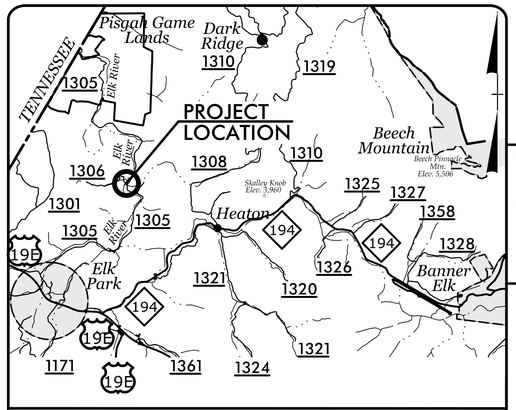
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09/08/99

TIP PROJECT: B–5835

CONTRACT: DK00424

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

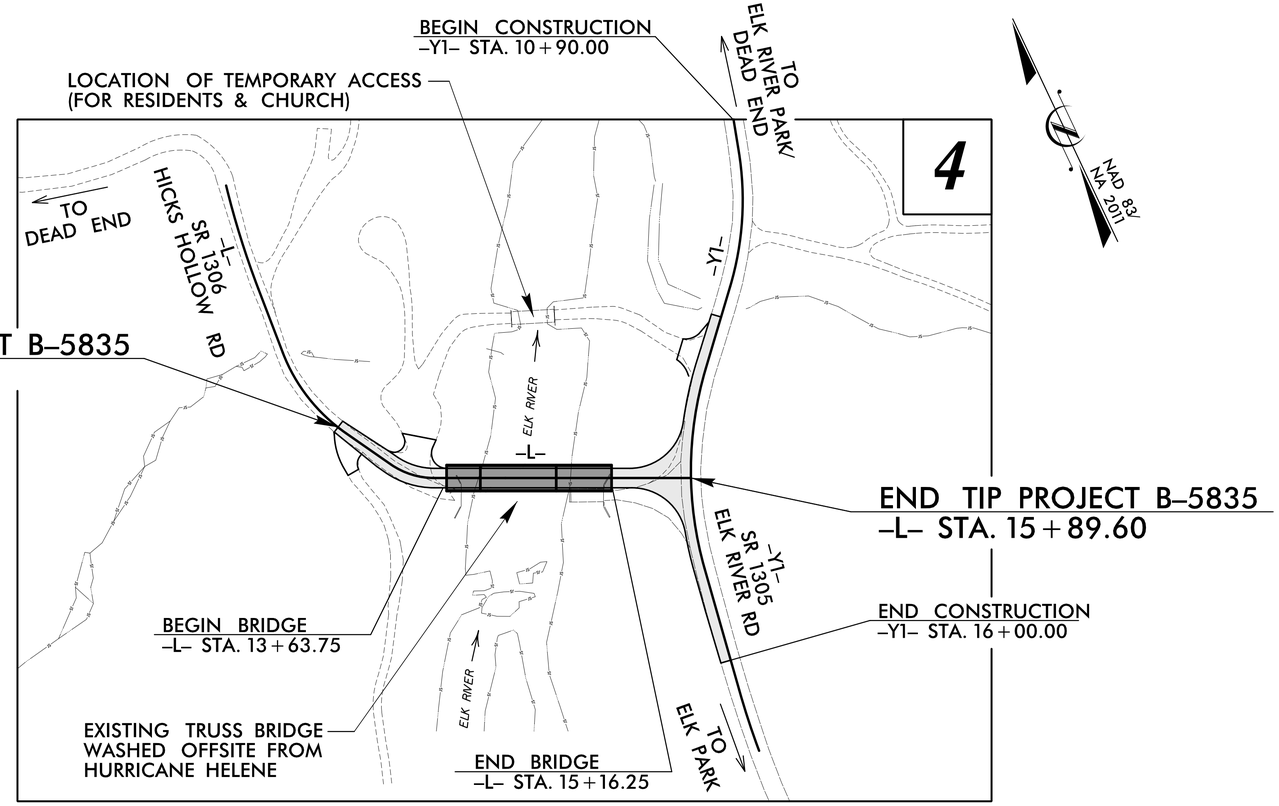
AVERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5835	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45788.1.2	N/A	PE
45788.2.1	BRZ–1306(030)	R/W
45788.2.2	N/A	UTIL.
45788.3.1	BRZ–1306(030)	CONST.

LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 30 15 0 30 60

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2025 = 120
ADT 2045 = 178
V = 20 MPH

FUNC CLASS = LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5835	=	*0.035 mile*
LENGTH STRUCTURES TIP PROJECT B–5835	=	*0.029 mile*
TOTAL LENGTH TIP PROJECT B–5835	=	*0.064 mile*

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
By:

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

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 2, 2024

LETTING DATE:
OCTOBER 16, 2025

V. MARCUS LOWERY, PE
PROJECT ENGINEER

OLIVIA L. PILKINGTON, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
9/17/2025
NORTH CAROLINA PROFESSIONAL SEAL 41420 ENGINEER CHRISTOPHER R. LEWIS P.E.
Signed by:
SIGNATURE:

ROADWAY DESIGN ENGINEER
9/16/2025
NORTH CAROLINA PROFESSIONAL SEAL 027418 ENGINEER V. MARCUS LOWERY P.E.
DocuSigned by:
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/16/2025
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PROJECT REFERENCE NO.	SHEET NO.
B-5835	1A

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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027418 MARCUS LOWERY
2/5/2025

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A–1 THRU 2A–5	PAVEMENT SCHEDULE, TYPICAL SECTIONS, DETAIL SHOWING METHOD OF WEDGING, DETAIL FOR SHOULDER BERM GUTTER, & AGGREGATE SUBGRADE DETAIL
2C–1	TYPE III – SHOP CURVED STRUCTURE ANCHOR UNIT
3B–1	ROADWAY SUMMARIES
3D–1 THRU 3D–2	DRAINAGE SUMMARY
3G–1	GEOTECHNICAL SUMMARIES
04	PLAN SHEET
05	PROFILE SHEET
RW–01 THRU RW–04	SURVEY CONTROL AND RIGHT–OF–WAY SHEETS
TMP–1 THRU TMP–4	TRANSPORTATION MANAGEMENT PLANS
PMP–1 THRU PMP–2	PAVEMENT MARKING PLANS
EC–01 THRU EC–05	EROSION CONTROL PLANS
SIGN–1 THRU SIGN–3	SIGNING PLANS
UO–1 THRU UO–2	UTILITIES BY OTHERS PLANS
X–1A	CROSS SECTION EARTHWORK VOLUME SUMMARY
X–1 THRU X–17	CROSS SECTIONS
S–1 THRU S–29	STRUCTURE PLANS
W–1 THRU W–2	RETAINING WALL 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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Power (Mountain Electric); Telecom (AT&T)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT–OF–WAY MARKERS:

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

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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 – MAJOR STRUCTURES	
423.01	Bridge Approach Fills – Type 1 Approach Fill for Bridge Abutment
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
806.01	Concrete Right–of–Way Marker
806.02	Granite Right–of–Way Marker
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.27	Brick Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.66	Drainage Structure Steps
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.04	Street Turnout
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

2/5/2025
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9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
B-5835	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE – LOS B)* — 2UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

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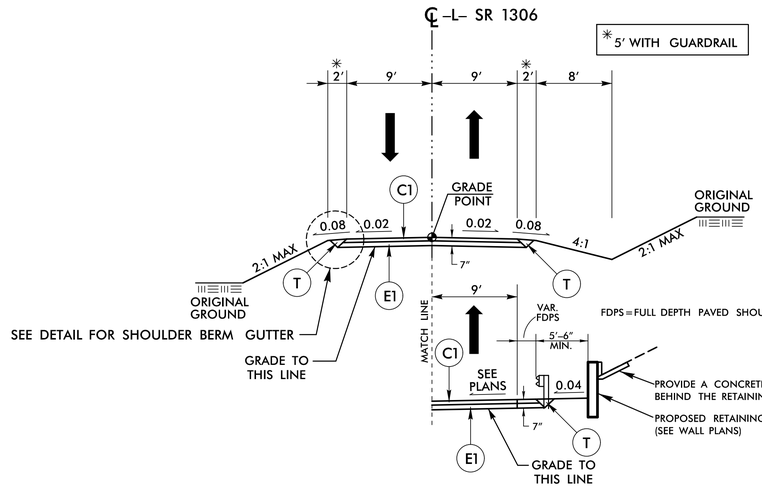
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PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN DATED MAY 13,2024)

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
L	CLASS IV SUBGRADE STABILIZATION
N	GEOTEXTILE FOR SUBGRADE STABILIZATION FOR AGGREGATE SUBGRADE
R	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING BITUMINOUS PAVEMENT. 3″ DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-1)

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

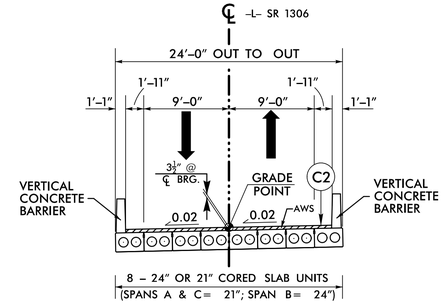


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

FROM –L– STA. 12+50.00 TO 13+63.75 (BEGIN BRIDGE)
FROM –L– STA. 15+16.25 (END BRIDGE) TO 15+89.60

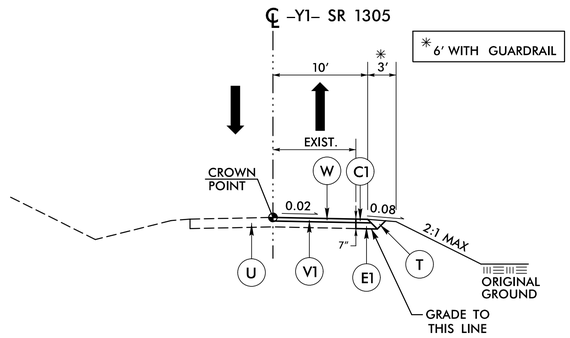
NOTE: FULL DEPTH PAVEMENT TO THE FACE OF THE GUARDRAIL



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:

FROM –L– STA. 13+63.75 (BEGIN BRIDGE) TO 15+16.25 (END BRIDGE)
NOTE: SEE STRUCTURE PLANS FOR BRIDGE CONSTRUCTION DETAILS INCLUDING BARRIER RAIL HEIGHT AND ASPHALT THICKNESS DIMENSIONS



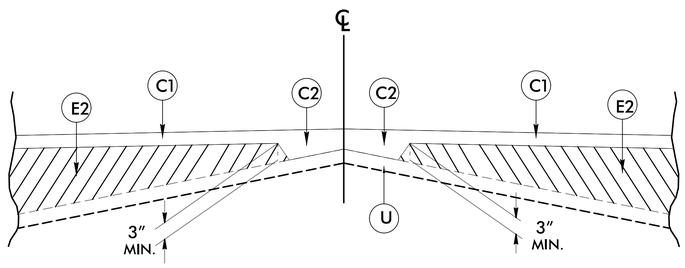
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:

FROM –Y1– STA. 12+75.00 TO 16+00.00

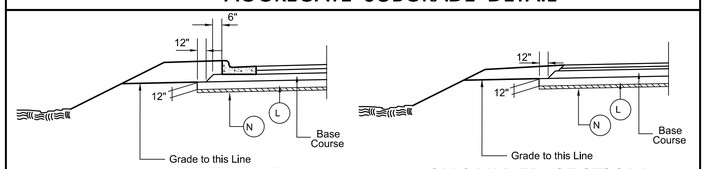
RIGHT SIDE ONLY
(MILLING, WEDGING, WIDENING)

NOTE: FULL DEPTH PAVEMENT TO THE FACE OF THE GUARDRAIL



Detail Showing Method of Wedging (W)

AGGREGATE SUBGRADE DETAIL



CURB & GUTTER SECTION SHOULDER SECTION

SEE SHEET 3G–1 "SUMMARY OF AGGREGATE SUBGRADE" TABLE FOR PERTINENT ALIGNMENTS AND STATIONS OR CONTINGENCIES

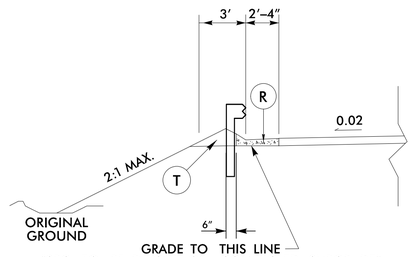
TYPICAL SECTION NO. 1A

USE FOR RETAINING WALL:

FROM –L– STA. 12+90.00 TO 13+30.00

DETAIL FOR SHOULDER BERM GUTTER

SEE CORRESPONDING TYPICAL SECTION FOR PAVEMENT DESIGN.
SEE TYPICAL SECTIONS AND PLANS FOR ACTUAL DIMENSIONS.



"SBG TO BE PLACED ON COMPACTED SUBGRADE"

LINE	STATIONS
–L–	15+27.13 to 15+45.00 LT

PROJECT REFERENCE NO.	SHEET NO.
B-5835	2A-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 027418 ENGINEER MARCUS LOWERY
2/3/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER PAMMIE A. SHAW
2/3/2025

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

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PROJECT REFERENCE NO.	SHEET NO.
B-5835	2C-1

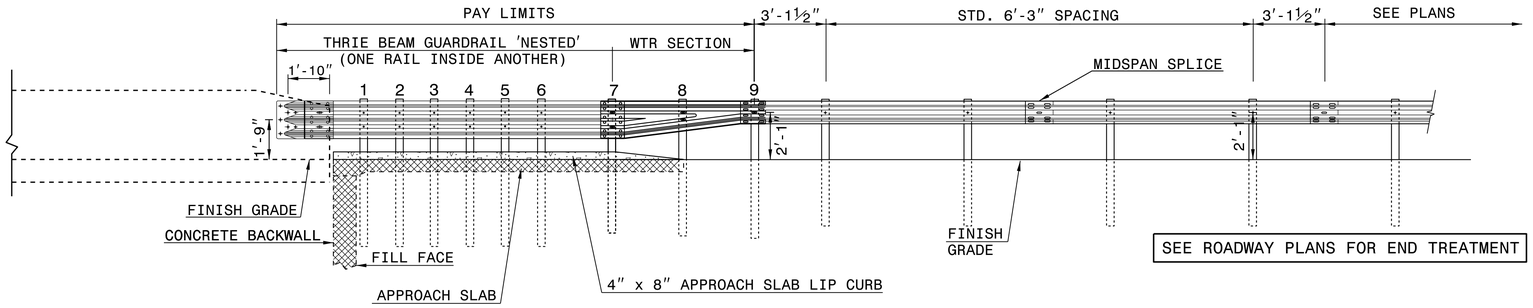
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

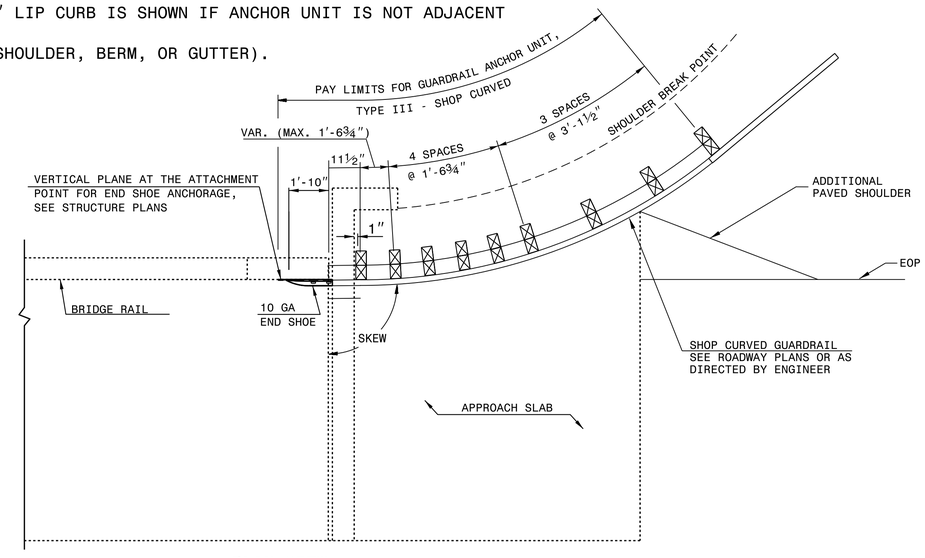
SHEET 1 OF 1

TYPE III SC



ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
  -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
  -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
  -USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
  -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  -SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

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

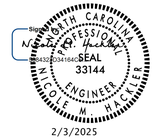
ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



2/3/2025

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: \jhowerton\guardrail\31inguardrail\typeiiisc.dgn

01-FEB-2018 09:09
S:\Contracts\Contracts\Special Details\jhowerton\Guardrail\31 inch Guardrail\type_iii_sc.dgn
jhowerton AT CSD-292595

12/06/07

COMPUTED BY: PAS DATE: 13 DEC 2018
CHECKED BY: VML DATE: 07 NOV 2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5835	3B-1

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
–L– 12 + 50.00 TO 13 + 63.75 (BEGIN BRIDGE)	107		5		102
–L– 15 + 16.25 (END BRIDGE) TO 15 + 79.60	77		176	99	
–Y1– 12 + 75.00 TO 16 + 00.00	2		68	66	
SUBTOTAL	186		249	165	102
MATERIAL FOR SHOULDER CONSTRUCTION			9	9	
LOSS DUE TO CLEARING & GRUBBING	–50			50	
ADDITIONAL UNDERCUT					
WASTE IN LIEU OF BORROW				–102	–102
PROJECT TOTAL	136		258	122	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				6	
GRAND TOTAL	136		258	128	
SAY	150			150	

ESTIMATED DDE = 15 CY

PER GEOTECHNICAL RECOMMENDATIONS:
ESTIMATED UNDERCUT = 450 CY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
SELECT GRANULAR MATERIAL = 400 CY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
SEE GEOTECHNICAL SUMMARY SHEET 3G–1 FOR ADDITIONAL ITEMS.

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	LENGTH (LF)
–L–	15 + 27.13	15 + 45.00	LT	17.87
			TOTAL:	17.87
			SAY:	18

PAVEMENT REMOVAL SUMMARY
IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
–L–	15 + 08	15 + 89	CL/RT	206.78
			TOTAL:	206.78
			SAY:	210

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

GUARDRAIL SUMMARY

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 TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE GREU, TL-2				TYPE III	AT-1	CAT-1			EA	G	NG				
–L–	12 + 85.27	13 + 63.75	RT		81.25′		12 + 85.27		1′–11″	VAR.	25′		0.5′		1				1										R = 81′
–L–	13 + 53.29	13 + 63.75	LT		31.25′			13 + 63.75	1′–11″	VAR.		4′								1									R = 12′ SHOP CURVED TYPE III
–L–	15 + 16.25	–Y1– 15 + 11.93	RT	12.5′	106.25′			15 + 16.25	1′–11″	VAR.		25′		0.5′	1				1									R = 47′
–L–	15 + 16.25	–Y1– 13 + 40.12	LT	12.5′	106.25′		–Y1– 13 + 40.12		1′–11″	VAR.	25′		0.5′		1				1										R = 47.5′
–L–	12 + 83.46	13 + 20.39	RT (DRIVE)		43.75′		13 + 20.39		2′	VAR.	25′		0.5′		1						1								R = 25′
		SUBTOTAL (LF)		25′	368.75′								TOTAL ANCHORS OR ATTENUATORS (EA)		4				3	1	1								
		LESS ANCHORS (LF)			168.75′								ANCHOR UNIT LENGTH (LF)		25′				18.75′	6.25′	6.25′								
		TOTAL GUARDRAIL (LF)		25′	200′								DEDUCTION PER TYPE (LF)		100′				56.25′	6.25′	6.25′								
		SAY GUARDRAIL (LF)		25′	200′		ADDITIONAL GUARDRAIL POSTS: SAY 10 EA						TOTAL DEDUCTION (LF)		168.75′														

(C) 2025
(c:\projects\NCDOT\B-5835\Roadway\Proj\b5835_rdy_psh_3b-1.dgn)
User:TIMOAH1

TGSLITV1014

COMPUTED BY: CRL DATE: 1/13/2025

CHECKED BY: BJH DATE: 1/13/2025

PROJECT NO.	SHEET NO.
B-5835	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 | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | Drainage Pipe THICKNESS OR GAUGE: DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | 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 | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | 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 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | SPRING BOX STD. 840.41 | 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. | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | 36" C.S. ELBOW | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: DMM DATE: 10/30/2024
CHECKED BY: DCE DATE: 10/30/2024 CORRECTED 11/7/24 BY DCE

(9-17-24)

PROJECT NO.	SHEET NO.
B-5835	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 GEOTEXTILE FOR SUBGRADE STABILIZATION

LINE	Station	Station	Geotextile for Subgrade Stabilization SY
CONTINGENCY			
		TOTAL SY:	0*

*Total square yards of "Geotextile for Subgrade Stabilization" is only the estimated quantity for subgrades and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

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

Docusign Envelope ID: 21965B6D-213D-403C-A7EB-45D8028D92EB

PROJECT REFERENCE NO.	SHEET NO.
B-5835	04
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 027418 ENGINEER MARCUS LOWERY
2/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 41420 ENGINEER CHRISTOPHER R. LOWE
2/3/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

8/17/99

REVISIONS

NAD 83 NA 2011

DETAIL 1
LATERAL BASE DITCH
(Not to Scale)

Min. D = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

FROM –L– STA. 15+20 TO STA. 15+30 LT

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)

Min. D = 1.0 Ft.
B = 2.0 Ft.

FROM –L– STA. 14+85 TO STA. 15+20 LT

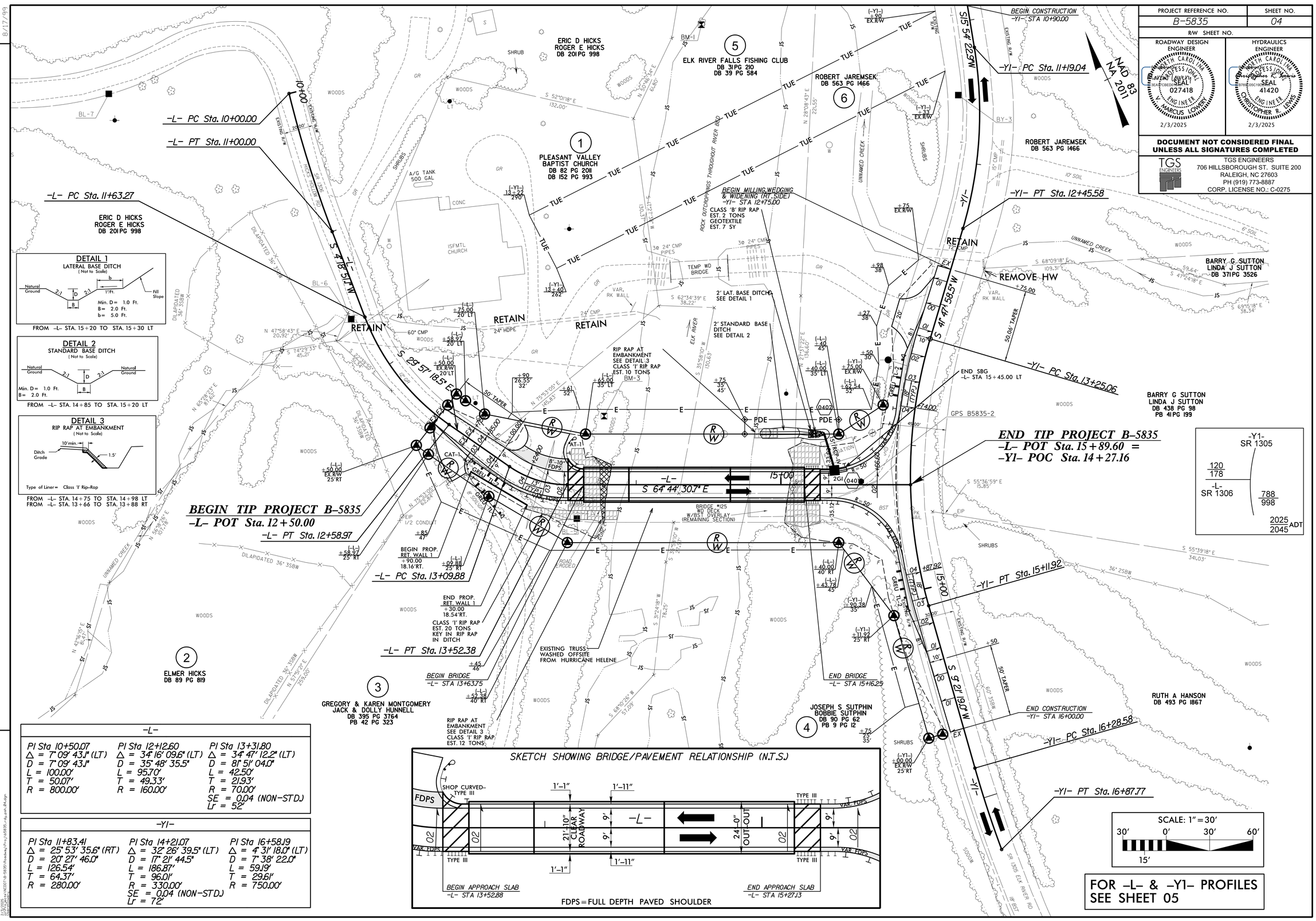
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = Class 'I' Rip-Rap

FROM –L– STA. 14+75 TO STA. 14+98 LT
FROM –L– STA. 13+66 TO STA. 13+88 RT

–L–		
PI Sta 10+50.07	PI Sta 12+12.60	PI Sta 13+31.80
△ = 7° 09' 43.1" (LT)	△ = 34° 16' 09.6" (LT)	△ = 34° 47' 12.2" (LT)
D = 7° 09' 43.1"	D = 35° 48' 35.5"	D = 81° 51' 04.0"
L = 100.00'	L = 95.70'	L = 42.50'
T = 50.07'	T = 49.33'	T = 21.93'
R = 800.00'	R = 160.00'	R = 70.00'
		SE = 0.04 (NON-STD.)
		Lr = 52'

–Y1–		
PI Sta 11+83.41	PI Sta 14+21.07	PI Sta 16+58.19
△ = 25° 53' 35.6" (RT)	△ = 32° 26' 39.5" (LT)	△ = 4° 31' 18.0" (LT)
D = 20° 27' 46.0"	D = 17° 21' 44.5"	D = 7° 38' 22.0"
L = 126.54'	L = 186.87'	L = 59.19'
T = 64.37'	T = 96.01'	T = 29.61'
R = 280.00'	R = 330.00'	R = 750.00'
	SE = 0.04 (NON-STD.)	
	Lr = 72'	



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP (N.T.S.)

FDPS = FULL DEPTH PAVED SHOULDER

2/3/2025
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5/28/99

–L–
SR 1306

PROPOSED 3–SPAN CORED SLAB BRIDGE
152.5' X 24' (90^SKEW; STA 14+40.00 –L–)

PI = 13+45.00
EL = 2,833.65'
VC = 40'
K = 4
V < 15 MPH

BEGIN GRADE
–L– STA. 12+75.00
ELEV=2842.67'

BEGIN BRIDGE
–L– STA. 13+63.75

EXISTING TRUSS NO LONGER IN–PLACE
WASHED OFFSITE DUE TO HURRICANE HELENE

EXISTING TIMBER DECK /STEEL I–BEAM
REMAINS

END BRIDGE
–L– STA. 15+16.25

END GRADE
–L– STA. 15+79.60=
–Y1– STA. 14+26.96
(10 RT)
ELEV=2829.35'

(–)12.8857%

(–)1.8329%

(–)4.0000%

(+) 3.9180%

EXCAVATION TO ELEV. 2823.5'
(STRUCTURES PAY ITEM)

CLASS II RIP RAP
KEY–IN 3.5' (TYP.)

CL 'II' RIP–RAP

MAINTAIN EXISTING GRADE
–L– STA 12+50
TO STA 12+75

APPROX. W.S. ELEV. ON
MAY 7, 2020

–L– STA.15+89.60=
–Y1– STA.14+27.16
ELEV=2828.95

END 2' LAT. BASE DITCH
–L– STA.15+30.00 LT
ELEV.=2821.76 LT

BEGIN 2' STANDARD BASE
DITCH
–L– STA.14+85.80 LT
ELEV.=2820.03'

END 2' STANDARD BASE DITCH
BEGIN 2' LAT. BASE DITCH
–L– STA.15+20.00 LT
ELEV.=2821.37'

BM3 ELEVATION = 2830.12'
N 897638 E 1125284
–L– STA. 13+78 47 LT.
RR SPIKE IN 24" OAK

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5800	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2823.6	FT
BASE DISCHARGE	=	8000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2825.2	FT
OVERTOPPING DISCHARGE	=	15000+	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	2829.0*	FT
* LOW POINT AT –L– AND –Y1– INTERSECTION			
	=		FT
DATE OF SURVEY	=	MAY 7,2020	
W.S.ELEVATION AT DATE OF SURVEY	=	2816.0	FT

FOR –L– PLAN SEE SHEET 04

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

EXISTING GROUND
PROPOSED GRADE
LEFT DITCH GRADE
RIGHT DITCH GRADE

PROJECT REFERENCE NO.	SHEET NO.
B-5835	05

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 027418 ENGINEER MARCUS LOWERY
2/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 41420 ENGINEER CHRISTOPHER R. LEWIS
2/3/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y1–
SR 1305

MAINTAIN EXISTING GRADE AT CROWN POINT
MILLING,WEDGING,& WIDENING
(RIGHT SIDE ONLY)
–Y1– STA 12+75 TO 16+00

SR 1306
(HICKS HOLLOW RD)

FOR –Y1– PLAN SEE SHEET 04

1/2/2025
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User:jlowery

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09/08/99

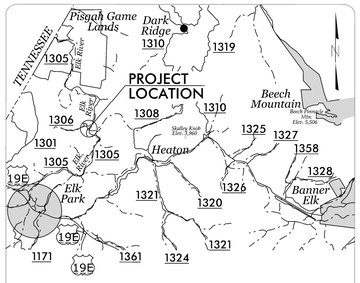
TIP PROJECT: B5835

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B5835	RW01	7

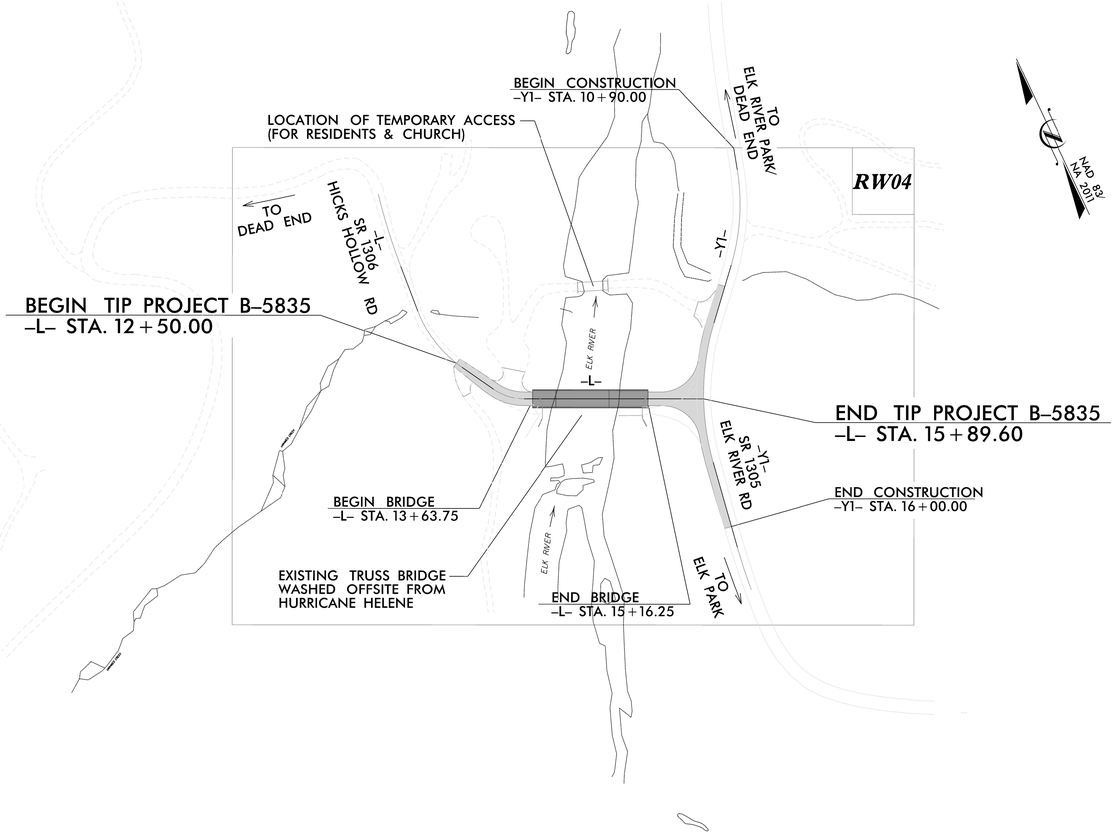
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

AVERY COUNTY



VICINITY MAP



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

100' 50' 0' 100' 200'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT GPS B5835-2
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 897521.1998(ft) EASTING: 1125425.0966(ft)
ELEVATION: 2828.8631(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998736060
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

WSP USA Inc.
1001 WADE AVE
SUITE 400
RALEIGH, NC 27605
TEL: 919.836.4040
WWW.WSP.COM

2024 STANDARD SPECIFICATIONS

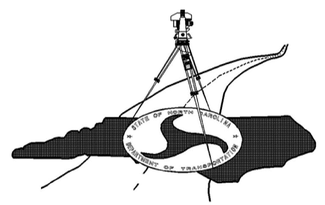
RIGHT OF WAY DATE: DECEMBER 2, 2024

LETTING DATE: MARCH 20, 2025

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L–5617 LAND SURVEYOR SARAH J. VINCENT

DocuSigned by: Sarah Vincent 1/24/25
–860541788A5848A...
SIGNATURE: *DATE:*

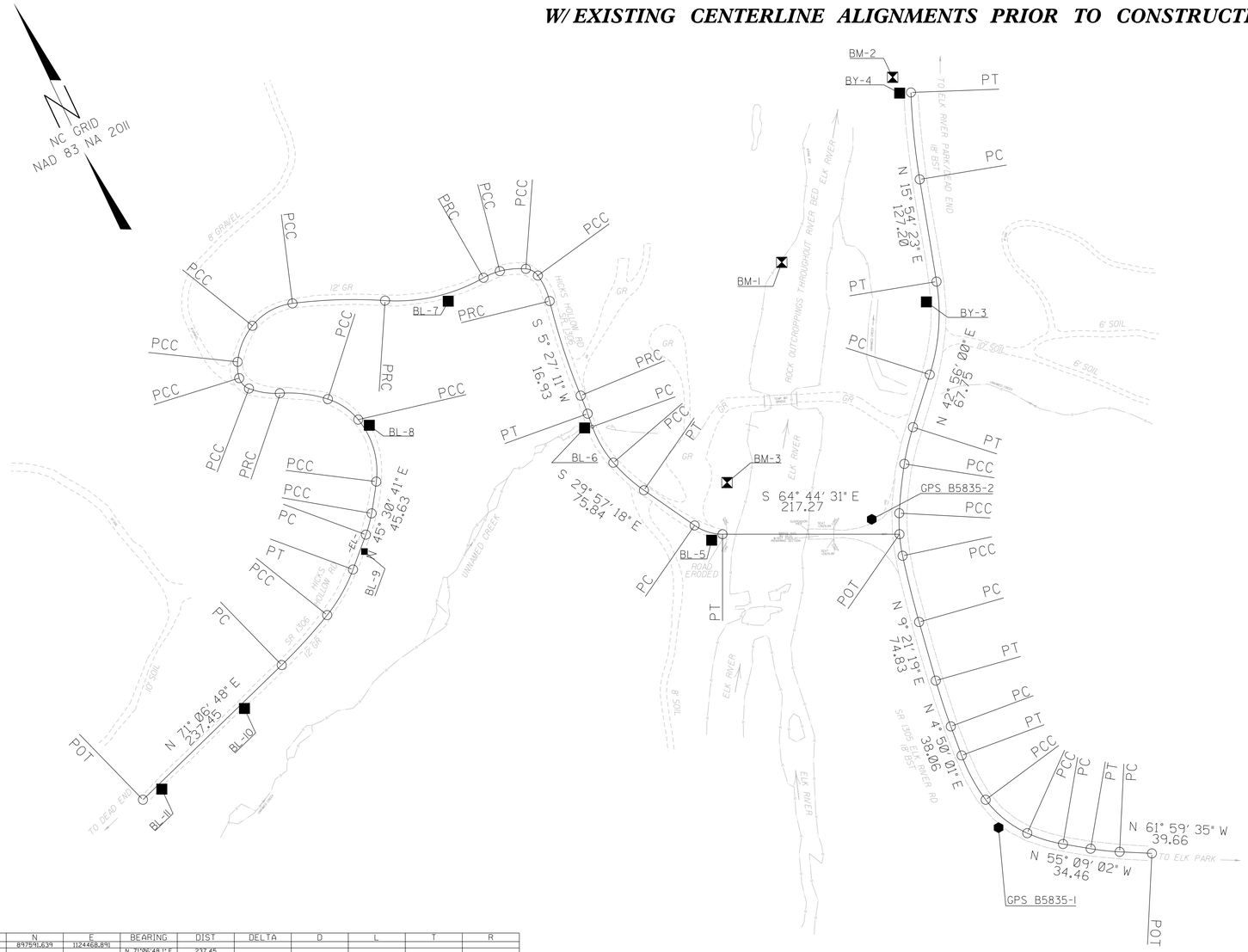


6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
B-5835	RW02C-1

Location and Surveys

DIV 11 NORTH WILKESBORO
LOCATION & SURVEYS

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4301 LAND SURVEYOR R. LANDON WAGONER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, R. LANDON WAGONER, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: SEPTEMBER-OCTOBER 2016
Datum/Epoch:NAD 83/2011
Published/Fixed-control use:
Localized around: B-5835-2
Northing:897521.1998
Easting:1125425.0966
Combined grid factor:0.9998736060
Geoid model:GEOID12NC
Units:SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from SEPTEMBER to OCTOBER , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 14TH day of JANUARY, 2025.

Signed by: R. Landon Wagoner 5606613FD30420...

Professional Land Surveyor L-4301

BL

POINT	DESC.	NORTH	EAST	ELEVATION
11	BL-11	897593.5126	1124495.3516	3019.69
10	BL-10	897639.7787	1124629.3700	3011.87
9	BL-9	897751.2034	1124844.8669	2975.26
8	BL-8	897888.8716	1124916.4156	2962.40
7	BL-7	897985.2915	1125069.8549	2900.71
6	BL-6	897773.8727	1125154.1523	2850.28
5	BL-5	897581.8591	1125236.3698	2833.09
2	B5835-GPS2	897521.1998	1125425.0966	2828.86

BY

POINT	DESC.	NORTH	EAST	ELEVATION
1	B5835-GPS1	897112.3885	1125404.3903	2853.68
2	B5835-GPS2	897521.1998	1125425.0966	2828.86
3	BY-3	897733.9791	1125599.6927	2830.30
4	BY-4	897979.9543	1125679.3832	2847.83

BM1 ELEVATION = 2818.50
N 897854 E 1125468
RR SPIKE IN 24" SYCAMORE

BM2 ELEVATION = 2843.17
N 898021 E 1125680
RR SPIKE IN 48" WHITE OAK

BM3 ELEVATION = 2830.12
N 897638 E 1125284
RR SPIKE IN 24" OAK

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	897591.639	1124468.891							
LINE			N 71°06'48.1" E	237.45					
PC	897668.581	1124693.557							
CURVE	897700.157	1124778.225	N 67°33'52.8" E	82.95	07°05'52.2"(LT)	08°33'05.8"	83.00	41.55	670.00
PCC									
CURVE	897737.252	1124822.753	N 54°45'48.3" E	64.31	18°30'15.1"(LT)	28°38'52.4"	64.59	32.58	200.00
PT									
LINE	897769.235	1124855.303	N 45°30'40.8" E	45.63					
PC									
CURVE	897789.867	1124872.821	N 40°28'05.9" E	27.07	10°21'09.8"(LT)	38°11'43.9"	27.10	13.59	150.00
PCC									
CURVE	897822.663	1124894.732	N 33°44'45.8" E	39.44	02°49'30.2"(LT)	07°09'43.1"	39.45	19.73	800.00
PCC									
CURVE	897900.987	1124907.103	N 28°58'31.9" E	79.29	46°42'57.6"(LT)	57°17'44.8"	81.53	43.19	100.00
PCC									
CURVE	897935.658	1124884.143	N 30°42'16.8" W	44.97	32°38'35.8"(LT)	71°37'11.0"	45.58	23.43	80.00
PCC									
CURVE	897971.385	1124833.879	N 57°43'56.9" W	59.44	21°24'35.6"(LT)	35°48'35.5"	59.79	30.25	160.00
PCC									
CURVE	897992.736	1124882.853	N 56°08'40.9" W	38.32	24°35'10.8"(RT)	63°39'43.1"	38.62	19.61	90.00
PCC									
CURVE	898009.389	1124796.672	N 17°54'21.2" W	17.50	51°53'28.5"(RT)	286°28'44.0"	18.11	9.73	20.00
PCC									
CURVE	898028.336	1124803.436	N 19°38'46.7" E	20.12	23°12'47.3"(RT)	114°35'29.6"	20.26	10.27	50.00
PCC									
CURVE	898068.686	1124838.781	N 47°36'14.8" E	47.86	32°42'04.1"(RT)	67°24'24.5"	48.52	24.94	85.00
PCC									
CURVE	898064.510	1124895.811	N 86°01'35.2" E	56.37	44°08'35.7"(RT)	76°23'35.7"	57.78	30.41	75.00
PCC									
CURVE	898019.186	1124999.252	S 66°27'48.1" E	113.78	10°52'25.7"(RT)	09°32'57.5"	113.87	57.11	600.00
PCC									
CURVE	897992.880	1125128.513	S 77°47'45.9" E	124.67	33°32'21.2"(LT)	26°38'57.1"	125.85	64.79	215.00
PCC									
CURVE	897991.670	1125142.116	S 86°47'37.7" E	21.64	15°32'37.5"(RT)	71°37'11.0"	21.70	10.92	80.00
PCC									
CURVE	897988.557	1125172.268	S 69°46'45.3" E	32.12	18°29'07.4"(RT)	57°17'44.8"	32.26	16.27	100.00
PCC									
CURVE	897966.846	1125182.878	S 35°35'15.7" E	16.87	49°53'51.8"(RT)	286°28'44.1"	17.42	9.38	20.00
PCC									
CURVE	897932.324	1125181.826	S 00°25'07.2" W	34.52	22°06'54.8"(RT)	63°39'43.1"	34.74	17.59	90.00
PCC									
CURVE	897811.118	1125166.733	S 07°05'51.9" W	122.15	08°45'24.6"(LT)	07°09'43.1"	122.27	61.25	800.00
PCC									
CURVE	897787.317	1125165.833	S 04°05'10.2" W	23.85	02°44'01.3"(RT)	11°27'33.8"	23.86	11.93	500.00
PCC									
LINE	897778.465	1125163.424	S 09°27'01.9" W	16.93					
PC									
CURVE	897715.520	1125167.877	S 04°59'41.2" E	51.14	20°53'44.1"(LT)	40°38'04.1"	51.42	25.80	141.00
PCC									
CURVE	897672.910	1125187.373	S 22°41'55.8" E	50.52	14°38'45.2"(LT)	28°38'52.4"	50.66	25.47	200.00
PT									
LINE	897607.198	1125225.244	S 29°57'18.5" E	75.84					
PC									
CURVE	897582.893	1125251.627	S 47°28'54.6" E	35.87	34°47'12.2"(LT)	95°29'34.7"	36.43	18.88	60.00
PCC									
LINE	897498.185	1125448.124	S 64°44'38.7" E	217.27					
POT									

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	897803.462	1125561.183							
LINE			N 61°59'34.6" W	39.66					
PC	897822.884	1125526.171							
CURVE	897840.754	1125495.618	N 58°34'18.3" W	35.81	06°50'32.6"(RT)	19°05'54.9"	35.83	17.93	300.00
PCC									
LINE	897860.446	1125467.337	N 55°09'02.0" W	34.46					
PCC									
CURVE	897881.289	1125433.366	N 47°50'11.8" W	45.83	14°37'48.4"(RT)	31°49'51.6"	45.95	23.10	180.00
PCC									
CURVE	897950.106	1125484.725	N 25°56'08.1" W	65.49	29°12'42.9"(RT)	44°04'25.2"	66.20	33.84	130.00
PCC									
CURVE	897921.917	1125481.289	N 03°15'15.0" W	61.91	16°18'39.3"(RT)	26°02'36.7"	62.12	31.27	220.00
PCC									
LINE	897249.842	1125484.416	N 04°50'00.7" E	38.86					
PC	897308.563	1125411.725	N 07°05'39.9" E	59.17	04°31'18.4"(RT)	07°38'22.0"	59.19	29.61	750.00
PCC									
LINE	897382.480	1125423.889	N 09°21'19.0" E	74.83					
PCC									
CURVE	897464.554	1125440.269	N 11°16'32.8" E	83.77	03°58'25.9"(RT)	04°35'01.2"	83.79	41.91	1250.00
PCC									
CURVE	897513.612	1125458.836	N 28°43'51.3" E	52.45	15°04'12.7"(RT)	28°38'52.4"	52.60	26.46	200.00
PCC									
CURVE	897565.721	1125490.364	N 31°10'38.9" E	60.90	05°49'06.5"(RT)	09°32'57.5"	60.93	30.49	600.00
PCC									
CURVE	897601.940	1125515.183	N 38°38'31.9" E	46.29	08°50'55.4"(RT)	19°05'54.9"	46.33	23.21	300.00
PT									
LINE	897651.544	1125565.331	N 42°55'55.5" E	67.75					
PC	897751.278	1125621.574	N 29°25'11.2" E	114.50	27°01'36.6"(LT)	23°23'09.7"	115.57	58.88	245.00
PT									
LINE	897873.683	1125656.434	N 15°54'22.9" E	127.20					
PC	897974.727	1125692.293	N 19°31'29.7" E	107.29	07°14'13.6"(RT)	06°44'26.4"	107.36	53.75	850.00

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.

14-JAN-2025 16:50
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5/26/20

PROPOSED ALIGNMENT CONTROL SHEET

PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
PC	10+00.00	897932.3237	1125181.8261	S07°53'42.7"W	99.93	07°09'43.1"	07°09'43.1"	100.00	50.07	800.00		
PT	11+00.00	897833.3360	1125168.0989	S04°18'51.1"W	63.27							
PC	11+63.27	897770.2414	1125163.3391	S12°49'13.7"E	94.28	34°16'09.6"	35°48'35.5"	95.70	49.33	160.00		
PT	12+58.97	897678.3137	1125184.2591	S29°57'18.5"E	50.90							
PC	13+09.88	897634.2101	1125209.6763	S47°20'54.6"E	41.85	34°47'12.2"	81°51'04.0"	42.50	21.93	70.00		
PT	13+52.38	897605.8550	1125240.4566	S64°44'30.7"E	237.22							
END	15+89.60	897504.6329	1125454.9991									

PROPOSED ALIGNMENT: Y1												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	897873.6034	1125656.4339	S15°54'22.9"W	119.04							
PC	11+19.04	897759.1215	1125623.8092	S28°51'10.7"W	125.46	25°53'35.6"	20°27'46.0"	126.54	64.37	280.00		
PT	12+45.58	897649.2324	1125563.2648	S41°47'58.5"W	79.48							
PC	13+25.06	897589.9835	1125510.2909	S25°34'38.8"W	184.38	32°26'39.5"	17°21'44.5"	186.87	96.01	330.00		
PT	15+11.92	897423.6731	1125430.6888	S09°21'19.0"W	116.66							
PC	16+28.58	897308.5633	1125411.7248	S07°05'40.0"W	59.17	04°31'18.0"	07°38'22.0"	59.19	29.61	750.00		
END	16+87.77	897249.8432	1125404.4166									

I, SARAH J. VINCENT, 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 24TH DAY OF JANUARY, 2025.

DocuSigned by:
Sarah Vincent
B605417B8A5848A...

PROFESSIONAL LAND SURVEYOR L-5617

NOTES:

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

B5835

R/W | D2D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

SEAL L-5617 SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: B5835

County: Avery

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

WSP USA Inc.
1961 HIGH, AVE
SUITE 400
HICKORY, NC 28601
TEL: 919.808.9000
WWW.WSP.COM

5/26/20

RIGHT OF WAY CONTROL SHEET

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

THIS 31ST DAY OF JANUARY, 2025.

_____

PROFESSIONAL LAND SURVEYOR L-5617

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
14+41.54	-14.86	938554.2002	1403177.8333
14+41.54	15.12	938554.7874	1403207.8096
14+41.54	-33.00	938553.8450	1403159.6968
14+41.54	40.00	938555.2903	1403232.6825
14+47.06	-33.00	938559.3609	1403159.5887
14+47.06	40.00	938560.7905	1403232.5747
16+23.02	-30.00	938728.8837	1403266.8896
16+23.02	43.00	938663.0802	1403298.4951
17+05.33	-45.00	938771.2429	1403350.2427
17+05.33	45.00	938682.5925	1403365.7699
19+21.40	45.00	938719.8701	1403578.6003
19+21.40	-45.00	938808.5205	1403563.0730
20+30.00	45.00	938768.2774	1403696.1662
21+21.42	-45.00	938895.1504	1403697.2098
21+85.00	15.00	938913.9729	1403782.5771
21+97.76	-45.00	938958.2668	1403740.1412
21+97.76	-15.00	938941.3945	1403764.9469

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
15+38.00	42.37	938623.3540	1403252.6266
16+30.00	47.00	938661.9616	1403305.5631
19+95.00	70.00	938724.8250	1403671.9977

NOTES:

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

R047

R/W | 03E-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

SEAL L- 5617 SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: R047

County: Wilkes

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

wsp

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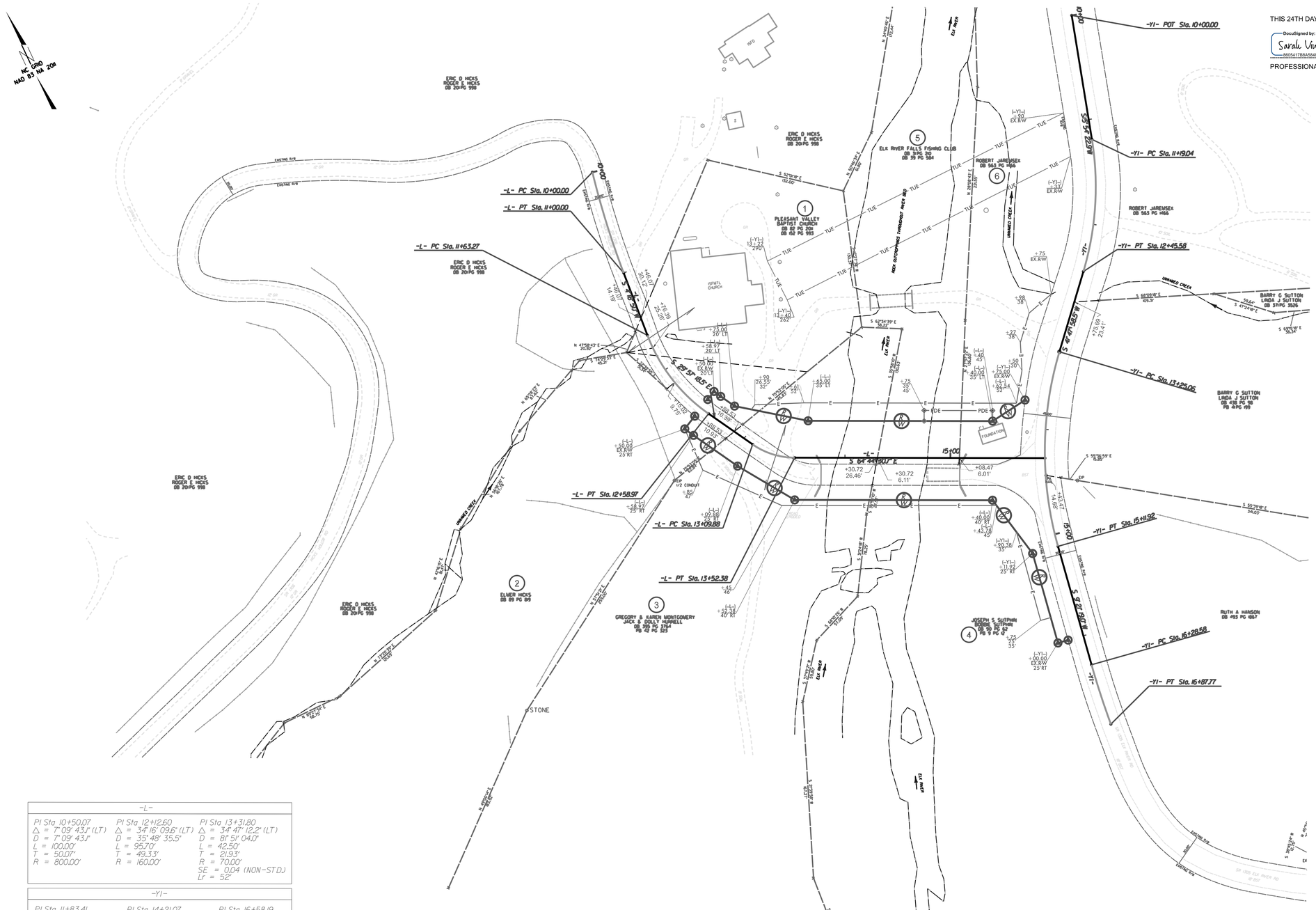
5/26/20

I , Sarah J. Vincent , PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 1/21/2025 TO 1/24/2025AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56,1600 AS APPLICABLE.

THIS 24TH DAY OF JANUARY, 2025.

DocuSigned by:
Sarah Vincent
B6054178BA5846A...

PROFESSIONAL LAND SURVEYOR L-5617



-L-		
PI Sta 10+50.07	PI Sta 12+12.60	PI Sta 13+31.80
Δ = 7° 09' 43.1" (LT)	Δ = 34° 16' 09.6" (LT)	Δ = 34° 47' 12.2" (LT)
D = 7° 09' 43.1"	D = 35° 48' 35.5"	D = 81° 51' 04.0"
L = 100.00'	L = 95.70'	L = 42.50'
T = 50.07'	T = 49.33'	T = 21.93'
R = 800.00'	R = 160.00'	R = 70.00'
		SE = 0.04 (NON-STD.)
		Lr = 52'

-Y1-		
PI Sta 11+83.41	PI Sta 14+21.07	PI Sta 16+58.19
Δ = 25° 53' 35.6" (RT)	Δ = 32° 26' 39.5" (LT)	Δ = 4° 31' 18.0" (LT)
D = 20° 27' 46.0"	D = 17° 21' 44.5"	D = 7° 38' 22.0"
L = 126.54'	L = 186.87'	L = 59.19'
T = 64.37'	T = 96.01'	T = 29.61'
R = 280.00'	R = 330.00'	R = 750.00'
	SE = 0.04 (NON-STD.)	
	Lr = 72'	

NOTES:

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

B5835
R/W | RW04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
SEAL L-5617 SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: B5835
County: Avery

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

WSP USA Inc.
1961 NWE AVE
SUITE 400
RALEIGH, NC 27615
TEL: 919.829.9070
WWW.WSP.COM

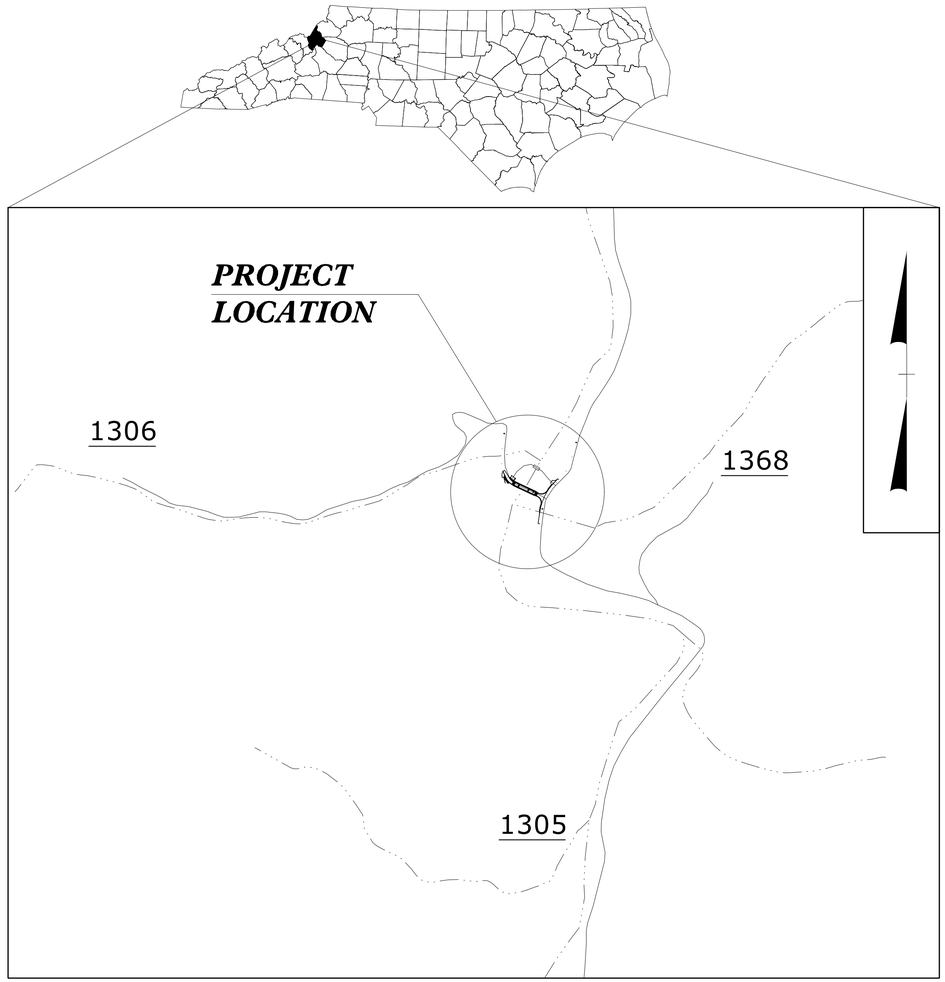
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

AVERY COUNTY

LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306



VICINITY MAP

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: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I

SHEET NO.
TMP–1

TIP PROJECT: B–5835

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

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

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

DON A. PARKER, P.E.
PROJECT ENGINEER

CODA BRANNAN, E.I.
DESIGN ENGINEER

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

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UNLESS ALL SIGNATURES COMPLETED

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

DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043251 DON A. PARKER

2/3/2025
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User:cbrannan

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PROJ. REFERENCE NO.	SHEET NO.
B-5835	TMP-1A

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

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

SIGNALS

EXISTING PROPOSED TEMPORARY

DS DRIVEWAY SIGNAL

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: Signed by: Don A. Parker 75D89E90ADEF440...

DATE: 2/3/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

2/3/2025
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PROJ. REFERENCE NO.	SHEET NO.
B-5835	TMP-1B

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

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING 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.

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

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

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

J) 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.

K) 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.

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

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

TRAFFIC CONTROL DEVICES

N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
- FULL ROADWAY CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- ON-SITE DETOURS

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

DATE: 2/6/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION OPERATIONS PLAN

2/6/2025
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User:dparker

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PROJ. REFERENCE NO.	SHEET NO.
B-5835	TMP-3

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

PHASING

PHASE I

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

NOTE: FOR PHASE I, SEE TMP-4

STEP 1-- INSTALL ALL WORK ZONE ADVANCE WARNING SIGNS IN ACCORDANCE WITH RSD 1101.01, SHEET 3 AND TMP-4.

STEP 2 -- AWAY FROM TRAFFIC AND USING FLAGGERS AS NECESSARY, CONSTRUCT PROPOSED BRIDGE AND APPROACHES, INCLUDING RETAINING WALL NO. 1 FROM -L- STA. 12+50 +/- TO STA. 15+75 UP TO BUT NOT INCLUDING THE FINAL LAYER.

STEP 3 -- AWAY FROM TRAFFIC AND USING FLAGGERS AS NECESSARY ON -Y1-, COMPLETE SHOULDER CONSTRUCTION AND PROPOSED GUARDRAIL INSTALLATION.

STEP 4 -- AWAY FROM TRAFFIC AND USING FLAGGERS AS NECESSARY ON -Y1-, COMPLETE MILLING AND PAVING, INCLUDING THE FINAL LAYER OF SURFACE COURSE THROUGHOUT THE PROJECT LIMITS AND INSTALL PROPOSED PAVEMENT MARKINGS.

STDP 5 -- REMOVE ROAD CLOSURE DEVICES AND OPEN THE PROJECT TO THE FINAL TRAFFIC PATTERN.

-- REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

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

DATE: 2/6/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

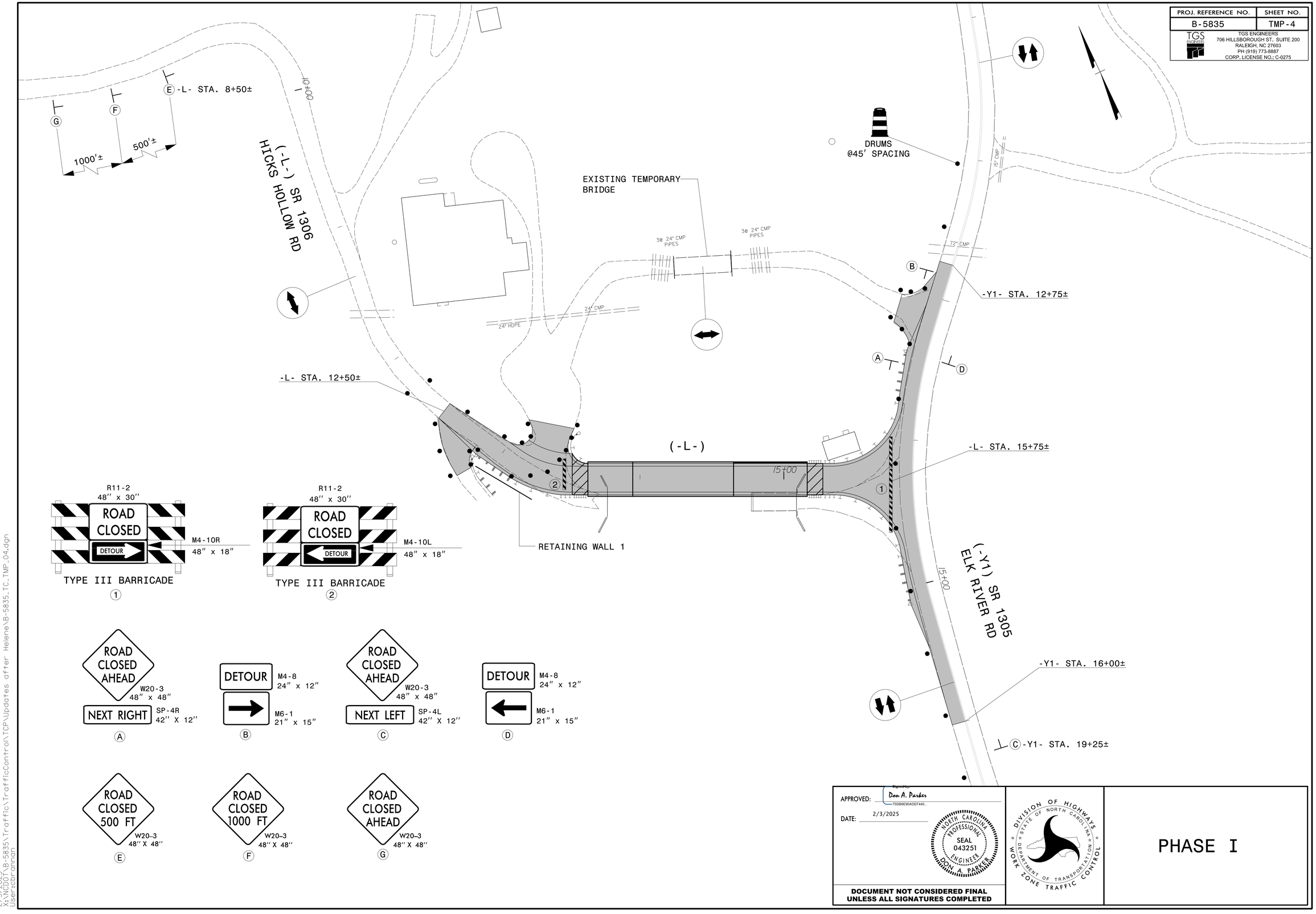
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2/6/2025
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PROJ. REFERENCE NO.	SHEET NO.
B-5835	TMP-4

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



R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10R
48" x 18"
TYPE III BARRICADE
①

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE
②

ROAD CLOSED AHEAD
W20-3
48" x 48"
NEXT RIGHT
SP-4R
42" X 12"
Ⓐ

DETOUR
M4-8
24" x 12"
M6-1
21" x 15"
Ⓑ

ROAD CLOSED AHEAD
W20-3
48" x 48"
NEXT LEFT
SP-4L
42" X 12"
Ⓒ

DETOUR
M4-8
24" x 12"
M6-1
21" x 15"
Ⓓ

ROAD CLOSED 500 FT
W20-3
48" X 48"
Ⓔ

ROAD CLOSED 1000 FT
W20-3
48" X 48"
Ⓕ

ROAD CLOSED AHEAD
W20-3
48" X 48"
Ⓖ

APPROVED: Don A. Parker (Digitally Signed) 75DB9E90ADEF440...
DATE: 2/3/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE I

2/3/2025
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T.I.P.: B-5835

TIP NO.	SHEET NO.
B-5835	PMP-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440... DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

AVERY COUNTY

LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE, SCHEDULE SHEET, INDEX OF SHEETS, LIST OF APPPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES, AND FINAL PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
INTEGRATED MULTIPOLYMER (IMP) (4″,90 MILS)	
IM1	(4″) WHITE EDGELINE
IM5	(4″) 2 FT.-6 FT./SP WHITE MINISKIP
IM13	(4″) YELLOW DOUBLE CENTER

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1306 HICKS HOLLOW RD	IMP	NONE
SR 1306 HICKS HOLLOW RD (BRIDGE DECK)	IMP	NONE
SR 1305 ELK RIVER RD	IMP	NONE

B) FOR INTEGRATED MULTIPOLYMER MARKINGS (IMP), SEE SPECIAL PROVISION.

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

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

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

PLAN SUBMITTED TO: NCDOT

OLIVIA L. PILKINGTON, P.E. NCDOT PROJECT MANAGER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

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

2/3/2025
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TIP NO.	SHEET NO.
B-5835	PMP-2

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

DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

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

-L- SR 1306
HICKS HOLLOW RD

-Y1- SR 1305
ELK RIVER RD

10+00

15+00

-L- STA. 12+50±

-L- STA. 13+00±

-L- STA. 13+81±

-Y1- STA. 12+75±
TIE TO EXIST. MARKINGS

-Y1- STA. 13+25±

-L- STA. 15+60±

-L- STA. 14+71±

-Y1- STA. 15+50±

-Y1- STA. 16+00±
TIE TO EXIST. MARKINGS

EXIST.

IM1

IM5

IM13

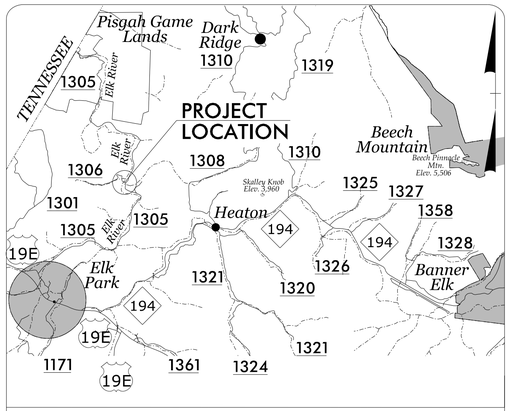
9'

10'

PAVEMENT MARKING DETAIL

2/3/2025
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User:cbrannan

TIP PROJECT: B–5835



VICINITY MAP

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PLAN FOR PROPOSED

HIGHWAY EROSION CONTROL

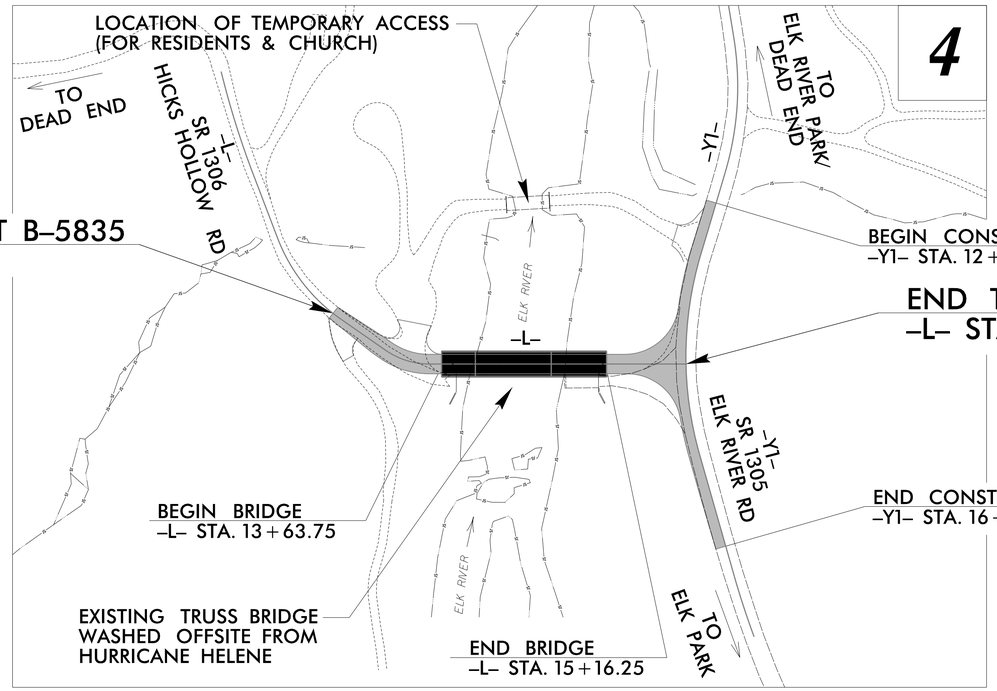
AVERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5835	EC-1	

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

LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306

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



NAD 83/ NA 2011

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

GRAPHIC SCALE

30 15 0 30 60

PLANS

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

TGS ENGINEERS

Prepared in the Office of:

TGS ENGINEERS

706 HILLSBOROUGH ST. – SUITE 200

RALEIGH, NC 27603

Designed by:

Ben Henegar, PE — *NAME*

3564 — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

PROJECT REFERENCE NO.	SHEET NO.
B-5835	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

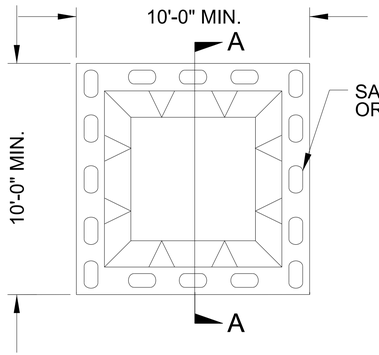
EROSION & SEDIMENT CONTROL LEGEND

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

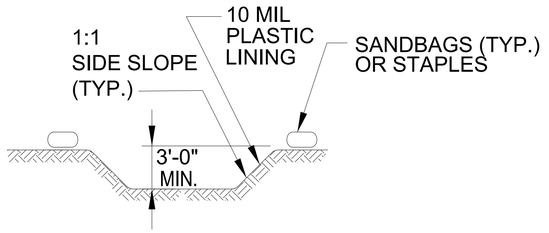
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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.
B-5835	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



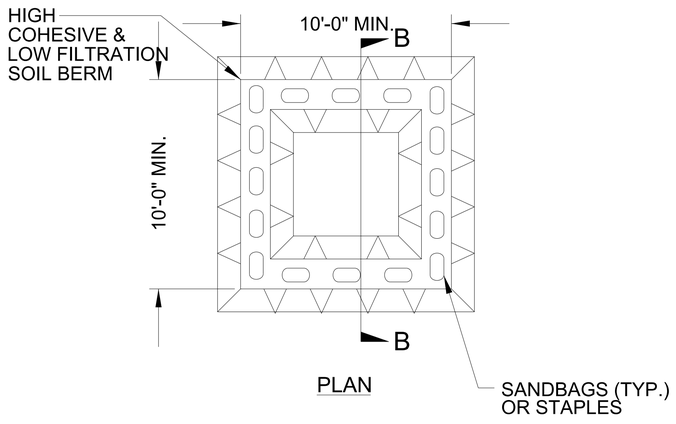
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

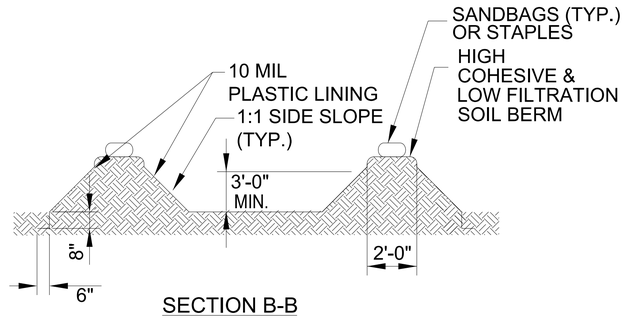
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

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.
B-5835	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
B-5835	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCHLINE STRAW MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	–L–	14+85	15+30	LT	50
				SUBTOTAL	50

SLOPE MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	–L–	15+27	15+70	LT	75
4	–L–	15+00	15+70	RT	175
4	–L–	37+00	39+00	RT	90
				SUBTOTAL	340

MATTING FOR EROSION CONTROL TOTALS

	ESTIMATE (SY)
DITCHLINE STRAW MATTING SUBTOTAL	50
DITCHLINE EXCELSIOR MATTING SUBTOTAL	N/A
SLOPE MATTING SUBTOTAL	340
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	145
TOTAL	535
SAY	600

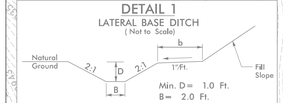
PROJECT REFERENCE NO.	SHEET NO.
B-5835	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

NAD 83 NA 2011

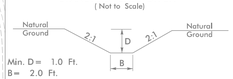
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

FROM -L- STA. 15+20 TO STA. 15+30 LT

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.

FROM -L- STA. 14+85 TO STA. 15+20 LT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

FROM -L- STA. 14+75 TO STA. 14+98 LT
FROM -L- STA. 13+66 TO STA. 13+88 RT

-L-

PI Sta 10+50.07	PI Sta 12+12.60	PI Sta 13+31.80
△ = 7° 09' 43.1" (LT)	△ = 34° 16' 09.6" (LT)	△ = 34° 47' 12.2" (LT)
D = 7° 09' 43.1"	D = 35° 48' 35.5"	D = 81° 51' 04.0"
L = 100.00'	L = 95.70'	L = 42.50'
T = 50.07'	T = 49.33'	T = 21.93'
R = 800.00'	R = 160.00'	R = 70.00'
		SE = 0.04 (NON-STD.)
		Lr = 52'

-Y1-

PI Sta 11+83.41	PI Sta 14+21.07	PI Sta 16+58.19
△ = 25° 53' 35.6" (RT)	△ = 32° 26' 39.5" (LT)	△ = 4° 31' 18.0" (LT)
D = 20° 27' 46.0"	D = 17° 21' 44.5"	D = 7° 38' 22.0"
L = 126.54'	L = 186.87'	L = 59.19'
T = 64.37'	T = 96.01'	T = 29.61'
R = 280.00'	R = 330.00'	R = 750.00'
	SE = 0.04 (NON-STD.)	
	Lr = 72'	

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

SCALE: 1" = 30'
30' 0' 30' 60'
15'

BEGIN TIP PROJECT B-5835
-L- POT Sta. 12+50.00

END TIP PROJECT B-5835
-L- POT Sta. 15+89.60 =
-Y1- POC Sta. 14+27.16

-L- PC Sta. 10+00.00
-L- PT Sta. 11+00.00
-L- PC Sta. 11+63.27
-L- PT Sta. 12+58.97
-L- PC Sta. 13+09.88
-L- PT Sta. 13+52.38
-L- PC Sta. 13+63.75
-Y1- PC Sta. 11+19.04
-Y1- PT Sta. 12+45.58
-Y1- PT Sta. 15+11.92
-Y1- PC Sta. 16+28.58
-Y1- PT Sta. 16+87.77

1 PLEASANT VALLEY BAPTIST CHURCH DB 82 PG 201 DB 152 PG 993
2 ELMER HICKS DB 89 PG 819
3 GREGORY & KAREN MONTGOMERY JACK & DOLLY HUNNELL DB 395 PG 376 PB 42 PG 323
4 JOSEPH S SUTPHIN BOBBIE SUTPHIN DB 90 PG 62 PB 9 PG 12
5 ELK RIVER FALLS FISHING CLUB DB 31 PG 210 DB 39 PG 584
6 OWNER UNKNOWN
7 BARRY G SUTTON LINDA J SUTTON DB 349 PG 2700 PB 38 PG 340A
ERIC D HICKS ROGER E HICKS DB 201 PG 998
BARRY G SUTTON LINDA J SUTTON DB 371 PG 3526
RUTH A HANSON DB 493 PG 1867

RETAIN
REMOVE HW
BEGIN CONSTRUCTION
END CONSTRUCTION -Y1- STA 16+00.00
BEGIN MILLING/WIDENING (RT SIDE) -Y1- STA 12+75.00
BEGIN BRIDGE -L- STA 13+63.75
END BRIDGE -L- STA 15+16.25
BEGIN PROP. RET. WALL 1 +90.00 18.16' RT.
END PROP. RET. WALL 1 +30.00 18.54' RT.
CLASS 'B' RIP RAP EST. 2 TONS GEOTEXTILE EST. 7 SY
CLASS 'I' RIP RAP EST. 20 TONS KEY IN RIP RAP IN DITCH
RIP RAP AT EMBANKMENT SEE DETAIL 3 CLASS 'I' RIP RAP EST. 10 TONS
RIP RAP AT EMBANKMENT SEE DETAIL 3 CLASS 'I' RIP RAP EST. 12 TONS
2' LAT. BASE DITCH SEE DETAIL 1
2' STANDARD BASE DITCH SEE DETAIL 2
EXISTING TRUSS WASHED OFFSITE FROM HURRICANE HELENE
ROCK OUTCROPPINGS THROUGHOUT RIVER BED
UNNAMED CREEK
ELK RIVER
29.57' 18.5' EXIST. GUARDRAIL
50' TAPER
75.00
50.00' TAPER
END SBG -L- STA 15+45.00 LT
CAT-1
GREU TL2
PDE
FDGE
BRIDGE #25 TO BE DEMOLISHED (REMAINING SECTION)
SR 1920 ELK RIVER RD
SR 1954 22.9W
S 64° 44' 30.7" E
S 92° 21' 19.0" W

PROJECT REFERENCE NO.	SHEET NO.
B-5835	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

NAD 83 NA 2011

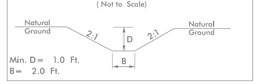
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

FROM –L– STA. 15+20 TO STA. 15+30 LT

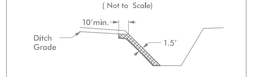
DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



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B = 2.0 Ft.

FROM –L– STA. 14+85 TO STA. 15+20 LT

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RIP RAP AT EMBANKMENT
(Not to Scale)



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BEGIN TIP PROJECT B-5835
–L– POT Sta. 12+50.00
–L– PT Sta. 12+58.97

END TIP PROJECT B-5835
–L– POT Sta. 15+89.60 =
–Y1– POC Sta. 14+27.16

–L–		
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SCALE: 1" = 30'
30' 0' 30' 60'
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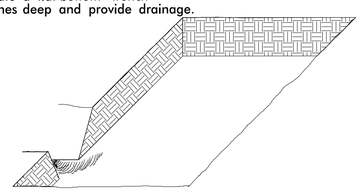
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5835	RF–1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

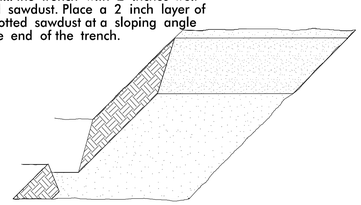
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

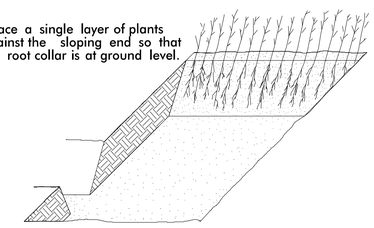
1. Locate a healing–in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



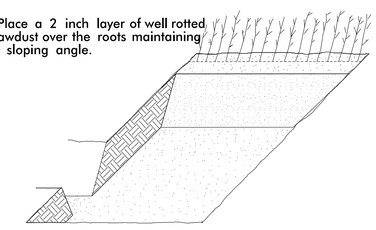
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

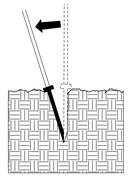


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

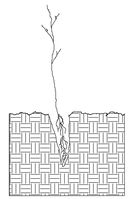


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

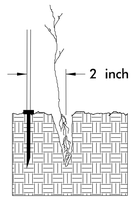
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



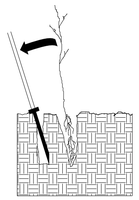
1. Insert planting bar as shown and pull handle toward planter.



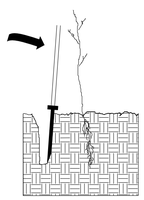
2. Remove planting bar and place seedling at correct depth.



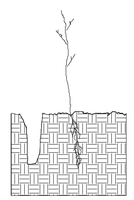
3. Insert planting bar 2 inches toward planter from seedling.



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:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR
25%	NYSSA SYLVATICA	BLACK GUM	12 in – 18 in BR

REFORESTATION DETAIL SHEET

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

Docusign Envelope ID: C2D550BB-974B-4D00-A9A3-23C52595C83A

T.I.P.: B-5835

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
B-5835	SIGN-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440... DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
AVERY COUNTY
LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306

ROADWAY STANDARD DRAWING

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

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

GENERAL NOTES

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

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	55.5	L.F.
4102000000	904	SIGN ERECTION, TYPE E	4	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	7	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	E SHEETS
SIGN-3	SIGN DETAIL SHEETS

PLAN SUBMITTED TO: NCDOT

OLIVIA L. PILKINGTON, P.E. NCDOT PROJECT MANAGER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

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

2/3/2025
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TIP NO.	SHEET NO.
B-5835	SIGN-2

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

DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

401 QUANTITY REQ'D 1



30 X 30
R1-1

ONE "U" POST PER SIGN

402 QUANTITY REQ'D 1



36 X 36
W14-1

ONE "U" POST PER SIGN

403 QUANTITY REQ'D 1



24 X 24
W13-1P

MOUNT BELOW SIGN 402
IN 1 INSTALLATION

404 QUANTITY REQ'D 1



36 X 36
W8-3

ONE "U" POST PER SIGN

405 QUANTITY REQ'D 1



36 X 36
W5-2

ONE "U" POST PER SIGN

TYPE "E" SIGNS

2/3/2025
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TIP NO.	SHEET NO.
B-5835	SIGN-3

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

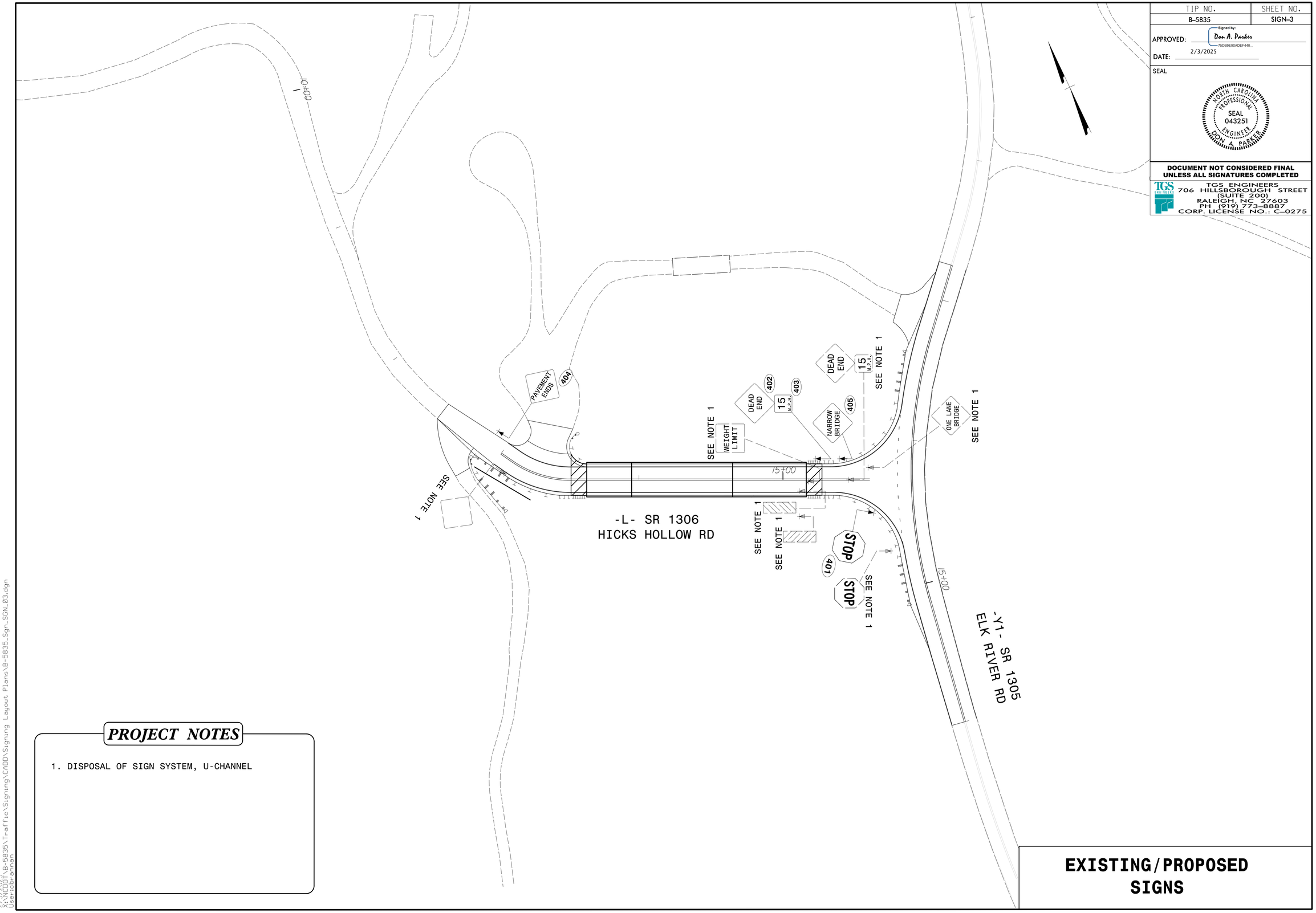
DATE: 2/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



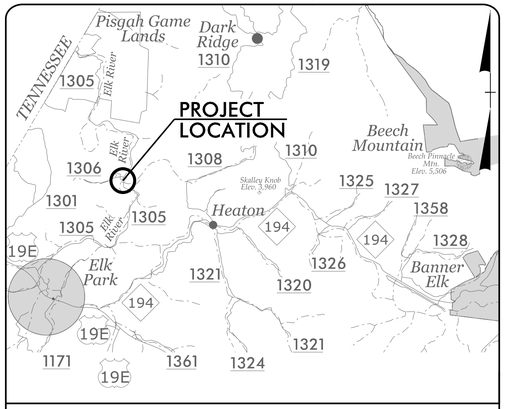
PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL

EXISTING/PROPOSED SIGNS

2/3/2025
X:\NCDOT\B-5835\Traffic\Signing\CADD\Signing Layout Plans\B-5835_Sgn_SGNL03.dgn
User:cbrannan

TIP PROJECT: B–5835



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

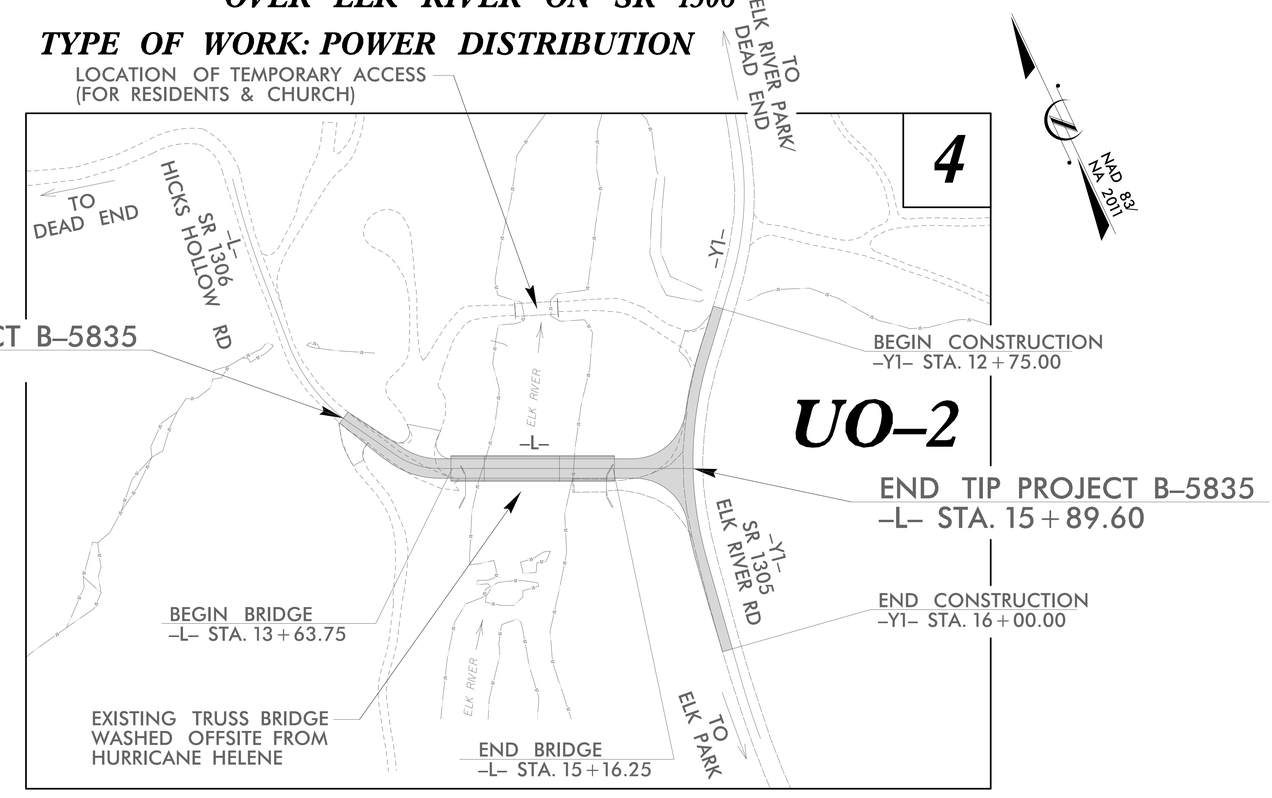
UTILITIES BY OTHERS PLANS
AVERY COUNTY

T.I.P. NO.	SHEET NO.
B–5835	UO–1

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.

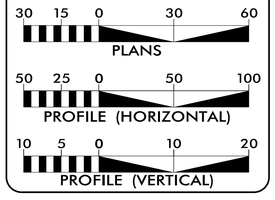
LOCATION: REPLACE BRIDGE NO. 125 OVER ELK RIVER ON SR 1306

TYPE OF WORK: POWER DISTRIBUTION



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO–1	TITLE SHEET
UO–2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) POWER DISTRIBUTION – MOUNTAIN ELECTRIC

PREPARED IN THE OFFICE OF:
HINDE ENGINEERING
License No. C-2639
10020 Monroe Road, Suite 280 Matthews, NC 28105
(704) 814-4407

Clint L. Stevens, P.E. — UTILITY COORDINATION PROJECT MANAGER
Harris Winters — PROJECT UTILITY COORDINATOR
James N. Arnold — PROJECT UTILITY DESIGNER

DIVISION OF HIGHWAYS
DIVISION 11
801 STATESVILLE RD.
NORTH WILKESBORO, NC 28659
PHONE (336) 903–9101
FAX (336) 667–4549

David Stutts, P.E. — DIVISION PROJECT ENGINEER
Daniel R. Adams, P.E. — PROJECT TEAM LEAD
Brandon Greer — DIVISION UTILITY ENGINEER

20-JAN-2025 14:28
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$$$$USERNAME$$$$

UBO PLANS ARE FOR INFORMATION ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. ALL PROPOSED RELOCATION INFORMATION SHOWN ON THE UBO PLANS WAS PROVIDED BY 3RD PARTIES. HINDE ENGINEERING, INC. ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE ACCURACY OR VALIDITY OF 3RD PARTY INFORMATION PROVIDED.

PROJECT REFERENCE NO.	SHEET NO.
B-5835	U0-2
THIS SHEET CORRESPONDS TO RDY-4	

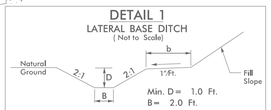
UTILITIES BY OTHERS

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

MOUNTAIN ELECTRIC TEMPORARY OVERHEAD POWER LINE

MOUNTAIN ELECTRIC TEMPORARY OVERHEAD POWER LINE

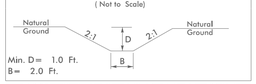
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

FROM –L– STA. 15+20 TO STA. 15+30 LT

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.

FROM –L– STA. 14+85 TO STA. 15+20 LT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class 'I' Rip-Rap

FROM –L– STA. 14+75 TO STA. 14+98 LT
FROM –L– STA. 13+66 TO STA. 13+88 RT

BEGIN TIP PROJECT B–5835
–L– POT Sta. 12+50.00
–L– PT Sta. 12+58.97
–L– PC Sta. 13+09.88

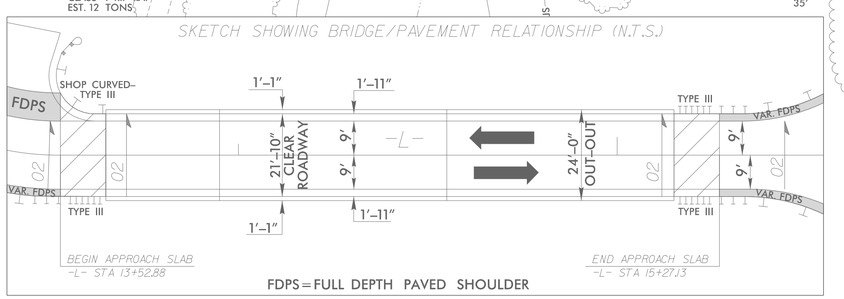
END TIP PROJECT B–5835
–L– POT Sta. 15+89.60 =
–Y1– POC Sta. 14+27.16

–L– PC Sta. 10+00.00
–L– PT Sta. 11+00.00
–L– PC Sta. 11+63.27
–Y1– PC Sta. 11+19.04
–Y1– PT Sta. 12+45.58
–Y1– PC Sta. 13+25.06
–Y1– PT Sta. 15+11.92
–Y1– PC Sta. 16+28.58
–Y1– PT Sta. 16+87.77
BEGIN BRIDGE –L– STA 13+63.75
END BRIDGE –L– STA 15+16.25
BEGIN CONSTRUCTION –Y1– STA 10+90.00
END CONSTRUCTION –Y1– STA 16+00.00
BEGIN MILLING,WEDGING & WIDENING (RT.SIDE) –Y1– STA 12+75.00
END SBG –L– STA 15+45.00 LT

–L–		
PI Sta 10+50.07	PI Sta 12+12.60	PI Sta 13+31.80
△ = 7° 09' 43.1" (LT)	△ = 34° 16' 09.6" (LT)	△ = 34° 47' 12.2" (LT)
D = 7° 09' 43.1"	D = 35° 48' 35.5"	D = 81° 51' 04.0"
L = 100.00'	L = 95.70'	L = 42.50'
T = 50.07'	T = 49.33'	T = 21.93'
R = 800.00'	R = 160.00'	R = 70.00'
		SE = 0.04 (NON-STD.)
		Lr = 52'

–Y1–		
PI Sta 11+83.41	PI Sta 14+21.07	PI Sta 16+58.19
△ = 25° 53' 35.6" (RT)	△ = 3° 26' 39.5" (LT)	△ = 4° 31' 18.0" (LT)
D = 20° 27' 46.0"	D = 17° 21' 44.5"	D = 7° 38' 22.0"
L = 126.54'	L = 186.87'	L = 59.19'
T = 64.37'	T = 96.01'	T = 29.61'
R = 280.00'	R = 330.00'	R = 750.00'
	SE = 0.04 (NON-STD.)	
	Lr = 72'	

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP (N.T.S.)



FDPS = FULL DEPTH PAVED SHOULDER

-Y1-
SR 1305
120
178
-L-
SR 1306
788
998
2025
2045 ADT

SCALE: 1" = 30'
30' 0' 30' 60'
15'

HINDE ENGINEERING
License No. C-2639
10020 Monroe Road, Suite 280 Matthews, NC 28105

UBO PLANS ARE FOR INFORMATION ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. ALL PROPOSED RELOCATION INFORMATION SHOWN ON THE UBO PLANS WAS PROVIDED BY 3RD PARTIES. HINDE ENGINEERING, INC. ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE ACCURACY OR VALIDITY OF 3RD PARTY INFORMATION PROVIDED.

29-JAN-2025 14:33
C:\Users\...\PROJECTS\2018\A2018803.00_TGS_B-5835\Design\Utilities\Engineering\UBO\Proj\B-5835_ut_rdy4_U002_psh.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-5835	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+50.00	0	0
12+75.00	9	0
12+90.00	13	0
12+95.00	6	0
13+00.00	5	0
13+05.00	5	0
13+10.00	4	0
13+15.00	4	0
13+20.00	4	0
13+25.00	3	0
13+30.00	3	0
13+50.00	11	1
15+30.00	205	302
15+50.00	29	56
15+70.00	16	35

Station Y1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+75.00	0	0
13+00.00	0	0
13+50.00	1	3
14+00.00	0	3
14+50.00	0	0
15+00.00	0	18
15+50.00	0	26
16+00.00	1	9

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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-1

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2930
2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

0.030 0.007
2845.51
SHEAR LINE

12 + 50.00
BEGIN TIP PROJECT B-5835 -L- STA 12 + 50.00

2849.08

12 + 00.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2930
2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-2

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2930
2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

12.5%
0.039
0.027
2842.66
SHEAR LINE

12 + 75.00

—L—

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-3

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

0.040 0.034

2840.76

12+90.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
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User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-4

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

0.040 0.038

2840.11

12+95.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-5

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

0.040 0.040

2839.43

13+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
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User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-6

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

SHEAR LINE
0.040
0.040
2838.75

13 + 05.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
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User:lowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-7

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820
2810

SHEAR LINE
0.040
0.040
2838.06

13+10.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-8

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820

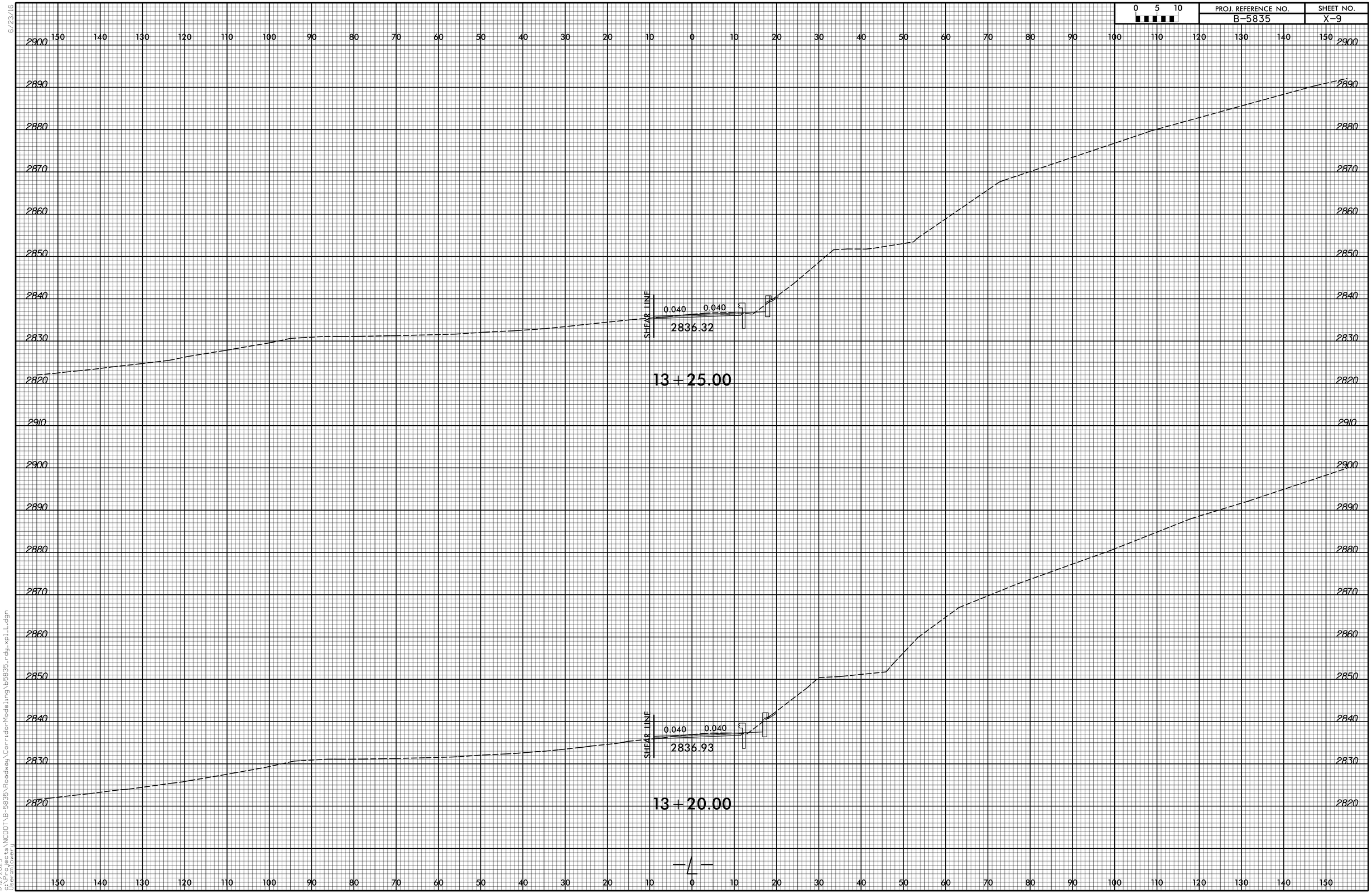
SHEAR LINE
0.040
0.040
2837.51

13+15.00

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-9



1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2840 2830 2820 2810

0.020 0.020

2815.54
14 + 50.00

2840 2830 2820 2810

0.020 0.020

2815.14
14 + 00.00

BEGIN BRIDGE –L– STA 13 + 63.75

2850 2840 2830 2890 2880 2870 2860 2850 2840 2830 2820

SHEAR LINE

0.020 0.020 4:1 2:1

2833.17
13 + 50.00

SHEAR LINE

0.035 0.035

2835.69
13 + 30.00

–L–

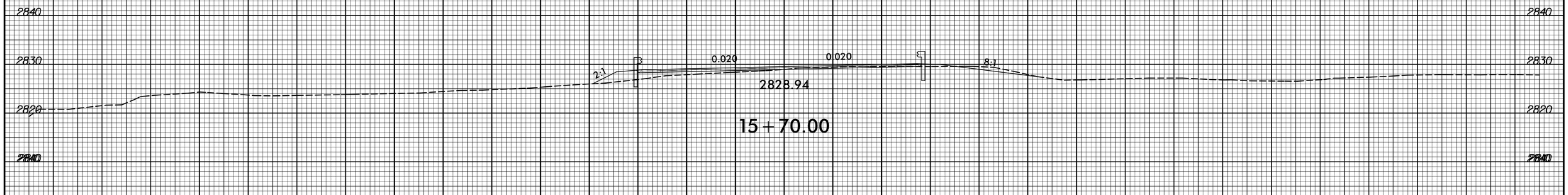
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1/2/2025
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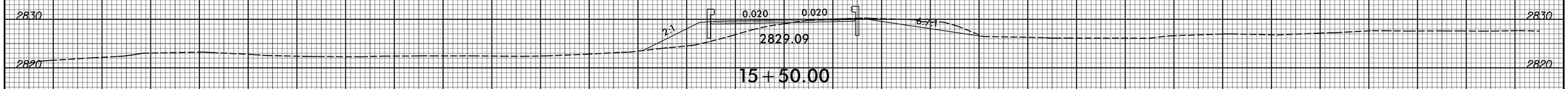
6/23/16

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	B-5835	X-11

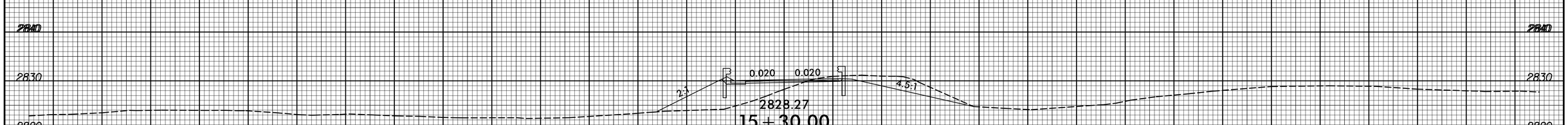
END TIP PROJECT B-5835 -L- STA 15+89.60



15+70.00

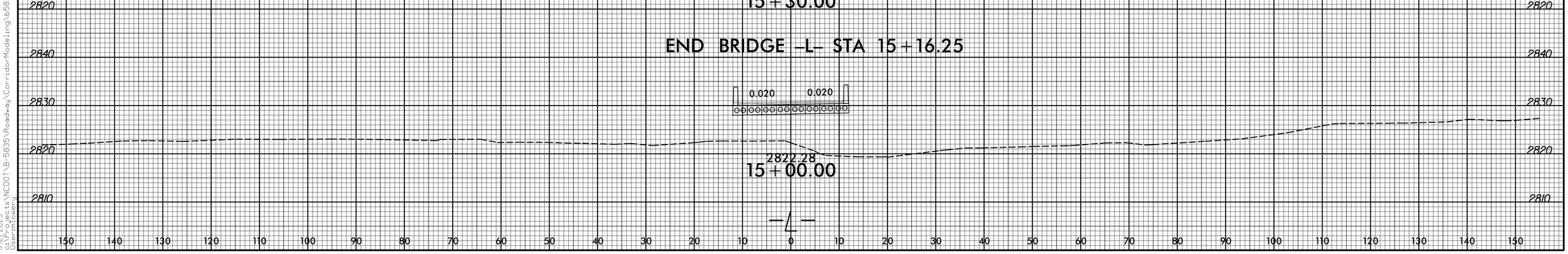


15+50.00



15+30.00

END BRIDGE -L- STA 15+16.25



15+00.00

-L-

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_L.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-12

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2850 2840 2830 2820 2810

0.001

2826.64

SHEARL LINE

13+00.00

2840 2830 2820 2810

0.015 12.5:1

2826.48

12+75.00

BEGIN MILLING, WEDGING, & WIDENING (RT. SIDE) –Y1– STA 12+75.00

2826.61

12+50.00

2850 2840 2830 2820 2810

2828.00

12+00.00

BEGIN CONSTRUCTION –Y1– STA 10+90.00

–Y1–

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_Y1.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-13

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2890
2880
2870
2860
2850
2840
2830
2820
2810

0.040
2828.28
SHEAR LINE

14+00.00

0.027
2827.40
2:1

13+50.00

—Y1—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_Y1.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-14

0.033

2:1

2831.72

15+00.00

0.040

2829.66

SHEAR LINE

14+50.00

—Y1—

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_Y1.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-15

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2910 2900 2890 2880 2870 2860 2850 2840 2830 2820 2810

0.006

2:1

2834.59

15+50.00

-Y1-

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_Y1.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920 2910 2900 2890 2880 2870 2860 2850 2840 2830 2820 2810

END CONSTRUCTION –Y1– STA 16+00.00

0.007 2:1

2838.31

16+00.00

–Y1–

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/2/2025
C:\Projects\NCDOT\B-5835\Roadway\CorridorModeling\b5835_rdy_xpl_Y1.dgn
User:mlowery

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5835	X-17

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920
2910
2900
2890
2880
2870
2860
2850
2840
2830
2820
2810

2842.24

16+50.00

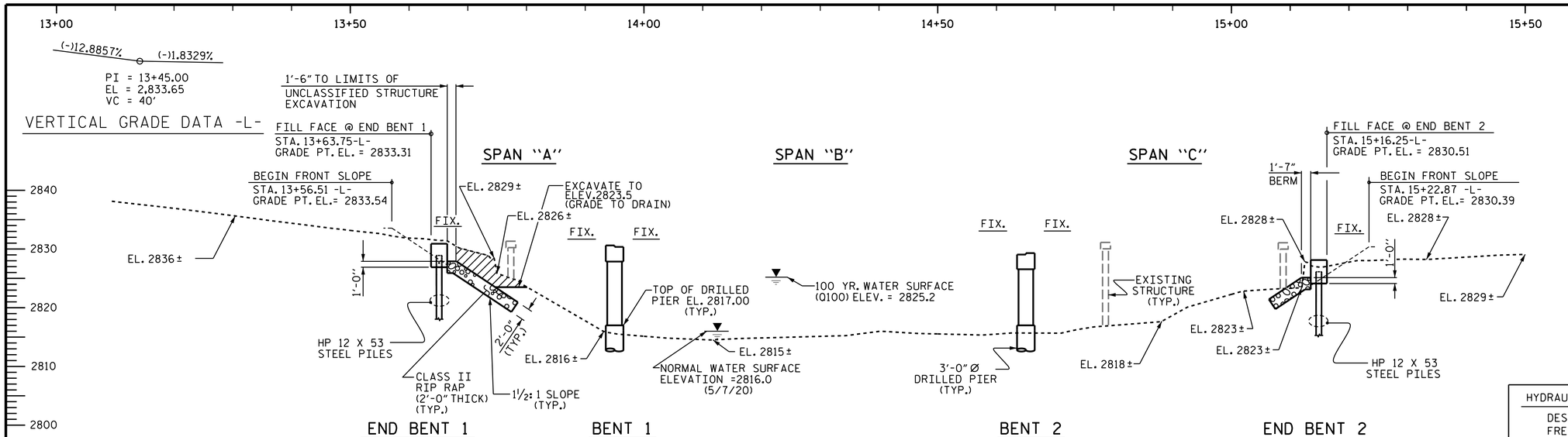
—Y1—

1/2/2025
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User:mlowery

F.A. PROJECT NO. : BRZ-1306(030)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

SEAL

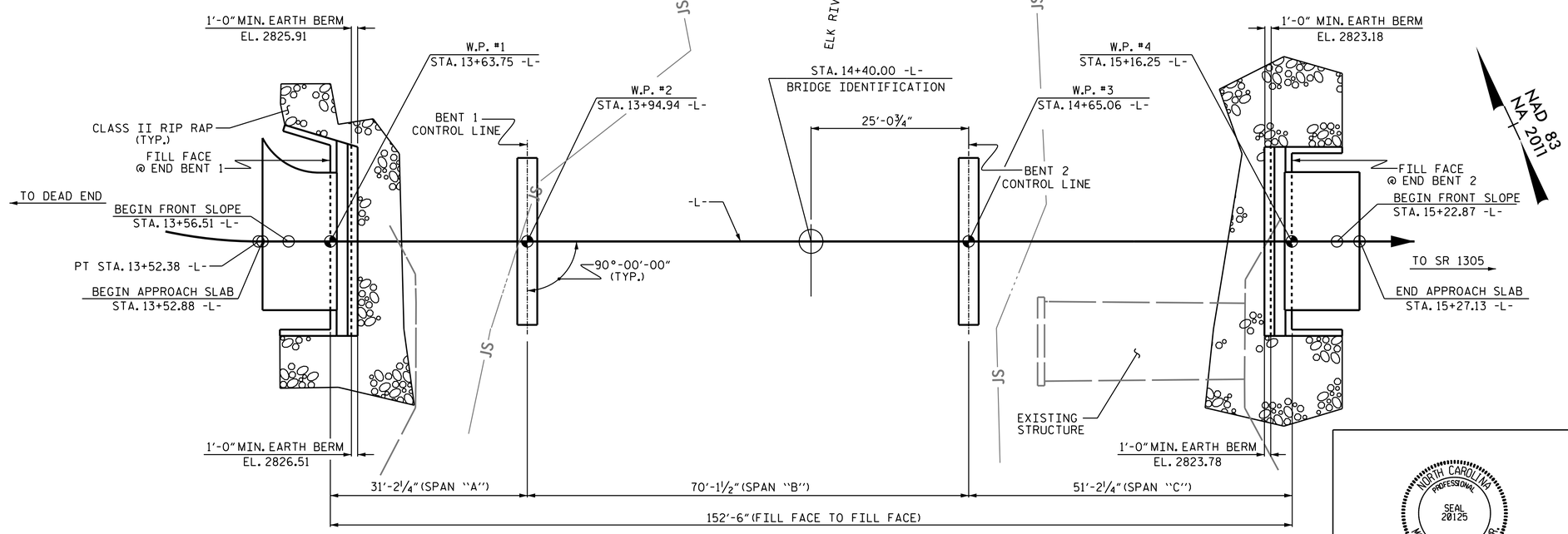


LOW CHORD ELEVATION	
END BENT 1 2831.05 LT.	END BENT 2 2828.32 LT.

SECTION ALONG -L-

HYDRAULIC DATA:	
DESIGN DISCHARGE	5800 CFS
FREQUENCY OF DESIGN DISCHARGE	25 YRS.
DESIGN HIGH WATER ELEVATION	2823.6
DRAINAGE AREA	40.1 SQ. MI.
BASE DISCHARGE	8000 CFS
FREQUENCY OF BASIC DISCHARGE	100 YRS.
BASE HIGH WATER ELEVATION	2825.2
OVERTOPPING FLOOD DATA:	
OVERTOPPING DISCHARGE	15000+ CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	2829.0*

*LOW POINT @ -L- AND -Y1- INTERSECTION
WS ELEV. TAKEN @ RS 18035.2



PLAN

PILES AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE #050125

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CREECH, JR.
Marshall G. Creech, Jr.
5FBCC2F3A4DC413...
3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

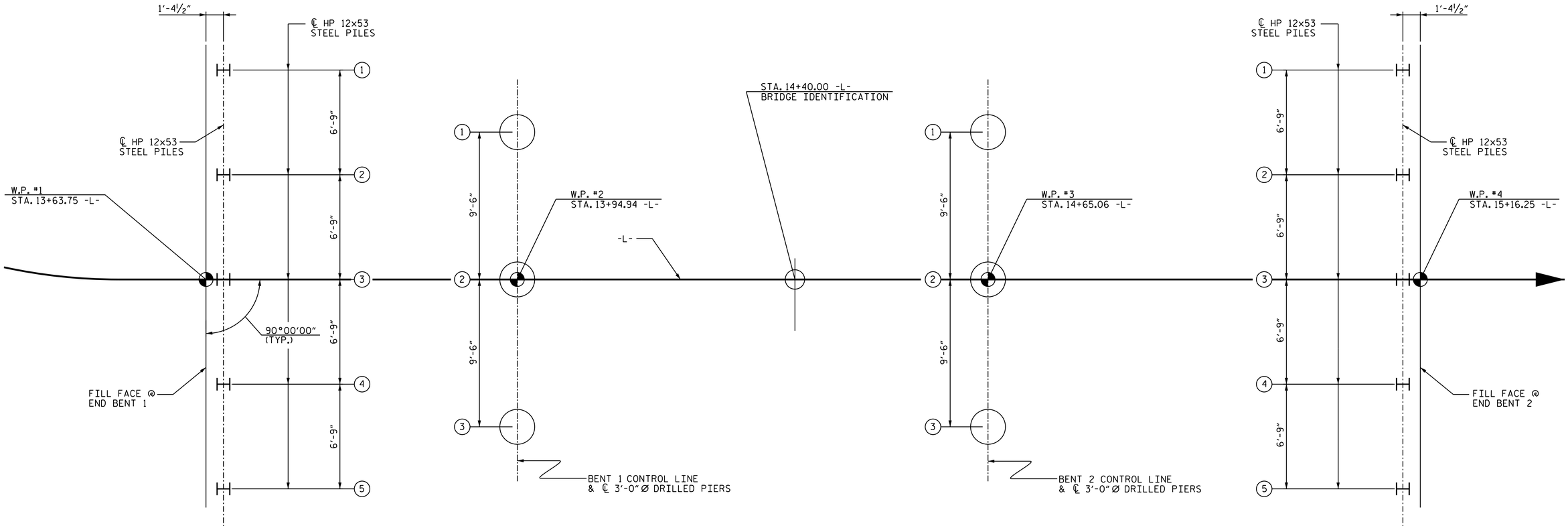
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER ELK RIVER ON SR 1306 BETWEEN SR 1305 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : S. B. WILLIAMS / ZCS DATE : 2/24
CHECKED BY : MGC DATE : 8/24

1/8/2025
c:\workdir\ncdot-pw.bentley.com_ncdot-pw-01\zachary smith\d0312556\001.B-5835-SMU-GeneralDrawing Sheet 1-05.dgn
ZSmith



END BENT 1 | BENT 1 | BENT 2 | END BENT 2

FOUNDATION LAYOUT PLAN

ALL END BENT PILES ARE HP12x53 STEEL PILES. DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30,000 TO 45,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FILL HOLES FOR PILE EXCAVATION AT END BENT 1 WITH CONCRETE.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 4

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

Marshall G. Cheek, Jr.

5FBCC2F3A4DC413...

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ELK RIVER
ON SR 1306 BETWEEN
SR 1305 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			29

DRAWN BY :	ZCS	DATE : 2/24
CHECKED BY :	MGC	DATE : 7/24

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")	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		
					Min. Pile Tip (Tip No Higher Than) Elev. FT	Required Driving Resistance (RDR)** per Pile KIPS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile LIN FT	Pile Exc In Soil per Pile LIN FT
End Bent 1, Piles 1-5	114	SEE END BENT SHEETS	15								2817.0	5.0	5.0
End Bent 2, Piles 1-5	148		20		2814.0	250							

* 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.

$$RDR = \frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Downdrag Resistance} + \frac{\text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$$

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 Downdrag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-5	114						
End Bent 2, Piles 1-5	148			0.60			

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Piers) #-# (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier KIPS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance Per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length per Pier LIN FT	Drilled Pier Length Not In Soil per Pier LIN FT	Drilled Pier Length In Soil per Pier LIN FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length * per Pier LIN FT
Bent 1, Piers 1-3	490	2801.0	10	2814	9.0	16.0			YES	2815.0	5.0
Bent 2, Piers 1-3	490	2801.0	10	2814	9.0	16.0			YES	2815.0	5.0
TOTAL QUANTITY:						96.0					30

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either __"Dia. Drilled Piers" or __"Dia. Drilled Piers Not in Soil" and __"Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications.

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for __"Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (J. Shane Johnson, 037422) on 06/19/2024.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, ie., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for Dynamic Pile Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

DRAWN BY : ZCS DATE : 2/24
CHECKED BY : MGC DATE : 7/24

SUMMARY OF DPT / PILE ORDER LENGTHS

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

Dynamic Pile Testing (DPT)				Pile Order Lengths	
End Bent/ Bent No.	DPT Required? YES or MAYBE	DPT Pile Length FT	Total DPT Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis * EST or DPT
End Bent 2, Piles 1-5	MAYBE		1		

* 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, the first end bent/bent no. listed for each group is the representive end bent/bent with the DPT.

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 Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 2, Piles 1-5				YES	
TOTAL QUANTITY:				5	

SUMMARY OF DRILLED PIER TESTING

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. PIER(s) #-# (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier LIN FT	Shaft Inspection Device (SID) Required? YES OR MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-3		MAYBE	70	MAYBE	
Bent 2, Piers 1-3		MAYBE	70	MAYBE	
TOTAL QUANTITY:		1	420.0		

* CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CHEEK, JR.
Marshall C. Cheek, Jr.
SFBCC2F3A4DC413...
3/19/2025

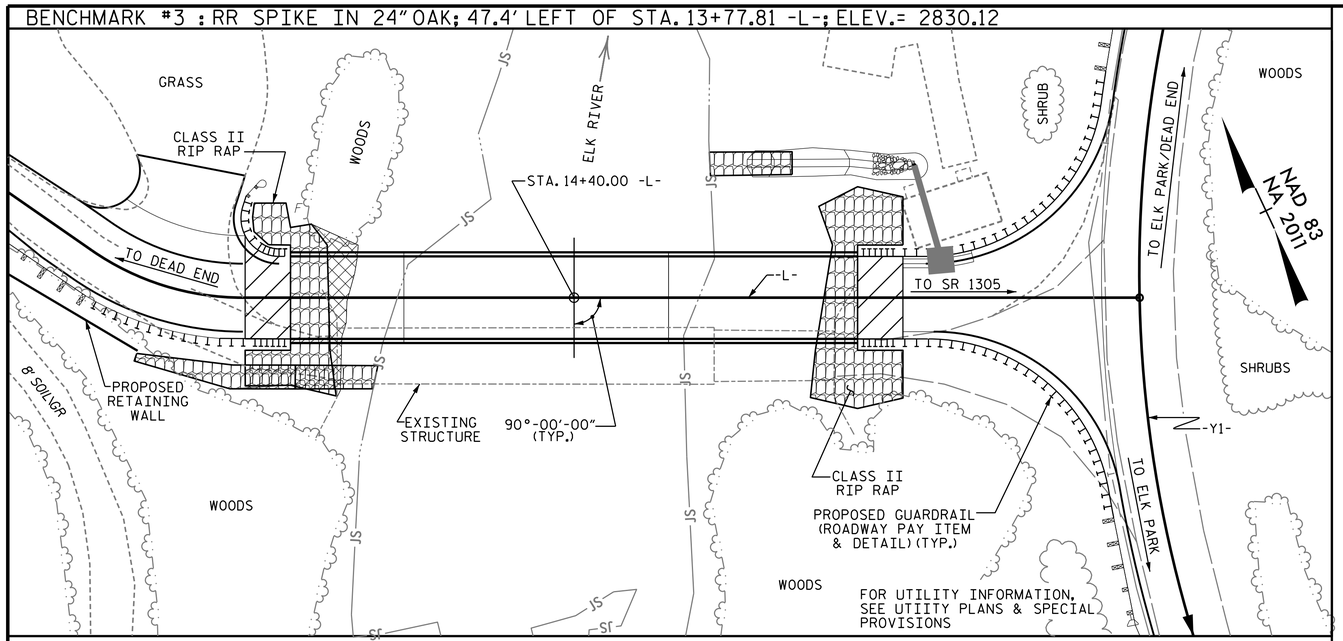
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			29



LOCATION SKETCH

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f_y = 60ksi.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING 2-SPAN STRUCTURE (1 @ 102'-0", 1 @ 30'-9") CONSISTING OF A (SPAN B) TIMBER FLOOR ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 11'-0" AND 1½" ASPHALT WEARING SURFACE AND A (SPAN A) TIMBER FLOOR & THRU TRUSS WITH A CLEAR ROADWAY WIDTH OF 12'-0" AND A 2" ASPHALT WEARING SURFACE AND A SUBSTRUCTURE CONSISTING OF YOUNT MASONRY ABUTMENTS AND INTERIOR BENT, AND LOCATED UPSTREAM OF THE PROPOSED BRIDGE SHALL BE REMOVED. DUE TO THE EFFECTS OF HURRICANE HELENE, THE EXISTING TRUSS SPAN WAS WASHED DOWNSTREAM AND IS NO LONGER CONSIDERED WITHIN THE SCOPE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR DISTANCE OF 25 FT LT. & 30 FT. RT. OF -L- @ END BENT 1 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 SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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 DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESMENT, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

TOTAL BILL OF MATERIAL

ITEM	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	C.Y.	LUMP SUM
SUPERSTRUCTURE												
END BENT 1				25.00	25.00					LUMP SUM	17.7	
BENT 1						48.00	15.00				15.4	
BENT 2						48.00	15.00				14.7	
END BENT 2											17.5	
TOTALS	LUMP SUM	LUMP SUM	LUMP SUM	25.00	25.00	96.00	30.00	1	1	LUMP SUM	65.3	LUMP SUM

TOTAL BILL OF MATERIAL

ITEM	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS		3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LBS.	LBS.	EA.	NO.	LIN. FT.	EA.	EA.	LIN. FT.	TONS	S.Y.	LUMP SUM	NO.	LIN. FT.	NO.	LIN. FT.
SUPERSTRUCTURE								300.50			LUMP SUM	16	640.00	8	560.00
END BENT 1	2,330		5	5	75				155	170					
BENT 1	8,325	1,415													
BENT 2	8,122	1,349													
END BENT 2	2,121		5	5	100	5			105	115					
TOTALS	20,898	2,764	10	10	175	5	1	300.50	260	285	LUMP SUM	16	640.00	8	560.00

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER
SIGNATURE: Marshall G. Cheek, Jr.
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3/19/2025

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TGS ENGINEERS
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SUITE 200
RALEIGH, NC 27603
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CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ELK RIVER
ON SR 1306 BETWEEN
SR 1305 AND DEAD END

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : S. B. WILLIAMS / ZCS DATE : 2/24
CHECKED BY : MGC DATE : 8/24

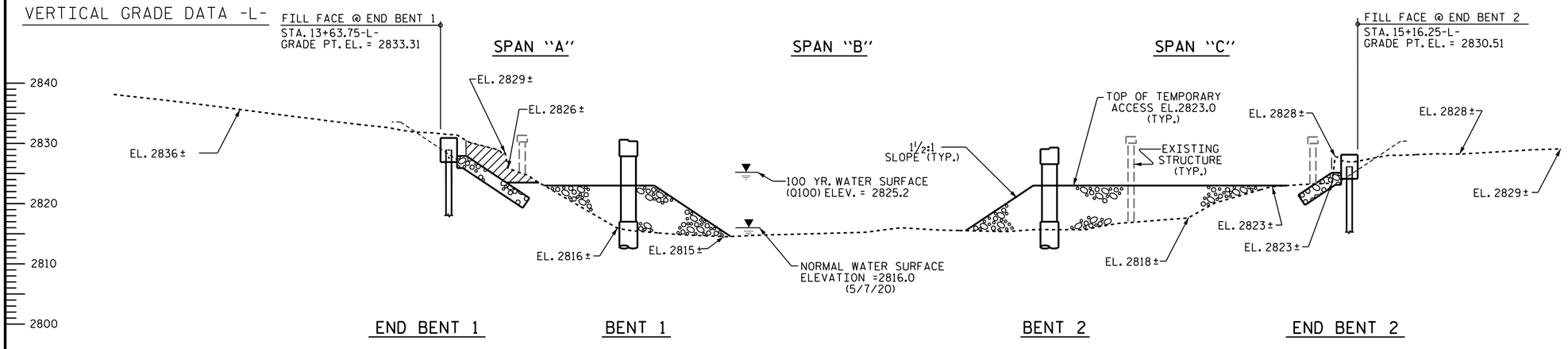
1/8/2025
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ZSmith

13+00 13+50 14+00 14+50 15+00 15+50

(-)12.8857% (-)1.8329%

PI = 13+45.00
EL = 2,833.65
VC = 40'

VERTICAL GRADE DATA -L-



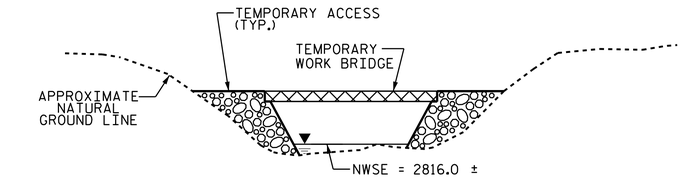
UNCLASSIFIED STRUCTURE EXCAVATION

NOTES:

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 14+40.00 -L-.

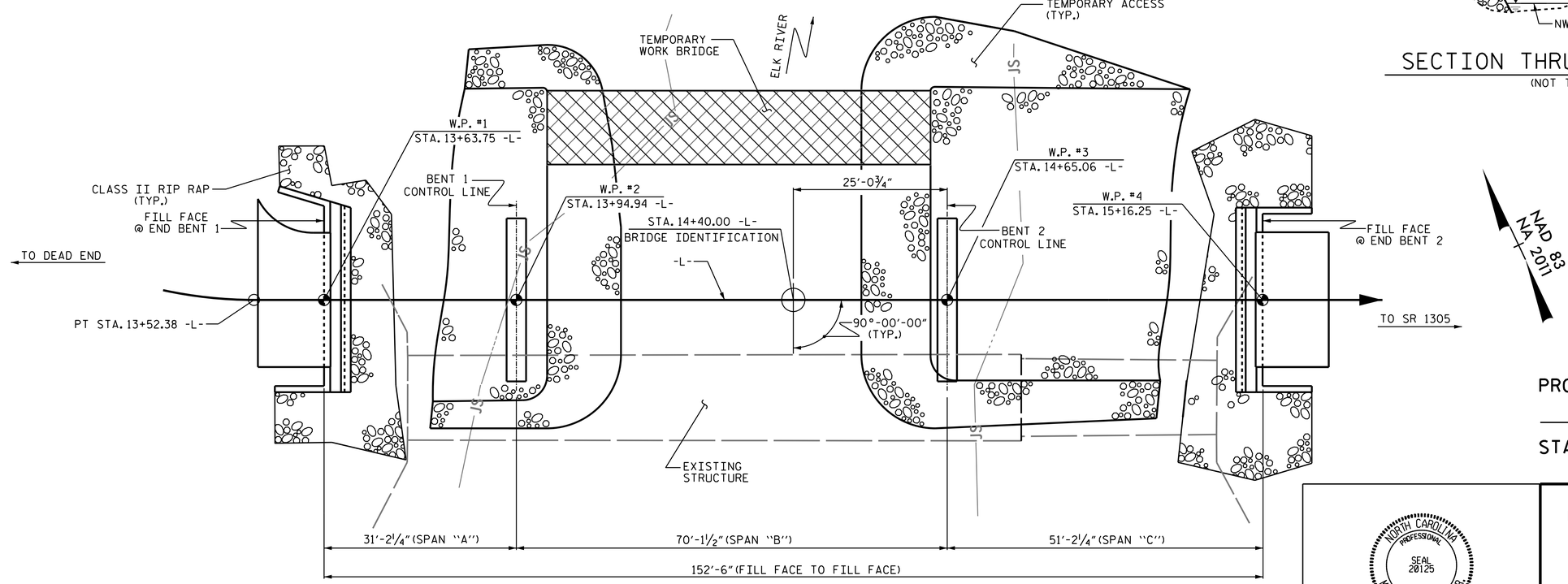
THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY ACCESS FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

SECTION ALONG -L-



SECTION THRU WORK BRIDGE

(NOT TO SCALE)



NAD 83
NA 1 2011

PLAN

PILES AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER
MARSHALL G. CHEEK, JR.
5FBCC2F3A4DC413...
3/19/2025

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CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY ACCESS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : ZCS DATE : 11/24
CHECKED BY : MGC DATE : 11/24

1/8/2025
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ZSmith

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

LEVEL		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 RATING		HL-93 (INVENTORY)	N/A	1	1.13	--	1.75	0.280	1.83	A	EXT	14.50	0.580	1.13	A	EXT	27.50	0.80	0.280	2.33	A	EXT	14.50	
		HL-93 (OPERATING)	N/A		1.92	--	1.35	0.280	2.37	A	EXT	14.50	0.580	1.92	A	EXT	27.50	N/A	--	--	--		--	
		HS-20 (INVENTORY)	36.000	2	1.48	53.28	1.75	0.280	2.49	A	EXT	8.50	0.580	1.48	A	EXT	27.50	0.80	0.280	3.22	A	EXT	11.50	
		HS-20 (OPERATING)	36.000		2.48	89.28	1.35	0.280	3.23	A	EXT	8.50	0.580	2.48	A	EXT	27.50	N/A	--	--	--		--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.16	69.66	1.40	0.280	5.16	A	EXT	14.50	0.580	5.87	A	EXT	23.50	0.80	0.280	5.26	A	EXT	14.50	
		SNGARBS2	20.000		4.51	90.20	1.40	0.280	4.51	A	EXT	11.50	0.580	4.66	A	EXT	23.50	0.80	0.280	4.61	A	EXT	11.50	
		SNAGRIS2	22.000		4.53	99.66	1.40	0.280	4.53	A	EXT	8.50	0.580	4.55	A	EXT	23.50	0.80	0.280	4.69	A	EXT	11.50	
		SNCOTTS3	27.250		2.23	60.77	1.40	0.280	2.59	A	EXT	14.50	0.580	2.23	A	EXT	27.50	0.80	0.280	2.64	A	EXT	14.50	
		SNAGGRS4	34.925		1.91	66.71	1.40	0.280	2.49	A	EXT	14.50	0.580	1.91	A	EXT	27.50	0.80	0.280	2.54	A	EXT	14.50	
		SNS5A	35.550		2.14	76.08	1.40	0.280	2.41	A	EXT	14.50	0.580	2.14	A	EXT	27.50	0.80	0.280	2.46	A	EXT	14.50	
		SNS6A	39.950		1.90	75.91	1.40	0.280	2.28	A	EXT	14.50	0.580	1.90	A	EXT	27.50	0.80	0.280	2.32	A	EXT	14.50	
		SNS7B	42.000		1.97	82.74	1.40	0.280	2.22	A	EXT	14.50	0.580	1.97	A	EXT	27.50	0.80	0.280	2.26	A	EXT	14.50	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.68	88.44	1.40	0.280	2.96	A	EXT	14.50	0.580	2.68	A	EXT	27.50	0.80	0.280	3.01	A	EXT	14.50	
		TNT4A	33.075		2.32	76.73	1.40	0.280	2.81	A	EXT	14.50	0.580	2.32	A	EXT	27.50	0.80	0.280	2.86	A	EXT	14.50	
		TNT6A	41.600		2.16	89.86	1.40	0.280	2.55	A	EXT	14.50	0.580	2.16	A	EXT	27.50	0.80	0.280	2.59	A	EXT	14.50	
		TNT7A	42.000		1.97	82.74	1.40	0.280	2.63	A	EXT	14.50	0.580	1.97	A	EXT	27.50	0.80	0.280	2.68	A	EXT	14.50	
		TNT7B	42.000		1.88	78.96	1.40	0.280	2.48	A	EXT	14.50	0.580	1.88	A	EXT	27.50	0.80	0.280	2.53	A	EXT	14.50	
		TNAGRIT4	43.000		1.76	75.68	1.40	0.280	2.57	A	EXT	14.50	0.580	1.76	A	EXT	27.50	0.80	0.280	2.62	A	EXT	14.50	
		TNAGT5A	45.000		2.02	90.90	1.40	0.280	2.49	A	EXT	14.50	0.580	2.02	A	EXT	27.50	0.80	0.280	2.54	A	EXT	14.50	
		TNAGT5B	45.000	3	1.56	70.20	1.40	0.280	2.40	A	EXT	11.50	0.580	1.56	A	EXT	27.50	0.80	0.280	2.46	A	EXT	11.50	
EMERGENCY VEHICLE (EV)		EV2	28.750		3.08	88.55	1.30	0.280	3.53	A	EXT	11.50	0.580	3.08	A	EXT	27.50	0.80	0.280	3.35	A	EXT	11.50	
		EV3	43.000	4	1.45	62.35	1.30	0.280	2.31	A	EXT	14.50	0.580	1.45	A	EXT	27.50	0.80	0.280	2.18	A	EXT	14.50	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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.

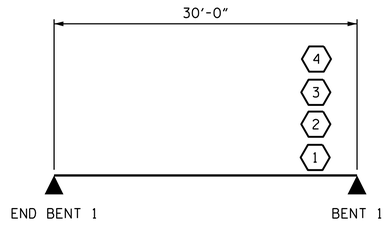
(#) CONTROLLING LOAD RATING

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

SPAN A

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

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

Marshall D. Cheek, Jr.

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3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 30' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : ZCS DATE : 11/24
CHECKED BY : MGC DATE : 11/24
DESIGN ENGINEER OF RECORD: ZCS DATE : 11/24

1/8/2025
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ZSmith

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

LEVEL		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 RATING		HL-93 (INVENTORY)	N/A	1	1.19	--	1.75	0.260	1.19	B	EXT	34.50	0.510	1.45	B	EXT	6.50	0.80	0.260	1.49	B	EXT	34.50	
		HL-93 (OPERATING)	N/A		1.55	--	1.35	0.260	1.55	B	EXT	34.50	0.510	1.94	B	EXT	6.50	N/A	--	--	--		--	
		HS-20 (INVENTORY)	36.000	2	1.55	55.80	1.75	0.260	1.55	B	EXT	34.50	0.510	1.85	B	EXT	6.50	0.80	0.260	1.94	B	EXT	34.50	
		HS-20 (OPERATING)	36.000		2.01	72.36	1.35	0.260	2.01	B	EXT	34.50	0.510	2.46	B	EXT	6.50	N/A	--	--	--		--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.32	58.32	1.40	0.260	4.32	B	EXT	34.50	0.510	5.86	B	EXT	6.50	0.80	0.260	4.33	B	EXT	34.50	
		SNGARBS2	20.000		3.24	64.80	1.40	0.260	3.24	B	EXT	34.50	0.510	4.12	B	EXT	6.50	0.80	0.260	3.25	B	EXT	34.50	
		SNAGRIS2	22.000		3.08	67.76	1.40	0.260	3.08	B	EXT	34.50	0.510	3.81	B	EXT	6.50	0.80	0.260	3.08	B	EXT	34.50	
		SNCOTTS3	27.250		2.15	58.59	1.40	0.260	2.15	B	EXT	34.50	0.510	2.82	B	EXT	6.50	0.80	0.260	2.15	B	EXT	34.50	
		SNAGGRS4	34.925		1.81	63.21	1.40	0.260	1.81	B	EXT	34.50	0.510	2.32	B	EXT	6.50	0.80	0.260	1.81	B	EXT	34.50	
		SNS5A	35.550		1.77	62.92	1.40	0.260	1.77	B	EXT	34.50	0.510	2.36	B	EXT	6.50	0.80	0.260	1.77	B	EXT	34.50	
		SNS6A	39.950		1.62	64.72	1.40	0.260	1.62	B	EXT	34.50	0.510	2.14	B	EXT	6.50	0.80	0.260	1.62	B	EXT	34.50	
		SNS7B	42.000		1.55	65.10	1.40	0.260	1.55	B	EXT	34.50	0.510	2.10	B	EXT	6.50	0.80	0.260	1.55	B	EXT	34.50	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.98	65.34	1.40	0.260	1.98	B	EXT	34.50	0.510	2.58	B	EXT	6.50	0.80	0.260	1.98	B	EXT	34.50	
		TNT4A	33.075		1.99	65.82	1.40	0.260	1.99	B	EXT	34.50	0.510	2.50	B	EXT	6.50	0.80	0.260	1.99	B	EXT	34.50	
		TNT6A	41.600		1.63	67.81	1.40	0.260	1.63	B	EXT	34.50	0.510	2.26	B	EXT	6.50	0.80	0.260	1.63	B	EXT	34.50	
		TNT7A	42.000		1.64	68.88	1.40	0.260	1.64	B	EXT	34.50	0.510	2.20	B	EXT	6.50	0.80	0.260	1.64	B	EXT	34.50	
		TNT7B	42.000		1.70	71.40	1.40	0.260	1.70	B	EXT	34.50	0.510	2.04	B	EXT	6.50	0.80	0.260	1.70	B	EXT	34.50	
		TNAGRIT4	43.000		1.61	69.23	1.40	0.260	1.61	B	EXT	34.50	0.510	1.97	B	EXT	6.50	0.80	0.260	1.62	B	EXT	34.50	
		TNAGT5A	45.000		1.52	68.40	1.40	0.260	1.52	B	EXT	34.50	0.510	1.96	B	EXT	6.50	0.80	0.260	1.52	B	EXT	34.50	
		TNAGT5B	45.000	3	1.50	67.50	1.40	0.260	1.50	B	EXT	34.50	0.510	1.87	B	EXT	6.50	0.80	0.260	1.50	B	EXT	34.50	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.30	66.13	1.30	0.260	2.47	B	EXT	34.50	0.510	3.06	B	EXT	6.50	0.80	0.260	2.30	B	EXT	34.50	
		EV3	43.000	4	1.50	64.50	1.30	0.260	1.62	B	EXT	34.50	0.510	2.00	B	EXT	6.50	0.80	0.260	1.50	B	EXT	34.50	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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.

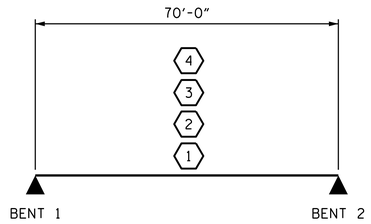
(#) CONTROLLING LOAD RATING

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

SPAN B

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

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

Signed by: Marshall G. Cheek, Jr.
5FBCC2F3A4DC413...

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 70' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE : 11/24
CHECKED BY :	MGC	DATE : 11/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE : 11/24

1/8/2025
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ZSmith

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

LEVEL		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 RATING		HL-93 (INVENTORY)	N/A	1	1.19	--	1.75	0.280	1.56	C	EXT	24.50	0.540	1.19	C	EXT	1.40	0.80	0.280	1.75	C	EXT	24.50	
		HL-93 (OPERATING)	N/A		1.83	--	1.35	0.280	2.02	C	EXT	24.50	0.540	1.83	C	EXT	4.50	N/A	--	--	--		--	
		HS-20 (INVENTORY)	36.000	2	1.66	59.76	1.75	0.280	1.93	C	EXT	24.50	0.540	1.66	C	EXT	4.50	0.80	0.280	2.17	C	EXT	24.50	
		HS-20 (OPERATING)	36.000		2.20	79.20	1.35	0.280	2.51	C	EXT	24.50	0.540	2.20	C	EXT	4.50	N/A	--	--	--		--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.42	59.67	1.40	0.280	4.92	C	EXT	24.50	0.540	4.92	C	EXT	4.50	0.80	0.280	4.42	C	EXT	24.50	
		SNGARBS2	20.000		3.49	69.80	1.40	0.280	3.88	C	EXT	24.50	0.540	3.55	C	EXT	4.50	0.80	0.280	3.49	C	EXT	24.50	
		SNAGRIS2	22.000		3.33	73.26	1.40	0.280	3.76	C	EXT	19.50	0.540	3.33	C	EXT	4.50	0.80	0.280	3.40	C	EXT	24.50	
		SNCOTTS3	27.250		2.21	60.22	1.40	0.280	2.45	C	EXT	24.50	0.540	2.39	C	EXT	4.50	0.80	0.280	2.21	C	EXT	24.50	
		SNAGGRS4	34.925		1.92	67.06	1.40	0.280	2.13	C	EXT	24.50	0.540	2.03	C	EXT	4.50	0.80	0.280	1.92	C	EXT	24.50	
		SNS5A	35.550		1.87	66.48	1.40	0.280	2.08	C	EXT	24.50	0.540	2.09	C	EXT	4.50	0.80	0.280	1.87	C	EXT	24.50	
		SNS6A	39.950		1.75	69.91	1.40	0.280	1.94	C	EXT	24.50	0.540	1.93	C	EXT	4.50	0.80	0.280	1.75	C	EXT	24.50	
		SNS7B	42.000		1.67	70.14	1.40	0.280	1.85	C	EXT	24.50	0.540	1.94	C	EXT	4.50	0.80	0.280	1.67	C	EXT	24.50	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.14	70.62	1.40	0.280	2.38	C	EXT	24.50	0.540	2.30	C	EXT	4.50	0.80	0.280	2.14	C	EXT	24.50	
		TNT4A	33.075		2.16	71.44	1.40	0.280	2.40	C	EXT	24.50	0.540	2.20	C	EXT	4.50	0.80	0.280	2.16	C	EXT	24.50	
		TNT6A	41.600		1.80	74.88	1.40	0.280	2.00	C	EXT	24.50	0.540	2.13	C	EXT	4.50	0.80	0.280	1.80	C	EXT	24.50	
		TNT7A	42.000		1.83	76.86	1.40	0.280	2.03	C	EXT	24.50	0.540	1.96	C	EXT	4.50	0.80	0.280	1.83	C	EXT	24.50	
		TNT7B	42.000		1.86	78.12	1.40	0.280	2.12	C	EXT	24.50	0.540	1.86	C	EXT	4.50	0.80	0.280	1.91	C	EXT	24.50	
		TNAGRIT4	43.000		1.78	76.54	1.40	0.280	2.01	C	EXT	24.50	0.540	1.78	C	EXT	4.50	0.80	0.280	1.81	C	EXT	24.50	
		TNAGT5A	45.000		1.69	76.05	1.40	0.280	1.88	C	EXT	24.50	0.540	1.82	C	EXT	4.50	0.80	0.280	1.69	C	EXT	24.50	
		TNAGT5B	45.000	3	1.66	74.70	1.40	0.280	1.84	C	EXT	24.50	0.540	1.68	C	EXT	4.50	0.80	0.280	1.66	C	EXT	24.50	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.50	71.88	1.30	0.280	2.99	C	EXT	24.50	0.540	2.66	C	EXT	4.50	0.80	0.280	2.50	C	EXT	24.50	
		EV3	43.000	4	1.61	69.23	1.30	0.280	1.93	C	EXT	24.50	0.540	1.75	C	EXT	4.50	0.80	0.280	1.61	C	EXT	24.50	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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.

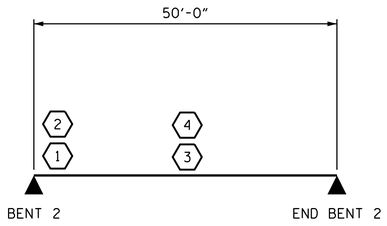
(#) CONTROLLING LOAD RATING

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

SPAN C

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

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

Marshall G. Cheek, Jr.

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

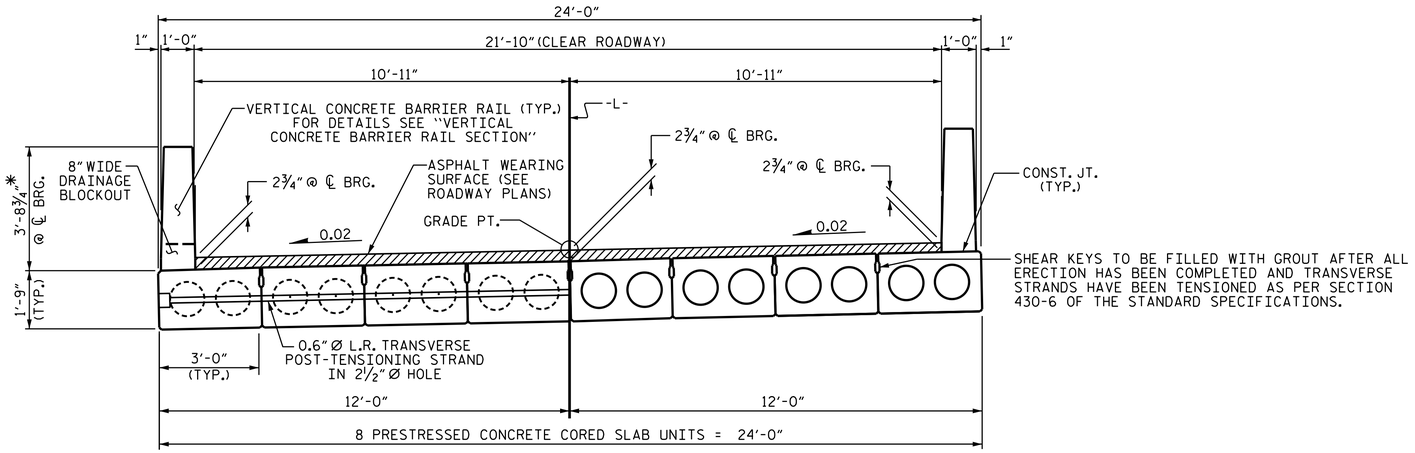
LRFR SUMMARY FOR 50' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE : 11/24
CHECKED BY :	MGC	DATE : 11/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE : 11/24

1/8/2025
c:\workdir\ncdot-pw.bentley.com_ncdot-pw-01\zachary smith\d0312556\008_B-5835-SMU-CS-LRFR 50' SPAN-05.dgn
ZSmith

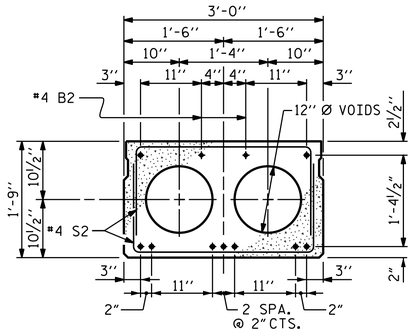


HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

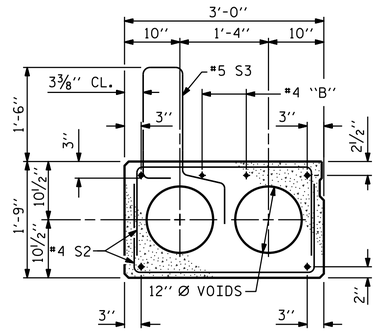
TYPICAL SECTION

* - 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, SHEET 6 OF 7.



INTERIOR SLAB SECTION (30' UNIT)

(9 STRANDS REQUIRED)

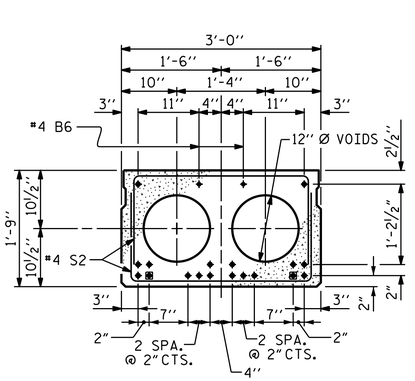


EXT. SLAB SECTION

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

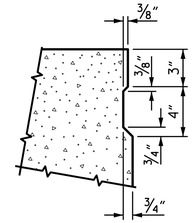
● BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



INTERIOR SLAB SECTION (50' UNIT)

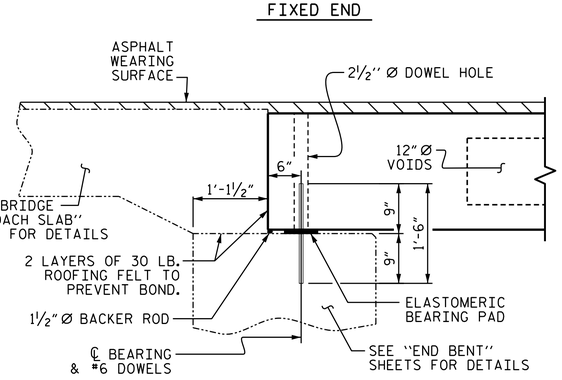
(18 STRANDS REQUIRED)



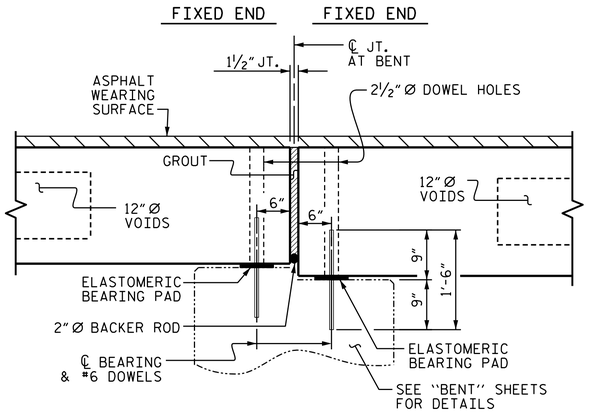
SHEAR KEY DETAIL

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

0.6" Ø LOW RELAXATION STRAND LAYOUT

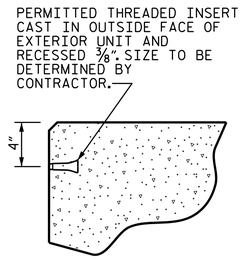


SECTION AT END BENT

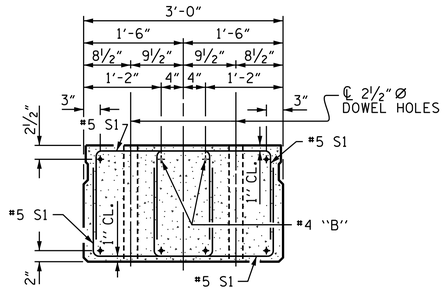


SECTION AT BENT

BENT 1 SHOWN, BENT 2 SIMILAR

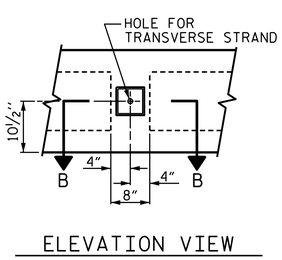


THREADED INSERT DETAIL

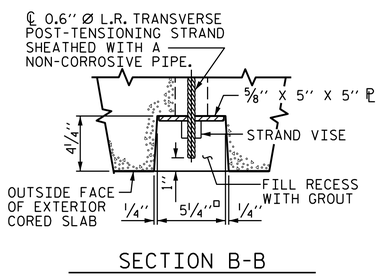


END ELEVATION

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.



ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 1 OF 7

DRAWN BY :	ZCS	DATE :	12/23
CHECKED BY :	MGC	DATE :	1/24
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	7/24

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

5FBCC2F3A4DC413...

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

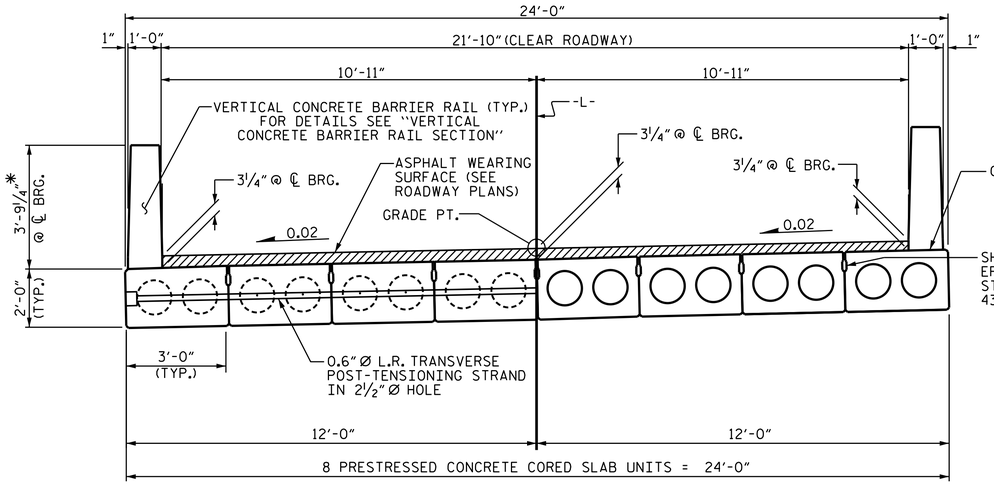
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SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW SPAN A & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			29

1/8/2025
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ZSmith



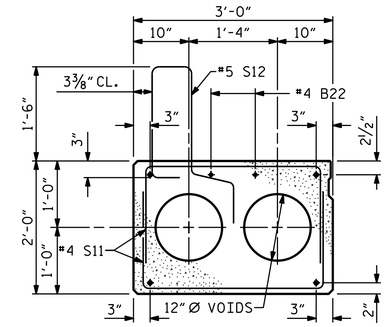
HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

TYPICAL SECTION

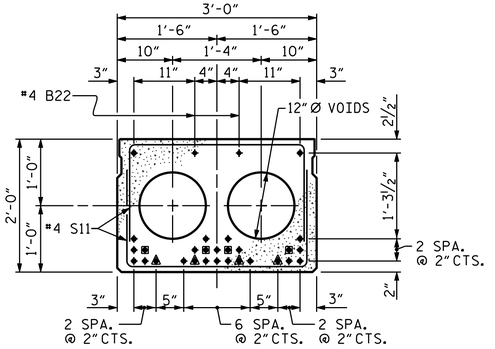
SHEAR KEYS TO BE FILLED WITH GROUT AFTER ALL ERECTION HAS BEEN COMPLETED AND TRANSVERSE STRANDS HAVE BEEN TENSIONED AS PER SECTION 430-6 OF THE STANDARD SPECIFICATIONS.

* - 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, SHEET 6 OF 7.



EXTERIOR SLAB SECTION

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



INTERIOR SLAB SECTION (70' UNIT)

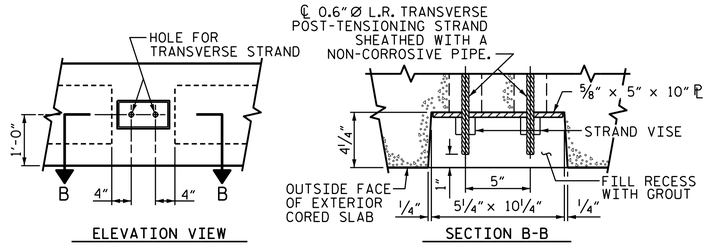
(28 STRANDS REQUIRED)

0.6'' Ø LOW RELAXATION STRAND LAYOUT

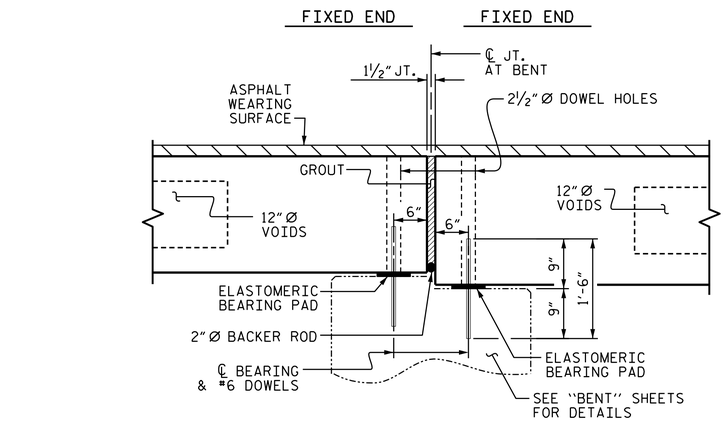
◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◈ 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.

DEBONDING LEGEND

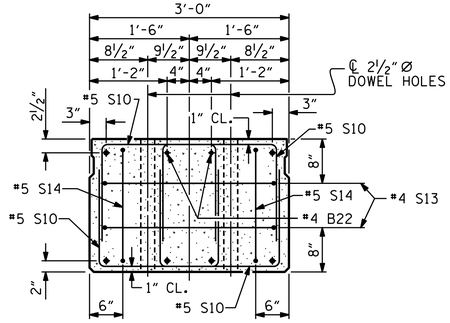


GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



SECTION AT BENT

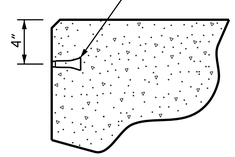
BENT 1 SHOWN, BENT 2 SIMILAR



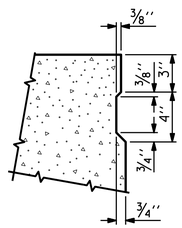
END ELEVATION

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.

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



THREADED INSERT DETAIL



SHEAR KEY DETAIL

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

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 7

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

Marshall G. Cheek, Jr.

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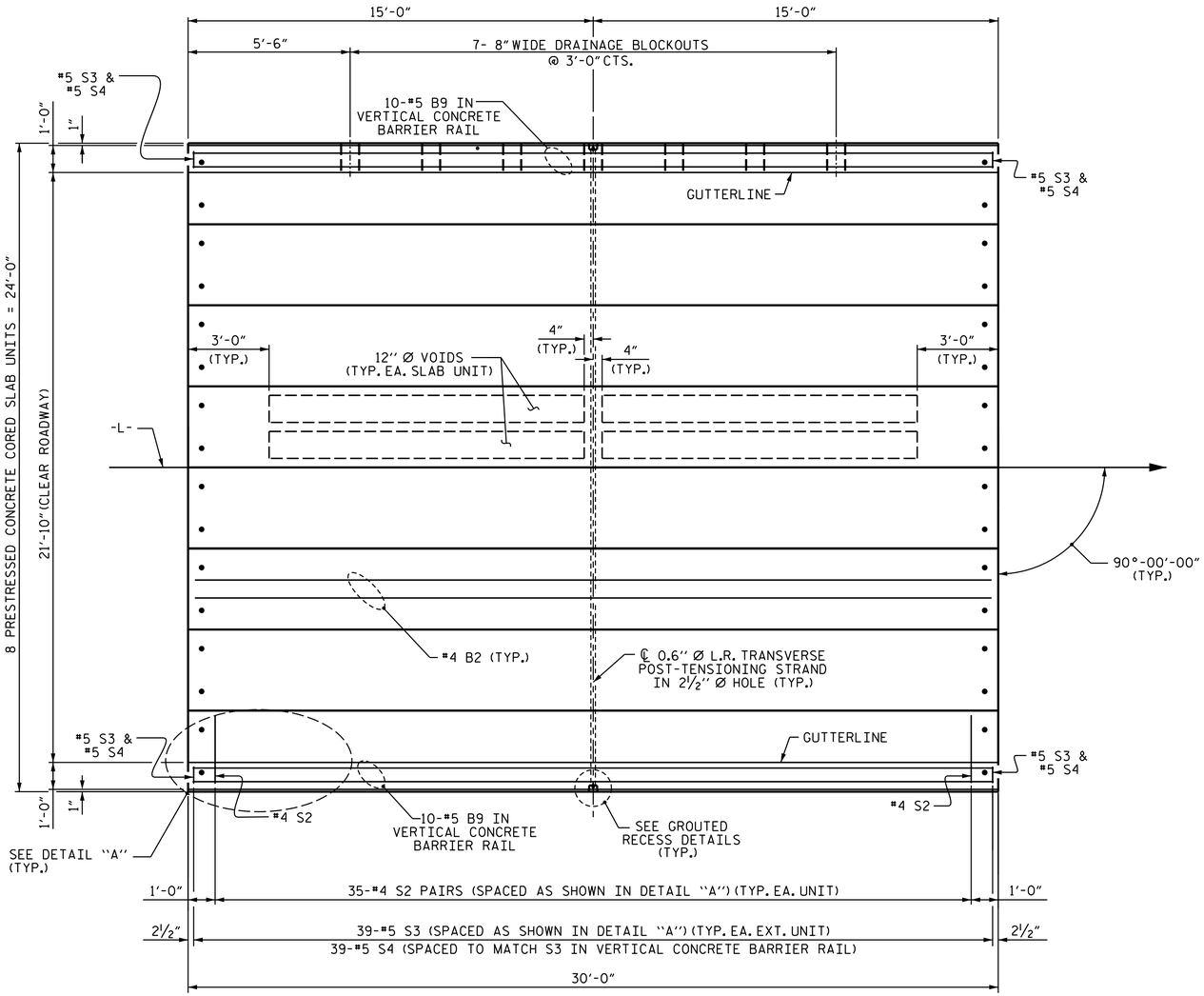
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE 3'-0'' X 2'-0'' PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW SPAN B

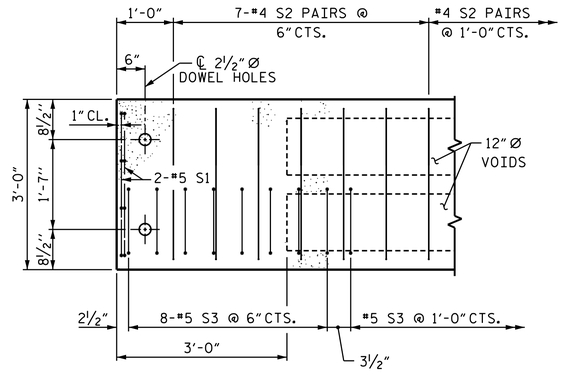
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			29

DRAWN BY :	ZCS	DATE : 12/23
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DESIGN ENGINEER OF RECORD : ZCS		DATE : 2/24

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ZSmith



PLAN OF SPAN A



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 3 OF 7

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

Signed by: Marshall G. Cheek, Jr.
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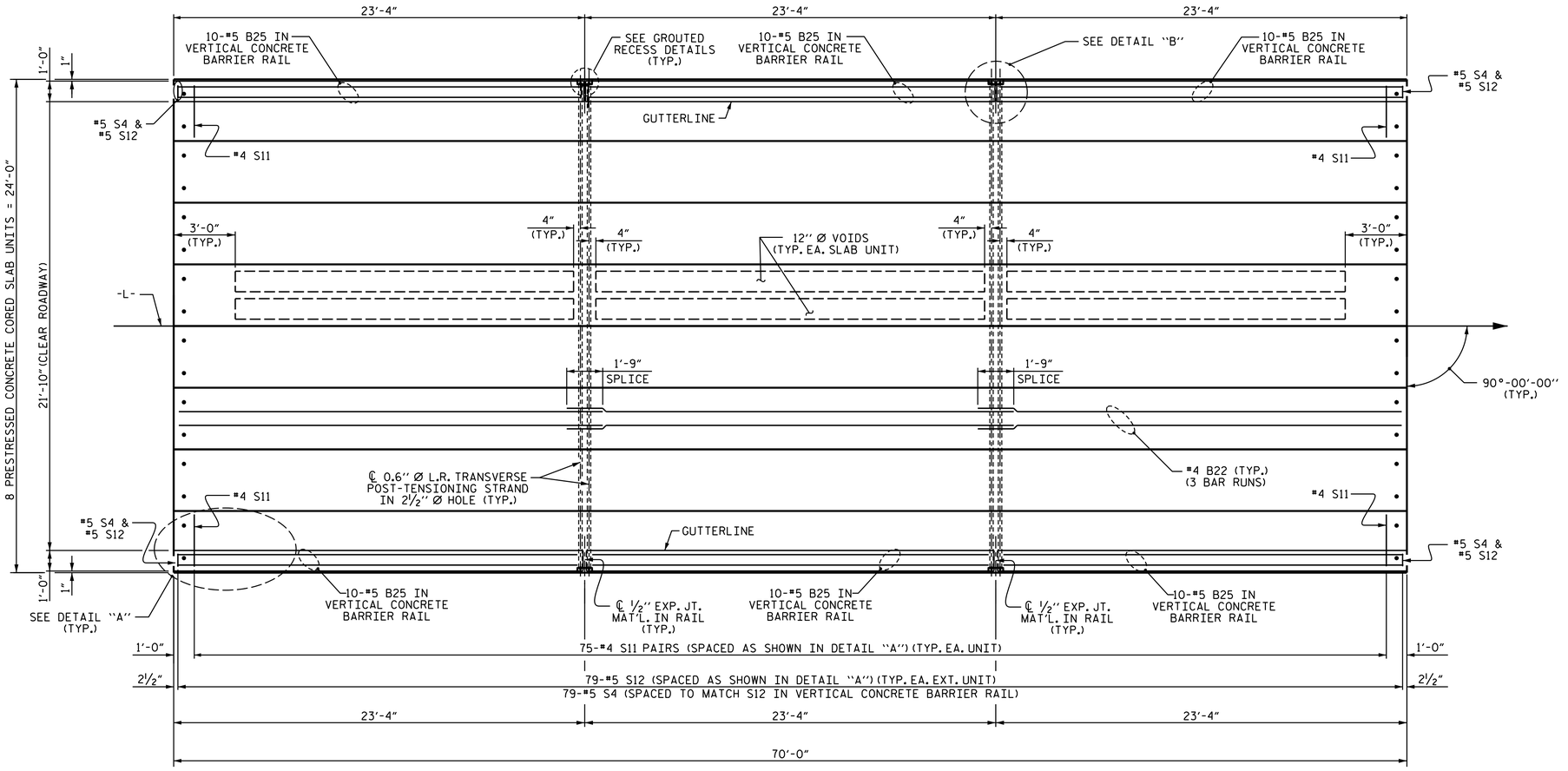
SUPERSTRUCTURE

PLAN OF SPAN A

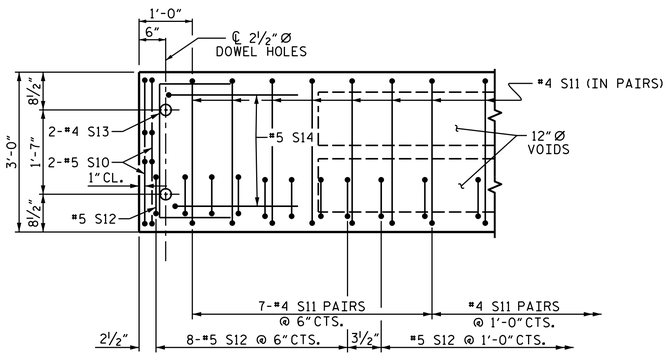
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			29

DRAWN BY :	ZCS	DATE :	10/24
CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	10/24

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ZSmith

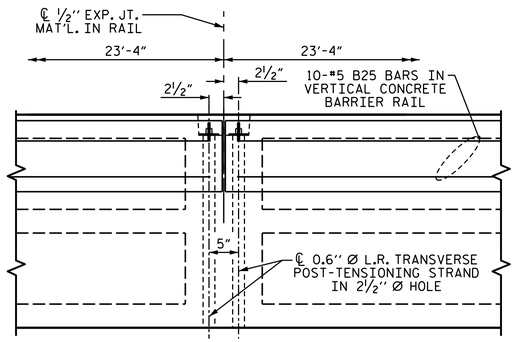


PLAN OF SPAN B



DETAIL "A"

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



DETAIL "B"

DRAWN BY :	ZCS	DATE :	10/24
CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	10/24

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ZSmith

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-
SHEET 4 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
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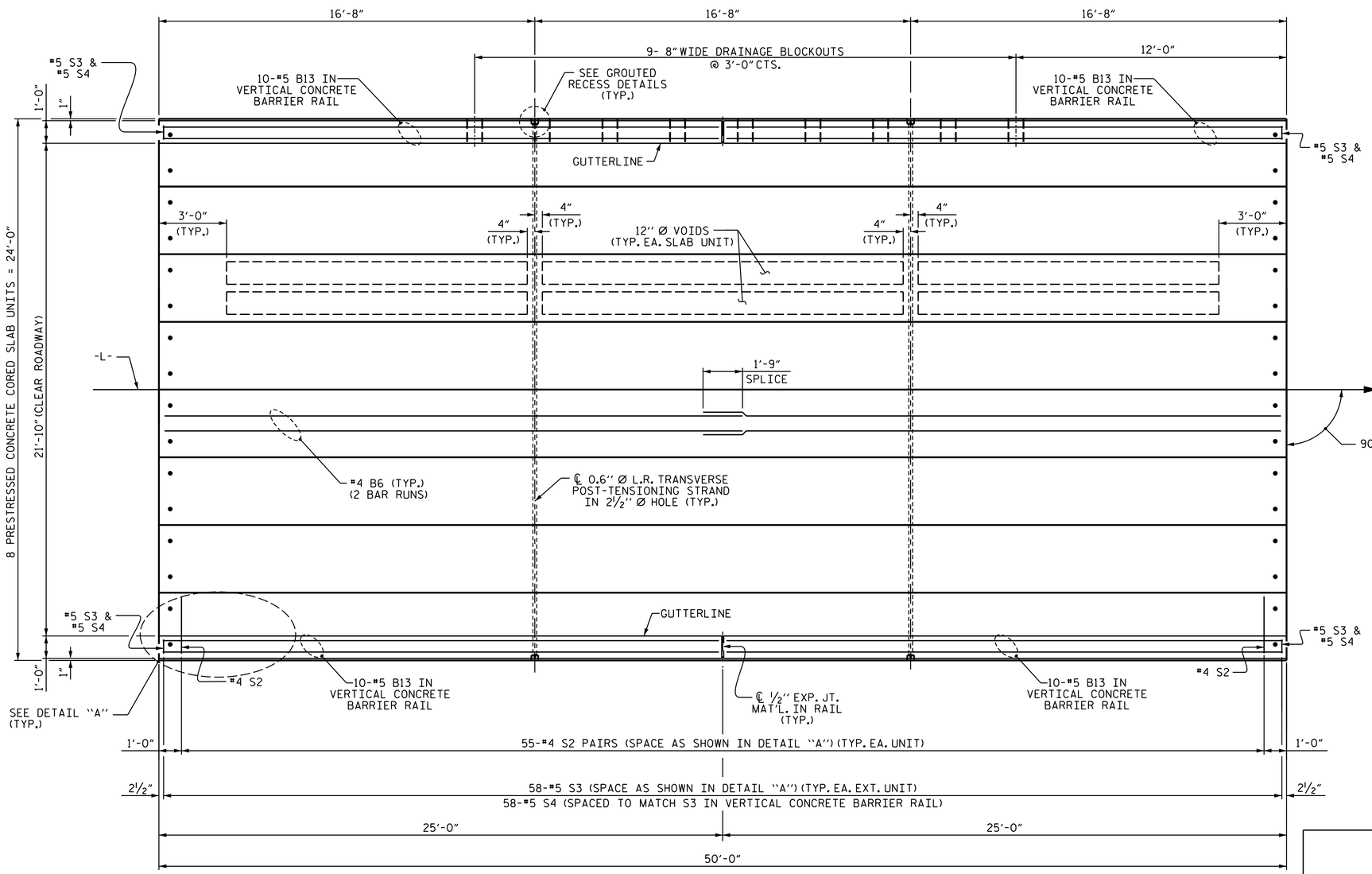
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RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

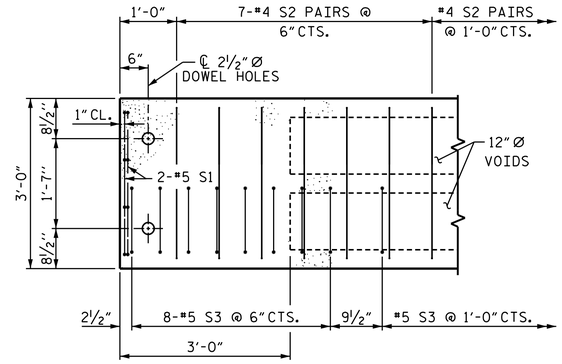
SUPERSTRUCTURE

PLAN OF SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			29



PLAN OF SPAN C



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 5 OF 7

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CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	10/24

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ZSmith

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

Marshall G. Cheek, Jr.
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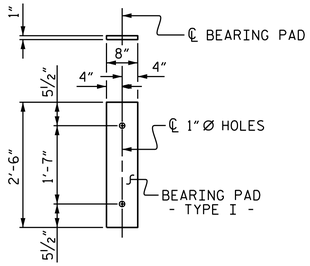
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RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			29



FIXED END
(TYPE I - 48 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' UNITS	4500
70' UNITS	5500
50' UNITS	4900

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

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
30' UNIT			
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	6	30'-0"	180'-0"
TOTAL	8		240'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	6	70'-0"	420'-0"
TOTAL	8		560'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	6	50'-0"	300'-0"
TOTAL	8		400'-0"

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 2½"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.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL 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, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. 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.

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.

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.

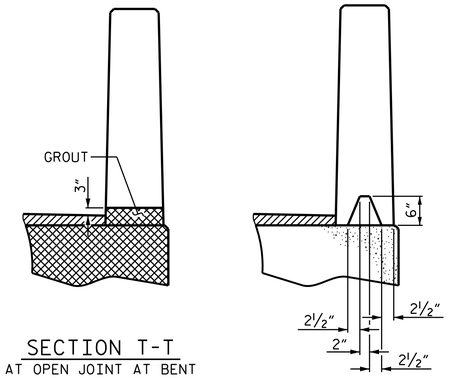
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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

APPLY EPOXY PROTECTIVE COATING TO THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE VERTICAL CONCRETE BARRIER RAIL.

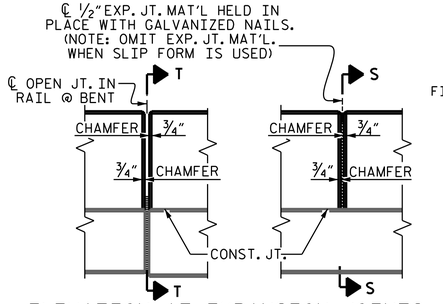
THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

VERTICAL CONCRETE BARRIER RAIL SECTION

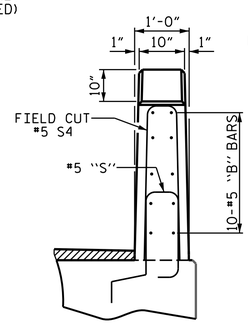


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

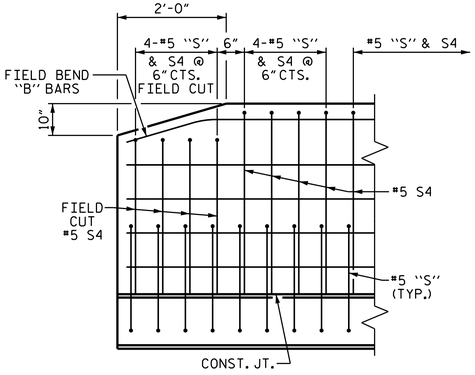
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-

SHEET 6 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			29

DRAWN BY :	ZCS	DATE :	12/23
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DESIGN ENGINEER OF RECORD : ZCS		DATE :	2/24

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ZSmith

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	70	#4	3	5'-4"	249	5'-4"	249
✳ S3	39	#5	1	5'-10"	237		
REINFORCING STEEL LBS.					324		324
✳EPOXY COATED REINFORCING STEEL LBS.					237		
5500 P.S.I. CONCRETE CU. YDS.					4.4		4.4
0.6" Ø L.R. STRANDS No.					9		9

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	110	#4	3	5'-4"	392	5'-4"	392
✳ S3	58	#5	1	5'-10"	353		
REINFORCING STEEL LBS.					496		496
✳EPOXY COATED REINFORCING STEEL LBS.					353		
6500 P.S.I. CONCRETE CU. YDS.					7.1		7.1
0.6" Ø L.R. STRANDS No.					18		18

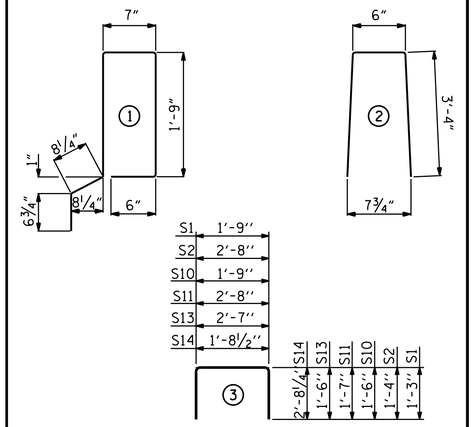
BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				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'-9"	40	4'-9"	40
S11	150	#4	3	5'-10"	584	5'-10"	584
✳S12	79	#5	1	5'-10"	481		
S13	4	#4	3	5'-7"	15	5'-7"	15
S14	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL LBS.					767		767
✳EPOXY COATED REINFORCING STEEL LBS.					481		
7500 P.S.I. CONCRETE CU. YDS.					11.8		11.8
0.6" Ø L.R. STRANDS No.					28		28

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	30' UNIT	70' UNIT	50' UNIT					
✳ B9	20			20	#5	STR	29'-7"	617
✳B25		60		60	#5	STR	22'-11"	1434
✳B13			40	40	#5	STR	24'-7"	1026
✳ S4	78	158	116	352	#5	2	7'-2"	2631
✳EPOXY COATED REINFORCING STEEL						LBS.		5708
CLASS AA CONCRETE						CU.YDS.		38.2
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT.		300.50

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
30' UNITS	2 9/16"	3'-8 9/16"
70' UNITS	1 1/2"	3'-7 1/2"
50' UNITS	1 11/16"	3'-7 11/16"

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
30' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/16"
FINAL CAMBER	3/16"

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 7/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	11/16"
FINAL CAMBER	1 3/4"

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
50' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 3/8"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	5/16"
FINAL CAMBER	1 1/16"

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 7 OF 7

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

Marshall G. Cheek, Jr.

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3/19/2025

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

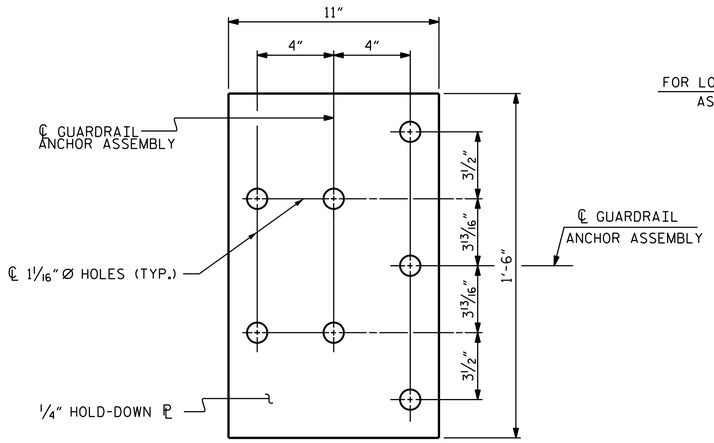
SUPERSTRUCTURE

PRESTRESSED CONCRETE CORED SLAB UNITS 90° SKEW

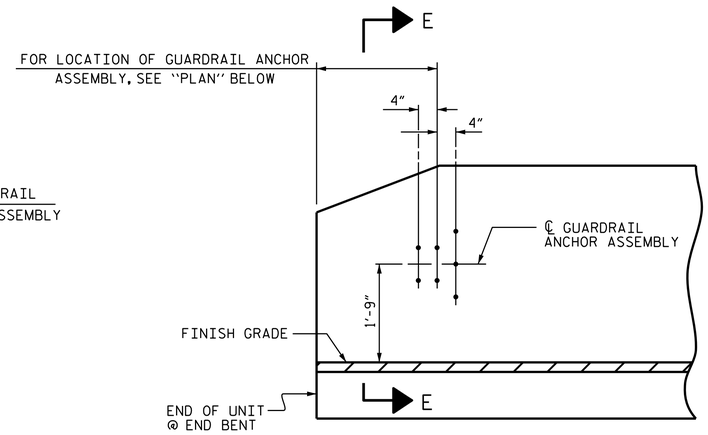
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : ZCS DATE : 10/24
CHECKED BY : MGC DATE : 10/24
DESIGN ENGINEER OF RECORD : ZCS DATE : 10/24

1/8/2025
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ZSmith



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" 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 1/8" 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.)

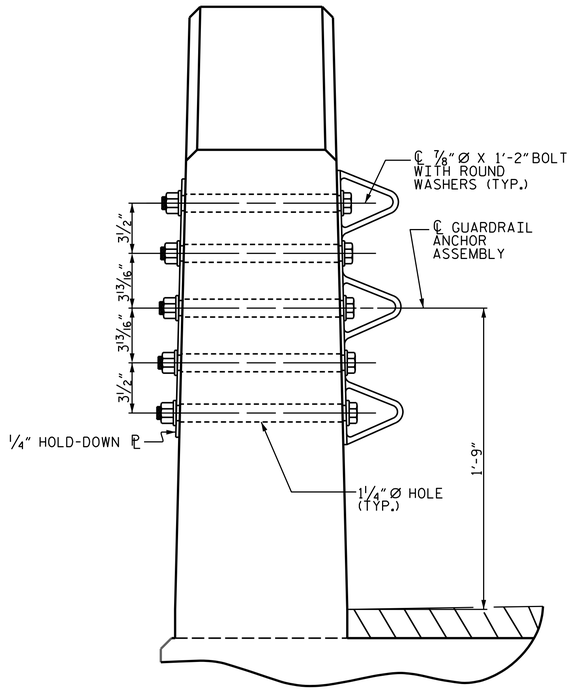
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

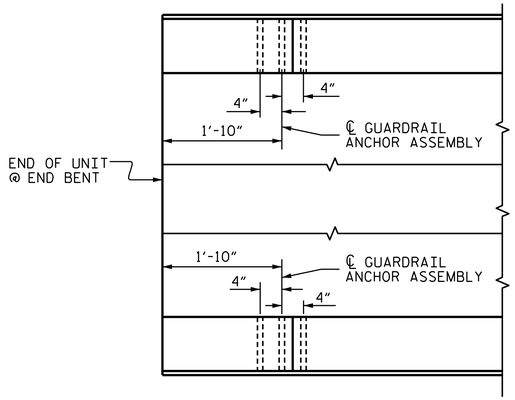
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

ASSEMBLED BY :	ZCS	DATE :	1/24
CHECKED BY :	MGC	DATE :	2/24
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

1/8/2025
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ZSmith

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

3/19/2025

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SUITE 200
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PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

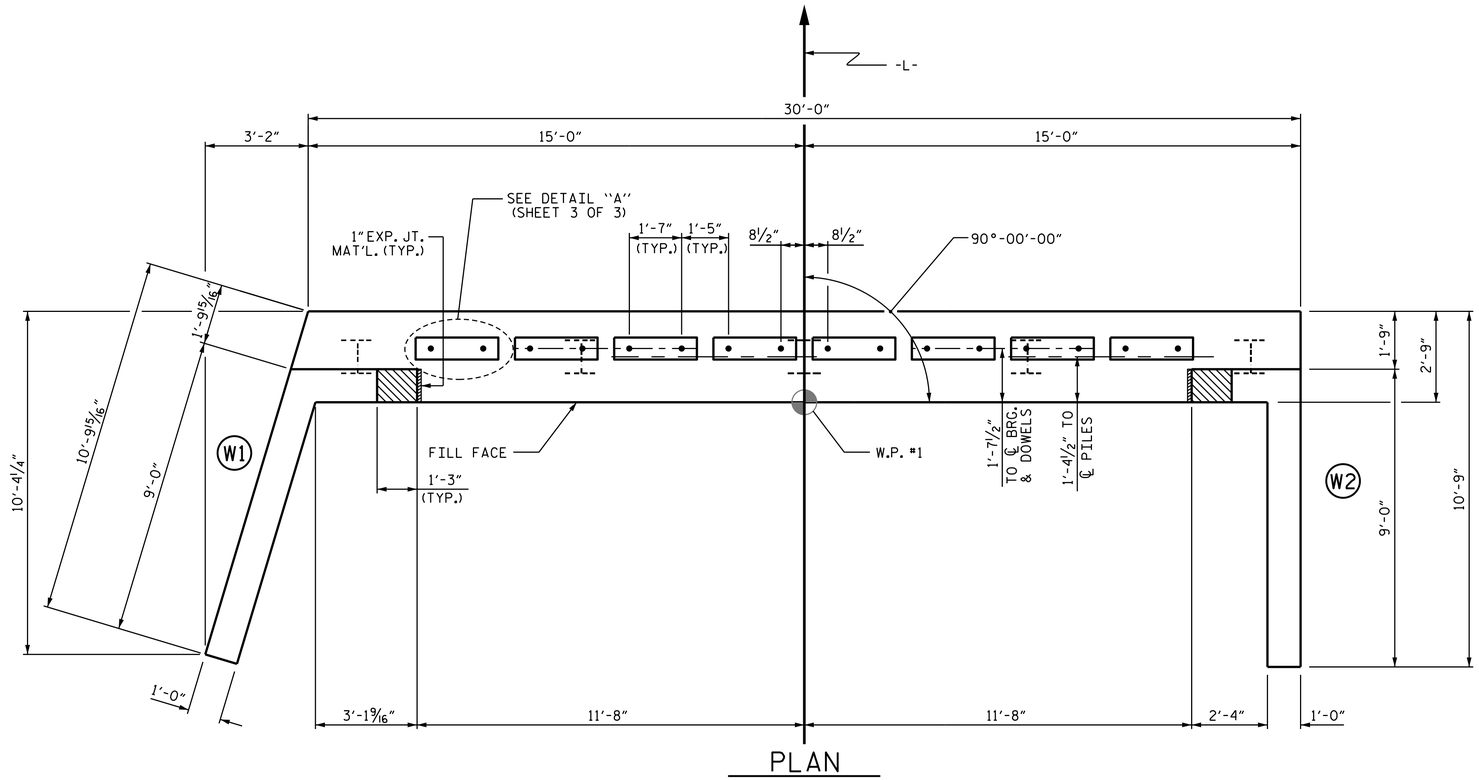
STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

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

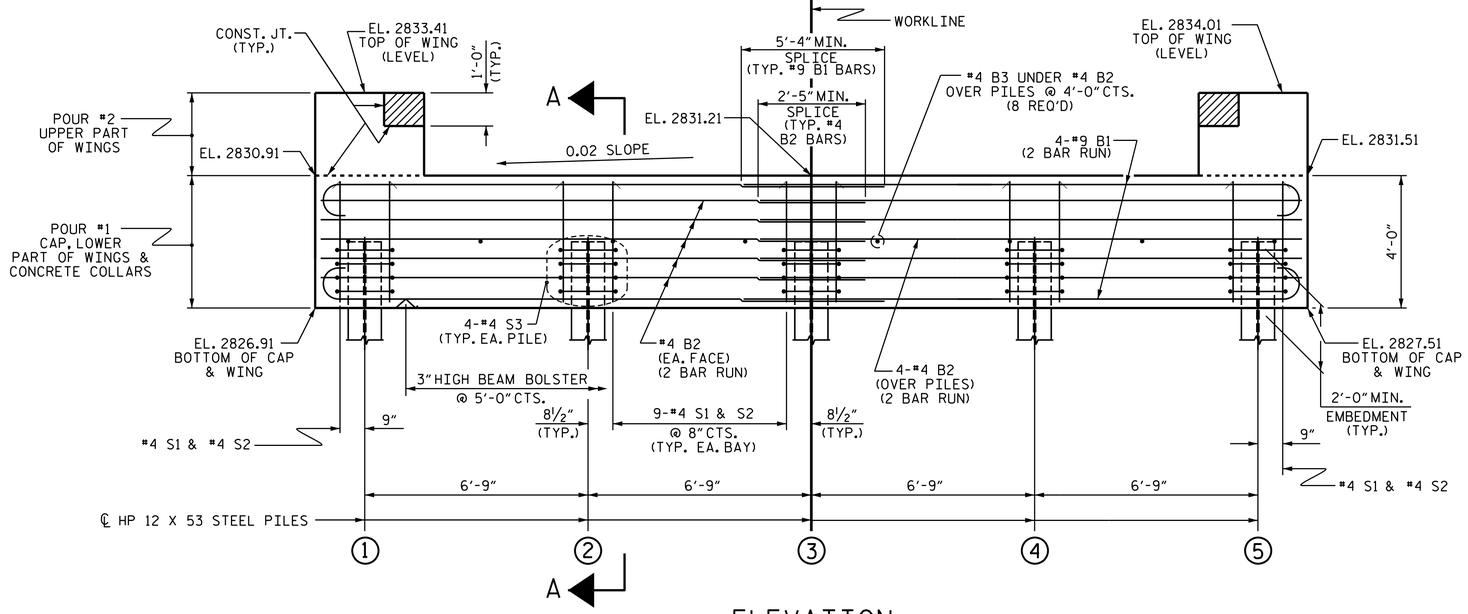
SHEET NO. S-16

TOTAL SHEETS 29

(SHT 1) STD. NO. GRA3



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

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 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

TOP OF PILE ELEVATIONS	
①	2828.95
②	2829.09
③	2829.22
④	2829.35
⑤	2829.48

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CREEK, JR.
Marshall C. Creek, Jr.
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3/19/2025

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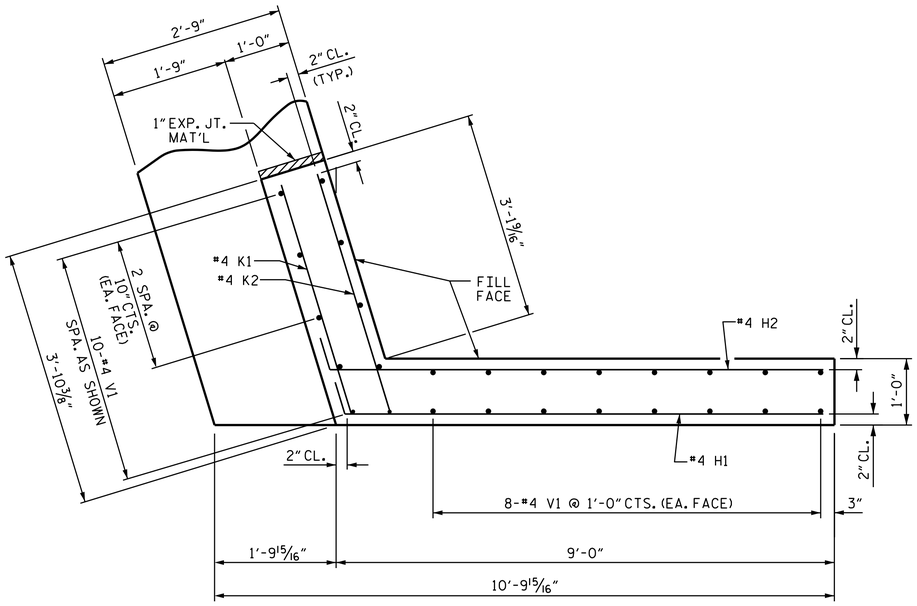
SUBSTRUCTURE

END BENT 1

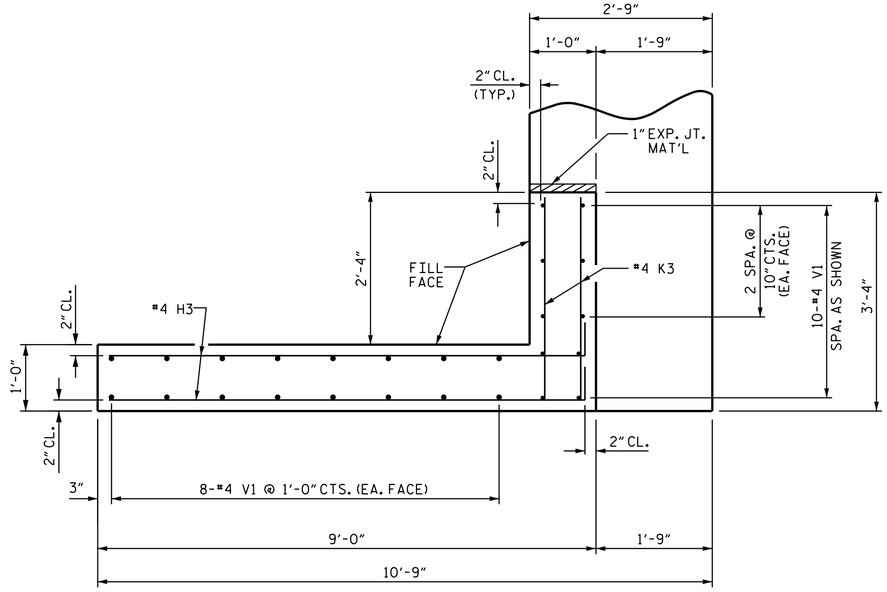
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			29

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DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

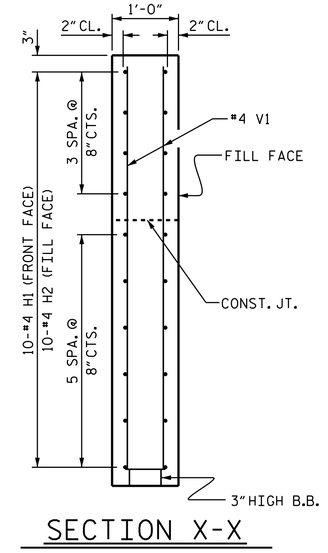
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ZSmith



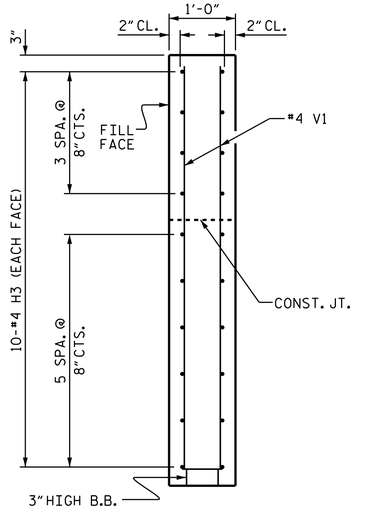
PLAN OF WING (W1)



PLAN OF WING (W2)

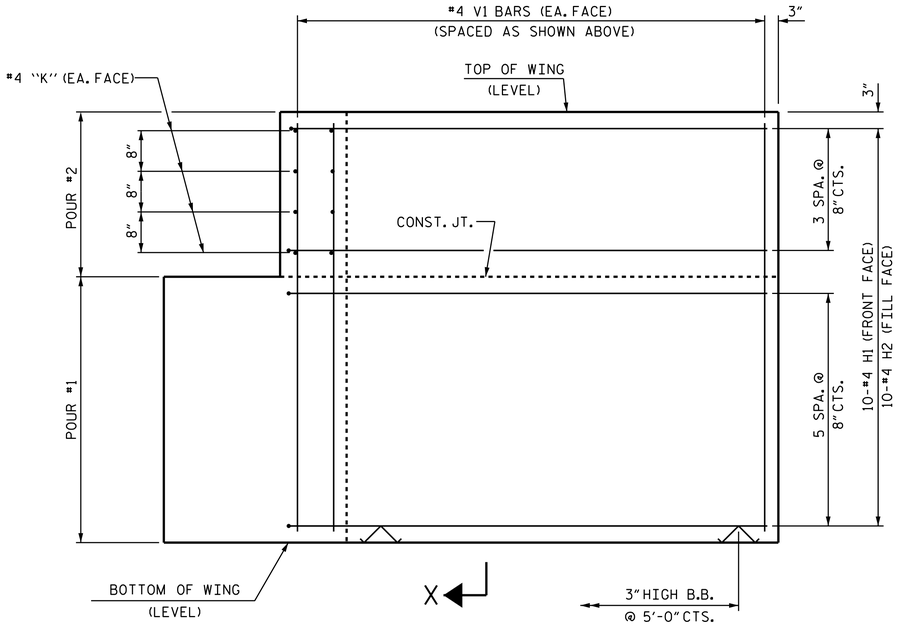


SECTION X-X

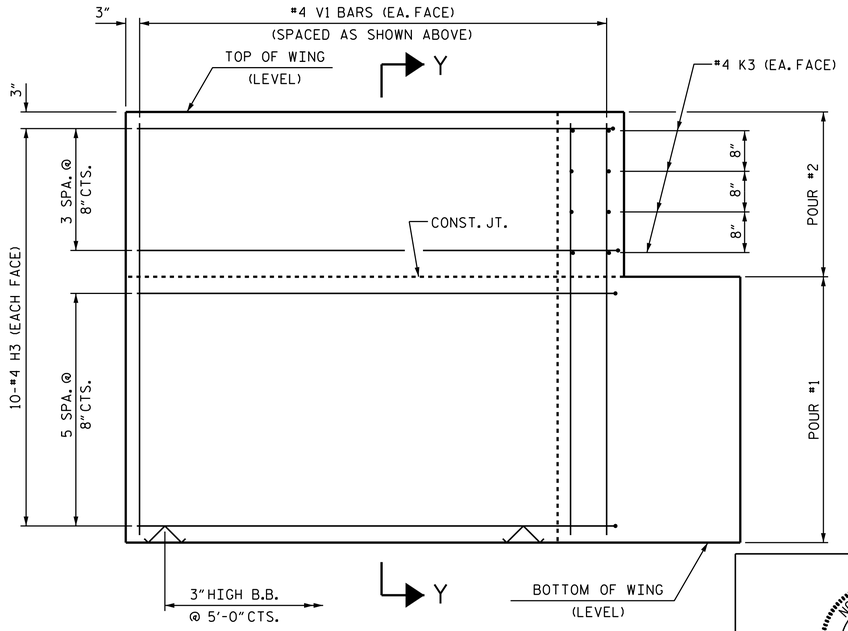


SECTION Y-Y

X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARGARET A. CHEEK, JR.

3/19/2025

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PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

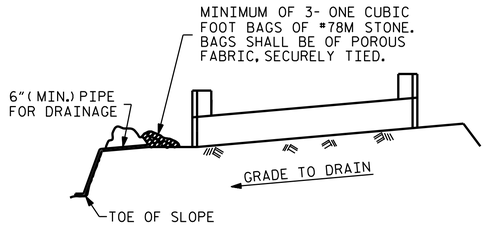
SUBSTRUCTURE

END BENT 1
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	11/23
CHECKED BY :	MGC	DATE :	2/24
DRAWN BY :	WJH	12/11	
CHECKED BY :	AAC	12/11	
REV. 4/15	MAA/TMG		

1/8/2025
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ZSmith

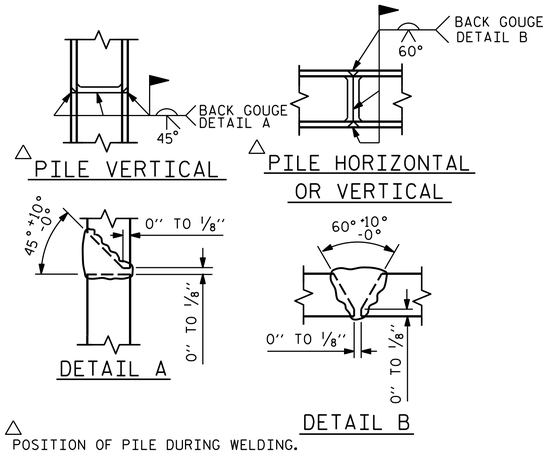


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

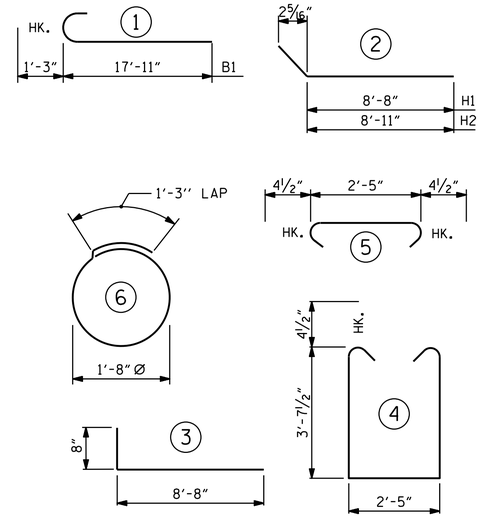
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

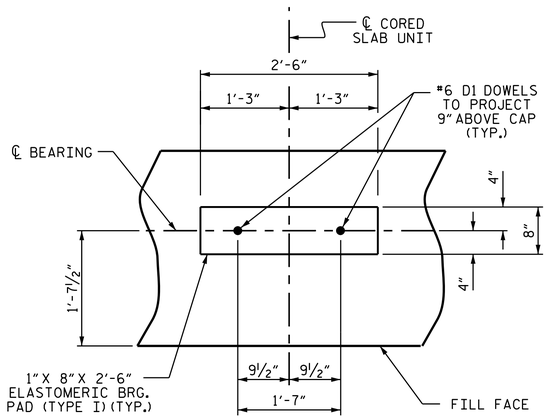
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#9	1	19'-2"	1043
B2	28	#4	STR	16'-5"	307
B3	8	#4	STR	2'-5"	13
D1	16	#6	STR	1'-6"	36
H1	10	#4	2	9'-4"	62
H2	10	#4	2	9'-7"	64
H3	20	#4	3	9'-4"	125
K1	4	#4	STR	3'-6"	9
K2	4	#4	STR	3'-8"	10
K3	8	#4	STR	2'-11"	16
S1	38	#4	4	10'-5"	264
S2	38	#4	5	3'-2"	80
S3	20	#4	6	6'-6"	87
V1	52	#4	STR	6'-2"	214

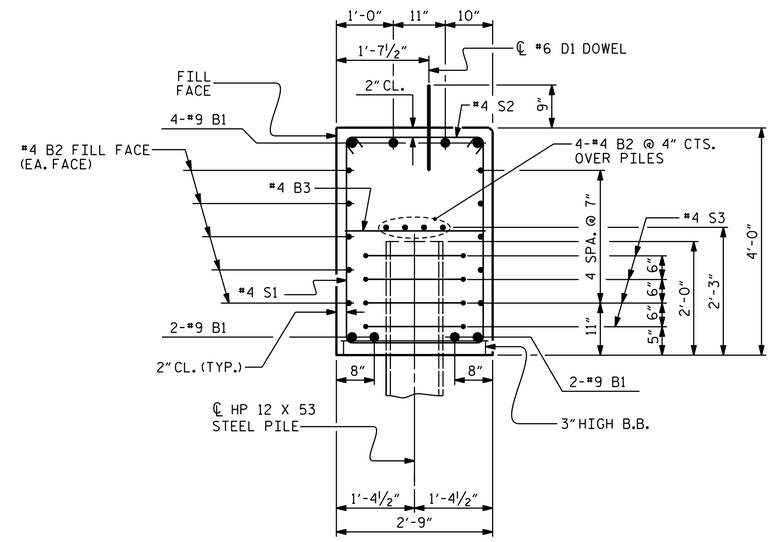
REINFORCING STEEL 2330 LBS.

CLASS A CONCRETE BREAKDOWN

	CAP, LOWER PART OF WINGS & COLLARS	15.6 C.Y.
POUR #2	UPPER PART OF WINGS	2.1 C.Y.
	TOTAL CLASS A CONCRETE	17.7 C.Y.

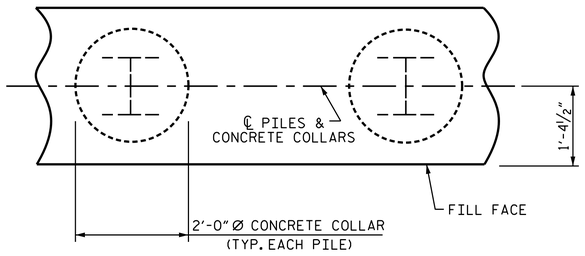


DETAIL "A"

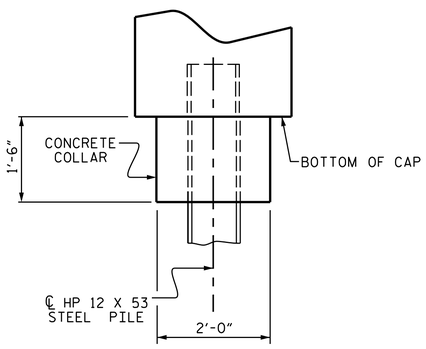


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 3 OF 3

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

3/19/2025

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RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

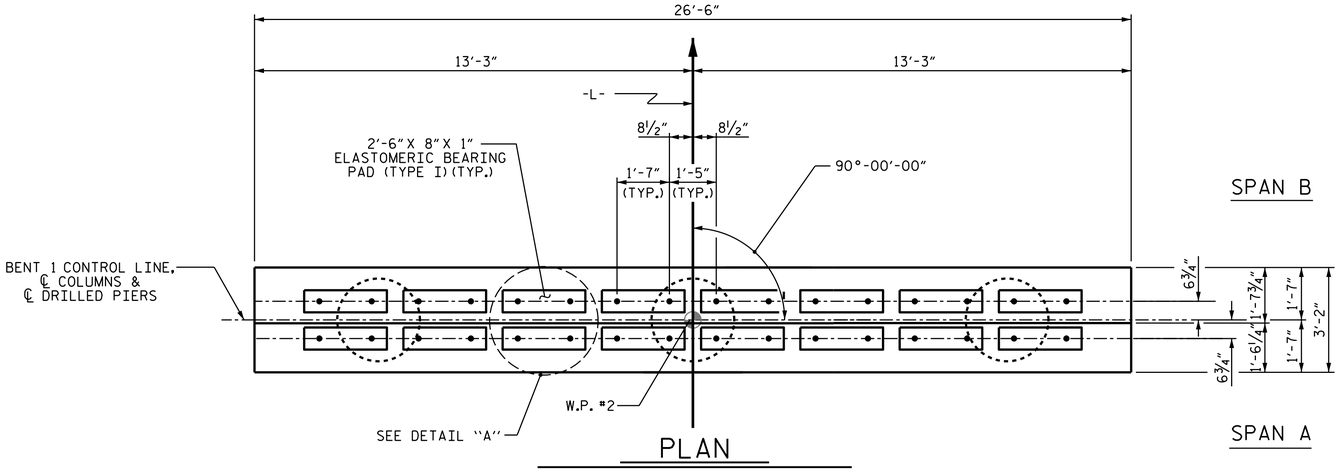
SUBSTRUCTURE

END BENT 1 DETAILS

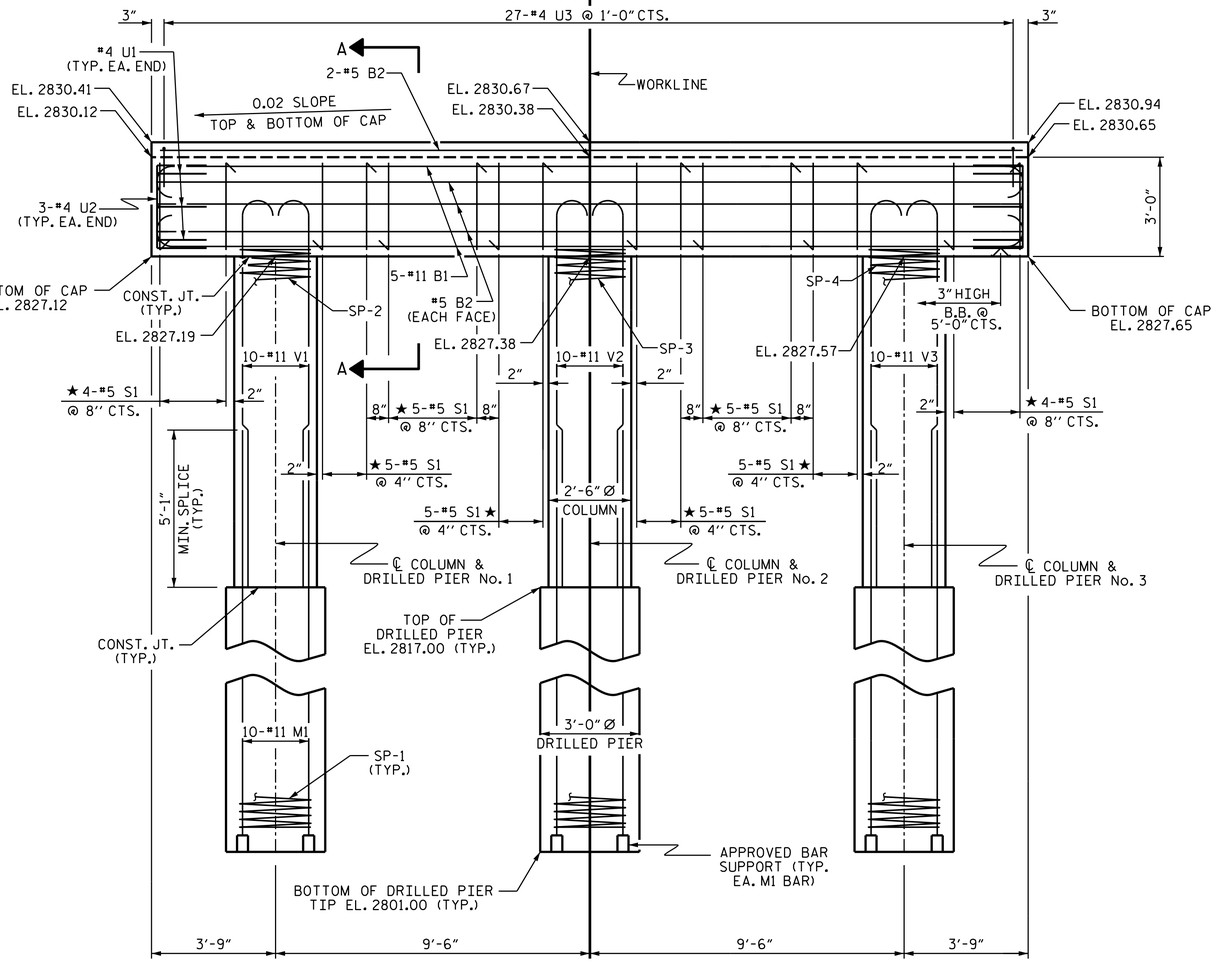
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	11/23
CHECKED BY :	MGC	DATE :	2/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	2/24

1/8/2025
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ZSmith



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

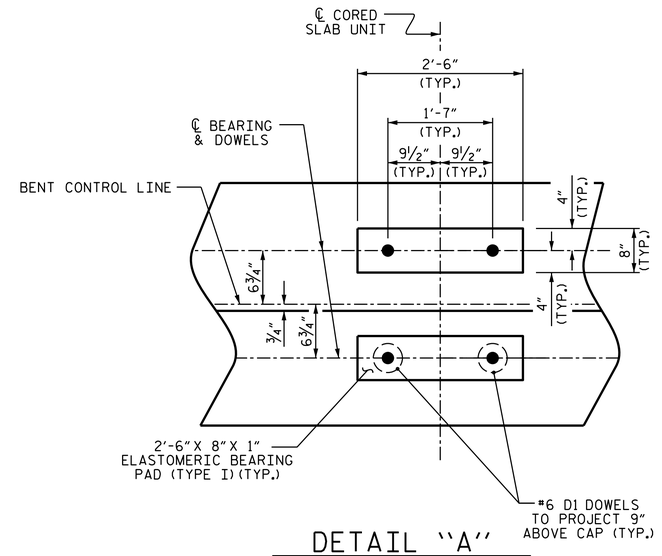
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 1 OF 2

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

3/19/2025

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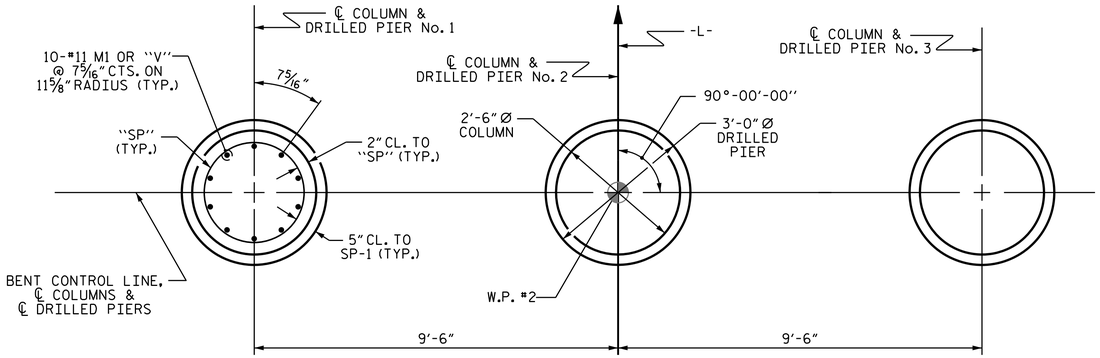
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RALEIGH

SUBSTRUCTURE
BENT 1

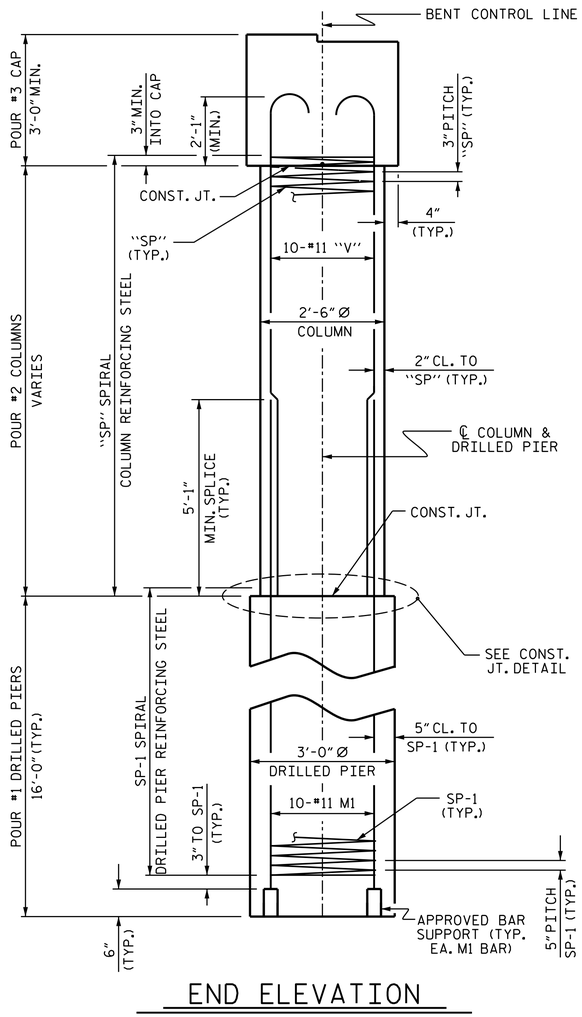
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	10/24
CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

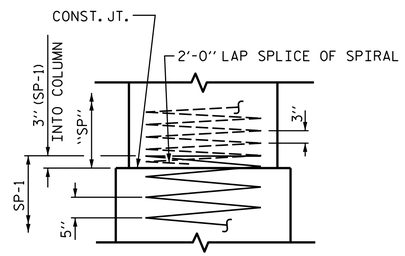
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ZSmith



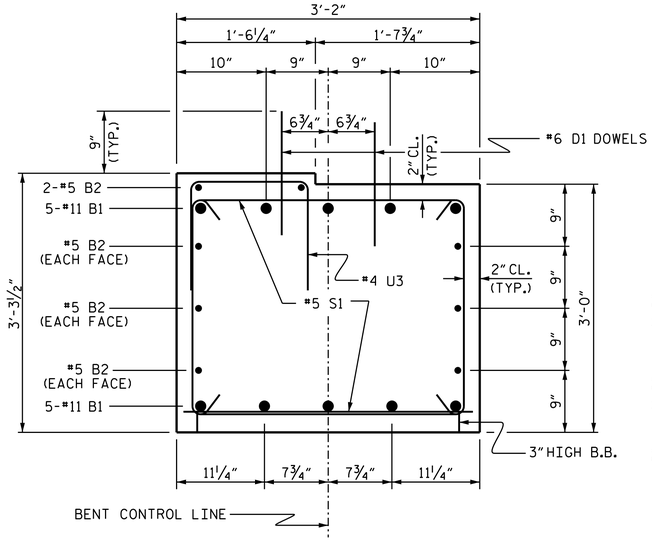
PLAN OF DRILLED PIERS & COLUMNS



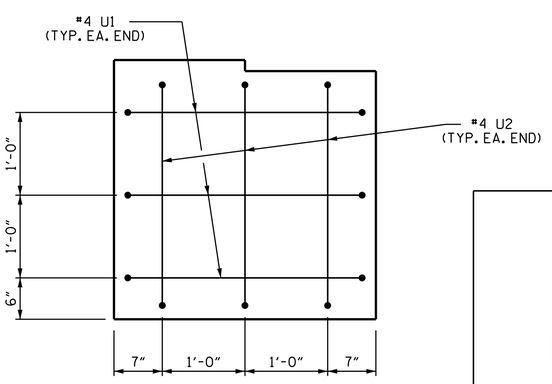
END ELEVATION



CONSTRUCTION JOINT DETAIL

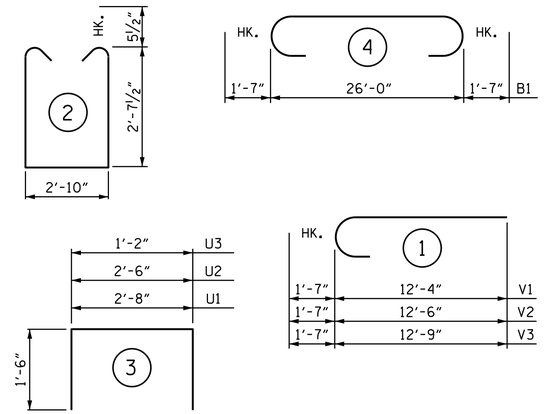


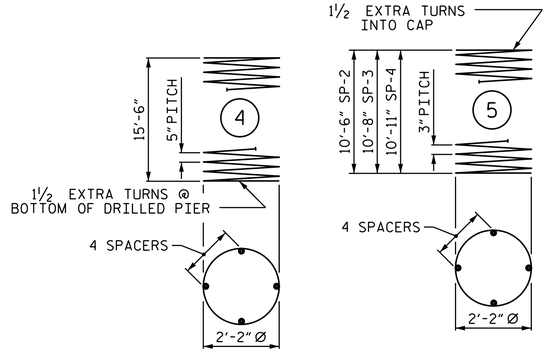
SECTION A-A



END OF CAP VIEW

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	4	29'-2"	1550
B2	8	#5	STR	26'-2"	218
D1	32	#6	STR	1'-6"	72
M1	30	#11	STR	23'-7"	3759
S1	38	#5	2	9'-0"	357
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	27	#4	3	4'-2"	75
V1	10	#11	1	13'-11"	739
V2	10	#11	1	14'-1"	748
V3	10	#11	1	14'-4"	762
REINFORCING STEEL					8,325 LBS.

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	4	259'-8"	813
SP-2	1	**	5	294'-0"	196
SP-3	1	**	5	300'-8"	201
SP-4	1	**	5	307'-4"	205
SPIRAL COLUMN REINFORCING STEEL					1,415 LBS.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-2, SP-3, SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	5.7 C.Y.
POUR #3 (CAP)	9.7 C.Y.
TOTAL CLASS A CONCRETE	15.4 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	12.6 C.Y.
CSL TUBES	210.00 LIN. FT.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CREEK, JR.

Signed by: Marshall C. Creek, Jr. 5FBCC2F3A4DC413...

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

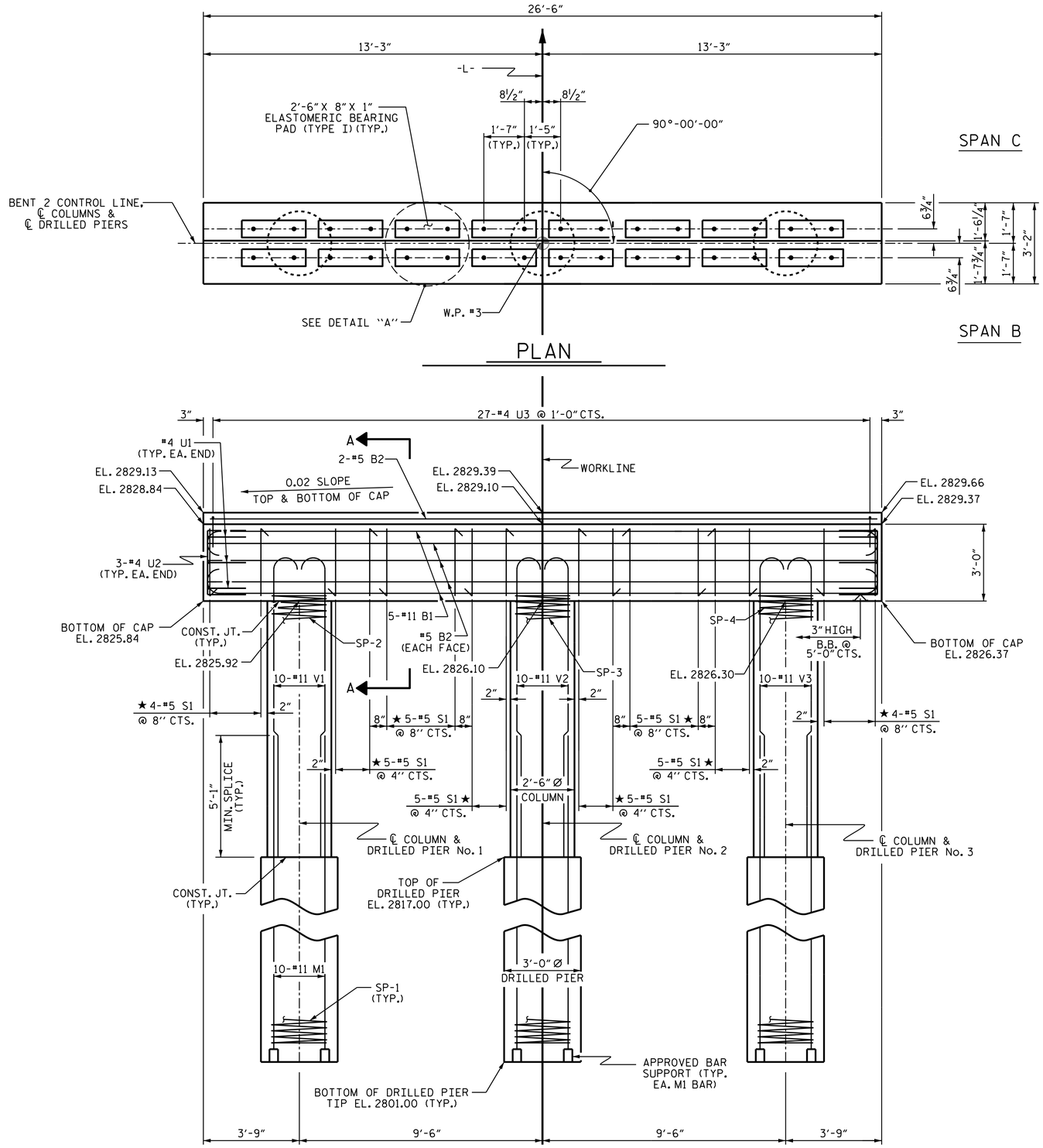
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	10/24
CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

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ZSmith



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

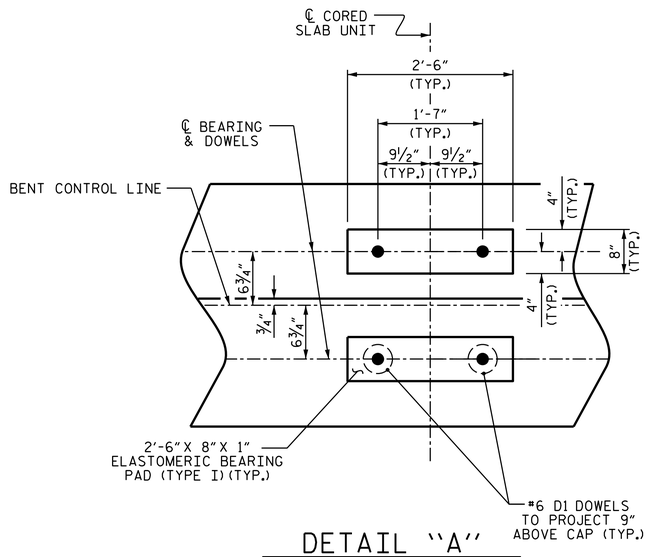
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 1 OF 2

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

Marshall G. Cheek, Jr.

5FBCC2F3A4DC413...

3/19/2025

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

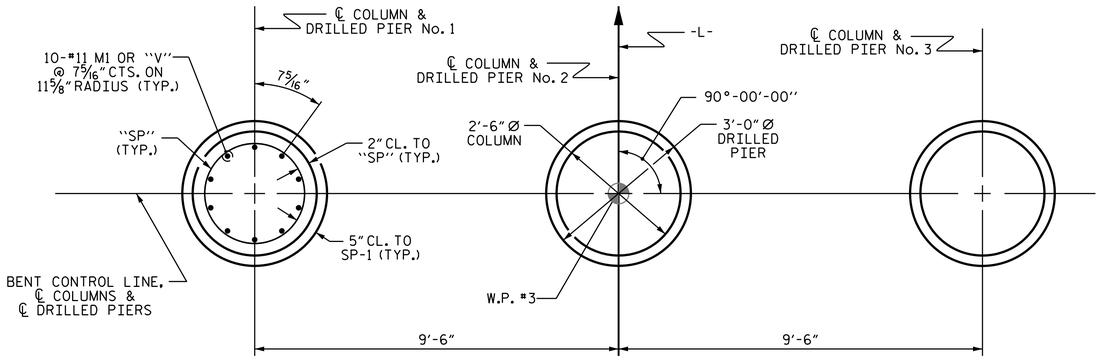
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

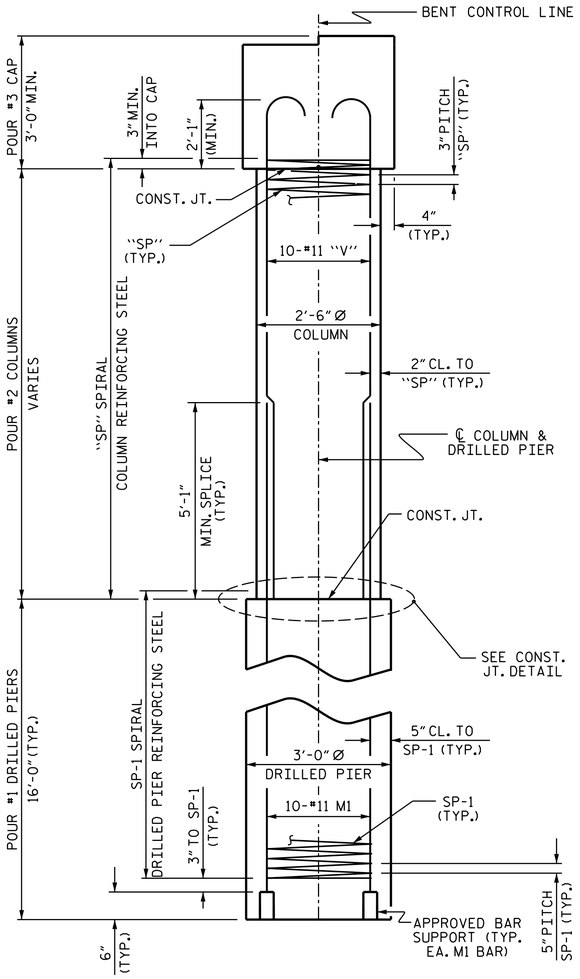
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1			3			TOTAL SHEETS
2			4			29

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CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

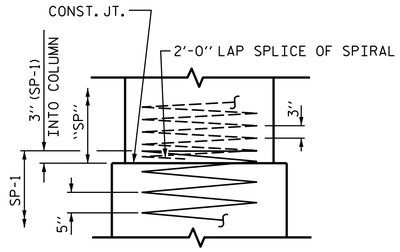
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ZSmith



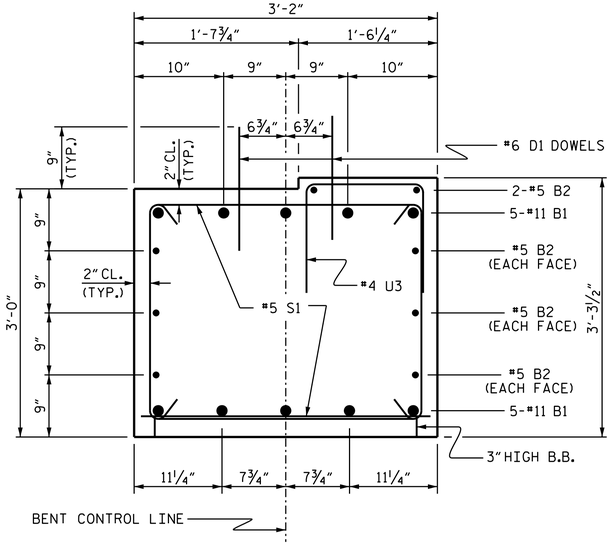
PLAN OF DRILLED PIERS & COLUMNS



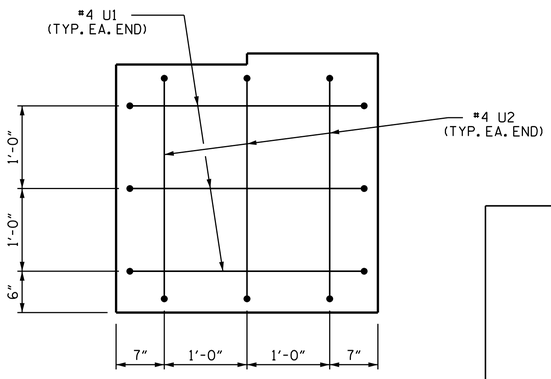
END ELEVATION



CONSTRUCTION JOINT DETAIL

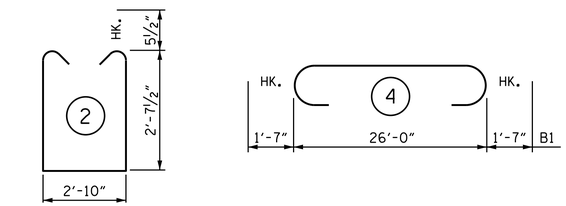


SECTION A-A



END OF CAP VIEW

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	4	29'-2"	1550
B2	8	#5	STR	26'-2"	218
D1	32	#6	STR	1'-6"	72
M1	30	#11	STR	23'-7"	3759
S1	38	#5	2	9'-0"	357
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	27	#4	3	4'-2"	75
V1	10	#11	1	12'-8"	673
V2	10	#11	1	12'-10"	682
V3	10	#11	1	13'-0"	691
REINFORCING STEEL					8,122 LBS.

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	✳	4	259'-8"	813
SP-2	1	✳✳	5	260'-7"	174
SP-3	1	✳✳	5	267'-3"	179
SP-4	1	✳✳	5	273'-11"	183
SPIRAL COLUMN REINFORCING STEEL					1,349 LBS.

✳ THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

✳✳ THE SP-2, SP-3, AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMN)	5.0 C.Y.
POUR #3 (CAP)	9.7 C.Y.
TOTAL CLASS A CONCRETE	14.7 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	12.6 C.Y.
CSL TUBES	210.00 LIN. FT.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 2

ASSEMBLED BY :	ZCS	DATE :	10/24
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DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

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

Marshall G. Cheek, Jr.

3/19/2025

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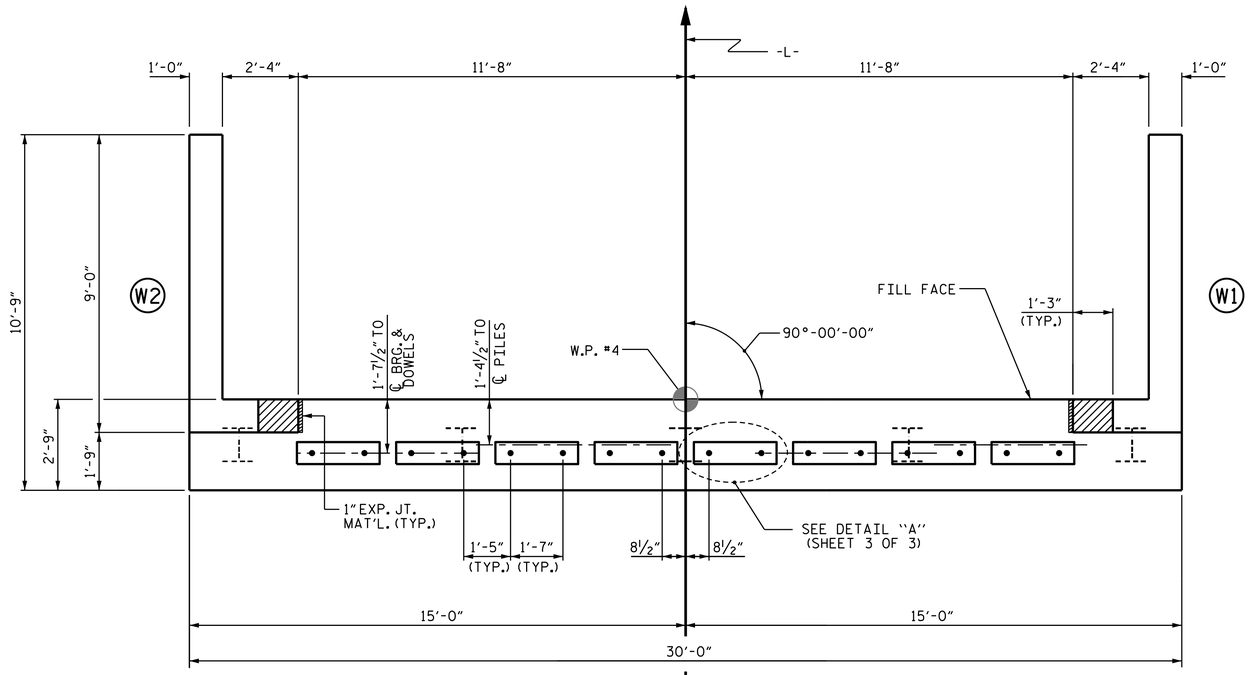
TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

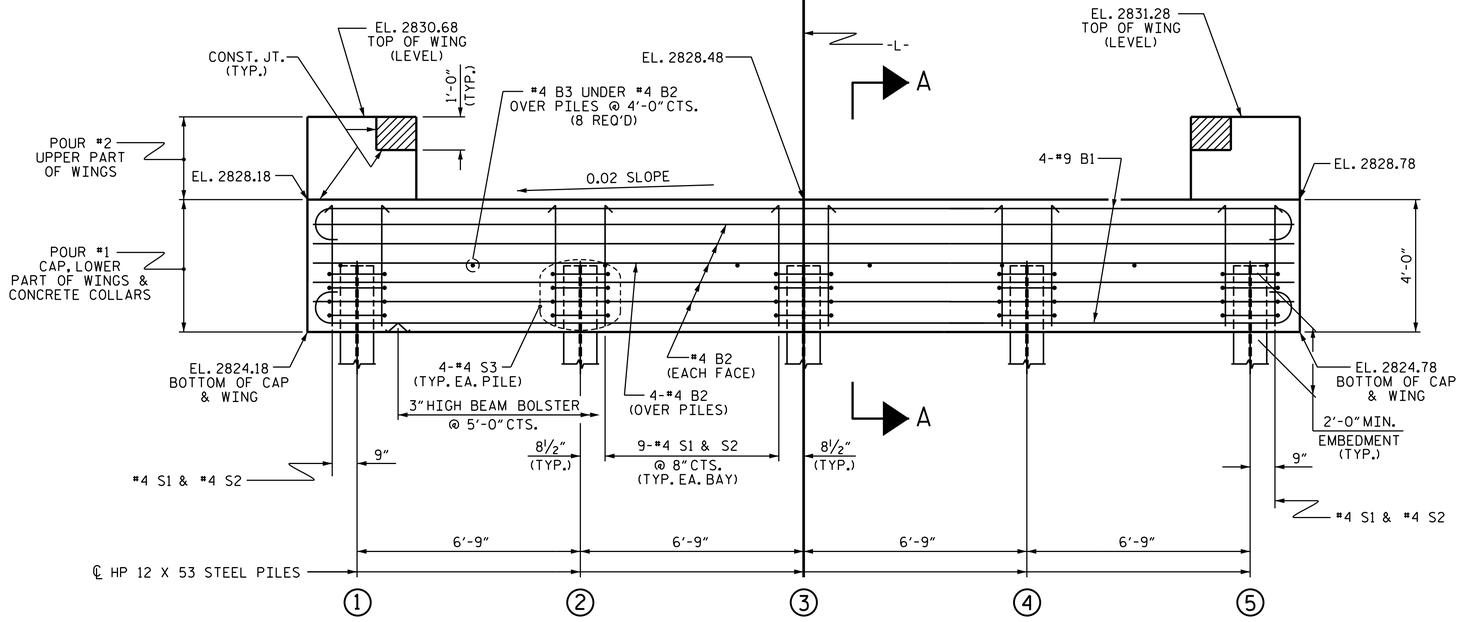
SUBSTRUCTURE
BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			29

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ZSmith



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

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 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

TOP OF PILE ELEVATIONS	
①	2826.22
②	2826.36
③	2826.49
④	2826.63
⑤	2826.76

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL C. CREEK, JR.
Marshall C. Creek, Jr.
3/19/2025

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STATE OF NORTH CAROLINA
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RALEIGH

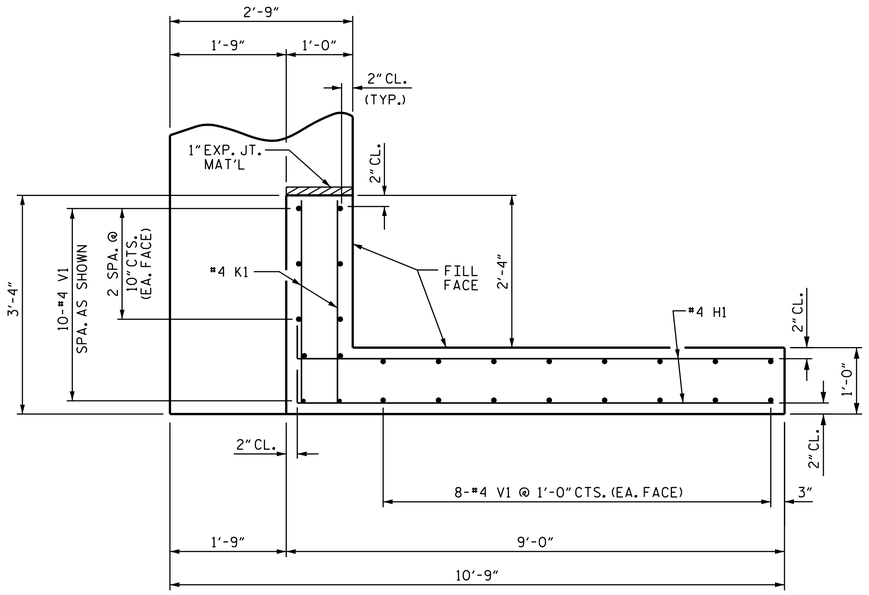
SUBSTRUCTURE

END BENT 2

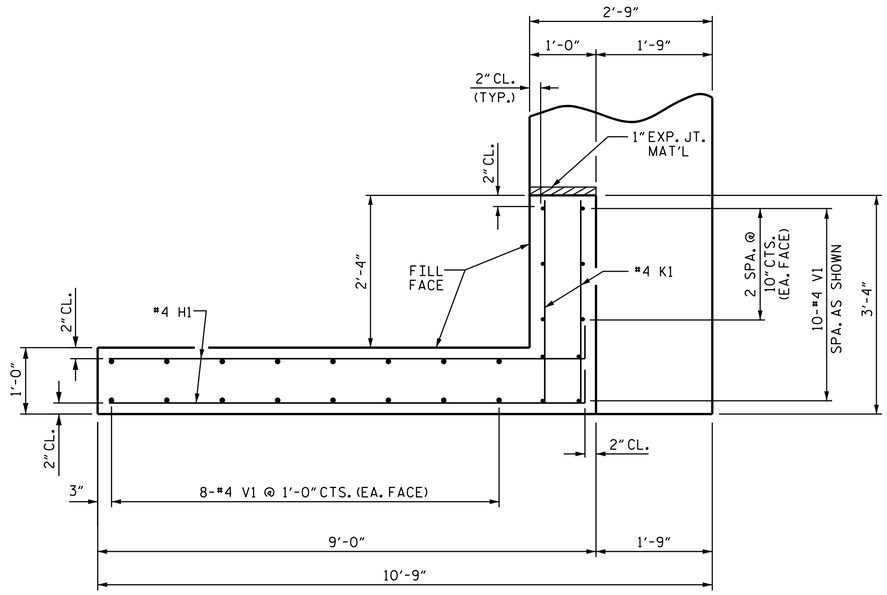
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			29

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CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

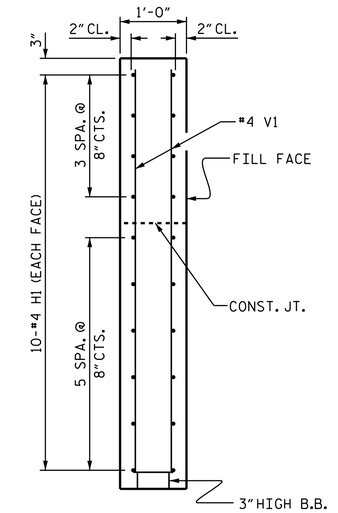
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ZSmith



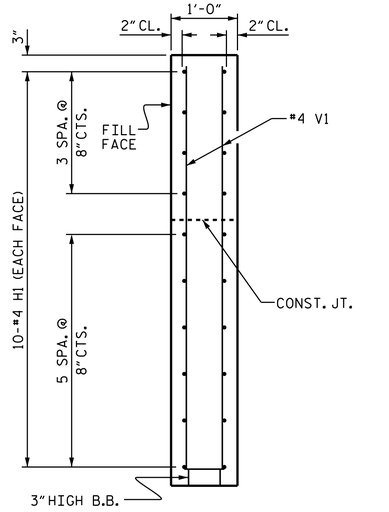
PLAN OF WING (W1)



PLAN OF WING (W2)

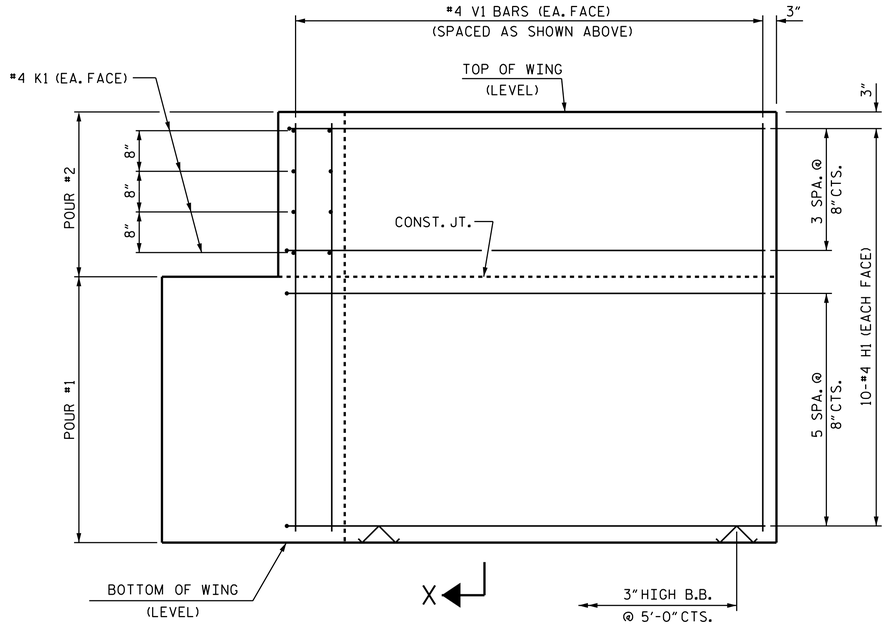


SECTION X-X

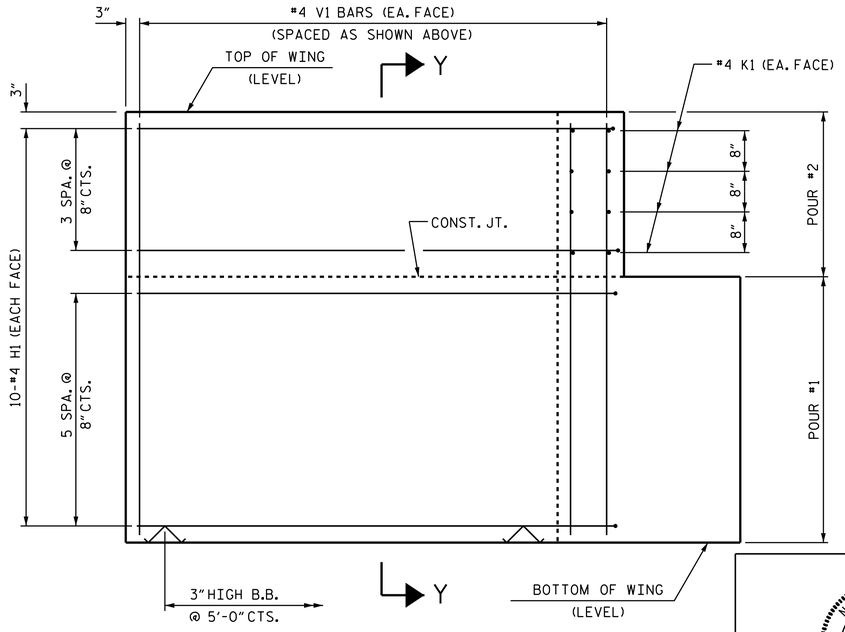


SECTION Y-Y

X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY :	ZCS	DATE :	11/23
CHECKED BY :	MGC	DATE :	2/24
DRAWN BY : WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY : AAC	12/11		

1/8/2025
c:\workdir\ncdot-pw.bentley.com_ncdot-pw-01\zachary smith\d0312556\025_B-5835-SMU-CS-End Bent 2-05 2 of 3.dgn
ZSmith

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
3/19/2025

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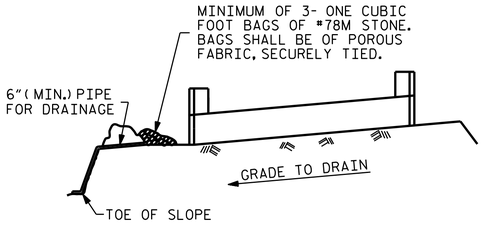
TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			29

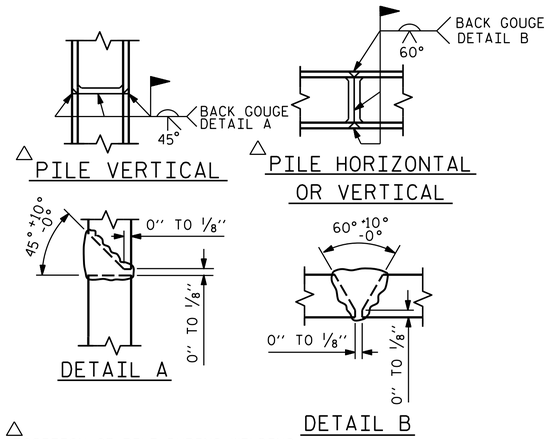


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

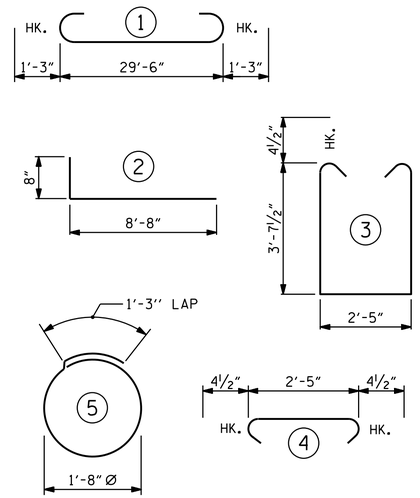
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

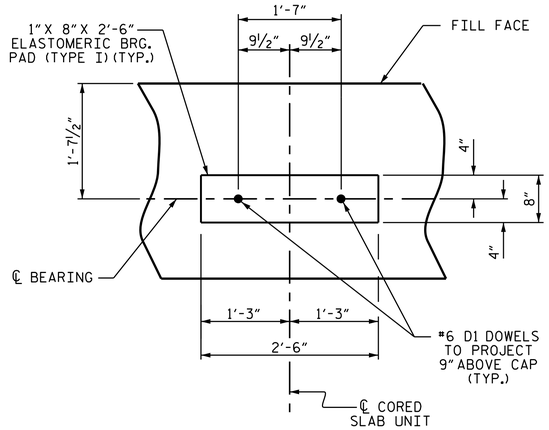
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
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B2	14	#4	STR	29'-8"	277
B3	8	#4	STR	2'-5"	13
D1	16	#6	STR	1'-6"	36
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	38	#4	3	10'-5"	264
S2	38	#4	4	3'-2"	80
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214

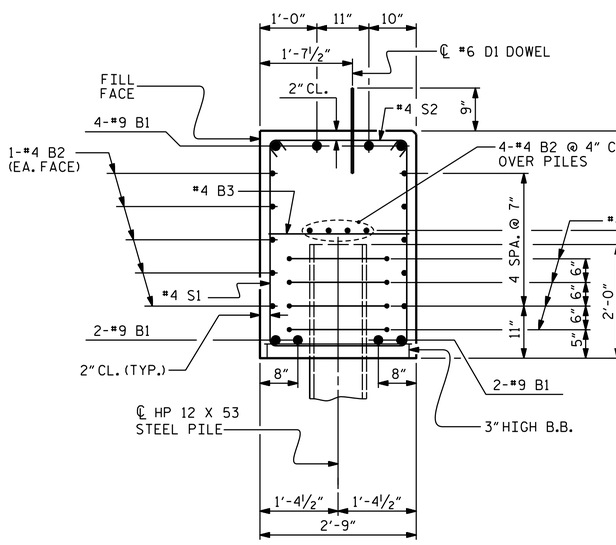
REINFORCING STEEL 2121 LBS.

CLASS A CONCRETE BREAKDOWN

	CAP, LOWER PART OF WINGS & COLLARS	15.5 C.Y.
POUR #2	UPPER PART OF WINGS	2.0 C.Y.
	TOTAL CLASS A CONCRETE	17.5 C.Y.

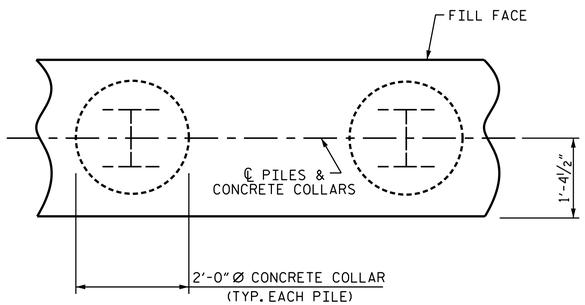


DETAIL "A"

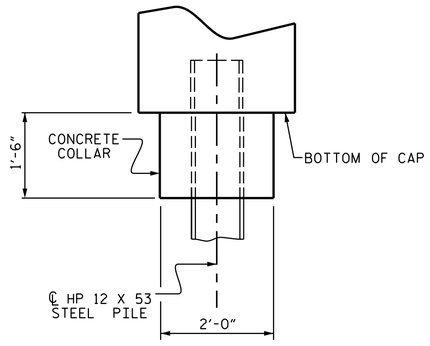


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 3 OF 3

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

Marshall G. Greek, Jr.
5FBCC2F3A4DC413...

3/19/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

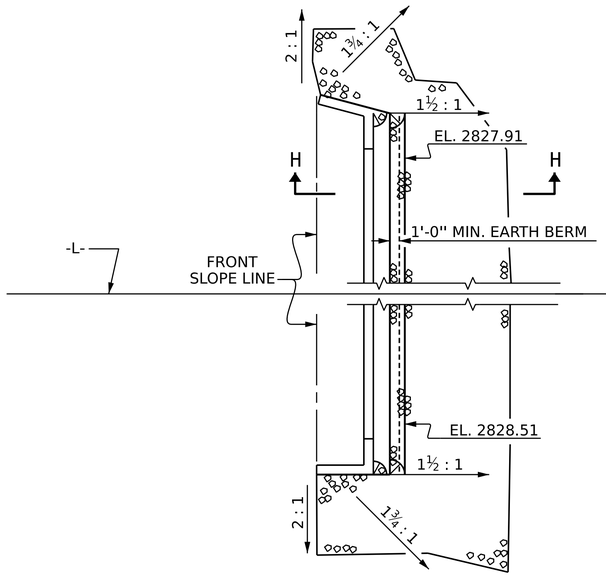
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			29

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CHECKED BY :	MGC	DATE :	10/24
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	10/24

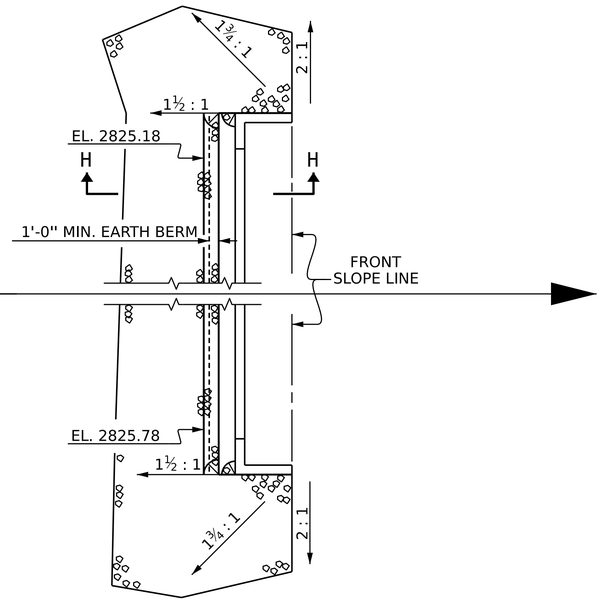
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ZSmith

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

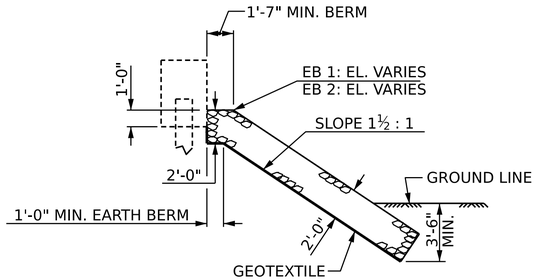


END BENT 1



END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+40.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	155	170
END BENT 2	105	115



℄ SECTION

BERM RIP RAPPED

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL B. CREEK, JR.

Marshall B. Creek, Jr.

3/19/2025

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

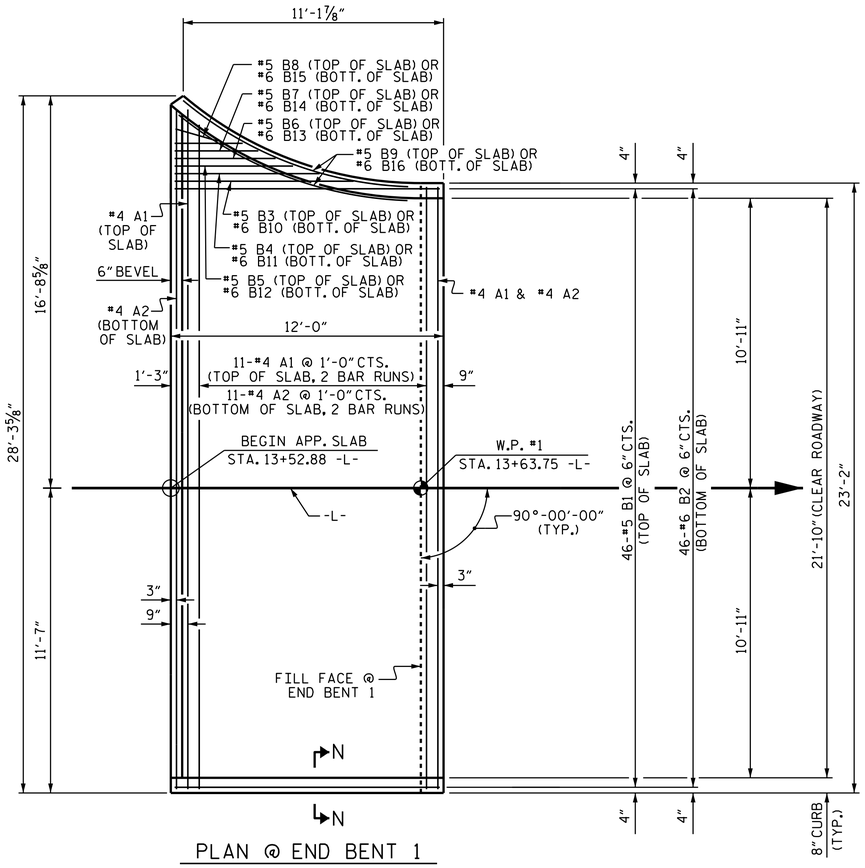
STANDARD
RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	5/24
CHECKED BY :	MGC	DATE :	7/24
DRAWN BY : REK 1/84	REV. 10/1/11		MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11		MAA/GM
	REV. 12/17		MAA/THC

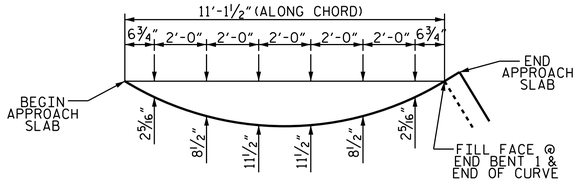
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ZSmith

STD. NO. RR1 Sht. 2



PLAN @ END BENT 1

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



ARC OFFSETS
LEFT SIDE

BILL OF MATERIAL
APPROACH SLAB AT EB 1

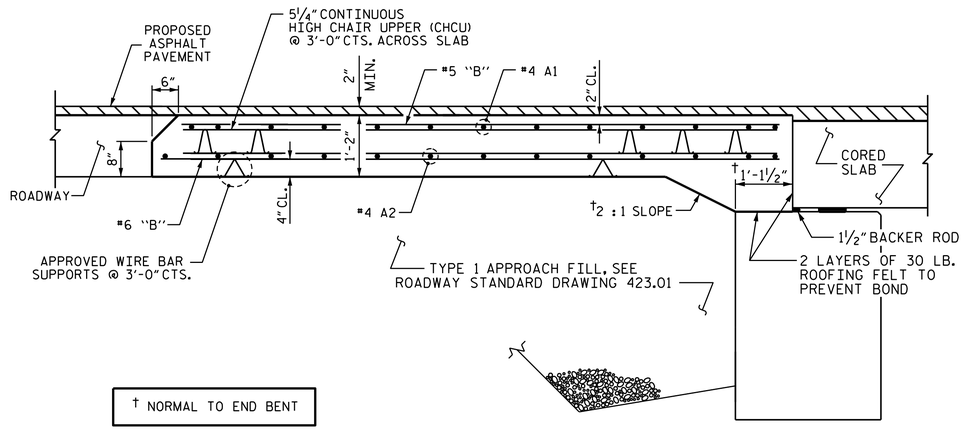
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	26	#4	STR	14'-11"	259
A2	26	#4	STR	14'-9"	256
✱B1	46	#5	STR	11'-3"	540
B2	46	#6	STR	11'-8"	806
✱B3	1	#5	STR	7'-0"	7
✱B4	1	#5	STR	5'-3"	5
✱B5	1	#5	STR	3'-11"	4
✱B6	1	#5	STR	2'-11"	3
✱B7	1	#5	STR	2'-0"	2
✱B8	1	#5	STR	1'-9"	2
✱B9	2	#5	STR	10'-6"	22
B10	1	#6	STR	7'-4"	11
B11	1	#6	STR	5'-7"	8
B12	1	#6	STR	4'-3"	6
B13	1	#6	STR	3'-3"	5
B14	1	#6	STR	2'-4"	4
B15	1	#6	STR	1'-9"	3
B16	2	#6	STR	10'-6"	32
REINFORCING STEEL				LBS.	1131
✱EPOXY COATED REINFORCING STEEL				LBS.	844
CLASS AA CONCRETE				C.Y.	14.6

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

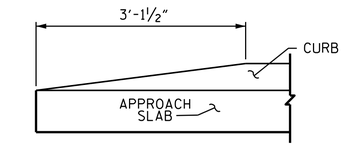
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

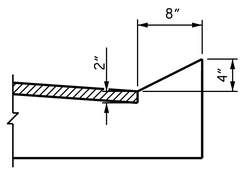


† NORMAL TO END BENT

SECTION THRU SLAB



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

CURB DETAILS

PROJECT NO. B-5835
AVERY COUNTY
STATION: 14+40.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER
Marshall G. Chesney, Jr.
5FBCC2F3A4DC413...
3/19/2025

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

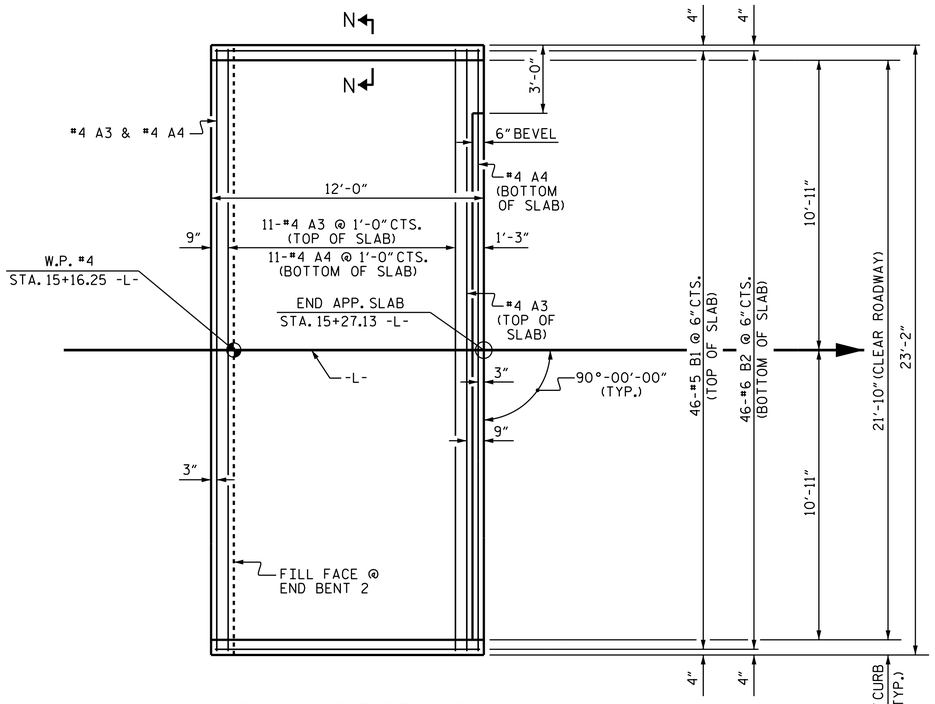
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

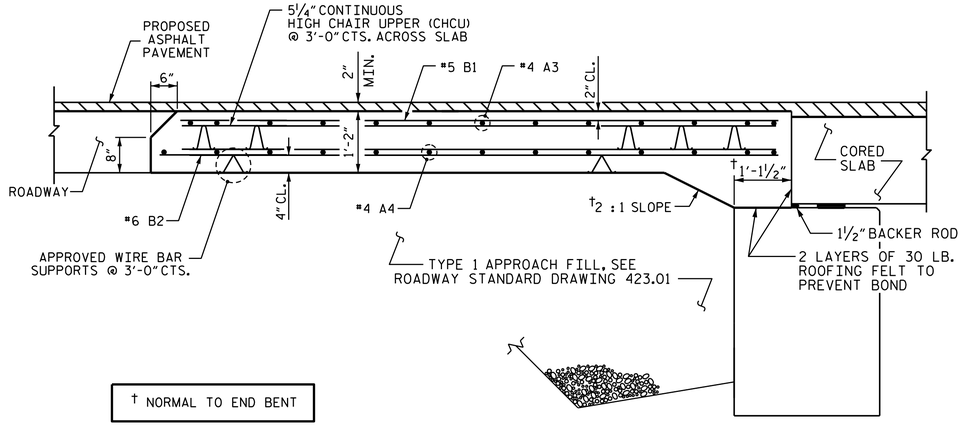
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY :	ZCS	DATE :	10/24
CHECKED BY :	MGC	DATE :	10/24
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

1/8/2025
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ZSmith



PLAN @ END BENT 2

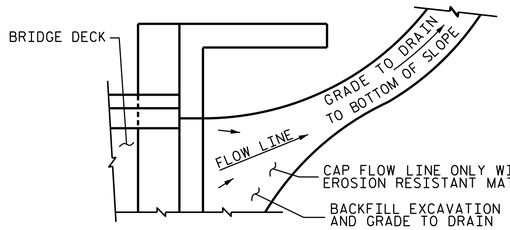


† NORMAL TO END BENT

SECTION THRU SLAB

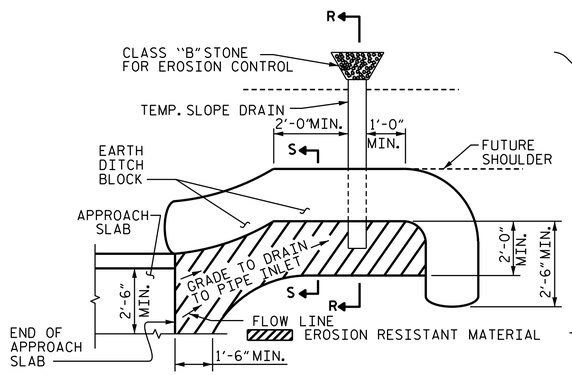
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CHECKED BY :	MGC	DATE :	10/24
DRAWN BY : FCJ 6/87	REV. 12/17		MAA/THC
CHECKED BY : EGA 6/87	REV. 06/19		BNB/THC
	REV. 07/23		BNB/SNM

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



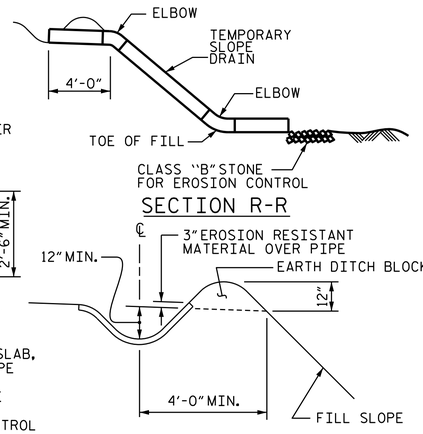
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



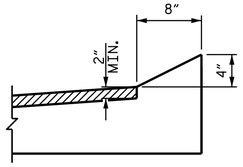
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



SECTION N-N

CURB DETAILS

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL					
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A3	13	#4	STR	22'-10"	198
A4	13	#4	STR	22'-10"	198
✱B1	46	#5	STR	11'-3"	540
B2	46	#6	STR	11'-8"	806
REINFORCING STEEL				LBS.	1004
✱EPOXY COATED REINFORCING STEEL				LBS.	738
CLASS AA CONCRETE				C.Y.	13.9

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.

PROJECT NO. B-5835

AVERY COUNTY

STATION: 14+40.00 -L-

SHEET 2 OF 2

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

3/19/2025

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			29

1/8/2025
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ZSmith

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$" 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 $\frac{1}{4}$" 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 $\frac{7}{8}$" ∅ SHEAR STUDS FOR THE $\frac{3}{4}$" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$" ∅ STUDS FOR 4 - $\frac{3}{4}$" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$" ∅ STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$" ∅ STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$"∅ STUDS FOR 4 - $\frac{3}{4}$" ∅ STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

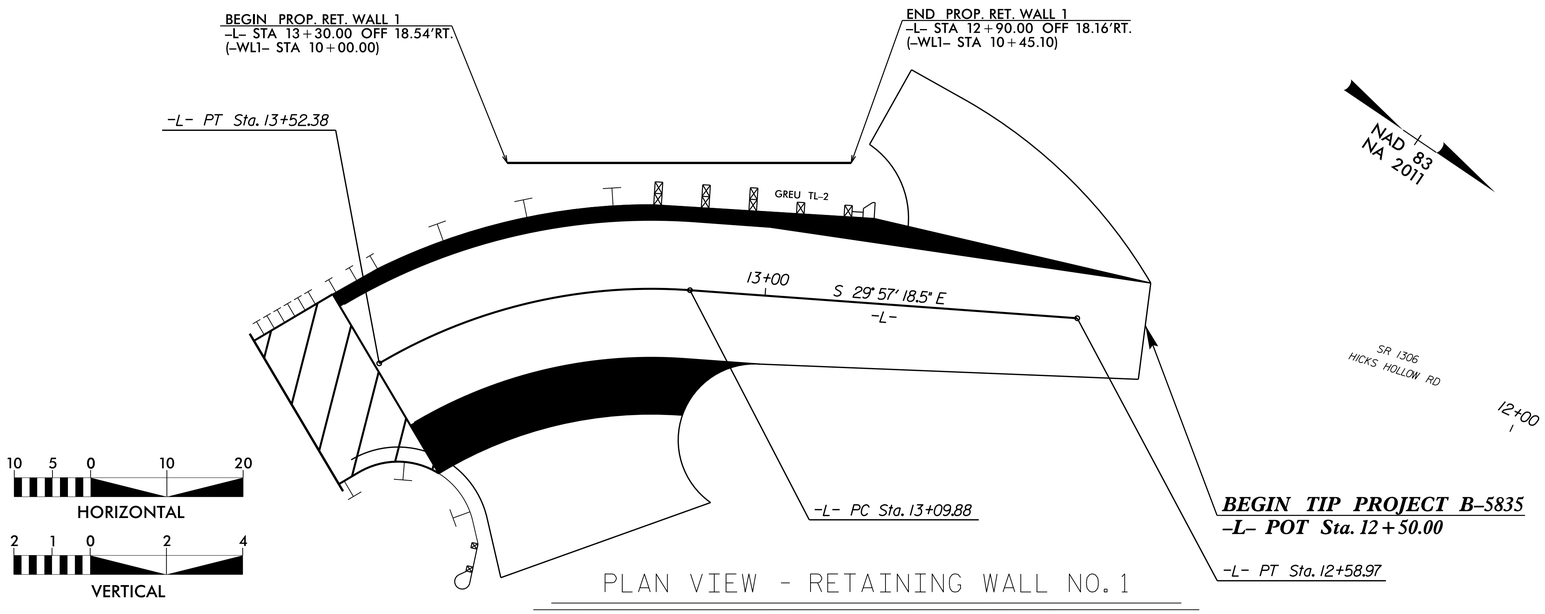
HANDRAILS AND POSTS:

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

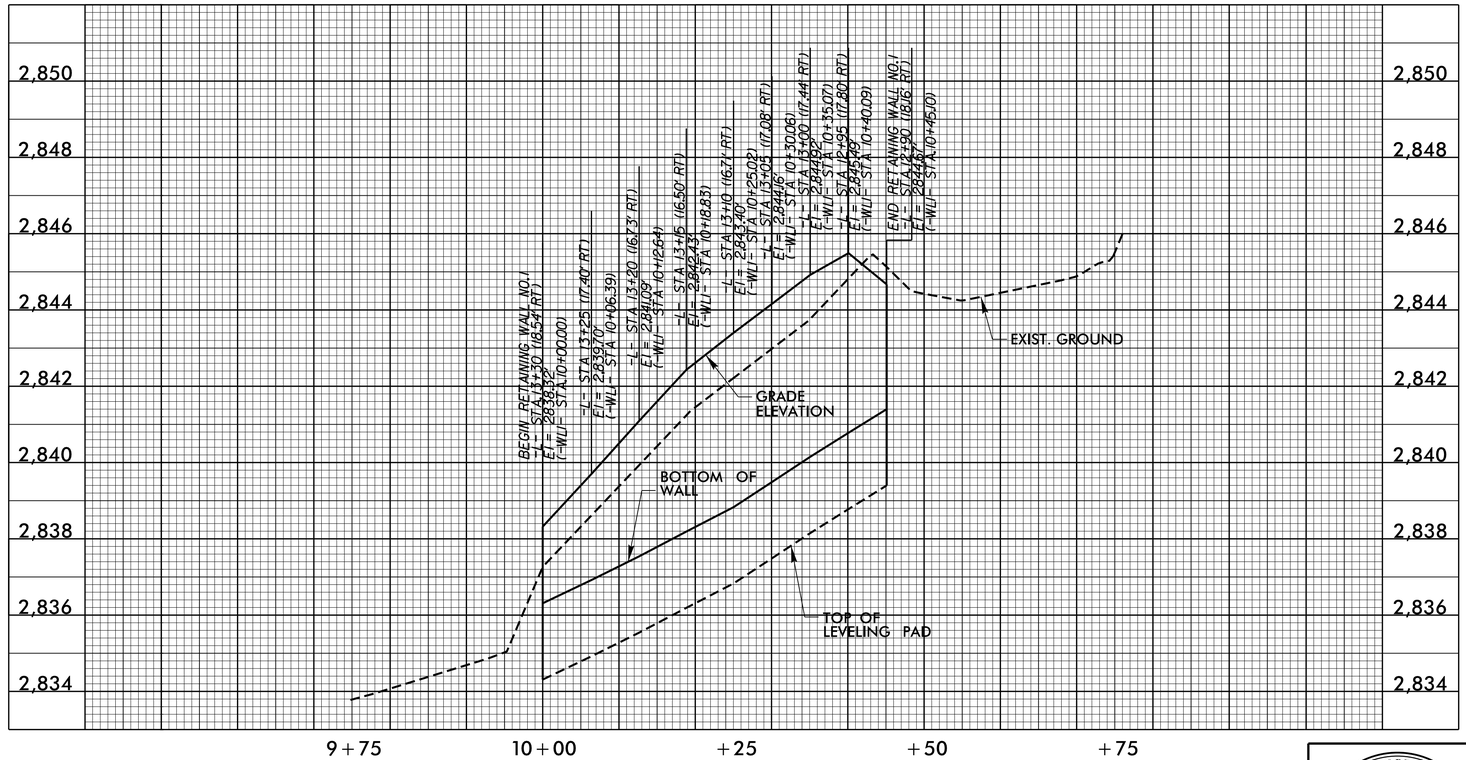
METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE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

SPECIAL NOTES:

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



PLAN VIEW - RETAINING WALL NO. 1



WALL ENVELOPE - RETAINING WALL NO. 1

NOTE: 1) OFFSET DIMENSIONS ARE FROM FACE OF WALL
2) THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

PREPARED BY: SY	DATE: 8/2023
REVIEWED BY: SCC	DATE: 8/2023

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 031361 ENGINEER SHIPING YANG

DocuSigned by: Shiping Yang 7A7310E67F76411...

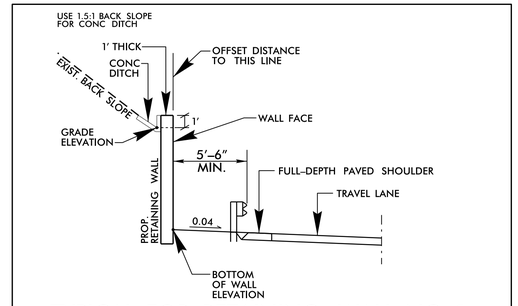
08/22/2023

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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TYPICAL FOR RETAINING WALL NO. 1

FRONT SLOPE WALL EMBEDMENT		
SLOPE IN FRONT OF STRUCTURES		MINIMUM EMBEDMENT DEPTH
HORIZONTAL	FOR WALLS	H/20
	FOR ABUTMENTS	H/10
3.0H:1.0V	WALLS	H/10
2.5H:1.0V	WALLS	H/8.5
2.0H:1.0V	WALLS	H/7
1.5H:1.0V	WALLS	H/5
1.25H:1.0V	WALLS	H/4
1.0H:1.0V	WALLS	H/3

NOTE:
1) MAINTAIN A MINIMUM BENCH WIDTH OF 4.0 IN FRONT OF THE WALL FOR ITS ENTIRE LENGTH.
2) MINIMUM EMBEDMENT DEPTH OF 2 FT, UNLESS LARGER DEPTHS DICTATED BY THE ABOVE TABLE.
3) MAXIMUM SLOPE OF 2H:1V WILL BE MAINTAINED ON FRONT SLOPES FOR THE ENTIRE LENGTH OF THE WALL.
4) SUBMITT WITH THE WALL DESIGN INTERNAL, EXTERNAL, AND GLOBAL STABILITY ANALYSISES.

MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 1	-WALL1-	* 267.4 SQUARE FEET

* WALL AREA IS MEASURED USING THE DESIGN HEIGHT "H"

PROJECT NO.: B-5835

AVERY COUNTY

STATION: RW1: 12+90.00 TO 13+30.00 -L-

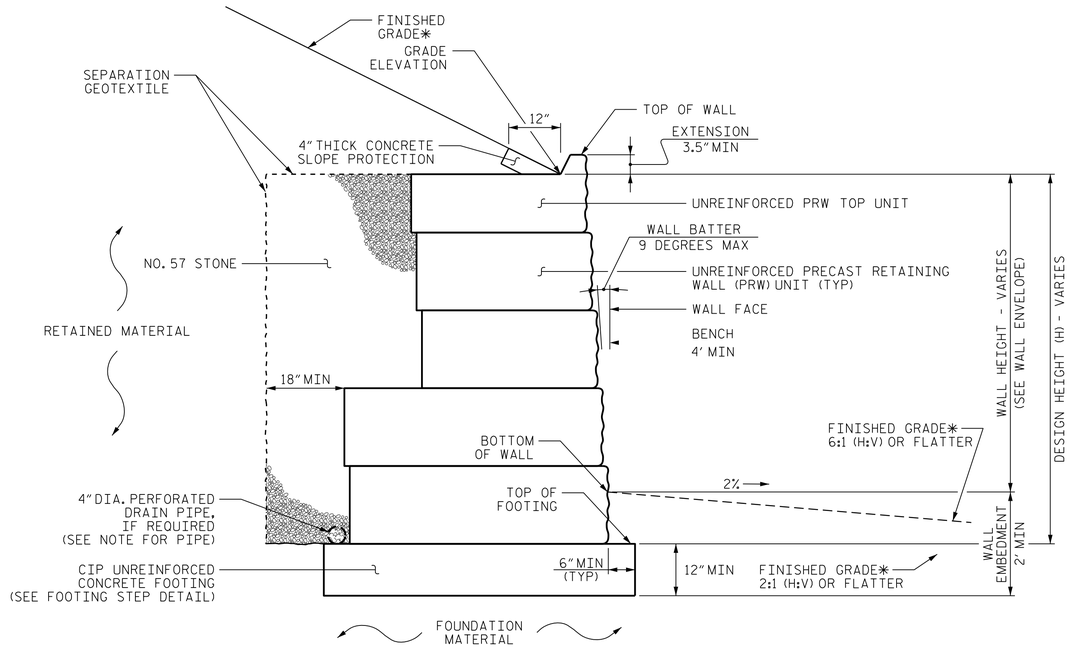
SHEET 1 OF 2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

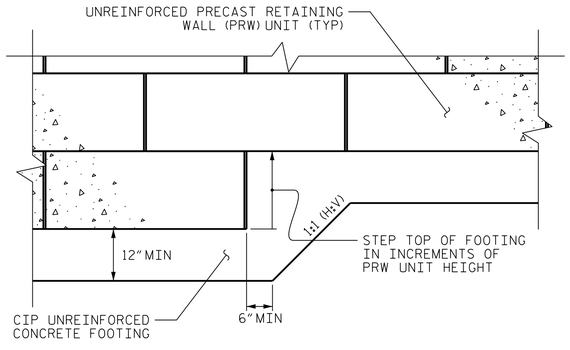
RETAINING WALL NO. 1 PRECAST GRAVITY WALL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-1
2			4			



PRECAST GRAVITY WALL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



FOOTING STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 031361 ENGINEER SHIPING YANG

DocuSigned by: Shiping Yang 7A7310E67F76411...

08/22/2023

DATE

ENGINEER

SIGNATURE DATE

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NOTES:

FOR PRECAST GRAVITY RETAINING WALLS, SEE SECTION 455 OF THE STANDARD SPECIFICATIONS.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

A DRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 1.

BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR DESIGN HEIGHTS EQUAL TO THE WALL HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
1) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2000 PSF
2) MINIMUM WALL EMBEDMENT DEPTH = 2 FT
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NO. 1. SEE PRECAST GRAVITY RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

PROJECT NO.: B-5835

AVERY COUNTY

STATION: RW1: 12+90.00 TO 13+30.00 -L-

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 1
PRECAST GRAVITY WALL

REVISIONS

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

SHEET NO. W-2