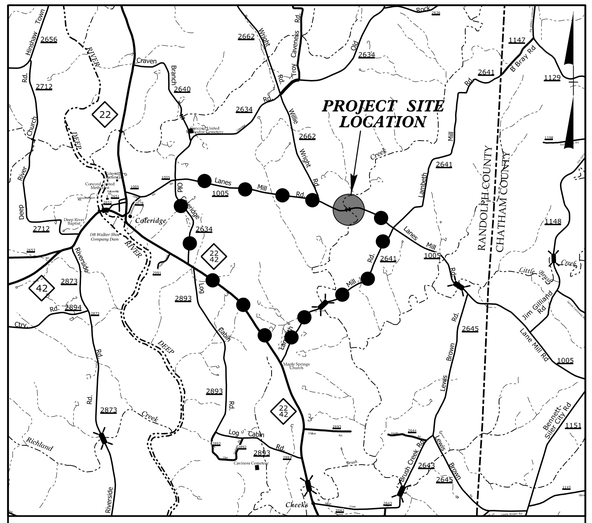
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09/08/99

PROJECT: BP8–R019

CONTRACT: DH00573

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


PROJECT SITE LOCATION
RANDOLPH COUNTY
CHATHAM COUNTY
Coleridge
Lanes Mill Rd
Brush Creek
Log Cabin
Cheeks
Bonlee
Bethlehem Church
Old Mullen Store Camping Area
Pleasant Grove Church
Eagle Springs Church
Bethlehem Church
Cheeks Cross Roads
Jim Graham Rd
Lanes Mill Rd
Little Creek
Rocky Creek
Rocky Creek Rd
Log Cabin Rd
Mill Creek
Mill Creek Rd
Brushland
Riverside
Bethlehem Church Rd
Bethlehem Church Rd
Bethlehem Church Rd

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8/17/99

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, TYPICAL SECTIONS No. 1, 2 AND 3, INCIDENTAL MILLING AND WEDGING DETAIL
2A-2	PAVEMENT SCHEDULE AND PAVED SHOULDER DETAILS
2C-1 THRU 2C-7	SPECIAL DETAILS
3B-1	SUMMARIES OF EARTHWORK, GUARDRAIL, ASPHALT PAVEMENT REMOVAL AND SHOULDER BERM GUTTER
3D-1	LIST OF PIPES, ENDWALLS, ETC. (for PIPES 48" & UNDER)
4 and 5	PLAN SHEET
6 and 7	PROFILE SHEET
RW-1 THRU RW-5	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X-26	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS
SN	STRUCTURE STANDARD 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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE
Randolph Telephone Membership Corporation - Communication.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	1A

ROADWAY DESIGN ENGINEER
11/7/2024
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES
Signed by: Brian Wiles
2B5DDDFE62E34DE...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
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
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

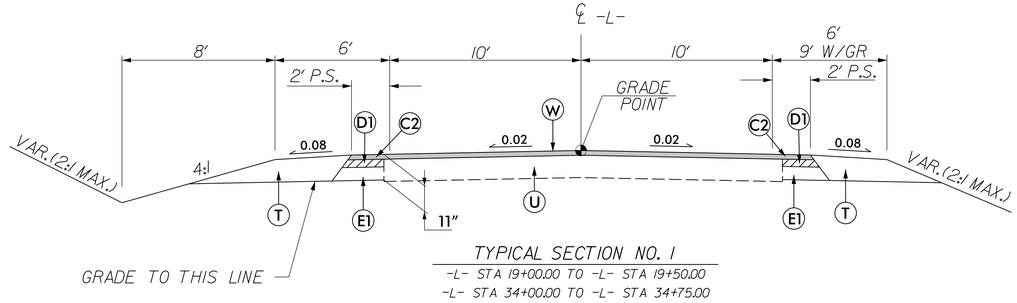
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line (SUE – LOS B)*
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records —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

6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" 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 TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

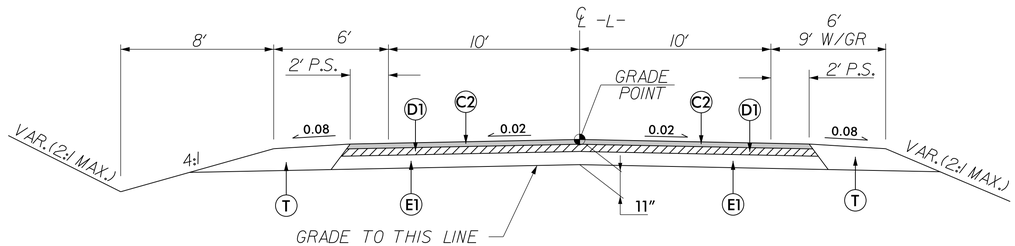
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

-L- STA 19+00.00 TO -L- STA 19+50.00

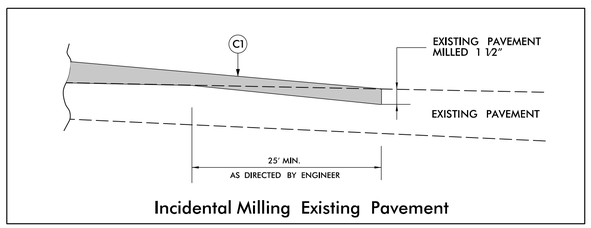
-L- STA 34+00.00 TO -L- STA 34+75.00



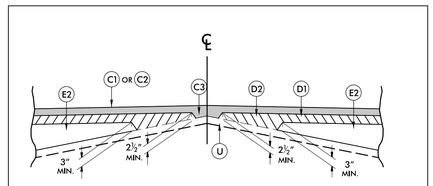
TYPICAL SECTION NO. 2

-L- STA 19+50.00 TO -L- STA 26+47.56 (BEGIN BRIDGE)

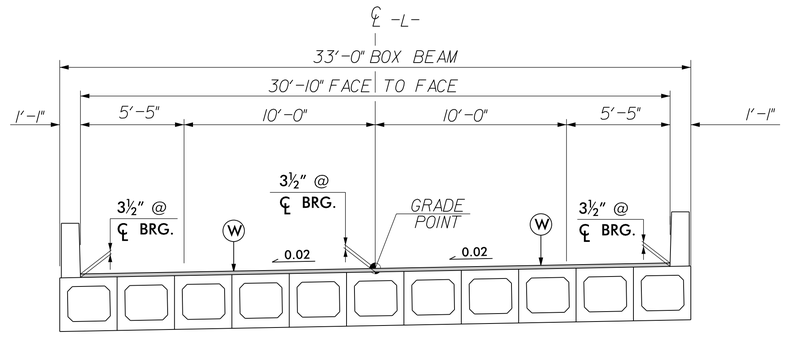
-L- STA 28+30.44 (END BRIDGE) TO -L- STA 34+00.00



Incidental Milling Existing Pavement



Detail Showing Method of Wedging



TYPICAL SECTION NO. 3

-L- STA 26+47.56 TO -L- STA 28+30.44

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	2A-1

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRYAN ALLEN WILES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

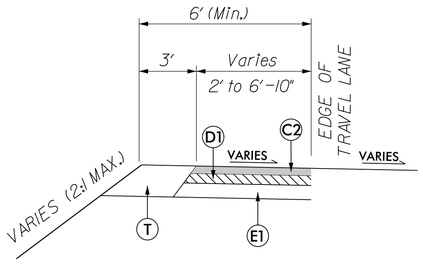
Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

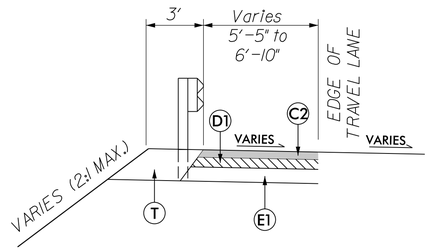
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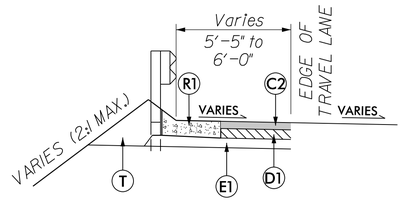
PAVEMENT SCHEDULE	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	4" I19.5C
D2	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
R1	SBG
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



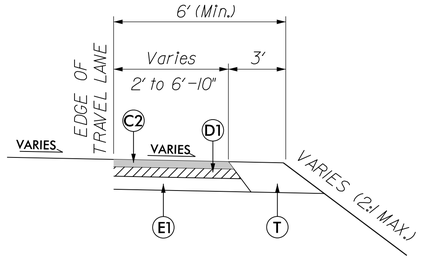
TYPICAL SECTION
FOR PAVED SHOULDER
(HIGH SIDE OF SUPERELEVATION)



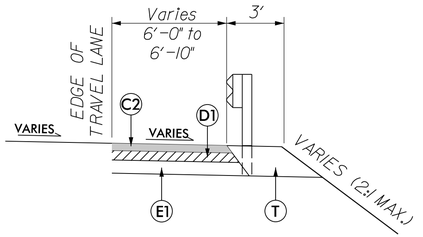
TYPICAL SECTION
FOR PAVED SHOULDER
(HIGH SIDE OF SUPERELEVATION)
w/ GUARDRAIL



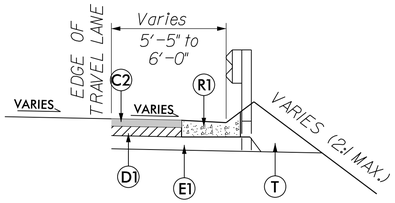
TYPICAL SECTION
FOR SHOULDER BERM GUTTER
(HIGH SIDE OF SUPERELEVATION)



TYPICAL SECTION
FOR PAVED SHOULDER
(LOW SIDE OF SUPERELEVATION)



TYPICAL SECTION
FOR PAVED SHOULDER
(LOW SIDE OF SUPERELEVATION
w/ GUARDRAIL



TYPICAL SECTION
FOR SHOULDER BERM GUTTER
(LOW SIDE OF SUPERELEVATION)

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILLIS

PAVEMENT DESIGN ENGINEER

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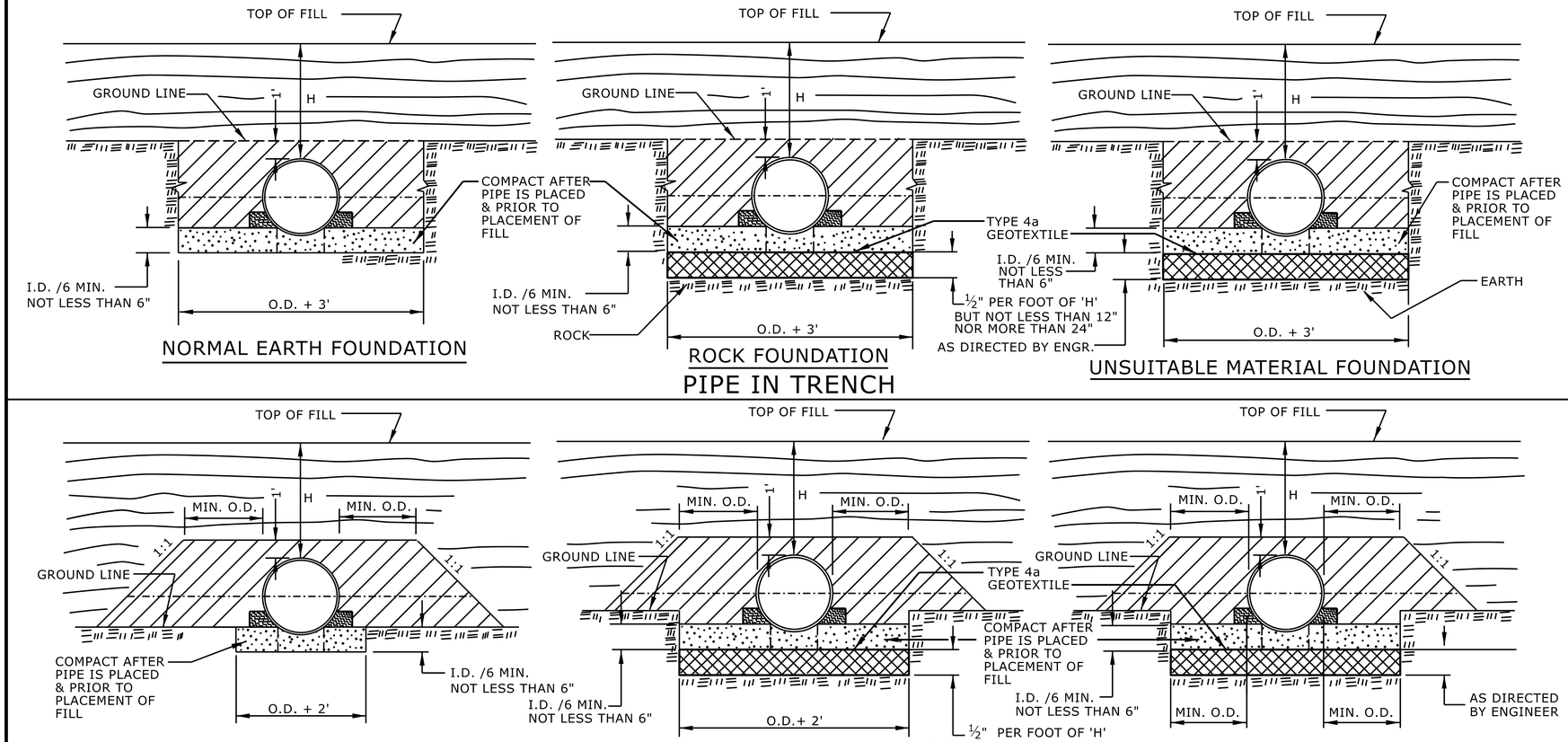
Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

11/26/2024
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USER:bwillis

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PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	2C-1



GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884320D34164C5...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

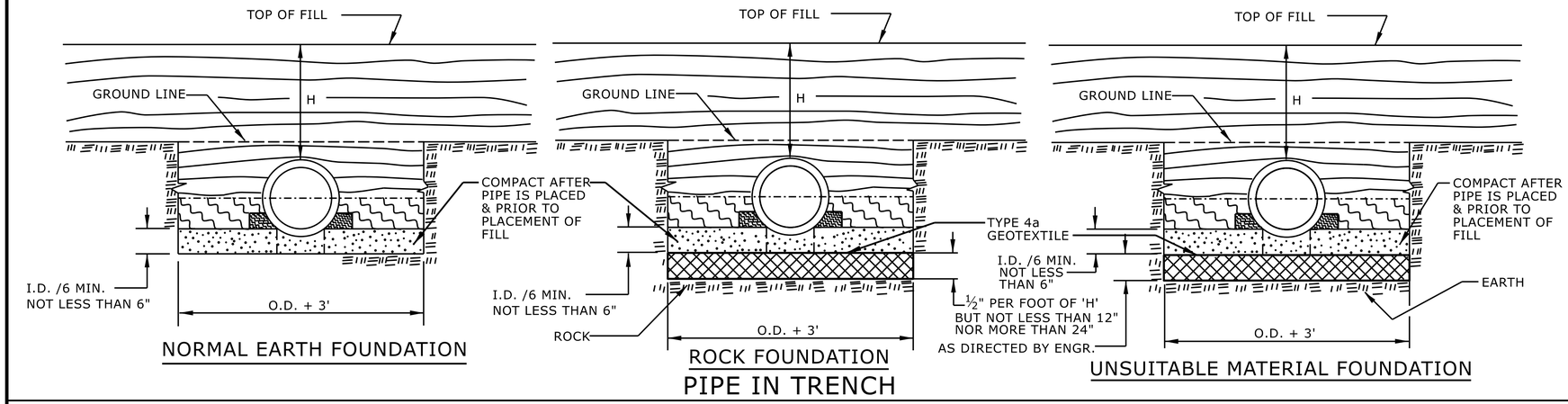
CONTRACTS STANDARDS
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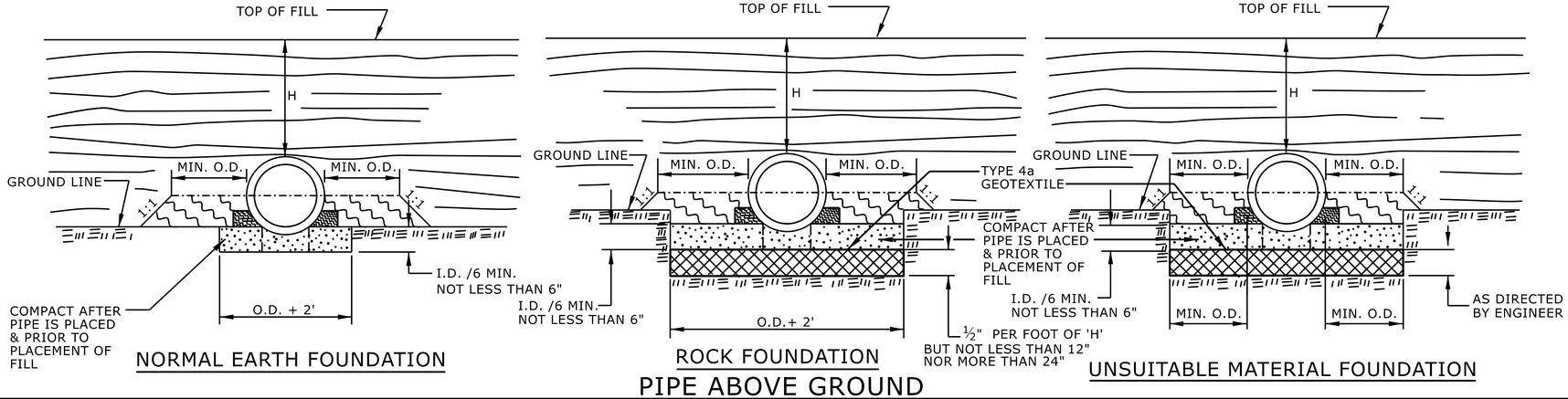
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PIPE IN TRENCH



PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

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

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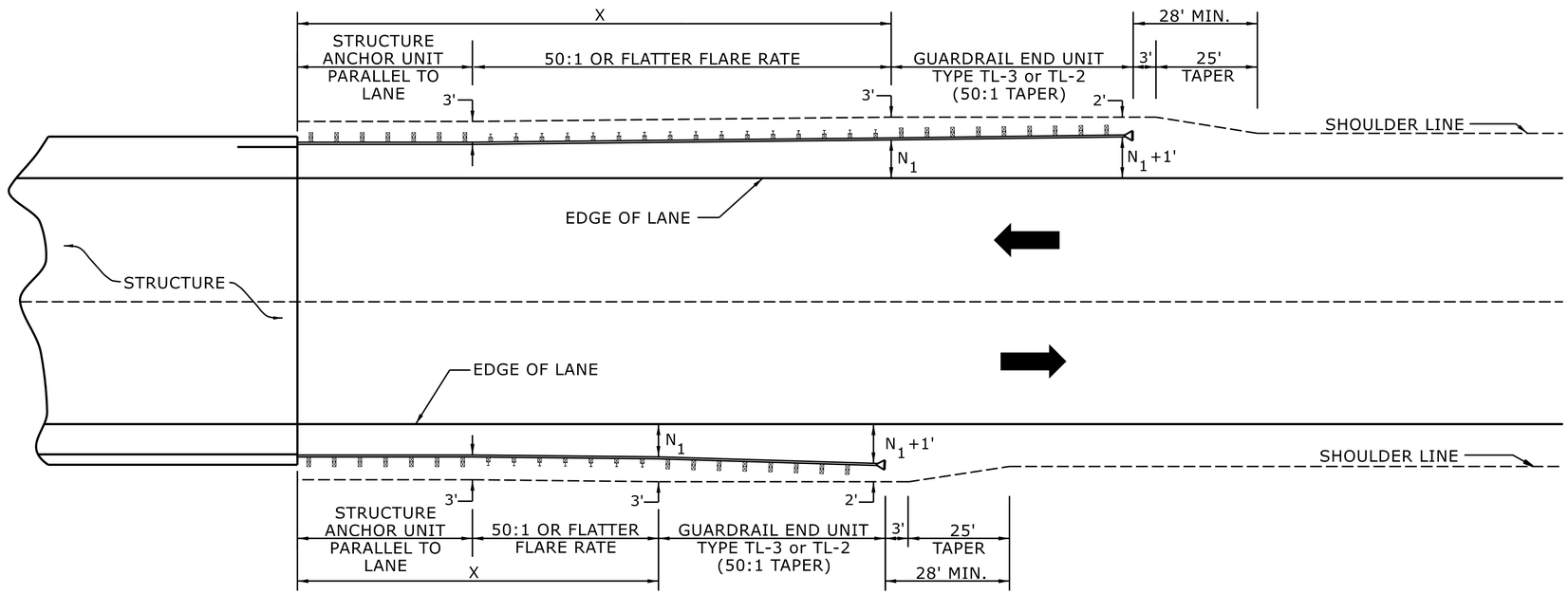
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USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
588432D34164C5...

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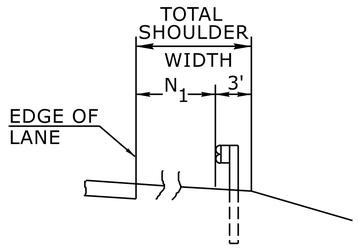
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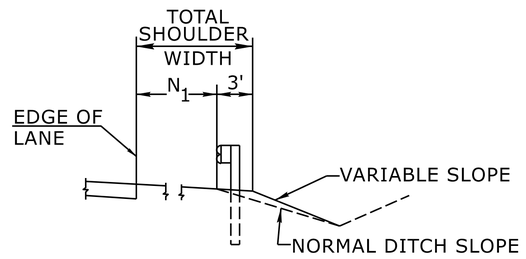
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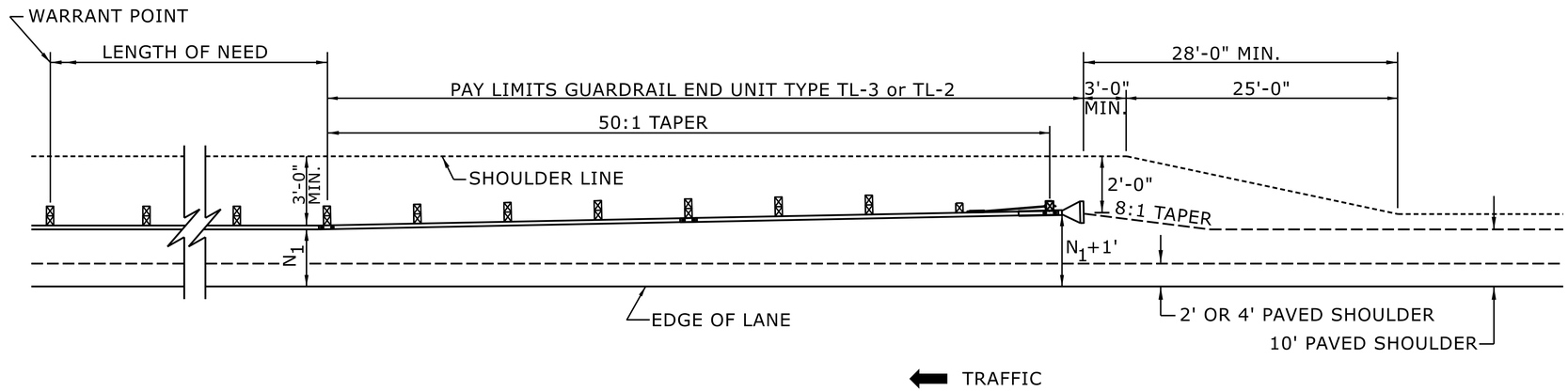


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

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12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
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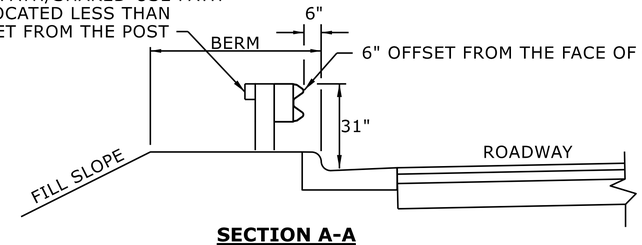
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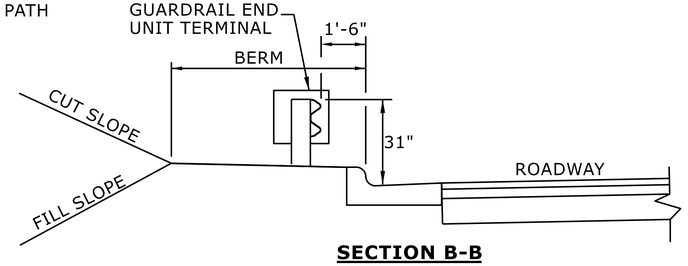
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PLACE APPROVED BICYCLE FRIENDLY RAILINGS, FENCE, OR RUB RAILS IF SIDEPATH/SHARED-USE PATH IS LOCATED LESS THAN 4 FEET FROM THE POST

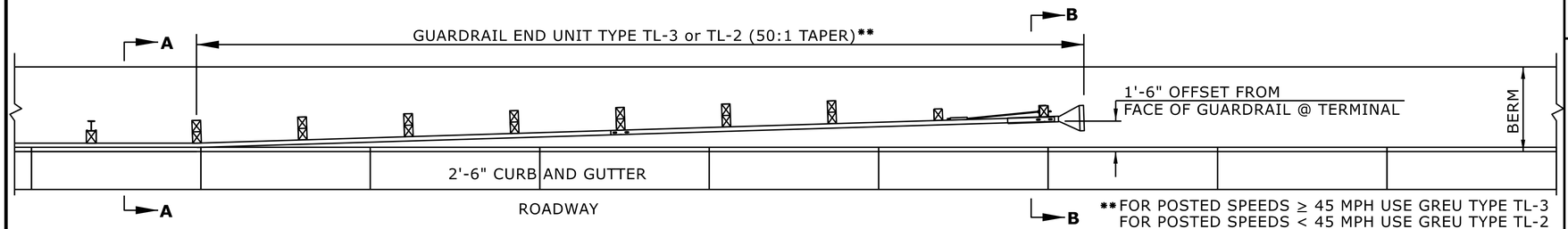
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



SECTION B-B



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

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS

GUARDRAIL 6" FROM THE FACE OF CURB

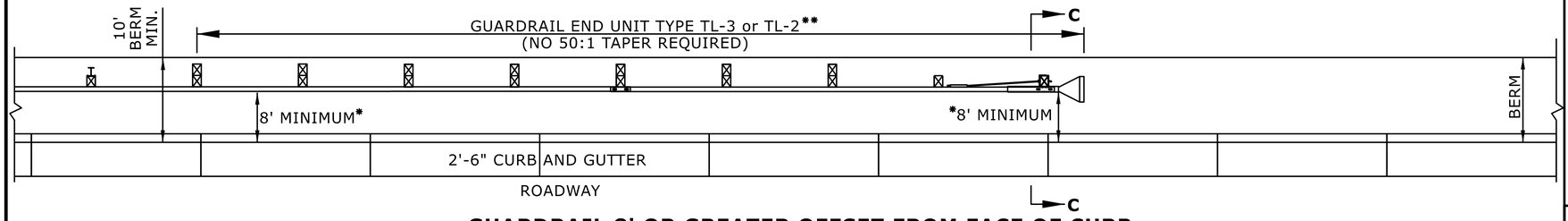
SECTION C-C

*FOR POSTED SPEED ≥ 40 MPH USE 13' MINIMUM OFFSET

SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH

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

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS



GUARDRAIL 8' OR GREATER OFFSET FROM FACE OF CURB

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

GUARDRAIL PLACEMENT

GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15

862D01

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
588432303416405...

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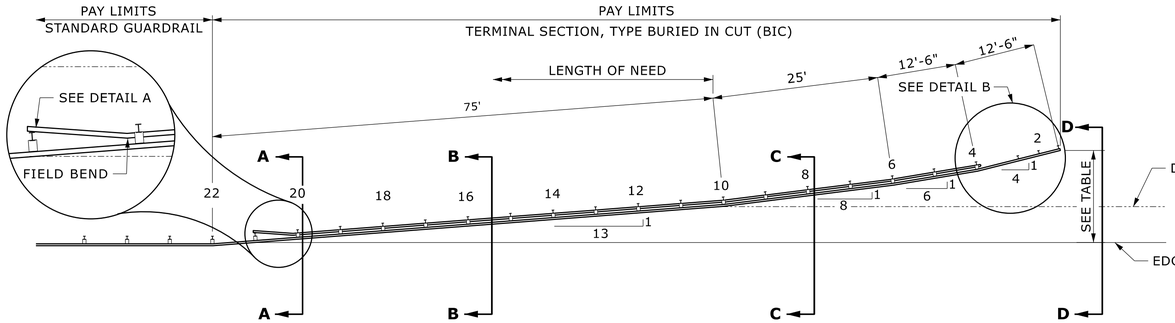
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DRAWING NOT TO SCALE

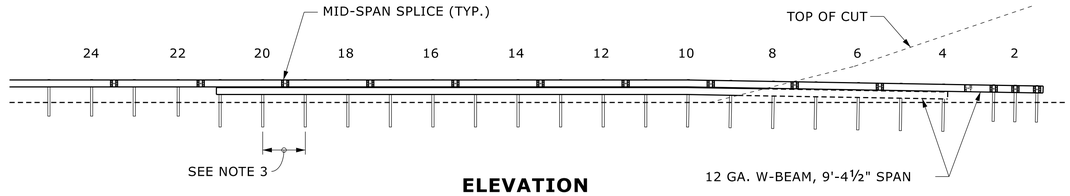


PLAN

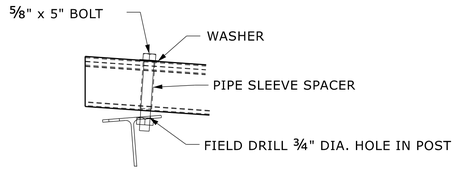
NOTE:

1. SEE DETAIL SHEET 2 OF 2 FOR OTHER DETAILS.
2. STEEL POSTS SHOWN.
3. TYPICAL POST SPACING IS 6'-3" UNLESS OTHERWISE NOTED.

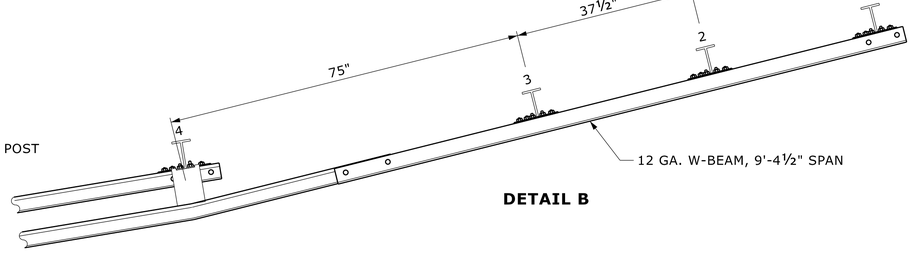
POST OFFSETS FROM EDGE OF SHOULDER	
POST	DISTANCE
1	13'-11¾"
4	10'-11"
6	8'-10¼"
10	69"



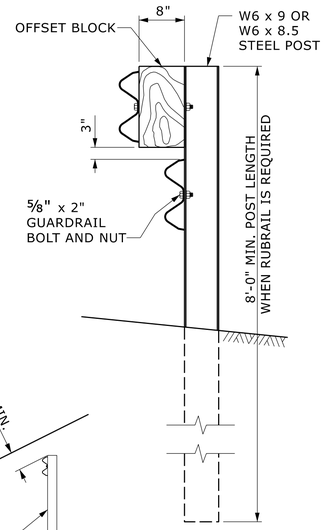
ELEVATION



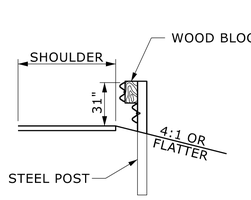
DETAIL A



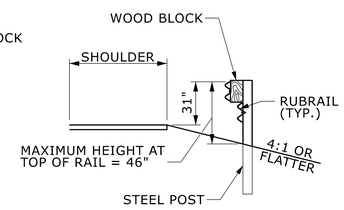
DETAIL B



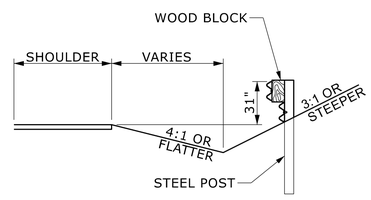
STEEL POST AND BLOCK DETAIL



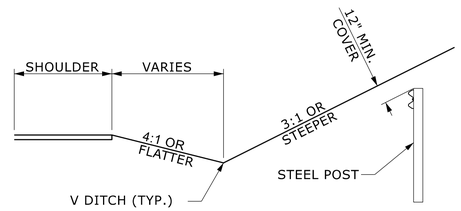
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

GUARDRAIL PLACEMENT

BURIED IN CUT END UNIT

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
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5884323D34164C5...

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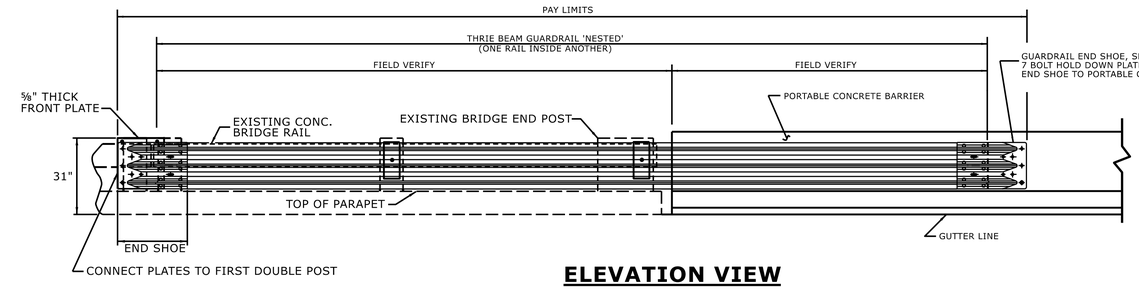
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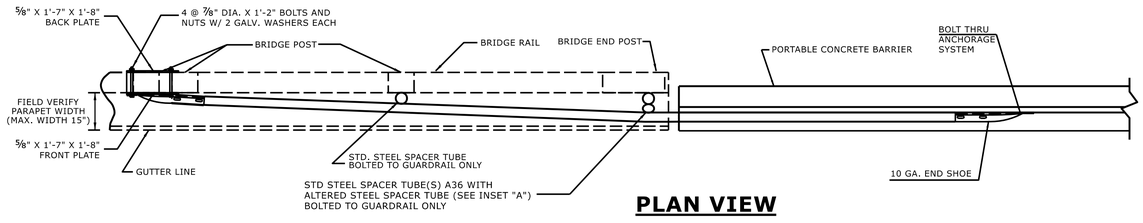
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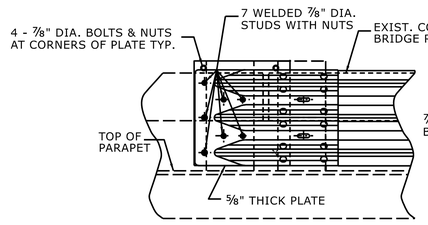
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BP8.R019	2C-7



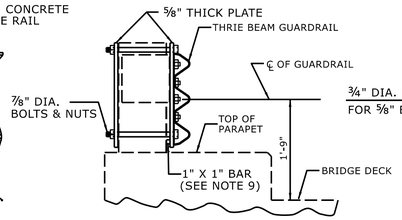
ELEVATION VIEW



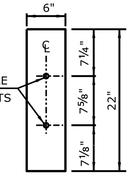
PLAN VIEW



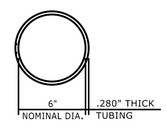
ELEVATION VIEW



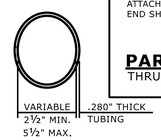
SECTION VIEW



FRONT VIEW



PLAN VIEW



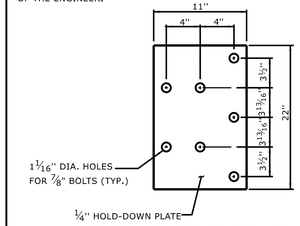
PLAN VIEW
INSET "A"

NOTES FOR 7 BOLT HOLD DOWN PLATE

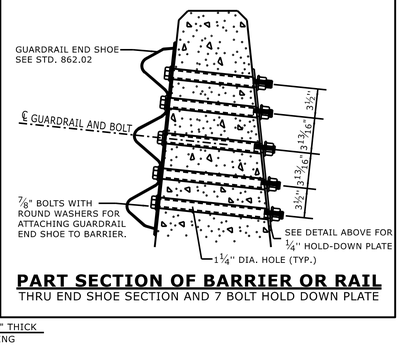
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅞" DIA. BOLTS WITH NUTS AND WASHERS.

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

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¾" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



7 BOLT HOLD DOWN PLATE

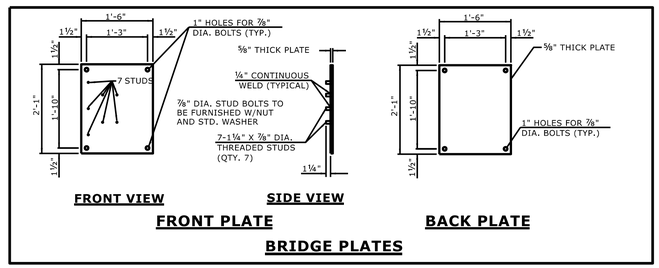


PART SECTION OF BARRIER OR RAIL
THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE

STEEL SPACER TUBE

GENERAL NOTES:

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



BRIDGE PLATES

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

STRUCTURE ANCHOR UNITS

TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

SHEET 8 OF 9

862D03

12/6/2024

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
58843203D34164C5...

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BP8.R019	3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–L– 19+00	26+47.56	1,722	4,372	2,650	
	SUBTOTAL	1,722	4,372	2,650	
–L– 28+30.44	34+75	776	1,324	548	
	SUBTOTAL	776	1,324	548	
TOTAL		2,498	5,696	3,198	
MATERIAL FOR SHOULDER CONSTRUCTION			422	422	
LOSS DUE TO CLEARING & GRUBBING		–0		0	
WASTE IN LIEU OF BORROW					
PROJECT TOTAL		2,498	6,118	3,820	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				181	
GRAND TOTALS:		2,498		3,801	
SAY:		2,550		3,850	

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

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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
L	19+50	26+60	CL	1578
L	28+12	34+00	CL	1307
			TOTAL:	2,885
			SAY:	2,890

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
L (LT SIDE)	24+00.00	26+28.10	228.10
L (LT SIDE)	28+32.10	30+25.00	192.90
L (RT SIDE)	28+49.90	30+25.00	175.10
			TOTAL: 596.10
			SAY: 600

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	GREU TL-2	GREU TL-3	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
L	23+50.00	26+40.10	LT	290.10				24+50	6	9		50		1			1		1											
L	23+50.00	26+57.90	RT	307.90			24+50		6	9	50		1				1		1											
L	28+20.10	30+75.00	LT	254.90			29+75		6	9	50		1				1		1											
L	28+37.90	30+75.00	RT	237.10				29+75	6	9		50		1			1		1											
		SUBTOTAL		1090.00													4		4											
		LESS ANCHOR DEDUCTIONS																												
		GREU TL-3 4 @ 50'		-200.00																										
		TYPE III 4 @ 18.75'		-75.00																										
		TOTAL		815.00													4		4											
		SAY		825			5 ADDITIONAL GUARDRAIL POSTS										4		4												

11/26/2024
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RLEDWARD

4/04/06

COMPUTED BY:_____ DATE:_____
CHECKED BY:BAW DATE:_____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	3D-1

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE | | | | | | | | DRAINAGE PIPE THICKNESS OR GAUGE | | | | | | | | C.S. PIPE SIZE | | | | | | | | C.S. PIPE THICKNESS OR GAUGE | | | | | | | | R.C. PIPE CLASS III | | | | | | | | R.C. PIPE CLASS IV | | | | | | | | *** R.C. PIPE (CLASS V) | **** RC PIPE CULVERTS, CONTRACTOR DESIGN | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") LIN. FT. A 5.0' THRU 10.0' | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") LIN. FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | T.B.D.I. STD. 840.35 | G.D.I. FRAME WITH TWO N.S. SAG GRATES STD. 840.24 | G.D.I. FRAME WITH TWO N.S. FLAT GRATES STD. 840.29 | CORR. STEEL ELBOWS NO. & SIZE | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD 840.72 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

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Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	4

RANDOLPH COUNTY BRIDGE #162

ROADWAY DESIGN ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES
Signed by: Brian A Wiles

HYDRAULICS ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER ANDREW NOTTINGHAM
Signed by: Andrew Nottingham

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

PI Sta 16+54.48
△ = 1° 09' 52.0" (LT)
D = 0° 22' 49.2"
L = 306.15'
T = 153.08'
R = 15,064.12'

PT Sta. 18+07.55

–L– POT Sta. 19+00.00
BEGIN CONSTRUCTION

PI Sta 23+43.27
△ = 40° 10' 09.8" (LT)
D = 6° 52' 41.7"
L = 584.01'
T = 304.58'
R = 833.00'
SE = 6%

PC Sta. 20+38.69

NAD 83/NA 2011

BL-102 SIMONS LANES MILL RD/ 20' PAVED ROADWAY
S 64° 38' 45.3" E
"B" RIP RAP

REMOVE
+60.00
30.00' & 40.00'
0410
15"
CUT DITCH SEE DETAIL A
+38.69
30.00' & 50.00
+00.00
30.00'
REMOVE
0411
REMOVE
+38.69
30.00' & 50.00
0412
15"
WOODS
BL-103

TIMOTHY LEE BRADY
DB 2752 PG 876
2

MORRIS L. DOVE, JR. AND WIFE, MARY JANE DOVE
DB 1074 PG 14
1

KATHERINE CRAVEN VESTAL AND LINDA L. CRAVEN REDDING
DB 1143 PG 97
3

TERESA L. MAYER AND HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81
4

RONNIE R. CRAVEN
DB 1878 PG 115
PB 76 PG 81
5

BM2 ELEVATION = 446.208
N 688961 E 1828888
BL STATION 22+44.00 46 LEFT
BENCH TIE SET IN 30" SYCAMORE

EXCAVATE TO EL. 434.0'
FS-3
SEE DETAIL K
15" RCP-III
LATERAL V DITCH
SEE DETAIL B
BEGIN SBG
STA 24+00 LT
CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
15" W/2 ELBOWS
END SBG
STA 26+28 LT
0402
0409
2G1
8+1
GREU II-3
EXISTING R/W
0408
18"
CUT DITCH
SEE DETAIL A
GRADE TO DRAIN
+00.00
50.00' & 75.00'
LATERAL V DITCH
SEE DETAIL B
CLASS II RIP RAP
TO ELEV. = 439' (TYP.)
WOODS
BRUSH CREEK
HIGH WATER MARK = 433.0'
STANDARD V DITCH
SEE DETAIL D
RIP RAP AT EMBANKMENT
SEE DETAIL I
CLASS II RIP RAP
BANK STABILIZATION
SEE DETAIL J
STANDARD BASE DITCH
SEE DETAIL E
BEGIN SBG
STA 28+32 LT
CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
15" RCP-IV
15" W/2 ELBOWS
LATERAL V DITCH
SEE DETAIL C
0405
0404
0403
BM2
0406
0407
CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
BEGIN SBG
STA 28+50 RT
EXCAVATE TO EL. 434.0'
REMOVE EXISTING CONCRETE FOOTINGS
N 75° 11' 04.9" W
N MTL (PAVED)
S MTL (PAVED)
BL-104
INDUSTRIAL
SIMONS LANES MILL RD/ 20' PAVED ROADWAY
PT Sta. 26+22.70
PC Sta. 29+53.23
+22.70
75.00'
+53.23
75.00'
22' (TYP.)
+39.00
+20.00
N 00° 52' 45" W
99.13'
N 36° 08' 43" W
57.48'
N 38° 48' 39" W
155.30'
N 41° 25' 47" W
85.55'
N 40° 36' 24" W
35.68'
N 37° 17' 41" W
34.46'
N 51° 11' 49" W
334.45'
25
30
MATCHLINE –L– STA. 30+00.00 SEE SHEET 5

DETAIL A
CUT DITCH
(Not to Scale)
Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D=1.0 Ft.
FROM –L– STA. 19+00 TO STA. 20+50 LT
FROM –L– STA. 22+75 TO STA. 22+98 RT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
d
2:1
D
2:1
b
1'-0"ft.
Fill Slope
Geotextile
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1.5 Ft.
d=1.0 Ft.
b=5.0 Ft.
Type of Liner= CL I Rip-Rap, Keyed-In
FROM –L– STA. 23+50 TO STA. 26+75 RT
EST. 115 TONS, 290 SY GEOTEXTILE
330 CY DDE
FROM –L– STA. 23+75 TO STA. 24+25 LT
EST. 18 TONS, 45 SY GEOTEXTILE
20 CY DDE

DETAIL C
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
d
2:1
D
2:1
b
Fill Slope
Geotextile
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1.5 Ft.
d=1.0 Ft.
b=5.0 Ft.
Type of Liner= CL B Rip-Rap, Keyed-In
FROM –L– STA. 28+00 TO STA. 30+00 LT
EST. 45 TONS, 165 SY GEOTEXTILE
125 CY DDE

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
d
2:1
D
2:1
Natural Ground
Tuck Geotextile a Minimum of 1ft (TYP)
Geotextile
Min. D=1.5 Ft.
Type of Liner= CL I Rip-Rap, Keyed-In
d=1.0 Ft.
FROM –L– STA. 26+75 TO STA. 27+25 RT
EST. 18 TONS, 45 SY GEOTEXTILE
18 CY DDE

BEGIN BRIDGE
–L– POT 26+47.56
END BRIDGE
–L– POT 28+30.44
TYPE III
TYPE III
TYPE III
TYPE III
10'
10'
10'
10'
30'-10" F-F
20'
33'
1'-3"
1'-3"
05
04
03
02
01
00
BEGIN APPROACH SLAB
–L– POT 26+36.71
END APPROACH SLAB
–L– POT 28+41.28
BRIDGE SKETCH

DETAIL E
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
d
2:1
D
2:1
Natural Ground
Geotextile
B
Tuck Geotextile a Minimum of 1ft (TYP)
Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=1.5 Ft.
d=1.0 Ft.
B=2.0 Ft.
Type of Liner= CL B Rip-Rap, Keyed-In
FROM –L– STA. 27+58 TO STA. 28+00 LT
EST. 15 TONS, 45 SY GEOTEXTILE
17 CY DDE

DETAIL I
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
1.0' min.
10' min.
1.0'
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refusal
Type of Liner= CL I Rip-Rap, Keyed-In
FROM –L– STA. 27+25 TO STA. 27+34 RT
EST. 5 TONS, 10 SY GEOTEXTILE
FROM –L– STA. 27+50 TO STA. 27+65 LT
EST 9 TONS, 17 SY GEOTEXTILE

DETAIL J
BANK STABILIZATION
(Not to Scale)
NWS
2.0'
CLASS I OR FLATTER (Typ.)
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refusal
Type of Liner= CL II Rip-Rap, Keyed-In
FROM –L– STA. 27+02 TO STA. 27+12
EST. 25 TONS, 34 SY GEOTEXTILE
FROM –L– STA. 27+66 TO STA. 27+94
EST 96 TONS, 112 SY GEOTEXTILE

DETAIL K
FALSE SUMP (FS-3)
(Not to Scale)
0.5' Min. 1.0' Max.
Outside Ditch Traffic Flow
2:1
10:1
2'
GI etc.
S
S=Ditch Slope
℄ Proposed Ditch
FROM STA. 22+50 LT

FOR PROFILE, SEE SHEET 6

11/26/2024
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REVISIONS

NAD 83/NA 2011

PI Sta 32+17.12
△ = 35° 09' 21.0" (RT)
D = 6° 52' 41.7"
L = 511.12'
T = 263.89'
R = 833.00'
SE = 6%

PI Sta 35+93.27
△ = 1° 47' 02.3" (RT)
D = 0° 47' 13.6"
L = 226.65'
T = 113.33'
R = 7,279.31'

PT Sta. 34+64.34
PC Sta. 34+79.93
PT Sta. 37+06.59
POT Sta. 38+78.35

BM3 ELEVATION = 463.588
N 688928 E 1829628
BL STATION 29+85.00 36' LEFT
BENCH TIE SET IN 24" OAK

TERESA L. MAYER AND
HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81

RONNIE R. CRAVEN
DB 1878 PG 1115
PB 76 PG 81

CUT DITCH
SEE DETAIL A

LATERAL V DITCH
SEE DETAIL C

END SBG
STA 30+25 LT

+00.00
50.00' &
75.00'

+64.34
50.00'

+79.93
30.00' &
50.00'

S 69° 39' 34.1" E

BM3

EXISTING RW

BP8.R019-2

S 67° 52' 31.7" E

TO BONLEE

SR1005 (LANES MILL RD) 20' PAVED ROADWAY

60.00'

EXISTING RW

BP8.R019-1

REMOVE EX. 15" PIPE

INV=451.04'

INV=449.13'

18"RCP

2 P.S.

<0413>

16'

10'

8%

GREU TL-3

MATCHLINE -L- STA. 30+00.00 SEE SHEET 4

SPECIAL V DITCH
SEE DETAIL G

SPECIAL V DITCH
SEE DETAIL F

END SBG
STA 30+25 RT

+70.00
50.00' &
70.00'

TDE

+10.00
50.00' &
70.00'

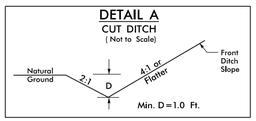
CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SY GEOTEXTILE

STANDARD BASE DITCH
SEE DETAIL H

+62.34
164.34
22.5°
(TYP)

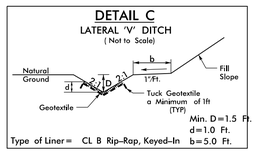
–L– POT Sta. 34+75.00
END CONSTRUCTION

DETAIL A
CUT DITCH
(Not to Scale)



FROM –L– STA. 33+40 TO STA. 34+75 LT

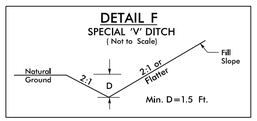
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap, Keyed-In

FROM –L– STA. 30+00 TO STA. 30+75 LT
EST. 17 TONS, 62 SY GEOTEXTILE
68 CY DDE

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

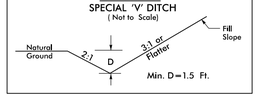


FROM –L– STA. 29+81 TO STA. 30+75 RT

S 53°05'43" E
111.64'

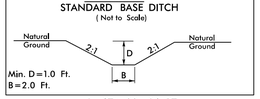
N 84°08'42" W
109.55'

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



FROM –L– STA. 30+75 TO STA. 31+00 RT
FROM –L– STA. 32+25 TO STA. 33+75 RT
FROM –L– STA. 34+38 TO STA. 34+75 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 33+86 RT
EST. 4 CY DDE
SLOPE=0.003ft/ft

FOR PROFILE, SEE SHEET 7

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	5

RANDOLPH COUNTY BRIDGE #162

ROADWAY DESIGN ENGINEER
11/12/2024
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES
Signed by: Brian A Wiles

HYDRAULICS ENGINEER
11/12/2024
NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER ANDREW WOTTINGHAM
Docusigned by: Andrew Nottingham

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	6

ROADWAY DESIGN ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN L. MILES ALLEN

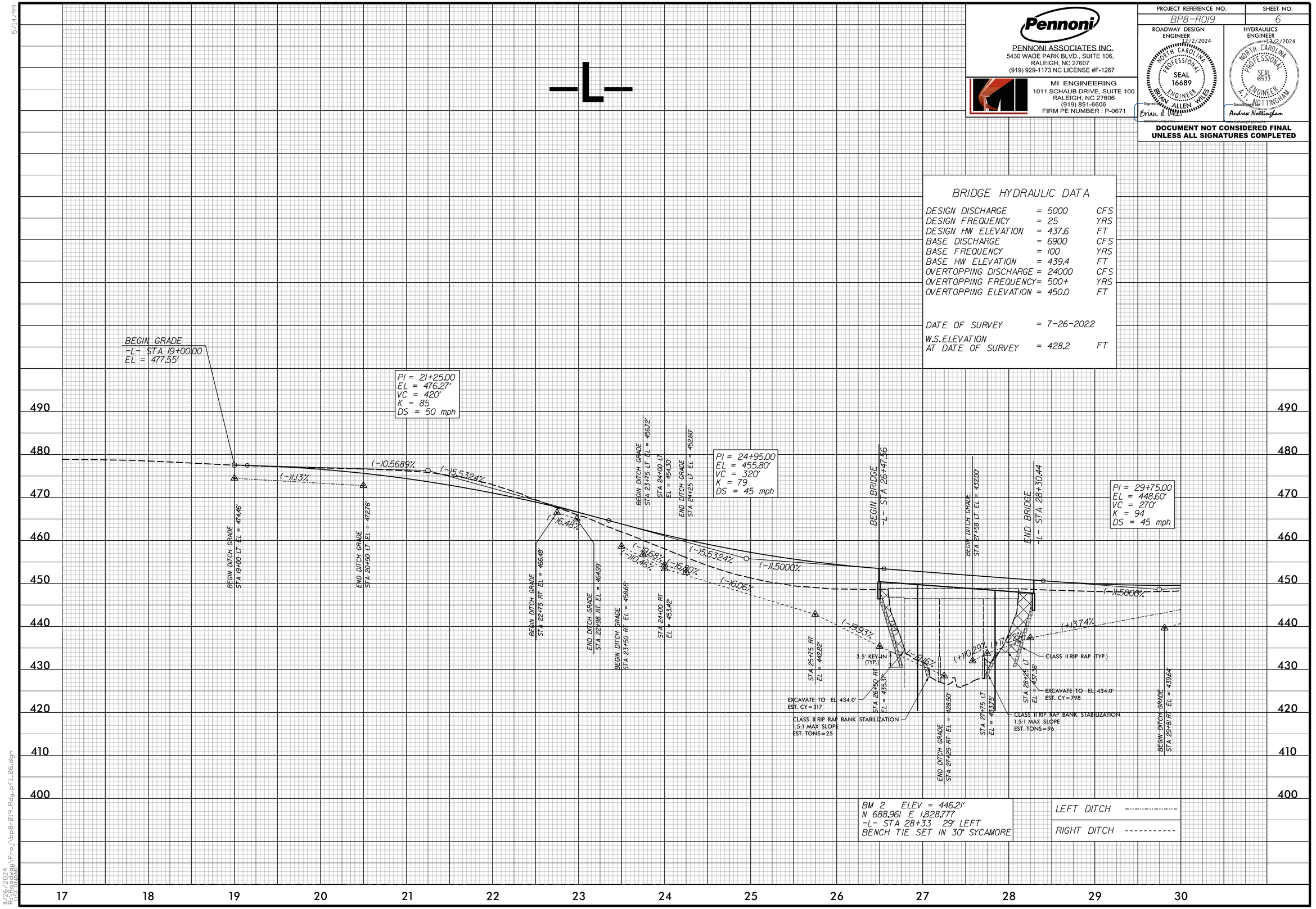
HYDRAULICS ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER A. T. NOTTINGHAM

Signed by: Brian L Miles
Docusigned by: Andrew Nottingham

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5000	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 437.6	FT
BASE DISCHARGE	= 6900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 439.4	FT
OVERTOPPING DISCHARGE	= 24000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 450.0	FT
DATE OF SURVEY	= 7-26-2022	
W.S. ELEVATION AT DATE OF SURVEY	= 428.2	FT



5/14/99

11/26/2024
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USER:name

Docusign Envelope ID: 3BE1689C-36A3-4145-8CF6-87AD64F0468E

5/14/99

Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	7

ROADWAY DESIGN ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES
Signed by: Brian A Wiles

HYDRAULICS ENGINEER
12/2/2024
NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER ANDREW THOMAS NOTTINGHAM
Docusigned by: Andrew Nottingham

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

490
480
470
460
450
440
430
420
410

30 31 32 33 34 35 36 37 38

-L-

PI = 33+95.00
EL = 454.35'
VC = 160'
K = 80
DS = 45 mph

END GRADE
-L- STA 34+75.00
EL = 457.05'

END DITCH GRADE
STA 30+75 LT EL = 449.05'

BEGIN DITCH GRADE
STA 33+40 LT EL = 452.58'
STA 33+50 LT
EL = 452.53'

STA 33+86 LT
EL = 451.04'

END DITCH GRADE
STA 34+75 LT EL = 454.87'

(+)11.3690%
(+)18.42%
(+)15.50%
(-)10.50%
(-)14.12%
(-)10.33%
(+)3.3750%
(+)4.30%
(+)5.30%

STA 30+25 LT
EL = 444.84'

END DITCH GRADE
STA 31+00 RT EL = 446.18'

BEGIN DITCH GRADE
STA 32+25 RT EL = 447.50'

END DITCH GRADE
STA 33+15 RT EL = 447.00'

BEGIN DITCH GRADE
STA 34+38 RT EL = 450.50'

END DITCH GRADE
STA 34+75 RT EL = 452.46'

BM 3 ELEV = 463.59'
N 688,928 E 1,829,623
-L- STA 35+70 29' LEFT
BENCH TIE SET IN 24" OAK

LEFT DITCH
RIGHT DITCH

11/26/2024
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USER:tmoore

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09/08/99

TIP PROJECT: BP8.RØ19.1

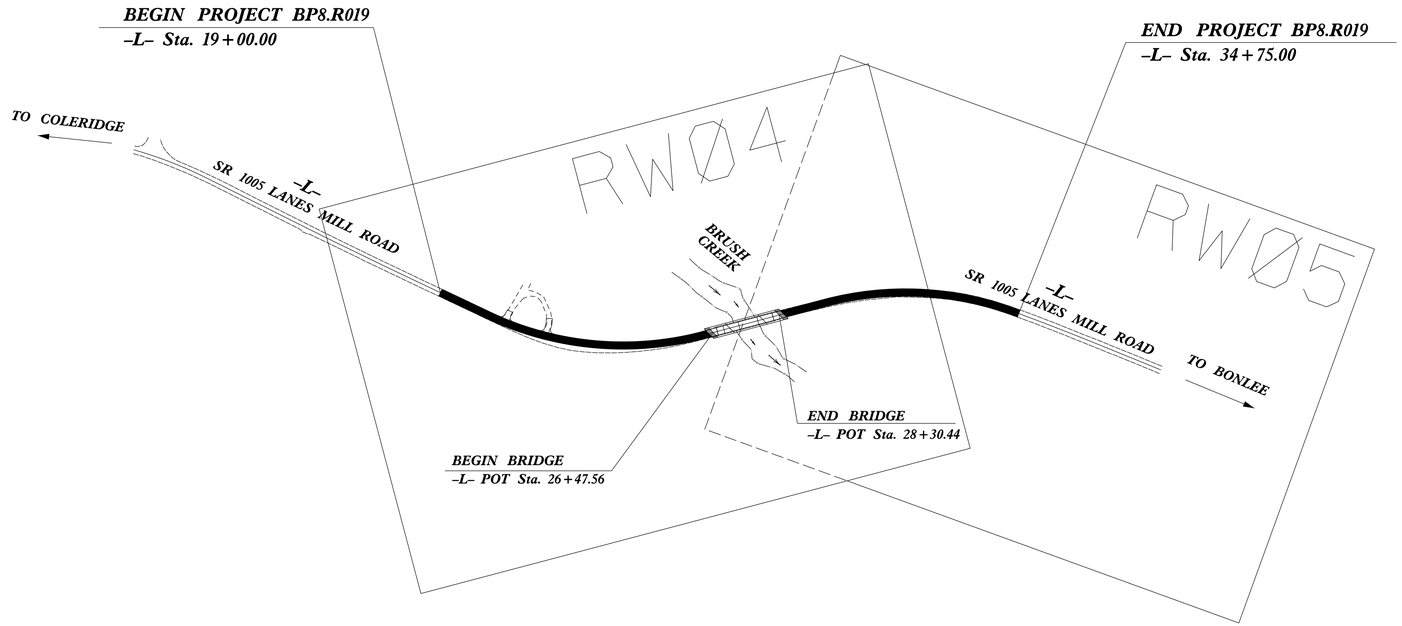
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8.R019	RW01	8

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

RANDOLPH COUNTY

NAD 83/ NA 2011



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT BP8.R019-1 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 689004.815(ft) EASTING: 1829250.763(ft) ELEVATION: 452.427(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987884
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM BP8.R019-1 TO -L- STATION 19+00.00 IS S 89°20'14" W 1254.23(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

WSP USA Inc.
128 TALBERT ROAD
SUITE A
MOORESVILLE, NC 28117
TEL: 704.662.0100
WWW.WSP.COM

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
3/15/23	8/22/25

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5368 LAND SURVEYOR THEODORE C. BENSON

DocuSigned by: Clint Benson 3831C1D05AA44E...

SIGNATURE: *Date:* 6/1/2023

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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

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6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW02C-1

Location and Surveys

McKIM & CREED

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Richard A. Mitchell, 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:

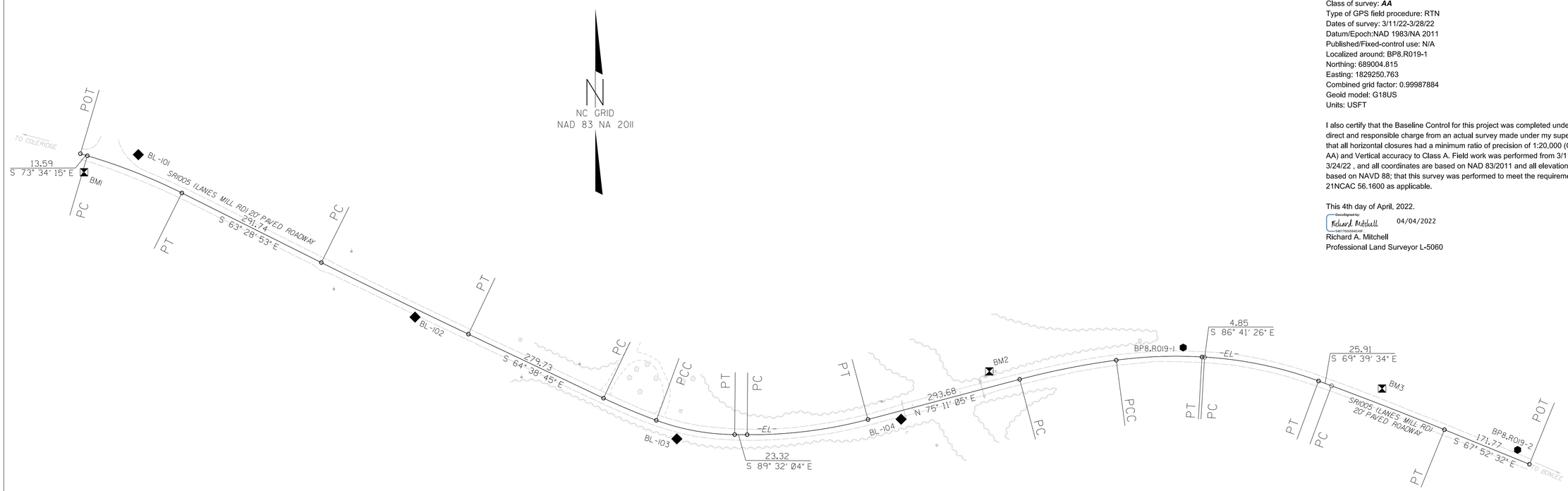
Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 3/11/22-3/28/22
Datum/Epoch:NAD 1983/NA 2011
Published/Fixed-control use: N/A
Localized around: BP8.R019-1
Northing: 689004.815
Easting: 1829250.763
Combined grid factor: 0.99987884
Geoid model: G18US
Units: USFT

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 3/11/22 to 3/24/22 , 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 4th day of April, 2022.

Docusigned by: Richard Mitchell 04/04/2022

Richard A. Mitchell
Professional Land Surveyor L-5060



SEE SHEET RW02C-2 FOR FURTHER ALIGNMENT DETAILS

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.

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SVincent AT MC06833

DocuSign Envelope ID: E0098E92-D470-4CF1-9E5E-B9D09FFA77B7

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	689367.482	1827186.791							
LINE			S 73°34'14.7" E	13.59					
PC	689363.639	1827199.823							
CURVE			S 68°31'34.0" E	190.09	10°05'21.3"(RT)	05°18'03.0"	190.33	95.41	1080.88
PT	689294.053	1827376.715							
LINE			S 63°28'53.3" E	291.74					
PC	689163.794	1827637.761							
CURVE			S 64°03'49.3" E	306.15	01°09'52.0"(LT)	00°22'49.2"	306.15	153.08	15064.12
PT	689029.893	1827913.076							
LINE			S 64°38'45.3" E	279.73					
PC	688910.111	1828165.860							
CURVE			S 67°13'53.1" E	107.09	05°10'15.6"(LT)	04°49'36.9"	107.13	53.60	1187.00
PCC	688868.665	1828264.606							
CURVE			S 79°40'32.4" E	149.16	19°43'03.0"(LT)	13°09'14.9"	149.90	75.70	435.57
PT	688841.933	1828411.348							
LINE			S 89°32'03.9" E	23.32					
PC	688841.744	1828434.663							
CURVE			N 82°49'30.5" E	227.90	15°16'51.2"(LT)	06°41'07.2"	228.57	114.97	857.04
PT	688870.208	1828660.775							
LINE			N 75°11'04.9" E	293.68					
PC	688945.302	1828944.688							
CURVE			N 78°47'03.6" E	184.26	07°11'57.4"(RT)	03°54'16.3"	184.38	92.31	1467.42
PCC	688981.141	1829125.431							
CURVE			N 87°50'48.3" E	160.57	10°55'31.9"(RT)	06°47'38.3"	160.81	80.65	843.33
PT	688987.174	1829285.886							
LINE			S 86°41'25.7" E	4.85					
PC	688986.894	1829290.732							
CURVE			S 78°10'29.9" E	217.96	17°01'51.6"(RT)	07°47'06.5"	218.76	110.19	735.96
PT	688942.229	1829504.066							
LINE			S 69°39'34.1" E	25.91					
PC	688933.221	1829528.363							
CURVE			S 68°46'02.9" E	226.64	01°47'02.3"(RT)	00°47'13.6"	226.65	113.33	7279.31
PT	688851.142	1829739.621							
LINE			S 67°52'31.7" E	171.77					
POT	688786.451	1829898.740							

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW02C-2

Location and Surveys

McKIM&CREED

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Richard A. Mitchell, 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: 3/11/22-3/28/22
Datum/Epoch:NAD 1983/NA 2011
Published/Fixed-control use: N/A
Localized around: BP8.R019-1
Northing: 689004.815
Easting: 1829250.763
Combined grid factor: 0.99987884
Geoid model: G18US
Units: USFT

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 3/11/22 to 3/24/22 , 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 4th day of April, 2022.

Docusigned by: Richard Mitchell 04/04/2022

Richard A. Mitchell
Professional Land Surveyor L-5060

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.

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6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW02C-3

Location and Surveys

McKIM&CREED

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BL

POINT	DESC.	NORTH	EAST	ELEVATION
101	BL-101	689365.6120	1827295.5690	491.59
102	BL-102	689061.6860	1827813.3330	478.03
103	BL-103	688833.9360	1828303.2640	473.08
104	BL-104	688870.6880	1828722.9010	448.38
1	BP8.R019-1	689004.8150	1829250.7630	452.43
2	BP8.R019-2	688813.3400	1829876.5650	475.37

```
****************************************
BM1       ELEVATION = 491.551
N 689333      E 1827194
BENCH TIE SET IN 14" OAK
****************************************

****************************************
BM2       ELEVATION = 446.208
N 688961      E 1828888
BENCH TIE SET IN 30" SYCAMORE
****************************************

****************************************
BM3       ELEVATION = 463.588
N 688928      E 1829623
BENCH TIE SET IN 24" OAK
****************************************
```

I, Richard A. Mitchell, 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: 3/11/22-3/28/22
Datum/Epoch:NAD 1983/NA 2011
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Localized around: BP8.R019-1
Northing: 689004.815
Easting: 1829250.763
Combined grid factor: 0.99987884
Geoid model: G18US
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This 4th day of April, 2022.

Docusigned by: Richard Mitchell 04/04/2022

Richard A. Mitchell
Professional Land Surveyor L-5060

NOTES:

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6/2/99

REVISIONS

$$$$$$$$SYSTIME$$$$$
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$$$$$$$$$$$$$$$$USERNAME$$$$

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW02D-1
Location and Surveys	

WSP USA Inc.
128 TALBERT ROAD
SUITE A
MOORESVILLE, NC 28117
TEL: 704.662.0100
WWW.WSP.COM

L

TYPE	STATION	NORTH	EAST
POT	10+05.74	689367.4820	1827186.7910
PC	10+19.32	689363.6394	1827199.8225
PT	12+09.66	689294.0527	1827376.7150
PC	15+01.40	689163.7945	1827637.7612
PT	18+07.55	689029.8933	1827913.0758
PC	20+38.69	688930.9171	1828121.9511
PT	26+22.70	688878.3745	1828691.6522
PC	29+53.23	688962.8917	1829011.1913
PT	34+64.34	688938.6415	1829513.7427
PC	34+79.93	688933.2214	1829528.3633
PT	37+06.59	688851.1420	1829739.6209
POT	38+78.35	688786.4510	1829898.7403

NOTES:

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

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REVISIONS

$$$$$$$$SYSTIME$$$$$$
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$$$$$$$$USERNAME$$$$$$$$$$$$$$$$

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW03E-1
Location and Surveys	

WSP USA Inc.
128 TALBERT ROAD
SUITE A
MOORESVILLE, NC 28117
TEL: 704.662.0100
WWW.WSP.COM

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	20+38.69	50.00	688885.7332	1828100.541
L	20+38.69	30.00	688903.8067	1828109.105
L	20+38.69	−30.00	688958.0275	1828134.797
L	20+38.69	−50.00	688976.101	1828143.362
L	23+00.00	75.00	688783.2047	1828362.008
L	23+00.00	50.00	688807.9976	1828365.22
L	23+00.00	−50.00	688907.169	1828378.066
L	23+00.00	−75.00	688931.9619	1828381.277
L	26+22.70	−75.00	688950.8812	1828672.474
L	26+22.70	75.00	688805.8679	1828710.83
L	29+53.23	−75.00	689035.3983	1828992.014
L	29+53.23	75.00	688890.3851	1829030.369
L	31+00.00	−75.00	689062.5057	1829149.48
L	31+00.00	−50.00	689037.5904	1829151.537
L	31+00.00	75.00	688937.9295	1829159.765
L	31+00.00	50.00	688913.0143	1829161.822
L	34+64.34	50.00	688891.7594	1829496.363
L	34+79.93	50.00	688886.3393	1829510.983
L	34+79.93	30.00	688905.0921	1829517.935
L	34+64.34	−50.00	688985.5237	1829531.123
L	34+79.93	−30.00	688961.3507	1829538.791
L	34+79.93	−50.00	688980.1036	1829545.743

I, Theodore C. Benbow, PLS, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of June, 2023.

DocuSigned by:
Clint Benbow
9831C13D55AA49E...

Professional Land Surveyor — L-5368 PLS * — Seal

NORTH CAROLINA PROFESSIONAL SEAL L-5368 LAND SURVEYOR THEODORE C. BENBOW

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.

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PROJECT REFERENCE NO.	SHEET NO.
BPS.R019	RW04

Location and Surveys

WSP USA Inc.
128 TALBERT ROAD
SUITE A
MOORESVILLE, NC 28117
TEL: 704.662.0100
WWW.WSP.COM

PI Sta 16+54.48
△ = 1° 09' 52.0" (LT)
D = 0° 22' 49.2"
L = 306.15'
T = 153.08'
R = 15,064.12'

PT Sta. 18+07.55

–L– POT Sta. 19 + 00.00
BEGIN CONSTRUCTION

PC Sta. 20+38.69

PI Sta 23+43.27
△ = 40° 10' 09.8" (LT)
D = 6° 52' 41.7"
L = 584.01'
T = 304.58'
R = 833.00'
SE = 6%

NAD 83/NA 2017

20

25

30

15" RCP

BL-102

SR1005 (LANES MILL RD) 20' PAVED ROADWAY

S 64° 38' 45.3" E

+00.00
30.00'

+60.00
30.00' &
40.00'

+38.69
30.00' &
50.00

+38.69
30.00' &
50.00

+00.00
50.00' &
75.00'

+00.00
50.00' &
75.00'

WOODS

12" RCP

GR

TC

FO

EXISTING RW

RW

MORRIS L. DOVE, JR. AND
WIFE, MARY JANE DOVE
DB 1074 PG 14

1

+35.82
44.39

BL-103

S 01°31'17" E
147.74'

TIMOTHY LEE BRADY
DB 2752 PG 876

2

KATHERINE CRAVEN VESTAL AND
LINDA L. CRAVEN REDDING
DB 1143 PG 97

3

N 10°13'45" W
96.73'

N 35°58'43" W
51.48'

N 38°48'39" W
(S 39°W)

PT Sta. 26+22.70

+22.70
75.00'

TERESA L. MAYER AND
HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81

4

N 47°29'42" W
85.55'

BRUSH CREEK

N 40°35'24" W
35.68'

+35.76
33.31

3" WOOD WW

BM2
TOW

N 75° 11' 04.9" E

+35.76
32.51

BL-104

MEMORIAL

HIGH WATER
MARK = 433.0'

N 37°28'17" W
104.49'

PC Sta. 29+53.23

+53.23
75.00'

RONNIE R. CRAVEN
DB 1878 PG 1115
PB 76 PG 81

5

N 59°11'17" W
334.49'

MATCHLINE –L– STA. 30 + 00.00 SEE SHEET 5

I, Theodore C. Benbow, PLS, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of June, 2023.

DocuSigned by:
Clint Benbow
9B31C1205AA4BE...

Professional Land Surveyor — L-5368 PLS * — Seal

NORTH CAROLINA PROFESSIONAL SEAL L-5368 LAND SURVEYOR THEODORE C. BENBOW

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.

$$$

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PROJECT REFERENCE NO.	SHEET NO.
BP8.R019	RW05

Location and Surveys

WSP USA Inc.
128 TALBERT ROAD
SUITE A
MOORESVILLE, NC 28117
TEL: 704.662.0100
WWW.WSP.COM

I, Theodore C. Benbow, PLS, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

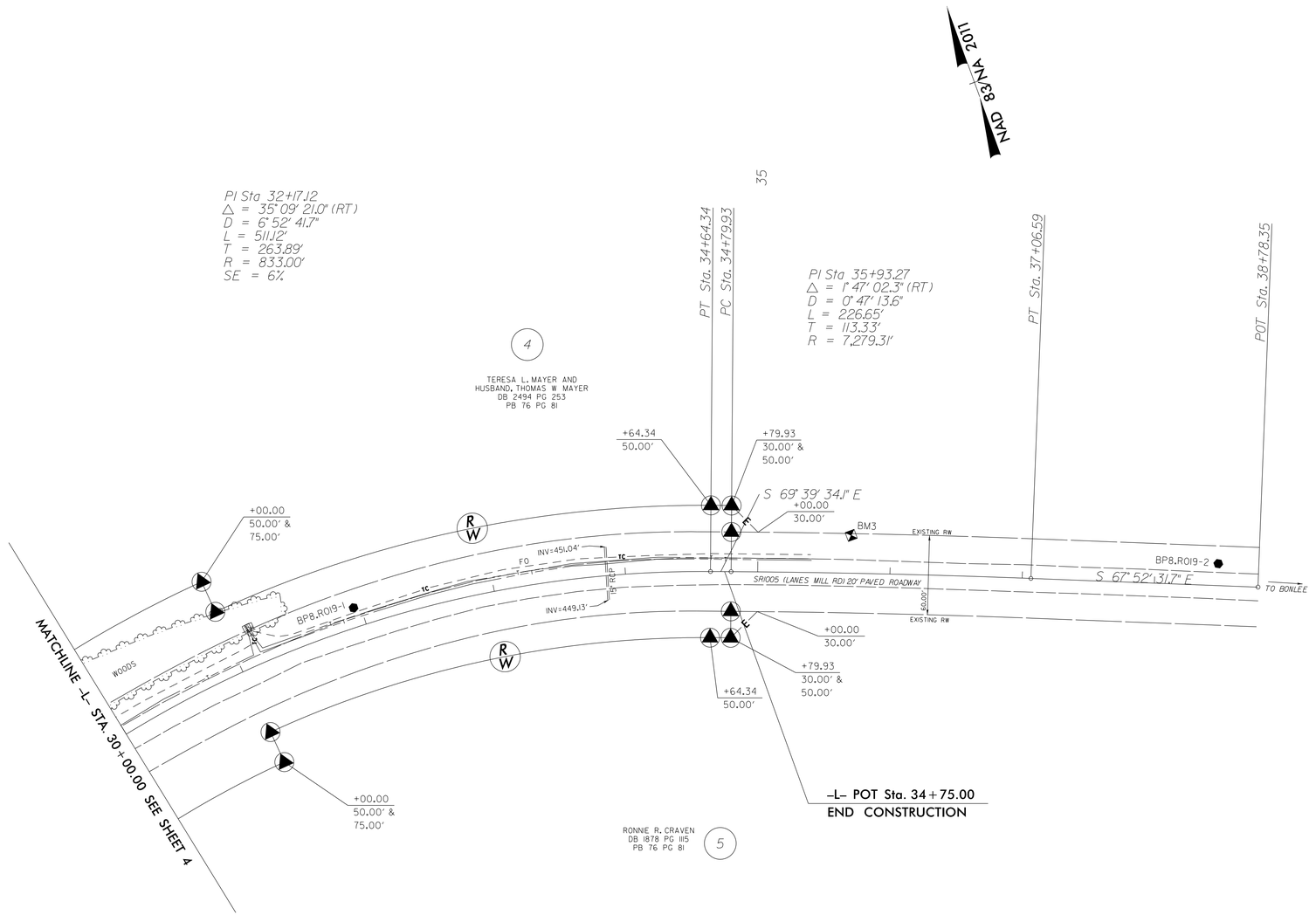
I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of June, 2023.

DocuSigned by:
Clint Benbow
SIGNATURE

Professional Land Surveyor — L-5368 PLS * — Seal

NORTH CAROLINA PROFESSIONAL SEAL L-5368 LAND SURVEYOR THEODORE C. BENBOW



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.

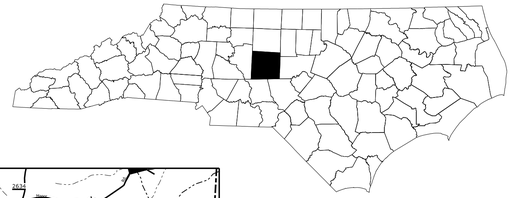
$$$$$$$$SYTIME$$$$
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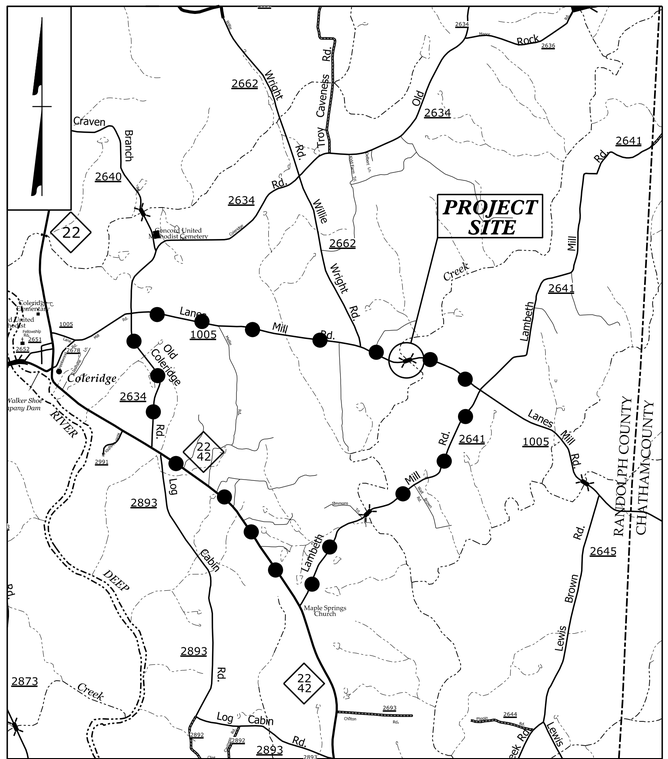
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

RANDOLPH COUNTY





VICINITY MAP

DETOUR ROUTE

LOCATION: BRIDGE 750162 OVER BRUSH CREEK ON SR 1005 (LANES MILL ROAD)

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE DETAIL AND DETOUR SIGNS

SHEET NO.
TMP-1

BP8-R019

PROJECT:



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

PLANS PREPARED BY:

BRIAN A. WILES, PE
PROJECT MANAGER

NCDOT CONTACTS:

TIM WELCH, PE
DIV. 8 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

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 8
121 DOT Drive
Carthage, NC 28327

PLANS PREPARED BY:
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

APPROVED: Signed by: Brian A Wiles 889DD0FEA2E34DE...

DATE: 12/2/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

11/26/2024
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USERNAME:

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PROJ. REFERENCE NO.	SHEET NO.
BP8-R019	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
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKER - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKER - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

FINAL PAVEMENT MARKING

PAINT PAVEMENT MARKING LINES (4")	12,600 LF
PERMANENT RAISED PAVEMENT MARKERS	60 EACH

PENNONI ASSOCIATES INC.
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APPROVED: Signed by: Brian A Wiles 8890D0FEA2E34DE...

DATE: 12/2/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

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

ROADWAY STANDARD DRAWINGS & LEGEND

11/26/2024
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PROJ. REFERENCE NO.	SHEET NO.
BP8-R019	TMP-1B

MANAGEMENT STRATEGIES

-CLOSE SR 1005 (LANES MILL ROAD) AND DETOUR TRAFFIC OFF-SITE

-MAINTAIN LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION

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.

SIGNING

A) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.

B) 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.

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

LOCAL NOTES

1) NOTIFY THE ENGINEER AT LEAST 30 DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

2) NOTIFY THE RANDOLPH COUNTY SCHOOLS TRANSPORTATION OFFICE AT (336) 633-5145 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.

3) NOTIFY THE RANDOLPH COUNTY EMERGENCY MANAGEMENT AT (336) 318-6911 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.

PHASING

STEP 1) USING RSD 1101.03, SHEET 1 OF 9 AND TMP-4, CLOSE SR 1005 (LANES MILL ROAD) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.

STEP 2) REMOVE THE EXISTING STRUCTURE.

STEP 3) CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.

STEP 4) PLACE FINAL PAVEMENT MARKINGS.

STEP 5) OPEN SR 1005 (LANES MILL ROAD) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

APPROVED: Signed by: Brian A Wiles 889D0FEA2E34DE...

DATE: 12/2/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION OPERATIONS PLAN

11/26/2024
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USERNAME:

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PROJ. REFERENCE NO.	SHEET NO.
BP8-R019	TMP-2

SIGN NUMBER: SP-1
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 3′-6″
HEIGHT: 2′-0″
TOTAL AREA: 7.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.47″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

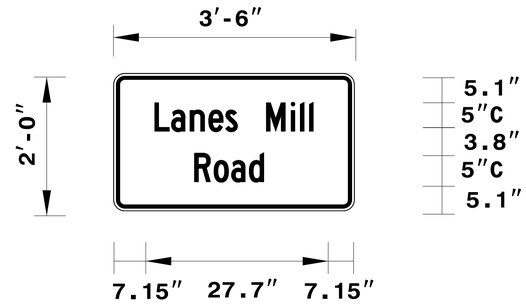
DESIGN BY: TAG
PROJECT ID: ID

CHECKED BY:
LOCATION:

April 24, 2023
DIV: DIV

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.



BORDER
R=1.5″
TH=0.63″
IN=0.47″

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner																										Series/Size Text Length
	L	a	n	e	s		M	i	l	l																C 2000
	4.8	10.1	13.5	16.6	19.5	21.6	26.6	30.9	32.5	34.1																27.7
	7.2	o	a	d																						C 2000
	14.1	17.5	0.52	23.6																						12.1

FILENAME: SIGN DESIGNS - Work Zone_2

NORTH CAROLINA D.O.T. SIGN DETAIL

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

APPROVED: Brian A Wiles
88900DFEA2E34DE...
DATE: 12/2/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SPECIAL SIGN DESIGN

11/26/2024
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USERNAME_

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PROJ. REFERENCE NO.	SHEET NO.
BP8-R019	TMP-3

PROJECT SITE

2712 Church River Deep River

DEEP RIVER

2640 Rd. 2634 Willie Wright Rd. 2662 Mill Creek 2641 Lambeth Mill Rd. 1005

Concord United Methodist Cemetery

Coleridge Elementary

Concord United Methodist

Fellowship Rd. 2651

Concord Church Rd. 2652

Lane Rd. 2678

Peskwood Rd.

Mill Rd.

Coleridge

Old Coleridge Rd. 2634

Lanes Mill Rd. 1005

Deep River Baptist

DB Walker Shoe Company Dam

RIVER

2653 Rd.

Riverside Rd. 2873

2991 Tuckahoe Rd.

22 42

Log Cabin Rd. 2893

Lambeth Mill Rd. 2641

Lanes Mill Rd. 1005

RANDOLPH COUNTY CHATHAM COUNTY

Little

Jim Lane

Rd. 2894 Ctry.

Rd. 2873

DEEP

Creek

Richland

Maple Springs Church

Brown Rd. 2645

Lewis

Chilton

Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

APPROVED: Signed by: Brian A Wiles 889D0DFEA2E34DE...

DATE: 12/2/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

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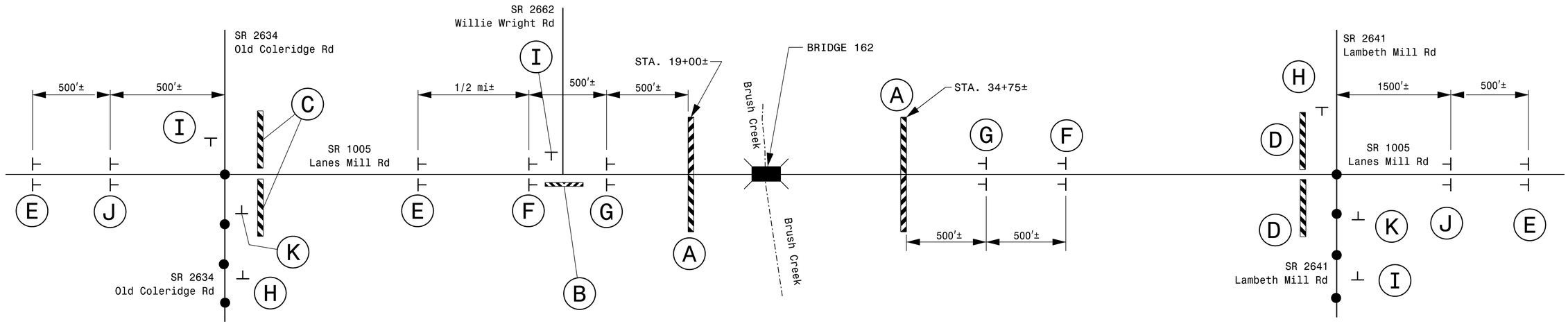
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

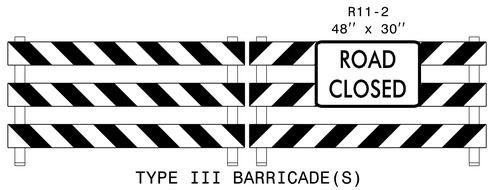
DETOUR ROUTE

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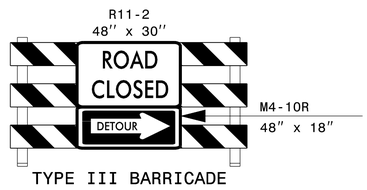
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BP8-R019	TMP-4





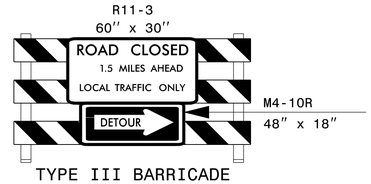
TYPE III BARRICADE(S)

A



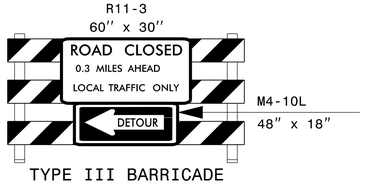
TYPE III BARRICADE

B



TYPE III BARRICADE

C



TYPE III BARRICADE

D



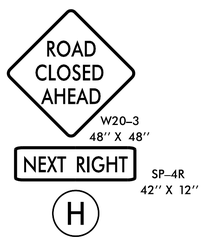
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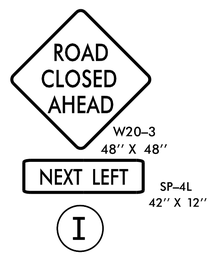
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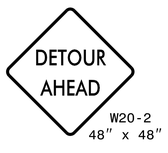
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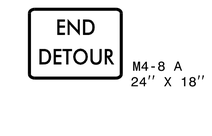
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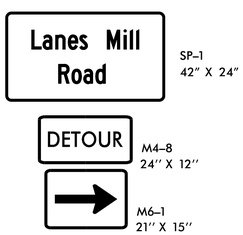
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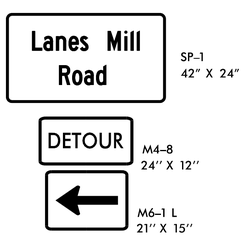
J



K



L



M

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

APPROVED: Brian A Wiles
DATE: 12/2/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES

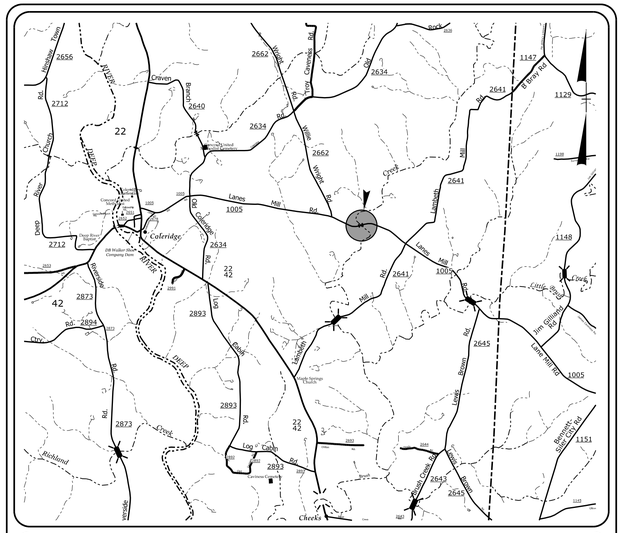
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ROAD CLOSURE DETAIL and DETOUR SIGNS

11/26/2024
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USERNAME:

TIP PROJECT: BP8–R019



OFF-SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

RANDOLPH COUNTY

LOCATION: BRIDGE 750162 OVER BRUSH CREEK ON SR 1005 (LANES MILL ROAD)

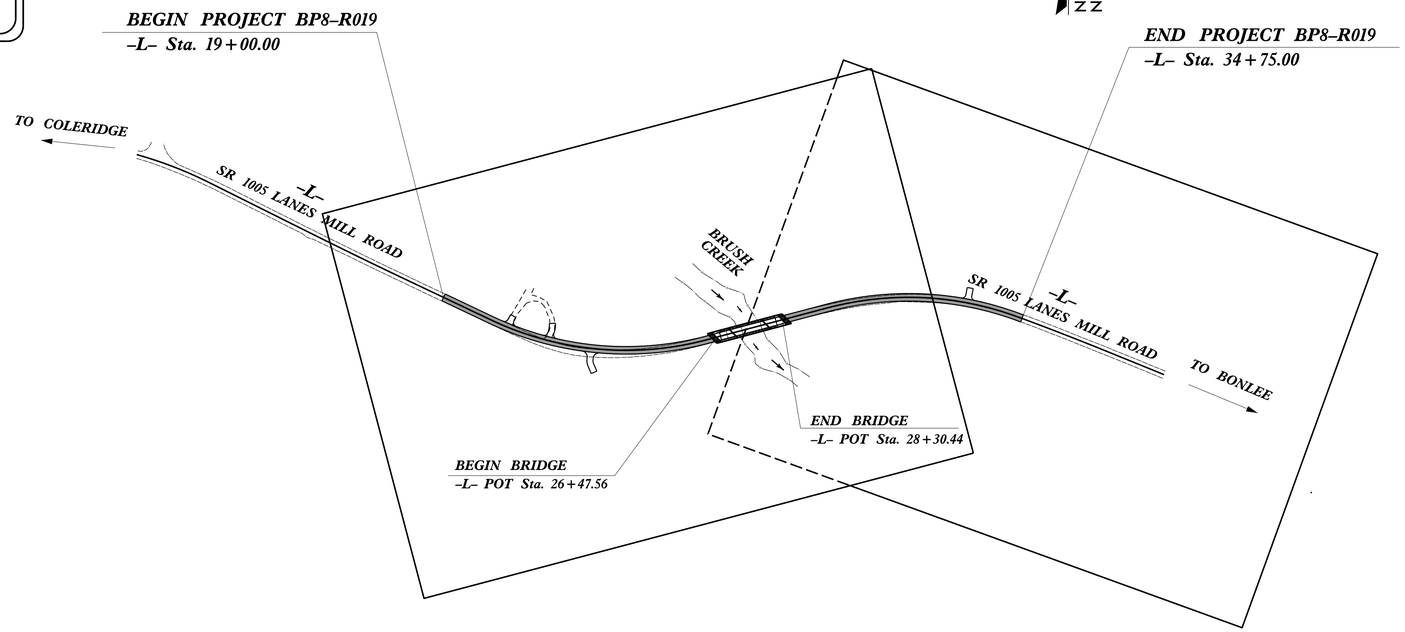
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8-R019	EC-1	

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

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

NAD 83/
NA 2011



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.

LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: NOVEMBER 8, 2024

Prepared in the Office of:

MI ENGINEERING, PLLC

1011 SCHAUB DR, SUITE 100
RALEIGH, NC 27606
(919) 851–6606
FIRM PE NUMBER: P–0671

Designed by:

KAREN HEFNER, PE ***3824***

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 revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

11/8/2024
N:\NC_Hydro\M2017_Randolph_I62\Erosion Control\CADD\BP8R019_ECO1_2024_TSH_LEGEND.dgn
$USERNAME$

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-02

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

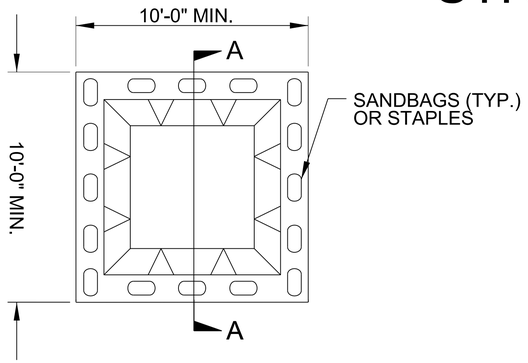
Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer 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—

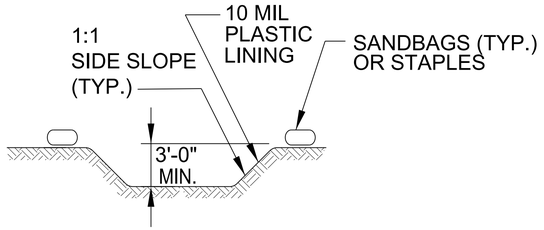
11/8/2024
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$USERNAME$

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-02A
R/W SHEET NO.	

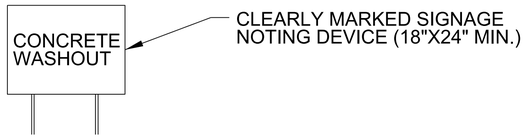
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



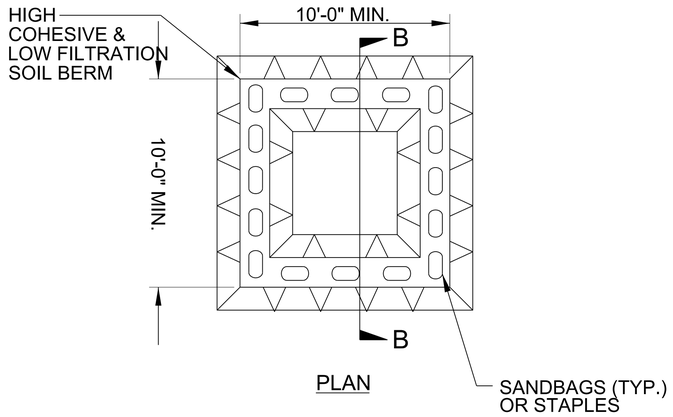
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

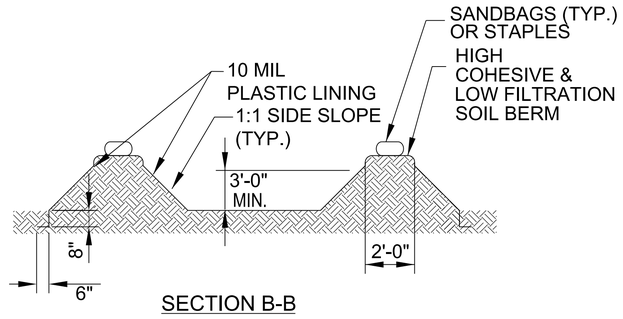
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

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

11/8/2024
N:\NC Hydro\M2107_Randolph_162\Erosion Control\CADD\BP8R019_EC02A_Concrete_Washout.dgn
$(USERNAME)$

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-03

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

11/8/2024
N:\NC Hydro\M2017_Randolph_162\Erosion Control\CADD\BP8R019_EC03_Stabilization Guide.dgn
$(USERNAME)$

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-03A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	19+00	20+50	LT	210
4	-L-	22+75	23+25	RT	95
4	-L-	33+40	34+75	LT	315
4	-L-	29+81	31+00	LT	280
4	-L-	34+38	34+75	LT	80
				SUBTOTAL	980
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					10,975
				TOTAL	11,955
				SAY	12,000

MATTING FOR EROSION CONTROL

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

11/8/2024
N:\NC Hydro\M2017_Randolph_I62\Erosion Control\CADD\BP8R019_EC03A_Matting.dgn
$USERNAME$

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING R/W OR EASEMENT.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE: PRIOR TO INSTALLATION OF EROSION CONTROL DEVICES, CONTRACTOR SHALL VERIFY BOUNDARIES OF JURISDICTIONAL AREAS AND DELINEATE WITH SAFETY FENCE OR FLAGGING.

NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES IN ACCORDANCE WITH THE "SOIL STABILIZATION TIMEFRAMES", SEE EC–3.

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

Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8–R019	EC–04/CONST.04
RANDOLPH COUNTY BRIDGE #162	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: NOVEMBER 8, 2024

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

–L– POT Sta. 19+00.00
BEGIN CONSTRUCTION

PI Sta 23+43.27
Δ = 40° 10' 09.8" (LT)
D = 6° 52' 41.7"
L = 584.01'
T = 304.58'
R = 833.00'
SE = 6%

PC Sta. 20+38.69

NAD 83/NA 2011

40 x 20 x 3
1.5 inch Skimmer
with 1.00 inch
Orifice Diameter
6 ft. weir
ID 4.1

60 x 22 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
10 ft. weir
ID 4.2

PT Sta. 26+22.70

PC Sta. 29+53.23

MATCHLINE –L– STA. 30+00.00 SEE SHEET 5

TIMOTHY LEE BRADY
DB 2752 PG 876

TERESA L. MAYER AND
HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81

MORRIS L. DOVE, JR. AND
WIFE, MARY JANE DOVE
DB 1074 PG 14

KATHERINE CRAVEN VESTAL AND
LINDA L. CRAVEN REDDING
DB 1143 PG 97

RONNIE R. CRAVEN
DB 1878 PG 115
PB 76 PG 81

CUT DITCH
SEE DETAIL A

REMOVE

EXCAVATE TO EL. 434.0'

FS–3
SEE DETAIL K

15" RCP–III

LATERAL V DITCH
SEE DETAIL B

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE

BEGIN SBG
STA 24+00 LT

15" W/2 ELBOWS

END SBG
STA 26+28 LT

GRADE TO DRAIN

CLASS II RIP RAP
TO ELEV. = 439' (TYP.)

STANDARD V DITCH
SEE DETAIL D

IMPERVIOUS
DIKE

RIP RAP AT EMBANKMENT
SEE DETAIL I

CLASS II RIP RAP
BANK STABILIZATION
SEE DETAIL J

STANDARD BASE DITCH
SEE DETAIL E

BEGIN SBG
STA 28+32 LT

15" RCP–IV

LATERAL V DITCH
SEE DETAIL C

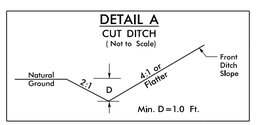
BEGIN SBG
STA 28+50 RT

EXCAVATE TO EL. 434.0'

REMOVE EXISTING
CONCRETE FOOTINGS

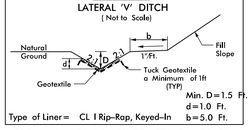
FROM STA. 22+50 LT

DETAIL A
CUT DITCH
(Not to Scale)



FROM –L– STA. 19+00 TO STA. 20+50 LT
FROM –L– STA. 22+75 TO STA. 22+98 RT

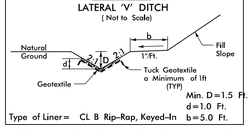
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CL I Rip–Rap, Keyed–In

FROM –L– STA. 23+50 TO STA. 26+75 RT
EST. 115 TONS, 290 SY GEOTEXTILE
330 CY DDE
FROM –L– STA. 23+75 TO STA. 24+25 LT
EST. 18 TONS, 45 SY GEOTEXTILE
20 CY DDE

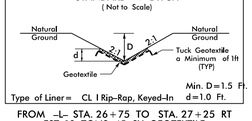
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CL B Rip–Rap, Keyed–In

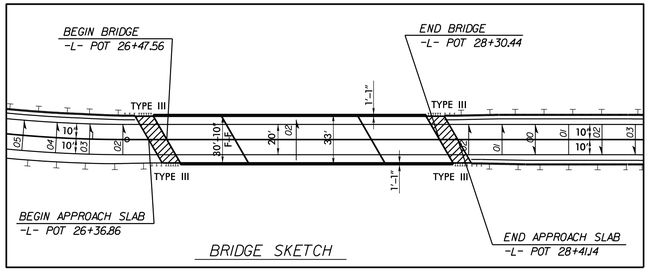
FROM –L– STA. 28+00 TO STA. 30+00 LT
EST. 45 TONS, 165 SY GEOTEXTILE
125 CY DDE

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



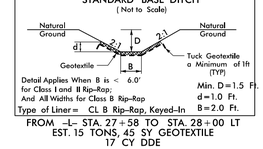
Type of Liner = CL I Rip–Rap, Keyed–In

FROM –L– STA. 26+75 TO STA. 27+25 RT
EST. 18 TONS, 45 SY GEOTEXTILE
18 CY DDE



BRIDGE SKETCH

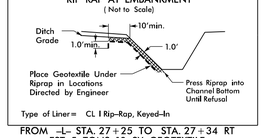
DETAIL E
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
And All Widths for Class B Rip–Rap
Type of Liner = CL B Rip–Rap, Keyed–In

FROM –L– STA. 27+58 TO STA. 28+00 LT
EST. 15 TONS, 45 SY GEOTEXTILE
17 CY DDE

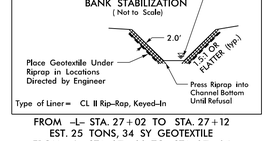
DETAIL I
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = CL I Rip–Rap, Keyed–In

FROM –L– STA. 27+25 TO STA. 27+34 RT
EST. 5 TONS, 10 SY GEOTEXTILE
FROM –L– STA. 27+50 TO STA. 27+65 LT
EST 9 TONS, 17 SY GEOTEXTILE

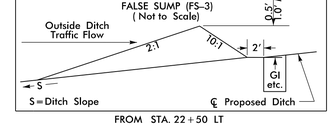
DETAIL J
BANK STABILIZATION
(Not to Scale)



Type of Liner = CL II Rip–Rap, Keyed–In

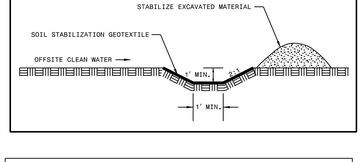
FROM –L– STA. 27+02 TO STA. 27+12
EST. 25 TONS, 34 SY GEOTEXTILE
FROM –L– STA. 27+66 TO STA. 27+94
EST 96 TONS, 112 SY GEOTEXTILE

DETAIL K
FALSE SUMP (FS–3)
(Not to Scale)



FROM STA. 22+50 LT

CLEAN WATER DIVERSION
CWD — CWD — CWD — CWD — CWD — CWD
(Not to Scale)



FOR PROFILE, SEE SHEET 6

11/8/2024
N:\Projects\Randolph_M2017_Randolph_162\Erosion Control\CADD\BPBR019_EC04_psh04_CG.dgn
MI ENGINEERING - kturner

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING R/W OR EASEMENT.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE: PRIOR TO INSTALLATION OF EROSION CONTROL DEVICES, CONTRACTOR SHALL VERIFY BOUNDARIES OF JURISDICTIONAL AREAS AND DELINEATE WITH SAFETY FENCE OR FLAGGING.

NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES IN ACCORDANCE WITH THE "SOIL STABILIZATION TIMEFRAMES", SEE EC–3.

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

Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

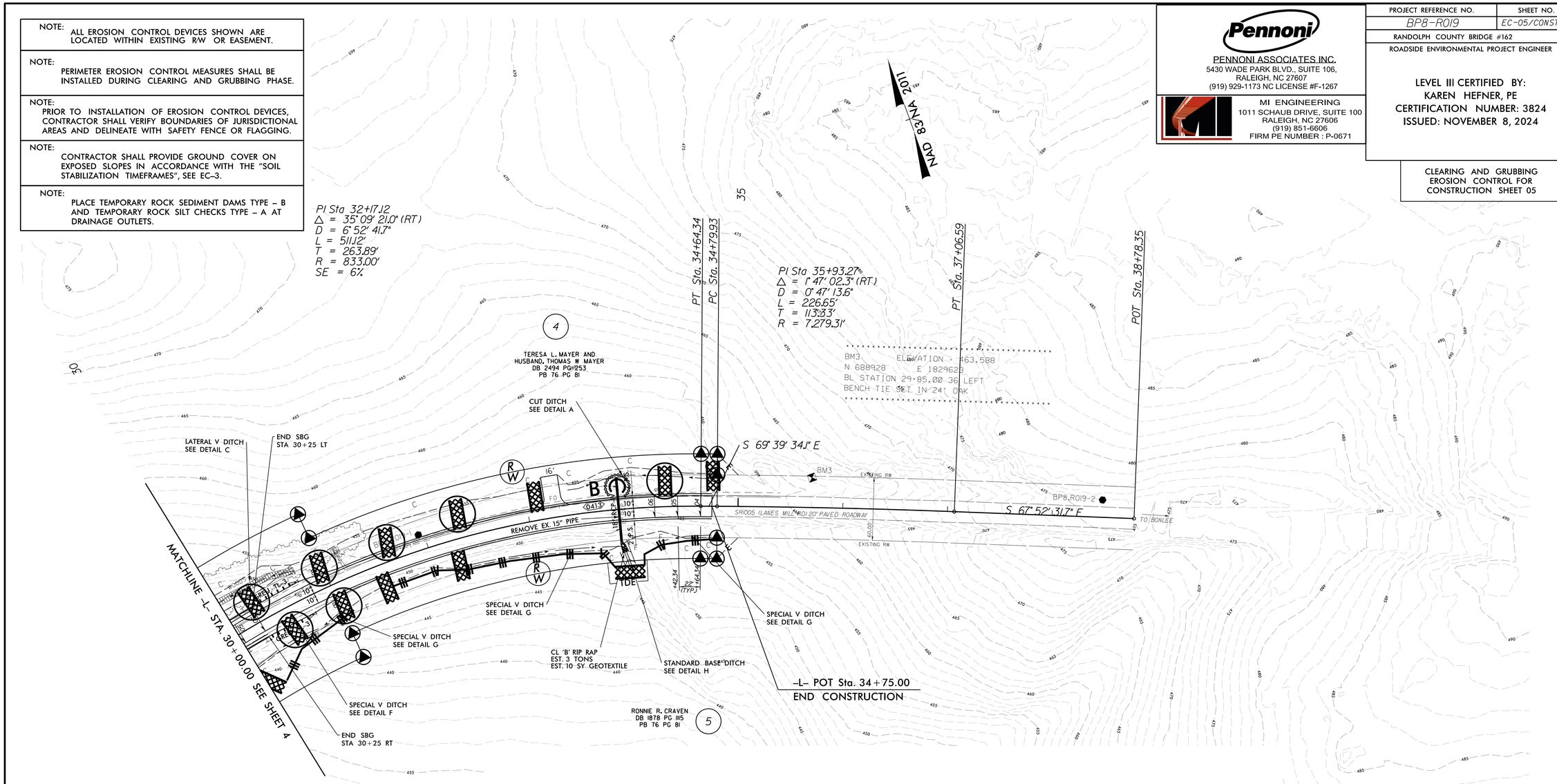
PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-05/CONST.05

RANDOLPH COUNTY BRIDGE #162

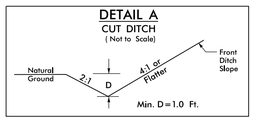
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: NOVEMBER 8, 2024

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

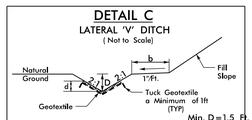


DETAIL A
CUT DITCH
(Not to Scale)



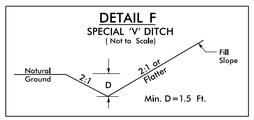
FROM –L– STA. 33+40 TO STA. 34+75 LT

DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



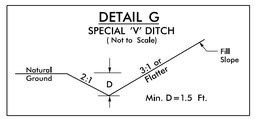
FROM –L– STA. 30+00 TO STA. 30+75 LT
EST. 17 TONS, 62 SY GEOTEXTILE
98 CY DDE

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



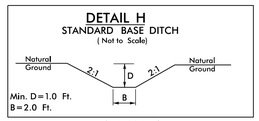
FROM –L– STA. 29+81 TO STA. 30+75 RT

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



FROM –L– STA. 30+75 TO STA. 31+00 RT
FROM –L– STA. 32+25 TO STA. 33+75 RT
FROM –L– STA. 34+38 TO STA. 34+75 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 33+86 RT
EST. 4 CY
SLOPE=0.003ft/ft

11/8/2024
N:\Projects\M21017_Randolph_162\Erosion Control\CADD\BP8R019_EC05_psh05_CG.dgn
MI ENGINEERING - hturner

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-06/CONST.04
RANDOLPH COUNTY BRIDGE #162	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: NOVEMBER 8, 2024

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 04

PI Sta 16+54.48
△ = 1° 09' 52.0" (LT)
D = 0° 22' 49.2"
L = 306.15'
T = 153.08'
R = 15,064.12'

PT Sta. 18+07.55

–L– POT Sta. 19+00.00
BEGIN CONSTRUCTION

PC Sta. 20+38.69

PI Sta 23+43.27
△ = 40° 10' 09.8" (LT)
D = 6° 52' 41.7"
L = 584.01'
T = 304.58'
R = 833.00'
SE = 6%

NAD 83/NA 2011

40 x 20 x 3
1.5 inch Skimmer
with 1.00 inch
Orifice Diameter
6 ft. weir
ID 4.1

60 x 22 x 3
1.5 inch Skimmer
with 1.25 inch
Orifice Diameter
10 ft. weir
ID 4.2

PT Sta. 26+22.70

PC Sta. 29+53.23

MATCHLINE –L– STA. 30+00.00 SEE SHEET 5

TIMOTHY LEE BRADY
DB 2752 PG 876
2

TERESA L. MAYER AND
HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81
4

MORRIS L. DOVE, JR. AND
WIFE, MARY JANE DOVE
DB 1074 PG 14
1

KATHERINE CRAVEN VESTAL AND
LINDA L. CRAVEN REDDING
DB 1143 PG 97
3

RONNIE R. CRAVEN
DB 1878 PG 115
PB 76 PG 81
5

REMOVE

CUT DITCH
SEE DETAIL A

FS–3
SEE DETAIL K

15" RCP–III

LATERAL V DITCH
SEE DETAIL B

BEGIN SBG
STA 24+00 LT

END SBG
STA 26+28 LT

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE

15" W/2 ELBOWS

EXCAVATE TO EL. 434.0'

CLASS II RIP RAP
BANK STABILIZATION
SEE DETAIL J

RIP RAP AT EMBANKMENT
SEE DETAIL I

STANDARD BASE DITCH
SEE DETAIL E

BEGIN SBG
STA 28+32 LT

15" RCP–IV

LATERAL V DITCH
SEE DETAIL C

GRADE TO DRAIN

CLASS II RIP RAP
TO ELEV.= 439' (TYP.)

STANDARD V DITCH
SEE DETAIL D

BEGIN SBG
STA 28+50 RT

EXCAVATE TO EL. 434.0'

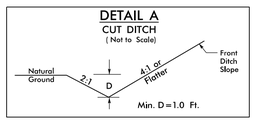
REMOVE EXISTING
CONCRETE FOOTINGS

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 28+50 to Sta. 29+75 –L– RT

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 24+50 to Sta. 26+25 –L– LT

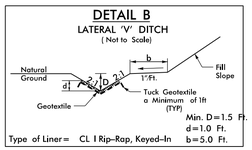
Place Matting for Erosion Control on Slope as Work Allows.
Sta. 22+00 to Sta. 23+00 –L– LT

DETAIL A
CUT DITCH
(Not to Scale)



FROM –L– STA. 19+00 TO STA. 20+50 LT
FROM –L– STA. 22+75 TO STA. 22+98 RT

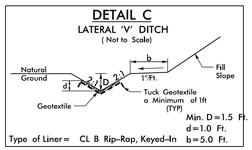
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip–Rap, Keyed–In

FROM –L– STA. 23+50 TO STA. 26+75 RT
EST. 115 TONS, 290 SY GEOTEXTILE
330 CY DDE
FROM –L– STA. 23+75 TO STA. 24+25 LT
EST. 18 TONS, 45 SY GEOTEXTILE
20 CY DDE

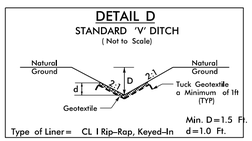
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip–Rap, Keyed–In

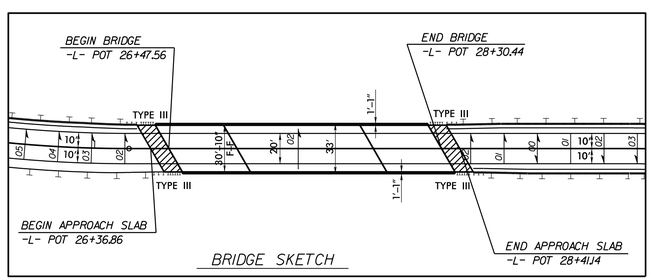
FROM –L– STA. 28+00 TO STA. 30+00 LT
EST. 45 TONS, 165 SY GEOTEXTILE
125 CY DDE

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



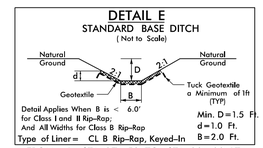
Type of Liner= CL I Rip–Rap, Keyed–In

FROM –L– STA. 26+75 TO STA. 27+25 RT
EST. 18 TONS, 45 SY GEOTEXTILE
18 CY DDE



BRIDGE SKETCH

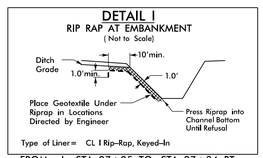
DETAIL E
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL B Rip–Rap, Keyed–In

FROM –L– STA. 27+58 TO STA. 28+00 LT
EST. 15 TONS, 45 SY GEOTEXTILE
17 CY DDE

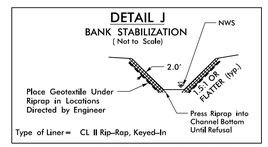
DETAIL I
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL I Rip–Rap, Keyed–In

FROM –L– STA. 27+25 TO STA. 27+34 RT
EST. 5 TONS, 10 SY GEOTEXTILE
FROM –L– STA. 27+30 TO STA. 27+65 LT
EST 9 TONS, 17 SY GEOTEXTILE

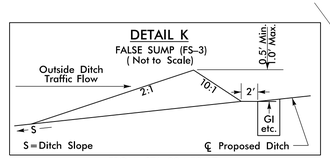
DETAIL J
BANK STABILIZATION
(Not to Scale)



Type of Liner= CL II Rip–Rap, Keyed–In

FROM –L– STA. 27+02 TO STA. 27+12
EST. 25 TONS, 34 SY GEOTEXTILE
FROM –L– STA. 27+66 TO STA. 27+94
EST 96 TONS, 112 SY GEOTEXTILE

DETAIL K
FALSE SUMP (FS–3)
(Not to Scale)



FROM STA. 22+50 LT

FOR PROFILE, SEE SHEET 6

11/8/2024
N:\ACE\Hydro\M21017_Randolph_162\Erosion Control\CADD\BP8R019_EC06_psh04_FG.dgn
M ENGINEERING, Inc.

Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	EC-07/CONST.05
RANDOLPH COUNTY BRIDGE #162	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: NOVEMBER 8, 2024

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 05

NAD 83/NA 2011

PI Sta 32+17.12
△ = 35° 09' 21.0" (RT)
D = 6° 52' 41.7"
L = 511.12'
T = 263.89'
R = 833.00'
SE = 6%

PI Sta 35+93.27
△ = 1° 47' 02.3" (RT)
D = 0° 47' 13.6"
L = 226.65'
T = 113.33'
R = 7,279.31'

PT Sta. 34+64.34
PC Sta. 34+79.93
PT Sta. 37+06.59
POT Sta. 38+78.35

BM3 ELEVATION = 463.588
N 688928 E 1829623
BL STATION 29+85.00 36' LEFT
BENCH TIE SET IN 24" OAK

TERESA L. MAYER AND HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81

CUT DITCH
SEE DETAIL A

LATERAL V DITCH
SEE DETAIL C

END SBG
STA 30+25 LT

S 69° 39' 34.1" E

BM3

EXISTING RW

BP8.R019-2

S 67° 52' 31.7" E

TO BONLEE

SR1005 (LANES MILL RD) 20' PAVED ROADWAY

40.00'

EXISTING RW

REMOVE EX. 15" PIPE

MATCHLINE -L- STA. 30+00.00 SEE SHEET 4

SPECIAL V DITCH
SEE DETAIL G

SPECIAL V DITCH
SEE DETAIL F

END SBG
STA 30+25 RT

CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SY GEOTEXTILE

STANDARD BASE DITCH
SEE DETAIL H

SPECIAL V DITCH
SEE DETAIL G

–L– POT Sta. 34+75.00
END CONSTRUCTION

RONNIE R. CRAVEN
DB 1878 PG 1115
PB 76 PG 81

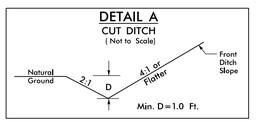
30

35

4

5

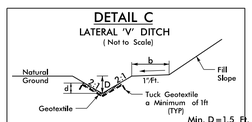
DETAIL A
CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.

FROM –L– STA. 33+40 TO STA. 34+75 LT

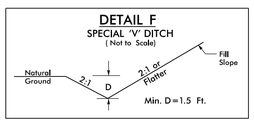
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
d=1.0 Ft.
b=5.0 Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

FROM –L– STA. 30+00 TO STA. 30+75 LT
EST. 17 TONS, 62 SY GEOTEXTILE
98 CY DDE

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



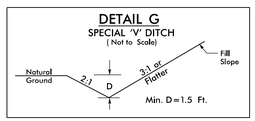
Min. D=1.5 Ft.

FROM –L– STA. 29+81 TO STA. 30+75 RT

S 53°05'43" E
111.64'

N 84°08'42" W
109.55'

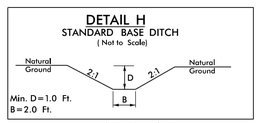
DETAIL G
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.

FROM –L– STA. 30+75 TO STA. 31+00 RT
FROM –L– STA. 32+25 TO STA. 33+75 RT
FROM –L– STA. 34+38 TO STA. 34+75 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



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

–L– STA. 33+86 RT
EST. 4 CY
SLOPE=0.003ft/ft

FOR PROFILE, SEE SHEET 7

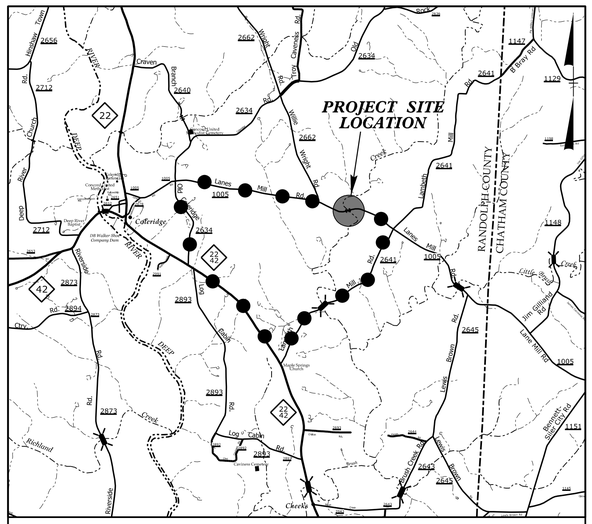
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MI ENGINEERING - hauser

09/08/99

TIP PROJECT: BP8–R019

T.I.P. NO.	SHEET NO.
BP8–R019	UO–1

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



VICINITY MAP

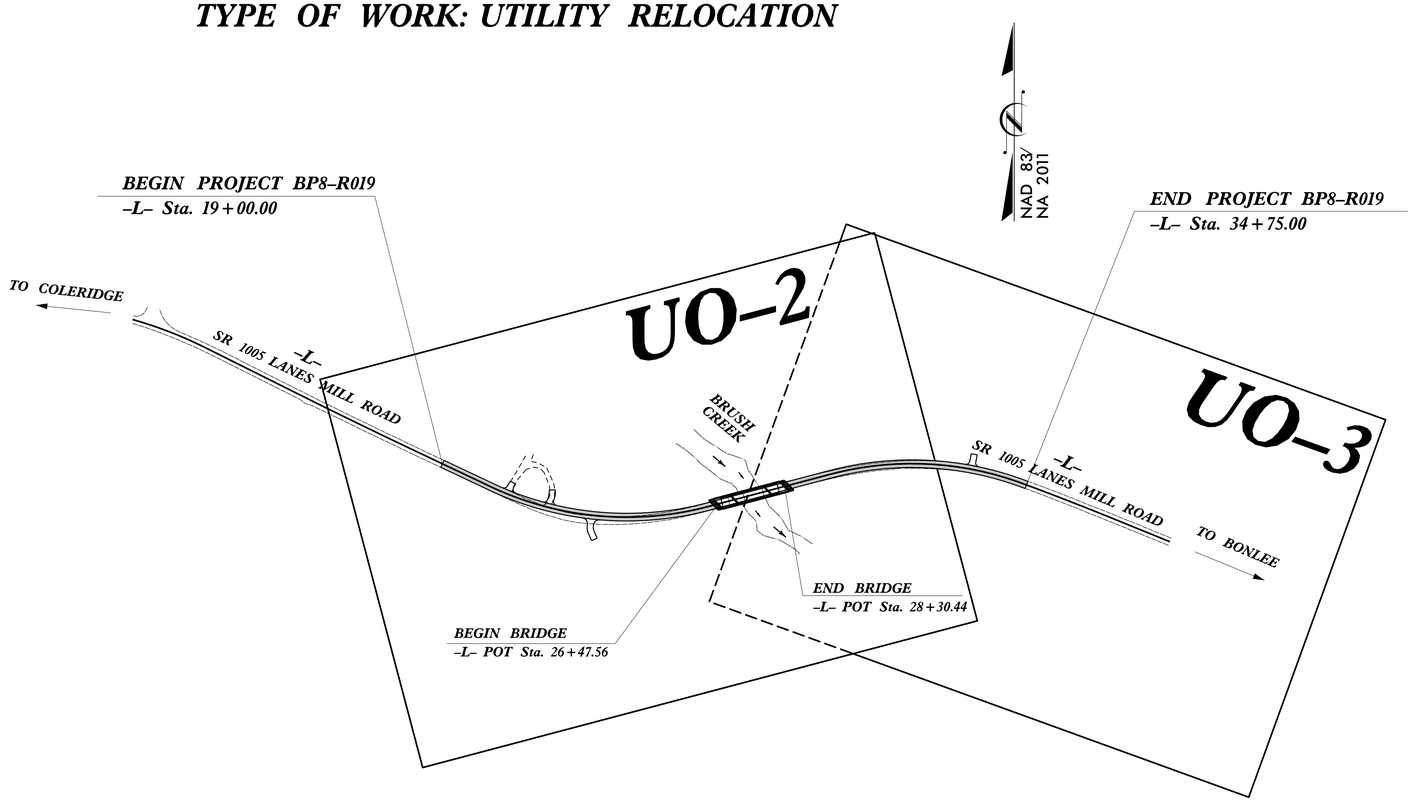
OFF-SITE DETOUR ROUTE N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
RANDOLPH COUNTY

LOCATION: BRIDGE 750162 OVER BRUSH CREEK ON SR 1005 (LANES MILL RD)

TYPE OF WORK: UTILITY RELOCATION



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO–1	TITLE SHEET
UO–2 THRU UO–3	UBO PLAN SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) TELEPHONE – RANDOLPH TELEPHONE MEMBERSHIP CORPORATION

PREPARED IN THE OFFICE OF:

Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

UTILITIES PROJECT COORDINATOR

WAYNE WILEY

DIVISION OF HIGHWAYS
DIVISION 8

121 DOT DRIVE
CARTHAGE NC 28327

TIM WELCH, PE — DIV. BRIDGE PROG. MANAGER
MICHAEL RICKETTS — DIV. UTILITIES ENGINEER
TRENT CAVINESS — DIV. UTILITIES COORDINATOR

12/13/2024
R:\Utilities\Engineering\UBO\Proj\bp8r019_ut_tsh_uo1.dgn
USERNAME

PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	U0-2
THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

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

NOTE: NCDOT TO GIVE RTMC 2 WEEKS NOTICE AND 3 WEEKS TO RELOCATE AFTER NCDOT CONTRACTOR CLEARS & GRUBS THE LEFT SIDE OF -L- ALIGNMENT

NAD 83/NA 2011

-L- POT Sta. 19+00.00
BEGIN CONSTRUCTION

PT Sta. 18+07.55

PC Sta. 20+38.69

PC Sta. 29+53.23

PT Sta. 26+22.70

RANDOLPH TELEPHONE TO RETAIN

RANDOLPH TELEPHONE

RANDOLPH TELEPHONE TO REMOVE OR ABANDON

RANDOLPH TELEPHONE TO REMOVE

MORRIS L. DOVE, JR. AND WIFE, MARY JANE DOVE
DB 1074 PG 14
1

TIMOTHY LEE BRADY
DB 2752 PG 876
2

KATHERINE CRAVEN VESTAL AND LINDA L. CRAVEN REDDING
DB 1143 PG 97
3

TERESA L. MAYER AND HUSBAND, THOMAS W MAYER
DB 2494 PG 253
PB 76 PG 81
4

RONNIE R. CRAVEN
DB 1878 PG 115
PB 76 PG 81
5

REMOVE

EXCAVATE TO EL. 434.0'

CLASS II RIP RAP BANK STABILIZATION
SEE DETAIL J

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE

BEGIN SBG
STA 24+00 LT

END SBG
STA 26+28 LT

BEGIN SBG
STA 28+32 LT

BEGIN SBG
STA 28+50 RT

15" RCP-III

15" RCP-IV

15" W/2 ELBOWS

GRADE TO DRAIN

CLASS II RIP RAP
TO ELEV. = 439' (TYP.)

EXISTING R/W

WOODS

BRUSH CREEK

HIGH WATER MARK = 433.0'

MATCHLINE -L- STA. 30+00.00 (SEE SHEET UO-3)

Pennoni

PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

5/14/99

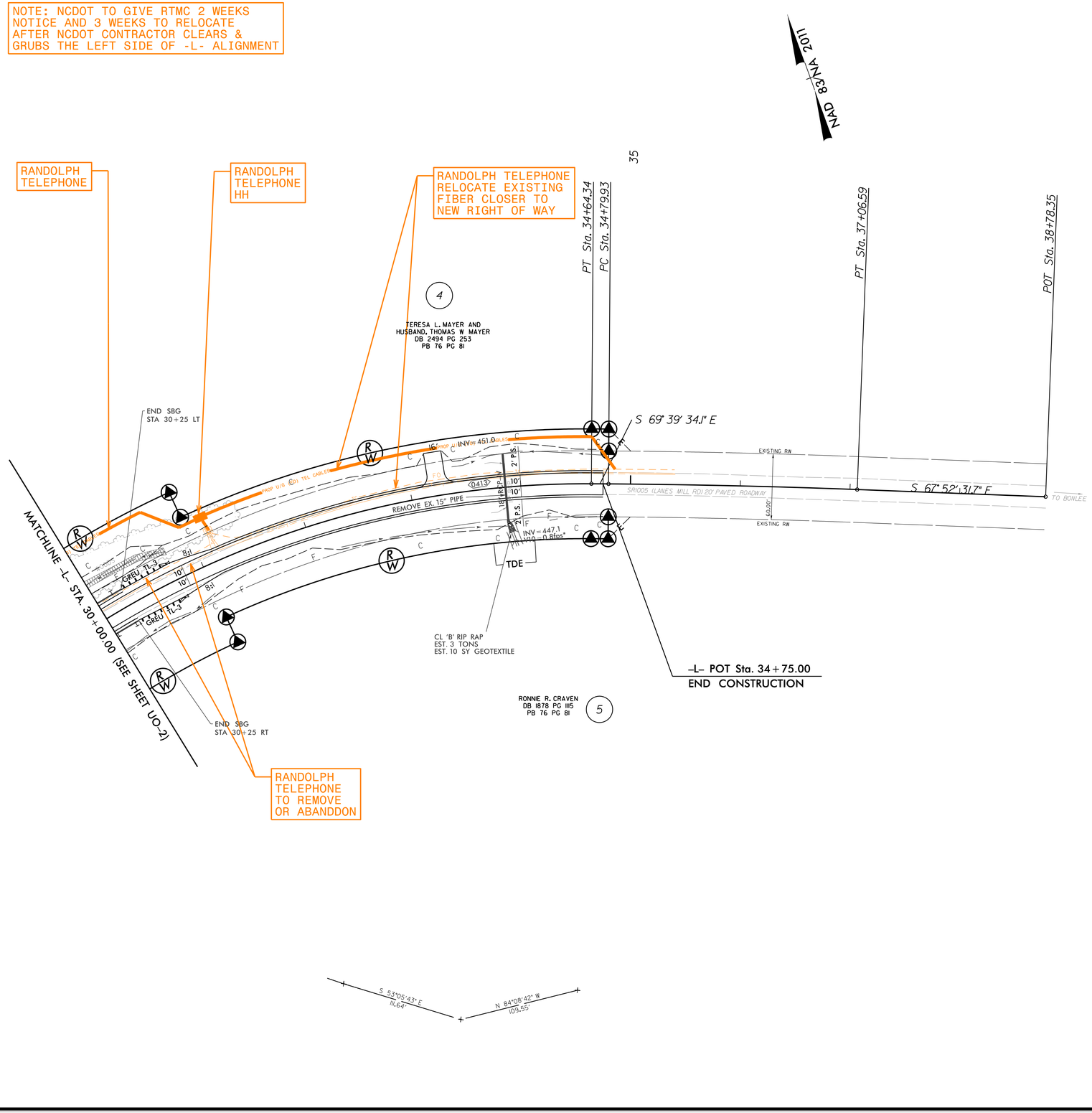
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PROJECT REFERENCE NO.	SHEET NO.
BP8-R019	U0-3
THIS SHEET CORRESPONDS TO RDY-5	

UTILITIES BY OTHERS

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

NOTE: NCDOT TO GIVE RTMC 2 WEEKS NOTICE AND 3 WEEKS TO RELOCATE AFTER NCDOT CONTRACTOR CLEARS & GRUBS THE LEFT SIDE OF -L- ALIGNMENT



PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
(919) 929-1173 NC LICENSE #F-1267

5/14/99
12/11/2024
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-1

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

485 480 475 470

S.S. 475.94
2%
Δ%
0.020
477.19
0.000
4%
EP
EP
473.89
477.15
S.S. 474.78
19+50.00

S.S. 475.35
2%
Δ%
0.020
477.40
0.012
4%
EP
EP
474.18
477.33
S.S. 474.65
19+25.00

S.S. 475.78
2%
Δ%
0.020
477.55
0.020
4%
EP
EP
474.64
477.53
S.S. 475.08
19+00.00

EP
EP
477.75
18+75.00

11/26/2024
RCRAMM
USERNAME
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	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

485 480 475 470

S.S. 474.53
4:1
2%
473.04
0.034
476.12
0.034
EP
EP
476.76
20+25.00
4:1
S.S. 474.17

S.S. 474.62
4:1
2%
473.33
0.022
476.55
0.022
EP
EP
476.86
20+00.00
4:1
S.S. 474.27

S.S. 475.64
4:1
2%
473.6
0.020
476.91
0.011
EP
EP
476.99
19+75.00
4:1
S.S. 474.48

485 480 475 470

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

11/26/2024
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-3

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

485 480 475 470 465

S.S. 474.14

DRIVEWAY

2%

4:1

0.060

474.39

0.060

4:1

2%

S.S. 475.57

EP

EP

476.18

471.35

473.11

21+00.00

S.S. 474.75

2%

4:1

0.057

475.04

0.057

4:1

2%

S.S. 475.21

EP

EP

476.44

472.04

473.71

20+75.00

S.S. 474.15

2%

4:1

0.045

475.62

0.045

4:1

2%

S.S. 474.22

EP

EP

476.62

472.76

474.10

20+50.00

11/26/2024
P:\SEPA\Projects\VSC\BP8R019_Rdy_xp1.dgn
PLOTTED BY: Ryan Hall

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-4

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

485 480 475 470 465

S.S. 474.12

2%

4%

0.060

471.99

0.060

4:1

2%

S.S. 476.28

474.21

468.95

470.71

21+75.00

S.S. 474.17

2%

4%

0.060

472.86

0.060

4:1

2%

S.S. 475.66

475.10

469.82

471.58

21+50.00

S.S. 474.35

2%

4%

0.060

473.66

0.060

4:1

2%

S.S. 475.44

475.82

470.62

472.38

21+25.00

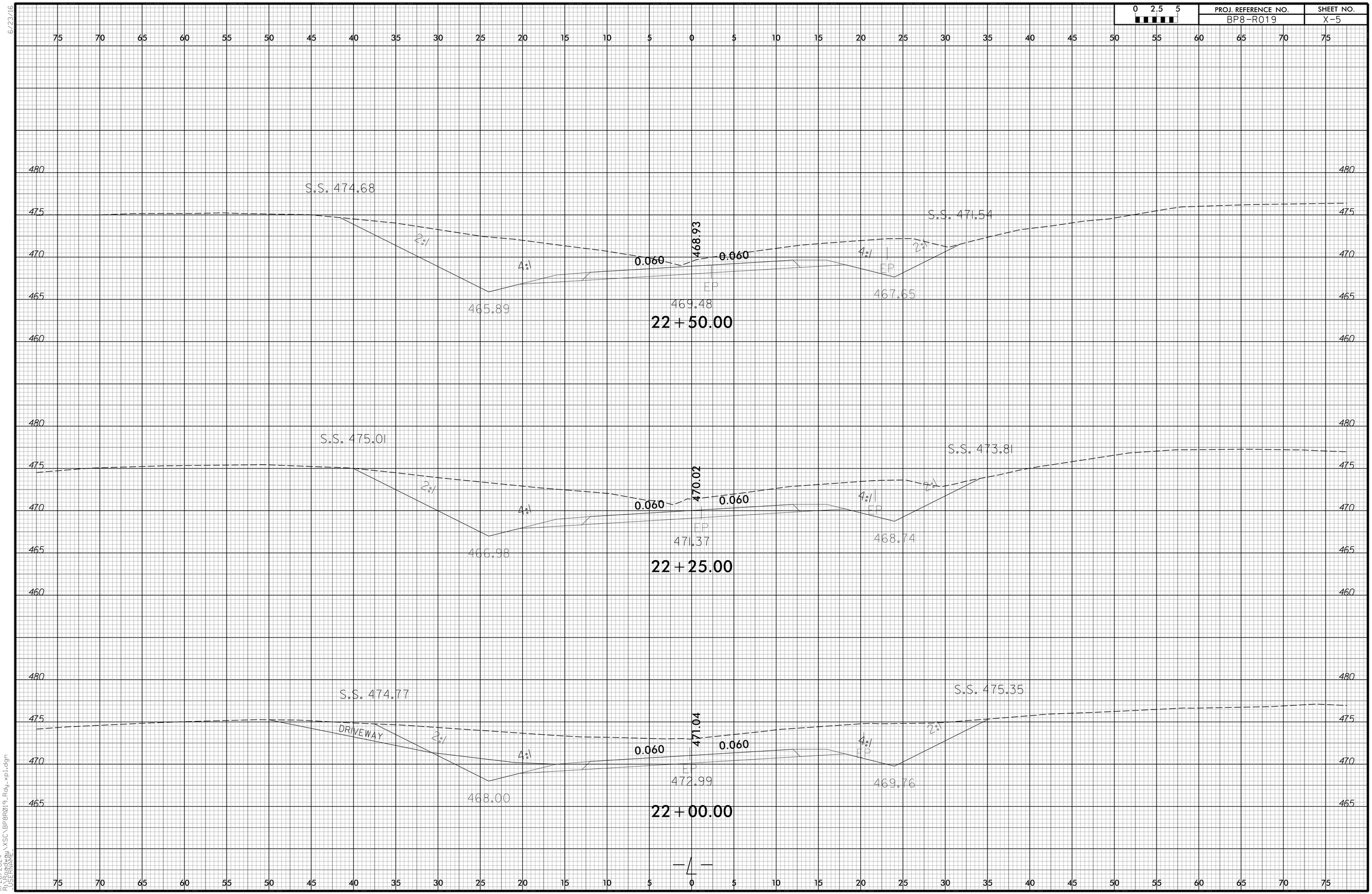
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PLSTEPHENS

485 480 475 470 465

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

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-5



11/26/2024
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ESTERRA

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-6

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

475
470
465
460
455

S.S. 466.80
2%
4%
462.13
EP
463.97
465.20
0.060
0.060
4%
EP
463.24
S.S. 463.85
23+25.00

S.S. 470.16
2%
4%
463.48
EP
465.85
466.52
0.060
0.060
4%
EP
464.85
S.S. 466.90
DRIVEWAY
23+00.00

480
475
470
465
460

S.S. 472.88
2%
4%
464.72
EP
467.56
467.76
0.060
0.060
4%
EP
466.48
S.S. 469.57
2%
22+75.00

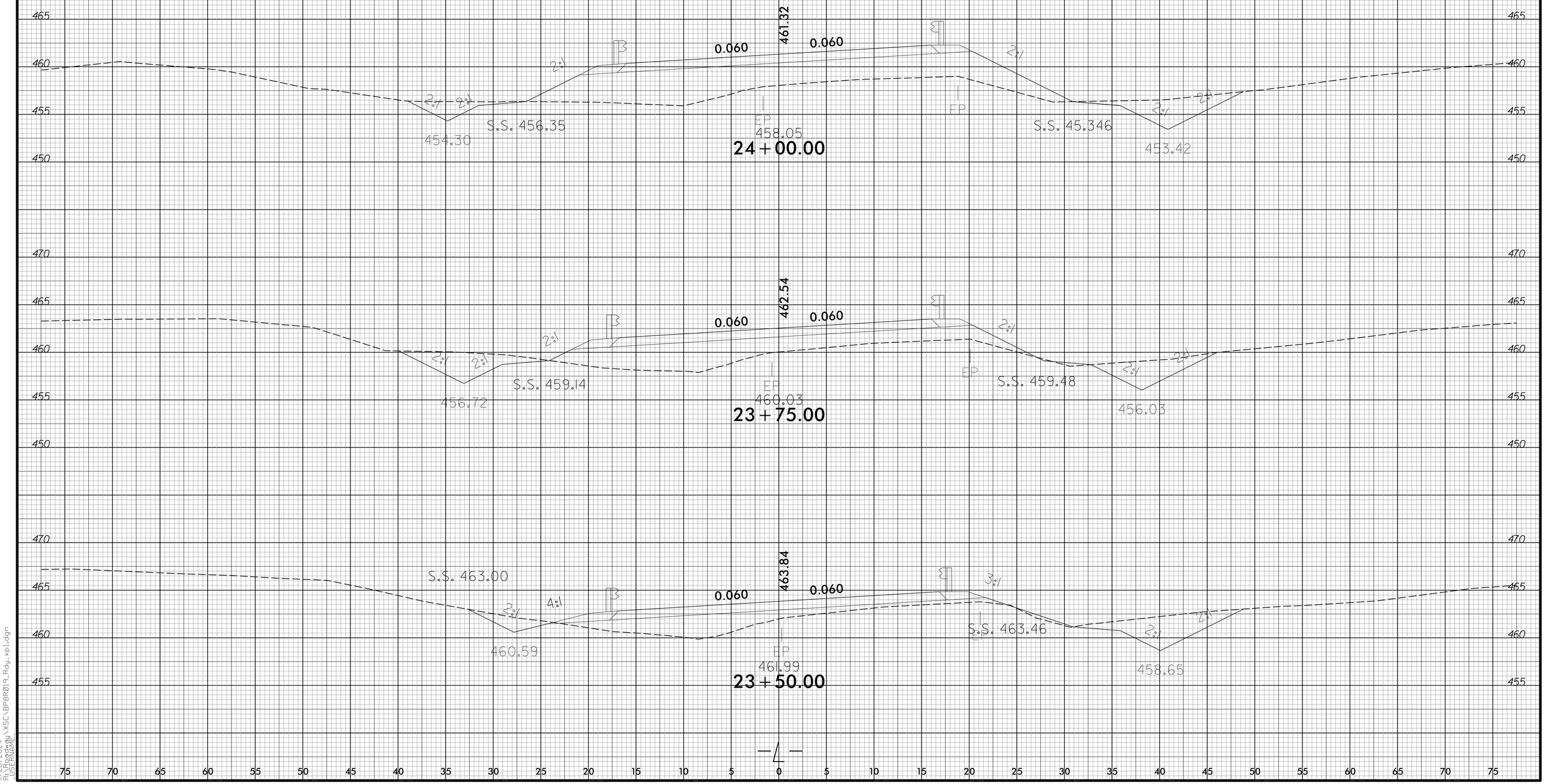
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Plotted By: Ryan Hall

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-7

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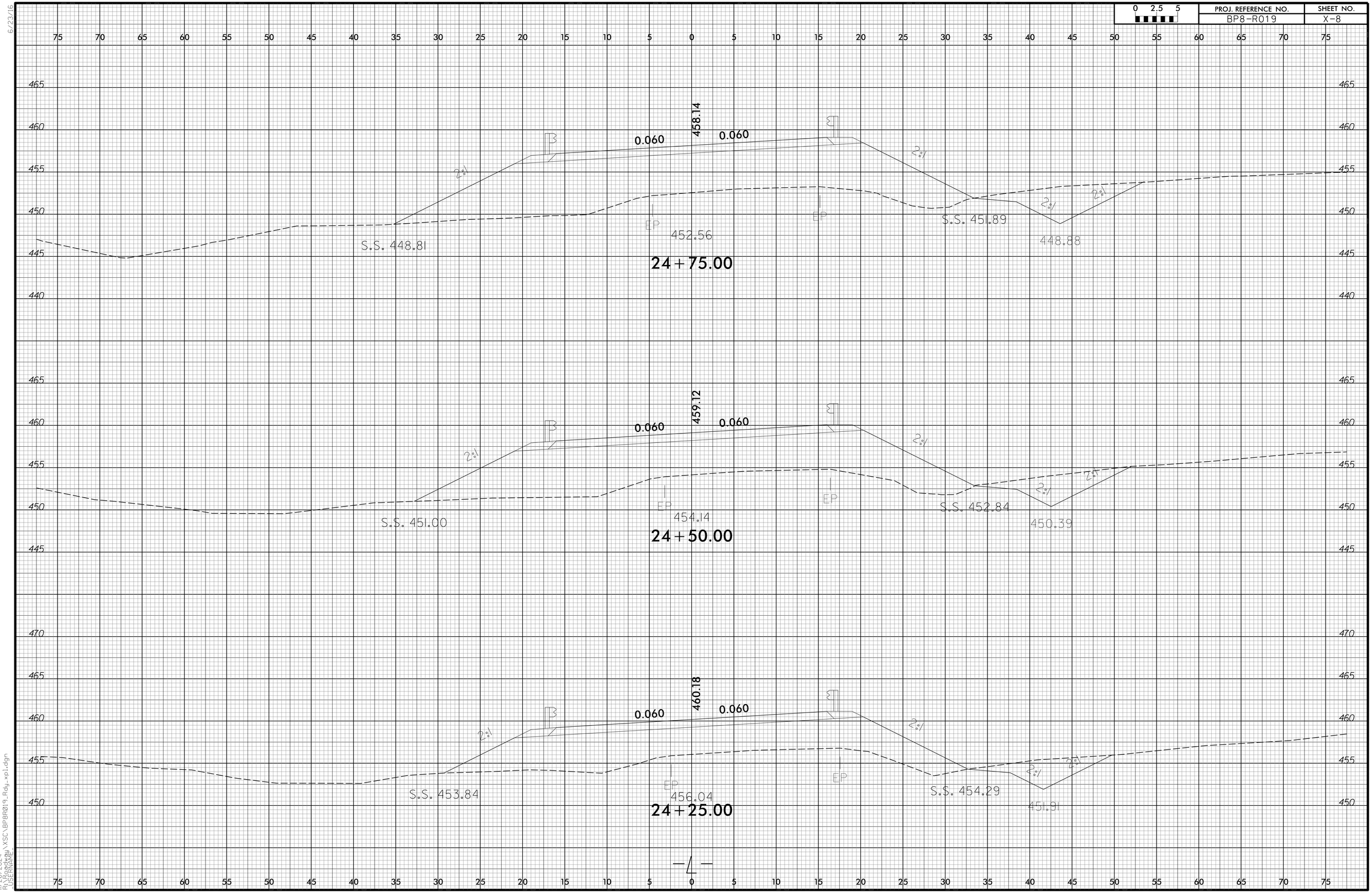
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11/26/2024
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6/23/16

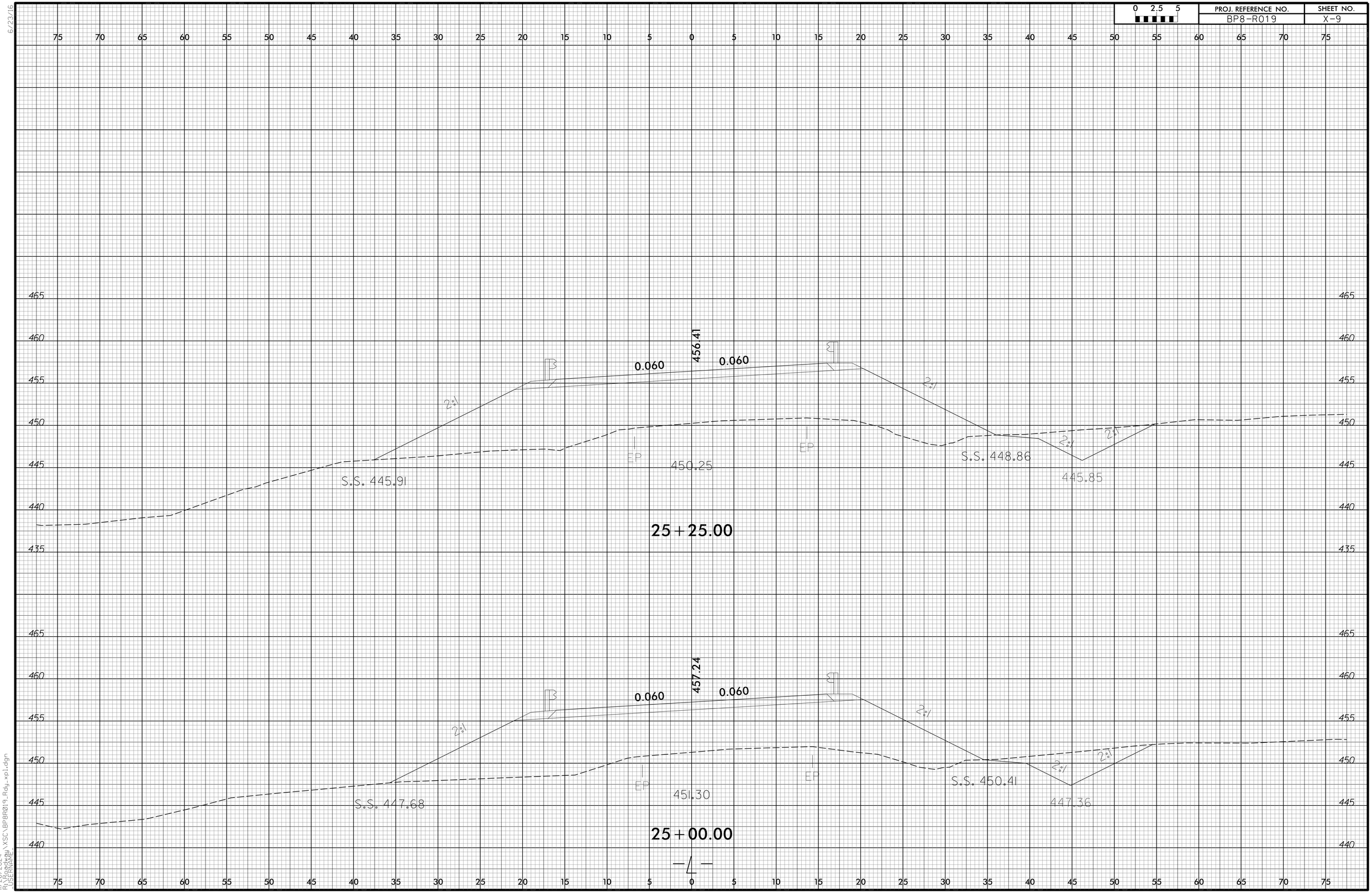
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	BP8-R019	X-9



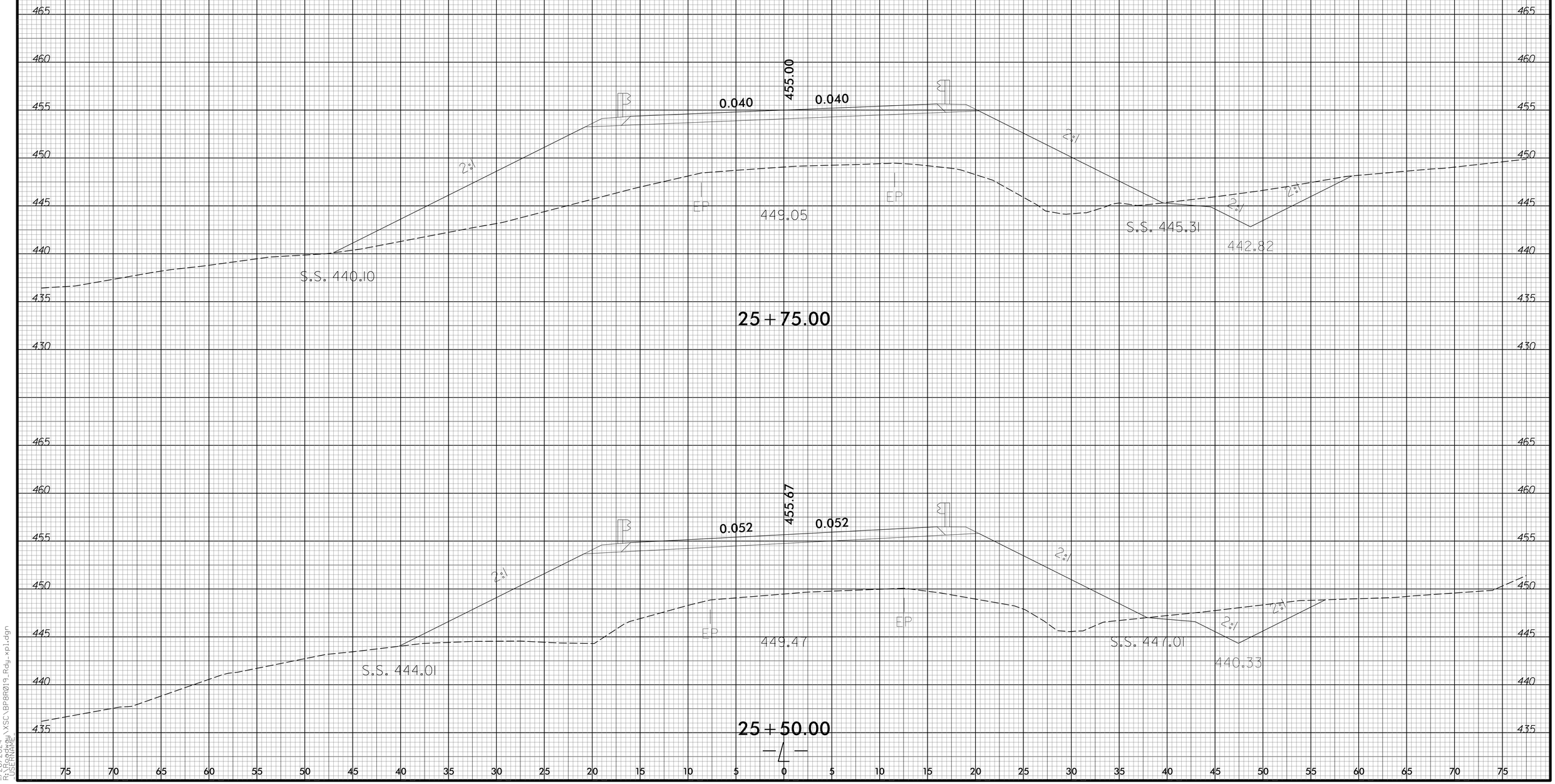
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6/23/16

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	BP8-R019	X-10

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465 460 455 450 445 440 435 430



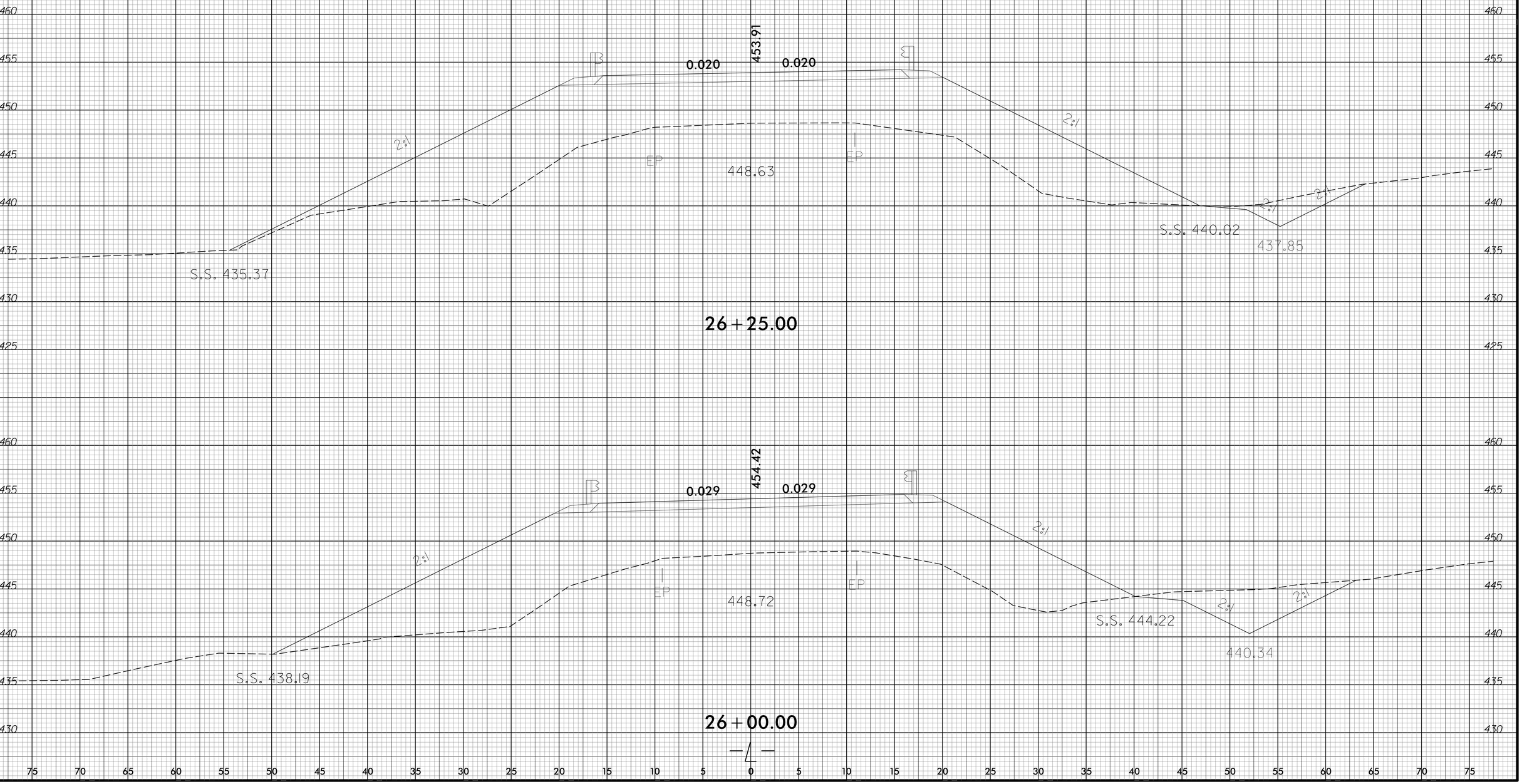
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PLOTTED BY: Ryan Bell

6/23/16

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	BP8-R019	X-11

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

460 455 450 445 440 435 430 425



11/26/2024
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ESTERRA

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-12

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

460 455 450 445 440 435 430 425

453.10

0.020 0.020

437.10

2% 2%

433.08

26+75.00

453.48

0.020 0.020

EP EP

448.64

2% 2%

S.S. 437.28

435.37

26+50.00

11/26/2024
P:\Projects\VSC\BP8R019_Rdy_xpl.dgn
PLOTTED BY: Ryan Hall

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-13

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

460 455 450 445 440 435 430 425 420

452.35

0.020 0.020

2% 2%

428.50

426.70

27+25.00

460 455 450 445 440 435 430 425

452.72

0.020 0.020

2% 2%

430.79

431.70

27+00.00

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

11/26/2024
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PLOTTED BY: Ryan Hall

6/23/16

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	BP8-R019	X-14

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

460 455 450 445 440 435 430 425 420

451.60

0.020 0.020

2% 2%

433.75

429.74

27+75.00

451.98

0.020 0.020

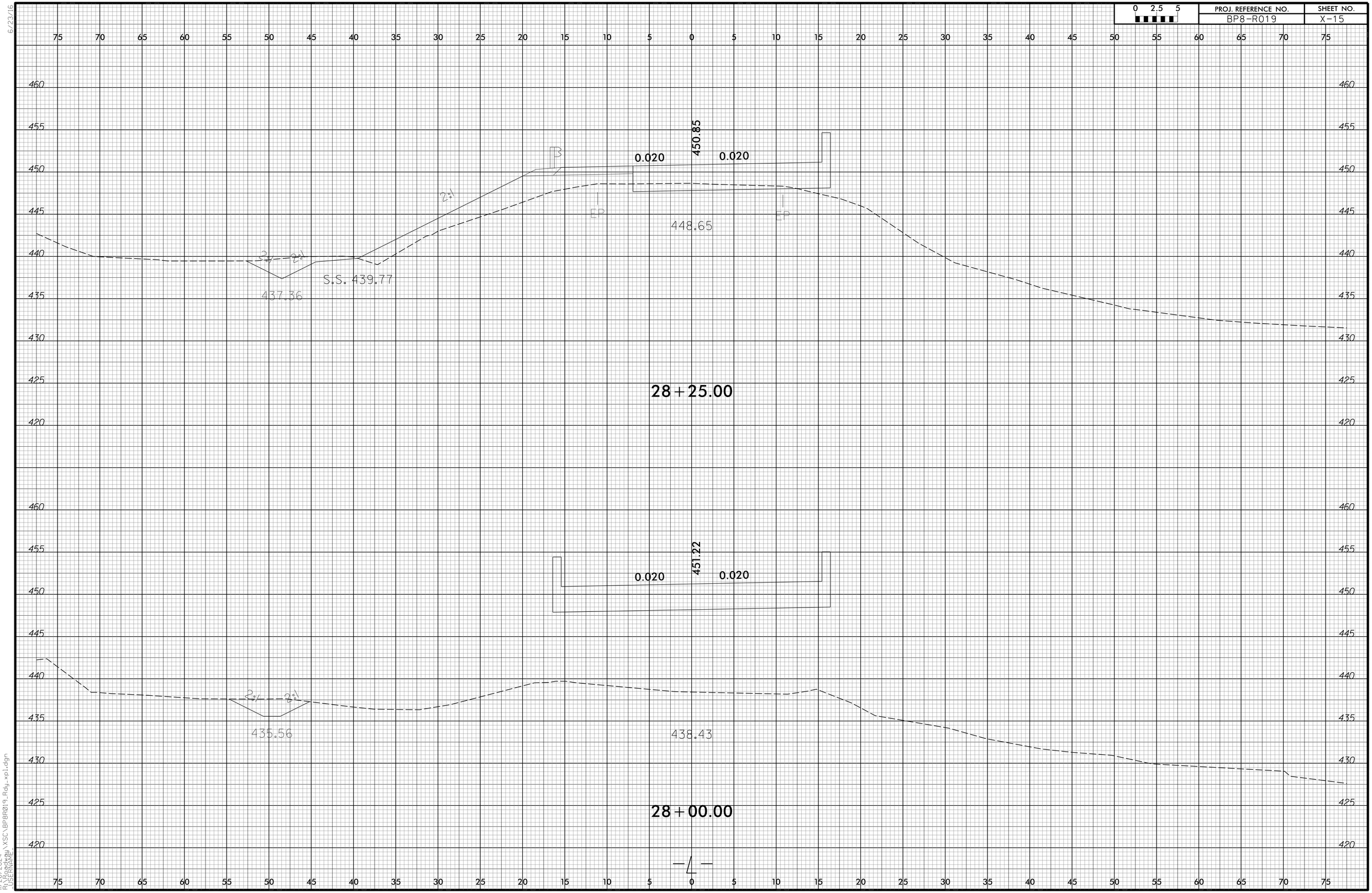
427.20

27+50.00

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PLOTTED BY:

6/23/16

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	BP8-R019	X-15



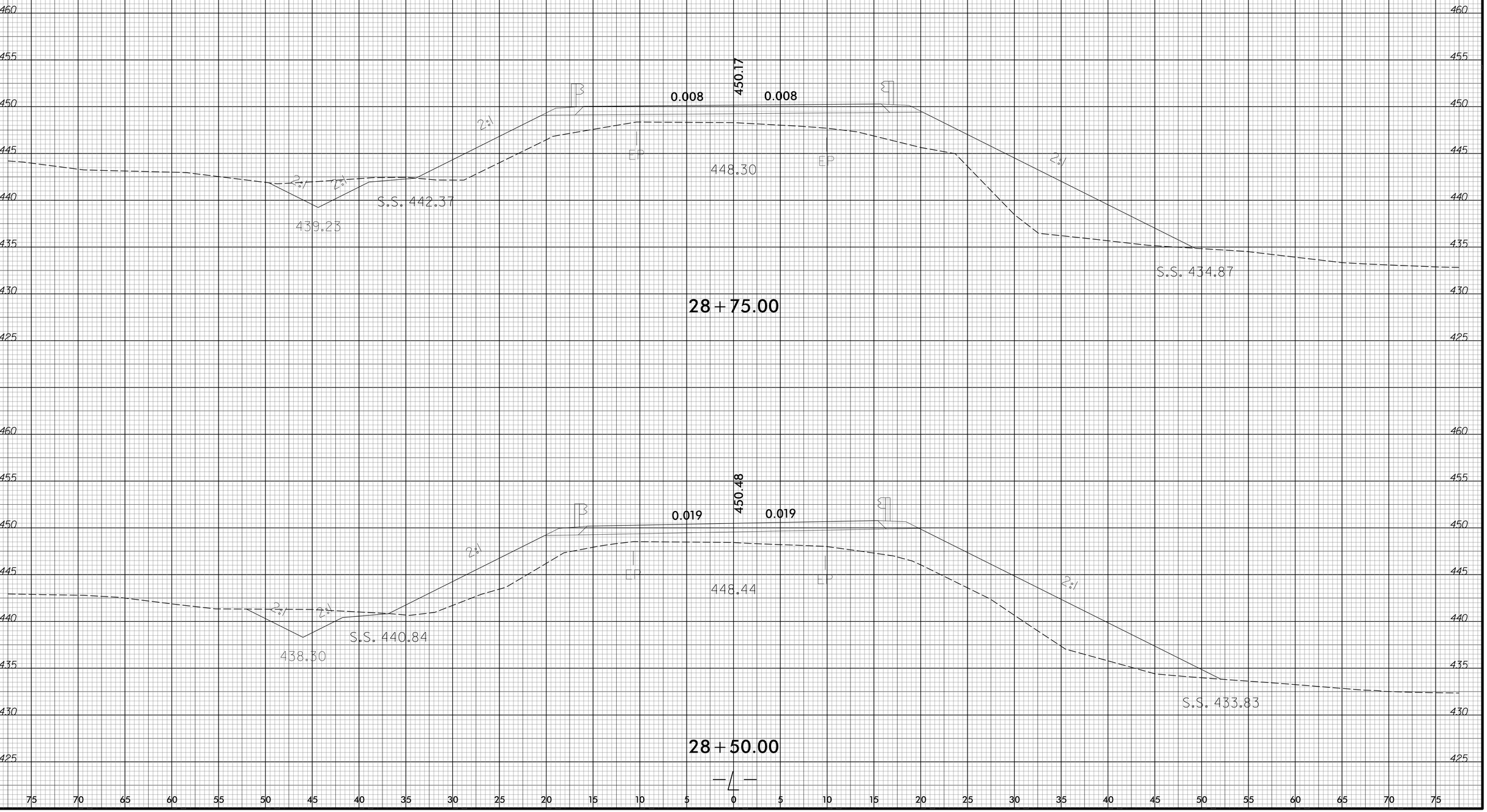
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6/23/16

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	BP8-R019	X-16

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

460 455 450 445 440 435 430 425



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jsepra

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-17

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

455 450 445 440 435 430

449.73

0.015 0.015

2% 2% 2% 2%

EP EP

448.06

S.S. 443.49

441.10

S.S. 436.96

29+25.00

460 455 450 445 440 435 430

449.92

0.004 0.004

2% 2% 2% 2%

EP EP

448.16

S.S. 442.97

440.16

S.S. 435.96

29+00.00

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

11/26/2024
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USERNAME

PROJ. REFERENCE NO.	SHEET NO.
BP8-R019	X-18

0 2.5 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

460 455 450 445 440 435

449.59

0.049 0.049

2:1 2:1 2:1 2:1

EP EP

448.31

S.S. 446.54

443.90

S.S. 441.66

440.68

30+00.00

449.57

0.038 0.038

2:1 2:1 2:1 2:1

EP EP

448.12

S.S. 445.84

442.97

S.S. 440.96

29+75.00

449.62

0.026 0.026

2:1 2:1 2:1 2:1

EP EP

448.01

S.S. 444.63

442.04

S.S. 439.3

29+50.00

460 455 450 445 440 435 430

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

6/23/16

11/26/2024
RCSEGRAW
C:\USERS\RCSEGRAW\XSC\BP8R019_Rdy.xpl.dgn

6/23/16

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	BP8-R019	X-19

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

460 455 450 445 440 435

S.S. 452.93

2%

4:1

0.060

449.82

0.060

2%

S.S. 444.81

2%

446.95

EP

449.25

EP

443.43

30+50.00

460 455 450 445 440 435

2%

4:1

0.060

449.67

0.060

2%

2%

S.S. 447.26

444.84

EP

448.69

EP

S.S. 443.16

2%

442.06

30+25.00

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

11/26/2024
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6/23/16

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	BP8-R019	X-20

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

465 460 455 450 445 440 435

S.S. 452.46

2%

4:1

449.3

0.060

EP

450.32

0.060

450.53

EP

3%

2%

S.S. 447.31

446.18

31+00.00

S.S. 452.16

2%

4:1

449.05

0.060

EP

450.03

0.060

449.84

EP

3%

2%

S.S. 445.72

444.81

30+75.00

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

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	BP8-R019	X-21

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

465 460 455 450 445 440

S.S. 455.52

2%

4%

0.060

451.00

0.060

3.5%

449.72

EP

451.63

EP

S.S. 448.90

31+50.00

S.S. 454.32

2%

4%

0.060

450.65

0.060

3%

449.37

EP

451.12

EP

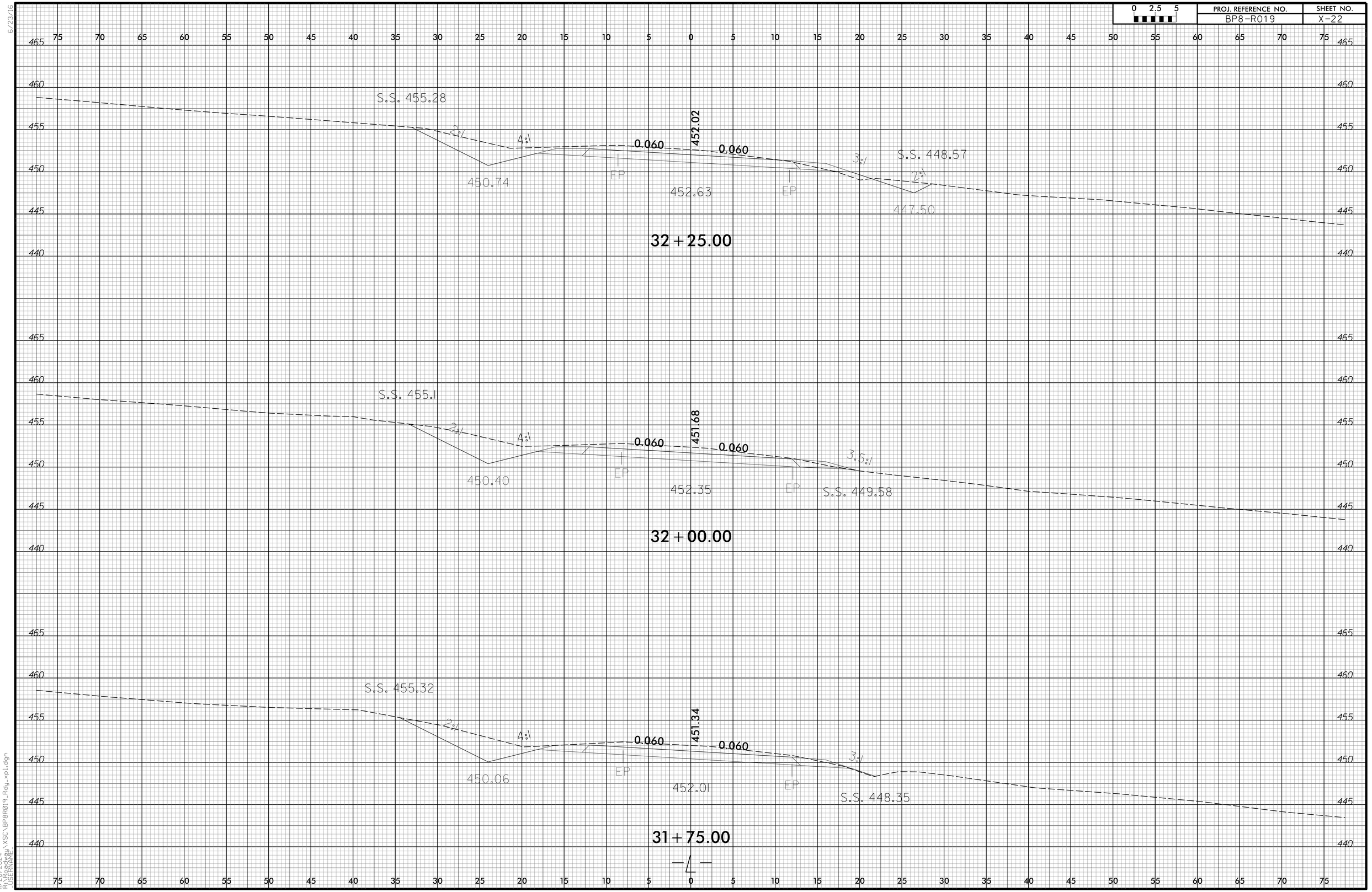
S.S. 447.40

31+25.00

11/26/2024
RLSEMAN
USERNAME
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6/23/16

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	BP8-R019	X-22



11/26/2024
RLEHMANN
I:\SE\RLEHMANN\XSC\BP8R019_Rdy_xpl.dgn

6/23/16

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	BP8-R019	X-23

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460 455 450 445 440 465

S.S. 454.86

2%

4:1

0.060

453.05

0.060

3:1

S.S. 448.33

2%

451.77

EP

453.32

EP

447.25

33+00.00

S.S. 454.38

2%

4:1

0.060

452.71

0.060

3:1

S.S. 448.25

2%

451.43

EP

453.10

EP

447.33

32+75.00

S.S. 455.50

2%

4:1

0.060

452.36

0.060

3:1

S.S. 448.46

2%

451.08

EP

452.86

EP

447.42

32+50.00

—℄—

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6/23/16

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460 455 450 445 440

S.S. 455.44

4:1

3:1

0.060

454.30

0.060

EP

451.50

454.33

EP

3:1

S.S. 448.47

2%

447.00

33+75.00

S.S. 454.90

2%

4:1

0.060

453.81

0.060

452.53

EP

453.92

EP

3:1

S.S. 448.65

2%

447.08

33+50.00

S.S. 454.73

DRIVE

2%

4:1

0.060

453.40

0.060

452.12

EP

453.55

EP

3:1

S.S. 448.62

2%

447.17

33+25.00

11/26/2024
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USERNAME

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP8-R019	X-25

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

465 460 455 450 445

S.S. 455.66

4:1

2%

0.047

456.25

0.047

3%

S.S. 452.28

2%

453.79

EP

456.22

EP

451.14

34+50.00

S.S. 455.46

4:1

2%

0.058

455.52

0.058

3%

452.72

EP

455.50

EP

S.S. 452.09

34+25.00

S.S. 455.28

4:1

2%

0.060

454.87

0.060

3%

451.64

EP

454.82

EP

S.S. 450.00

34+00.00

11/26/2024
RDWAY.tbl
USERNAME

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6/23/16

0 2.5 5

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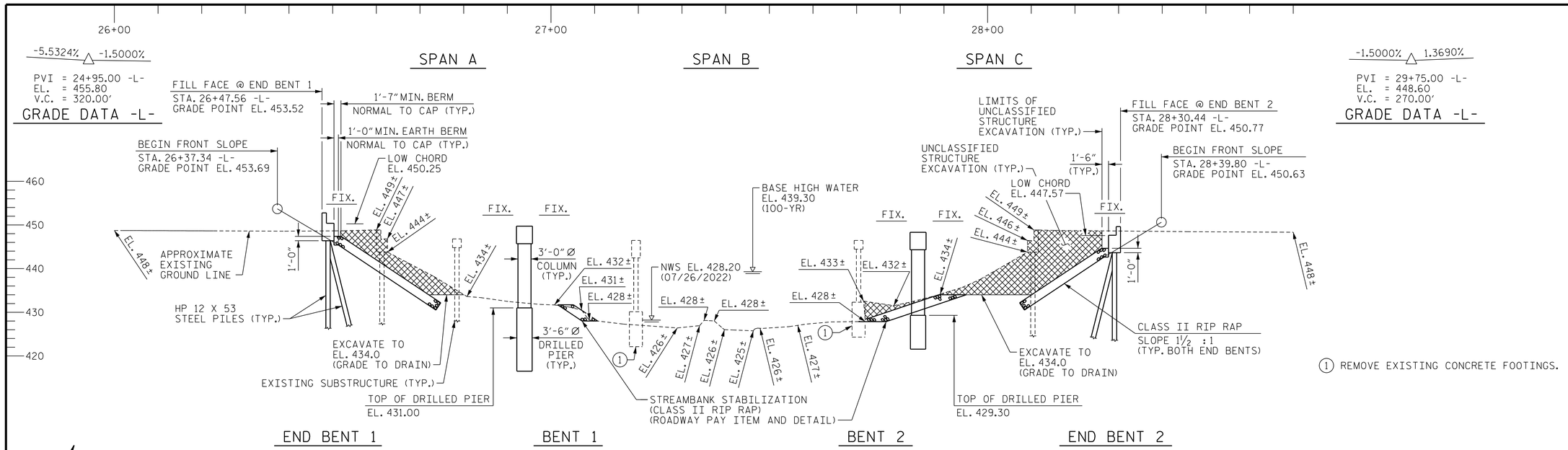
465
460
455
450

457.97
35+00.00

S.S. 457.49
4:1
2%
454.87
0.035
457.05
0.035
457.03
34+75.00
3%
S.S. 453.47
2%
452.46

EP

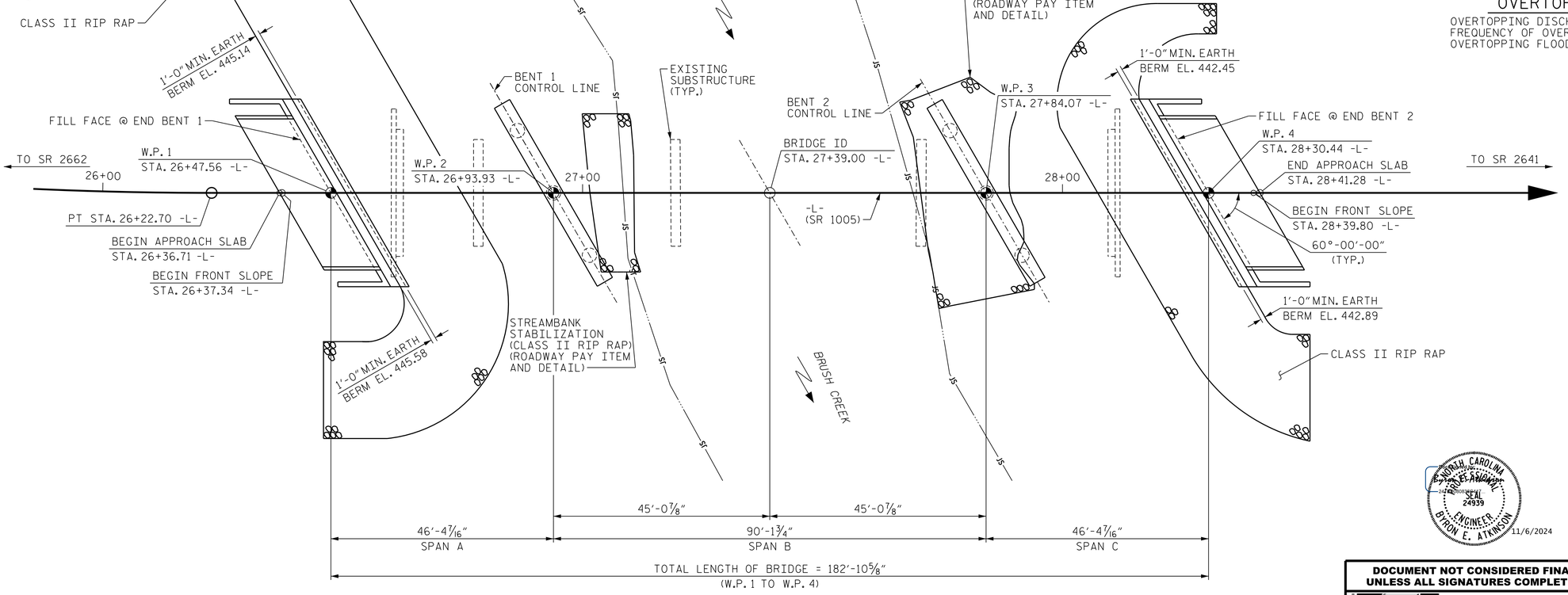
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Plotted By: Ryan Hall



① REMOVE EXISTING CONCRETE FOOTINGS.

SECTION ALONG -L-

(SECTION TAKEN AT RIGHT ANGLES TO END BENTS AND BENTS)



PLAN

(PILES NOT SHOWN FOR CLARITY)

HYDRAULIC DATA

DESIGN DISCHARGE	= 5000 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 437.5
DRAINAGE AREA	= 39.6 SQ. MI.
BASE DISCHARGE (Q100)	= 6900 CFS
BASE HIGH WATER ELEVATION	= 439.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 24000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 450.0 ✳

✳ AT STA. 29+50.00 -L-; LT. SHOULDER

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 750162

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1005
OVER BRUSH CREEK
BETWEEN SR 2662 & SR 2641

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

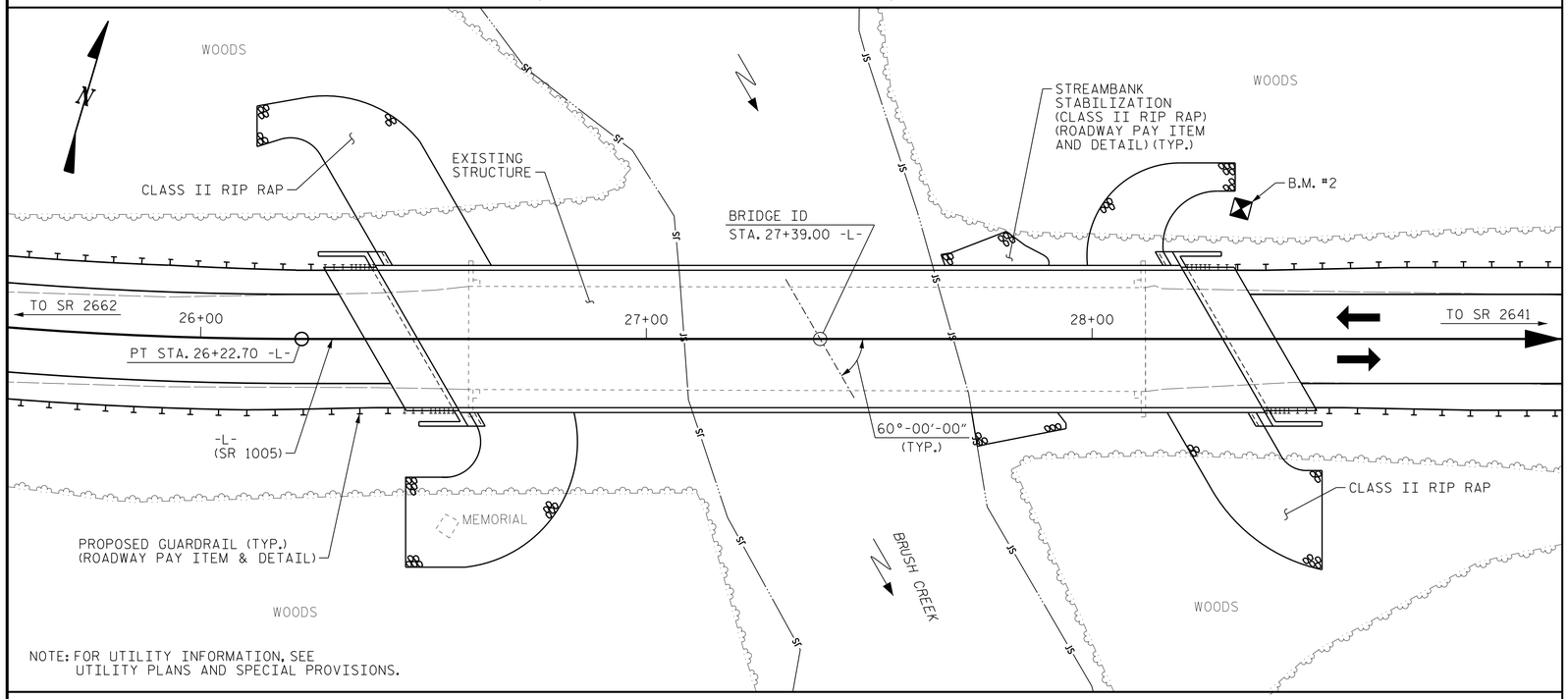
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

DRAWN BY :	B.E. LANNING	DATE : 11/2023
CHECKED BY :	B.E. ATKINSON	DATE : 11/2023
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE : 11/2024

11/6/2024
2:51:37 PM
User: blanning
Filename: N:\NC Bridges\M210117_CH Eng_Randolph 162 Br._Rep\BP8R019\Structures\401_001_BP8R019_SMU_GD01_750162.dgn

B.M. #2: BENCH TIE SET IN 30" SYCAMORE TREE, 29.21' LT. OF STA. 28+33.44 -L-, EL. 446.21



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-6" Ø DRILLED PIER IN SOIL	3'-6" Ø DRILLED PIER NOT IN SOIL	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE								LUMP SUM	
END BENT 1						LUMP SUM	28.5		3,933
BENT 1			18.0	27.0			34.9		12,659
BENT 2			0.0	24.0			35.1		11,432
END BENT 2						LUMP SUM	28.5		3,933
TOTAL	LUMP SUM	LUMP SUM	18.0	51.0	1	LUMP SUM	127.0	LUMP SUM	31,957

TOTAL BILL OF MATERIAL

	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	
	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						360.0			LUMP SUM	33	1980.00
END BENT 1		7	7	175	7		481	534			
BENT 1	1,408										
BENT 2	920										
END BENT 2		7	7	120	7		338	376			
TOTAL	2,328	14	14	295	14	360.0	819	910	LUMP SUM	33	1980.00

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 11/2024

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 27+39.00 -L-."

THE EXISTING STRUCTURE CONSISTING OF FOUR SPANS (1 @ 18'-5", 1 @ 41'-0", 1 @ 51'-0", AND 1 @ 41'-2", WITH ASPHALT WEARING SURFACE ON STEEL BEAMS AND A CLEAR ROADWAY WIDTH OF 24'-0" ON STEEL H-PILE AND CONCRETE CAP WITH TIMBER PILE END BENTS AND BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED IN IT'S ENTIRETY, EXCEPT METAL RAILS AND POSTS. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 60 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY. SEE ROADWAY QUANTITIES.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

PROJECT NO. BP8.R019
RANDOLPH COUNTY
STATION: 27+39.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

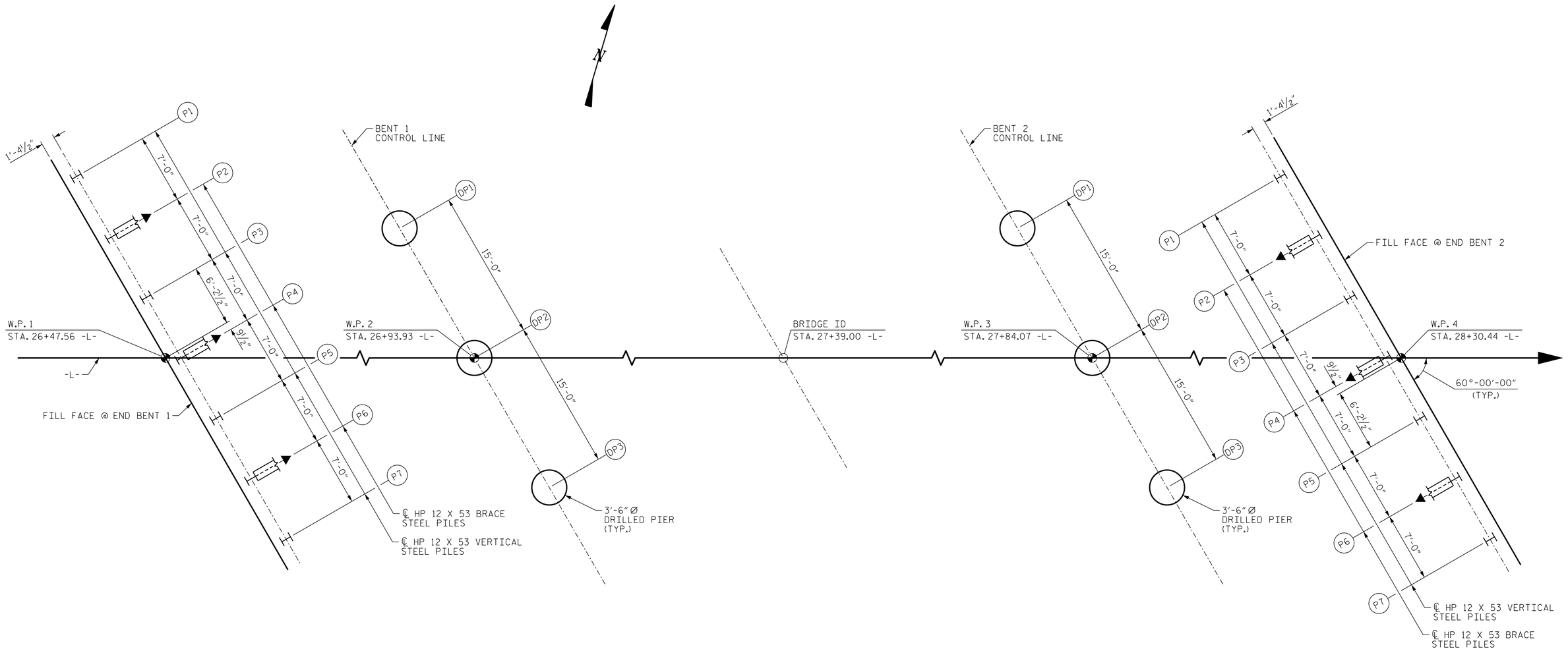
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1005
OVER BRUSH CREEK
BETWEEN SR 2662 & SR 2641

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

11/6/2024
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User: blanning
Filename: N:\NC Bridges\M21017.CH Eng.Randolph 162 Br. Rep\BP8R019\Structures\401.003.BP8R019.SMU.0002.750162.dgn



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

FOUNDATION LAYOUT

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

BRACE PILES ARE TO BE BATTERED AT 3:12.

▲ INDICATES BATTER DIRECTION.

FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON 11/6/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

DRAWN BY :	B.E. LANNING	DATE : 11/2023
CHECKED BY :	B.E. ATKINSON	DATE : 11/2023
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE : 11/2024

11/6/2024
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User: blanning
Filename: N:\NC Bridges\M210117_CH Eng_Randolph 162 Br._Rep\BP8R019\Structures\401_005_BP8R019_SMU_FL1_750162.dgn

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 No. 1	64	448.36	25			110							
End Bent No. 2, Pile 1-4	64	445.67	15			110							
End Bent No. 2, Pile 5-7	64	445.67	20			110							

*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.

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

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 No. 1	64			0.60			1.00
End Bent No. 2	64			0.60			1.00

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent No. 1				Yes	
End Bent No. 2				Yes	
TOTAL QTY:				14	

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length* per Pier Lin FT	Drilled Pier Length Not In Soil* per Pier Lin FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT
Bent No. 1	410	416.7	95	424	7.0		9.0	6.0			
Bent No. 2	405	421.7	95	429	7.0		8.0	0.0			
TOTAL QTY:							51.0	18.0			

*Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "42" Dia. Drilled Piers" or "42" Dia. Drilled Piers Not in Soil" and "42" Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the *NCDOT Standard Specifications* .

**Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casting for 42" Dia. Drilled Pier" in accordance with Article 411-7 of the *NCDOT Standard Specifications* .

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent No. 1		Yes	61.0		
Bent No. 2		Yes	37.0		
TOTAL QTY:			294.0		

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

NOTES:

1. THE PILE AND DRILLED PIER FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (THOMAS J. DAILY, #045672) ON 08-31-2023.
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 DPT TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTS, CSL TESTING, SID INSPECTIONS AND PITS WHEN THESE ITEMS MAY BE REQUIRED.
4. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30 TO 40 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
6. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

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

SHEET NO. S-4

TOTAL SHEETS 24

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 11/2024

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User: blanning
Filename: N:\NC Bridges\M21017_CH Eng_Randolph 162 Br. Repl\BP8R019\Structures\401_007_BP8R019_SMU_FT1_750162.dgn

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)	2.02	--	1.75	0.223	3.55	45′	E	21.6	0.628	**2.02**	45′	E	8.7	0.80	0.223	3.20	45′	E	21.6	
		HL-93(Opr)	N/A	--	2.65	--	1.35	0.223	4.60	45′	E	21.6	0.628	2.65	45′	E	8.7	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	(2)	2.36	84.96	1.75	0.223	4.35	45′	E	21.6	0.628	**2.36**	45′	E	8.7	0.80	0.223	3.93	45′	E	21.6	
		HS-20(Opr)	36.000	--	3.09	111.24	1.35	0.223	5.63	45′	E	21.6	0.628	3.09	45′	E	8.7	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	6.42	86.67	1.40	0.223	10.54	45′	E	21.6	0.628	6.42	45′	E	8.7	0.80	0.223	7.62	45′	E	21.6	
		SNGARBS2	20.000	--	4.77	95.40	1.40	0.223	8.54	45′	E	21.6	0.628	4.77	45′	E	8.7	0.80	0.223	6.17	45′	E	21.6	
		SNAGRIS2	22.000	--	4.53	99.66	1.40	0.223	8.30	45′	E	17.3	0.628	4.53	45′	E	8.7	0.80	0.223	6.06	45′	E	17.3	
		SNCOTTS3	27.250	--	3.16	86.11	1.40	0.223	5.26	45′	E	21.6	0.628	3.16	45′	E	8.7	0.80	0.223	3.80	45′	E	21.6	
		SNAGGRS4	34.925	--	2.78	97.09	1.40	0.223	4.66	45′	E	21.6	0.628	2.78	45′	E	8.7	0.80	0.223	3.37	45′	E	21.6	
		SNS5A	35.550	--	2.92	103.81	1.40	0.223	4.54	45′	E	21.6	0.628	2.92	45′	E	8.7	0.80	0.223	3.28	45′	E	21.6	
		SNS6A	39.950	--	2.72	108.66	1.40	0.223	4.28	45′	E	21.6	0.628	2.72	45′	E	8.7	0.80	0.223	3.09	45′	E	21.6	
		SNS7B	42.000	--	2.77	116.34	1.40	0.223	4.08	45′	E	21.6	0.628	2.77	45′	E	8.7	0.80	0.223	2.95	45′	E	21.6	
	TTST	TNAGRIT3	33.000	--	3.17	104.61	1.40	0.223	5.25	45′	E	21.6	0.628	3.17	45′	E	8.7	0.80	0.223	3.80	45′	E	21.6	
		TNT4A	33.075	--	3.00	99.23	1.40	0.223	5.31	45′	E	21.6	0.628	3.00	45′	E	8.7	0.80	0.223	3.84	45′	E	21.6	
		TNT6A	41.600	--	2.99	124.38	1.40	0.223	4.46	45′	E	21.6	0.628	2.99	45′	E	8.7	0.80	0.223	3.22	45′	E	21.6	
		TNT7A	42.000	--	2.71	113.82	1.40	0.223	4.55	45′	E	21.6	0.628	2.71	45′	E	8.7	0.80	0.223	3.29	45′	E	21.6	
		TNT7B	42.000	--	2.65	111.30	1.40	0.223	4.74	45′	E	21.6	0.628	2.65	45′	E	8.7	0.80	0.223	3.42	45′	E	21.6	
		TNAGRIT4	43.000	--	2.50	107.50	1.40	0.223	4.52	45′	E	21.6	0.628	2.50	45′	E	8.7	0.80	0.223	3.26	45′	E	21.6	
		TNAGT5A	45.000	--	2.61	117.45	1.40	0.223	4.20	45′	E	21.6	0.628	2.61	45′	E	8.7	0.80	0.223	3.03	45′	E	21.6	
		TNAGT5B	45.000	(3)	2.39	107.55	1.40	0.223	4.10	45′	E	21.6	0.628	**2.39**	45′	E	8.7	0.80	0.223	2.96	45′	E	21.6	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	3.61	103.79	1.30	0.223	6.60	45′	E	21.6	0.628	3.61	45′	E	8.7	0.80	0.223	4.43	45′	E	21.6	
		EV3	43.000	(4)	2.41	103.63	1.30	0.223	4.24	45′	E	21.6	0.628	**2.41**	45′	E	8.7	0.80	0.223	2.84	45′	E	21.6	

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:

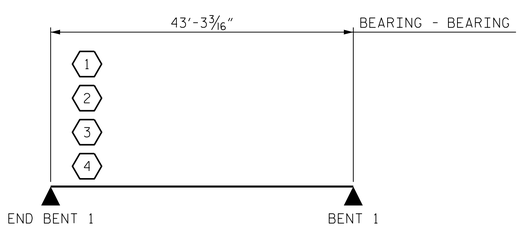
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(#) CONTROLLING LOAD RATING

(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
E - EXTERIOR GIRDER



LRFR SUMMARY

(SPAN A SHOWN, SPAN C SIMILAR)

PROJECT NO. BP8.R019
RANDOLPH COUNTY
STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 45′ BOX BEAM UNIT 60° SKEW SPAN A OR C

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 11/2024

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User: blanning
Filename: N:\NC Bridges\M21017_CH Eng.Randolph 162 Br. Repl\BP8R019\Structures\401_009_BP8R019_SMU_LRFR1_750162.dgn

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)	1.034	--	1.75	0.246	1.63	90'	E	44.134	0.627	**1.03**	90'	E	8.827	0.80	0.246	1.23	90'	E	44.134	
		HL-93(Opr)	N/A	--	1.343	--	1.35	0.246	2.11	90'	E	44.134	0.627	1.34	90'	E	8.827	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	(2)	1.343	48.336	1.75	0.246	2.21	90'	E	44.134	0.627	**1.34**	90'	E	8.827	0.80	0.246	1.67	90'	E	44.134	
		HS-20(Opr)	36.000	--	1.741	62.658	1.35	0.246	2.87	90'	E	44.134	0.627	1.74	90'	E	8.827	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.909	52.766	1.4	0.246	6.46	90'	E	44.134	0.627	4.08	90'	E	8.827	0.80	0.246	3.91	90'	E	44.134	
		SNGARBS2	20.000	--	2.857	57.143	1.4	0.246	4.72	90'	E	44.134	0.627	2.88	90'	E	8.827	0.80	0.246	2.86	90'	E	44.134	
		SNAGRIS2	22.000	--	2.658	58.474	1.4	0.246	4.44	90'	E	44.134	0.627	2.66	90'	E	8.827	0.80	0.246	2.68	90'	E	44.134	
		SNCOTTS3	27.250	--	1.943	52.958	1.4	0.246	3.21	90'	E	44.134	0.627	2.04	90'	E	8.827	0.80	0.246	1.94	90'	E	44.134	
		SNAGGRS4	34.925	--	1.603	55.974	1.4	0.246	2.65	90'	E	44.134	0.627	1.67	90'	E	8.827	0.80	0.246	1.60	90'	E	44.134	
		SNS5A	35.550	--	1.569	55.767	1.4	0.246	2.59	90'	E	44.134	0.627	1.68	90'	E	8.827	0.80	0.246	1.57	90'	E	44.134	
		SNS6A	39.950	--	1.431	57.149	1.4	0.246	2.36	90'	E	44.134	0.627	1.53	90'	E	8.827	0.80	0.246	1.43	90'	E	44.134	
		SNS7B	42.000	--	1.362	57.202	1.4	0.246	2.25	90'	E	44.134	0.627	1.49	90'	E	8.827	0.80	0.246	1.36	90'	E	44.134	
	TTST	TNAGRIT3	33.000	--	1.742	57.481	1.4	0.246	2.88	90'	E	44.134	0.627	1.82	90'	E	8.827	0.80	0.246	1.74	90'	E	44.134	
		TNT4A	33.075	--	1.747	57.786	1.4	0.246	2.89	90'	E	44.134	0.627	1.78	90'	E	8.827	0.80	0.246	1.75	90'	E	44.134	
		TNT6A	41.600	--	1.42	59.082	1.4	0.246	2.35	90'	E	44.134	0.627	1.57	90'	E	8.827	0.80	0.246	1.42	90'	E	44.134	
		TNT7A	42.000	--	1.423	59.764	1.4	0.246	2.35	90'	E	44.134	0.627	1.54	90'	E	8.827	0.80	0.246	1.42	90'	E	44.134	
		TNT7B	42.000	--	1.461	61.373	1.4	0.246	2.42	90'	E	44.134	0.627	1.46	90'	E	8.827	0.80	0.246	1.46	90'	E	44.134	
		TNAGRIT4	43.000	--	1.398	60.12	1.4	0.246	2.31	90'	E	44.134	0.627	1.42	90'	E	8.827	0.80	0.246	1.40	90'	E	44.134	
		TNAGT5A	45.000	--	1.322	59.491	1.4	0.246	2.19	90'	E	44.134	0.627	1.40	90'	E	8.827	0.80	0.246	1.32	90'	E	44.134	
		TNAGT5B	45.000	(3)	1.309	58.923	1.4	0.246	2.16	90'	E	44.134	0.627	1.35	90'	E	8.827	0.80	0.246	**1.31**	90'	E	44.134	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	2.019	58.058	1.3	0.246	3.60	90'	E	44.130	0.627	2.02	90'	E	8.827	0.80	0.246	2.55	90'	E	44.134	
		EV3	43.000	(4)	1.359	58.431	1.3	0.246	2.37	90'	E	44.130	0.627	**1.36**	90'	E	8.827	0.80	0.246	1.68	90'	E	44.134	

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.
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(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

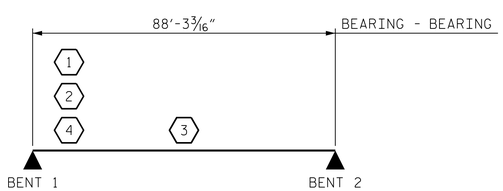
(3) LEGAL LOAD RATING **

(4) EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



LRFR SUMMARY

(SPAN B)

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON 11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

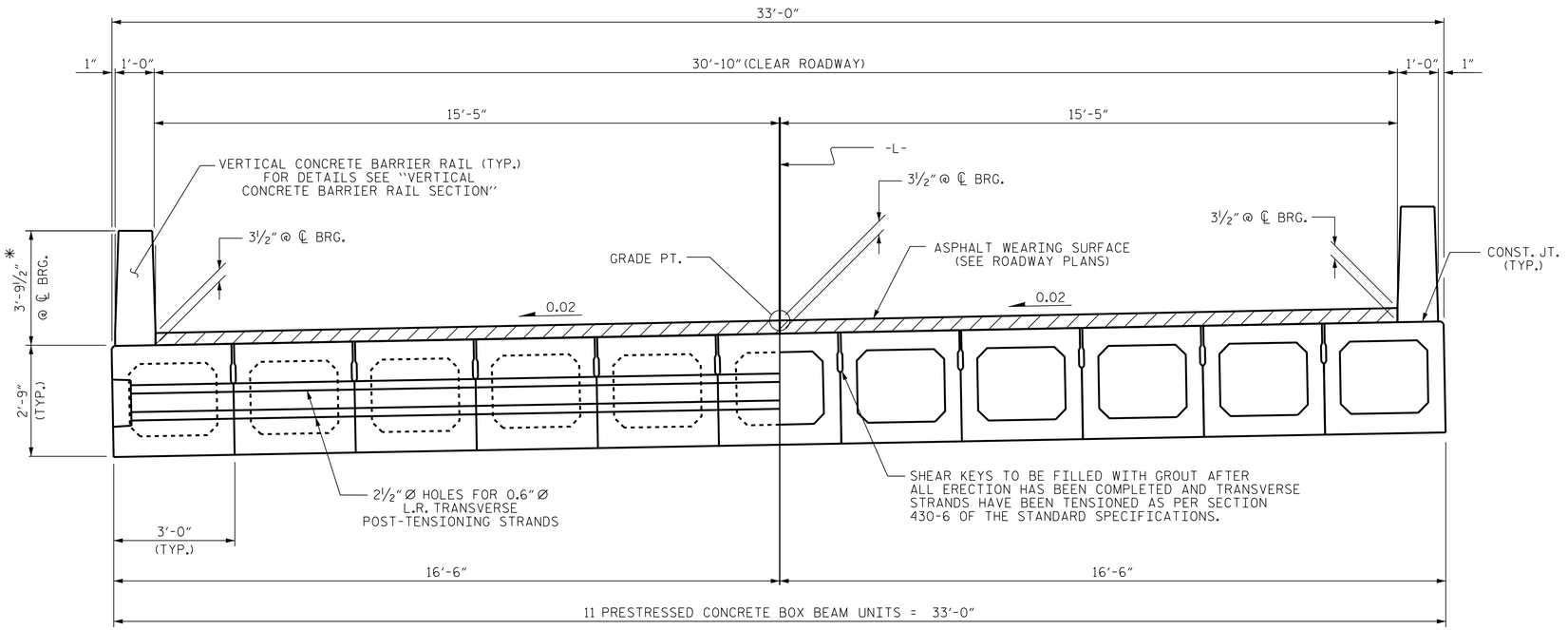
STANDARD
LRFR SUMMARY FOR
90' BOX BEAM UNIT
60° SKEW
SPAN B
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY:	B.E. LANNING	DATE: 11/2023
CHECKED BY :	B.E. ATKINSON	DATE: 11/2023
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE: 11/2024
DRAWN BY :	TMG II/II	
CHECKED BY :	AAC II/II	

STD. NO. 33LRFR1_60&120S_90L

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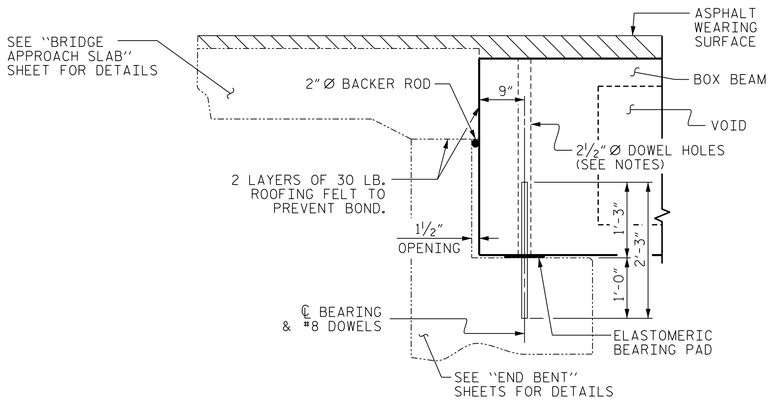
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

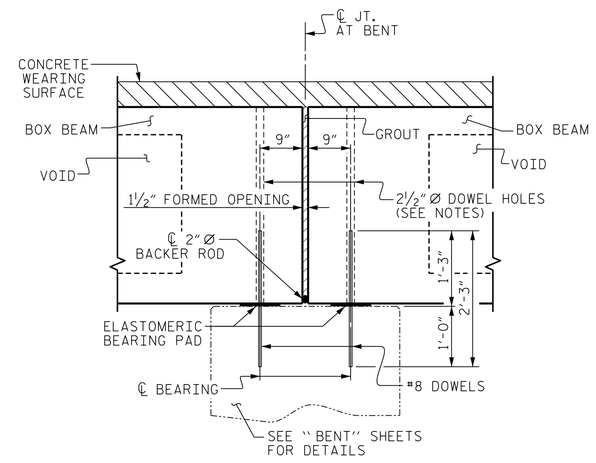
* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE ''VERTICAL CONCRETE BARRIER RAIL SECTION'' DETAIL.

FIXED END



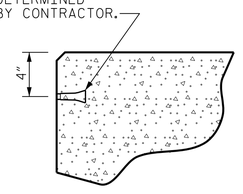
SECTION AT END BENT

FIXED END FIXED END



SECTION AT BENT

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



THREADED INSERT DETAIL

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2½″ Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR 45′ UNITS AND 6000 PSI FOR 90′ UNITS.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

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. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3′-0″ X 2′-9″ PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

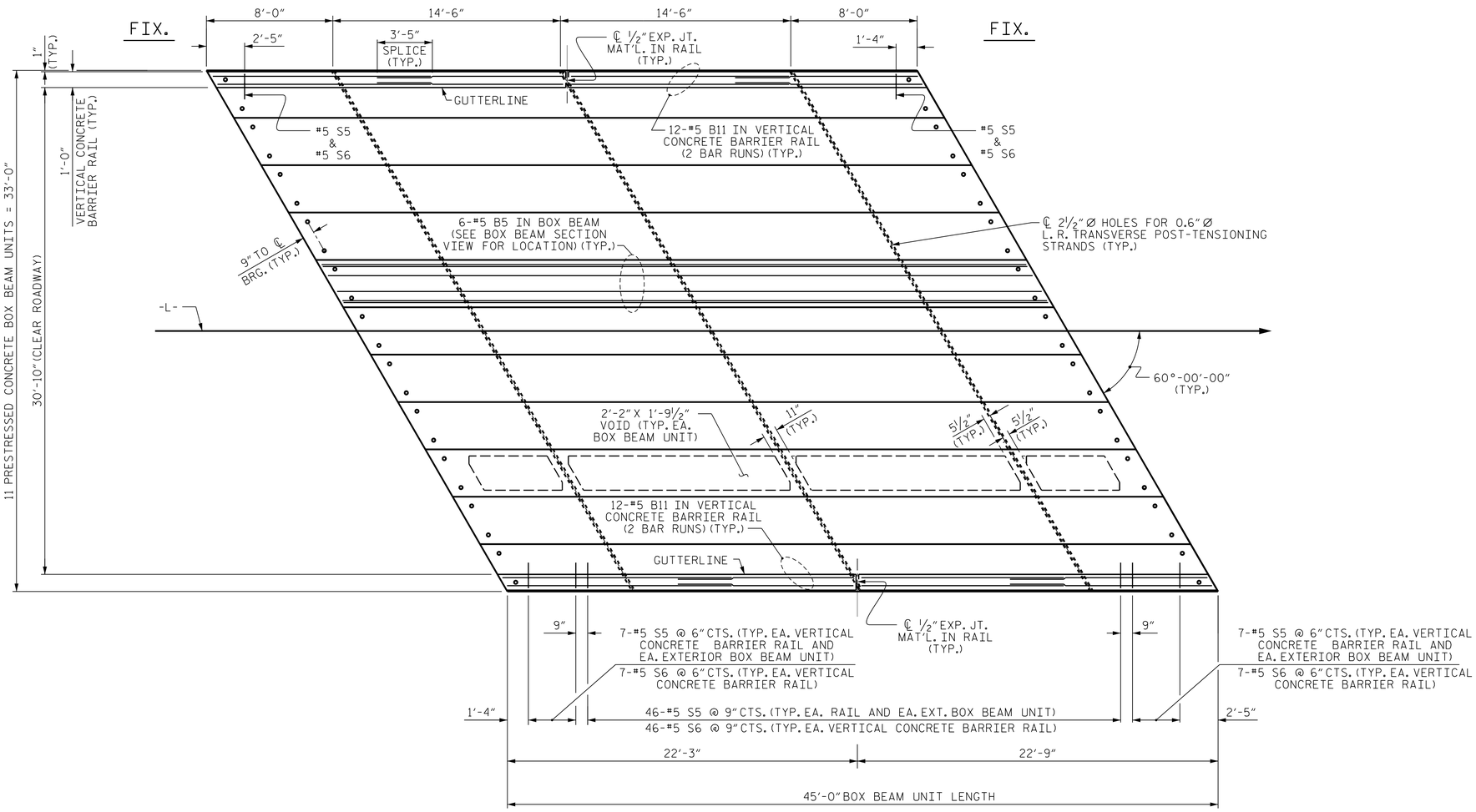
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
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2			4			24

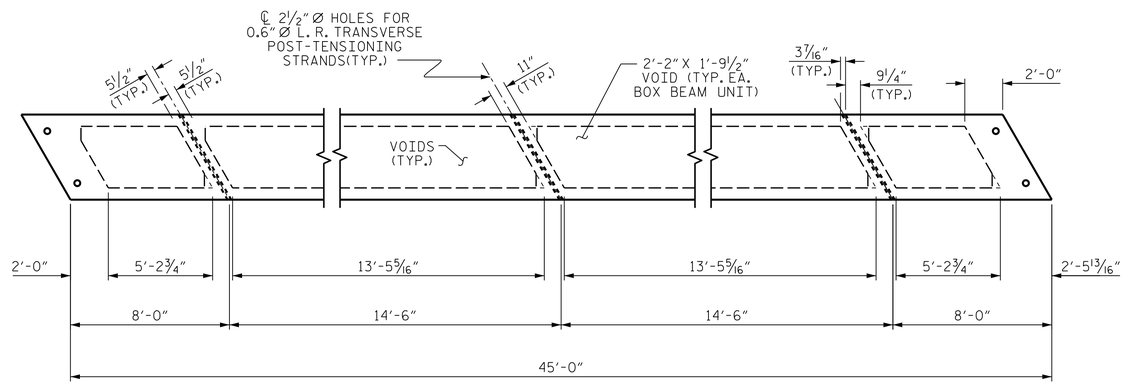
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CHECKED BY : TMG 11/11		

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PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT
30'-10" CLEAR ROADWAY
60° SKEW
SPAN A OR C

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

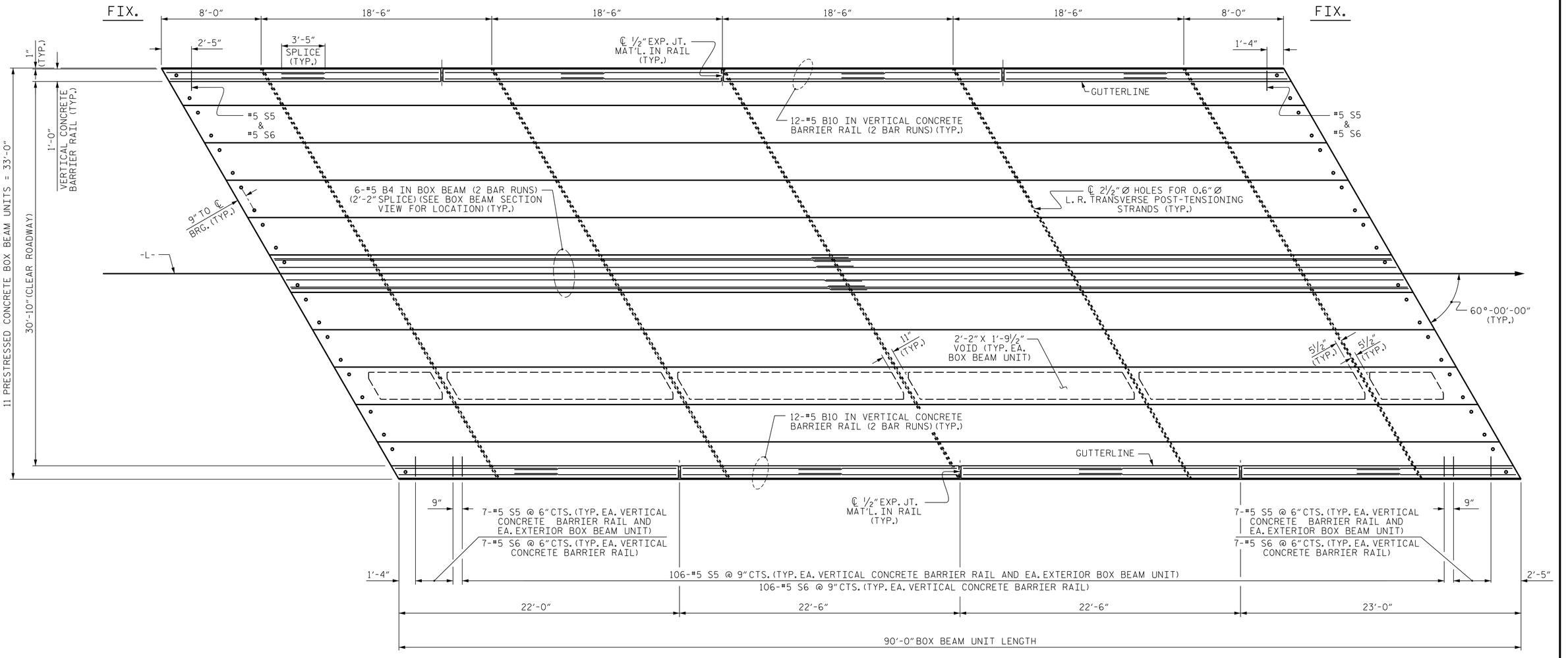
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

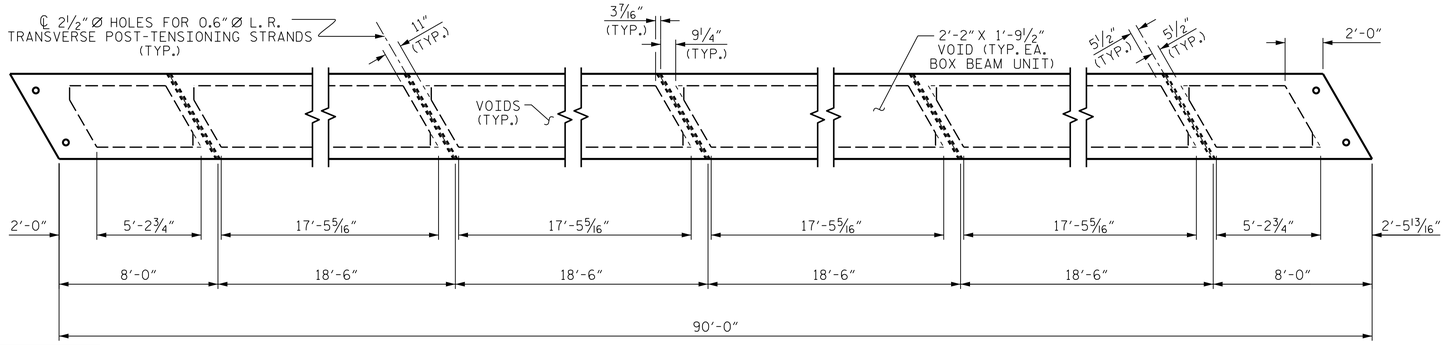
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TOTAL SHEETS 24

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PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 90' UNIT
30'-10" CLEAR ROADWAY
60° SKEW
SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

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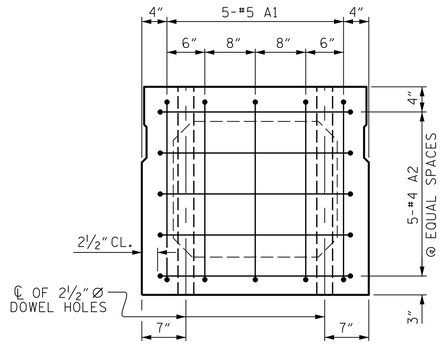
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
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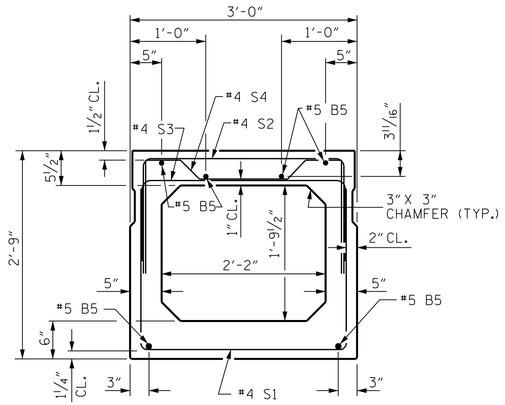
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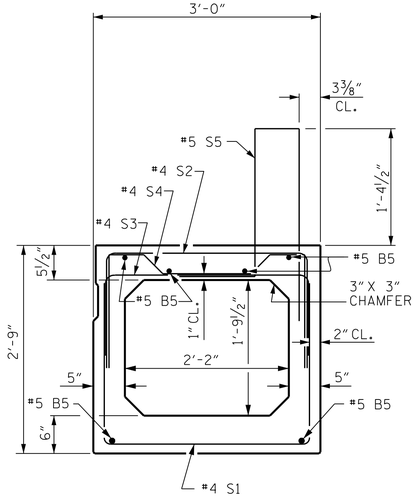
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

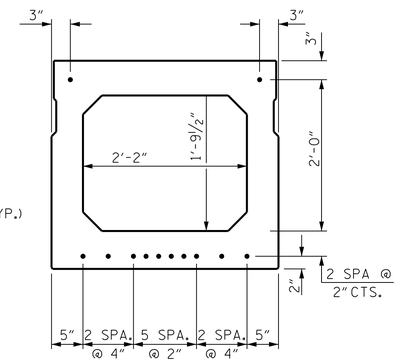
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



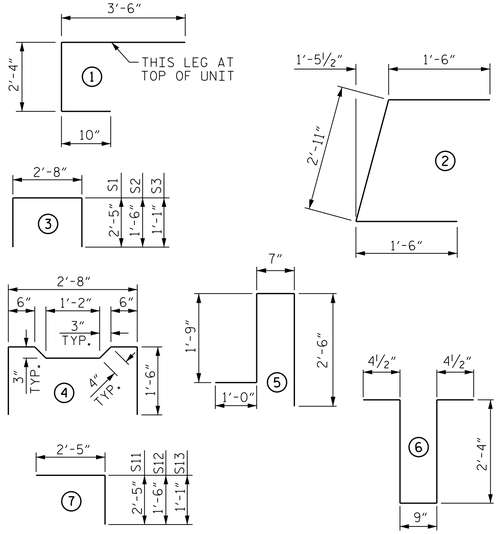
TYPICAL STRAND LOCATION

(12 STRANDS REQUIRED)

DEBONDING LEGEND

● FULLY BONDED STRANDS

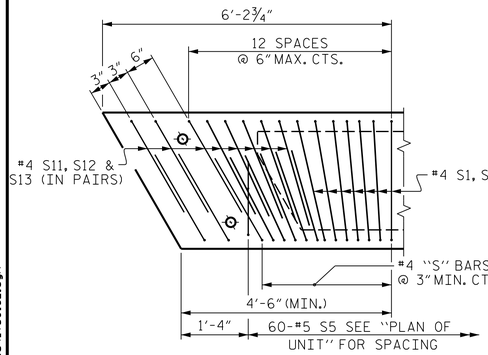
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

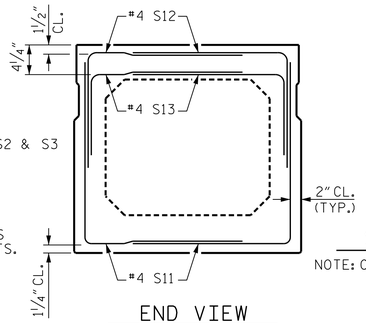
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	28	#4	2	5'-11"	111	5'-11"	111
B5	6	#5	STR	44'-7"	279	44'-7"	279
K1	9	#4	6	6'-2"	37	6'-2"	37
K2	6	#4	STR	2'-10"	11	2'-10"	11
S1	37	#4	3	7'-6"	185	7'-6"	185
S2	37	#4	3	5'-8"	140	5'-8"	140
S3	59	#4	3	4'-10"	190	4'-10"	190
S4	22	#4	4	5'-10"	86	5'-10"	86
S11	32	#4	7	4'-10"	103	4'-10"	103
S12	32	#4	7	3'-11"	84	3'-11"	84
S13	32	#4	7	3'-6"	75	3'-6"	75
✳ S5	60	#5	5	5'-10"	365	--	--
REINFORCING STEEL					1371 LBS.		1371 LBS.
✳ EPOXY COATED REINF. STEEL					365 LBS.		
5000 P.S.I. CONCRETE				8.4	CU. YDS.	8.3	CU. YDS.
0.6" Ø L.R. STRANDS					No. 12		No. 12



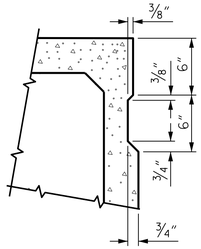
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



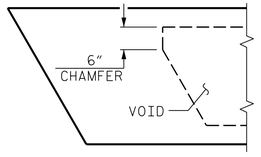
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

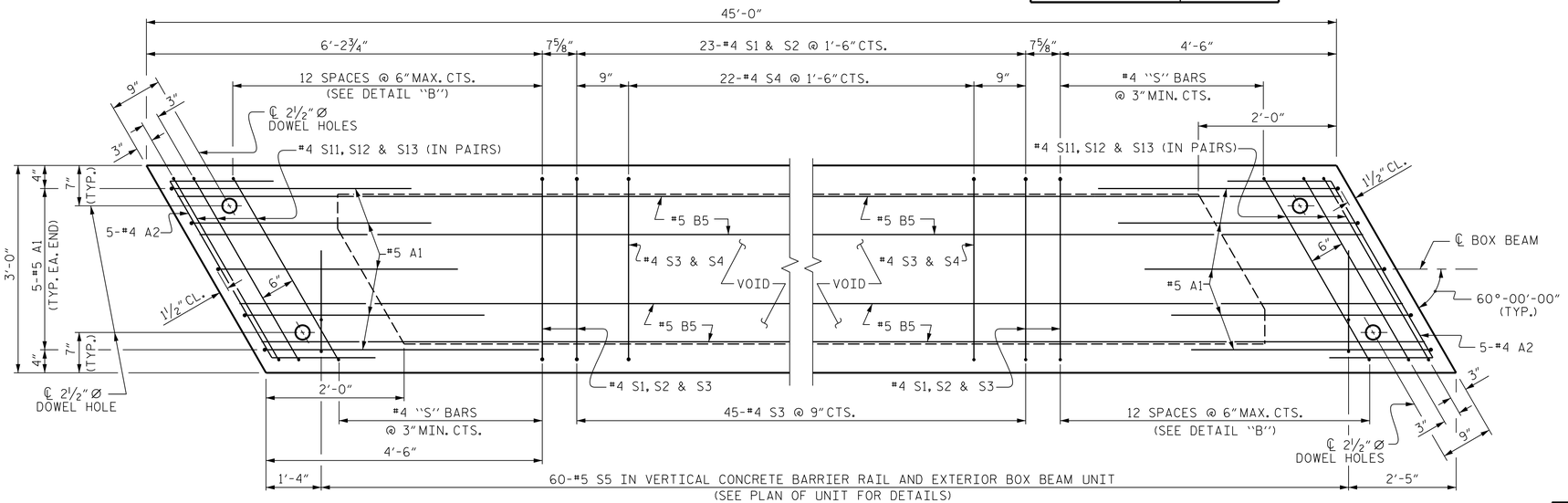


CHAMFER DETAIL

SHOWING 6" VOID CHAMFER

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP8.R019
RANDOLPH COUNTY
STATION: 27+39.00 -L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN A OR C

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

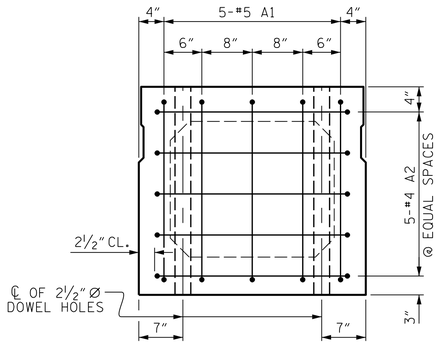
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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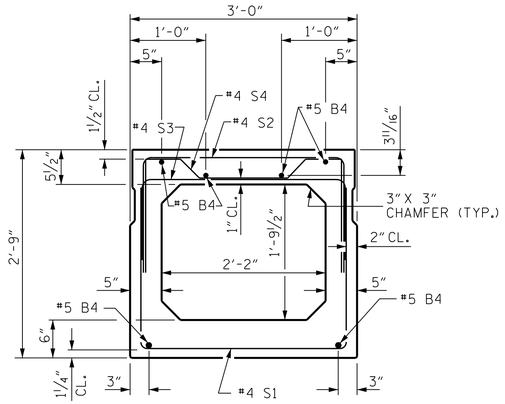
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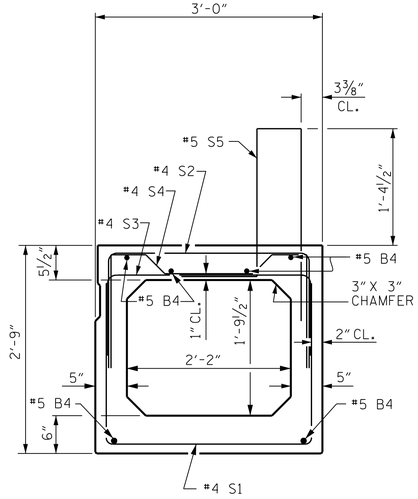
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

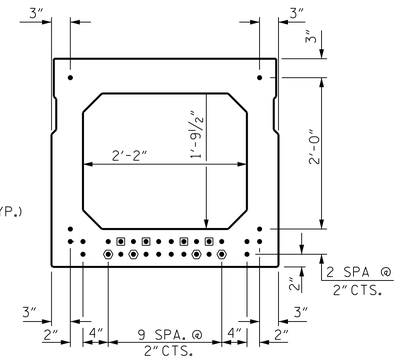
(STRAND LAYOUT NOT SHOWN)



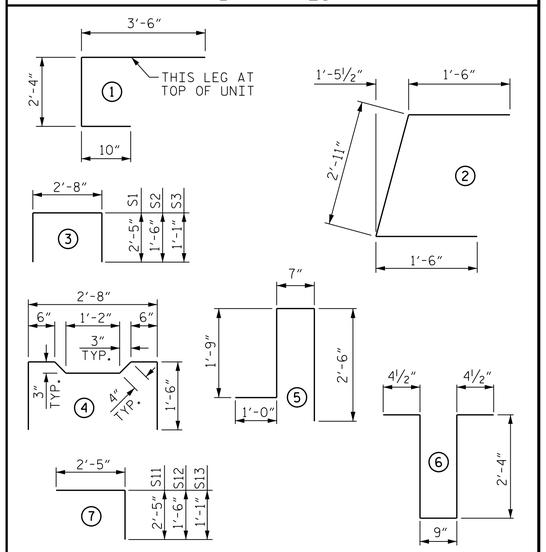
EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



BAR TYPES

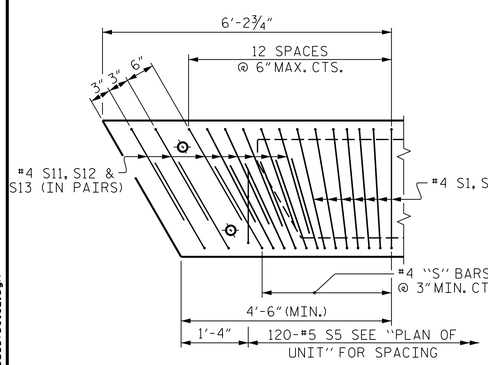


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

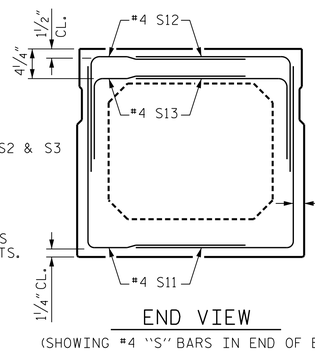
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	40	#4	2	5'-11"	158	5'-11"	158
B4	12	#5	STR	45'-11"	575	45'-11"	575
K1	15	#4	6	6'-2"	62	6'-2"	62
K2	10	#4	STR	2'-10"	19	2'-10"	19
S1	67	#4	3	7'-6"	336	7'-6"	336
S2	67	#4	3	5'-8"	254	5'-8"	254
S3	119	#4	3	4'-10"	384	4'-10"	384
S4	52	#4	4	5'-10"	203	5'-10"	203
S11	32	#4	7	4'-10"	103	4'-10"	103
S12	32	#4	7	3'-11"	84	3'-11"	84
S13	32	#4	7	3'-6"	75	3'-6"	75
✳ S5	120	#5	5	5'-10"	730	--	--

REINFORCING STEEL	2323	LBS.		2323 LBS.
✳ EPOXY COATED REINF. STEEL	730	LBS.		
8000 P.S.I. CONCRETE	16.1	CU. YDS.	16.0	CU. YDS.
0.6" Ø L.R. STRANDS	No. 30		No. 30	



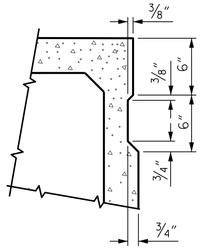
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



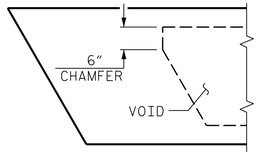
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



CHAMFER DETAIL

SHOWING 6" VOID CHAMFER

TYPICAL STRAND LOCATION

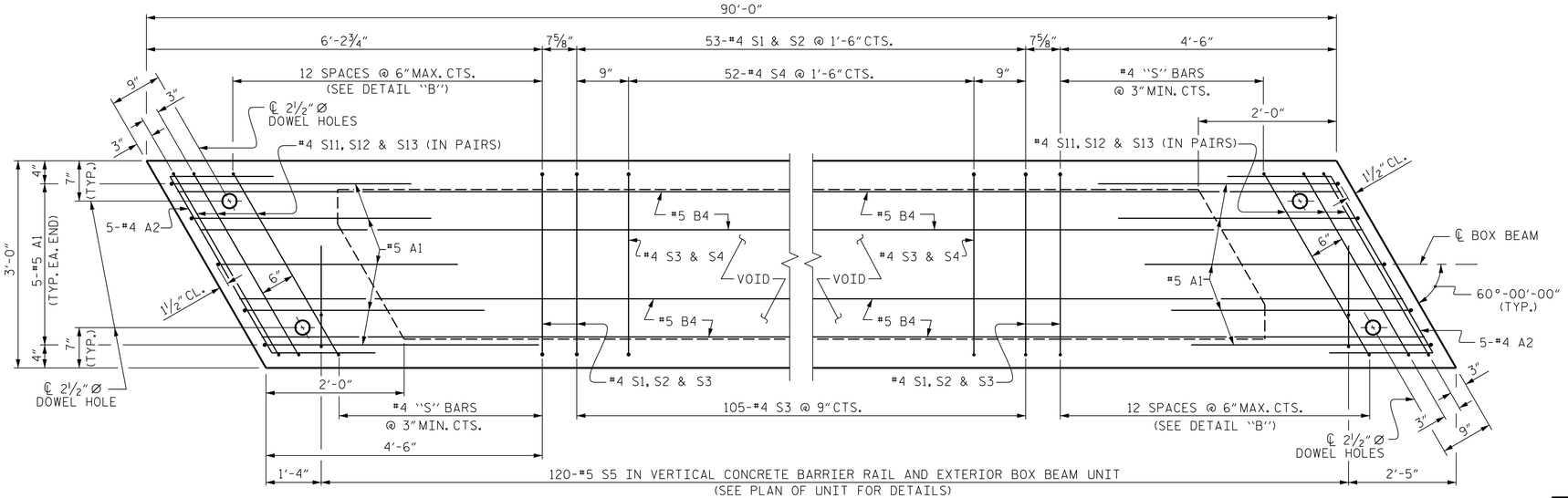
(30 STRANDS REQUIRED)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◘ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⬢ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

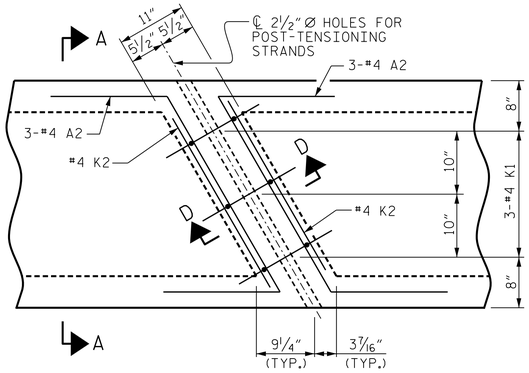
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			24

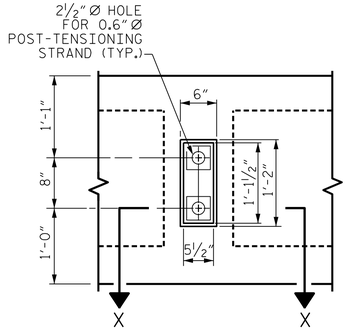
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CHECKED BY :	B.E. ATKINSON	DATE: 11/2023
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE: 11/2024
DRAWN BY :	DGE II/II	REV. 4/15 MAA/TMG
CHECKED BY :	TMG II/II	

STD. NO. 33PCBB4_60S_90L

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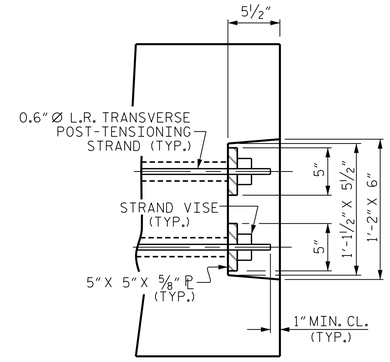


PLAN

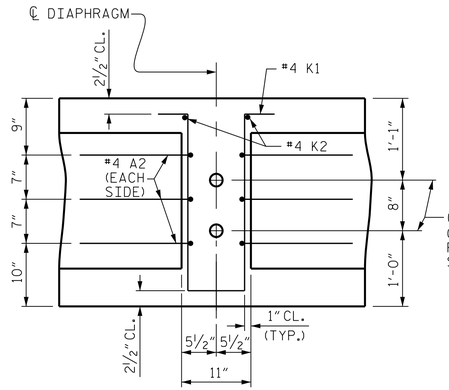


VIEW Y-Y

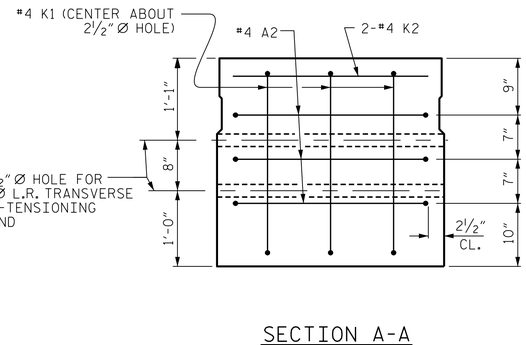
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

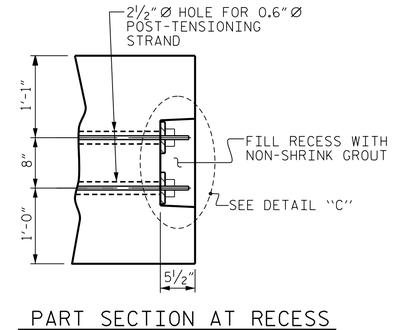


SECTION D-D

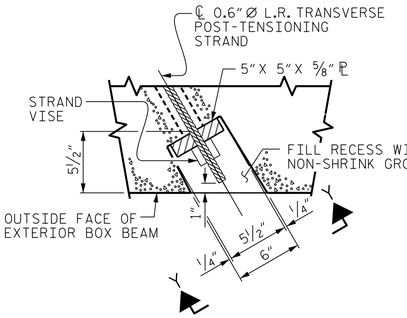


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS



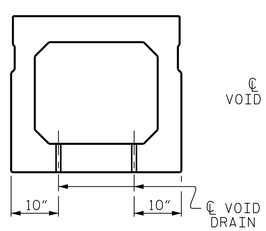
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

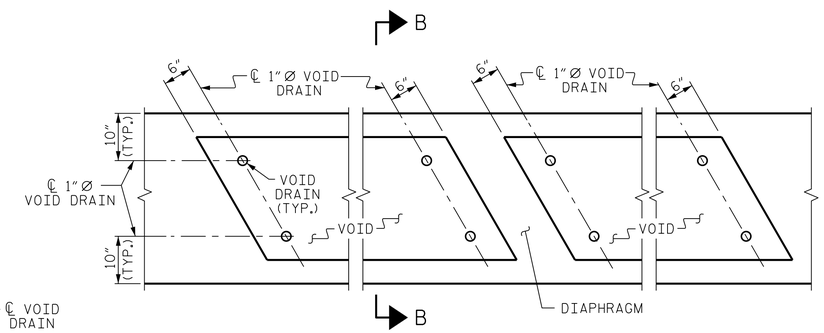
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2½" Ø HOLE.



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
45' BOX BEAM UNIT (SPANS A & C)	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	⅛" ↓
FINAL CAMBER	⅜" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
90' BOX BEAM UNIT (SPAN B)	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2¾" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	¾" ↓
FINAL CAMBER	2" ↑

** INCLUDES FUTURE WEARING SURFACE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 ENGINEER BYRON E. ATKINSON

11/6/2024

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

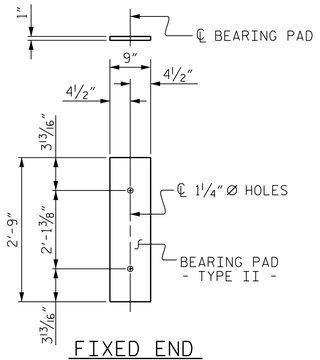
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			24

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DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE : 11/2024

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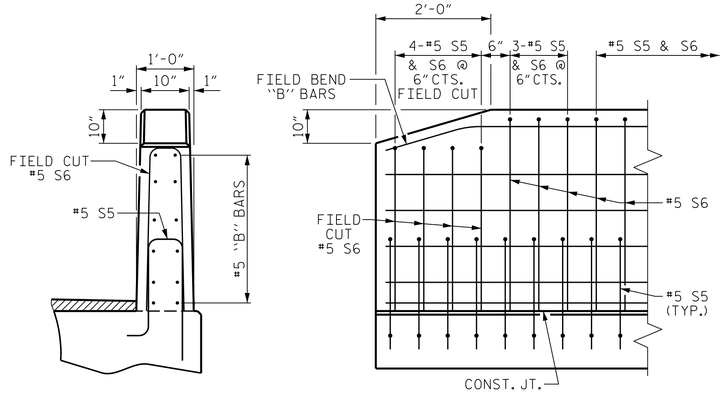


FIXED END

(TYPE II - 66 REQ'D.)

ELASTOMERIC BEARING DETAILS

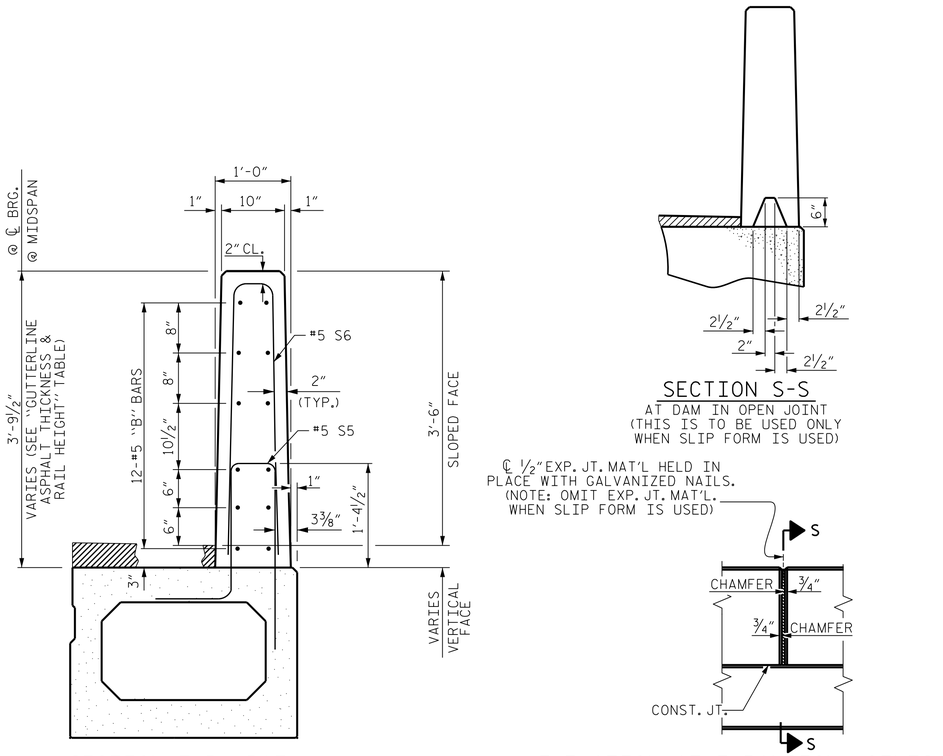
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END VIEW

SIDE VIEW

END OF RAIL DETAILS



SECTION THRU RAIL

SECTION S-S

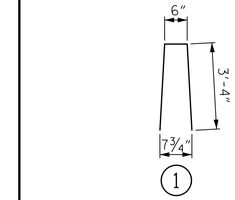
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

BOX BEAM UNITS REQUIRED			
45' UNITS	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	4	45'-0"	180'-0"
INTERIOR B.B.	18	45'-0"	810'-0"
TOTAL	22	———	990'-0"

BOX BEAM UNITS REQUIRED			
90' UNITS	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	9	90'-0"	810'-0"
TOTAL	11	———	990'-0"



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	45' UNIT					
✳B11	96	192	#5	STR	13'-0"	2603
✳S6	120	240	#5	1	7'-2"	1794
✳EPOXY COATED REINFORCING STEEL				LBS.		4397
CLASS AA CONCRETE				CU.YDS.		23.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		180.0

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	90' UNIT				
✳B10	192	#5	STR	13'-0"	2603
✳S6	240	#5	1	7'-2"	1794
✳EPOXY COATED REINFORCING STEEL			LBS.		4397
CLASS AA CONCRETE			CU.YDS.		23.3
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.		180.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
45' UNITS	3/8"	3'-9⅛"

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
90' UNITS	1½"	3'-7½"

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 7 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

11/6/2024

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

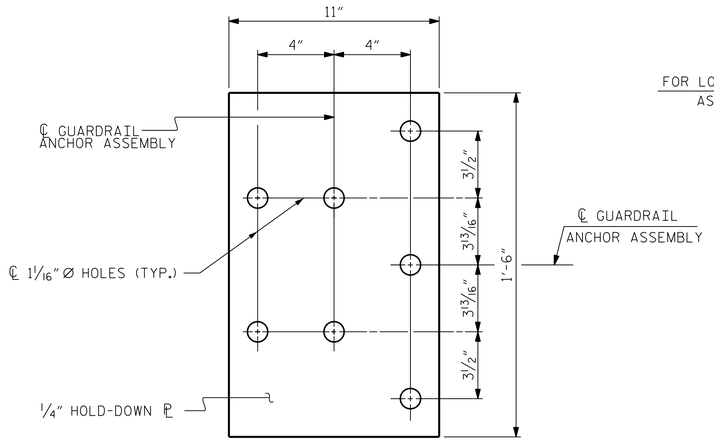
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

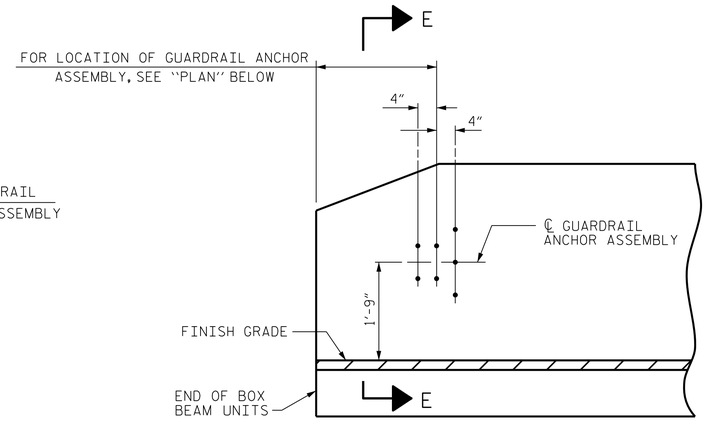
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CHECKED BY :	B.E. ATKINSON	DATE : 11/2023
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PLAN



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.)

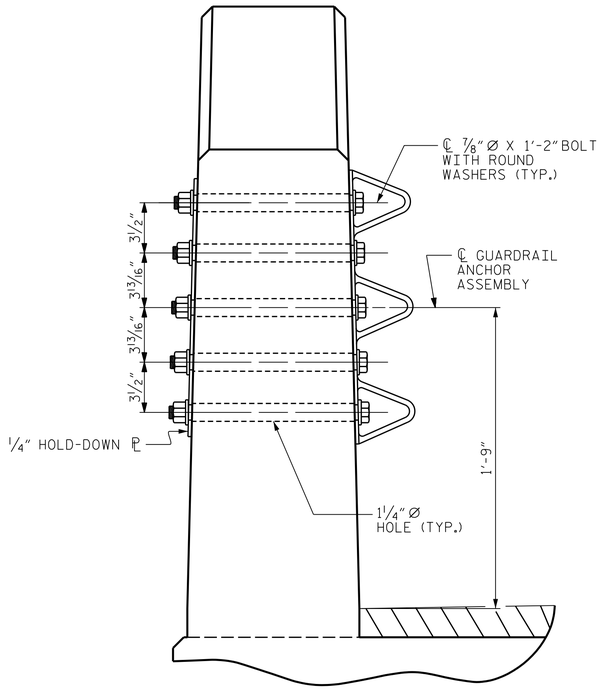
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

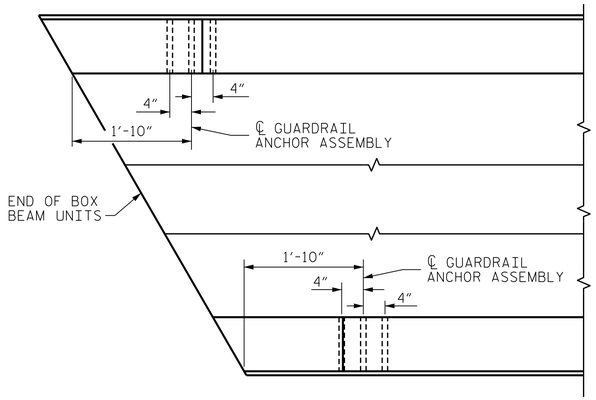
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 BYRON E. ATKINSON 11/6/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY:	B.E. LANNING	DATE:	11/2023
CHECKED BY :	B.E. ATKINSON	DATE:	11/2023
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE:	11/2024
DRAWN BY :	MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY :	GM 5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS					
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1			3		
2			4		

SHEET NO. S-14

TOTAL SHEETS 24

(SHT 1b) STD. NO. GRA3

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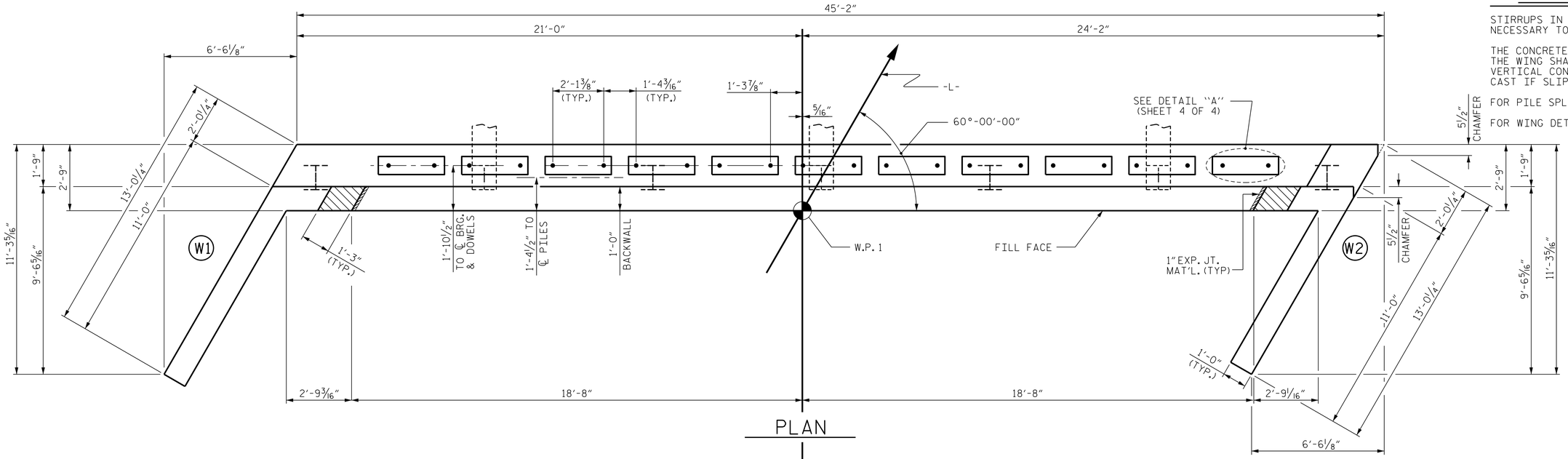
NOTES

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

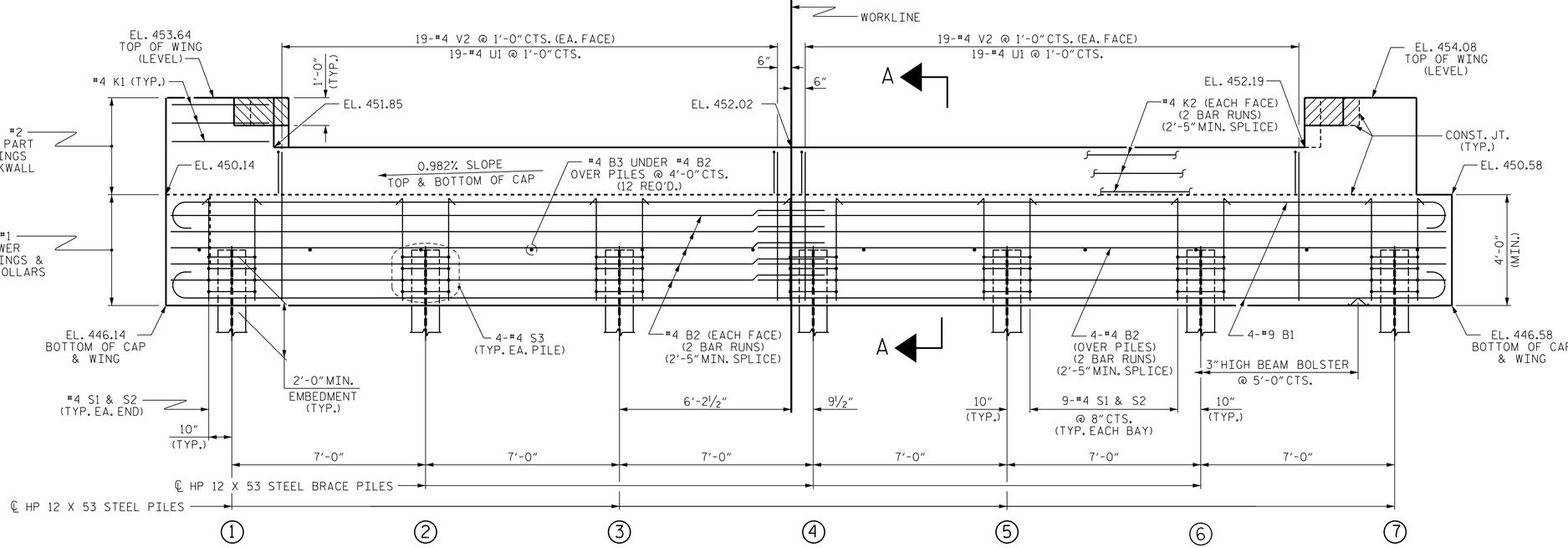
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS

①	448.15
②	448.22
③	448.29
④	448.36
⑤	448.43
⑥	448.49
⑦	448.56

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

11/6/2024

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1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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DEPARTMENT OF TRANSPORTATION
RALEIGH

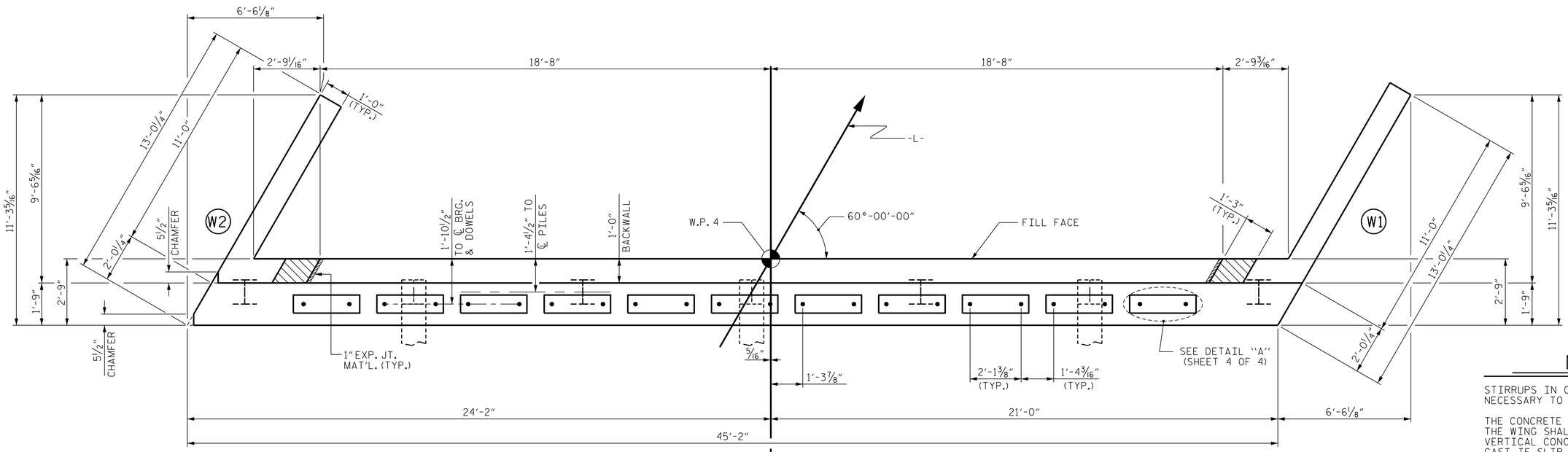
SUBSTRUCTURE

END BENT No. 1

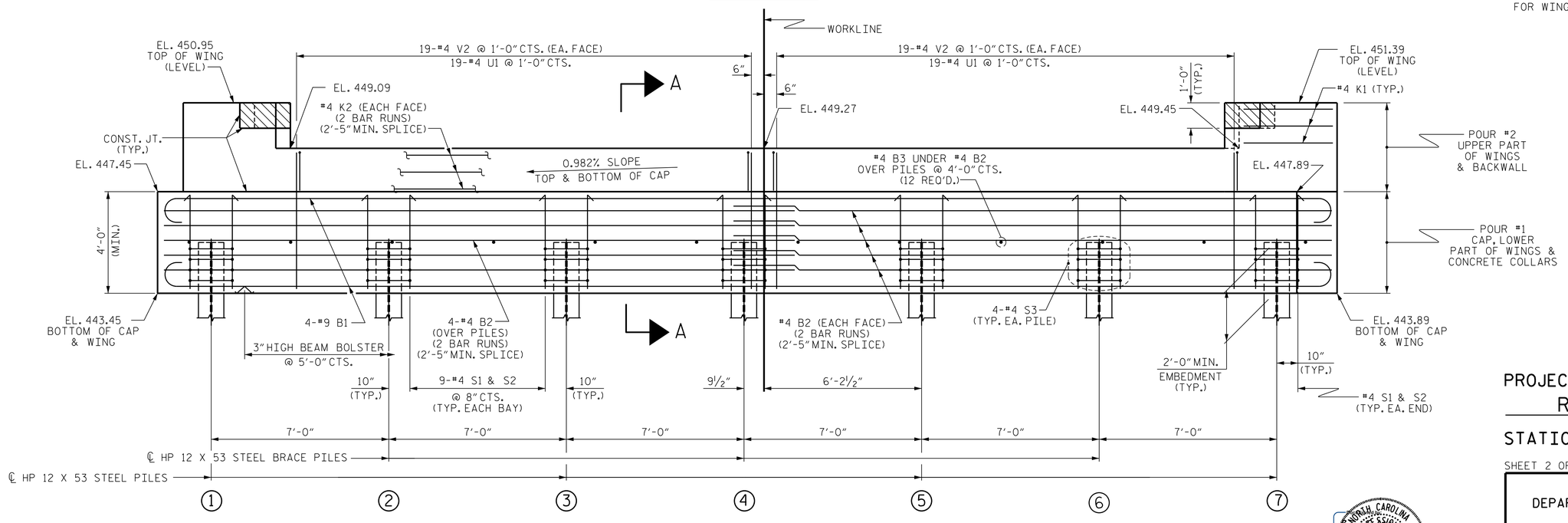
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2			4			24

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PLAN



ELEVATION

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

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	445.48
②	445.55
③	445.62
④	445.68
⑤	445.75
⑥	445.82
⑦	445.89

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON 11/6/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

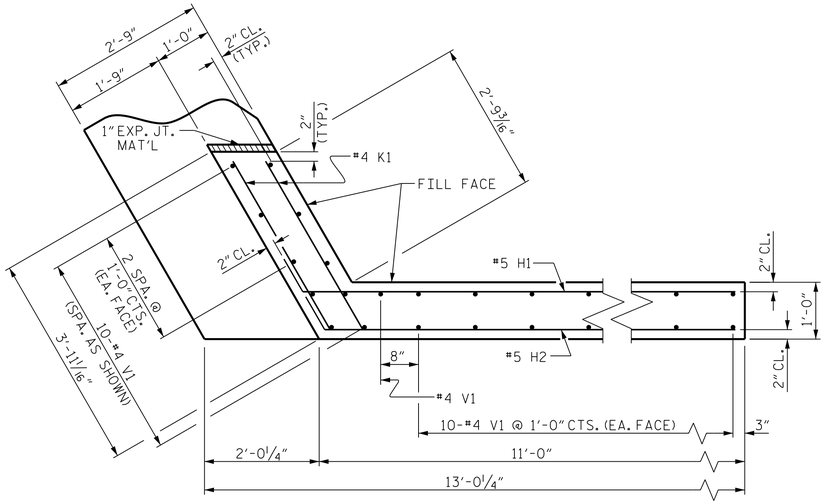
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

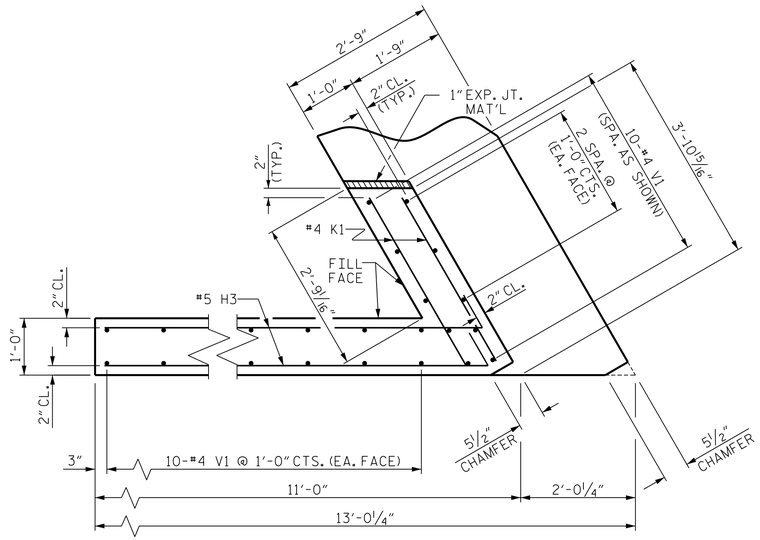
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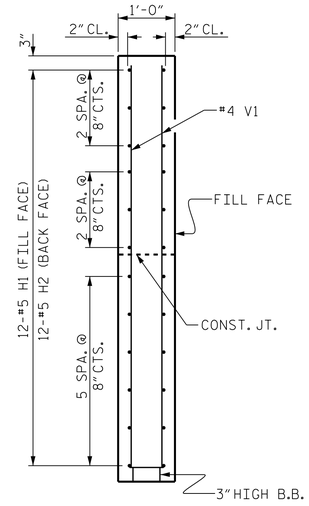
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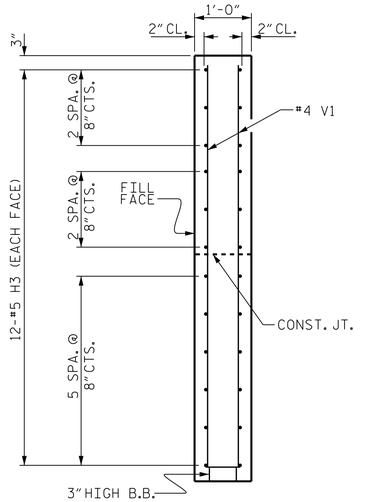
PLAN OF WING (W1)



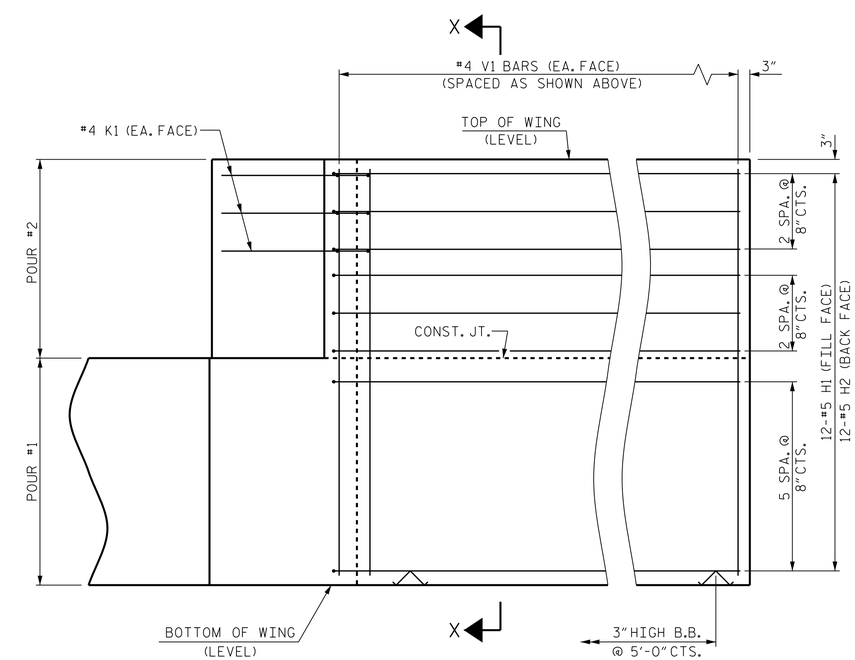
PLAN OF WING (W2)



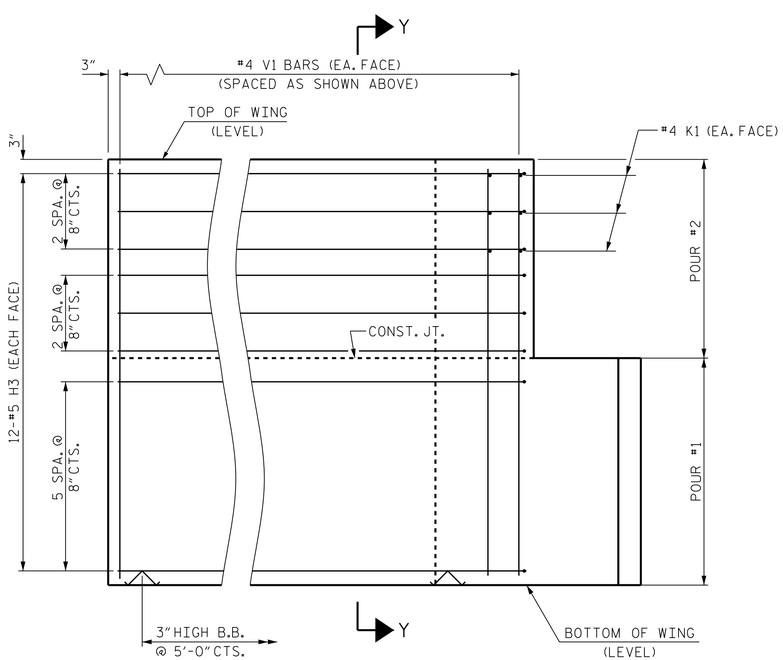
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

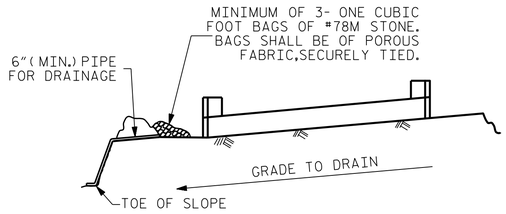
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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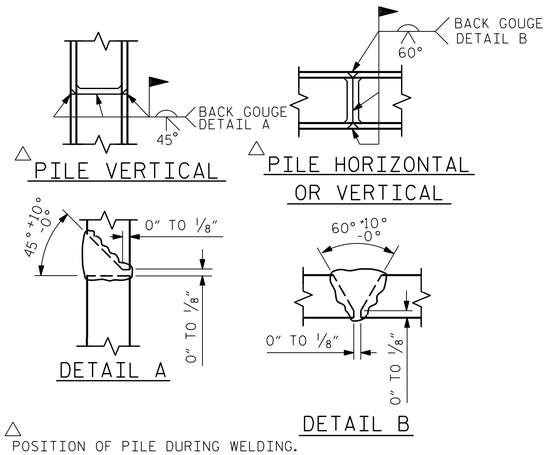


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

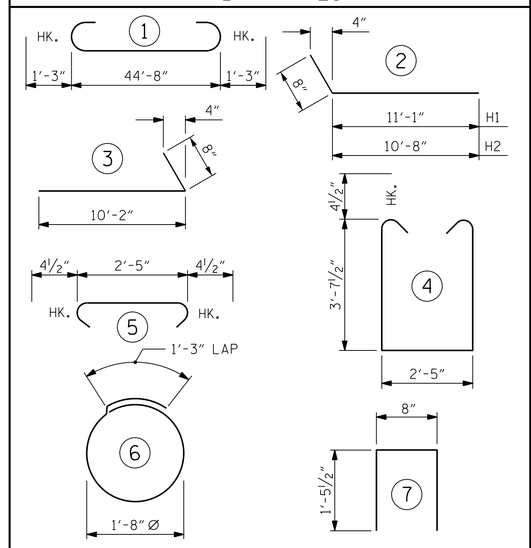
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

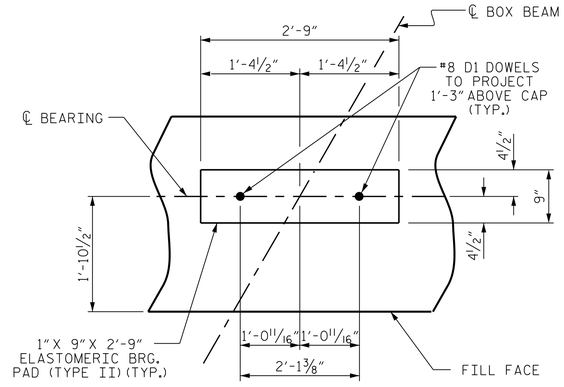
BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-2"	1,283
B2	28	#4	STR	23'-8"	443
B3	12	#4	STR	2'-5"	19
D1	22	#8	STR	2'-3"	132
H1	12	#5	2	11'-9"	147
H2	12	#5	2	11'-4"	142
H3	24	#5	3	10'-10"	271
K1	12	#4	STR	3'-3"	26
K2	12	#4	STR	23'-8"	190
S1	56	#4	4	10'-5"	390
S2	56	#4	5	3'-2"	118
S3	28	#4	6	6'-6"	122
U1	38	#4	7	3'-7"	91
V1	61	#4	STR	7'-2"	292
V2	76	#4	STR	5'-3"	267

REINFORCING STEEL (FOR ONE END BENT) 3,933 LBS.

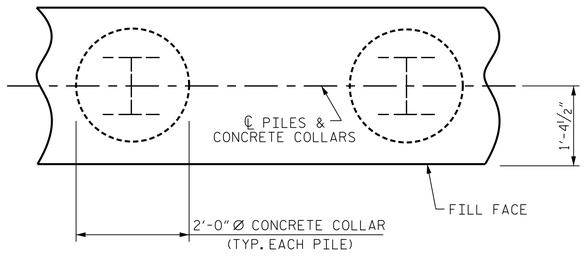
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	22.6 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	5.9 C.Y.
TOTAL CLASS A CONCRETE		28.5 C.Y.

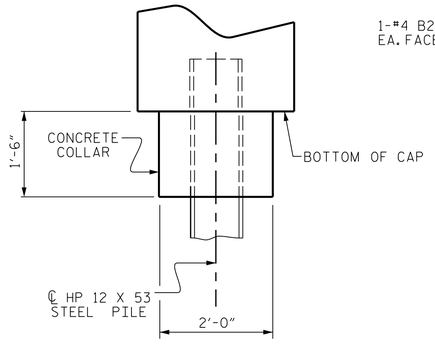


DETAIL "A"

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



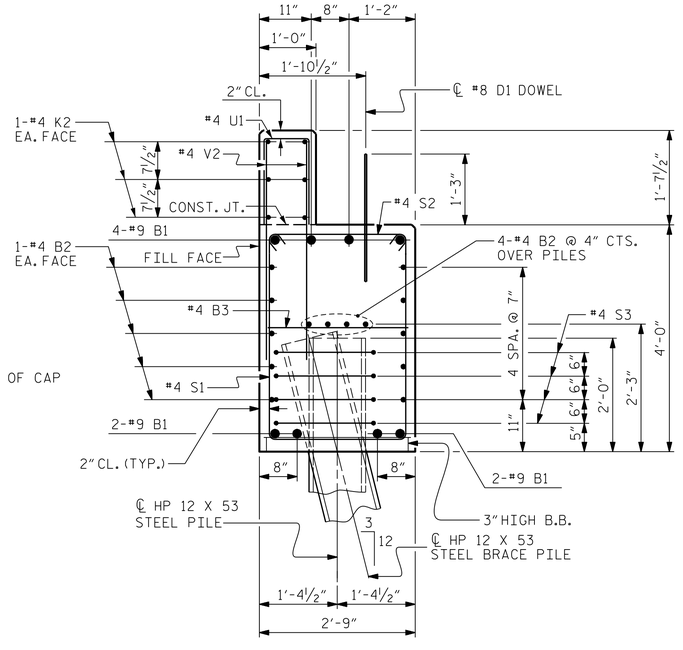
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



SECTION A-A

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

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON

11/6/2024

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

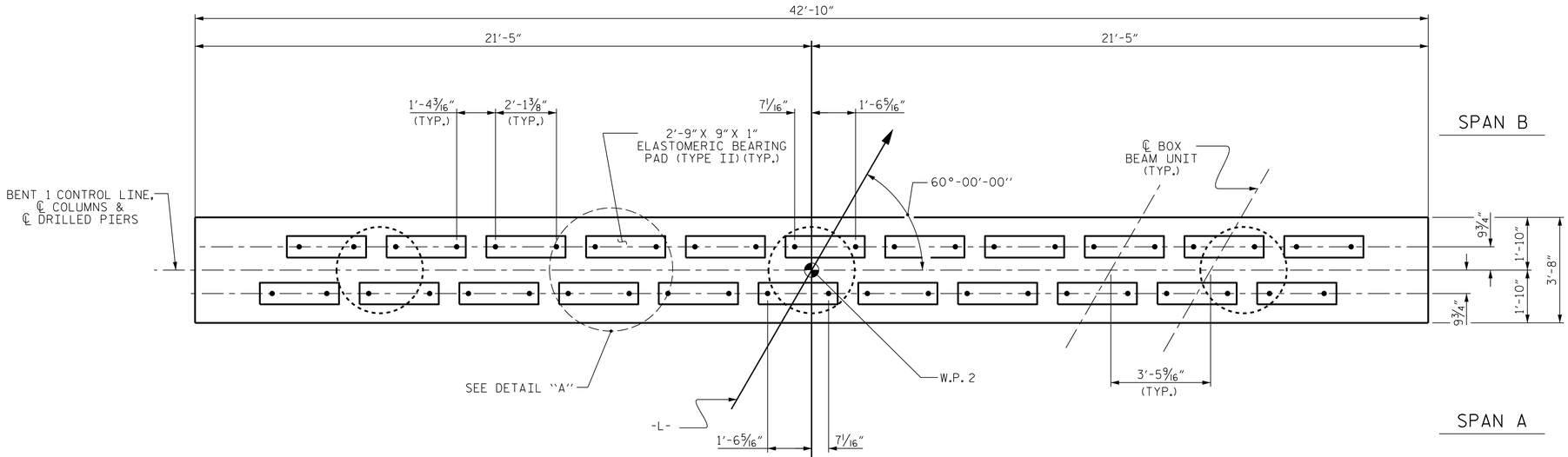
SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

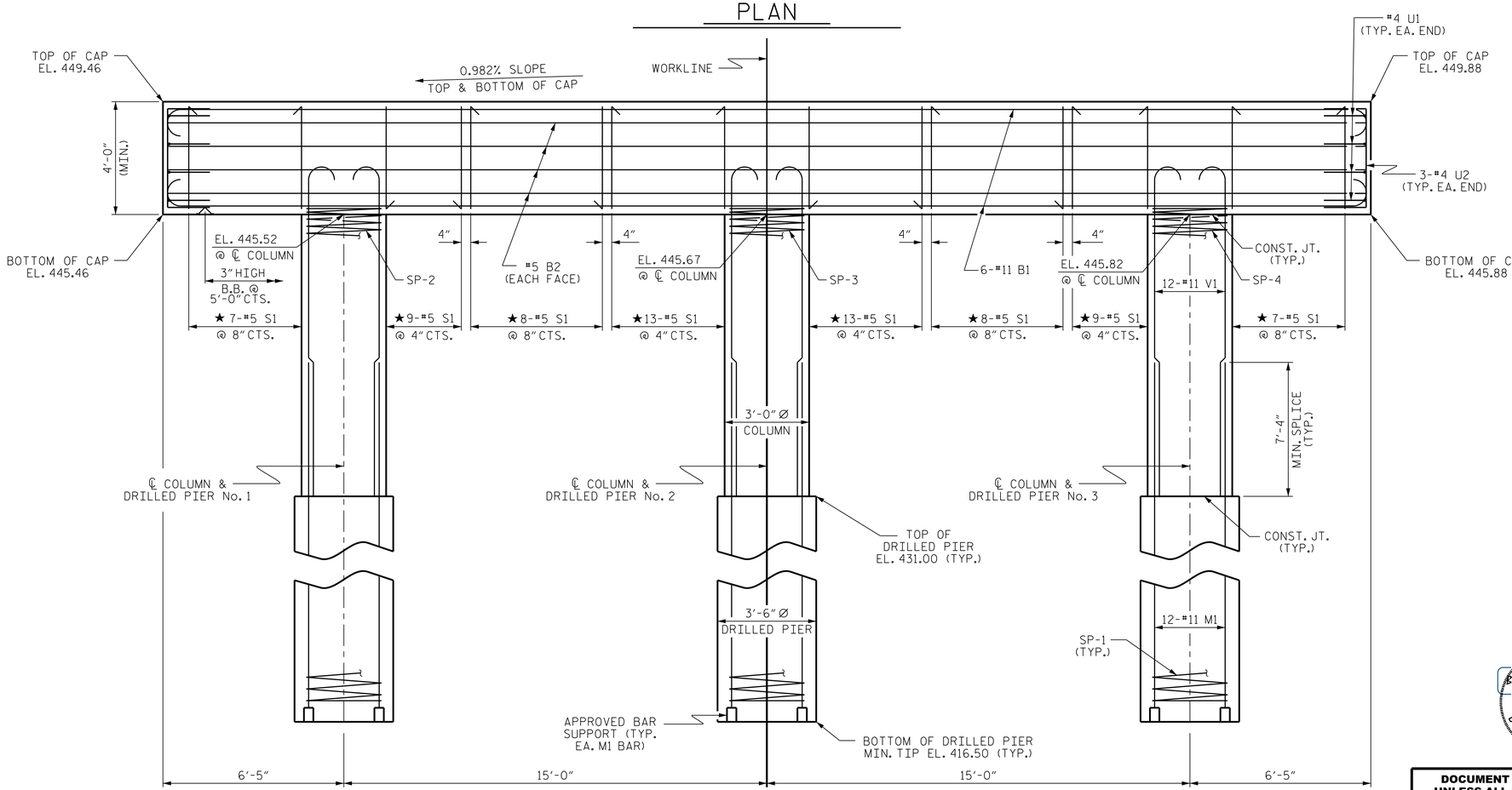
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PLAN



ELEVATION

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

NOTES

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

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

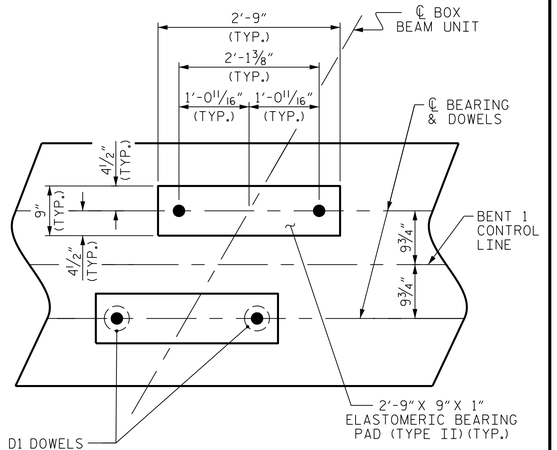
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

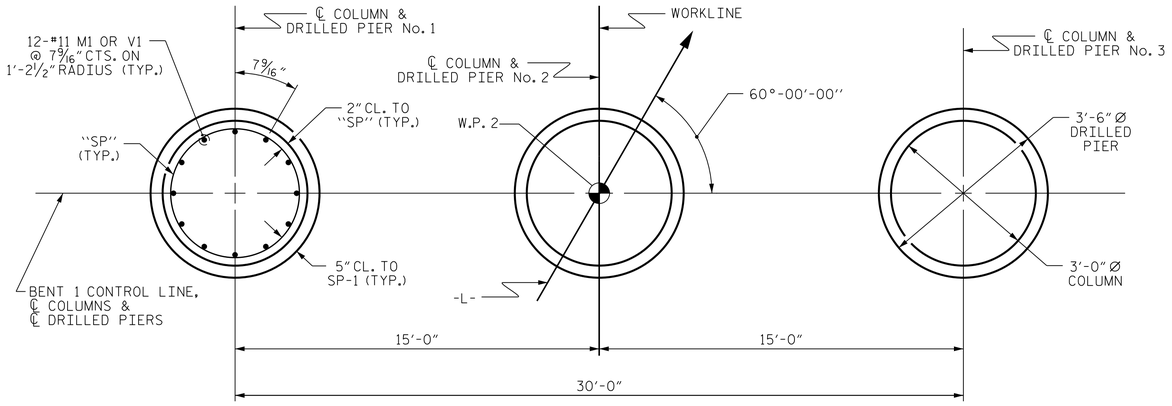
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

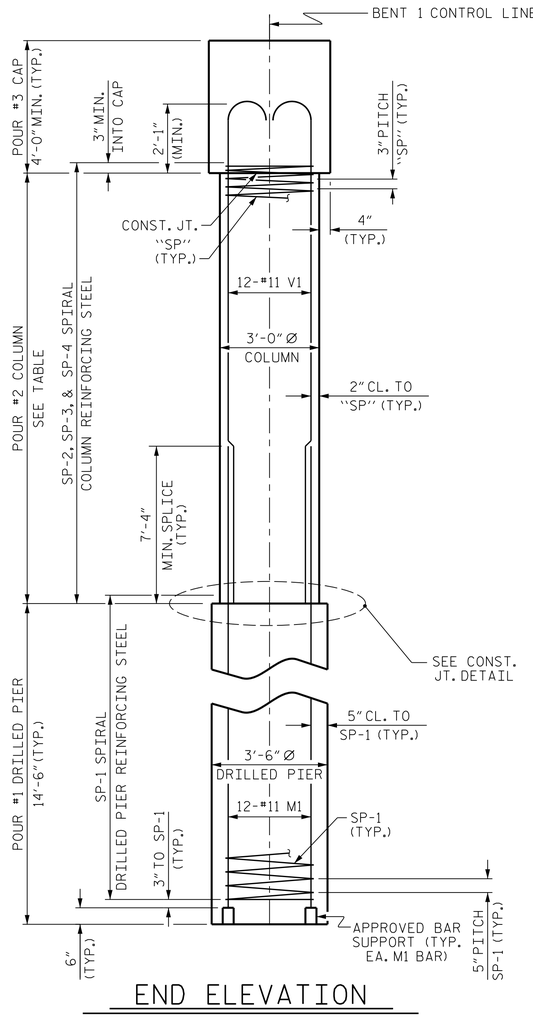
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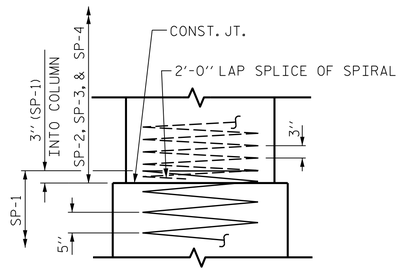
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PLAN OF DRILLED PIERS & COLUMNS

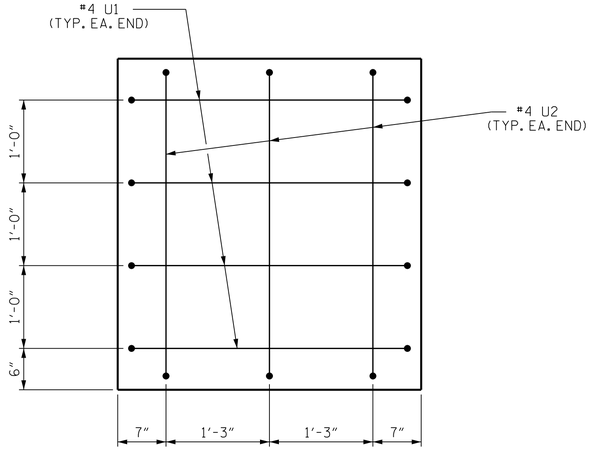


END ELEVATION



CONSTRUCTION JOINT DETAIL

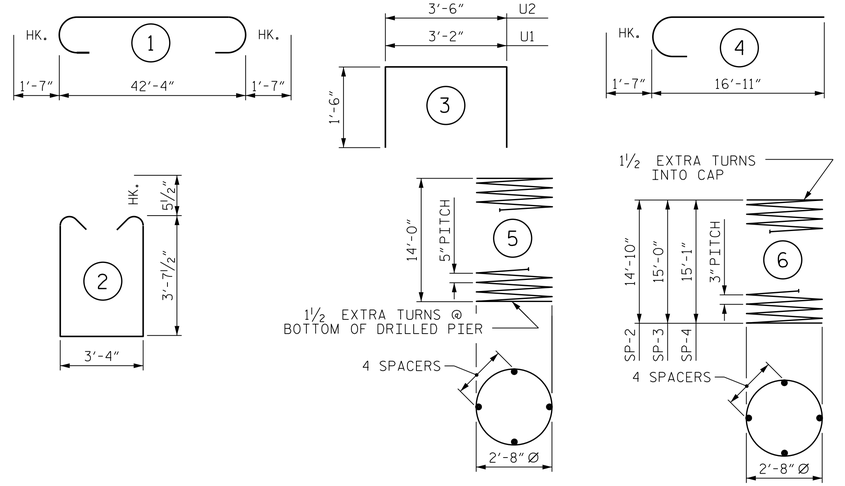
COLUMN TABLE	
COLUMN NO.	HEIGHT
1	14'-6 1/4"
2	14'-8"
3	14'-9 13/16"



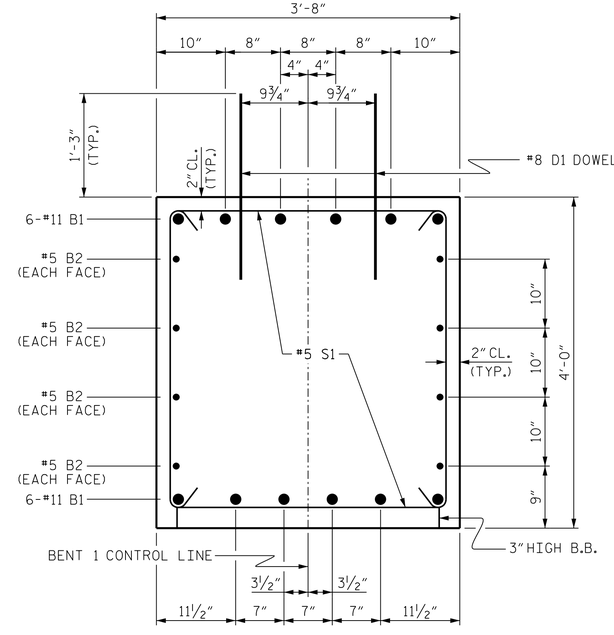
END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION THRU CAP

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	45'-6"	2901
B2	8	#5	STR	42'-6"	355
D1	44	#8	STR	2'-3"	264
M1	36	#11	STR	24'-4"	4654
S1	74	#5	2	11'-6"	888
U1	8	#4	3	6'-2"	33
U2	6	#4	3	6'-6"	26
V1	36	#11	4	18'-6"	3538

REINFORCING STEEL (FOR ONE BENT) 12,659 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	5	343'-2"	1074
SP-2	1	**	6	500'-7"	334
SP-3	1	**	6	506'-5"	338
SP-4	1	**	6	508'-10"	340

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1408 LBS.

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

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	11.6 C.Y.
POUR #3 (CAP)	23.3 C.Y.
TOTAL CLASS A CONCRETE	34.9 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	15.5 C.Y.

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

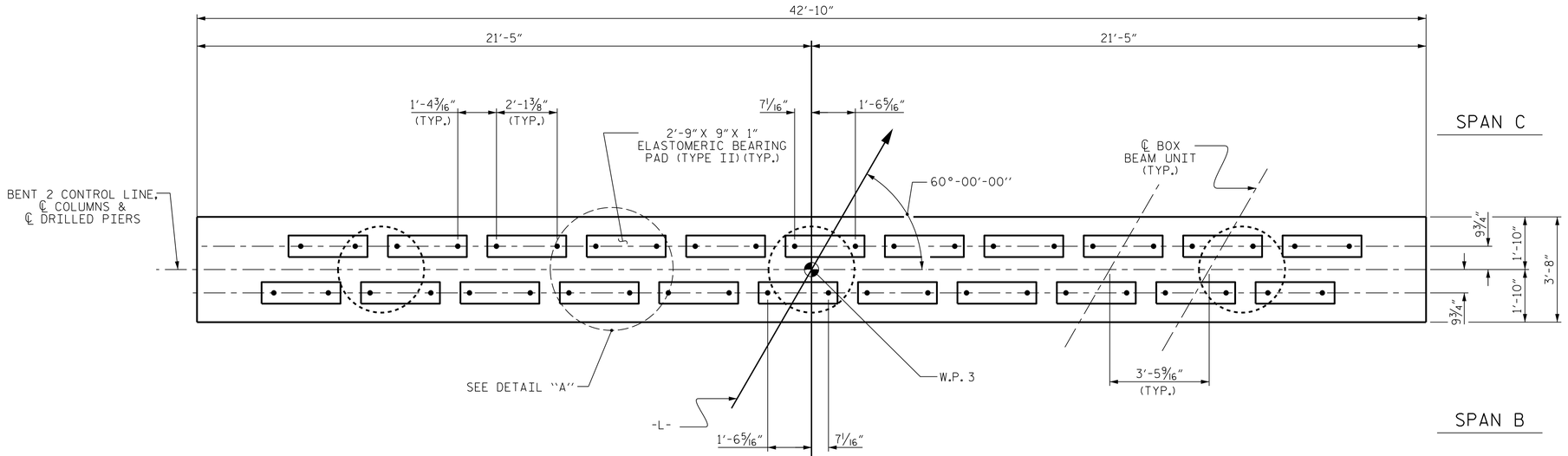
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RALEIGH, NC 27606
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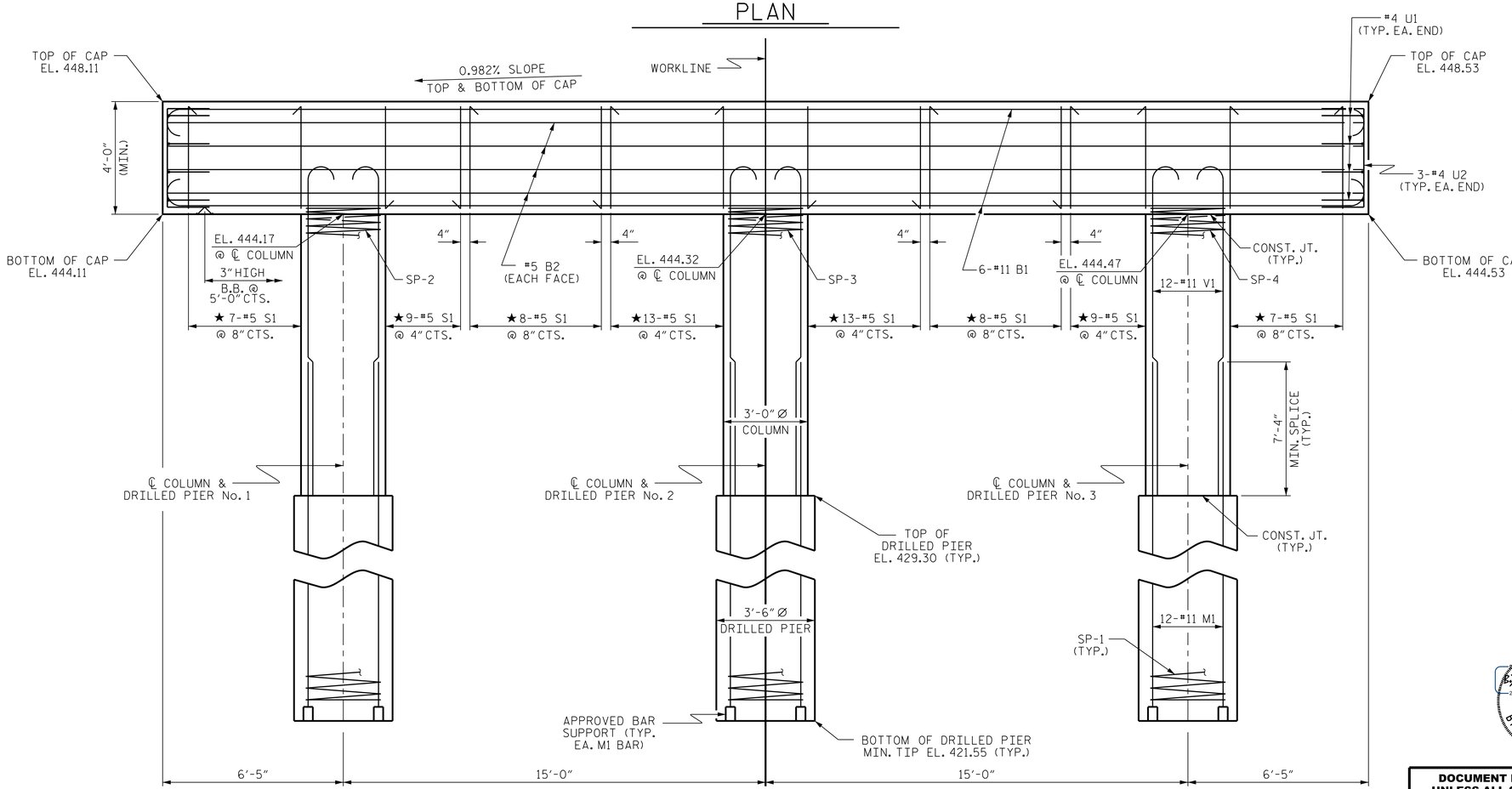
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PLAN



ELEVATION

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

NOTES

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

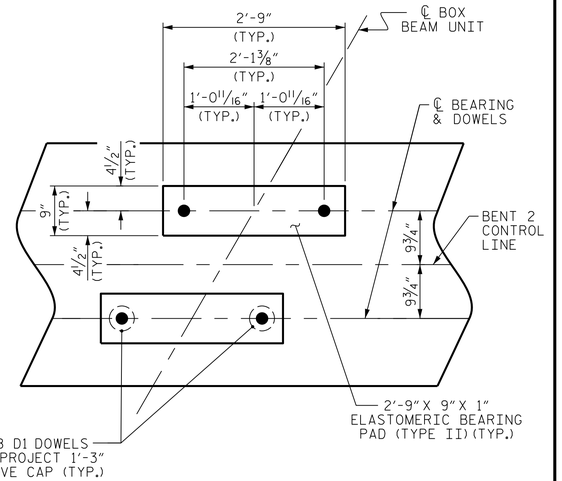
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★ INVERT ALTERNATE STIRRUPS.

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DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

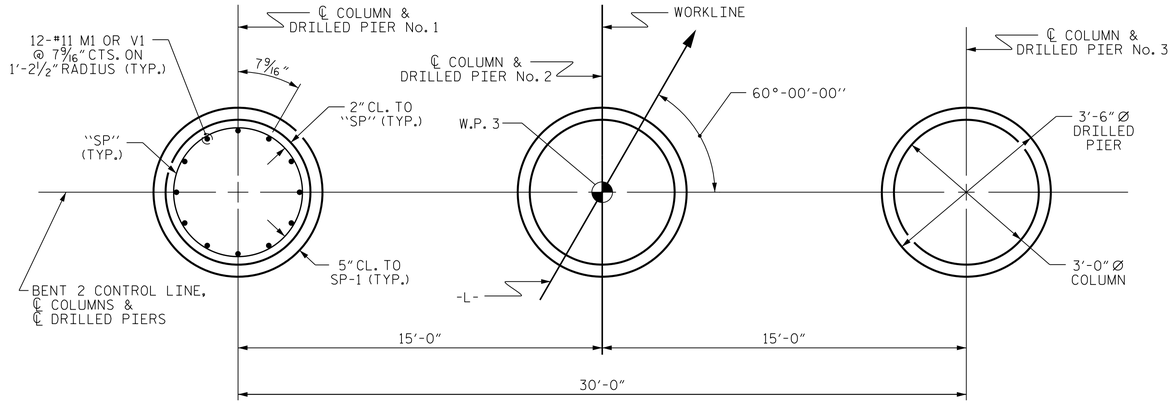
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

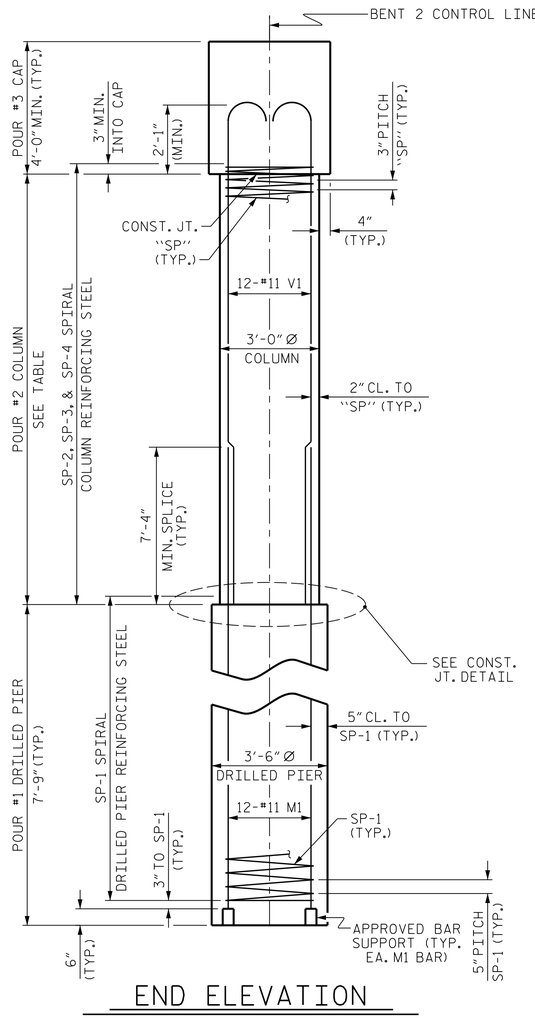
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			24

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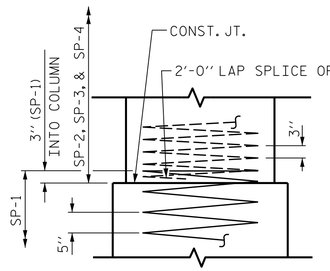
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PLAN OF DRILLED PIERS & COLUMNS

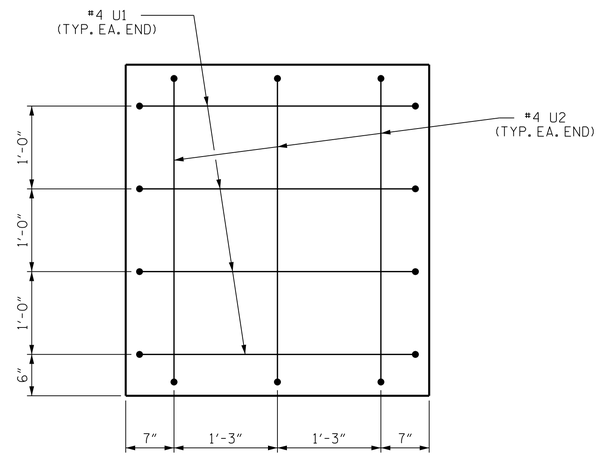


END ELEVATION



CONSTRUCTION JOINT DETAIL

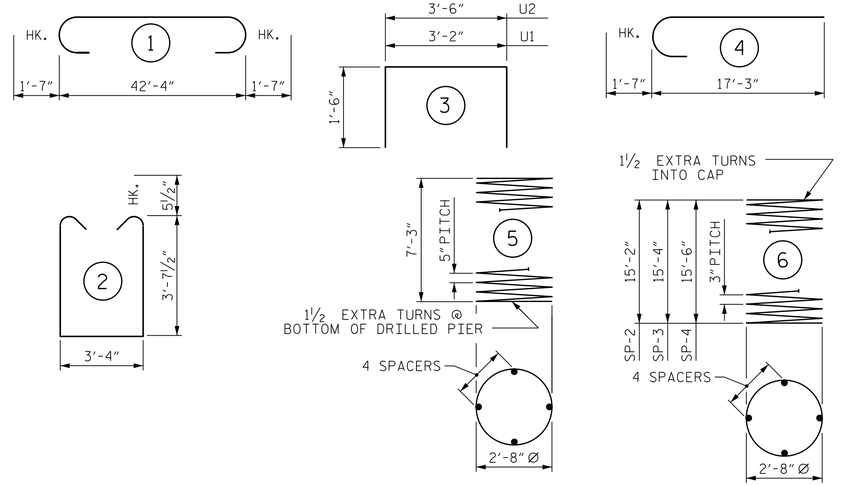
COLUMN TABLE	
COLUMN NO.	HEIGHT
1	14'-10 7/16"
2	15'-0 1/4"
3	15'-2"



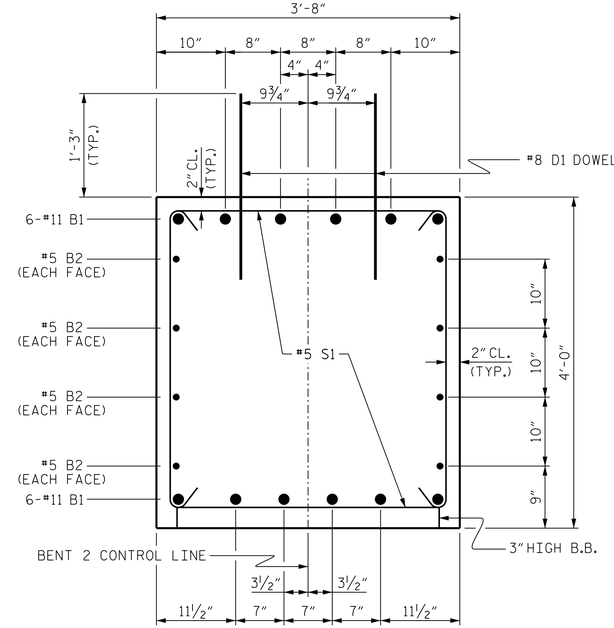
END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION THRU CAP

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	45'-6"	2901
B2	8	#5	STR	42'-6"	355
D1	44	#8	STR	2'-3"	264
M1	36	#11	STR	17'-7"	3363
S1	74	#5	2	11'-6"	888
U1	8	#4	3	6'-2"	33
U2	6	#4	3	6'-6"	26
V1	36	#11	4	18'-10"	3602

REINFORCING STEEL (FOR ONE BENT) 11,432 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	5	184'-9"	578
SP-2	1	**	6	512'-2"	342
SP-3	1	**	6	517'-1"	345
SP-4	1	**	6	522'-10"	349

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 920 LBS.

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

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	11.8 C.Y.
POUR #3 (CAP)	23.3 C.Y.
TOTAL CLASS A CONCRETE	35.1 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	8.3 C.Y.

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
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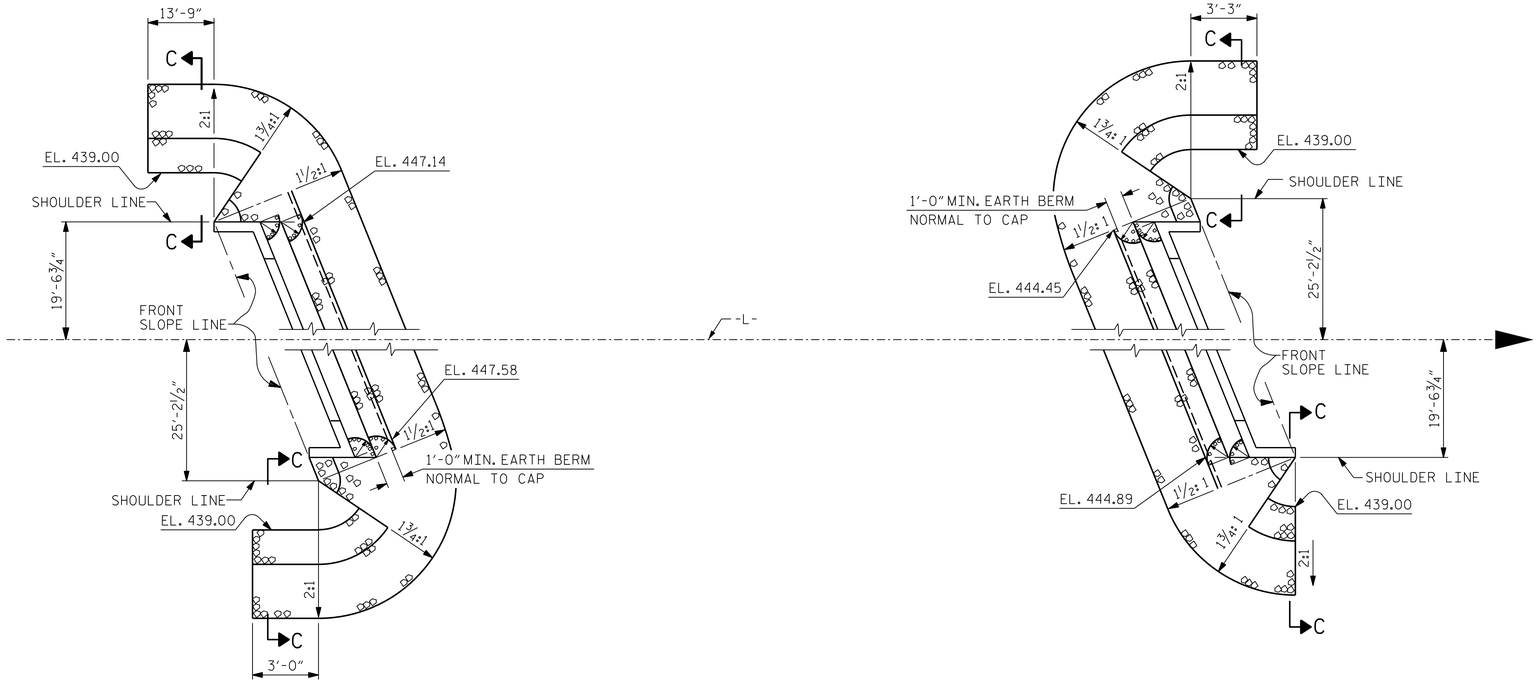
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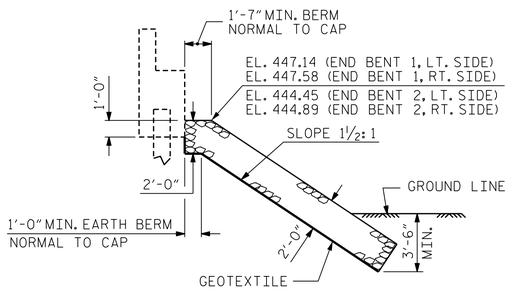
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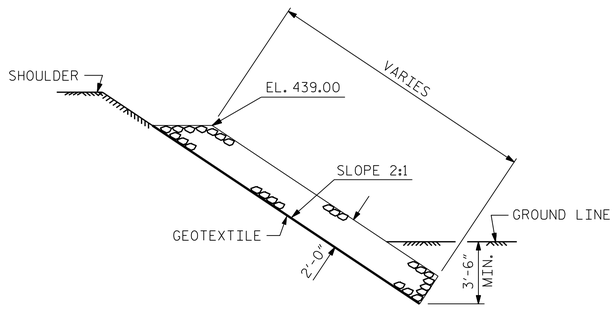
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PLAN



℄ SECTION
BERM RIP RAPPED



SECION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 27+39.00 -L-	RIP RAP CLASS II (2′-0″ THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	481	534
END BENT 2	338	376

PROJECT NO. BP8.R019
RANDOLPH COUNTY
STATION: 27+39.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

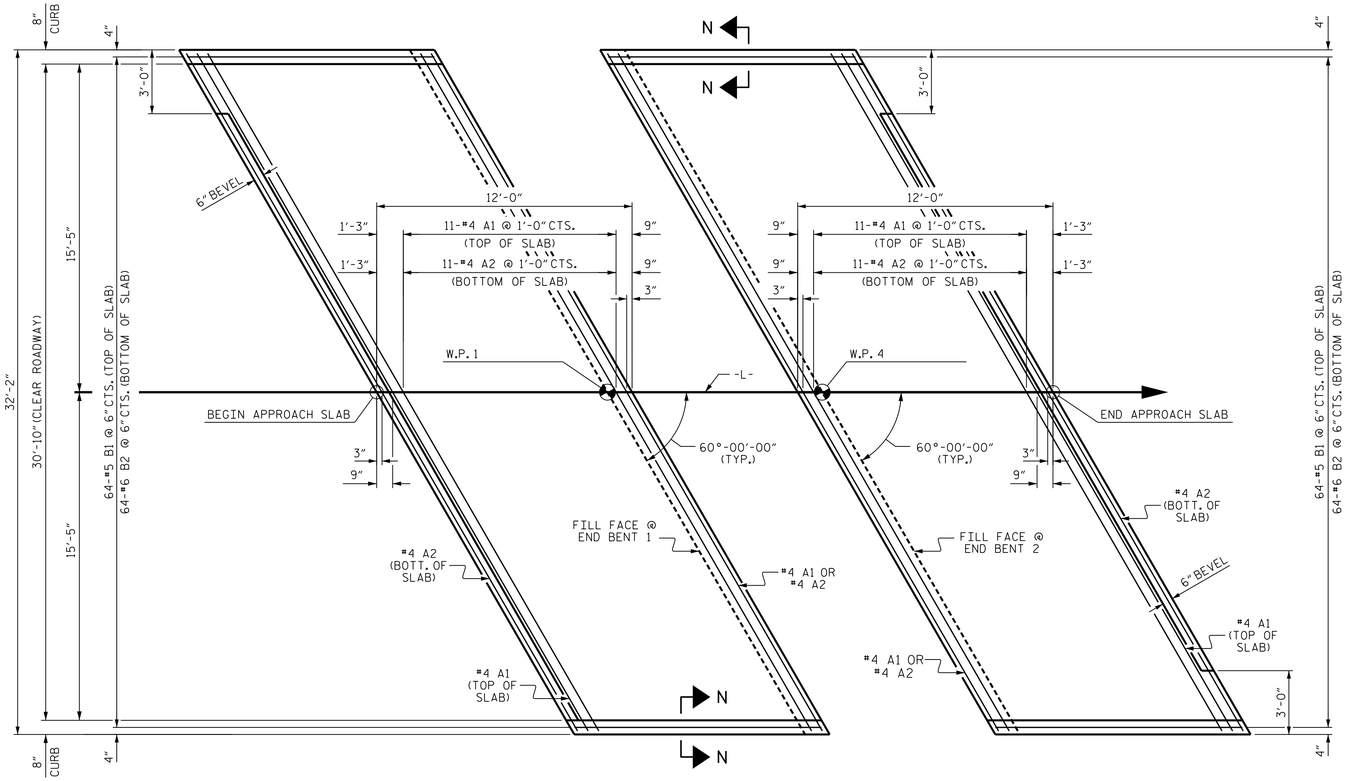
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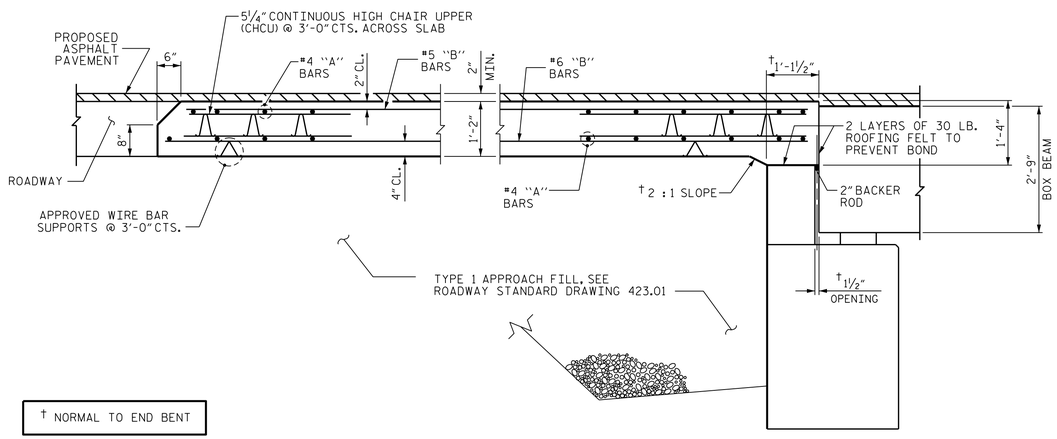
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PLAN @ END BENT 1

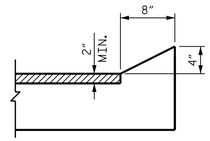
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N

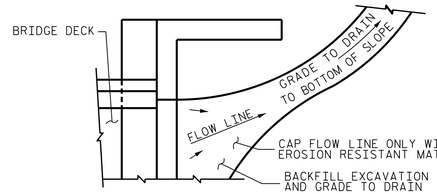
CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

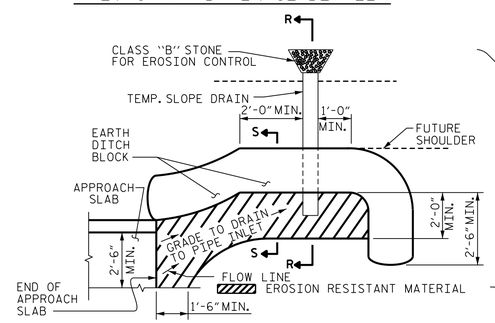
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



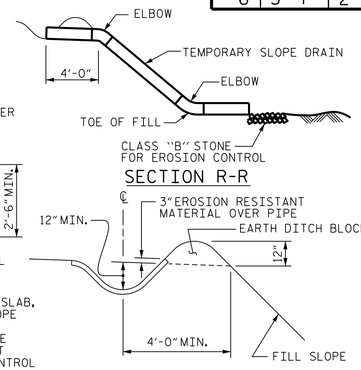
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	36'-8"	318
A2	13	#4	STR	36'-8"	318
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1431
* EPOXY COATED REINFORCING STEEL				LBS.	1058
CLASS AA CONCRETE				C.Y.	17.0

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	36'-8"	318
A2	13	#4	STR	36'-8"	318
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1431
* EPOXY COATED REINFORCING STEEL				LBS.	1058
CLASS AA CONCRETE				C.Y.	17.0

SPLICE LENGTHS

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

PROJECT NO. BP8.R019

RANDOLPH COUNTY

STATION: 27+39.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 60° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
11/6/2024

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1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH