OPENX SAMPLE PLANSET

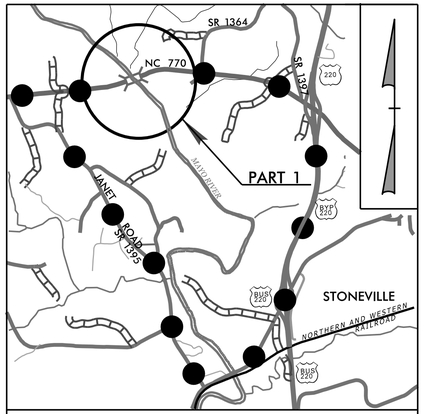
This sample planset is for demonstrating appearance, sheet layout, and plan preparation only. The design content is illustrative and not intended for design or construction use.

Refer to applicable Manuals, Standards, and Guidelines for actual design requirements. This sample is not a substitute for compliance with engineering standards.

TIP PROJECT: BR-0093

CONTRACT: C204929

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

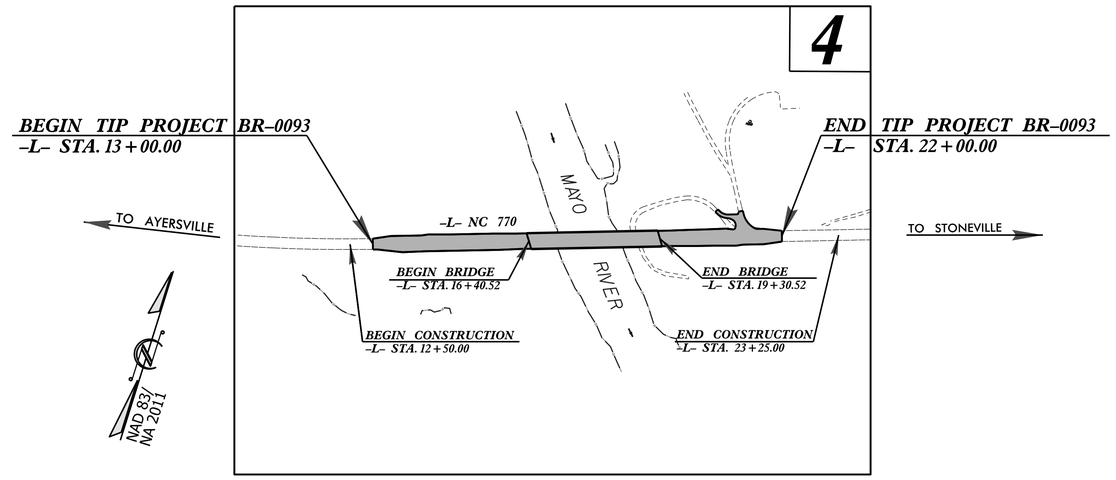
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0093	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67093.1.1	N/A	PE
67093.2.1	N/A	UTIL/RW
67093.3.1	N/A	CONST

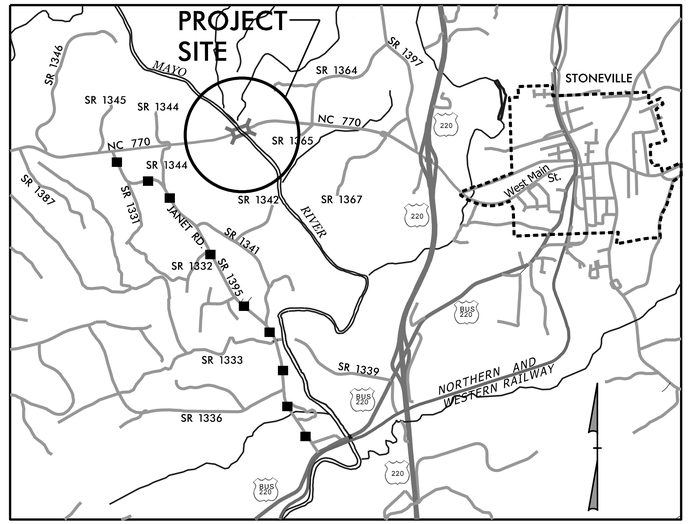
LOCATION: *REPLACE BRIDGE 780035 ON NC 770 OVER MAYO RIVER AND SR 1395 (JANET ROAD) FROM US 220 BUS TO NC 770*

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

PART 1: BR–0093



PART 2: BR–0093 DETOUR RESURFACING



RESURFACING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT LENGTH

PART 1: BR-0093
LENGTH ROADWAY STATE PROJECT = 0.115 MILES
LENGTH STRUCTURES STATE PROJECT = 0.055 MILES

PART 2: BR-0093 DETOUR RESURFACING
LENGTH ROADWAY STATE PROJECT = 2.751 MILES

PART 1 & PART 2
TOTAL LENGTH TIP PROJECT = 2.921 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 14, 2023

LETTING DATE:
JUNE 18, 2024

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/26/20

INDEX OF SHEETS

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

PART 1

1	TITLE SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	ROADWAY DETAIL
2G-1	GEOTECHNICAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW-01 THRU RW-04	RIGHT OF WAY PLANS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP- 2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-19	CROSS-SECTIONS
S-1 THRU S-36	STRUCTURE PLANS

PART 2

1	RESURFACING MAPS
2	TYPICAL SECTIONS
3	ROADWAY DETAILS
4	SHOULDER WEDGING DETAILS
5	SUMMARY OF QUANTITIES

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

GRADE LINE:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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

CHARTER SPECTRUM - CABLE TV

MCNC - BROADBAND/TELEPHONE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
423.02	Bridge Approach Fills - Type 1A Alternate Approach Fill for Integral 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
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

BR-0093
1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



DocuSigned by:
Hon Nguyen 04/03/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Note: Not to Scale

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Existing Concrete Monument (ECM)
- Parcel / Sequence Number (123)
- Existing Fence Line
- 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
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (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 (C/A)
- Proposed Control of Access Line (C/A)
- Proposed ROW and CA Line (RW/C/A)
- 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:

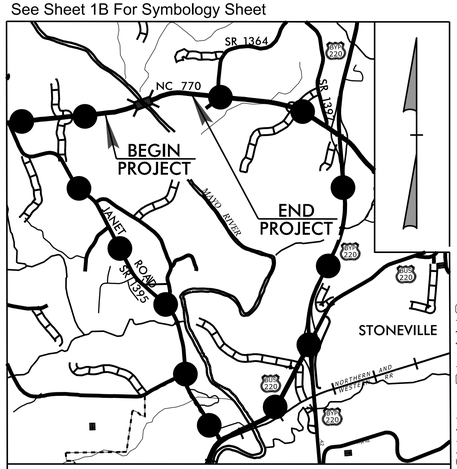
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line (SUE - LOS B)* (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

09/08/99

TIP PROJECT: BR-0093

CONTRACT: C204929

See Sheet 1A For Index of Sheets
See Sheet 1B For Symbology Sheet



VICINITY MAP

DETOUR ROUTE

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0093	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67093.1.1	N/A	PE
67093.2.1	N/A	UTIL/RW
67093.3.1	N/A	CONST.

LOCATION: *REPLACE BRIDGE 780035 ON NC 770 OVER MAYO RIVER*

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

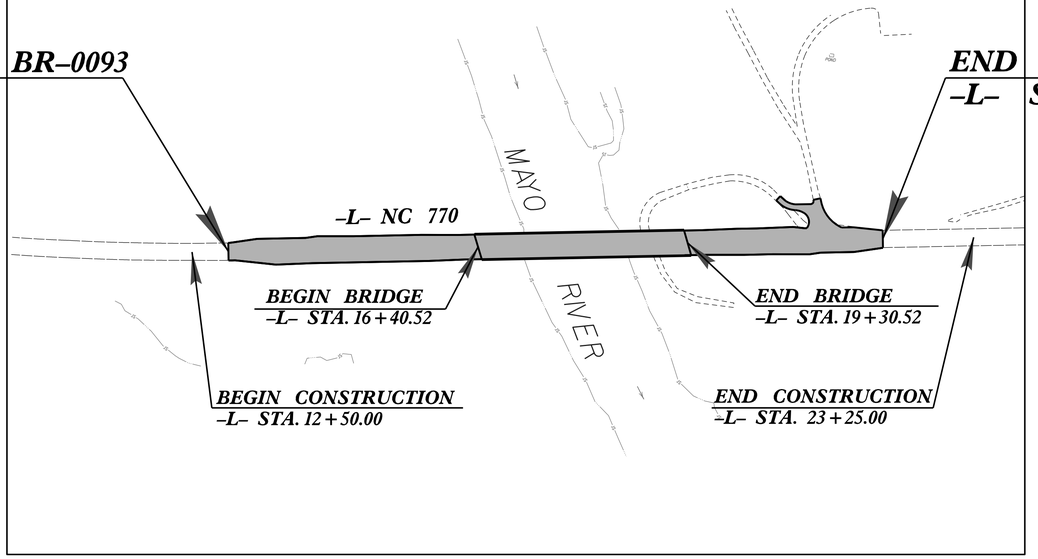
PART 1

4

BEGIN TIP PROJECT BR–0093
–L– STA. 13 + 00.00

END TIP PROJECT BR–0093
–L– STA. 22 + 00.00

NAD 83/
NA 2011



TO AYERSVILLE

TO STONEVILLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2024 = 2,315
ADT 2045 = 2,800
K = 9 %
D = 65 %
T = 10 % *
V = 60 MPH
* TTST 4% DUAL 6%
FUNC CLASS =
MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BR-0093 = 0.115 Mi.
LENGTH STRUCTURE TIP PROJECT BR-0093 = 0.055 Mi.
TOTAL LENGTH TIP PROJECT BR-0093 = 0.170 Mi.

Plans Prepared by:

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 14, 2023

LETTING DATE:
JUNE 18, 2024

SARA SHERMAN, PE
PROJECT MANAGER

JORDAN WOODARD, PE
ROADWAY GROUP LEAD

HAN NGUYEN, PE
ROADWAY TEAM LEAD

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044158 ENGINEER BENJAMIN J. HENEGAR

DocuSigned by: Benjamin J. Henegar P.E.
SIGNATURE:
04/09/2024

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER HAN C. NGUYEN

DocuSigned by: Han Nguyen P.E.
SIGNATURE:
04/09/2024

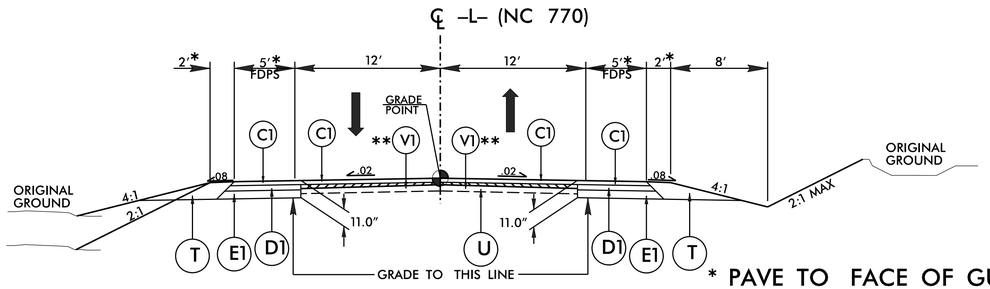
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/26/20

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
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 TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 4.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE 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.
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J	6″ ABC.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING BITUMINOUS PAVEMENT (1.5′ DEPTH).
V2	INCIDENTAL MILLING.
W	VARIABLE DEPTH ASPHALT PAVEMENT.

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

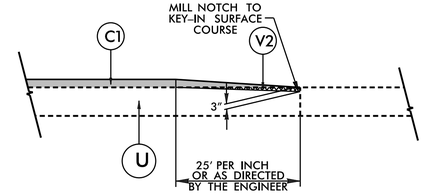


* PAVE TO FACE OF GUARDRAIL
* 3′ SHOULDER BEHIND GUARDRAIL

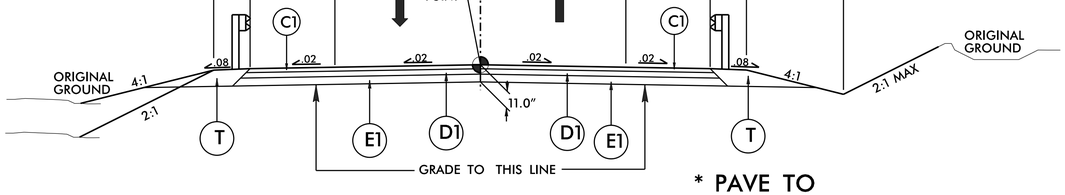
TYPICAL SECTION NO. 1

–L– STA. 13+00 TO 16+00
** –L– STA. 13+00 TO 15+25
–L– STA. 19+90 TO 22+00
** –L– STA. 21+50 TO 22+00

INCIDENTAL MILLING DETAIL
(AT BEGIN AND END FOR TIE–INS)



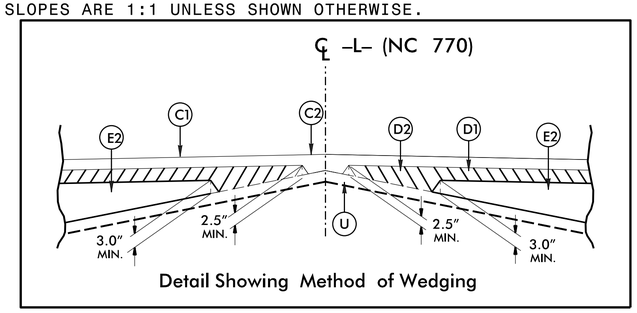
–L– STA. 12+25.00 TO STA. 13+00.00
–L– STA. 22+00.00 TO STA. 22+75.00

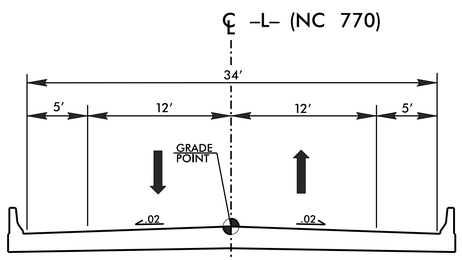


* PAVE TO FACE OF GUARDRAIL

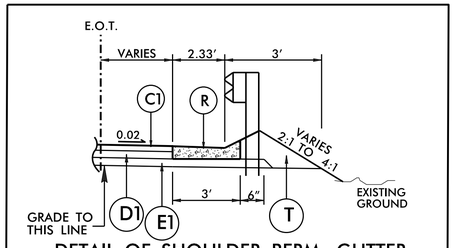
TYPICAL SECTION NO. 2

–L– STA. 16+00 TO 16+40.52 (BEGIN BRIDGE)
–L– STA. 19+30.52 (END BRIDGE) TO 19+90





TYPICAL SECTION ON STRUCTURE



DETAIL OF SHOULDER BERM GUTTER
–L– STA. 19+40 TO STA. 20+27 (LT)
–L– STA. 19+49 TO STA. 20+27 (RT)

REVISIONS

BR-8093
2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER Hon C Nguyen
DocuSigned by: Hon Nguyen 6/03/2024

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D WARD
DocuSigned by: Andrew Ward 6/03/2024
2D2C959DCBCA49E

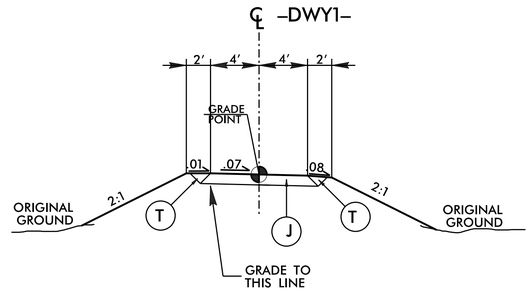
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5/26/20

FINAL PAVEMENT SCHEDULE

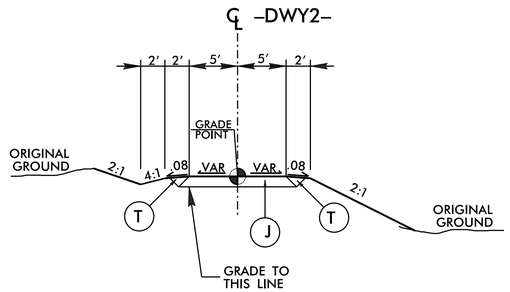
C1	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 4.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE 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.
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J	6″ ABC.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT (1.5′ DEPTH).
W	VARIABLE DEPTH ASPHALT PAVEMENT.

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



TYPICAL SECTION NO. 3

–DWY1– STA. 10+75.00 TO 11+25.68



TYPICAL SECTION NO. 4

–DWY2– STA. 11+37.00 TO 11+82.49

REVISIONS

BR-8093

2A-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER Hon C Nguyen

DocuSigned by: Hon Nguyen 08/03/2024

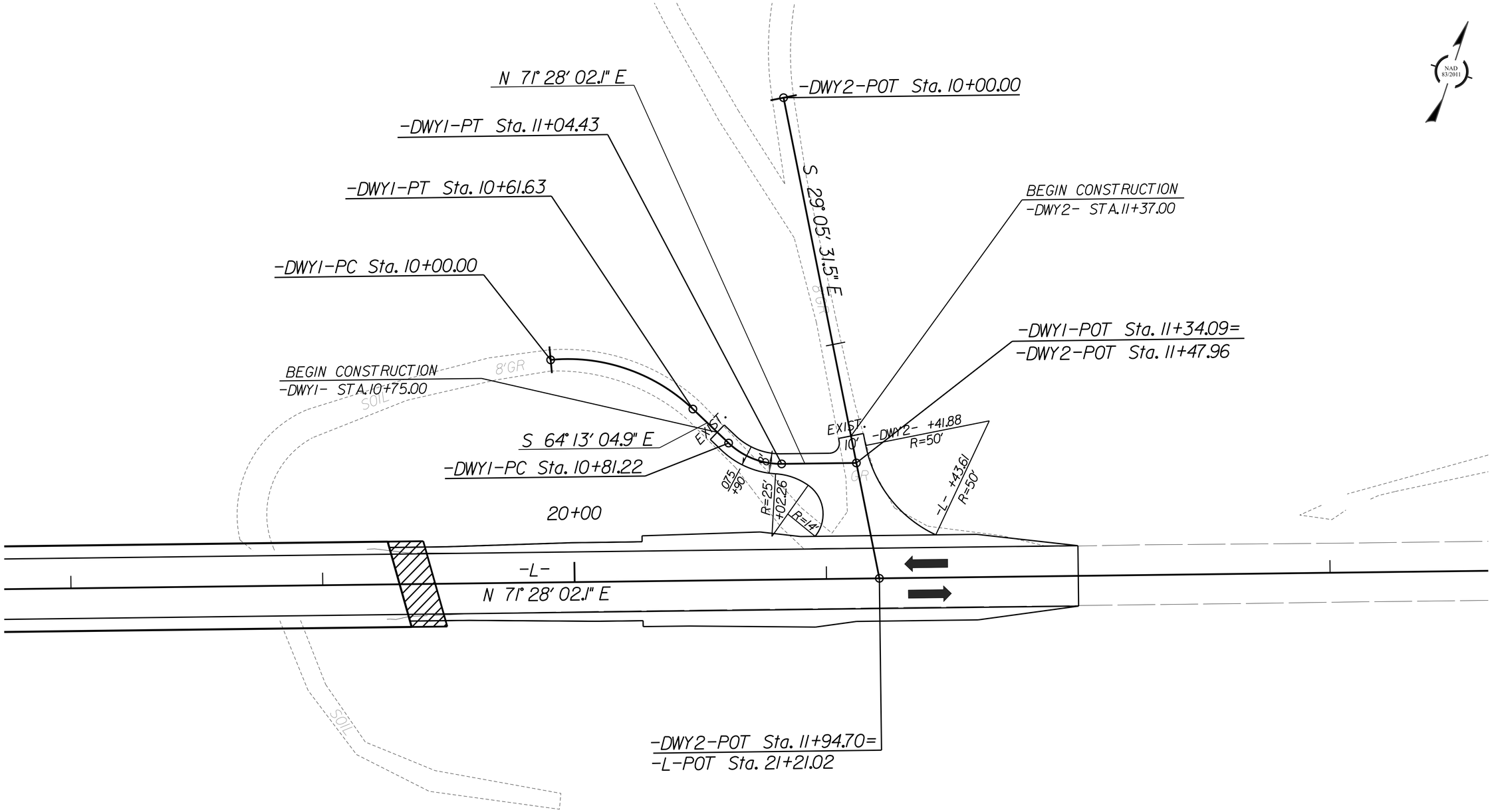
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARREN

DocuSigned by: Andrew Warren 08/03/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/26/20



-DWY1-	
PI Sta 10+32.84	PI Sta 10+93.44
△ = 49° 02' 29.3" (RT)	△ = 44° 18' 53.0" (LT)
D = 79° 34' 38.9"	D = 190° 59' 09.4"
L = 61.63'	L = 23.20'
T = 32.84'	T = 12.22'
R = 72.00'	R = 30.00'

10 0 20

SCALE: 1" = 20'

BR-0093

2B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

NAD 83/2011

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER Hon C. Nguyen

DocuSigned by: Hon Nguyen 04/03/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

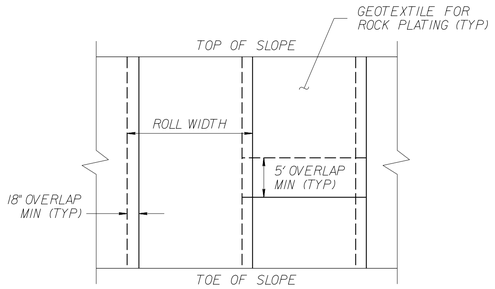
PROJECT REFERENCE NO.	SHEET NO.
BR-0093	2G-1

GEOTECHNICAL ENGINEER

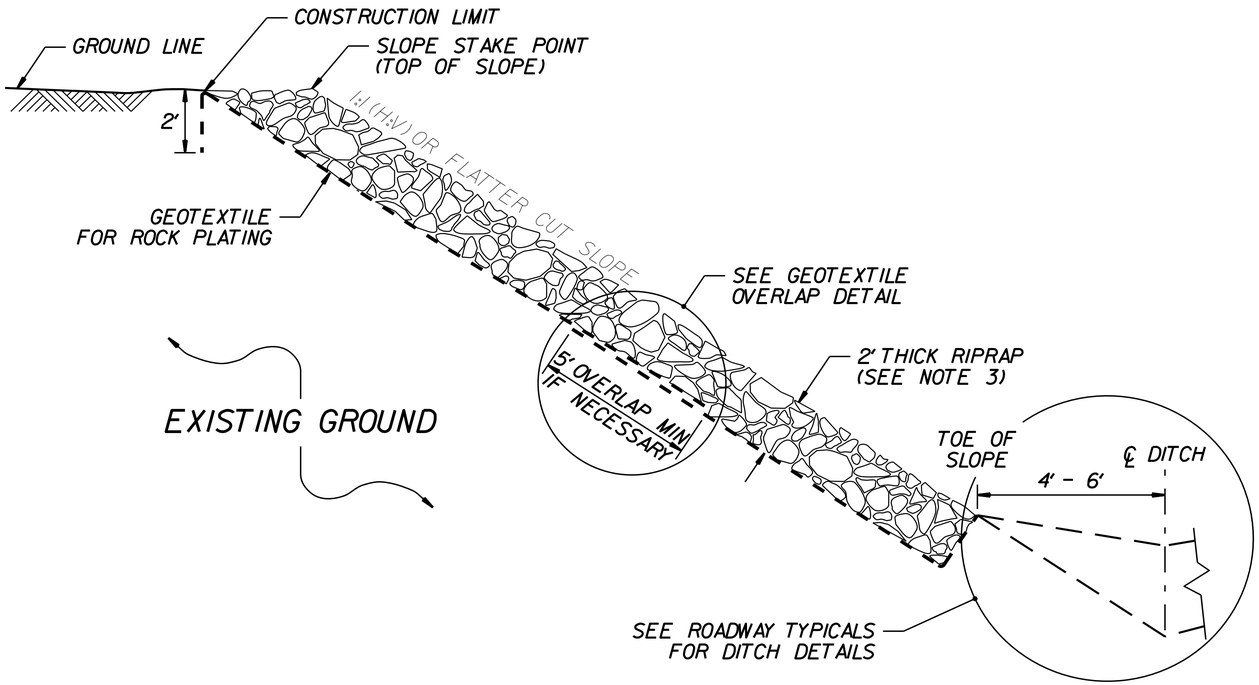
NORTH CAROLINA PROFESSIONAL SEAL 030395 ENGINEER JACOB C. WESSELL

DocuSigned by: 07/17/2023
676F8AF157BB46E... SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)



SPECIAL ROCK PLATING DETAIL – TYPICAL SECTION

NOTES:

FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.

USE ROCK PLATING AT FOLLOWING LOCATIONS:

LINES	BEGINNING SLOPE	APPROX. STATION	ENDING SLOPE	APPROX. STATION	LOCATION LT/RT	ROCK PLATING DETAIL NO.	RIPRAP CLASS* I/2/B	SY
-L-	1:1	12+50	2:1	13+50	LEFT	2G-1 SHEET	*	170

* USE CLASS I, 2 OR B RIPRAP FOR ROCK PLATING LOCATIONS.

ESTIMATED TOTAL QUANTITY OF ROCK PLATING = **170** SY

PREPARED BY: C. SWAFFORD	DATE: 06/15/23
REVIEWED BY: J. WESSELL	DATE: 06/15/23

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SPECIAL ROCK PLATING DETAIL

REVISIONS

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

COMPUTED BY:	KDA	DATE: 2/2 /2024
CHECKED BY:	KM	DATE: 2/8/2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station to Station	Uncl. Exc. (C.Y.)	Embank. +% (C.Y.)	Borrow (C.Y.)	Waste (C.Y.)
SUMMARY NO. 1				
-L- STA. 12+50.00 TO 16+40.52 (BB)	5,608	547		5,061
-L- STA. 19+30.52 (EB) TO 22+50.00	193	296	103	
-DWY1- STA. 10+50.00 TO 11+20.00	1	6	5	
-DWY2- STA. 11+25.00 TO 11+75.00	18	2		16
SUMMARY NO. 1 TOTALS	5,820	851	108	5,077
PROJECT SUB TOTALS	5,820	851	108	5,077
WASTE IN LIEU OF BORROW			-108	-108
GRAND TOTALS	5,820	851		4,969
SAY	5,850			

ESTIMATED DDE = 35 CY
ESTIMATED SHOULDER BORROW = 160 CY
ESTIMATED SHALLOW UNDERCUT CONT. = 100 CY
ESTIMATED CLASS IV SUBGRADE STABILIZATION CONT. = 200 CY
ESTIMATED UNDERCUT CONT. = 450 CY

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.

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

SUMMARY OF ASPHALT PAVEMENT REMOVAL

Station to Station	LOC LT/RT/ CL	Square Yards
-L- STA. 16+00.00 TO STA. 16+50.86	CL	135.29
-L- STA. 19+21.42 TO STA. 19+90.00	CL	182.87
PROJECT TOTAL		318.16
SAY		320

SUMMARY OF SHOULDER BERM GUTTER

Station to Station	LOC LT/RT/CL	Length (FT)
-L- STA. 19+40 TO 20+27	LT	87.00
-L- STA. 19+49 TO 20+27	RT	78.00
PROJECT TOTAL		165.00
SAY		170

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF TRAVEL LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DITANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEGIN STATION	END STATION	LOC.	LENGTH (FT.) STRAIGHT	LENGTH (FT.) SHOP CURVED	LENGTH (FT.) DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS GREU TL-3	ANCHORS GREU TL-2	ANCHORS TYPE III	ANCHORS TYPE B-77	ANCHORS TYPE B-83	ANCHORS CAT-1	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GUARDRAIL	REMARKS
-L-	14+25.59	16+35.96	LT	210.37'				15+60.00	6.0'	9.0'		50.00'		1.00'	1			1						77'	FILL WARRANT
-L-	19+25.96	20+73.83	LT	147.87'			19+50.00		6.0'	9.0'	50.00'		1.00'		1			1						114'	FILL WARRANT (GR SHORTENED DUE TO DRIVEWAY)
-L-	13+59.71	16+45.08	RT	285.37'			15+90.00		6.0'	9.0'	50.00'		1.00'		1			1						77'	FILL WARRANT
-L-	19+35.08	20+95.45	RT	160.37'				19+60.00	6.0'	9.0'		50.00'		1.00'	1			1						102'	FILL WARRANT
		SUB-TOTAL		804.00'											4			4						370'	SUB-TOTAL
	DEDUCTION FOR ANCHOR UNITS																								
		GREU TL-3 @ 50'	4	-200.00'																					
		GREU TL-2 @ 25'																							
		TYPE-III @ 18.75'																							
		TYPE B-77 @ 22.875'	4	-91.50'																					
		TYPE B-83 @ 25.00'																							
		CAT-1 @ 6.25'																							
		PROJECT TOTAL		512.50'											4			4						370'	PROJECT TOTAL
			SAY	512.50'																					

ADDITIONAL GUARDRAIL POSTS = 5 EA

TGSLTW1014

COMPUTED BY: BJH DATE: 07/06/23

CHECKED BY: REL DATE: 07/06/23

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
BR-0093	3D-1

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

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C. S. PIPE SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | 36" C.S. ELBOW | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: CMS DATE: 06/19/2023
CHECKED BY: JCW DATE: 06/19/2023

(2-3-23)

PROJECT NO.	SHEET NO.
BR-0093	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
-L-	12+50	13+50	LT	SD	100
CONTINGENCY				SD	200
				TOTAL LF:	300

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	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-	1:1	12+50	2:1	13+50	LT	2G-1 Sheet	*	170
							TOTAL SY:	170

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

CUR DATA -L-	CUR DATA -L-	CUR DATA -DWY1-	CUR DATA -DWY1-
PIc 11+81.45	PIc 25+24.26	PIc 10+32.84	PIc 10+93.44
Δc = 04°27'26.6" (LT)	Δc = 03°58'58.9" (RT)	Δc = 49°02'29.3" (RT)	Δc = 44°18'53.0" (LT)
D = 01°44'10.4"	D = 01°44'10.4"	D = 79°34'38.9"	D = 190°59'09.4"
Lc = 256.73	Lc = 229.41	Lc = 61.63	Lc = 23.20
Tc = 128.43	Tc = 114.75	Tc = 32.84	Tc = 12.22
R = 3,300	R = 3,300	R = 72	R = 30

BR-0093
04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER Hon C Nguyen
DocuSigned by: Hon Nguyen 04/03/2024

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044158 ENGINEER BENJAMIN J. HEDGER
DocuSigned by: Benjamin J. Hedger 04/03/2024

HYDRAULICS PREPARED BY
TGS ENGINEERS

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REVISIONS

NAD 83/2011

BEGIN TIP PROJECT BR-0093
-L- STA 13+00.00

END TIP PROJECT BR-0093
-L- STA 22+00.00

BEGIN CONST -L-
STA 12+50.00

END CONST -L-
STA 23+25.00

BEGIN CONST -DWY2-
STA 11+37.00

BEGIN CONST -DWY1-
STA 10+75.00

-DWY2- POT STA 11+94.70 =
-L- POT STA 21+21.02

BEGIN APPROACH SLAB
-L- STA 16+26.38

BEGIN BRIDGE
-L- STA 16+40.52

END BRIDGE
-L- STA 19+30.52

END APPROACH SLAB
-L- STA. 19+44.66

-L- PC 10+53.02

-L- PT 13+09.75

-L- PC 24+09.51

STATE OF NORTH CAROLINA
DB 1552 PG 126I
PB 82 PG 45

STATE OF NORTH CAROLINA
DB 1518 PG 181
PB 82 PG 45

MARTIN FAMILY CEMETERY
DB 802 PG 453
PB 82 PG 45

JIMMY L. MARTIN
DB 802 PG 459
PB 82 PG 45

PHYLLIS S. FAGGE
DB 1504 PG 255

BANK STABILIZATION
SEE DETAIL 4G
CLASS 'II' RIP-RAP
KEYED-IN (2.0' THICK)
EST. 240 TONS
(STRUCTURE PAY ITEM)

BANK STABILIZATION
SEE DETAIL 4F
CLASS 'II' RIP-RAP
KEYED-IN (2.0' THICK)
EST. 440 TONS
(STRUCTURE PAY ITEM)

RIP-RAP
(STRUCTURE PAY ITEM)

CLASS 'I' RIP-RAP
EST. 3 TONS
GEOTEXTILE
EST. 7 SY

CLASS 'I' RIP-RAP
EST. 4 TONS
GEOTEXTILE
EST. 10 SY

CLASS 'I' RIP-RAP
EST. 20 TONS
GEOTEXTILE
EST. 30 SY

HEAD DITCH
SEE DETAIL 4E
CLASS 'I' RIP-RAP
EST. 40 TONS
GEOTEXTILE
EST. 80 SY
S=3.0%
L=35'
EST. 35 CY DDE

SPECIAL CUT 'V' DITCH
SEE DETAIL 4A

STANDARD 'V' DITCH
SEE DETAIL 4B

FALSE SUMP
SEE DETAIL 4C

FALSE SUMP
SEE DETAIL 4D

REMOVE EXIST.
CONC. DITCH
-L- 22+70 TO
23+25 LT

REMOVE EXIST.
CONC. DITCH
-L- 21+95 TO
22+55 RT

15" CSP W/ ROD &
LUG, GASKETS
& 2 ELBOWS

18" CSP W/ ROD &
LUG, GASKETS
& 2 ELBOWS

ROCK PLATE SLOPES
-L- STA.12+50 TO 13+50 LT
SEE DETAIL 2G-1

RETAIN

REMOVE

END SBG
-L- 20+27 LT

END SBG
-L- 20+27 RT

BEGIN SBG
-L- 19+40 LT

BEGIN SBG
-L- 19+49 RT

JB w/MH

DETAIL 4A
SPECIAL CUT 'V' DITCH
(Not to Scale)

FROM –L– STA. 12+50 TO 15+40 LT
FROM –L– STA. 12+50 TO 15+50 RT
FROM –L– STA. 21+50 TO 22+00 LT

DETAIL 4B
STANDARD 'V' DITCH
(Not to Scale)

FROM –L– STA. 22+00 TO 22+60 LT

DETAIL 4C
FALSE SUMP
(Not to Scale)

–L– STA. 15+55 LT
–L– STA. 22+35 RT

DETAIL 4D
FALSE SUMP
(Not to Scale)

–L– STA. 15+65 RT
–L– STA. 23+05 LT

DETAIL 4E
HEAD DITCH
(Not to Scale)

–L– STA. 22+50 LT

DETAIL 4F
BANK STABILIZATION
(Not to Scale)

–L– STA. 17+00 LT & RT

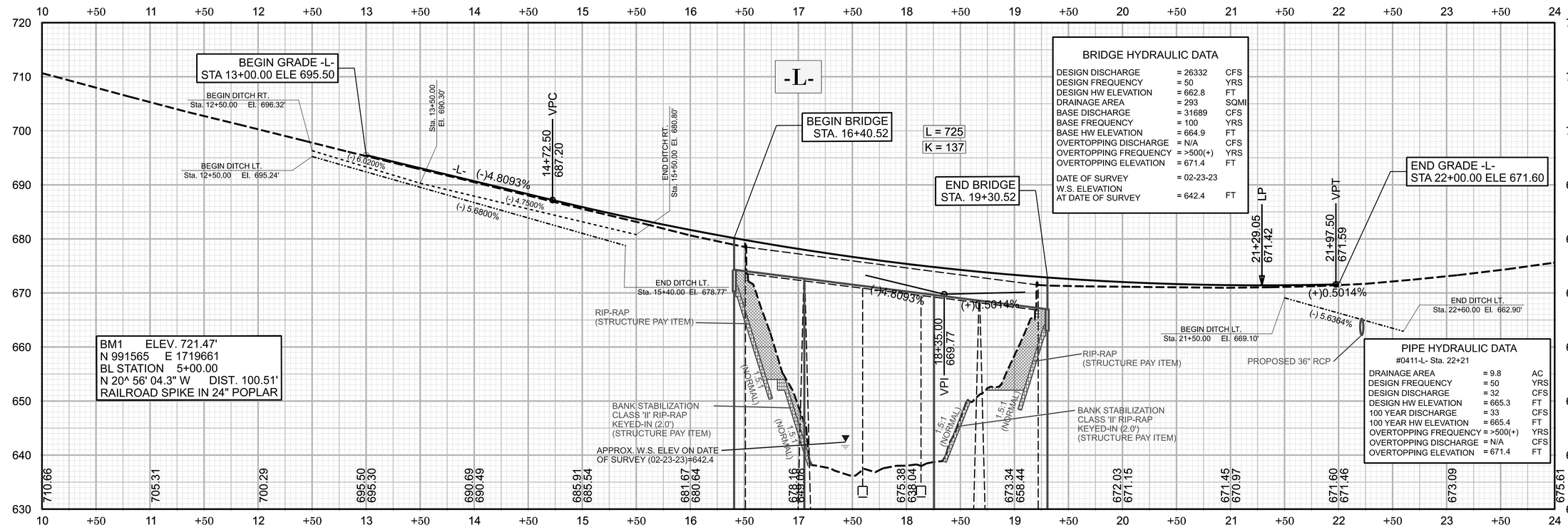
DETAIL 4G
BANK STABILIZATION
(Not to Scale)

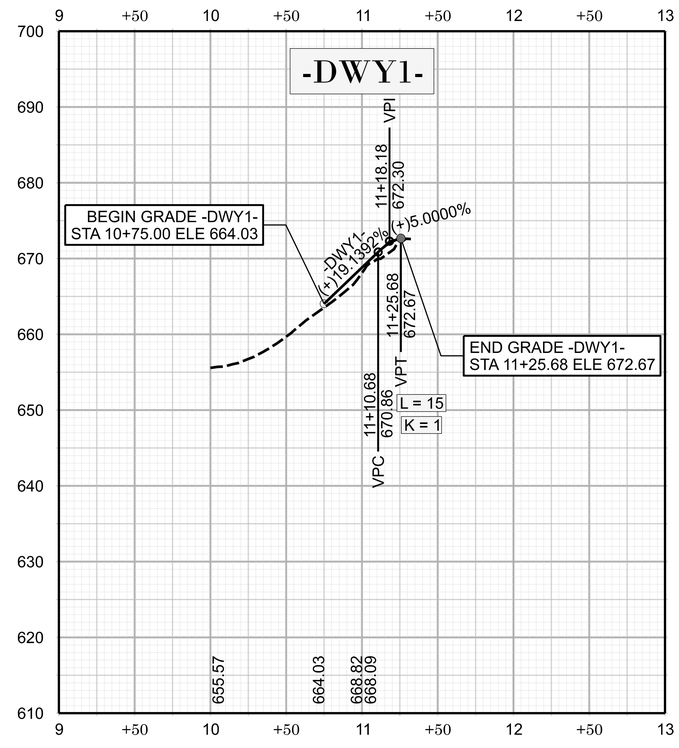
–L– STA. 18+50 LT & RT

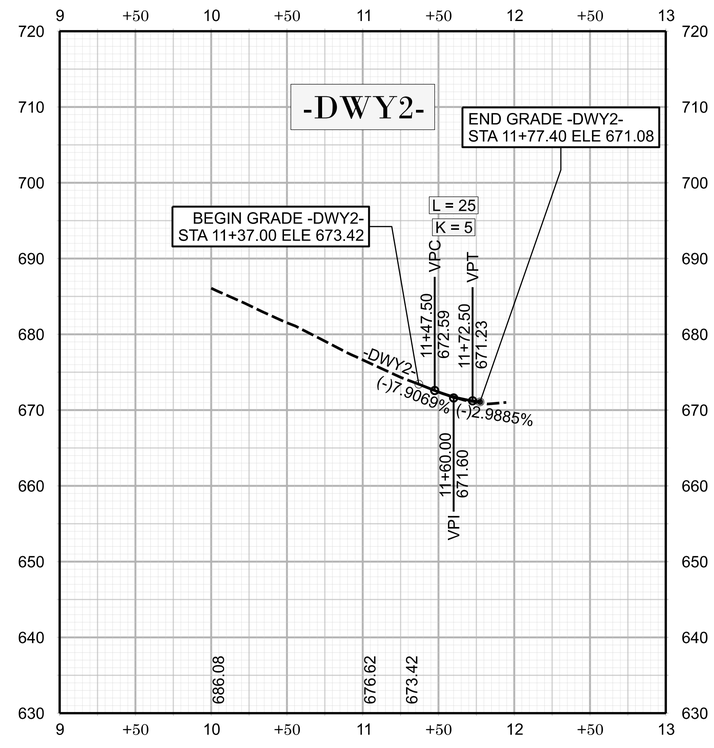
BRIDGE APPROACH SLAB

FOR STRUCTURE PLANS, SEE SHEETS S–1 THRU S–36
FOR –L–, –DWY1–, –DWY2– PROFILES, SEE SHEET NO. 5
FOR –DWY1–, –DWY2– DETAILS, SEE SHEET 2B–1

5/26/20







FOR –L–, –DWY1–, –DWY2– PLANS, SEE SHEET NO. 4

REVISIONS

BR-0093
05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042662 ENGINEER Hon C Nguyen
DocuSigned by: Hon Nguyen 04/03/2024

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044158 ENGINEER BENJAMIN J. HERRON
DocuSigned by: Benjamin J. Herron 04/03/2024

HYDRAULICS PREPARED BY
TGS ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED