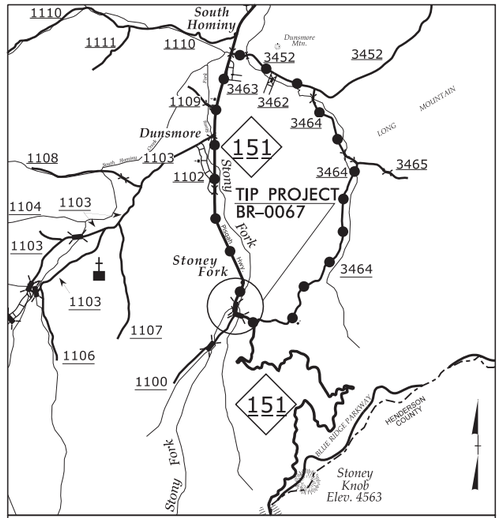
09/08/99

TIP PROJECT: BR-0067

CONTRACT: DM00478

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



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

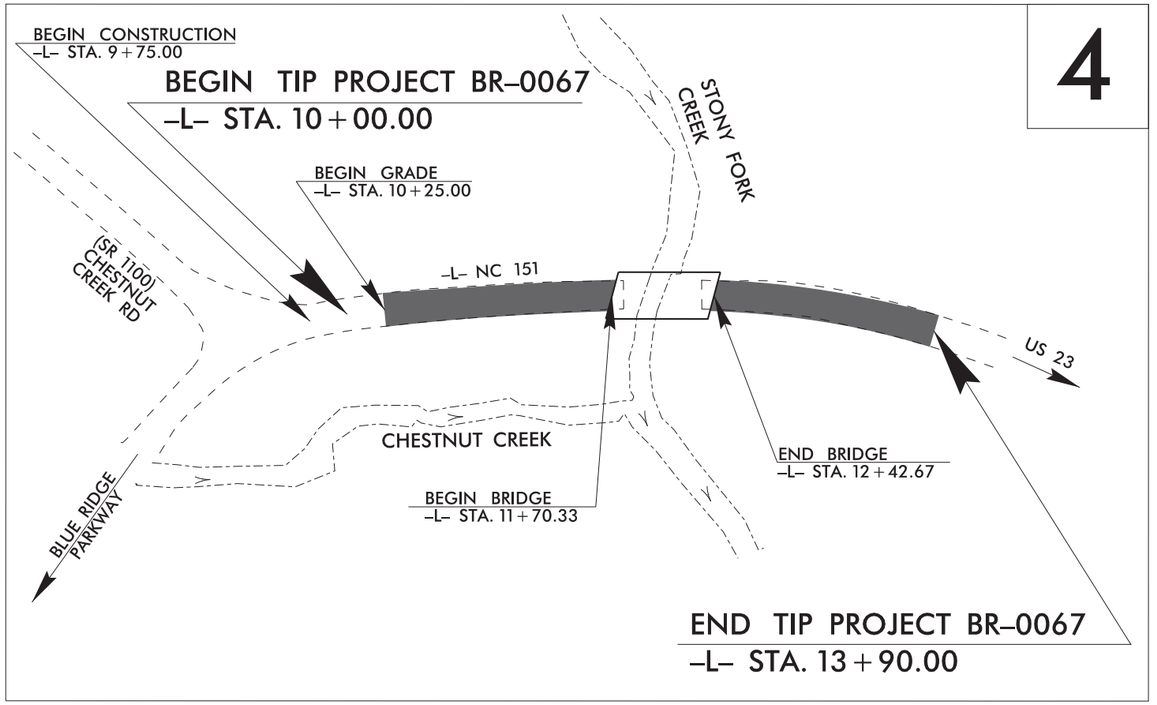
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0067	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67067.1.1		P.E.
67067.2.1		ROW/UTIL
67067.3.1		CONST

LOCATION: REPLACE BRIDGE NO. 100086 ON NC 151 OVER STONY FORK CREEK

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



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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2024 = 1200
ADT 2044 = 1490
K = %
D = %
T = % *
V = 40 MPH
* TTST = __ DUAL 3%
FUNC CLASS =
RURAL COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0067	=	0.060 MI
LENGTH OF STRUCTURE TIP PROJECT BR-0067	=	0.014 MI
TOTAL LENGTH OF TIP PROJECT BR-0067	=	0.074 MI

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

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 31, 2023

LETTING DATE:
MAY 21, 2025

VERROL MCLEARY
PROJECT MANAGER

DAVID J. CLODGO, PE
PROJECT ENGINEER

PIOTR J. STOJDA
PROJECT TEAM LEAD

HYDRAULICS ENGINEER
04/15/2025
Signed by: Corey A. Cavalier
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 030018 ENGINEER COREY A CAVALIER P.E.

ROADWAY DESIGN ENGINEER
04/15/2025
DocuSigned by: David J. Clodgo
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 035683 ENGINEER DAVID J. CLODGO P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035683 DAVID J. CLODFO

04/15/2025

DocuSigned by:
David J. Clodfo
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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A–1 THRU 2A–2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C–1 THRU 2C–2	METHOD OF PIPE INSTALLATION DETAILS
2C–3 THRU 2C–4	GUARDRAIL PLACEMENT DETAILS
2C–5	STRUCTURE ANCHOR UNITS DETAILS
3B–1	ROADWAY SUMMARIES
3D–1	DRAINAGE SUMMARIES
3G–1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW1–1 THRU RW–4	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASMENT AND PROPERTY TIES
TMP–1 THRU TMP–2	TRAFFIC MANAGEMENT PLANS
EC–1 THRU EC–5	EROSION CONTROL PLANS
RF–1	REFORESTATION PLANS
SIGN–1 THRU SIGN–4	COMBINED SIGNING AND PAVEMENT MARKING PLANS
UO–1 THRU UO–2	UTILITIES BY OTHERS PLANS
X–1	CROSS–SECTION SUMMARY SHEET
X–2 THRU X–4	CROSS–SECTIONS
S–1 THRU S–16	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01–16–2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Haywood Electric, Charter, ATT

RIGHT–OF–WAY MARKERS:

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

STANDARD DRAWINGS

EFF. 01–16–2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO. TITLE

DIVISION 2 – EARTHWORK
200.03 Method of Clearing – Method III
225.02 Guide for Grading Subgrade – Secondary and Local
225.04 Method of Obtaining Superelevation – Two Lane Pavement

DIVISION 3 – PIPE CULVERTS
300.01 Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)

DIVISION 4 – MAJOR STRUCTURES
423.01 Bridge Approach Fills – Type 1 Approach Fill for Bridge Abutment
423.02 Bridge Approach Fills – Type 1A Alternate Approach Fill for Integral Bridge Abutment

DIVISION 5 – SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction – High Side of Superelevated Curve – Method I

DIVISION 6 – ASPHALT BASES AND PAVEMENTS
654.01 Pavement Repairs

DIVISION 8 – INCIDENTALS
815.02 Subsurface Drain
840.00 Concrete Base Pad for Drainage Structures
840.17 Concrete Grated Drop Inlet Type 'A' – 12" thru 72" Pipe
840.22 Frames and Wide Slot Sag Grates
840.25 Anchorage for Frames – Brick or Concrete or Precast
840.26 Brick Grated Drop Inlet Type 'A' – 12" thru 72" Pipe
840.29 Frames and Narrow Slot Flat Grates
840.35 Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.45 Precast Drainage Structure
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02 Guardrail Installation
862.03 Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
862.04 Anchoring End of Guardrail – for B–77 and B–83 Anchor Units
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

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9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2A-1

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035683 DAVID J. CLODGO — 04/15/2025 — DocuSigned by: David J. Clodgo

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038176 SHIHAI ZHANG — 04/15/2025 — DocuSigned by: Shihai Zhang

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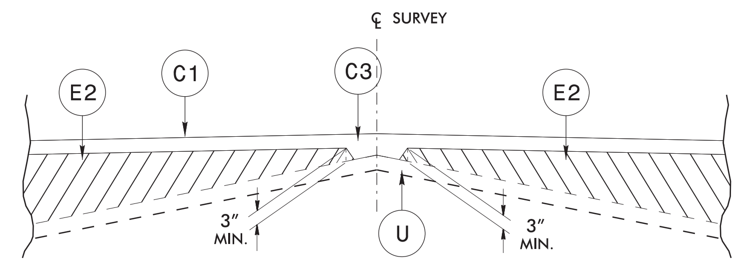
6/2/99

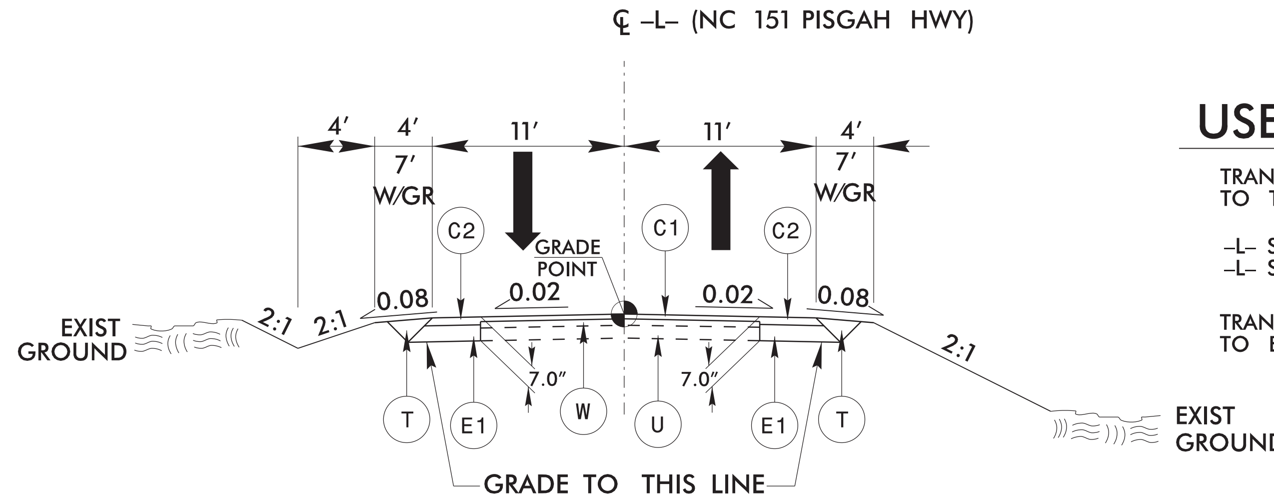
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AT AN AVERAGE RATE OF 110LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DPETH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



Detail Showing Method of Wedging



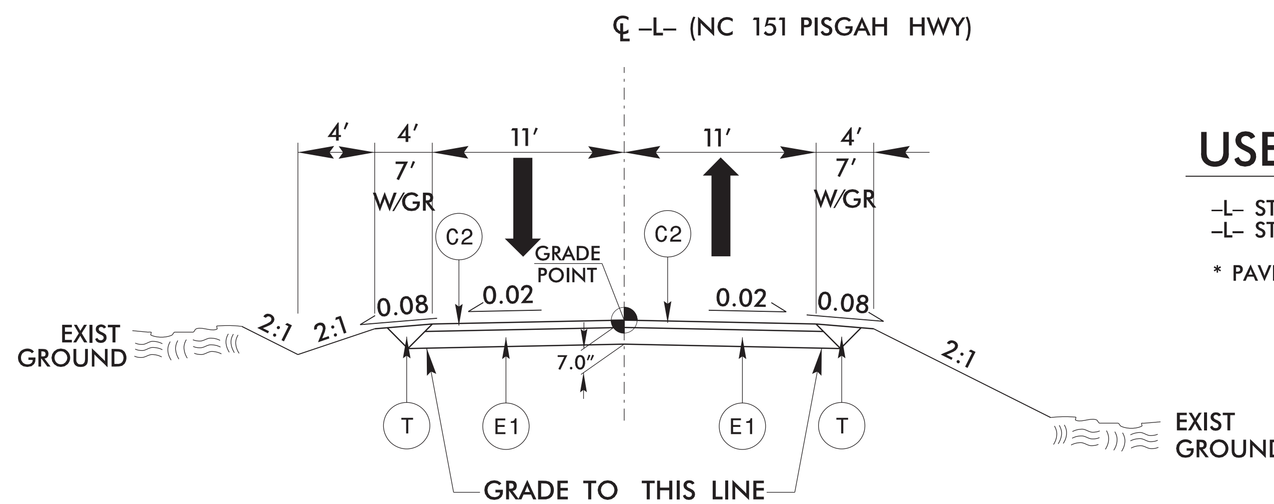
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

TRANSITION FROM EXISTING AT -L- STA. 10+25.00
TO TYPICAL NO. 1 AT -L- STA. 10+75.00

-L- STA. 10+75.00 TO 11+30.00
-L- STA. 12+90.00 TO 13+40.00

TRANSITION FROM TYPICAL NO. 1 AT -L- STA. 13+40.00
TO EXISTING AT -L- STA. 13+90.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 11+30.00 TO STA. 11+70.33 (BEGIN BRIDGE)
-L- STA. 12+42.67 (END BRIDGE) TO STA. 12+90.00

* PAVE TO THE FACE OF GUARDRAIL

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PAVEMENT SCHEDULE	
C1	1.5″ S9.5B
C1	3.0″ S9.5B
C2	VAR. S9.5B
E1	4.0″ B23.0C
E2	VAR. B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035683 DAVID J. CLODFO

04/25/2025

DocuSigned by: David J. Clodfo 3E2867247D744FF...

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038176 SHILIAI ZHANG

04/25/2025

DocuSigned by: Shilai Zhang 245D67F41811435...

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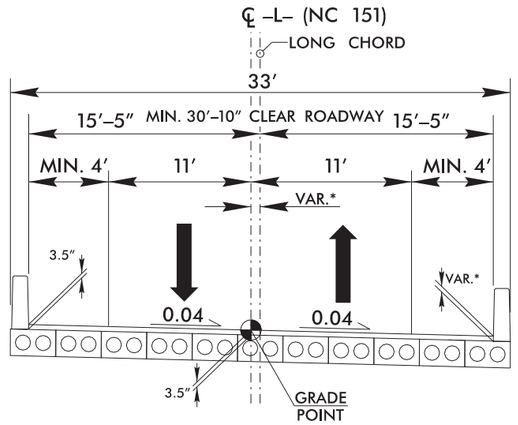

USE TYPICAL SECTION ON STRUCTURE

–L– STA. 11+70.33 (BEGIN BRIDGE) TO STA. 12+42.67 (END BRIDGE)

TYPICAL SECTION ON STRUCTURE

*SEE STRUCTURE PLANS

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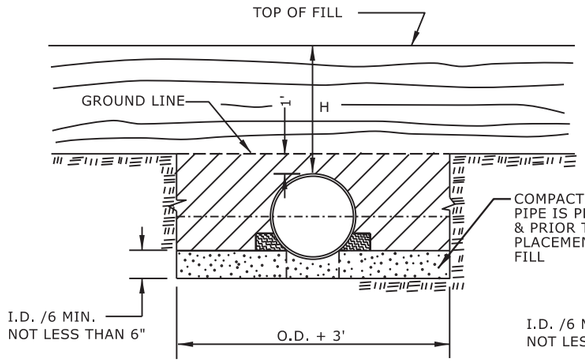
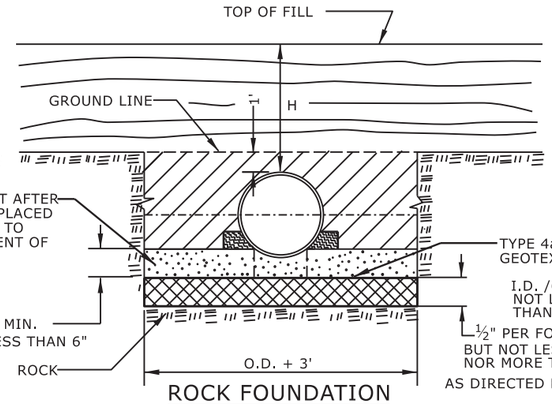
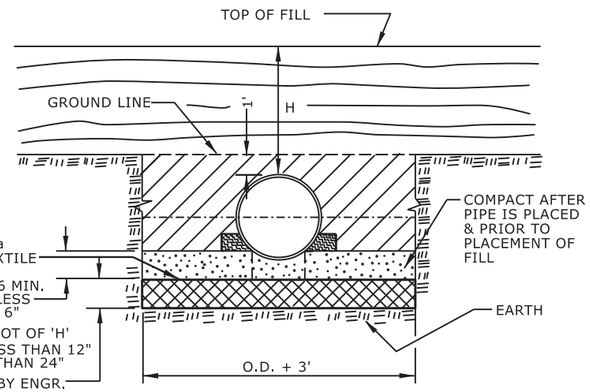


NORMAL EARTH FOUNDATION

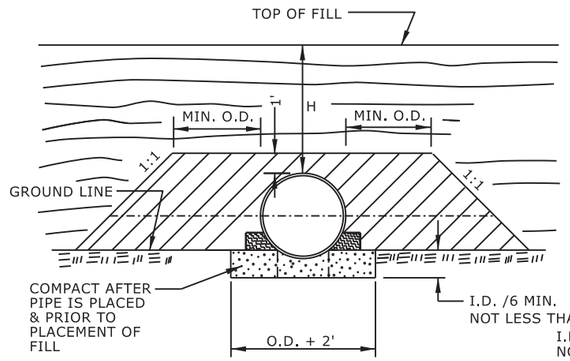


ROCK FOUNDATION

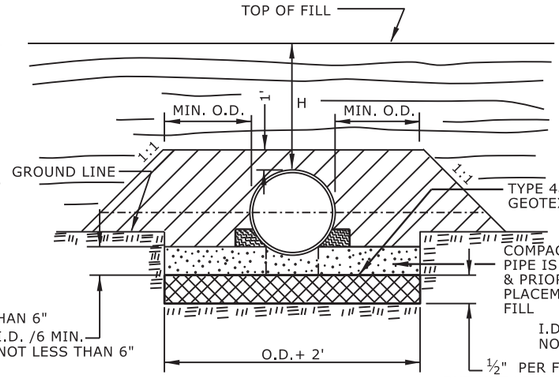


UNSUITABLE MATERIAL FOUNDATION

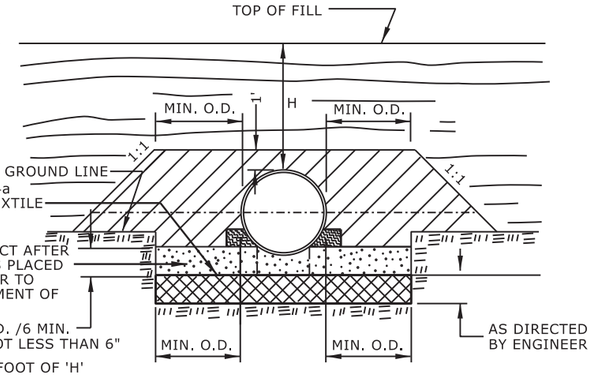
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

04/15/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
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SHEET 1 OF 2

300.01

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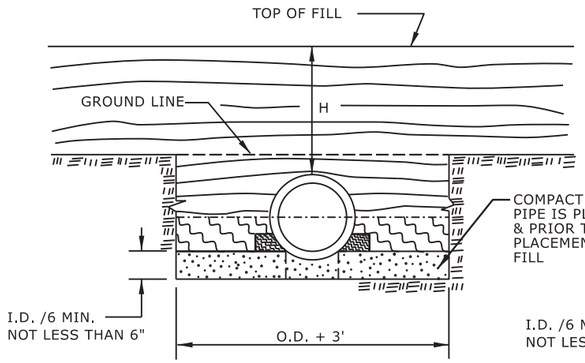
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

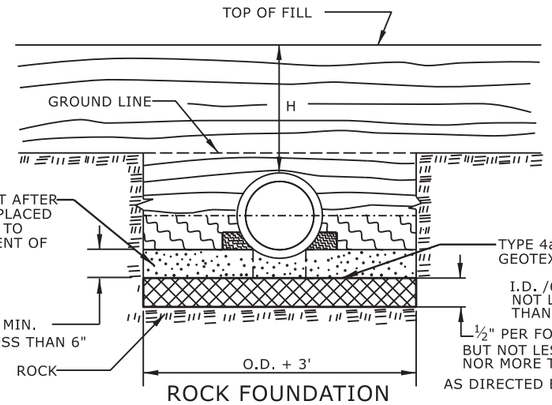
SEE TITLE BLOCK

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

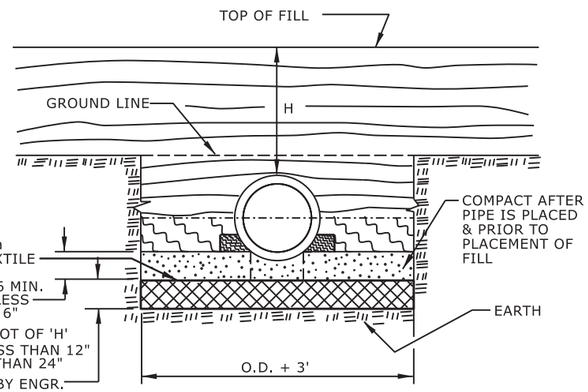
PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2C-2



NORMAL EARTH FOUNDATION

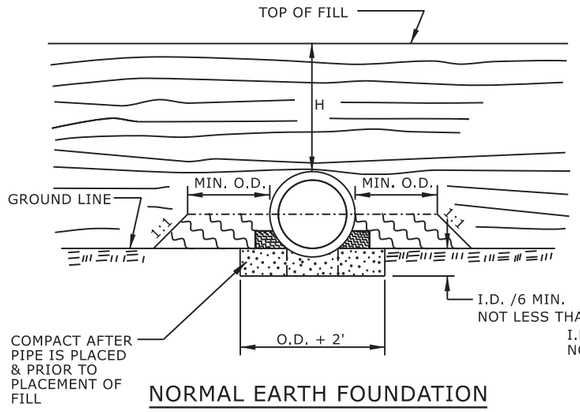


ROCK FOUNDATION

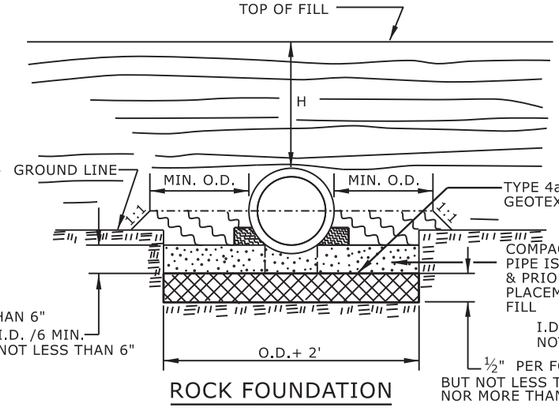


UNSUITABLE MATERIAL FOUNDATION

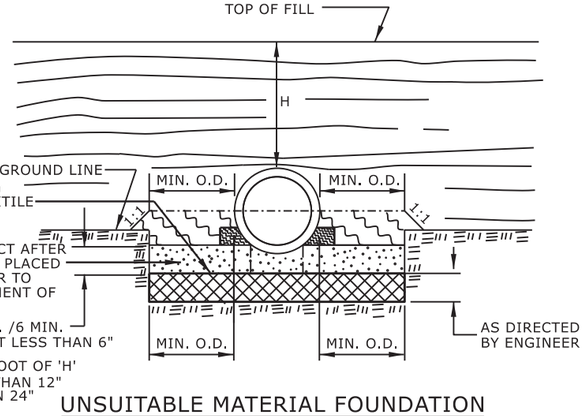
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

04/15/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler

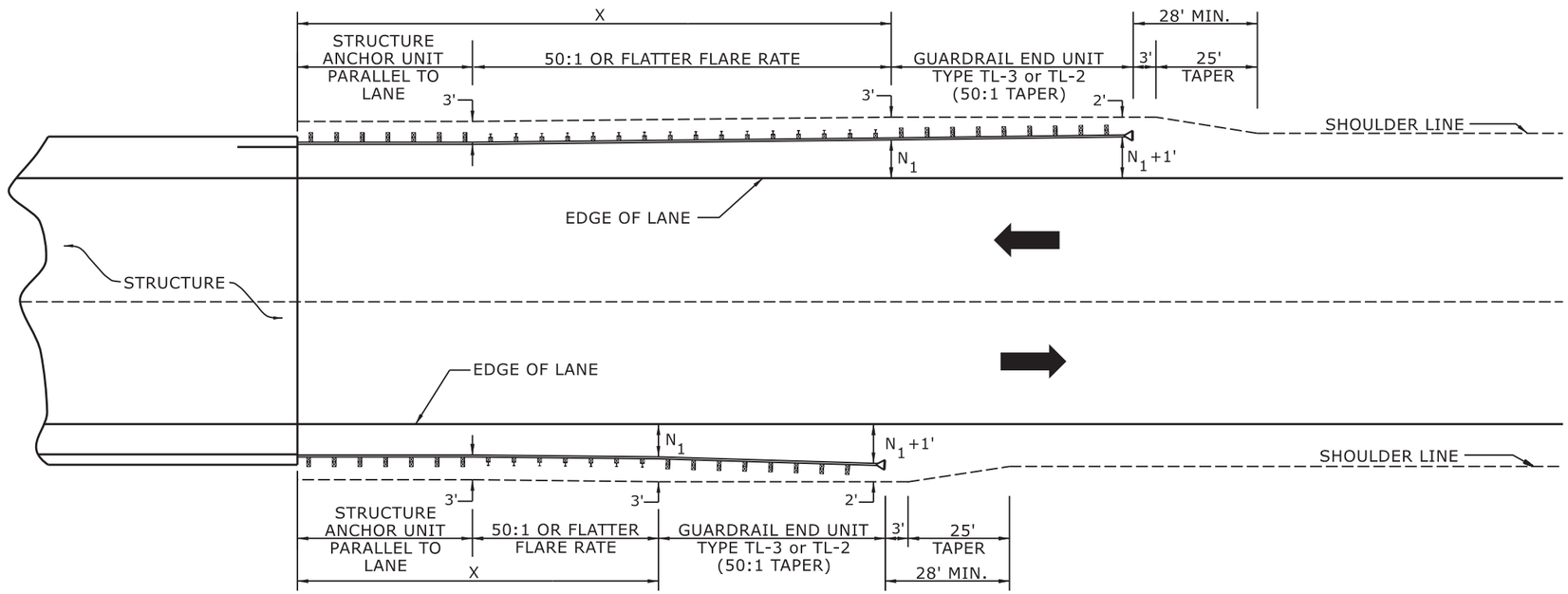
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2C-3



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

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

04/15/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5864323D34164C6...

SHEET 4 OF 15

862D01

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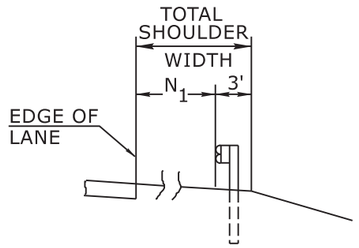
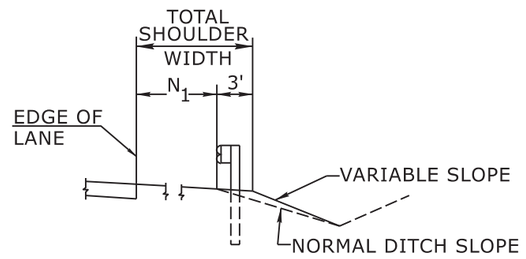
PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2C-4

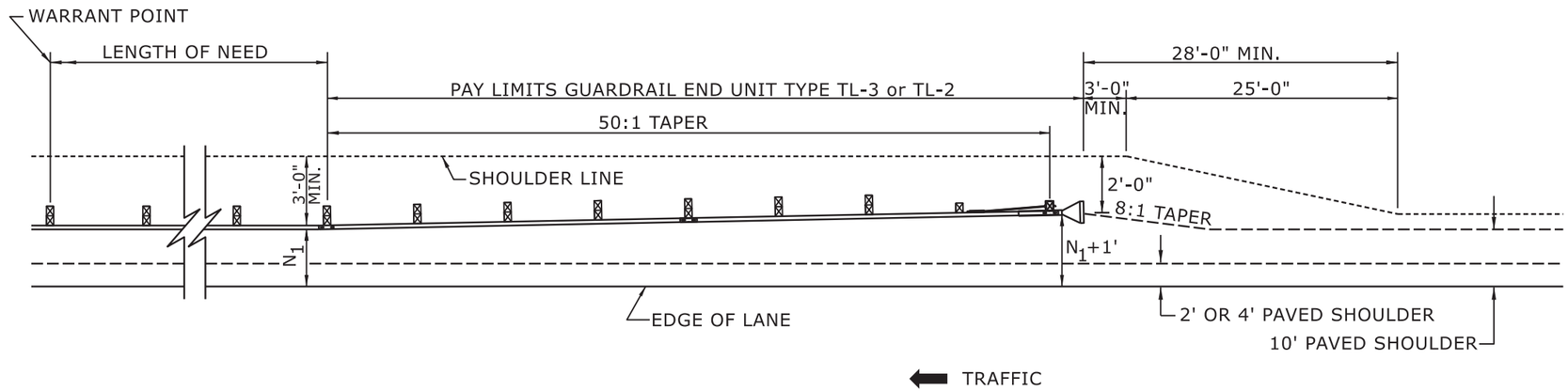


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

04/15/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

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

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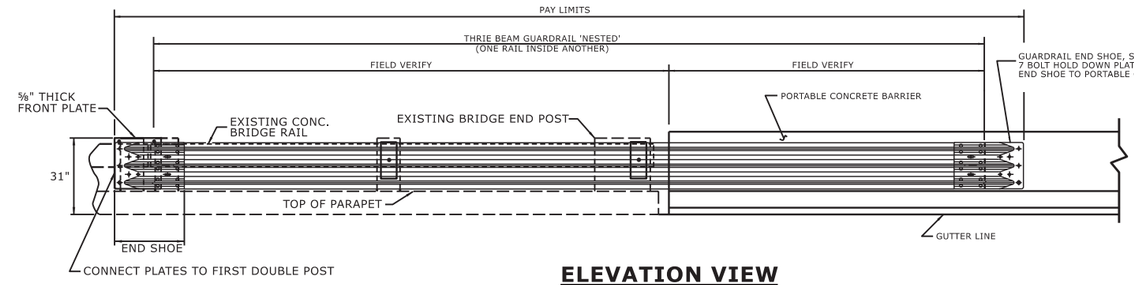
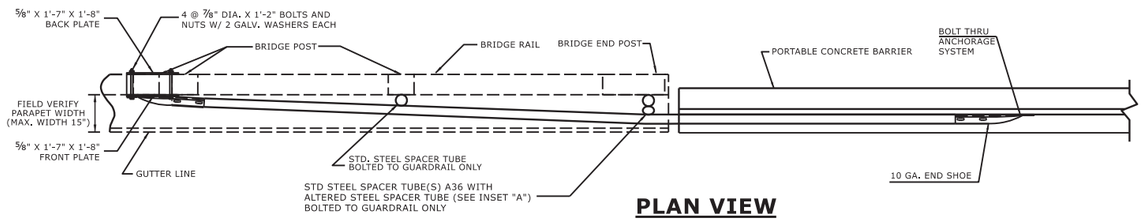
FILE SPEC.:

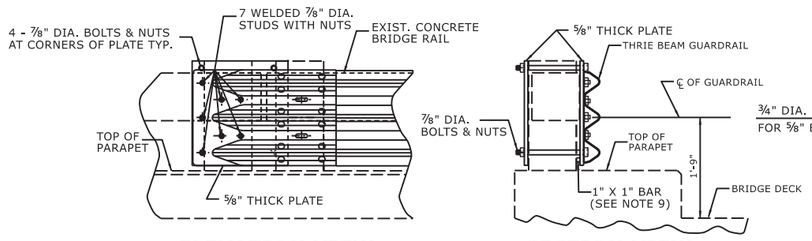
PROJECT REFERENCE NO.	SHEET NO.
BR-0067	2C-5



ELEVATION VIEW

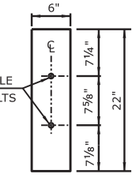


PLAN VIEW

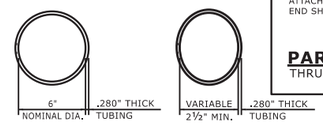


ELEVATION VIEW

SECTION VIEW



FRONT VIEW



PLAN VIEW

PLAN VIEW INSET "A"

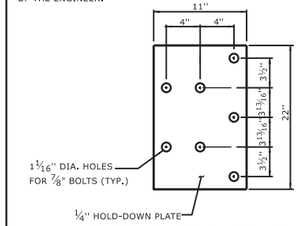
STEEL SPACER TUBE

NOTES FOR 7 BOLT HOLD DOWN PLATE

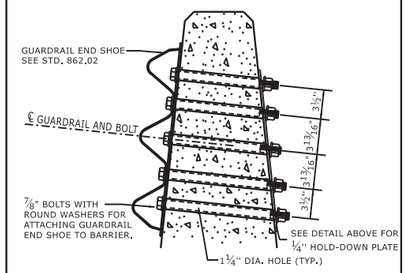
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅞" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¼" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



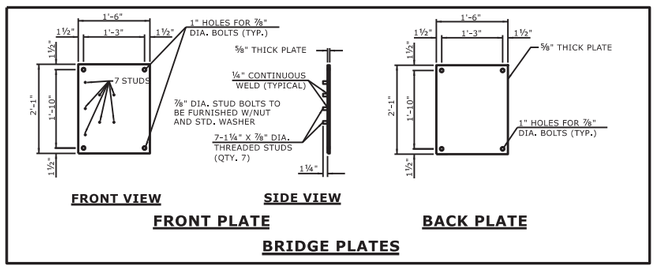
7 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER OR RAIL
THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE ⅞" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH ¼" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



BRIDGE PLATES

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

ROADWAY DETAIL DRAWING FOR

STRUCTURE ANCHOR UNITS

TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

SHEET 8 OF 9

862D03

04/15/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5864323D34164C5...

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

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

COMPUTED BY: CTPS DATE: 1/2/25
CHECKED BY: PJS DATE: 2/11/25

PROJECT NO.	SHEET NO.
BR-0067	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- Sta. 10+25.00	-L- Sta. 11+70.33	28	62	34	
-L- Sta. 12+42.67	-L- Sta. 13+90.00	30	14		16
SUBTOTALS:		58	75	34	16
SUBTOTALS:					
PROJECT TOTALS:		58	75	34	16
WASTE IN LIEU OF BORROW				-16	-16
PROJECT TOTALS:		58	75	18	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				1	
GRAND TOTALS:		58		19	
SAY:		65		20	

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 the Roadway Design Unit. 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	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
L	11+30	11+83	CL	114			
L	12+34	12+90	CL	124			
		TOTAL:		238			
		SAY:		240			

SHOULDER BERM GUTTER SUMMARY

LINE	Station	Station	LENGTH
L	12+38.99	12+71.06	32.07
		TOTAL:	32.07
		SAY:	33

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	GREU, TL-2	CAT-1	AT-1	Type III SC	B-77 SC	G	NG				
L	11+09.06	11+65.71	RT	56.25					4	7	25			0.5	1			1										
L	11+19.07	11+74.89	LT	56.25					5	8		25		0.5	1			1								62.37		
L	12+46.16	13+00.86	LT	56.25					5.5	8.5	25			0.5	1			1								62.10		
L	12+38.99	12+96.72	RT	56.25					4	7		25		0.5	1			1										
			PROJECT TOTALS	225.00																						124.47		
			ANCHOR DEDUCTIONS																									
			(4) GREU 350 TL-2 @ 25' EACH =	-100.00																								
			(4) TYPE III @18.75' EACH =	-75.00																								
			GRAND TOTALS	50.00																								
			SAY	50.0											4			4								130		
			ADDITIONAL GUARDRAIL POSTS = 5																									

RD-328814L

COMPUTED BY:	CAC	DATE:	11/17/2022
CHECKED BY:	JLM	DATE:	11/18/2022

PROJECT NO.	SHEET NO.
BR-0067	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE
L 12+62	15 RT	0401		2609.5																	
		0401	0402		2606.4	2606.3															
		0403	0404		2616.7	2609.9					52						X	X			
L 10+00	18 LT	0403		2619.6																	
		0404	0405		2609.9	2607.9					60						X	X			
L 10+50	18 LT	0404		2614.6																	
		0405	0406		2608.1	2603.6					96						X	X			
L 11+10	22 LT	0405		2612.7																	
SHEET TOTALS											208										
PROJECT TOTALS											208										

LINE & STATION	FROM	TO	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
L 12+62	0401																						1							
	0401	0402										8																		
	0403	0404																												
L 10+00	0403																													
	0404	0405																												
L 10+50	0404																						1							
	0405	0406																												
L 11+10	0405																						1							
SHEET TOTALS												8											3							
PROJECT TOTALS												8											3							

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 12+62	0401																		1						1														
	0401	0402																																					
	0403	0404																																				26	REMOVE EXIST 24" CMP
L 10+00	0403																																						
	0404	0405																																				22	REMOVE EXIST 24" CMP
L 10+50	0404								1						1																								
	0405	0406																																				21	REMOVE EXIST RCP/CPP
L 11+10	0405								1						1																								
SHEET TOTALS									2						2				1						1													69	
PROJECT TOTALS									2						2				1						1													69	

ABBREVIATIONS

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

COMPUTED BY: DMM_____ DATE: 6/3/2022__
CHECKED BY: JCK_____ DATE: 6/3/2022__

(12-17-19)

PROJECT NO.	SHEET NO.
BR-0067	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
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			1		100	200	500		
			TOTAL CY/TONS/SY:		100	200**	500**		

*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.

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035683 DAVID J. CLODGO — 04/15/2025	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030018 COREY A. CAVALIER — 04/15/2025
DocuSigned by: David J. Clodgo 3E2867247D744FF...	Signed by: Corey A. Cavalier AD33B8A477DF481...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

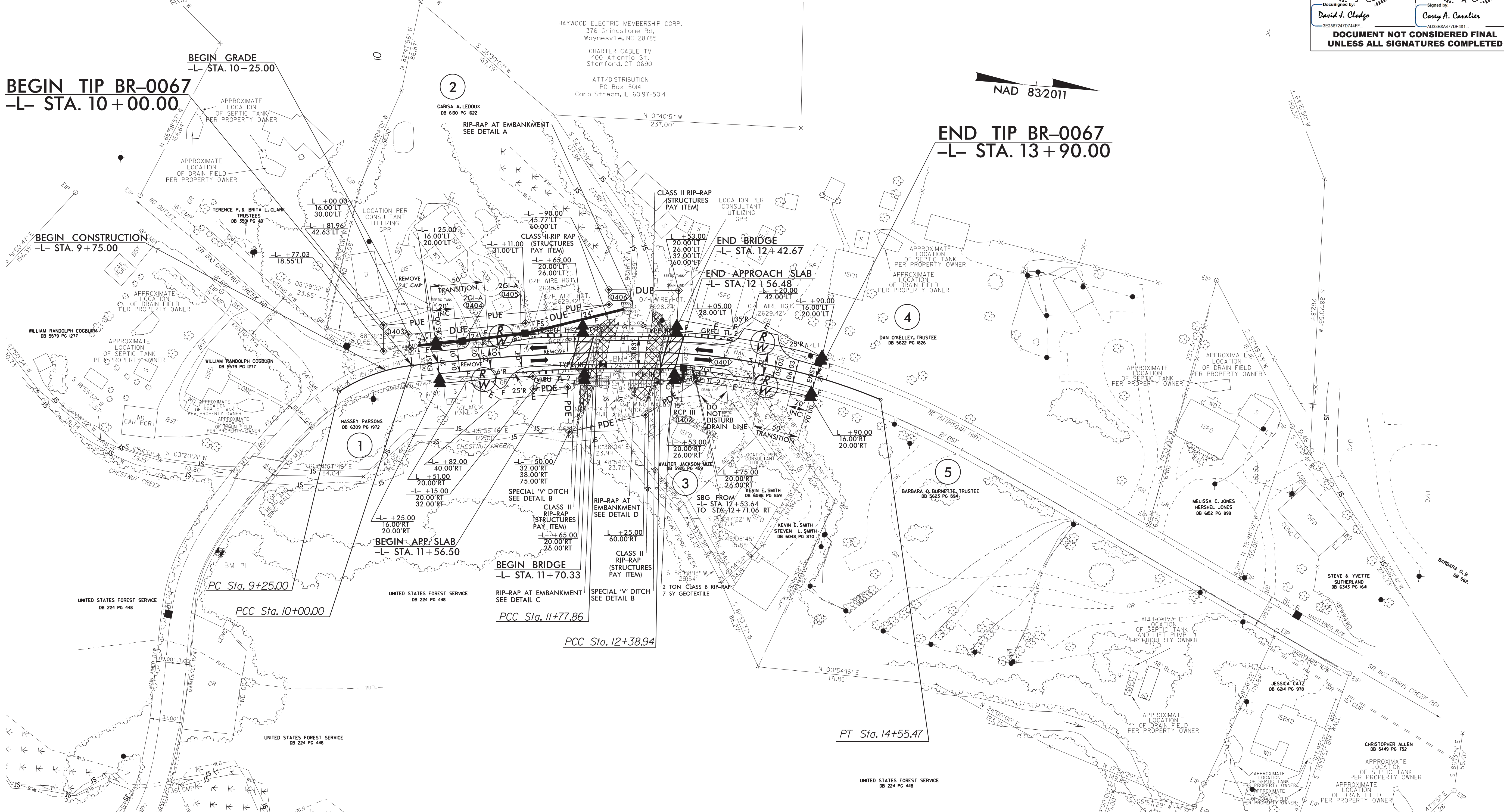
PI Sta 9+63.19	PI Sta 10+88.98	PI Sta 12+08.41	PI Sta 13+48.44
Δ = 26° 35′ 47.1″ (RT)	Δ = 4° 47′ 45.6″ (RT)	Δ = 3° 10′ 52.9″ (RT)	Δ = 21° 01′ 41.5″ (RT)
D = 35° 27′ 42.8″	D = 2° 41′ 47.5″	D = 5° 12′ 31.3″	D = 9° 42′ 40.3″
L = 75.00′	L = 177.86′	L = 61.08′	L = 216.54′
T = 38.19′	T = 88.98′	T = 30.55′	T = 109.50′
R = 161.57′	R = 2,124.81′	R = 1,100.00′	R = 590.00′
	RO = SEE PLANS	SE = .04	RO = SEE PLANS
	SE = SEE PLANS		SE = SEE PLANS

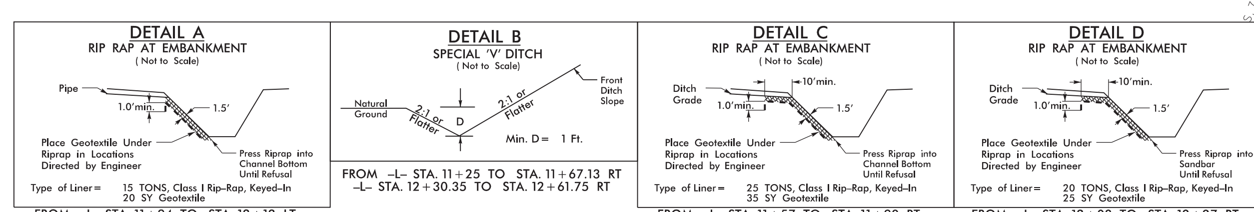
HAYWOOD ELECTRIC MEMBERSHIP CORP.
376 Grindstone Rd,
Waynesville, NC 28785

CHARTER CABLE TV
400 Atlantic St.
Stamford, CT 06901

ATT/DISTRIBUTION
PO Box 5014
Carol Stream, IL 60197-5014

REVISIONS





FOR -L- PROFILE, SEE SHEET 5
DRIVE TURNOUT RADII ARE 10′ UNLESS OTHERWISE NOTED
FOR STRUCTURE PLANS, SEE SHEETS S-1 THROUGH S-16

8/17/99

15-APR-2025 12:01
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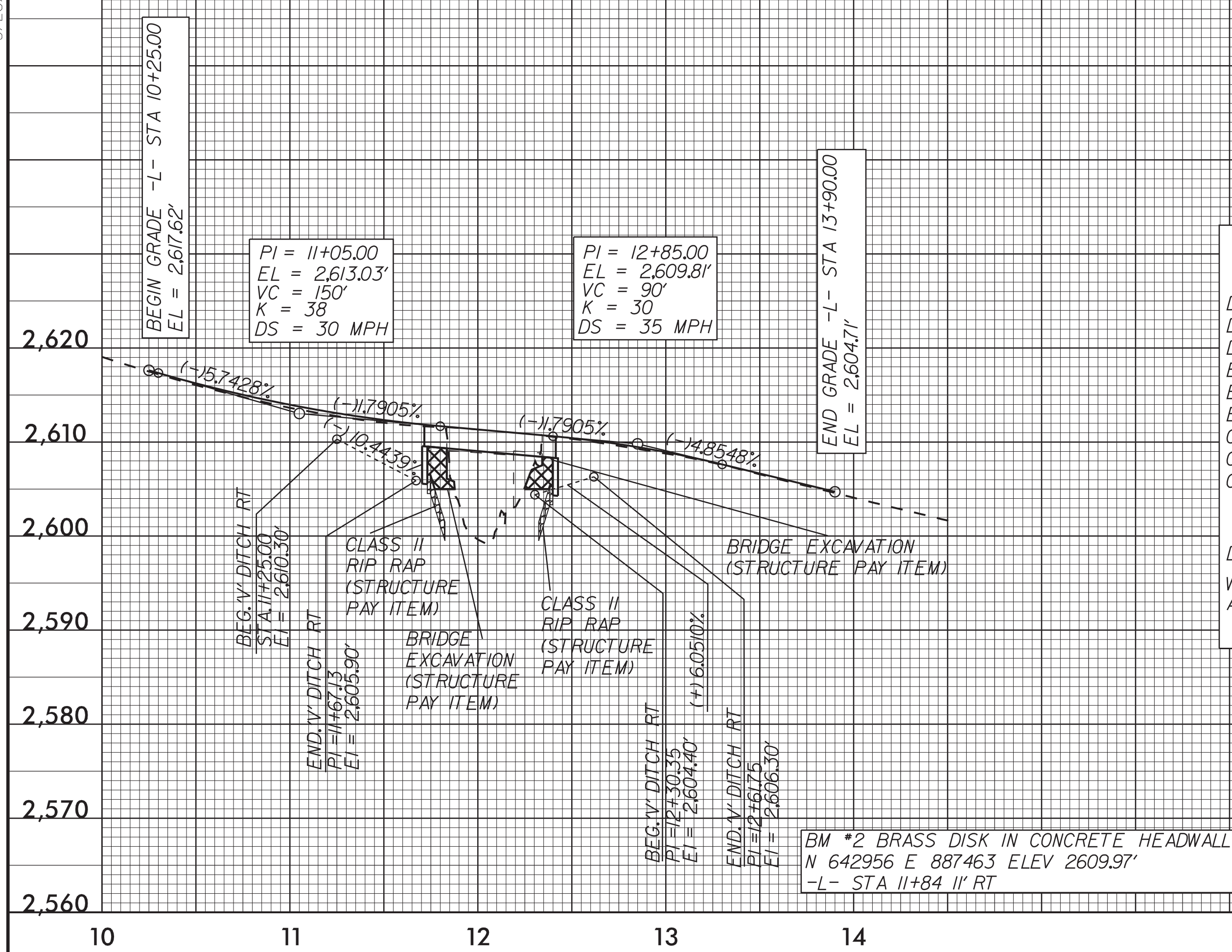
$$$$USERNAME$$$$

BR0067_Rdy_psh_4.dgn 4/15/2025 12:01:58 PM

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 035683 ENGINEER DAVID J. CLODGO 04/15/2025	NORTH CAROLINA PROFESSIONAL SEAL 030018 ENGINEER COREY A. CAVALIER 04/15/2025
DocuSigned by: David J. Clodgo	Signed by: Corey A. Cavalier

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 740	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2606.3	FT
BASE DISCHARGE	= 880	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2606.7	FT
OVERTOPPING DISCHARGE	= 1837	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2609.8	FT
DATE OF SURVEY	= 8/25/22	
W.S.ELEVATION AT DATE OF SURVEY	= 2601.1	FT

LEFT DITCH —··—··—··—

RIGHT DITCH ---------------

FOR -L- PLAN,SEE SHEET 4

5/28/99
14-APR-2025 10:31
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09/08/99

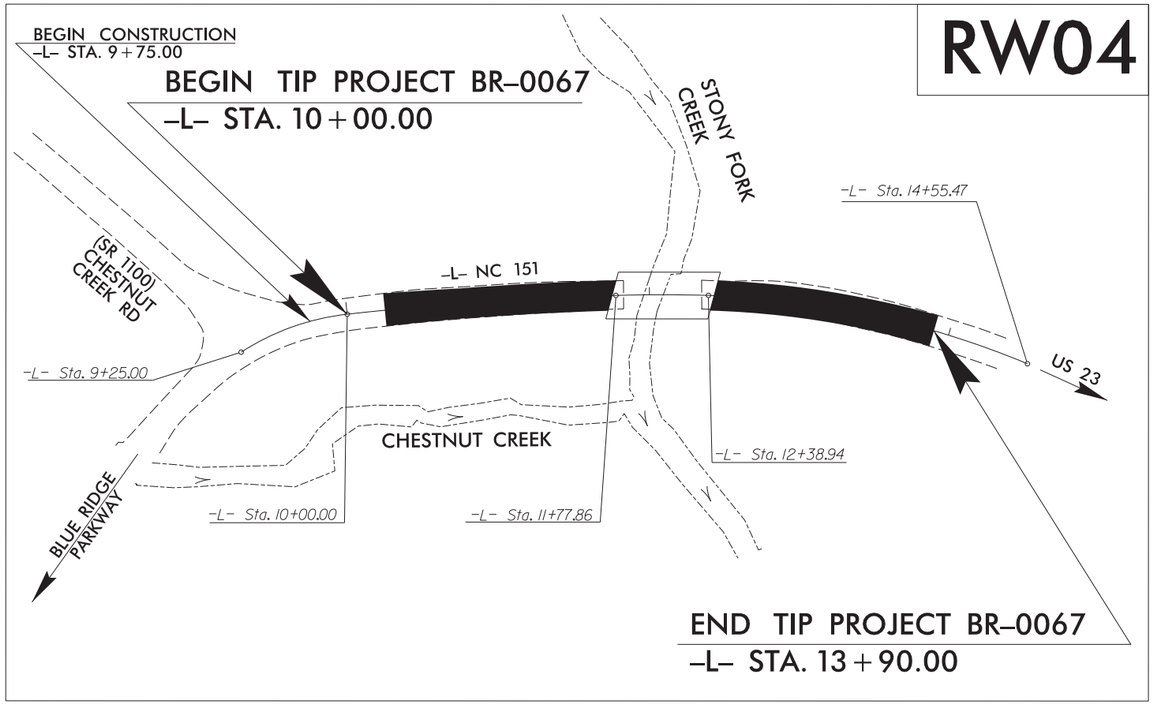
TIP PROJECT: BR-0067

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0067	RW01	07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

BUNCOMBE COUNTY



NAD 83/2011

GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "BR0067-2"
WITH NAD 83/NSRS XXXX STATE PLANE GRID COORDINATES OF
NORTHING: 642,709.306(ft) EASTING: 887,466.206(ft)
ELEVATION: 2,621.54(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999758269
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"BR0067-2" TO -L- STATION 9+25 IS
S 84-59'10.1" E 44.16(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

Vaughn & Melton

1318-F Patton Avenue
Asheville, NC 28806
Firm License # F-1088

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
JULY 31, 2023	AUGUST 20, 2024

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DocuSigned by:
F1570CB85C7248A...

10/17/2023

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

\$\$\$\$\$SYSTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$EDGN\$\$\$\$\$\$\$\$\$
\$\$\$\$\$\$\$\$\$USERNAME\$\$\$\$\$\$\$\$\$

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW02C-1

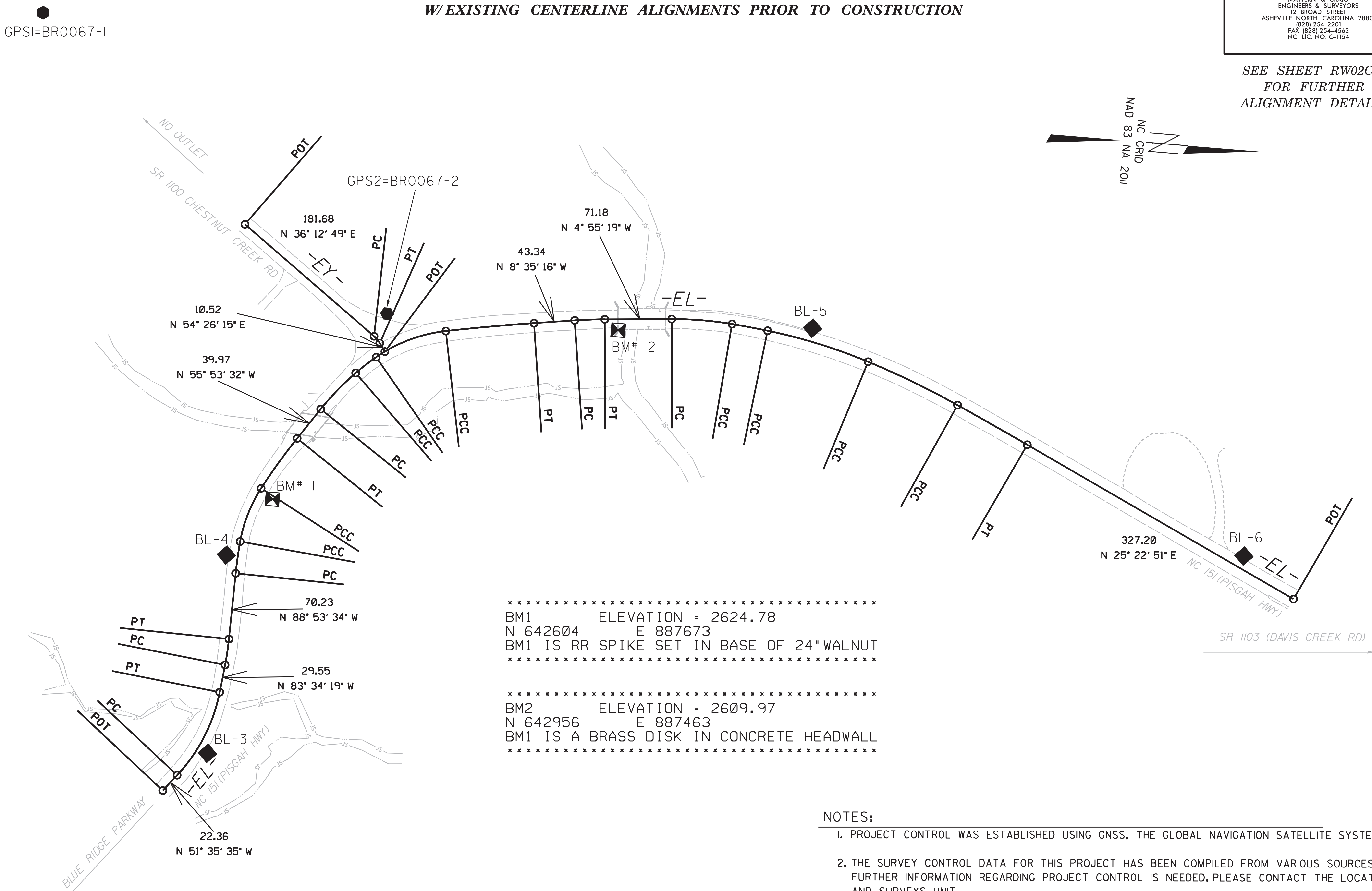
Location and Surveys

MATTERN & CRAIG
ENGINEERS & SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEET RW02C-2 FOR FURTHER ALIGNMENT DETAILS



BM1 ELEVATION = 2624.78
N 642604 E 887673
BM1 IS RR SPIKE SET IN BASE OF 24" WALNUT

BM2 ELEVATION = 2609.97
N 642956 E 887463
BM1 IS A BRASS DISK IN CONCRETE HEADWALL

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY 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.

REVISIONS

6/2/99

15-MAY-2019 09:20 Working Folders\Survey\BR-0067\Deliverables\REVISED\br0067_ls_rw02c_1.dgn

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW02C-2

Location and Surveys

MATTERN AND CRAIG

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEET RW02C-3 FOR FURTHER ALIGNMENT DETAILS

BL

POINT	DESC.	NORTH	EAST	ELEVATION
3	BL-3	642557.5530	887947.8440	2621.15
4	BL-4	642560.1720	887735.9800	2621.76
GPS2	BR-0067-2	642709.3060	887466.2060	2621.54
5	BL-5	643161.3070	887444.2540	2604.20
6	BL-6	643638.3010	887647.9990	2580.89

BY

POINT	DESC.	NORTH	EAST	ELEVATION
GPS1	BR-0067-1	642083.5510	887113.2560	2655.82
GPS2	BR-0067-2	642709.3060	887466.2060	2621.54

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	642550.948	887383.909							
LINE			N 36°12'49" E	181.68					
PC	642697.532	887491.245							
CURVE			N 45°19'32" E	9.50	18°13'26"(RT)	190°59'09"	9.54	4.81	30.00
PT	642704.213	887498.002							
LINE			N 54°26'15" E	10.52					
POT	642710.332	887506.562							

NOTES:

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REVISIONS

6/2/99

03-APR-2019 15:52
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PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW02C-3
Location and Surveys	
MATTERN AND CRAIG	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	642513.486	887991.243							
LINE			N 51°35'35" W	22.36					
PC	642527.377	887973.722							
CURVE			N 67°34'57" W	99.17	31°58'44"(LT)	31°49'52"	100.46	51.58	180.00
PT	642565.194	887882.050							
LINE			N 83°34'19" W	29.55					
PC	642568.502	887852.689							
CURVE			N 86°13'57" W	27.85	05°19'15"(LT)	19°05'55"	27.86	13.94	300.00
PT	642570.332	887824.900							
LINE			N 88°53'34" W	70.23					
PC	642571.689	887754.680							
CURVE			N 86°42'53" W	34.20	04°21'22"(RT)	12°44'04"	34.21	17.11	449.93
PCC	642573.649	887720.537							
CURVE			N 73°13'29" W	60.81	22°37'26"(RT)	36°57'54"	61.20	31.01	155.00
PT	642591.198	887662.318							
LINE			S 61°54'46" E	0.00					
PC	642591.198	887662.318							
CURVE			N 58°54'09" W	65.48	06°01'14"(RT)	09°11'26"	65.51	32.78	623.41
PT	642625.017	887606.251							
LINE			N 55°53'32" W	39.97					
PC	642647.428	887573.160							
CURVE			N 50°39'26" W	53.47	10°28'13"(RT)	19°33'13"	53.55	26.85	293.02
PCC	642681.327	887531.806							
CURVE			N 42°26'36" W	27.48	05°57'27"(RT)	21°40'08"	27.49	13.76	264.41
PT	642701.607	887513.260							
LINE			S 39°27'52" E	0.00					
PC	642701.606	887513.260							
CURVE			N 25°17'42" W	79.10	28°20'20"(RT)	35°27'43"	79.91	40.79	161.57
PCC	642773.124	887479.462							
CURVE			N 09°51'24.2" W	94.10	02°32'16"(RT)	02°41'48"	94.11	47.06	2124.81
PT	642865.838	887463.353							
LINE			N 08°35'16" W	43.34					
PC	642908.693	887456.881							
CURVE			N 06°45'18" W	31.99	03°39'57"(RT)	11°27'33"	31.99	16.00	500.00
PT	642940.457	887453.119							
LINE			N 04°55'19" W	71.18					
PC	643011.374	887447.012							
CURVE			N 00°02'12" W	64.36	09°46'13"(RT)	15°09'41"	64.44	32.30	377.90
PT	643075.738	887446.970							
LINE			N 04°50'54" E	0.00					
PC	643075.738	887446.970							
CURVE			N 05°55'21" E	38.47	02°08'52"(RT)	05°34'60"	38.47	19.24	1026.20
PT	643114.000	887450.939							
LINE			S 06°59'47" W	0.00					
PC	643114.000	887450.939							
CURVE			N 12°26'17" E	111.91	10°53'01"(RT)	09°42'40"	112.07	56.21	590.00
PT	643223.278	887475.042							
LINE			N 17°52'48" E	0.00					
PC	643223.279	887475.042							
CURVE			N 21°09'25" E	105.64	06°33'15"(RT)	06°12'03"	105.70	52.91	923.99
PT	643321.798	887513.171							
LINE			S 24°26'03" W	0.00					
PC	643321.797	887513.170							
CURVE			N 24°54'27" E	85.25	00°56'48"(RT)	01°06'38"	85.25	42.62	5159.33
PT	643399.114	887549.071							
LINE			N 25°22'51" E	327.20					
POT	643694.728	887689.319							

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY 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.

REVISIONS

6/2/99

6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW02D-1

Location and Surveys

Vaughn & Melton
1318-F Patton Avenue
Asheville, NC 28806
Firm License # F-1088

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Mark A. Parris, 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 18th day of September, 2023.

DocuSigned by:
F1570CB85C7245A...

Professional Land Surveyor L-4529

L

TYPE	STATION	NORTH	EAST
PC	9+25.00	642705.4467	887510.1955
PCC	10+00.00	642773.1236	887479.4620
PCC	11+77.86	642948.8716	887452.4821
PCC	12+38.94	643009.7326	887447.4368
PT	14+55.47	643223.2782	887475.0421

NOTES:

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

18-SEP-2023 13:51
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jgordon
AT P407-21HL-11

6/2/99

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW03E-1

Location and Surveys

Vaughn & Melton
1318-F Patton Avenue
Asheville, NC 28806
Firm License # F-1088

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	10+25.00	-16.00	642794.7791	887459.0479	
L	10+25.00	20.00	642801.3096	887494.4506	
L	10+25.00	-20.00	642794.0535	887455.1142	
L	10+25.00	16.00	642800.5840	887490.5169	
L	11+65.00	-20.00	642933.7703	887434.0740	
L	11+65.00	26.00	642939.1183	887479.7621	SPIKE SET IN OAK TREE
L	11+65.00	20.00	642938.4208	887473.8028	
L	11+65.00	-26.00	642933.0728	887428.1147	
L	12+53.00	-26.00	643022.9741	887420.8444	PAINT DOT ON ROCK WALL
L	12+53.00	26.00	643024.5916	887472.8193	
L	12+53.00	20.00	643024.4050	887466.8222	
L	12+53.00	-20.00	643023.1607	887426.8415	
L	13+90.00	20.00	643155.9870	887478.0325	
L	13+90.00	16.00	643156.7860	887474.1131	
L	13+90.00	-16.00	643163.1777	887442.7580	
L	13+90.00	-20.00	643163.9767	887438.8386	

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+77.03	-18.55	642744.8553	887467.9703
L	9+81.96	-42.63	642742.8136	887443.2768
L	10+00.00	-30.00	642767.3348	887450.0258
L	10+00.00	-16.00	642770.0362	887463.7627
L	11+11.00	-31.00	642878.1620	887430.2091
L	11+15.00	20.00	642889.2996	887480.1394
L	11+15.00	32.00	642890.9747	887492.0219
L	11+48.00	32.00	642923.1934	887487.7346
L	11+48.00	75.00	642928.5342	887530.4016
L	11+90.00	-60.00	642954.9897	887391.5066
L	11+90.00	-45.77	642956.4027	887405.6702
L	12+25.00	60.00	642999.8764	887508.1532
L	12+53.00	-60.00	643021.9165	887386.8609
L	12+75.00	26.00	643045.6192	887472.5571
L	12+75.00	20.00	643045.6563	887466.5572

I , Mark A. Parris , 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 9/11/23 to 9/13/23, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 18th day of September, 2023.

DocuSigned by:
F1570CB85C7248A...

Professional Land Surveyor L-4529

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 9/11/23 TO 9/13/23 .

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jcgordon AT P40V-2IHI-1

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RW04

Location and Surveys

Vaughn & Melton
1318-F Patton Avenue
Asheville, NC 28806
Firm License # F-1088

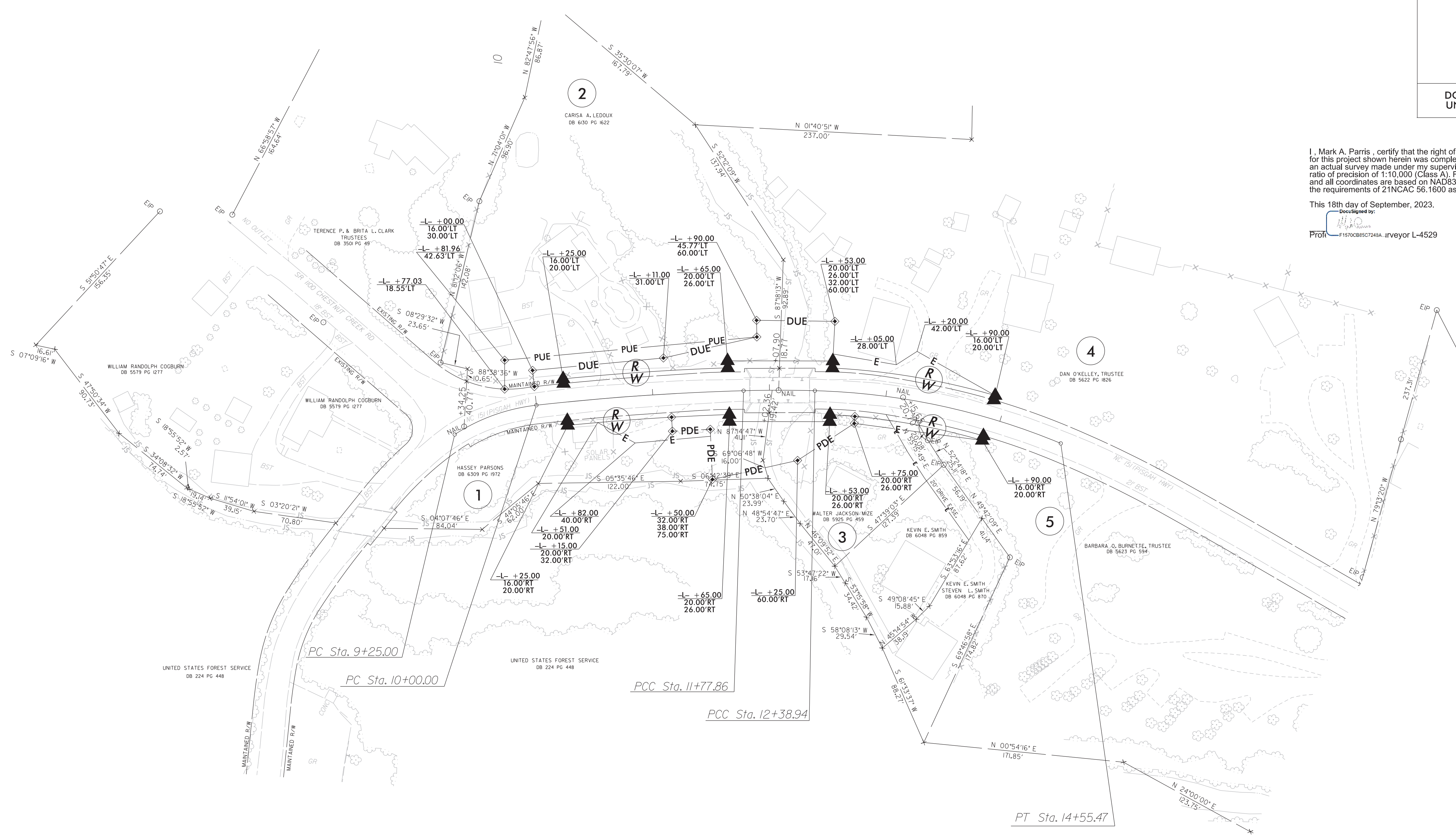
PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR MARK A. PARRIS
DocuSigned by:
F1570CB85C7248A...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-			
PI Sta 9+63.19	PI Sta 10+88.98	PI Sta 12+08.41	PI Sta 13+48.44
Δ = 26° 35′ 47.1″ (RT)	Δ = 4° 47′ 45.6″ (RT)	Δ = 3° 10′ 52.9″ (RT)	Δ = 21° 01′ 41.5″ (RT)
D = 35° 27′ 42.8″	D = 2° 41′ 47.5″	D = 5° 12′ 31.3″	D = 9° 42′ 40.3″
L = 75.00′	L = 177.86′	L = 61.08′	L = 216.54′
T = 38.19′	T = 88.98′	T = 30.55′	T = 109.50′
R = 161.57′	R = 2,124.81′	R = 1,100.00′	R = 590.00′
	RO = SEE PLANS	SE = .04	RO = SEE PLANS
	SE = SEE PLANS		SE = SEE PLANS

NC GRID NAD 83 NA 2011



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DocuSigned by:
F1570CB85C7248A...
Professional Land Surveyor L-4529

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 9/11/23 TO 9/13/23.

REVISIONS

6/2/99

09-OCT-2023 13:43
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jcgordon AT P40V-21H1-27

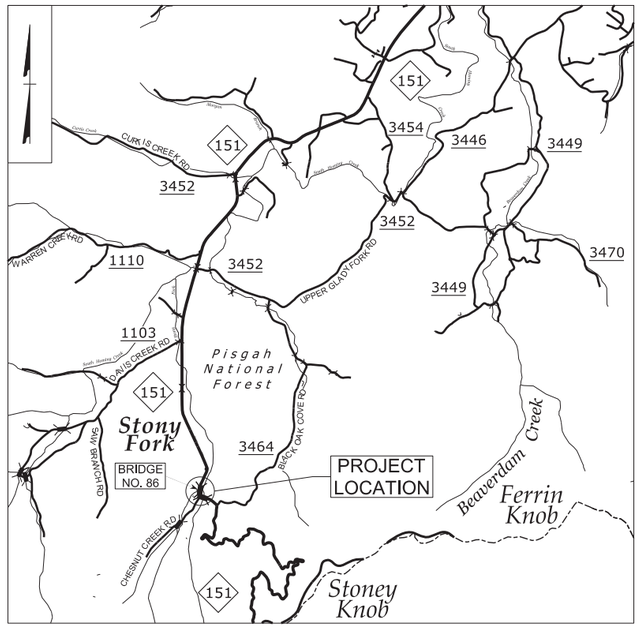
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY

LOCATION: ***BRIDGE NO. 86 ON NC 151 OVER STONY FORK CREEK***

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



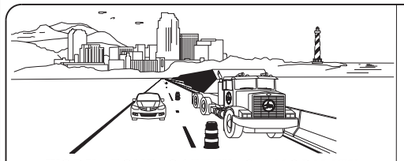
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN (GENERAL NOTES, MANAGEMENT STRATEGIES, AND PHASING)
TMP-2	NC 151 OFF-SITE DETOUR

SHEET NO.
TMP-1

BR-0067

TIP PROJECT:



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

PLANS PREPARED BY:

TADEAUS M. KELLY, EIT

SAROJ NAPIT, PE

NCDOT CONTACT:

VERROL McLEARY
PROJECT MANAGER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 045090 ENGINEER ZACHARY T CLARK

2/3/2025
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PROJ. REFERENCE NO.	SHEET NO.
BR-0067	TMP-1A

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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - REDUCED CONFLICT INTERSECTIONS
1205.16	BICYLE FACILITIES - SYMBOLS AND DETAILS
1205.17	PAVEMENT MARKINGS - SIDE-BY-SIDE/ADJACENT ON/OFF RAMPS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION
1266.01	RAISED PAVEMENT MARKERS - TUBULAR MARKERS
1267.01	FLEXIBLE DELINEATORS - INSTALLATION
1267.02	FLEXIBLE DELINEATORS - SPACING TABLES
1267.03	FLEXIBLE DELINEATORS - INTERCHANGE PLACEMENT

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

SIGNALS

EXISTING · PROPOSED · TEMPORARY · PORTABLE

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

APPROVED: _____

DATE: _____

NORTH CAROLINA PROFESSIONAL SEAL 045090 ENGINEER ZACHARY T CLARK

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

2/3/2025
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User:rtmkellyl

PROJ. REFERENCE NO.	SHEET NO.
BR-0067	TMP-1B

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) 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.

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

D) 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.

E) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

F) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

H) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

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

MISCELLANEOUS

J) NOTIFY EMERGENCY MEDICAL SERVICES (EMS), FIRE DEPARTMENT AND LOCAL SCHOOLS 30 DAYS PRIOR TO ROAD CLOSURE.

K) COORDINATE WITH LOCAL AUTHORITIES TO MAINTAIN ACCESS TO NEARBY PARKS AND TRAILS.

MANAGEMENT STRATEGIES

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

- OFF-SITE DETOURS/USE OF ALTERNATIVE ROUTES

- ROAD CLOSURES

PHASING

BEFORE BEGINNING ANY CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL INSTALL ALL ADVANCED WARNING SIGNS IN ACCORDANCE WITH RSD 1101.01. FIELD VERIFY LOCATIONS WITH RESIDENT ENGINEER PRIOR TO INSTALLATION.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING DRIVEWAYS DURING CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR AS DIRECTED IN THE PHASING NOTES.

STEP 1:

INSTALL DETOUR SIGNAGE AS SHOWN ON TMP-2 AND CLOSE NC 151 TO TRAFFIC.

STEP 2:

AWAY FROM TRAFFIC REMOVE EXISTING STRUCTURE AND CONSTRUCT PROPOSED BRIDGE STRUCTURE, PROPOSED DRAINAGE AND GUARDRAIL.

CONSTRUCT FINAL LAYER OF PAVEMENT INCLUDING PAVEMENT MARKINGS AND MARKERS PER FINAL PAVEMENT MARKING PLANS.

STEP 3:

REMOVE ALL DETOUR SIGNAGE AND TRAFFIC CONTROL DEVICES AND OPEN ROAD TO TRAFFIC.

APPROVED: _____

DATE: _____

NORTH CAROLINA PROFESSIONAL SEAL 045090 ENGINEER ZACHARY T CLARK

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

2/3/2025
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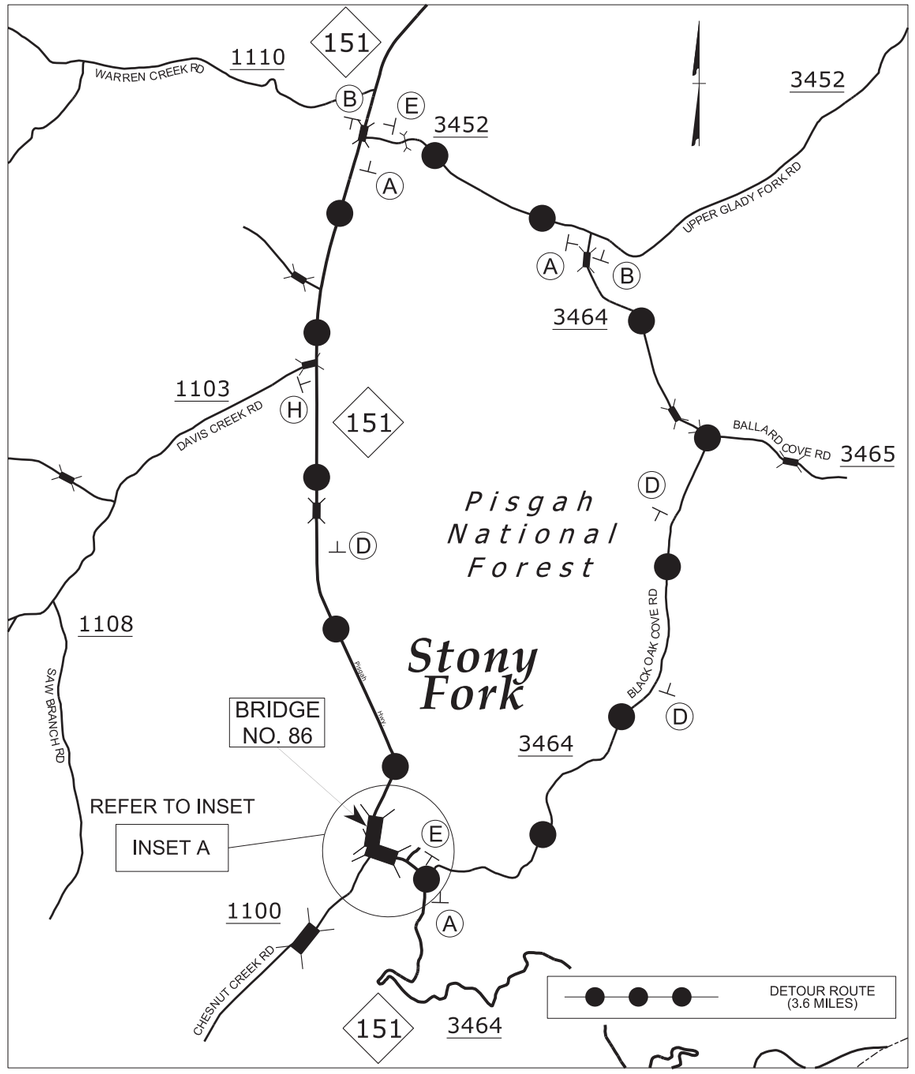
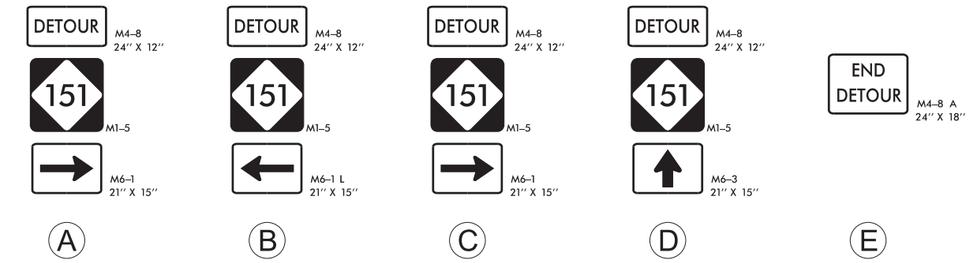
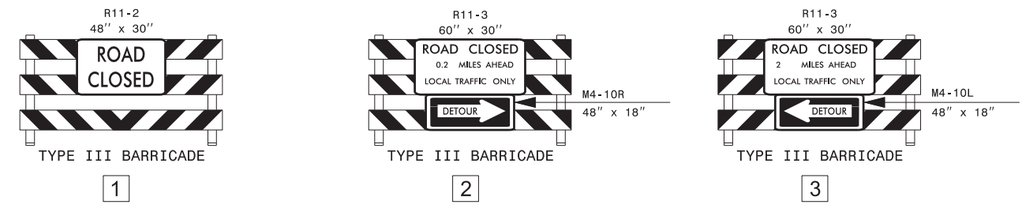
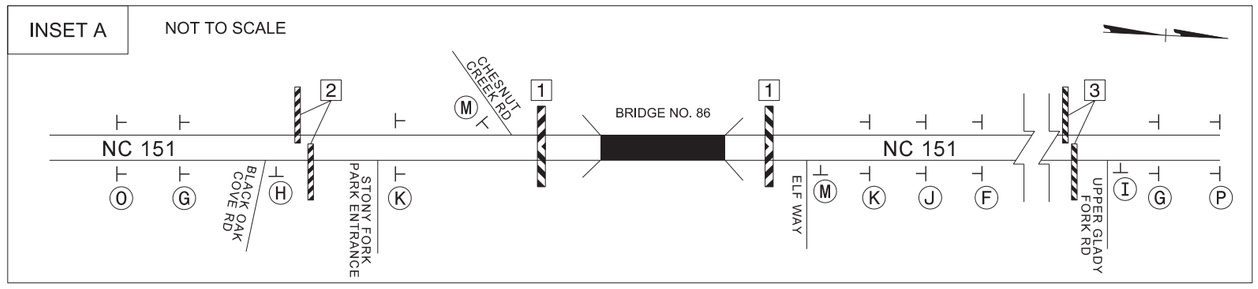
User:rmkelly1

PROJ. REFERENCE NO.	SHEET NO.
BR-0067	TMP-2









NOTES:

REFER TO RSD 1101.03 SHEET 1 OF 9 FOR SIGN SPACING. ADJUST SIGN SPACING AND LOCATIONS AS NECESSARY TO MEET FIELD CONDITIONS.

APPROVED: _____

DATE: _____

NORTH CAROLINA PROFESSIONAL SEAL 045090 ENGINEER ZACHARY T. CLARK

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NC 151
OFF-SITE DETOUR

2/3/2025
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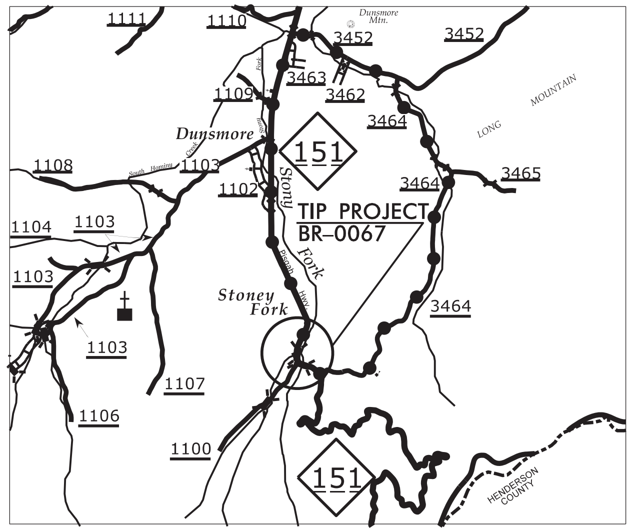
User:tmkellyl

TIP PROJECT: BR-0067



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

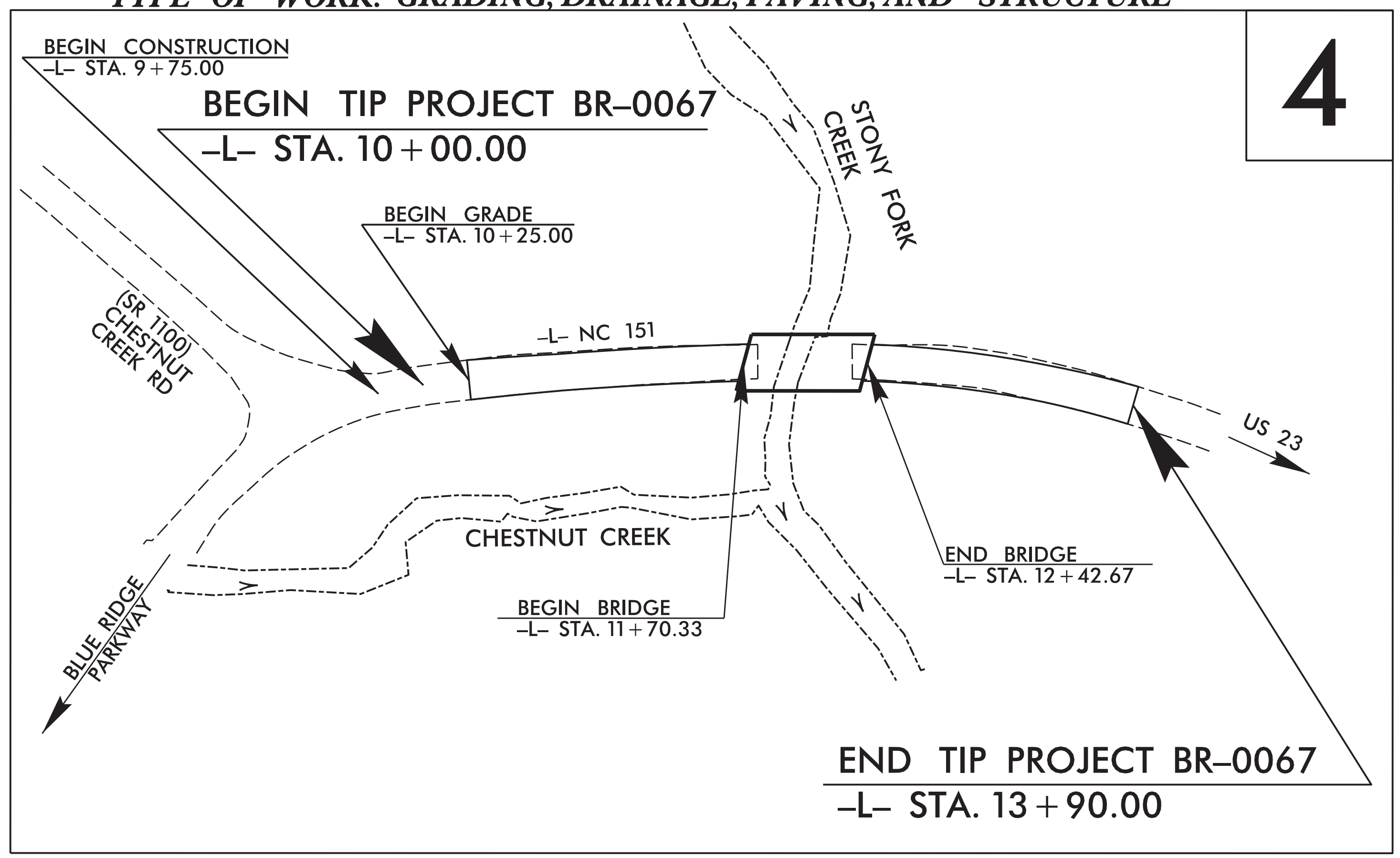
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0067	EC-1	

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

LOCATION: REPLACE BRIDGE NO. 100086 ON NC 151 OVER STONY FORK CREEK

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



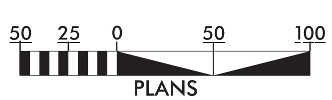
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE



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

Prepared In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2024 STANDARD SPECIFICATIONS

Designed by:

Noelle Ring	*3456*
NAME	LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

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

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

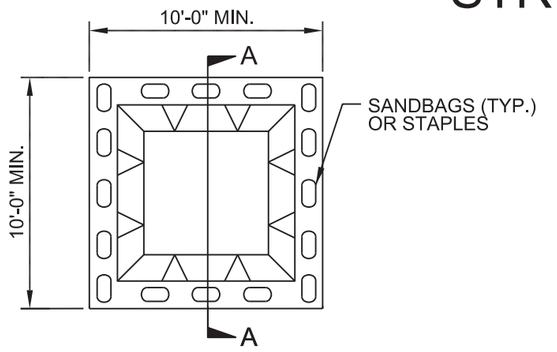
EROSION & SEDIMENT CONTROL LEGEND

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

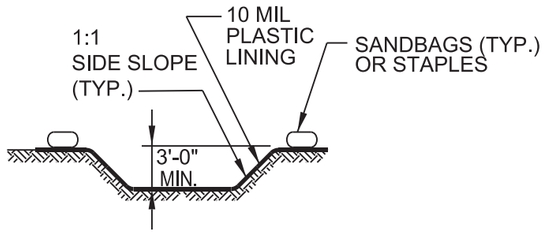
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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.
BR-0067	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

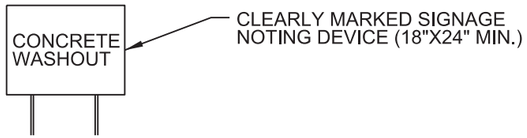
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



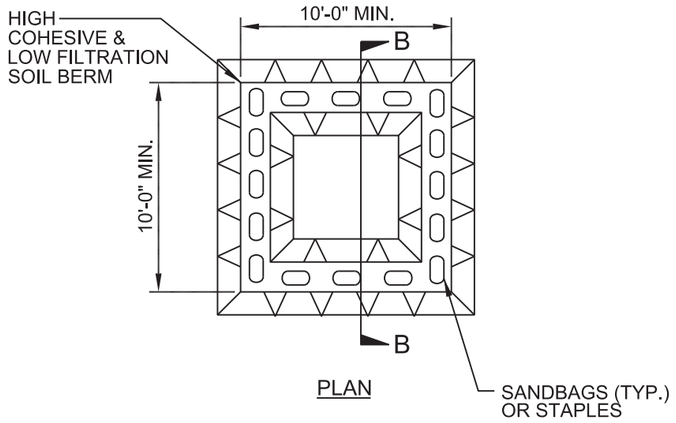
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

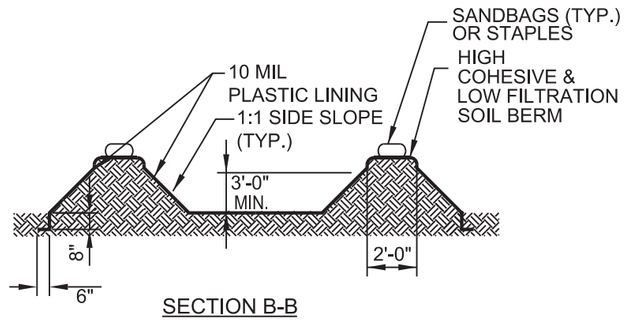
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

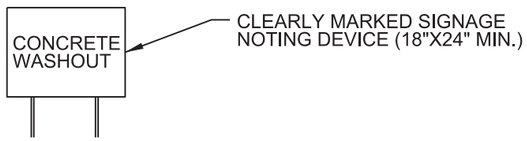
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	EC-03
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+30.35	12+61.75	RT	20 (excelsior)
			SUBTOTAL		20 (excelsior)
MISC MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					968
			TOTAL		988
			SAY		1000

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)				
					TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
4	-L-	11+25	11+67.13	RT	25				
				SUBTOTAL	25				
			ADDITIONAL PSRM TO BE INSTALLED		0				
				TOTAL	25				
				SAY	30				

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	EC-3A
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

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

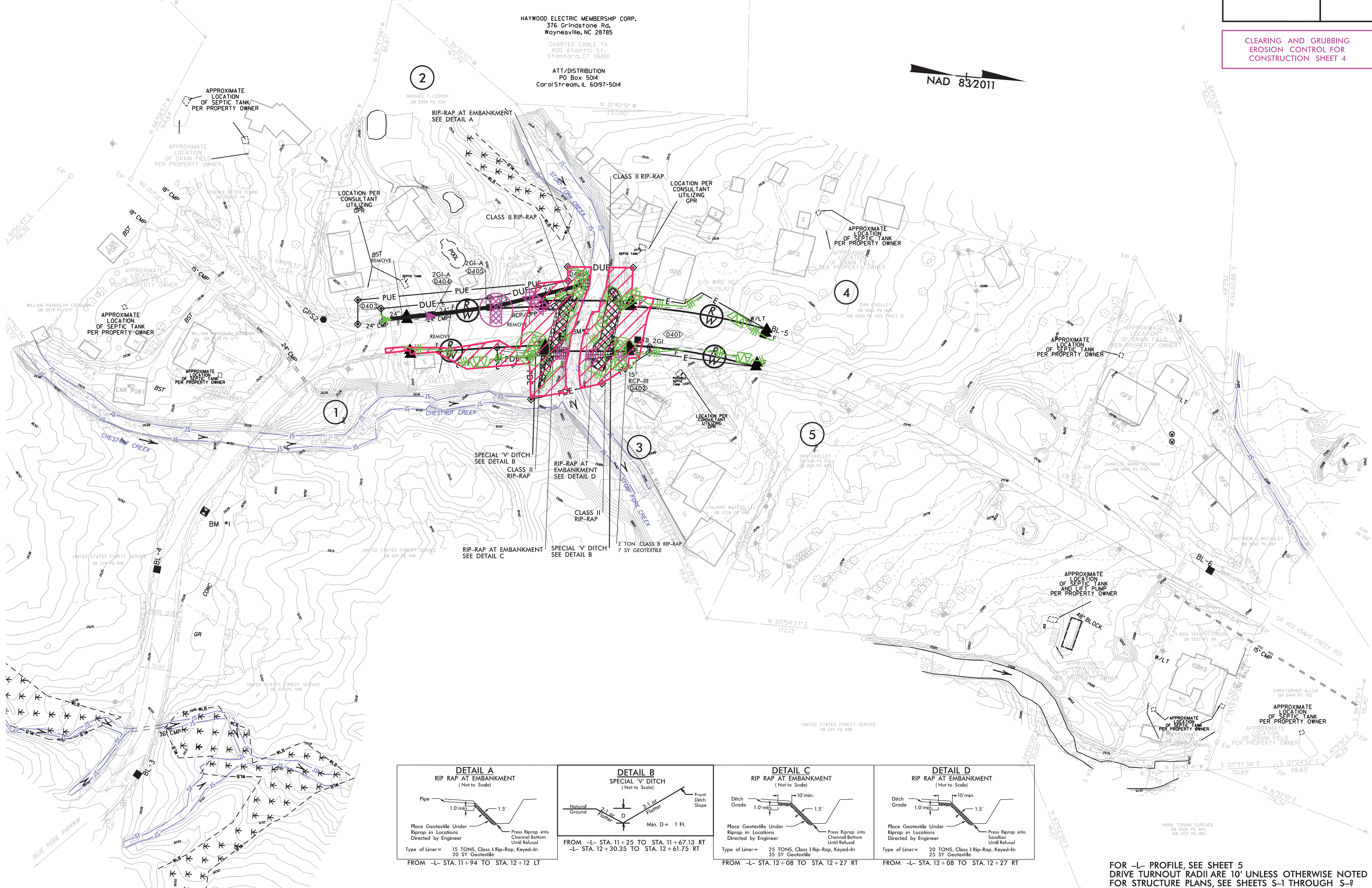
NOTE: UTILIZE SPECIAL STILLING WHERE APPLICABLE.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

REVISIONS

8/17/99



DETAIL A
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner = 15 TONS, Class I Rip-Rap, Keyed-In; 20 SY Geotextile
FROM -L- STA. 11+94 TO STA. 12+12 LT

DETAIL B
SPECIAL 'V' DITCH
(Not to Scale)
Min. D = 1 Ft.
FROM -L- STA. 11+25 TO STA. 11+67.13 RT
-L- STA. 12+30.35 TO STA. 12+61.75 RT

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner = 25 TONS, Class I Rip-Rap, Keyed-In; 35 SY Geotextile
FROM -L- STA. 12+08 TO STA. 12+27 RT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner = 20 TONS, Class I Rip-Rap, Keyed-In; 25 SY Geotextile
FROM -L- STA. 12+08 TO STA. 12+27 RT

FOR -L- PROFILE, SEE SHEET 5
DRIVE TURNOUT RADII ARE 10' UNLESS OTHERWISE NOTED
FOR STRUCTURE PLANS, SEE SHEETS S-1 THROUGH S-?

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

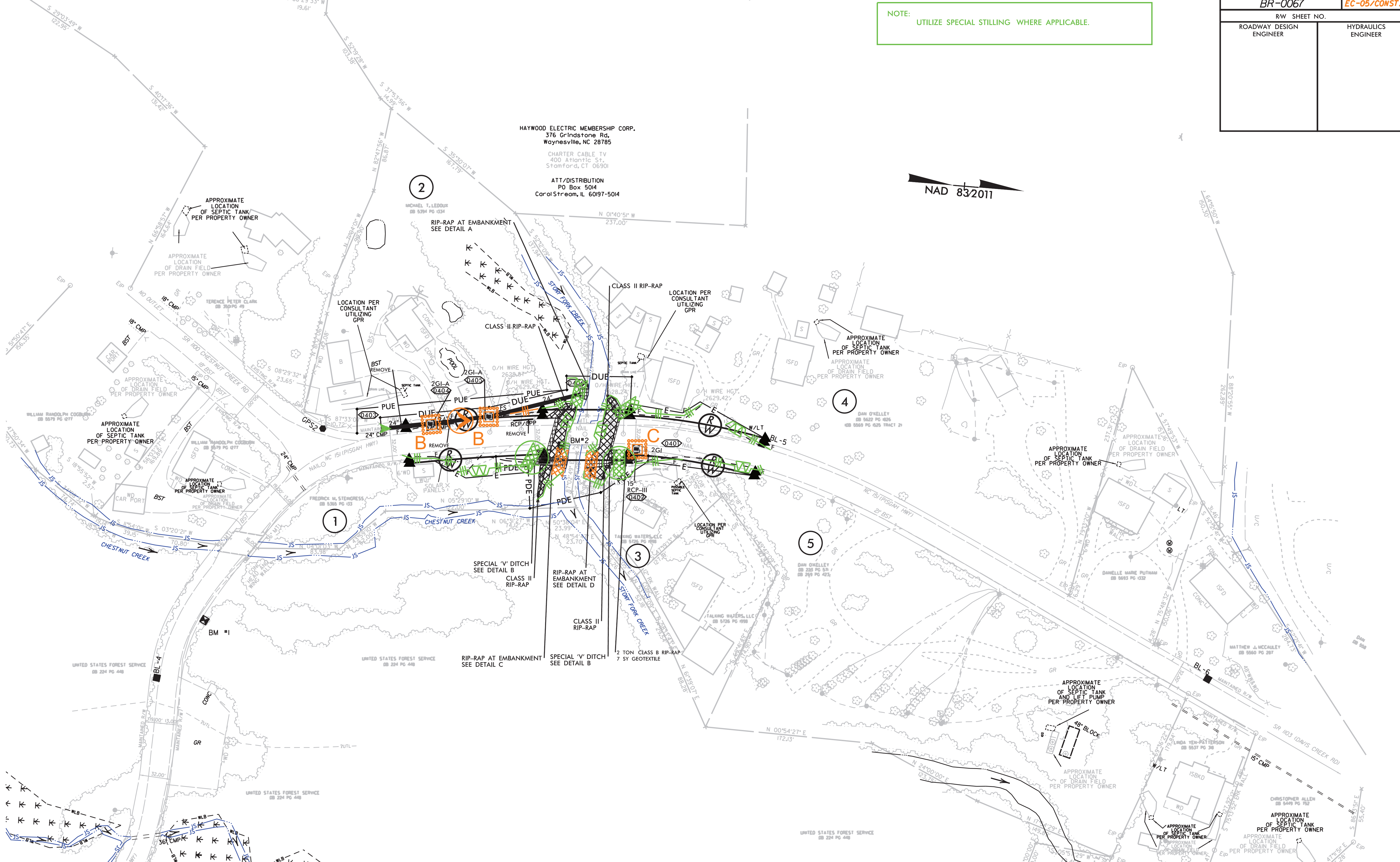
BR0067_EC_psh_4_ORD.dgn 1/21/2025 1:04:45 PM

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE: UTILIZE SPECIAL STILLING WHERE APPLICABLE.

8/17/99

REVISIONS



DETAIL A
RIP RAP AT EMBANKMENT
(Not to Scale)

Pipe
1.0' min.
1.5'
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refusal

Type of Liner = 15 TONS, Class I Rip-Rap, Keyed-In
20 SY Geotextile

FROM -L- STA. 11+94 TO STA. 12+12 LT

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

Natural Ground
2:1 or Flatter
D
2:1 or Flatter
Front Ditch Slope
Min. D = 1 Ft.

FROM -L- STA. 11+25 TO STA. 11+67.13 RT
-L- STA. 12+30.35 TO STA. 12+61.75 RT

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade
10' min.
1.0' min.
1.5'
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refusal

Type of Liner = 25 TONS, Class I Rip-Rap, Keyed-In
35 SY Geotextile

FROM -L- STA. 12+08 TO STA. 12+27 RT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade
10' min.
1.0' min.
1.5'
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Sandbar Until Refusal

Type of Liner = 20 TONS, Class I Rip-Rap, Keyed-In
25 SY Geotextile

FROM -L- STA. 12+08 TO STA. 12+27 RT

FOR -L- PROFILE, SEE SHEET 5
DRIVE TURNOUT RADII ARE 10' UNLESS OTHERWISE NOTED
FOR STRUCTURE PLANS, SEE SHEETS S-1 THROUGH S-?

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

BR0067_EC_psh_4_ORD.dgn 1/23/2025 3:11:32 PM

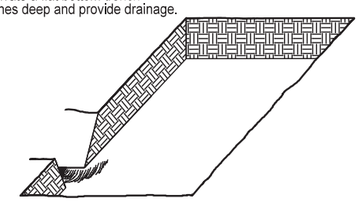
PROJECT REFERENCE NO.	SHEET NO.
BR-0067	RF-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PLANTING DETAILS

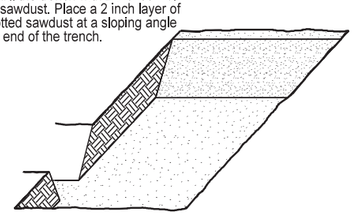
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

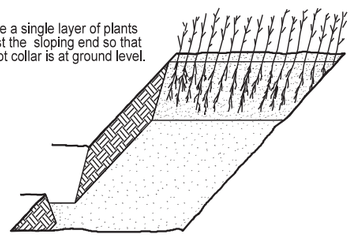
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



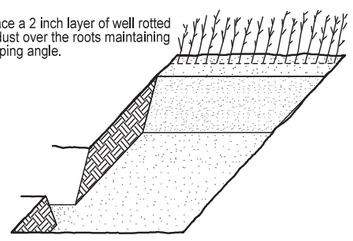
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

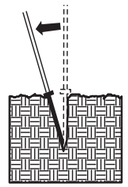


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

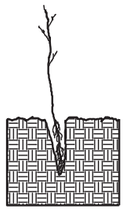


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

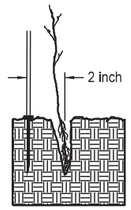
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.

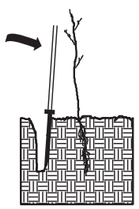


2. Remove planting bar and place seedling at correct depth.

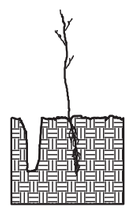


3. Insert planting bar 2 inches toward planter from seedling.

4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

34% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
33% LIRIODENDRON TULIPIFERA	YELLOW POPLAR	12 in - 18 in BR
33% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

5/26/20

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING & PAVEMENT MARKING PLAN
BUNCOMBE COUNTY

REPLACE BRIDGE 86 ON NC 151 OVER STONY FORK CREEK

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 2018 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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.

. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TW0 U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.

. 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.

. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

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

NC 151	INTEGRATED MULTIPOLYMER	INLAID CRADLE MARKER SNOWPLOWABLE ALT 4

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

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

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

E) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	55	L.F.
4102000000	904	SIGN ERECTION, TYPE E	4	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	9	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	MARKER DETAIL
SIGN-3	E AND F SHEET
SIGN-4	SIGNING PLAN SHEET

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

Kelvin Jordan — SIGNING & DELINEATION REGIONAL ENGINEER

Ashley Matthews,PE — SIGNING & DELINEATION PROJECT DESIGN ENGINEER

BR-0067
SIGN 001

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

APPROVED: _____

DATE: _____

SEAL:

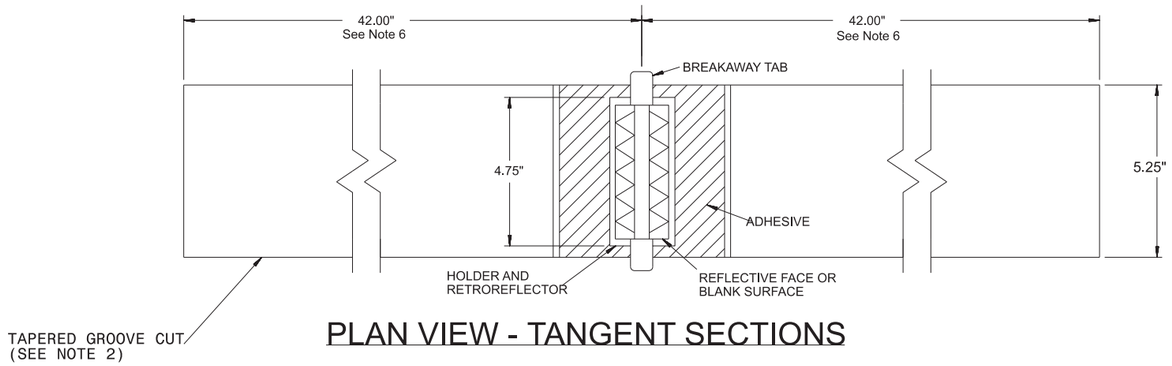
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048105 ASHLEY K. MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

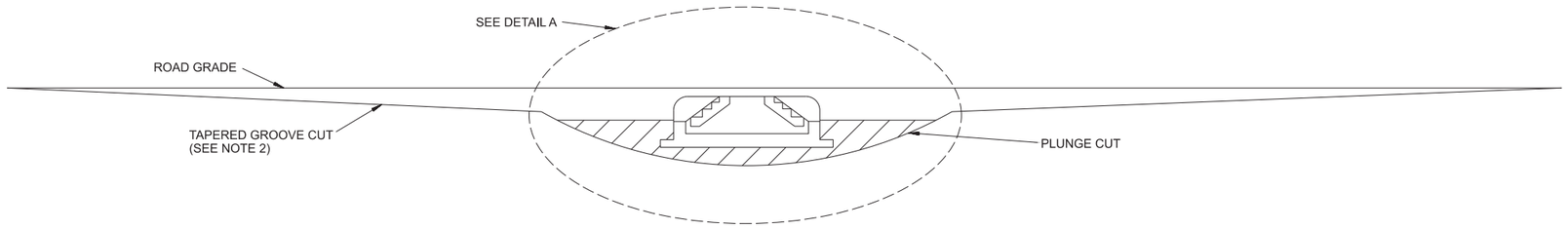
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

T.I.P.: BR-0067

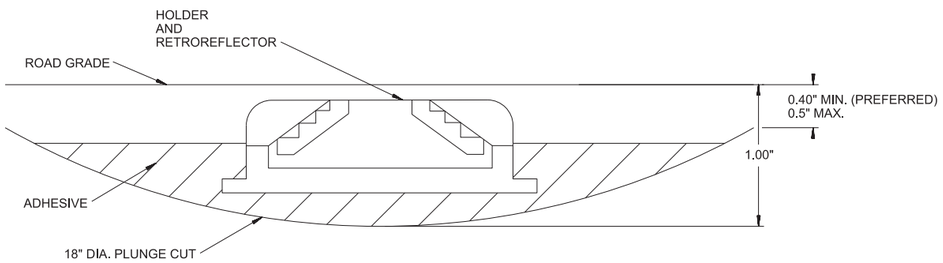
5/26/20



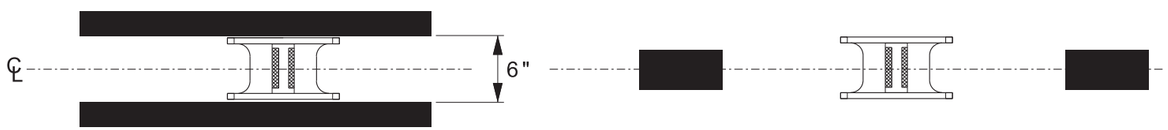
PLAN VIEW - TANGENT SECTIONS



PROFILE VIEW



DETAIL A



MARKER SPACING

NOTES:

1. ALL GROOVE EDGES SHALL BE AT LEAST 2 INCHES FROM ANY SEAM OR PAVEMENT JOINT
2. GROOVE CUTS MAY BE TAPERED OR BEVELED. TAPERED CUTS SHALL START AT ROAD LEVEL ON EACH END AND TAPER AT A FIXED RATE AS SHOWN ON THE PROFILE VIEW. BEVELED GROOVE CUTS SHALL BE 0.5" MAXIMUM DEPTH (0.4" PREFERRED), AND SHALL BE 0.4" MINIMUM DEPTH AT BOTH ENDS OF THE PLUNGE CUT.
3. GROOVE AND PLUNGE CUT SHALL BE CLEAN AND DRY PRIOR TO PLACEMENT OF ADHESIVE.
4. THE EPOXY ADHESIVE SHALL BE THOROUGHLY MIXED UNTIL IT IS UNIFORM IN COLOR, AND APPLIED IN COLOR, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. MARKER SHALL BE INSTALLED AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH THE BREAKWAY TABS RESTING ON THE PAVEMENT SURFACE. THE EPOXY SHALL BE FILLED TO THE LEVEL OF THE TOP OF THE MARKER HOLDER. EPOXY SHALL NOT TOUCH THE RETROREFELCTOR.
6. TOTAL GROOVE LENGTH MAY BE SHORTENED TO 54" ON SHARP CURVES IF APPROVED BY THE ENGINEER. GROOVES SHALL NOT OVERLAP WITH LOOP DETECTOR WIRES.

BR-0067

SIGN 002

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

DETAIL OF INLAID CRADLE MARKER

5/26/20

(401) QUANTITY REQ'D 1

30 X 30
W1-4R

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D 1

24 X 30
R2-1

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D 1

30 X 30
W1-5

ONE "U" POST PER SIGN

(404) QUANTITY REQ'D 1

36 X 36

SEE DETAIL BELOW

ONE "U" POST PER SIGN

SIGN NUMBER: 404
TYPE: E
QUANTITY: 1

SIGN WIDTH: 3'-0"
HEIGHT: 3'-0"
TOTAL AREA: 9 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0-1/2"
WIDTH: 0-3/4"
RADIE: 1-3/8"

NO. Z BARS:
LENGTH:

BACKG COLOR: Yellow
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.125" (3,2 mm) ALUMINUM

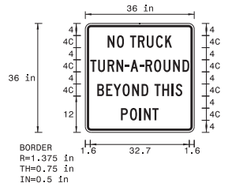
USE NOTES:

1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.

DESIGN BY: AKM
PROJECT ID: BR-0067

CHECKED BY: KLJ
LOCATION:

Jan 29, 2025
DIV: 13



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		N	O		T	R	U	C	K																	C 2000
	7.375	3	2.4	2	2.6	3	3	3	2.25	7.375																27.45
		T	U	R	N		-		A		-		R	O	U	N	D									C 2000
	1.6	2.6	3.125	3	2.25	0.5	1.4	0.5	2.6	0.5	1.4	0.5	2.6	3.2	3.125	3.125	2.25	1.6								32.7
		B	E	Y	O	N	D		T	H	I	S														C 2000
	4	3	2.4	3	3.2	3.125	2.25	2	2.6	3.125	1.2	2.25	4													28.1
		P	O	I	N	T																				C 2000
	11.8	3	3.2	1.4	2.6	2	11.8																			12.4

English_20

NORTH CAROLINA D.O.T. SIGN DETAIL

BR-0067
SIGN 003

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: _____

DATE: _____

SEAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/26/20

BEGIN TIP BR-0067
-L- STA. 10+00
+/- TIE TO EXISTING

END TIP BR-0067
-L- STA. 13+90
+/- TIE TO EXISTING

EXISTING R/W
EXISTING R/W
MAINTAINED R/W
MAINTAINED R/W
IM1
NO TRUCK TURN-A-ROUND BEYOND THIS POINT
404
NO TRUCK TURN-A-ROUND BEYOND THIS POINT
WEIGHT LIMIT SINGLE VEHICLE 23 TONS TRUCK TRACTOR SEMITRAILER 29 TONS
WEIGHT LIMIT SINGLE VEHICLE 23 TONS TRUCK TRACTOR SEMITRAILER 29 TONS
SPEED LIMIT 35
SPEED LIMIT 35
401
402
403
NARROW BRIDGE
IM13
ME
IM1
BTM
WLB
WLB
WLB
JS
STONY FORK CREEK
STONY FORK CREEK
CHESTNUT CREEK
CHESTNUT CREEK

PMP SCHEDULE

INTEGRATED MULTIPOLYMER (IMP)

IM1	WHITE EDGELINE (4", 90 MIL)
IM13	YELLOW DOUBLE CENTER (4", 90 MIL)
ME	SNOWPLOWABLE MARKER YELLOW & YELLOW

BR-0067
SIGN 004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: _____

DATE: _____

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 048105 ENGINEER ASHLEY K. MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99

TIP PROJECT: BR-0067

CONTRACT: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

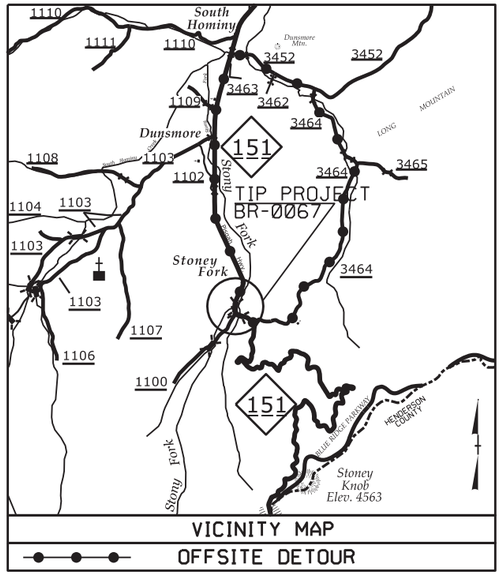
T.I.P. NO.	SHEET NO.
BR-0067	UO-01

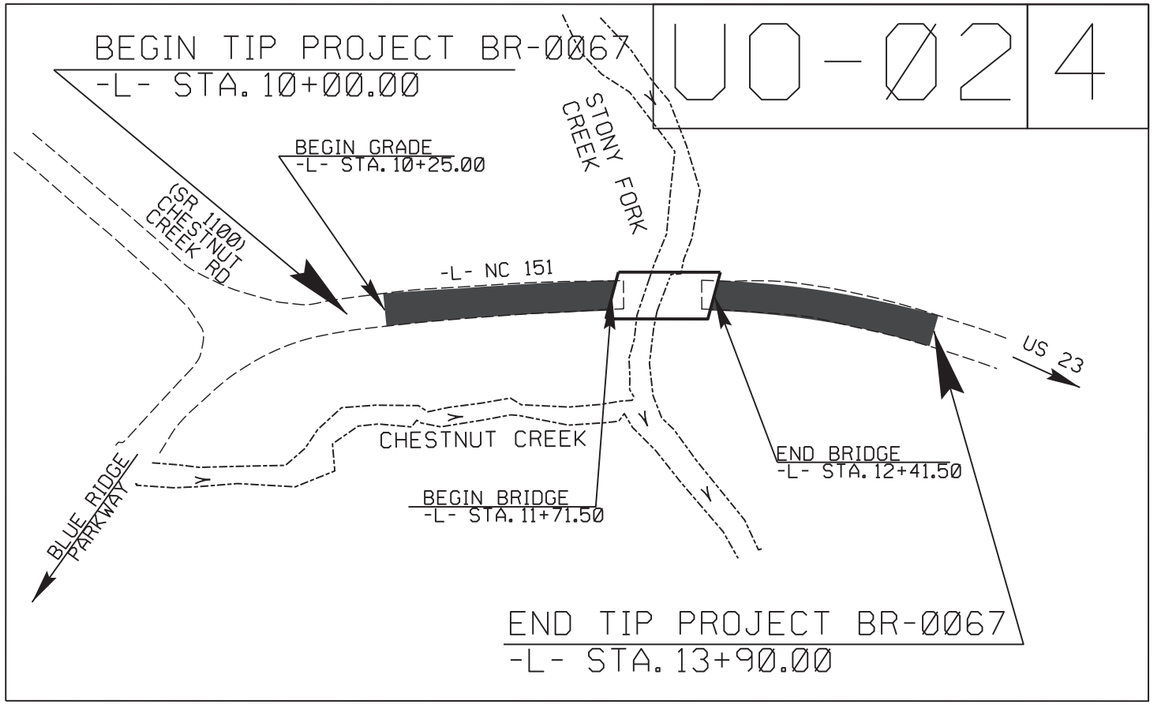
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

UTILITIES BY OTHERS
BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 86 ON NC 151 OVER STONY FORK CREEK

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





NAD 83/ 2011

GRAPHIC SCALES

50 25 0 50 100
PLANS

INDEX OF SHEETS

SHEET NO.:	DESCRIPTON:
UO-01	TITLE SHEET
UO-02	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(1) HAYWOOD EMC - POWER (D)
(2) AT&T COMMUNICATIONS - COMMUNICATIONS (D)
(3) SPECTRUM - CATV

PLANS PREPARED BY:
RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM I, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

LETTING DATE:
05/20/2025

RICHY NARRON
UTILITY PROJECT MANAGER

JAMIE YOW
PROJECT UTILITY COORDINATOR

JOHN DAVIS
PROJECT UTILITY CADD/SUPPORT

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

AMY YORK	*UTILITIES REGIONAL ENGINEER*
DEAUNTRE RILEY	*UTILITIES ENGINEER*
DAYTON MARTIN	*UTILITIES AREA COORDINATOR*
DOUG JOYNER	*UTILITIES COORDINATOR*

2/11/2025
\\ad.rkk.com\fs\Cloud\Projects\2020\20105_NCDOTuoLSA\E01-BR-0067 Bunc 86\Utilities\Engineering\UBO\Proj\BR0067_Rdy_tsh.dgn

PROJECT REFERENCE NO.	SHEET NO.
BR-0067	U0-2
THIS SHEET CORRESPONDS TO RDY-04	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

NAD 83/2011

NEW HAYWOOD EMC OVERHEAD POWER, AT&T AND SPECTRUM CATV

NEW HAYWOOD EMC OVERHEAD POWER, AT&T AND SPECTRUM CATV

EXISTING POLE TO REMAIN

EXISTING AT&T OVERHEAD TO REMAIN

EXISTING POLE TO REMAIN

EXISTING POLE TO REMAIN

EXISTING HAYWOOD EMC OVERHEAD POWER AND SPECTRUM CATV

EXISTING HAYWOOD EMC OVERHEAD POWER, AT&T AND SPECTRUM CATV

BEGIN GRADE -L- STA. 10+25.00

BEGIN TIP BR-0067 -L- STA. 10+00.00

END TIP BR-0067 -L- STA. 13+90.00

BEGIN APPROACH SLAB -L- STA. 11+60.67

BEGIN BRIDGE -L- STA. 11+71.50

END BRIDGE -L- STA. 12+47.50

END APPROACH SLAB -L- STA. 12+52.33

HAYWOOD ELECTRIC MEMBERSHIP CORP.
376 Grindstone Rd,
Waynesville, NC 28785

CHARTER CABLE TV
400 Atlantic St.
Stamford, CT 06901

ATT/DISTRIBUTION
PO Box 5014
Carol Stream, IL 60197-5014

NOTE:

1. ALL EXISTING POWER ROUTING/CONNECTIVITY PROVIDED BY HAYWOOD EMC AND GOOGLE EARTH

UTILITY OWNERS ON THIS SHEET

HAYWOOD ELECTRIC MEMBERSHIP CORP - POWER (DIST)
AT&T - TELECOMMUNICATIONS
SPECTRUM - CATV

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

REVISIONS

8/17/99

2/11/2025
\\rkk.com\fs\Cloud\Projects\2020\20105_NCDOT\uol_SA\E01-BR-0067 Bunc 86\Utilities\Engineering\UB0\Proj\BR0067_Rdy_psh_4.dgn

PROJ. REFERENCE NO.	SHEET NO.
BR-0067	X-1

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".

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

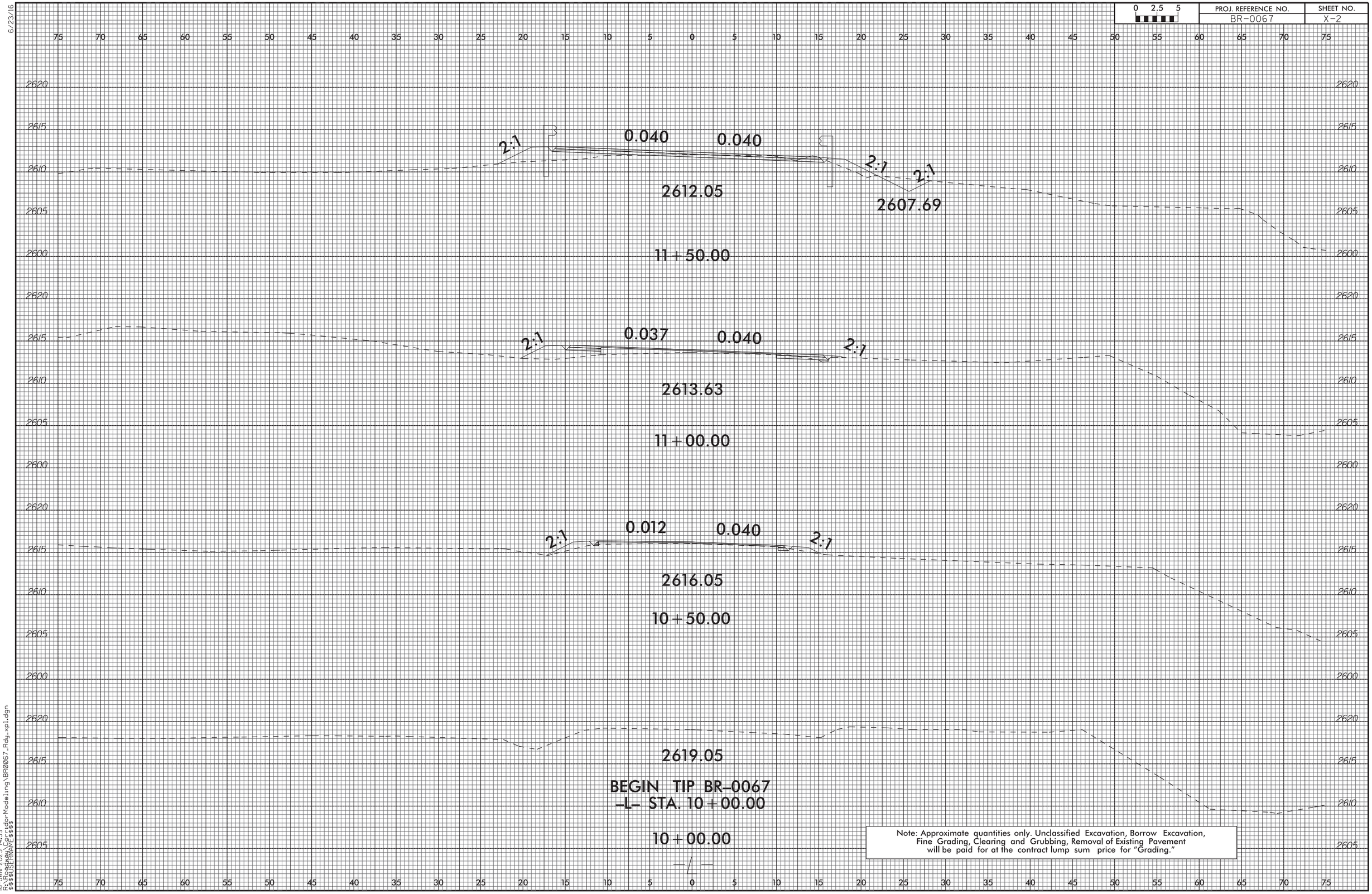
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	0	0
10+50.00	1	2
11+00.00	2	12
11+50.00	12	24
11+70.33	12	16

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+42.67	17	0
12+50.00	17	3
13+00.00	4	9
13+50.00	1	0
13+90.00	0	0

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BR-0067	X-2



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

16-JAN-2025 14:39
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$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BR-0067	X-3

END TIP BR-0067
-L- STA. 13+90.00

DRIVE TIE

2606.57

13+50.00

2:1

DRIVE TIE

2608.77

13+00.00

2:1

2:1

2:1

2:1

2610.34

2605.59

12+50.00

12+00.00

16-JAN-2025 14:39
P:\...\Roadway Modeling\BR0067_Rdy_xpl.dgn
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BR-0067	X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2610
2605
2600
2595

2604.08
14+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2610
2605
2600
2595

16-JAN-2025 14:39
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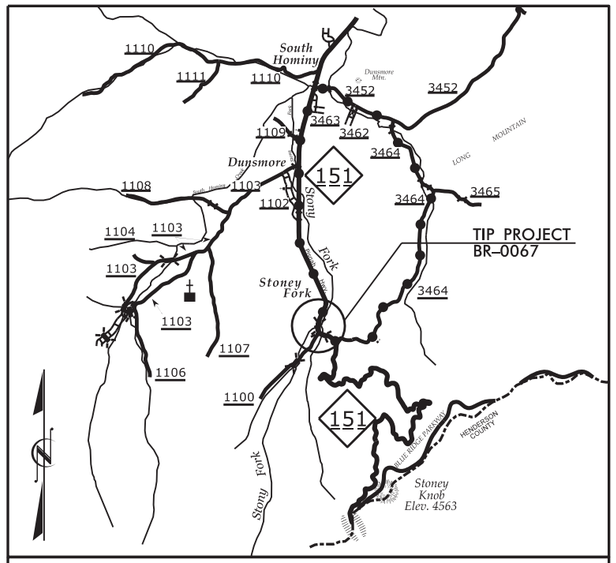
$$$$USERNAME$$$$

TIP PROJECT: BR-0067

CONTRACT: DM00478



VICINITY MAP N.T.S.

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

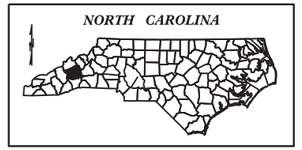
BUNCOMBE COUNTY

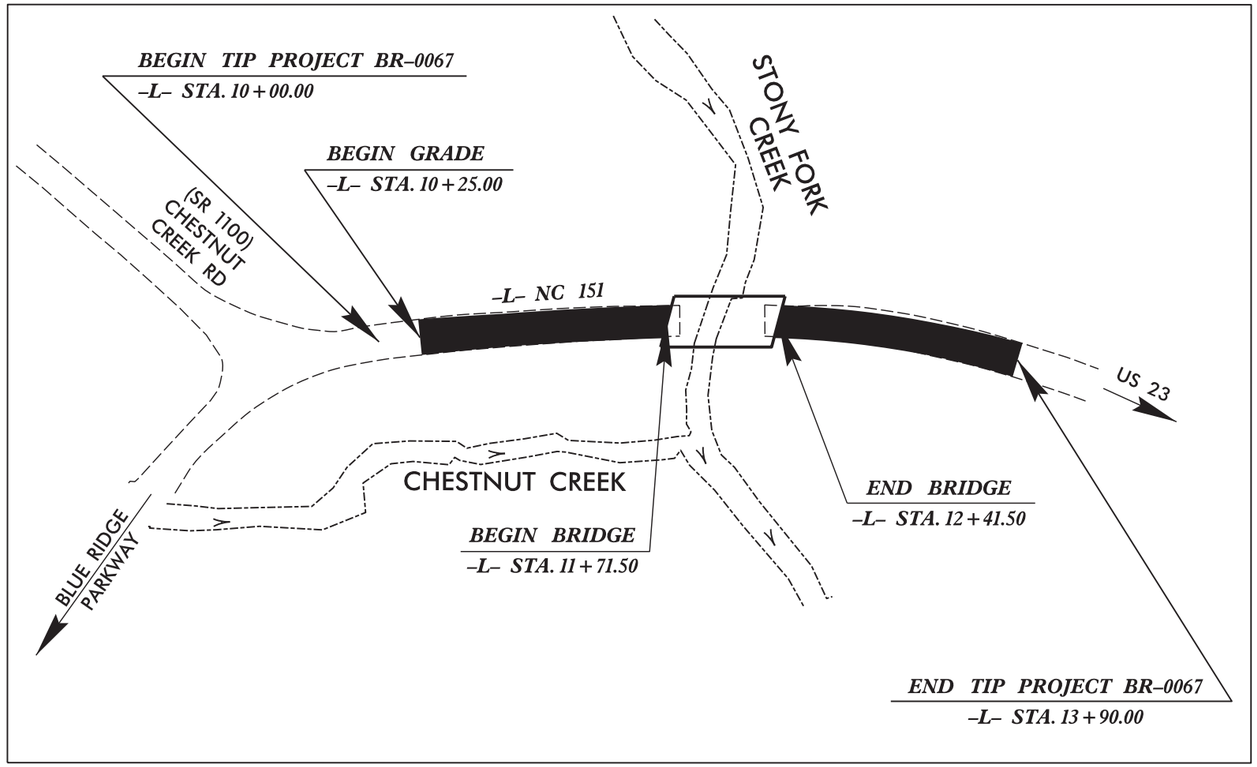
LOCATION: BRIDGE NO. 100086 ON NC 151 OVER STONY FORK CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0067	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67067.1.1	–	P.E.
67067.2.1	–	ROW/UTIL
67067.3.1	–	CONST.





STRUCTURE

DESIGN DATA

ADT 2024 = 1200
ADT 2044 = 1,490
* V = 40 MPH
** (TTST 1 %, DUAL 3 %)

FUNC CLASS = RURAL COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0067 = 0.061 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0067 = 0.013 MILES

TOTAL LENGTH TIP PROJECT BR-0067 = 0.074 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE :

MAY 21, 2025

ADAM A. COLE, P.E.
PROJECT ENGINEER

SAMUEL N. MEGAHED, P.E.
PROJECT DESIGN ENGINEER

8/26/21

11+00 11+50 12+00 12+50 13+00

GRADE DATA

(-) 5.7428% (-) 1.7905%

P.I. STA.= 11+05.00 -L-
EL.= 2613.03
V.C. = 150'

GRADE DATA

(-) 1.7905% (-) 4.8548%

P.I. STA. = 12+85.00 -L-
EL. = 2609.81
V.C.=90'

2630
2620
2610
2600

SPAN A

FILL FACE @ END BENT 1
STA. 11+70.33 -L-
GRADE PT. EL. 2611.87

BEGIN FRONT SLOPE
STA. 11+60.79 -L-
GRADE PT. EL. 2613.02

1'-7" MIN. BERM (TYP.)
NORMAL TO CAP

EL. 2612.0 ±

FIX.

EL.2611.0 ±

EL. 2608.0 ±

EL. 2606.0 ±

LOW CHORD
EL. 2608.97

EL. 2601 ±

EL. 2599.0 ±

STEEL PILE

WATER SURFACE
(100 YR.) EL. = 2606.7

NORMAL WATER
SURFACE
EL.= 2601.1
(06/06/2022)

DEGIGN WATER
SURFACE (50 YR.)
EL. = 2606.3

1'-6" TO LIMIT OF UNCLASSIFIED
STRUCTURE EXCAVATION (TYP.)

1'-0" MIN. EARTH BERM (TYP.)
NORMAL TO CAP

FILL FACE @ END BENT 2
STA. 12+ 42.67 -L-
GRADE PT. EL. 2610.56

BEGIN FRONT SLOPE
STA. 12+49.16 -L-
GRADE PT. EL. 2610.44

EL. 2611±

FIX.

EXISTING
SUBSTRUCTURE

EL. 2603.0 ±
EL. 2601.0 ±
EL. 2603.0 ±

MIN 3'-6" KEY-IN (TYP.)

LOW CHORD
EL. 2607.76

1 1/2: 1 SLOPE
NORMAL TO CAP
(TYP.)

UNCLASSIFIED STRUCTURE
EXCAVATION

END BENT 1

END BENT 2

SECTION ALONG -L-

(SECTION THROUGH END BENTS ARE AT RIGHT ANGLES)

W.P. #1
FILL FACE @ END BENT 1
STA. 11+70.33 -L-

BEGIN FRONT SLOPE
STA. 11+60.79 -L-
$3\frac{5}{8}$" LT.

-LONG CHORD EXT.-

-L-

BEGIN APPROACH
SLAB STA.
11+56.50 -L-
$5\frac{1}{2}$" LT.

-LONG CHORD-

WORK POINT NO. 1 DETAIL

W.P. 2
FILL FACE @ END BENT 2
STA. 12+42.67 -L-

BEGIN FRONT SLOPE
STA. 12+ 49.16 -L-
$3\frac{3}{16}$" LT.

-L-

-LONG CHORD EXT. -

-L- (NC151)

END APPROACH SLAB
STA. 12+56.48 -L-
$6\frac{7}{8}$" LT.

WORK POINT NO. 2 DETAIL

CLASS II
RIP RAP (TYP.)

STONY FORK CREEK

CLASS II
RIP RAP (TYP.)

W.P. #1
FILL FACE @ END BENT 1
STA. 11+70.33 -L-

1'-7" MIN. BERM (TYP.)

1'-0" MIN. EARTH BERM (TYP.)
NORMAL TO CAP

W.P. 2
FILL FACE @ END BENT 2
STA. 12+42.67 -L-

TO BLUE RIDGE PARKWAY

BEGIN FRONT SLOPE
STA. 11+60.79 -L-
$3\frac{5}{8}$" LT.

-LONG CHORD EXT.-

PCC STA.
11+77.86 -L-

BRIDGE I.D.
STA. 12+06.50-L-

BEGIN FRONT SLOPE
STA. 12+49.16 -L-
$3\frac{3}{16}$" LT.

-LONG CHORD EXT. -

-L- (NC151)

$1\frac{13}{16}$"

PCC STA.
12+38.94 -L-

BEGIN APPROACH
SLAB STA.
11+56.50 -L-
$5\frac{1}{2}$" LT.

105°-00'-00" (TYP.)
TO LONG CHORD

END APPROACH SLAB
STA. 12+56.48 -L-
$6\frac{7}{8}$" LT.

TO SR 1103

CLASS II
RIP RAP

CLASS II
RIP RAP

36'-0$\frac{1}{8}$"

36'-3$\frac{13}{16}$"

72'-3$\frac{15}{16}$"

PLAN

(PILES NOT SHOWN FOR CLARITY)

-L- CURVE DATA

P.I. STA. = 10+88.98	P.I. STA. = 12+08.41	P.I. STA. = 13+48.44
Δ= 4° 47' 45.6" (RT)	Δ= 3° 10' 52.9" (RT)	Δ= 21° 01' 41.5" (RT)
D= 2° 41' 47.5"	D= 5° 12' 31.3"	D= 9° 42' 40.3"
L= 177.86'	L= 61.08'	L= 216.54'
T= 88.98'	T= 30.55'	T= 109.50'
R= 2,124.81'	R= 1,100.00'	R= 590.00'

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

NORTH CAROLINA PROFESSIONAL SEAL 35647 ENGINEER ADAM A. COLE

DocuSigned by:
02EE938FABE674C5...
04/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by:
90E555644BA74ED...
04/16/2025

PROJECT NO. BR-0067
BUNCOMBE COUNTY
STATION: 12+06.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 151 OVER
STONY FORK CREEK BETWEEN
BLUE RIDGE PARKWAY AND SR 1103

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			15

DRAWN BY : Z. W. MAUNG DATE : 5/2023
CHECKED BY : K. PUROHIT, P.E. DATE : 1/2024
DESIGN ENGINEER OF RECORD: E. T. C. Jr., P.E. DATE : 5/2023

3/7/2025
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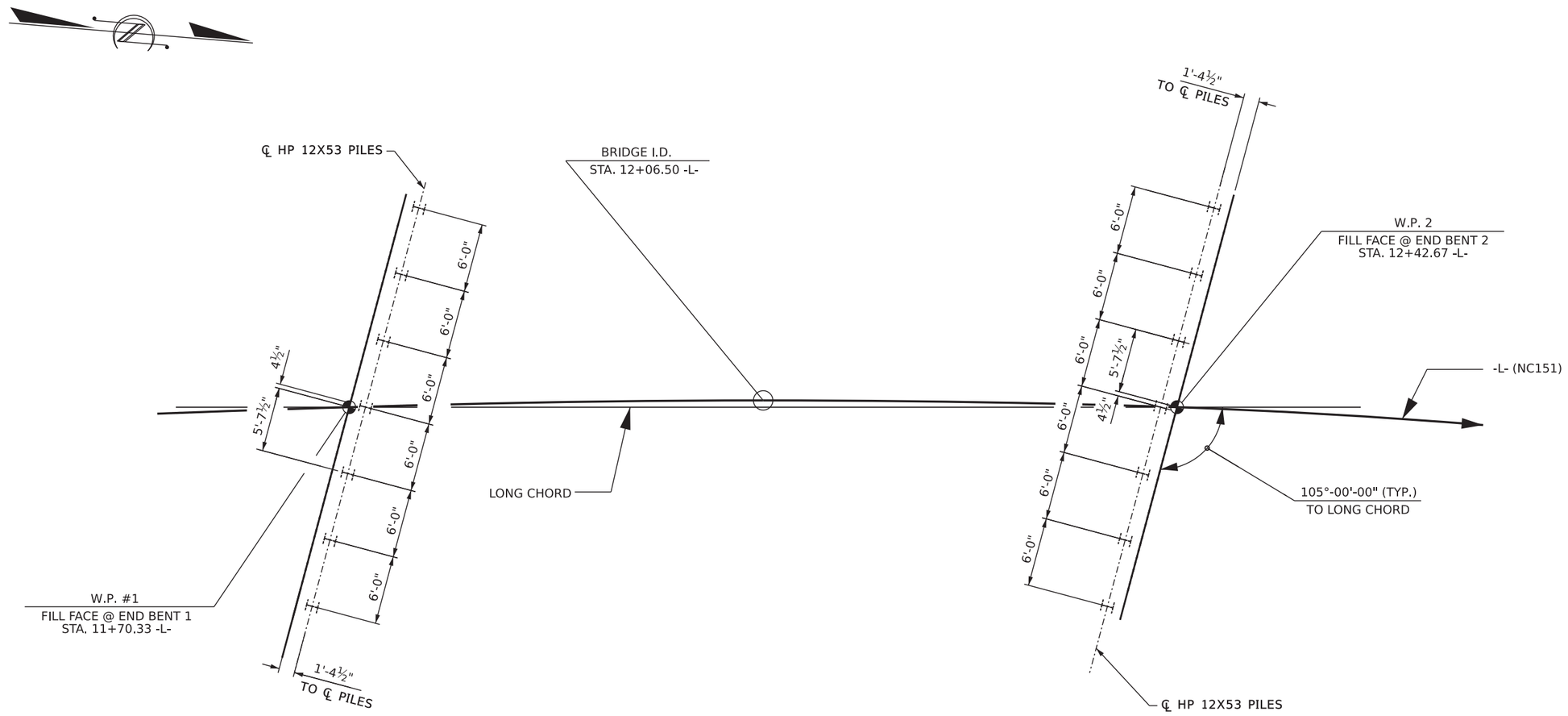
zwmaung

8/26/21



END BENT 1

END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE.

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

FOR BRIDGE OVER STONY FORK CREEK ON NC 151 BETWEEN BLUE RIDGE PARKWAY AND SR 1103

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N MEGALED

DocuSigned by: Samuel Megaled 96E5656648A74ED...

04/16/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			15

DRAWN BY : Z. W. MAUNG DATE : 5/ 2023
CHECKED BY : K. PUROHIT, P.E. DATE : 2/ 2024
DESIGN ENGINEER OF RECORD: E. T. C. Jr.,P.E. DATE : 5/ 2023

3/7/2025
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zwmaung

8/26/21

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-7	7	156		45			260							
End Bent 2, Piles 1-7	7	156		55			260							
TOTAL QUANTITY:														

$$* RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$$

** Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent/ Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
TOTAL QUANTITY:		

Pile Order Lengths for Concrete Piles	
End Bent/ Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT

* EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-7	156			0.6		
End Bent 2, Piles 1-7	156			0.6		

* Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-7				7
End Bent 2, Piles 1-7				7
TOTAL QUANTITY:				14

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Shiping Yang, #031361) on 03-19-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL M MEGALED

DocuSigned by: Samuel Megaled 96E5556644BA74ED...

04/16/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			15

3/21/2025
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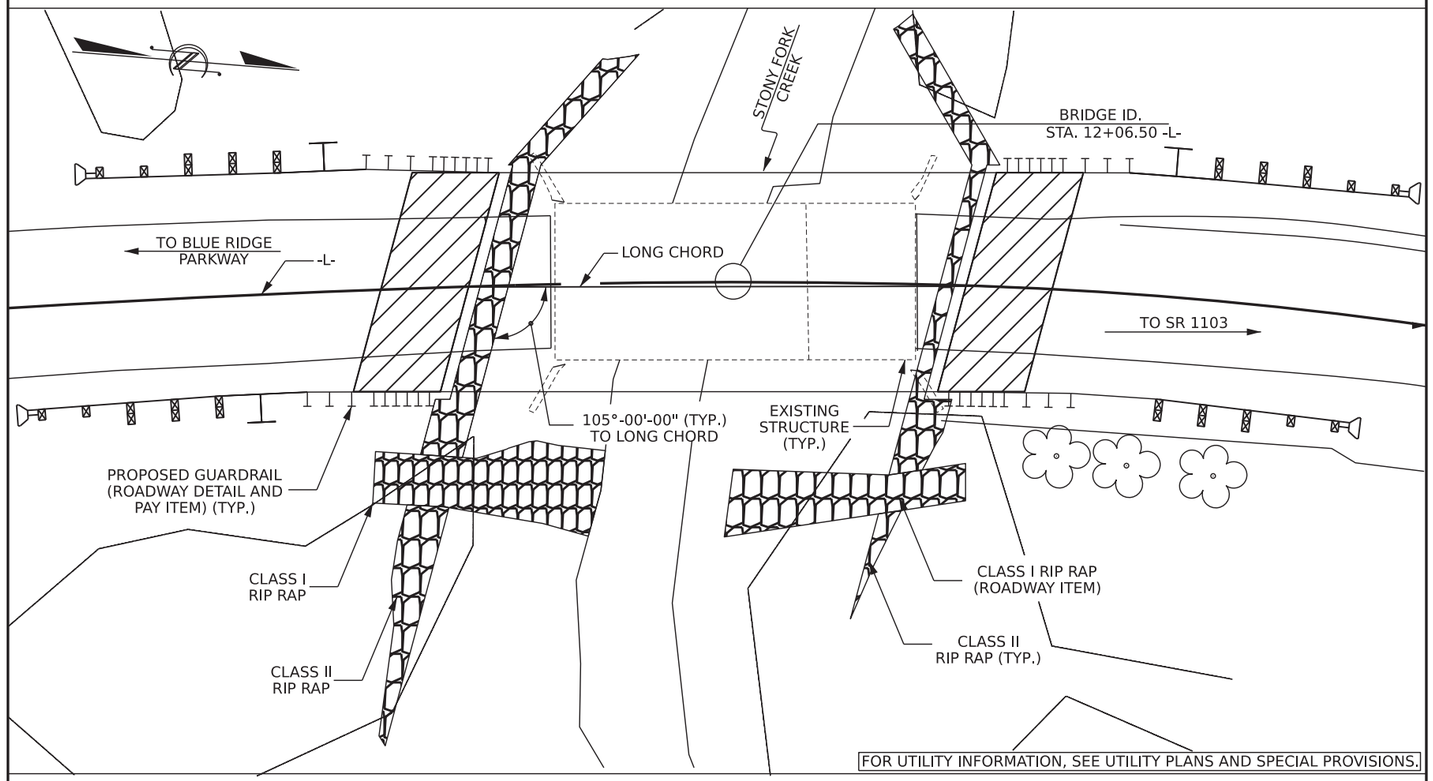
BM #2: BRASS DISK IN CONCRETE HEADWALL, 11' RIGHT OF STA. 11+84.00 -L-, EL. 2609.97



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+09.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 21 FT. +/- EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 35'-6", 1 SPAN @ 16'-0", WITH A CLEAR ROADWAY WIDTH OF 20'-6" AND HAVING A REINFORCED CONCRETE DECK ON I-BEAMS SUPERSTRUCTURE AND A SUBSTRUCTURE OF END BENTS AND INTERIOR BENTS WITH REINFORCED CONCRETE CAPS AND REINFORCED CONCRETE PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS CURRENTLY POSTED FOR LOAD LIMITS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		STEEL PILES POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE											140.26				11	770
END BENT NO. 1				22.4		2714	7	7	315	7		75	85			
END BENT NO. 2				22.4		2714	7	7	385	7		55	60			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	44.8	LUMP SUM	5428	14	14	700	14	140.26	130	145	LUMP SUM	11	770

HYDRAULIC DATA

DESIGN DISCHARGE	740 C.F.S.
FREQUENCY OF DESIGN FLOOD	50 YRS.
DESIGN HIGH WATER ELEVATION	2606.3 FT.
DRAINAGE AREA	1.8 SQ. MI.
BASIC DISCHARGE (Q100)	880 C.F.S.
BASIC HIGH WATER ELEVATION	2606.7 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	1,837 C.F.S.
FREQUNECY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	2609.8 FT. *

* OVERTOPPING ELEVATION IS 2,609.8' AT THE END OF EXISTING BERM AT STA. 12+48.5 -L- RT.

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

Docusigned by: Samuel Megahed 04/16/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 151 OVER STONY FORK CREEK BETWWEN BLUE RIDGE PARKWAY AND SR 1103

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			15

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : Z. W. MAUNG DATE : 1/2023
CHECKED BY : K. PUROHIT, P.E. DATE : 1/2024
DESIGN ENGINEER OF RECORD: E. T. C., Jr., P.E. DATE : 1/2023

3/26/2025
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zwmaung

8/26/21

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.10	70'	EL	3.448	0.80	0.269	1.01	70'	EL	34.482	
		HL-93 (OPERATING)	N/A		1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	1.32	70'	EL	34.482	
		HS-20 (OPERATING)	36.000		1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000		2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000		2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250		1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925		1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550		1.200	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950		1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
		SNS7B	42.000		1.050	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075		1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600		1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000		1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000		1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43.000		1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
		TNAGT5A	45.000		1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482	
		TNAGT5B	45.000	⟨3⟩	1.020	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	1.02	70'	EL	34.482	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.829	52.587	1.3	0.269	2.13	70'	EL	34.482	0.608	2.20	70'	EL	3.448	0.80	0.269	1.83	70'	EL	34.482	
		EV3	43.000	⟨4⟩	1.196	51.434	1.3	0.269	1.39	70'	EL	34.482	0.608	1.48	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.

2.

3.

4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING * *

⟨4⟩ EMERGENCY VEHICLE LOAD RATING * *

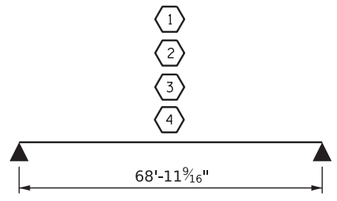
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN " A "

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGARED

DocuSigned by: Samuel Megared 90E5556648A74ED...

04/16/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 70' CORED SLAB UNIT 105° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY:	Z. W. MAUNG	DATE :	2/2024
CHECKED BY :	K. PUROHIT. P.E.	DATE :	2/2024
DRAWN BY : CVC	6/10	REV. BY : BNB/AKP	06/23
CHECKED BY : DNS	6/10		

3/7/2025
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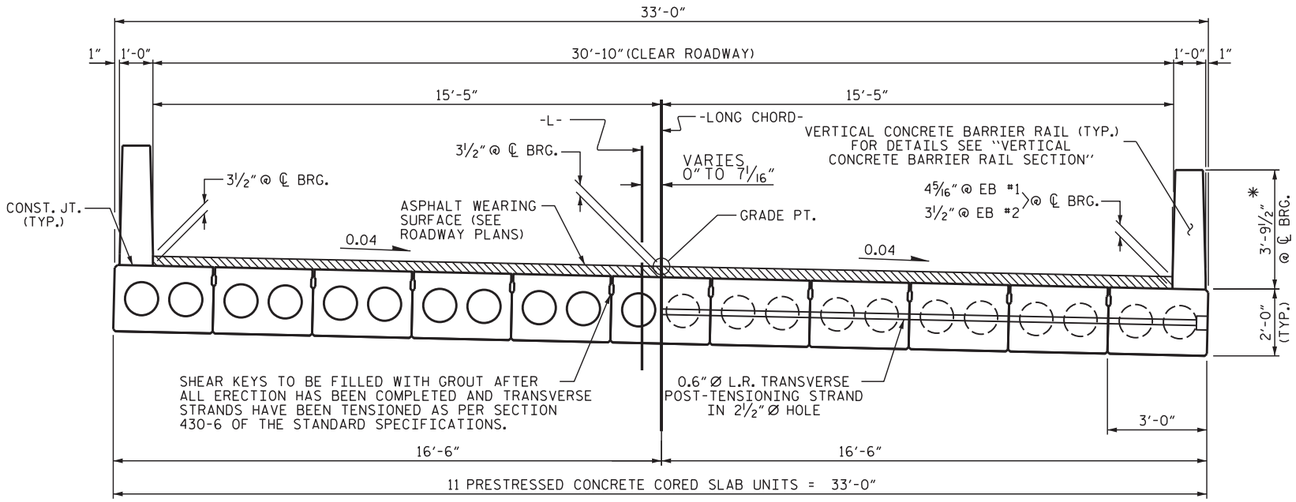
STD. NO. 24LRFR1_75&105S_70L



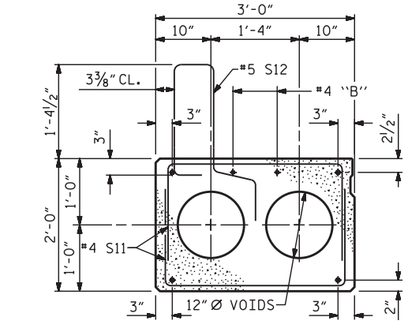
HALF SECTION
THROUGH VOIDS

HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

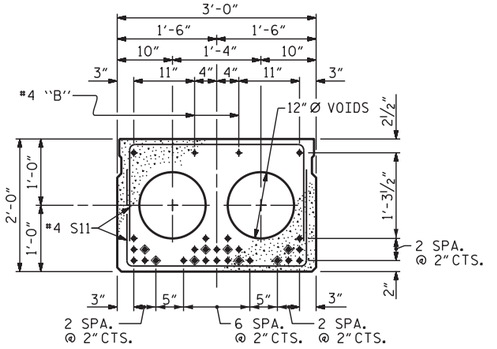
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE ''VERTICAL CONCRETE BARRIER RAIL SECTION'' DETAIL.

FIXED END



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (70′ UNIT)

(28 STRANDS REQUIRED)

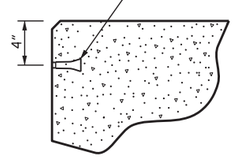
0.6'' Ø LOW RELAXATION STRAND LAYOUT

◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

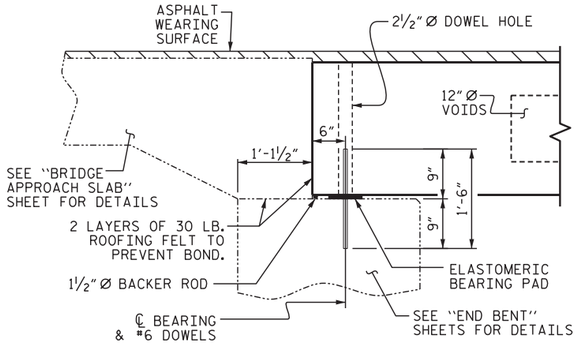
◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

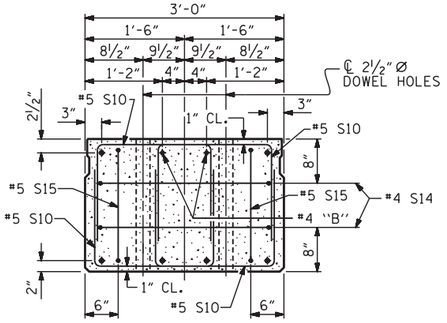
PERMITTED THREADED INSERT
CAST IN OUTSIDE FACE OF
EXTERIOR UNIT AND
RECESSED ⅜″. SIZE TO BE
DETERMINED
BY CONTRACTOR.



THREADED INSERT DETAIL

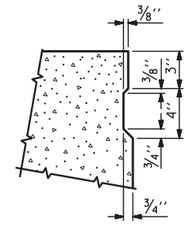


SECTION AT END BENT



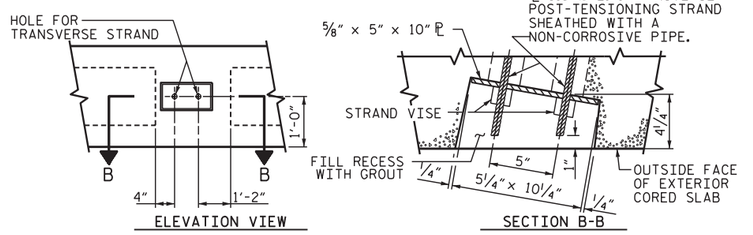
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

PROJECT NO. BR-0067
BUNCOMBE COUNTY
STATION: 12+06.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3′-0'' X 2′-0'' PRESTRESSED CONCRETE CORED SLAB UNIT

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed 90E55644B474ED...
04/16/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : Z. W. MAUNG	DATE : 1/2023	
CHECKED BY : K. PUROHIT, P.E.	DATE : 1/2024	
DRAWN BY : MAA 6/10	REV. 9/14	MAA/TMG
CHECKED BY : MKT 7/10		

3/7/2025
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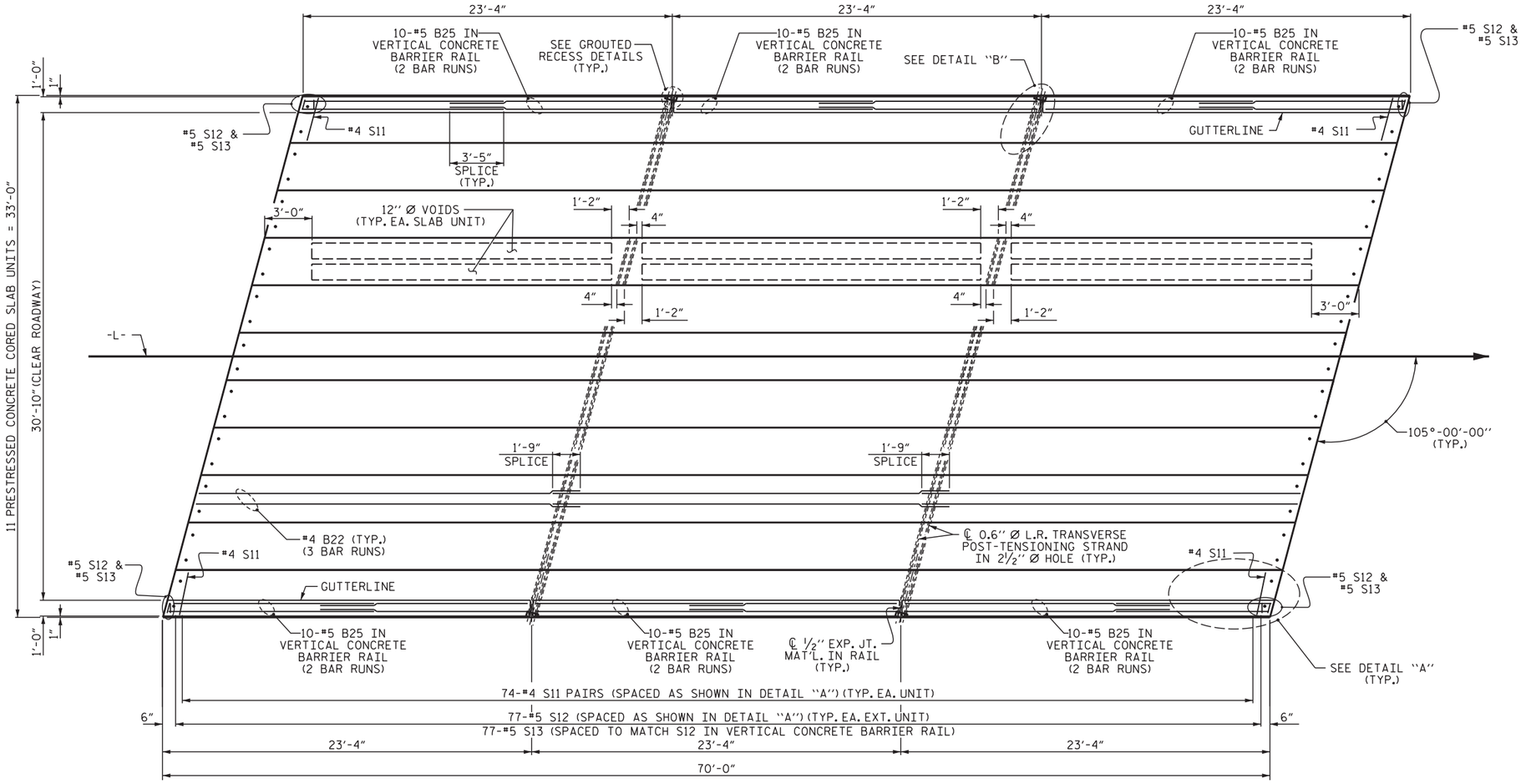
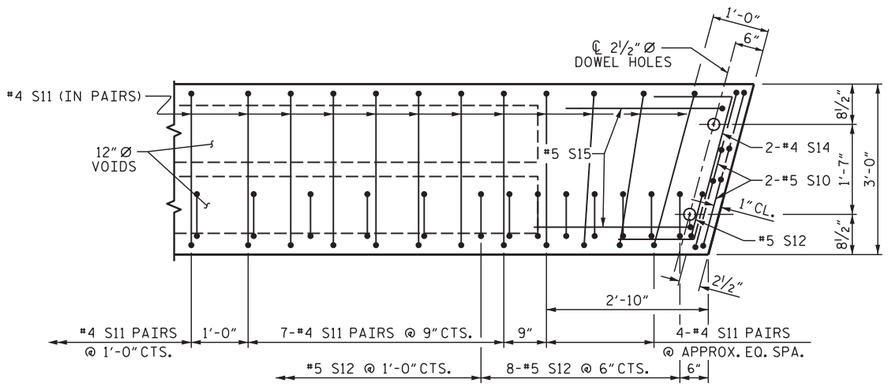
STD. NO. 24PCS4_33_105S

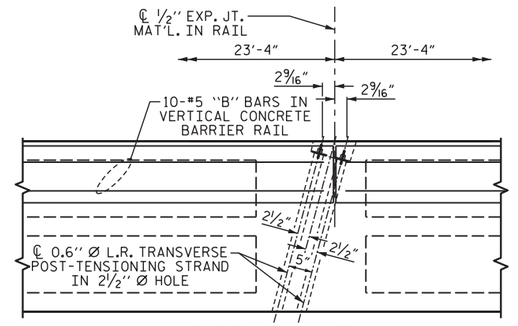


PLAN OF UNIT



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

ASSEMBLED BY :	Z. W. MAUNG	DATE :	1/2023
CHECKED BY :	K. PUROHIT, P.E.	DATE :	1/2024
DRAWN BY : MAA	6/10	REV. 12/5/11	MAA/AAC
CHECKED BY : MKT	7/10	REV. 8/14	MAA/TMG

3/7/2025
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NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGARED

DocuSigned by: Samuel Megared 90E556648A74ED...
04/16/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BR-0067
BUNCOMBE COUNTY
STATION: 12+06.50 -L-

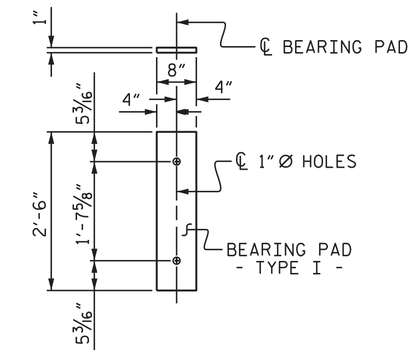
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT 30'-10" CLEAR ROADWAY 105° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			15

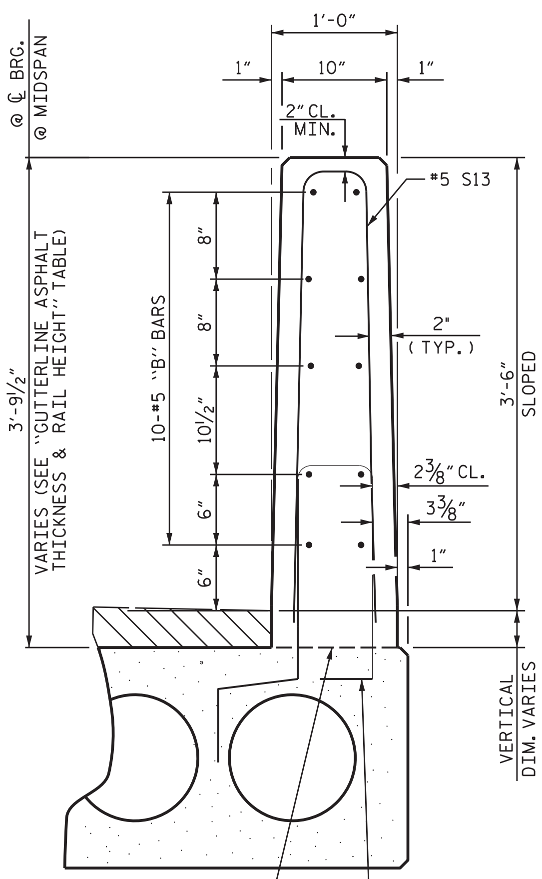
STD. NO. 24PCS_33_105S_70L



FIXED END
(TYPE I - 22 REQ'D)

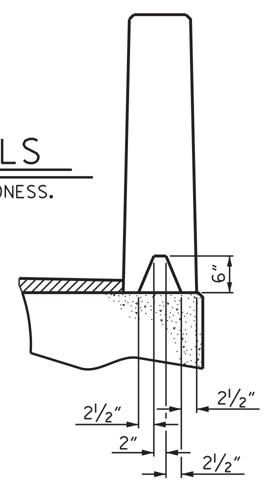
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

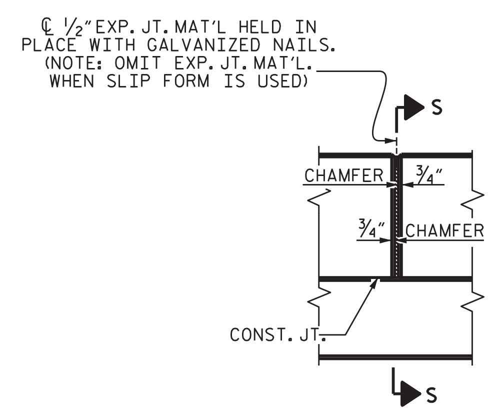


CONST. JT.
#5 S12 SEE "PLAN OF UNIT" FOR SPACING

SECTION THRU RAIL



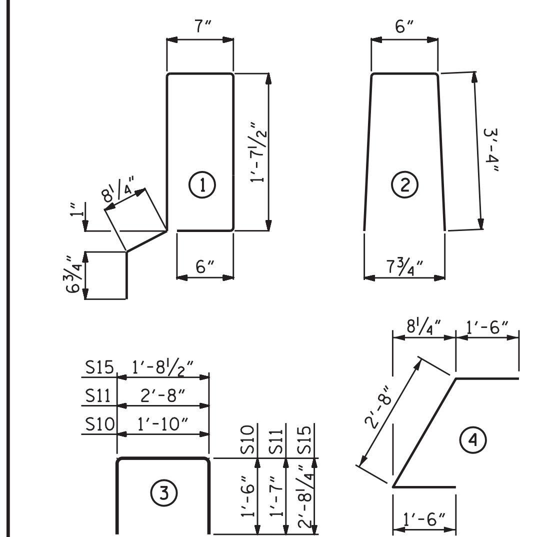
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	79	#5	1	5'-7"	460		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL		LBS.			760		760
* EPOXY COATED REINFORCING STEEL		LBS.			460		
7000 P.S.I. CONCRETE		CU. YDS.			12.0		12.0
0.6" Ø L.R. STRANDS		No.			28		28

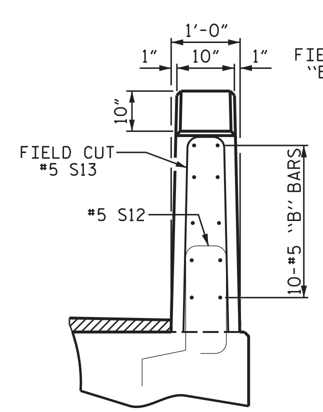
DEAD LOAD DEFLECTION AND CAMBER

70' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/4" ↓
FINAL CAMBER	1 1/2" ↑

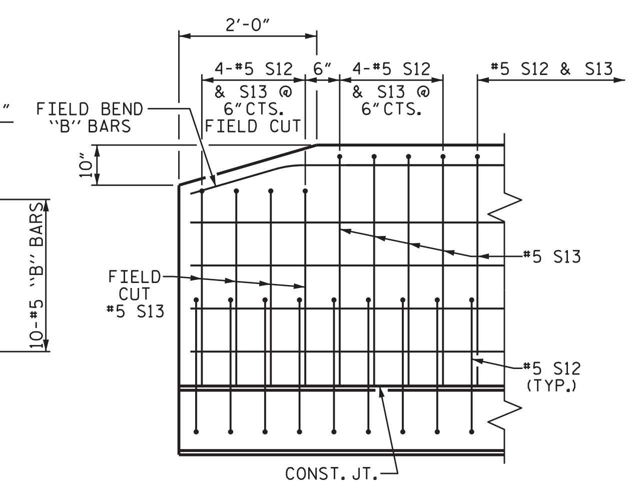
** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	2"	3'-8"



END VIEW



SIDE VIEW

END OF RAIL DETAILS

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

CONCRETE RELEASE STRENGTH

UNIT	PSI
70' UNITS	5500

PROJECT NO. BR-0067
BUNCOMBE COUNTY
STATION: 12+06.50 -L-

SHEET 3 OF 3

CORED SLABS REQUIRED

70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL	11	70'-0"	770'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS 70' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B25	120	120	#5	STR	13'-8"	1711
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL			LBS.			2892
CLASS AA CONCRETE			CU.YDS.			18.1
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.			140.26

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DocuSigned by:
Samuel Megahed
04/16/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : Z. W. MAUNG DATE : 1/2023
CHECKED BY : K. PUROHIT, P.E. DATE : 1/2024
DRAWN BY : MAA 6/10
CHECKED BY : MKT 7/10
REV. 5/18 MAA/THC

3/7/2025
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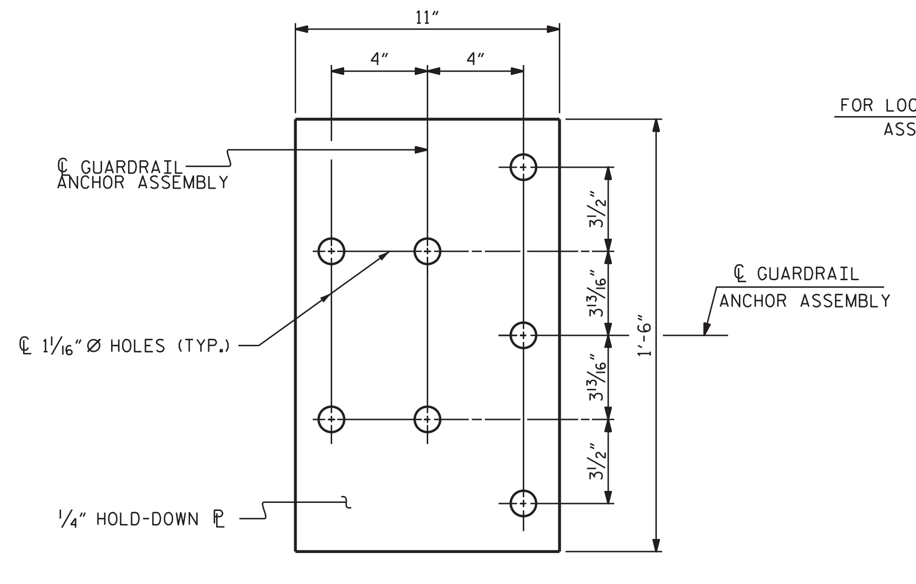
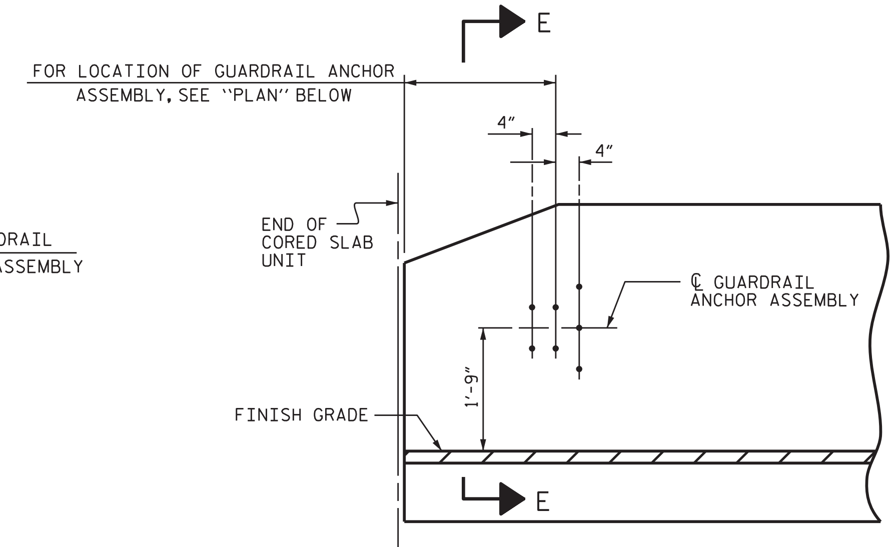
STD. NO. 24PCS3_33_75&105S



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

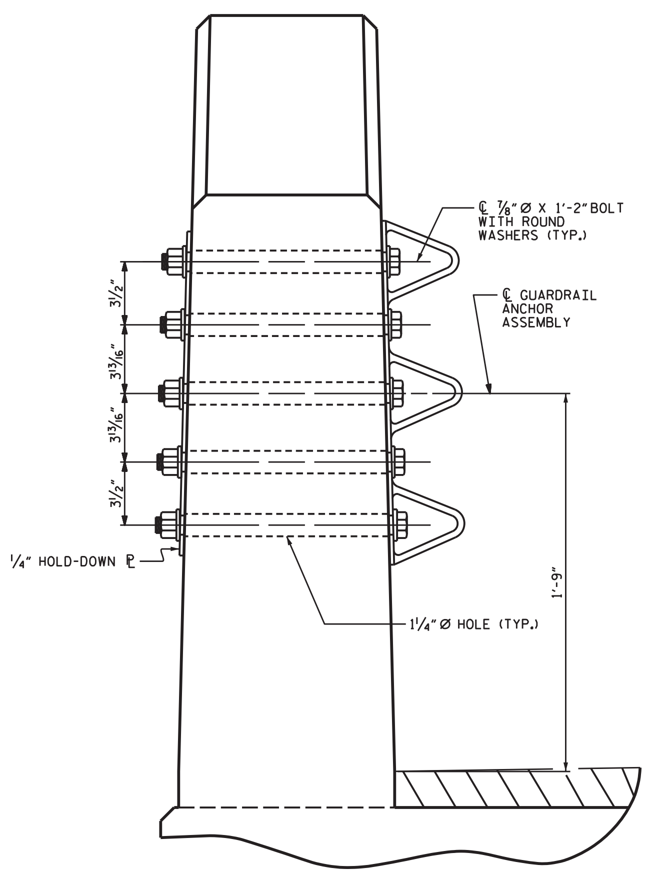
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

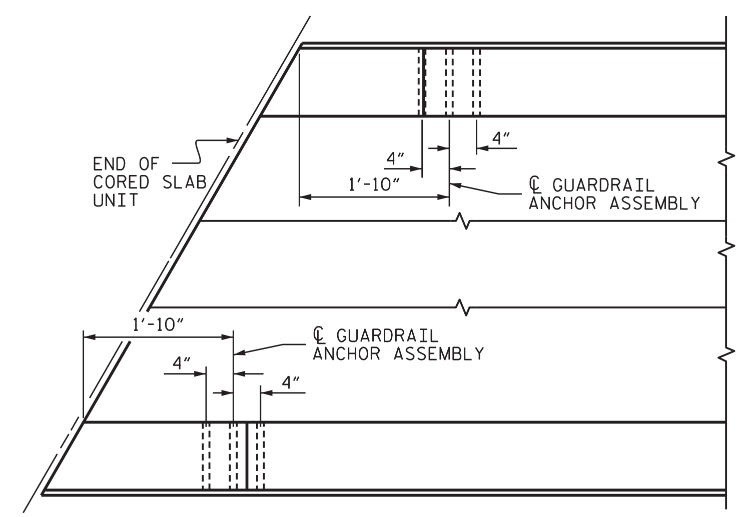
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

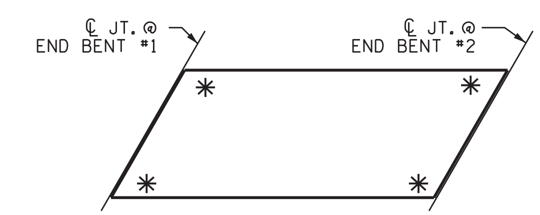
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled

04/16/2025

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

SHEET NO. S-9

TOTAL SHEETS 15

ASSEMBLED BY : Z. W. MAUNG	DATE : 1/2023
CHECKED BY : K. PUROHIT, P.E.	DATE : 1/2024

DRAWN BY : MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC
	REV. 5/18	MAA/THC

3/7/2025
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(SHT 1a) STD. NO. GRA3

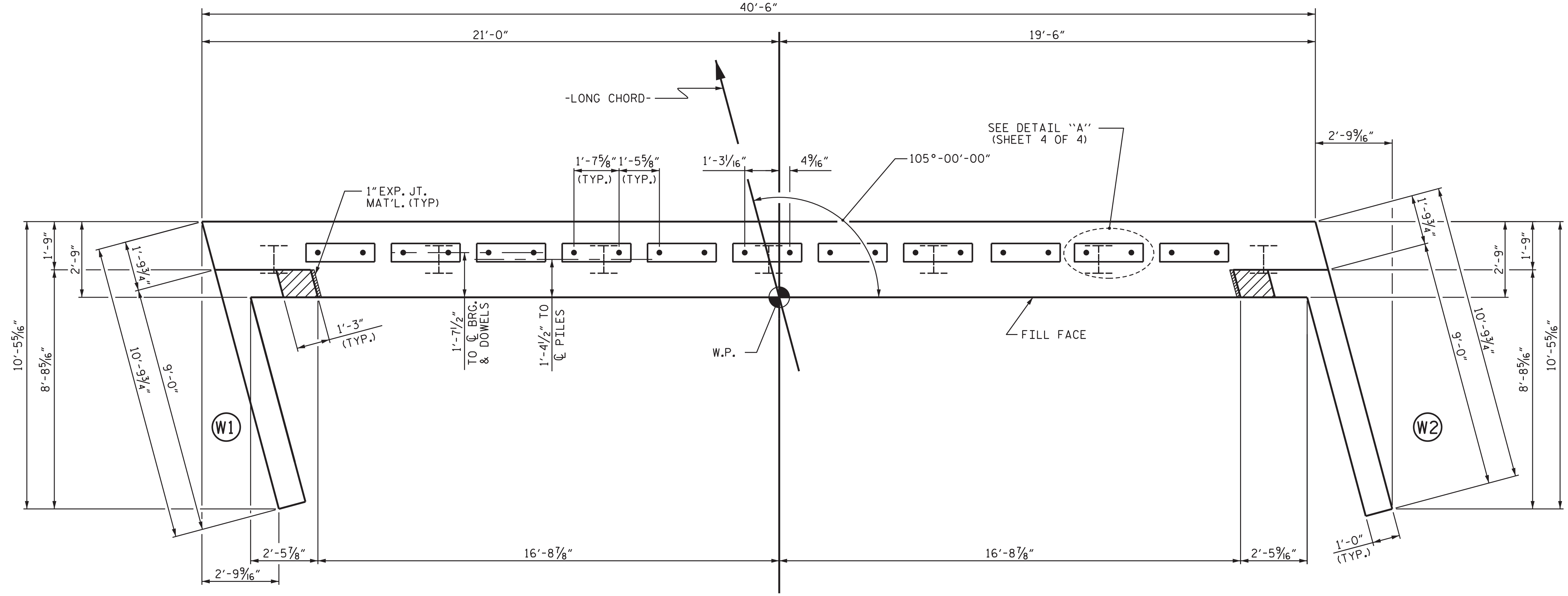
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

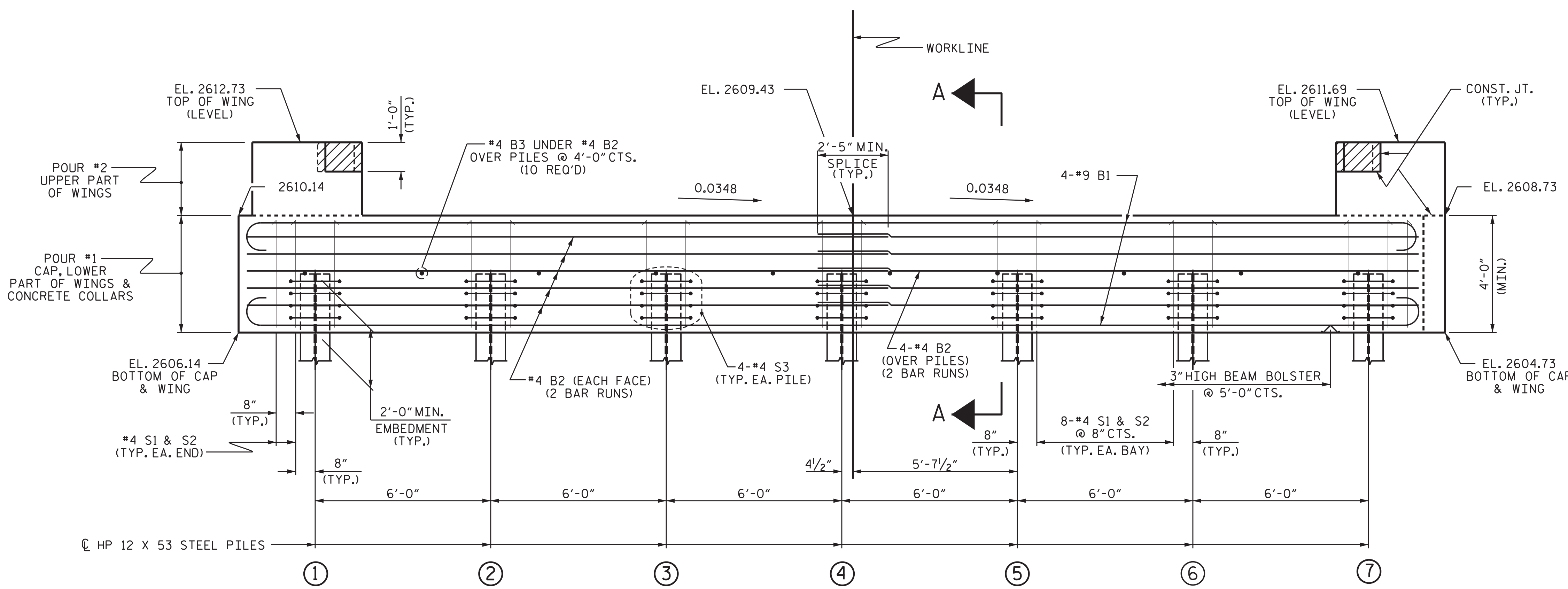
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
1	2608.08
2	2607.87
3	2607.66
4	2607.45
5	2607.24
6	2607.03
7	2606.83

PROJECT NO. **BR-0067**

BUNCOMBE COUNTY

STATION: **12+06.50 -L-**

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed
04/16/2025

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

SHEET NO. S-10
TOTAL SHEETS 15

ASSEMBLED BY : Z. W. MAUNG DATE : 5/2023
CHECKED BY : K. PUROHIT, P.E. DATE : 2/2024
DRAWN BY : WJH 12/11 | CHECKED BY : AAC 12/11 | REV. 4/15 | MAA/TMG

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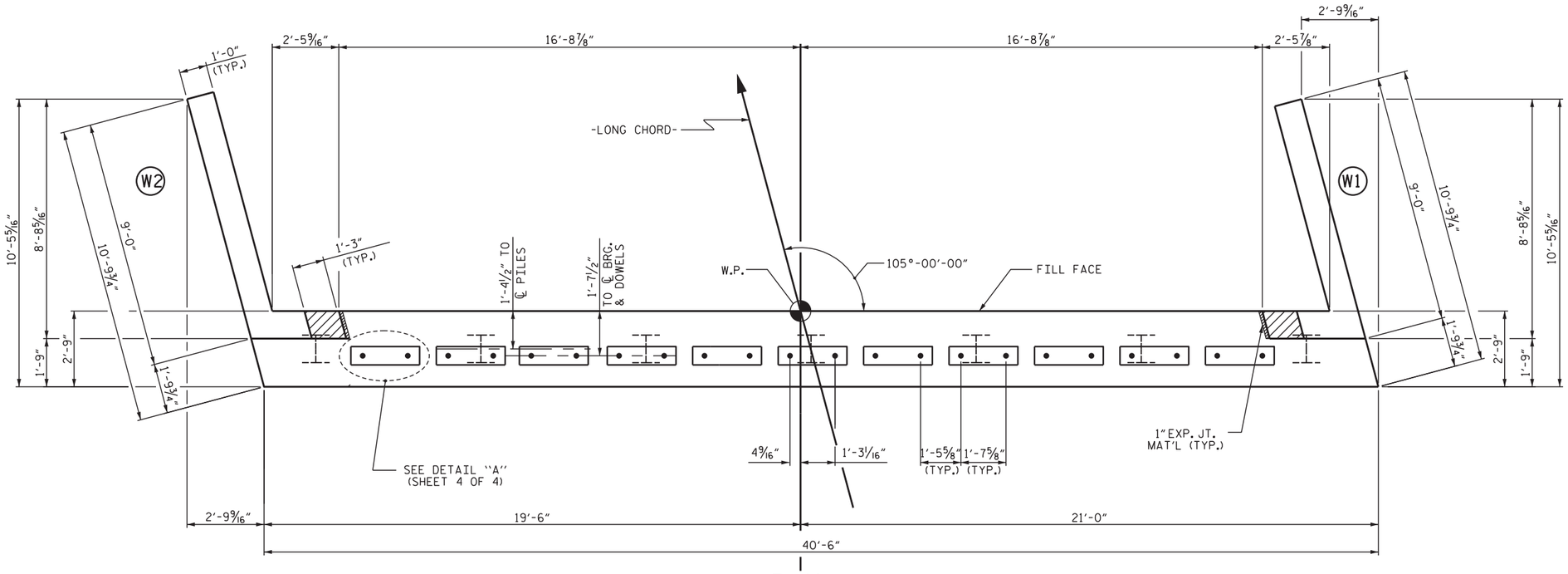
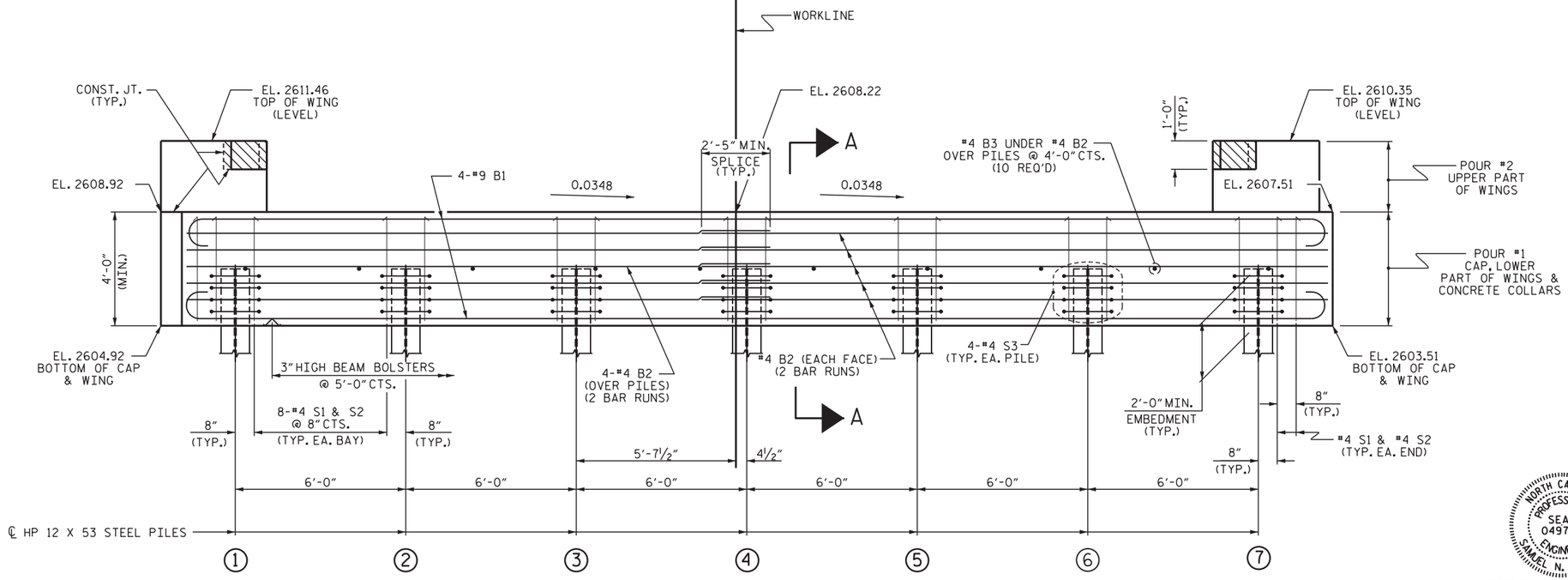
STD. NO. EB_33_105S4



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
1	2606.86
2	2606.65
3	2606.44
4	2606.23
5	2606.02
6	2605.82
7	2605.61

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

DocuSigned by: Samuel Megahed 90E5550448A74ED...
04/16/2025

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : Z.W.MAUNG DATE : 5/2023
CHECKED BY : K. PUROHIT, P.E. DATE : 2/2024
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11
REV. 4/15 MAA/TMG

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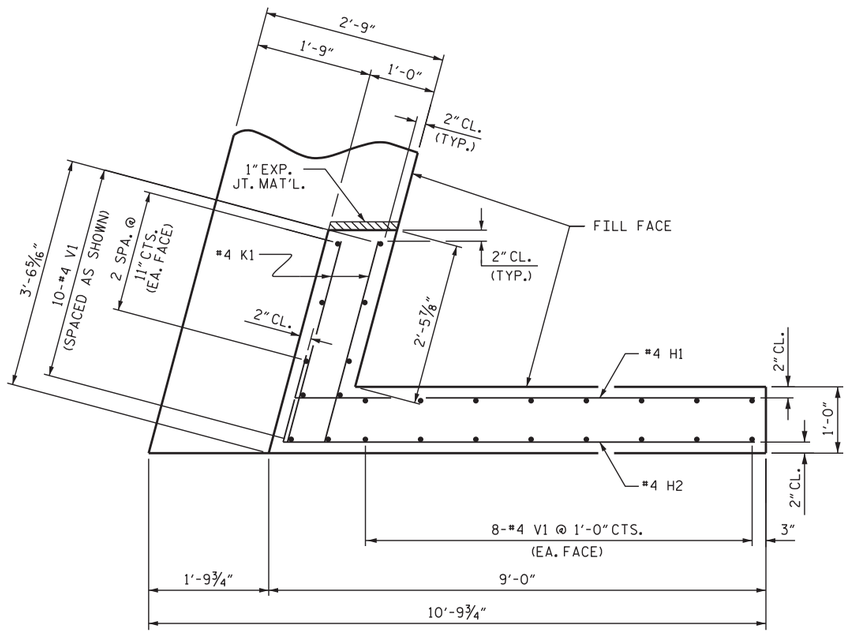
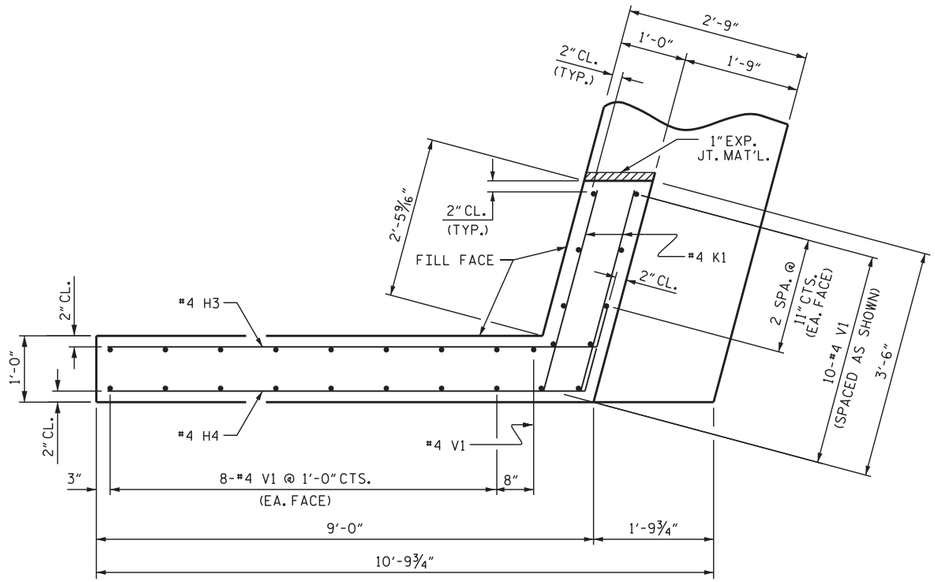
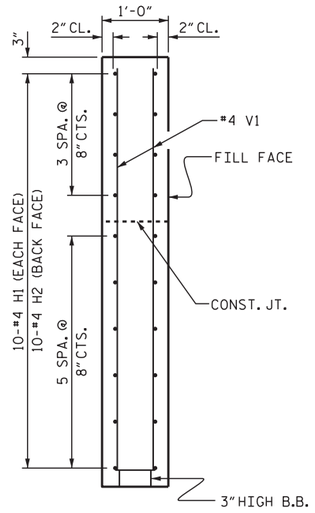
STD. NO. EB_33_105S4



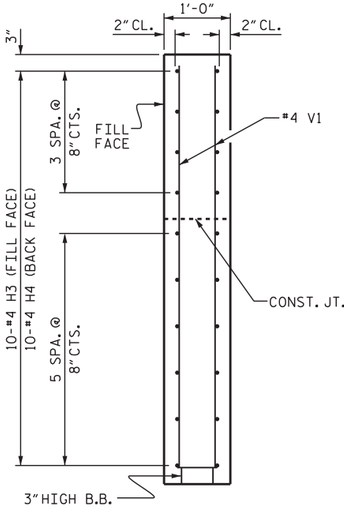
PLAN OF WING (W1)



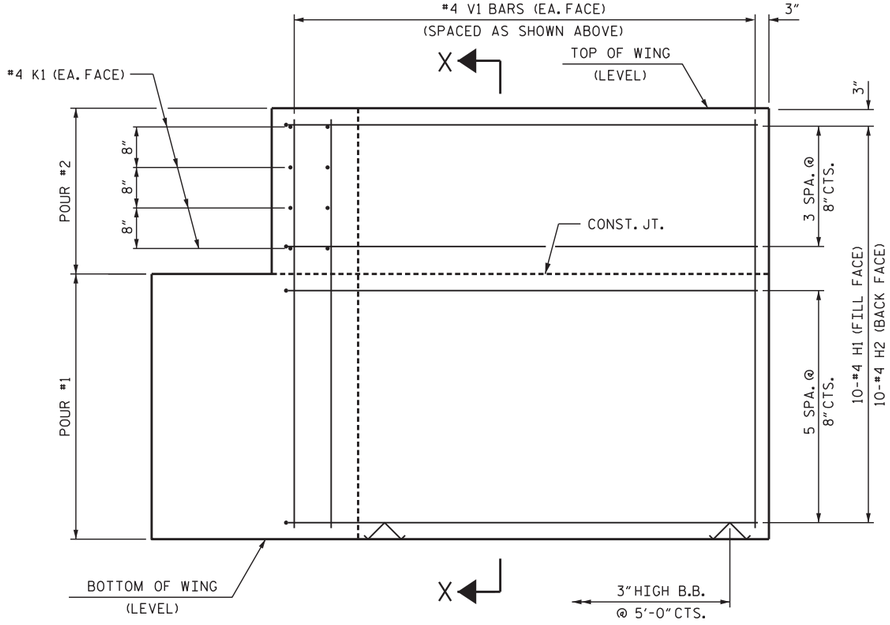
PLAN OF WING (W2)



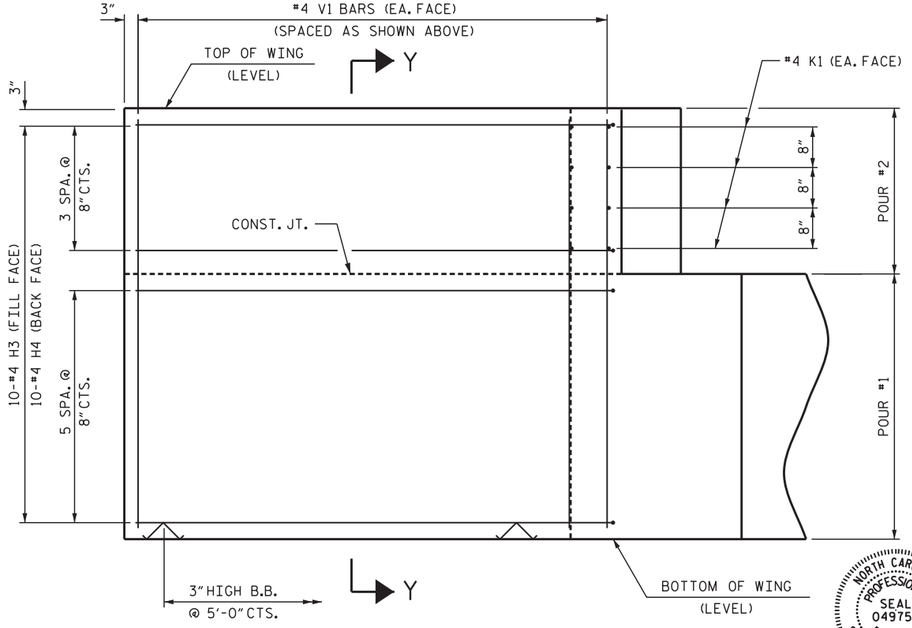
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY : Z.W.MAUNG	DATE : 1/2023		
CHECKED BY : K. PUROHIT, P.E.	DATE : 1/2024		
DRAWN BY : WJH 12/11	REV. 4/15	MAA/TMG	
CHECKED BY : AAC 12/11			

3/7/2025
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NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MCCARTER

DocuSigned by: Samuel Mccarter 90E550644BA74ED...
04/16/2025

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PROJECT NO. BR-0067
BUNCOMBE COUNTY
STATION: 12+06.50 -L-

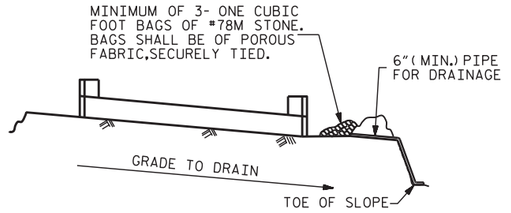
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			15

STD. NO. EB_33_105S4

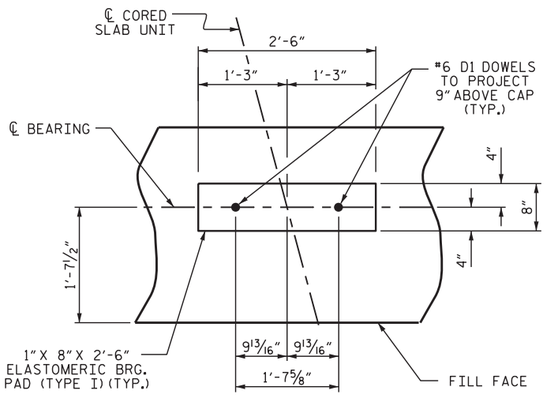


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

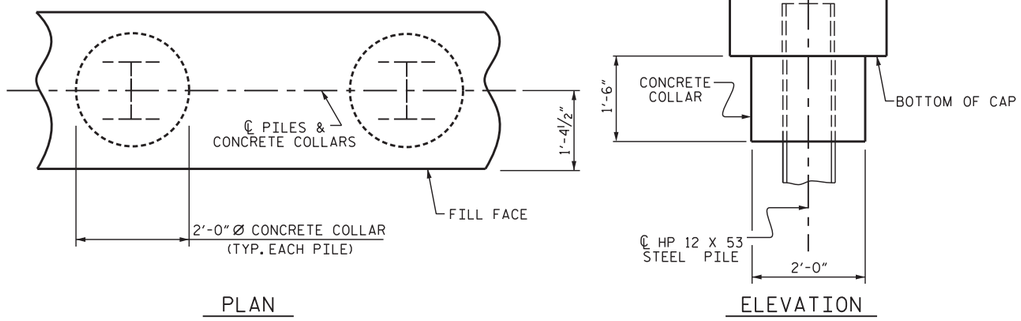
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

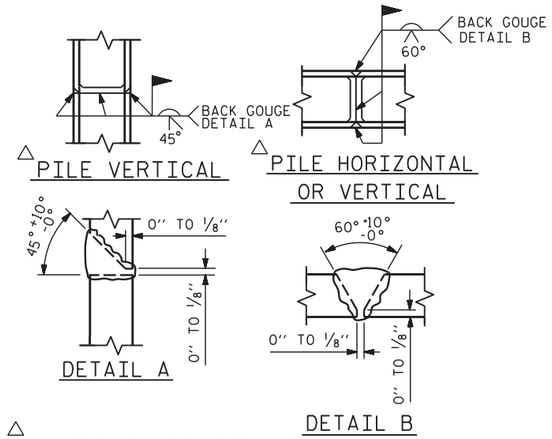
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PLAN ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

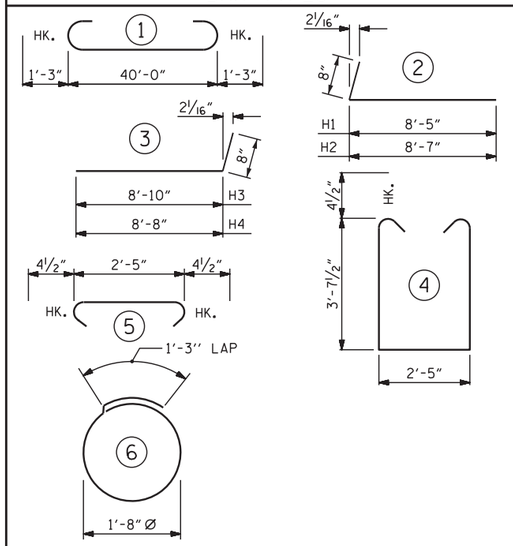
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 45	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 55
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	42'-6"	1156
B2	28	#4	STR	21'-4"	399
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	10	#4	2	9'-1"	61
H2	10	#4	2	9'-3"	62
H3	10	#4	3	9'-6"	63
H4	10	#4	3	9'-4"	62
K1	16	#4	STR	3'-1"	33
S1	52	#4	4	10'-5"	362
S2	52	#4	5	3'-2"	110
S3	28	#4	6	6'-6"	122
V1	53	#4	STR	6'-2"	218

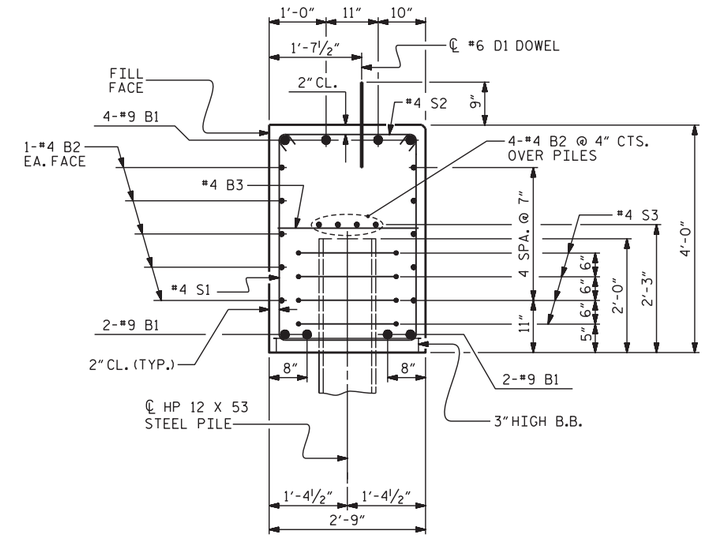
REINFORCING STEEL (FOR ONE END BENT) 2714 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 20.1 C.Y.

POUR #2 UPPER PART OF WINGS 2.3 C.Y.

TOTAL CLASS A CONCRETE 22.4 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGAHED

Docusigned by: Samuel Megahed 90E5556648A74ED...

04/16/2025

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PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : Z.W.MAUNG	DATE : 5/2023	
CHECKED BY : K. PUROHIT, P.E.	DATE : 1/2024	
DRAWN BY : WJH 12/11	REV. 4/17	MAA/THC
CHECKED BY : AAC 12/11		

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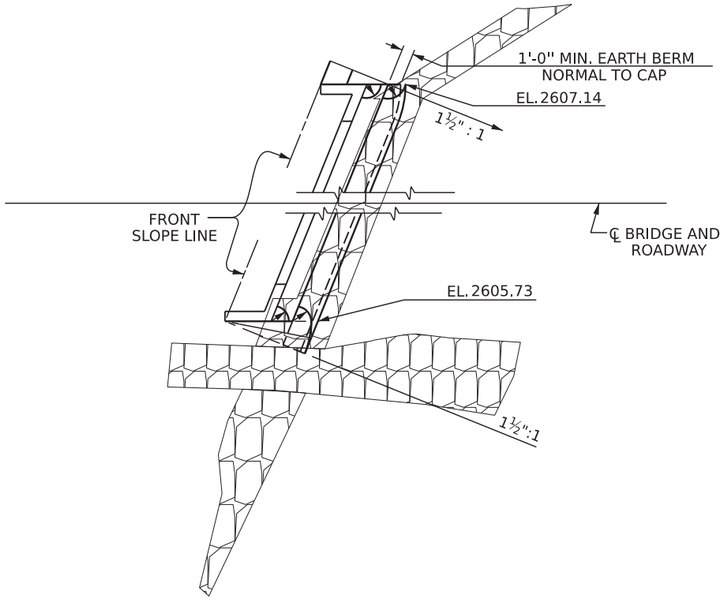
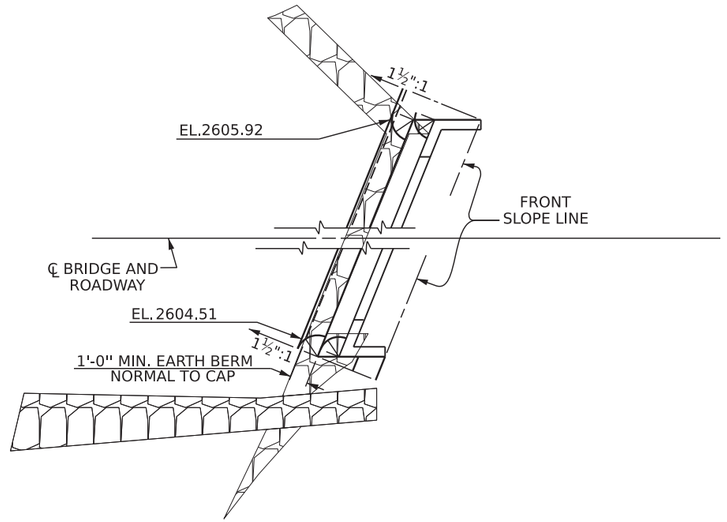
STD. NO. EB_33_105S4

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

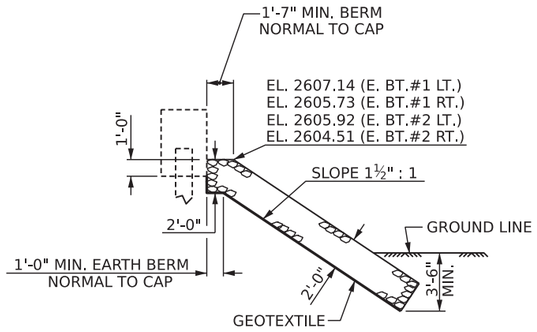


AT END BENT 1



AT END BENT 2

BERM RIP RAPPED



℄ SECTION

BERM RIP RAPPED

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+06.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	75	85
END BENT 2	55	60

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049759 ENGINEER SAMUEL N. MEGALED

DocuSigned by: Samuel Megaled 90E5556448B47AED
04/16/2025

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : Z. W. MAUNG DATE : 2/2024
CHECKED BY : K. PUROHIT, P.E. DATE : 2/2024

DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84

REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM
REV. 12/17 MAA/THC

3/7/2025
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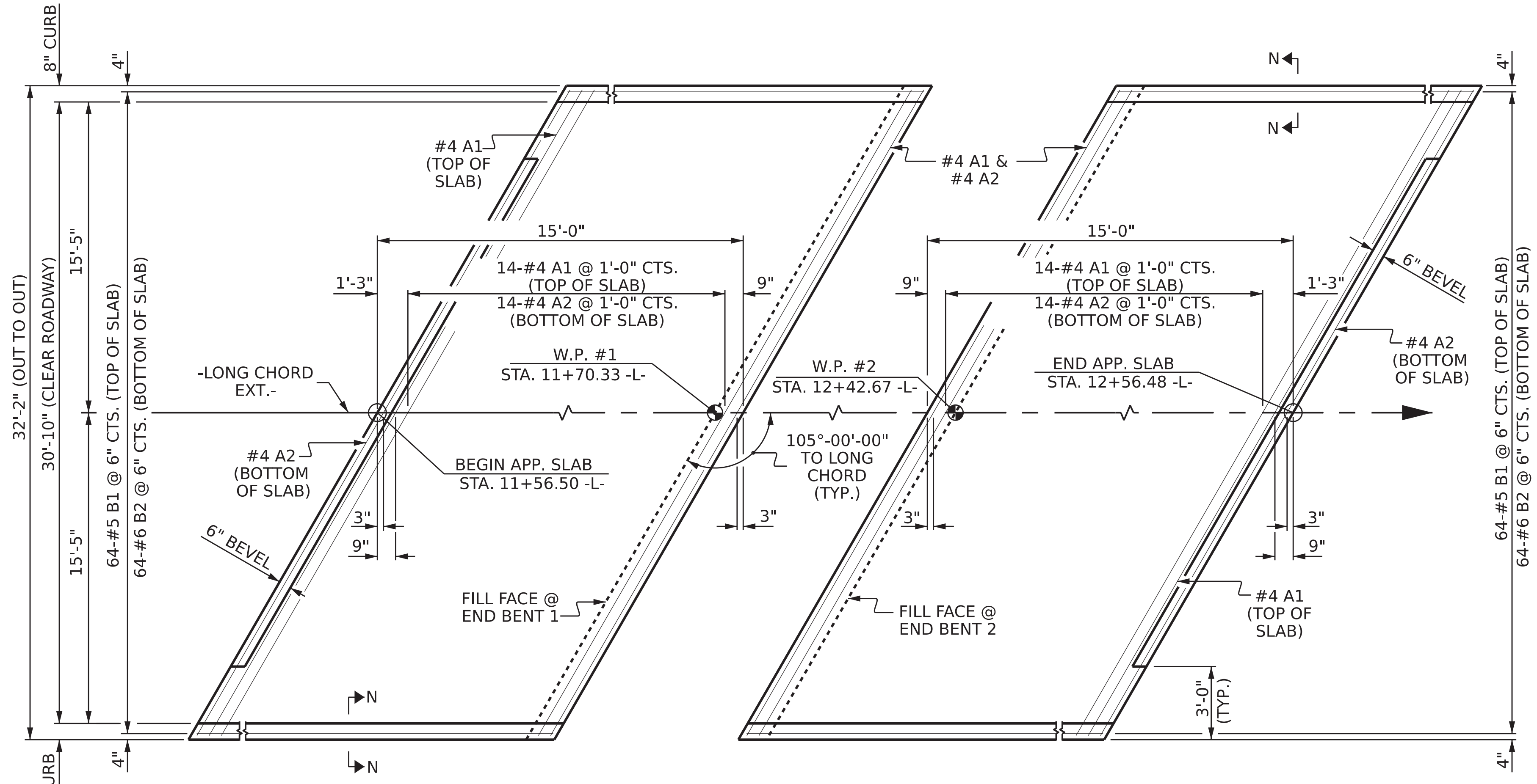
STD. NO. RR1 Sht. 3

8/26/21



PLAN @ END BENT 1

PLAN @ END BENT 2

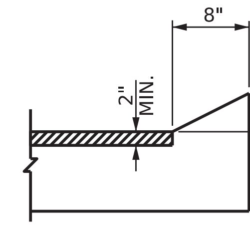
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

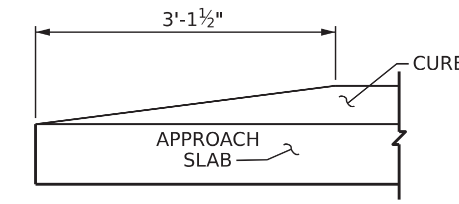
FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

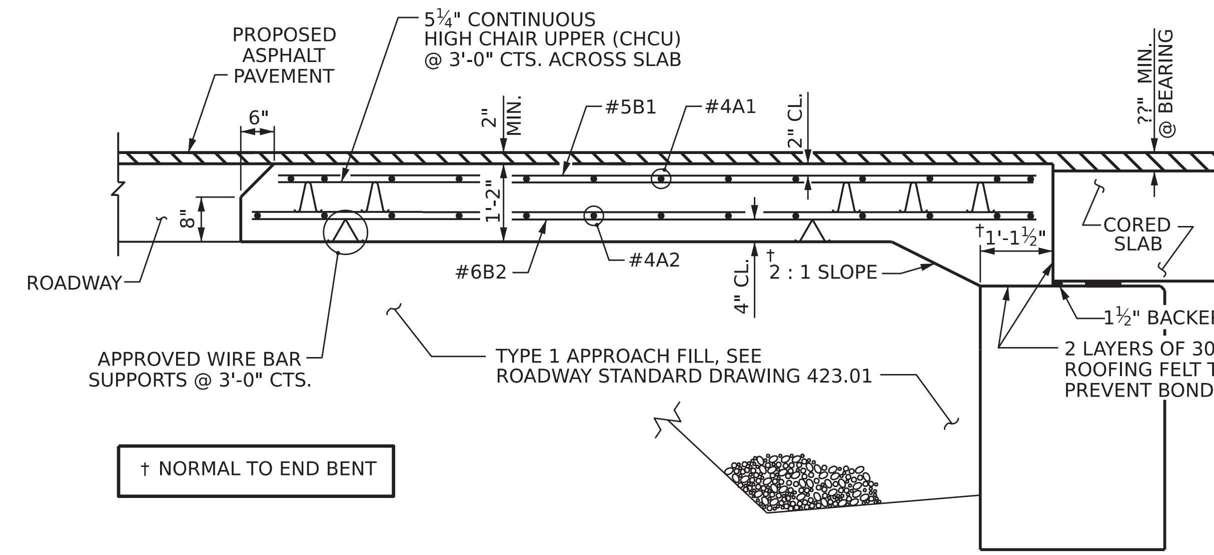
BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	32'-11"	352
A2	16	#4	STR	32'-11"	352
*B1	64	#5	STR	14'-1"	940
B2	64	#6	STR	14'-7"	1402
REINFORCING STEEL				LBS.	1754
* EPOXY COATED REINFORCING STEEL				LBS.	1292
CLASS AA CONCRETE				C. Y.	24.4

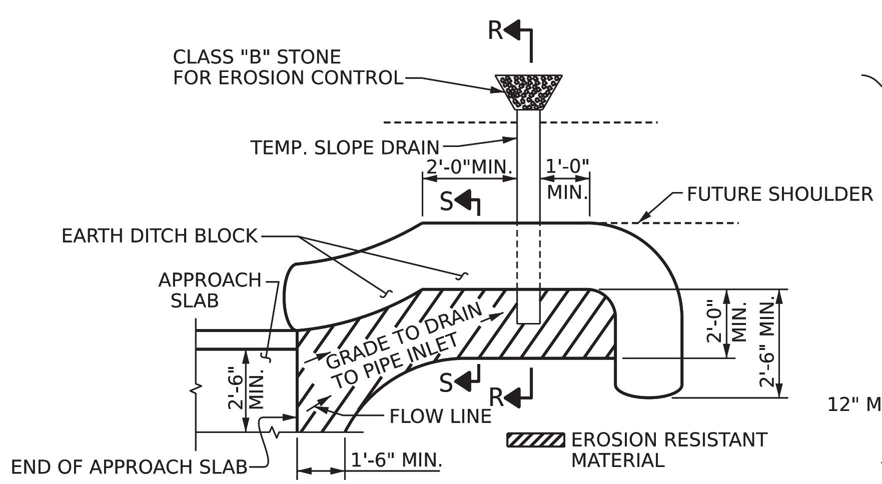
APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	32'-11"	352
A2	16	#4	STR	32'-11"	352
*B1	64	#5	STR	14'-1"	940
B2	64	#6	STR	14'-7"	1402
REINFORCING STEEL				LBS.	1754
* EPOXY COATED REINFORCING STEEL				LBS.	1292
CLASS AA CONCRETE				C. Y.	24.4



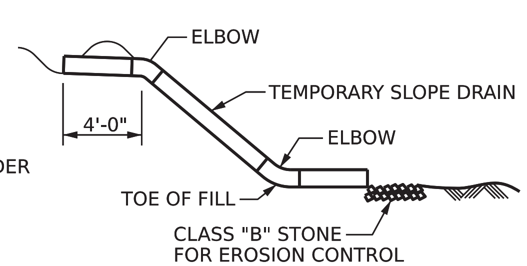
† NORMAL TO END BENT

SECTION THRU SLAB

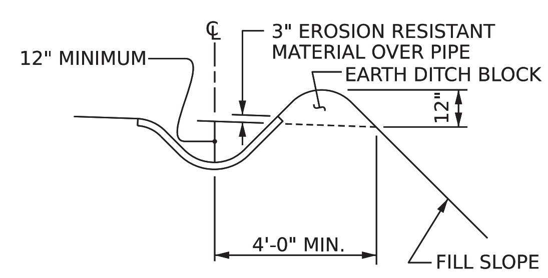


NOTE:
IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

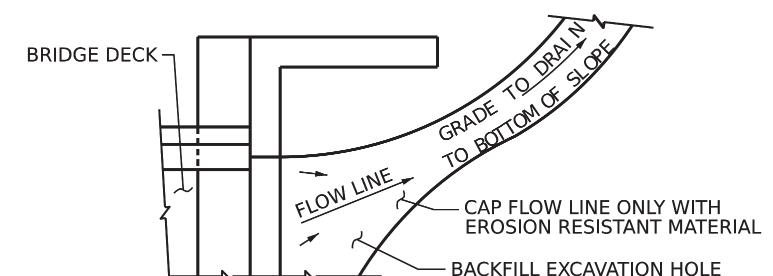
PLAN VIEW



SECTION R-R



SECTION S-S



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

SPLICE LENGTHS

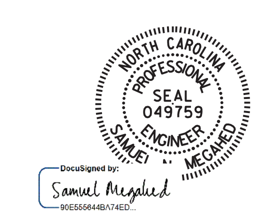
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

PROJECT NO. BR-0067

BUNCOMBE COUNTY

STATION: 12+06.50 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB

ASSEMBLED BY:	Z. W. MAUNG	DATE :	1/2024
CHECKED BY :	K. PUROHIT, P.E.	DATE :	1/2024
DRAWN BY : FCJ 6/87	REV. 12/17	MAA/THC	
CHECKED BY : EGA 6/87	REV. 06/19	BNB/THC	
	REV. 07/23	BNB/SNM	

3/11/2025
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zwmaung

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-15
1			3				TOTAL SHEETS
2			4				15

STD. NO. BAS3 Sht. 01b

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
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 A.A.S.H.T.O.
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 1½" 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 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 1/16 INCH 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.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC

4/16/2025
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