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09/08/99

TIP PROJECT: BP2-R022

CONTRACT: DB00627

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R022	1	

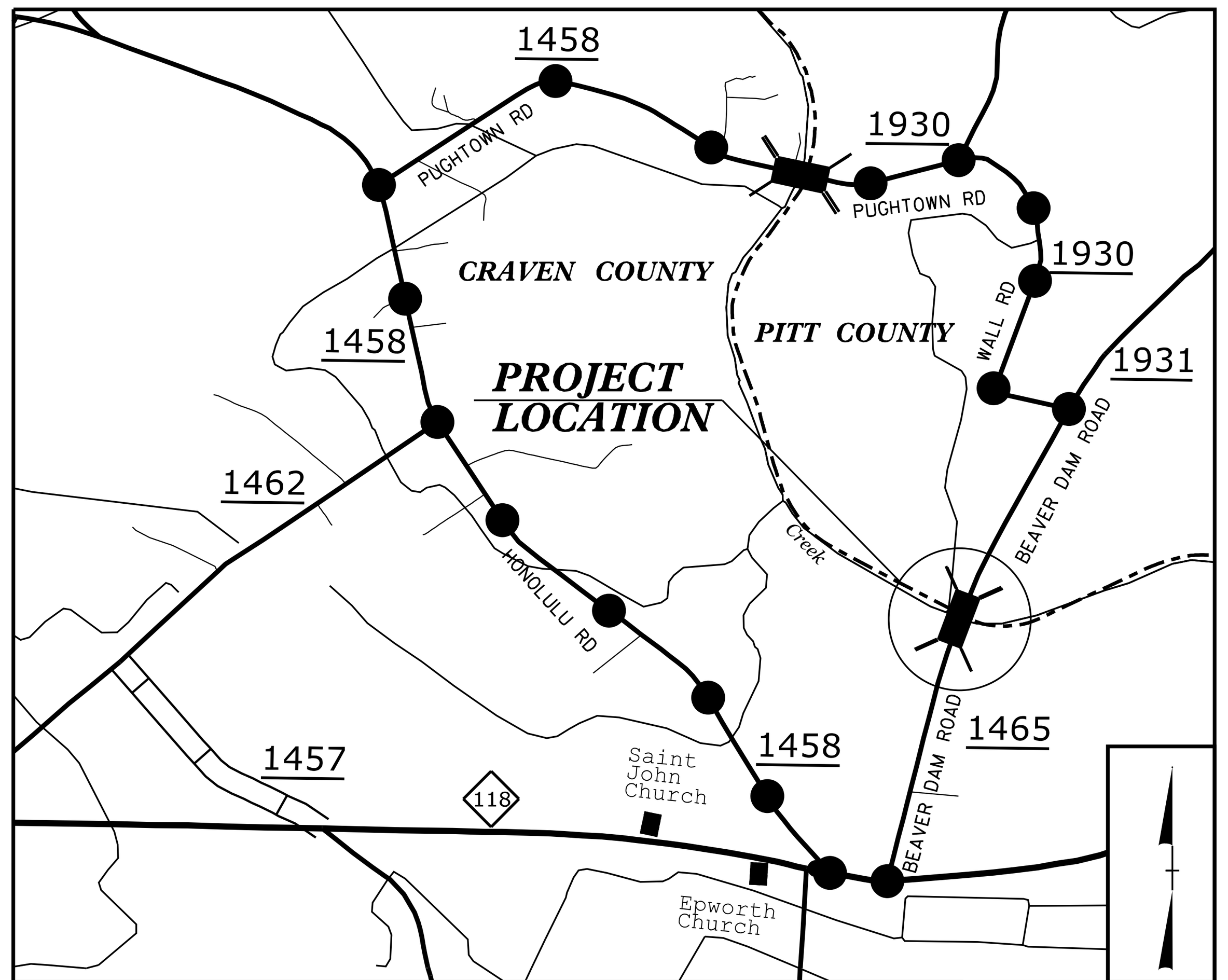
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP2-R022.1	N/A	PE
BP2-R022.2	N/A	RW, UTIL.
BP2-R022.3	N/A	CONST.

CRAVEN & PITT COUNTY

LOCATION: REPLACE BRIDGE NO. 240043 ON SR 1465 OVER SWIFT CREEK

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

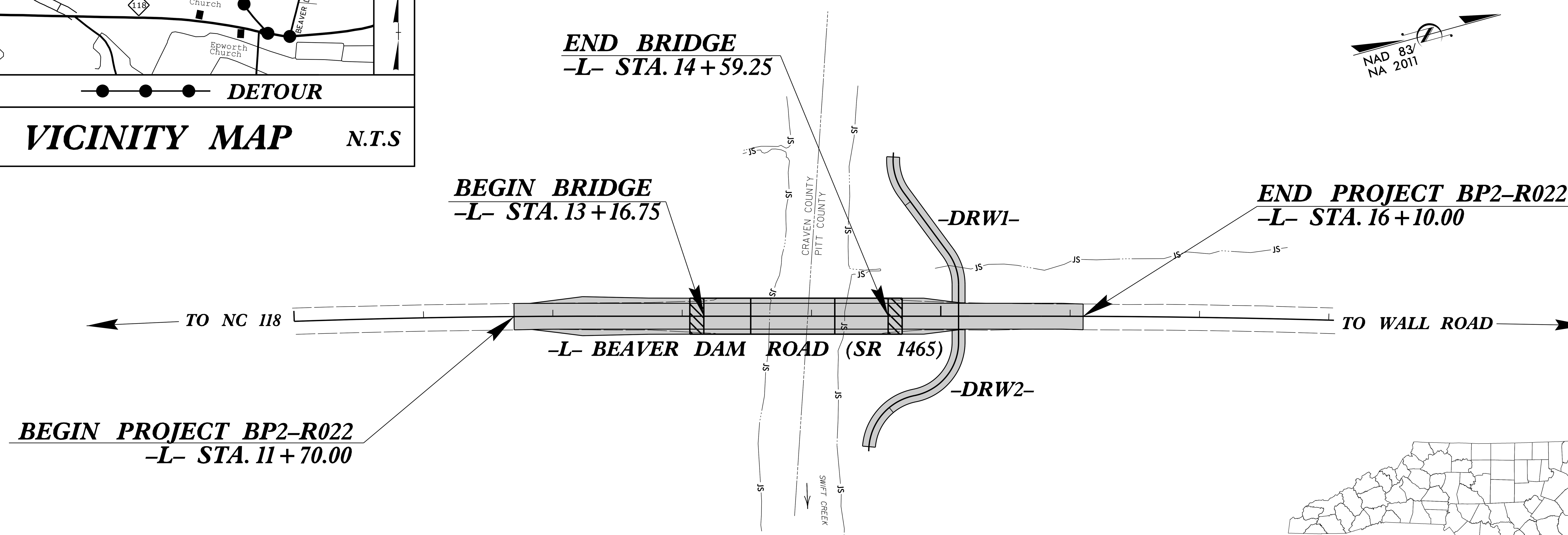
100% PLANS

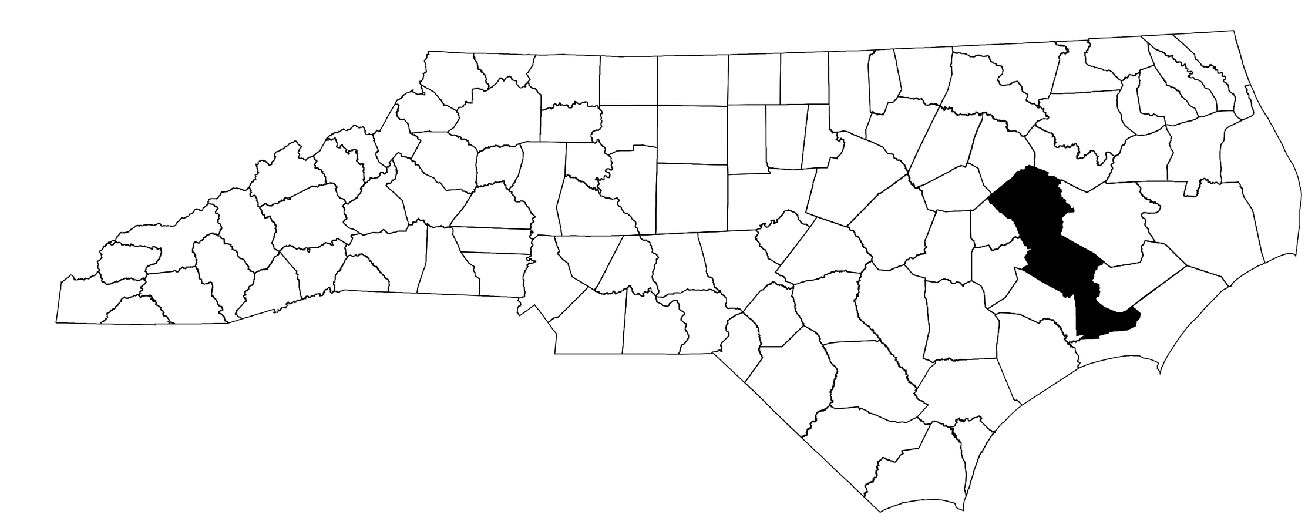


DETOUR

VICINITY MAP

N.T.S





THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2026 = 712
ADT 2046 = 1745
K = 0%
D = 0%
T = 6% *
V = 60 MPH
* TTST = 6% DUAL %
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP2-R022 = 0.056 MILES

LENGTH STRUCTURE TIP PROJECT BP2-R022 = 0.027 MILES

TOTAL LENGTH TIP PROJECT BP2-R022 = 0.083 MILES

PREPARED IN THE OFFICE OF:

RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 16, 2023

LETTING DATE:
MAY 13, 2026

ALEX VINSON, PE
PROJECT ENGINEER

SEAN KORTOVICH, PE
PROJECT DESIGN ENGINEER

CATHRINE HOSSACK, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Alexander R Vinson
9DD0FF1E6D1438...

SEAL 049764 NORTH CAROLINA PROFESSIONAL ENGINEER ALEXANDER R. VINSON

P.E.
SIGNATURE: 3/27/2026

ROADWAY DESIGN ENGINEER

Signed by:
E741DD4D67CA471...

SEAL 044511 NORTH CAROLINA PROFESSIONAL ENGINEER SEAN M. KORTOVICH

P.E.
SIGNATURE: 3/27/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044511 ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RS&H 8521 SIX FORKS ROAD, SUITE 400 RALEIGH, NC 27615 NC FIRM LICENSE No: F-0493

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-2	METHOD OF PIPE INSTALLATION
2C-3 THRU 2C-4	GUARDRAIL PLACEMENT
2C-5	RAISED PAVEMENT MARKERS
2D-1	MODIFIED CONCRETE FLUME
3B-1	EARTHWORK SUMMARY, SUMMARY OF PAVEMENT REMOVAL, SHOULDER BERM GUTTER SUMMARY,SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL,
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL, EXISITNG CENTERLINES, RIGHT OF WAY, EASEMENT, AND PROPERTY TIES
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY
X-2 THRU X-9	CROSS-SECTIONS
S-1 THRU S-25	STRUCTURE PLANS
SN	STRUCTURE STANDARD NOTES SHEET

GENERAL NOTES

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

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SUBSURFACE DRAINS:

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

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.

SUBSURFACE PLANS:

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

END BENTS:

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

RIGHT-OF-WAY MARKERS:

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

STANDARD DRAWINGS

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6)
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge

- Woods Line
- Orchard
- Vineyard — 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:

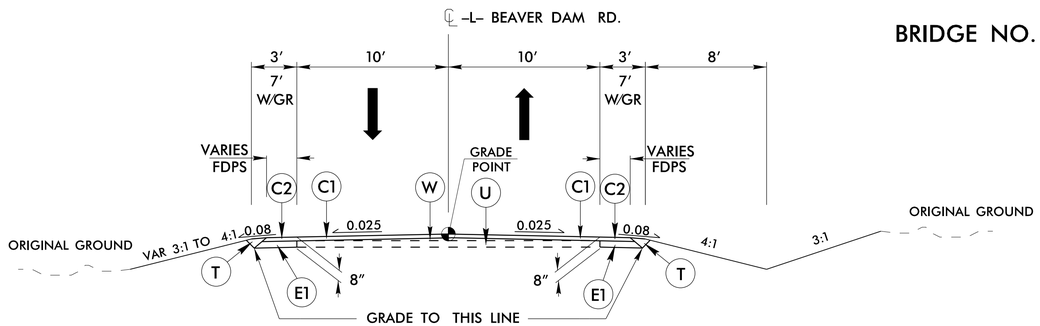
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE – LOS B)* — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

6/2/99

PAVEMENT SCHEDULE

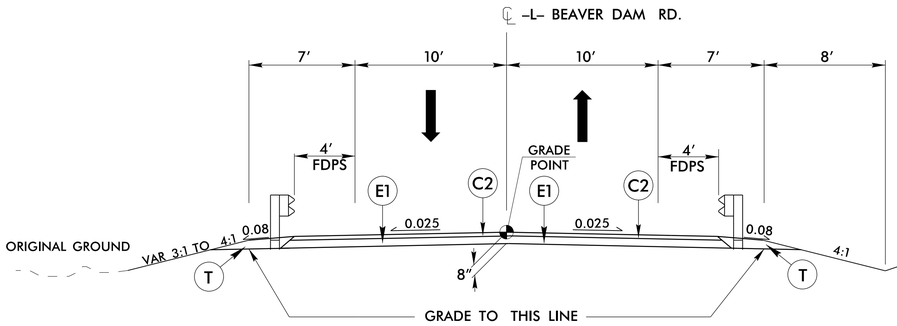
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1″ IN DEPTH OR GREATER THAN 1.5″ IN DEPTH.
E1	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	PROP. APPROX. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5 ½″ IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 0″-1.5″ (SEE MILLING DETAIL THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS NOTED OTHERWISE



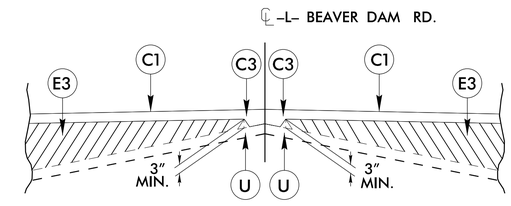
TYPICAL SECTION NO. 1

–L– STA. 11+70.00 TO –L– STA. 12+91.75
–L– STA. 14+84.25 TO –L– STA. 16+10.00

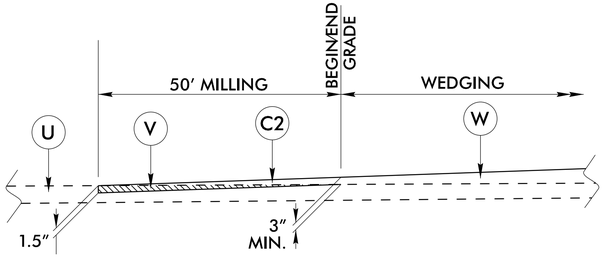


TYPICAL SECTION NO. 2

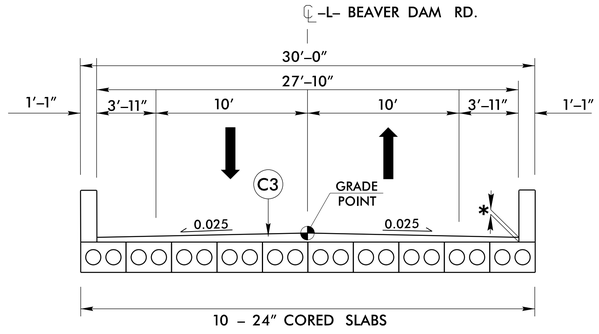
–L– STA. 12+91.75 TO –L– STA. 13+16.75
–L– STA. 14+59.25 TO –L– STA. 14+84.25



STANDARD WEDGING DETAIL



DETAIL OF MILLING AT PAVEMENT TIE–INS



TYPICAL SECTION NO. 3

–L– STA. 13+16.75 TO –L– STA. 14+59.25

*PAVEMENT DEPTH VARIES ACROSS BRIDGE, SEE STRUCTURE PLANS

BRIDGE NO. 240043

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2A-1
R/W SHEET NO.	

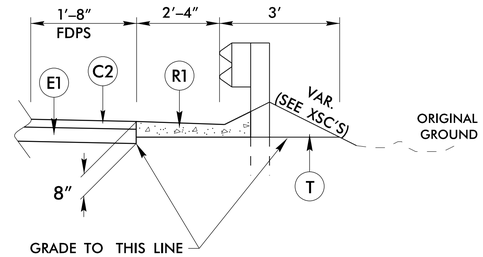
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044511 ENGINEER IN WAI KONTOLEON 3/27/2026

PAVEMENT DESIGN ENGINEER

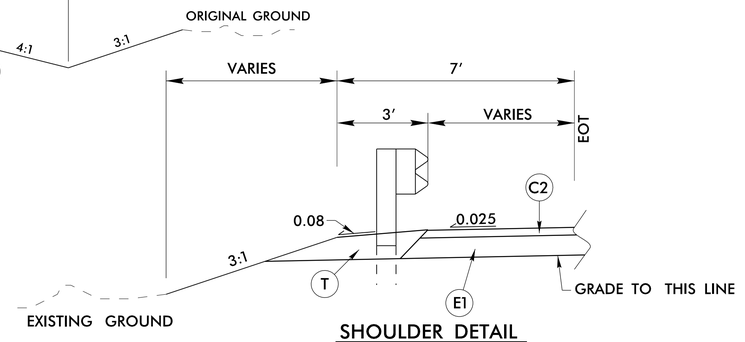
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493



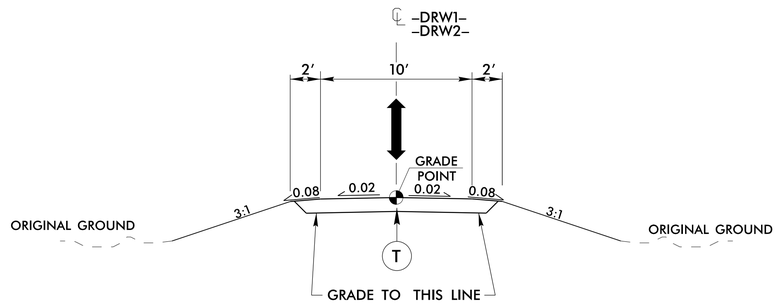
SHOULDER BERM GUTTER DETAIL

–L– STA. 12+96.00 TO –L– STA. 13+05.88 (RT)
–L– STA. 14+70.13 TO –L– STA. 14+87.75 (RT)
–L– STA. 12+96.00 TO –L– STA. 13+05.88 (LT)
–L– STA. 14+70.13 TO –L– STA. 14+87.75 (LT)



SHOULDER DETAIL

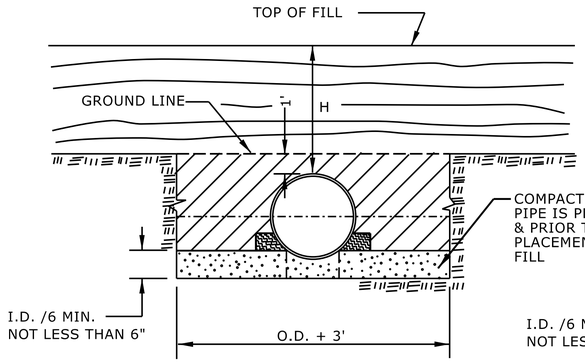
USE IN CONJUNCTION WITH GUARDRAIL ON –L–
SEE CROSS SECTIONS



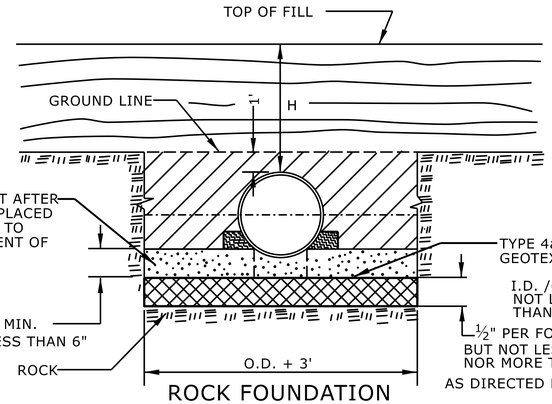
USE TYPICAL SECTION NO. 4

–DRW1– STA. 10+10.55 TO –DRW1– STA. 11+38.00
–DRW2– STA. 10+10.55 TO –DRW2– STA. 11+35.00

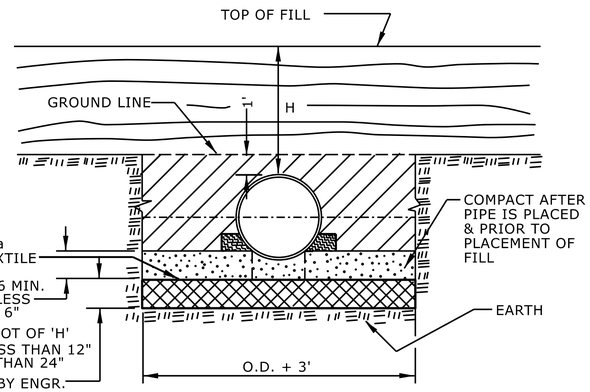
PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2C-1



NORMAL EARTH FOUNDATION

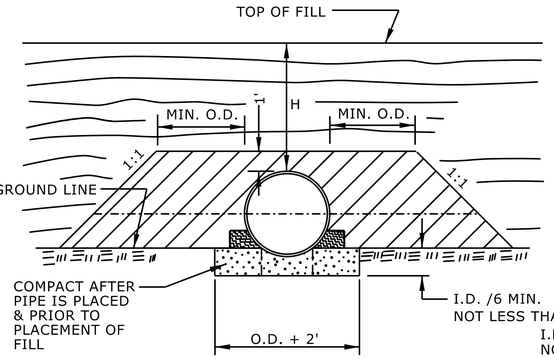


ROCK FOUNDATION

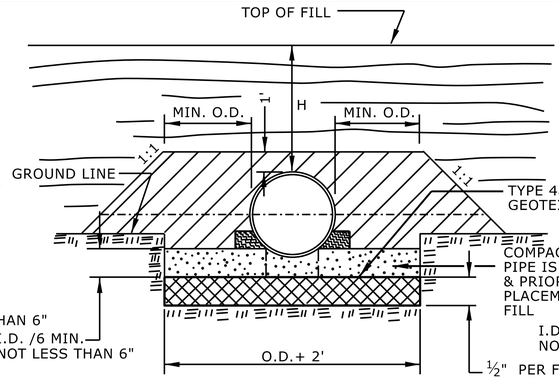


UNSUITABLE MATERIAL FOUNDATION

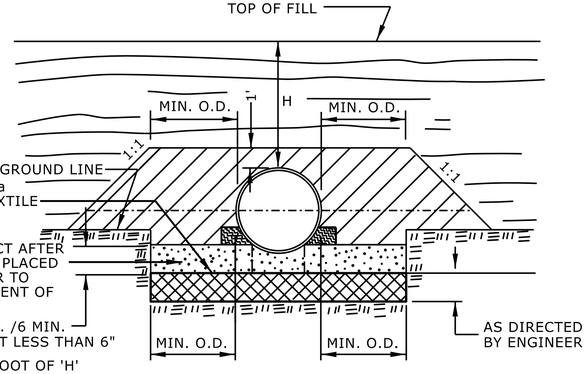
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, 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

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKER
Signature: Nicole M. Hacker
3/27/2026

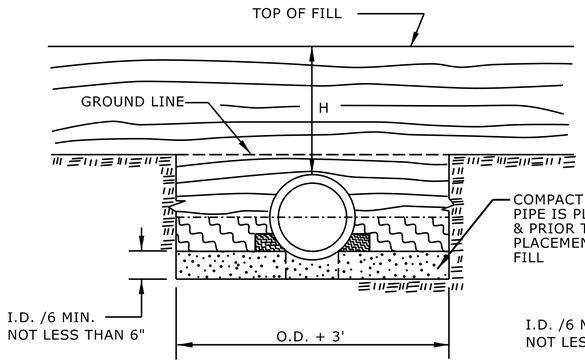
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

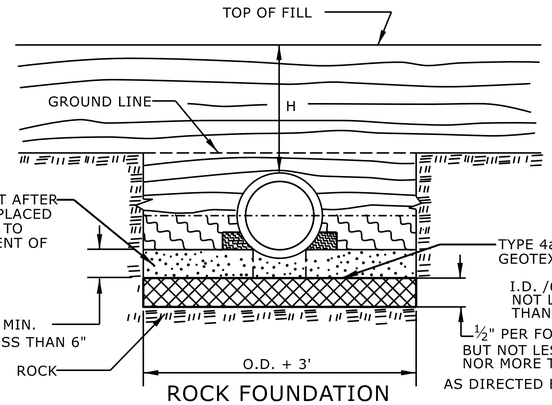
SEE TITLE BLOCK

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

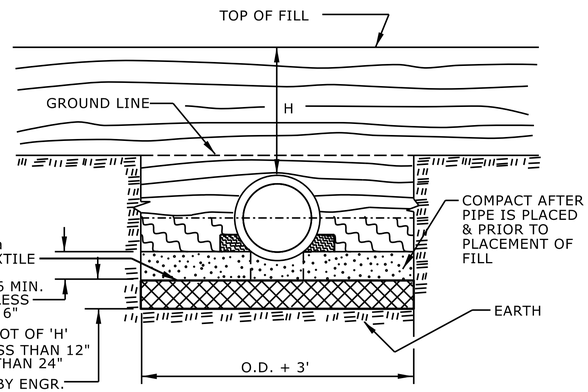
PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2C-2



NORMAL EARTH FOUNDATION

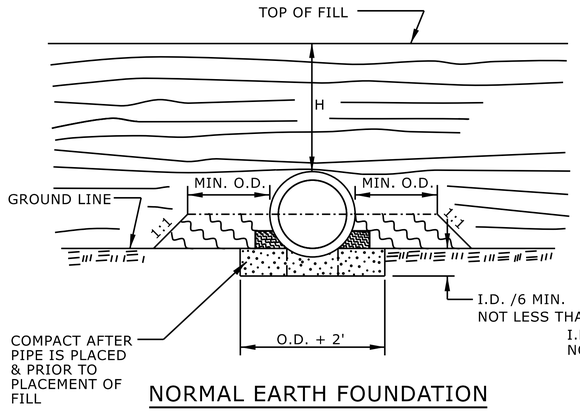


ROCK FOUNDATION

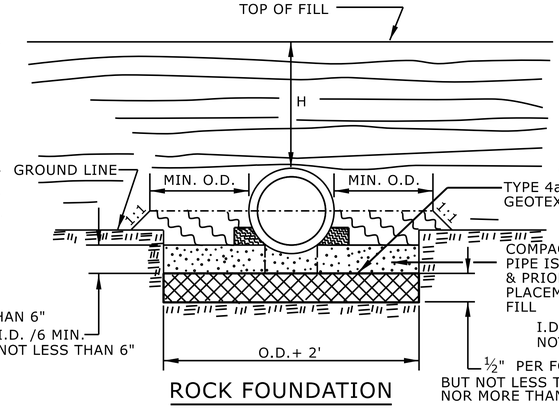


UNSUITABLE MATERIAL FOUNDATION

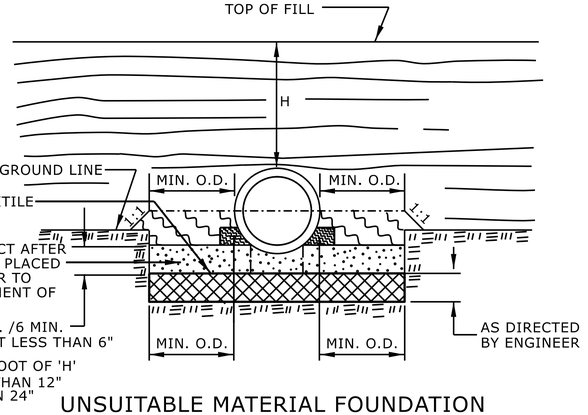
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

SPRINGLINE OF PIPE

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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
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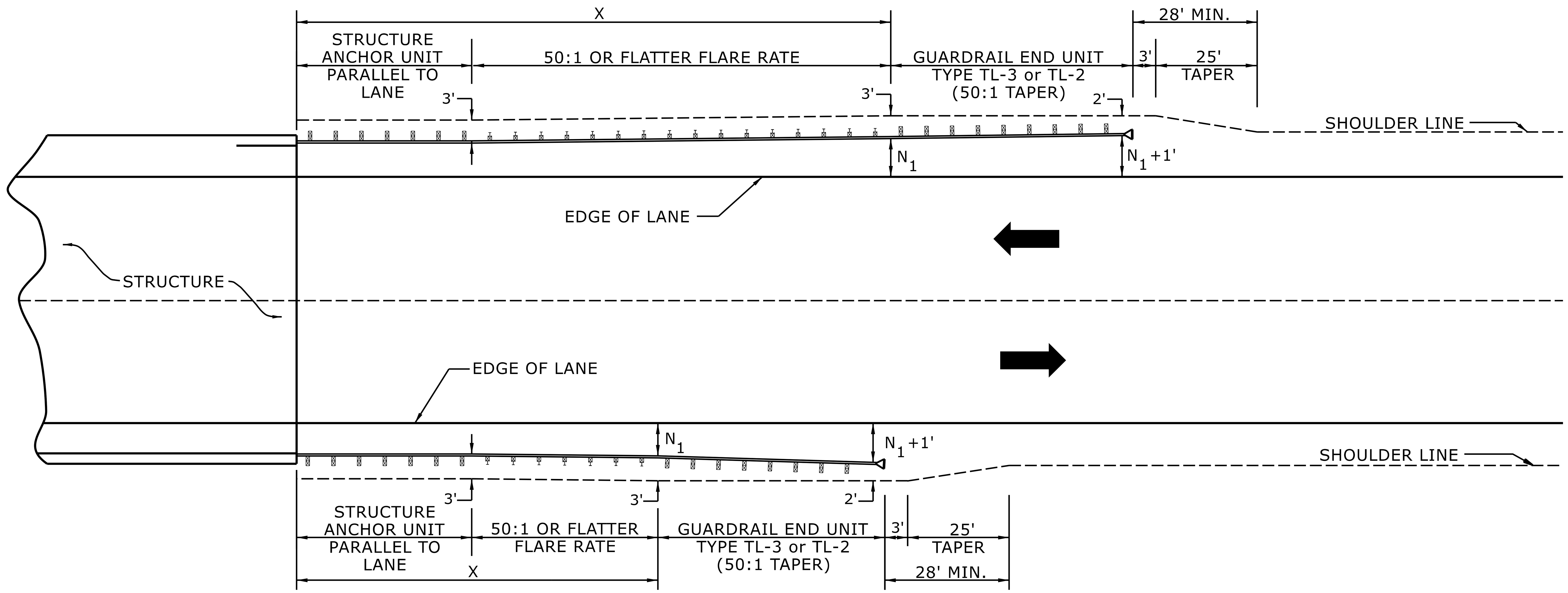

USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15
862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
3/27/2025

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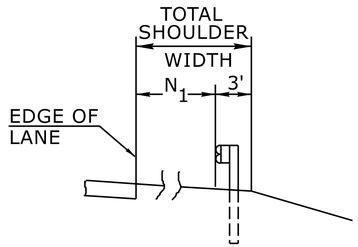
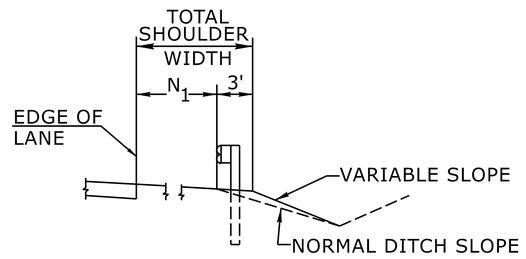
PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2C-4

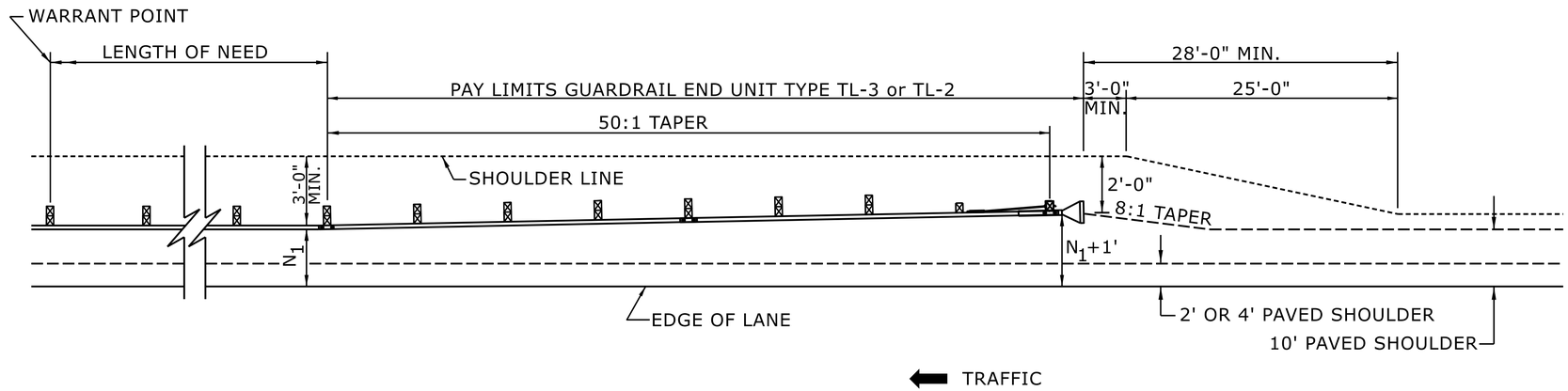


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 083144 ENGINEER NICOLE M. HACKER
3/27/2026

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CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
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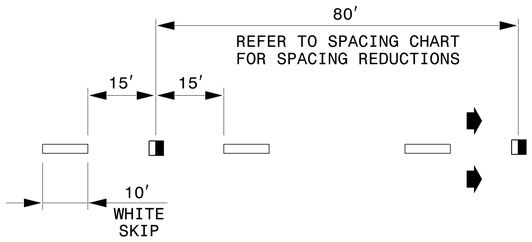
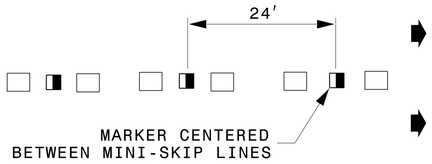
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2C-5

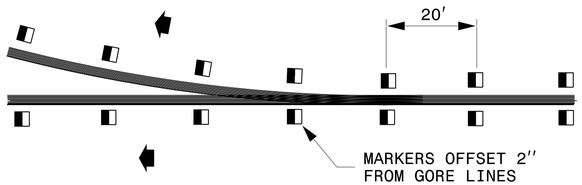
10′-30′/SP SKIP LINE



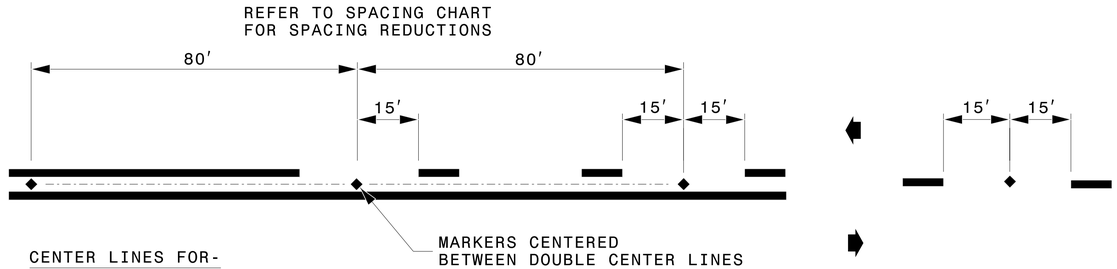
3′-9′/SP MINI-SKIP LINE



GORE LINES



YELLOW CENTER LINES

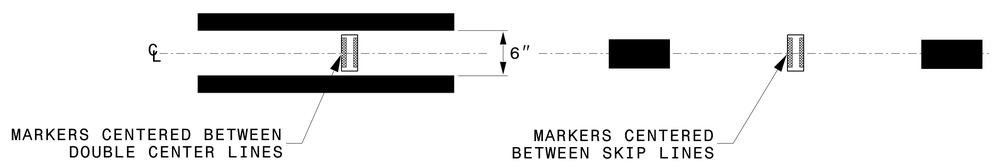


CENTER LINES FOR-

TWO-LANE, TWO-WAY ROADWAYS
UNDIVIDED ROADWAYS
TWO-WAY LEFT TURN LANES

DETAIL OF PAVEMENT MARKER PLACEMENT

RAISED REFLECTIVE PAVEMENT MARKERS



LEGEND

- CRYSTAL/RED PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- DIRECTION OF TRAFFIC FLOW

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

RAISED PAVEMENT MARKERS

INSTALLATION SPACING

SHEET 2 OF 3

1250D01

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER 3/27/2024

CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
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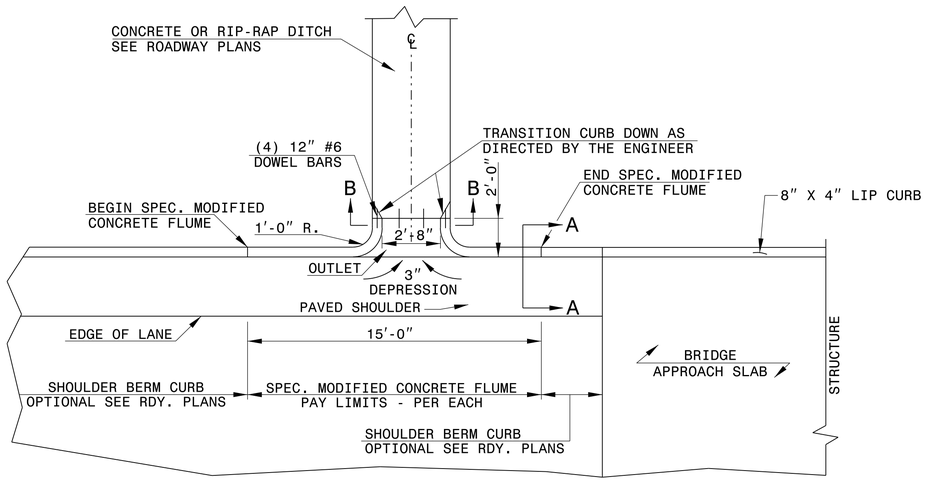
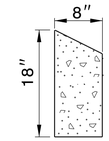
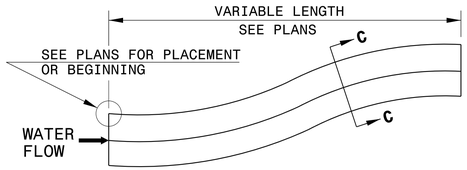
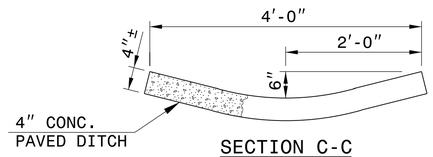
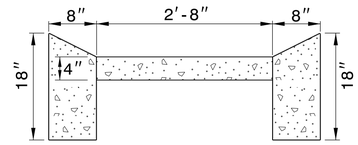
CHECKED BY: DATE:
FILE SPEC.:

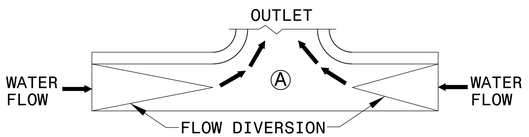


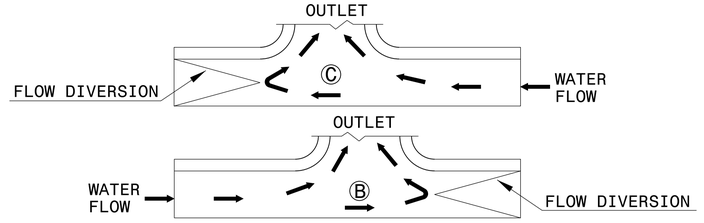


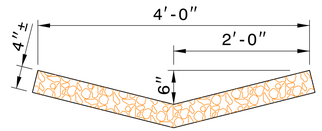












PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	2D-1

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

ENGLISH DETAIL DRAWING FOR

SPEC. MODIFIED CONCRETE FLUME

WITH CONCRETE OR RIP-RAP DITCH

PLAN VIEW

SECTION A-A

DOWNGRADE OR SAG

SECTION C-C

SECTION B-B

SAG

DOWN GRADE

FLOW DIVERSION EXAMPLES

RIP-RAP LINED DITCH

NOTES:

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

SHEET 1 OF 1
MODFLMDTCH

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

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

SHEET 1 OF 1
MODFLMDTCH

SEAL
33144
NICOLE M. HACKLER
Signed by:
Nicole M. Hackler
5884323D34164C5...
3/27/2020

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: E.E. Ward DATE: July 2004
CHECKED BY: DATE:
FILE SPEC.: w:details\stand\modifiedflume.dgn

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +%	BORROW	WASTE
-L- 11+70.00	-L- 13+16.75 (BR)	13		291	278	
-L- 14+59.25 (BR)	-L- 16+10.00	17		169	152	
-DRW1- 10+10.55	-DRW1- 11+38.00	12		385	373	
-DRW2- 10+10.55	-DRW2- 11+35.00	190		62		128
PROJECT TOTALS:		232		912	803	
WASTE IN LIEU OF BORROW					-128	
EST. 5% TO REPLACE SOIL IN BORROW PIT					34	
GRAND TOTALS:		232		912	709	
SAY:		240			710	

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

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

UNDERCUT EXCAVATION = 300 CUBIC YARDS CONTINGENCY

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+91.75	13+27.36	CL	95.48
-L-	14+53.41	14+84.25	CL	83.65
			TOTAL:	179.14
			SAY:	180

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- RT	12+96.00	13+05.88	9.88
-L- RT	14+70.13	14+87.75	17.62
-L- LT	12+96.00	13+05.88	9.88
-L- LT	14+70.13	14+87.75	17.62
		TOTAL:	55
		SAY:	60

NOTE:
INVERT ELEVATIONS INDICATED ARE FOR BID PURPOSES ONLY AND SHALL NOT BE USED FOR PROJECT CONSTRUCTION STAKE OUT. SEE "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 300-5".

LIST OF PIPES, ENDWALLS, ETC.

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	42"	60"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	REINFORCED ENDWALLS (CY)	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	T.B.G.D.I. STD. 840.35	T.B.G.D.I. (W.S. FLAT) FRAME W/2 GRATES STD. 840.29	MODIFIED CONCRETE FLUME (EA.)	PIPE REMOVAL LIN.FT.	REMARKS
-L- 13+01	13LT	0401																																																				1		
-L- 14+83	13LT	0402																																																				1		
-L- 14+83	13RT	0403																																																				1		
-L- 13+01	13RT	0405		23.50																																								1									1	1			
		0405	0406		20.75	20.00		28				X																																													
-L- 14+90	38LT	0404			9.50	8.50				80		X																												5.6																41	REMOVE 41LF OF 36" CMP
-L- 15+03	38RT	0407			15.50	15.00			64			X																																												60	REMOVE 60LF OF 42" CMP
							TOTAL	28	64	80																														5.6			1									1	1	3	101	

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.G.D.I. TRAFFIC BEARING GRATED DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GREU TL-3	ANCHORS TYPE III	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+23.04	13+16.75 (BR)	LT	93.75				13+16.75 (BR)	4.00	7.00		50.00'		1	1	1								
-L-	12+22.99	13+16.75 (BR)	RT	93.75			13+16.75 (BR)		4.00	7.00	50.00'		1		1	1								
-L-	14+59.25 (BR)	14+98.87	LT		50		14+59.25 (BR)		4.00	7.00						1	1							
-L-	14+59.25 (BR)	14+98.59	RT		50			14+59.25 (BR)	4.00	7.00						1	1							
			SUBTOTALS	187.5	100																			
			ANCHOR DEDUCTION	137.5	50																			
			TOTAL	50	50																			
			SAY	62.5	62.5																			

ANCHOR DEDUCTION
GREU TYPE TL-3: 2 @ 50' = 100'
AT-1: 2 @ 6.25' = 12.5'
TYPE III: 4 @ 18.75' = 75'
GRAND TOTAL = 187.5'
ADDITIONAL GUARDRAIL POSTS = 5

COMPUTED BY: Tyler C. Bottoms DATE: 5/23/23 CHECKED BY:Jinyoung Park DATE: 5/30/23	(2-3-23)	PROJECT NO. BP2-R022	SHEET NO. 3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

***UD = Underdrain**
***BD = Blind Drain**
***SD = Subsurface Drain**

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044511 ENGINEER CHRISTOPHER M. KORTYNA
3/27/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042764 ENGINEER ALEXANDER R. VINSON
3/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

NAD 83 NA 2011

-L- CURVE DATA

PI Sta 11+16.85	PI Sta 16+90.84
△ = 1° 56' 53.9" (RT)	△ = 1° 34' 36.9" (RT)
D = 0° 50' 01.4"	D = 0° 41' 47.3"
L = 233.68'	L = 226.41'
T = 116.85'	T = 113.21'
R = 6,872.18'	R = 8,226.47'
SE = EXIST	SE = EXIST
RO = N/A	RO = N/A

-DRW1- CURVE DATA

PI Sta 10+38.26	PI Sta 11+23.76
△ = 36° 26' 07.2" (LT)	△ = 39° 26' 42.1" (RT)
D = 136° 25' 06.7"	D = 136° 25' 06.7"
L = 26.71'	L = 28.91'
T = 13.82'	T = 15.06'
R = 42.00'	R = 42.00'

-DRW2- CURVE DATA

PI Sta 10+54.72	PI Sta 11+14.19
△ = 78° 52' 39.9" (RT)	△ = 78° 52' 39.9" (LT)
D = 136° 25' 06.7"	D = 130° 13' 03.7"
L = 57.82'	L = 60.57'
T = 34.55'	T = 36.19'
R = 42.00'	R = 44.00'

BEGIN PROJECT
-L- STA. 11+70.00

END PROJECT
-L- STA. 16+10.00

POT Sta. 11+41.51
END CONSTRUCTION
-DRW1- POT Sta. 11+38.00
PT Sta. 11+37.62

1 SANDRA R. JONES DB 1447 PG 0866

2 SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3052 PG 590

3 KENNETH M. SODERSTROM AND WIFE AMY G. SODERSTROM DB 2734 PG 220

4 SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3379 PG 638

PAULINE M. AMABILE AND HUSBAND JOHN J. AMABILE DB 250 PG 814

KENNETH M. SODERSTROM AND WIFE AMY G. SODERSTROM

-L- +81.00 49.00' LT 30.00' LT
-L- +10.00 41.00' LT 30.00' LT
-L- +90.00 41.00' LT 30.00' LT
-L- +48.00 129.00' LT
-L- +69.00 128.00' LT
-L- +45.00 45.00' LT 39.00' LT 30.00' LT
END APPROACH SLAB -L- STA. 14+70.13
END BRIDGE -L- STA. 14+59.25
-L- +50.00 49.00' LT 39.00' LT
-L- +45.00 50.00' LT 30.00' LT

EST 1 TON CL B RIP RAP
EST 5 SY GEOTEXTILE
MCF
60" ALT w/HW

N 71° 34' 17.0" W
PC Sta. 11+08.70
S 68° 59' 00.9" W
PT Sta. 10+51.15
PC Sta. 10+24.44
N 74° 34' 51.9" W
PT Sta. 18+04.04

-L- POT Sta.15+13.70 =
-DRW1- POT Sta. 10+00.00
-DRW2- POT Sta.10+00.00

PC Sta. 10+00.00
PT Sta. 12+33.68

-L- +87.00 39.00' RT 30.00' RT
-L- +95.00 45.00' RT 39.00' RT 30.00' RT
BEGIN APPROACH SLAB -L- STA. 13+05.88
BEGIN BRIDGE -L- STA. 13+16.75
-L- +20.00 45.00' RT 39.00' RT 30.00' RT

SBG FROM 12+96 TO 13+06 -L- LT & RT
SBG FROM 14+70 TO 14+88 -L- LT & RT

EST 1 TON CL B RIP RAP
EST 5 SY GEOTEXTILE

N 15° 25' 08.1" E
RIP RAP CLASS II
STRUCTURES PAY ITEM

-L- +34.00 107.00' RT 39.00' RT
-L- +64.00 48.00' RT 30.00' RT

PC Sta. 15+77.63
S 74° 34' 51.9" E
PC Sta. 10+20.17
-L- +44.00 48.00' RT 30.00' RT
PRC Sta. 10+78.00
-L- +00.00 110.00' RT
END CONSTRUCTION
-DRW2- PT Sta. 11+35.00
PT Sta. 11+38.57

BM ELEVATION = 24.952'
N 587562 E 2518614
BL STA 15+60.5 OFFSET 69.84' RT
RAILROAD SPIKE IN BASE OF 16.5" GUM

FOR -L- PROFILE SEE SHEET 5

FOR -DRW1- PROFILE SEE SHEET 5

FOR -DRW2- PROFILE SEE SHEET 5

NOTE: EXISTING HORIZONTAL ALIGNMENT WAS USED

NOTE: 25' OF SHOP CURVED GUARDRAIL WAS USED

NOTE: -DRW2- SUPERS TO AVOID POOLING ON THE ACCESS ROAD

NOTE: EXISTING GATES FOR DRIVEWAYS TO BE RESET. PLACE GATES APPROXIMATELY 30' OFF THE PROPOSED EOT.

FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-25

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044511 SEAN M. KORTOVICH — Signed by: E741DD4D67CA471... — 3/27/2026

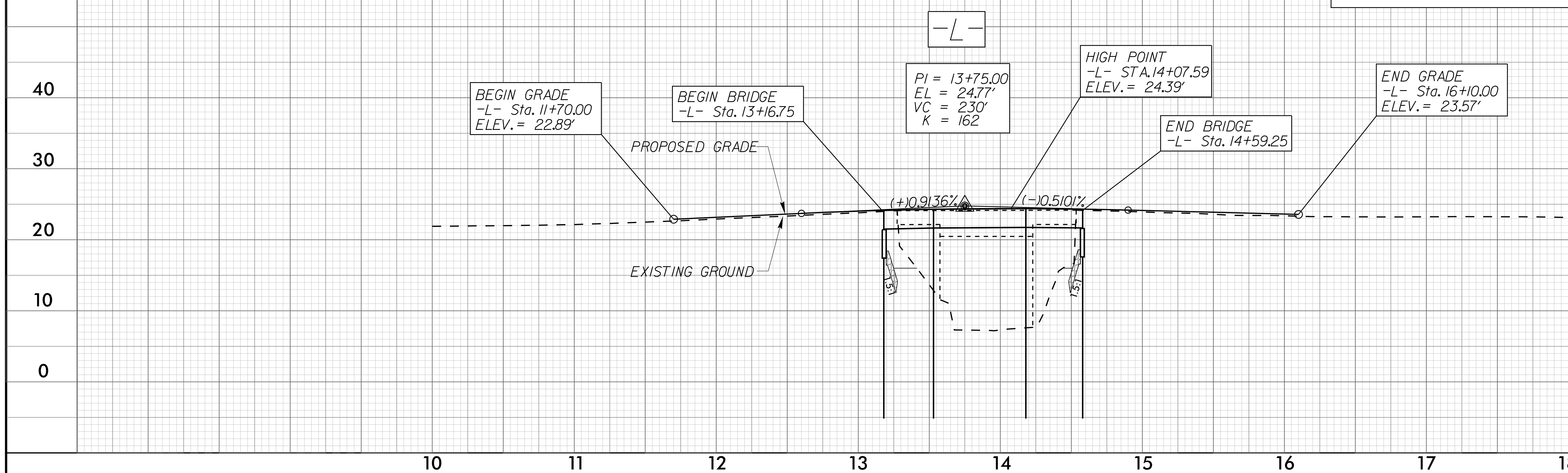
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049764 ALEXANDER R. VINSON — DocuSigned by: Alexander R Vinson 9DD0FFF1E6D1438... — 3/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

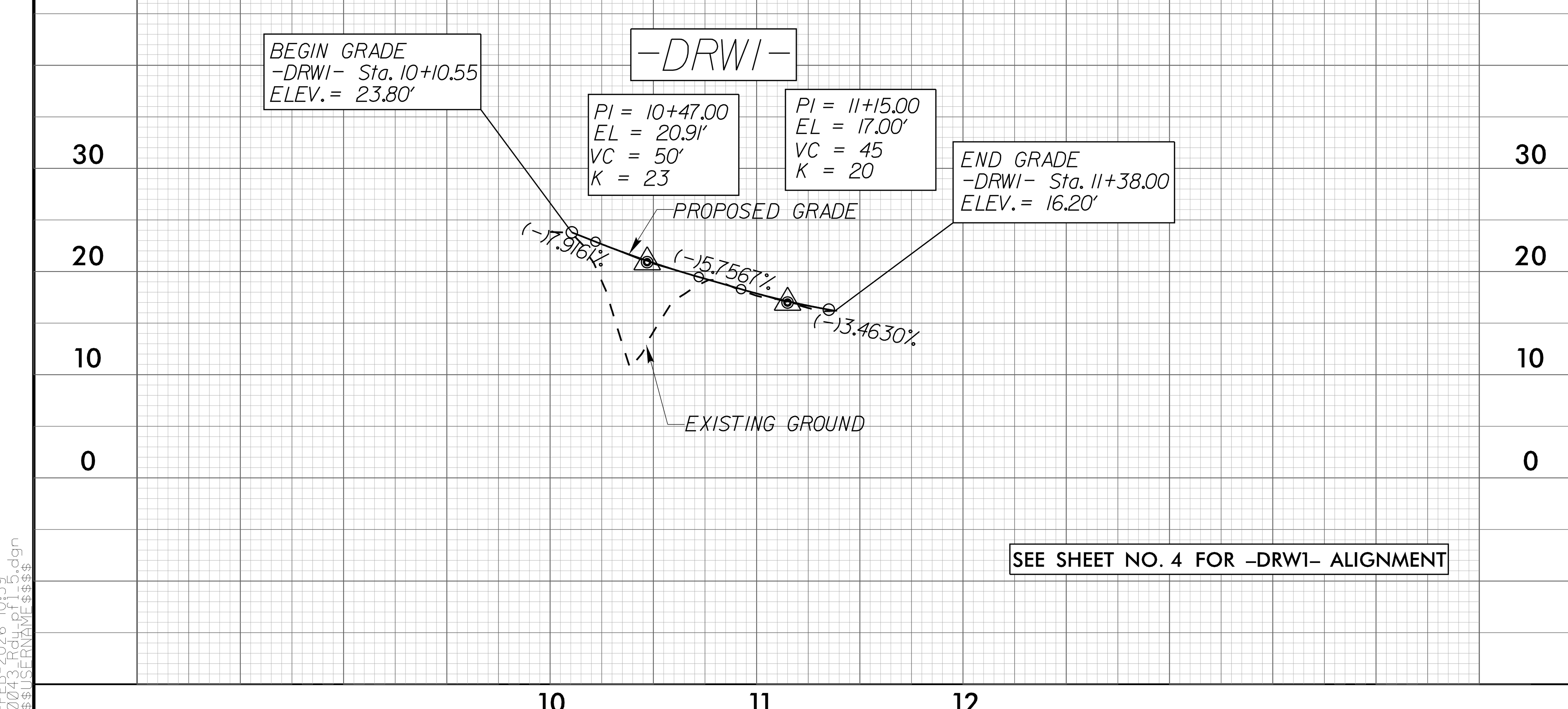
STRUCTURE HYDRAULIC DATA

DRAINAGE AREA	=	96.3	SQ MI
DESIGN DISCHARGE	=	3900	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	19.0'	FT
BASE DISCHARGE	=	5700	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	20.6	FT
OVERTOPPING DISCHARGE	=	6200	CFS
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING ELEVATION	=	20.9	FT

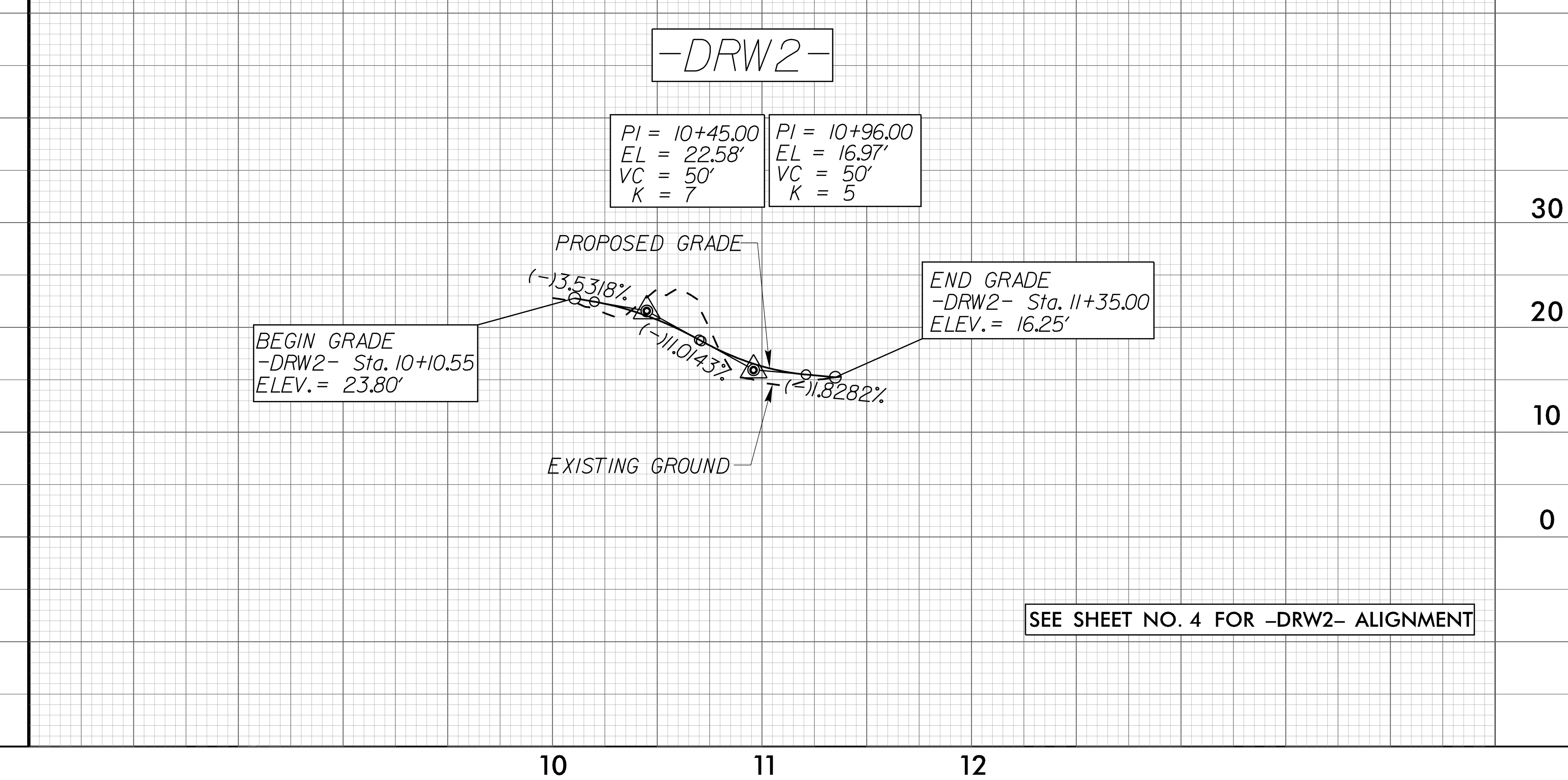


BM#1 @ RR SPIKE IN BASE OF 16.5" GUM
ELEV. = 24.952'
-BL- STA. 15+61.05 69.84' RT
-L- STA. 15+21.02 56.09' RT.

SEE SHEET NO. 4 FOR -L- ALIGNMENT



SEE SHEET NO. 4 FOR -DRW1- ALIGNMENT



SEE SHEET NO. 4 FOR -DRW2- ALIGNMENT

09/08/99

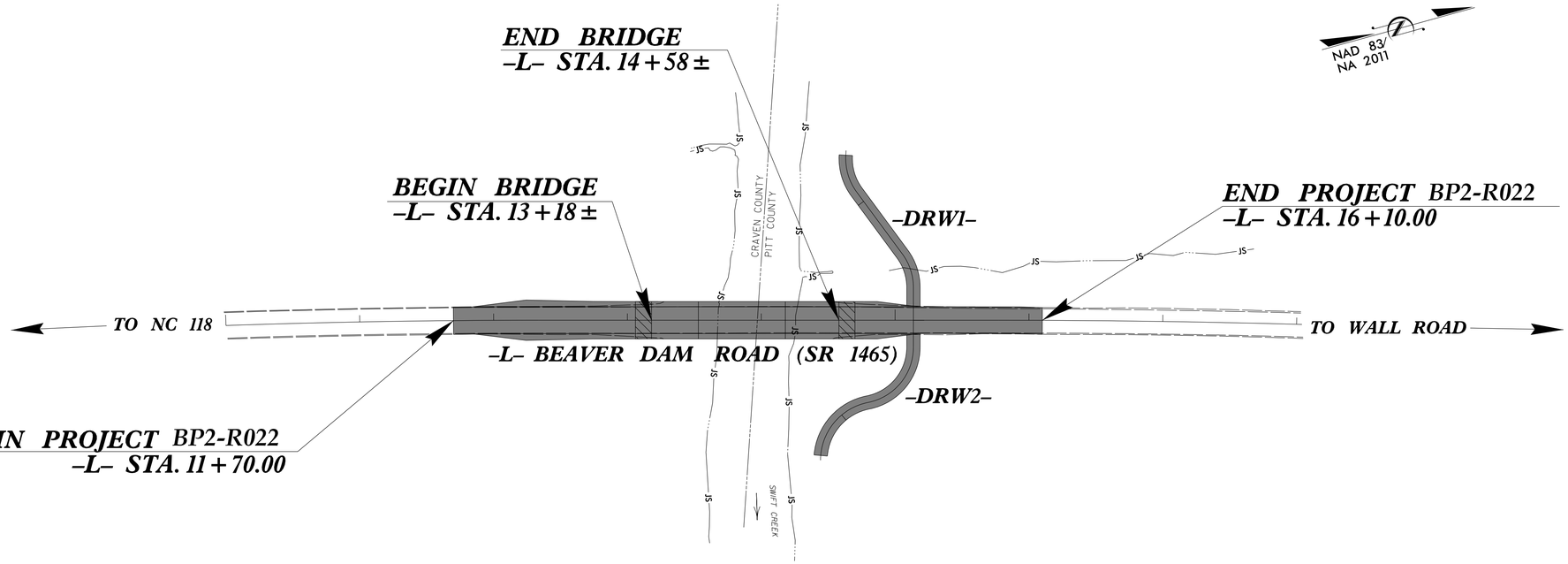
TIP PROJECT: BP2–R022

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R022	RW01	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

CRAVEN /PITT COUNTY



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "BP2-R022-2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 587117.0780(ft) EASTING: 2518451.3510(ft)
ELEVATION: 20.571(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999878839
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"BP2-R022-2" TO -L- STATION 10+00 IS
S 31°14'03" W 50.79(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

LOCATION AND SURVEYS
DIVISION 2

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
05/16/2023	*06/21/2024*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5082 LAND SURVEYOR JAMES C. GREEN III

DocuSigned by:
Dave Green
SIGNATURE:

08/22/2023
Date:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

14-AUG-2023 09:10
N:\BRIDGE-JOBS\BP2_R022\Control\Control Sheets\RW and Title-Sheets\BP2-R022_ls_rw01.dgn
mwstahl AT LS-328780L

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW02D-1

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5082 LAND SURVEYOR JAMES C. GREEN III

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROPOSED ALIGNMENT CONTROL SHEET

I, James C. Green, 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 22 day of August, 2023.

DocuSigned by:

Professional Land Surveyor L-5082

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	587073.6520	2518425.0160
PT	12+33.68	587299.9386	2518483.3049
PC	15+77.63	587631.5009	2518574.7501
PT	18+04.04	587848.9080	2518637.9430

DRW1

TYPE	STATION	NORTH	EAST
POT	10+00.00	587569.8718	2518557.7527
PC	10+24.44	587576.3696	2518534.1930
PT	10+51.15	587575.0873	2518507.9636
PC	11+08.70	587554.4455	2518454.2358
PT	11+37.62	587553.8054	2518425.8960
POT	11+41.51	587555.0367	2518422.2005

DRW2

TYPE	STATION	NORTH	EAST
POT	10+00.00	587569.8718	2518557.7527
PC	10+20.17	587564.5078	2518577.2015
PRC	10+78.00	587520.8728	2518607.9167
PT	11+38.57	587475.1600	2518640.0946

REVISIONS

NOTES:

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

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

6/2/99

10-AUG-2023 13:00
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mwstahl AT LS-328780L

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW03E-1

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5082 LAND SURVEYOR JAMES C. GREEN III

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , James C. Green , 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 July 27 2023 to August 1 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 22 day of August, 2023.

DocuSigned by:
James C. Green
BFC2DD053857475...
Professional Land Surveyor L-5082

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	12+90.00	-41.00	587365.1279	2518458.7534	
L	12+90.00	-30.00	587362.2033	2518469.3575	
L	12+95.00	30.00	587351.0709	2518528.5274	
L	12+95.00	45.00	587347.0828	2518542.9875	
L	13+10.00	-30.00	587381.4835	2518474.6750	
L	13+10.00	-41.00	587384.4081	2518464.0709	
L	13+20.00	30.00	587375.1711	2518535.1742	
L	13+20.00	45.00	587371.1830	2518549.6343	
L	14+45.00	-30.00	587511.6245	2518510.5680	NOT SET (STEEP BANK)
L	14+45.00	-45.00	587515.6126	2518496.1079	NOT SET (STEEP BANK)
L	14+64.00	48.00	587509.2025	2518590.8122	
L	14+64.00	30.00	587513.9882	2518573.4601	NOT SET (FELL IN RIP-RAP)
L	15+44.00	48.00	587586.3231	2518612.0822	
L	15+44.00	30.00	587591.1088	2518594.7300	
L	15+45.00	-30.00	587608.0253	2518537.1554	
L	15+45.00	-50.00	587613.3428	2518517.8753	

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 JULY 27 2023 TO AUGUST 1 2023 .

10-AUG-2023 11:30
N:\BRIDGE_JOBS\BP2_R022\Control\Control Sheets\RW and Title-Sheets\BP2-r022_ls_rw03E-1.dgn
mwstahl AT LS-328780

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW04

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5082 LAND SURVEYOR JAMES C. GREEN III

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , James C. Green , 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 July 27 2023 to August 1 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 22 day of August, 2023.

DocuSigned by:
Jake Green
BFC2DD553857475...
Professional Land Surveyor L-5082

-L- CURVE DATA

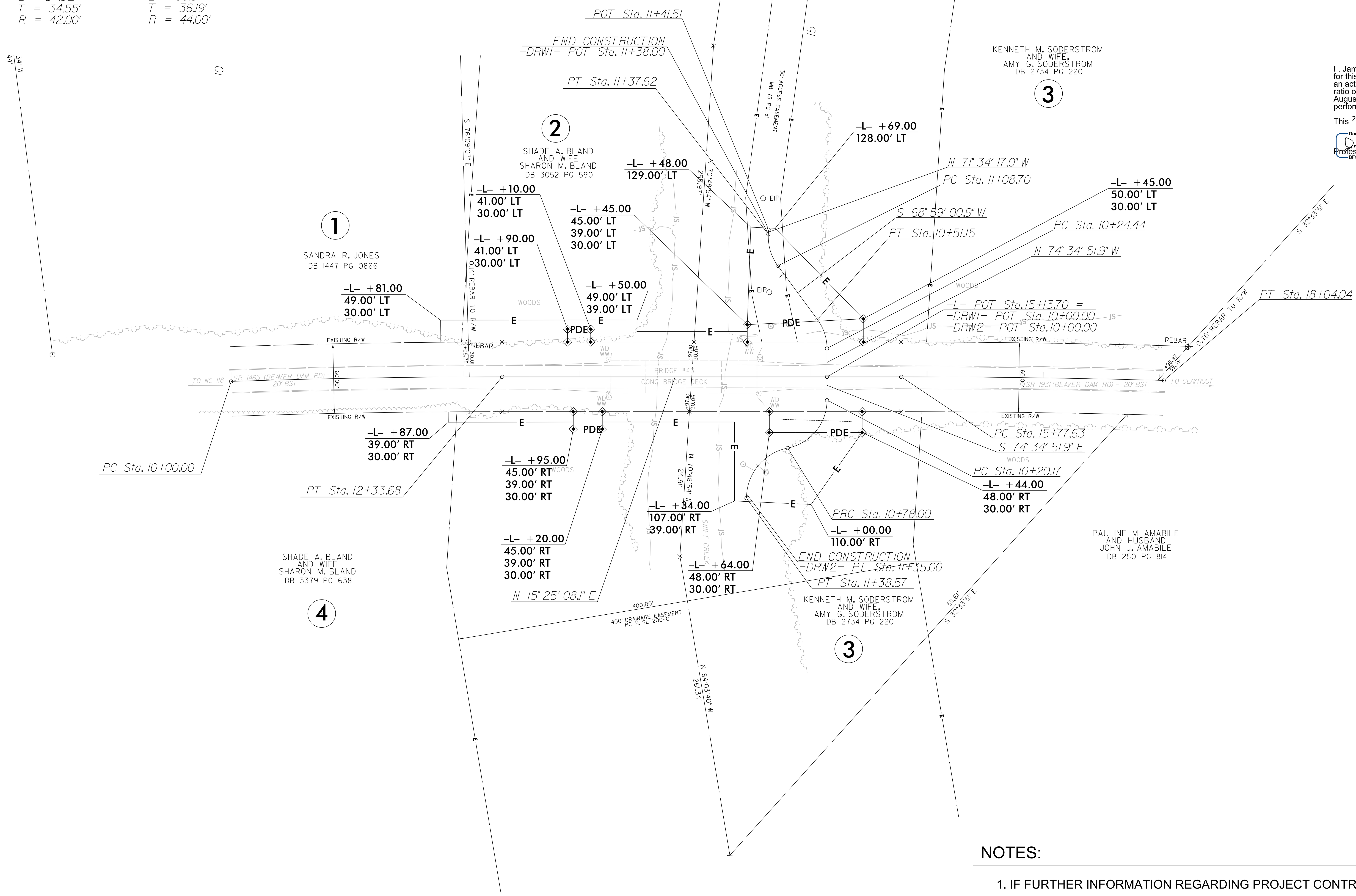
PI Sta 11+16.85	PI Sta 16+90.84
△ = 1° 56′ 53.9″ (RT)	△ = 1° 34′ 36.9″ (RT)
D = 0° 50′ 01.4″	D = 0° 41′ 47.3″
L = 233.68′	L = 226.41′
T = 116.85′	T = 113.21′
R = 6,872.18′	R = 8,226.47′
SE = EXIST	SE = EXIST
RO = N/A	RO = N/A

-DRW1- CURVE DATA

PI Sta 10+38.26	PI Sta 11+23.76
△ = 36° 26′ 07.2″ (LT)	△ = 39° 26′ 42.1″ (RT)
D = 136° 25′ 06.7″	D = 136° 25′ 06.7″
L = 26.71′	L = 28.91′
T = 13.82′	T = 15.06′
R = 42.00′	R = 42.00′

-DRW2- CURVE DATA

PI Sta 10+54.72	PI Sta 11+14.19
△ = 78° 52′ 39.9″ (RT)	△ = 78° 52′ 39.9″ (LT)
D = 136° 25′ 06.7″	D = 130° 13′ 03.7″
L = 57.82′	L = 60.57′
T = 34.55′	T = 36.19′
R = 42.00′	R = 44.00′



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 JULY 27 2023 TO AUGUST 1 2023.

REVISIONS

6/2/99

14-AUG-2023 11:53
N:\BRIDGE_JOBS\BP2.R022\Control\Control Sheets\RW and Title-Sheets\BP2-R022_ls_RW04.dgn
mwstahl AT LS-328780L

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

I, Rodney W. Lemonds, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 3-3-2022 - 3-16-2022
Datum/Epoch:NAD83/2011
Published/Fixed-control use:
Localized around: BP2R022 GPS-2

Northing:587,117.0780

Easting:2518451.351

Combined grid factor: 0.999878839

Geoid model:GEOID G12B

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 3-3-2022 to 3-16-2022 , 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 10th day of August, 2023.

DocuSigned by:
Rodney W. Lemonds
602DB0C503AC6481...
Professional Land Surveyor L-5115

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW02C-1

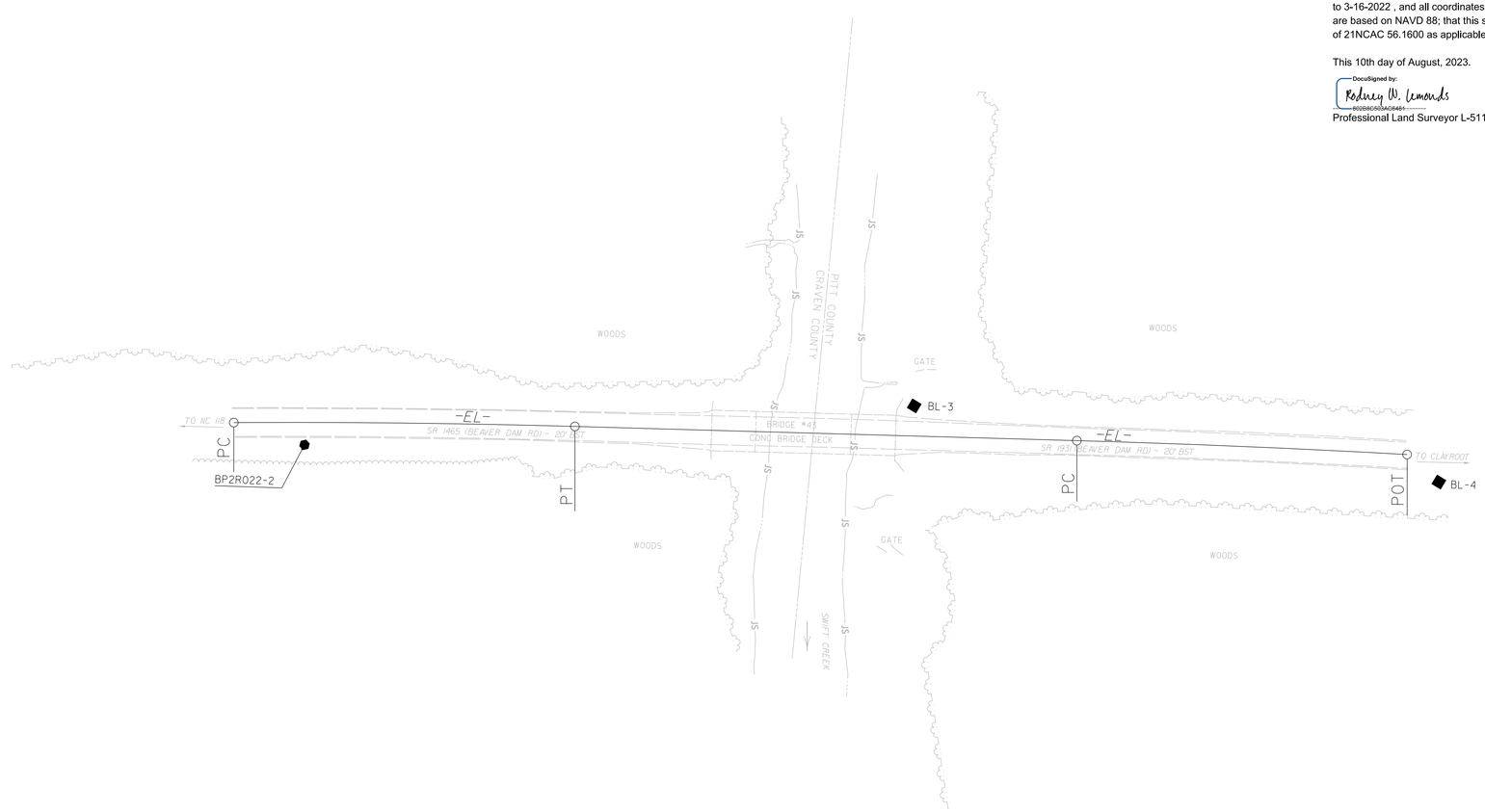
Location and Surveys

Wadelynn Geospatial, LLC
8200 Canthy Circle
GARNER, NC 27529
P: 919.210.9573
www.wadelynngeo.com

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5115 LAND SURVEYOR RODNEY W. LEMONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NC GRID NAD 83 NA 2011

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS
6/2/99

10-AUG-2023 15:34
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mchodesl AT LS-330206L

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

I, Rodney W. Lemonds, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 3-3-2022 - 3-16-2022
Datum/Epoch:NAD83/2011
Published/Fixed-control use:
Localized around: BP2R022 GPS-2

Northing:587117.078

Easting:2518451.351

Combined grid factor: 0.999878839

Geoid model:GEOID G12B

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 3-3-2022 to 3-16-2022 , 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 10th day of August, 2023.

DocuSigned by:
Rodney W. Lemonds
602B8C502AC6481...
Professional Land Surveyor L-5115

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW02C-2

Location and Surveys

Wadelynn Geospatial, LLC
2664 Timber Drive 219
GARNER, NC 27529
P: 919.210.9573
www.wadelynngeo.com

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5115 LAND SURVEYOR RODNEY W. LEMONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	(BP2R022-1)	586548.816	2518342.208	22.329
2	(BP2R022-2)	587117.078	2518451.351	20.571
3	BL-3	587528.985	2518525.030	21.696
4	BL-4	587865.497	2518661.444	21.723

****
BM1 ELEVATION = 24.952'
N 587562.024 E 2518613.780
BL STATION 15+61.05 69.8 RIGHT
RAILROAD SPIKE IN BASE OF 16.5" GUM
****

NOTES:

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

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

10-AUG-2023 15:36
\\dot02-307-f10\newbern$\BRIDGE-JOBS\BP2.R022\Control\Control Sheets\C-Sheets\BP2.R022_ls_rw02c-2.dgn
mrhodes1 AT LS-330206L

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	RW02C-3

Location and Surveys

Wadelynn Geospatial, LLC
2664 Timber Drive 219
GARNER, NC 27529
P: 919.210.9573
www.wadelynngeo.com

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5115 LAND SURVEYOR RODNEY W. LEMONDS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Rodney W. Lemonds, PLS, certify that the Existing Centerline Alignments (Prior to Construction) were calculated by me using the existing paved roadway as mapped from an actual field survey performed under direct supervision.

Witness my seal and signature this day,

DocuSigned by:
Rodney W. Lemonds
60388C503AC5481...

Professional Land Surveyor L-5115

ELEBL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	587073.652	2518425.016							
CURVE			N 14° 26′ 41.1" E	233.67	1° 56′ 53.92" (RT)	0° 50′ 01.45"	233.68	116.85	6872.18
PT	587299.939	2518483.305							
LINE			N 15° 25′ 08.1" E	343.94					
PC	587,631.501	2518574.750							
CURVE			N 16° 12′ 26.5" E	226.40	1° 34′ 36.90" (RT)	0° 41′ 47.33"	226.41	113.21	8226.47
POT	587,848.908	2518637.943							

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

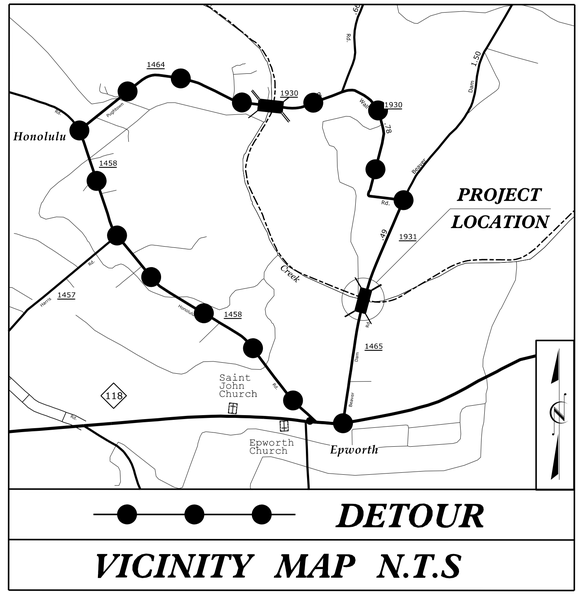
10-AUG-2023 15:36
N:\BRIDGE_JOBS\BP2_R022\Control\Control Sheets\C-Sheets\BP2_R022_ls_rw02c-3.dgn
mwstahl AT LS-328780L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CRAVEN COUNTY

LOCATION: BRIDGE NO. 240043 ON SR 1465 OVER SWIFT CREEK
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE



DETOUR

VICINITY MAP N.T.S

INDEX OF SHEETS

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

SHEET NO.
TMP-1

BP2-R022

TIP PROJECT:

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

PLANS PREPARED BY:

SEAN KORTOVICH, P.E
PROJECT ENGINEER

NIKI AVGERINOS, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

CASEY WHITLEY, P.E
NCDOT DIVISION 2 BRIDGE PROGRAM MANAGER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Signed by: Niki E Avgerinos 87897FCD3365484E...

DATE: 3/27/2026

RS&H
NC FIRM LICENSE No: F-0493
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615

NORTH CAROLINA PROFESSIONAL SEAL 058284 ENGINEER NIKI E. AVGERINOS

3/26/2026
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PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

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

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

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8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

APPROVED: Signed by: Nikki E Avgerinos 67B07FCD336548E...

DATE: 3/27/2026

NORTH CAROLINA PROFESSIONAL SEAL 058284 ENGINEER NIKKI E. AVGERINOS

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

ROADWAY STANDARD DRAWINGS & LEGEND

3/26/2026
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PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	TMP-1B

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATAGIES:

TRAFFIC MANAGEMENT STRATEGIES:
- FULL ROADWAY CLOSURES
- OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

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 ALTERATIONS.

SIGNNG

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

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

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

D) 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

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

TRAFFIC CONTROL DEVICES

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

G) STATE FORCES WILL INSTALL MARKINGS AND MARKERS ON THE FINISHED PROJECT. CONTACT LANE WARD AT (252) 439-2830 TWO WEEKS PRIOR TO CLOSING THE ROAD FOR DETOUR INSTALLATION.

PHASING NOTES

PHASE I STEP 1

USING TMP-2 AND RSD 1101.03 (SHEET 1 OF 9), INSTALL DETOUR ROUTE SIGNING TO CLOSE SR 1465 (BEAVER DAM RD)

PHASE I STEP 2

AWAY FROM TRAFFIC, COMPLETE PROPOSED BRIDGE AND ROADWAY CONSTRUCTION ALONG -L- SR 1465 (BEAVER DAM RD), INCLUDING DRAINAGE, GUARDRAIL, AND FINAL PAVEMENT MARKINGS AND MARKERS

PHASE I STEP 3

REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN -L- SR 1465 (BEAVER DAM RD) TO PROPOSED TRAFFIC PATTERN

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8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

APPROVED: Signed by: Niki E Avgerinos 67897FCD336548E...

DATE: 3/27/2026

NORTH CAROLINA PROFESSIONAL SEAL 058284 ENGINEER NIKI E. AVGERINOS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRANSPORATION OPERATIONS PLAN

3/26/2026
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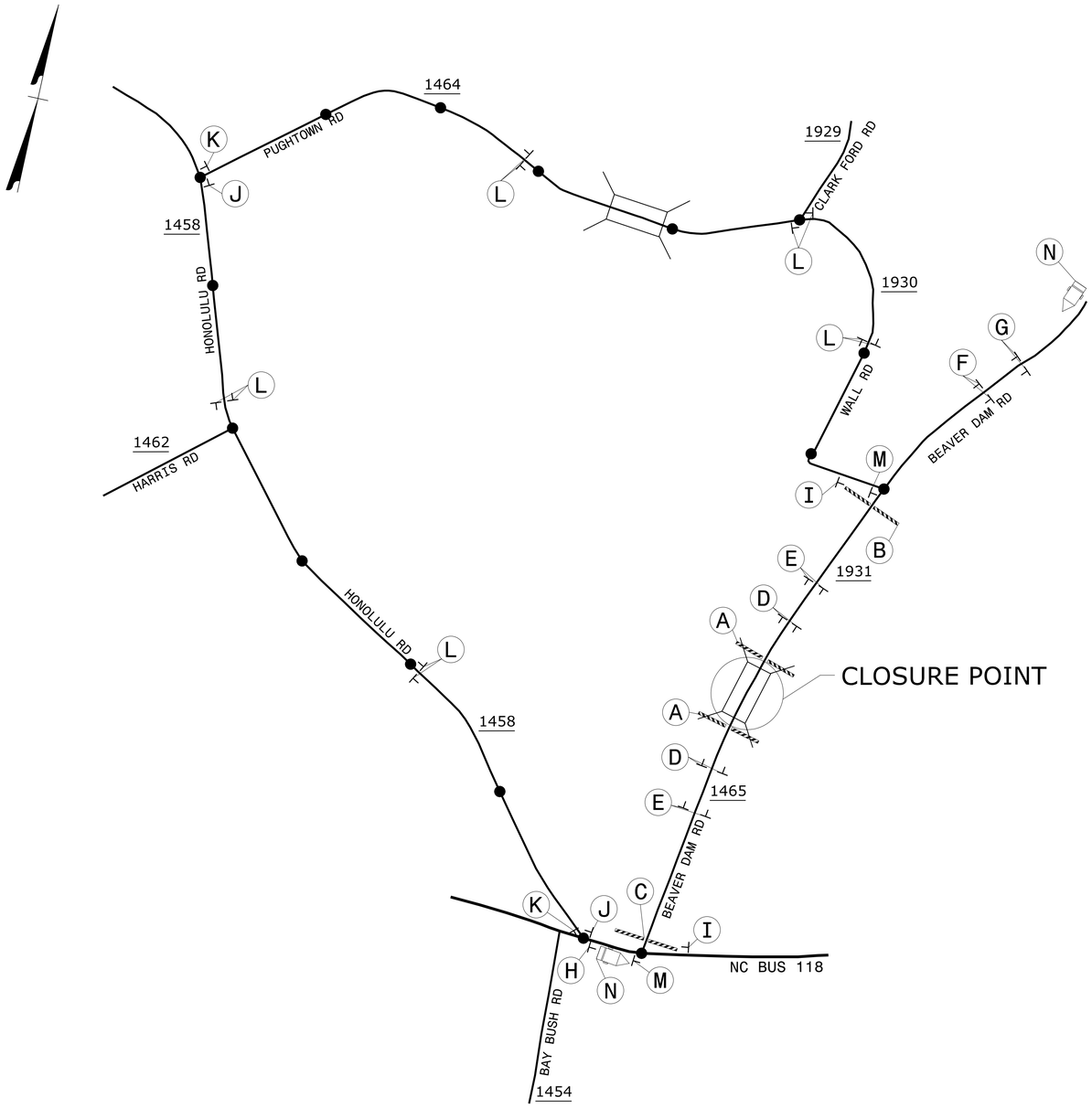
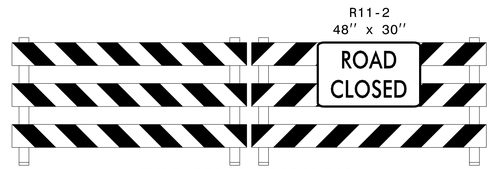
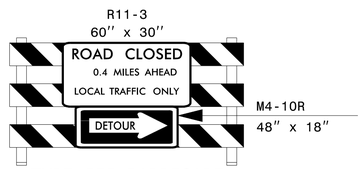
PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	TMP-2





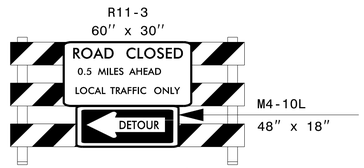
TYPE III BARRICADE(S)

A



TYPE III BARRICADE

B



TYPE III BARRICADE

C

D

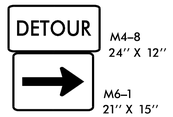
E

F

G

H

I



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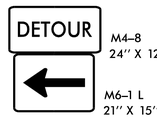

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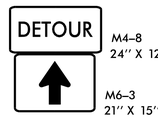

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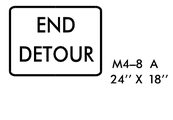

M

MESSAGE NO. 1	MESSAGE NO. 2
BEAVER DAM RD CLOSED	STARTING (DAY) (TIME)

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
ROAD CLOSED XX MI	FOLLOW POSTED DETOUR

CHANGEABLE MESSAGE SIGN

N

SEE RSD 1101.03 SHEET 1 OF 9
FOR MORE DETAILS

LEGEND

DETOUR ROUTE

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

APPROVED: Signed by: Niki E Avgerinos E7897FCD336548E...

DATE: 3/27/2026

NORTH CAROLINA PROFESSIONAL SEAL 058284 ENGINEER NIKI E AVGERINOS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETOUR ROUTE

3/26/2026
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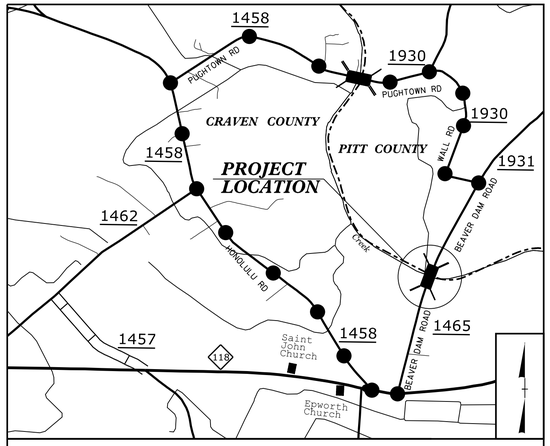
User:AvgerinN

WBS PROJECT: BP2–R022

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R022	EC-1	

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



VICINITY MAP N.T.S

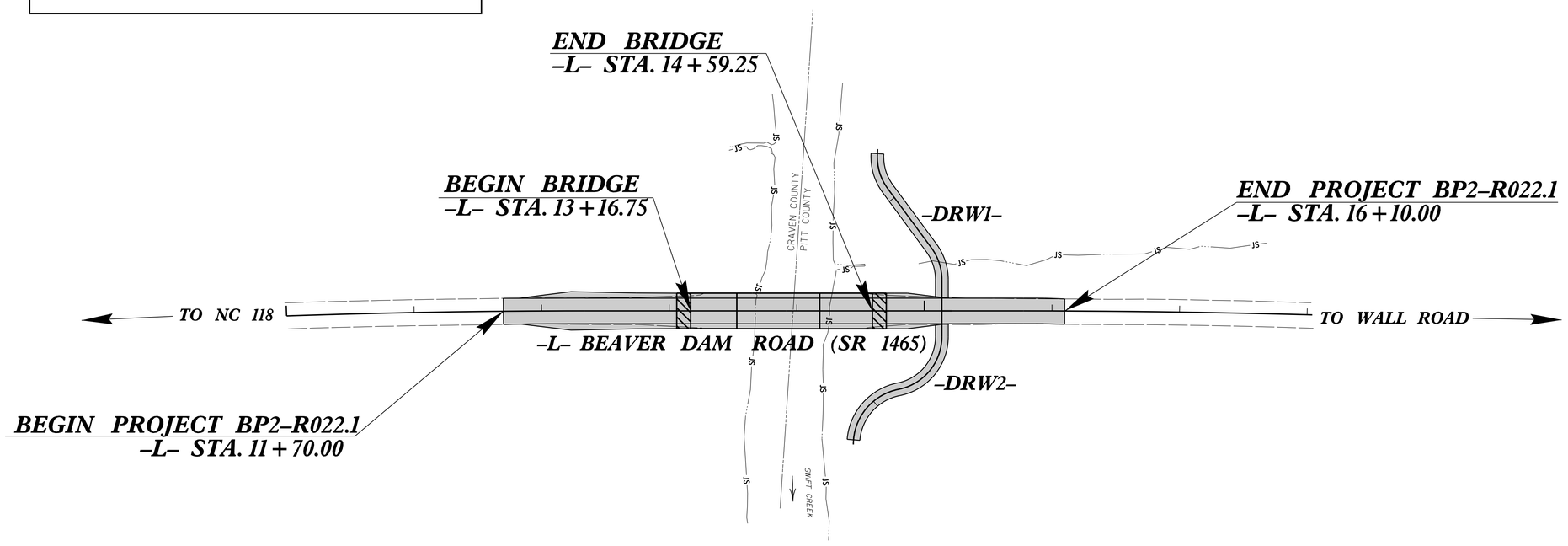
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CRAVEN & PITT COUNTY

REPLACE BRIDGE NO. 240043 ON SR 1465
LOCATION: OVER SWIFT CREEK
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

NAD 83/
NA 2011



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE

50 25 0 50 100
PLANS

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

RS&H

Prepared in the Office of:

RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

Designed by:

ALEX VINSON ***3909***
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	EC-02

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

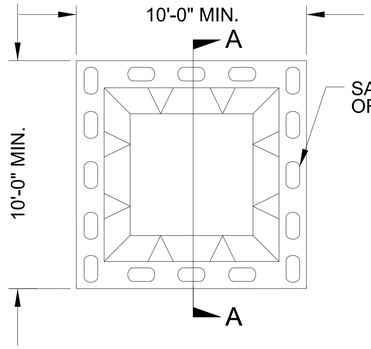
EROSION & SEDIMENT CONTROL LEGEND

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

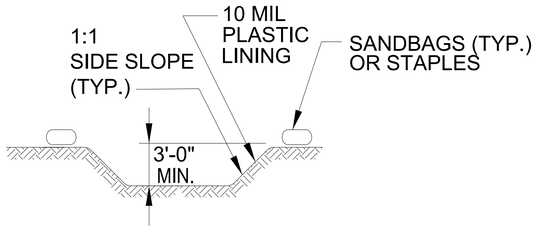
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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.
BP2-R022	EC-2A

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

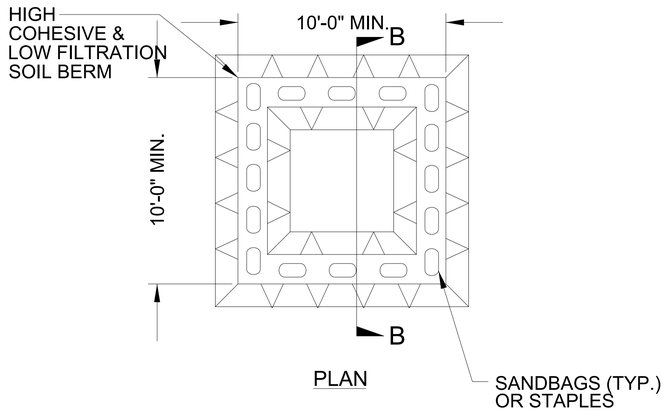
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

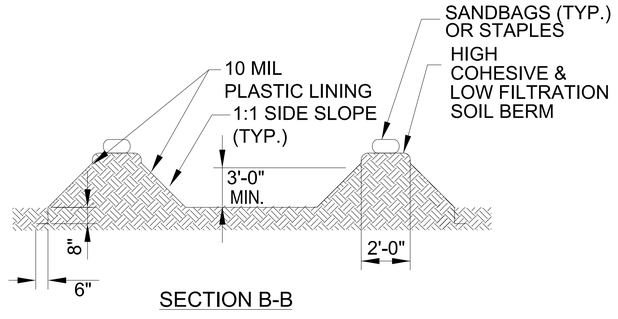
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

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.

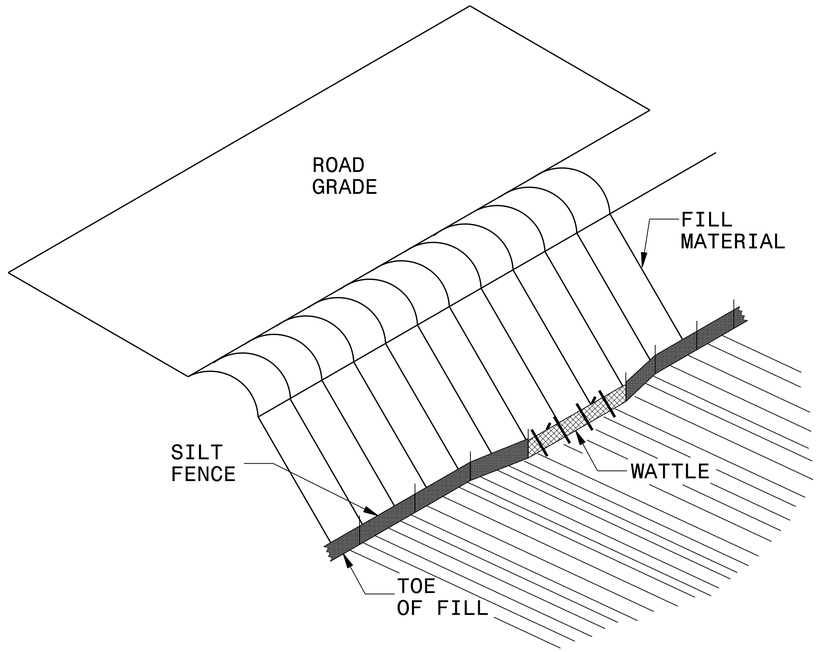
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

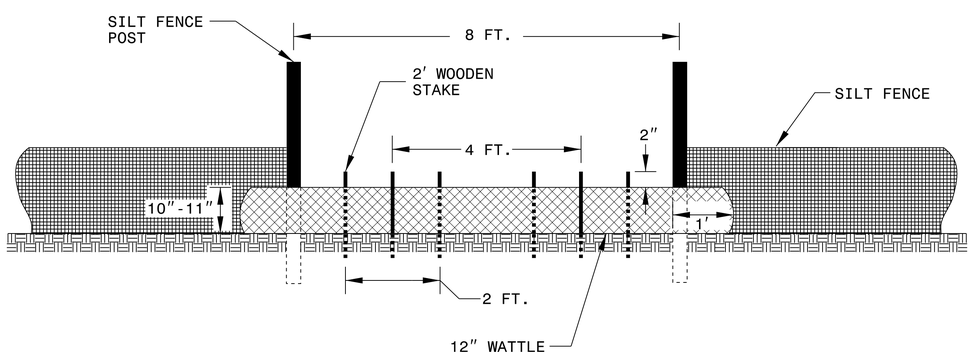
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	EC-2B

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

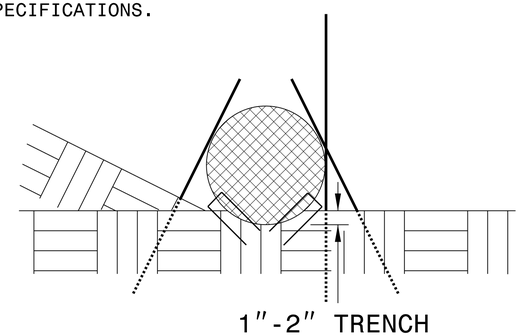
PROVIDE STAPLES MADE OF 11 GUAGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6" IN LENGTH.

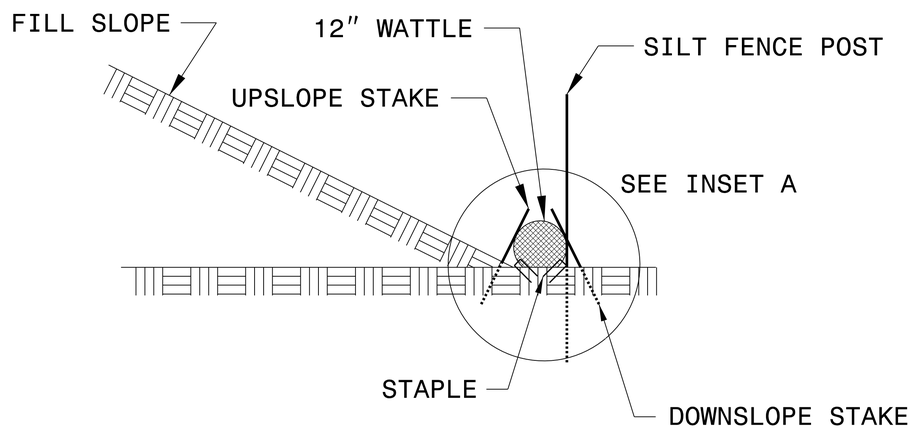
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP2-R022	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

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RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

-L- CURVE DATA

PI Sta 11+16.85	PI Sta 16+90.84
Δ = 1° 56' 53.9" (RT)	Δ = 1° 34' 36.9" (RT)
D = 0° 50' 01.4"	D = 0° 41' 47.3"
L = 233.68'	L = 226.41'
T = 116.85'	T = 113.21'
R = 6,872.18'	R = 8,226.47'
SE = EXIST	SE = EXIST
RO = N/A	RO = N/A

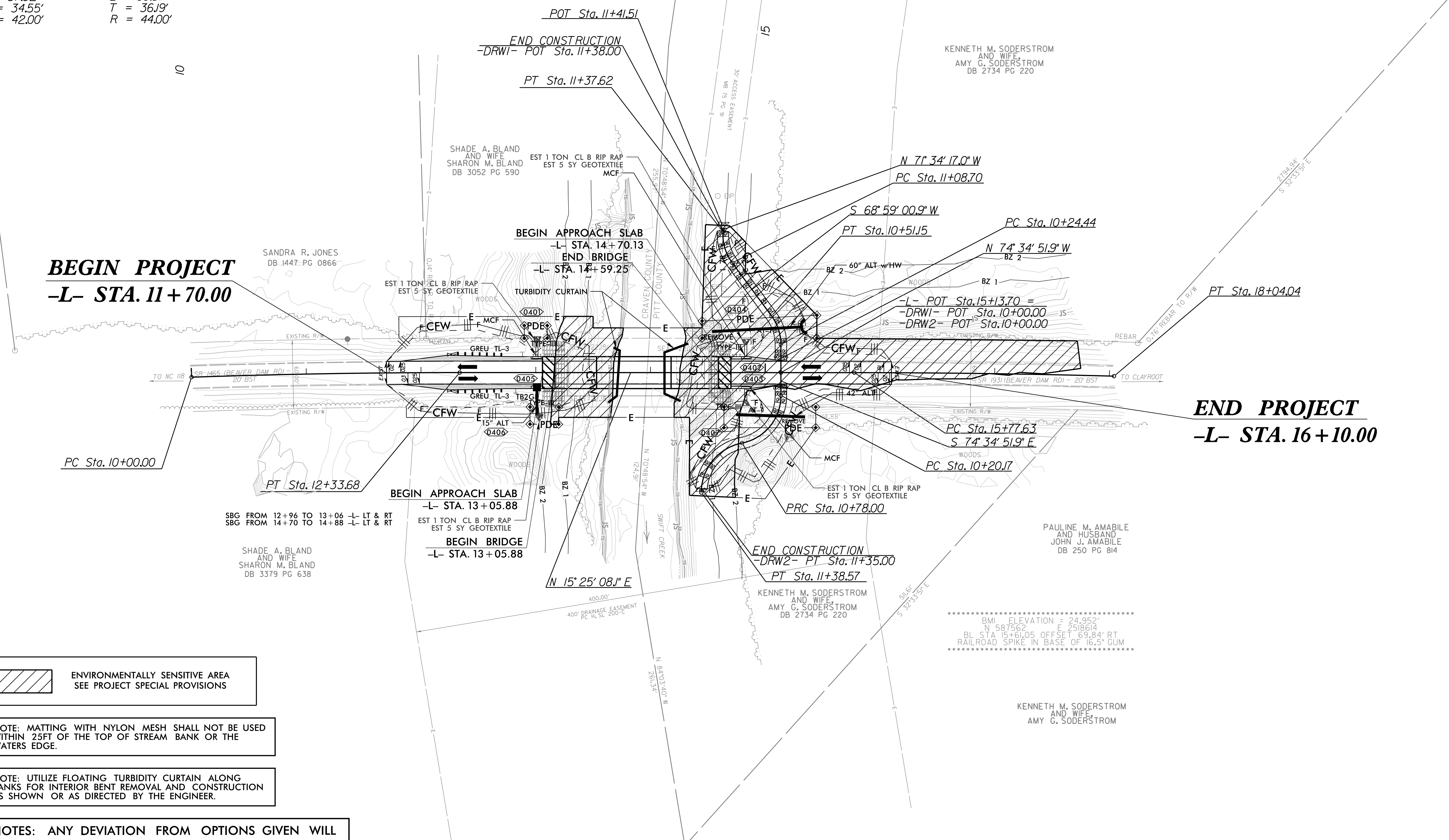
-DRW1- CURVE DATA

PI Sta 10+38.26	PI Sta 11+23.76
Δ = 36° 26' 07.2" (LT)	Δ = 39° 26' 42.1" (RT)
D = 136° 25' 06.7"	D = 136° 25' 06.7"
L = 26.71'	L = 28.91'
T = 13.82'	T = 15.06'
R = 42.00'	R = 42.00'

-DRW2- CURVE DATA

PI Sta 10+54.72	PI Sta 11+14.19
Δ = 78° 52' 39.9" (RT)	Δ = 78° 52' 39.9" (LT)
D = 136° 25' 06.7"	D = 130° 13' 03.7"
L = 57.82'	L = 60.57'
T = 34.55'	T = 36.19'
R = 42.00'	R = 44.00'

NAD 83 NA 2011


POT Sta. 11+41.51
END CONSTRUCTION
-DRW1- POT Sta. 11+38.00
PT Sta. 11+37.62
KENNETH M. SODERSTROM AND WIFE, AMY G. SODERSTROM DB 2734 PG 220
SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3052 PG 590
EST 1 TON CL B RIP RAP EST 5 SY GEOTEXTILE
MCF
N 71° 34' 17.0" W
PC Sta. 11+08.70
S 68° 59' 00.9" W
PT Sta. 10+51.15
PC Sta. 10+24.44
N 74° 34' 51.9" W
BEGIN APPROACH SLAB -L- STA. 14+70.13
END BRIDGE -L- STA. 14+59.25
SANDRA R. JONES DB 1447 PG 0866
BEGIN PROJECT
-L- STA. 11+70.00
TURBIDITY CURTAIN
-L- POT Sta.15+13.70 =
-DRW1- POT Sta. 10+00.00
-DRW2- POT Sta.10+00.00
PT Sta. 18+04.04
TO NC 118
SR 1465 (BEAVER DAM RD) - 20' BST
SR 1931 (BEAVER DAM RD) - 20' BST
TO CLAYROOT
GREU TL-3
CFW
PDE
END PROJECT
-L- STA. 16+10.00
PC Sta. 15+77.63
S 74° 34' 51.9" E
PC Sta. 10+20.17
PC Sta. 10+00.00
PT Sta. 12+33.68
BEGIN APPROACH SLAB -L- STA. 13+05.88
SBG FROM 12+96 TO 13+06 -L- LT & RT
SBG FROM 14+70 TO 14+88 -L- LT & RT
EST 1 TON CL B RIP RAP EST 5 SY GEOTEXTILE
BEGIN BRIDGE -L- STA. 13+05.88
SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3379 PG 638
N 15° 25' 08.1" E
PRC Sta. 10+78.00
END CONSTRUCTION
-DRW2- PT Sta. 11+35.00
PT Sta. 11+38.57
KENNETH M. SODERSTROM AND WIFE, AMY G. SODERSTROM DB 2734 PG 220
PAULINE M. AMABILE AND HUSBAND JOHN J. AMABILE DB 250 PG 814
BM1 ELEVATION = 24.952'
N 587562 E 2518614
BL STA 15+61.05 OFFSET 69.84' RT
RAILROAD SPIKE IN BASE OF 16.5" GUM
KENNETH M. SODERSTROM AND WIFE, AMY G. SODERSTROM
CRAVEN COUNTY
PITT COUNTY
SWIFT CREEK

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

NOTE: MATTING WITH NYLON MESH SHALL NOT BE USED WITHIN 25FT OF THE TOP OF STREAM BANK OR THE WATERS EDGE.

NOTE: UTILIZE FLOATING TURBIDITY CURTAIN ALONG BANKS FOR INTERIOR BENT REMOVAL AND CONSTRUCTION AS SHOWN OR AS DIRECTED BY THE ENGINEER.

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

REVISIONS

8/17/99

16-FEB-2026 14:16
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RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

NAD 83 NA 2011

-L- CURVE DATA

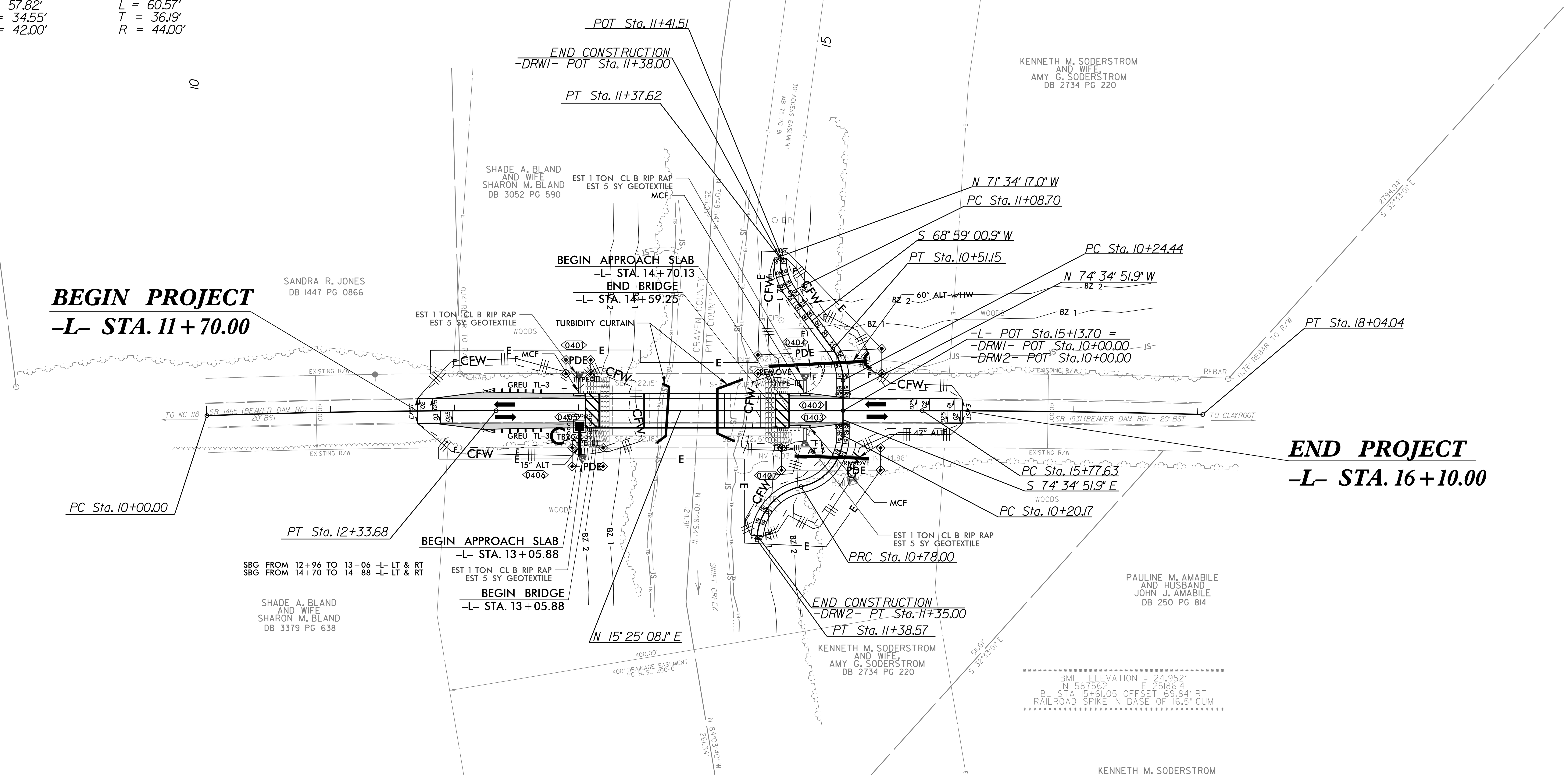
PI Sta 11+16.85	PI Sta 16+90.84
△ = 1° 56' 53.9" (RT)	△ = 1° 34' 36.9" (RT)
D = 0° 50' 01.4"	D = 0° 41' 47.3"
L = 233.68'	L = 226.41'
T = 116.85'	T = 113.21'
R = 6,872.18'	R = 8,226.47'
SE = EXIST	SE = EXIST
RO = N/A	RO = N/A

-DRW1- CURVE DATA

PI Sta 10+38.26	PI Sta 11+23.76
△ = 36° 26' 07.2" (LT)	△ = 39° 26' 42.1" (RT)
D = 136° 25' 06.7"	D = 136° 25' 06.7"
L = 26.71'	L = 28.91'
T = 13.82'	T = 15.06'
R = 42.00'	R = 42.00'

-DRW2- CURVE DATA

PI Sta 10+54.72	PI Sta 11+14.19
△ = 78° 52' 39.9" (RT)	△ = 78° 52' 39.9" (LT)
D = 136° 25' 06.7"	D = 130° 13' 03.7"
L = 57.82'	L = 60.57'
T = 34.55'	T = 36.19'
R = 42.00'	R = 44.00'



POT Sta. 11+41.51
END CONSTRUCTION
-DRW1- POT Sta. 11+38.00
PT Sta. 11+37.62
KENNETH M. SODERSTROM AND WIFE, AMY G. SODERSTROM DB 2734 PG 220
SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3052 PG 590
EST 1 TON CL B RIP RAP EST 5 SY GEOTEXTILE
N 71° 34' 17.0" W
PC Sta. 11+08.70
S 68° 59' 00.9" W
PT Sta. 10+51.15
PC Sta. 10+24.44
N 74° 34' 51.9" W
SANDRA R. JONES DB 1447 PG 0866
BEGIN PROJECT
-L- STA. 11+70.00
BEGIN APPROACH SLAB -L- STA. 14+70.13
END BRIDGE -L- STA. 14+59.25
TURBIDITY CURTAIN
-L- POT Sta. 15+13.70 =
-DRW1- POT Sta. 10+00.00
-DRW2- POT Sta. 10+00.00
PT Sta. 18+04.04
END PROJECT
-L- STA. 16+10.00
PC Sta. 15+77.63
S 74° 34' 51.9" E
PC Sta. 10+20.17
PC Sta. 10+00.00
PT Sta. 12+33.68
BEGIN APPROACH SLAB -L- STA. 13+05.88
SBG FROM 12+96 TO 13+06 -L- LT & RT
SBG FROM 14+70 TO 14+88 -L- LT & RT
BEGIN BRIDGE -L- STA. 13+05.88
PRC Sta. 10+78.00
END CONSTRUCTION
-DRW2- PT Sta. 11+35.00
PT Sta. 11+38.57
N 15° 25' 08.1" E
SHADE A. BLAND AND WIFE SHARON M. BLAND DB 3379 PG 638
PAULINE M. AMABILE AND HUSBAND JOHN J. AMABILE DB 250 PG 814
BM1 ELEVATION = 24.952' N 587562 E 2518614 BL STA 15+61.05 OFFSET 69.84' RT RAILROAD SPIKE IN BASE OF 16.5" GUM
KENNETH M. SODERSTROM AND WIFE, AMY G. SODERSTROM
TO NC 118
TO CLAYROOT
SWIFT CREEK

NOTE: MATTING WITH NYLON MESH SHALL NOT BE USED WITHIN 25FT OF THE TOP OF STREAM BANK OR THE WATERS EDGE.

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ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

REVISIONS

8/17/99

16-FEB-2026 14:21
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$$$$USERNAME$$$$

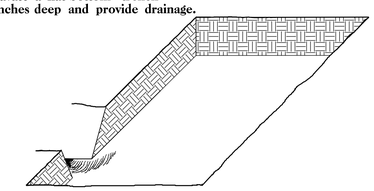
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R022	RF-1	1
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

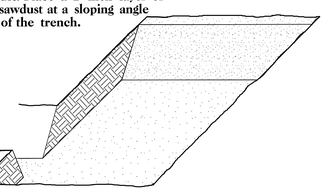
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

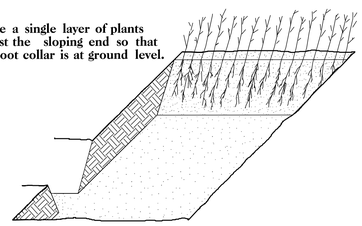
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



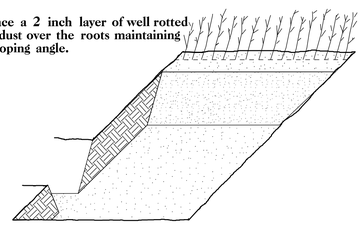
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

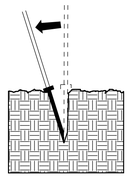


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

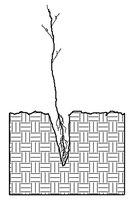


6. Repeat layers of plants and sawdust as neeessary and water thoroughly.

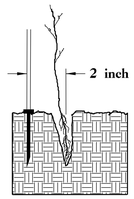
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



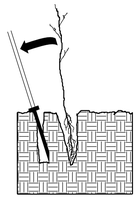
1. Insert planting bar as shown and pull handle toward planter.



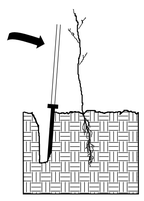
2. Remove planting bar and place seedling at correct depth.



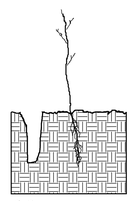
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

40% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
30% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
30% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS SECTION INDEX

ALIGNMENT	SHEET NUMBERS
-L-	X-2 THRU X-5
-DRW1-	X-6 THRU X-7
-DRW2-	X-8 THRU X-9

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-1A

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

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+70.00	0	0
12+00.00	0	34
12+50.00	1	116
13+00.00	5	70
13+16.75	7	4

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+59.25	0	0
15+00.00	13	96
15+50.00	3	30
16+00.00	1	4
16+10.00	0	0

Station DRW1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+10.55	0	0
10+25.00	0	29
10+26.11	0	5
10+50.00	0	154
10+75.00	2	103
11+00.00	4	3
11+25.00	5	1
11+38.00	1	1

Station DRW2	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+10.55	0	0
10+25.00	0	5
10+27.96	0	2
10+50.00	26	8
10+75.00	95	0
11+00.00	65	13
11+25.00	3	18
11+35.00	1	2

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-2

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

30 25 20

EXIST R/W

EXIST R/W

23.64

0.025 0.025

23.80

23.65

3:1

13+00.00

EXIST R/W

EXIST R/W

3:1

0.025 0.025

23.34

3:1

12+50.00

EXIST R/W

EXIST R/W

3:1

0.025 0.025

22.92

3:1

12+00.00

EXIST R/W

EXIST R/W

0.019 0.039

22.64

11+70.00

22.49

11+50.00

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-3

EXIST R/W

0.025 0.025

7.32

14+00.00

EXIST R/W

EXIST R/W

0.025 0.025

13.67

13+50.00

EXIST R/W

EXIST R/W

0.025 0.025

23.99

13+16.75
BEGIN BRIDGE

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-4

6/23/16

TIE TO –DRW1–
Sta. 10+26.11
ELEV. 22.218'

TIE TO –DRW2–
Sta. 10+27.96
ELEV. 22.663'

EXIST R/W

8.88:1

0.025

0.025

12.21:1

23.92

15+00.00

EXIST R/W

EXIST R/W

0.025

0.025

24.15

14+59.25
END BRIDGE

EXIST R/W

EXIST R/W

0.025

0.025

16.54

14+50.00

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-5

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

25 20 15 30 25 20 15

23.23

16+50.00

EXIST R/W

0.007 0.019

23.32

EXIST R/W

16+10.00

30 25 20 15

EXIST R/W

4:1 0.012 0.024 4:1

23.37

EXIST R/W

16+00.00

30 25 20 15

EXIST R/W

3:1 0.025 0.025 3:1

23.60

EXIST R/W

15+50.00

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

RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-6

13:1 0.020 0.013 3:1

14.15

10+50.00

TIE TO –L–
Sta. 15+00.00

12:1 0.010 0.020 3:1

18.57

10+26.11

12:1 0.009 0.019 3:1

19.08

10+25.00

0.005 0.005

23.69

10+10.55

–DRW1–

6/23/16

RS&H 8521 SIX FORKS ROAD, SUITE 400 RALEIGH, NC 27615 NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-7

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

20 15 10

16.23

11+40.00

0.075 0.075

16.20

20 15 10

11+38.00

0.062 0.062 3:1

16.47

20 15 10

11+25.00

25 20 15 10

3:1 0.037 0.037

17.65

11+00.00

25 20 15 10

3:1 0.020 0.012 3:1

19.01

10+75.00

-DRW1-

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

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240243-Rd1_XP1_DRW1.dgn
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RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-8

24.69

2:1 0.020 0.020 2:1

2:1 WERE UTILIZED
TO REDUCE IMPACTS

10+50.00

TIE TO –L–
Sta. 15+00.00

3:1 0.012 0.012 3:1

22.15

10+27.96

3:1 0.009 0.009 3:1

22.37

10+25.00

0.005 0.005

23.41

10+10.55

–DRW2–

RS&H
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RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
BP2-R022	X-9

16.28

11+36.00

0.103 0.103

16.25

11+35.00

100:1 0.010 0.010 100:1

16.00

11+25.00

50:1 0.020 0.020 3:1

15.75

11+00.00

20.88

2:1 WERE UTILIZED
TO REDUCE IMPACTS

2:1 0.020 0.020 2:1

10+75.00

-DRW2-

20-FEB-2026 11:52
240043_Rdwy01_DRW2.dgn
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09/08/99

TIP PROJECT: BP2-R022

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R022	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP2-R022	N/A	PE
BP2-R022	N/A	RW, UTIL.
BP2-R022	N/A	CONST.

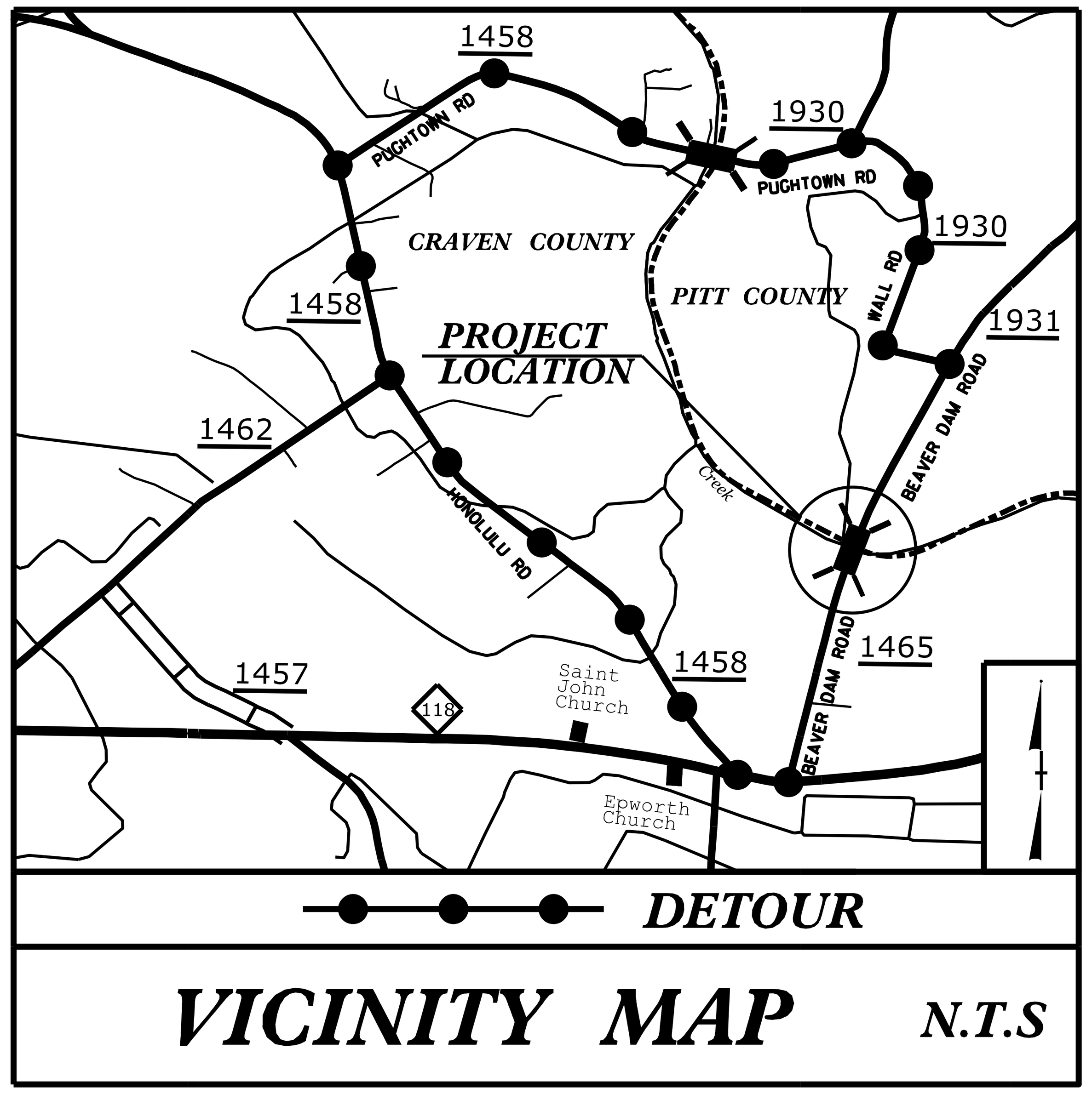
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

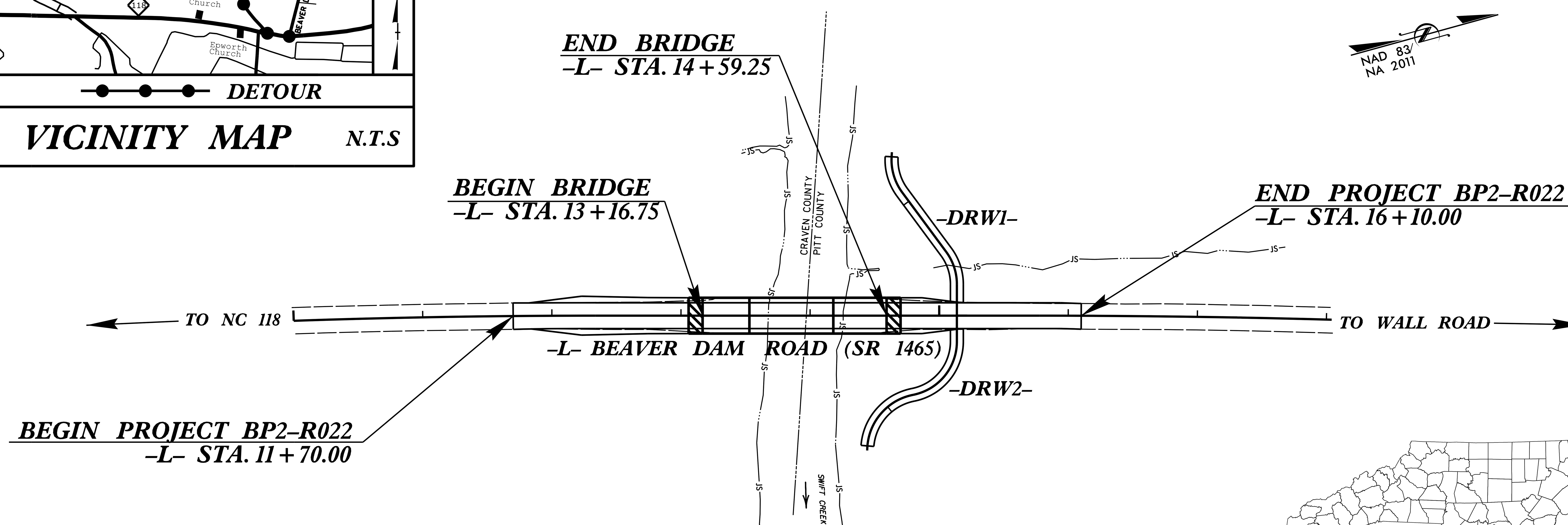
CRAVEN & PITT COUNTY

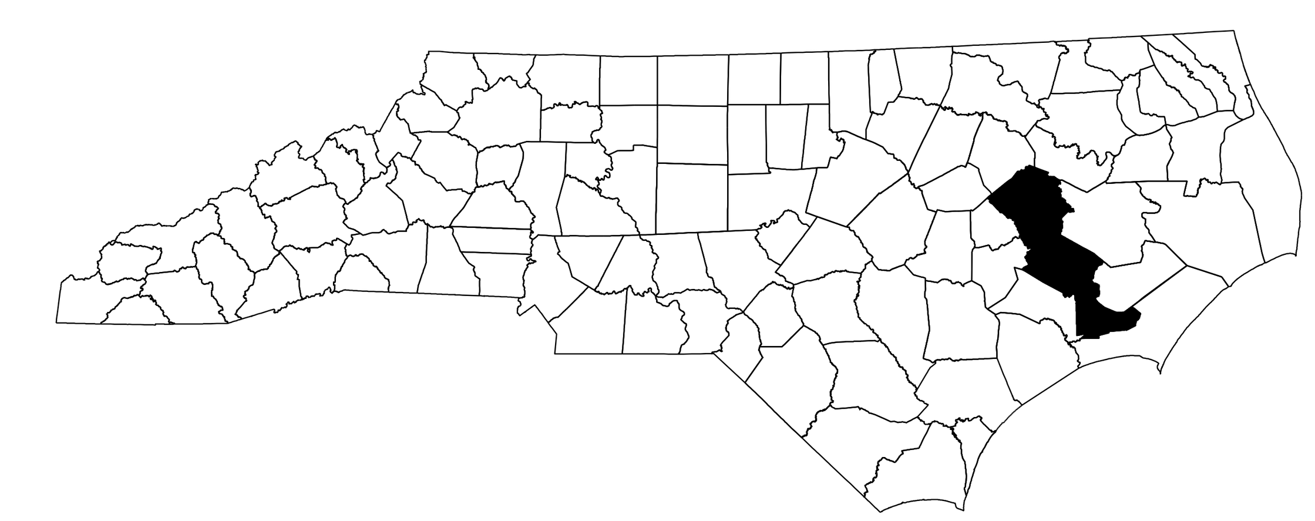
LOCATION: REPLACE BRIDGE NO. 240043 ON SR 1465
OVER SWIFT CREEK

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

100% PLANS







DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STRUCTURE

CONTRACT: DB00627

DESIGN DATA

ADT 2026 = 712
ADT 2046 = 1745
K = 0%
D = 0%
T = 6% *
V = 60 MPH
* TTST = 6% DUAL %
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP2-R022 = 0.056 MILES

LENGTH STRUCTURE TIP PROJECT BP2-R022 = 0.027 MILES

TOTAL LENGTH TIP PROJECT BP2-R022 = 0.083 MILES

PREPARED IN THE OFFICE OF:
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 16, 2023

LETTING DATE:
MAY 13, 2026

MATTHEW R. ACOSTA, PE
PROJECT ENGINEER

TONY R. LAWS, PE
PROJECT DESIGN ENGINEER

CATHRINE HOSSACK, PE
NCDOT CONTACT

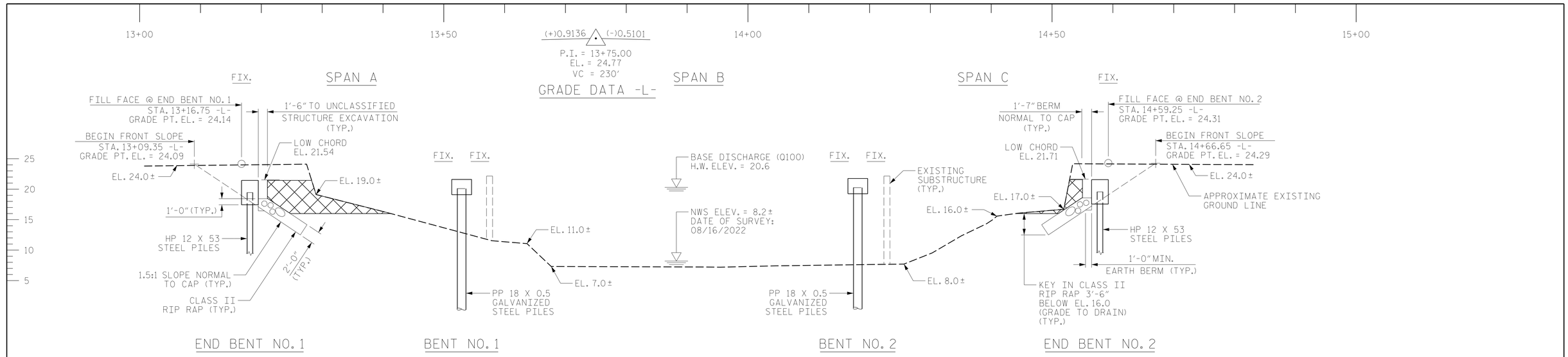
STRUCTURAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 052672

3/27/2026

SIGNATURE: P.E.

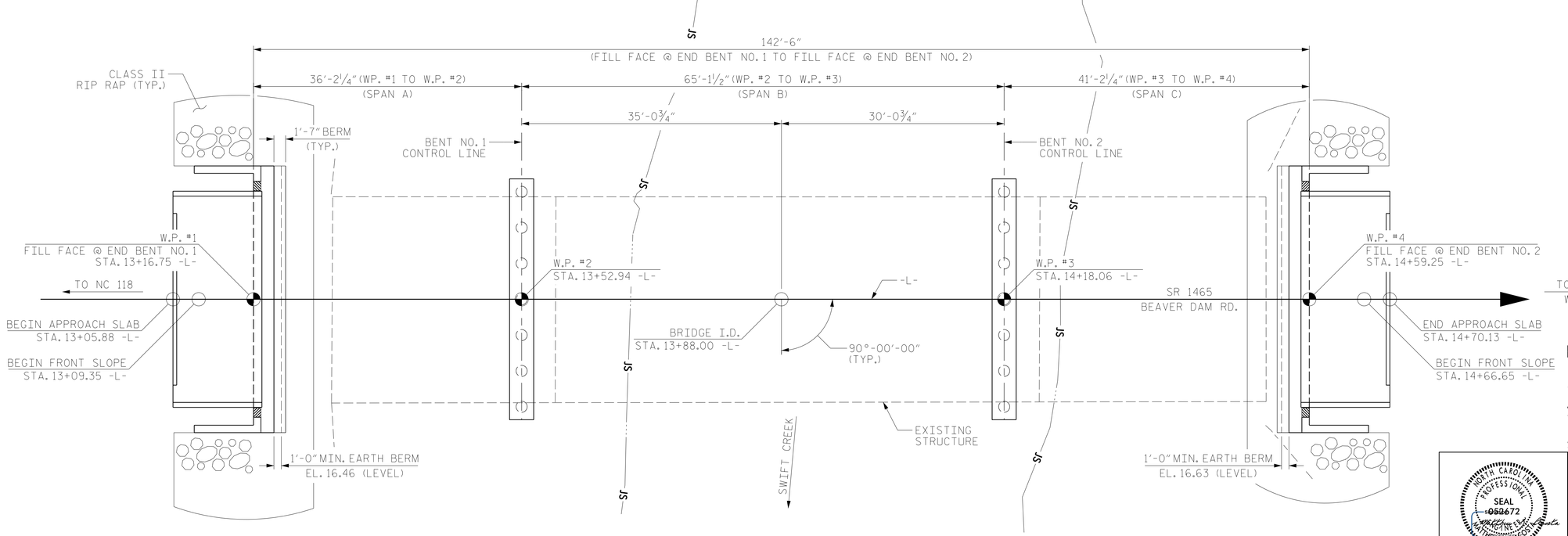
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



SECTION ALONG -L-

UNCLASSIFIED STRUCTURE EXCAVATION

NAD 83 | NA 2011



PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE 240043

NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER TIMOTHY R. LAWS

3/27/2026

RS&H

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1465
OVER SWIFT CREEK BETWEEN
NC 118 AND SR 1930

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

DRAWN BY : M. R. ACOSTA DATE : 08/2023
CHECKED BY : T. R. LAWS DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

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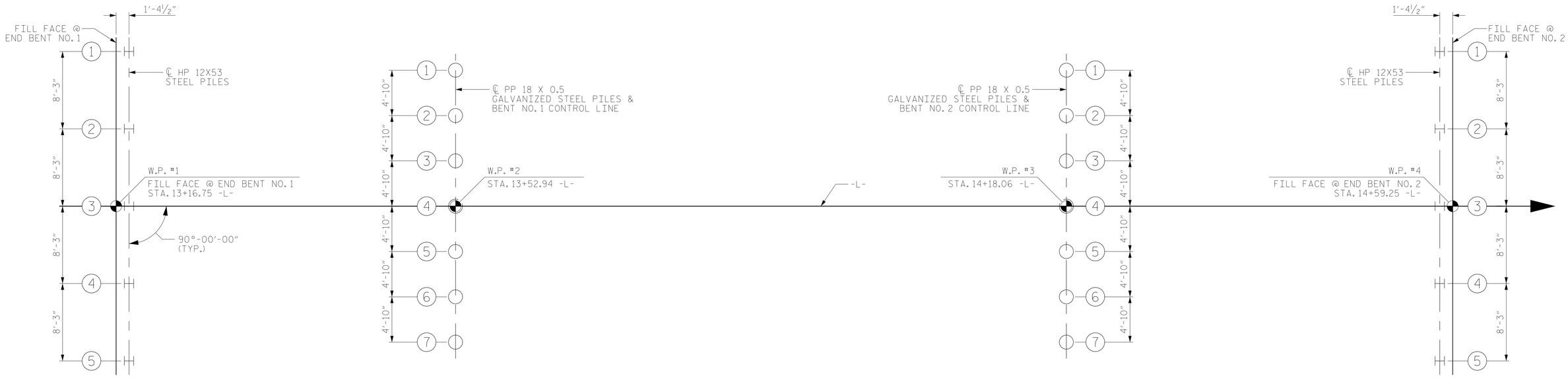

END BENT NO. 1 | BENT NO. 1 | BENT NO. 2 | END BENT NO. 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILES

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 2 OF 4

NOTE:

SEE "PILE FOUNDATION TABLES" SHEET FOR ADDITIONAL INFORMATION.

LEGEND:

⊢⊣ HP 12X53 VERTICAL STEEL PILE

◯ PP 18 X 0.5 VERTICAL GALVANIZED STEEL PILE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032672 MATTHEW R. ACOSTA 3/27

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GENERAL DRAWING
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OVER SWIFT CREEK BETWEEN
NC 118 AND SR 1930

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

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-5	70	19.42	60	N/A	N/A	120							
Bent 1, Piles 1-7	120	21.07	115	-5.3	-27.0	180							
Bent 1, Piles 1-7	120	21.16	65	-5.3	-26.0	165							
End Bent 2, Piles 1-5	70	19.59	60	N/A	N/A	120							

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

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
EB1	MAYBE	65	2		
B1	YES	120			
B2	MAYBE	70			
EB2	MAYBE	65			

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

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 TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-5	66			0.60			
Bent 1, Piles 1-7	118			0.75		20	1.00
Bent 2, Piles 1-7	118			0.75		7	1.00
End Bent 2, Piles 1-5	70			0.60			

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jinyoung Park PE#032171) on 7-31-23.
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 will determine the need for PDA Testing when PDAs may be required.

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER MATTHEW R. ACOSTA

3/27/2026

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DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
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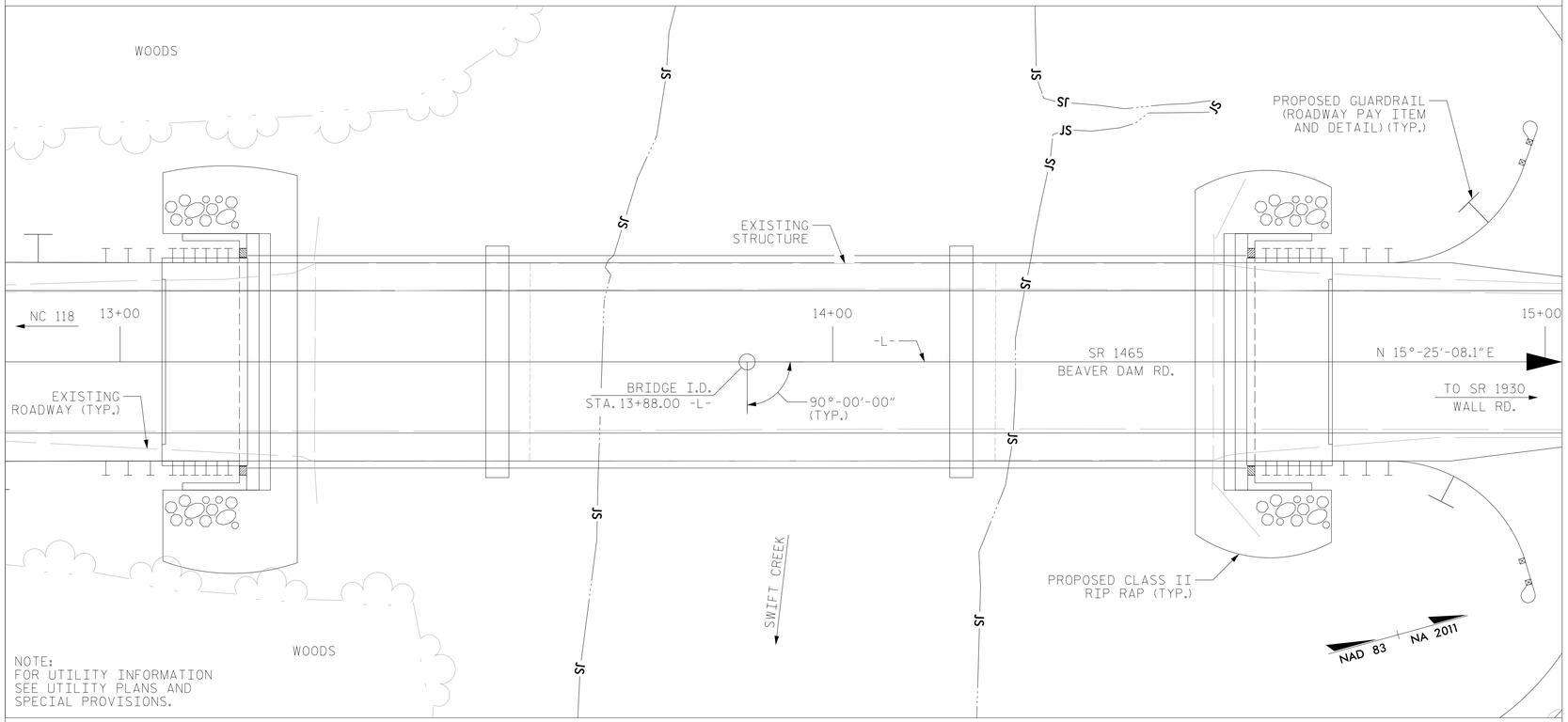
BM#1: RAILROAD SPIKE IN BASE OF 16.5"DIAMETER GUM TREE, 56' RT. OF STA. 15+21.00 -L-, EL. 24.95



LOCATION SKETCH

TOTAL BILL OF MATERIALS

	REMOVAL OF EXISTING STRUCTURE @ STA. 13+88.00 -L-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 13+88.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 18 X 0.50 GALVANIZED STEEL PILES	HP 12X53 STEEL PILES		PP 18 X 0.50 GALVANIZED STEEL PILES		STEEL PILE POINTS
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	EACH	NO.	LIN. FT.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE														
END BENT NO. 1					20.2		2458	5		5	300			
BENT NO. 1					9.3		1941		7			7	805	7
BENT NO. 2					9.3		1941		7			7	455	
END BENT NO. 2					20.2		2458	5		5	300			
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	59.0	LUMP SUM	8798	10	14	10	600	14	1260	7

	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	280.51				30	1400
END BENT NO. 1		90	98			
BENT NO. 1						
BENT NO. 2						
END BENT NO. 2		90	98			
TOTAL	280.51	180	196	LUMP SUM	30	1400

HYDRAULIC DATA

DESIGN DISCHARGE	= 3900 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS
DESIGN HIGH WATER ELEVATION	= 19.0'
DRAINAGE AREA	= 96.3 SQ. MI.
BASE DISCHARGE (Q100)	= 5700 CFS
BASE HIGH WATER ELEVATION	= 20.6'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 6200 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100+ YRS
* OVERTOPPING FLOOD ELEVATION	= 20.9'

* ELEVATION TAKEN 725' PAST THE PROJECT TIE IN @ STA. 16+10.00 -L-

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 2 SHALL BE EXCAVATED FOR A DISTANCE OF 28 FT LEFT AND 28 FT RIGHT FOR END BENT NO. 1 AND 27 FT LEFT AND 27 FT RIGHT FOR END BENT NO. 2 OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS @ 30'-2", 66'-1" AND 30'-2" WITH ASPHALT WEARING SURFACE ON STEEL PLANK FLOOR BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-2" ON TIMBER CAPS ON TIMBER PILES AT END BENT NO. 1 AND NO. 2 AND CONCRETE CAP ON STEEL PILES AT BENT NO. 1 AND NO. 2 LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, 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. 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 CONDITION 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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM THE COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO THE HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 13+88.00 -L-".

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

PAVEMENT ALONG THE TRANSVERSE CENTERLINE OF ALL CAPS SHALL BE SAW CUT TO A DEPTH OF ¾", CLEANED, AND FILLED WITH AN APPROVED ASPHALT SEALANT IN ACCORDANCE WITH SECTION 1028 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR VARIOUS PAY ITEMS.

APPLY AN APPROVED PROTECTIVE COATING TO THE TOPS OF ALL CAPS. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO OTHER PAY ITEMS IN THE CONTRACT AND NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

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

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 4 OF 4

DRAWN BY : M. R. ACOSTA DATE : 08/2023

CHECKED BY : T. R. LAWS DATE : 08/2023

DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

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RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1465
OVER SWIFT CREEK BETWEEN
NC 118 AND SR 1930

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

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.94	--	1.75	0.27	2.26	A	EL	17.0	0.60	1.94	A	EL	1.74	0.80	0.27	2.03	A	EL	17.0	
		HL-93(Opr)	N/A	--	2.55	--	1.35	0.27	2.93	A	EL	17.0	0.60	2.55	A	EL	1.74	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	2.25	81.00	1.75	0.27	2.98	A	EL	13.5	0.60	2.25	A	EL	1.75	0.80	0.27	2.71	A	EL	13.5	
		HS-20(Opr)	36.000	--	2.95	106.20	1.35	0.27	3.86	A	EL	13.5	0.60	2.95	A	EL	1.75	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	4.64	62.64	1.4	0.27	6.45	A	EL	17.0	0.60	5.98	A	EL	1.75	0.80	0.27	4.64	A	EL	17.0	
		SNGARBS2	20.000	--	3.98	79.60	1.4	0.27	5.47	A	EL	20.5	0.60	4.49	A	EL	1.75	0.80	0.27	3.98	A	EL	20.5	
		SNAGRIS2	22.000	--	3.94	86.68	1.4	0.27	5.42	A	EL	13.5	0.60	4.28	A	EL	1.75	0.80	0.27	3.94	A	EL	13.5	
		SNCOTTS3	27.250	--	2.32	63.22	1.4	0.27	3.23	A	EL	17.0	0.60	2.98	A	EL	1.75	0.80	0.27	2.32	A	EL	17.0	
		SNAGGRS4	34.925	--	2.15	75.09	1.4	0.27	2.99	A	EL	17.0	0.60	2.66	A	EL	1.75	0.80	0.27	2.15	A	EL	17.0	
		SNS5A	35.550	--	2.08	73.94	1.4	0.27	2.90	A	EL	17.0	0.60	2.81	A	EL	1.74	0.80	0.27	2.08	A	EL	17.0	
		SNS6A	39.950	--	2.01	80.30	1.4	0.27	2.80	A	EL	17.0	0.60	2.63	A	EL	1.74	0.80	0.27	2.01	A	EL	17.0	
		SNS7B	42.000	3	1.92	80.64	1.4	0.27	2.67	A	EL	17.0	0.60	2.70	A	EL	1.74	0.80	0.27	1.92	A	EL	17.0	
	TTST	TNAGRIT3	33.000	--	2.48	81.84	1.4	0.27	3.46	A	EL	17.0	0.60	3.10	A	EL	1.75	0.80	0.27	2.48	A	EL	17.0	
		TNT4A	33.075	--	2.48	82.03	1.4	0.27	3.45	A	EL	17.0	0.60	2.91	A	EL	1.75	0.80	0.27	2.48	A	EL	17.0	
		TNT6A	41.600	--	2.18	90.69	1.4	0.27	3.03	A	EL	17.0	0.60	2.86	A	EL	32.25	0.80	0.27	2.18	A	EL	17.0	
		TNT7A	42.000	--	2.25	94.50	1.4	0.27	3.13	A	EL	17.0	0.60	2.64	A	EL	1.75	0.80	0.27	2.25	A	EL	17.0	
		TNT7B	42.000	--	2.21	92.82	1.4	0.27	3.07	A	EL	17.0	0.60	2.56	A	EL	1.75	0.80	0.27	2.21	A	EL	17.0	
		TNAGRIT4	43.000	--	2.24	96.32	1.4	0.27	3.08	A	EL	13.5	0.60	2.45	A	EL	1.75	0.80	0.27	2.24	A	EL	17.0	
		TNAGT5A	45.000	--	2.06	92.70	1.4	0.27	2.87	A	EL	17.0	0.60	2.60	A	EL	1.74	0.80	0.27	2.06	A	EL	17.0	
		TNAGT5B	45.000	--	1.99	89.55	1.4	0.27	2.77	A	EL	17.0	0.60	2.31	A	EL	1.74	0.80	0.27	1.99	A	EL	17.0	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	2.86	82.23	1.3	0.27	4.24	A	EL	13.5	0.60	3.43	A	EL	1.75	0.80	0.27	2.86	A	EL	20.5	
		EV3	43.000	4	1.84	79.12	1.3	0.27	2.76	A	EL	17.0	0.60	2.3	A	EL	1.74	0.80	0.27	1.84	A	EL	17.0	

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. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 1 OF 3

DRAWN BY : M. R. ACOSTA DATE : 08/2023
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 35' CORED SLAB UNIT 90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
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AcostaM

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.02	--	1.75	0.274	1.05	65′	EL	32.0	0.513	1.20	65′	EL	6.4	0.80	0.274	1.02	65′	EL	32.0	
		HL-93(Opr)	N/A	--	1.36	--	1.35	0.274	1.36	65′	EL	32.0	0.513	1.56	65′	EL	6.4	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.31	47.01	1.75	0.274	1.34	65′	EL	32.0	0.513	1.48	65′	EL	6.4	0.80	0.274	1.31	65′	EL	32.0	
		HS-20(Opr)	36.000	--	1.74	62.71	1.35	0.274	1.74	65′	EL	32.0	0.513	1.92	65′	EL	6.4	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.87	38.73	1.4	0.274	3.69	65′	EL	32.0	0.513	4.33	65′	EL	6.4	0.80	0.274	2.87	65′	EL	32.0	
		SNGARBS2	20.000	--	2.17	43.42	1.4	0.274	2.79	65′	EL	32.0	0.513	3.11	65′	EL	6.4	0.80	0.274	2.17	65′	EL	32.0	
		SNAGRIS2	22.000	--	2.07	45.55	1.4	0.274	2.66	65′	EL	32.0	0.513	2.89	65′	EL	6.4	0.80	0.274	2.07	65′	EL	32.0	
		SNCOTTS3	27.250	--	1.43	38.92	1.4	0.274	1.84	65′	EL	32.0	0.513	2.17	65′	EL	6.4	0.80	0.274	1.43	65′	EL	32.0	
		SNAGGRS4	34.925	--	1.21	42.14	1.4	0.274	1.55	65′	EL	32.0	0.513	1.81	65′	EL	6.4	0.80	0.274	1.21	65′	EL	32.0	
		SNS5A	35.550	--	1.18	41.91	1.4	0.274	1.52	65′	EL	32.0	0.513	1.85	65′	EL	6.4	0.80	0.274	1.18	65′	EL	32.0	
		SNS6A	39.950	--	1.09	43.43	1.4	0.274	1.40	65′	EL	32.0	0.513	1.69	65′	EL	6.4	0.80	0.274	1.09	65′	EL	32.0	
		SNS7B	42.000	--	1.04	43.49	1.4	0.274	1.33	65′	EL	32.0	0.513	1.67	65′	EL	6.4	0.80	0.274	1.04	65′	EL	32.0	
	TTST	TNAGRIT3	33.000	--	1.33	43.80	1.4	0.274	1.71	65′	EL	32.0	0.513	2.01	65′	EL	6.4	0.80	0.274	1.33	65′	EL	32.0	
		TNT4A	33.075	--	1.34	44.14	1.4	0.274	1.72	65′	EL	32.0	0.513	1.95	65′	EL	6.4	0.80	0.274	1.33	65′	EL	32.0	
		TNT6A	41.600	--	1.10	45.61	1.4	0.274	1.41	65′	EL	32.0	0.513	1.80	65′	EL	6.4	0.80	0.274	1.10	65′	EL	32.0	
		TNT7A	42.000	--	1.11	46.40	1.4	0.274	1.42	65′	EL	32.0	0.513	1.74	65′	EL	6.4	0.80	0.274	1.10	65′	EL	32.0	
		TNT7B	42.000	--	1.15	48.30	1.4	0.274	1.48	65′	EL	32.0	0.513	1.62	65′	EL	6.4	0.80	0.274	1.15	65′	EL	32.0	
		TNAGRIT4	43.000	--	1.09	46.82	1.4	0.274	1.40	65′	EL	32.0	0.513	1.57	65′	EL	6.4	0.80	0.274	1.09	65′	EL	32.0	
		TNAGT5A	45.000	--	1.02	46.08	1.4	0.274	1.32	65′	EL	32.0	0.513	1.57	65′	EL	6.4	0.80	0.274	1.02	65′	EL	32.0	
		TNAGT5B	45.000	3	1.01	45.43	1.4	0.274	1.30	65′	EL	32.0	0.513	1.49	65′	EL	6.4	0.80	0.274	1.01	65′	EL	32.0	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	1.70	48.88	1.3	0.274	2.12	65′	EL	32.0	0.513	2.33	65′	EL	6.4	0.80	0.274	1.70	65′	EL	32.0	
		EV3	43.000	4	1.11	47.73	1.3	0.274	1.38	65′	EL	32.0	0.513	1.57	65′	EL	6.4	0.80	0.274	1.11	65′	EL	32.0	

LOAD FACTORS:

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

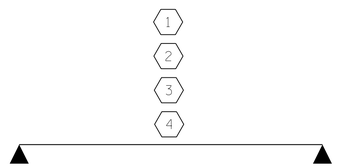
⟨3⟩ LEGAL LOAD RATING **

⟨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 'B'

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER MATTHEW R. ACOSTA

3/27/2026

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919-926-4100 FAX 919-846-9080
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North Carolina License Nos. 50073 * F-0493 * C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 65′ CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. R. ACOSTA DATE : 08/2023
CHECKED BY : T. R. LAWS DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

2/20/2026
X:\P\1034045005_Div 2 LIBR Bridge 240043\Design\Structures\CAD\401_011_BP2_R022_SMU_LRFR_S-6_240043.dgn
AcostaM

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	(1)	1.42	--	1.75	0.27	1.72	A	EL	19.5	0.58	1.83	A	EL	37.26	0.80	0.27	1.42	A	EL	19.5	
		HL-93(Opr)	N/A	--	2.22	--	1.35	0.27	2.22	A	EL	19.5	0.58	2.40	A	EL	37.26	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	(2)	1.78	64.08	1.75	0.27	2.15	A	EL	19.5	0.58	2.15	A	EL	1.74	0.80	0.27	1.78	A	EL	19.5	
		HS-20(Opr)	36.000	--	2.79	100.44	1.35	0.27	2.79	A	EL	19.5	0.58	2.82	A	EL	1.74	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.28	44.28	1.4	0.27	4.97	A	EL	19.5	0.58	5.97	A	EL	37.25	0.80	0.27	3.28	A	EL	19.5	
		SNGARBS2	20.000	--	2.73	54.60	1.4	0.27	4.12	A	EL	15.5	0.58	4.41	A	EL	1.74	0.80	0.27	2.73	A	EL	19.5	
		SNAGRIS2	22.000	--	2.71	59.62	1.4	0.27	4.03	A	EL	15.5	0.58	4.16	A	EL	1.74	0.80	0.27	2.71	A	EL	15.5	
		SNCOTTS3	27.250	--	1.64	44.69	1.4	0.27	2.48	A	EL	19.5	0.58	2.94	A	EL	1.74	0.80	0.27	1.64	A	EL	19.5	
		SNAGGRS4	34.925	--	1.48	51.69	1.4	0.27	2.24	A	EL	19.5	0.58	2.55	A	EL	1.74	0.80	0.27	1.48	A	EL	19.5	
		SNS5A	35.550	--	1.44	51.19	1.4	0.27	2.18	A	EL	19.5	0.58	2.66	A	EL	1.74	0.80	0.27	1.44	A	EL	19.5	
		SNS6A	39.950	--	1.37	54.73	1.4	0.27	2.07	A	EL	19.5	0.58	2.48	A	EL	1.74	0.80	0.27	1.37	A	EL	19.5	
		SNS7B	42.000	(3)	1.30	54.60	1.4	0.27	1.97	A	EL	19.5	0.58	2.52	A	EL	1.74	0.80	0.27	1.30	A	EL	19.5	
	TTST	TNAGRIT3	33.000	--	1.68	55.44	1.4	0.27	2.55	A	EL	19.5	0.58	2.94	A	EL	1.74	0.80	0.27	1.68	A	EL	19.5	
		TNT4A	33.075	--	1.70	56.23	1.4	0.27	2.58	A	EL	19.5	0.58	2.79	A	EL	1.74	0.80	0.27	1.70	A	EL	19.5	
		TNT6A	41.600	--	1.45	60.32	1.4	0.27	2.19	A	EL	19.5	0.58	2.72	A	EL	1.74	0.80	0.27	1.45	A	EL	19.5	
		TNT7A	42.000	--	1.48	62.16	1.4	0.27	2.24	A	EL	19.5	0.58	2.51	A	EL	1.74	0.80	0.27	1.48	A	EL	19.5	
		TNT7B	42.000	--	1.52	63.84	1.4	0.27	2.29	A	EL	19.5	0.58	2.40	A	EL	37.26	0.80	0.27	1.52	A	EL	19.5	
		TNAGRIT4	43.000	--	1.47	63.21	1.4	0.27	2.23	A	EL	19.5	0.58	2.31	A	EL	1.74	0.80	0.27	1.47	A	EL	19.5	
		TNAGT5A	45.000	--	1.36	61.20	1.4	0.27	2.06	A	EL	19.5	0.58	2.40	A	EL	1.74	0.80	0.27	1.36	A	EL	19.5	
		TNAGT5B	45.000	--	1.33	59.85	1.4	0.27	2.01	A	EL	19.5	0.58	2.18	A	EL	1.74	0.80	0.27	1.33	A	EL	19.5	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	1.97	56.64	1.3	0.27	3.18	A	EL	15.5	0.58	3.33	A	EL	37.26	0.80	0.27	1.97	A	EL	19.5	
		EV3	43.000	(4)	1.26	54.18	1.3	0.27	2.05	A	EL	19.5	0.58	2.22	A	EL	37.26	0.80	0.27	1.26	A	EL	19.5	

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)

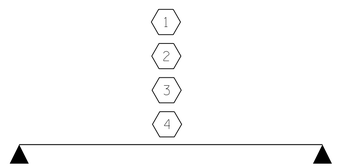
(3) LEGAL LOAD RATING **

(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 'C'

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 3 OF 3

DRAWN BY : M. R. ACOSTA DATE : 08/2023
CHECKED BY : T. R. LAWS DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

2/20/2026
X:\P\1034045005_Div 2 LIBR Bridge 240043\Design\Structures\CAD\401_013_BP2_R022_SMU_LRFR_S-7_240043.dgn
AcostaM

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NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER MATTHEW R. ACOSTA
3/27/2026

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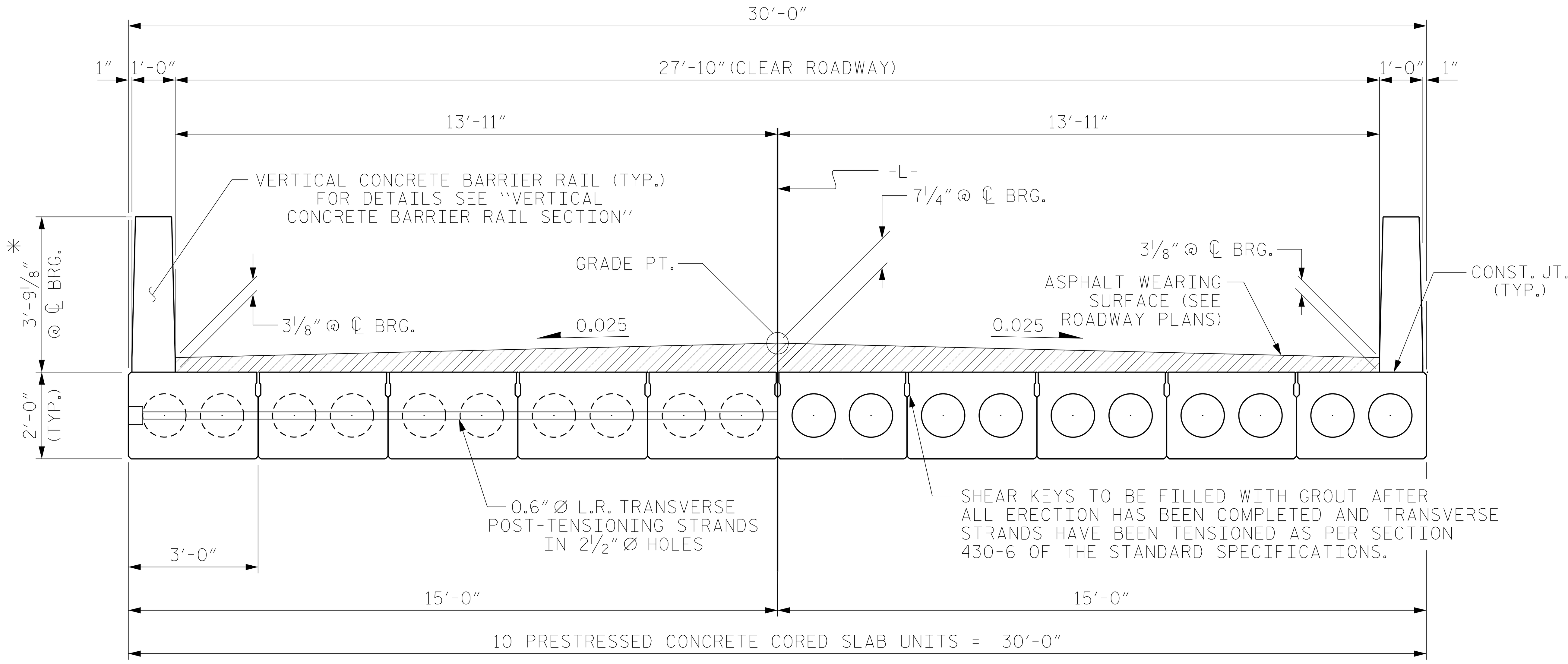
www.rsandh.com
North Carolina License Nos. 50073 * F-0493 * C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 40' CORED SLAB UNIT 90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			25

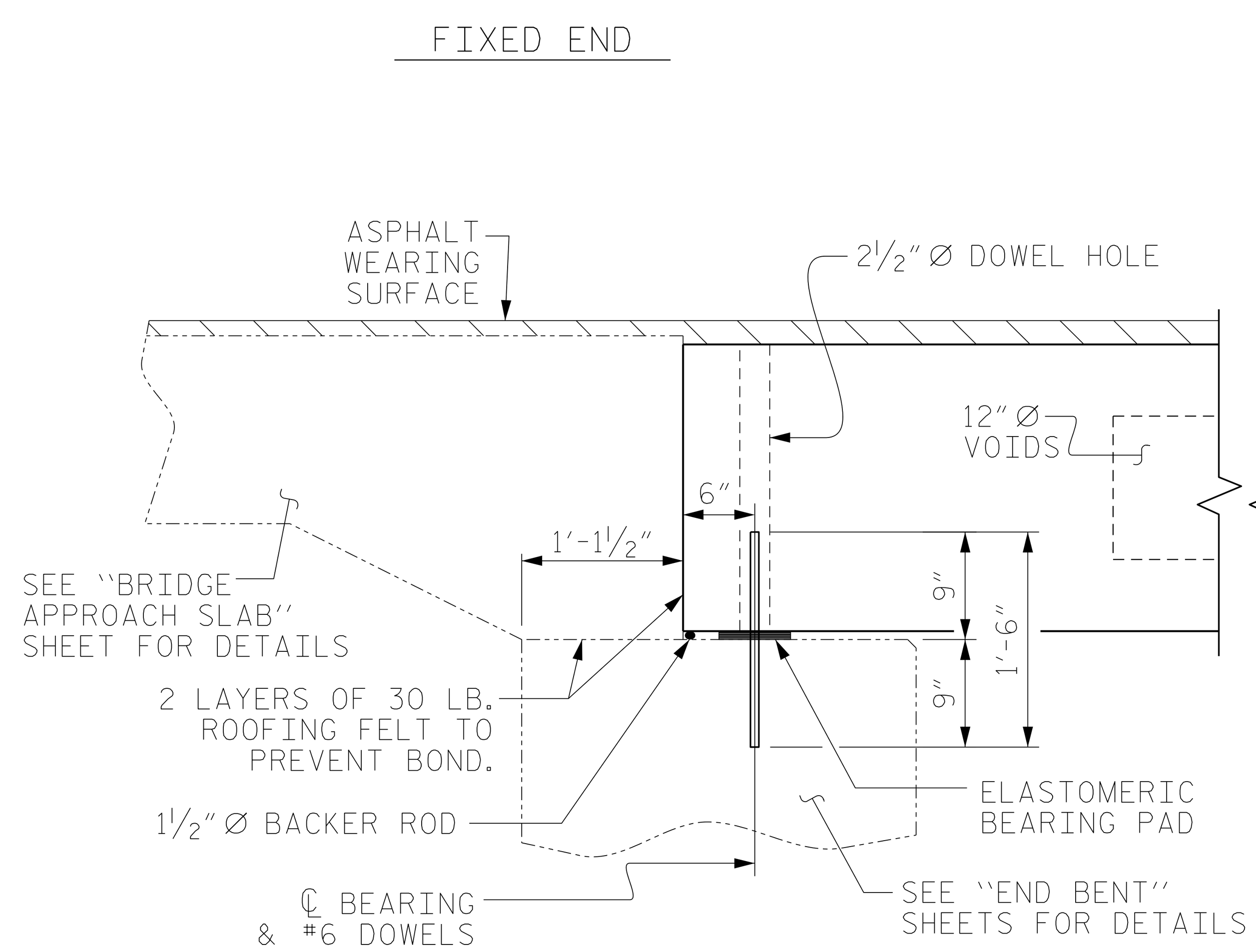


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

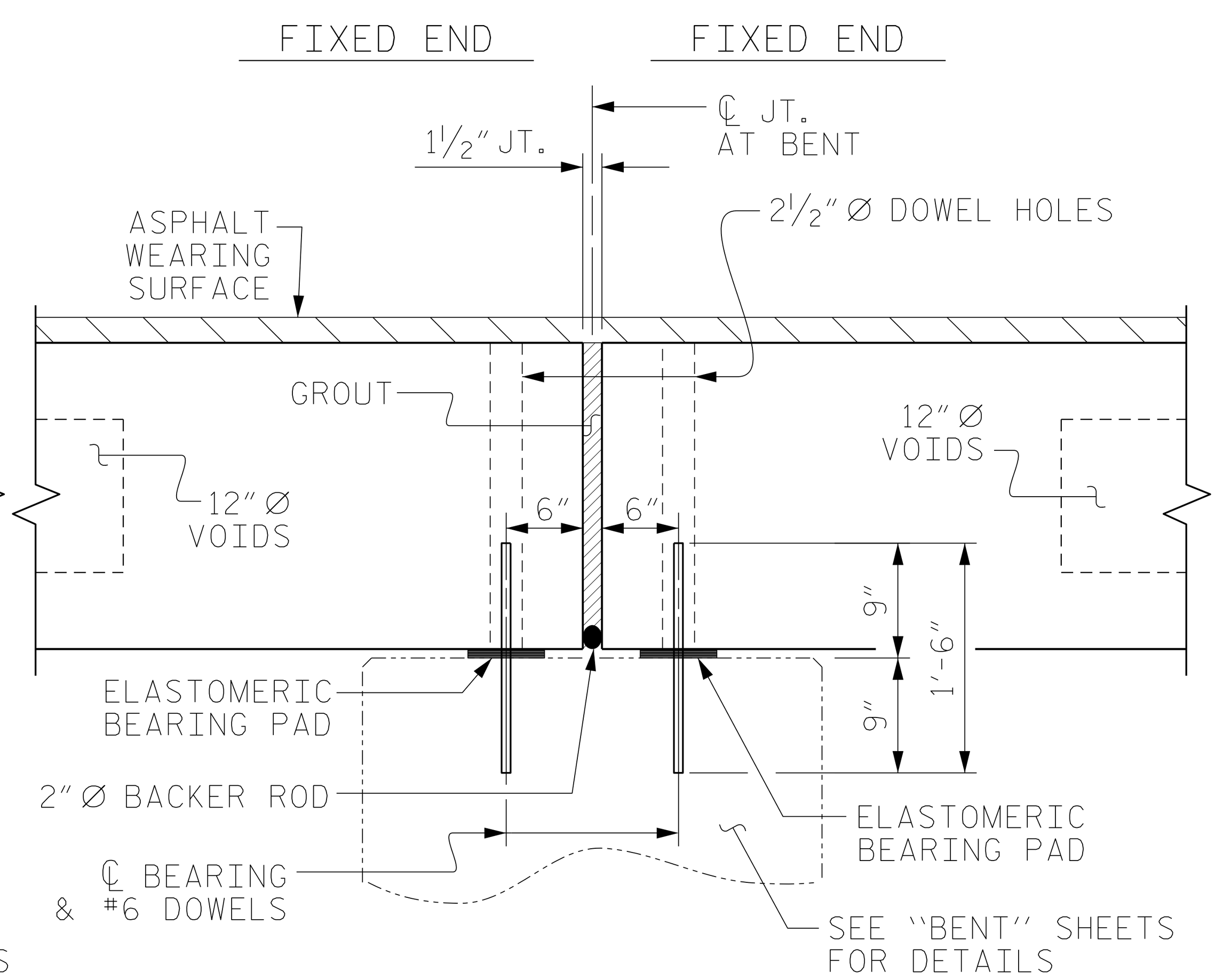
TYPICAL SECTION

HALF SECTION
THROUGH VOIDS

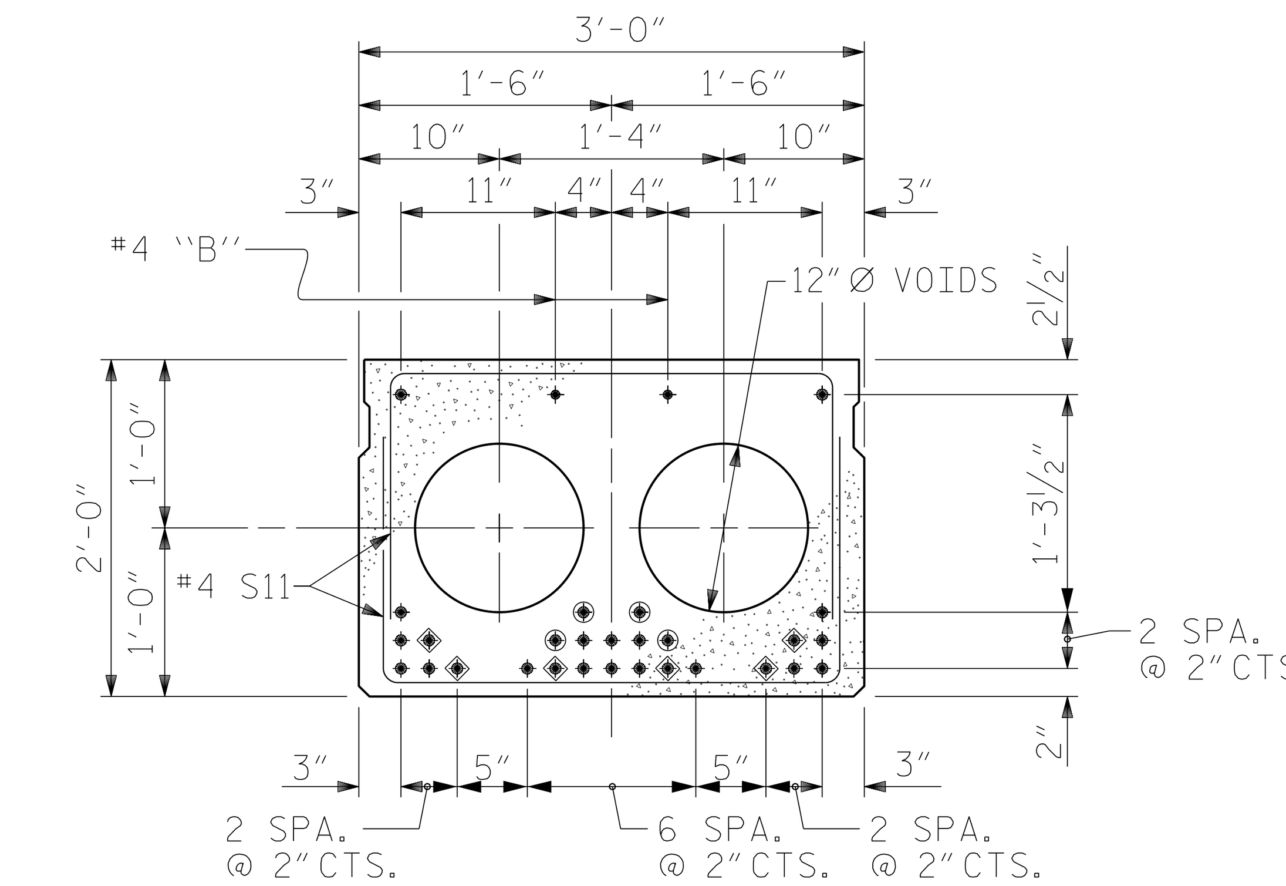
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



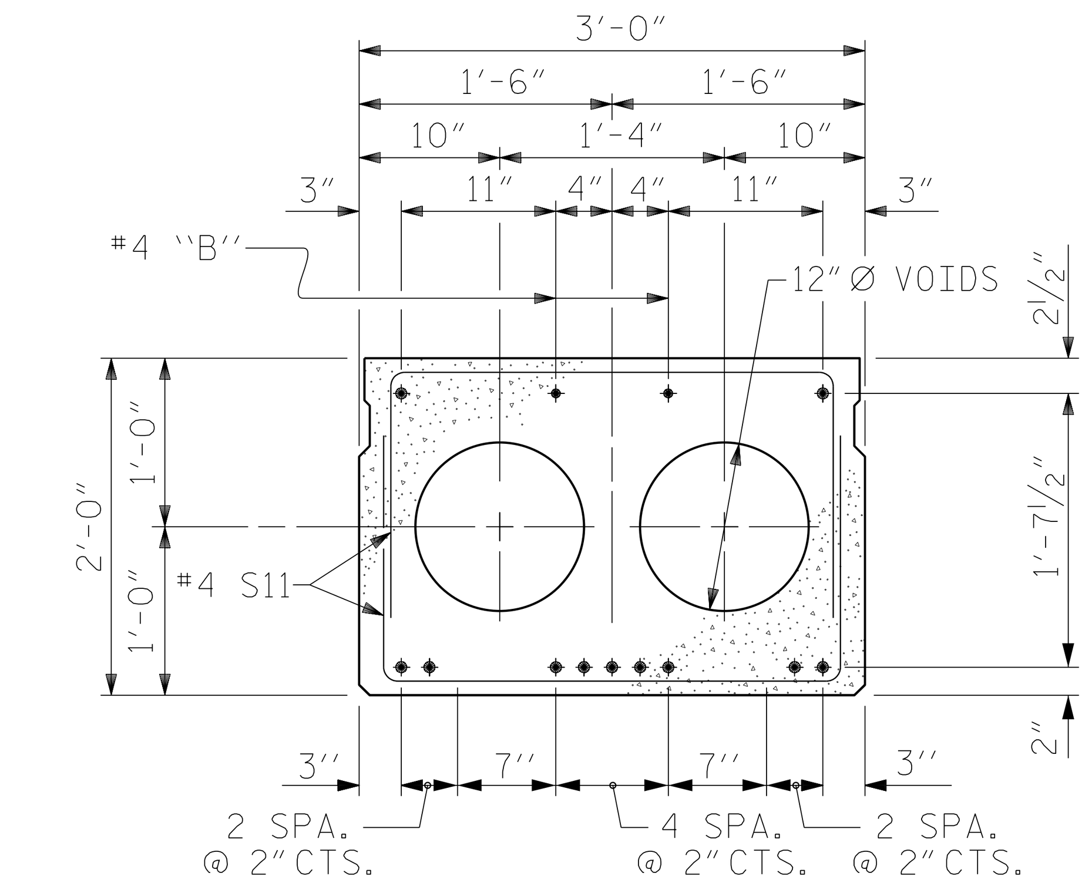
SECTION AT END BENT



SECTION AT BENT

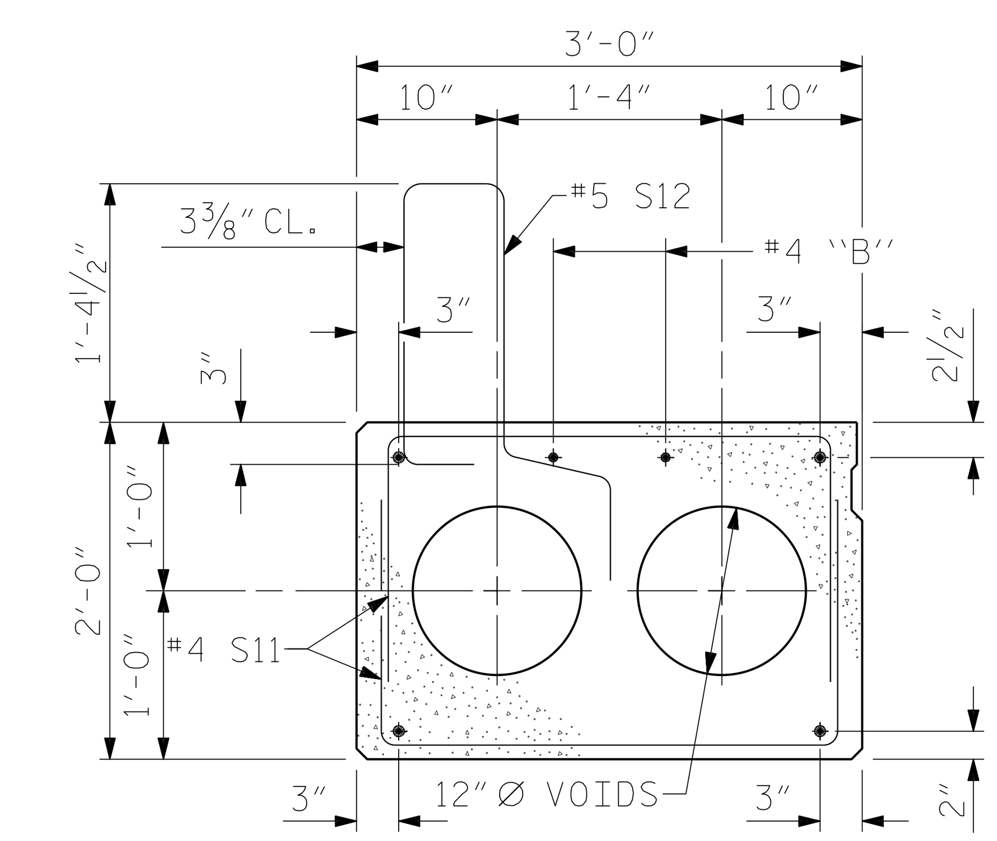


INTERIOR SLAB SECTION (65' UNIT)
(24 STRANDS REQUIRED)



INTERIOR SLAB SECTION (35' & 40' UNITS)
(11 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

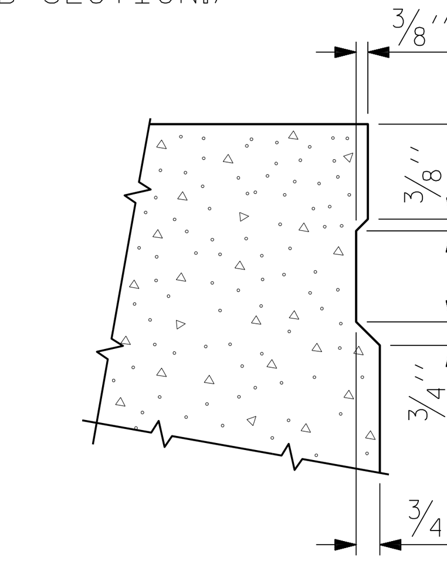


EXTERIOR SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

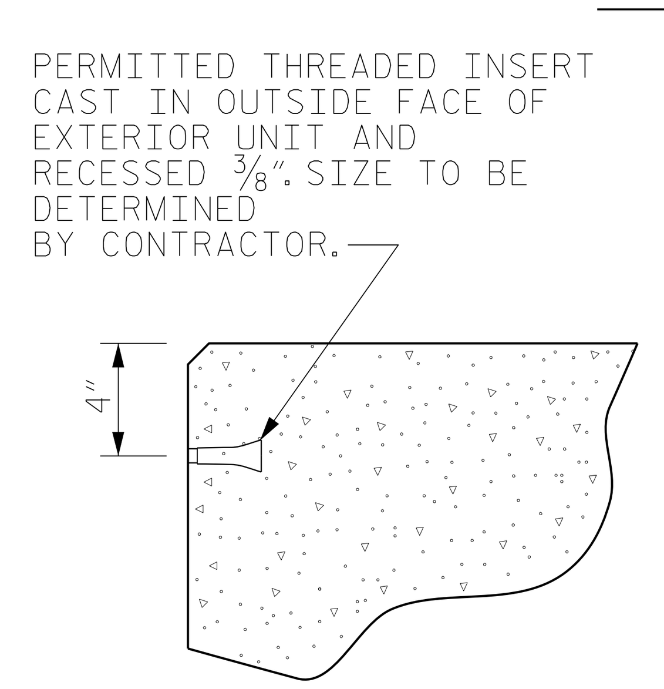
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

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

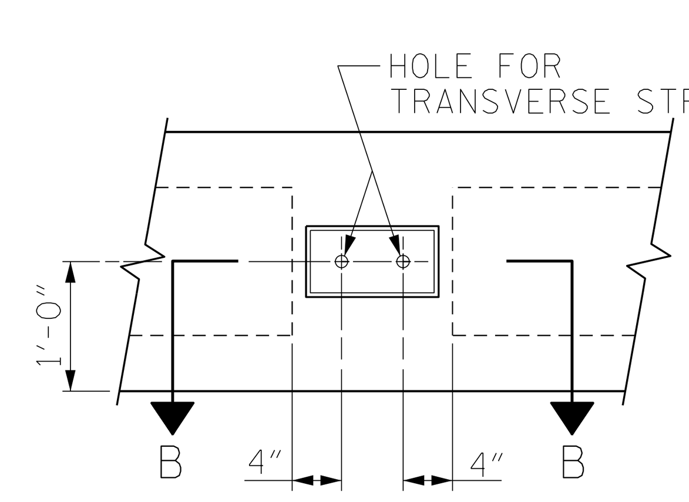
DEBONDING LEGEND



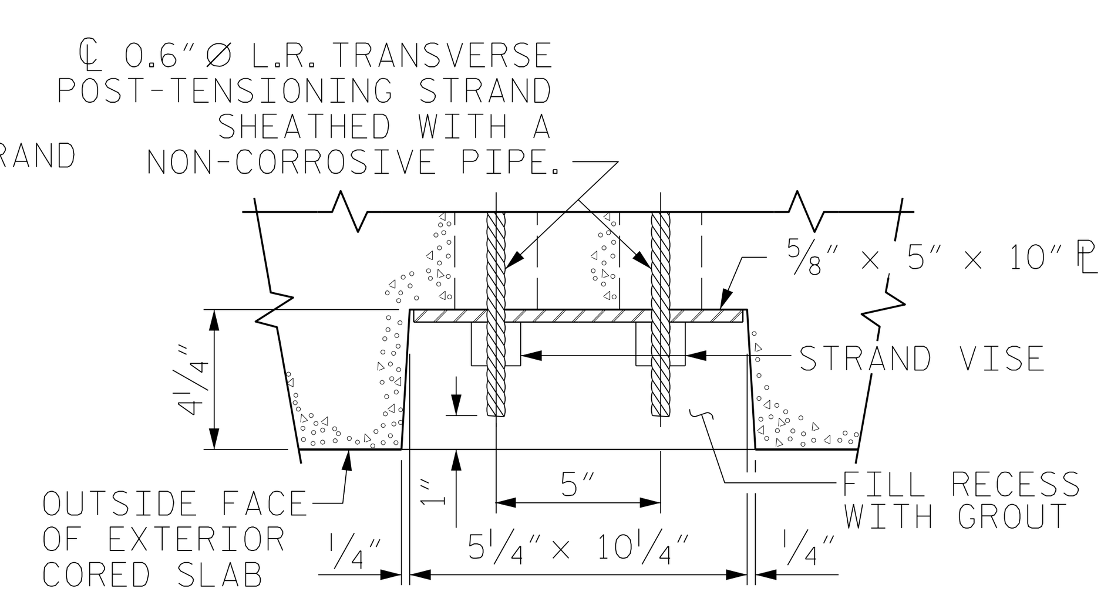
SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



THREADED INSERT DETAIL

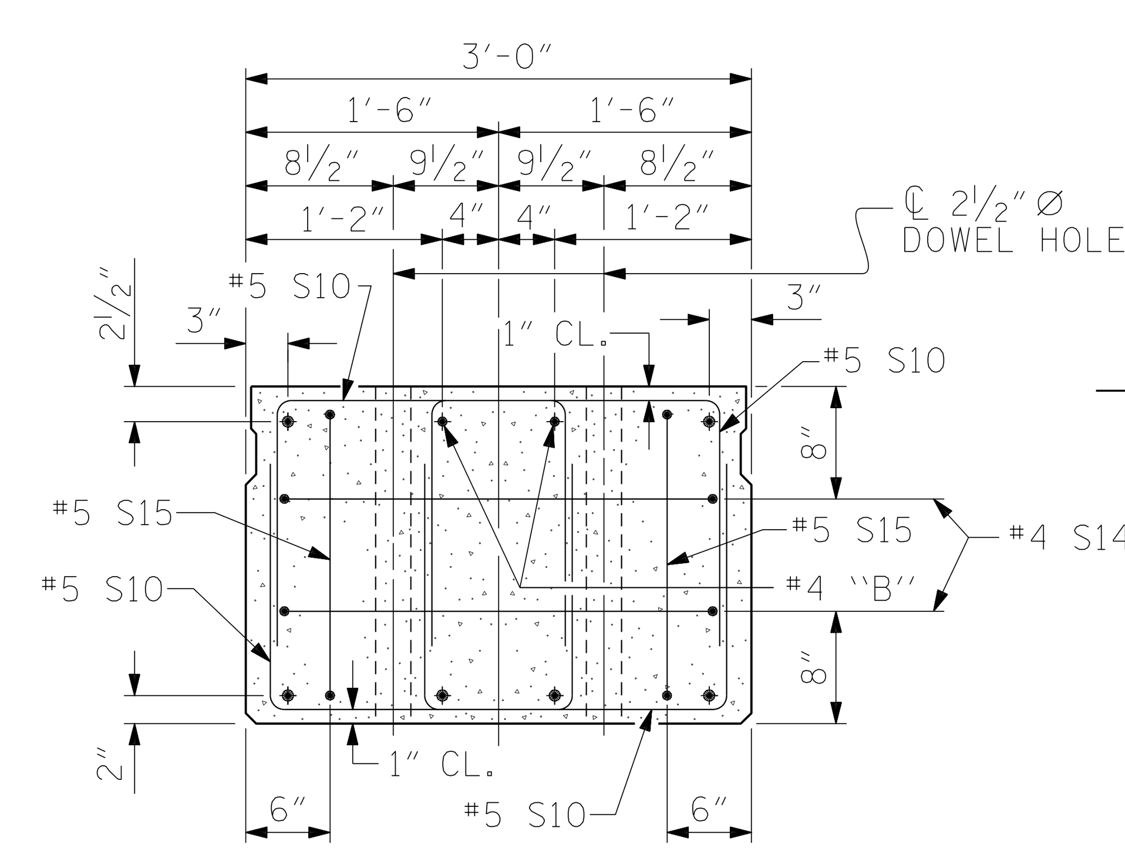


ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND• 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.

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 1 OF 6

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052672
3/27/2026

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RS&H Architects-Engineers-Planners, Inc.
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North Carolina License Nos. 50073 * F-0493 * C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

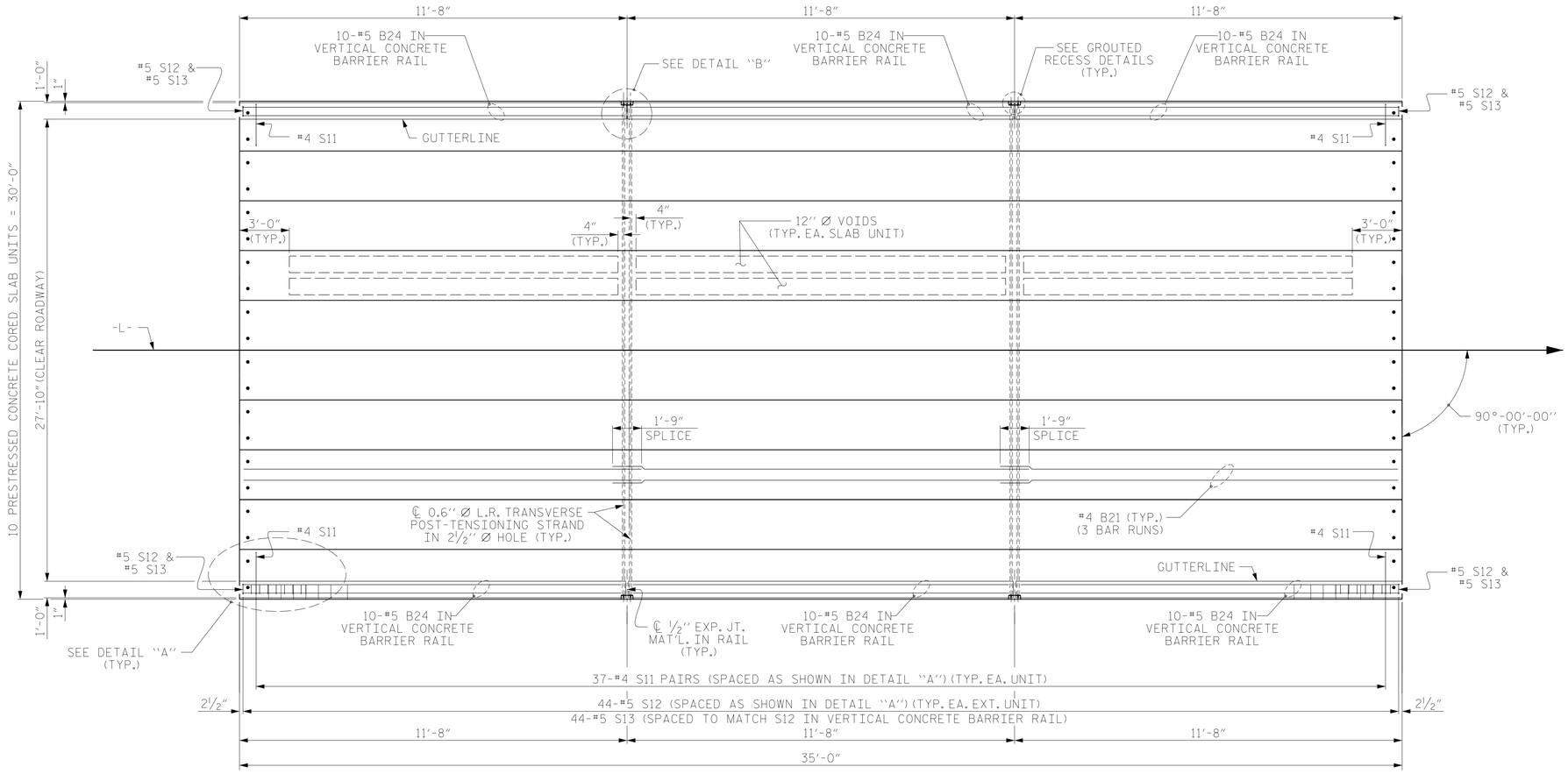
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-8
TOTAL SHEETS 25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

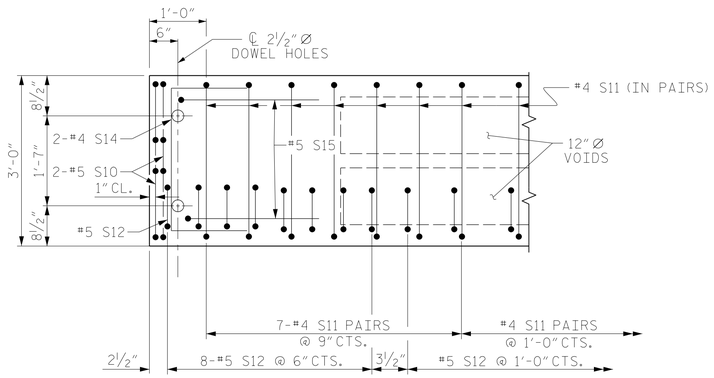
DRAWN BY : M. R. ACOSTA DATE : 08/2023
CHECKED BY : T. R. LAWS DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

2/20/2026
X:\P\1034045005_Div 2 LIBR Bridge 240043\Design\Structures\CAD\401_015_BP2.R022_SMU_CS_S-8_240043.dgn
AcostaM



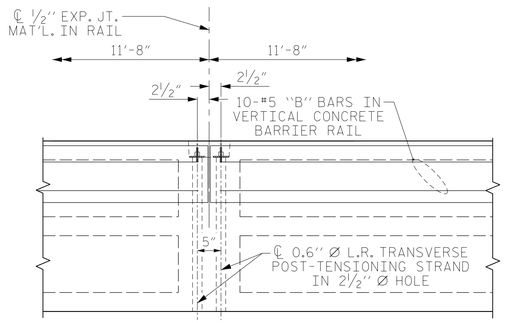
PLAN OF UNIT

(SPAN A)



DETAIL "A"

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



DETAIL "B"

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

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 2 OF 6

DRAWN BY : M. R. ACOSTA DATE : 08/2023
CHECKED BY : T. R. LAWS DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

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NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER TIMOTHY R. LAWS
3/27/2026

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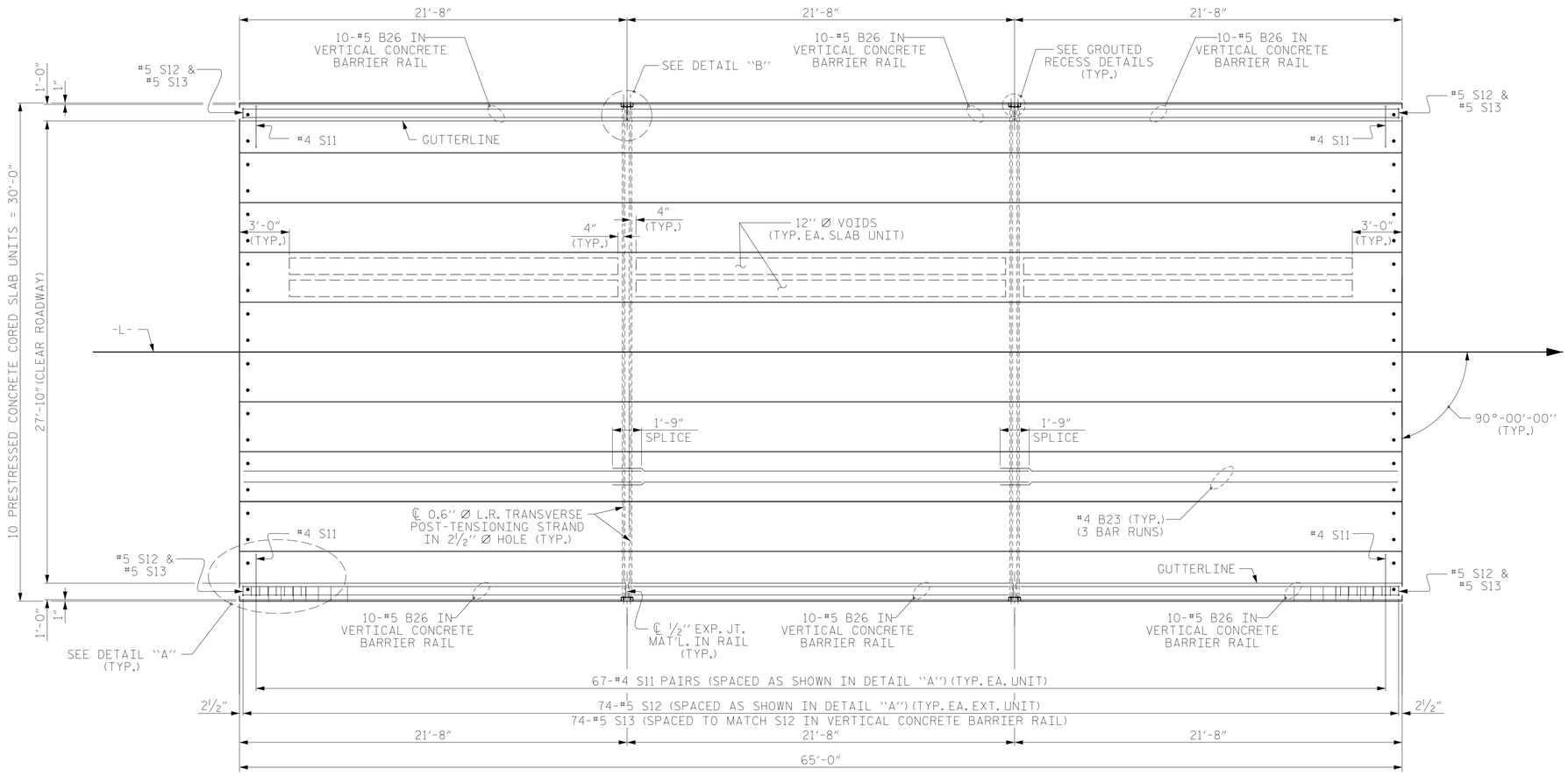
North Carolina License Nos. 50073 • F-0493 • C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

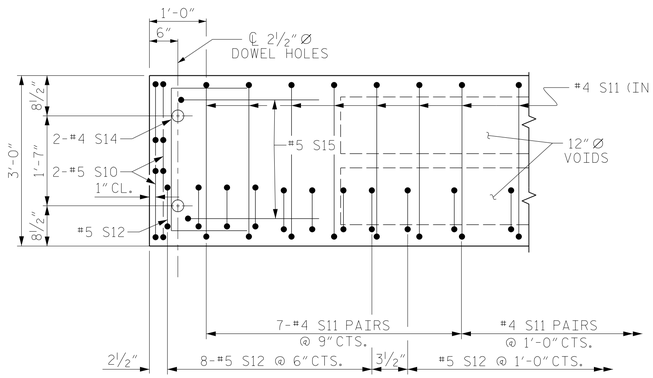
PLAN OF 35′ UNIT 27′-10″ CLEAR ROADWAY 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			25



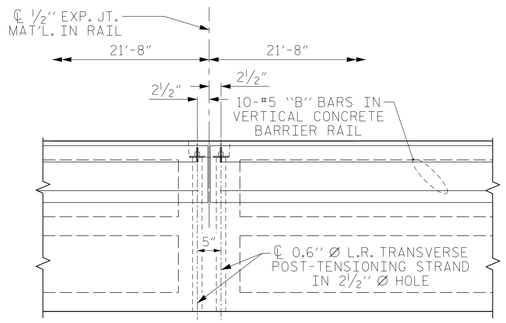
PLAN OF UNIT

(SPAN B)



DETAIL "A"

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



DETAIL "B"

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

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 3 OF 6

DRAWN BY : M. R. ACOSTA	DATE : 08/2023
CHECKED BY : T. R. LAWS	DATE : 08/2023
DESIGN ENGINEER OF RECORD: M. R. ACOSTA	DATE : 03/2026

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STATE OF NORTH CAROLINA
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RALEIGH

PLAN OF 65′ UNIT 27′-10″ CLEAR ROADWAY 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			25

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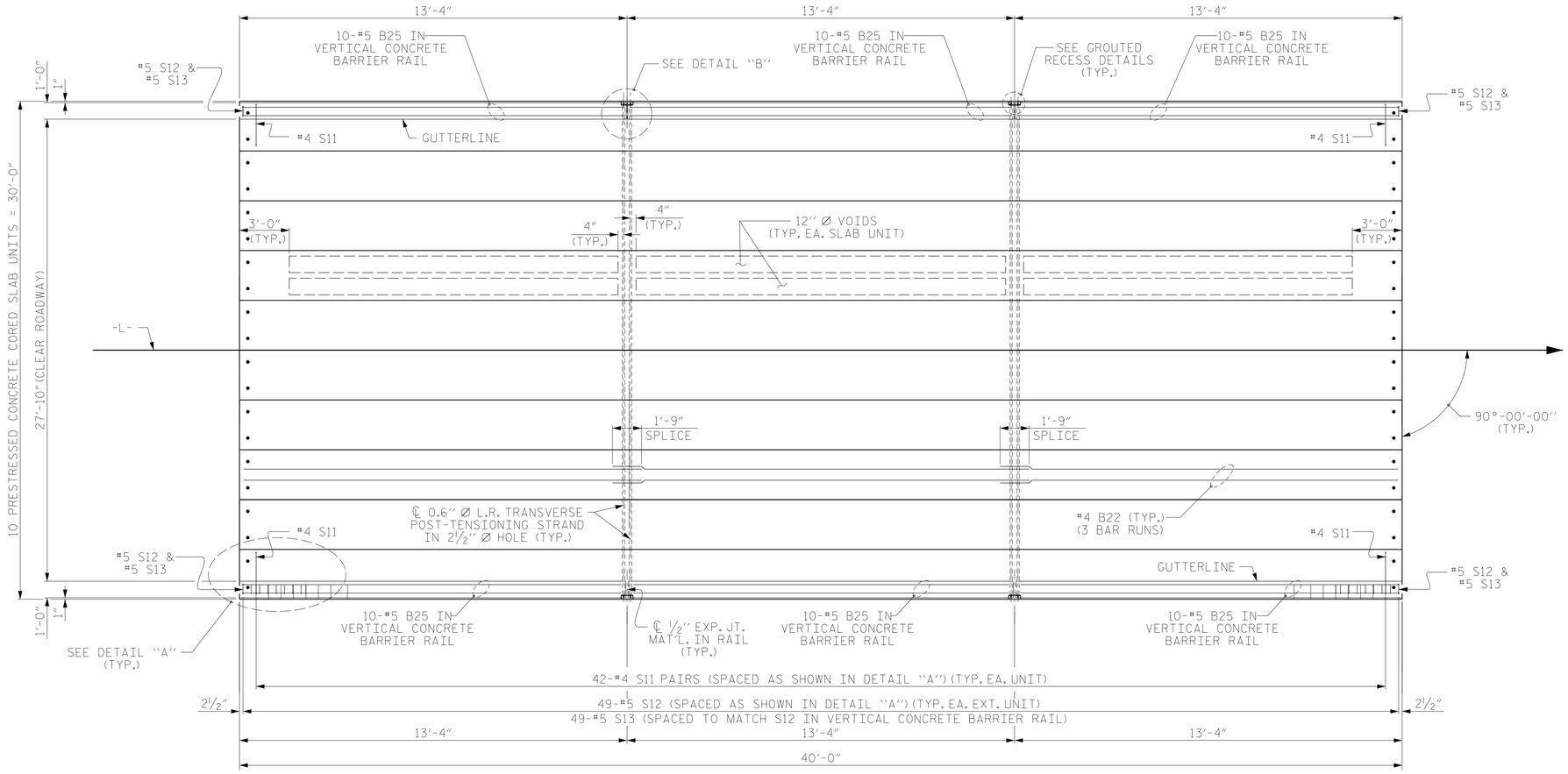
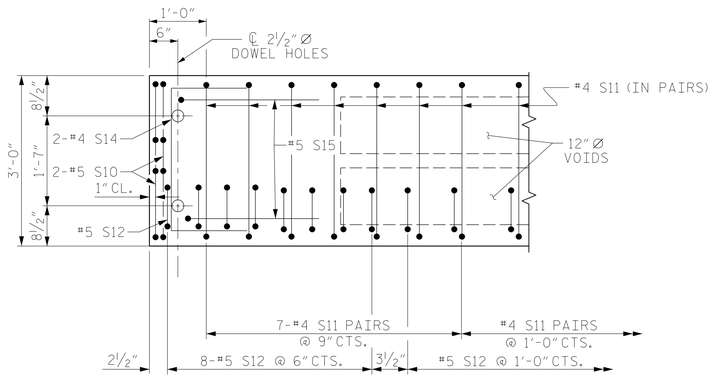
STD. NO. 24PCS_30_90S_65L



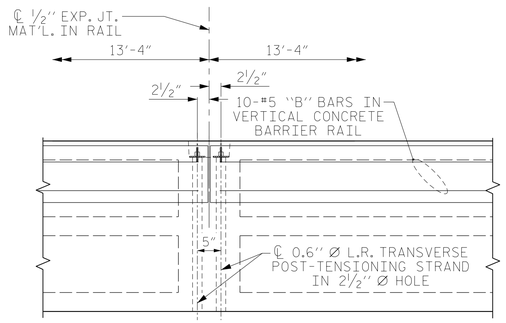
PLAN OF UNIT

(SPAN C)



DETAIL "A"

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



DETAIL "B"

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

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 4 OF 6

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STATE OF NORTH CAROLINA
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RALEIGH

PLAN OF 40′ UNIT 27′-10″ CLEAR ROADWAY 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			25

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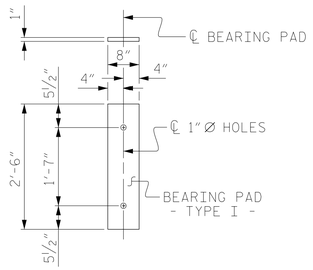
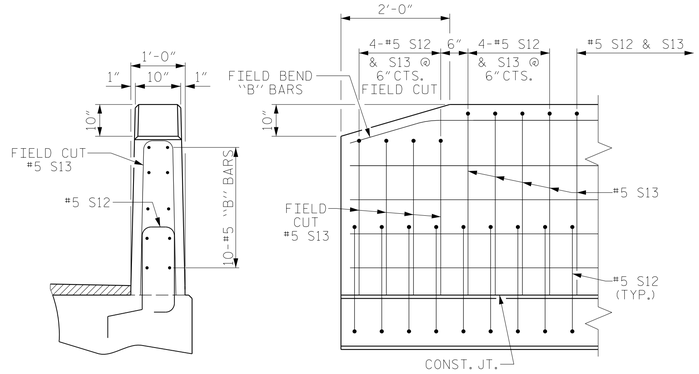


FIXED END
(TYPE I - 60 REQ'D)

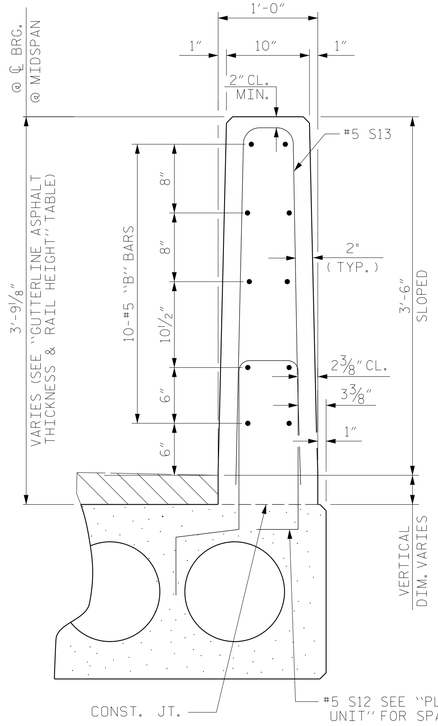
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

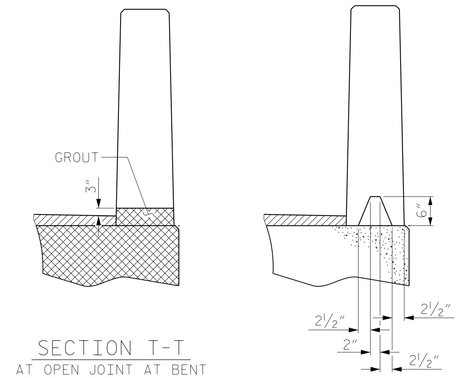


END VIEW SIDE VIEW

END OF RAIL DETAILS

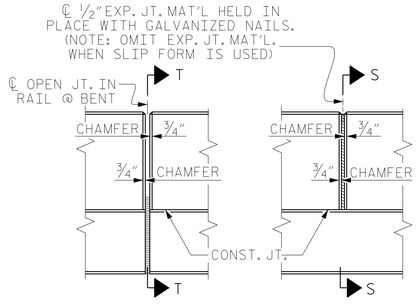


SECTION THRU RAIL



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

VERTICAL CONCRETE BARRIER RAIL DETAILS

NOTES

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

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

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

THE 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.

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 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.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 5 OF 6

DRAWN BY : M. R. ACOSTA DATE : 08/2023
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			25

2/20/2026
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BILL OF MATERIAL FOR ONE 35′ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B21	6	#4	STR	12′-9″	51	12′-9″	51
S10	8	#5	3	4′-9″	40	4′-9″	40
S11	74	#4	3	5′-10″	288	5′-10″	288
✳S12	44	#5	1	5′-7″	256		
S14	4	#4	3	5′-7″	15	5′-7″	15
S15	4	#5	3	7′-1″	30	7′-1″	30
REINFORCING STEEL			LBS.		424		424
✳EPOXY COATED REINFORCING STEEL			LBS.		256		
5000 P.S.I. CONCRETE			CU. YDS.		3		3
0.6″ Ø L.R. STRANDS			No.		11		11

BILL OF MATERIAL FOR ONE 40′ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	14′-6″	58	14′-6″	58
S10	8	#5	3	4′-9″	40	4′-9″	40
S11	84	#4	3	5′-10″	327	5′-10″	327
✳S12	49	#5	1	5′-7″	285		
S14	4	#4	3	5′-7″	15	5′-7″	15
S15	4	#5	3	7′-1″	30	7′-1″	30
REINFORCING STEEL			LBS.		470		470
✳EPOXY COATED REINFORCING STEEL			LBS.		285		
5000 P.S.I. CONCRETE			CU. YDS.				
0.6″ Ø L.R. STRANDS			No.		11		11

BILL OF MATERIAL FOR ONE 65′ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B23	6	#4	STR	22′-10″	92	22′-10″	92
S10	8	#5	3	4′-9″	40	4′-9″	40
S11	134	#4	3	5′-10″	522	5′-10″	522
✳S12	74	#5	1	5′-7″	431		
S14	4	#4	3	5′-7″	15	5′-7″	15
S15	4	#5	3	7′-1″	30	7′-1″	30
REINFORCING STEEL			LBS.		699		699
✳EPOXY COATED REINFORCING STEEL			LBS.		431		
6000 P.S.I. CONCRETE			CU. YDS.		30		30
0.6″ Ø L.R. STRANDS			No.		24		24

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	35′ UNIT					
✳B24	60	60	#5	STR	11′-4″	709
✳S13	88	88	#5	2	7′-2″	658
✳EPOXY COATED REINFORCING STEEL				LBS.		1367
CLASS AA CONCRETE				CU.YDS.		9.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		70.13

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	40′ UNIT					
✳B25	60	60	#5	STR	13′-0″	814
✳S13	98	98	#5	2	7′-2″	733
✳EPOXY COATED REINFORCING STEEL				LBS.		1547
CLASS AA CONCRETE				CU.YDS.		10.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		80.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	65′ UNIT					
✳B26	60	60	#5	STR	21′-3″	1330
✳S13	148	148	#5	2	7′-2″	1106
✳EPOXY COATED REINFORCING STEEL				LBS.		2436
CLASS AA CONCRETE				CU.YDS.		16.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		130.13

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 2′-0″
35′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/8″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/16″ ↓
FINAL CAMBER	5/16″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 2′-0″
40′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/16″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/8″ ↓
FINAL CAMBER	5/16″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 2′-0″
65′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 7/8″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/2″ ↓
FINAL CAMBER	1 3/8″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH

UNIT	PSI
35′ & 40′ UNITS	4000
65′ UNITS	4800

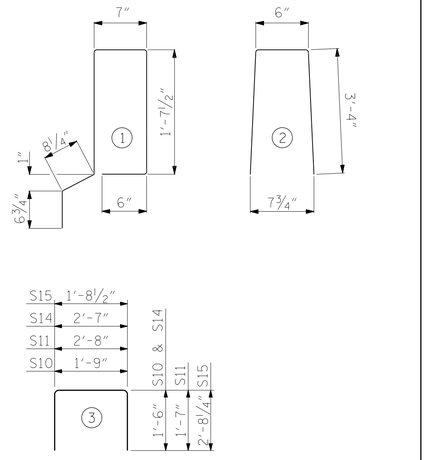
CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
35′ UNIT			
EXTERIOR C.S.	2	35′-0″	70′-0″
INTERIOR C.S.	8	35′-0″	280′-0″
TOTAL	10	35′-0″	350′-0″
40′ UNIT			
EXTERIOR C.S.	2	40′-0″	80′-0″
INTERIOR C.S.	8	40′-0″	320′-0″
TOTAL	10	40′-0″	400′-0″
65′ UNIT			
EXTERIOR C.S.	2	65′-0″	130′-0″
INTERIOR C.S.	8	65′-0″	520′-0″
TOTAL	10	65′-0″	650′-0″

GRADE 270 STRANDS

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
35′ UNITS	2 13/16″	3′-8 13/16″
40′ UNITS	2 13/16″	3′-8 13/16″
65′ UNITS	1¾″	3′-7¾″

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 050672 ENGINEER MATTHEW R. LAWS

3/27/2026

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			25

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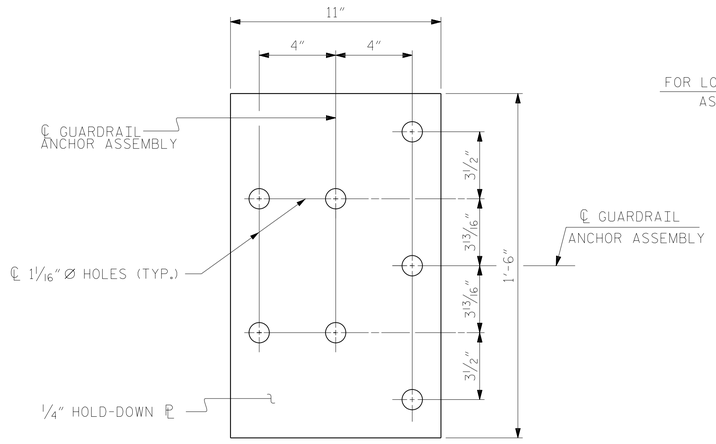
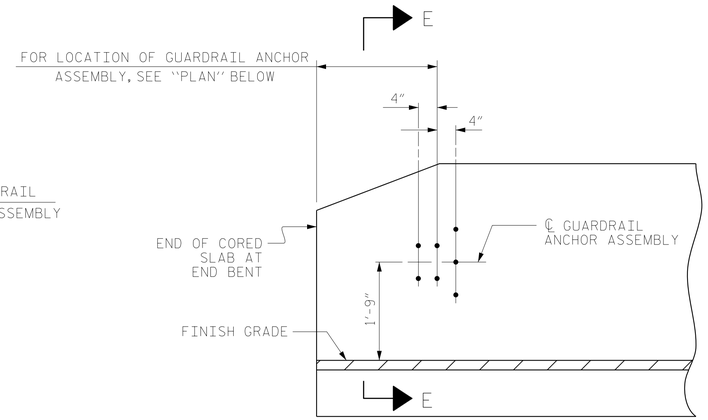


PLAN



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.)

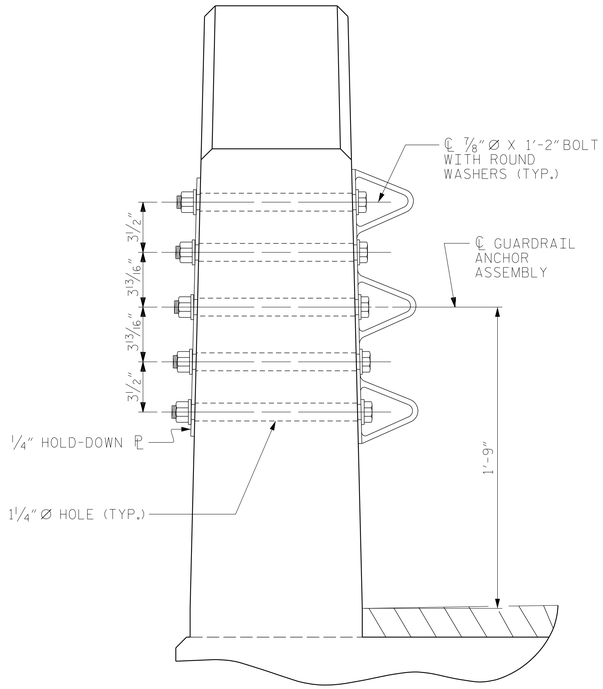
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

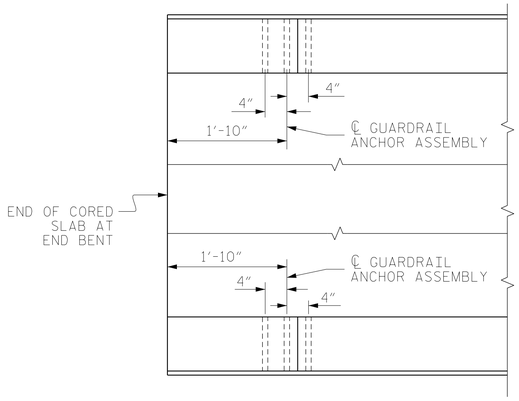
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR.

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

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3/27/2026

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RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			25

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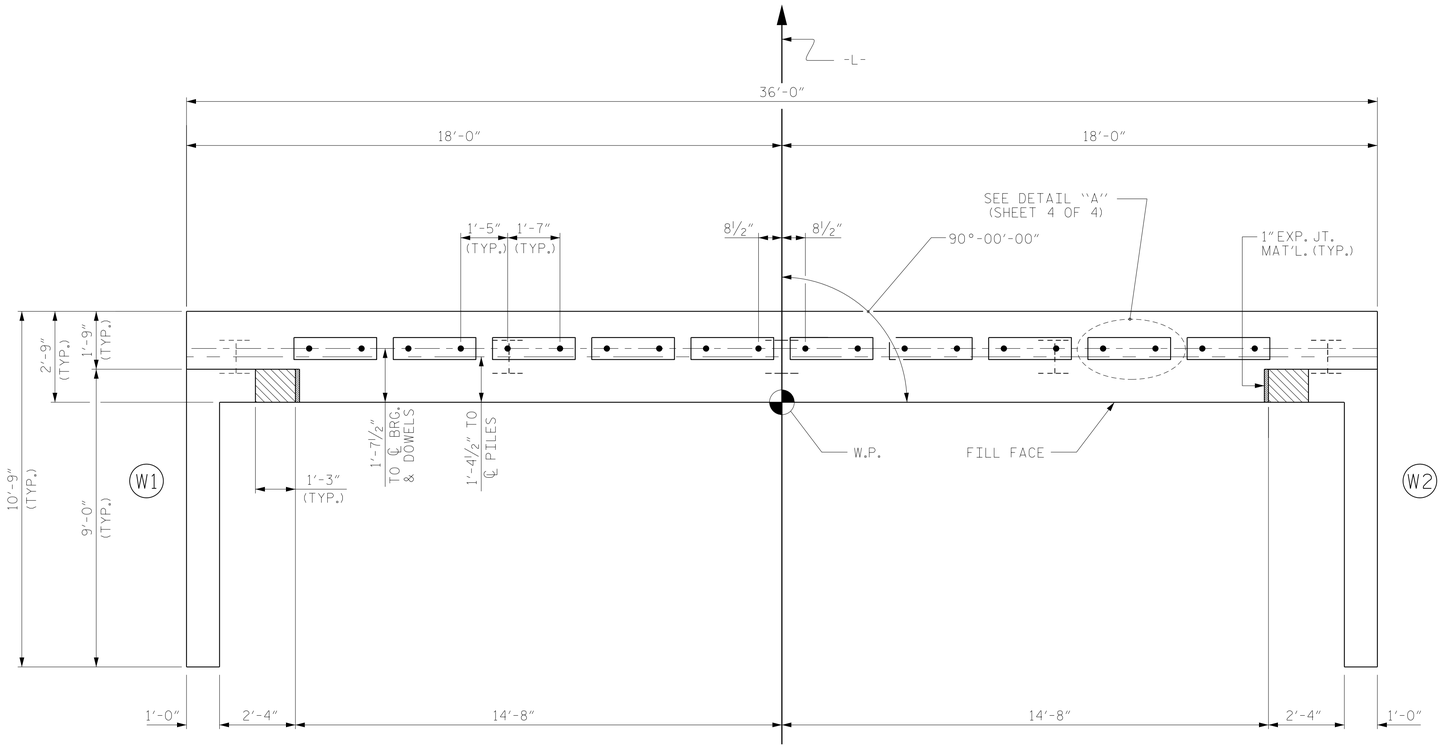
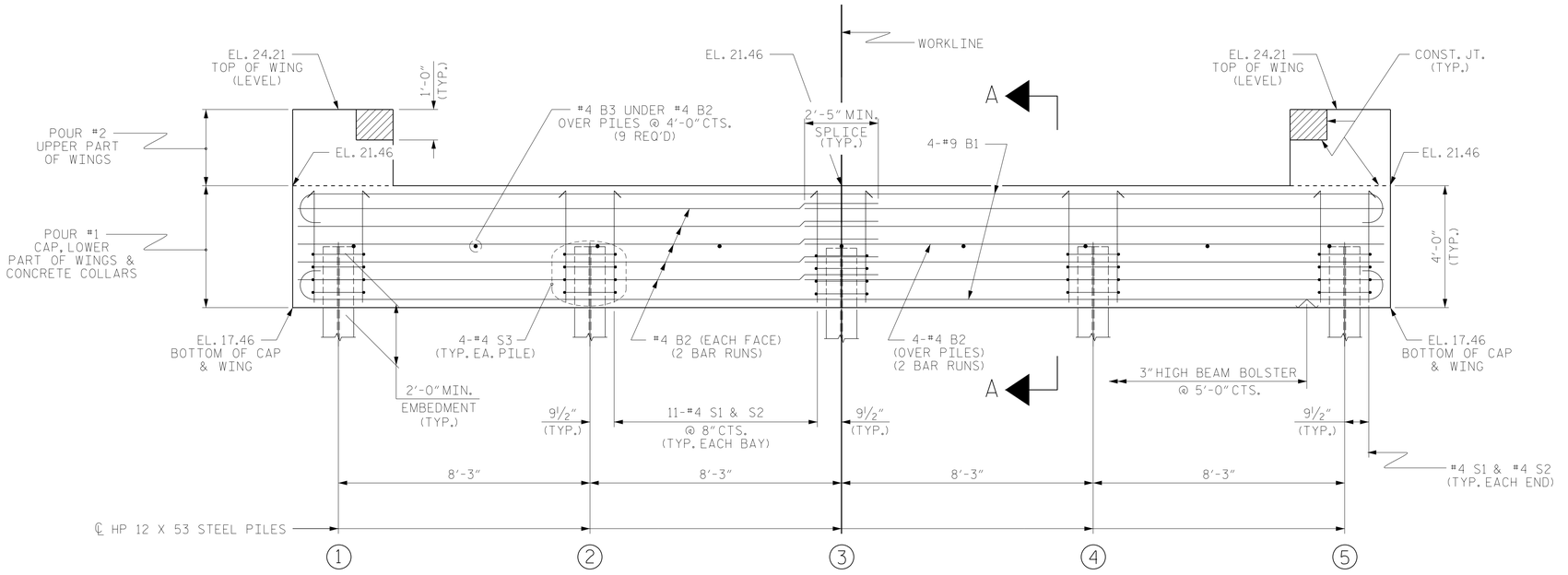
(SHT 1) STD. NO. GRA3



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.

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 1 OF 4

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SUBSTRUCTURE

END BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			25

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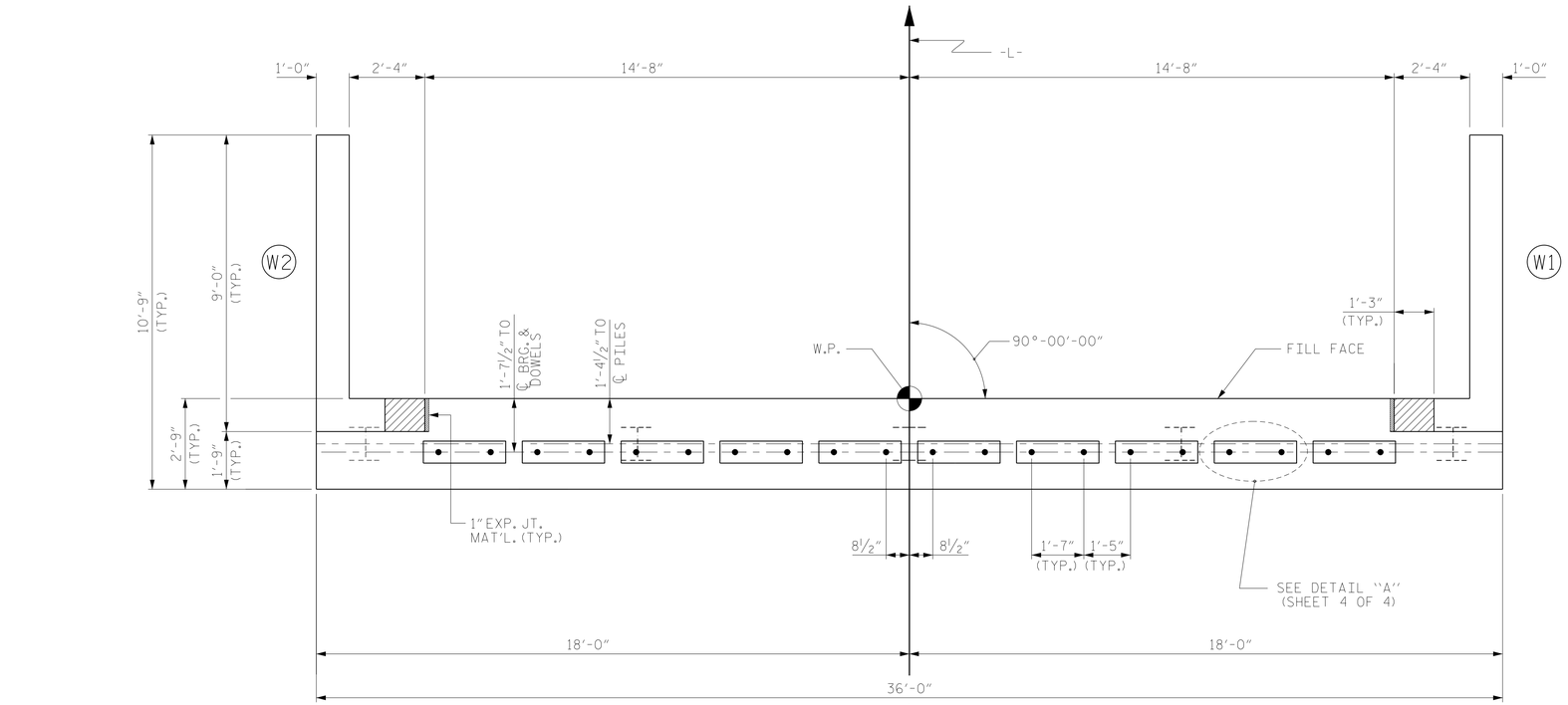
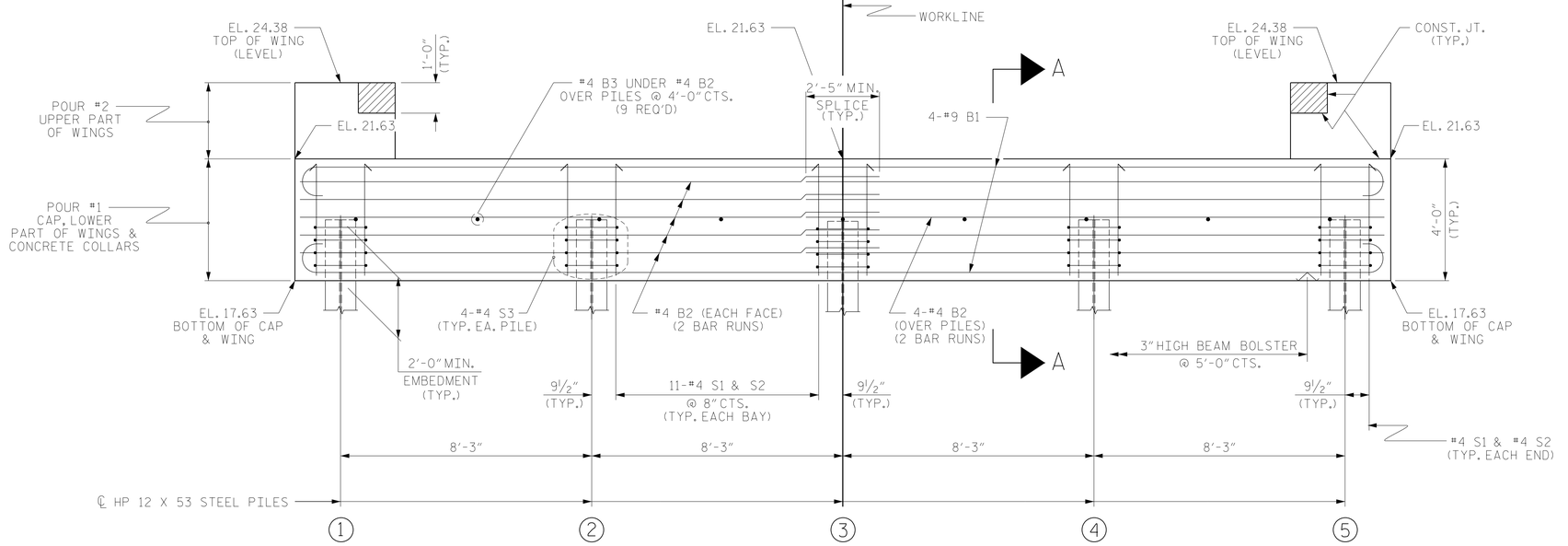
STD. NO. EB_30_90S4



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.

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 2 OF 4

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SUBSTRUCTURE

END BENT NO. 2

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			25

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DESIGN ENGINEER OF RECORD: M. R. ACOSTA DATE : 03/2026

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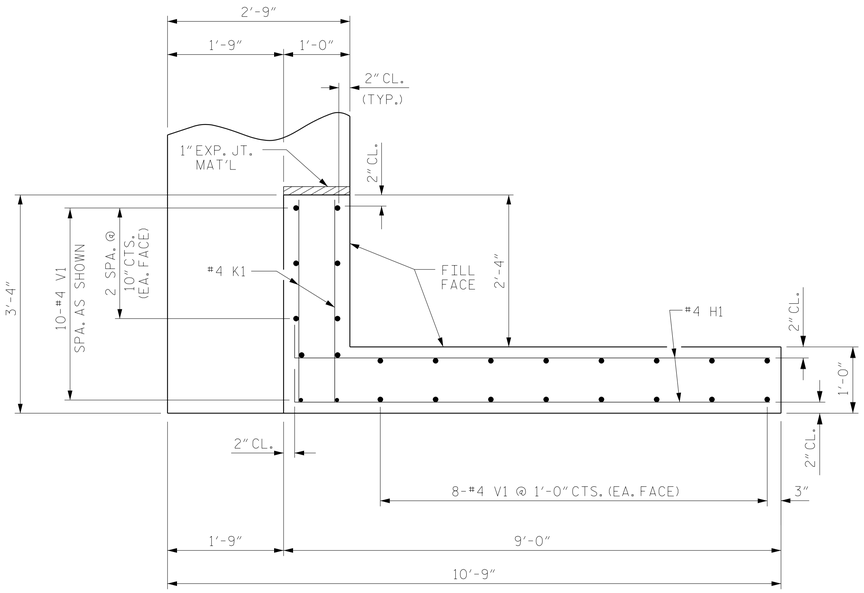
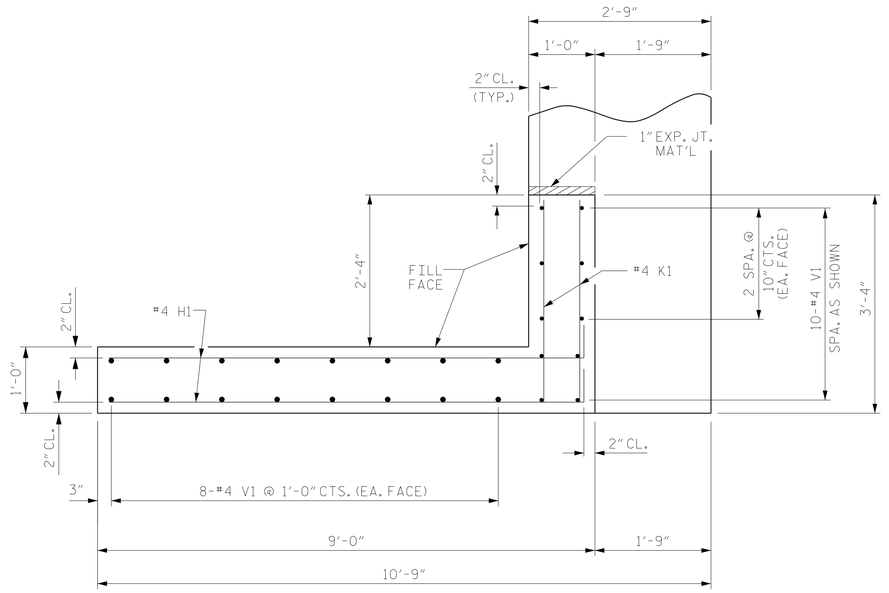
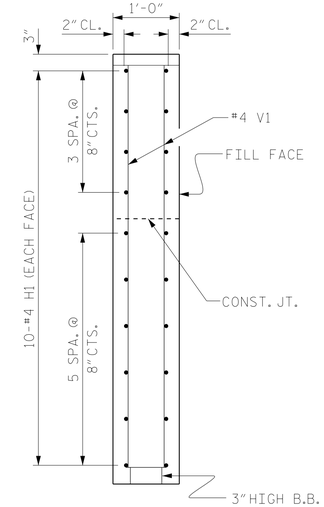
STD. NO. EB_30_90S4



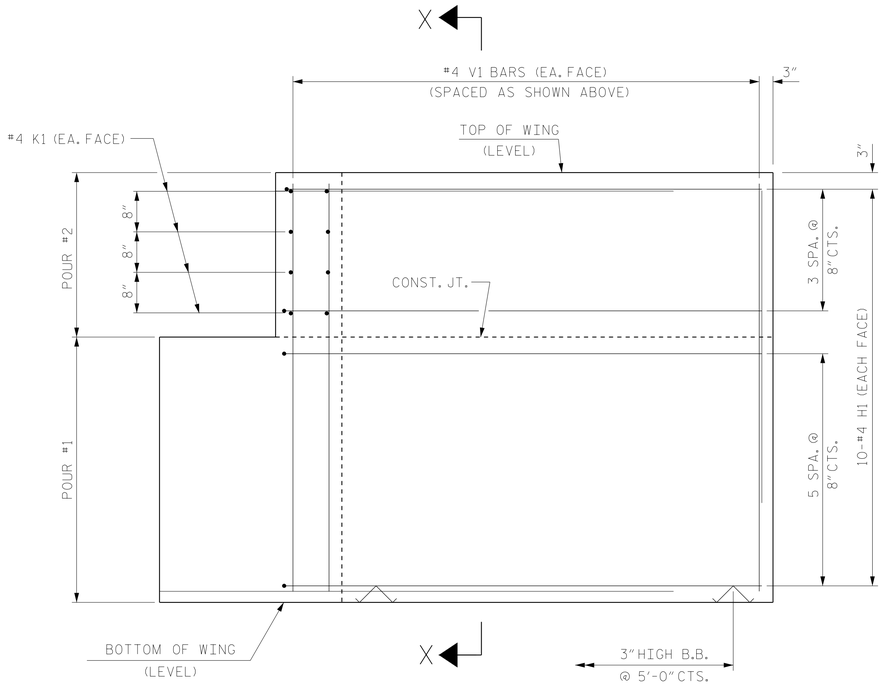
PLAN OF WING (W1)



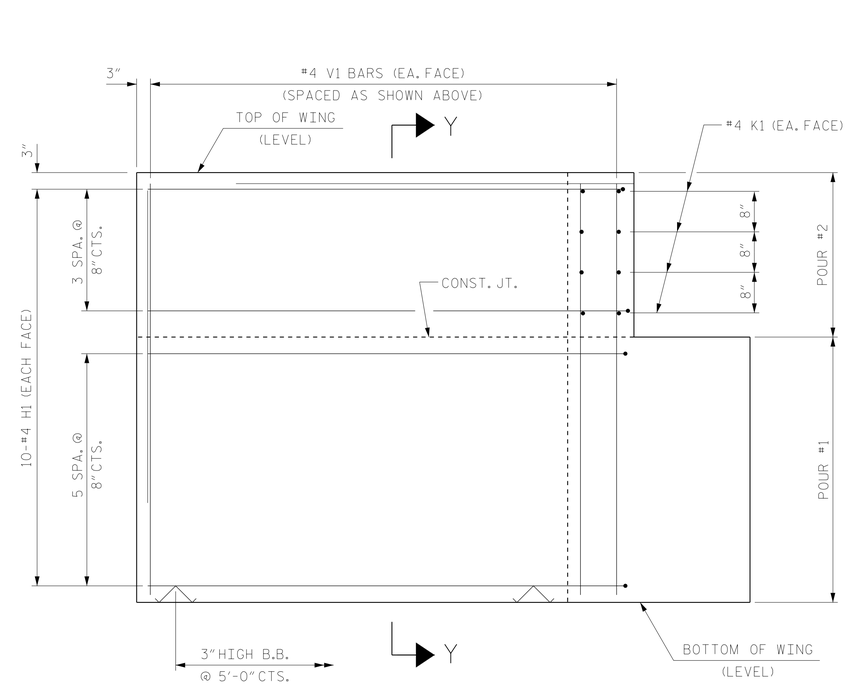
PLAN OF WING (W2)



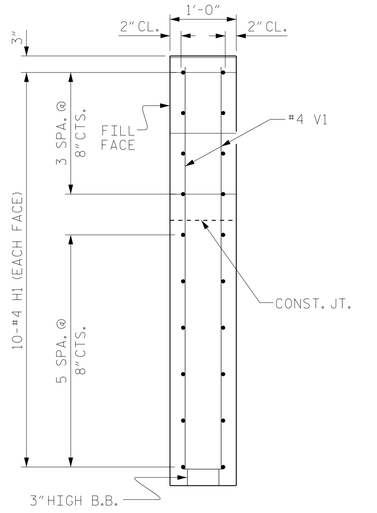
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 3 OF 4

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END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			25

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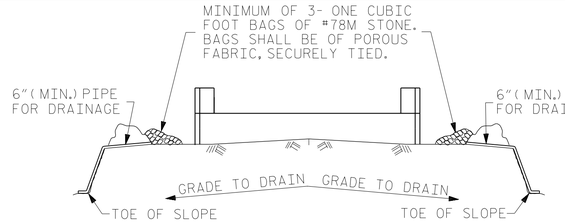
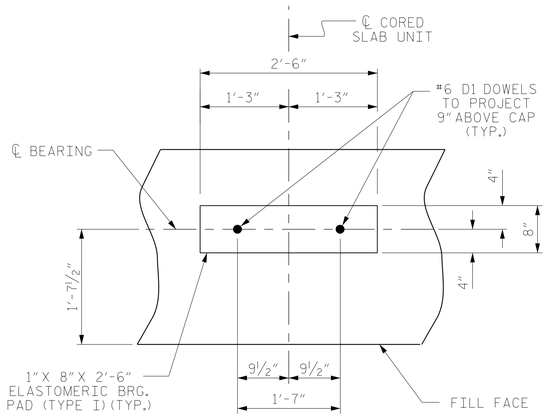


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

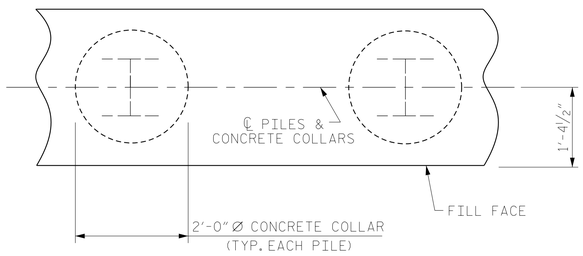
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

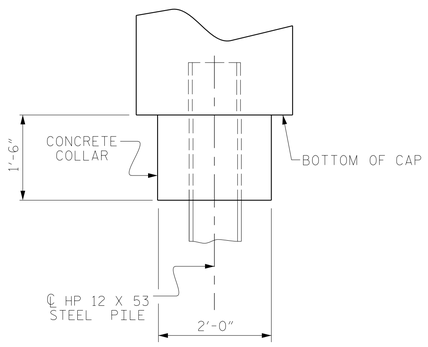


DETAIL "A"

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



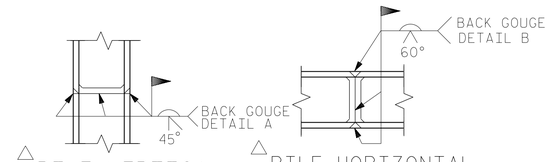
PLAN



ELEVATION

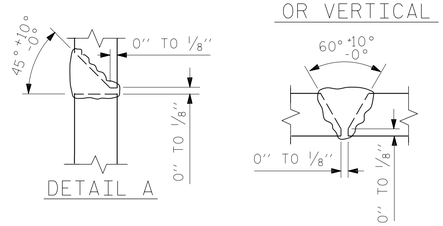
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



△ PILE VERTICAL

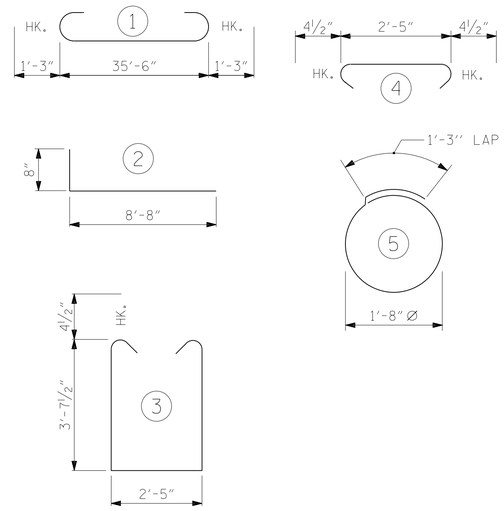
△ PILE HORIZONTAL OR VERTICAL



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-5"	223

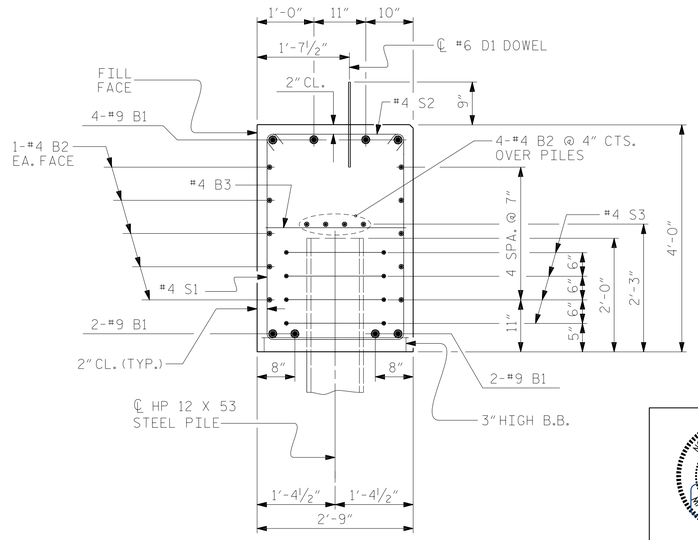
REINFORCING STEEL (FOR ONE END BENT) 2458 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.9 C.Y.

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

TOTAL CLASS A CONCRETE 20.2 C.Y.



SECTION A-A

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

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 4 OF 4

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SUBSTRUCTURE

END BENT NO. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			25

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STD. NO. EB_30_90S4

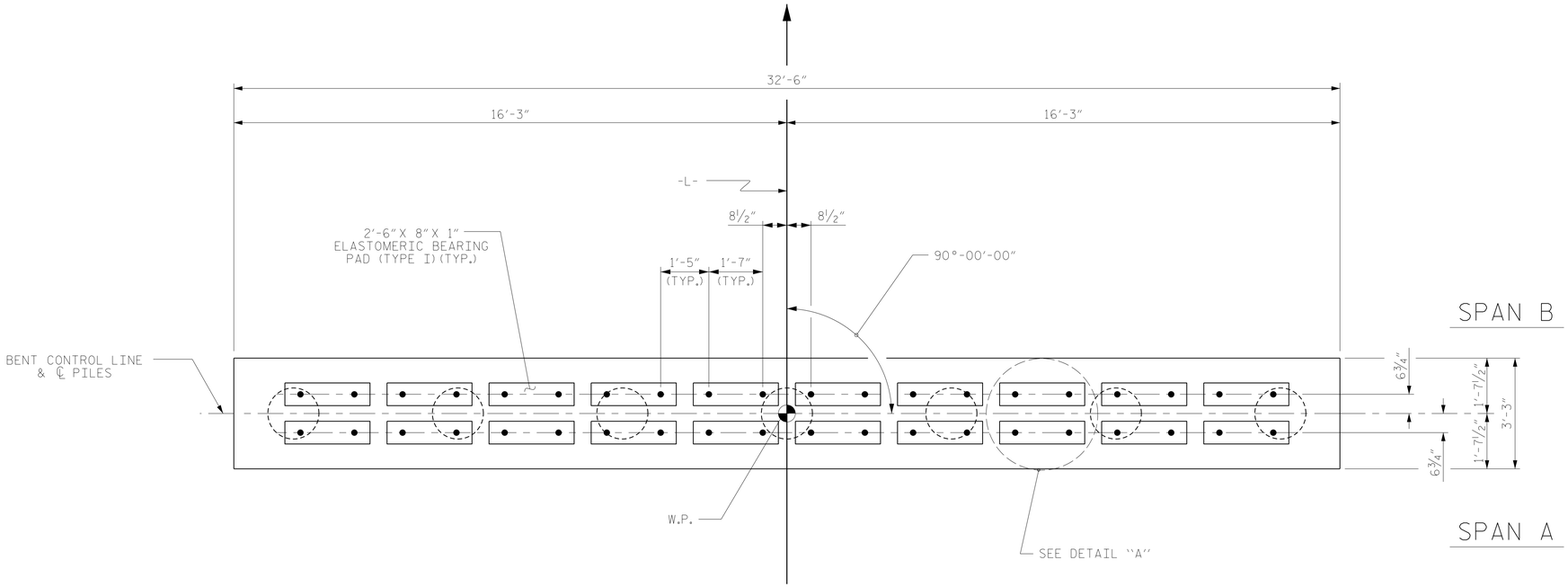
NOTES

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

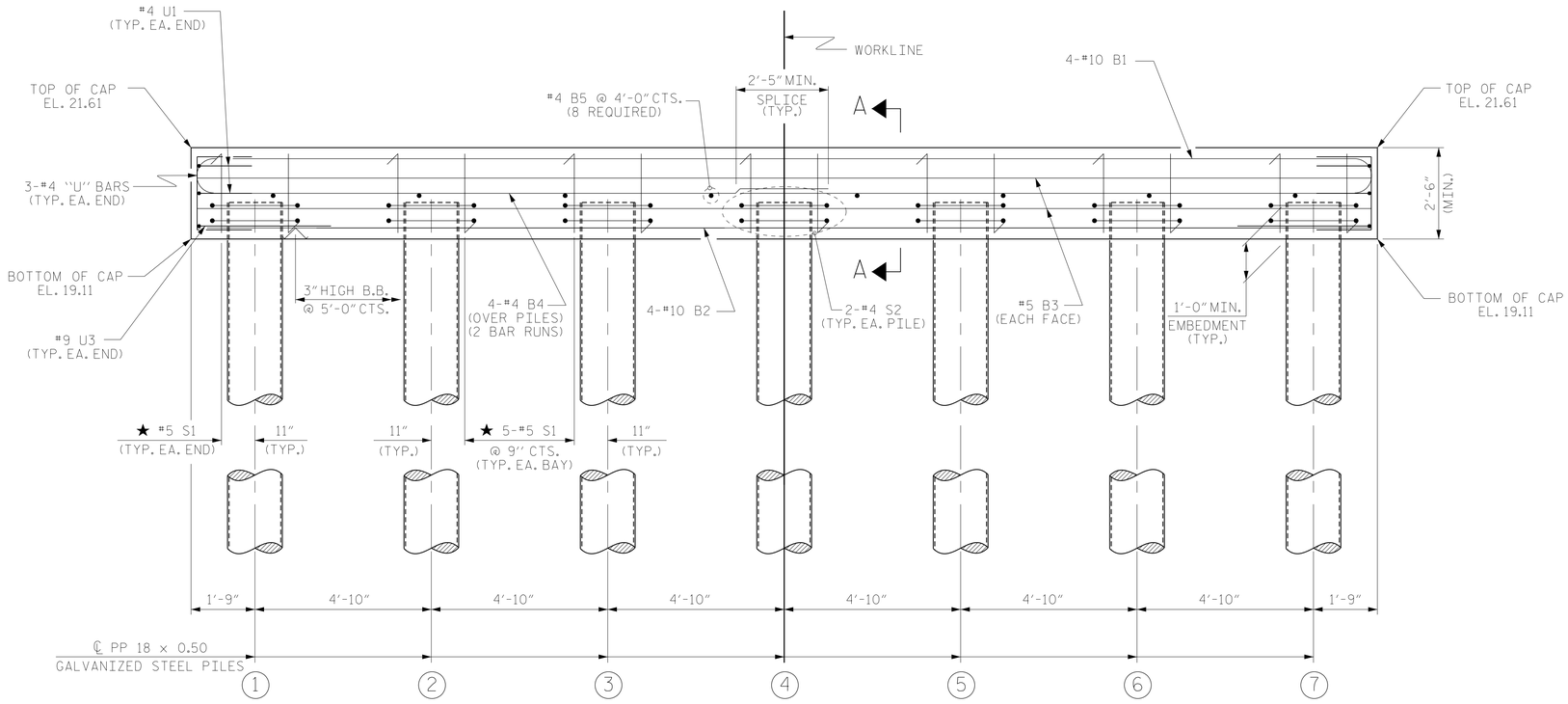
★ INVERT ALTERNATE STIRRUPS.

FOR ADDITIONAL REINFORCING STEEL IN PP 18 x 0.50 GALVANIZED STEEL PILES, SEE "18" STEEL PIPE PILE" SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 30 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

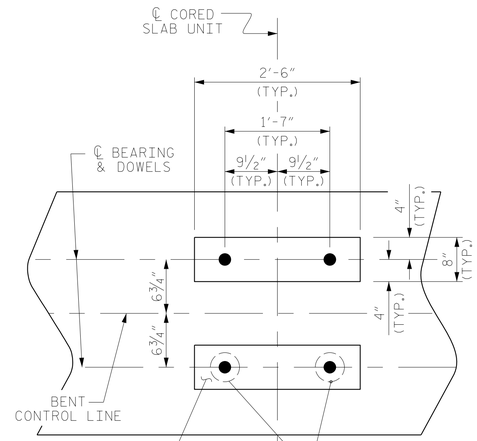


PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER TIMOTHY R. LAWS

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SUBSTRUCTURE

BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. R. ACOSTA DATE : 08/2023
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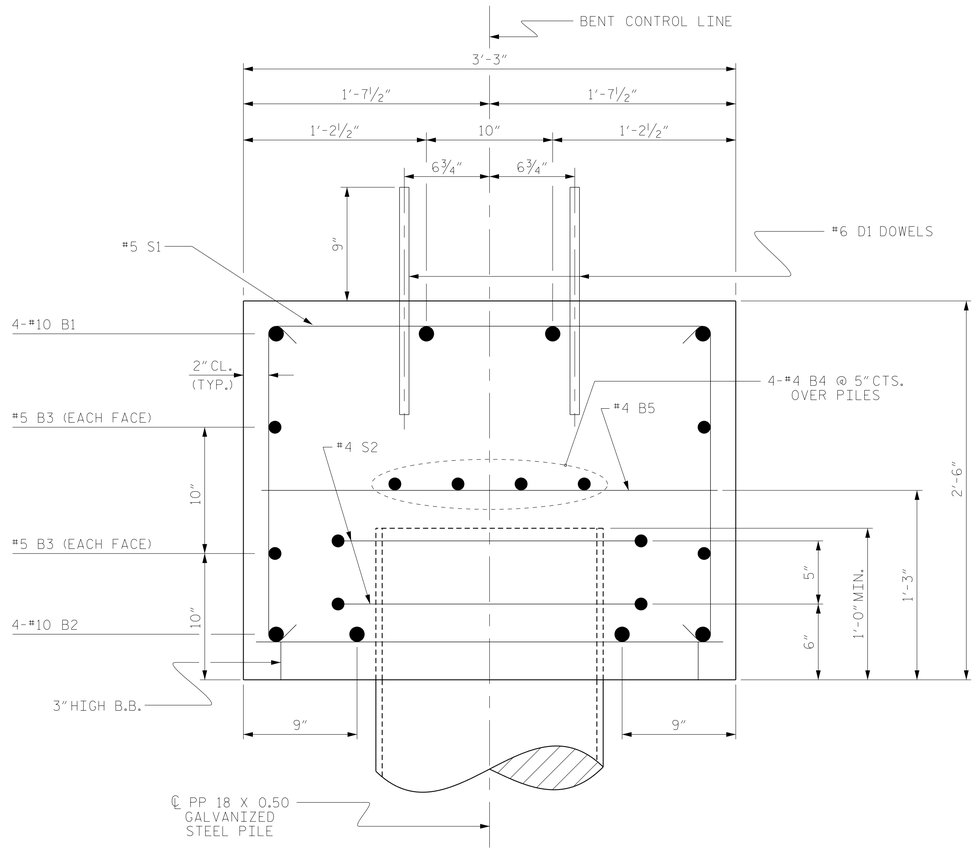
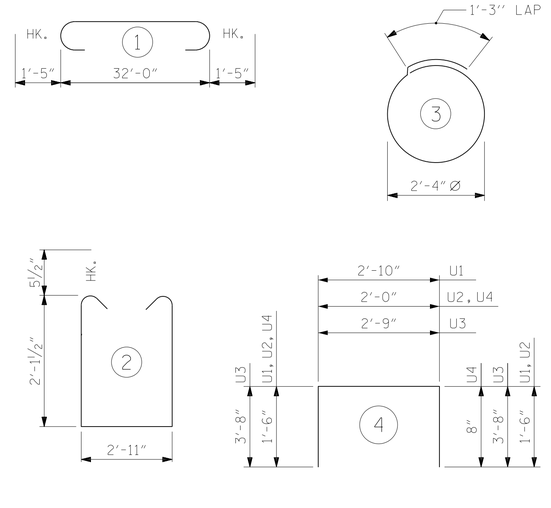
STD.NO. 18"PP_BT_30_90S_<60'



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE BENT

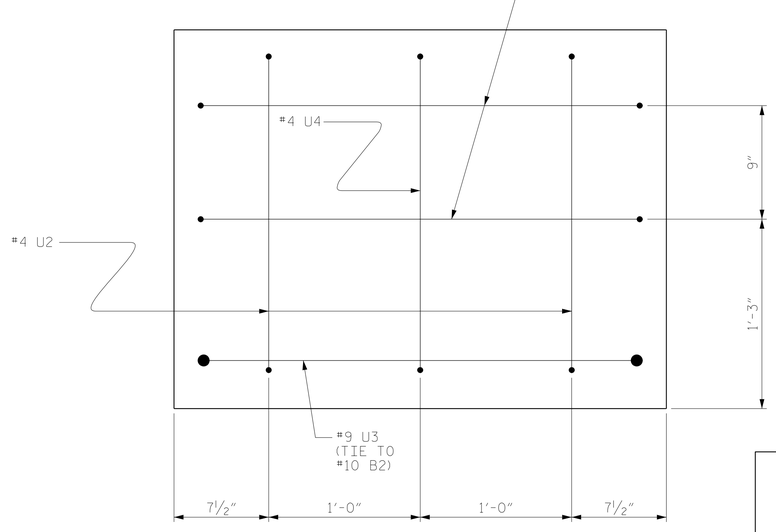
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	34'-10"	600
B2	4	#10	STR	32'-2"	554
B3	4	#5	STR	32'-2"	134
B4	8	#4	STR	17'-4"	93
B5	8	#4	STR	2'-11"	16
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	14	#4	3	8'-7"	80
U1	4	#4	4	5'-10"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-1"	69
U4	2	#4	4	4'-2"	6

REINFORCING STEEL (FOR ONE BENT) 1941 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

TOTAL CLASS A CONCRETE ▲ 9.3 C.Y.

▲ CONCRETE DISPLACED BY THE PP 18 x 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



END OF CAP VIEW
(TYPICAL BOTH ENDS)

PROJECT NO. BP2-R022
CRAVEN/PITT COUNTY
STATION: 13+88.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 050672 ENGINEER MATTHEW R. ACOSTA
3/27/2026

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BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			25

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STD. NO. 18"PP_BT_30_90S_<60'

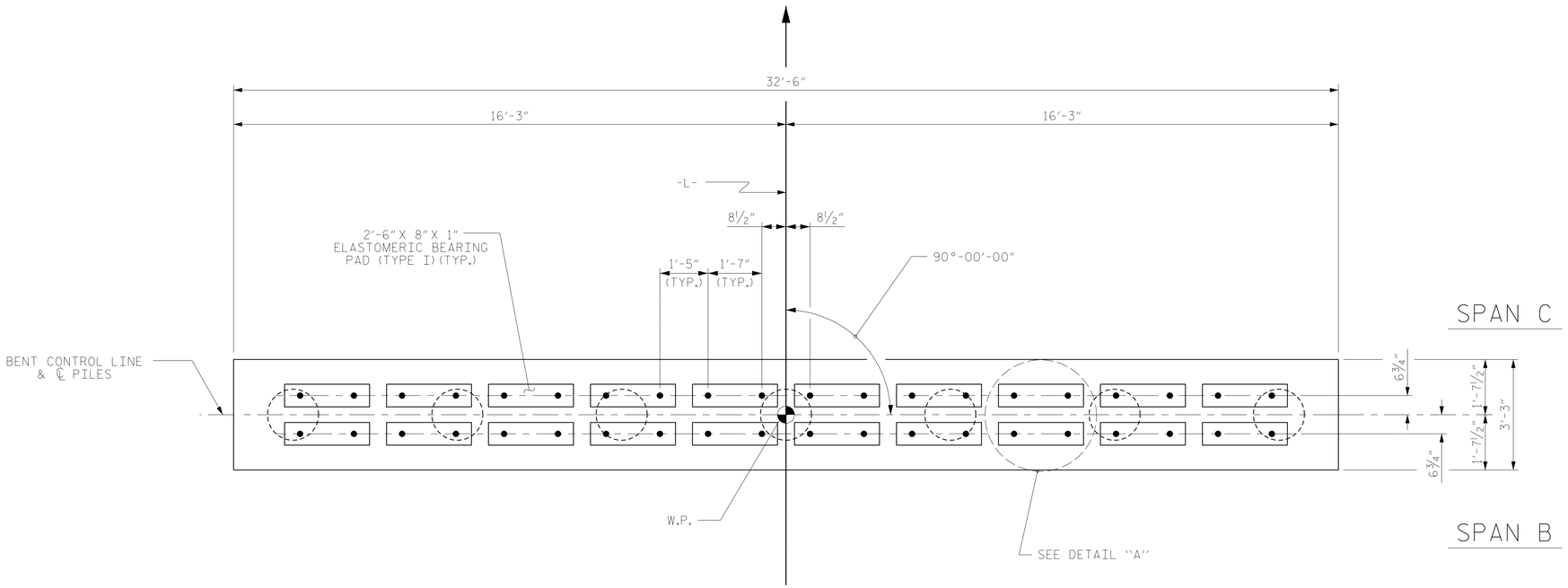
NOTES

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

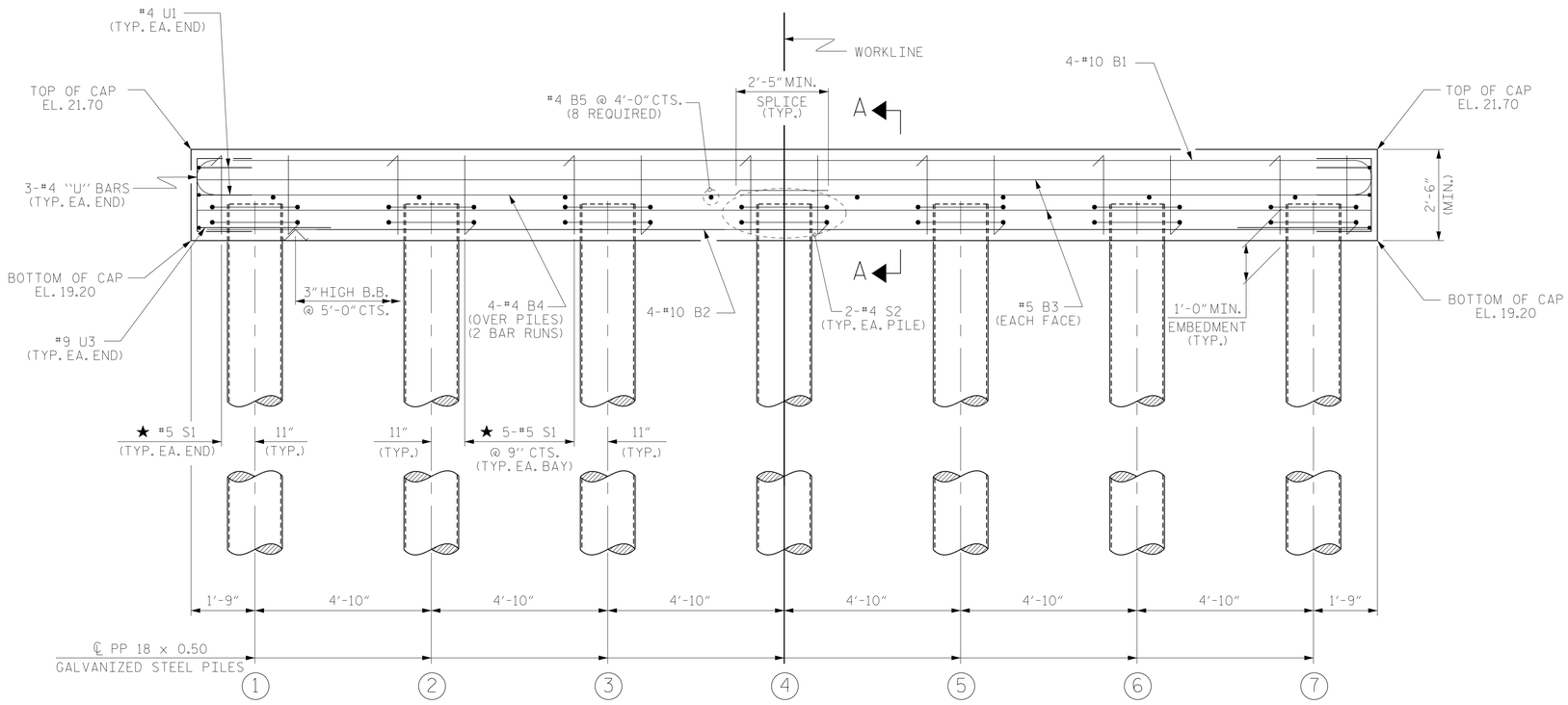
★ INVERT ALTERNATE STIRRUPS.

FOR ADDITIONAL REINFORCING STEEL IN PP 18 x 0.50 GALVANIZED STEEL PILES, SEE "18" STEEL PIPE PILE" SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 33 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

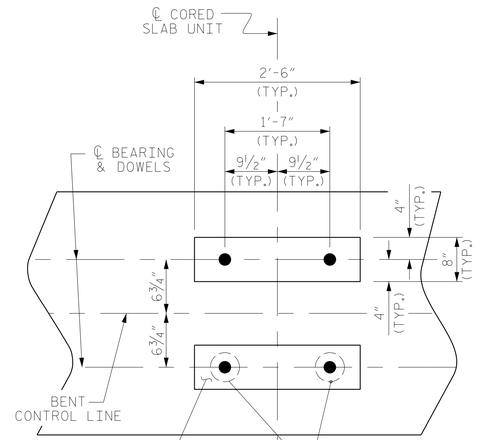


PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 052672 ENGINEER TIMOTHY R. LAWS

3/27/2026

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			25

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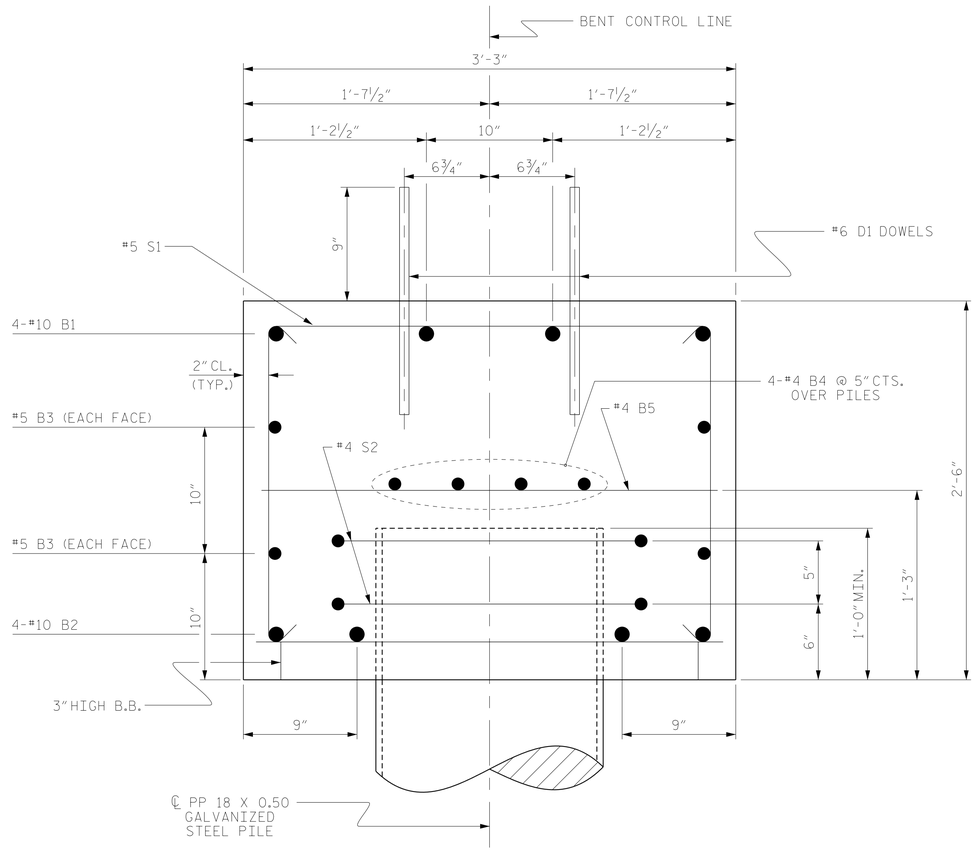
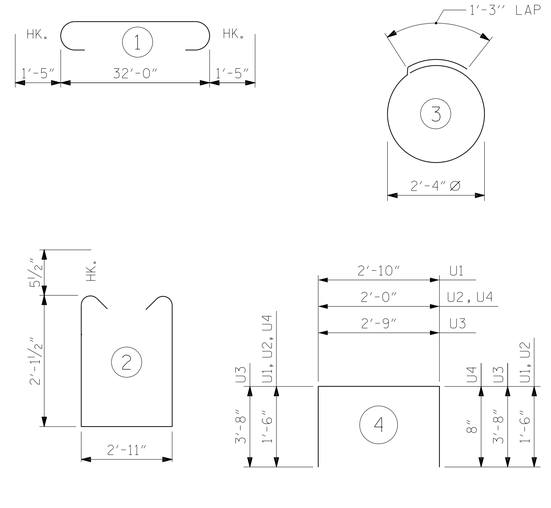
STD.NO. 18"PP_BT_30_90S_<60'



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE BENT

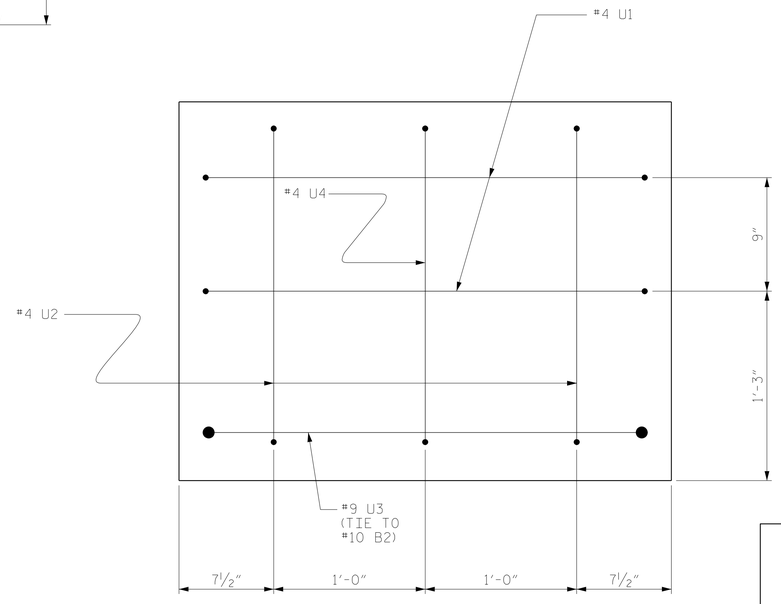
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	34'-10"	600
B2	4	#10	STR	32'-2"	554
B3	4	#5	STR	32'-2"	134
B4	8	#4	STR	17'-4"	93
B5	8	#4	STR	2'-11"	16
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	14	#4	3	8'-7"	80
U1	4	#4	4	5'-10"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-1"	69
U4	2	#4	4	4'-2"	6

REINFORCING STEEL (FOR ONE BENT) 1941 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

TOTAL CLASS A CONCRETE ▲ 9.3 C.Y.

▲ CONCRETE DISPLACED BY THE PP 18 x 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



END OF CAP VIEW

(TYPICAL BOTH ENDS)

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

SHEET 2 OF 2

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BENT NO. 2

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			25

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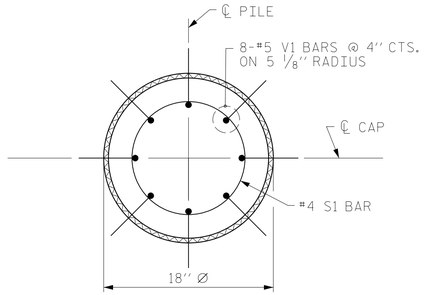
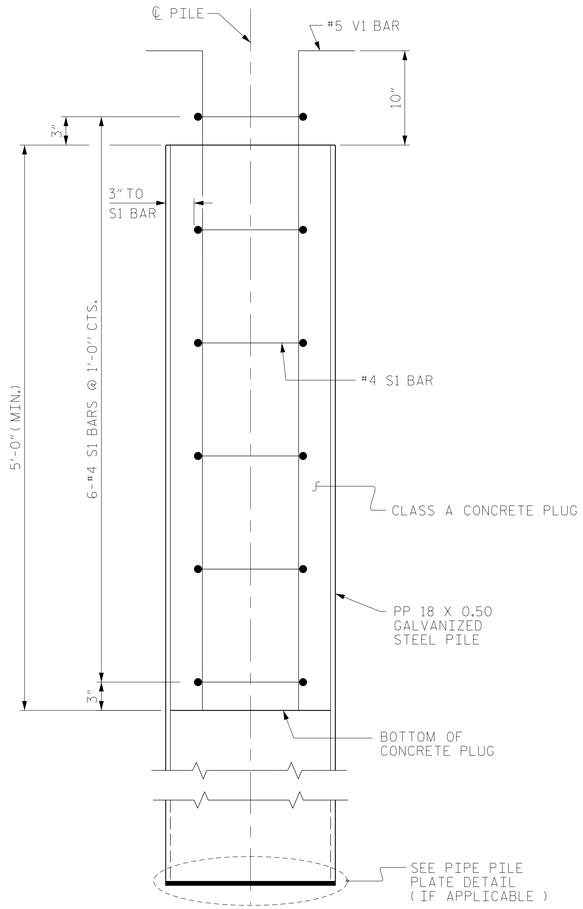
STD. NO. 18"PP_BT_30_90S_<60'



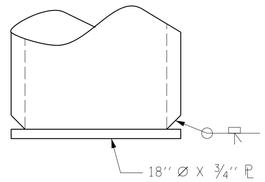
PLAN



ELEVATION

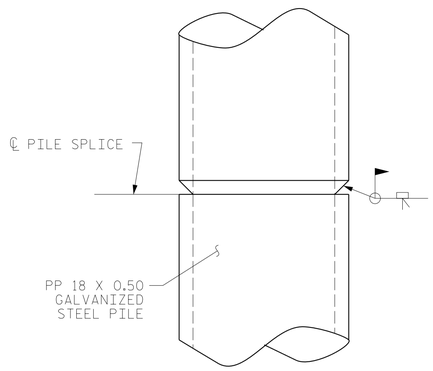
PP 18 X 0.50 GALVANIZED STEEL PILE

(OPEN OR CLOSED END)



PIPE PILE PLATE DETAIL

(IF APPLICABLE)



PIPE PILE SPLICE DETAIL

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

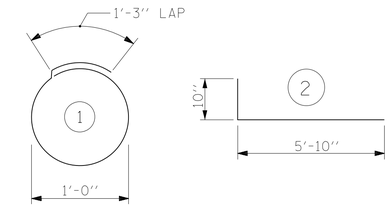
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 18 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	4'-5''	18
V1	8	#5	2	6'-8''	56
REINFORCING STEEL =				74	lbs
CLASS A CONCRETE					
5'-0'' MINIMUM PLUG					0.3 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

18'' STEEL PIPE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			25

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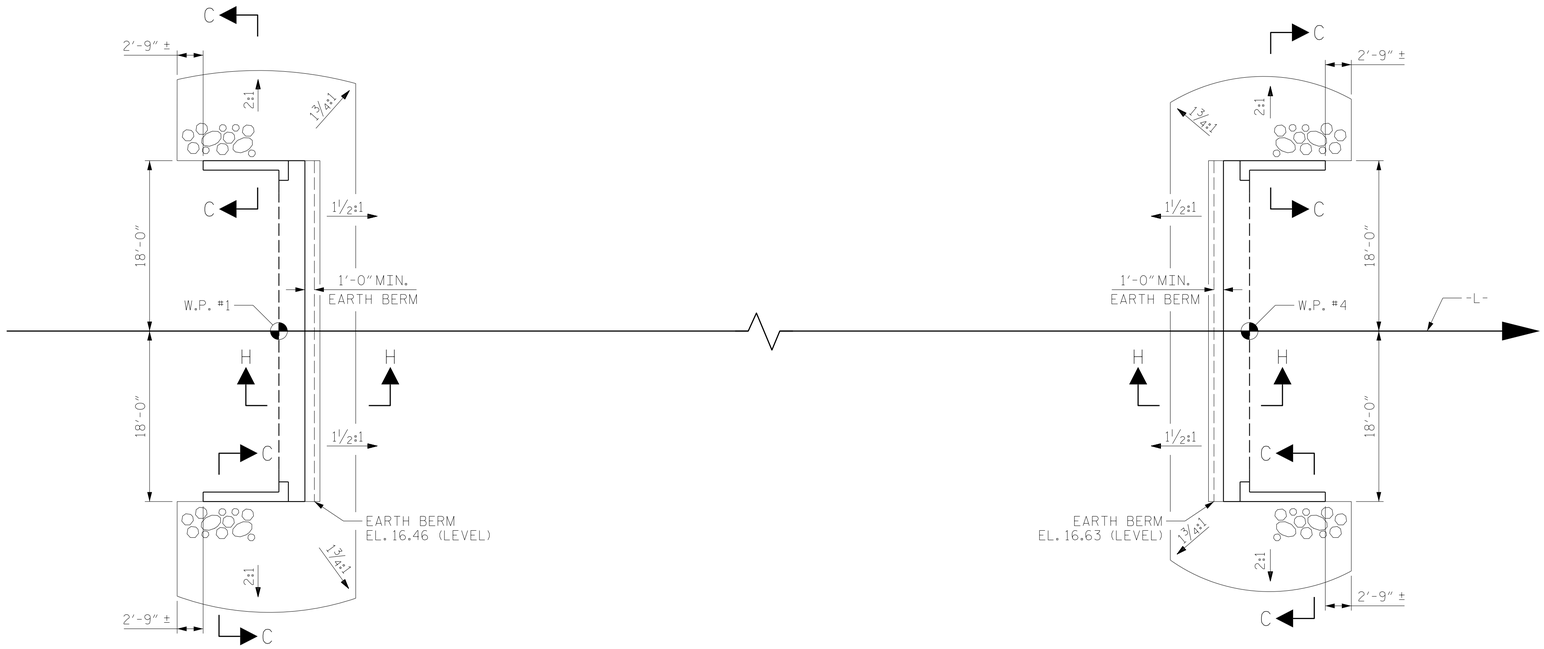
STD. NO. SPP3

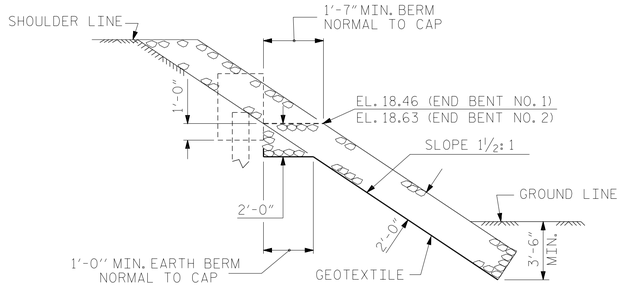
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

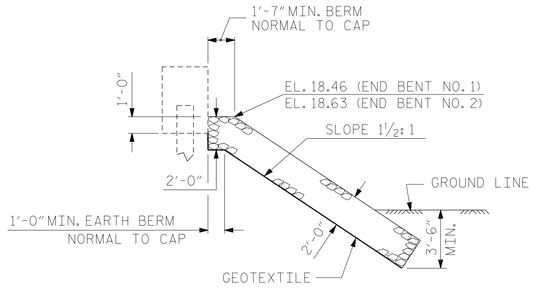


PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+88.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT NO. 1	90	98
END BENT NO. 2	90	98

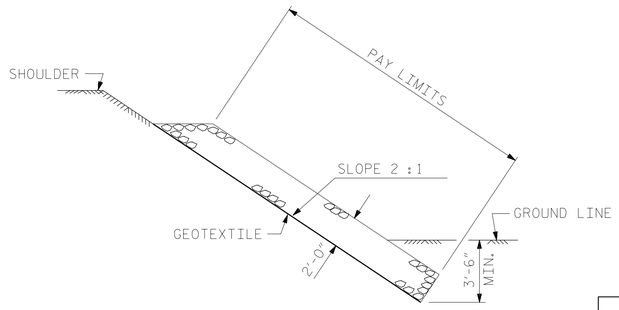


SECTION H-H



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

RIP RAP DETAILS

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1			3			TOTAL SHEETS
2			4			25

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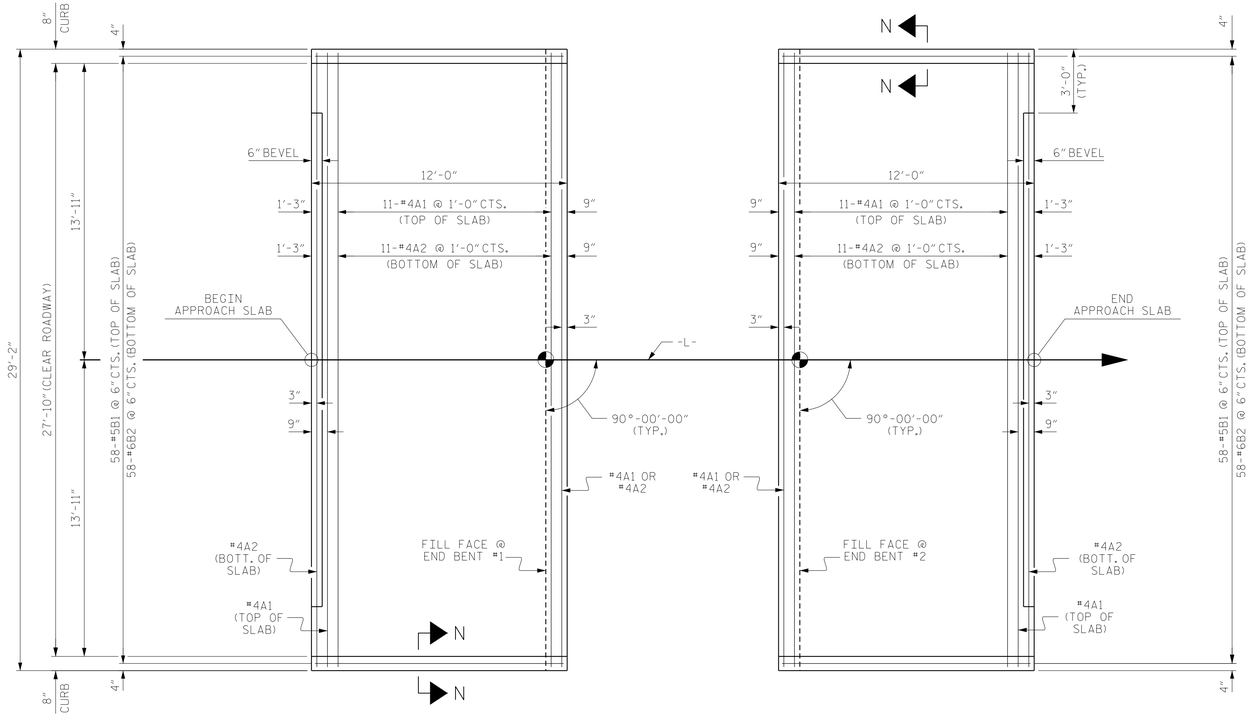
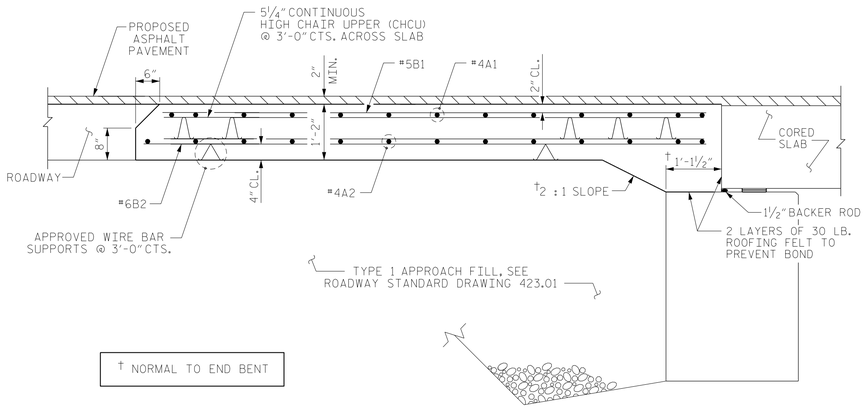


PLAN @ END BENT #1 PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

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

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

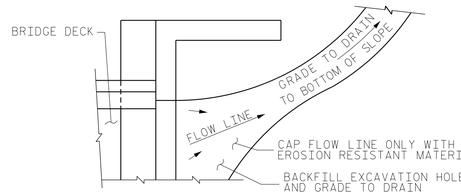
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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.

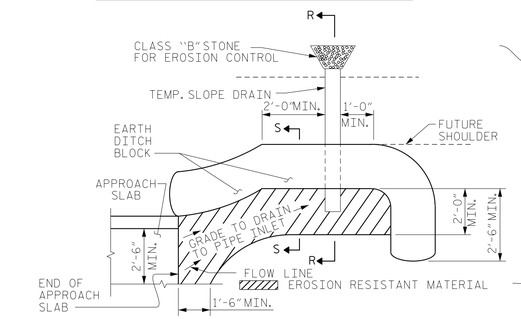
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

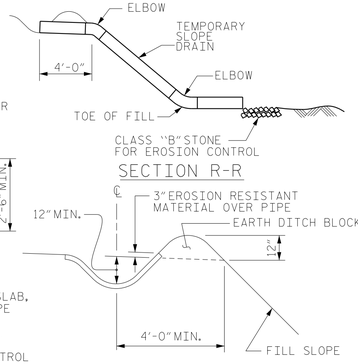


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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



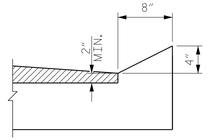
SECTION R-R

SECTION S-S

PLAN VIEW

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	13	#4	STR	28'-10"	25Q
A2	13	#4	STR	28'-10"	25Q
.	.	.	.	.	.
* B1	58	#5	STR	11'-2"	67Q
B2	58	#6	STR	11'-8"	101Q
REINFORCING STEEL				LBS.	126Q
* EPOXY COATED . REINFORCING STEEL				LBS.	92Q
CLASS AA CONCRETE				C. Y.	17.7

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	28'-10"	25Q
A2	13	#4	STR	28'-10"	25Q
.	.	.	.	.	.
* B1	58	#5	STR	11'-2"	67Q
B2	58	#6	STR	11'-8"	101Q
REINFORCING STEEL				LBS.	126Q
* EPOXY COATED . REINFORCING STEEL				LBS.	92Q
CLASS AA CONCRETE				C. Y.	17.7

PROJECT NO. BP2-R022

CRAVEN/PITT COUNTY

STATION: 13+88.00 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

STD. NO. BAS_30_90S

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

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

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