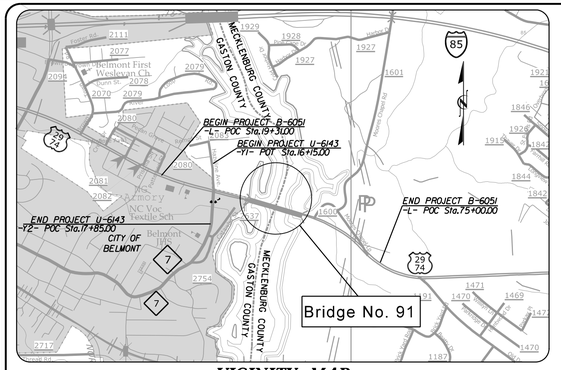
CONTRACT NO: C204773 TIP PROJECT: B-6051 /U-6143

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-6051 / U-6143	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
48708.1.1		P.E. (B-6051)
48326.1.1		P.E. (U-6143)
48708.2.1		R / W & UTIL. (B-6051)
48326.2.1	0007005	R / W & UTIL. (U-6143)
48708.3.1	0029074	CONSTRUCTION (B-6051)
48326.3.1	0007005	CONSTRUCTION (U-6143)

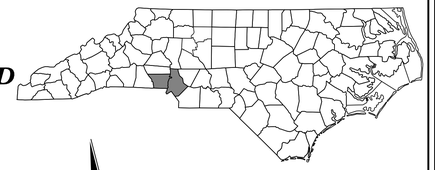
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GASTON / MECKLENBURG COUNTIES

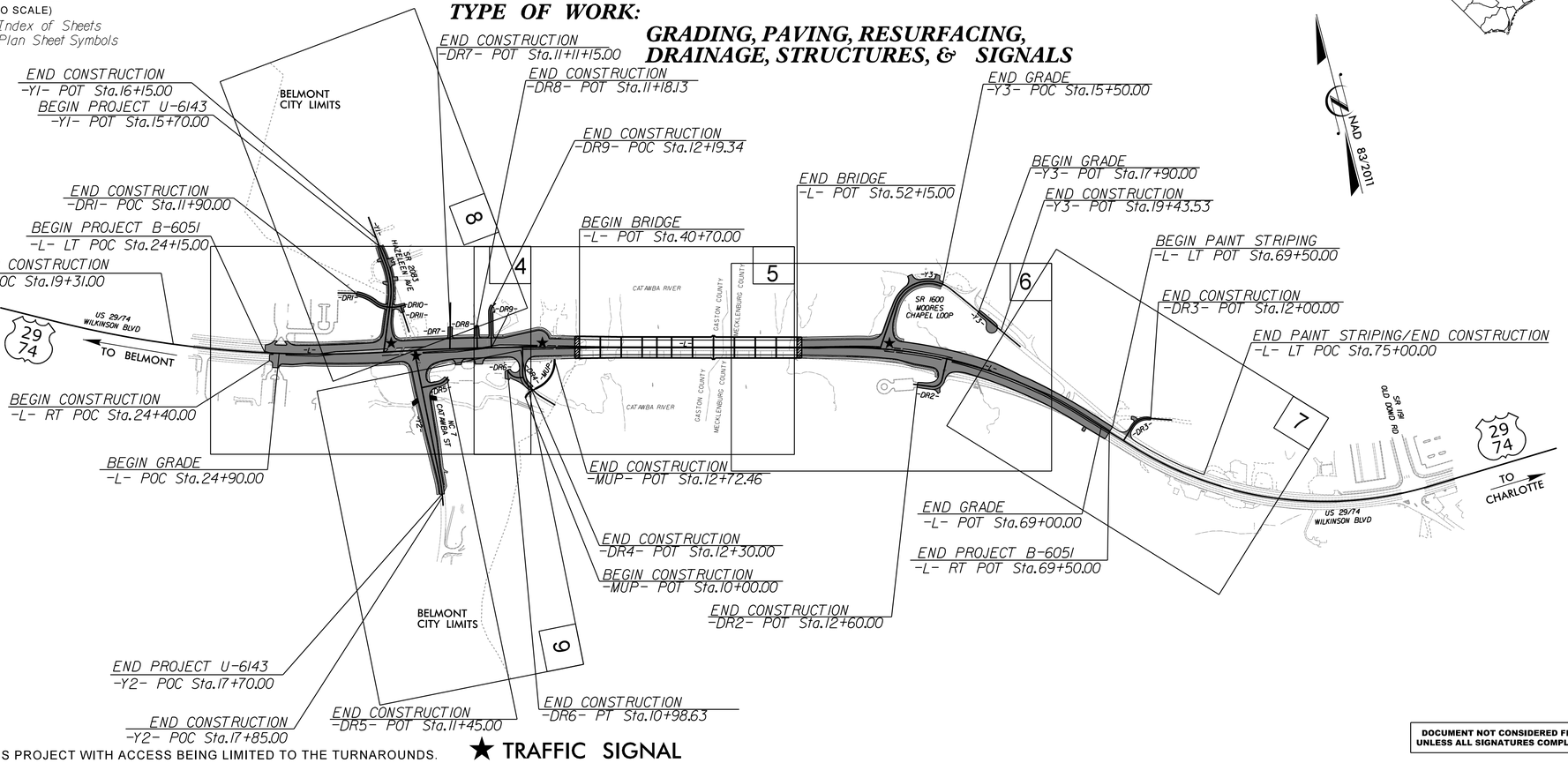


VICINITY MAP
(NOT TO SCALE)
See Sheet 1A For Index of Sheets
See Sheet 1B For Plan Sheet Symbols

LOCATION: *US 29/US74 REPLACE BRIDGE 350091 OVER CATAWBA RIVER & NC 7 (EAST CATAWBA STREET) AT US 74 (WILKINSON BOULEVARD) INTERSECTION. CONSTRUCT NORTHBOUND RIGHT-TURN LANE ON NC 7 (EAST CATAWABA STREET) AND EXTEND EXISTING WESTBOUND LEFT-TURN LANE ON US 74 (WILKINSON BOULEVARD)*



TYPE OF WORK: ***GRADING, PAVING, RESURFACING, DRAINAGE, STRUCTURES, & SIGNALS***

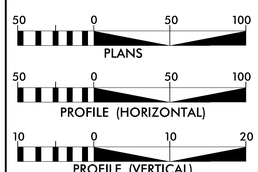


NOTES:
1. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE TURNAROUNDS.

★ TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2024 = 29,848
ADT 2044 = 36,088
DHV = 11%
DIR = 80%
T = 6%*
V = 50 MPH
(* TTST = 2% / DUAL 4%)
FUNC CLASS = MAJOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-6051 /U-6143 = 0.642 mi
LENGTH STRUCTURE TIP PROJECT B-6051 /U-6143 = 0.217 mi
TOTAL LENGTH TIP PROJECT B-6051 /U-6143 = 0.859 mi

PLANS PREPARED BY:
RK&K
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 23, 2023

LETTING DATE:
MAY 19, 2026

Scott D. Blevins, P.E.
PROJECT ENGINEER
Carter Mull, P.E.
PROJECT DESIGN ENGINEER
David Stutts, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER
4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 036821 ENGINEER ELENI M. RIGGS P.E.
DocuSigned by: Eleni Riggs
SIGNATURE: 4/7/2026

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL P.E.
DocuSigned by: Carter Mull
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

4/7/2026
R:\Roadway\Proj\B-6051_rdy_tsh.dgn
jalinger

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	1A

ROADWAY DESIGN ENGINEER

4/7/2026

NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL

DocuSigned by: Carter Mull
968B2C1867894A0...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX of SHEETS

INDEX OF SHEETS

LIST OF STANDARDS

EFF. 01-16-2024
REV.

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
235.01	Embankment Monitoring
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.39	Reinforced Concrete Endwall - for Single 72" 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
838.69	Reinforced Brick Endwall - for Single 72" 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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.07	Concrete Sidepath / Shared Use Path / Greenway Construction
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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".

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Energy, City of Belmont,

Enbridge Natural Gas, Piedmont Natural Gas, AT&T Communications, Conterra Ultra Broadband,

RST Global, SEGRA, MCI/Verizon, Charter/Spectrum, & City of Charlotte

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH 2C DETAILS SHOWN

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential — ?

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — 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 — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

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 — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)* — P
- U/G Power Line (SUE – LOS C)* — P
- U/G Power Line (SUE – LOS D)* — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

FINAL PAVEMENT SCHEDULE

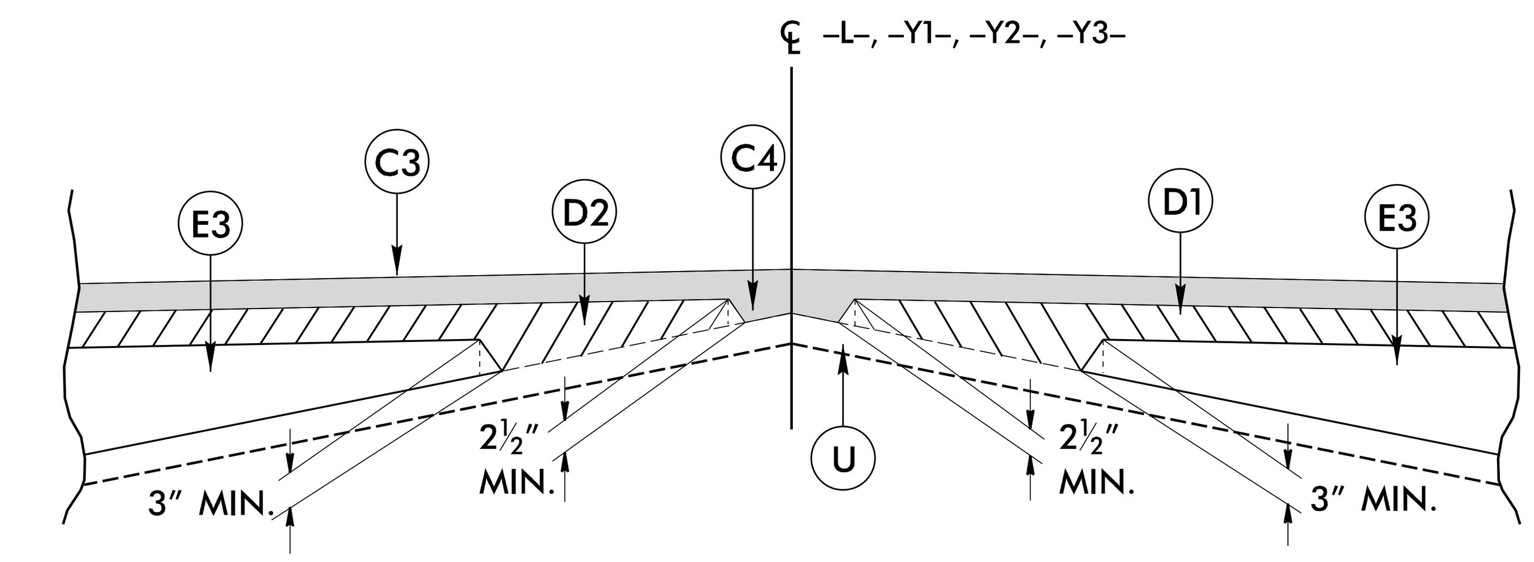
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD	R1	2'-6" CURB & GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	R2	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
C3	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.	J1	PROP. 6" AGGREGATE BASE COURSE	R3	8" X 4" CURB
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.	J2	PROP. 4" AGGREGATE BASE COURSE UNDER 2'-6" C&G	S1	5' SIDEWALK
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	K	PROP. 12" CLASS IV SUBGRADE STABILIZATION	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N	GEOTEXTILE FOR SUBGRADE STABILIZATION	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.	W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2A-1

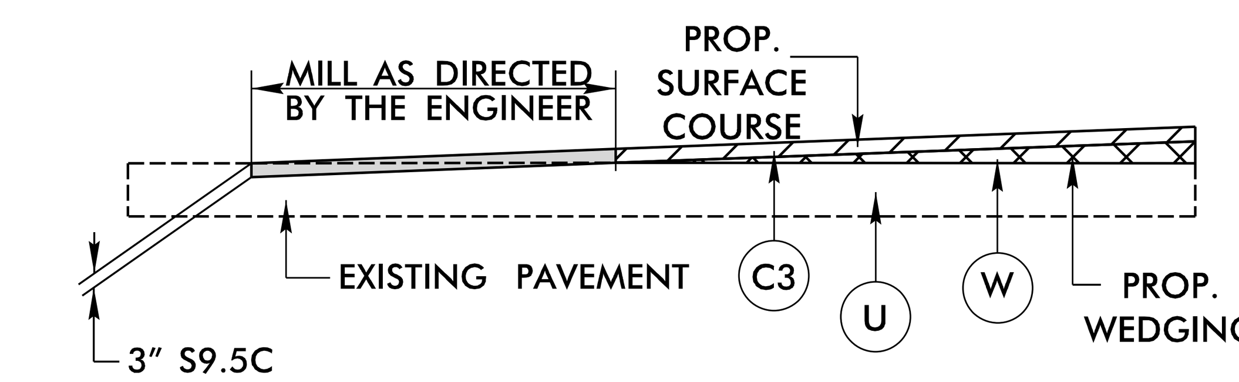
ROADWAY DESIGN ENGINEER — 4/9/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047301 CARTER A. MULL — DocuSigned by: Carter Mull 968B2C1867894A0...

PAVEMENT DESIGN ENGINEER — 4/9/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARGO — DocuSigned by: Andrew D. Wargo 2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Detail Showing Method of Wedging

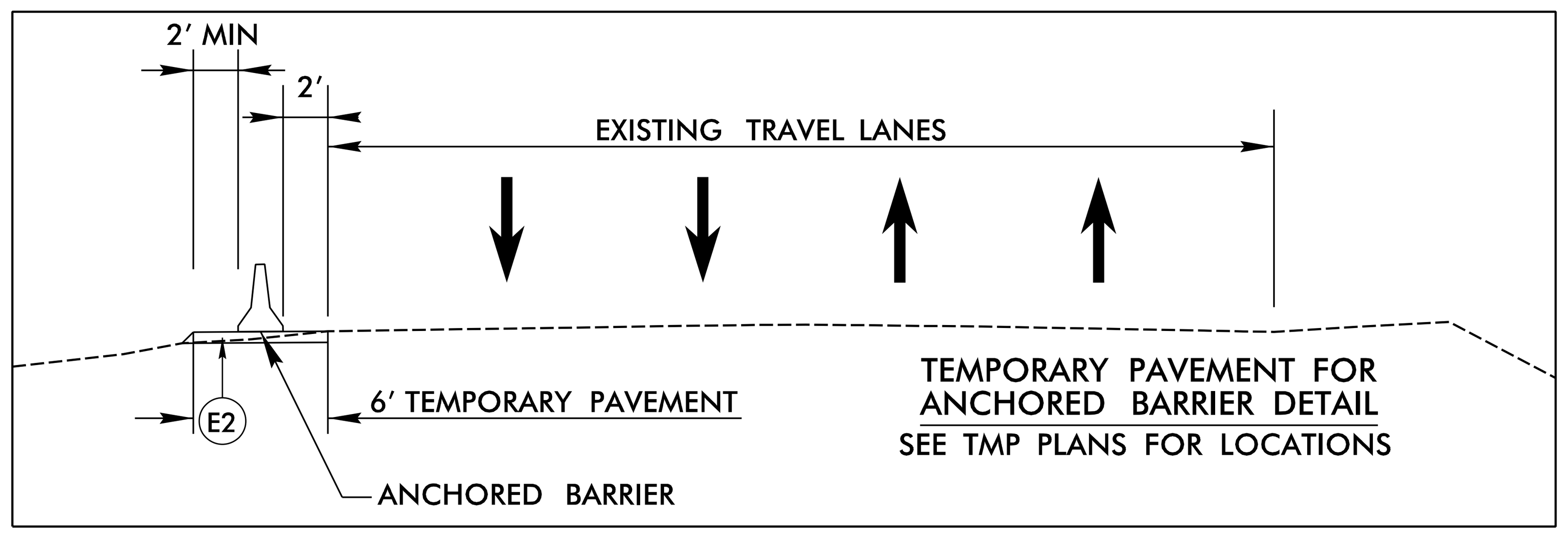


INCIDENTAL MILLING DETAIL

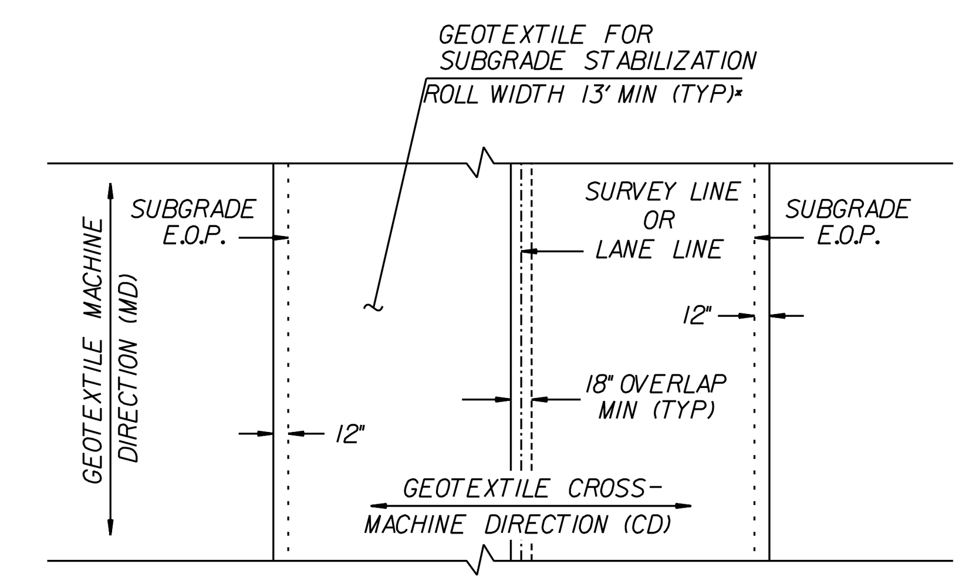
MILL EXISTING PAVEMENT ON THE FOLLOWING ALIGNEMENT TIES:
-L-, -Y1-, -Y2-, -Y3-

NOTES:
SEE PLANS FOR LOCATION OF AUXILARY LANES, TURN LANES, TAPERS, CONCRETE ISLANDS AND SAFETY RAILS.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

* FROM -L- LT STA. 57+68.98 TO 69+00.00, NO MULTI-USE PATH CONSTRUCTION, BERM WIDTH REMAINS 16.5' FOR FUTURE MUP CONSTRUCTION.
* FROM -L- RT STA. 59+75.81 TO 69+00.00, NO MULTI-USE PATH CONSTRUCTION, BERM WIDTH REMAINS 16.5' FOR FUTURE MUP CONSTRUCTION.

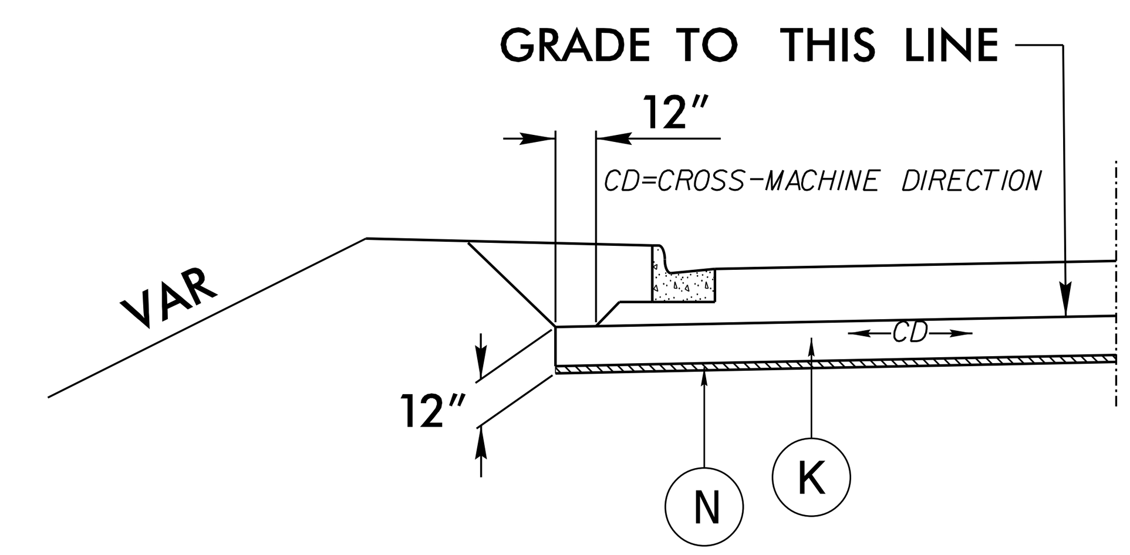


TEMPORARY PAVEMENT FOR ANCHORED BARRIER DETAIL
SEE TMP PLANS FOR LOCATIONS



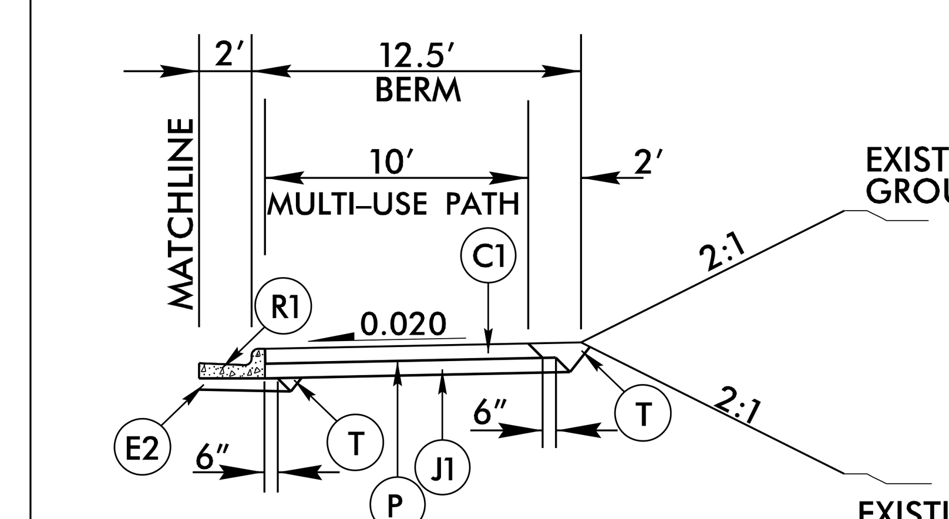
GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT
(PLAN VIEW)
(100% COVERAGE REQUIRED)

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



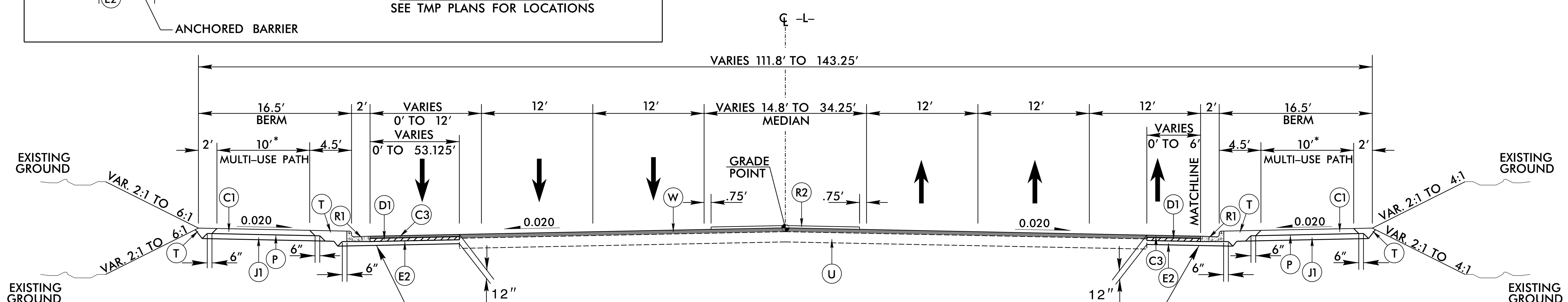
DETAIL FOR SHALLOW UNDERCUT

-L- STA 24+75 TO 26+75
-L- STA 28+25 TO 30+25
-L- STA 36+75 TO 38+25
-Y3- STA 14+75 TO 15+50
-DR1- STA 10+50 TO 11+90



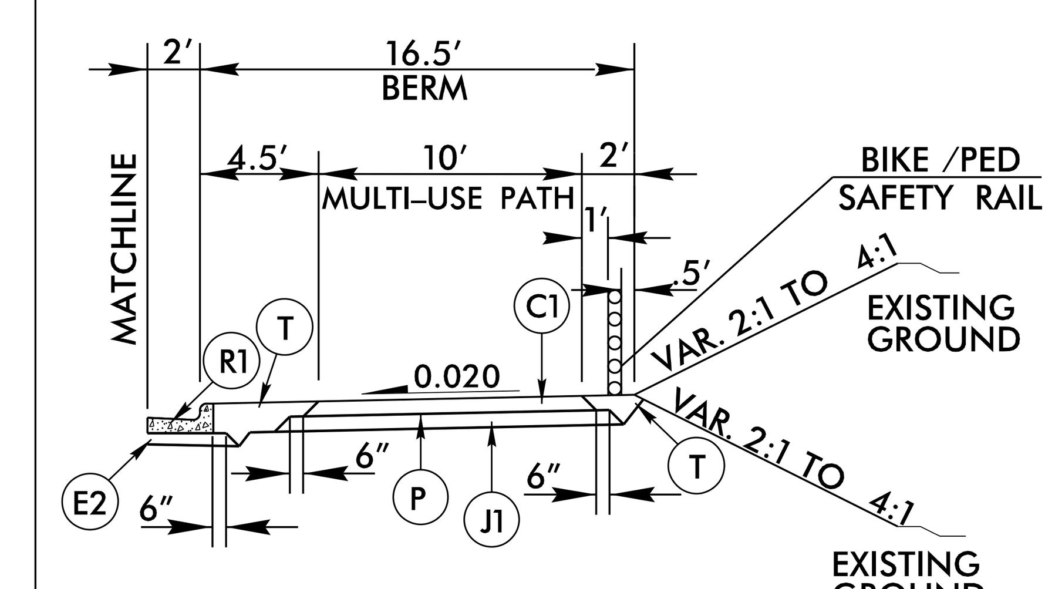
INSET A

USE W/TYP. NO. 1
-L- STA. 24+94.31 TO 26+22.56 RT



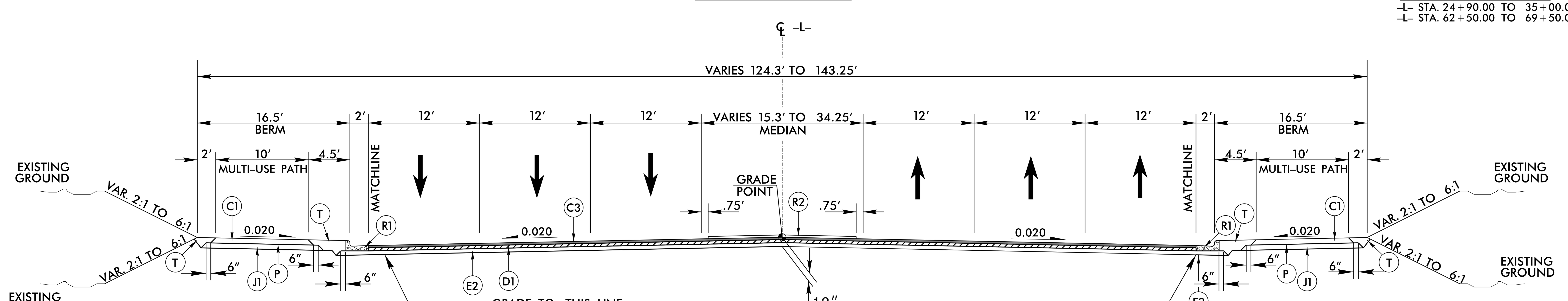
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 24+90.00 TO 35+00.00
-L- STA. 62+50.00 TO 69+50.00



INSET B: BIKE /PED. SAFETY RAIL

USE W/TYP. NO. 1, 2
SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 35+00.00 TO 39+75.00

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Raleigh, North Carolina 27615-3960
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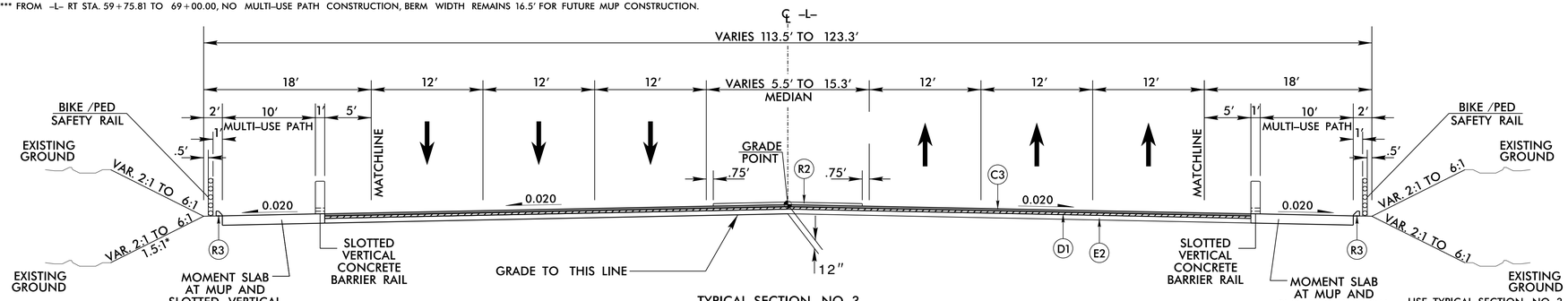
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD	R1	2'-6" CURB & GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	R2	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
C3	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.	J1	PROP. 6" AGGREGATE BASE COURSE	R3	8" X 4" CURB
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.	J2	PROP. 4" AGGREGATE BASE COURSE UNDER 2'-6" C&G	S1	5' SIDEWALK
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	K	PROP. 12" CLASS IV SUBGRADE STABILIZATION	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N	GEOTEXTILE FOR SUBGRADE STABILIZATION	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.	W	WEDGING

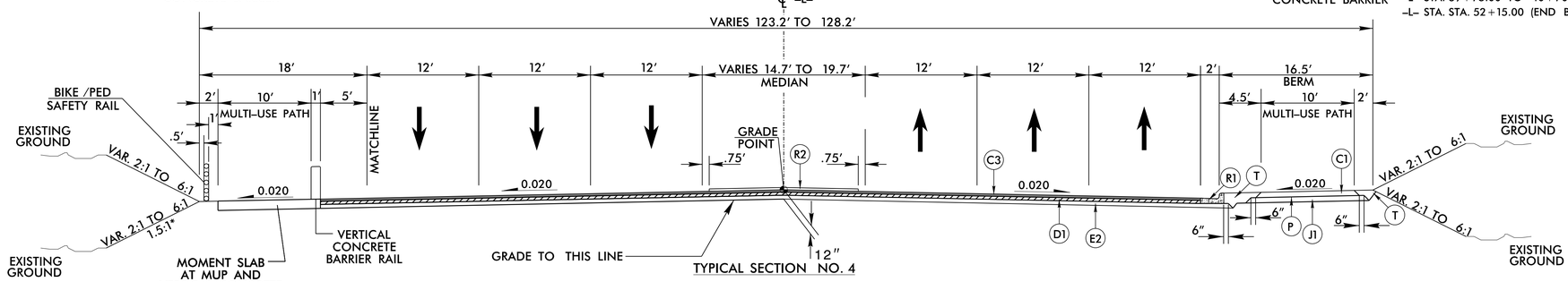
NOTES:
SEE PLANS FOR LOCATION OF AUXILARY LANES, TURN LANES, TAPERS, CONCRETE ISLANDS AND SAFETY RAILS.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

* FROM –L– LT STA. 52+15.00 TO 56+00.00 USE REINFORCED 1.5:1 SLOPES TO MINIMALIZE FILL AREA TO CAUSEWAY.
** END SLOTTED VERTICAL BARRIER AND BEGIN VERTICAL BARRIER –L– LT/RT STA. 52+67.53
*** FROM –L– LT STA. 57+68.98 TO 69+00.00, NO MULTI-USE PATH CONSTRUCTION, BERM WIDTH REMAINS 16.5' FOR FUTURE MUP CONSTRUCTION.
*** FROM –L– RT STA. 59+75.81 TO 69+00.00, NO MULTI-USE PATH CONSTRUCTION, BERM WIDTH REMAINS 16.5' FOR FUTURE MUP CONSTRUCTION.



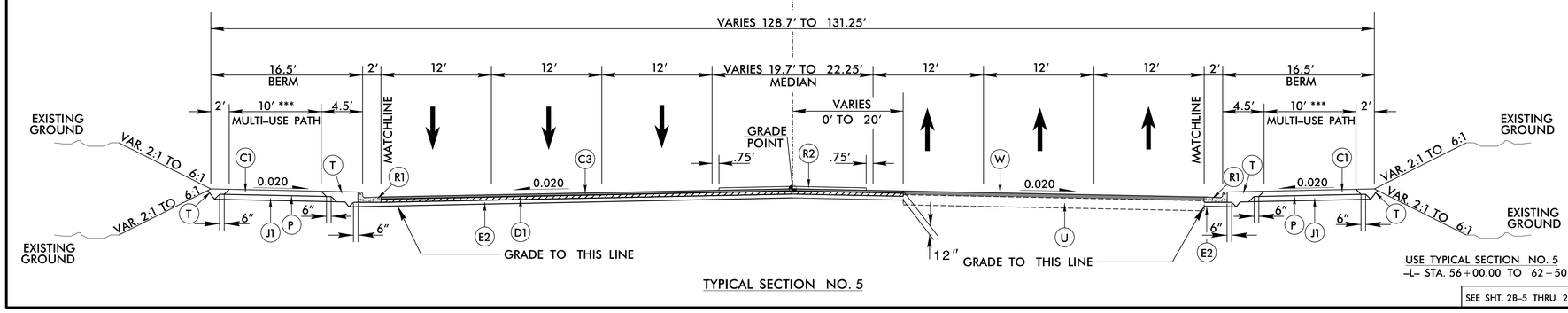
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 39+75.00 TO 40+70.00 (BEGIN BRIDGE)
–L– STA. STA. 52+15.00 (END BRIDGE) TO 54+75.00**



TYPICAL SECTION NO. 4

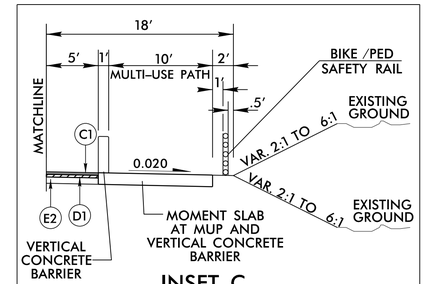
USE TYPICAL SECTION NO. 4
–L– STA. 54+75.00 TO 56+00.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
–L– STA. 56+00.00 TO 62+50.00

SEE SHT. 2B–5 THRU 2B–8 FOR MOMENT SLAB AND BARRIER DETAIL



INSET C

USE W/TYP. NO. 3, 4, 5
–L– STA. 52+67.53 TO 54+75.00 RT
–L– STA. 52+67.53 TO 56+29.00 LT

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2A-2

ROADWAY DESIGN ENGINEER
4/9/2026
NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER
DocuSigned by: Carter A. Mull

PAVEMENT DESIGN ENGINEER
4/9/2026
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO
DocuSigned by: Andrew D. Wargo

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2A-3

ROADWAY DESIGN ENGINEER — 4/9/2026 — NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER — Carter Mull

PAVEMENT DESIGN ENGINEER — 4/9/2026 — NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER — Andrew D. Wargo

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD	R1	2'-6" CURB & GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	R2	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
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D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	K	PROP. 12" CLASS IV SUBGRADE STABILIZATION	T	EARTH MATERIAL
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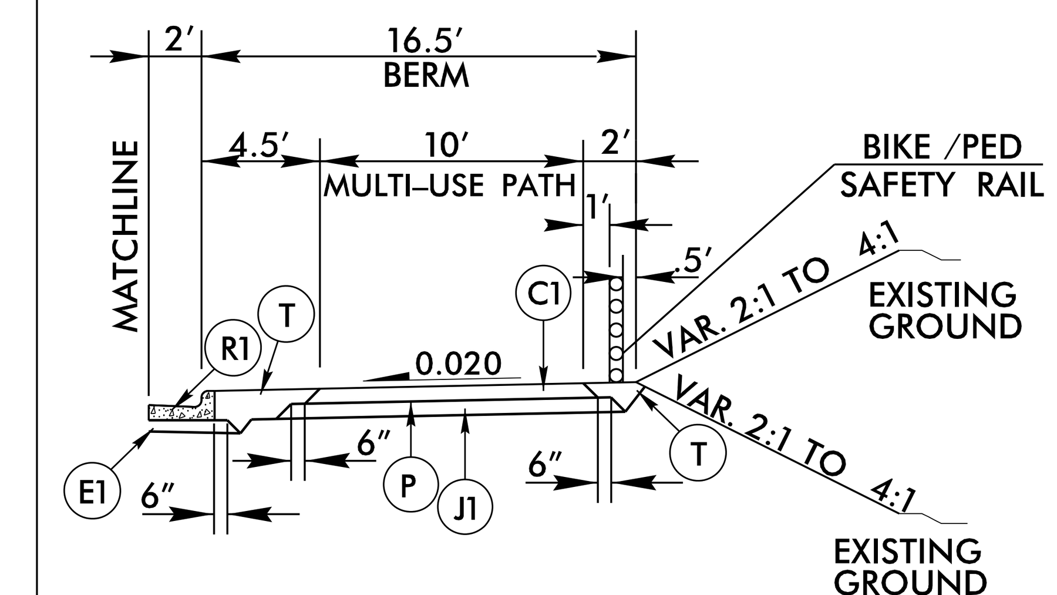
E1	PROP. APPROX. 4". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.	W	WEDGING

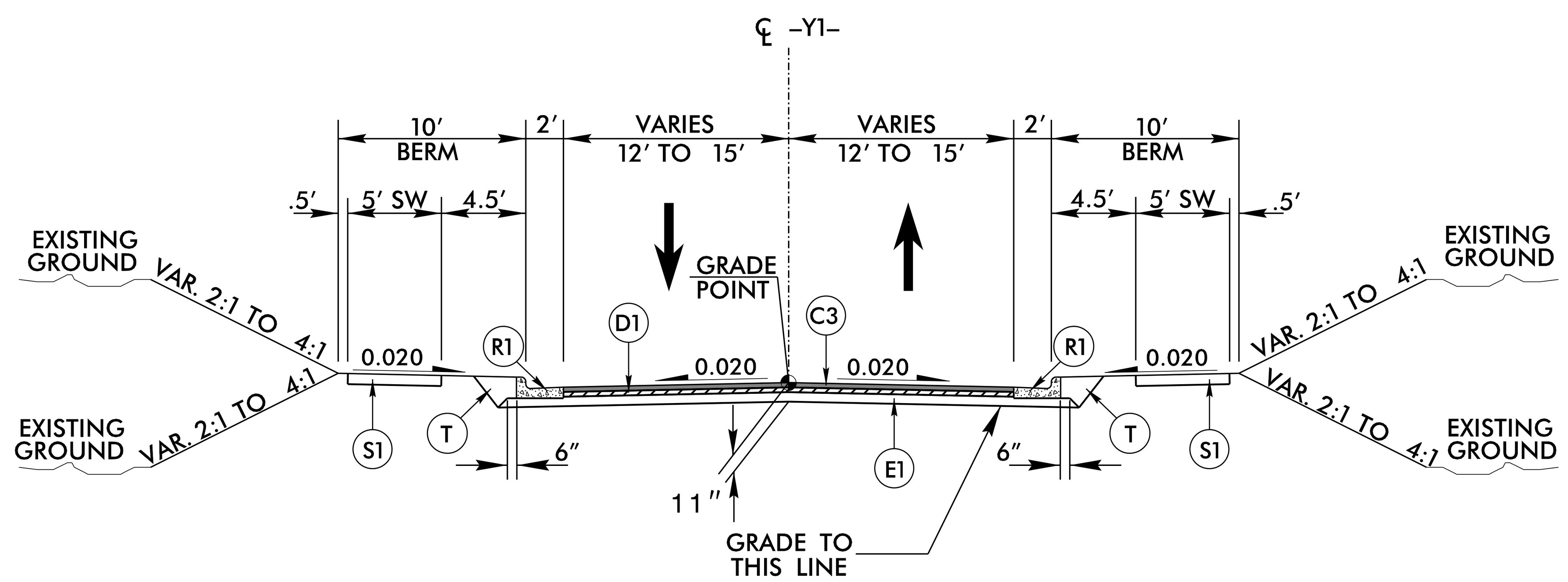
NOTES:
SEE PLANS FOR LOCATION OF AUXILARY LANES, TURN LANES, TAPERS, CONCRETE ISLANDS, AND SAFETY RAILS.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

* FROM -Y3- LT STA. 10+48.70 TO 13+00.00 USE REINFORCED 1.5:1 SLOPES TO MINIMALIZE FILL AREA TO CAUSEWAY.



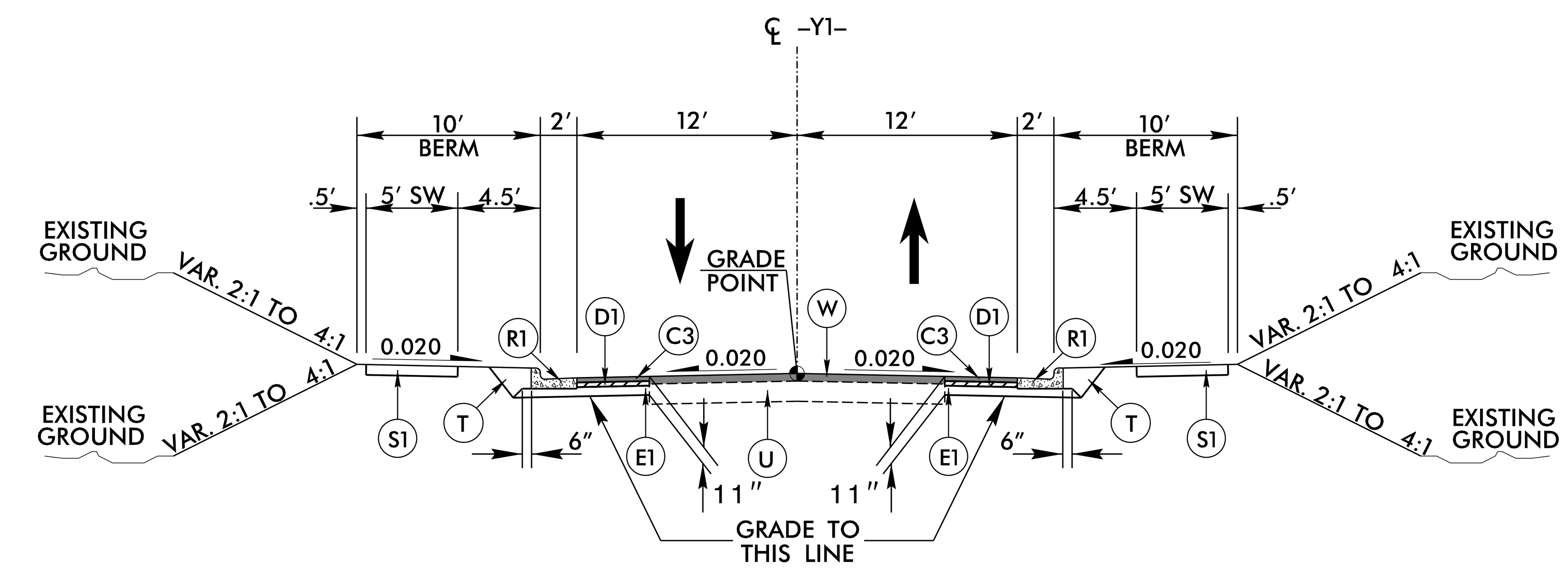
INSET B: BIKE /PED. SAFETY RAIL

USE W/TYP. NO. 8 AND 9
SEE PLANS FOR LOCATIONS



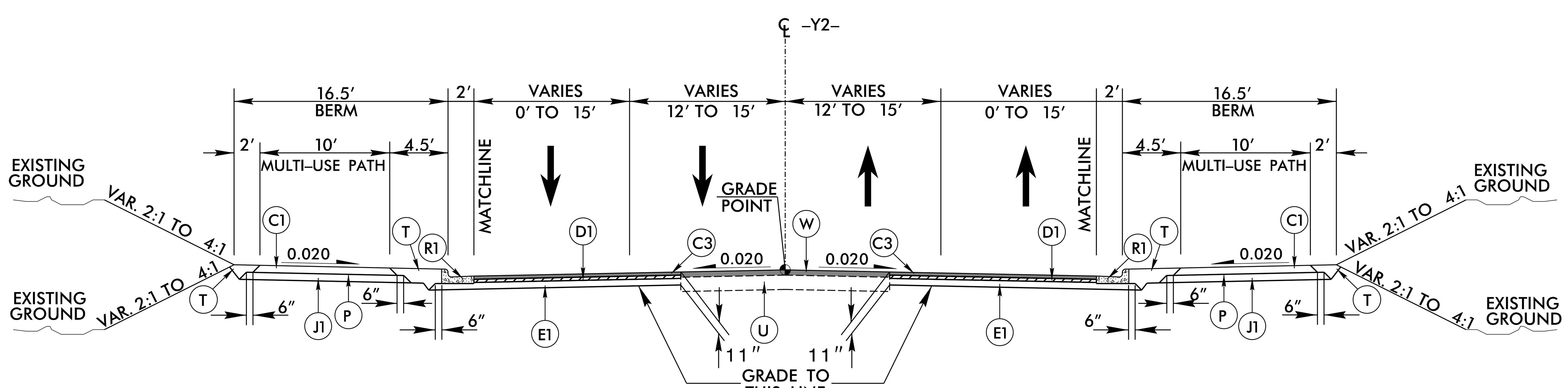
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
-Y1- STA. 10+54.10 TO 13+31.83



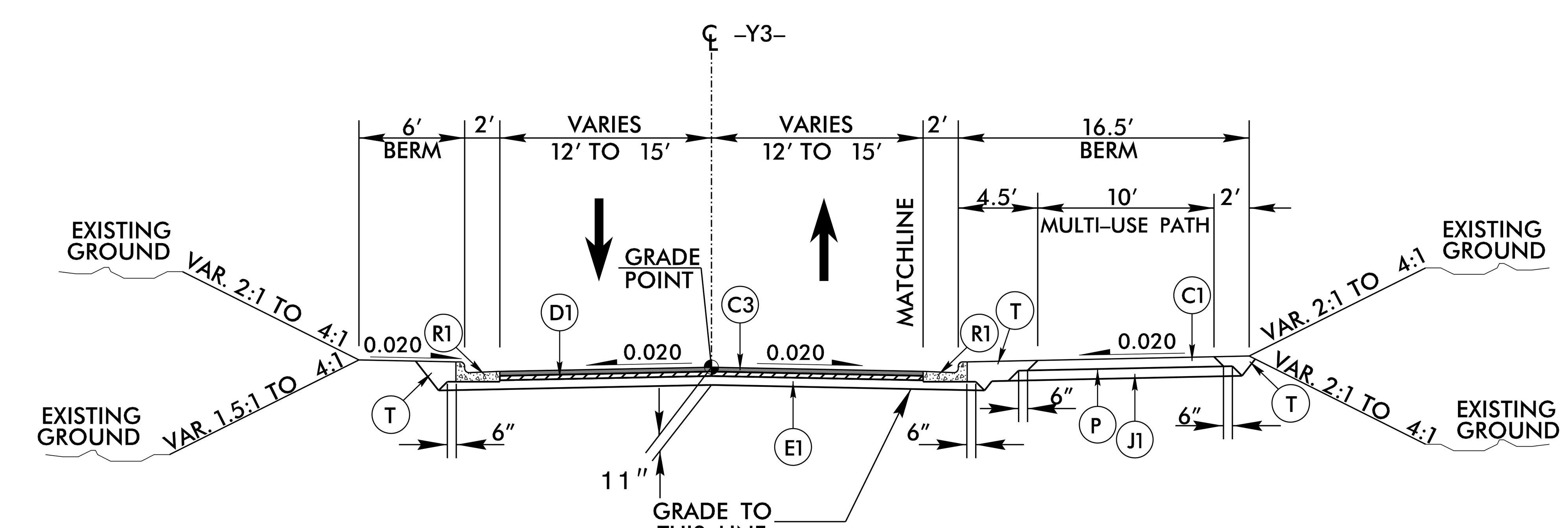
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
-Y1- STA. 13+31.83 TO 15+70.00



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
-Y2- STA. 10+53.69 TO 17+70.00



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y3- STA. 10+48.70 TO 14+50.00

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PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2A-4

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
4/9/2026 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047301 CARTER A. MULL DocuSigned by: Carter Mull 968B2C1867894A0...	4/9/2026 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARGO DocuSigned by: Andrew D. Wargo 2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD	R1	2'-6" CURB & GUTTER
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C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.	J2	PROP. 4" AGGREGATE BASE COURSE UNDER 2'-6" C&G	S1	5' SIDEWALK
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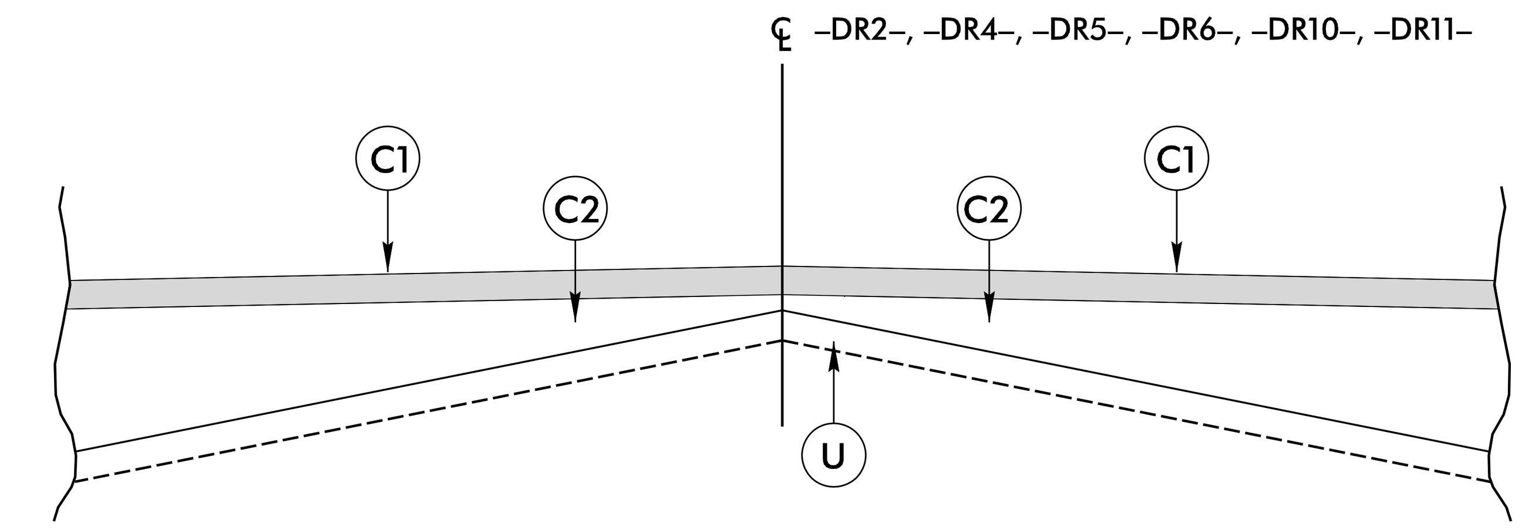
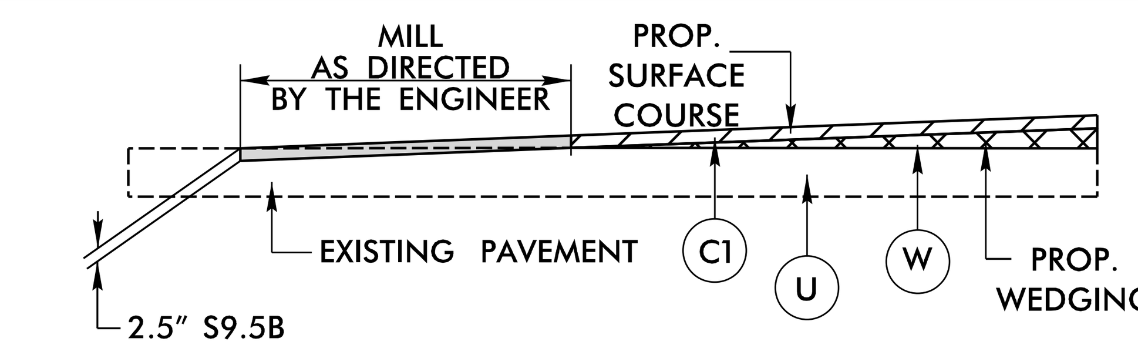
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N	GEOTEXTILE FOR SUBGRADE STABILIZATION	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.	W	WEDGING

NOTES:
SEE PLANS FOR LOCATION OF AUXILARY LANES, TURN LANES, TAPERS, CONCRETE ISLANDS, AND SAFETY RAILS.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

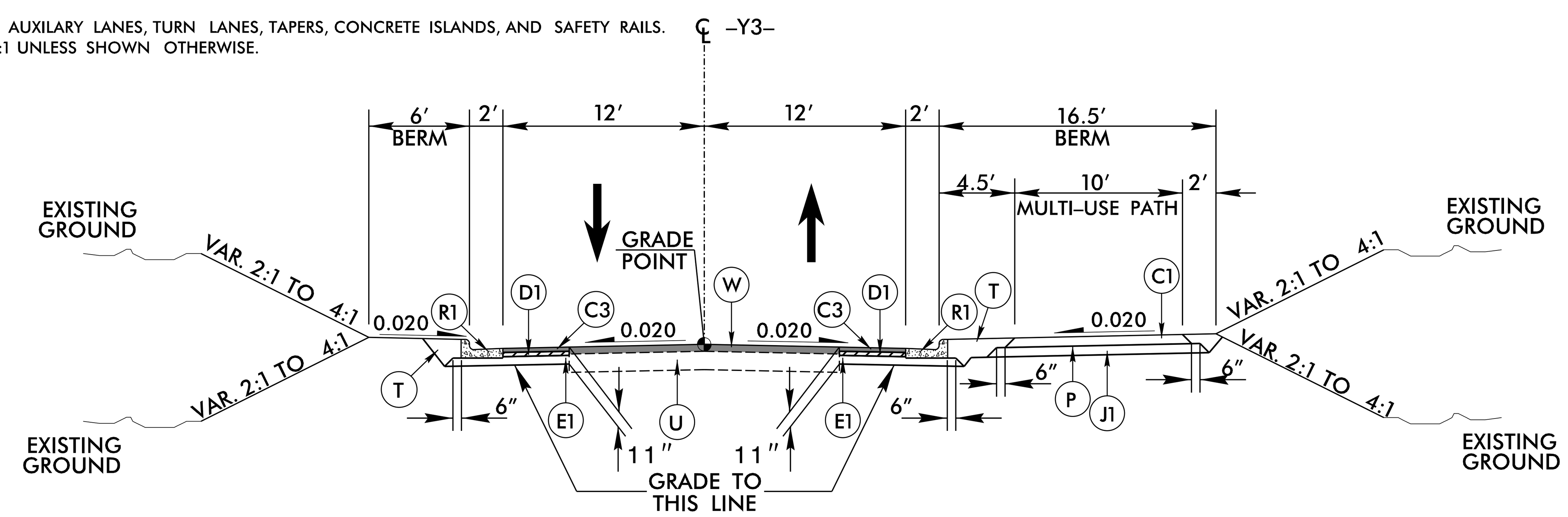


Detail Showing Method of Wedging



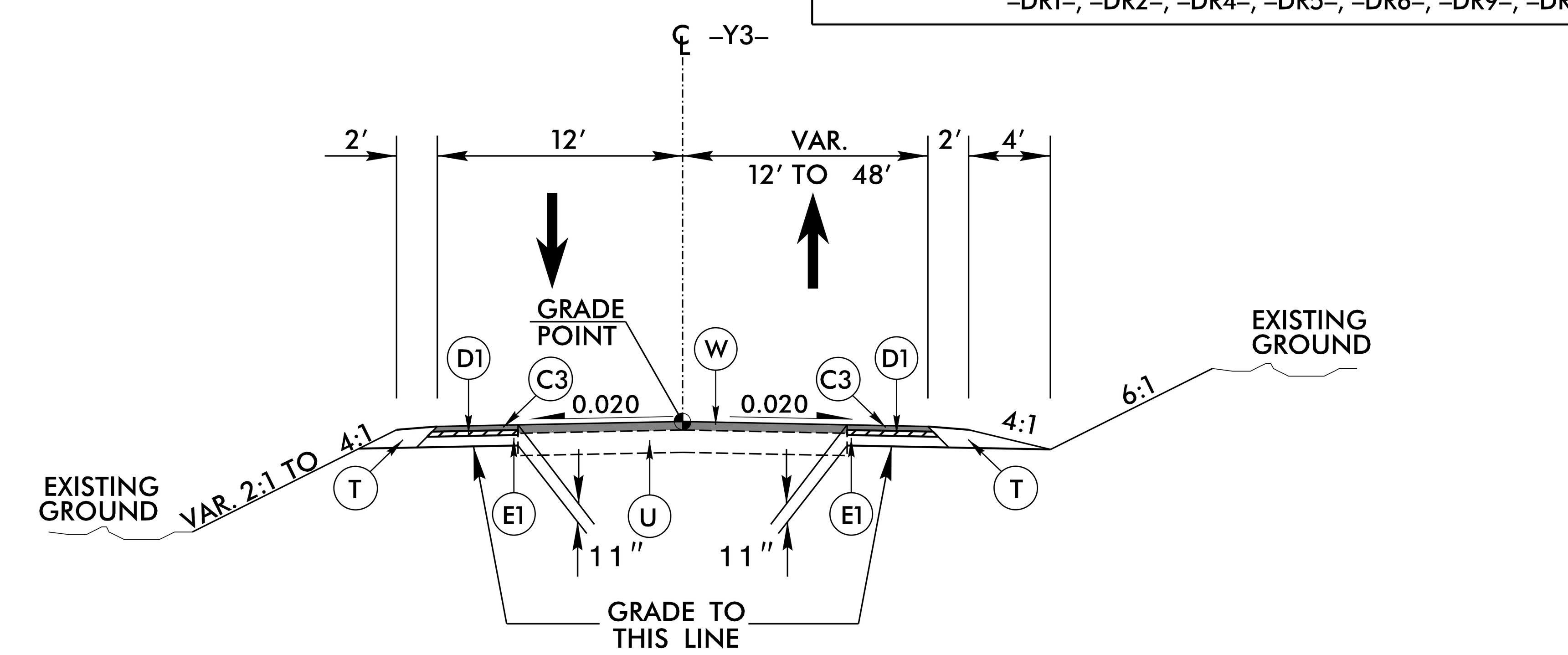
INCIDENTAL MILLING DETAIL

MILL EXISTING PAVEMENT ON THE FOLLOWING ALIGENEMENT TIES:
–DR1–, –DR2–, –DR4–, –DR5–, –DR6–, –DR9–, –DR10–, –DR11–



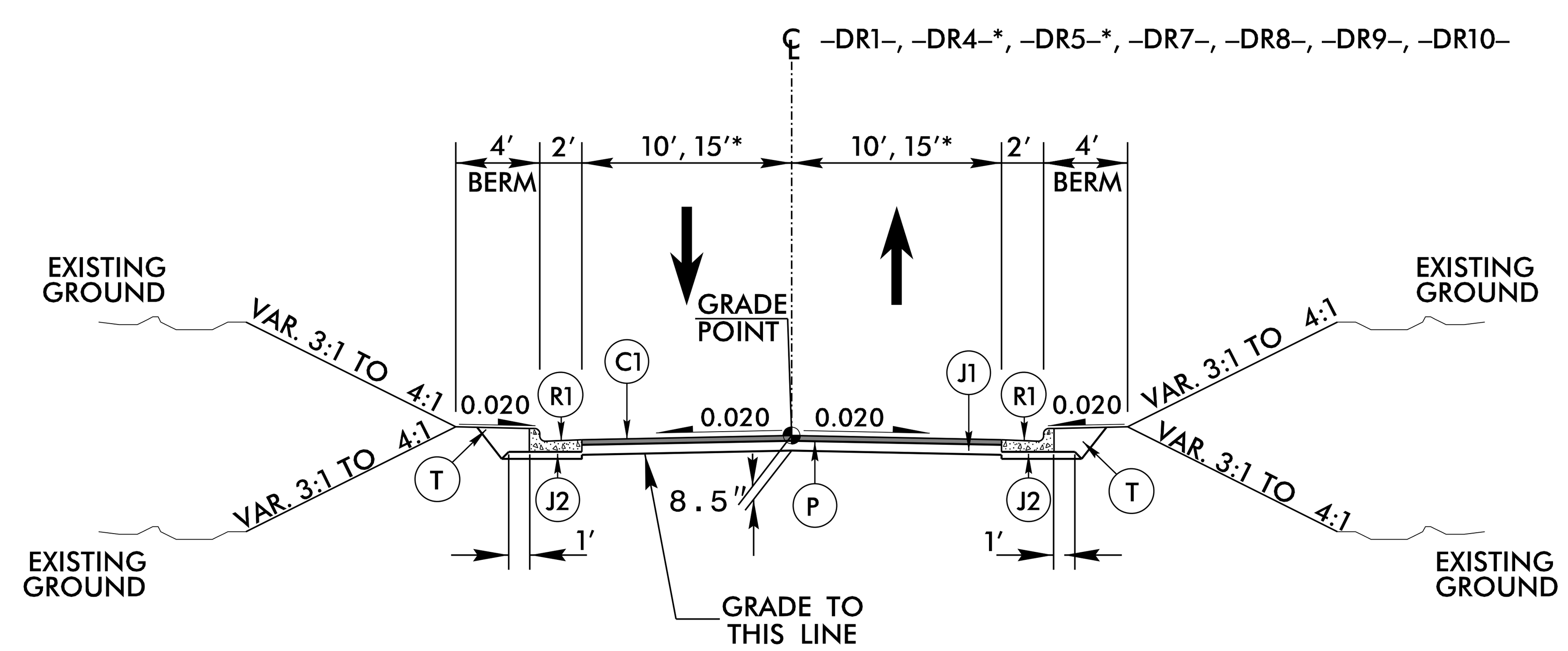
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
–Y3– STA. 14 + 50.00 TO 15 + 50.00



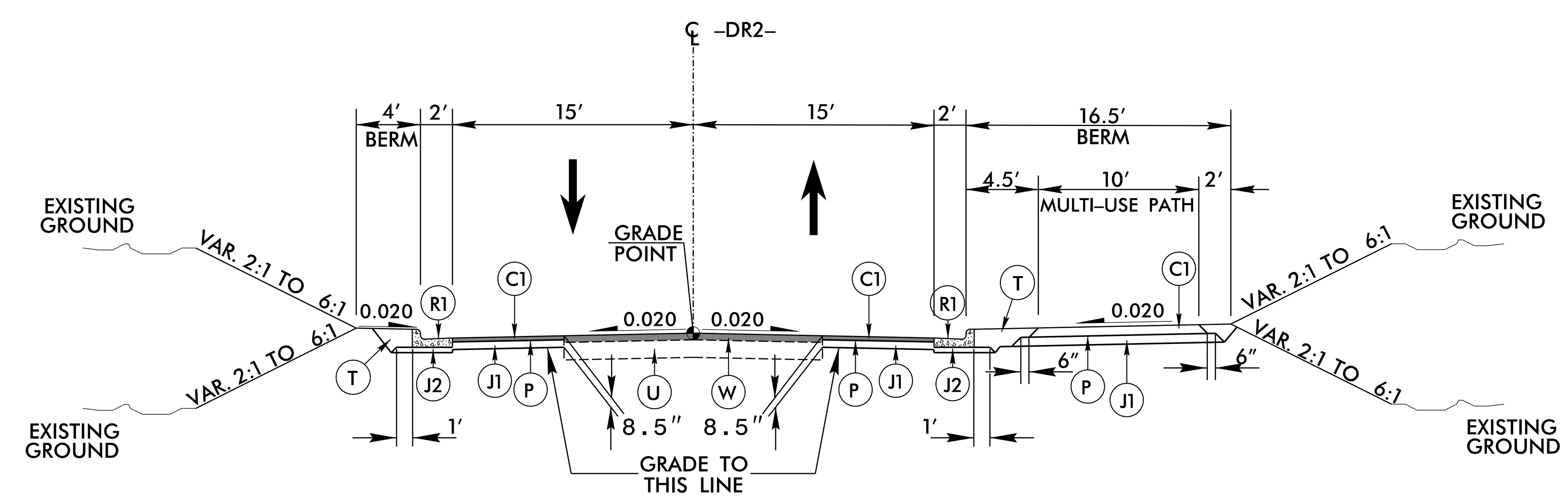
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
–Y3– STA. 17 + 90.00 TO 19 + 18.55



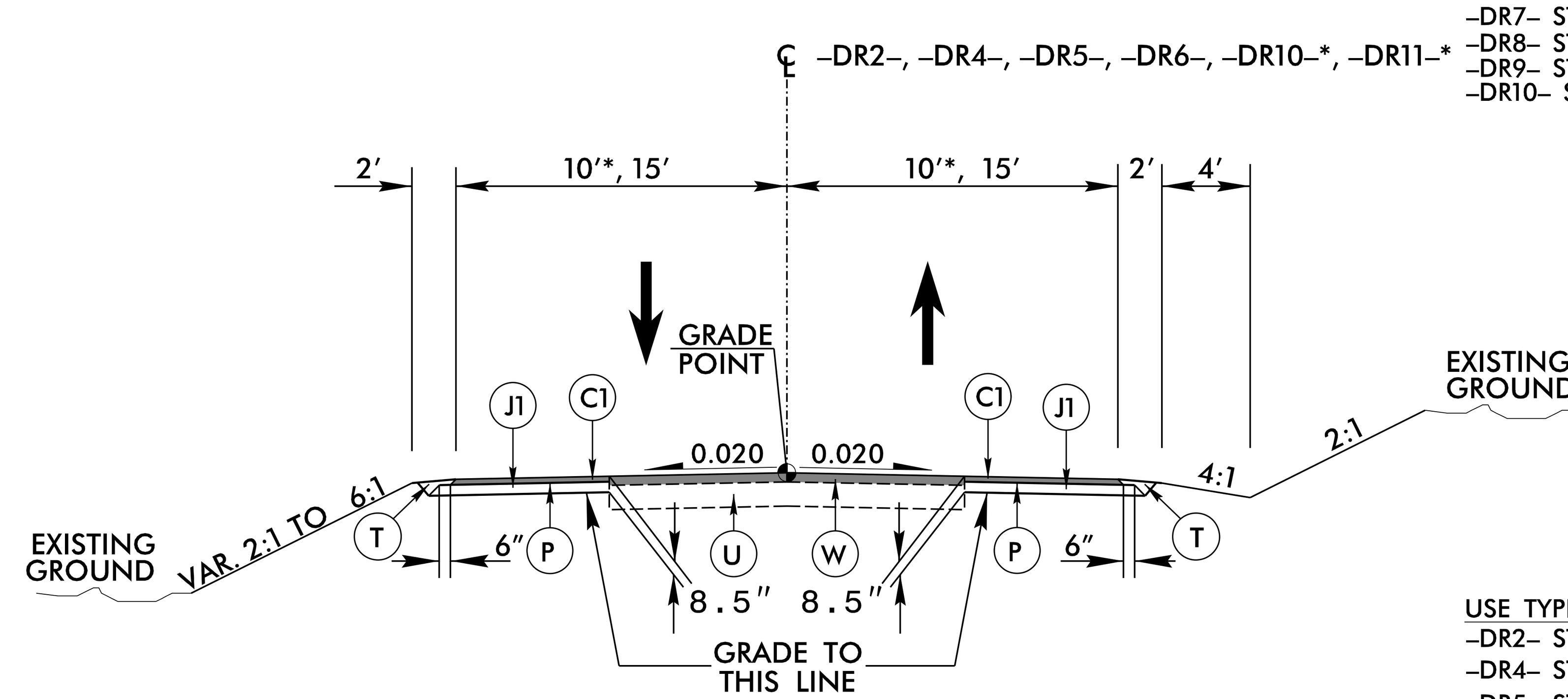
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
–DR1– STA. 10 + 12.21 TO 11 + 90.00
–DR4– STA. 10 + 47.72 TO 11 + 04.72
–DR5– STA. 10 + 32.75 TO 10 + 75.16
–DR7– STA. 10 + 53.19 TO 11 + 15.00
–DR8– STA. 10 + 52.47 TO 11 + 18.13
–DR9– STA. 10 + 50.98 TO 12 + 19.34
–DR10– STA. 10 + 12.23 TO 10 + 46.23



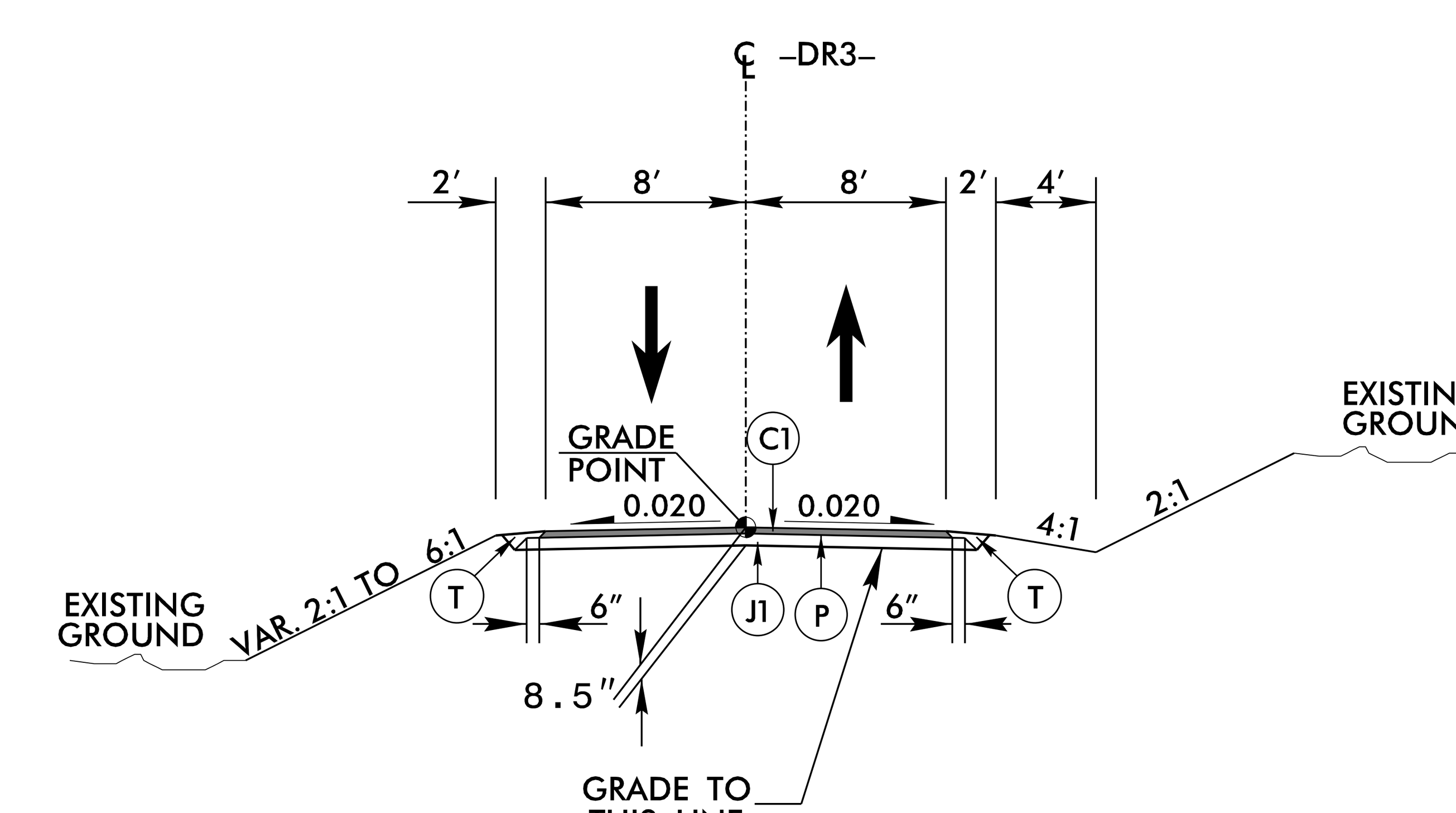
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
–DR2– STA. 10 + 59.13 TO 11 + 07.43



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
–DR2– STA. 11 + 07.43 TO 12 + 60.00
–DR4– STA. 11 + 50.15 TO 12 + 30.00
–DR5– STA. 11 + 24.31 TO 11 + 45.00
–DR6– STA. 10 + 15.44 TO 10 + 98.63
–DR10– STA. 10 + 46.23 TO 10 + 82.70
–DR11– STA. 10 + 10.05 TO 10 + 35.00



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
–DR3– STA. 10 + 30.55 TO 12 + 00.00

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FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD	R1	2'-6" CURB & GUTTER
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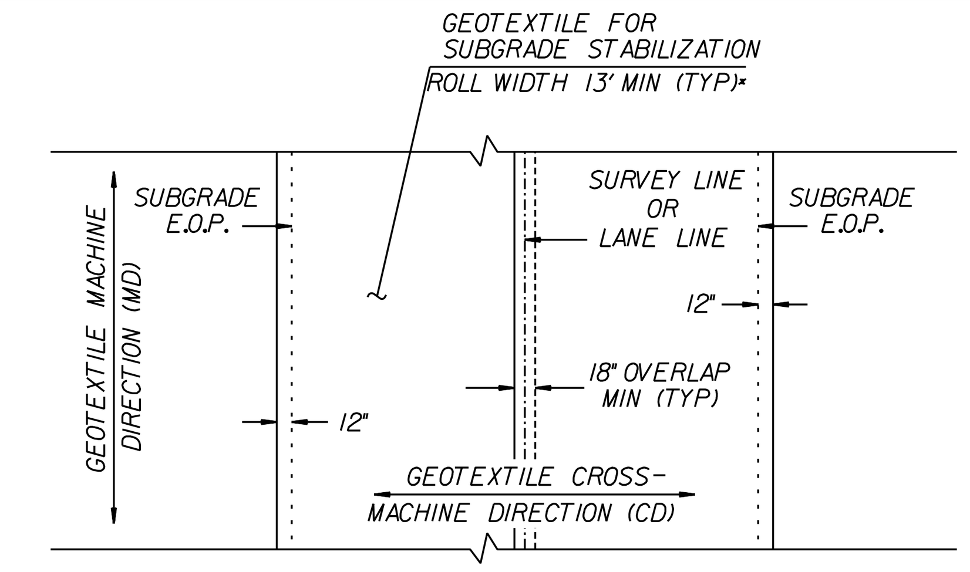
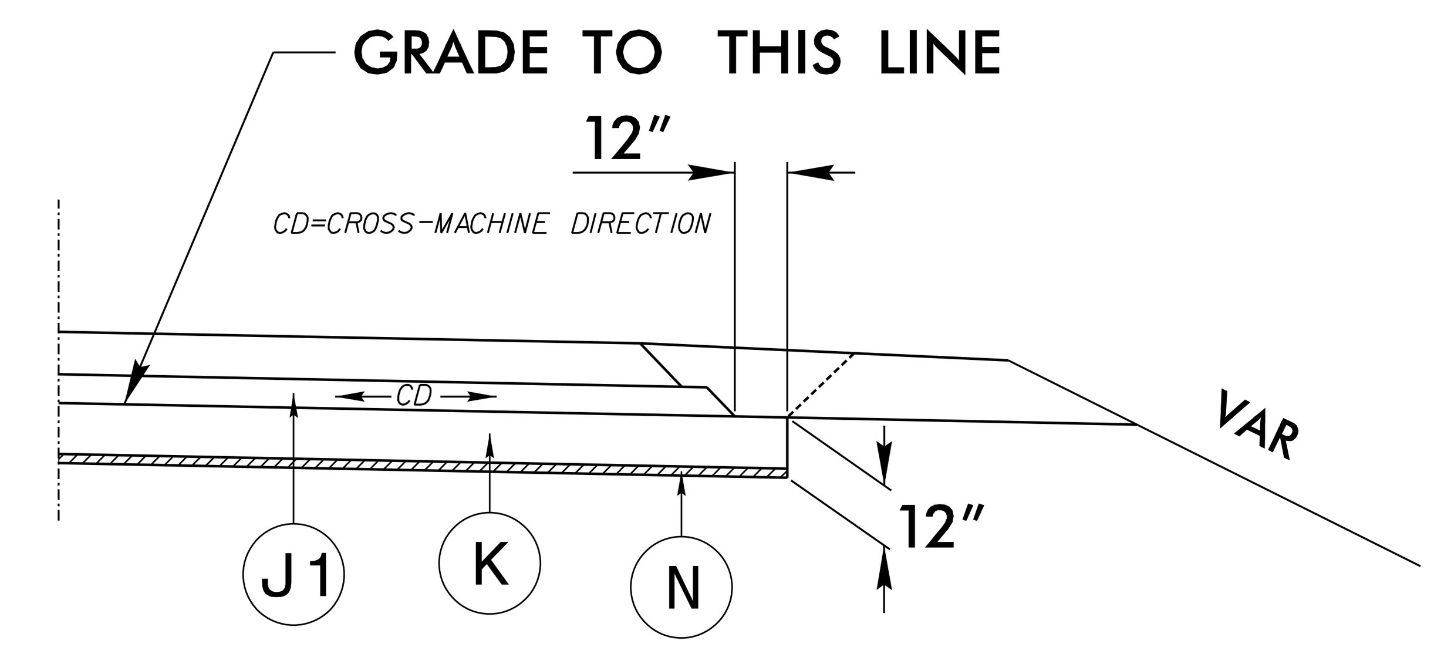
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.	J2	PROP. 4" AGGREGATE BASE COURSE UNDER 2'-6" C&G	S1	5' SIDEWALK
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	K	PROP. 12" CLASS IV SUBGRADE STABILIZATION	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N	GEOTEXTILE FOR SUBGRADE STABILIZATION	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4". DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD.	W	WEDGING

NOTES:
SEE PLANS FOR LOCATION OF AUXILARY LANES, TURN LANES, TAPERS, CONCRETE ISLANDS, AND SAFETY RAILS.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

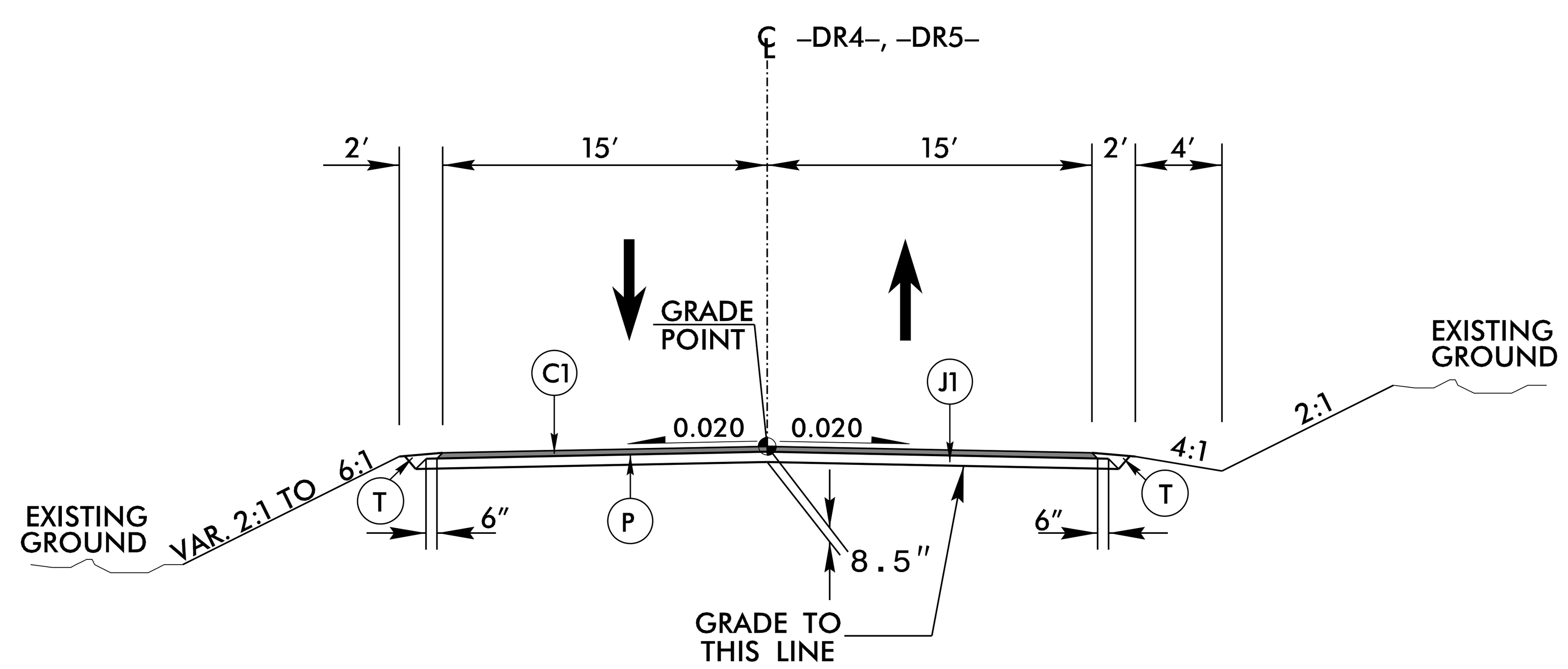


GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT
(PLAN VIEW)
(100% COVERAGE REQUIRED)

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

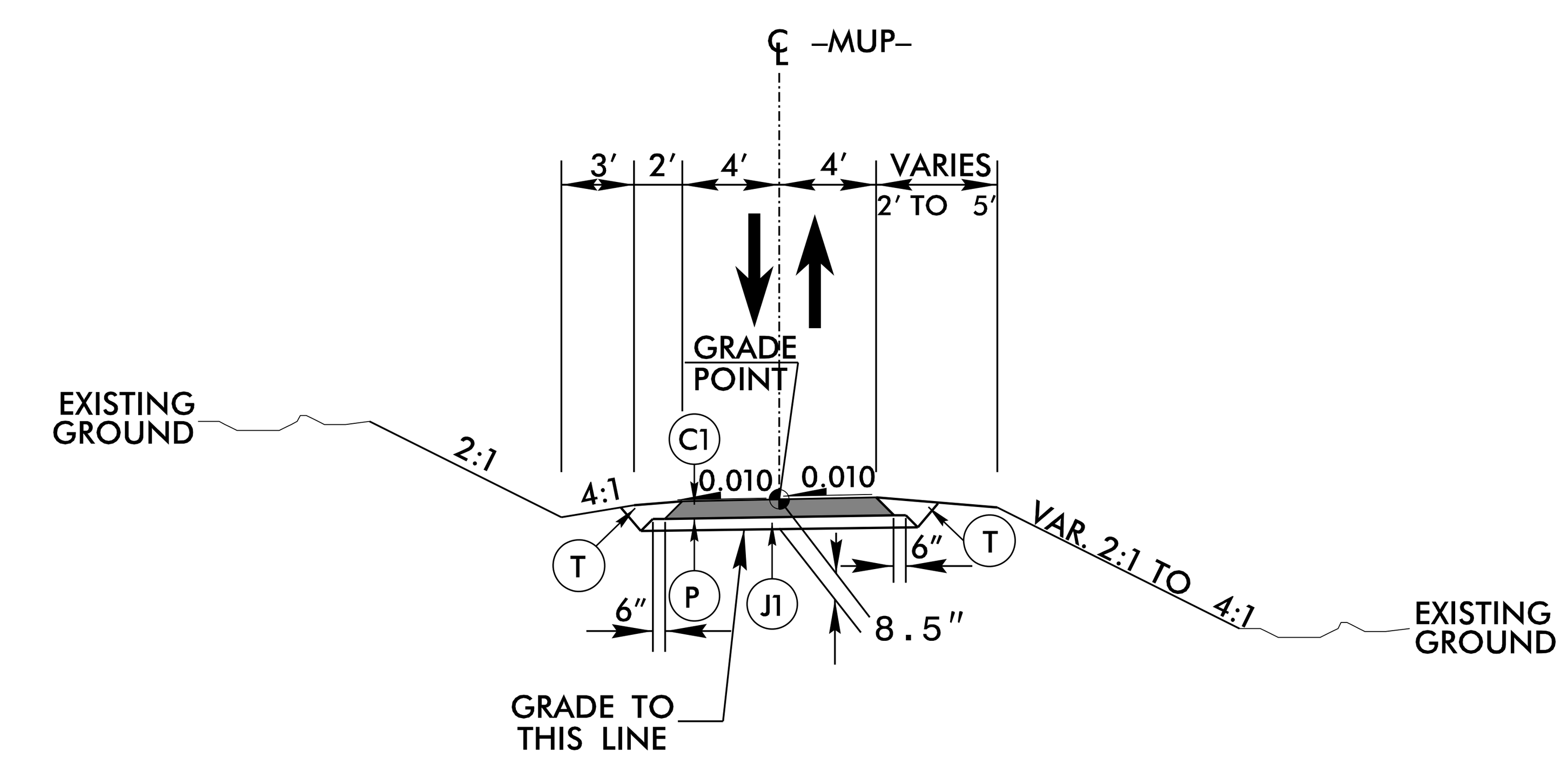


DETAIL FOR SHALLOW UNDERCUT
-MUP- STA 10+00 TO 11+75



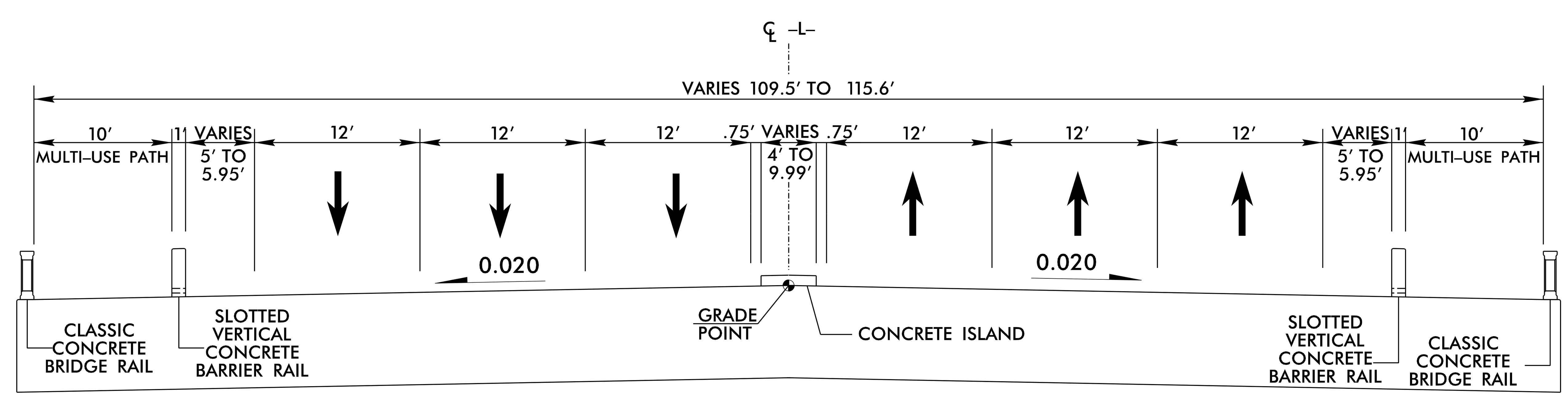
TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16
-DR4- STA. 11+04.72 TO 11+50.15
-DR5- STA. 10+75.16 TO 11+24.31



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
-MUP- STA. 10+00.00 TO 10+43.10
-MUP- STA. 10+73.09 TO 12+72.46



STRUCTURE TYPICAL SECTION NO. 18 AT THE FOLLOWING LOCATION:

-L- STA. 40+70.00 (BEGIN BRIDGE) TO 52+15.00 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2A-5

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
4/9/2026	4/9/2026
NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL	NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO
DocuSigned by: Carter Mull 968B2C1867894A0...	DocuSigned by: Andrew D. Wargo 2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

4/7/2026

NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL

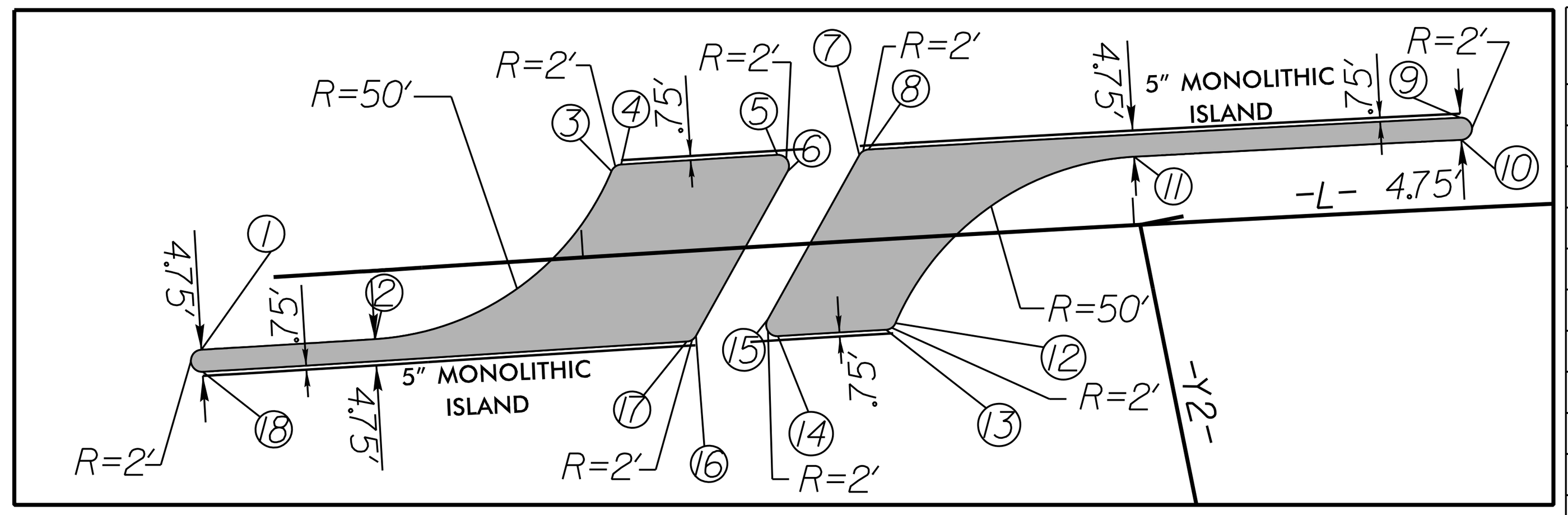
DocuSigned by: Carter Mull 968B2C1867894A0...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L- /-Y1- & -L- /-Y2- INTERSECTION DETAIL

INSET B

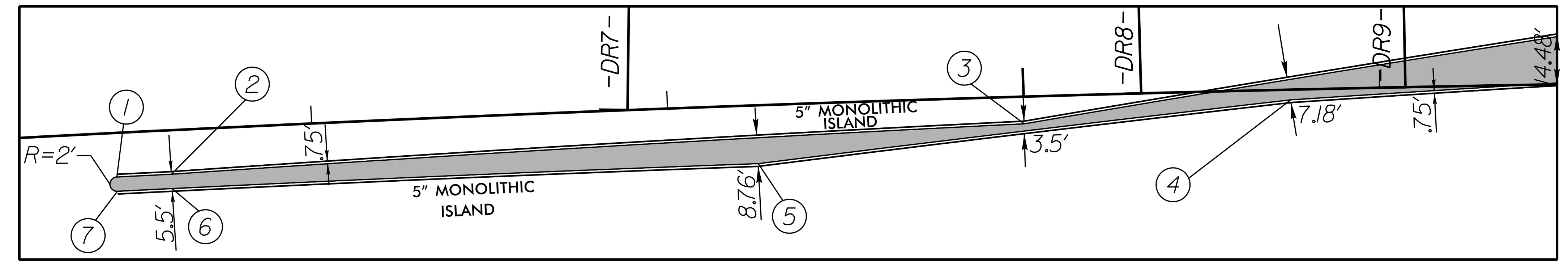
NTS



POINT NUMBER	-L- STATION	OFFSET	LT / RT
1	+30.03	12.38'	RT
2	+61.43	12.38'	RT
3	+06.14	15.27'	LT
4	+07.93	16.38'	LT
5	+36.25	16.38'	LT
6	+37.93	13.30'	LT
7	+51.07	15.45'	LT
8	+52.75	16.38'	LT
9	+60.00	16.38'	LT
10	+60.00	12.38'	LT
11	+00.66	12.38'	LT
12	+55.84	15.27'	RT
13	+54.05	16.38'	RT
14	+34.41	16.38'	RT
15	+32.72	13.30'	RT
16	+19.55	15.45'	RT
17	+17.86	16.38'	RT
18	+30.03	16.38'	RT

INSET D

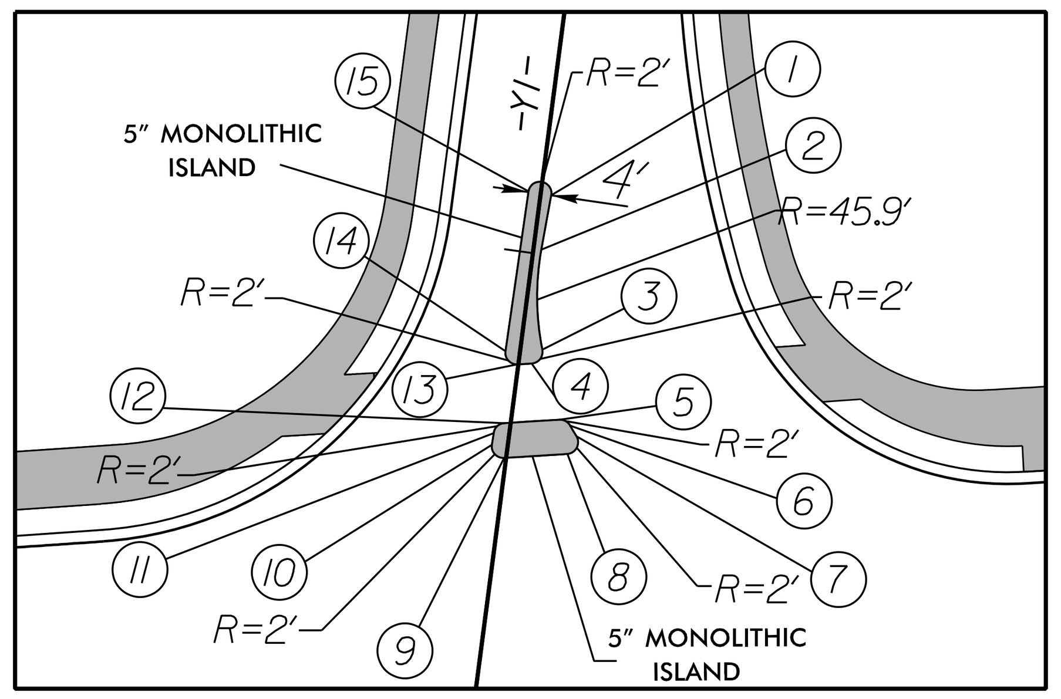
NTS



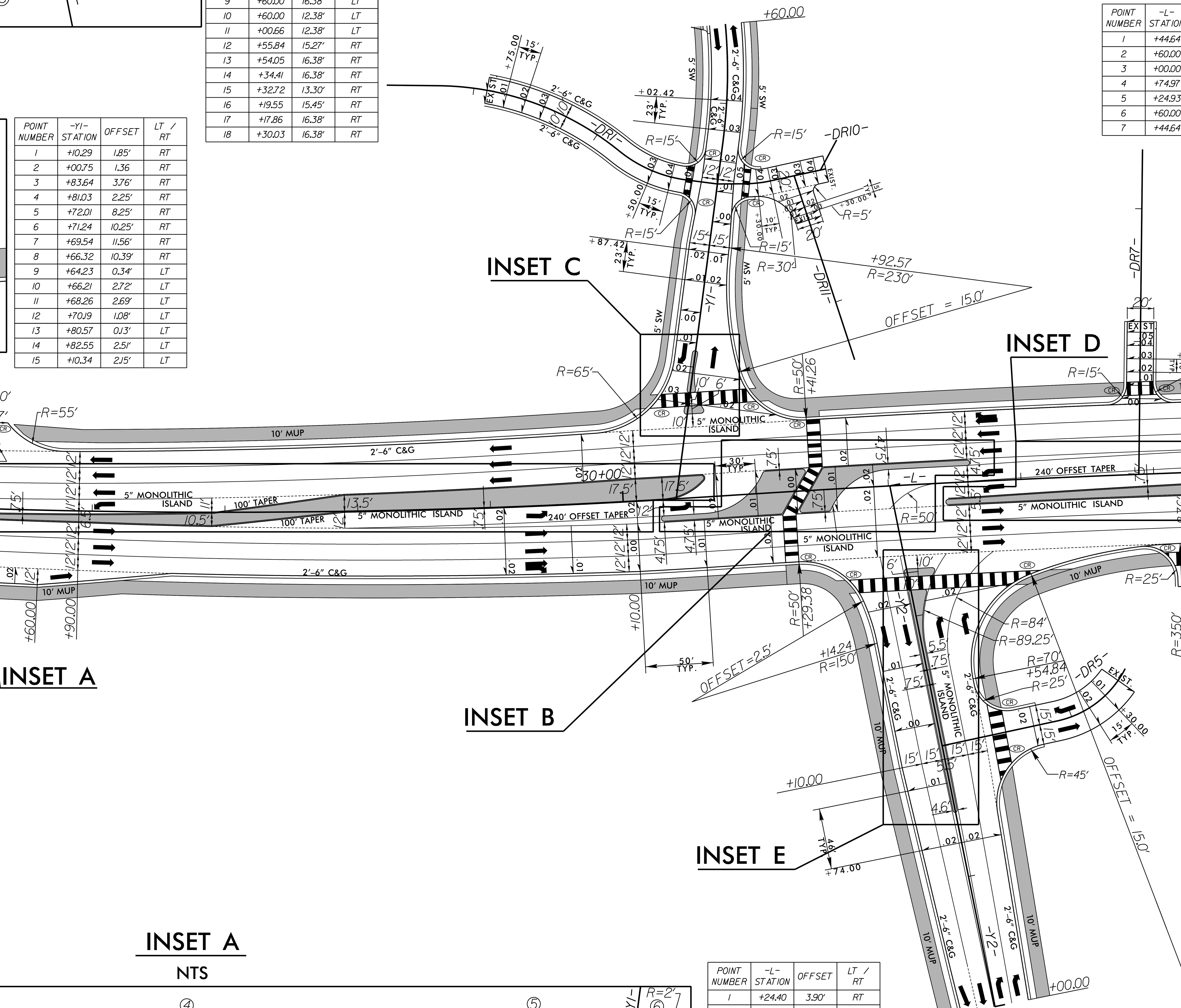
POINT NUMBER	-L- STATION	OFFSET	LT / RT
1	+44.64	12.37'	RT
2	+60.00	12.37'	RT
3	+00.00	7.63'	RT
4	+74.97	2.88'	RT
5	+24.93	16.38'	RT
6	+60.00	16.38'	RT
7	+44.64	16.38'	RT

INSET C

NTS



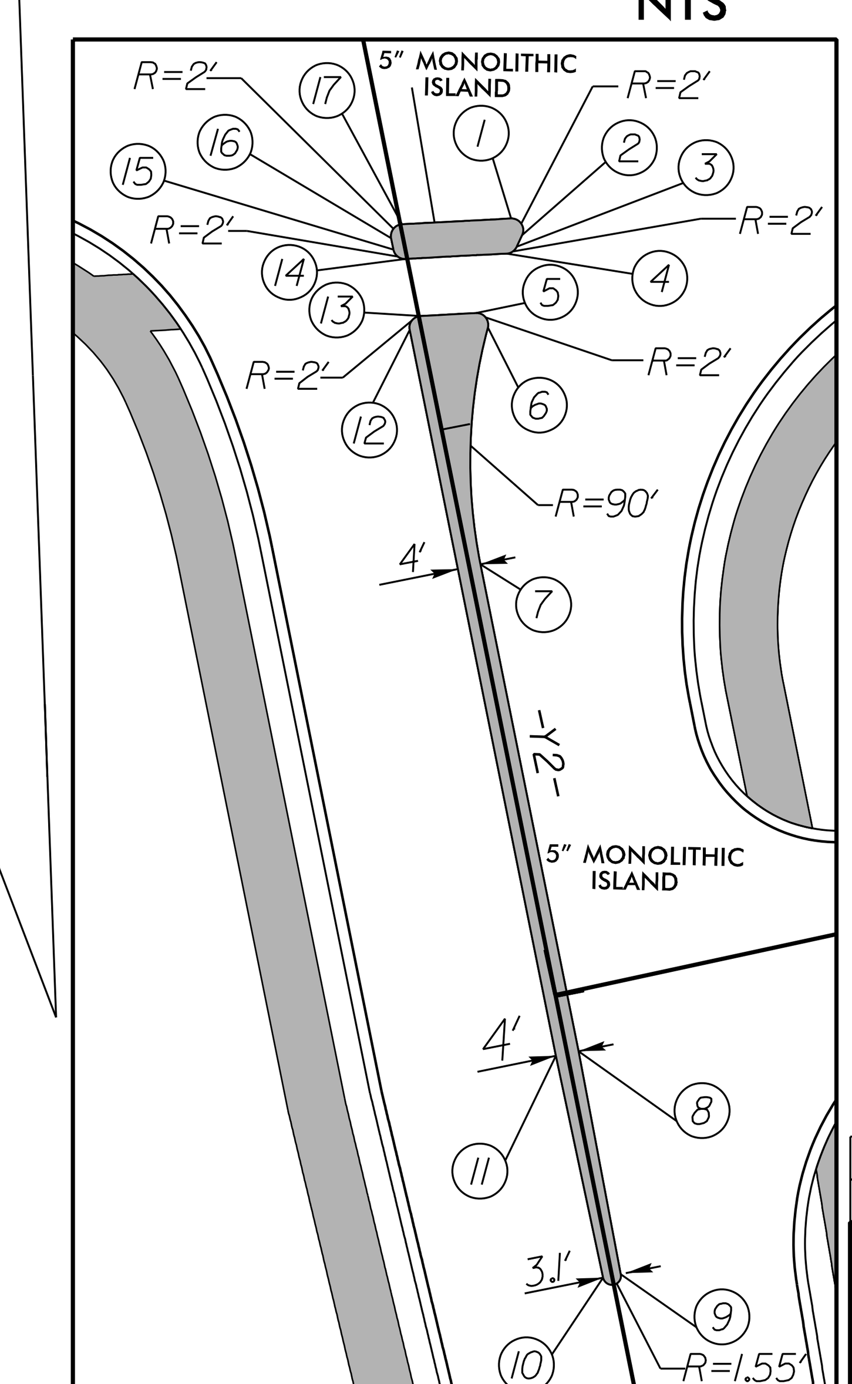
POINT NUMBER	-Y1- STATION	OFFSET	LT / RT
1	+10.29	1.85'	RT
2	+00.75	1.36	RT
3	+83.64	3.76'	RT
4	+81.03	2.25'	RT
5	+72.01	8.25'	RT
6	+71.24	10.25'	RT
7	+69.54	11.56'	RT
8	+66.32	10.39'	RT
9	+64.23	0.34'	LT
10	+66.21	2.72'	LT
11	+68.26	2.69'	LT
12	+70.19	1.08'	LT
13	+80.57	0.13'	LT
14	+82.55	2.51'	LT
15	+10.34	2.15'	LT



MATCHLINE -L- STA. 36+50.00 SEE SHEET 2B-2

INSET E

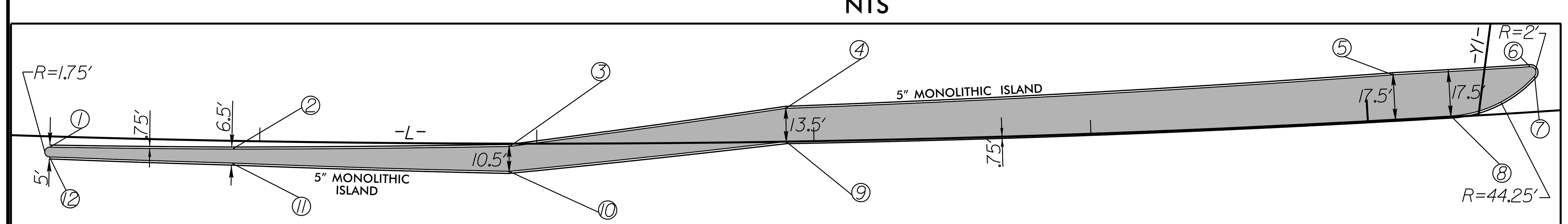
NTS



POINT NUMBER	-Y2- STATION	OFFSET	LT / RT
1	+66.59	18.98'	LT
2	+69.77	20.28'	LT
3	+71.56	18.97'	LT
4	+72.37	17.05'	LT
5	+81.41	9.82'	LT
6	+84.27	11.32'	LT
7	+24.15	2.00'	LT
8	+9.99	2.00'	LT
9	+49.20	1.55'	LT
10	+49.20	1.55'	RT
11	+9.99	2.00'	RT
12	+81.99	2.00'	RT
13	+80.01	0.29'	LT
14	+69.82	0.29'	RT
15	+67.84	2.00'	RT
16	+65.81	2.00'	RT
17	+63.84	0.29'	LT

INSET A

NTS



POINT NUMBER	-L- STATION	OFFSET	LT / RT
1	+24.40	3.90'	RT
2	+90.24	3.00'	RT
3	+90.26	1.00'	RT
4	+90.09	11.99'	LT
5	+10.01	16.38'	LT
6	+59.68	16.38'	LT
7	+61.07	12.94'	LT
8	+30.03	0.38'	LT
9	+90.03	0.01'	LT
10	+90.01	9.99'	RT
11	+90.01	8.00'	RT
12	+24.35	7.40'	RT

FOR PLANS SEE SHT.4

NOTE: DRAWING NOT TO SCALE

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8/17/99

2/4/2026
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cmull

8/17/99

–L– /–DR4– INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

4/7/2026

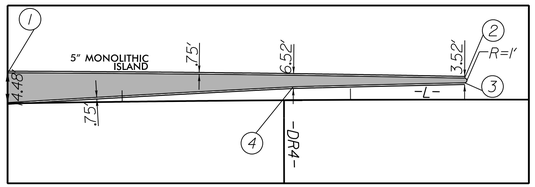
NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARLTON A. MULL

Digitally signed by Carlton Mull

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

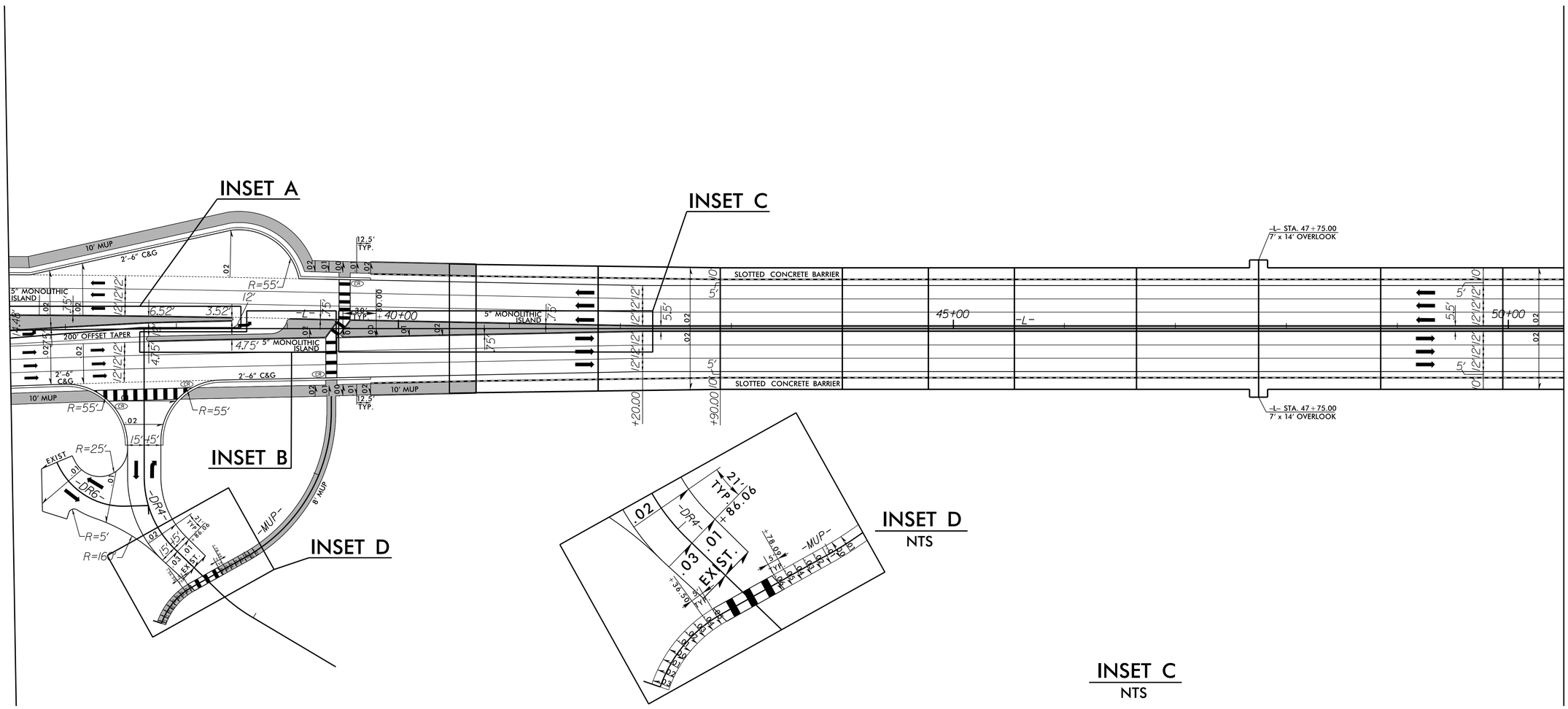
NAD 83/NA 2011

INSET A
NTS



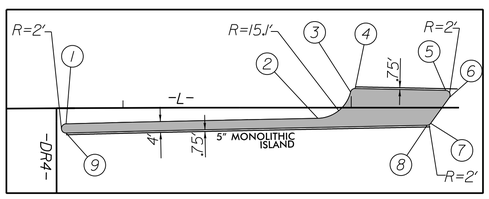
POINT NUMBER	–L– STATION	OFFSET	LT / RT
1	+50.10	13.38'	LT
2	+50.00	9.38'	LT
3	+50.00	7.36'	LT
4	+74.97	5.87'	LT

MATCHLINE –L– STA. 36+50.00
SEE SHEET 2B–1



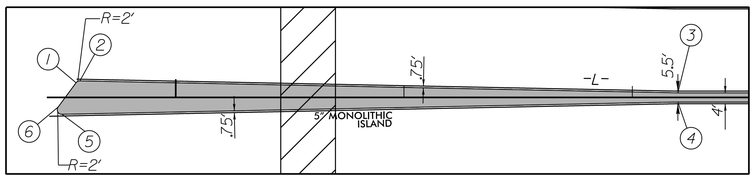
MATCHLINE –L– STA. 50+50.00
SEE SHEET 2B–3

INSET B
NTS



POINT NUMBER	–L– STATION	OFFSET	LT / RT
1	+75.00	6.88'	RT
2	+85.34	4.68'	RT
3	+99.71	6.83'	LT
4	+101.70	8.35'	LT
5	+41.35	7.56'	LT
6	+42.93	4.39'	LT
7	+34.79	6.90'	RT
8	+33.21	7.73'	RT
9	+75.00	10.88'	RT

INSET C
NTS



POINT NUMBER	–L– STATION	OFFSET	LT / RT
1	+56.36	6.42'	LT
2	+58.01	7.23'	LT
3	+19.99	2.00'	LT
4	+19.99	2.00'	RT
5	+50.17	7.39'	RT
6	+48.52	4.20'	RT

INSET D
NTS

FOR PLANS SEE SHT.5

NOTE: DRAWING NOT TO SCALE

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ROADWAY DESIGN ENGINEER

4/7/2026

NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL

DocuSigned by: Carter Mull 968B2C1867894A0...

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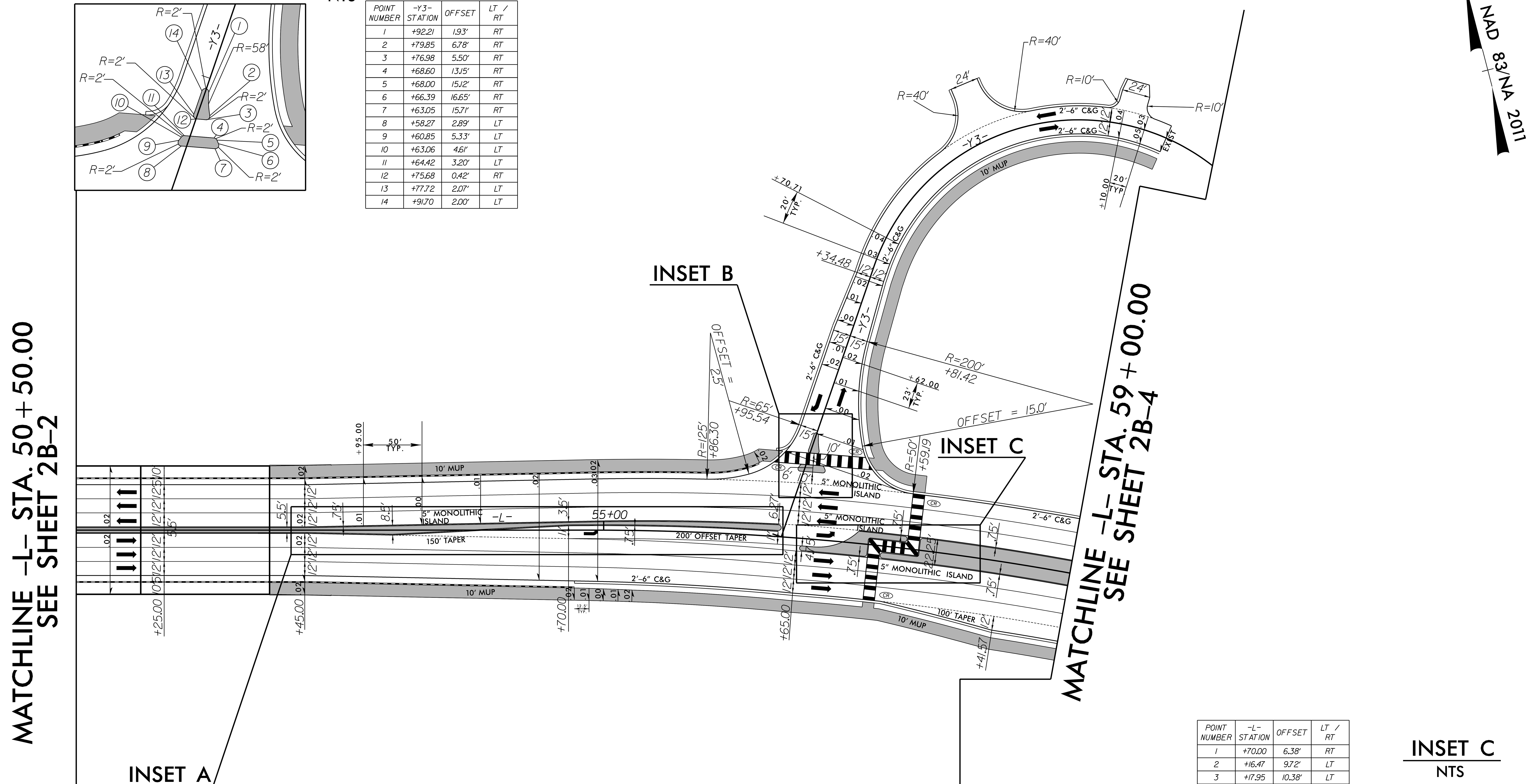
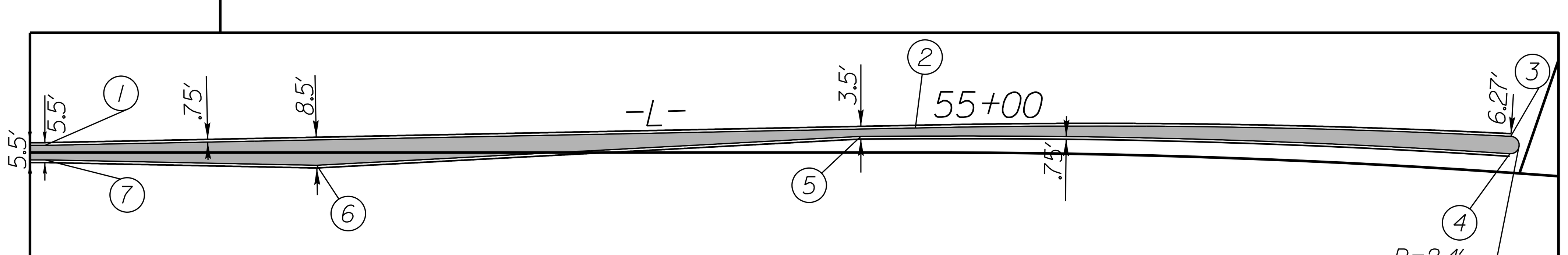
-L- /-Y3- INTERSECTION DETAIL

NAD 83/NA 2011

INSET B
NTS

POINT NUMBER	-Y3- STATION	OFFSET	LT / RT
1	+92.21	1.93'	RT
2	+79.85	6.78'	RT
3	+76.98	5.50'	RT
4	+68.60	13.15'	RT
5	+68.00	15.12'	RT
6	+66.39	16.65'	RT
7	+63.05	15.71'	RT
8	+58.27	2.89'	LT
9	+60.85	5.33'	LT
10	+63.06	4.61'	LT
11	+64.42	3.20'	LT
12	+75.68	0.42'	RT
13	+77.72	2.07'	LT
14	+91.70	2.00'	LT



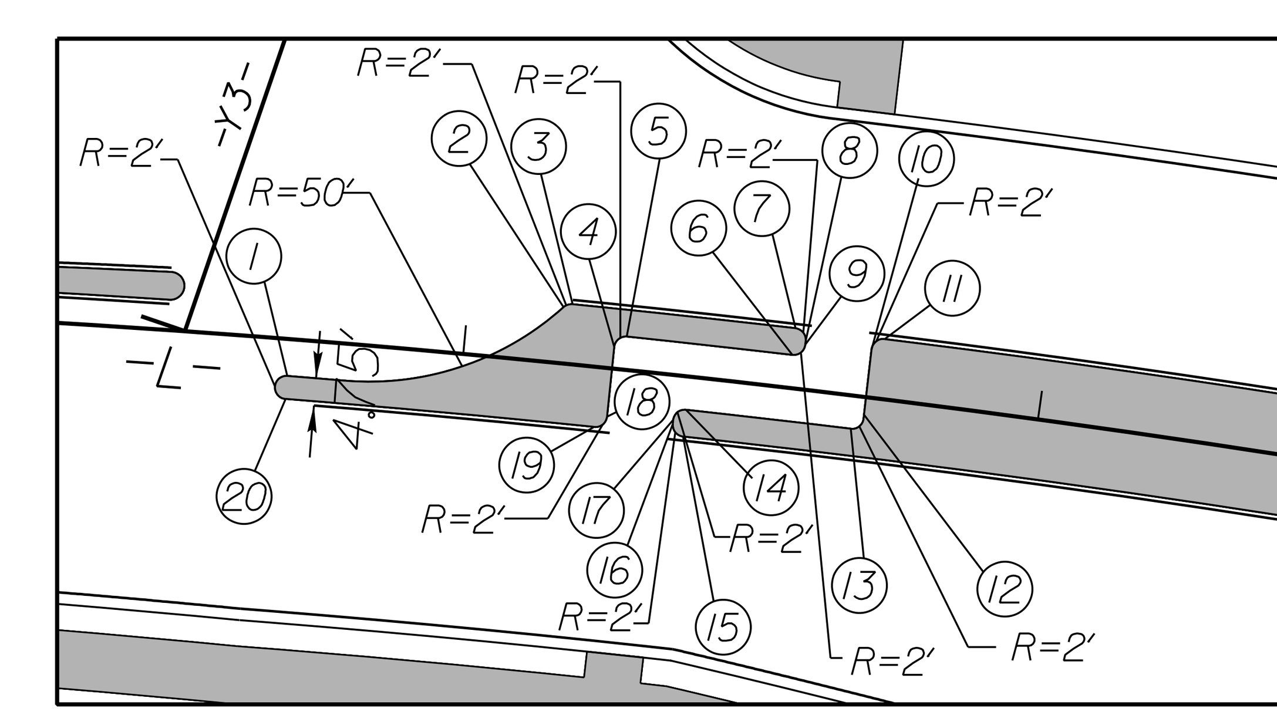


INSET A
NTS

POINT NUMBER	-L- STATION	OFFSET	LT / RT
1	+45.01	2.00'	LT
2	+85.01	6.80'	LT
3	+48.66	10.05'	LT
4	+48.72	5.28'	LT
5	+70.00	4.50'	LT
6	+19.98	3.50'	RT
7	+45.01	2.00'	RT

POINT NUMBER	-L- STATION	OFFSET	LT / RT
1	+70.00	6.38'	RT
2	+16.47	9.72'	LT
3	+17.95	10.38'	LT
4	+25.82	3.75'	LT
5	+27.82	5.75'	LT
6	+56.53	5.75'	LT
7	+56.53	10.38'	LT
8	+58.52	8.38'	LT
9	+58.52	7.75'	LT
10	+69.98	8.36'	LT
11	+71.97	10.38'	LT
12	+70.06	3.74'	RT
13	+68.06	5.75'	RT
14	+39.33	5.75'	RT
15	+39.33	10.38'	RT
16	+37.32	8.38'	RT
17	+37.32	7.75'	RT
18	+25.82	8.38'	RT
19	+23.81	10.38'	RT
20	+70.00	10.38'	RT

INSET C
NTS



FOR PLANS SEE SHT.6

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–L– /–DR2– INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2B-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

4/7/2026

NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER Carter N.A. MULL

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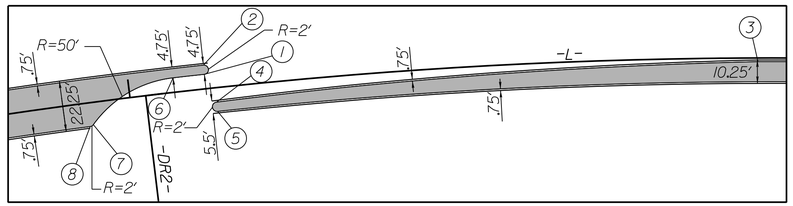


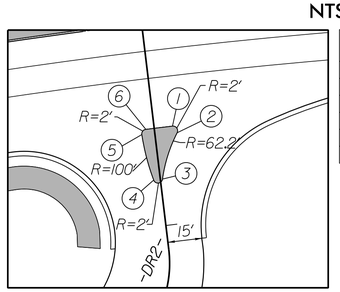
POINT NUMBER	–L– STATION	OFFSET	LT / RT
1	+33.50	6.38'	LT
2	+33.50	10.38'	LT
3	+75.79	1.63'	LT
4	+37.48	6.34'	RT
5	+37.52	10.38'	RT
6	+19.74	6.38'	RT
7	+82.53	9.74'	RT
8	+81.07	10.38'	RT

INSET B
NTS

NAD 83/NA 2011

MATCHLINE –L– STA. 59+00.00
SEE SHEET 2B–3

INSET A
NTS



POINT NUMBER	–DR2– STATION	OFFSET	LT / RT
1	+57.14	8.07'	LT
2	+60.26	9.71'	LT
3	+79.62	0.95'	LT
4	+79.59	2.93'	RT
5	+59.19	5.68'	RT
6	+57.13	3.69'	RT

FOR PLANS SEE SHT.6/7

NOTE: DRAWING NOT TO SCALE

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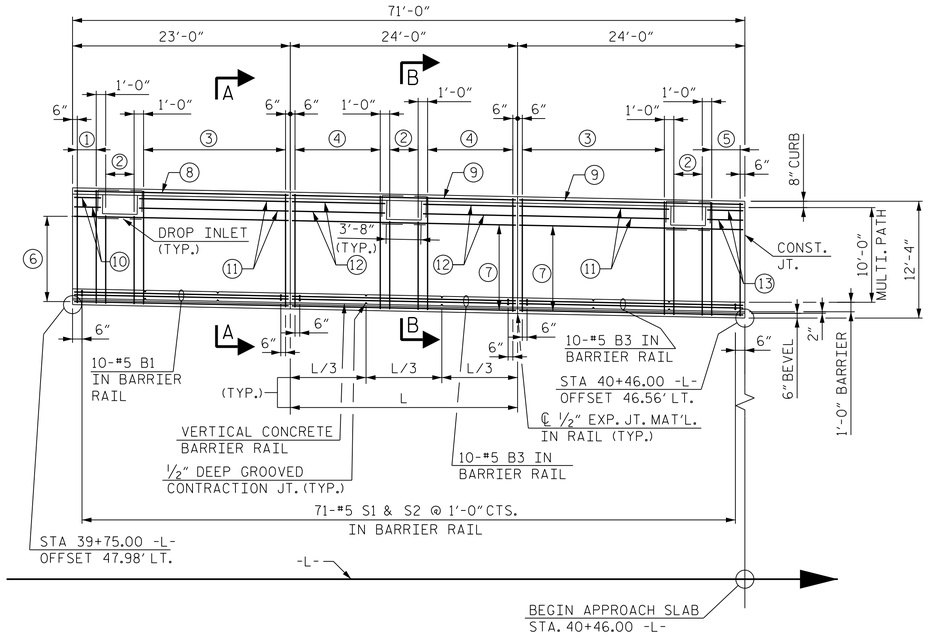
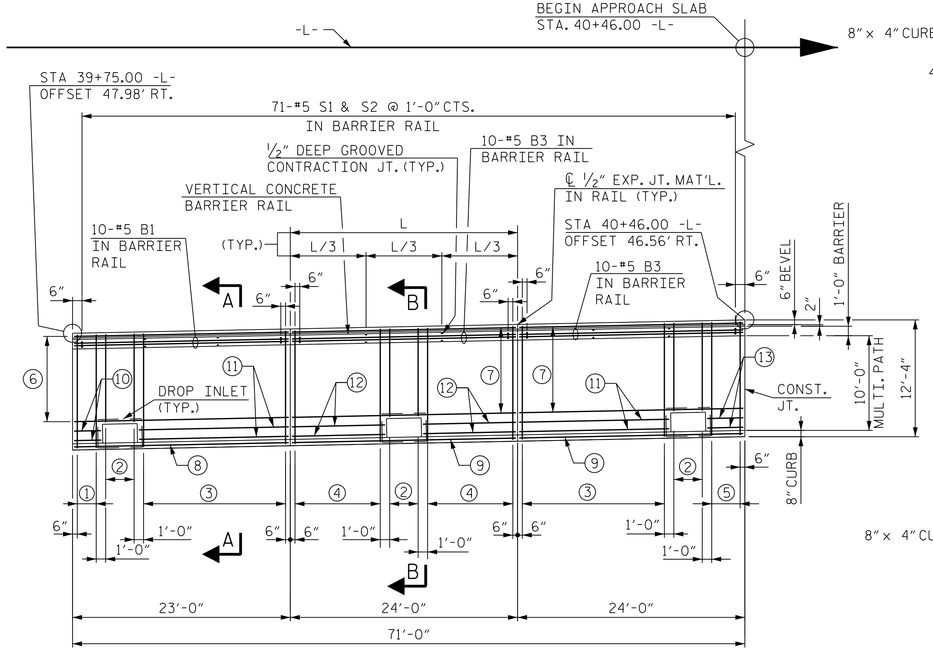


PLAN OF LEFT MOMENT SLAB @ END BENT 1

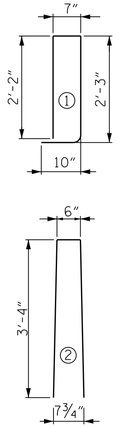
(STAGE 3) TO BE BUILT WITH STAGE 3 OF THE BRIDGE



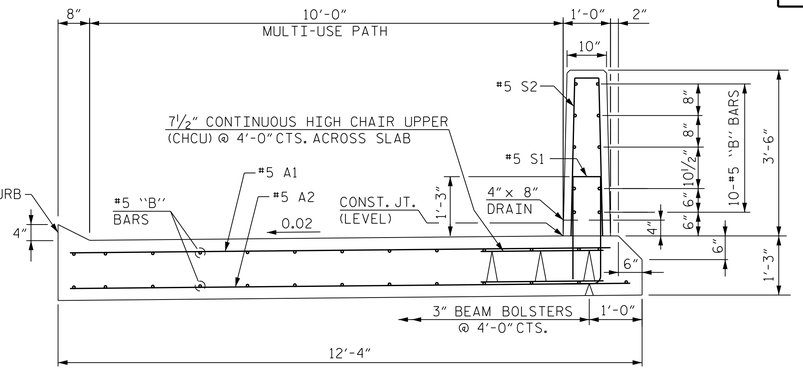
PLAN OF RIGHT MOMENT SLAB @ END BENT 1

(STAGE 2) TO BE BUILT WITH STAGE 2 OF THE BRIDGE

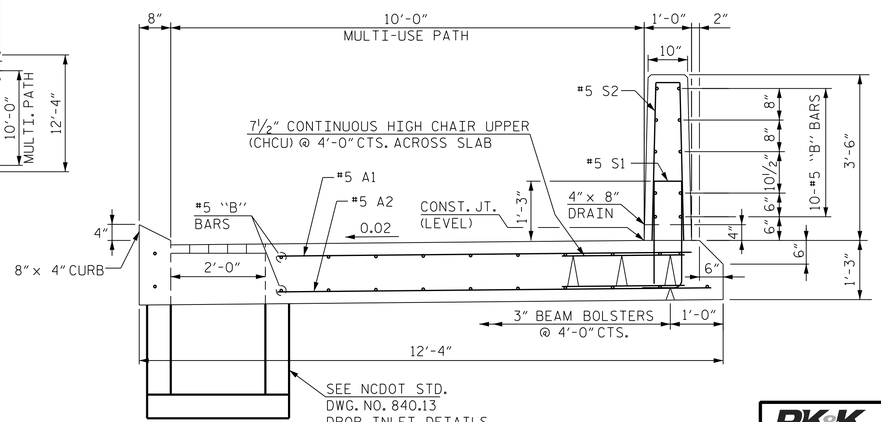
1. 3-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   3-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
2. 4-#5 A3 @ 1'-0" CTS. (TOP OF SLAB)
   4-#5 A4 @ 1'-0" CTS. (BOT. OF SLAB)
3. 16-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   16-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
4. 10-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   10-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
5. 4-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   4-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
6. 10-#5 B1 @ 1'-0" CTS. MAX. (TOP OF SLAB)
   10-#5 B2 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
7. 10-#5 B3 @ 1'-0" CTS. MAX. (TOP OF SLAB)
   10-#5 B4 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
8. #5 B1 (TOP OF SLAB)
   #5 B2 (BOT. OF SLAB)
9. #5 B3 (TOP OF SLAB)
   #5 B4 (BOT. OF SLAB)
10. #5 B5 (TOP OF SLAB)
    #5 B6 (BOT. OF SLAB)
11. #5 B7 (TOP OF SLAB)
    #5 B8 (BOT. OF SLAB)
12. #5 B9 (TOP OF SLAB)
    #5 B10 (BOT. OF SLAB)
13. #5 B11 (TOP OF SLAB)
    #5 B12 (BOT. OF SLAB)



ALL BAR DIMENSIONS ARE OUT-TO-OUT



SECTION A-A



SECTION B-B

BILL OF MATERIAL-STAGE 3 — FOR MOMENT SLAB AND VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH (FT.)	WEIGHT
✳ A1	59	#5	STR.	11'-7"	713
A2	59	#5	STR.	12'-0"	738
✳ A3	12	#5	STR.	8'-10"	111
A4	12	#5	STR.	9'-3"	116
✳ B1	21	#5	STR.	22'-8"	496
B2	11	#5	STR.	22'-8"	260
✳ B3	42	#5	STR.	23'-8"	1037
B4	22	#5	STR.	23'-8"	543
✳ B5	2	#5	STR.	2'-10"	6
B6	2	#5	STR.	2'-10"	6
✳ B7	4	#5	STR.	15'-9"	66
B8	4	#5	STR.	15'-9"	66
✳ B9	4	#5	STR.	9'-9"	41
B10	4	#5	STR.	9'-9"	41
✳ B11	2	#5	STR.	3'-9"	8
B12	2	#5	STR.	3'-9"	8
✳ S1	71	#5	1	5'-10"	432
✳ S2	71	#5	2	7'-2"	531
REINFORCING STEEL					1,778 LBS.
✳ EPOXY COATED REINFORCING STEEL					3,441 LBS.
CLASS AA CONCRETE					40.5 CU.YDS.
VERTICAL CONCRETE BARRIER RAIL					71 LIN. FT.

BILL OF MATERIAL-STAGE 2 — FOR MOMENT SLAB AND VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH (FT.)	WEIGHT
✳ A1	59	#5	STR.	11'-7"	713
A2	59	#5	STR.	12'-0"	738
✳ A3	12	#5	STR.	8'-10"	111
A4	12	#5	STR.	9'-3"	116
✳ B1	21	#5	STR.	22'-8"	496
B2	11	#5	STR.	22'-8"	260
✳ B3	42	#5	STR.	23'-8"	1037
B4	22	#5	STR.	23'-8"	543
✳ B5	2	#5	STR.	2'-10"	6
B6	2	#5	STR.	2'-10"	6
✳ B7	4	#5	STR.	15'-9"	66
B8	4	#5	STR.	15'-9"	66
✳ B9	4	#5	STR.	9'-9"	41
B10	4	#5	STR.	9'-9"	41
✳ B11	2	#5	STR.	3'-9"	8
B12	2	#5	STR.	3'-9"	8
✳ S1	71	#5	1	5'-10"	432
✳ S2	71	#5	2	7'-2"	531
REINFORCING STEEL					1,778 LBS.
✳ EPOXY COATED REINFORCING STEEL					3,441 LBS.
CLASS AA CONCRETE					40.5 CU.YDS.
VERTICAL CONCRETE BARRIER RAIL					71 LIN. FT.

NOTES:

THE BARRIER RAILS ON EACH MULTI-USE PATH SHALL NOT BE CAST UNTIL THE MULTI-USE PATH CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

MULTI-USE PATH AND BARRIER SHALL BE CLASS AA CONCRETE.

ALL REINFORCING STEEL IN BARRIER SHALL BE EPOXY COATED.

THE TOP OF THE MULTI-USE PATH SHALL RECEIVE A RAKED FINISH IN ACCORDANCE WITH SECTION 1078-15 OF THE STANDARD SPECIFICATIONS.

BROOM THE CONCRETE SURFACE OF THE MULTI-USE PATH IN A TRANSVERSE DIRECTION TO TRAFFIC.

BELOW MULTI-USE PATH, PROVIDE 6" MINIMUM THICKNESS OF CLASS VI SELECT MATERIAL FOUNDATION CONDITIONING MATERIAL.

BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO ACCOMMODATE PLACEMENT OF DROP INLETS.

FOR BARRIER RAIL EXPANSION JOINT DETAILS, SEE SHEET 4 OF 4.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. B-6051/U-6143

GASTON/MECKLENBURG COUNTY

STATION: 46+42.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MOMENT SLAB AND MULTI-USE PATH DETAILS AT END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2B-5
1			3			TOTAL SHEETS
2			4			

DRAWN BY : B. A. HAAG DATE : DEC 2023
CHECKED BY : M. SHARMA DATE : DEC 2023
DESIGN ENGINEER OF RECORD : J. W. GENTRY DATE : DEC 2023

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4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 35630 ENGINEER JOSHUA W. GENTRY
DocuSigned by: Joshua W. Gentry 09FE19E1742940...

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2/6/2026
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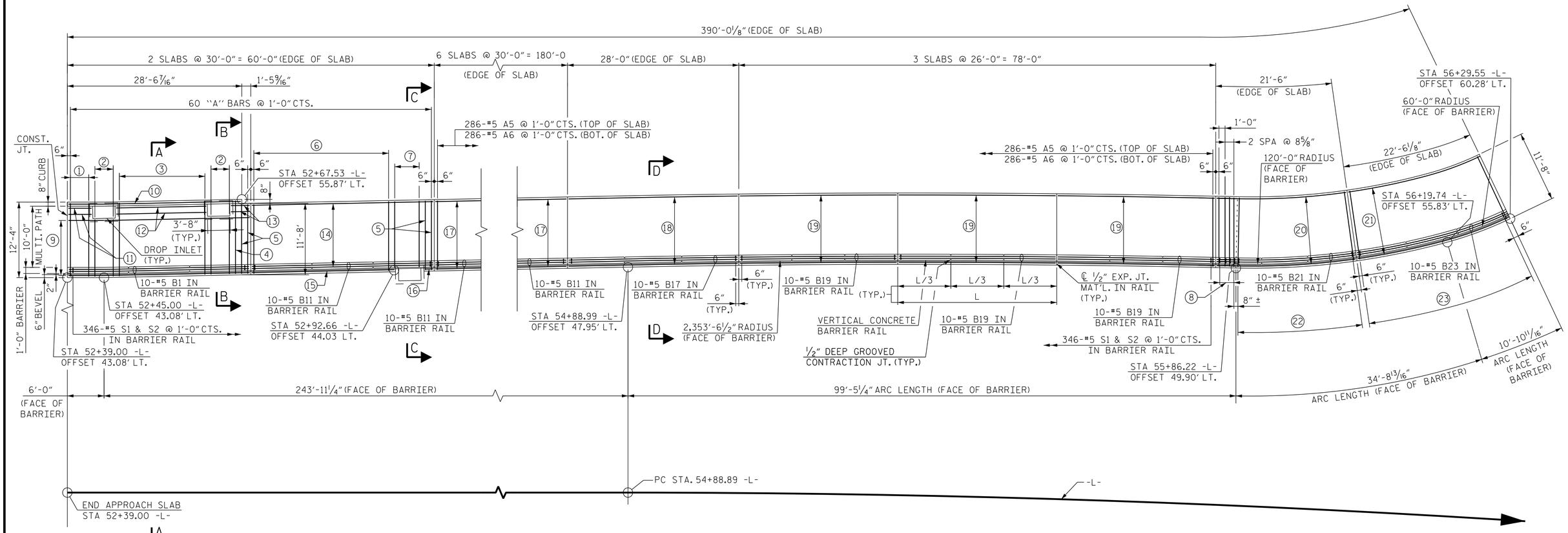

PLAN OF LEFT MOMENT SLAB @ END BENT 2

(STAGE 3) TO BE BUILT WITH STAGE 3 OF THE BRIDGE

NOTES:

THE BARRIER RAILS ON EACH MULTI-USE PATH SHALL NOT BE CAST UNTIL THE MULTI-USE PATH CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVER STRENGTH OF 3,000 PSI.

MULTI-USE PATH AND BARRIER SHALL BE CLASS AA CONCRETE.

ALL REINFORCING STEEL IN BARRIER SHALL BE EPOXY COATED.

THE TOP OF THE MULTI-USE PATH SHALL RECEIVE A RAKED FINISH IN ACCORDANCE WITH SECTION 1078-15 OF THE STANDARD SPECIFICATIONS.

BROOM THE CONCRETE SURFACE OF THE MULTI-USE PATH IN A TRANSVERSE DIRECTION TO TRAFFIC.

BELOW MULTI-USE PATH, PROVIDE 6" MINIMUM THICKNESS OF CLASS VI SELECT MATERIAL FOUNDATION CONDITIONING MATERIAL.

BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO ACCOMMODATE PLACEMENT OF DROP INLETS.

FIELD BEND AND CUT BARS AS NECESSARY.

FOR SECTIONS A-A AND B-B, SEE SHEET 1 OF 4.

FOR PLAN OF RIGHT MOMENT SLAB AT END BENT 2, SEE SHEET 3 OF 4.

FOR SECTIONS C-C AND D-D, SEE SHEET 4 OF 4.

FOR BILL OF MATERIALS, SEE SHEET 4 OF 4.

FOR BARRIER RAIL EXPANSION JOINT DETAILS, SEE SHEET 4 OF 4.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS HAN 10 FEET IN LENGTH.

SEE NCDOT STD. DWG. NO 840.13 FOR DROP INLET. FINISH DROP INLET WALLS ACCORDING TO NCDOT STD. DWG. NO 840.14 FOR PORTIONS NOT BELOW MOMENT SLAB.

1. 4-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   4-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
2. 4-#5 A3 @ 1'-0" CTS. (TOP OF SLAB)
   4-#5 A4 @ 1'-0" CTS. (BOT. OF SLAB)
3. 15-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
   15-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)
4. #5 A1 (TOP OF SLAB)
   #5 A2 (BOT. OF SLAB)
5. #5 A5 @ 1'-0" CTS. (TOP OF SLAB)
   #5 A6 @ 1'-0" CTS. (BOT. OF SLAB)
6. 23-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
   23-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)
7. 5-#5 A7 @ TOP OF SLAB
   5-#5 A8 @ BOT. OF SLAB
8. 4-#5 A5 SPA. AS SHOWN (TOP OF SLAB)
   4-#5 A6 SPA. AS SHOWN (BOT. OF SLAB)
   4-#5 S1 & S2 SPA. AS SHOWN IN BARRIER RAIL
9. 10-#5 B1 @ 1'-0" CTS. MAX. (TOP OF SLAB)
   10-#5 B2 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
10. #5 B3 (TOP OF SLAB)
    #5 B4 (BOT. OF SLAB)
11. #5 B5 (TOP OF SLAB)
    #5 B6 (BOT. OF SLAB)
12. #5 B7 (TOP OF SLAB)
    #5 B8 (BOT. OF SLAB)
13. #5 B9 (TOP OF SLAB)
    #5 B10 (BOT. OF SLAB)
14. 11-#5 B11 @ 1'-0" CTS. MAX. (TOP OF SLAB)
    11-#5 B12 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
15. #5 B13 (TOP OF SLAB)
    #5 B14 (BOT. OF SLAB)
16. #5 B15 (TOP OF SLAB)
    #5 B16 (BOT. OF SLAB)
17. 12-#5 B11 @ 1'-0" CTS. MAX. (TOP OF SLAB)
    12-#5 B12 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
18. 12-#5 B17 @ 1'-0" CTS. MAX. (TOP OF SLAB)
    12-#5 B18 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
19. 12-#5 B19 @ 1'-0" CTS. MAX. (TOP OF SLAB)
    12-#5 B20 @ 1'-0" CTS. MAX. (BOT. OF SLAB)
20. 12-#5 B21 @ 1'-0" CTS. MAX. (TOP OF SLAB) (FIELD BEND/CUT AS NECCESSARY)
    12-#5 B22 @ 1'-0" CTS. MAX. (BOT. OF SLAB) (FIELD BEND/CUT AS NECCESSARY)
21. 12-#5 B23 @ 1'-0" CTS. MAX. (TOP OF SLAB) (FIELD BEND/CUT AS NECCESSARY)
    12-#5 B24 @ 1'-0" CTS. MAX. (BOT. OF SLAB) (FIELD BEND/CUT AS NECCESSARY)
22. 20-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
    20-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)
    20-#5 S1 & S2 @ 1'-0" CTS. IN BARRIER RAIL
23. 26-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
    26-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)
    26-#5 S1 & S2 @ 1'-0" CTS. IN BARRIER RAIL

PROJECT NO. B-6051/U-6143
GASTON/MECKLENBURG COUNTY
STATION: 46+42.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MOMENT SLAB AND MULTI-USE PATH AT END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2B-6
1			3			TOTAL SHEETS
2			4			

DRAWN BY : B. A. HAAG DATE : DEC 2023
CHECKED BY : M. SHARMA DATE : DEC 2023
DESIGN ENGINEER OF RECORD : J. W. GENTRY DATE : DEC 2023

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4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 35630 ENGINEER JOSHUA W. GENTRY
DocuSigned by: Joshua W. Gentry
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2/6/2026
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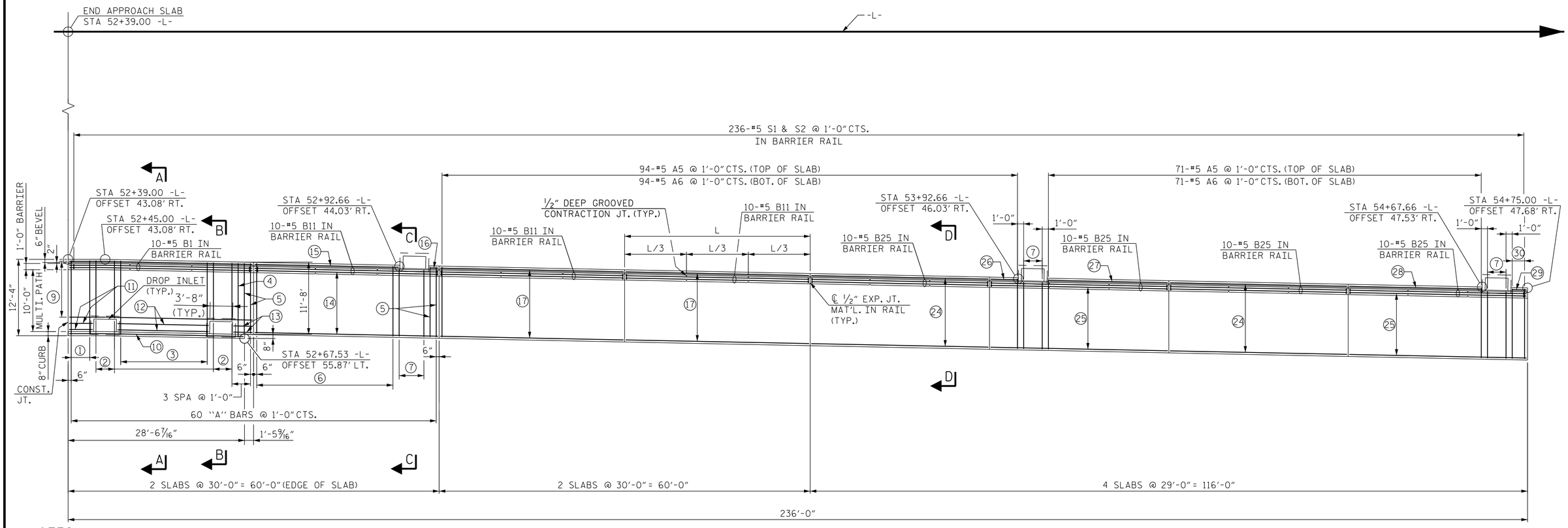

NOTES:

THE BARRIER RAILS ON EACH MULTI-USE PATH SHALL NOT BE CAST UNTIL THE MULTI-USE PATH CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVER STRENGTH OF 3,000 PSI.

MULTI-USE PATH AND BARRIER SHALL BE CLASS AA CONCRETE.

ALL REINFORCING STEEL IN BARRIER SHALL BE EPOXY COATED.

THE TOP OF THE MULTI-USE PATH SHALL RECEIVE A RAKED FINISH IN ACCORDANCE WITH SECTION 1078-15 OF THE STANDARD SPECIFICATIONS.

BROOM THE CONCRETE SURFACE OF THE MULTI-USE PATH IN A TRANSVERSE DIRECTION TO TRAFFIC.

BELOW MULTI-USE PATH, PROVIDE 6" MINIMUM THICKNESS OF CLASS VI SELECT MATERIAL FOUNDATION CONDITIONING MATERIAL.

BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO ACCOMMODATE PLACEMENT OF DROP INLETS.

FIELD BEND AND CUT BARS AS NECESSARY.

FOR SECTIONS A-A AND B-B, SEE SHEET 1 OF 4.

FOR PLAN OF LEFT MOMENT SLAB AT END BENT 2, SEE SHEET 2 OF 4.

FOR SECTIONS C-C AND D-D, SEE SHEET 4 OF 4.

FOR BILL OF MATERIALS, SEE SHEET 4 OF 4.

FOR BARRIER RAIL EXPANSION JOINT DETAILS, SEE SHEET 4 OF 4.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS HAN 10 FEET IN LENGTH.

SEE NCDOT STD. DWG. NO 840.13 FOR DROP INLET. FINISH DROP INLET WALLS ACCORDING TO NCDOT STD. DWG. NO 840.14 FOR PORTIONS NOT BELOW MOMENT SLAB.

PLAN OF RIGHT MOMENT SLAB @ END BENT 2

(STAGE 2) TO BE BUILT WITH STAGE 2 OF THE BRIDGE

① 4-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
4-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)

② 4-#5 A3 @ 1'-0" CTS. (TOP OF SLAB)
4-#5 A4 @ 1'-0" CTS. (BOT. OF SLAB)

③ 15-#5 A1 @ 1'-0" CTS. (TOP OF SLAB)
15-#5 A2 @ 1'-0" CTS. (BOT. OF SLAB)

④ #5 A1 (TOP OF SLAB)
#5 A2 (BOT. OF SLAB)

⑤ 2-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
2-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)

⑥ 23-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
23-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)

⑦ 5-#5 A7 @ TOP OF SLAB
5-#5 A8 @ BOT. OF SLAB

⑨ 10-#5 B1 @ 1'-0" CTS. MAX. (TOP OF SLAB)
10-#5 B2 @ 1'-0" CTS. MAX. (BOT. OF SLAB)

⑩ #5 B3 (TOP OF SLAB)
#5 B4 (BOT. OF SLAB)

⑪ #5 B5 (TOP OF SLAB)
#5 B6 (BOT. OF SLAB)

⑫ #5 B7 (TOP OF SLAB)
#5 B8 (BOT. OF SLAB)

⑬ #5 B9 (TOP OF SLAB)
#5 B10 (BOT. OF SLAB)

⑭ 11-#5 B11 @ 1'-0" CTS. MAX. (TOP OF SLAB)
11-#5 B12 @ 1'-0" CTS. MAX. (BOT. OF SLAB)

⑮ #5 B13 (TOP OF SLAB)
#5 B14 (BOT. OF SLAB)

⑯ #5 B15 (TOP OF SLAB)
#5 B16 (BOT. OF SLAB)

⑰ 12-#5 B11 @ 1'-0" CTS. MAX. (TOP OF SLAB)
12-#5 B12 @ 1'-0" CTS. MAX. (BOT. OF SLAB)

㉔ 12-#5 B25 @ 1'-0" CTS. MAX. (TOP OF SLAB)
12-#5 B26 @ 1'-0" CTS. MAX. (BOT. OF SLAB)

㉕ 11-#5 B25 @ 1'-0" CTS. MAX. (TOP OF SLAB)
11-#5 B26 @ 1'-0" CTS. MAX. (BOT. OF SLAB)

㉖ #5 B27 (TOP OF SLAB)
#5 B28 (BOT. OF SLAB)

㉗ #5 B29 (TOP OF SLAB)
#5 B30 (BOT. OF SLAB)

㉘ #5 B31 (TOP OF SLAB)
#5 B32 (BOT. OF SLAB)

㉙ #5 B33 (TOP OF SLAB)
#5 B34 (BOT. OF SLAB)

㉚ 3-#5 A5 @ 1'-0" CTS. (TOP OF SLAB)
3-#5 A6 @ 1'-0" CTS. (BOT. OF SLAB)

PROJECT NO. B-6051/U-6143
GASTON/MECKLENBURG COUNTY
STATION: 46+42.50 -L-

SHEET 3 OF 4

DRAWN BY :	B. A. HAAG — DATE : DEC 2023
CHECKED BY :	M. SHARMA — DATE : DEC 2023
DESIGN ENGINEER OF RECORD :	J. W. GENTRY — DATE : DEC 2023

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4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 35630 ENGINEER JOSHUA W. GENTRY
DocuSigned by: Joshua W. Gentry

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MOMENT SLAB AND MULTI-USE PATH AT END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2B-7
1			3			TOTAL SHEETS
2			4			

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2/6/2026
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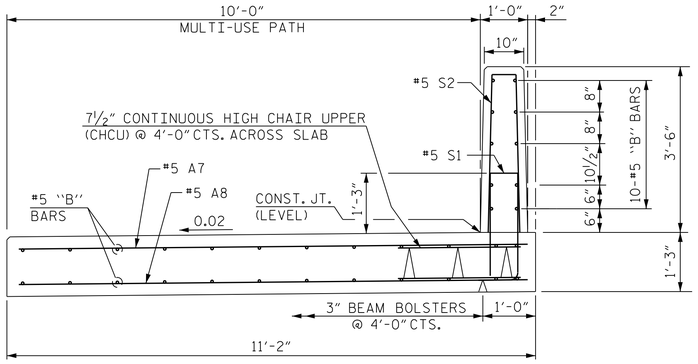
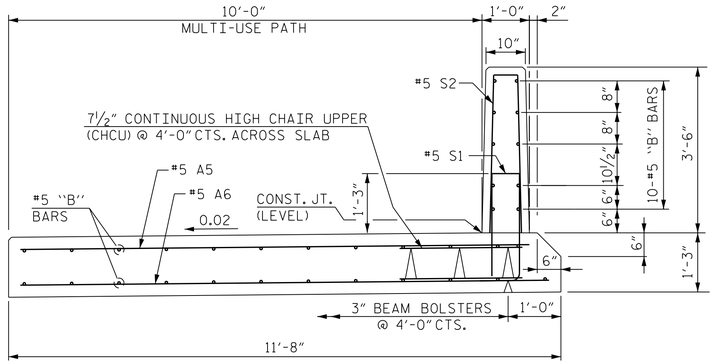


SECTION C-C



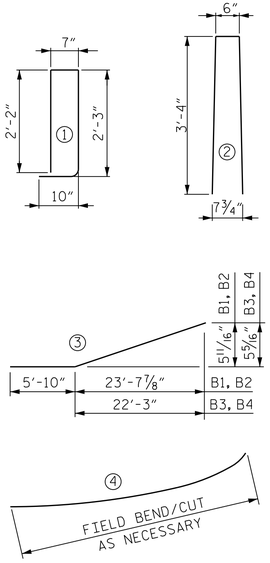
SECTION D-D

NOTES:

FOR PLAN OF LEFT MOMENT SLAB AT END BENT 2, SEE SHEET 2 OF 4.

FOR PLAN OF RIGHT MOMENT SLAB AT END BENT 2, SEE SHEET 3 OF 4.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

BILL OF MATERIAL-STAGE 3

FOR MOMENT SLAB AND VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH (FT.)	WEIGHT
✳ A1	20	#5	STR.	11′-7″	242
A2	20	#5	STR.	12′-0″	250
✳ A3	8	#5	STR.	8′-10″	74
A4	8	#5	STR.	9′-3″	77
✳ A5	363	#5	STR.	10′-11″	4133
A6	363	#5	STR.	11′-4″	4291
✳ A7	4	#5	STR.	10′-8″	45
A8	4	#5	STR.	10′-8″	45
✳ B1	20	#5	3	29′-6″	615
B2	10	#5	3	29′-6″	308
✳ B3	1	#5	3	28′-1″	29
B4	1	#5	3	28′-1″	29
✳ B5	2	#5	STR.	3′-9″	8
B6	2	#5	STR.	3′-9″	8
✳ B7	2	#5	STR.	14′-9″	31
B8	2	#5	STR.	14′-9″	31
✳ B9	2	#5	STR.	3′-0″	6
B10	2	#5	STR.	3′-0″	6
✳ B11	153	#5	STR.	29′-7″	4721
B12	83	#5	STR.	29′-7″	2561
✳ B13	1	#5	STR.	23′-3″	24
B14	1	#5	STR.	23′-3″	24
✳ B15	1	#5	STR.	1′-4″	1
B16	1	#5	STR.	1′-4″	1
✳ B17	22	#5	STR.	27′-7	633
B18	12	#5	STR.	27′-7″	345
✳ B19	66	#5	STR.	25′-7″	1761
B20	36	#5	STR.	25′-7″	961
✳ B21	22	#5	4	22′-6″	516
B22	12	#5	4	22′-6″	282
✳ B23	22	#5	4	25′-10″	593
B24	12	#5	4	25′-10″	323
✳ S1	396	#5	1	5′-10″	2409
✳ S2	396	#5	2	7′-2″	2960

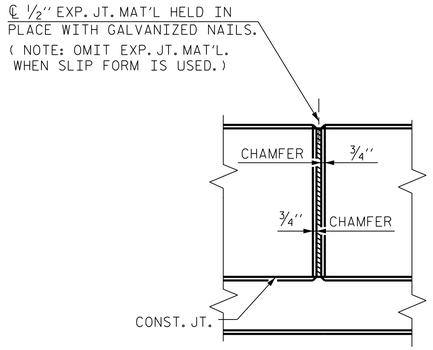
REINFORCING STEEL	9,553 LBS.
✳ EPOXY COATED REINFORCING STEEL	18,812 LBS.
CLASS AA CONCRETE	212.9 CU.YDS.
VERTICAL CONCRETE BARRIER RAIL	395 LIN. FT.

BILL OF MATERIAL-STAGE 2

FOR MOMENT SLAB AND VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH (FT.)	WEIGHT
✳ A1	20	#5	STR.	11′-7″	242
A2	20	#5	STR.	12′-0″	250
✳ A3	8	#5	STR.	8′-10″	74
A4	8	#5	STR.	9′-3″	77
✳ A5	195	#5	STR.	10′-11″	2220
A6	195	#5	STR.	11′-4″	2305
✳ A7	12	#5	STR.	10′-8″	134
A8	12	#5	STR.	10′-8″	134
✳ B1	20	#5	3	29′-6″	615
B2	10	#5	3	29′-6″	308
✳ B3	1	#5	3	28′-1″	29
B4	1	#5	3	28′-1″	29
✳ B5	2	#5	STR.	3′-9″	8
B6	2	#5	STR.	3′-9″	8
✳ B7	2	#5	STR.	14′-9″	31
B8	2	#5	STR.	14′-9″	31
✳ B9	2	#5	STR.	3′-0″	6
B10	2	#5	STR.	3′-0″	6
✳ B11	65	#5	STR.	29′-7″	2006
B12	35	#5	STR.	29′-7″	1080
✳ B13	1	#5	STR.	23′-3″	24
B14	1	#5	STR.	23′-3″	24
✳ B15	1	#5	STR.	1′-4″	1
B16	1	#5	STR.	1′-4″	1
✳ B25	86	#5	STR.	28′-7″	2564
B26	46	#5	STR.	28′-7″	1371
✳ B27	1	#5	STR.	4′-3″	4
B28	1	#5	STR.	4′-3″	4
✳ B29	1	#5	STR.	19′-4″	20
B30	1	#5	STR.	19′-4″	20
✳ B31	1	#5	STR.	21′-3″	22
B32	1	#5	STR.	21′-3″	22
✳ B33	1	#5	STR.	2′-4″	2
B34	1	#5	STR.	2′-4″	2
✳ S1	235	#5	1	5′-10″	1430
✳ S2	235	#5	2	7′-2″	1757

REINFORCING STEEL	5,683 LBS.
✳ EPOXY COATED REINFORCING STEEL	11,200 LBS.
CLASS AA CONCRETE	128.4 CU.YDS.
VERTICAL CONCRETE BARRIER RAIL	236 LIN. FT.



ELEVATION AT EXPANSION JOINTS

PROJECT NO. B-6051/U-6143

GASTON/MECKLENBURG COUNTY

STATION: 46+42.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MOMENT SLAB AND MULTI-USE PATH DETAILS

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1 Suite 700
Raleigh, North Carolina 27615 | NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 35630 ENGINEER VIRGINIA W. GENTRY
DocuSigned by: Virginia W. Gentry

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

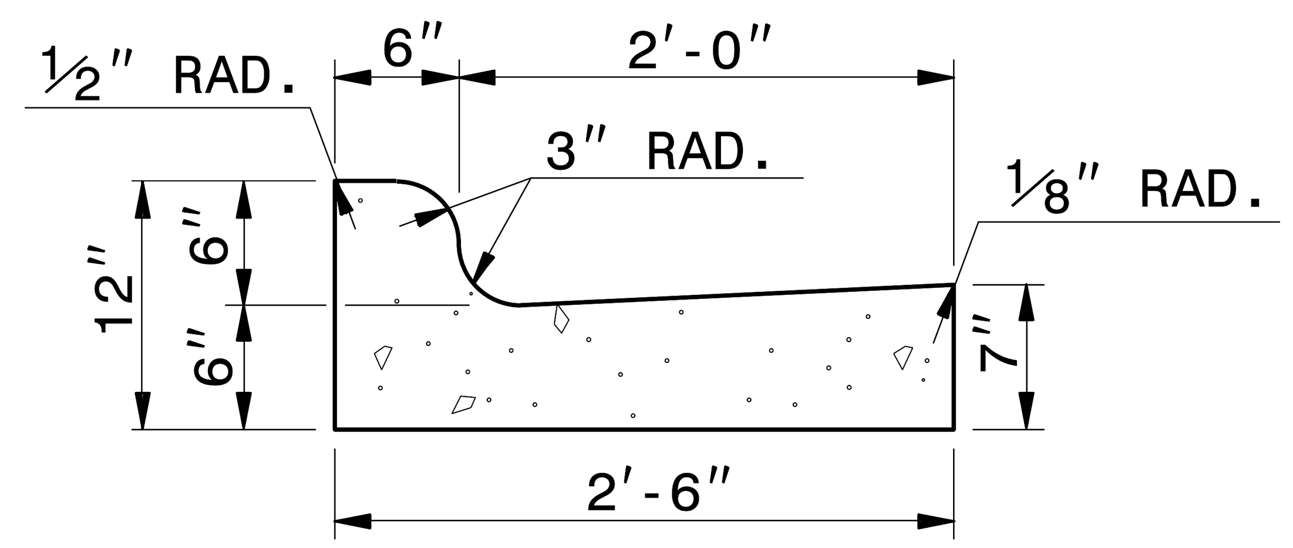
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2B-8
1			3			TOTAL SHEETS
2			4			

DRAWN BY : B. A. HAAG DATE : DEC 2023
CHECKED BY : M. SHARMA DATE : DEC 2023
DESIGN ENGINEER OF RECORD : J. W. GENTRY DATE : DEC 2023

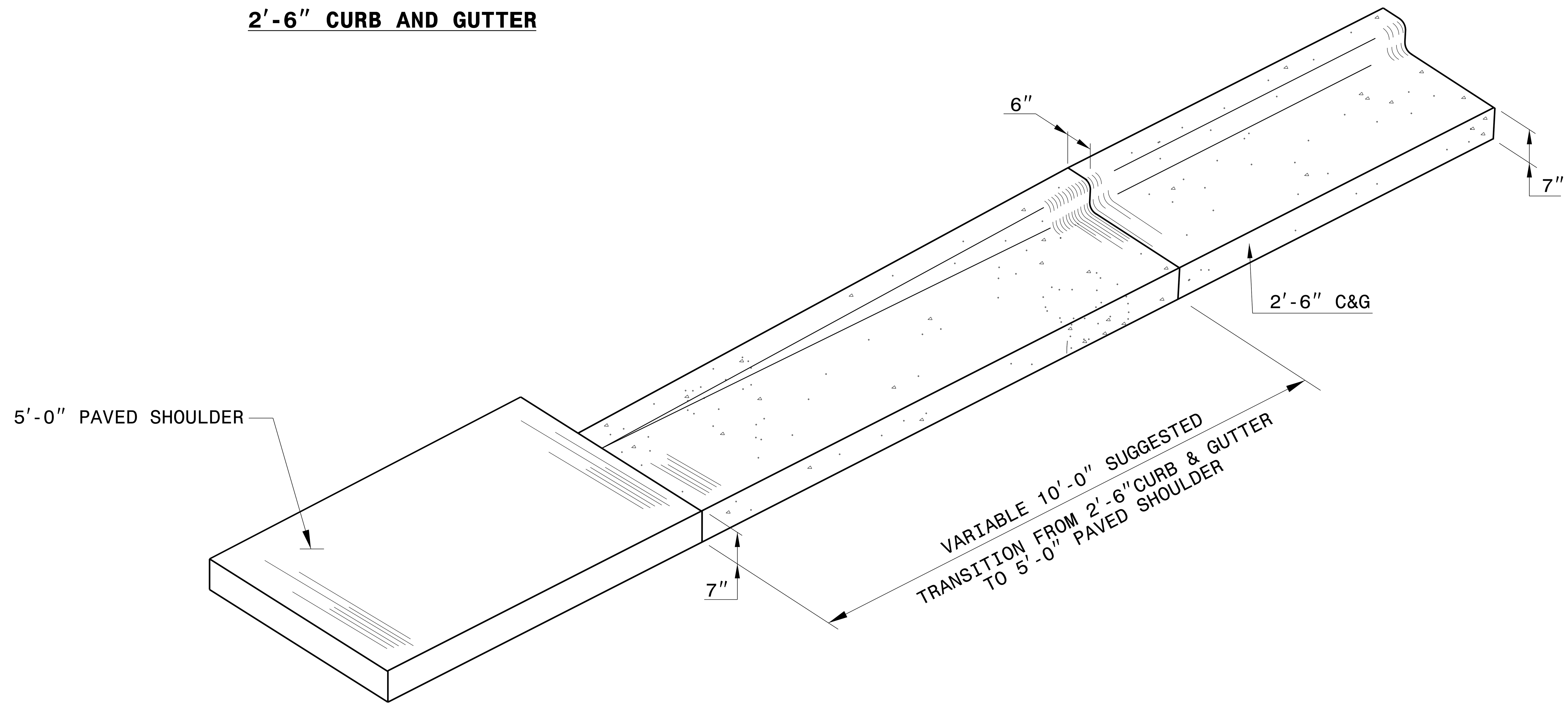
jcook
2/6/2026
R:\Structures\DGN\350091\FINAL\B6051_SMU_MS4_17350091.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-1

*NOTE: SEE STD. DWG. 846.01
FOR GENERAL NOTES



2'-6" CURB AND GUTTER



ISOMETRIC VIEW OF TRANSITION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER 4/7/2026

Signed by: Nicole M. Hackler

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL OF 10' TRANSITION FROM 2'-6"CURB & GUTTER TO 5'-0" PAVED SHOULDER

ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 04-13-2016
CHECKED BY: DATE:
FILE SPEC.: details/nbritt/english/misc/c&g transition sections.dgn

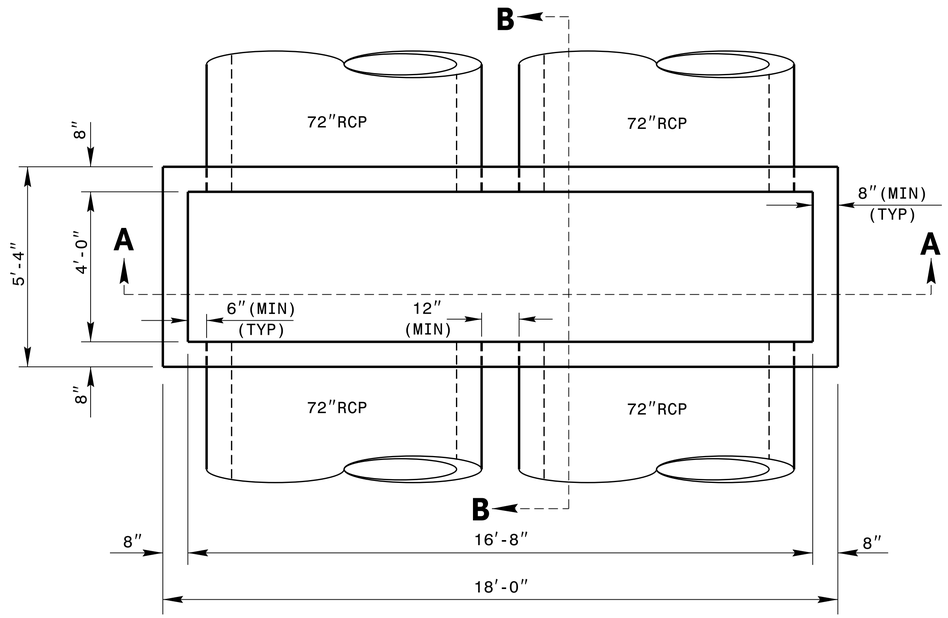
5/14/99

26-JUN-2019 07:46
S:\Contracts\Contracts\Special Details\nbritt\english\misc\c&g transition sections.dgn
jhowerton AT CSD-242595

DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLAN VIEW

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB, SEE STD. DRAWING 840.00.

INSTALL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT AND BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE.

CHAMFER ALL EXPOSED CORNERS 1".

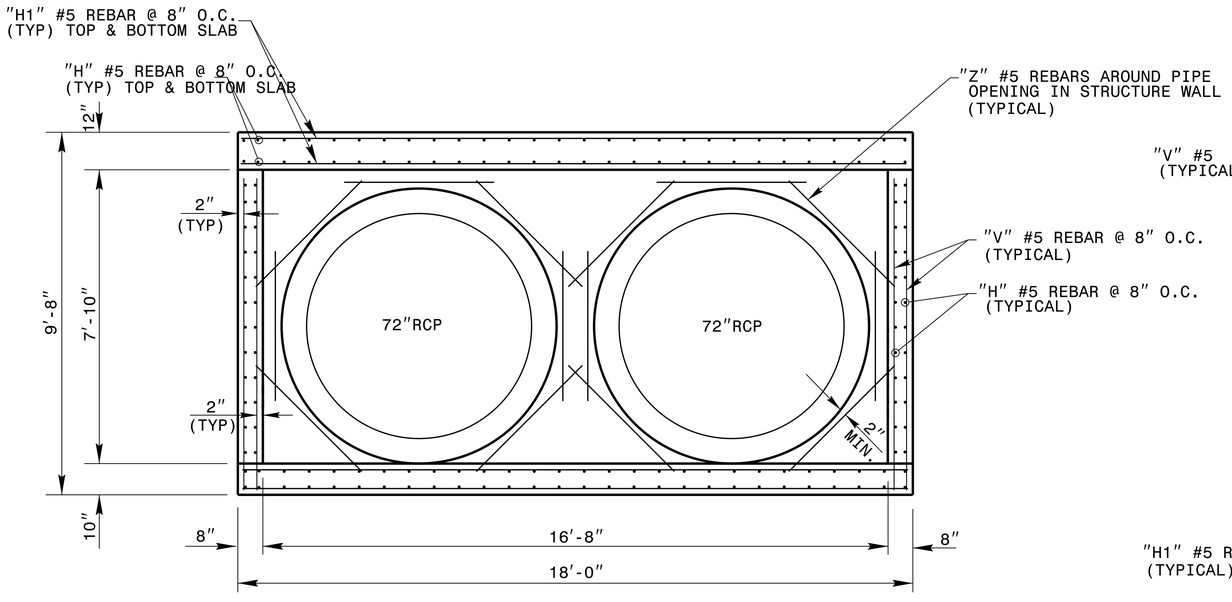
2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

HEIGHT DIMENSIONS MAY BE ADJUSTED DOWN FOR SMALLER PIPES AS DIRECTED BY THE ENGINEER.

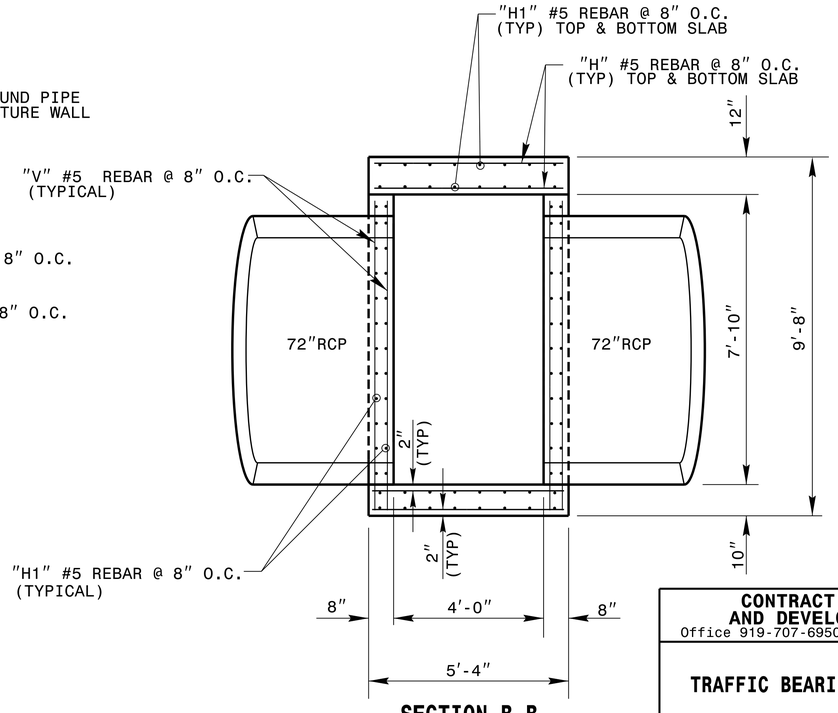
BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	WEIGHT
H	160	#5	5'-0"	834
H1	80	#5	17'-8"	1474
V	136	#5	8'-6"	1206
Z	28	#5	4'-0"	117
TOTAL REINF. STEEL (LBS.)				3631
TOTAL CONC. (CU. YDS.)				14.6

* 1.05 CU. YD. DEDUCTION FOR 72" RC PIPE
* NO DEDUCTION HAS BEEN MADE FOR PIPES



SECTION A-A



SECTION B-B

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER 4/7/2026
Signed by: Nicole M. Hackler
5884323D34164C5...

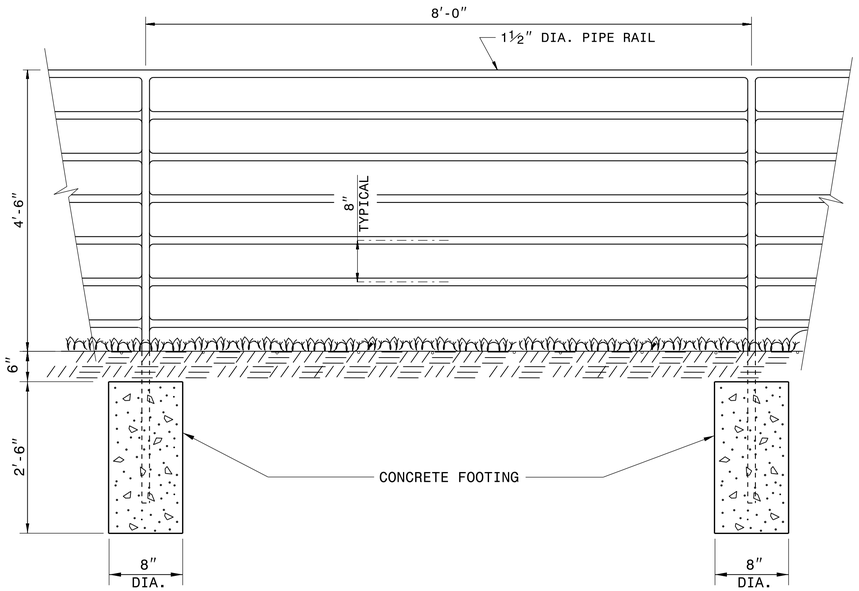
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TRAFFIC BEARING JUNCTION BOX

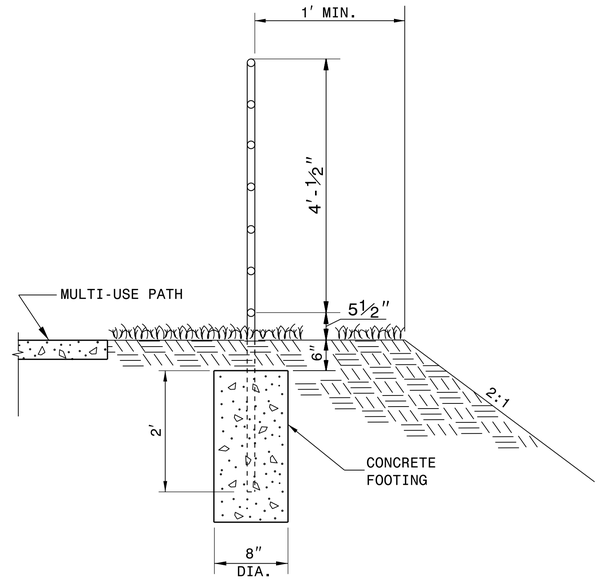
ORIGINAL BY: nbritt DATE: 05/07/08
MODIFIED BY: kkempf DATE: 02/12/19
CHECKED BY: DATE:
FILE SPEC.: special details/kkempf/english/72 tbjb.dgn

12-MAR-2019 12:30
S:\Contracts\Contracts\Special Details\kkempf\english\72 tbjb.dgn
kkempf AT CSD-219396

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-3



ELEVATION



SECTION VIEW

NOTES:

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

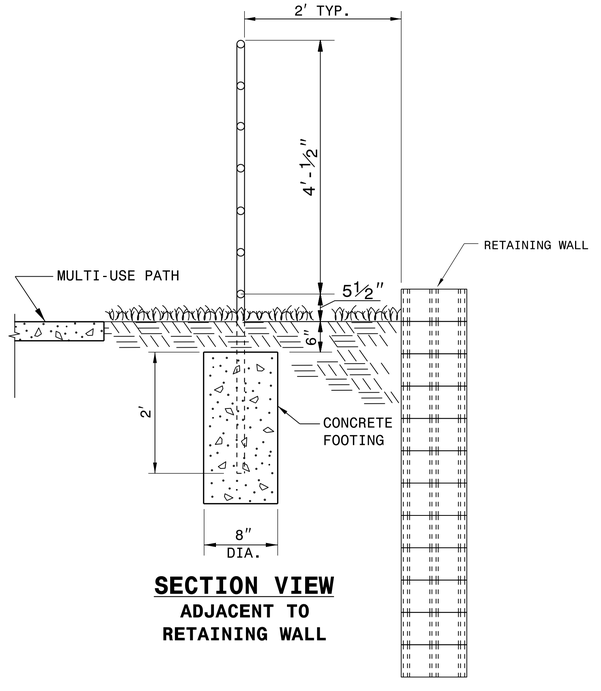
REPAIR GALVANIZING IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1076.

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

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

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

PLACEMENT OF HANDRAIL IN RELATION TO SHOULDER BREAK POINT AND PATH MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.



SECTION VIEW
ADJACENT TO RETAINING WALL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HUEBLER 2026

Signed by: Nicole M. Huebler 5884323034164C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

BICYCLE / PEDESTRIAN SAFETY RAIL

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: K.A. KEMPF DATE: 7-20-23
CHECKED BY: _____ DATE: _____
FILE SPEC.: details\kkempf\english\safety rails 2024.dgn

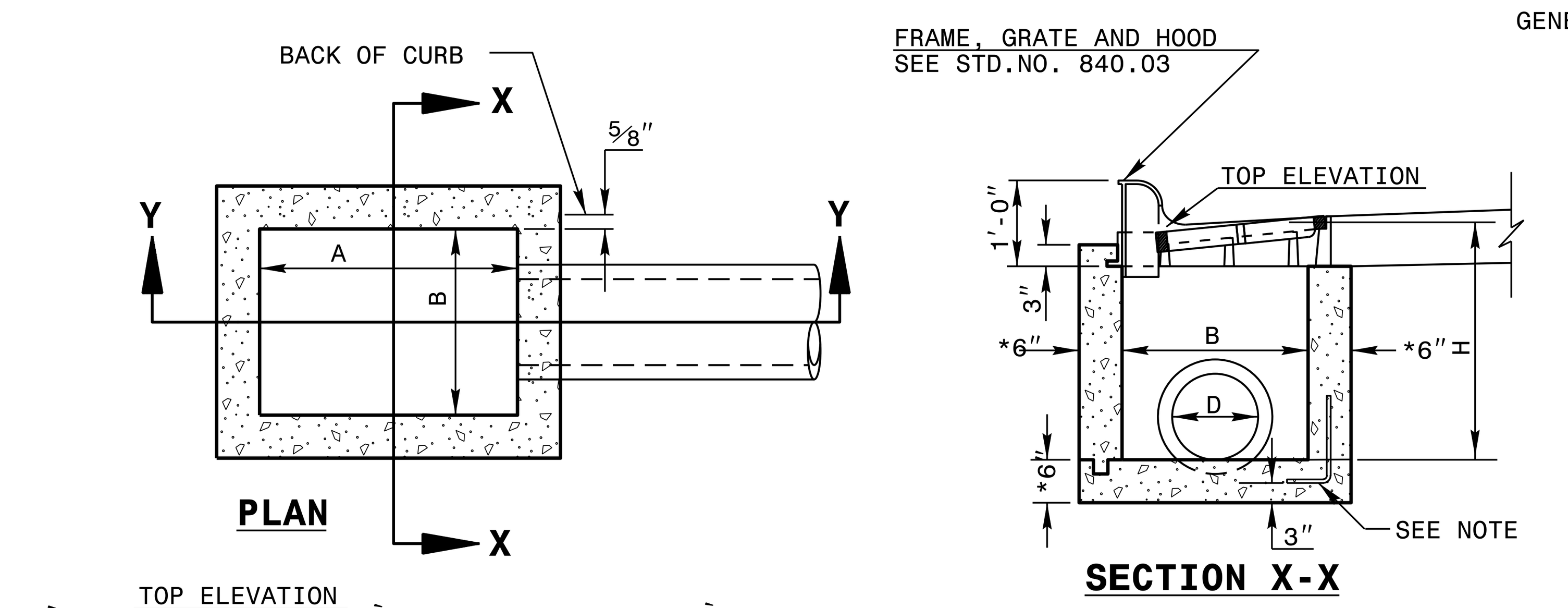
20-JUL-2023 12:36
Safety Rails 2024.dgn
kkempf
AT CSD-320967

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-4

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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH CONCRETE CATCH BASIN
12″ THRU 84″ PIPE

SHEET 1 OF 2 — 840D02



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3′-6″ IN DEPTH WITH STEPS 12″ ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2″ KEYWAY, OR #4 BAR DOWELS AT 12″ CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

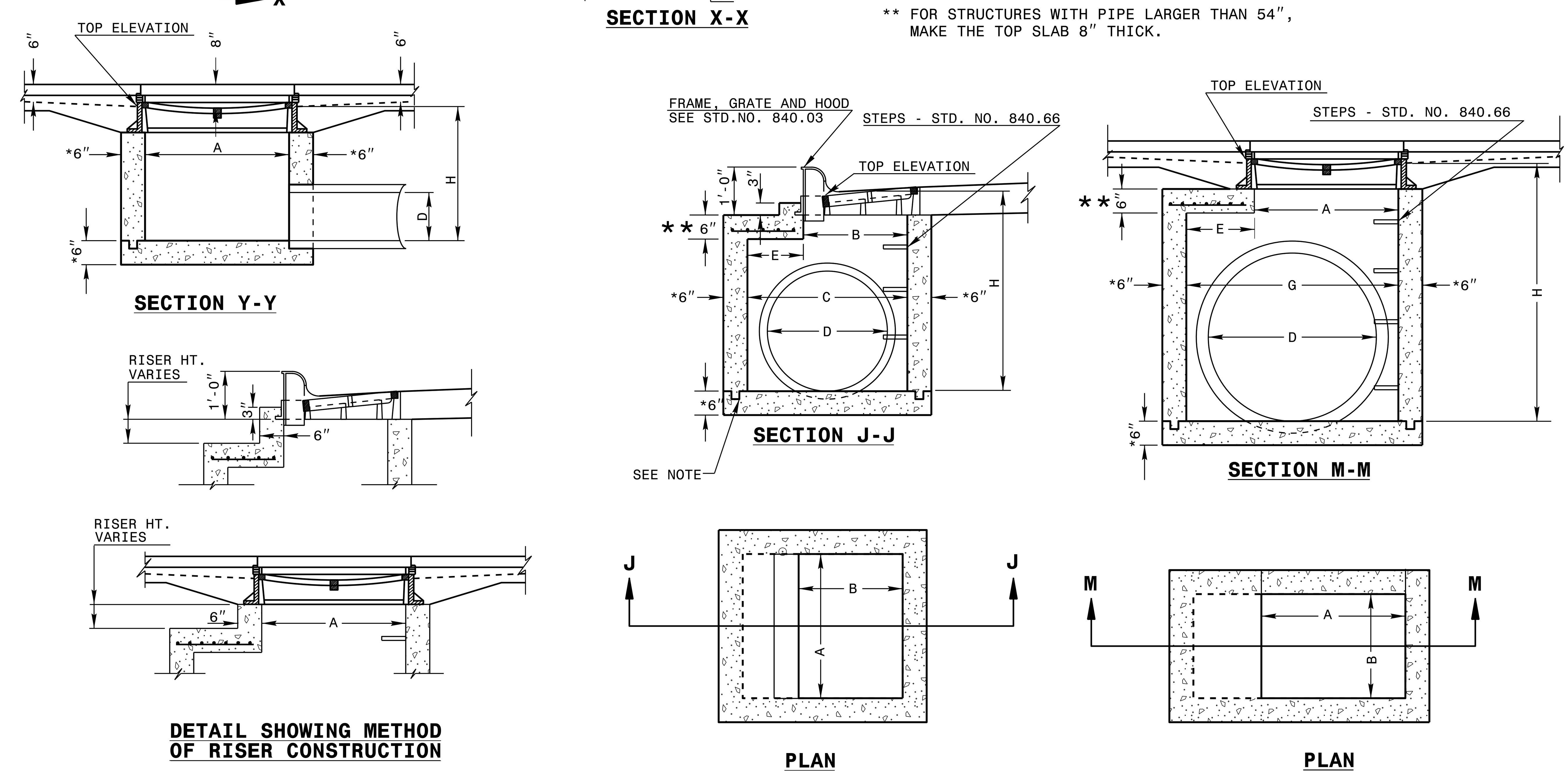
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

* USE 6″ WALLS FOR BOXES UP TO 8′ IN HEIGHT. USE 8″ WALLS, 8″ BOTTOM SLAB AND 8″ TOP SLAB FOR BOXES GREATER THAN 8′ IN HEIGHT AND UP TO 20′ IN HEIGHT.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1″.

** FOR STRUCTURES WITH PIPE LARGER THAN 54″, MAKE THE TOP SLAB 8″ THICK.



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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH CONCRETE CATCH BASIN
12″ THRU 84″ PIPE

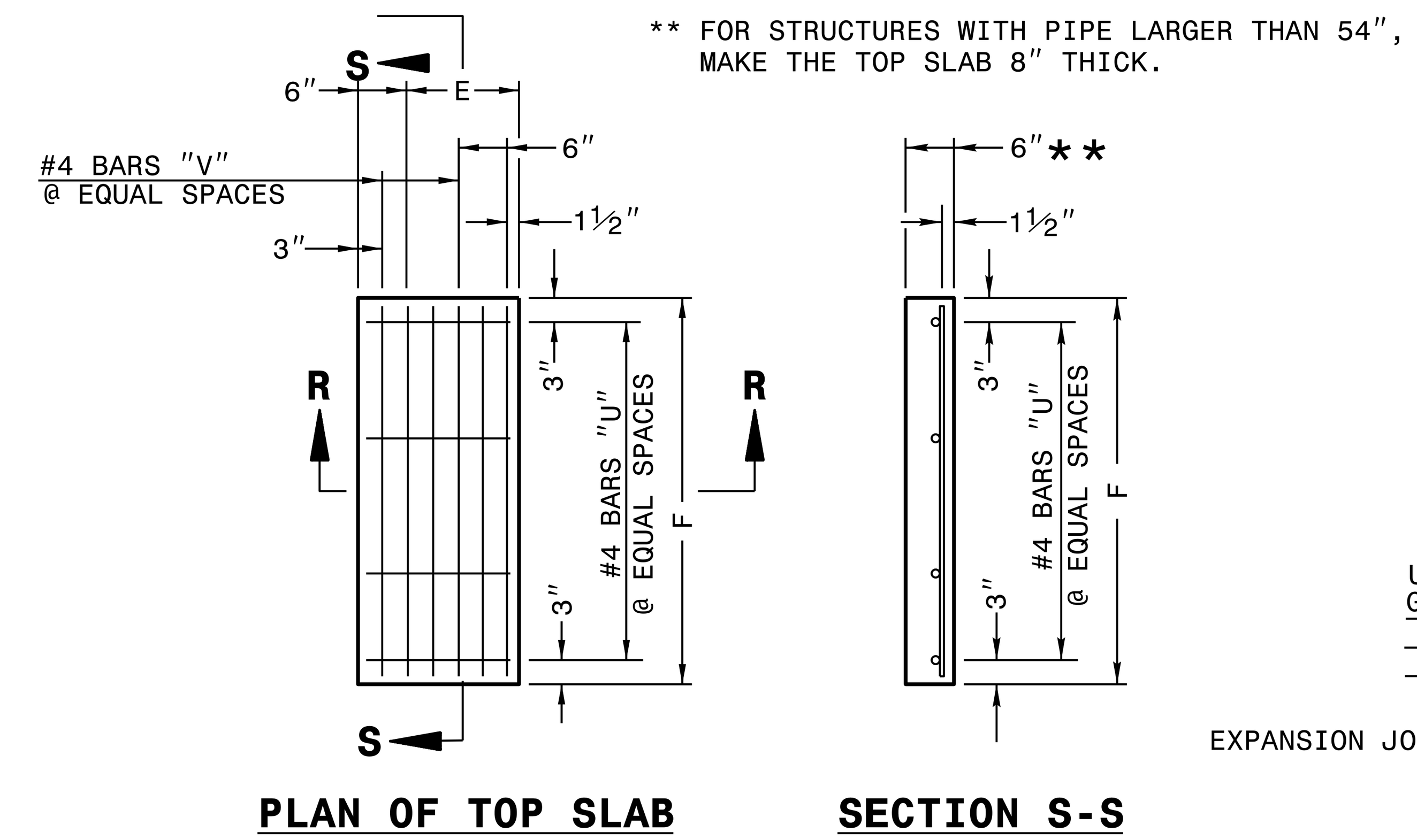
SHEET 1 OF 2 — 840D02

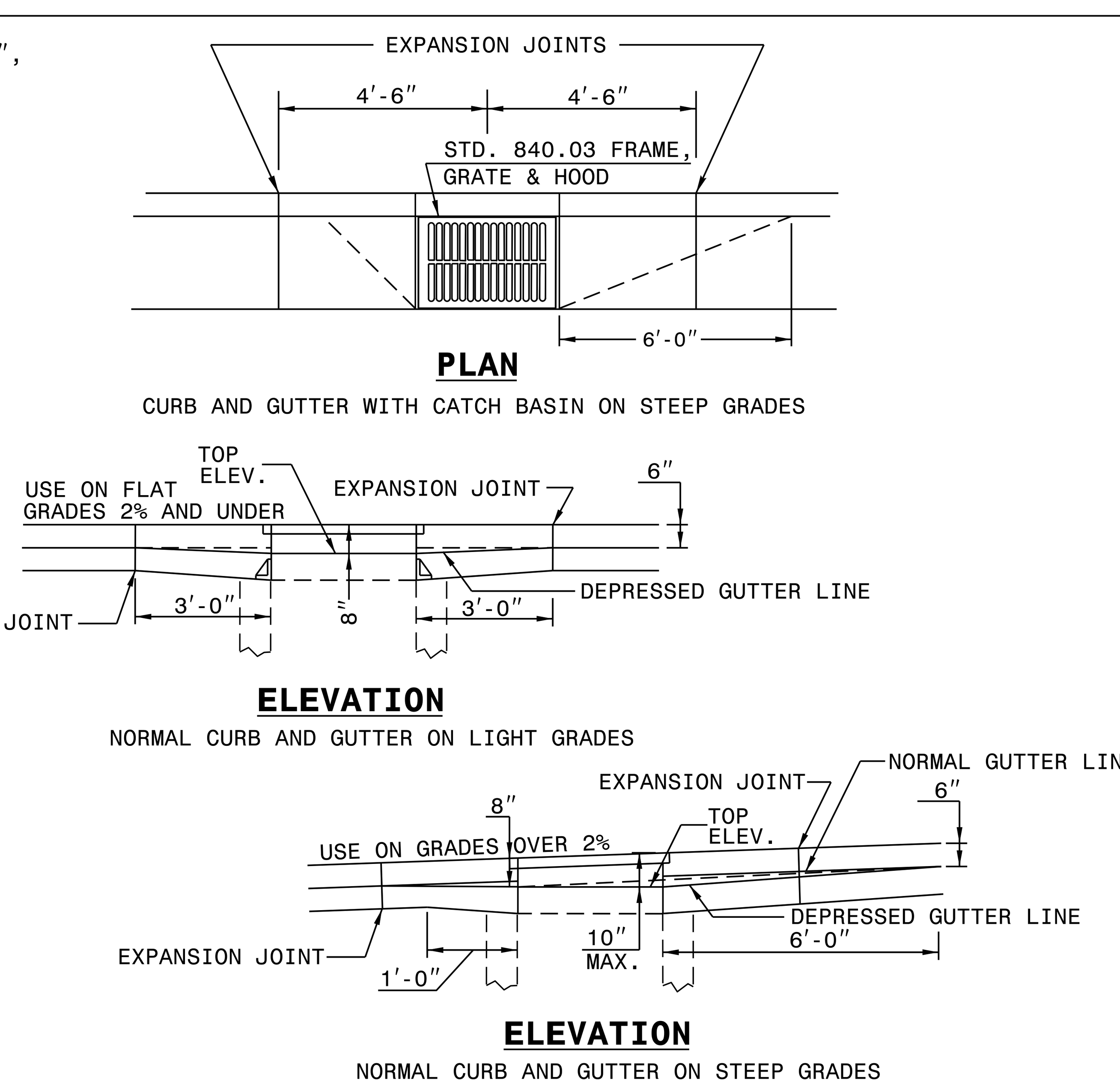
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

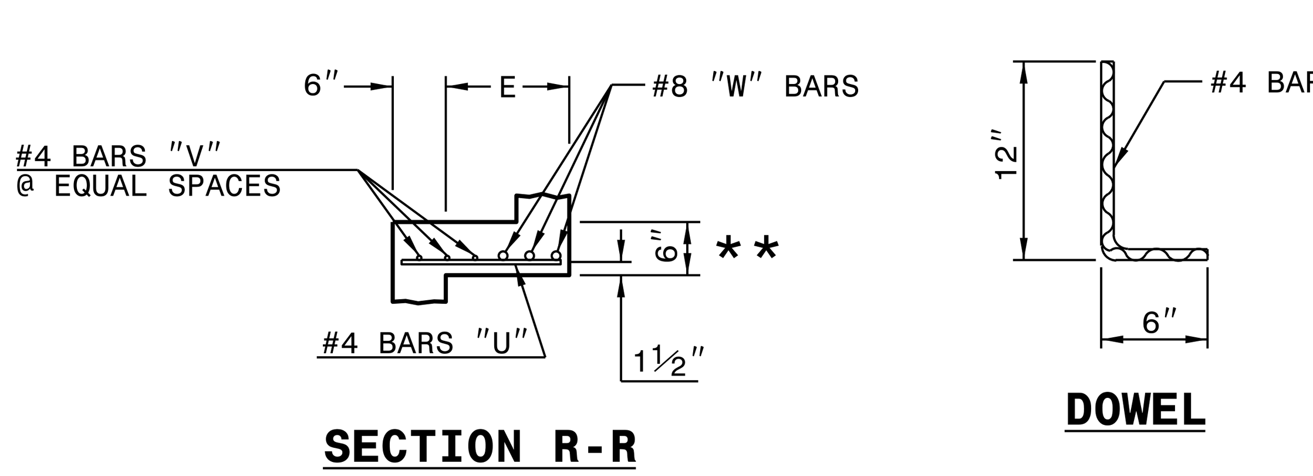
ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH CONCRETE CATCH BASIN
12″ THRU 84″ PIPE

SHEET 2 OF 2 — 840D02

** FOR STRUCTURES WITH PIPE LARGER THAN 54″, MAKE THE TOP SLAB 8″ THICK.







* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION									CU.YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT			BARS-U		BARS-V		BARS-W		TOTAL	TOP	BOTTOM	TOT. CONC. FOR MINIMUM		
D	A	B	C	G	H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.	SLAB	SLAB	HEIGHT, H	C.M.	R.C.
12″	3′-0″	2′-2″	--	--	2′-0″	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15″	3′-0″	2′-2″			2′-3″											0.235	0.829	0.023	0.036
18″	3′-0″	2′-2″			2′-6″											0.235	0.887	0.033	0.049
24″	3′-0″	2′-2″			3′-1″											0.235	1.001	0.059	0.085
30″	3′-0″	2′-2″	3′-4″	3′-4″	3′-10″	1′-2″	4′-4″	4	1′-5″	2	4′-1″	3	4′-1″	39	0.123	0.347	1.433	0.092	0.127
36″	3′-0″	2′-2″	3′-10″	3′-10″	4′-6″	1′-8″	4′-10″	4	1′-11″	3	4′-7″	3	4′-7″	43	0.161	0.432	1.714	0.132	0.178
42″	3′-0″	2′-2″	4′-5″	4′-5″	4′-11″	2′-2″	5′-5″	5	2′-5″	4	5′-2″	3	5′-2″	47	0.200	0.543	1.738	0.180	0.243
48″	3′-0″	2′-2″	5′-0″	5′-0″	5′-6″	2′-10″	6′-0″	5	3′-1″	4	5′-9″	3	5′-9″	51	0.235	0.667	2.052	0.235	0.317
54″	3′-0″	2′-2″	5′-7″	5′-7″	6′-0″	3′-5″	6′-7″	6	3′-8″	5	6′-4″	3	6′-4″	56	0.289	0.802	2.387	0.297	0.401
60″	3′-0″	2′-2″	6′-3″	6′-3″	6′-6″	4′-1″	7′-3″	6	4′-4″	5	7′-0″	3	7′-0″	61	0.340	0.973	2.722	0.363	0.546
66″	3′-0″	2′-2″	6′-11″	6′-11″	7′-0″	4′-9″	7′-11″	7	5′-0″	6	7′-8″	3	7′-8″	66	0.391	1.160	3.057	0.440	0.655
72″	3′-0″	2′-2″	7′-6″	7′-6″	7′-6″	5′-3″	8′-6″	7	5′-6″	6	8′-3″	3	8′-3″	72	0.442	1.340	3.392	0.524	0.774
78″	3′-0″	2′-2″	8′-1″	8′-1″	8′-0″	5′-11″	9′-1″	8	6′-2″	7	8′-10″	3	8′-10″	78	0.493	1.530	3.727	0.615	0.893
84″	3′-0″	2′-2″	8′-9″	8′-9″	8′-6″	6′-7″	9′-9″	8	6′-10″	7	9′-6″	3	9′-6″	84	0.544	1.760	4.062	0.713	1.010

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

ENGLISH DETAIL DRAWING FOR
EXTRA DEPTH CONCRETE CATCH BASIN
12″ THRU 84″ PIPE

SHEET 2 OF 2 — 840D02

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

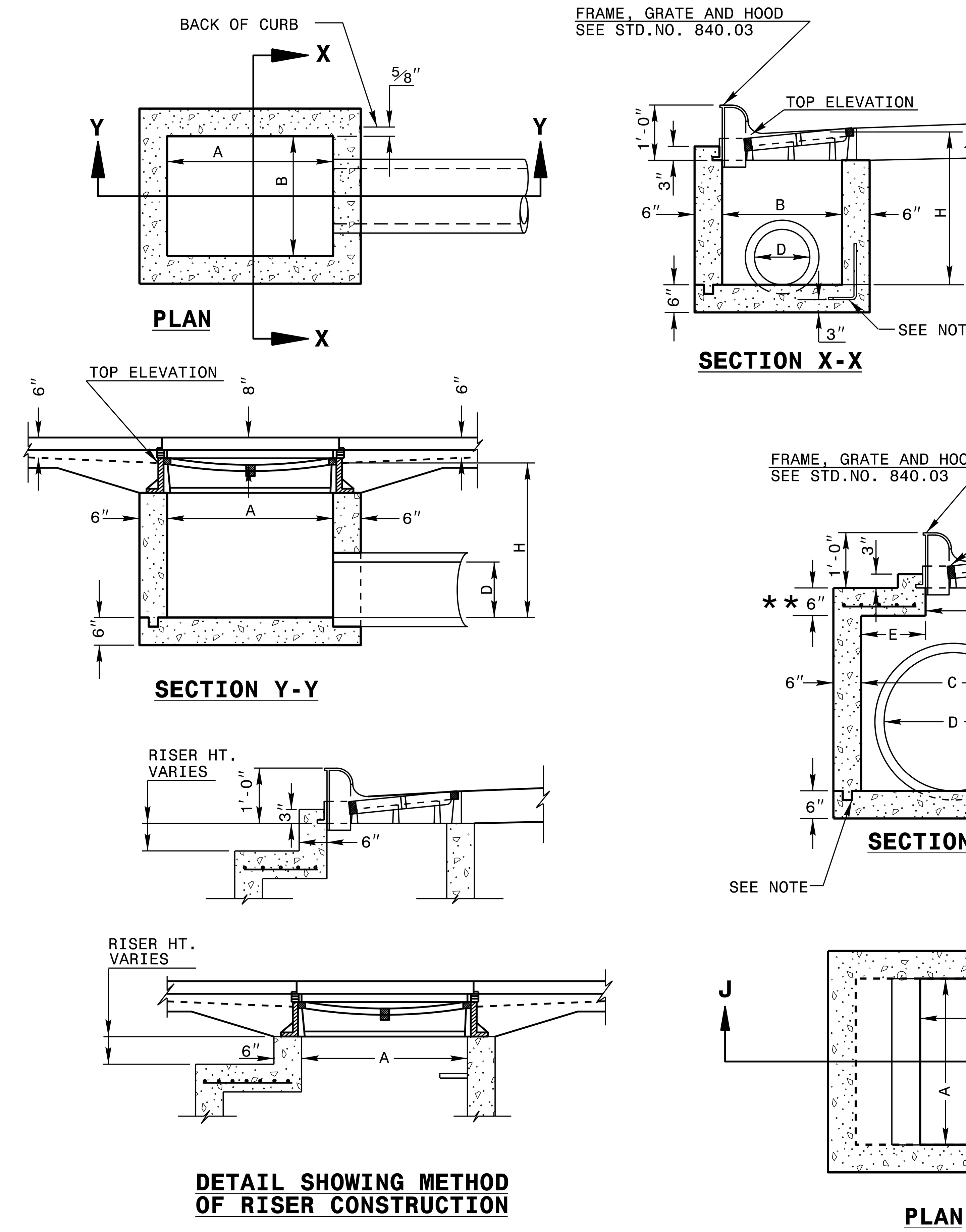
SEE PLATE FOR TITLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER 2026

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: jhowerton/840d02 Extra Depth CB.dgn

5/14/99



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

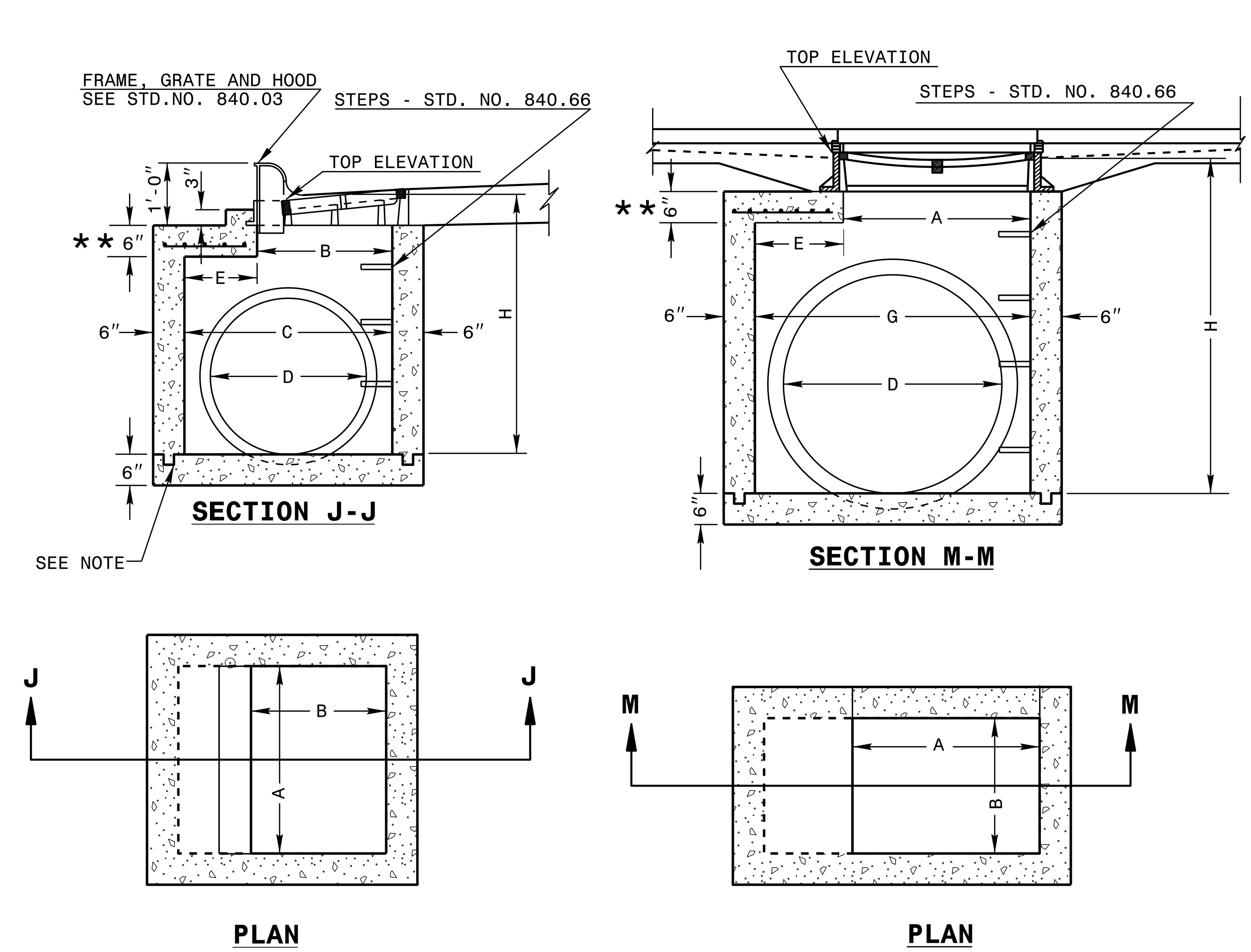
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.



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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

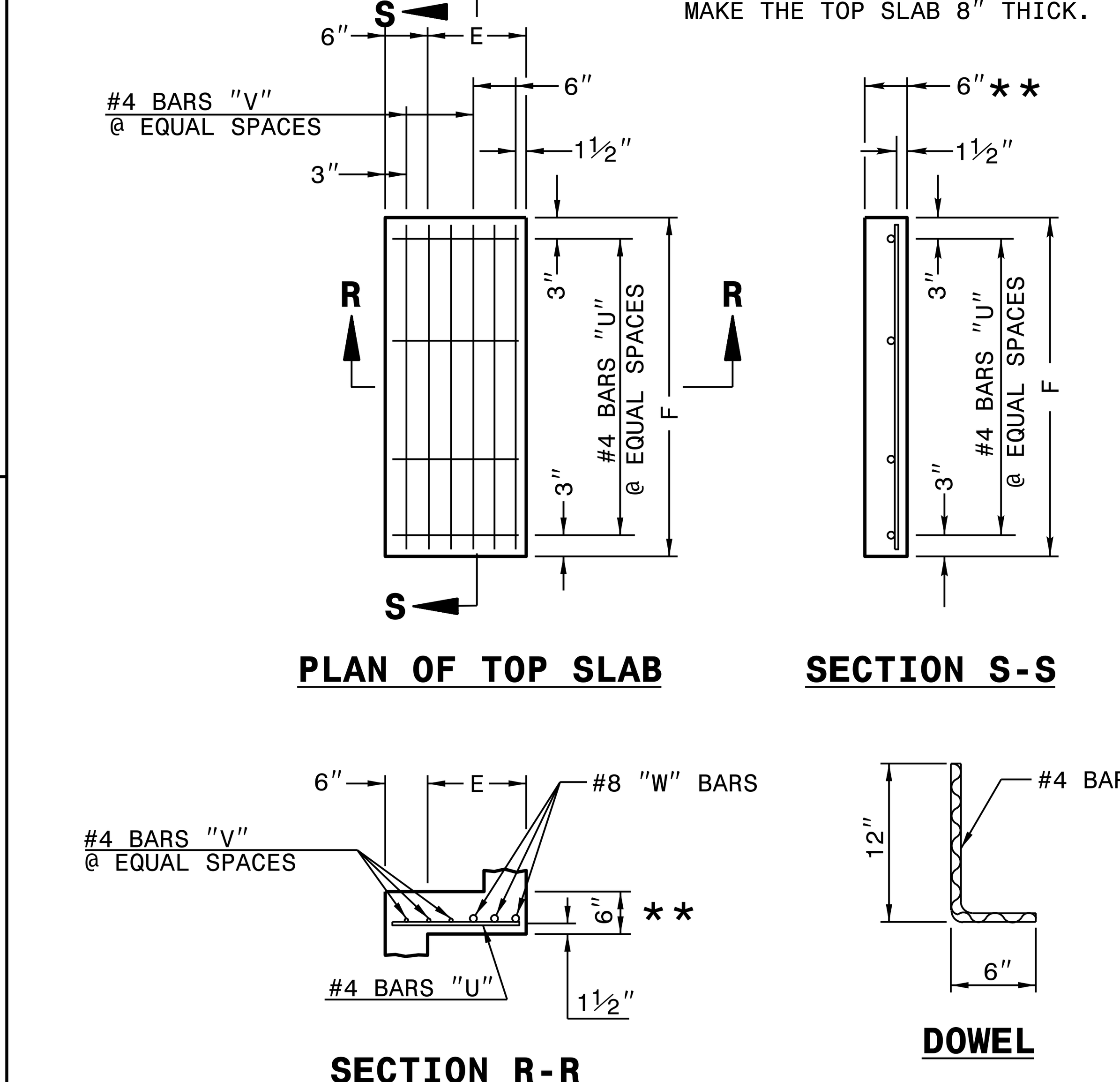
SHEET 1 OF 2
840D02

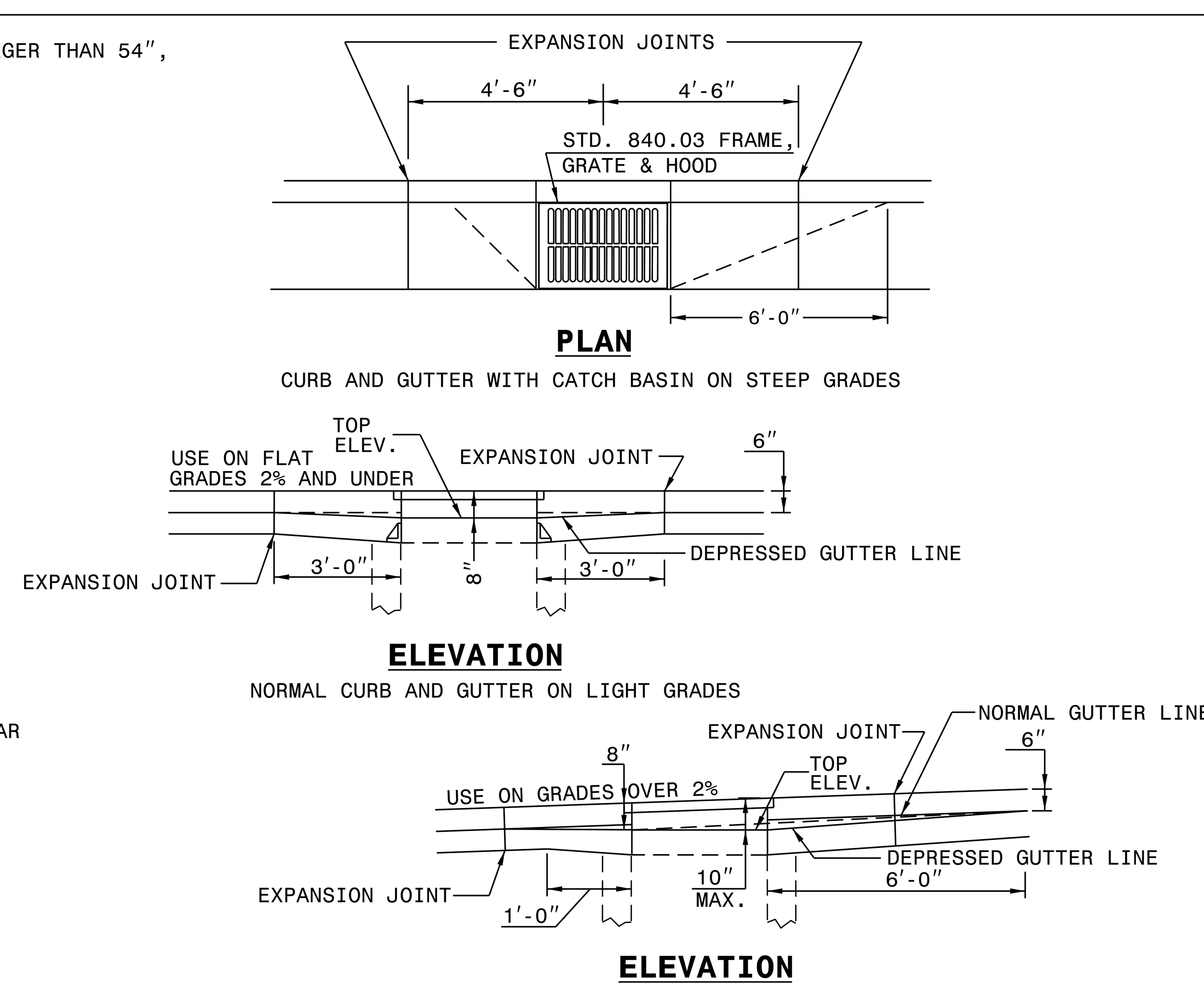
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 1 OF 2
840D02

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.





* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION									CU.YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT			BARS-U		BARS-V		BARS-W		TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H		
D	A	B	C	G	H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH					C.M.	R.C.
12"	3'-0"	2'-2"	--	--	2'-0"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			2'-3"											0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			2'-6"											0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-1"											0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	4'-1"	3	4'-1"	39	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	4'-7"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	5'-2"	3	5'-2"	47	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	5'-9"	3	5'-9"	51	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	6'-4"	3	6'-4"	56	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	7'-0"	3	7'-0"	61	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	7'-8"	3	7'-8"	66	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	8'-3"	3	8'-3"	72	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	8'-10"	3	8'-10"	78	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	9'-6"	3	9'-6"	84	0.544	1.760	4.062	0.713	1.010

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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER

Signed by: Nicole M. Hackler

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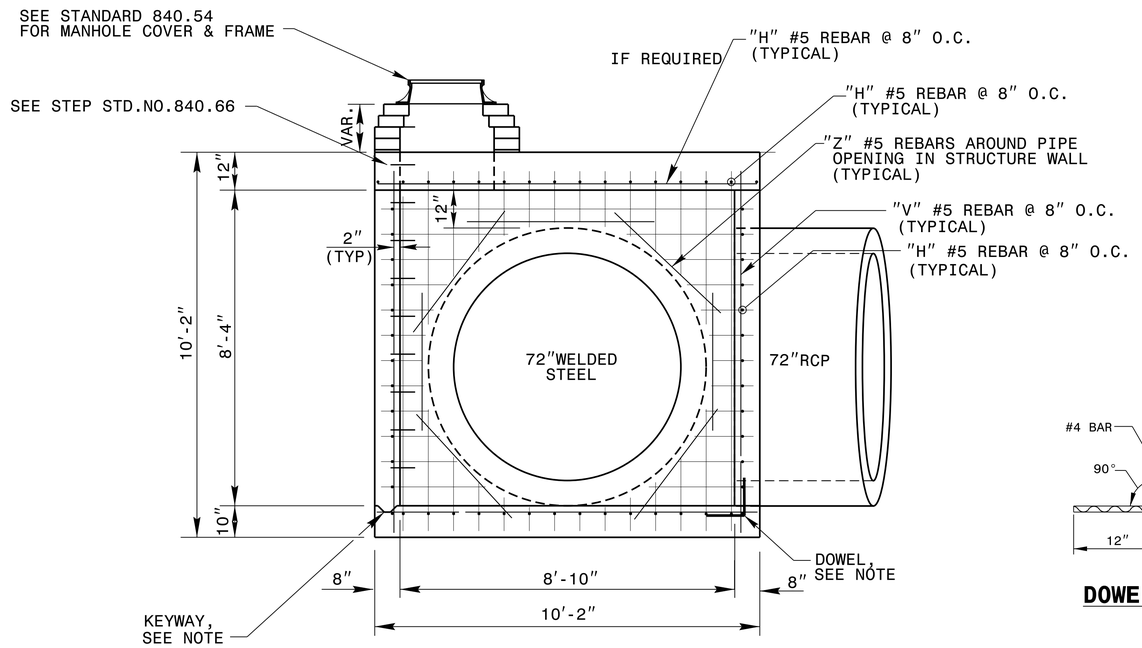
SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-6



SECTION A-A

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS OR BRICK/BLOCK WALLS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

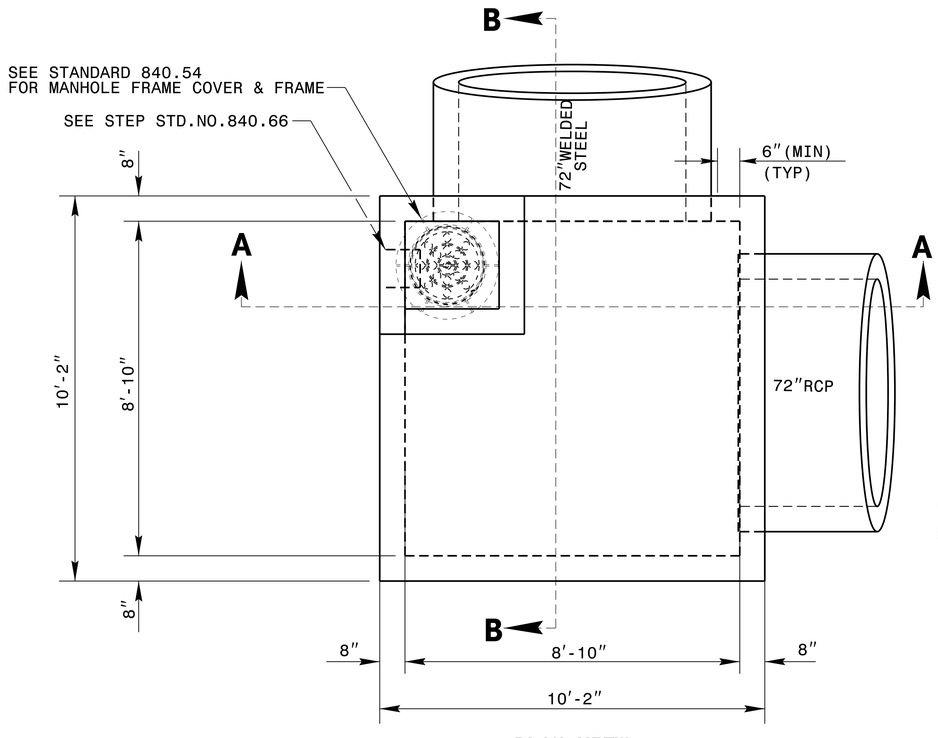
DOWEL

BILL OF MATERIALS

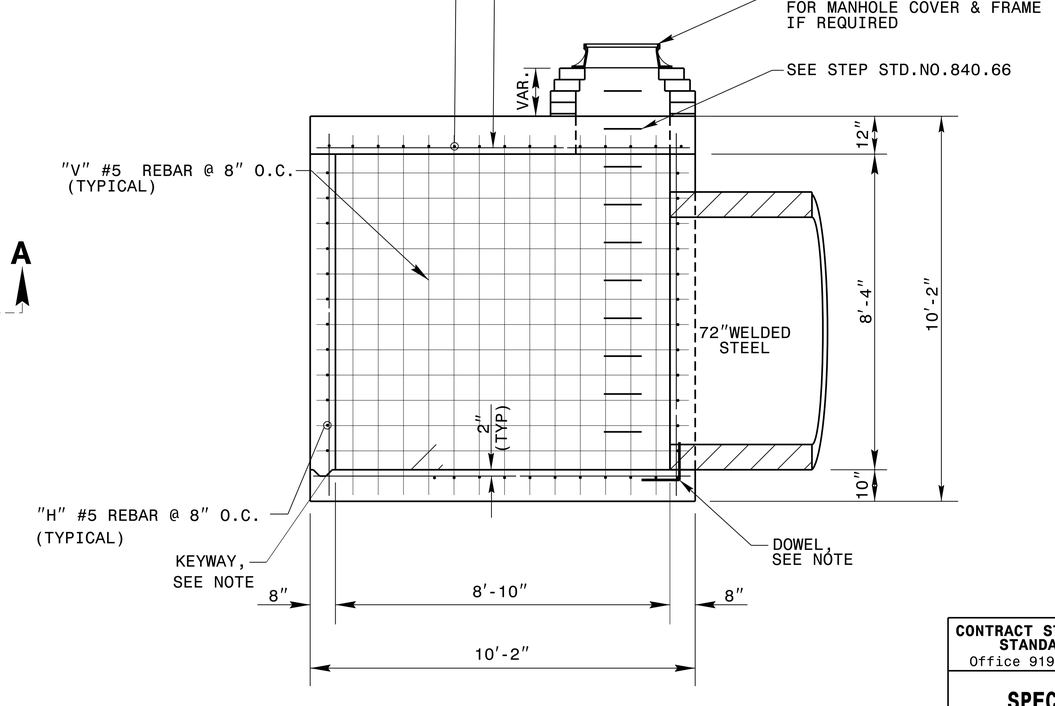
BAR	NO.	SIZE	LENGTH	WEIGHT
H	84	#5	9'-6"	833
V	70	#5	9'-2"	670
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1577
TOTAL CONC. (CU. YDS.)				* 15.2

* NO DEDUCTION HAS BEEN MADE FOR PIPES

* 2.00 CU. YD. DEDUCTION FOR 2-72" RC PIPE



PLAN VIEW



SECTION B-B

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M HUCKLER
Signed
Nicole M. Huckler
5884323D34164C5...

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STANDARDS AND SPECIAL DESIGN
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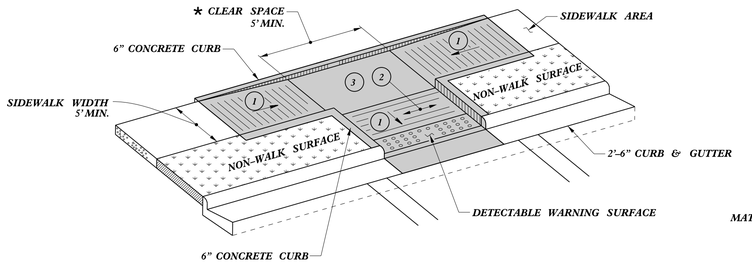
SPECIAL JUNCTION BOX WITH SLAB LID

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: nbritt DATE: 04/17/09
CHECKED BY: _____ DATE: _____
FILE SPEC.: detail/nbritt/english/rural/r2417c72jb.dgn

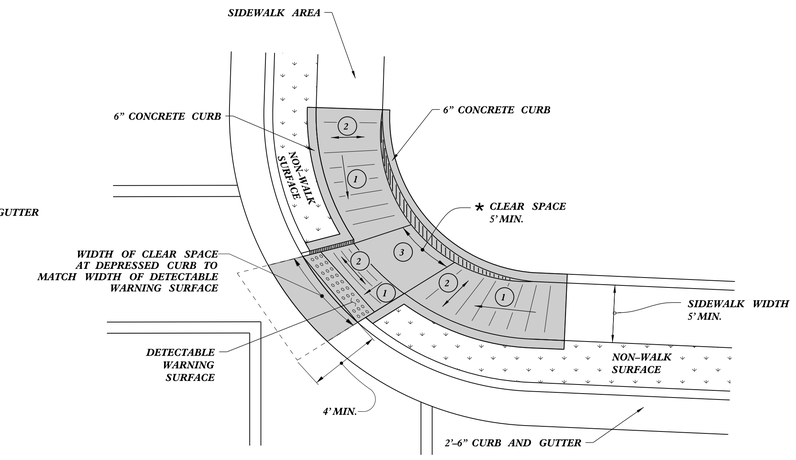
14-FEB-2018 13:14
S:\Contracts\Special Details\nbritt\english\rural\r2417c 72 jb.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-7

* – *WHERE CLEAR SPACE IS CONSTRAINED ON TWO OR MORE SIDES, THE CLEAR SPACE SHALL BE 4'MINIMUM X 5'MINIMUM, WITH 5' PROVIDED IN THE DIRECTION OF THE PEDESTRIAN STREET CROSSING.*



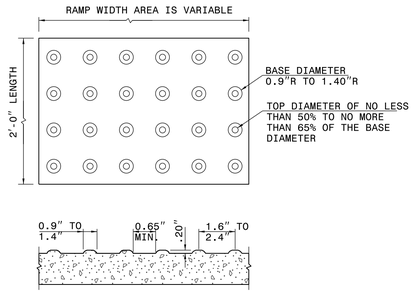
TYPE 3



TYPE 3 MODIFIED
INSTALLATION IN A RADIUS

NOTES:
DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING SURFACE

(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

(3) *MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00%.*

PAY LIMITS FOR 1 CURB RAMP

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

CURB RAMP

PARALLEL RAMP

SHEET 9 OF13

848D06

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M HACKLER 4/7/2026

Signed by: Nicole M. Hackler 5884323D34164C5...

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SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 12-22-2023
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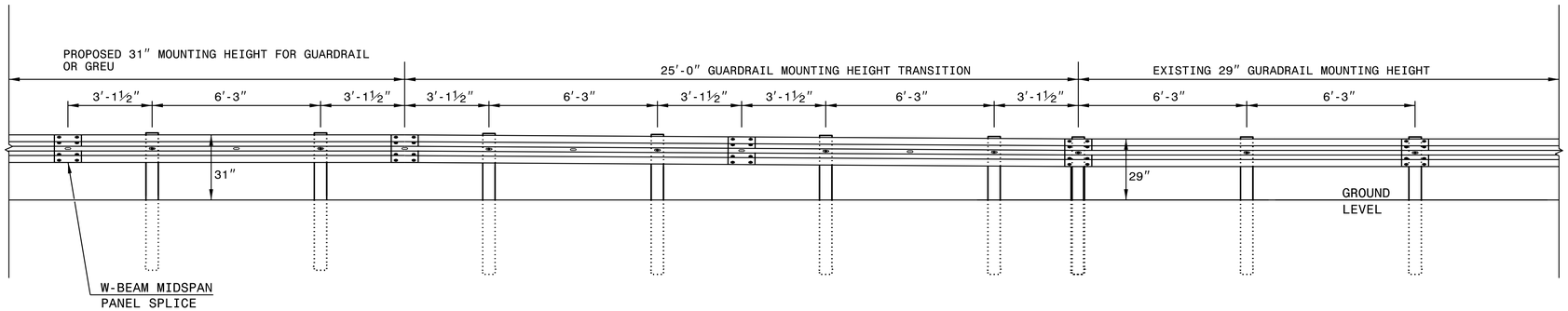
FILE SPEC.: special details\nmhackler\D0609.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-8

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



ELEVATION VIEW

TRANSITION FROM 29″ TO 31″ W-BEAM GUARDRAIL MOUNTING HEIGHT

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DEPT. OF TRANSPORTATION
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

GUARDRAIL INSTALLATION

SHEET 5 OF 9

862D02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER 2/5/2025

Signed by: Nicole M. Hackler 588432303416405...

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

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CHECKED BY: DATE:
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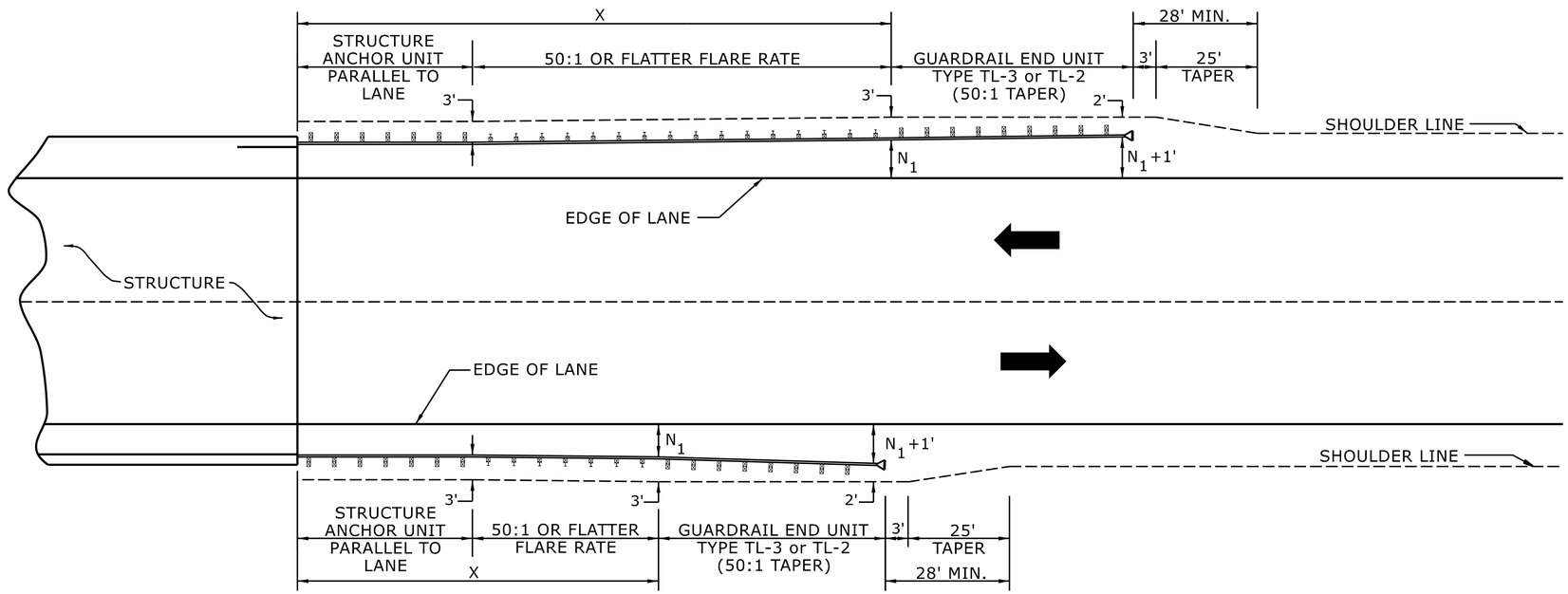
PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-9



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

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER 4/7/2026
Signed by: Nicole M. Hackler
588432303416405...

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AND DEVELOPMENT UNIT
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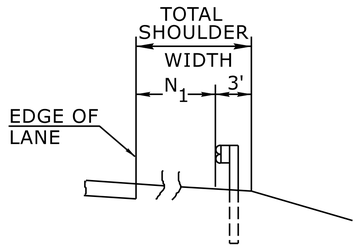
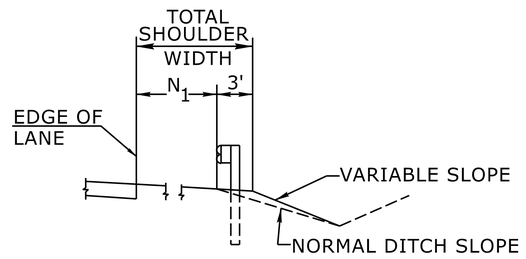
PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-10

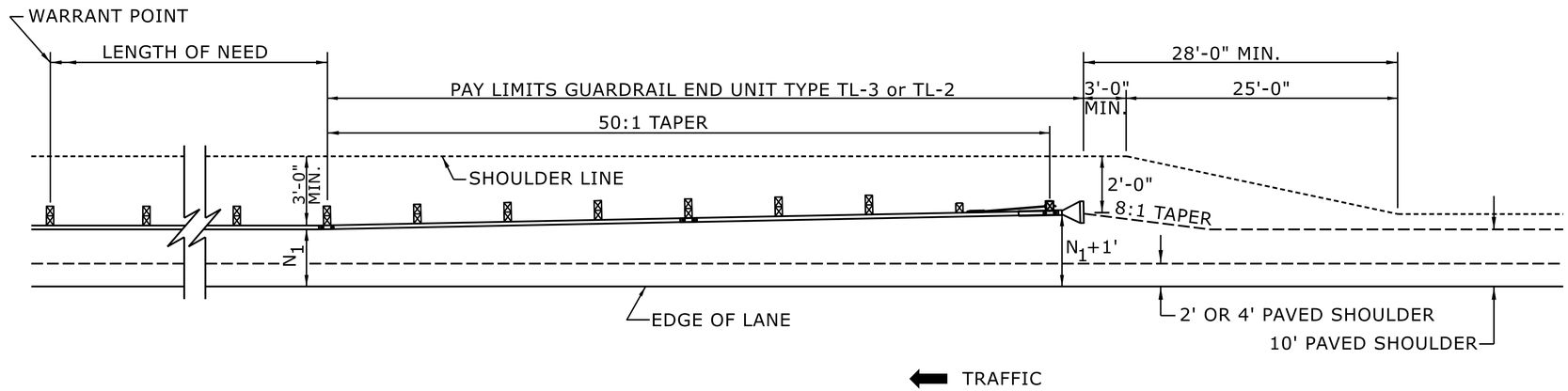


FILL SECTION



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

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER 7/7/2026
Signed by: Nicole M. Hackler 588432303416 4C5...

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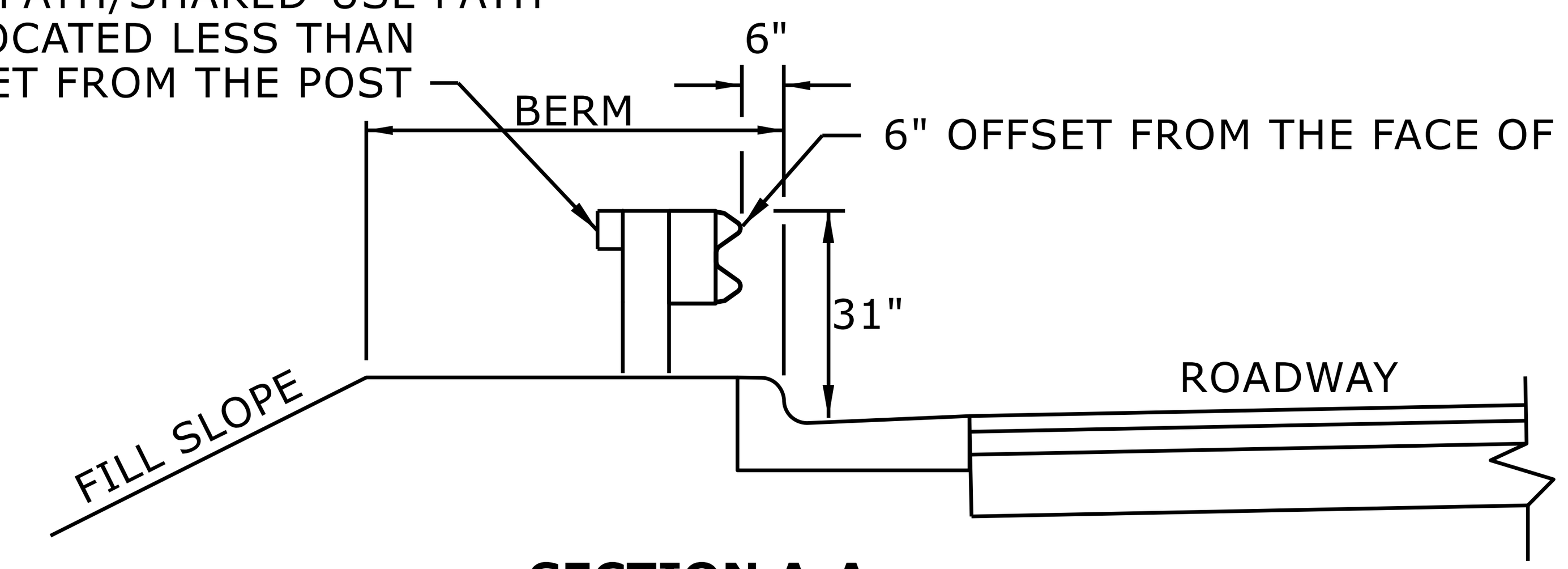
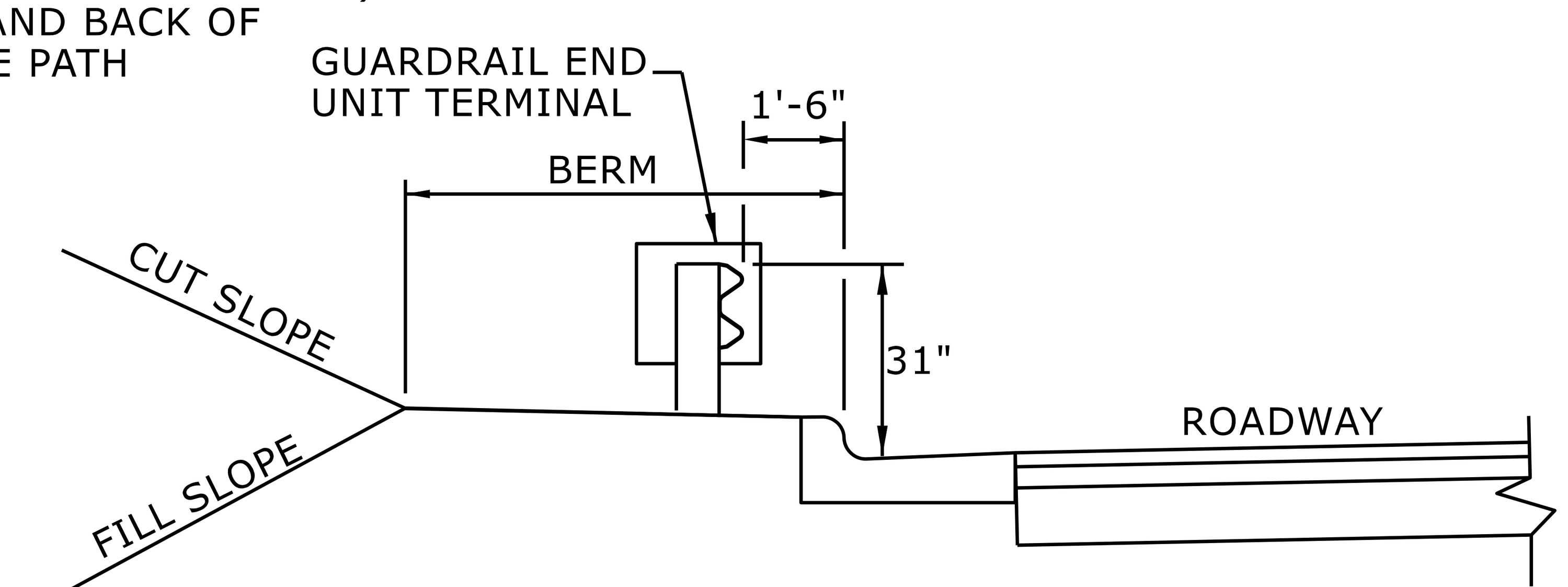
FILE SPEC.:

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

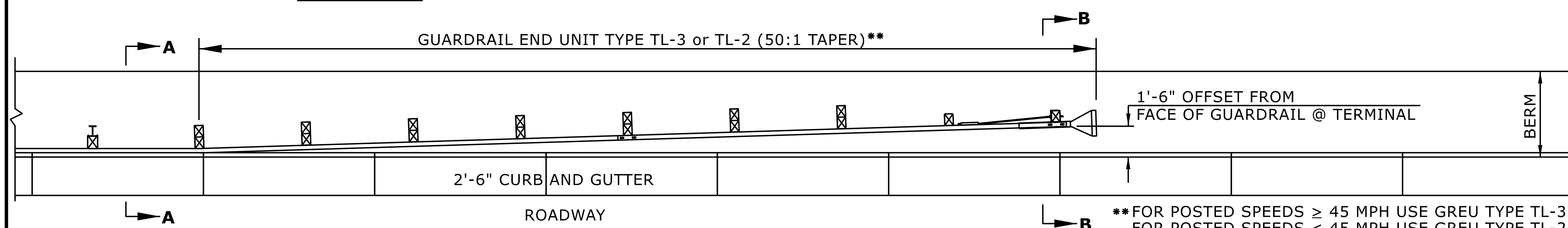
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



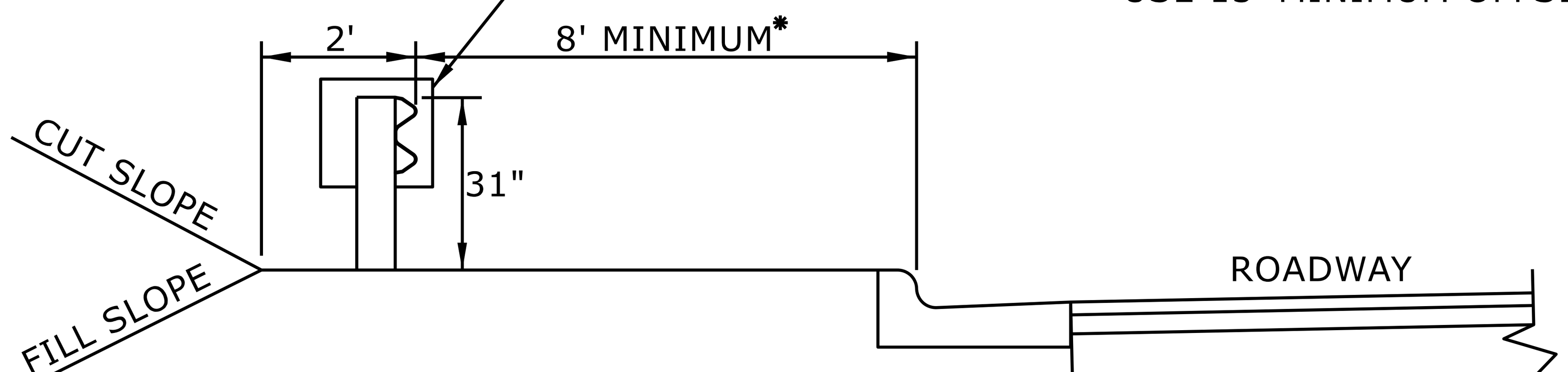
SECTION B-B



** 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 6" FROM THE FACE OF CURB



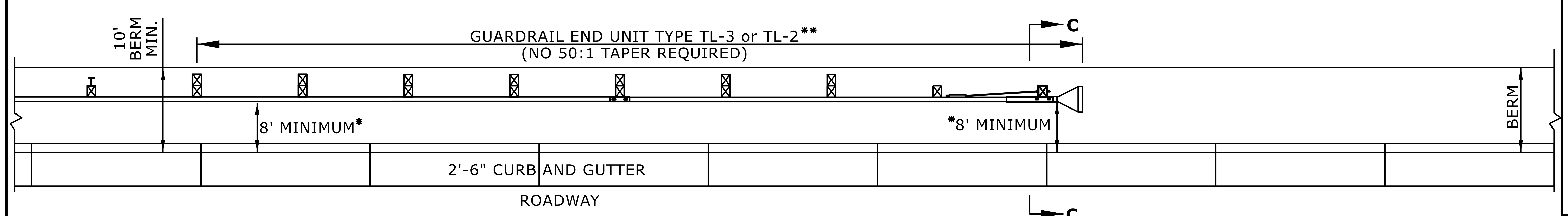
SECTION C-C

* 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
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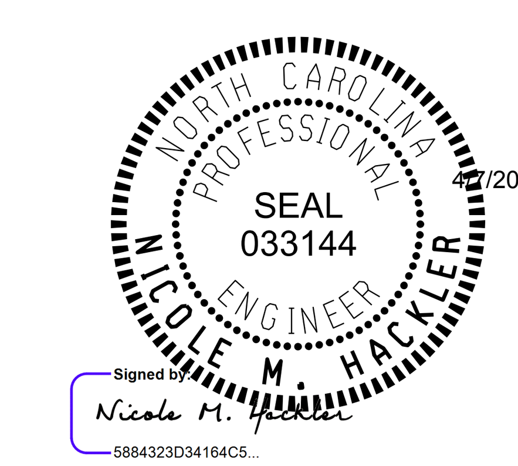
RALEIGH, N.C.

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

SHEET 12 OF 15
862D01



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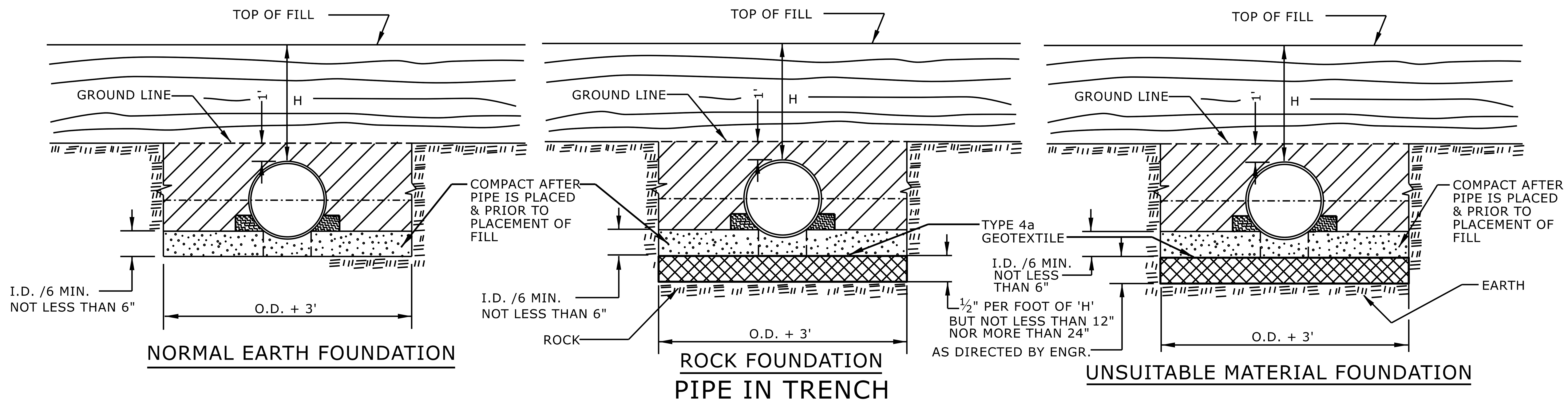
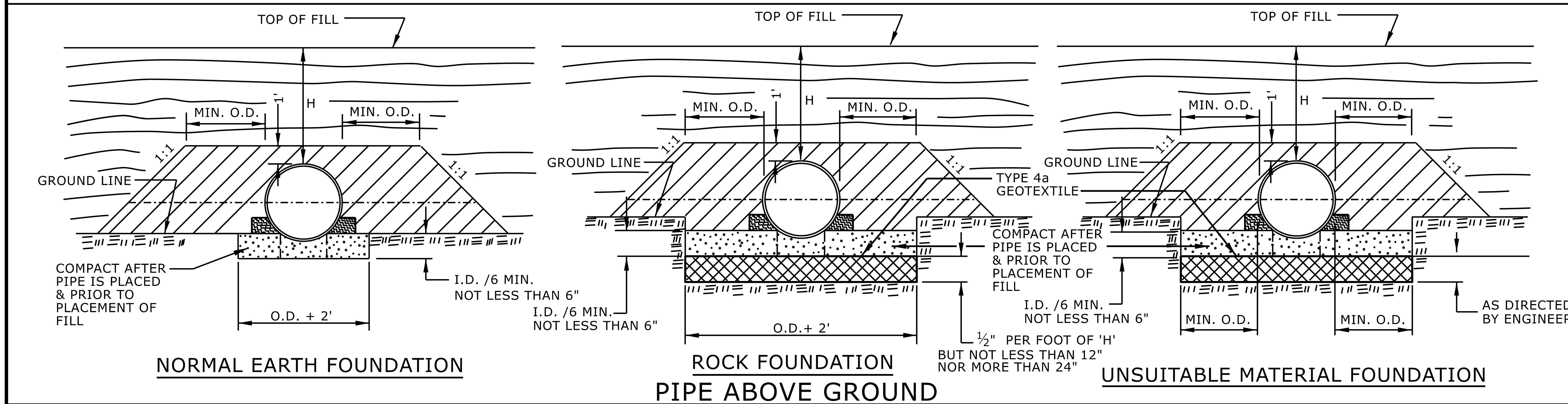
PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-12





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
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RALEIGH, N.C.

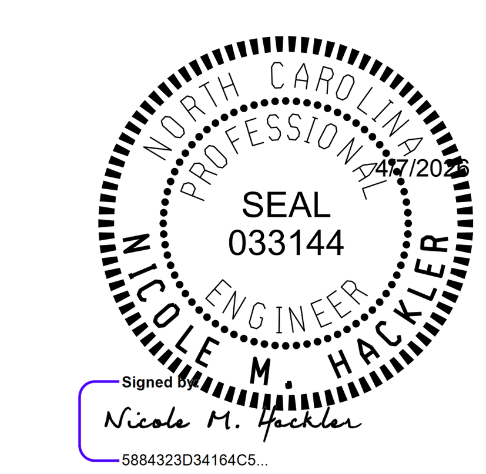
ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01



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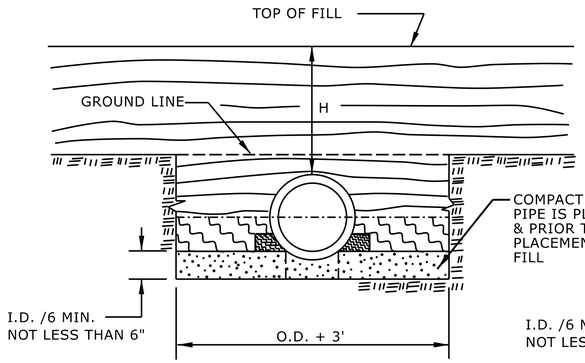
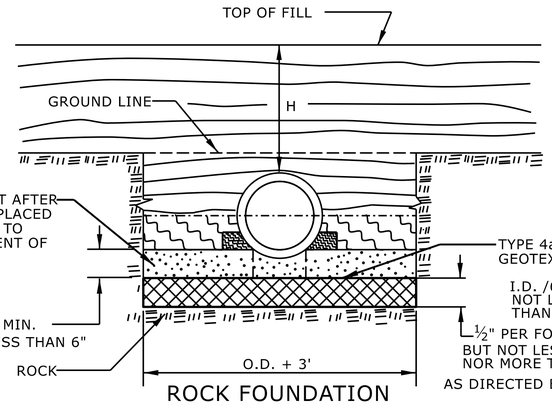
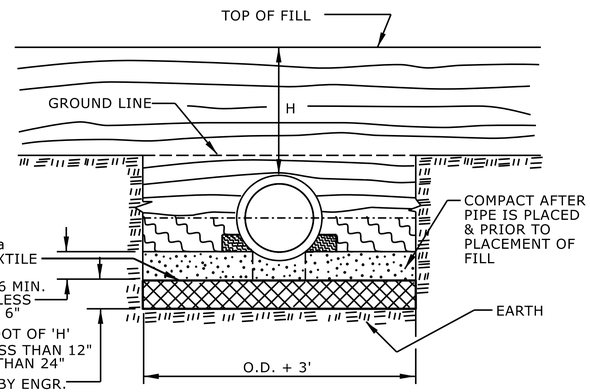
PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-13



NORMAL EARTH FOUNDATION

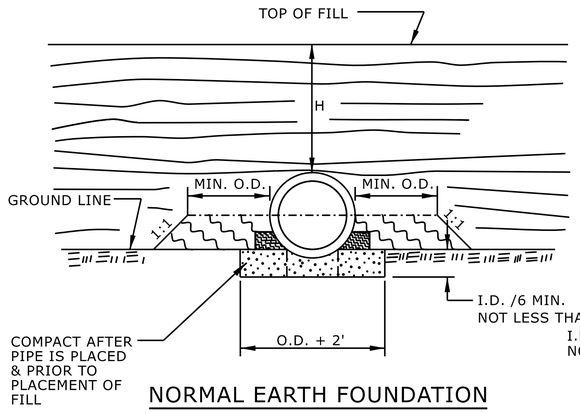


ROCK FOUNDATION

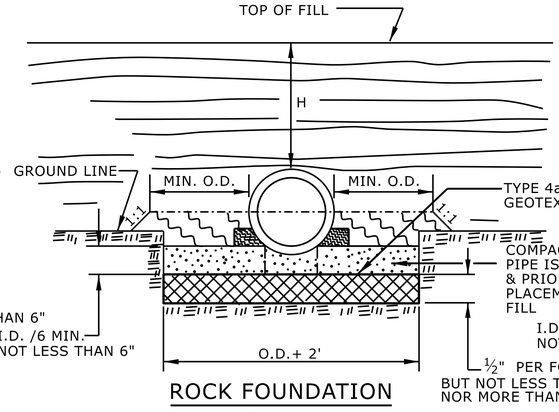


UNSUITABLE MATERIAL FOUNDATION

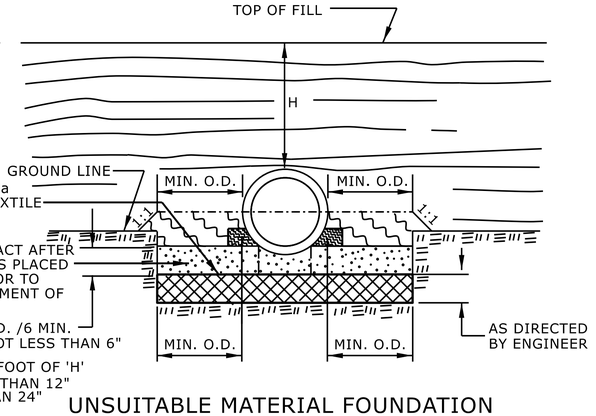
PIPE IN TRENCH



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

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER 4/7/2026

Signed by: Nicole M. Hackler

5884323D34164C5...

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

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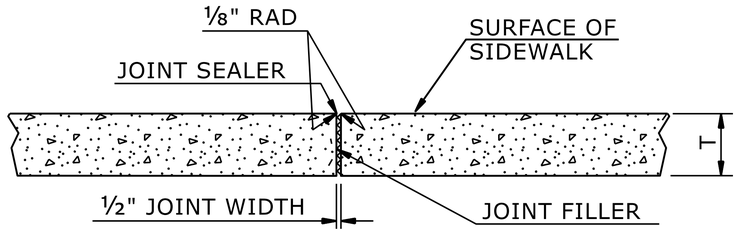
PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2C-14

NOTES:

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

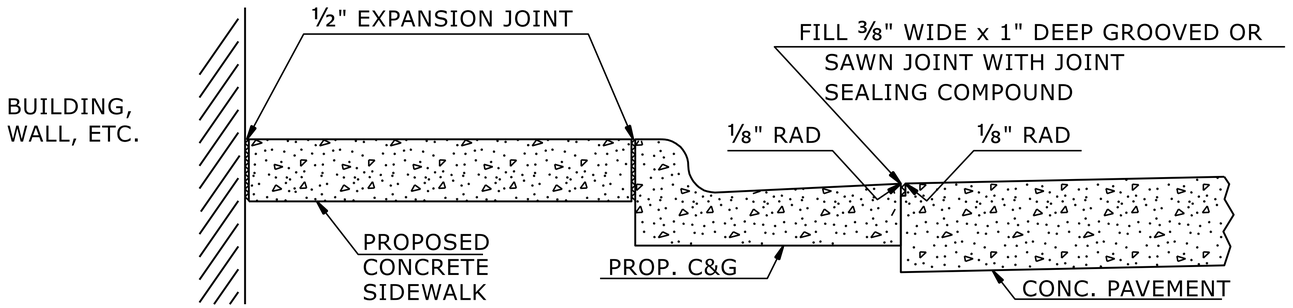
PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

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 SEAL 033144 ENGINEER NICOLE M. HACKLER
4/2/2026
Signed by: Nicole M. Hackler
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

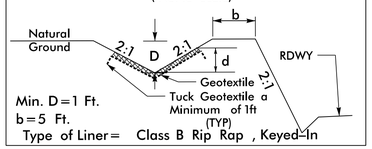
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER
4/7/2026
NORTH CAROLINA PROFESSIONAL SEAL 036821 ENGINEER ELENI M. RIGGS
DocuSigned by: Eleni Riggs
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

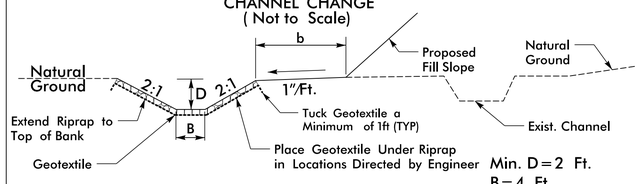
DETAIL A
BERM 'V' DITCH
(Not to Scale)



Min. D=1 Ft.
b=5 Ft.
Type of Liner= Class B Rip Rap , Keyed–In

–L– STA. 36+35 TO STA. 38+00 LT
37 TON RIP RAP, 82 SY GEOTEXTILE

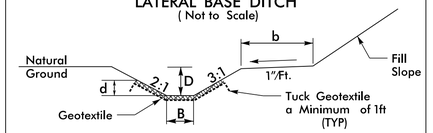
DETAIL B
CHANNEL CHANGE
(Not to Scale)



Min. D=2 Ft.
B=4 Ft.
b=10 Ft.
Type of Liner= Class B Rip Rap, Keyed–In

–Y2– STA. 12+88 TO STA. 13+83 RT
100 TON RIP RAP, 218 SY GEOTEXTILE, 105 CY DDE

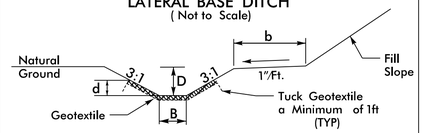
DETAIL C
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D=1 Ft.
d=1 Ft.
B=2 Ft.
b=5 Ft.
Type of Liner= Class B Rip–Rap, Keyed–In

–MUP– STA. 11+85 TO STA. 12+18 LT
9 TON RIP RAP, 20 SY GEOTEXTILE, 276 CY DDE

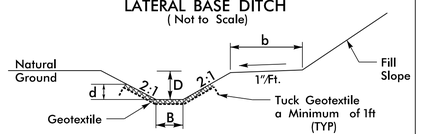
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D=1 Ft.
d=1 Ft.
B=4 Ft.
b=5 Ft.
Type of Liner= Class B Rip–Rap, Keyed–In

NOT USED ON PROJECT

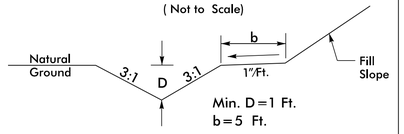
DETAIL E
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
B=4 Ft.
b=5 Ft.
Type of Liner=Class B Rip–Rap, Keyed–In

–L– STA. 38+50 TO STA. 39+15 RT (Min. D=2', d=2')
42 TON RIP RAP, 93 SY GEOTEXTILE, 611 CY DDE
–L– STA. 59+00* TO STA. 60+50 LT (Min. D=1', d=1')
410 TON RIP RAP, 910 SY GEOTEXTILE, 222 CY DDE
*DITCH CONTINUES FOR 30' BEYOND –L– 59+00, TIES W/EXIST. CHAN. OAL=967' (APPROX.)

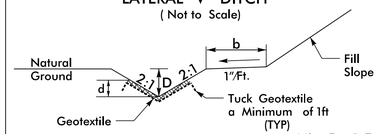
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1 Ft.
b=5 Ft.

–L– STA. 27+10 LT TO STA. 29+83 LT, 362 CY DDE
–Y1– STA. 11+05* LT TO STA. 11+21 LT, 94 CY DDE
–Y1– STA. 13+31 LT TO STA. 13+50 LT, 9 CY DDE
–Y1– STA. 13+88 LT TO STA. 14+00 LT, 7 CY DDE
*DITCH CONTINUES FOR 37.2' BEYOND –Y1– 11+05, CURVES TO TIE AT –L– 29+83.

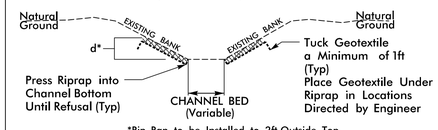
DETAIL G
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1 Ft.
d=1 Ft.
Type of Liner= Cl B Rip–Rap, Keyed–In b=5 Ft.

–L– STA. 38+20 TO STA. 38+50 RT
7 TON RIP RAP, 15 SY GEOTEXTILE, 261 CY DDE

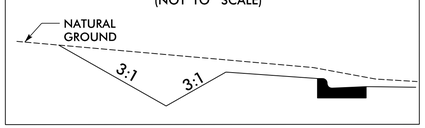
DETAIL H
PIPE OUTLET BANK STABILIZATION
(Not to Scale)



*Rip–Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams
Length=40 Ft.
Type of Liner= Class I Rip–Rap, Keyed–In

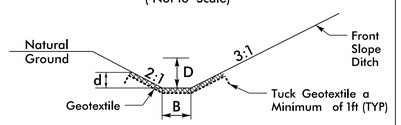
–L– STA. 29+83 RT (d=5')
85 TON RIP RAP, 130 SY GEOTEXTILE
–L– STA. 58+87 LT (d=3.5')
57 TON RIP RAP, 104 SY GEOTEXTILE

DETAIL I
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–L– STA. 31+50 TO STA. 33+50 LT
–Y1– STA. 11+25 TO STA. 11+75 LT
–Y1– STA. 12+68 TO STA. 13+25 LT

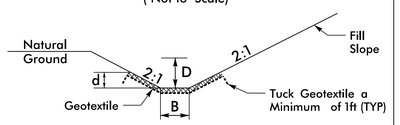
DETAIL J
SPECIAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
d=1 Ft.
Type of Liner= Class B Rip–Rap, Keyed–In B=2 Ft.

–MUP– STA. 11+00 TO STA. 11+85 LT
28 TON RIP RAP, 63 SY GEOTEXTILE

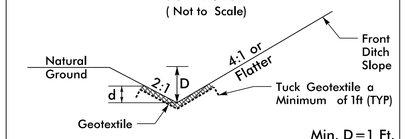
DETAIL K
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
d=1 Ft.
Type of Liner= Class I Rip–Rap, Keyed–In B=2 Ft.

–Y2– STA. 15+00* TO STA. 16+00 LT
*DITCH CONTINUES FOR 25' BEYOND –Y2– 15+00, CURVES TO TIE W/NG. OAL=125' (APPROX.)
42 TON RIP RAP, 90 SY GEOTEXTILE, 622 CY DDE

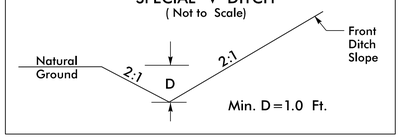
DETAIL L
CUT DITCH
(Not to Scale)



Min. D=1 Ft.
Type of Liner= Cl A Rip–Rap, Keyed–In d=1 Ft.

–DR3– STA. 10+61 TO 11+00 LT
8 TON RIP RAP, 19 SY GEOTEXTILE
–DR3– STA. 10+58 TO 11+00 RT
9 TON RIP RAP, 21 SY GEOTEXTILE

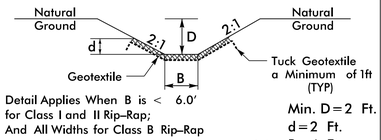
DETAIL M
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

–DR10– STA. 10+40 TO STA. 10+75 LT

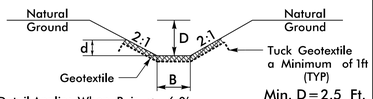
DETAIL N
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D=2 Ft.
d=2 Ft.
Type of Liner= Class I Rip–Rap, Keyed–In B=4 Ft.

–L– STA.39+90 RT, L=38', S=3.3%,
BEG. ELEV=567.4', END ELEV=566.2'
26 TON RIP RAP, 55 SY GEOTEXTILE, 32 CY DDE
–L– STA. 54+70 RT, L=16', S=3.1%,
BEG. ELEV=580.5', END ELEV=580.0'
11 TON RIP RAP, 23 SY GEOTEXTILE, 2 CY DDE
–Y3– STA. 12+75 RT, L=20', S=1.0%,
BEG. ELEV=567.8', END ELEV=567.8'
14 TON RIP RAP, 29 SY GEOTEXTILE, 2 CY DDE

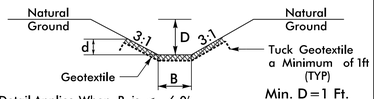
DETAIL O
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D=2.5 Ft.
d=2.5 Ft.
B=4 Ft.
Type of Liner= Class B Rip–Rap, Keyed–In

–L– STA. 29+78 LT, L=75', S=2.33%
BEG. ELEV=587.75', END ELEV=586.00'
57 TON RIP RAP, 127 SY GEOTEXTILE, 11 CY DDE

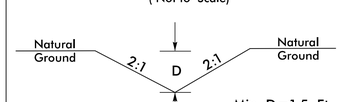
DETAIL P
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D=1 Ft.
d=1 Ft.
B=4 Ft.
Type of Liner= Class B Rip–Rap, Keyed–In

–L– STA. 70+00 LT, L=26', S=6.5%,
BEG. ELEV=630.0', END ELEV=628.3'
14 TON RIP RAP, 30 SY GEOTEXTILE, 13 CY DDE

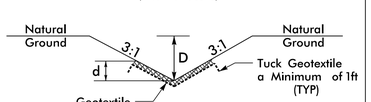
DETAIL Q
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.

–Y1– STA. 13+50 RT, L=93', S=4.32%
BEG. ELEV=599.25', END ELEV=595.25'
43 CY DDE
–DR11– STA. 10+25 LT, L=69', S=3.63%
BEG. ELEV=593.50', END ELEV=591.00'
37 CY DDE

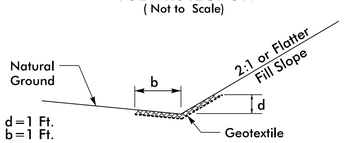
DETAIL R
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
Type of Liner= Cl B Rip–Rap, Keyed–In d=1.0 Ft.

–DR11– STA. 11+33 LT, L=31', S=6.41%
BEG. ELEV=588.12', END ELEV=586.12'
10 TON RIP RAP, 22 SY GEOTEXTILE, 27 CY DDE
–DR11– STA. 11+24 RT, L=35', S=9.20%
BEG. ELEV=590.23', END ELEV=586.97'
11 TON RIP RAP, 25 SY GEOTEXTILE, 45 CY DDE

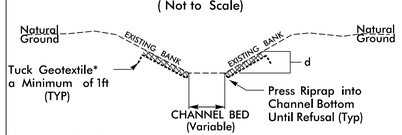
DETAIL S
TOE PROTECTION
(Not to Scale)



d=1 Ft.
b=1 Ft.
Type of Liner= Class B Rip–Rap

–L– STA. 65+50 TO STA. 68+00 RT
103 TON RIP RAP, 229 SY GEOTEXTILE
–L– STA. 60+50 TO STA. 66+50 LT
247 TON RIP RAP, 549 SY GEOTEXTILE
–Y2– STA. 11+10 TO STA. 12+61 RT
62 TON RIP RAP, 138 SY GEOTEXTILE
–Y2– STA. 13+00 TO STA. 16+50 RT
144 TON RIP RAP, 321 SY GEOTEXTILE

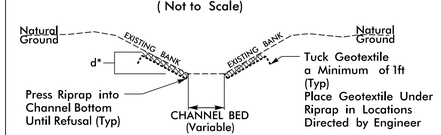
DETAIL T
BANK STABILIZATION ON BANKS ONLY
(Not to Scale)



Length= Varies
d= Varies
Est.= Class B Rip–Rap, Keyed–In
*Place Geotextile Under Riprap in Locations Directed by Engineer

–Y2– STA. 12+60 LT; 3 TON RIP RAP, 7 SY GEOTEXTILE
–Y2– STA. 12+95 LT; 15 TON RIP RAP, 33 SY GEOTEXTILE
–Y2– STA. 12+85 RT; 7 TON RIP RAP, 16 SY GEOTEXTILE

DETAIL U
PIPE OUTLET BANK STABILIZATION
(Not to Scale)

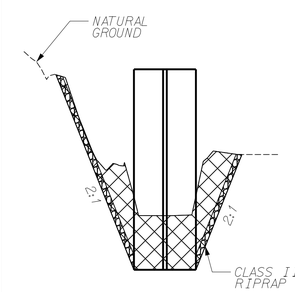


Length=25 Ft.
d=3 Ft.*
*Rip–Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams
Type of Liner= Class II Rip–Rap, Keyed–In

–Y3– STA. 12+75 LT
72 TON RIP RAP, 104 SY GEOTEXTILE

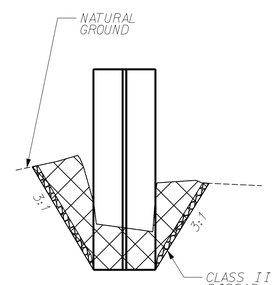
COMBINED QUANTITIES FOR DETAILS V AND W
PERMANENT CHANNEL EXCAVATION
TOTAL CHANNEL EXCAVATION = 83 CY
TOTAL CL II RIP RAP = 40 TONS
TOTAL GEOTEXTILE FAB. = 41 SY

DETAIL V



OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH=17'

DETAIL W



INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH=18'

4/7/2026
R:\Hydraulics\CADD\PSHS\B-6051_hyd_psh02D.dgn
jbilger

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024955 ENGINEER MARGARET M. SMELTZER

DocuSigned by: Margaret M. Smeltzer 4AC8B8A0680C4F3...

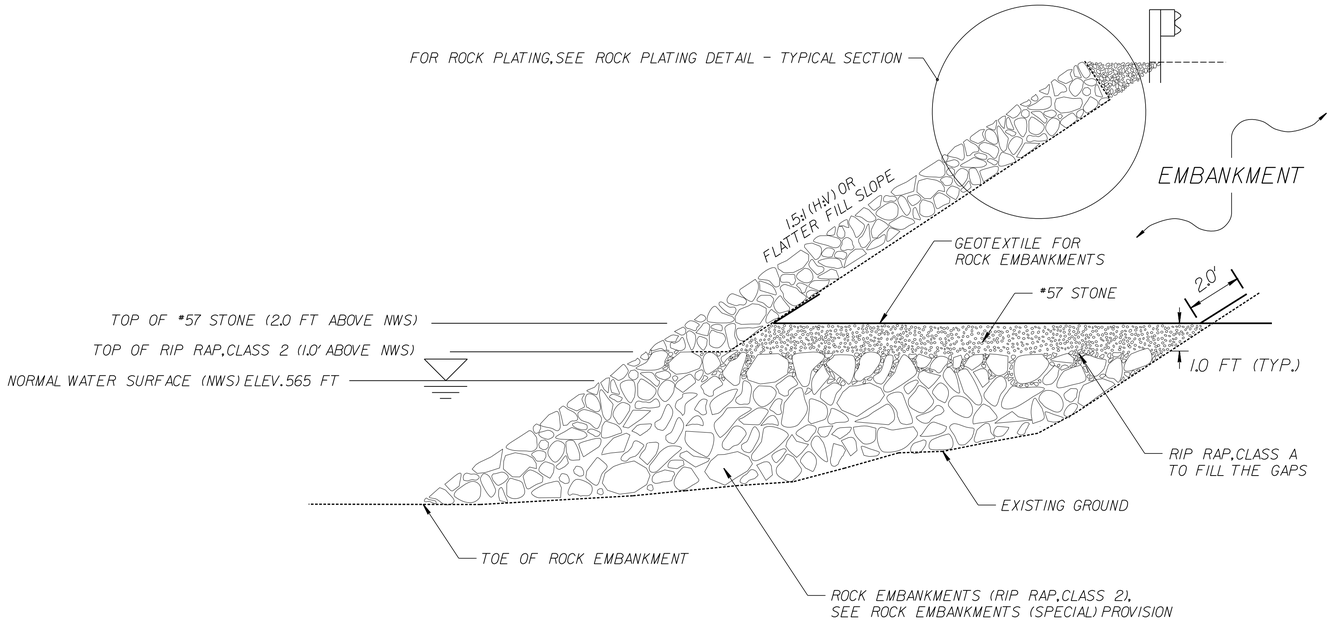
4/7/2026

SIGNATURE DATE

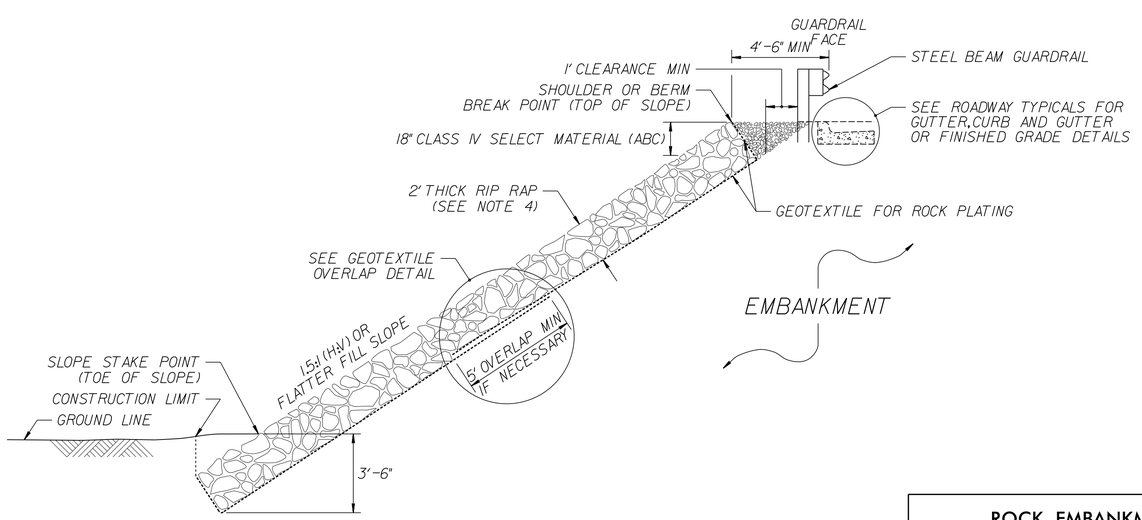
ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ROCK EMBANKMENT AND ROCK PLATING TYPICAL SECTION
(NOT TO SCALE)

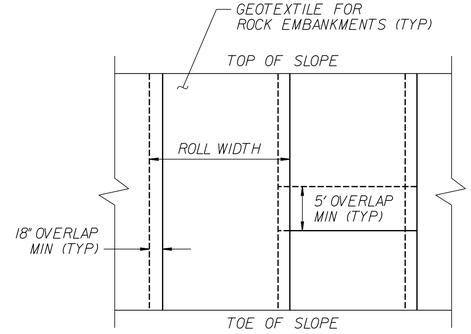


ROCK PLATING DETAIL – TYPICAL SECTION
(NOT TO SCALE)

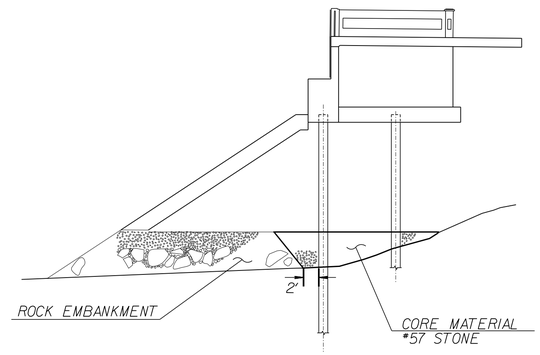
ESTIMATED QUANTITIES		
ROCK EMBANKMENTS	7,600	TON
#57 STONE	2,270	TON
RIP RAP, CLASS A	950	TON
GEOTEXTILE FOR ROCK EMBANKMENTS	3,750	SY
ROCK PLATING	2,560	SY

ROCK EMBANKMENT LOCATIONS			
ALIGNMENT	BEGIN	END	LOCATION
-L-	51+85 +/-	56+30 +/-	LEFT

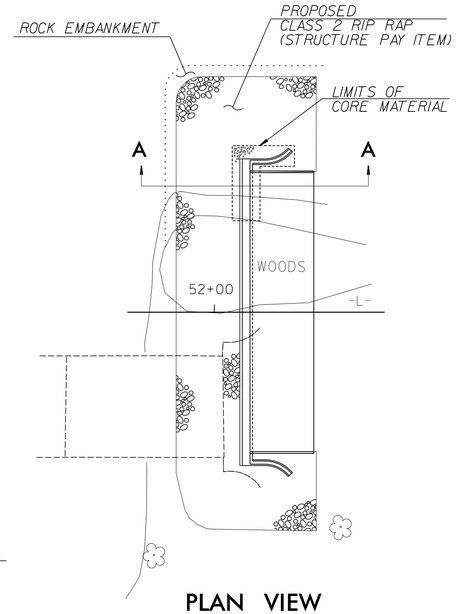
ROCK PLATING LOCATIONS			
ALIGNMENT	BEGIN	END	LOCATION
-L-	52+40 +/-	56+30 +/-	LEFT
-Y3-	10+95 +/-	13+20 +/-	LEFT



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)



SECTION A–A



PLAN VIEW

CORE MATERIAL – TYPICAL SECTION
(NOT TO SCALE)

NOTES

1. FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISION.
2. FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE RIP RAP, CLASS 2 FOR ROCK EMBANKMENTS.
4. USE RIP RAP, CLASS 2 FOR ROCK PLATING.
5. INSTALL ROCK EMBANKMENTS USING RIP RAP, CLASS 2 MATERIAL AS SHOWN ON THE TYPICAL SECTION OR 1.0 FT ABOVE THE NORMAL WATER SURFACE ELEVATION.
6. FILL VOIDS IN THE TOP OF ROCK EMBANKMENT WITH RIP RAP, CLASS A. PLACE *57 STONE 1.0 FT ABOVE RIP RAP AS SHOWN ON THE TYPICAL SECTION.
7. INSTALL GEOTEXTILE FOR ROCK EMBANKMENTS ON TOP OF *57 STONE.
8. INSTALL ROCK PLATING ABOVE ROCK EMBANKMENT FROM 1.0 FT ABOVE THE NORMAL WATER SURFACE ELEVATION TO THE SHOULDER HINGE POINT.
9. IN AREAS OF PILE INSTALLATION, CORE MATERIAL CONSISTING OF *57 STONE SHALL BE USED IN LIEU OF RIP RAP AS SHOWN IN THE CORE MATERIAL TYPICAL SECTION.

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ROCK EMBANKMENTS & ROCK PLATING DETAILS & NOTES

DATE: 02-08-23

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024955 ENGINEER MARGARET M. SWITZER

DocuSigned by: Margaret M. Switzer 4AC85A0680C4F3... 4/7/2026

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

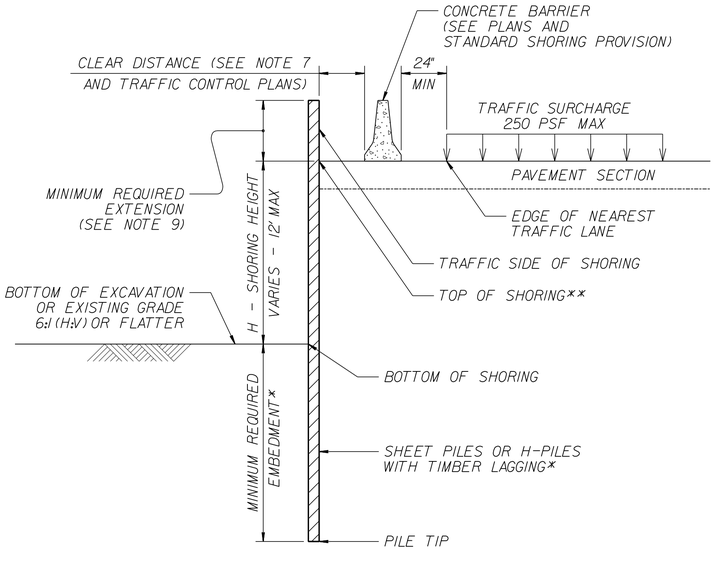
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 "--".

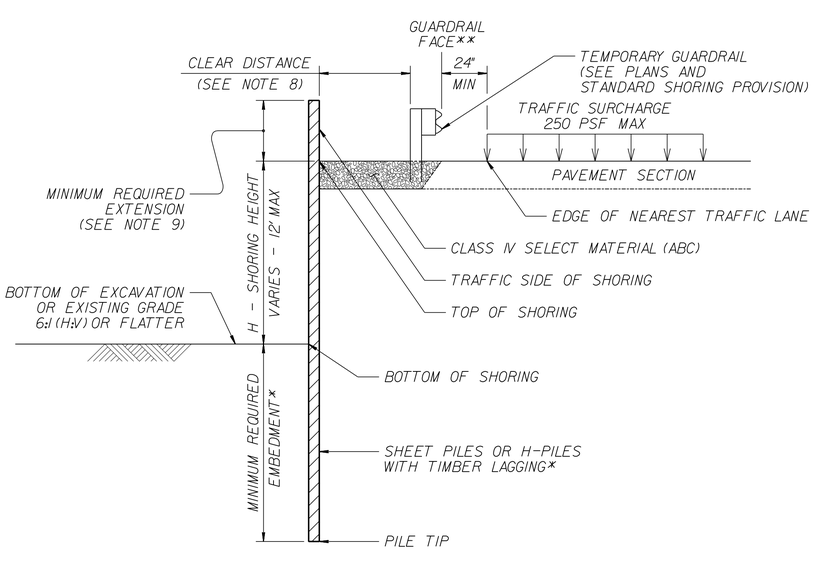
NOTES:

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.



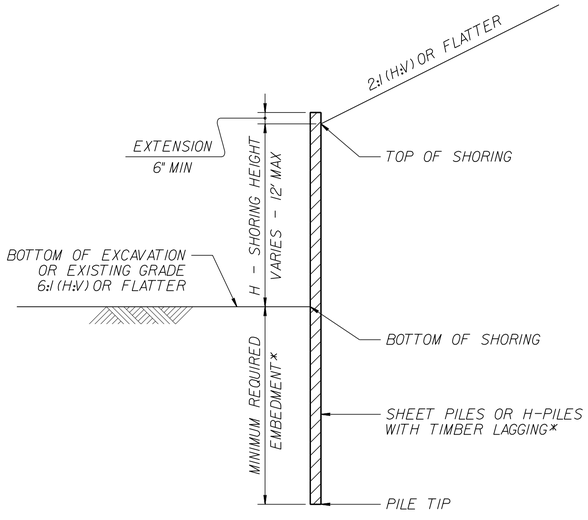
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

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STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024955 ENGINEER MARGARET M. SWITZER

DocuSigned by: Margaret M. Switzer 4AC685A0680C4F3...

4/7/2026

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ENGINEER

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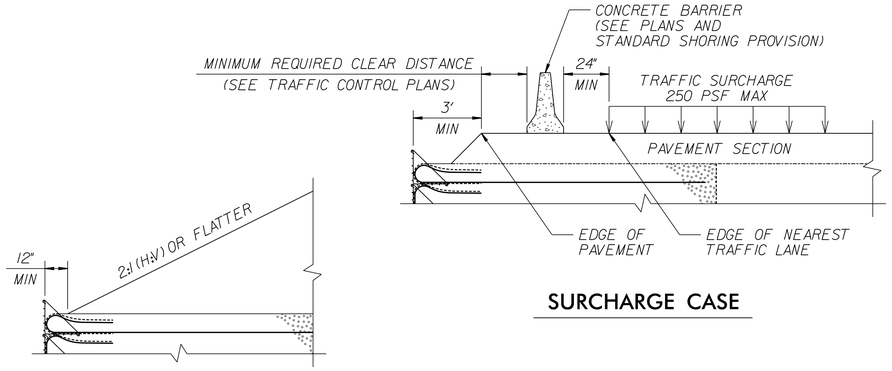
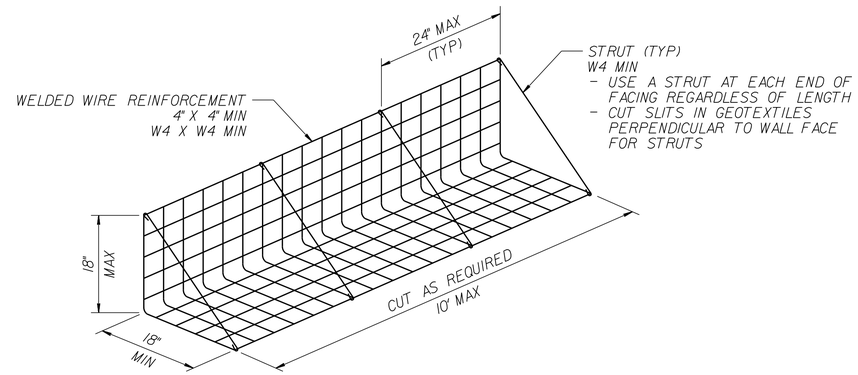
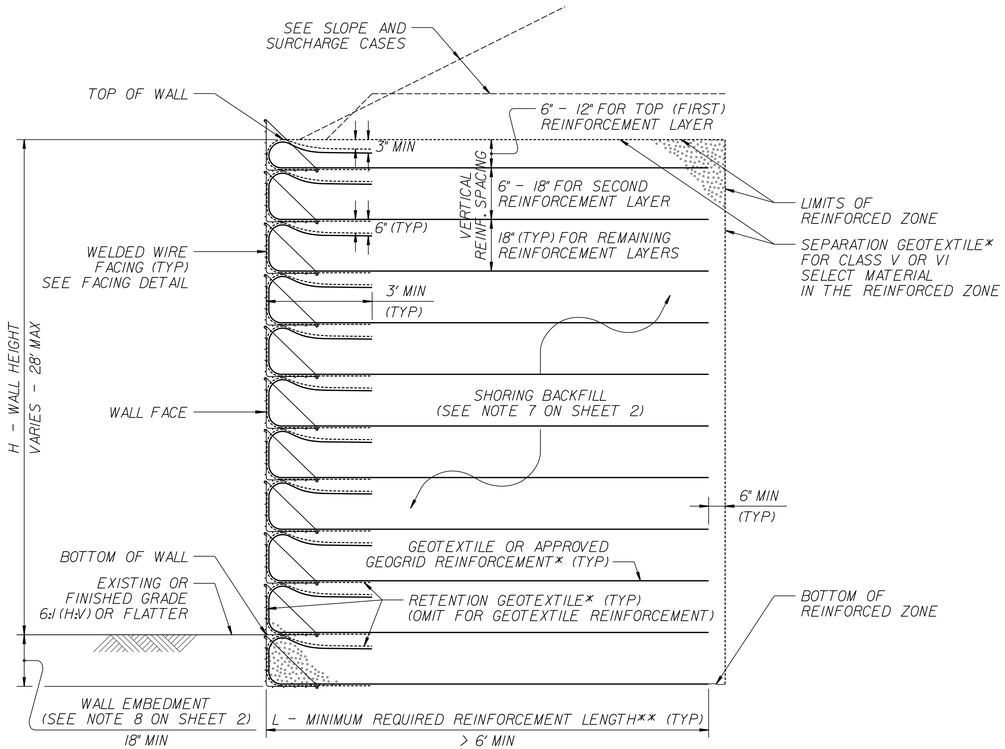


SURCHARGE CASE

SLOPE CASE

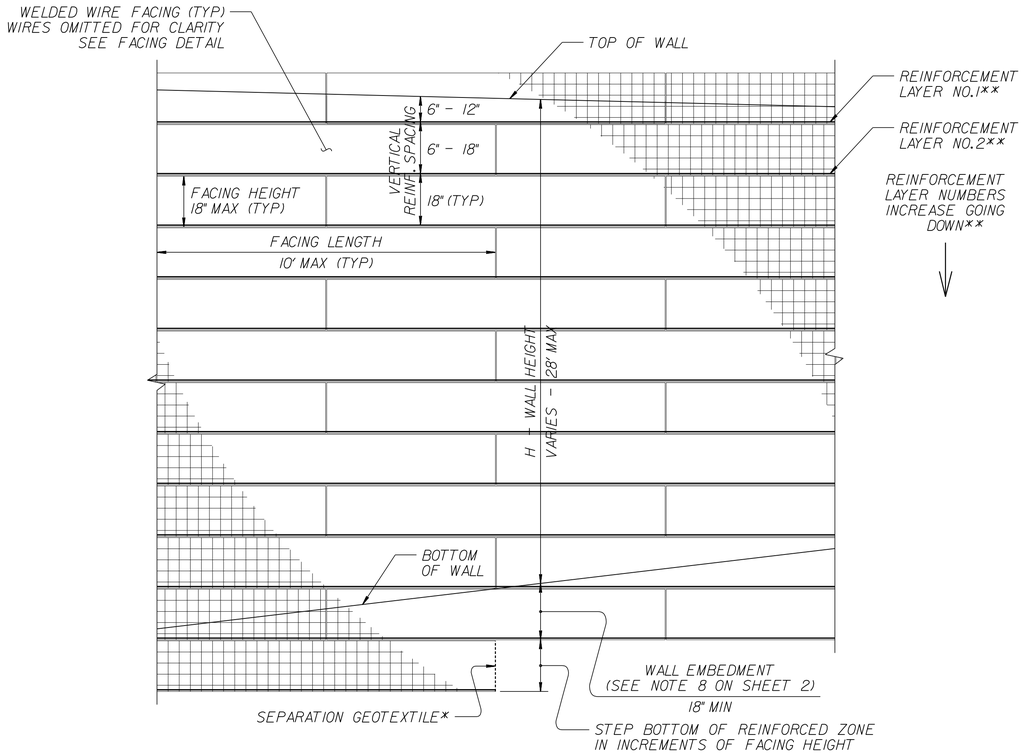


FACING DETAIL



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.

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GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024955 ENGINEER MARGARET M. SWITZER

DocuSigned by: Margaret M. Switzer 4AC685A068C4F3... 4/7/2026

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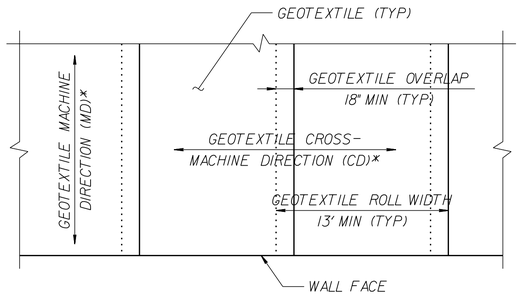
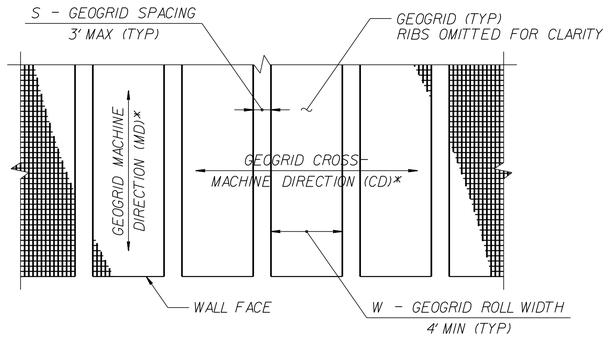


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

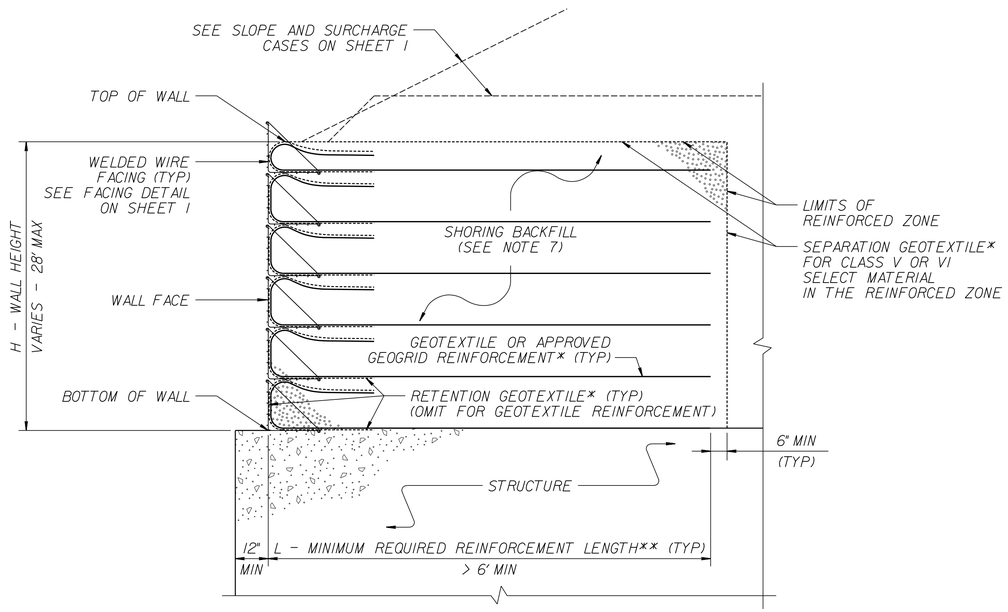


GEOGRID PLACEMENT

(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 CLASS VI SELECT MATERIAL 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.

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GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	2G-5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024955 ENGINEER MARGARET M. SWITZER

DocuSigned by: Margaret M. Switzer 4AC6B8A0680C4F3...

4/7/2026

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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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.

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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

5/9/06

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3B-1

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

B–6051 & U–6143 SUMMARY OF EARTHWORK

IN CUBIC YARDS

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	UNSUIT. UNCL. EXCA. C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
STAGE-1								
-L-	24+15.00	30+10.00	250			4,369	4,119	
-L- LT	33+00.00	40+70.00	5,834	1,150	1,190	2,582		5,592
-L- LT	52+15.00	66+00.00	29	6,770		82,435	82,406	6,770
-Y1-	10+54.10	12+00.00	1,837	724		7		2,554
-Y1-	12+72.00	15+70.00	193	153		222	29	153
-Y2-	11+00.00	17+70.00	739			13,994	13,255	
-Y3-	10+48.70	15+50.00	6	260		8,925	8,919	260
-DR5-	10+32.75	11+45.00				766	766	
-DR7-	10+53.19	11+15.00	237					237
-DR8-	10+52.47	11+18.13	273					273
-DR9-	10+50.98	12+19.34	727			2		725
SUBTOTAL			**11,315**	**9,057**	**1,190**	**113,302**	**109,494**	**16,564**
STAGE-2								
-L-	35+00.00	40+45.00				450	450	
-L-	52+40.00	56+60.00	2			1,364	1,362	
SUBTOTAL			**2**			**1,814**	**1,812**	
STAGE-3								
-L- RT	30+10.00	40+70.00	117			2,156	2,039	
-L- RT	52+15.00	69+50.00	582			4,699	4,117	
-Y2-	10+53.69	11+00.00	24			288	264	
-MUP-	10+00.00	12+50.00	350			523	173	
-DR2-	10+59.13	12+60.00	44			128	84	
-DR4-	10+47.72	12+30.00	10			54	44	
-DR6-	10+15.44	10+98.63	2			1		1
SUBTOTAL			**1,129**			**7,849**	**6,721**	**1**
STAGE-4								
-L-	30+10.00	33+00.00	419			163		256
-L- LT	66+00.00	69+50.00	43			672	629	
-Y3-	17+90.00	19+18.55	22			124	102	
-DR3-	10+30.55	12+00.00	442			83		359
-DR10-	10+12.23	10+82.70	81			1		80
-DR11-	10+10.05	10+35.00	13					13
SUBTOTAL			**1,020**			**1,043**	**731**	**708**
ICT-1								
-Y1-	12+00.00	12+72.00	591	223		2		812
-DR1-	10+12.21	11+90.00	659			3		656
SUBTOTAL			**1,250**	**223**		**5**		**1,467**
SHEET TOTALS			**14,716**	**9,280**	**1,190**	**124,013**	**118,758**	**18,740**
MATERIAL FOR SHOULDER CONSTRUCTION						**23**	**23**	
ADDITIONAL UNDERCUT				**1,400**				**1,400**
EARTH WASTE IN LIEU OF BORROW							**-9,460**	**-9,460**
PROJECT TOTAL			**14,716**	**10,680**	**1,190**	**124,044**	**109,321**	**10,680**
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT							**5,466**	
GRAND TOTAL			**14,716**		**1,190**		**114,787**	
SAY			**14,720**				**114,800**	

DRAINAGE DITCH EXCAVATION = 2,790 C.Y.
TOTAL SHALLOW UNDERCUT = 810 C.Y.

TOTAL UNCLASSIFIED EXCAVATION - ACCEPTABLE = 4,370 C.Y.
BUT NOT TO BE USED IN TOP 3' OF EMBANKMENT OR BACKFILL
-L- STA. 28+25 TO STA. 30+25 = 220 C.Y.
-Y1- STA. 10+50 TO STA. 12+75 = 2,890 C.Y.
-Y2- STA. 15+25 TO STA. 16+25 = 450 C.Y.
-MUP- STA. 10+25 TO STA. 12+25 = 380 C.Y.
-DR1- STA. 10+50 TO STA. 11+90 = 430 C.Y.

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

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT
NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING,BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

3/8/2026
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PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3B-2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

B–6051 & U–6143 GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH (FT)			WARRANT POINT		"N" DIST. FROM E.O.L. (FT)	TOTAL SHOULDER WIDTH	FLARE LENGTH (FT)		W							IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL (FT)	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	GREU TL-2	CAT-1	TES	AT-1	IA MASH TL-3	G	NG			
-L-	26+62.90	30+56.25	RT	400.00			29+25.00	30+25.00	2.50	N/A	50		1		1		1								
-L-	39+50.00	39+75.00	RT	25.00																1					
-L-	38+35.80	39+30.00	RT	93.75			38+50.00	39+00.00	2.50	N/A	50		1		1		1								
-L-	57+73.75	63+50.00	LT	593.75				57+50.00	2.50	N/A	50		1				1								
-L-	62+36.40	66+81.25	RT	437.50			65+00.00	66+50.00	2.50	N/A	50		1		1		1								
-L-	63+50.00	64+00.00	LT	50.00					2.50	N/A	50		1		1										
-Y2-	10+76.40	17+11.35	RT	631.25			11+75.00	16+75.00	2.50	N/A	25.00		1			1	1								
-Y2-	12+53.80	17+15.32	LT	456.25			16+25.00	12+00.00	2.50	N/A	25.00		1			1	1								
-Y3-	10+72.90	13+79.86	LT	275.00	75.00		13+00.00	11+00.00	2.50	N/A									2						
-Y3-	10+90.00	13+96.80	RT	306.25			11+75.00	13+50.00	2.50	N/A	25		1			1	1								
-Y3-	19+43.66	19+43.66	CL	25.00					2.50	N/A								2							
-DR11-	11+36.52			37.50														2							
-L-	38+67.61	40+81.74	RT																					214.81	
-L-	52+03.18	56+35.06	RT																					452.20	
-Y2-	11+14.02	16+71.77	RT																					558.59	
-Y2-	12+18.68	15+72.45	LT																					354.10	
TOTAL				3,331.25	75.00										4	3	7	4	2	1				1580	
	LESS ANCHOR DEDUCTIONS																								
	GREU TL-3	**4**	**@50'=**	**200.00**																					
	GREU TL-2	**3**	**@25'=**	**75.00**																					
	CAT-1	**7**	**@6.25'=**	**43.75**																					
	B-77	**0**	**@22.875' =**	**0.00**																					
	AT-1	**2**	**@6.25' =**		**12.50**																				
	IA MASH TL-3	**1**	**@25' =**	**25.00**																					
	TOTAL ANCHOR DEDUCTIONS (FT)			**343.75**																					
			SAY GUARDRAIL (FT) =	**2,987.50**	**62.50**										**4**	**3**	**7**	**4**	**2**	**1**				**1580**	
			SINGLE FACED CONCRETE BARRIER =	**0'**																					
			ADDITIONAL POSTS =	20																					

B–6051 & U–6143 TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH (FT)			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W							IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL (FT)	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TEMPORARY GREU TL-3	TEMPORARY THRIE-BEAM	CAT-1	TES	AT-1	IA MASH TL-3	G	NG			
-L-	40+83.00	40+83.00	MED													1									
-L-	52+03.00	52+03.00	MED													1									
-L-	63+50.00	66+00.00	LT	250.00											1										
-L-	65+50.00	68+00.00	LT	250.00											1										
TOTAL				500.00	0.00										2	2	0		0	0				0	
	LESS ANCHOR DEDUCTIONS																								
	GREU TL-3	**2**	**@50'=**	**100.00**																					
	GREU TL-2	**0**	**@25'=**	**0.00**																					
	CAT-1	**0**	**@6.25'=**	**0.00**																					
	B-77	**0**	**@22.875' =**	**0.00**																					
	AT-1	**0**	**@6.25' =**	**0.00**																					
	IA MASH TL-3	**0**	**@25' =**	**0.00**																					
	TOTAL ANCHOR DEDUCTIONS (FT)			**100.00**																					
			SAY TEMPORARY GUARDRAIL (FT) =	**400.00**	**0.00**										**2**	**2**	**0**		**0**	**0**				**0**	
			SINGLE FACED CONCRETE BARRIER =	**0'**																					
			ADDITIONAL POSTS =	5																					

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5/9/06

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3B-3
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

B–6051 & U–6143
2'–6" CURB & GUTTER SUMMARY

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS DRIVES	DEDUCTIONS OTHERS	NET LENGTH
-L-	24+68.41	25+26.00	LT	67			67
-L-	25+56.06	29+81.30	LT	422			422
-L-	31+41.26	33+67.30	LT	227			227
-L-	34+17.07	39+75.00	LT	959			959
-L-	57+59.19	69+50.00	LT	1,210			1,210
-L-	24+92.28	30+10.00	RT	525			525
-L-	30+10.00	31+29.38	RT	130			130
-L-	34+47.05	35+18.27	RT	108			108
-L-	35+60.75	37+53.16	RT	238			238
-L-	37+87.46	39+75.00	RT	220			220
-L-	54+75.00	59+80.42	RT	525			525
-L-	60+24.80	69+50.00	RT	940	16.00		924
-Y1-	10+43.00	12+13.37	LT	195			195
-Y1-	12+64.12	15+70.00	LT	299	20.00		279
-Y1-	10+73.48	12+31.36	RT	205			205
-Y1-	12+56.32	14+51.46	RT	237	25.00		212
-Y1-	14+91.88	15+70.00	RT	106			106
-Y2-	10+82.03	11+83.60	LT	282			282
-Y2-	12+15.60	17+21.88	LT	532			532
-Y2-	10+44.48	17+70.00	RT	746			746
-Y3-	10+68.46	13+83.64	LT	374			374
-Y3-	14+16.36	15+05.85	LT	145			145
-Y3-	10+73.14	15+49.97	RT	496			496
-DR1-	10+15.76	11+90.00	LT	183			183
-DR1-	10+14.00	11+90.00	RT	183			183
-DR7-	10+53.96	11+15.00	LT	68			68
-DR7-	10+56.44	11+15.00	RT	67			67
						TOTAL	9,628
						SAY	**9,640**

B–6051 & U–6143
ASPHALT PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	30+18	40+82	RT	15360.57		1706.73
-L-	52+00	52+50	CL	2465.24		273.92
-L-	56+60	70+85	LT	23227.49		2580.83
-L-	55+50	69+50	RT	31936.20		3548.47
-Y1-	10+77.78	14+00	RT	6060.60		673.40
-L-	31+85	31+85	LT	3452.13		383.57
-L-	52+40	54+40	LT	1401.82		155.76
-L-	38+67	40+37	CL	1296.97		144.11
-L	52+03	56+02	CL	2483.95		275.99
					TOTAL	9,742.77
					SAY	**9,750**

B–6051
ASPHALT PAVEMENT BREAKING SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	52+50	55+50	RT	14209.66		1578.85
-Y3-	10+00	13+50	LT/RT	9948.59		1105.40
					TOTAL	2,684.25
					SAY	**2,690**

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

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COMPUTED BY:	CJP	DATE:	6/7/2023
CHECKED BY:	EMR	DATE:	REV. 8/5/2025

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	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" & UNDER)

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE
SHEET 4								
- L- 24+04.74	-41	LT	EX0412	411		608.0	605.6	0.7%
- L- 24+75.00	-45	LT	411		608.9			
- L- 24+75.00	-45	LT	411	410		605.6	604.9	0.8%
- L- 25+20.00	-46	LT	410		607.9			
- L- 25+20.00	-46	LT	410	409		604.9	602.9	0.8%
- L- 25+87.50	-47	LT	409		605.9			
- L- 25+87.50	-47	LT	409	408		602.6	599.3	0.7%
- L- 26+87.50	-49	LT	408		602.6			
- L- 26+87.50	-49	LT	408	407		599.3	595.3	0.7%
- L- 28+00.00	-51	LT	407		598.5			
- L- 28+00.00	-51	LT	407	406		595.3	591.7	0.8%
- L- 29+00.00	-53	LT	406		594.9			
- L- 29+00.00	-53	LT	406	403		591.7	588.7	0.9%
- L- 30+20.77	-2	LT	405		592.0			
- L- 30+20.77	-2	LT	405	402		588.8	588.7	0.4%
- L- 26+87.50	9	RT	415		603.8			
- L- 26+87.50	9	RT	415	414		600.6	596.6	0.5%
- L- 28+00.00	-1	LT	414		599.8			
- L- 28+00.00	-1	LT	414	413		596.6	593.0	0.5%
- L- 29+00.00	-1	LT	413		596.2			
- L- 29+00.00	-1	LT	413	402		593.0	590.1	0.5%
- Y1- 10+85.00	-1	LT	421		590.2			
- Y1- 10+85.00	-1	LT	421	438		587.0	586.5	0.7%
- Y1- 10+95.00	39	RT	438		589.5			
- Y1- 10+95.00	39	RT	438	426		586.5	583.8	0.5%
- L- 31+60.00	-55	LT	426		586.8			
- L- 31+60.00	-55	LT	426	425		583.8	582.5	0.5%
- L- 32+25.00	-55	LT	425		585.5			
- L- 32+25.00	-55	LT	425	424		582.5	581.2	0.5%
- L- 33+25.00	-77	LT	423		584.0			
- L- 33+25.00	-77	LT	423	424		580.0	579.9	0.4%
- L- 33+25.00	-55	LT	424		584.2			
- L- 33+25.00	-55	LT	424	430		579.9	579.5	0.4%
- DR7- 10+77.00	-12	LT	463		586.3			
- DR7- 10+77.00	-12	LT	463	423		582.0	580.0	0.4%
- L- 34+25.00	-55	LT	430		583.7			
- L- 34+25.00	-55	LT	430	431		579.5	579.2	0.4%
- L- 35+00.00	-55	LT	431		583.5			
- L- 35+00.00	-55	LT	431	432		579.2	579.0	0.4%
- L- 36+50.00	-96	LT	445	469		588.7	585.9	0.5%
- L- 35+75.00	-54	LT	432		583.3			
- L- 35+75.00	-54	LT	432	439		579.0	578.8	0.5%
- L- 37+00.00	-58	LT	501	439		577.4	577.3	0.4%
- L- 36+50.00	-52	LT	439		583.1			
- L- 36+50.00	-52	LT	439	444		576.3	576.1	0.4%
- L- 33+25.00	12	RT	442		585.3			
- L- 33+25.00	12	RT	442	441		582.2	581.7	0.4%
- L- 34+25.00	10	RT	441		584.9			
- L- 34+25.00	10	RT	441	443		581.7	581.5	0.4%
3D-1 TOTALS								

LINE & STATION	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC	C.S. PIPE 15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 15"	18"	24"	30"	36"	42"	48"
SHEET 4																									
- L- 33+25.00 (423 to 424)																						20			
- DR7- 10+77.00 (463 to 423)																			52						
- L- 36+50.00 (445 to 469)																			8						
3D-1 TOTALS	0	0	0	0	0	0	0					0	0	0	0	0	0	0	60	0	0	20	0	0	0

LINE & STATION	R.C. PIPE CLASS IV 15"	18"	24"	30"	36"	42"	48"	PIPE AS NOTED					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 4																							
- L- 24+04.74	68																						
- L- 24+75.00															1			1			1		
- L- 24+75.00	44																						
- L- 25+20.00															1			1			1		
- L- 25+20.00	64																						
- L- 25+87.50															1			1			1		
- L- 25+87.50		100																					
- L- 26+87.50															1			1			1		
- L- 26+87.50		112																					
- L- 28+00.00															1			1			1		
- L- 28+00.00		100																					
- L- 29+00.00															1			1			1		
- L- 29+00.00		80																					
- L- 30+20.77															1							1	
- L- 30+20.77	36																						
- L- 26+87.50															1							1	
- L- 26+87.50	112																						
- L- 28+00.00															1							1	
- L- 28+00.00	100																						
- L- 29+00.00															1							1	
- L- 29+00.00	80																						
- Y1- 10+85.00															1							1	
- Y1- 10+85.00	40																						
- Y1- 10+95.00															1			1			1		
- Y1- 10+95.00	72																						
- L- 31+60.00															1			1			1		
- L- 31+60.00	64																						
- L- 32+25.00															1			1			1		
- L- 32+25.00	100																						
- L- 33+25.00															1								
- L- 33+25.00																							
- L- 33+25.00															1			1			1		
- L- 33+25.00				100																			
- DR7- 10+77.00															1			1		1			
- DR7- 10+77.00																							
- L- 34+25.00															1			1			1		
- L- 34+25.00				76																			
- L- 35+00.00															1			1			1		
- L- 35+00.00				76																			
- L- 36+50.00																							
- L- 35+75.00															1			1			1		
- L- 35+75.00				76																			
- L- 37+00.00			48																				
- L- 36+50.00															1	1.8		1			1		
- L- 36+50.00					48																		
- L- 33+25.00															1							1	
- L- 33+25.00	100																						
- L- 34+25.00															1							1	
- L- 34+25.00	48																						
3D-1 TOTALS	928	392	48	328	48	0	0	0	0	0	0	0	0	0	23	1.8	0	15	0	1	14	7	0

LINE & STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET STD. 850.11 (4" CONCRETE PAVED DITCH SY)	OTCB	FLOWABLE FILL (CY)	DRAINAGE PIPE ELBOWS NO. & SIZE	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																															
- L- 24+04.74																														64	
- L- 25+87.50 (409 to 408)																														228	
- L- 29+00.00 (406 to 403)																														402	
- L- 30+20.77 (405)									1					1																	
- L- 26+87.50 (415)									1					1																	
- L- 26+87.50 (415 to 414)																														82	
- L- 28+00.00 (414)									1					1																	
- L- 29+00.00 (413)									1					1																	
- Y1- 10+85.00 (421)									1					1																	
- L- 31+60.00 (426 to 425)																														276	
- L- 33+25.00 (423)			1					2																							
- L- 33+25.00 (424 to 430)																														90	
- L- 36+50.00 (445 to 469)																							11			2 @ 15					
- L- 33+25.00 (442)									1					1																	
- L- 34+25.00 (441)									1					1																	
3D-1 TOTALS	0	0	1	0	0	0	0	2	7	0		0	0	7	0	0	0	0	0	0	0		11	0	0	2 @ 15		0	0	1142	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3D-2

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | % MINIMUM REQUIRED SLOPE | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE | | | | | | | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE | | | | | | |

COMPUTED BY:	CJP	DATE:	6/7/2023
CHECKED BY:	EMR	DATE:	REV. 8/5/2025

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3D-3

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" & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | % MINIMUM REQUIRED SLOPE | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE | | | | | | | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) THICKNESS OR GAUGE | | | | | | | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE, PP, OR PVC | C.S. PIPE SIZE | | | | | | | C.S. PIPE THICKNESS OR GAUGE | | | | | | | R.C. PIPE CLASS III SIZE | | | | | | | R.C. PIPE CLASS IV SIZE | | | | | | | PIPE AS NOTED | | | | | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. 'B') LIN. FT. A (5.0' THRU 10.0') | QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. 'B') LIN. FT. B (10.0' AND ABOVE) | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | D.I. FRAME AND GRATE STD. 840.26 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S.) FR. WITH TWO FLAT GRATES STD. 840.29 | DRIVEWAY DROP INLET LIN. FT. STD. 840.30 | D.I. IN APPROACH SLAB STD. 840.13 | J.B. STD. 840.31 OR 840.32 | TBJB STD. 840.34 | T.B.D.I. STD. 840.35 | STEEL GRATE AND FRAME STD. 840.37 | M.H. FRAME AND COVER STD. 840.54 | ADJUST MH | ADJUST CB | ADJUST DI | CONV DI TO JBMH | CONV JB TO DI | CONV CB TO JB | BERM DRAINAGE OUTLET STD. 850.11 (4" CONCRETE PAVED DITCH SY) | OTCB | FLOWABLE FILL (CY) | DRAINAGE PIPE ELBOWS NO. & SIZE | C.S. PIPE ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3D-4

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" & UNDER)

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC	C.S. PIPE 15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
SHEET 5 (cont.)																										
- L- 40+40.00	57	RT	518		583.5																					
- L- 40+40.00	57	RT	518	514		580.3	580.0	0.6%																		
- L- 40+10.00	57	RT	514		583.1																					
- L- 40+10.00	57	RT	514	526		580.0	579.6	0.7%																		
- L- 39+80.00	58	RT	526		582.7																					
- L- 39+80.00	58	RT	526	507		579.3	579.2	0.5%																		
- L- 39+50.00	46	RT	507		582.9																					
- L- 39+50.00	46	RT	507	523		579.2	579.1	0.5%																		
- L- 39+05.74	47	RT	523		583.5																					
- L- 39+05.74	47	RT	523	506		579.1	579.1	0.5%																		
- L- 38+90.74	47	RT	506		582.9																					
- L- 38+90.74	47	RT	506	519		578.6	578.5	0.4%																		
- L- 38+75.74	48	RT	519		583.5																					
- L- 38+75.74	48	RT	519	509		578.5	578.4	0.4%																		
- L- 36+95.00	51	RT	446	509		575.8	575.4	0.4%																		
- L- 38+50.00	48	RT	509		583.5																					
- L- 38+50.00	48	RT	509	508		574.9	572.0	0.4%																		
- L- 39+15.00	101	RT	515			569.9	567.4	0.4%																		
SHEET 6																										
- L- 52+45.00	53	RT	604		588.5																					
- L- 52+45.00	53	RT	604	605		585.3	585.1	0.5%																		
- L- 52+63.75	53	RT	605		588.3																					
- L- 52+63.75	53	RT	605	603		585.1	585.0	0.5%																		
- L- 52+45.00	-53	LT	608		588.5																					
- L- 52+45.00	-53	LT	608	609		585.3	585.1	0.5%																		
- L- 52+63.75	-53	LT	609		588.3																					
- L- 52+63.75	-53	LT	609	639		585.1	585.0	0.5%																		
- L- 52+95.00	-44	LT	639		589.1																					
- L- 52+95.00	-44	LT	639	603		585.0	584.8	0.5%																		
- L- 52+95.00	44	RT	603		588.2																					
- L- 52+95.00	44	RT	603	637		584.5	583.7	0.6%																		
- L- 53+95.00	46	RT	637		587.1																					
- L- 53+95.00	46	RT	637	601		583.7	583.1	0.6%																		
- L- 53+95.00	-4	LT	615		588.1																					
- L- 53+95.00	-4	LT	615	616		585.0	584.7	0.8%																		
- L- 55+20.00	-6	LT	638		588.0																					
- L- 55+20.00	-6	LT	638	617		584.8	584.7	0.4%																		
- L- 54+95.00	-6	LT	617		587.9																					
- L- 54+95.00	-6	LT	617	616		584.7	584.6	0.5%																		
- L- 54+70.00	-5	LT	616		587.8																					
- L- 54+70.00	-5	LT	616	601		584.6	583.3	0.5%																		
3D-4 TOTALS									0	0	0	0	0	0	0					0	0	0	0	0	0	0

LINE & STATION	R.C. PIPE CLASS III 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 15"	18"	24"	30"	36"	42"	48"	PIPE AS NOTED					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
SHEET 5 (cont.)																					
- L- 40+40.00																					
- L- 40+40.00	28																				
- L- 40+10.00																					
- L- 40+10.00		28																			
- L- 39+80.00																					
- L- 39+80.00									32												
- L- 39+50.00																					
- L- 39+50.00									44												
- L- 39+05.74																					
- L- 39+05.74									16												
- L- 38+90.74																					
- L- 38+90.74										16											
- L- 38+75.74																					
- L- 38+75.74										24											
- L- 36+95.00												152									
- L- 38+50.00																					
- L- 38+50.00						52															
- L- 39+15.00						76														4.5	
SHEET 6																					
- L- 52+45.00																					
- L- 52+45.00	20																				
- L- 52+63.75																					
- L- 52+63.75								32													
- L- 52+45.00																					
- L- 52+45.00	20																				
- L- 52+63.75																					
- L- 52+63.75								32													
- L- 52+95.00																					
- L- 52+95.00								88													
- L- 52+95.00																					
- L- 52+95.00									100												
- L- 53+95.00																					
- L- 53+95.00									72												
- L- 53+95.00																					
- L- 53+95.00								72													
- L- 55+20.00																					
- L- 55+20.00								24													
- L- 54+95.00																					
- L- 54+95.00								24													
- L- 54+70.00																					
- L- 54+70.00								52													
3D-4 TOTALS	68	28	0	0	0	128	0	324	264	40	0	152	0	0	0	0	0	0	0	4.5	0

LINE & STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 5 (cont.)									
- L- 40+40.00	1								
- L- 40+40.00									
- L- 40+10.00	1								
- L- 40+10.00									
- L- 39+80.00	1								
- L- 39+80.00									
- L- 39+50.00	1			1			1		
- L- 39+50.00									
- L- 39+05.74	1			1			1		
- L- 39+05.74									
- L- 38+90.74	1			1	1				
- L- 38+90.74									
- L- 38+75.74	1			1		1			
- L- 38+75.74									
- L- 36+95.00									
- L- 38+50.00	1	3.6		1		1			
- L- 38+50.00									
- L- 39+15.00									
SHEET 6									
- L- 52+45.00	1								
- L- 52+45.00									
- L- 52+63.75	1								
- L- 52+63.75									
- L- 52+45.00	1								
- L- 52+45.00									
- L- 52+63.75	1								
- L- 52+63.75									
- L- 52+95.00	1								
- L- 52+95.00									
- L- 52+95.00	1								
- L- 52+95.00									
- L- 53+95.00	1								
- L- 53+95.00									
- L- 53+95.00	1							1	
- L- 53+95.00									
- L- 55+20.00	1							1	
- L- 55+20.00									
- L- 54+95.00	1							1	
- L- 54+95.00									
- L- 54+70.00	1							1	
- L- 54+70.00									
3D-4 TOTALS	19	3.6	0.0	5	1	2	2	4	0

LINE & STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET STD. 850.11 (4" CONCRETE PAVED DITCH SY)	OTCB	FLOWABLE FILL (CY)
SHEET 5 (cont.)																									
- L- 40+40.00	1	1																							
- L- 40+40.00																									
- L- 40+10.00	1	1																							
- L- 40+10.00																									
- L- 39+80.00	1	1																							
- L- 39+80.00																									
- L- 39+50.00																									
- L- 39+50.00																									
- L- 39+05.74																									
- L- 39+05.74																									
- L- 38+90.74																									
- L- 38+90.74																									
- L- 38+75.74																									
- L- 38+75.74																									
- L- 36+95.00																									
- L- 38+50.00																									
- L- 38+50.00																									
- L- 39+15.00																									
SHEET 6																									
- L- 52+45.00	1	1																							
- L- 52+45.00																									
- L- 52+63.75	1	1																							
- L- 52+63.75																									
- L- 52+45.00	1	1																							
- L- 52+45.00																									
- L- 52+63.75	1	1																							
- L- 52+63.75																									
- L- 52+95.00									1					1											
- L- 52+95.00																									
- L- 52+95.00									1					1											
- L- 52+95.00																									
- L- 53+95.00									1					1											
- L- 53+95.00																									
- L- 53+95.00									1					1											
- L- 53+95.00																									
- L- 55+20.00									1					1											
- L- 55+20.00																									
- L- 54+95.00									1					1											
- L- 54+95.00																									
- L- 54+70.00									1					1											
- L- 54+70.00																									
3D-4 TOTALS	7	7	0	0	0	0	0	0	7	0		0	0	7	0	0	0	0	0	0	0		0	0	0

LINE & STATION	DRAINAGE PIPE ELBOWS NO. & SIZE	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
3D-4 TOTALS			0	0	0	

ABBREVIATIONS

- C.B. — CATCH BASIN
- N.D.I. — NARROW DROP INLET
- D.I. — DROP INLET
- G.D.I. — GRATED DROP INLET
- G.D.I.(N.S.) — (NARROW SLOT)
- J.B. — JUNCTION BOX
- M.H. — MANHOLE
- T.B.D.I. — TRAFFIC BEARING DROP INLET
- T.B.J.B. — TRAFFIC BEARING JUNCTION BOX

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	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 48" & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC	C.S. PIPE 15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
SHEET 6																										
- L- 61+50.00	5	RT	632		600.9																					
- L- 61+50.00	5	RT	632	619		597.5	595.2	0.5%																		
- L- 60+44.00	7	RT	619		598.6																					
- L- 60+44.00	7	RT	619	618		595.2	589.2	0.5%																		
- L- 57+75.63	-9	LT	618		592.3																					
- L- 57+75.63	-9	LT	618	631		589.2	586.7	0.5%																		
- L- 56+75.00	8	RT	631		589.9																					
- L- 56+75.00	8	RT	631	635		586.7	584.9	0.5%																		
- L- 60+75.00	56	RT	607		597.5																					
- L- 60+75.00	56	RT	607	611		594.2	588.6	0.4%																		
- L- 58+44.96	61	RT	611		592.0																					
- L- 58+44.96	61	RT	611	635		588.6	584.9	0.5%																		
- L- 56+75.00	49	RT	635		587.9																					
- L- 56+75.00	49	RT	635	636		584.6	583.4	0.6%																		
- L- 56+00.00	48	RT	636		586.7																					
- L- 56+00.00	48	RT	636	612		583.4	582.6	0.6%																		
- L- 55+20.00	46	RT	612		586.2																					
- L- 55+20.00	46	RT	612	602		582.1	582.0	0.4%																		
- L- 54+95.00	46	RT	602		586.1																					
- L- 54+95.00	46	RT	602	601		582.0	581.9	0.4%																		
- L- 54+70.00	47	RT	601		586.5																					
- L- 54+70.00	47	RT	601	613		581.4	580.5	0.6%																		
- Y3- 11+61.50	-17	LT	625		585.9																					
- Y3- 11+61.50	-17	LT	625	627		582.5	582.2	0.5%																		
- Y3- 11+64.47	19	RT	627		585.6																					
- Y3- 11+64.47	19	RT	627	626		582.2	575.6	0.4%																		
- Y3- 15+80.42	25	RT	630	633		579.3	575.3	0.4%																		
- Y3- 14+82.00	14	RT	633		578.6																					
- Y3- 14+82.00	14	RT	633	624		575.3	574.3	0.5%																		
- Y3- 14+05.77	14	RT	624		577.7																					
- Y3- 14+05.77	14	RT	624	626		574.3	574.0	0.5%																		
- L- 62+35.00	4	RT	620		602.9																					
- L- 62+35.00	4	RT	620	606		599.6	598.0	0.6%																		
- L- 62+35.00	49	RT	606		601.3																					
- L- 62+35.00	49	RT	606	621		595.5	576.4	3.3%															72					
- DR2- 11+00.00	25	RT	610		594.5																					
- DR2- 11+00.00	25	RT	610	614		591.2	591.0	0.4%																		
3D-5 TOTALS									0	0	0	0	0	0	0					0	72	0	0	0	0	0

LINE & STATION	R.C. PIPE CLASS III 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 15"	18"	24"	30"	36"	42"	48"	PIPE AS NOTED					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
SHEET 6																					
- L- 61+50.00																					
- L- 61+50.00								104													
- L- 60+44.00																					
- L- 60+44.00								268													
- L- 57+75.63																					
- L- 57+75.63								100													
- L- 56+75.00																					
- L- 56+75.00								40													
- L- 60+75.00																					
- L- 60+75.00								224													
- L- 58+44.96																					
- L- 58+44.96								164													
- L- 56+75.00																					
- L- 56+75.00									72												
- L- 56+00.00																					
- L- 56+00.00									76												
- L- 55+20.00																					
- L- 55+20.00										24											
- L- 54+95.00																					
- L- 54+95.00										24											
- L- 54+70.00																					
- L- 54+70.00				44																	
- Y3- 11+61.50																					
- Y3- 11+61.50								36													
- Y3- 11+64.47																					
- Y3- 11+64.47								108													
- Y3- 15+80.42								88													
- Y3- 14+82.00																					
- Y3- 14+82.00								68													
- Y3- 14+05.77																					
- Y3- 14+05.77								120													
- L- 62+35.00																					
- L- 62+35.00								44													
- L- 62+35.00																					
- L- 62+35.00																					
- DR2- 11+00.00																					
- DR2- 11+00.00	36																				
3D-5 TOTALS	36	0	0	44	0	0	0	1364	148	48	0	0	0	0	0	0	0	0	0	0	0

LINE & STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 6									
- L- 61+50.00	1							1	
- L- 61+50.00									
- L- 60+44.00	1							1	
- L- 60+44.00									
- L- 57+75.63	1							1	
- L- 57+75.63									
- L- 56+75.00	1							1	
- L- 56+75.00									
- L- 60+75.00	1			1			1		
- L- 60+75.00									
- L- 58+44.96	1			1			1		
- L- 58+44.96									
- L- 56+75.00	1			1			1		
- L- 56+75.00									
- L- 56+00.00	1			1			1		
- L- 56+00.00									
- L- 55+20.00	1			1			1		
- L- 55+20.00									
- L- 54+95.00	1			1	1				
- L- 54+95.00									
- L- 54+70.00	1	0.1							
- L- 54+70.00									
- Y3- 11+61.50	1			1			1		
- Y3- 11+61.50									
- Y3- 11+64.47	1			1		1			
- Y3- 11+64.47									
- Y3- 15+80.42									
- Y3- 14+82.00	1			1			1		
- Y3- 14+82.00									
- Y3- 14+05.77	1			1	1				
- Y3- 14+05.77									
- L- 62+35.00	1							1	
- L- 62+35.00									
- L- 62+35.00	1	0.8		1			1		
- L- 62+35.00									
- DR2- 11+00.00	1			1		1			
- DR2- 11+00.00									
3D-5 TOTALS	18	0.9	0	12	2	2	8	5	0

LINE & STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET STD. 850.11 (4" CONCRETE PAVED DITCH SY)	OTCB	FLOWABLE FILL (CY)	DRAINAGE PIPE ELBOWS NO. & SIZE	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 6																															
- L- 61+50.00									1					1																	
- L- 61+50.00																															
- L- 60+44.00									1					1																	
- L- 60+44.00																															
- L- 57+75.63									1					1																	
- L- 57+75.63																														46	
- L- 56+75.00									1					1																	
- L- 56+75.00																															
- L- 60+75.00																															
- L- 60+75.00																															
- L- 58+44.96																															
- L- 58+44.96																															
- L- 56+75.00																															
- L- 56+75.00																															
- L- 56+00.00																															
- L- 56+00.00																															
- L- 55+20.00																															
- L- 55+20.00																															
- L- 54+95.00																															
- L- 54+95.00																															
- L- 54+70.00									1					1																	
- L- 54+70.00																															
- Y3- 11+61.50																															
- Y3- 11+61.50																															
- Y3- 11+64.47																															
- Y3- 11+64.47																															
- Y3- 15+80.42																															
- Y3- 14+82.00																															
- Y3- 14+82.00																															
- Y3- 14+05.77																															
- Y3- 14+05.77																															
- L- 62+35.00									1					1																	
- L- 62+35.00																															
- L- 62+35.00																															
- L- 62+35.00																											2 @ 18			41	
- DR2- 11+00.00																															
- DR2- 11+00.00																															
3D-5 TOTALS	0	0	0	0	0	0	0	0	6	0		0	0	6	0	0	0	0	0	0	0		0	0	0		2 @ 18	0	0	87	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

3/4/2026
R:\Roadway\Proj\B-6051_rdy_psh03d.dgn
cmull

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COMPUTED BY: CJP DATE: 6/7/2023
CHECKED BY: EMR DATE: REV. 8/5/2025

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" & UNDER)

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC
SHEET 7																			
- L- 66+75.00	47	RT	701		616.5														
- L- 66+75.00	47	RT	701	702		613.2	601.7	0.6%											
- L- 63+75.00	49	RT	702		605.1														
- L- 63+75.00	49	RT	702	606		601.7	598.0	0.8%											
- L- 65+00.00	0	LT	703		611.4														
- L- 65+00.00	0	LT	703	620		608.0	599.6	0.5%											
-L- 69+75.00	67	LT	704	705		628.3	613.8					328							
-L- 66+50.00	62	LT	705		617.3														
-L- 66+50.00	62	LT	705	708		612.1	589.7					312							
-L- 63+50.00	100	LT	708		597.7														
-L- 63+50.00	100	LT	708	706		589.7	588.4					16							
-L- 63+50.00	118	LT	706		593.7														
-L- 63+50.00	118	LT	706	707		588.4	574.1					316							
-DR3- 10+59.10	0	CL	709							64									
-DR3- 11+25.00	14	LT	710						36										
SHEET 8																			
- Y1- 16+00.00	-16	LT	801		611.5														
- Y1- 16+00.00	-16	LT	801	802		608.8	604.7	0.4%											
- Y1- 14+71.67	-14	LT	802		607.7														
- Y1- 14+71.67	-14	LT	802	433		604.7	603.5	0.5%											
- Y1- 14+95.00	48	RT	803		608.0														
- Y1- 14+95.00	48	RT	803	804		605.8	604.8	0.5%											
- Y1- 14+72.22	48	RT	804		607.0														
- Y1- 14+72.22	48	RT	804	805		604.8	603.8	0.5%											
- Y1- 14+50.00	48	RT	805		606.0														
- Y1- 14+50.00	48	RT	805	806		603.8	601.3	0.5%											
- Y1- 14+05.61	33	RT	806		603.5														
SHEET 9																			
- Y2- 17+62.50	-27	LT	903		590.0														
- Y2- 17+62.50	-27	LT	903	902		588.8	586.2	0.5%											
- Y2- 16+75.00	-39	LT	902		586.5														
- Y2- 16+75.00	-39	LT	902	901		586.2	582.5	0.5%											
- Y2- 16+00.00	19	RT	908		586.8														
- Y2- 16+00.00	19	RT	908	909		583.8	572.8	1.8%	48							X			
3D-6 TOTALS									84	64	0	972	0	0	0				
PROJECT TOTALS									304	64	0	972	0	0	0				

LINE & STATION	C.S. PIPE 15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 15"	18"	24"	30"	36"	42"	48"
SHEET 7																					
- L- 66+75.00																					
- L- 66+75.00															292						
- L- 63+75.00																					
- L- 63+75.00															136						
- L- 65+00.00																					
- L- 65+00.00															264						
-L- 69+75.00																					
-L- 66+50.00																					
-L- 66+50.00																					
-L- 63+50.00																					
-L- 63+50.00																					
-L- 63+50.00																					
-L- 63+50.00																					
-DR3- 10+59.10																					
-DR3- 11+25.00																					
SHEET 8																					
- Y1- 16+00.00																					
- Y1- 16+00.00															128						
- Y1- 14+71.67																					
- Y1- 14+71.67															92						
- Y1- 14+95.00																					
- Y1- 14+95.00															20						
- Y1- 14+72.22																					
- Y1- 14+72.22															24						
- Y1- 14+50.00																					
- Y1- 14+50.00															48						
- Y1- 14+05.61																					
SHEET 9																					
- Y2- 17+62.50																					
- Y2- 17+62.50								88													
- Y2- 16+75.00																					
- Y2- 16+75.00								76													
- Y2- 16+00.00																					
- Y2- 16+00.00																					
3D-6 TOTALS	0	0	0	0	0	0	0	164	0	0	0	0	0	0	1004	0	0	0	0	0	0
PROJECT TOTALS	0	72	0	0	0	0	0	664	56	0	64	0	128	0	5064	936	304	328	296	0	0

LINE & STATION	PIPE AS NOTED 24" R.C.P. CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 7																
- L- 66+75.00								1			1			1		
- L- 66+75.00																
- L- 63+75.00								1			1			1		
- L- 63+75.00																
- L- 65+00.00								1							1	
- L- 65+00.00																
-L- 69+75.00																
-L- 66+50.00								1	0.3							
-L- 66+50.00																
-L- 63+50.00								1	2.0							
-L- 63+50.00																
-L- 63+50.00								1	0.3							
-L- 63+50.00																
-DR3- 10+59.10																
-DR3- 11+25.00																
SHEET 8																
- Y1- 16+00.00								1								
- Y1- 16+00.00																
- Y1- 14+71.67								1			1		1			
- Y1- 14+71.67																
- Y1- 14+95.00								1								
- Y1- 14+95.00																
- Y1- 14+72.22								1								
- Y1- 14+72.22																
- Y1- 14+50.00								1								
- Y1- 14+50.00																
- Y1- 14+05.61								1								
SHEET 9																
- Y2- 17+62.50								1								
- Y2- 17+62.50																
- Y2- 16+75.00								1								
- Y2- 16+75.00																
- Y2- 16+00.00								1			1			1		
- Y2- 16+00.00																
3D-6 TOTALS	0	0	0	0	0	0	0	15	2.5	0	4	0	1	3	1	0
PROJECT TOTALS	0	0	0	0	0	4.5	0	120	22.4	0.0	66	6	24	36	25	0

LINE & STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET STD. 850.11 (4" CONCRETE PAVED DITCH SY)	OTCB	FLOWABLE FILL (CY)
SHEET 7																									
- L- 66+75.00																									
- L- 66+75.00																									
- L- 63+75.00																									
- L- 63+75.00																									
- L- 65+00.00									1					1											
- L- 65+00.00																									
-L- 69+75.00																									
-L- 66+50.00	1	1																							
-L- 66+50.00																									
-L- 63+50.00												1				1									
-L- 63+50.00																									
-L- 63+50.00	1	1																							
-L- 63+50.00																									
-DR3- 10+59.10																									
-DR3- 11+25.00																									
SHEET 8																									
- Y1- 16+00.00				1				1																	
- Y1- 16+00.00																									
- Y1- 14+71.67																									
- Y1- 14+71.67																									
- Y1- 14+95.00	1	1																							
- Y1- 14+95.00																									
- Y1- 14+72.22	1	1																							
- Y1- 14+72.22																									
- Y1- 14+50.00	1	1																							
- Y1- 14+50.00																									
- Y1- 14+05.61	1	1																							
SHEET 9																									
- Y2- 17+62.50				1				1																	
- Y2- 17+62.50																									
- Y2- 16+75.00				1				1																	
- Y2- 16+75.00																									
- Y2- 16+00.00																									
- Y2- 16+00.00																									
3D-6 TOTALS	6	6	0	3	0	0	0	3	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
PROJECT TOTALS	18	18	1	4	0	0	0	6	29	0	0	2	0	29	0	2	0	0	0	0	0	0	11	0	0

LINE & STATION	DRAINAGE PIPE ELBOWS NO. & SIZE	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 7						
- L- 66+75.00						
- L- 66+75.00					418	
- L- 63+75.00						
- L- 63+75.00						
- L- 65+00.00						
- L- 65+00.00					97	
-L- 69+75.00						
-L- 66+50.00						
-L- 66+50.00						
-L- 63+50.00						
-L- 63+50.00						
-L- 63+50.00						
-L- 63+50.00						
-DR3- 10+59.10						
-DR3- 11+25.00						
SHEET 8						
- Y1- 16+00.00						
- Y1- 16+00.00					47	
- Y1- 14+71.67						
- Y1- 14+71.67						
- Y1- 14+95.00						
- Y1- 14+95.00						
- Y1- 14+72.22						
- Y1- 14+72.22						
- Y1- 14+50.00						
- Y1- 14+50.00						
- Y1- 14+05.61						
SHEET 9						
- Y2- 17+62.50						
- Y2- 17+62.50						
- Y2- 16+75.00						
- Y2- 16+75.00					29	
- Y2- 16+00.00						
- Y2- 16+00.00	2 @ 15					
3D-6 TOTALS	2 @ 15		0	0	591	
PROJECT TOTALS	12 @ 15	2 @ 18	0	0	2312	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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COMPUTED BY:	CJP	DATE:	6/7/2023
CHECKED BY:	EMR	DATE:	REV. 8/5/2025

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	3D-7

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" & OVER)

SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 54"	60"	66"	72"	78"	84"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC
SHEET 4																		
- L- 29+82.50	-85	LT	404	403		585.0	584.9											
- L- 29+82.50	-55	LT	403		592.0													
- L- 29+82.50	-55	LT	403	402		584.9	584.7											
- L- 29+82.50	-2	LT	402		593.3													
- L- 29+82.50	-2	LT	402	465		581.3	572.9											
- L- 29+82.50	102	RT	465		580.3													
- L- 29+82.50	102	RT	465	401		568.5	568.1											
SHEET 6																		
- Y3- 12+75.00	57	RT	628	626		566.8	566.1											
- Y3- 12+75.00	14	RT	626		580.0													
- Y3- 12+75.00	14	RT	626	629		566.0	565.0											
- L- 62+40.58	126	RT	622	621		570.2	570.2	0.5%										
- L- 62+31.92	121	RT	621		581.0													
- L- 62+31.92	121	RT	621	634		570.2	568.9	0.5%										
- L- 60+10.00	-23	LT	634		578.5													
- L- 60+10.00	-23	LT	634	623		568.8	568.0	0.5%										
3D-7 TOTALS									0	0	0	0	0	0				

SIZE / THICKNESS OR GAUGE	C.S. PIPE 54"	60"	66"	72"	78"	84"	R.C. PIPE CLASS III 54"	60"	66"	72"	78"	84"	R.C. PIPE CLASS IV 12"	54"	60"	66"	72"	78"	84"
SHEET 4																			
- L- 29+82.50															32				
- L- 29+82.50																			
- L- 29+82.50															52				
- L- 29+82.50																			
- L- 29+82.50															104				
- L- 29+82.50																			
- L- 29+82.50															40				
SHEET 6																			
- Y3- 12+75.00										44									
- Y3- 12+75.00																			
- Y3- 12+75.00																	60		
- L- 62+40.58										12									
- L- 62+31.92																			
- L- 62+31.92																			
- L- 60+10.00																			
- L- 60+10.00										160									
3D-7 TOTALS	0	0	0	0	0	0	0	0	0	216	0	0	0	0	228	0	60	0	0

SIZE / THICKNESS OR GAUGE	PIPE AS NOTED 72" W.S PIPE, 1.00" THICK, IN SOIL	72" W.S PIPE, 1.00" THICK, NOT IN SOIL				REINFORCED ENDWALLS CU. YARDS R.C.P.	C.S.P.	MASONRY DRAINAGE STRUCTURES C.Y.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
SHEET 4																	
- L- 29+82.50						5.6											
- L- 29+82.50								2				1			1		
- L- 29+82.50																	
- L- 29+82.50								5.6									
- L- 29+82.50																	
- L- 29+82.50								6.3									
- L- 29+82.50																	
SHEET 6																	
- Y3- 12+75.00						7.1											
- Y3- 12+75.00								4.5				1		1			
- Y3- 12+75.00																	
- L- 62+40.58						7.1											
- L- 62+31.92								7.4									
- L- 62+31.92	132	132															
- L- 60+10.00								6.5									
- L- 60+10.00																	
3D-7 TOTALS	132	132	0	0	0	19.8	0	32.3	0	0	0	2	0	1	1	0	0

SIZE / THICKNESS OR GAUGE	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	BERM DRAINAGE OUTLET	OTCB	FLOWABLE FILL (CY)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																								
- L- 29+82.50																								
- L- 29+82.50																								SPECIAL DETAIL SHEET 2C-4
- L- 29+82.50																								
- L- 29+82.50									1					1										TB DI - SPECIAL DETAIL
- L- 29+82.50																								
- L- 29+82.50												1				1								
- L- 29+82.50																								
SHEET 6																								
- Y3- 12+75.00																								
- Y3- 12+75.00																								SPECIAL DETAIL SHEET 2C-4
- Y3- 12+75.00																								
- L- 62+40.58																								
- L- 62+31.92												1				1								SPECIAL DETAIL SHEET 2C-6
- L- 62+31.92																								
- L- 60+10.00													1											SPECIAL DETAIL SHEET 2C-2
- L- 60+10.00																			180					INCLUDES PLUG & FILL OF 4'x5' RCBC
3D-7 TOTALS	0	0	0	0	0	0	0	0	1	0	0	2	1	1	0	2	0	0	180			0	0	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

3/4/2026
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COMPUTED BY: MMS DATE: 03/16/2023
CHECKED BY: JRB DATE: 03/17/2023

(2-3-23)

PROJECT NO.	SHEET NO.
B-6051 / U-6143	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
-Y3-	13+75	15+75	RT	SD	225
CONTINGENCY					200
				TOTAL LF:	425

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
L	24+75	26+75			150	300	470		
L	28+25	30+25			160	360	560		
L	36+75	38+25			70	780	1,230		
Y3	14+75	15+50			20	40	50		
DR1	10+50	11+90			140	270	420		
MUP	10+00	11+75			70	130	200		
CONTINGENCY					200	500	600		
				TOTAL CY/TONS/SY:	810	2,380**	3,530**	0	0

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

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

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	1.5:1	52+40	1.5:1	56+30	LT			1,810
-Y3-	1.5:1	10+70	1.5:1	13+20	LT			750
							TOTAL SY:	2,560

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

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	-L- 52+30	20	LT
2	-L- 52+30	50	LT
3	-L- 55+50	25	LT
4	-L- 55+50	55	LT
	TOTAL GAUGES (EACH):		4

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS
-L-	40+50	40+95	1
-L-	51+85	56+30	2
-L-	58+25	61+75	1
-Y3-	10+70	13+20	1

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge on US 29/US 74 over Catawba River Between NC 7 and SR 1600	1	1
Bridge on US 29/US 74 over Catawba River Between NC 7 and SR 1600	2	2

PROJECT REFERENCE NO.	SHEET NO.
B-6051_U-6143	3P-1
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	STATE EMPLOYEES' CREDIT UNION
2	4,8	ANGELA BERADI JONATHAN STRUTTS, ELAINE CANUP AUSTIN
3	4	DONNA W. NEIL & DOLLY W. WILLIAMS
4	4,8	DAVID J. WORICK
5	4,8	DAVID J. WORICK
6	4	TIEN NGUYEN AND WIFE THUY BUI NGUUYEN
7	4,5,8	CLT EXPRESS LIVERY LLC
8	4	GASTON COLLEGE
9	4,9	CITY OF BELMONT
10	4,5	ARETE 108, LLC
11	4,9	CITY OF BELMONT
12	5	CATAWBA LAND PARTNERS, LLC
13	5	TONY M. WRIGHT
14	5,6	DUKE POWER COMPANY
15	5	CITY OF BELMONT
15A	5	DUKE
16	5,6	DUKE POWER COMPANY
17	6	MECKLENBURG COUNTY
17A	6	MECKLENBURG COUNTY
18	6	MECKLENBURG COUNTY
20	6	DUKE POWER COMPANY
21	6,7	MECKLENBURG COUNTY
22	6	MECKLENBURG COUNTY
23	6	MECKLENBURG COUNTY
24	6,7	MECKLENBURG COUNTY
25	7	DUKE POWER COMPANY
26	7	MECKLENBURG COUNTY
27	7	CK CATO INDUSTRIAL #2 LLC
28	7	DUKE POWER COMPANY
29	7	WAYNE ROBBINS AND WIFE LINDA C. ROBBINS
30	7	WAYNE ROBBINS AND WIFE LINDA C. ROBBINS
31	7	WILKINSON RESTORATION II, LLC
32	8	THE WISCONSIN REVOCABLE LIVING TRUST
33	8	RONALD EDWARD ASHE
34	9	CITY OF BELMONT
35	4	BELMONT PROPERTIES
36	8	BOYD P. FALLS IRREVOCABLE TRUST

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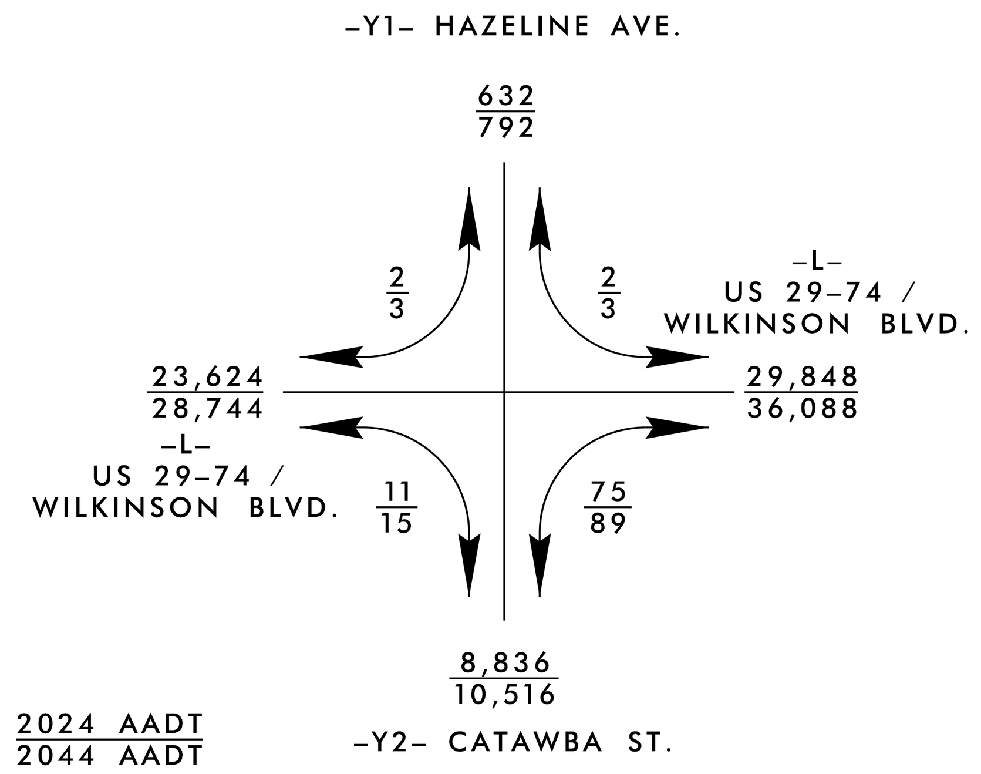


-L-

PI Sta 21+92.39	PI Sta 34+61.05
Δ = 17° 42' 35.4" (LT)	Δ = 3° 43' 32.2" (RT)
D = 1° 00' 00.0"	D = 0° 28' 38.9"
L = 1,770.98'	L = 780.29'
T = 892.61'	T = 390.28'
R = 5,729.58'	R = 12,000.00'
V = 50 MPH	V = 50 MPH
SE = RC	SE = NC

-Y1-

PI Sta 13+72.07
Δ = 28° 09' 28.0" (LT)
D = 14° 19' 26.2"
L = 196.58'
T = 100.32'
R = 400.00'
V = 30 MPH
SE = .04

-DR1-

PI Sta 10+52.12	PI Sta 11+55.98
Δ = 31° 41' 11.4" (RT)	Δ = 38° 33' 10.1" (LT)
D = 57° 17' 44.8"	D = 26° 02' 36.7"
L = 55.30'	L = 148.03'
T = 28.38'	T = 76.94'
R = 100.00'	R = 220.00'
V = 15 MPH	V = 15 MPH
SE = .03	SE = .03

-DR9-

PI Sta 12+11.98
Δ = 52° 51' 07.5" (RT)
D = 114° 35' 29.6"
L = 46.12'
T = 24.85'
R = 50.00'
V = 15 MPH
SE = .04

-DR10-

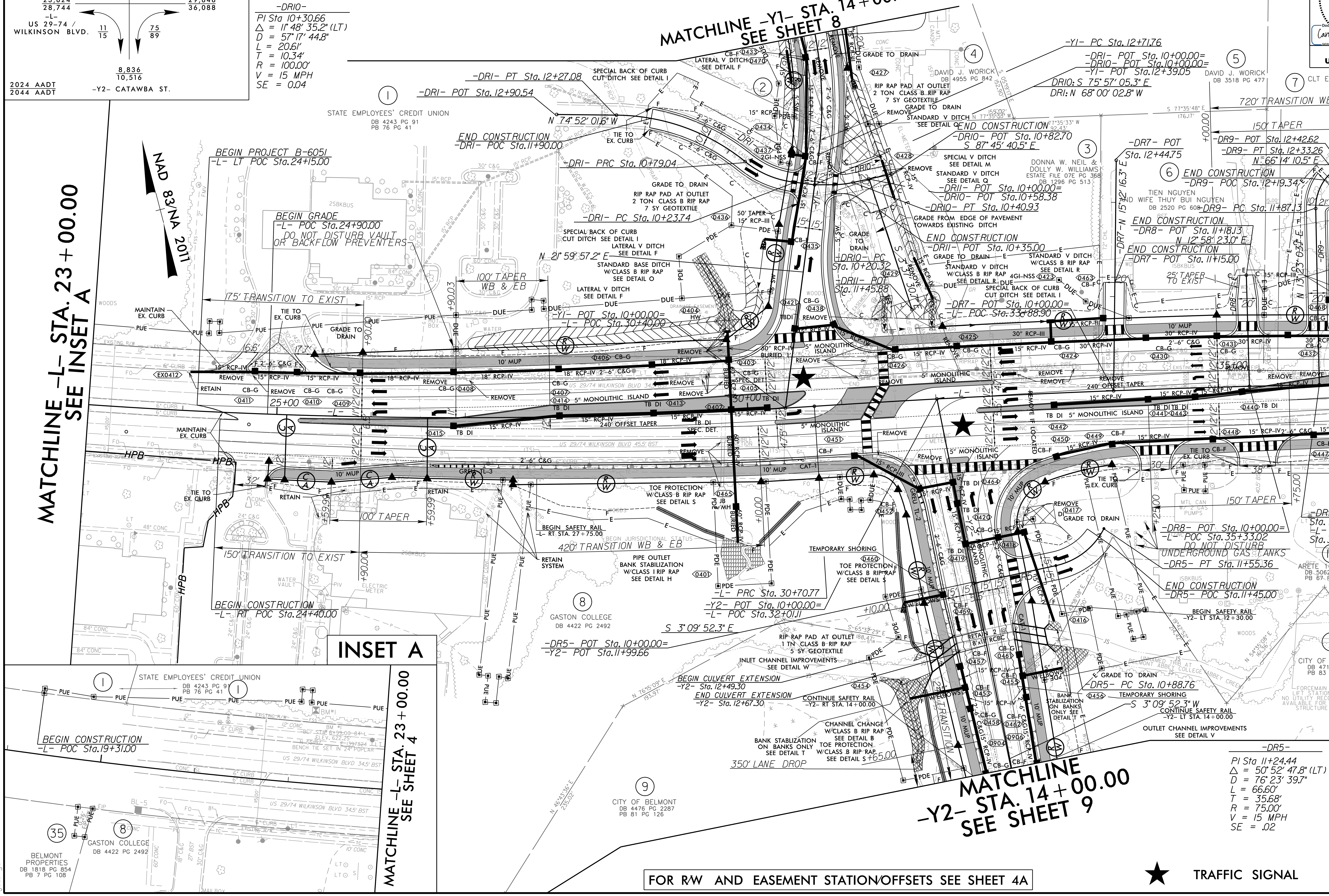
PI Sta 10+30.66
Δ = 11° 48' 35.2" (LT)
D = 57° 17' 44.8"
L = 20.61'
T = 10.34'
R = 100.00'
V = 15 MPH
SE = 0.04

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	4
R/W SHEET NO.	4A

ROADWAY DESIGN ENGINEER — 4/7/2026 — NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER CARTER A. MULL

HYDRAULICS ENGINEER — 4/7/2026 — NORTH CAROLINA PROFESSIONAL SEAL 036821 ENGINEER ELENI M. RIGGS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-DR5-

PI Sta 11+24.44
Δ = 50° 52' 47.8" (LT)
D = 76° 23' 39.7"
L = 66.60'
T = 35.68'
R = 75.00'
V = 15 MPH
SE = .02

FOR CULVERT PLANS
SEE SHTS. CU_1 THRU CU_10
FOR -L- PROFILE SEE SHT. 10
FOR -Y1- PROFILE SEE SHT. 12
FOR -Y2- PROFILE SEE SHT. 12
FOR -DR1- PROFILE SEE SHT. 13
FOR -DR5- PROFILE SEE SHT. 14
FOR -DR7- PROFILE SEE SHT. 14
FOR -DR8- PROFILE SEE SHT. 14
FOR -DR9- PROFILE SEE SHT. 14
FOR -DR10- PROFILE SEE SHT. 14
FOR -DR11- PROFILE SEE SHT. 15
FOR DITCH DETAILS SEE SHT. 2D-1
FOR INTERSECTION DETAILS
SEE SHTS. 2B-1 & 2B-2

FOR R/W AND EASEMENT STATION/OFFSETS SEE SHEET 4A

★ TRAFFIC SIGNAL

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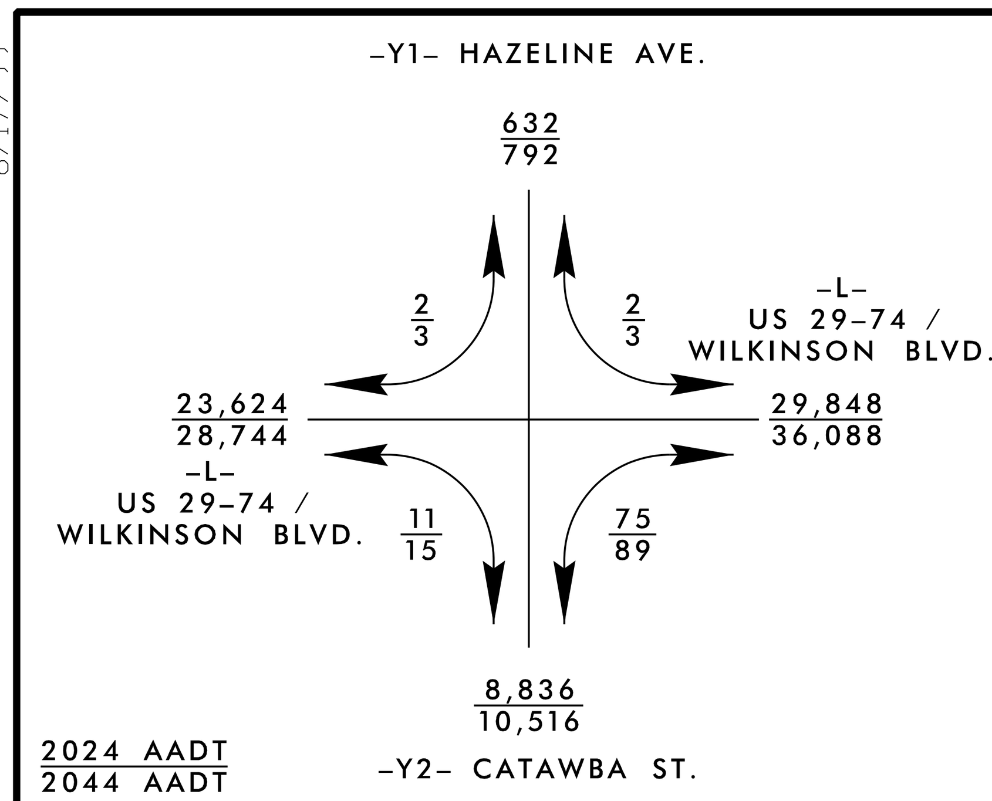

-L-		-Y1-	-DR1-		-DR9-
PI Sta 21+92.39	PI Sta 34+61.05	PI Sta 13+72.07	PI Sta 10+52.12	PI Sta 11+55.98	PI Sta 12+11.98
Δ = 17° 42' 35.4" (LT)	Δ = 3° 43' 32.2" (RT)	Δ = 28° 09' 28.0" (LT)	Δ = 31° 41' 11.4" (RT)	Δ = 38° 33' 10.1" (LT)	Δ = 52° 51' 07.5" (RT)
D = 1° 00' 00.0"	D = 0° 28' 38.9"	D = 14° 19' 26.2"	D = 57° 17' 44.8"	D = 26° 02' 36.7"	D = 114° 35' 29.6"
L = 1,770.98'	L = 780.29'	L = 196.58'	L = 55.30'	L = 148.03'	L = 46.12'
T = 892.61'	T = 390.28'	T = 100.32'	T = 28.38'	T = 76.94'	T = 24.85'
R = 5,729.58'	R = 12,000.00'	R = 400.00'	R = 100.00'	R = 220.00'	R = 50.00'
V = 50 MPH	V = 50 MPH	V = 30 MPH	V = 15 MPH	V = 15 MPH	V = 15 MPH
SE = RC	SE = NC	SE = .04	SE = .03	SE = .03	SE = .04

-DR10-
PI Sta 10+30.66
Δ = 11° 48' 35.2" (LT)
D = 57° 17' 44.8"
L = 20.61'
T = 10.34'
R = 100.00'
V = 15 MPH
SE = 0.04

PROJECT REFERENCE NO.	SHEET NO.
B-6051/U-6143	4A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

4/7/2026

NORTH CAROLINA PROFESSIONAL SEAL 047301 ENGINEER

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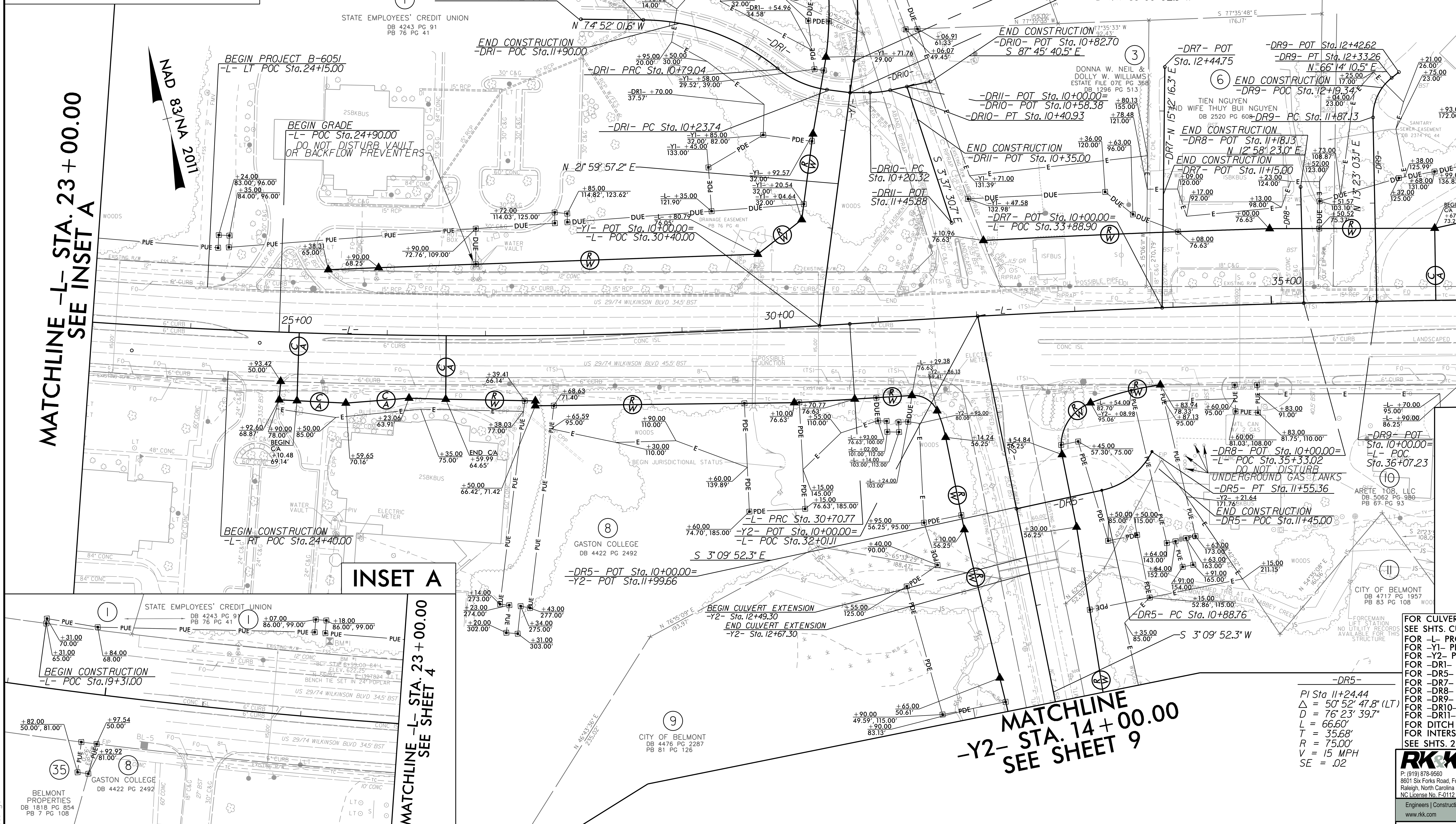

MATCHLINE -Y1- STA. 14+00.00
SEE SHEET 8
MATCHLINE -L- STA. 23+00.00
SEE INSET A
MATCHLINE -L- STA. 37+00.00
SEE SHEET 5
MATCHLINE
-Y2- STA. 14+00.00
SEE SHEET 9
NAD 83/NA 2011
BEGIN PROJECT B-6051
-L- LT POC Sta.24+15.00
BEGIN GRADE
-L- POC Sta.24+90.00
DO NOT DISTURB VAULT
OR BACKFLOW PREVENTERS
STATE EMPLOYEES' CREDIT UNION
DB 4243 PG 91
PB 76 PG 41
-DR1- PT Sta. 12+27.08
-DR1- POT Sta. 12+90.54
END CONSTRUCTION
-DR1- POC Sta.11+90.00
-DR1- PRC Sta. 10+79.04
-DR1- PC Sta. 10+23.74
-Y1- POT Sta. 10+00.00=
-L- POC Sta.30+40.00
-Y1- PC Sta. 12+71.76
-DR1- POT Sta. 10+00.00=
-DR10- POT Sta.10+00.00=
-Y1- POT Sta. 12+39.05
DR10: S 75° 57' 05.3" E
DR1: N 68° 00' 02.8" W
END CONSTRUCTION
-DR10- POT Sta. 10+82.70
S 87° 45' 40.5" E
-DR11- POT Sta. 10+00.00=
-DR10- POT Sta. 10+58.38
-DR10- PT Sta. 10+40.93
END CONSTRUCTION
-DR11- POT Sta. 10+35.00
-DR10- PC Sta. 10+20.32
-DR11- POT Sta. 11+45.88
-DR7- POT Sta. 10+00.00=
-L- POC Sta.33+88.90
DAVID J. WORICK
DB 4955 PG 842
DAVID J. WORICK
DB 3518 PG 477
CLT EXPRESS LIVERY LLC
DB 4421 PG 369
DONNA W. NEIL &
DOLLY W. WILLIAMS
ESTATE FILE 07E PG 368
DB 1296 PG 513
TIEN NGUYEN
AND WIFE THUY BUI NGUYEN
DB 2520 PG 608
-DR7- POT Sta. 12+44.75
-DR9- POT Sta. 12+42.62
-DR9- PT Sta. 12+33.26
N 66° 14' 10.5" E
END CONSTRUCTION
-DR9- POC Sta. 12+19.34
-DR9- PC Sta. 11+87.13
END CONSTRUCTION
-DR8- POT Sta. 11+18.13
N 12° 58' 23.0" E
END CONSTRUCTION
-DR7- POT Sta. 11+15.00
N 15° 42' 16.3" E
N 13° 23' 03.1" E
N 74° 52' 01.6" W
N 21° 59' 57.2" E
S 3° 37' 30.7" E
US 29/74 WILKINSON BLVD 34.5' BST
US 29/74 WILKINSON BLVD 45.5' BST
25+00
30+00
35+00
-L-
BEGIN CONSTRUCTION
-L- RT POC Sta.24+40.00
GASTON COLLEGE
DB 4422 PG 2492
-L- PRC Sta. 30+70.77
-Y2- POT Sta. 10+00.00=
-L- POC Sta.32+01.11
S 3° 09' 52.3" E
-DR5- POT Sta. 10+00.00=
-Y2- POT Sta.11+99.66
BEGIN CULVERT EXTENSION
-Y2- Sta. 12+49.30
END CULVERT EXTENSION
-Y2- Sta. 12+67.30
CITY OF BELMONT
DB 4476 PG 2287
PB 81 PG 126
-DR8- POT Sta. 10+00.00=
-L- POC Sta.35+33.02
DO NOT DISTURB
UNDERGROUND GAS TANKS
-DR5- PT Sta. 11+55.36
END CONSTRUCTION
-DR5- POC Sta.11+45.00
-DR5- PC Sta. 10+88.76
S 3° 09' 52.3" W
-DR9- POT
Sta. 10+00.00=
-L- POC
Sta. 36+07.23
ARETE 108, LLC
DB 5062 PG 980
PB 67 PG 93
CITY OF BELMONT
DB 4717 PG 1957
PB 83 PG 108
INSET A
STATE EMPLOYEES' CREDIT UNION
DB 4243 PG 91
PB 76 PG 41
BEGIN CONSTRUCTION
-L- POC Sta.19+31.00
MATCHLINE -L- STA. 23+00.00
SEE SHEET 4
BELMONT PROPERTIES
DB 1818 PG 854
PB 7 PG 108
GASTON COLLEGE
DB 4422 PG 2492

FOR CULVERT PLANS
SEE SHTS. CU_1 THRU CU_10
FOR -L- PROFILE SEE SHT. 10
FOR -Y1- PROFILE SEE SHT. 12
FOR -Y2- PROFILE SEE SHT. 12
FOR -DR1- PROFILE SEE SHT. 13
FOR -DR5- PROFILE SEE SHT. 14
FOR -DR7- PROFILE SEE SHT. 14
FOR -DR8- PROFILE SEE SHT. 14
FOR -DR9- PROFILE SEE SHT. 14
FOR -DR10- PROFILE SEE SHT. 14
FOR -DR11- PROFILE SEE SHT. 15
FOR DITCH DETAILS SEE SHT. 2D-1
FOR INTERSECTION DETAILS
SEE SHTS. 2B-1 & 2B-2

-DR5-
PI Sta 11+24.44
Δ = 50° 52' 47.8" (LT)
D = 76° 23' 39.7"
L = 66.60'
T = 35.68'
R = 75.00'
V = 15 MPH
SE = .02

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