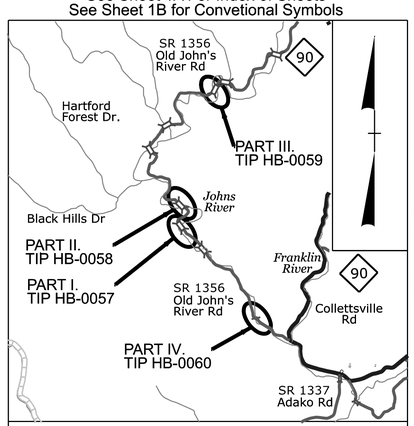
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CONTRACT: DK00484 TIP PROJECT: HB-0057/HB-0058/HB-0059/HB-0060

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

LOCATION: *BRIDGE 185 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*
BRIDGE 186 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER
BRIDGE 275 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER
BRIDGE 317 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER

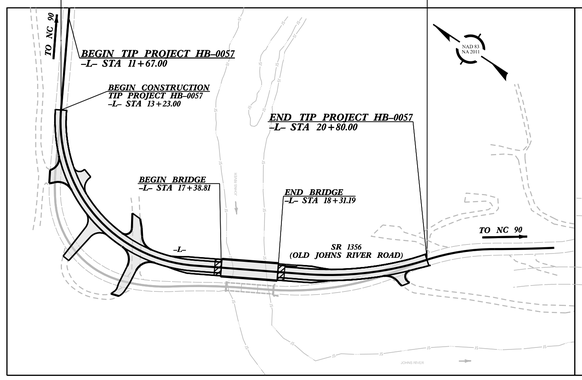
TYPE OF WORK: *GRADING, PAVING, DRAINAGE, STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057/HB-0058/ HB-0059/HB-0060	1	

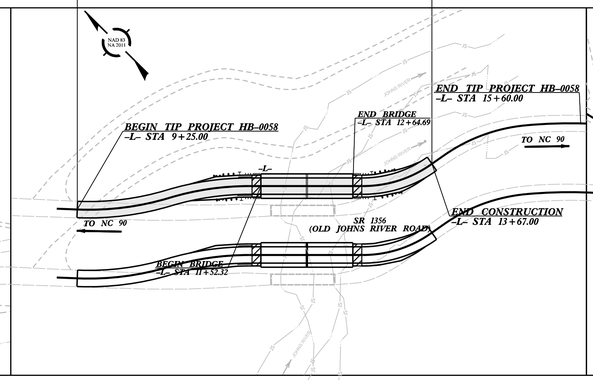
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50727.1.1	FBRG111	PE
50727.2.1	FBRG111	ROW
50727.2.2	FBRG111	UTIL
50727.3.1	FBRG111	CONST
50728.1.1	FBRG111	PE
50728.2.1	FBRG111	ROW
50728.2.2	FBRG111	UTIL
50728.3.1	FBRG111	CONST
50729.1.1	FBRG111	PE
50729.2.1	FBRG111	ROW
50729.2.2	FBRG111	UTIL
50729.3.1	FBRG111	CONST
50730.1.1	FBRG111	PE
50730.2.1	FBRG111	ROW
50730.2.2	FBRG111	UTIL
50730.3.1	FBRG111	CONST



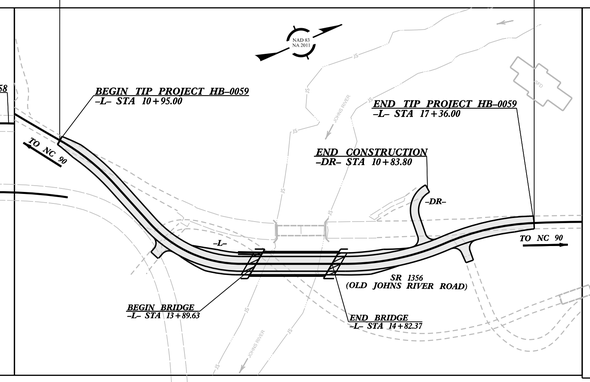
PART I. HB-0057



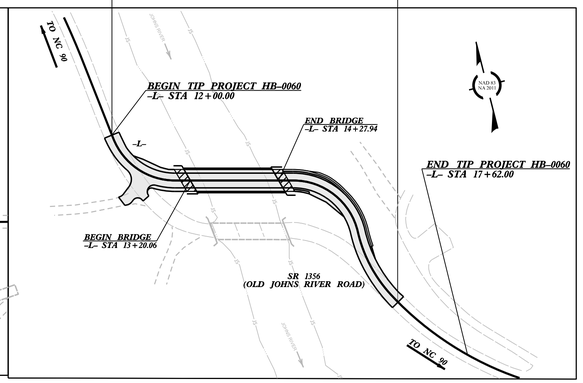
PART II. HB-0058



PART III. HB-0059



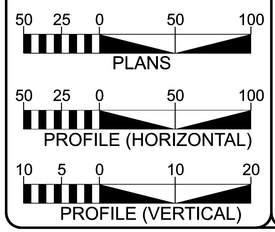
PART IV. HB-0060



THIS PROJECT IS NOT LOCATED WITHIN A MUNICIPAL BOUNDARY.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES
HB-0057/HB-0058/HB-0059/HB-0060



PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT
HB-0057/HB-0058/HB-0059/HB-0060 = 0.429 MILES

LENGTH OF STRUCTURE TIP PROJECT
HB-0057/HB-0058/HB-0059/HB-0060 = 0.076 MILES

TOTAL LENGTH OF TIP PROJECT
HB-0057/HB-0058/HB-0059/HB-0060 = 0.520 MILES

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 18, 2025

LETTING DATE:
NOVEMBER 19, 2026

RICKY A. TIPTON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

RAMIE A. SHAW, PE
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: B25FCD1434FF4AF... 10/14/2026
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

ROADWAY DESIGN ENGINEER

Signed by: 75A410DDAF7A489... 10/14/2026
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

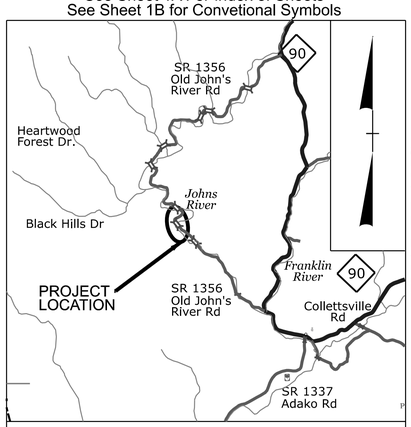
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01/16/24

TIP PROJECT: HB-0057

CONTRACT:DK00484

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

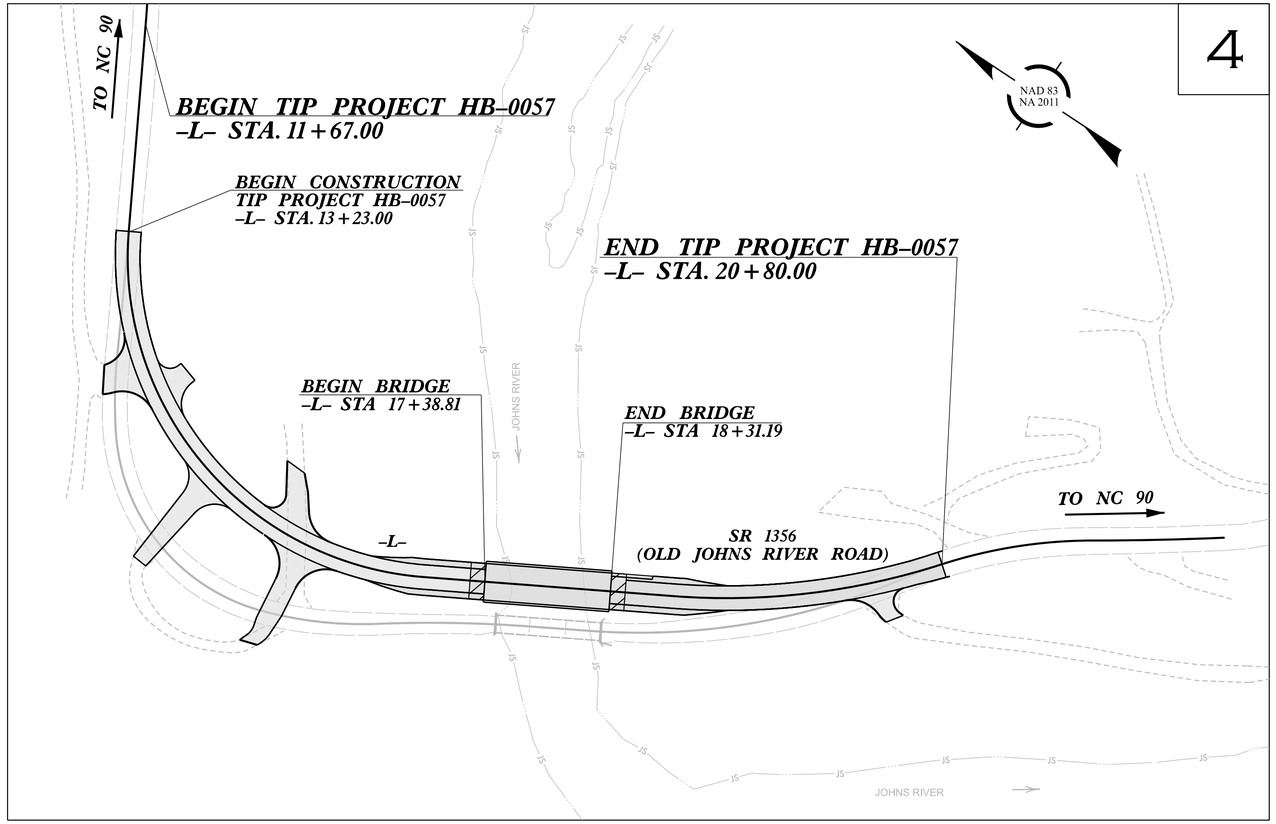
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50727.1.1	FBRG111	PE
50727.2.1	FBRG111	ROW
50727.2.2	FBRG111	UTIL
50727.3.1	FBRG111	CONST



LOCATION: *BRIDGE 185 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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



THIS PROJECT IS NOT LOCATED WITHIN A MUNICIPAL BOUNDARY.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 170
ADT 2045 = 220
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB-0057 = 0.156 MILES
LENGTH OF STRUCTURE TIP PROJECT HB-0057 = 0.017 MILES
TOTAL LENGTH OF TIP PROJECT HB-0057 = 0.173 MILES

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 18, 2025

LETTING DATE:
NOVEMBER 19, 2026

RICKY A. TIPTON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

RAMIE A. SHAW, PE
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: B25FCD1434FF4AF 10/22/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

ROADWAY DESIGN ENGINEER

Signed by: 75A410DDAFF4489 10/22/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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PART I. HB-0057: INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-4	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2G-1	GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-2 THRU X-11	CROSS-SECTIONS
TITLE SHEET	
S1-S24	STRUCTURE PLANS
STANDARD NOTES	

PART II. HB-0058: INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2G-1	GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-2 THRU X-7	CROSS-SECTIONS
TITLE SHEET	
S1-S24	STRUCTURE PLANS
STANDARD NOTES	

PART III. HB-0059: INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-4	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-2 THRU X-11	CROSS-SECTIONS
TITLE SHEET	
S1-S24	STRUCTURE PLANS
STANDARD NOTES	

PART IV. HB-0060: INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-2	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2C-4	SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION DETAIL
2C-5	METHOD OF PIPE INSTALLATION DETAIL, FLEXIBLE PIPE
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS SECTION SUMMARY SHEET
X-2 THRU X-9	CROSS-SECTIONS
TITLE SHEET	
S1-S24	STRUCTURE PLANS
STANDARD 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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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

BLUE RIDGE ELECTRIC, AT&T, CHARTER SPECTRUM

RIGHT-OF-WAY MARKERS:

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

EFF. 08-11-2025
REV. 11-26-2025

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
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	
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Signed by: Angela Pridgen 10/23/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7600
NC Lic. No. P-0270

Docusign Envelope ID: 2894AAF5-FEBA-84A6-81EF-AAFAF4530C79

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-4	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2G-1	GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X- 11	CROSS-SECTIONS
TITLE SHEET S-1 THRU S-24 STANDARD NOTES	STRUCTURE PLANS

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024
REVISED:

EFF. 08-11-2025
REV. 11-26-2025

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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

BLUE RIDGE ELECTRIC, AT&T, CHARTER SPECTRUM

RIGHT-OF-WAY MARKERS:

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

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
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	
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.04	Drainage Ditches with Class 'B' Rip Rap

HB-0057
4RD1 | 1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



Signature
Angela Pridgen 10/14/2026
75A410DAF7A489

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. P-0270

05/20/24

HB-0057
4RD1 | 1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

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

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

UTILITIES:

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

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

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

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

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

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

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

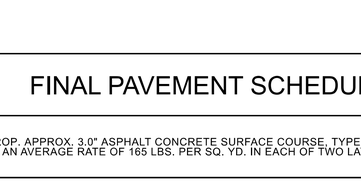
MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line (SUE - LOS B)*
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility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

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FINAL PAVEMENT SCHEDULE

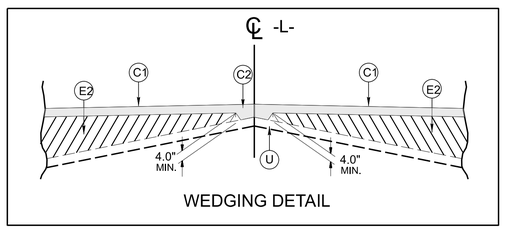
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
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 GREATER THAN 5.5" IN DEPTH OR LESS THAN 4" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

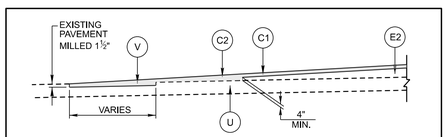


SHOULDER BERM GUTTER DETAIL

-L- STA. 18+42.06 TO STA. 18+62.44 (LT)



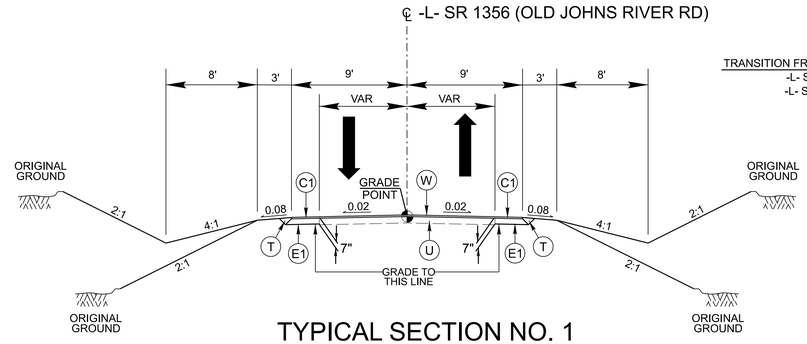
WEDGING DETAIL



MILLING DETAIL FOR PROFILE CONNECTIONS

TYING PROPOSED PAVEMENTS TO EXISTING PAVEMENTS

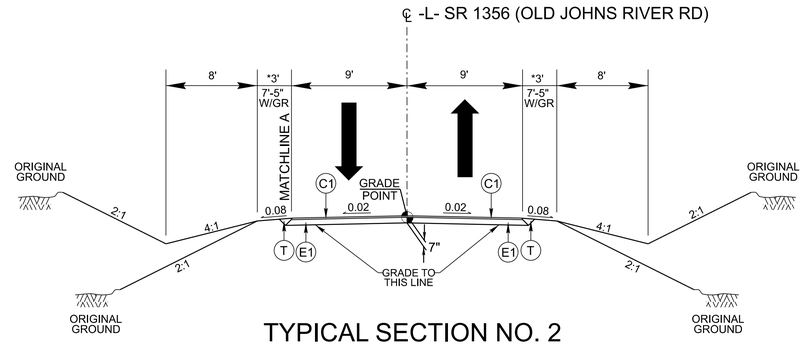
-L- STA. 13+23.00 TO STA. 14+00.00
-L- STA. 19+90.00 TO STA. 20+80.00



TYPICAL SECTION NO. 1

-L- STA. 13+23.00 TO STA. 14+12.56
-L- STA. 19+36.78 TO STA. 20+80.00

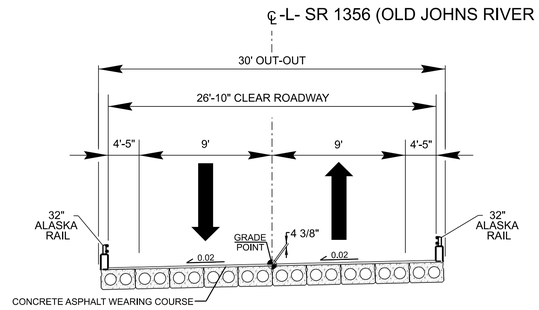
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA 13+23.00 TO STA. 13+48.00
-L- STA 20+55.00 TO STA. 20+80.00



TYPICAL SECTION NO. 2

-L- STA. 14+12.56 TO STA. 17+38.81 (BEGIN BRIDGE)
-L- STA. 18+31.19 (END BRIDGE) TO STA. 19+36.78

*INCREASE PAVED SHOULDER WIDTH TO 4'-5" AT GUARDRAIL LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS.



TYPICAL SECTION NO. 3

-L- STA. 17+38.81 (BEGIN BRIDGE) TO STA. 18+31.19 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)

HB-0057
4RD1 | 2A-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDDY
Signed by: Angela Priddy 10/7/2026
75BA1D2D0F1F4A8...

PAVEMENT ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A. SHAW
DocuSigned by: Ramie Shaw 10/7/2026
C56DB73B4B7E4E6...

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PREPARED BY

GFT Infrastructure, Inc.
356 Gloucester Avenue, Suite 300
Omaha, NE 68102
919.439.5662
NC Lic. No. P-0270

REVISIONS

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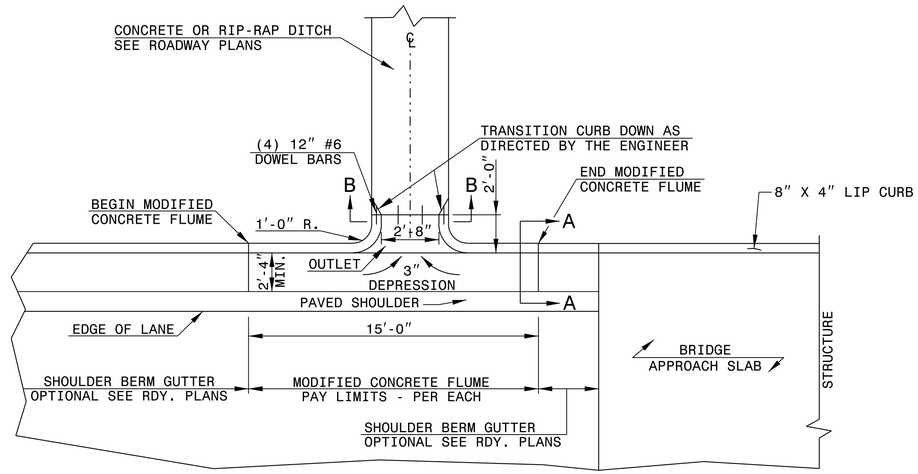
PROJECT REFERENCE NO.	SHEET NO.
HB-0057	2C-1

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

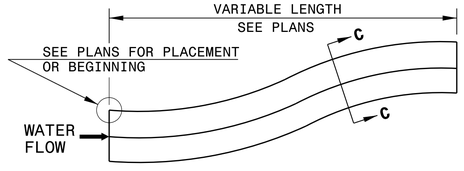
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

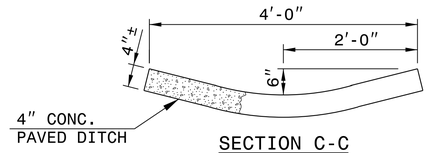
WITH CONCRETE OR RIP-RAP DITCH



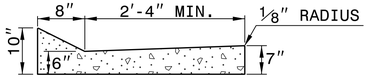
PLAN VIEW



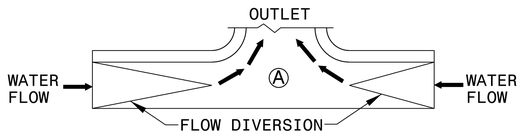
DOWNGRADE OR SAG



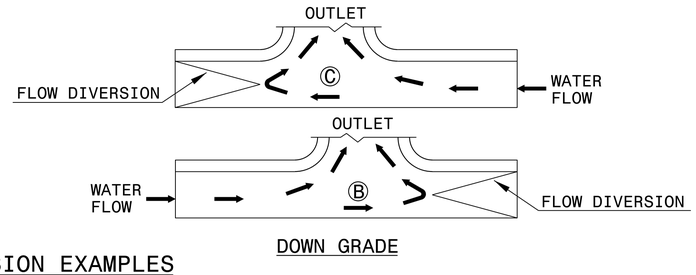
SECTION C-C



SECTION A-A

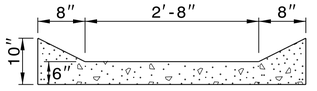


SAG

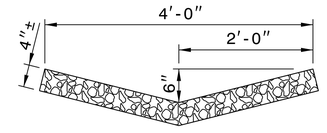


DOWN GRADE

FLOW DIVERSION EXAMPLES



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18″ PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

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UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: _____ DATE: _____
FILE SPEC.: w:details\stand\modifiedflume.dgn

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M HICKLER

Signed by: Nicole M Hickler 10/7/2026
5884323D34164C5...

18-OCT-2017 14:17
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\modifiedflume.dgn
jhowerton AT CSD-212595

5/26/20

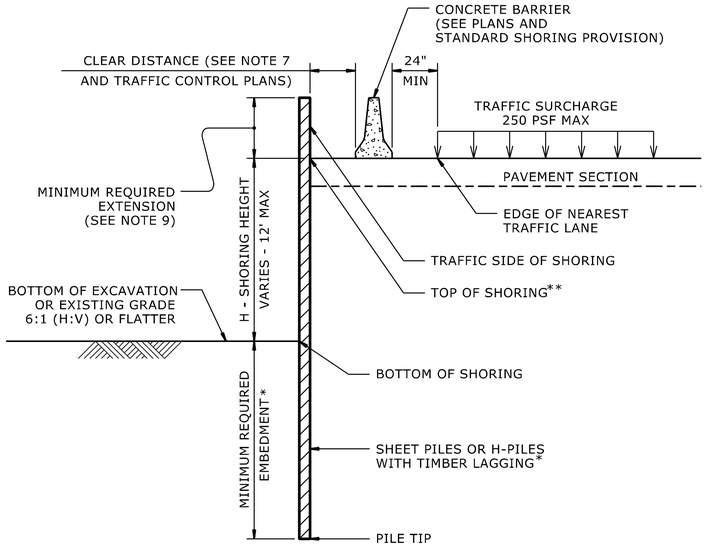
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

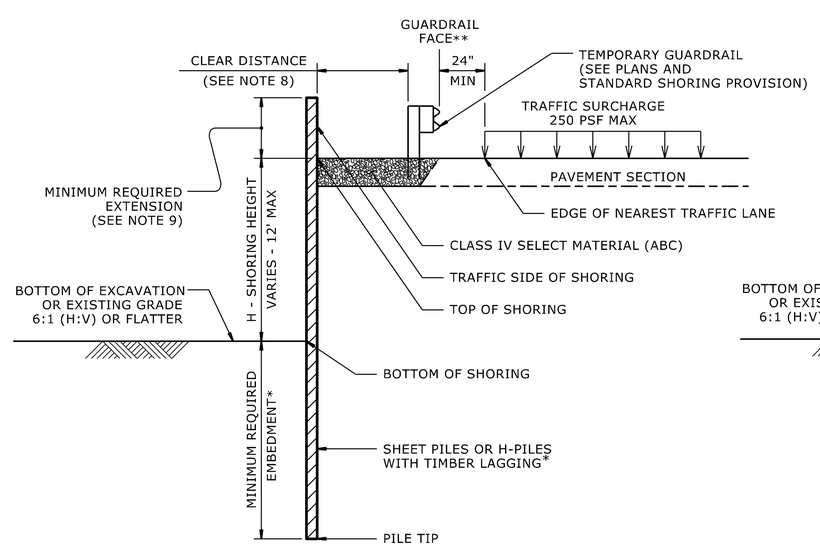
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, φ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



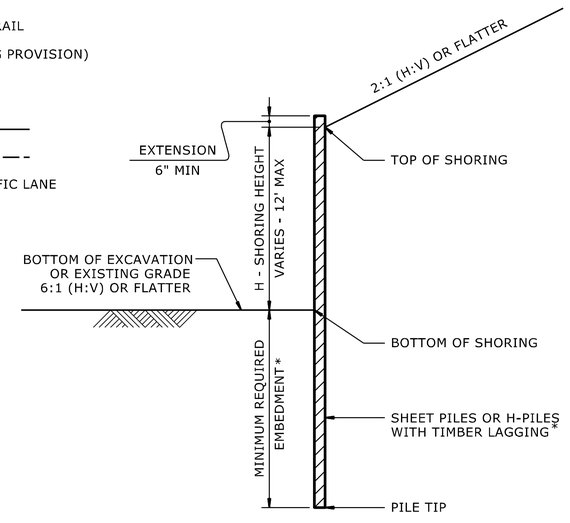
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

HB-0057

2G-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

Signed By: Michael W Shipman

NORTH CAROLINA PROFESSIONAL SEAL 054501 ENGINEER MICHAEL W SHIPMAN

10/8/2026

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STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY SHORING

Prepared In the Office of:

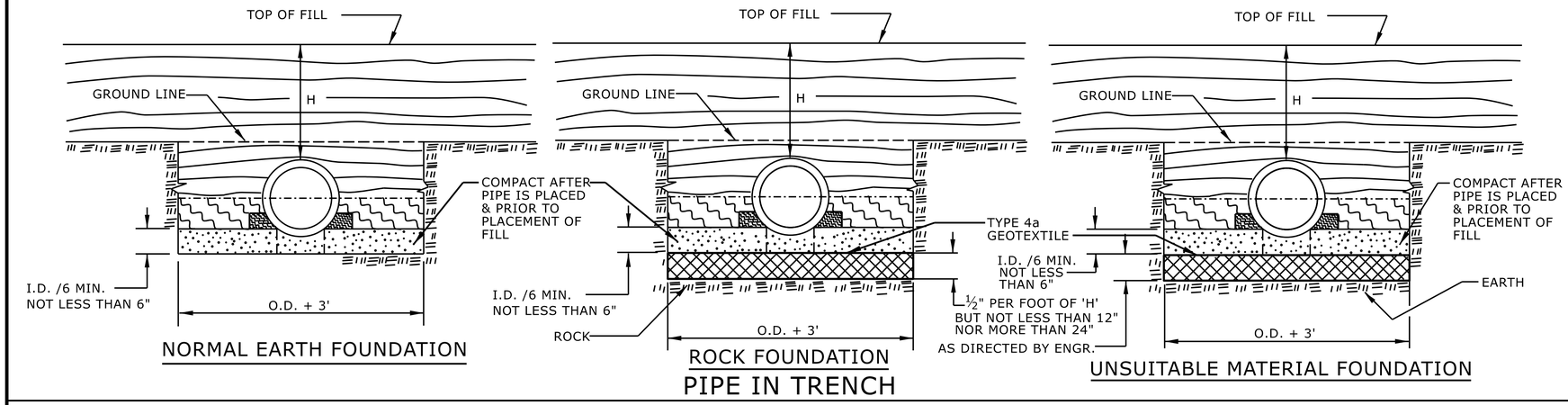
GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DATE: 02-18-2025

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PROJECT REFERENCE NO.	SHEET NO.
HB-0057	2C-2



GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/7/2026
588432303416...

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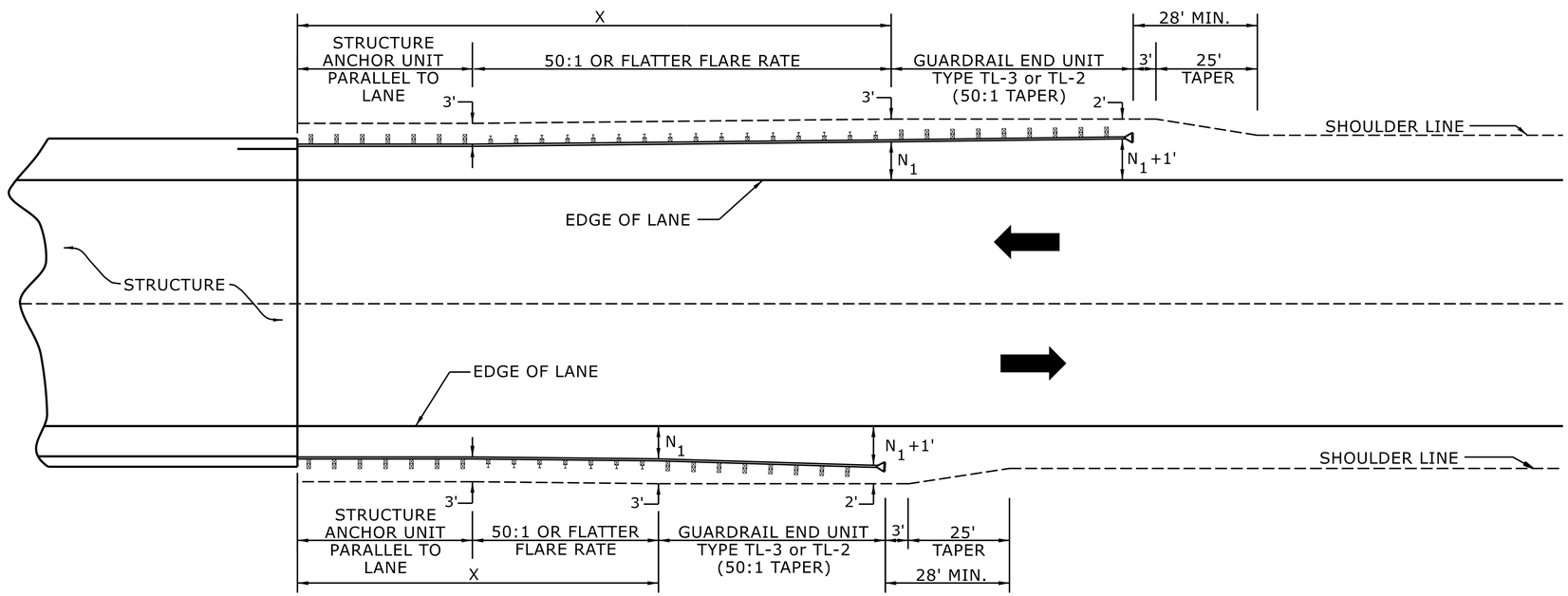
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

Docusign Envelope ID: 88E5D2CB-D2B6-8E2F-80F8-E48528623B59

PROJECT REFERENCE NO.	SHEET NO.
HB-0057	2C-3



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

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/7/2026
588432D34164C5...

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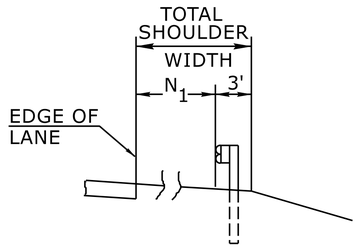
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Office 919-707-6950 FAX 919-250-4119

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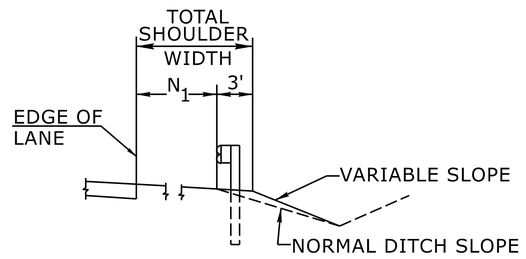
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CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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PROJECT REFERENCE NO.	SHEET NO.
HB-0057	2C-4

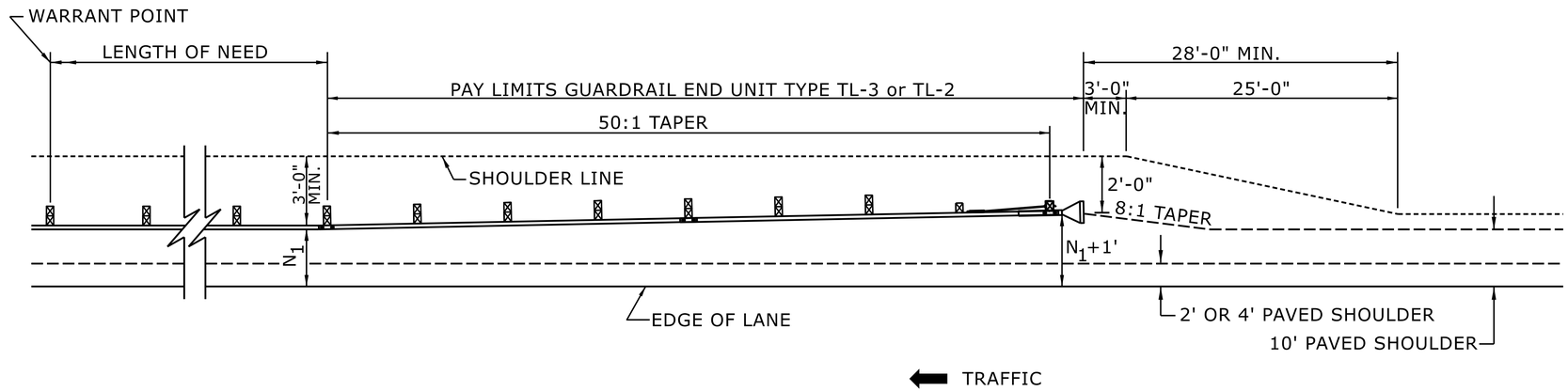


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by: Nicole M Hackler 7/2026
588432D34164C8...

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UNLESS ALL SIGNATURES COMPLETED

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

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FILE SPEC.:

Docusign Envelope ID: 963A02FD-E77A-86C1-80B6-3BDC7AD9131D

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
-L- 13+23.00	-L- 17+38.81 (BEGIN BRIDGE)	975	360		615
SUBTOTALS:		975	360		615
-L- 18+31.19 (END BRIDGE)	-L- 20+80.00	657	138		519
SUBTOTALS:		657	138		518
PROJECT SUBTOTALS:		1632	498		1134
GRAND TOTALS:		1632	498		1134
SAY:		1660			

EST. DDE = 300 CY
SHOULDER BORROW = 16 CY
UNDERCUT EXCAVATION = 450 CY
SHALLOW UNDERCUT = 50 CY
SELECT GRANULAR MATERIAL = 200 CY
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY
CLASS IV SUBGRADE STABILIZATION = 100 TON
GEOTEXTILE FOR SUBGRADE STABILIZATION = 150 SY

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, SHOULDER BORROW, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY ENGINEER

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	YD^2
-L-	13+23	17+39 EXIST BRIDGE	RT	813.10
-L-	18+31 EXIST BRIDGE	20+80	RT	327.52
			TOTAL:	1140.61
			SAY:	1160

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	LENGTH
-L-	18+42.06	18+62.44	LT	20.38'
			TOTAL:	20.38'
			SAY:	21'

"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	XI MOD	TYPE III	GREU TL-2	M-350	TYPE XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	16+82.56	17+38.81 (BRIDGE)	LT	56.25'				17+38.81 (BRIDGE)	4'-5"	7'-5"		25		0.5		1	1												SUBREGIONAL TIER UNDIVIDED TWO-WAY, TWO-LANE BRIDGE <50 MPH
-L-	16+82.56	17+38.81 (BRIDGE)	RT	56.25'			17+38.81 (BRIDGE)		4'-5"	7'-5"	25		0.5			1	1													
-L-	18+31.19 (BRIDGE)	18+87.44	LT	56.25'			18+31.19 (BRIDGE)		4'-5"	7'-5"	25		0.5			1	1													
-L-	18+31.19 (BRIDGE)	18+87.44	RT	56.25'				18+31.19 (BRIDGE)	4'-5"	7'-5"		25		0.5		1	1													
		ANCHOR UNIT DEDUCTIONS																												
		TYPE III	4 @ 18.75' EACH	-75.00'																										
		GREU TL-2	4 @ 25' EACH	-100.00																										
			TOTALS	50.00'												4	4													
			SAY	50.00'												4	4													
			ADDITIONAL GUARDRAIL POSTS (EA)	5																										

HB-0057
4RD1 | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



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PREPARED BY

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-835-1600
NC Lic. No. P-0270

SYSTEMS\ENGINEERING\ROADWAY\SHEETS\ROADWAY SHEETS.DGN
9/9/2021 9:27:57 AM

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

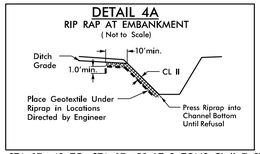
NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300–5".

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | 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 | C.S. PIPE 15" | 18" | 24" | 36" | 42" | 48" | C.S. PIPE THICKNESS .064 | .064 | .064 | .079 | .109 | .109 | R.C. PIPE (CLASS III) 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE (CLASS IV) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" R. C. PIPE (CLASS V) | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. PER EACH (0' THRU 5.0') | A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | G.D.I. FRAME WITH GRATE STD. 840.22 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | MODIFIED CONC. FLUME | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

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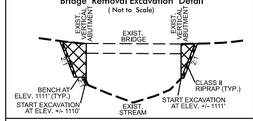
CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+85.68	PIc 15+59.75	PIc 19+78.42	PIc 21+33.66	PIc 22+37.78
Δc = 18°32'19.6" (RT)	Δc = 90°18'23.9" (LT)	Δc = 22°14'00.8" (LT)	Δc = 17°51'56.4" (RT)	Δc = 02°30'42.7" (LT)
D = 10°54'48.5"	D = 24°22'52.3"	D = 11°07'31.4"	D = 15°54'55.8"	D = 02°35'33.2"
Lc = 169.87	Lc = 370.39	Lc = 199.85	Lc = 112.25	Lc = 96.89
Tc = 85.68	Tc = 236.26	Tc = 101.20	Tc = 56.59	Tc = 48.45
R = 525	R = 235	R = 515	R = 360	R = 2,210
	SE = 0.060	SE = 0.040		
	Lr = 84'	Lr = 56'		
		DS = 25 MPH		

DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



STA 17+42 TO STA 17+59 LT, 2 TONS CL II, 7 SY GEO
STA 18+06 TO STA 18+19 LT, 6 TON CL II, 18 SY GEO

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



-L- STA 17+34 TO STA 17+59 RT
-L- STA 18+15 TO STA 18+42 RT

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

-L- STA. 14+55 TO STA. 15+07 RT, 60 CY DDE
-L- STA. 15+41 TO STA. 15+87 RT, 231 CY DDE

DETAIL 4D
SPECIAL BASE DITCH
(Not to Scale)



-L- STA 16+22 TO STA 17+45 RT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



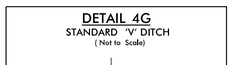
-L- STA 16+94 TO STA 17+45 LT

DETAIL 4F
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)

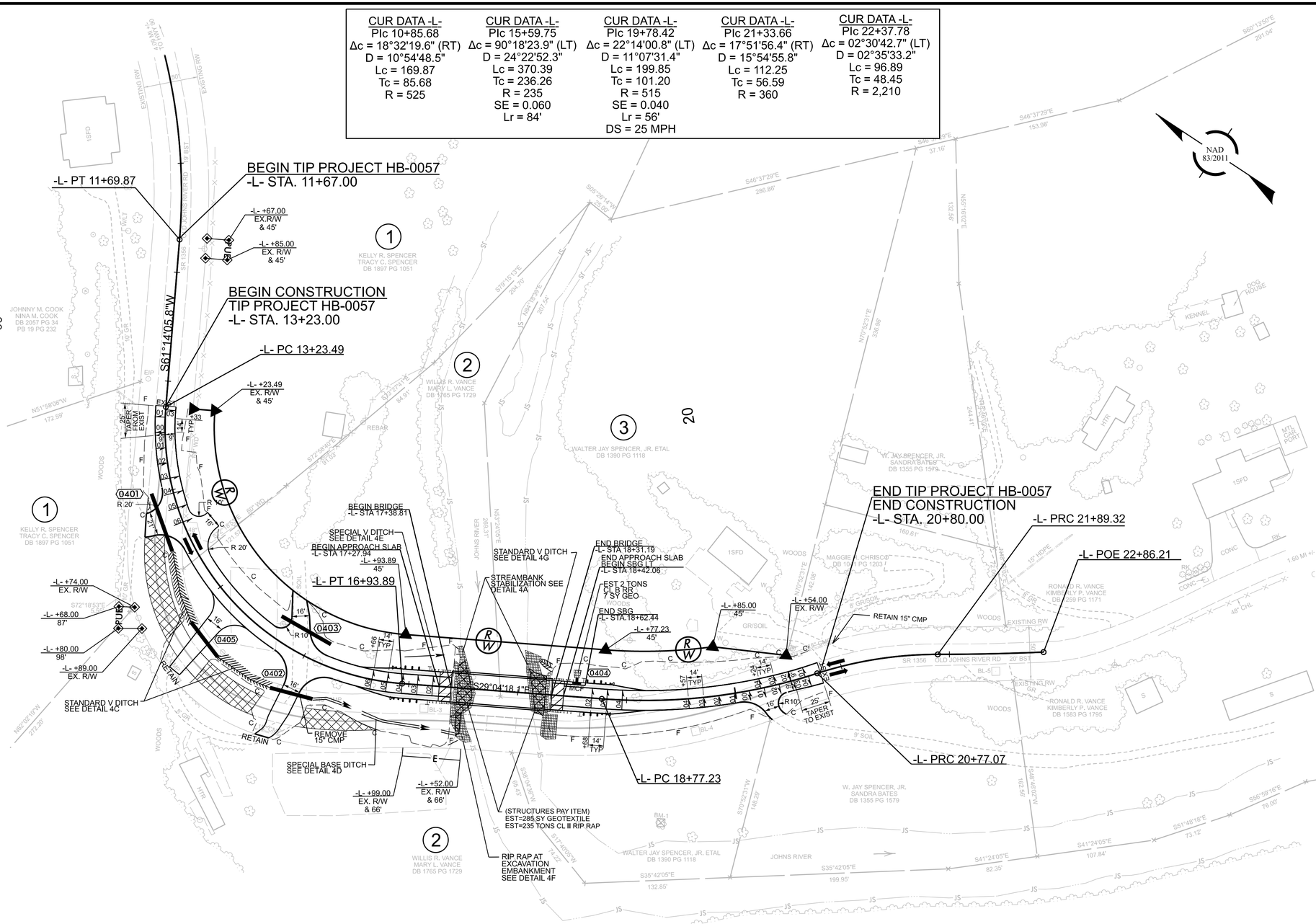


Type of Liner=1 TON,CL B Rip-Rap, Keyed-In; 6 SY GEO.
-L- STA 17+45 TO STA 17+56 RT

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



-L- STA 18+14 TO STA 18+30 LT, 2 CY DDE



NOTE:
ALL DRIVEWAY PIPE ARE 15" RCP-CLASS V UNLESS OTHERWISE NOTED.
ALL DRIVEWAY RADII ARE 25' UNLESS OTHERWISE NOTED.
ALL PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
ALL STRUCTURE ANCHOR UNITS ARE TYPE III UNLESS OTHERWISE NOTED.
ALL GUARDRAIL END TREATMENTS ARE TYPE TL-2 UNLESS OTHERWISE NOTED.

PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET 05

REVISIONS

HB-0057
4RD1 | 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA D PRIDGEN
DocuSigned by: Angela D Pridgen 10/7/2026

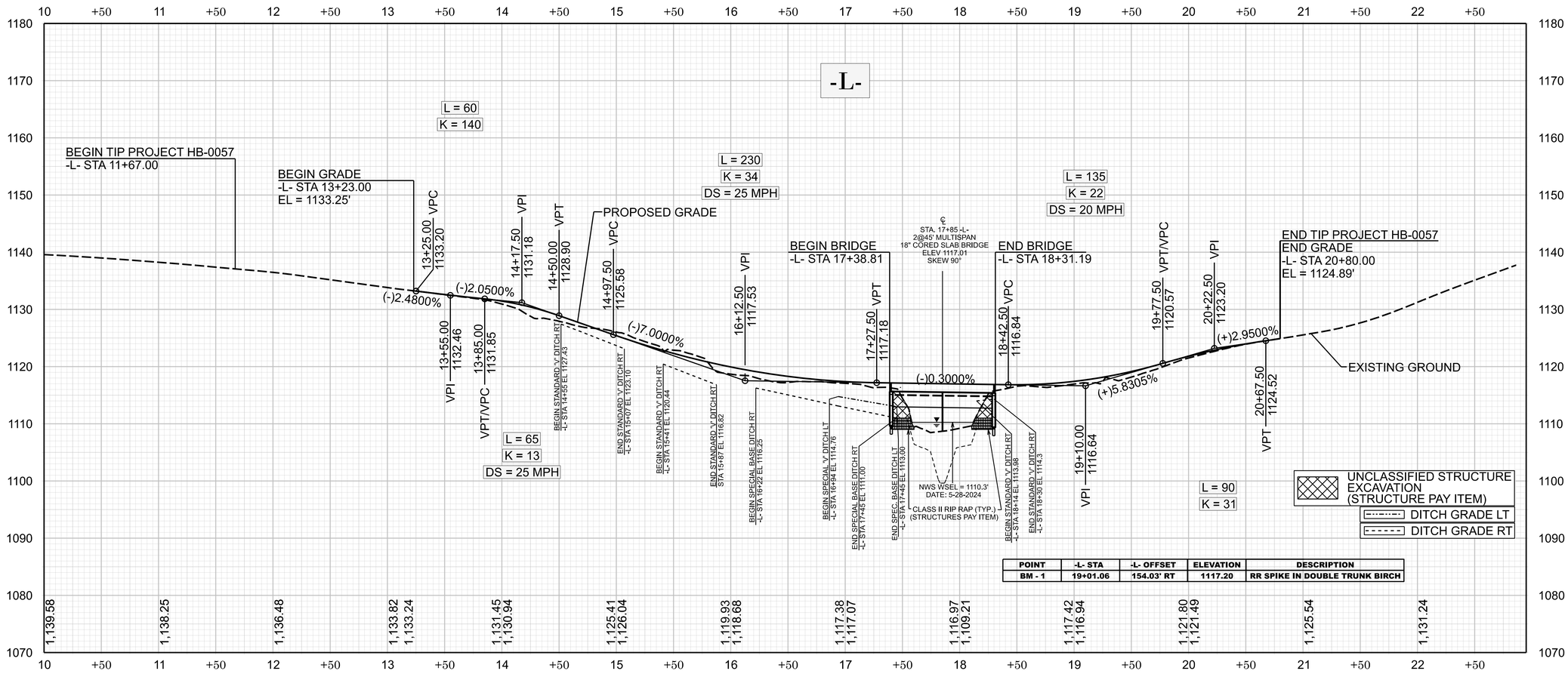
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K JERNIGAN JR
DocuSigned by: 10/7/2026

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PREPARED BY

GFT Infrastructure, Inc.
1000 Corporate Center Dr.
Raleigh, NC 27607
919-829-7660
NC Lic. No. P-0270

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POINT	-L- STA	-L- OFFSET	ELEVATION	DESCRIPTION
BM - 1	19+01.06	154.03' RT	1117.20	RR SPIKE IN DOUBLE TRUNK BIRCH

HYDRAULIC DATA

DESIGN DISCHARGE	= 2100 C.F.S.
FREQUENCY OF DESIGN FLOOD	= <2 YRS.
DESIGN HIGH WATER ELEVATION	= 1116.6'
DRAINAGE AREA	= 60.8 SQ. MI.
BASIC DISCHARGE (Q100)	=10800 C.F.S.
BASIC HIGH WATER ELEVATION	=1124.36'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 2300 C.F.S.
FREQUENCY OF OVERRTOPPING FLOOD	= <2 YRS.
OVERTOPPING FLOOD ELEVATION	=1116.8'

**OVERTOPPING OCCURS AT RDY LOW-POINT -L- STA. 18+44 +/-*

WS EL. Taken @ River Station 116286

FOR -L- PLAN, SEE SHEET 04

HB-0057

4RD1	05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER WILLIAM K. JERNIGAN JR.

DocuSigned by: William K. Jernigan Jr. 71A410D0071484...

10/7/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN JR.

DocuSigned by: William K. Jernigan Jr.

10/7/2026

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GFT Infrastructure, Inc.
4601 Six Forks Road, Suite 360
Raleigh, NC 27609
919-420-7660
NC Lic. No. P-0270

09/08/99

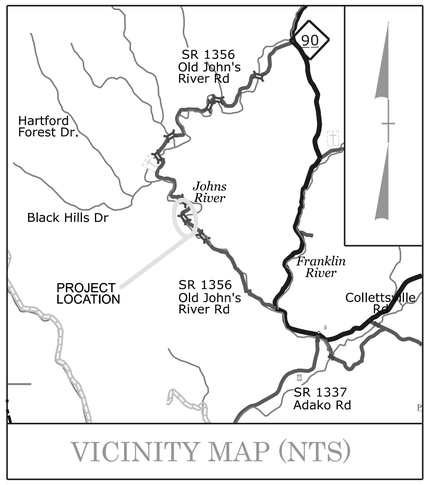
TIP PROJECT: *HB-0057*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	RW01	5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

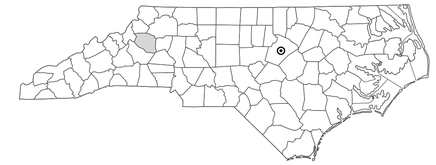
SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

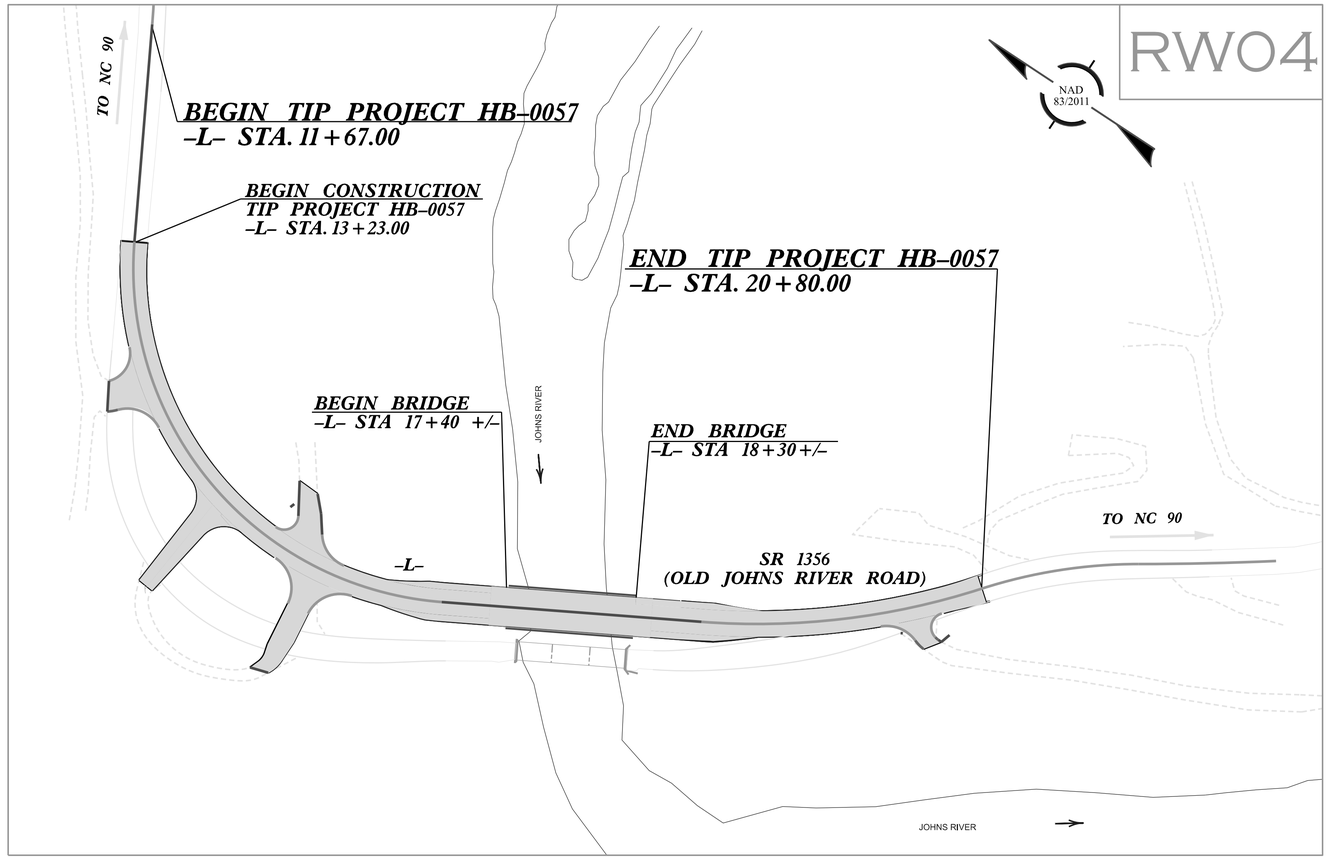
CALDWELL COUNTY



VICINITY MAP (NTS)

ROW ACQUISITION PLAN SET





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GRAPHIC SCALES

40' 20' 0' 40' 80'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT 185-2
WITH NAD83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 811055.4742 EASTING: 1199392.7562
ELEVATION: 1130.44
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99989738
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2025

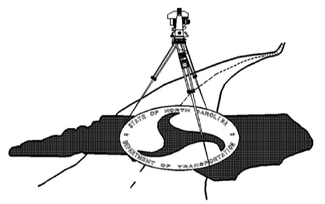
LETTING DATE: AUGUST 20, 2026

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

Signed by: Matthew Cornwell 7/23/2025
EBD36F114736475...

SIGNATURE: *DATE:*



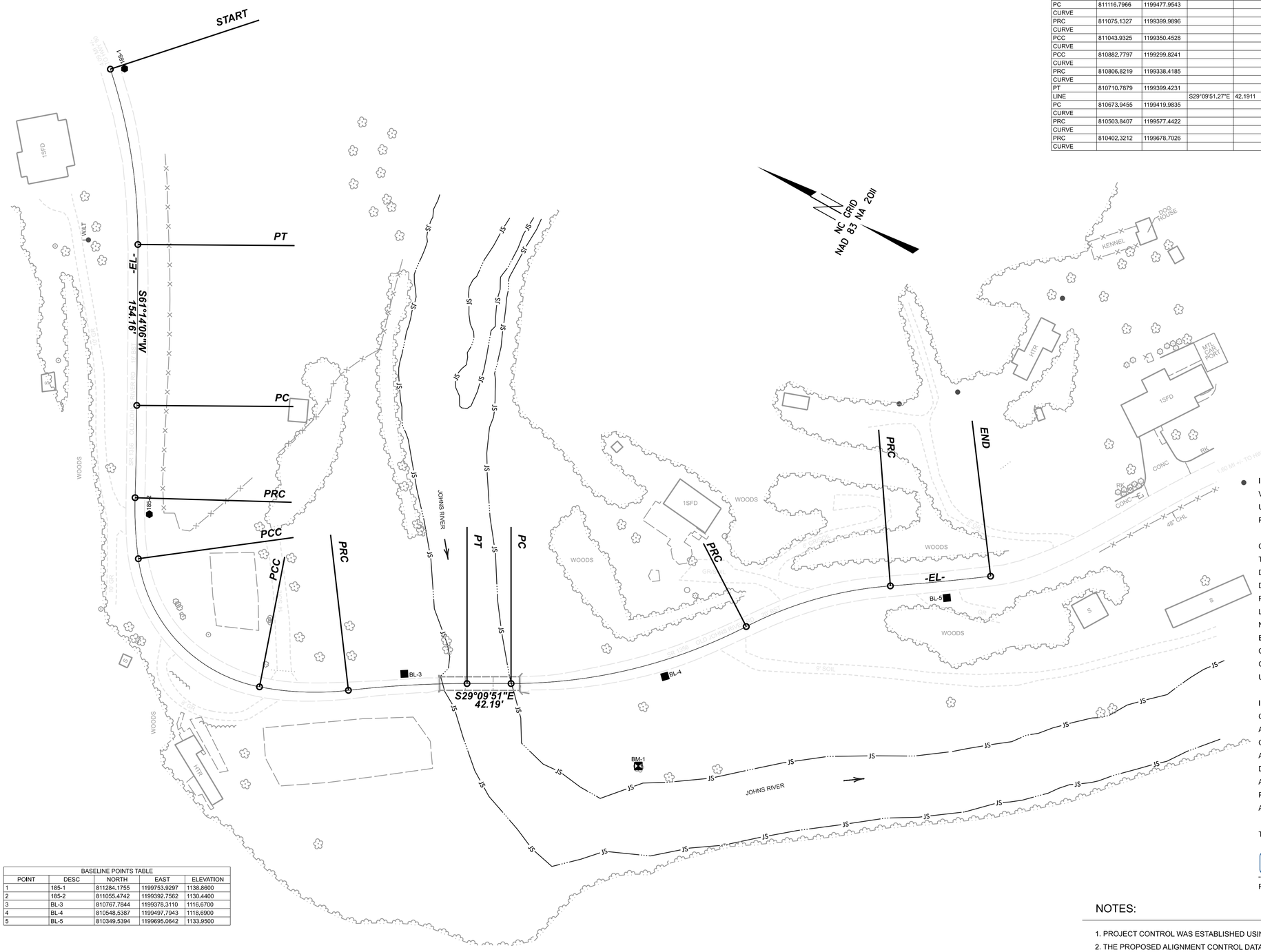
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5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	811295.8541	1199746.9179							
CURVE					18°38'15.2" Right	10°54'48.5"	170.78	86.15	525.00
PT	811190.9812	1199613.0908							
LINE			S61°14'05.82"W	154.1597					
PC	811116.7966	1199477.9543							
CURVE					01°17'25.6" Right	01°27'35.2"	88.40	44.20	3925.00
PRC	811075.1327	1199399.9896							
CURVE					09°27'34.1" Left	16°08'22.8"	58.61	29.37	355.00
PCC	811043.9325	1199350.4528							
CURVE					71°15'00.0" Left	39°30'51.6"	180.31	103.91	145.00
PCC	810882.7797	1199299.8241							
CURVE					17°30'08.5" Left	20°27'46.0"	85.53	43.10	280.00
PRC	810806.8219	1199338.4185							
CURVE					06°31'19.9" Right	05°43'46.5"	113.83	56.98	1000.00
PT	810710.7879	1199399.4231							
LINE			S29°09'51.27"E	42.1911					
PC	810673.9455	1199419.9835							
CURVE					27°14'59.1" Left	11°38'43.7"	233.99	119.25	492.00
PRC	810503.8407	1199577.4422							
CURVE					22°58'27.8" Right	15°54'55.8"	144.35	73.16	360.00
PRC	810402.3212	1199678.7026							
CURVE					02°30'03.1" Left	02°35'33.2"	96.46	48.24	2210.00



BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	185-1	811284.1755	1199753.9297	1138.8600
2	185-2	811055.4742	1199392.7562	1130.4400
3	BL-3	810767.7844	1199378.3110	1116.6700
4	BL-4	810548.5387	1199497.7943	1118.6900
5	BL-5	810349.5394	1199695.0642	1133.9500

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	810529.0350	1199410.4437	1117.2000	RRSPIKE IN DOUBLE TRUNK BIRCH

50 25 0 50 100

PLANS 1"=50'

- I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE PROJECT CONTROL WAS VERIFIED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: APRIL 2022
DATUM/EPOCH: NAD83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: 185-2
NORTHING: 811055.4742
EASTING: 1199392.7562
COMBINED GRID FACTOR: 0.99989738
GEOID MODEL: GEOID18
UNITS: US 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 DECEMBER 2023, 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 2/21/2024

DocuSigned by:
Matthew Cornwell
E8D36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. 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.

HB-0057
R/W | 02C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2018 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0057
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

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	811295.1884	1199746.3047	S51°57'56.0"W	169.13	18°32'19.6"	10°54'48.5"	169.87	85.68	525.00		
PT	11+69.87	811190.9812	1199613.0908	S61°14'05.8"W	153.62							
PC	13+23.49	811117.0548	1199478.4246	S16°04'53.9"W	333.23	90°18'23.9"	24°22'52.3"	370.39	236.26	235.00		
PT	16+93.89	810796.8664	1199386.1182	S29°04'18.1"E	183.34							
PC	18+77.23	810636.6269	1199475.2027	S40°11'18.5"E	198.59	22°14'00.8"	11°07'31.4"	199.85	101.20	515.00		
PRC	20+77.07	810484.9161	1199603.3560	S42°22'20.7"E	111.80	17°51'56.4"	15°54'55.8"	112.25	56.59	360.00		
PRC	21+89.32	810402.3212	1199678.7026	S34°41'43.9"E	96.88	02°30'42.7"	02°35'33.2"	96.89	48.45	2210.00		
END	22+86.21	810322.6679	1199733.8480									

I, MATTHEW T. CORNWELL, 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 7/23/2025

Signed by:
Matthew Cornwell
EBD36F114736475...

PROFESSIONAL LAND SURVEYOR L-4775

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.

HB-0057

R/W | D2D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0057

County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

5/26/20

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

I , MATTHEW T. CORNWELL, 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 7/21/2025, 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 7/23/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
13+23.49	-25.0000	811095.1398	1199490.4551
13+23.49	-45.0000	811077.6078	1199500.0795
16+93.89	-45.0000	810818.7320	1199425.4487
18+77.23	-45.0000	810658.4926	1199514.5332
19+85.00	-45.0000	810578.1362	1199570.9392
20+54.00	-23.8784	810517.6877	1199601.4259

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
11+67.00	-45.0000	811153.0414	1199637.4733
11+67.00	-25.0000	811170.5205	1199627.7532
11+85.00	-25.0000	811161.7856	1199611.8586
11+85.00	-45.0000	811144.2536	1199621.4830
14+68.00	87.0000	811052.2222	1199302.1057
14+74.00	75.0139	811039.8098	1199309.4996
14+80.00	98.0000	811041.5781	1199285.1577
14+89.00	80.3329	811023.4551	1199296.8914

NOTES:

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

HB-0057
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0057
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

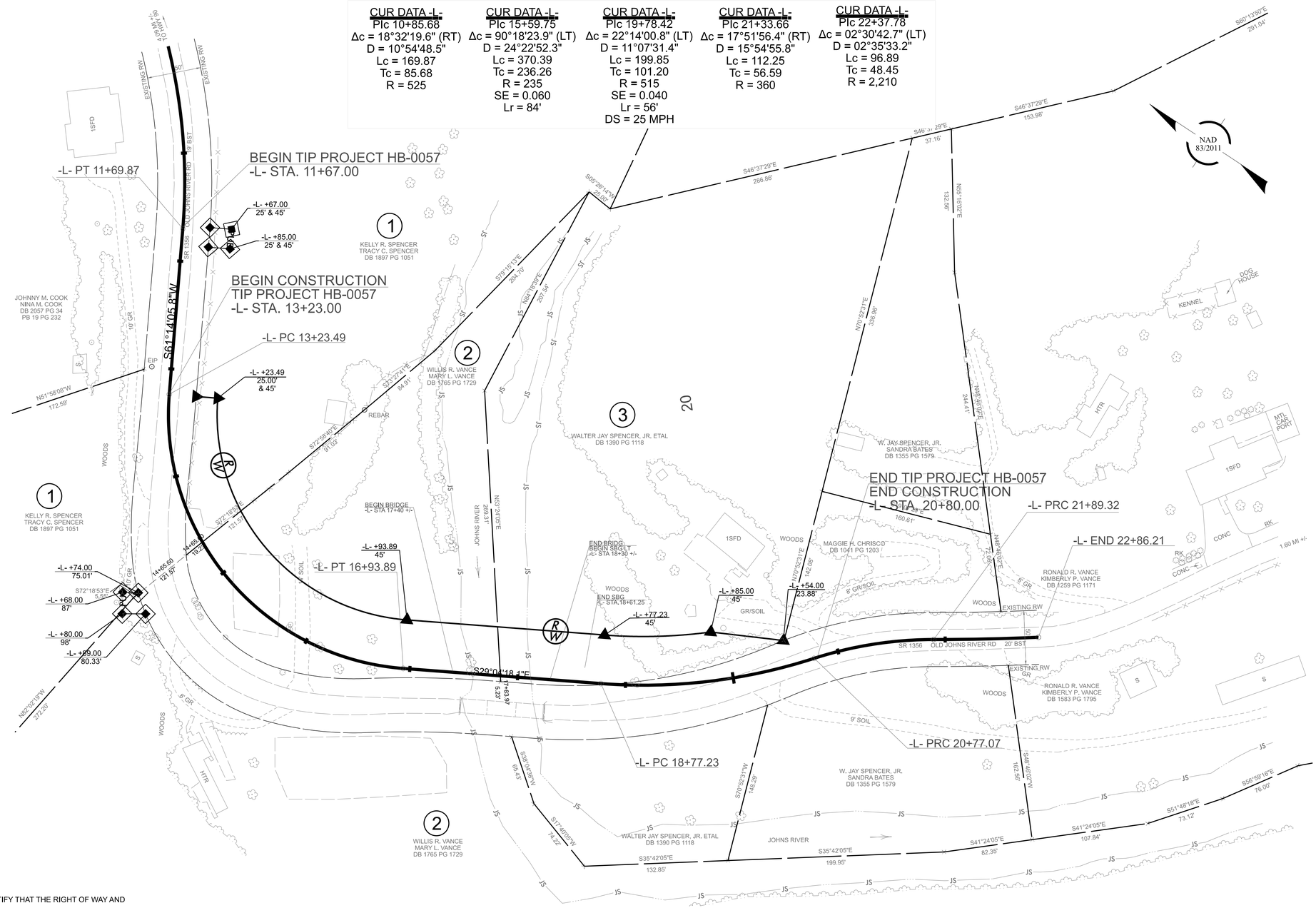
PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

TGS ENGINEERS

5/26/20

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+85.68	PIc 15+59.75	PIc 19+78.42	PIc 21+33.66	PIc 22+37.78
Δc = 18°32'19.6" (RT)	Δc = 90°18'23.9" (LT)	Δc = 22°14'00.8" (LT)	Δc = 17°51'56.4" (RT)	Δc = 02°30'42.7" (LT)
D = 10°54'48.5"	D = 24°22'52.3"	D = 11°07'31.4"	D = 15°54'55.8"	D = 02°35'33.2"
Lc = 169.87	Lc = 370.39	Lc = 199.85	Lc = 112.25	Lc = 96.89
Tc = 85.68	Tc = 236.26	Tc = 101.20	Tc = 56.59	Tc = 48.45
R = 525	R = 235	R = 515	R = 360	R = 2,210
	SE = 0.060	SE = 0.040		
	Lr = 84'	Lr = 56'		
		DS = 25 MPH		



I , MATTHEW T. CORNWELL, 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 7/21/2025, 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 7/23/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

NOTES:

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

HB-0057
R/W 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0057
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

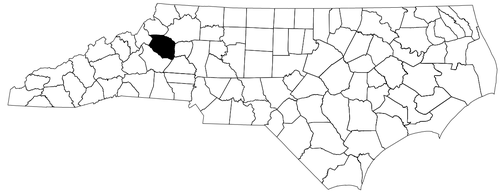
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TGS ENGINEERS
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SHELBY, NC 28150
704-476-0003

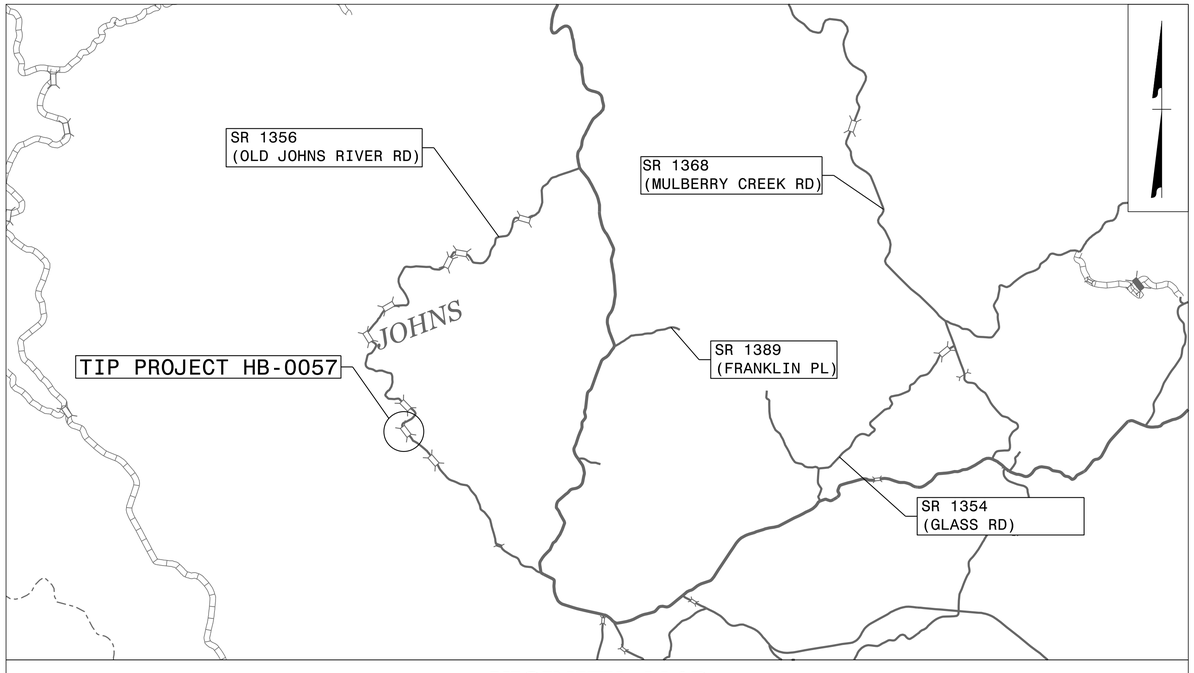
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CALDWELL COUNTY



LOCATION: REPLACEMENT OF BRIDGE NO. 185 ON SR 1356 OVER JOHNS RIVER



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
TMP-2	TEMPORARY SHORING NOTES
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-3	PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

TIP PROJECT: HB-0057



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

PLANS PREPARED BY:

JERRY P. PAGE, PE
PROJECT ENGINEER

JOHN BAUMAN, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

SUZANA MATTA, PE
NCDOT PROJECT ENGINEER

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

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UNLESS ALL SIGNATURES COMPLETED

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

APPROVED: DocuSigned by: John Bauman 7FFD5B84C3784D1...

DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052428 ENGINEER JOHN BAUMAN

8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES

LEGEND

GENERAL

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

SIGNALS

PROPOSED | TEMPORARY | PORTABLE | DS

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
P1	PAINT WHITE EDGELINE (4")
P5	PAINT 2 FT. - 6 FT./SP WHITE MINISKIP (4")
P13	PAINT DOUBLE YELLOW CENTER (4")

APPROVED: DocuSigned by: John Bauman 7FFD5B4C37984D1...

DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052428 ENGINEER JOHN BAUMAN

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

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

8/14/2026
pw:\\gftnet-pw.bentley.com:gftnet-pw-01\Documents\Projects\69172\5-Working\Task 019.01 - Bridge I3085\Traffic\Traffic\TrafficControl\TCP\HB-0057_TMP_PSH01A.dgn
User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-1B

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) 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 ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

TRAFFIC BARRIER

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

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

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

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

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (55 MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

TRAFFIC CONTROL DEVICES

L) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (55 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.

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- SR 1356	PAINT	N/A

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

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

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

MISCELLANEOUS

R) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AS DIRECTED BY THE ENGINEER.

S) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE PAVEMENT ENDS SIGNS (W8-3) (500 FT) AND (1000 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES

- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- WEEKEND WORK

WORK ZONE SAFETY & MOBILITY STRATEGIES

- AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

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Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052428 ENGINEER JOHN BAUMAN

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

8/14/2026
PW:\\gfnet-pw.bentley.com:gfnet-pw-01\Documents\Projects\69172\5-Working\Task 019.01 - Bridge 13085\TrafficControl\TCP\HB-0057_TMP_PSH01B.dgn
User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-2

TEMPORARY SHORING NOTES

SHORING LOCATION NO. 1

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

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

DESIGN TEMPORARY SHORING FROM -L- STATION 18+27, 20′ (RT) TO -L- STATION 18+45, 20′ (RT) FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 110 PCF
FRICTION ANGLE (Φ) = 30 DEGREES
COHESION (c) = 0 PSF
GROUNDWATER ELEVATION = NOT ENCOUNTERED

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING WILL NOT PENETRATE BELOW ELEVATION 1109.5 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT. THE DOCUMENT WAS SUBMITTED TO THE DIVISION 11 PROJECT DEVELOPMENT ENGINEER ON 9/24/2026 AND SEALED BY A PROFESSIONAL ENGINEER, MIKEL W. SHIPMAN, PE, LICENSE #054501.

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DATE: 10/8/2026

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

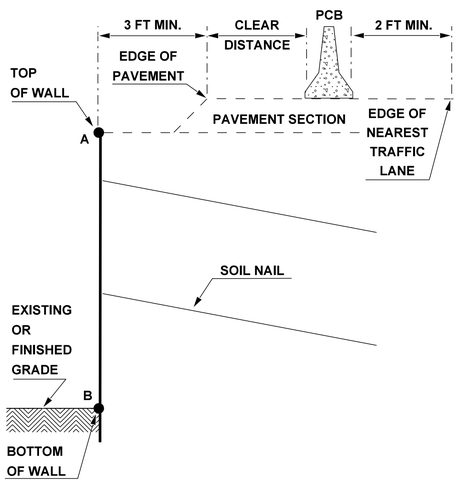
TEMPORARY SHORING NOTES

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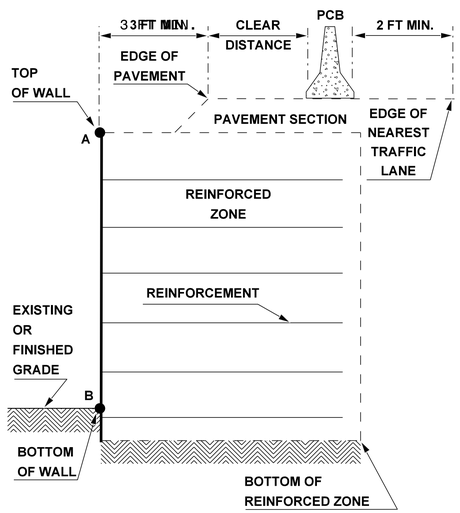
10/5/2026
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PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-2A

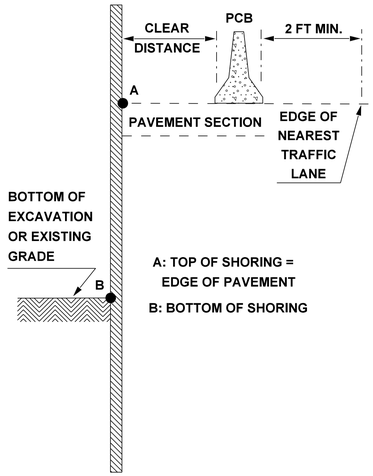
TEMPORARY SOIL NAIL WALL



TEMPORARY MSE WALL



TEMPORARY SHORING



NOTE: WALL OR SHORING HEIGHT = A-B

FIGURE A

NOTES

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

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

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

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

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

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

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

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

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

MINIMUM REQUIRED CLEAR DISTANCE, inches

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

* See Figure Below

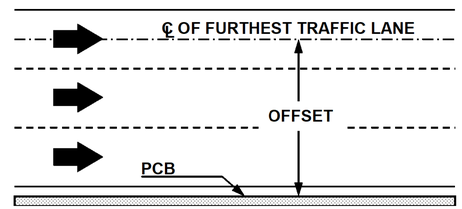


FIGURE B

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SEAL

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-3

PHASING

PHASE I

STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEET 3 OF 3 PLACE ADVANCE WARNING SIGNS ON SR 1356(OLD JOHNS RIVER RD).

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PLACE WATER FILLED BARRIER AND TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-4 AND BEGIN CONSTRUCTION, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE

STEP 3: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- INSTALL TEMPORARY SHORING AS SHOWN ON TMP-4
- COMPLETE CONSTRUCTION AS SHOWN ON TMP-4, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- USE WEDGING TO CREATE TIE-IN FROM THE EXISTING PATTERN TO THE PHASE II PATTERN.
- PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-5
- PLACE TEMPORARY MARKINGS AS SHOWN ON TMP-5
- SHIFT TRAFFIC INTO THE PHASE II PATTERN.

PHASE II

STEP 1: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, BEGIN CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, REMOVE TEMPORARY SHORING AND COMPLETE CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING 1101.02 SHEETS 1 AND 14 OF 19, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLAN AND REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES.

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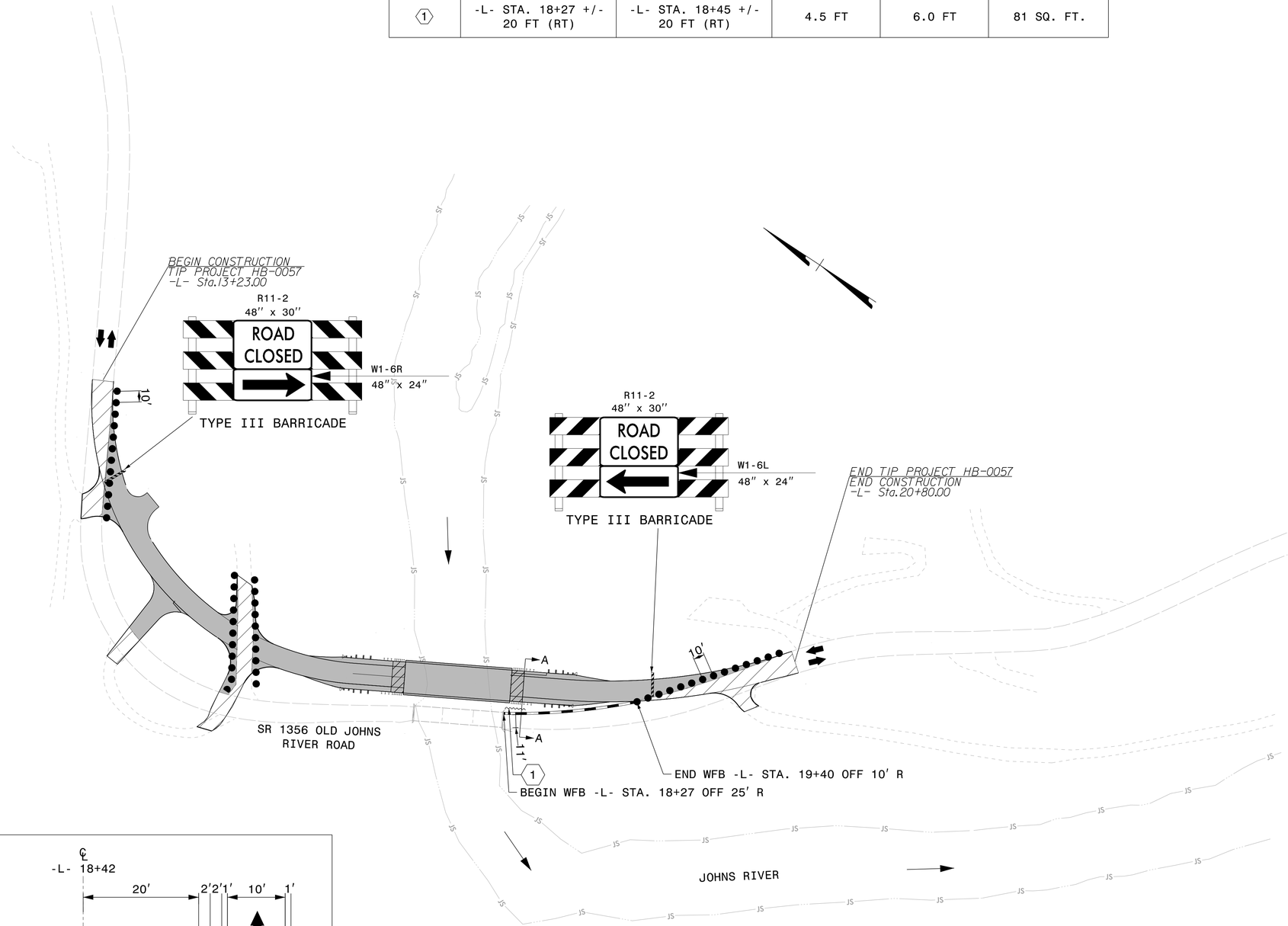
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

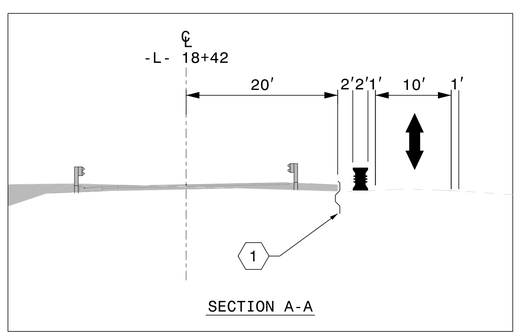
PHASING

8/4/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-4

SHORING I.D. NO.	BEGIN STATION AND OFFSET	END STATION AND OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	QUANTITY
⟨1⟩	-L- STA. 18+27 +/- 20 FT (RT)	-L- STA. 18+45 +/- 20 FT (RT)	4.5 FT	6.0 FT	81 SQ. FT.





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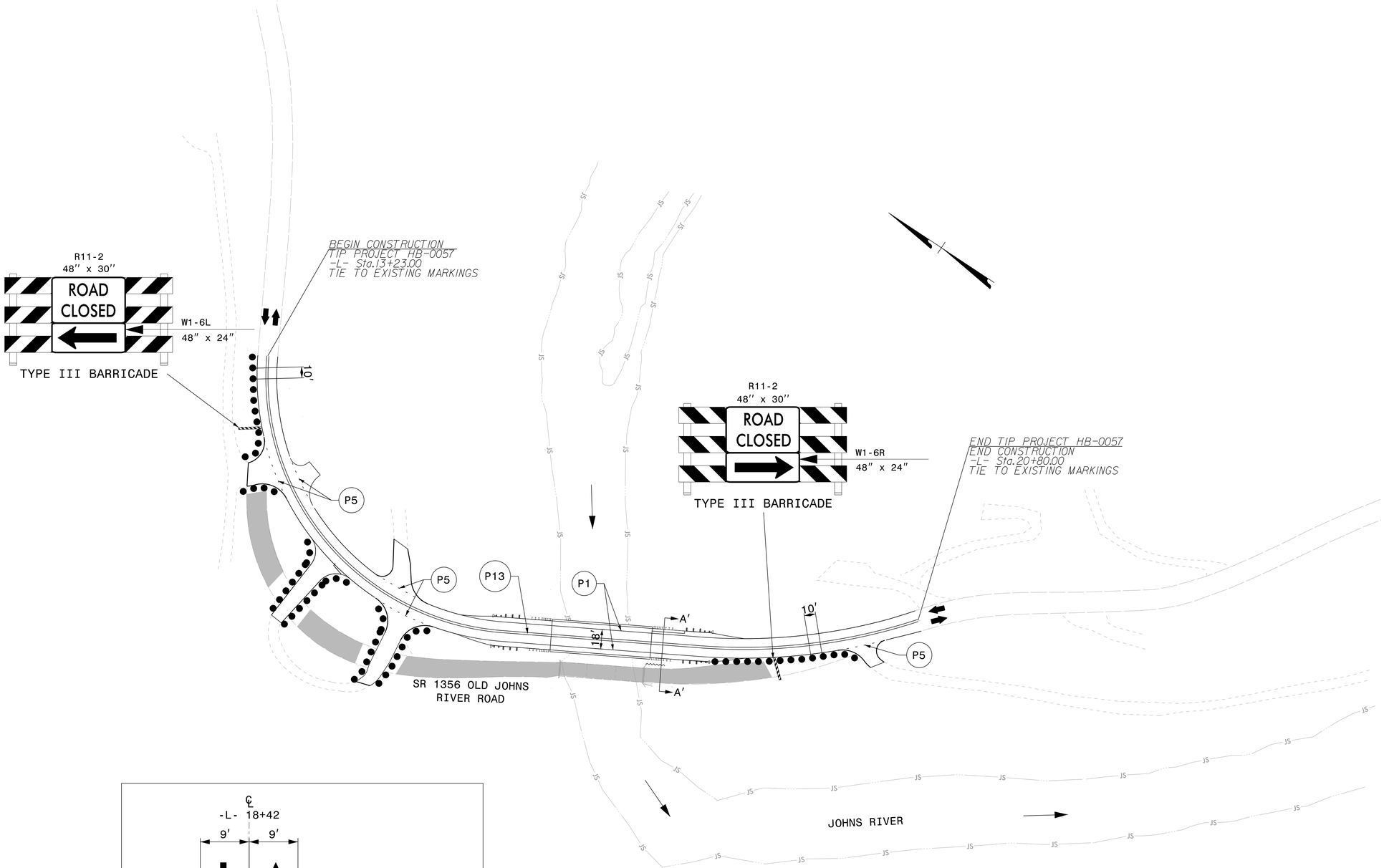
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

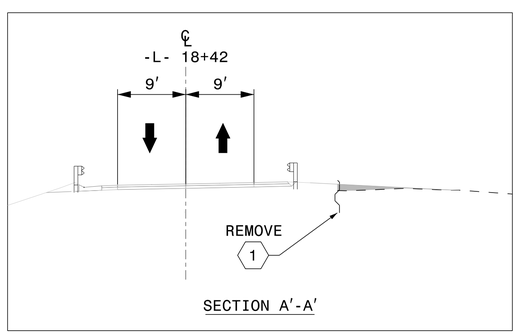
PHASE I DETAIL

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8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	TMP-5





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PHASE II DETAIL

8/14/2026
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User:jbauman

TIP PROJECT: HB-0057

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

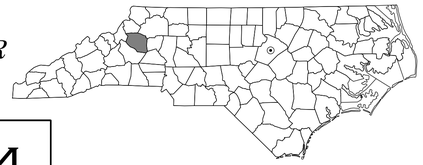
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

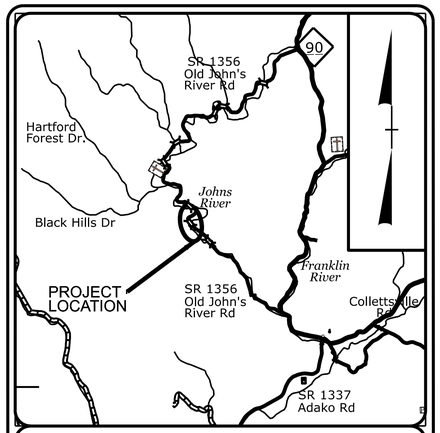
CALDWELL COUNTY

LOCATION: *BRIDGE 185 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	





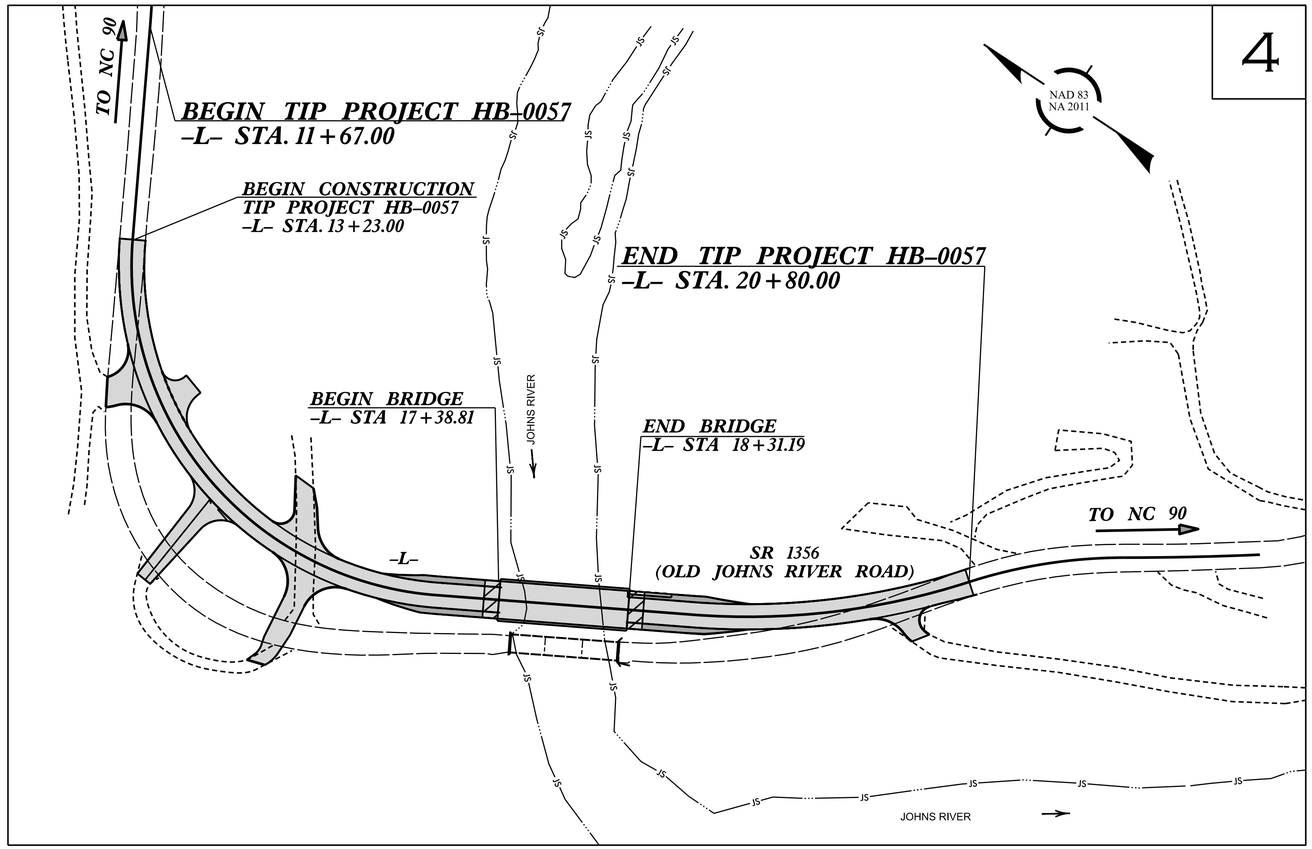
VICINITY MAP
NOT TO SCALE

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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



GRAPHIC SCALE

50 25 0 50 100

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.

Prepared In the Office of:

GFT

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Designed by:

HANNAH AREY — *NAME*

4651 — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGNFILE$$$$

PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

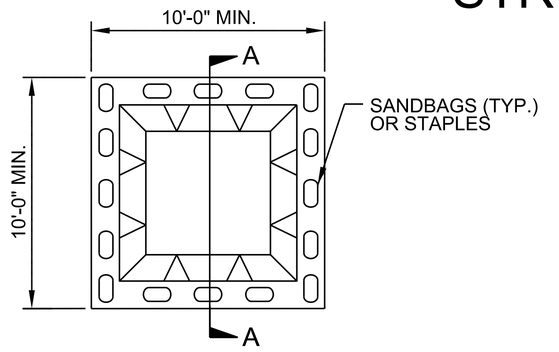
EROSION & SEDIMENT CONTROL LEGEND

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

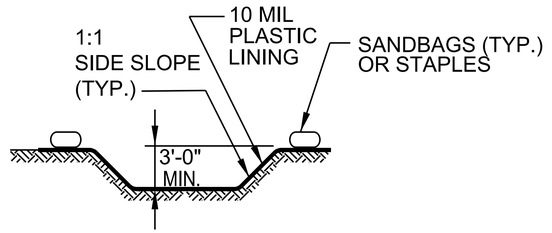
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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.
HB-0057	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



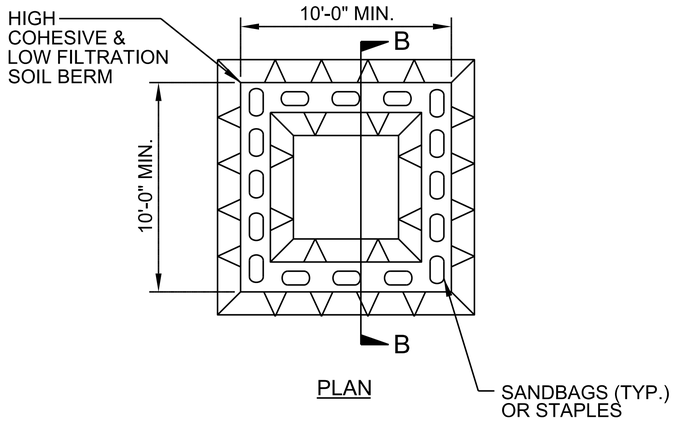
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

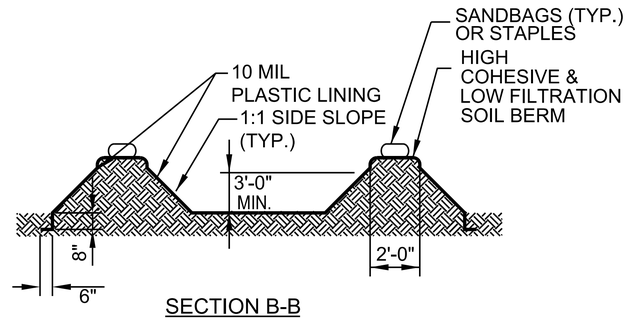
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

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 CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
HB-0057	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCH LINE MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	14+55	15+87	RT	45
4	-L-	16+22	17+45	RT	70
4	-L-	16+94	17+45	LT	25
4	-L-	18+14	18+30	LT	10
				SUBTOTAL	150
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2000
				TOTAL	2150
				SAY	2200

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
HB-0057	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

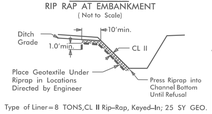
SOIL STABILIZATION TIMEFRAMES

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

HB-0057

EC-4/CONST.4

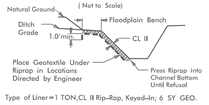
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEO.

-L- STA 17+42 TO STA 17+59 LT
-L- STA 18+06 TO STA 18+19 LT

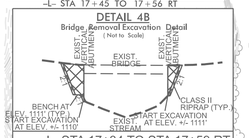
DETAIL 4F
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



Type of Liner = 1 TON,CL II Rip-Rap, Keyed-In; 6 SY GEO.

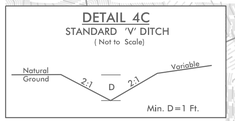
-L- STA 17+45 TO 17+56 RT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



-L- STA 17+34 TO STA 17+59 RT
-L- STA 18+15 TO STA 18+42 RT

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



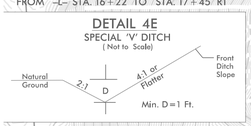
FROM -L- STA. 14+55 TO STA. 15+87 RT

DETAIL 4D
SPECIAL BASE DITCH
(Not to Scale)



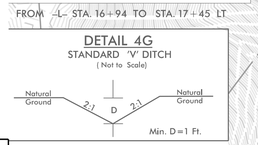
FROM -L- STA. 16+22 TO STA. 17+45 RT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 16+94 TO STA. 17+45 LT

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



FROM -L- STA. 18+16 TO STA. 18+30

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

BEGIN TIP PROJECT HB-0057
-L- STA. 11+67.00

END TIP PROJECT HB-0057
-L- STA. 20+80.00

NC GRID
NAD 83 NA 2011

-L- +67.00
EX R/W
& 45'

-L- +85.00
EX. R/W
& 45'

EXISTING

SR 1356 OLD JOHNS RIVER RD

110' SPR

15" HDPE

INV=1129.58
0401

INV=1124.
0403

INV=1119.05
0405

INV=1120.06
0402

INV=1119.82

INV=1116.23

STA. 17+40

STA. 18+28

STA. 18+38

12 INCH TEMPORARY PIPE

SPECIAL V DITCH SEE DETAIL 4E

STANDARD V DITCH SEE DETAIL 4G

STREAMBANK STABILIZATION SEE DETAIL 4A

EST 2 TONS CL B RR
7 SY GEO

SAG STA. 18+44 (+/-)

SPECIAL BASE DITCH SEE DETAIL 4D

IMPERVIOUS DIKE

FLOATING TURBIDITY CURTAIN

CLASS II RIP RAP WITH GEOTEXTILE (STRUCTURES PAY ITEM)
EST=300 CY EXCAVATION
EST=245 SY GEOTEXTILE
EST=240 TONS CLASS II RIP RAP

RIP RAP AT EXCAVATION EMBANKMENT SEE DETAIL 4F

REMOVE EXISTING BRIDGE & ABUTMENTS SEE DETAIL 4B

PLACE CL II RIP RAP TO ELEV 1116.6 +/- OR AT SHOULDER PT. (TYP.)

RETAIN 15" CMP

JOHNS RIVER

WOODS

GR/SOIL

8' GR/SOIL

9' SOIL

EXISTING RW

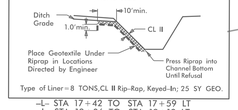
20' BST

RM-1

HB-0057

EC-5/CONST.4

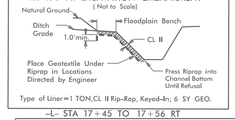
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner=8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEO.

–L– STA 17+42 TO STA 17+59 LT
–L– STA 18+06 TO STA 18+19 LT

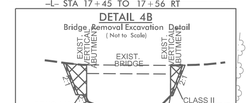
DETAIL 4F
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



Type of Liner=1 TON,CL II Rip-Rap, Keyed-In; 6 SY GEO.

–L– STA 17+45 TO 17+56 RT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



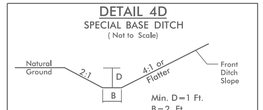
–L– STA 17+34 TO STA 17+59 RT
–L– STA 18+15 TO STA 18+42 RT

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



FROM –L– STA. 14+55 TO STA. 15+87 RT

DETAIL 4D
SPECIAL BASE DITCH
(Not to Scale)



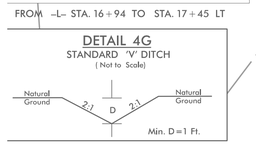
FROM –L– STA. 16+22 TO STA. 17+45 RT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



FROM –L– STA. 16+94 TO STA. 17+45 LT

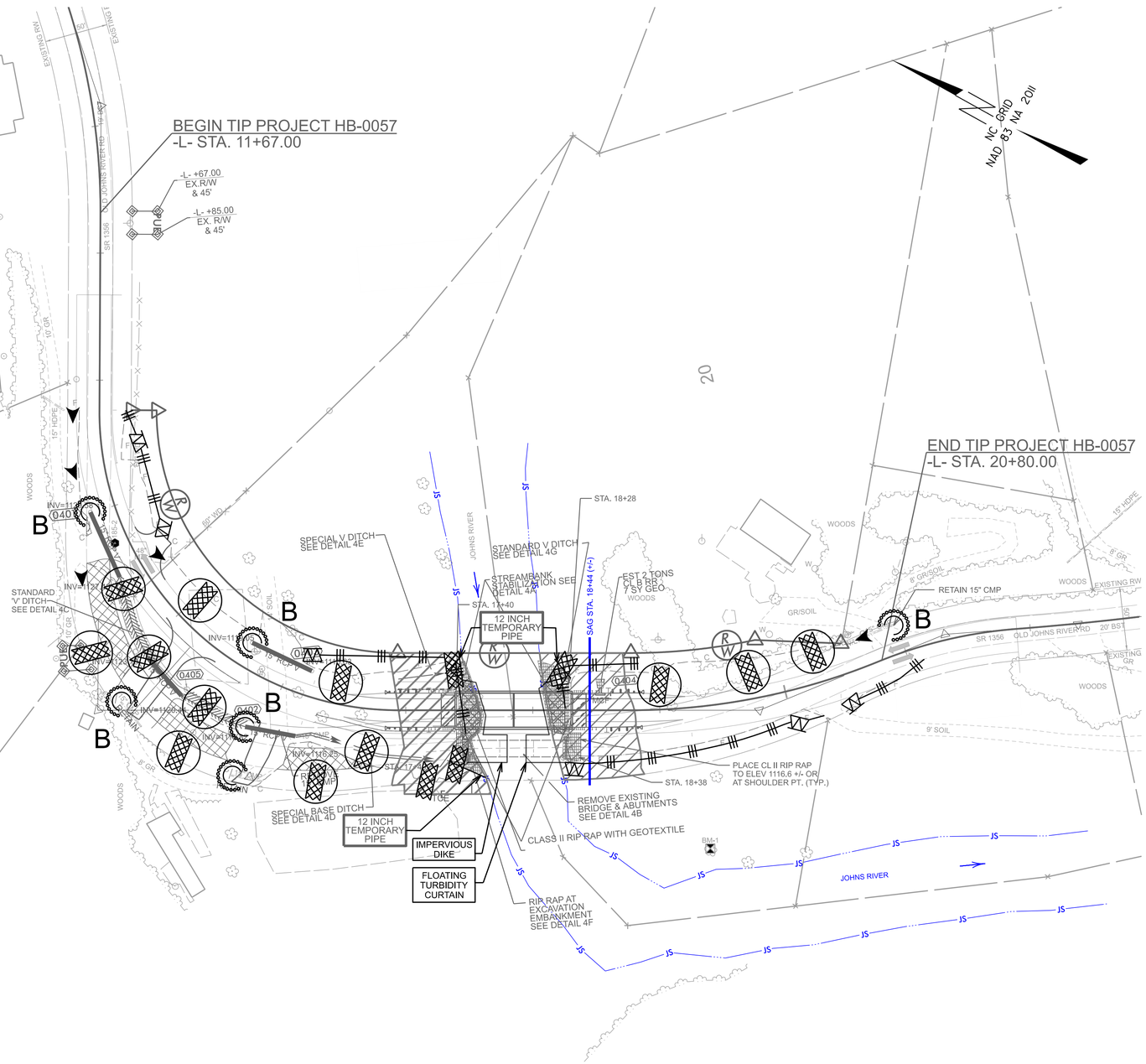
DETAIL 4G
STANDARD 'V' DITCH
(Not to Scale)



FROM –L– STA. 18+16 TO STA. 18+30

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINES
-L- STA. 14+55 - 15+87 RT,
-L- STA. 16+22 - 17+45 RT,
-L- STA. 16+94 - 17+45 LT,
-L- STA. 18+14 - 18+30 LT

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



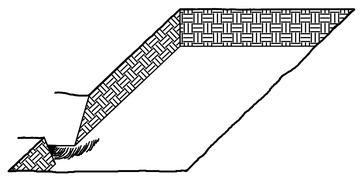
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

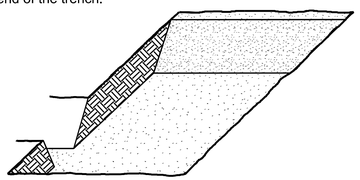
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

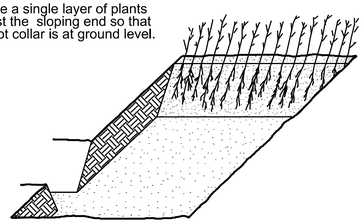
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



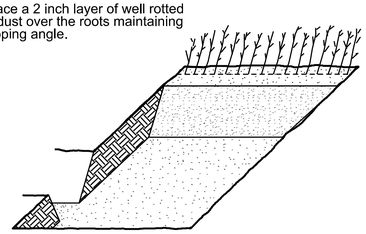
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

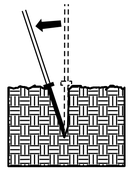


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

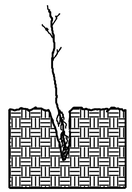


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

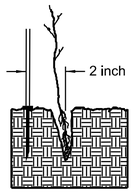
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



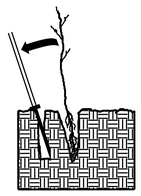
1. Insert planting bar as shown and pull handle toward planter.



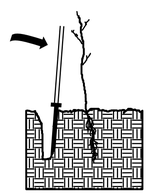
2. Remove planting bar and place seedling at correct depth.



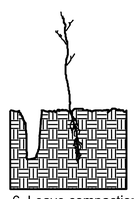
3. Insert planting bar 2 inches toward planter from seedling.



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% CORNUS AMOMUM	SILKY DOGWOOD	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR
25% SALIX NIGRA	BLACK WILLOW	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

09/08/99

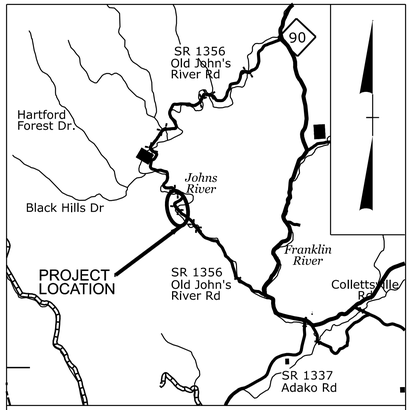
TIP PROJECT: HB-0057

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
CALDWELL COUNTY

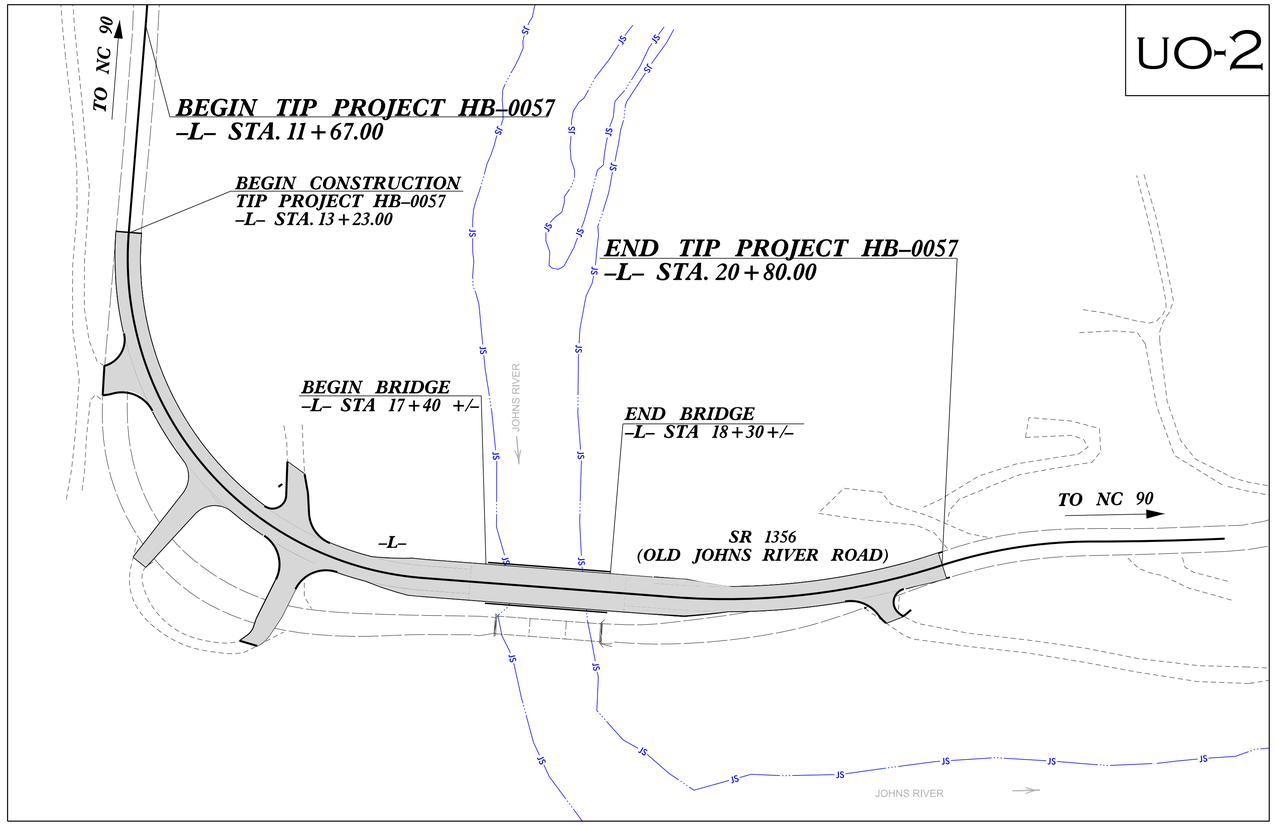
LOCATION: BRIDGE #185 OVER JOHNS RIVER
ON SR 1356 (OLD JOHNS RIVER ROAD)
TYPE OF WORK: POWER & COMMUNICATIONS

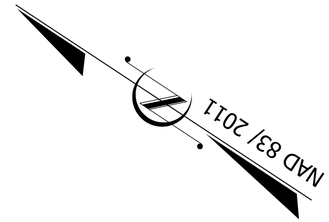


VICINITY MAP (NTS)

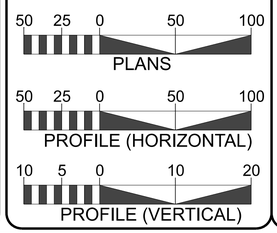
T.I.P. NO.	SHEET NO.
HB–0057	UO–1

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.





GRAPHIC SCALES



INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) POWER – BLUE RIDGE ELECTRIC

(B) COMMUNICATIONS – AT&T

(C) COMMUNICATIONS – CHARTER SPECTRUM

PREPARED IN THE OFFICE OF

TELICS

TELICS
119 BROOKSTOWN AVE.
SUITE 305
WINSTON SALEM, NC 27101
(336) 705 – 8844

CORY WOOD — *UTILITY PROJECT MANAGER*
CORY WOOD — *UTILITY COORDINATOR*

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

BRANDON GREER — *DIVISION UTILITIES ENGINEER*

02/02/22

UTILITIES BY OTHERS

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
Plc 10+85.68	Plc 15+59.75	Plc 19+78.42	Plc 21+33.66	Plc 22+37.78
Δc = 18°32'19.6" (RT)	Δc = 90°18'23.9" (LT)	Δc = 22°14'00.8" (LT)	Δc = 17°51'56.4" (RT)	Δc = 02°30'42.7" (LT)
D = 10°54'48.5"	D = 24°22'52.3"	D = 11°07'31.4"	D = 15°54'55.8"	D = 02°35'33.2"
Lc = 169.87	Lc = 370.39	Lc = 199.85	Lc = 112.25	Lc = 96.89
Tc = 85.68	Tc = 236.26	Tc = 101.20	Tc = 56.59	Tc = 48.45
R = 525	R = 235	R = 515	R = 360	R = 2,210
	SE = 0.060	SE = 0.040		
	Lr = 84'	Lr = 56'		
		DS = 25 MPH		

-L- PT 11+69.87

BEGIN TIP PROJECT HB-0057
-L- STA. 11+67.00

BEGIN CONSTRUCTION
TIP PROJECT HB-0057
-L- STA. 13+23.00

-L- PC 13+23.49

END TIP PROJECT HB-0057
END CONSTRUCTION
-L- STA. 20+80.00

-L- PRC 21+89.32

-L- END 22+86.21

-L- PT 16+93.89

-L- PC 18+77.23

-L- PRC 20+77.07

BLUE RIDGE GUY

BLUE RIDGE POLE REMOVED

BLUE RIDGE POLE & GUY

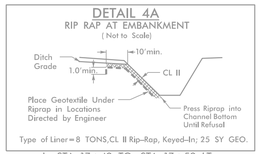
BLUE RIDGE POLE

AERIAL BLUE RIDGE AT&T AND SPECTRUM REMOVED

AERIAL BLUE RIDGE AT&T AND SPECTRUM

AERIAL BLUE RIDGE AT&T AND SPECTRUM TO REMAIN

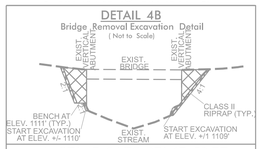
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner=8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEO.

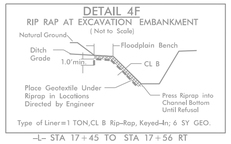
-L- STA 17+42 TO STA 17+59 LT
-L- STA 18+06 TO STA 18+19 LT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



-L- STA 17+34 TO STA 17+59 RT
-L- STA 18+15 TO STA 18+42 RT

DETAIL 4F
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



Type of Liner=1 TON,CL B Rip-Rap, Keyed-In; 6 SY GEO.

-L- STA 17+45 TO STA 17+56 RT

HB-0057
UO-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

TELICS
119 BROOKSTOWN AVE
SUITE 305
WINSTON SALEM, NC 27101
PHONE:(336)705-8844

REVISIONS

CROSS SECTION INDEX

CROSS SECTION INDEX X-1
CROSS SECTION SUMMARY X-1A

ROADWAY	STATION	TO	STATION	SHEET NO.
-L- SR 1356 (OLD JOHNS RIVER RD)	13+00		21+00	X-2 TO X-11

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

PROJ. REFERENCE NO.	SHEET NO.
HB-0057	X-1A

'NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

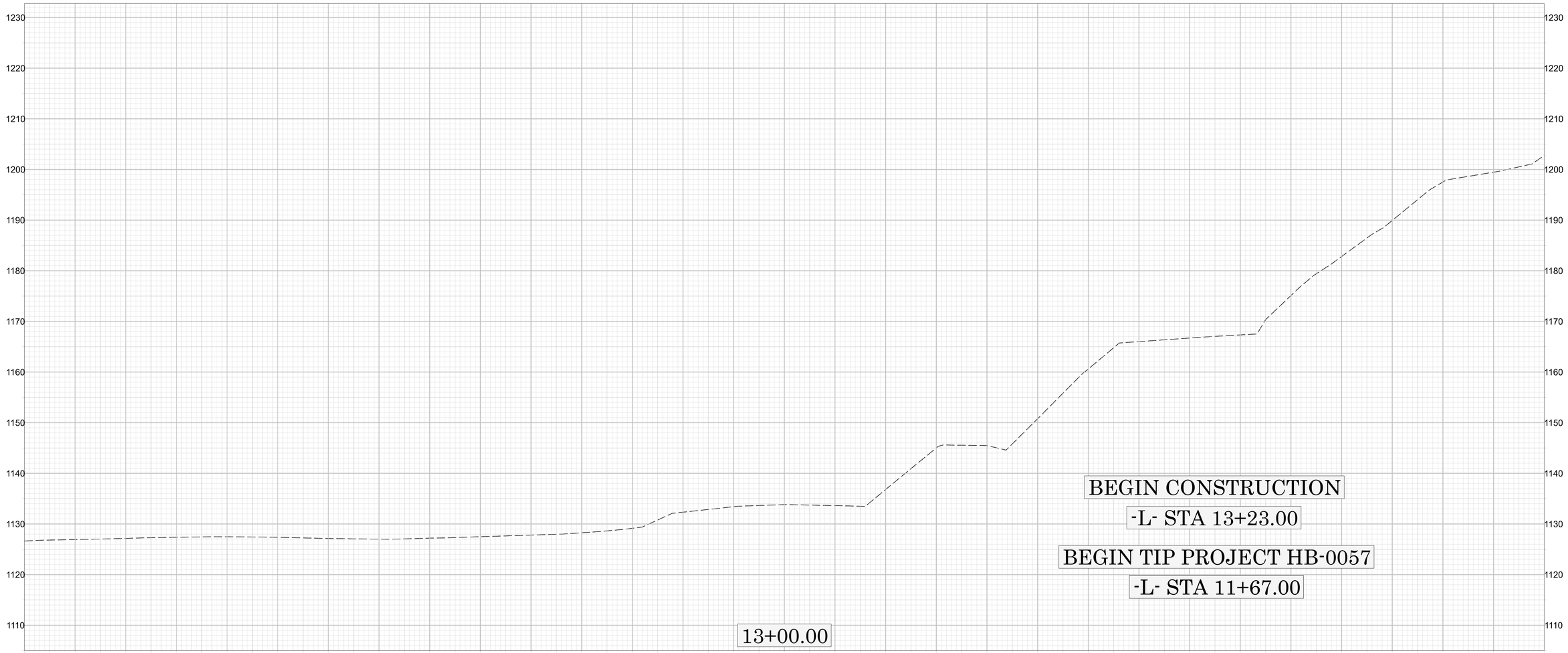
Station L	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)
13+23.00	0	0																
13+50.00	3	0																
14+00.00	6	57																
14+50.00	0	69																
15+00.00	84	12																
15+50.00	184	2																
16+00.00	100	30																
16+50.00	69	64																
17+00.00	249	50																
17+38.81 (BRIDGE)	280	29																
Station L	**Uncl. Exc. (cu. yd)**	**Embt. (cu yd.)**																
18+31.19 (BRIDGE)	0	0																
18+50.00	26	17																
19+00.00	109	38																
19+50.00	219	27																
20+00.00	234	22																
20+50.00	64	14																
20+80.00	5	2																

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

Quantities are approximate only. The Resident Engineer will use methods including but not limited to recross-sectioning, truck measurements, and aerial surveys to compute the final quantities for which the contractor will be paid.

11/14/23

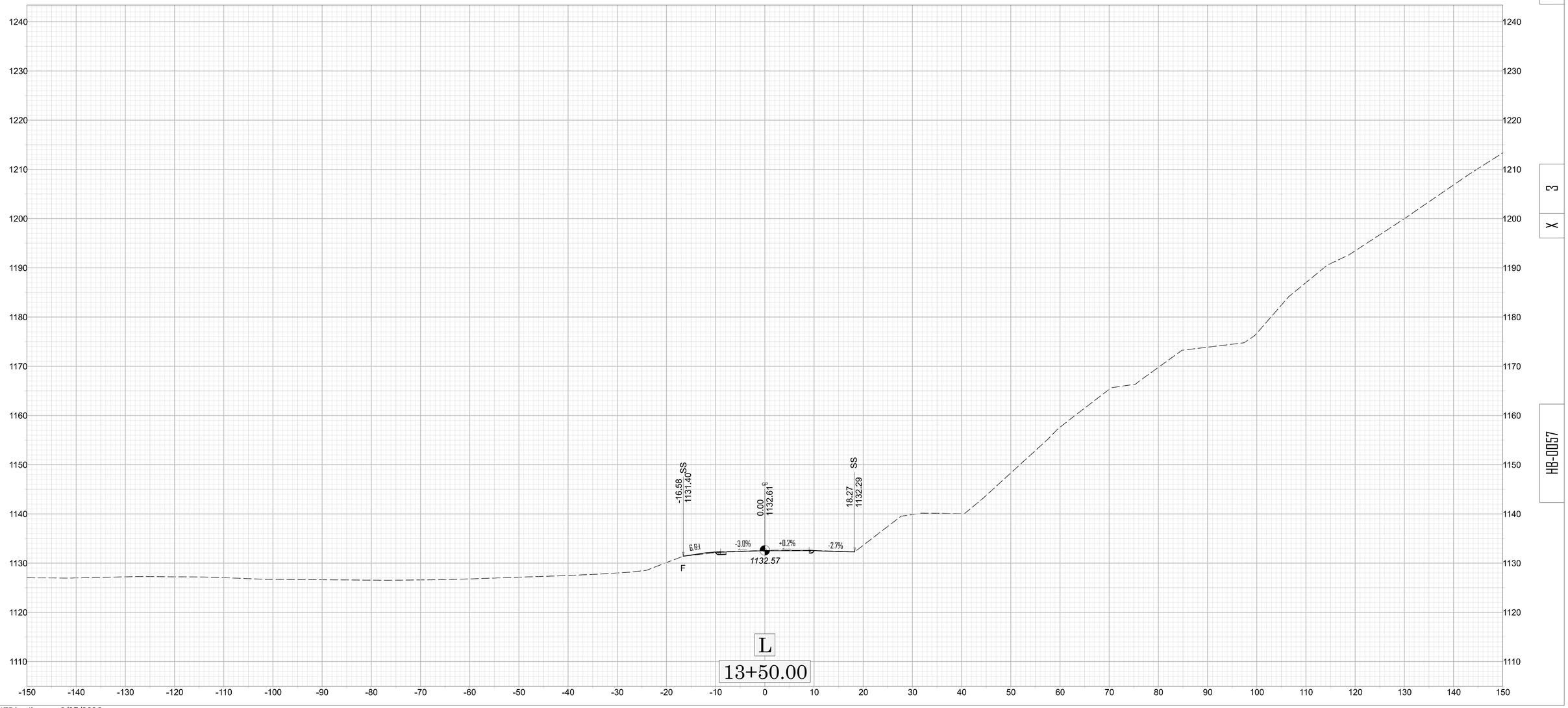
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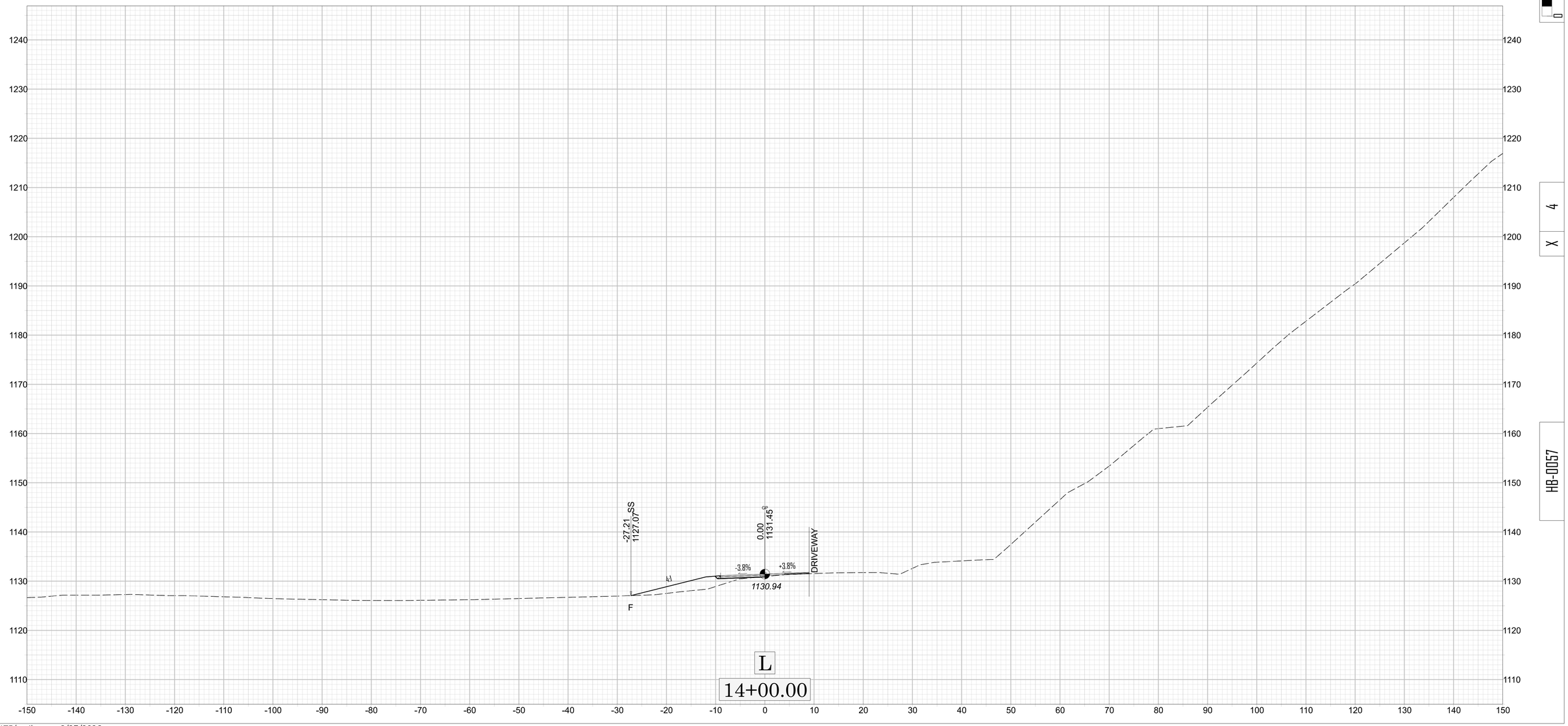
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HB-0057

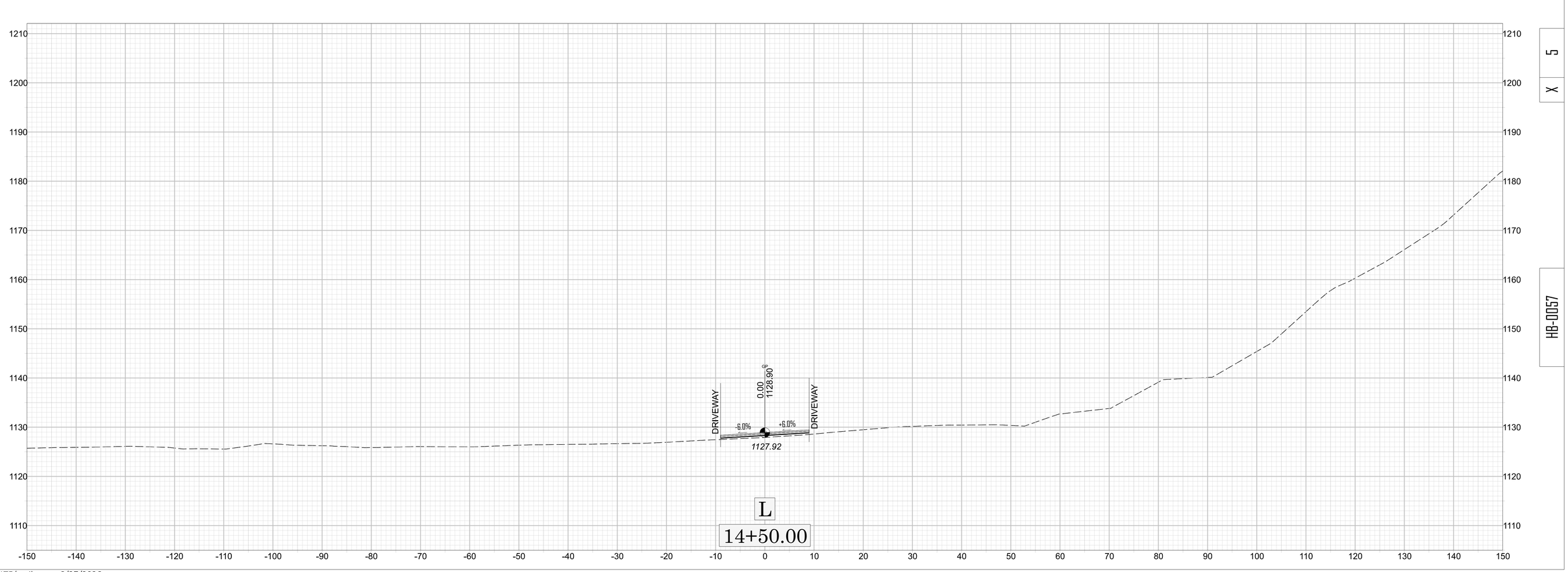
11/14/23


0
10
20
3
X
HB-0057
1240
1230
1220
1210
1200
1190
1180
1170
1160
1150
1140
1130
1120
1110
-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
-16.58
1131.40
SS
0.00
1132.61
G
18.27
1132.29
SS
6.61
-3.0%
+0.2%
-2.7%
F
1132.57
L
13+50.00

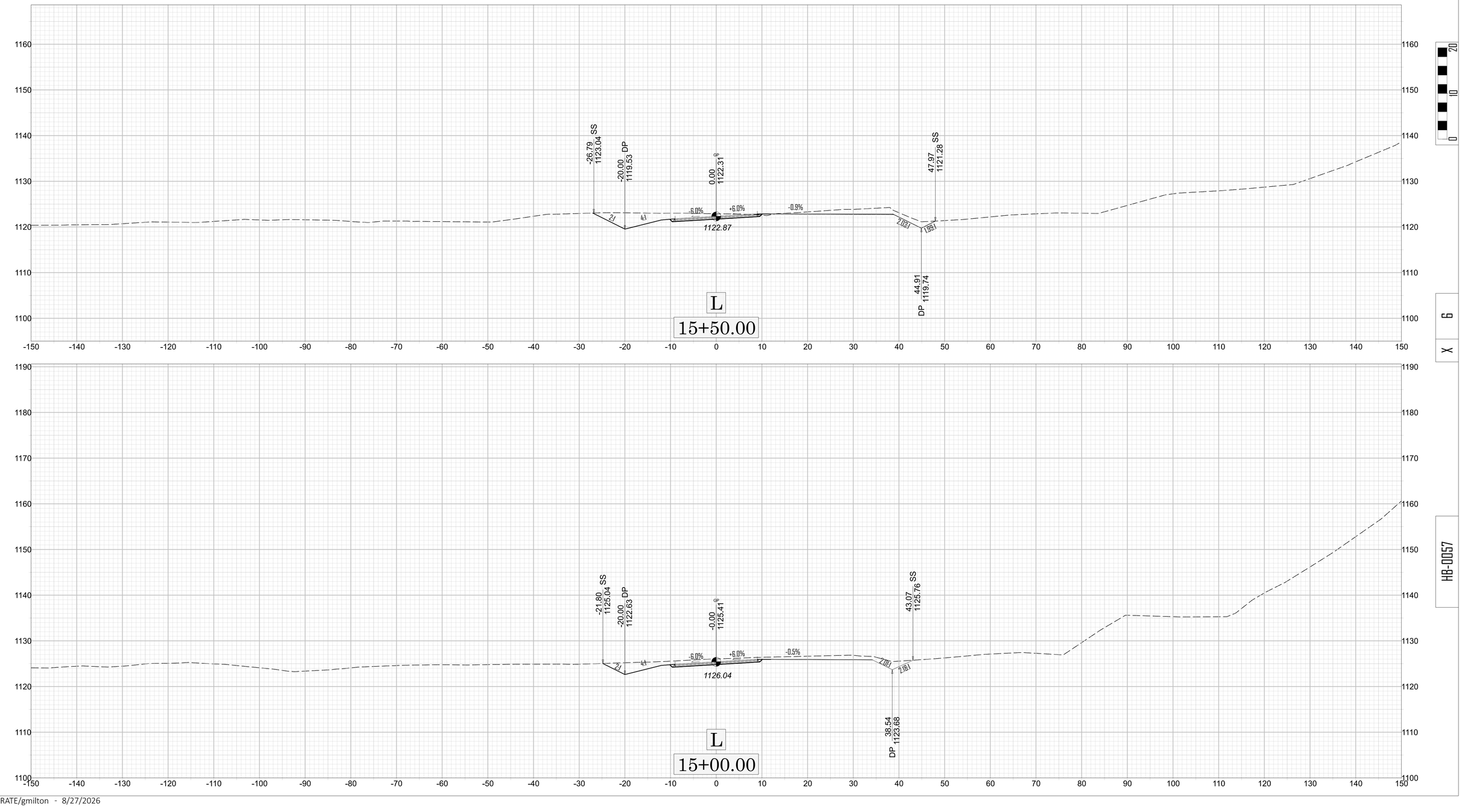
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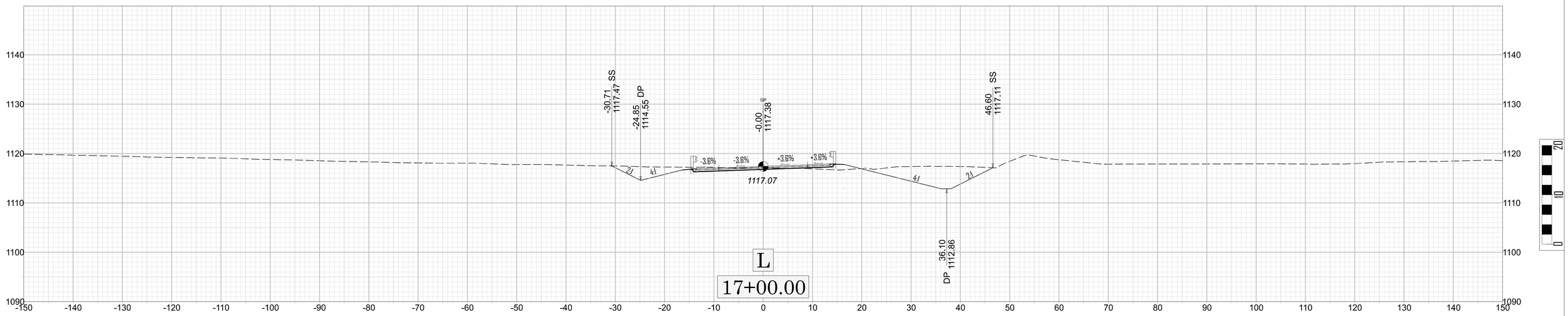

0
10
20
4
X
HB-0057
1240
1230
1220
1210
1200
1190
1180
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1130
1120
1110
-150
-140
-130
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
-27.21
1127.07SS
0.00
1131.45
-3.8%
+3.8%
-3.8%
DRIVEWAY
1130.94
F
L
14+00.00

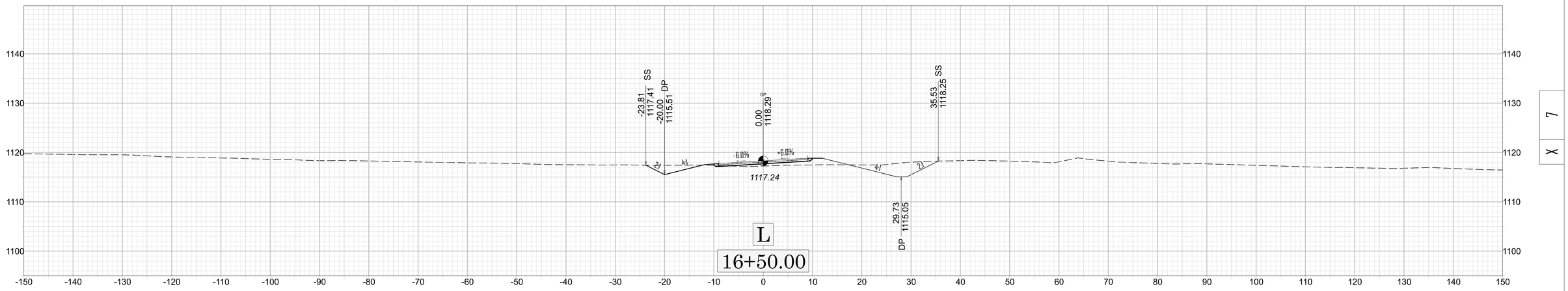
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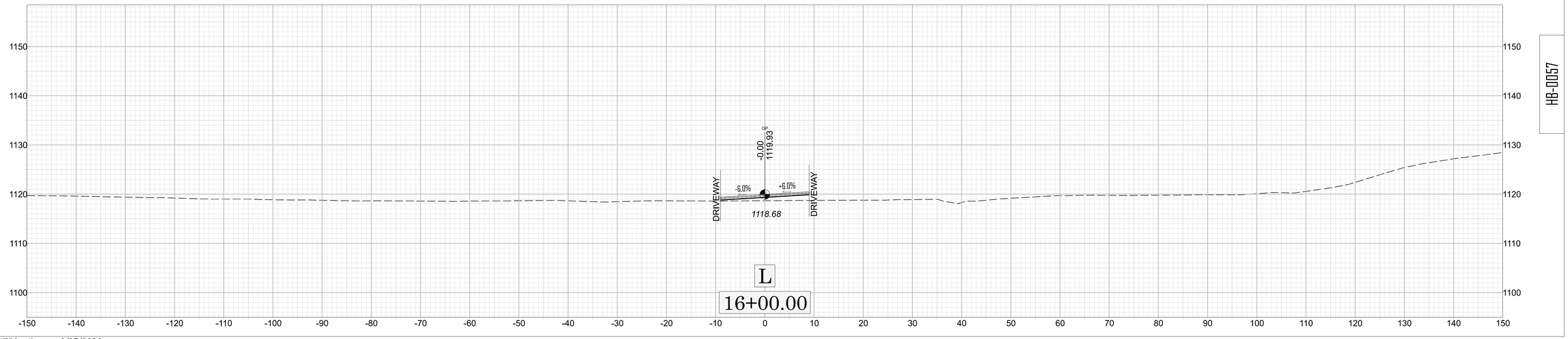

20
10
0
X 5
HB-0057
1210
1200
1190
1180
1170
1160
1150
1140
1130
1120
1110
-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
DRIVEWAY
DRIVEWAY
-6.0%
+6.0%
0.00
1128.90
1127.92
L
14+50.00

11/14/23


-26.79
1123.04
SS
-20.00
1119.53
DP
0.00
1122.31
47.97
1121.28
SS
44.91
1119.74
DP
-6.0%
+6.0%
-0.9%
2
1
4
1
2.00:1
1.99:1
1122.87
L
15+50.00
-21.80
1125.04
SS
-20.00
1122.63
DP
-0.00
1125.41
43.07
1125.76
SS
38.54
1123.68
DP
-6.0%
+6.0%
-0.5%
2
1
4
1
2.00:1
2.18:1
1126.04
L
15+00.00
0
10
20
X
B
HB-0057


-30.71
1117.47
SS
-24.85
1114.55
DP
-0.00
1117.38
CP
46.60
1117.11
SS
-3.6%
-3.6%
+3.6%
+3.6%
2:1
4:1
1117.07
4:1
2:1
36.10
1112.86
DP
L
17+00.00
1140
1130
1120
1110
1100
1090
-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
0
10
20

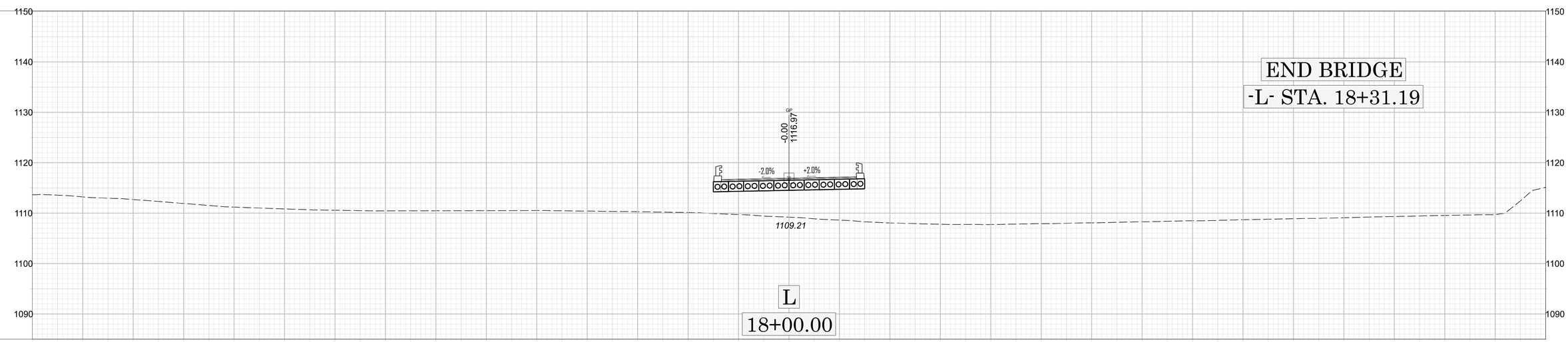

-23.81
1117.41
SS
-20.00
1115.51
DP
0.00
1118.29
CP
35.53
1118.25
SS
-6.0%
+6.0%
2:1
4:1
1117.24
4:1
2:1
29.73
1115.05
DP
L
16+50.00
1140
1130
1120
1110
1100
-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

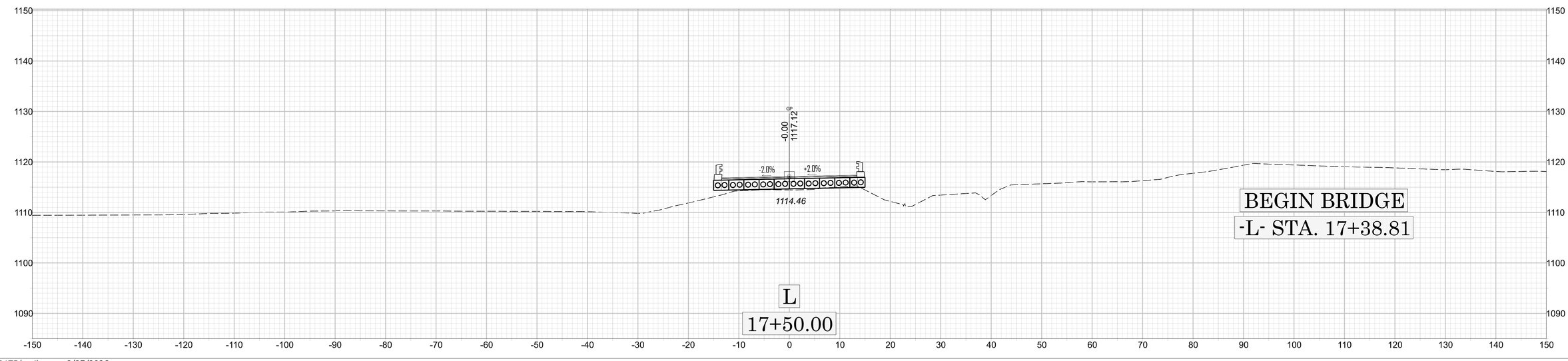

-0.00
1119.93
CP
DRIVEWAY
DRIVEWAY
-6.0%
+6.0%
1118.68
L
16+00.00
1150
1140
1130
1120
1110
1100
-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

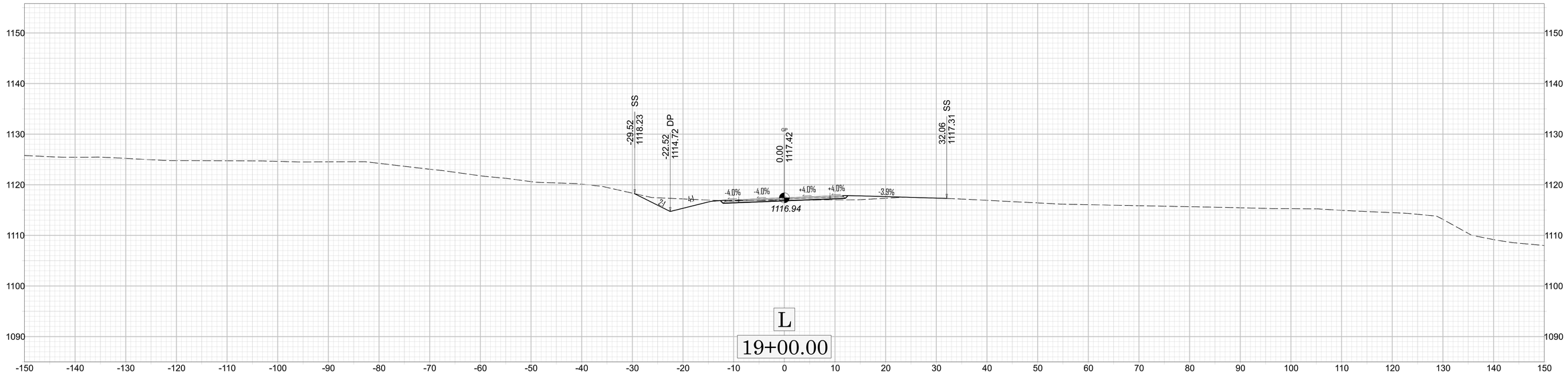
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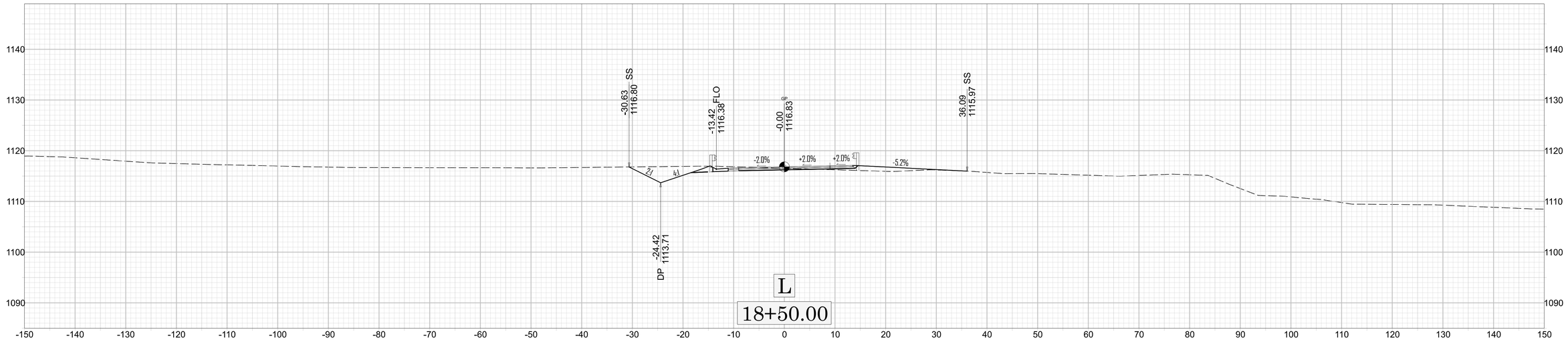
X

HB-0057


END BRIDGE
-L- STA. 18+31.19
GP
-0.00
1116.97
-2.0%
+2.0%
1109.21
L
18+00.00


GP
-0.00
1117.12
-2.0%
+2.0%
1114.46
BEGIN BRIDGE
-L- STA. 17+38.81
L
17+50.00

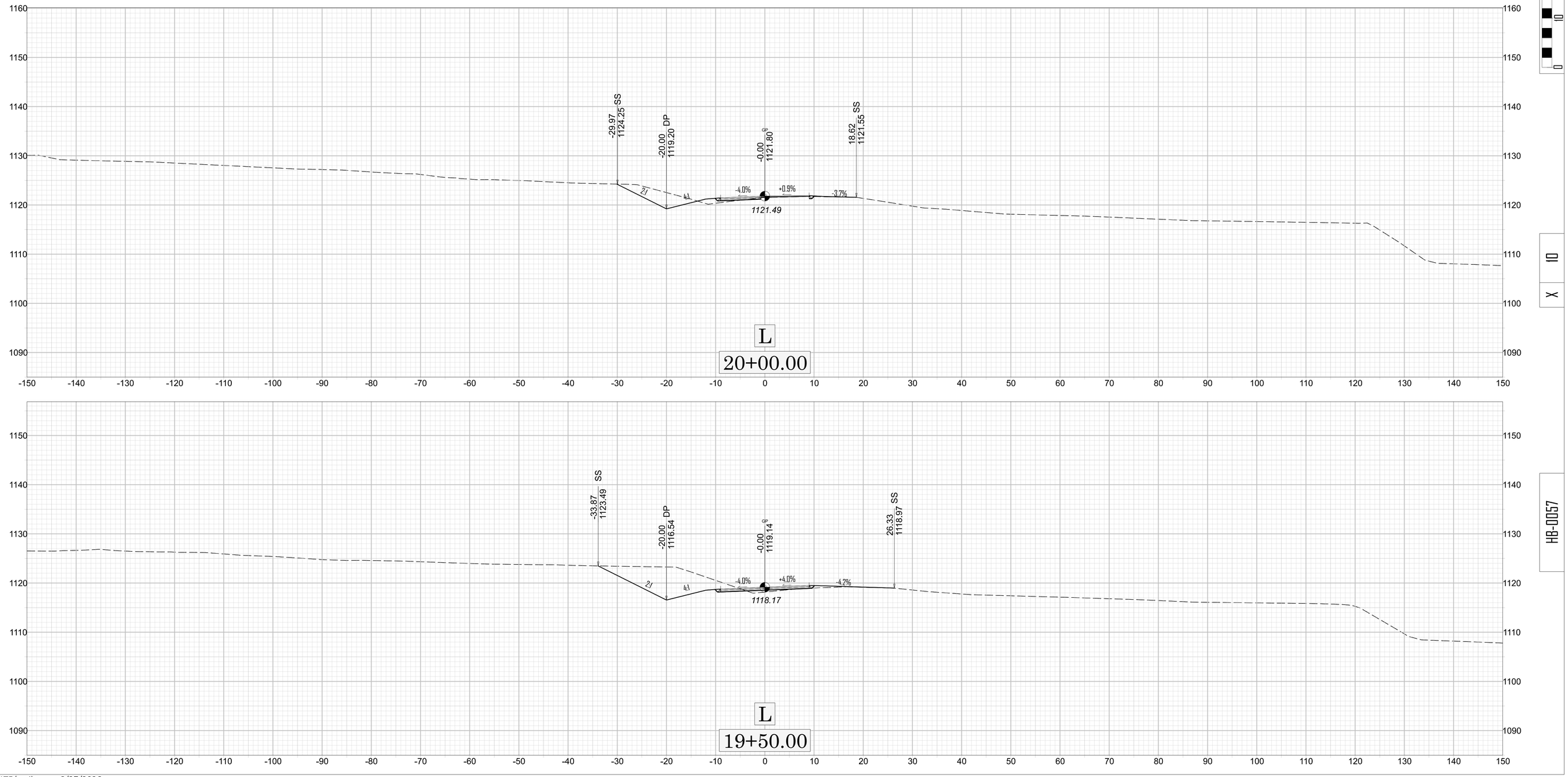




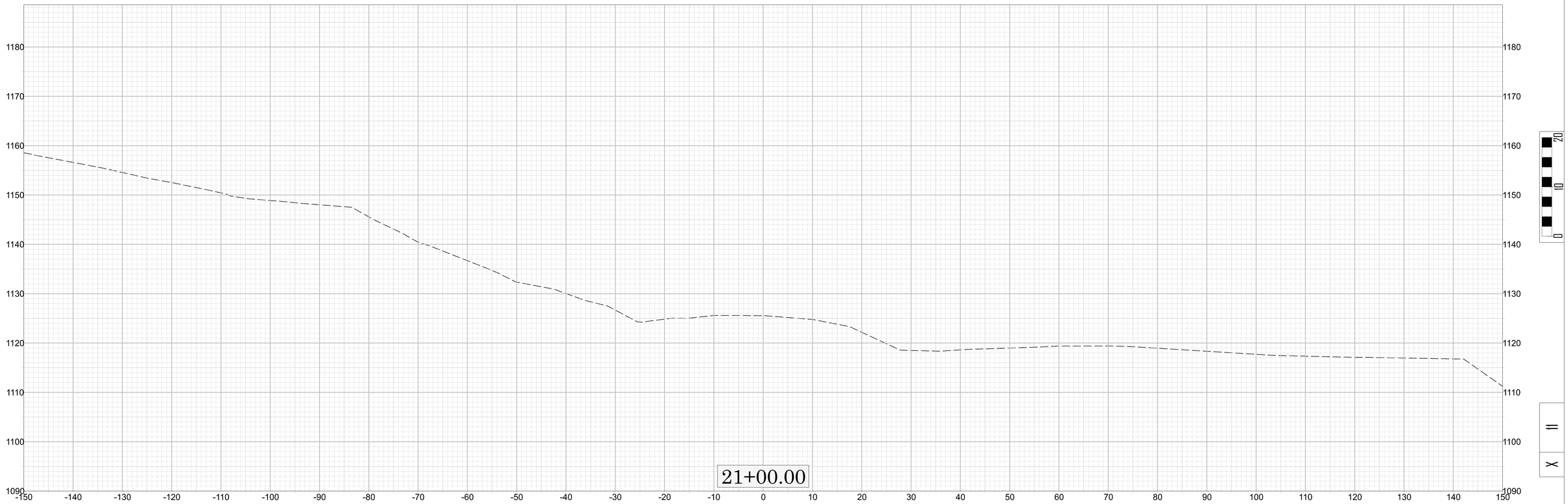
20
10
0

B
X

HB-0057

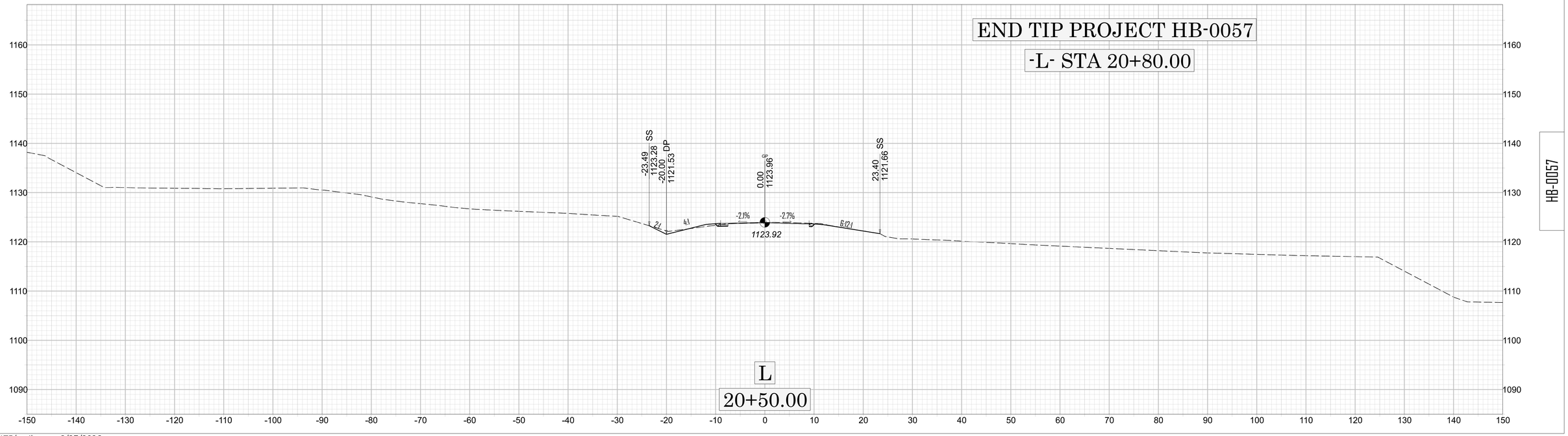

-29.97
1124.25
SS
-20.00
1119.20
DP
-0.00
1121.80
℄
18.62
1121.55
SS
2:1
4:1
-4.0%
+0.9%
-3.7%
1121.49
L
20+00.00
-33.87
1123.49
SS
-20.00
1116.54
DP
-0.00
1119.14
℄
26.33
1118.97
SS
2:1
4:1
-4.0%
+4.0%
-4.2%
1118.17
L
19+50.00
1160
1150
1140
1130
1120
1110
1100
1090
-150
-140
-130
-120
-110
-100
-90
-80
-70
-60
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-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
0
10
20
X
10
HB-0057

11/14/23



END TIP PROJECT HB-0057

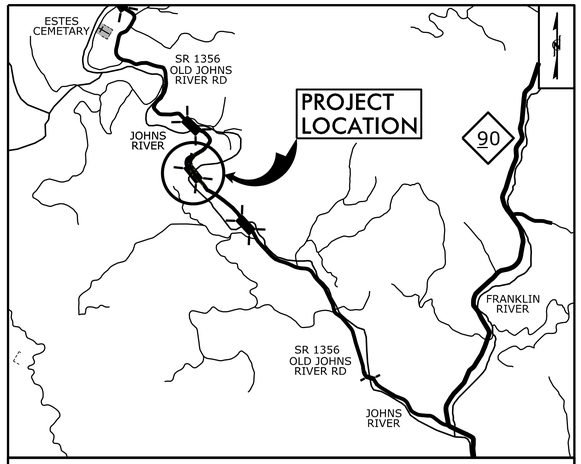
-L- STA 20+80.00



CORPORATE/gmilton - 8/27/2026

PROJECT: HB–0057

CONTRACT NO: DK00484



VICINITY MAP

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

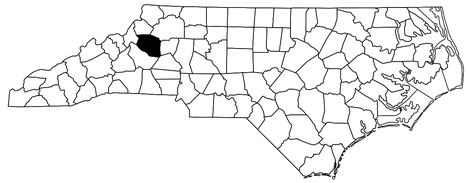
STRUCTURES

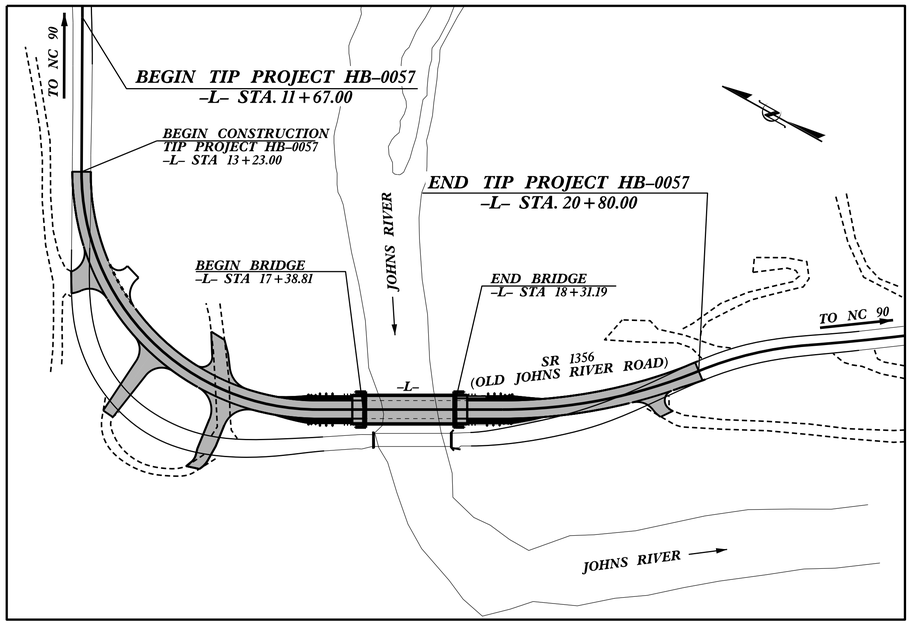
LOCATION: ***REPLACEMENT OF BRIDGE NO. 130185 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER***

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50727.1.1	FBRG111	PE
50727.2.1	FBRG111	ROW
50727.2.2	FBRG111	UTIL
50727.3.1	FBRG111	CONST





STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2025 = 170
ADT 2045 = 220

V = 30 MPH

FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB–0057 = 0.156 MILES
LENGTH OF STRUCTURE TIP PROJECT HB–0057 = 0.017 MILES
TOTAL LENGTH OF TIP PROJECT HB–0057 = 0.173 MILES

NCDOT CONTACT: RAMIE A. SHAW, P. E.
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

LETTING DATE:
NOVEMBER 19, 2026

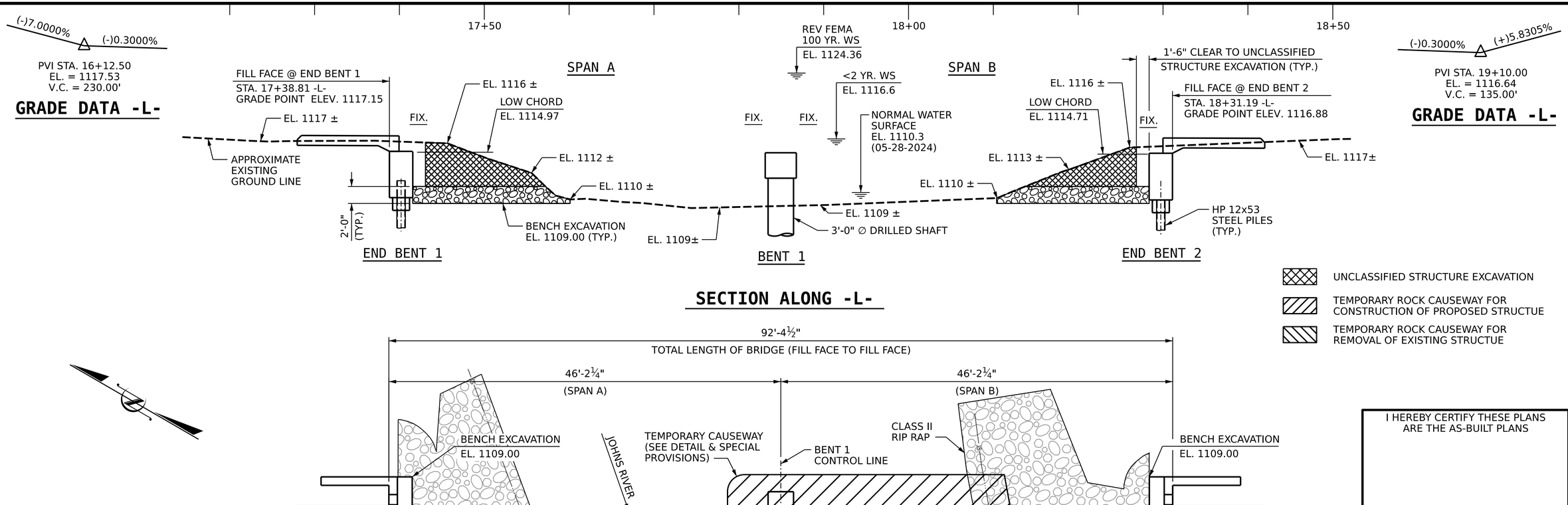
ERIC B. NELSON, P.E.
PROJECT MANAGER

JOHN A. YANNACCONE, P.E.
STRUCTURES DESIGN ENGINEER

Docusign Envelope ID: 9EDE532C-720F-85E2-82BA-9470FCF16C6F

pw://gfnet-pw.bentley.com:gfnet-pw-01/Documents/Projects/69172_ORD/Task 019_01 - Bridge 130185/5-Working/Structures/CAD/2.0 90% Plans/401.001_HB-0057_SMU_GD_001_130185 Caldwell185.rbl
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8/26/21

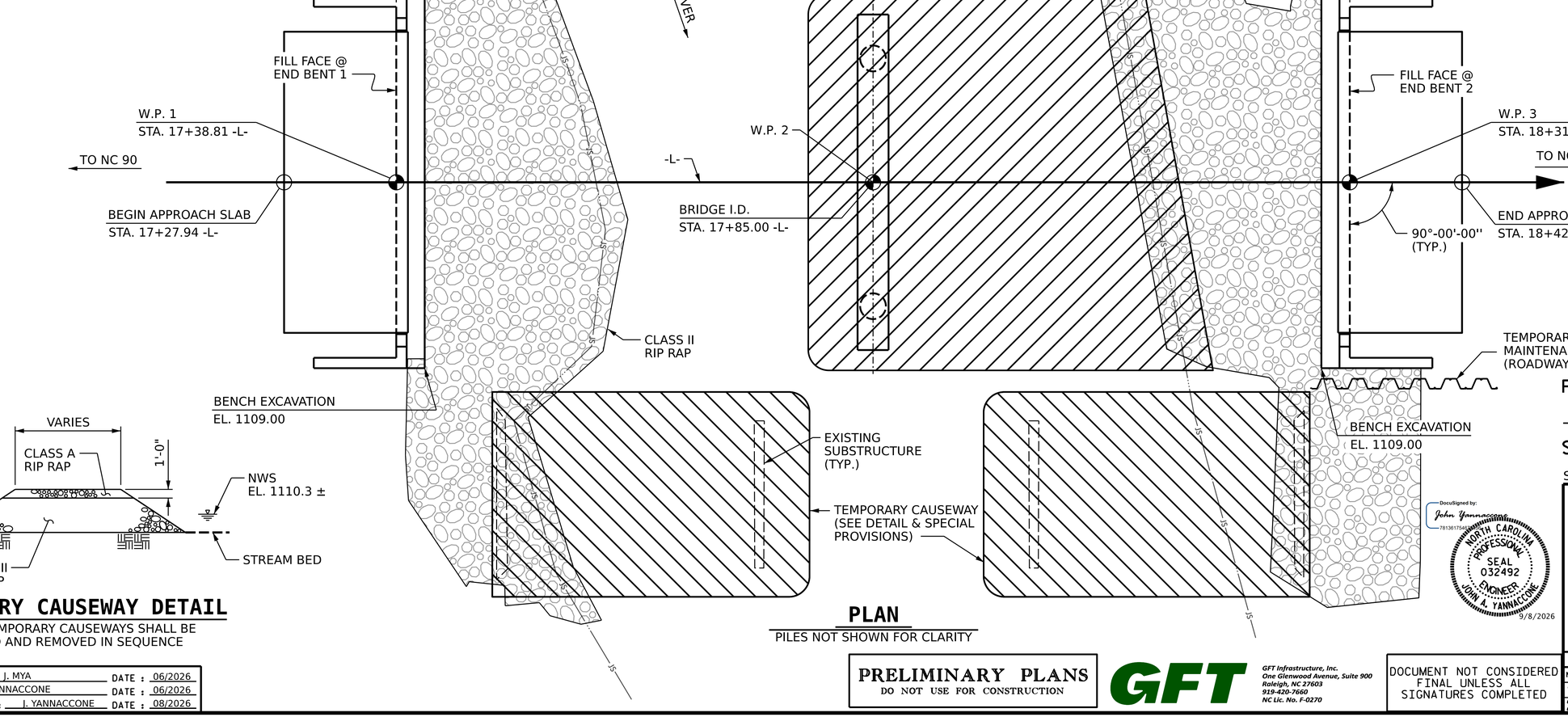


SECTION ALONG -L-

UNCLASSIFIED STRUCTURE EXCAVATION

TEMPORARY ROCK CAUSEWAY FOR CONSTRUCTION OF PROPOSED STRUCTUE

TEMPORARY ROCK CAUSEWAY FOR REMOVAL OF EXISTING STRUCTUE



PLAN

PILES NOT SHOWN FOR CLARITY

TEMPORARY CAUSEWAY DETAIL

NOTE: TEMPORARY CAUSEWAYS SHALL BE PLACED AND REMOVED IN SEQUENCE

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 130185

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1356
(OLD JOHNS RIVER ROAD)
OVER JOHNS RIVER BETWEEN
NC 90 AND NC 90

DocuSigned by: John Yannaccone 7813617546...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/8/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GFT

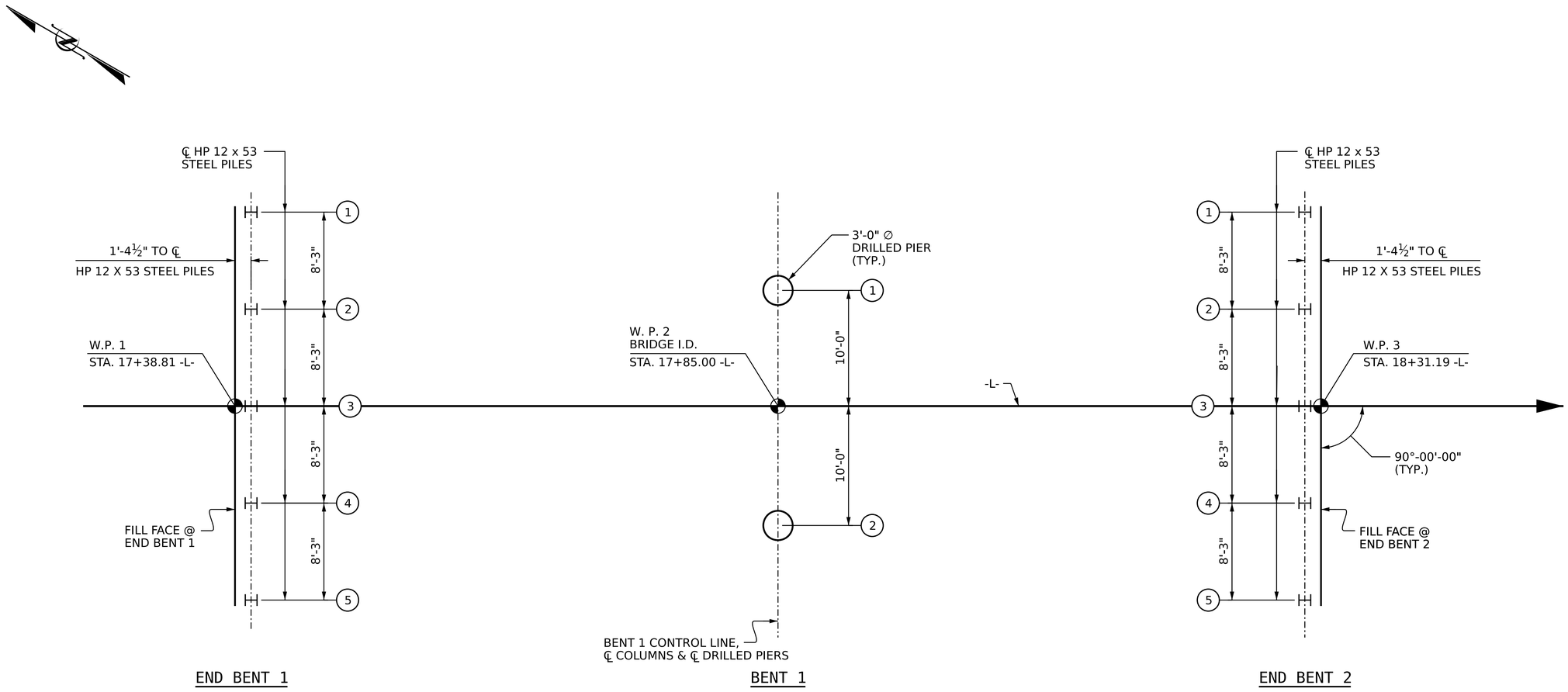
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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8/27/2026 11:57:20 AM SMU_pdf.pltcfg Caldwell85.tbl
8/26/21



FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED PIERS.

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1356
(OLD JOHNS RIVER ROAD)
OVER JOHNS RIVER BETWEEN
NC 90 AND NC 90

DocuSigned by: John Yannaccone 7813617546784S6...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			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")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-5	5	108	1111.85	15			180					1099.8	4.8	5.2
End Bent 2, Piles 1-5	5	108	1111.58	15			180					1099.5	7.6	2.4
TOTAL QUANTITY:													62	38

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	108			0.6		
End Bent 2, Piles 1-5	108			0.6		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-5				5
End Bent 2, Piles 1-5				5
TOTAL QUANTITY:				10

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip 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	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1-2	2	470	1092.00	150		6.3		6.9	13.2	YES	1100.00	12.4
TOTAL QUANTITY:								13.8	26.4			24.8

* 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. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "__Dia. Drilled Piers in Soil."

** 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.

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) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Pier 1-2		2		2	
TOTAL QUANTITY:		2		2	

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Mikel W. Shipman, #054501) on 09-16-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.
4. For Piles, see Section 450 of the Standard Specifications.
5. Piles at End Bent No. 1 must be installed to a minimum tip elevation of 1099.8 ft in order to obtain sufficient lateral resistance.
6. Piles at End Bent No. 2 must be installed to a minimum tip elevation of 1099.5 ft in order to obtain sufficient lateral resistance.
7. It has been estimated that a Delmag 19-42 with an energy of 42,400 ft-lbs, or an equivalent hammer, is sufficient to drive piles to the required driving resistance at End Bent Nos. 1 and 2. This estimated energy does not release the Contractor from providing driving equipment in accordance with Subarticle 450-3(D)(2) of the Standard Specifications.
8. Before filling holes for Pile Excavation at End Bent Nos. 1 and 2, drive piles to the required driving resistance of 180 kips.
9. Fill holes for Pile Excavation at End Bent Nos. 1 and 2 with concrete or grout.
10. For Drilled Piers, see Section 411 of the Standard Specifications.
11. Install Permanent Steel Casing at Bent No. 1 as necessary by vibrating, screwing or driving permanent casings before excavating or disturbing any material below elevation 1100.0 ft.

PROJECT NO. HB-0057

Caldwell COUNTY

STATION: 17+85.00 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

Signed by: John Yannaccone 9/23/2026
#EF98B90B739424...
SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

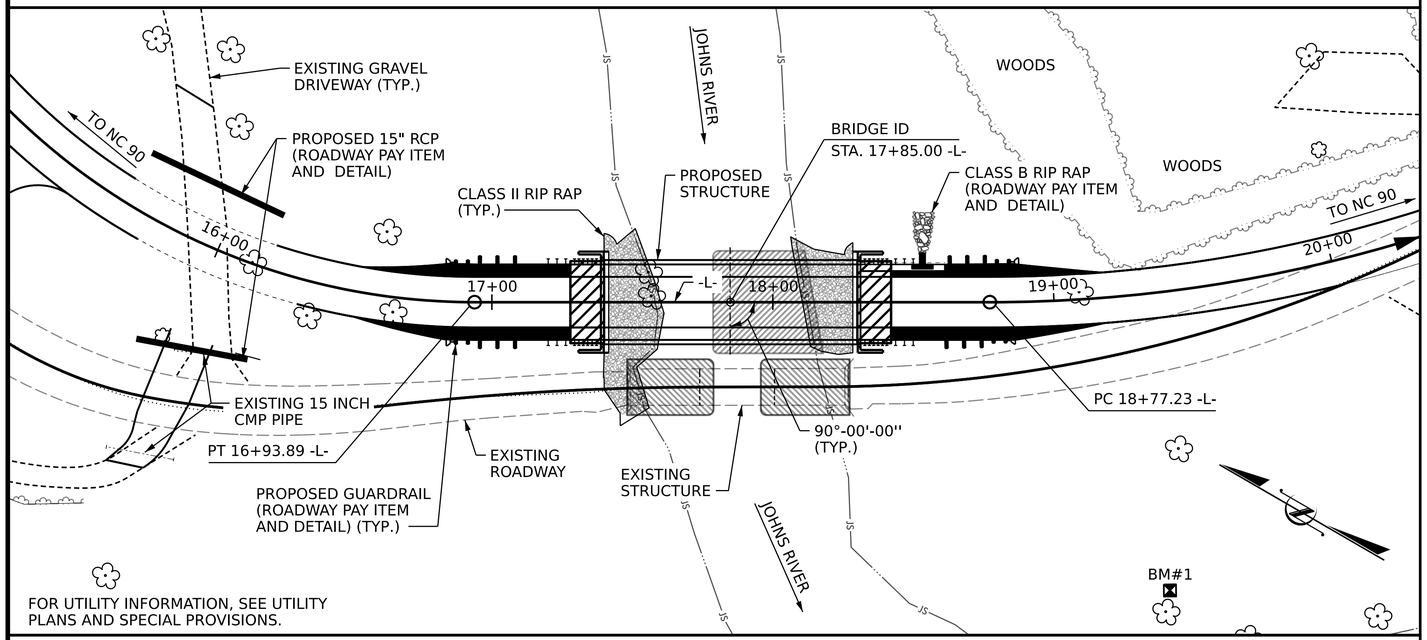
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SHEET NO. S-3

TOTAL SHEETS 24

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9/17/2026 11:49:44 AM SMU_pdf.pltcfg
Caldwell185.tbl
8/26/21

BM #1 RR SPIKE IN DOUBLE TRUNK BIRCH 154.03' RT. OF STA 19+01.06 -L-, EL 1117.20



LOCATION SKETCH

HYDRAULIC DATA:

DESIGN DISCHARGE	= 2100 CFS
FREQUENCY OF DESIGN FLOOD	= <2 YEARS
DESIGN HIGH WATER ELEVATION	= 1116.6 FT.
DRAINAGE AREA	= 60.8 SQ. MI.
BASE DISCHARGE (Q 100)	= 10800 CFS
BASE HIGH WATER ELEVATION	= 1124.36 FT.

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE	= 2300 CFS
FREQUENCY OF OVERTOPPING FLOOD	= <2 YEARS
OVERTOPPING FLOOD ELEVATION	= 1116.8 FT. **

** OVERTOPPING OCCURS AT ROADWAY LOW-POINT -L- STA. 18+44 ±

WS EL. TAKEN @ RIVER STATION 116286

TOTAL BILL OF MATERIAL

	CONST., MAINT. AND REMOVAL OF TEMP. ACCESS AT STA. 17+85.00 -L-	REMOVAL OF EXIST. STRUCTURE AT STA. 17+85.00 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" ∅ DRILLED PIERS IN SOIL	3'-0" ∅ DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" ∅ DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 17+85.00 -L-	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE												2,419	2,669	
END BENT 1				26	24						LUMP SUM			26.6
BENT 1						26.4	13.8	24.8	2	2				13.2
END BENT 2				12	38						LUMP SUM			26.6
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	38	62	26.4	13.8	24.8	2	2	LUMP SUM	2,419	2,669	66.4

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS, STA. 17+85.00 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		STEEL PILE POINTS	32" ALASKA RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE
	LUMP SUM	LBS.	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	SQ. FT.
SUPERSTRUCTURE	LUMP SUM							165.25			LUMP SUM	20	900.0	2,419
END BENT 1		2,731		5	5	75	5		115	140				
BENT 1		5,425	750											
END BENT 2		2,731		5	5	75	5		120	145				
TOTAL	LUMP SUM	10,887	750	10	10	150	10	165.25	235	285	LUMP SUM	20	900.0	2,419

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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 BAR SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICE 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.

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 17+85.00 -L-.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 17+85.00 -L-.

FOR CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 22 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF THREE SIMPLE STEEL SPANS (26.33'-26.0'-26.33') SUPPORTING A TIMBER DECK WITH ASPHALT WEARING SURFACE, 13-FOOT CLEAR ROADWAY WIDTH, AND LOCATED 10 FEET DOWNSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

NOTES:

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

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"

SAMPLE BAR REPLACEMENT FOR FEDERAL AID PROJECTS

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER BETWEEN NC 90 AND NC 90

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

Signed by: John Yannaccone 4EF9BB80B739424...

9/23/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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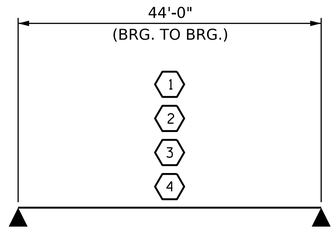
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2			4			24

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8/26/21

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	1	1.23	--	1.75	0.257	1.26	45'	EL	22.000	0.282	3.14	45'	EL	1.300	0.80	0.257	1.23	45'	EL	22.000	
		HL-93 (OPERATING)	N/A		1.63	--	1.35	0.257	1.63	45'	EL	22.000	0.282	4.11	45'	EL	1.300	N/A	-	-	45'	-	-	
		HS-20 (INVENTORY)	36.000	2	1.51	54.36	1.75	0.257	1.55	45'	EL	22.000	0.282	3.74	45'	EL	1.300	0.80	0.257	1.51	45'	EL	22.000	
		HS-20 (OPERATING)	36.000		2.01	72.36	1.35	0.257	2.01	45'	EL	22.000	0.282	4.89	45'	EL	1.300	N/A	-	-	45'	-	-	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.94	39.69	1.40	0.257	3.78	45'	EL	22.000	0.282	10.64	45'	EL	1.300	0.80	0.257	2.94	45'	EL	22.000	
		SNGARBS2	20.000		2.38	47.60	1.40	0.257	3.05	45'	EL	22.000	0.282	7.76	45'	EL	1.300	0.80	0.257	2.38	45'	EL	22.000	
		SNAGRIS2	22.000		2.34	51.48	1.40	0.257	2.98	45'	EL	22.000	0.282	7.29	45'	EL	1.300	0.80	0.257	2.34	45'	EL	22.000	
		SNCOTTS3	27.250		1.47	40.06	1.40	0.257	1.89	45'	EL	22.000	0.282	5.26	45'	EL	1.300	0.80	0.257	1.47	45'	EL	22.000	
		SNAGGRS4	34.925		1.30	45.40	1.40	0.257	1.67	45'	EL	22.000	0.282	4.51	45'	EL	1.300	0.80	0.257	1.30	45'	EL	22.000	
		SNS5A	35.550		1.26	44.79	1.40	0.257	1.62	45'	EL	22.000	0.282	4.66	45'	EL	1.300	0.80	0.257	1.26	45'	EL	22.000	
		SNS6A	39.950		1.19	47.54	1.40	0.257	1.53	45'	EL	22.000	0.282	4.31	45'	EL	1.300	0.80	0.257	1.19	45'	EL	22.000	
		SNS7B	42.000		1.13	47.46	1.40	0.257	1.46	45'	EL	22.000	0.282	4.34	45'	EL	1.300	0.80	0.257	1.13	45'	EL	22.000	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.46	48.18	1.40	0.257	1.88	45'	EL	22.000	0.282	5.08	45'	EL	1.300	0.80	0.257	1.46	45'	EL	22.000	
		TNT4A	33.075		1.48	48.95	1.40	0.257	1.89	45'	EL	22.000	0.282	4.89	45'	EL	1.300	0.80	0.257	1.48	45'	EL	22.000	
		TNT6A	41.600		1.24	51.58	1.40	0.257	1.59	45'	EL	22.000	0.282	4.74	45'	EL	1.300	0.80	0.257	1.24	45'	EL	22.000	
		TNT7A	42.000		1.26	52.92	1.40	0.257	1.62	45'	EL	22.000	0.282	4.36	45'	EL	1.300	0.80	0.257	1.26	45'	EL	22.000	
		TNT7B	42.000		1.31	55.02	1.40	0.257	1.69	45'	EL	22.000	0.282	4.16	45'	EL	1.300	0.80	0.257	1.31	45'	EL	22.000	
		TNAGRIT4	43.000		1.25	53.75	1.40	0.257	1.61	45'	EL	22.000	0.282	4.00	45'	EL	1.300	0.80	0.257	1.25	45'	EL	22.000	
		TNAGT5A	45.000		1.16	52.20	1.40	0.257	1.50	45'	EL	22.000	0.282	4.08	45'	EL	1.300	0.80	0.257	1.16	45'	EL	22.000	
		TNAGT5B	45.000	3	1.14	51.30	1.40	0.257	1.46	45'	EL	22.000	0.282	3.78	45'	EL	1.300	0.80	0.257	1.14	45'	EL	22.000	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.70	48.88	1.30	0.257	2.36	45'	EL	22.000	0.282	5.85	45'	EL	1.300	0.80	0.257	1.70	45'	EL	22.000	
		EV3	43.000	4	1.10	47.30	1.30	0.257	1.51	45'	EL	22.000	0.282	3.92	45'	EL	1.300	0.80	0.257	1.10	45'	EL	22.000	



LRFR SUMMARY

FOR SPANS "A" & "B"

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

(#) CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING * *

4 EMERGENCY VEHICLE LOAD RATING * *

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

DocuSigned by: John Yannaccone 7813617546784S8...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/8/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 45' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY:	J. MYA	DATE :	4/2026
CHECKED BY :	J. YANNACCONE	DATE :	4/2026
DRAWN BY :	MAA 1/08	REV. 10/1/11	MAA/GM
CHECKED BY :	GM/DI 2/08	REV. 04/23	BNB/AAI
		REV. 02/25	BLL/AYG

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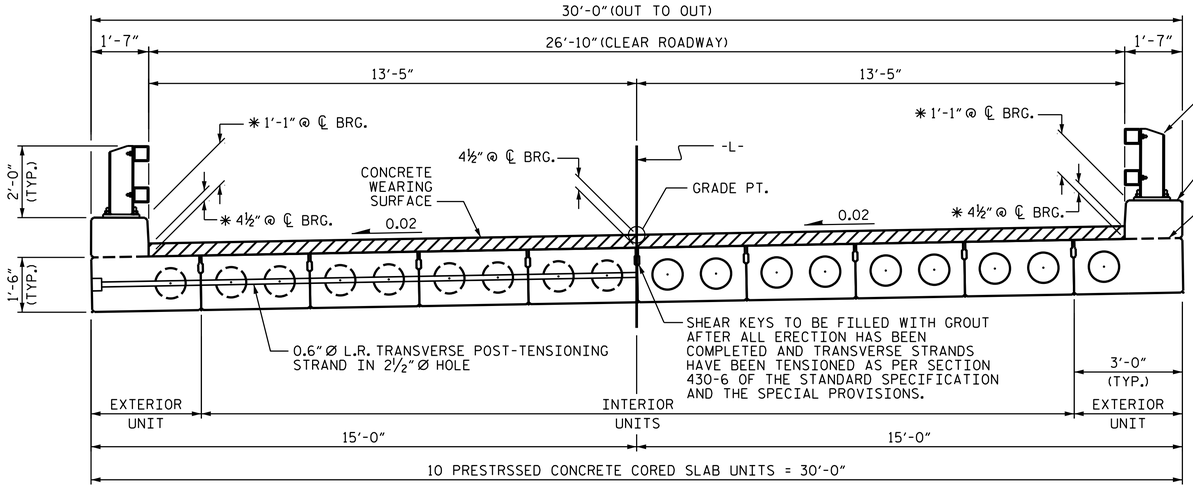
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Raleigh, NC 27603
919-420-7660
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2			4			24

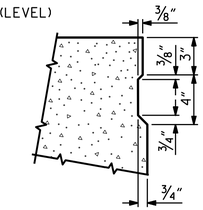
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8/26/21
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TYPICAL SECTION

* - THE MAXIMUM CURB HEIGHT AND CONCRETE THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND CONCRETE THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE THICKNESS SEE THE "32" ALASKA RAIL CURB SECTION" DETAIL.



SHEAR KEY DETAIL

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

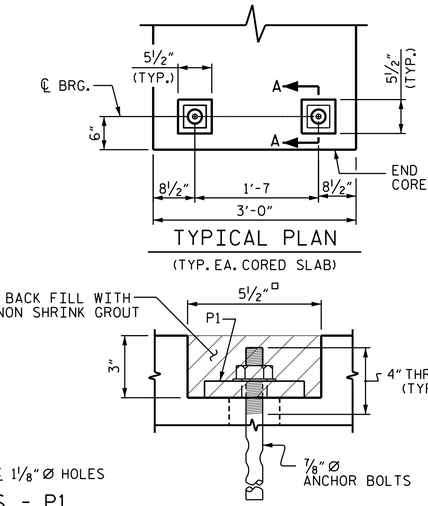


PLATE DETAILS - P1

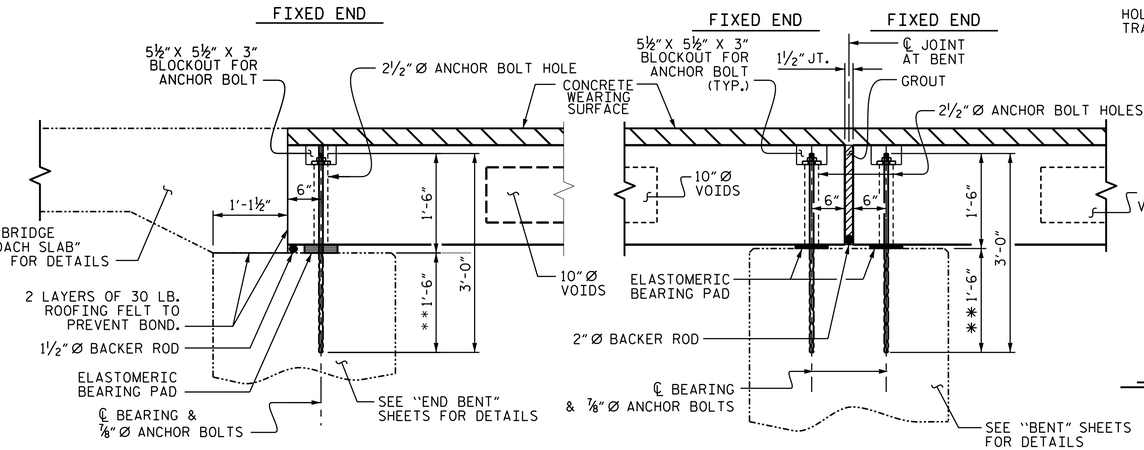
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SECTION A-A

(FIXED)

BLOCKOUT DETAIL FOR ANCHOR BOLTS

(TYP. FOR EACH CORED SLAB)

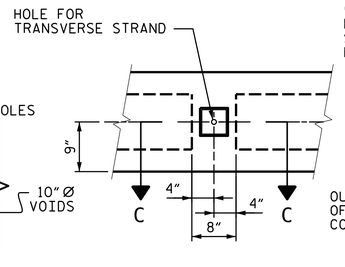


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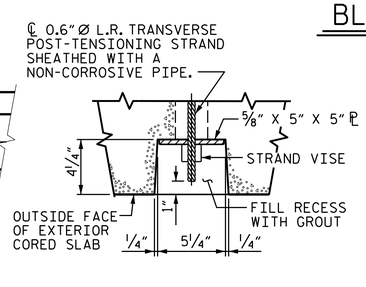
** SWEDGED

SECTION AT BENT

** SWEDGED

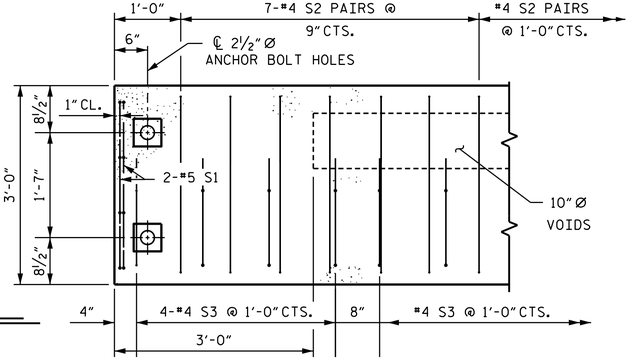


ELEVATION VIEW



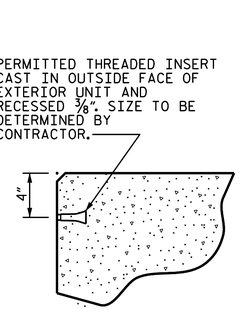
SECTION C-C

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

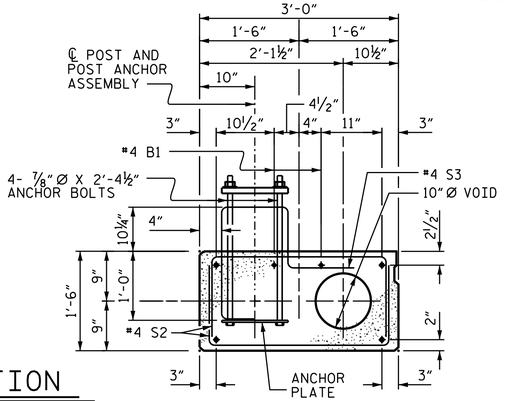


DETAIL "A"

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

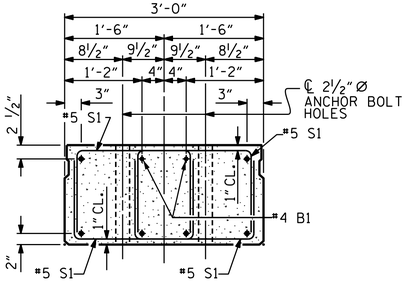


THREADED INSERT SECTION



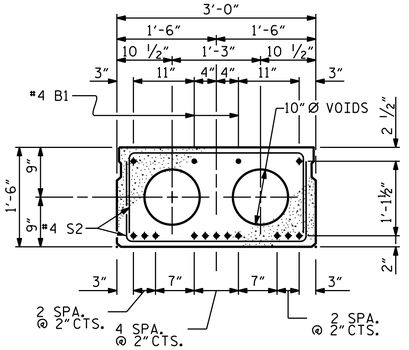
EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)



END ELEVATION

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



INTERIOR SLAB SECTION (45' UNIT)

(13 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

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9/8/2026

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

DRAWN BY :	J. MYA	DATE :	06/2026
CHECKED BY :	J. YANNACCONE	DATE :	06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE :	08/2026

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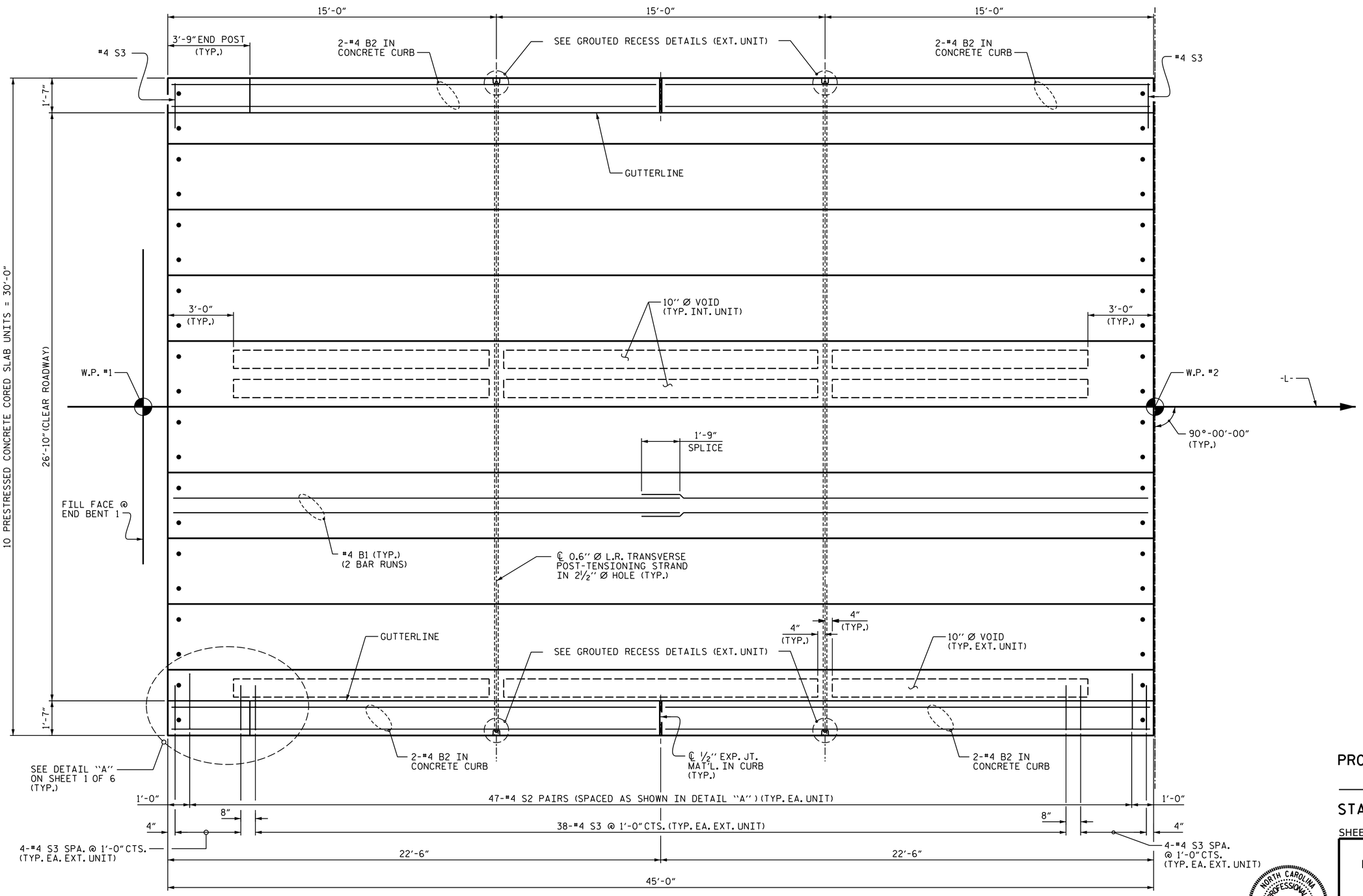
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PLAN OF SPAN A

(SEE SHEET 4 OF 6 FOR #4 S2 BARS AT EACH POST ANCHOR ASSEMBLY)

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PROJECT NO. **HB-0057**

CALDWELL COUNTY

STATION **17+85.00 -L-**

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT 26'-10" CLEAR ROADWAY 90° SKEW SPAN A

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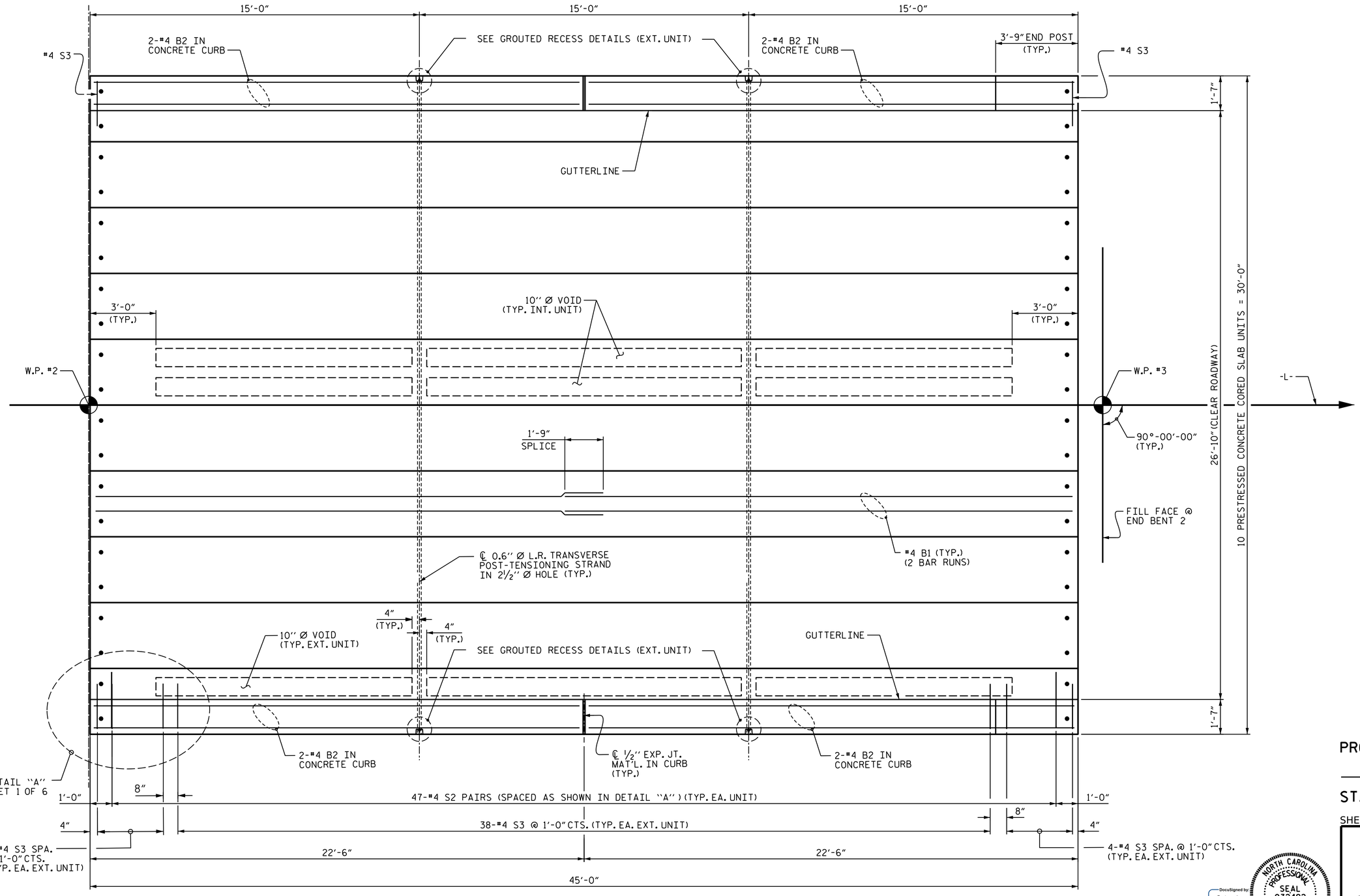
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PLAN OF SPAN B

(SEE SHEET 4 OF 6 FOR #4 S2 BARS AT EACH POST ANCHOR ASSEMBLY)

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9/8/2026

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT
26'-10" CLEAR ROADWAY
90° SKEW
SPAN B

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-6"
45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	½" ↓
FINAL CAMBER	¾" ↑

** INCLUDES FUTURE WEARING SURFACE

18" CORED SLABS REQUIRED

45' C.S. UNITS (SPAN A)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	8	45'-0"	360'-0"
TOTAL	10		450'-0"
45' C.S. UNITS (SPAN B)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	8	45'-0"	360'-0"
TOTAL	10		450'-0"

BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	2	3'-9"	31	3'-9"	31
S2	94	#4	2	4'-10"	303	4'-10"	303
S2	98	#4	2	4'-10"	316	-	-
* S3	46	#4	1	5'-5"	166	-	-
REINFORCING STEEL LBS.					712		396
* EPOXY COATED REINFORCING STEEL LBS.					166		-
6000 P.S.I. CONCRETE CU. YDS.					6.7		5.9
0.6" Ø L.R. STRANDS No.					13		13

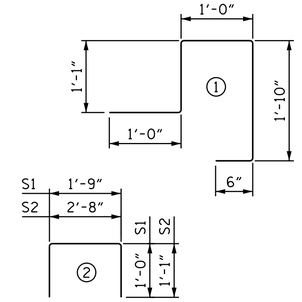
GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT

	CONCRETE OVERLAY THICKNESS	CURB HEIGHT
	@ MID-SPAN	@ MID-SPAN
45' UNITS	3½"	1'-0"

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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.

AT ALL FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2½" Ø ANCHOR BOLT HOLES AT FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

THE ANCHOR BOLT BLOCKOUTS IN CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT PRIOR TO PLACEMENT OF THE WEARING SURFACE.

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 CONCRETE CURBS 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.

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.

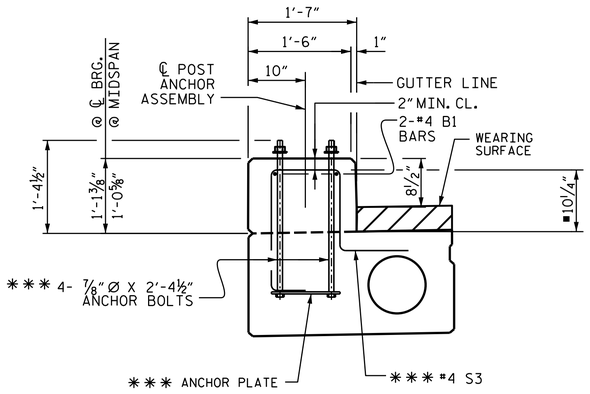
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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

THE COST OF THE METAL RAIL ANCHOR ASSEMBLY CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

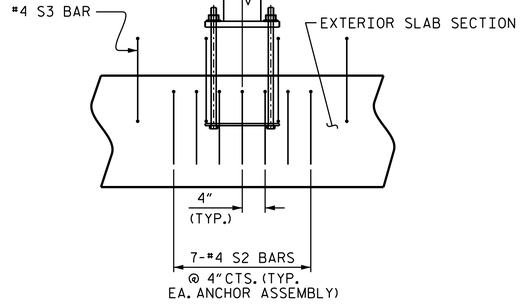
FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

■ DIMENSIONS MEASURED AT GUTTER LINE



32" ALASKA RAIL CURB SECTION

*** THE PRECASTER SHALL ROTATE THE ANCHOR BOLTS, ANCHOR PLATE, AND #4 S3 BARS TO ACCOUNT FOR THE 2 PERCENT SUPERELEVATION. THE TOP OF CURB SHALL BE LEVEL AND THE ALASKA RAIL SHALL BE PLUMB.



SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)

FIXED END

(TYPE I - 40 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

ELEVATION AT EXPANSION JOINTS

SECTION S-S

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
45' UNITS	4800

PROJECT NO. HB-0057
CALDWELL COUNTY
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SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

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9/8/2026

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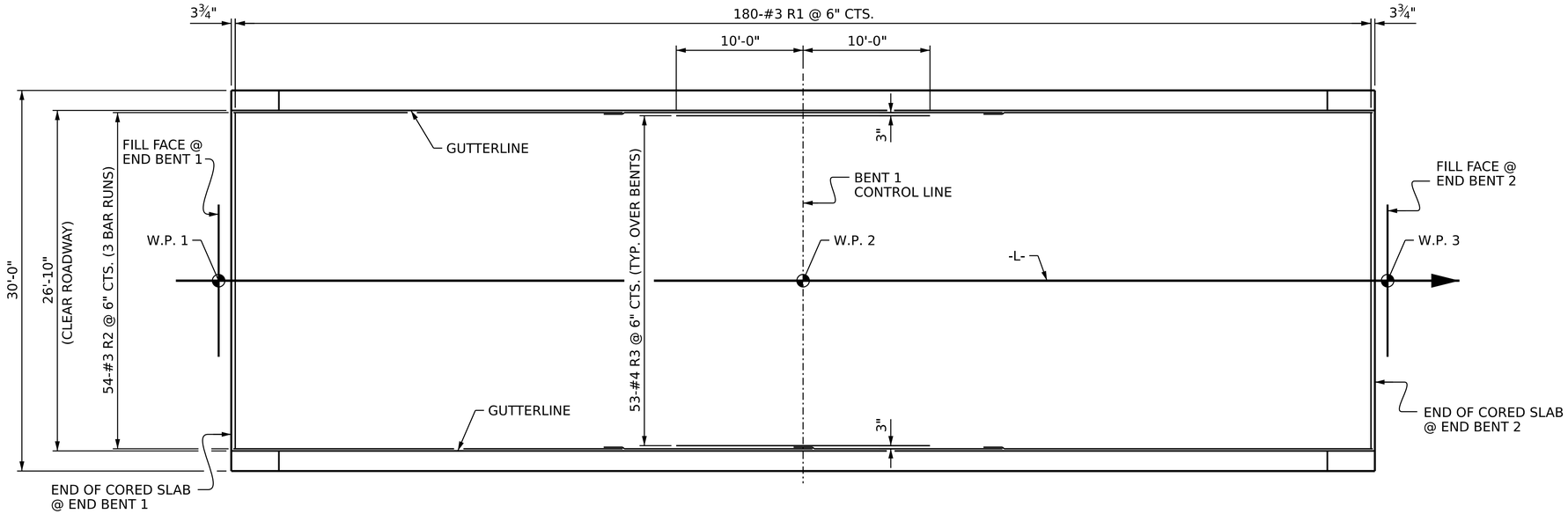
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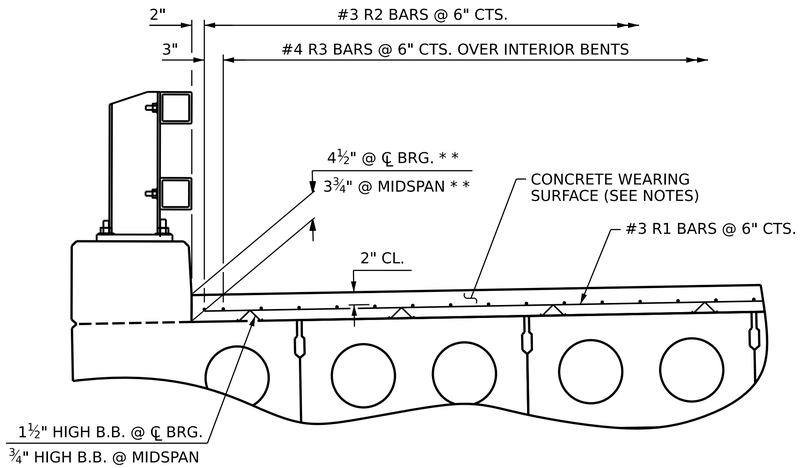
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PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

NOTES:

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL IN CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE CURB. THE COST OF THE #3 BARS AND #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	180	#3	STR.	26'-6"	1,794
*R2	162	#3	STR.	31'-0"	1,888
*R3	53	#4	STR.	20'-0"	708
* EPOXY COATED REINFORCING STEEL				LBS.	4,390
CONCRETE WEARING SURFACE				SQ. FT.	2,419

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3	1'-6"
#4	1'-11"

GROOVING BRIDGE FLOORS

APPROACH SLABS	540	SQ.FT.
BRIDGE DECK	2,129	SQ.FT.
TOTAL	2,669	SQ.FT.

PROJECT NO. HB-0057
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SHEET 5 OF 6

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9/8/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING SURFACE

DRAWN BY : J. MYA DATE : 06/2026
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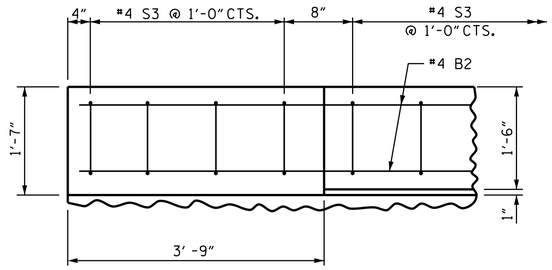
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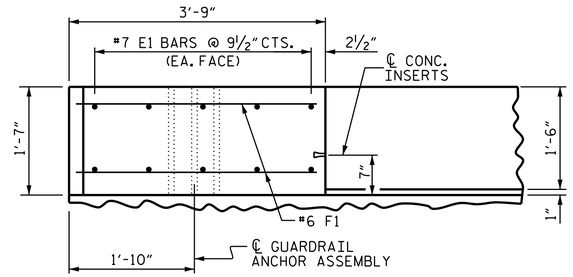
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BILL OF MATERIAL FOR 2 CURBS & 4 END POSTS

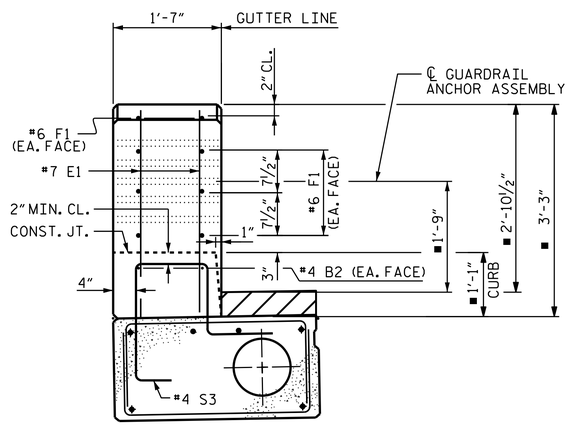
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✳E1	40	#7	STR.	3'-0"	245
✳F1	32	#6	STR.	3'-5"	164
✳EPOXY COATED REINFORCING STEEL				LBS.	645
CLASS AA CONCRETE				CU. YDS.	12.7
1'-7" x 1'-0" CONCRETE CURB				LIN. FT.	180.25



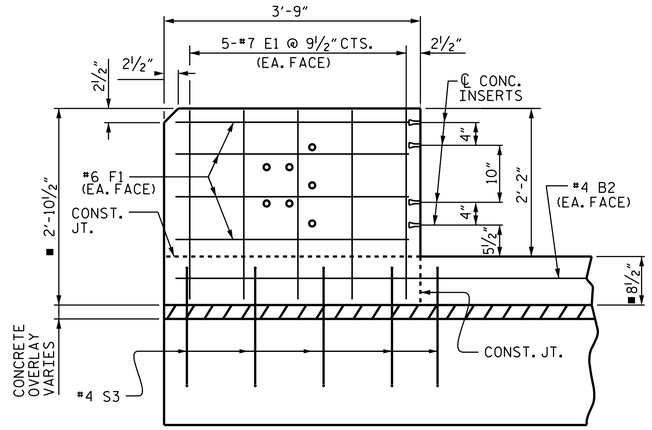
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

■ DIMENSIONS MEASURED AT GUTTER LINE

CURB AND END POST FOR 32" ALASKA RAIL

PROJECT NO. **HB-0057**

CALDWELL COUNTY

STATION **17+85.00 -L-**

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE CURBS AND END POSTS

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9/8/2026

DRAWN BY :	J. MYA	DATE : 06/2026
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DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE : 08/2026

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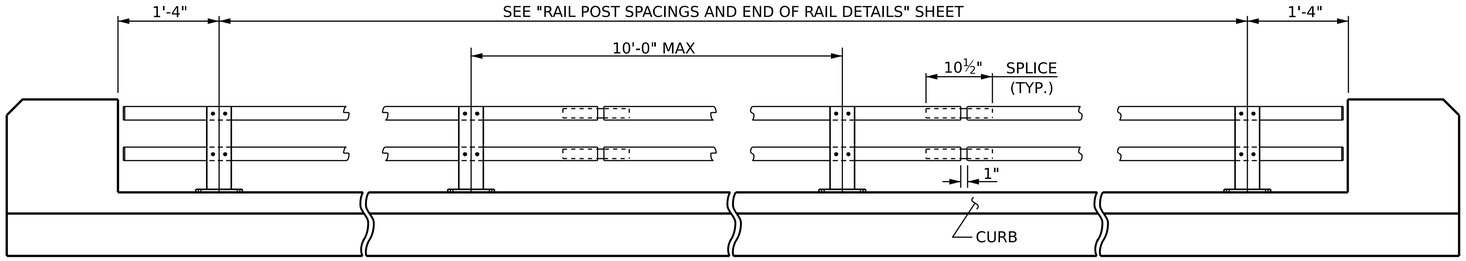
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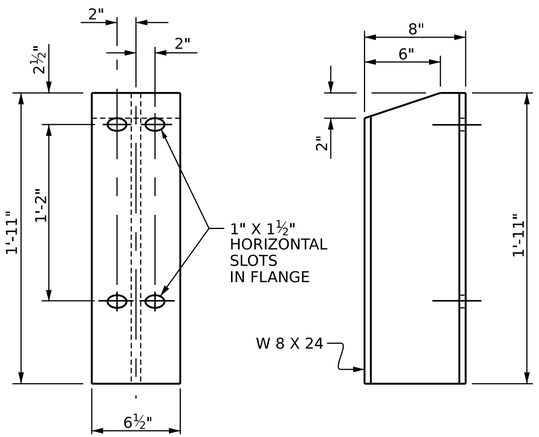
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ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR9.



FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

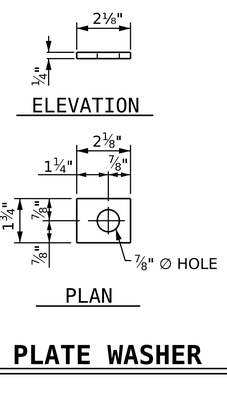
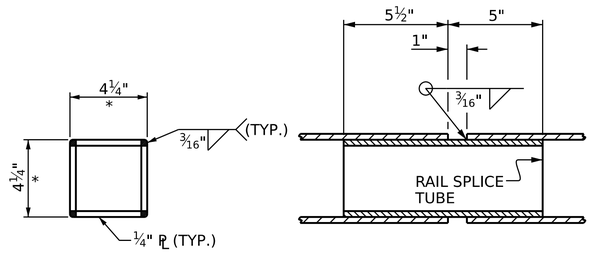
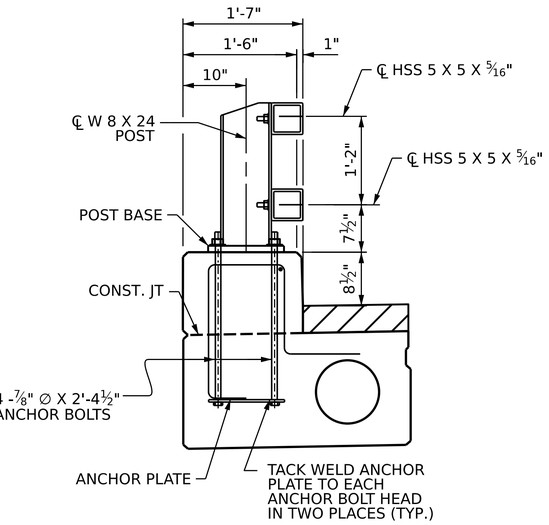


PLATE WASHER

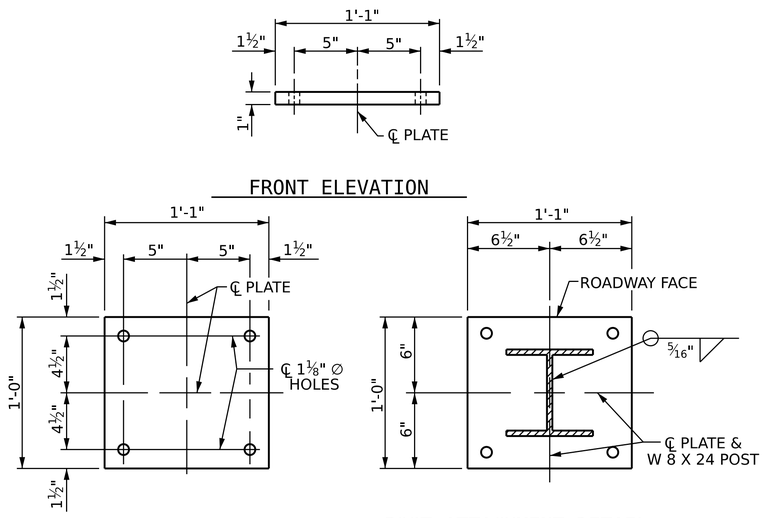


RAIL SPLICE DETAILS

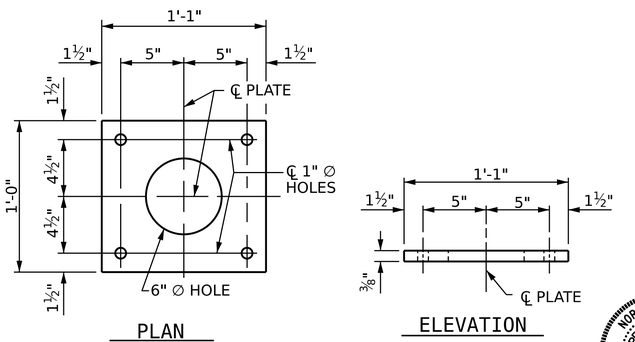
* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.



SECTION THRU RAIL



POST BASE DETAILS



ANCHOR PLATE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

GROOVED CONTRACTION JOINTS,½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" ∅ WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 32" ALASKA RAIL, SEE THE STANDARD SPECIFICATIONS.

METAL RAIL LENGTH 165.25 LIN. FT.

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32" ALASKA RAIL

ASSEMBLED BY : J. MYA	DATE : 04/2026
CHECKED BY : J. YANNACCONE	DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE	DATE : 04/2026
DRAWN BY : RWW 7/14	REV. 12/17 MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18 MAA/THC
	REV. 10/23 BNB/SNM

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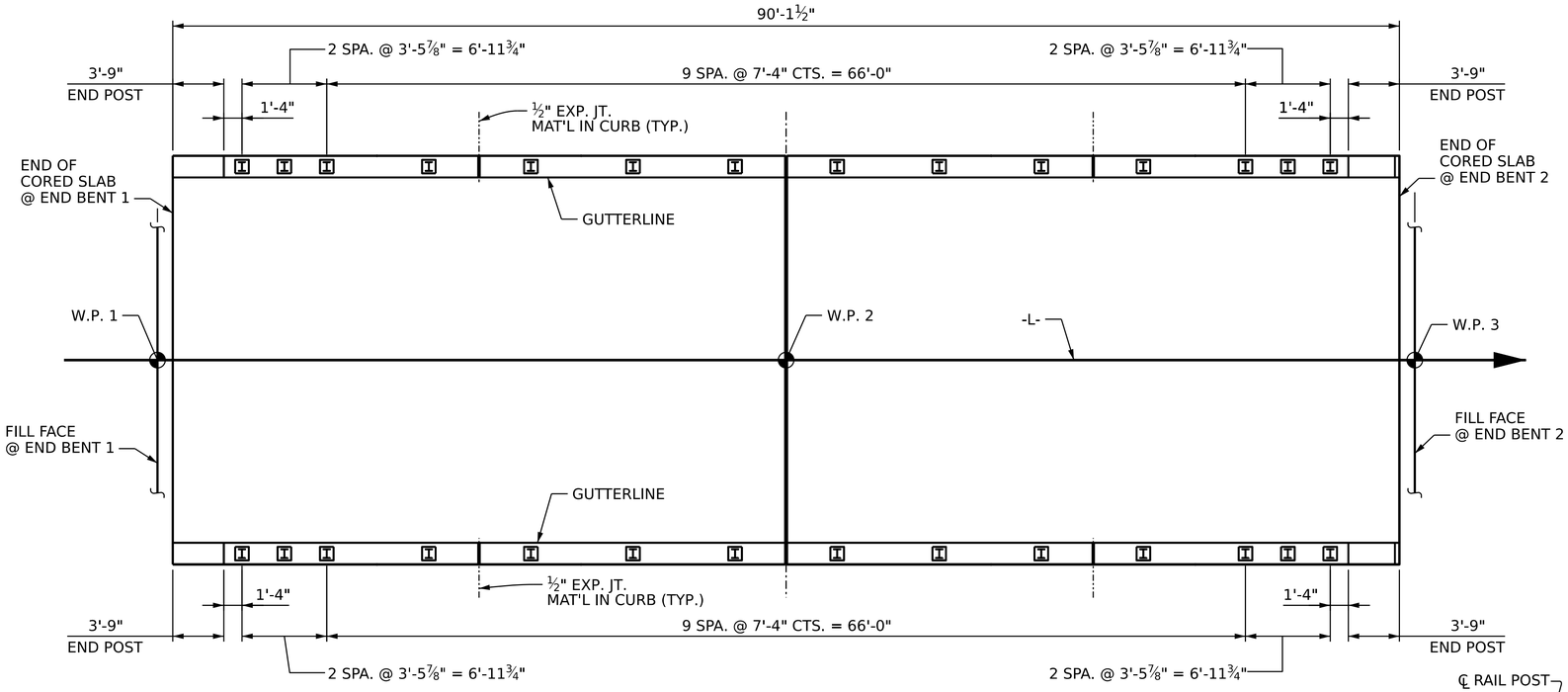
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
DocuSigned by: John Yannaccone 7813617546784S6...
9/8/2026

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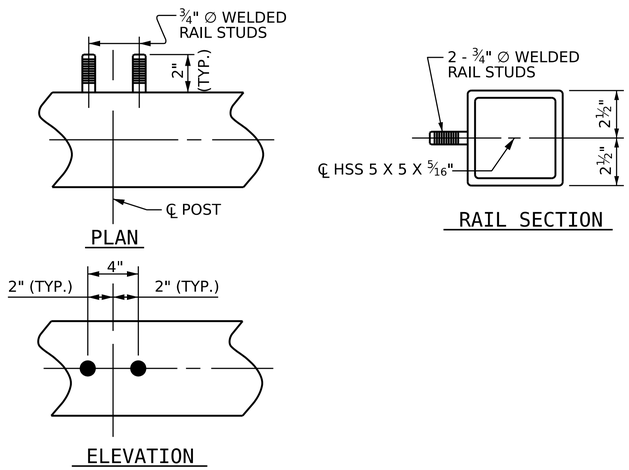
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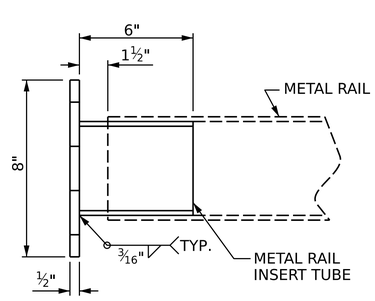
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PLAN OF RAIL POST SPACINGS

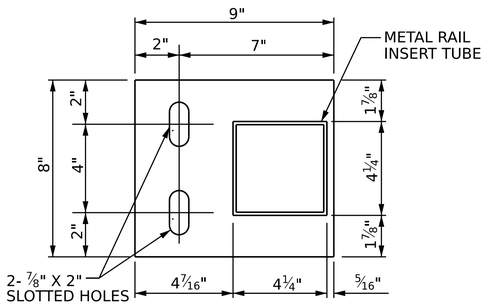


RAIL STUD DETAILS



METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.



PLAN - RAILS AND END POST

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO ASTM A123.

B. ¾" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅝" BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

THE ¾" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT, THE ½" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾" ∅ x 6½" BOLTS AND 2'' O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLTS SHALL APPLY TO THE ¾" ∅ x 6½" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR 32" ALASKA RAIL

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

DocuSigned by: John Yannaccone 7813617546784567...
9/8/2026

ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC
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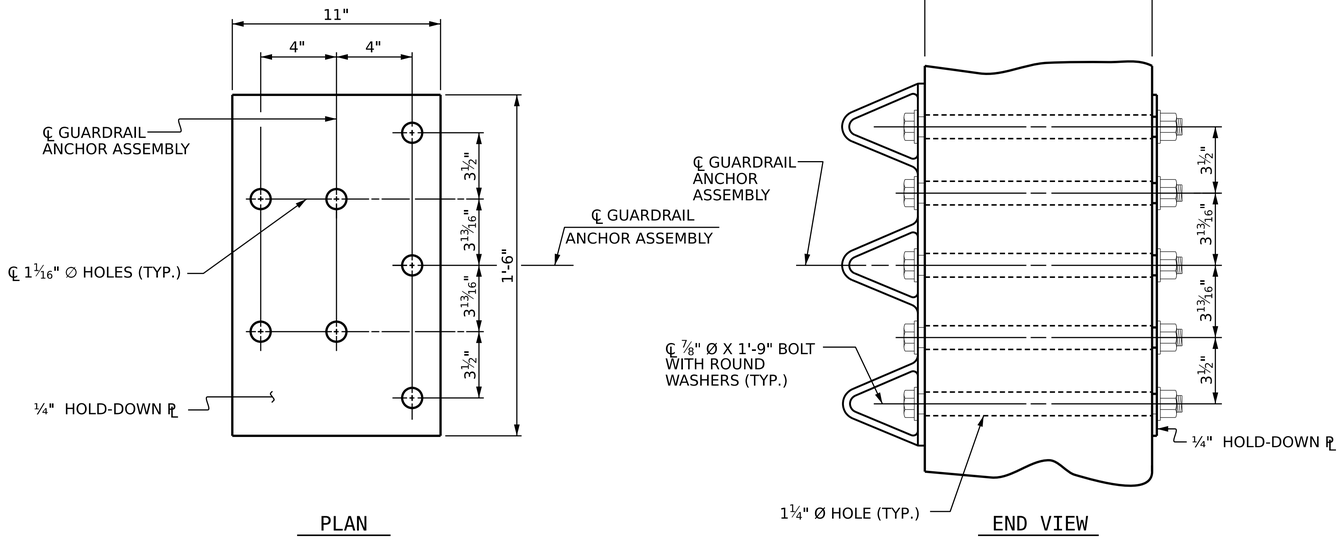
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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ 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 ⅞'' ∅ 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.

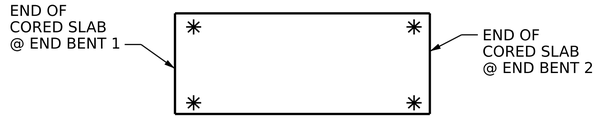
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

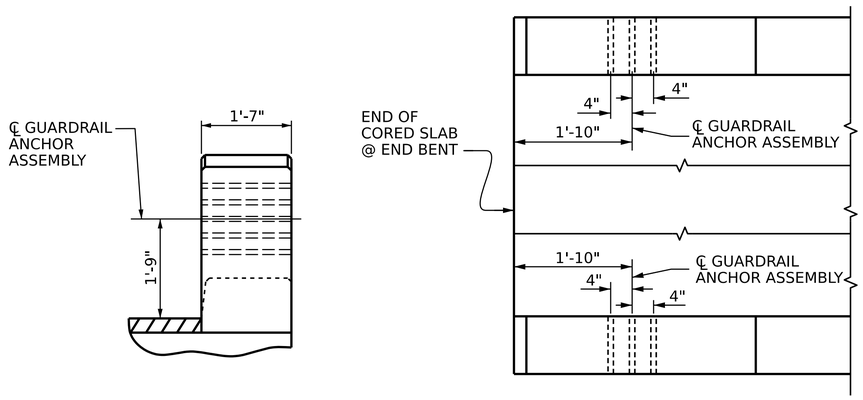
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR.
(32" ALASKA RAIL)

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-

DocuSigned by: John Yannaccone 781361754678456...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC
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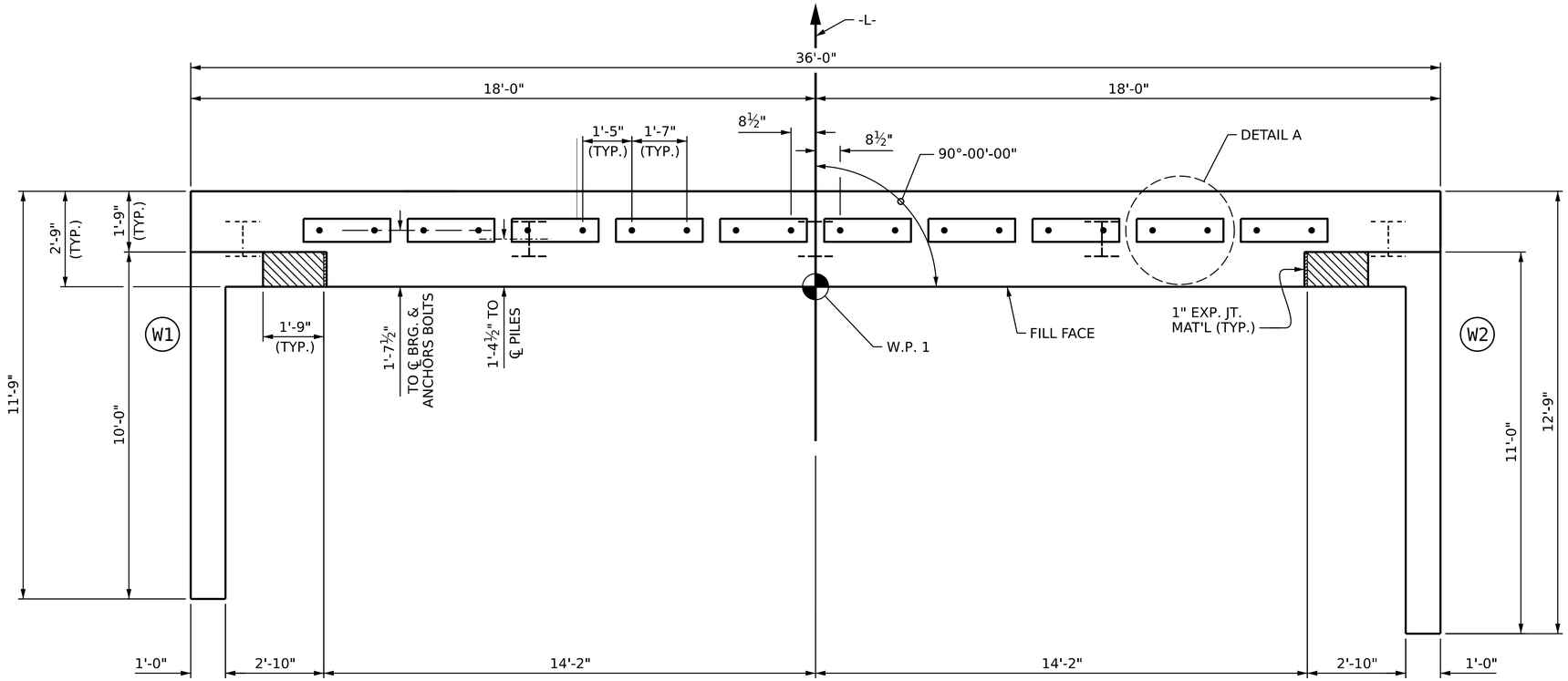
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PLAN

NOTES:

THE "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

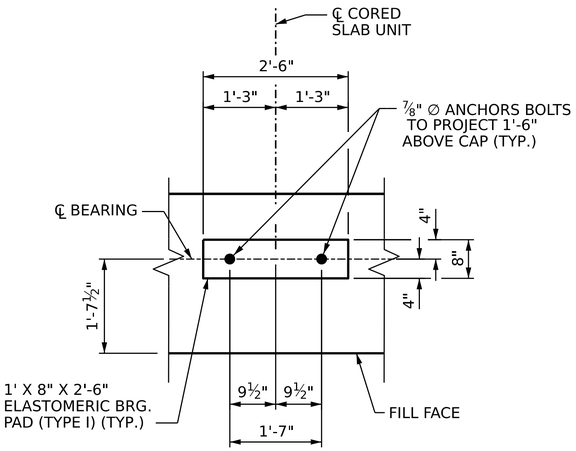
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE CURB IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

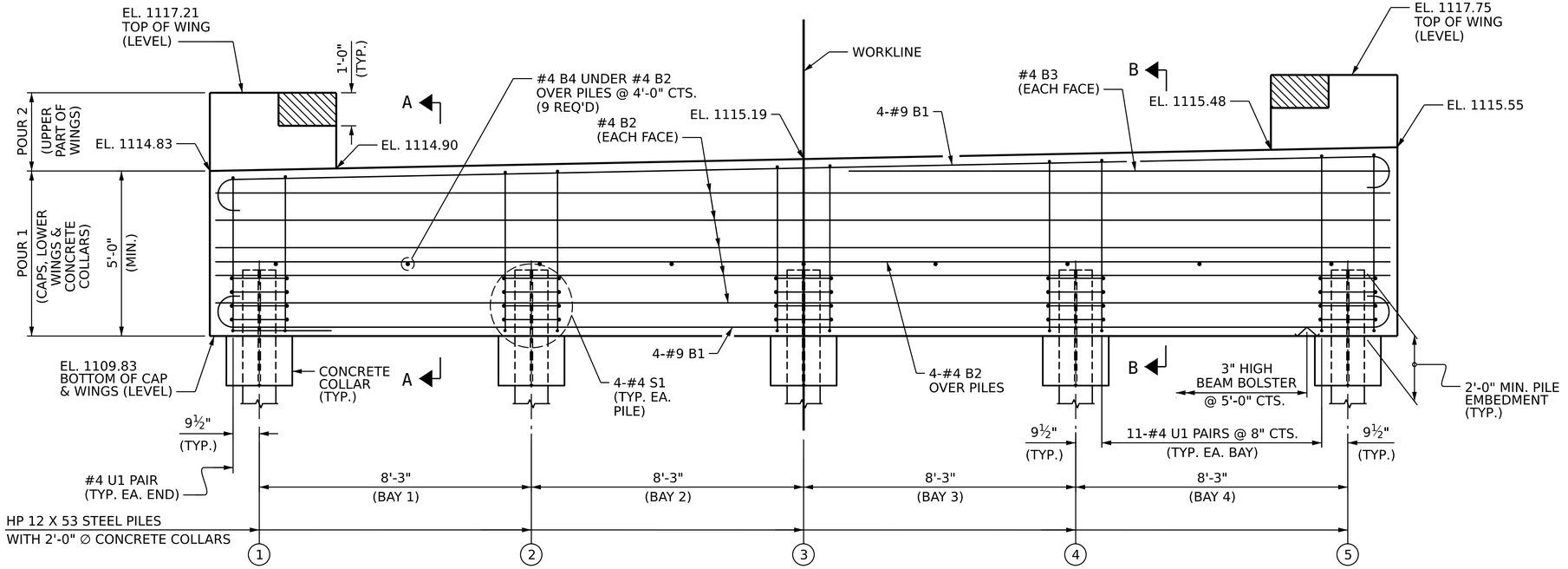
FOR WING DETAILS, SEE SHEET 2 OF 3.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. ANCHOR PLATES, WASHERS, AND NUTS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. ANCHOR PLATES, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.



DETAIL A



ELEVATION

WINGS NOT SHOWN FOR CLARITY.

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

DocuSigned by: John Yannaccone 781361754678456...

9/8/2026

DRAWN BY :	D. COMANICIU — DATE : 06/2026
CHECKED BY :	J. YANNACCONE — DATE : 06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE — DATE : 08/2026

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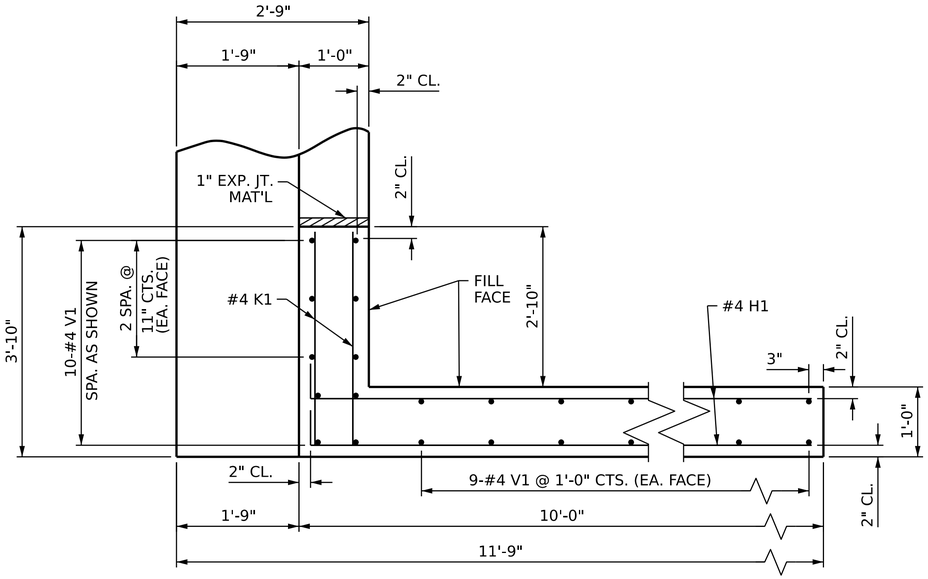
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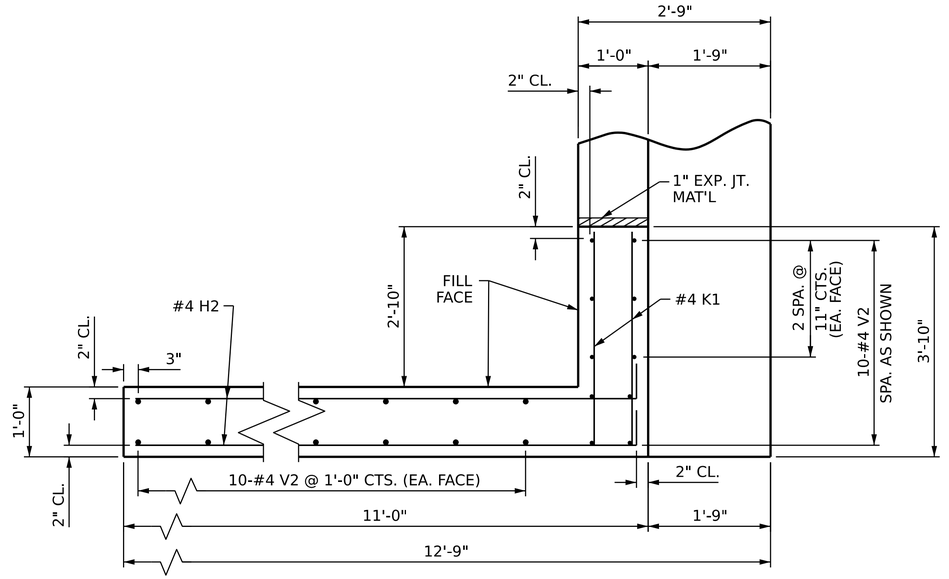
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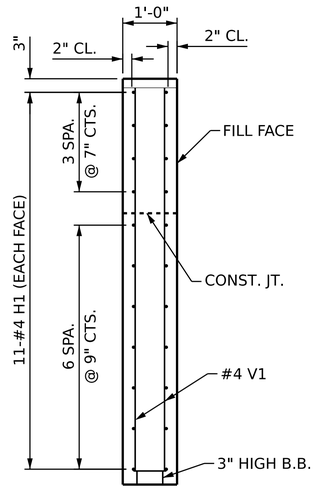
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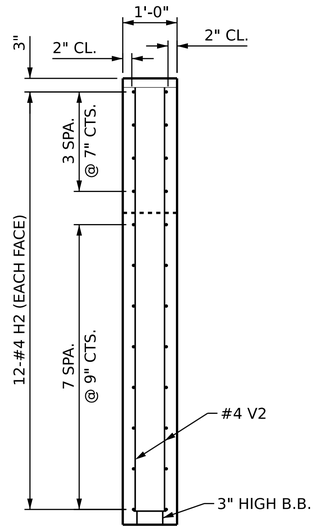
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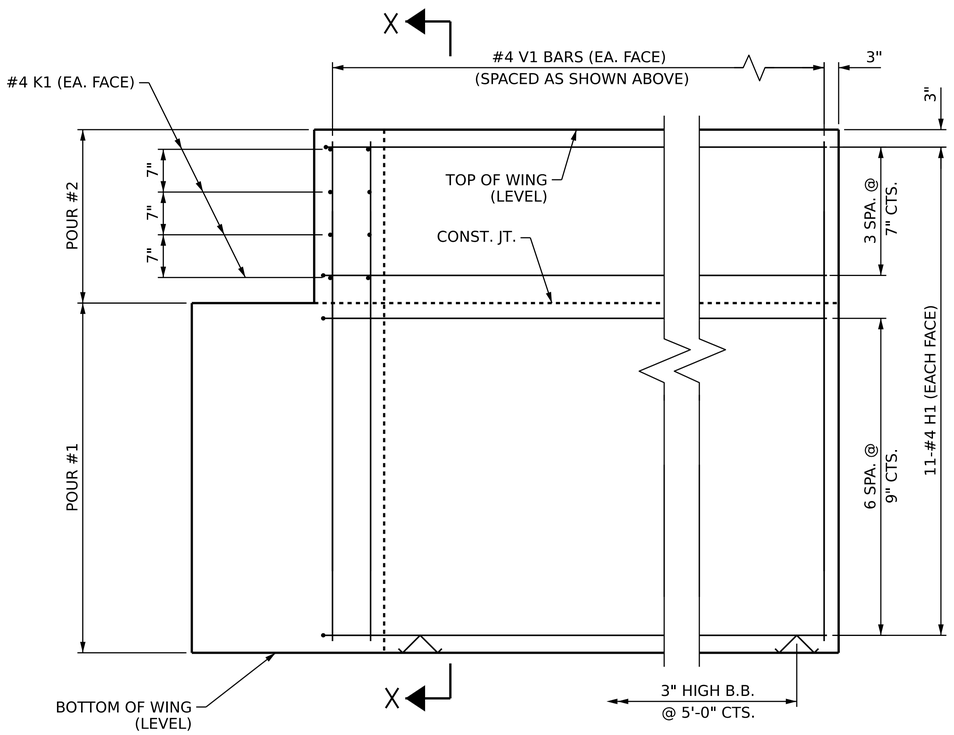
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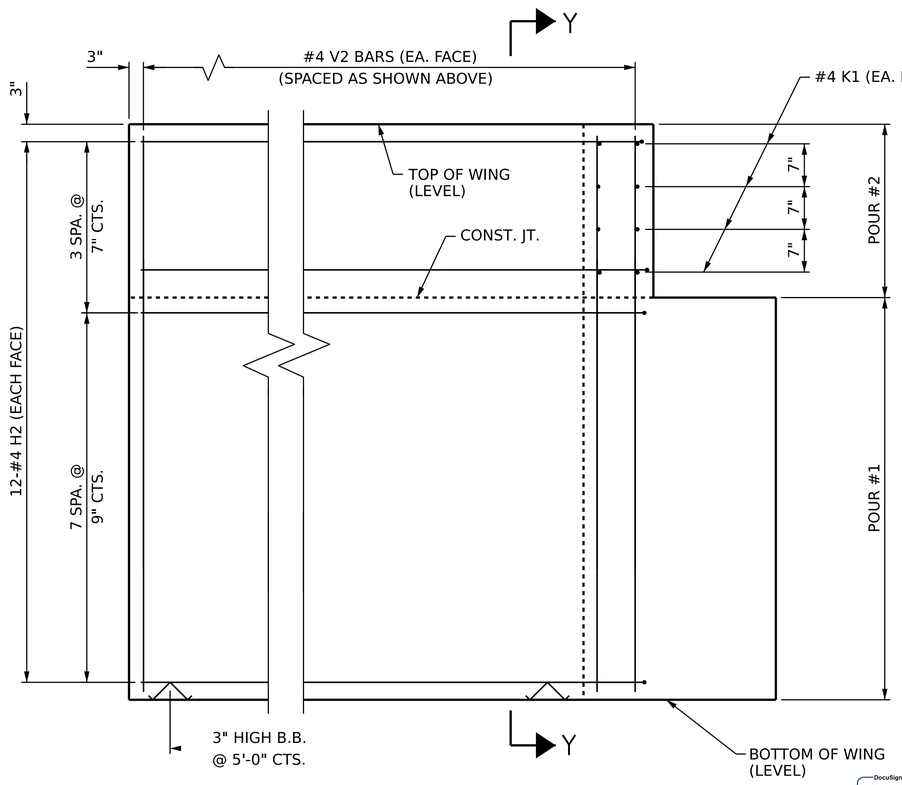
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

DocuSigned by: John Yannaccone 781361754678456...
9/8/2026

DRAWN BY :	J. MYA	DATE :	06/2026
CHECKED BY :	J. YANNACCONE	DATE :	06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE :	08/2026

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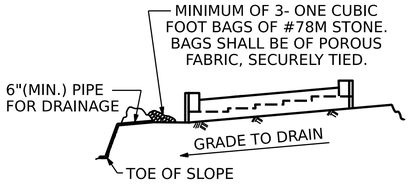
PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WING DETAILS

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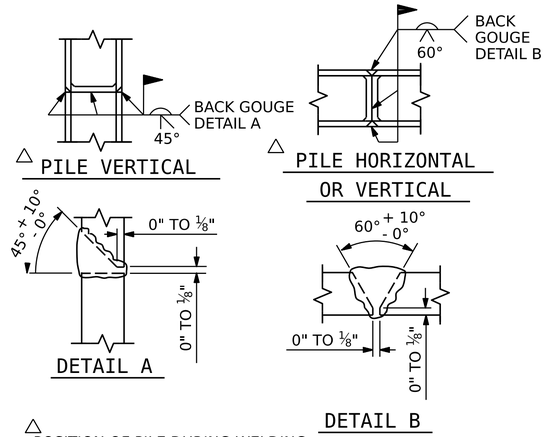


TEMPORARY DRAINAGE AT END BENT

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.

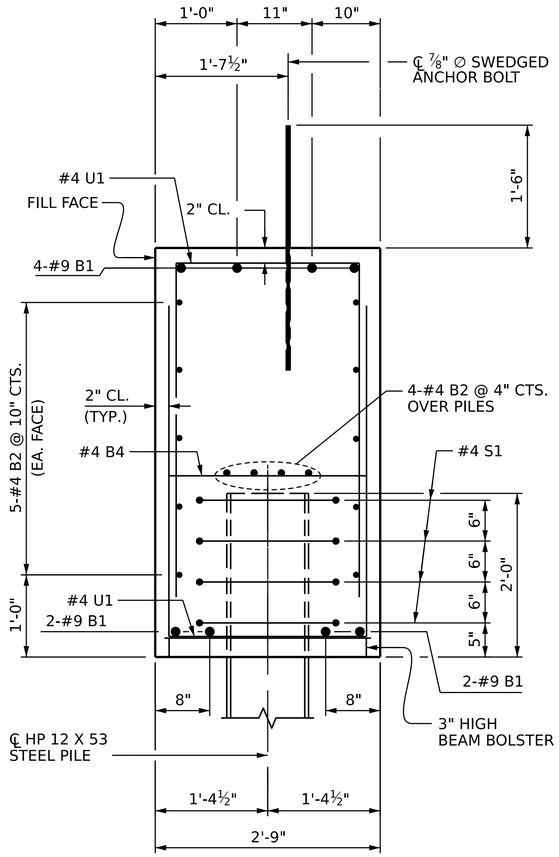
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

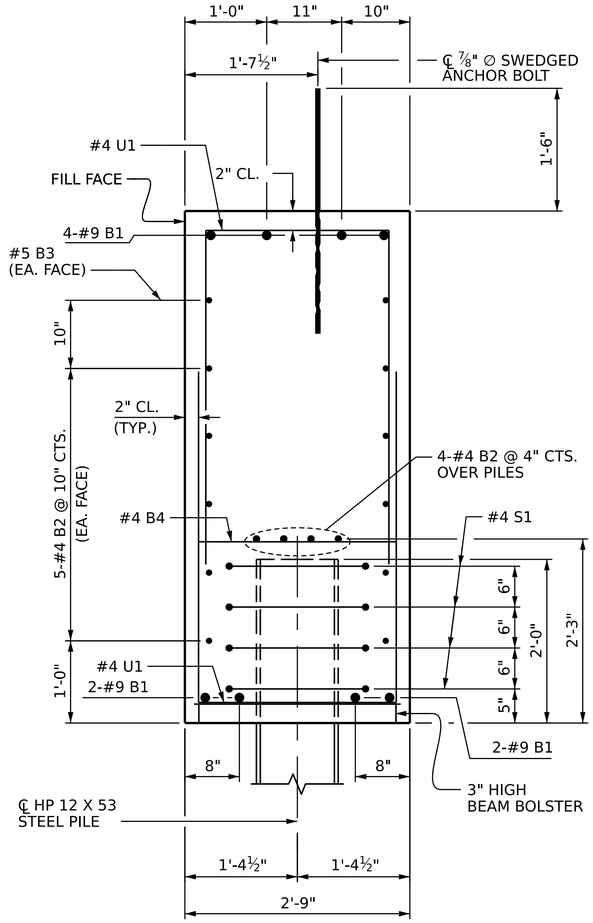


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

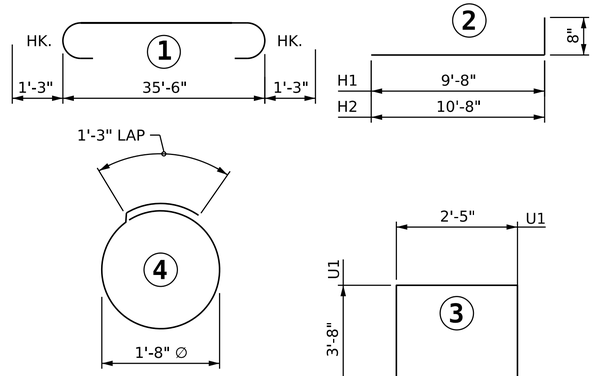


SECTION A-A



SECTION B-B

BAR TYPES

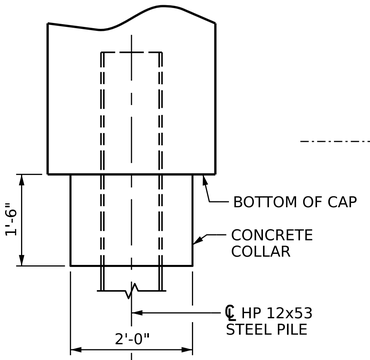


ALL BAR DIMENSIONS ARE OUT TO OUT.

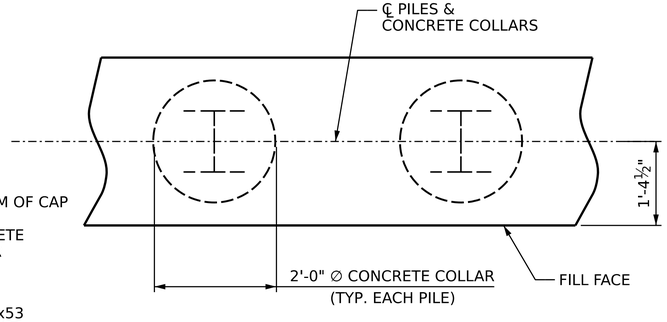
BILL OF MATERIAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	14	#4	STR	35'-8"	334
B3	2	#4	STR	9'-4'	12
B4	9	#4	STR	2'-5"	15
H1	22	#4	2	10'-4"	152
H2	24	#4	2	11'-4"	182
K1	16	#4	STR	3'-6"	37
S1	20	#4	4	6'-6"	87
U1	92	#4	3	9'-9"	599
V1	28	#4	STR	6'-11"	129
V2	30	#4	STR	7'-6"	150

REINFORCING STEEL	2,731 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, LOWER PART OF WINGS & COLLARS)	24.3 C.Y.
POUR #2 (UPPER PART OF WINGS)	2.3 C.Y.
TOTAL CLASS A CONCRETE	26.6 C.Y.



ELEVATION



PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1 DETAILS

DocuSigned by: John Yannaccone 7813617546784567...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

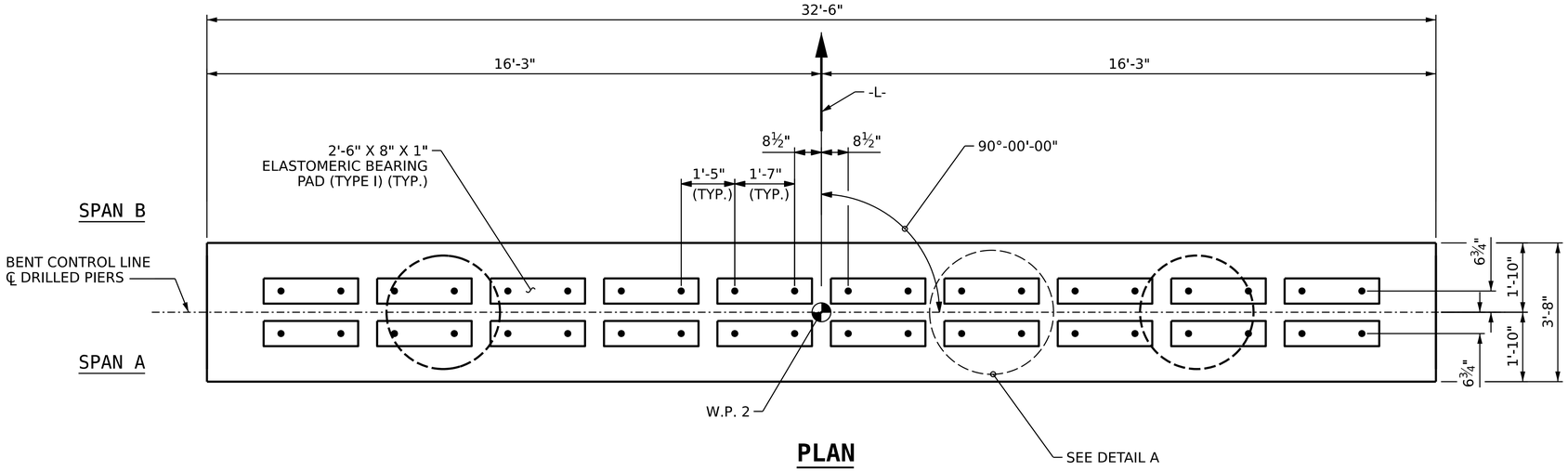
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One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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2			4			24

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PLAN

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

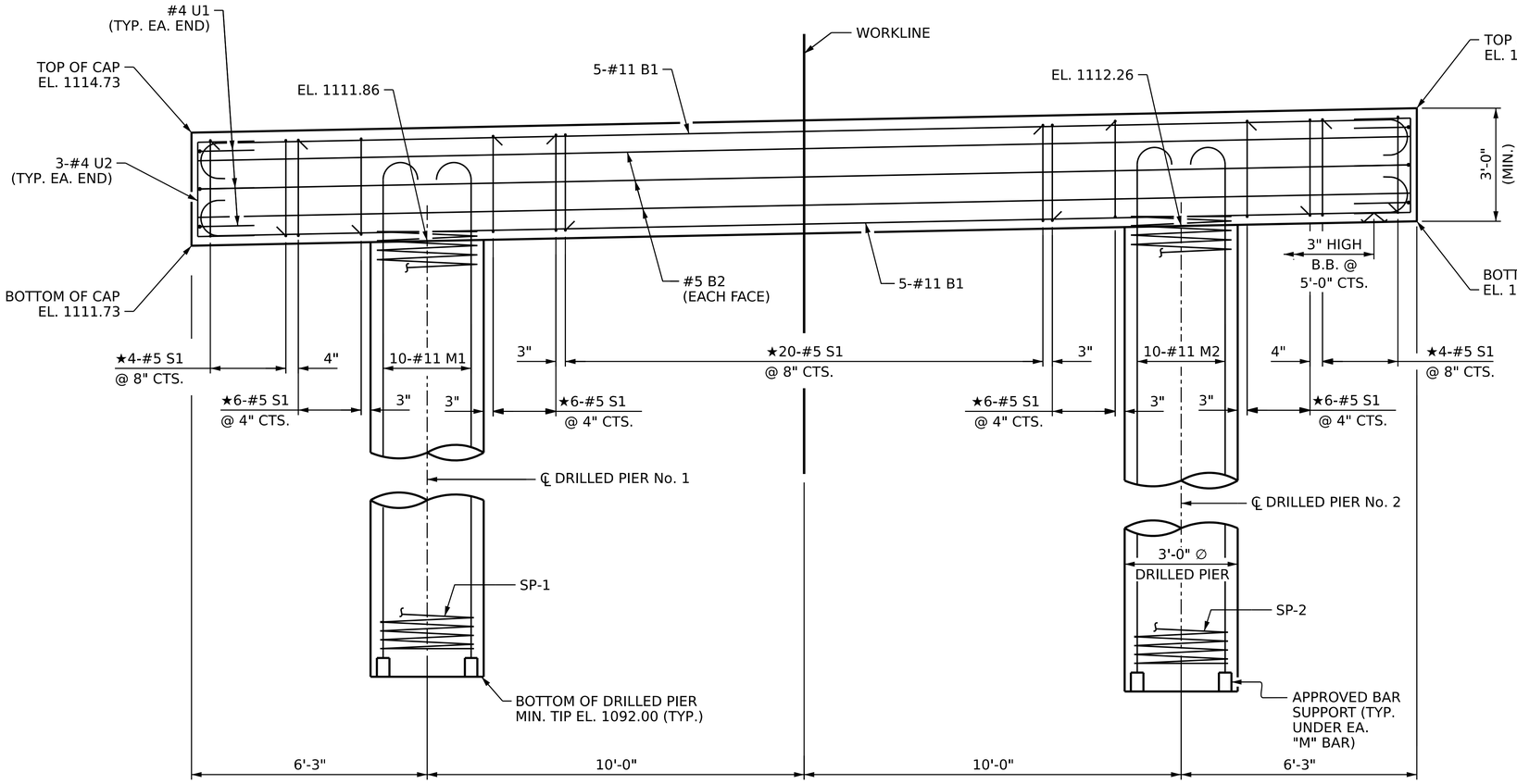
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

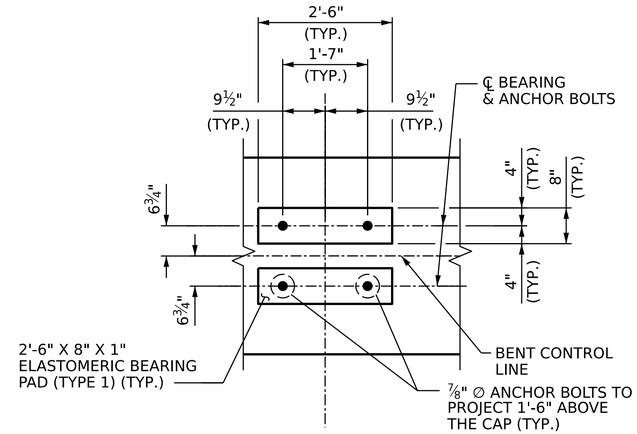
★ INVERT ALTERNATE STIRRUPS.

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

SINCE NO COLUMN SPLICE IS PROVIDED, THE CONTRACTOR SHALL CONFIRM THAT THE "M" BARS HAVE THE MINIMUM EMBEDMENT INTO THE CAP PRIOR TO PLACEMENT OF THE DRILLED PIER CONCRETE.



ELEVATION



DETAIL A

(TYP. EA. BRIDGE SEAT)

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DocuSigned by: John Yannaccone 781361754678456...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/8/2026

DRAWN BY :	D. COMANICIU/ J. MYA
CHECKED BY :	J. YANNACCONE
DESIGN ENGINEER OF RECORD:	J. YANNACCONE
DATE :	06/2026
DATE :	06/2026
DATE :	08/2026

PRELIMINARY PLANS
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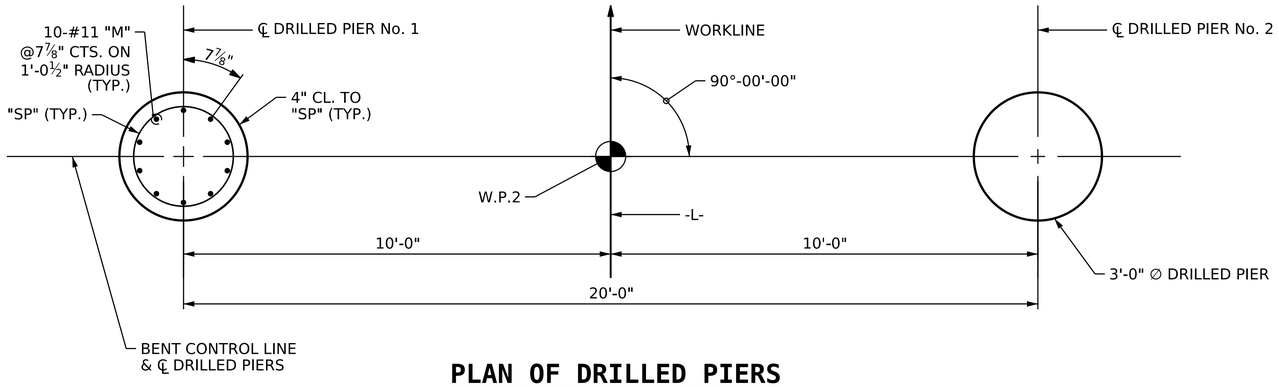
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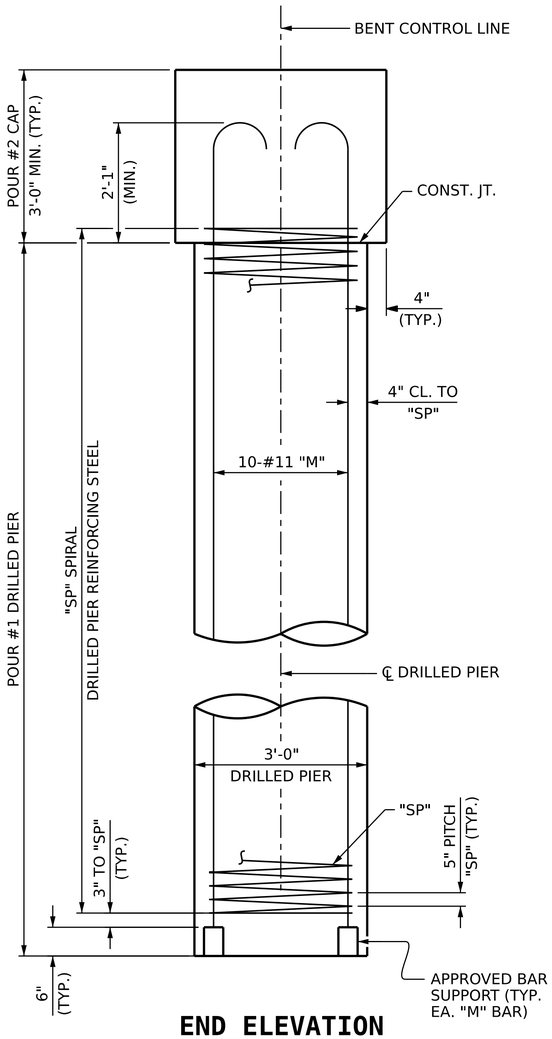
TOTAL SHEETS 24

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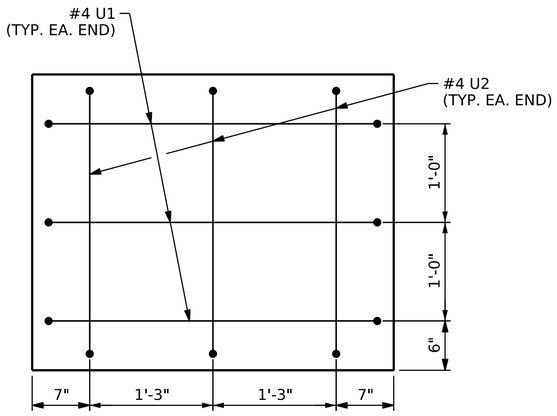
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PLAN OF DRILLED PIERS



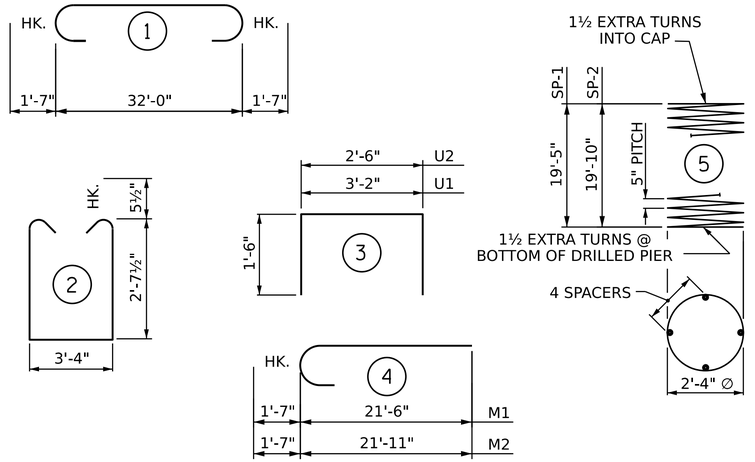
END ELEVATION



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
M1	10	#11	4	26'-1"	1386
M2	10	#11	4	26'-6"	1408
S1	52	#5	2	9'-6"	515
U1	6	#4	3	6'-2"	25
U2	6	#4	3	5'-6"	22
REINFORCING STEEL (FOR ONE BENT)					5,425 LBS.
SP-1	1	*	5	356-1"	371
SP-2	1	*	5	363'-4"	379
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					750 LBS.

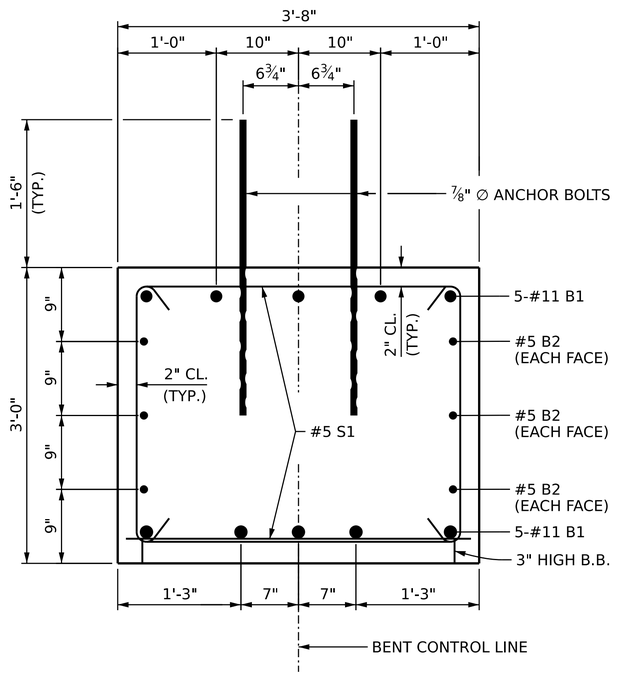
* THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (CAP)	13.2 C.Y.
TOTAL CLASS A CONCRETE	13.2 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	10.5 C.Y.



SECTION THRU CAP

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DocuSigned by: John Yannaccone 781361754678405...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/8/2026

DRAWN BY :	D. COMANICIU/ J. MYA	DATE :	06/2026
CHECKED BY :	J. YANNACCONE	DATE :	06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE :	08/2026

PRELIMINARY PLANS
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Raleigh, NC 27603
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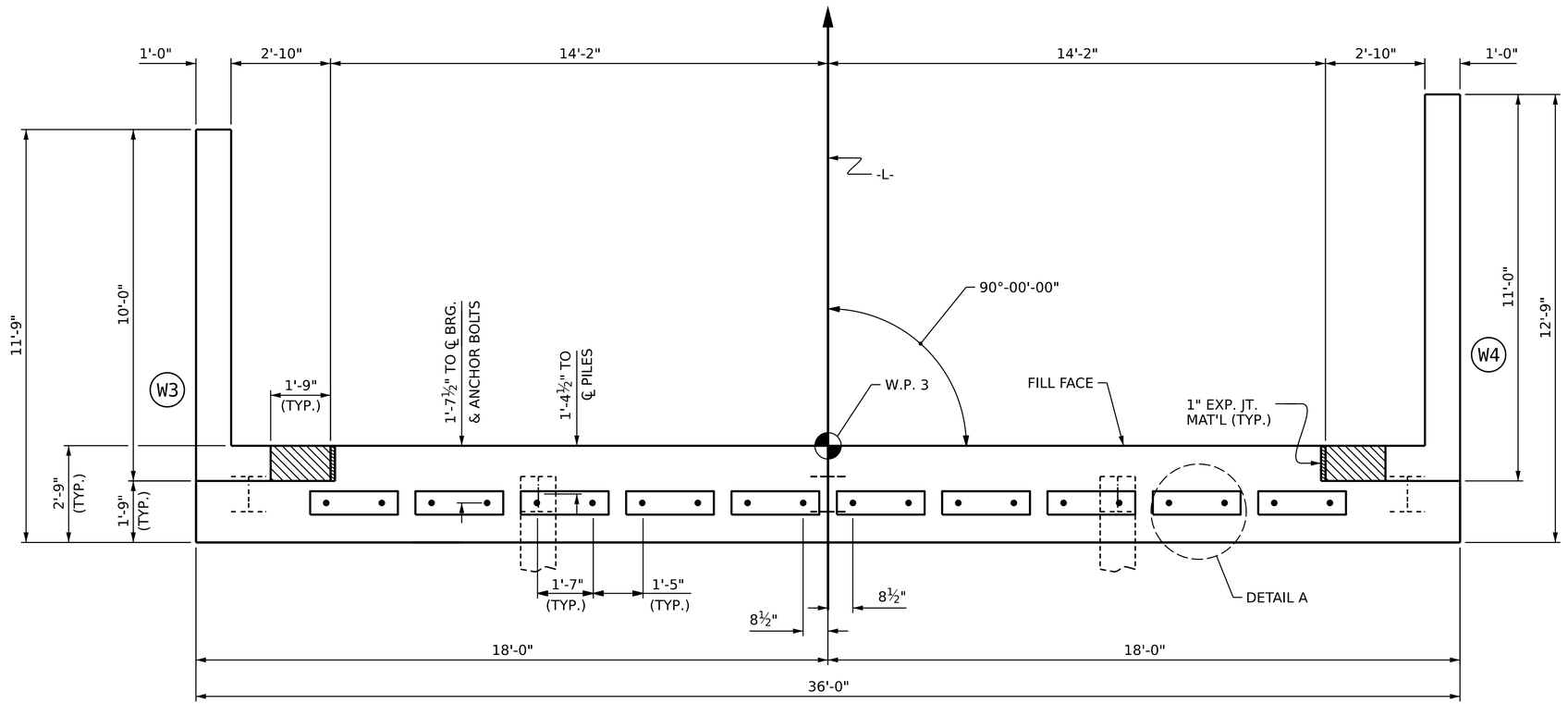
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SHEET NO. S-19

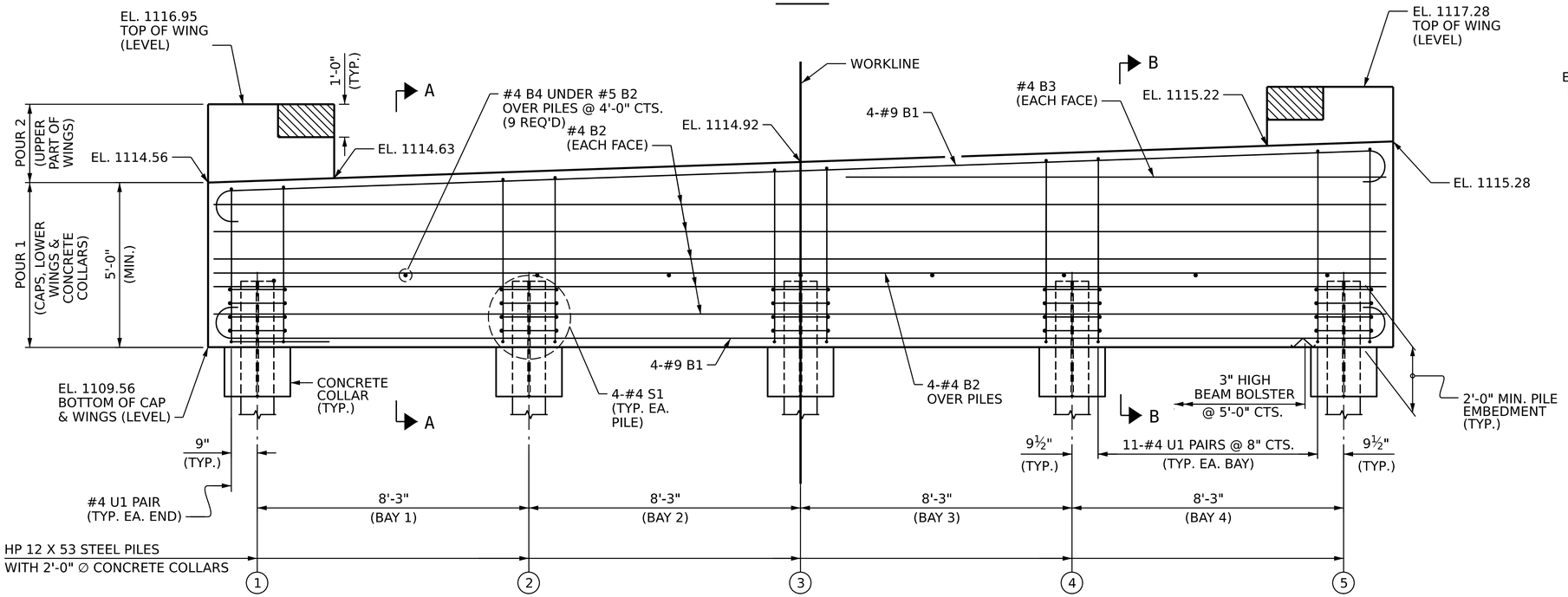
TOTAL SHEETS 24

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PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.

NOTES:

THE "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

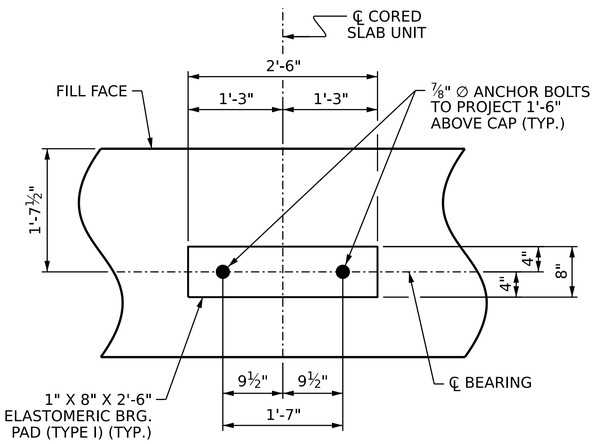
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE CURB IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. ANCHOR PLATES, WASHERS, AND NUTS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. ANCHOR PLATES, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.



DETAIL A

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

DocuSigned by: John Yannaccone 7813617546784560
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

DRAWN BY : D. COMANICIU DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

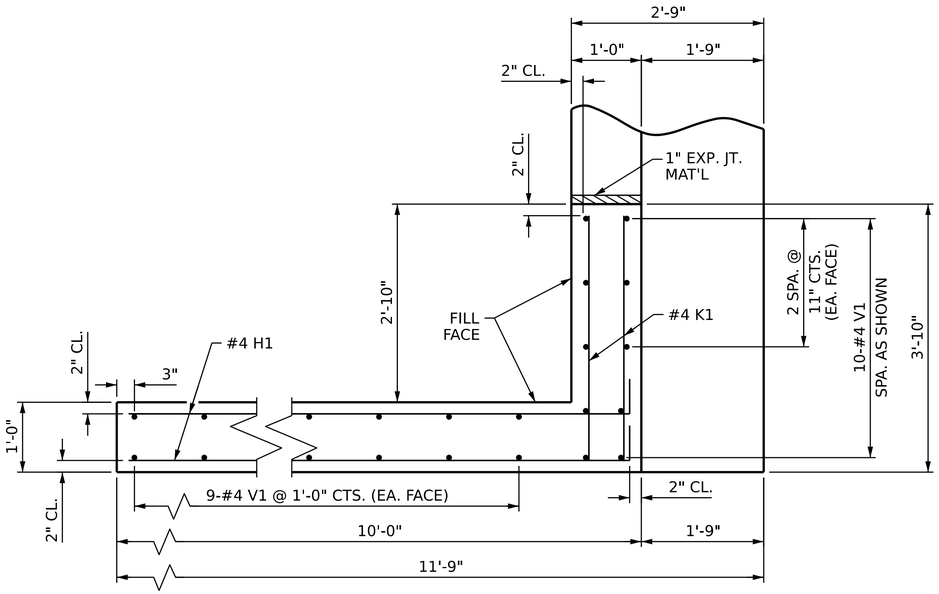
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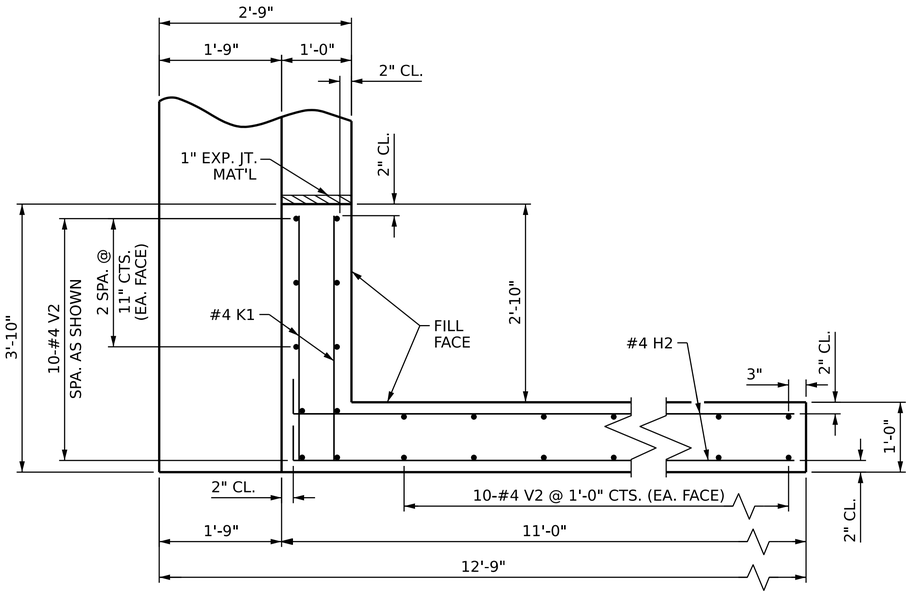
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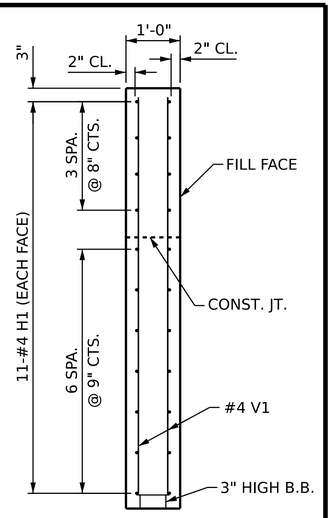
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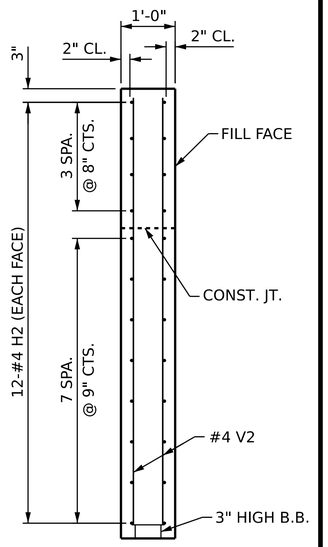
PLAN OF WING (W3)



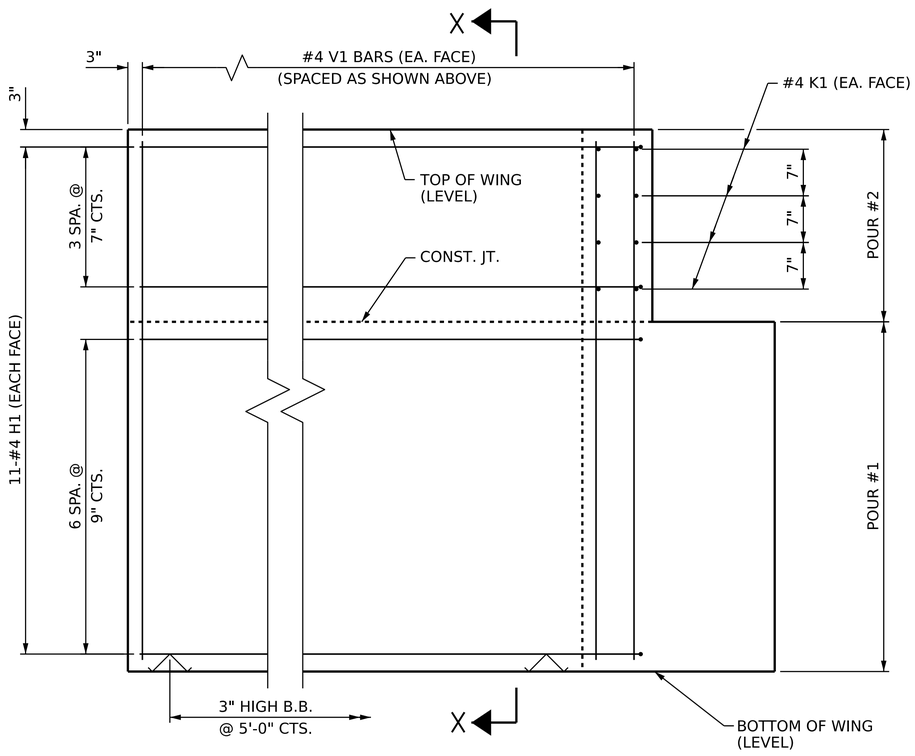
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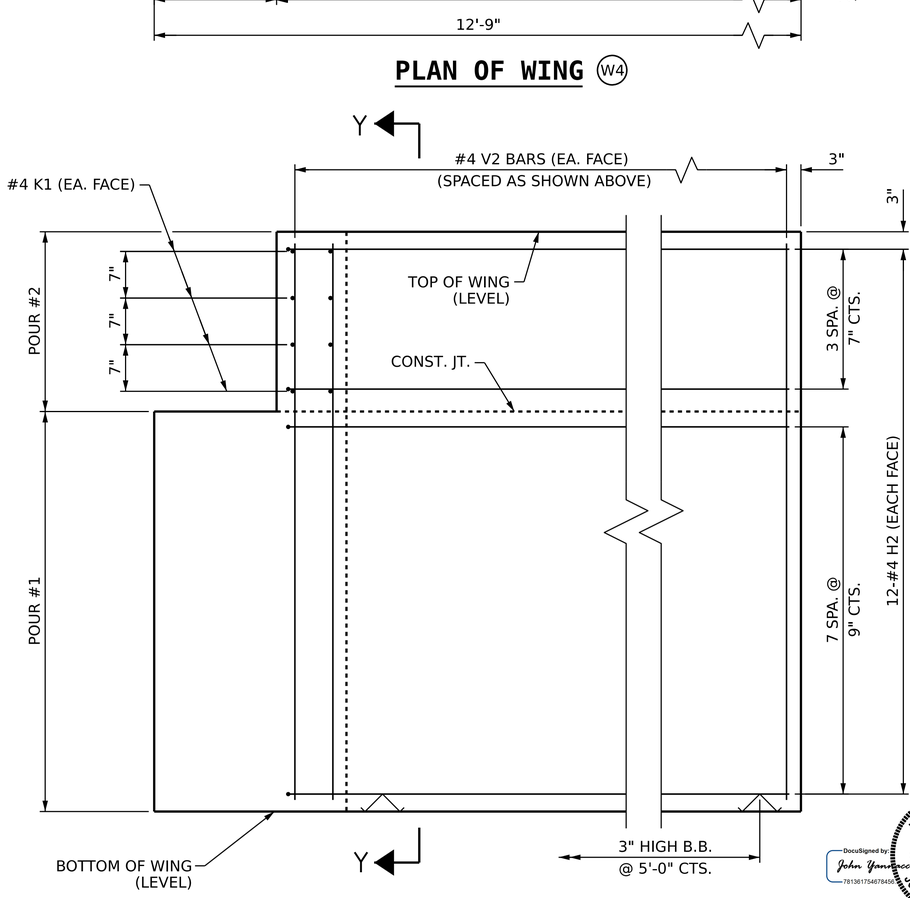
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

DocuSigned by: John Yannaccone 781361754678456...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

WING DETAILS

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

DRAWN BY : D. COMANICIU	DATE : 06/2026	
CHECKED BY : J. YANNACCONE	DATE : 06/2026	
DESIGN ENGINEER OF RECORD: J. YANNACCONE	DATE : 08/2026	

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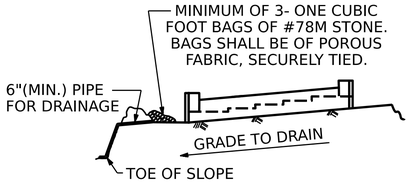
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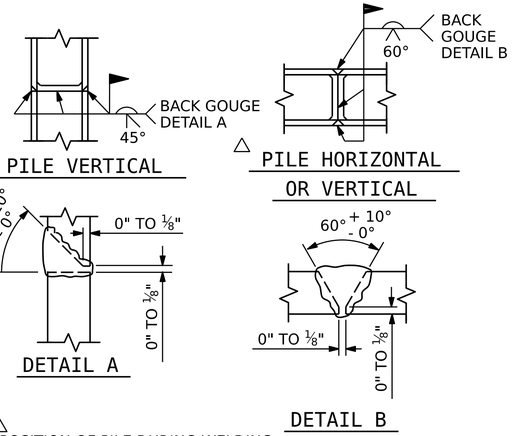


TEMPORARY DRAINAGE AT END BENT

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.

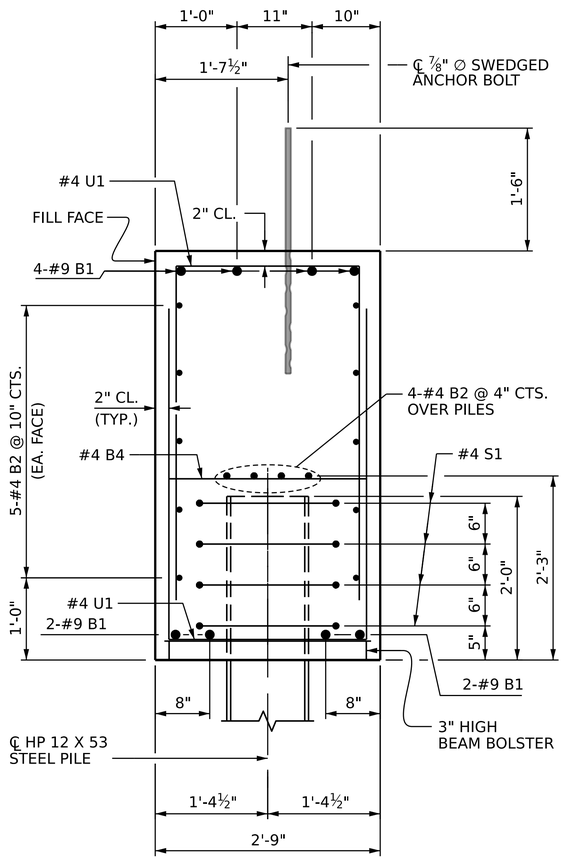
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

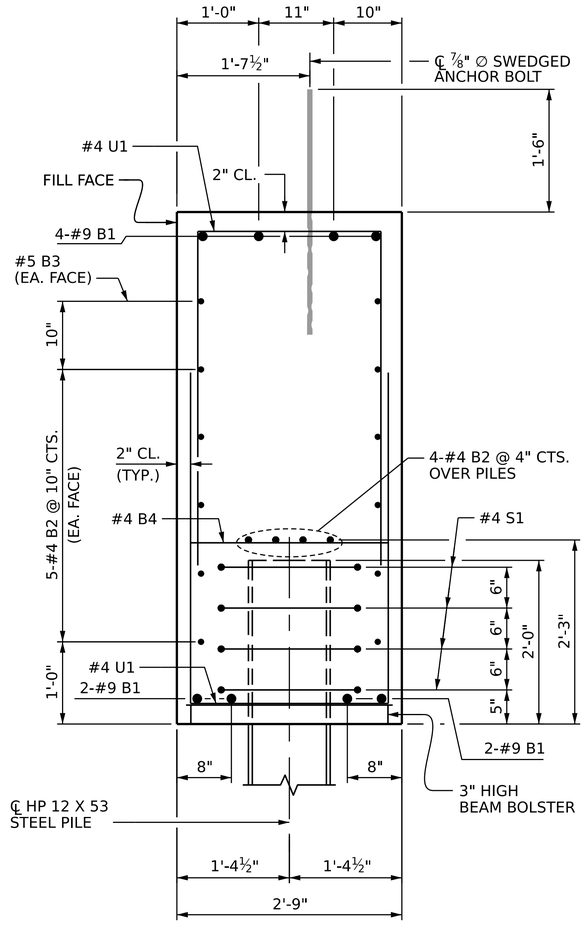


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

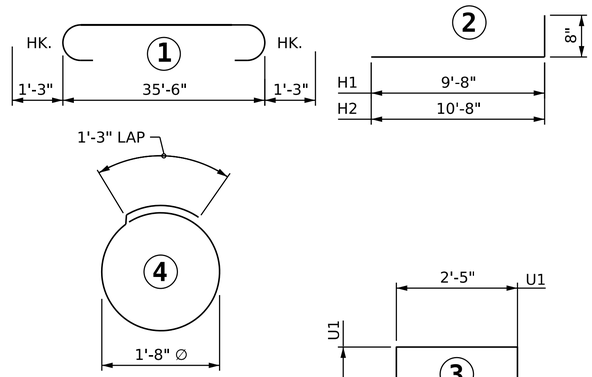


SECTION A-A



SECTION B-B

BAR TYPES

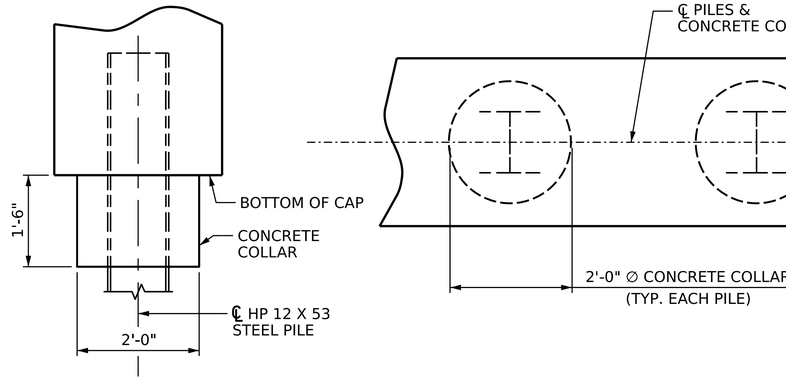


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	14	#4	STR	35'-8"	334
B3	2	#4	STR	9'-4"	12
B4	9	#4	STR	2'-5"	15
H1	22	#4	2	10'-4"	152
H2	24	#4	2	11'-4"	182
K1	16	#4	STR	3'-6"	37
S1	20	#4	4	6'-6"	87
U1	92	#4	3	9'-9"	599
V1	28	#4	STR	6'-11"	129
V2	30	#4	STR	7'-6"	150

REINFORCING STEEL	2,731 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, LOWER PART OF WINGS & COLLARS)	24.3 C.Y.
POUR #2 (UPPER PART OF WINGS)	2.3 C.Y.
TOTAL CLASS A CONCRETE	26.6 C.Y.



ELEVATION

PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2 DETAILS

DocuSigned by: John Yannaccone 781361754678458...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

DRAWN BY : D. COMANICIU DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

PRELIMINARY PLANS
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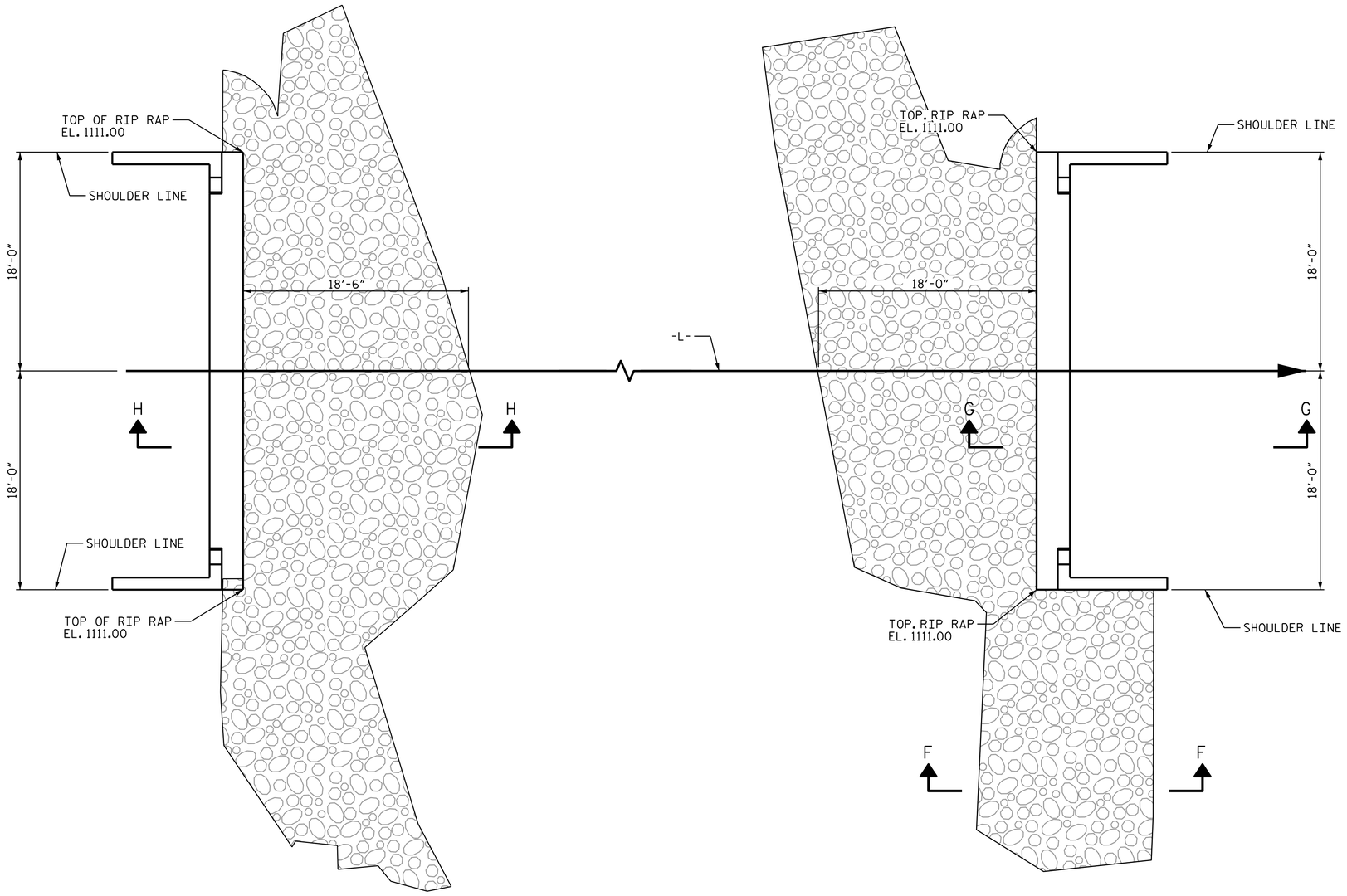
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Raleigh, NC 27603
919-420-7660
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2			4			24

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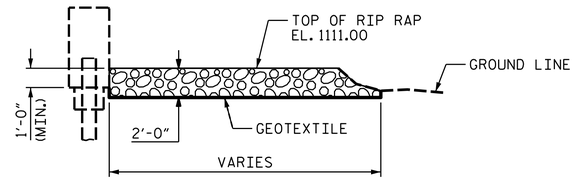


END BENT 1

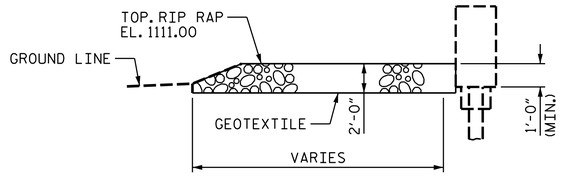
END BENT 2

PLAN OF RIP RAP

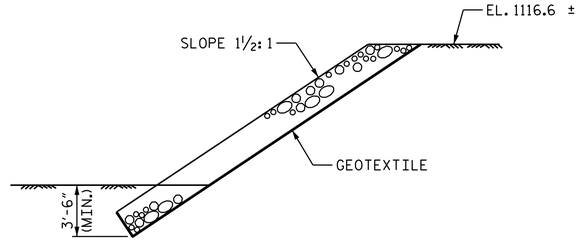
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+85.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	115	140
END BENT 2	120	145
TOTAL	235	285



SECTION H-H



SECTION G-G



SECTION F-F

PROJECT NO. HB-0057
CALDWELL COUNTY
STATION 17+85.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
DocuSigned by: John Yannaccone 781361754678456...
9/8/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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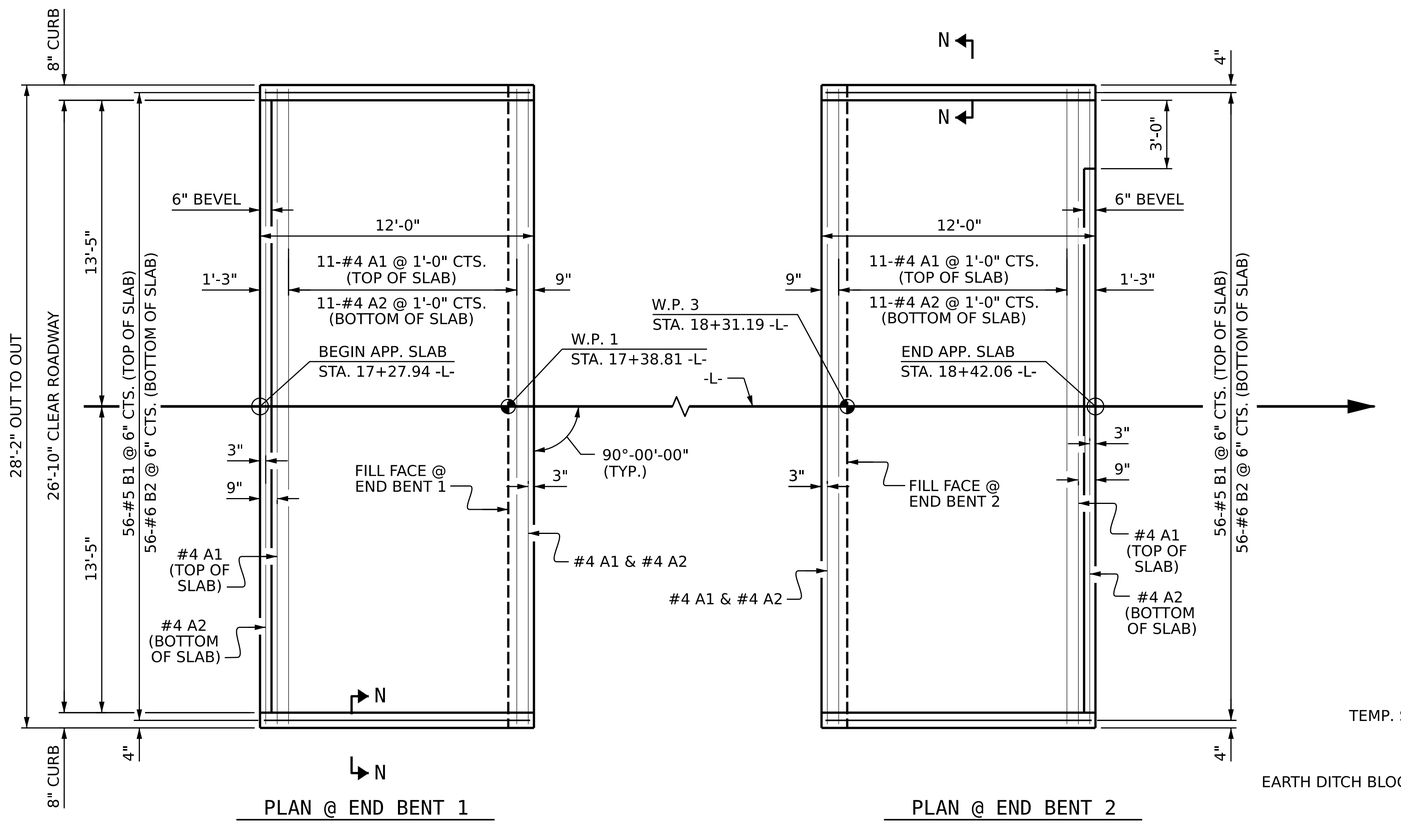
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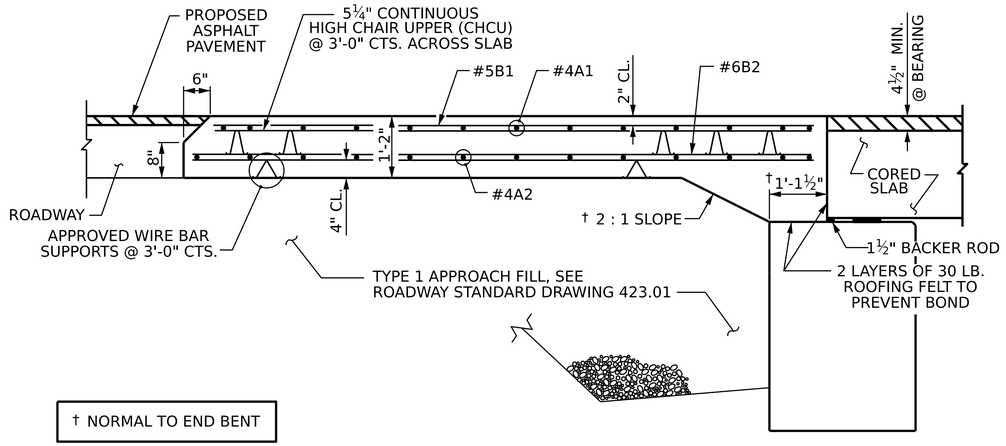
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PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



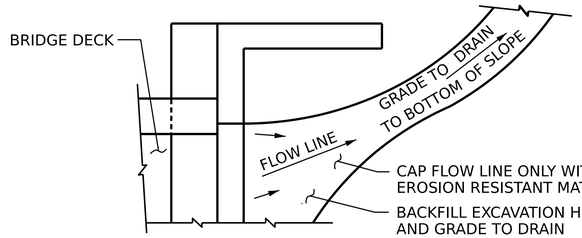
† NORMAL TO END BENT

SECTION THRU SLAB

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.



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 RESISTENT 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.

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	27'-10"	242
A2	13	#4	STR	27'-10"	242
*B1	56	#5	STR	11'-2"	652
B2	56	#6	STR	11'-8"	981

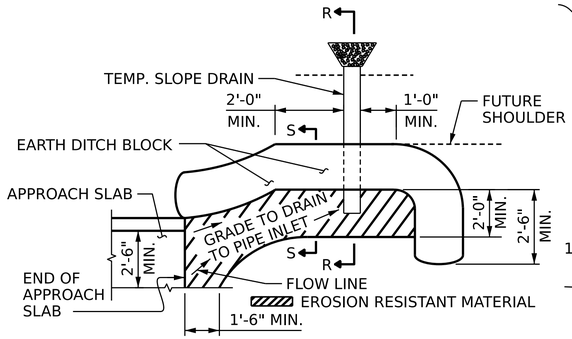
REINFORCING STEEL	LBS.	1,223
* EPOXY COATED REINFORCING STEEL	LBS.	894
CLASS AA CONCRETE	C. Y.	16.1

APPROACH SLAB AT EB 2

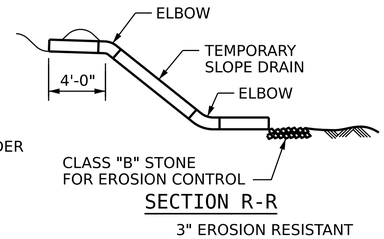
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	27'-10"	242
A2	13	#4	STR	27'-10"	242
*B1	56	#5	STR	11'-2"	652
B2	56	#6	STR	11'-8"	981

REINFORCING STEEL	LBS.	1,223
* EPOXY COATED REINFORCING STEEL	LBS.	894
CLASS AA CONCRETE	C. Y.	16.1

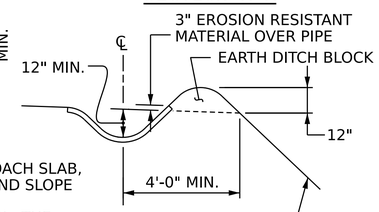
TEMPORARY DRAINAGE DETAIL



PLAN VIEW



SECTION R-R



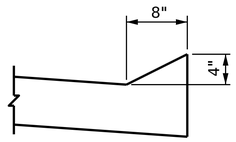
SECTION S-S

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.

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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



SECTION N-N

PROJECT NO. HB-0057

CALDWELL COUNTY

STATION 17+85.00 -L-

ASSEMBLED BY : J. MYA			DATE : 04/2026
CHECKED BY : J. YANNACCONE			DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE			DATE : 04/2026
DRAWN BY : KMM 3-08	REV. 06/19		MAA/THC
CHECKED BY : GM 3-08	REV. 08/19		BNB/THC
	REV. 07/23		BNB/SNM

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919-420-7660
NC Lic. No. F-0270

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NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/8/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT

(SUB-REGIONAL TIER)

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

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.

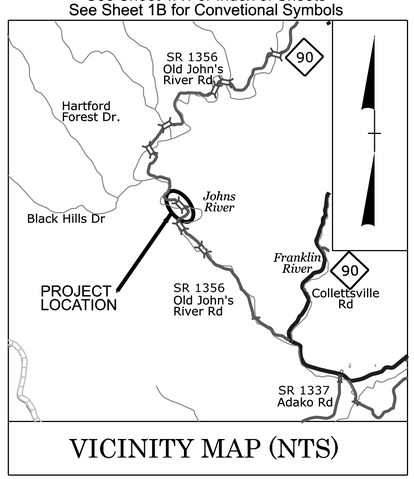
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TIP PROJECT: HB-0058

CONTRACT: DK00484

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

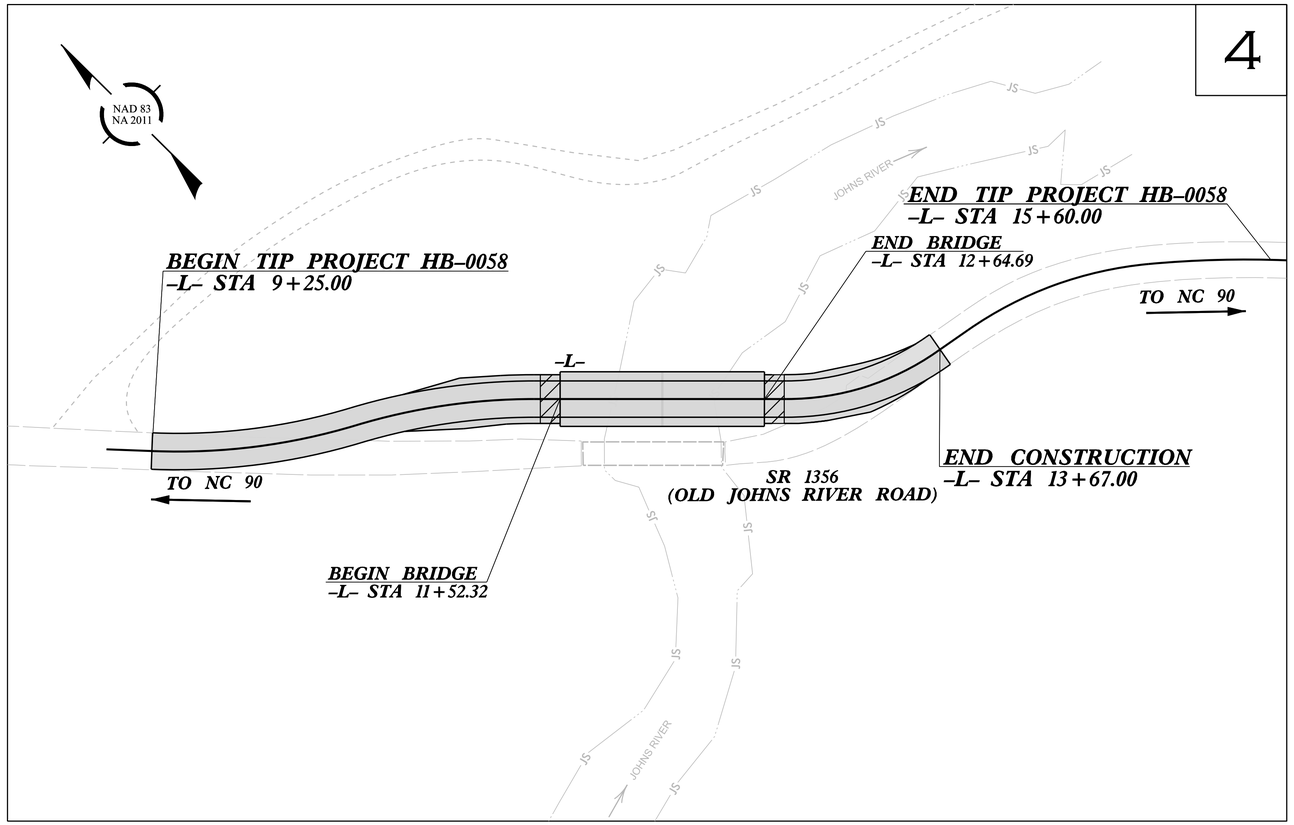
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0058	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50728.1.1	FBRG111	PE
50728.2.1	FBRG111	ROW
50728.2.2	FBRG111	UTIL
50728.3.1	FBRG111	CONST



LOCATION: *BRIDGE 186 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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



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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 120
ADT 2045 = 240
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB-0058 = 0.084 MILES
LENGTH OF STRUCTURE TIP PROJECT HB-0058 = 0.021 MILES
TOTAL LENGTH OF TIP PROJECT HB-0058 = 0.120 MILES

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 18, 2025

LETTING DATE:
NOVEMBER 19, 2026

RICKY A. TIPTON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

RAMIE A. SHAW, PE
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
B25FCD1434FF4AF...
10/8/2026 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

ROADWAY DESIGN ENGINEER

Signed by:
10/7/2026 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/15/23

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2G-1	GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X- 7	CROSS-SECTIONS
TITLE SHEET S-1 THRU S-24 STANDARD NOTES	STRUCTURE PLANS

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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

BLUE RIDGE ELECTRIC, AT&T, CHARTER SPECTRUM

RIGHT-OF-WAY MARKERS:

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

EFF. 08-11-2025
REV. 11-26-2025

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 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	
840.00	Concrete Base Pad for Drainage Structures
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches

HB-0058
4RD1 | 1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. P-0270

05/20/24

HB-0058
4RD1 | 1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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

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

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

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

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

ROADS AND RELATED FEATURES:
- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

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

EXISTING STRUCTURES:
MAJOR:
- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

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

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

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

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

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

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

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

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

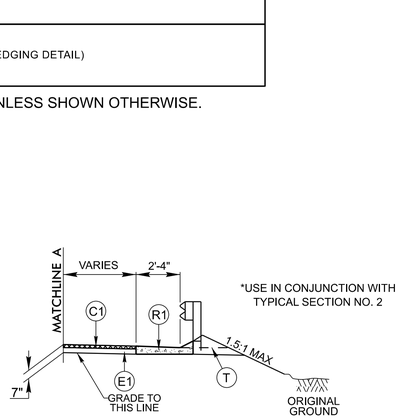
MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line (SUE - LOS B)*
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility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

Docusign Envelope ID: A3479BC4-5CF7-87A7-8097-B370DFBD5475

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" 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 GREATER THAN 5.5" IN DEPTH OR LESS THAN 4" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

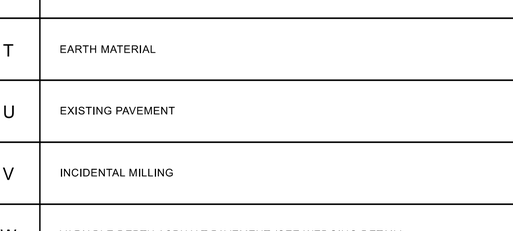
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



*USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

SHOULDER BERM GUTTER DETAIL

-L- STA. 11+25.00 TO STA. 11+41.44 LT (MIRROR)
-L- STA. 11+23.00 TO STA. 11+41.44 RT



WEDGING DETAIL

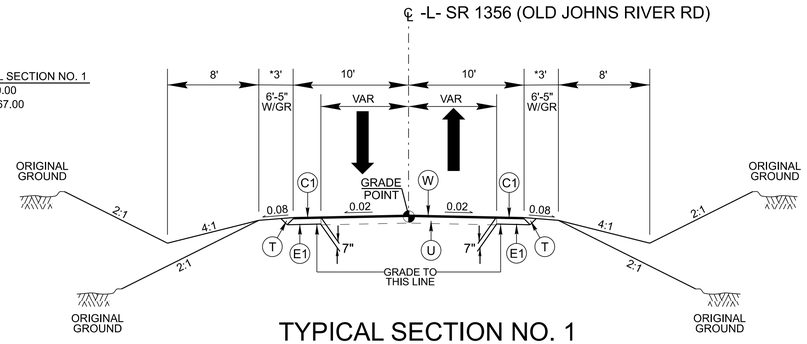


MILLING DETAIL FOR PROFILE CONNECTIONS

TYING PROPOSED PAVEMENTS TO EXISTING PAVEMENTS

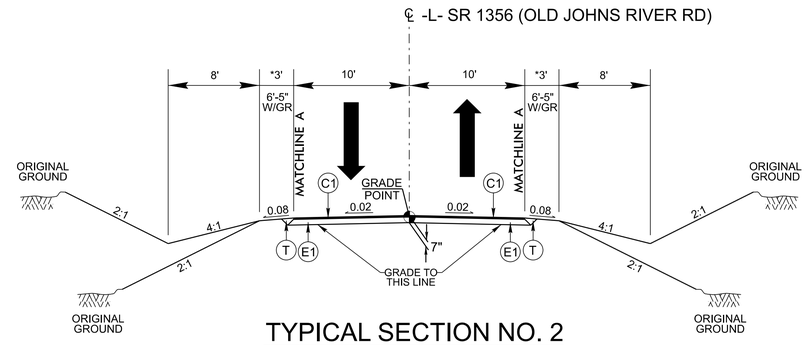
-L- STA. 9+25.00 TO STA. 9+50.00
-L- STA. 13+42.00 TO STA. 13+67.00

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA 9+25.00 TO STA. 9+50.00
-L- STA 13+42.00 TO STA. 13+67.00



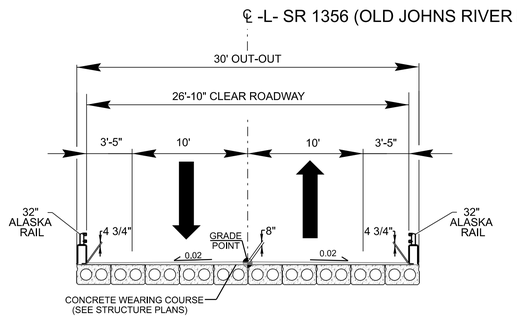
TYPICAL SECTION NO. 1

-L- STA. 9+25.00 TO STA. 10+42.88
-L- STA. 12+64.69 (END BRIDGE) TO STA. 13+67.00
*INCREASE PAVED SHOULDER WIDTH TO 3'-5" AT GUARDRAIL
LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS.



TYPICAL SECTION NO. 2

-L- STA. 10+42.88 TO STA. 11+52.32 (BEGIN BRIDGE)
*INCREASE PAVED SHOULDER WIDTH TO 3'-5" AT GUARDRAIL
LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS.



TYPICAL SECTION NO. 3

-L- STA. 11+52.32 (BEGIN BRIDGE) TO STA. 12+64.69 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)

HB-0058
4RD1 | 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B PRIDDY
Angela B Priddy 11/7/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A SHAW
Ramie A Shaw 11/7/2026

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PREPARED BY

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NC Lic. No. P-0210

Docusign Envelope ID: FE813B55-22AA-8194-827C-02AD34EE3153

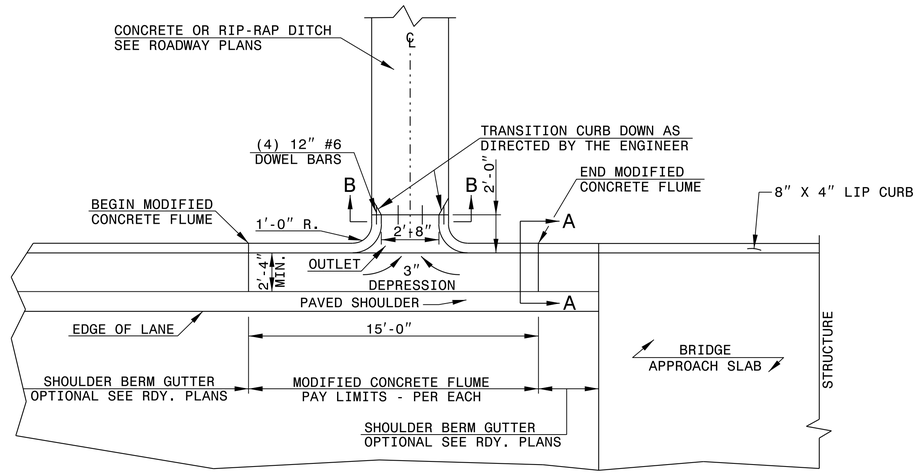
PROJECT REFERENCE NO.	SHEET NO.
HB-0058	2C-1

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

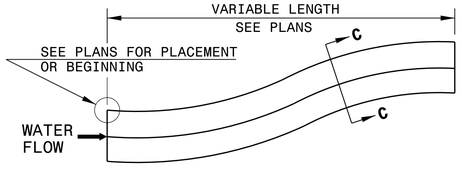
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

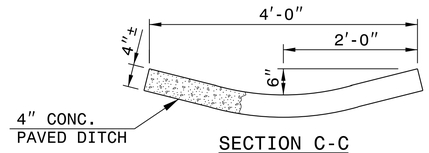
WITH CONCRETE OR RIP-RAP DITCH



PLAN VIEW



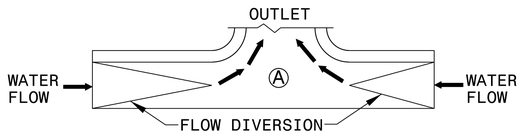
DOWNGRADE OR SAG



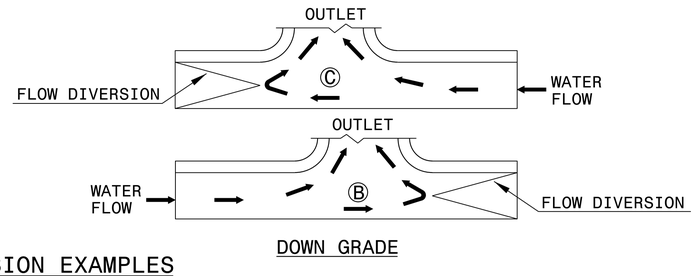
SECTION C-C



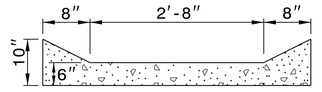
SECTION A-A



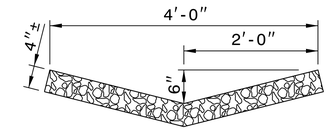
SAG



DOWN GRADE



SECTION B-B



RIP-RAP LINED DITCH

FLOW DIVERSION EXAMPLES

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18″ PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

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

SEE PLATE FOR TITLE

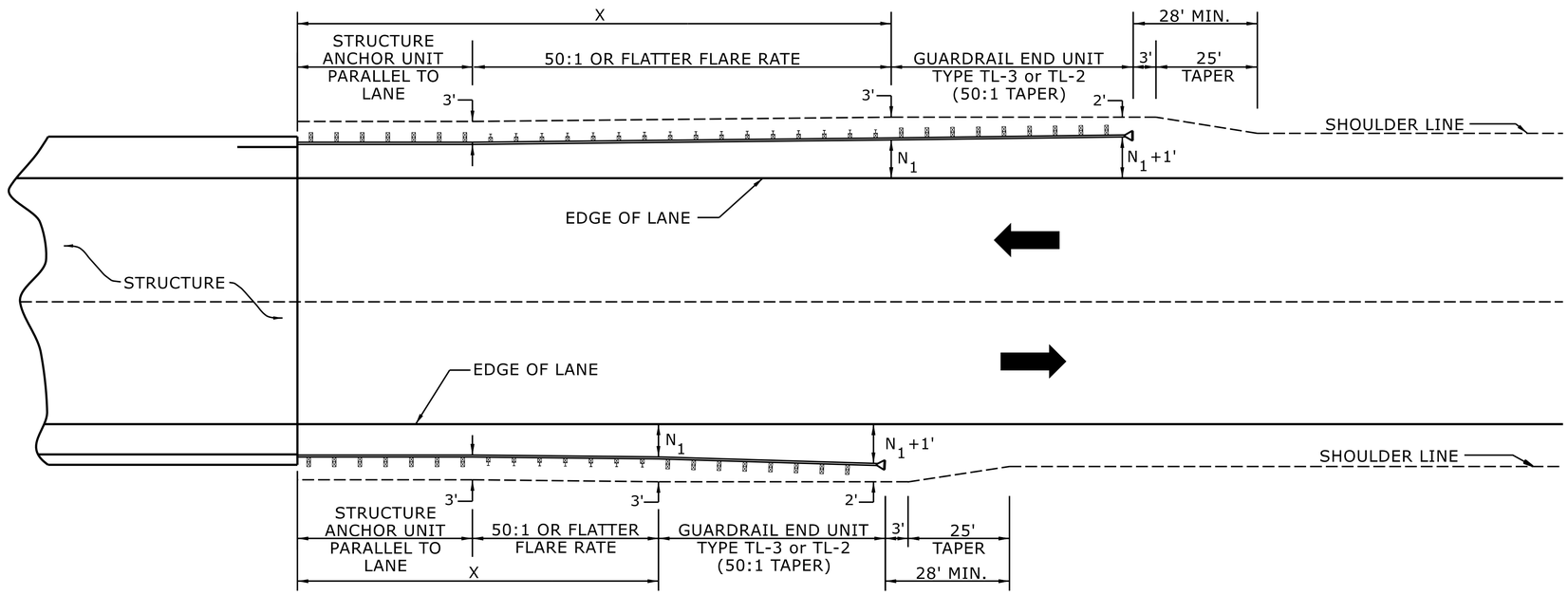
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MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: _____ DATE: _____
FILE SPEC.: w:details\stand\modifiedflume.dgn

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M HICKLER
Signed by: Nicole M Hickler 10/8/2026
58843233D34164C5...

18-OCT-2017 14:17
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jhowerton AI CSD-212595

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PROJECT REFERENCE NO.	SHEET NO.
HB-0058	2C-2



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

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M Hacklero 8/2026
5884323D3416 4C5...

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UNLESS ALL SIGNATURES COMPLETED

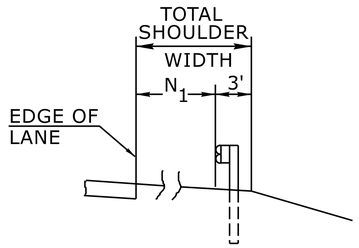
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

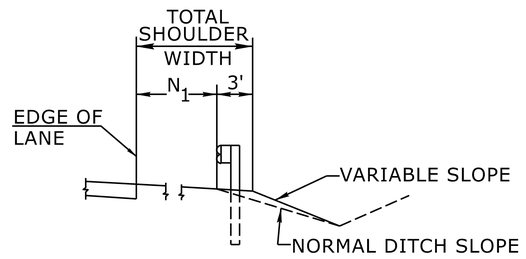
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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PROJECT REFERENCE NO.	SHEET NO.
HB-0058	2C-3

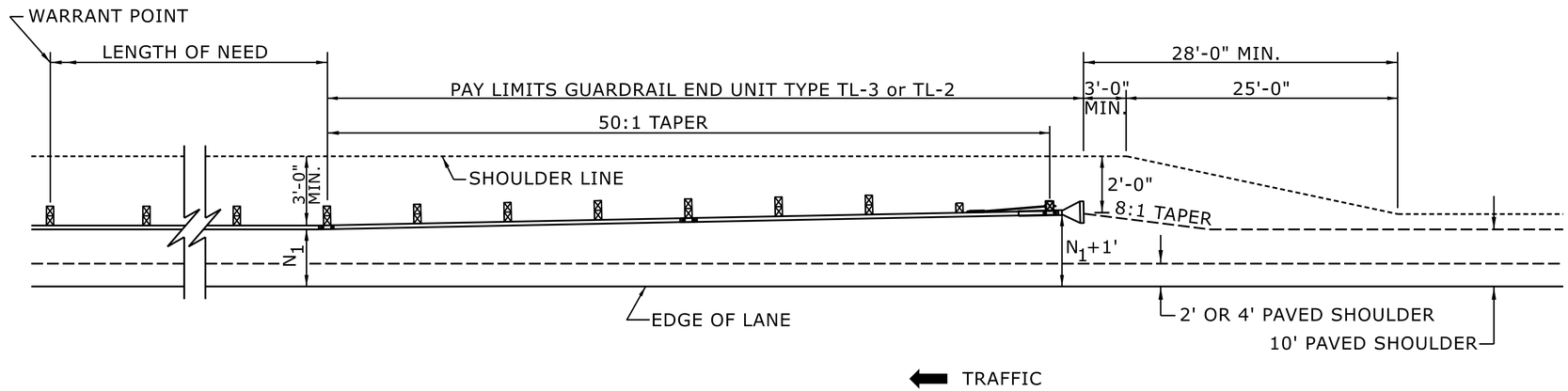


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/8/2026
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

5/26/20

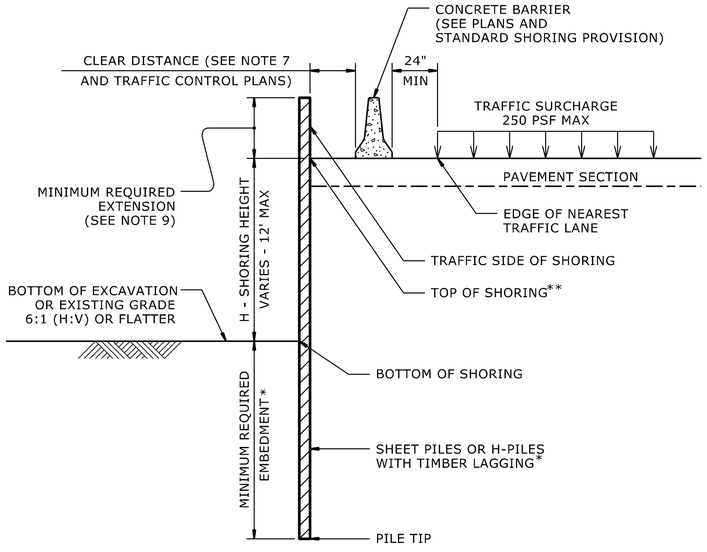
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

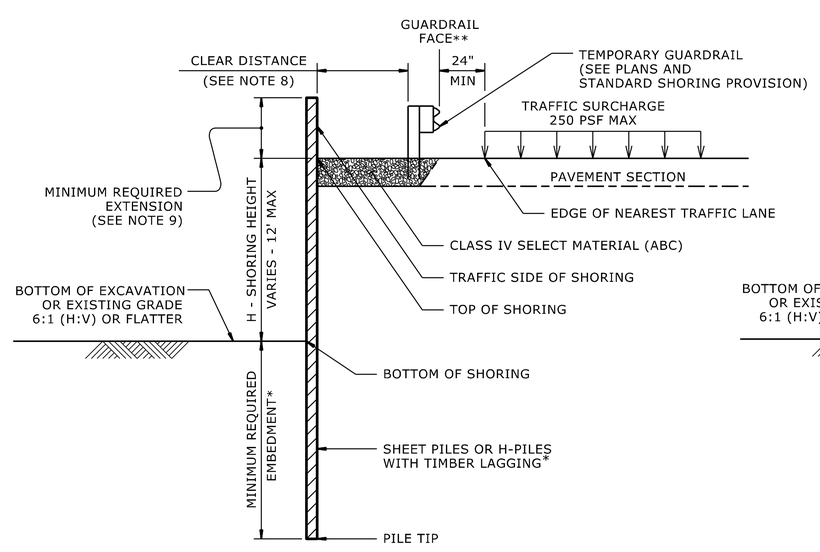
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, φ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



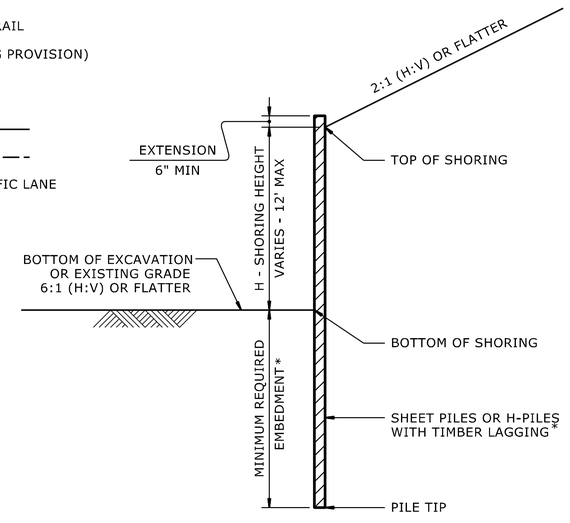
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

HB-0058

2G-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

Signed: Mark W Shipman

NORTH CAROLINA PROFESSIONAL SEAL 054501 ENGINEER MARK W SHIPMAN

10/8/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY SHORING

Prepared in the Office of:

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DATE: 02-18-2025

Docusign Envelope ID: 963A02FD-E77A-86C1-80B6-3BDC7AD9131D

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
-L- 9+25.00	-L- 11+52.32 (BEGIN BRIDGE)	318	75		243
SUBTOTALS:		318	75		243
-L- 12+64.69 (END BRIDGE)	-L- 13+67.00	10	186	176	
SUBTOTALS:		10	186	176	
PROJECT SUBTOTALS:		328	261	176	243
WASTE IN LIEU OF BORROW				-176	-176
GRAND TOTALS:		328	261		67
SAY:		340			

EST. DDE = 29 CY
SHOULDER BORROW = 4 CY
UNDERCUT EXCAVATION = 450 CY
SHALLOW UNDERCUT = 50 CY
SELECT GRANULAR MATERIAL = 200 CY
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY
CLASS IV SUBGRADE STABILIZATION = 100 TON
GEOTEXTILE FOR SUBGRADE STABILIZATION = 150 SY

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, SHOULDER BORROW AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY ENGINEER

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	YD³
-L-	9+26.52	11+63.98	RT	306.85
-L-	12+43.08	13+50.07	RT	130.53
-L-	12+50 (TMP INCIDENTAL STONE REMOVAL)		RT	15.56
			TOTAL:	452.94
			SAY:	460

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	LENGTH
-L-	11+25.00	11+41.44	LT	16.44
-L-	11+23.00	11+41.44	RT	18.44
			TOTAL:	34.88
			SAY:	35

"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: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	ANCHORS: XI MOD	ANCHORS: TYPE III	ANCHORS: GREU TL-2	ANCHORS: M-350	ANCHORS: TYPE XIII	ANCHORS: CAT-1	ANCHORS: VI MOD	ANCHORS: BIC	ANCHORS: AT-1	IMPACT ATTENUATOR TYPE 350: EA	IMPACT ATTENUATOR TYPE 350: G	IMPACT ATTENUATOR TYPE 350: NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	10+96.06	11+52.32 (BRIDGE)	LT	56.25'				11+52.32 (BRIDGE)	3'-5"	6'-5"		25'		0.50'		1	1													
-L-	10+96.06	11+52.32 (BRIDGE)	RT	56.25			11+52.32 (BRIDGE)		3'-5"	6'-5"	25'		0.50'			1	1													SUBREGIONAL TIER UNDIVIDED TWO-WAY, TWO-LANE BRIDGE <50 MPH
-L-	12+64.69 (BRIDGE)	13+20.94	LT	56.25			12+64.69 (BRIDGE)		3'-5"	6'-5"	25'		0.50'			1	1													
-L-	12+64.69 (BRIDGE)	13+20.94	RT	56.25				12+64.69 (BRIDGE)	3'-5"	6'-5"		25'		0.50'		1	1													
		ANCHOR UNIT DEDUCTIONS																												
		TYPE III	4 @ 18.75' EACH	-75.00'																										
		GREU TL-2	4 @ 25' EACH	-100.00'																										
			TOTALS	50'												4	4													
			SAY	50												4	4													
			ADDITIONAL GUARDRAIL POSTS (EA)	5																										

HB-0058
4RD1 | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



Signature: Angela B. Pridgen 10/23/2026
Date: 10/23/2026

PREPARED BY

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 801
Raleigh, NC 27603
919-835-7800
NC Lic. No. P-0270

USER:TIMESLER DGN:SHEETS
$$$

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HB-0058
4R01 | 3D-1

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

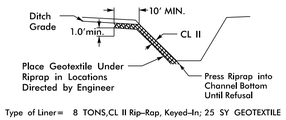
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S. PIPE SIZE 15" | 18" | 24" | 36" | 42" | 48" | C.S. PIPE THICKNESS OR GAUGE .064 | .064 | .064 | .079 | .109 | .109 | R.C. PIPE (CLASS III) SIZE 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE (CLASS IV) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | *** R. C. PIPE (CLASS V) | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. PER EACH (0' THRU 5.0') | A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | G.D.I. FRAME WITH GRATE STD. 840.22 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | MODIFIED CONC. FLUME | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

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11/14/23

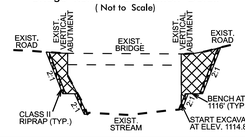
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEOTEXTILE

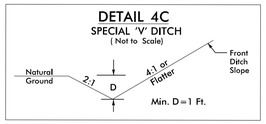
–L– STA 11+85 TO STA 11+96 LT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



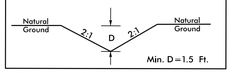
-L- STA 11+50 TO STA 11+81 RT
-L- STA 12+42 TO STA 12+74 RT

DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



–L– STA 9+35 TO STA 11+56 LT
–L– STA 9+37 TO STA 11+56 RT

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



–L– STA 11+56 TO STA 11+85 LT, 12 CY DDE
–L– STA 11+56 TO STA 11+72 RT, 17 CY DDE

NAD 83/2011

RODNEY L. BEANE
REBECCA BEANE
DB 993 PG 75
DB 1031 PG 1139

RONALD R. VANCE
KIMBERLY P. VANCE
DB 993 PG 392

WILLIAM CHILDERS
DB 1191 PG 1755

KELLY R. SPENCER
TRACY C. SPENCER
DB 1897 PG 1051

END TIP PROJECT HB-0058
-L- STA 15+60.00

BEGIN TIP PROJECT HB-0058
-L- STA 9+25.00

-L- PC 9+26.29
-L- POB 9+00.00
-L- PRC 10+38.60
-L- PT 11+38.01
-L- PC 12+76.91
-L- PT 13+64.50
-L- POE 13+85.82

-L- +27.00 EX. R/W
-L- +53.00 60'
-L- +72.00 58'
-L- +76.18 84.50'
-L- +93.00 58' & 80'
-L- +40.00 25' & 40'
-L- +13.00 EX. R/W
-L- +55.00 EX. R/W & 39'

BEGIN SBG 11+25.00 (LT)
EST. 2 TONS CL B RR 7 SY GEO.
STREAM BANK STABILIZATION SEE DETAIL 4A
STD V DITCH SEE DETAIL 4D
SPECIAL V DITCH SEE DETAIL 4C
25' TAPER FROM EXIST
BEGIN SBG 11+23.00 (RT)
EST. 2 TONS CL B RR 7 SY GEO.
REMOVE EXISTING BRIDGE AND ABUTMENTS SEE DETAIL 4B
END APPROACH SLAB -L- STA 12+75.57
END BRIDGE -L- STA 12+64.69
(STRUCTURES PAY ITEM)
EST = 480 SY GEOTEXTILE
EST = 410 TONS CL II RIP RAP
BEGIN APPROACH SLAB -L- STA 11+41.44
BEGIN BRIDGE -L- STA 11+52.32
END APPROACH SLAB -L- STA 13+51.00
END CONSTRUCTION -L- STA 13+67.00

S42°28'30.6"E
S44°38'48.54"E
S79°29'49.7"E

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 9+82.96	PIc 10+88.66	PIc 13+22.10
Δc = 18°55'30.3" (LT)	Δc = 16°45'12.3" (RT)	Δc = 34°51'01.2" (LT)
D = 16°51'06.1"	D = 16°51'06.1"	D = 39°47'19.4"
Lc = 112.30	Lc = 99.42	Lc = 87.59
Tc = 56.67	Tc = 50.07	Tc = 45.20
R = 340	R = 340	R = 144
SE = 0.000	SE = 0.000	SE = 0.000
RO = N/A	RO = N/A	RO = N/A
DS < 15 MPH	DS < 15 MPH	DS < 15 MPH

NOTE:
ALL PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
DRAINAGE STRUCTURES ARE MCF UNLESS OTHERWISE NOTED.
USE TYPE III STRUCTURE ANCHOR UNITS UNLESS OTHERWISE NOTED.
USE GREU-TL2 GUARDRAIL END UNITS UNLESS OTHERWISE NOTED.

PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET 05

HB-0058
4RD1 | 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B PRIDGEN
Signature: Angela B Pridgen 9/7/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM A JERNIGAN
Digitally signed by William A Jernigan 9/8/2026

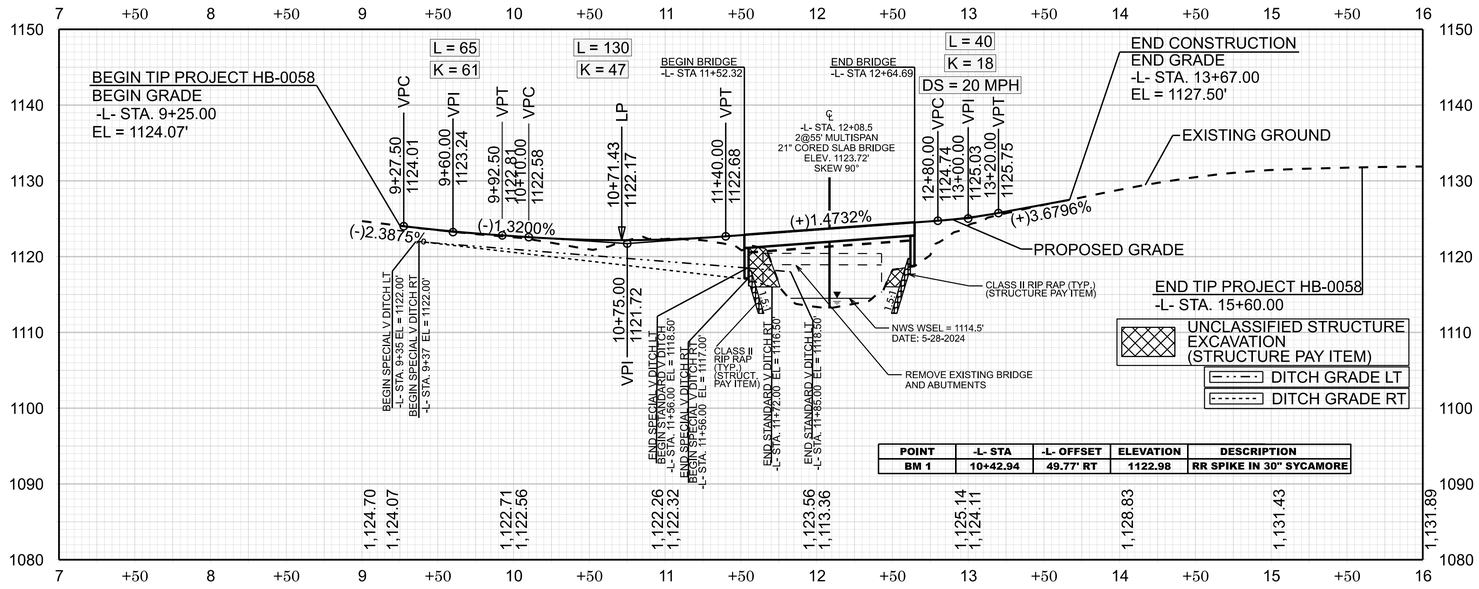
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT
GFT Infrastructure, Inc.
4601 Six Forks Road, Suite 360
Raleigh, NC 27609
919-420-7660
NC Lic. No. P-0270

Docusign Envelope ID: A3479BC4-5CF7-87A7-8097-B370DFBD5475

-L-



POINT	-L- STA	-L- OFFSET	ELEVATION	DESCRIPTION
BM 1	10+42.94	49.77' RT	1122.98	RR SPIKE IN 30" SYCAMORE

HYDRAULIC DATA	
DESIGN DISCHARGE	= 2900 C.F.S.
FREQUENCY OF DESIGN FLOOD	= <2 YRS.
DESIGN HIGH WATER ELEVATION	= 1122.3'
DRAINAGE AREA	= 60.4 SQ. MI.
BASIC DISCHARGE (Q100)	= 10800 C.F.S.
BASIC HIGH WATER ELEVATION	= 1128.44'
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 3000 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= <2 YRS.
OVERTOPPING FLOOD ELEVATION	= 1122.2'

* OVERTOPPING OCCURS AT RDY LOW POINT -L- STA. 10+71+/-

WS EL. Taken @ River Station 118397.2

FOR -L- PLAN, SEE SHEET 04

HB-0058

4RD1	05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Signature: Angela B. Pridgen 9/18/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM R. JERNIGAN JR

Signature: William R. Jernigan Jr 9/18/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
3600 Glenwood Avenue, Suite 300
Raleigh, NC 27612
919-420-7640
NC Lic. No. P-0270

09/08/99

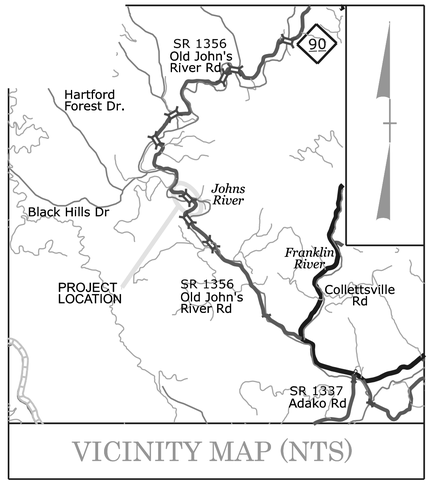
TIP PROJECT: *HB-0058*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0058	RW01	5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

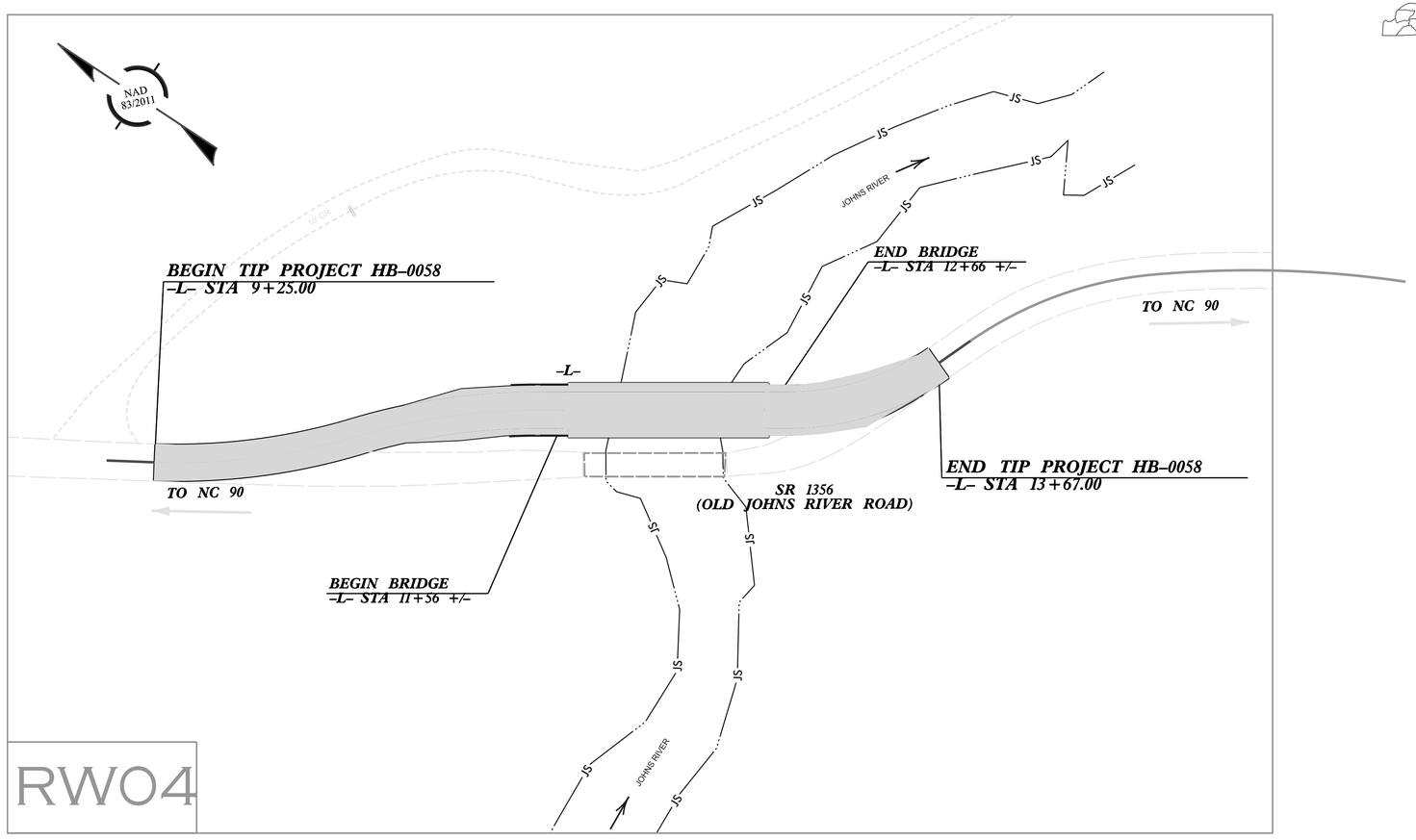
CALDWELL COUNTY



VICINITY MAP (NTS)

ROW ACQUISITION PLAN SET





DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

40' 20' 0' 40' 80'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT 185-2
WITH NAD83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 811055.4742 EASTING: 1199392.7562
ELEVATION: 1130.44
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99989738
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2025

LETTING DATE: NOVEMBER 19, 2026

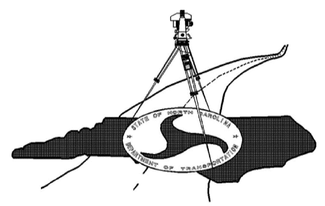
PROFESSIONAL LAND SURVEYOR

Signed by: Matthew Cornwell EBD35F11473E475...

10/22/2026

SIGNATURE: *DATE:*

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

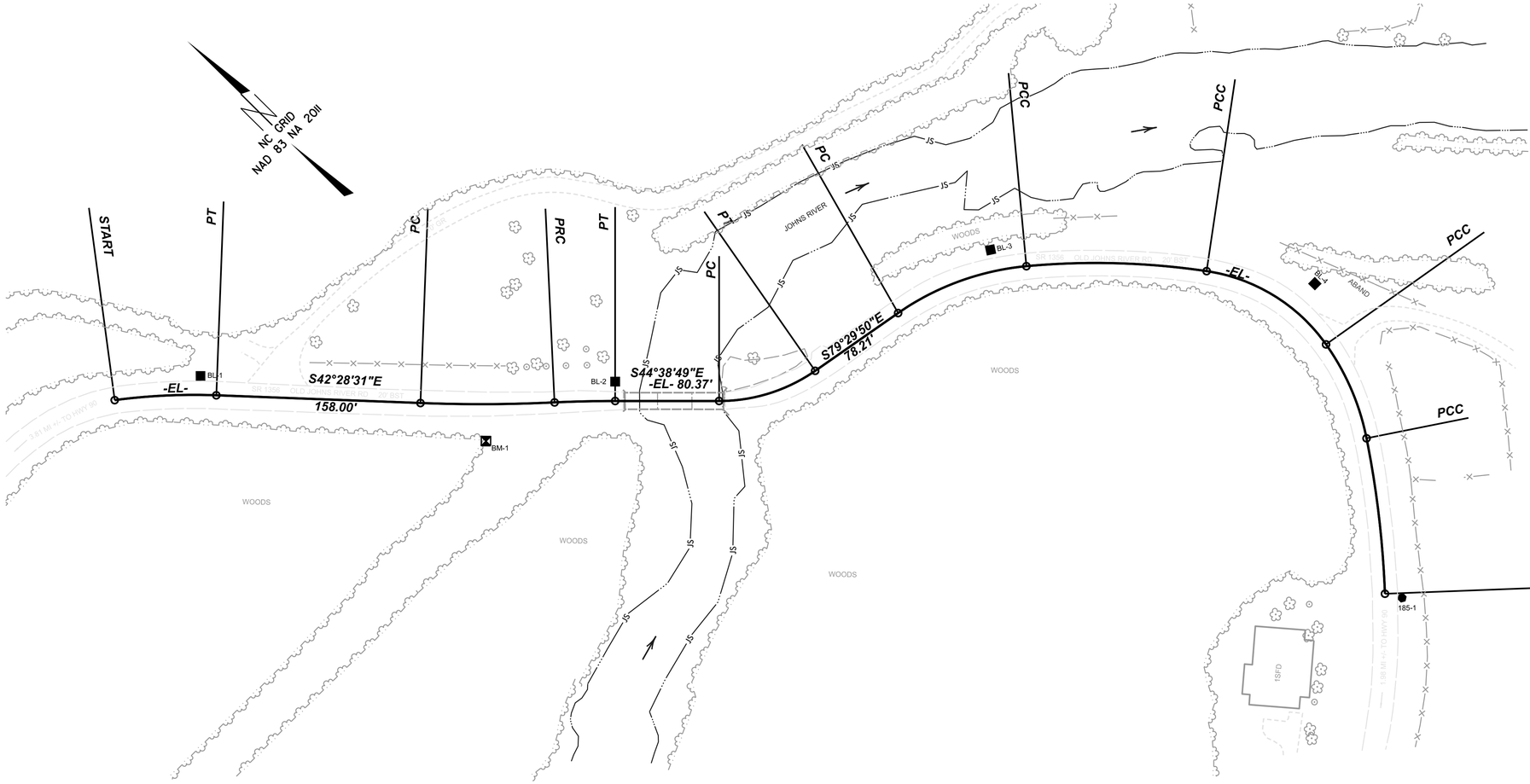


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5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE PROJECT CONTROL WAS VERIFIED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: APRIL 2022
DATUM/EPOCH: NAD83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: 185-2
NORTHING: 811055.4742
EASTING: 1199392.7562
COMBINED GRID FACTOR: 0.99989738
GEOID MODEL: GEOID18
UNITS: US 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 DECEMBER 2023, 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 2/22/2024

DocuSigned by:
Matthew Cornwell
E8D3B114758A4E...

PROFESSIONAL LAND SURVEYOR L-4775

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	BL-1	812065.9079	1199223.1014	1126.1100
1301851	185-1	811284.1755	1199753.9297	1138.8600
1301852	185-2	811055.4742	1199392.7562	1130.4400
2	BL-2	811834.7836	1199445.2861	1120.6300
3	BL-3	811699.8101	1199721.7568	1129.8800
4	BL-4	811503.0043	1199879.3951	1131.7600

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	811873.4596	1199342.3195	1122.9800	RRSPIKE IN BASE OF 30" SYCAMORE

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	812100.0050	1199163.1012							
CURVE					09°48'42.3" Right	12°27'20.2"	78.77	39.48	460.00
PT	812046.7309	1199220.9979							
LINE			S42°28'30.57"E	158.0033					
PC	811930.1924	1199327.6929							
CURVE					04°52'18.1" Left	04°41'47.0"	103.73	51.90	1220.00
PRC	811856.7504	1199400.9070							
CURVE					02°42'00.1" Right	05°45'30.1"	46.89	23.45	995.00
PT	811824.1799	1199434.6310							
LINE			S44°38'48.54"E	80.3741					
PC	811766.9976	1199491.1126							
CURVE					34°51'01.2" Left	44°04'25.2"	79.07	40.80	130.00
PT	811730.5312	1199559.9044							
LINE			S79°29'49.73"E	78.2134					
PC	811716.2741	1199636.8074							
CURVE					29°33'38.7" Right	27°40'44.8"	106.80	54.62	207.00
PCC	811671.1656	1199732.3075							
CURVE					13°42'45.3" Right	09°48'39.3"	139.77	70.22	584.00
PCC	811569.3221	1199827.5446							
CURVE					46°13'56.5" Right	41°31'07.3"	111.35	58.91	138.00
PCC	811463.7886	1199852.1179							
CURVE					24°01'45.3" Right	30°09'20.4"	79.68	40.44	190.00
PCC	811390.4591	1199822.4564							
CURVE					09°08'11.4" Right	07°32'20.1"	121.19	60.72	760.00

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. 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.

HB-0058
R/W | D2C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2018 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0058
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

5/26/20

PROPOSED ALIGNMENT CONTROL SHEET

PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	9+00.00	812007.2721	1199257.1237	S42°28'30.6"E	26.29							
PC	9+26.29	811987.8802	1199274.8777	S51°56'15.7"E	111.79	18°55'30.3"	16°51'06.1"	112.30	56.67	340.00		
PRC	10+38.60	811918.9573	1199362.8975	S53°01'24.7"E	99.06	16°45'12.3"	16°51'06.1"	99.42	50.07	340.00		
PT	11+38.01	811859.3722	1199442.0372	S44°38'48.5"E	138.90							
PC	12+76.91	811760.5540	1199539.6446	S62°04'19.1"E	86.24	34°51'01.2"	39°47'19.4"	87.59	45.20	144.00		
PT	13+64.50	811720.1604	1199615.8448	S79°29'49.7"E	21.32							
PC	13+85.82	811716.2741	1199636.8074	S64°43'00.4"E	105.62	29°33'38.7"	27°40'44.8"	106.80	54.62	207.00		
PCC	14+92.61	811671.1656	1199732.3075	S43°04'48.4"E	139.44	13°42'45.3"	09°48'39.3"	139.77	70.22	584.00		
END	16+32.38	811569.3221	1199827.5446									

I, MATTHEW T. CORNWELL, 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 7/24/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

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.

HB-0058

R/W | 020-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0058

County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

5/26/20

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

I , MATTHEW T. CORNWELL, 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 7/15/2025 TO 7/16/2025, 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 9/30/2026

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

PERMANENT ROW MARKER IRON PIN AND CAP: L				
STATION	OFFSET	NORTH	EAST	
9+27.00	-24.9993	812004.2779	1199293.7601	
10+40.00	-40.0000	811953.3223	1199383.4219	
10+40.00	-25.0000	811940.1823	1199376.1872	
14+13.00	-25.0000	811733.3536	1199670.8701	MAGNAIL IN ROCK

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L				
STATION	OFFSET	NORTH	EAST	
10+53.00	-60.0000	811963.2115	1199406.3215	
10+72.00	-58.0000	811949.5071	1199424.0194	
10+76.18	-84.5000	811968.4551	1199443.2225	
10+93.00	-58.0000	811935.0608	1199443.9042	
10+93.00	-80.0000	811952.4518	1199457.3784	
15+55.00	-25.0000	811645.8493	1199795.8586	MAGNAIL IN ROCK
15+55.00	-39.0000	811655.5421	1199805.9605	

NOTES:

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

HB-0058
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

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2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0058
County: Caldwell

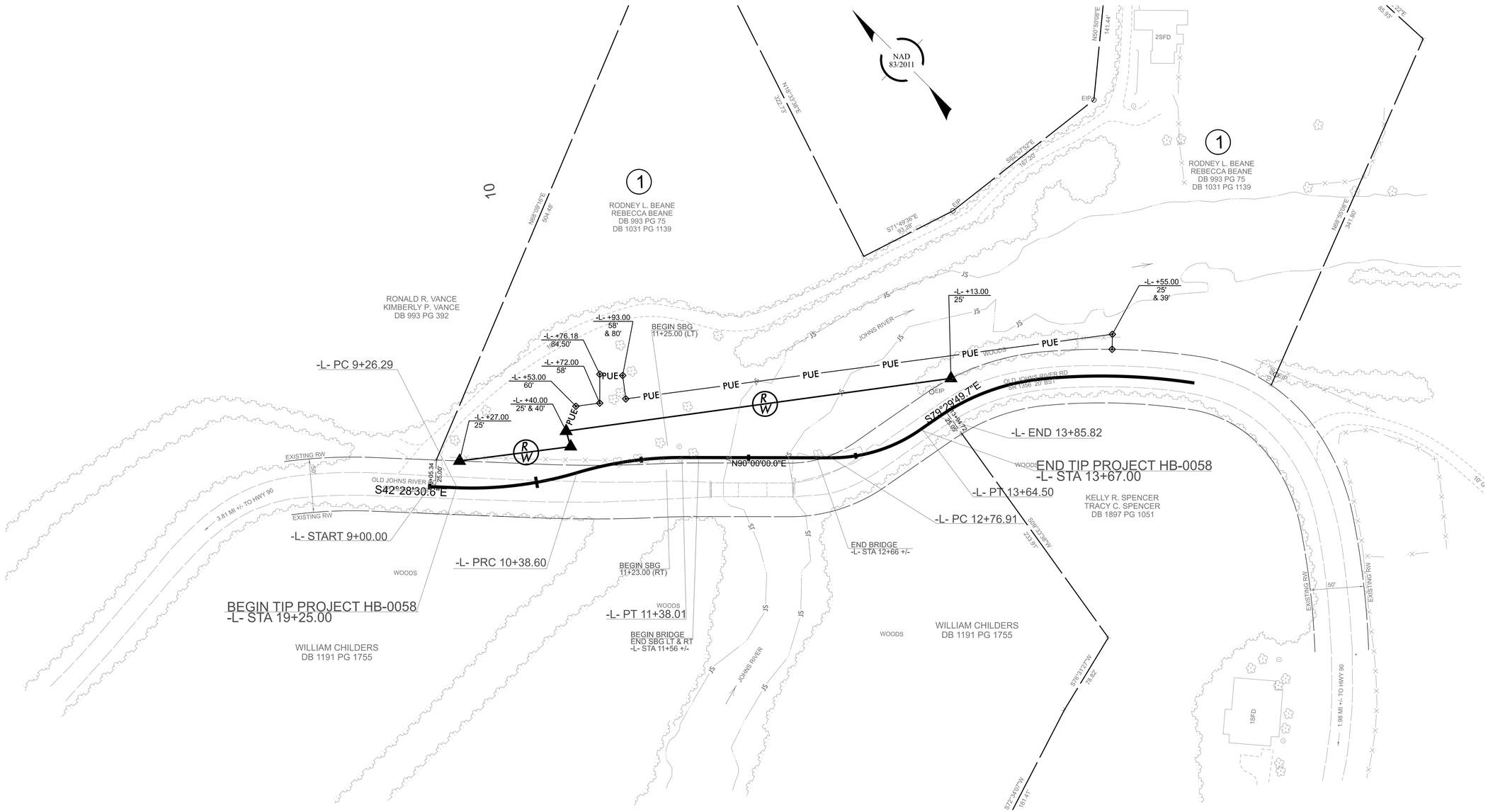
PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

5/26/20



CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 9+82.96	PIc 10+88.66	PIc 13+22.10
Δc = 18°55'30.3" (LT)	Δc = 16°45'12.3" (RT)	Δc = 34°51'01.2" (LT)
D = 16°51'06.1"	D = 16°51'06.1"	D = 39°47'19.4"
Lc = 112.30	Lc = 99.42	Lc = 87.59
Tc = 56.67	Tc = 50.07	Tc = 45.20
R = 340	R = 340	R = 144
SE = 0.020	SE = 0.020	SE = 0.020
RO = N/A	RO = N/A	RO = N/A
DS < 15 MPH	DS < 15 MPH	DS < 15 MPH

I , MATTHEW T. CORNWELL, 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 7/15/2025 TO 7/16/2025, 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 9/30/2026

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

50' 25' 0' 50' 100'

NOTES:

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

HB-0058
R/W 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0058
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

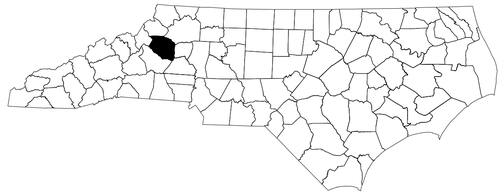
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704-476-0003

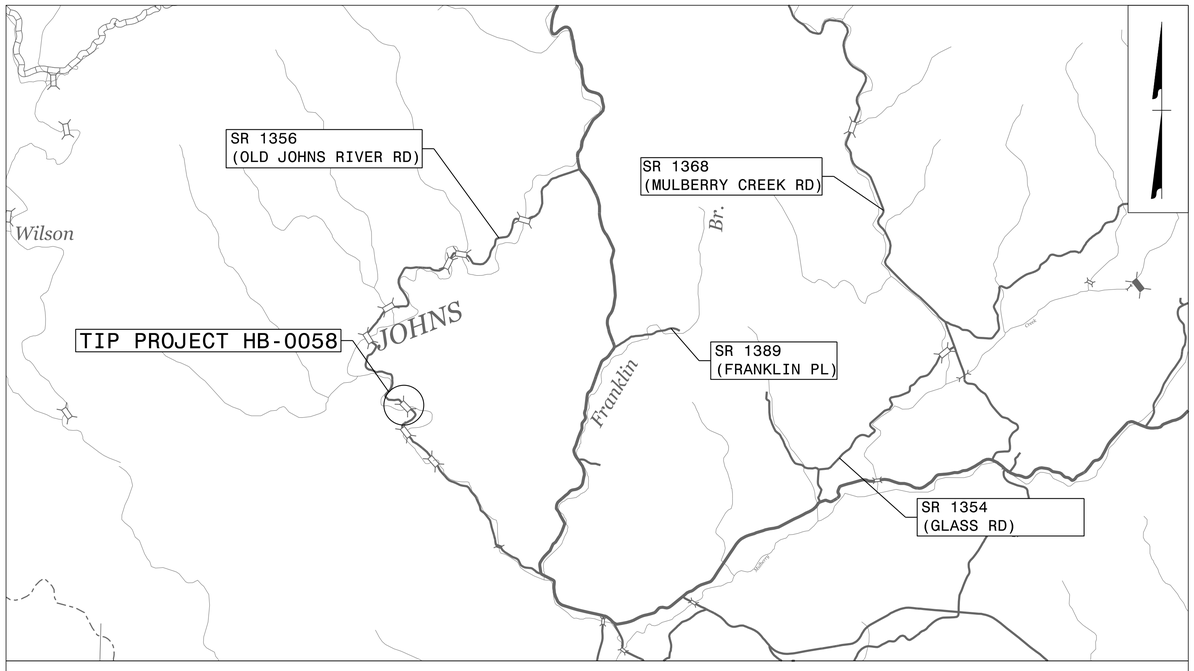
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CALDWELL COUNTY



LOCATION: REPLACEMENT OF BRIDGE NO. 186 ON SR 1356 OVER JOHNS RIVER



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
TMP-2	TEMPORARY SHORING NOTES
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-3	PHASING NOTES
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

TIP PROJECT: HB-0058



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

PLANS PREPARED BY:

JERRY P. PAGE, PE
PROJECT ENGINEER

JOHN BAUMAN, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

SUZANA MATTA, PE
NCDOT PROJECT ENGINEER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

APPROVED: DocuSigned by: John Bauman 7FFD5B4C37984D1...

DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052428 ENGINEER JOHN BAUMAN

8/14/2026
PW:\\gfnet-pw.bentley.com:gfnet-pw-01\Documents\Projects\69172\5-Working\Task 019.02 - Bridge I3086\Traffic\Traffic Control\TCP\HB-0058_TMP_PSH01.dgn
User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES

LEGEND

GENERAL

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

SIGNALS

- PROPOSED
- TEMP TEMPORARY
- PORT PORTABLE
- DS

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

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

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

APPROVED: DocuSigned by: John Bauman 7FFD5B4C37984D1...

DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052428 JOHN BAUMAN

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

8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-1B

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) 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 ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

TRAFFIC BARRIER

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

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

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

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

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (55 MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

TRAFFIC CONTROL DEVICES

L) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (55 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.

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- SR 1356	PAINT	N/A

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

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

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

MISCELLANEOUS

R) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AS DIRECTED BY THE ENGINEER.

S) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE PAVEMENT ENDS SIGNS (W8-3) (500 FT) AND (1000 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES

- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- ONE-LANE, TWO WAY OPERATION (SIGNALIZED)
- WEEKEND WORK

WORK ZONE SAFETY & MOBILITY STRATEGIES

- TEMPORARY TRAFFIC SIGNALS
- AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

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TRANSPORTATION OPERATIONS PLAN

8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-2

TEMPORARY SHORING NOTES

SHORING LOCATION NO. 1

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

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

DESIGN TEMPORARY SHORING FROM -L- STATION 11+39, 21′ (RT) TO -L- STATION 11+63, 21′ (RT) FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 115 PCF
FRICTION ANGLE (Φ) = 30 DEGREES
COHESION (c) = 0 PSF
GROUNDWATER ELEVATION = 1115.2 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM -L- STATION 11+39, 21′ (RT) TO -L- STATION 11+63, 21′ (RT). THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM -L- STATION 11+39, 21′ (RT) TO -L- STATION 11+63, 21′ (RT) MAY NOT PENETRATE BELOW ELEVATION 1111.7 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM -L- STATION 11+39, 21′ (RT) TO -L- STATION 11+63, 21′ (RT). SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM -L- STATION 11+39, 21′ (RT) TO -L- STATION 11+63, 21′ (RT). FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

SHORING LOCATION NO. 2

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

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

DESIGN TEMPORARY SHORING FROM -L- STATION 12+45, 20′ (RT) TO -L- STATION 12+80, 20′ (RT) FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 PCF
FRICTION ANGLE (Φ) = N/A
COHESION (c) = 1000 PSF
GROUNDWATER ELEVATION = 1115.2 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM -L- STATION 12+45, 20′ (RT) TO -L- STATION 12+80, 20′ (RT)). THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM -L- STATION 12+45, 20′ (RT) TO -L- STATION 12+80, 20′ (RT) MAY NOT PENETRATE BELOW ELEVATION 1113.0 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM -L- STATION 12+45, 20′ (RT) TO -L- STATION 12+80, 20′ (RT). SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM -L- STATION 12+45, 20′ (RT) TO -L- STATION 12+80, 20′ (RT) FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT. THE DOCUMENT WAS SUBMITTED TO THE DIVISION 11 PROJECT DEVELOPMENT ENGINEER ON 9/24/2026 AND SEALED BY A PROFESSIONAL ENGINEER, MIKEL W. SHIPMAN, PE, LICENSE #054501.

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

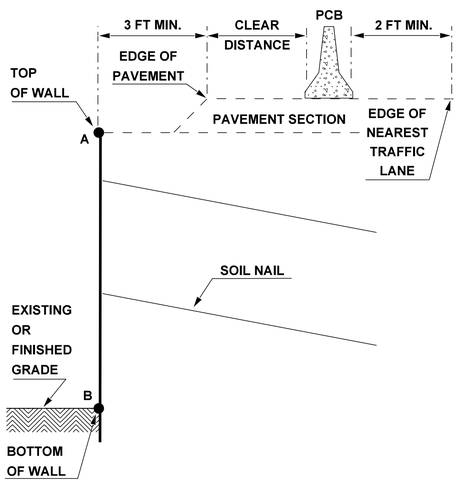
TEMPORARY SHORING NOTES

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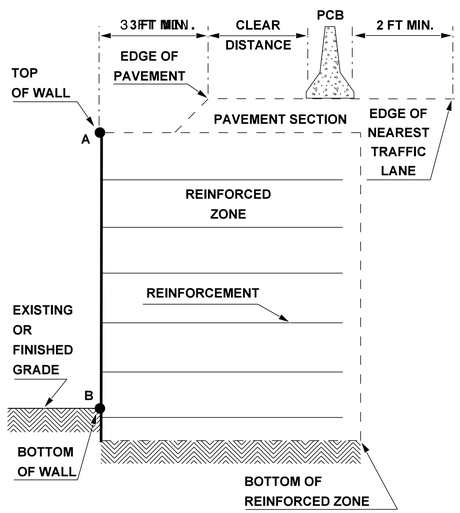
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PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-2A

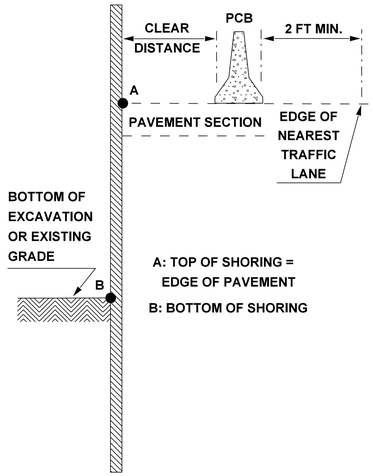
TEMPORARY SOIL NAIL WALL



TEMPORARY MSE WALL



TEMPORARY SHORING



NOTE: WALL OR SHORING HEIGHT = A-B

FIGURE A

NOTES

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

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

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

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

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

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

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

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

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

MINIMUM REQUIRED CLEAR DISTANCE, inches

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

* See Figure Below

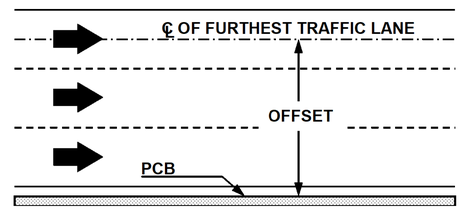


FIGURE B

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PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

8/14/2026
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User:jbauman

PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-3

PHASING

PHASE I

STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEET 3 OF 3 PLACE ADVANCE WARNING SIGNS ON SR 1356(OLD JOHNS RIVER RD).

STEP 2: USING RSD 1101.02 SHEETS 1 AND 17 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PLACE INCIDENTAL STONE, TEMPORARY MARKINGS, WATER FILLED BARRIER, AND TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-4 AND SHIFT TRAFFIC INTO THE PHASE I PATTERN.

STEP 3: USING RSD 1101.02 SHEETS 1 AND 17 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- INSTALL TEMPORARY SHORING AS SHOWN ON TMP-4
- COMPLETE CONSTRUCTION AS SHOWN ON TMP-4, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- USE WEDGING TO CREATE TIE-IN FROM THE EXISTING PATTERN TO THE PHASE II PATTERN.
- PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-5
- PLACE TEMPORARY MARKINGS AS SHOWN ON TMP-5
- SHIFT TRAFFIC INTO THE PHASE II PATTERN.

PHASE II

STEP 1: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, REMOVE INCIDENTAL STONE AND BEGIN CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, REMOVE TEMPORARY SHORING AND COMPLETE CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING 1101.02 SHEETS 1 AND 14 OF 19, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLAN AND REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES.

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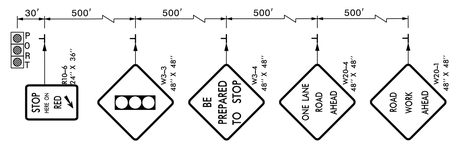
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PHASING

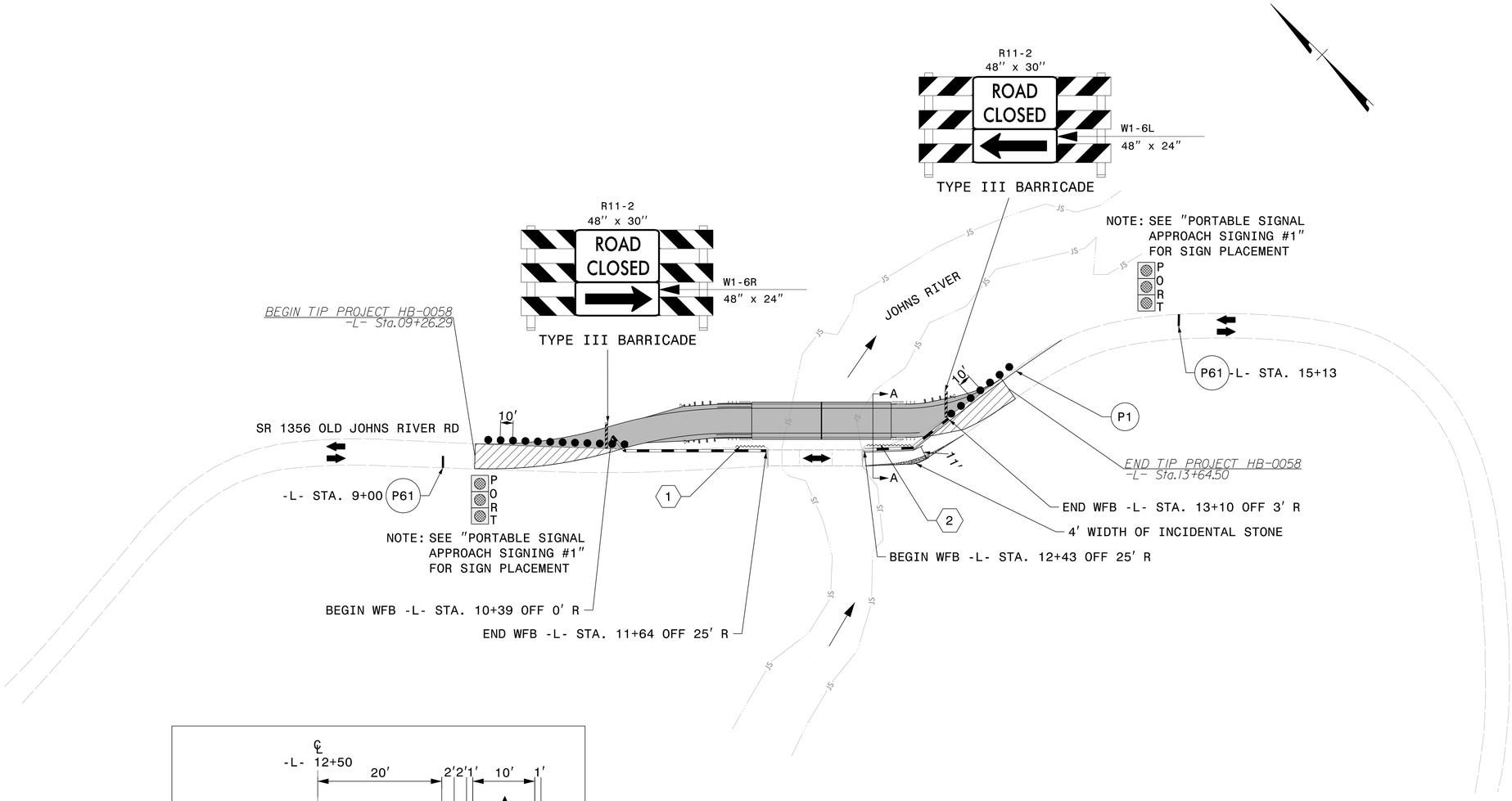
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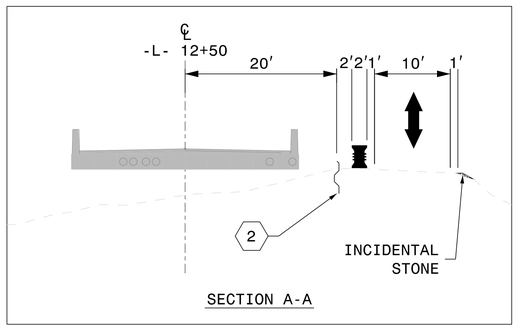
PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-4

PORTABLE SIGNAL APPROACH SIGNING #1



SHORING I.D. NO.	BEGIN STATION AND OFFSET	END STATION AND OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	QUANTITY
①	-L- STA. 11+39 +/- 21 FT (RT)	-L- STA. 11+63 +/- 21 FT (RT)	4.5 FT	6.0 FT	108 SQ. FT.
②	-L- STA. 12+45 +/- 20 FT (RT)	-L- STA. 12+80 +/- 20 FT (RT)	4.5 FT	6.0 FT	158 SQ. FT.





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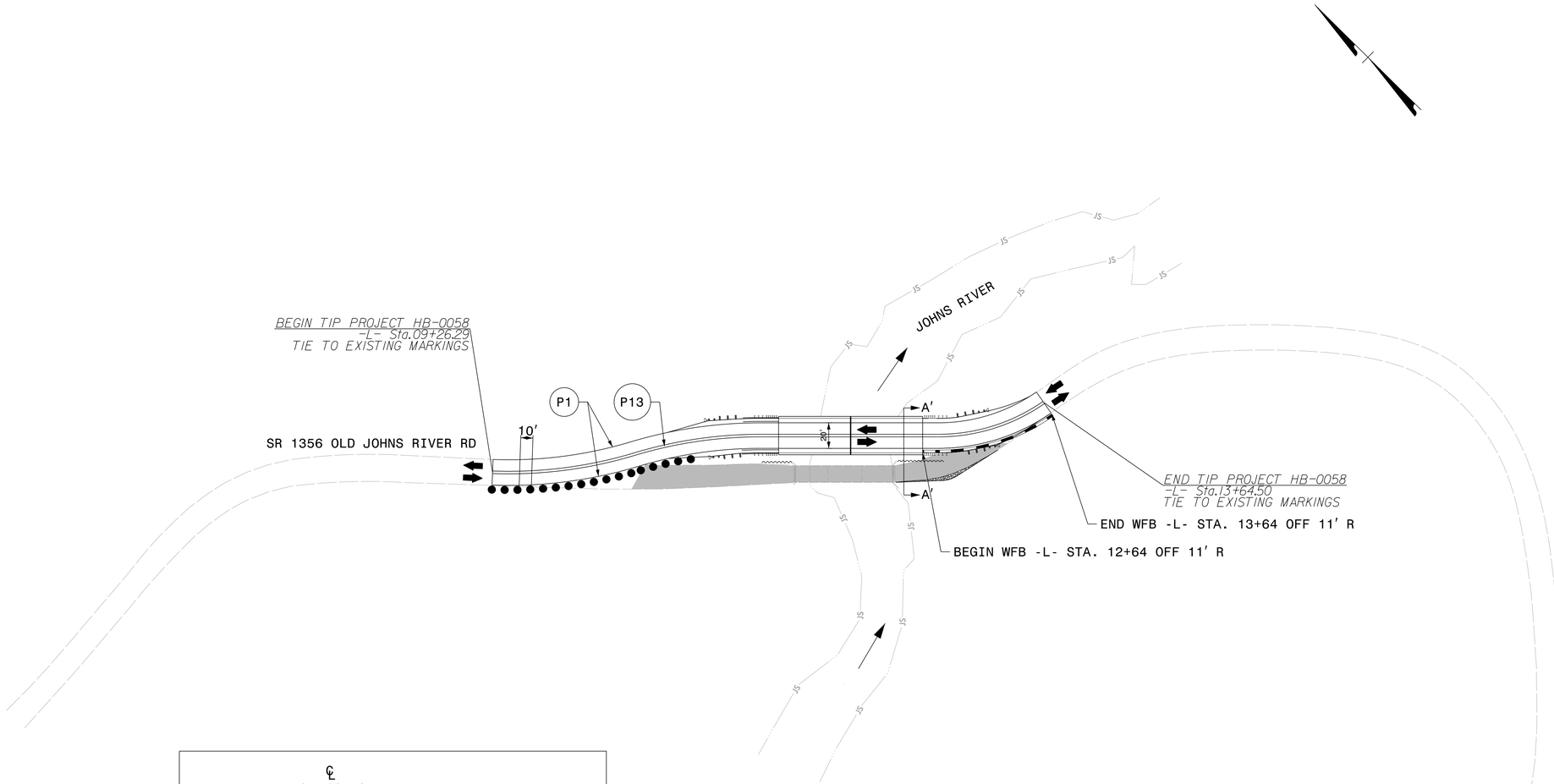
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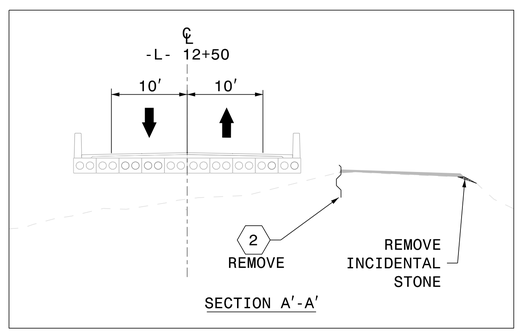
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PHASE I DETAIL

8/14/2026
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PROJ. REFERENCE NO.	SHEET NO.
HB-0058	TMP-5





SECTION A′-A′

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PHASE II DETAIL

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User:jbauman

11/15/23

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
CALDWELL COUNTY

LOCATION: BRIDGE 186 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN INDEX, GENERAL NOTES, ROADWAY STANDARD DRAWINGS, AND PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKINGS - DETAIL IN LIEU OF STANDARD FOR ROADWAY STANDARD DRAWING 1205.01 SHEET 1 OF 2
PMP-3	PAVEMENT MARKING DETAILS

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
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 ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
(-L-) SR 1356 OLD JOHNS RIVER ROAD	INTEGRATED MULTIPOLYMER
(-L-) SR 1356 OLD JOHNS RIVER ROAD (BRIDGE DECK)	INTEGRATED MULTIPOLYMER

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

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

PAVEMENT MARKING AND MARKER SCHEDULE

SYMBOL	DESCRIPTION
IM1	INTEGRATED MULTIPOLYMER WHITE EDGELINE (4", 90 MIL)
IM13	INTEGRATED MULTIPOLYMER YELLOW DOUBLE CENTER (4", 90 MIL)

PLAN PREPARED BY:

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

JOHN BAUMAN, PE — PROJECT ENGINEER
JODY L. COLE — PROJECT DESIGN ENGINEER

HB-0058
PMP | 01

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



APPROVED: DocuSigned by: John Bauman 7FFD5B4C3798401...
DATE: 10/8/2026

SEAL:



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

TIP PROJECT: HB-0058

PROJECT REFERENCE NO.	SHEET NO.
HB-0058	PMP-2

CONTINUOUS LINES

EDGE LINE
YELLOW OR WHITE — 4″/6″

LANE LINE
WHITE — 4″/6″

CENTER LINE
YELLOW — 4″/6″

GORE LINE
WHITE — 8″/12″

DIAGONAL LINE
YELLOW OR WHITE — 12″ 45 MPH OR HIGHER
8″ LESS THAN 45 MPH
4″-6″ FOR BICYCLE FACILITIES

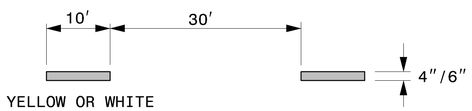
CROSSWALK LINE
WHITE — 8″ TRANSVERSE
24″ LONGITUDINAL

RxR LINE
WHITE — 16″

STOP OR TRANSVERSE BAR
WHITE — 24″

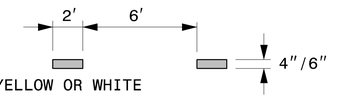
10′-30′/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10′-30′/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



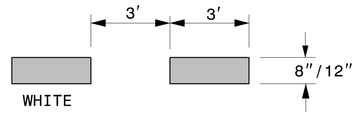
2′-6′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2′-6′/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND BICYCLE LANE EXTENSIONS.



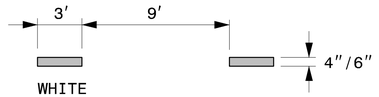
3′-3′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-3′/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



3′-9′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-9′/SP MINI-SKIPS FOR MINI-SKIP LANE LINES, LINE EXTENSIONS THROUGH TAPERS, AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



GENERAL NOTES:

1- USE 6″ LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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

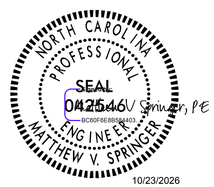
ROADWAY DETAIL DRAWING FOR

PAVEMENT MARKINGS

LINE TYPES AND OFFSETS

SHEET 1 OF 2

1205D01

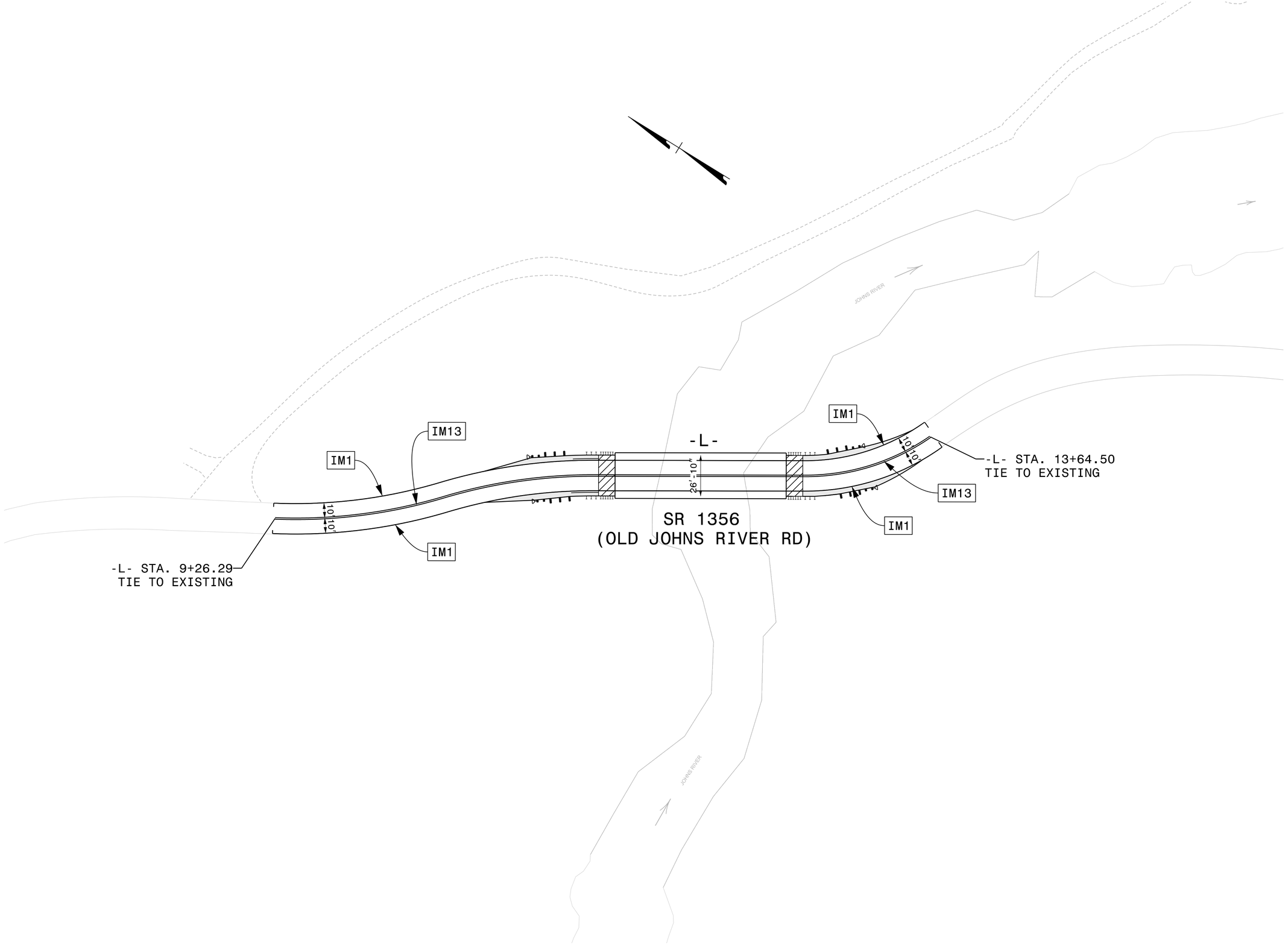


CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

5/26/20



HB-0058

PMP | 03

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



APPROVED: DocuSigned by: John Baumann 7FFD5B4C37984D1...

DATE: 10/8/2026

SEAL:



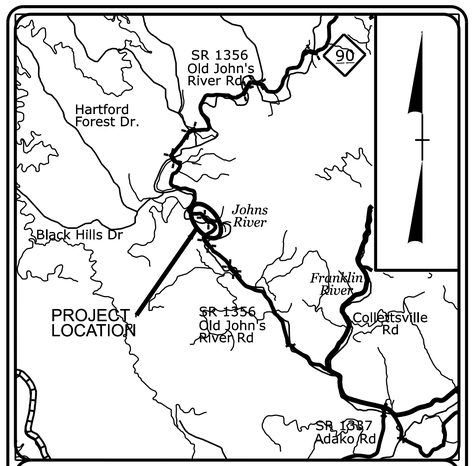
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919.789.9977
NC Lic. No. C-3378

TIP PROJECT: HB–0058



VICINITY MAP
NOT TO SCALE

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

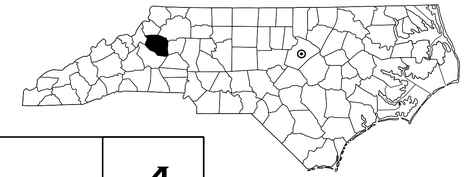
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CALDWELL COUNTY

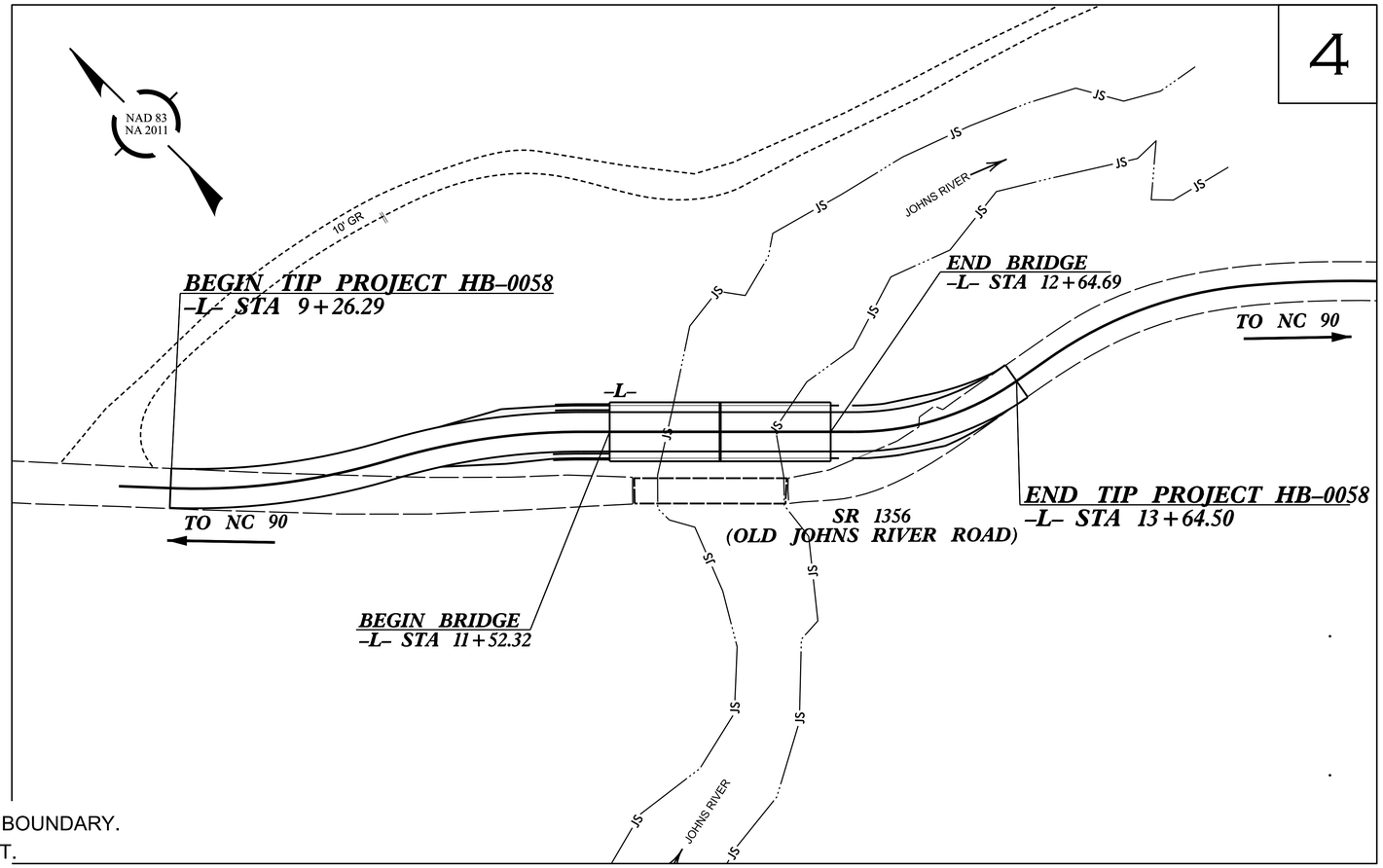
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0058	EC-1	

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



LOCATION: *BRIDGE 186 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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



THIS PROJECT IS NOT LOCATED WITHIN A MUNICIPAL BOUNDARY.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

GRAPHIC SCALE

50 25 0 50 100
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.

Prepared In the Office of:

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

Designed by:

HANNAH AREY — NAME
4651 — LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
HB-0058	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.
HB-0058	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCH LINE MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	9+35	11+85	LT	200
4	-L-	3+38	11+72	RT	175
			SUBTOTAL		375
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2000
				TOTAL	2375
				SAY	2400

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
HB-0058	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

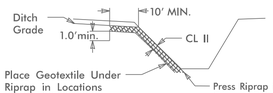
SOIL STABILIZATION TIMEFRAMES

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

HB-0058

EC-4/CONST.4

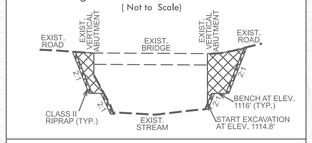
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEOTEXTILE

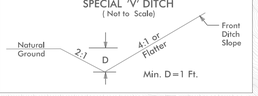
–L– STA 11+85 TO STA 11+96 LT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



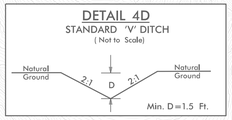
-L- STA 11+50 TO STA 11+81 RT
-L- STA 12+42 TO STA 12+74 RT

DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



–L– STA 9+35 TO STA 11+56 LT
–L– STA 9+38 TO STA 11+56 RT

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



–L– STA 11+56 TO STA 11+85 LT
–L– STA 11+56 TO STA 11+72 RT

NC GRID
NAD 83 NA 2011

FLOATING TURBIDITY CURTAIN

IMPERVIOUS DIKE

STREAM BANK STABILIZATION SEE DETAIL 4A

PLACE CLASS II RIP RAP TO ELEV. 1126.6' +/- OR TO SHOULDER PT. (TYP.)

STA. 12+78

-L- +55.00
EX. R/W
& 39'

-L- +93.00
58'
-L- +76.18
64.50'
-L- +72.00
58'
-L- +53.00
60'

END NOT FOUND

12" RCP & 80'

15" PVC INV = 1122.56'

EST. 2 TONS CL B RR 7 SY GEO.

STD V DITCH SEE DETAIL 4D

STA. 11+44

PUE

SPECIAL V DITCH SEE DETAIL 4C

15" CMP INV = 1122.90'

INV = 1120.82'

EXISTING RW

OLD JOHNS RIVER RD SR 1356 20' BST

3.81 MI +/- TO HWY 90

WOODS

JOHNS RIVER

REMOVE EXISTING BRIDGE AND ABUTMENTS SEE DETAIL 4B

CLASS II RIP RAP WITH GEOTEXTILE (TYP.)
(STRUCTURES PAY ITEM)
EST = 400 CY EXCAVATION
EST = 460 SY GEOTEXTILE
EST = 410 TONS CL II RIP RAP

BEGIN TIP PROJECT HB-0058
-L- STA 19+25.00

END TIP PROJECT HB-0058
-L- STA 13+67.00

60" WD RAIL

ABAND CL

10' GR

2SFD

1SFD

185-1

1.98 MI +/- TO HWY 90

50'

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

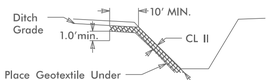
NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

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

HB-0058

EC-5/CONST.4

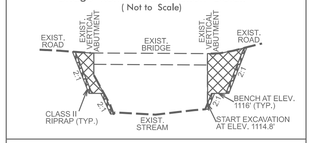
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEOTEXTILE

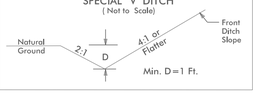
–L– STA 11+85 TO STA 11+96 LT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



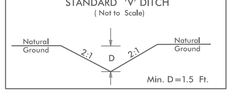
-L- STA 11+50 TO STA 11+81 RT
-L- STA 12+42 TO STA 12+74 RT

DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



–L– STA 9+35 TO STA 11+56 LT
–L– STA 9+38 TO STA 11+56 RT

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



–L– STA 11+56 TO STA 11+85 LT
–L– STA 11+56 TO STA 11+72 RT

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
-L- STA. 9+35 - 11+56 LT,
-L- STA. 11+56 - 11+85 LT,
-L- STA. 9+38 - 11+56 RT,
-L- STA. 11+56 - 11+72 RT

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

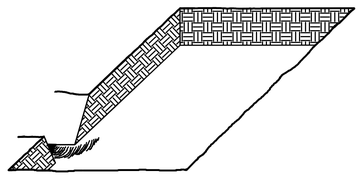
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	X-XXXX	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

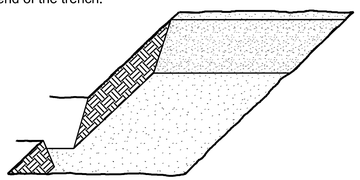
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

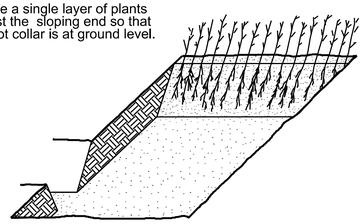
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



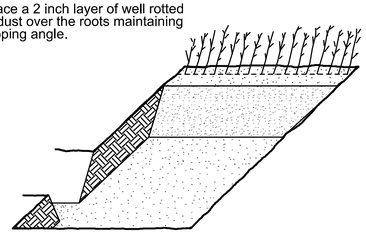
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

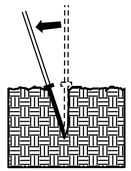


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

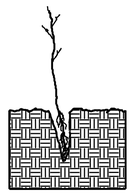


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

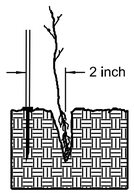
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



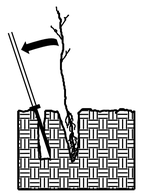
1. Insert planting bar as shown and pull handle toward planter.



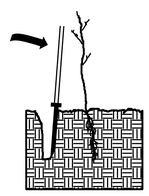
2. Remove planting bar and place seedling at correct depth.



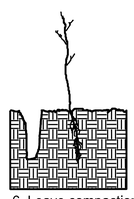
3. Insert planting bar 2 inches toward planter from seedling.



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% CORNUS AMOMUM	SILKY DOGWOOD	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR
25% SALIX NIGRA	BLACK WILLOW	12 in - 18 in BR

REFORESTATION DETAIL SHEET

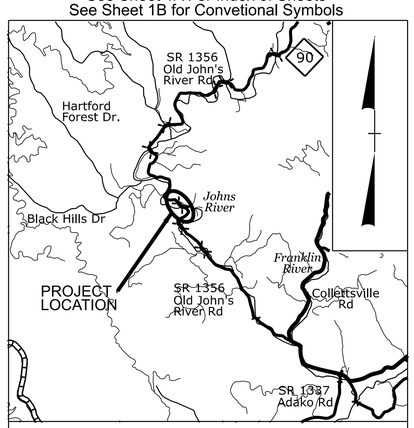
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

09/08/99

TIP PROJECT: HB-0058

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

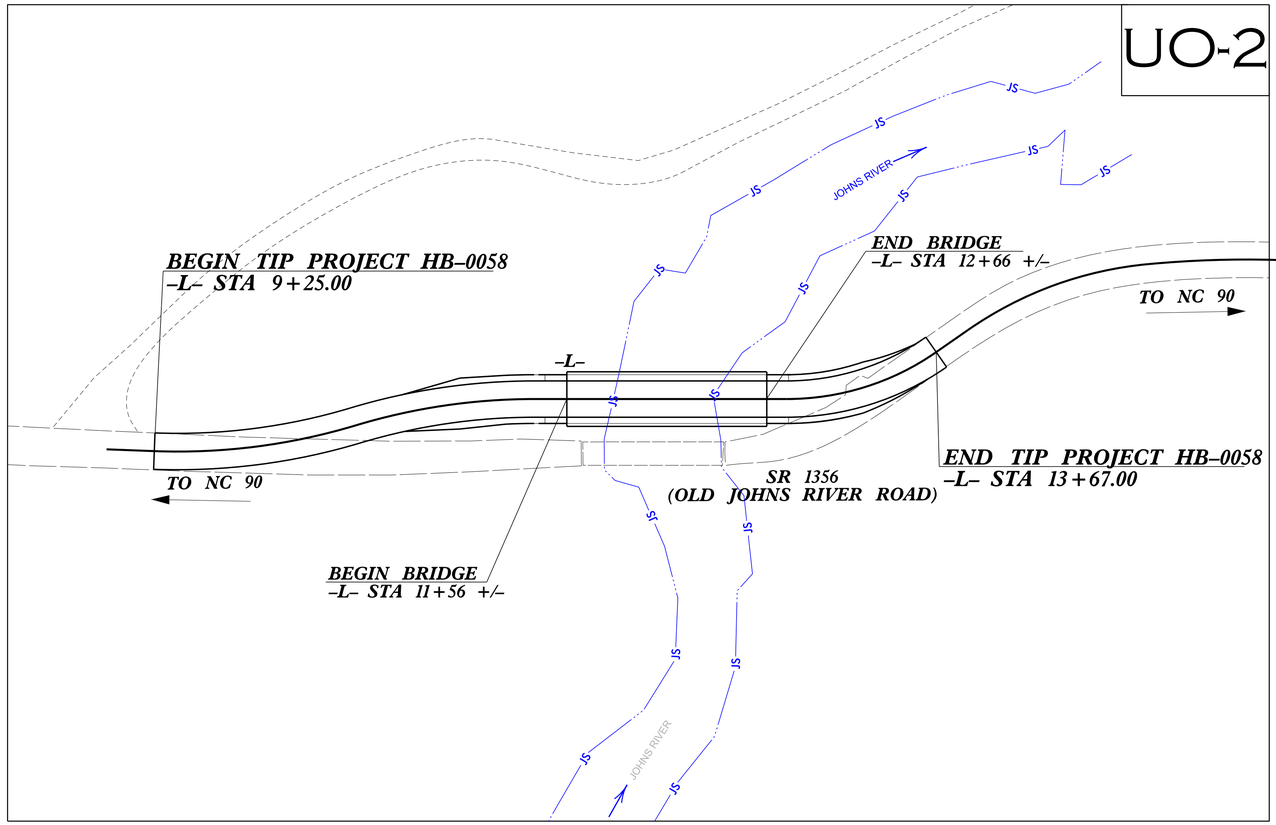
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

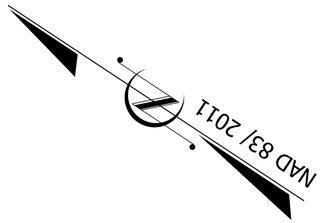
UTILITIES BY OTHERS PLANS
CALDWELL COUNTY

LOCATION: BRIDGE #186 OVER JOHNS RIVER
ON SR 1356 (OLD JOHNS RIVER ROAD)
TYPE OF WORK: POWER & COMMUNICATIONS

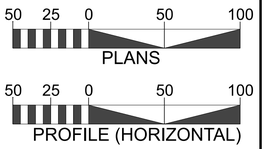
T.I.P. NO.	SHEET NO.
HB–0058	UO–1

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.





GRAPHIC SCALES



INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) POWER – BLUE RIDGE ELECTRIC

(B) COMMUNICATIONS – AT&T

(C) COMMUNICATIONS – CHARTER SPECTRUM

PREPARED IN THE OFFICE OF

TELICS

TELICS
119 BROOKSTOWN AVE.
SUITE 305
WINSTON SALEM, NC 27101
(336) 705 – 8844

CORY WOOD — *UTILITY PROJECT MANAGER*
CORY WOOD — *UTILITY COORDINATOR*

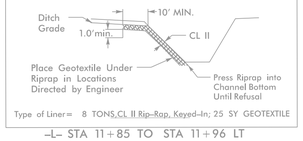
DIVISION OF HIGHWAYS
DIVISION 11
801 STATESVILLE RD.
NORTH WILKESBORO NC 28659
PHONE (336) 903-9101
FAX (336) 667-4549

BRANDON GREER — *DIVISION UTILITIES ENGINEER*

02/02/22

UTILITIES BY OTHERS

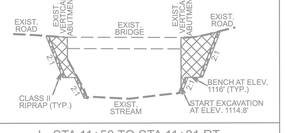
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 8 TONS,CL II Rip-Rap, Keyed-In; 25 SY GEOTEXTILE

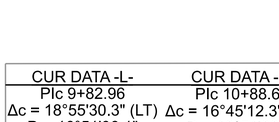
-L- STA 11+85 TO STA 11+96 LT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



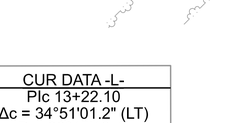
-L- STA 11+50 TO STA 11+81 RT
-L- STA 12+42 TO STA 12+74 RT

DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



-L- STA 9+35 TO STA 11+56 LT
-L- STA 9+38 TO STA 11+56 RT

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



-L- STA 11+56 TO STA 11+85 LT
-L- STA 11+56 TO STA 11+72 RT

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 9+82.96	PIc 10+88.66	PIc 13+22.10
Δc = 18°55'30.3" (LT)	Δc = 16°45'12.3" (RT)	Δc = 34°51'01.2" (LT)
D = 16°51'06.1"	D = 16°51'06.1"	D = 39°47'19.4"
Lc = 112.30	Lc = 99.42	Lc = 87.59
Tc = 56.67	Tc = 50.07	Tc = 45.20
R = 340	R = 340	R = 144
SE = 0.020	SE = 0.020	SE = 0.020
RO = N/A	RO = N/A	RO = N/A
DS < 15 MPH	DS < 15 MPH	DS < 15 MPH

HB-0058
UO-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

TELICS
119 BROOKSTOWN AVE
SUITE 305
WINSTON SALEM, NC 27101
PHONE:(336)705-8844

REVISIONS

5/26/20

CROSS SECTION INDEX

CROSS SECTION INDEX X-1
CROSS SECTION SUMMARY X-1A

ROADWAY	STATION	TO	STATION	SHEET NO.
-L- SR 1356 (OLD JOHNS RIVER RD)	9+00.00		13+85.82	X-2 TO X-7

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

PROJ. REFERENCE NO.	SHEET NO.
HB-0058	X-1A

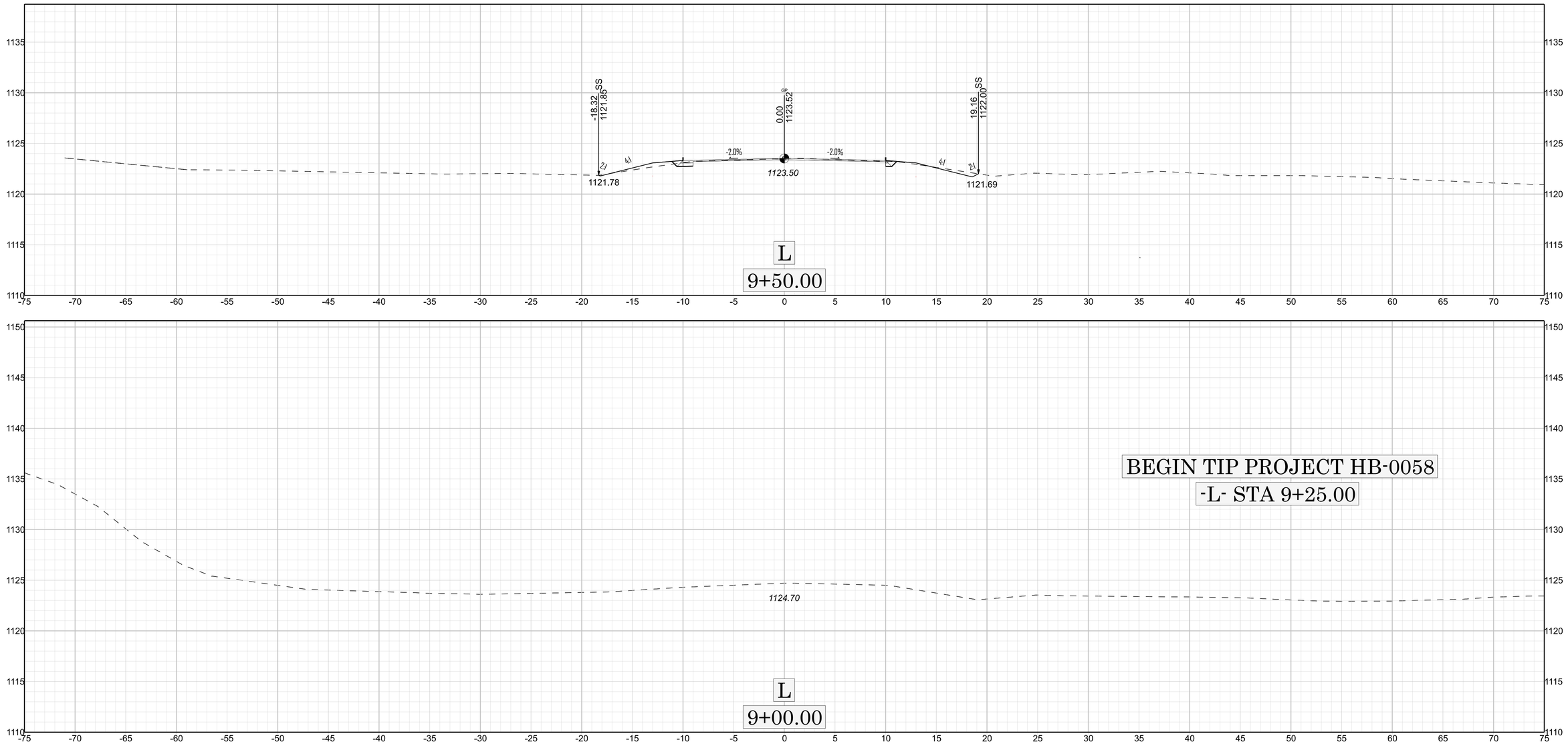
'NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

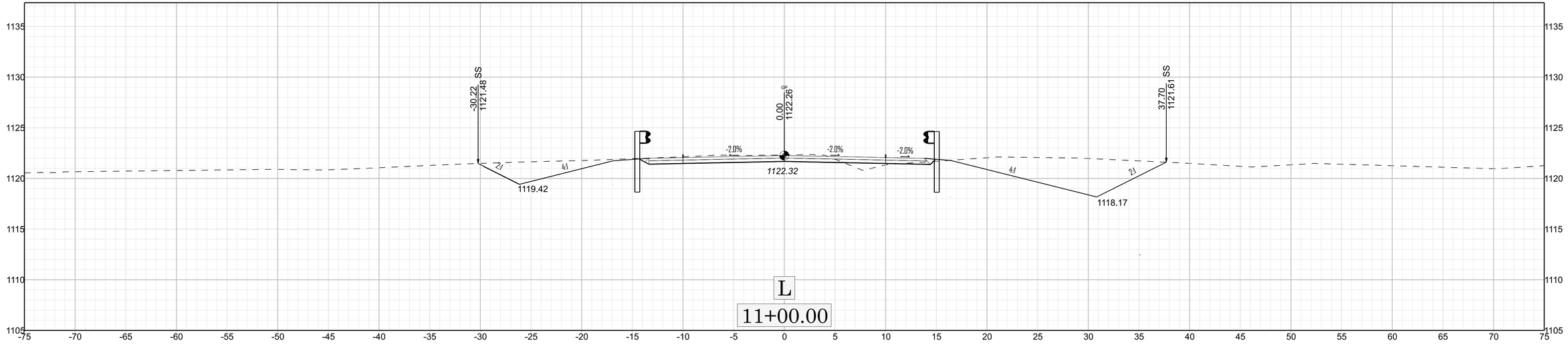
CROSS-SECTION SUMMARY

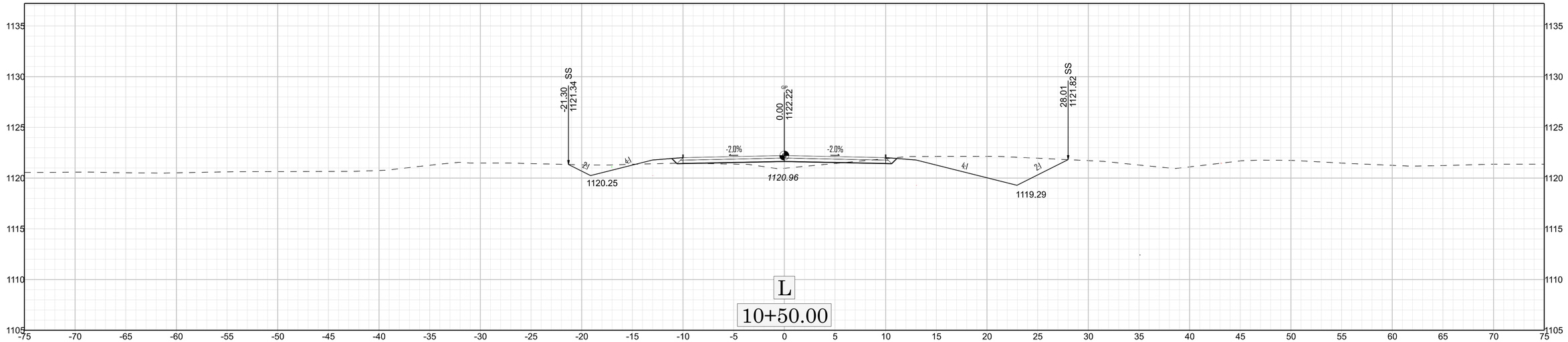
Station L	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)	Station	Uncl. Exc. (cu. yd)	Embt. (cu yd.)
9+25.00	0	0																
9+50.00	8	1																
10+00.00	29	5																
10+50.00	44	9																
11+00.00	91	7																
11+50.00	135	37																
11+52.32(Bridge)	11	6																
Station L	Uncl. Exc. (cu. yd)	Embt. (cu yd.)																
12+64.69 (BRIDGE)	0	0																
13+00.00	1	125																
13+50.00	5	37																
13+67.00	4	0																

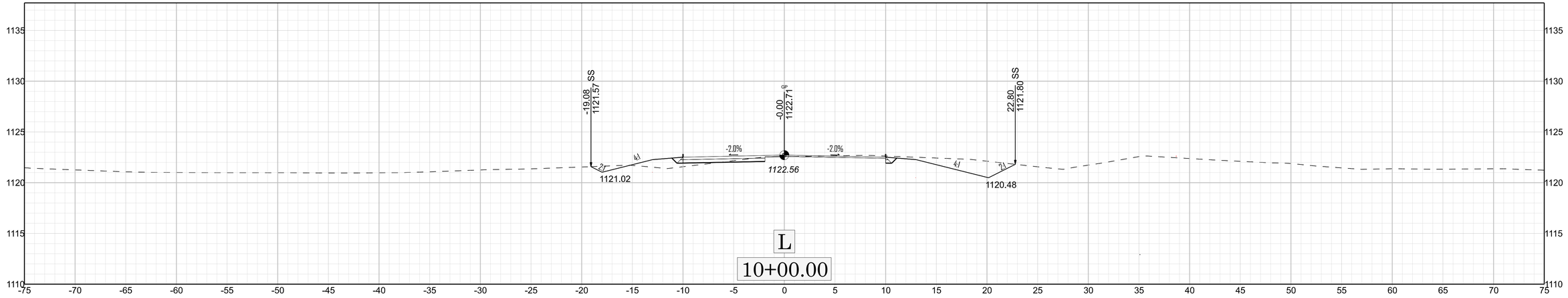
Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

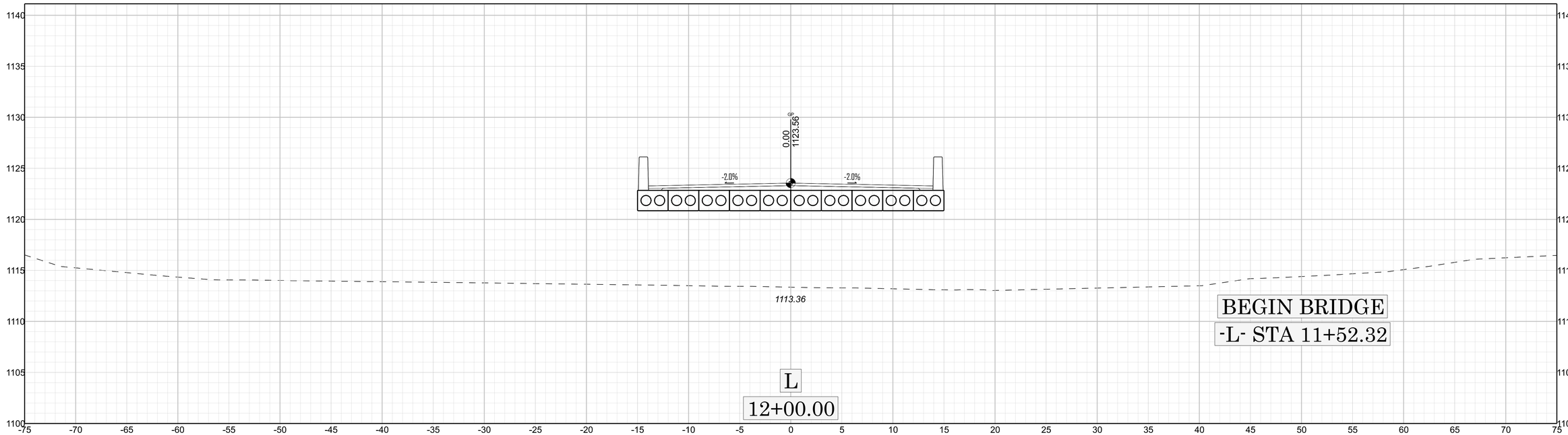
Quantities are approximate only. The Resident Engineer will use methods including but not limited to recross-sectioning, truck measurements, and aerial surveys to compute the final quantities for which the contractor will be paid.

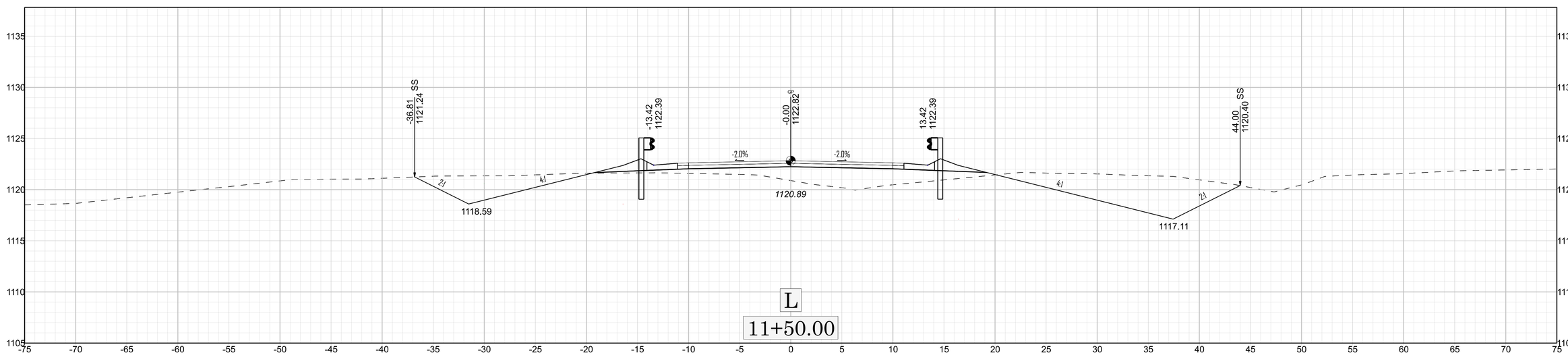

-18.32
1121.85
SS
0.00
1123.52
CL
19.16
1122.00
SS
2:1
4:1
-2.0%
-2.0%
4:1
2:1
1121.78
1123.50
1121.69
L
9+50.00
BEGIN TIP PROJECT HB-0058
-L- STA 9+25.00
1124.70
L
9+00.00

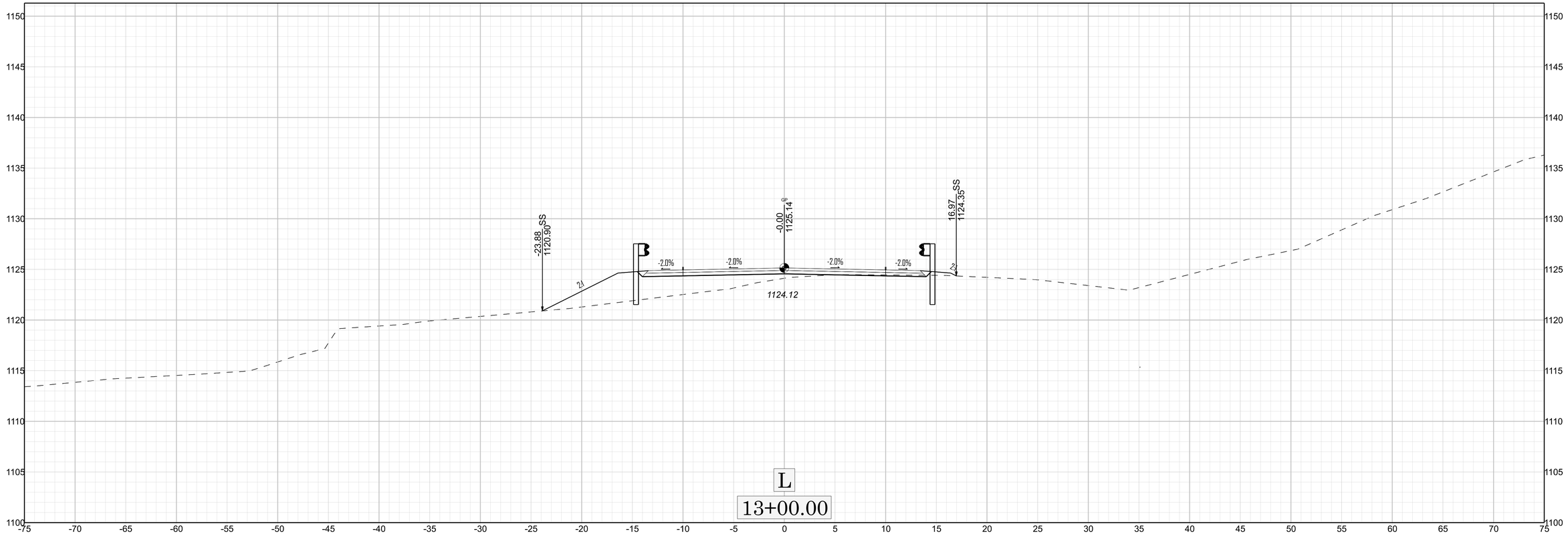

-30.22
SS
1121.48
0.00
GS
1122.26
37.70
SS
1121.61
-2.0%
-2.0%
-2.0%
2:1
4:1
4:1
2:1
1119.42
1122.32
1118.17
L
11+00.00

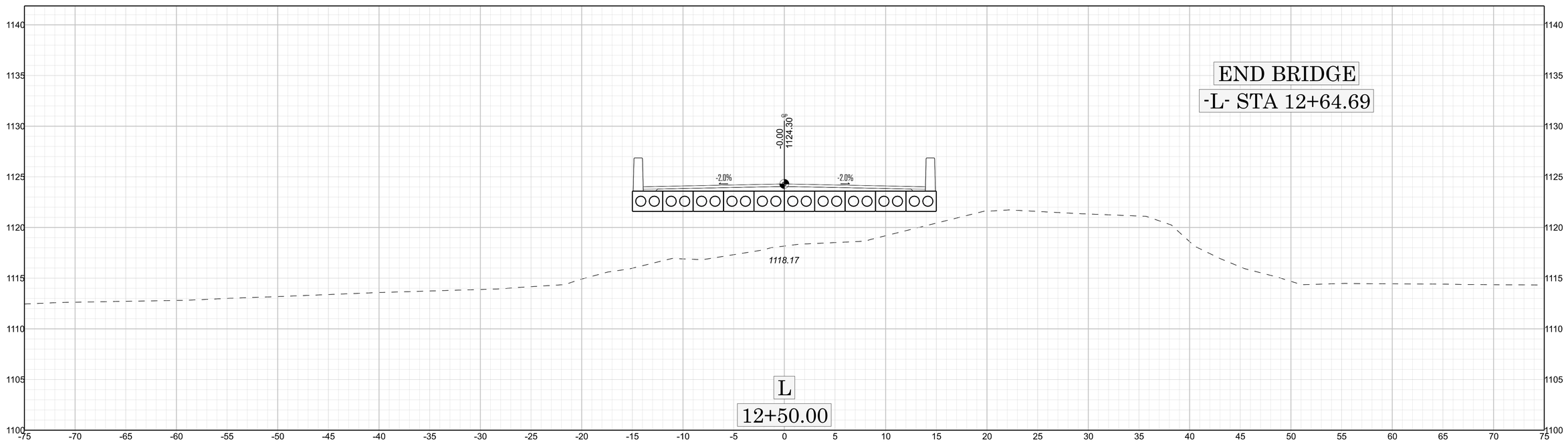

-21.30
SS
1121.34
0.00
GS
1122.22
28.01
SS
1121.82
-2.0%
-2.0%
2:1
4:1
4:1
2:1
1120.25
1120.96
1119.29
L
10+50.00


-19.08
SS
1121.57
-0.00
GS
1122.71
22.80
SS
1121.80
-2.0%
-2.0%
2:1
4:1
4:1
2:1
1121.02
1122.56
1120.48
L
10+00.00


0.00
1123.56
-2.0%
-2.0%
1113.36
BEGIN BRIDGE
-L- STA 11+52.32
L
12+00.00


-36.81
1121.24
SS
-13.42
1122.39
-0.00
1122.82
13.42
1122.39
44.00
1120.40
SS
-2.0%
-2.0%
2:1
4:1
4:1
2:1
1118.59
1120.89
1117.11
L
11+50.00


-23.88
1120.90SS
2:1
-2.0%
-2.0%
-2.0%
-2.0%
-0.00
1125.14
16.97
1124.35SS
2:1
1124.12
L
13+00.00


END BRIDGE
-L- STA 12+64.69
-0.00
1124.30
-2.0%
-2.0%
1118.17
L
12+50.00

X 05

HB-0058

END CONSTRUCTION
-L- STA 13+67.00

-12.38
1126.20
SS

-0.00
1126.81
CL

16.38
1125.76
SS

-2.0%
-2.0%
-2.0%
4.72:1

1126.84

L
13+50.00

1185 1180 1175 1170 1165 1160 1155 1150 1145 1140 1135 1130 1125 1120 1115 1110 1105 1100

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

0 5

X 90

HB-0058

END TIP PROJECT HB-0058
-L- STA 15+60.00

1128.26

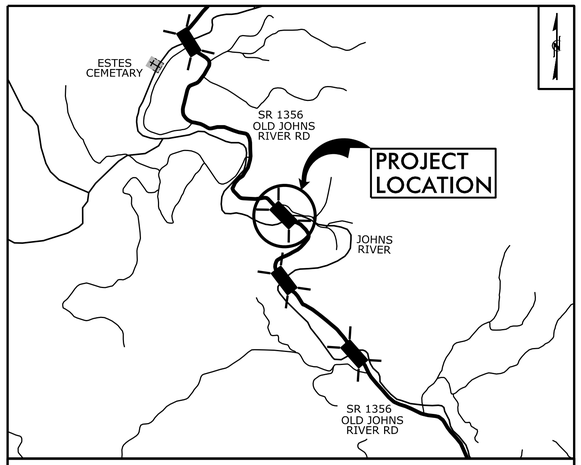
13+85.82

X 07

HB-0058

PROJECT: HB–0058

CONTRACT NO: DK00484



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

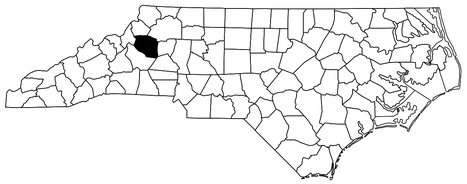
STRUCTURES

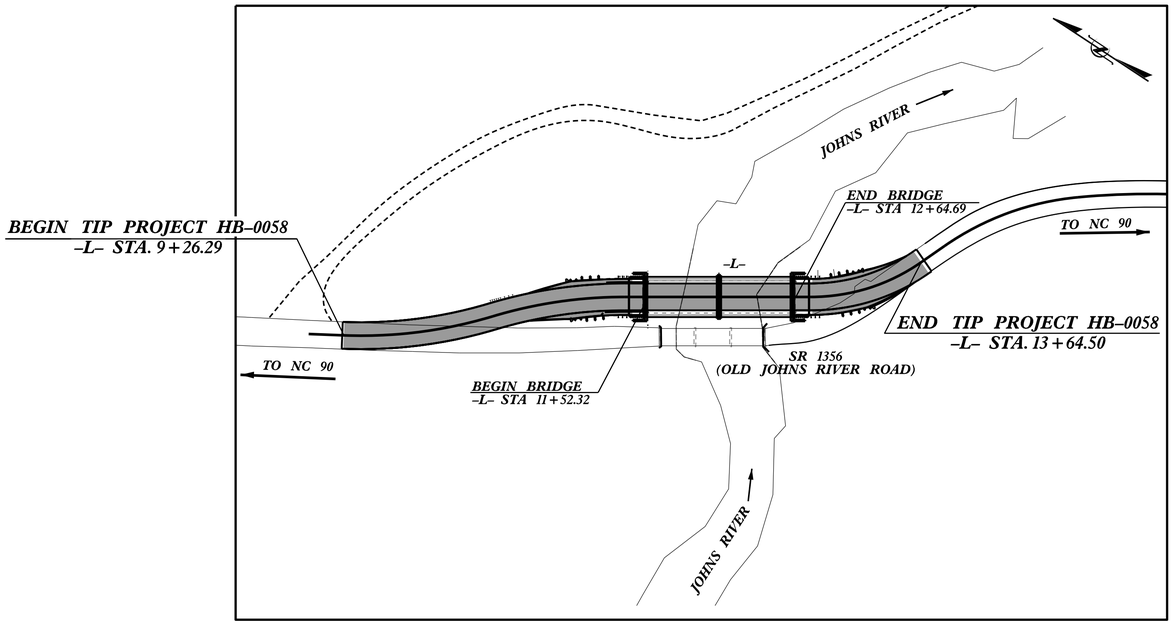
LOCATION: REPLACEMENT OF BRIDGE NO. 130186 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0058	1	24

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50728.1.1	FBRG111	PE
50728.2.1	FBRG111	ROW
50728.2.2	FBRG111	UTIL
50728.3.1	FBRG111	CONST





STATE OF NORTH CAROLINA ☆ DEPARTMENT OF TRANSPORTATION ☆

DESIGN DATA

ADT 2025 = 120
ADT 2045 = 220
V = 30 MPH

FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB–0058 = 0.062 MILES
LENGTH OF STRUCTURE TIP PROJECT HB–0058 = 0.021 MILES
TOTAL LENGTH OF TIP PROJECT HB–0058 = 0.083 MILES

NCDOT CONTACT: RAMIE A. SHAW, P. E.
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

LETTING DATE:
NOVEMBER 19, 2026

ERIC B. NELSON, P.E.
PROJECT MANAGER

JOHN A. YANNACCONE, P.E.
STRUCTURES DESIGN ENGINEER

8/26/21
pw:\\gfnet-pw.bentley.com:gfnet-pw-01\Documents\Projects\69172_ORD\Task 019_02 - Bridge 130186\5-Working\Structures\CAD\2.0 90% Plans\401.001_HB-0058_SMU_GD_001_130186
9/11/2026 5:56:03 PM SMU_pdf.pltcfg
Caldwell_186.tbl

(-)1.3200% (+)1.4732%

PVI STA. 10+75.00
EL. = 1121.72
V.C. = 130.00'

GRADE DATA -L-

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

(+)1.4732% (+)3.5600%

PVI STA. 13+00.00
EL. = 1125.03
V.C. = 40.00'

GRADE DATA -L-

SPAN A SPAN B

1130 1125 1120 1115 1110

FILL FACE @ END BENT 1
STA. 11+52.31 -L-
GRADE POINT ELEV. 1122.86

1'-6" CLEAR TO UNCLASSIFIED STRUCTURE EXCAVATION

BEGIN FRONT SLOPE
STA. 11+44.98 -L-
GRADE POINT EL. 1122.75

EL. 1122 ±

LOW CHORD
EL. 1120.52

FIX.

EL. 1121 ±

APPROXIMATE EXISTING GROUND LINE

EL. 1122 ±

1'-0" (TYP.)

1½:1 SLOPE NORMAL TO CAP (TYP.)

BENCH EXCAVATION EL. 1114.00 (TYP.)

EL. 1114 ±

END BENT 1

REV FEMA 100 YR. WS
EL. 1128.44

<2 YR. WS
EL. 1122.3

FIX. FIX.

EL. 1113 ±

NORMAL WATER SURFACE
EL. 1114.5
(05-28-2024)

3'-0" ∅ DRILLED SHAFT

BENT 1

FILL FACE @ END BENT 2
STA. 12+64.69 -L-
GRADE POINT ELEV. 1124.51

LOW CHORD
EL. 1122.09

FIX.

BEGIN FRONT SLOPE
STA. 12+72.36 -L-
GRADE POINT EL. 1124.62

EL. 1118 ±

EL. 1122 ±

EL. 1120 ±

2'-0" (TYP.)

HP 12x53 STEEL PILES (TYP.)

CLASS II RIP RAP (TYP.)

END BENT 2

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

SECTION ALONG -L-

112'-4½"
TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE)

56'-2¼" (SPAN A)

56'-2¼" (SPAN B)

1'-0" EARTH BERM
EL. 1115.43 (TYP.)

CLASS II RIP RAP

BENT 1 CONTROL LINE

JOHNS RIVER

1'-0" EARTH BERM
EL. 1117.04 (TYP.)

UNCLASSIFIED STRUCTURE EXCAVATION

TEMPORARY ROCK CAUSEWAY FOR CONSTRUCTION OF PROPOSED STRUCTURE

TEMPORARY ROCK CAUSEWAY FOR REMOVAL OF EXISTING STRUCTURE

HORIZONTAL CURVE DATA -L-

P.I. STA. 10+88.66
Δ = 16°-45'-12.3" (RT)
D = 16°-51'-06.1"
L = 99.42'
T = 50.07'
R = 340.00'

FILL FACE @ END BENT 1

W.P. 1
STA. 11+52.31 -L-

TO NC 90

PT STA. 11+38.01 -L-

BEGIN APPROACH SLAB
STA. 11+41.44 -L-

BEGIN FRONT SLOPE
STA. 11+44.98 -L-

TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC (ROADWAY PAY ITEM) (TYP.)

BRIDGE I.D.
STA. 12+08.50 -L-

-L-

W.P. 2

TEMPORARY CAUSEWAY (SEE DETAIL & SPECIAL PROVISIONS)

EXISTING SUBSTRUCTURE (TYP.)

TEMPORARY CAUSEWAY (SEE DETAIL & SPECIAL PROVISIONS)

HORIZONTAL CURVE DATA -L-

P.I. STA. 13+22.10
Δ = 34°-51'-01.2" (LT)
D = 39°-47'-19.4"
L = 87.59'
T = 45.20'
R = 144.00'

FILL FACE @ END BENT 2

W.P. 3
STA. 12+64.69 -L-

BEGIN FRONT SLOPE
STA. 12+72.36 -L-

TO NC 90

90°-00'-00" (TYP.)

PC STA. 12+76.91 -L-

END APPROACH SLAB
STA. 12+75.57 -L-

CLASS II RIP RAP

VARIES

CLASS A RIP RAP

1'-0"

1½: 1 (TYP.)

NWS
EL. 1114.5 ±

STREAM BED

CLASS II RIP RAP

TEMPORARY CAUSEWAY DETAIL

NOTE: TEMPORARY CAUSEWAYS SHALL BE PLACED AND REMOVED IN SEQUENCE.

PLAN

PILES NOT SHOWN FOR CLARITY

DocuSigned by: John Yannaccone 781361754678458...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

PROJECT NO. **HB-0058**
CALDWELL COUNTY
STATION **12+08.50 -L-**

SHEET 1 OF 4 REPLACES BRIDGE NO. 130186

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356
(OLD JOHNS RIVER ROAD)
OVER JOHNS RIVER BETWEEN
NC 90 AND NC 90

DRAWN BY :	J. MYA	DATE :	06/2026
CHECKED BY :	J. YANNACCONE	DATE :	06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE :	08/2026

PRELIMINARY PLANS
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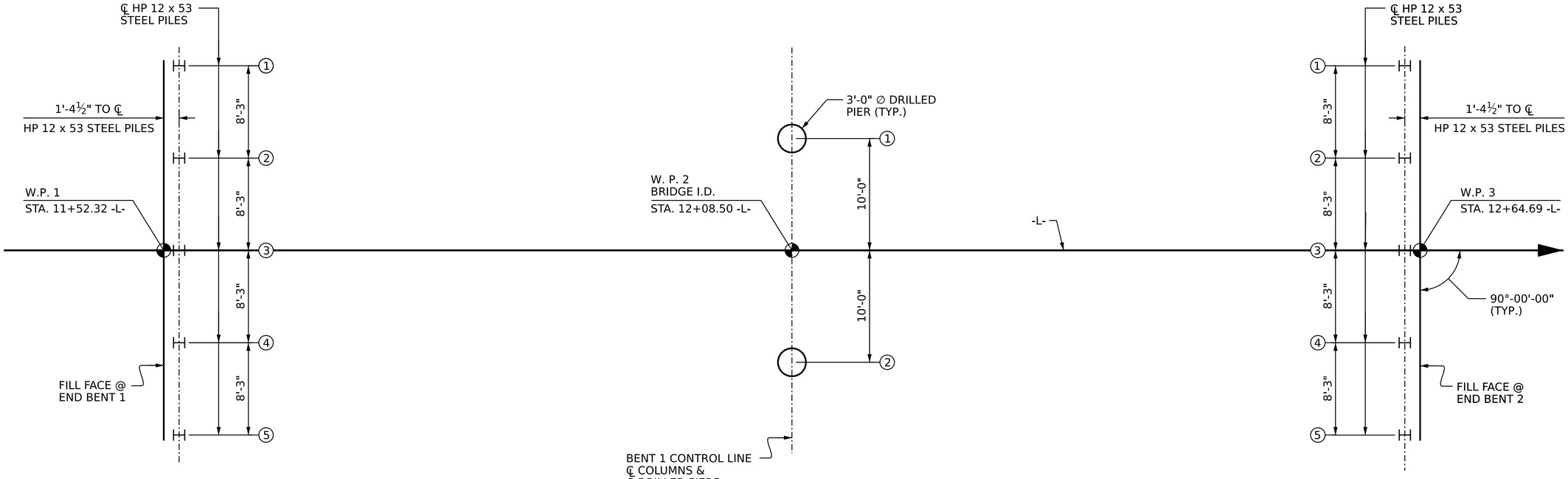
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One Glenwood Avenue, Suite 900
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1			3			TOTAL SHEETS
2			4			24

8/26/21
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END BENT 1 | BENT 1 | END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED PIERS.

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 2 OF 4

DocuSigned by: John Yannaccone 781361754678456...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356
(OLD JOHNS RIVER ROAD)
OVER JOHNS RIVER BETWEEN
NC 90 AND NC 90

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

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-5	5	158	1118.43	15			263					1106.4	3.1	6.9
End Bent 2, Piles 1-5	5	196	1120.04	15			355					1108.0	5.2	4.8
TOTAL QUANTITY:													41.5	58.5

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	158			0.6		
End Bent 2, Piles 1-5	158	37.2		0.6	29.7	

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-5				5
End Bent 2, Piles 1-5				5
TOTAL QUANTITY:				10

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip 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	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1	1	532	1107.30	170		6.0		6	5.2	YES	1112.30	7
Bent 1, Pier 2	1	532	1106.40	170		6.0		6	6.1	YES	1111.40	7
TOTAL QUANTITY:								12	11.3			14

* 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 "36 Dia. Drilled Piers" or "36 Dia. Drilled Piers Not in Soil" and "36 Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "36 Dia. Drilled Piers in Soil."

** 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 36 Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

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) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-2		2		2	
TOTAL QUANTITY:		2		2	

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Mikel W. Shipman, #054501) on 09-22-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.
4. For Piles, see Section 450 of the Standard Specifications.
5. Piles at End Bent No. 1 must be installed to a minimum tip elevation of 1106.4 ft in order to obtain sufficient lateral resistance.
6. Piles at End Bent No. 2 must be installed to a minimum tip elevation of 1108.0 ft in order to obtain sufficient lateral resistance.
7. It has been estimated that a Delmag 19-42 with an energy of 42,400 ft-lbs, or an equivalent hammer, is sufficient to drive piles to the required driving resistance at End Bent Nos. 1 and 2. This estimated energy does not release the Contractor from providing driving equipment in accordance with Subarticle 450-3(D)(2) of the Standard Specifications.
8. Before filling holes for Pile Excavation at End Bent No. 1, drive piles to the required driving resistance of 263 kips.
9. Before filling holes for Pile Excavation at End Bent No. 2, drive piles to the required driving resistance of 355 kips.
10. Fill holes for Pile Excavation at End Bent No. 1 and End Bent No. 2 with concrete or grout.
11. For Drilled Piers, see Section 411 of the Standard Specifications.

PROJECT NO. HB-0058

Caldwell COUNTY

STATION: 12+08.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

Signed by: John Yannaccone 4EF98B90B739424...

9/23/2026

SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

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REVISIONS

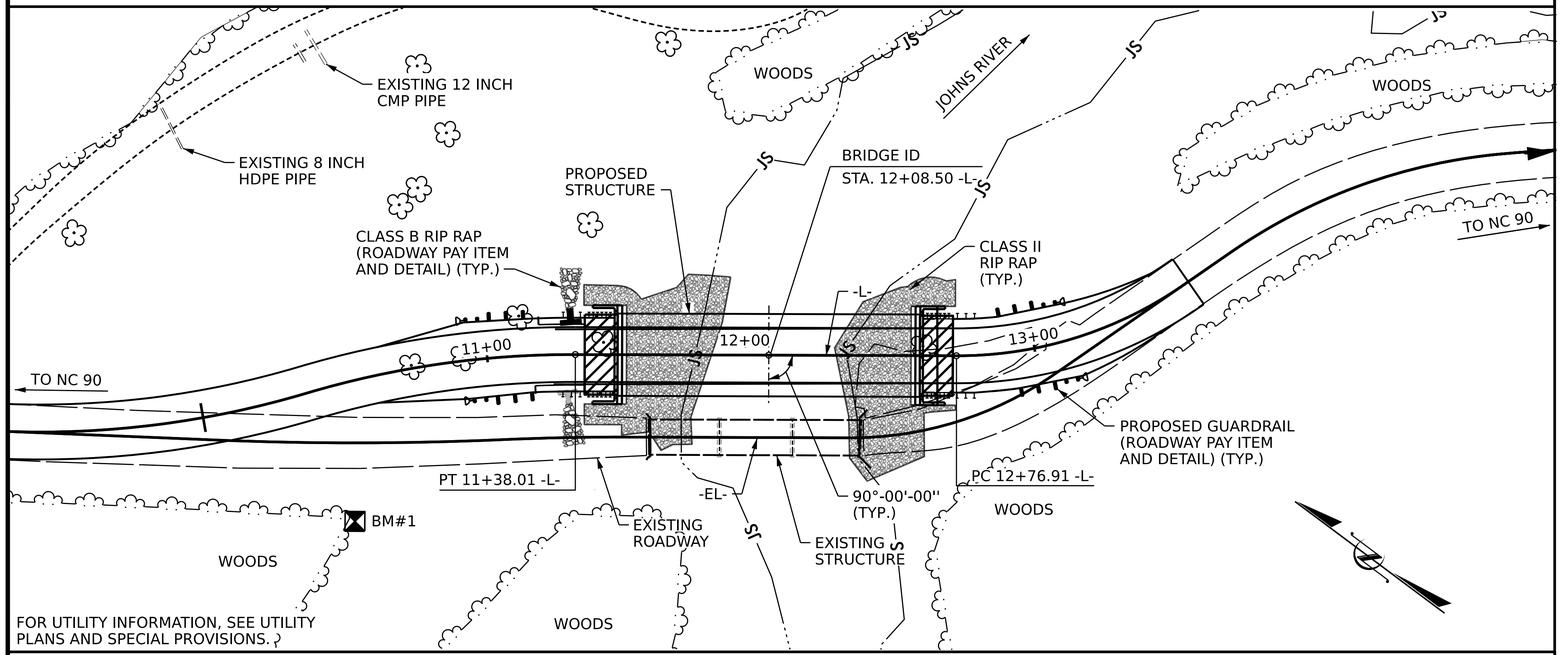
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SHEET NO. S-3

TOTAL SHEETS 24

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BENCHMARK: BM #1 RR SPIKE IN 30" SYCAMORE 49.77' RT. OF STA 10+42.94,-L- EL 1122.98



LOCATION SKETCH

HYDRAULIC DATA:

DESIGN DISCHARGE	= 2900 CFS
FREQUENCY OF DESIGN FLOOD	= <2 YEARS
DESIGN HIGH WATER ELEVATION	= 1122.3 FT.
DRAINAGE AREA	= 60.4 SQ. MI.
BASE DISCHARGE (Q 100)	= 10800 CFS
BASE HIGH WATER ELEVATION	=1128.44 FT.

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE	= 3000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= <2 YEARS
OVERTOPPING FLOOD ELEVATION	= 1122.2 FT. **

** OVERTOPPING OCCURS AT ROADWAY LOW-POINT -L- STA. 10+71±

WS EL. TAKEN @ RIVER STATION 118397.2

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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 BAR SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICE 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.

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 12+08.50 -L-.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+08.50 -L-.

FOR CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 22 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF THREE SIMPLE STEEL SPANS (26.33'-26.0'-26.33') SUPPORTING A TIMBER DECK WITH ASPHALT WEARING SURFACE, 13-FOOT CLEAR ROADWAY WIDTH, AND LOCATED 10 FEET DOWNSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

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"

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

TOTAL BILL OF MATERIAL

	CONST., MAINT. AND REMOVAL OF TEMP. ACCESS AT STA. 12+08.50 -L-	REMOVAL OF EXIST. STRUCTURE AT STA. 12+08.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" ∅ DRILLED PIERS IN SOIL	3'-0" ∅ DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" ∅ DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 12+08.50 -L-	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE												2,955	3,146	
END BENT 1				34.5	15.5						LUMP SUM			20.2
BENT 1						11.3	12.0	14.0	2	2				13.2
END BENT 2				24.0	26.0						LUMP SUM			20.2
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	58.5	41.5	11.3	12.0	14.0	2	2	LUMP SUM	2,955	3,146	53.6

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS, STA. 12+08.5 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		STEEL PILE POINTS	32" ALASKA RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE
	LUMP SUM	LBS.	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	SQ. FT.
SUPERSTRUCTURE	LUMP SUM							205.25			LUMP SUM	20	1,100.0	2,955
END BENT 1		2,410		5	5	75	5		210	250				
BENT 1		4,574	445											
END BENT 2		2,410		5	5	75	5		200	230				
TOTAL	LUMP SUM	9,394	445	10	10	150	10	205.25	410	480	LUMP SUM	20	1,100.0	2,955

SAMPLE BAR REPLACEMENT FOR FEDERAL AID PROJECTS

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER BETWEEN NC 90 AND NC 90

Signed by: John Yannaccone 4EF9BB9D8739424...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/23/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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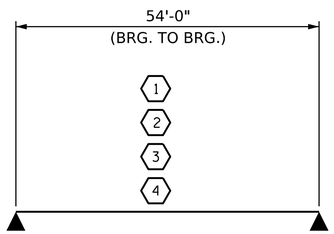
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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	1	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27	
		HL-93 (OPERATING)	N/A	·	1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		HS-20 (OPERATING)	36.000	·	1.900	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.90	55'	EL	5.4	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500	·	2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000	·	2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000	·	2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250	·	1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925	·	1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550	·	1.160	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950	·	1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
		SNS7B	42.000	·	1.028	43.175	1.4	0.275	1.50	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	·	1.320	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075	·	1.330	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600	·	1.101	45.811	1.4	0.275	1.60	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000	·	1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000	·	1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000	·	1.101	47.330	1.4	0.275	1.60	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNAGT5A	45.000	·	1.031	46.405	1.4	0.275	1.50	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
		TNAGT5B	45.000	3	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.617	46.483	1.3	0.275	2.37	55'	EL	27	0.523	2.27	55'	EL	5.4	0.80	0.275	1.62	55'	EL	27	
		EV3	43.000	4	1.049	45.107	1.3	0.275	1.54	55'	EL	27	0.523	1.53	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27	



LRFR SUMMARY

FOR SPAN " A " & "B"

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

(#) CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING * *

4 EMERGENCY VEHICLE LOAD RATING **

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

DocuSigned by: John Yannaccone 781361754678456...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY: J. MYA	DATE : 4/2026
CHECKED BY : J. YANNACCONE	DATE : 4/2026
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 04/23 BNB/AAI

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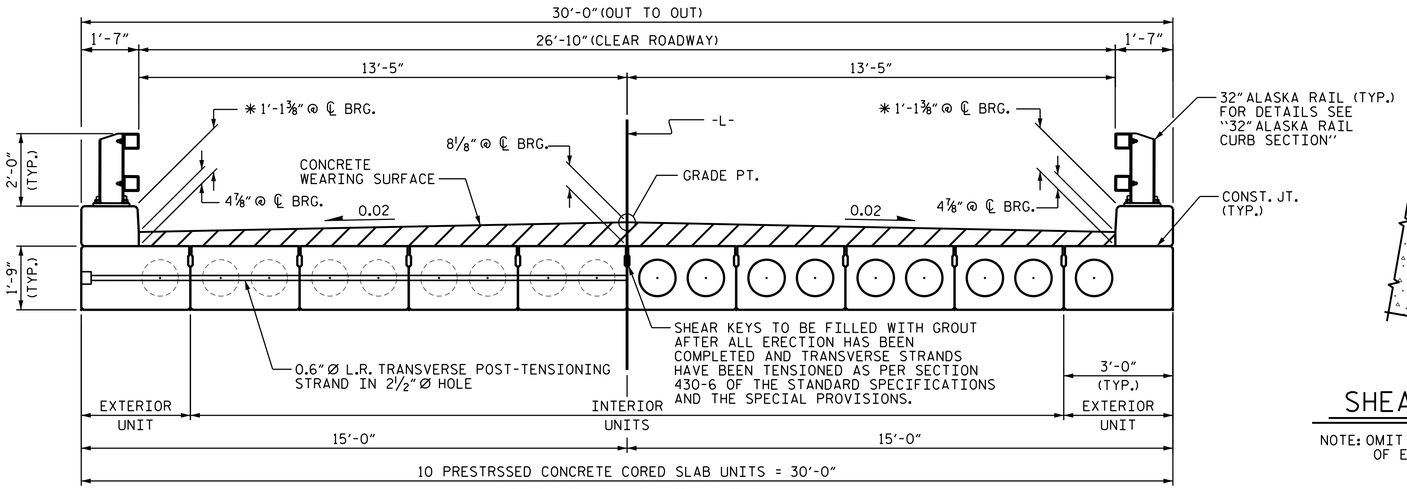
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SHEET NO. S-5

TOTAL SHEETS 24

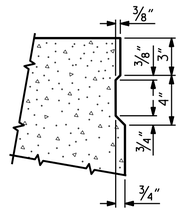
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8/26/21



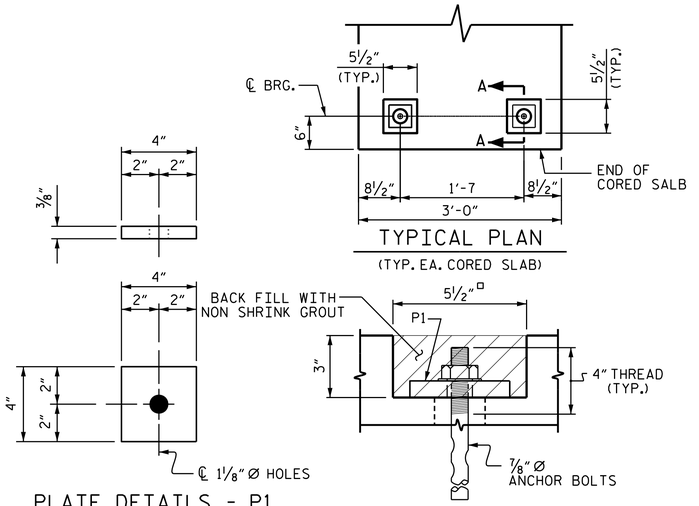
TYPICAL SECTION

* - THE MAXIMUM CURB HEIGHT AND CONCRETE THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND CONCRETE THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE THICKNESS SEE THE "32" ALASKA RAIL CURB SECTION" DETAIL.



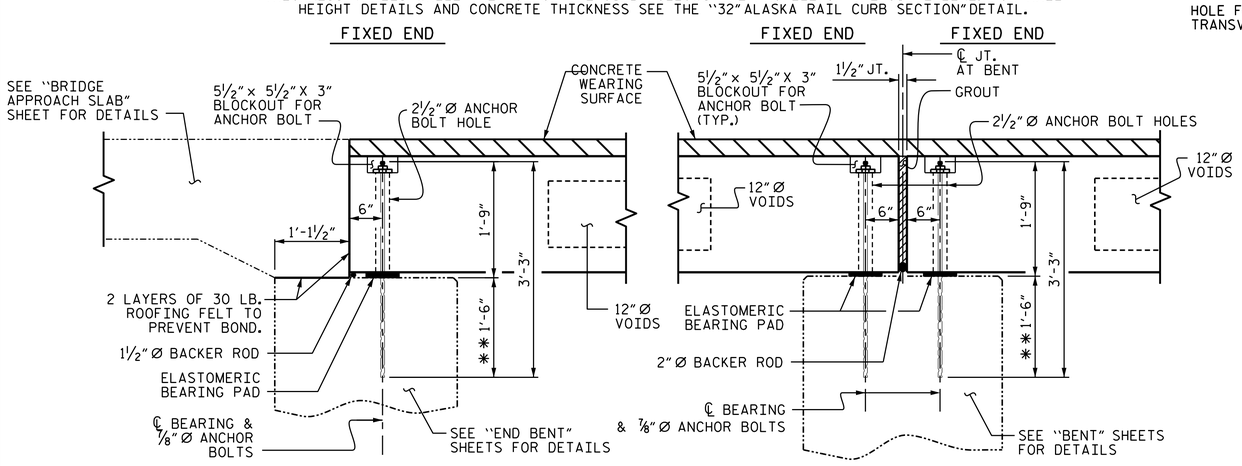
SHEAR KEY DETAIL

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



BLOCKOUT DETAIL FOR ANCHOR BOLTS

(TYP. FOR EACH CORED SLAB)

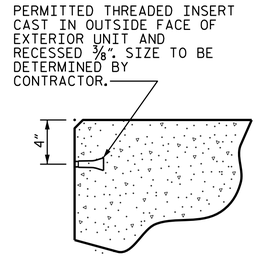


SECTION AT END BENT

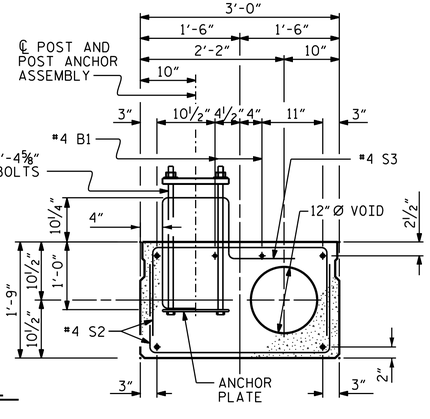
** SWEDGED

SECTION AT BENT

** SWEDGED

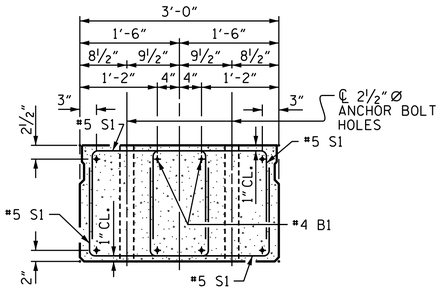


THREADED INSERT SECTION



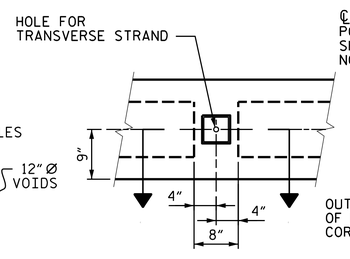
EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)

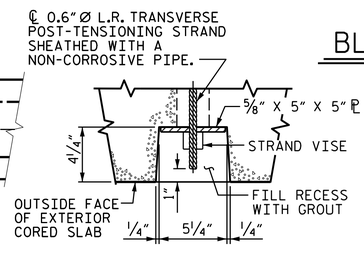


END ELEVATION

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

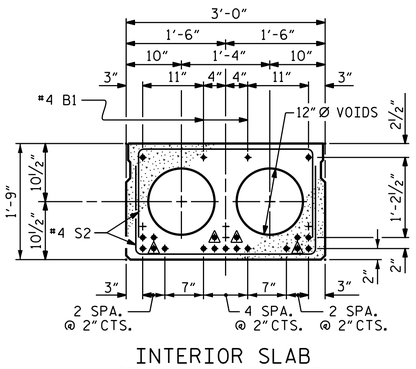


ELEVATION VIEW



SECTION C-C

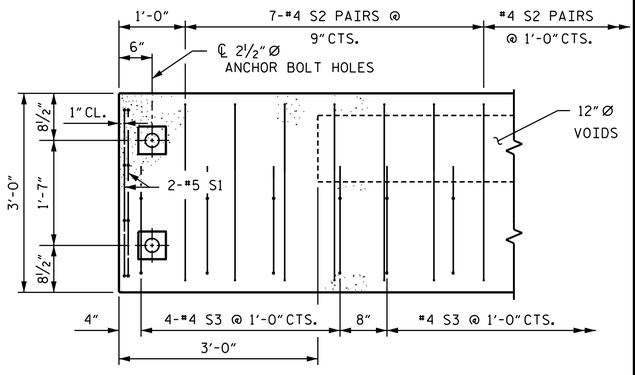
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



INTERIOR SLAB SECTION (55' UNIT)

(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



DETAIL "A"

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

⚠ 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.

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

DocuSigned by: John Yannaccone 7813617546784585
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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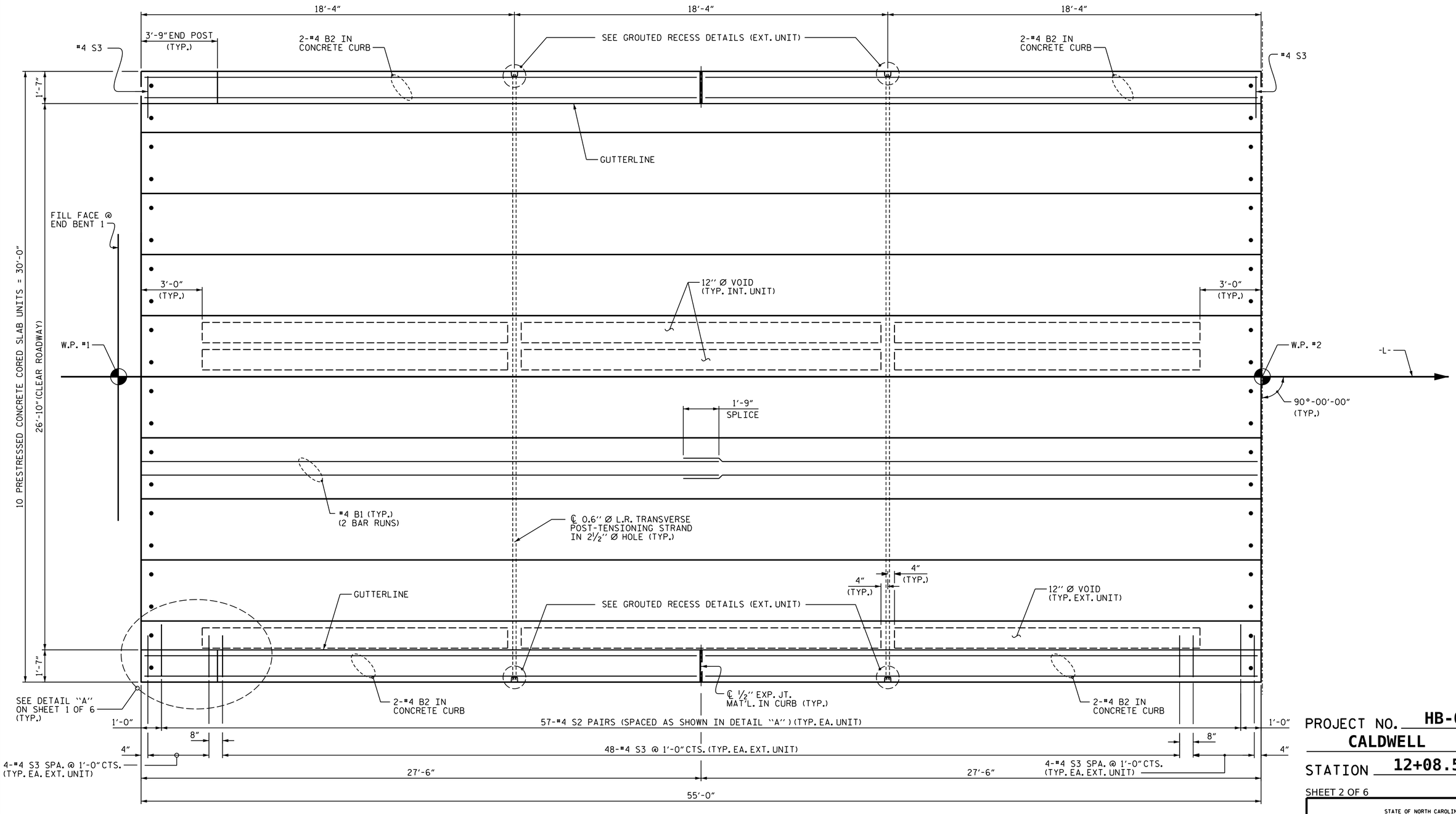
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PLAN OF SPAN A

(SEE SHEET 4 OF 6 FOR #4 S2 BARS AT EACH POST ANCHOR ASSEMBLY)

DocuSigned by: John Yannaccone 7813617546784S6...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT 26'-10" CLEAR ROADWAY 90° SKEW SPAN A

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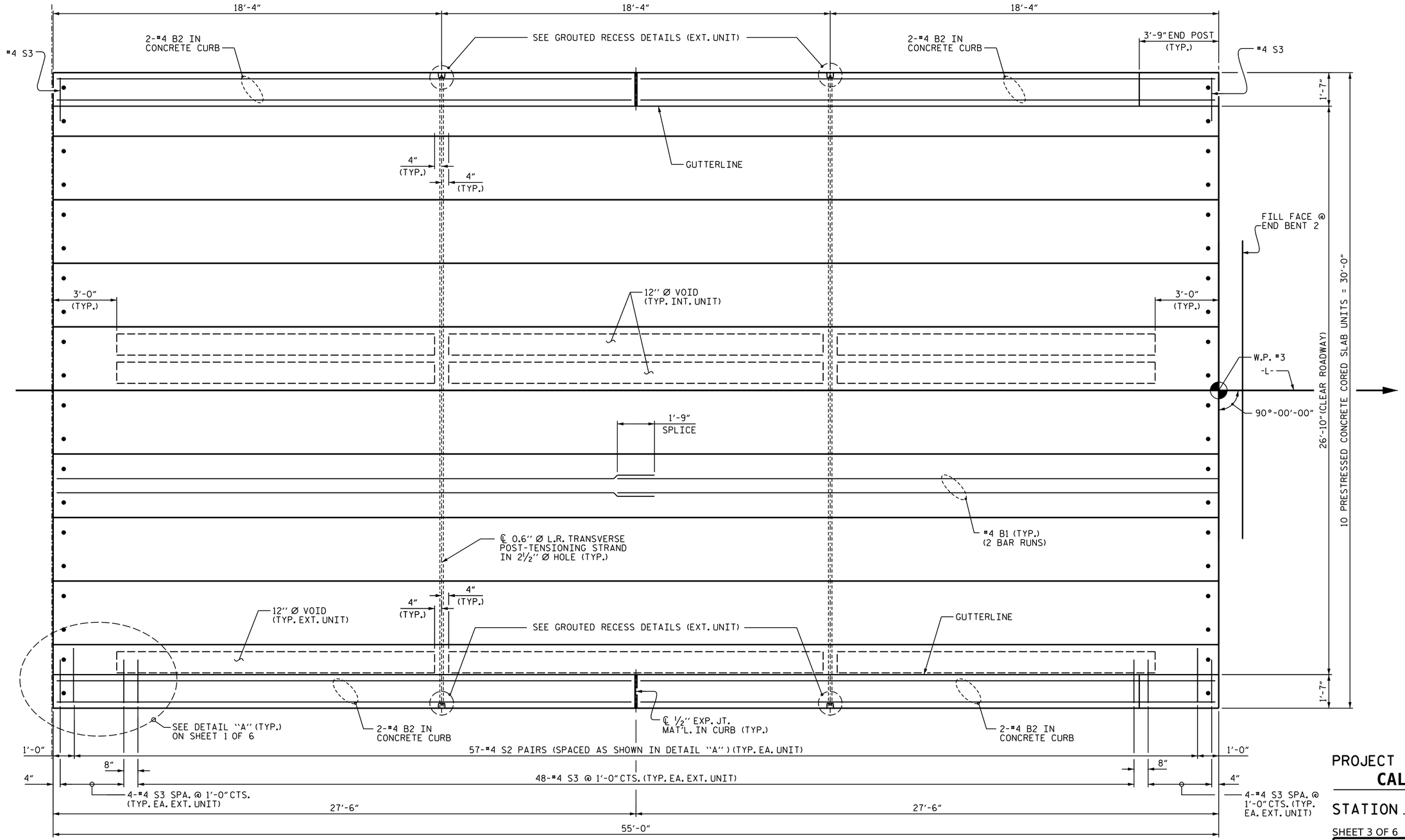
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PLAN OF SPAN B

(SEE SHEET 4 OF 6 FOR #4 S2 BARS AT EACH POST ANCHOR ASSEMBLY)

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT
26'-10" CLEAR ROADWAY
90° SKEW
SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
DocuSigned by: John Yannaccone 7813617546784B6...
9/14/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅜" ↓
FINAL CAMBER	1⅛" ↑

** INCLUDES FUTURE WEARING SURFACE

21" CORED SLABS REQUIRED

55' C.S. UNITS (SPAN A)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	8	55'-0"	440'-0"
TOTAL	10		550'-0"
55' C.S. UNITS (SPAN B)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	8	55'-0"	440'-0"
TOTAL	10		550'-0"

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	2	4'-3"	35	4'-3"	35
S2	114	#4	2	5'-4"	406	5'-4"	406
S2	98	#4	2	5'-4"	349	-	-
* S3	56	#4	1	5'-5"	203	-	-
REINFORCING STEEL			LBS.		865		516
* EPOXY COATED REINFORCING STEEL			LBS.		203		-
6500 P.S.I. CONCRETE			CU. YDS.		9.2		7.8
0.6" Ø L.R. STRANDS			No.		19		19

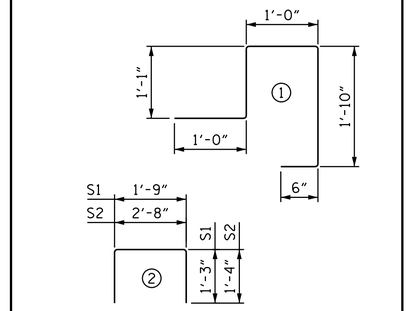
GUTTERLINE CONCRETE THICKNESS & CURB HEIGHT

	CONCRETE OVERLAY THICKNESS	CURB HEIGHT
	@ MID-SPAN	@ MID-SPAN
55' UNITS	3¾"	1'-0¼"

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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.

AT ALL FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2½" Ø ANCHOR BOLT HOLES AT FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

THE ANCHOR BOLT BLOCKOUTS IN CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT PRIOR TO PLACEMENT OF THE WEARING SURFACE.

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 CONCRETE CURBS 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.

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.

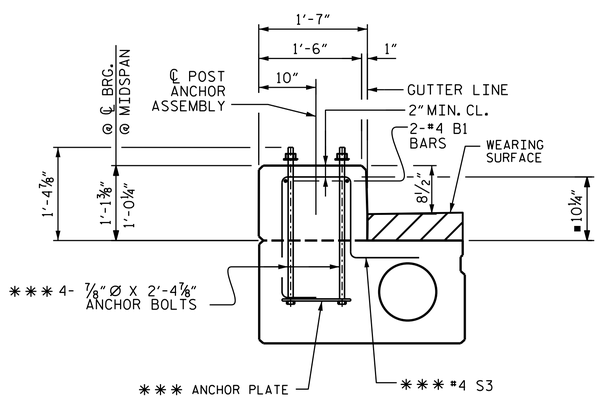
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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

THE COST OF THE METAL RAIL ANCHOR ASSEMBLY CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

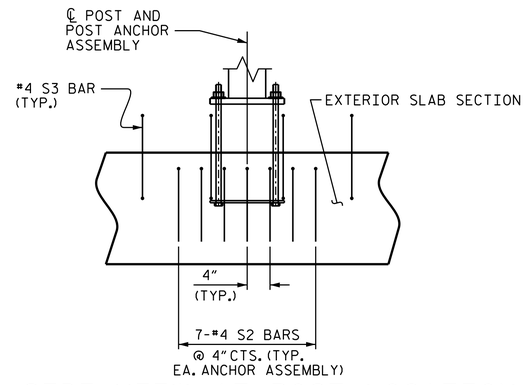
FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

■ DIMENSIONS MEASURED AT GUTTER LINE



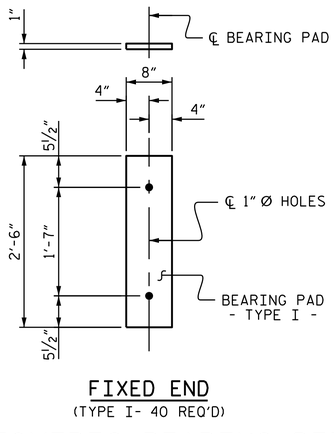
32" ALASKA RAIL CURB SECTION

*** THE TOP OF CURB SHALL BE LEVEL AND THE ALASKA RAIL SHALL BE PLUMB.



SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)

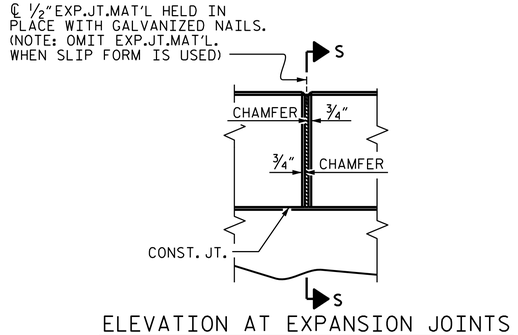


FIXED END

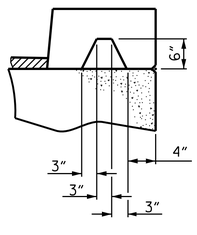
(TYPE I- 40 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



ELEVATION AT EXPANSION JOINTS



SECTION S-S

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
55' UNITS	4900

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

DocuSigned by: John Yannaccone 7813617546784B6...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

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DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

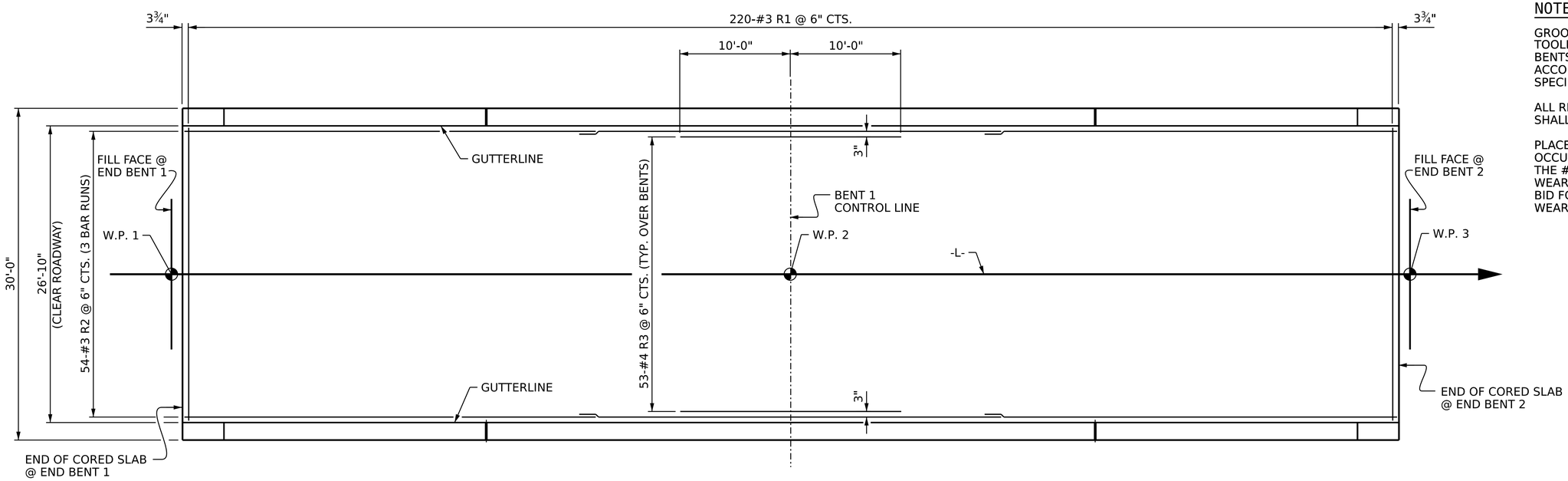
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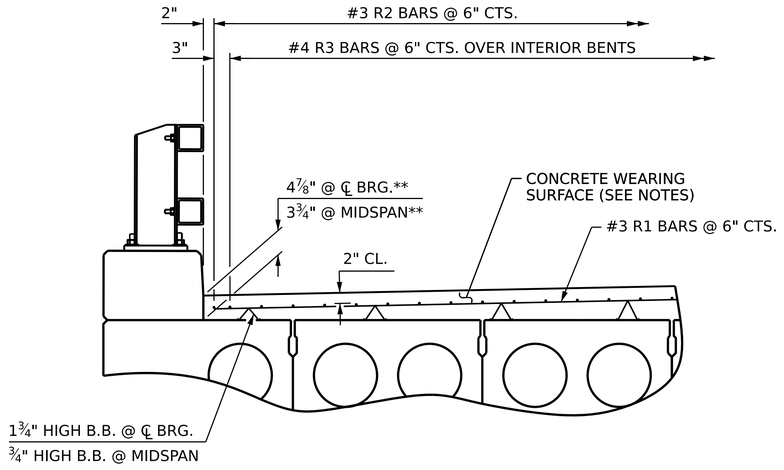
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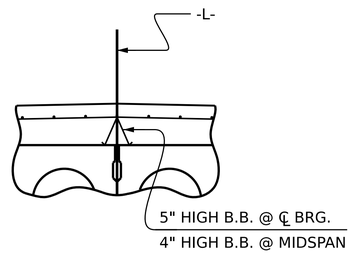
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SPAN A SPAN B

PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL





REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

NOTES:

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL IN CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE CURB. THE COST OF THE #3 BARS AND #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	220	#3	STR.	26'-6"	2,192
*R2	162	#3	STR.	37'-8"	2,294
*R3	53	#4	STR.	20'-0"	708
* EPOXY COATED REINFORCING STEEL				LBS.	5,194
CONCRETE WEARING SURFACE				SQ. FT.	2,955

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3	1'-6"
#4	1'-11"

GROOVING BRIDGE FLOORS

APPROACH SLABS	540	SQ.FT.
BRIDGE DECK	2,606	SQ.FT.
TOTAL	3,146	SQ.FT.

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 5 OF 6

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NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING SURFACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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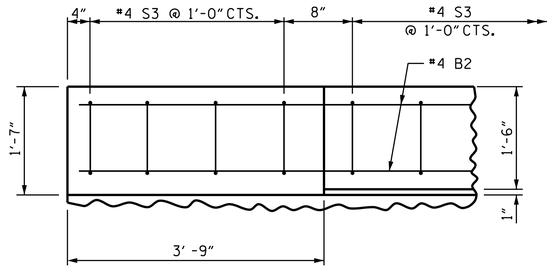
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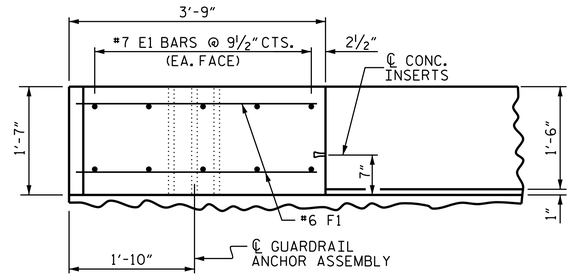
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BILL OF MATERIAL FOR 2 CURBS & 4 END POSTS

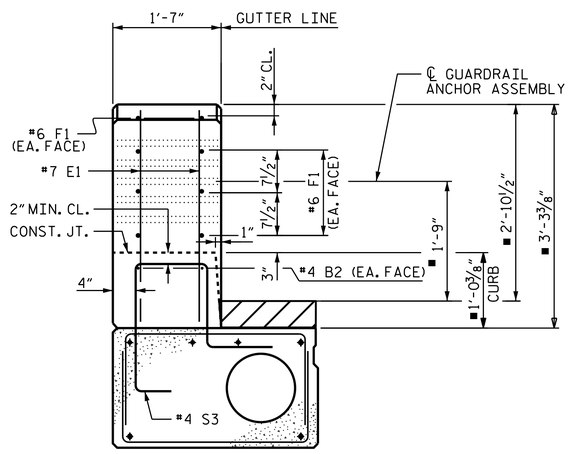
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B2	16	#4	STR.	27'-1"	290
✳E1	40	#7	STR.	3'-0"	245
✳F1	32	#6	STR.	3'-5"	164
✳EPOXY COATED REINFORCING STEEL				LBS.	699
CLASS AA CONCRETE				CU. YDS.	15.1
1'-7" x 1'-0" CONCRETE CURB				LIN. FT.	220.25



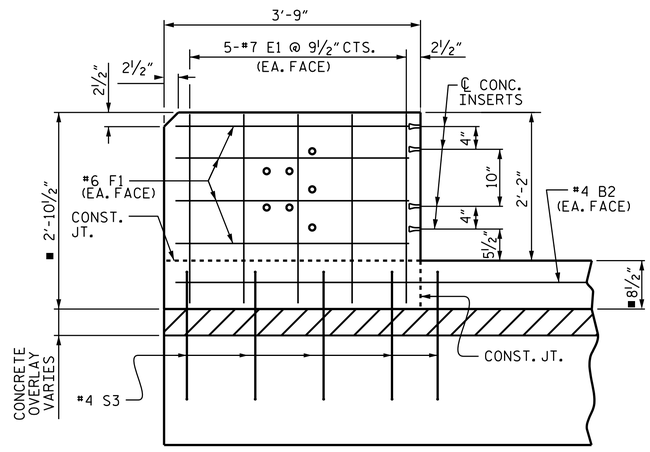
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

■ DIMENSIONS MEASURED AT GUTTER LINE

CURB AND END POST FOR 32" ALASKA RAIL

PROJECT NO. **HB-0058**

CALDWELL COUNTY

STATION **12+08.50 -L-**

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE CURBS AND END POSTS

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NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

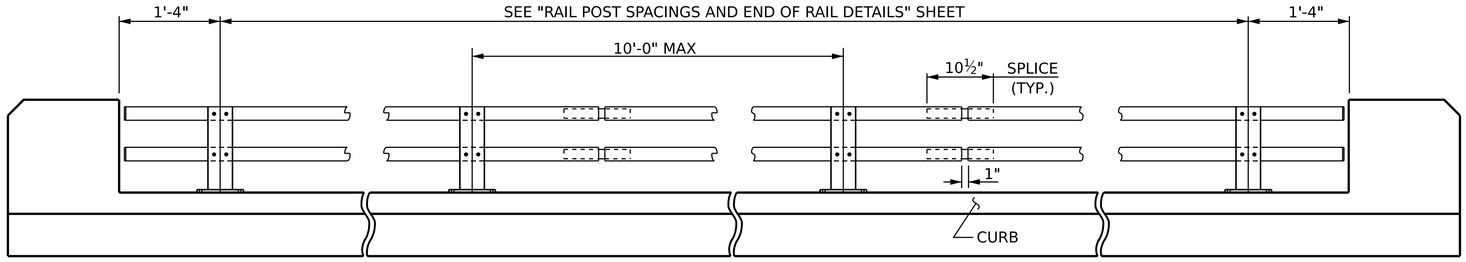
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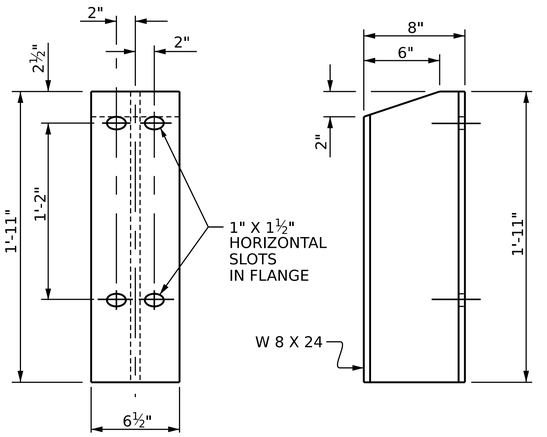
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ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR9.



FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

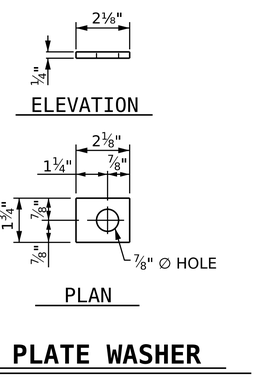
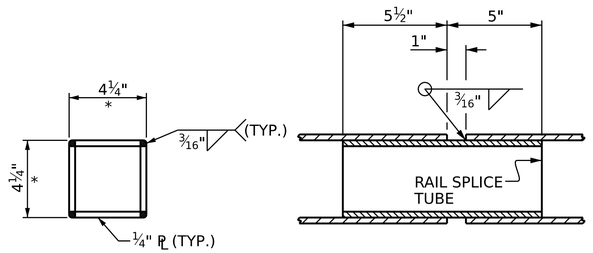
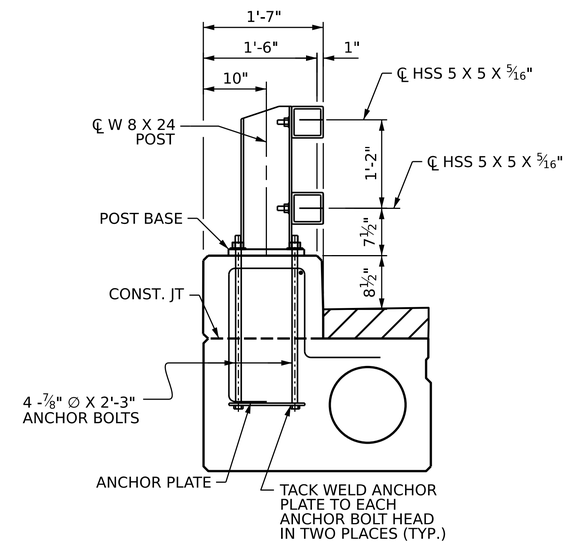


PLATE WASHER

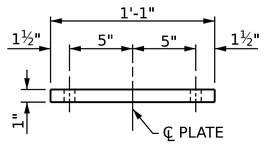


RAIL SPLICE DETAILS

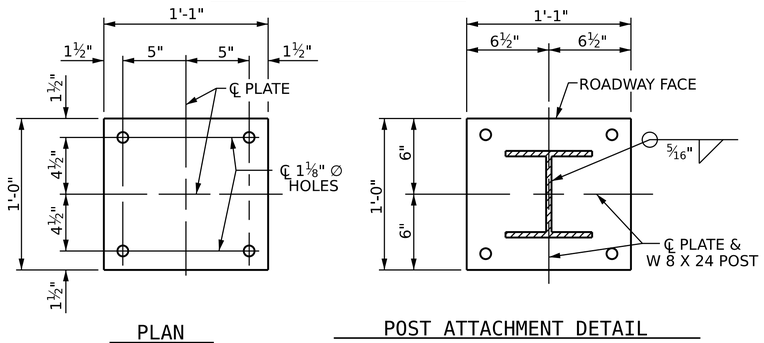
* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.



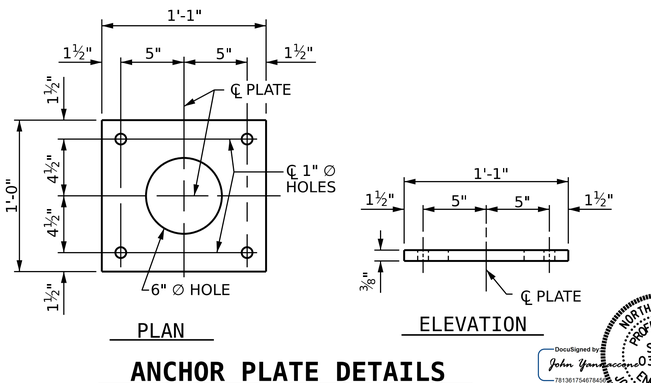
SECTION THRU RAIL



FRONT ELEVATION



POST BASE DETAILS



ANCHOR PLATE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

GROOVED CONTRACTION JOINTS,½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" ∅ WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 32" ALASKA RAIL, SEE THE STANDARD SPECIFICATIONS.

METAL RAIL LENGTH 205.25 LIN. FT.

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32" ALASKA RAIL

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NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC
	REV. 10/23	BNB/SNM

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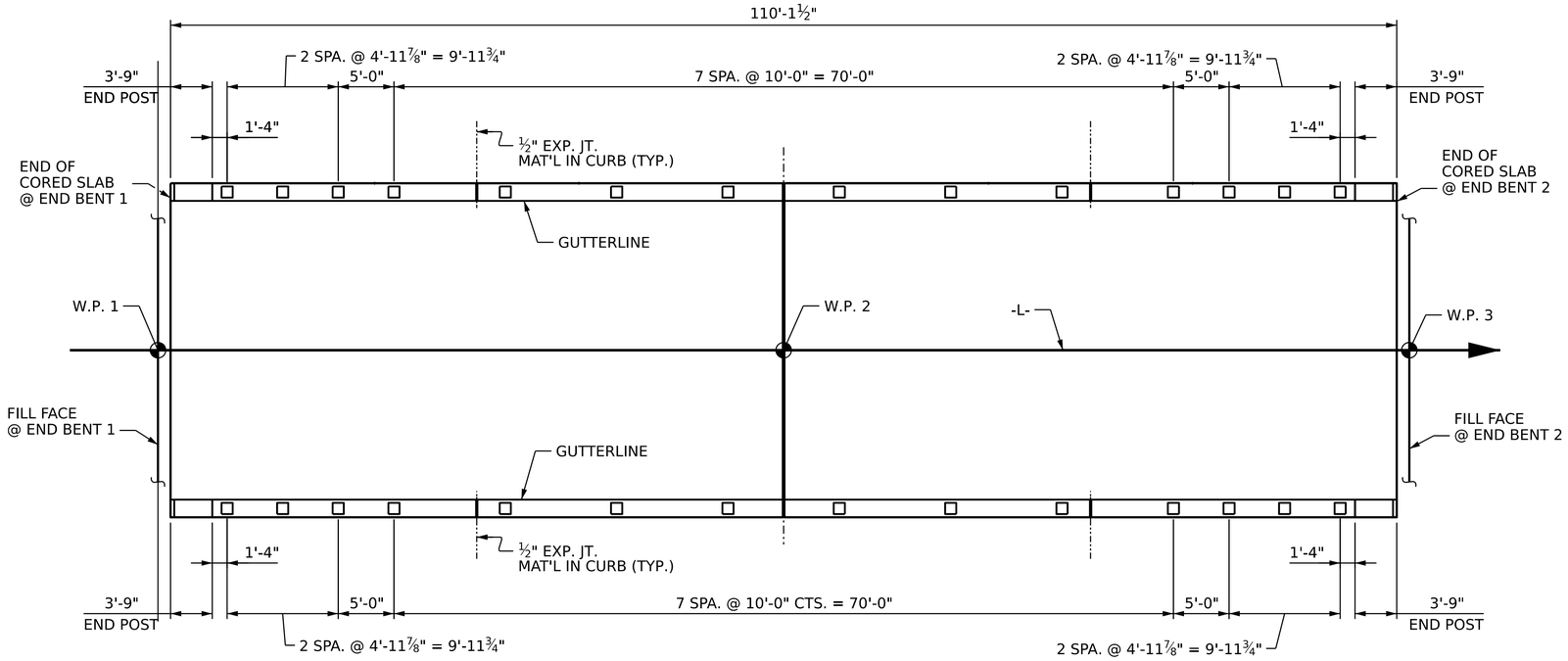
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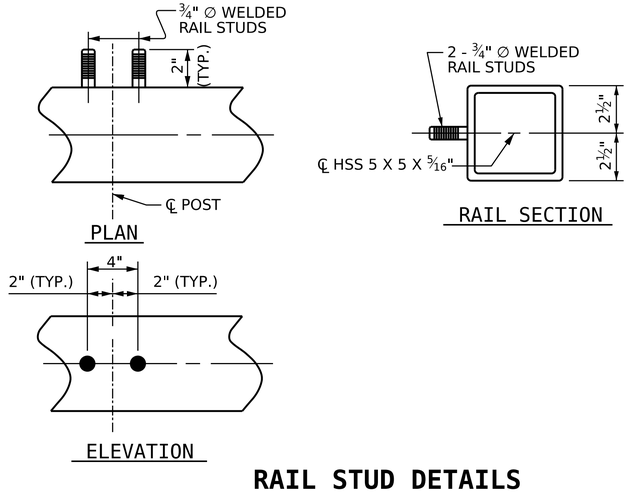
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STD. NO. BMR8

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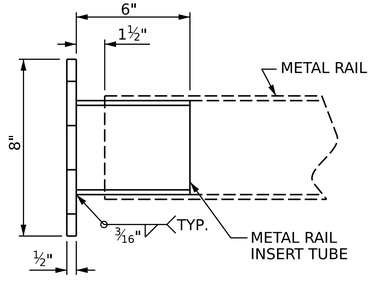


PLAN OF RAIL POST SPACINGS



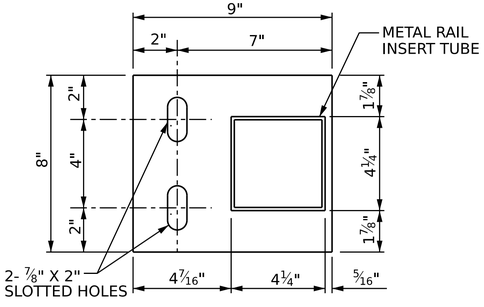
RAIL SECTION

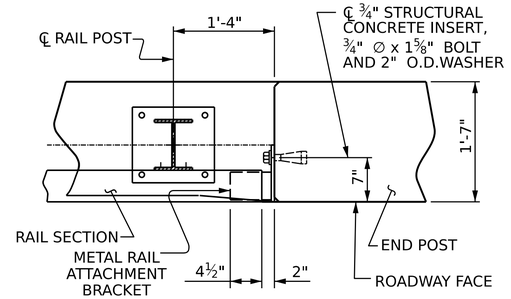
RAIL STUD DETAILS



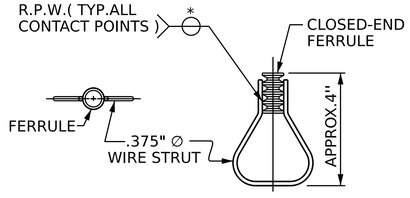
METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.





PLAN - RAILS AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO ASTM A123.

B. ¾" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅝" BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

THE ¾" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT, THE ½" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾" ∅ x 6½" BOLTS AND 2'' O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLTS SHALL APPLY TO THE ¾" ∅ x 6½" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR 32" ALASKA RAIL

ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
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	REV. 10/23	BNB/SNM

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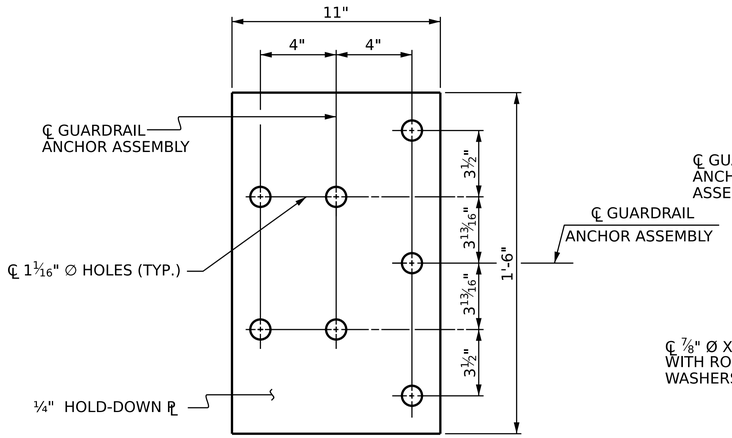
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9/14/2026

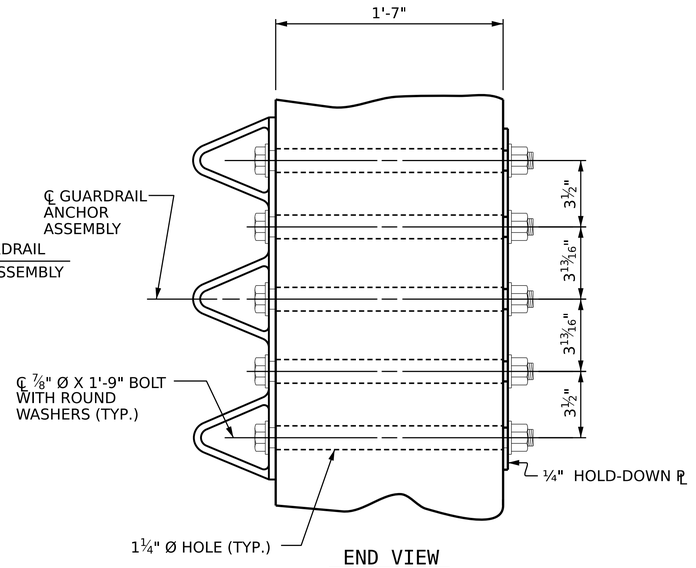
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STD. NO. BMR9

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8/26/21



PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ 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 ⅞'' ∅ 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.

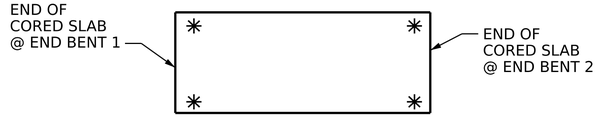
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

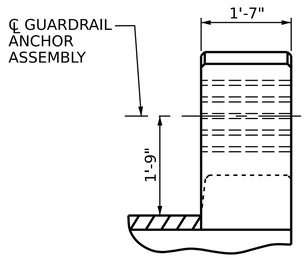
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.

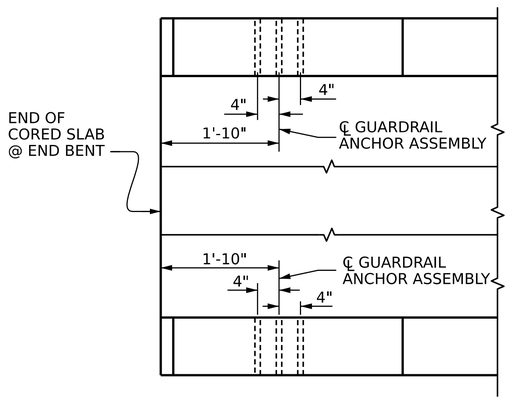


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR.
(32" ALASKA RAIL)

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

DocuSigned by: John Yannaccone 7813617546784567
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC
	REV. 10/23	BNB/SNM

PRELIMINARY PLANS
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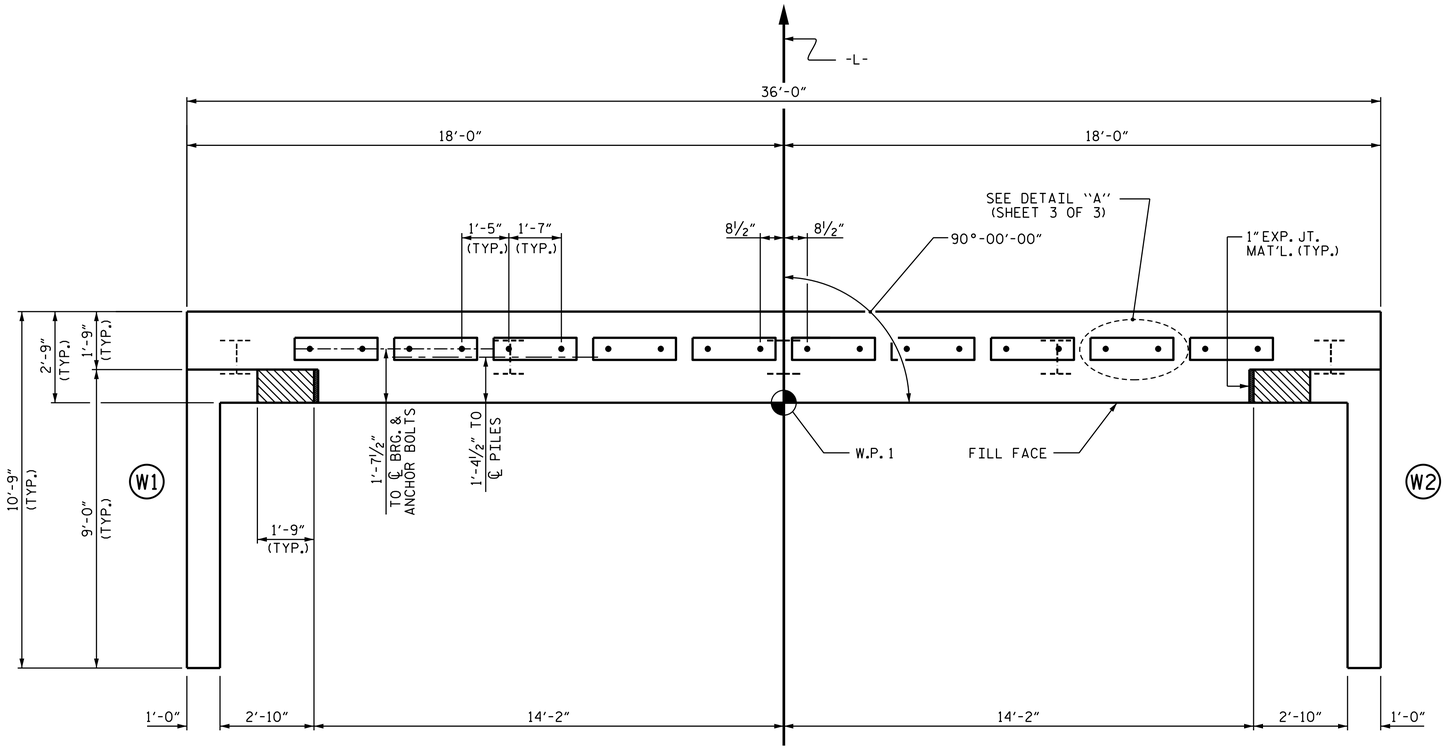
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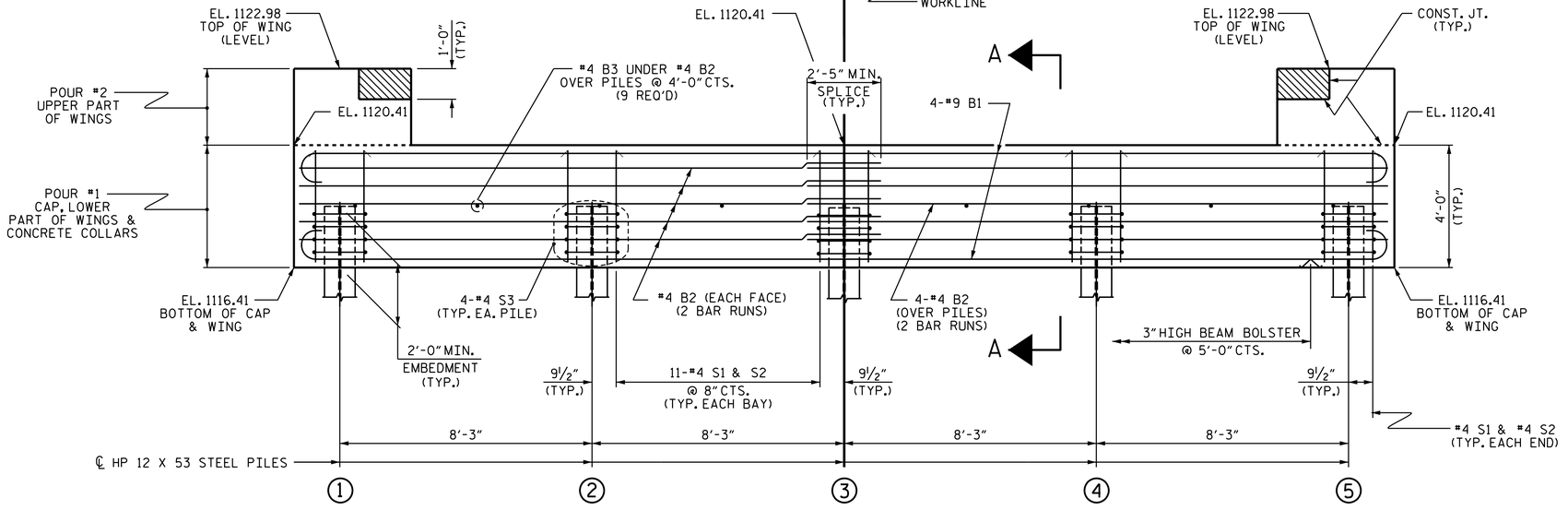
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STD. GRA3 Sht.3

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8/26/21



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 ANCHOR BOLTS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DocuSigned by: John Yannaccone 781361754678456...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY :	J. PARROTT — DATE : 06/2026
CHECKED BY :	J. YANNACCONE — DATE : 06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE — DATE : 08/2026

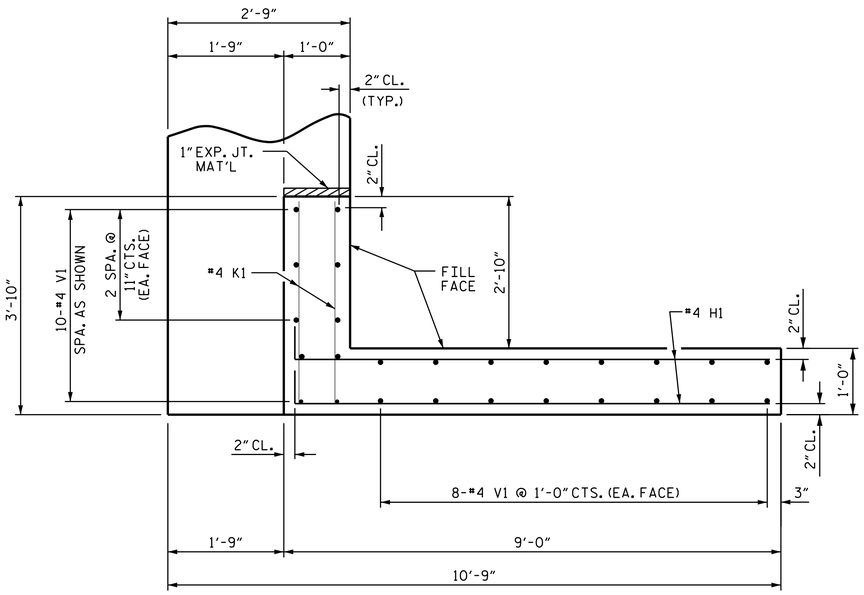
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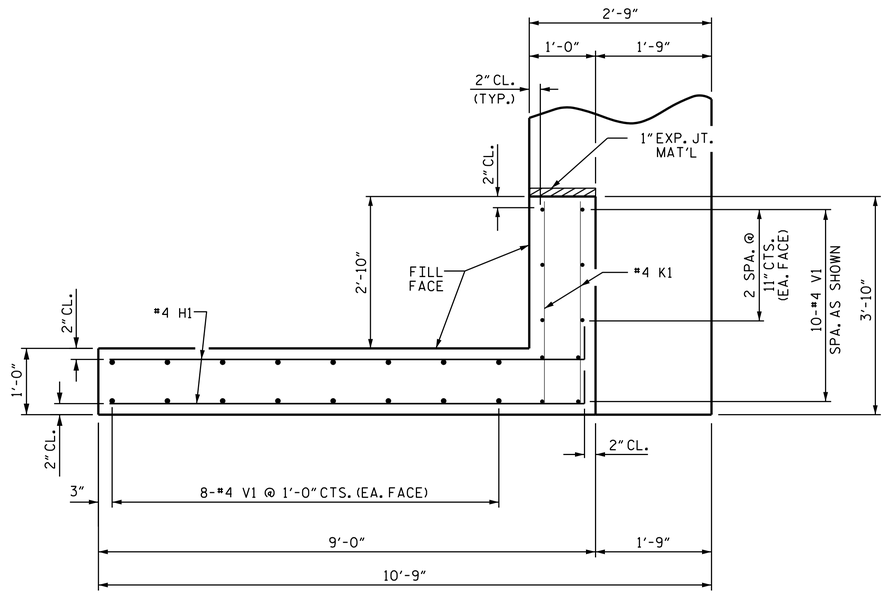
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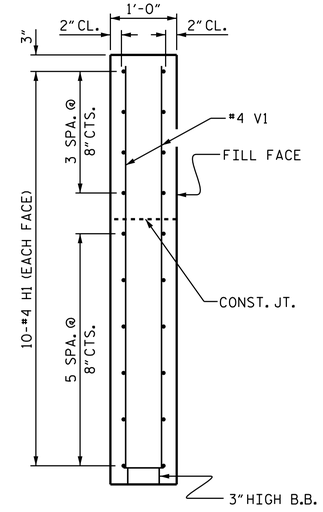
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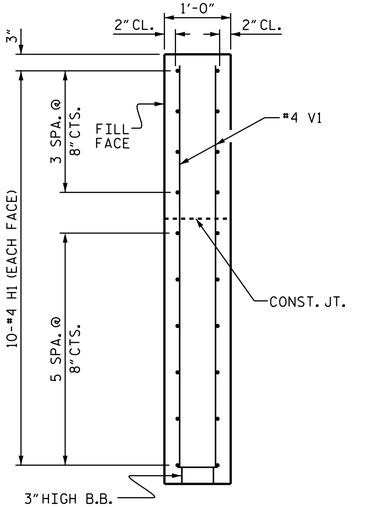
PLAN OF WING (W1)



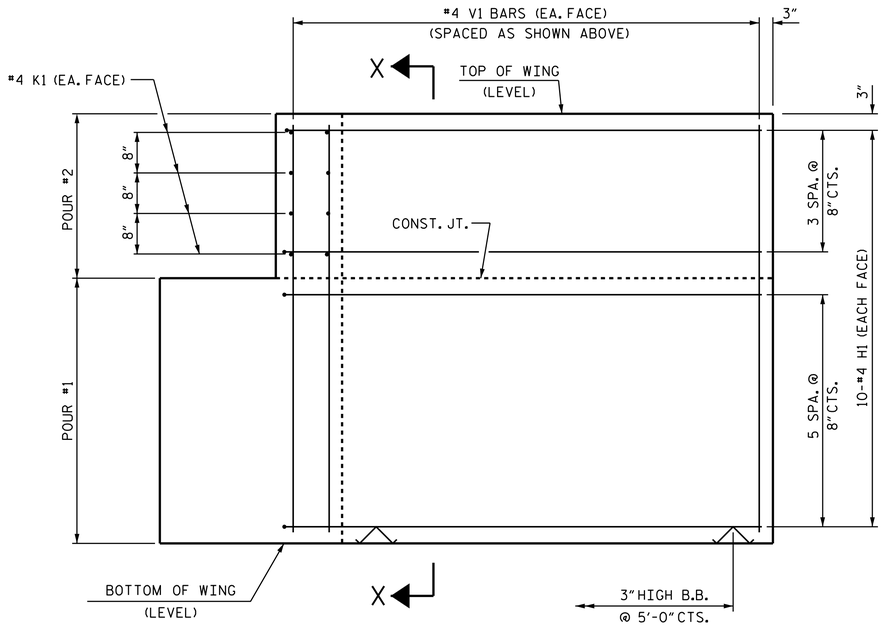
PLAN OF WING (W2)



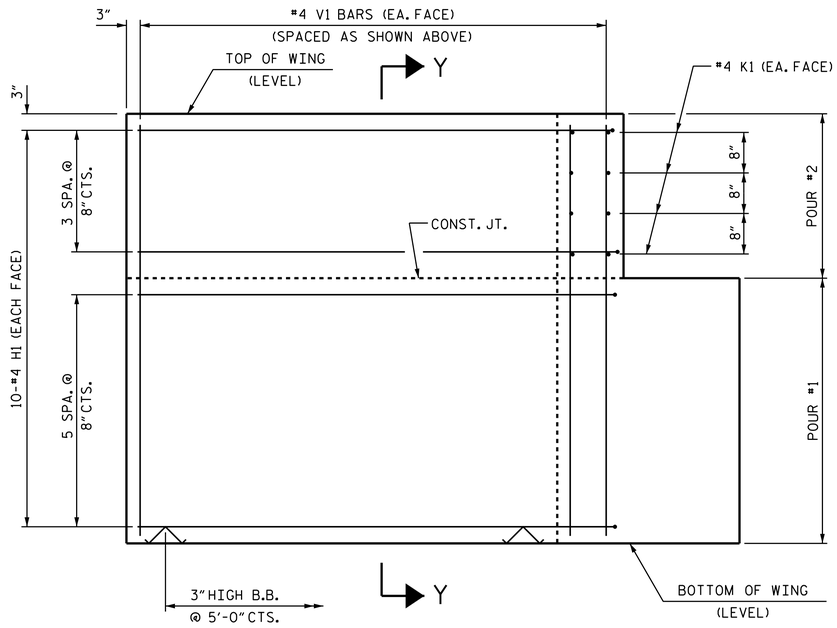
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

DocuSigned by: John Yannaccone 7813617546784561...
9/14/2026

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

DRAWN BY :	J.PARROTT — DATE : 4/2026
CHECKED BY :	J. YANNACCONE — DATE : 4/2026
DESIGN ENGINEER OF RECORD:	J.YANNACCONE — DATE : 4/2026

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DEPARTMENT OF TRANSPORTATION
RALEIGH

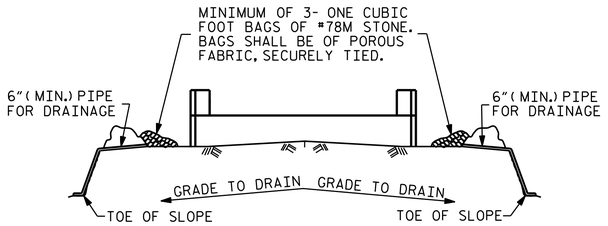
SUBSTRUCTURE

END BENT 1
WING DETAILS

PROJECT NO. **HB-0058**
CALDWELL COUNTY
STATION **12+08.50 -L-**
SHEET 2 OF 3

REVISIONS						SHEET NO.
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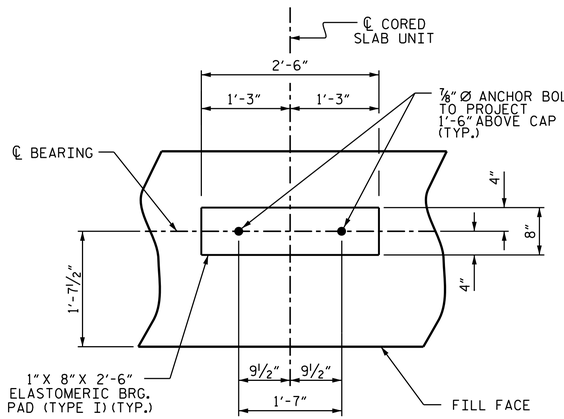


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

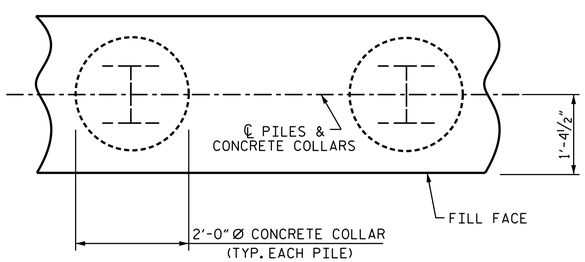
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

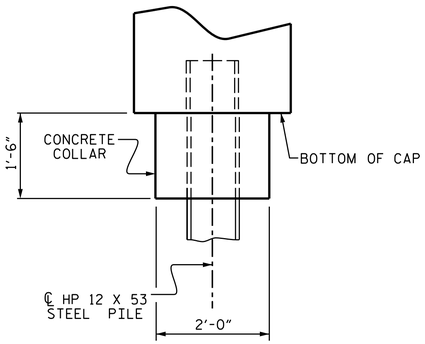
TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

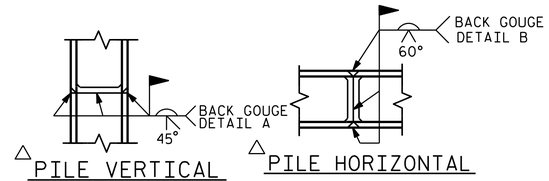


PLAN



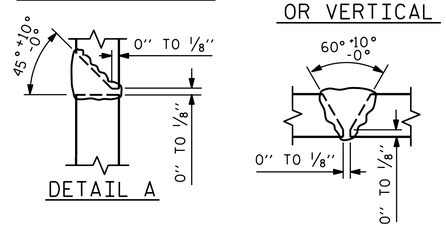
ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL



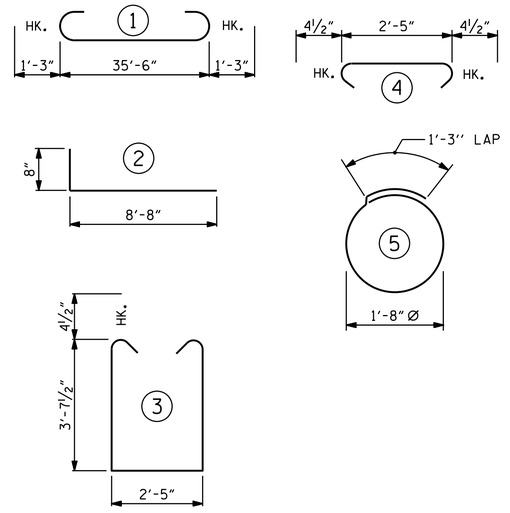
DETAIL A

DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	3'-5"	37
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214

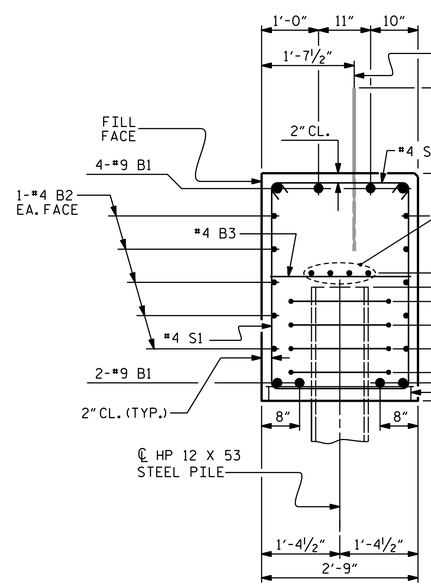
REINFORCING STEEL (FOR ONE END BENT) 2,410 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.9 C.Y.

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

TOTAL CLASS A CONCRETE 20.2 C.Y.



SECTION A-A

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

DocuSigned by: John Yannaccone 7813617546784A6...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

DRAWN BY : J. PARROTT DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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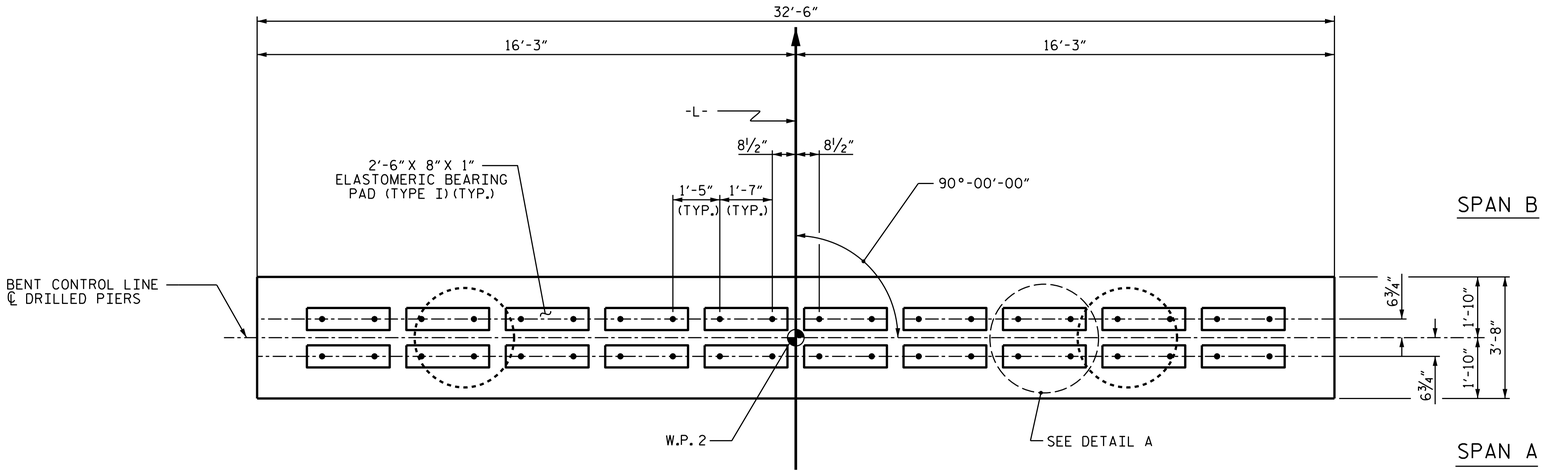
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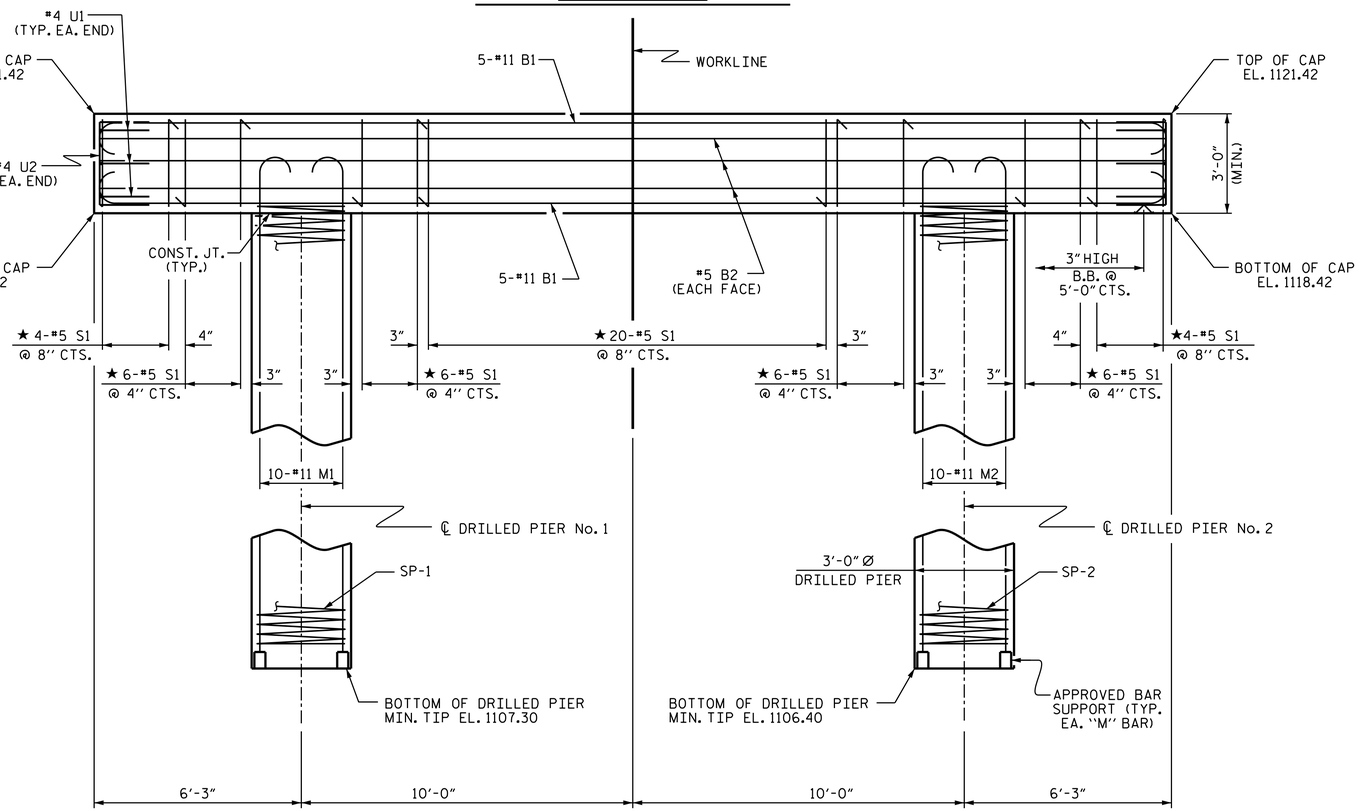
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8/26/21



PLAN



ELEVATION

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

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

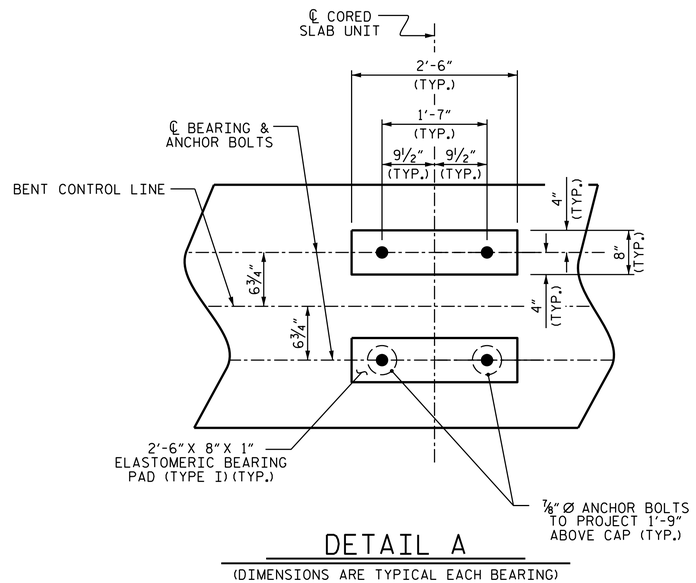
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

SINCE NO COLUMN SPLICE IS PROVIDED, THE CONTRACTOR SHALL CONFIRM THAT THE "M" BARS HAVE THE MINIMUM EMBEDMENT INTO THE CAP PRIOR TO PLACEMENT OF THE DRILLED PIER CONCRETE.



DETAIL A

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DocuSigned by: John Yannaccone 7813617546784561...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY :	J. PARROTT DATE : 06/2026
CHECKED BY :	J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE DATE : 08/2026

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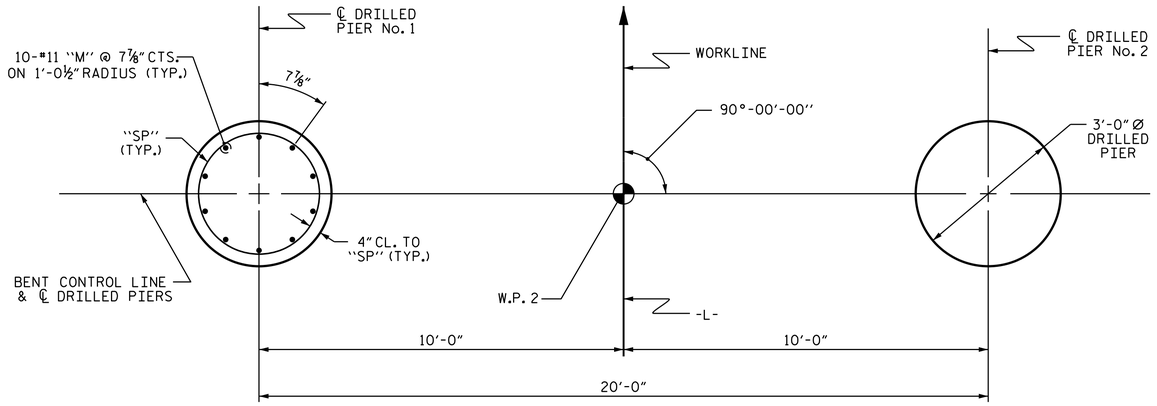
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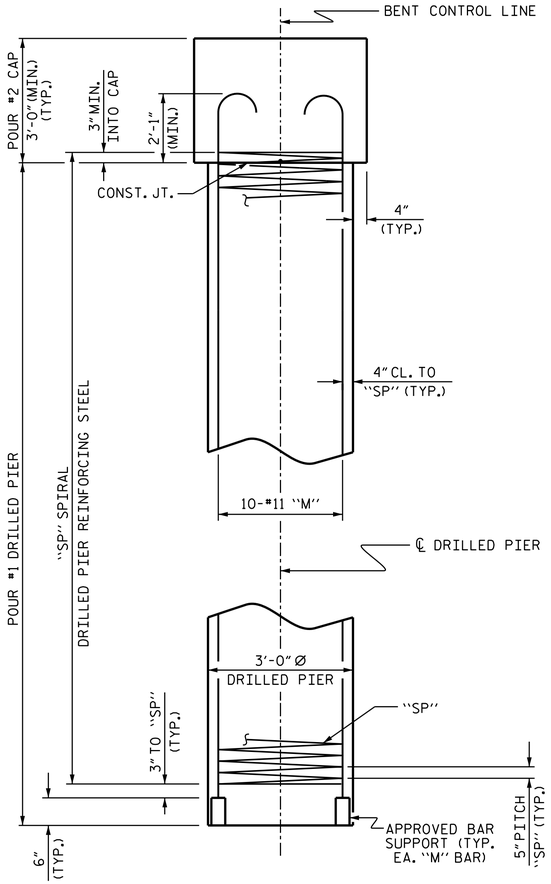
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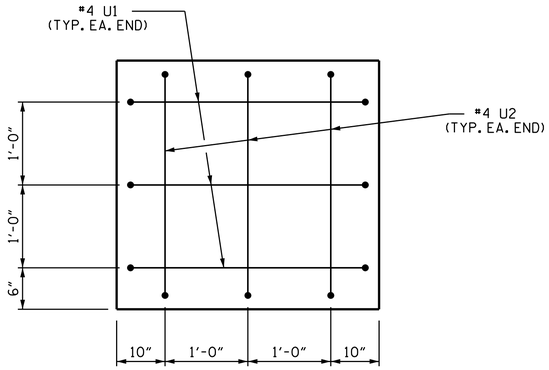
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PLAN OF DRILLED PIERS

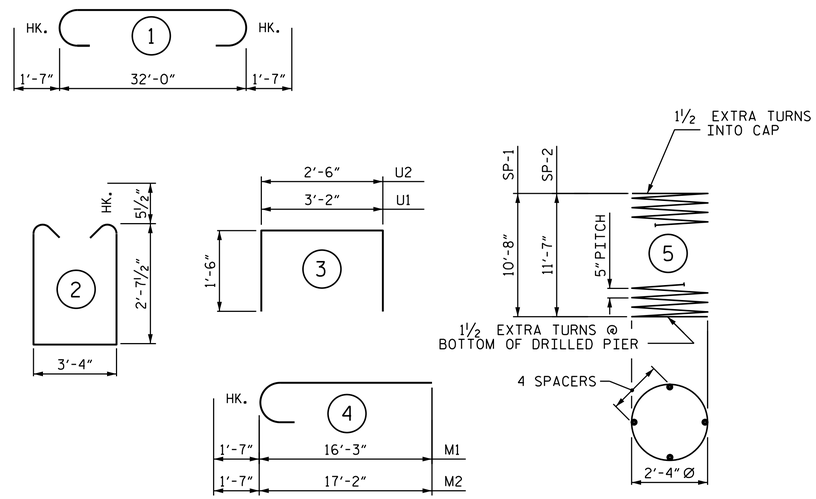


END ELEVATION

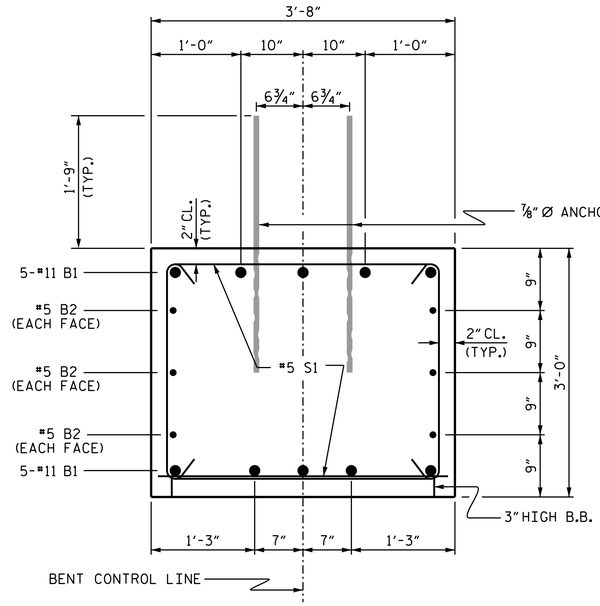


END OF CAP VIEW
(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL
FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
M1	10	#11	4	17'-10"	947
M2	10	#11	4	18'-9"	996
S1	52	#5	2	9'-6"	515
U1	6	#4	3	6'-2"	25
U2	6	#4	3	5'-6"	22

REINFORCING STEEL (FOR ONE BENT) 4,574 LBS.

SP-1	1	*	5	205'-4"	214 LBS.
SP-2	1	*	5	221'-2"	231 LBS.

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 445 LBS.

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (CAP)	13.2 C.Y.
TOTAL CLASS A CONCRETE	13.2 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	6.1 C.Y.

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

DocuSigned by: John Yannaccone 7813617546784561...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY : J. PARROTT DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

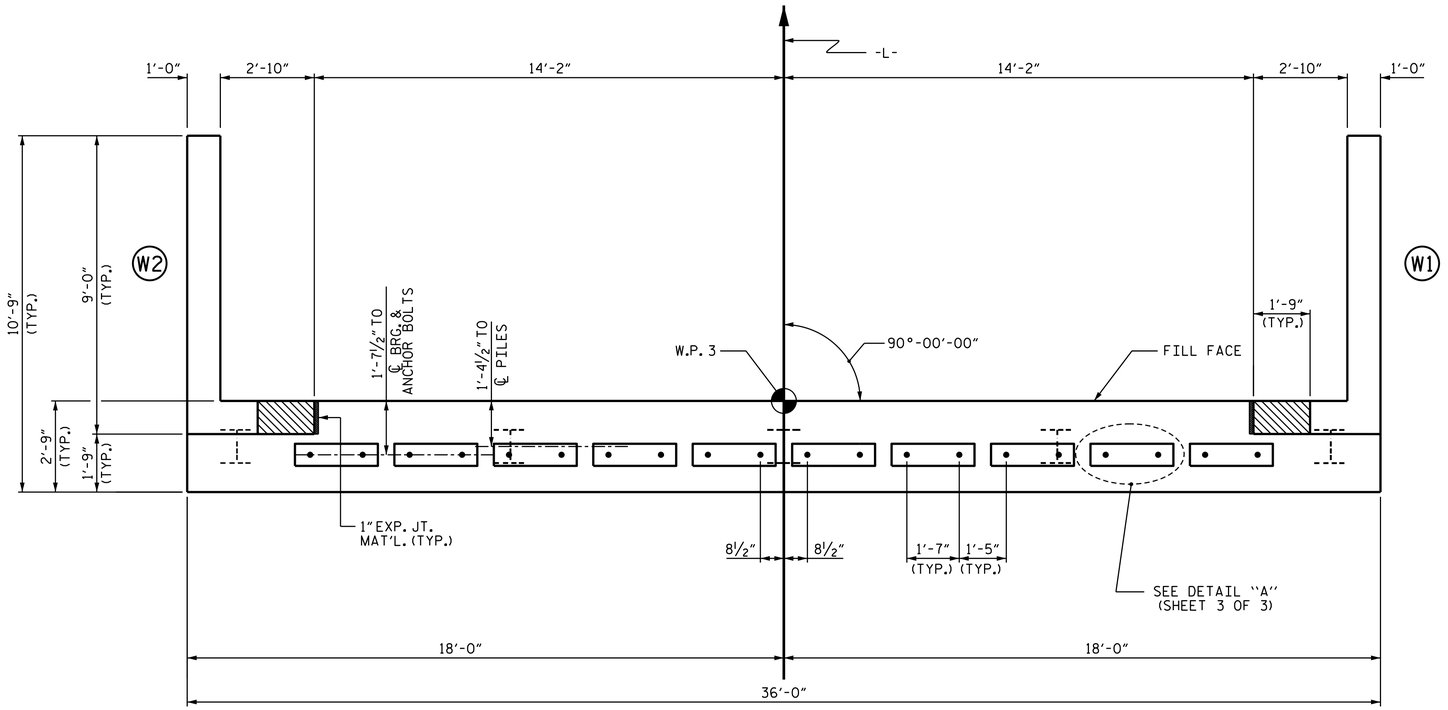
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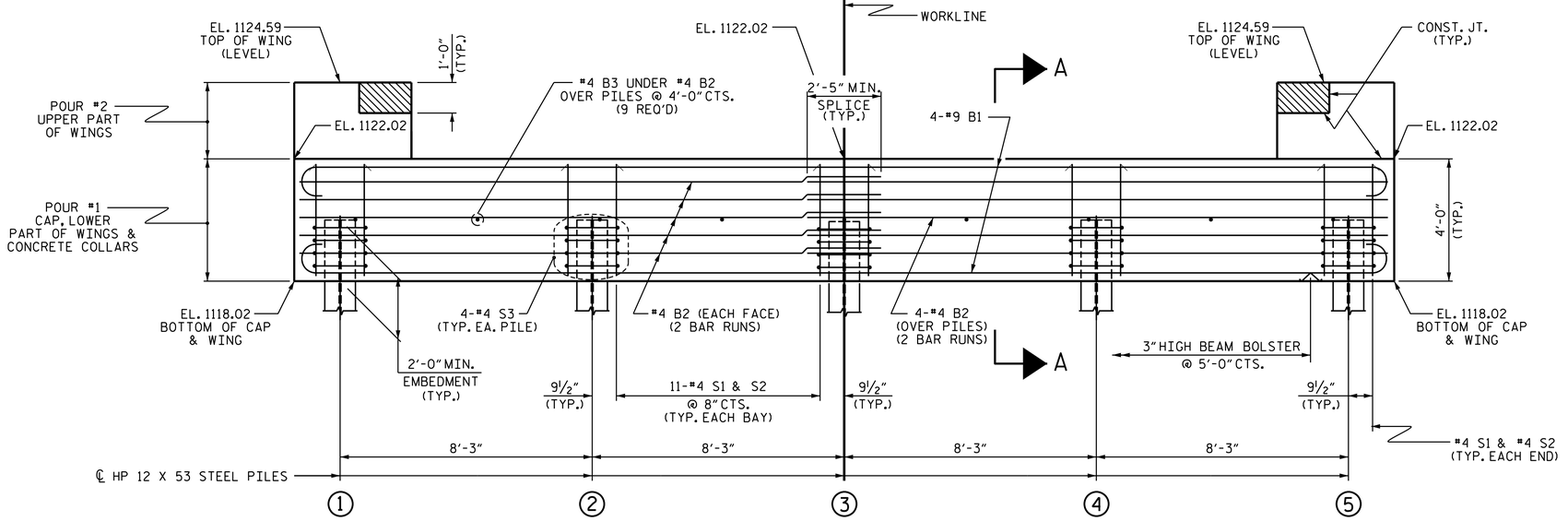
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PLAN



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 ANCHOR BOLTS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

PROJECT NO. HB-0058
CALDWELL COUNTY
STATION 12+08.50 -L-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

DocuSigned by: John Yannaccone 7813617546784565...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY : J.PARROTT DATE : 4/2026
CHECKED BY : J. YANNACCONE DATE : 4/2026
DESIGN ENGINEER OF RECORD: J.YANNACCONE DATE : 4/2026

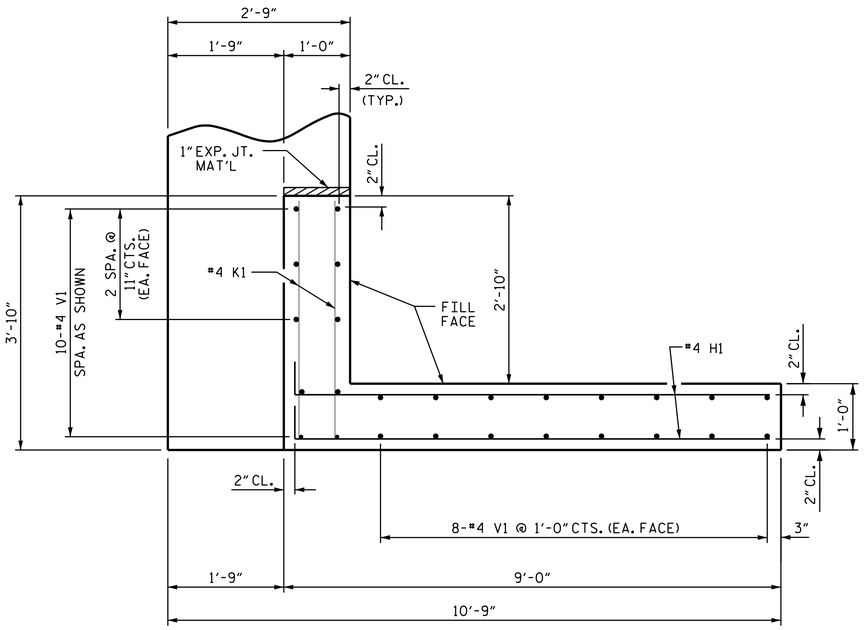
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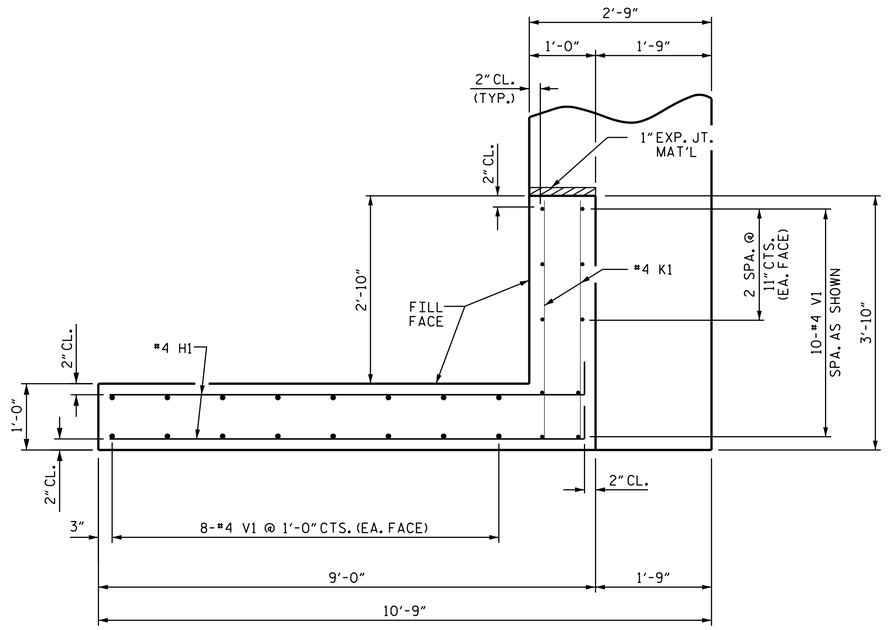
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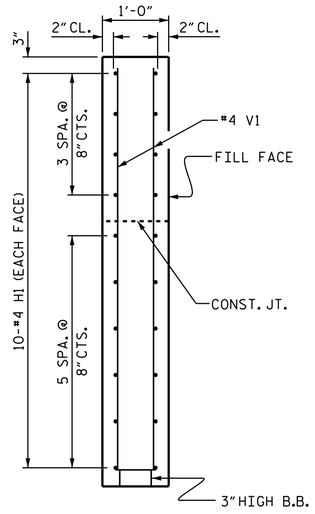
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8/26/21



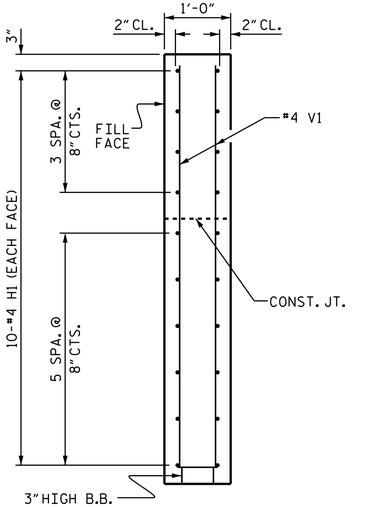
PLAN OF WING (W1)



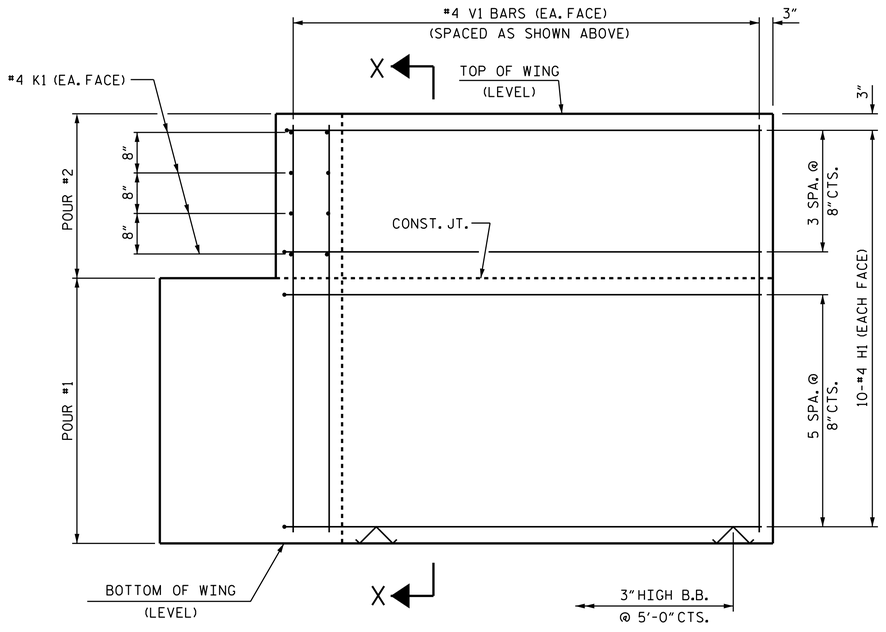
PLAN OF WING (W2)



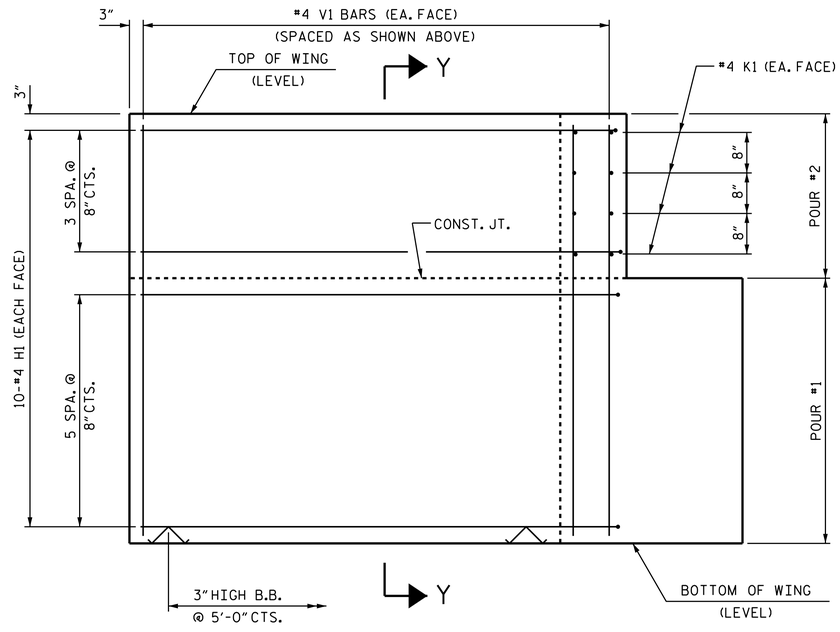
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

DocuSigned by: John Yannaccone 781361754678456...
9/14/2026

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

PROJECT NO. **HB-0058**

CALDWELL COUNTY

STATION **12+08.50 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
WING DETAILS

DRAWN BY :	J. PARROTT	DATE : 06/2026
CHECKED BY :	J. YANNACCONE	DATE : 06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE : 08/2026

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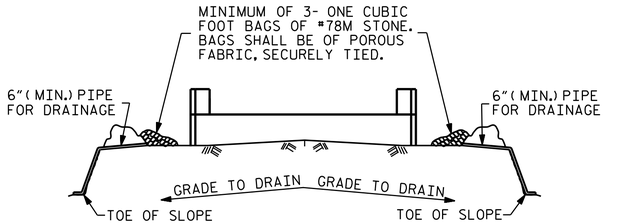
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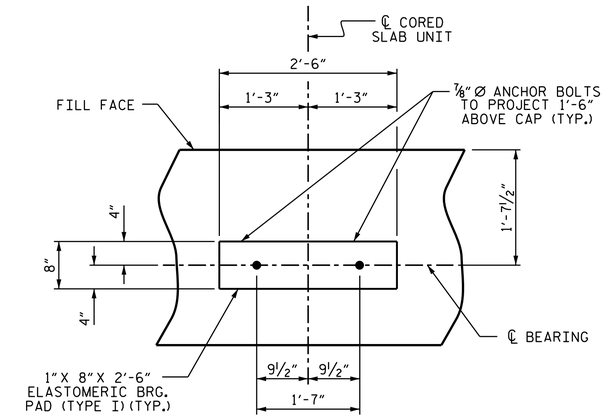


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

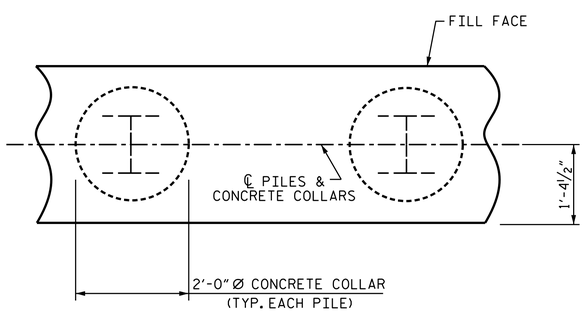
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

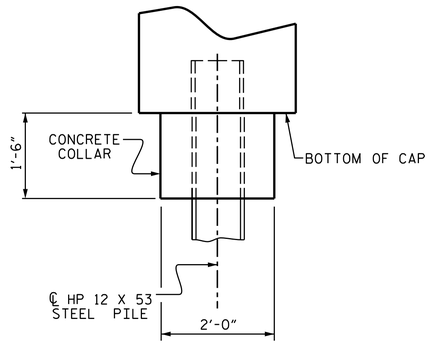
TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

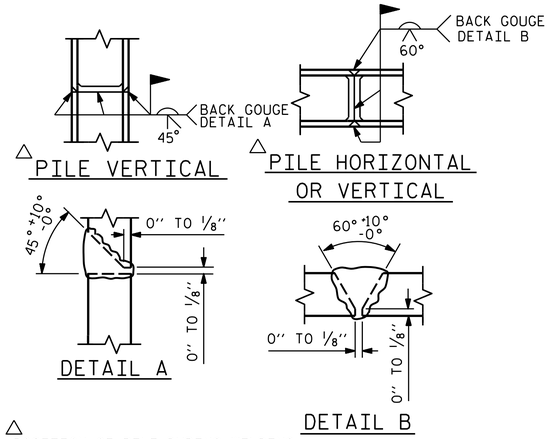


PLAN



ELEVATION

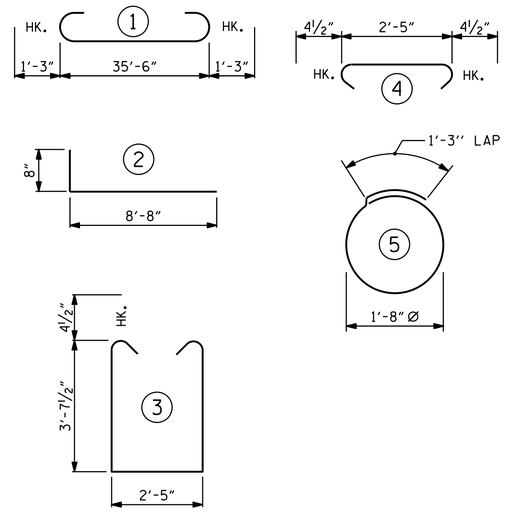
CORROSION PROTECTION FOR STEEL PILES DETAIL



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	3'-5"	37
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214

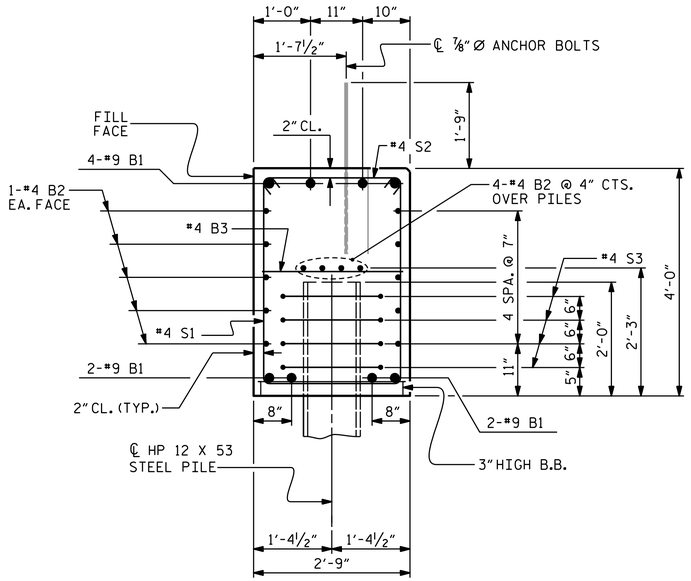
REINFORCING STEEL (FOR ONE END BENT) 2,410 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.9 C.Y.

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

TOTAL CLASS A CONCRETE 20.2 C.Y.



SECTION A-A

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

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

DocuSigned by: John Yannaccone 781361754678456...
NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE
9/14/2026

DRAWN BY :	J. PARROTT	DATE :	06/2026
CHECKED BY :	J. YANNACCONE	DATE :	06/2026
DESIGN ENGINEER OF RECORD:	J. YANNACCONE	DATE :	08/2026

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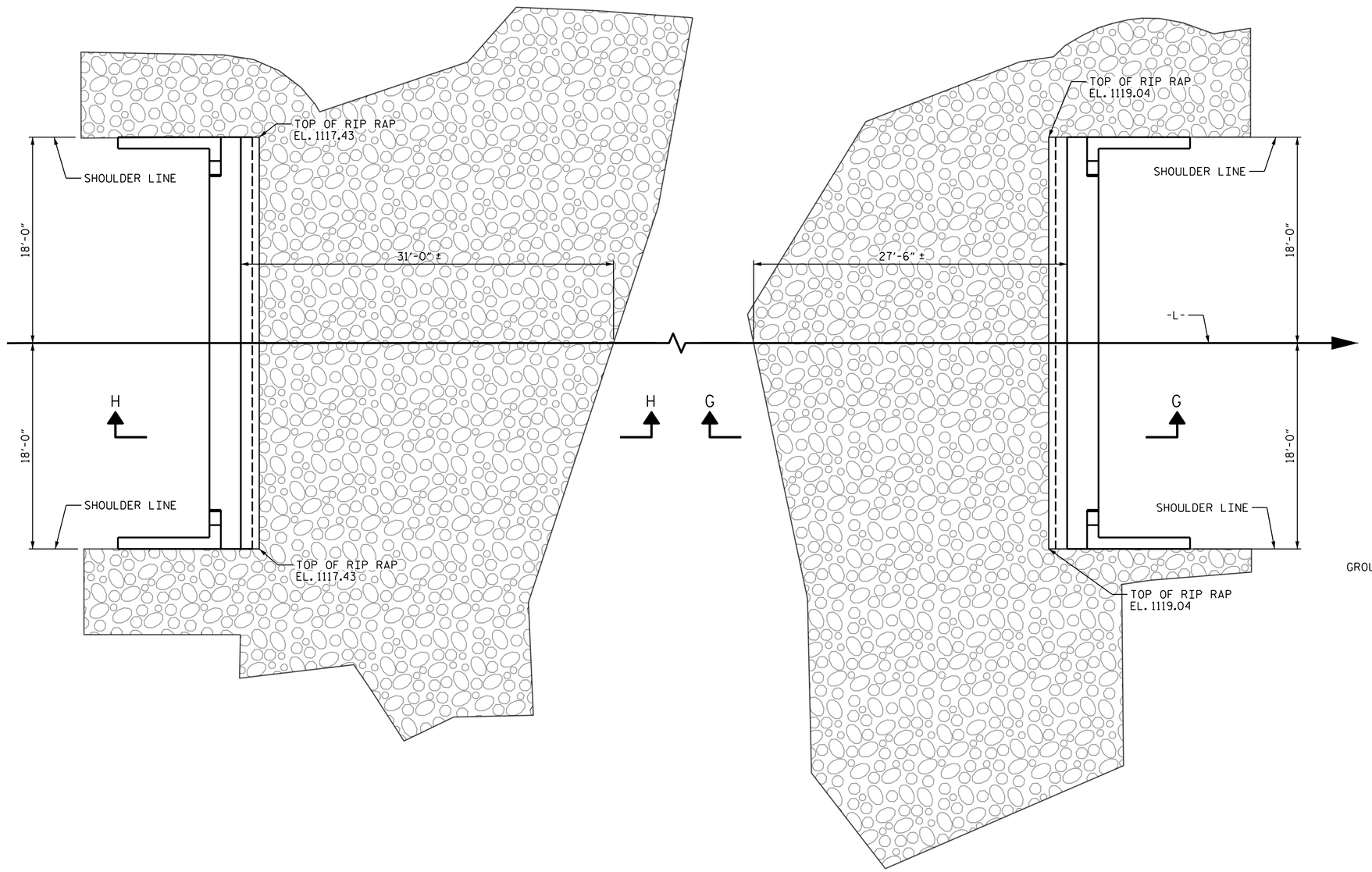
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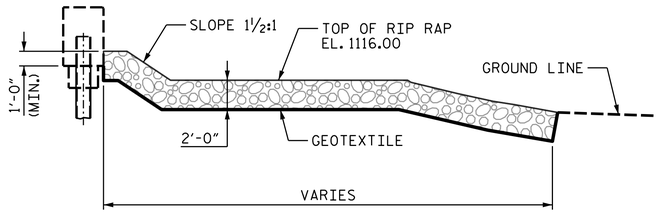
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+08.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	210	250
END BENT 2	200	230
TOTAL	410	480



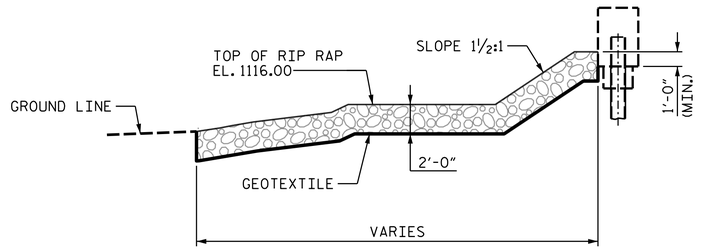
END BENT 1

END BENT 2

PLAN OF RIP RAP



SECTION H-H



SECTION G-G

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

DocuSigned by: John Yannaccone 7813617546784567

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

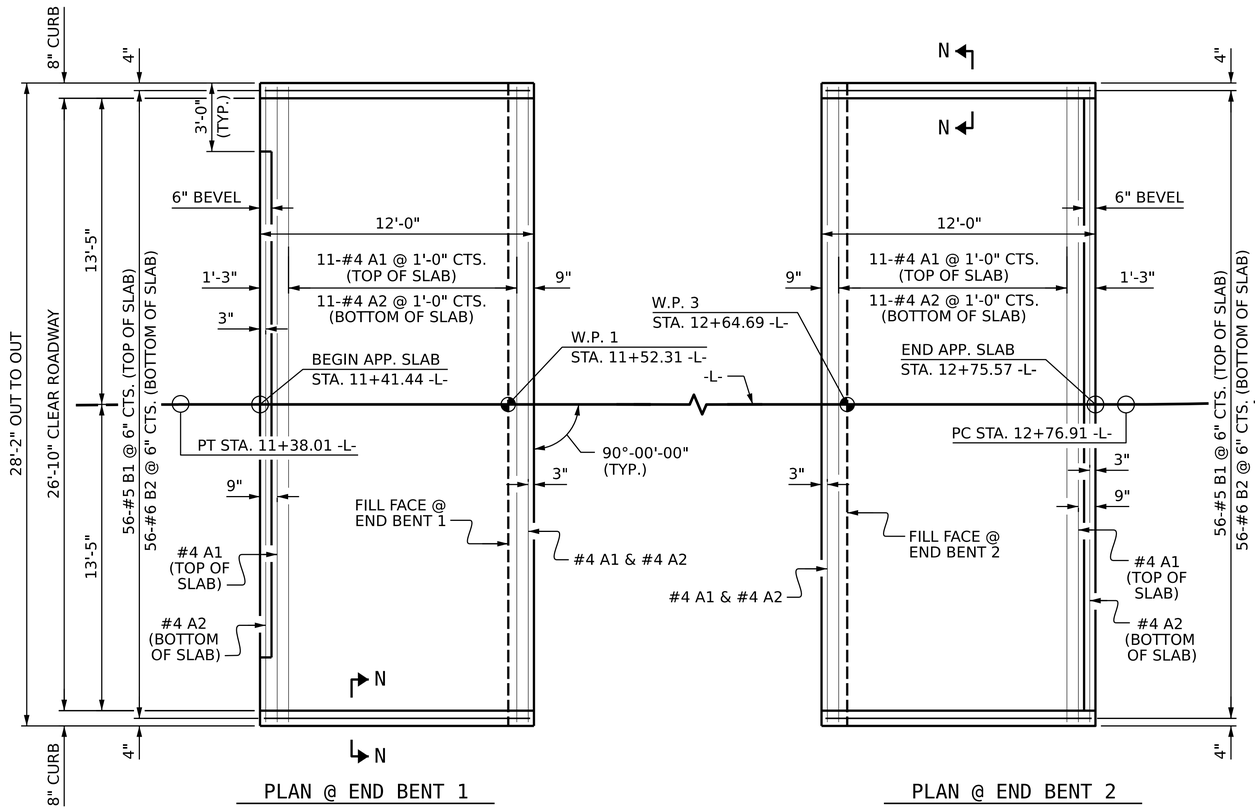
DRAWN BY : J. MYA DATE : 06/2026
CHECKED BY : J. YANNACCONE DATE : 06/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE DATE : 08/2026

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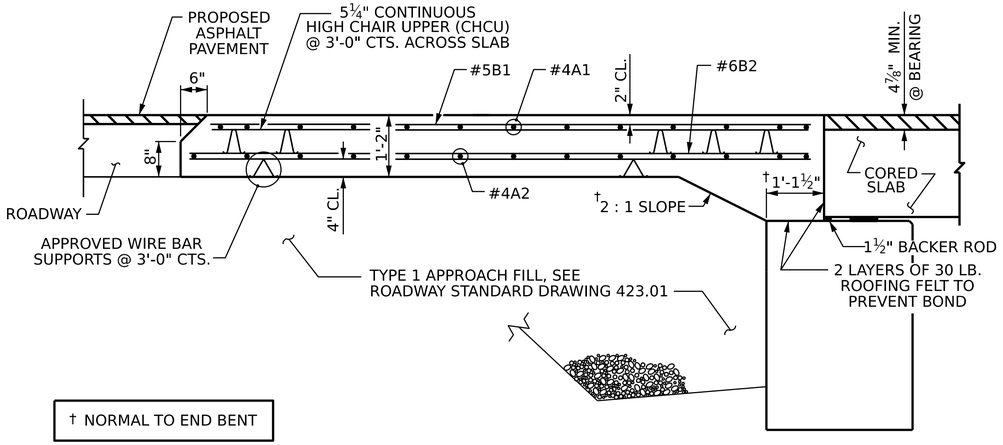
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PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



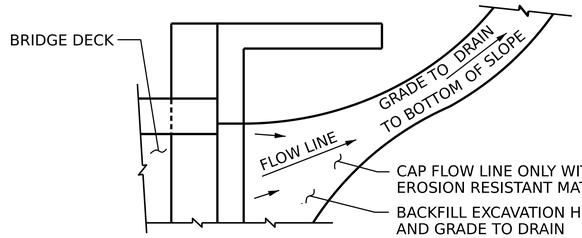
† NORMAL TO END BENT

SECTION THRU SLAB

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.



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 RESISTENT 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.

BILL OF MATERIAL

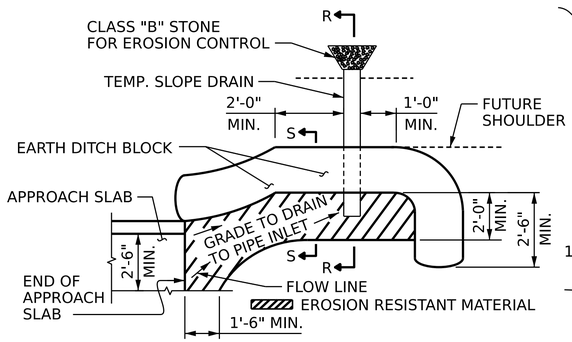
APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	27'-10"	242
A2	13	#4	STR	27'-10"	242
*B1	56	#5	STR	11'-2"	652
B2	56	#6	STR	11'-8"	981
REINFORCING STEEL				LBS.	1,223
* EPOXY COATED REINFORCING STEEL				LBS.	894
CLASS AA CONCRETE				C. Y.	16.9

APPROACH SLAB AT EB 2

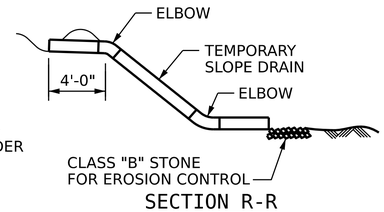
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	27'-10"	242
A2	13	#4	STR	27'-10"	242
*B1	56	#5	STR	11'-2"	652
B2	56	#6	STR	11'-8"	981
REINFORCING STEEL				LBS.	1,223
* EPOXY COATED REINFORCING STEEL				LBS.	894
CLASS AA CONCRETE				C. Y.	16.9

TEMPORARY DRAINAGE DETAIL

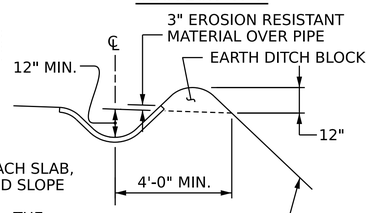


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

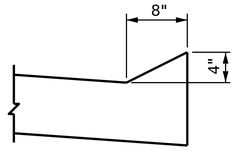


SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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



SECTION N-N

PROJECT NO. HB-0058

CALDWELL COUNTY

STATION 12+08.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT

(SUB-REGIONAL TIER)

DocuSigned by: John Yannaccone 781361754678458...

NORTH CAROLINA PROFESSIONAL SEAL 032492 ENGINEER JOHN A. YANNACCONE

9/14/2026

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ASSEMBLED BY : J. MYA		DATE : 04/2026
CHECKED BY : J. YANNACCONE		DATE : 04/2026
DESIGN ENGINEER OF RECORD: J. YANNACCONE		DATE : 04/2026
DRAWN BY : KMM 3-08	REV. 06/19	MAA/THC
CHECKED BY : GM 3-08	REV. 08/19	BNB/THC
	REV. 07/23	BNB/SNM

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8/26/21

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

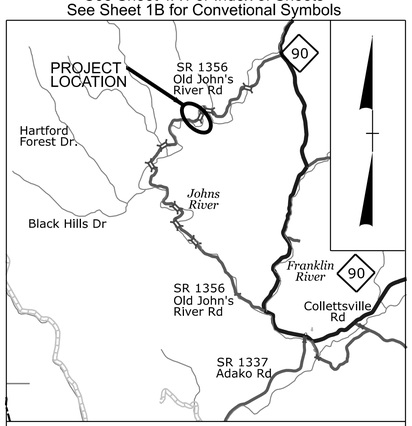
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01/16/24

TIP PROJECT: HB-0059

CONTRACT: DK00484

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

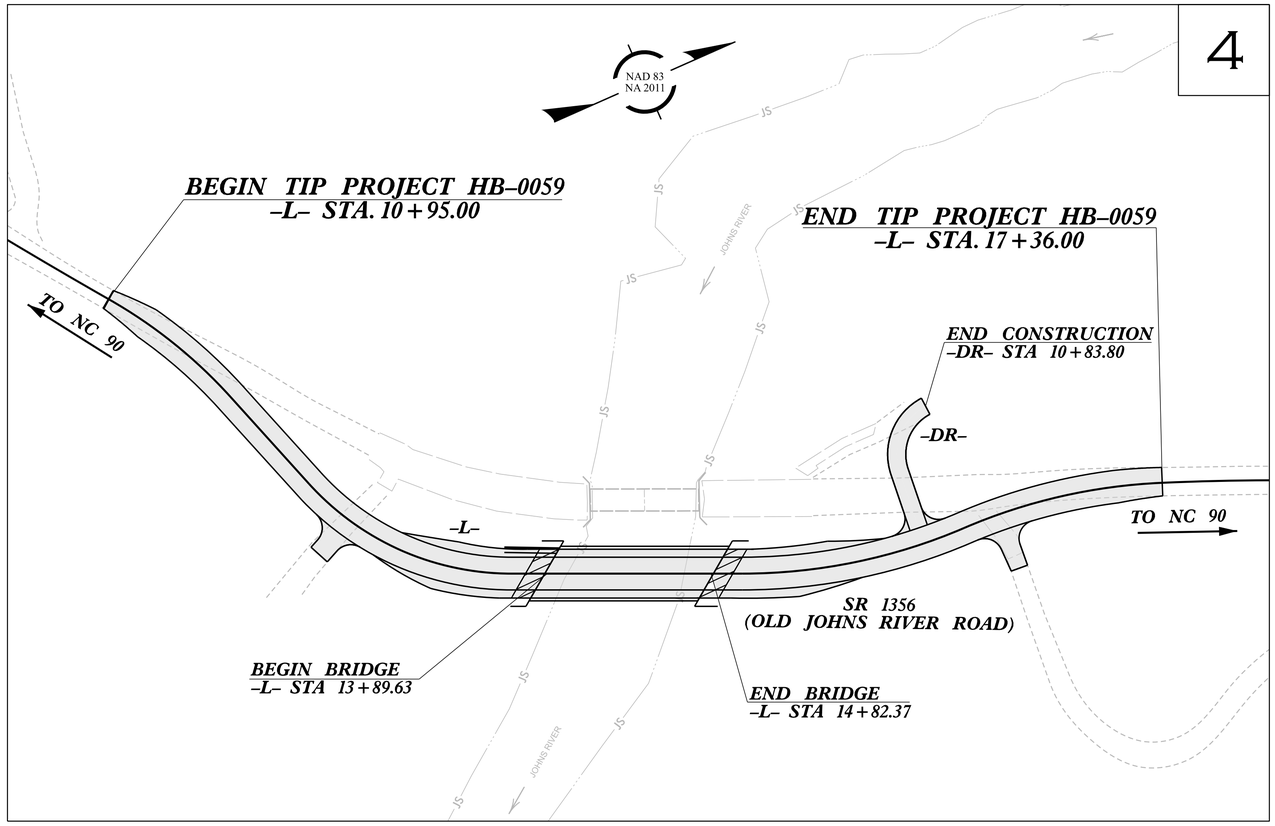
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0059	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50729.1.1	FBRG111	PE
50729.2.1	FBRG111	ROW
50729.2.2	FBRG111	UTIL
50729.3.1	FBRG111	CONST



LOCATION: *BRIDGE 275 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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



THIS PROJECT IS NOT LOCATED WITHIN A MUNICIPAL BOUNDARY.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 140
ADT 2045 = 230
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB-0059 = 0.103 MILES
LENGTH OF STRUCTURE TIP PROJECT HB-0059 = 0.018 MILES
TOTAL LENGTH OF TIP PROJECT HB-0059 = 0.121 MILES

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 18, 2025

LETTING DATE:
NOVEMBER 19, 2026

RICKY A. TIPTON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

RAMIE A. SHAW, PE
NCDOT DIVISION 11
PROJECT DEVELOPMENT ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: 10/8/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

ROADWAY DESIGN ENGINEER

Signed by: Angela Pridgen 10/8/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

Docusign Envelope ID: 8E9033B5-03B8-894D-80EB-8D68263410A8

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAIL
2C-2	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-4	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X- 11	CROSS-SECTIONS
TITLE SHEET S-1 THRU S-24 STANDARD NOTES	STRUCTURE PLANS

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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

BLUE RIDGE ELECTRIC, AT&T, CHARTER SPECTRUM

RIGHT-OF-WAY MARKERS:

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

EFF. 08-11-2025
REV. 11-26-2025

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 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	
840.00	Concrete Base Pad for Drainage Structures
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
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

HB-0059
4RD1 | 1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. P-0270

05/20/24

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

HB-0059 | 4RD1 | 1B

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

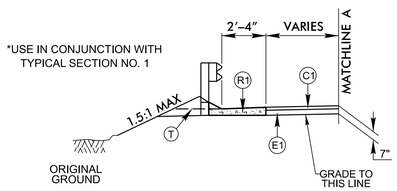
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE - LOS B)* — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

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FINAL PAVEMENT SCHEDULE

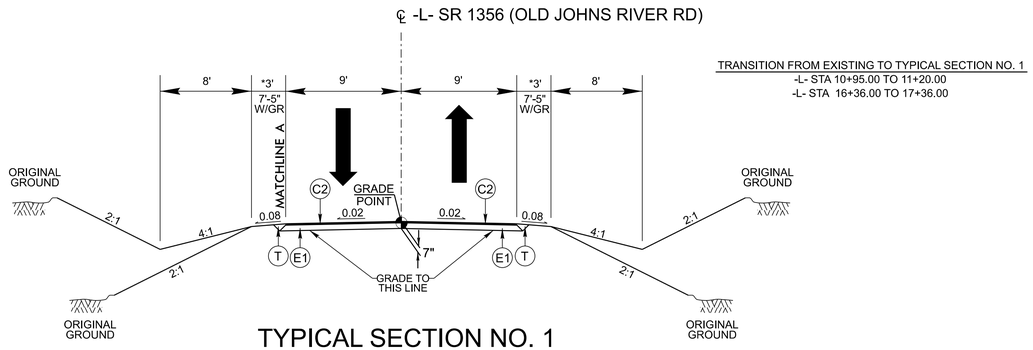
C1	PROP. APPROX. 2.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J	PROP 6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

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



SHOULDER BERM GUTTER DETAIL

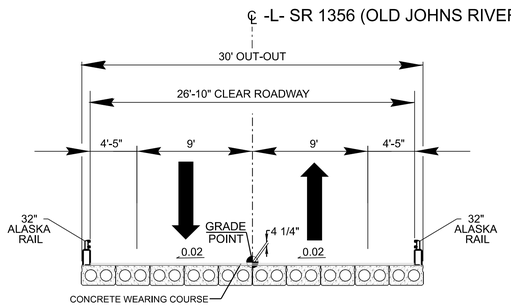
-L- STA. 13+65.73 TO STA. 13+86.28



TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA 10+95.00 TO 11+20.00
-L- STA 16+36.00 TO 17+36.00

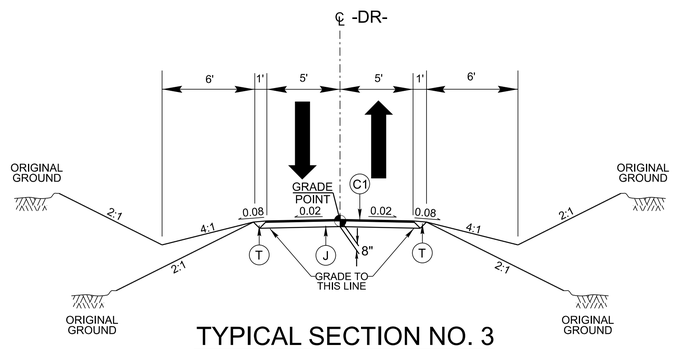
TYPICAL SECTION NO. 1

-L- STA. 10+95.00 TO STA. 13+89.63 (BEGIN BRIDGE)
-L- STA. 14+82.37 (END BRIDGE) TO STA. 17+36.00
*WIDEN PAVED SHOULDER TO 4'-5" AT GUARDRAIL LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 2

-L- STA. 13+89.63 (BEGIN BRIDGE) TO STA. 14+82.37 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)



TYPICAL SECTION NO. 3

-DR- STA. 10+09.00 TO STA. 10+83.80

HB-0059
4RD1 | 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

DocuSigned by: Angela Pridgen 11/8/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RANDALL A. SHAW

DocuSigned by: Randall Shaw 11/8/2026

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PREPARED BY

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GFT Infrastructure, Inc.
3600 Glenwood Ave, Suite 360
Raleigh, NC 27612
919-420-7660
NC Lic. No. P-0270

Docusign Envelope ID: 940D1910-DA26-8F04-82E4-6639A881F4AA

PROJECT REFERENCE NO.	SHEET NO.
HB-0059	2C-1

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

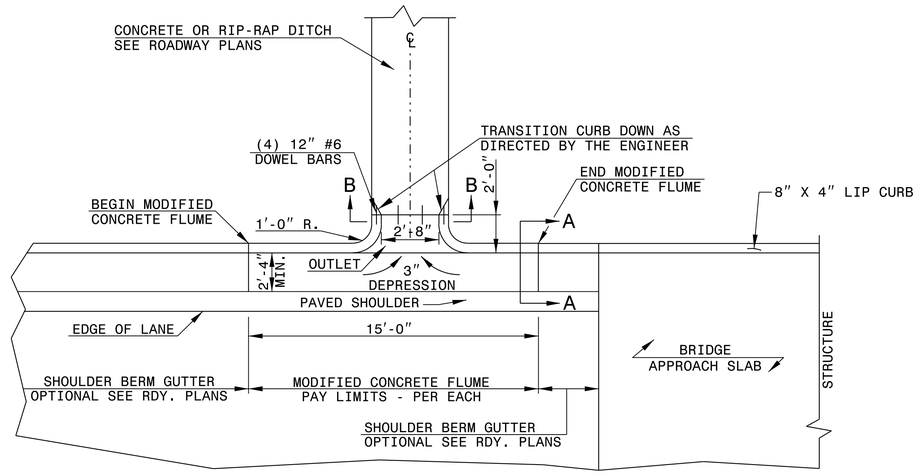
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

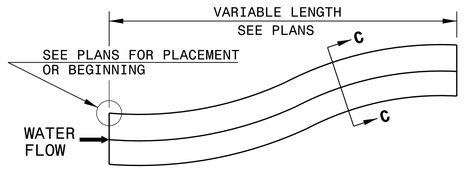
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1

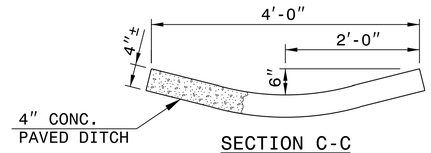
MODFLMDTCH



PLAN VIEW



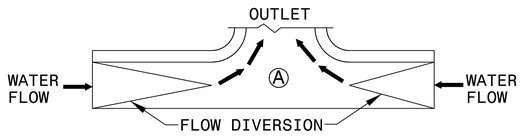
DOWNGRADE OR SAG



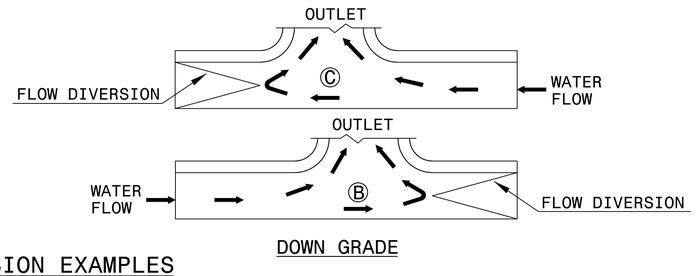
SECTION C-C



SECTION A-A

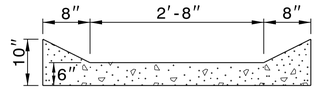


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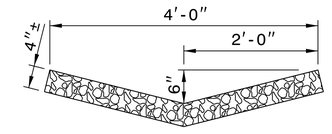


DOWN GRADE

FLOW DIVERSION EXAMPLES



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18″ PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: _____ DATE: _____
FILE SPEC.: w:details\stand\modifiedflume.dgn

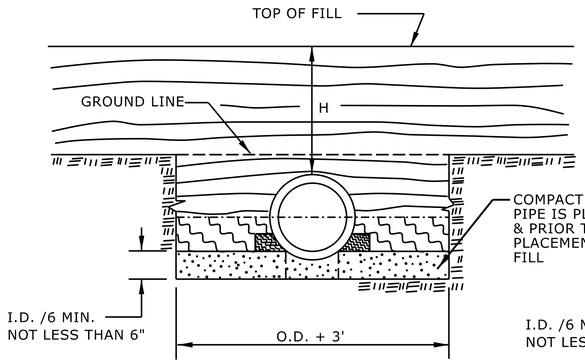
NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M HUCKABEE

Signed by: Nicole M Huckabee 10/8/2026
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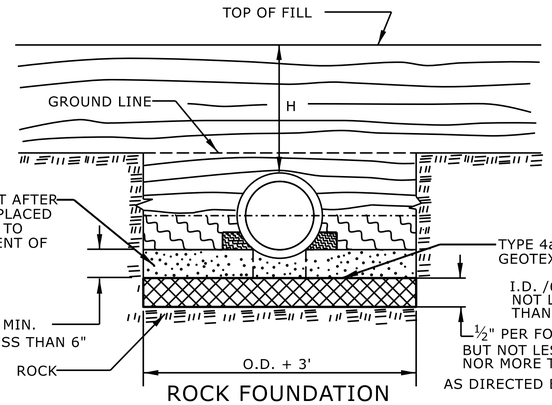
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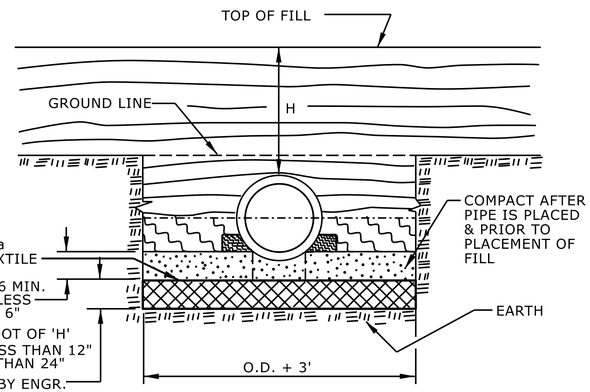
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HB-0059	2C-2



NORMAL EARTH FOUNDATION

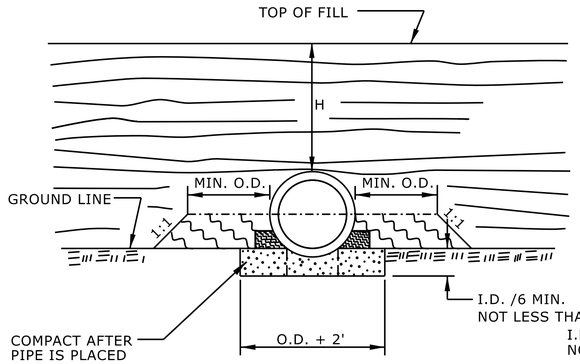


ROCK FOUNDATION

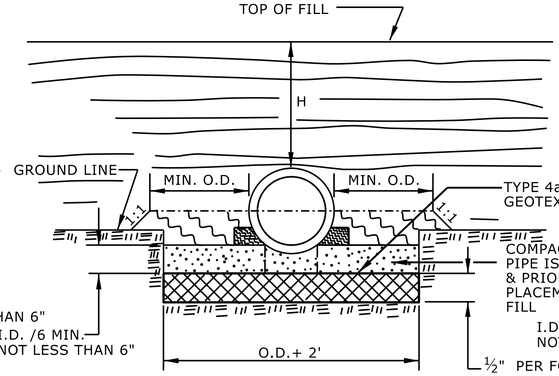


UNSUITABLE MATERIAL FOUNDATION

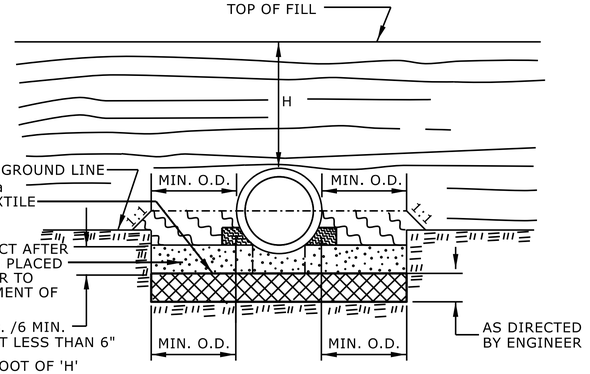
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/8/2026
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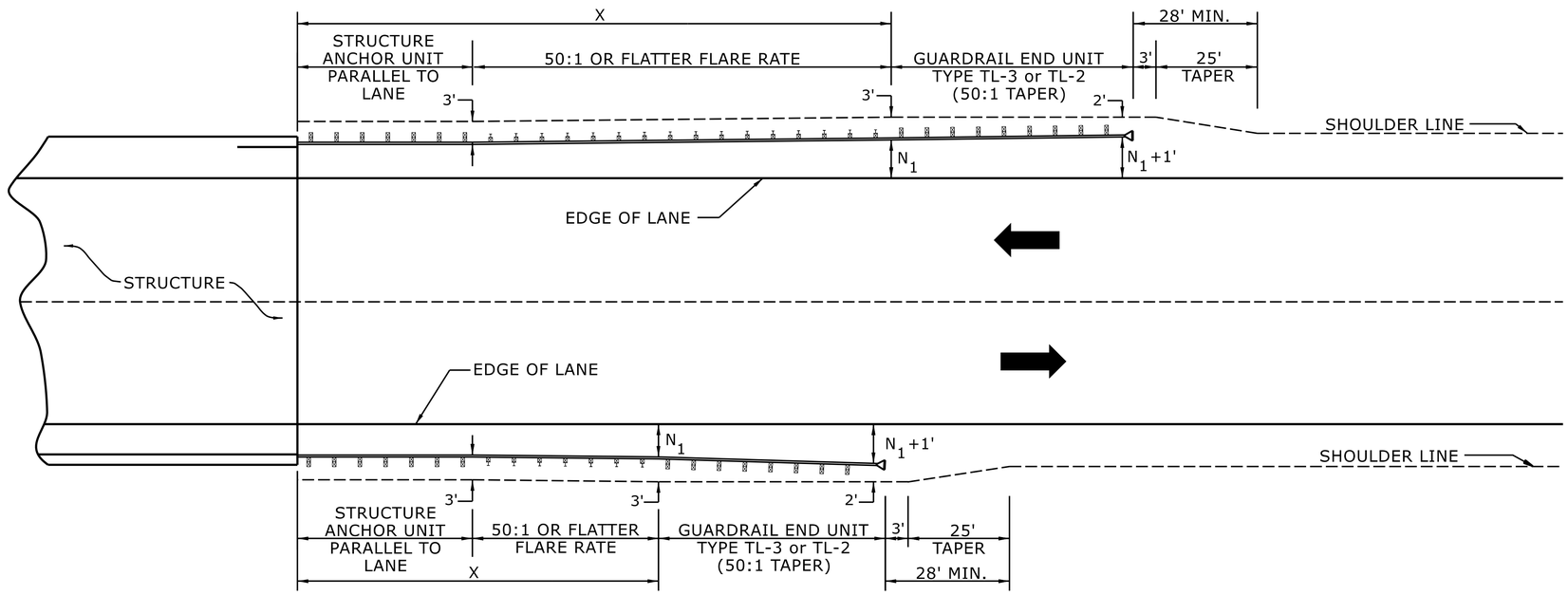
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

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ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
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USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/8/2026
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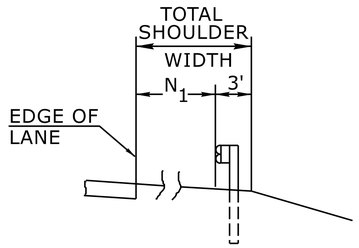
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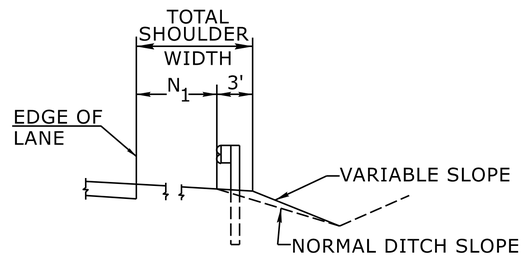
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HB-0059	2C-4

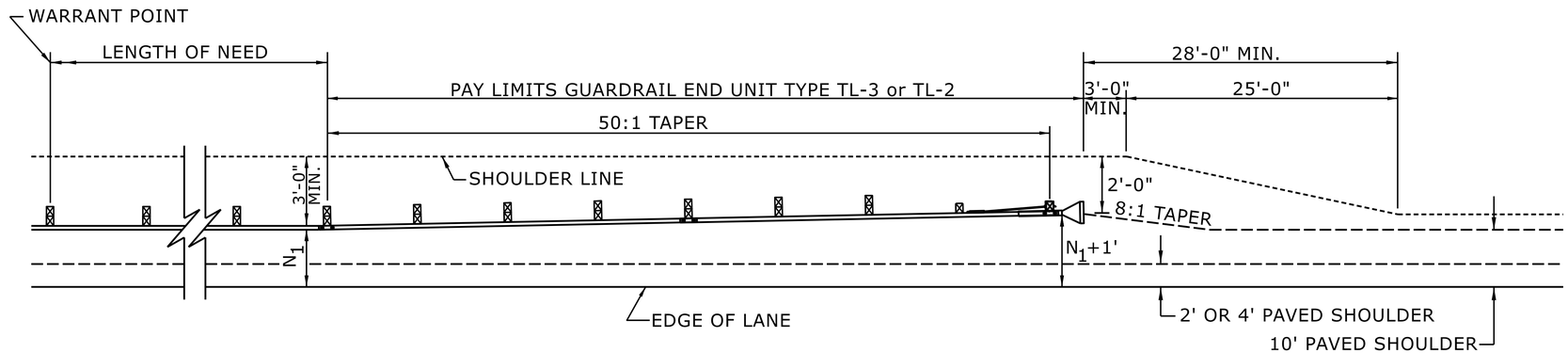


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by: Nicole M Hackler 5884323D34164C5... 10/8/2026

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AND DEVELOPMENT UNIT
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5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
-L- 10+95.00	-L- 13+89.63 (BEGIN BRIDGE)	318	152		166
SUBTOTALS:		318	152		166
-L- 14+82.37 (END BRIDGE)	-L- 17+36.00	625	10		615
-DR- STA. 10+09.00	-DR- STA. 10+87.09	119	0		119
SUBTOTALS:		744	10		734
PROJECT SUBTOTALS:		1062	162		900
GRAND TOTALS:		1062	162		900
SAY:		1070			

EST. DDE = 13 CY
SHOULDER BORROW = 17 CY
UNDERCUT EXCAVATION = 450 CY
SHALLOW UNDERCUT = 50 CY
SELECT GRANULAR MATERIAL = 200 CY
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY
CLASS IV SUBGRADE STABILIZATION = 100 TON
GEOTEXTILE FOR SUBGRADE STABILIZATION = 150 SY

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION,SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID FOR FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY ENGINEER

CONCRETE PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	YD^2
-L-	13+30	14+50 (EXIST BRIDGE)	LT	387.29
-L-	14+97 (EXIST BRIDGE)	15+51	LT	175.09
			TOTAL:	562.38
			SAY:	570

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	LENGTH
-L-	13+65.73	13+86.28	LT	20.55'
			TOTAL:	20.55'
			SAY:	21'

"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	XI MOD	TYPE III	GREU TL-2	M-350	TYPE XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	13+41.11	13+97.36 (BRIDGE)	LT	56.25'			13+97.36 (BRIDGE)		4'-5"	7'-5"		25'		0.50'		1	1											SUBREGIONAL TIER UNDIVIDED TWO-WAY, TWO-LANE BRIDGE <50 MPH
-L-	13+25.62	13+81.87 (BRIDGE)	RT	56.25'			13+81.87 (BRIDGE)		4'-5"	7'-5"	25'		0.50'			1	1												
-L-	14+90.10 (BRIDGE)	15+46.35	LT	56.25'				14+90.10 (BRIDGE)	4'-5"	7'-5"	25'		0.50'			1	1												
-L-	14+74.61 (BRIDGE)	15+30.86	RT	56.25'				14+74.61 (BRIDGE)	4'-5"	7'-5"		25'		0.50'		1	1												
		ANCHOR UNIT DEDUCTIONS																											
		TYPE III	4 @ 18.75' EACH	-75.00'																									
		GREU TL-2	4 @ 25' EACH	-100.00'																									
TOTALS				50.00'												4	4											
SAY				50.00'												4	4											
ADDITIONAL GUARDRAIL POSTS (EA)				5																								

HB-0059
4RD1 | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B PRIDGEN
Angela B Pridgen 10/23/2026
DocuSigned by: 7E5A1955DA7A4B5...

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PREPARED BY

GFT
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One Glenwood Avenue, Suite 901
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919-535-7602
NC Lic. No. P-0270

SYSTIMESTAMP
SESSIONNAME

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HB-0059
4RD1 | 3D-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

PREPARED BY

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-831-7600
NC Lic. No. P-0210

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

SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S. PIPE THICKNESS OR GAUGE | 15" | 18" | 24" | 36" | 42" | 48" | R.C. PIPE (CLASS III) | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE (CLASS IV) | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" R. C. PIPE (CLASS V) | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. *FT. PER EACH (0' THRU 5.0') | LIN. *FT. A 5.0' THRU 10.0' | LIN. *FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION CATCH BASIN | CONCRETE TRANSITIONAL SECTION DROP INLET | G.D.I. FRAME WITH GRATE STD. 840.22 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | MODIFIED CONC. FLUME | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

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PIc 10+47.65	PIc 11+38.73	PIc 13+12.43	PIc 15+61.86	PIc 16+80.38	PIc 17+70.35
Δc = 02° 06'57.8" (LT)	Δc = 18°16'51.5" (RT)	Δc = 47°53'09.1" (LT)	Δc = 23°15'26.2" (LT)	Δc = 20°47'24.0" (RT)	Δc = 02°42'00.1" (RT)
D = 02°13'14.8"	D = 21°13'14.4"	D = 38°11'49.9"	D = 18°32'32.4"	D = 18°32'32.4"	D = 03°54'39.5"
Lc = 95.29	Lc = 86.15	Lc = 125.36	Lc = 125.43	Lc = 112.12	Lc = 69.04
Tc = 47.65	Tc = 43.44	Tc = 66.61	Tc = 63.59	Tc = 56.68	Tc = 34.52
R = 2,580	R = 270	R = 150	R = 309	R = 309	R = 1,465
	SE = 0.020	SE = 0.020	SE = 0.020	SE = 0.020	
	RO=30'	RO=30'	RO=30'	RO=30'	
		DS=25 MPH			

CUR DATA -DR-
PIc 10+67.03
Δc = 80°48'27.7" (RT)
D = 190°59'09.4"
Lc = 42.31
Tc = 25.54
R = 30
SE = SEE PLANS

NAD 83/2011

BEGIN TIP PROJECT HB-0059
-L- STA. 10+95.00

-L- PRC 10+95.29

-L- PT 11+81.43

-L- PC 10+00.00

-L- PC 12+45.83

-L- PT 13+71.19

BEGIN APPROACH SLAB
-L- STA 13+78.93

-L- PC 14+98.27

-DR- PC 10+41.49

-DR- PT 10+83.80

END CONSTRUCTION

-DR- PT 10+87.09

-L- PRC 16+23.70

-DR- POT 10+00.00 =
-L-POC 16+00.00

-L- PCC 17+35.82

-L- POE 18+04.86

END TIP PROJECT HB-0059
-L- STA. 17+36.00

N71°46'30.6"E

N23°53'21.4"E

N04°09'57.8"W

N84°58'25.5"W

STANDARD V DITCH
SEE DETAIL 4D

EST 2 TON
CL B RIP RAP
7 SY GEO

BEGIN SBG
-L- STA 13+65.73

END BRIDGE
-L- STA 14+82.37

END APPROACH SLAB
-L- STA 14+93.07

SPECIAL V DITCH
SEE DETAIL 4E

RIPRAP AT EXCAVATION EMBANKMENT
SEE DETAIL 4B

REMOVE EXISTING BRIDGE AND ABUTMENTS
SEE DETAIL 4C

PUE

EST. 1 TON
CL B RIP RAP
5 SY GEO.

LP -L- 13+65.71
ELEV = 1153.27

STREAM BANK STABILIZATION
SEE DETAIL 4A

PLACE CLASS II RIP RAP TO ELEV. 1153.1' +/- OR AT SHOULDER PT.(TYP.)

BEGIN BRIDGE
-L- STA 13+89.63

(STRUCTURES PAY ITEM)
EST= 265 SY GEOTEXTILE
EST= 245 TONS CL II RIP RAP

STANDARD VDITCH
SEE DETAIL 4D

TAPER TO EXIST.

DO NOT DISTURB SEPTIC FIELD

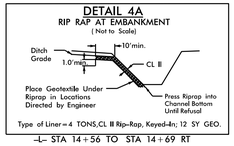
JOHN D. HAYES
DB 1883 PG 618

NOTE:
-ALL DRIVEWAYS ARE 10' UNLESS OTHERWISE NOTED
-ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
-ALL PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED
-ALL GUARDRAIL STRUCTURE ANCHOR UNITS ARE TYPE-III UNLESS OTHERWISE NOTED
-ALL GUARDRAIL ANCHOR UNITS ARE GREU-TL2 UNLESS OTHERWISE NOTED
-ALL DRIVEWAY PIPES ARE 15"RCP-CLASS V UNLESS OTHERWISE NOTED

PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET 05

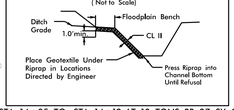
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 4 TONS,CL III Rip-Rap, Keyed-in; 12 SY GEO.

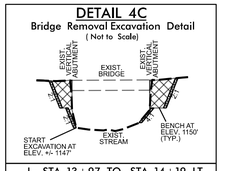
-L- STA 14+56 TO STA 14+69 RT

DETAIL 4B
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



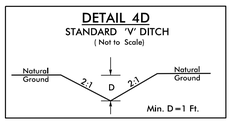
-L- STA 14+05 TO STA 14+12 LT, 10 TONS RR, 27 SY GEO
-L- STA 14+75 TO STA 14+87 LT, 10 TONS RR, 27 SY GEO

DETAIL 4C
Bridge Removal Excavation Detail
(Not to Scale)



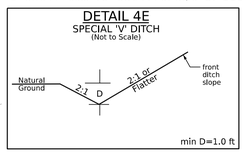
-L- STA. 13+97 TO STA. 14+19 LT
-L- STA. 14+59 TO STA. 14+95 LT

DETAIL 4D
STANDARD "V" DITCH
(Not to Scale)



-L- STA. 13+90 TO STA. 14+05 LT, 11 CY DDE
-L- STA. 14+66.5 TO STA. 14+81 RT, 3 CY DDE

DETAIL 4E
SPECIAL "V" DITCH
(Not to Scale)



-L- STA 12+95 TO STA 13+90 LT
-L- STA 14+86 TO STA 15+15 LT
-L- STA 16+20 TO STA 16+60 LT

HB-0059
4RD1 | 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN
Signature: Angela B. Pridgen 9/8/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN JR.
Signature: William K. Jernigan Jr. 9/8/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

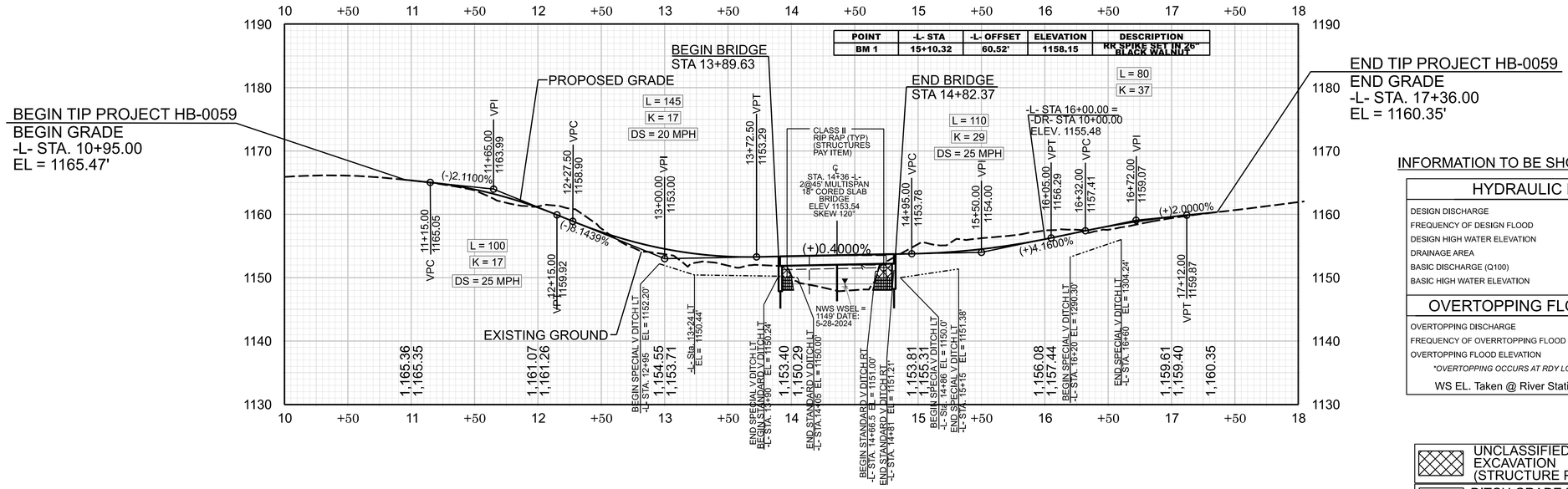
PREPARED BY

GFT
GFT Infrastructure, Inc.
3121 Benson Drive, Suite 300
Raleigh, NC 27609
919-420-7660
NC Lic. No. P-0270

Docusign Envelope ID: 91379786-2B94-80D1-81B4-A00AB60076E8

11/14/23

-L-



POINT	-L- STA	-L- OFFSET	ELEVATION	DESCRIPTION
BM 1	15+10.32	60.52'	1158.15	RR SPIKE SET IN 26" BLACK WALNUT

INFORMATION TO BE SHOWN ON PLANS

HYDRAULIC DATA		
DESIGN DISCHARGE	=	1100 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	<2 YRS.
DESIGN HIGH WATER ELEVATION	=	1153.1'
DRAINAGE AREA	=	53.1 SQ. MI.
BASIC DISCHARGE (Q100)	=	9870 C.F.S.
BASIC HIGH WATER ELEVATION	=	1160.17'

OVERTOPPING FLOOD DATA		
OVERTOPPING DISCHARGE	=	1200 C.F.S.
FREQUENCY OF OVERTTOPPING FLOOD	=	<2 YRS.
OVERTOPPING FLOOD ELEVATION	=	1153.3'

**OVERTOPPING OCCURS AT RDY LOW POINT -L- 13+66 +/-*

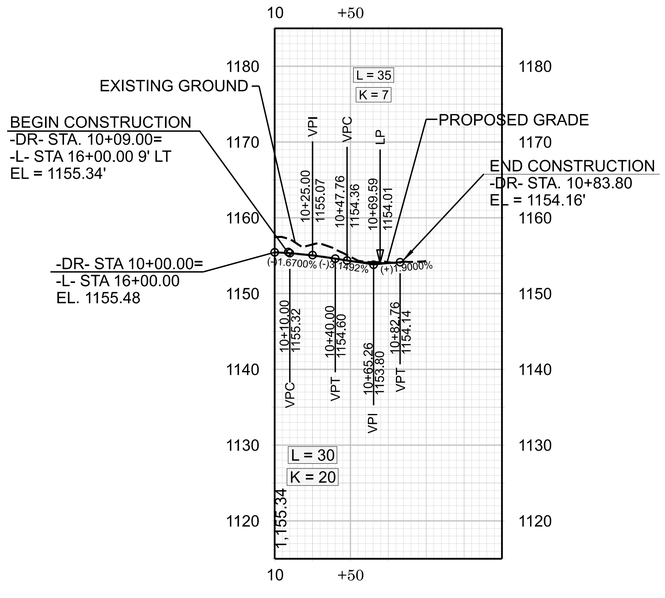
WS EL. Taken @ River Station 133059

UNCLASSIFIED STRUCTURE EXCAVATION (STRUCTURE PAY ITEM)

DITCH GRADE LT

DITCH GRADE RT

-DR-



FOR -L- PLAN, SEE SHEET 04
FOR -DR- PLAN, SEE SHEET 04

HB-0059

4RD1 | 05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Signature: Angela B. Pridgen 10/8/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM A. JERNIGAN

Signature: William A. Jernigan 10/8/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT

GFT Infrastructure, Inc.
3600 Glenwood Ave., Suite 300
Raleigh, NC 27612
919-420-7640
NC Lic. No. P-0270

09/08/99

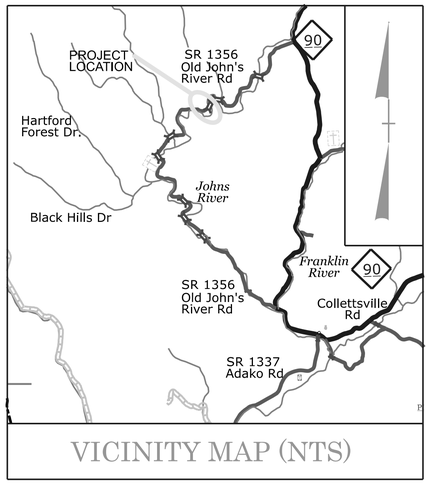
TIP PROJECT: *HB-0059*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0059	RW01	5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

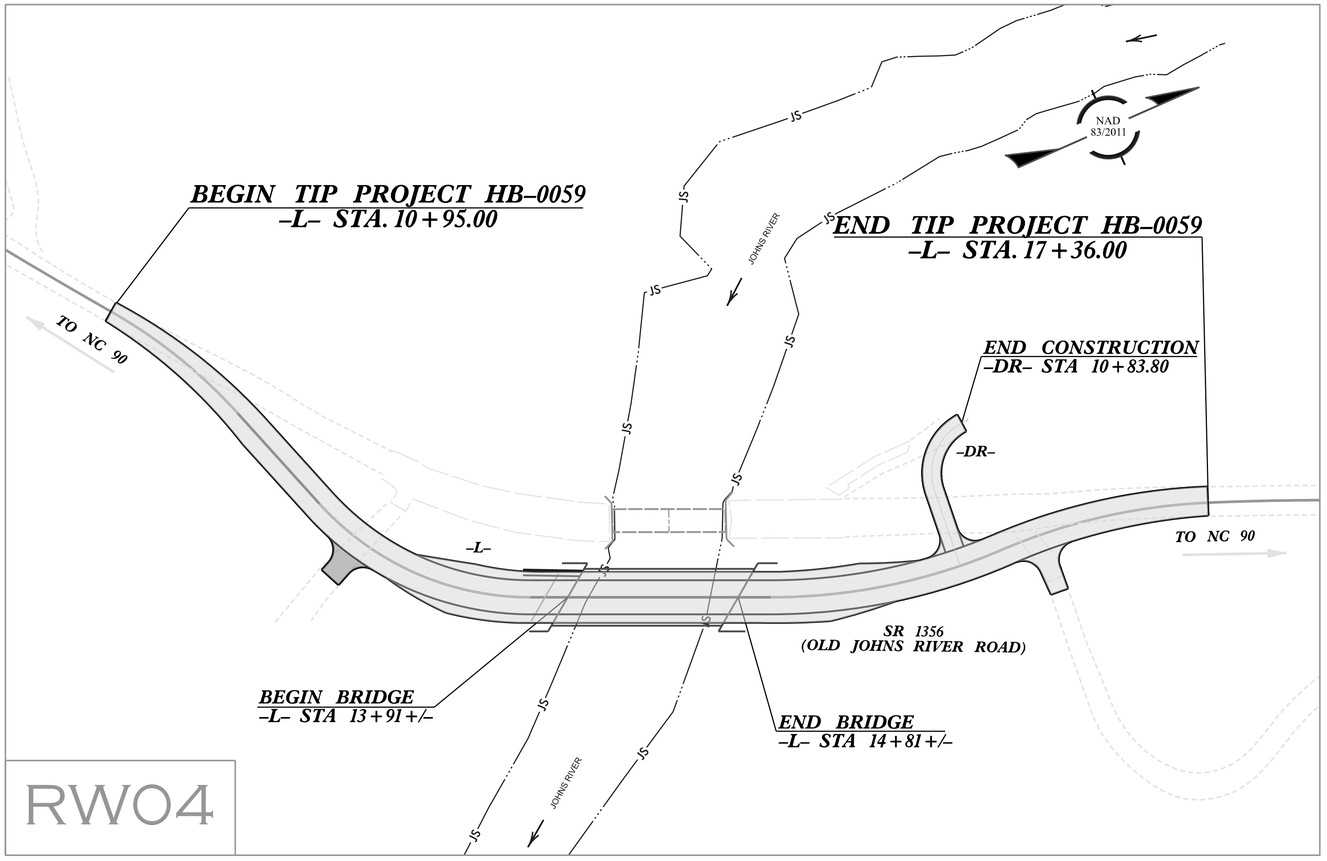
CALDWELL COUNTY



VICINITY MAP (NTS)

ROW ACQUISITION PLAN SET





DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

40' 20' 0' 40' 80'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT 275-1
WITH NAD83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 817873.4413 EASTING: 1200703.4351
ELEVATION: 1157.426
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990013
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2025

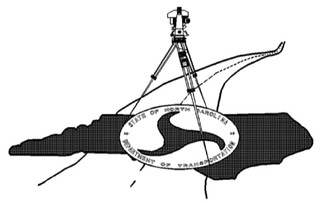
LETTING DATE: AUGUST 20, 2026

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

Signed by: Matthew Cornwell 7/30/2025
EBD36F11473E475...

SIGNATURE: *DATE:*

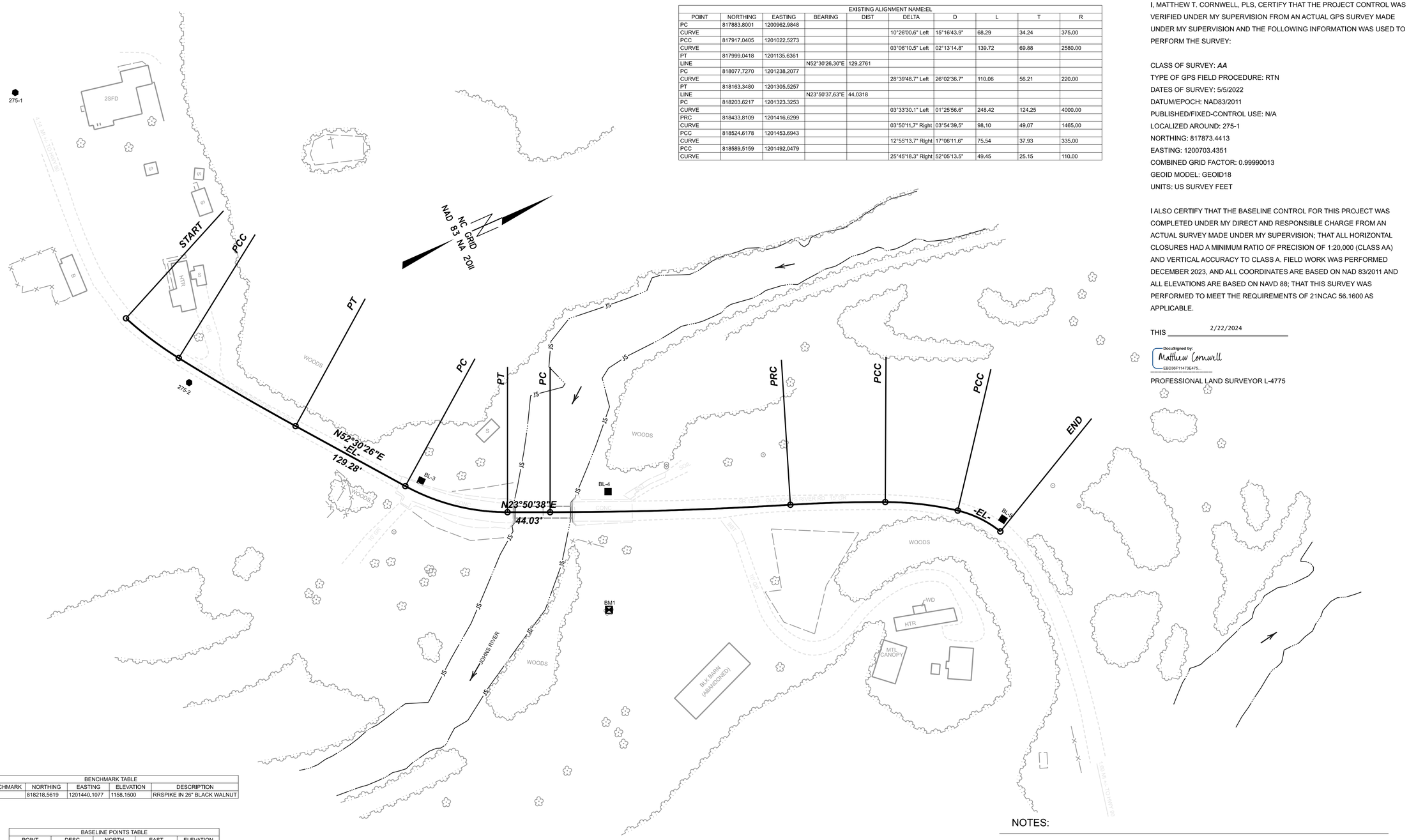


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5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	817883.8001	1200962.9848							
CURVE					10°26'00.6" Left	15°16'43.9"	68.29	34.24	375.00
PCC	817917.0405	1201022.5273							
CURVE					03°06'10.5" Left	02°13'14.8"	139.72	69.88	2580.00
PT	817999.0418	1201135.6361							
LINE			N52°30'26.30"E	129.2761					
PC	818077.7270	1201238.2077							
CURVE					28°39'48.7" Left	26°02'36.7"	110.06	56.21	220.00
PT	818163.3480	1201305.5257							
LINE			N23°50'37.63"E	44.0318					
PC	818203.6217	1201323.3253							
CURVE					03°33'30.1" Left	01°25'56.6"	248.42	124.25	4000.00
PRC	818433.8109	1201416.6299							
CURVE					03°50'11.7" Right	03°54'39.5"	98.10	49.07	1465.00
PCC	818524.6178	1201453.6943							
CURVE					12°55'13.7" Right	17°06'11.6"	75.54	37.93	335.00
PCC	818589.5159	1201492.0479							
CURVE					25°45'18.3" Right	52°05'13.5"	49.45	25.15	110.00

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	818218.5619	1201440.1077	1158.1500	RRSPIKE IN 26" BLACK WALNUT

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	275-1	817873.4413	1200703.4351	1157.4260
2	275-2	817916.5818	1201050.1128	1163.8400
3	BL-3	818094.8173	1201239.8074	1155.4500
4	BL-4	818267.1214	1201328.0476	1155.1100
5	BL-5	818628.6563	1201519.1081	1164.7200

50 25 0 50 100
PLANS 1"=50'

I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE PROJECT CONTROL WAS VERIFIED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 5/5/2022
DATUM/EPOCH: NAD83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: 275-1
NORTHING: 817873.4413
EASTING: 1200703.4351
COMBINED GRID FACTOR: 0.99990013
GEOID MODEL: GEOID18
UNITS: US 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 DECEMBER 2023, 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 2/22/2024

DocuSigned by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. 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.

HB-0059
R/W | 02C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2018 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0059
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

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	817917.0405	1201022.5273	N54°33'07.9"E	95.28	02°06'57.8"	02°13'14.8"	95.29	47.65	2580.00		
PRC	10+95.29	817972.2991	1201100.1464	N62°38'04.8"E	85.78	18°16'51.5"	21°13'14.4"	86.15	43.44	270.00		
PT	11+81.43	818011.7299	1201176.3290	N71°46'30.6"E	64.39							
PC	12+45.83	818031.8688	1201237.4925	N47°49'56.0"E	121.75	47°53'09.1"	38°11'49.9"	125.36	66.61	150.00		
PT	13+71.19	818113.5987	1201327.7299	N23°53'21.4"E	127.08							
PC	14+98.27	818229.7914	1201379.1934	N12°15'38.3"E	124.57	23°15'26.2"	18°32'32.4"	125.43	63.59	309.00		
PRC	16+23.70	818351.5189	1201405.6467	N11°01'37.2"E	111.51	20°47'24.0"	18°32'32.4"	112.12	56.68	309.00		
PCC	17+35.82	818460.9680	1201426.9750	N22°46'19.3"E	69.03	02°42'00.1"	03°54'39.5"	69.04	34.52	1465.00		
END	18+04.86	818524.6178	1201453.6943									

PROPOSED ALIGNMENT: DR												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	818327.8551	1201404.4773	N84°58'25.5"W	41.49							
PC	10+41.49	818331.4904	1201363.1441	N44°34'11.6"W	38.89	80°48'27.7"	190°59'09.4"	42.31	25.54	30.00		
PT	10+83.80	818359.1956	1201335.8517	N04°09'57.8"W	16.19							
END	11+00.00	818375.3449	1201334.6754									

I, MATTHEW T. CORNWELL, 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 7/30/2025

Signed by:
Matthew Cornwell
EBD36F114736475...

PROFESSIONAL LAND SURVEYOR L-4775

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.

HB-0059

R/W | 02D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0059

County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

TGS ENGINEERS

5/26/20

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

I , MATTHEW T. CORNWELL, 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 7/16/2025 TO 7/17/2025, 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 7/30/2025

Signed by:
Matthew Cornwell
EBD36F114736475...

PROFESSIONAL LAND SURVEYOR L-4775

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
10+95.00	25.0000	817952.0329	1201114.7876
10+95.00	12.5000	817962.0812	1201107.3524
12+45.83	45.0000	817989.1262	1201251.5661
12+80.00	-56.8624	818094.7429	1201238.9356
13+71.19	45.0000	818095.3750	1201368.8747
14+98.27	45.0000	818211.5677	1201420.3382
15+80.00	-45.5861	818314.9253	1201357.0244
16+23.70	45.0000	818351.0226	1201450.6440
17+35.82	12.5000	818456.4022	1201438.6113

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+20.00	-42.2969	818063.9670	1201199.7338
12+20.00	-50.0000	818071.2837	1201197.3247
12+30.00	-77.0000	818100.0567	1201198.3789
12+36.00	-63.0000	818088.6355	1201208.4564
12+50.00	-90.0000	818117.8983	1201210.9237
12+60.22	-80.0000	818110.2592	1201218.7425
15+80.00	-72.0000	818318.9365	1201330.9168

NOTES:

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

HB-0059
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0059
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

TGS ENGINEERS

5/26/20

CUR DATA -L-
PIc 10+47.65
Δc = 02° 06'57.8" (LT)
D = 02°13'14.8"
Lc = 95.29
Tc = 47.65
R = 2,580

CUR DATA -L-
PIc 11+38.73
Δc = 18°16'51.5" (RT)
D = 21°13'14.4"
Lc = 86.15
Tc = 43.44
R = 270
SE = 0.020
RO=30'

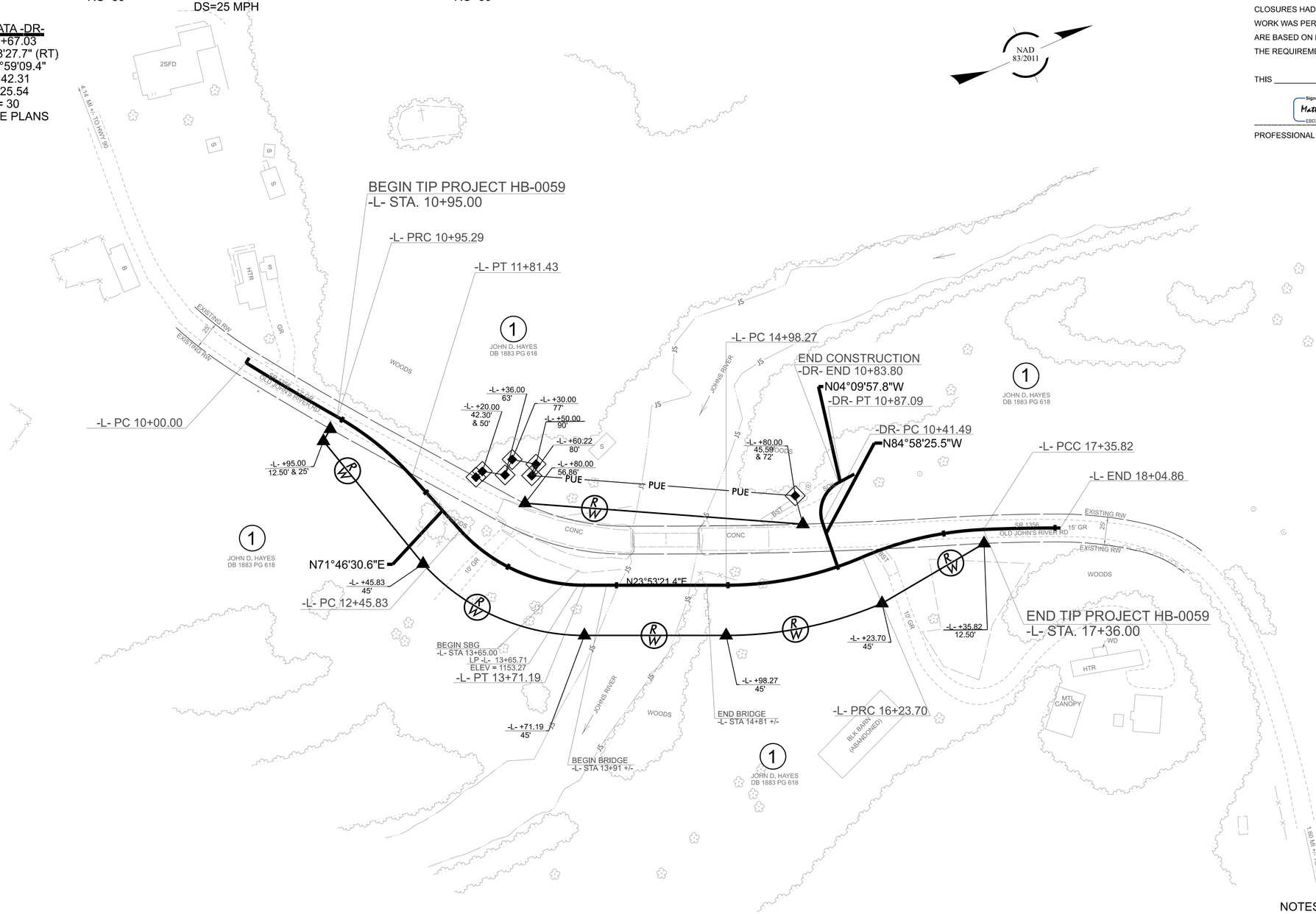
CUR DATA -L-
PIc 13+12.43
Δc = 47°53'09.1" (LT)
D = 38°11'49.9"
Lc = 125.36
Tc = 66.61
R = 150
SE = 0.020
RO=30'
DS=25 MPH

CUR DATA -L-
PIc 15+61.86
Δc = 23°15'26.2" (LT)
D = 18°32'32.4"
Lc = 125.43
Tc = 63.59
R = 309
SE = 0.020
RO=30'

CUR DATA -L-
PIc 16+80.38
Δc = 20°47'24.0" (RT)
D = 18°32'32.4"
Lc = 112.12
Tc = 56.68
R = 309
SE = 0.020
RO=30'

CUR DATA -L-
PIc 17+70.35
Δc = 02°42'00.1" (RT)
D = 03°54'39.5"
Lc = 69.04
Tc = 34.52
R = 1,465

CUR DATA -DR-
PIc 10+67.03
Δc = 80°48'27.7" (RT)
D = 190°59'09.4"
Lc = 42.31
Tc = 25.54
R = 30
SE = SEE PLANS



NOTES:

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

I , MATTHEW T. CORNWELL, 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 7/16/2025 TO 7/17/2025, 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 7/30/2025

Signed by: Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

HB-0059
R/W | 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0059
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

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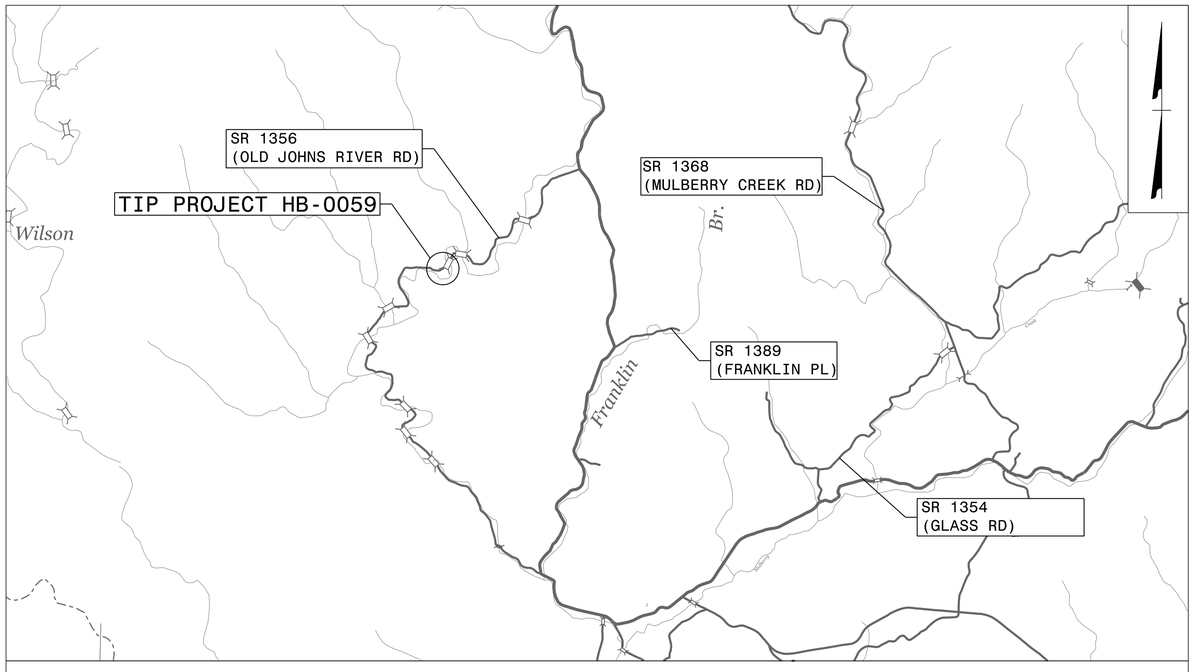
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CALDWELL COUNTY



LOCATION: REPLACEMENT OF BRIDGE NO. 275 ON SR 1356 OVER JOHNS RIVER



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-2	TRANSPORTATION OPERATIONS PLAN
TMP-3	PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

TIP PROJECT: HB-0059



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

PLANS PREPARED BY:

JERRY P. PAGE, PE
PROJECT ENGINEER

JOHN BAUMAN, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

SUZANA MATTA, PE
NCDOT PROJECT ENGINEER

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

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APPROVED: DocuSigned by: John Bauman 7FFD5B4C37984D1...

DATE: 10/8/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052428 ENGINEER JOHN BAUMAN

8/12/2026
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PROJ. REFERENCE NO.	SHEET NO.
HB-0059	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES

LEGEND

GENERAL

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

SIGNALS

PROPOSED | TEMPORARY | PORTABLE | DS

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
P1	PAINT WHITE EDGELINE (4")
P13	PAINT DOUBLE YELLOW CENTER (4")

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

ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
HB-0059	TMP-2

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 ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

TRAFFIC CONTROL DEVICES

K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (55 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.

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- SR 1356	PAINT	N/A

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

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

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

MISCELLANEOUS

Q) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AS DIRECTED BY THE ENGINEER.

R) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE PAVEMENT ENDS SIGNS (W8-3) (500 FT) AND (1000 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES
- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- WEEKEND WORK

WORK ZONE SAFETY & MOBILITY STRATEGIES
- AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

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TRANSPORTATION OPERATIONS PLAN

8/2/2026
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PROJ. REFERENCE NO.	SHEET NO.
HB-0059	TMP-3

PHASING

PHASE I

STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEET 3 OF 3 PLACE ADVANCE WARNING SIGNS ON SR 1356(OLD JOHNS RIVER RD).

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-4 AND BEGIN CONSTRUCTION, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- COMPLETE CONSTRUCTION AS SHOWN ON TMP-4, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- USE WEDGING TO CREATE TIE-IN FROM THE EXISTING PATTERN TO THE PHASE II PATTERN.
- PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-5
- PLACE TEMPORARY MARKINGS AS SHOWN ON TMP-5
- SHIFT TRAFFIC INTO THE PHASE II PATTERN.

PHASE II

STEP 1: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, BEGIN CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, COMPLETE CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING 1101.02 SHEETS 1 AND 14 OF 19, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLAN AND REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES.

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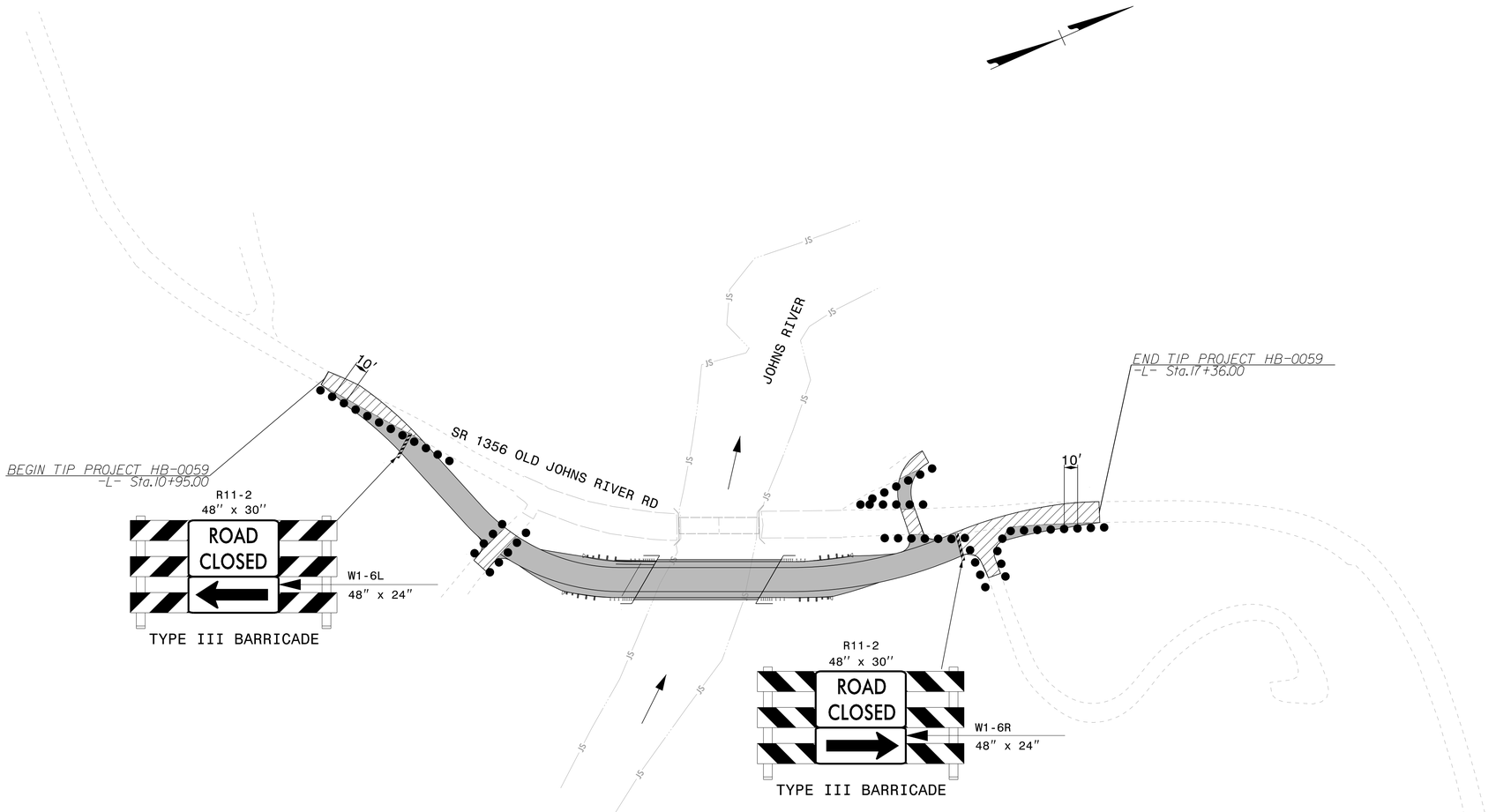
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PHASING

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PROJ. REFERENCE NO.	SHEET NO.
HB-0059	TMP-4



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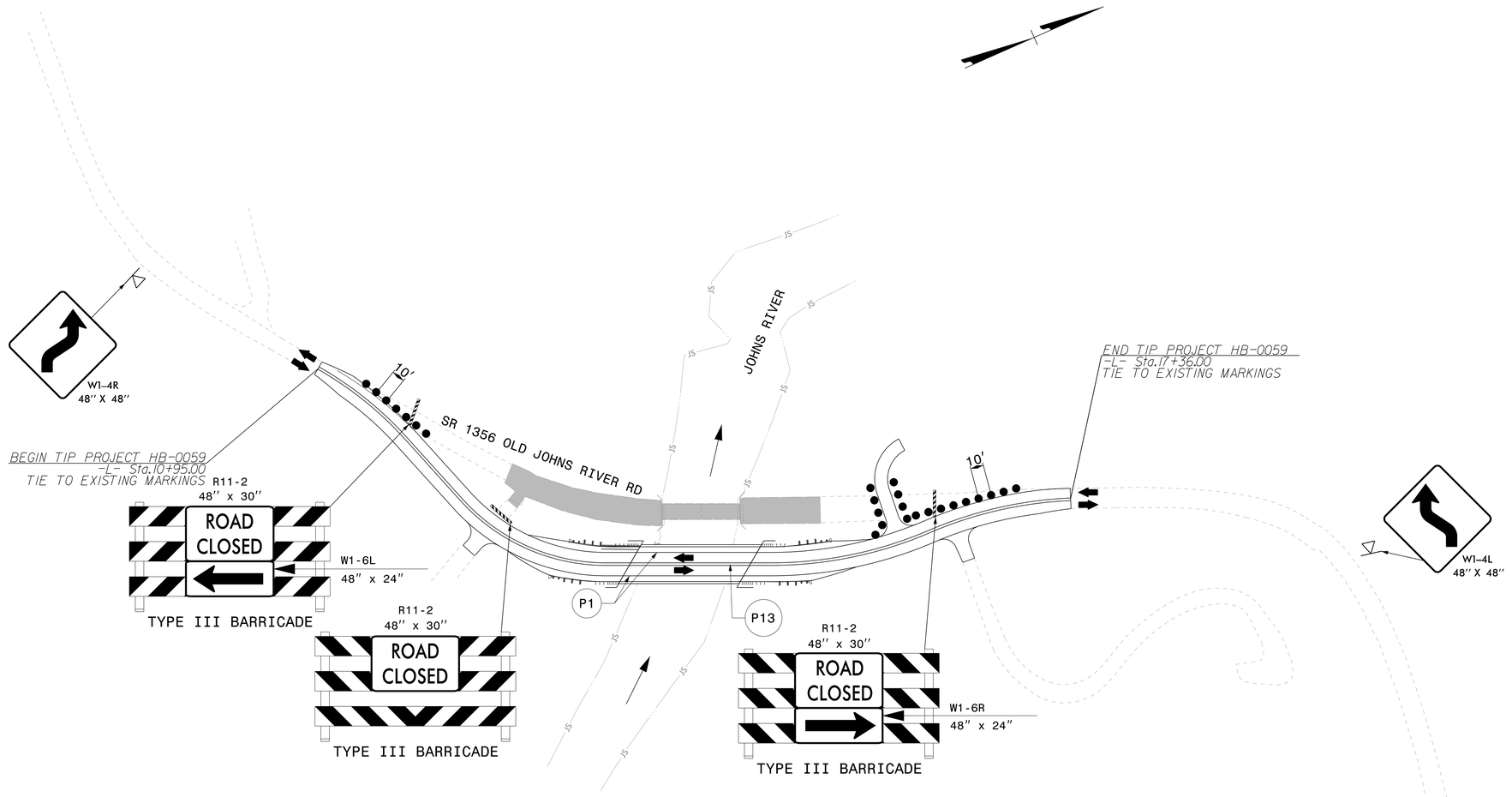
PHASE I DETAIL

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PROJ. REFERENCE NO.	SHEET NO.
HB-0059	TMP-5



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PHASE II DETAIL

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11/15/23

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
CALDWELL COUNTY

LOCATION: BRIDGE 275 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN INDEX, GENERAL NOTES, ROADWAY STANDARD DRAWINGS, AND PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKINGS - DETAIL IN LIEU OF STANDARD FOR ROADWAY STANDARD DRAWING 1205.01 SHEET 1 OF 2
PMP-3	PAVEMENT MARKING DETAILS

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
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 ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
(-L-) SR 1356 OLD JOHNS RIVER ROAD	INTEGRATED MULTIPOLYMER
(-L-) SR 1356 OLD JOHNS RIVER ROAD (BRIDGE DECK)	INTEGRATED MULTIPOLYMER

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

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

PAVEMENT MARKING AND MARKER SCHEDULE

SYMBOL	DESCRIPTION
IM1	INTEGRATED MULTIPOLYMER WHITE EDGELINE (4", 90 MIL)
IM13	INTEGRATED MULTIPOLYMER YELLOW DOUBLE CENTER (4", 90 MIL)

PLAN PREPARED BY:

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JOHN BAUMAN, PE — PROJECT ENGINEER
JODY L. COLE — PROJECT DESIGN ENGINEER

HB-0059
PMP | 01

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

APPROVED: DocuSigned by: John Bauman
DATE: 10/8/2026

SEAL:
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TIP PROJECT: HB-0059

PROJECT REFERENCE NO.	SHEET NO.
HB-0059	PMP-2

CONTINUOUS LINES

EDGE LINE
YELLOW OR WHITE — 4″/6″

LANE LINE
WHITE — 4″/6″

CENTER LINE
YELLOW — 4″/6″

GORE LINE
WHITE — 8″/12″

DIAGONAL LINE
YELLOW OR WHITE — 12″ 45 MPH OR HIGHER
8″ LESS THAN 45 MPH
4″-6″ FOR BICYCLE FACILITIES

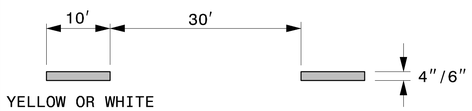
CROSSWALK LINE
WHITE — 8″ TRANSVERSE
24″ LONGITUDINAL

RxR LINE
WHITE — 16″

STOP OR TRANSVERSE BAR
WHITE — 24″

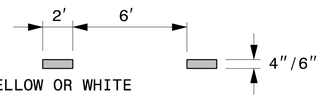
10′-30′/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10′-30′/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



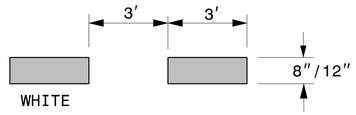
2′-6′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2′-6′/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND BICYCLE LANE EXTENSIONS.



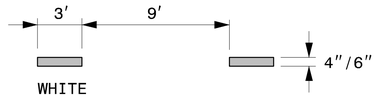
3′-3′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-3′/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



3′-9′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-9′/SP MINI-SKIPS FOR MINI-SKIP LANE LINES, LINE EXTENSIONS THROUGH TAPERS, AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



GENERAL NOTES:

1- USE 6″ LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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RALEIGH, N.C.

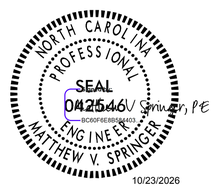
ROADWAY DETAIL DRAWING FOR

PAVEMENT MARKINGS

LINE TYPES AND OFFSETS

SHEET 1 OF 2

1205D01

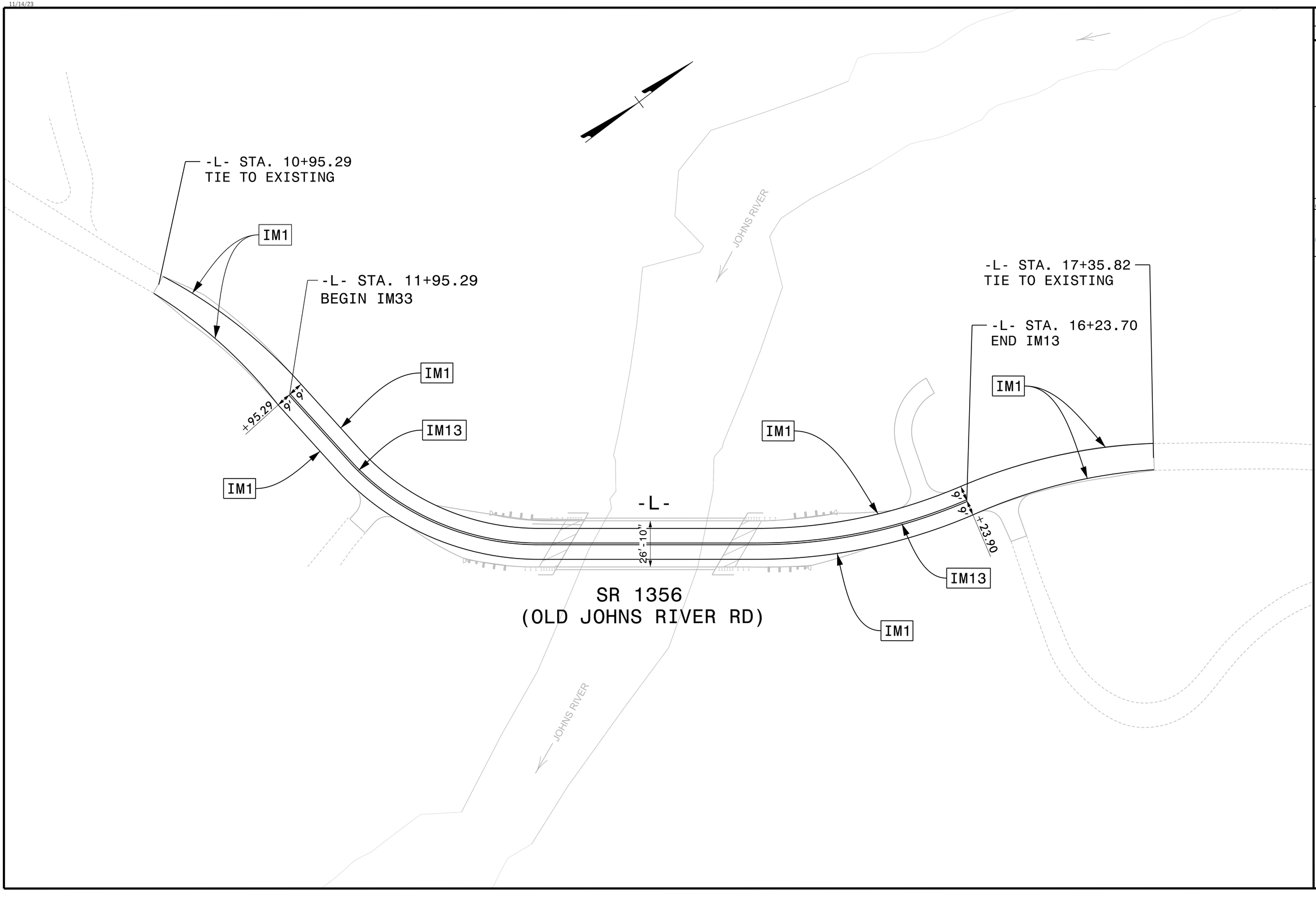


CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

11/14/23



HB-0059

PMP | 03

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052428 JEFFERSON JOHN BAUMAN
10/8/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

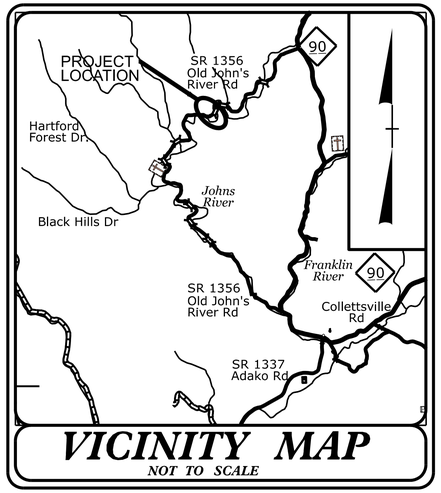
PREPARED BY

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. P-0270

TIP PROJECT: HB-0059

TIP PROJECT: HB-0059



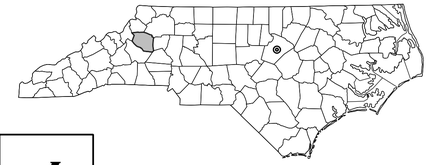
VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
CALDWELL COUNTY

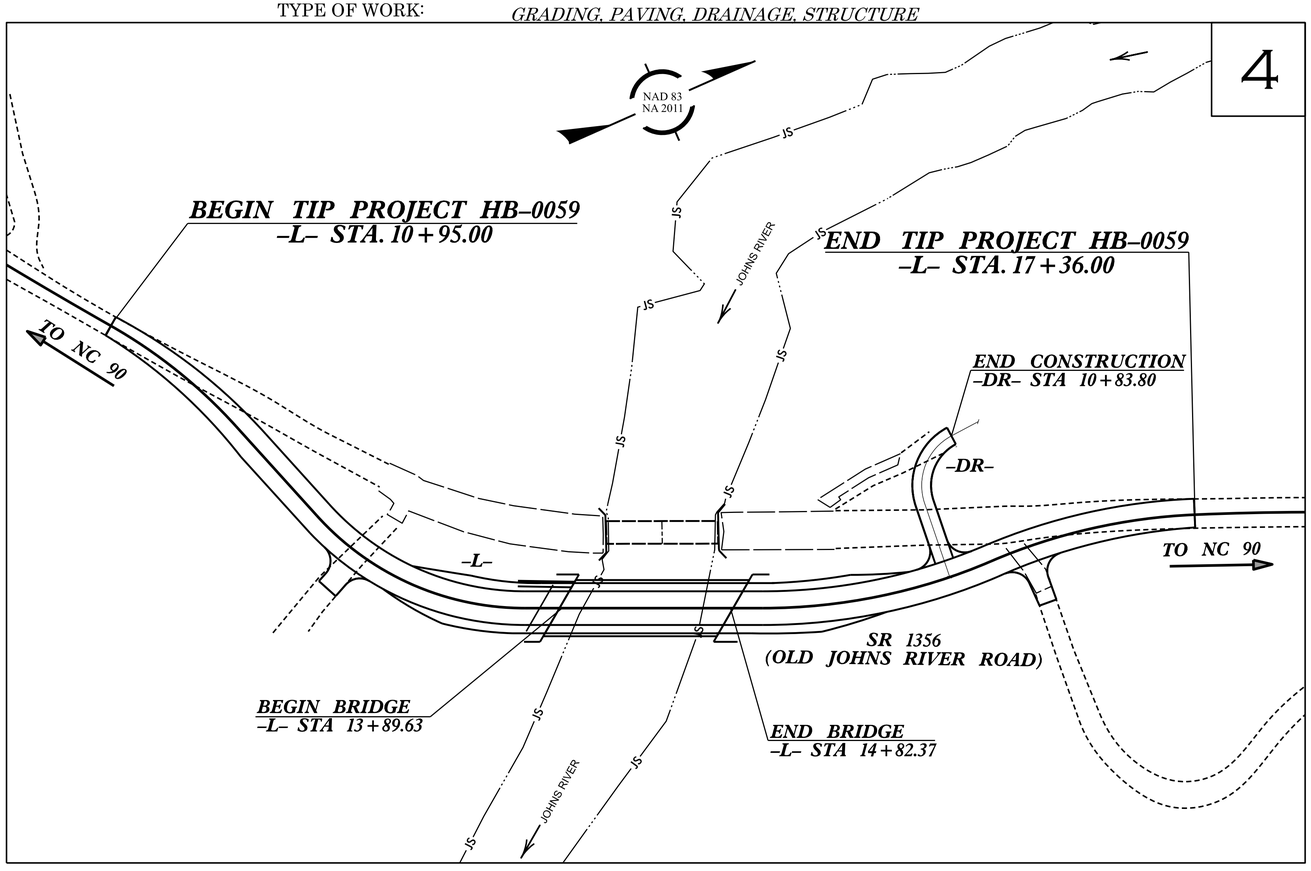
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0059	EC-1	

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



LOCATION: *BRIDGE 275 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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



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

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.

GRAPHIC SCALE

50 25 0 50 100
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.

Prepared In the Office of:

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

Designed by:

Hannah Arey — NAME
4651 — LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

SYSTIME

PROJECT REFERENCE NO.	SHEET NO.
HB-0059	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.
HB-0059	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCH LINE MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+93	13+24	LT	15
4	-L-	13+90	14+05	LT	10
4	-L-	14+87	15+15	LT	10
4	-L-	16+20	16+60	LT	10
4	-L-	14+66	14+81	RT	5
				SUBTOTAL	50
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2000
				TOTAL	2050
				SAY	2100

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
HB-0059	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

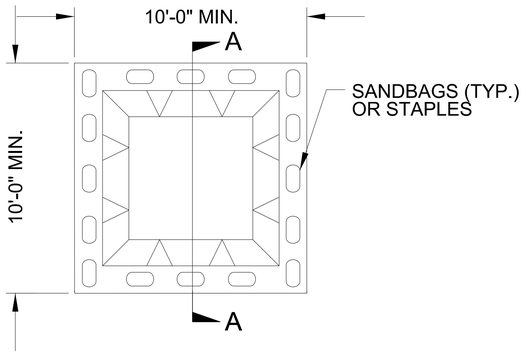
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

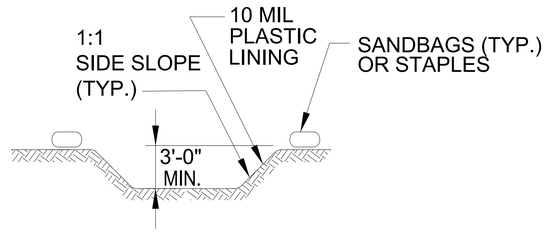
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7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

PROJECT REFERENCE NO.	SHEET NO.
HB-0059	EC-3B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



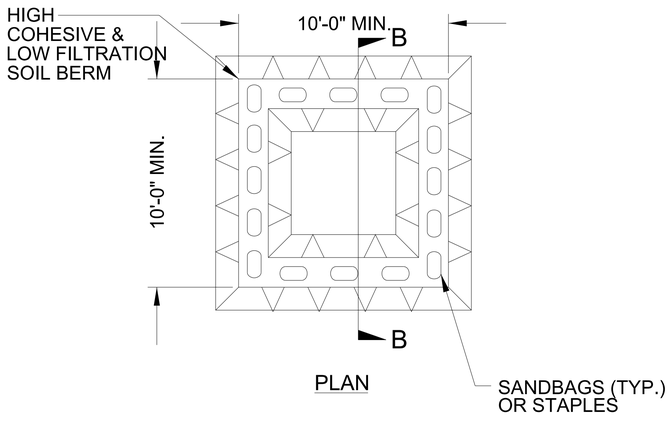
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

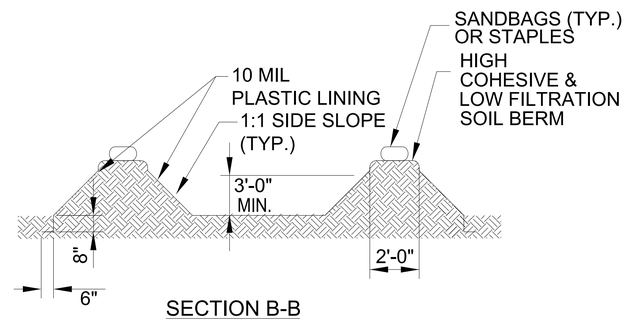
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

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

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

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

BEGIN TIP PROJECT HB-0059
-L- STA. 10+95.00

NAD 83 NC GRID NA 20W

-L- PRC 10+95.29

-L- PT 11+81.43

-L- PC 10+00.00

STANDARD V DITCH
SEE DETAIL 4D

FLOATING
TURBIDITY
CURTAIN

END CONSTRUCTION
-DR- POE 10+83.80

BEGIN SBG
-L- STA 13+65.73

END BRIDGE
-L- STA 14+82.37

END APPROACH
SLAB
-L- STA 14+98.07
SPECIAL V DITCH
SEE DETAIL 4E

JOHNS RIVER

-DR- PT 10+87.09

-L- PCC 17+35.82

-L- POE 18+04.86

REMOVE EXISTING
BRIDGE AND
ABUTMENTS
SEE DETAIL 4C

PUE

SPECIAL V DITCH
SEE DETAIL 4E

-DR- PC
10+41.49

(0403)

(0401)

(0402)

-L- PC 12+45.83

EST. 1 TON
CL B RIP RAP
5 SY GEO.

LP -L- 13+65.71
ELEV = 1153.27

-L- PT 13+71.19

BEGIN APPROACH SLAB
-L- STA 13+78.93

IMPERVIOUS
DIKE

STANDARD VDITCH
SEE DETAIL 4D

BEGIN BRIDGE
-L- STA 13+89.63

-L- PC 14+98.27

BLK BARN
(ABANDONED)

-L- PRC 16+23.70

-DR- POT 10+00.00 =
-L-POC 16+00.00

END TIP PROJECT HB-0059
-L- STA. 17+36.00

EXISTING RW

EXISTING RW

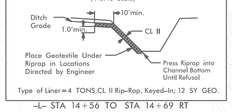
HTR

MTL
CANOPY

WD

W/LT

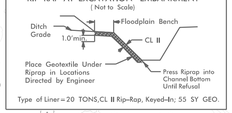
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 4 TONS, CL II Rip-Rap, Keyed-In; 12 SY GEO.

-L- STA 14+56 TO STA 14+69 RT

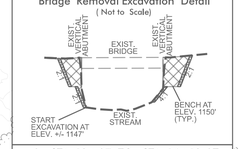
DETAIL 4B
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



Type of Liner = 20 TONS, CL II Rip-Rap, Keyed-In; 55 SY GEO.

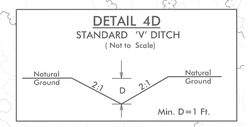
-L- STA 14+05 TO STA 14+12 LT
-L- STA 14+75 TO STA 14+87 LT

DETAIL 4C
Bridge Removal Excavation Detail
(Not to Scale)



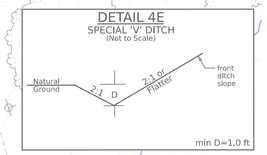
-L- STA. 13+97 TO STA. 14+19 LT
-L- STA. 14+59 TO STA. 14+95 LT

DETAIL 4D
STANDARD "V" DITCH
(Not to Scale)



-L- STA. 13+90 TO STA. 14+05 LT
-L- STA. 14+66.5 TO STA. 14+81 RT

DETAIL 4E
SPECIAL "V" DITCH
(Not to Scale)



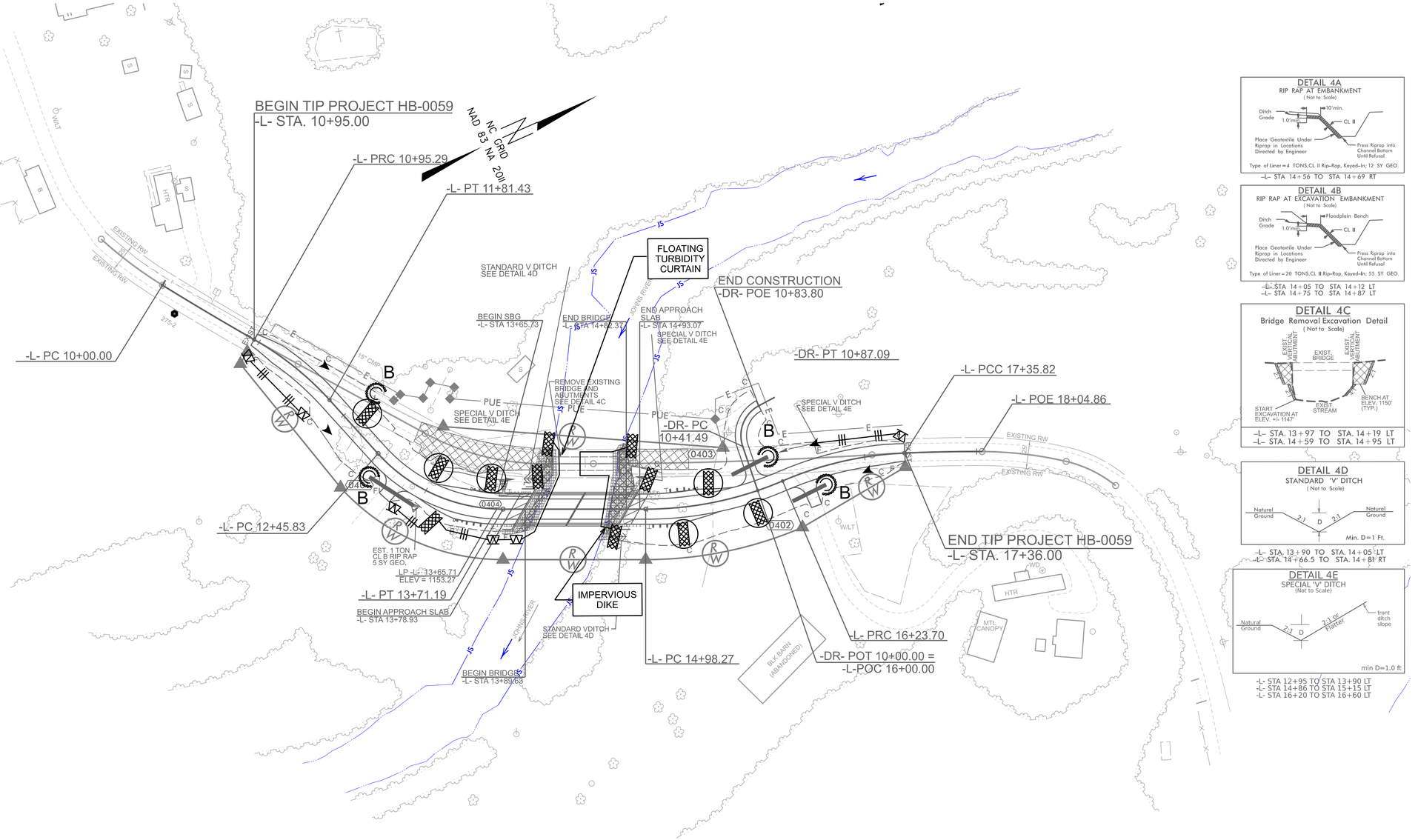
-L- STA 12+95 TO STA 13+90 LT
-L- STA 14+86 TO STA 15+15 LT
-L- STA 16+20 TO STA 16+60 LT

HB-0059

EC-4/CONST.4

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

INSTALL MATTING IN THE PROPOSED DITCH LINE.
-L- STA. 12+96 - 13+24 LT,
-L- STA. 13+90 - 14+05 LT,
-L- STA. 14+87 - 15+15 LT,
-L- STA. 16+20 - 16+60 LT,
-L- STA. 14+66 - 14+81 RT



DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = 4 TONS, CL II Rip-Rap, Keyed-In; 12 SY GEO.
-L- STA 14+56 TO STA 14+69 RT

DETAIL 4B
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)

Type of Liner = 20 TONS, CL II Rip-Rap, Keyed-In; 55 SY GEO.
-L- STA 14+05 TO STA 14+12 LT
-L- STA 14+75 TO STA 14+87 LT

DETAIL 4C
Bridge Removal Excavation Detail
(Not to Scale)

-L- STA. 13+97 TO STA. 14+19 LT
-L- STA. 14+59 TO STA. 14+95 LT

DETAIL 4D
STANDARD "V" DITCH
(Not to Scale)

-L- STA. 13+90 TO STA. 14+05 LT
-L- STA. 14+66.5 TO STA. 14+81 RT

DETAIL 4E
SPECIAL "V" DITCH
(Not to Scale)

-L- STA 12+95 TO STA 13+90 LT
-L- STA 14+86 TO STA 15+15 LT
-L- STA 16+20 TO STA 16+60 LT

HB-0059
EC-5/CONST.4

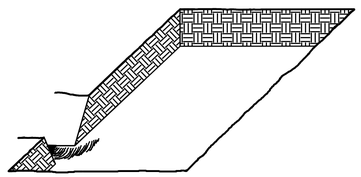
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0057	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

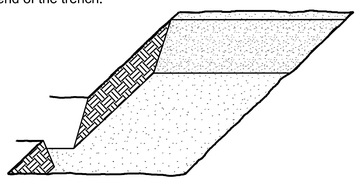
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

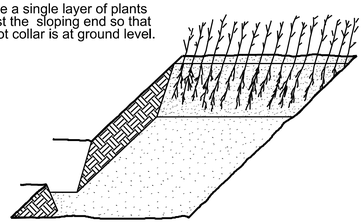
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



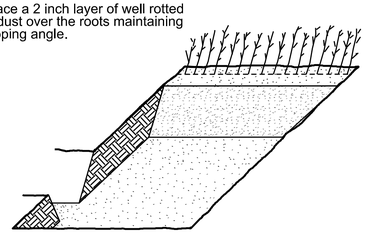
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

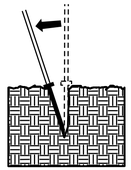


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

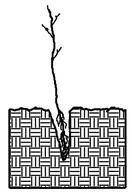


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

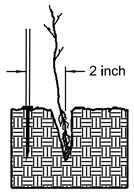
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



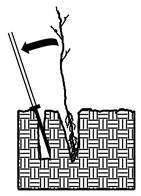
1. Insert planting bar as shown and pull handle toward planter.



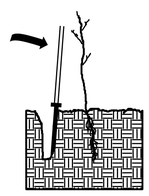
2. Remove planting bar and place seedling at correct depth.



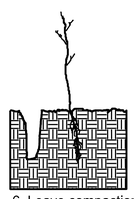
3. Insert planting bar 2 inches toward planter from seedling.



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% CORNUS AMOMUM	SILKY DOGWOOD	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR
25% SALIX NIGRA	BLACK WILLOW	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

09/08/99

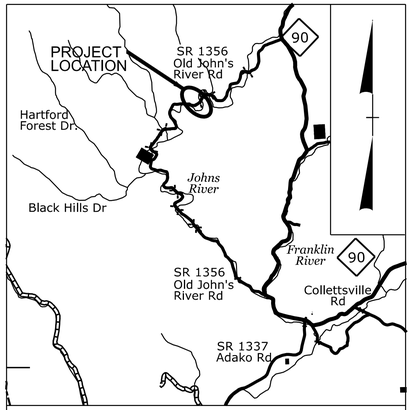
TIP PROJECT: HB-0059

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
CALDWELL COUNTY

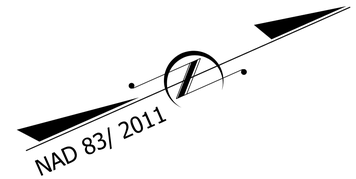
LOCATION: BRIDGE #275 OVER JOHNS RIVER
ON SR 1356 (OLD JOHNS RIVER ROAD)
TYPE OF WORK: POWER & COMMUNICATIONS

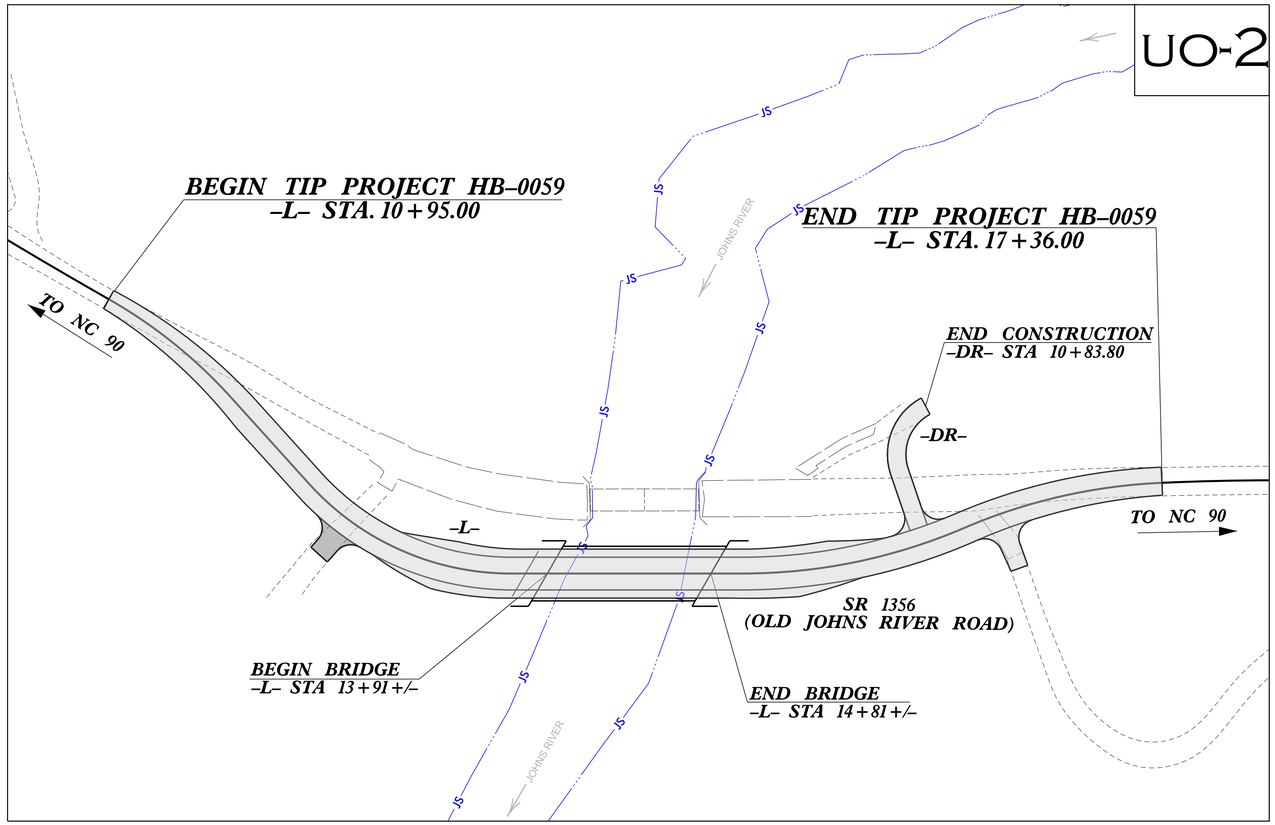


VICINITY MAP (NTS)

T.I.P. NO.	SHEET NO.
HB–0059	UO–1

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.





GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) POWER – BLUE RIDGE ELECTRIC

(B) COMMUNICATIONS – AT&T

(C) COMMUNICATIONS – CHARTER SPECTRUM

PREPARED IN THE OFFICE OF

TELICS

TELICS
119 BROOKSTOWN AVE.
SUITE 305
WINSTON SALEM, NC 27101
(336) 705 – 8844

CORY WOOD — *UTILITY PROJECT MANAGER*
CORY WOOD — *UTILITY COORDINATOR*

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

BRANDON GREER — *DIVISION UTILITIES ENGINEER*

02/02/22

UTILITIES BY OTHERS

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+47.65	PIc 11+38.73	PIc 13+12.43	PIc 15+61.86	PIc 16+80.38	PIc 17+70.35
Δc = 02° 06'57.8" (LT)	Δc = 18°16'51.5" (RT)	Δc = 47°53'09.1" (LT)	Δc = 23°15'26.2" (LT)	Δc = 20°47'24.0" (RT)	Δc = 02°42'00.1" (RT)
D = 02°13'14.8"	D = 21°13'14.4"	D = 38°11'49.9"	D = 18°32'32.4"	D = 18°32'32.4"	D = 03°54'39.5"
Lc = 95.29	Lc = 86.15	Lc = 125.36	Lc = 125.43	Lc = 112.12	Lc = 69.04
Tc = 47.65	Tc = 43.44	Tc = 66.61	Tc = 63.59	Tc = 56.68	Tc = 34.52
R = 2,580	R = 270	R = 150	R = 309	R = 309	R = 1,465
	SE = 0.020	SE = 0.020	SE = 0.020	SE = 0.020	
	RO=30'	RO=30'	RO=30'	RO=30'	
		DS=25 MPH			

CUR DATA -DR-
PIc 10+67.03
Δc = 80°48'27.7" (RT)
D = 190°59'09.4"
Lc = 42.31
Tc = 25.54
R = 30
SE = SEE PLANS

NAD 83/2011

BEGIN TIP PROJECT HB-0059
-L- STA. 10+95.00

-L- PRC 10+95.29

-L- PT 11+81.43

-L- PC 10+00.00

-L- PC 14+98.27

END CONSTRUCTION
-DR- POE 10+83.80
N04°09'57.8"W

-DR- PT 10+87.09

-DR- PC 10+41.49
N84°58'25.5"W

-L- PCC 17+35.82

-L- POE 18+04.86

N71°46'30.6"E

N23°53'21.4"E

-L- PC 12+45.83

-L- PT 13+71.19

-L- PRC 16+23.70

END TIP PROJECT HB-0059
-L- STA. 17+36.00

BEGIN SBG
-L- STA 13+85.00
LP -L- 13+65.71
ELEV = 1153.27

BEGIN BRIDGE
-L- STA 13+91 +/-

END BRIDGE
-L- STA 14+81 +/-

BURIED AT&T ABANDONED

BLUE RIDGE GUYS

BURIED AT&T

BLUE RIDGE POLE

BLUE RIDGE POLE REMOVED

AERIAL BLUE RIDGE AT&T AND SPECTRUM

AERIAL BLUE RIDGE AT&T AND SPECTRUM REMOVED

AERIAL BLUE RIDGE AT&T AND SPECTRUM TO REMAIN

AT&T PEDESTAL TO REMAIN

JOHN D. HAYES DB 1883 PG 618

REMOVE EXISTING BRIDGE AND ABUTMENTS SEE DETAIL 4C

EXCAVATION EMBANKMENT RIPRAP SEE DETAIL 4B

STANDARD V DITCH SEE DETAIL 4D

SPECIAL V DITCH SEE DETAIL 4E

EST 2 TON CL B RIP RAP 7 SY GEO

EST. 1 TON CL B RIP RAP GEO.

CLASS II RIP RAP WITH GEOTEXTILE (TYP.)

STREAM BANK STABILIZATION SEE DETAIL 4A

PLACE CLASS II RIP RAP TO ELEV. 1153.1' +/- OR AT SHOULDER PT.(TYP.)

BRIDGE# 275 2 SPAN

OBSCURE

WOODS

SEPTIC DRAN FIELD

100' TAPER TO EXISTING

OLD JOHN'S RIVER RD

SR 1556

EXISTING RW

15' GR

MTL CANOPY

BLK BARN (ABANDONED)

2SFD FFE = 1168.95'

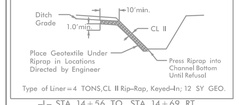
HTR FFE = 1173.89'

HTR FFE = 1192.24'

WD

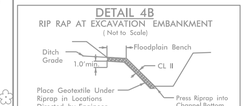
1.60 MI +/- TO HWY 90

DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



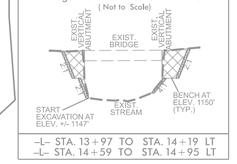
Type of Liner = 4 TONS,CL II Rip-Rap, Keyed-in, 12 SY GEO.
-L- STA 14+56 TO STA 14+69 RT

DETAIL 4B
RIP RAP AT EXCAVATION EMBANKMENT
(Not to Scale)



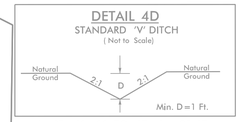
Type of Liner = 20 TONS,CL II Rip-Rap, Keyed-in, 55 SY GEO.
-L- STA 14+05 TO STA 14+12 LT
-L- STA 14+75 TO STA 14+87 LT

DETAIL 4C
Bridge Removal Excavation Detail
(Not to Scale)



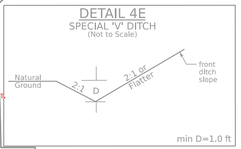
-L- STA. 13+97 TO STA. 14+19 LT
-L- STA. 14+59 TO STA. 14+95 LT

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



-L- STA. 13+90 TO STA. 14+05 LT
-L- STA. 14+66 TO STA. 14+81 RT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



-L- STA 12+96 TO STA 13+90 LT
-L- STA 14+87 TO STA 15+15 LT
-L- STA 16+20 TO STA 16+60 LT

HB-0059
U0-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

TELICS
119 BROOKSTOWN AVE
SUITE 305
WINSTON SALEM, NC 27101
PHONE:(336)705-8844

REVISIONS

5/26/20

CROSS SECTION INDEX

CROSS SECTION INDEX X-1
CROSS SECTION SUMMARY X-1A

ROADWAY	STATION	TO	STATION	SHEET NO.
-L- SR 1356 (OLD JOHNS RIVER RD)	10+50.00		17+50.00	X-2 TO X-9
-DR-	10+00.00		10+87.09	X-10 TO X-11

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

PROJ. REFERENCE NO.	SHEET NO.
HB-0059	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

'NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

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

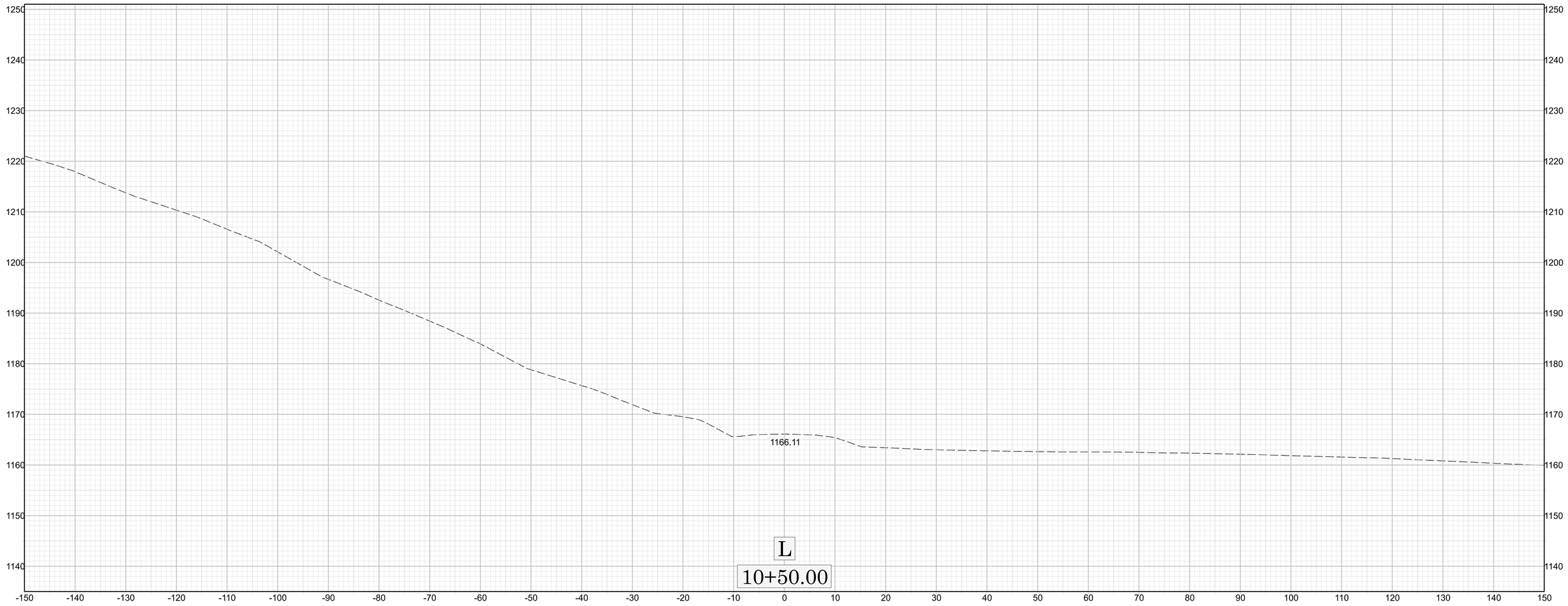
Quantities are approximate only. The Resident Engineer will use methods including but not limited to recross-sectioning, truck measurements, and aerial surveys to compute the final quantities for which the contractor will be paid.

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+95.00	0	0
11+00.00	1	0
11+50.00	11	8
12+00.00	70	7
12+50.00	139	0
13+00.00	82	8
13+50.00	12	45
13+91.00 (BEGIN BRIDGE)	5	61

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+81.00 (END BRIDGE)	0	0
15+00.00	47	0
15+50.00	254	0
16+00.00	200	0
16+50.00	87	0
17+00.00	28	3
17+36.00	7	2

Station DR	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+09.00	0	0
10+25.00	32	0
10+50.00	50	0
10+75.00	31	0
10+83.80	5	0

11/14/23



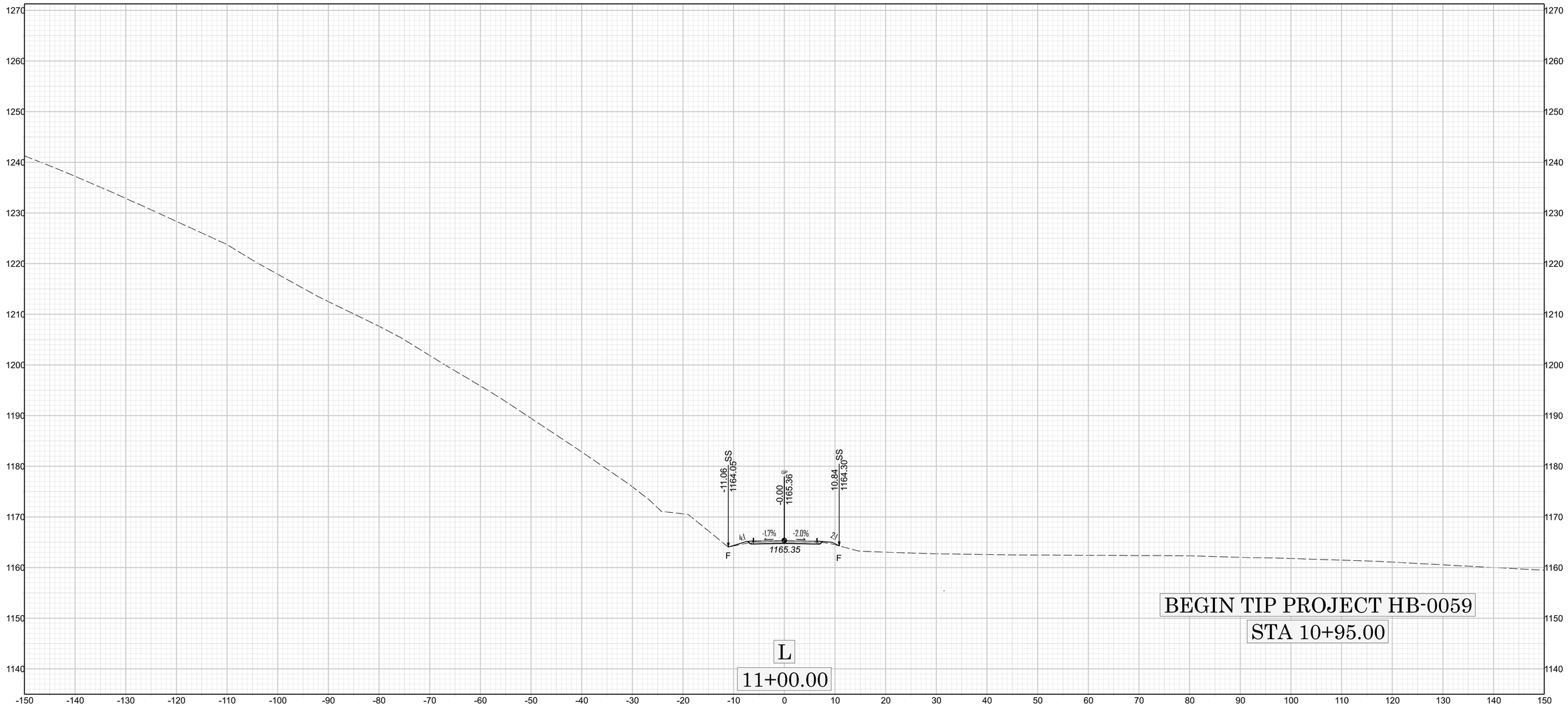
0 10 20

X 02

HB-0059

CORPORATE/gmilton - 8/28/2026

11/14/23



0 10 20

X 03

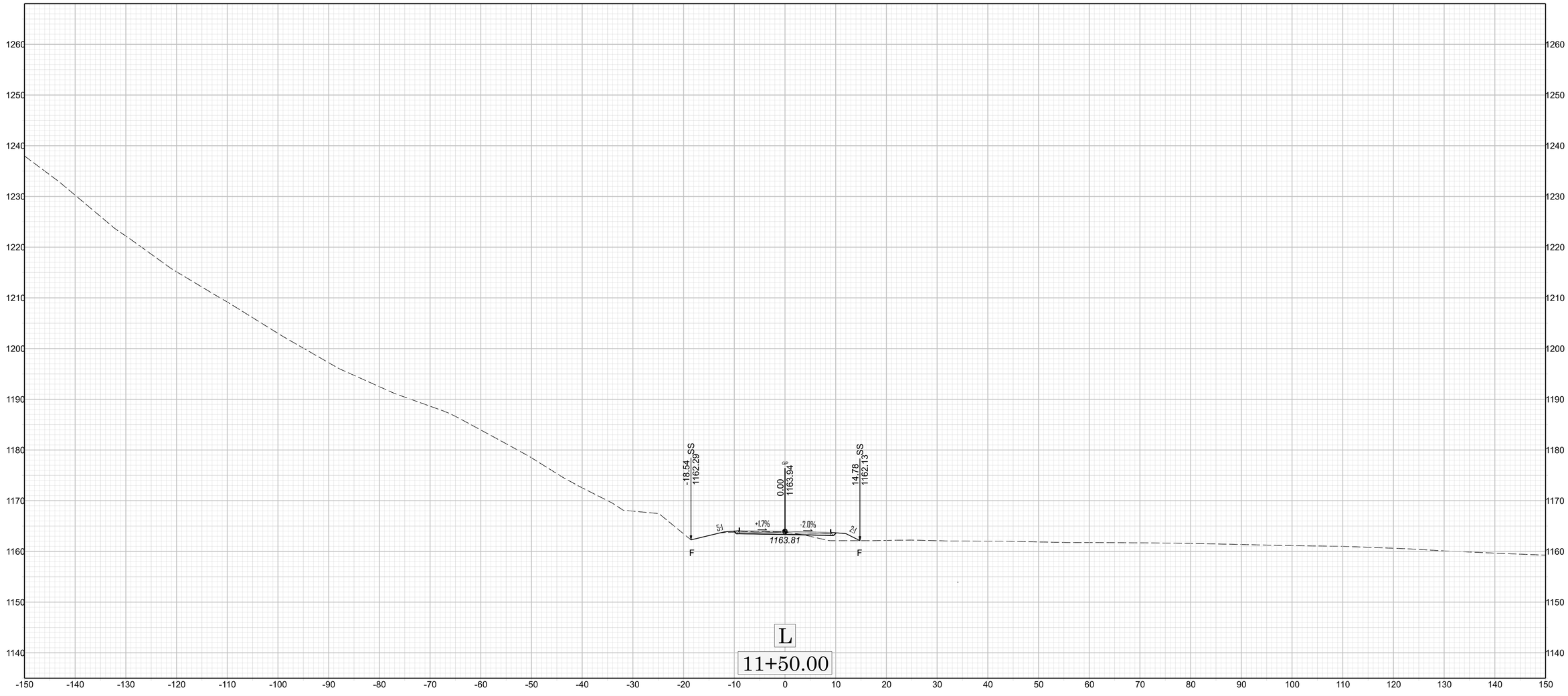
HB-0059

CORPORATE/gmilton - 8/28/2026

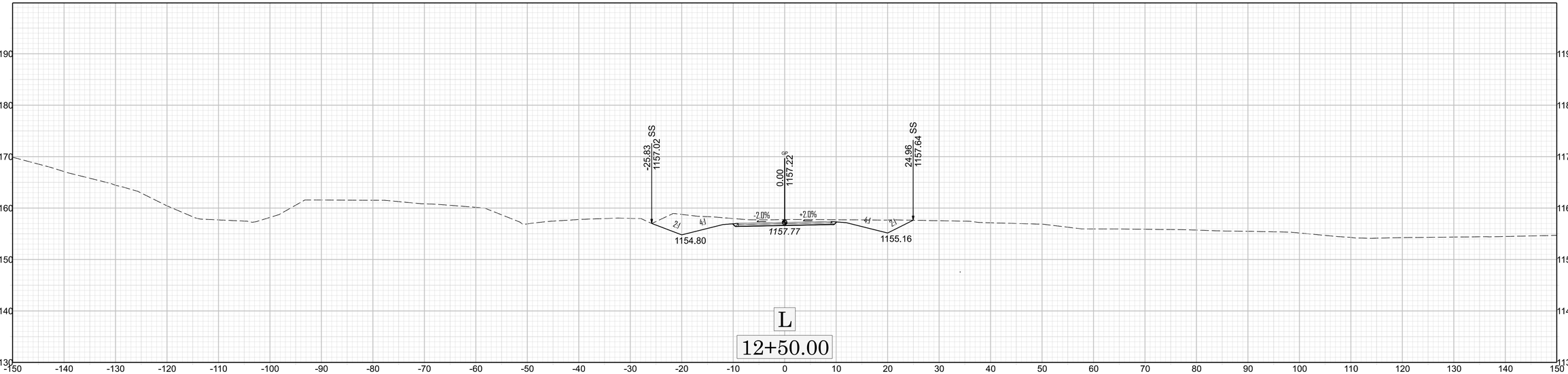
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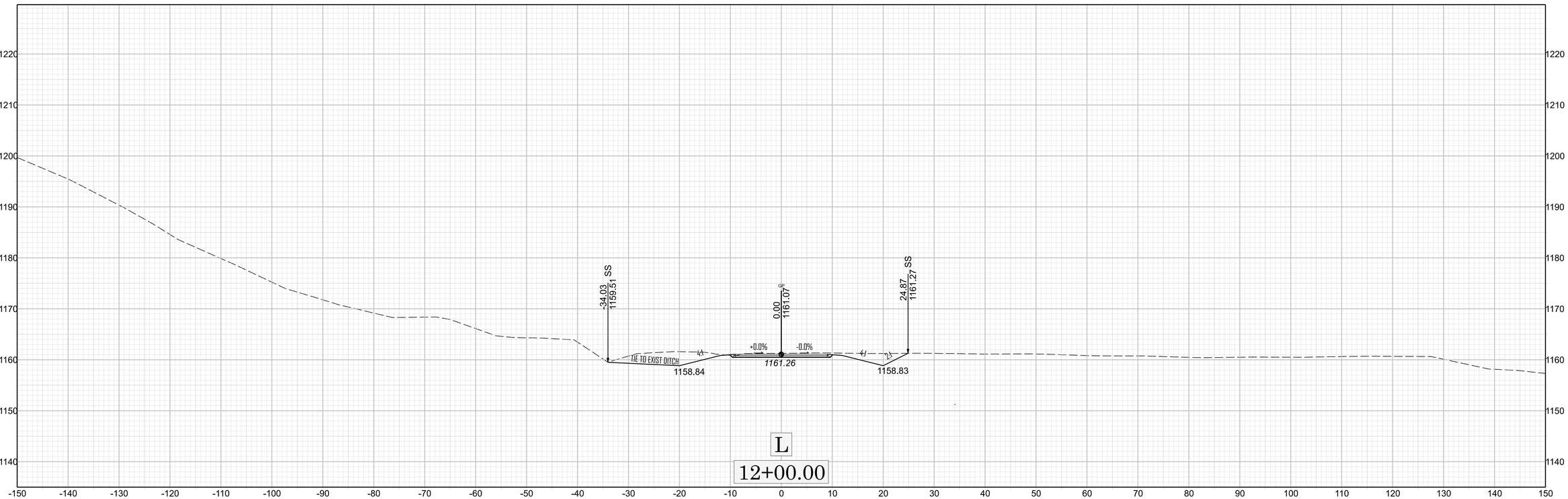
X 04

HB-0059



11/14/23



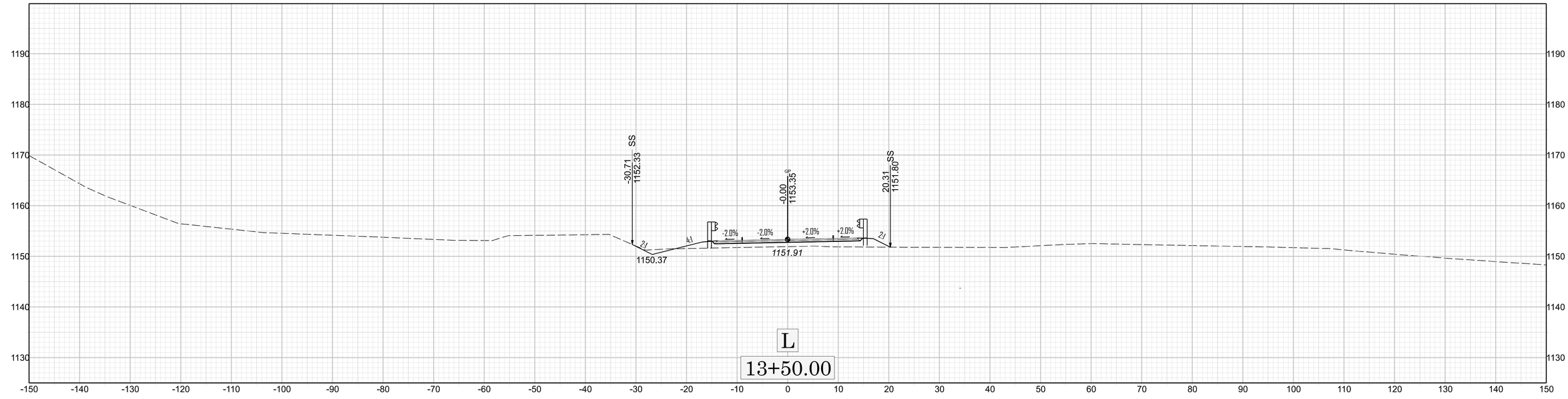


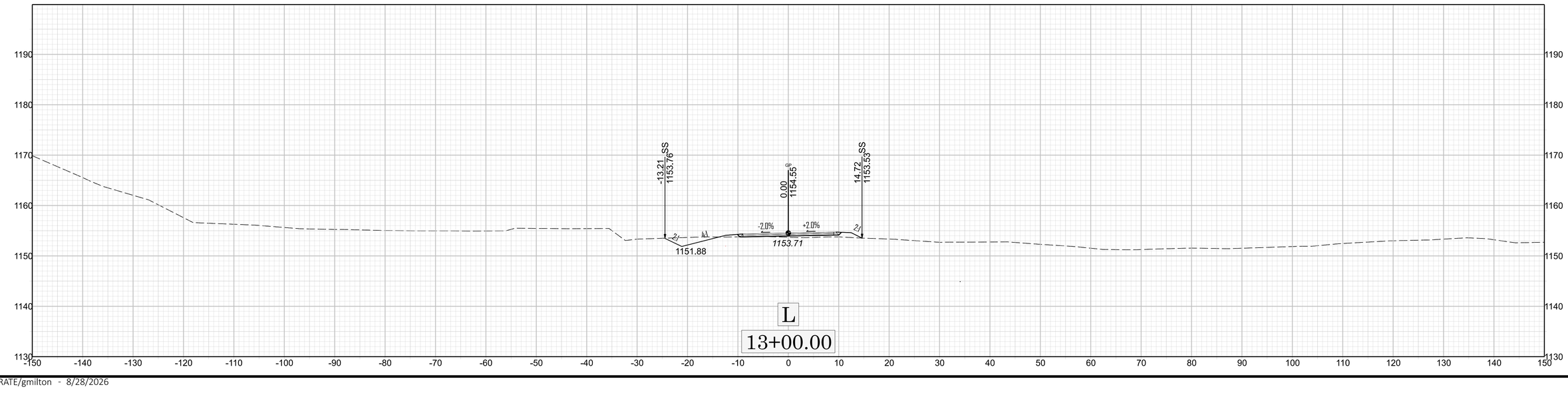
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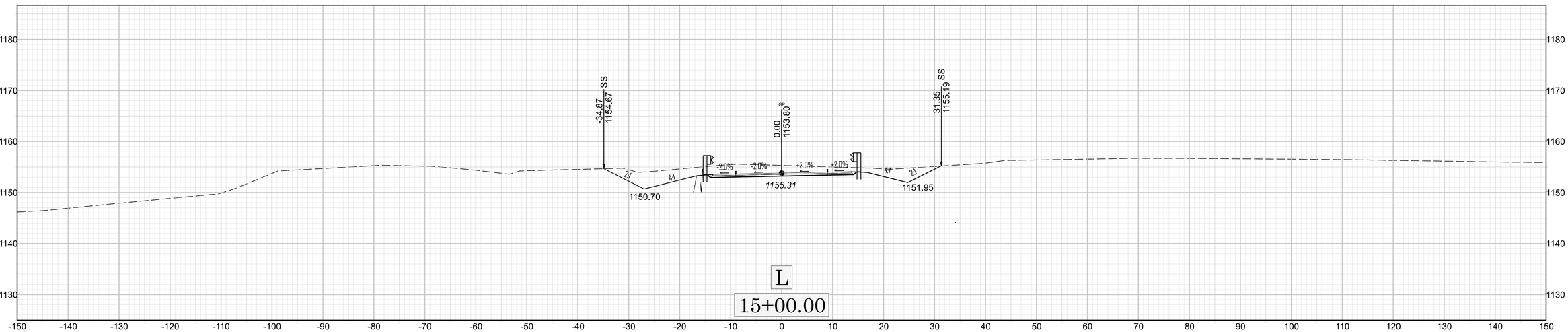
05 X

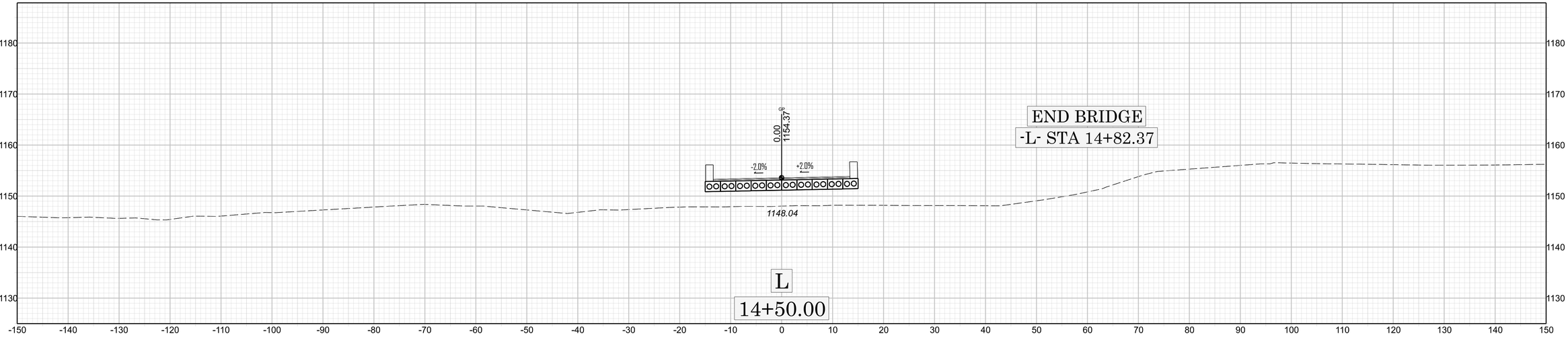
HB-0059

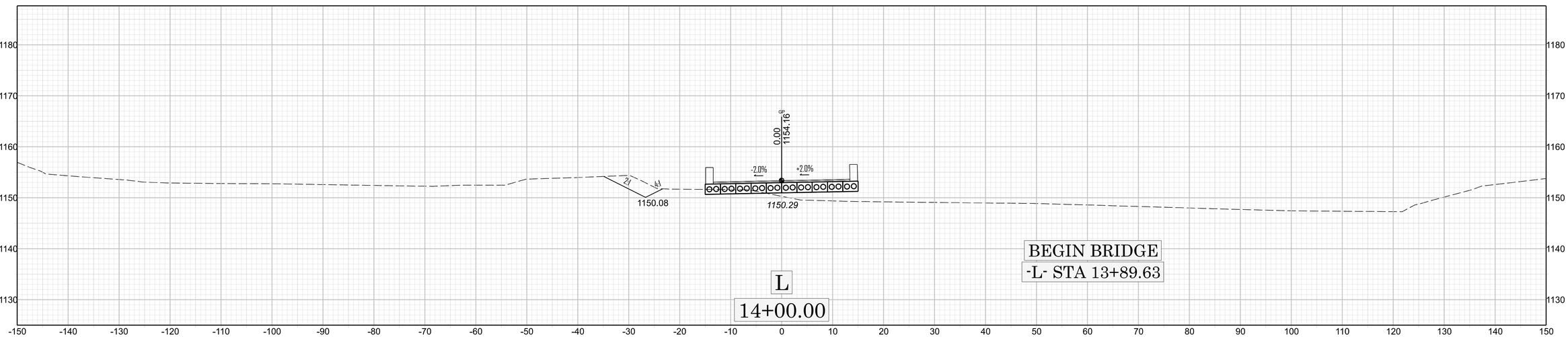
CORPORATE/gmilton - 8/28/2026

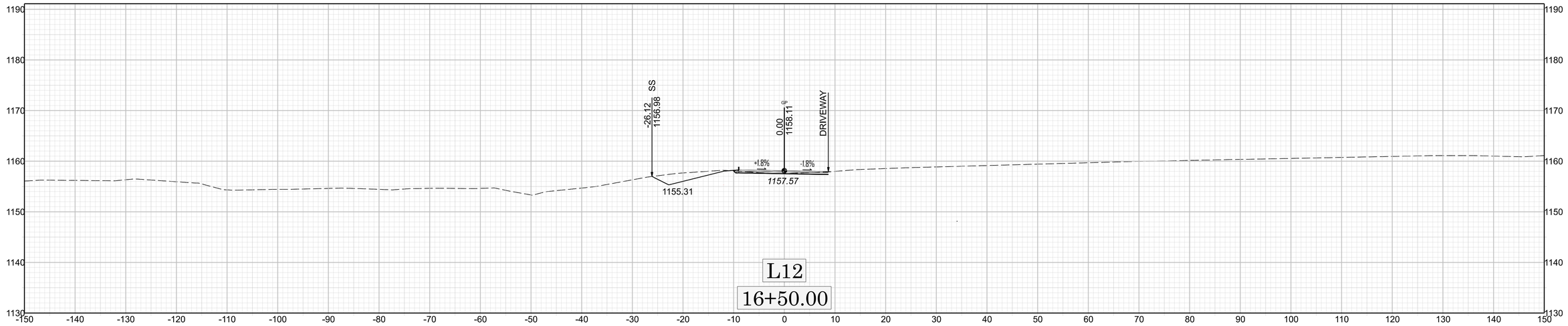

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A1
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-2.0%
+2.0%
+2.0%
2:1
1150.37
1151.91
1190
1180
1170
1160
1150
1140
1130
-150
-140
-130
-120
-110
-100
-90
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-70
-60
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-40
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-20
-10
0
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20
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40
50
60
70
80
90
100
110
120
130
140
150
L
13+50.00


-13.21
1153.76
SS
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1154.55
CL
14.72
1153.53
SS
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A1
-2.0%
+2.0%
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0
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70
80
90
100
110
120
130
140
150
L
13+00.00


-34.87
1154.67
SS
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1153.80
31.35
1155.19
SS
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-2.0%
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L
15+00.00

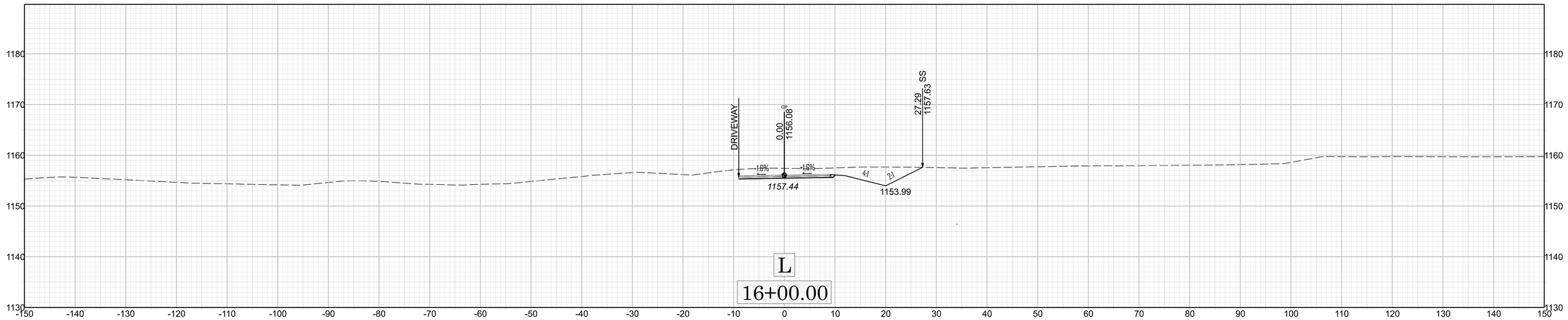

0.00
1154.37
-2.0%
+2.0%
1148.04
END BRIDGE
-L- STA 14+82.37
L
14+50.00


0.00
1154.16
-2.0%
+2.0%
2:1
4:1
1150.08
1150.29
BEGIN BRIDGE
-L- STA 13+89.63
L
14+00.00



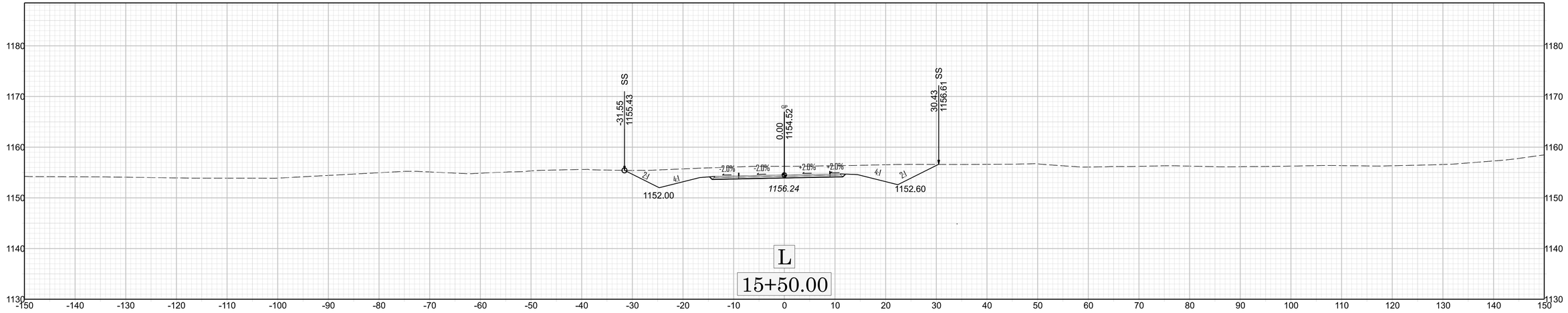
L12

16+50.00



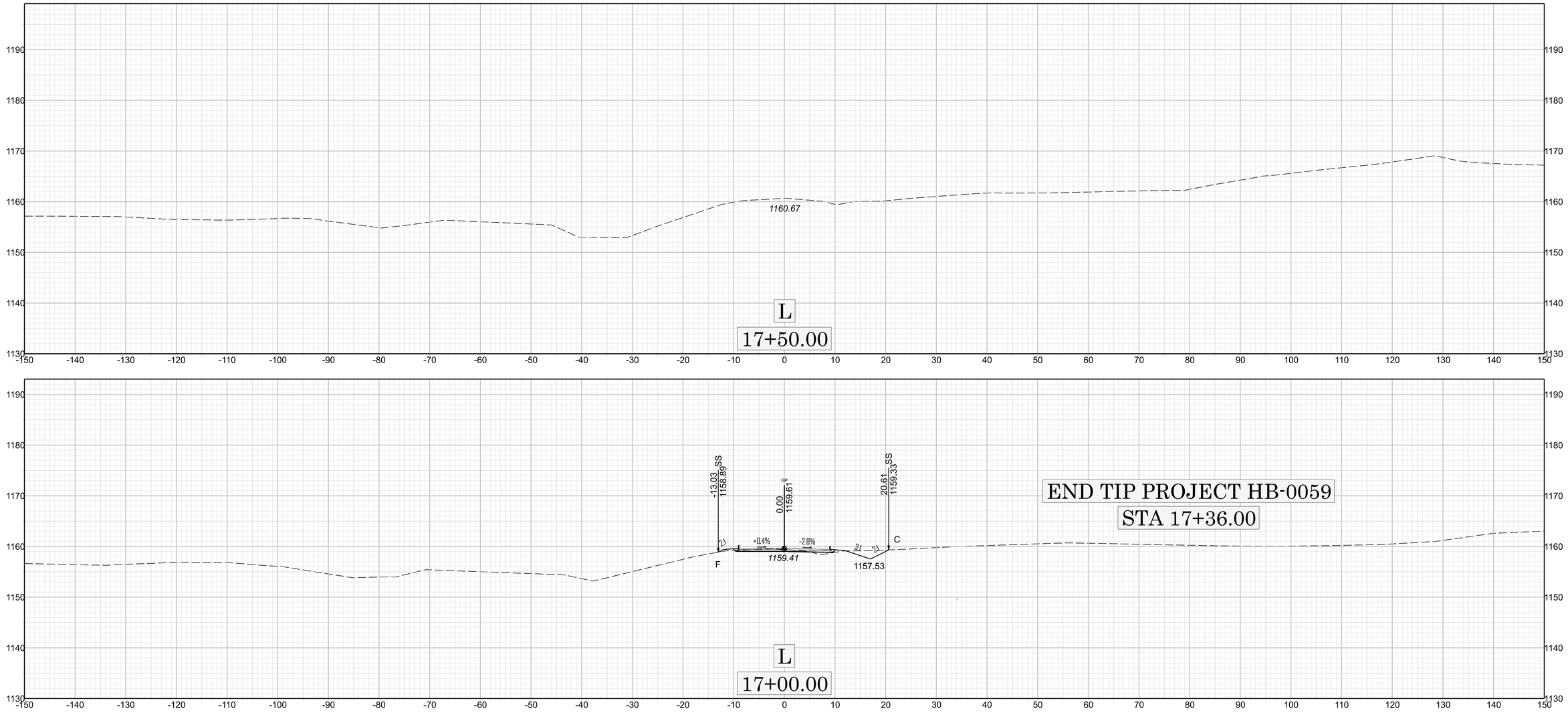
L

16+00.00



L

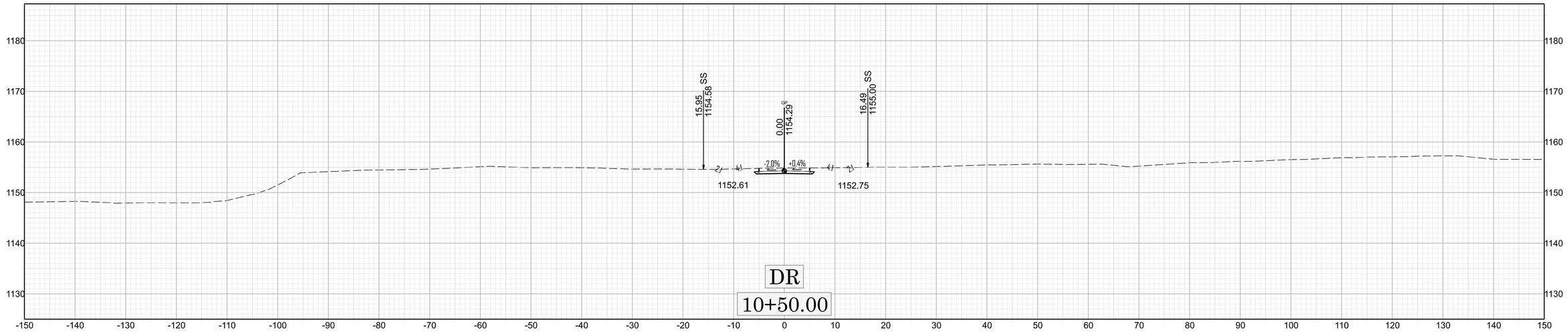
15+50.00

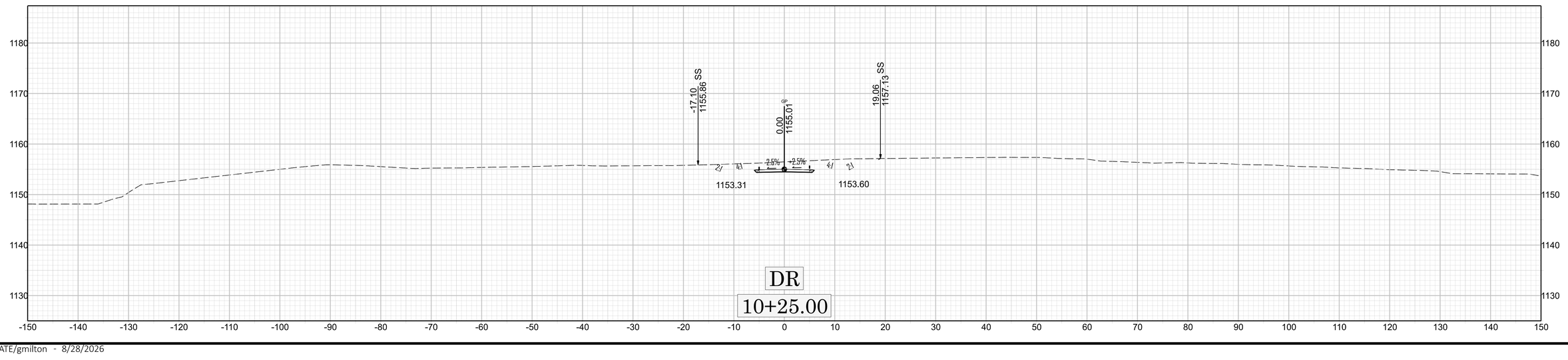


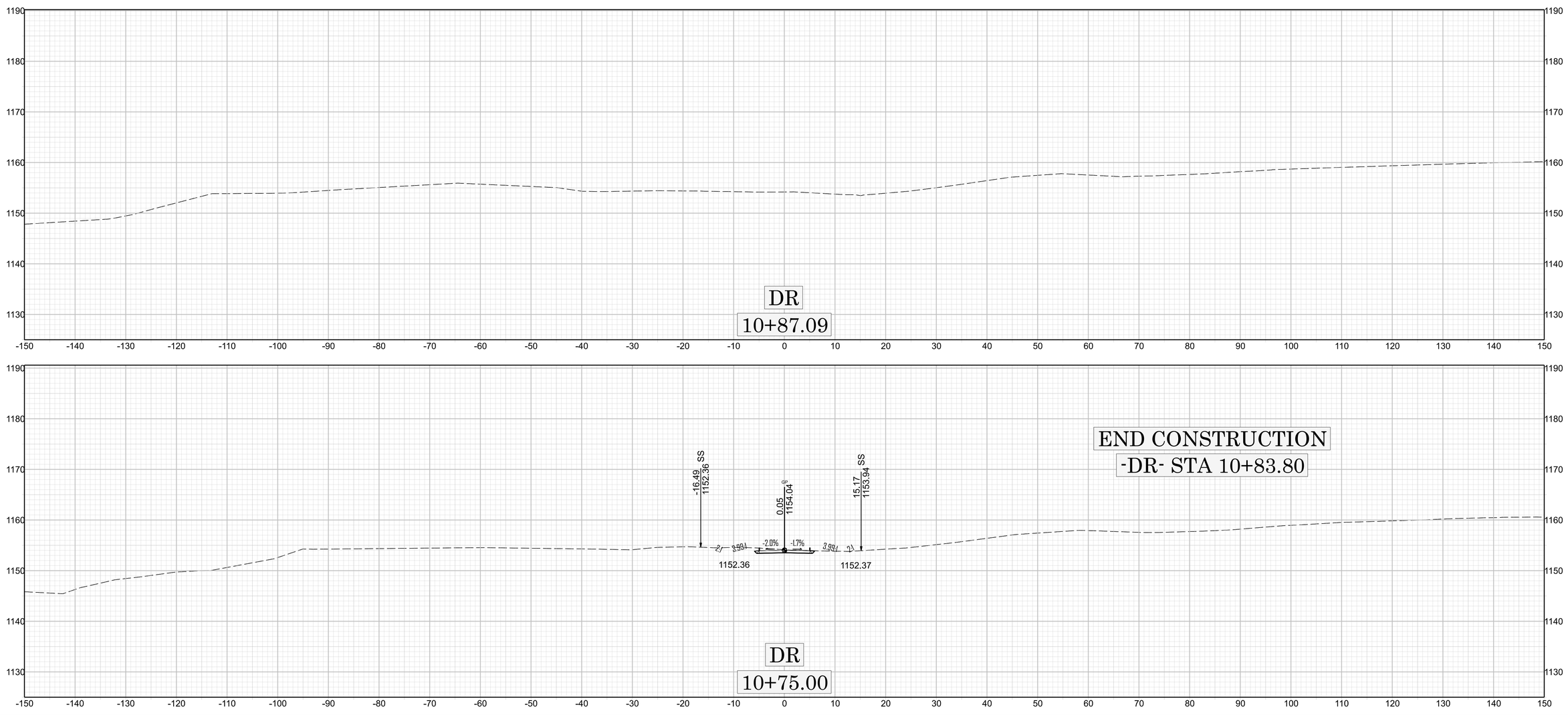
0 10 20

X 60

HB-0059

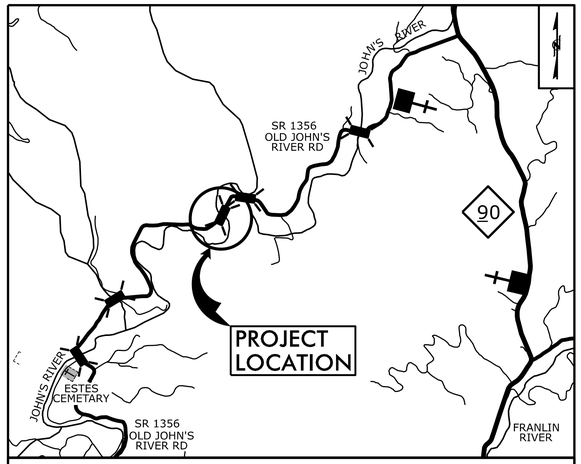

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SS
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℄
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-2.0%
+0.4%
1152.61
1152.75
DR
10+50.00


-17.10
1155.86
SS
0.00
1155.01
℄
19.06
1157.13
SS
-2.5%
+2.5%
1153.31
1153.60
DR
10+25.00


DR
10+87.09
END CONSTRUCTION
-DR- STA 10+83.80
DR
10+75.00
-16.49
1152.36
SS
0.05
1154.04
15.17
1153.94
SS
-2.0%
-1.7%
8.99ft
3.99ft
2%
2%
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140
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PROJECT: HB–0059

CONTRACT NO: DK00484



VICINITY MAP

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

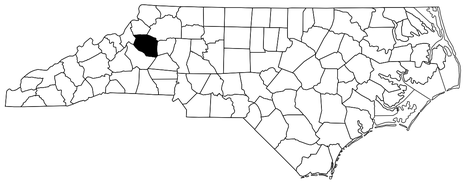
STRUCTURES

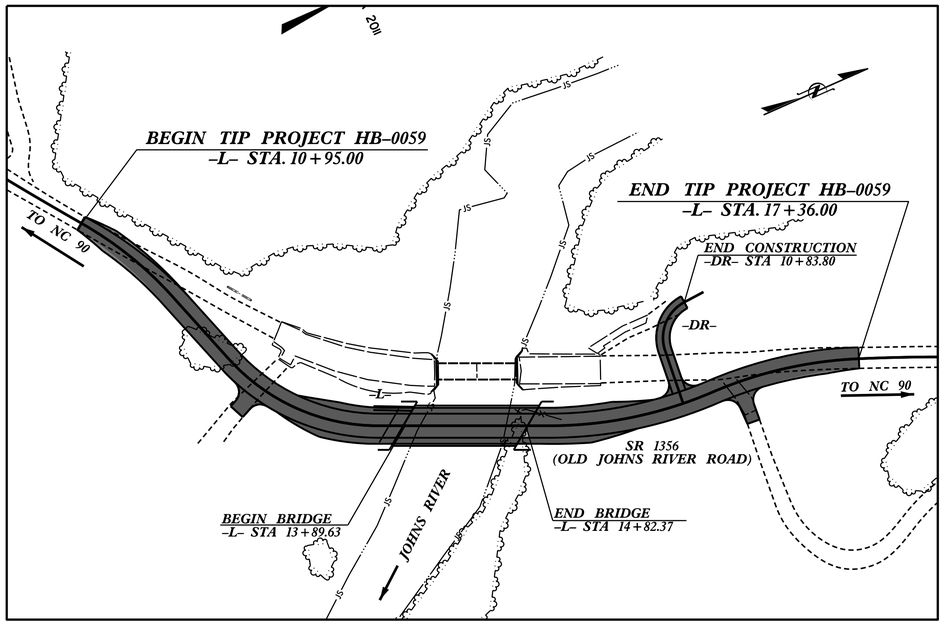
LOCATION: REPLACEMENT OF BRIDGE NO. 130275 ON SR–1356 (OLD JOHNS RIVER RD) OVER JOHNS RIVER

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0059	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50729.1.1	FBRG111	PE
50729.2.1	FBRG111	ROW
50729.2.2	FBRG111	UTIL
50729.3.1	FBRG111	CONST





STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2025 = 140
ADT 2045 = 230
V = 30 MPH

FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB–0059 = 0.104 MILES
LENGTH OF STRUCTURE TIP PROJECT HB–0059 = 0.017 MILES
TOTAL LENGTH OF TIP PROJECT HB–0059 = 0.121 MILES

NCDOT CONTACT: RAMIE A. SHAW, P. E.
DIVISION 11 CONTACT

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

LETTING DATE:
NOVEMBER 19, 2026

ERIC B. NELSON, P.E.
PROJECT MANAGER

TOM M. FORD, P.E.
STRUCTURES DESIGN ENGINEER

Docusign Envelope ID: EE5E00C8-AADA-8B39-8228-8560A53227D1

8/26/21
pw://gfnet-pw.bentley.com:gfnet-pw-01/Documents/Projects/69172_ORD/Task 019.03 - Bridge 130275/5-Working/Structures/CAD/3.0 100% Plans/401.001_HB-0059_SMU_GD_S01_130275
9/22/2026 12:18:18 PM SMU_pdf.pltcfg
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13+50 14+00 14+50 15+00 15+50

(-)8.1439% (+)0.4000%

PVI STA. 13+00.00
EL = 1153.00
VC = 145.00'

GRADE DATA -L-

(+)0.4000% (+)4.1600%

PVI STA. 15+50.00
EL = 1154.00
VC = 110.00'

GRADE DATA -L-

1170
1160
1150
1140

SPAN A SPAN B

FILL FACE @ END BENT 1
STA. 13+89.63 -L-
GRADE POINT ELEV. 1153.36

FIX. LOW CHORD EL. 1151.25 EL. 1150 ± EL. 1148 ± EL. 1148 ±

PROPOSED <2 YR. WSEL = 1153.1

REV. FEMA 100 YR. WSEL = 1160.17

FIX. FIX.

NORMAL WATER SURFACE EL. = 1149.0 (05-28-2024)

EL. 1152 ±

CLASS II RIP RAP (TYP.)

3'-0" ∅ DRILLED SHAFT

EL. 1147 ±

EL. 1147 ±

BENCH EXCAVATION EL. 1148.0 (TYP.)

LOW CHORD EL. 1151.60

FIX.

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

FILL FACE @ END BENT 2
STA. 14+82.37 -L-
GRADE POINT ELEV. 1153.73

2'-0" (TYP.)

HP 12x53 STEEL PILES (TYP.)

EL. 1155 ±

APPROXIMATE EXISTING GROUND LINE

END BENT 1 BENT 1 END BENT 2

UNCLASSIFIED STRUCTURE EXCAVATION

TEMPORARY ROCK CAUSEWAY FOR CONSTRUCTION OF PROPOSED STRUCTURE

TEMPORARY ROCK CAUSEWAY FOR REMOVAL OF EXISTING STRUCTURE

VARIES
CLASS A RIP RAP
1'-0"
1½: 1 (TYP.)
NWS EL. 1149.0 ±
STREAM BED
CLASS II RIP RAP

TEMPORARY CAUSEWAY DETAIL

HORIZONTAL CURVE DATA -L-

P.I. STA. 13+12.43
Δ = 47°-53'-09.1" (LT)
D = 38°-11'-49.9"
L = 125.36'
T= 66.61'
R= 150.00'

SECTION ALONG -L-

SECTIONS @ END BENT AND BENT ARE AT RIGHT ANGLES

EXISTING SUBSTRUCTURE (TYP.)

JOHNS RIVER

TEMPORARY CAUSEWAY (SEE DETAIL & SPECIAL PROVISIONS)

92'-8⅞"

TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE)

46'-4 7/16" 46'-4 7/16"

BENCH EXCAVATION EL. 1148.00

BENT 1 CONTROL LINE

W. P. 1
STA. 13+89.63 -L-

BEGIN APPROACH SLAB
STA. 13+78.93 -L-

TO NC 90

PT STA. 13+71.19 -L-

W.P. 2
BRIDGE I. D.
STA. 14+36.00 -L-

-L-

120°-00'-00" (TYP.)

END APPROACH SLAB
STA. 14+93.07 -L-

TO NC 90

PC STA. 14+98.27 -L-

W. P. 3
STA. 14+82.37 -L-

FILL FACE @ END BENT 1

FILL FACE @ END BENT 2

JOHNS RIVER

TEMPORARY CAUSEWAY (SEE DETAIL & SPECIAL PROVISIONS)

BENCH EXCAVATION EL. 1148.00

BENCH EXCAVATION EL. 1148.00

PLAN

PILES NOT SHOWN FOR CLARITY

HORIZONTAL CURVE DATA -L-

P.I. STA. 15+61.86
Δ = 23°-15'-26.2" (LT)
D = 18°-32'-32.4"
L = 125.43'
T= 63.59'
R= 309.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 130275

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
3817C6B20AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
SR 1356 (OLD JOHNS RIVER RD.)
OVER JOHNS RIVER
BETWEEN NC 90 AND NC 90

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

GFT

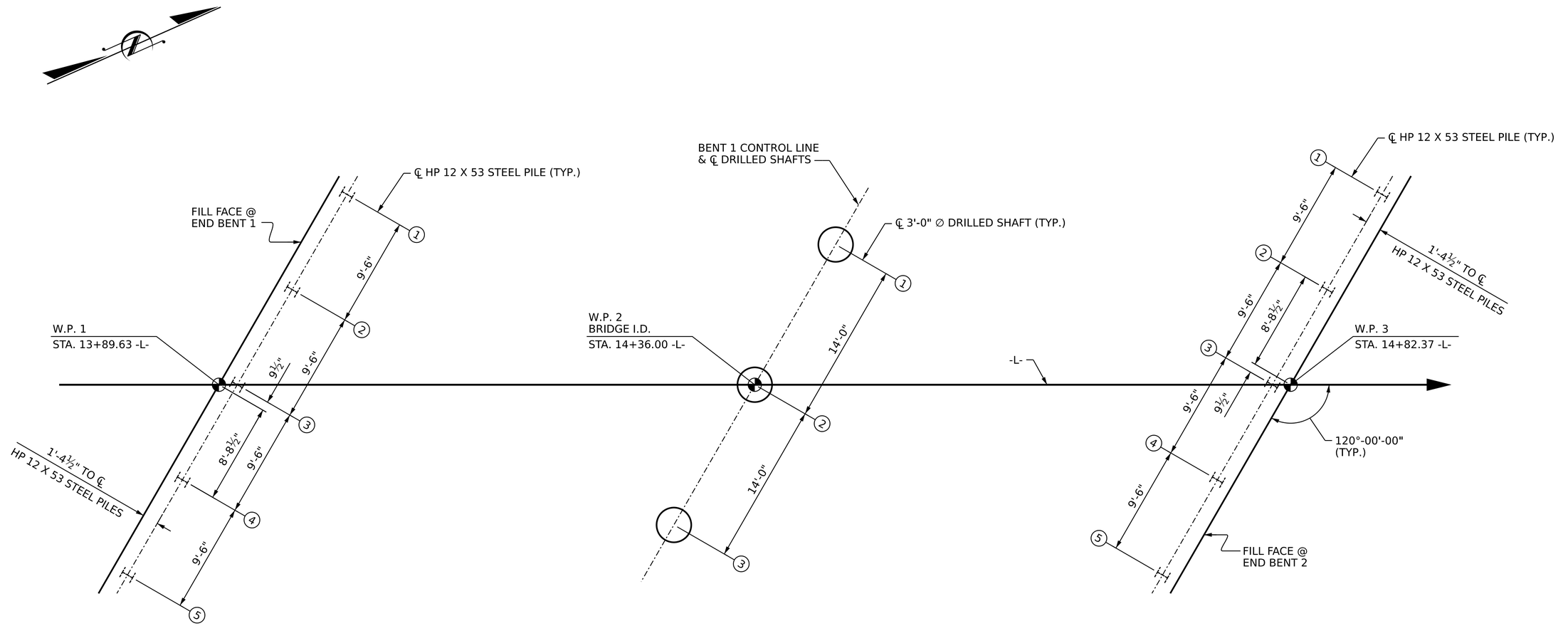
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END BENT 1 | BENT 1 | END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED SHAFTS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED SHAFTS.

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 2 OF 4

DocuSigned by:
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NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
SR 1356 (OLD JOHNS RIVER RD.)
OVER JOHNS RIVER
BETWEEN NC 90 AND NC 90

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-5	5	157	1149.11	20			262					1137.1	1.9	8.1
End Bent 2, Piles 1-5	5	157	1149.47	20			262					1137.5	0.6	9.4
TOTAL QUANTITY:													12.5	87.5

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	157			0.6		
End Bent 2, Piles 1-5	157			0.6		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-5				5
End Bent 2, Piles 1-5				5
TOTAL QUANTITY:				10

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1, Piles 1-5	25	1
End Bent 2, Piles 1-5	25	1
TOTAL QUANTITY:		2

*

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip 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	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1	1	481	1127.00	30		3.0		5.9	15.9	YES	1140.00	8.8
Bent 1, Pier 2	1	481	1126.00	20		1.0		5.1	18.0	YES	1140.00	9.1
Bent 1, Pier 3	1	481	1126.00	20		1.0		5.1	18.3	YES	1140.00	9.4
TOTAL QUANTITY:								16.1	52.2			27.3

* 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 "36in Dia. Drilled Piers" or "36in. Dia. Drilled Piers Not in Soil" and "36in. Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "36in. Dia. Drilled Piers in Soil."

** 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 36in. Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

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) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-3		3		3	
TOTAL QUANTITY:		3		3	

PROJECT NO. HB-0059

Caldwell COUNTY

STATION: 14+36.00 -L-

SHEET 3 OF 4

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Mikel W. Shipman, #054501) on 09-16-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD

DocuSigned by: Tom W Ford 9/22/2026

SIGNATURE DATE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

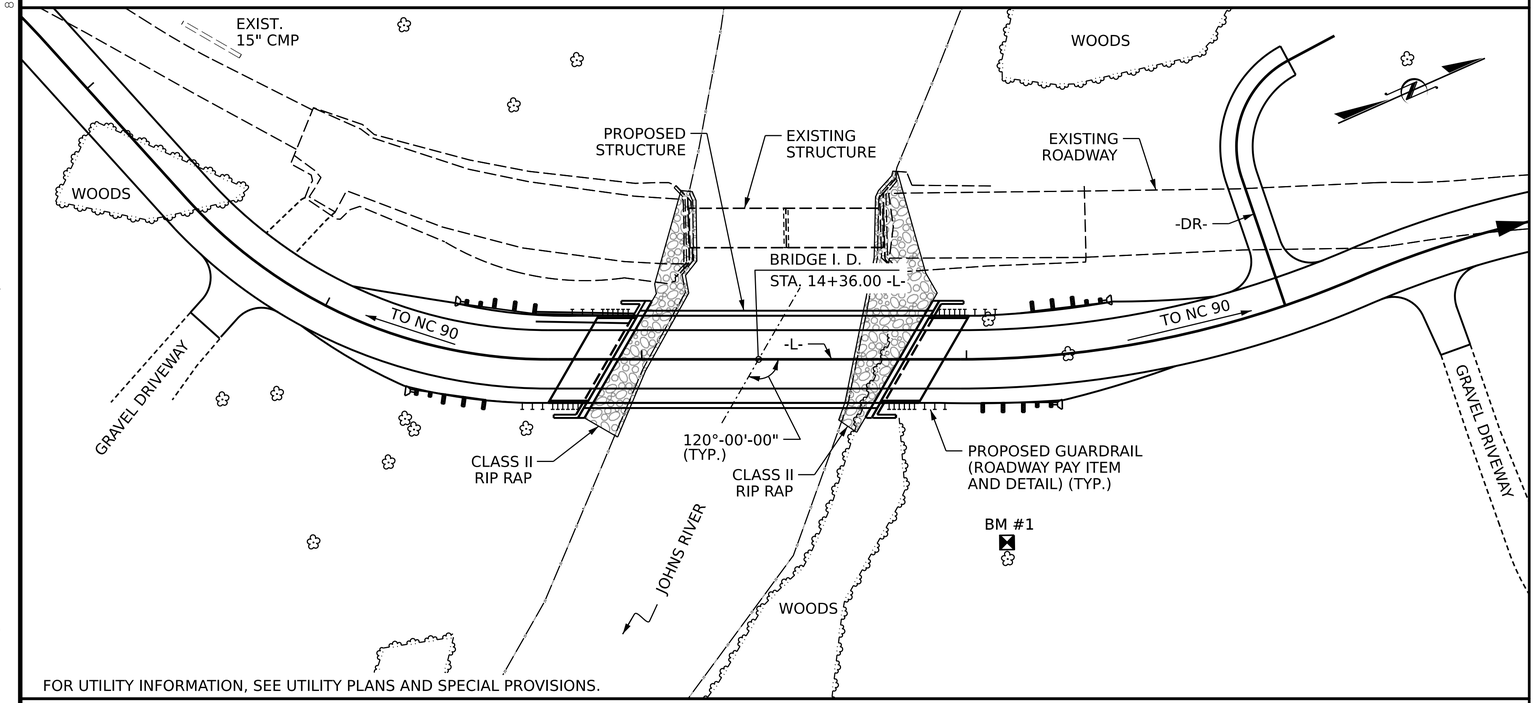
PILE AND DRILLED PIER FOUNDATION TABLES

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BENCHMARK: BM #1 RR SPIKE SET IN 26" BLACK WALNUT 60.52' RT. OF STA. 15+10.32, -L- EL. 1158.15



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATIVE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (2 @ 30'-0") TIMBER DECK ON STEEL I-BEAMS ON CONCRETE END BENTS AND INTERIOR BENTS WITH A CLEAR ROADWAY WIDTH OF 11'-2" LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A REDUCED LOAD LIMIT MAY BE POSTED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 19 FT AT END BENT 1 AND 2 EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

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+36.00 -L-.

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 BAR SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICE 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.

HYDRAULIC DATA

DESIGN DISCHARGE	= 1100 CFS
FREQUENCY OF DESIGN FLOOD	= <2 YEARS
DESIGN HIGH WATER ELEVATION	= 1153.1 FT.
DRAINAGE AREA	= 53.1 SQ. MI.
BASE DISCHARGE (Q 100)	= 9870 CFS
BASE HIGH WATER ELEVATION	= 1160.17 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1200 CFS
FREQUENCY OF OVERTOPPING FLOOD	= <2 YEARS
OVERTOPPING FLOOD ELEVATION	= 1153.3 FT. **

** OVERTOPPING OCCURS AT ROADWAY LOW-POINT -L- STA. 13+66 ±

WS ELEVATION TAKEN @ RIVER STATION 133059

TOTAL BILL OF MATERIAL

	CONST. MAINT. AND REMOVAL OF TEMP. ACCESS AT STA. 14+36.00 -L-	REMOVAL OF EXIST. STRUCTURE AT STA. 14+36.00 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" ∅ DRILLED PIERS IN SOIL	3'-0" ∅ DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" ∅ DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 14+36.00 -L-	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.
SUPERSTRUCTURE												2,419	2696
END BENT 1				40.5	9.5						LUMP SUM		
BENT 1						52.2	16.1	27.3	3	3			
END BENT 2				47.0	3.0						LUMP SUM		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	87.5	12.5	52.2	16.1	27.3	3	3	LUMP SUM	2,419	2696

TOTAL BILL OF MATERIAL

	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIP. SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	32" ALASKA RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE
						NO.	LIN. FT.							NO.	LIN. FT.	
	CU. YDS.	LUMP SUM	LBS.	LBS.	EACH			EACH	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM			SQ. FT.
SUPERSTRUCTURE		LUMP SUM								163.46			LUMP SUM	20	900.00	2,419
END BENT 1	23.6		3,268		5	5	100	5	1		105	120				
BENT 1	13.4		7,305	1,309												
END BENT 2	23.6		3,265		5	5	100	5	1		140	145				
TOTAL	60.6	LUMP SUM	13,838	1,309	10	10	200	10	2	163.46	245	265	LUMP SUM	20	900.00	2,419

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"

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

SAMPLE BAR REPLACEMENT FOR FEDERAL AID PROJECTS

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
381F69BAD9743D...
9/22/2026

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
SR 1356 (OLD JOHNS RIVER ROAD)
OVER JOHNS RIVER
BETWEEN NC 90 AND NC 90

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	1	1.23	--	1.75	0.257	1.26	45'	EL	22.000	0.282	3.14	45'	EL	1.300	0.80	0.257	1.23	45'	EL	22.000	
		HL-93 (OPERATING)	N/A		1.63	--	1.35	0.257	1.63	45'	EL	22.000	0.282	4.11	45'	EL	1.300	N/A	0.000	-	-	-	-	
		HS-20 (INVENTORY)	36.000	2	1.51	54.36	1.75	0.257	1.55	45'	EL	22.000	0.282	3.74	45'	EL	1.300	0.80	0.257	1.51	45'	EL	22.000	
		HS-20 (OPERATING)	36.000		2.01	72.36	1.35	0.257	2.01	45'	EL	22.000	0.282	4.89	45'	EL	1.300	N/A	-	-	-	-	-	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.94	39.69	1.40	0.257	3.78	45'	EL	22.000	0.282	10.64	45'	EL	1.300	0.80	0.257	2.94	45'	EL	22.000	
		SNGARBS2	20.000		2.38	47.60	1.40	0.257	3.05	45'	EL	22.000	0.282	7.76	45'	EL	1.300	0.80	0.257	2.38	45'	EL	22.000	
		SNAGRIS2	22.000		2.34	51.48	1.40	0.257	2.98	45'	EL	22.000	0.282	7.29	45'	EL	1.300	0.80	0.257	2.34	45'	EL	22.000	
		SNCOTTS3	27.250		1.47	40.06	1.40	0.257	1.89	45'	EL	22.000	0.282	5.26	45'	EL	1.300	0.80	0.257	1.47	45'	EL	22.000	
		SNAGGRS4	34.925		1.30	45.40	1.40	0.257	1.67	45'	EL	22.000	0.282	4.51	45'	EL	1.300	0.80	0.257	1.30	45'	EL	22.000	
		SNS5A	35.550		1.26	44.79	1.40	0.257	1.62	45'	EL	22.000	0.282	4.66	45'	EL	1.300	0.80	0.257	1.26	45'	EL	22.000	
		SNS6A	39.950		1.19	47.54	1.40	0.257	1.53	45'	EL	22.000	0.282	4.31	45'	EL	1.300	0.80	0.257	1.19	45'	EL	22.000	
		SNS7B	42.000	3	1.13	47.46	1.40	0.257	1.46	45'	EL	22.000	0.282	4.34	45'	EL	1.300	0.80	0.257	1.13	45'	EL	22.000	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.46	48.18	1.40	0.257	1.88	45'	EL	22.000	0.282	5.08	45'	EL	1.300	0.80	0.257	1.46	45'	EL	22.000	
		TNT4A	33.075		1.48	48.95	1.40	0.257	1.89	45'	EL	22.000	0.282	4.89	45'	EL	1.300	0.80	0.257	1.48	45'	EL	22.000	
		TNT6A	41.600		1.24	51.58	1.40	0.257	1.59	45'	EL	22.000	0.282	4.74	45'	EL	1.300	0.80	0.257	1.24	45'	EL	22.000	
		TNT7A	42.000		1.26	52.92	1.40	0.257	1.62	45'	EL	22.000	0.282	4.36	45'	EL	1.300	0.80	0.257	1.26	45'	EL	22.000	
		TNT7B	42.000		1.31	55.02	1.40	0.257	1.69	45'	EL	22.000	0.282	4.16	45'	EL	1.300	0.80	0.257	1.31	45'	EL	22.000	
		TNAGRIT4	43.000		1.25	53.75	1.40	0.257	1.61	45'	EL	22.000	0.282	4.00	45'	EL	1.300	0.80	0.257	1.25	45'	EL	22.000	
		TNAGT5A	45.000		1.16	52.20	1.40	0.257	1.50	45'	EL	22.000	0.282	4.08	45'	EL	1.300	0.80	0.257	1.16	45'	EL	22.000	
		TNAGT5B	45.000		1.14	51.30	1.40	0.257	1.46	45'	EL	22.000	0.282	3.78	45'	EL	1.300	0.80	0.257	1.14	45'	EL	22.000	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.70	48.88	1.30	0.257	2.36	45'	EL	22.000	0.282	5.85	45'	EL	1.300	0.80	0.257	1.70	45'	EL	22.000	
		EV3	43.000	4	1.10	47.30	1.30	0.257	1.51	45'	EL	22.000	0.282	3.92	45'	EL	1.300	0.80	0.257	1.10	45'	EL	22.000	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

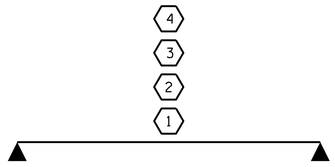
(#) CONTROLLING LOAD RATING

1. DESIGN LOAD RATING (HL-93)
2. DESIGN LOAD RATING (HS-20)
3. LEGAL LOAD RATING * *
4. EMERGENCY VEHICLE LOAD RATING * *

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD
3814B8DD0AD9723D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 45' CORED SLAB UNIT 120° SKEW

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

GFT

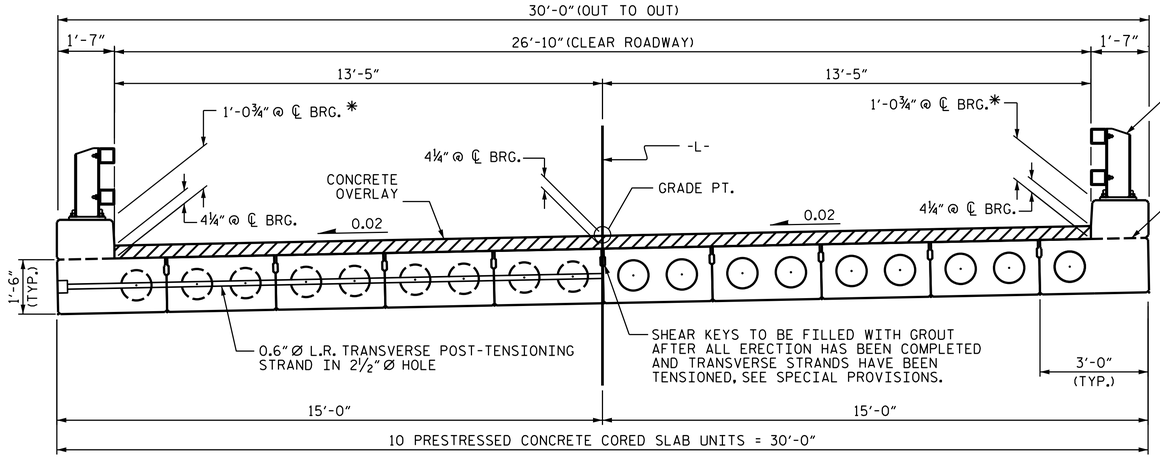
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
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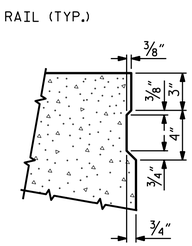
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8/26/21
pw://gfnet-pw.bentley.com:gfnet-pw-01/Documents/Projects/69172.ORD/Task 019.03 - Bridge 130275/5-Working/Structures/CAD/3.0 100% Plans/401.011-HB-0059.SMU_CS1.S06.130275
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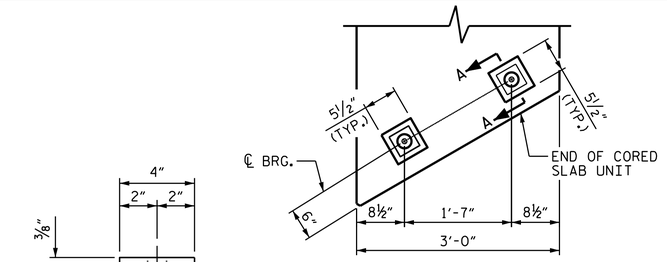
TYPICAL SECTION

* - THE MAXIMUM CURB HEIGHT AND CONCRETE OVERLAY THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND CONCRETE OVERLAY THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE.



SHEAR KEY DETAIL

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



TYPICAL PLAN

(TYP. EA. CORED SLAB)

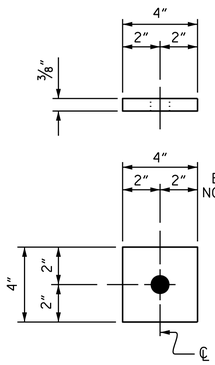
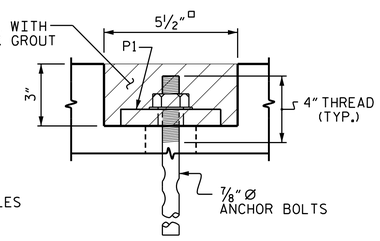


PLATE DETAILS - P1

(FIXED)
P1 (80 REQ'D.)

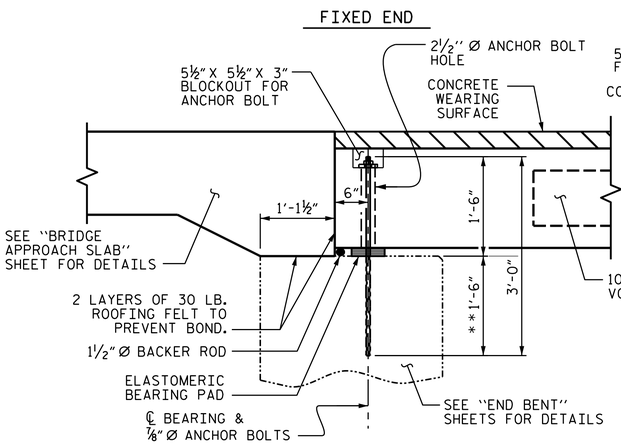


SECTION A-A

(FIXED)

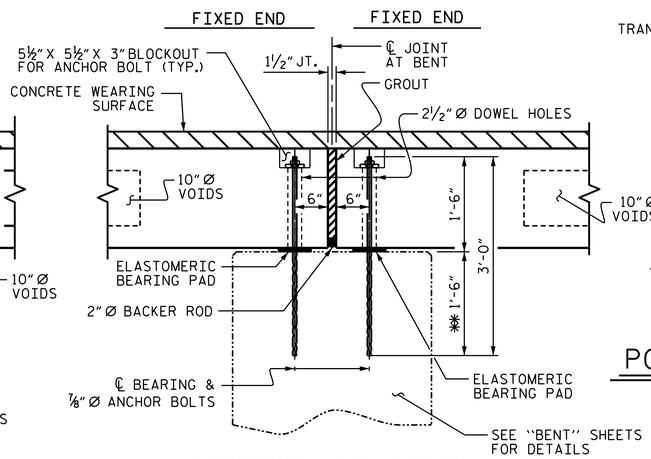
BLOCKOUT DETAIL FOR ANCHOR BOLTS

(TYP. FOR EACH CORED SLAB)



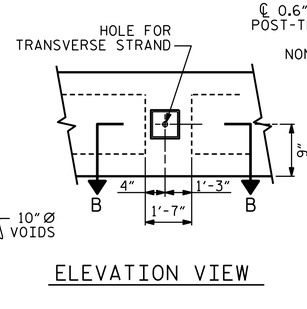
SECTION AT END BENT

(TYPICAL FOR ALL CORED SLABS)
** SWEDGED

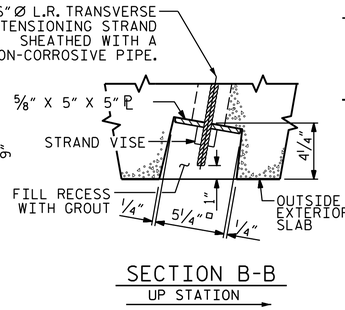


SECTION AT BENT

(TYPICAL FOR ALL CORED SLABS)
** SWEDGED



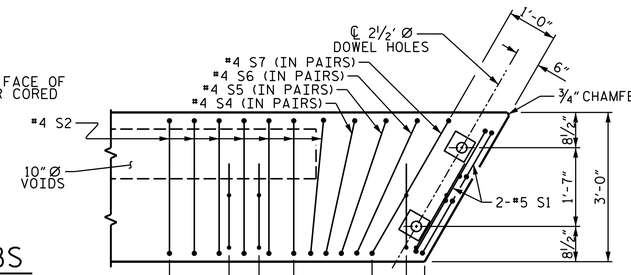
ELEVATION VIEW



SECTION B-B

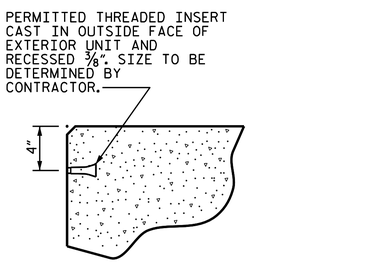
UP STATION

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

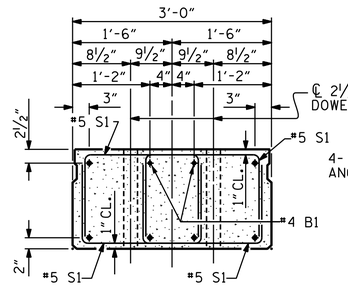


DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 BARS.

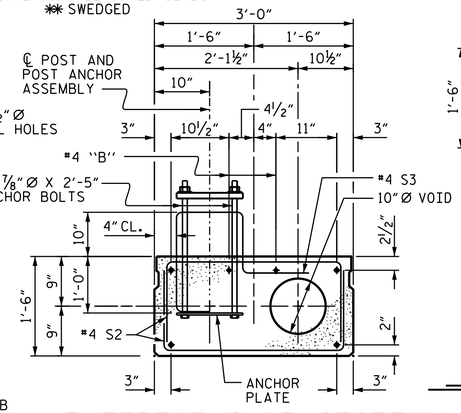


THREADED INSERT SECTION



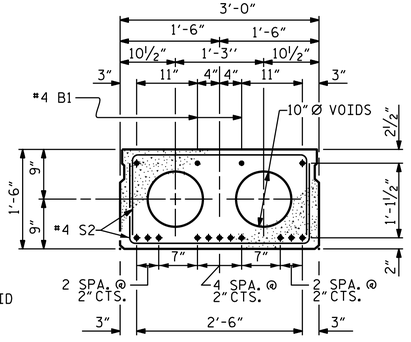
END ELEVATION

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



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION



INTERIOR SLAB SECTION 45° UNIT)

(13 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

SHEET 1 OF 6

DocuSigned by:
[signature]
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9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

DRAWN BY :	J. MYA — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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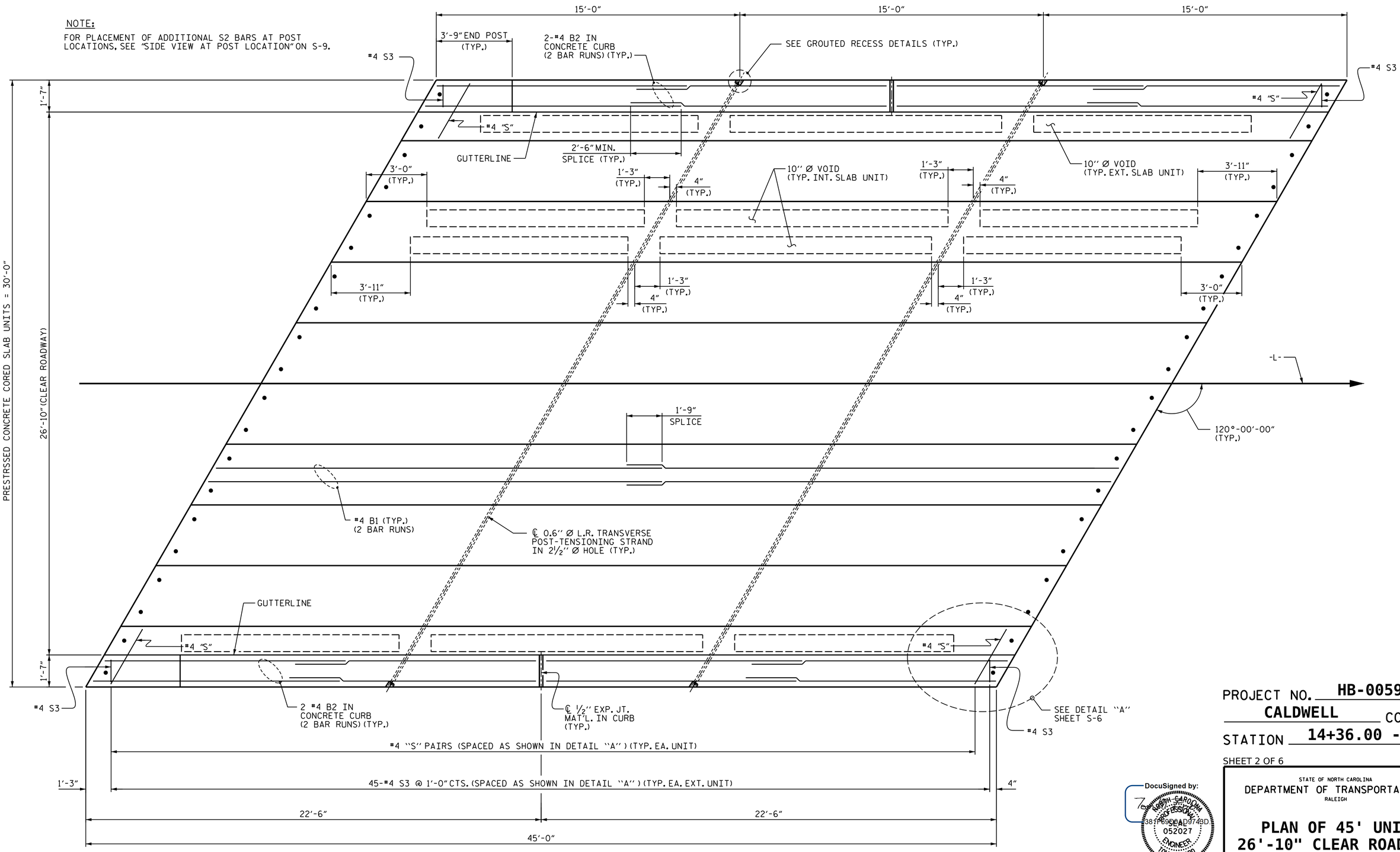
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NOTE:

FOR PLACEMENT OF ADDITIONAL S2 BARS AT POST LOCATIONS, SEE "SIDE VIEW AT POST LOCATION" ON S-9.



PLAN OF SPAN A

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 2 OF 6

DocuSigned by:
[redacted]
SEAL 052027 ENGINEER TOM M. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT
26'-10" CLEAR ROADWAY
120° SKEW

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
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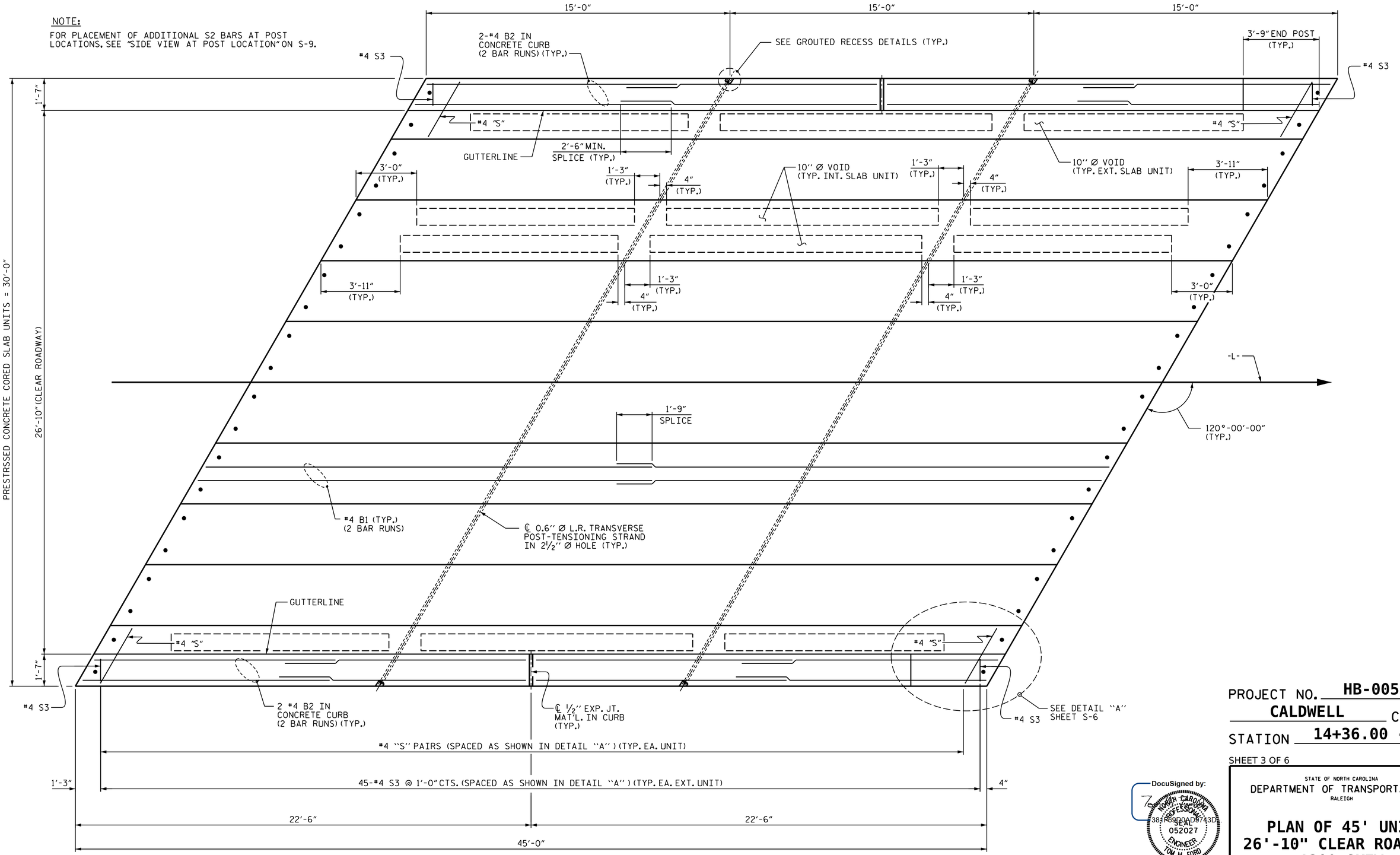
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8/26/21

NOTE:

FOR PLACEMENT OF ADDITIONAL S2 BARS AT POST LOCATIONS, SEE "SIDE VIEW AT POST LOCATION" ON S-9.



PLAN OF SPAN B

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 3 OF 6

DocuSigned by:
[redacted]
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT
26'-10" CLEAR ROADWAY
120° SKEW

DRAWN BY :	J. MYA	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

GFT Infrastructure, Inc.
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BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	2	4'-0"	33	4'-0"	33
S2	141	#4	2	4'-10"	455		
S2	92	#4	2			4'-10"	297
✱ S3	45	#4	1	5'-5"	163		
S4	4	#4	2	4'-11"	13	4'-11"	13
S5	4	#4	2	5'-0"	13	5'-0"	13
S6	4	#4	2	5'-1"	14	5'-1"	14
S7	4	#4	2	5'-3"	14	5'-3"	14
REINFORCING STEEL LBS.					604		446
✱ EPOXY COATED REINFORCING STEEL LBS.					163		
6000 P.S.I. CONCRETE CU. YDS.					6.7		6.0
0.6" Ø L.R. STRANDS No.					13		13

18" CORED SLABS REQUIRED

45' C.S. UNITS (SPAN A)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	8	45'-0"	360'-0"
TOTAL	10		450'-0"
45' C.S. UNITS (SPAN B)			
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	8	45'-0"	360'-0"
TOTAL	10		450'-0"

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

GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT

	CONCRETE OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
45' UNITS	3½"	3'-0"

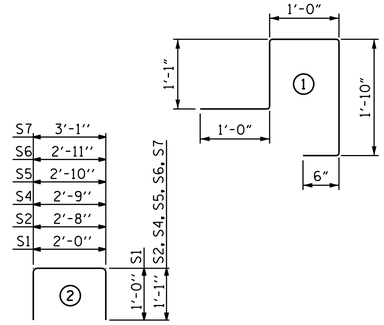
DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-6"
45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1⅜"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	9/16"
FINAL CAMBER	13/16"

CONCRETE RELEASE STRENGTH

UNIT	PSI
45' UNITS	4800

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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 ANCHOR BOLT HOLES AT FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

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 CONCRETE CURBS 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 CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB 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.

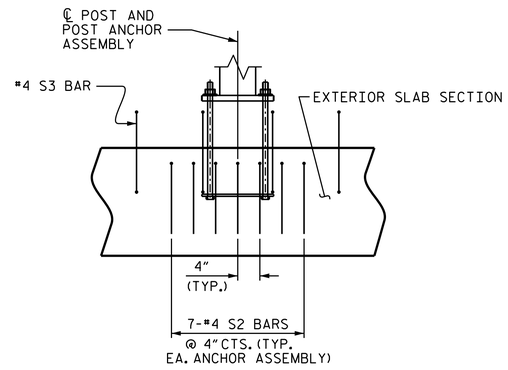
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

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.

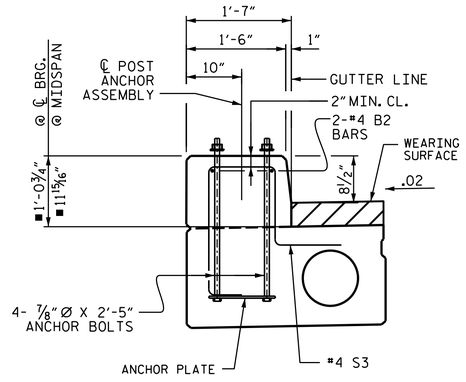
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

FOR CORED SLAB POST TENSIONING, SEE SPECIAL PROVISIONS.



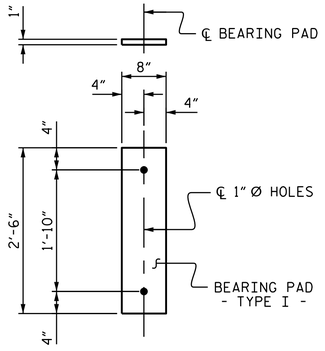
SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)



■ DIMENSIONS MEASURED AT GUTTERLINE

32" ALASKA RAIL CURB SECTION

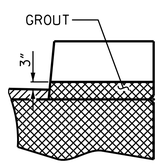


FIXED END

(TYPE I- 40 REQ'D)

ELASTOMERIC BEARING DETAILS

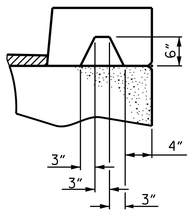
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



SECTION T-T

AT OPEN JOINT AT BENT

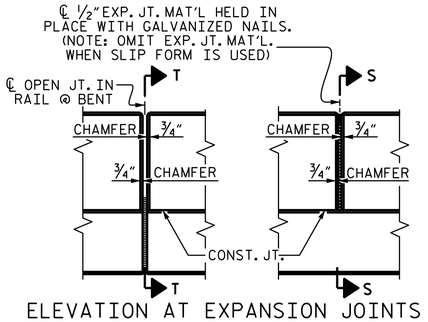
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)



SECTION S-S

AT DAM IN OPEN JOINT

(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 4 OF 6

DocuSigned by: 38F4980A09743D...

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD

9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

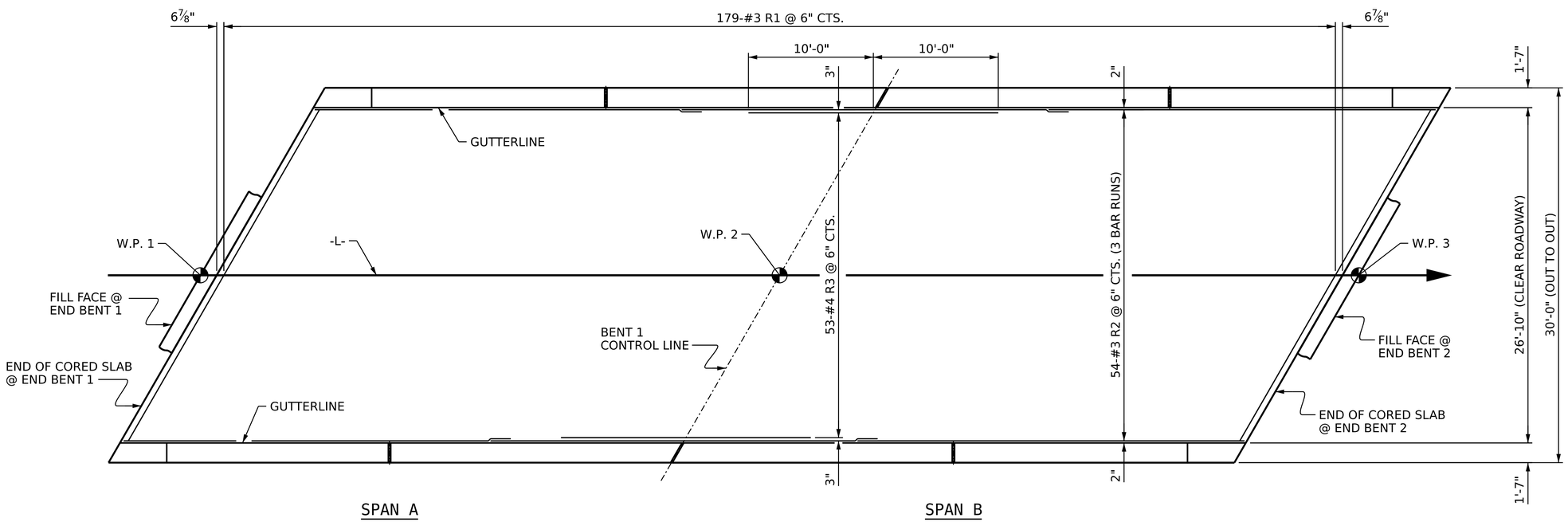
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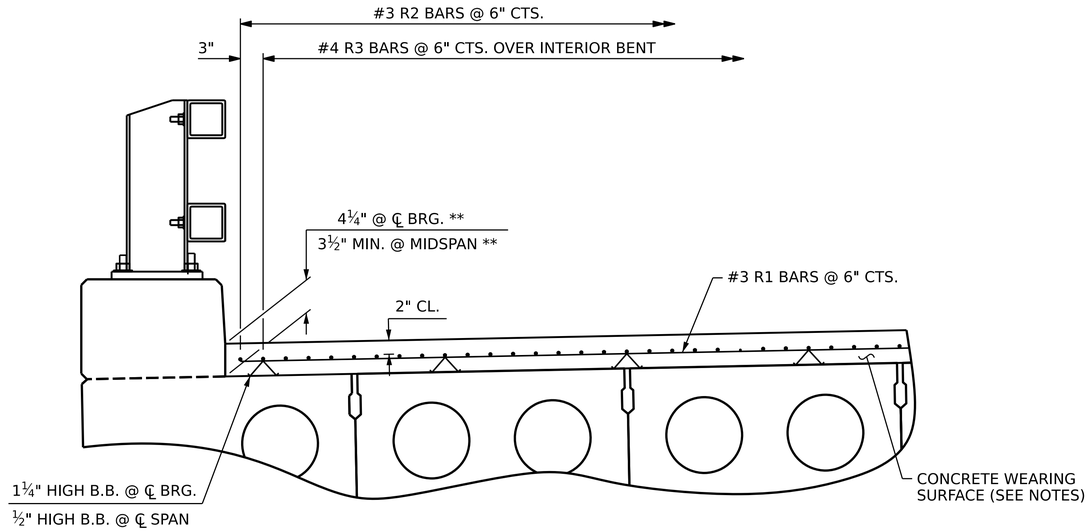
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PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

NOTES:

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL IN CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE CURB. THE COST OF THE #3 BARS AND #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	179	#3	STR.	30'-7"	2,058
*R2	162	#3	STR.	31'-0"	1,888
*R3	53	#4	STR.	20'-0"	708
* EPOXY COATED REINFORCING STEEL				LBS.	4,654
CONCRETE WEARING SURFACE				SQ. FT.	2,419

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3	1'-6"
#4	1'-11"

GROOVING BRIDGE FLOORS

APPROACH SLABS	548	SQ.FT.
BRIDGE DECK	2,148	SQ.FT.
TOTAL	2,696	SQ.FT.

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 5 OF 6

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9/22/2026

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING SURFACE

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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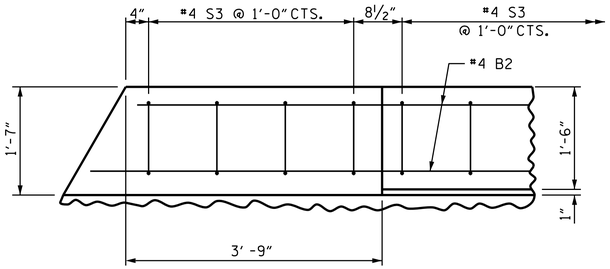
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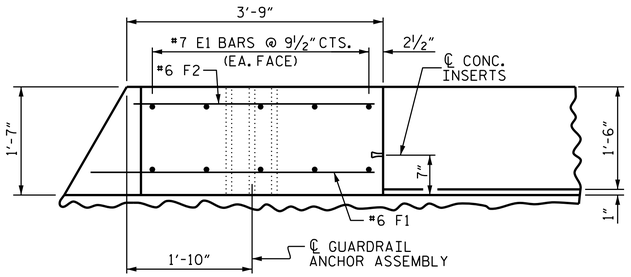
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BILL OF MATERIAL FOR 2 CURBS & 4 END POSTS

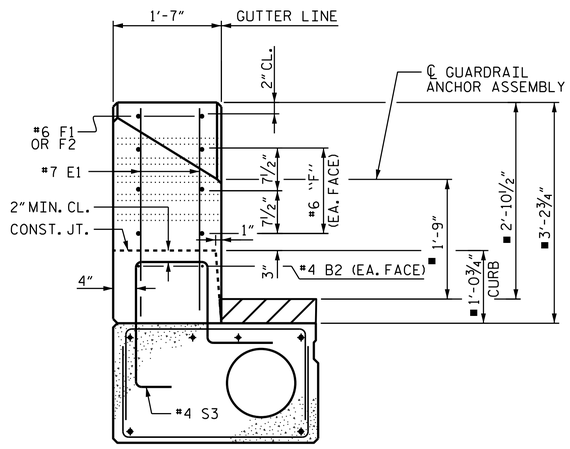
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B2	32	#4	STR.	12'-4"	264
✳E1	40	#7	STR.	3'-0"	245
✳F1	16	#6	STR.	4'-2"	100
✳F2	16	#6	STR.	3'-5"	82
✳EPOXY COATED REINFORCING STEEL				LBS.	691
CLASS AA CONCRETE				CU. YDS.	11.2
1'-7" x 1'-0" CONCRETE CURB				LIN. FT.	180.29



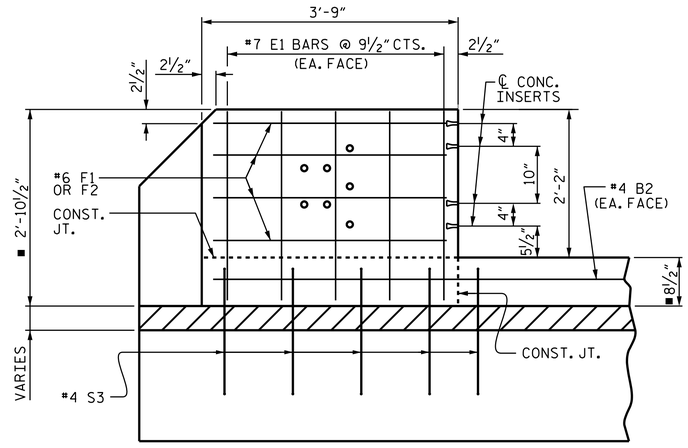
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

■ DIMENSIONS MEASURED AT GUTTER LINE

CURB AND END POST FOR 32" ALASKA RAIL

PROJECT NO. **HB-0059**

CALDWELL COUNTY

STATION **14+36.00 -L-**

SHEET 6 OF 6

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NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE CURBS & END POSTS

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

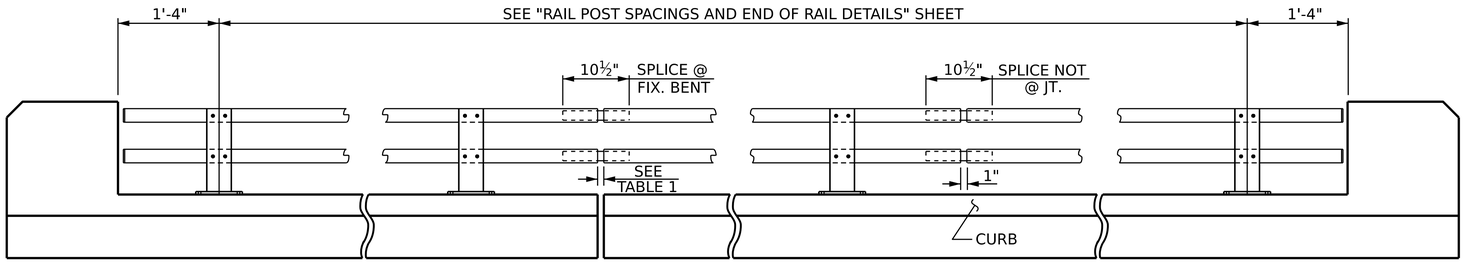
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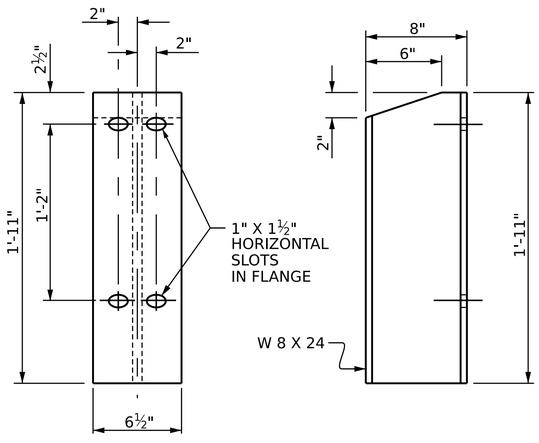
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ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR9.



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

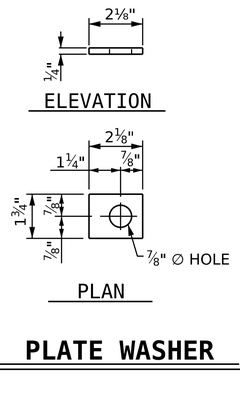
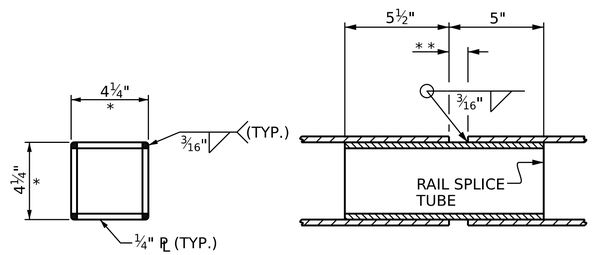


PLATE WASHER

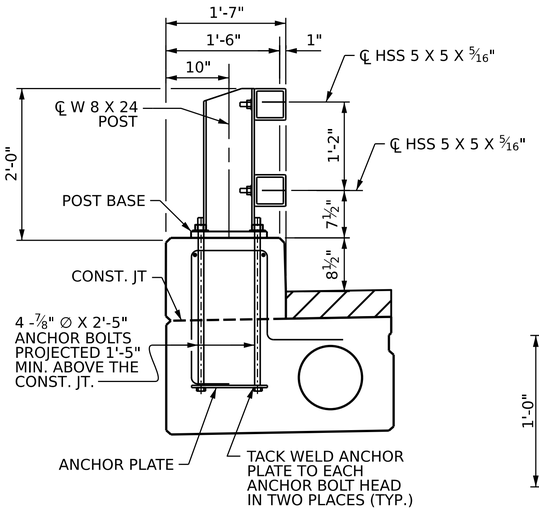
TABLE 1	
	RAIL OPENING
BENT 1	1½"



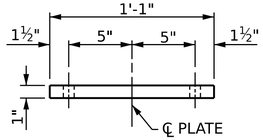
RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

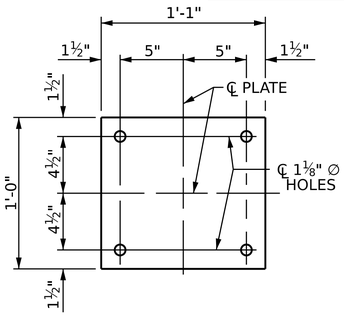
* * -1" FOR SPLICE NOT AT EXPANSION JOINT; SEE TABLE 1 FOR OPENING FOR SPLICES AT EXPANSION JOINTS.



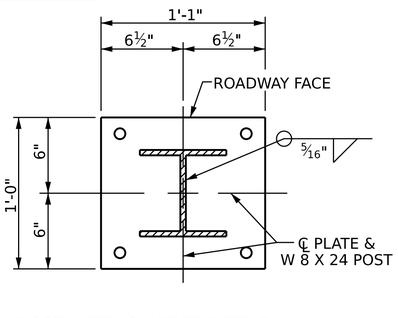
SECTION THRU RAIL



FRONT ELEVATION

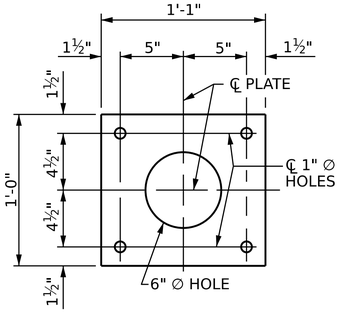


PLAN

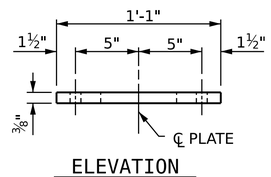


POST ATTACHMENT DETAIL

POST BASE DETAILS



PLAN



ELEVATION

ANCHOR PLATE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

GROOVED CONTRACTION JOINTS,½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" ∅ WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 32" ALASKA RAIL, SEE THE STANDARD SPECIFICATIONS.

METAL RAIL LENGTH 163.46 LIN. FT.

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32" ALASKA RAIL

DocuSigned by:
381B9DAD9742D...
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
9/22/2026

ASSEMBLED BY : J. PARROTT	DATE : 5/2026		
CHECKED BY : T. FORD	DATE : 5/2026		
DESIGN ENGINEER OF RECORD : T. FORD	DATE : 8/2026		
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC	
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC	
	REV. 10/23	BNB/SNM	

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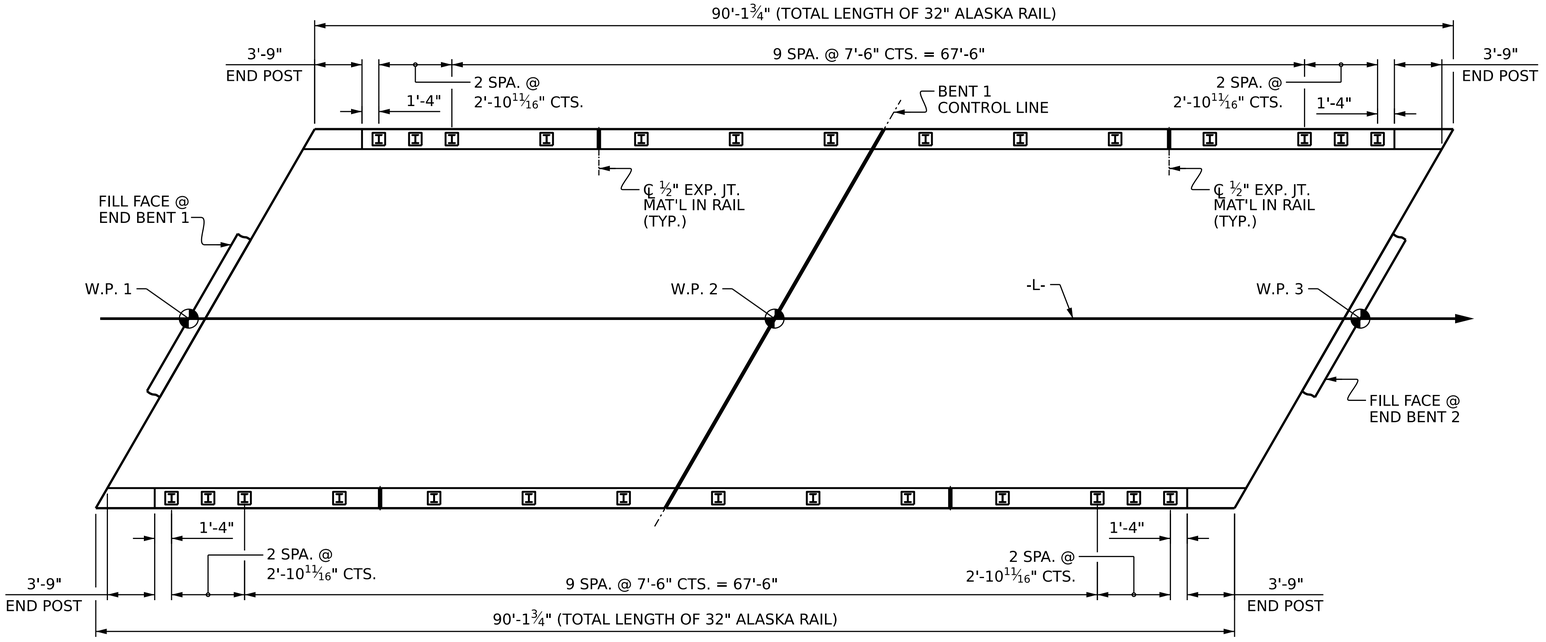
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STD. NO. BMR8

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Caldwell_275_100%.tbl
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PLAN OF RAIL POST SPACINGS

NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

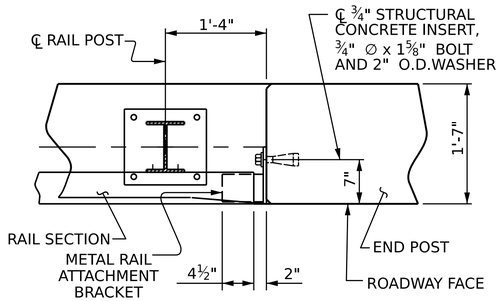
A. ½" METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO ASTM A123.

B. ¾" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅝" BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

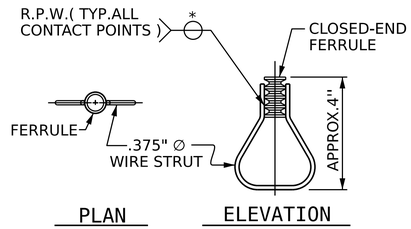
THE ¾" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT, THE ½" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾" ∅ x 6½" BOLTS AND 2'' O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLTS SHALL APPLY TO THE ¾" ∅ x 6½" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

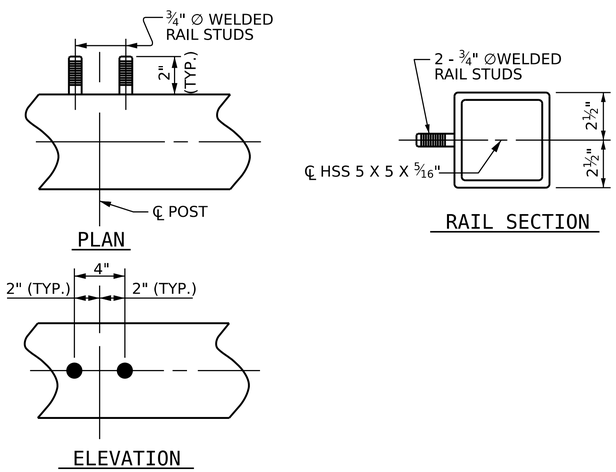


PLAN - RAILS AND END POST



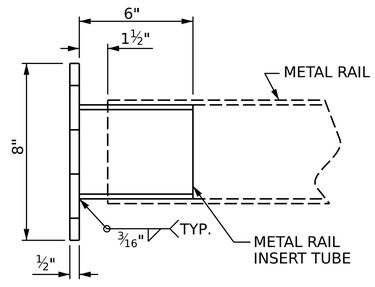
STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



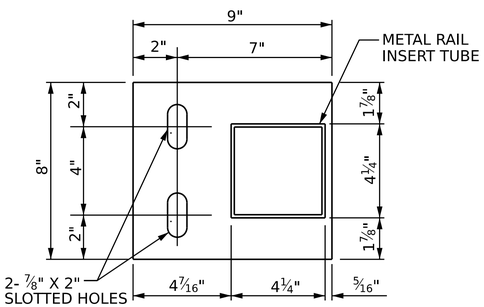
RAIL STUD DETAILS

RAIL SECTION



METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.



PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 2 OF 3

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD
3817C9B0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR 32" ALASKA RAIL

ASSEMBLED BY : J. PARROTT	DATE : 5/2026
CHECKED BY : T. FORD	DATE : 5/2026
DESIGN ENGINEER OF RECORD : T. FORD	DATE : 8/2026
DRAWN BY : RWW 7/14	REV. 12/17 MAA/THC
CHECKED BY : TMG 7/14	REV. 5/18 MAA/THC
	REV. 10/23 BNB/SNM

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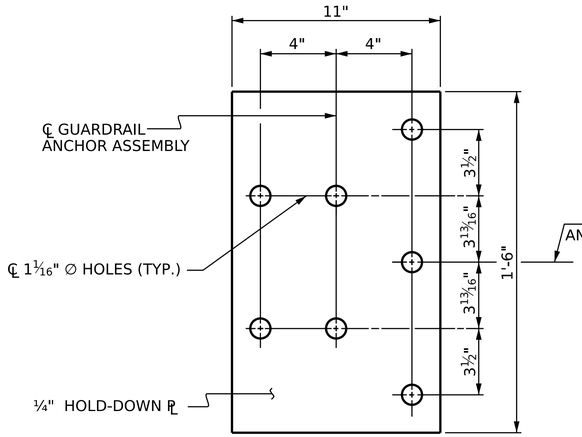
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
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2			4			24

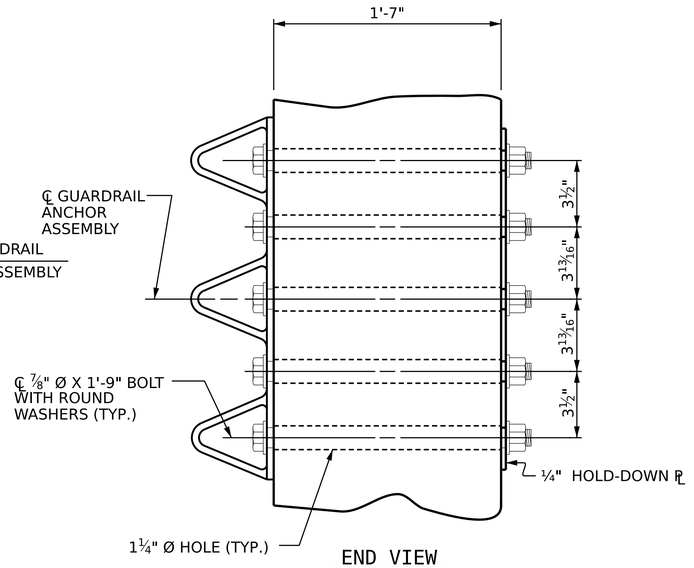
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8/26/21
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PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ 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 ⅞'' ∅ 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.

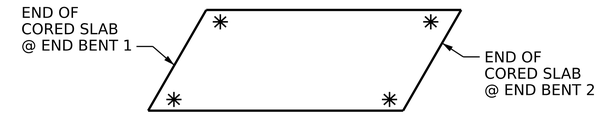
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

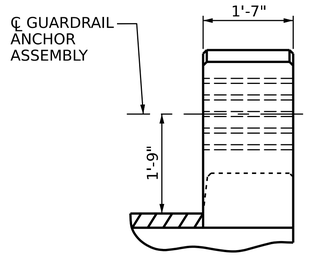
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.

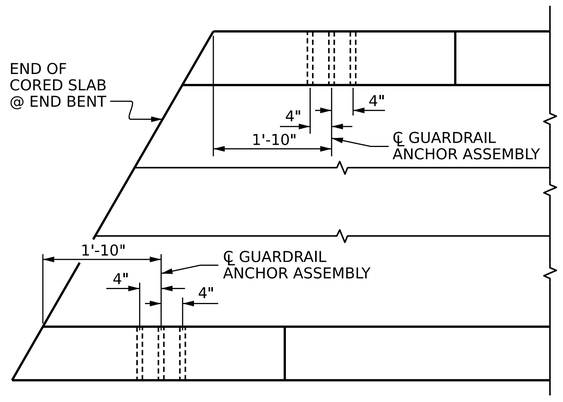


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(32" ALASKA RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 3 OF 3

DocuSigned by:
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9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR 32" ALASKA RAIL

ASSEMBLED BY : J. MYA			DATE : 5/2026	REVISIONS			SHEET NO.
CHECKED BY : T. FORD			DATE : 5/2026	NO.	BY:	DATE:	S-14
DESIGN ENGINEER OF RECORD: T. FORD			DATE : 8/2026	1			TOTAL SHEETS
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CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC		3			
	REV. 10/23	BNB/SNM		4			

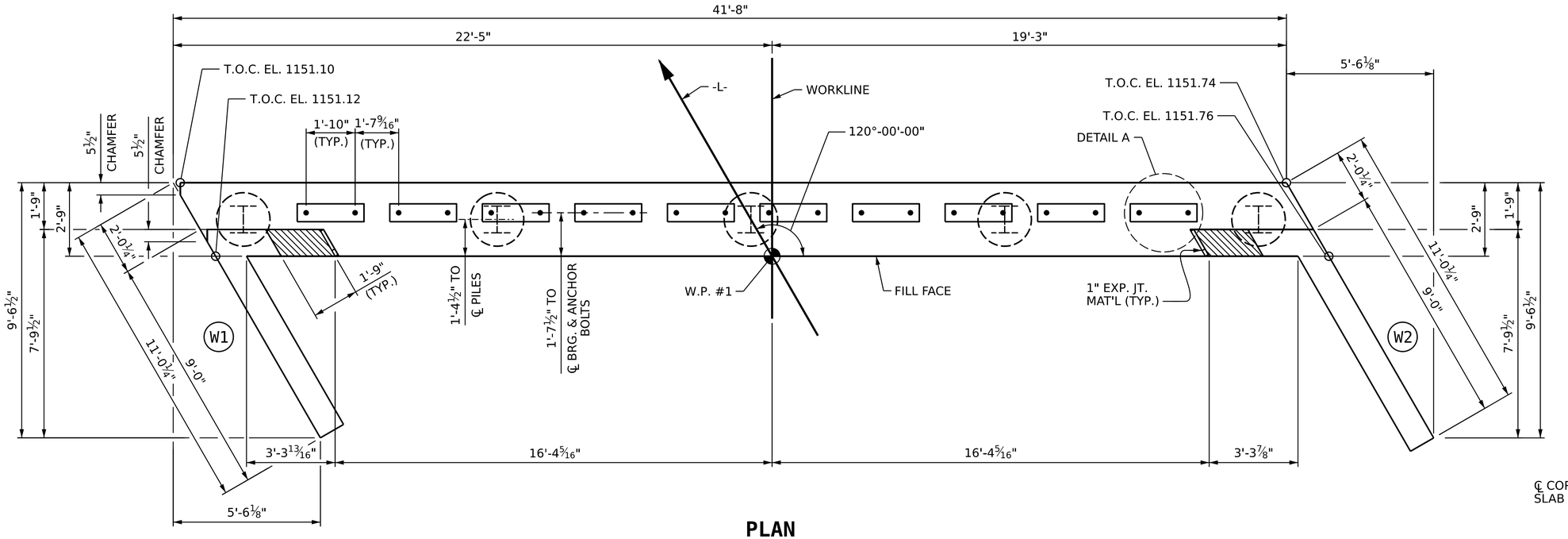
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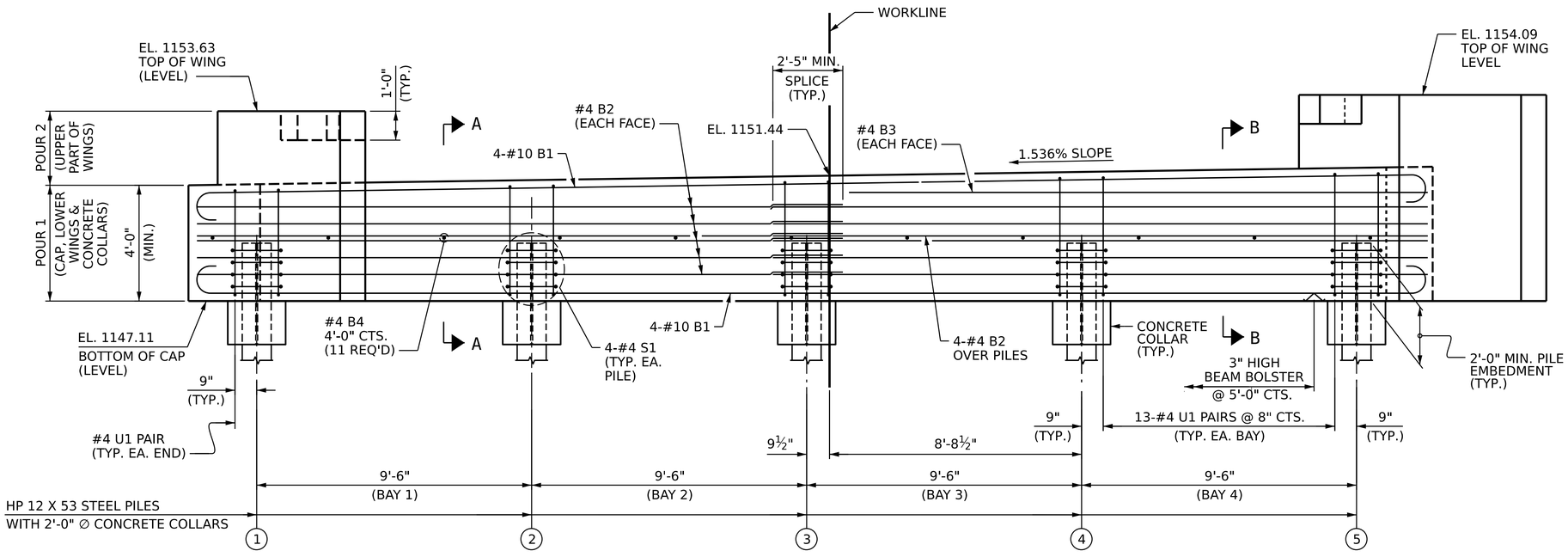
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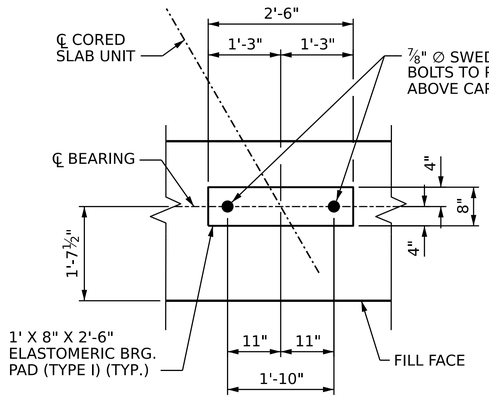
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PLAN



ELEVATION



DETAIL A

NOTES:

THE "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

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

FOR WING DETAILS, SEE SHEET 2 OF 3.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 1 OF 3

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
381F0B0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DRAWN BY :	J. MYA — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

GFT

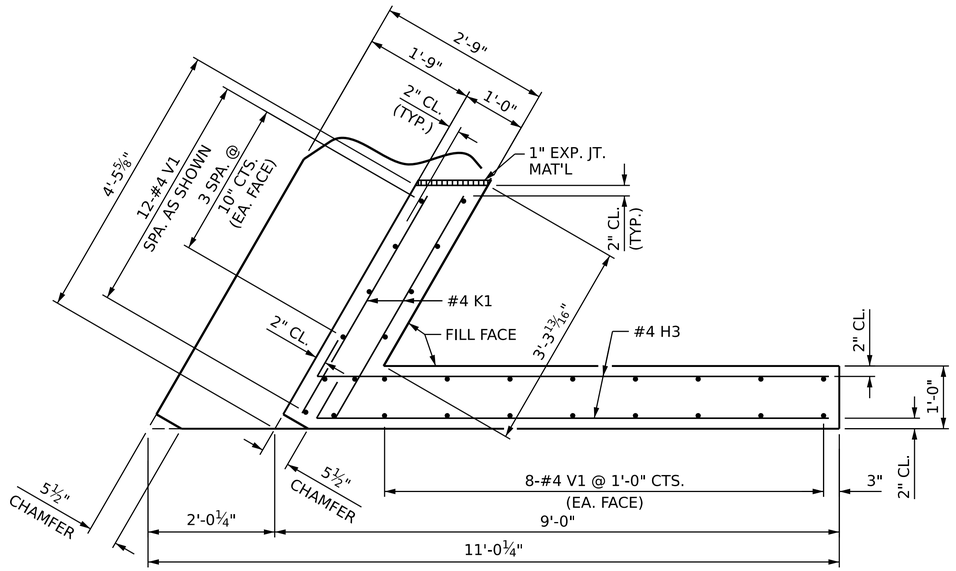
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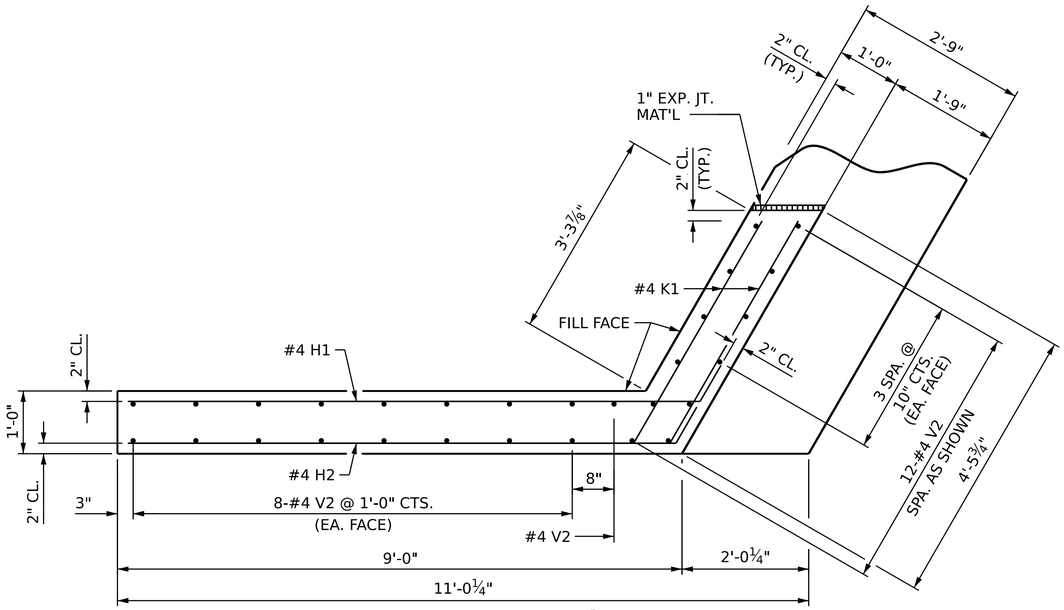
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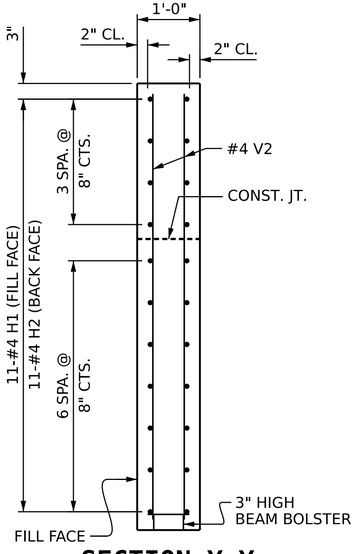
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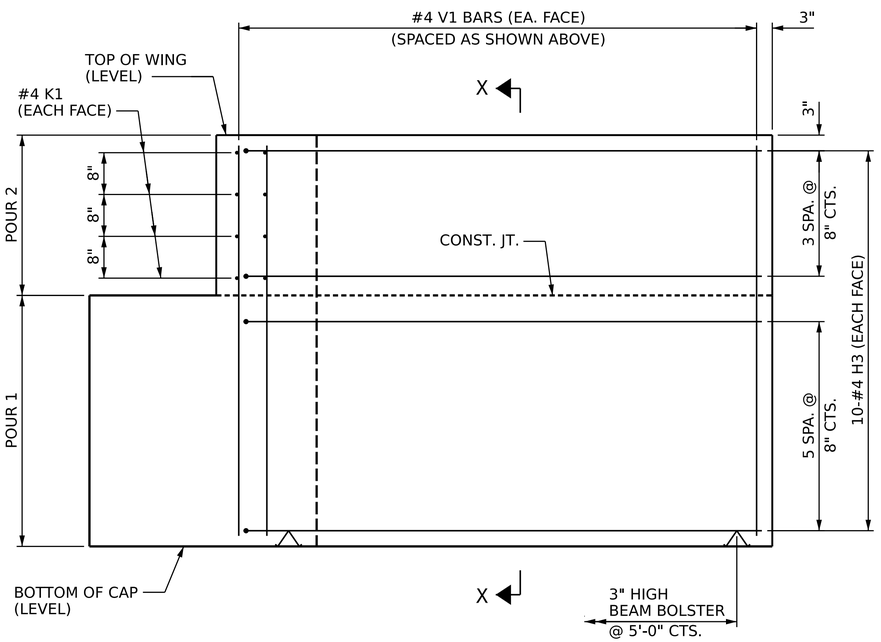
PLAN OF WING W1



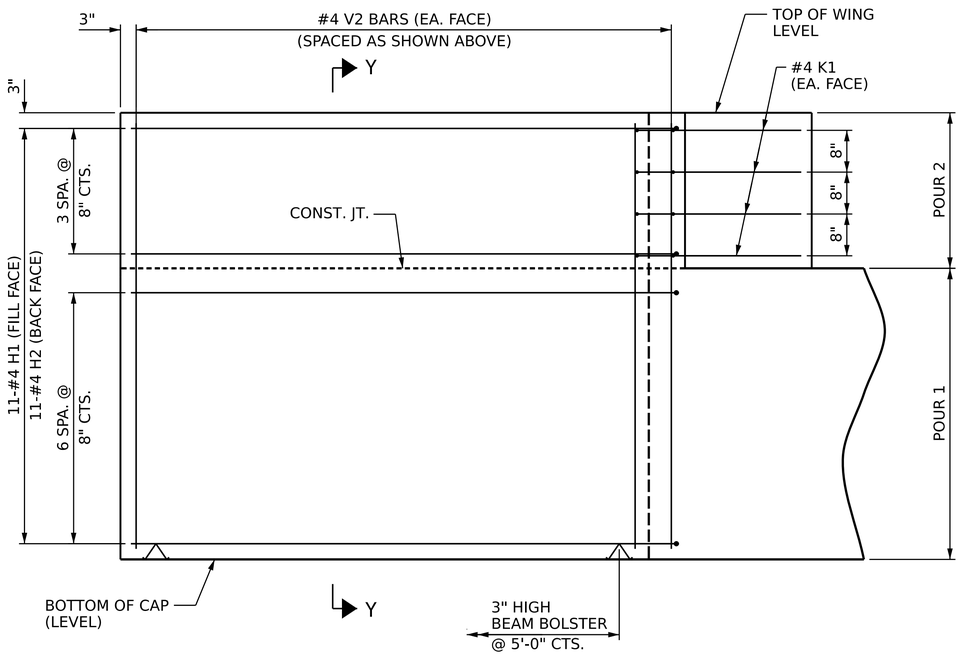
PLAN OF WING W2



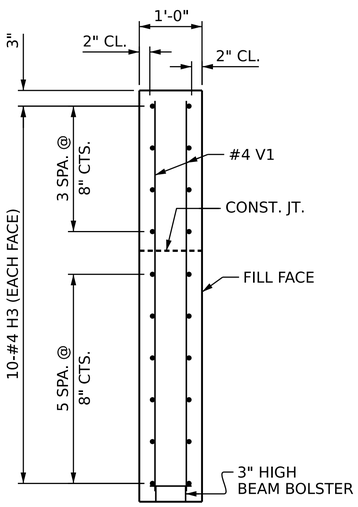
SECTION Y-Y



ELEVAITON OF WING W1



ELEVAITON OF WING W2



SECTION X-X

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 2 OF 3

DocuSigned by:
[redacted]
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WING DETAILS

DRAWN BY : J. MYA	DATE : 5/2026	
CHECKED BY : T. FORD	DATE : 5/2026	
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026	

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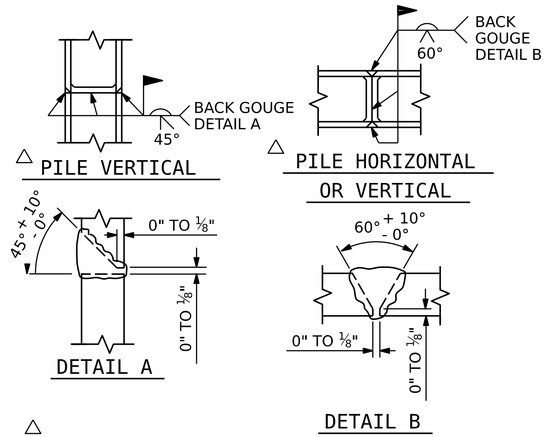


TEMPORARY DRAINAGE AT END BENT

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.

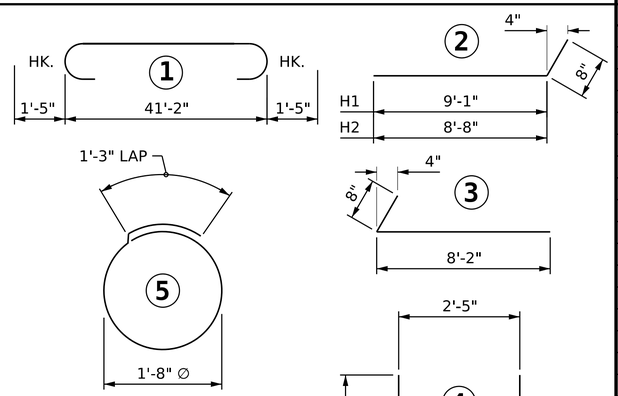
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

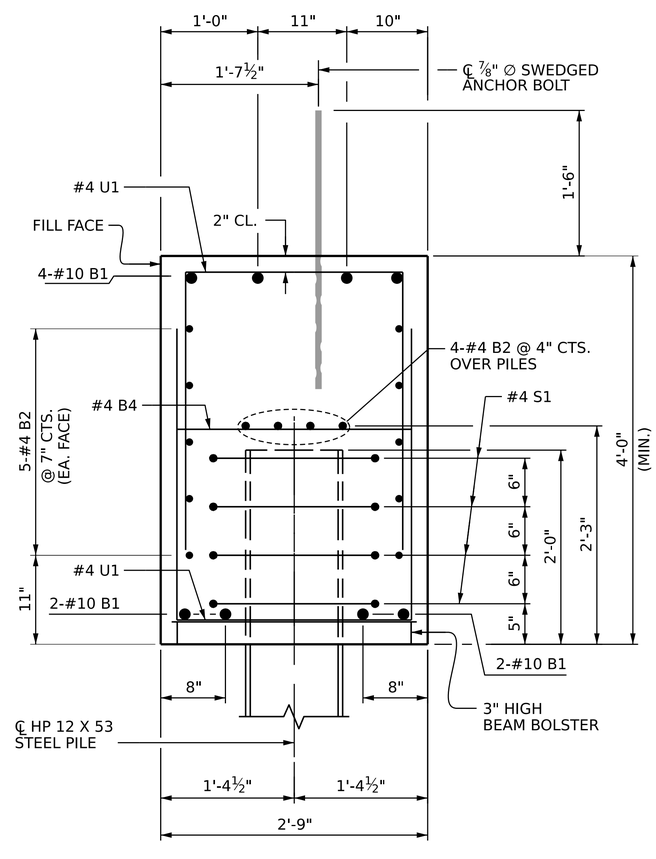
BAR TYPES



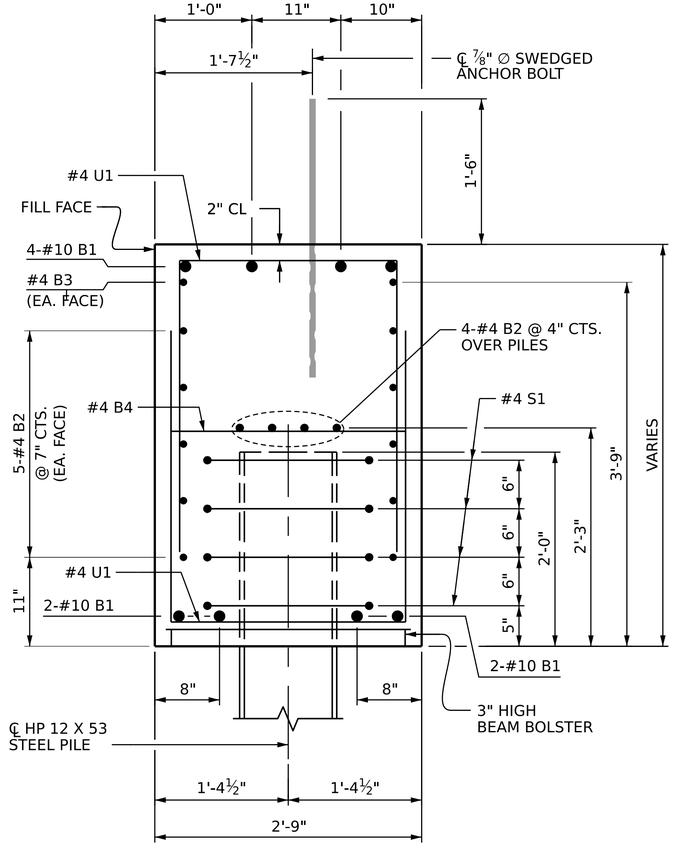
BILL OF MATERIAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	44'-0"	1,515
B2	28	#4	STR	21'-11"	410
B3	2	#4	STR	20'-6"	27
B4	11	#4	STR	2'-5"	18
H1	11	#4	2	9'-9"	72
H2	11	#4	2	9'-4"	69
H3	20	#4	3	8'-10"	118
K1	16	#4	STR	3'-11"	42
S1	20	#4	5	6'-6"	87
U1	108	#4	4	9'-3"	667
V1	28	#4	STR	6'-2"	115
V2	29	#4	STR	6'-7"	128

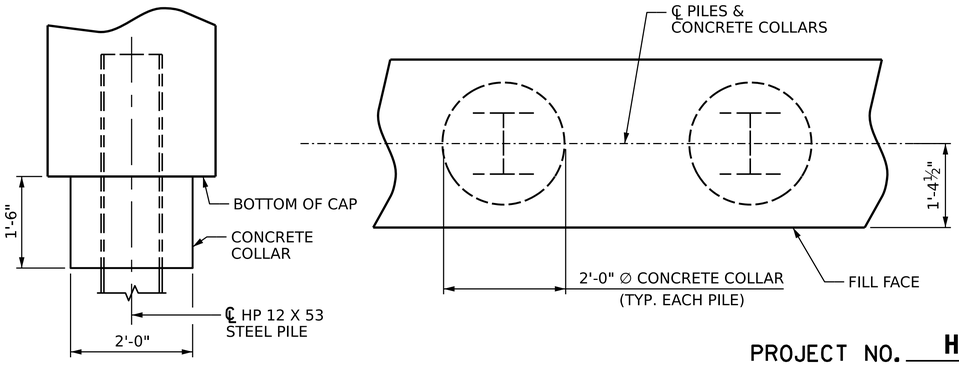
REINFORCING STEEL	3,268 LBS.
CLASS A CONCRETE	
POUR #1 (CAP, LOWER WINGWALL, & COLLARS)	21.4 C.Y.
POUR #2 (BACKWALL & UPPER WINGWALLS)	2.2 C.Y.
TOTAL CLASS A CONCRETE	23.6 C.Y.



SECTION A-A



SECTION B-B



CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 3 OF 3

DocuSigned by:
[signature]
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9/22/2026

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

DRAWN BY :	J. MYA	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

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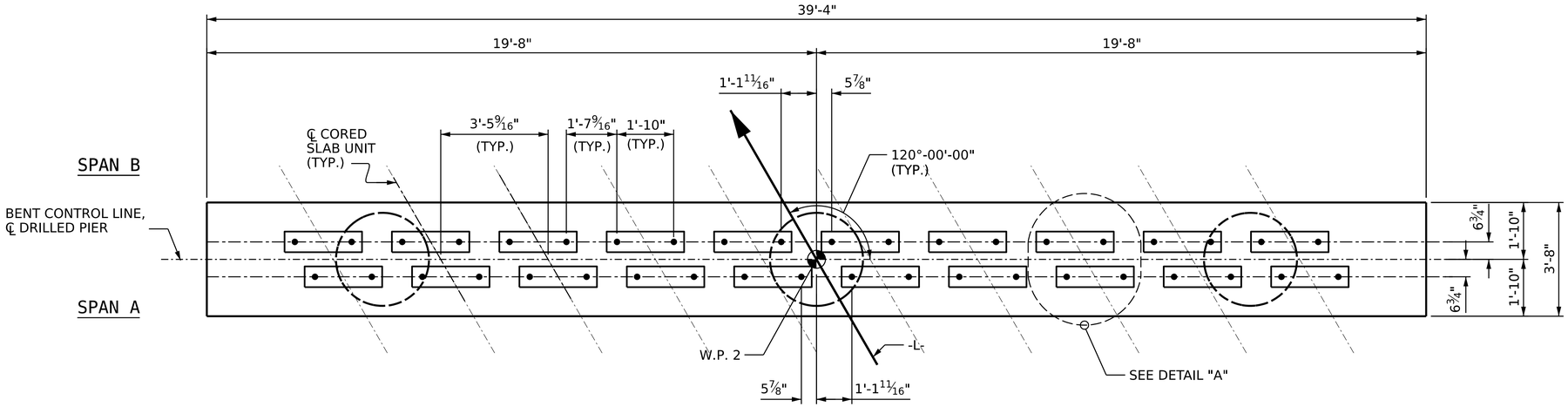
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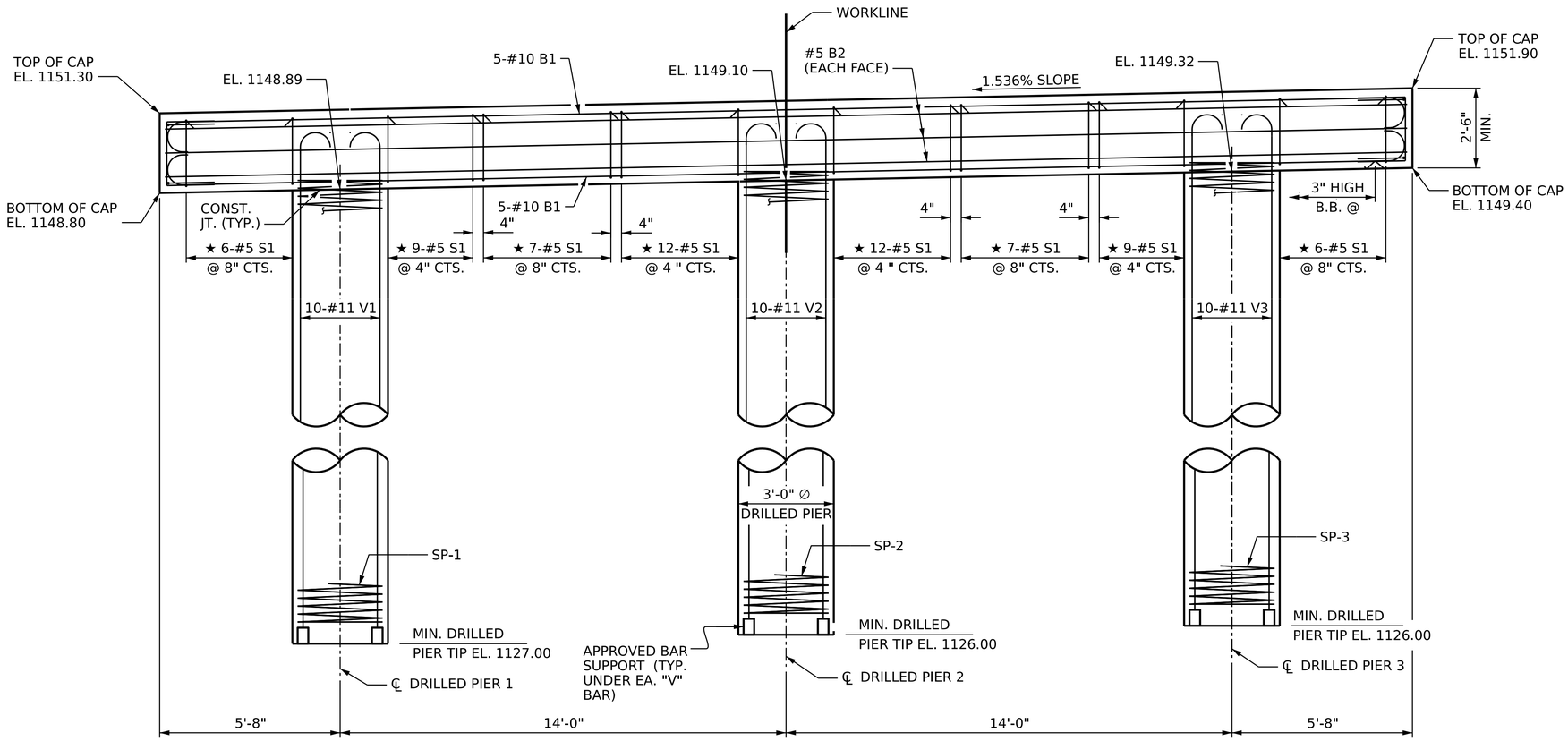
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PLAN



ELEVATION

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.

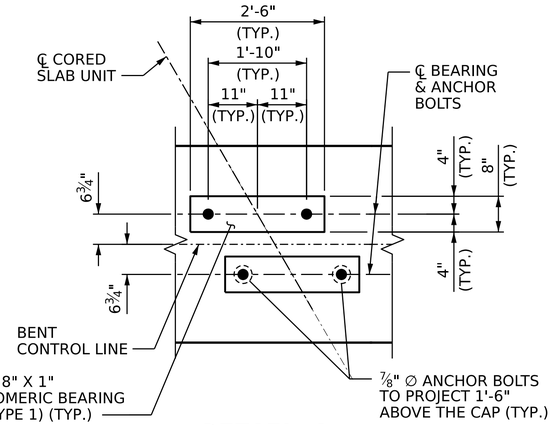
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

CONTRACTOR SHALL CONFIRM "V" BAR EMBEDMENT INTO CAP PRIOR TO POURING OF DRILLED PIER CONCRETE.



DETAIL A

(TYP. EA. BRIDGE SEAT)

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 1 OF 2

DocuSigned by:
[illegible]
3871F99DEAD974D...
9/22/2026

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

GFT

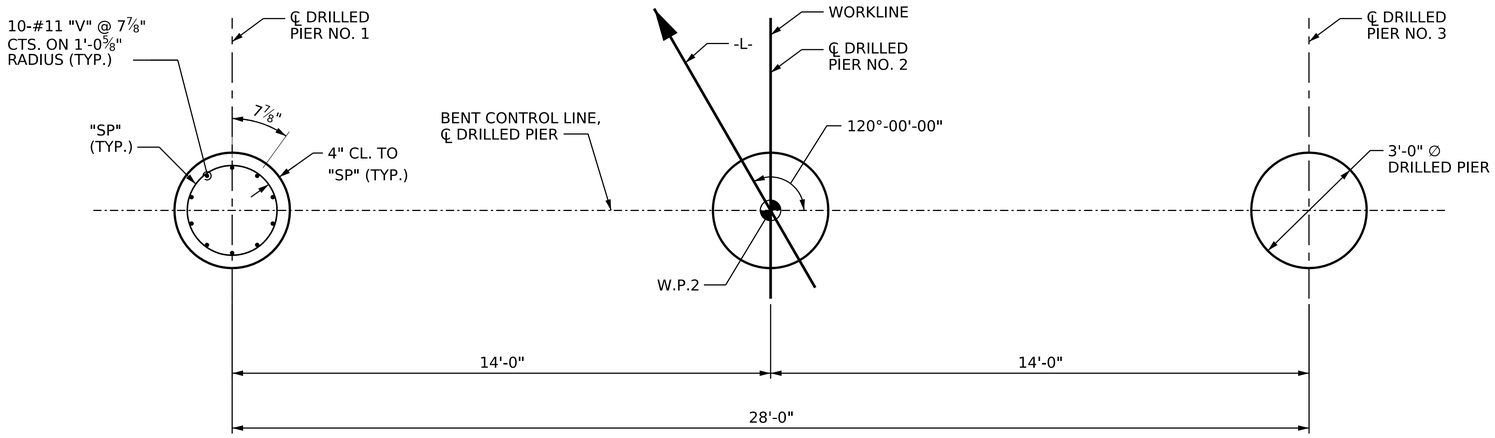
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2			4			24

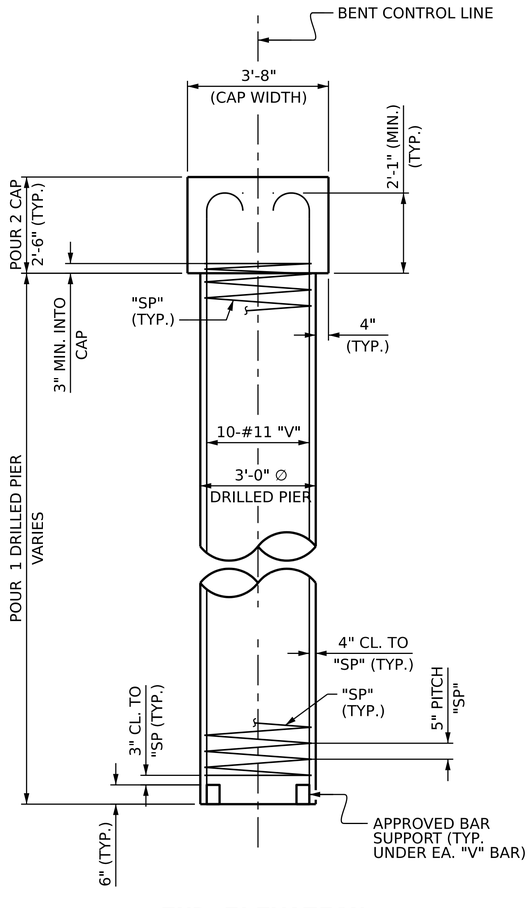
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8/26/21
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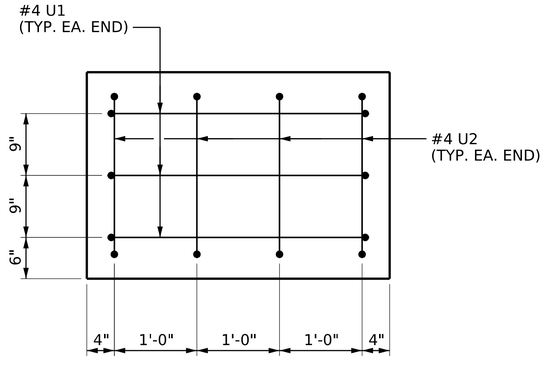


PLAN OF DRILLED PIERS

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL DRILLED PIERS UNLESS NOTED OTHERWISE

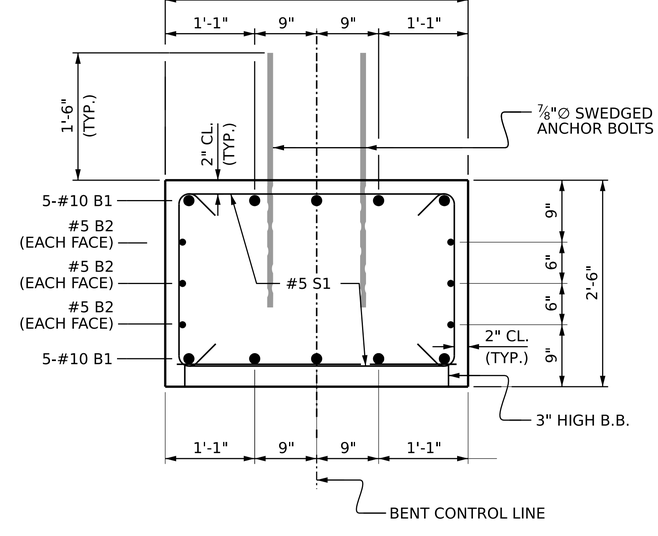


END ELEVATION



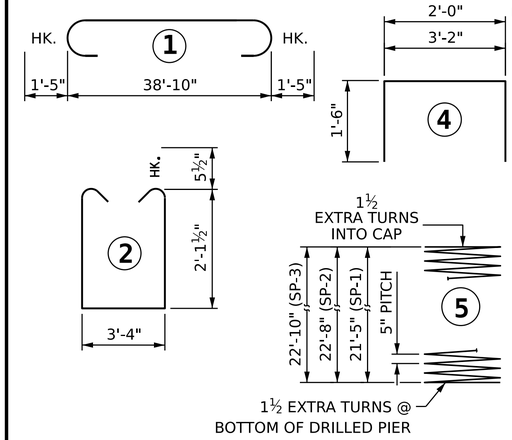
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	41'-8"	1,793
B2	6	#5	STR	39'-0"	244
S1	68	#5	2	8'-6"	603
U1	6	#4	4	6'-2"	25
U2	8	#4	4	5'-0"	27
V1	10	#11	3	28'-0"	1,488
V2	10	#11	3	29'-4"	1,558
V3	10	#11	3	29'-6"	1,567
REINFORCING STEEL					7,305 LBS.
SP-1	1	*	5	403'-10"	421
SP-2	1	*	5	425'-11"	444
SP-3	1	*	5	425'-11"	444
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					1,309 LBS.

* THE SP-1, SP-2, & SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)	
POUR #2 (CAP)	13.4 C.Y.
TOTAL CLASS A CONCRETE	13.4 C.Y.

DRILLED PIERS: (FOR ONE BENT)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	17.9 C.Y.

PROJECT NO. HB-0059

CALDWELL COUNTY

STATION 14+36.00 -L-

SHEET 2 OF 2

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NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

DRAWN BY :	J. MYA	DATE : 5/2026
CHECKED BY :	T. FORD	DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE : 8/2026

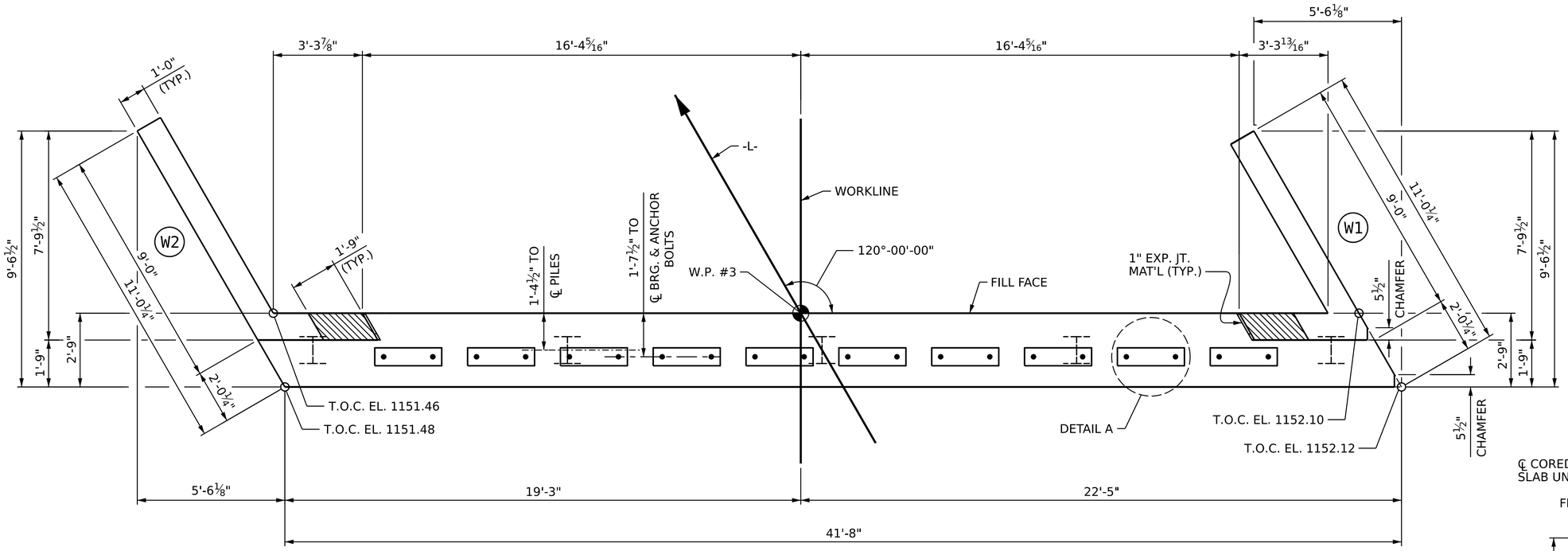
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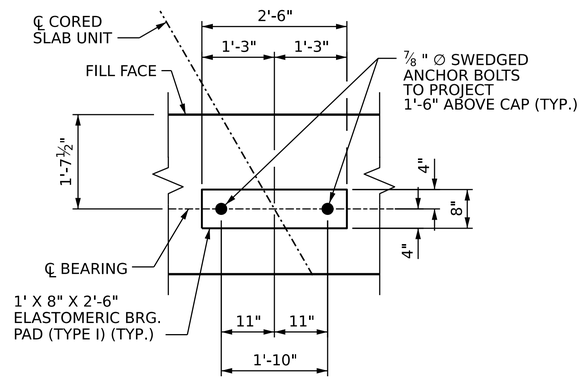
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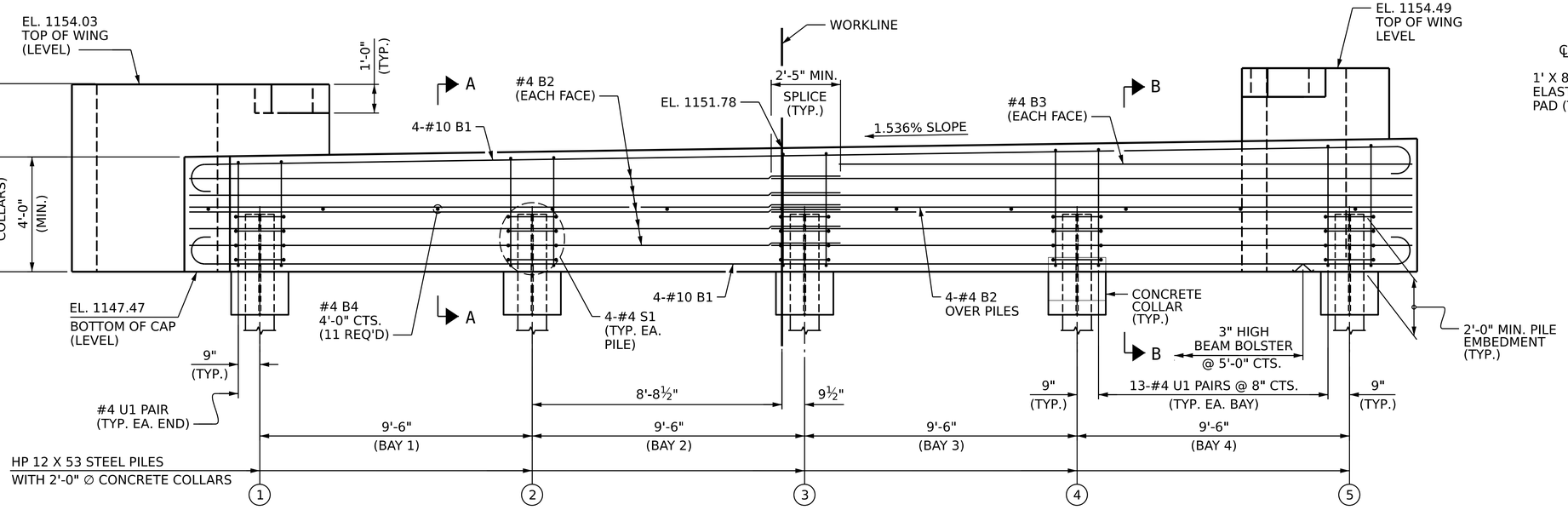
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PLAN



DETAIL A



ELEVATION

NOTES:

THE "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

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

FOR WING DETAILS, SEE SHEET 2 OF 3.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

SHEET 1 OF 3

DocuSigned by:
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9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

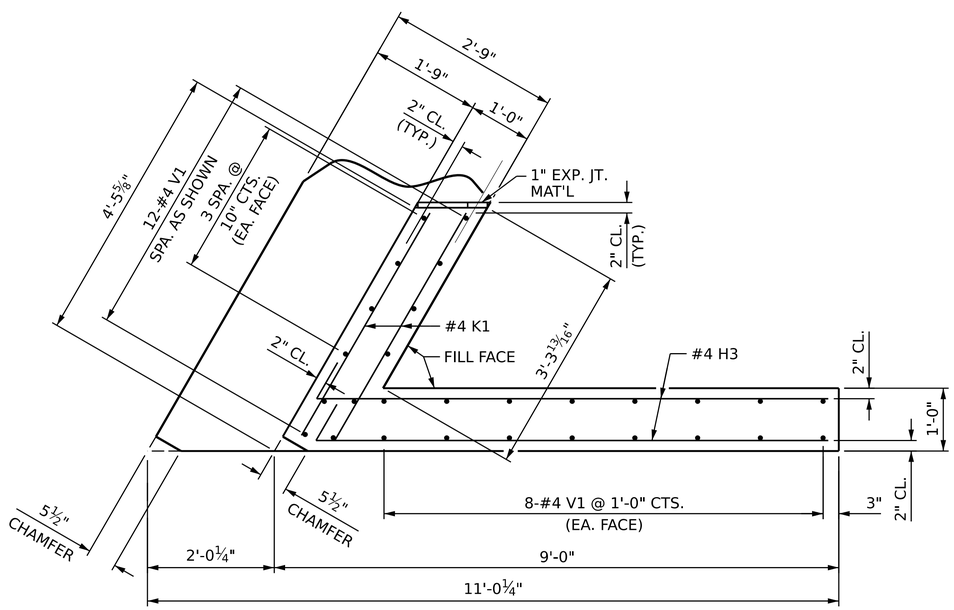
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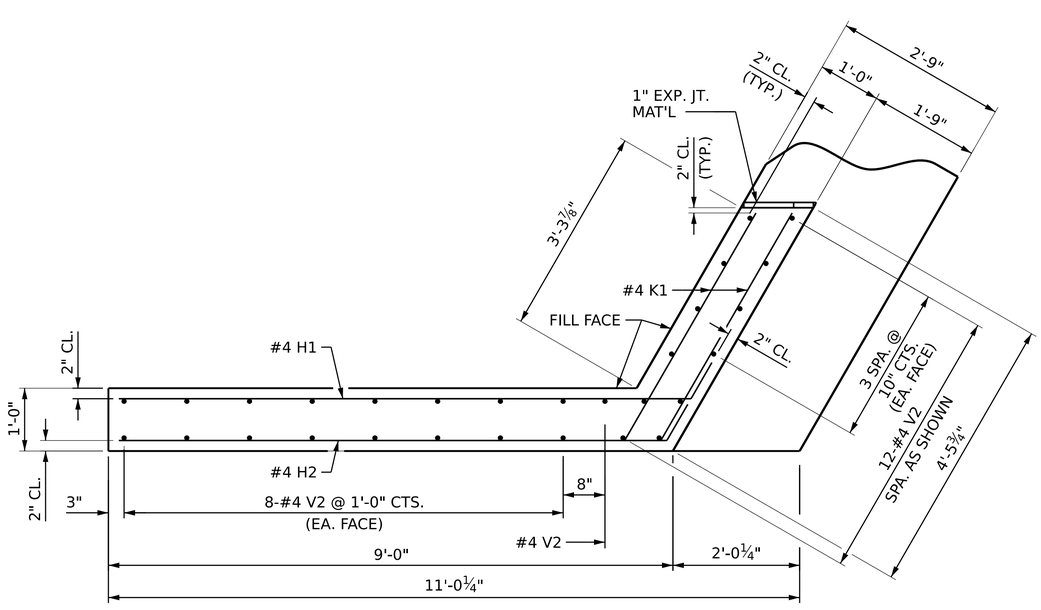
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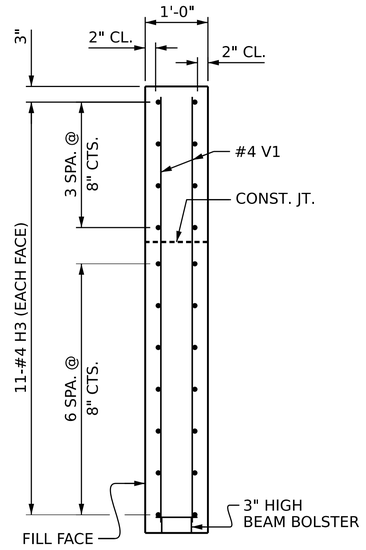
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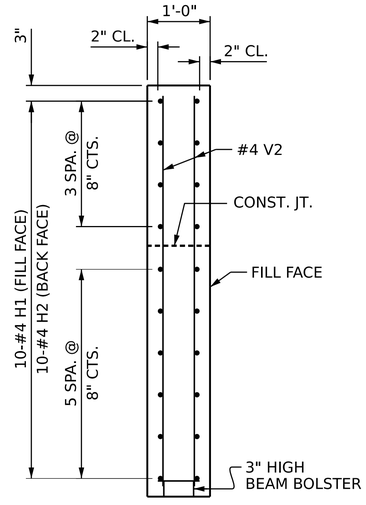
PLAN OF WING W1



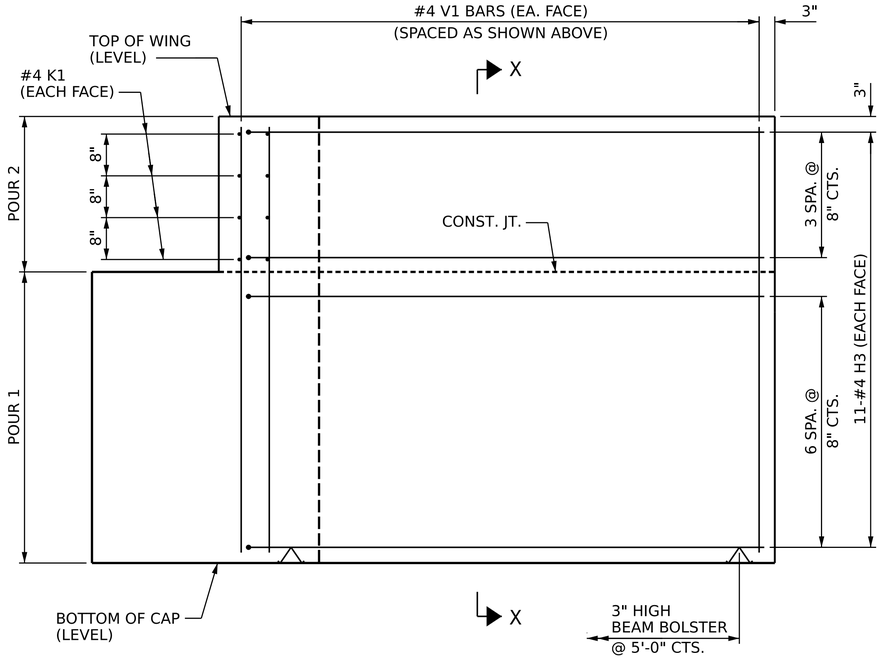
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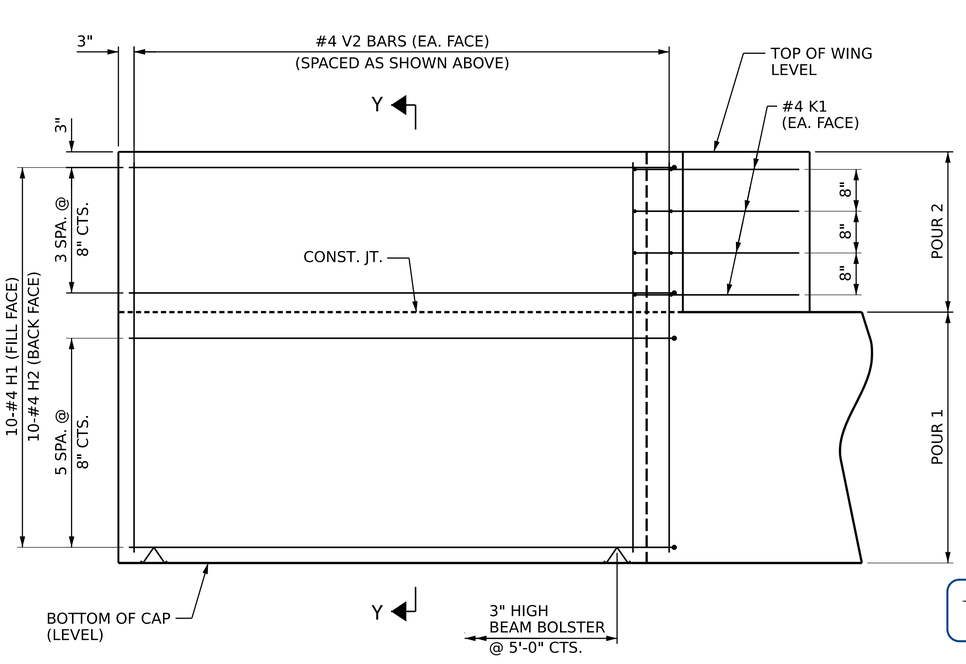
SECTION X-X



SECTION Y-Y



ELEVAITON OF WING W1



ELEVAITON OF WING W2

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9/22/2026

STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER SEAL 052027 TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 2 OF 3

DRAWN BY : J. MYA	DATE : 5/2026
CHECKED BY : T. FORD	DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026

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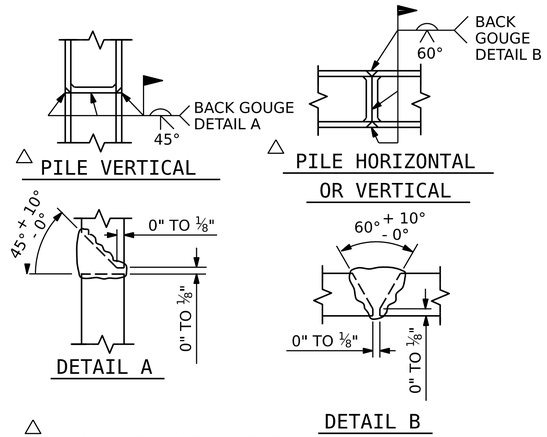


TEMPORARY DRAINAGE AT END BENT

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.

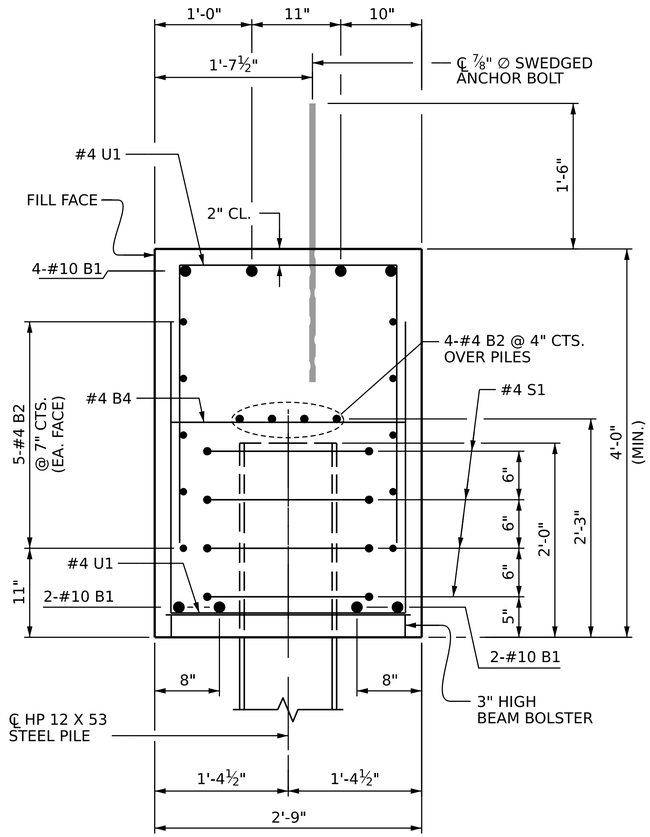
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

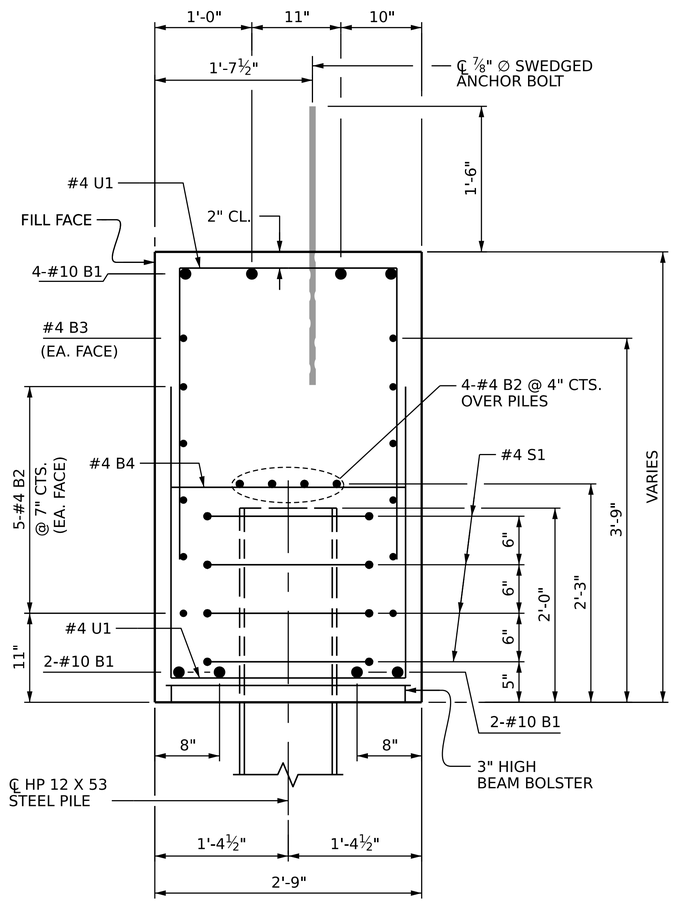


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

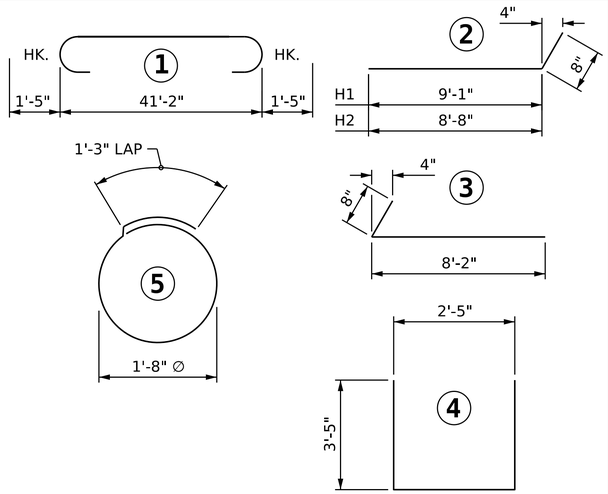


SECTION A-A



SECTION B-B

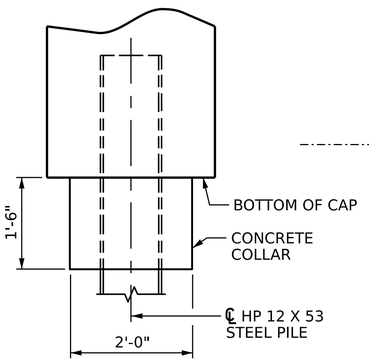
BAR TYPES

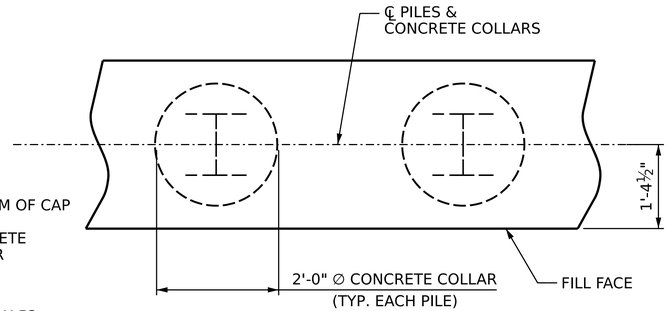


BILL OF MATERIAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	44'-0"	1,515
B2	28	#4	STR	21'-11"	410
B3	2	#4	STR	20'-6"	27
B4	11	#4	STR	2'-5"	18
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
H3	22	#4	3	8'-10"	130
K1	16	#4	STR	3'-11"	42
S1	20	#4	5	6'-6"	87
U1	108	#4	STR	9'-3"	667
V1	28	#4	STR	6'-7"	123
V2	29	#4	STR	6'-2"	119

REINFORCING STEEL	3,265 LBS.
CLASS A CONCRETE	
POUR #1 (CAP, LOWER WINGWALL, & COLLARS)	21.4 C.Y.
POUR #2 (BACKWALL & UPPER WINGWALLS)	2.2 C.Y.
TOTAL CLASS A CONCRETE	23.6 C.Y.





CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-
SHEET 3 OF 3

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38F89DDAD974BD...
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM W. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2 DETAILS

DRAWN BY :	J. MYA — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

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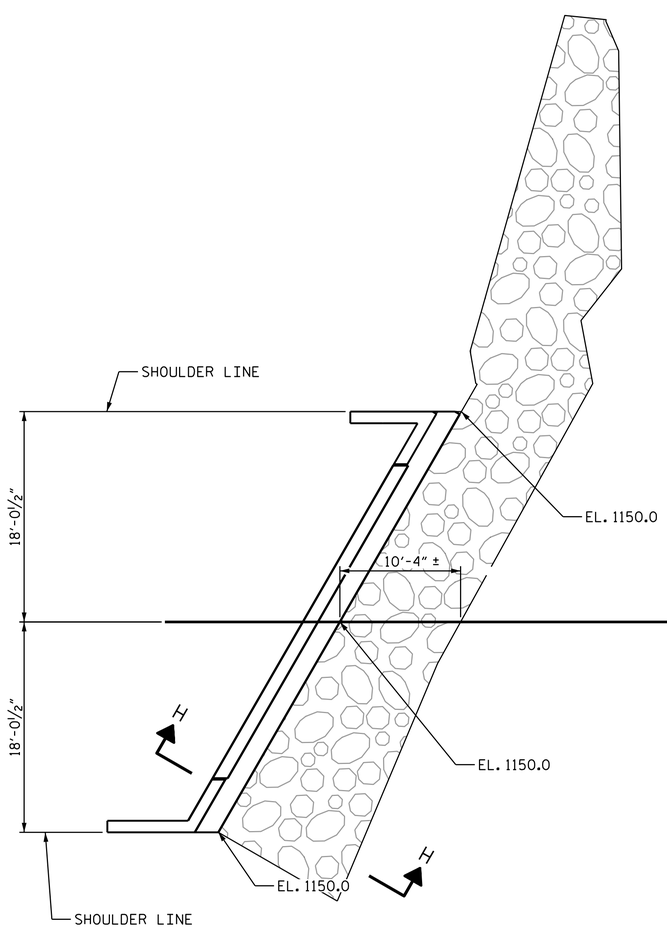
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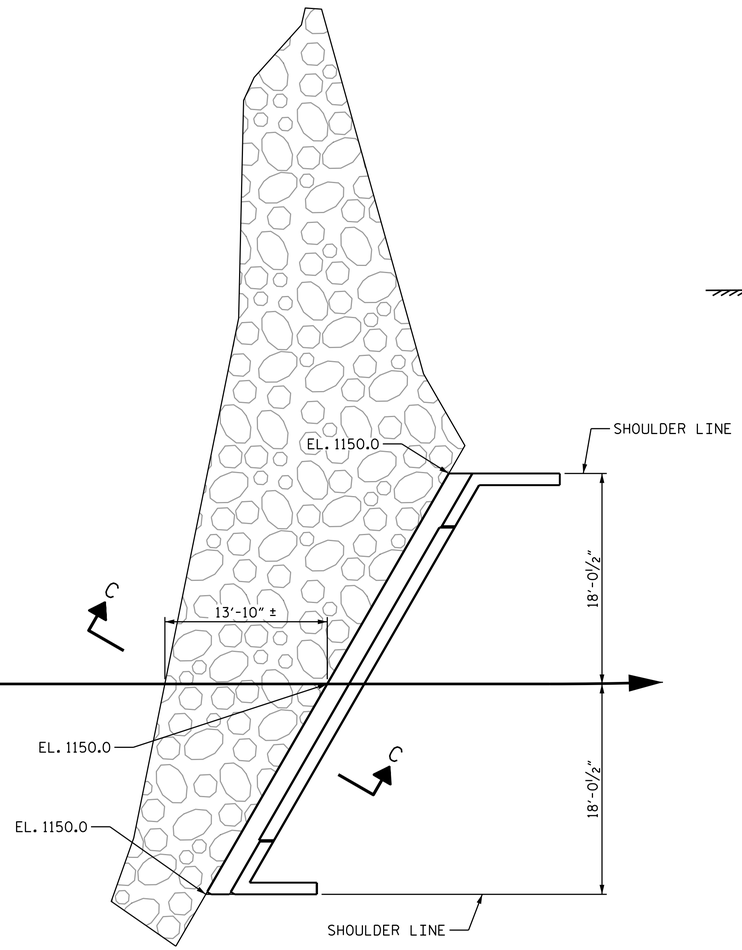
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ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+36.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	105	120
END BENT 2	140	145
TOTAL	245	265

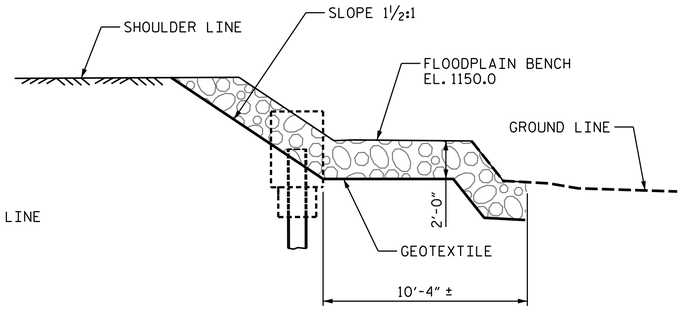


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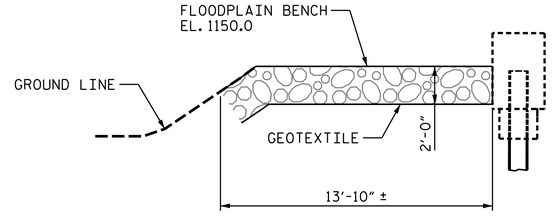


END BENT 2

PLAN OF RIP RAP



SECTION H-H



SECTION C-C

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

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38[illegible]9743D
9/22/2026

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

DRAWN BY :	J. PARROTT	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

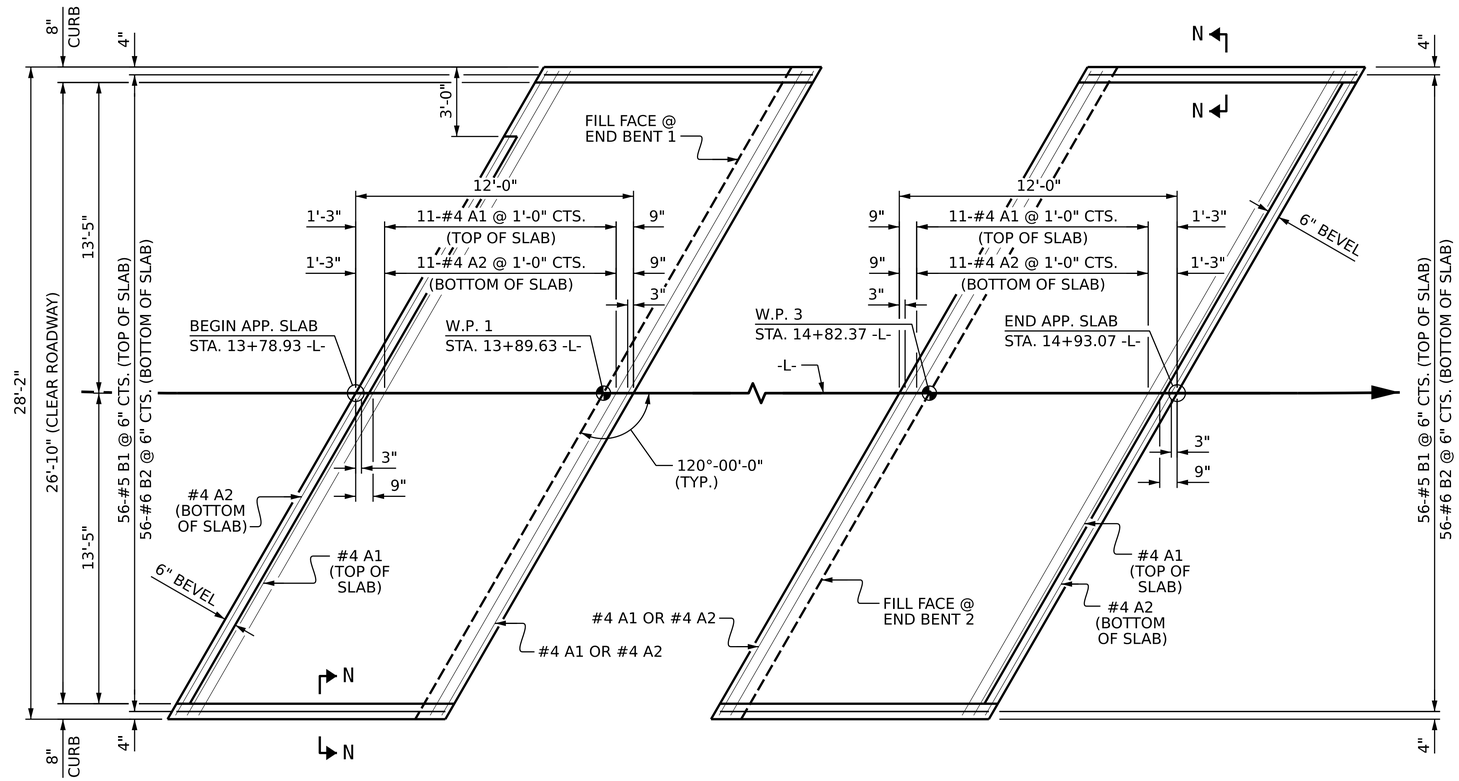
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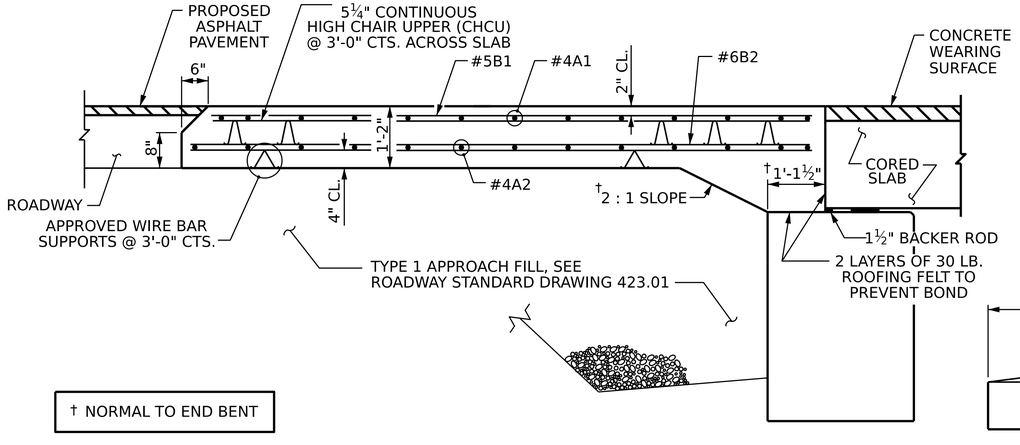
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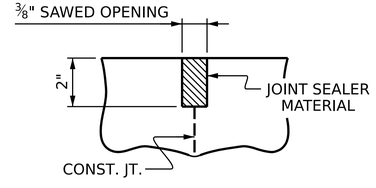
PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

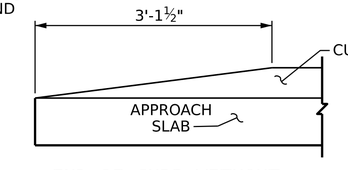


† NORMAL TO END BENT

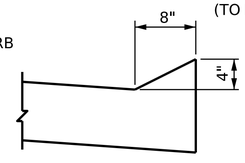
SECTION THRU SLAB



SAWED JOINT DETAIL



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

CURB DETAILS

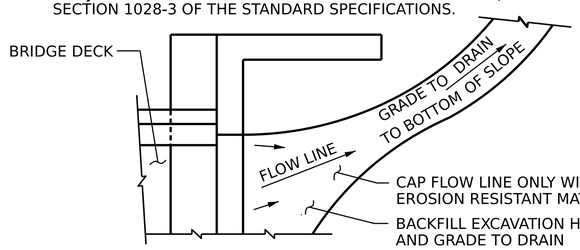
NOTES

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 SLABS SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



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 RESISTENT 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.

BILL OF MATERIAL

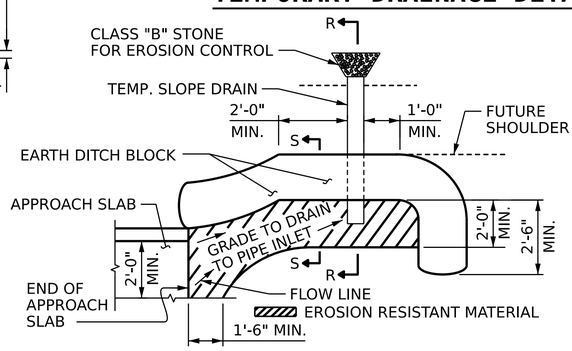
APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	32'-1"	279
A2	13	#4	STR	32'-1"	279
*B1	56	#5	STR	11'-1"	647
B2	56	#6	STR	11'-7"	974
REINFORCING STEEL				LBS.	1253
* EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	16.3

APPROACH SLAB AT EB 2

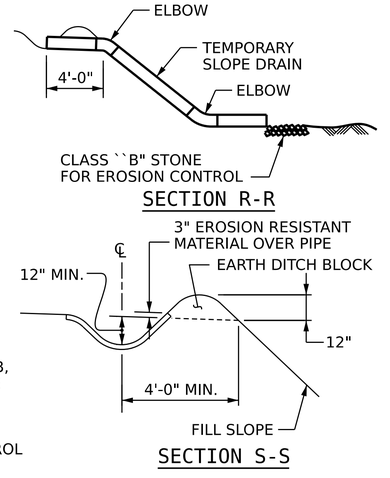
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	32'-1"	279
A2	13	#4	STR	32'-1"	279
*B1	56	#5	STR	11'-1"	647
B2	56	#6	STR	11'-7"	974
REINFORCING STEEL				LBS.	1253
* EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	16.3

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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 TOM M. FORD
38B8B9D0AD9743D...
9/22/2026

PROJECT NO. HB-0059
CALDWELL COUNTY
STATION 14+36.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT

(SUB-REGIONAL TIER)

DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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

8/26/21

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

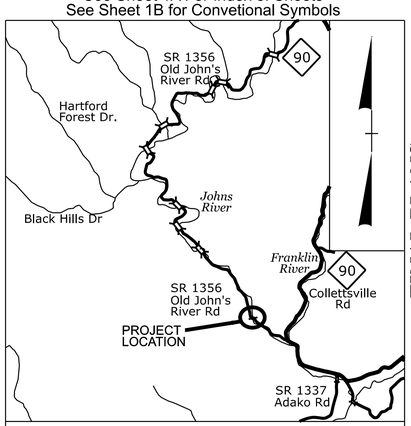
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01/16/24

TIP PROJECT: HB-0060

CONTRACT: DK00484

See Sheet 1A For Index of Sheets
See Sheet 1B for Convetional Symbols



VICINITY MAP (NTS)

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

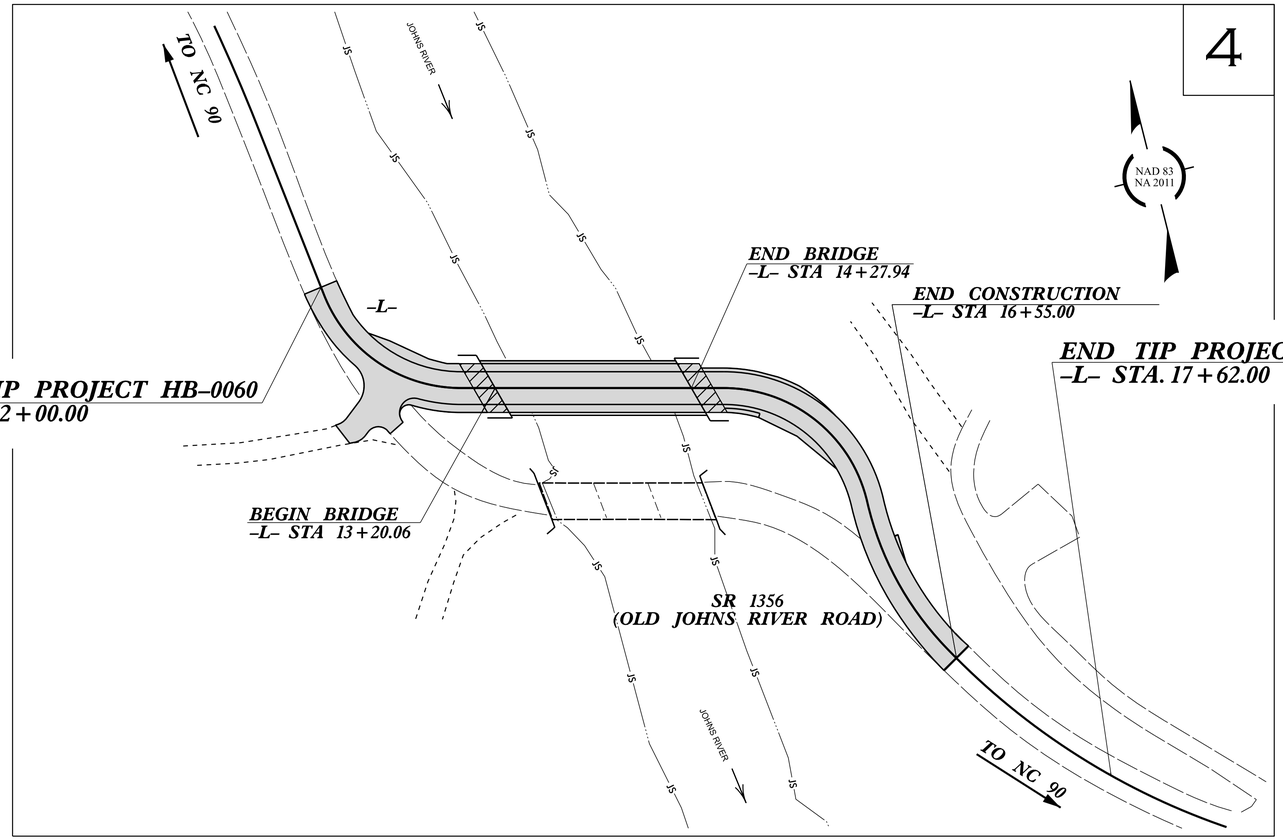
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0060	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50730.1.1	FBRG111	PE
50730.2.1	FBRG111	ROW
50730.2.2	FBRG111	UTIL
50730.3.1	FBRG111	CONST

LOCATION: *BRIDGE 317 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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

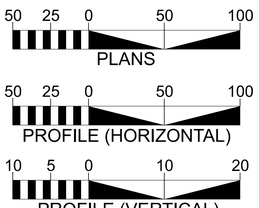




THIS PROJECT IS NOT LOCATED WITHIN A MUNICIPAL BOUNDARY.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2025 = 140
ADT 2045 = 230
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HB-0060 = 0.086 MILES
LENGTH OF STRUCTURE TIP PROJECT HB-0060 = 0.020 MILES
TOTAL LENGTH OF TIP PROJECT HB-0060 = 0.106 MILES

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2025

LETTING DATE: NOVEMBER 19, 2026

RICKY A. TIPTON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

RAMIE A. SHAW, PE
NCDOT DIVISION II
PROJECT DEVELOPMENT ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: B25FCD1454FF4AF... 10/8/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

ROADWAY DESIGN ENGINEER

Signed by: 75A4100DAF7A4B5... 10/8/2026 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	METHOD OF PIPE INSTALLATION DETAIL, RIGID PIPE
2C-2	GUARDRAIL PLACEMENT DETAIL, SHEET 4 OF 15
2C-3	GUARDRAIL PLACEMENT DETAIL, SHEET 6 OF 15
2C-4	SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION DETAIL
2C-5	METHOD OF PIPE INSTALLATION DETAIL, FLEXIBLE PIPE
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
04 THRU 05	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UB-01 THRU UB-02	UTILITY BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X- 9	CROSS-SECTIONS
TITLE SHEET S-1 THRU S-27 STANDARD NOTES	STRUCTURE PLANS

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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

BLUE RIDGE ELECTRIC, AT&T, CHARTER SPECTRUM

RIGHT-OF-WAY MARKERS:

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

EFF. 08-11-2025
REV. 11-26-2025

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
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	
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
846.01	Concrete Curb, Gutter and Curb & Gutter
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
876.04	Drainage Ditches with Class 'B' Rip Rap

HB-0060
4RD1 | 1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Signature: Angela B. Pridgen Date: 1/23/2026

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PREPARED BY

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Raleigh, NC 27603
NC Lic. No. C-3325
NC Lic. No. P-0270

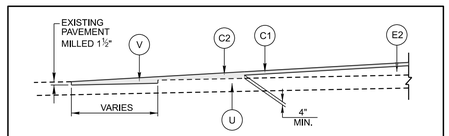
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11/14/23

FINAL PAVEMENT SCHEDULE

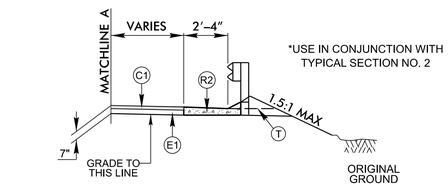
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
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 GREATER THAN 5.5" IN DEPTH OR LESS THAN 4" IN DEPTH.
R1	EXPRESSWAY GUTTER
R2	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING

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



MILLING DETAIL FOR PROFILE CONNECTIONS

TYING PROPOSED PAVEMENTS TO EXISTING PAVEMENTS
-L- STA. 12+00.00 TO STA. 12+25.00
-L- STA. 16+30.00 TO STA. 16+55.00

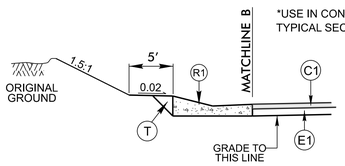


*USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

SHOULDER BERM GUTTER DETAIL

-L- STA. 14+32.19 TO STA. 14+62.45 (LT)
-L- STA. 14+46.43 TO STA. 14+69.09 (RT)

NOTE: SEE SHEET 2B-1 FOR SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION DETAIL.

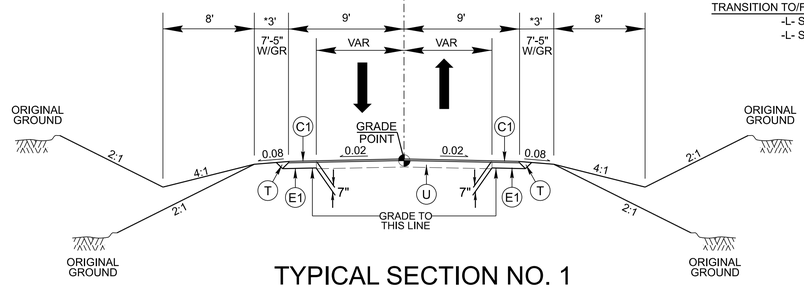


*USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 1 & 2

EXPRESSWAY GUTTER

-L- STA. 14+62.45 TO STA. 15+77.38 (LT)

℄ -L- SR 1356 (OLD JOHNS RIVER RD)

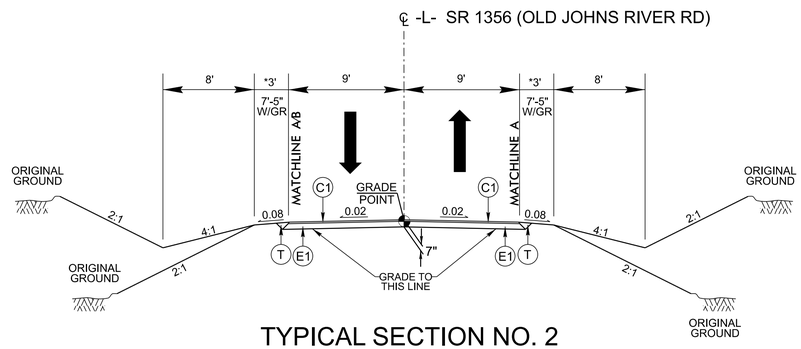


TRANSITION TO/FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA. 12+00.00 TO STA. 12+25.00
-L- STA. 16+30.00 TO STA. 16+55.00

TYPICAL SECTION NO. 1

-L- STA. 12+00.00 TO STA. 12+71.15
-L- STA. 15+72.80 TO STA. 16+55.00
*INCREASE PAVED SHOULDER WIDTH TO 4'-5" AT GUARDRAIL
LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS.

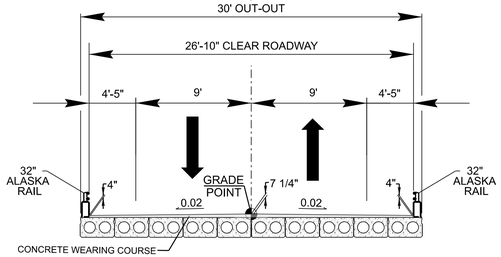
℄ -L- SR 1356 (OLD JOHNS RIVER RD)



TYPICAL SECTION NO. 2

-L- STA. 12+71.15 TO STA. 13+20.06 (BEGIN BRIDGE)
-L- STA. 14+27.94 (END BRIDGE) TO STA. 15+72.80
*INCREASE PAVED SHOULDER WIDTH TO 4'-5" AT GUARDRAIL
LOCATIONS TO MATCH STRUCTURE WIDTH. SEE PLANS FOR LOCATIONS.

℄ -L- SR 1356 (OLD JOHNS RIVER RD)



TYPICAL SECTION NO. 3

-L- STA. 13+20.06 (BEGIN BRIDGE) TO STA. 14+27.94 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)

HB-0060
4RD1 | 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

DocuSigned by: Angela B. Pridgen 10/8/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A. SHAW

DocuSigned by: Ramie Shaw 10/8/2026

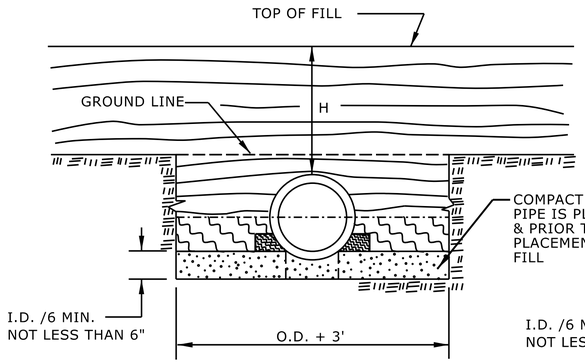
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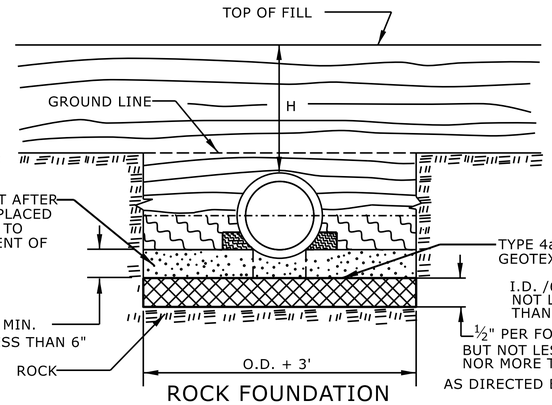
GFT Infrastructure, Inc.
3600 Glenwood Avenue, Suite 300
Raleigh, NC 27612
919-420-7640
NC Lic. No. P-0270

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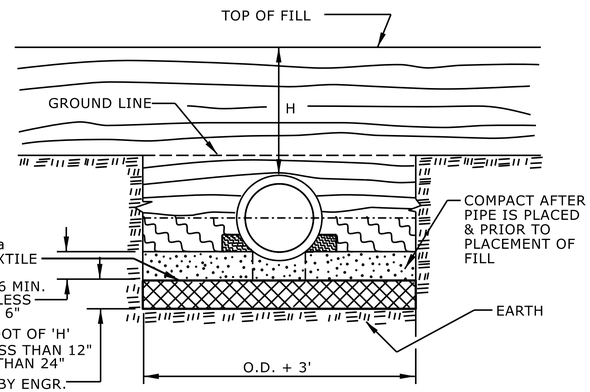
PROJECT REFERENCE NO.	SHEET NO.
HB-0060	2C-1



NORMAL EARTH FOUNDATION

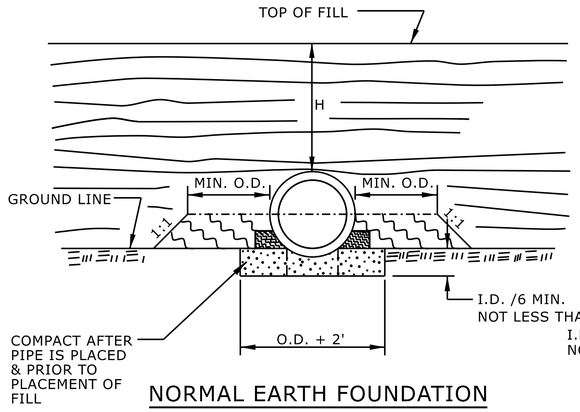


ROCK FOUNDATION

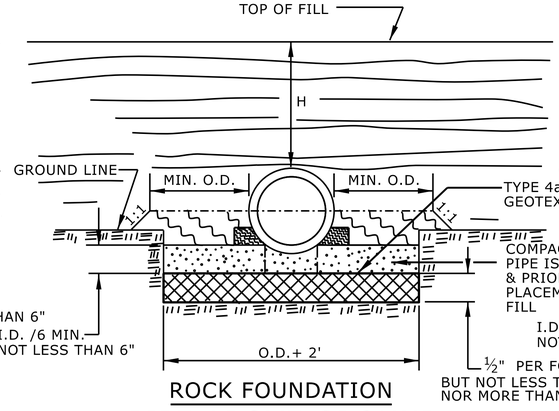


UNSUITABLE MATERIAL FOUNDATION

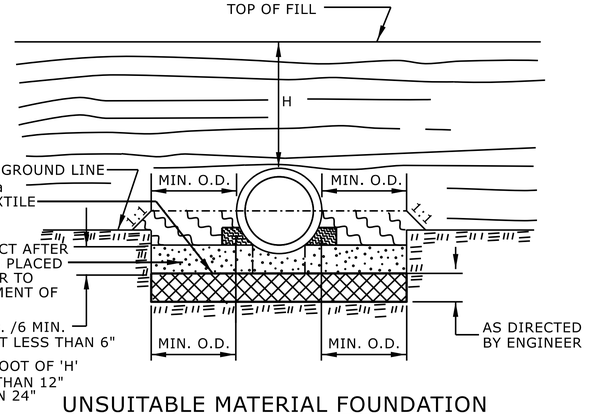
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/8/2026
588432303416 4C5...

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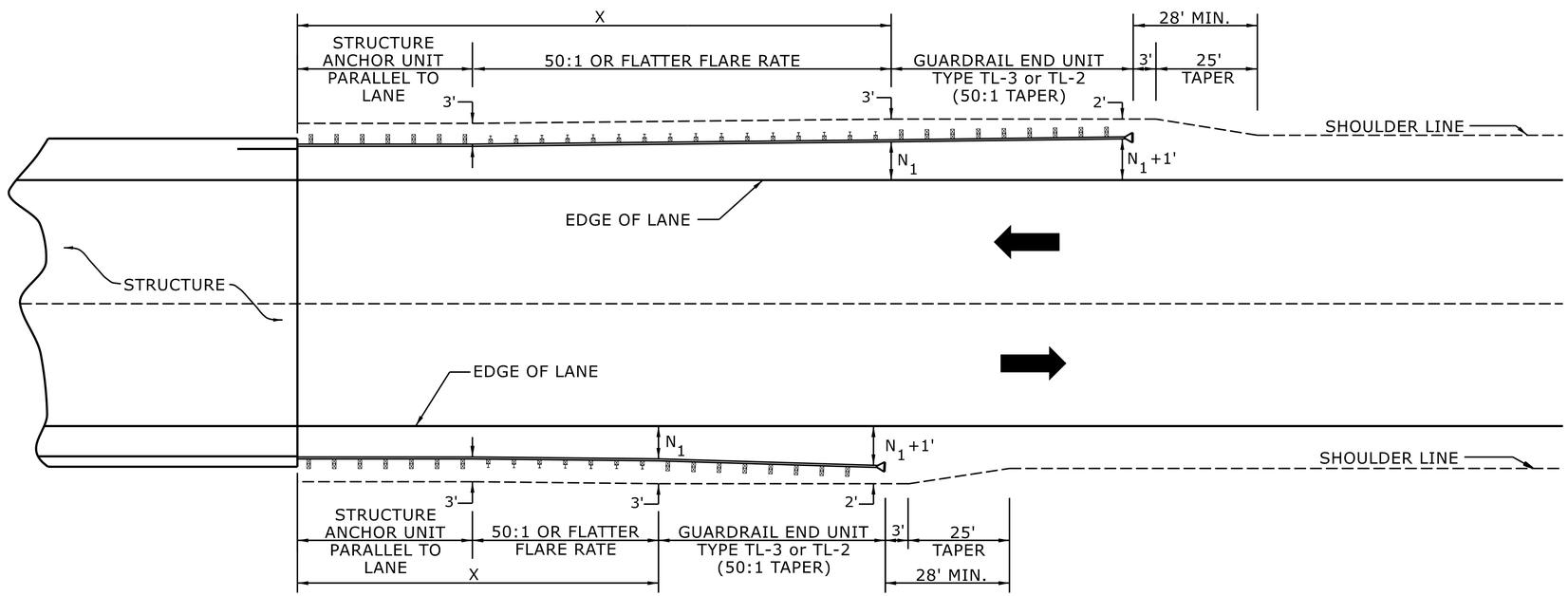
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

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PROJECT REFERENCE NO.	SHEET NO.
HB-0060	2C-2



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

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 10/8/2026
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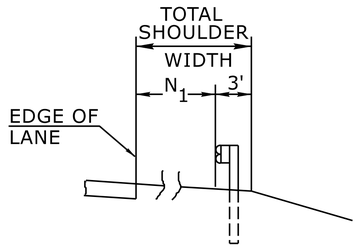
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AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

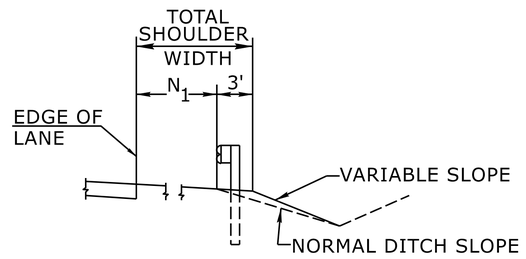
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PROJECT REFERENCE NO.	SHEET NO.
HB-0060	2C-3

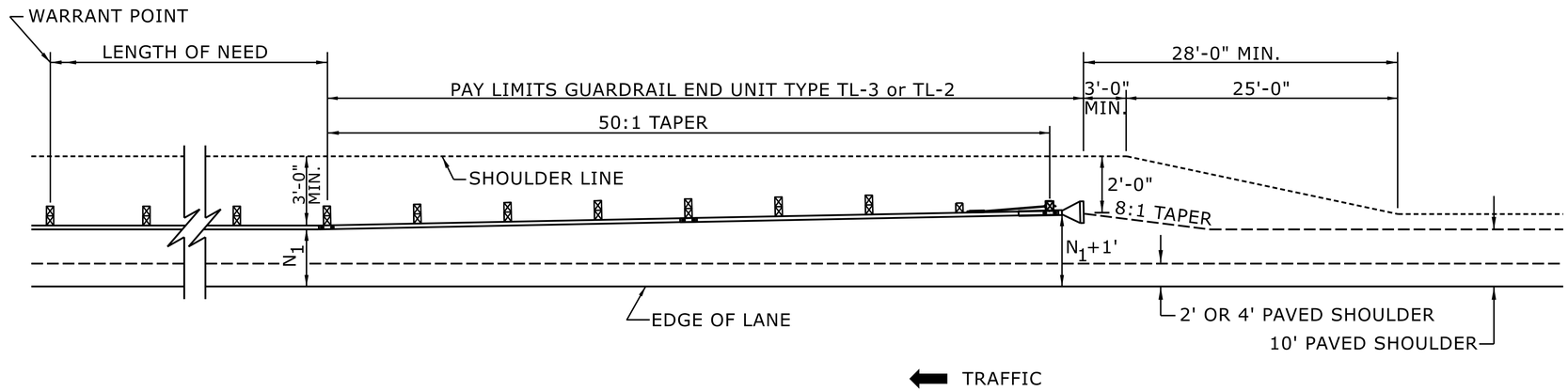


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by: Nicole M Hackler 5884323D34164C5... 11/8/2026

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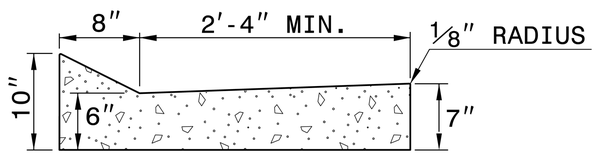
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

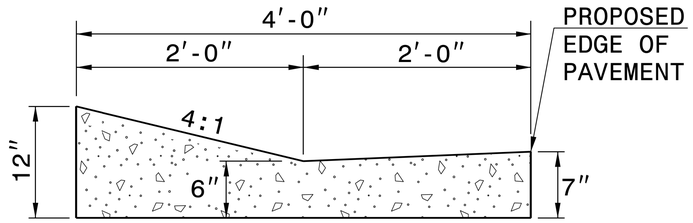
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5/26/20



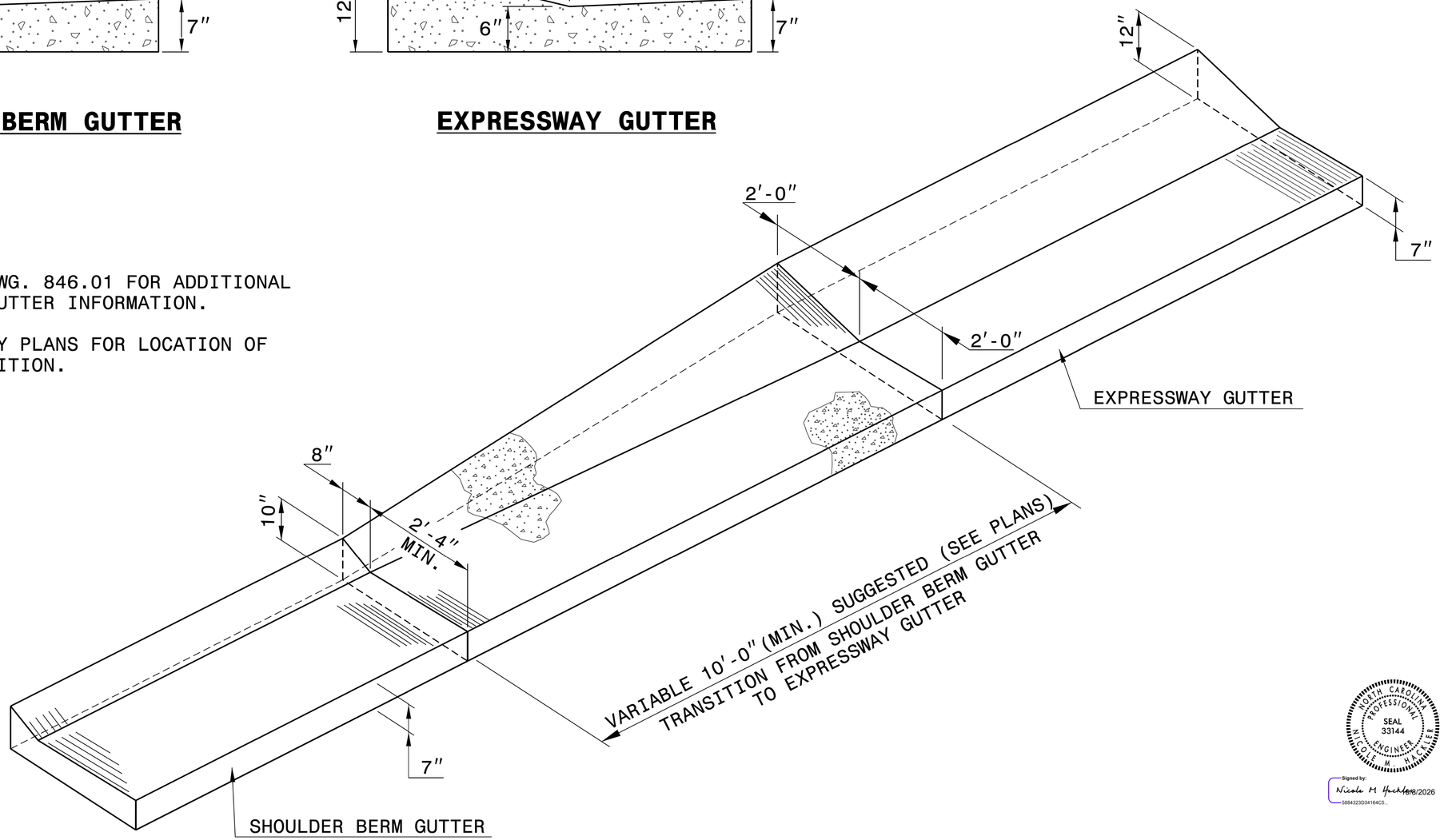
SHOULDER BERM GUTTER



EXPRESSWAY GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER

Signed by: Nicole M Hackler 1/8/2026
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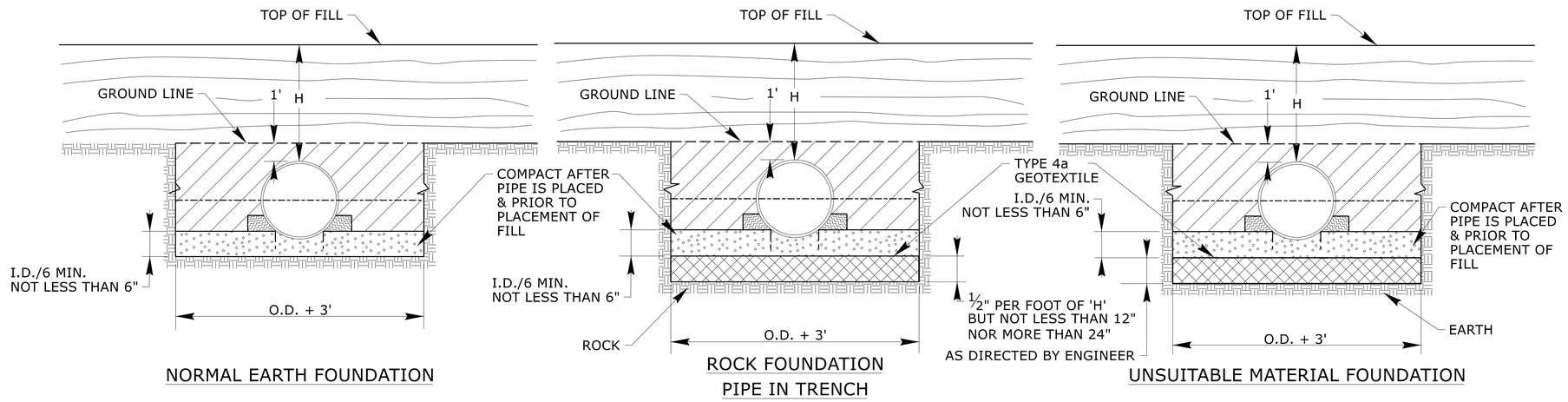
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION

ORIGINAL BY: T.S.Spell DATE: 8-13-02
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
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SYSTIME$$$

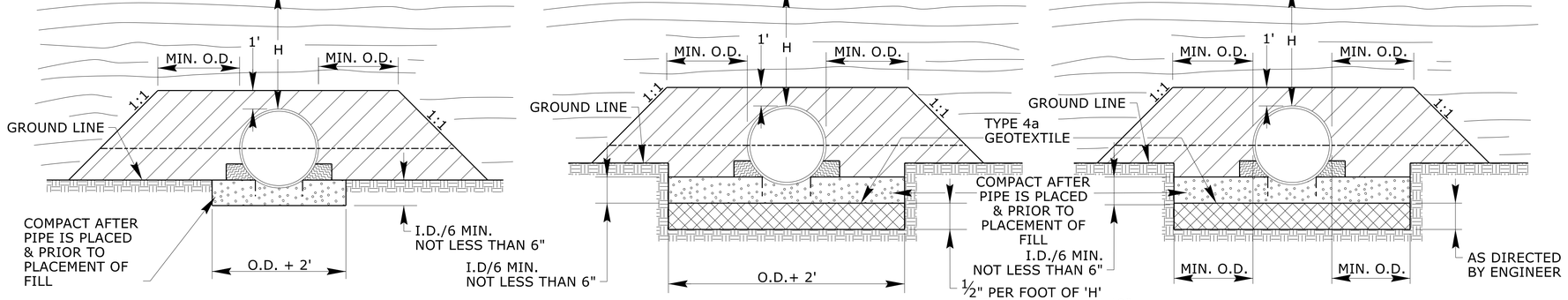
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NORMAL EARTH FOUNDATION

ROCK FOUNDATION
PIPE IN TRENCH

UNSUITABLE MATERIAL FOUNDATION



NORMAL EARTH FOUNDATION

ROCK FOUNDATION
PIPE ABOVE GROUND

UNSUITABLE MATERIAL FOUNDATION

NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE 4a GEOTEXTILE AS DIRECTED BY THE ENGINEER.

REV

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300D01

HB-0060

4R1 | 2C-5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
COUNTY COUNTY

CONTRACT STANDARDS AND
DEVELOPMENT UNIT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. TAYLOR

Nicole Taylor

10/23/2026

188432034164C5

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CHECKED BY: JRC DATE: 03/25/2026

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
-L- 12+00.00	-L- 13+20.06 (BEGIN BRIDGE)	258	51		207
SUBTOTALS:		258	51		207
-L- 14+27.94 (END BRIDGE)	-L- 16+55.00	1279	5		1274
SUBTOTALS:		1537			1481
PROJECT SUBTOTALS:		1537	56		1481
GRAND TOTALS:		1537	56		1481
SAY:		1540			

EST. DDE = 60 CY
SHOULDER BORROW = 4 CY
UNDERCUT EXCAVATION = 450 CY
SHALLOW UNDERCUT = 50 CY
SELECT GRANULAR MATERIAL = 200 CY
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY
CLASS IV SUBGRADE STABILIZATION = 100 TON
GEOTEXTILE FOR SUBGRADE STABILIZATION = 150 SY

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, SHOULDER BORROW, REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY ENGINEER

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	SY
-L-	13+32	13+47 (EXISTING BRIDGE)	RT	26.28
-L-	14+39 (EXISTING BRIDGE)	15+76	RT	133.72
			TOTAL:	160.00
			SAY:	170

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	LENGTH FT
-L-	14+32.19	14+62.45	LT	40.26
-L-	14+46.43	14+69.09	RT	22.66
			TOTAL:	62.92
			SAY:	63

EXPRESSWAY GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/ RT/ CL	LENGTH FT
-L-	14+62.45	15+77.38	LT	104.93
			TOTAL:	104.93
			SAY:	105

"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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	ANCHORS TYPE III	ANCHORS GREU TL-2	ANCHORS M-350	ANCHORS TYPE XIII	ANCHORS CAT-1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT-1	IMPACT ATTENUATOR TYPE TL-2 EA	IMPACT ATTENUATOR TYPE TL-2 G	IMPACT ATTENUATOR TYPE TL-2 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+52.35	13+12.31 (BRIDGE)	LT	43.75'	12.50'			13+12.31 (BRIDGE)	4'-5"	7'-5"		25		0.5		1	1													SUBREGIONAL TIER UNDIVIDED TWO-WAY, TWO-LANE BRIDGE <50 MPH
-L-	12+69.13	13+27.81 (BRIDGE)	RT	31.25'			13+27.81 (BRIDGE)		4'-5"	7'-5"						1								1		1				
-L-	14+20.19 (BRIDGE)	14+72.21	LT	43.75'	12.50'		14+20,19 (BRIDGE)		4'-5"	7'-5"	25		0.5			1	1													
-L-	14+35.69 (BRIDGE)	14+96.11	RT	43.75'	12.50'			14+35.69(BRIDGE)	4'-5"	7'-5"		25		0.5		1	1													
		ANCHOR UNIT DEDUCTIONS																												
		TYPE III	4 @ 18.75' EACH	-75.00'																										
		GREU TL-2	3 @ 25.00' EACH	-75.00'																										
			TOTALS	12.50'	37.50'											4	3							1		1				
			SAY	12.50'	37.50'											4	3							1		1				
			ADDITIONAL GUARDRAIL POSTS (EA)	5																										

HB-0060
4RD1 | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Angela B. Pridgen 3/26/2026

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PREPARED BY

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-835-7800
NC Lic. No. P-0270

SYSTEM#: 6666666 DOWNSIZE SHEET

COMPUTED BY:_____ DATE:_____
CHECKED BY:_____ DATE:_____

5/26/20

HB-0060
4R01 | 3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE (CLASS III) SIZE	R.C. PIPE (CLASS IV) SIZE	15" R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. A (5.0' THRU 10.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. B (10.0' AND ABOVE)	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION CATCH BASIN	CONCRETE TRANSITIONAL SECTION DROP INLET	D.I. STD. 840.14 OR 840.15	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.24	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	MODIFIED CONC. FLUME	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
								12" 15" 18" 24" 30" 36" 42" 48"	DO NOT USE RCP	15" 18" 24" 36" 42" 48"	.064 .064 .064 .079 .109 .109	15" 18" 24" 30" 36" 42" 48"	12" 15" 18" 24" 30" 36" 42" 48"																									
14+98.00	LT	0401		1101.63																	1																
		0401	0402		1099.21	1098.70							48																								
14+58.00	LT	0402		1101.12																	1																
		0402	0404		1098.70	1098.55														28																
14+42.00	LT	0403		1101.19																	1																
		0403	0402		1098.77	1098.70							20																								
14+60.00	RT	0404		1100.97																	1																
		0404	0405		1098.55	1098.20		16																													
12+61.00	RT	0406			1103.50	1101.00		48																													
TOTAL								16	48				68							28																	
SAY								16	48				68							28																	

ABBREVIATIONS

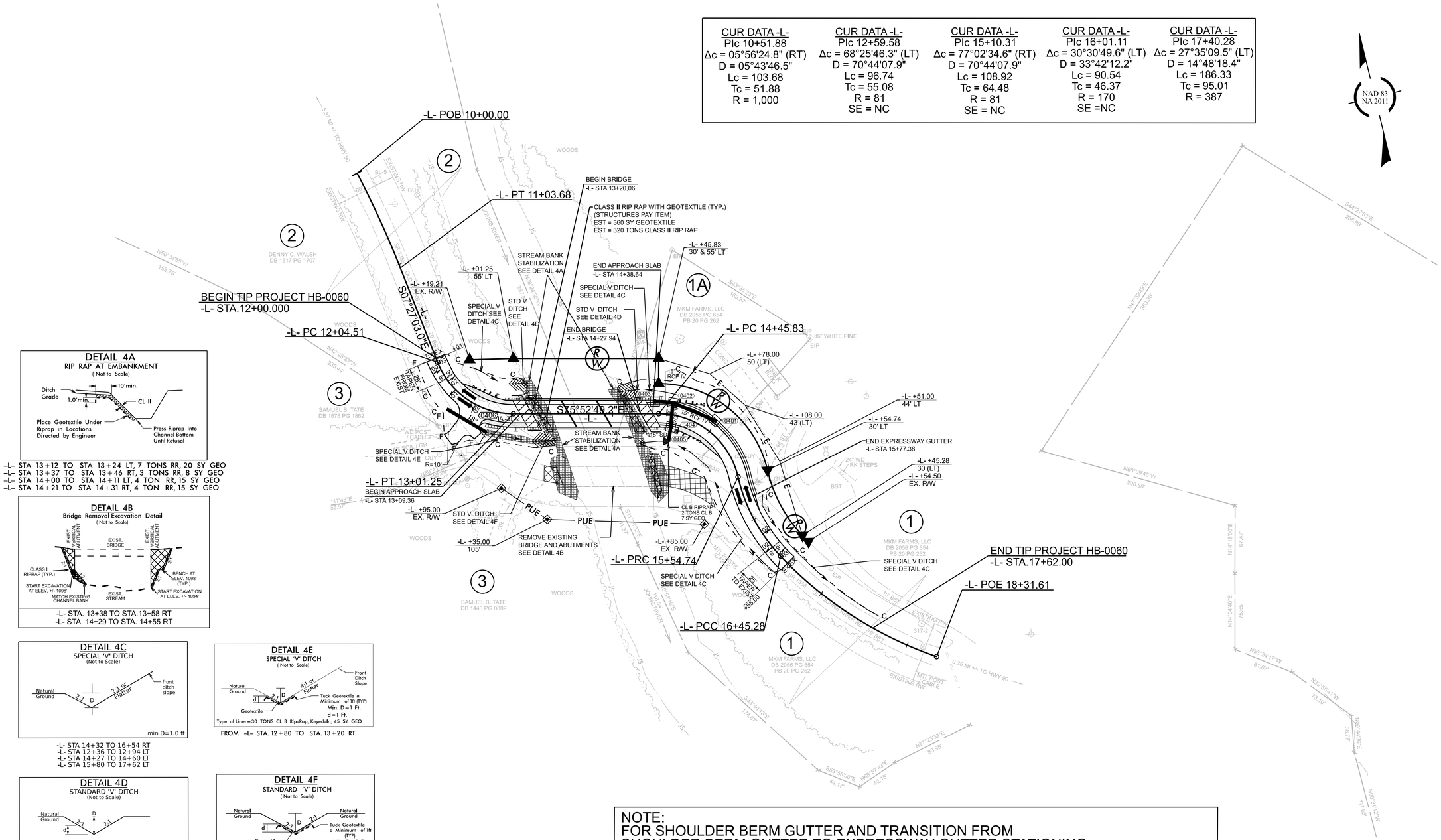
C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

$$$

Docusign Envelope ID: 29609B7A-B9BA-85E2-820C-A10E1D1DDFBE

11/14/23

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+51.88	PIc 12+59.58	PIc 15+10.31	PIc 16+01.11	PIc 17+40.28
Δc = 05°56'24.8" (RT)	Δc = 68°25'46.3" (LT)	Δc = 77°02'34.6" (RT)	Δc = 30°30'49.6" (LT)	Δc = 27°35'09.5" (LT)
D = 05°43'46.5"	D = 70°44'07.9"	D = 70°44'07.9"	D = 33°42'12.2"	D = 14°48'18.4"
Lc = 103.68	Lc = 96.74	Lc = 108.92	Lc = 90.54	Lc = 186.33
Tc = 51.88	Tc = 55.08	Tc = 64.48	Tc = 46.37	Tc = 95.01
R = 1,000	R = 81	R = 81	R = 170	R = 387
	SE = NC	SE = NC	SE =NC	



NAD 83
NA 2011

DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)

-L- STA 13+12 TO STA 13+24 LT, 7 TONS RR, 20 SY GEO
-L- STA 13+37 TO STA 13+46 RT, 3 TONS RR, 8 SY GEO
-L- STA 14+00 TO STA 14+11 LT, 4 TON RR, 15 SY GEO
-L- STA 14+21 TO STA 14+31 RT, 4 TON RR, 15 SY GEO

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)

-L- STA. 13+38 TO STA.13+58 RT
-L- STA. 14+29 TO STA. 14+55 RT

DETAIL 4C
SPECIAL "V" DITCH
(Not to Scale)

min D=1.0 ft

-L- STA 14+32 TO 16+54 RT
-L- STA 12+36 TO 12+94 LT
-L- STA 14+27 TO 14+60 LT
-L- STA 15+80 TO 17+62 LT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)

Type of Liner=30 TONS CL B Rip-Rap, Keyed-In; 45 SY GEO

FROM -L- STA. 12+80 TO STA. 13+20 RT

DETAIL 4D
STANDARD "V" DITCH
(Not to Scale)

min D=1.0 ft
d=0.5 ft

-L- STA 14+26 TO 14+32 RT, 3 CY DDE
-L- STA 14+04 TO 14+27 LT, 18 CY DDE
-L- STA 12+94 TO 13+18 LT, 18 CY DDE

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

Type of Liner=10 TONS CL B Rip-Rap, Keyed-In; 18 SY GEO

FROM -L- STA. 13+20 TO STA. 13+44 RT, 18 CY DDE

NOTE:
FOR SHOULDER BERM GUTTER AND TRANSITION FROM SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER STATIONING (SEE TYPICAL SECTIONS, SHEET 2A-1)

ALL DRIVEWAY RADII ARE 15' UNLESS OTHERWISE NOTED.
ALL PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
ALL STRUCTURE ANCHOR UNITS ARE TYPE III UNLESS OTHERWISE NOTED.
ALL GUARDRAIL END TREATMENTS ARE TYPE TL-2 UNLESS OTHERWISE NOTED.
ALL DRAINAGE STRUCTURES ARE 2GI-A UNLESS OTHERWISE NOTED.
ALL PIPES ARE 15" RCP CL IV UNLESS OTHERWISE NOTED.

PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET 05

HB-0060
4RD1 | 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B PRIDGEN
10/16/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM R JERNIGAN JR
10/15/2026

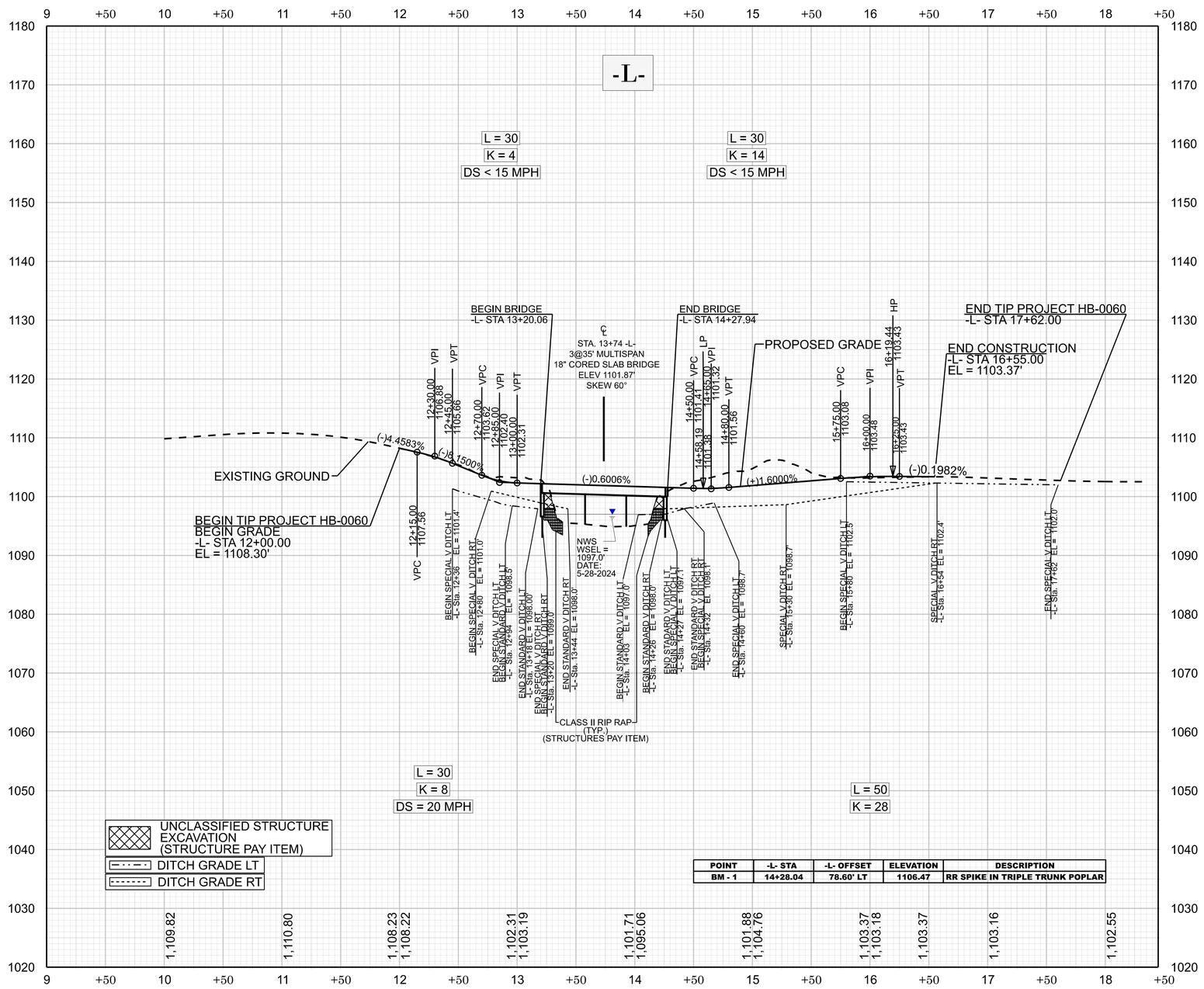
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PREPARED BY

GFT
GFT Infrastructure, Inc.
4601 Six Forks Road, Suite 360
Raleigh, NC 27609
919-420-7660
NC Lic. No. P-0270

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11/14/23



HYDRAULIC DATA

DESIGN DISCHARGE	= 2000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= <2 YRS.
DESIGN HIGH WATER ELEVATION	= 1101.4'
DRAINAGE AREA	= 63.8 SQ. MI.
BASIC DISCHARGE (Q100)	= 11100 C.F.S.
BASIC HIGH WATER ELEVATION	= 1108.74'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 2100 C.F.S.
FREQUENCY OF OVERRTOPPING FLOOD	= <2 YRS.
OVERTOPPING FLOOD ELEVATION	= 1101.39'

** OVERTOPPING OCCURS AT RDY LOW POINT -L- 14+58 +/-*

WS EL. Taken @ River Station 108787

FOR -L- PLAN, SEE SHEET 04

HB-0060
4RD1 | 05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B PRIDGEN

Signature: Angela B Pridgen 8/28/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K JERNIGAN JR

Docusigned by: 8/28/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GFT
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4601 Six Forks Road, Suite 360
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09/08/99

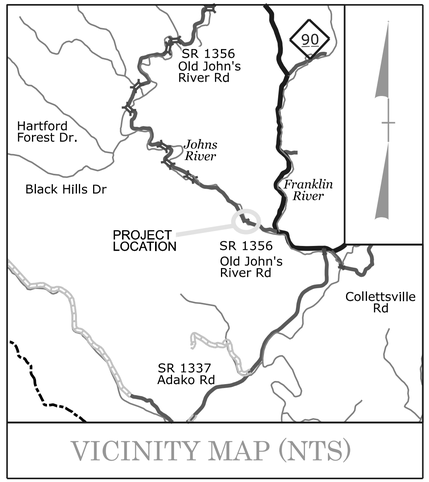
TIP PROJECT: HB-0060

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0060	RW01	5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

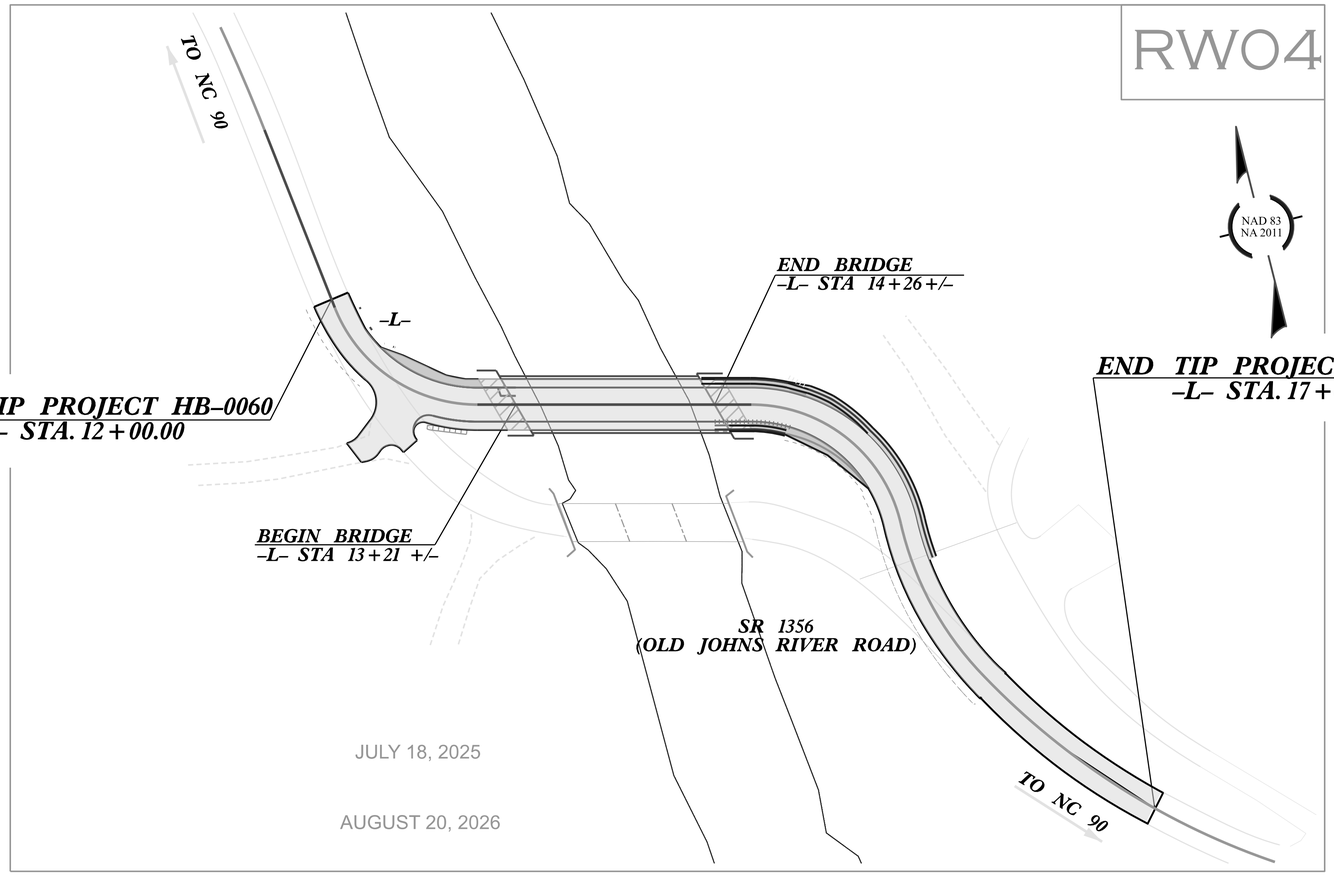
CALDWELL COUNTY



VICINITY MAP (NTS)

ROW ACQUISITION PLAN SET





JULY 18, 2025

AUGUST 20, 2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

40' 20' 0' 40' 80'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT 317-2
WITH NAD83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 805413.4099 EASTING: 1203814.0741
ELEVATION: 1105.00
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989542
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

TGS ENGINEERS
201 WEST MARION STREET
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2025

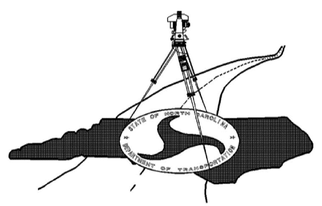
LETTING DATE: AUGUST 20, 2026

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

Signed by: Matthew Cornwell EBD36F11473E475... 7/31/2025

SIGNATURE: *DATE:*

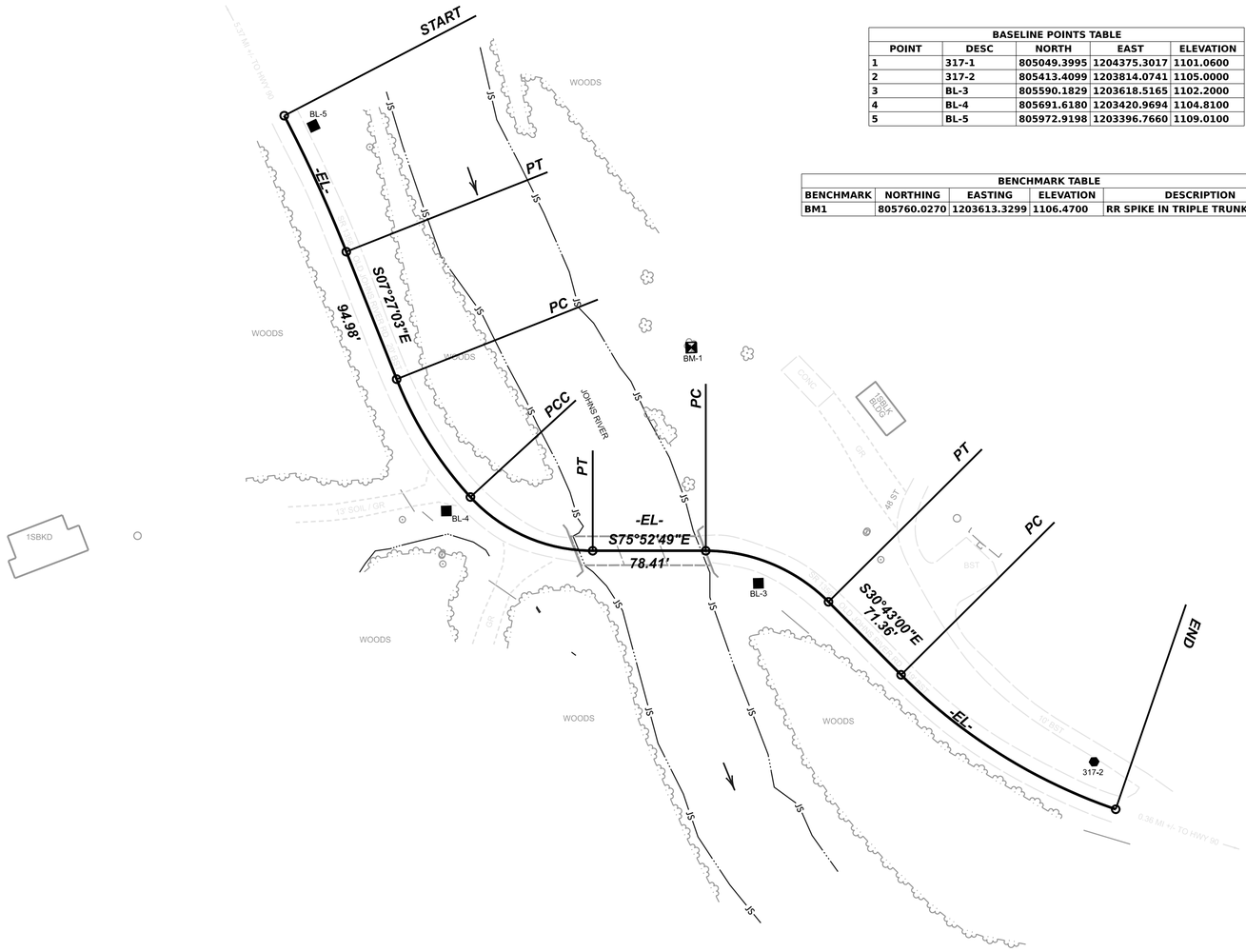


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5/26/20

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	317-1	805049.3995	1204375.3017	1101.0600
2	317-2	805413.4099	1203814.0741	1105.0000
3	BL-3	805590.1829	1203618.5165	1102.2000
4	BL-4	805691.6180	1203420.9694	1104.8100
5	BL-5	805972.9198	1203396.7660	1109.0100

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	805760.0270	1203613.3299	1106.4700	RR SPIKE IN TRIPLE TRUNK POPLAR

NC GRID
NAD 83 NA 2011

50 25 0 50 100
PLANS 1"=50'

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	805984.6836	1203378.8128							
CURVE					05°56'24.8" Right	05°43'46.5"	103.68	51.88	1000.00
PT	805882.7629	1203397.5572							
LINE			S07°27'02.97"E	94.9784					
PC	805788.5865	1203409.8735							
CURVE					20°57'30.9" Left	21°37'15.8"	96.94	49.02	265.00
PCC	805696.8717	1203439.5498							
CURVE					47°28'15.4" Left	49°49'20.7"	95.28	50.57	115.00
PT	805640.0595	1203512.6465							
LINE			S75°52'49.23"E	78.4101					
PC	805620.9315	1203588.6877							
CURVE					45°09'48.8" Right	47°44'47.3"	94.59	49.91	120.00
PT	805565.8523	1203662.5783							
LINE			S30°43'00.48"E	71.3567					
PC	805504.5068	1203699.0269							
CURVE					26°13'13.3" Left	14°48'18.4"	177.10	90.13	387.00

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE PROJECT CONTROL WAS VERIFIED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: ***AA***
TYPE OF GPS FIELD PROCEDURE: RTN
DATES OF SURVEY: 4/2022
DATUM/EPOCH: NAD83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: 317-2
NORTHING: 805413.4099
EASTING: 1203814.0741
COMBINED GRID FACTOR: 0.99989542
GEOID MODEL: GEOID18
UNITS: US 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 DECEMEBER 2023, 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 2/22/2024

DocuSigned by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

HB-0060
R/W | D2C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2018 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0060
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
704-476-0003

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	805984.6836	1203378.8128	S10°25'15.4"E	103.63	05°56'24.8"	05°43'46.5"	103.68	51.88	1000.00		
PT	11+03.68	805882.7629	1203397.5572	S07°27'03.0"E	100.83							
PC	12+04.51	805782.7838	1203410.6324	S41°39'56.1"E	91.09	68°25'46.3"	70°44'07.9"	96.74	55.08	81.00		
PT	13+01.25	805714.7346	1203471.1887	S75°52'49.2"E	144.58							
PC	14+45.83	805679.4651	1203611.3991	S37°21'31.9"E	100.89	77°02'34.6"	70°44'07.9"	108.92	64.48	81.00		
PRC	15+54.74	805599.2687	1203672.6227	S14°05'39.4"E	89.47	30°30'49.6"	33°42'12.2"	90.54	46.37	170.00		
PCC	16+45.28	805512.4921	1203694.4102	S43°08'39.0"E	184.53	27°35'09.5"	14°48'18.4"	186.33	95.01	387.00		
END	18+31.61	805377.8503	1203820.6006									

I, MATTHEW T. CORNWELL, 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 7/31/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

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.

HB-0060

R/W | 020-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0060

County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

TGS ENGINEERS

5/26/20

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

I , MATTHEW T. CORNWELL, 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 7/17/2025 TO 7/21/2025, 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 7/31/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+19.21	-29.6437	805777.5470	1203442.0638
13+01.25	-55.0000	805768.0722	1203484.6089
14+45.83	-55.0000	805732.8015	1203624.8240
14+45.83	-30.0000	805708.5571	1203618.7239
15+54.74	-30.0000	805598.6600	1203702.6165
16+45.28	-30.0000	805527.1969	1203720.5592
16+54.50	-30.0000	805519.8306	1203724.8180

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+95.00	74.5281	805645.8296	1203441.4998
13+35.00	105.0000	805604.6728	1203478.3076
15+85.00	46.4344	805561.8298	1203628.8388

NOTES:

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

HB-0060
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

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2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0060
County: Caldwell

PREPARED FOR

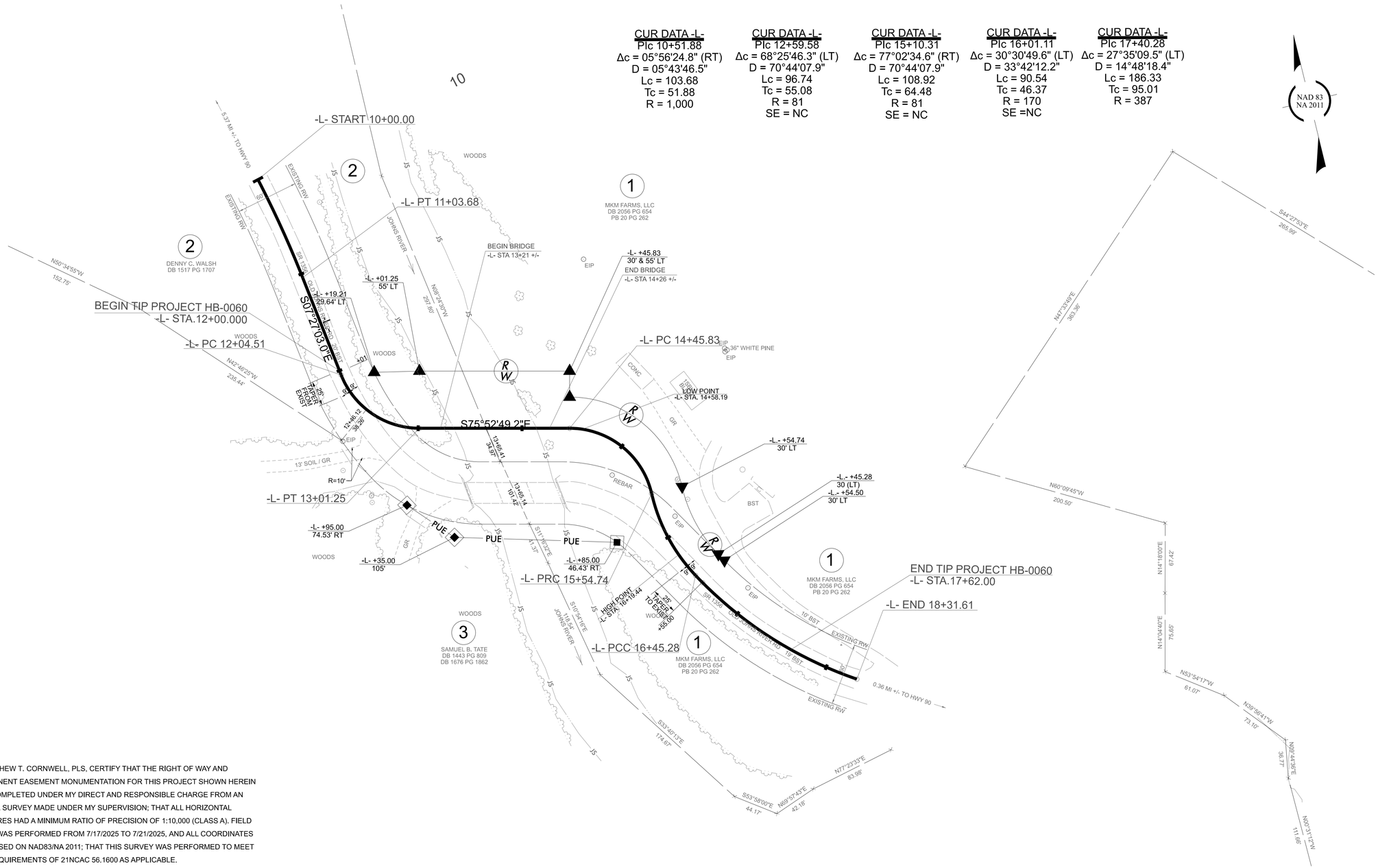
LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

TGS ENGINEERS

5/26/20



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THIS 7/31/2025

Signed by:
Matthew Cornwell
EBD36F11473E475...

PROFESSIONAL LAND SURVEYOR L-4775

NOTES:

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

HB-0060
R/W | 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

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2024 STANDARD SPECIFICATIONS

TIP PROJECT: HB-0060
County: Caldwell

PREPARED FOR

LOCATION AND SURVEYS UNIT

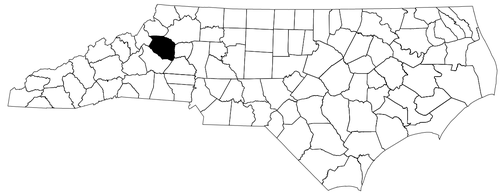
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SUITE 200
SHELBY, NC 28150
704-476-0003

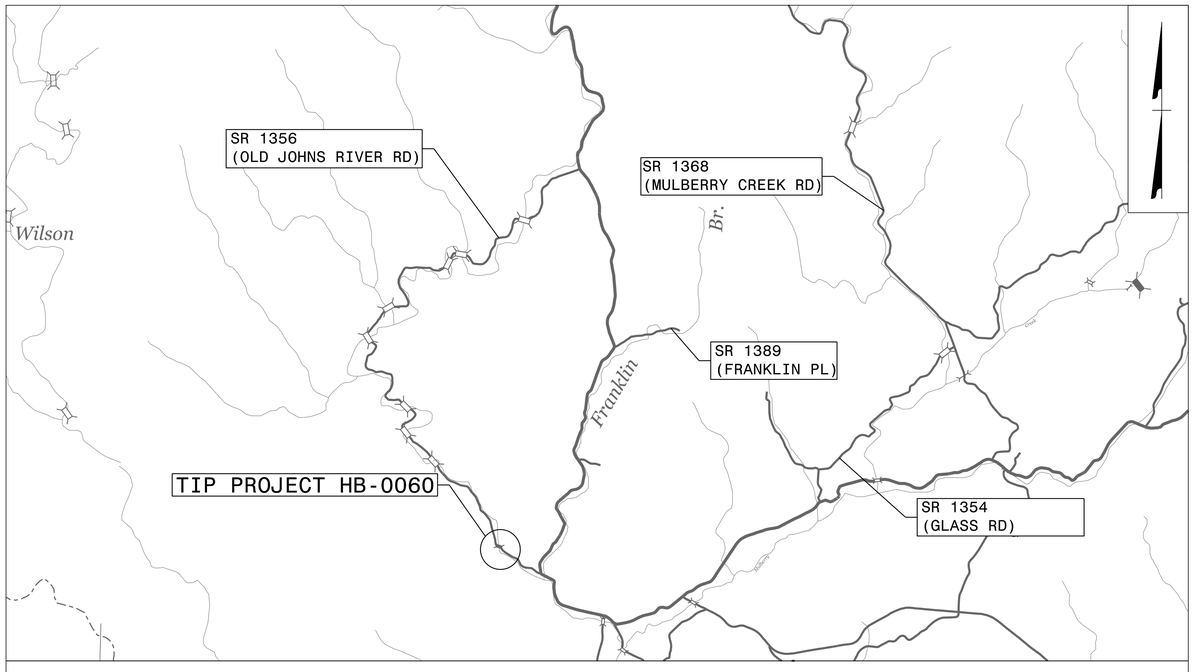
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CALDWELL COUNTY



LOCATION: REPLACEMENT OF BRIDGE NO. 317 ON SR 1356 OVER JOHNS RIVER



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-2	TRANSPORTATION OPERATIONS PLAN
TMP-3	PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

TIP PROJECT: HB-0060



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

PLANS PREPARED BY:

JERRY P. PAGE, PE
PROJECT ENGINEER

JOHN BAUMAN, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

SUZANA MATTA, PE
NCDOT PROJECT ENGINEER

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

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DATE: 10/8/2026

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PROJ. REFERENCE NO.	SHEET NO.
HB-0060	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES

LEGEND

GENERAL

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

SIGNALS

- PROPOSED
- TEMPORARY
- PORTABLE
- DS

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
P1	PAINT WHITE EDGELINE (4")
P5	PAINT 2 FT. - 6 FT./SP WHITE MINISKIP (4")
P13	PAINT DOUBLE YELLOW CENTER (4")

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ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
HB-0060	TMP-2

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 ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

TRAFFIC CONTROL DEVICES

K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (55 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.

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- SR 1356	PAINT	N/A

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

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

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

MISCELLANEOUS

Q) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AS DIRECTED BY THE ENGINEER.

R) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE PAVEMENT ENDS SIGNS (W8-3) (500 FT) AND (1000 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES
- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- WEEKEND WORK

WORK ZONE SAFETY & MOBILITY STRATEGIES
- AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

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TRANSPORTATION OPERATIONS PLAN

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PROJ. REFERENCE NO.	SHEET NO.
HB-0060	TMP-3

PHASING

PHASE I

STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEET 3 OF 3 PLACE ADVANCE WARNING SIGNS ON SR 1356(OLD JOHNS RIVER RD).

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-4 AND BEGIN CONSTRUCTION, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- COMPLETE CONSTRUCTION AS SHOWN ON TMP-4, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- USE WEDGING TO CREATE TIE-IN FROM THE EXISTING PATTERN TO THE PHASE II PATTERN.
- PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-5
- PLACE TEMPORARY MARKINGS AS SHOWN ON TMP-5
- SHIFT TRAFFIC INTO THE PHASE II PATTERN.

PHASE II

STEP 1: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, BEGIN CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 2: USING RSD 1101.02 SHEET 1 OF 19 AND RSD 1101.04 SHEET 1 OF 2, COMPLETE CONSTRUCTION AS SHOWN ON TMP-5, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 3: USING 1101.02 SHEETS 1 AND 14 OF 19, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLAN AND REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES.

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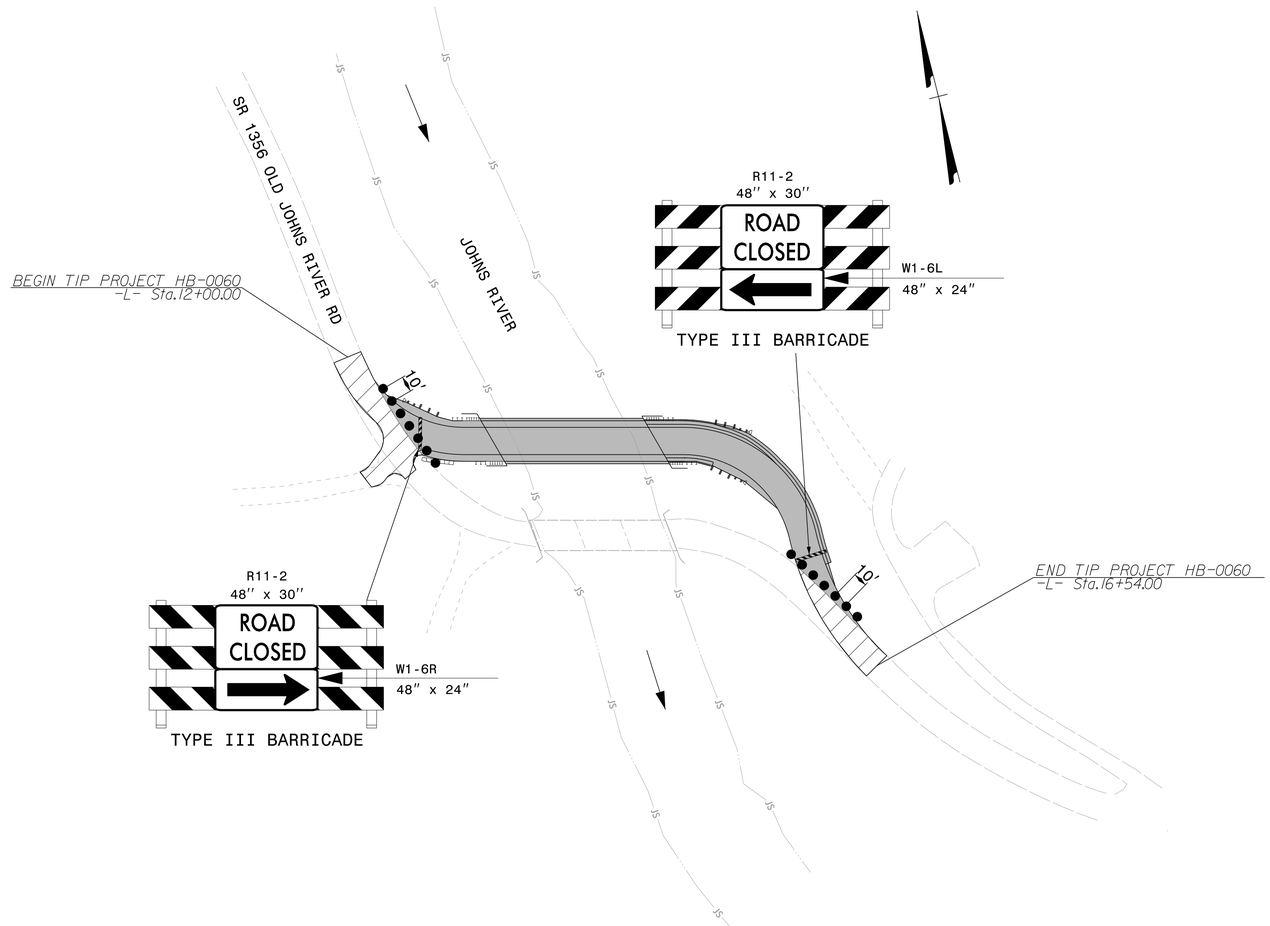
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PROJ. REFERENCE NO.	SHEET NO.
HB-0060	TMP-4



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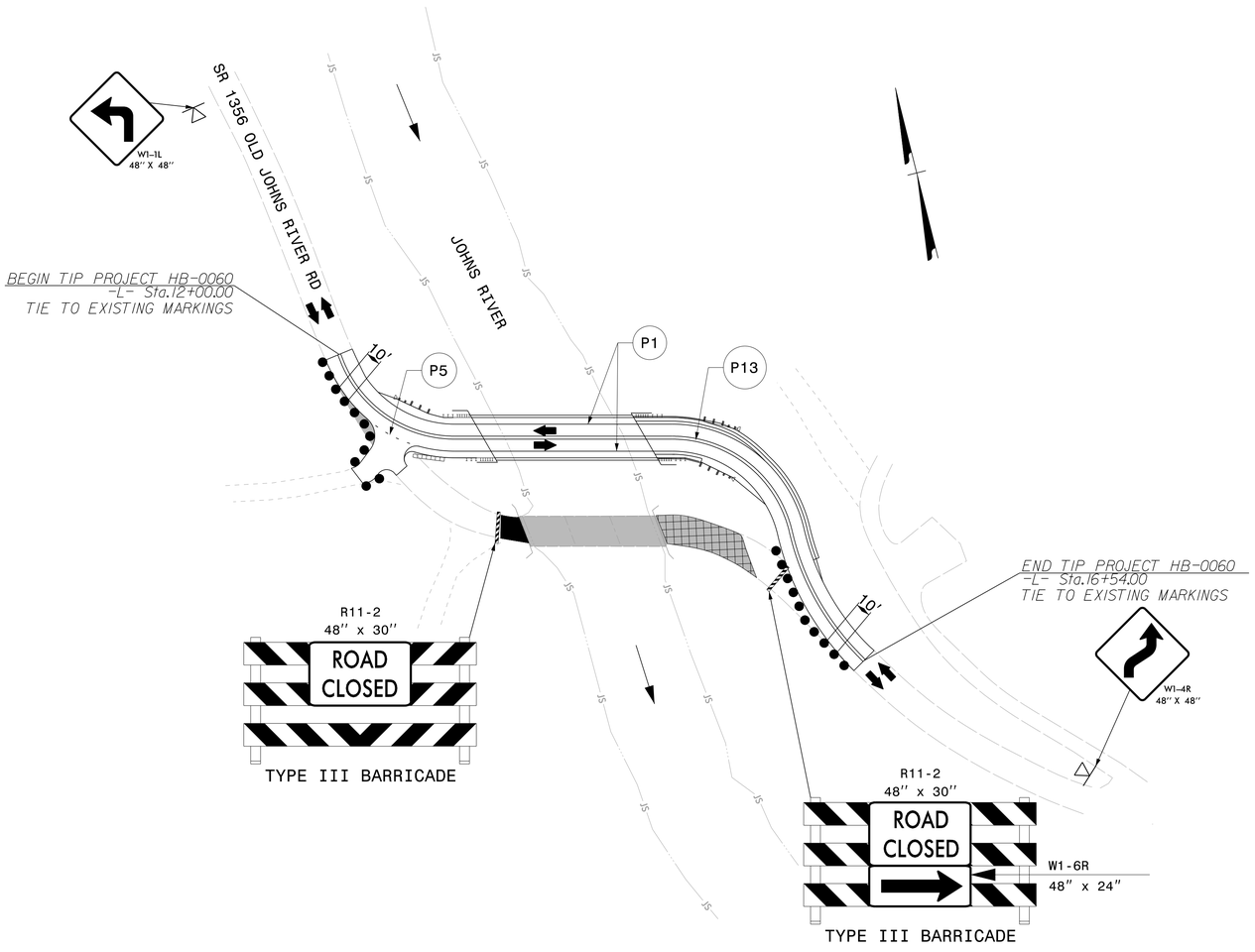
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PHASE I DETAIL

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PROJ. REFERENCE NO.	SHEET NO.
HB-0060	TMP-5



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PHASE II DETAIL

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11/15/23

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
CALDWELL COUNTY

LOCATION: BRIDGE 317 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN INDEX, GENERAL NOTES, ROADWAY STANDARD DRAWINGS, AND PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKINGS - DETAIL IN LIEU OF STANDARD FOR ROADWAY STANDARD DRAWING 1205.01 SHEET 1 OF 2
PMP-3	PAVEMENT MARKING DETAILS

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
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 ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
(-L-) SR 1356 OLD JOHNS RIVER ROAD	INTEGRATED MULTIPOLYMER
(-L-) SR 1356 OLD JOHNS RIVER ROAD (BRIDGE DECK)	INTEGRATED MULTIPOLYMER

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

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

PAVEMENT MARKING AND MARKER SCHEDULE

SYMBOL	DESCRIPTION
IM1	INTEGRATED MULTIPOLYMER WHITE EDGELINE (4", 90 MIL)
IM13	INTEGRATED MULTIPOLYMER YELLOW DOUBLE CENTER (4", 90 MIL)

PLAN PREPARED BY:

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JOHN BAUMAN, PE — PROJECT ENGINEER
JODY L. COLE — PROJECT DESIGN ENGINEER

HB-0060
PMP | 01

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY



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TIP PROJECT: HB-0060

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HB-0060	PMP-2

CONTINUOUS LINES

EDGE LINE
YELLOW OR WHITE — 4″/6″

LANE LINE
WHITE — 4″/6″

CENTER LINE
YELLOW — 4″/6″

GORE LINE
WHITE — 8″/12″

DIAGONAL LINE
YELLOW OR WHITE — 12″ 45 MPH OR HIGHER
8″ LESS THAN 45 MPH
4″-6″ FOR BICYCLE FACILITIES

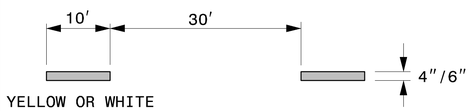
CROSSWALK LINE
WHITE — 8″ TRANSVERSE
24″ LONGITUDINAL

RxR LINE
WHITE — 16″

STOP OR TRANSVERSE BAR
WHITE — 24″

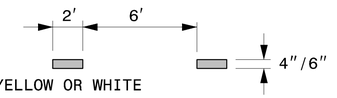
10′-30′/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10′-30′/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



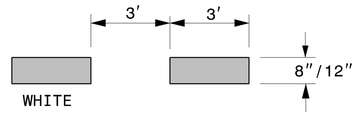
2′-6′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2′-6′/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND BICYCLE LANE EXTENSIONS.



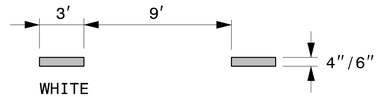
3′-3′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-3′/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



3′-9′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-9′/SP MINI-SKIPS FOR MINI-SKIP LANE LINES, LINE EXTENSIONS THROUGH TAPERS, AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



GENERAL NOTES:

1- USE 6″ LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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RALEIGH, N.C.

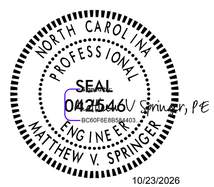
ROADWAY DETAIL DRAWING FOR

PAVEMENT MARKINGS

LINE TYPES AND OFFSETS

SHEET 1 OF 2

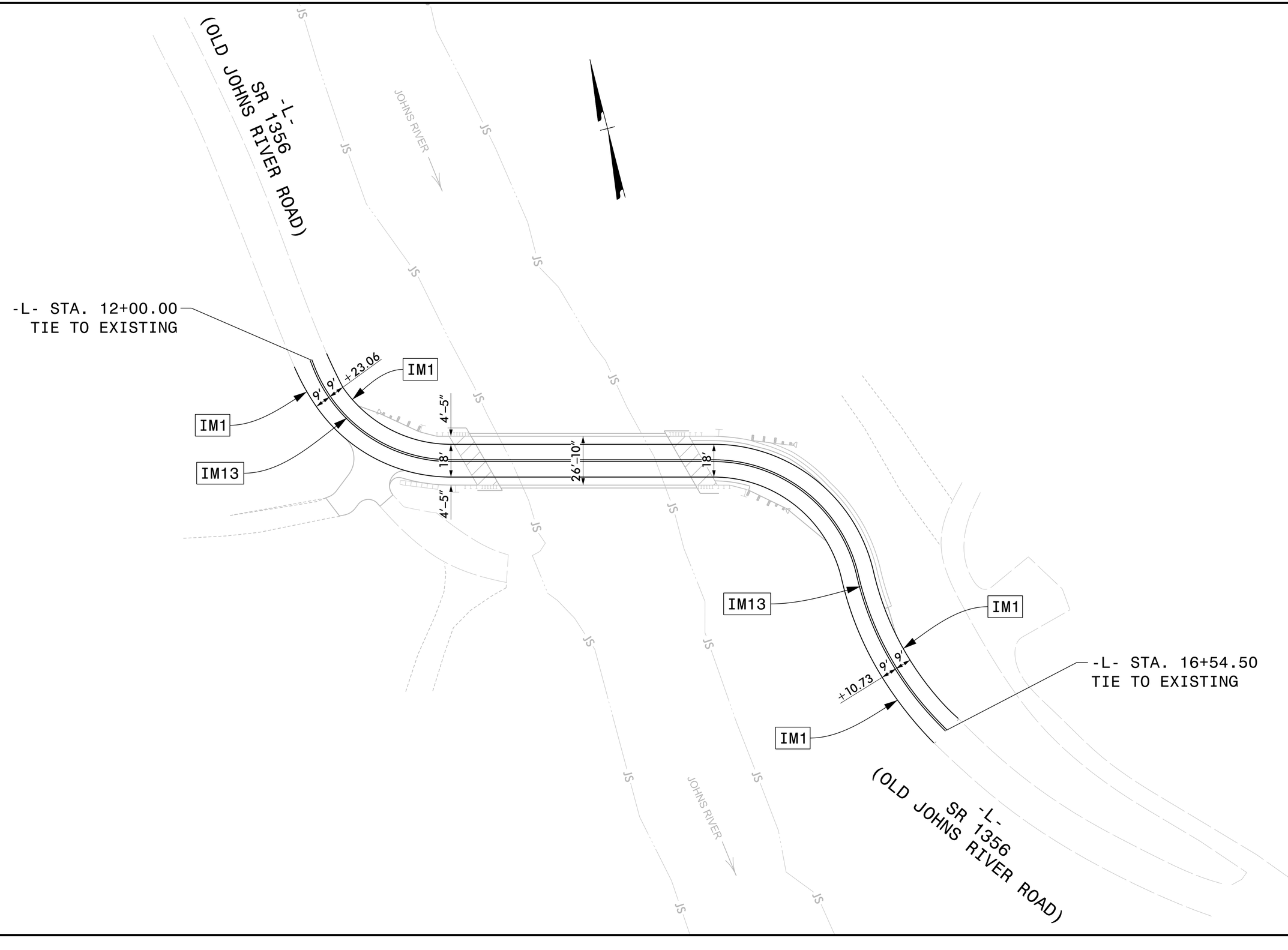
1205D01



CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



HB-0060

PMP | 03

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052428 JOHN BAUMANN
Digitally signed by JOHN BAUMANN
10/8/2026

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PREPARED BY

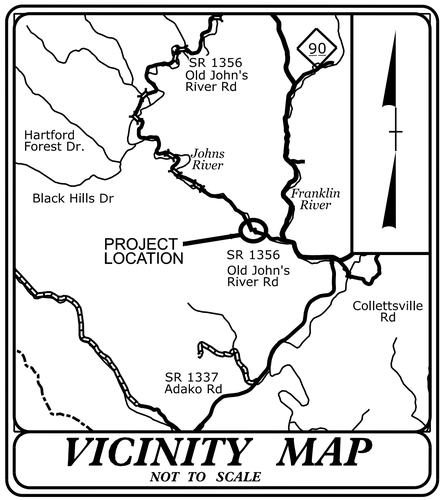
GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919.851.1982
NC Lic. No. P-0210

TIP PROJECT: HB-0060

PROJECT: HB-0060

TIP



VICINITY MAP

NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

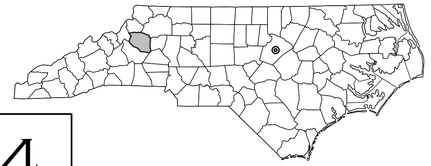
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

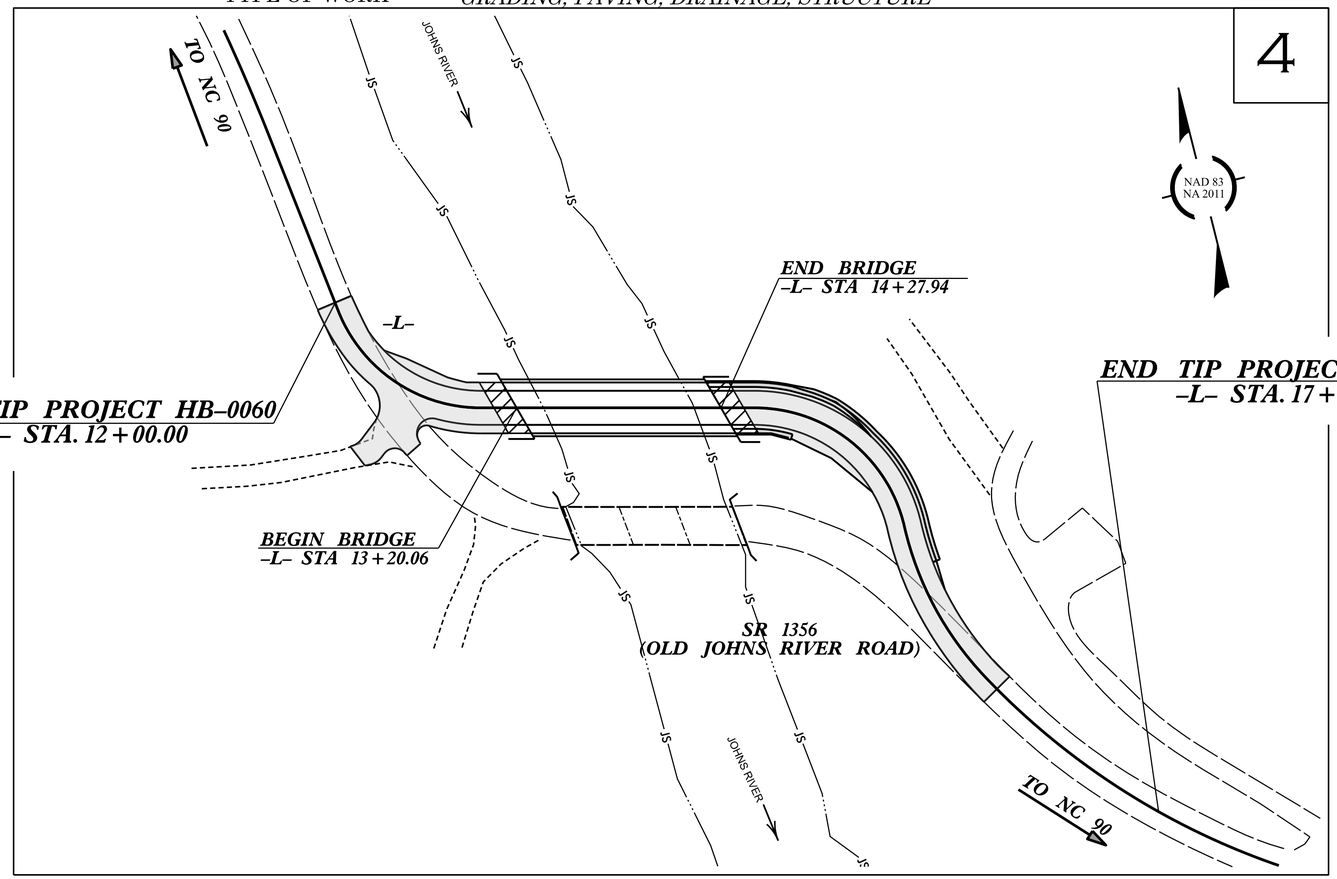
CALDWELL COUNTY

LOCATION: *BRIDGE 317 ON SR 1356 (OLD JOHNS RIVER ROAD) OVER JOHNS RIVER*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0060	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	





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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE

50 25 0 50 100

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.

Prepared In the Office of:

GFT

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

Designed by:

Hannah Arey — *NAME*

4651 — *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.
HB-0060	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.
HB-0060	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCH LINE MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+80	13+20	LT	15
4	-L-	14+08	14+70	LT	45
4	-L-	12+00	12+40	RT	30
4	-L-	15+30	16+24	RT	25
				SUBTOTAL	115
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2000
				TOTAL	2115
				SAY	2150

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

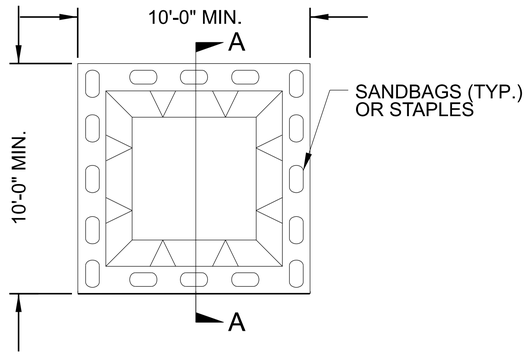
PROJECT REFERENCE NO.	SHEET NO.
HB-0060	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

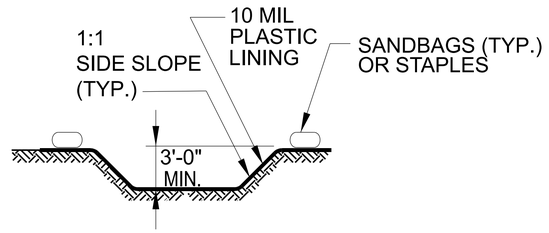
SOIL STABILIZATION TIMEFRAMES

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

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



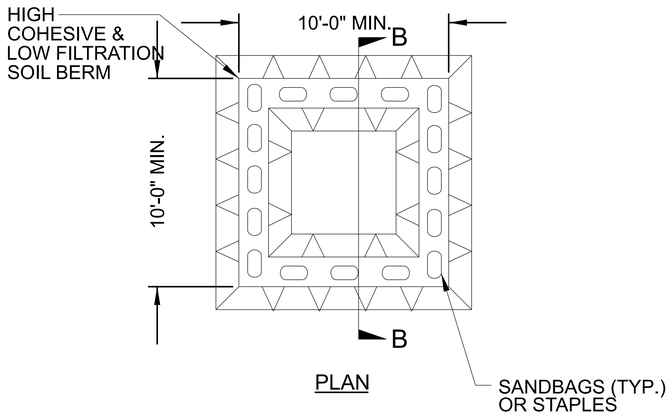
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

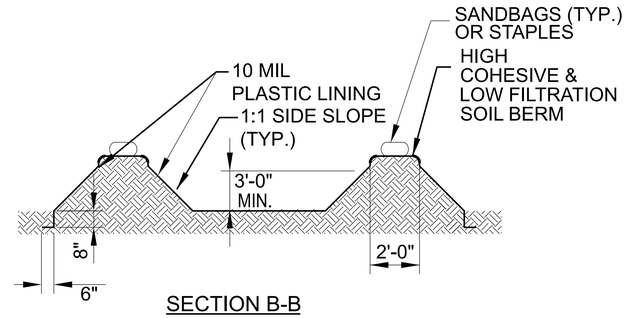
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

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 CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

HB-0060

EC-4/CONST.4

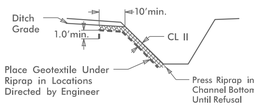
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

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

DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner=18 TONS,CL II Rip-Rap, Keyed-In; 58 SY GEO.

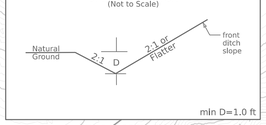
-L- STA 13+12 TO STA 13+24 LT
-L- STA 13+37 TO STA 13+46 RT
-L- STA 14+00 TO STA 14+11 LT
-L- STA 14+21 TO STA 14+31 RT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



-L- STA. 13+38 TO STA.13+58 RT
-L- STA. 14+29 TO STA. 14+55 RT

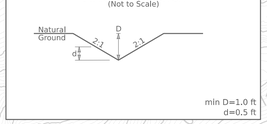
DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



min D=1.0 ft

-L- STA 14+32 TO 16+54 RT
-L- STA 12+36 TO 12+94 LT
-L- STA 14+27 TO 14+60 LT
-L- STA 15+80 TO 17+62 LT

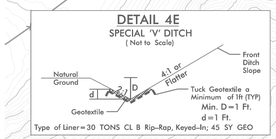
DETAIL 4D
STANDARD 'V' DITCH
(Not to Scale)



min D=1.0 ft
d=0.5 ft

-L- STA 14+26 TO 14+32 RT
-L- STA 14+04 TO 14+27 RT
-L- STA 12+94 TO 13+18 LT

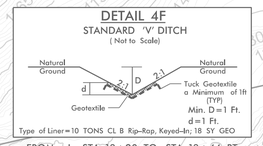
DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=1 Ft.
d=1 Ft.
Type of Liner=30 TONS CL B Rip-Rap, Keyed-In; 45 SY GEO

FROM -L- STA. 12+80 TO STA. 13+20 RT

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



Min. D=1 Ft.
d=1 Ft.
Type of Liner=10 TONS CL B Rip-Rap, Keyed-In; 18 SY GEO

FROM -L- STA. 13+20 TO STA. 13+44 RT

BEGIN TIP PROJECT HB-0060
-L- STA.12+00.000

NC GRID
NAD 83 NA 2011

JOHNS RIVER

EXISTING RW

STREAM BANK STABILIZATION SEE DETAIL 4A

SPECIAL V DITCH SEE DETAIL 4C

STD V DITCH SEE DETAIL 4D

STD V DITCH SEE DETAIL 4D

FLOATING TURBIDITY CURTAIN

STA. 14+13

SPECIAL V DITCH SEE DETAIL 4C

-L- +78.00
50 (LT)

-L- +08.00
43' (LT)

-L- +51.00
44' LT

SPECIAL V DITCH SEE DETAIL 4C

SPECIAL V DITCH SEE DETAIL 4E

STA. 14+38

STREAM BANK STABILIZATION SEE DETAIL 4A

INV=+101.0

STA. 13+35

18" HDPE

STD V DITCH SEE DETAIL 4F

REMOVE EXISTING BRIDGE AND ABUTMENTS SEE DETAIL 4B

PDE

SPECIAL V DITCH SEE DETAIL 4C

END TIP PROJECT HB-0060
-L- STA.17+62.00

EXISTING RW

317-2

0.36 MI +/- TO HWY 90

18" CMP

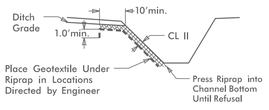
EXISTING RW

1SBKD

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

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE
-L- STA. 12+80 - 13+20 LT,
-L- STA. 14+08 - 14+70 LT,
-L- STA. 12+00 - 12+40 RT,
-L- STA. 15+30 - 16+24 RT

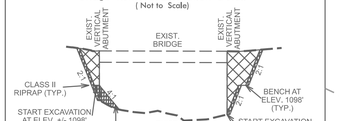
DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner=18 TONS,CL II Rip-Rap, Keyed-In; 58 SY GEO.

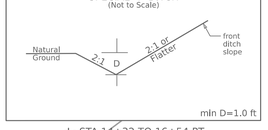
-L- STA 13+12 TO STA 13+24 LT
-L- STA 13+37 TO STA 13+46 RT
-L- STA 14+00 TO STA 14+11 LT
-L- STA 14+21 TO STA 14+31 RT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)



-L- STA. 13+38 TO STA.13+58 RT
-L- STA. 14+29 TO STA. 14+55 RT

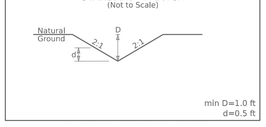
DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)



min D=1.0 ft

-L- STA 14+32 TO 16+54 RT
-L- STA 12+36 TO 12+94 LT
-L- STA 14+27 TO 14+60 LT
-L- STA 15+80 TO 17+62 LT

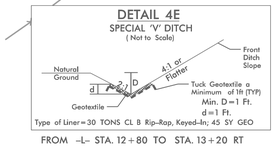
DETAIL 4D
STANDARD 'V' DITCH
(Not to Scale)



min D=1.0 ft
d=0.5 ft

-L- STA 14+26 TO 14+32 RT
-L- STA 14+04 TO 14+27 LT
-L- STA 12+94 TO 13+18 LT

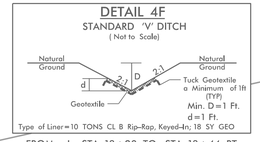
DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)



Type of Liner=30 TONS CL B Rip-Rap, Keyed-In; 45 SY GEO

FROM -L- STA. 12+80 TO STA. 13+20 RT

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



Type of Liner=10 TONS CL B Rip-Rap, Keyed-In; 18 SY GEO

FROM -L- STA. 13+20 TO STA. 13+44 RT

HB-0060
EC-5/CONST.4

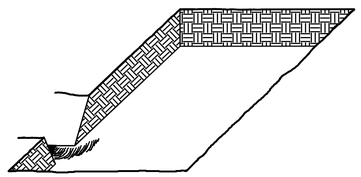
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0060	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

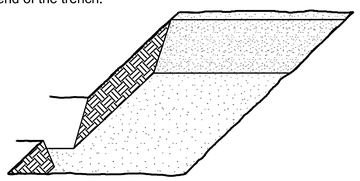
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

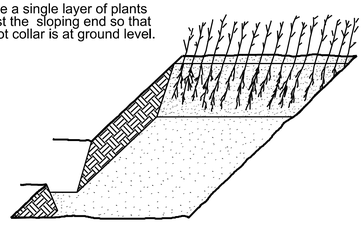
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



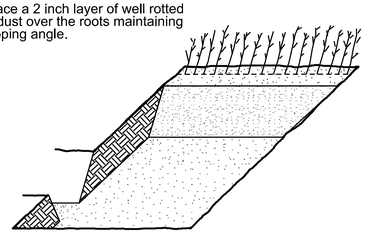
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

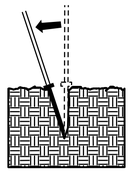


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

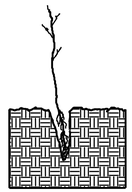


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

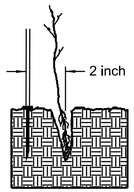
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



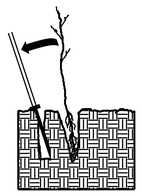
1. Insert planting bar as shown and pull handle toward planter.



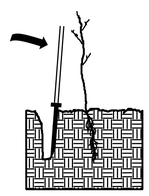
2. Remove planting bar and place seedling at correct depth.



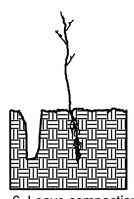
3. Insert planting bar 2 inches toward planter from seedling.



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% CORNUS AMOMUM	SILKY DOGWOOD	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR
25% SALIX NIGRA	BLACK WILLOW	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

09/08/99

TIP PROJECT: HB-0060

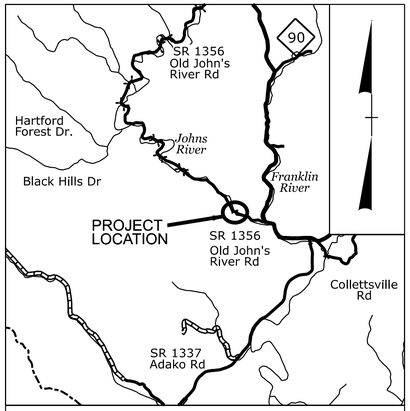
CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
CALDWELL COUNTY

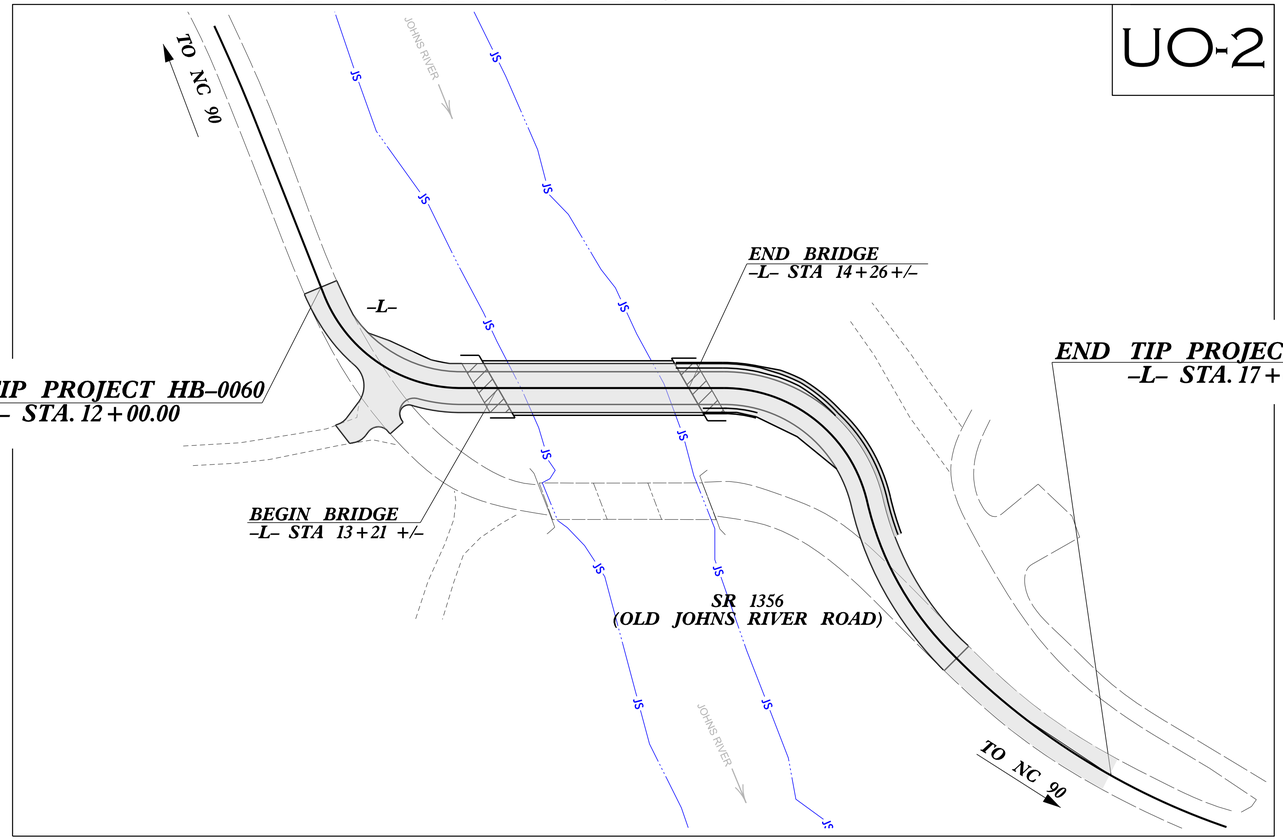
T.I.P. NO.	SHEET NO.
HB–0060	UO–1

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.



VICINITY MAP (NTS)

LOCATION: BRIDGE #317 OVER JOHNS RIVER ON SR 1356 (OLD JOHNS RIVER ROAD)
TYPE OF WORK: POWER & COMMUNICATIONS





GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) POWER – BLUE RIDGE ELECTRIC

(B) COMMUNICATIONS – AT&T

(C) COMMUNICATIONS – CHARTER SPECTRUM

PREPARED IN THE OFFICE OF

TELICS

TELICS
119 BROOKSTOWN AVE.
SUITE 305
WINSTON SALEM, NC 27101
(336) 705 – 8844

CORY WOOD — UTILITY PROJECT MANAGER
CORY WOOD — UTILITY COORDINATOR

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

BRANDON GREER — DIVISION UTILITIES ENGINEER

02/02/22

UTILITIES BY OTHERS

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+51.88	PIc 12+59.58	PIc 15+10.31	PIc 16+01.11	PIc 17+40.28
Δc = 05°56'24.8" (RT)	Δc = 68°25'46.3" (LT)	Δc = 77°02'34.6" (RT)	Δc = 30°30'49.6" (LT)	Δc = 27°35'09.5" (LT)
D = 05°43'46.5"	D = 70°44'07.9"	D = 70°44'07.9"	D = 33°42'12.2"	D = 14°48'18.4"
Lc = 103.68	Lc = 96.74	Lc = 108.92	Lc = 90.54	Lc = 186.33
Tc = 51.88	Tc = 55.08	Tc = 64.48	Tc = 46.37	Tc = 95.01
R = 1,000	R = 81	R = 81	R = 170	R = 387
	SE = NC	SE = NC	SE =NC	

-L- POB 10+00.00

-L- PT 11+03.68

-L- PT 13+01.25

-L- PRC 15+54.74

-L- PCC 16+45.28

-L- POE 18+31.61

BEGIN TIP PROJECT HB-0060
-L- STA.12+00.000

-L- PC 12+04.51

-L- PC 14+45.83

END TIP PROJECT HB-0060
-L- STA.17+62.00

-L- POE 18+31.61

S07°27'03.0"E

S75°52'49.2"E

S44°27'53"E 265.98'

N47°37'40"E 365.36'

N60°09'45"W 200.50'

N14°18'00"E 67.42'

N14°04'40"E 75.65'

N53°54'17"W 61.07'

N33°56'41"W 73.10'

N09°44'39"E 36.77'

N09°21'10"W 111.66'

S33°40'12"E 174.87'

S53°58'00"E 44.17'

N69°57'43"E 42.16'

N77°23'33"E 63.98'

N80°34'55"W 152.75'

N42°46'25"W 238.44'

S37°41'11"E 0.36 MI +/- TO HWY 90

NAD 83
NA 2011

DETAIL 4A
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade
10' min.
1.0' min.
CL II
Place Geotextile Under Riprap in Locations Directed by Engineer
SAMUEL B. TATE DB 1443 PG 809 DB 1676 PG 1862
Place Riprap Into Channel Bottom Until Refusal

Type of Liner = 18 TONS,CL II Rip-Rap, Keyed-In; 58 SY GEO.

-L- STA 13+12 TO STA 13+24 LT
-L- STA 13+37 TO STA 13+46 RT
-L- STA 14+00 TO STA 14+11 LT
-L- STA 14+21 TO STA 14+31 RT

DETAIL 4B
Bridge Removal Excavation Detail
(Not to Scale)

EXIST. VERTICAL ABUTMENT
EXIST. BRIDGE
EXIST. VERTICAL ABUTMENT
CLASS II RIPRAP (TYP.)
START EXCAVATION AT ELEV. +/- 1098'
MATCH EXISTING CHANNEL BANK
EXIST. STREAM
BENCH AT ELEV. 1098' (TYP.)
START EXCAVATION AT ELEV. +/- 1094'

-L- STA. 13+38 TO STA.13+58 RT
-L- STA. 14+29 TO STA. 14+55 RT

DETAIL 4C
SPECIAL 'V' DITCH
(Not to Scale)

Natural Ground
2:1
D
2:1 or Flatter
front ditch slope

min D=1.0 ft

-L- STA 14+32 TO 16+54 RT
-L- STA 12+40 TO 12+94 LT
-L- STA 14+27 TO 14+70 LT
-L- STA 15+80 TO 17+60 LT

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

Natural Ground
D
2:1
1:1
d

min D=1.0 ft
d=0.5 ft

-L- STA 14+26 TO 14+32 RT
-L- STA 14+08 TO 14+27 LT
-L- STA 12+94 TO 13+18 LT

DETAIL 4E
SPECIAL 'V' DITCH
(Not to Scale)

Natural Ground
4:1 or Flatter
Front Ditch Slope
2:1
D
d
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1 Ft.
d=1 Ft.
Geotextile

Type of Liner=30 TONS CL B Rip-Rap, Keyed-In; 45 SY GEO

FROM -L- STA. 12+80 TO STA. 13+20 RT

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

Natural Ground
2:1
D
d
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1 Ft.
d=1 Ft.
Geotextile

Type of Liner=10 TONS CL B Rip-Rap, Keyed-In; 18 SY GEO

FROM -L- STA. 13+20 TO STA. 13+40 RT

(STRUCTURES PAY ITEM)
EST = 80 CY EXCAVATION
EST = 360 SY GEOTEXTILE
EST = 320 TONS CLASS II RIP RAP

BEGIN BRIDGE
-L- STA 13+21 +/-

END BRIDGE
-L- STA 14+26 +/-

STREAM BANK STABILIZATION SEE DETAIL 4A

SPECIAL V DITCH SEE DETAIL 4C

STD V DITCH SEE DETAIL 4D

PROP SAG
-L- STA 14+58.19
EL 1101.38

-L- +79.00
62' LT

-L- +45.83
30' & 55' LT

-L- +01.25
55' LT

-L- +19.21
EX. R/W

-L- +45.00
EX. R/W

-L- +54.74
30' LT

-L- +51.00
44' LT

-L- +35.00
105'

-L- +85.00
EX. R/W

AT&T POLE REMOVED

BLUE RIDGE POLE REMOVED

BLUE RIDGE POLE & GUY

BURIED AT&T

AERIAL BLUE RIDGE AND SPECTRUM TO REMAIN

AT&T HAND HOLE

AERIAL BLUE RIDGE AT&T AND SPECTRUM

BLUE RIDGE POLE & GUY

AERIAL BLUE RIDGE AT&T AND SPECTRUM

BLUE RIDGE POLE & GUY

REMOVE EXISTING DRAINAGE APPURTENANCES

STA. 13+35
16" HDPE
INV = 1102.48'

STA. 13+10
INV = 1103.5

STA. 14+38
INV = 1101.0'

INV = 1098.53'
18" RCP

INV = 1099.61'

INV = 1097.00'
18" CMP

317-2

1 MKM FARMS, LLC
DB 2056 PG 654
PB 20 PG 262

2 SAMUEL B. TATE
DB 1443 PG 809
DB 1676 PG 1862

3 MKM FARMS, LLC
DB 2056 PG 654
PB 20 PG 262

DENNY C. WALSH
DB 1517 PG 1707

JOHNS RIVER

WOODS

EXISTING R/W

SR 1336

SR 1338

BL-5

RET.

EIP

BM-1

36" WHITE PINE

24" WD

10' BST

GUY

W/ GUY

W/ POST

CABLE

SPECIAL V DITCH SEE DETAIL 4E

STD V DITCH SEE DETAIL 4D

STD V DITCH SEE DETAIL 4C

SPECIAL V DITCH SEE DETAIL 4C

STREAM BANK STABILIZATION SEE DETAIL 4A

CLASS II RIPRAP 27YDS CL B 7 SY GEO

REBAR

EXISTING R/W

TEL POST

CABLE

0.36 MI +/- TO HWY 90

REVISIONS

HB-0060	
	U0-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

TELTOC
119 BROOKSTOWN AVE
SUITE 305
WINSTON SALEM, NC 27101
PHONE:(336)705-8844

5/26/20

CROSS SECTION INDEX

CROSS SECTION INDEX X-1
CROSS SECTION SUMMARY X-1A

ROADWAY	STATION	TO	STATION	SHEET NO.
-L- SR 1356 (OLD JOHNS RIVER RD)	11+50		18+00	X-2 TO X-9

GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

PROJ. REFERENCE NO.	SHEET NO.
HB-0060	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

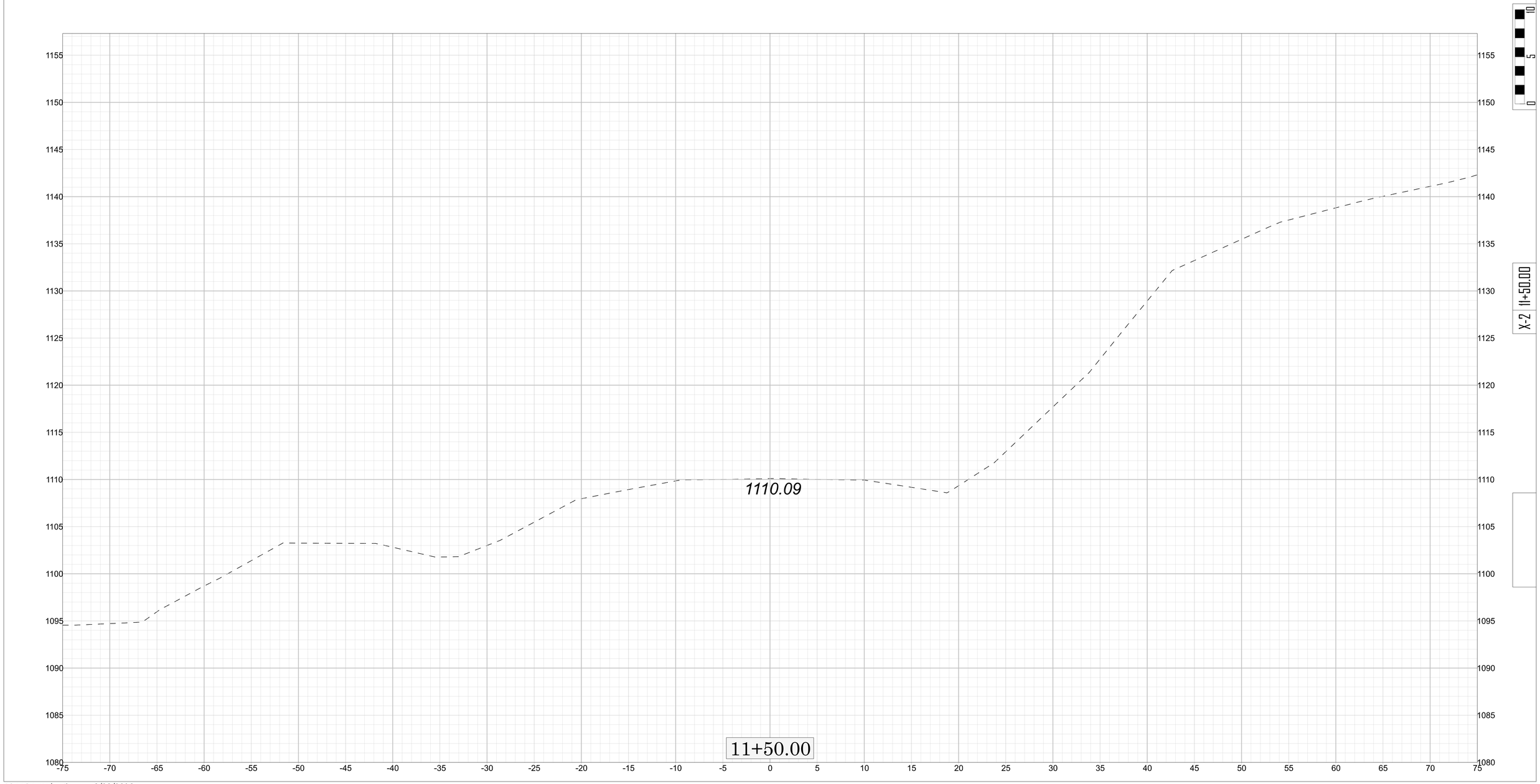
'NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt
12+00.00	0	0															
12+50.00	4	22															
13+00.00	97	20															
13+20.06 (BEGIN BRIDGE)	157	2															
Station L	**Uncl. Exc. (cu. yd.)**	**Embt (cu. yd.)**															
14+27.94 (END BRIDGE)	0	0															
14+50.00	88	4															
15+00.00	455	0															
15+50.00	487	0															
16+00.00	206	0															
16+50.00	40	0															
16+55.00	1	0															
17+00.00	1	0															
17+62.00	1	0															

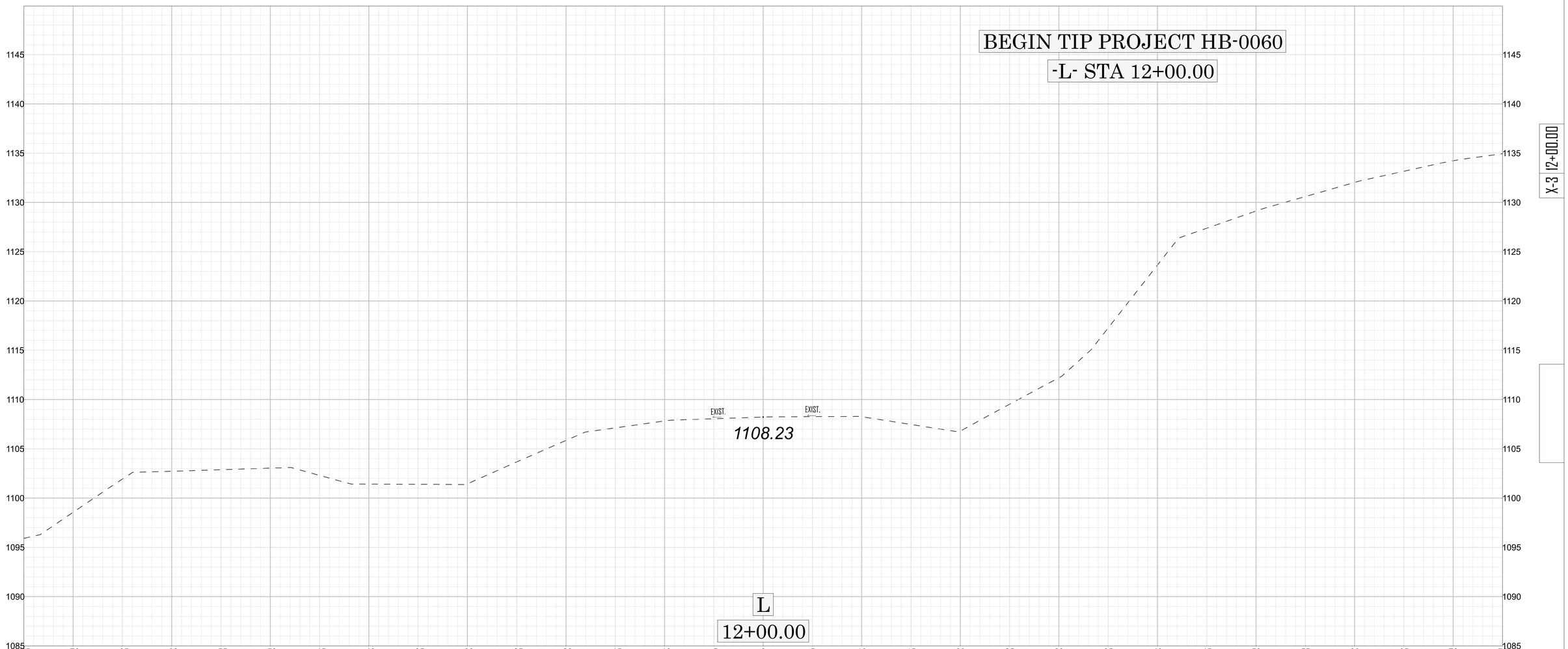
Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

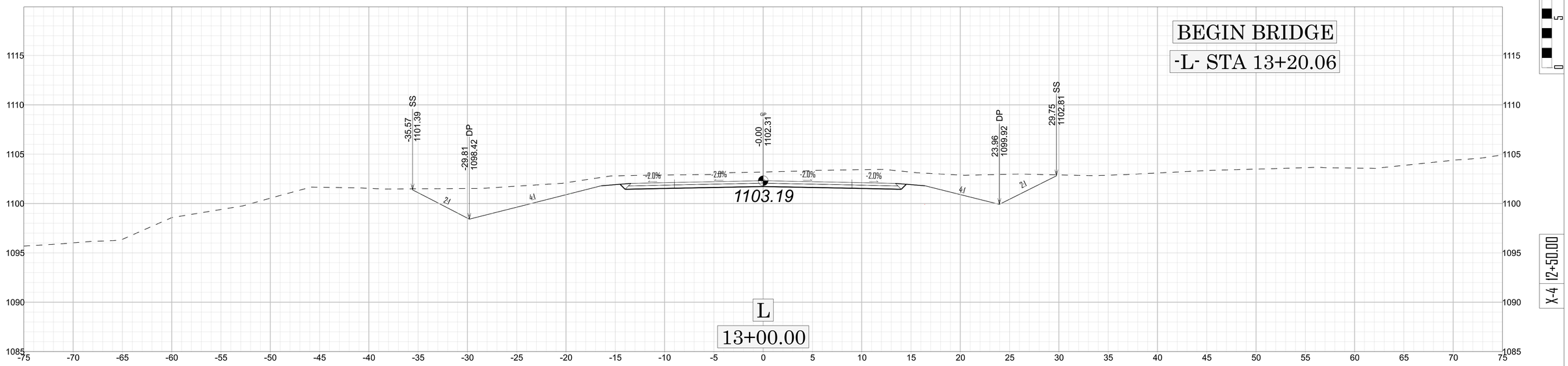
Quantities are approximate only. The Resident Engineer will use methods including but not limited to recross-sectioning, truck measurements, and aerial surveys to compute the final quantities for which the contractor will be paid.

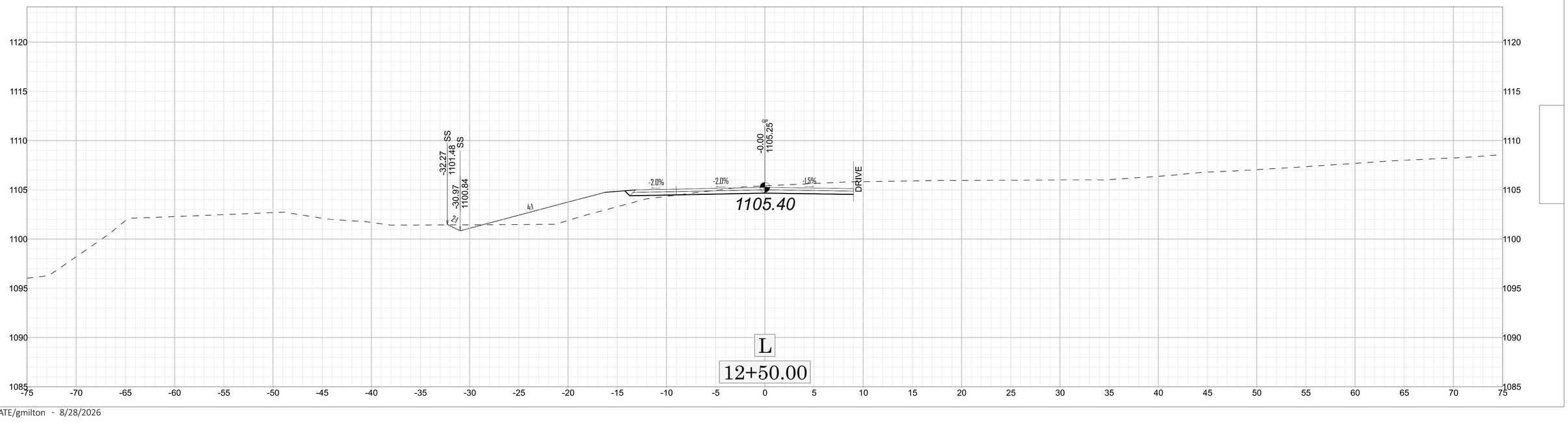
11/14/23


1155
1150
1145
1140
1135
1130
1125
1120
1115
1110
1105
1100
1095
1090
1085
1080
-75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
1110.09
11+50.00
10
5
0
11+50.00
X-Z-X

11/14/23

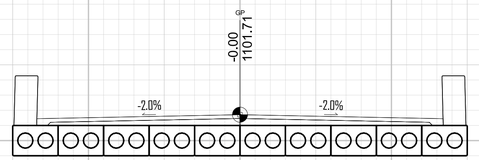

BEGIN TIP PROJECT HB-0060
-L- STA 12+00.00
EXIST.
1108.23
EXIST.
L
12+00.00
X-3 12+00.00
0
5
10
1145
1140
1135
1130
1125
1120
1115
1110
1105
1100
1095
1090
1085
-75
-70
-65
-60
-55
-50
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75


BEGIN BRIDGE
-L- STA 13+20.06
-35.57 SS 1101.39
-29.81 DP 1098.42
-0.00 GS 1102.31
23.96 DP 1099.92
29.75 SS 1102.81
-2.0%
-2.0%
-2.0%
-2.0%
2:1
4:1
4:1
2:1
1103.19
L
13+00.00
1115
1110
1105
1100
1095
1090
1085
-75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
0 5 10
X-4 12+50.00


-32.27 SS 1101.48
-30.97 SS 1100.84
-0.00 GS 1105.25
-2.0%
-2.0%
-1.5%
DRIVE
4:1
2:1
1105.40
L
12+50.00
1120
1115
1110
1105
1100
1095
1090
1085
-75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

END BRIDGE

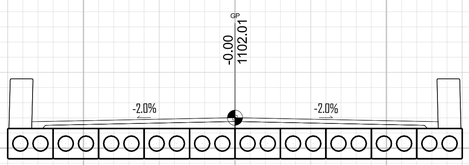
-L- STA 14+27.94



1095.06

L

14+00.00

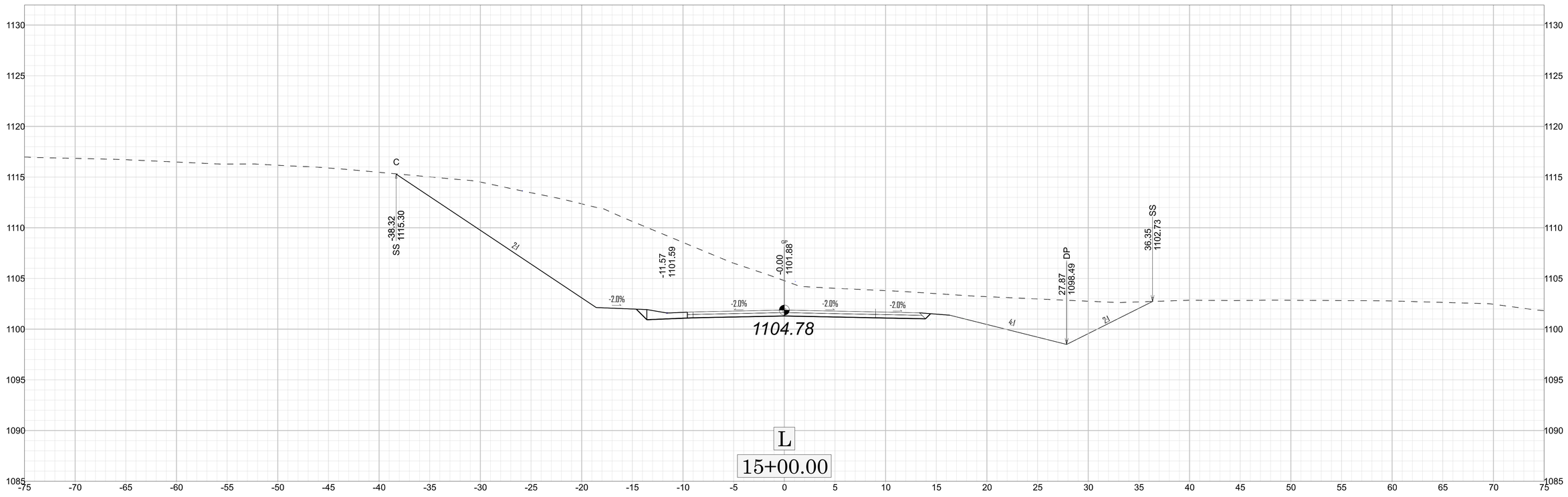


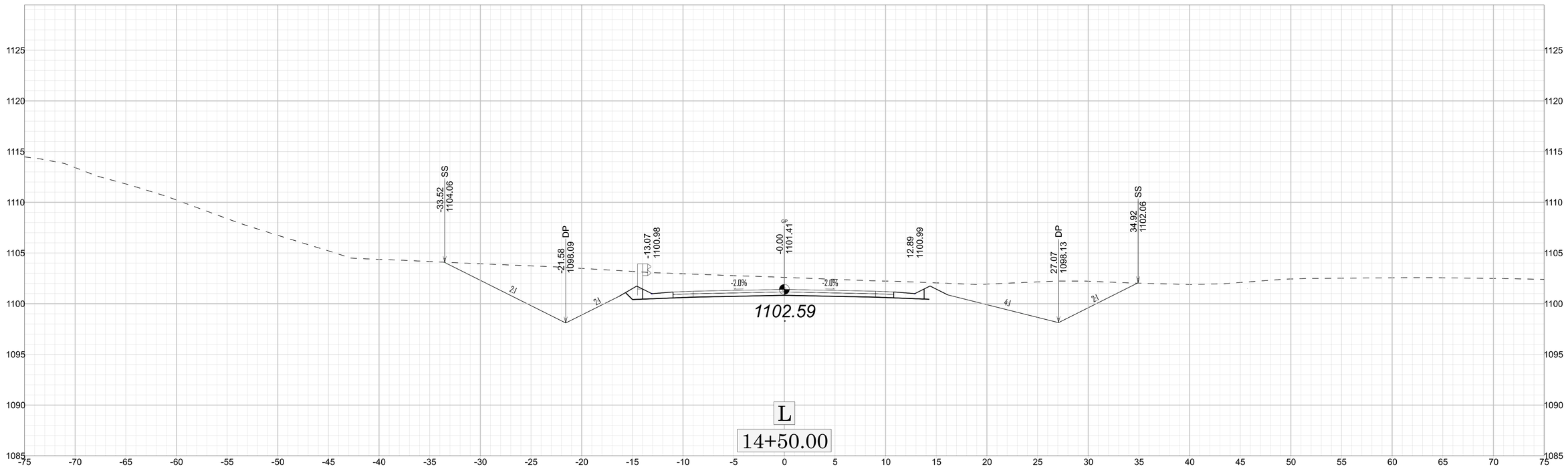
1095.43

L

13+50.00

X-5 |3+50.00

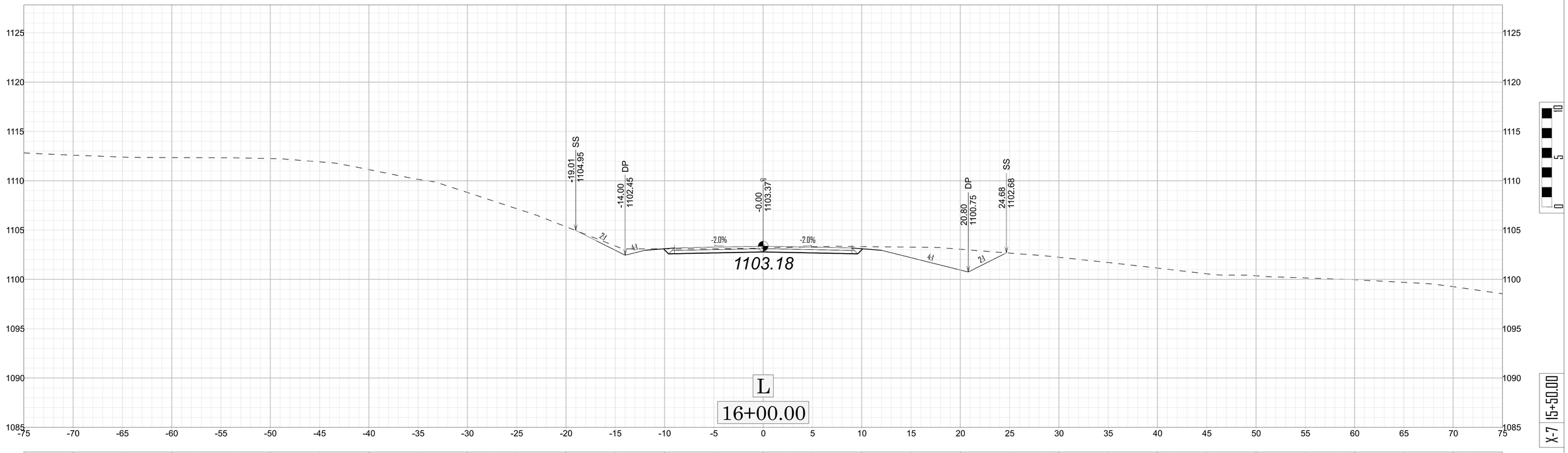


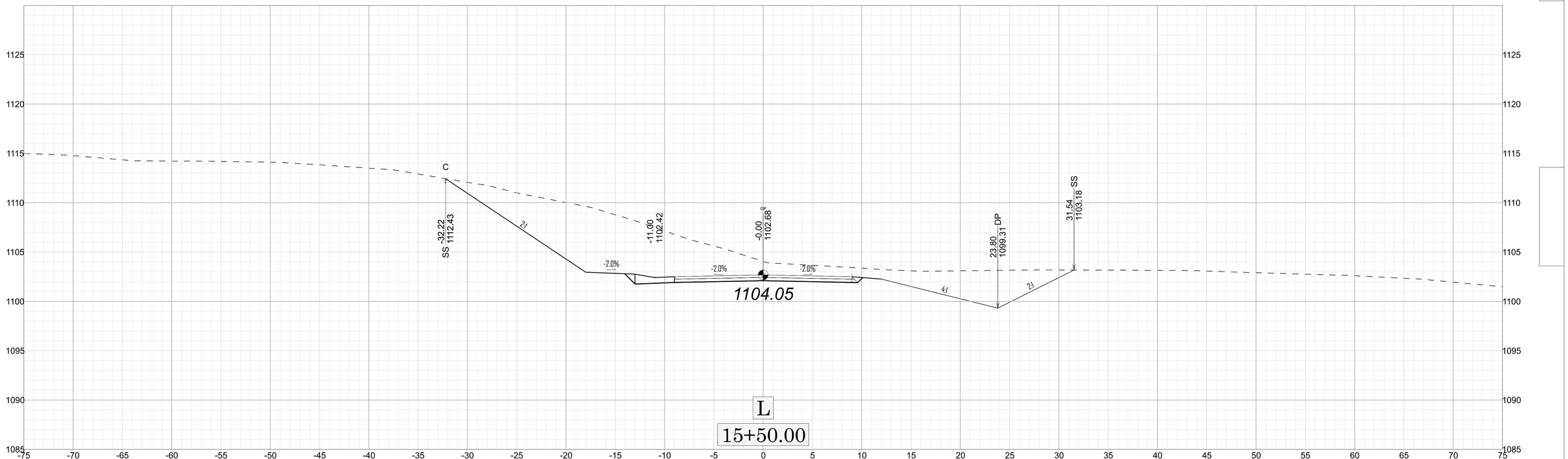


0 5 10

X-6 | 4+50.00

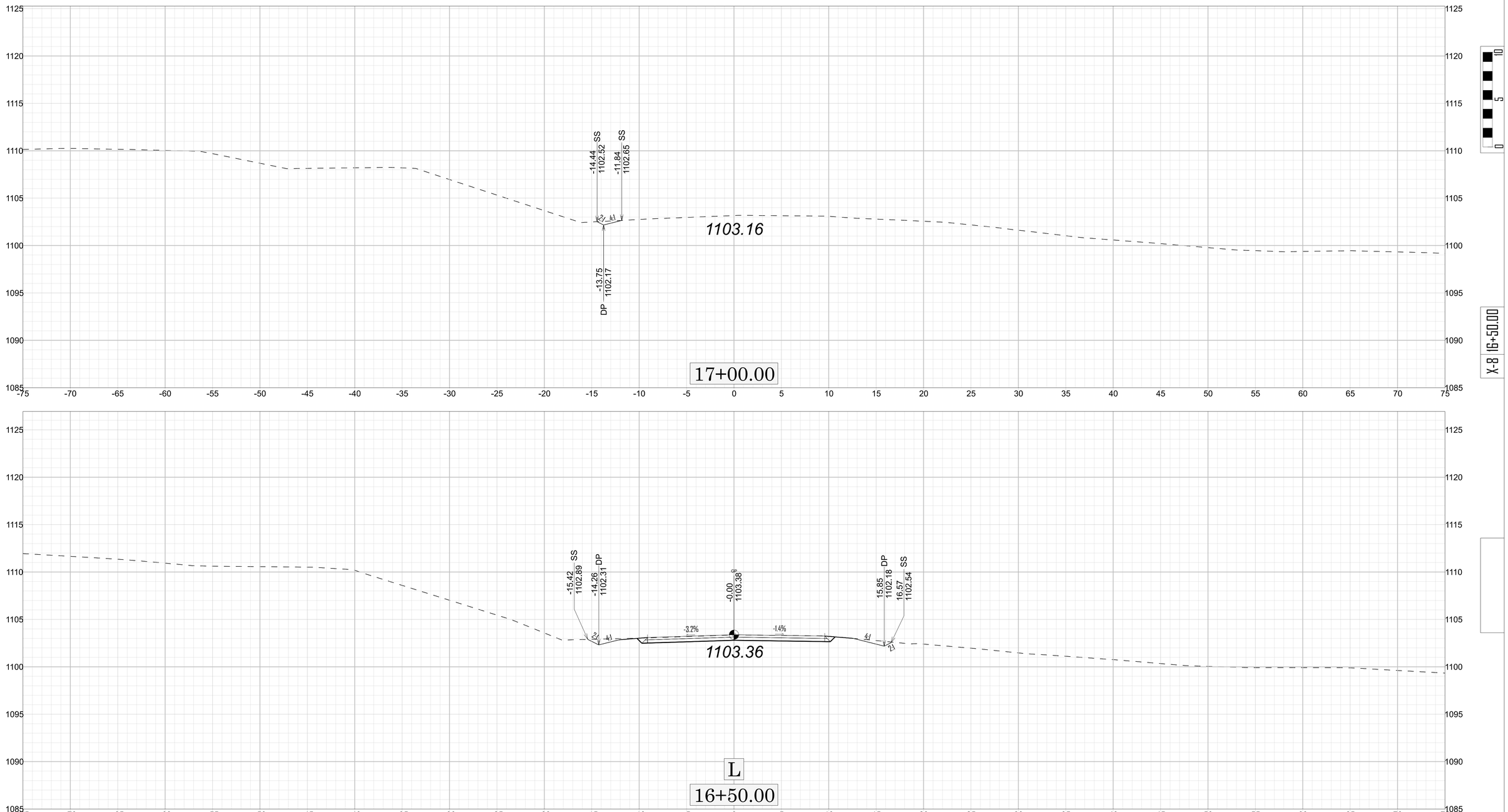
11/14/23

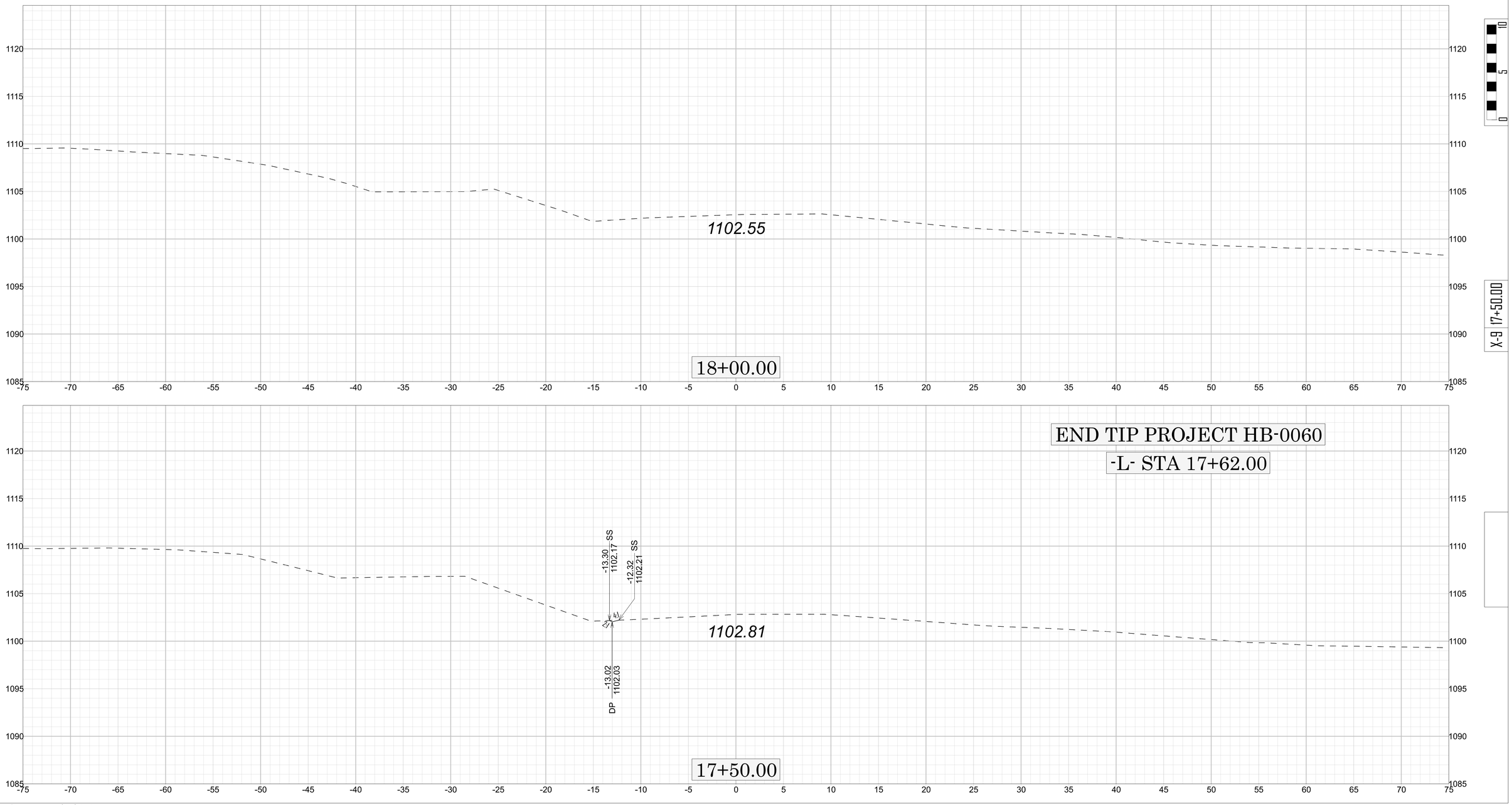




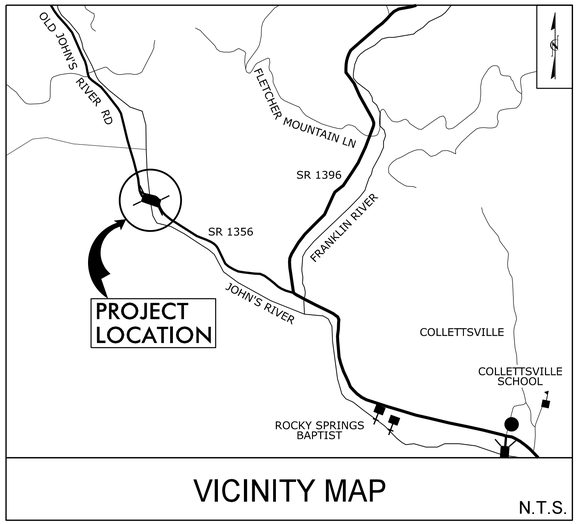
0 5 10

X-7 | 5+50.00


-14.44
1102.52
SS
-11.84
1102.65
SS
1103.16
DP
-13.75
1102.17
17+00.00
-15.42
1102.89
SS
-14.26
1102.31
DP
-0.00
1103.38
15.85
1102.18
DP
16.57
1102.54
SS
-3.2%
-1.4%
4:1
1103.36
L
16+50.00
0
5
10
X-8 16+50.00


1102.55
18+00.00
END TIP PROJECT HB-0060
-L- STA 17+62.00
-13.30
1102.17
SS
-12.32
1102.21
SS
1102.81
-13.02
1102.03
DP
17+50.00
X-6
0
5
10

CONTRACT NO: DK00484 TIP PROJECT: HB–0060



VICINITY MAP

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

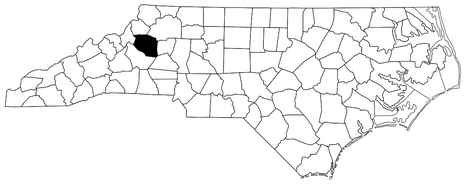
STRUCTURES

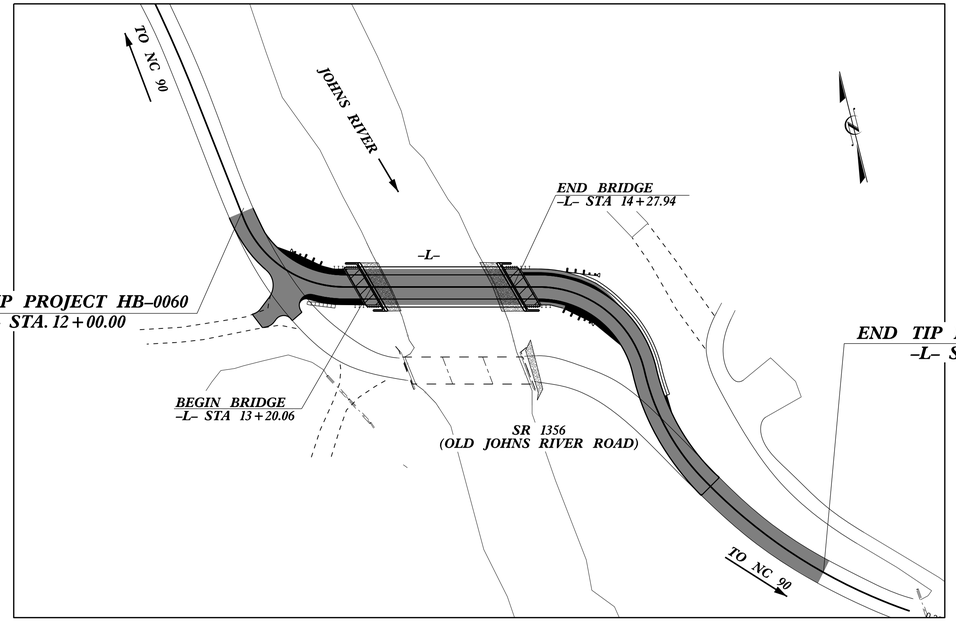
LOCATION: ***REPLACEMENT OF BRIDGE NO. 130317 OVER JOHNS RIVER ON SR–1356 (OLD JOHN'S RIVER RD)***

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0060	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50730.1.1	FBRG111	P.E.
50730.2.1	FBRG111	R.O.W.
50730.2.2	FBRG111	UTIL.
50730.3.1	FBRG111	CONST.





STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2025 = 140
ADT 2045 = 230
V = 30 MPH

FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH
CALDWELL COUNTY

LENGTH OF ROADWAY TIP PROJECT HB–0060 = 0.086 MILES
LENGTH OF STRUCTURE TIP PROJECT HB–0060 = 0.020 MILES
TOTAL LENGTH OF TIP PROJECT HB–0060 = 0.106 MILES

NCDOT CONTACT: RAMIE A. SHAW, P.E.
DIVISION 11 CONTACT

GFT
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

LETTING DATE:
NOVEMBER 19, 2026

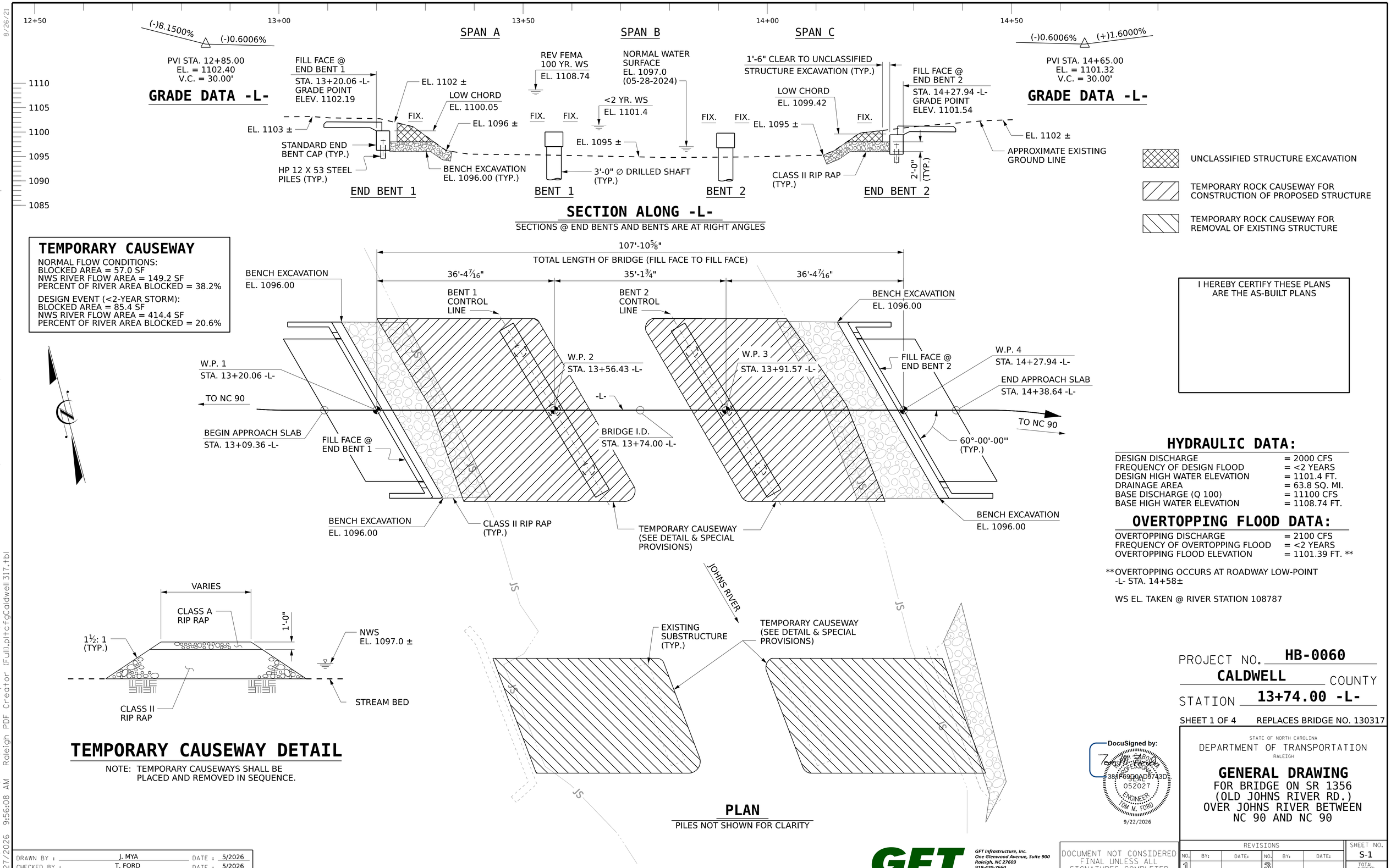
ERIC B. NELSON, P.E.
PROJECT MANAGER

TOM M. FORD, P.E.
STRUCTURES DESIGN ENGINEER

Docusign Envelope ID: CC5FA4C7-1F09-8A02-8022-994852B24851

8/26/21

pw://gfnet-pw.bentley.com:gfnet-pw-01/Documents/Projects/69172_ORD/Task 019_04 - Bridge 130317/5-Working/Structures/CAD/3.0 100% Plans/401_001_HB0060_SMU_GD_001_130317
8/27/2026 9:56:08 AM Raleigh PDF Creator (Full).pltcfg.caldwell 317.tbl



SECTION ALONG -L-

SECTIONS @ END BENTS AND BENTS ARE AT RIGHT ANGLES

TEMPORARY CAUSEWAY

NORMAL FLOW CONDITIONS:
BLOCKED AREA = 57.0 SF
NWS RIVER FLOW AREA = 149.2 SF
PERCENT OF RIVER AREA BLOCKED = 38.2%

DESIGN EVENT (<2-YEAR STORM):
BLOCKED AREA = 85.4 SF
NWS RIVER FLOW AREA = 414.4 SF
PERCENT OF RIVER AREA BLOCKED = 20.6%

PLAN

PILES NOT SHOWN FOR CLARITY

TEMPORARY CAUSEWAY DETAIL

NOTE: TEMPORARY CAUSEWAYS SHALL BE PLACED AND REMOVED IN SEQUENCE.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

HYDRAULIC DATA:

DESIGN DISCHARGE	= 2000 CFS
FREQUENCY OF DESIGN FLOOD	= <2 YEARS
DESIGN HIGH WATER ELEVATION	= 1101.4 FT.
DRAINAGE AREA	= 63.8 SQ. MI.
BASE DISCHARGE (Q 100)	= 11100 CFS
BASE HIGH WATER ELEVATION	= 1108.74 FT.

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE	= 2100 CFS
FREQUENCY OF OVERTOPPING FLOOD	= <2 YEARS
OVERTOPPING FLOOD ELEVATION	= 1101.39 FT. **

**OVERTOPPING OCCURS AT ROADWAY LOW-POINT -L- STA. 14+58±

WS EL. TAKEN @ RIVER STATION 108787

PROJECT NO. HB-0060
CALDWELL COUNTY
STATION 13+74.00 -L-
SHEET 1 OF 4 REPLACES BRIDGE NO. 130317

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
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9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356 (OLD JOHNS RIVER RD.) OVER JOHNS RIVER BETWEEN NC 90 AND NC 90

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			27

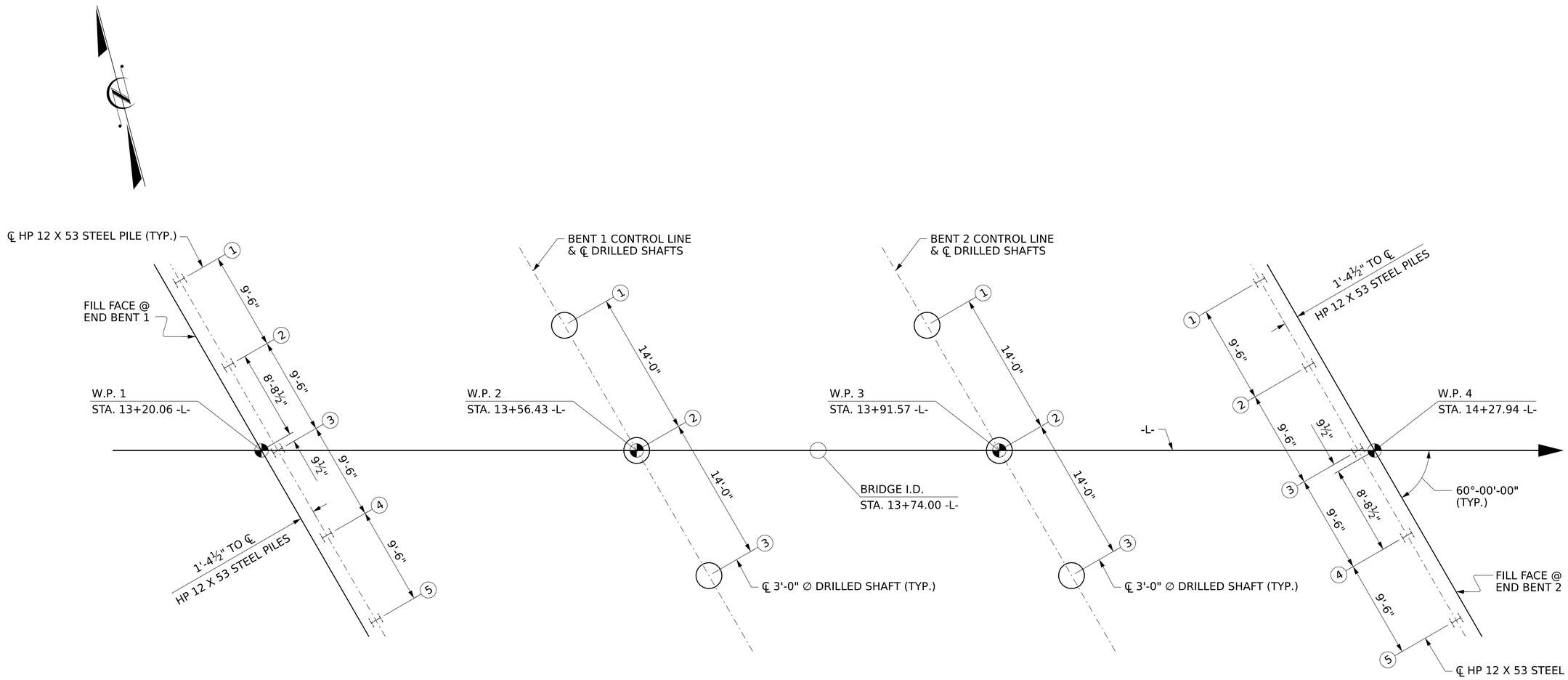
DRAWN BY : J. MYA DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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Raleigh, NC 27603
919-420-7660
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8/26/21
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END BENT 1 | BENT 1 | BENT 2 | END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED SHAFTS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED SHAFTS.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 2 OF 4

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
38AF89D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356
(OLD JOHNS RIVER RD.)
OVER JOHNS RIVER BETWEEN
NC 90 AND NC 90

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-5	5	141	1097.96	20			235					1086.0	2.5	7.5
End Bent 2, Piles 1-5	5	141	1097.33	15			235					1085.3	5.9	4.1
TOTAL QUANTITY:													42	58

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	141			0.6		
End Bent 2, Piles 1-5	141			0.6		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-5				5
End Bent 2, Piles 1-5				5
TOTAL QUANTITY:				10

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	25	1
TOTAL QUANTITY:		1

*

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip 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	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1	1	407	1084.50	130	1090.00	5.2		6.3	6.6	YES	1091.00	5.4
Bent 1, Pier 2	1	410	1074.00	90	1088.00	8.1		10	13.3	YES	1086.00	5.3
Bent 1, Pier 3	1	410	1074.00	90	1088.00	8.1		10	13.4	YES	1086.00	5.3
Bent 2, Pier 1	1	409	1079.00	90	1091.00	13.9		13.9	4.3	YES	1092.90	4.3
Bent 2, Pier 2	1	409	1079.00	90	1091.00	13.9		13.9	4.2	YES	1092.90	4.3
Bent 2, Pier 3	1	407	1084.50	130	1091.00	6.2		6.5	6.1	YES	1091.00	5.9
TOTAL QUANTITY:								60.6	47.9			30.5

* 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 "36in Dia. Drilled Piers" or "36in. Dia. Drilled Piers Not in Soil" and "36in. Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "36in. Dia. Drilled Piers in Soil."

** 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 36in. Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

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) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-3		3		3	
Bent 2, Piers 1-3		3		3	
TOTAL QUANTITY:		6		6	

PROJECT NO. HB-0060

Caldwell COUNTY

STATION: 13+74.00 -L-

SHEET 3 OF 4

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Mikel W. Shipman, #054501) on 09-16-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

DocuSigned by: Tom M Ford 9/22/2026

SIGNATURE 381F85D0AD9743D... DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

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REVISIONS

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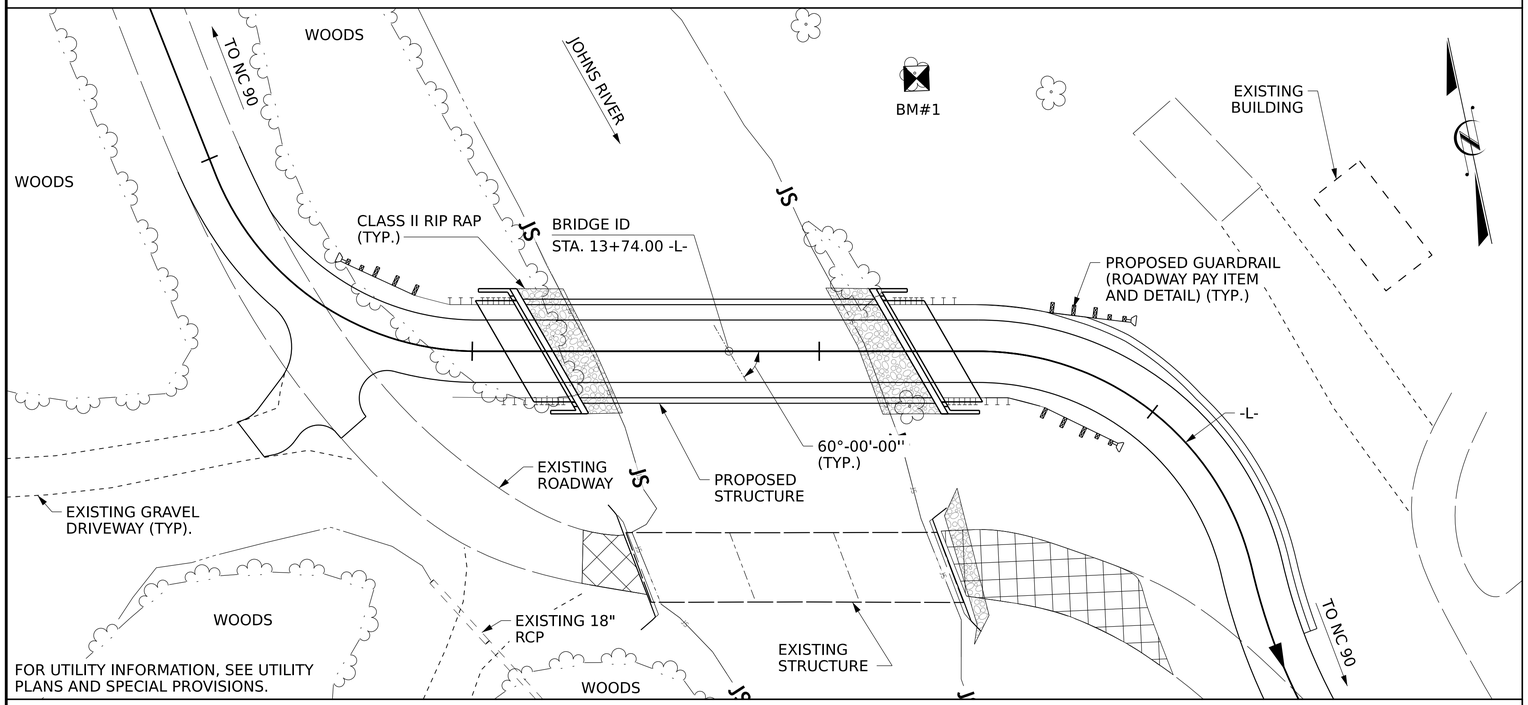
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TOTAL SHEETS 27

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BENCHMARK: BM #1 RR SPIKE IN TRIPLE TRUNK POPLAR 78.60' LT. OF STA 14+28.04, EL 1106.47



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS @ STA. 13+74.00 -L-	REMOVAL OF EXISTING STRUCTURE AT STA. 13+74.00 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION NOT IN SOIL	PILE EXCAVATION IN SOIL	3'-0" ∅ DRILLED PIERS IN SOIL	3'-0" ∅ DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" ∅ DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+74.00 -L-	CONCRETE WEARING SURFACE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.
SUPERSTRUCTURE												2,825
END BENT 1				12.5	37.5						LUMP SUM	
BENT 1						33.3	26.3	16.0	3	3		
BENT 2						14.6	34.3	14.5	3	3		
END BENT 2				29.5	20.5						LUMP SUM	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	42.0	58.0	47.9	60.6	30.5	6	6	LUMP SUM	2,825

TOTAL BILL OF MATERIAL

	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		H-PILE POINTS	DYNAMIC PILE TESTING	32" ALASKA RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE
	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	EACH	NO.	LIN. FT.	EACH	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	SQ. FT.
SUPERSTRUCTURE	3,057		LUMP SUM								193.75			LUMP SUM	30	1,050	2,825
END BENT 1		22.6		2,713		5	5	100	5	1		160	180				
BENT 1		13.4		6,363	1,115												
BENT 2		13.4		4,959	929												
END BENT 2		22.6		2,713		5	5	75				160	180				
TOTAL	3,057	72.0	LUMP SUM	16,748	2,044	10	10	175	5	1	193.75	320	360	LUMP SUM	30	1,050	2,825

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATIVE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIA PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 31'-2", 1 @ 30'-0", 1 @ 31'-2") TIMBER DECK ON STEEL I-BEAMS ON CONCRETE END BENTS AND INTERIOR BENTS WITH A CLEAR ROADWAY WIDTH OF 19'-1" LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED SV: 18 TONS, TTST: 24 TONS. SHOULD THE INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A REDUCED LOAD LIMIT MAY BE POSTED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

FOR CONCRETE WATERPROOFING MEMBRANE - CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

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

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 19 FT AT END BENT 1 AND 2 EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

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 13+74.00 -L-.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS; FOR PROJECTS REQUIRING UP TO 400 TONS OFREINFORCING 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 BAR SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICE 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.

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"

SAMPLE BAR REPLACEMENT FOR FEDERAL AID PROJECTS

NOTES:

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

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 4 OF 4

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1356 (OLD JOHNS RIVER RD.) OVER JOHNS RIVER BETWEEN NC 90 AND NC 90

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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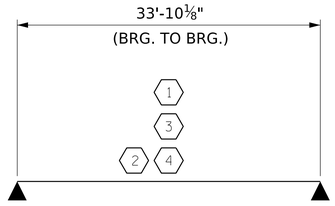
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8/26/21

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γLL)	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 (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.66	--	1.75	0.266	1.66	35'	EL	16.900	0.383	3.05	35'	EL	6.400	0.80	0.266	1.75	35'	EL	16.900	
		HL-93 (OPERATING)	N/A		2.15	--	1.35	0.266	2.15	35'	EL	16.900	0.383	4.04	35'	EL	6.400	N/A	-	-	-	-	-	
		HS-20 (INVENTORY)	36.000	⟨2⟩	2.20	79.20	1.75	0.266	2.20	35'	EL	13.400	0.383	3.51	35'	EL	6.400	0.80	0.266	2.35	35'	EL	13.400	
		HS-20 (OPERATING)	36.000		2.86	102.96	1.35	0.266	2.86	35'	EL	13.400	0.383	4.64	35'	EL	6.400	N/A	-	-	-	-	-	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.00	54.00	1.40	0.266	4.73	35'	EL	16.900	0.383	8.99	35'	EL	6.400	0.80	0.266	4.00	35'	EL	16.900	
		SNGARBS2	20.000		3.45	69.00	1.40	0.266	4.04	35'	EL	13.400	0.383	6.90	35'	EL	6.400	0.80	0.266	3.45	35'	EL	13.400	
		SNAGRIS2	22.000		3.42	75.24	1.40	0.266	4.01	35'	EL	13.400	0.383	6.64	35'	EL	6.400	0.80	0.266	3.42	35'	EL	13.400	
		SNCOTTS3	27.250		2.00	54.50	1.40	0.266	2.37	35'	EL	16.900	0.383	4.38	35'	EL	6.400	0.80	0.266	2.00	35'	EL	16.900	
		SNAGGRS4	34.925		1.85	64.61	1.40	0.266	2.19	35'	EL	16.900	0.383	4.00	35'	EL	6.400	0.80	0.266	1.85	35'	EL	16.900	
		SNS5A	35.550		1.80	63.99	1.40	0.266	2.13	35'	EL	16.900	0.383	4.26	35'	EL	6.400	0.80	0.266	1.80	35'	EL	16.900	
		SNS6A	39.950		1.74	69.51	1.40	0.266	2.05	35'	EL	16.900	0.383	4.01	35'	EL	6.400	0.80	0.266	1.74	35'	EL	16.900	
		SNS7B	42.000	⟨3⟩	1.66	69.72	1.40	0.266	1.96	35'	EL	16.900	0.383	4.09	35'	EL	6.400	0.80	0.266	1.66	35'	EL	16.900	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.15	70.95	1.40	0.266	2.54	35'	EL	16.900	0.383	4.83	35'	EL	6.400	0.80	0.266	2.15	35'	EL	16.900	
		TNT4A	33.075		2.14	70.78	1.40	0.266	2.54	35'	EL	16.900	0.383	4.47	35'	EL	6.400	0.80	0.266	2.14	35'	EL	16.900	
		TNT6A	41.600		1.88	78.21	1.40	0.266	2.22	35'	EL	16.900	0.383	4.28	35'	EL	6.400	0.80	0.266	1.88	35'	EL	16.900	
		TNT7A	42.000		1.94	81.48	1.40	0.266	2.30	35'	EL	16.900	0.383	4.07	35'	EL	6.400	0.80	0.266	1.94	35'	EL	16.900	
		TNT7B	42.000		1.91	80.22	1.40	0.266	2.26	35'	EL	16.900	0.383	3.99	35'	EL	6.400	0.80	0.266	1.91	35'	EL	16.900	
		TNAGRIT4	43.000		1.93	82.99	1.40	0.266	2.28	35'	EL	13.400	0.383	3.85	35'	EL	6.400	0.80	0.266	1.93	35'	EL	16.900	
		TNAGT5A	45.000		1.79	80.55	1.40	0.266	2.11	35'	EL	16.900	0.383	4.16	35'	EL	6.400	0.80	0.266	1.79	35'	EL	16.900	
		TNAGT5B	45.000		1.72	77.40	1.40	0.266	2.04	35'	EL	16.900	0.383	3.59	35'	EL	6.400	0.80	0.266	1.72	35'	EL	16.900	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.48	71.30	1.30	0.266	3.13	35'	EL	13.400	0.383	5.21	35'	EL	6.400	0.80	0.266	2.48	35'	EL	13.400	
		EV3	43.000	⟨4⟩	1.59	68.37	1.30	0.266	2.03	35'	EL	16.900	0.383	3.47	35'	EL	6.400	0.80	0.266	1.59	35'	EL	16.900	



LRFR SUMMARY

FOR SPANS A THRU C

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

⟨#⟩ CONTROLLING LOAD RATING
⟨1⟩ DESIGN LOAD RATING (HL-93)
⟨2⟩ DESIGN LOAD RATING (HS-20)
⟨3⟩ LEGAL LOAD RATING * *
⟨4⟩ EMERGENCY VEHICLE LOAD RATING **
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

DocuSigned by:
Tom M. Ford
38FF89B0AD9743D...
9/22/2026

NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 35' CORED SLAB UNIT 60° SKEW

(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY :	J. PARROTT — DATE : 3/2026
CHECKED BY :	T. FORD — DATE : 3/2026
DESIGN ENGINEER OF RECORD :	T. FORD — DATE : 8/2026
DRAWN BY :	MAA I/08
CHECKED BY :	GM/DI 2/08

REV. II/12/08RR	MAA/GM
REV. ID/1/11	MAA/GM
REV. 04/23	BNB/AAI

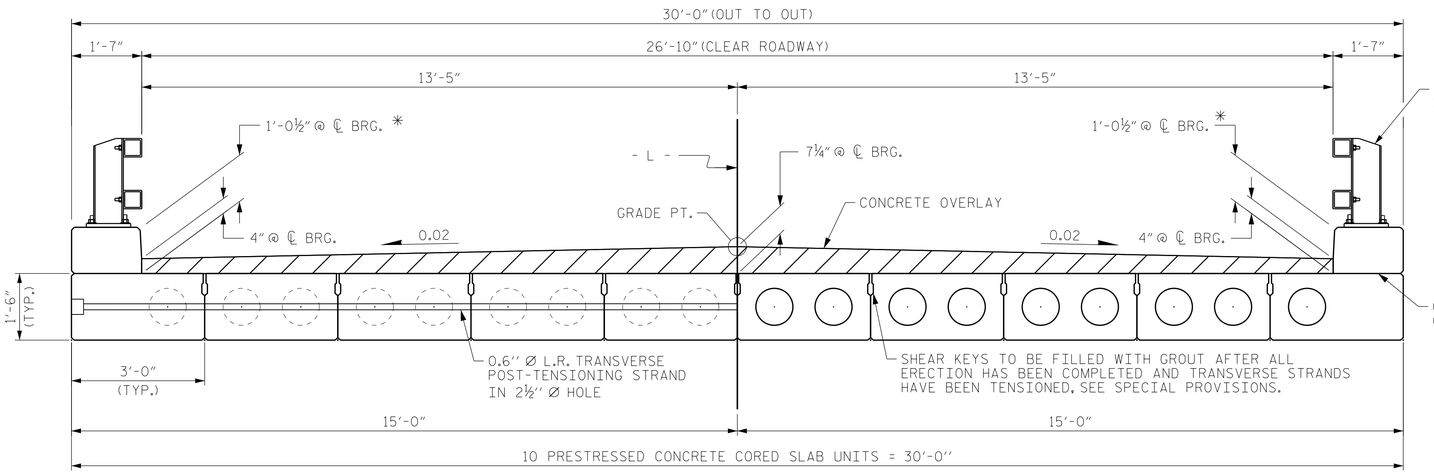
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
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2			4			27

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8/26/21
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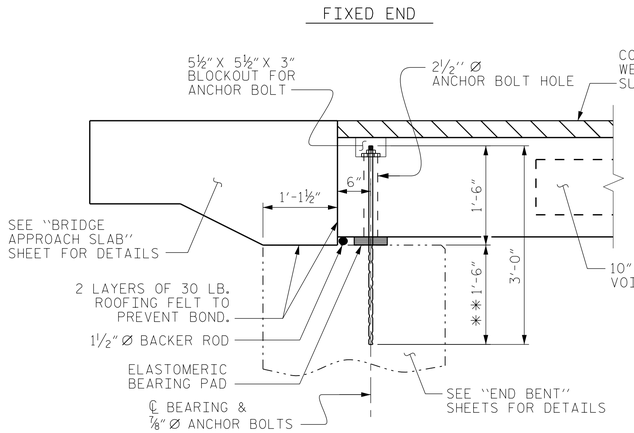


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

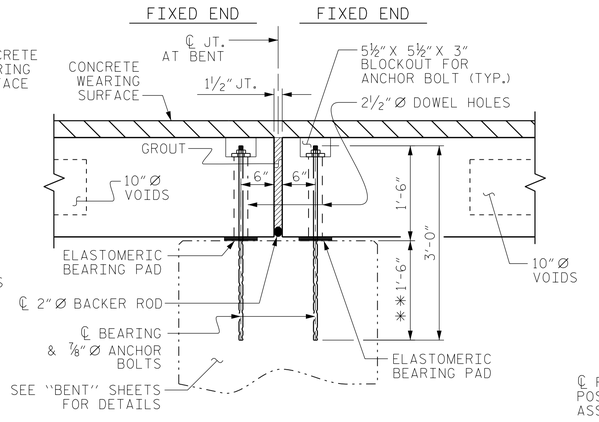
TYPICAL SECTION

* - THE MAXIMUM CURB HEIGHT AND CONCRETE OVERLAY THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND CONCRETE OVERLAY THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE.



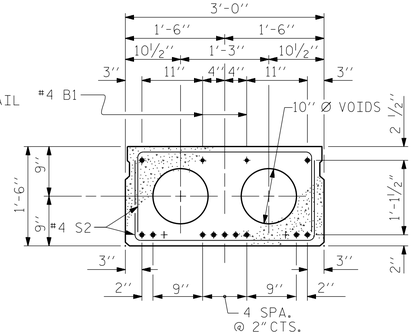
SECTION AT END BENT

(TYP. FOR ALL CORED SLABS)
** SWEDGED



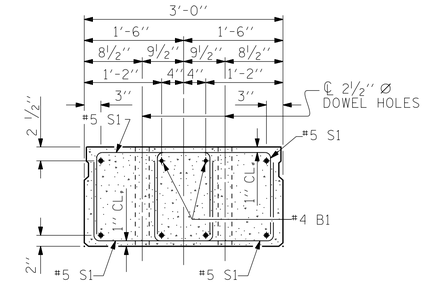
SECTION AT BENT

(TYP. FOR ALL CORED SLABS)
** SWEDGED



INTERIOR SLAB (SECTION 35' UNIT)

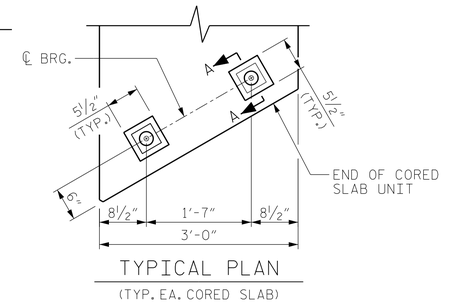
(11 STRANDS REQUIRED)



END ELEVATION

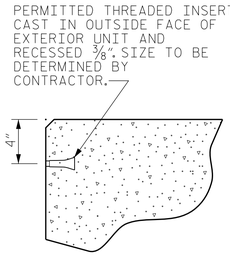
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES (STRAND LAYOUT NOT SHOWN)
INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL PLAN

(TYP. EA. CORED SLAB)



THREADED INSERT DETAIL

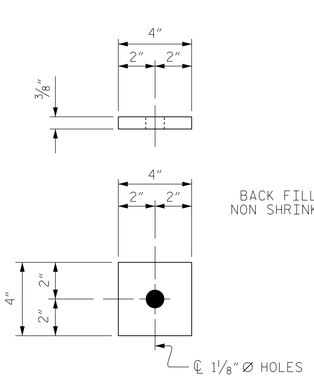
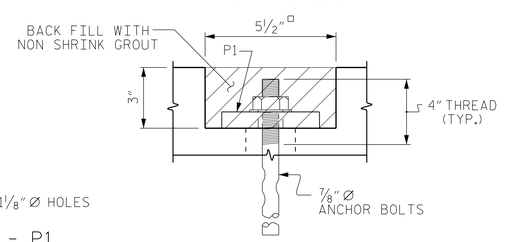


PLATE DETAILS - P1

(FIXED)
P1 (120 REQ'D.)

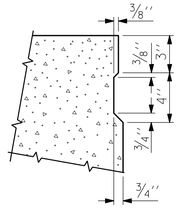


SECTION A-A

(FIXED)

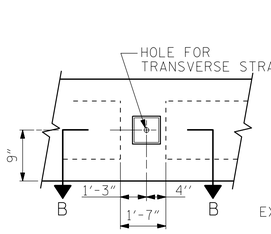
BLOCKOUT DETAIL FOR ANCHOR BOLTS

(TYP. FOR EACH CORED SLAB)

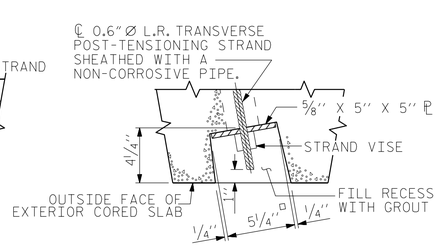


SHEAR KEY DETAIL

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

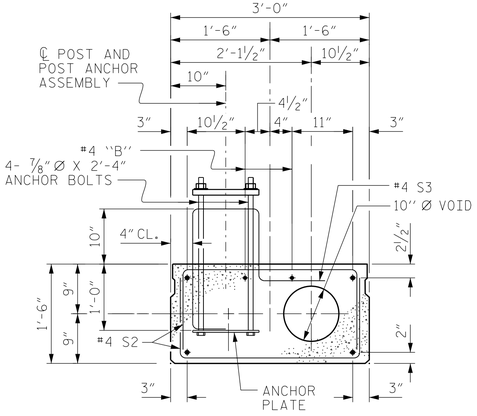


ELEVATION VIEW



SECTION B-B

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



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)

DocuSigned by:
Tom M. Ford
381F69B0AD9743D...
9/22/2026

PROJECT NO. HB-0060
CALDWELL COUNTY
STATION 13+74.00 -L-
SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 60° SKEW

ASSEMBLED BY : J. PARROTT	DATE : 3/2026	
CHECKED BY : T. FORD	DATE : 3/2026	
DESIGN ENGINEER OF RECORD : T. FORD	DATE : 8/2026	
DRAWN BY : WJH 4/89	REV. 10/1/11	MAA/GM
CHECKED BY : FCJ 5/89	REV. 8/14	RWW/TMG
	REV. 12/17	MAA/THC

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Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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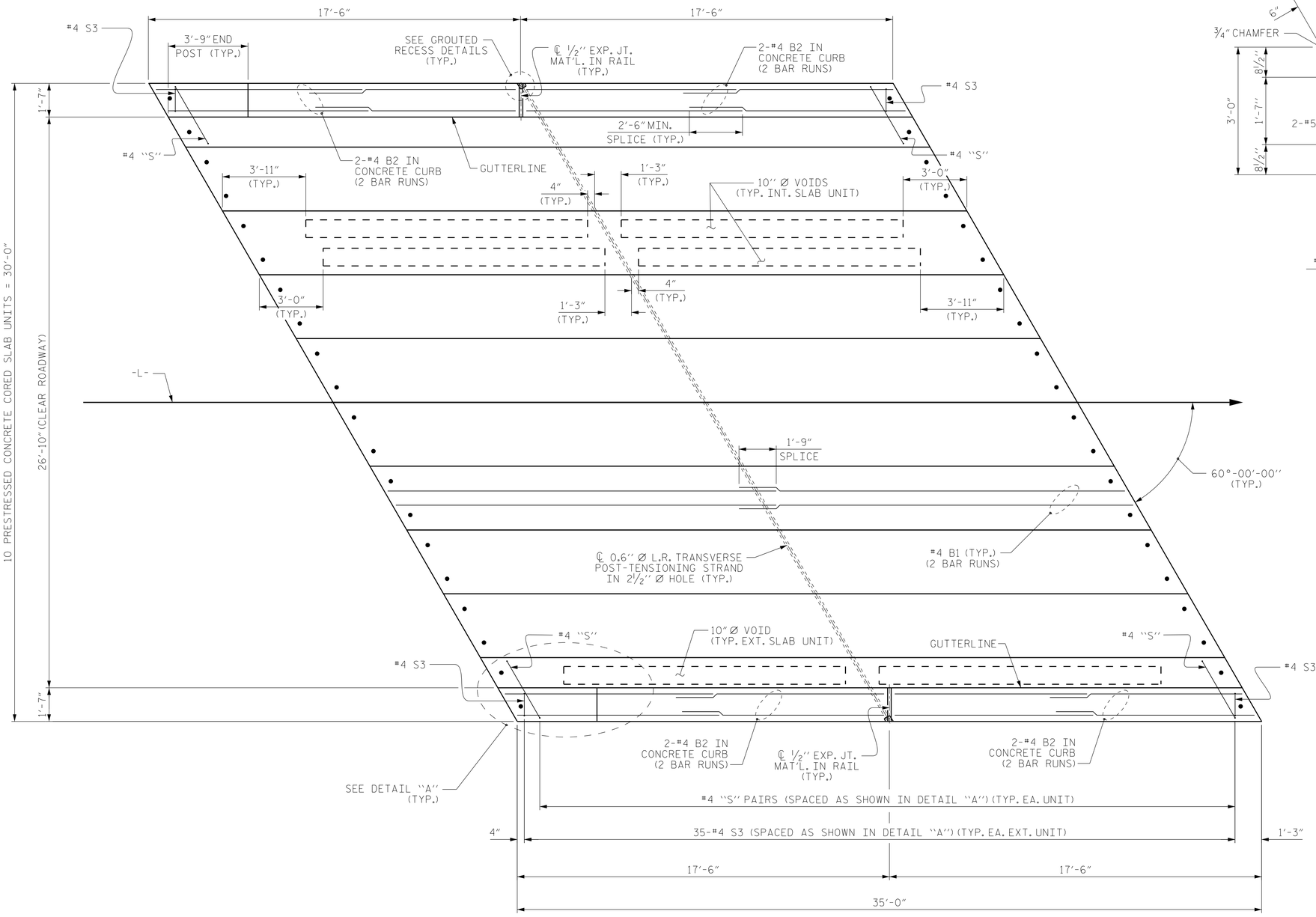
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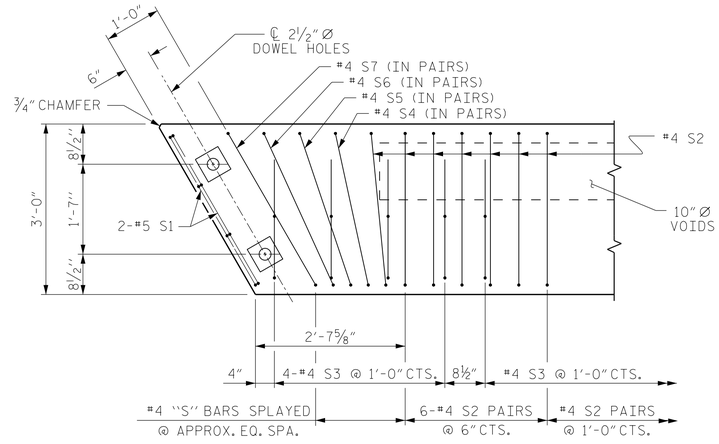
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NOTE:

FOR PLACEMENT OF ADDITIONAL S2 BARS AT POST LOCATIONS, SEE "SIDE VIEW AT POST LOCATION" ON S-10.



PLAN OF SPAN A



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 BARS.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 2 OF 7

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
381F69D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN A

DRAWN BY :	J. PARROTT — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

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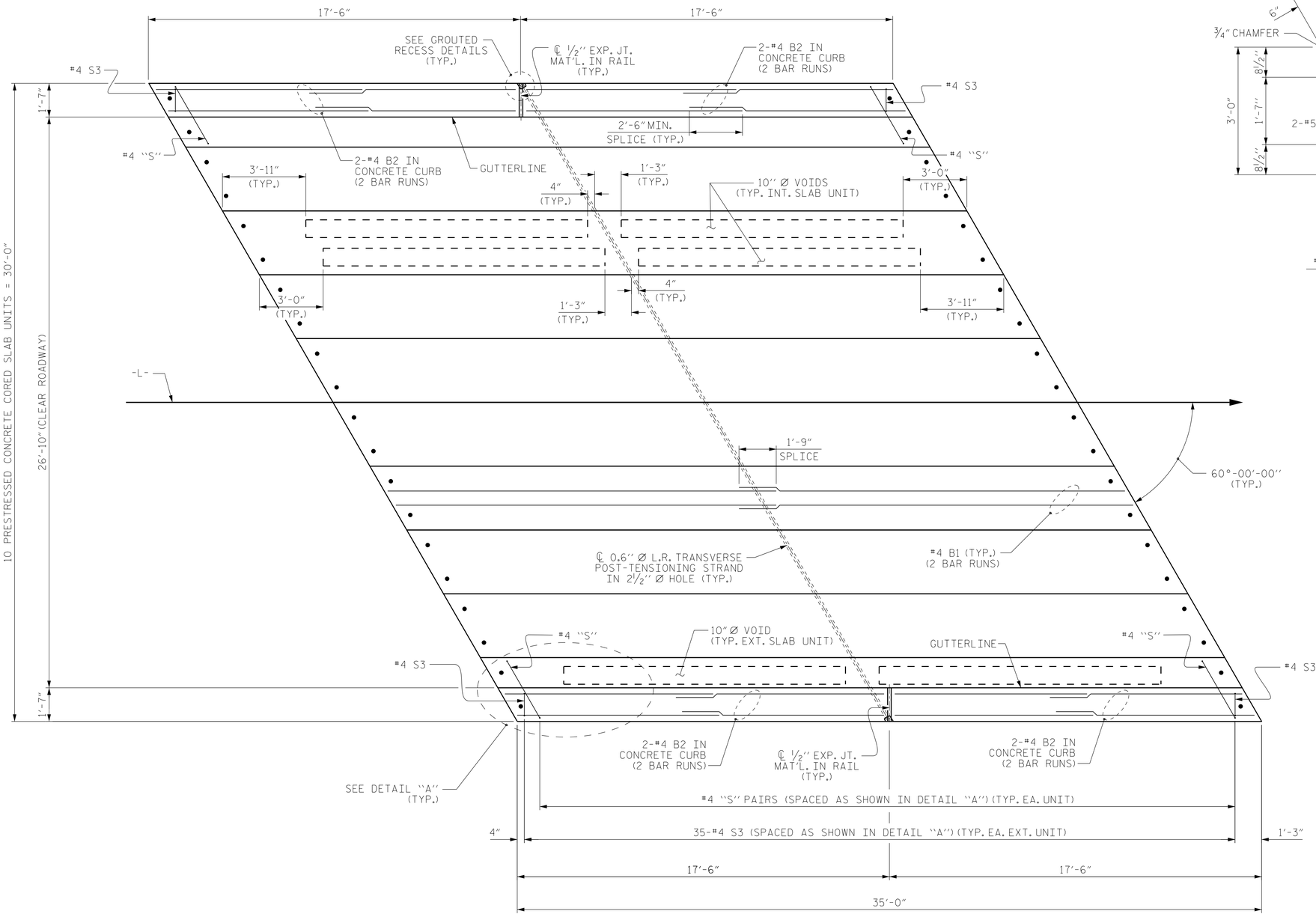
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8/26/21

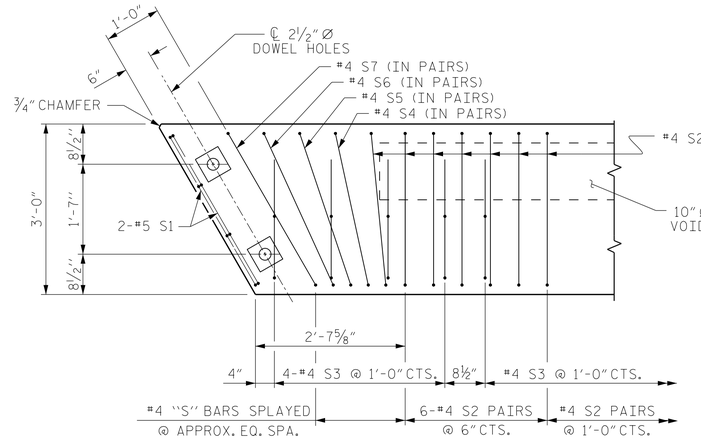
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NOTE:

FOR PLACEMENT OF ADDITIONAL S2 BARS AT POST LOCATIONS, SEE "SIDE VIEW AT POST LOCATION" ON S-10.



PLAN OF SPAN B



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 BARS.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 3 OF 7

DocuSigned by:
TOM M. FORD
NORTH CAROLINA PROFESSIONAL
38FF69DDAD9743D...
SEAL 052027 ENGINEER TOM M. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN B

DRAWN BY : J. PARROTT	DATE : 5/2026				
CHECKED BY : T. FORD	DATE : 5/2026				
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026				

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TOTAL SHEETS 27

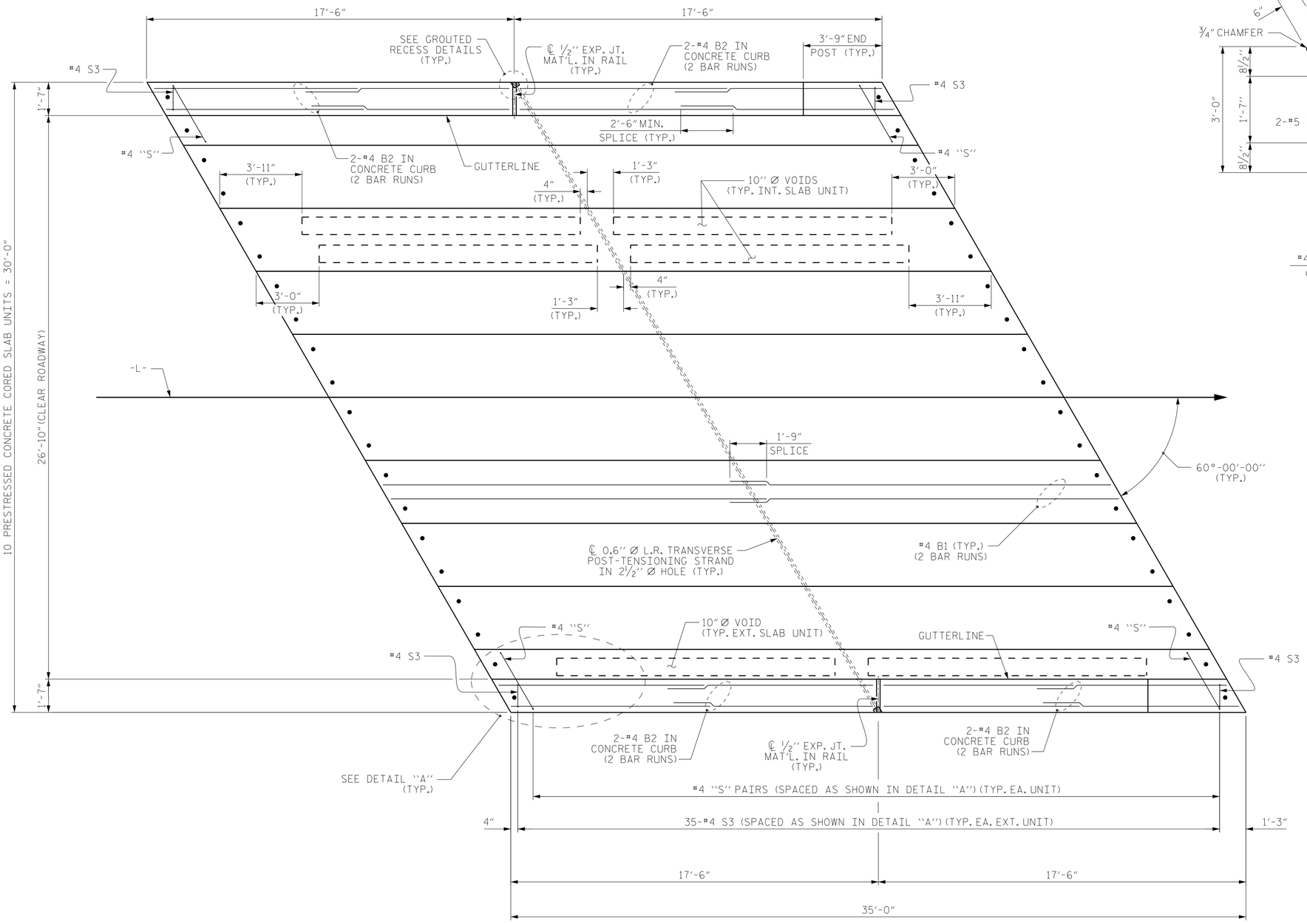
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8/26/21

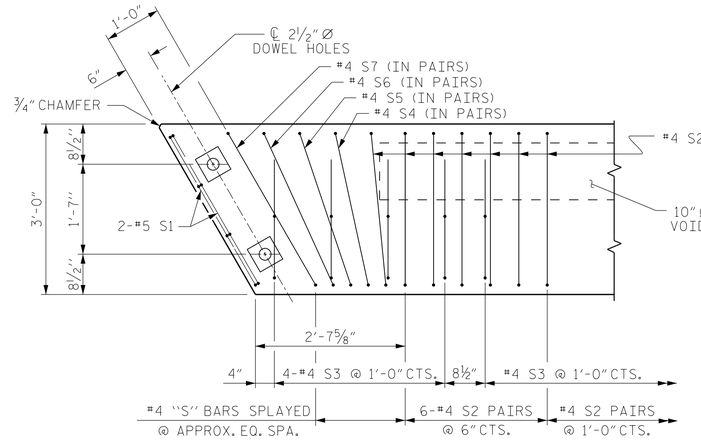
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NOTE:

FOR PLACEMENT OF ADDITIONAL S2 BARS AT POST LOCATIONS, SEE "SIDE VIEW AT POST LOCATION" ON S-10.



PLAN OF SPAN C



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 BARS.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 4 OF 7

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
381F69D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN C

DRAWN BY : J. PARROTT	DATE : 5/2026				
CHECKED BY : T. FORD	DATE : 5/2026				
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026				

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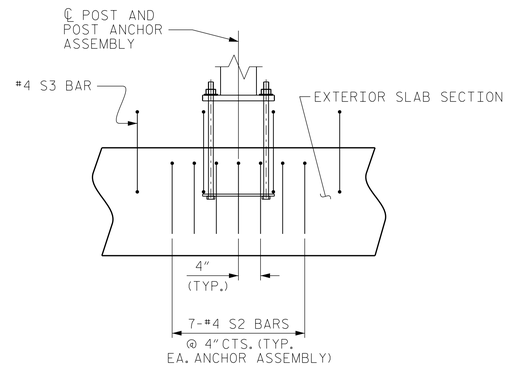
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BILL OF MATERIAL FOR ONE 35′ CORED SLAB UNIT (SPAN A & C)

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B1	4	#4	STR	18′-3″	49	18′-3″	49
S1	8	#5	2	4′-0″	33	4′-0″	33
S2	107	#4	2	4′-10″	345		
S2	72	#4	2			4′-10″	232
✳ S3	35	#4	1	5′-5″	127		
S4	4	#4	2	4′-11″	13	4′-11″	13
S5	4	#4	2	5′-0″	13	5′-0″	13
S6	4	#4	2	5′-1″	14	5′-1″	14
S7	4	#4	2	5′-3″	14	5′-3″	14
REINFORCING STEEL			LBS.		481		368
✳ EPOXY COATED REINFORCING STEEL			LBS.		127		
6000 P.S.I. CONCRETE			CU. YDS.		4.9		4.4
0.6″ Ø L.R. STRANDS			No.		11		11

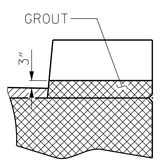
BILL OF MATERIAL FOR ONE 35′ CORED SLAB UNIT (SPAN B)

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B1	4	#4	STR	18′-3″	49	18′-3″	49
S1	8	#5	2	4′-0″	33	4′-0″	33
S2	100	#4	2	4′-10″	323		
S2	72	#4	2			4′-10″	232
✳ S3	35	#4	1	5′-5″	127		
S4	4	#4	2	4′-11″	13	4′-11″	13
S5	4	#4	2	5′-0″	13	5′-0″	13
S6	4	#4	2	5′-1″	14	5′-1″	14
S7	4	#4	2	5′-3″	14	5′-3″	14
REINFORCING STEEL			LBS.		459		368
✳ EPOXY COATED REINFORCING STEEL			LBS.		127		
6000 P.S.I. CONCRETE			CU. YDS.		4.9		4.4
0.6″ Ø L.R. STRANDS			No.		11		11



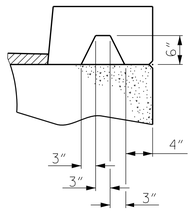
SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)



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)

18″ CORED SLABS REQUIRED

35′ C.S. UNITS (SPAN A)

	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	35′-0″	70′-0″
INTERIOR C.S.	8	35′-0″	280′-0″
TOTAL	10		350′-0″

35′ C.S. UNITS (SPAN B)

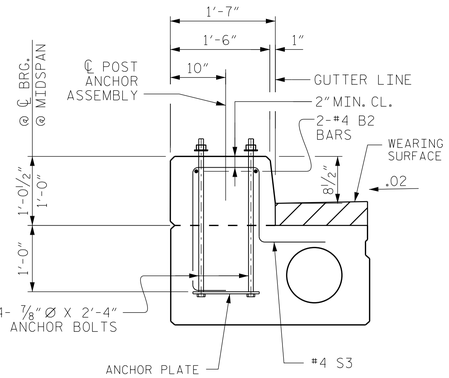
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	35′-0″	70′-0″
INTERIOR C.S.	8	35′-0″	280′-0″
TOTAL	10		350′-0″

35′ C.S. UNITS (SPAN C)

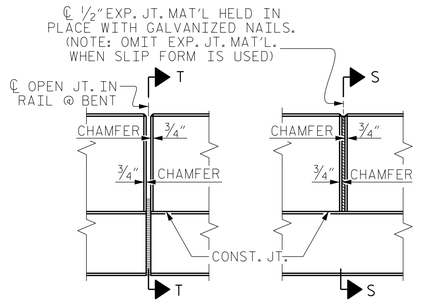
	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	35′-0″	70′-0″
INTERIOR C.S.	8	35′-0″	280′-0″
TOTAL	10		350′-0″

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ × 1′-6″ 0.6″ Ø L.R. STRAND
35′ CORED SLAB UNIT	
CAMBER (SLAB ALONE IN PLACE)	⅝″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	⅛″ ↓
FINAL CAMBER	½″ ↑



32″ ALASKA RAIL CURB SECTION

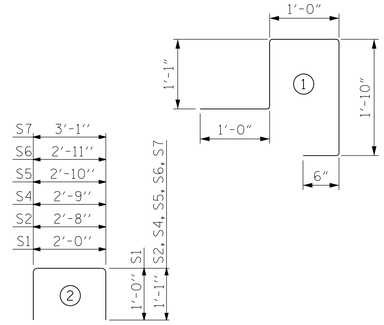


ELEVATION AT EXPANSION JOINTS

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

BAR TYPES



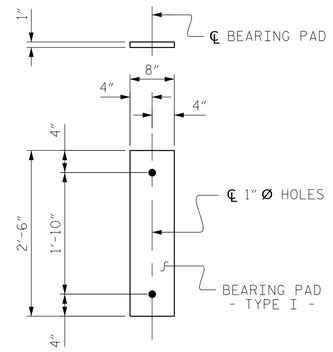
ALL BAR DIMENSIONS ARE OUT TO OUT

GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT

	CONCRETE OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
35′ UNITS	3½″	3′-0″

CONCRETE RELEASE STRENGTH

UNIT	PSI
35′ UNITS	4800



FIXED END
(TYPE I- 60 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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 ANCHOR BOLT HOLES AT FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

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 CONCRETE CURBS 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 CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB 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.

FOR CORED SLAB POST TENSIONING, SEE SPECIAL PROVISIONS.

PROJECT NO. HB-0060
CALDWELL COUNTY
STATION 13+74.00 -L-

SHEET 5 OF 7

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0" X 1′-6" PRESTRESSED CONCRETE CORED SLAB UNIT 60° SKEW

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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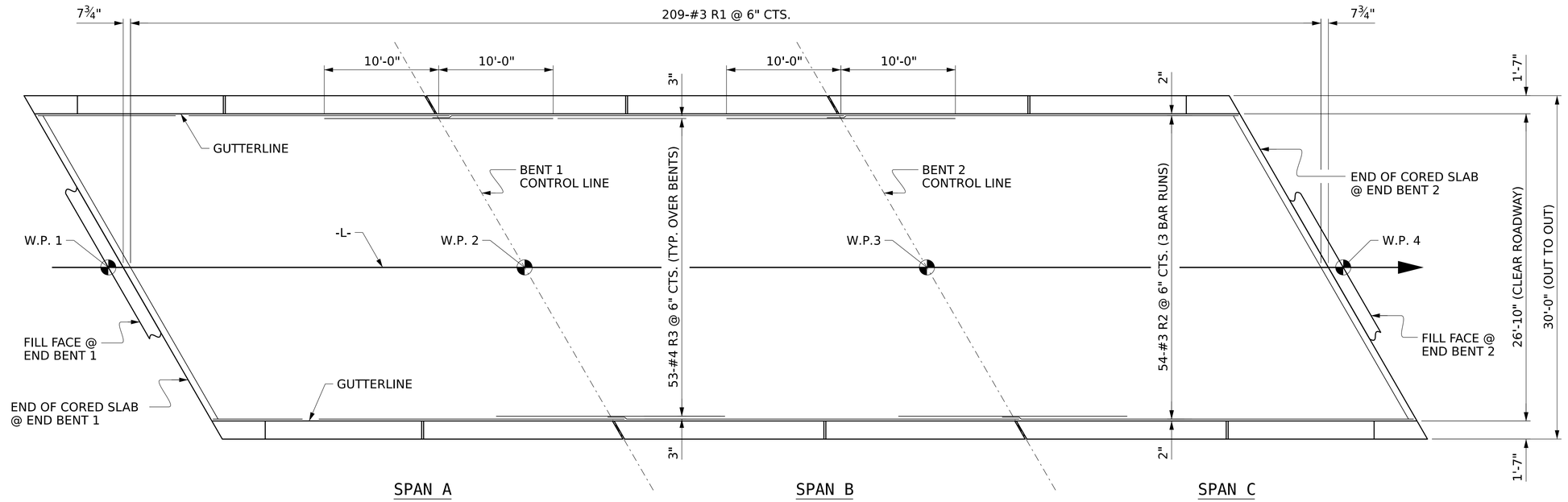
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SHEET NO. S-10
TOTAL SHEETS 27

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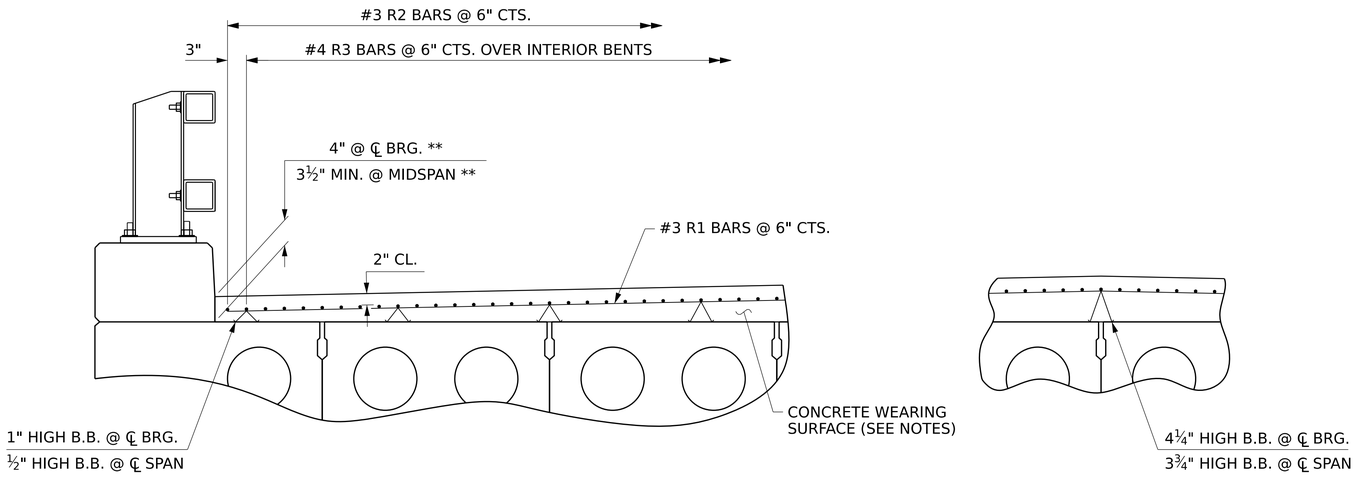
PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL

NOTES:

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL IN CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE CURB. THE COST OF THE #3 BARS AND #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.



REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	209	#3	STR.	30'-7"	2,403
*R2	162	#3	STR.	36'-0"	2,193
*R3	106	#4	STR.	20'-0"	1,416
* EPOXY COATED REINFORCING STEEL				LBS.	6,012
CONCRETE WEARING SURFACE				SQ. FT.	2,825

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3	1'-6"
#4	1'-11"

GROOVING BRIDGE FLOORS

APPROACH SLABS	548	SQ.FT.
BRIDGE DECK	2,509	SQ.FT.
TOTAL	3,057	SQ.FT.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 6 OF 7

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
381F69D0AD974BD...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING SURFACE

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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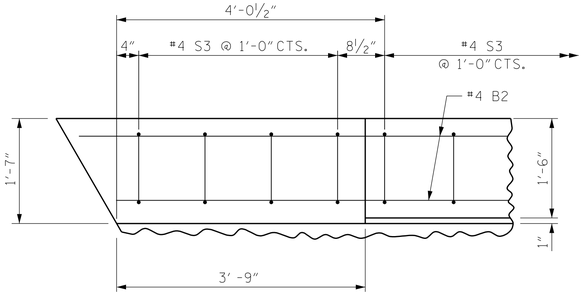
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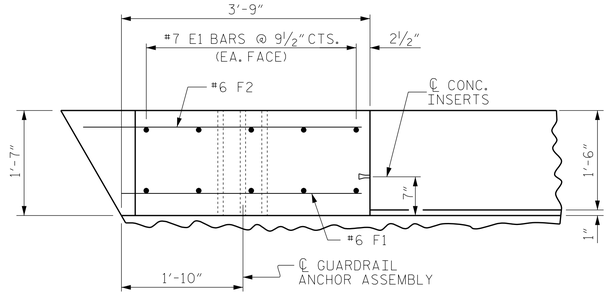
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BILL OF MATERIAL FOR 2 CURBS & 4 END POSTS

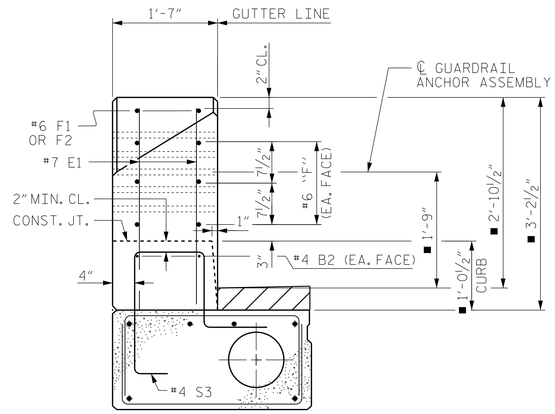
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B2	48	#4	STR.	10'-3"	329
✳E1	40	#7	STR.	3'-0"	245
✳F1	16	#6	STR.	3'-5"	82
✳F2	16	#6	STR.	4'-2"	100
✳EPOXY COATED REINFORCING STEEL				LBS.	756
CLASS AA CONCRETE				CU. YDS.	14.3
1'-7" x 1'-0" CONCRETE CURB				LIN. FT.	210.58



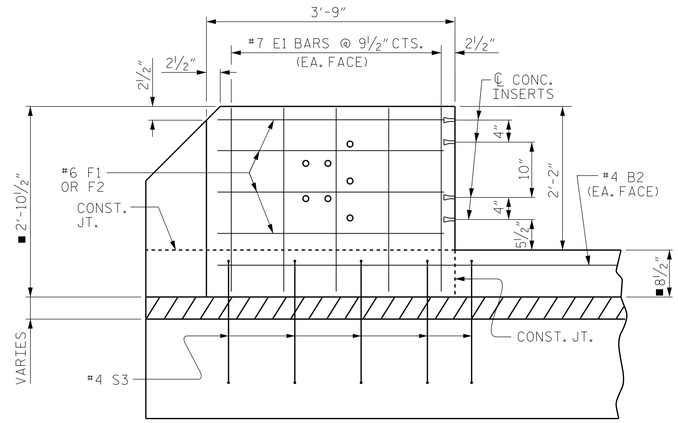
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

■ DIMENSIONS MEASURED AT GUTTER LINE

CURB AND END POST FOR 32" ALASKA RAIL

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 7 OF 7

DocuSigned by:
381F69D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE CURBS & END POSTS

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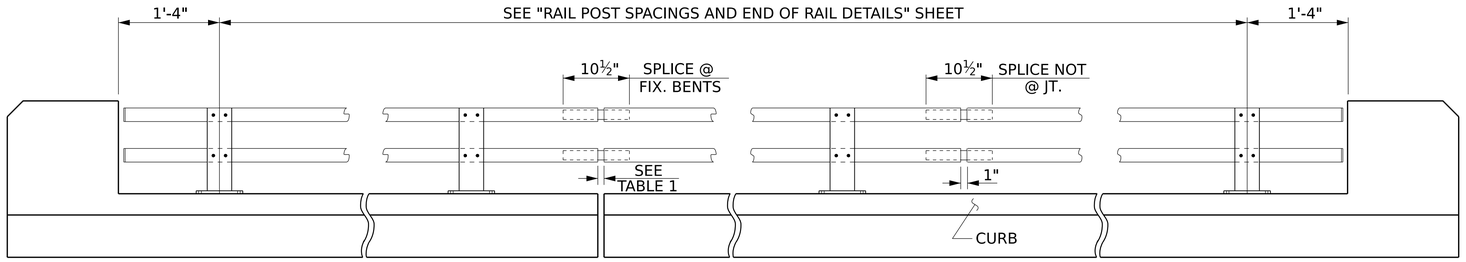
DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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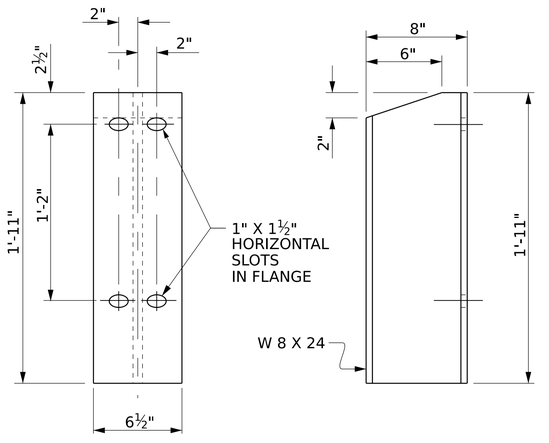
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ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR9.



FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

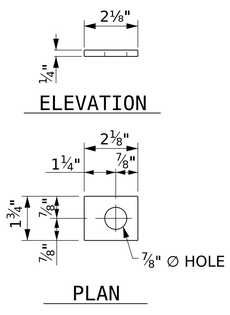
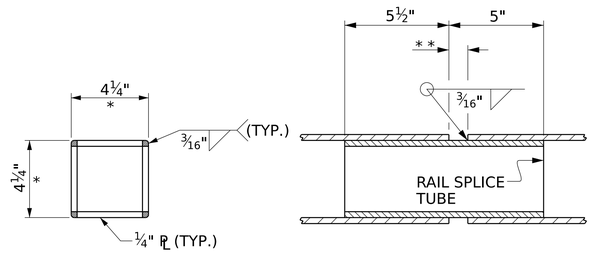


PLATE WASHER

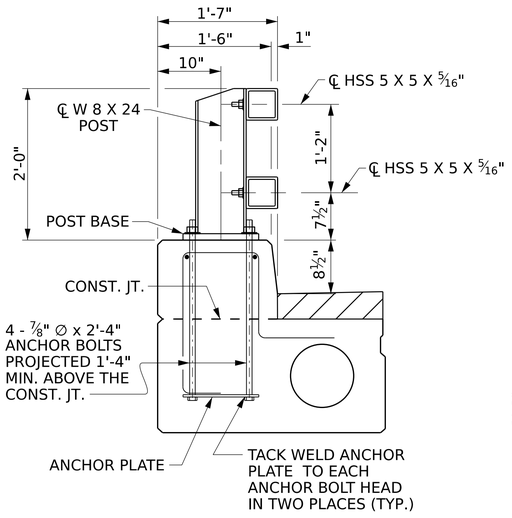
TABLE 1	
	RAIL OPENING
BENT 1	1½"
BENT 2	1½"



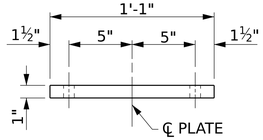
RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

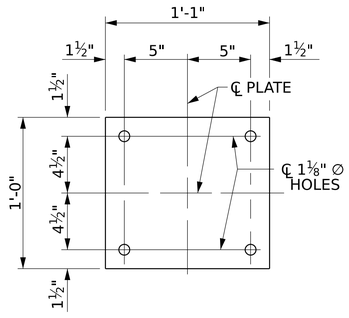
* * -1" FOR SPLICE NOT AT EXPANSION JOINT; SEE TABLE 1 FOR OPENING FOR SPLICES AT EXPANSION JOINTS.



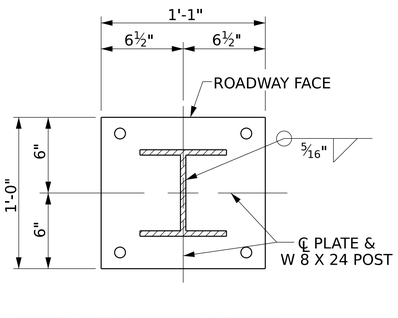
SECTION THRU RAIL



FRONT ELEVATION

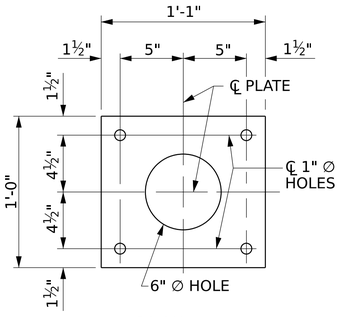


PLAN

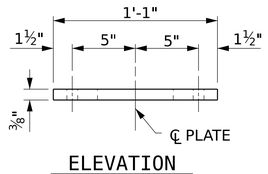


POST ATTACHMENT DETAIL

POST BASE DETAILS



PLAN



ELEVATION

ANCHOR PLATE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

GROOVED CONTRACTION JOINTS,½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" ∅ WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 32" ALASKA RAIL, SEE THE STANDARD SPECIFICATIONS.

METAL RAIL LENGTH 193.75 LIN. FT.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32" ALASKA RAIL

DocuSigned by: TOM M. FORD, NORTH CAROLINA, PROFESSIONAL ENGINEER, SEAL 052027, 381F69D0AD9743D... 9/22/2026

ASSEMBLED BY : J. PARROTT	DATE : 3/2026		
CHECKED BY: T. FORD	DATE : 3/2026		
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026		
DRAWN BY : RWW 7/14	REV. 12/17	MAA/THC	
CHECKED BY : TMG 7/14	REV. 5/18	MAA/THC	
	REV. 10/23	BNB/SNM	

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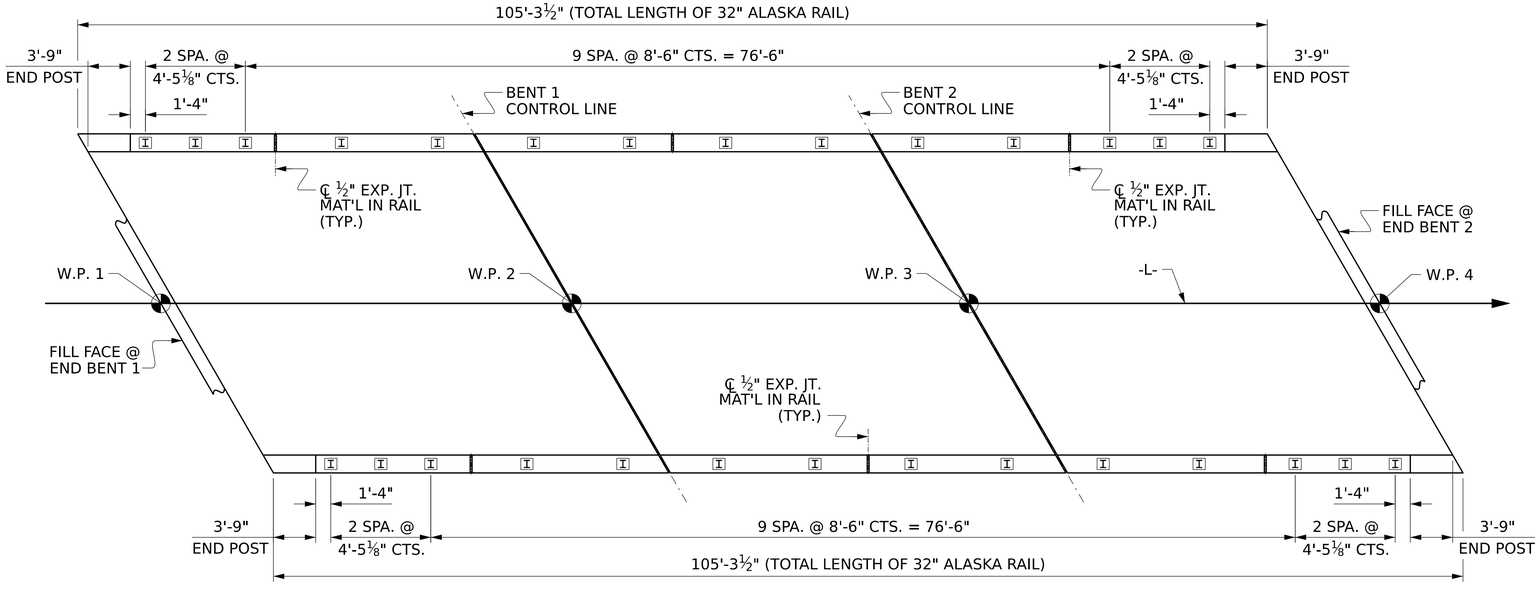
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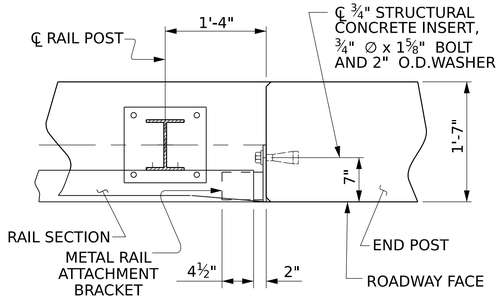
8/26/21

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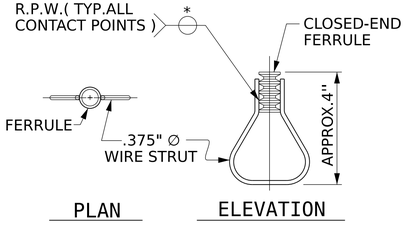
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PLAN OF RAIL POST SPACINGS



PLAN - RAILS AND END POST



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

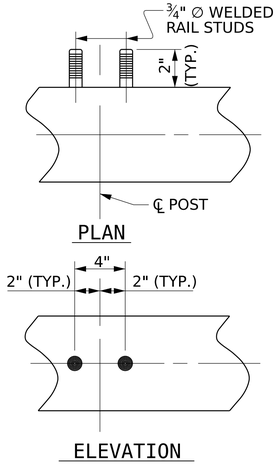
A. ½" METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO ASTM A123.

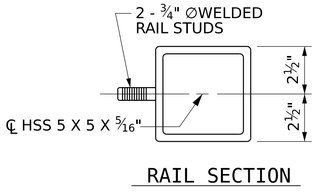
B. ¾" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅝" BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

THE ¾" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

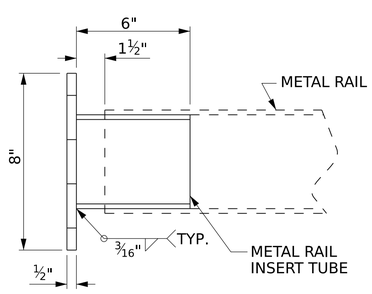
THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT, THE ½" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

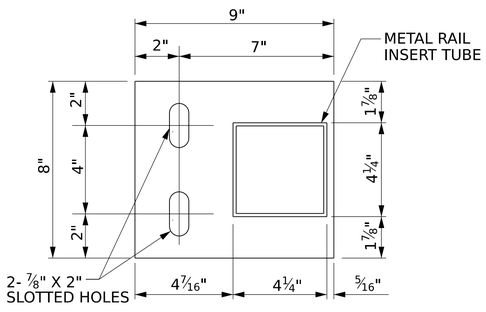
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾" ∅ x 6½" BOLTS AND 2'' O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLTS SHALL APPLY TO THE ¾" ∅ x 6½" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.





RAIL STUD DETAILS





METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 2 OF 3

DocuSigned by:
TOM FORD
PROFESSIONAL ENGINEER
SEAL 052027
3817F6B00AD3743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR 32" ALASKA RAIL

ASSEMBLED BY : J. PARROTT	DATE : 3/2026	REV. 12/17	MAA/THC
CHECKED BY: T. FORD	DATE : 3/2026	REV. 5/18	MAA/THC
DESIGN ENGINEER OF RECORD: T. FORD	DATE : 8/2026	REV. 10/23	BNB/SNM
DRAWN BY : RWW 7/14			
CHECKED BY : TMG 7/14			

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919-420-7660
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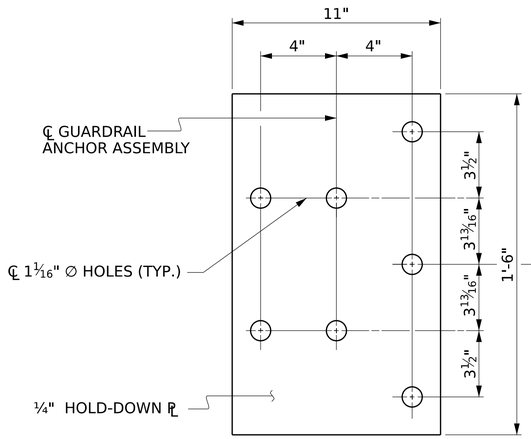
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2			4			27

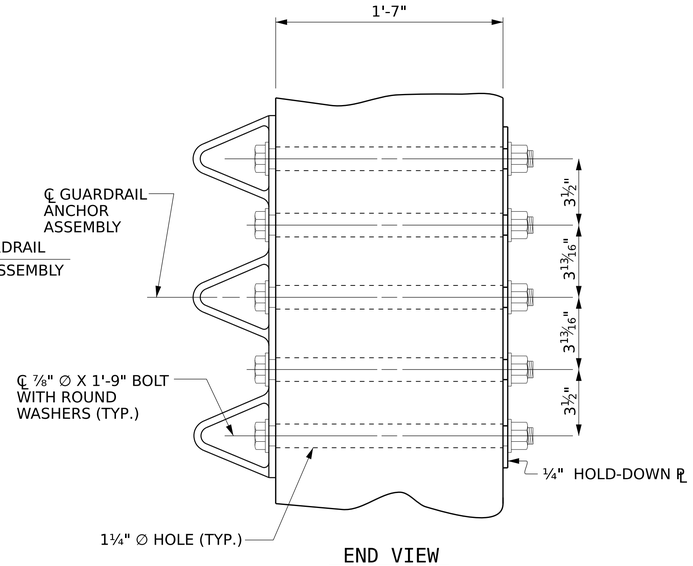
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PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ 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 ⅞'' ∅ 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 THE PARAPET. 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 ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

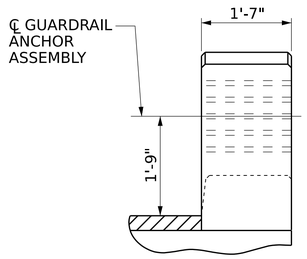
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.

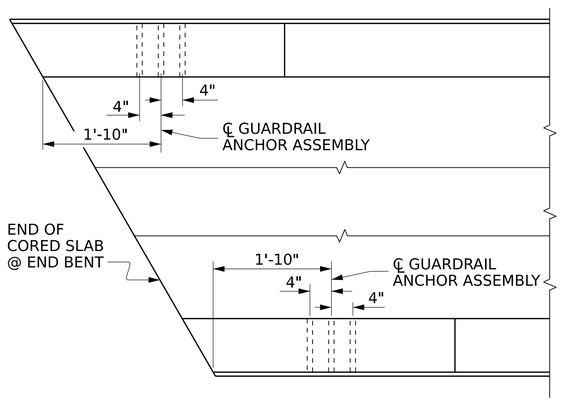


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(32" ALASKA RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. **HB-0060**
CALDWELL COUNTY
STATION **13+74.00 -L-**
SHEET 3 OF 3

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
38F69D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR 32" ALASKA RAIL

ASSEMBLED BY : J. PARROTT		DATE : 3/2026			
CHECKED BY : T. FORD		DATE : 3/2026			
DESIGN ENGINEER OF RECORD: T. FORD		DATE : 8/2026			
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			

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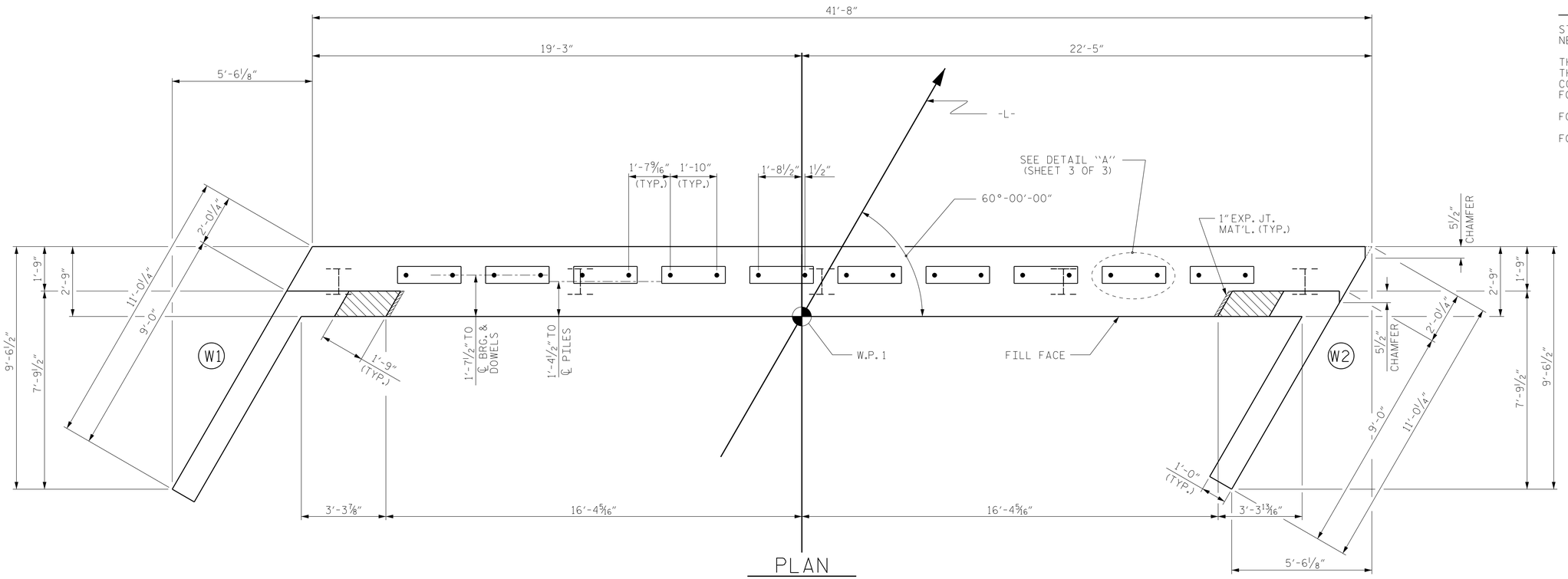
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2			4			27

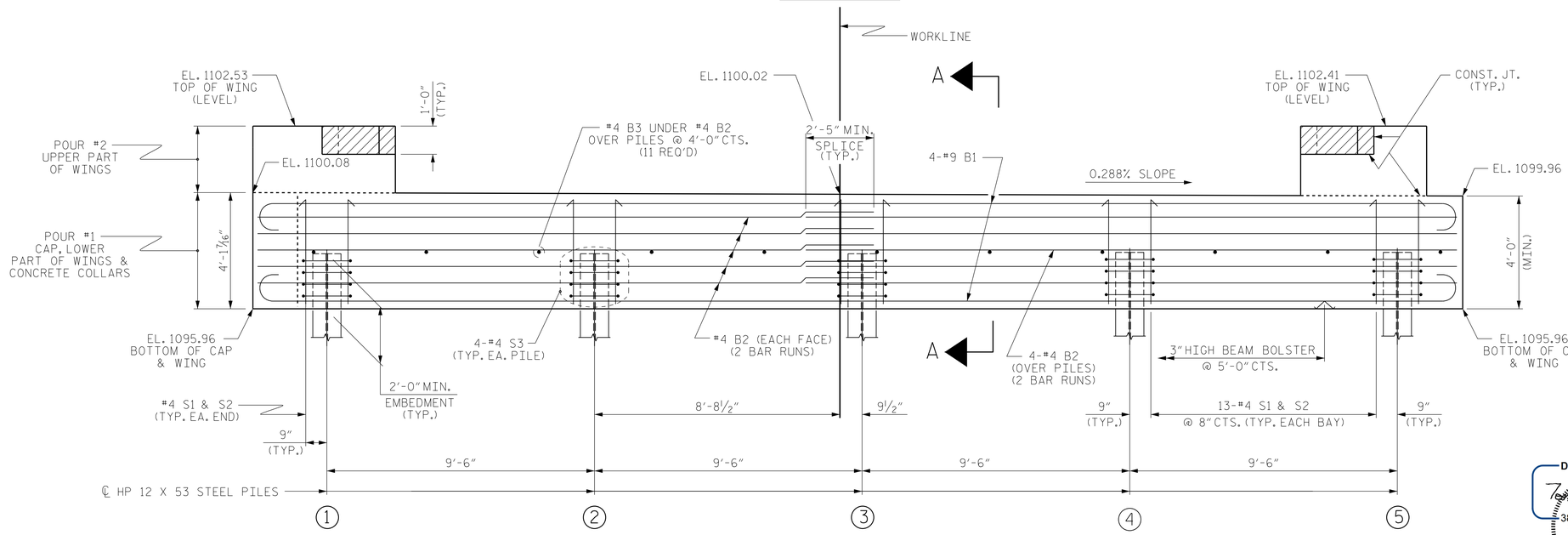
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PLAN



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 CONCRETE CURB IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 1 OF 3

DocuSigned by:
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
381F69D0AD9743E...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DRAWN BY :	J. PARROTT	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

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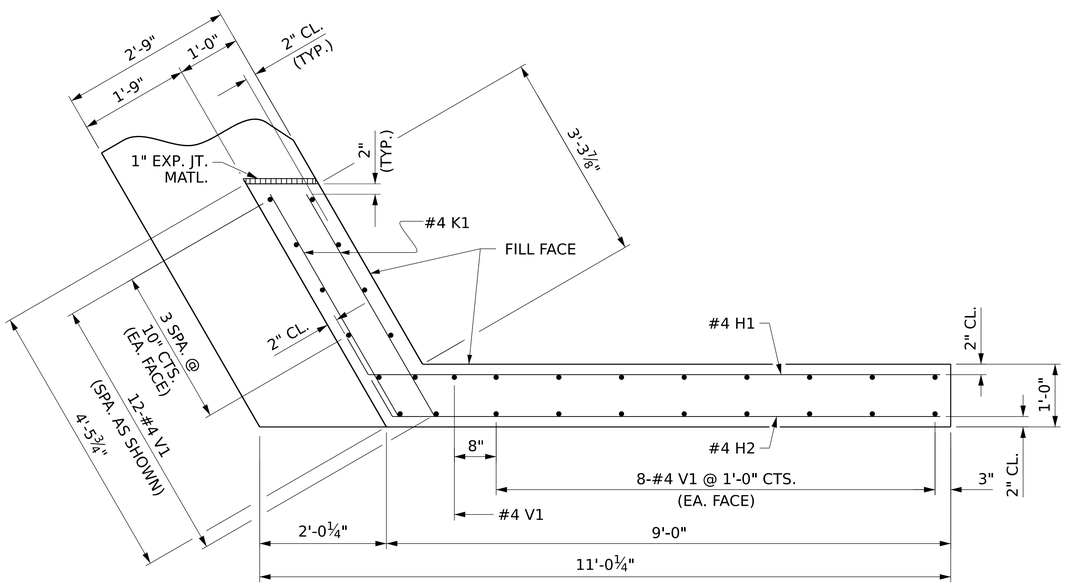
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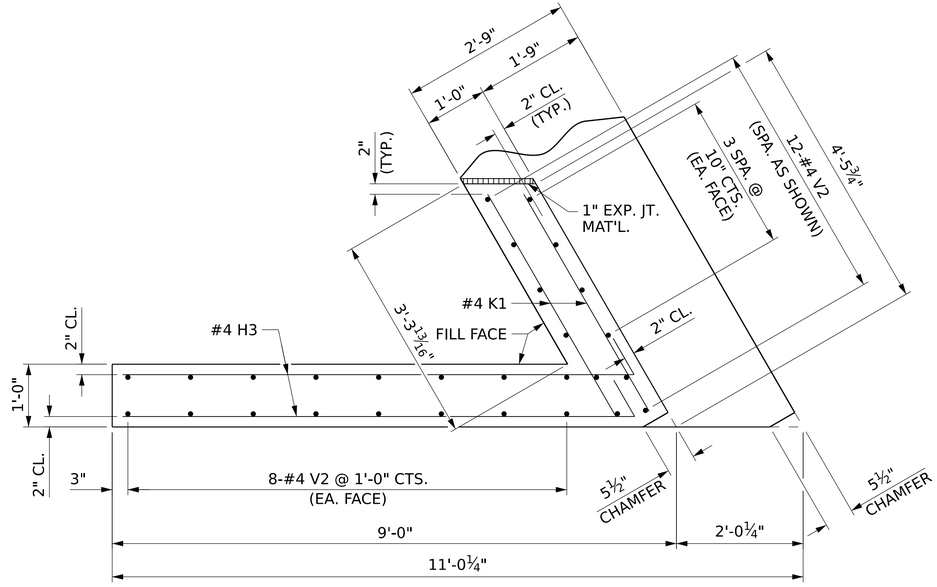
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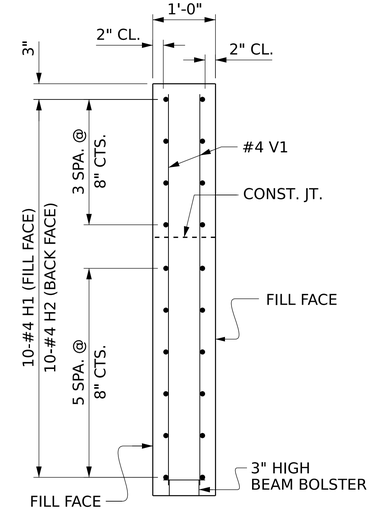
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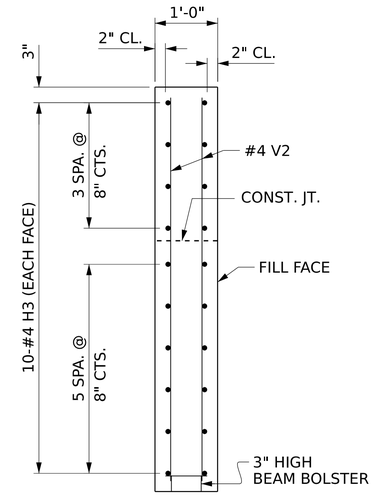
PLAN OF WING W1



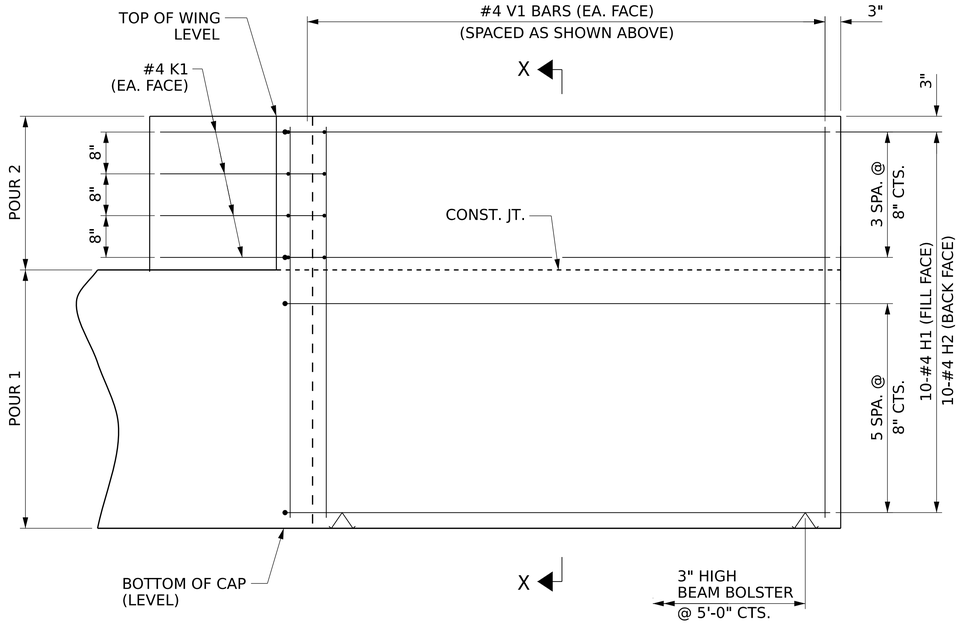
PLAN OF WING W2



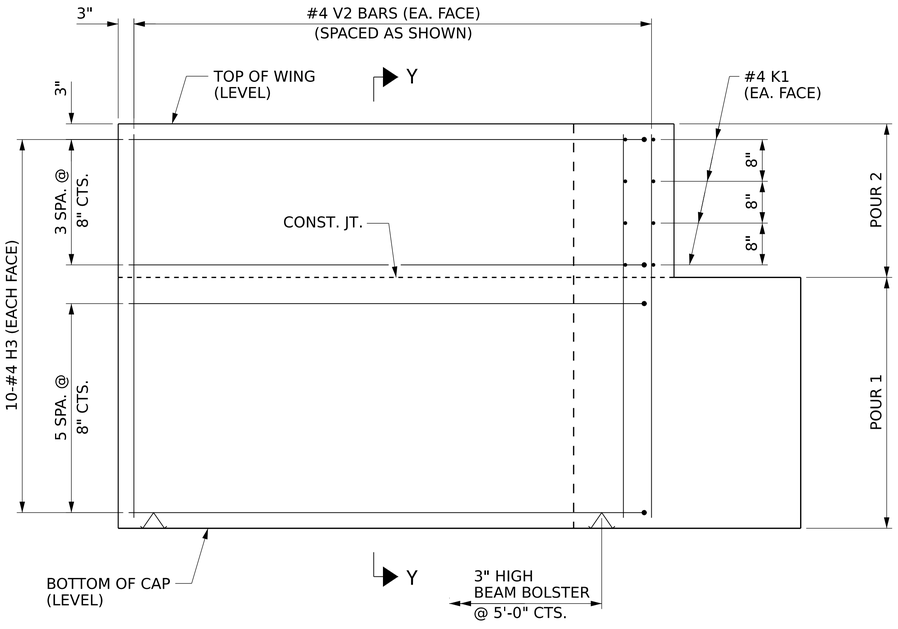
SECTION X-X



SECTION Y-Y



ELEVAITON OF WING W1



ELEVAITON OF WING W2

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9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 WING DETAILS

PROJECT NO. **HB-0060**
CALDWELL COUNTY
STATION **13+74.00 -L-**
SHEET 2 OF 3

DRAWN BY :	J. PARROTT — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

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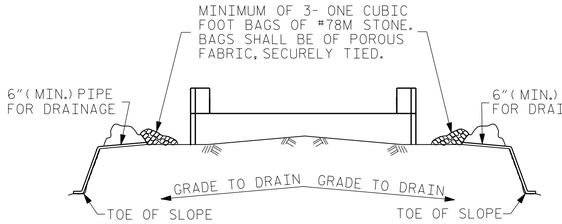
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TOTAL SHEETS 27

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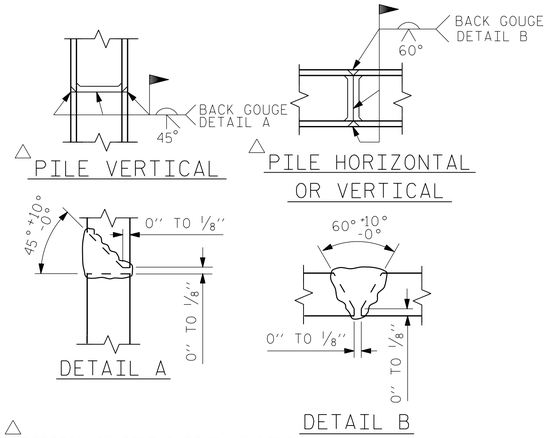


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

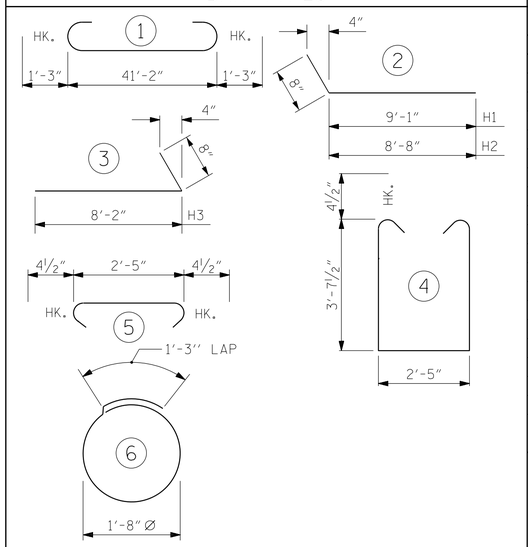
TEMPORARY DRAINAGE AT END BENT



△ 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	8	#9	1	43'-8"	1188
B2	28	#4	STR	21'-11"	410
B3	11	#4	STR	2'-5"	18
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
H3	20	#4	3	8'-10"	118
K1	16	#4	STR	3'-11"	42
S1	54	#4	4	10'-5"	376
S2	54	#4	5	3'-2"	114
S3	20	#4	6	6'-6"	87
V1	29	#4	STR	6'-2"	119
V2	28	#4	STR	6'-1"	114

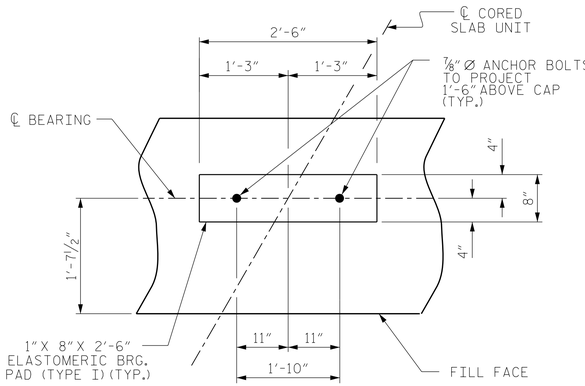
REINFORCING STEEL (END BENT 1) 2713 LBS.

CLASS A CONCRETE BREAKDOWN (END BENT 1)

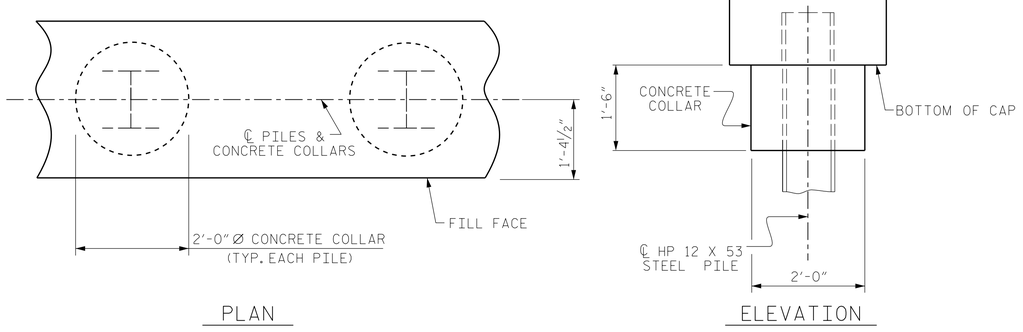
POUR #1 CAP, LOWER PART OF WINGS & COLLARS 20.5 C.Y.

POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 22.6 C.Y.

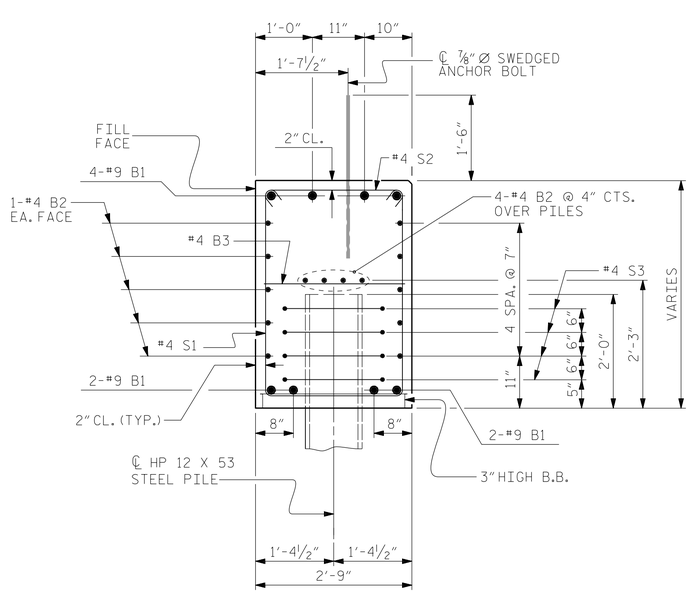


DETAIL "A"



PLAN ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

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

DocuSigned by: NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TRIM M. FORD 3817F6B0AD9743D... 9/22/2026

PROJECT NO. HB-0060

CALDWELL COUNTY

STATION 13+74.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

DRAWN BY :	J. PARROTT	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

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919-420-7660
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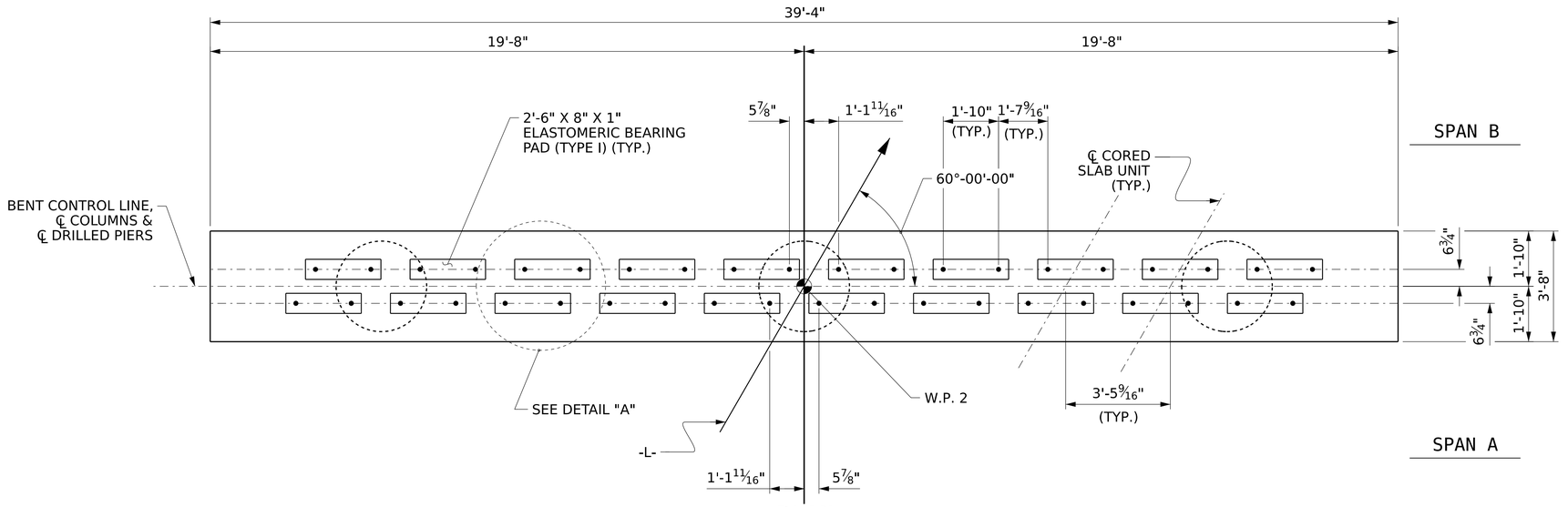
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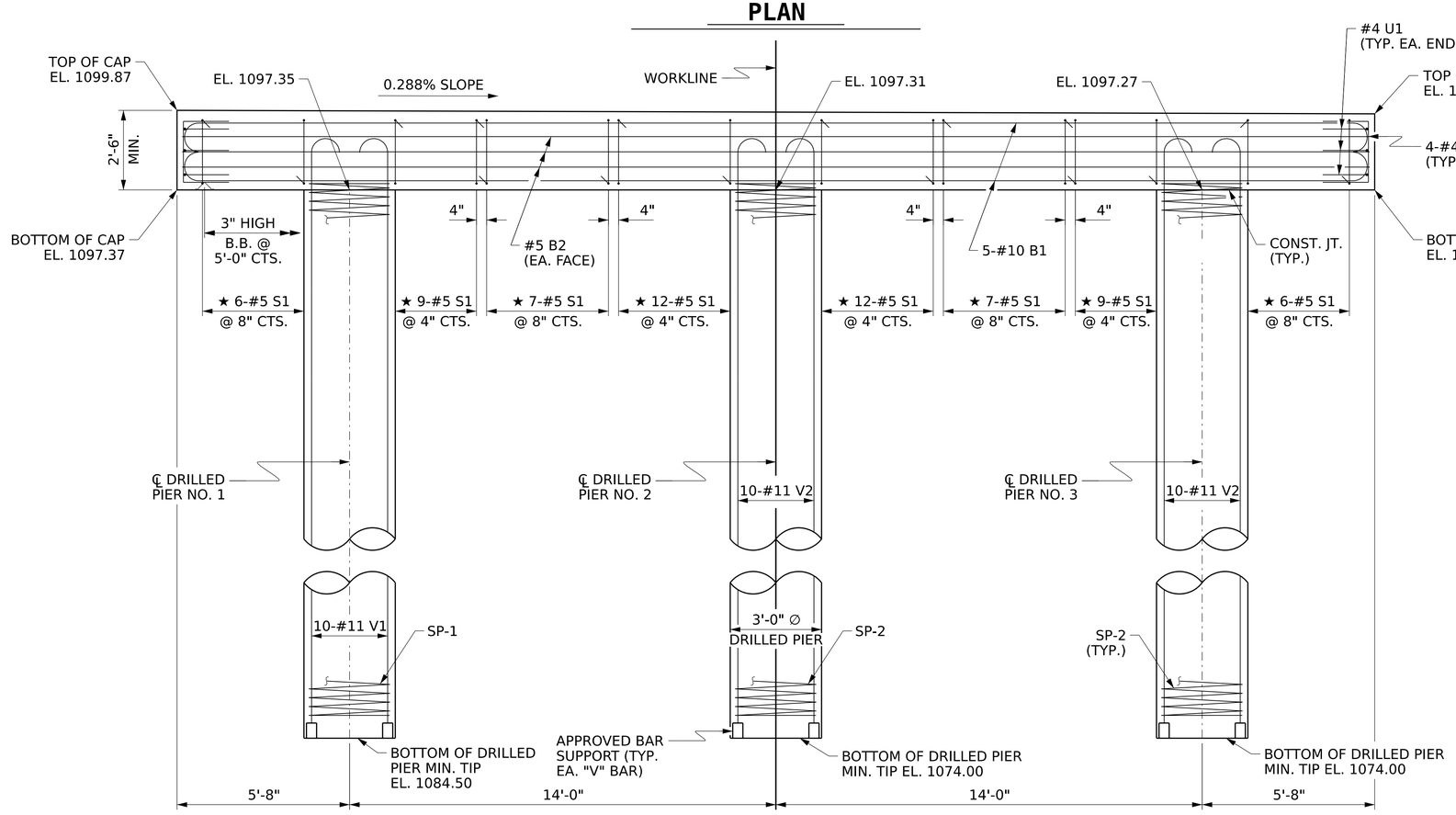
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PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH 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.

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

CONTRACTOR SHALL CONFIRM "V" BAR EMBEDMENT INTO CAP PRIOR TO POURING OF DRILLED PIER CONCRETE.

DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 1 OF 2

DocuSigned by:
381F69D0AD974BD...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

DRAWN BY :	J. PARROTT	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

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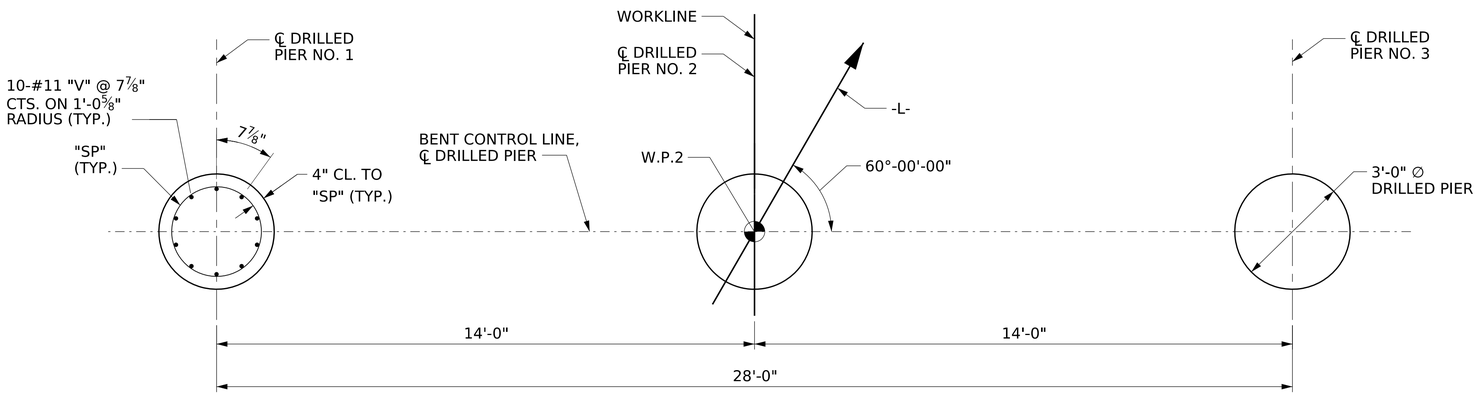
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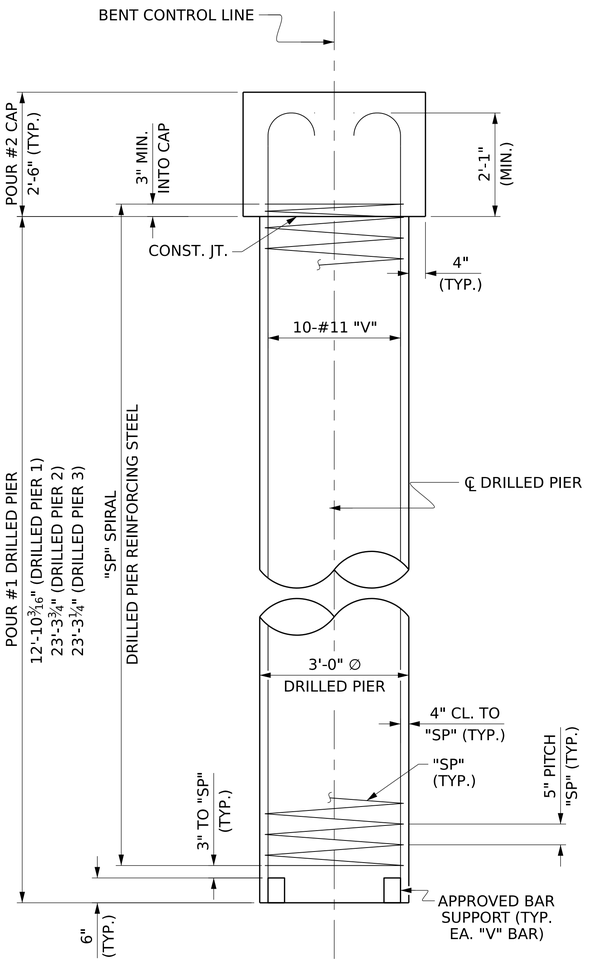
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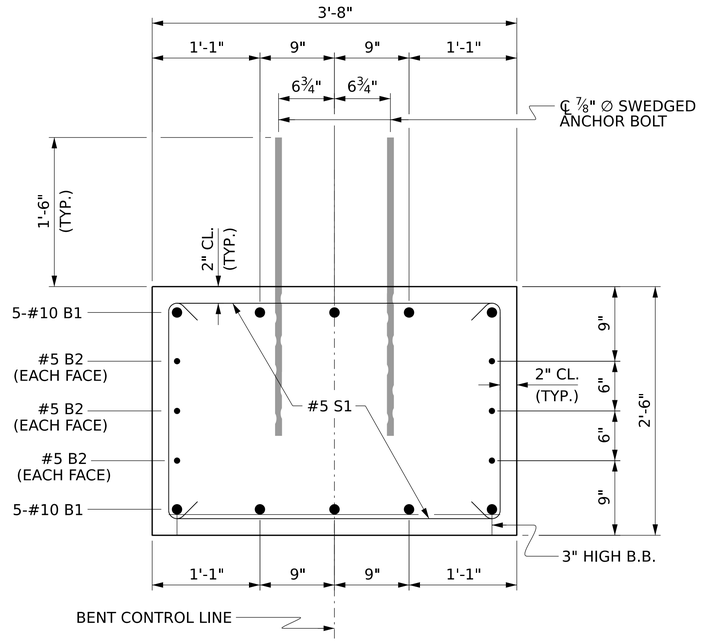
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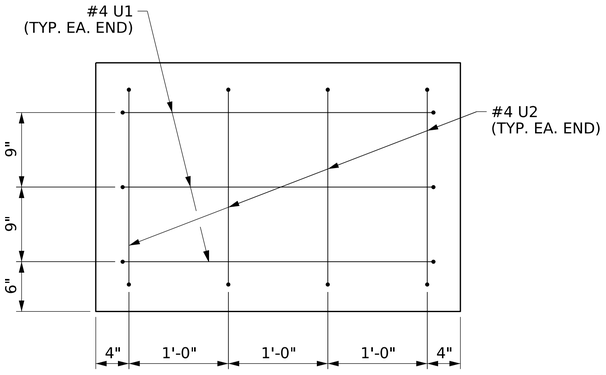
PLAN OF DRILLED PIERS



END ELEVATION



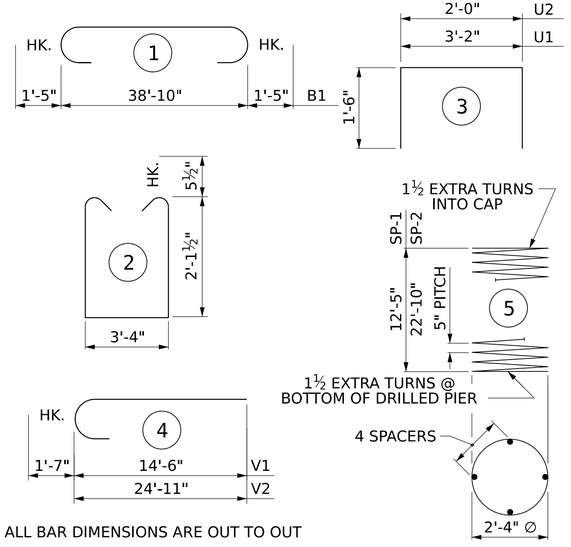
SECTION THRU CAP



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	41'-8"	1,793
B2	6	#5	STR	39'-0"	244
S1	68	#5	2	8'-6"	603
U1	6	#4	3	6'-2"	25
U2	8	#4	3	5'-0"	27
V1	10	#11	4	16'-1"	855
V2	20	#11	4	26'-6"	2,816

REINFORCING STEEL (BENT 1) 6,363 LBS.

SP-1	1	*	5	236'-11"	247
SP-2	2	*	5	416'-4"	868

SPIRAL COLUMN REINFORCING STEEL (BENT 1) 1,115 LBS.

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

CLASS A CONCRETE BREAKDOWN (BENT 1)

POUR #2 (CAP)	13.4 C.Y.
TOTAL CLASS A CONCRETE	13.4 C.Y.

DRILLED PIERS: (BENT 1)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	15.6 C.Y.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

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NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
381F69D0AD9743D...
9/22/2026

DRAWN BY :	J. PARROTT	DATE : 5/2026
CHECKED BY :	T. FORD	DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE : 8/2026

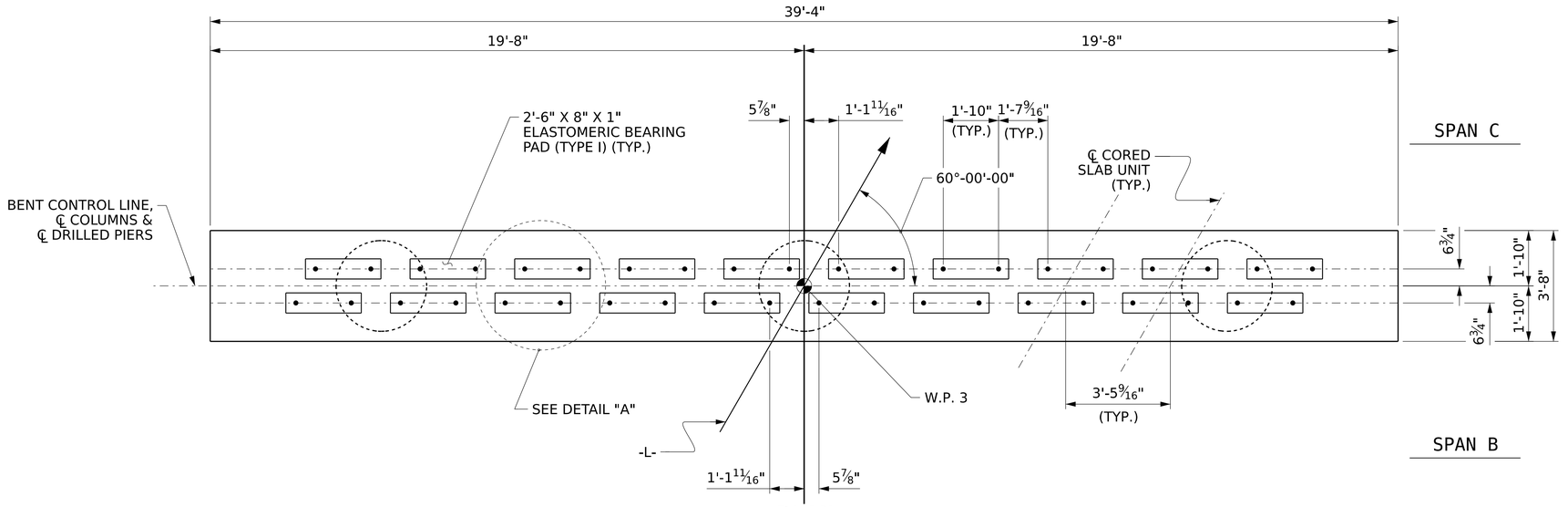
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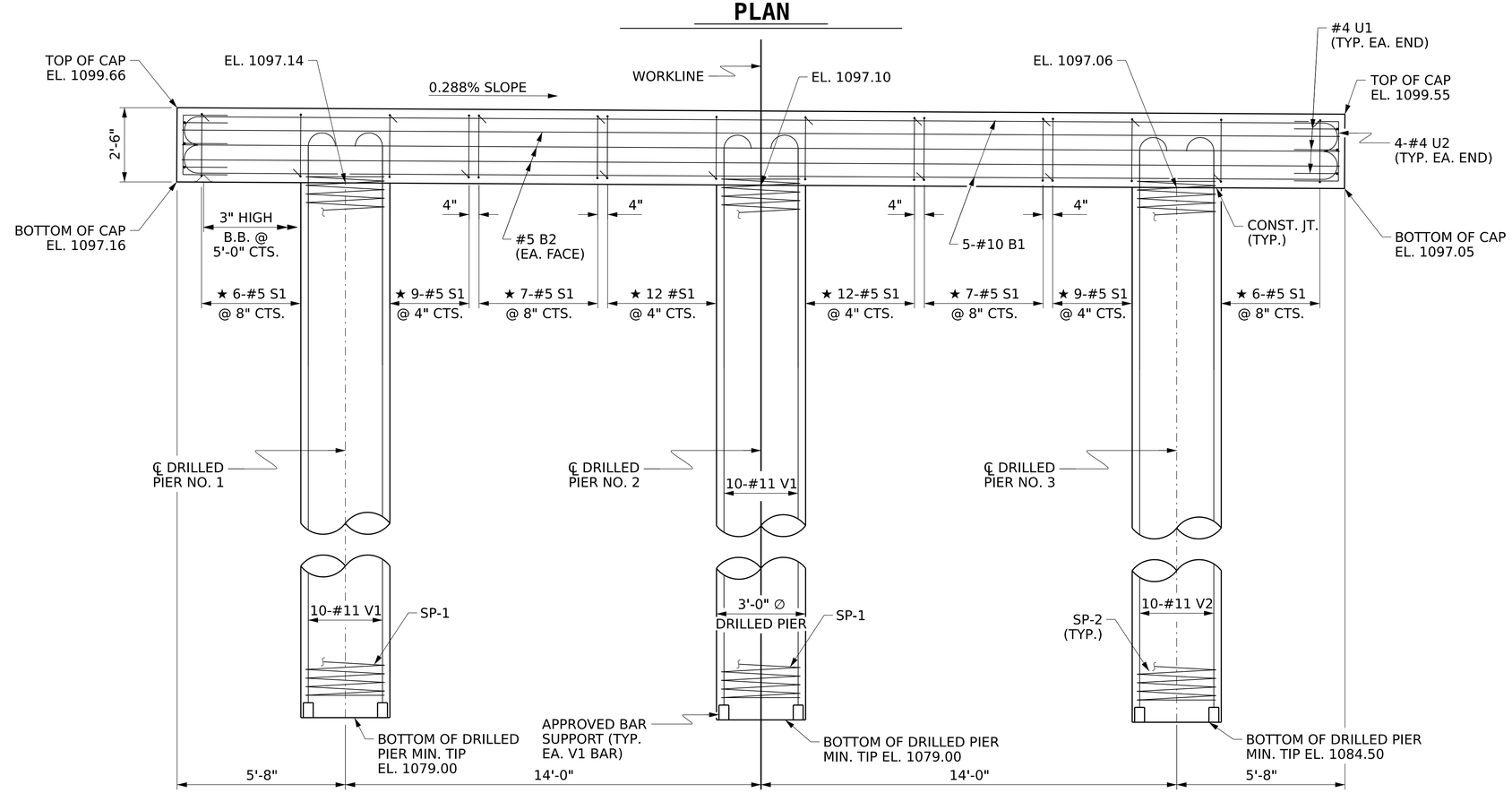
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PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH 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.

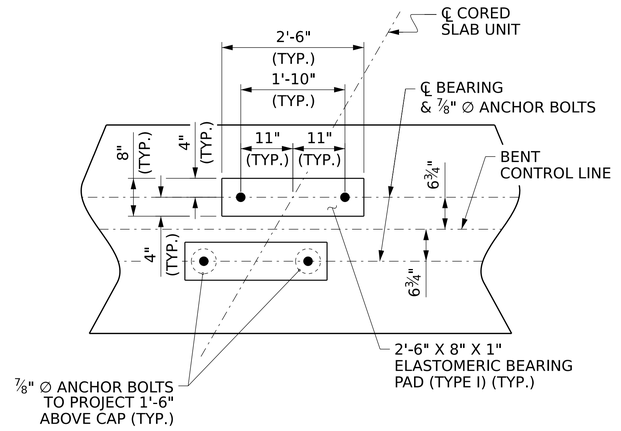
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

CONTRACTOR SHALL CONFIRM "V" BAR EMBEDMENT INTO CAP PRIOR TO POURING OF DRILLED PIER CONCRETE.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 1 OF 2

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Tom Ford
3B1F69D0AD9743D...
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

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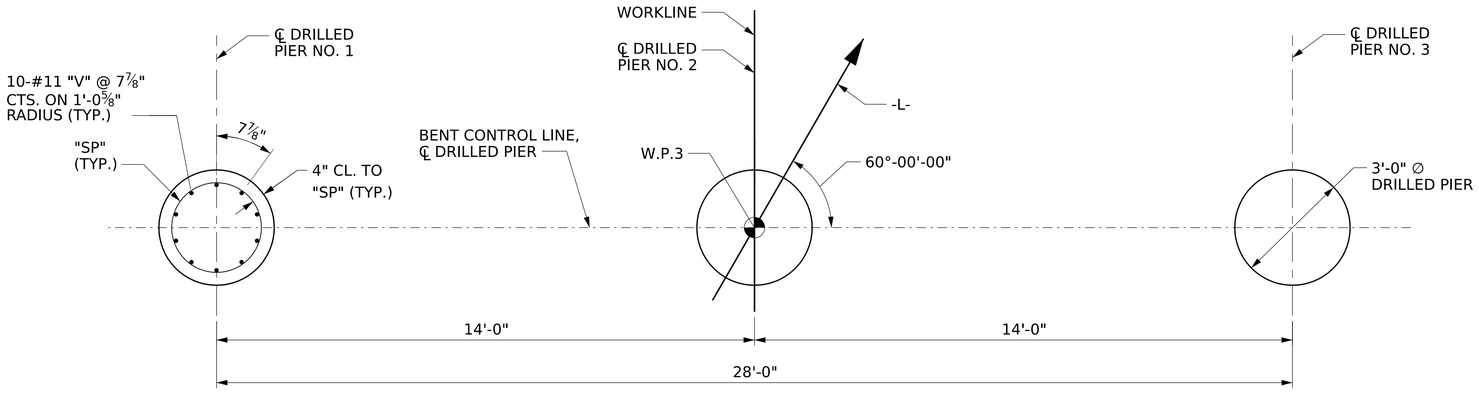
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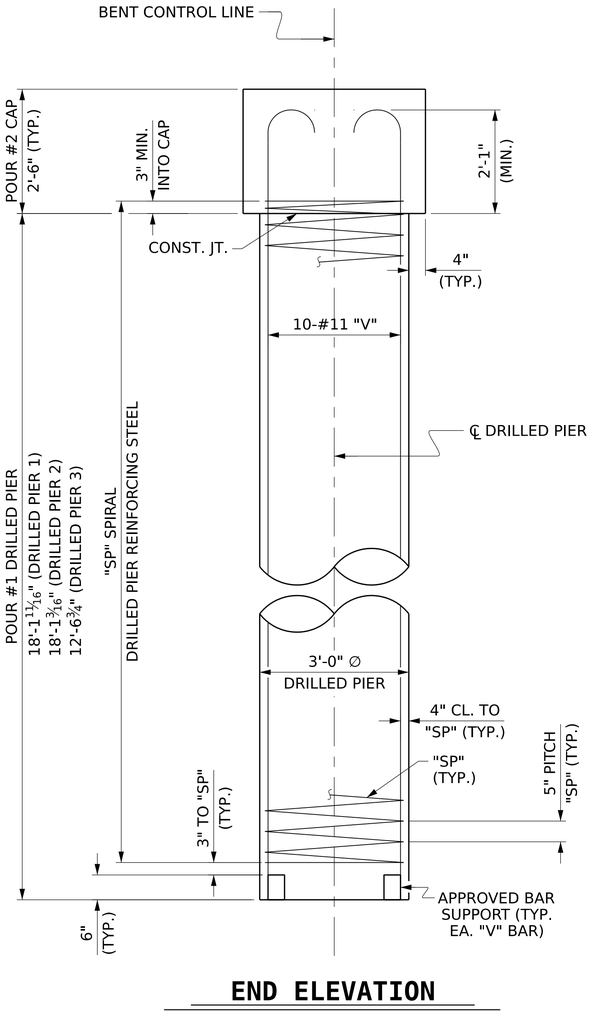
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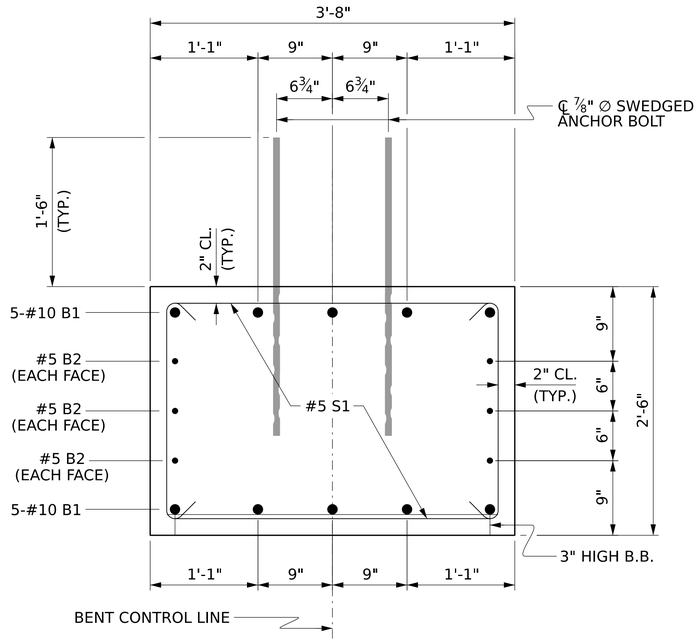
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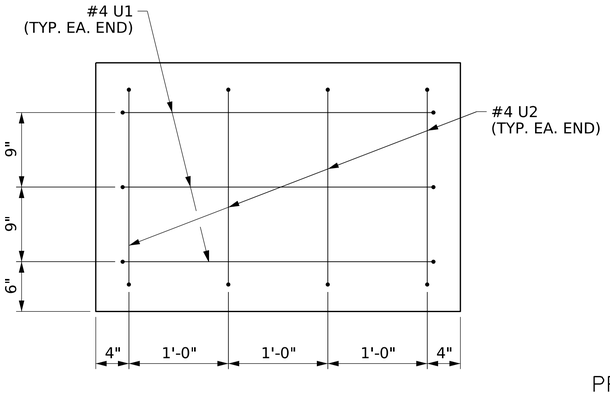
PLAN OF DRILLED PIERS



END ELEVATION



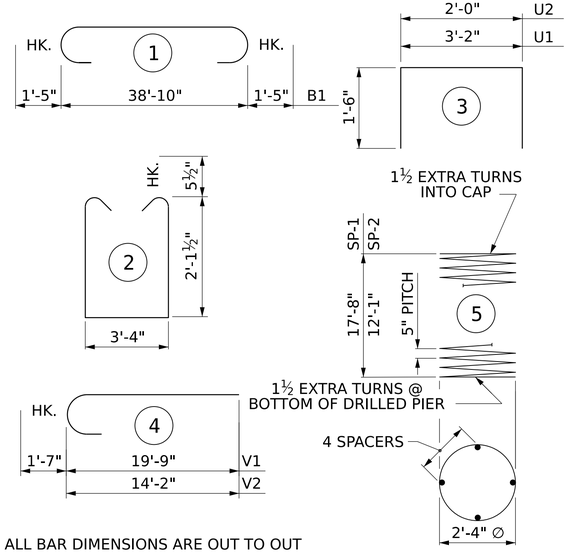
SECTION THRU CAP



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	41'-8"	1,793
B2	6	#5	STR	39'-0"	244
S1	68	#5	2	8'-6"	603
U1	6	#4	3	6'-2"	25
U2	8	#4	3	5'-0"	27
V1	20	#11	4	21'-4"	2,267
V2	10	#11	4	15'-9"	837

REINFORCING STEEL (BENT 2) 4,959 LBS.

SP-1	2	*	5	330'-3"	689
SP-2	1	*	5	229'-9"	240

SPIRAL COLUMN REINFORCING STEEL (BENT 1) 929 LBS.

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

CLASS A CONCRETE BREAKDOWN (BENT 2)

POUR #2 (CAP)	13.4 C.Y.
TOTAL CLASS A CONCRETE	13.4 C.Y.

DRILLED PIERS: (BENT 2)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	12.8 C.Y.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2 DETAILS

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
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9/22/2026

DRAWN BY :	J. PARROTT	DATE : 5/2026
CHECKED BY :	T. FORD	DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE : 8/2026

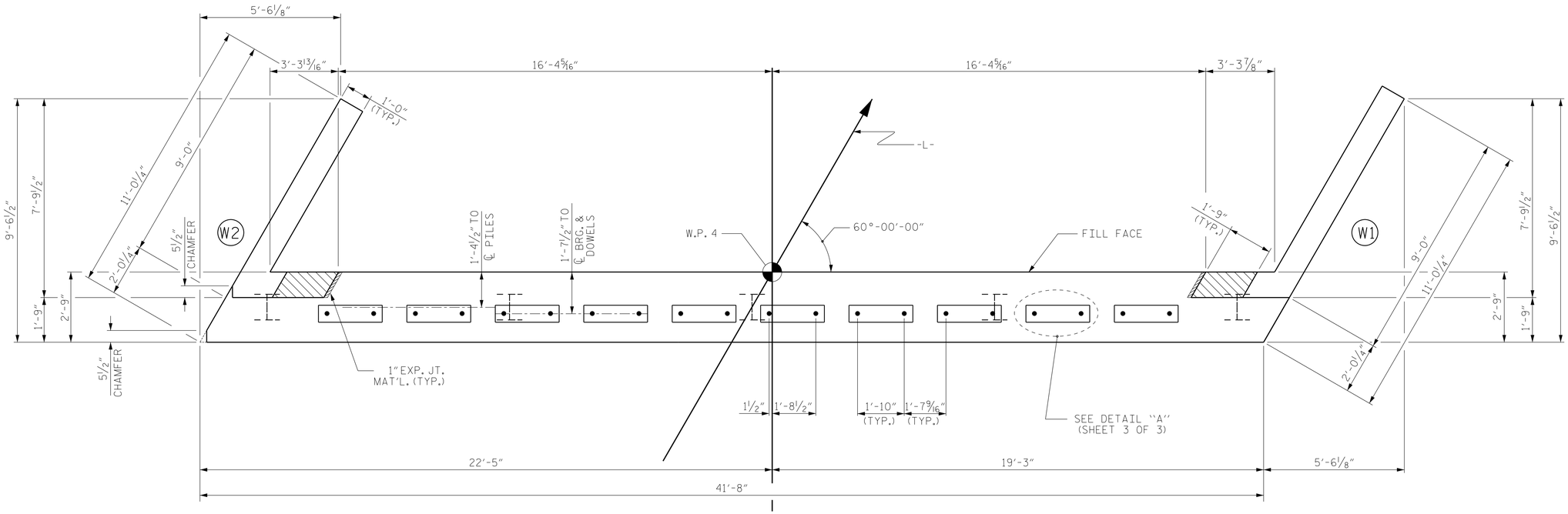
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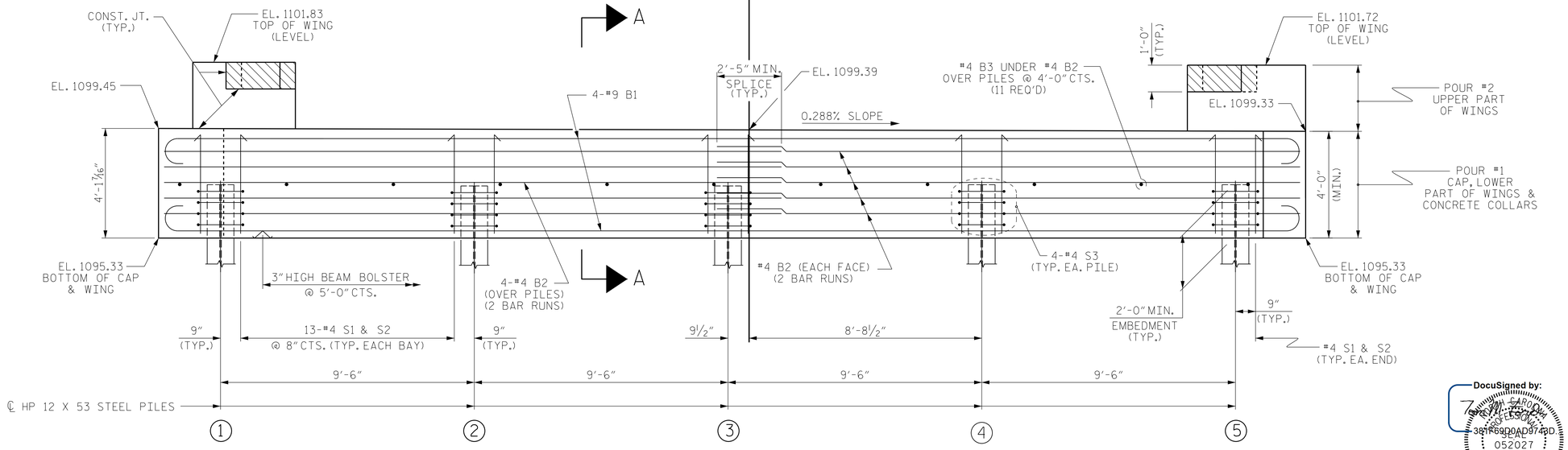
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PLAN



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 CONCRETE CURB IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD
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DRAWN BY : J. PARROTT DATE : 5/2026
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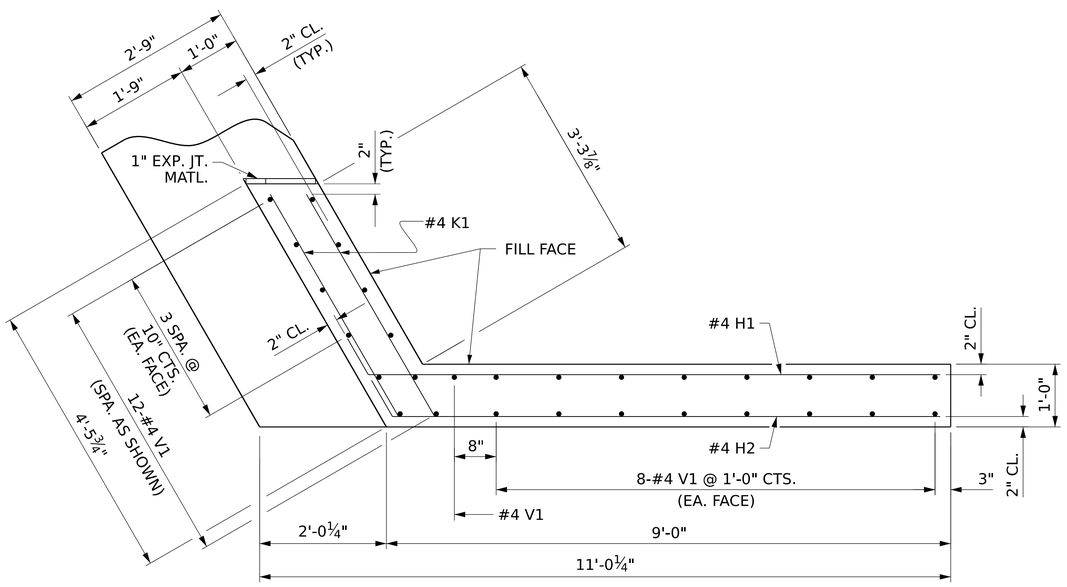
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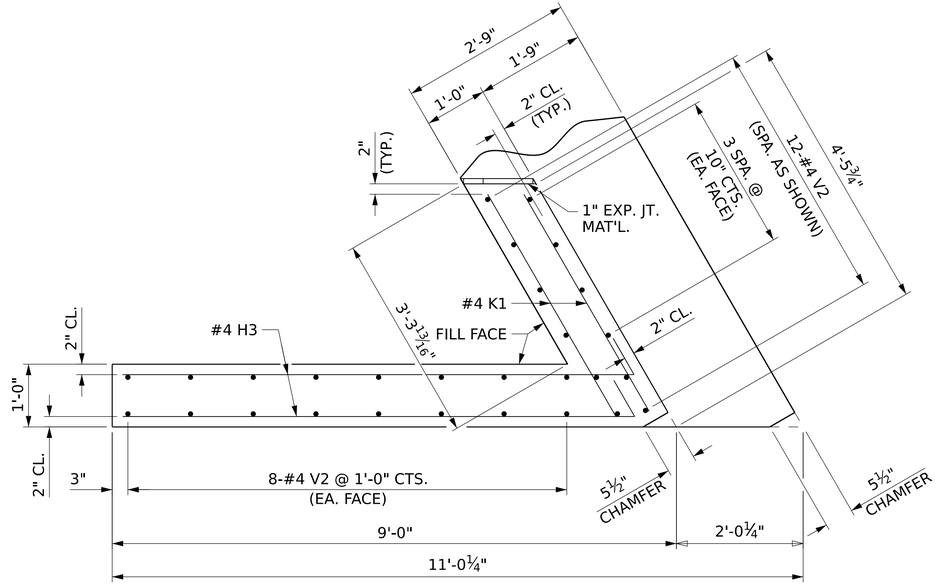
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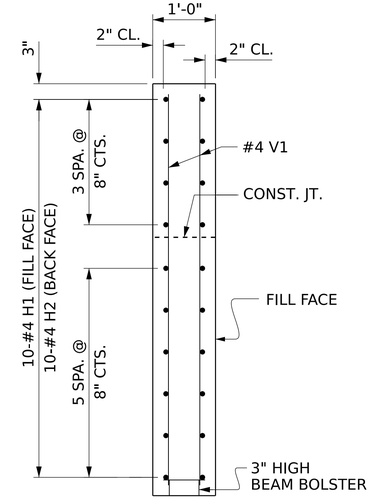
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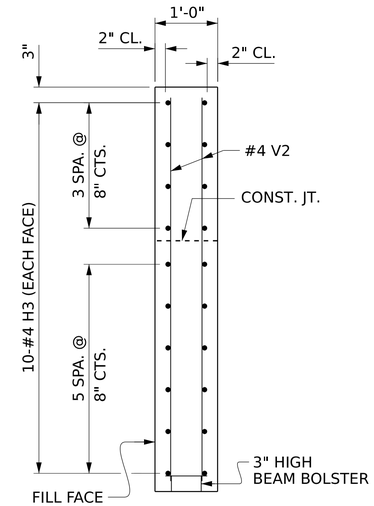
PLAN OF WING W1



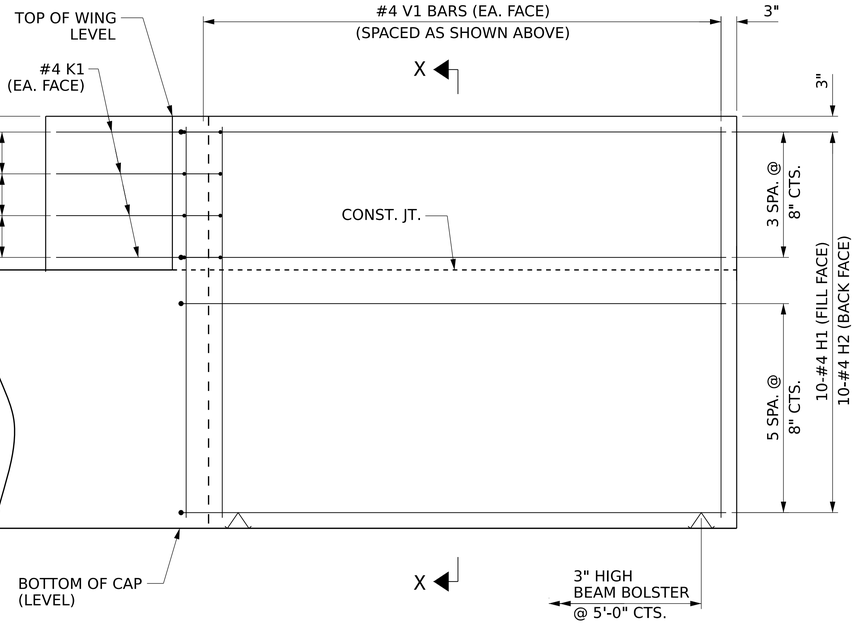
PLAN OF WING W2



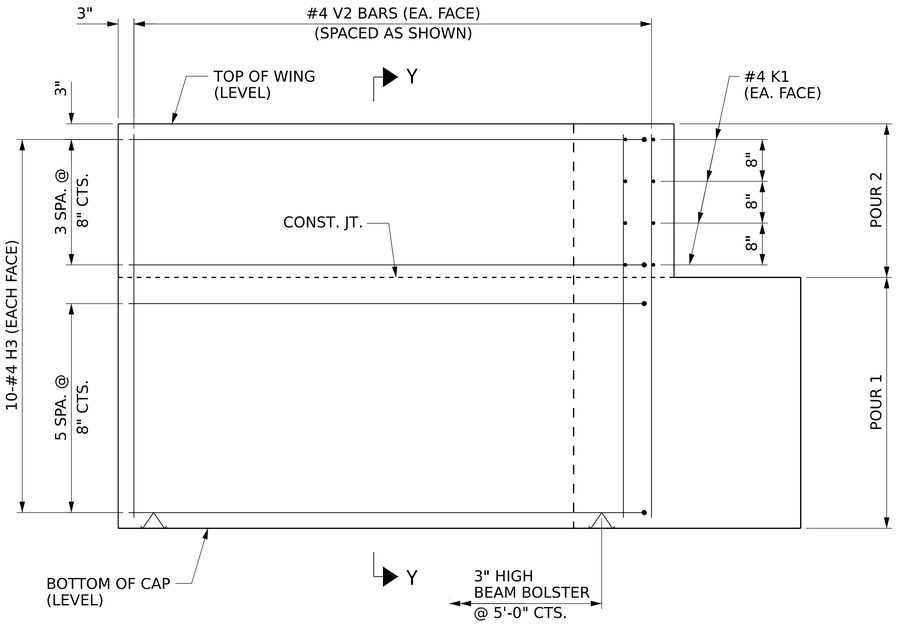
SECTION X-X



SECTION Y-Y



ELEVAITON OF WING W1



ELEVAITON OF WING W2

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PROJECT NO. **HB-0060**
CALDWELL COUNTY
STATION **13+74.00 -L-**
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2 WING DETAILS

DRAWN BY :	J. PARROTT — DATE : 5/2026
CHECKED BY :	T. FORD — DATE : 5/2026
DESIGN ENGINEER OF RECORD:	T. FORD — DATE : 8/2026

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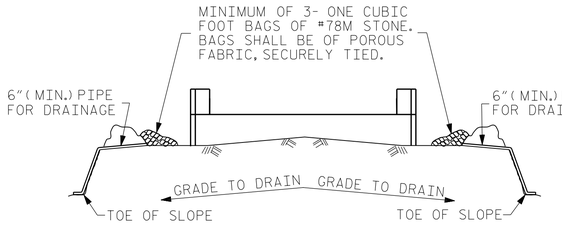
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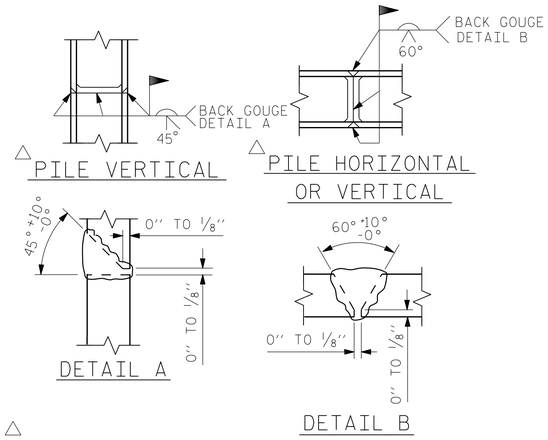


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

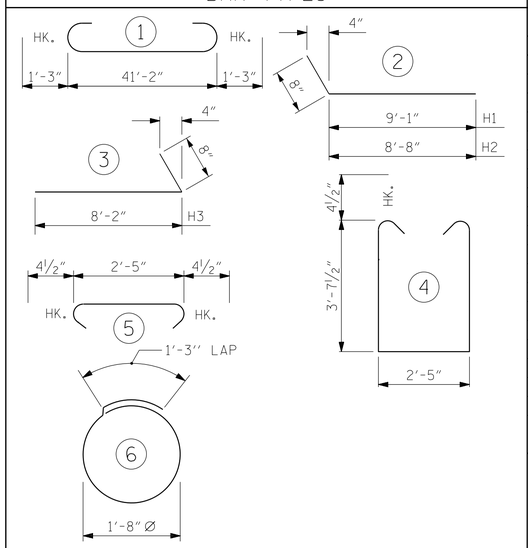
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-8"	1188
B2	28	#4	STR	21'-11"	410
B3	11	#4	STR	2'-5"	18
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
H3	20	#4	3	8'-10"	118
K1	16	#4	STR	3'-11"	42
S1	54	#4	4	10'-5"	376
S2	54	#4	5	3'-2"	114
S3	20	#4	6	6'-6"	87
V1	29	#4	STR	6'-1"	118
V2	28	#4	STR	6'-2"	115

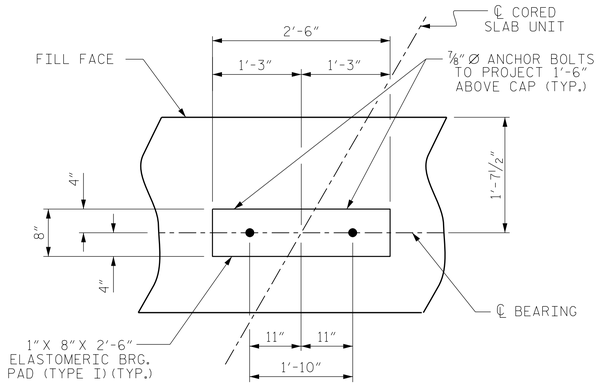
REINFORCING STEEL (END BENT 2) 2713 LBS.

CLASS A CONCRETE BREAKDOWN (END BENT 2)

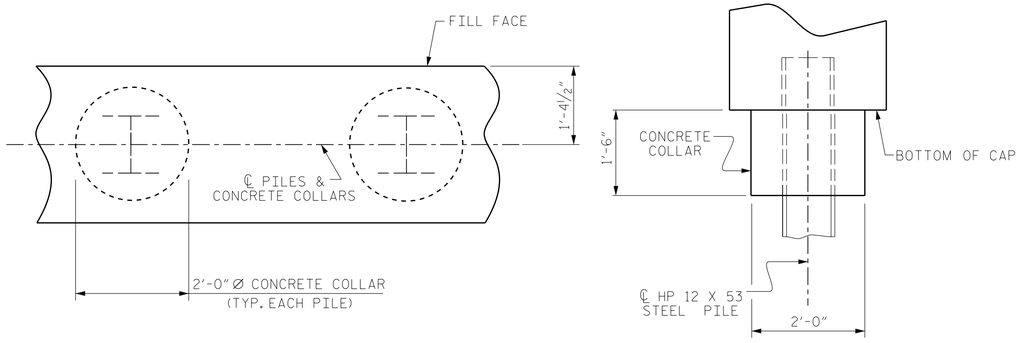
POUR #1 CAP, LOWER PART OF WINGS & COLLARS 20.5 C.Y.

POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 22.6 C.Y.

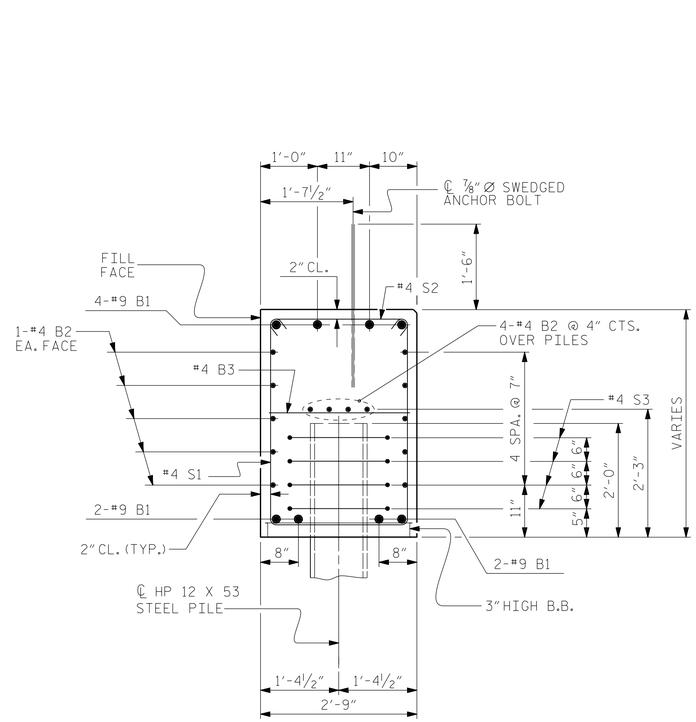


DETAIL "A"



PLAN ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

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

DocuSigned by: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 ENGINEER TOM M. FORD 38778900AD974BD...
9/22/2026

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

DRAWN BY :	J. PARROTT	DATE :	5/2026
CHECKED BY :	T. FORD	DATE :	5/2026
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	8/2026

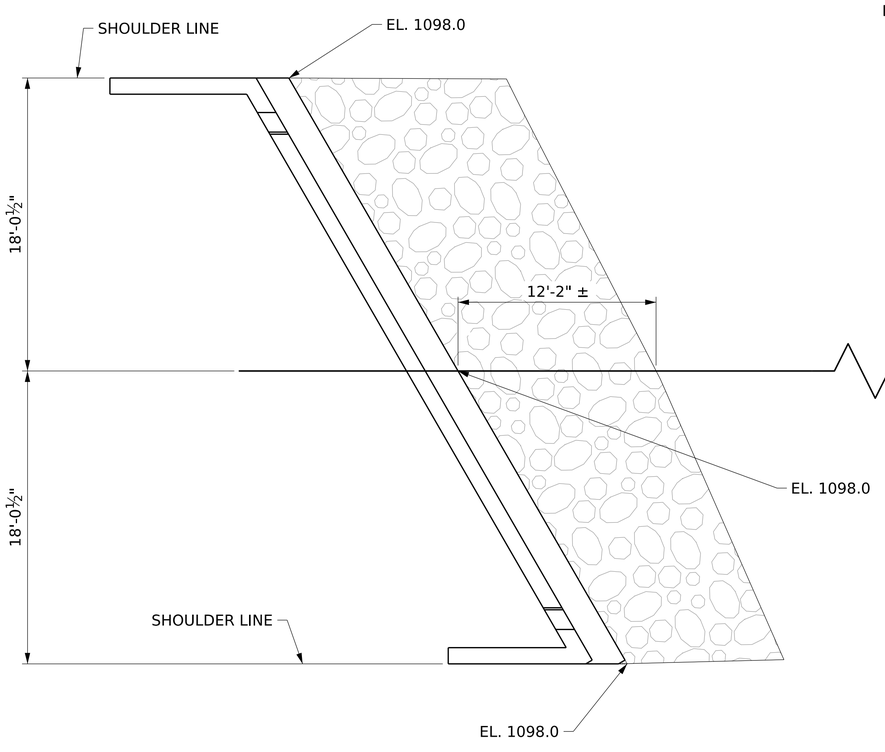
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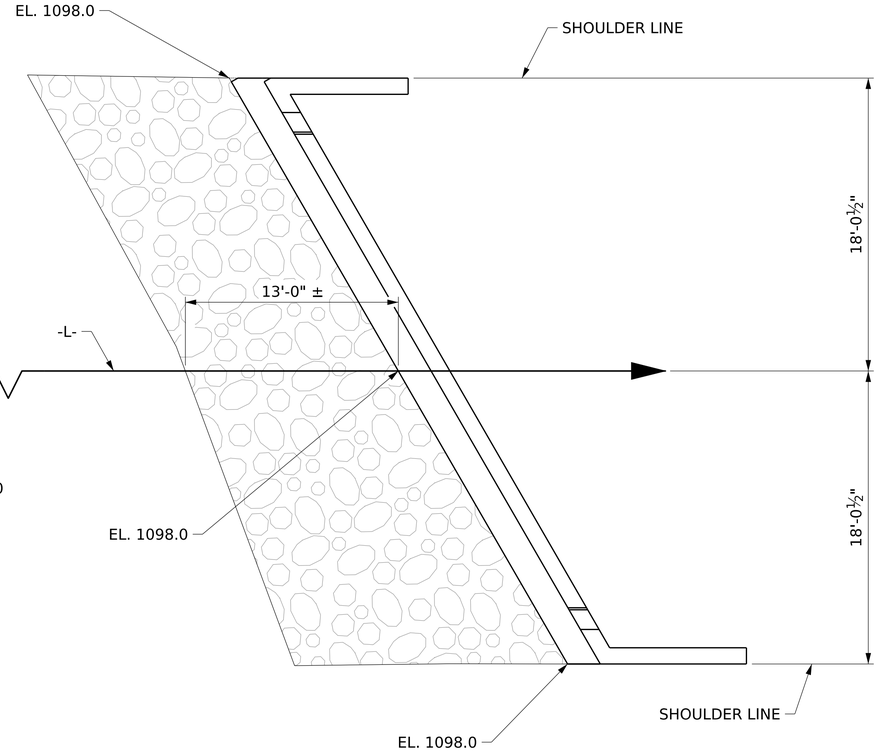
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2			4			27

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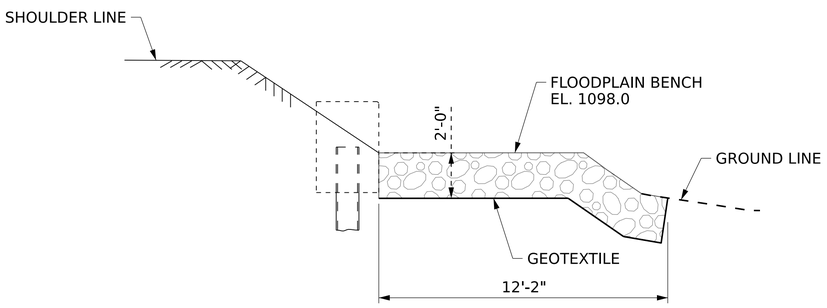
END BENT 1



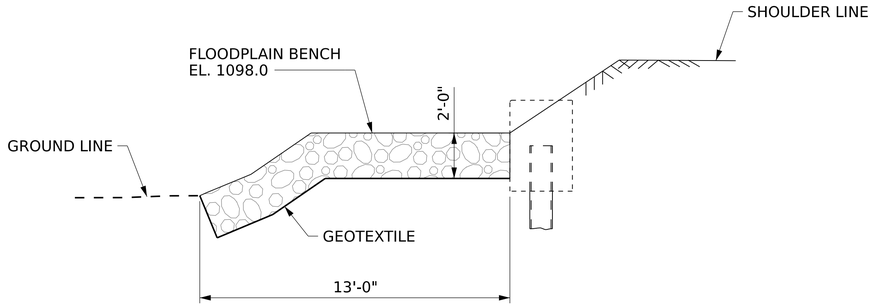
END BENT 2

PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+74.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	160	180
END BENT 2	160	180
TOTAL	320	360



℄ SECTION
(@ END BENT 1)



℄ SECTION
(@ END BENT 2)

PROJECT NO. **HB-0060**
CALDWELL COUNTY
STATION **13+74.00 -L-**

DocuSigned by:
Tom M. Ford
3817E6D0AD9743D...
NORTH CAROLINA PROFESSIONAL SEAL 052027 ENGINEER TOM M. FORD
9/22/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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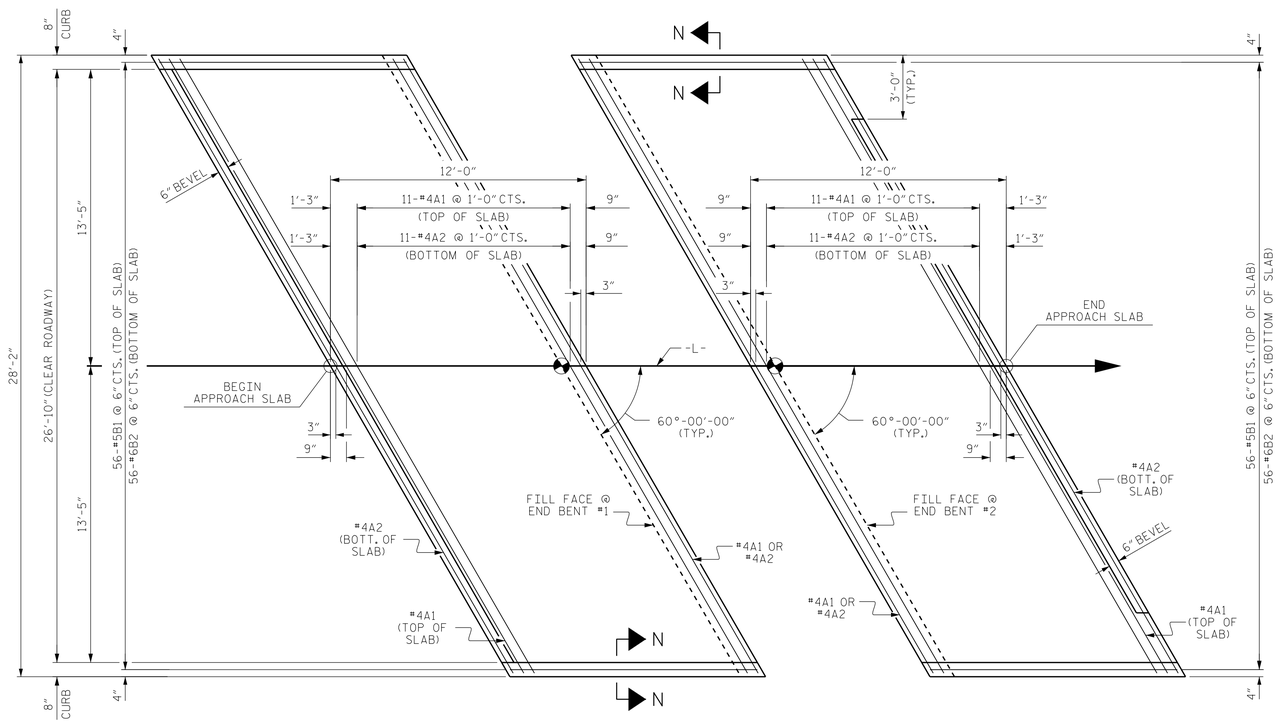
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SHEET NO. S-26
TOTAL SHEETS 27

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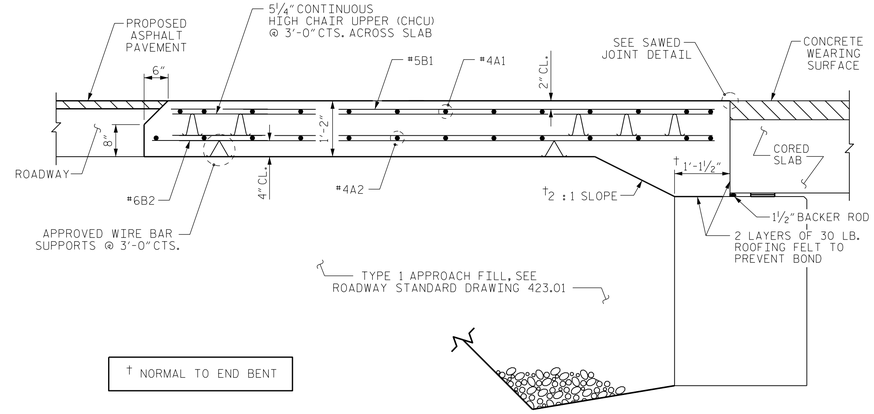
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8/26/21



PLAN @ END BENT #1

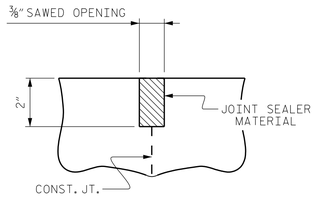
PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

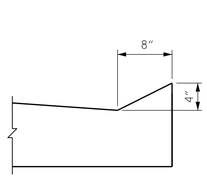


† NORMAL TO END BENT

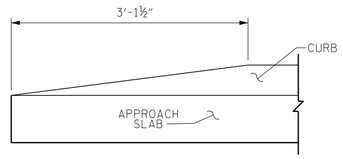
SECTION THRU SLAB



SAWED JOINT DETAIL



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

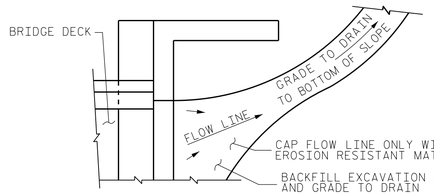
NOTES

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.

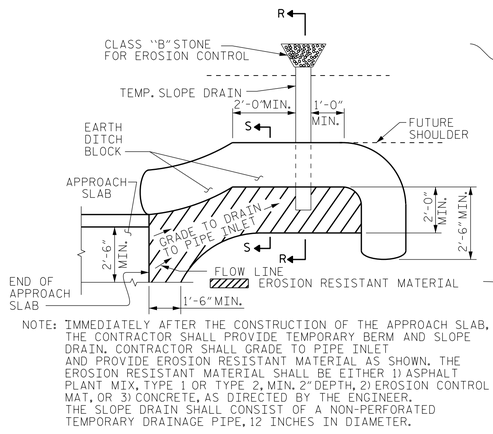
APPROACH SLABS SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



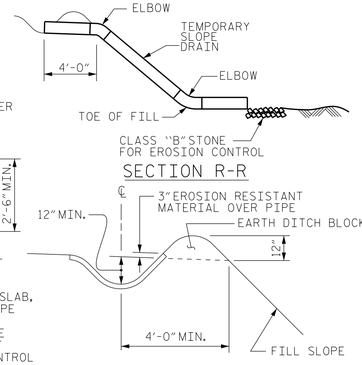
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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 S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	32'-1"	279
A2	13	#4	STR	32'-1"	279
✳ B1	56	#5	STR	11'-1"	647
B2	56	#6	STR	11'-7"	974
REINFORCING STEEL				LBS.	1253
✳ EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C.Y.	16.3
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	32'-1"	279
A2	13	#4	STR	32'-1"	279
✳ B1	56	#5	STR	11'-1"	647
B2	56	#6	STR	11'-7"	974
REINFORCING STEEL				LBS.	1253
✳ EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C.Y.	16.3

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

DocuSigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052027 TOM M. FORD
381R69D0AD9743D...
9/22/2026

PROJECT NO. **HB-0060**

CALDWELL COUNTY

STATION **13+74.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 60° SKEW

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

DRAWN BY : J. PARROTT DATE : 5/2026
CHECKED BY : T. FORD DATE : 5/2026
DESIGN ENGINEER OF RECORD: T. FORD DATE : 8/2026

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8/26/21

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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