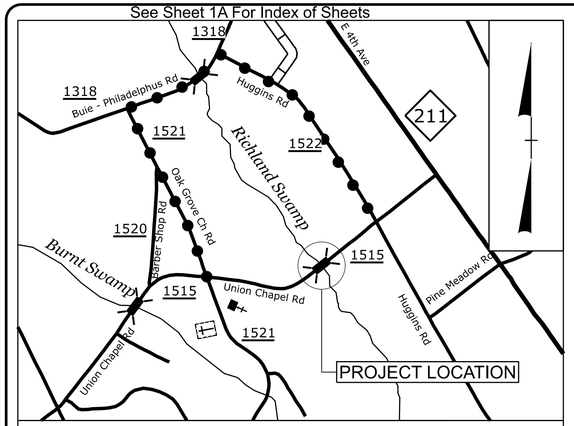
11/20/25

TIP PROJECT: BP6.R007

CONTRACT: DF00527

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

● ● ● ● ● ● ● ● Offsite Detour Route

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

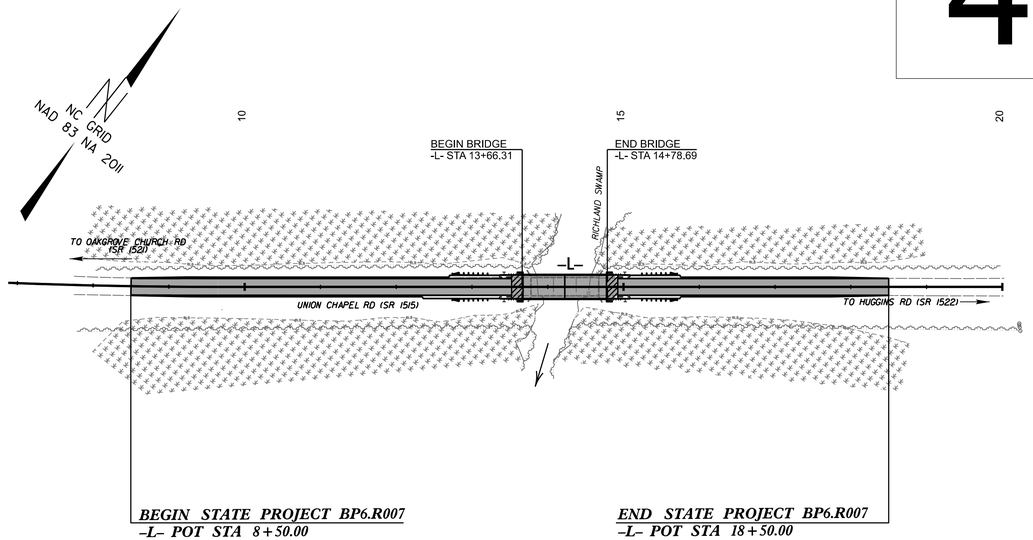
LOCATION: *BRIDGE NO.369 OVER RICHLAND SWAMP ON SR 1515 (UNION CHAPEL RD)*

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R007	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP6.R007.1		P.E.
BP6.R007.2		RW & UTL
BP6.R007.3		CONST.

4



BEGIN STATE PROJECT BP6.R007
–L– POT STA 8+50.00

END STATE PROJECT BP6.R007
–L– POT STA 18+50.00

NO DESIGN EXCEPTIONS WARRANTED.

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 2023 = 1600
V = 60 MPH
* TTST = 6% DUAL
FUNC CLASS =
RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BP6.R007 = 0.168 MILES

LENGTH OF STRUCTURE TIP PROJECT BP6.R007 = 0.021 MILE

TOTAL LENGTH OF TIP PROJECT BP6.R007 = 0.198 MILES

Prepared in the Office of:
LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
NC License No. C-4947

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 20, 2025

LETTING DATE:
MAY 20, 2026

SCOTT COOKE, PE
PROJECT ENGINEER

XIAOHAN LI, PE
PROJECT DESIGN ENGINEER

ADAM BRITT
NCDOT CONTACT

HYDRAULICS ENGINEER

Signed by: Scott Cooke 17E6FA1BEC9A43B... P.E.
SIGNATURE:
4/2/2026

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER Scott Evans Cooke

ROADWAY DESIGN ENGINEER

Signed by: Xiaohan Li P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaohan Li

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

BP6.R007
RDY | IA

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 THRU 2C-4	ROADWAY DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-1 THRU TMP-2B	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-9	CROSS-SECTIONS
S-1 THRU S-18	STRUCTURE PLANS

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
DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.02 Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
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
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.36 Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37 Steel Grate and Frame
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 11, 12, and 14 of 15)
862.02 Guardrail Installation (Use Detail in Lieu of Standard for Sheet 5 of 9)
862.03 Structure Anchor Units (Use Detail in Lieu of Standards for Sheets 6 and 8 of 9)
876.02 Guide for Rip Rap at Pipe Outlets

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

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SHOULDER CONSTRUCTION:

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

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.

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

COMMUNICATIONS - SPECTRUM

ELECTRIC - DUKE ENERGY

WATER - ROBESON COUNTY WATER DEPARTMENT

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

05/29/25

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BP6.R007 | RDY | 18

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
- Permanent Construction Easement — PE
- 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:

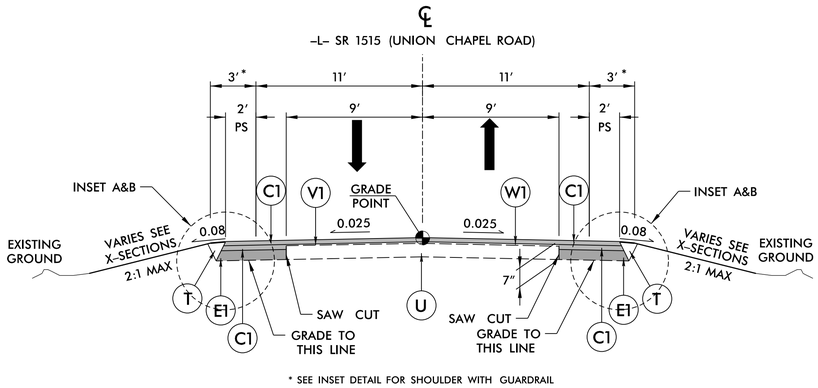
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE - LOS B)* — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

PAVEMENT SCHEDULE

(PRELIMINARY PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
C3	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.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W1	PAVEMENT WEDGING (SEE WEDGING DETAIL)
W2	WEDGING FOR BRIDGE (SEE WEDGING DETAIL)

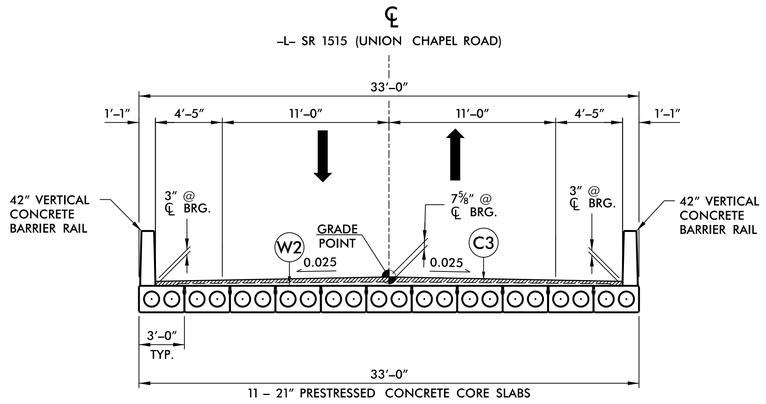
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



* SEE INSET DETAIL FOR SHOULDER WITH GUARDRAIL

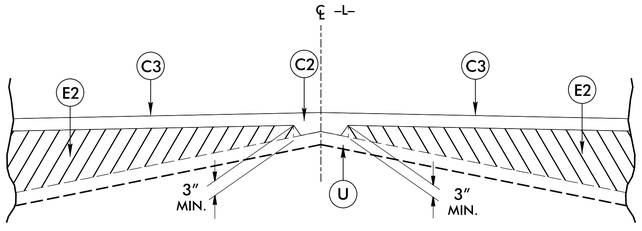
TYPICAL SECTION NO. 1

–L– STA. 8+50 TO 13+66.31
–L– STA. 14+78.69 TO 18+50.00
USE 3" MILLING FROM
–L– STA. 9+55.00 TO 11+05.00

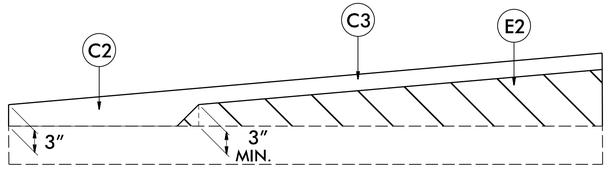


TYPICAL SECTION NO. 3

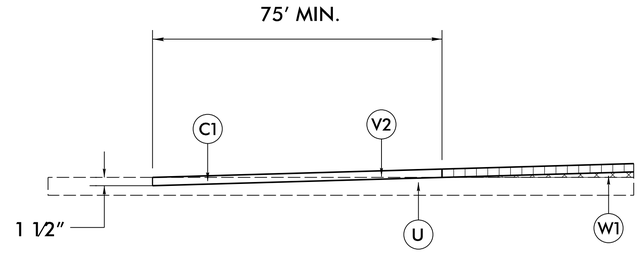
–L– STA. 13+66.31 TO 14+78.69
NOTE: SEE STRUCTURE PLAN S1–6 FOR TYPICAL SECTION CONSTRUCTION DETAILS



W1: Detail Showing Method of Wedging



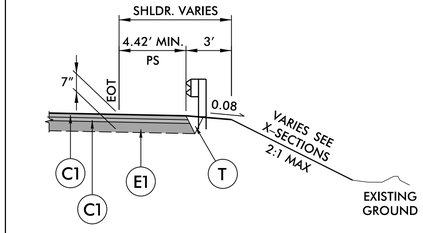
W2: Wedging Detail For Bridge



INCIDENTAL MILLING DETAIL

–L– STA. 8+50.00 TO 9+25.00
–L– STA. 17+75.00 TO 18+50.00

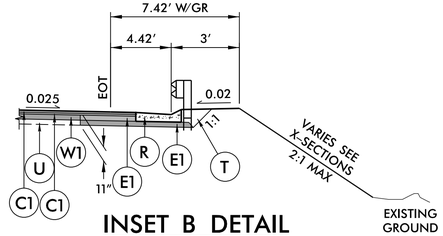
DETAIL SHOWING GUARDRAIL PLACEMENT



INSET A DETAIL

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 12+70.00(LT) TO 13+36.44(LT)
–L– STA. 12+35.00(RT) TO 13+36.44(RT)
–L– STA. 15+08.56(LT&RT) TO 15+75.00(LT&RT)

DETAIL SHOWING GUARDRAIL PLACEMENT w/SBG



INSET B DETAIL

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 13+36.44(LT&RT) TO 13+52.44(LT&RT)
–L– STA. 14+92.56(LT&RT) TO 15+08.56(LT&RT)

BP6.R007
RDY | 2A-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaohan Li
Docusigned by: Xiaohan Li
4/23/2026

PAVEMENT DESIGN ENGINEER, NCDOT
NORTH CAROLINA PROFESSIONAL SEAL 23876 ENGINEER Weihai Zhang
Docusigned by: Weihai Zhang
4/23/2026

PREPARED BY

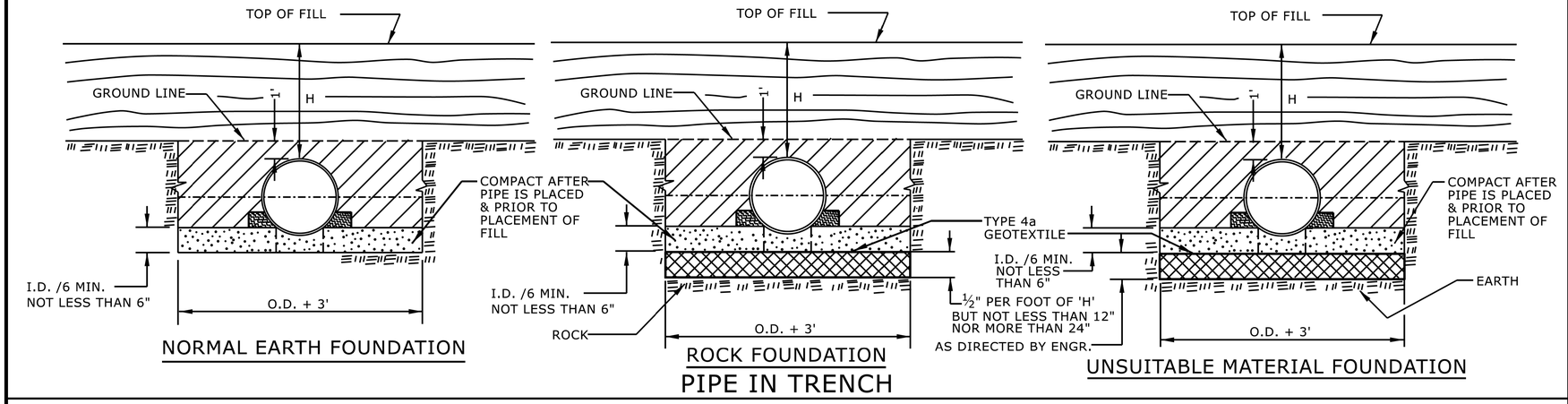
LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710

NCBELS C-4947

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	2C-1



GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

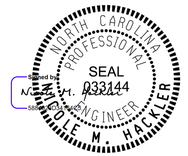
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE



SHEET 1 OF 2

300.01

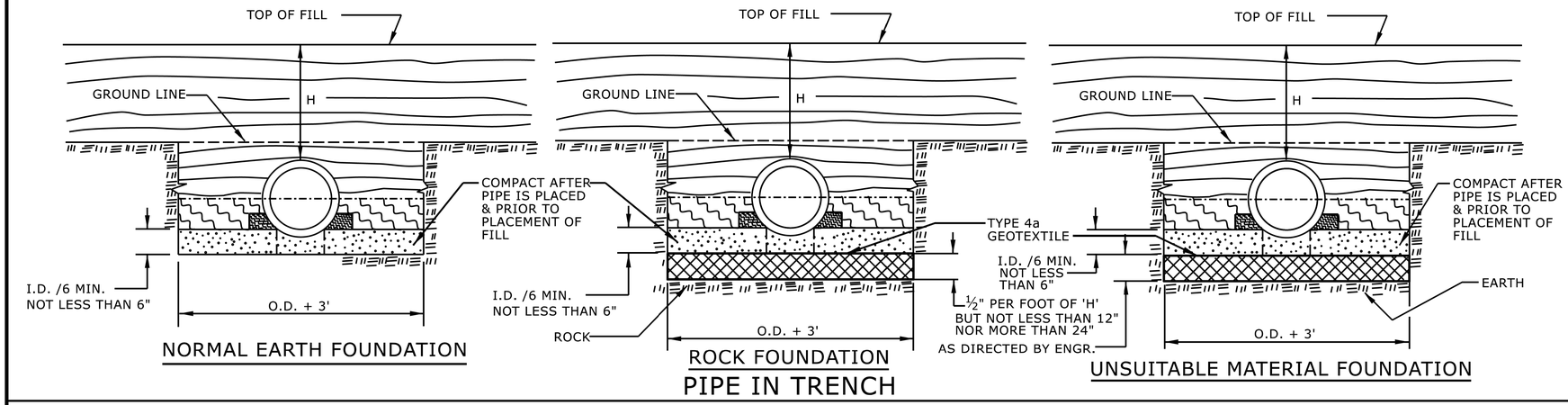
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

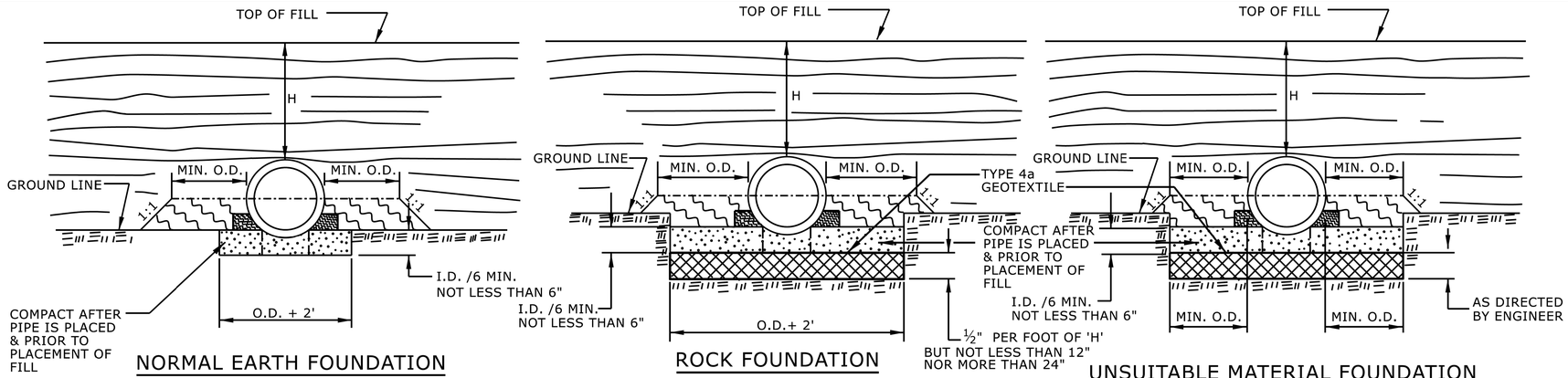
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	2C-2



PIPE IN TRENCH



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.

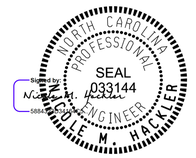
ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

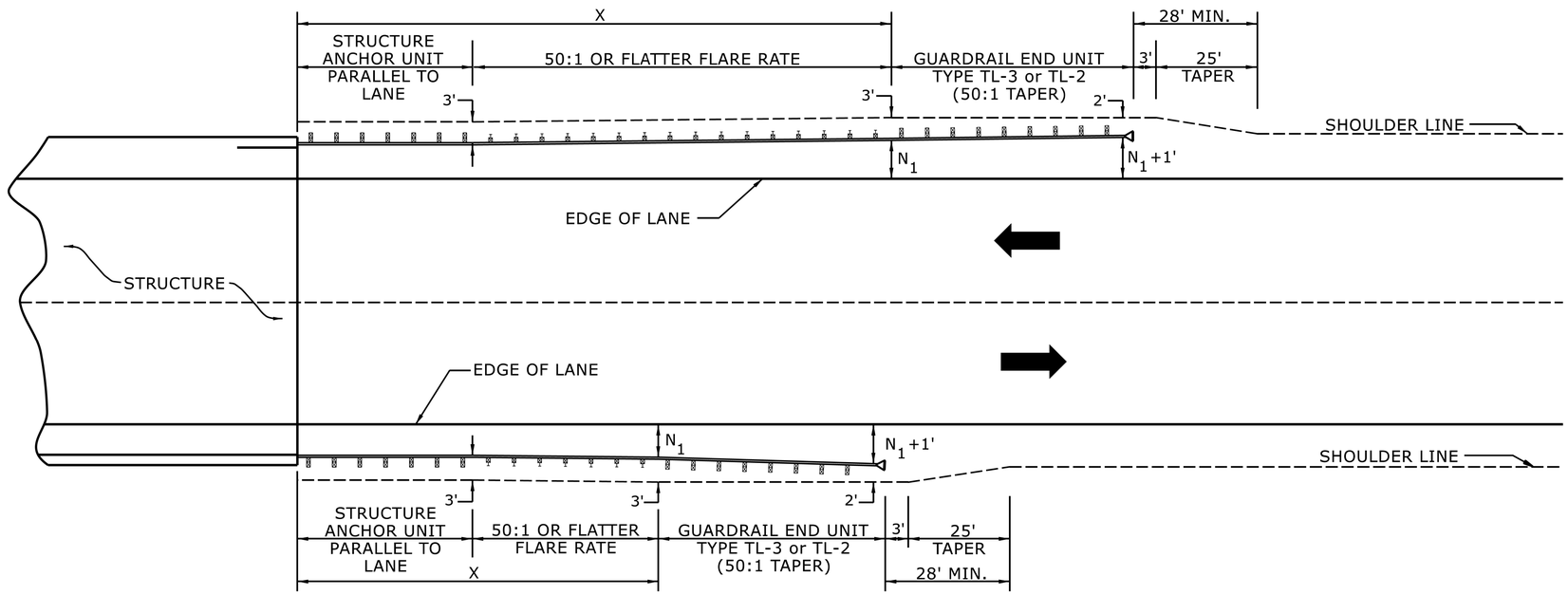
CONTRACTS STANDARDS AND DEVELOPMENT UNIT

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

SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	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

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
4/6/2026

SHEET 4 OF 15

862D01

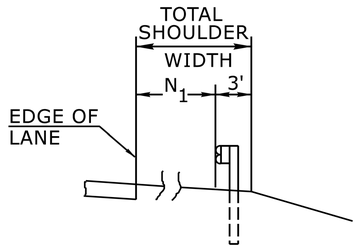
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

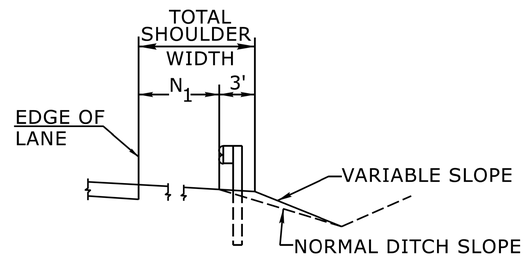
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	2C-4

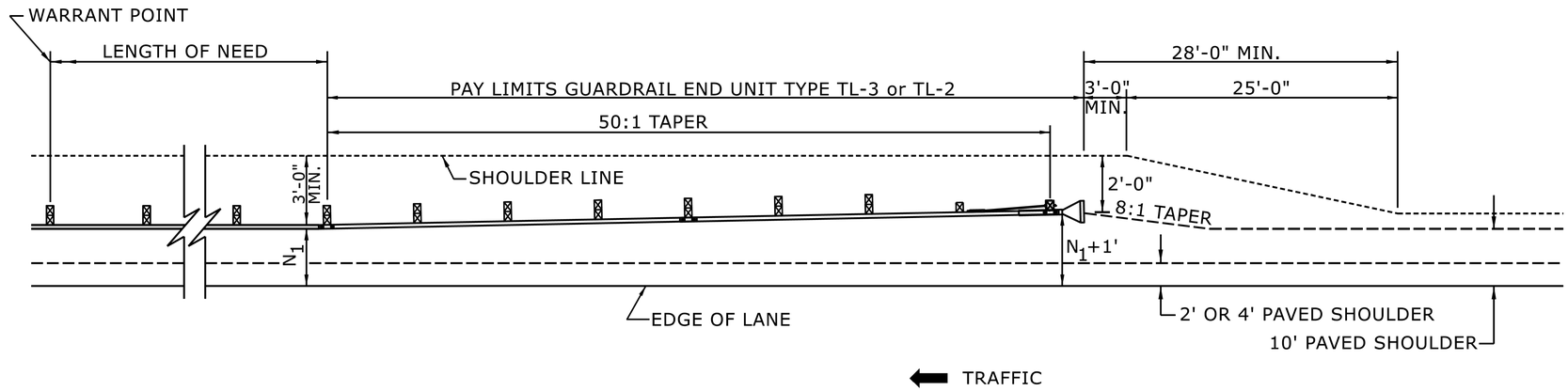


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
4/6/2026

SHEET 6 OF 15

862D01

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.:

11/14/23

"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 SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								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	SEU TYPE III	M-350	CAT-1	GREU, TL-2	GREU, TL-3	XI	XI MOD	XIII	AT-1				
-L-	12+73.69	13+67.44	LT	93.75'			13+67.44		4.42'	7.42'		50'		1'	1				1							
-L-	14+77.56	15+71.31	LT	93.75'				14+77.56	4.42'	7.42'	50'		1'		1				1							
-L-	12+73.69	16+67.44	RT	93.75'			13+67.44		4.42'	7.42'	50'		1'		1				1							
-L-	14+77.56	15+71.31	RT	93.75'				14+77.56	4.42'	7.42'		50'		1'	1				1							
SUB TOTAL				375'																						
		ANCHOR UNIT DEDUCTION																								
		Type III	4 @ 18.75' =	75'																						
		GREU, TL-3	4 @ 50' =	200'																						
TOTAL				100'											4				4							
		ADDITIONAL GUARDRAIL POSTS = 5																								

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+25%	BORROW	WASTE
-L- 8+50.00 TO 18+50.00	115		253	138	
TOTAL	115		253	138	
MATERIAL FOR SHOULDER BORROW				38	
PROJECT TOTAL	115		253	138	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				9	
GRAND TOTAL	115		253	185	

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGNER. THESE QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY GEOTECHNICAL ENGINEERING UNIT.

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

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LINEAR FEET
-L-	13+36.44	13+52.44	LT	16
-L-	14+92.56	15+08.56	LT	16
-L-	13+36.44	13+52.44	RT	16
-L-	14+92.56	15+08.56	RT	16
			TOTAL:	64

BP6.R007
RDY | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710

NCBELS C-4947

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

11/14/23

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

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

STATION	SIZE / THICKNESS OR GAUGE	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) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
–L– 13+42.44		LT	401		145.58															
			401	402		142.58	142.20			16'										
–L– 13+42.44		RT	403		145.58															
			403	404		142.58	140.46			28'										
–L– 15+02.56		LT	405		145.62															
			405	406		142.62	141.54			20'										
–L– 15+02.56		RT	407		145.62															
			407	408		142.62	141.00			28'										
TOTAL										92'										

STATION	SIZE / THICKNESS OR GAUGE	C.S. PIPE 12"	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"
–L– 13+42.44																							
–L– 13+42.44																							
–L– 15+02.56																							
–L– 15+02.56																							
TOTAL																							

STATION	SIZE / THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.109	.109	** 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.	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')	LIN. FT. B (10.0' AND ABOVE)	C.B. STD. 840.01 OR STD. 840.02
–L– 13+42.44																1			
–L– 13+42.44																1			
–L– 15+02.56																1			
–L– 15+02.56																1			
TOTAL																4			

STATION	SIZE / THICKNESS OR GAUGE	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. FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.D.I. FRAME WITH TWO GRATES STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	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
–L– 13+42.44											1	1					
–L– 13+42.44											1	1					
–L– 15+02.56											1	1					
–L– 15+02.56											1	1					
TOTAL											4	4					

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

BP6.R007
RDY | 3D-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

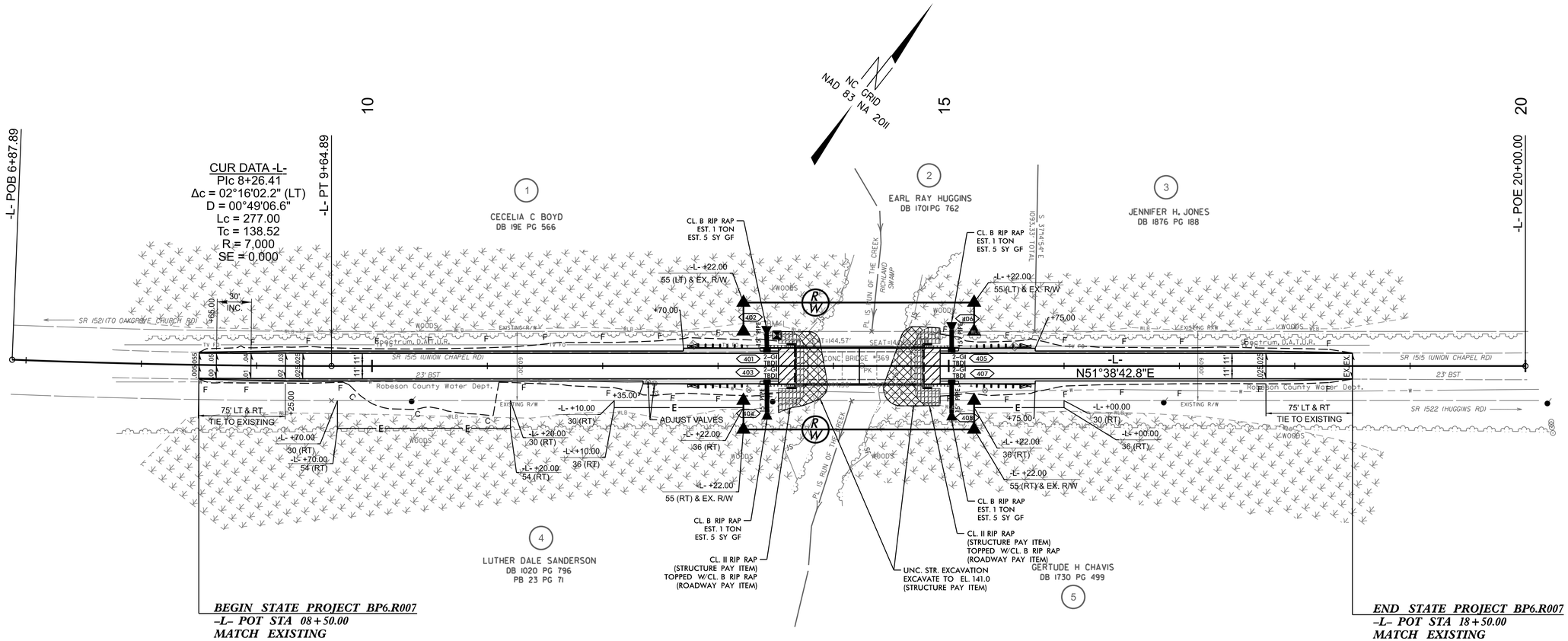
LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710

NCBELS C-4947

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

11/14/23



BEGIN STATE PROJECT BP6.R007
–L– POT STA 08+50.00
MATCH EXISTING

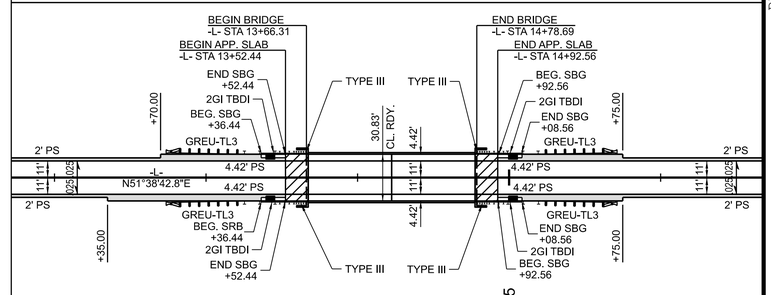
END STATE PROJECT BP6.R007
–L– POT STA 18+50.00
MATCH EXISTING

BRIDGE APPROACH SLAB

FOR -L- PROFILE, SEE SHEET NO. 5

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-2

SKETCH SHOWING BRIDGE RELATIVE TO PAVEMENT



REVISIONS

BP6.R007
RDY | 004

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaohan Li
4/2/2026

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER Evans Cooke
4/2/2026

PREPARED BY

LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710

NCBELS C-4947

11/14/23

BM 1	353598	1966666	147.58'	RR SPIKE IN BASE OF 20" OAK

-L-

BRIDGE HYDRAULIC DATA

DRAINAGE AREA	= 31.6 SQ MI
DESIGN FREQUENCY	= 25 YR
DESIGN DISCHARGE	= 2000 CFS
DESIGN HW ELEVATION	= 144.9 FT
100-YEAR DISCHARGE	= 3000 CFS
100-YEAR HW ELEVATION	= 145.5 FT

* OVERTOPPING OCCURS @ STATION 10+15.26 @ ELEV = 144.9' (25-YR FLOOD).

BEGIN STATE PROJECT BP6.R007
-L- STA 08+50.00
ELEV. = 145.60

L = 240
K = 145

VPC 8+98.90 145.21
LP 10+15.26 144.74
VPT 11+38.90 145.27
VPI 8+50.00 145.60
VPI 10+18.90 144.25

PROPOSED GRADE
EXISTING GROUND
-L-
(-)0.8000%
(-)0.8000%
(+)0.8500%
(+)0.8500%

BEGIN BRIDGE
-L- STA. 13+61.31

SKEW = 90°00'00"
PROPOSED 2 @ 55'
21" CORED SLAB BRIDGE
W/ 2.5' DEEP CAP

VPC 12+92.50 146.58
VPI 14+22.50 147.68
HP 14+22.50 147.13

END BRIDGE
-L- STA. 14+78.69

VPRC 15+52.50 146.58

(-)0.8500%
(-)0.8500%
(+)0.6000%
(+)0.6000%

L = 200
K = 138

LP 16+69.74 146.08
VPT 17+52.50 146.33
VPI 16+52.50 145.73
END STATE PROJECT
BP6.R007
-L- STA 18+50.00
ELEV. = 146.91
18+50.00 146.91

UNCLASSIFIED STRUCTURE EXCAVATION EST. 253 CY
EXCAVATE TO EL = 141.0'
Q25 YR ELEV=144.9'
Q100 ELEV=145.5'

VEGETATION LINE ON DATE OF SURVEY=141.4' (7-12-22)
2' THK. CL II RIP RAP KEYED-IN (TYP. EA. END)
UNCLASSIFIED STRUCTURE EXCAVATION EST. 245 CY
EXCAVATE TO EL = 141.0'

L = 260
K = 153

145.60 145.20 144.75 144.99 145.79 146.64 147.11 146.93 146.25 146.11 146.61 146.91

FOR -L- PLAN, SEE SHEET NO. 4
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-2

BP6.R007
RDY | 005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WAKE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaolan Qiao
Signed by: Xiaolan Qiao
4/2/2026

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER Evans Cooke
Signed by: Evans Cooke
4/2/2026

PREPARED BY

LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710

NCBELS C-4947

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

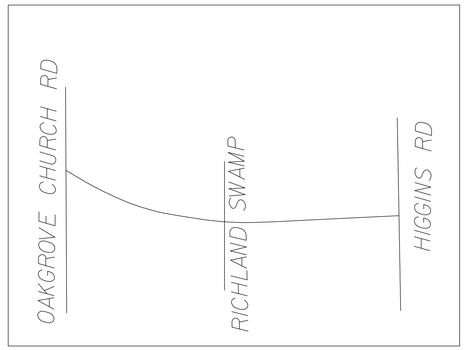
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R007	RW01	05

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

ROBESON COUNTY

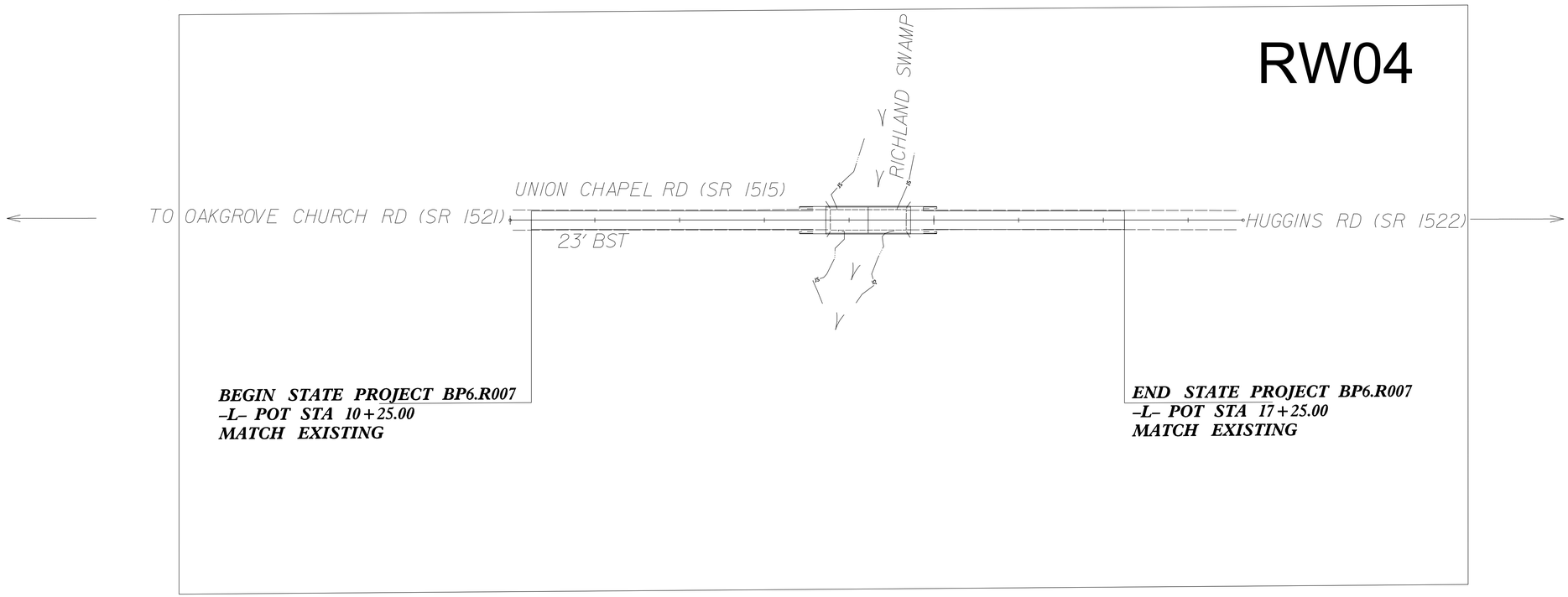
TIP PROJECT: BP6.R007



VICINTY MAP

NC GRID
NAD 83 NA 2011

RW04



BEGIN STATE PROJECT BP6.R007
–L– POT STA 10+25.00
MATCH EXISTING

END STATE PROJECT BP6.R007
–L– POT STA 17+25.00
MATCH EXISTING

GRAPHIC SCALE

50 25 0 50 100
PLANS

NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "770369-101" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 354684.3051(ft) EASTING: 1968110.7217(ft) ELEVATION: 164.62(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999912007 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "770369-101" TO -L- STATION 10+00.00 IS S 52-07'08.6" W 2158.24(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	***LETTING DATE:***
02/03/2023	*09/16/2026*

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

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

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.18 14:01:04 -04'00'

SIGNATURE: ***Date:***

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

09/08/99

18-JUN-2025 13:56
C:\Projects\NCDOT\BP6.R007\BP6.R007 Files\BP6.R007 Files\CADD files (3)\Roadway\Design\BP6R007_RDY_DSN - Copy.dgn
jason.prevatte AT PREVATTEJ

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	RW02C-1

Location and Surveys

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

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. I cenhour Jr., PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by others and the following information was used to perform the survey:

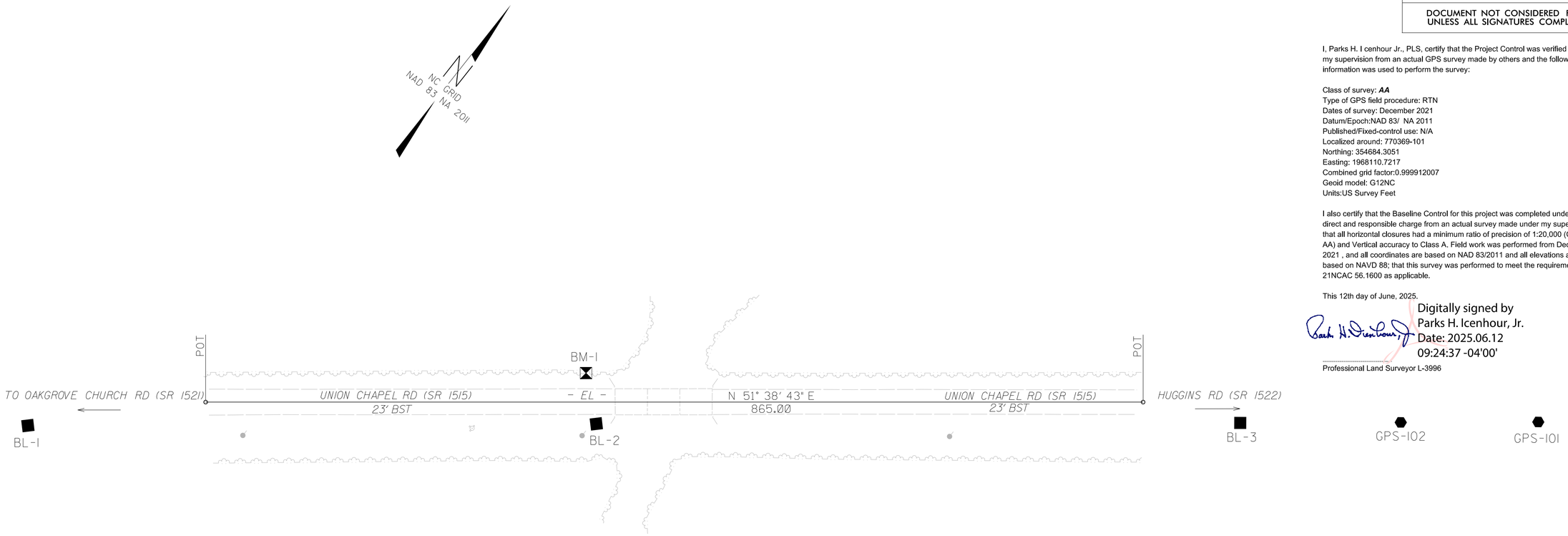
Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: December 2021
Datum/Epoch:NAD 83/ NA 2011
Published/Fixed-control use: N/A
Localized around: 770369-101
Northing: 354684.3051
Easting: 1968110.7217
Combined grid factor:0.999912007
Geoid model: G12NC
Units:US Survey Feet

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 from December 2021 , 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 12th day of June, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.12 09:24:37 -04'00'

Professional Land Surveyor L-3996



BL

POINT	DESC.		NORTH	EAST	ELEVATION
1	770369	BL1	353240.3226	1966291.9782	144.69
2	770369	BL2	353567.0315	1966702.2919	144.85
3	770369	BL3	353936.4080	1967167.7021	146.74
102	770369	102	354338.4777	1967672.6736	156.85
101	770369	101	354684.3051	1968110.7217	164.62

```
*****************************************
BM1       ELEVATION = 147.58
N 353598      E 1966666
RR SPIKE IN BASE OF 20" OAK TREE
*****************************************
```

EL

POINT	N	E	BEARING	DIST
POT	353359.093	1966407.243		
LINE			N 51°38'42.8" E	865.00
POT	353895.851	1967085.562		

NOTES:

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

11-JUN-2025 14:3
C:\Projects\NCDOT\division 6 group rw jobs\ss4\bp6.r007\CADD files (3)\C_SERIES\bp6r-007_ls_rw02c-1.dgn
Jason.prevatte AT PREVATTEJ

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	RW02D–1
Location and Surveys	

GEL Engineering of NC, Inc. 2004

GEL SOLUTIONS

an Affiliate of THE GEL GROUP, INC.

2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour Jr., PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 12th day of June, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.12 09:43:26 -04'00'

Professional Land Surveyor L-3996

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	353359.0934	1966407.2428
POT	18+65.00	353895.8509	1967085.5617

NOTES:

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

REVISIONS

6/2/99

I:\JUN-2025\GO\
C:\Projects\NCDOT\division 6 group rw jobs\ss#\bp6.r007\BP6.R007_LS_RW02D.DGN
jason.revette AT PREVATTE

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	RW03E-1

Location and Surveys

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

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Parks H. Icenhour Jr. , 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 4/02/2025 to 4/03/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of June, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.16 13:47:51 -04'00'

Professional Land Surveyor L-3996

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST	
L	13+22.00	-55.00	353602.0338	1966625.6209	NOT SET UNDER WATER
L	13+22.00	55.00	353515.7736	1966693.8791	NOT SET UNDER WATER
L	13+22.00	30.00	353535.3782	1966678.3658	
L	13+22.00	-30.00	353582.4292	1966641.1341	
L	15+22.00	55.00	353639.8794	1966850.7158	NOT SET UNDER WATER
L	15+22.00	30.00	353659.4840	1966835.2026	
L	15+22.00	-30.00	353706.5350	1966797.9708	
L	15+22.00	-55.00	353726.1396	1966782.4576	NOT SET UNDER WATER

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 4/02/2025 TO 4/03/2025 .

REVISIONS

6/2/99

16-JUN-2025 13:27
C:\Projects\NCDOT\division 6 group rw jobs\ss4\bp6..r-007\BP6.R007 Files\BP6.R007 Files\CADD files (3)\RightOfWay\BP6.R007.LS_RW02E.DGN
jasonprevatte
AT PREVATTEJ

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	RW04

Location and Surveys

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

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

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

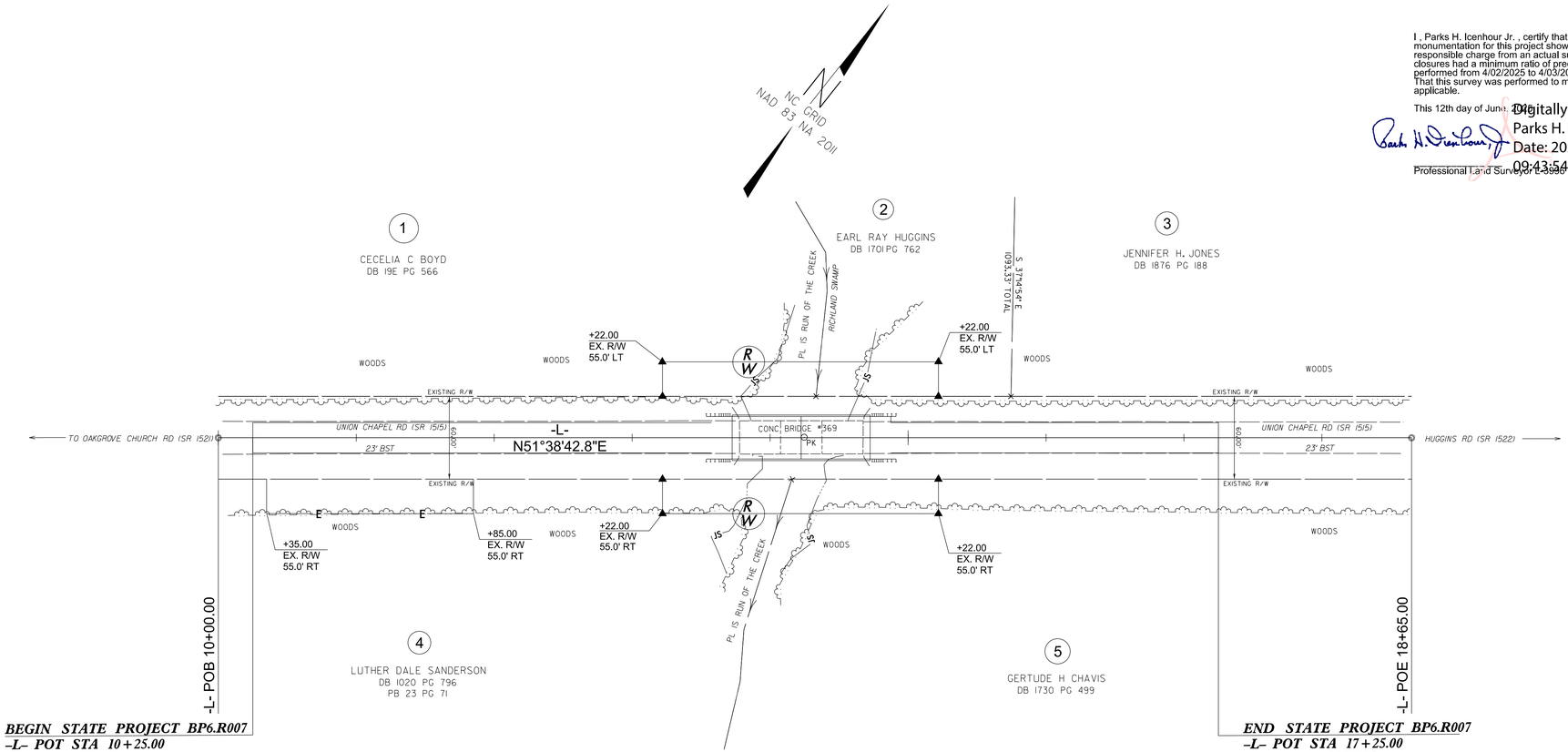
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Parks H. Icenhour Jr. , 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 4/02/2025 to 4/03/2025 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 12th day of June, 2025

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.12 09:43:54 -04'00'

Professional Land Surveyor, L-3996



NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 4/02/2025 TO 4/03/2025.

REVISIONS

6/2/99

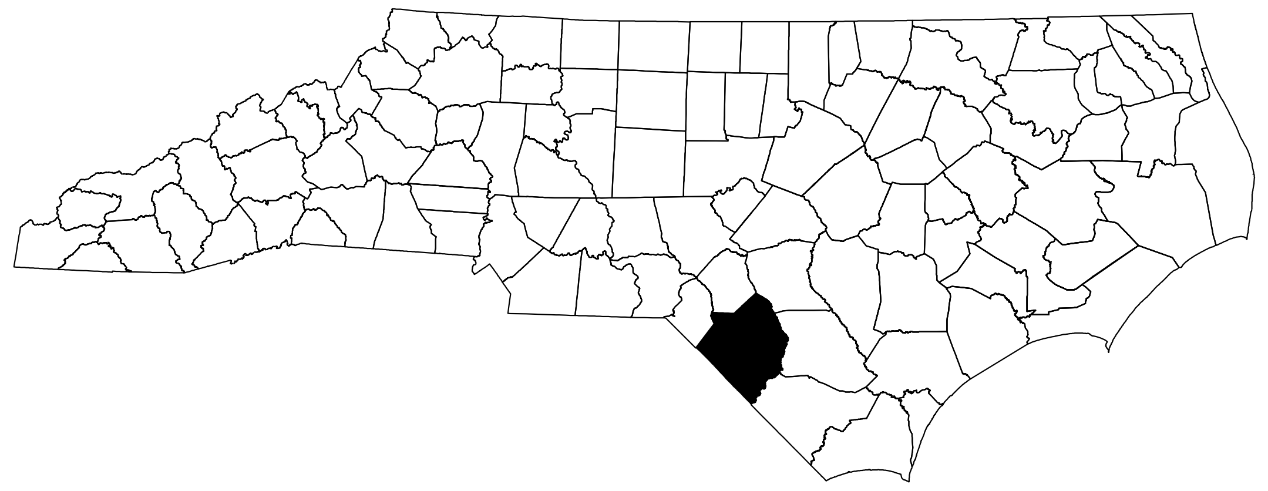
12-JUN-2025 09:05
C:\Users\ss4\NCDOT\dvdsion 6 group rw jobs\ss4\bp6.r007\BP6R007.RDY_DSN.dgn
osourprevatte
AT PREVATTE

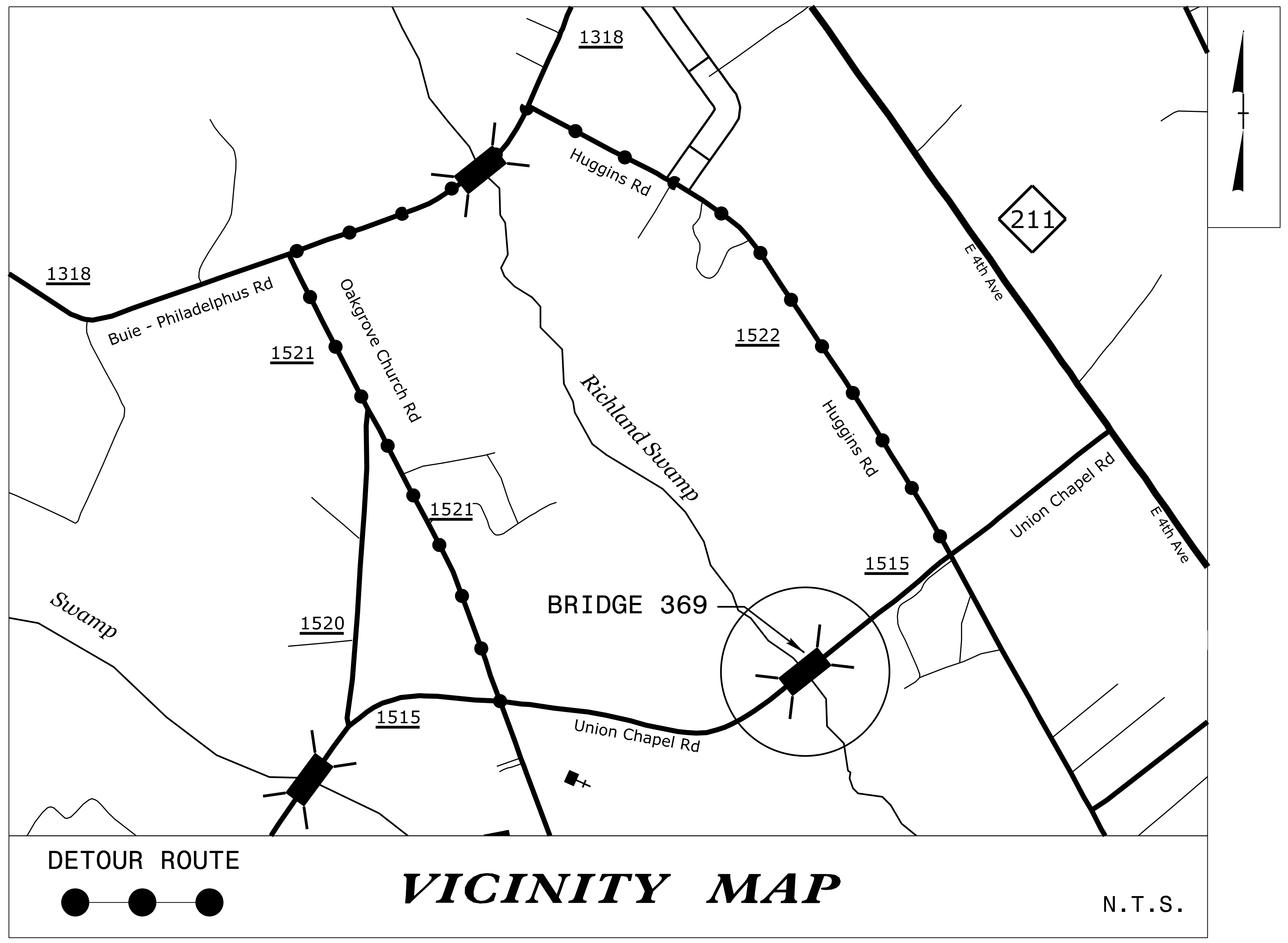
C:\Roadway\Design\BP6R007.RDY_DSN.dgn
J:\BP6.R007 Files\CADD files (3)\Roadway\Design\BP6R007.RDY_DSN.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ROBESON COUNTY





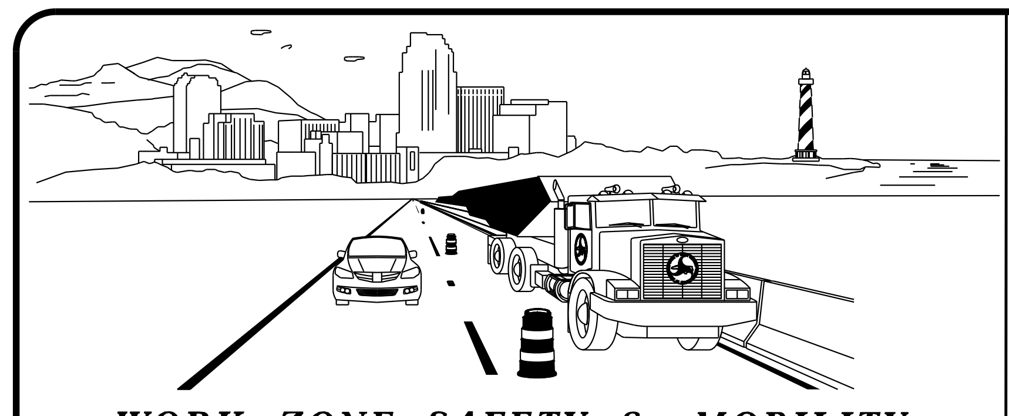
DETOUR ROUTE ●—●—●

VICINITY MAP

LOCATION BRIDGE: #770369 ON SR 1515 (UNION CHAPEL ROAD) OVER RICHLAND SWAMP

INDEX OF SHEETS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

PLANS PREPARED BY:

SCOTT COOKE, PE
PROJECT MANAGER

SCOTT COOKE, PE
PROJECT ENGINEER

NCDOT CONTACTS:

ADAM BRITT
DIVISION BRIDGE PROGRAM MANAGER

ljb Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710
License No. C-4947

APPROVED: Signed by: Scott Cooke
17F6FA1B6C2A43B...

DATE: 4/2/2026

SEAL
024905
Scott Evans Cooke

PROJECT NO.: BP6.R007

PROJ. REFERENCE NO.	SHEET NO.
BP6.R007	TMP-1A

BRIDGE #770369

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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

⬅	DIRECTION OF TRAFFIC FLOW
↔	DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- - - -	EXIST. PVMT.
→	NORTH ARROW
——	PROPOSED PVMT.
	TEMP. SHORING (LOCATION PURPOSES ONLY)

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
þ	STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

□	CRYSTAL/CRYSTAL
◨	CRYSTAL/RED
◆	YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

↑↰↱	PAVEMENT MARKING SYMBOLS

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

JJB Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710
License No. C-4947

APPROVED Signed by: Scott Cooke
17F6FA1B6C2A43B...

DATE: 4/2/2026

SEAL 024905
Scott Evans Cooke

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD
DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
BP6.R007	TMP-1B

BRIDGE #770369

MANAGEMENT STRATEGIES

- OFF-SITE DETOUR, CLOSE (SR 1515) UNION CHAPEL RD TO THRU TRAFFIC. DETOUR TRAFFIC ALONG (SR 1521) OAKGROVE CHURCH RD, (SR 1318) BUIE-PHILADELPHUS ROAD, AND (SR 1522) HUGGINS ROAD.
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION
- PROVIDE ONE MONTH NOTICE TO THE ENGINEER, ROBESON COUNTY EMERGENCY SERVICES, AND ROBESON COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE

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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

G) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL LAYER OF SURFACE. LINES.

PHASING

STEP 1: PRIOR TO ANY CONSTRUCTION OPERATIONS, INSTALL RAISED PAVEMENT MARKERS ALONG CENTER LINES OFF-SITE DETOUR ROUTE IN ACCORDANCE WITH RSD 1250.01 AND RSD 1251.01.

STEP 2: PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER OFF-SITE DETOUR SIGNS AS SHOWN ON TEMP-2 IN ACCORDANCE WITH RSD 1101.03 (SHEET 1 OF 9).

STEP 3: USING OFF-SITE DETOUR, UNCOVER ALL DETOUR SIGNING, CLOSE -L- (UNION CHAPEL RD) TO TRAFFIC USING TYPE III BARRICADES AND SHIFT TRAFFIC ONTO PROPOSED DETOUR.

STEP 4: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

REMOVE EXISTING BRIDGE 770369 AND CONTRUCT PROPOSED STRUCTURE AND ROADWAY. SEE ROADWAY AND STRUCTURE PLANS.

CONSTRUCT PROPOSED -L- UP TO AND INCLUDING FINAL LAYER OF SURFACE COURSE. PLACE FINAL PAVEMENT MARKINGS AND MARKERS. SEE PAVEMENT MARKING PLAN.

STEP 5: UPON COMPLETION OF ROADWAY, REMOVE ALL TRAFFIC CONTROL DEVICES AND SIGNING. OPEN SR 1515 (UNION CHAPEL ROAD) TO FINAL TRAFFIC PATTERN.

RJB Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710
License No. C-4947

Signed by:
APPROVED: Scott Cooke
17F6FA1B6C2A43B...

DATE: 4/2/2026

SEAL 024905
Scott Evans Cooke

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

Docusign Envelope ID: F93D2256-4E15-832D-83C7-87CB1C61C1A4

PROJ. REFERENCE NO.	SHEET NO.
BP6.R007	TMP-2A

BRIDGE #770369

SIGN NUMBER: SP1
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 4′-0″
HEIGHT: 2′-0″
TOTAL AREA: 8.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.38″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

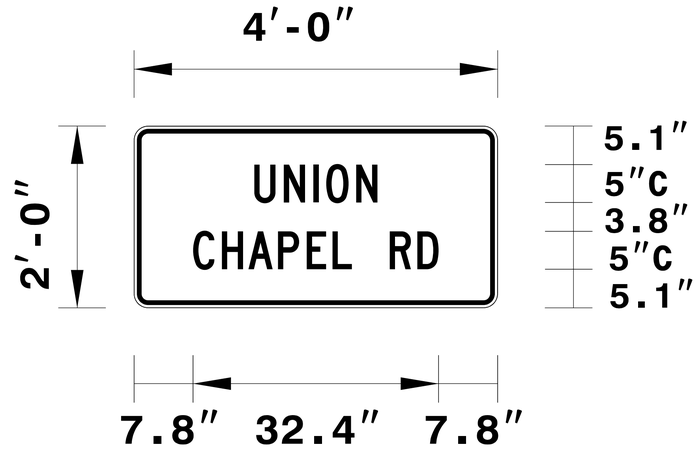
SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

DESIGN BY: FSN
PROJECT ID: BP6.R007

CHECKED BY: RLC
LOCATION: SEE PLANS

Jul 22, 2022
DIV: 6



BORDER
R=1.5″
TH=0.63″
IN=0.38″

Spacing Factor is 1 unless specified otherwise

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.
3. To be mounted with Detour Signing.

LETTER POSITIONS

Letter locations are panel edge to lower left corner

																												Series/Size Text Length
	U	N	I	O	N																							C 2000
	15.9	19.8	23.7	25.4	29.3																							16.3
	C	H	A	P	E	L		R	D																			C 2000
	7.8	11.6	15.1	19	22.8	26.2	28.8	33.8	37.4																			32.4

FILENAME: BP6R007_TCP_SignDesign

NORTH CAROLINA D.O.T. SIGN DETAIL

Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710
License No. C-4947

Signed by:
APPROVED: Scott Cooke
17F6FA1B6C2A43B...
DATE: 4/2/2026

SEAL 024905
Scott Evans Cooke

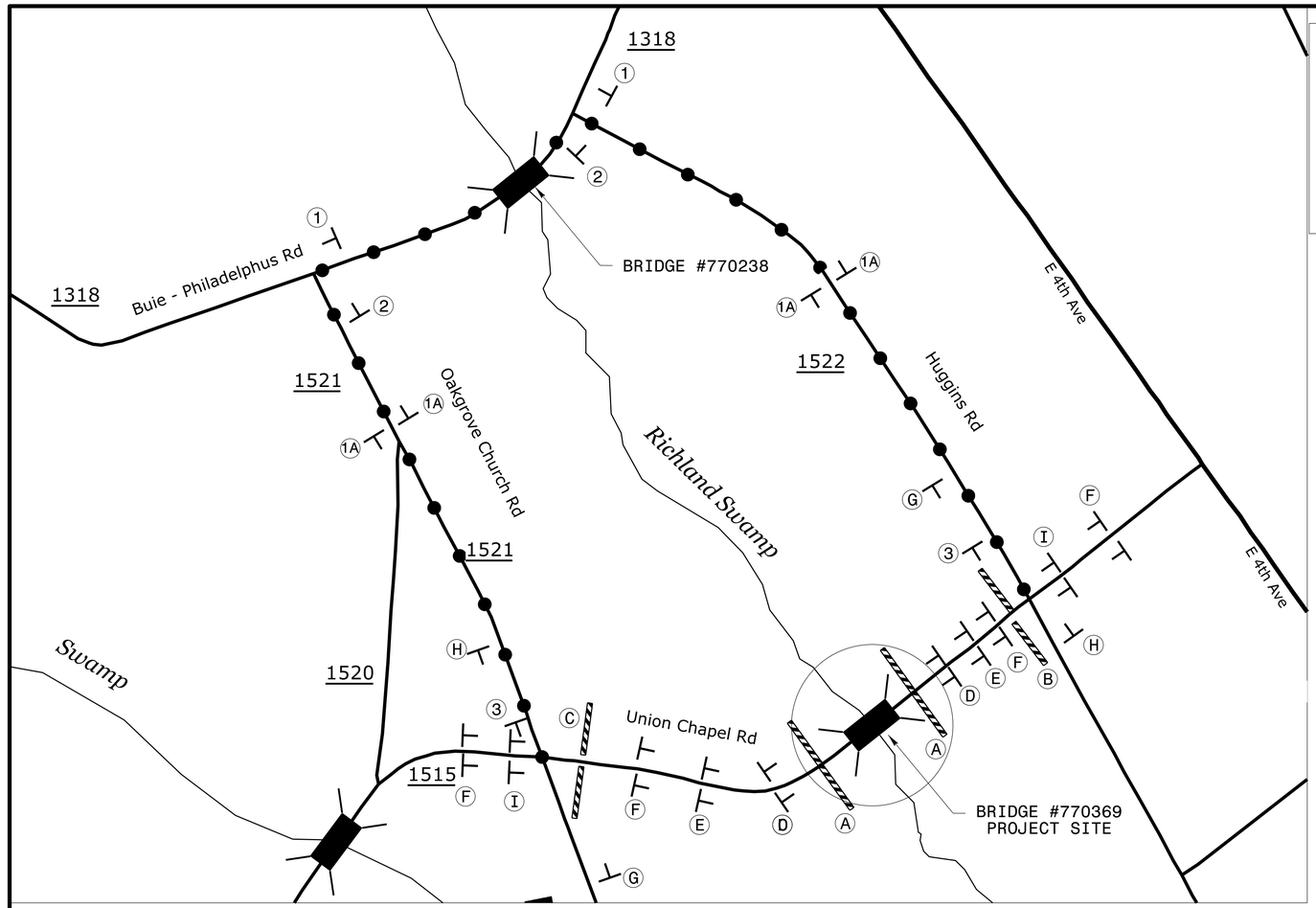
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SPECIAL SIGN DESIGN

PROJ. REFERENCE NO.	SHEET NO.
BP6.R007	TMP-2B

BRIDGE #770369



R11-2
48″ x 30″
ROAD CLOSED
TYPE III BARRICADE(S)

A

R11-4
60″ x 30″
ROAD CLOSED TO THRU TRAFFIC
DETOUR
M4-10R
48″ x 18″
TYPE III BARRICADE

B

R11-4
60″ x 30″
ROAD CLOSED TO THRU TRAFFIC
DETOUR
M4-10L
48″ x 18″
TYPE III BARRICADE

C

ROAD CLOSED 500 FT
W20-3
48″ X 48″

D

ROAD CLOSED 1000 FT
W20-3
48″ X 48″

E

ROAD CLOSED AHEAD
W20-3
48″ X 48″

F

ROAD CLOSED AHEAD
W20-3
48″ X 48″
NEXT RIGHT
SP-4R
42″ X 12″

G

ROAD CLOSED AHEAD
W20-3
48″ X 48″
NEXT LEFT
SP-4L
42″ X 12″

H

DETOUR AHEAD
W20-2
48″ x 48″

I

UNION CHAPEL RD
DETOUR
M4-8
24″ X 12″
M6-1 L
21″ X 15″

1

UNION CHAPEL RD
DETOUR
M4-8
24″ X 12″
M6-3
21″ X 15″

1A

UNION CHAPEL RD
DETOUR
M4-8
24″ X 12″
M6-1
21″ X 15″

2

UNION CHAPEL RD
END DETOUR
M4-8 A
24″ X 18″

3

NOTES:

TRAFFIC CONTROL DEVICES Ⓐ THRU Ⓘ SHALL BE INSTALLED ACCORDING TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9.

TRAFFIC CONTROL DEVICES ① THRU ③ SHALL BE INSTALLED AS PER ENGINEER'S INSTRUCTION.

Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919) 594-6710
License No. C-4947

APPROVED: Scott Cooke
17F6FA1B6C2A43B...

DATE: 4/2/2026

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER Scott Cooke Evans

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

OFFSITE DETOUR SIGNING AND ROAD CLOSURE SIGNING

SYSTIME $$SYSTIME
DGNFILE $$DGNFILE

5/26/20

PAVEMENT MARKING AND SIGNING PLAN SET HAS BEEN CHECKED BY

INITIALS	*DATE*
XL	*10/09/2025*
RLC	*10/10/2025*
SEC	*10/20/2025*

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING & SIGNING PLAN

ROBERSON COUNTY

LOCATION: BRIDGE NO.369 OVER RICHLAND SWAMP ON SR1515 (UNION CHAPEL RD)

BP6.R007
PMP | 1

LJB ENGINEERING PC
Signed by:
APPROVED: Xiaohan Li
83D77FEC572140F...
DATE: 4/2/2026

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaohan Li

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

T.I.P.: BP6.R007

INDEX

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

MARKING SCHEDULE

SYMBOL	DESCRIPTION	TYPE
T1	WHITE EDGELINE (4", 90 MIL)	THERMOPLASTIC
T13	YELLOW DOUBLE CENTER (4", 90 MIL)	THERMOPLASTIC
MA	PERMANENT RAISED MARKER	YELLOW & YELLOW

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1515 (UNION CHAPEL RD)	THERMOPLASTIC	PERM RAISED

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

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

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

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

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
		PROPOSED ROADWAY IMPROVEMENTS		
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	4000	LF
4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS @ 80' SPACING	13	EA

PLAN SUBMITTED TO:

Adam Britt *DIVISION BRIDGE PROGRAM MANAGER*

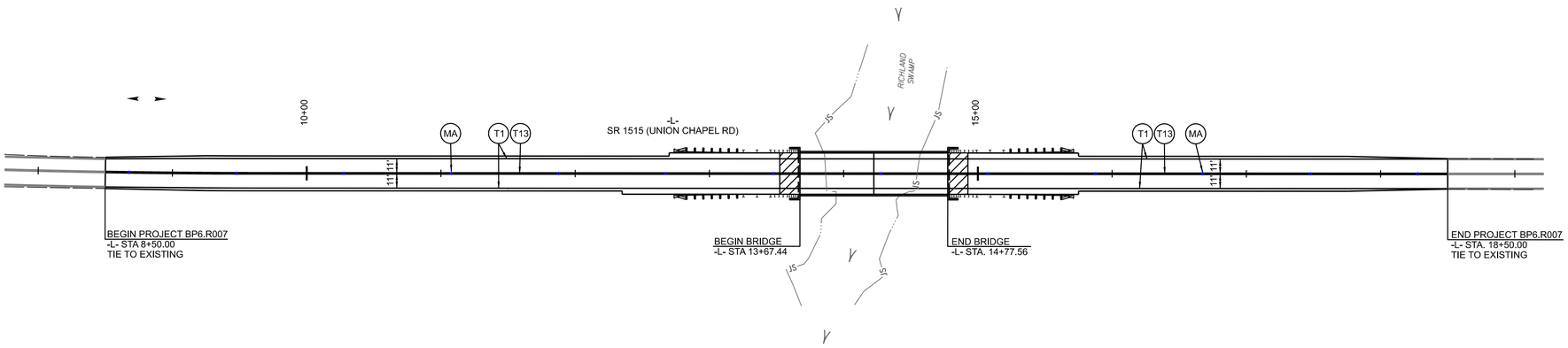
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: LJB Engineering PC

Xiaohan Li, PE PROJECT ENGINEER

Engineering Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC, 27606
(919) 594-6710
NC license No. C-4947

5/26/20



PAVEMENT MARKING SCHEDULE			
T1	-	WHITE EDGELINE (4", 90 MIL)	THERMOPLASTIC
T13	-	YELLOW DOUBLE CENTER (4", 90 MIL)	THERMOPLASTIC
MA	-	PERMANENT RAISED MARKER	YELLOW-YELLOW

Engineering
Building Partnerships
1121 Situs Court, Suite 200
Raleigh, NC 27606
(919)594-6710
NCBELS-4947

BP6.R007

PMP 2

LJB ENGINEERING PC

APPROVED: Signed by: Xiaohan Li 83D77FEC572140F...

DATE: 4/2/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 047090 ENGINEER Xiaohan Li

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R007	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP6.R007.1		P.E.
BP6.R007.2		RW&UTL
BP6.R007.3		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

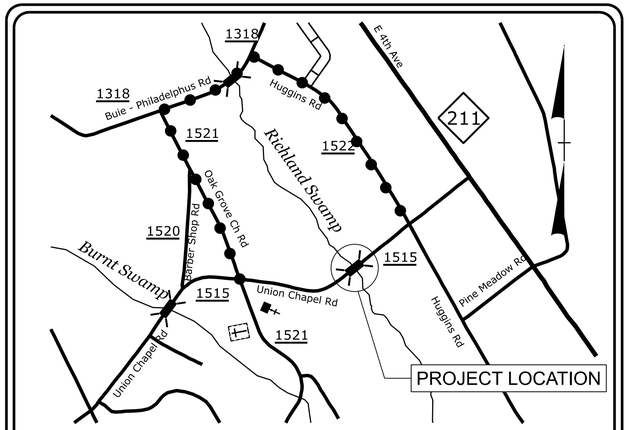
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ROBESON COUNTY

LOCATION: *BRIDGE NO. 369 OVER RICHLAND SWAMP ON SR 1515 (UNION CHAPEL RD)*

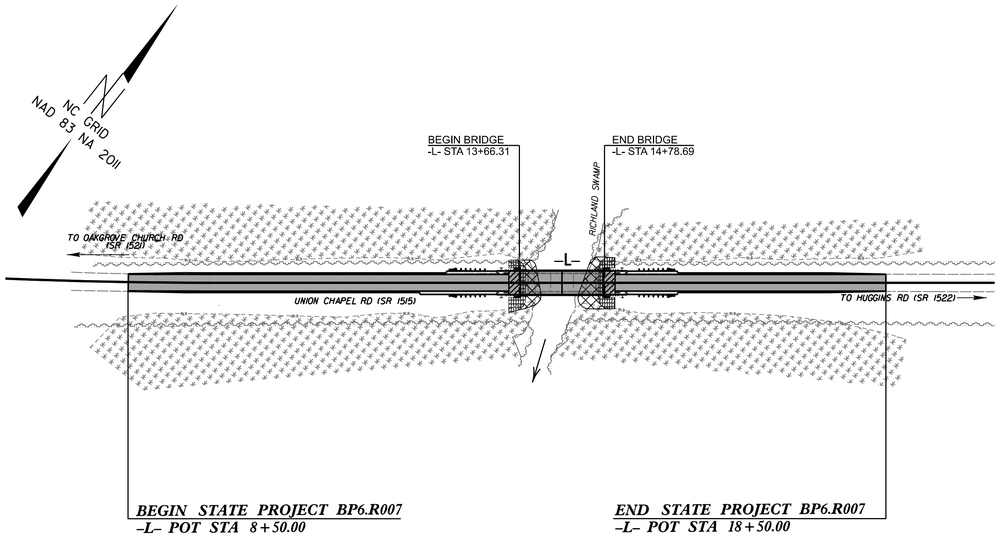
TYPE OF WORK: *GRADING, PAVING, DRAINAGE AND STRUCTURE*

TIP PROJECT: BP6.R007



VICINITY MAP
NOT TO SCALE

● ● ● ● ● ● ● ● Offsite Detour Route



BEGIN STATE PROJECT BP6.R007
–L– POT STA 8+50.00

END STATE PROJECT BP6.R007
–L– POT STA 18+50.00

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.

Engineering
Building Partnerships

Prepared In the Office of:
LJB Engineering PC
1121 Situs Court, Suite 200
Raleigh, NC 27606
NC License No. C-4123

Designed by:

Xiaohan Li ***4772***
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$REVISIONS$$$$

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	EC-02

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

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

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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	EC-03

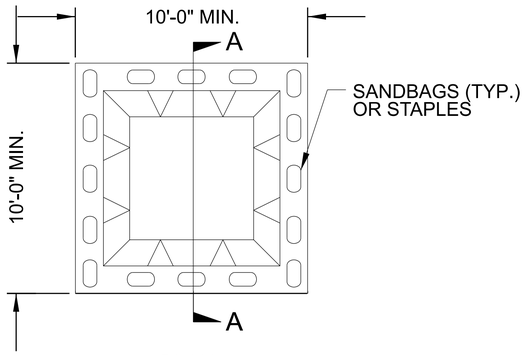
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

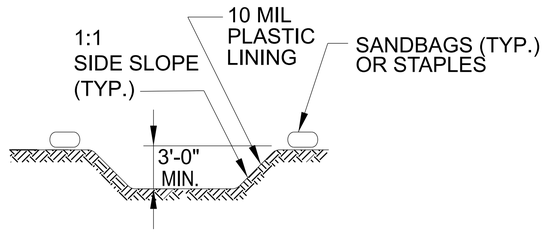
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	EC-04

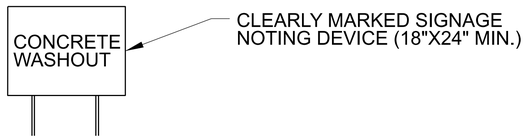
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



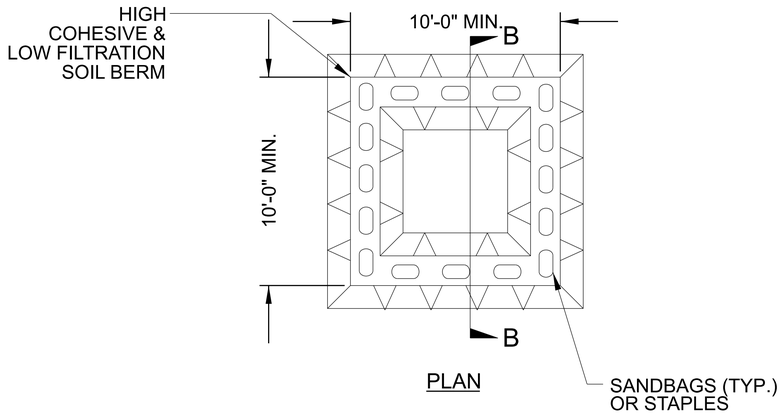
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

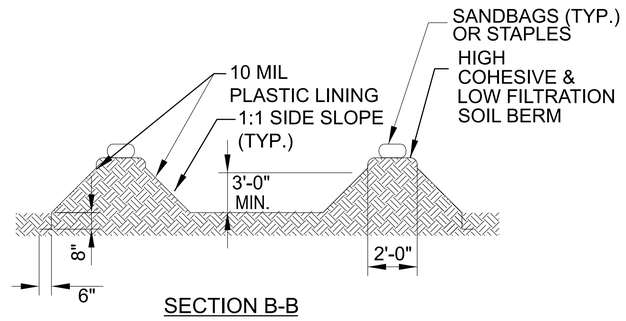
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

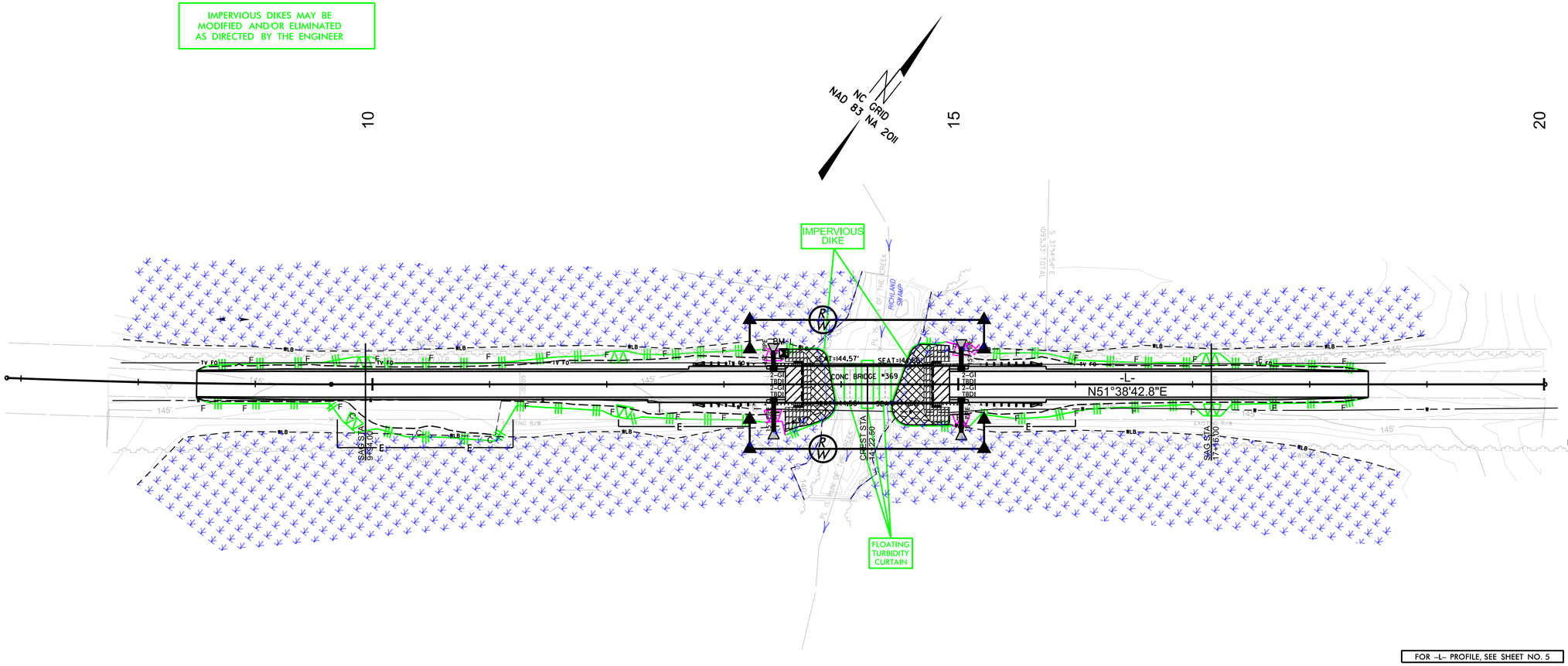
PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	EC-05/CONST.04

NOTE: ALL MATTING USED ON THIS PROJECT SHALL BE COIR FIBER.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT BRIDGE CONSTRUCTION

IMPERVIOUS DIKES MAY BE MODIFIED AND/OR ELIMINATED AS DIRECTED BY THE ENGINEER



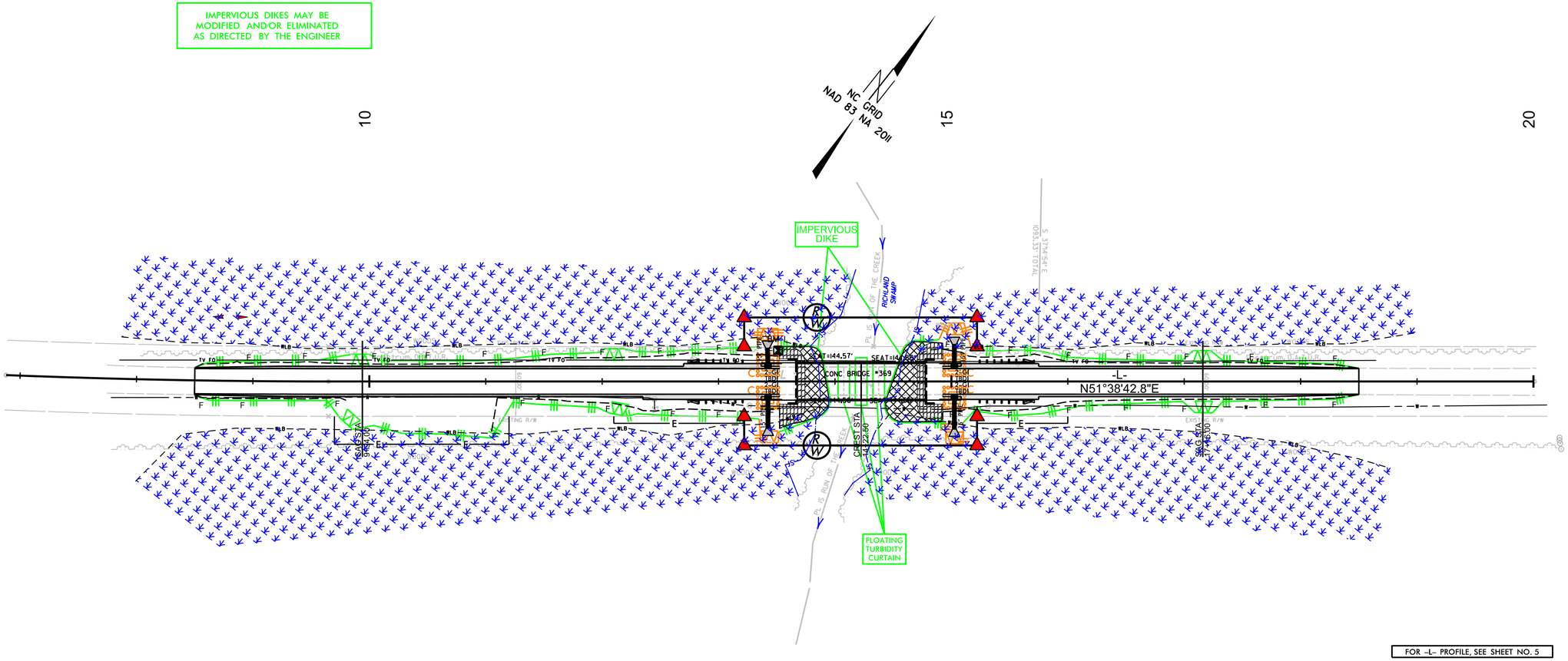
FOR –L– PROFILE, SEE SHEET NO. 5

PROJECT REFERENCE NO.	SHEET NO.
BP6.R007	EC-06/CONST.04

NOTE: ALL MATTING USED ON THIS PROJECT SHALL BE COIR FIBER.

UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT BRIDGE CONSTRUCTION

IMPERVIOUS DIKES MAY BE MODIFIED AND/OR ELIMINATED AS DIRECTED BY THE ENGINEER



FOR –L– PROFILE, SEE SHEET NO. 5

11/14/23

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CROSS SECTION INDEX

ROADWAY	STATION TO STATION	SHEET NUMBER
CROSS SECTION SUMMARY SHEET		X-1A
-L- SR 1515 (UNION CHAPEL RD)	8+50.00 TO 18+50.00	X-2 THRU X-9

BPG.R007

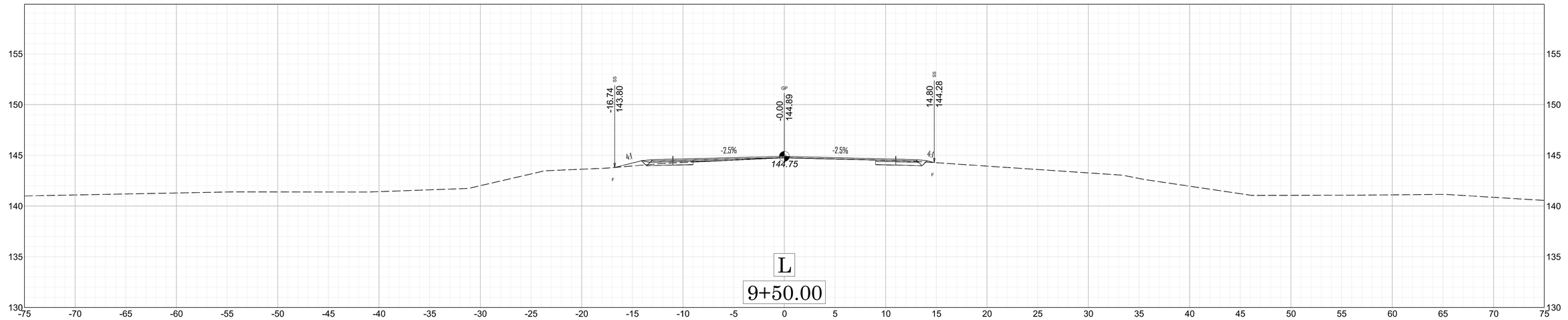
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

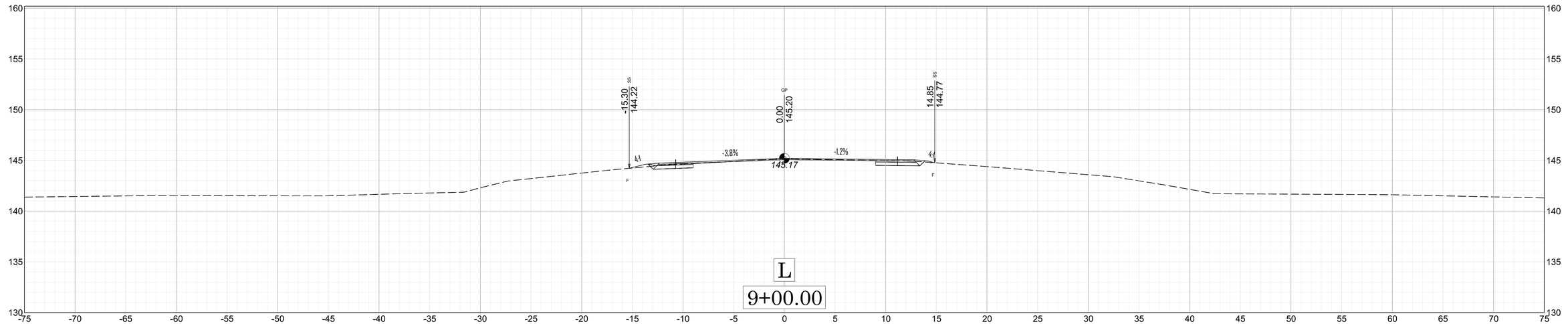
NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

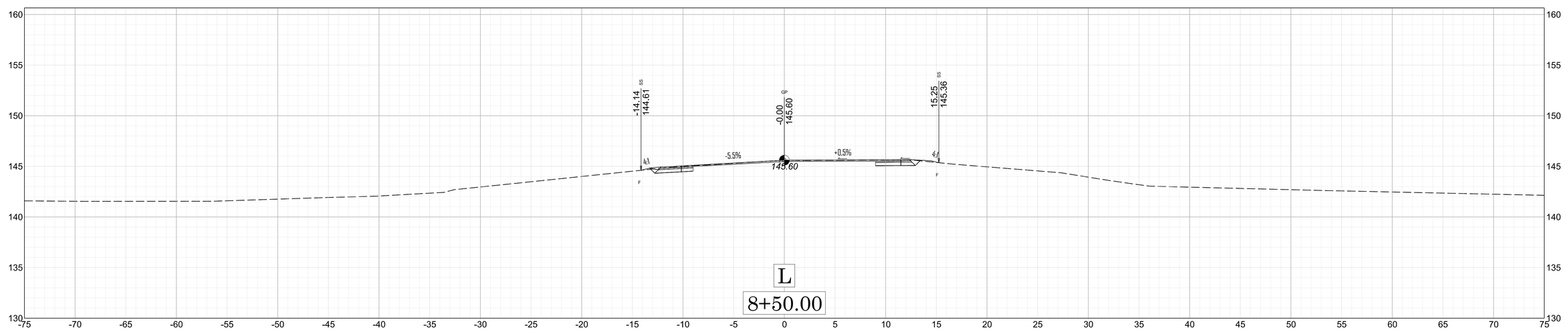
CROSS-SECTION SUMMARY

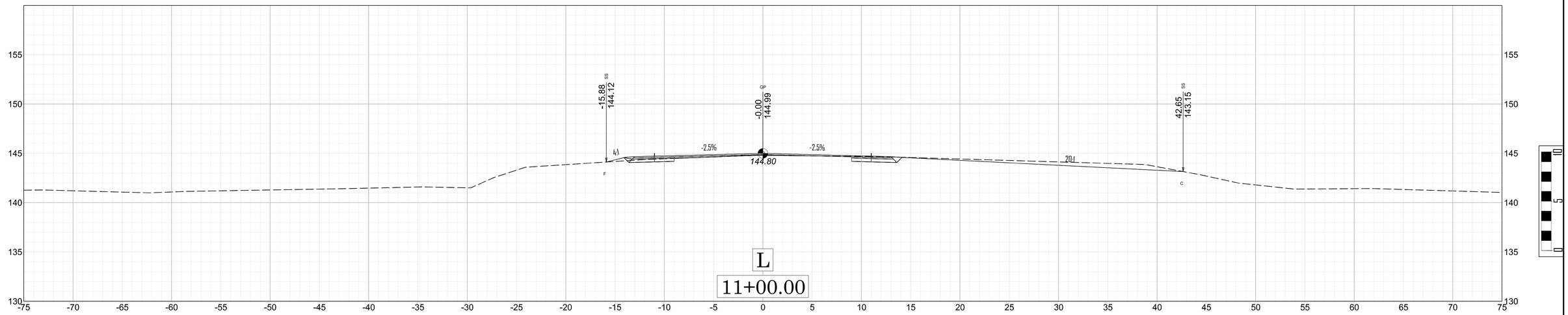
STATION -L-	UNCL. EXC. (CU.YD.)	EMBT. (CU.YD.)
8+50.00	0	0
9+00.00	7	1
9+50.00	6	1
10+00.00	11	1
10+50.00	15	0
11+00.00	18	0
11+50.00	12	3
12+00.00	1	11
12+50.00	0	24
13+00.00	0	70
13+50.00	3	29
13+66.31	3	7
14+00.00	3	9
14+50.00	0	0
14+78.69	2	13
15+00.00	3	16
15+50.00	3	28
16+00.00	0	16
16+50.00	2	3
17+00.00	4	1
17+50.00	7	1
18+00.00	8	1
18+50.00	7	0

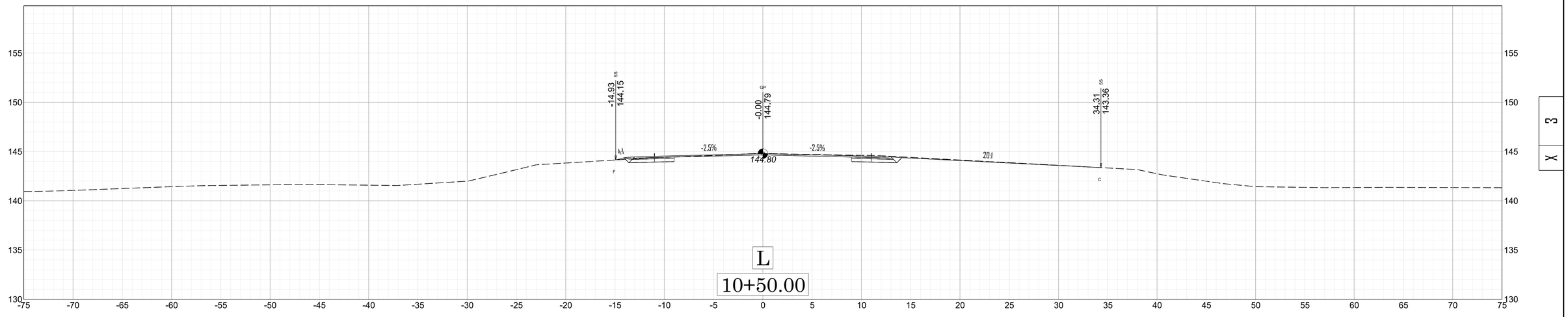
NOTE: Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

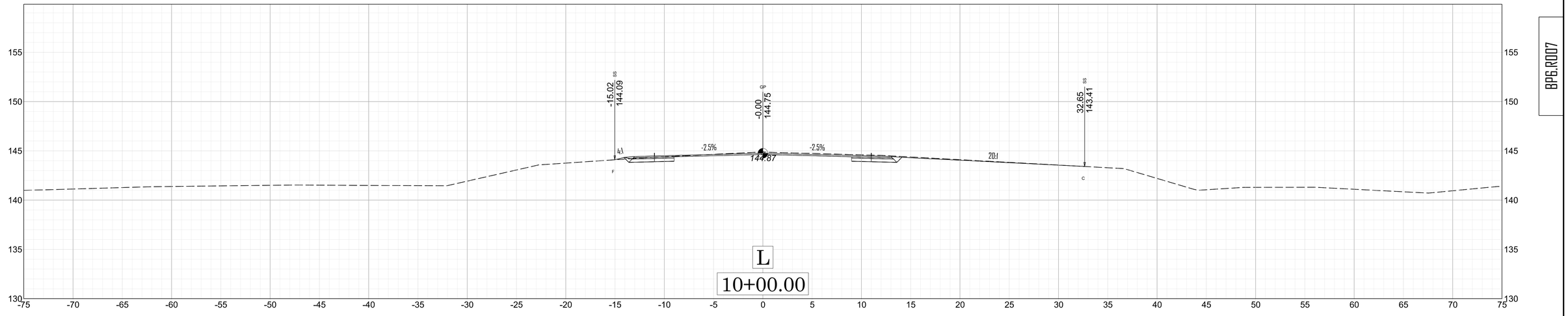

-16.74
143.80
SS
-0.00
144.89
GP
14.80
144.28
SS
4:1
-2.5%
-2.5%
4:1
144.75
F
F
L
9+50.00


-15.30
144.22
SS
0.00
145.20
GP
14.85
144.77
SS
4:1
-3.8%
-1.2%
4:1
145.17
F
F
L
9+00.00

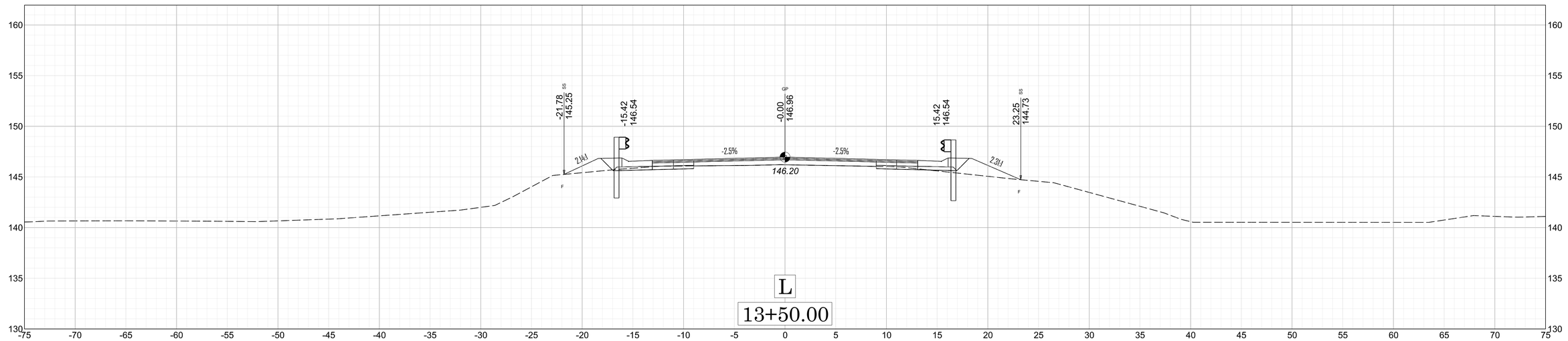

-14.14
144.61
SS
-0.00
145.60
GP
15.25
145.36
SS
4:1
-5.5%
+0.5%
4:1
145.60
F
F
L
8+50.00

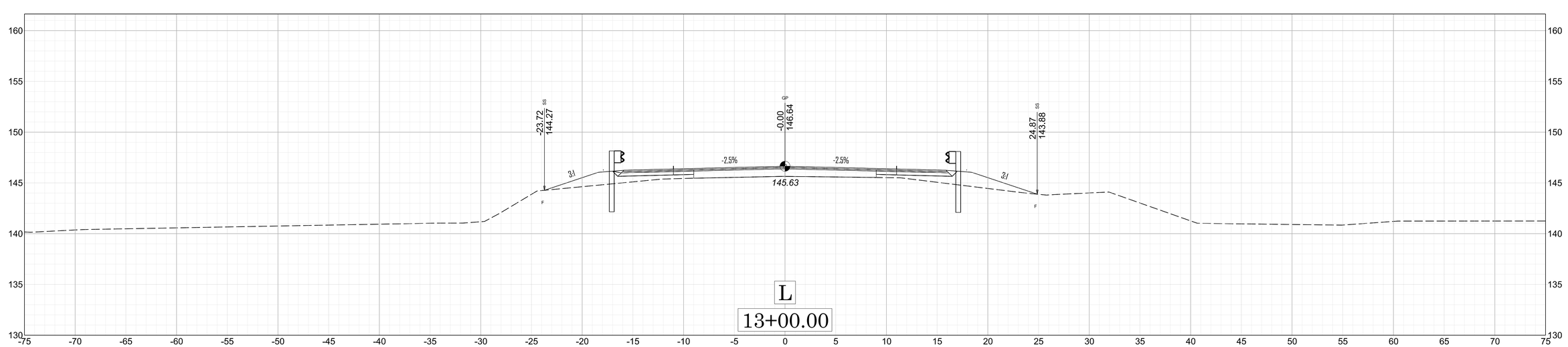

-15.88
144.12
SS
-0.00
144.99
GP
42.65
143.15
SS
4:1
-2.5%
-2.5%
20:1
144.80
F
C
L
11+00.00

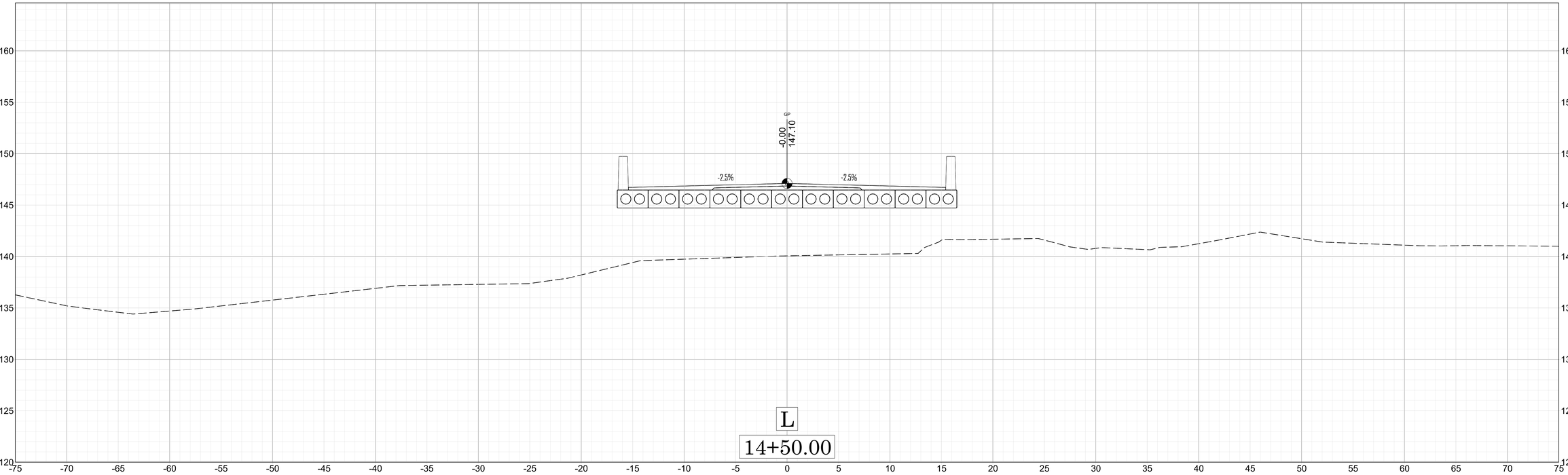

-14.93
144.15
SS
-0.00
144.79
GP
34.31
143.36
SS
4:1
-2.5%
-2.5%
20:1
144.80
F
C
L
10+50.00

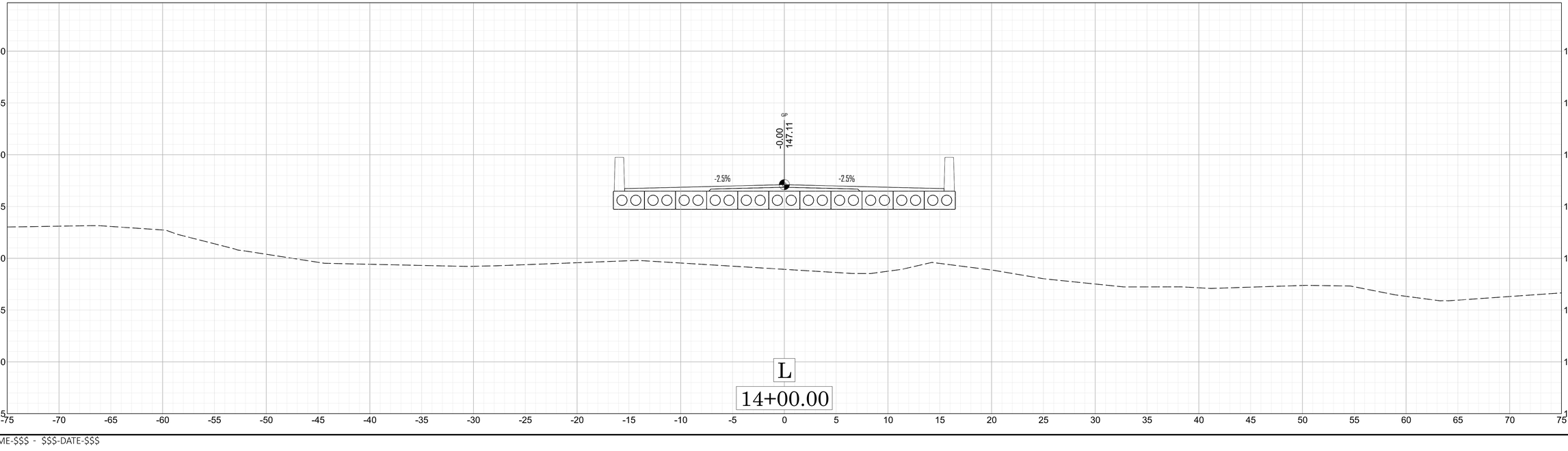

-15.02
144.09
SS
-0.00
144.75
GP
32.65
143.41
SS
4:1
-2.5%
-2.5%
20:1
144.87
F
C
L
10+00.00

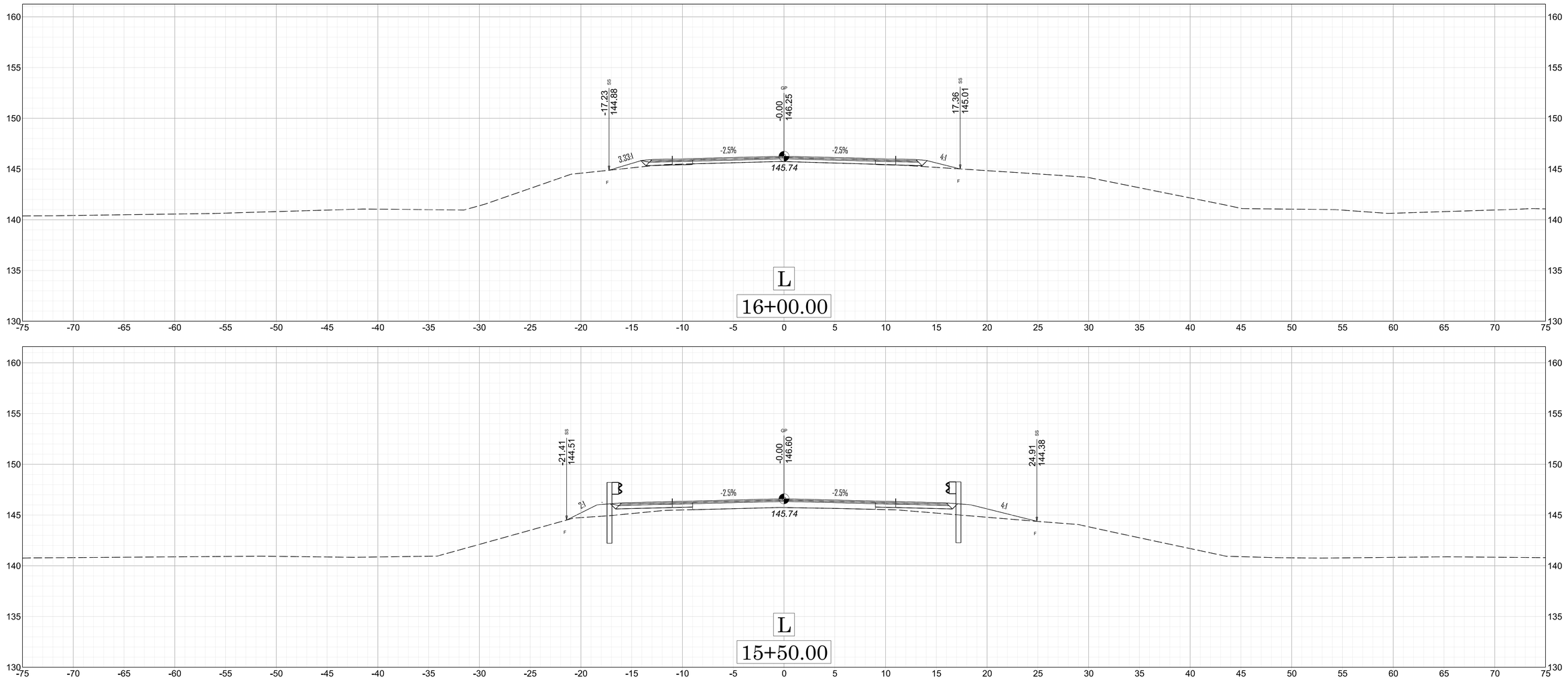
-21.98
143.82
SS
0.00
146.21
CP
24.96
143.90
SS
3.75:1
-2.5%
-2.5%
3.75:1
145.20
F
F
L
12+50.00
-20.45
143.77
SS
0.00
145.79
CP
18.38
144.29
SS
4:1
-2.5%
-2.5%
4:1
144.90
F
F
L
12+00.00
-19.13
143.68
SS
-0.00
145.36
CP
15.48
144.59
SS
4:1
-2.5%
-2.5%
4:1
144.84
F
F
L
11+50.00
160
155
150
145
140
135
130
-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


-21.78
145.25
SS
-15.42
146.54
-0.00
146.96
GP
15.42
146.54
23.25
144.73
SS
2.1H:1
-2.5%
-2.5%
2.3H:1
146.20
F
F
L
13+50.00

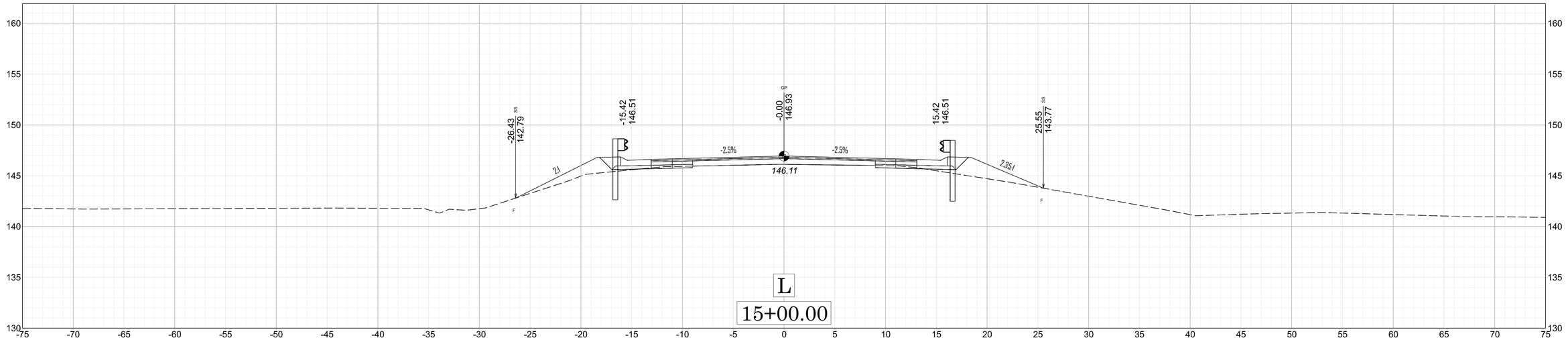

-23.72
144.27
SS
-0.00
146.64
GP
24.87
143.88
SS
3:1
-2.5%
-2.5%
3:1
145.63
F
F
L
13+00.00

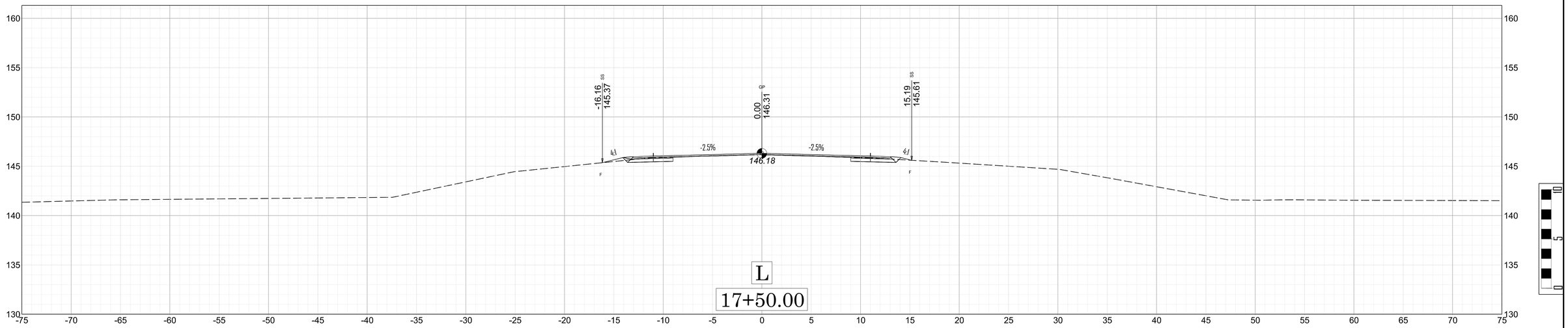

GP
-0.00
147.10
-2.5%
-2.5%
L
14+50.00

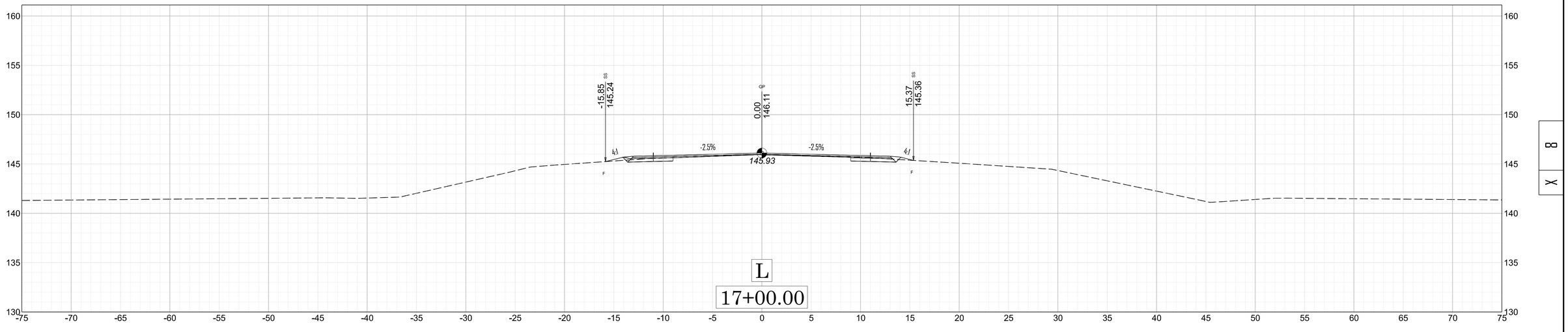

GP
-0.00
147.11
-2.5%
-2.5%
L
14+00.00

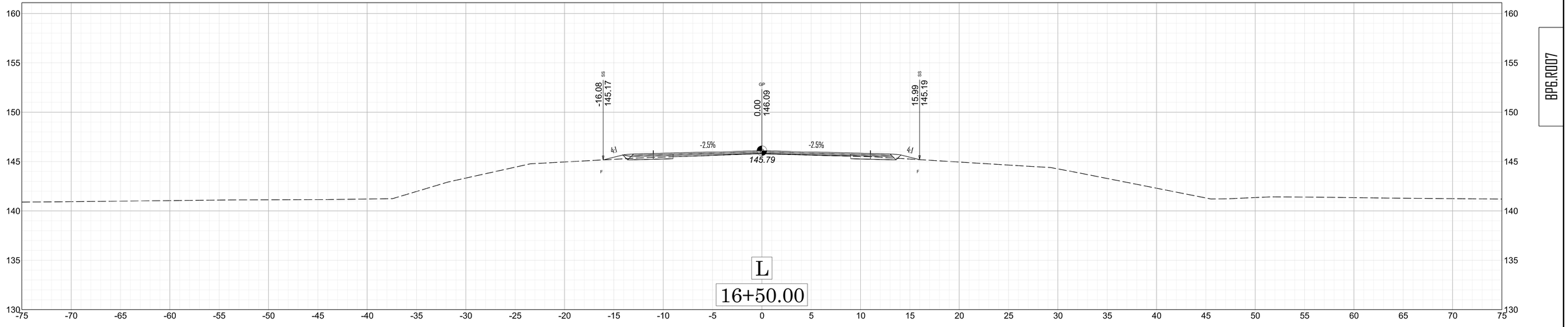

-17.23
144.88
SS
-0.00
146.25
GP
17.36
145.01
SS
3.33:1
-2.5%
-2.5%
4:1
145.74
F
F
L
16+00.00

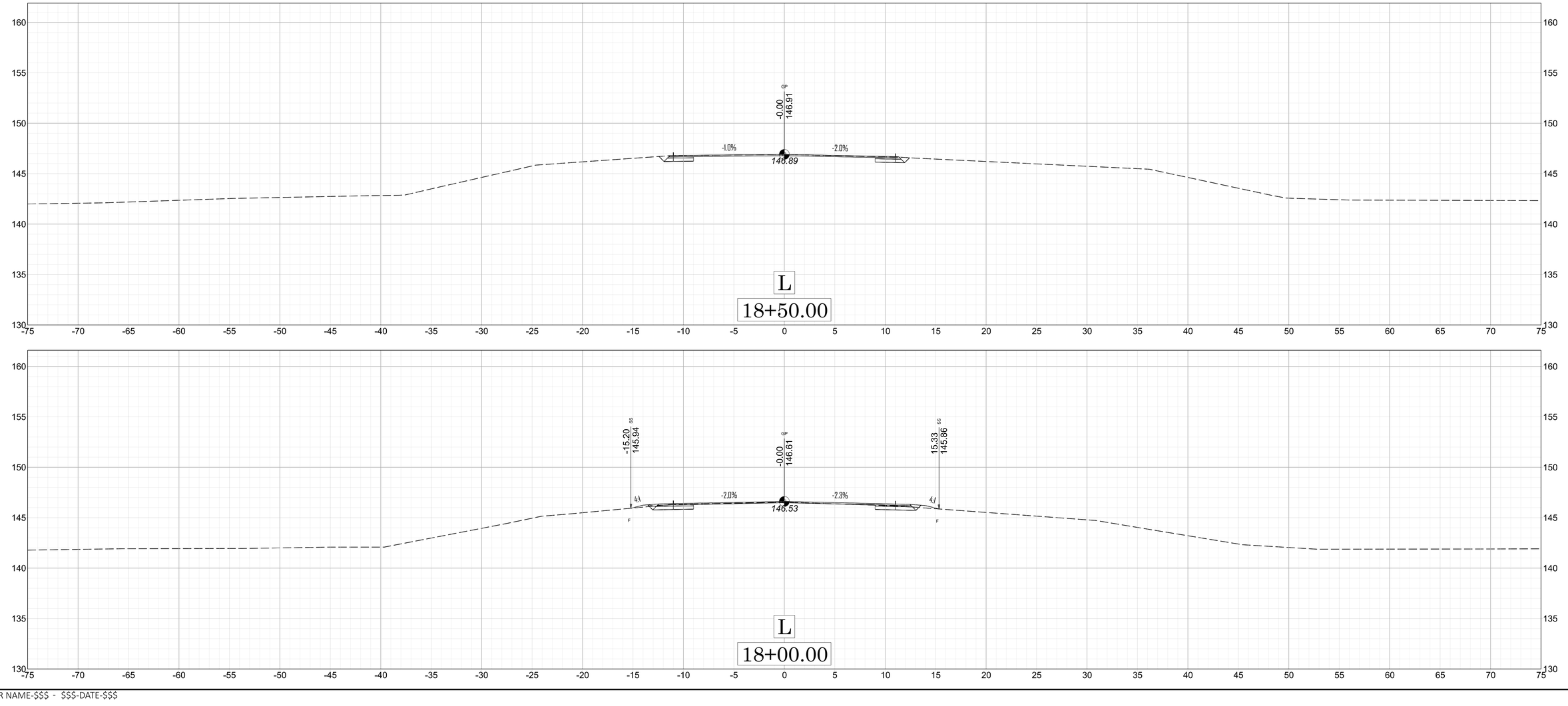
-21.41
144.51
SS
-0.00
146.60
GP
24.91
144.38
SS
2:1
-2.5%
-2.5%
4:1
145.74
F
F
L
15+50.00


-26.43
142.79
SS
-15.42
146.51
-0.00
146.93
GP
15.42
146.51
25.55
143.77
SS
2:1
-2.5%
-2.5%
2.35:1
146.11
F
F
L
15+00.00


-16.16
145.37
SS
0.00
146.31
℄
15.19
145.61
SS
4:1
-2.5%
-2.5%
4:1
146.18
F
F
L
17+50.00


-15.85
145.24
SS
0.00
146.11
℄
15.37
145.36
SS
4:1
-2.5%
-2.5%
4:1
145.93
F
F
L
17+00.00


-16.08
145.17
SS
0.00
146.09
℄
15.99
145.19
SS
4:1
-2.5%
-2.5%
4:1
145.79
F
F
L
16+50.00



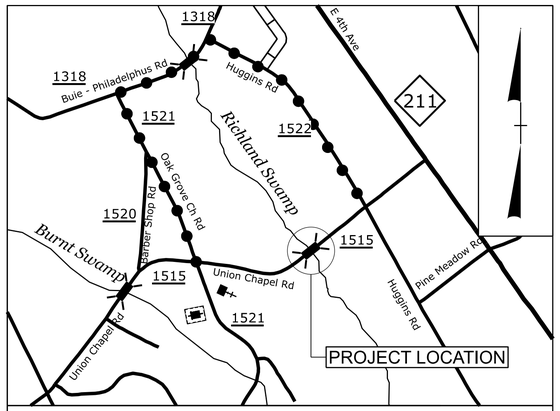
0 5 10

X

BPG.R007

TIP PROJECT: BP6.R007

CONTRACT: DF00527



VICINITY MAP (NTS)

● ● ● ● ● ● ● ● Offsite Detour Route

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

ROBESON COUNTY

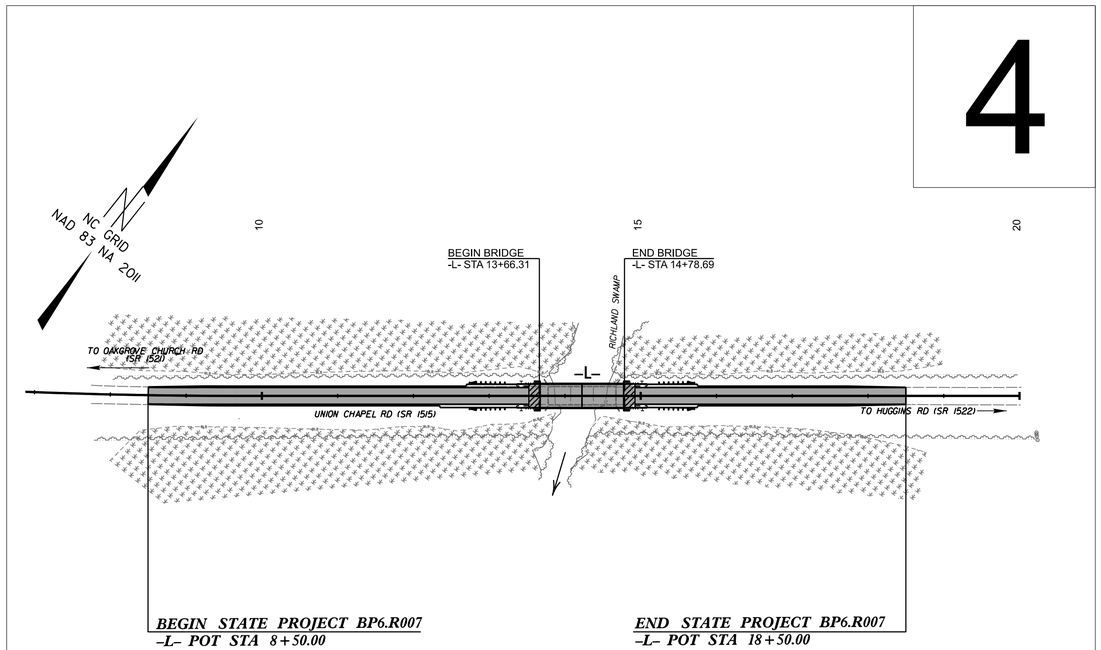
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R007		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP6.R007.1	–	P.E.
BP6.R007.2	–	RW & UTL
BP6.R007.3	–	CONST.

LOCATION: BRIDGE NO. 369 OVER RICHLAND SWAMP ON SR 1515 (UNION CHAPEL RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

4



BEGIN STATE PROJECT BP6.R007
–L– POT STA 8+50.00

END STATE PROJECT BP6.R007
–L– POT STA 18+50.00

STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2023 = 1600
V = 60 MPH
* TTST = 6%, DUAL
FUNC CLASS = RURAL LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP.6R007 = 0.168 MILES
LENGTH STRUCTURE PROJECT BP.6R007 = 0.021 MILES

TOTAL LENGTH PROJECT BP6.R007 = 0.189 MILES

Prepared In the Office of:
LJB ENGINEERING PC
1121 SITUS COURT, SUITE 200
RALEIGH, N.C. 27610
NC LICENSE NO. C–4947

Engineering
Building Partnerships

2018 STANDARD SPECIFICATIONS

LETTING DATE :

MAY 20, 2026

SCOTT COOKE, PE
PROJECT ENGINEER

NAV R. PANERU, PE
PROJECT DESIGN ENGINEER

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

180 170 160 150 140 130 120

SPAN A

1'-7" MIN. RIP RAP BERM (TYP.)
1'-0" MIN. EARTH BERM (TYP.)
FILL FACE AT END BENT 1
STA. 13+66.31 -L-
G.P. EL. = 147.02
BEGIN FRONT SLOPE
STA. 13+61.89 -L-
G.P. EL. = 147.01
FIX.
LOW CHORD EL. 144.64
EXCAVATE TO EL. 141.0 (GRADE TO DRAIN)
EL. 147±
FEMA (Q100) W.S.E. = 144.68
EL. 146±
VEGETATION LINE EL. = 141.4 (07/12/2022)
1'-6" (TYP.)
APPROX. NATURAL GROUND LINE
EL. 142±
3'-6" MIN. (TYP.)
EL. 141±
EL. 139±
HP 12X53 STEEL PILE (TYP. EACH END BENT)
EXISTING SUBSTRUCTURE (TYP.) *

SPAN B

FIX. FIX.
EL. 136±
B.O.C. EL. 142.16 (HP 14X73 STEEL PILE)
1'-6" LIMITS OF UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)
LOW CHORD EL. 144.64
EXCAVATE TO EL. 141.0 (GRADE TO DRAIN)
BASE (Q100) W.S.E. = 145.5
DESIGN (Q25) W.S.E. = 144.9
EL. 143±
EL. 138±
UNCLASSIFIED STRUCTURE EXCAVTION (TYP.)
FILL FACE OF END BENT 2
STA. 14+78.69 -L-
G.P. EL. = 147.02
EL. 146±
FIX.
BEGIN FRONT SLOPE
STA. 14+83.11 -L-
G.P. EL. = 147.01
2'-6" (TYP.)
B.O.C. EL. 142.06 (TYP. EA. END BENT)
2'-0" THICK CLASS II RIP RAP SLOPE 1½:1 NORMAL TO CAP (TYP. EACH END BENT)
EL. 146±
APPROX. NATURAL GROUND LINE

SECTION ALONG -L-

* EXISTING END BENTS AND INTERIOR BENTS CONSISTS OF CONCRETE PIER CAPS ON TIMBER PILES.

GRADE DATA

P.I. STA. = 14+22.50 -L-
EL. = 147.68
V.C. = 260.00'

(+) 0.8500 % (-) 0.8500 %

HYDRAULIC DATA

DESIGN DISCHARGE	= 2000 CFS
FREQUENCY OF DESIGN DISCHARGE	= 25 YR
DESIGN HIGH WATER ELEVATION	= 144.9
DRAINAGE AREA	= 31.6 SQ MI
BASE DISCHARGE (Q100)	= 3000 CFS
BASE HIGH WATER ELEVATION	= 145.5

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 2000 CFS
FREQUENCY OF OVERTOPPING	= 25 YR
OVERTOPPING ELEVATION	= 144.9

NOTE: OT OCCURS AT SAG STA. 10+15.26 -L-

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

LENGTH OF BRIDGE (FILL FACE TO FILL FACE) = 112'-4½" (W.P. 1 TO W.P. 3)
56'-2¼" (W.P. 1 TO W.P. 2)
56'-2¼" (W.P. 2 TO W.P. 3)
CLASS II RIP RAP SLOPE PROTECTION
W.P. 1
STA. 13+66.31 -L-
BEGIN FRONT SLOPE
STA. 13+61.89 -L-
BEGIN APPROACH SLAB
STA. 13+52.44 -L-
-L-
N51°38'42.8"E
TO SR 1521 (OAKGROVE CHURCH RD.)
FILL FACE AT END BENT 1
BENT 1 CONTROL LINE
BRIDGE I.D. AND W.P. 2
STA. 14+22.50 -L-
90°-00'-00" (TYP.)
EXISTING BRIDGE
RICHLAND SWAMP
1'-0" MIN. EARTH BERM EL. 141.56
1'-7" MIN. RIP RAP BERM EL. 143.56
CLASS II RIP RAP SLOPE PROTECTION
W.P. 3
STA. 14+78.69 -L-
BEGIN FRONT SLOPE
STA. 14+83.11 -L-
END APPROACH SLAB
STA. 14+92.56 -L-
-L-
N51°38'42.8"E
FILL FACE AT END BENT 2
TO SR 1522 (HUGGINS RD.)
1'-0" MIN. EARTH BERM EL. 141.56
1'-7" MIN. RIP RAP BERM EL. 143.56

PLAN

(PILES NOT SHOWN FOR CLARITY)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL 053484 NORTH CAROLINA PROFESSIONAL ENGINEER N. Paneru
4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-
SHEET 1 OF 4 REPLACES BRIDGE NO. 770369

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

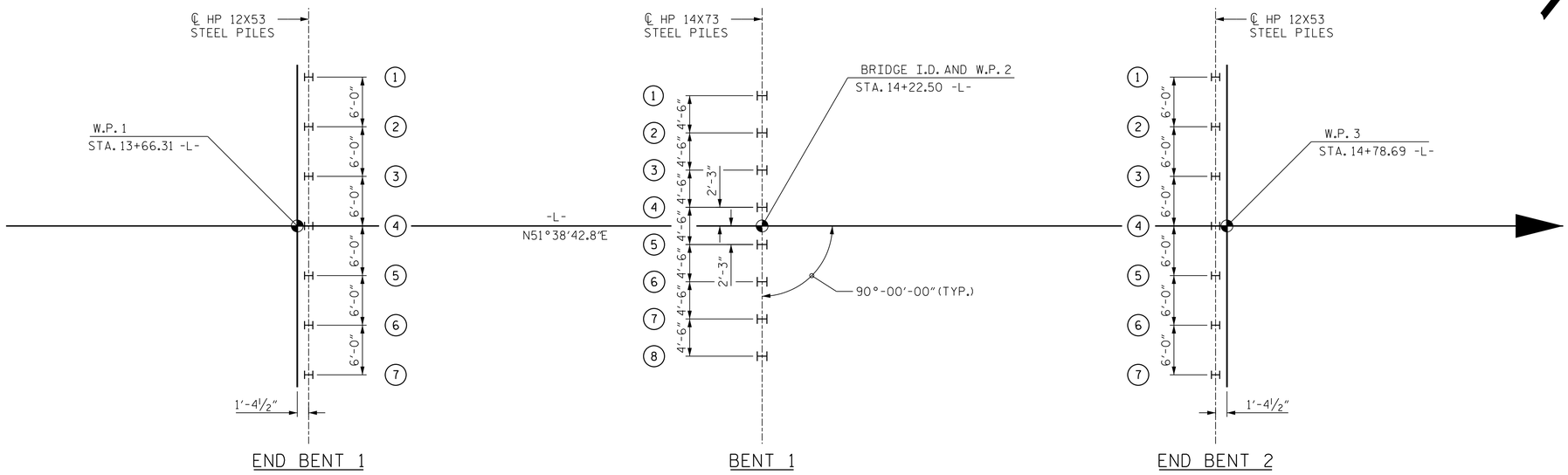
GENERAL DRAWING FOR BRIDGE OVER RICHLAND SWAMP ON SR 1515 BETWEEN SR 1521 AND SR 1522

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

400_002_BP6R007_SMU_GDI_S1-01_770369.dgn
5:17:22 PM
4/1/2026



FOUNDATION LAYOUT

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 27 TO 43 KIP-FT PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 66 KIP-FT PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. PANERU

4/2/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER RICHLAND SWAMP ON SR 1515 BETWEEN SR 1521 AND SR 1522

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

400_003_BP6R007_SMU_G02_S1-02_770369.dgn
4/1/2026 5:17:23 PM

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 to 7)	7	148	143.10	60			215							
Bent 1 (Piles 1 to 8)	8	250	143.20	70	131.00	107.00	370							
End Bent 2 (Piles 1 to 7)	7	148	143.10	55			215							
TOTAL QUANTITY:														

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

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

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 to 7)	148			0.70		
Bent 1 (Piles 1 to 8)	250		1	0.70		10
End Bent 2 (Piles 1 to 7)	148			0.70		

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

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	65	1
Bent 1	75	1
End Bent 2	60	1
TOTAL QUANTITY:		3

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

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (James P. Racine, #052956) on 12-09-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nadav R. Paneru
4/2/2026

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

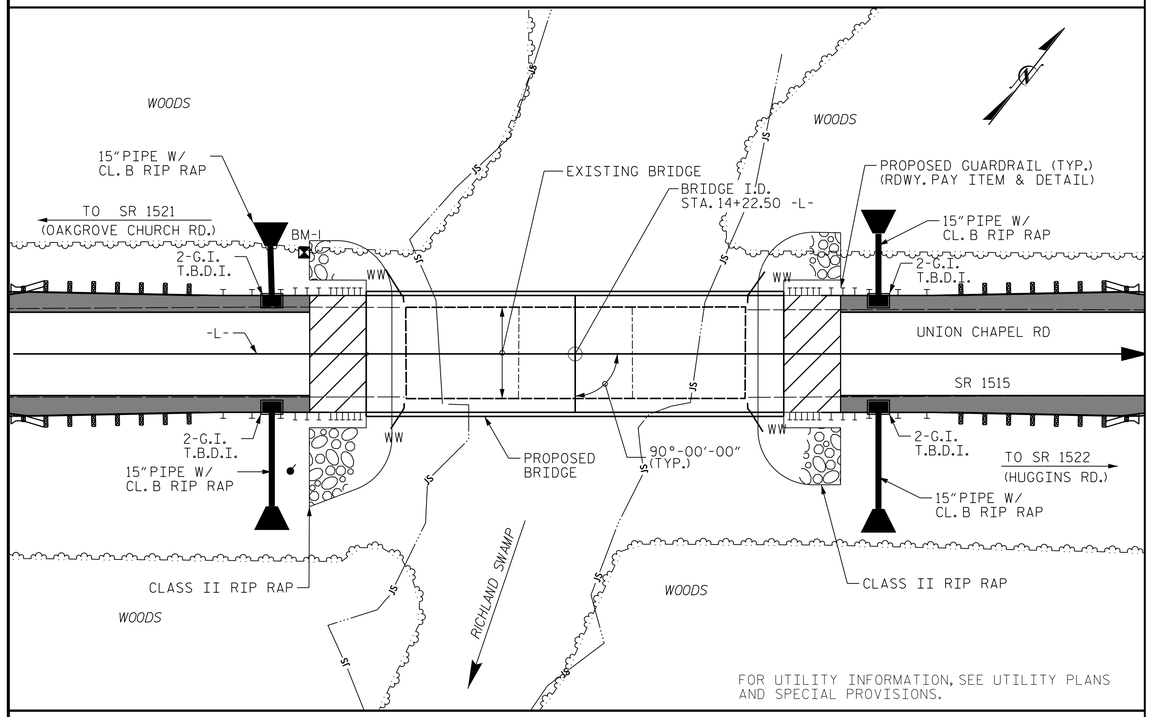
1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

400_004_BP6R007_SMU_GD3_S1-03_770369.dgn
4/1/2026 5:17:24 PM

BM1: RR SPIKE SET IN BASE OF 20" OAK, STA. 10+15.00 -L-, 47.00' LT., EL. = 164.62



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA.14+22.50-L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 GALVANIZED STEEL PILES
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	EACH
SUPERSTRUCTURE					LUMP SUM			
END BENT NO. 1				14.2		2115	7	
BENT NO. 1				10.7		2136		8
END BENT NO. 2				14.2		2115	7	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	39.1	LUMP SUM	6366	14	8

TOTAL BILL OF MATERIAL

	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVINIZED STEEL PILES		DYNAMIC PILE TESTING	CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	PLAIN RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	LUMP SUM	TONS	SQ.YDS.	NO.	LIN.FT.
SUPERSTRUCTURE						220.5	LUMP SUM				
END BENT NO. 1	7	420			1			112	125	11	605
BENT NO. 1			8	560	1						
END BENT NO. 2	7	385			1			112	125	11	605
TOTAL	14	805	8	560	3	220.5	LUMP SUM	224	250	22	1210

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

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 2.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

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.

(1) ~~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+22.50 -L-.~~

(1) ~~THE CONCRETE IN THE BENT CAP OF BENT NO.1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BYWEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXCERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLYASH PER 1.0 LB OF CEMENT. NO PAYABLE WILL BE MADE FORTHIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.~~

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 4 SHALL BE EXCAVATED FOR A DISTANCE OF 32 FT± LEFT AND 40 FT± RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUMPRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF (10) PRESTRESSED CONCRETE CHANNEL SPANS (30'-30'-30"); CLEAR ROADWAY WIDTH OF 24'-4" ASPHALT WEARING COURSE ON PRECAST CONCRETE CAPS WITH TIMBER PILE BENTS AND LOCATED ALONG CENTERLINE OF ROAD 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. THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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."

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS AND DOWELS IN PLACE OF CAST-IN-PLACE OR PRESET ANCHORS. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

FOR INTERIOR BENT, ONLY PARTIAL GALVANIZING OF PILES IS REQUIRED. SEE INTERIOR BENT SHEET FOR REQUIRED GALVANIZED LENGTH. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-

SHEET 4 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL 053484 NORTH CAROLINA PROFESSIONAL ENGINEER NICHOLAS V. PANERU
Signature
Docusigned by: Nick Paneru
5/11/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER RICHLAND SWAMP ON SR 1515 BETWEEN SR 1521 AND SR 1522

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-4
1	NRP	5/11/26	3			TOTAL SHEETS
2			4			18

400_005_BP6R007_SMU_G04_S1-04_770363.dgn
5/11/2026 1:19:51 PM

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	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ DC	γ DW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING * *

(4) EMERGENCY VEHICLE LOAD RATING **

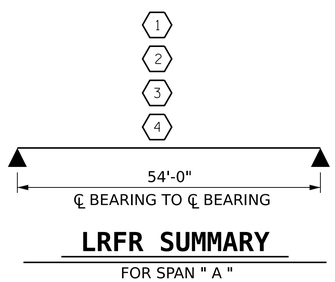
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN " A "

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nav R Paneru

Signature Nav R Paneru

Date: 4/2/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55' CORE SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

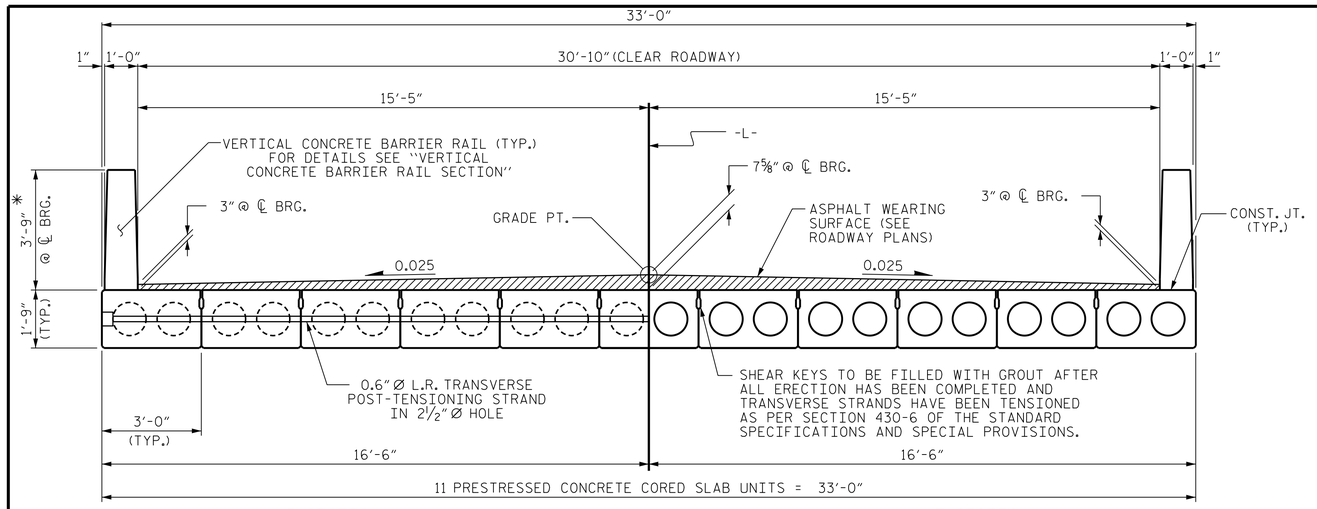
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			18

DRAWN BY :	NRP	DATE : 12/14/25
CHECKED BY :	RLC	DATE : 12/16/25
DESIGN ENGINEER OF RECORD:	N. PANERU	DATE : 12/2025

400_006_BP6R007_SMU_LRFR_S1-05_770369.dgn

4/1/2026 5:17:39 PM

STD. NO. 21LRFR1_90S_55L



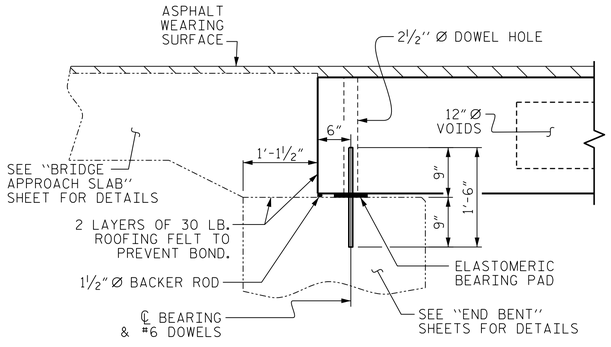
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

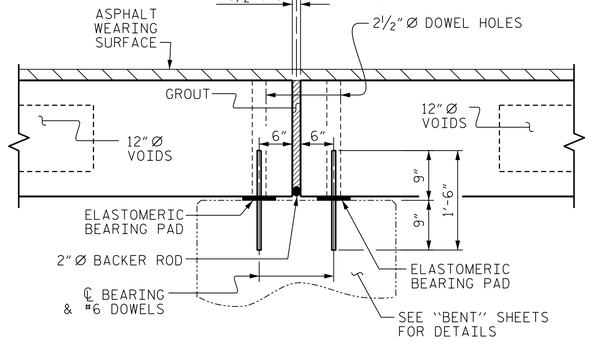
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE ″VERTICAL CONCRETE BARRIER RAIL SECTION″ DETAIL.

FIXED END

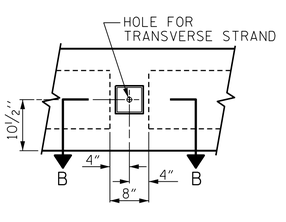


SECTION AT END BENT

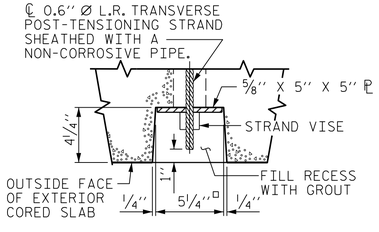
FIXED END FIXED END



SECTION AT BENT

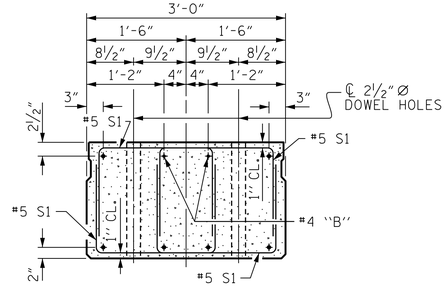


ELEVATION VIEW



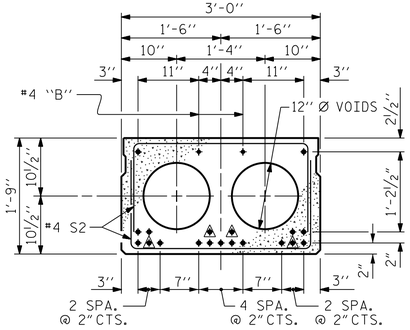
SECTION B-B

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



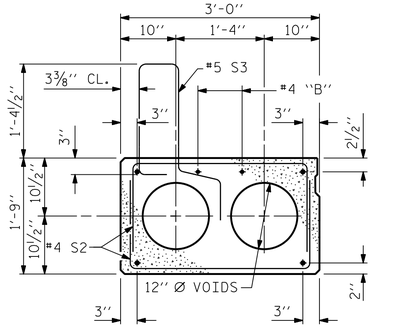
END ELEVATION

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



INTERIOR SLAB SECTION (55′ UNIT)

(19 STRANDS REQUIRED)



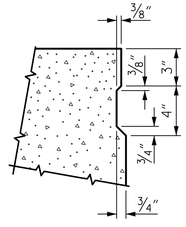
EXT. SLAB SECTION

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

0.6″Ø LOW RELAXATION STRAND LAYOUT

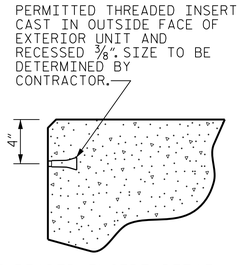
⚠ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6′-0″FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



SHEAR KEY DETAIL

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



THREADED INSERT DETAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER NOV R. PANERU
Signature
Date
4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-

SHEET 1 OF 4

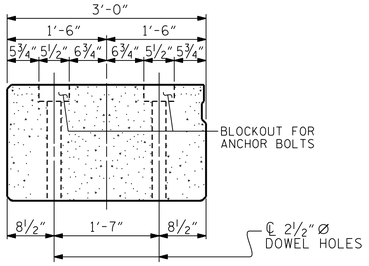
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ x 1′-9″ PRESTRESSED CONCRETE CORE SLAB UNIT 90° SKEW (SPANS A & B)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-6
1			3			TOTAL SHEETS
2			4			18

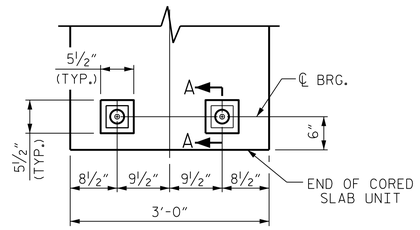
1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025



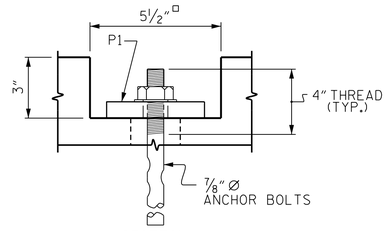
END ELEVATION

SHOWING LOCATION OF BLOCKOUT FOR ANCHOR BOLTS AND DOWEL HOLES.



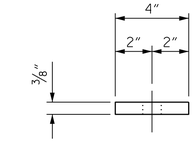
TYPICAL PLAN

(TYP. FOR EXTERIOR CORED SLABS)



SECTION A-A

(FIXED)



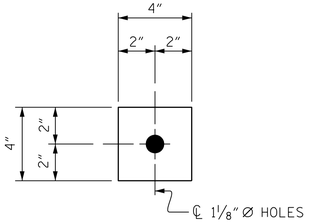


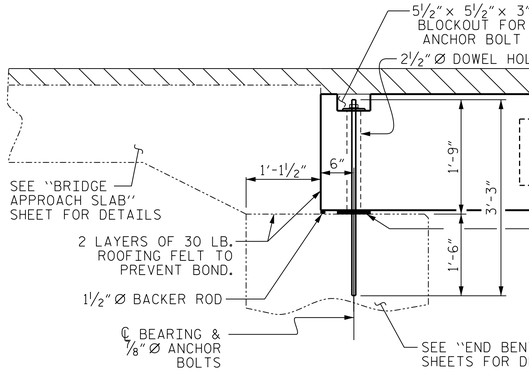
PLATE DETAILS - P1

(FIXED)
P1 (8 REQ'D.)

BLOCKOUT DETAIL FOR ANCHOR BOLTS

(TYP. FOR EXTERIOR CORED SLABS)

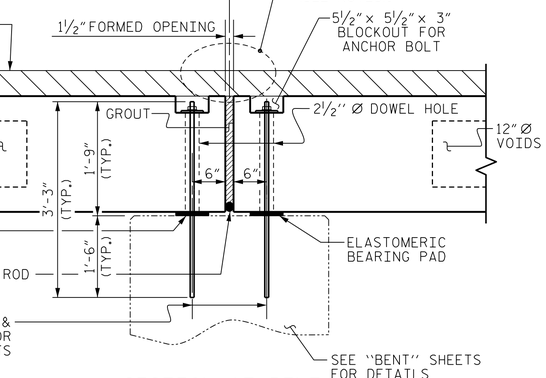
FIXED END



SECTION AT END BENT

(TYP. FOR EXTERIOR CORED SLABS)

FIXED END FIXED END



SECTION AT BENT

(TYP. FOR EXTERIOR CORED SLABS)

NOTES

AT ALL FIXED AND EXPANSION ENDS OF EXTERIOR CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF EXTERIOR 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 2½"Ø DOWEL HOLES AT EXPANSION ENDS OF EXTERIOR CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

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

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

SHEET 2 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. R. Paneru

Signed By: Nathan Paneru D032F...

4/2/2026

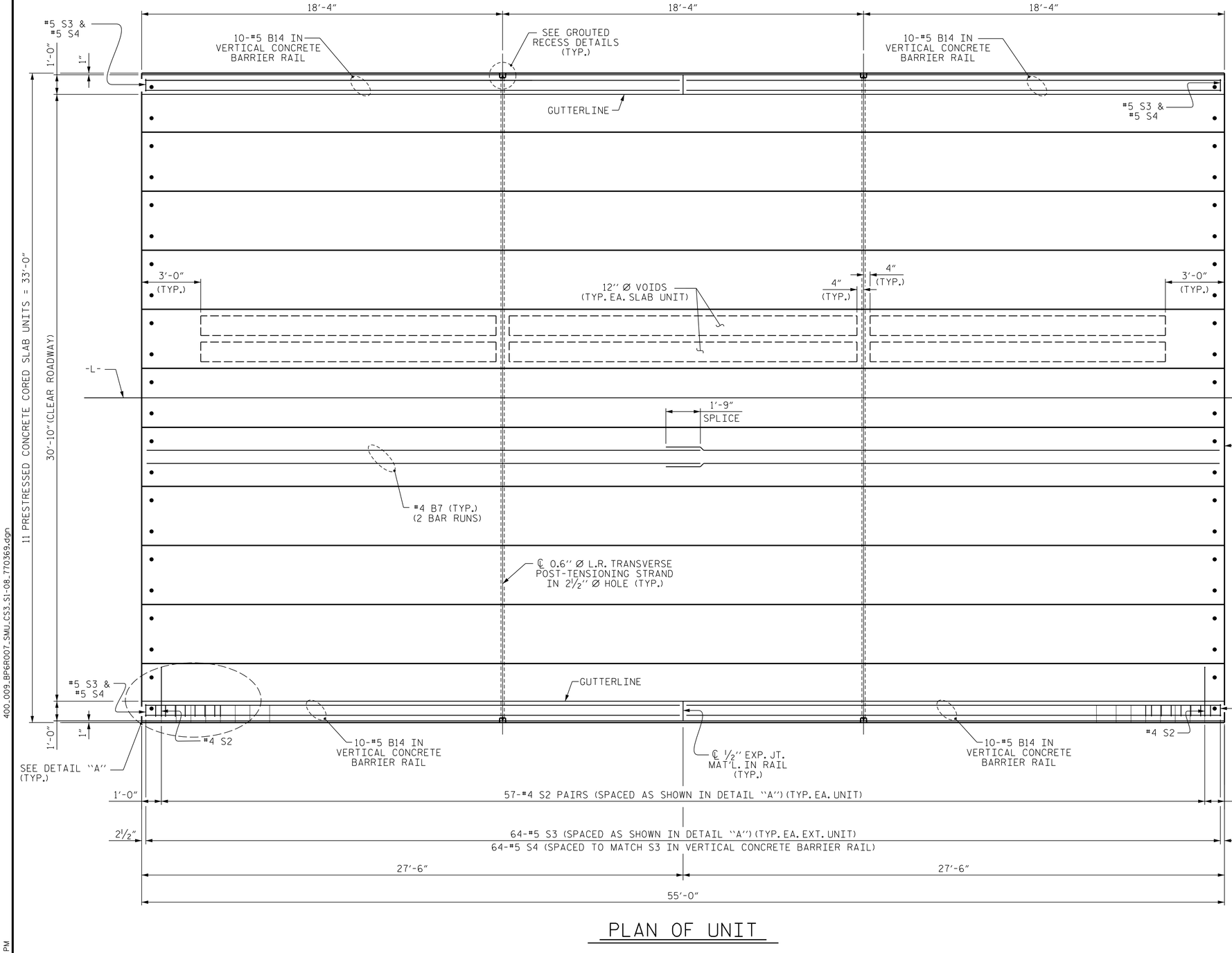
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTRESSED CONCRETE CORE SLAB UNIT 90° SKEW (SPANS A & B)

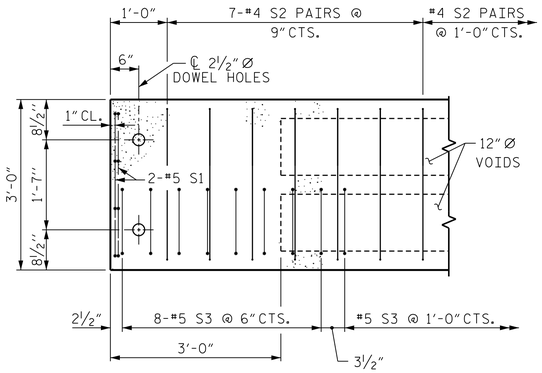
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-7
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025



PLAN OF UNIT



DETAIL ″A″

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. Paneru
Signature
Date
4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-
SHEET 3 OF 4

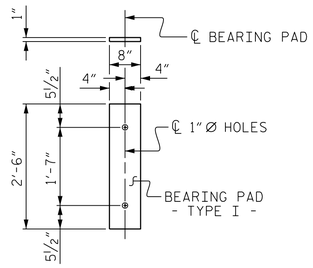
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORE SLAB UNIT 90° SKEW (SPANS A & B)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-8
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947



FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS 55' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B14	40	80	#5	STR	27'-1"	2260
✳S4	128	256	#5	2	7'-2"	1914
✳EPOXY COATED REINFORCING STEEL				LBS.		4174
CLASS AA CONCRETE				CU.YDS.		28.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		220.5

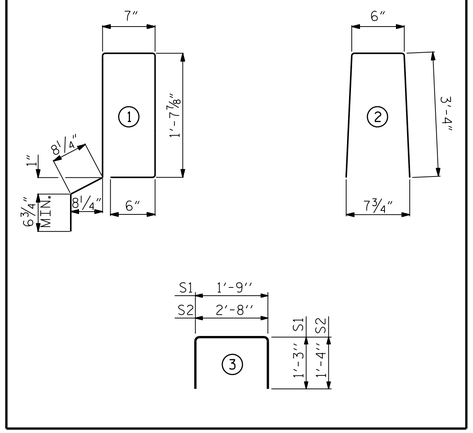
BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
✳S3	64	#5	1	5'-8"	378		
REINFORCING STEEL		LBS.			516		516
✳EPOXY COATED REINFORCING STEEL		LBS.			378		
6500 P.S.I. CONCRETE		CU. YDS.			7.8		7.8
0.6"Ø L.R. STRANDS		No.			19		19

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	9	55'-0"	495'-0"
TOTAL	11	55'-0"	605'-0"

BAR TYPES



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**	7/16" ↓
FINAL CAMBER	1 1/16" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
55' UNITS	1 15/16"	3'-7 15/16"

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

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

NOTES

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

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

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

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

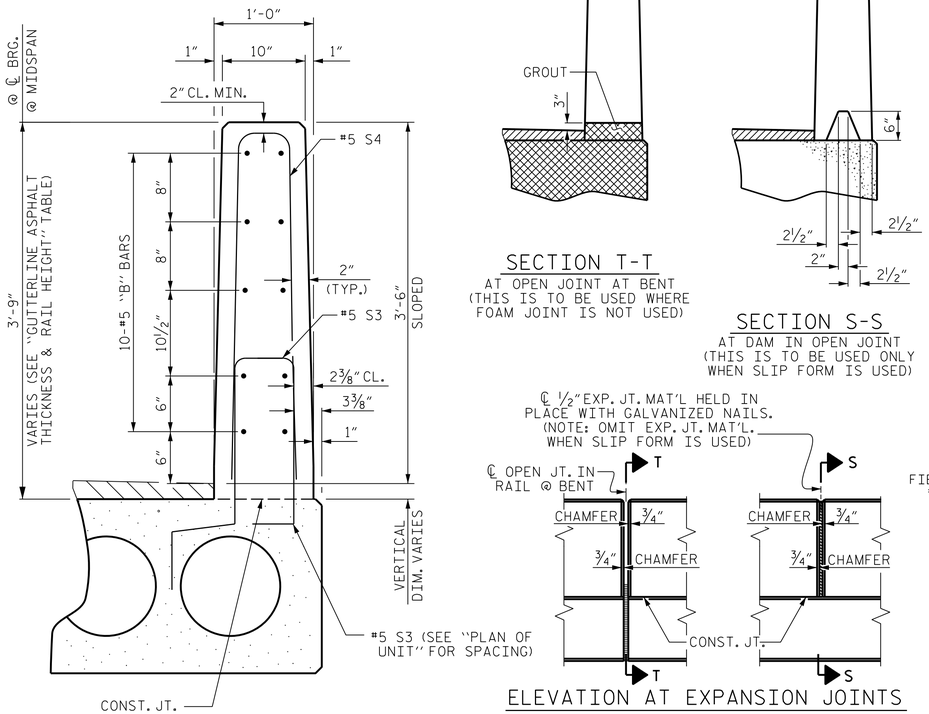
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

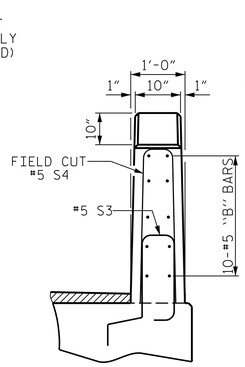


VERTICAL CONCRETE BARRIER RAIL SECTION

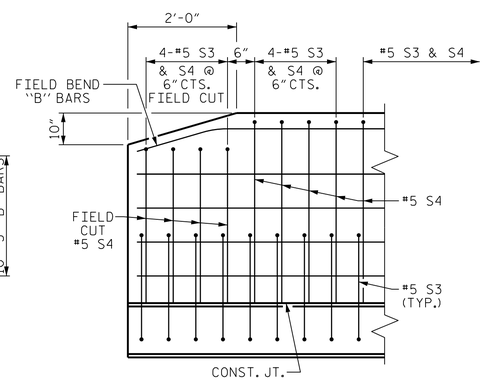
SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

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

ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

400.010.BP6R007.SMU.CS4.S1-09_770369.dgn
4/1/2026 5:17:45 PM

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 053484 NOV R. PANERU
4/2/2026

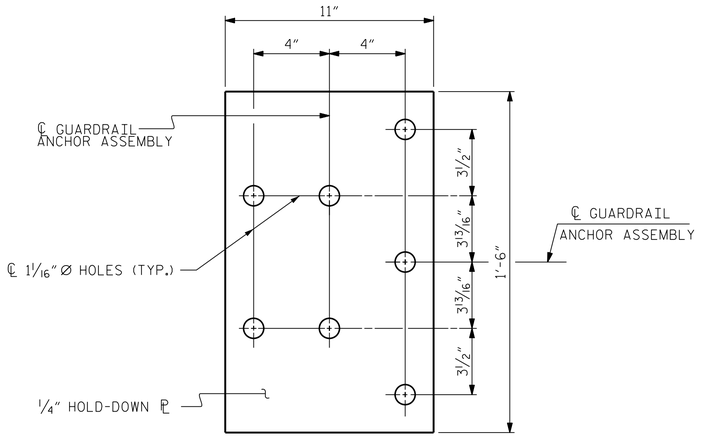
PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

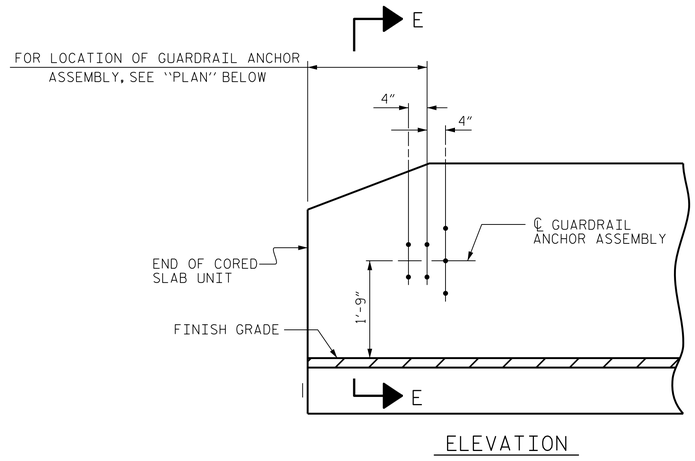
3'-0" X 1'-9" PRESTRESSED CONCRETE CORE SLAB UNIT 90° SKEW (SPANS A & B)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947



PLAN



ELEVATION

NOTES

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

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

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

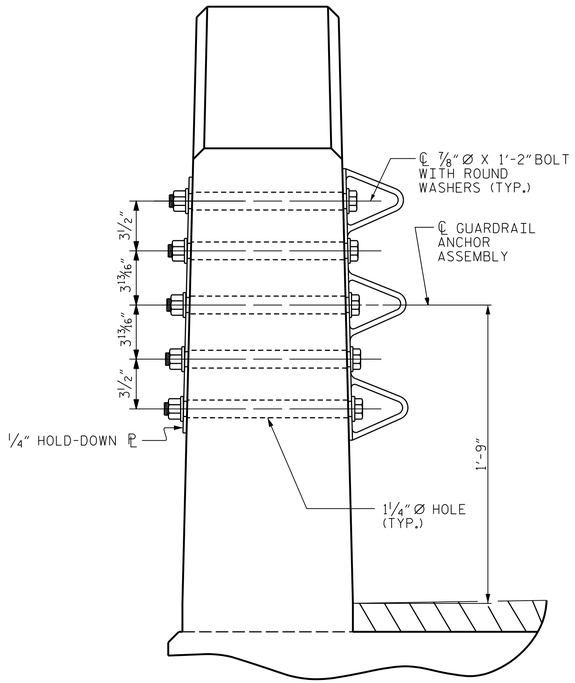
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

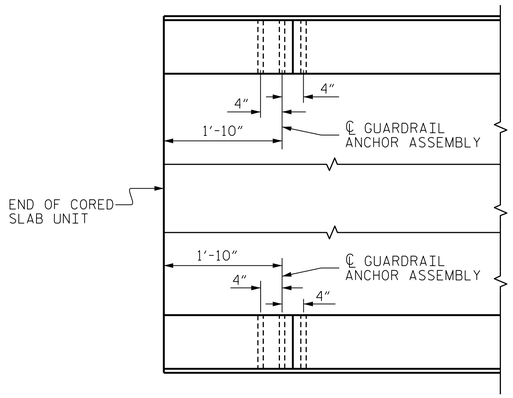
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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



SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 053484 — Nicholas Ryan Panero — DocuSigned by: Nicholas R. Panero — 4/2/2026

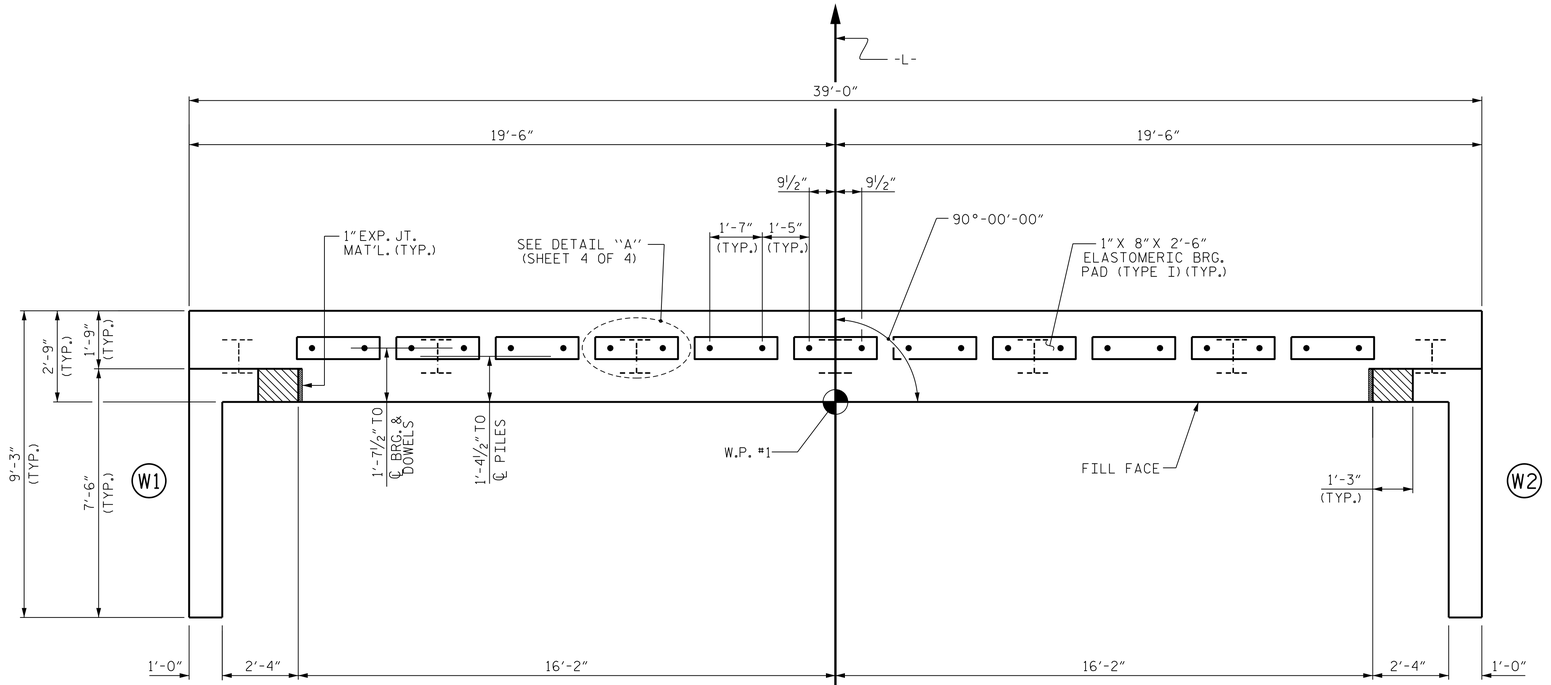
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

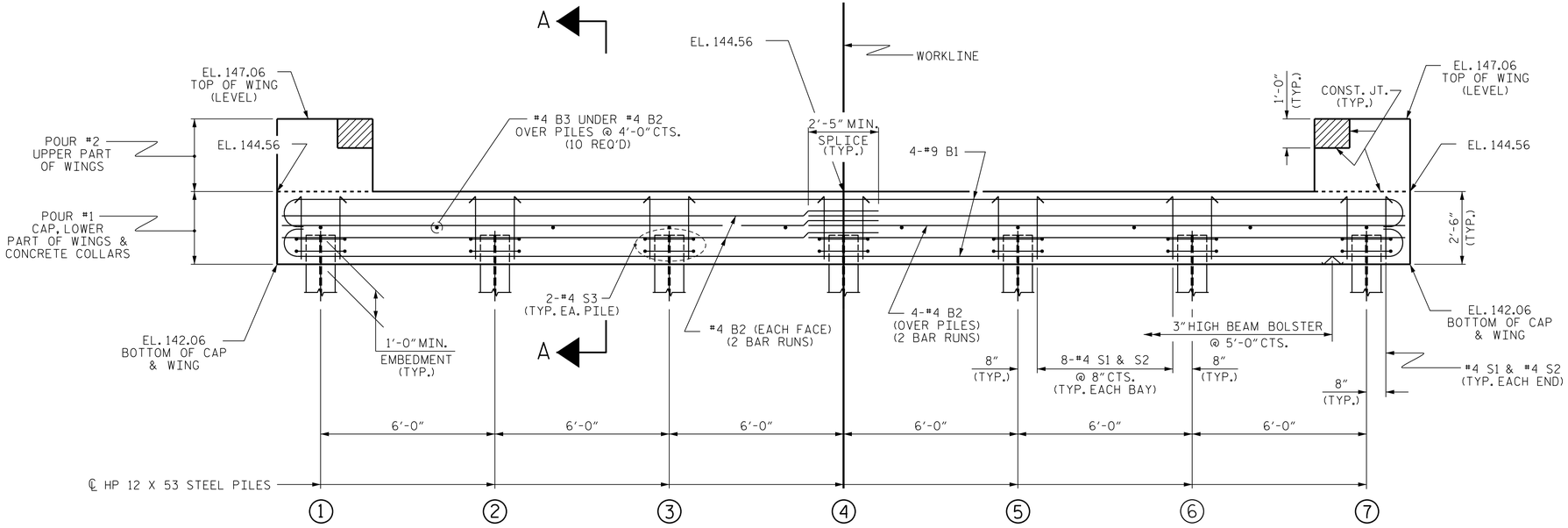
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-10
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947



PLAN



ELEVATION

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

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. R. Paneru
Signed By: N. Paneru
Date: 4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

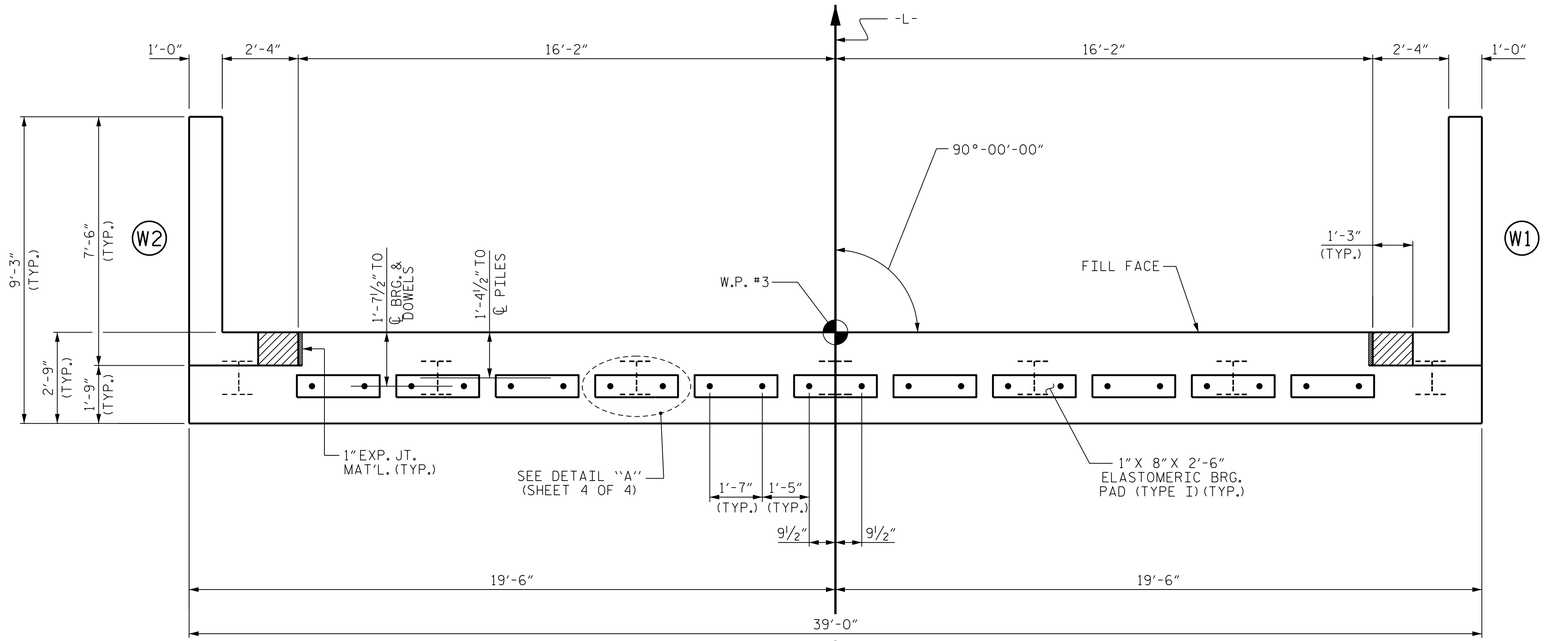
DRAWN BY : NRP	DATE : 12/14/25
CHECKED BY : RLC	DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU	DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

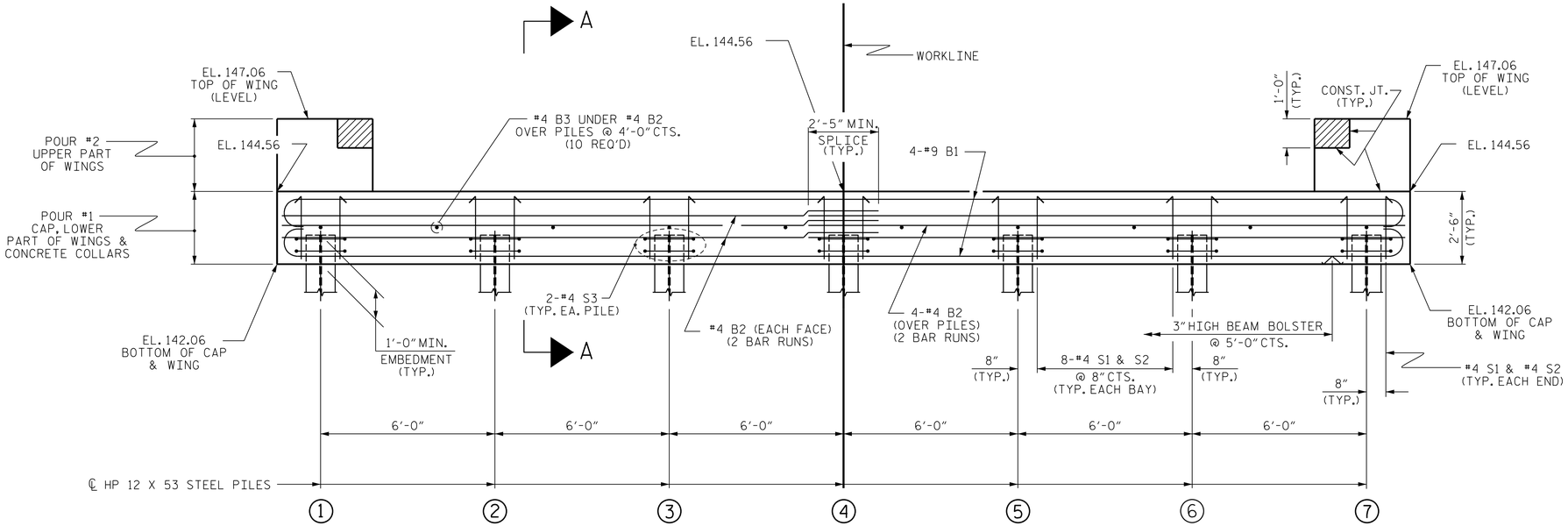
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-11
TOTAL SHEETS 18

400_012_BP6R007_SMU_E1_S1-11_770369.dgn
4/1/2026 5:17:48 PM



PLAN



ELEVATION

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

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. R. Paneru
4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

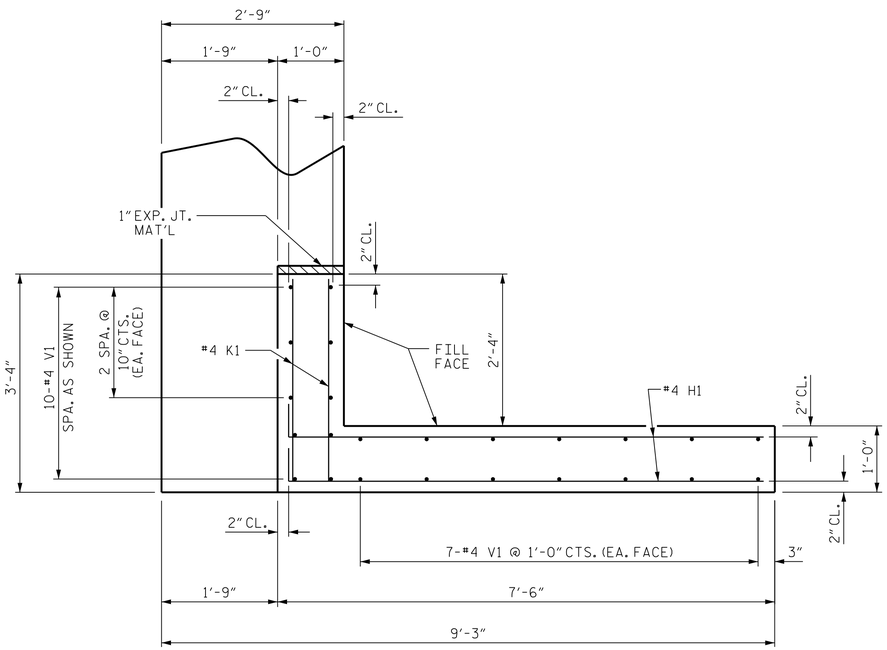
DRAWN BY :	NRP	DATE :	12/14/25
CHECKED BY :	RLC	DATE :	12/16/25
DESIGN ENGINEER OF RECORD:	N. PANERU	DATE :	12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

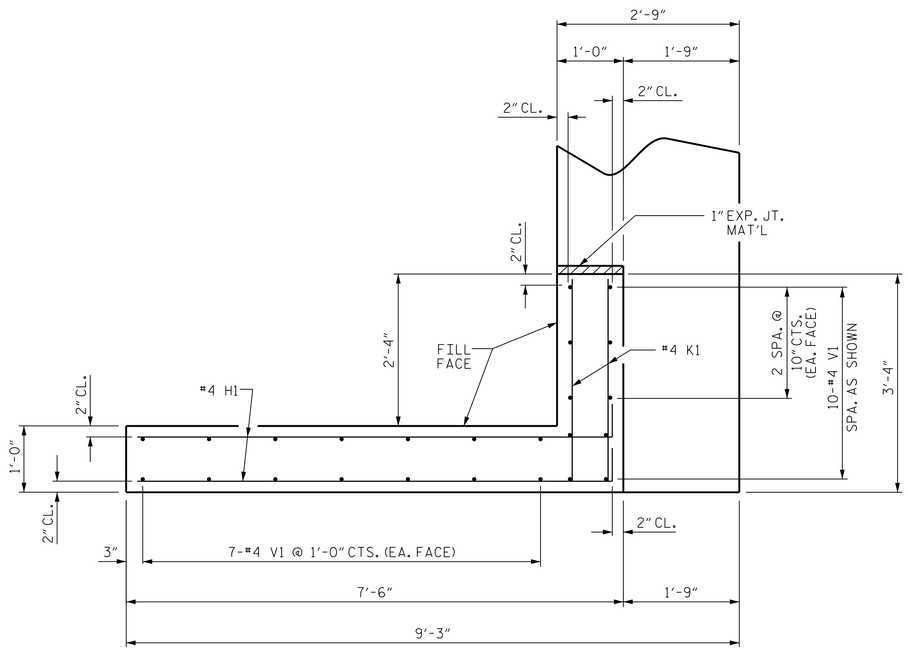
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-12
TOTAL SHEETS 18

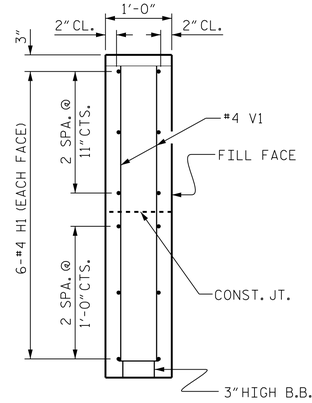
400_013_BP6R007_SMU_E2_S1-12_770369.dgn
5:17:49 PM
4/1/2026



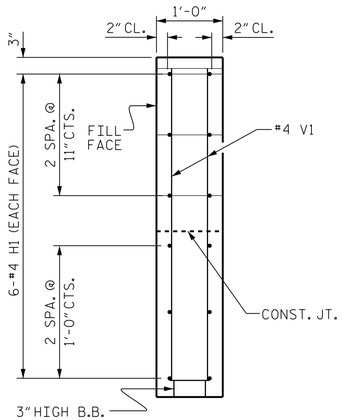
PLAN OF WING (W1)



PLAN OF WING (W2)

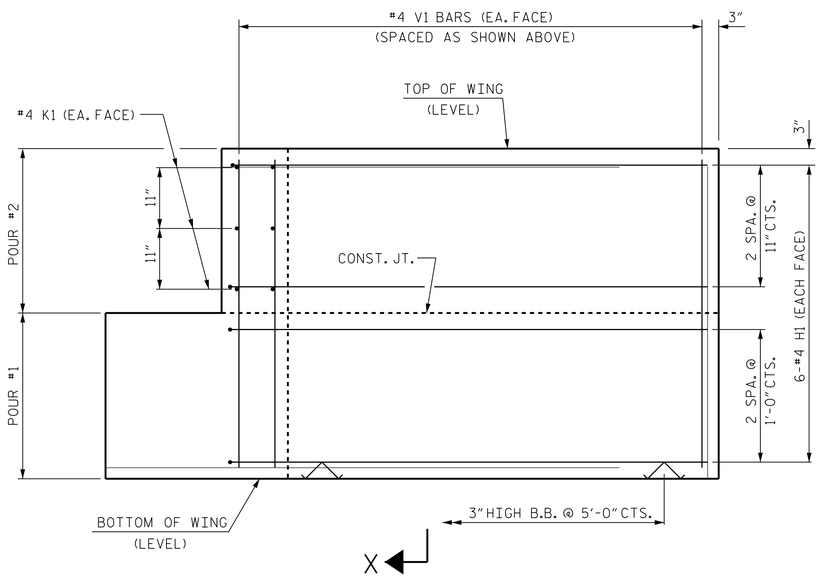


SECTION X-X



SECTION Y-Y

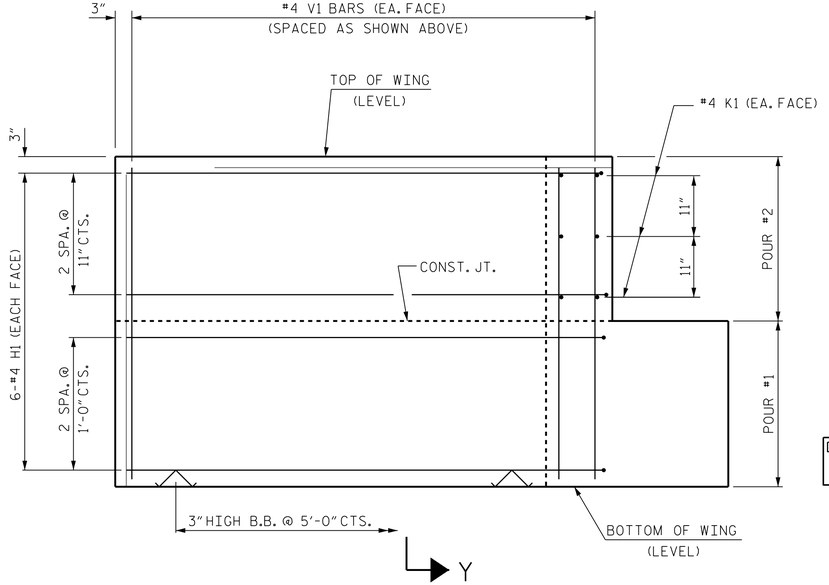
X



X

ELEVATION OF WING (W1)

Y



Y

ELEVATION OF WING (W2)

WING DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

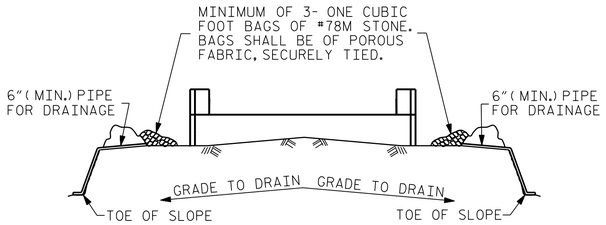
SUBSTRUCTURE
END BENT
WING DETAILS

DRAWN BY : NRP	DATE : 12/14/25
CHECKED BY : RLC	DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU	DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-13
1			3			TOTAL SHEETS
2			4			18

400_014_BP6R007_SMU_E3_S1-13_770369.dgn
4/1/2026 5:17:50 PM

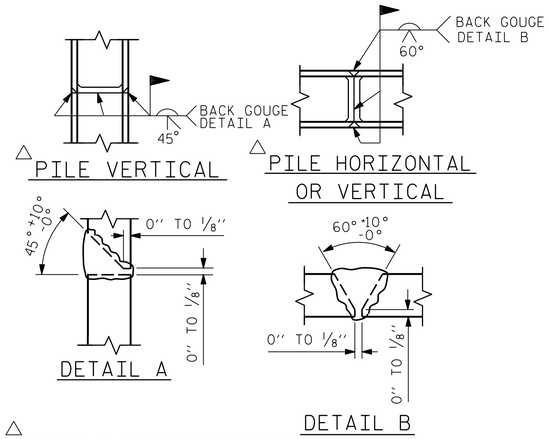


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

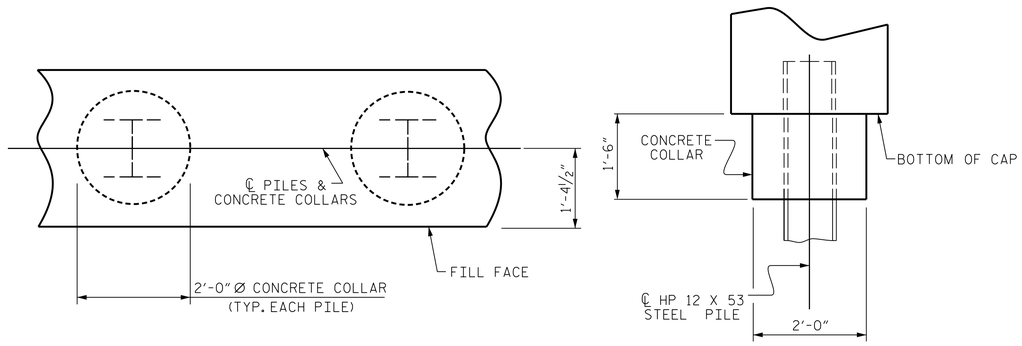
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



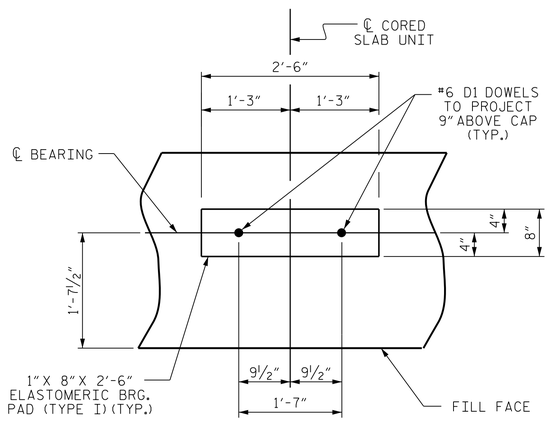
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



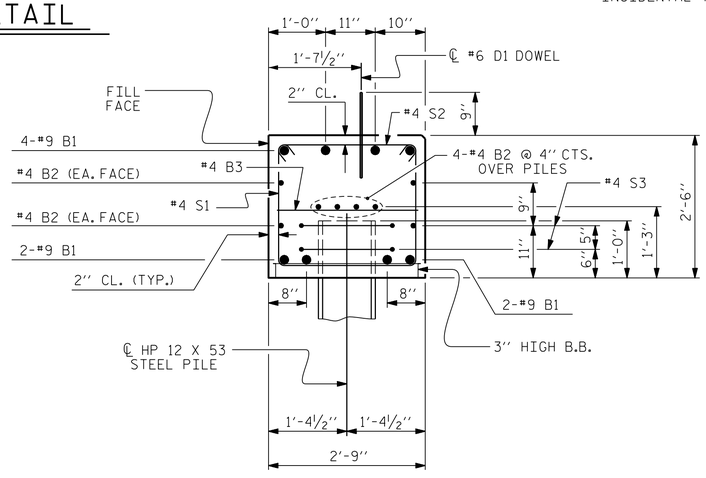
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



DETAIL "A"

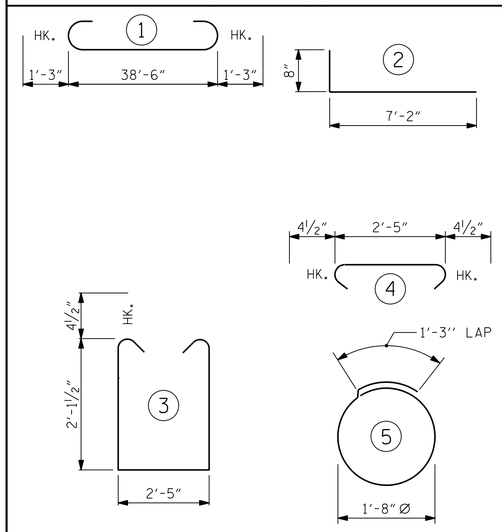
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 420	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 385
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-2"	106
S3	14	#4	5	6'-6"	61
V1	48	#4	STR	4'-8"	150

REINFORCING STEEL (FOR ONE END BENT) 2115 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 12.4 C.Y.

POUR #2 UPPER PART OF WINGS 1.8 C.Y.

TOTAL CLASS A CONCRETE 14.2 C.Y.

NOTES

PROVIDE A MINIMUM OF 3" CONCRETE COVER FROM EXTERIOR FACE OF CONCRETE MEMBERS TO REINFORCING STEEL, UNLESS OTHERWISE NOTED IN PLANS.

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER N. PANERU
Signed by: Nicholas Paneru
4/2/2026

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

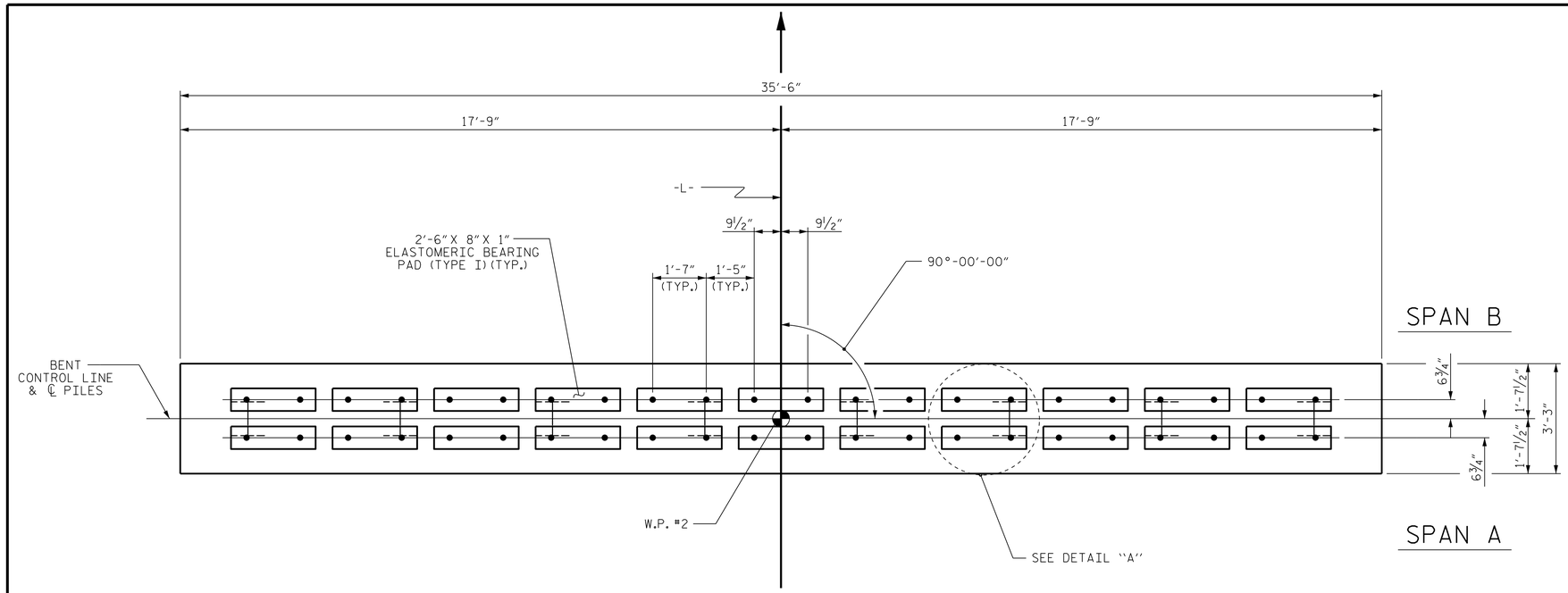
SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

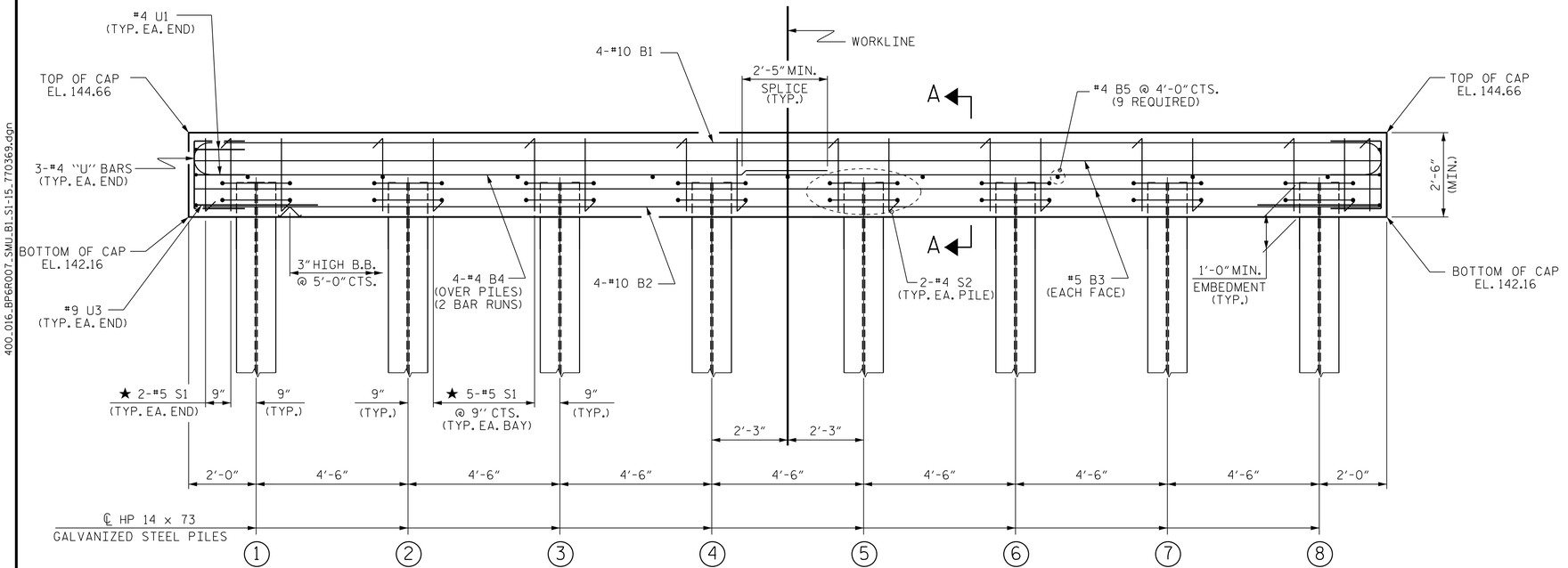
DRAWN BY : NRP	DATE : 12/14/25
CHECKED BY : RLC	DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU	DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-14
1			3			TOTAL SHEETS
2			4			18



PLAN



ELEVATION

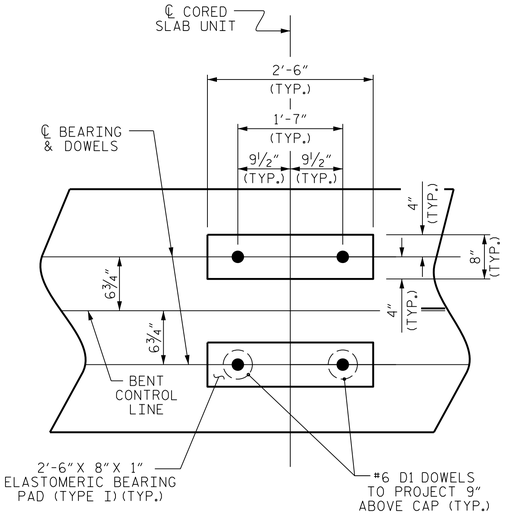
FOR SECTION A-A, SEE SHEET 2 OF 2

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL ''A''

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nov R Paneru

4/2/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

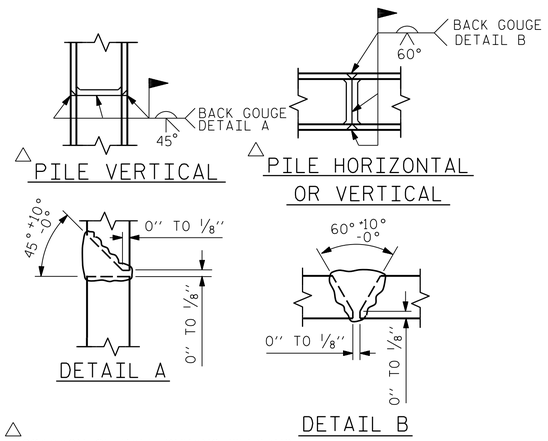
BENT No. 1

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-15
1			3			TOTAL SHEETS
2			4			18

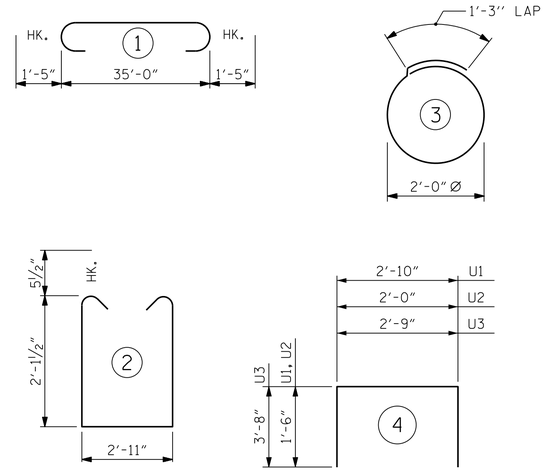
400_016_BP6R007_SMU_B1_S1-15_770369.dgn
4/1/2026 5:17:53 PM



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	39	#5	2	8'-1"	329
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

REINFORCING STEEL (FOR ONE BENT) 2136 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

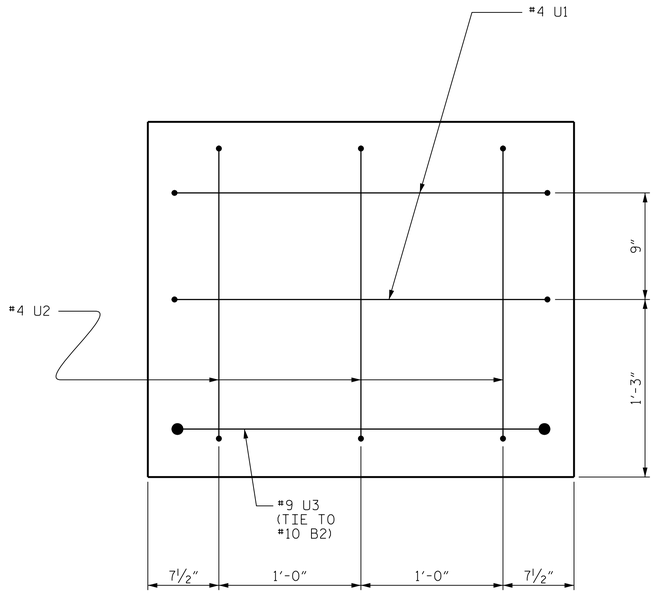
TOTAL CLASS A CONCRETE 10.7 C.Y.

HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)

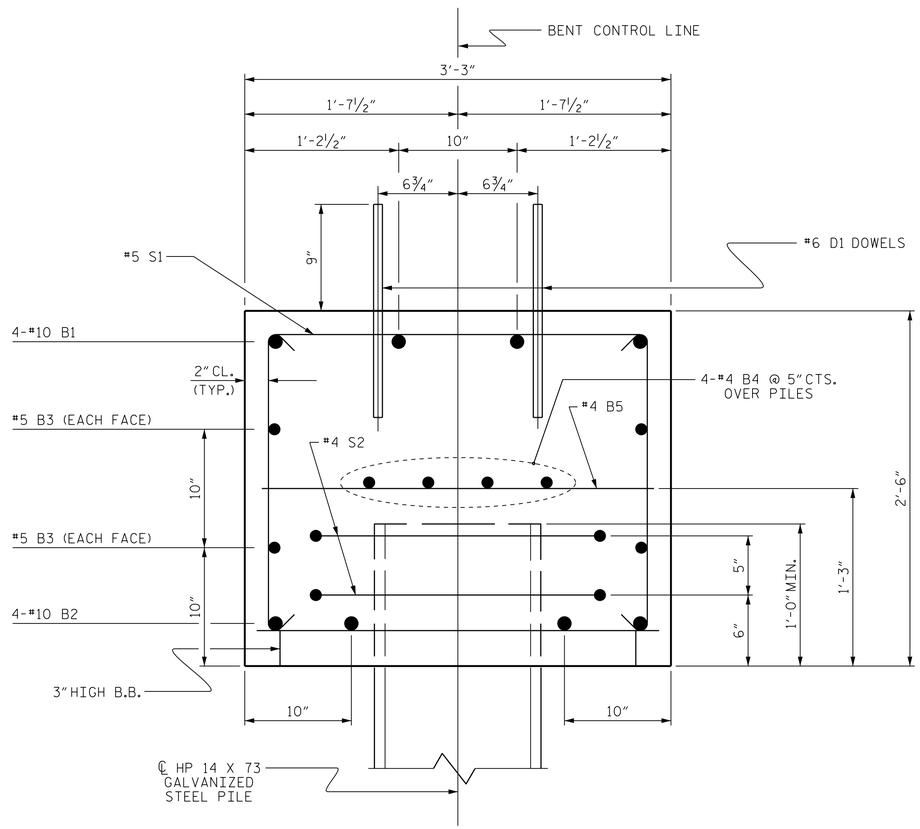
No. 8 LIN. FT. 560

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)

NO: 8



END OF CAP VIEW
(TYPICAL BOTH ENDS)



SECTION A-A

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nav R. Paneru
Signature
Nav Paneru
DocuSigned by:
4/2/2026

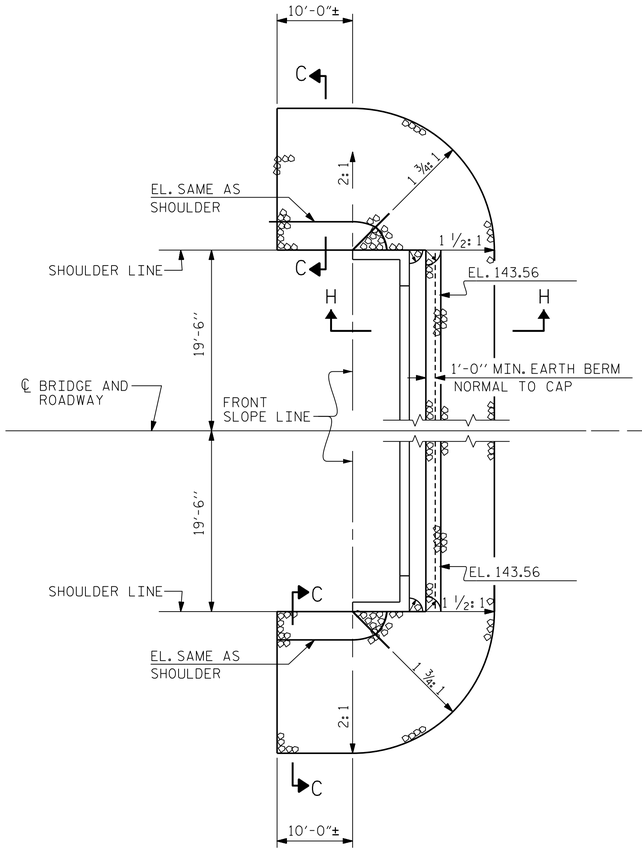
PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-

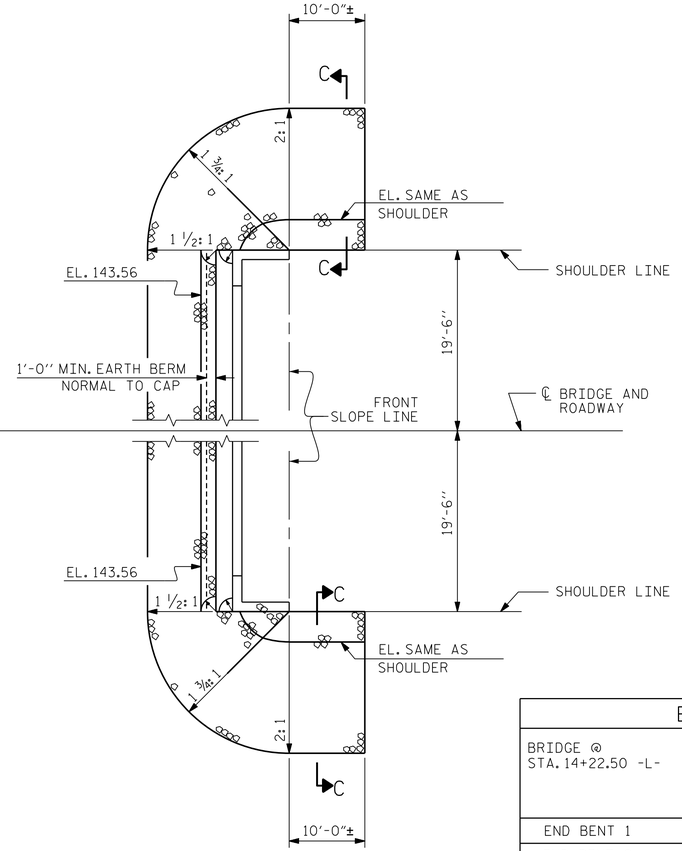
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-16
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-8710 · LJB.COM
NCBELS C-4947





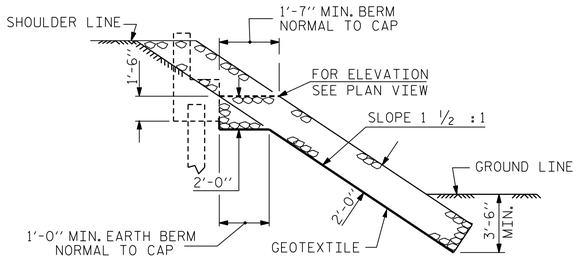
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

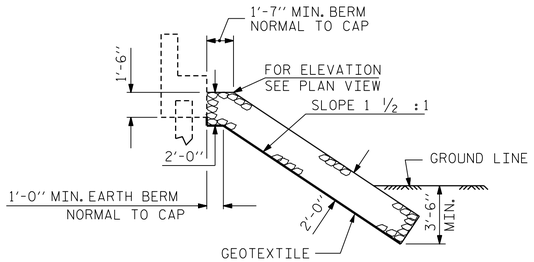
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+22.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	112	125
END BENT 2	112	125

PLAN - END BENT No. 1

PLAN - END BENT No. 2

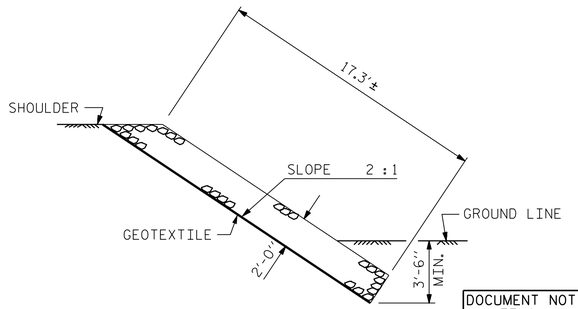


SECTION H-H



℄ SECTION

BERM RIP RAPPED



SECTION C-C

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nicholas R. Paneru

4/2/2026

PROJECT NO. BP6.R007

ROBESON COUNTY

STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

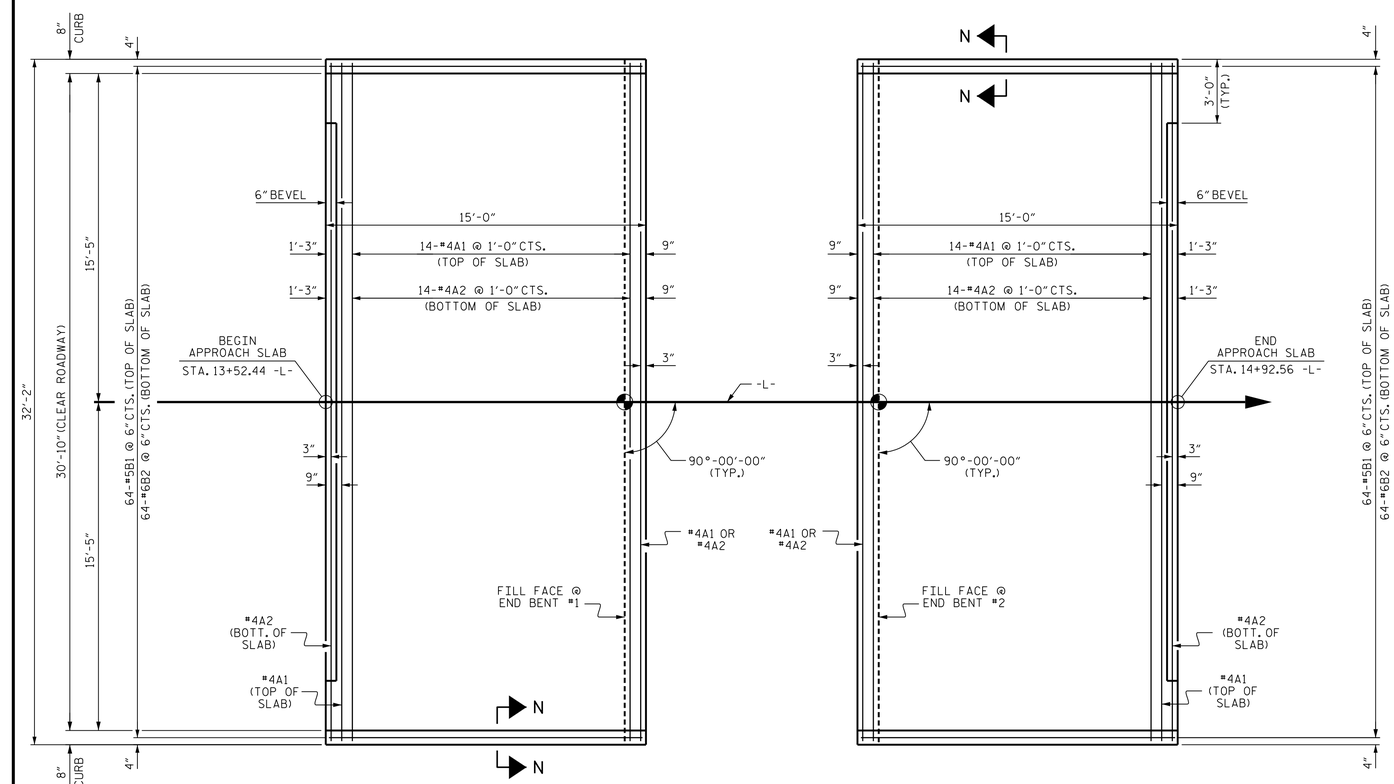
RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			18

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-8710 · LJB.COM
NCBELS C-4947

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

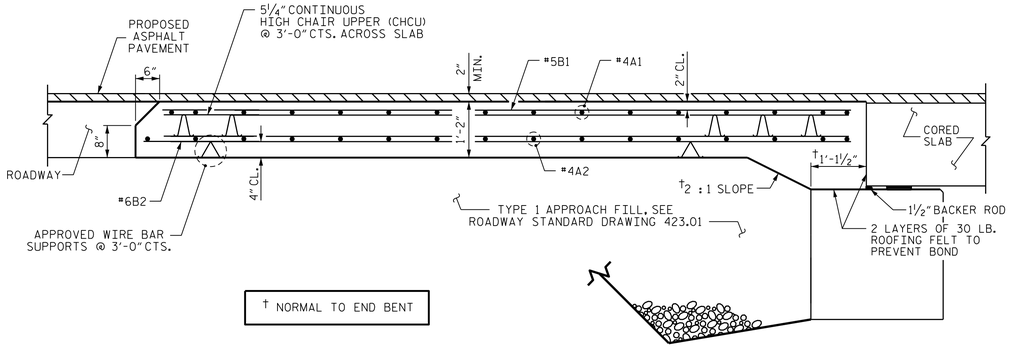
400.018.BP6R007.SMU_RR_SI-17_770369.dgn
4/1/2026 5:17:55 PM



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 INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

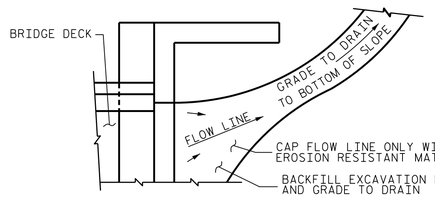
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

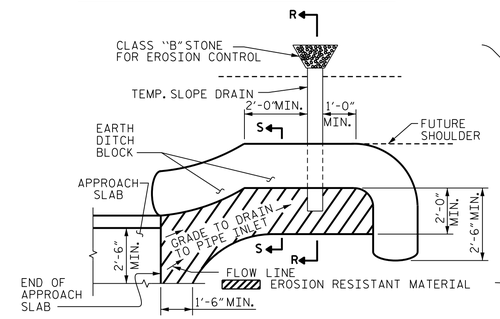
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



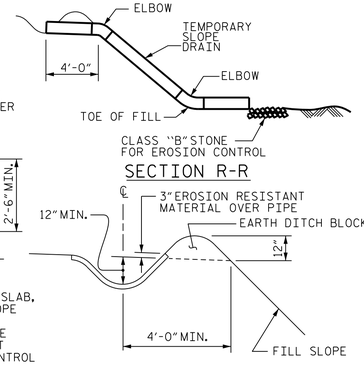
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW

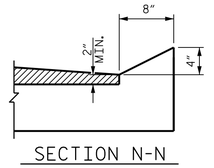


SECTION R-R

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N

CURB DETAILS

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

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	31'-10"	340
A2	16	#4	STR	31'-10"	340
* B1	64	#5	STR	14'-2"	946
B2	64	#6	STR	14'-8"	1410
REINFORCING STEEL				LBS.	1750
* EPOXY COATED REINFORCING STEEL				LBS.	1286
CLASS AA CONCRETE				C.Y.	22.8
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	31'-10"	340
A2	16	#4	STR	31'-10"	340
* B1	64	#5	STR	14'-2"	946
B2	64	#6	STR	14'-8"	1410
REINFORCING STEEL				LBS.	1750
* EPOXY COATED REINFORCING STEEL				LBS.	1286
CLASS AA CONCRETE				C.Y.	22.8

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 053484 ENGINEER Nicholas Ryan Paneru
4/2/2026

PROJECT NO. BP6.R007
ROBESON COUNTY
STATION: 14+22.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORE SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-18
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : NRP DATE : 12/14/25
CHECKED BY : RLC DATE : 12/16/25
DESIGN ENGINEER OF RECORD: N. PANERU DATE : 12/2025

1121 SITUS COURT, SUITE 200
RALEIGH, NC 27606
(919) 594-6710 · LJB.COM
NCBELS C-4947

400.019.BP6R007.SMU.AS.S1-18.770369.dgn
4/1/2026 5:17:57 PM

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 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" 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.