This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

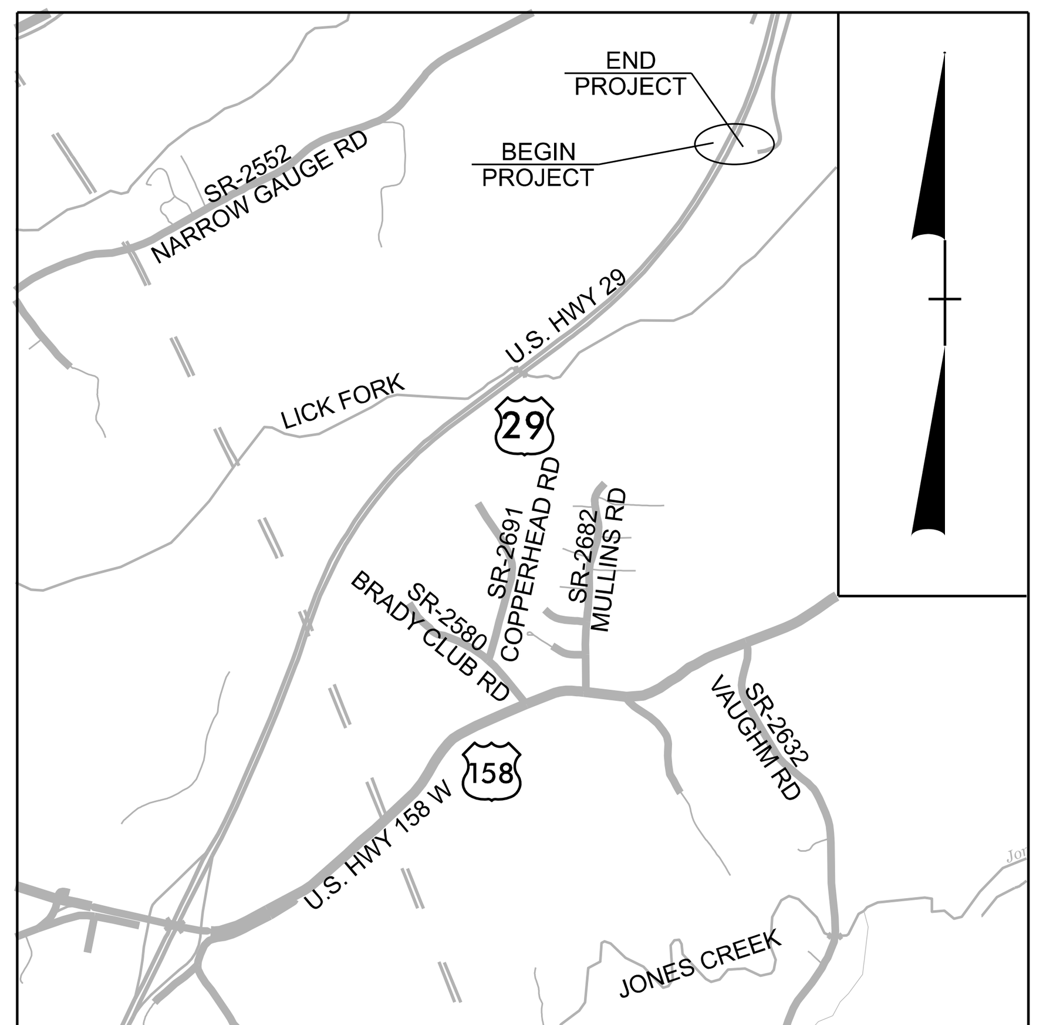
The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

01/16/24

TIP PROJECT: GMR07.XROC.001

CONTRACT: DG00680

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

LOCATION: *US 29 CROSSLINE WORK - PIPE 2*

TYPE OF WORK: *GRADING AND DRAINAGE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	GMR07.XROC.001	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
N/A	N/A	N/A

NAD 83/2011

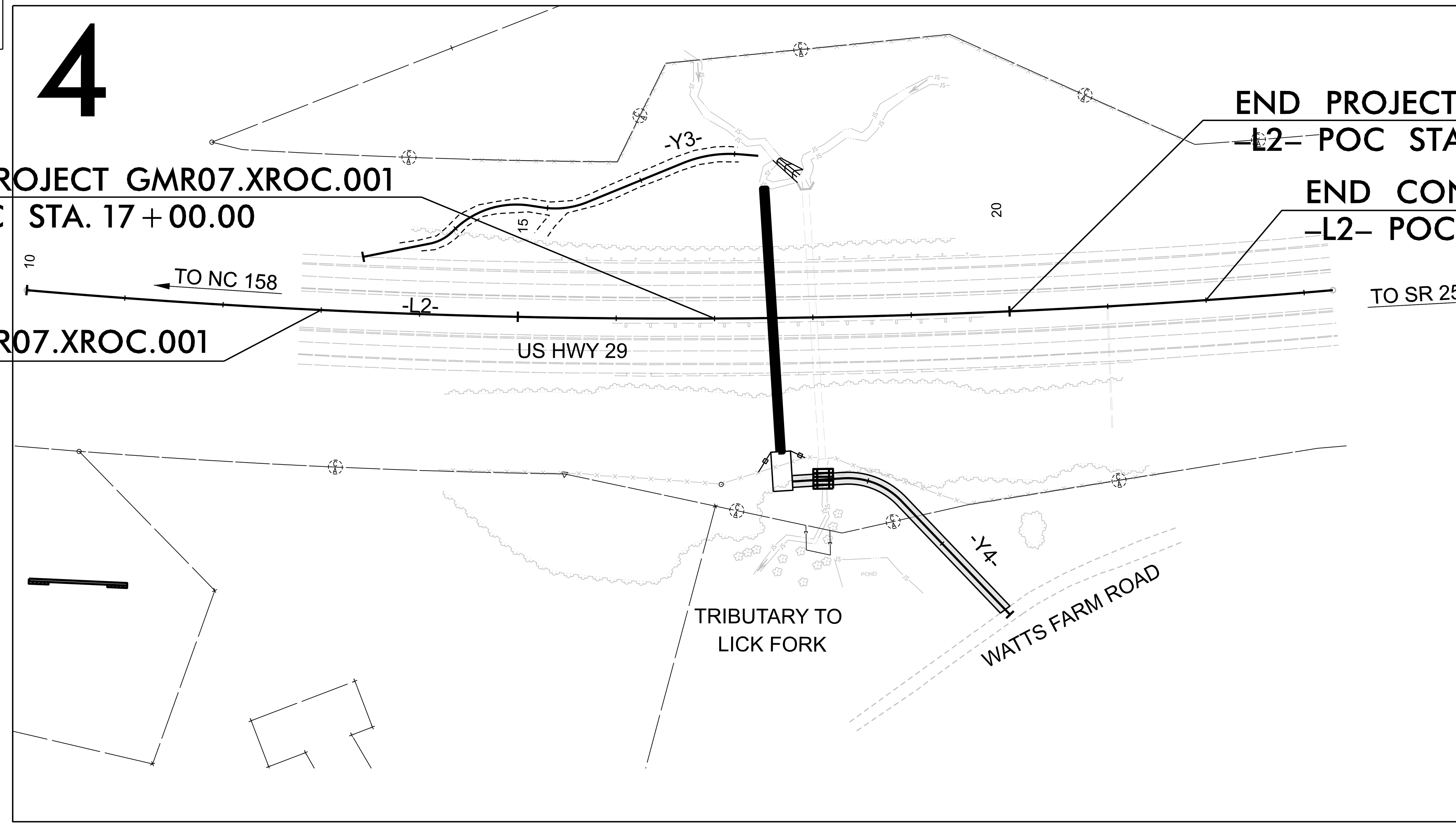
4

BEGIN PROJECT GMR07.XROC.001
-L2- POC STA. 17+00.00

END PROJECT GMR07.XROC.001
-L2- POC STA. 20+00.00

END CONSTRUCTION GMR07.XROC.001
-L2- POC STA. 22+00.00

BEGIN CONSTRUCTION GMR07.XROC.001
-L2- POC STA. 13+00.00



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 US 29

ADT 2025 = 15,400
ADT 2045 = 17,200
K = 8 %
D = 55 %
T = 10 % *
V = 70 MPH
TTST=5%/DUAL=5%
FUNC CLASS =
PRINCIPLE ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY WBS PROJECT GMR07.XROC.001 = 0.057 MI
LENGTH OF STRUCTURE WBS PROJ. GMR07.XROC.001 = 0.000 MI
TOTAL LENGTH WBS PROJECT GMR07.XROC.001 = 0.057 MI

Prepared in the Office of:

HNTB

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills ST,
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 19, 2026

LETTING DATE:
MAY 21, 2026

JAMES L. EASON, PE
PROJECT ENGINEER

MATTHEW R. LEVITON
PROJECT DESIGN ENGINEER

DANIEL R. DAGENHART
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Erik Seiler
914DF6C33CF245D...
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 048034 ENGINEER Erik Peter Seiler
3/26/2026

ROADWAY DESIGN ENGINEER

Signed by:
James L. Eason
D9E490E55F6940C...
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 018468 ENGINEER JAMES L. EASON
3/24/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

$$$-USER NAME-$$$ - $$$-DATE-$$$

5/26/20

GMR07.XROC.001
4CSI | 001A

NORTH CAROLINA PROFESSIONAL SEAL 018468 ENGINEER JAMES L. EASON

Signed by: James L. Eason
D9E490B5F4F2497...
4/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 1/16/2024
REVISED:

GRADING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECUARE A PROPER TIE-IN.

CLEARING:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATIONS AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
COMMUNICATIONS - AT&T

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
275.01	ROCK PLATING
DIVISION 8 - INCIDENTALS	
838.21	REINFORCED CONCRETE ENDWALL - FOR SINGLE 54" PIPE - 90° SKEW
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

9/21/21

GMR07.XROC.001
4CS1 | 0018

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)
- Computed Property Corner
- Existing Concrete Monument (ECM)
- Parcel / Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line
- Existing Control of Access Line
- Proposed Control of Access Line
- Proposed ROW and CA Line
- Existing Easement Line
- Proposed Temporary Construction Easement
- Proposed Temporary Drainage Easement
- Proposed Permanent Drainage Easement
- Proposed Permanent Drainage/Utility Easement
- Proposed Permanent Utility Easement
- Proposed Temporary Utility Easement
- Proposed Aerial Utility Easement

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

** SUE - Subsurface Utility Engineering*
LOS - Level of Service - A,B,C or D (Accuracy)

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line Test Hole (SUE - LOS A)*
- U/G Power Line (SUE - LOS B)*
- U/G Power Line (SUE - LOS C)*
- U/G Power Line (SUE - LOS D)*

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

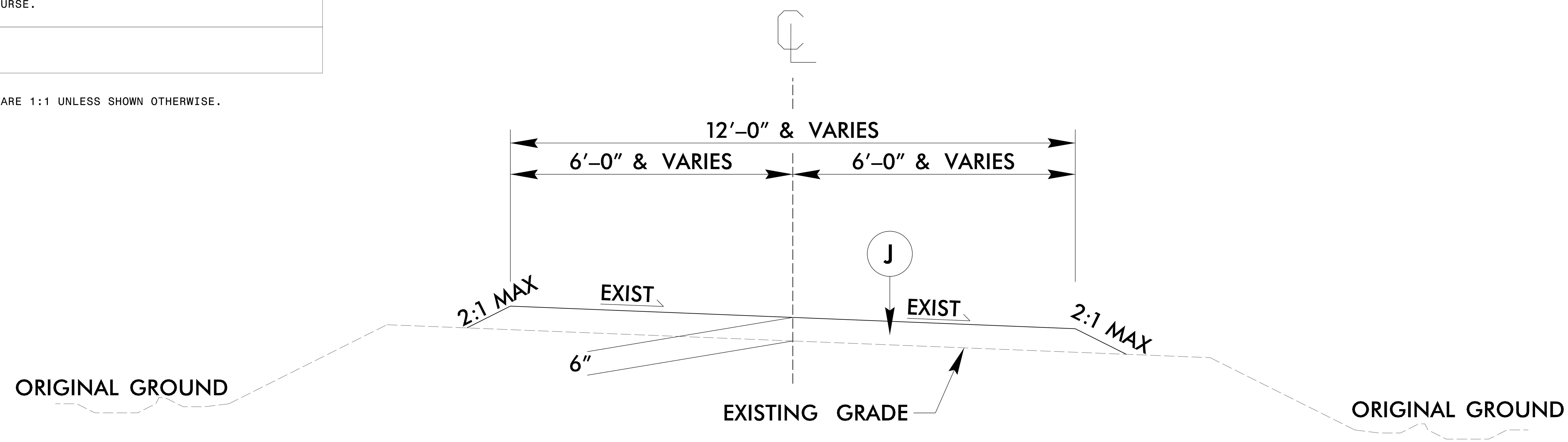
MISCELLANEOUS:

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

11/14/23

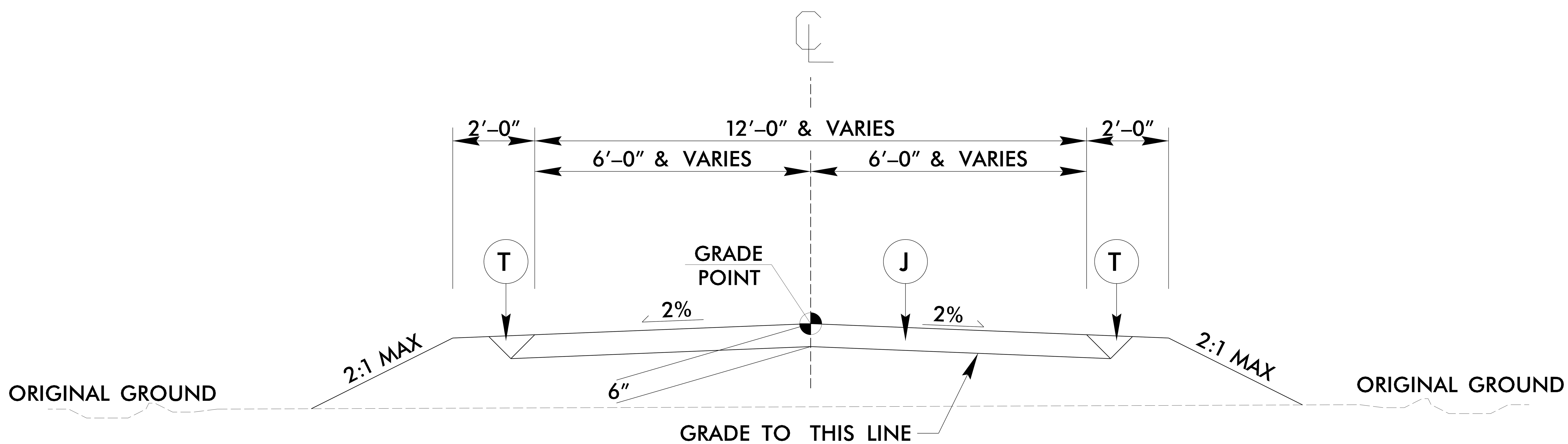
PAVEMENT SCHEDULE	
J	6″ AGGREGATE BASE COURSE.
T	EARTH MATERIAL

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



TYPICAL SECTION

–Y3– STA. 10 + 00 TO STA. 14 + 24



TYPICAL SECTION

–Y4– STA. 10 + 07.03 TO STA. 12 + 77.22

GMR07.XROC.001

4CS1	2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018468 ENGINEER JAMES EASON

Signed by:
[illegible]
D9E490E55F6940C...
3/24/2026

PREPARED BY

HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St,
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

11/14/23

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. + %	BORROW	WASTE
–Y4– 10+00.00	–Y4– 12+50.00	29		61	32	
PROJECT TOTALS:		29		61	32	
EST. SHOULDER MATERIAL						
LOSS DUE TO CLEARING AND GRUBBING						
ADDITIONAL UNDERCUT						
PROJECT TOTAL:		29		61	32	
GRAND TOTALS:		29		61	32	
SAY:		30			40	

NOTE: PLUS 10 CY FOR PIPE INLET/OUTLET

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

Earthwork quantities are calculated by the roadway designer.

FENCING SUMMARY
47" WOVEN WIRE

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LENGTH (FT)
–Y4–	12+63	12+85	RT	24
–Y4–	12+89	13+11	RT	32
			TOTAL:	56
			SAY:	60

GMR07.XROC.001

4CS1 | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

PREPARED BY

HNTB

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

COMPUTED BY: S.J. Martin DATE: 3/20/2025

CHECKED BY: E.P Seiler DATE: 8/12/2025

PROJECT NO.	SHEET NO.
GMR07.XROC.001	3D-1

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.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	Welded Steel Pipe (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"		
US 29		Inlet													
US 29		Inlet	Outlet		574	573.3		269							
SHEET TOTALS								269							

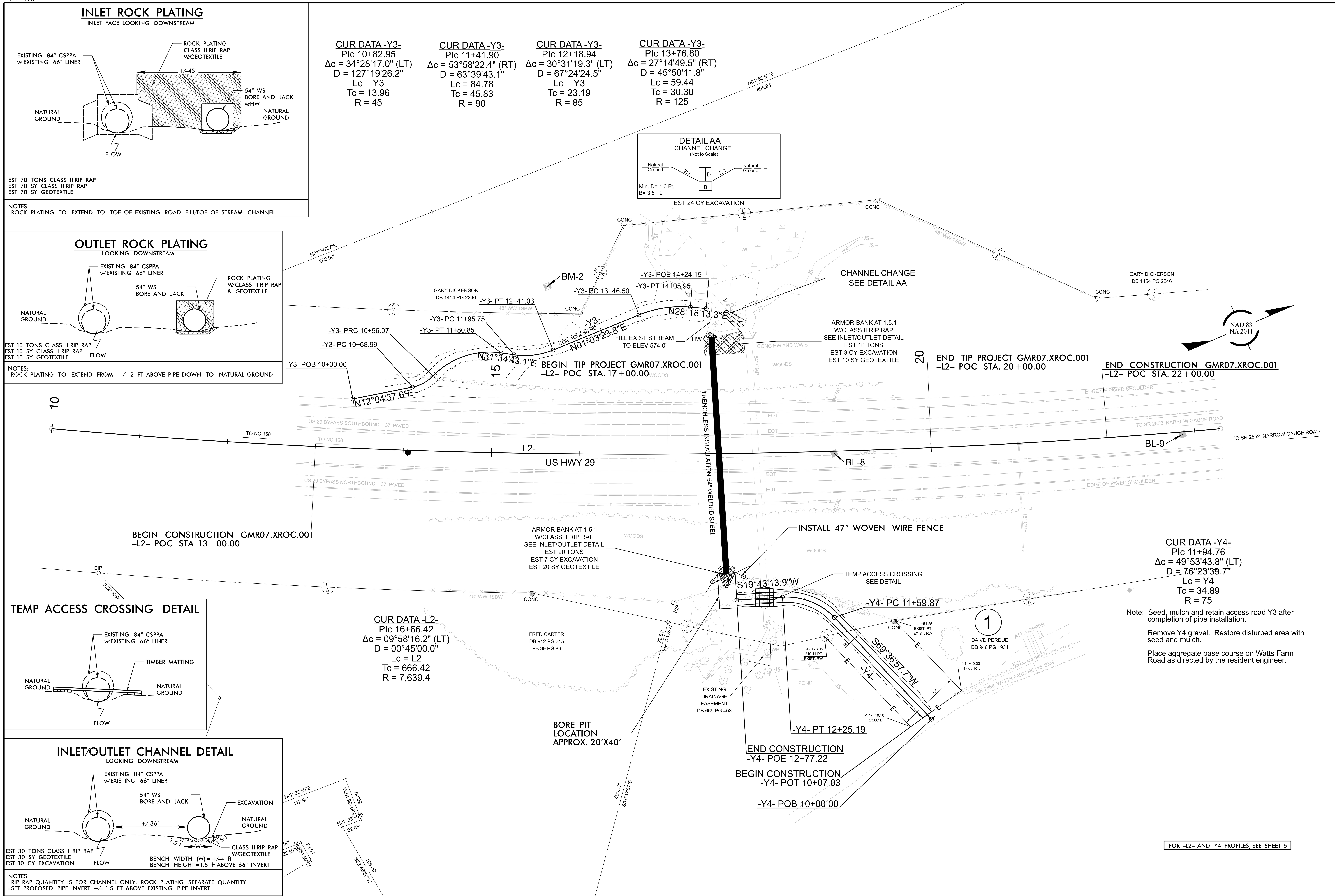
STATION	C.S. PIPE 54" .109	54" .138	54" .168	54" .138	54" .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168	72"	STRUCTURAL PLATE PIPE 60" 12	60" 10	60"	66" 12	66" 10	66"	72" 12	72" 10	72"	78"	78"	78"
US 29																								
US 29																								
SHEET TOTALS																								

STATION	REINFORCED ENDWALLS: ENDWALLS STD 838.21 WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN													REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72		PIPE REMOVAL LIN. FT.	REMARKS
US 29	5.2																												
US 29																													Minimum 1.00 inch thickness
SHEET TOTALS	5.2																												

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.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING

11/14/23


INLET ROCK PLATING
INLET FACE LOOKING DOWNSTREAM
EXISTING 84" CSPPA w/EXISTING 66" LINER
ROCK PLATING CLASS II RIP RAP W/GEOTEXTILE
+/-45'
54" WS BORE AND JACK w/HW
NATURAL GROUND
NATURAL GROUND
FLOW
EST 70 TONS CLASS II RIP RAP
EST 70 SY CLASS II RIP RAP
EST 70 SY GEOTEXTILE
NOTES:
-ROCK PLATING TO EXTEND TO TOE OF EXISTING ROAD FILL/TOE OF STREAM CHANNEL.
OUTLET ROCK PLATING
LOOKING DOWNSTREAM
EXISTING 84" CSPPA w/EXISTING 66" LINER
54" WS BORE AND JACK
ROCK PLATING W/CLASS II RIP RAP & GEOTEXTILE
NATURAL GROUND
FLOW
EST 10 TONS CLASS II RIP RAP
EST 10 SY CLASS II RIP RAP
EST 10 SY GEOTEXTILE
NOTES:
-ROCK PLATING TO EXTEND FROM +/- 2 FT ABOVE PIPE DOWN TO NATURAL GROUND
CUR DATA -Y3-
PIc 10+82.95
Δc = 34°28'17.0" (LT)
D = 127°19'26.2"
Lc = Y3
Tc = 13.96
R = 45
CUR DATA -Y3-
PIc 11+41.90
Δc = 53°58'22.4" (RT)
D = 63°39'43.1"
Lc = 84.78
Tc = 45.83
R = 90
CUR DATA -Y3-
PIc 12+18.94
Δc = 30°31'19.3" (LT)
D = 67°24'24.5"
Lc = Y3
Tc = 23.19
R = 85
CUR DATA -Y3-
PIc 13+76.80
Δc = 27°14'49.5" (RT)
D = 45°50'11.8"
Lc = 59.44
Tc = 30.30
R = 125
N01°53'57"E
805.94'
N01°50'37"E
262.00'
DETAIL AA
CHANNEL CHANGE
(Not to Scale)
Natural Ground
2:1
D
2:1
Natural Ground
B
Min. D= 1.0 Ft.
B= 3.5 Ft.
EST 24 CY EXCAVATION
CONC
CONC
CONC
CONC
WC
48" WW 1SBW
BM-2
GARY DICKERSON
DB 1454 PG 2246
-Y3- POE 14+24.15
-Y3- PT 14+05.95
-Y3- PC 13+46.50
-Y3- PT 12+41.03
-Y3- PC 11+95.75
-Y3- PT 11+80.85
-Y3- PRC 10+96.07
-Y3- PC 10+68.99
-Y3- POB 10+00.00
N12°04'37.6"E
N31°34'43.1"E
N01°03'23.8"E
N28°18'13.3"E
-Y3-
SOIL ACCESS RD
CHANNEL CHANGE
SEE DETAIL AA
FILL EXIST STREAM
TO ELEV 574.0'
HW
ARMOR BANK AT 1.5:1
W/CLASS II RIP RAP
SEE INLET/OUTLET DETAIL
EST 10 TONS
EST 3 CY EXCAVATION
EST 10 SY GEOTEXTILE
CONC HW AND WW'S
84" CMP
WOODS
GARY DICKERSON
DB 1454 PG 2246
NAD 83
NA 2011
BEGIN TIP PROJECT GMR07.XROC.001
-L2- POC STA. 17+00.00
END TIP PROJECT GMR07.XROC.001
-L2- POC STA. 20+00.00
END CONSTRUCTION GMR07.XROC.001
-L2- POC STA. 22+00.00
10
15
20
EDGE OF PAVED SHOULDER
US 29 BYPASS SOUTHBOUND 37' PAVED
TO NC 158
TO NC 158
EOT
EOT
-L2-
US HWY 29
TRENCHLESS INSTALLATION 54" WELDED STEEL
BL-8
BL-9
TO SR 2552 NARROW GAUGE ROAD
TO SR 2552 NARROW GAUGE ROAD
US 29 BYPASS NORTHBOUND 37' PAVED
EOT
EOT
EDGE OF PAVED SHOULDER
15" CMP
BEGIN CONSTRUCTION GMR07.XROC.001
-L2- POC STA. 13+00.00
ARMOR BANK AT 1.5:1
W/CLASS II RIP RAP
SEE INLET/OUTLET DETAIL
EST 20 TONS
EST 7 CY EXCAVATION
EST 20 SY GEOTEXTILE
WOODS
INSTALL 47" WOVEN WIRE FENCE
WOODS
CUR DATA -Y4-
PIc 11+94.76
Δc = 49°53'43.8" (LT)
D = 76°23'39.7"
Lc = Y4
Tc = 34.89
R = 75
EIP
0.28' R/W
S19°43'13.9"W
TEMP ACCESS CROSSING
SEE DETAIL
-Y4- PC 11+59.87
48" WW 1SBW
CONC
CONC
-L- +51.25
EXIST RT.
EXIST. RW
1
DAIVD PERDUE
DB 946 PG 1934
Note: Seed, mulch and retain access road Y3 after completion of pipe installation.
Remove Y4 gravel. Restore disturbed area with seed and mulch.
Place aggregate base course on Watts Farm Road as directed by the resident engineer.
TEMP ACCESS CROSSING DETAIL
EXISTING 84" CSPPA w/EXISTING 66" LINER
TIMBER MATTING
NATURAL GROUND
NATURAL GROUND
FLOW
CUR DATA -L2-
PIc 16+66.42
Δc = 09°58'16.2" (LT)
D = 00°45'00.0"
Lc = L2
Tc = 666.42
R = 7,639.4
FRED CARTER
DB 912 PG 315
PB 39 PG 86
22.81'
EIP TO R/W
-L- +73.05
210.11 RT.
EXIST. RW
S69°36'57.7"W
-Y4-
POND
ATT. COPPER
EOI
SR 2666 WATTS FARM RD 16' S&G
-Y4- +10.00
47.00' RT.
-Y4- +10.16
23.00' LT
70'
12'
EXISTING
DRAINAGE
EASEMENT
DB 669 PG 403
BORE PIT
LOCATION
APPROX. 20'X40'
-Y4- PT 12+25.19
END CONSTRUCTION
-Y4- POE 12+77.22
BEGIN CONSTRUCTION
-Y4- POT 10+07.03
-Y4- POB 10+00.00
400.73'
S51°47'57"E
INLET/OUTLET CHANNEL DETAIL
LOOKING DOWNSTREAM
EXISTING 84" CSPPA w/EXISTING 66" LINER
54" WS BORE AND JACK
EXCAVATION
NATURAL GROUND
NATURAL GROUND
+/-36'
1.5:1
W
1.5:1
CLASS II RIP RAP W/GEOTEXTILE
EST 30 TONS CLASS II RIP RAP
EST 30 SY GEOTEXTILE
EST 10 CY EXCAVATION
FLOW
BENCH WIDTH (W) = +/-4 ft
BENCH HEIGHT = 1.5 ft ABOVE 66" INVERT
NOTES:
-RIP RAP QUANTITY IS FOR CHANNEL ONLY. ROCK PLATING SEPARATE QUANTITY.
-SET PROPOSED PIPE INVERT +/- 1.5 FT ABOVE EXISTING PIPE INVERT.
N02°23'50"E
112.90'
N87°36'10"W
50.00'
N02°23'50"E
22.63'
23.01'
S82°46'50"W
108.00'
FOR -L2- AND Y4 PROFILES, SEE SHEET 5

GMR07.XROC.001

4CS1 | 004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018468 ENGINEER JAMES L. EASON

Signed by: [illegible]
D9E490E...
3/24/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048034 ENGINEER ERIK PETER SEILER

DocuSigned by: [illegible]
914DF6C33CF245D...
3/26/2026

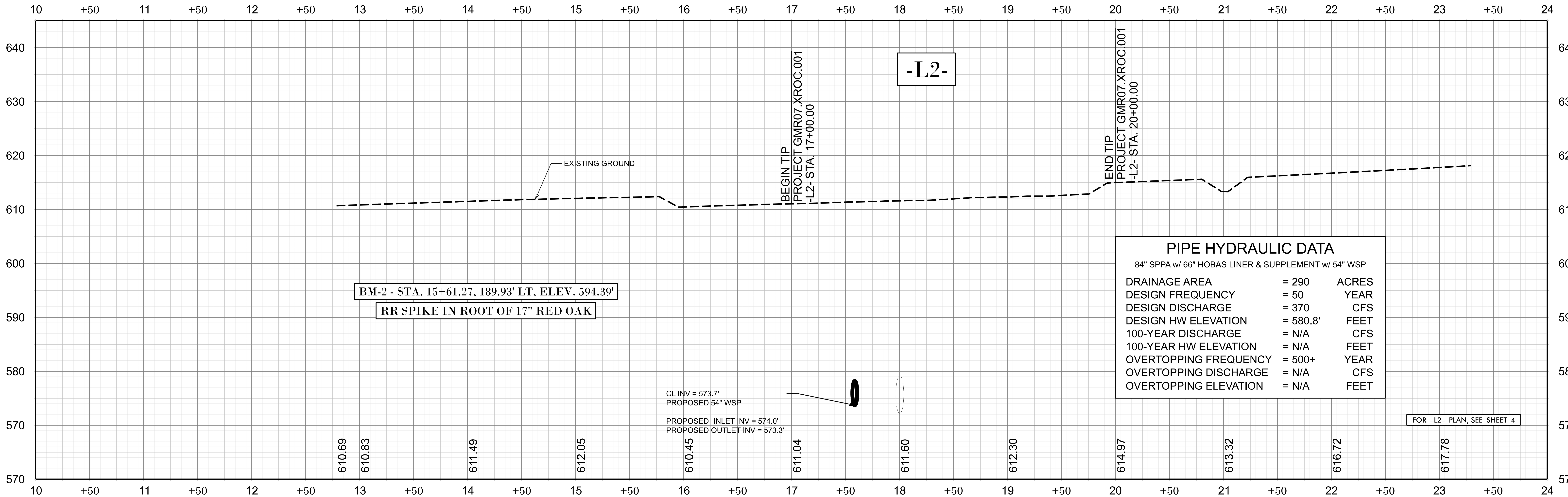
PREPARED BY

HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St, Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

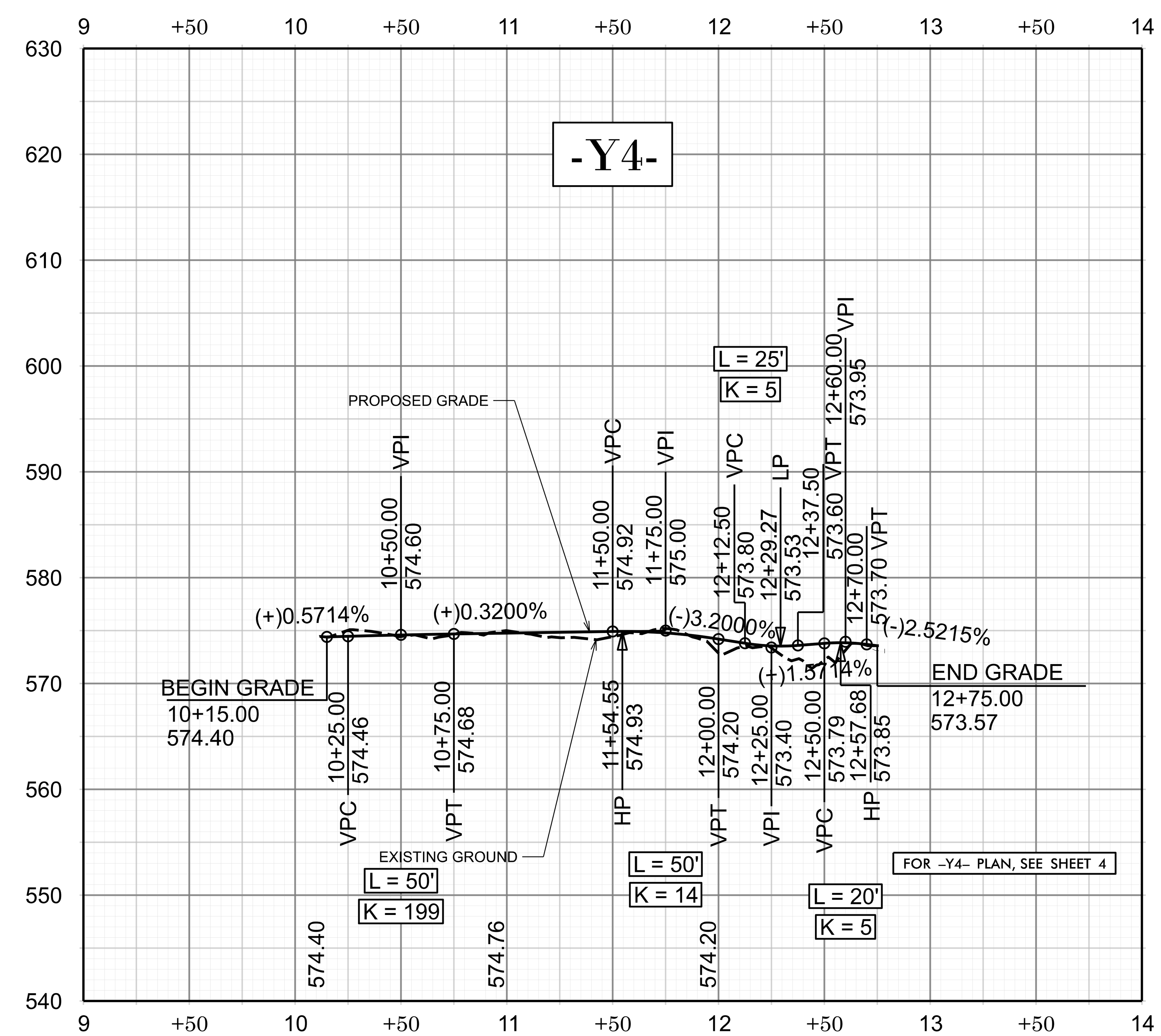
11/14/23



PIPE HYDRAULIC DATA

84" SPPA w/ 66" HOBAS LINER & SUPPLEMENT w/ 54" WSP

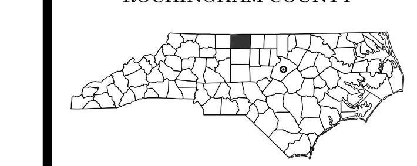
DRAINAGE AREA	= 290	ACRES
DESIGN FREQUENCY	= 50	YEAR
DESIGN DISCHARGE	= 370	CFS
DESIGN HW ELEVATION	= 580.8'	FEET
100-YEAR DISCHARGE	= N/A	CFS
100-YEAR HW ELEVATION	= N/A	FEET
OVERTOPPING FREQUENCY	= 500+	YEAR
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= N/A	FEET



GMR07.XROC.001

4CSI	005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018468 ENGINEER

Signed by: D9E490E55F6940C...

3/24/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048034 ENGINEER Erik Peter Seiler

DocuSigned by: 914DF6C33CF245D...

3/26/2026

PREPARED BY

HNTB

HNTB NORTH CAROLINA, P.C.
4000 Centre at North Hills St,
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

09/08/99

TIP PROJECT: GMR07.XROC.001

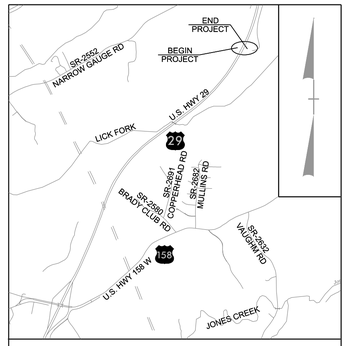
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	GMR07.XROC.001	RW01	8

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

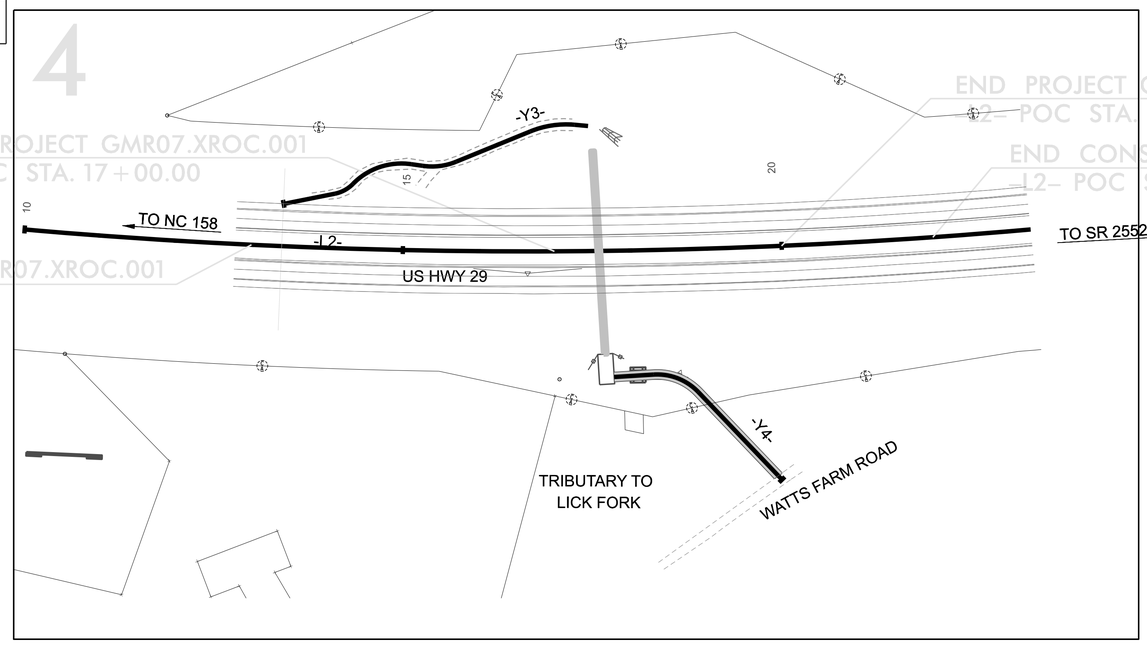
SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

- ROCKINGHAM- COUNTY

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)



NAD 83/2011

BEGIN PROJECT GMR07.XROC.001
–L2– POC STA. 17+00.00

BEGIN CONSTRUCTION GMR07.XROC.001
–L2– POC STA. 13+00.00

END PROJECT GMR07.XROC.001
–L2– POC STA. 20+00.00

END CONSTRUCTION GMR07.XROC.001
–L2– POC STA. 22+00.00

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50' 25' 0' 50' 100'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT US29-5
WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 958766.1889 EASTING: 1820652.2381
ELEVATION: 588.01
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999556782
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:
GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

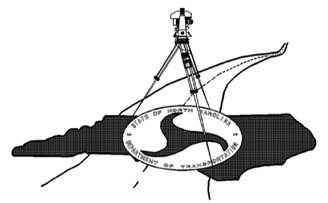
PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR JR

GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

Digitally signed by Parks H. Icenhour, Jr.
Date: 2026.03.10 16:32:43 -04'00'

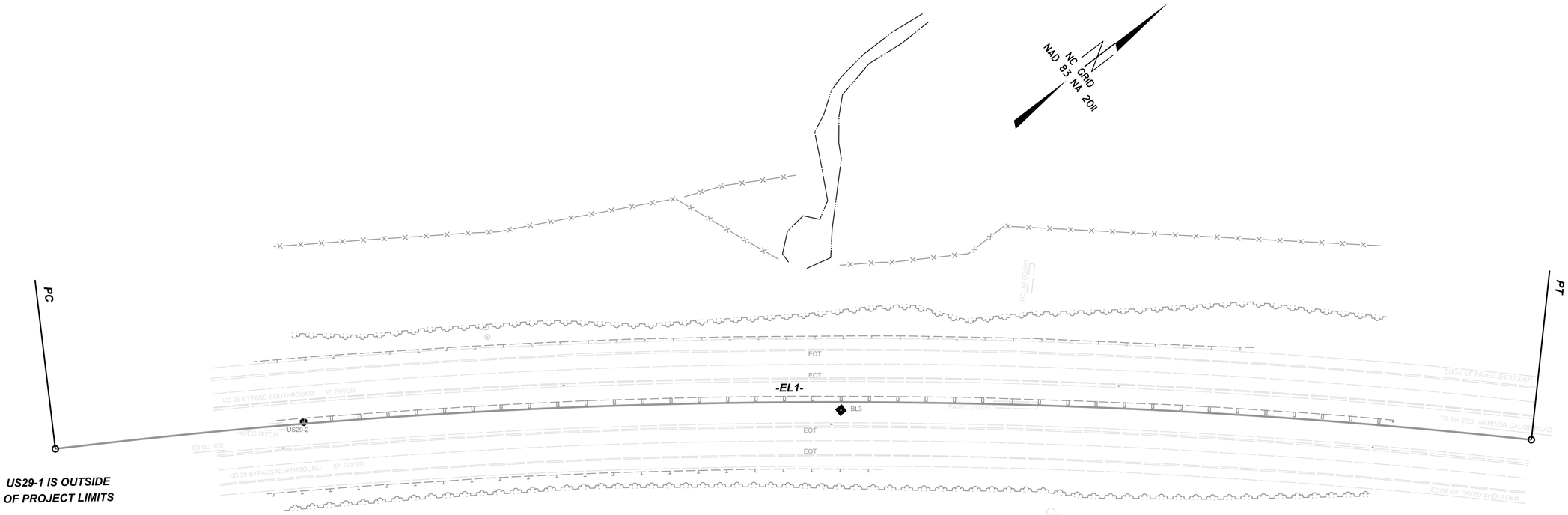
SIGNATURE: *DATE:*



5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



US29-1 IS OUTSIDE OF PROJECT LIMITS

SEE SHEET RW02C-4 FOR FURTHER ALIGNMENT DETAILS

50 25 0 50 100
PLANS 1"=50'

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 5/15/2024
DATUM/EPOCH:NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: US29-5
NORTHING:958766.1889
EASTING:1820652.2381
COMBINED GRID FACTOR: 0.9999556782
GEOID MODEL:18US
UNITS:FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 5/15/2024 TO 5/16/2024 , AND ALL COORDINATES ARE BASED ON NAD 83/NA 2011 AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 5TH DAY OF JUNE, 2024.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2024.06.05 17:11:36 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

US29BYPASS
R/W | 02C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

GEL ENGINEERING OF NC, INC. NO. C-1938 NORTH CAROLINA CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: US29BYPASS
County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

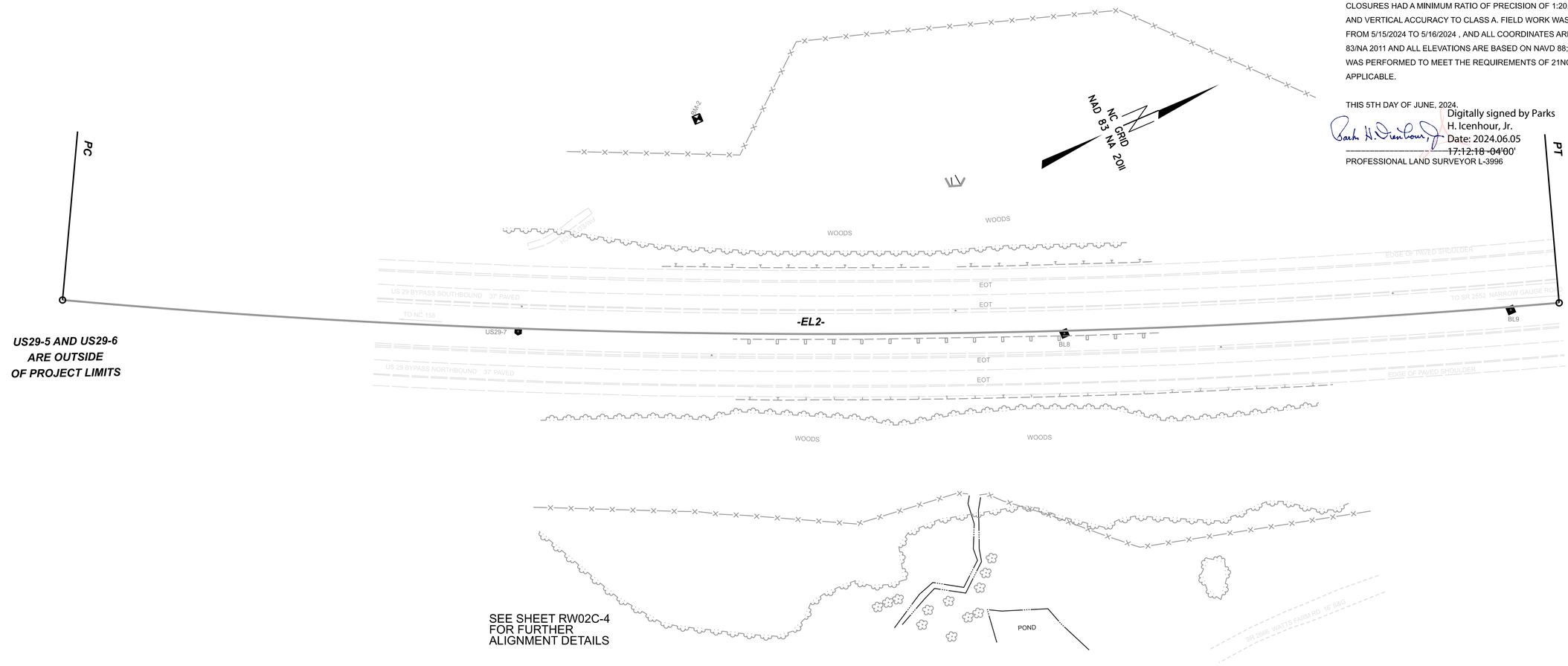
PREPARED BY

GEL Engineering of NC, Inc. 2304
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



US29-5 AND US29-6 ARE OUTSIDE OF PROJECT LIMITS

SEE SHEET RW02C-4 FOR FURTHER ALIGNMENT DETAILS

50 25 0 50 100

PLANS 1"=50'

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 5/15/2024
DATUM/EPOCH:NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: US29-5
NORTHING:958766.1889
EASTING:1820652.2381
COMBINED GRID FACTOR: 0.9999556782
GEOID MODEL:18US
UNITS:FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 5/15/2024 TO 5/16/2024 , AND ALL COORDINATES ARE BASED ON NAD 83/NA 2011 AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 5TH DAY OF JUNE, 2024.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2024.06.05 17:12:18 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

US29BYPASS
R/W 02C-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H ICENHOUR JR

GEL ENGINEERING OF NC, INC. NO. C-1938 NORTH CAROLINA CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: US29BYPASS
County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE POINT TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	US29-1	955367.278	1817275.412	647.98
2	US29-2	956110.801	1817678.347	636.73
3	BL-3	956494.136	1817956.918	630.75
4	BL-4	957020.504	1818399.04	621.37
5	US29-5	958766.189	1820652.238	588.01
6	US29-6	960902.649	1822612.775	604.47
7	US29-7	961652.657	1823019.764	609.72
8	BL-8	962097.449	1823212.233	612.36
9	BL-9	962469.677	1823348.978	615.87

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	956232.445	1818135.261	608.58	RR SPIKE IN ROOT OF 17" RED OAK
BM2	961873.124	1822909.116	594.39	RR SPIKE IN ROOT OF 14" RED OAK

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 5/15/2024
DATUM/EPOCH:NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: US29-5
NORTHING:958766.1889
EASTING:1820652.2381
COMBINED GRID FACTOR: 0.9999556782
GEOID MODEL:18US
UNITS:FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 5/15/2024 TO 5/16/2024 , AND ALL COORDINATES ARE BASED ON NAD 83/NA 2011 AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 5TH DAY OF JUNE, 2024.

[illegible]

Digitally signed by Parks H. Icenhour, Jr.
Date: 2024.06.05 17:14:04 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

US29BYPASS

R/W	02C-3

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: *US29BYPASS*
County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. DBA

GEL SOLUTIONS

an Affiliate of THE GEL GROUP, INC.

111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EXISTING ALIGNMENT NAME:EL1									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	955922.319	1817564.568							
CURVE					13°02'33.4"" Right	01°00'00.0""	1304.2604	654.9609	5729.578
PT	956962.732	1818346.427							

EXISTING ALIGNMENT NAME:EL2									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	961292.071	1822834.95							
CURVE					09°58'16.2"" Left	00°45'00.0""	1329.4834	666.4245	7639.397
PT	962511.599	1823360.139							

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 5/15/2024
DATUM/EPOCH:NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: US29-5
NORTHING:958766.1889
EASTING:1820652.2381
COMBINED GRID FACTOR: 0.9999556782
GEOID MODEL:18US
UNITS:FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 5/15/2024 TO 5/16/2024 , AND ALL COORDINATES ARE BASED ON NAD 83/NA 2011 AND ALL ELEVATIONS ARE BASED ON NAVD 88; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 5TH DAY OF JUNE, 2024

Parks H. Icenhour, Jr.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2024.06.05 17:11:55 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

US29BYPASS
R/W | 02C-04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA ★ DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: *US29BYPASS*
County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20

PROPOSED ALIGNMENT CONTROL SHEET

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

THIS 10TH DAY OF MARCH, 2026.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2026.03.10 16:33:43 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

PROPOSED ALIGNMENT: L2												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
PC	10+00.00	961292.0714	1822834.9502	N23°17'56.7"E	1327.8064	09°58'16.2"	00°45'00.0"	1329.4834	666.4245	7639.3970		

PROPOSED ALIGNMENT: Y3												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	961619.5135	1822939.1052	N12°04'37.6"E	68.9936							
PC	10+68.99	961686.9800	1822953.5406	N05°09'30.9"W	26.6673	34°28'17.0"	127°19'26.2"	27.0738	13.9606	45.0000		
PRC	10+96.07	961713.5393	1822951.1429	N04°35'31.9"E	81.6804	53°58'22.4"	63°39'43.1"	84.7804	45.8305	90.0000		
PT	11+80.85	961794.9574	1822957.6824	N31°34'43.1"E	14.9017							
PC	11+95.75	961807.6525	1822965.4860	N16°19'03.4"E	44.7468	30°31'19.3"	67°24'24.5"	45.2803	23.1912	85.0000		
PT	12+41.03	961850.5969	1822978.0582	N01°03'23.8"E	105.4724							
PC	13+46.50	961956.0514	1822980.0031	N14°40'48.5"E	58.8854	27°14'49.5"	45°50'11.8"	59.4439	30.2951	125.0000		
PT	14+05.95	962013.0145	1822994.9260	N28°18'13.3"E	18.1992							
END	14+24.15	962029.0380	1823003.5551									

PROPOSED ALIGNMENT: Y4												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	962079.5127	1823533.4914	S69°36'57.7"W	159.8749							
PC	11+59.87	962023.8267	1823383.6279	S44°40'05.8"W	63.2687	49°53'43.8"	76°23'39.7"	65.3131	34.8898	75.0000		
PT	12+25.19	961978.8307	1823339.1499	S19°43'13.9"W	52.0285							
END	12+77.22	961929.8536	1823321.5938									

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

GMR07.XROC.001

R/W | 02D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-3996 PARKS H. ICENHOUR, JR. LAND SURVEYOR

GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

TIP PROJECT: *GMR07.XROC.001*

County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20

RIGHT OF WAY CONTROL SHEET

NO RIGHT OF WAY OR PERMANENT EASEMENTS
ON THIS PROJECT.
TEMPORARY EASEMENTS ONLY

I, PARKS H ICENHOUR JR, PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

THIS 10TH DAY OF MARCH, 2026.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2026.03.10 16:32:14 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

GMR07.XROC.001

R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

TIP PROJECT: *GMR07.XROC.001*

County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

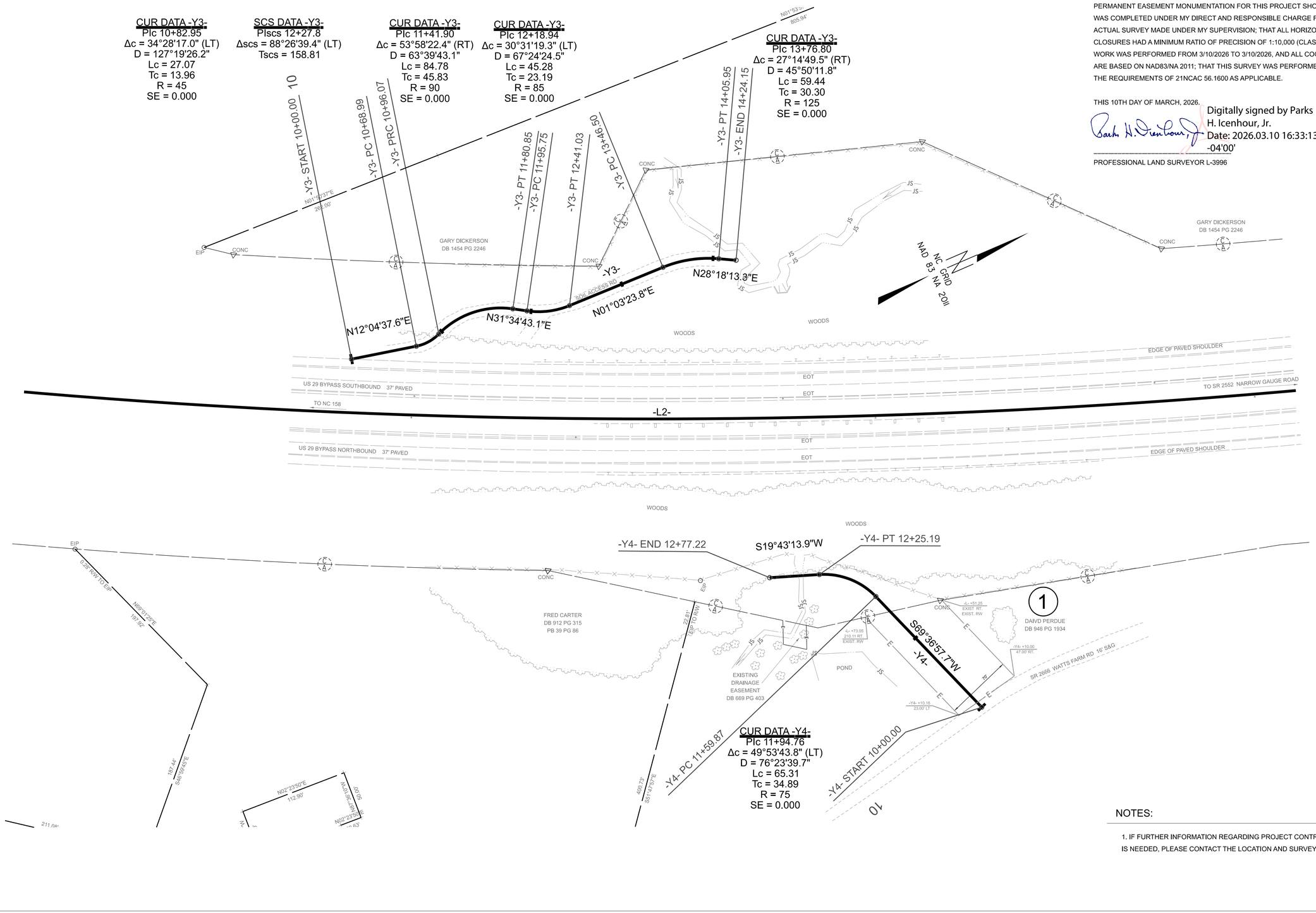
GEL Engineering of NC, Inc. 2964

GEL SOLUTIONS

an Affiliate of THE GEL GROUP, INC.

111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

5/26/20



I , PARKS H ICENHOUR JR , PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 3/10/2026 TO 3/10/2026, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 10TH DAY OF MARCH, 2026.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2026.03.10 16:33:13 -04'00'

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

GMR07.XROC.001

R/W | 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR JR.

GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

TIP PROJECT: *GMR07.XROC.001*

County: ROCKINGHAM

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. C-1938

GEL SOLUTIONS

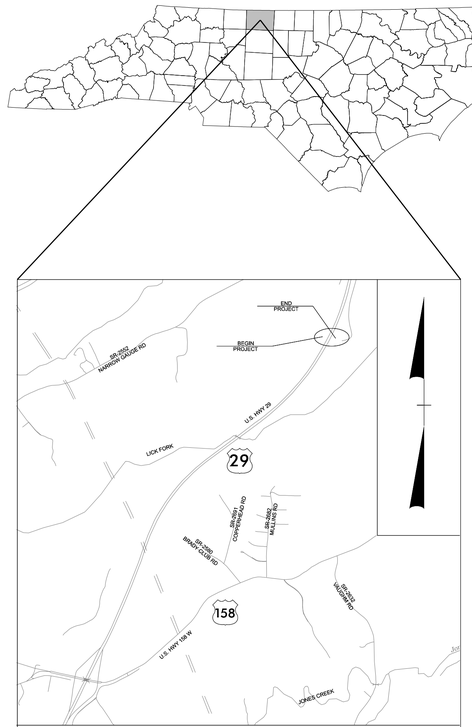
an Affiliate of THE GEL GROUP, INC.

111 CREEK RIDGE ROAD
SUITE C
GREENSBORO,NC 27406
(336) 516-9840
WWW.GEL-SOLUTIONS.COM

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ROCKINGHAM COUNTY



VICINITY MAP (NTS)

LOCATION: *US 29 CROSSLINE WORK - PIPE 2*

TYPE OF WORK: *GRADING AND DRAINAGE*

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

H. SHYU, P.E.
TRAFFIC CONTROL PROJECT ENGINEER

G. RODRIGUEZ, EIT
PROJECT DESIGN ENGINEER

D. MCPHERSON
DIV TRAFFIC ENGINEER

B. KETNER, P.E.
PROJECT TEAM LEAD

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

INDEX OF SHEETS

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JAN 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER

PHASING

STEP 1. USING RSD 1101.01 (SHEET 1 OF 3), PLACE ADVANCE WARNING SIGNS.

STEP 2. USING RSD 1101.02 (SHEET 4 OF 19), PLACE PCB ON SHOULDER AS SHOWN ON RSD 1101.04 (SHEET 1 OR 2 OF 2) PER ENGINEER INSTRUCTIONS. COMPLETE PIPE AWAY FROM TRAFFIC.

STEP 3. USING RSD 1101.02 (SHEET 4 OF 19), REMOVE PCB AND ALL REMAINING TRAFFIC CONTROL DEVICES.

SHEET NO.
TMP-1

GMR07.XROC.001

TIP PROJECT:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills Street
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: DocuSigned by: Helen Shyu DF15975A95E44EF...

DATE: 4/26/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042517 ENGINEER HELEN SHYU

PROJ. REFERENCE NO.	SHEET NO.
GMR07.XROC.001	TMP-1A

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

TRAFFIC MANAGEMENT STRATEGIES:
- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- WORK HOUR RESTRICTIONS FOR PEAK TRAVEL

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
ANY ROADS	MONDAY THRU FRIDAY 6:00 A.M. - 7:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS

ROAD NAME
ANY ROADS

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

TIME RESTRICTIONS CONTINUED

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING AND WITHIN 10 FT OF AN OPEN TRAVEL LANE ON A DIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

I) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER

J) USE SEQUENTIAL FLASHING WARNING LIGHTS ON DRUMS USED FOR THE MERGING TAPERS OF NIGHTTIME LANE CLOSURES IN ACCORDANCE WITH SECTION 1140 IN THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

K) NOTIFY THE NCDOT STATEWIDE TRANSPORTATION OPERATIONS CENTER (STOC) AT 877-627-7862 APPROXIMATELY 30 MINUTES PRIOR TO INSTALLING AND WITHIN 15 MINUTES AFTER REMOVING LANE CLOSURES ON INTERSTATES, FREEWAYS, CONTROLLED ACCESS FACILITIES, AND US ROUTES.

TRAFFIC PATTERN ALTERATIONS

L) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

M) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

N) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

O) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

   DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE

   ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

   INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

   INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

P) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION

   PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

PAVEMENT MARKINGS AND MARKERS

Q) REPLACE ANY DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills Street
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: DocuSigned by: Helen Shyu DF15975A95E44EF...

DATE: 4/26/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042517 ENGINEER HELEN SHYU

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

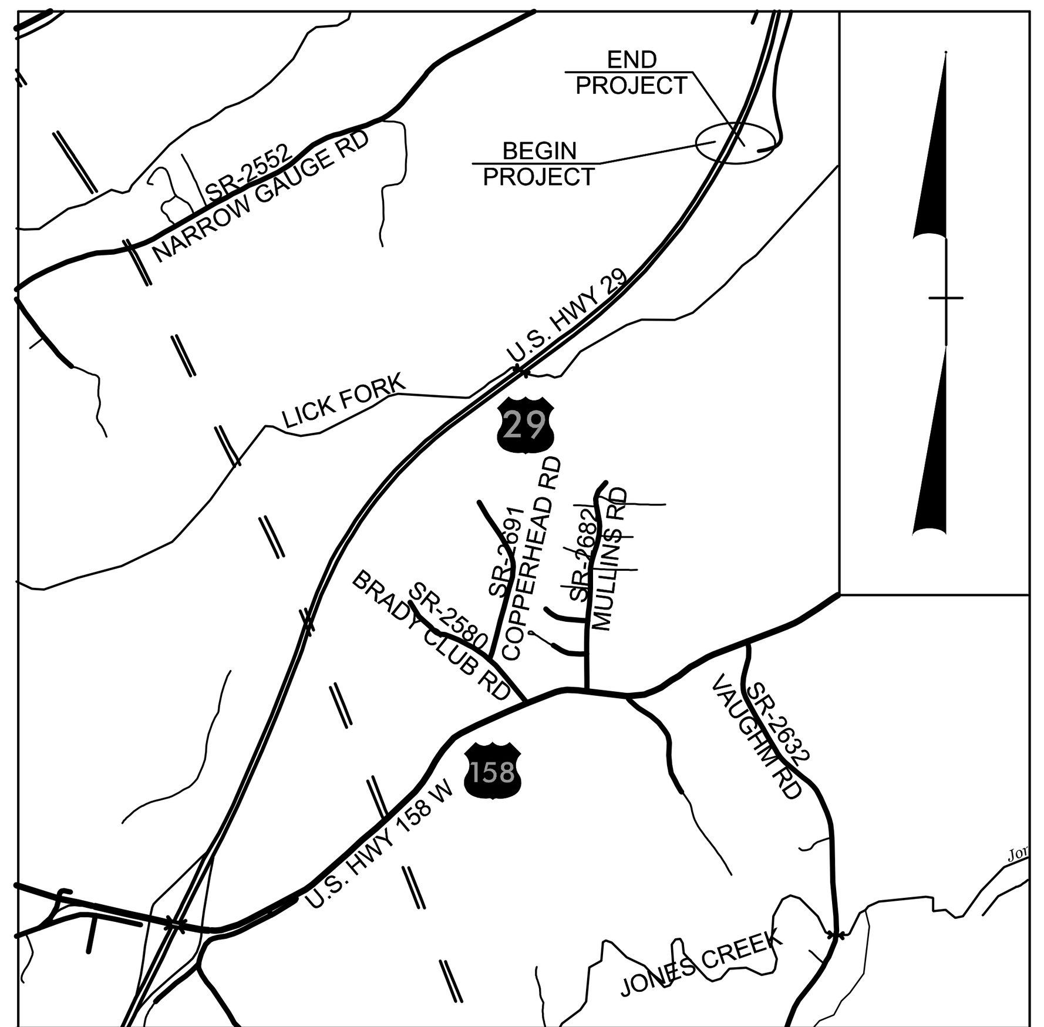
TRANSPORTATION MANAGEMENT PLAN

MANAGEMENT STRATEGIES AND GENERAL NOTES

TIP PROJECT: GMR07.XROC.001

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	GMR07.XROC.001	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



VICINITY MAP (NTS)

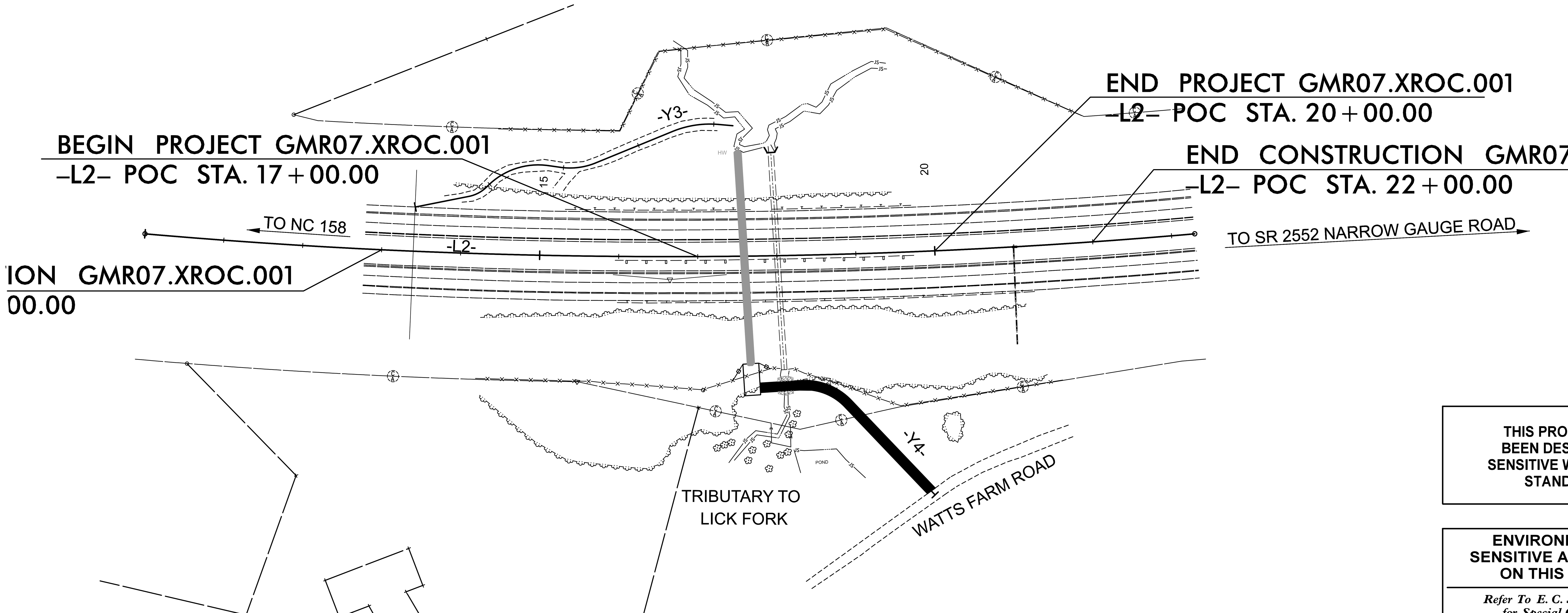
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ROCKINGHAM COUNTY

LOCATION: *US 29 CROSSLINE WORK - PIPE 2*

TYPE OF WORK: *GRADING AND DRAINAGE*

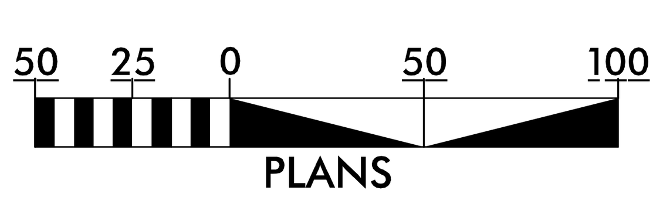


THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

HNTB

Prepared In the Office of:

HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills ST,
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

Designed by:

NATALIE CHAN, P.E. — *3444*
NAME — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

PROJECT REFERENCE NO.	SHEET NO.
GMR07.XROC.001	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

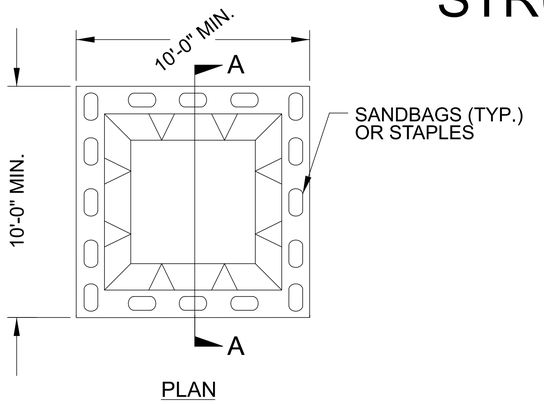
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

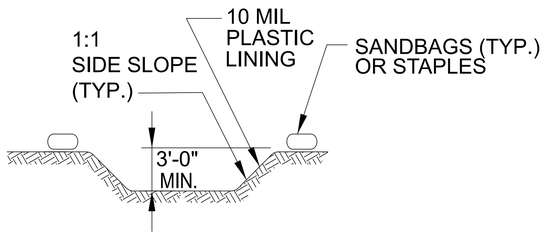
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	EW EW EW
1636.03	Coir Fiber Wattle Barrier	CFW CFW CFW

PROJECT REFERENCE NO.	SHEET NO.
GMR07.XROC.001	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

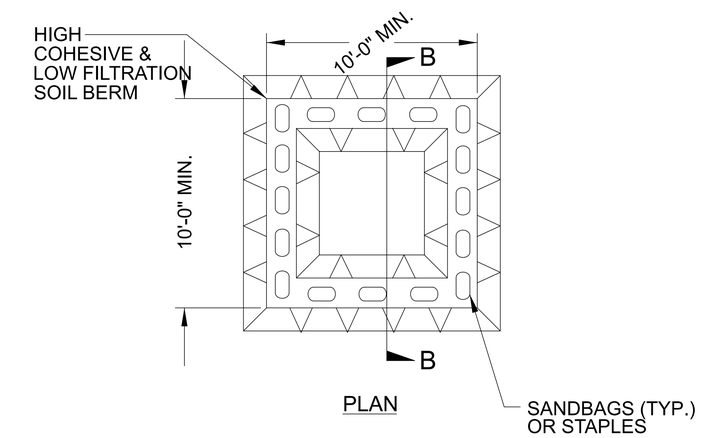
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

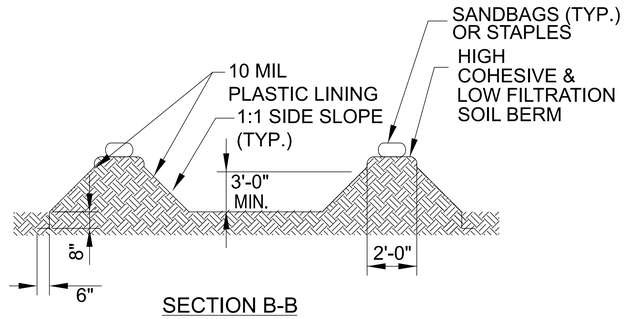
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

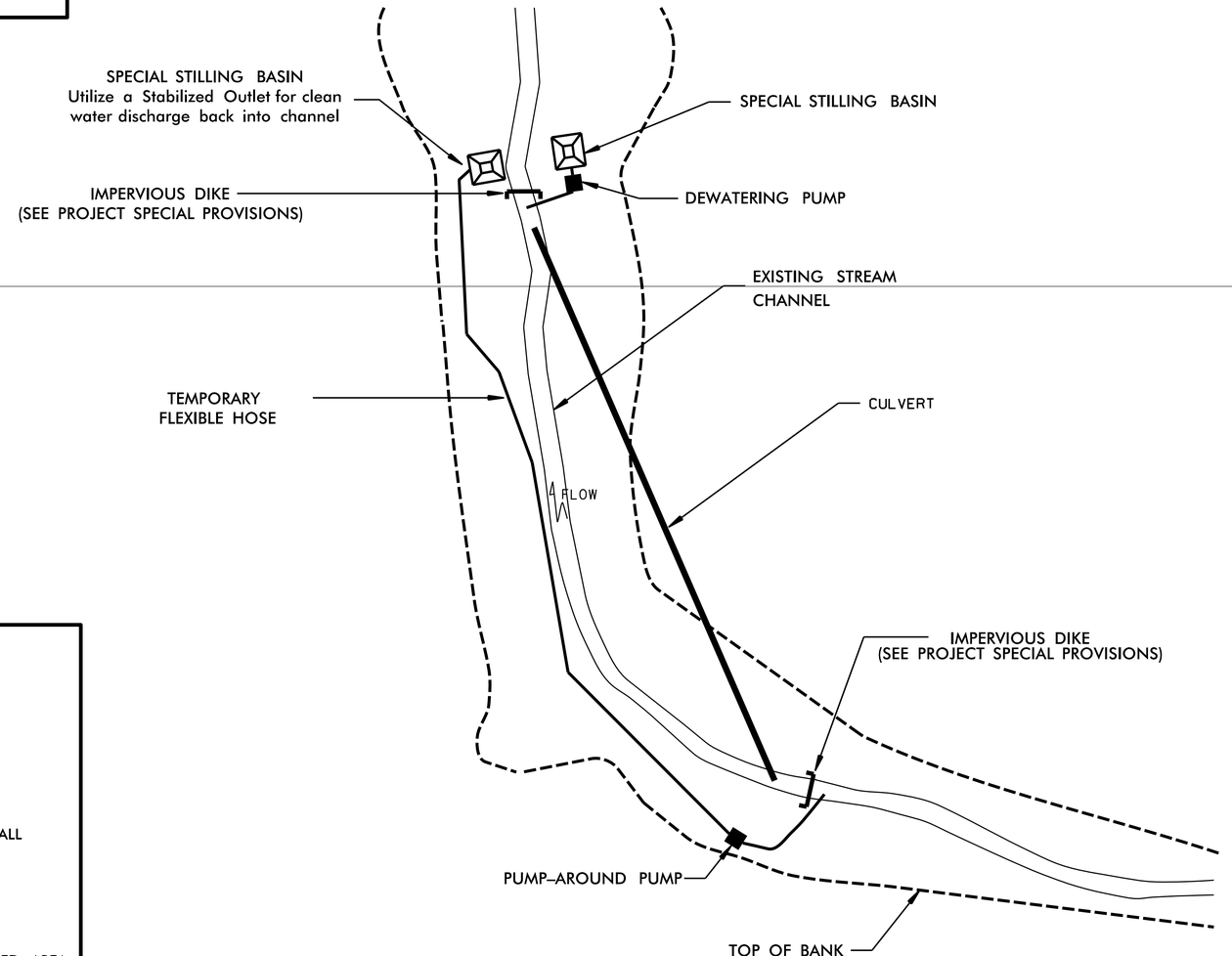
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

EXAMPLE OF PUMP–AROUND OPERATION

NOTES:
1) All excavation shall be performed in only dry or isolated areas of the work zone.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL STILLING BASIN.
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
6. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

PROJECT REFERENCE NO.	SHEET NO.
GMR07.XROC.001	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

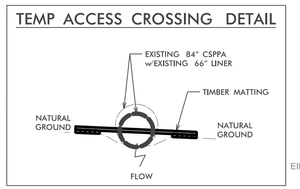
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

5/26/20

TEMP ACCESS CROSSING DETAIL



INLET ROCK PLATING

INLET FACE LOOKING DOWNSTREAM

EST 70 TONS CLASS II RIP RAP
EST 70 SY CLASS II RIP RAP
EST 70 SY GEOTEXTILE

NOTES:
-ROCK PLATING TO EXTEND TO TOE OF EXISTING ROAD FILL/TOE OF STREAM CHANNEL

OUTLET ROCK PLATING

LOOKING DOWNSTREAM

EST 10 TONS CLASS II RIP RAP
EST 10 SY CLASS II RIP RAP
EST 10 SY GEOTEXTILE

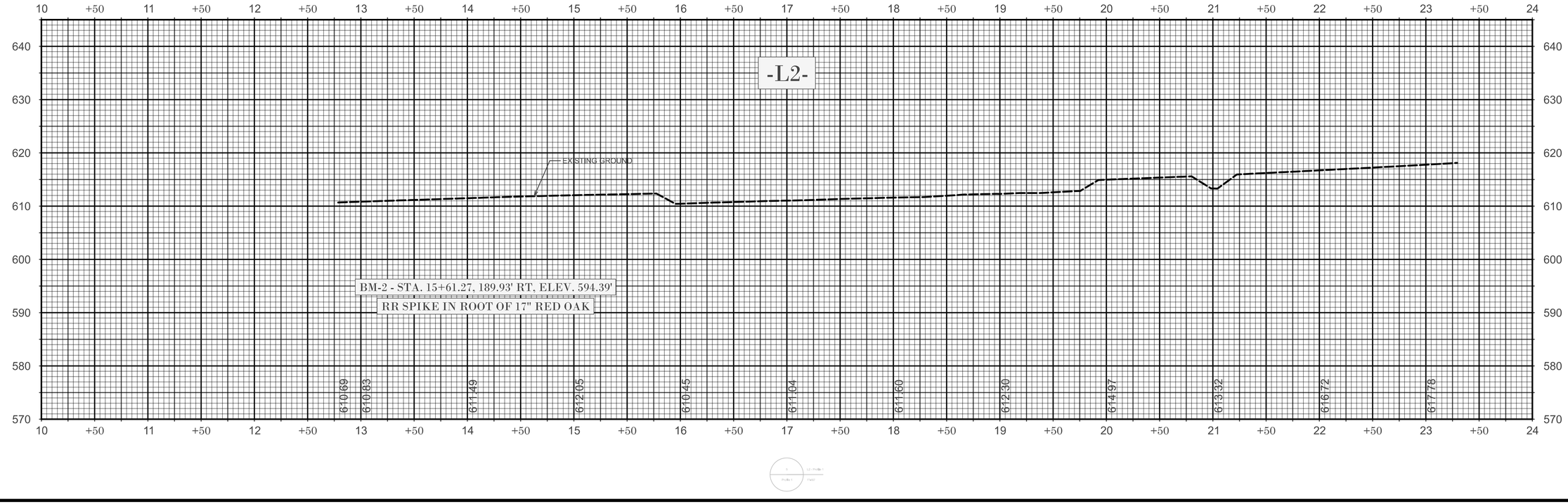
NOTES:
-ROCK PLATING TO EXTEND FROM +/- 2 FT ABOVE PIPE DOWN TO NATURAL GROUND

INLET/OUTLET CHANNEL DETAIL

LOOKING DOWNSTREAM

EST 30 TONS CLASS II RIP RAP
EST 30 SY GEOTEXTILE
EST 10 CY EXCAVATION

NOTES:
-RIP RAP QUANTITY IS FOR CHANNEL ONLY. ROCK PLATING SEPARATE QUANTITY.
-SET PROPOSED PIPE INVERT +/- 1.5 FT ABOVE EXISTING PIPE INVERT.



GMR07.XROC.001

004 | EC-4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROCKINGHAM COUNTY

ROADSIDE ENVIRONMENTAL UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

HNTB

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

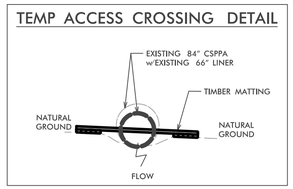
REVISIONS

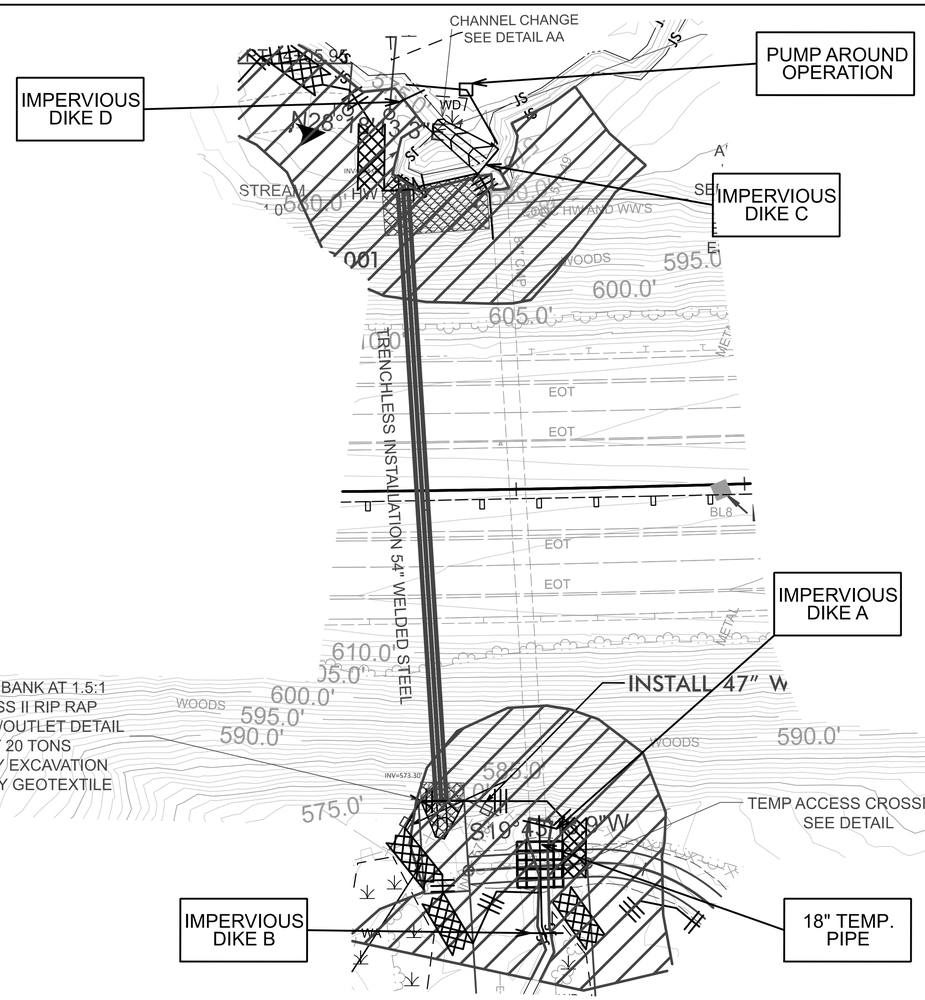
CULVERT CONSTRUCTION SEQUENCE STA. 17+59 -L2-

PROJECT REFERENCE NO.	SHEET NO.
GMR07.XROC.001	EC-4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

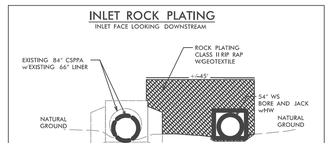
1. UTILITIZE SPECIAL STILLING BASIN(S) DURING PIPE INSTALLATION AS NEEDED.
2. INSTALL IMPERVIOUS DIKE A, B, C, D, PUMP AROUND OPERATION, AND TEMPORARY 18” PIPE AS SHOWN ON PLAN.
3. DEWATER WORK AREA(S) BY SPECAIL STILLING BASIN(S) AS NEEDED.
4. CONSTRUCT TEMPORARY ACCESS CROSSING AND TEMPORARY ACCESS ROAD ON DOWNSTREAM SIDE AS SHOWN ON PLAN AND DETAIL.
5. INSTALL PROPOSED 54” WELDED STEEL PIPE BY TRENCHLESS INSTALLATION WHILE KEEPING THE FLOW IN THE EXISTING 84” CMP.
6. INSTALL UPSTREAM AND DOWNSTREAM ARMOR BANK, ROCK PLATING, CHANNEL CHANGE, AND HEADWALL.
7. REMOVE TEMPORARY ACCESS CROSSING AND TEMPORARY ACCESS ROAD.
8. REMOVE IMPERVIOUS DIKE A, B, C, D, PUMP AROUND OPERATION, AND TEMPORARY 18” PIPE.
9. REMOVE ANY REMAINING SPECIAL STILLING BASIN(S).
10. COMPLETE CONSTRUCTION.

TEMP ACCESS CROSSING DETAIL





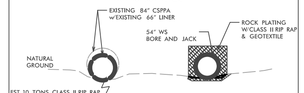
INLET ROCK PLATING
INLET FACE LOOKING DOWNSTREAM



EST 70 TONS CLASS II RIP RAP
EST 70 SY CLASS II RIP RAP
EST 70 SY GEOTEXTILE

NOTES:
-ROCK PLATING TO EXTEND TO TOE OF EXISTING ROAD FILLTOE OF STREAM CHANNEL

OUTLET ROCK PLATING
LOOKING DOWNSTREAM



EST 10 TONS CLASS II RIP RAP
EST 10 SY CLASS II RIP RAP
EST 10 SY GEOTEXTILE

NOTES:
-ROCK PLATING TO EXTEND FROM +/- 2 FT ABOVE PIPE DOWN TO NATURAL GROUND

INLET/OUTLET CHANNEL DETAIL
LOOKING DOWNSTREAM

EST 30 TONS CLASS II RIP RAP
EST 30 SY GEOTEXTILE
EST 10 CY EXCAVATION

BENCH WIDTH (W)= +-4 FT
BENCH HEIGHT=1.5 ft ABOVE 66" INVERT

CLASS II RIP RAP W/GEOTEXTILE

NOTES:
-RIP RAP QUANTITY IS FOR CHANNEL ONLY. ROCK PLATING SEPARATE QUANTITY.
-SET PROPOSED PIPE INVERT +/- 1.5 FT ABOVE EXISTING PIPE INVERT.