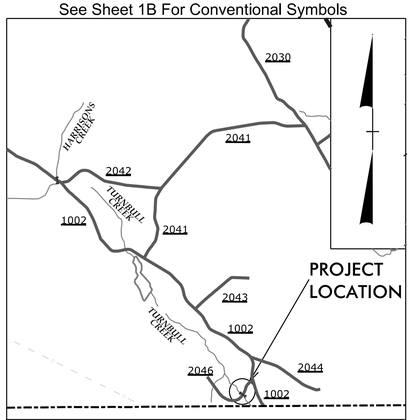
09/08/99

PROJECT: BP6-R021

CONTRACT: DF00489

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

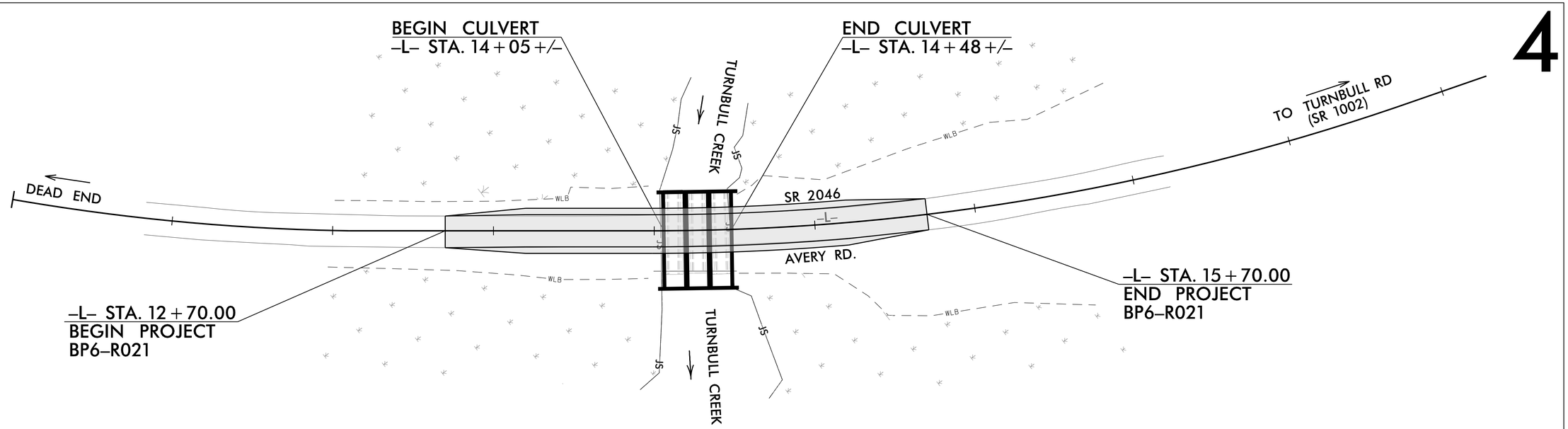
LOCATION: *STRUCTURE #250208 OVER TURNBULL CREEK ON SR 2046 AVERY RD.*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING & CULVERT*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6-R021	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP6.R021.1	N/A	PE
BP6.R021.2	N/A	R/W & UTIL.
BP6.R021.3	N/A	CONST.

NAD 83/ NA 2011



4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 618
ADT 2045 = 754
V = 60 MPH
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH STRUCTURE PROJECT #BP6–R021	= 0.008 MILES
LENGTH ROADWAY PROJECT #BP6–R021	= 0.049 MILES
TOTAL LENGTH PROJECT #BP6–R021	= 0.057 MILES

NCDOT CONTACT: ADAM T. BRITT

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

NORTH CAROLINA DEPARTMENT OF TRANSPORATION
DIVISION 6
558 GILLESPIE ST
FAYETTEVILLE, NC 28301

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 5, 2024

LETTING DATE: DECEMBER 18, 2024

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN R. TURNER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

9/23/2024

Signed by: John W. Twisdale, Jr. P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 024897 ENGINEER John W Twisdale, Jr.

ROADWAY DESIGN ENGINEER

9/20/2024

DocuSigned by: Jimmy Terry P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L TERRY

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/26/20

INDEX OF SHEETS

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

GRADE LINE:
GRADING AND SURFACING:

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 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

SUBSURFACE DRAINS:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE SOUTH RIVER EMC AND BRIGHTSPEED.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

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 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
876.01	Rip Rap in Channels and Ditches

BP6-R021
2RD2 | 001A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 035018 ENGINEER JIMMY L. TERRELL
5/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

TGS ENGINEERS
201 W. MARION ST., STE 200
LUMBERTON, NC 28358
PH: (704) 472-6003
CORP. LICENSE NO.: C-0275

REVISIONS

11/27/23

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BPG-R021
2R02 | 0018

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

5/26/20

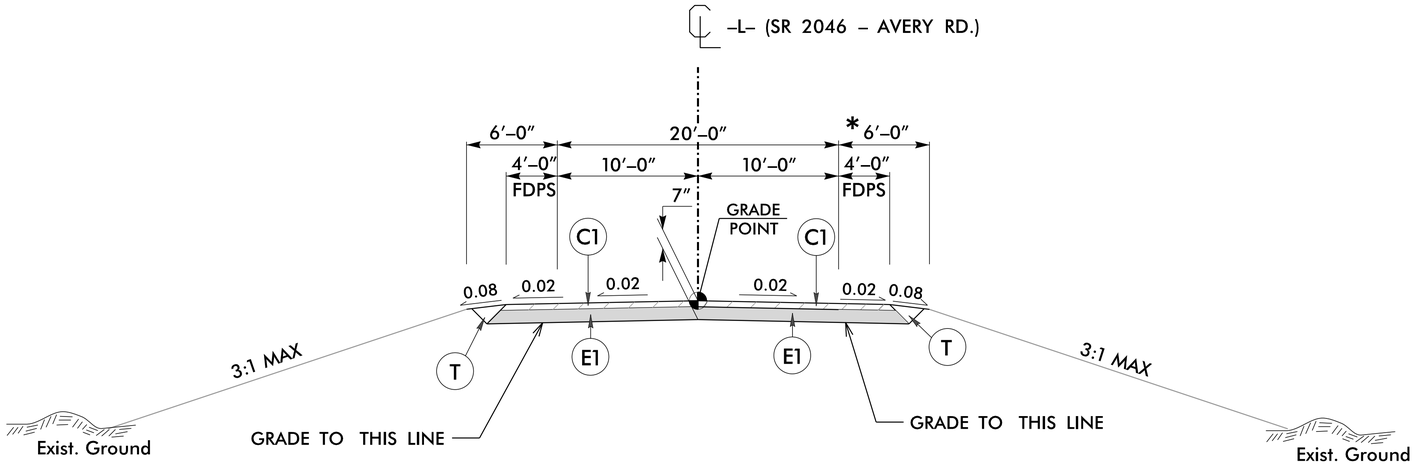
FINAL PAVEMENT SCHEDULE

2/22/2024

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1 ½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	INCIDENTAL MILLING, SEE THIS SHEET FOR DETAIL

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

* NOTE: FINAL SHOULDER WIDTH ON RIGHT SIDE OF –L– SHALL BE DETERMINED BY PHASE II TRAFFIC CONTROL SHIFT. (SEE CROSS–SECTIONS)



TYPICAL SECTION NO. 1

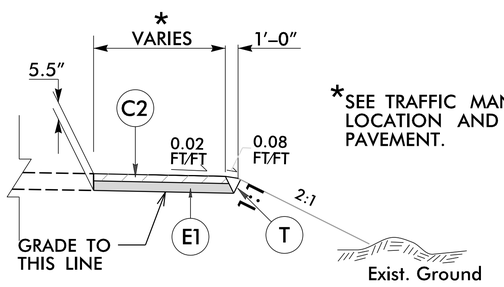
USE TYPICAL SECTION NO. 1

-L- STA. 13+20.00 TO -L- STA. 15+20.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:

-L- STA. 12+70.00 TO -L- STA. 13+20.00
-L- STA. 15+20.00 TO -L- STA. 15+70.00

TEMPORARY PAVEMENT DETAIL

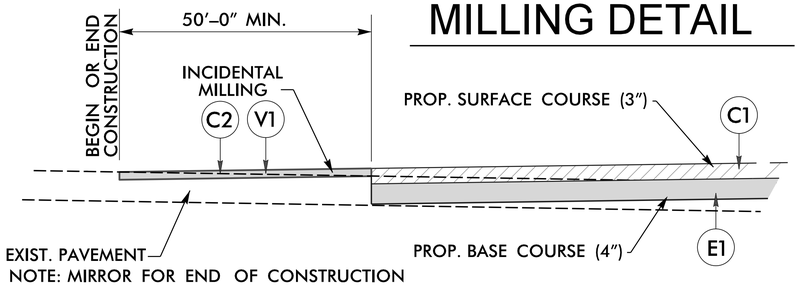


*SEE TRAFFIC MANAGEMENT PLANS FOR LOCATION AND WIDTH OF TEMPORARY PAVEMENT.

USE DETAIL AS FOLLOWS:

-L- STA. 12+77+/- TO -L- STA. 15+62+/-

MILLING DETAIL



NOTE: MIRROR FOR END OF CONSTRUCTION

USE MILLING DETAIL AS FOLLOWS:

MILLING AND RESURFACING:
-L- STA. 12+70.00 TO -L- STA. 13+20.00
-L- STA. 15+20.00 TO -L- STA. 15+70.00

REVISIONS

BP6-R021

2RD2 | 2A-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY
9/20/2024

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARCO
9/20/2024

PREPARED BY

TGS ENGINEERS
210 E. GRACE ST.
SHELBY, NC 28150
PH. (704) 476-0003
CORP. LICENSE NO.: C-0275

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

COMPUTED BY: SGM DATE: 9/9/2024
CHECKED BY: JLT DATE: 9/12/24

PROJECT NO.	SHEET NO.
BP6-R021	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 12+70.00	-L- 15+70.00	74	600	526	
SUBTOTALS:		74	600	526	0
TOTALS:		74	600	526	0
LOSS DUE TO CLEARING & GRUBBING		-30		30	
PROJECT TOTALS:		44	600	556	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				28	
GRAND TOTALS:		44	600	584	0
SAY:		**50**		**600**	

SHALLOW UNDERCUT = 100 CUBIC YARDS
SELECT GRANULAR MATERIAL = 400 CUBIC YARDS
PER GEOTECH RECOMMENDATION, ESTIMATED 450 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

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

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

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-L-	12+70	13+20	RT	1.89
-L-	13+20	15+20	CL	430.28
Temporary Pavement				
-L-	12+77	15+62	RT	296.57
			GRAND TOTALS:	728.74
			SAY:	**750**

COMPUTED BY: K. de Montbrun DATE: 7/8/2024
CHECKED BY: M. Walko DATE: 7/8/2024

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
BP6-R021	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

***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	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.**

11/14/23

CUR DATA -L-	CUR DATA -L-
PIc 11+05.28	PIc 16+39.91
Δc = 08°56'46.5" (LT)	Δc = 19°06'36.4" (LT)
D = 04°15'26.2"	D = 03°59'59.9"
Lc = 210.14	Lc = 477.76
Tc = 105.28	Tc = 241.12
R = 1,345.83	R = 1,432.4
SE = EXIST.	SE = 0.060

BACKFILL WITH CLASS II RIP RAP
15 FEET FROM INLET TO THE
ELEVATION OF PROPOSED PIPE
(EST. 165 TONS)

SMITHFIELD-CARROLLS FARMS LLC
Deed Book/Page [10122/792]
Plat Book/Page [140/92]
1

2
MOTTY V MELVIN
Deed Book/Page [3551/0417]

NAD 83
NA 2011

-L- PT 12+10.14

-L- PC 13+98.79

TURNBULL CREEK

WOODS

-L- +68.00
49 (LT)

PROPOSED 3@14'-0"x 8'-5"; ALUMINUM STRUCTUAL PLATE PIPE ARCH
WITH HEADWALL AND ENDWALL

-L- +88.00
49 (LT)

BEGIN CULVERT
-L- STA. 14+05 +/-

50' TAPER
TO EXIST.
20'
TYP.
+20
+50

-L- +70.00
EX. R/W

EXISTING RW

4' FDPS

9.2'
10.5'
9.8'
9.7'
10'

-L-
N37°17'24.1"E

BM1
ELEV= 95.40'

20' BST AVERY RD (SR 2046)

TURNBULL CREEK

BL-2

(3) 42"CMP
(2) PIPES

50' CONC HW

-L- +70.00
52 (RT)

BEGIN PROJECT BP6-R021
-L- STA. 12+70.00

END CULVERT
-L- STA. 14+48 +/-

EXISTING 3@ 142"x 91" CMPA
TO BE REMOVED

END PROJECT BP6-R021
-L- STA. 15+70.00

FILL AND PROPOSED PIPE FROM TEMPORARY
DETOUR TO REMAIN AFTER CONSTRUCTION IS COMPLETE

PROPERTY LINE
RUN OF TURNBULL CREEK

3
BULL CREEK FARMS LLC
Deed Book/Page [10227/199]
Plat Book/Page [140/92]

4
RAYFIELD HAMMONDS
Deed Book/Page [851/0252]

FOR CULVERT PLANS, SEE SHEET C-1 THRU C-2

FOR –L– PROFILE, SEE SHEET NO. 005

BP6-R021
2RD2 | 004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
35018
ENGINEER
JIMMY L. TERRY
Jimmy L. Terry
9/9/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

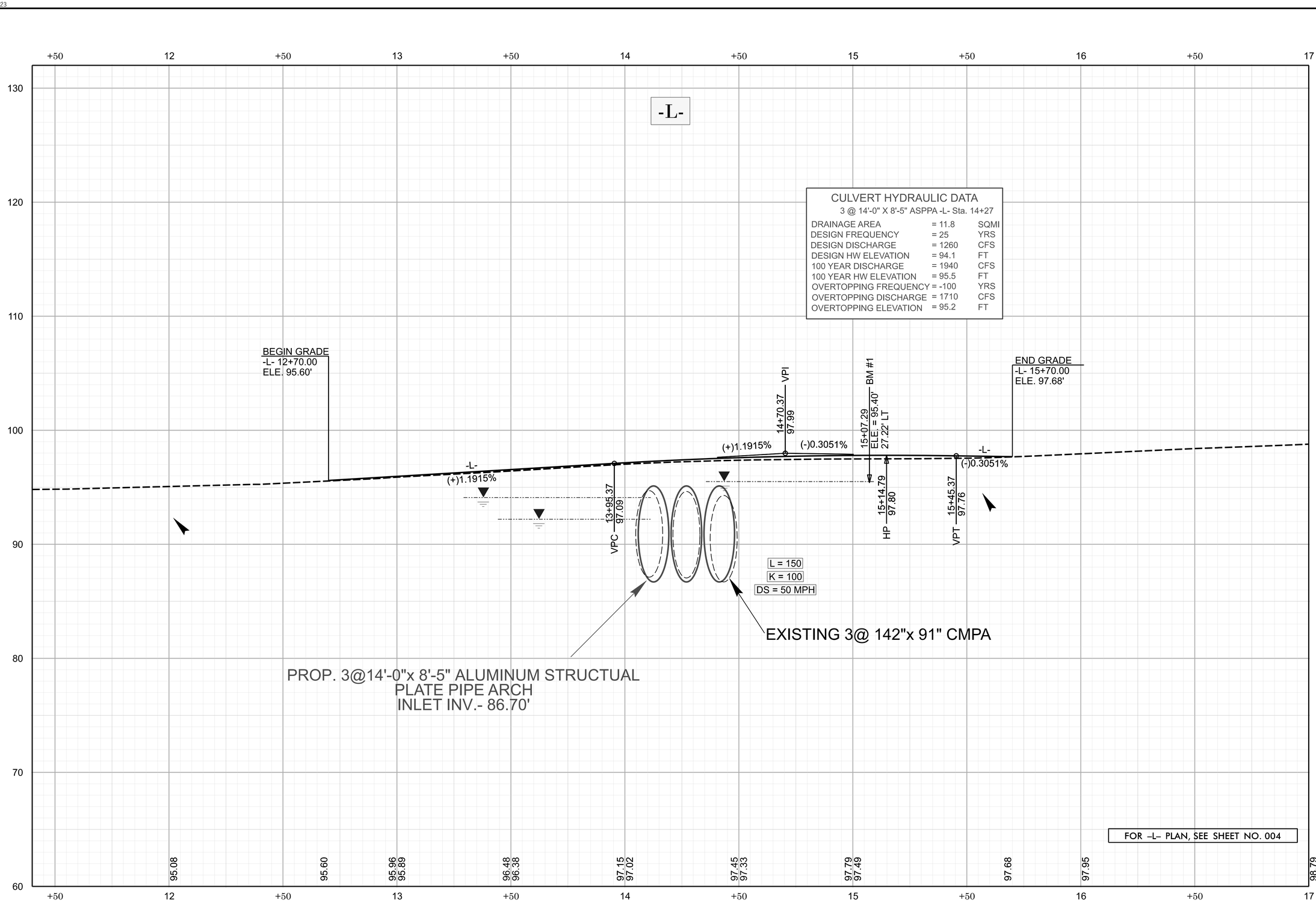
HYDRAULICS ENGINEER
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
024857
ENGINEER
John W. Twisdale, Jr.
John W. Twisdale, Jr.
9/23/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

REVISIONS

11/14/23



BP6-R021

2RD2	005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA
PROFESSIONAL SEAL
035018
ENGINEER
JIMMY L. TERRY
Jimmy Terry
11/20/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER
NORTH CAROLINA
PROFESSIONAL SEAL
024897
ENGINEER
John W. Twisdale, Jr.
John W. Twisdale Jr.
11/13/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

TGS ENGINEERS
201 W. PARRISH ST. STE 200
DURHAM, NC 27701
PH. (704) 472-8053
CORP. LICENSE NO.: C-0275

REVISIONS

09/08/99

TIP PROJECT: *BP6.R021*

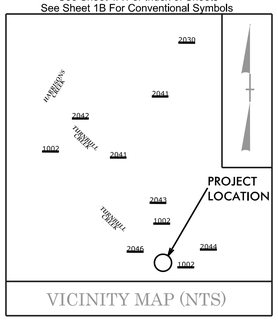
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R021	RW01	6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

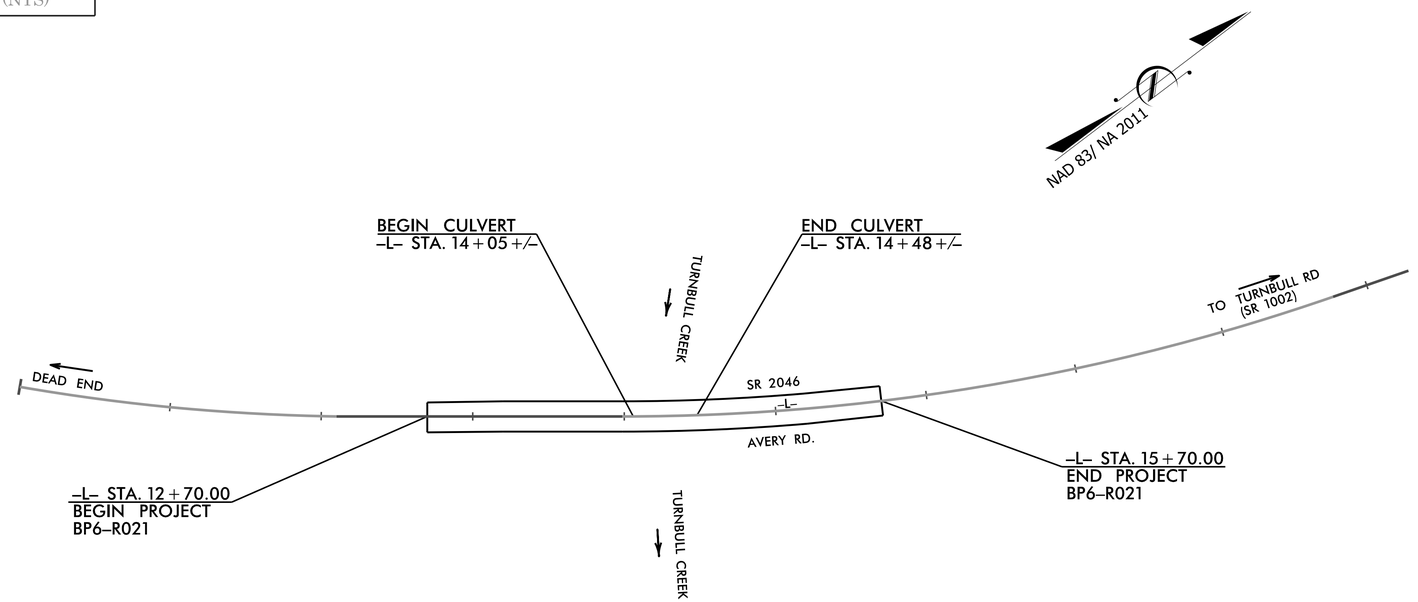
SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

CUMBERLAND COUNTY

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP (NTS)



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 BP6.R021-101
WITH NAD83/NA 2011STATE PLANE GRID COORDINATES OF
NORTHING: 402777.6854 EASTING: 2107905.8964
ELEVATION: 118.03
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998960208
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.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 5, 2024

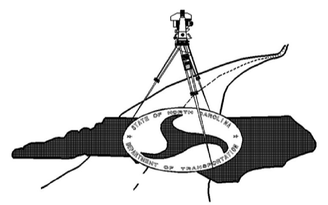
LETTING DATE: DECEMBER 18, 2024

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARNELL HENNHOUR

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

SIGNATURE: *DATE:*



5/26/20

PRIMARY SURVEY CONTROL SHEET

NC GRID
NAD 83 NA 2011

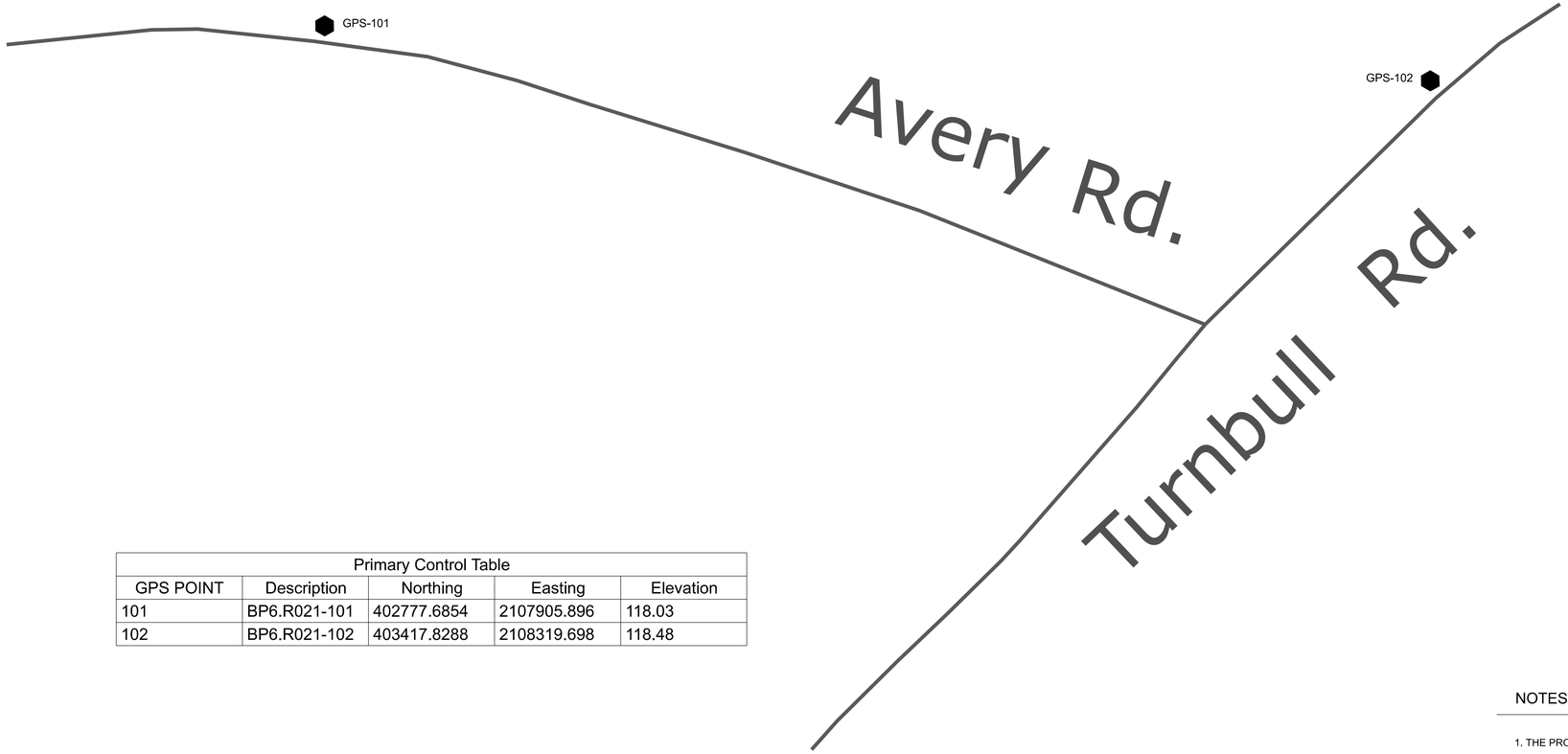
I, PARKS H. ICENHOUR JR., PLS, CERTIFY THAT THE PRIMARY PROJECT CONTROL WAS VERIFIED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 04/2024
DATUM/EPOCH:NAD83/ NA 2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: BP6.R021-101
NORTHING: 402777.6854
EASTING:2107905.8964
COMBINED GRID FACTOR:0.9998960208
GEOID MODEL: GEOID 18 (CONUS)
UNITS:US SURVEY FEET

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

THIS 7TH DAY OF NOVEMBER, 2024.

_____
PROFESSIONAL LAND SURVEYOR L-3996



Primary Control Table				
GPS POINT	Description	Northing	Easting	Elevation
101	BP6.R021-101	402777.6854	2107905.896	118.03
102	BP6.R021-102	403417.8288	2108319.698	118.48

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.

BP6.R021
R/W | D2C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP6.R021
County: CUMBERLAND

PREPARED FOR

LOCATION AND SURVEYS UNIT

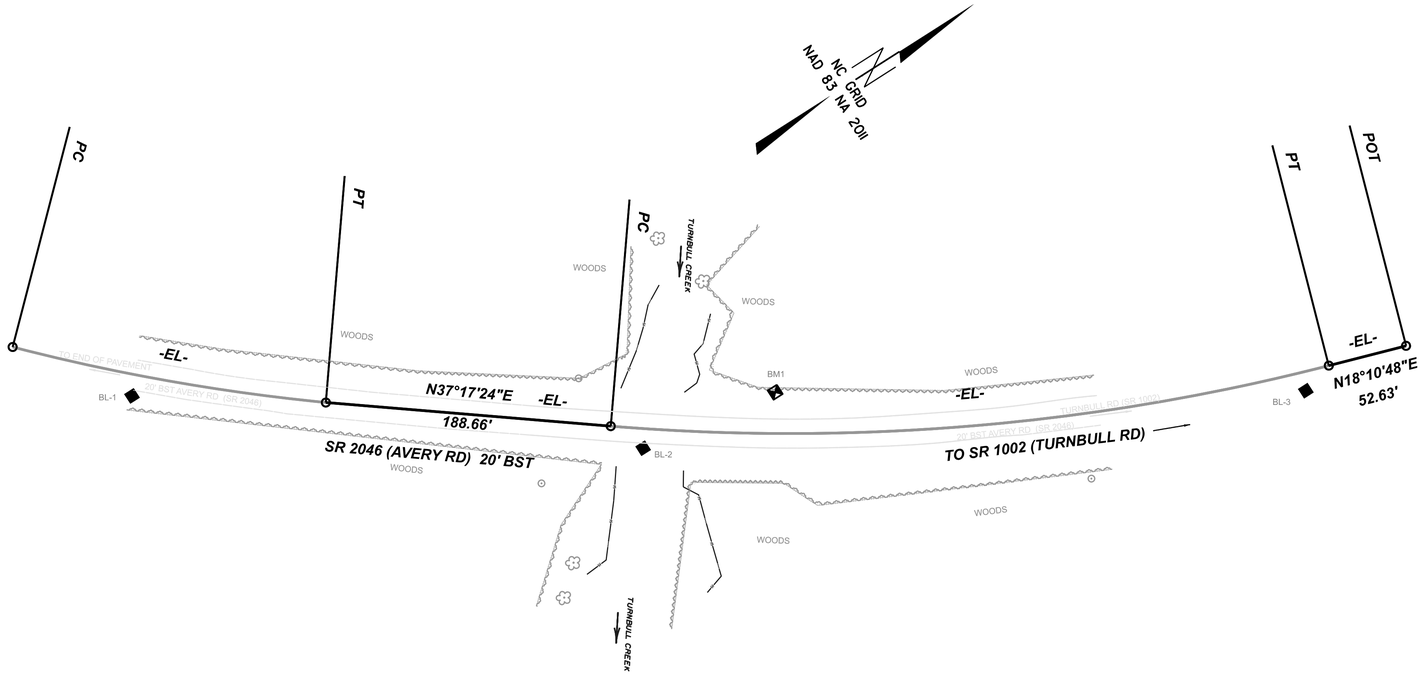
PREPARED BY

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



Baseline Point Table				
POINT	Description	Northing	Easting	Elevation
1	BP6.R021 BL-1	401627.3080	2107309.9000	94.93
2	BP6.R021 BL-2	401893.0802	2107520.5050	97.43
3	BP6.R021 BL-3	402282.1042	2107723.8400	101.13

Bench Table				
Benchmark	Northing	Easting	Elevation	Description
BM1	401986.3984	2107536.318	95.40	RR Spike inBbase of 20" Oak

I, PARKS H. ICENHOUR JR., PLS, CERTIFY THAT THE PROJECT CONTROL WAS VERIFIED 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: 4/2024
DATUM/EPOCH:NAVD 88
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: BP6.R021-101
NORTHING: 402777.6854
EASTING: 2107905.8964
COMBINED GRID FACTOR: 0.9998960208
GEOID MODEL: GEOID 18 (CONUS)
UNITS:US SURVEY FEET

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

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 3/2024 TO 4/2024 , 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 7th DAY OF NOVEMBER, 2024.

_____
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.

BP6.R021
R/W | D2C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP6.R021
County: CUMBERLAND

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

NC Engineering FIRM No. C-1938
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
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 7th DAY OF NOVEMBER, 2024.

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

_____

PROFESSIONAL LAND SURVEYOR L-3996

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	401578.2759	2107240.3495							
CURVE					08°56'46.5" Left	04°15'26.2"	210.14	105.28	1345.83
PT	401732.7850	2107382.4620							
LINE			N37°17'24.12"E	188.6552					
PC	401882.8751	2107496.7587							
CURVE					19°06'36.4" Left	03°59'59.9"	477.76	241.12	1432.40
PT	402303.7842	2107718.0689							
LINE			N18°10'47.76"E	52.6271					
POT	402353.7842	2107734.4886							

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.

BP6.R021

R/W | D2D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP6.R021

County: CUMBERLAND

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL Engineering of NC, Inc. C-1938
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

5/26/20

RIGHT OF WAY CONTROL SHEET

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 10/2024 TO 11/2024, 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 7th DAY OF NOVEMBER, 2024.

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

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

_____

PROFESSIONAL LAND SURVEYOR L-3996

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+70.00	-30.0000	401798.5842	2107394.8610
12+70.00	30.0000	401762.2331	2107442.5957
13+70.00	52.0000	401828.4623	2107520.6835
13+88.00	-49.0000	401903.9736	2107451.2353
14+68.00	-49.0000	401966.6938	2107496.9690
14+70.00	52.0000	401911.1635	2107581.3573
15+70.00	30.0000	402009.7497	2107617.9707
15+70.00	-30.0000	402040.1495	2107566.2420

NOT SET (IN WATER)
NOT SET (IN WATER)
NOT SET (IN WATER)
NOT SET (IN WATER)

NOTES:

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

BP6.R021
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP6.R021
County: CUMBERLAND

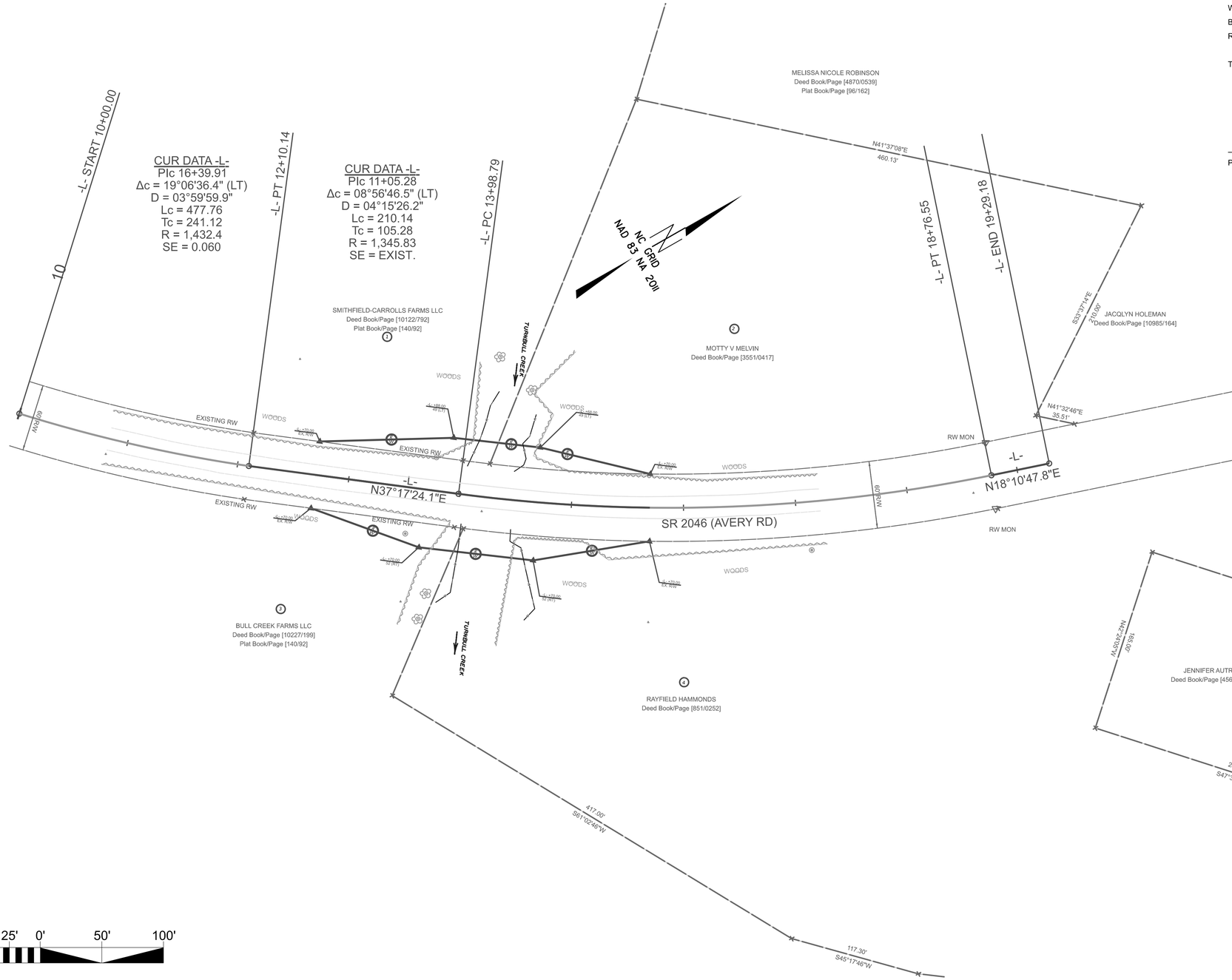
PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
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 10/2024TO 11/2024 ,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 7th DAY OF NOVEMBER, 2024.

GEL ENGINEERING OF NC, INC NO.C-1938

_____

PROFESSIONAL LAND SURVEYOR L-3996

NOTES:

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

BP6.R021
R/W 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP6.R021
County: CUMBERLAND

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

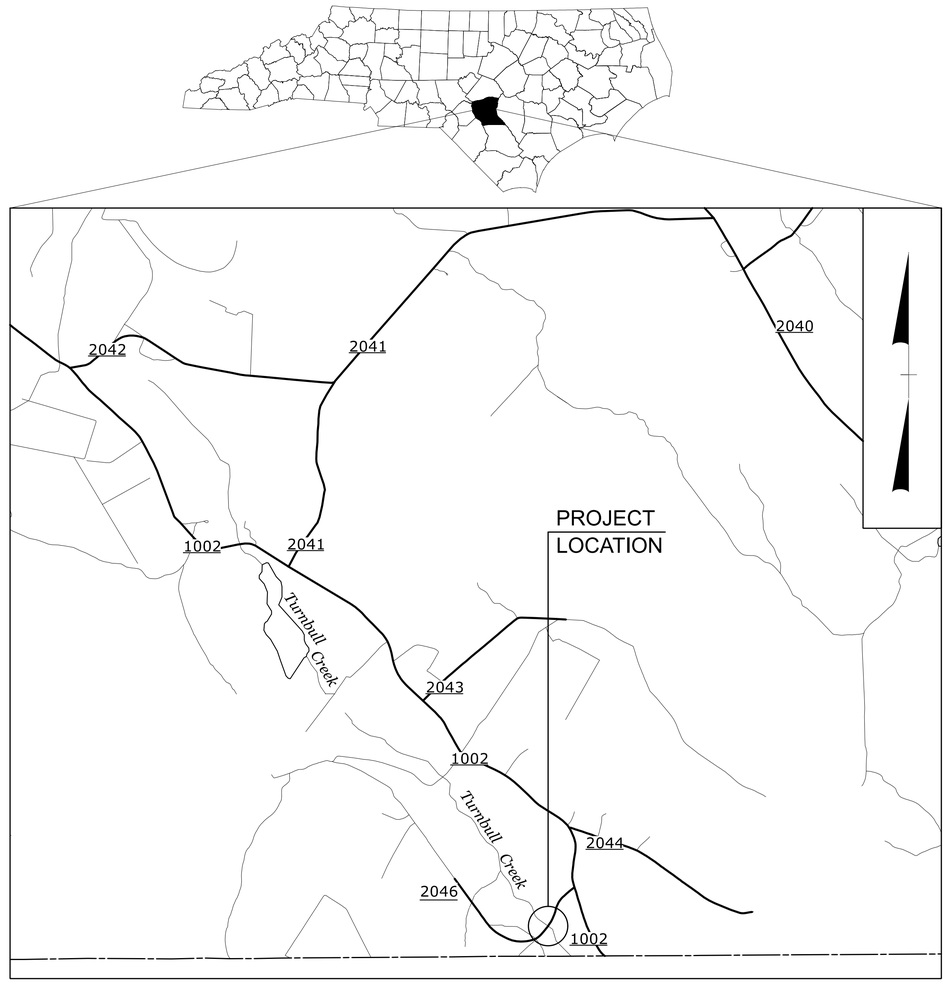
GEL Engineering NC, Inc. COA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CUMBERLAND COUNTY

LOCATION: STRUCTURE #250208 OVER TURNBULL CREEK ON SR 2046 AVERY RD.

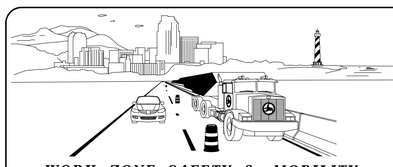


VICINITY MAP

INDEX OF SHEETS

SHEET NO.
TMP-1

TIP PROJECT: BP6-R021



PLANS PREPARED FOR N.C.D.O.T. BY: TGS ENGINEERS

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

DON A. PARKER, P.E.
PROJECT ENGINEER

CODA BRANNAN, E.I.
DESIGN ENGINEER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

9/9/2024
X:\NCDOT\Div 6 Cumberland 208\Work Zone Traffic Control\Cumberland 208_TC_TMP_01.dgn
User:cbrannan

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-1A

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

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE 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
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- WEDGING

SIGNALS

EXISTING | PROPOSED | TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM | SKINNY DRUM | TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
P1	WHITE EDGELINE (4")
P13	YELLOW DOUBLE CENTER (4")
P61	WHITE STOPBAR (24")

APPROVED: Don A. Parker (Signed by: 75DB9E90ADEF440...)

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-1B

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

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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) 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.

B) 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.

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

D) 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.

E) 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

I) 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.

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

K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

L) 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.

M) 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

TRAFFIC CONTROL DEVICES

N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS AS SHOWN IN THE TMP. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

PAVEMENT MARKINGS AND MARKERS

O) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 2046 AVERY RD	PAINT	NONE

P) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

Q) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
- LANE SHIFTS OR CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- ONE-LANE, TWO WAY OPERATION (SIGNALIZED)
- ON-SITE DETOURS

WORK ZONE SAFETY & MOBILITY STRATEGIES:
- TEMPORARY TRAFFIC SIGNALS

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

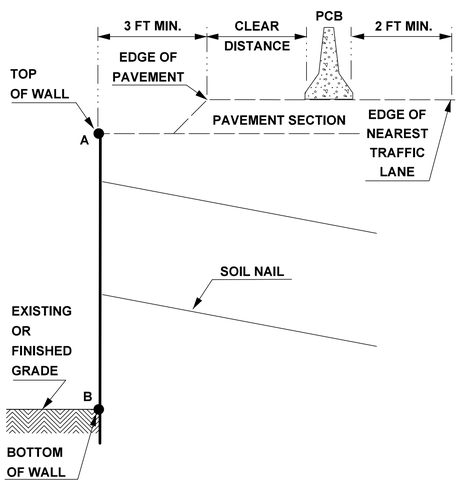
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

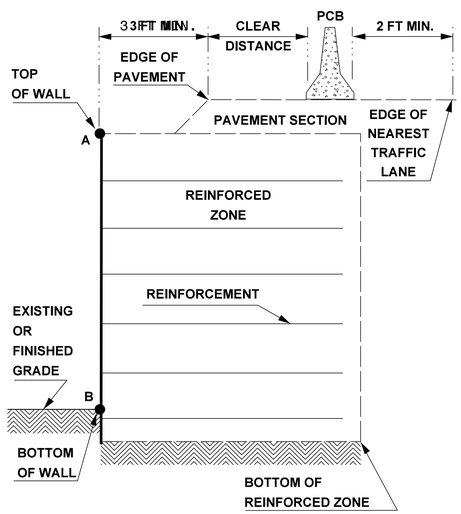
TRANSPORTATION OPERATIONS PLAN

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-2

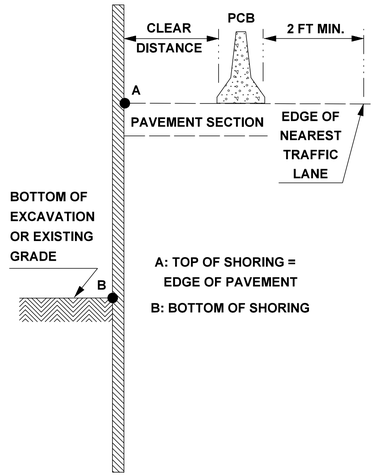
TEMPORARY SOIL NAIL WALL



TEMPORARY MSE WALL



TEMPORARY SHORING



NOTE: WALL OR SHORING HEIGHT = A-B

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" STANDARD PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING/WALL IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING/WALLS EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS OR APPROVED BY THE ENGINEER.

8- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THIS MINIMUM REQUIRED DISTANCE IS NOT AVAILABLE, CONTACT THE ENGINEER.

9- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph <30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

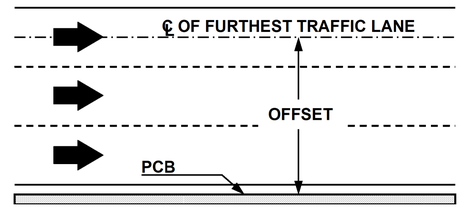


FIGURE B

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DION A PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-2A

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

SHORING NOTES

Shoring Location No. 1 (CUT SHORING):

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

TEMPORARY SHORING IS REQUIRED FOR THE STRUCTURE CONSTRUCTION FROM -L- STATION 13+85, 3.0 FT RT TO -L- STATION 14+70, 3.0 FT RT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM -L- STATION 13+85, 3.0 FT RT TO -L- STATION 14+70, 3.0 FT RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS:

ABOVE ELEVATION 95 FT
UNIT WEIGHT ( ) = 120 LB/@F
FRICTION ANGLE (ϕ) = 28 DEGREES
COHESION (c) = 0 LB/SF

ELEVATION 95 FT TO ELEVATION 75 FT
UNIT WEIGHT ( ) = 115 LB/@F
FRICTION ANGLE (ϕ) = 26 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 92 FT

BELOW ELEVATION 75 FT
UNIT WEIGHT ( ) = 120 LB/@F
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF

DO NOT USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM -L- STATION 13+85, 3.0 FT RT TO -L- STATION 14+70, 3.0 FT RT. CONTRACTOR DESIGNED SHORING IS REQUIRED. SEE TEMPORARY SHORING SPECIAL PROVISION.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM -L- STATION 13+85, 3.0 FT RT TO -L- STATION 14+70, 3.0 FT RT.

Shoring Location No. 2 (CUT SHORING):

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

TEMPORARY SHORING IS REQUIRED FOR THE STRUCTURE CONSTRUCTION FROM -L- STATION 13+85, 7.0 FT RT TO -L- STATION 14+70, 6.25 FT RT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM -L- STATION 13+85, 7.0 FT RT TO -L- STATION 14+70, 6.25 FT RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS:

ABOVE ELEVATION 95 FT
UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 28 DEGREES
COHESION (c) = 0 LB/SF

ELEVATION 95 FT TO ELEVATION 75 FT
UNIT WEIGHT (γ) = 115 LB/CF
FRICTION ANGLE (ϕ) = 26 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 92 FT

BELOW ELEVATION 75 FT
UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF

DO NOT USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM -L- STATION 13+85, 7.0 FT RT TO -L- STATION 14+70, 6.25 FT RT. CONTRACTOR DESIGNED SHORING IS REQUIRED. SEE TEMPORARY SHORING SPECIAL PROVISION.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM -L- STATION 13+85, 7.0 FT RT TO -L- STATION 14+70, 6.25 FT RT.

APPROVED: Signed by: Kelly de Montbrun 49E66D07E160486...
DATE: 9/19/2024

NORTH CAROLINA PROFESSIONAL SEAL 045542 ENGINEER KELLY DE MONTBRUN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SHORING NOTES

9/12/2024
X:\NCDOT\Div 6 Cumberland 208\Work Zone Traffic Control\Cumberland 208_TC_TMP_02A.dgn
User:cbrannan

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-3

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

PHASING

NOTE: FOR ALL FLAGGING OPERATIONS, SEE RSD 1101.02, SHEET 1.

PHASE I

NOTE: FOR PHASE I, SEE TMP-2, 2A, AND 4

STEP 1 -- USE FLAGGERS TO COMPLETE THE FOLLOWING:

-- INSTALL ALL WORK ZONE ADVANCE WARNING SIGNS IN ACCORDANCE WITH RSD 1101.01, SHEET 3, AND TMP-4.

-- INSTALL AND COVER TEMPORARY PORTABLE SIGNAL AND ADVANCE WARNING SIGNS FOR TEMPORARY PORTABLE SIGNAL (SEE TMP-4 AND SPECIAL PROVISION).

STEP 2 -- USING FLAGGERS, CONSTRUCT 4' FDPS UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE -L- STA. 12+70 +/- TO -L- STA. 15+70+/- (LT) (SEE TMP-4).

NOTE: WORK IN A CONTINUOUS MANNER TO COMPLETE STEP 3 IN A SINGLE WORK PERIOD.

STEP 3 -- USE FLAGGERS TO COMPLETE THE FOLLOWING:

-- INSTALL TEMPORARY WHITE EDGELINES AND STOP BARS AS SHOWN ON TMP-4

-- INSTALL PCB AND CRASH CUSHIONS FROM -L- STA. 13+40 +/- TO -L- STA. 15+00 +/-.

-- UNCOVER SIGNAL WARNING SIGNS AND ACTIVATE TEMPORARY PORTABLE SIGNALS WITH TRAFFIC IN A 1-LANE-2-WAY PATTERN IN THE SOUTHBOUND LANE.

STEP 4 -- PERFORM THE FOLLOWING AWAY FROM TRAFFIC:

-- INSTALL TEMPORARY SHORING LOCATION 1.

-- CONSTRUCT STAGE I CULVERT AND SHORING LOCATION 2.

-- CONSTRUCT TEMPORARY ON-SITE DETOUR FROM -L- STA. 12+77 +/- TO -L- STA. 15+62 +/-.

PHASE II

NOTE: FOR PHASE II, SEE TMP-2, 2A, AND 5

NOTE: WORK IN A CONTINUOUS MANNER TO COMPLETE STEPS 1 IN A SINGLE WORK PERIOD

STEP 1 -- TURN OFF SIGNAL, COVER SIGNS, AND USE FLAGGERS TO CONTROL 1 LANE – 2 WAY TRAFFIC.

-- REMOVE AND RESET PCB AND CRASH CUSHIONS TO -L- STA. 13+33 +/- TO 14+93 +/-.

-- INSTALL TEMPORARY WHITE EDGELINES AS SHOWN ON TMP-5.

-- ADJUST DRUM TAPERS AND BARRICADES, AND RESUME SIGNAL CONTROL WITH TRAFFIC IN 1 LANE-2 WAY PATTERN USING THE ON-SITE DETOUR.

STEP 2 -- PERFORM THE FOLLOWING AWAY FROM TRAFFIC:

-- REMOVE SHORING LOCATION 1.

-- CONSTRUCT STAGE II CULVERT

-- CONSTRUCT PROPOSED SOUTHBOUND FULL DEPTH TRAVEL LANE AND REPAIR 4' FDPS (AS NECESSARY) UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 13+20 +/- TO -L- STA. 15+20 +/-.

PHASE III

NOTE: FOR PHASE III, SEE TMP-6

NOTE: WORK IN A CONTIUOUS MANNER TO COMPLETE STEP 1 IN A SINGLE WORK PERIOD

STEP 1 -- TURN OFF SIGNAL, COVER SIGNS, AND USE FLAGGERS TO CONTROL 1 LANE- 2 WAY TRAFFIC.

-- REMOVE PCB AND CRASH CUSHIONS.

-- ADJUST DRUM TAPERS AND BARRICADES AND RESUME SIGNAL CONTROL WITH TRAFFIC IN 1 LANE-2 WAY PATTERN IN THE SOUTHBOUND TRAVEL LANE.

STEP 2 -- REMOVE PHASE II ON-SITE DETOUR.

-- INSTALL PROPOSED FULL DEPTH NORTHBOUND TRAVEL LANE AND 4' PAVED SHOULDER UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 13+20 +/- TO -L- STA. 15+20 +/-.

PHASE IV

STEP 1 -- USING FLAGGERS, REMOVE TEMPORARY PORTABLE SIGNALS, COVER OR REMOVE ALL WARNING SIGNS FOR TEMPORARY PORTABLE SIGNAL, AND RETURN TRAFFIC TO 2-LANE-2-WAY TRAFFIC PATTERN.

STEP 2 -- USING FLAGGERS, COMPLETE CONSTRUCTION THROUGHOUT THE PROJECT LIMITS INCLUDING THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS.

STEP 3 -- REMOVE ALL TRAFFIC CONTROL DEVICES.

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASING

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-4

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

R11-2
48" x 30"
W1-6R
48" x 24"
TYPE III BARRICADE
1

R11-2
48" x 30"
W1-6R
48" x 24"
TYPE III BARRICADE
2

-L- STA. 12+70±
BEGIN 4' FDPS
BEGIN P1

-L- STA. 13+20±

-L- STA. 9+75± P61

-L- STA. 11+50±

SR 2046
AVERY RD

A

P1

25'

-L- STA. 15+00±
END CRASH CUSHION
AND PCB

-L- STA. 15+20±

-L- STA. 15+70±
END 4' FDPS
END P1

1 QUANTITY = 391 SF

TEMPORARY SHORING
FROM STA. 13+85, 3' RT
TO STA. 14+70, 3' RT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

F
10
11
13
14
15
17
19

EXIST
11'
EXIST
11'

A B C D E
500' 500' 500' 500'
P O R T

10'
10'

1
2

-L- STA. 11+00±

-L- STA. 12+77±
BEGIN WIDENING FOR
PHASE II TRAFFIC SHIFT

DRUMS

-L- STA. 13+40±
BEGIN CRASH CUSHION
AND PCB

-L- STA. 13+75±
EOP 24' RT OF
-L- CENTERLINE

2 QUANTITY = 391 SF

TEMPORARY SHORING
FROM STA. 13+85, 7' RT
TO STA. 14+50, 7' RT
TO STA. 14+70, 6.25' RT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

-L- STA. 14+75±
EOP 23.25' RT OF
-L- CENTERLINE

-L- STA. 14+50±

-L- STA. 14+50±
EOP 24' RT OF
-L- CENTERLINE

-L- STA. 15+62±
END WIDENING FOR
PHASE II TRAFFIC SHIFT

-L- STA. 16+90±

-L- STA. 17+40±

-L- STA. 18+65± P61

P O R T
A B C D E
500' 500' 500' 500'

F

4' FDPS
-L- SR 2046
7'
5'
1' 1'
17' TEMP. PAVEMENT FOR
PHASE II TRAFFIC PATTERN
1'
11'
3'
2'
3:1
P1
TEMP. SHORING
LOCATION #1
TEMP. SHORING
LOCATION #2
CONSTRUCTION JOINT

SECTION A-A
-L- STA. 14+25.00
PHASE I

ROAD WORK AHEAD
W20-1
48" X 48"
25 M.P.H.
W13-1
24" X 24"
A

ONE LANE ROAD AHEAD
W20-4
48" X 48"
25 M.P.H.
W13-1
24" X 24"
B

PREPARE TO STOP
W3-1C
48" X 48"
C

W3-3
48" X 48"
D

STOP HERE ON RED
R10-6
24" X 36"
E

END ROAD WORK
G20-2 A
48" X 24"
F

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...
DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

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

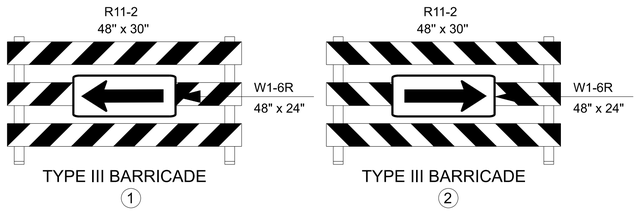
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

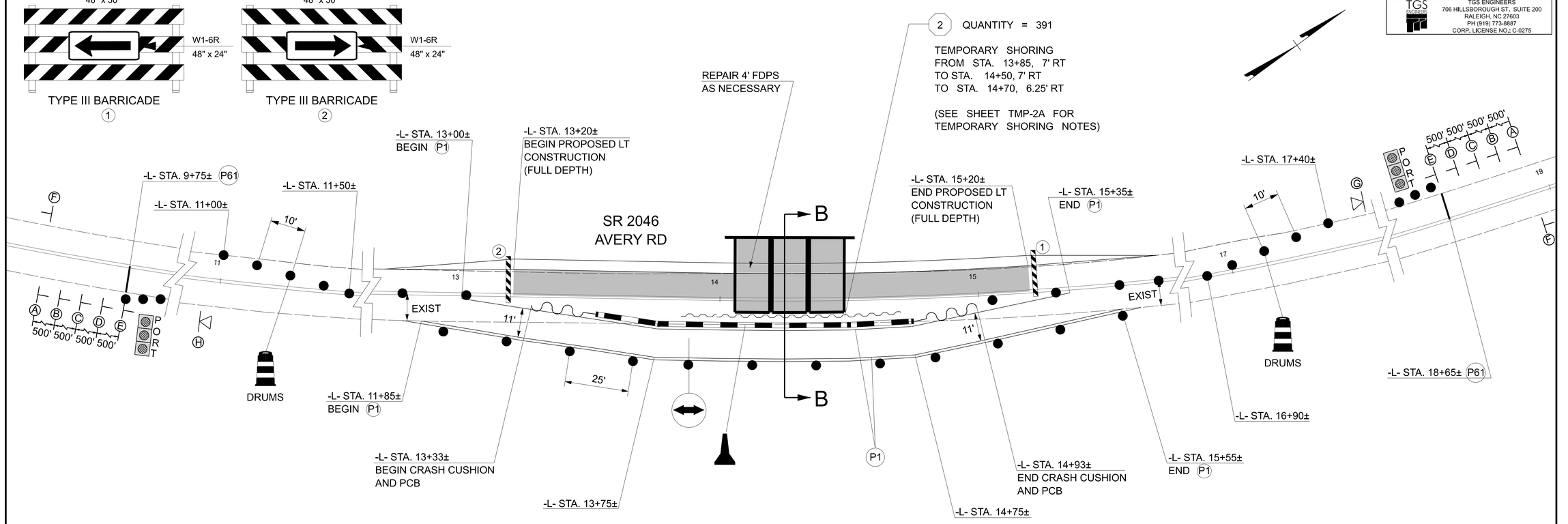
PHASE I

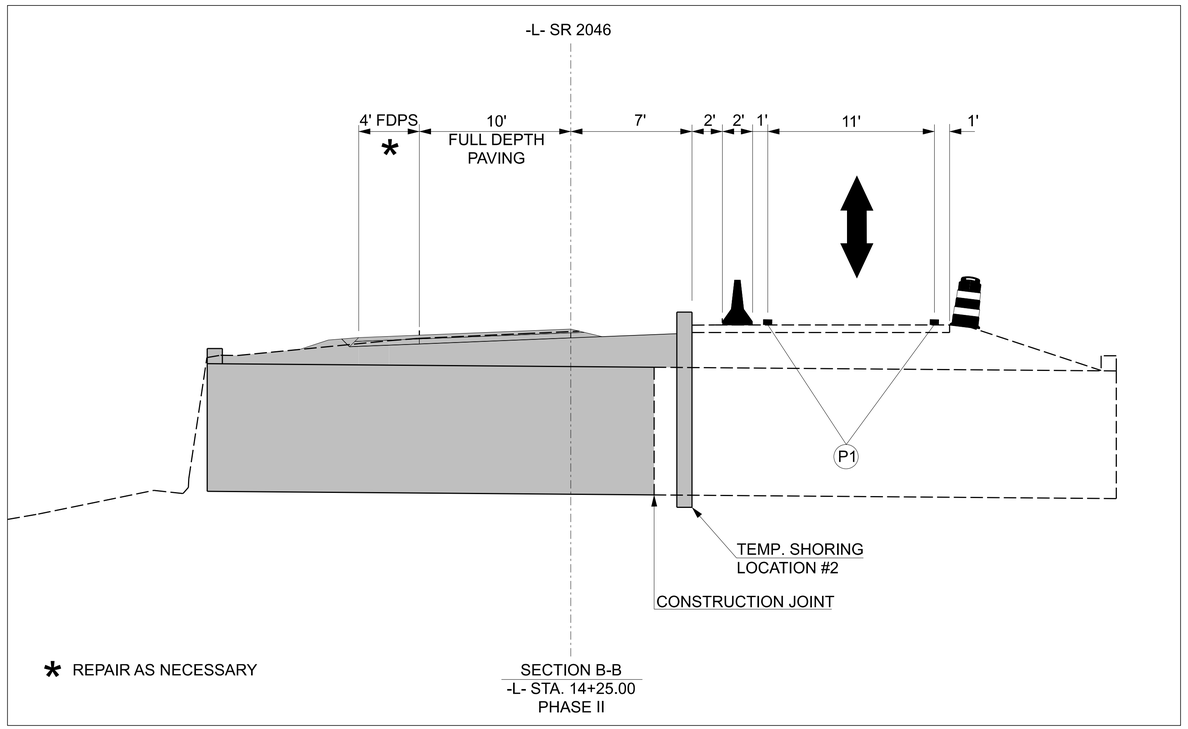
9/12/2024
X:\NCDOT\Div. 6 Cumberland 208\Work Zone Traffic Control\Cumberland 208_TC_TMP_04.dgn
User:rdparman

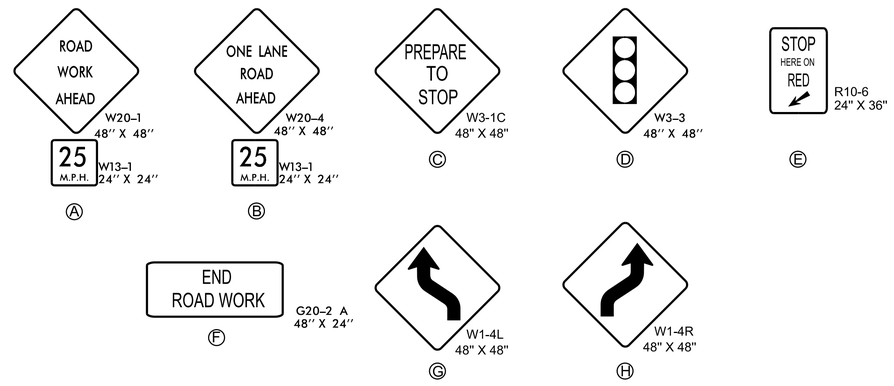
PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-5

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









APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

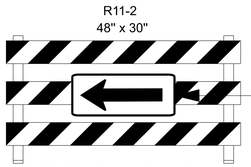
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PHASE II

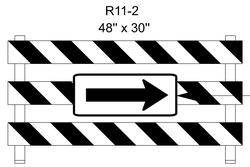
9/12/2024
X:\NCDOT\Div 6 Cumberland 208\Work Zone Traffic Control\Cumberland 208_TC_TMP_05.dgn
User:adparmon

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	TMP-6

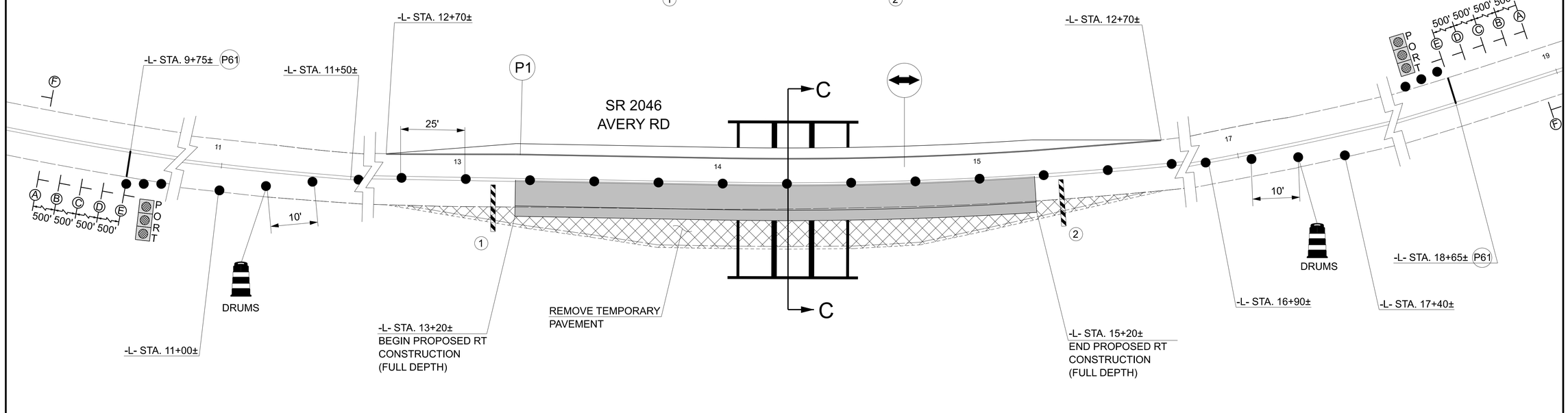
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

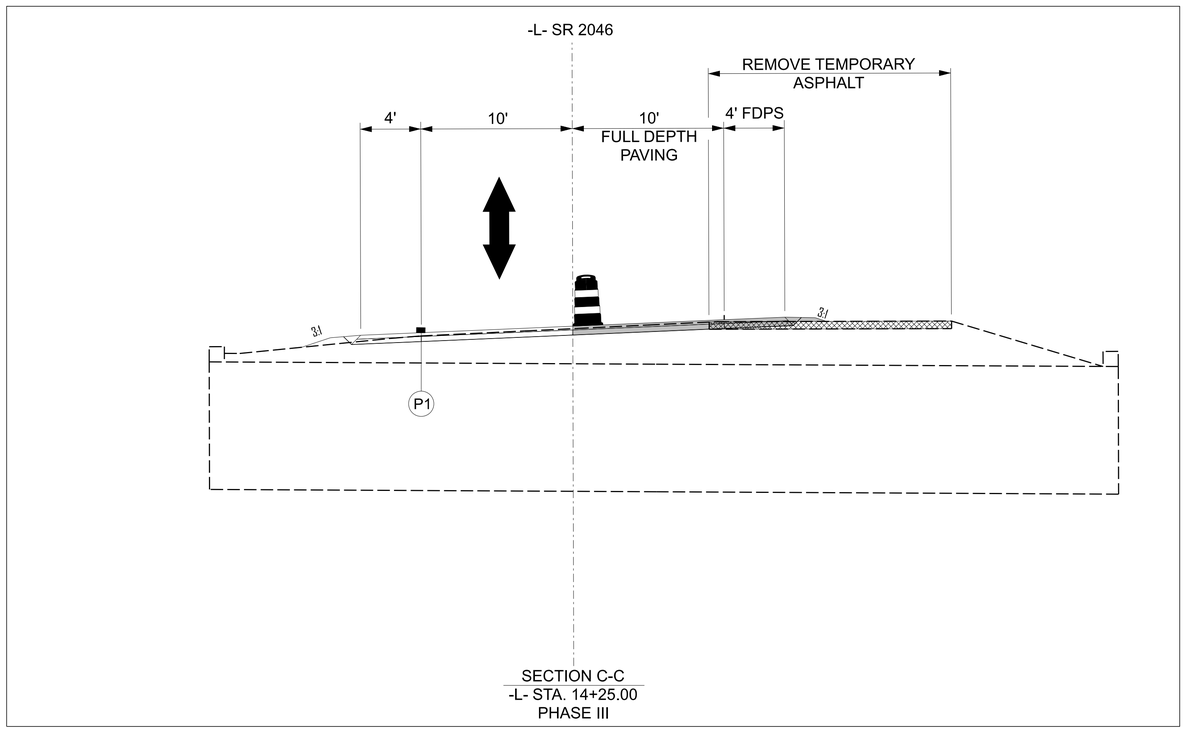


TYPE III BARRICADE
(1)

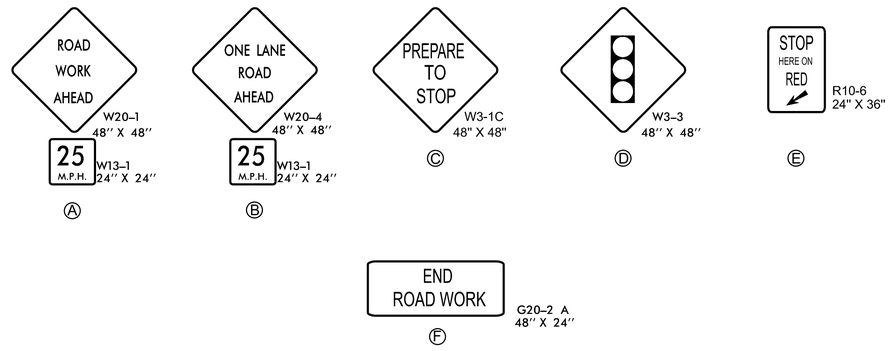


TYPE III BARRICADE
(2)





SECTION C-C
-L- STA. 14+25.00
PHASE III



APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE III

9/12/2024
X:\NCDOT\Div 6 Cumberland 208\Work Zone Traffic Control\Cumberland 208_TC_TMP_06.dgn
User:cdrogman

T.I.P.: BP6-R021

TIP NO.	SHEET NO.
BP6-R021	PMP-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440... DATE: 9/20/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

CUMBERLAND COUNTY

LOCATION: STRUCTURE #205208 OVER TURNBULL CREEK ON SR 2046 AVERY RD.

INDEX

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 2046 AVERY RD.	THERMOPLASTIC	NONE

D) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

E) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

F) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
THERMOPLASTIC (4",90 MILS)	
T1	(4") WHITE EDGELINE
T13	(4") YELLOW DOUBLE CENTER

PLAN SUBMITTED TO: NCDOT

ADAM T. BRITT PROJECT ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

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

TIP NO.	SHEET NO.
BP6-R021	PMP-2

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

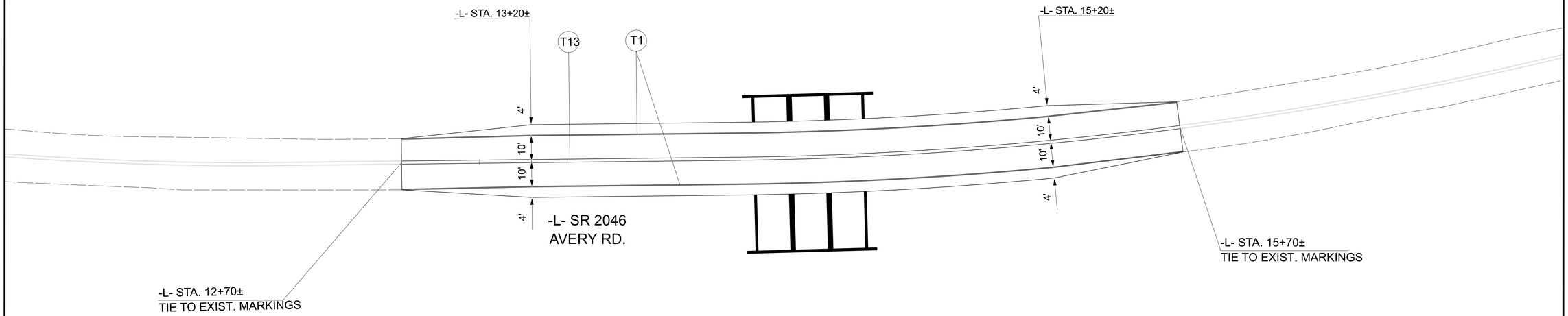
DATE: 9/20/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

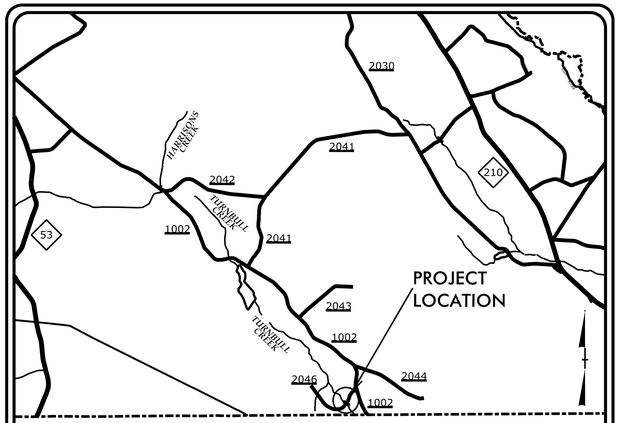
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



PAVEMENT MARKING DETAIL

TIP PROJECT: BP6–R021



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CUMBERLAND COUNTY

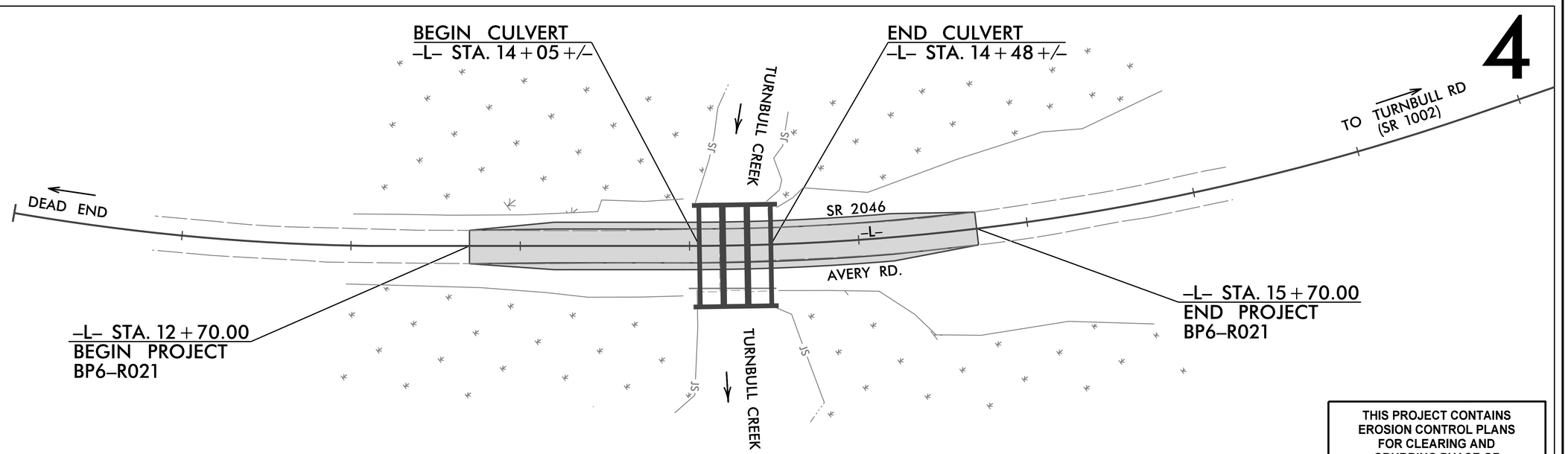
LOCATION: *STRUCTURE #250208 OVER TURNBULL CREEK ON SR 2046 AVERY RD.*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING & CULVERT*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6-R021	EC-1	

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

NAD 83/ NA 2011



THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

GRAPHIC SCALE

20 10 0 20 40

PLANS

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.

TGS ENGINEERS

Prepared in the Office of:

TGS ENGINEERS

706 HILLSBOROUGH ST
SUITE 200
RALEIGH, NC 27603

Designed by:

Ben Henegar, PE — *3564*

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.

PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

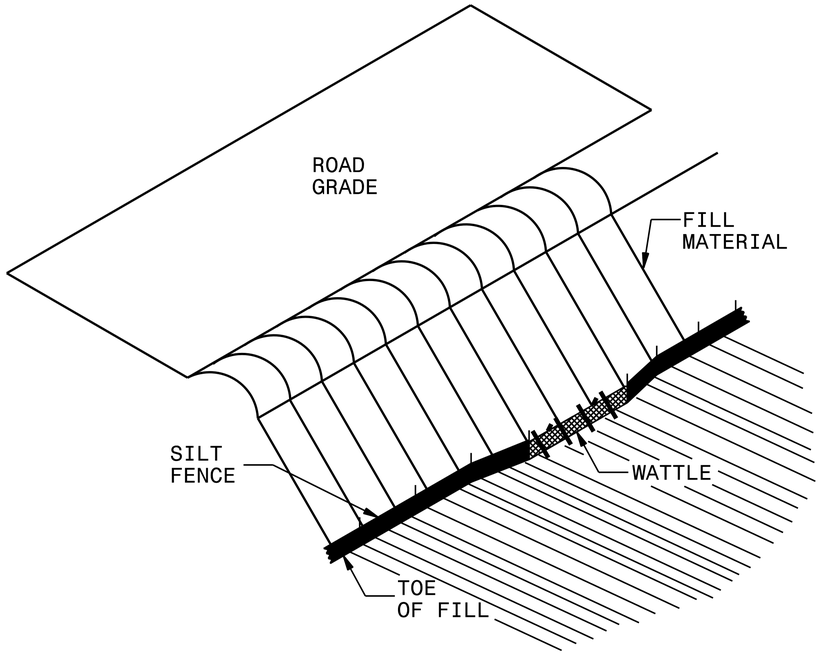
EROSION & SEDIMENT CONTROL LEGEND

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

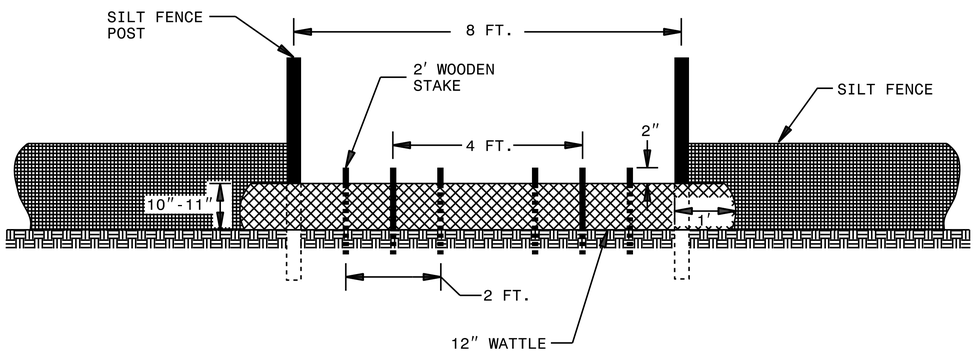
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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.
BP6-R021	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

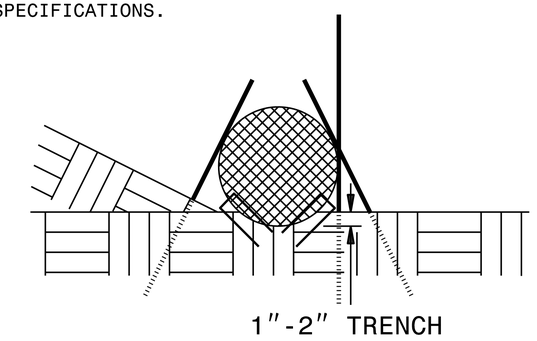
PROVIDE STAPLES MADE OF 11 GUAGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6″ IN LENGTH.

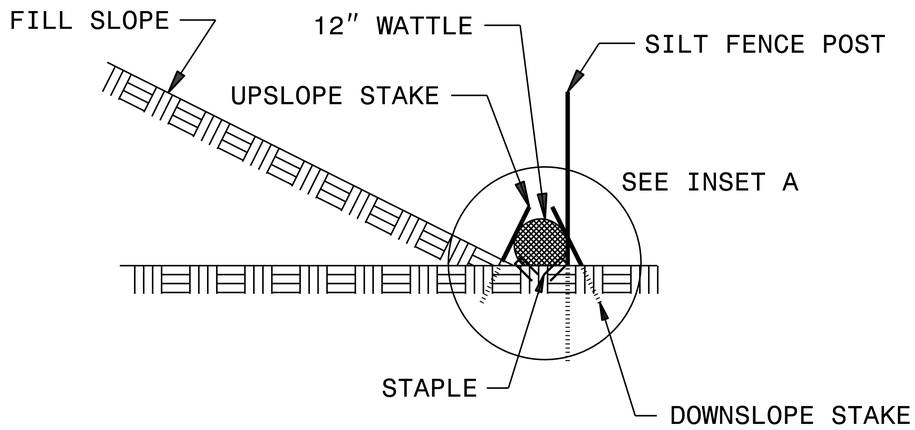
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	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

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE & TYPE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	–L– SLOPE	12+70	15+70	LT	330
4	–L– SLOPE	12+70	15+70	RT	590
				SUBTOTAL	920
				MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	80
				TOTAL	1,000
				SAY	1,000

11/14/23

CUR DATA -L-
PIc 11+05.28
Δc = 08°56'46.5" (LT)
D = 04°15'26.2"
Lc = 210.14
Tc = 105.28
R = 1,345.83
SE = EXIST.

CUR DATA -L-
PIc 16+39.91
Δc = 19°06'36.4" (LT)
D = 03°59'59.9"
Lc = 477.76
Tc = 241.12
R = 1,432.4
SE = 0.060

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

BACKFILL WITH CLASS II RIP RAP 15 FEET FROM INLET TO THE ELEVATION OF PROPOSED PIPE (EST. 165 TONS)

SMITHFIELD-CARROLLS FARMS LLC
Deed Book/Page [10122/792]
Plat Book/Page [140/92]
1

2
MOTTY V MELVIN
Deed Book/Page [3551/0417]

NAD 83
NA 2011

-L- PT 12+10.14

-L- PC 13+98.79

TURNBULL CREEK

WOODS

PROPOSED 3@14'-0"x 8'-5"; ALUMINUM STRUCTUAL PLATE PIPE ARCH WITH HEADWALL AND ENDWALL

IMPERVIOUS DIKE

50' TAPER TO EXIST.
20' TYP.
+20
+50

BEGIN CULVERT
-L- STA. 14+05 +/-

EXISTING RW

1CFW1

4' FDPS

9.2'
10.5'
9.8'
9.7'
10'

-L-
N37°17'24.1"E

20' BST AVERY RD (SR 2046)

BM1
ELEV= 95.40'

50' CONC HW

2CFW1

BEGIN PROJECT BP6-R021
-L- STA. 12+70.00

END PROJECT BP6-R021
-L- STA. 15+70.00

END CULVERT
-L- STA. 14+48 +/-

EXISTING 3@ 142"x 91" CMPA TO BE REMOVED

FILL AND PROPOSED PIPE FROM TEMPORARY DETOUR TO REMAIN AFTER CONSTRUCTION IS COMPLETE

3
BULL CREEK FARMS LLC
Deed Book/Page [10227/199]
Plat Book/Page [140/92]

4
RAYFIELD HAMMONDS
Deed Book/Page [851/0252]

BP6-R021

EC-04/CONST.04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

TGS ENGINEERS
201 W GORDON ST STE 200
GIBSONIA, NC 28339
PH (704) 472-8053
CORP LICENSE NO.: C-0275

REVISIONS

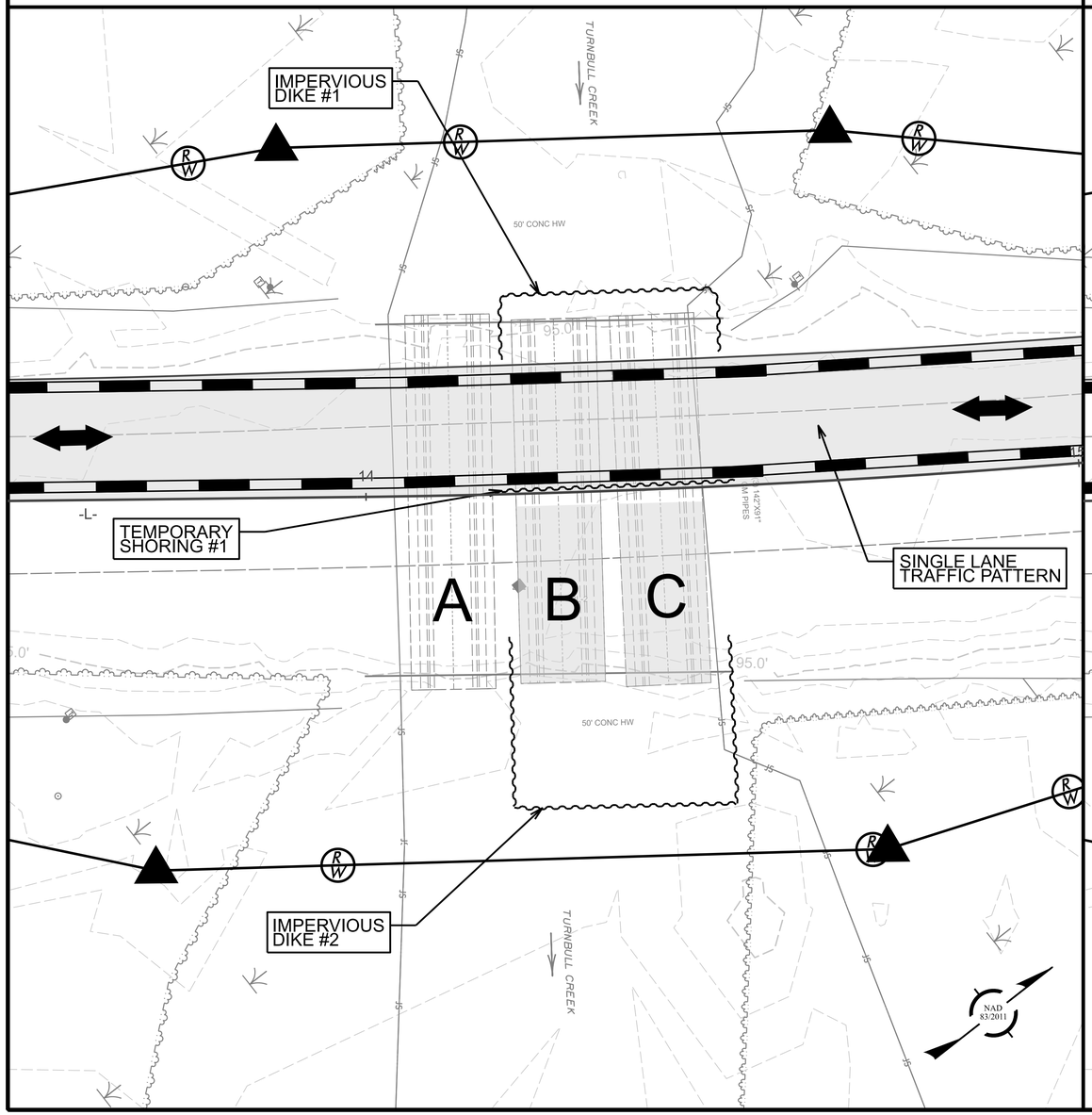
CULVERT CONSTRUCTION SEQUENCE STA. 14+27 -L-

1"=10'

PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	EC-4A/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

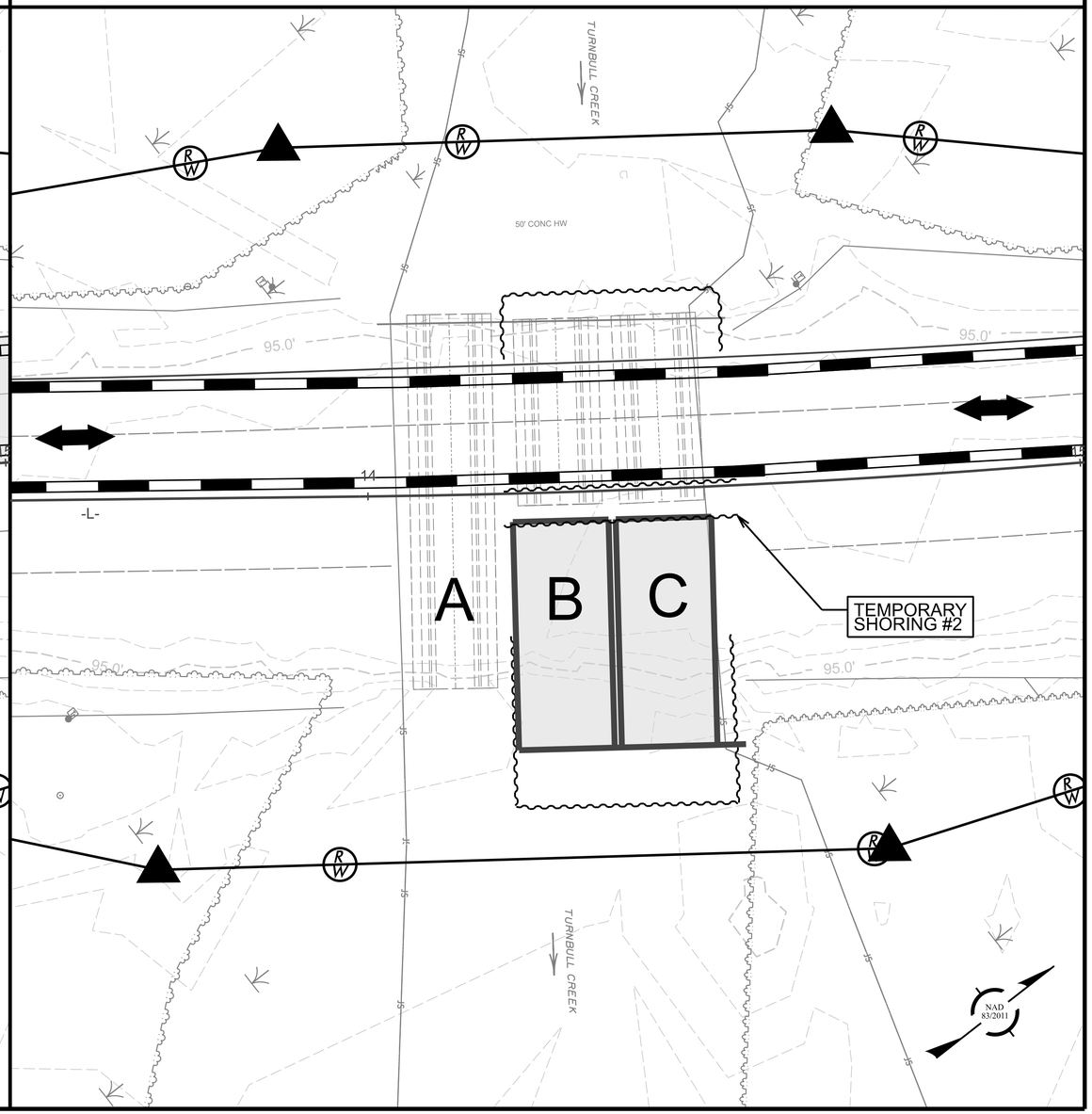
PHASE I

1. INSTALL TEMPORARY SHORING #1 AND SINGLE LANE TRAFFIC PATTERN (SEE TRAFFIC CONTROL PLANS).
2. WHILE MAINTAINING NORMAL FLOW IN EXISTING CULVERT BARREL 'A', INSTALL IMPERVIOUS DIKES #1 & #2.
3. INSTALL SPECIAL STILLING BASIN(S). DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
4. REMOVE APPROXIMATELY 25' OF EXISTING CULVERT BARRELS 'B' AND 'C' (DOWNSTREAM).



PHASE II

1. INSTALL TEMPORARY SHORING #2.
2. CONSTRUCT 32' OF PROPOSED CULVERT BARRELS 'B' & 'C' (DOWNSTREAM).
3. DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.



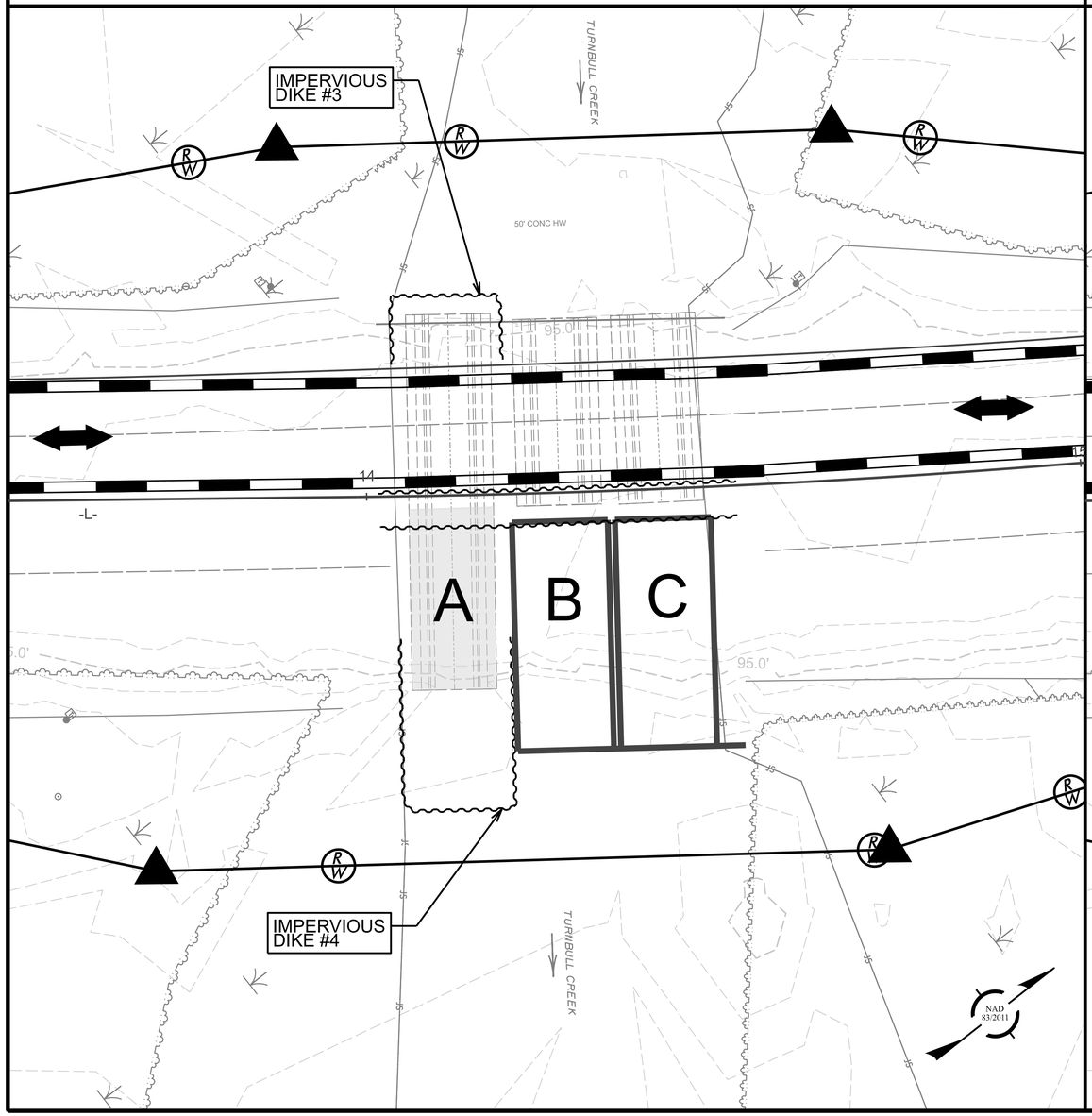
PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	EC-4B/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 14+27 -L-

1"=10'

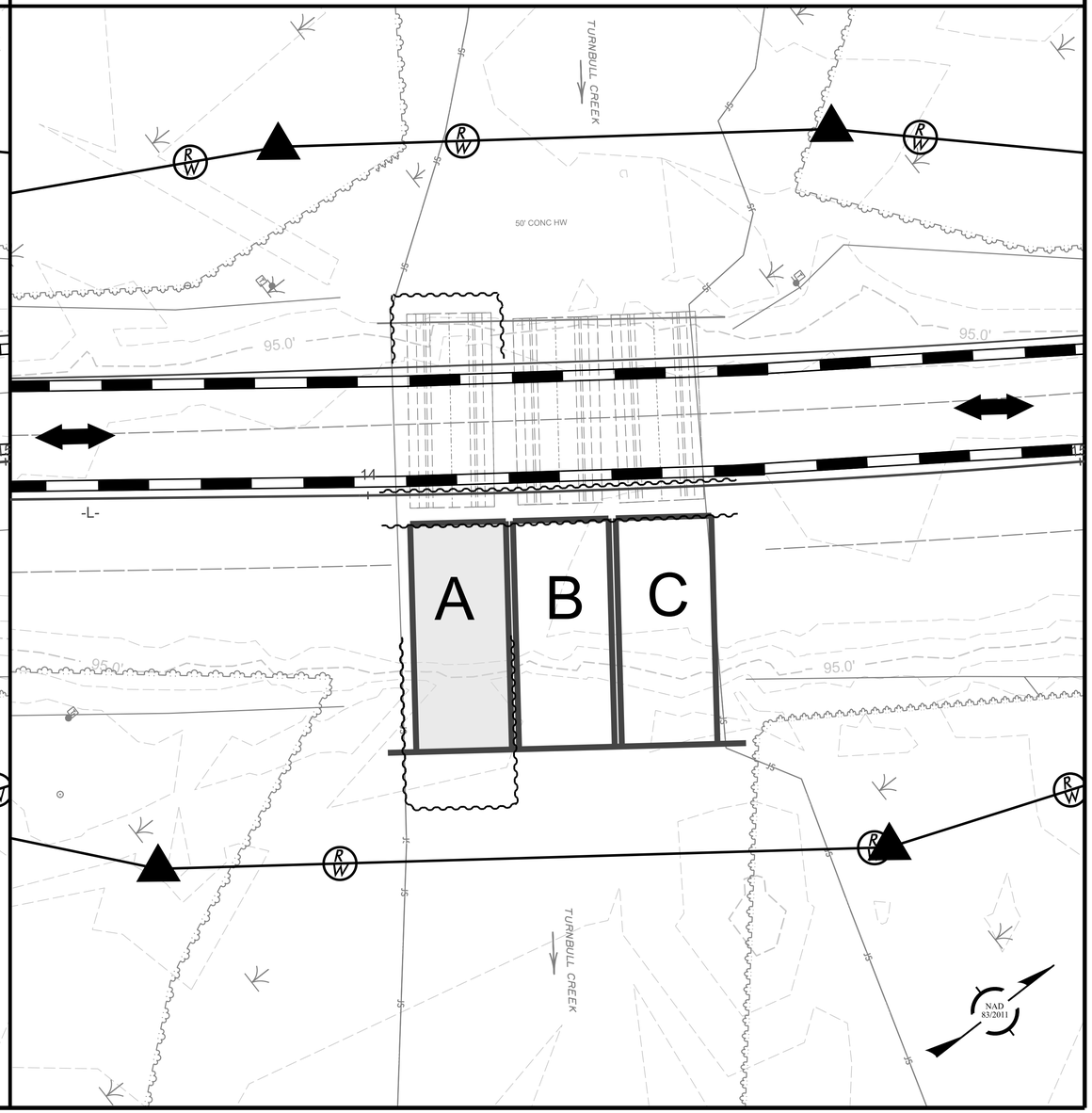
PHASE III

1. REMOVE IMPERVIOUS DIKES #1 & #2, ALLOWING NORMAL FLOW THROUGH BARRELS 'B' & 'C'.
2. INSTALL IMPERVIOUS DIKES #3 & #4.
3. INSTALL SPECIAL STILLING BASIN(S). DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
4. REMOVE APPROXIMATELY 25' OF EXISTING CULVERT BARREL 'A' (DOWNSTREAM).



PHASE IV

1. CONSTRUCT 32' OF PROPOSED CULVERT BARREL 'A' (DOWNSTREAM).
2. DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.



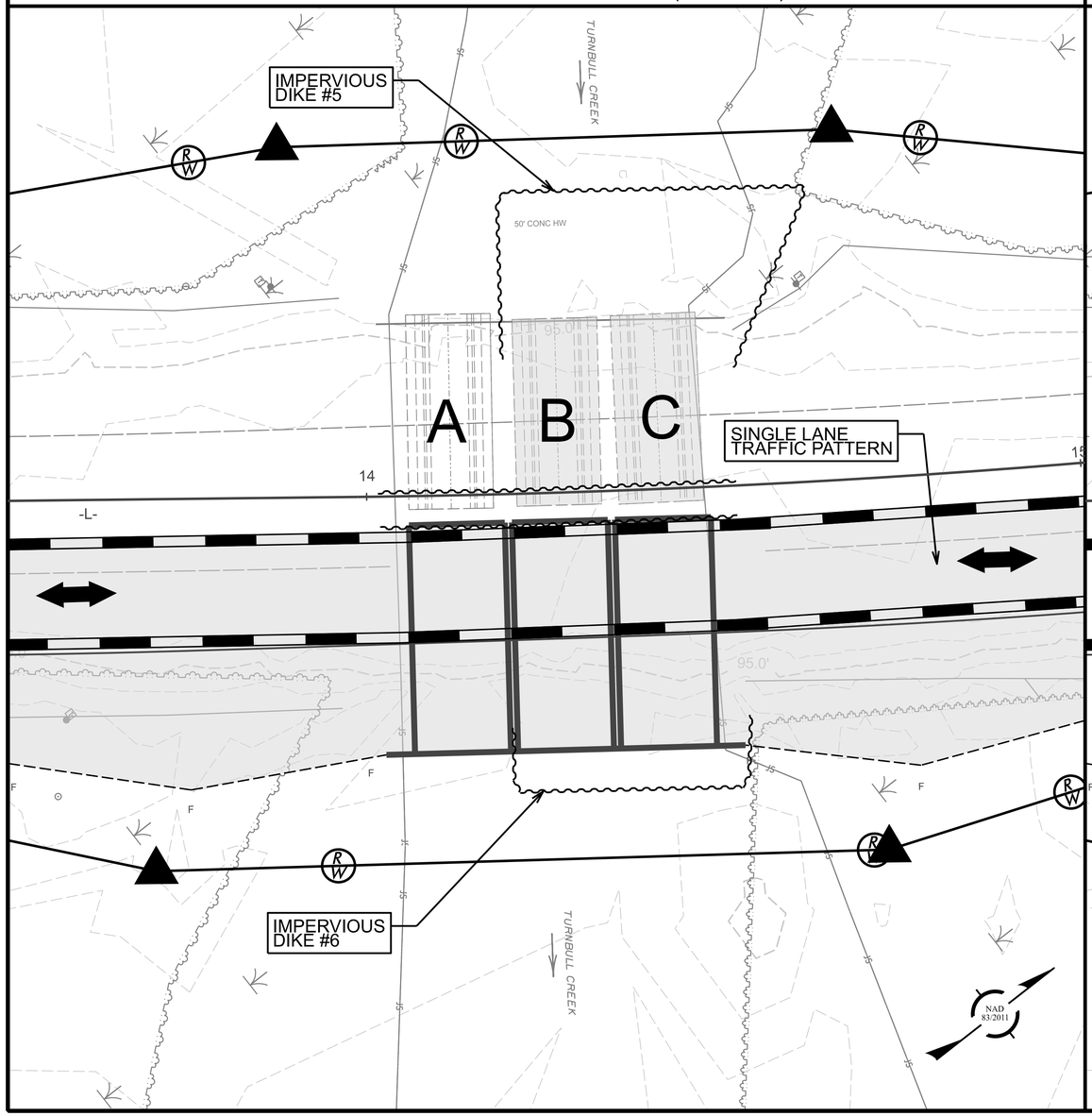
CULVERT CONSTRUCTION SEQUENCE STA. 14+27 -L-

1"=10'

PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	EC-4C/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

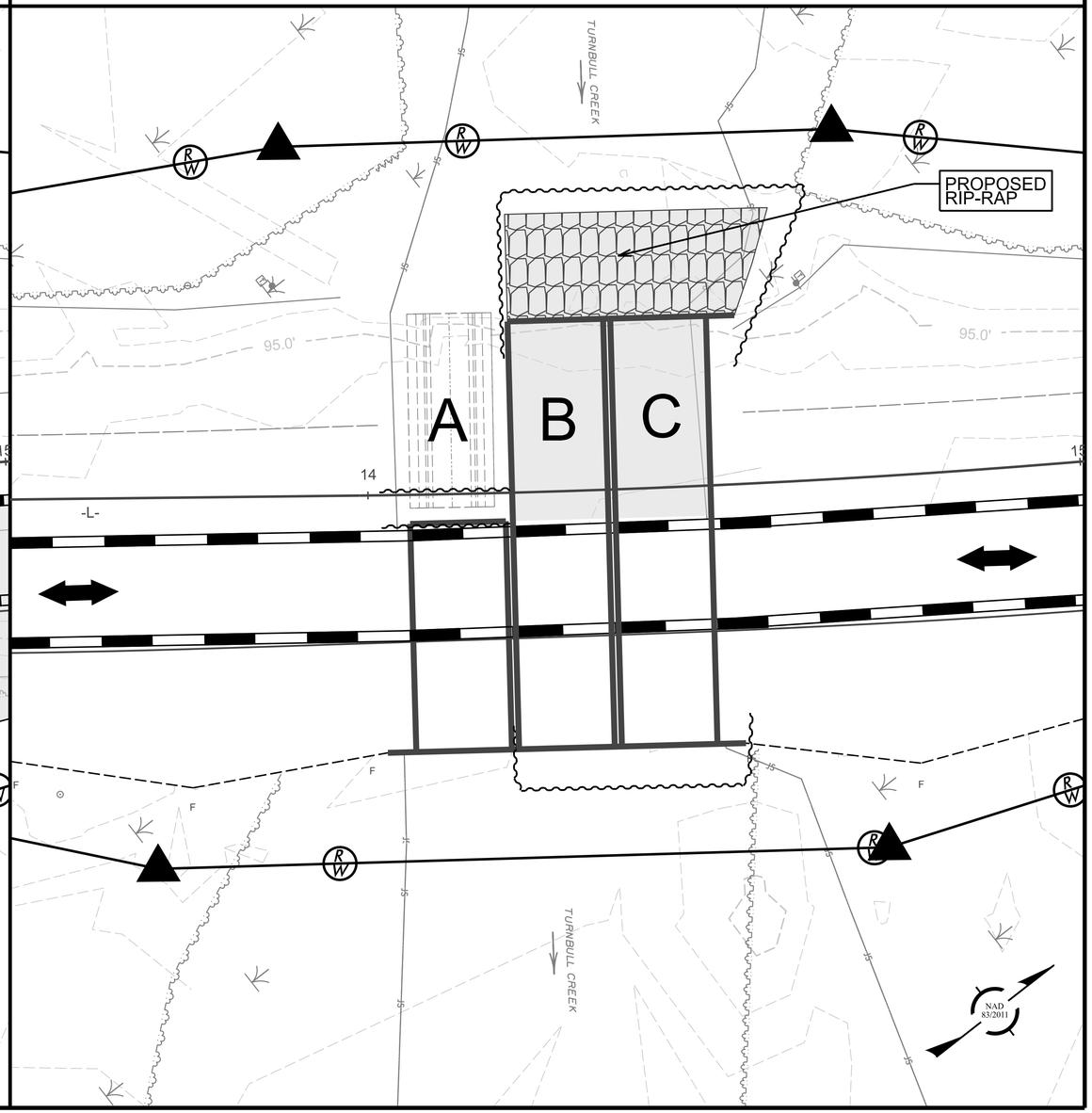
PHASE V

1. SHIFT TRAFFIC TO NEWLY CONSTRUCTED DOWNSTREAM CULVERTS (SEE TRAFFIC CONTROL PLANS).
2. REMOVE IMPERVIOUS DIKES #3 & #4.
3. WHILE MAINTAINING NORMAL FLOW IN BARREL 'A', INSTALL IMPERVIOUS DIKES #5 & #6.
4. INSTALL SPECIAL STILLING BASIN(S). DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
5. REMOVE REMAINDER OF EXISTING CULVERT BARRELS 'B' & 'C' (UPSTREAM).



PHASE VI

1. CONSTRUCT REMAINDER OF PROPOSED CULVERT BARRELS 'B' & 'C' AND PORTION OF RIP-RAP (UPSTREAM).
2. DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.



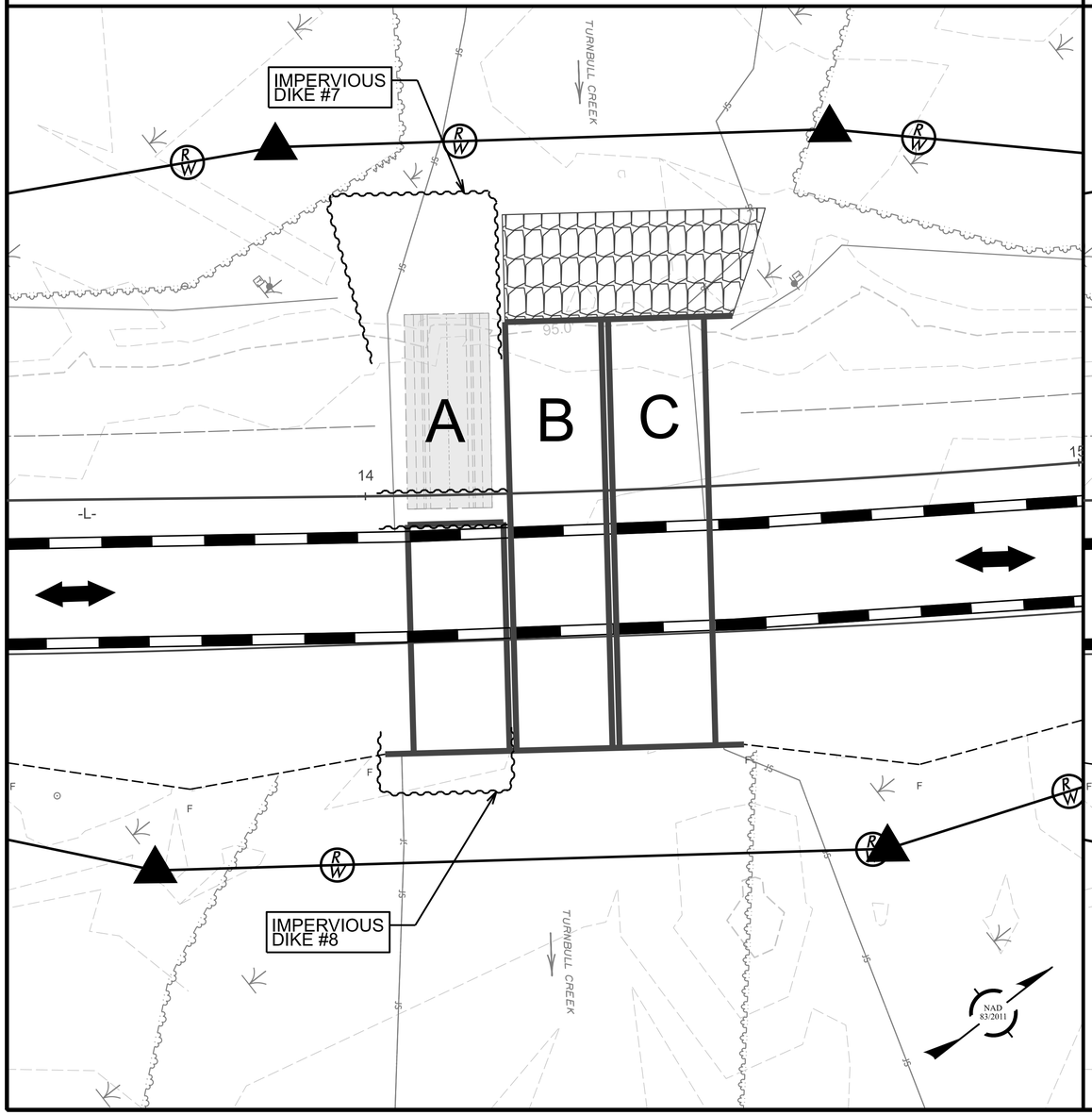
CULVERT CONSTRUCTION SEQUENCE STA. 14+27 -L-

1"=10'

PROJECT REFERENCE NO.	SHEET NO.
BP6-R021	EC-4D/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

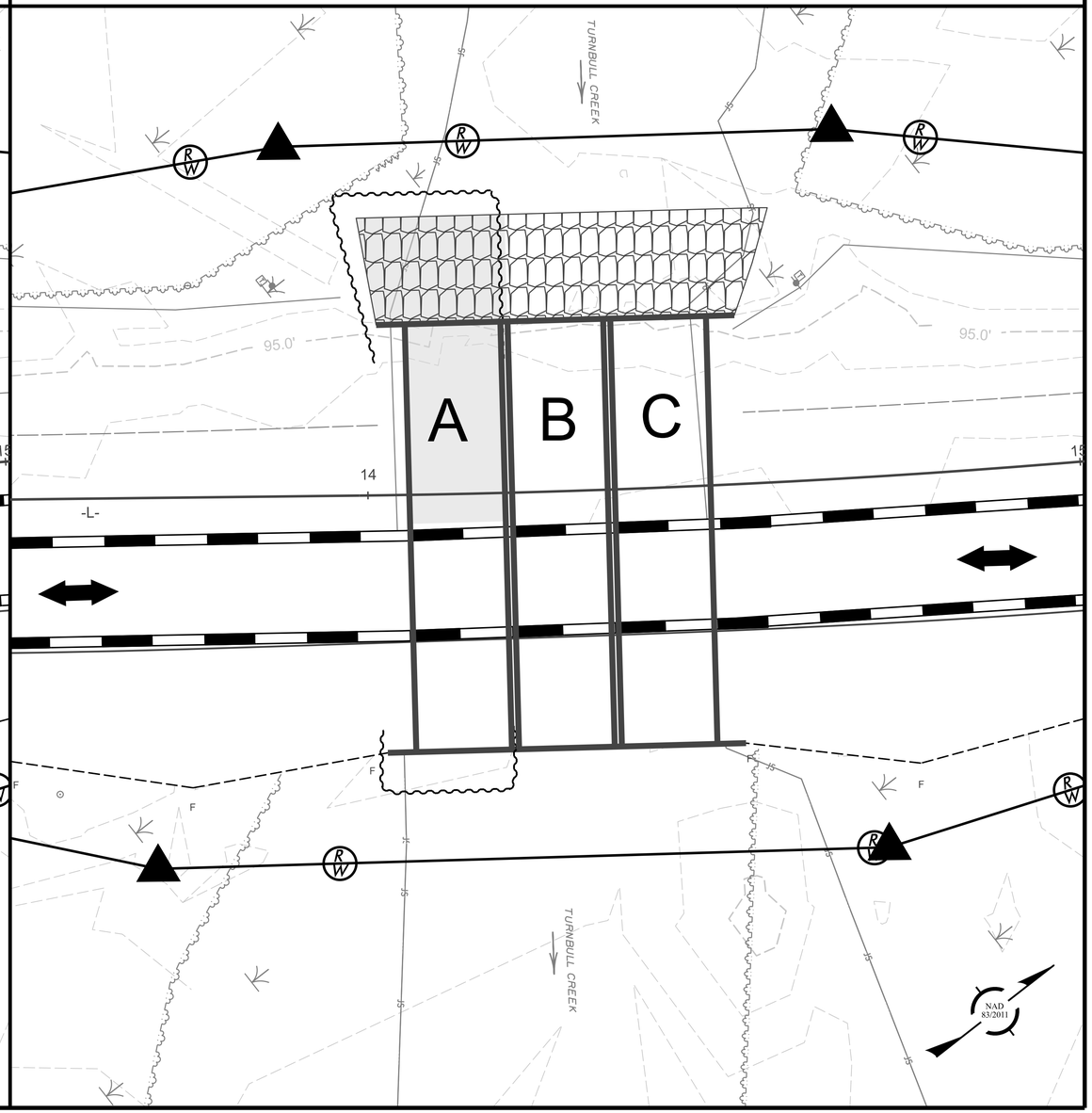
PHASE VII

1. REMOVE IMPERVIOUS DIKES #5 & #6, ALLOWING FLOW THROUGH BARRELS 'B' & 'C'.
2. INSTALL IMPERVIOUS DIKES #7 & #8.
3. INSTALL SPECIAL STILLING BASIN(S). DEWATER CONSTRUCTION AREA INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
4. REMOVE REMAINDER OF EXISTING CULVERT BARREL 'A' (UPSTREAM).



PHASE VIII

1. CONSTRUCT REMAINDER OF PROPOSED CULVERT BARREL 'A' AND REMAINDER OF RIP-RAP (UPSTREAM).
2. REMOVE IMPERVIOUS DIKES #7 & #8, TEMPORARY SHORINGS #1 & #2, AND SPECIAL STILLING BASIN(S), ALLOWING FLOW IN ALL BARRELS.
3. CONSTRUCT REMAINDER OF PROPOSED ROADWAY IMPROVEMENTS.



11/14/23

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

CUR DATA -L-
PIc 11+05.28
Δc = 08°56'46.5" (LT)
D = 04°15'26.2"
Lc = 210.14
Tc = 105.28
R = 1,345.83
SE = EXISTS.

CUR DATA -L-
PIc 16+39.91
Δc = 19°06'36.4" (LT)
D = 03°59'59.9"
Lc = 477.76
Tc = 241.12
R = 1,432.4
SE = 0.060

BACKFILL WITH CLASS II RIP RAP 15 FEET FROM INLET TO THE ELEVATION OF PROPOSED PIPE (EST. 165 TONS)

SMITHFIELD-CARROLLS FARMS LLC
Deed Book/Page [10122/792]
Plat Book/Page [140/92]
1

2
MOTTY V MELVIN
Deed Book/Page [3551/0417]

NAD 83
NA 2011

-L- PT 12+10.14

-L- PC 13+98.79

TURNBULL CREEK

WOODS

PROPOSED 3@14'-0"x 8'-5"; ALUMINUM STRUCTUAL PLATE PIPE ARCH WITH HEADWALL AND ENDWALL

IMPERVIOUS DIKE

BEGIN CULVERT
-L- STA. 14+05 +/-

50' TAPER TO EXIST.
20' TYP.
+60
+20

EXISTING RW

4' FDPS

20' BST AVERY RD (SR 2046)

9.2'
10.5'
9.8'
9.7'

-L-
N37°17'24.1"E

(3) 42"X91" CMPA PIPES

BM1
ELEV= 95.40'

50' CONST. R/W

BEGIN PROJECT BP6-R021
-L- STA. 12+70.00

END PROJECT BP6-R021
-L- STA. 15+70.00

END CULVERT
-L- STA. 14+48 +/-

EXISTING 3@ 42"x 91" CMPA TO BE REMOVED

FILL AND PROPOSED PIPE FROM TEMPORARY DETOUR TO REMAIN AFTER CONSTRUCTION IS COMPLETE

3
BULL CREEK FARMS LLC
Deed Book/Page [10227/199]
Plat Book/Page [140/92]

4
RAYFIELD HAMMONDS
Deed Book/Page [851/0252]

BP6-R021

EC-05/CONST.04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

TGS ENGINEERS
201 W. GORDON ST. STE 200
GIBSONIA, NC 28339
PH (704) 474-8053
CORP. LICENSE NO.: C-0275

REVISIONS

T.I.P.: BP6-R021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
CUMBERLAND COUNTY

LOCATION: STRUCTURE #205208 OVER TURNBULL CREEK ON SR 2046 AVERY RD.

TIP NO.	SHEET NO.
BP6-R021	SIGN-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440... 9/20/2024

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

. SIGNS FURNISHED BY STATE
. CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	42	L.F.
4102000000	904	SIGN ERECTION, TYPE E	4	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	4	EA.

INDEX

PLAN SUBMITTED TO: NCDOT

ADAM T. BRITT DIVISION 6 BRIDGE PROGRAM MANAGER

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

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

9/12/2024
X:\NCDOT\Div 6 Cumberland 208\Signing and Delineation\Signing\Design\Cumberland 208_Sgn_SGN_01.dgn
User:cbrannan

(400) QUANTITY REQ'D 2

12" X 36"
OM3-R

ONE "U" POST PER SIGN

(401) QUANTITY REQ'D 2

12" X 36"
OM3-L

ONE "U" POST PER SIGN

TIP NO.	SHEET NO.
BP6-R021	SIGN-2

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 9/20/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TYPE "E" SIGNS

TIP NO.	SHEET NO.
BP6-R021	SIGN-3

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

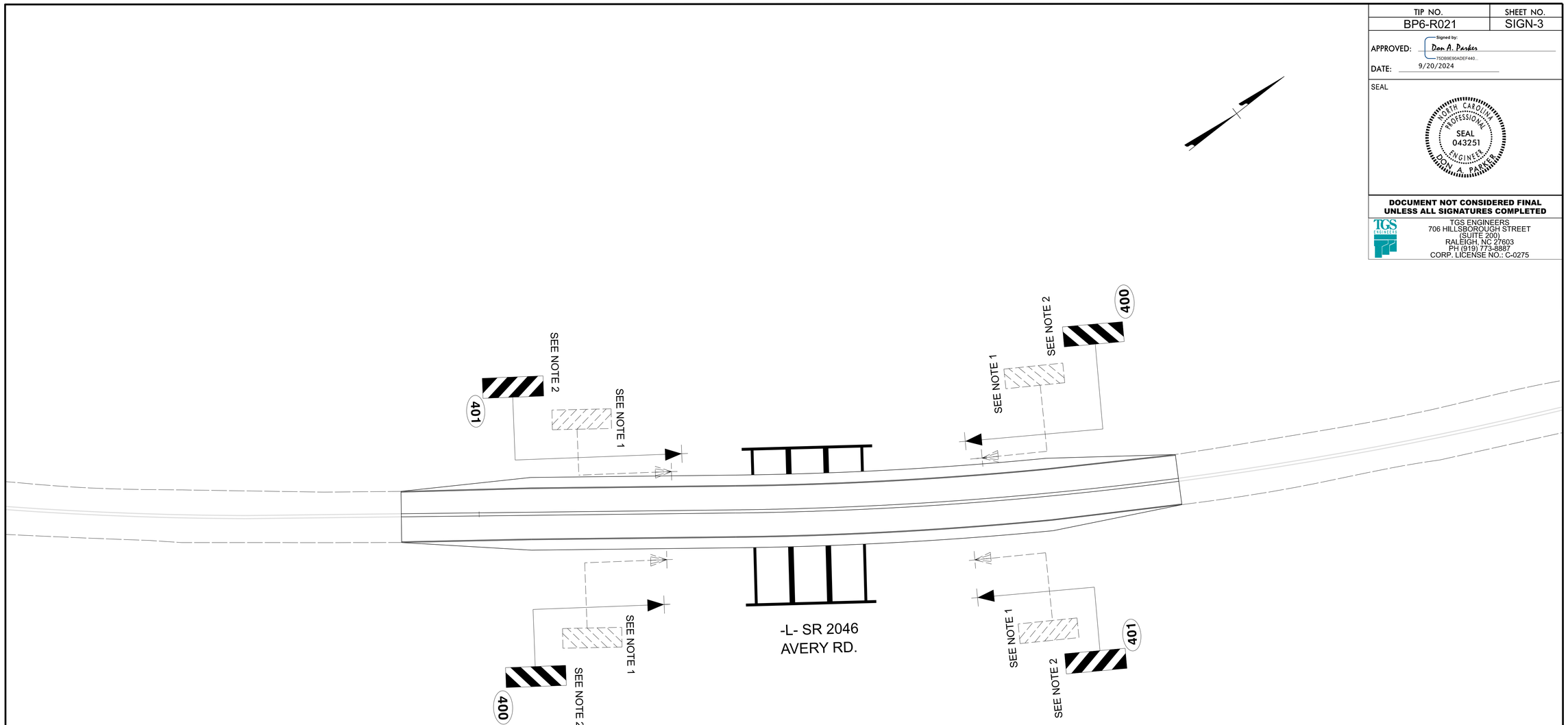
DATE: 9/20/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. SIGN ERECTION, TYPE E

EXISTING/PROPOSED SIGNS

PROJ. REFERENCE NO.	SHEET NO.
BP6-R021	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

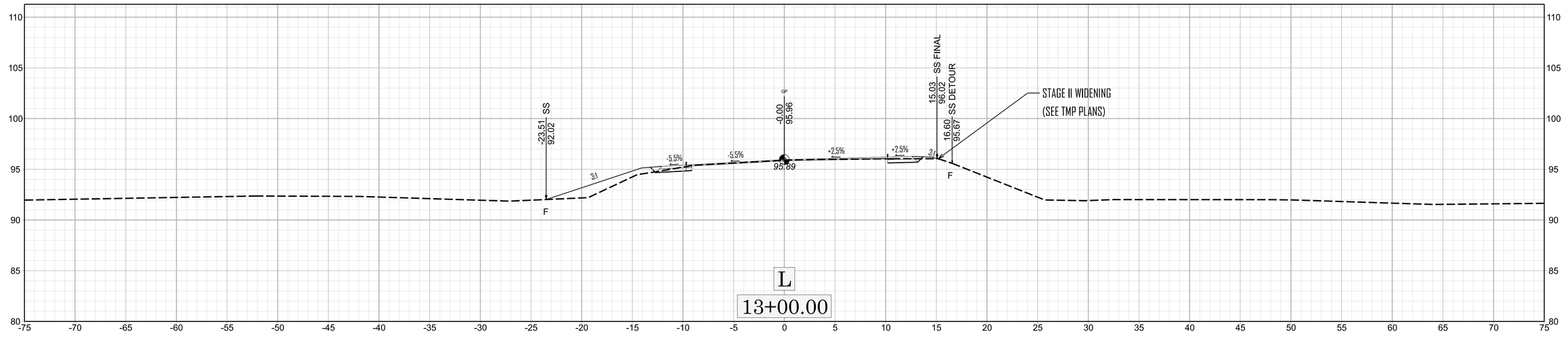
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

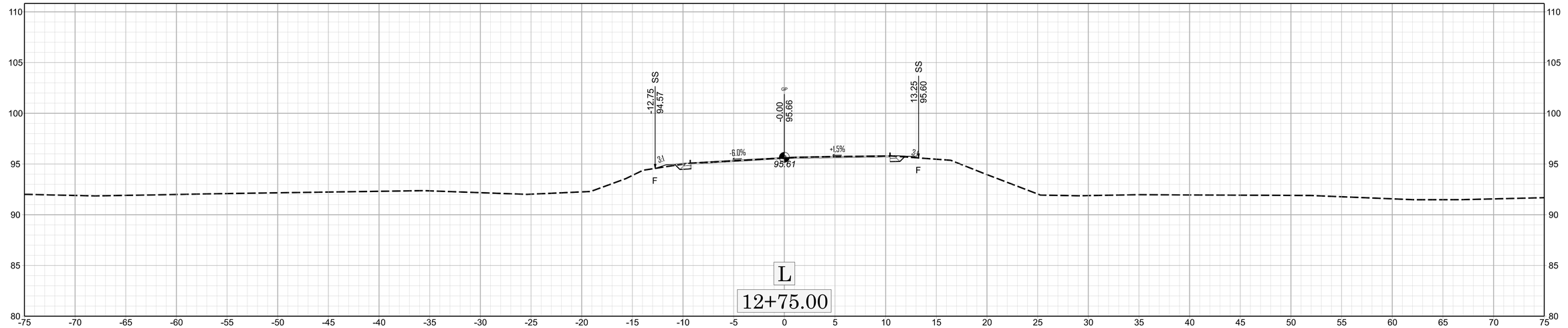
CROSS-SECTION SUMMARY

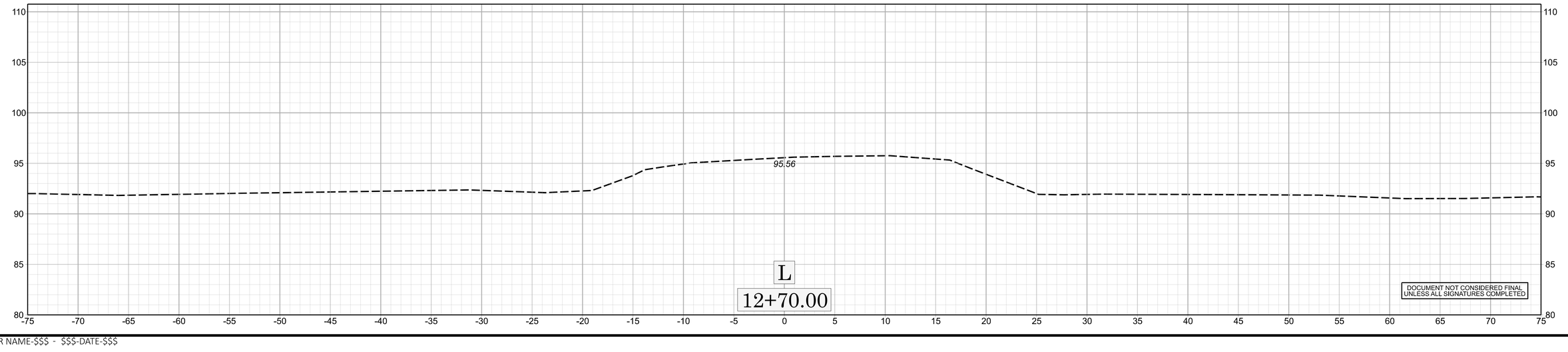
Station -L-	Uncl. Exc. (cu yd)	Embt (cu yd)
12+70.00	0	0
12+75.00	0	0
13+00.00	1	5
13+25.00	5	18
13+50.00	10	31
13+75.00	11	39
14+00.00	11	49
14+25.00	10	93
14+50.00	9	98
14+75.00	7	56
15+00.00	5	45
15+25.00	3	32
15+50.00	1	12
15+70.00	1	2

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

11/14/23





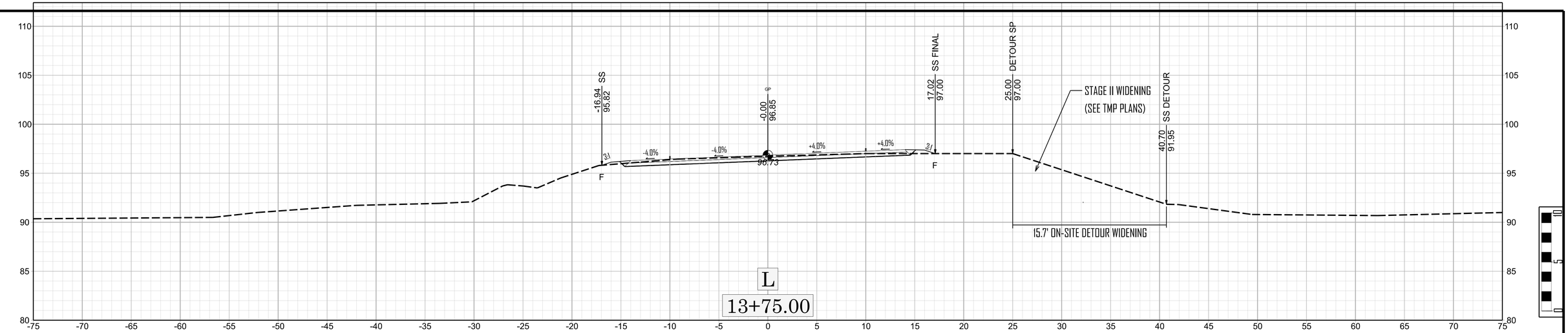


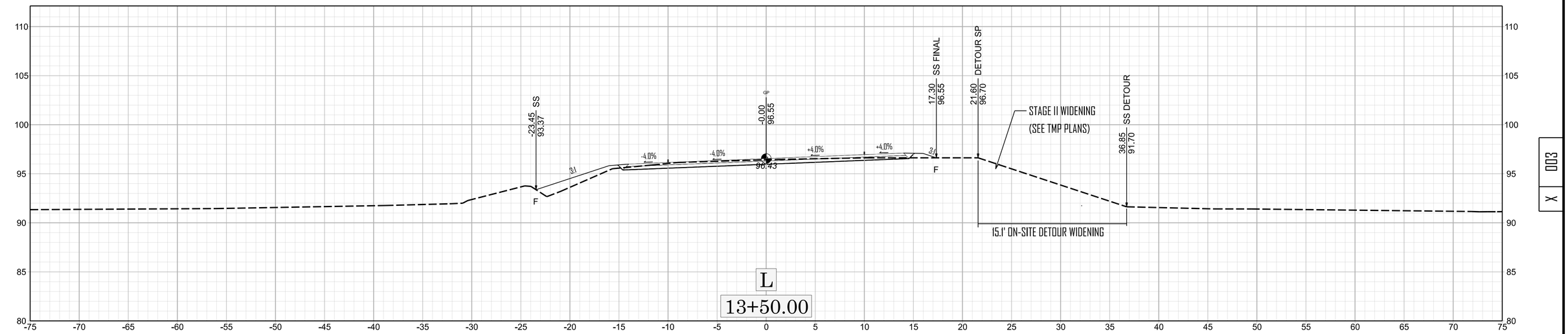
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

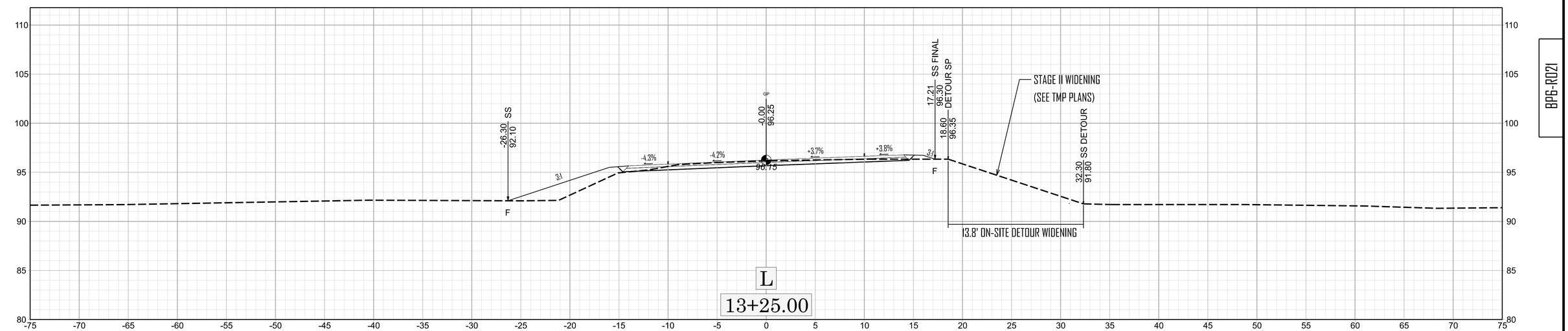
X 002

BPB-R021

11/14/23

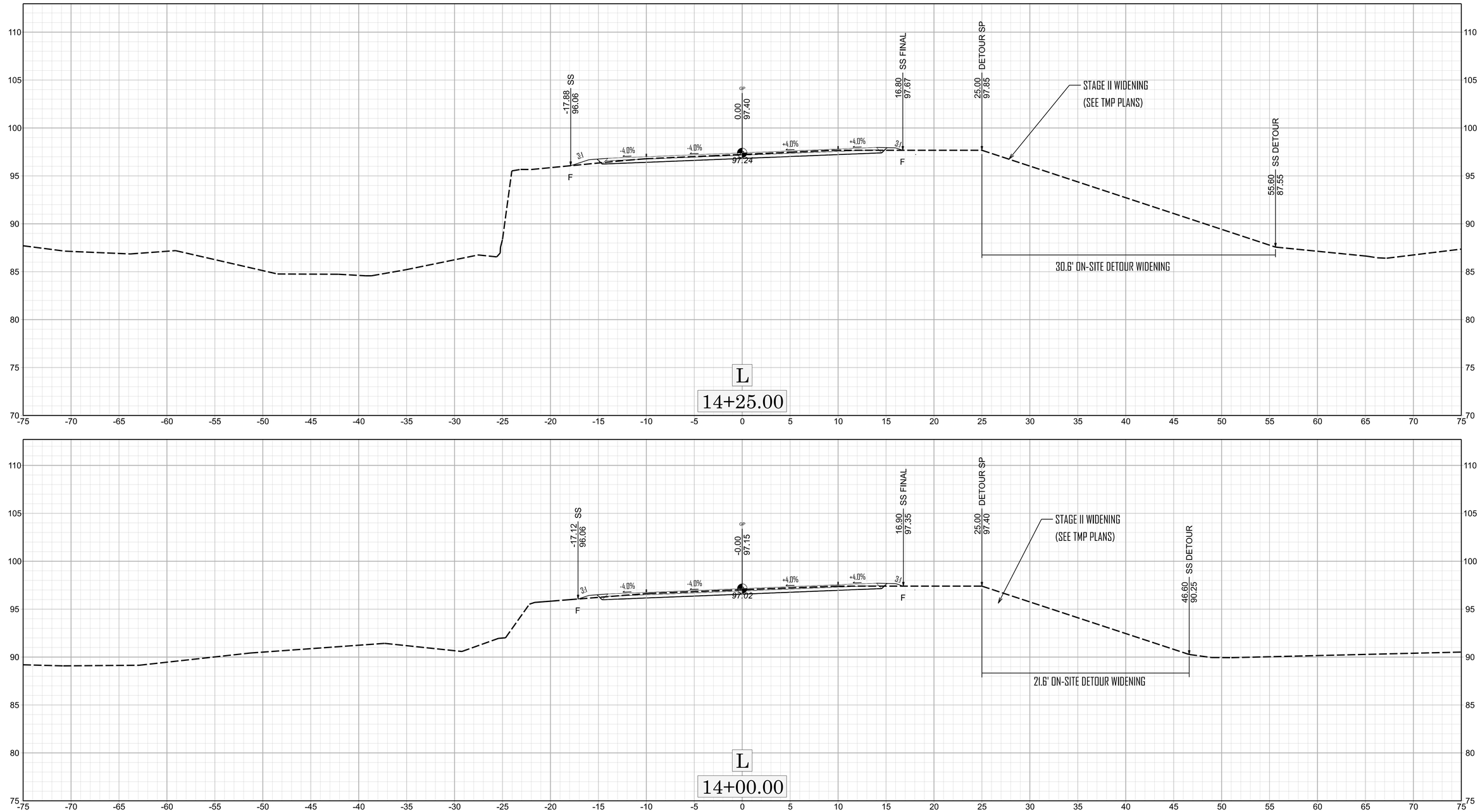






X 003

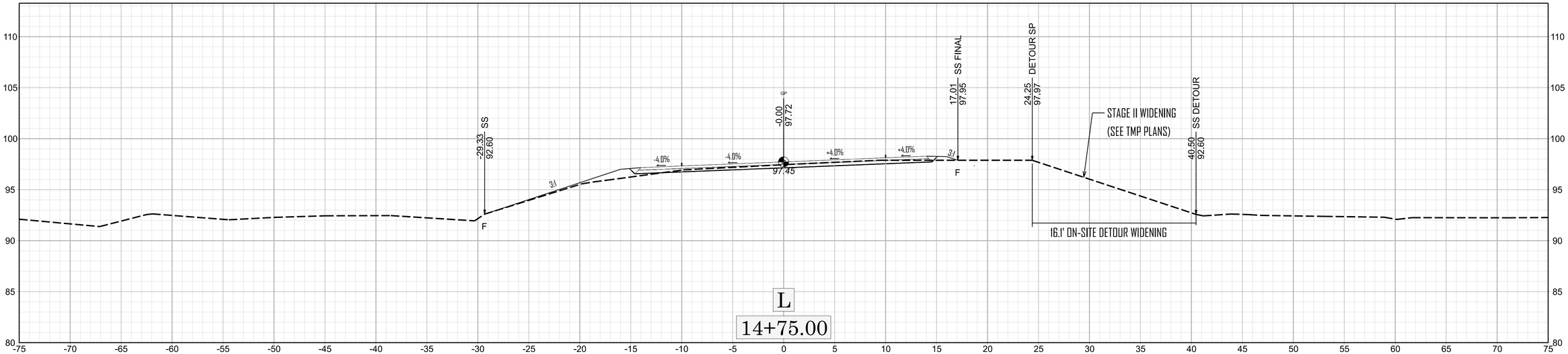
BPB-R021

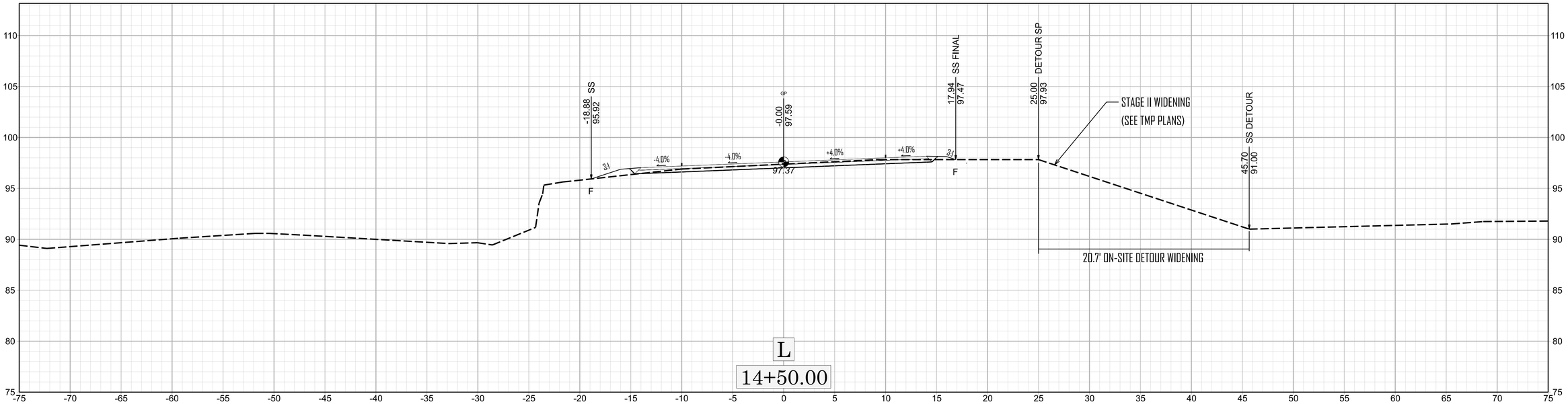


0 5 10

X 004

BPG-R021

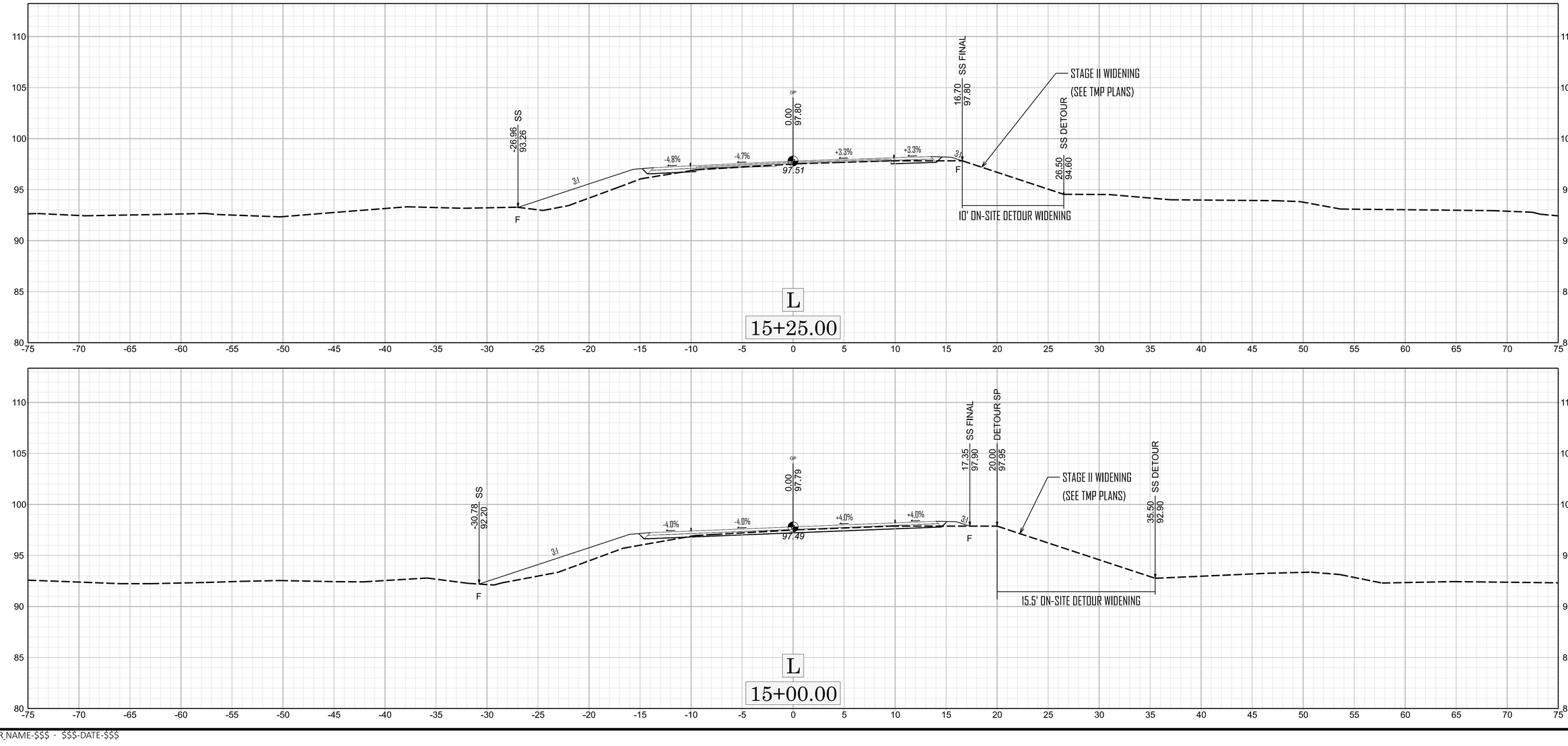


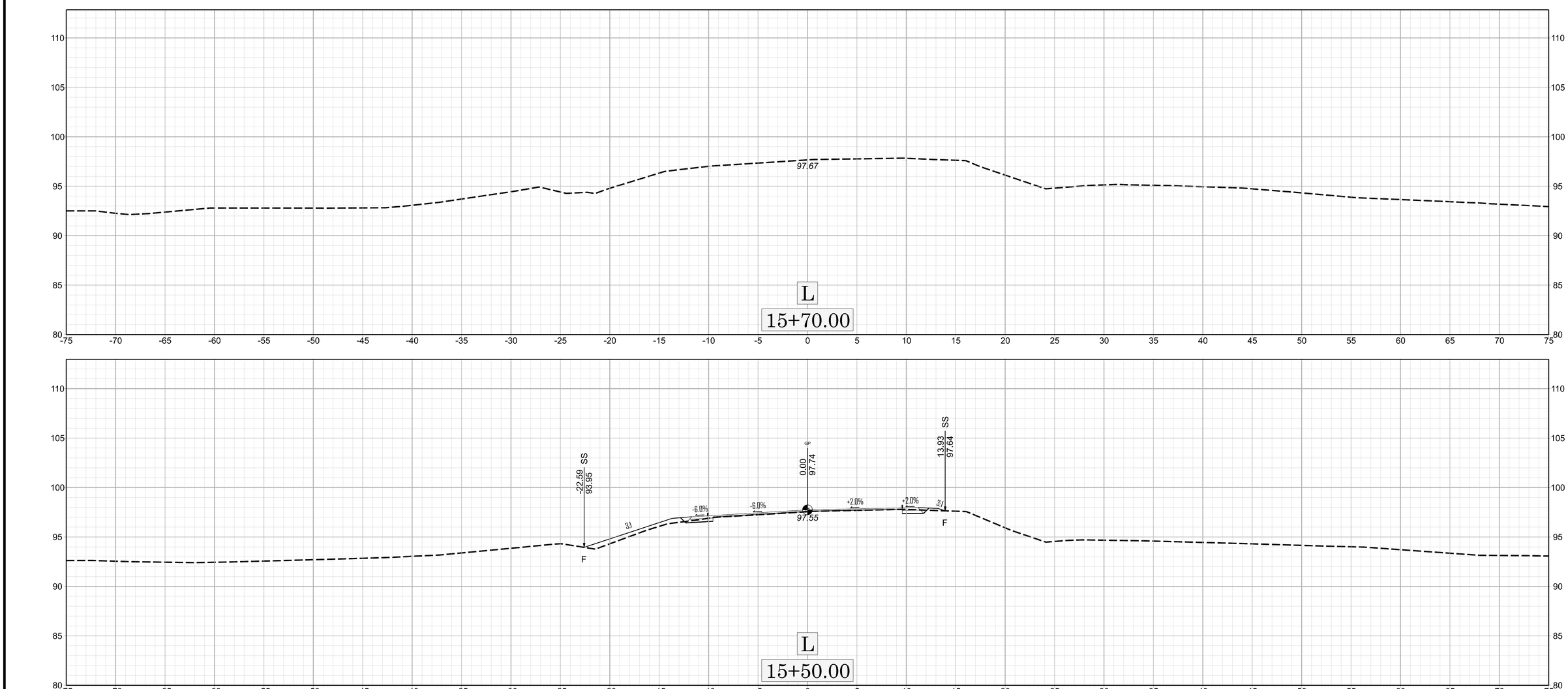


0 5 10

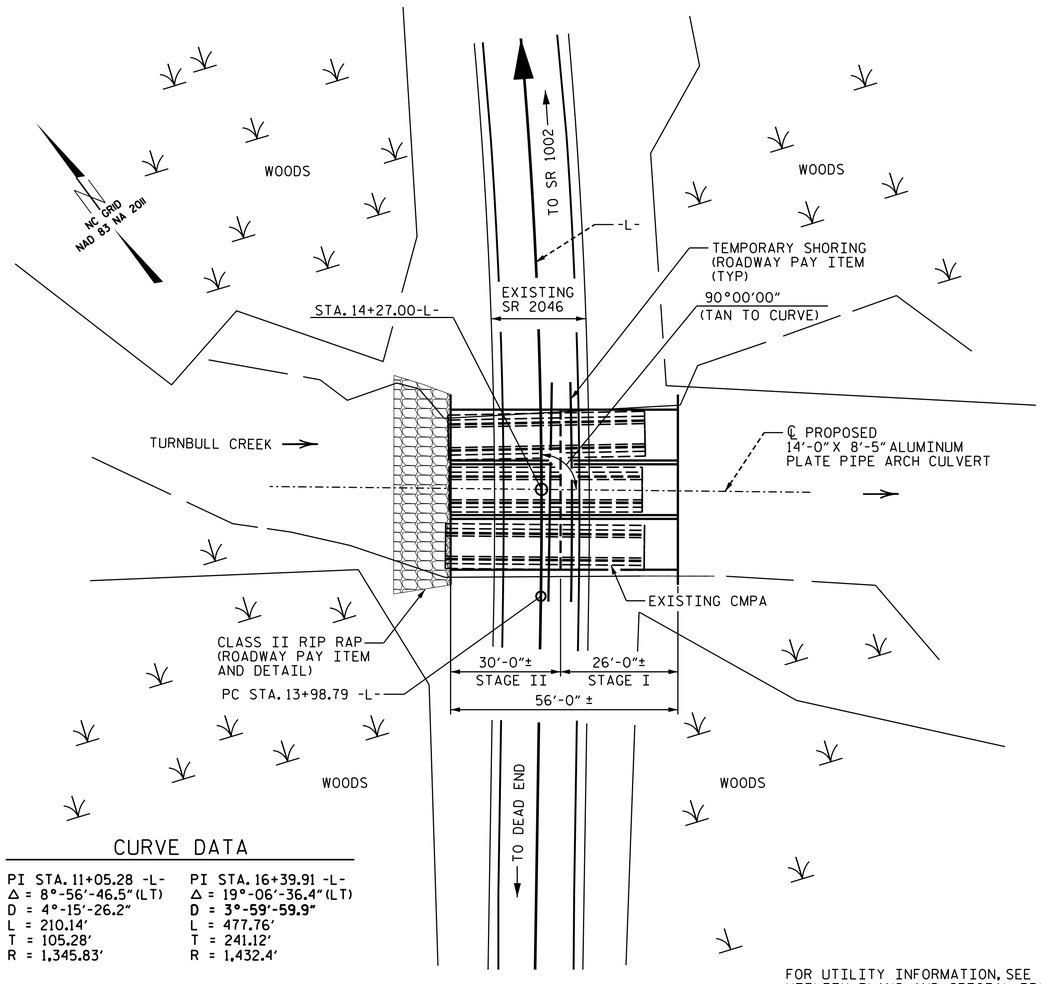
X 005

BPB-R021





BENCHMARK #1 : RR SPIKE IN 20' OAK TREE; 25.8' LT. OF STA 15+07.2-L- ; ELEV. 95.40'



CURVE DATA

PI STA. 11+05.28 -L-	PI STA. 16+39.91 -L-
Δ = 8°-56'-46.5"(LT)	Δ = 19°-06'-36.4"(LT)
D = 4°-15'-26.2"	D = 3°-59'-59.9"
L = 210.14'	L = 477.76'
T = 105.28'	T = 241.12'
R = 1,345.83'	R = 1,432.4'

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

ROADWAY DATA

GRADE POINT ELEV. @ STATION 14+27.00 -L-	= 97.42'
BED ELEV. @ STATION 14+27.00 -L-	= 86.5'
ROADWAY SLOPES	= 3:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 1260 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 94.1'
DRAINAGE AREA	= 11.8 SQ. MI.
BASE DISCHARGE (Q100)	= 1940 C.F.S.
BASE HIGH WATER ELEVATION	= 95.5'

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 1710 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= ~100 YEARS *
OVERTOPPING HIGH WATER ELEVATION	= 95.2'

* SHOULDER POINT RT. OF 10+84.00-L-
WS ELEV. TAKEN @ RIVER STATION 1192

TOTAL STRUCTURE QUANTITIES

ALUMINUM PLATE PIPE ARCH CULVERT	LUMP SUM
CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDITIONING MATERIAL	190 TONS

NOTES

ASSUMED LIVE LOAD ---------- HL-93 OR ALTERNATE LOADING.

DESIGN FILL---------- 12.1 FT. MAX.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTES SHEET.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY, THE SUPPLIER SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12 AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOR FALSEWORK & FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ALUMINUM PLATE PIPE ARCH CULVERT, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

REMOVAL OF THE EXISTING PIPE CULVERT SHALL BE PERFORMED SO AS NOT TO ALLOW ANY DEBRIS TO FALL INTO THE WATER. REMOVAL OF THE EXISTING PIPE CULVERT SHALL BE PAID FOR UNDER THE LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

THE MANUFACTURER OF THE ALUMINUM PLATE PIPE ARCH CULVERT SHALL PROVIDE LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY PER NCDOT REQUIREMENTS.

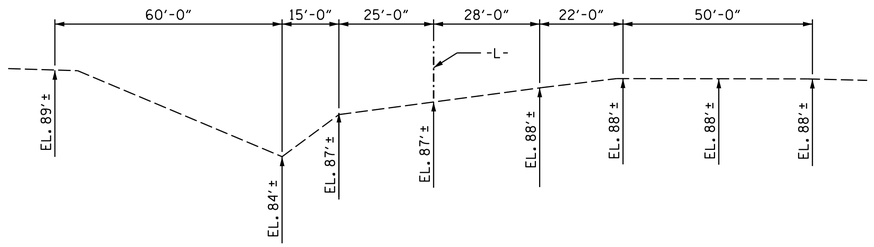
THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOUNDATION NOTES

1. INSTALL ALUMINUM PLATE PIPE ARCH CULVERT IN ACCORDANCE WITH SECTION 300 OF THE STANDARD SPECIFICATIONS.
2. EXCAVATE 12 INCHES BELOW THE BOTTOM OF THE COLVERT AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS. FOUNDATION CONDITIONING MATERIAL SHOULD CONSIST OF SELECT MATERIAL CLASS V OR VI FOR PIPE CULVERTS.
3. IF REQUIRED, UNDERCUT LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL.



PROFILE ALONG ℄ CULVERT

PROJECT NO. BP6-R021

CUMBERLAND COUNTY

STATION: 14+27.00-L-

SHEET 1 OF 2 REPLACES STR. #250208

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. ENGINEER
Marshall G. Cheek, Jr.
9/20/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

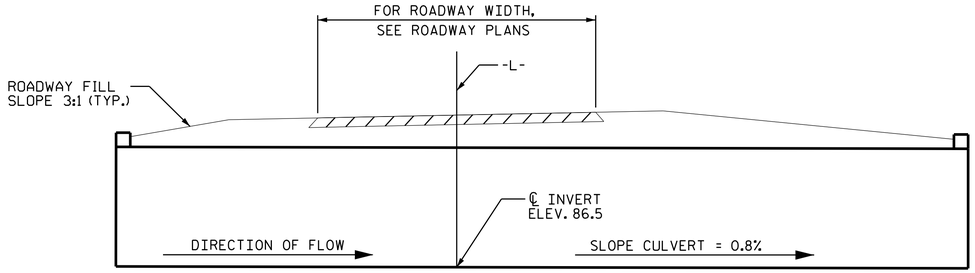
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

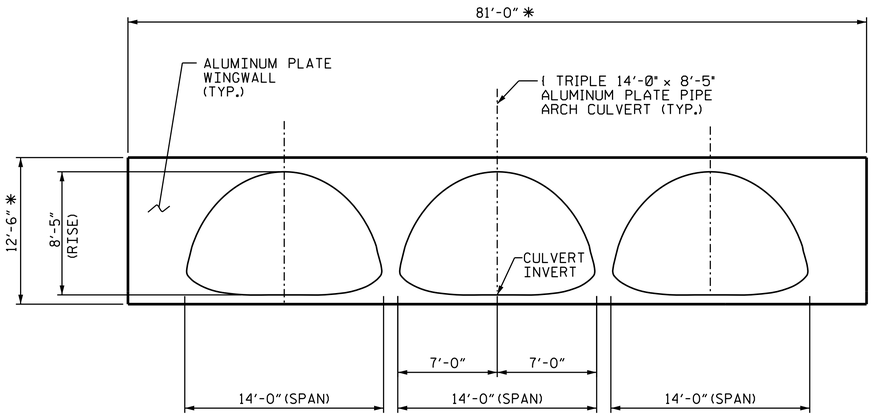
3 - 14'-0" X 8'-5" ALUMINUM PLATE PIPE ARCH CULVERT 90°-00'-00" SKEW

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

DRAWN BY :	NMW	DATE : 6/24
CHECKED BY :	MGC	DATE : 6/24



CULVERT SECTION NORMAL TO ROADWAY

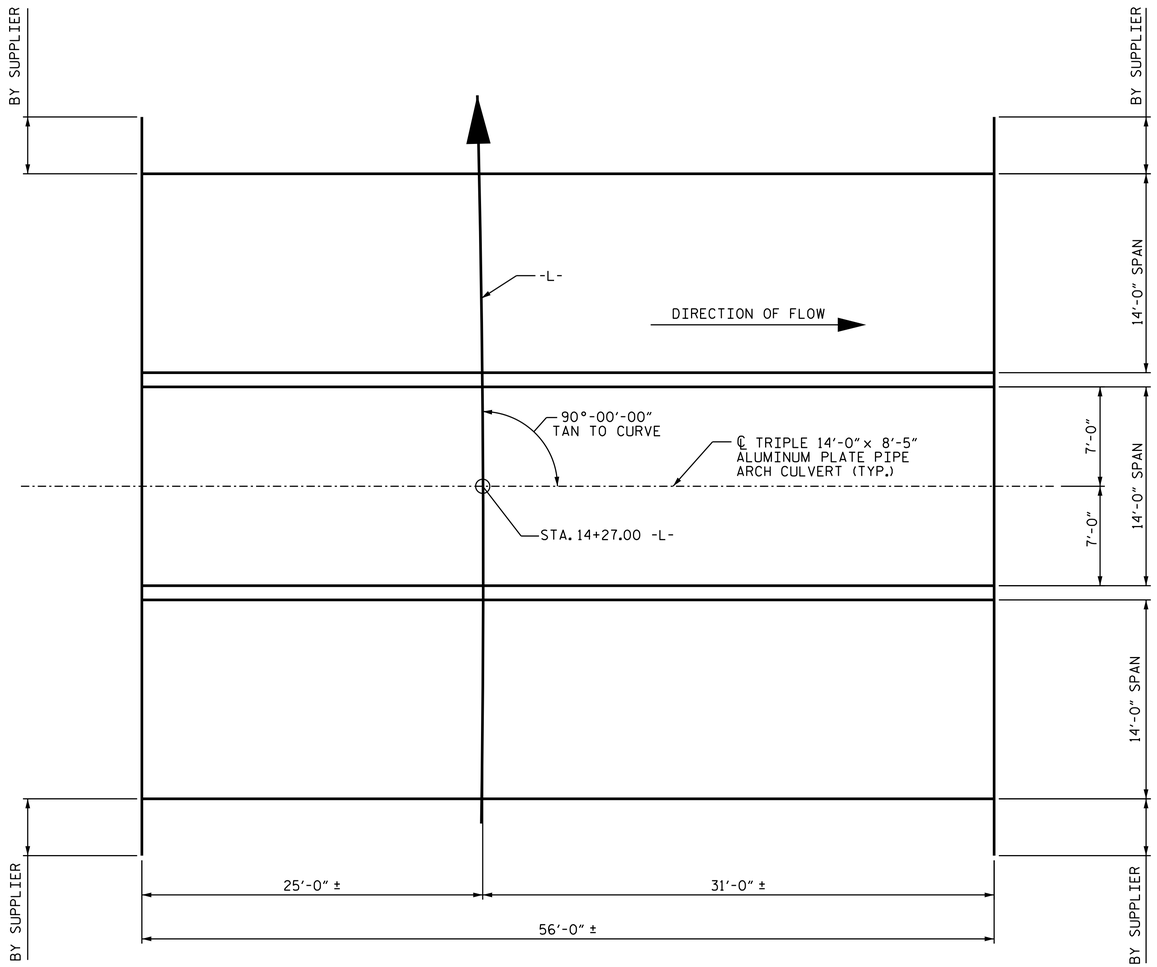


END ELEVATION

INLET AND OUTLET

✱ DIMENSION TO BE FIELD VERFIED.

NOTE: INTERMEDIATE HEADWALL REQUIRED FOR STAGE CONSTRUCTION. INTERMEDIATE HEADWALL SHALL BE APPROXIMATELY 67'-6" x 11'-0" OR AS DETERMINED IN THE FIELD.



PLAN VIEW

DRAWN BY :	NMW	DATE :	6/24
CHECKED BY :	MGC	DATE :	6/24

PROJECT NO. BP6-R021

CUMBERLAND COUNTY

STATION: 14+27.00-L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.

Signature: Marshall G. Cheek, Jr. 5FBCC2F3A4DC413...

1/24/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3 - 14'-0" X 8'-5" ALUMINUM PLATE PIPE ARCH CULVERT 90°-00'-00" SKEW

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

8/26/21

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO ½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.