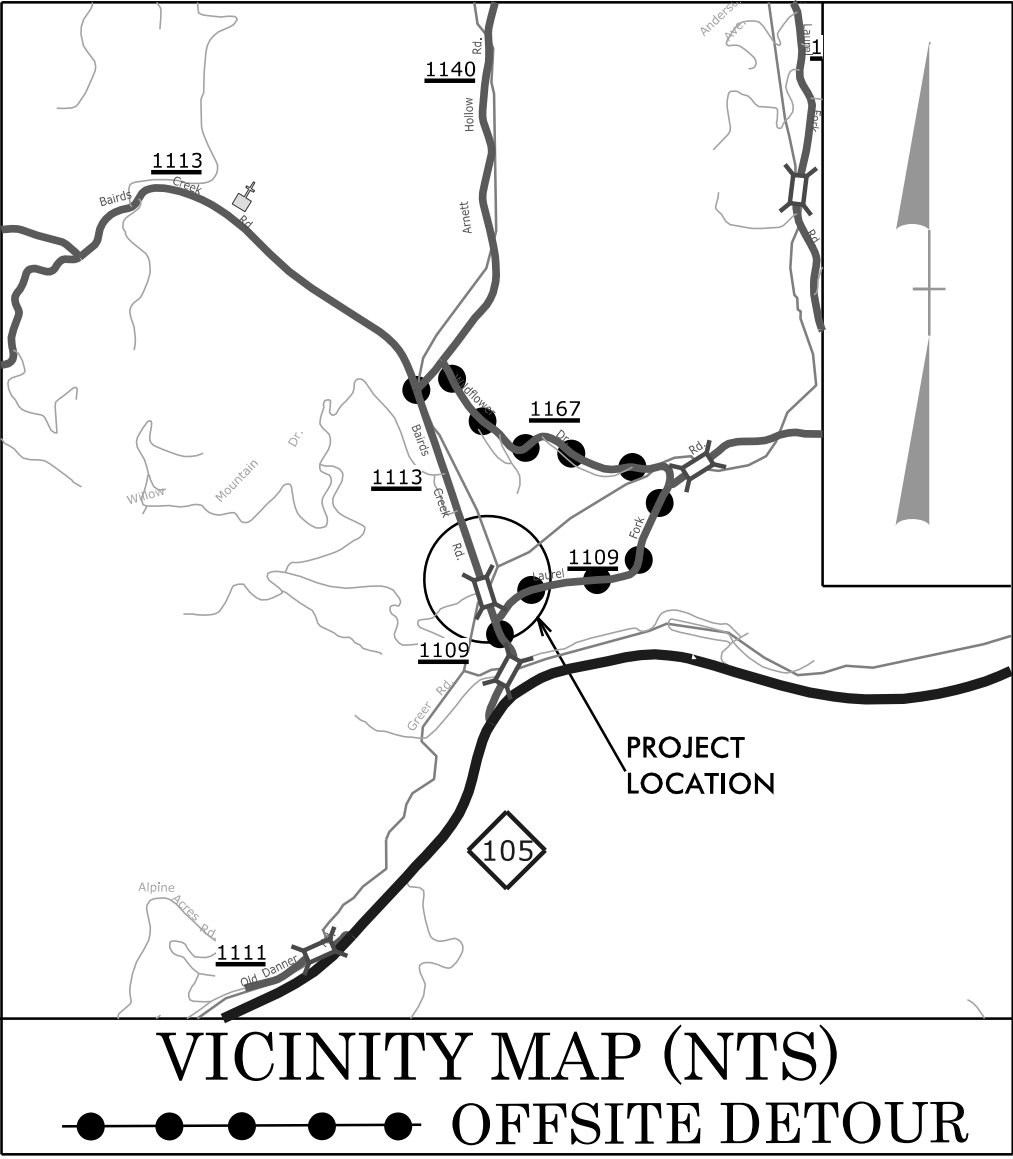


01/16/24

PROJECT: DF18311.2095016.PR

CONTRACT: DK00437

See Sheet 1A For Index of Sheets

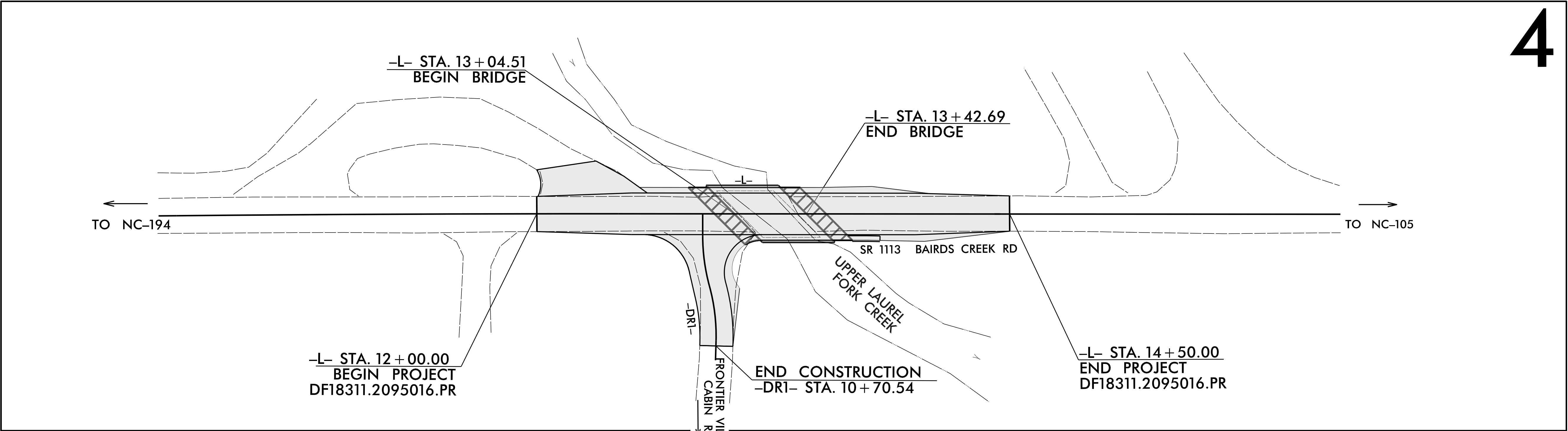
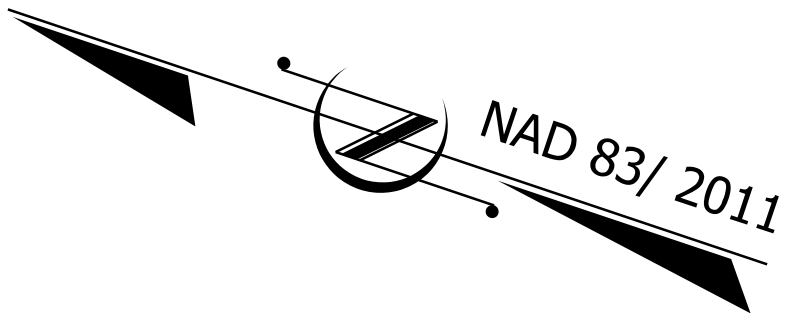


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA COUNTY

LOCATION: *STRUCTURE #940322 ON
SR 1113 (BAIRDS CREEK RD) OVER
UPPER LAUREL FORK CREEK*
TYPE OF WORK: *GRADING, DRAINAGE,
PAVING, & STRUCTURE*

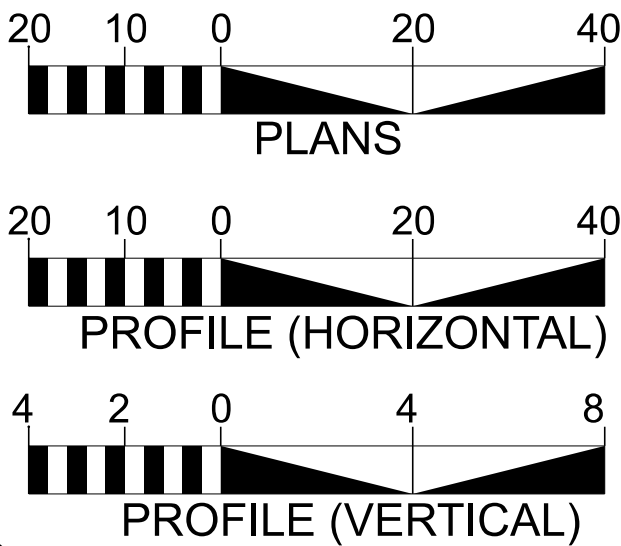
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2095016.PR	11	
STATE PROJ. NO.		F. A. PROJ. NO.	DESCRIPTION
DF18311.2095016.PR			PE
DF18311.2095016.PR			R/W
DF18311.2095016.PR			UTIL.
DF18311.2095016.PR			CONST.



4

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UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2025 = 2,070
ADT 2045 = 2,530
V = 40 MPH
TTST =3% DUAL = 3%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT DF18311.2095016.PR = 0.040 MILES
LENGTH OF STRUCTURE PROJECT DF18311.2095016.PR = 0.007 MILES
TOTAL LENGTH OF PROJECT DF18311.2095016.PR = 0.047 MILES

TGS ENGINEERS
201 W. MARION ST.
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO. C-0275

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAR. 28, 2025

LETTING DATE:
NOV. 20, 2025

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION 11
801 STATESVILLE RD
NORTH WILKESBORO, NC 28659

JIMMY L. TERRY, PE
PROJECT ENGINEER

KATELYN S. ALMOND
PROJECT DESIGN ENGINEER

ROB WEISZ, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

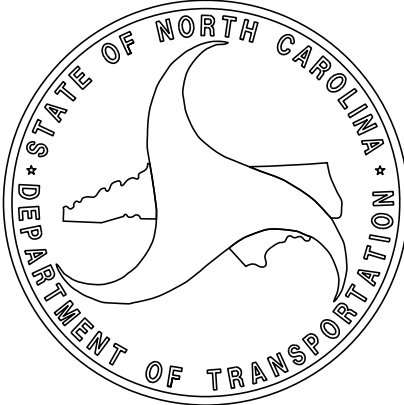
9/15/2025

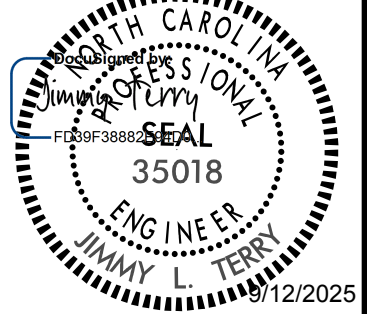
Signed by:
John W. Twissdale, Jr.
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

9/12/2025

DocuSigned by:
Jimmy L. Terry
P.E.
SIGNATURE:





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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.

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

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 BLUE RIDGE EMC, SPECTRUM AND SKYLINE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO. TITLE

DIVISION 2 - EARTHWORK

200.03 Method of Clearing - Method III
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS

300.01 Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)

DIVISION 4 - MAJOR STRUCTURES

423.01 Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS

815.02 Subsurface Drain
840.00 Concrete Base Pad for Drainage Structures
840.29 Frames and Narrow Slot Flat Grates
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
840.72 Pipe Collar
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

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-2	SPECIAL DETAILS - METHOD OF PIPE INSTALLATION
2C-3 THRU 2C-4	SPECIAL DETAILS - GUARDRAIL PLACEMENT
2C-5	SPECIAL DETAILS - TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT
3B-1	ROADWAY AND DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
RW-01 THRU RW-04	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-9	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS
STRUCTURE STANDARD NOTES	

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	

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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)*	

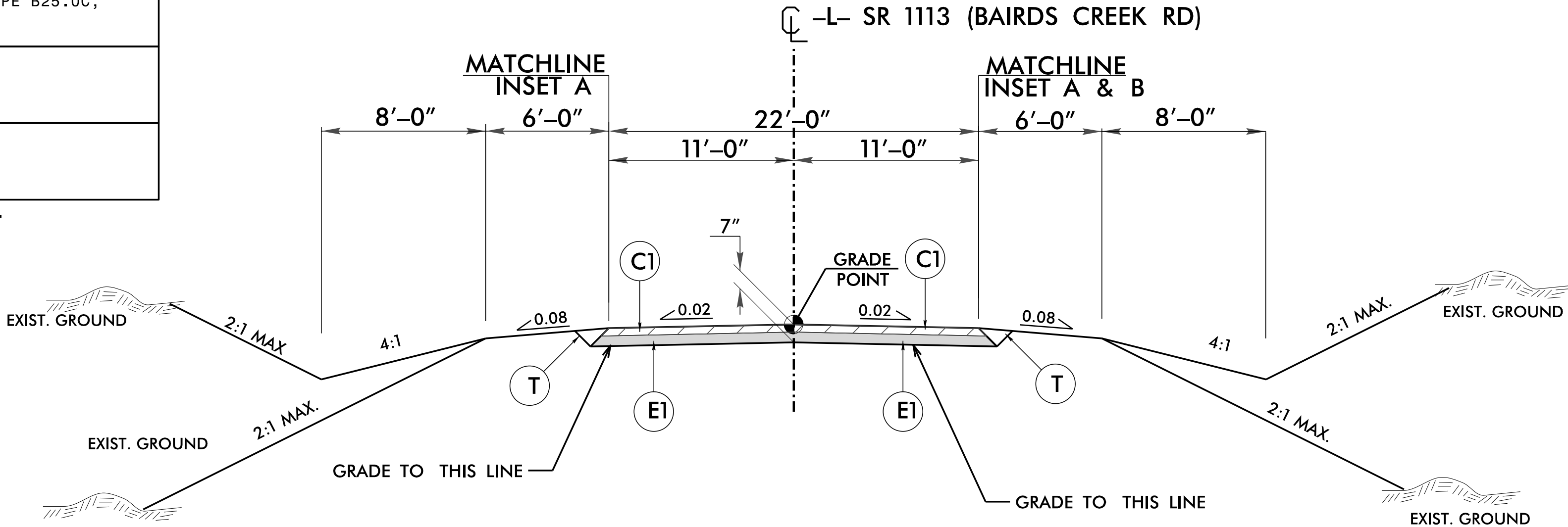
MISCELLANEOUS:

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	
Geoenviromental Boring	
Abandoned According to Utility Records	
End of Information	

11/14/23

FINAL PAVEMENT SCHEDULE (DEC 17, 2024)	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.

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



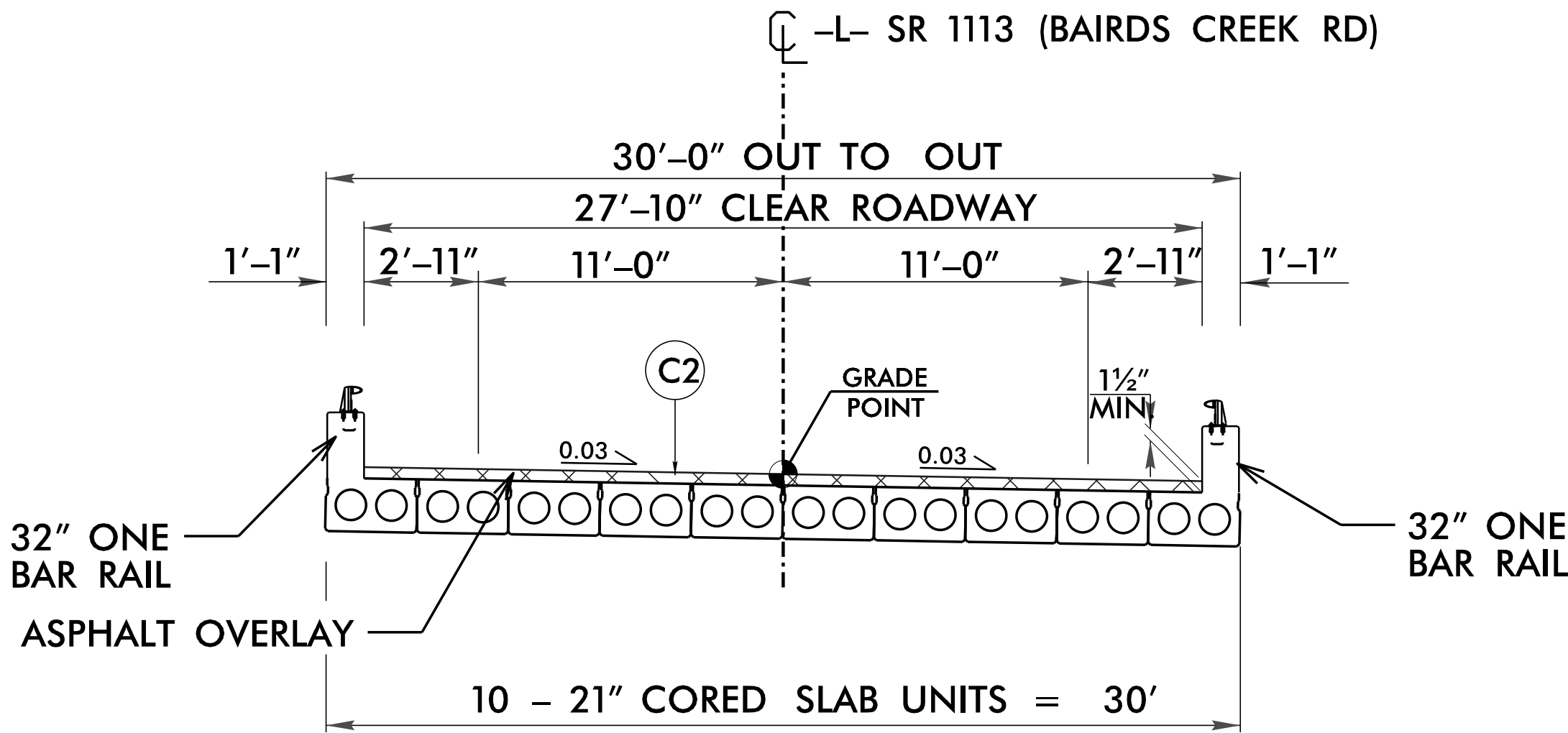
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO.1

-L- STA. 12 + 50.00 TO -L- STA. 13 + 04.51
-L- STA. 13 + 42.69 TO -L- STA. 14 + 00.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 1 AS FOLLOWS:

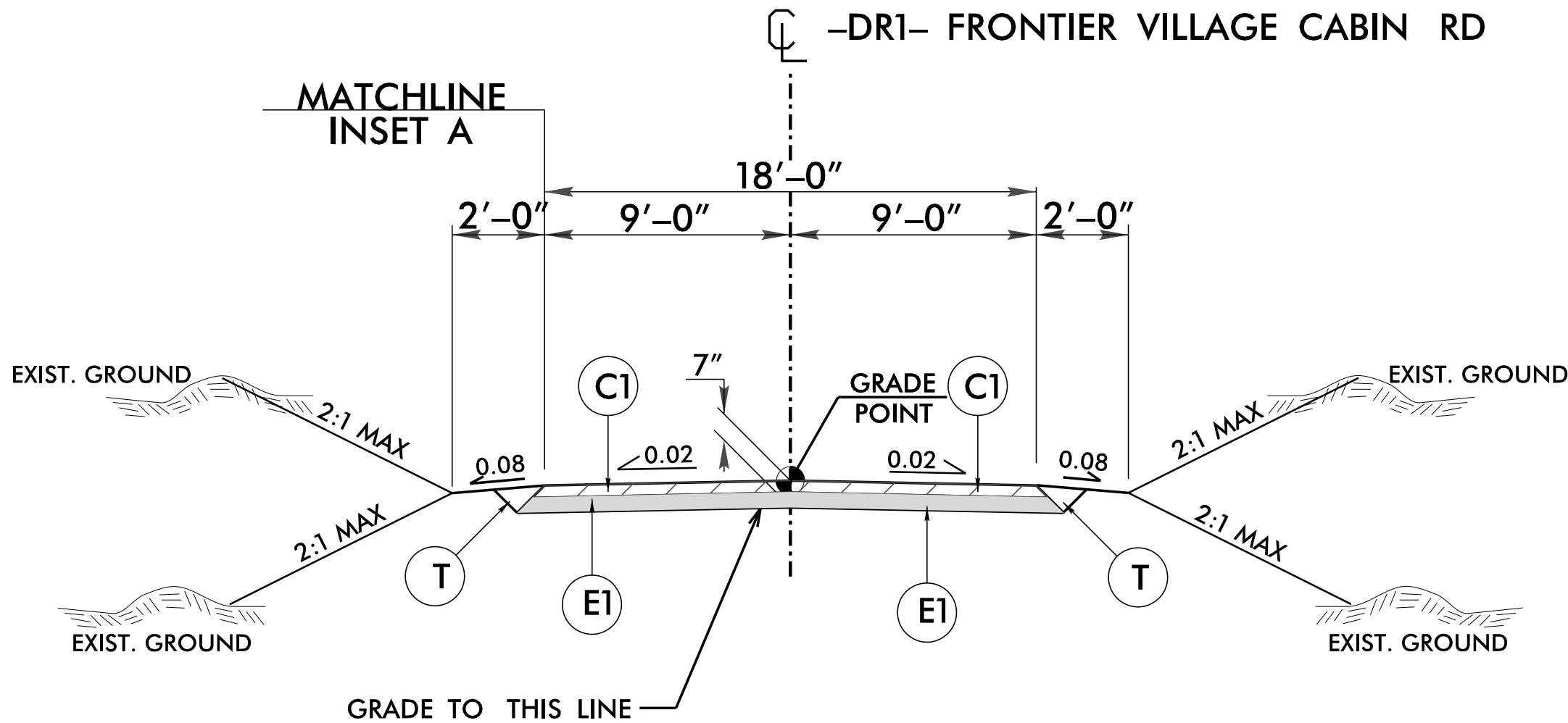
-L- STA. 12 + 00.00 TO -L- STA. 12 + 50.00
-L- STA. 14 + 00.00 TO -L- STA. 14 + 50.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

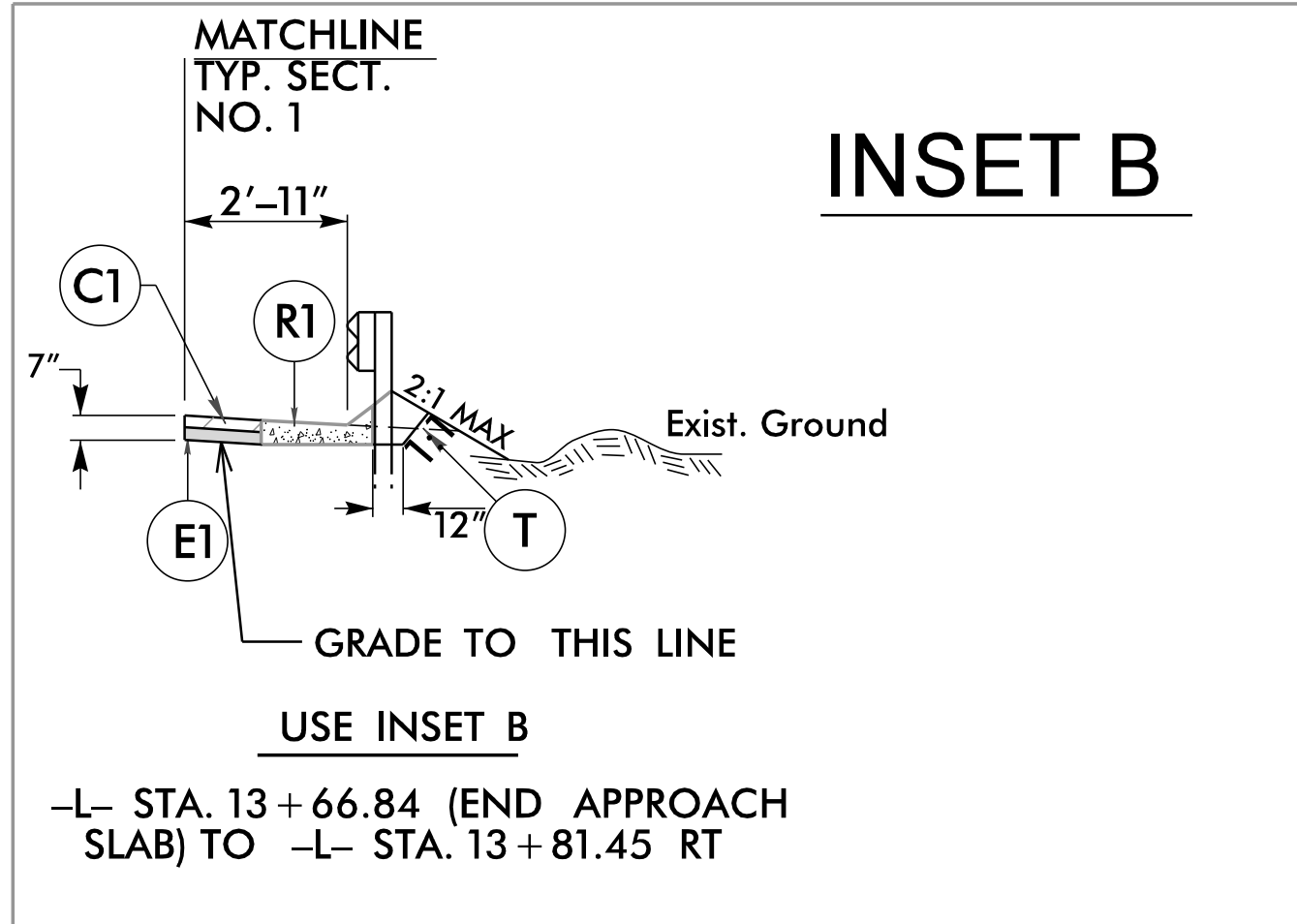
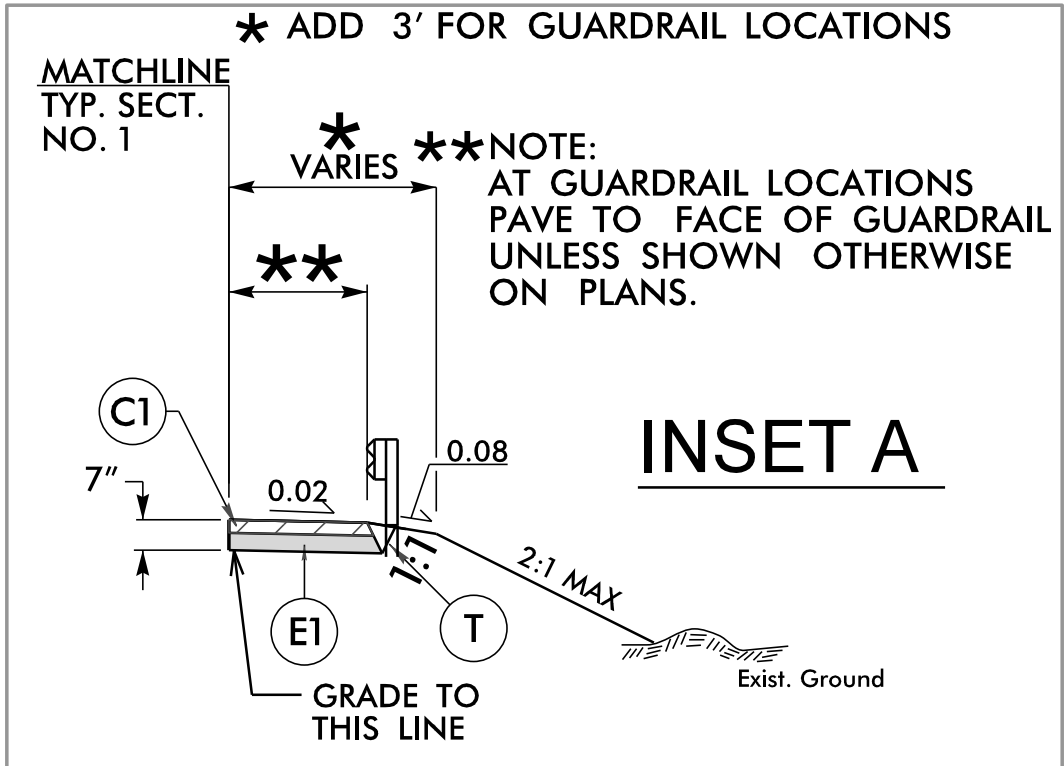
-L- STA. 13 + 04.51 TO -L- STA. 13 + 42.69



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

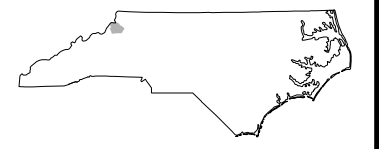
-DR1- STA. 10 + 11.00 TO -DR1- STA. 10 + 70.54



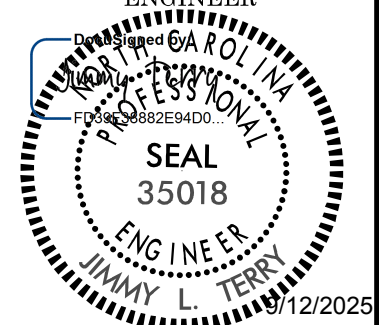
DF18311.2095016.PR

3RDI 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WATAUGA COUNTY



ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER



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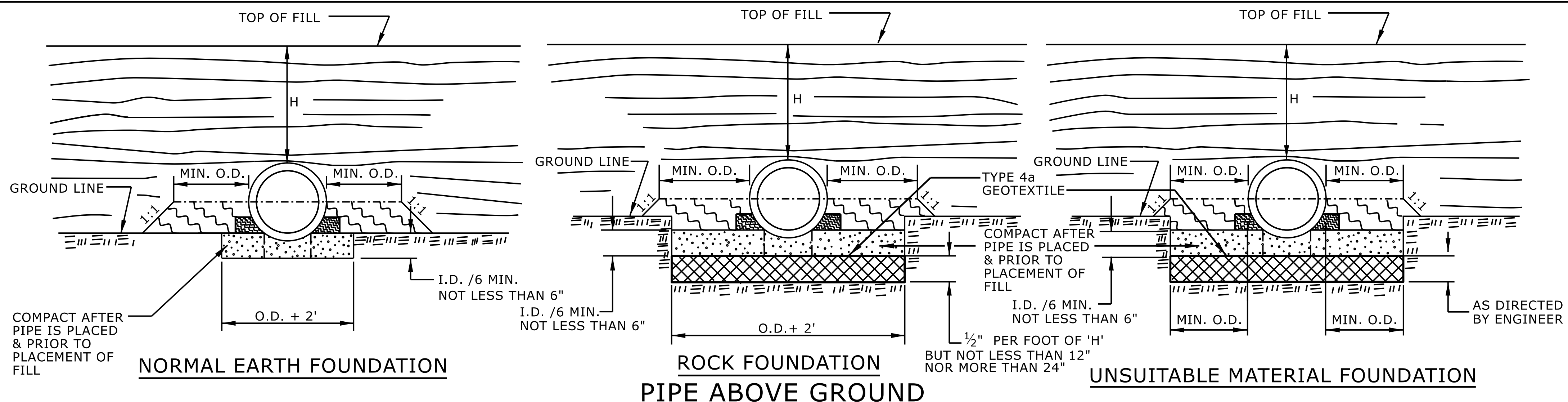
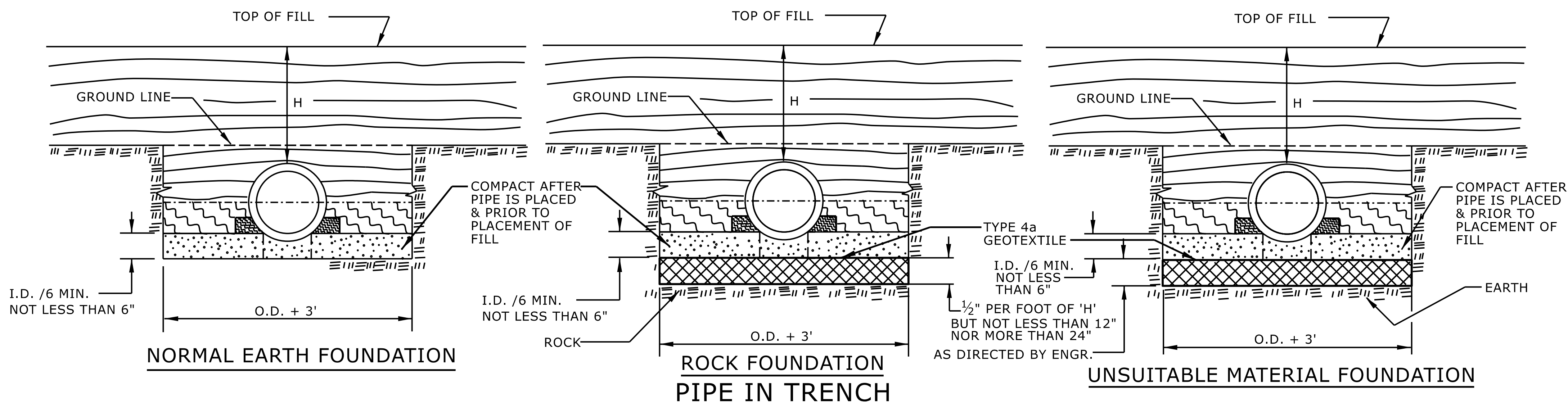
PAVEMENT DESIGN
ENGINEER



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PREPARED BY

TGS ENGINEERS
201 W. HARRIS ST., STE. 200
SHREVE, NC 28680
PH: 704/476-2800
CORP. LICENSE NO. 1-C-0275

REVISIONS



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.

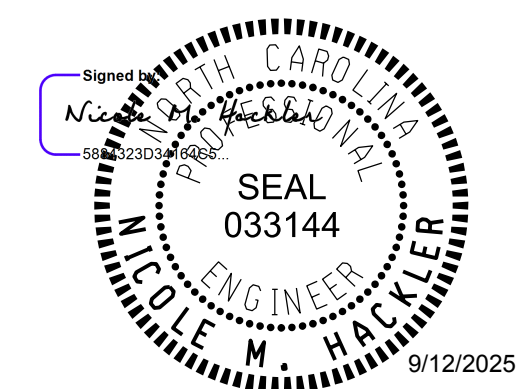
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

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.

ROADWAY DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION RIGID PIPE	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
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SHEET 2 OF 2
300.01



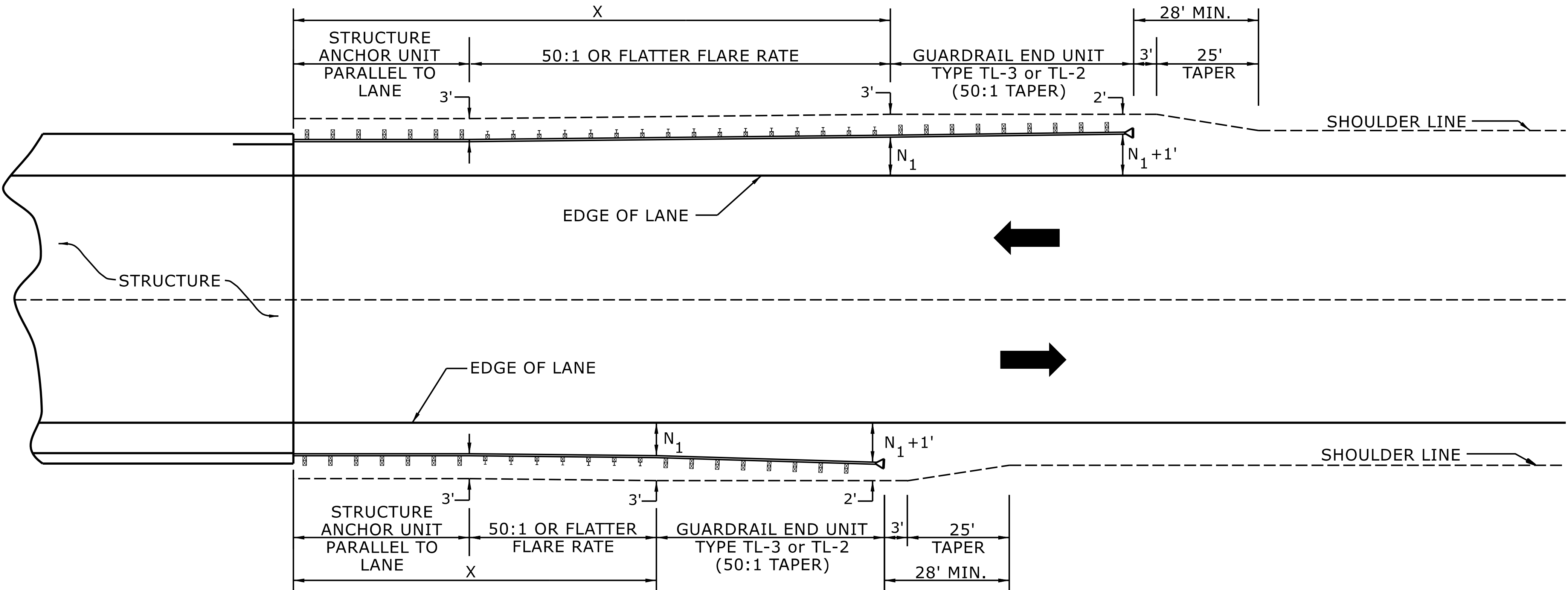
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**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	2C-3



USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
("N₁" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

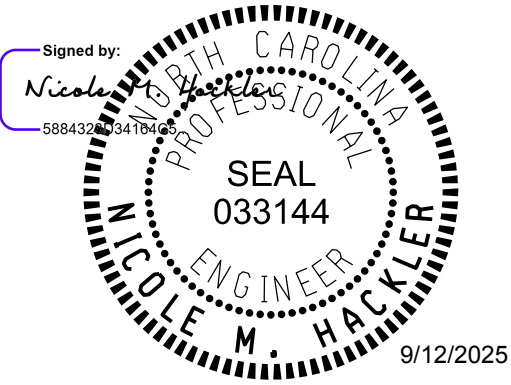
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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.

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



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

SHEET 4 OF 15
862D01

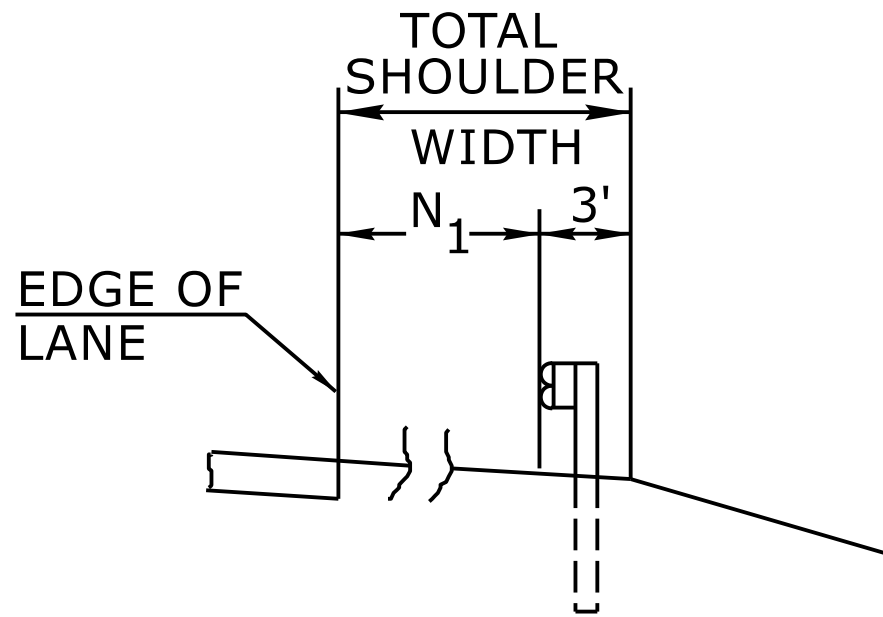
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**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

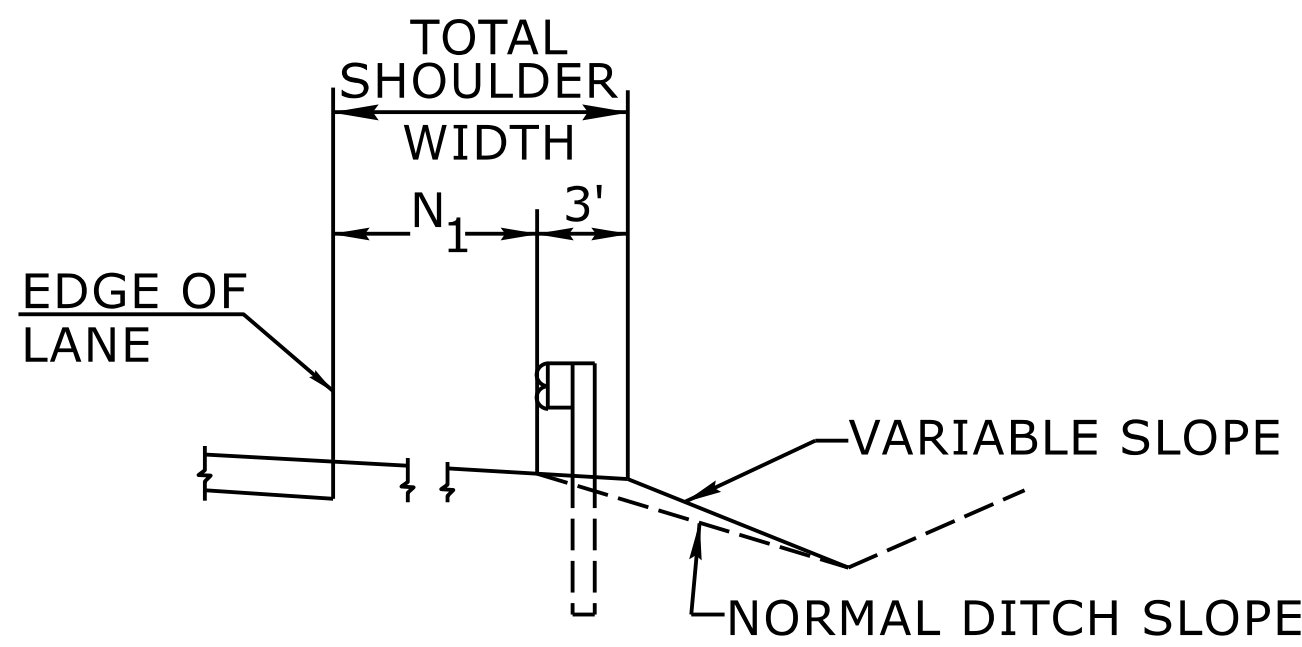
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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	2C-4

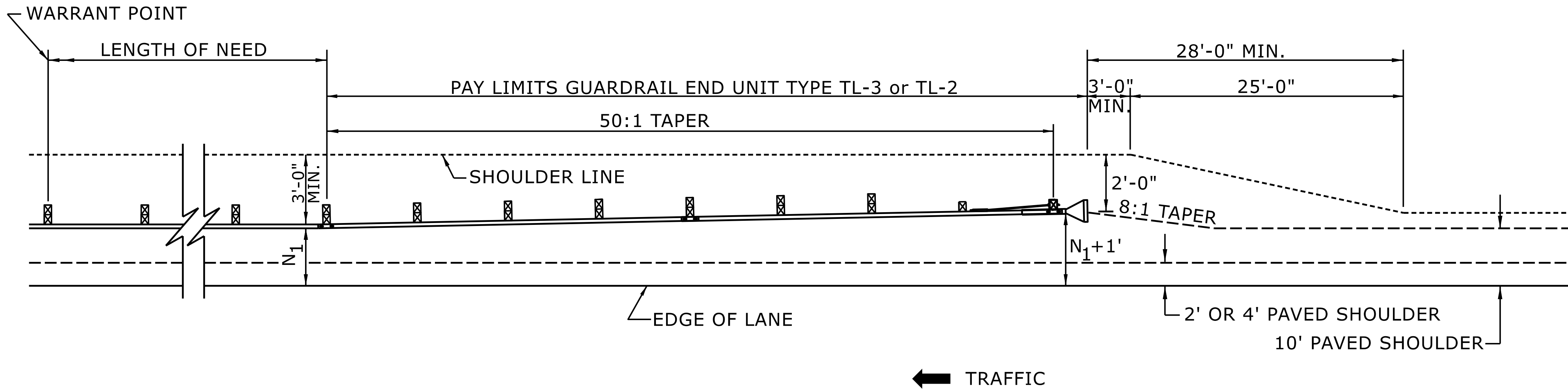


FILL SECTION



CUT SECTION

"N₁"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

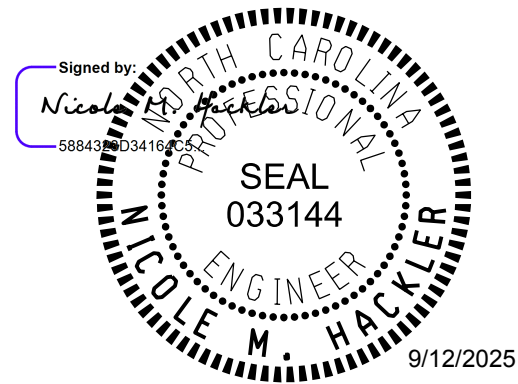


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15
862D01



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UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

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

SEE TITLE BLOCK

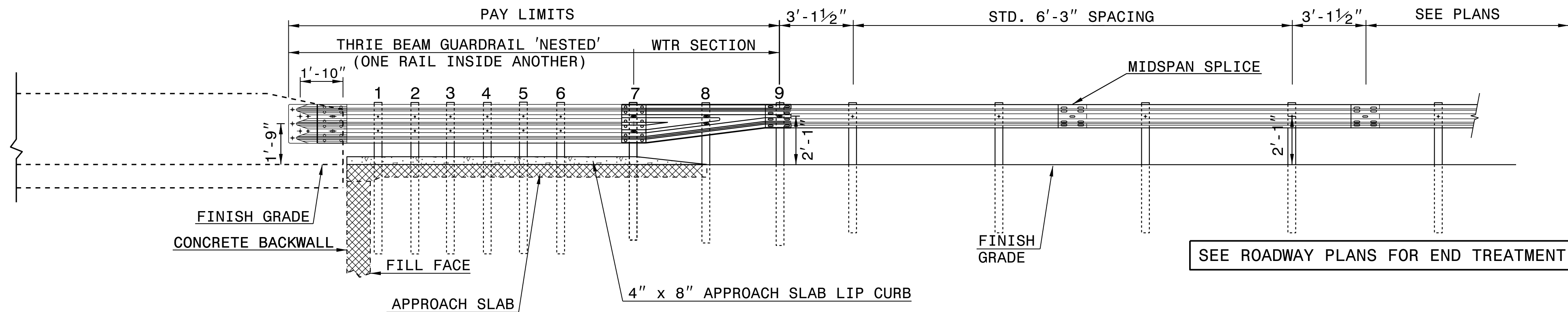
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:

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

ENGLISH DETAIL DRAWING FOR
TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC



NOTE:

****POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.**

*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE $11\frac{1}{2}$ " IF CONCRETE BACKWALL IS NOT PRESENT.

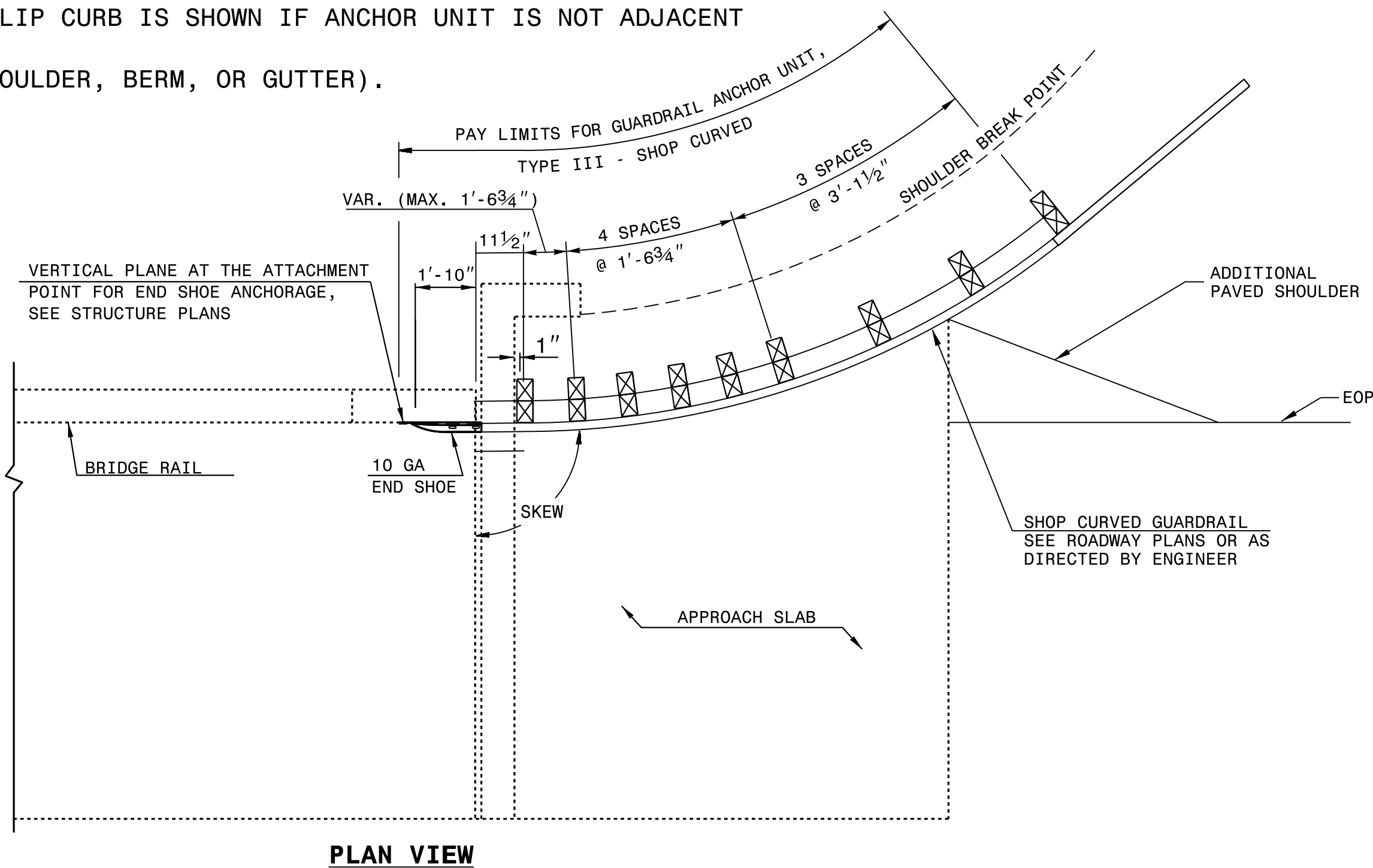
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.

-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).

-USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.

-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.

-SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



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

SHEET 1 OF 1

TYPE III SC

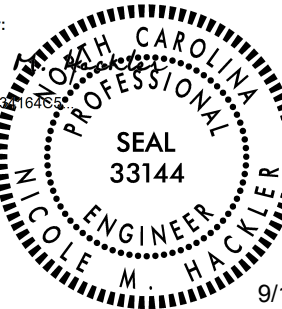
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward	DATE: 4-4-02
MODIFIED BY: T.S.Spell	DATE: 2-01-18
CHECKED BY:	DATE:
FILE SPEC.: \\howerton\guardrail\3\inguardrail\typeiiiisc.	

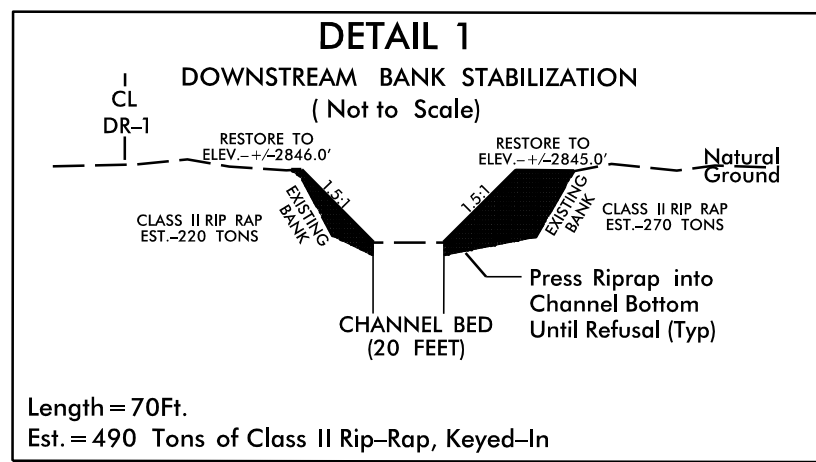
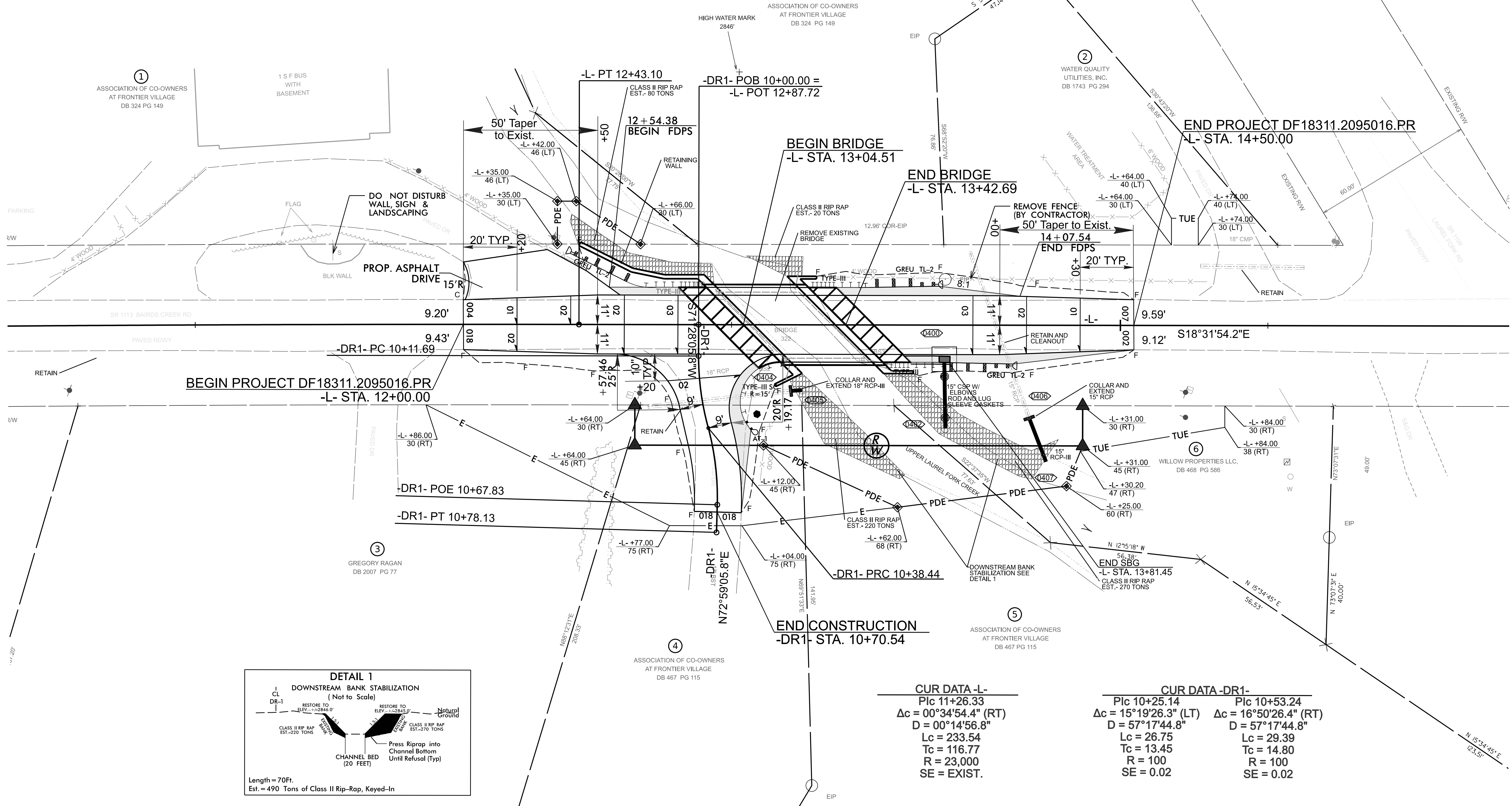
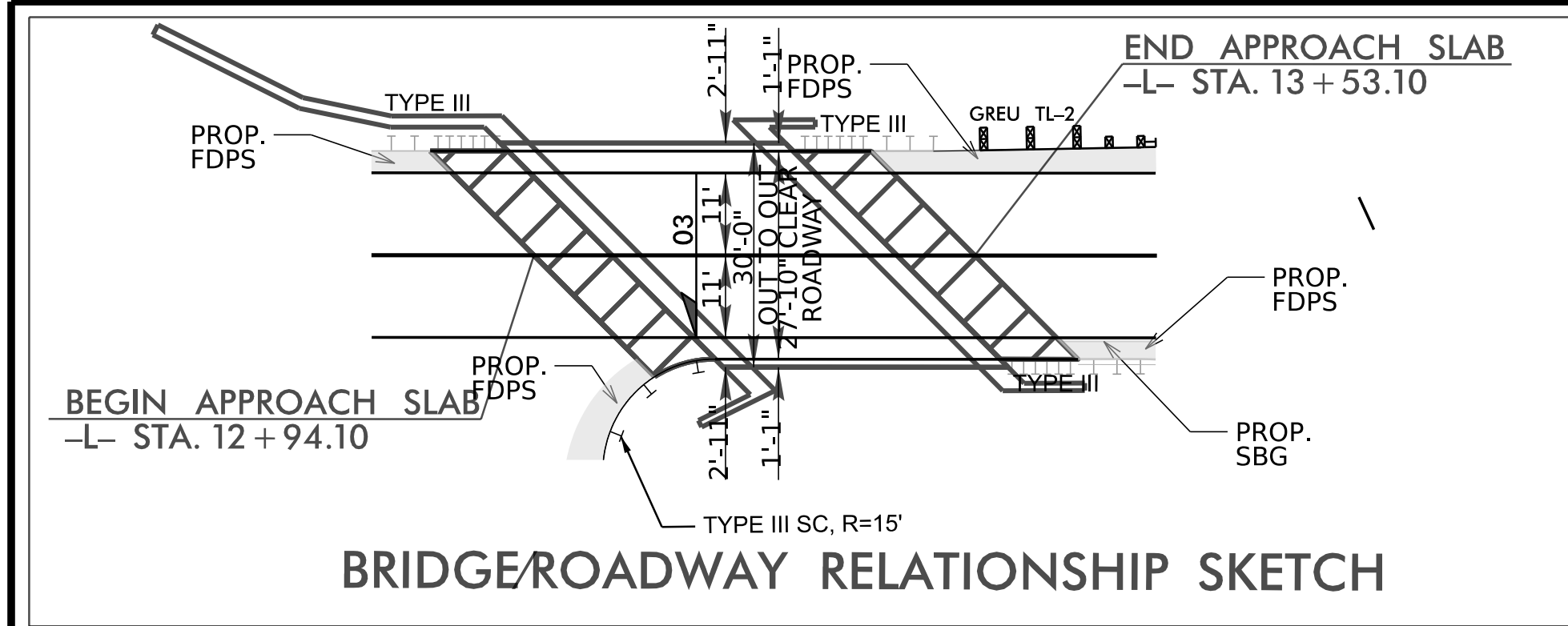
Signed by
Nicole
5884323D



9/12/2025

COMPUTED BY: DMB DATE:06/02/2025 CHECKED BY: DMB DATE: 06/02/2025		(9-17-24)				PROJECT NO. DF18311.2095016.PR		SHEET NO. 3G-1							
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS															
SUMMARY OF SUBSURFACE DRAINAGE						SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION									
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF	LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY				SD	200										
				TOTAL LF:	200				ASU(1)	12	100	200	300		
									TOTAL CY/TONS/SY:		100	200**	300**	0	0
*UD = Underdrain *BD = Blind Drain *SD = Subsurface Drain															
*ASU(1/2) = Aggregate Subgrade (Type 1 or 2) *AST = Aggregate Stabilization **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.															

11/14/23



CUR DATA -L-
Plc 11+26.33
 $\Delta c = 00^{\circ}34'54.4''$ (RT)
 $D = 00^{\circ}14'56.8''$
 $Lc = 233.54$
 $Tc = 116.77$
 $R = 23,000$
SE = EXIST.

CUR DATA -DR1-
Plc 10+25.14
 $\Delta c = 15^{\circ}19'26.3''$ (LT)
 $D = 57^{\circ}17'44.8''$
 $Lc = 26.75$
 $Tc = 13.45$
 $R = 100$
SE = 0.02

Plc 10+53.24
 $\Delta c = 16^{\circ}50'26.4''$ (RT)
 $D = 57^{\circ}17'44.8''$
 $Lc = 29.39$
 $Tc = 14.80$
 $R = 100$
SE = 0.02

FOR -L- PROFILE, SEE SHEET 5
FOR -DR1- PROFILE, SEE SHEET 5

DF18311.2095016.PR

3RD01 004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WATAUGA COUNTY

ROADWAY DESIGN
ENGINEER

SEAL
35018

JIMMY L. TERRY
11/14/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS
ENGINEER

SEAL
024897

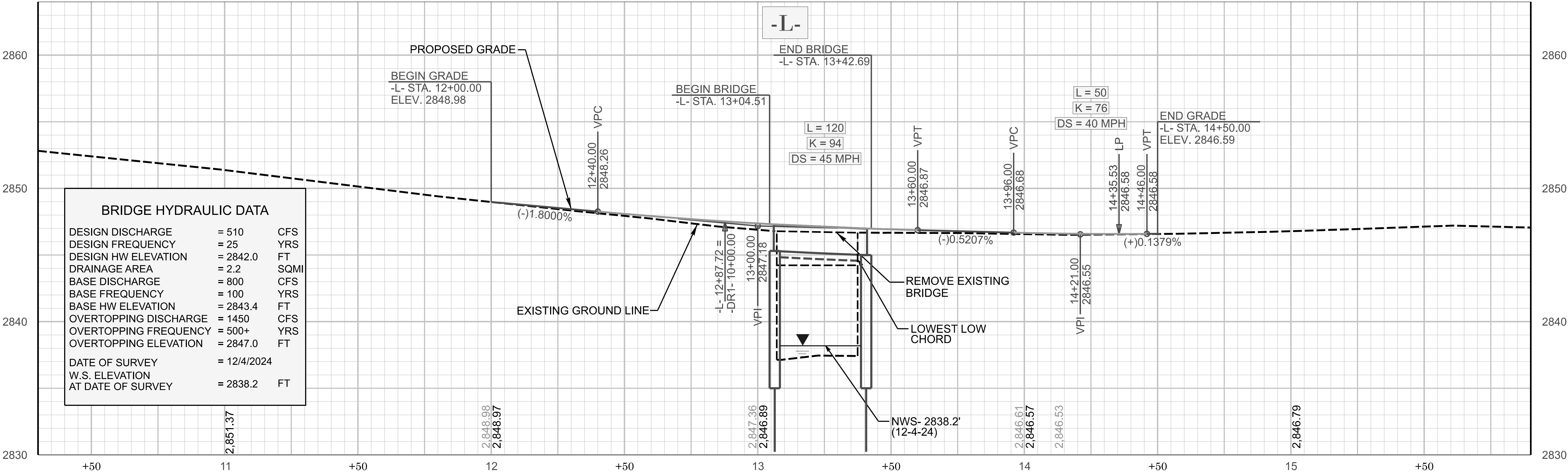
JOHN W. TWISDALE JR.
11/14/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

TGS ENGINEERS
201 W. HARRIS ST., STE. 200
SHREVEPORT, LA 70503
CORP. LICENSE NO. 12-0275

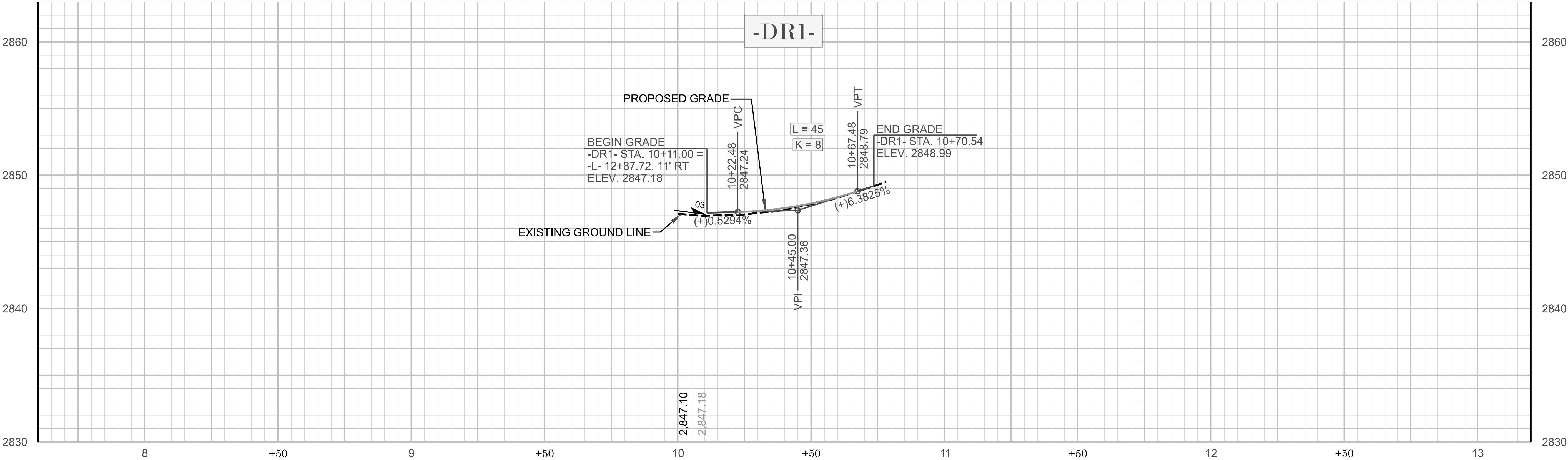
REVISIONS



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 510	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2842.0	FT
DRAINAGE AREA	= 2.2	SQMI
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2843.4	FT
OVERTOPPING DISCHARGE	= 1450	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2847.0	FT
DATE OF SURVEY	= 12/4/2024	
W.S. ELEVATION AT DATE OF SURVEY	= 2838.2	FT

POINT	NORTH	EAST	ELEVATION	DESCRIPTION
BM 1	905070.3750	1192725.2790	2867.01'	RR SPIKE IN 18" WHITE PINE

FOR -L- PLAN, SEE SHEET 4



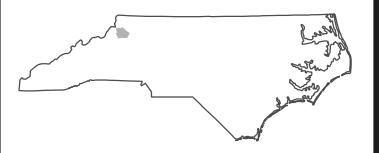
POINT	NORTH	EAST	ELEVATION	DESCRIPTION
BM 1	905070.3750	1192725.2790	2867.01'	RR SPIKE IN 18" WHITE PINE

FOR -DR1- PLAN, SEE SHEET 4

DF18311.2095016.PR

3RD1 005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WATAUGA COUNTY

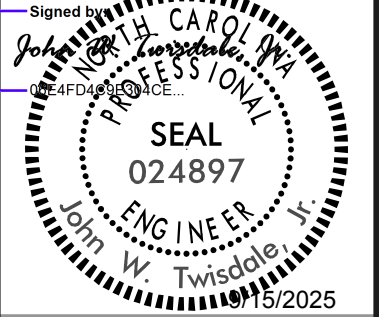


ROADWAY DESIGN
ENGINEER



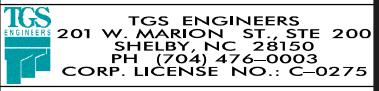
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS
ENGINEER



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PREPARED BY



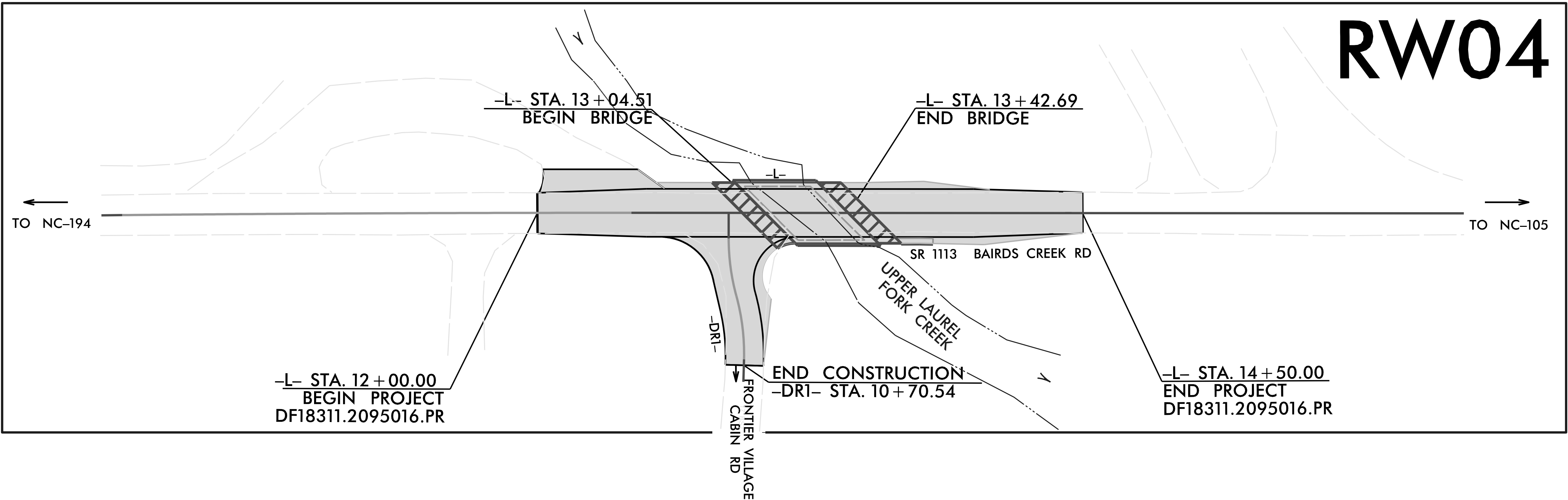
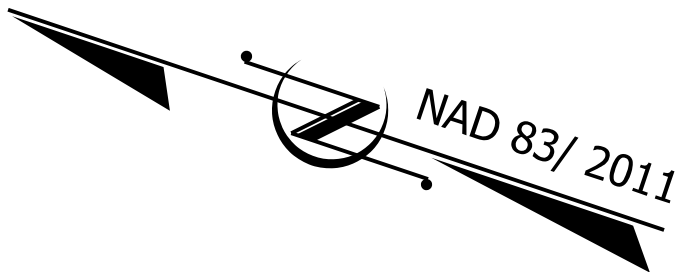
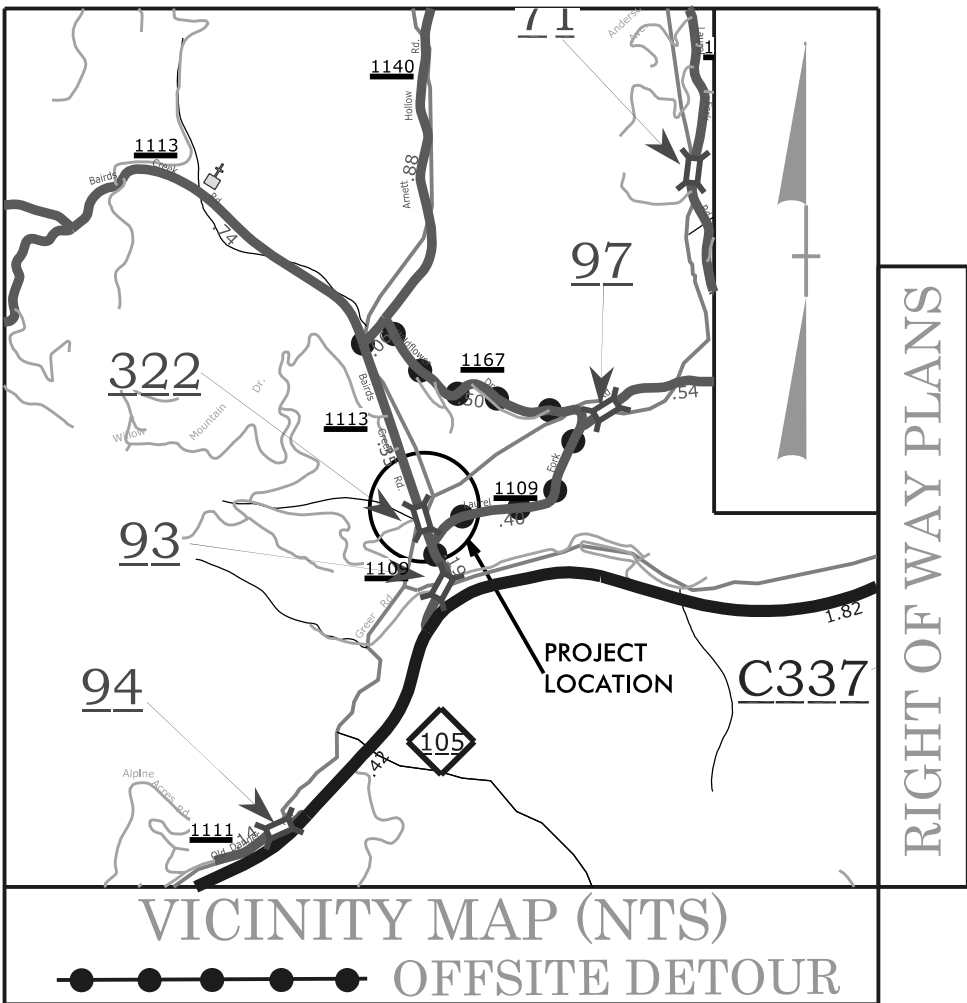
TGS ENGINEERS
201 W. HARRISON ST., STE. 200
SHREVEPORT, LA 70503
PH: (504) 472-2803
CORP. LICENSE NO.: C-0275

REVISIONS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2095016.PR	RW01	6

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

WATAUGA COUNTY



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

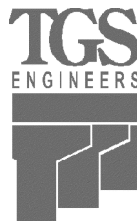
GRAPHIC SCALES



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "940322-2"
WITH NAD83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 905121.5187 USFT EASTING: 1192932.9686 USFT
ELEVATION: 2847.320 USFT
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99988000280
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:



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

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 28, 2025

LETTING DATE:
NOVEMBER 20, 2025

PROFESSIONAL LAND
SURVEYOR

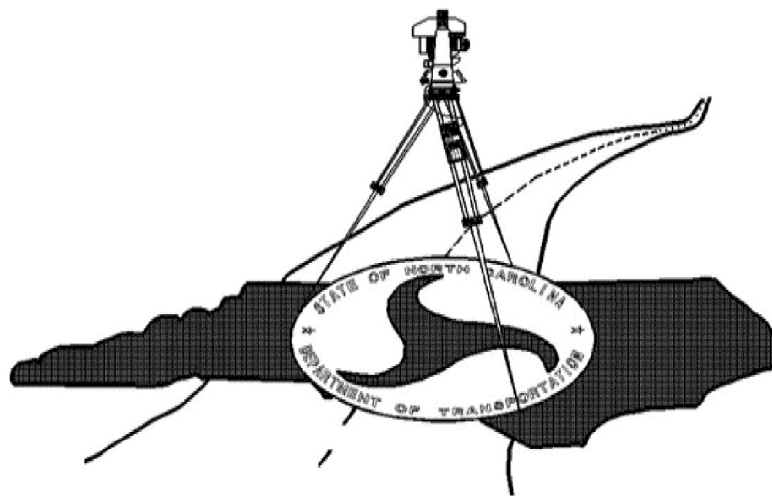


Signed by:
Matthew Cornwell
EBC295114735475

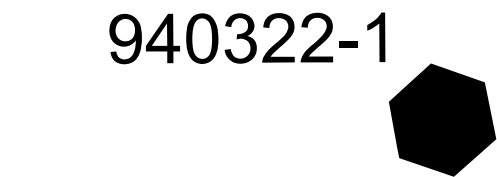
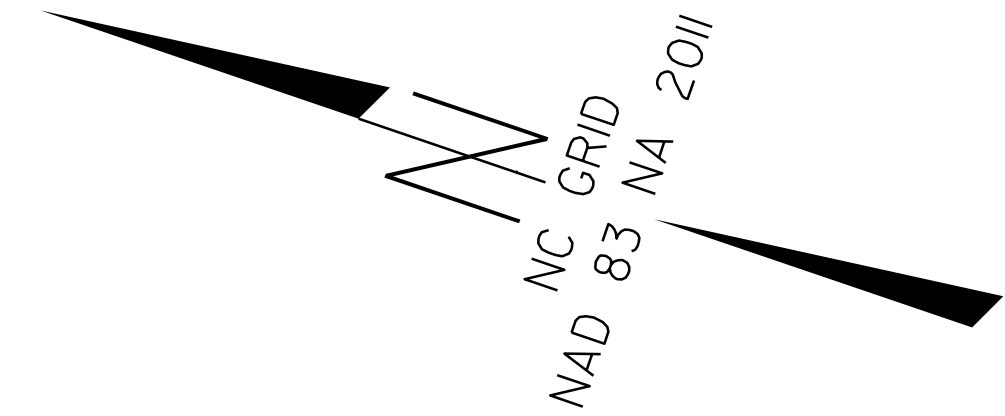
6/9/2025

SIGNATURE:

DATE:



PRIMARY SURVEY CONTROL SHEET



SR 1113 BAIRDS CREEK RD



940322-2

UPPER LAUREL FORK CREEK

SR 1109 LAUREL FORK RD



PRIMARY CONTROL TABLE				
Benchmark	Description	Northing	Easting	Elevation
1	940322-1	905587.9618	1192831.4509	2856.781
2	940322-2	905121.5187	1192932.9686	2847.320

I, M. TODD WOODRUFF, PLS, CERTIFY THAT THE PRIMARY PROJECT CONTROL WAS [PERFORMED/VERIFIED] UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: **AA**
TYPE OF GPS FIELD PROCEDURE: [STATIC, OPUS, RTN]
DATES OF SURVEY: OCTOBER, 2024
DATUM/EPOCH: NAD83/NA 2011
PUBLISHED/FIXED-CONTROL USE:
[PROJECT CONTROL IF APPLICABLE, N/A FOR RTN]
LOCALIZED AROUND: 940322-2
NORTHING: 905121.5187
EASTING: 1192932.9686
COMBINED GRID FACTOR: 0.99988000280
GEOID MODEL: GEOID18 (Conus)
UNITS: US Survey Feet

THIS 28 DAY OF OCTOBER, 2024.

Signed by:
M. Todd Woodruff

PROFESSIONAL LAND SURVEYOR L-4206

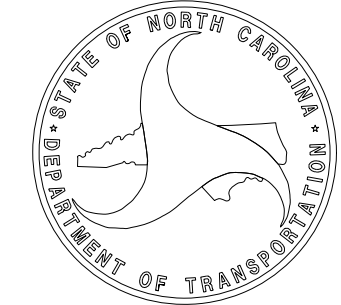
NOTES:

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

DF18311.2095016.PR

R/W 02C-1

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

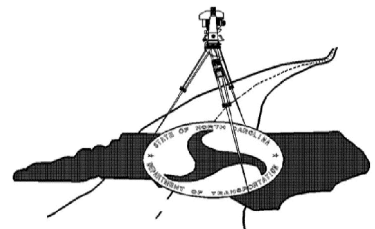


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT: DF18311.2095016
County: WATAUGA

PREPARED FOR



LOCATION AND
SURVEYS UNIT

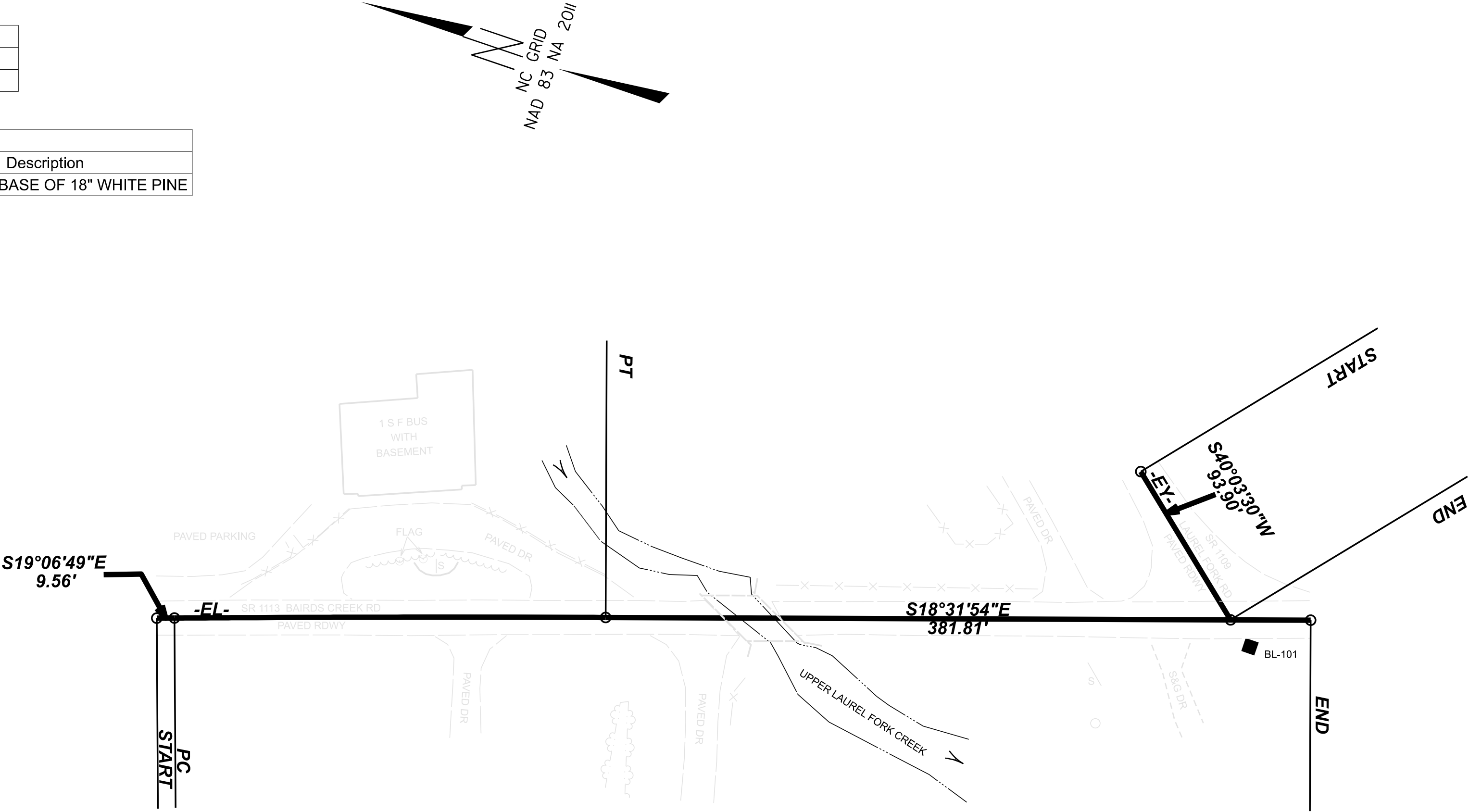
PREPARED BY

SECONDARY SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

Baseline Points Table				
Benchmark	Description	Northing	Easting	Elevation
101	BL-101	904859.5720	1193040.5980	2846.68

Benchmark Points Table				
Benchmark	Northing	Easting	Elevation	Description
BM1	905070.3750	1192725.2790	2867.01	RR SPIKE IN BASE OF 18" WHITE PINE



EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
START	905425.1872	1192864.993							
LINE			S19° 06' 49"E	9.5572					
PC	905416.1569	1192868.123							
CURVE					0.582" Right	0.249"	233.54	116.771	23000
PT	905195.1071	1192943.472							
LINE			S18° 31' 54"E	381.8091					
END	904833.0957	1193064.822							

EXISTING ALIGNMENT NAME:EY									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
START	904946.0723	1193111.477							
LINE			S40° 03' 30"W	93.9038					
END	904874.1994	1193051.043							



NOTES:

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

I, M. TODD WOODRUFF, PLS, CERTIFY THAT THE SECONDARY BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION UTILIZING PRIMARY GPS CONTROL SET BY OTHERS; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM OCTOBER, 14 2024 TO OCTOBER, 14 2024, AND ALL COORDINATES ARE BASED ON NAD 83/NA 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 28 DAY OF OCTOBER, 2024.

Signed by:
M. Todd Woodruff

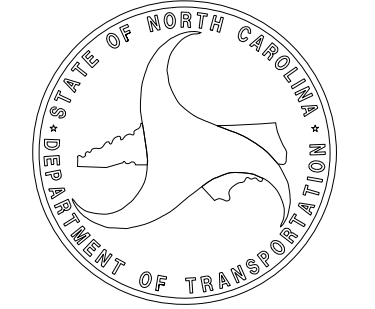
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PROFESSIONAL LAND SURVEYOR L-4206

DF18311.2095016.PR

R/W 02C-2

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

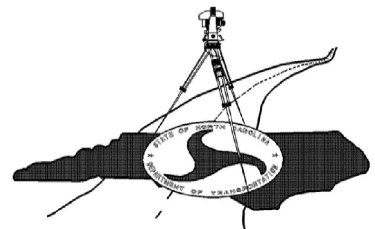


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FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT:DF18311.2095016
County: Watauga

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

DIVISION 8
LOCATION AND SURVEYS
300 DOT DRIVE
ASHEBORO, NC 27205

PROPOSED ALIGNMENT CONTROL SHEET

I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

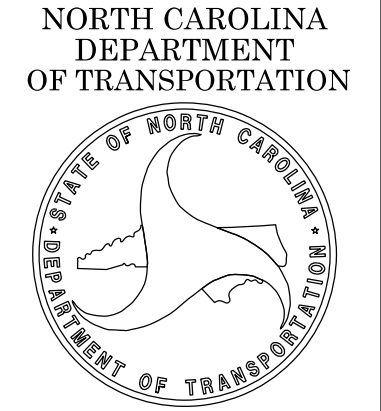
THIS 6/9/2025

Signed by: Matthew Cornwell
EBD036F11473E475

PROFESSIONAL LAND SURVEYOR L-4775

DF18311.2095016.PR

R/W 020-I



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

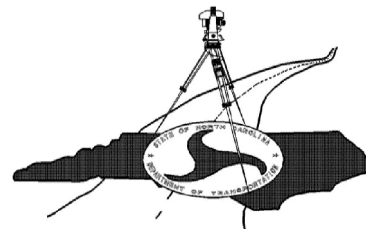
PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	905425.1872	1192864.9932	S19°06'48.6"E	9.56							
PC	10+09.56	905416.1569	1192868.1226	S18°49'21.4"E	233.54	00°34'54.4"	00°14'56.8"	233.54	116.77	23000.00		
PT	12+43.10	905195.1071	1192943.4715	S18°31'54.2"E	381.81							
END	16+24.91	904833.0957	1193064.8219									

PROPOSED ALIGNMENT: DR1												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	905152.7935	1192957.6555	S71°28'05.8"W	11.69							
PC	10+11.69	905149.0774	1192946.5698	S63°48'22.6"W	26.67	15°19'26.3"	57°17'44.8"	26.75	13.45	100.00		
PRC	10+38.44	905137.3069	1192922.6424	S64°33'52.6"W	29.29	16°50'26.4"	57°17'44.8"	29.39	14.80	100.00		
PT	10+67.83	905121.7125	1192886.3390	N72°59'05.8"E	10.31							
END	10+78.14	905124.7284	1192896.1944									

TIP PROJECT: DF18311.2095016.PR

County: Watauga

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY



NOTES:

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

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 6/4/2025 TO 6/5/2025, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 6/9/2025

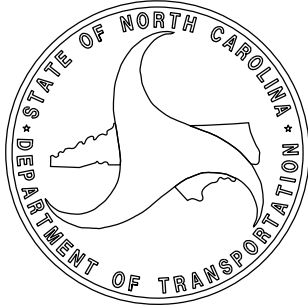
Signed by: Matthew Cornwell
EBD36F11473EA75

PROFESSIONAL LAND SURVEYOR L-4775

DF18311.2095016.PR

R/W 03E-1

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT: DF18311.2095016.PR
County: Watauga

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+64.00	30.0000	905165.7533	1192921.6706
12+64.00	45.0000	905160.9858	1192907.4484
14+31.00	30.0000	905007.4126	1192974.7482
14+31.00	45.0000	905002.6452	1192960.5260

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
12+35.00	-46.0000	905217.4195	1192984.5063
12+35.00	-30.0000	905212.3289	1192969.3377
12+42.00	-46.0000	905210.7697	1192986.7369
12+66.00	-30.0000	905182.9268	1192979.1951
13+12.00	45.0000	905115.4747	1192922.7042
13+62.00	68.0000	905060.7573	1192916.7883
14+25.00	60.0000	905003.5666	1192944.3968

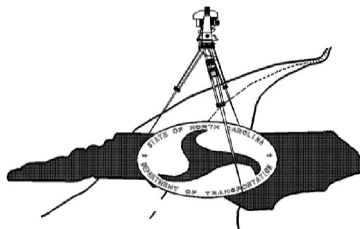
NOT SET - FALLS IN CREEK

NOT SET - FALLS IN CREEK

NOTES:

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

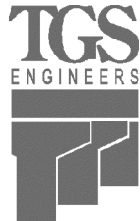
PREPARED FOR

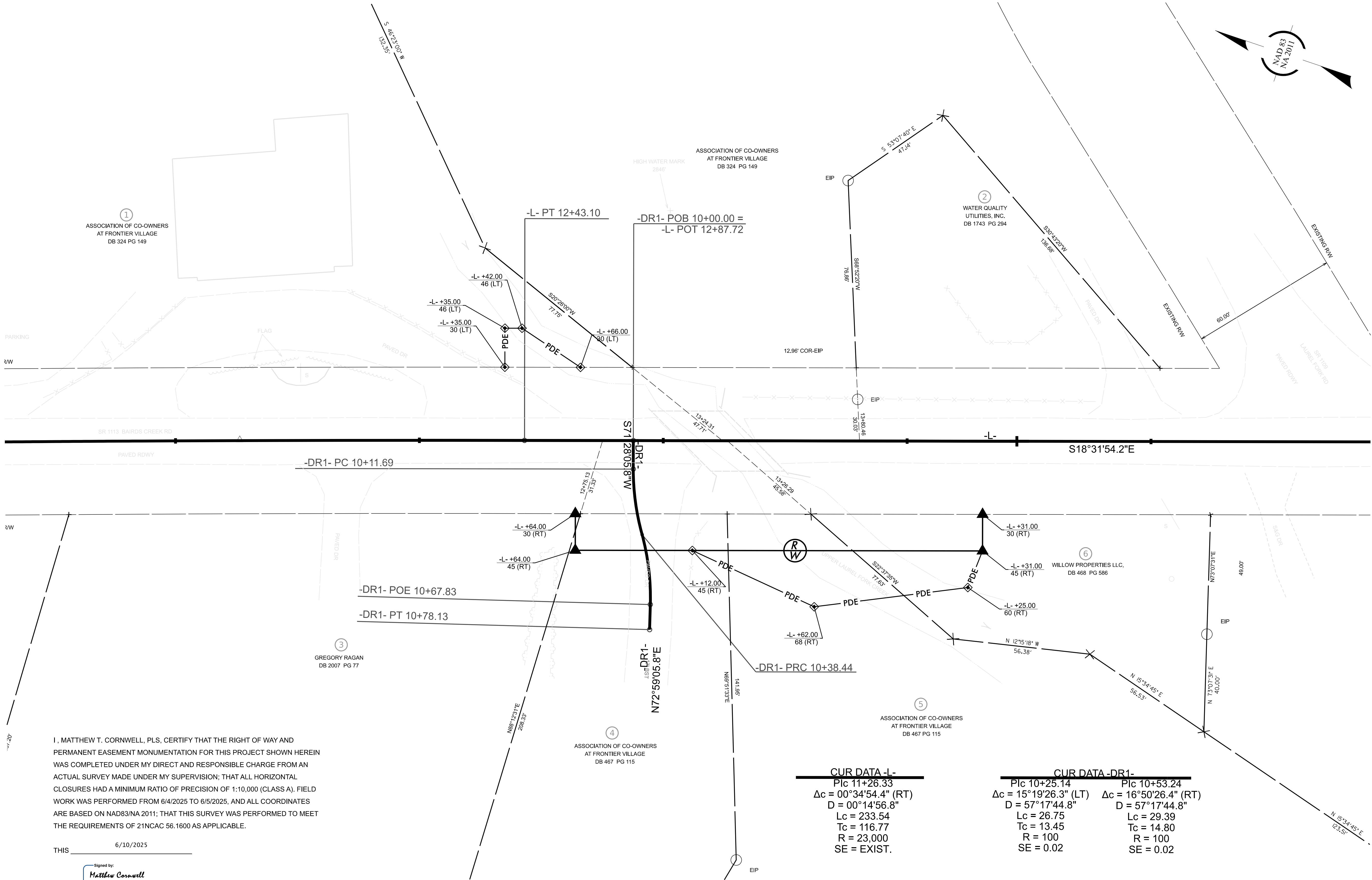


LOCATION AND
SURVEYS UNIT

PREPARED BY

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





I, MATTHEW T. CORNWELL, PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 6/4/2025 TO 6/5/2025, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 6/10/2025
Signed by: Matthew Cornwell
EBC09P11473E475
PROFESSIONAL LAND SURVEYOR L-4775

CUR DATA -L-
Plc 11+26.33
 $\Delta c = 00^\circ 34' 54.4''$ (RT)
D = $00^\circ 14' 56.8''$
Lc = 233.54
Tc = 116.77
R = 23,000
SE = EXIST.

CUR DATA -DR1-	
Plc 10+25.14	Plc 10+53.24
$\Delta c = 15^\circ 19' 26.3''$ (LT)	$\Delta c = 16^\circ 50' 26.4''$ (RT)
D = $57^\circ 17' 44.8''$	D = $57^\circ 17' 44.8''$
Lc = 26.75	Lc = 29.39
Tc = 13.45	Tc = 14.80
R = 100	R = 100
SE = 0.02	SE = 0.02

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

DF18311.2095016.PR

R/W

04

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

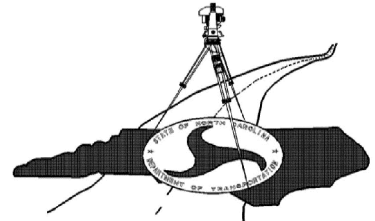
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SURVEYOR

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT: DF18311.2095016.PR
County: Watauga

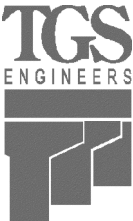
PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

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

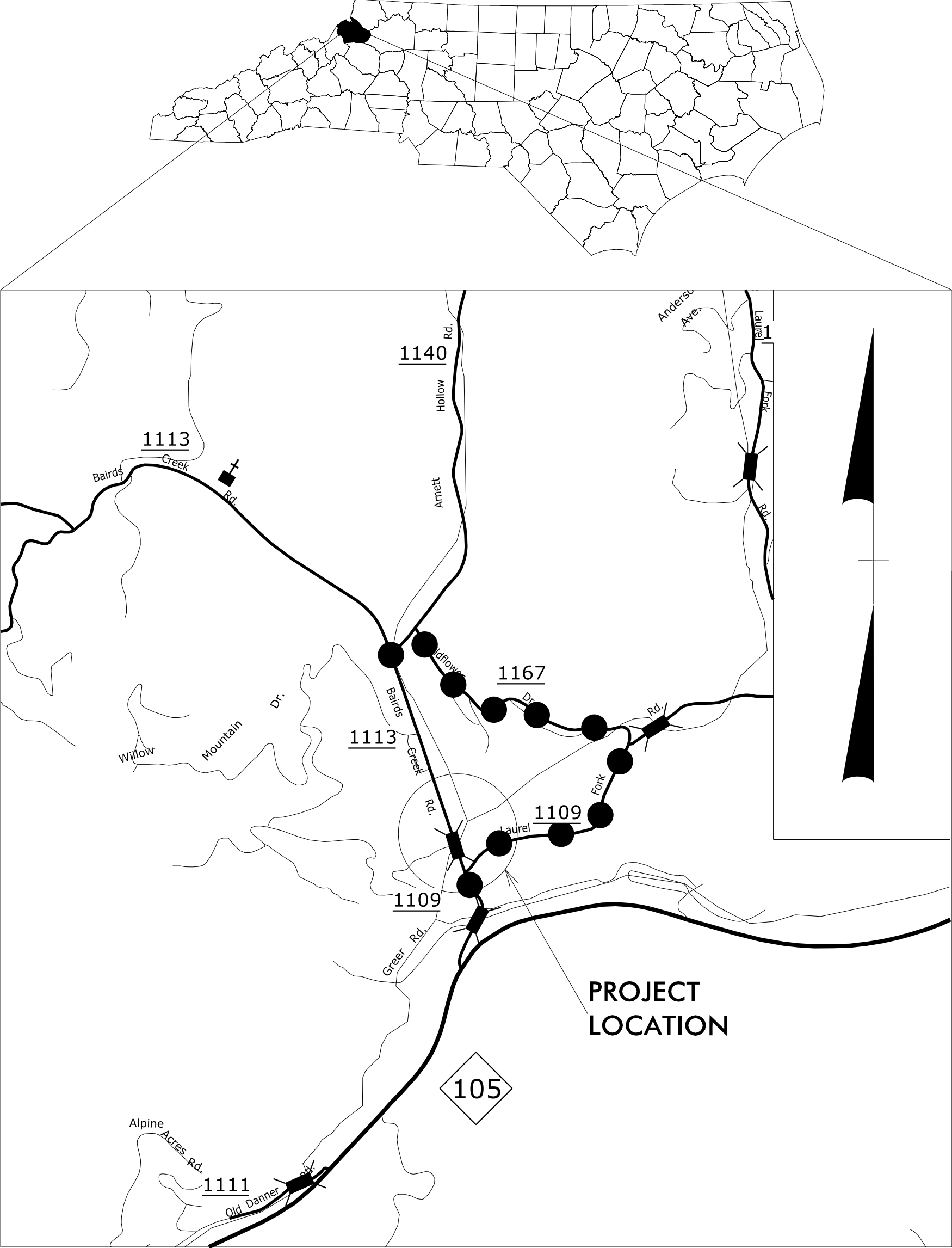


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WATAUGA COUNTY

LOCATION: *STRUCTURE #940322 ON SR 1113 (BAIRDS CREEK RD) OVER UPPER LAUREL FORK CREEK*
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, & STRUCTURE*



VICINITY MAP
● ● ● OFFSITE DETOUR



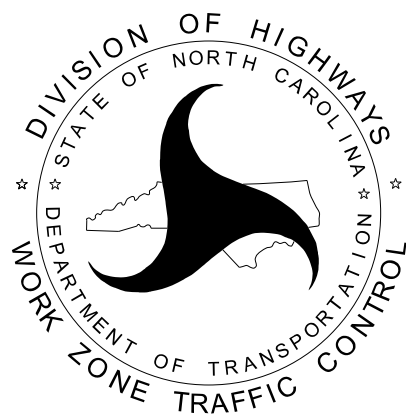
PLANS PREPARED FOR N.C.D.O.T. BY: TGS ENGINEERS



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

DON A. PARKER, P.E.
PROJECT ENGINEER

CODA BRANNAN, E.I.
DESIGN ENGINEER

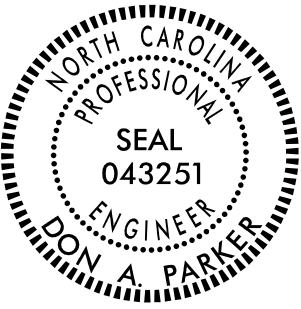


INDEX OF SHEETS

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 AND PHASING
TMP-2	SIGN DESIGN
TMP-3	PHASING
TMP-4	OFF-SITE DETOUR DETAIL
TMP-5	PHASE I DETAIL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: 
DATE: 9/12/2025



TIP PROJECT: DF18311.2095016.PR

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:

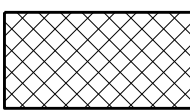
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1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS

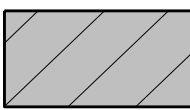
LEGEND

GENERAL

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

 WORK AREA

 REMOVAL

 WEDGING

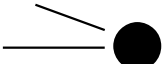
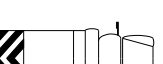
SIGNALS

-  EXISTING
-  PROPOSED
-  TEMPORARY

PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

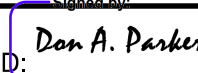
PAVEMENT MARKERS

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

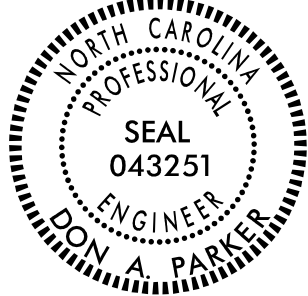
PAVEMENT MARKING SYMBOLS

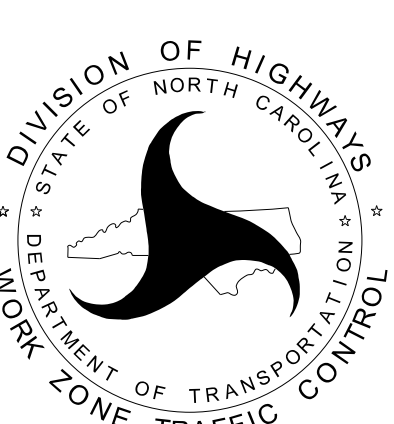
-  PAVEMENT MARKING SYMBOLS

PROJ. REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	TMP-1A
 TGS ENGINEERS 706 HILLSBOROUGH ST., SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	

APPROVED: 
750B9250A0EF440...

DATE: 9/12/2025





ROADWAY STANDARD
DRAWINGS & LEGEND

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJ. REFERENCE NO.	SHEET NO.
DR18311.2095016.PR	TMP-1B
TCS ENGINEERS TCS ENGINEERS 706 HILLSBOROUGH ST., SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	

GENERAL NOTES

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

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

* LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

* PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

* THESE NOTES APPLY ONLY DURING PAVING OF ASHPALT ROADWAY AT FRONTIER VILLAGE CABIN RD (STEP 4)

APPROVED:

Don A. Parker

DATE: 9/12/2025

750B8E90ADEF440...

NORTH CAROLINA

PROFESSIONAL

SEAL

043251

ENGINEER

DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

WORK ZONE TRAFFIC CONTROL

TRANSPORTATION
OPERATIONS
PLAN

APPROVED: <u>Don A. Parker</u> 750B8E90ADEFA440...			SIGN DESIGN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

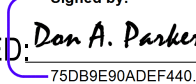
PROJ. REFERENCE NO.	SHEET NO.
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TCS ENGINEERS TCS ENGINEERS 706 HILLSBOROUGH ST., SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	

PHASING

PHASE 1

- STEP 1 -- INSTALL AND COVER DETOUR SIGNING. (SEE RSD 1101.03 AND TMP-4)
- STEP 2 -- UNCOVER DETOUR SIGNING AND CLOSE SR 1113 (BAIRDS CREEK RD.) (-L-)
- STEP 3 -- AWAY FROM TRAFFIC, CONSTRUCT PROPOSED BRIDGE. USE INCIDENTAL STONE TO PROVIDE ACCESS TO -DR1- (FRONTIER VILLAGE DR) AS SHOWN ON TMP-4 OR AS DIRECTED BY THE ENGINEER.
- STEP 4 -- USING FLAGGERS TO MAINTAIN 1L-2W ACCESS TO FRONTIER VILLAGE CABIN RD.(-DR1-), CONSTRUCT ASPHALT ROADWAY APPROACHES AND INSTALL FINAL PAVEMENT MARKINGS.
- STEP 5 -- COVER OR REMOVE DETOUR SIGNING AND RE-OPEN BAIRDS CREEK RD. TO 2L-2W TRAFFIC.
- STEP 6 -- REMOVE ALL TRAFFIC CONTROL DEVICES.

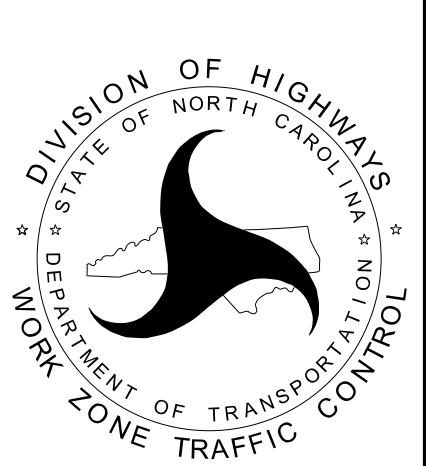
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APPROVED:  Don A. Parker
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DATE: 9/12/2025

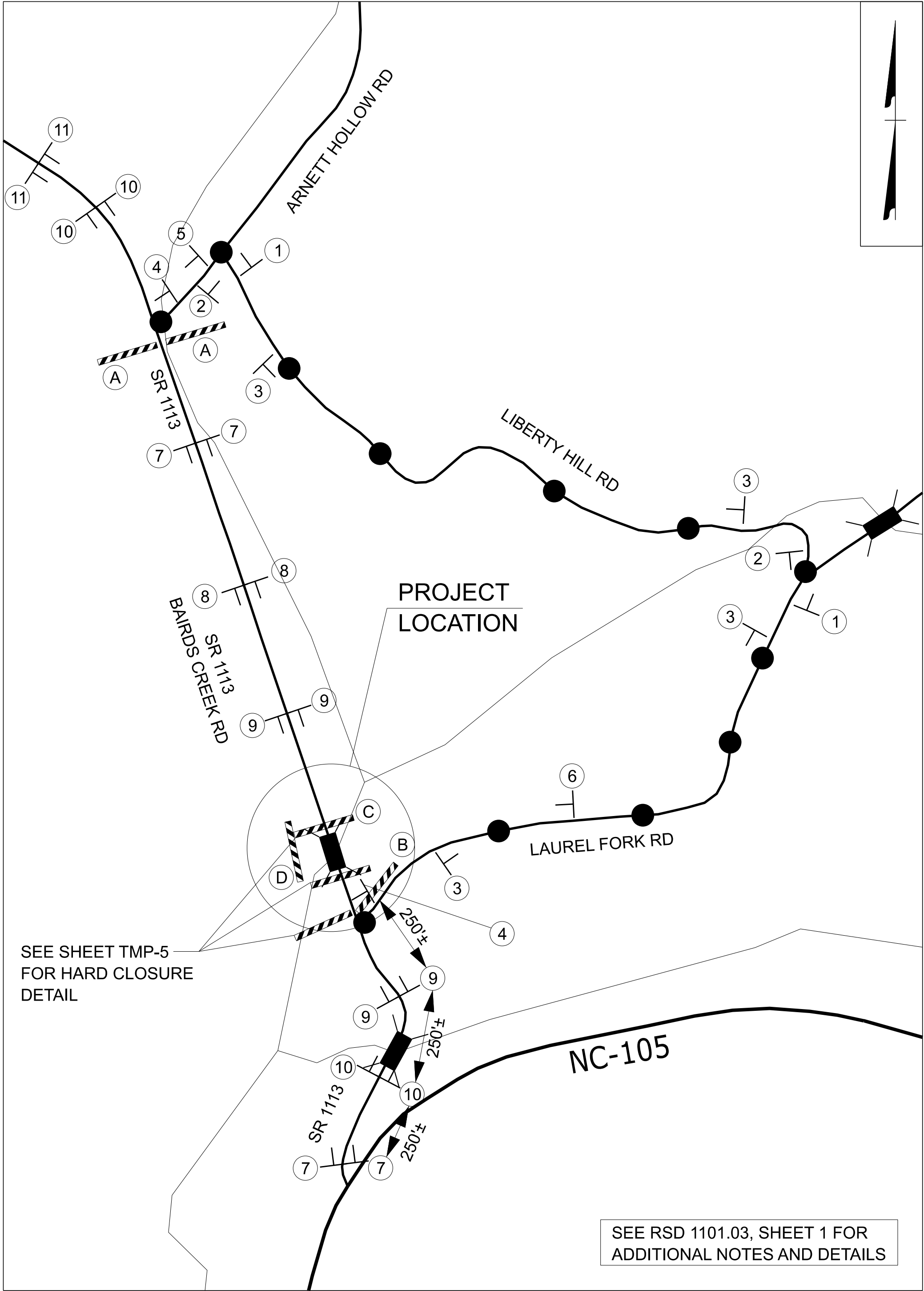
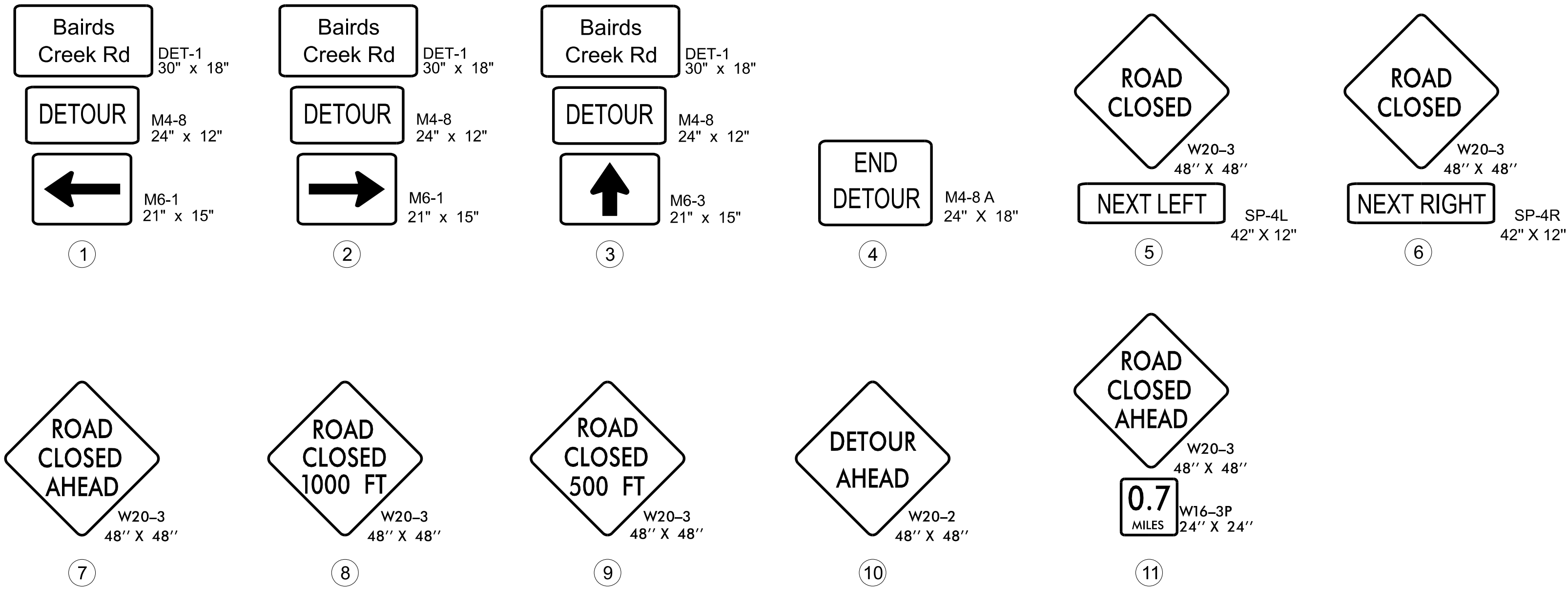
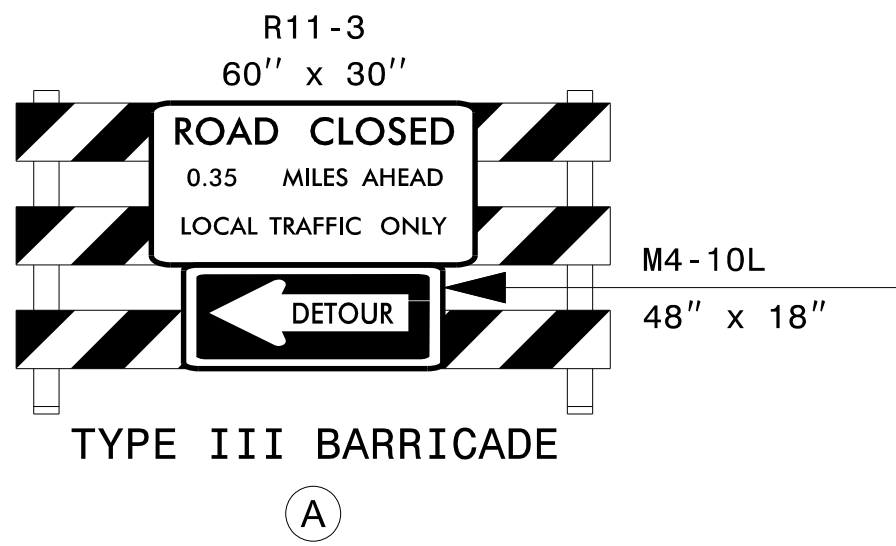


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PHASING

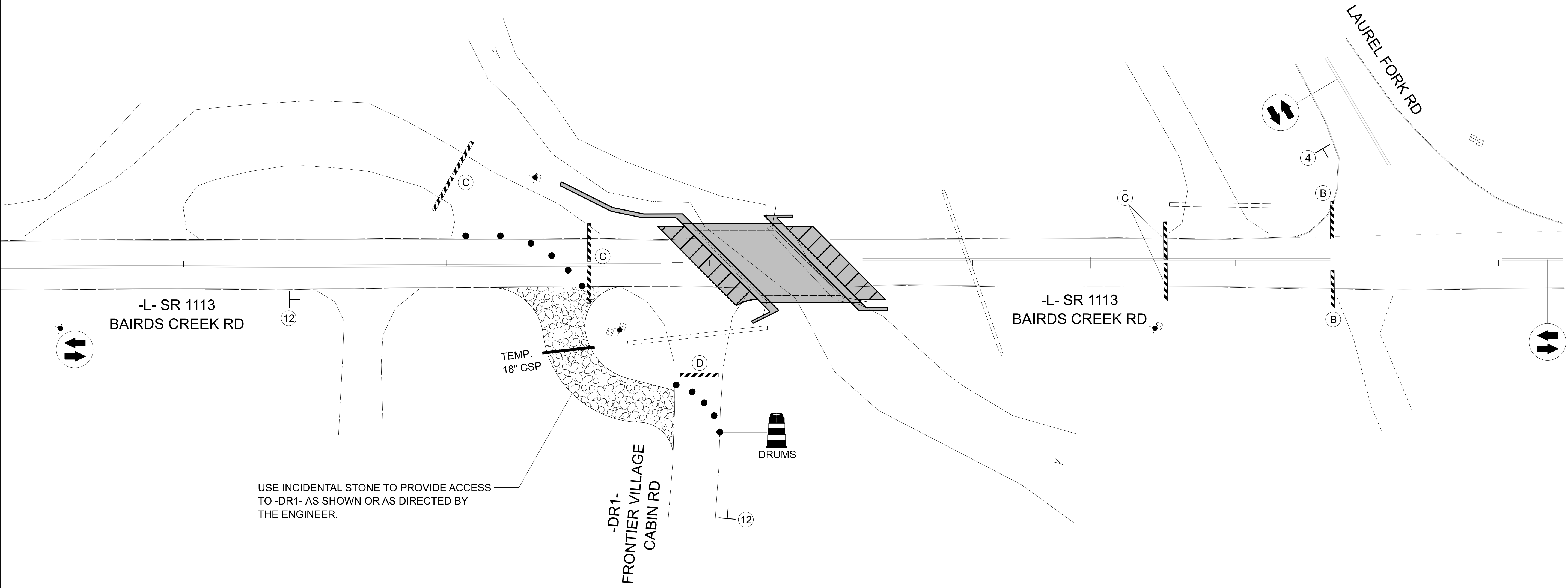
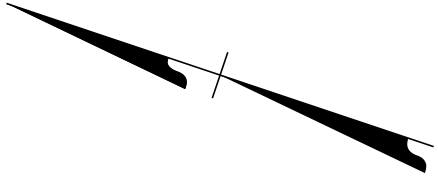
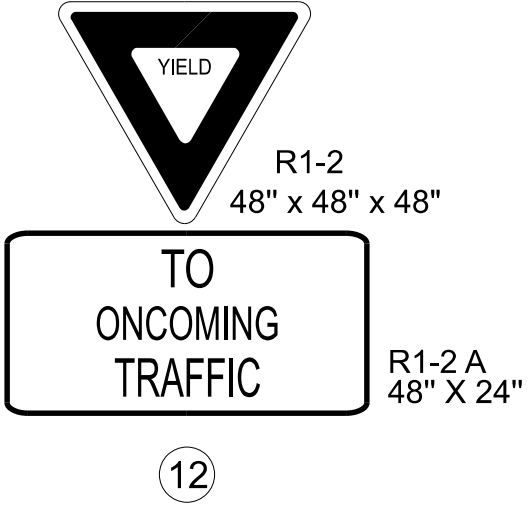
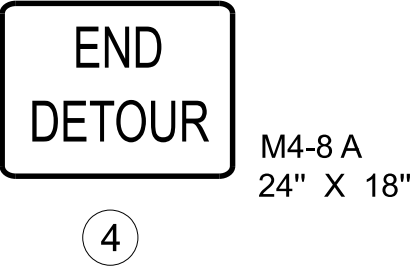
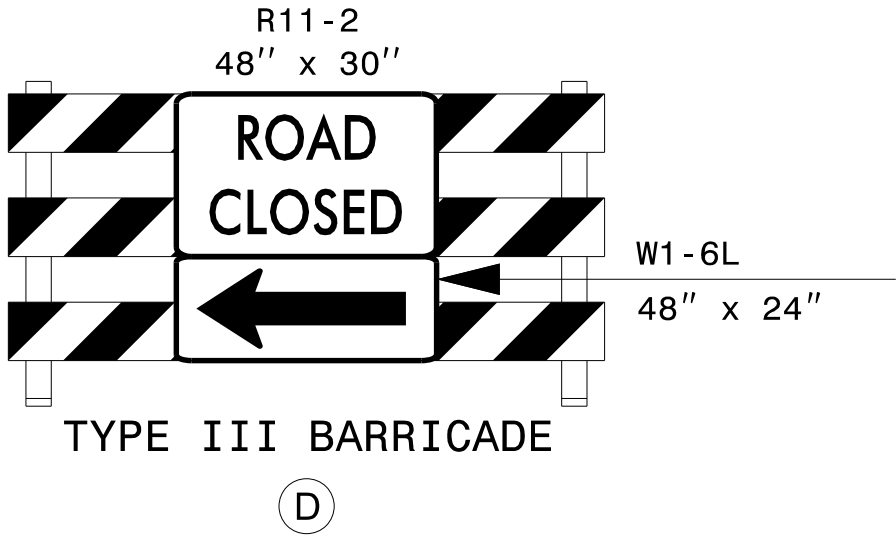
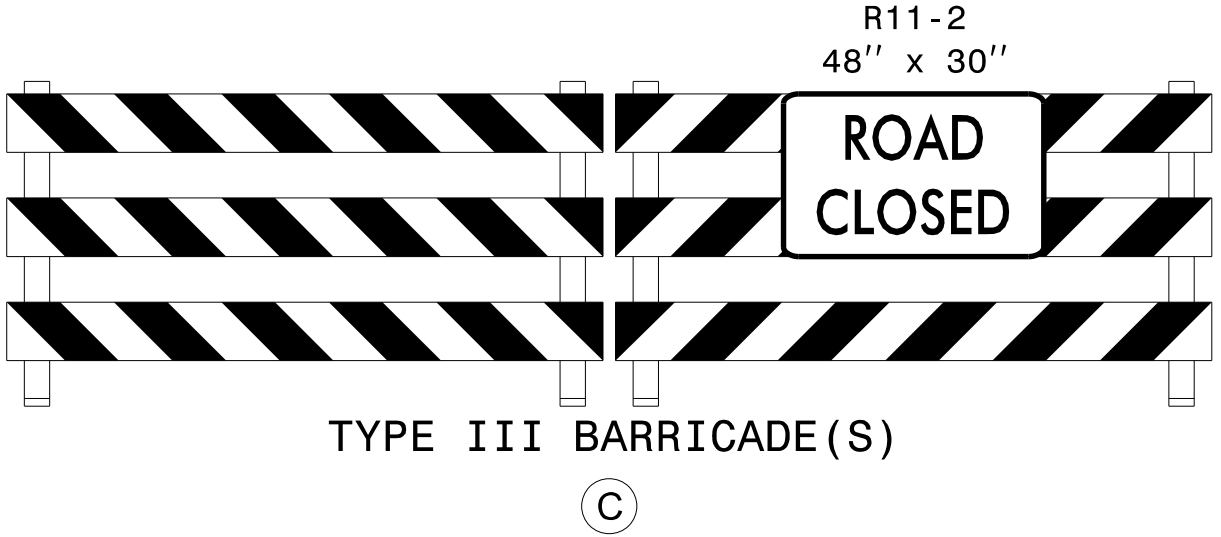
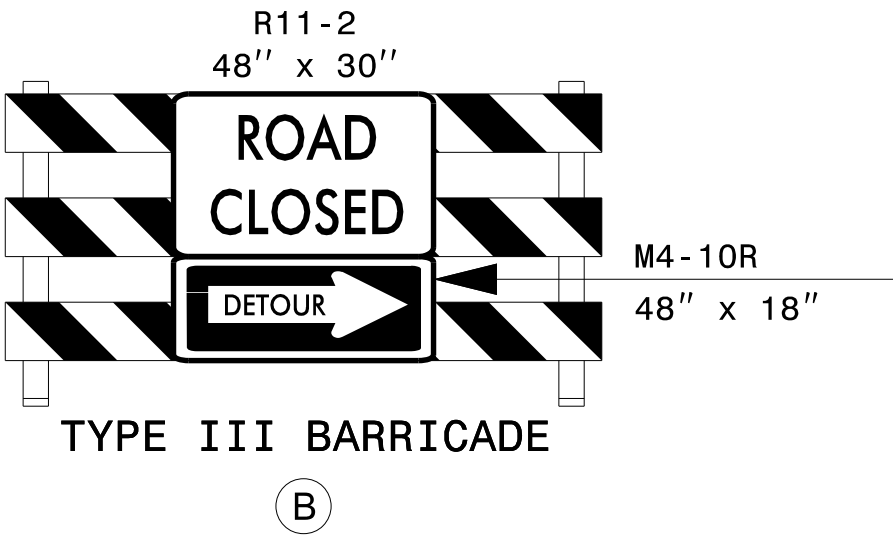
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VICINITY MAP
OFFSITE DETOUR

APPROVED: Don A. Parker 705B6E90ADEF440... DATE: 9/12/2025 SEAL 043251 ENGINEER DON A. PARKER DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL	PHASE I
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PROJ. REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	TMP-5
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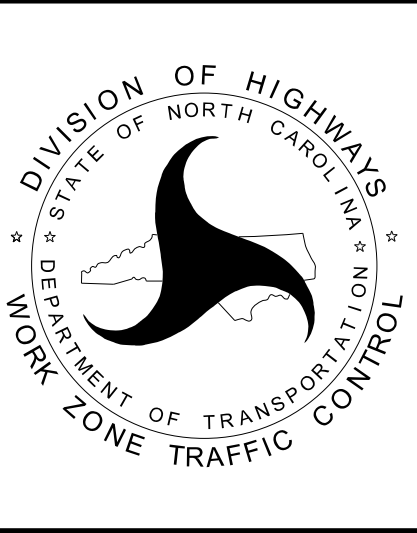
USE INCIDENTAL STONE TO PROVIDE ACCESS
TO -DR1- AS SHOWN OR AS DIRECTED BY
THE ENGINEER.

APPROVED: *Don A. Parkes*
750B8E60ADE440...

DATE: 9/12/2025

SEAL
043251
NORTH CAROLINA
PROFESSIONAL
ENGINEER
DON A. PARKES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PHASE I

PROJECT: DF18311.2095016.PR

CONTRACT: DK00437

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

WATAUGA COUNTY

LOCATION: *STRUCTURE #940322 ON*

SR 1113 (BAIRDS CREEK RD) OVER

UPPER LAUREL FORK CREEK

TYPE OF WORK: *GRADING, DRAINAGE,*

PAVING, & STRUCTURE

INDEX

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

ROADWAY STANDARD DRAWING

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

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

GENERAL NOTES

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

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
- | ROAD NAME | MARKING | MARKER |
|----------------------------------|--------------------------|--------|
| -L- SR 1113
(BAIRDS CREEK RD) | INTEGRATED MULTI-POLYMER | NONE |
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

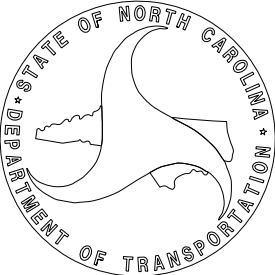
FINAL PAVEMENT MARKING SCHEDULE

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

TIP NO.	SHEET NO.
DF18311.2095016.PR	PMP-1
APPROVED: <i>Don A. Parker</i> Signed by: 750B9E9DADEF442...	
DATE: 9/12/2025	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PLAN SUBMITTED TO: NCDOT

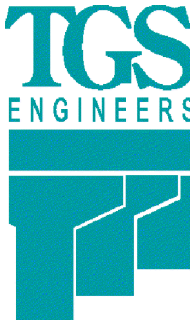
ROB WEISZ, P.E. DIVISION 11 BRIDGE ROGRAM MANAGER



PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER



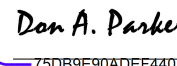
TGS ENGINEERS

706 HILLSBOROUGH ST. SUITE 200

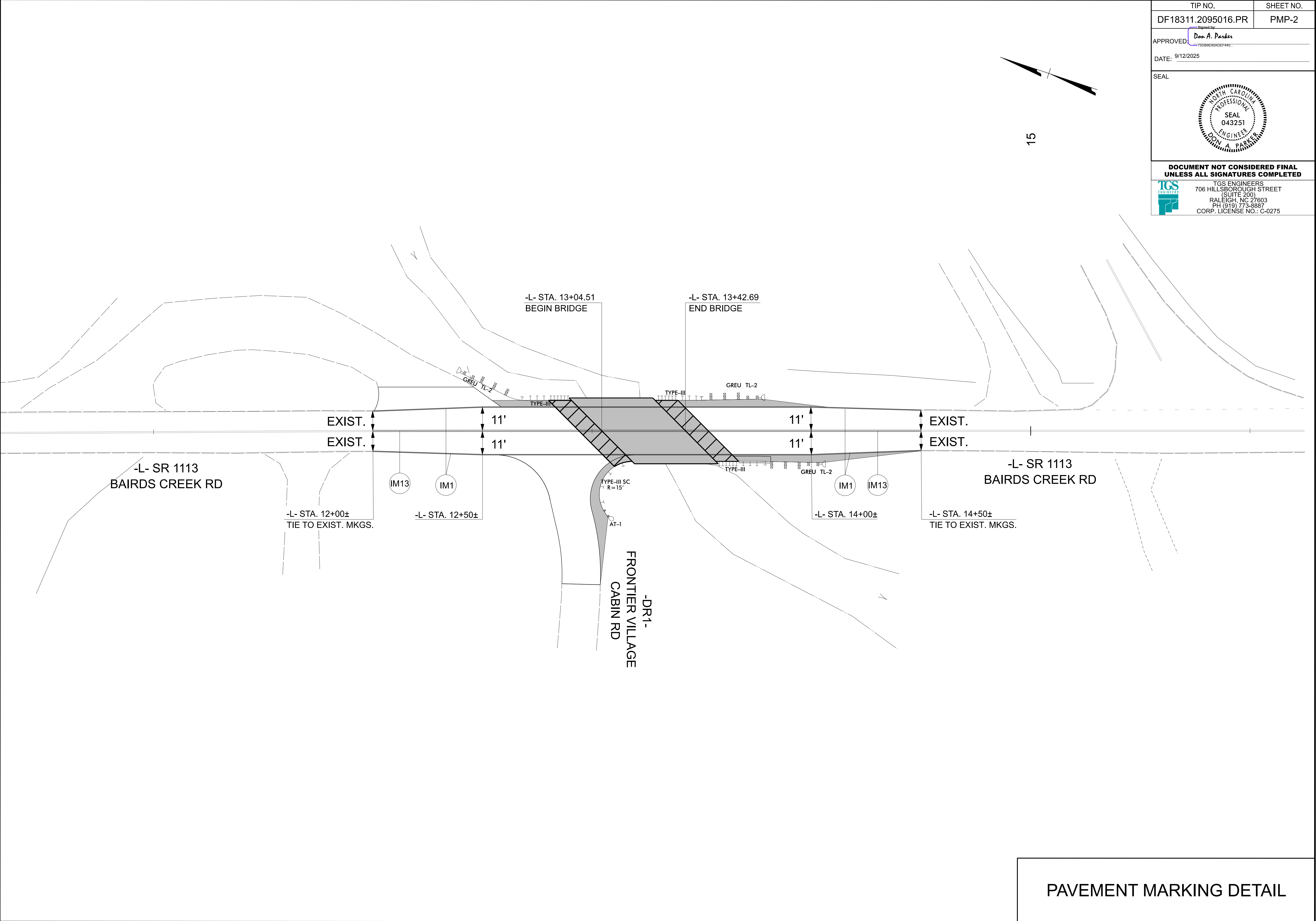
RALEIGH, NC 27603

PH (919) 773-8887

CORP. LICENSE NO.: C-0275

TIP NO.	SHEET NO.
DF18311.2095016.PR	PMP-2
APPROVED:  750B9E9DADEF440...	
DATE: 9/12/2025	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 706 HILLSBOROUGH STREET (SUITE 200) RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	

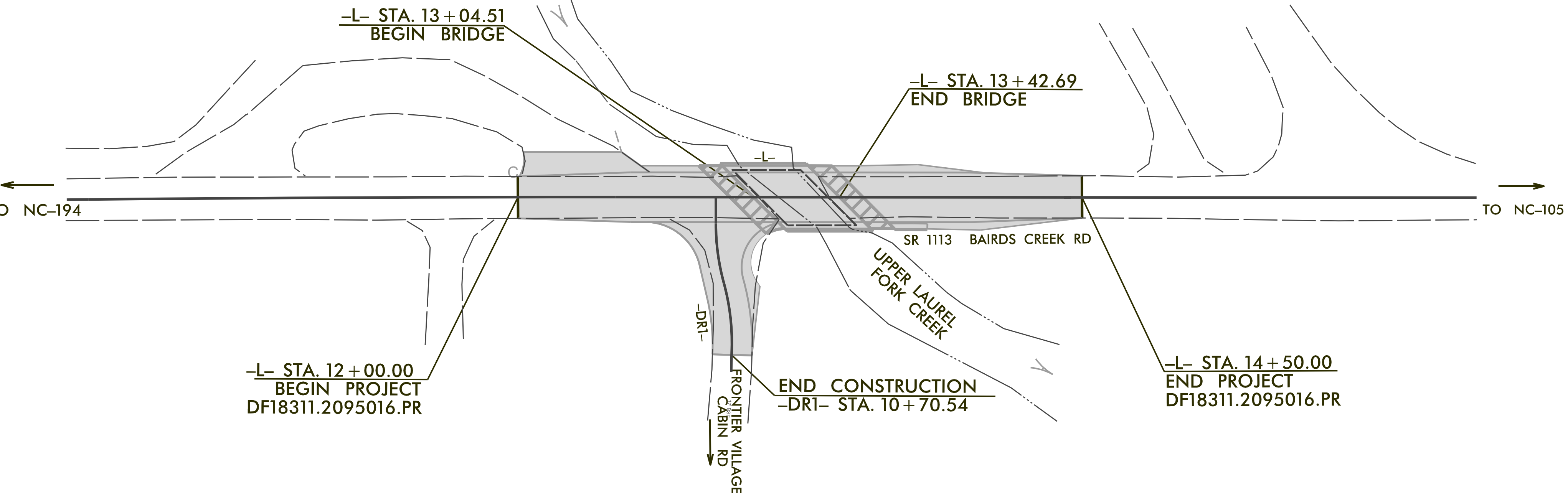
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PAVEMENT MARKING DETAIL

VICINITY MAP

NOT TO SCALE

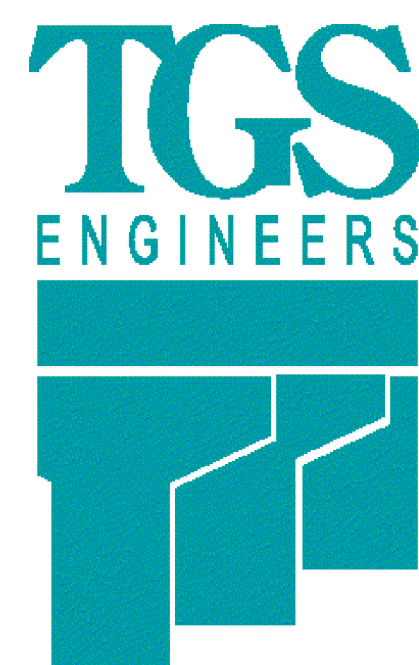
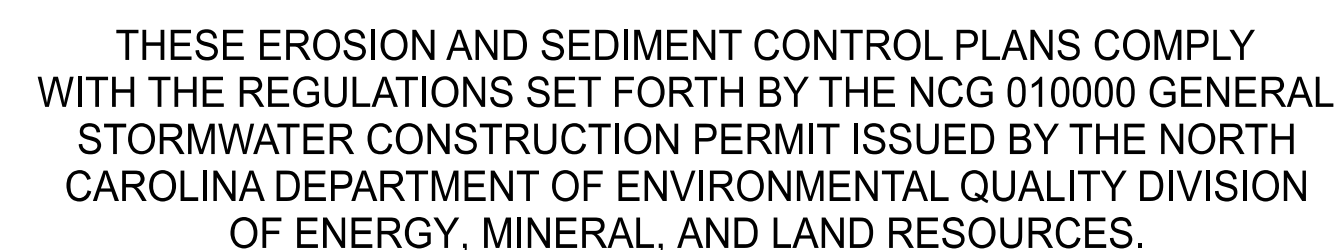


LOCATION: BRIDGE #940322 ON SR 1113 (BAIRDS CREEK ROAD)
OVER UPPER LAUREL FORK CREEK

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

 NAD 83/2011

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



Designed by:

Andrew H. Cochrane, PE 3015

NAME LEVEL III CERTIFICATION NO.

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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	
1630.04	Stilling Basin	
1630.05	Temporary Diversion	
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

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

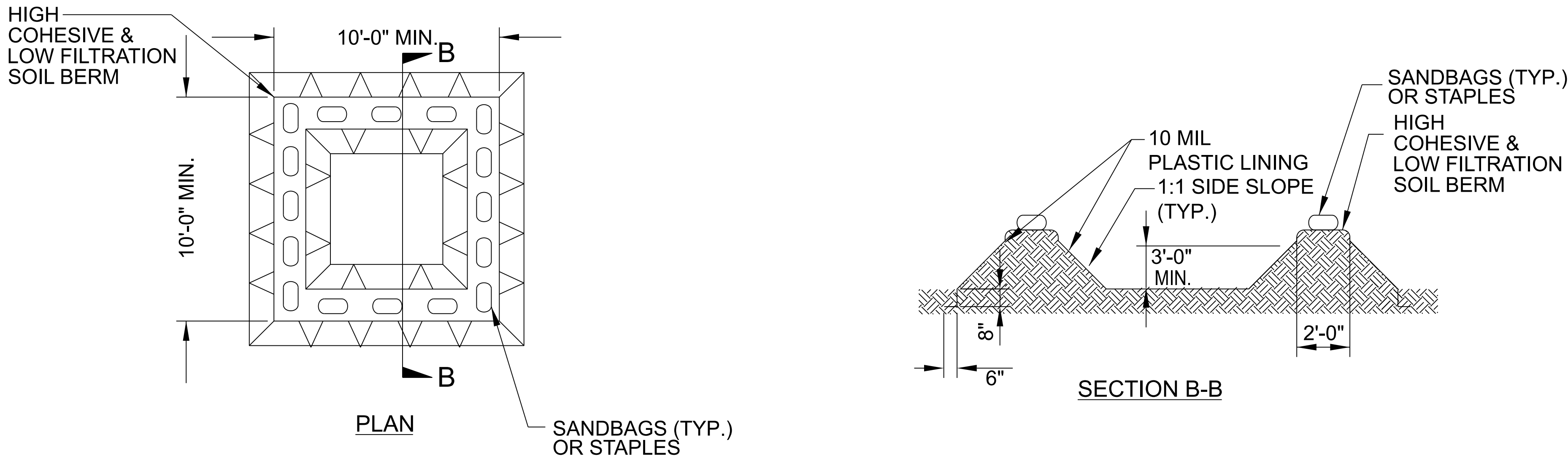
PROJECT REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	EC-02A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 - 3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE



- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 - 3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
DF18311.2095016.PR	EC-03
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

11/14/23

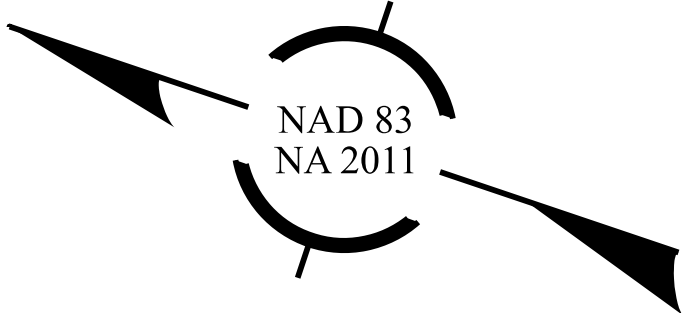
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

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

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

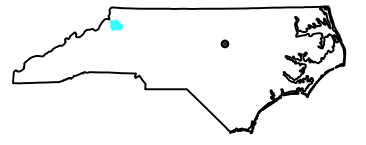
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4



DF18311.2095016.PR

EC-04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WATAUGA COUNTY

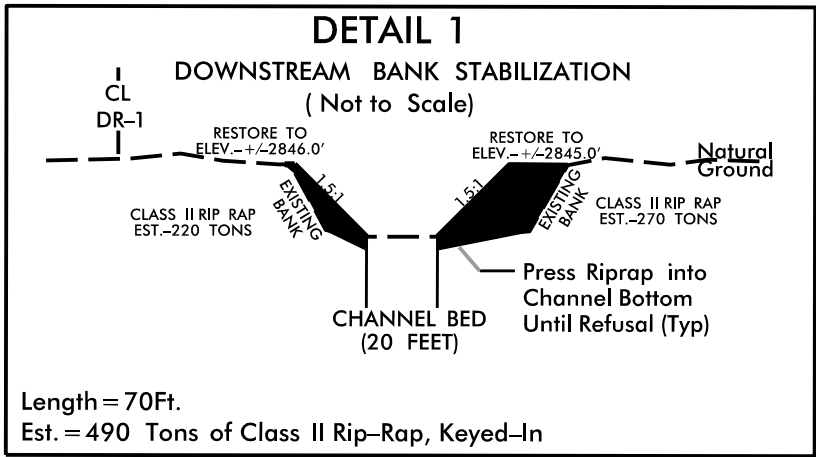
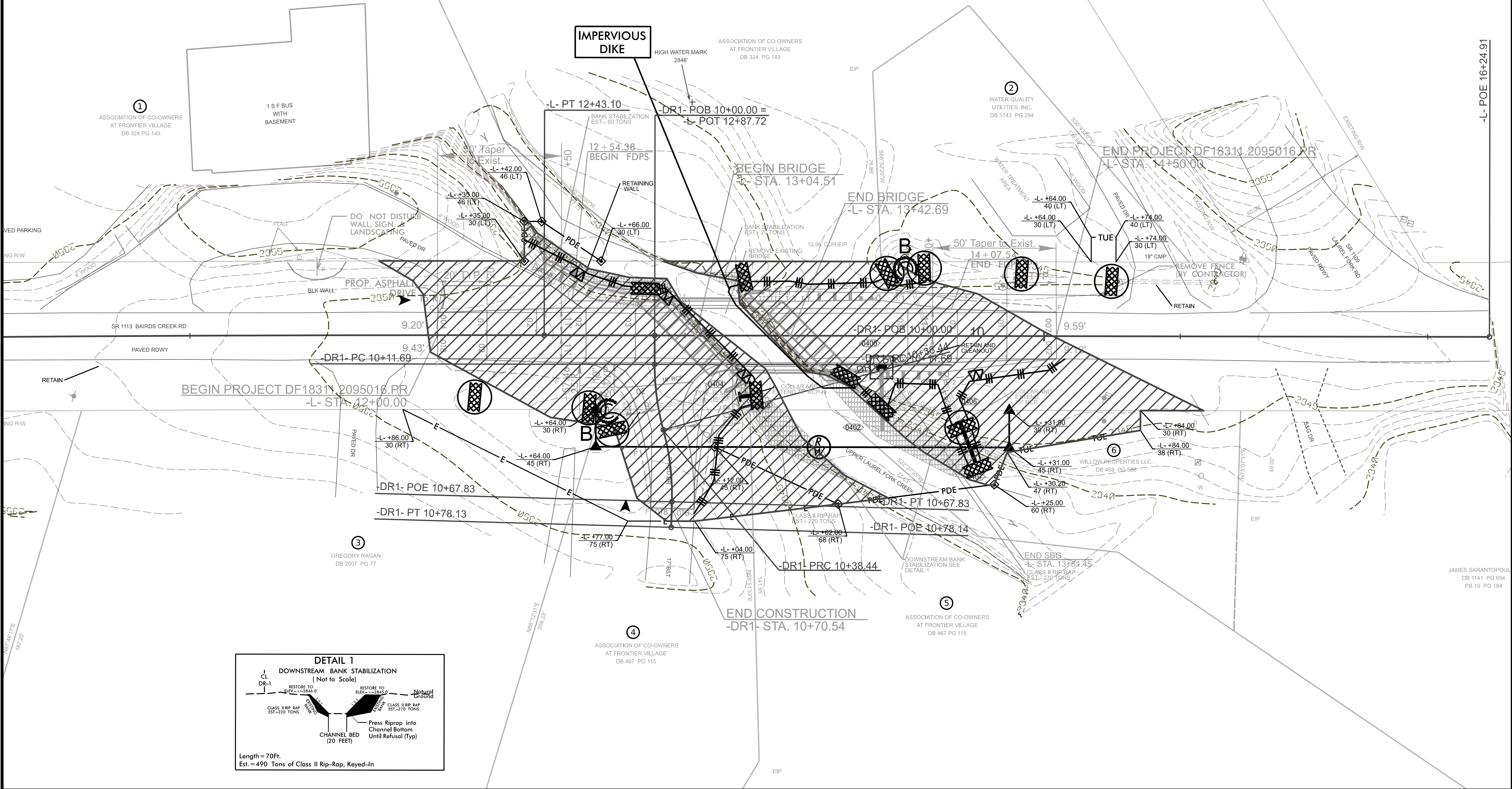


ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PREPARED BY

TGS
TGS ENGINEERS
201 W. HANCOCK ST., STE. 200
SHELBY, NC 28150
PH: 704.476.0003
CORP. LICENSE: NC-11C-0275

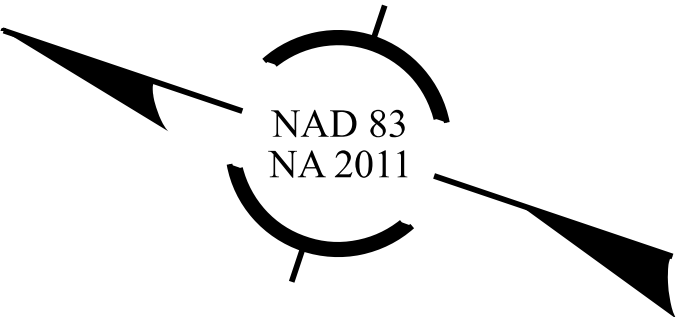


REVISIONS

11/14/23

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

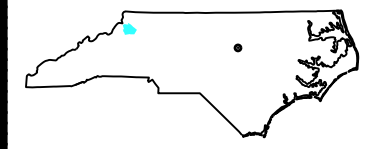
IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.



DF18311.2095016.PR

EC-05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WATAUGA COUNTY

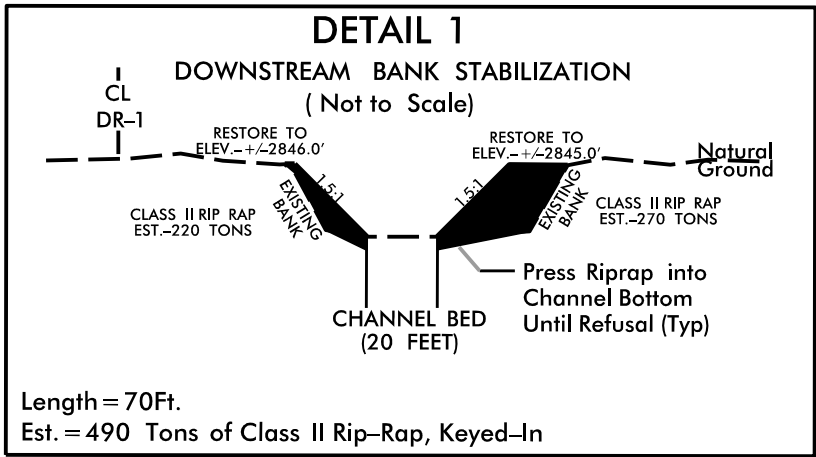
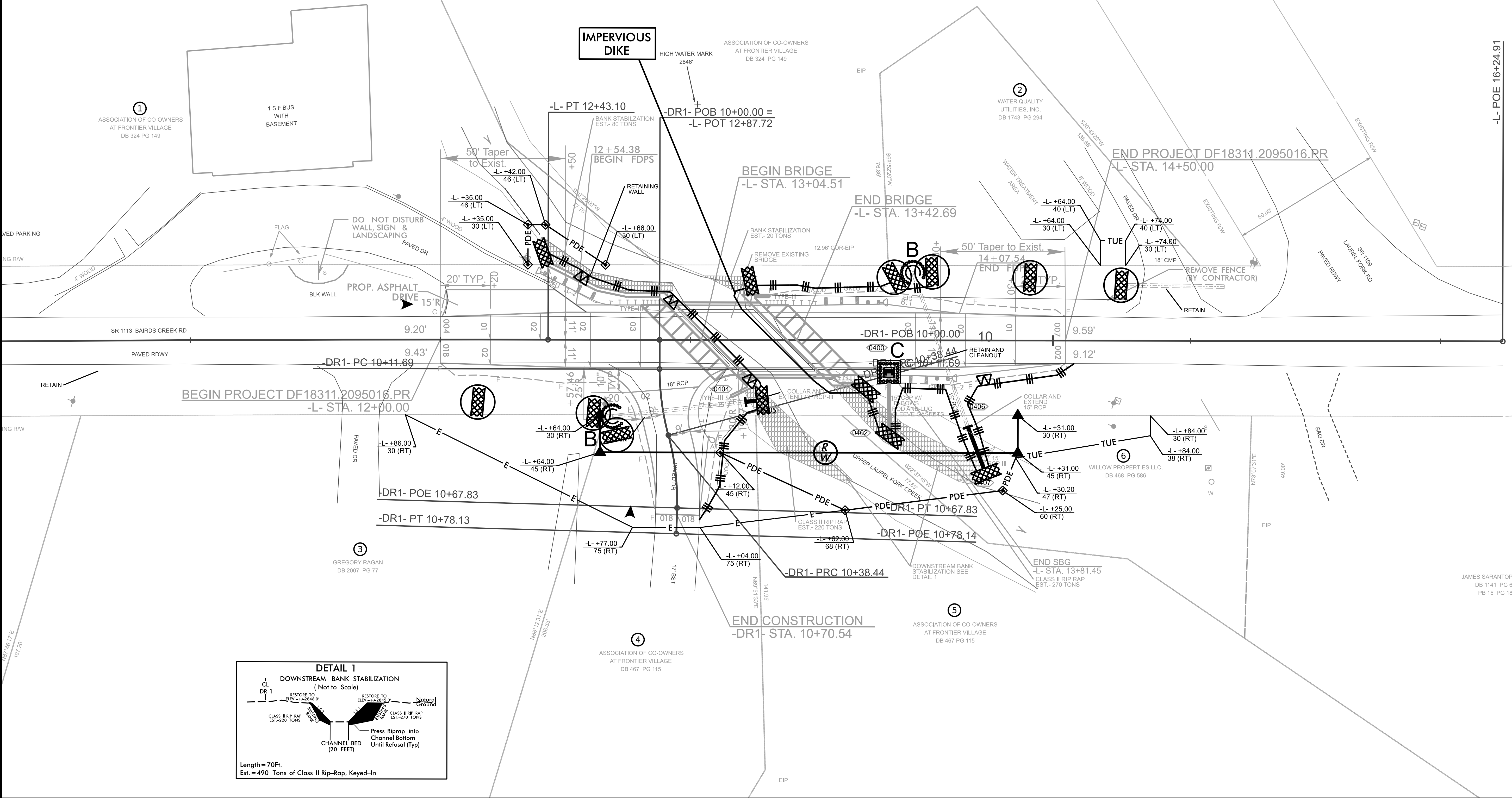


ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PREPARED BY

TGS ENGINEERS
201 W. HANCOCK ST., STE. 200
SHREVEPORT, LA 70503
CORP. LICENSE NO. 17-C-0275



REVISIONS

9/3/2025 11:00:07 AM X:\NCDOT\Div 11 Watauga 322\Signing and Delineation\Signing\Watauga322_Sgn_SGN_01.dgn User: cbrannan

PROJECT: DF18311.2095016.PR

CONTRACT: DK00437

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
WATAUGA COUNTY

LOCATION: *STRUCTURE #940322 ON
SR 1113 (BAIRDS CREEK RD) OVER
UPPER LAUREL FORK CREEK*

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

TIP NO.
DF18311.2095016.PR

SHEET NO.
SIGN-1

APPROVED
Don A. Parker

DATE: 9/12/2025

SEAL


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ROADWAY STANDARD DRAWING

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

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

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	26	L.F.
4102000000	904	SIGN ERECTION, TYPE E	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	5	EA.
4158000000	907	DISPOSAL OF SIGN SYSTEM, WOOD	1	EA.

GENERAL NOTES

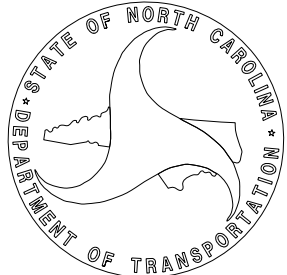
- . SIGNS FURNISHED BY STATE
- . CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER.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

INDEX

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

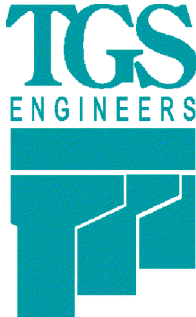
PLAN SUBMITTED TO: NCDOT

ROB WEISZ, P.E. DIVISION 11 BRIDGE PROGRAM MANAGER

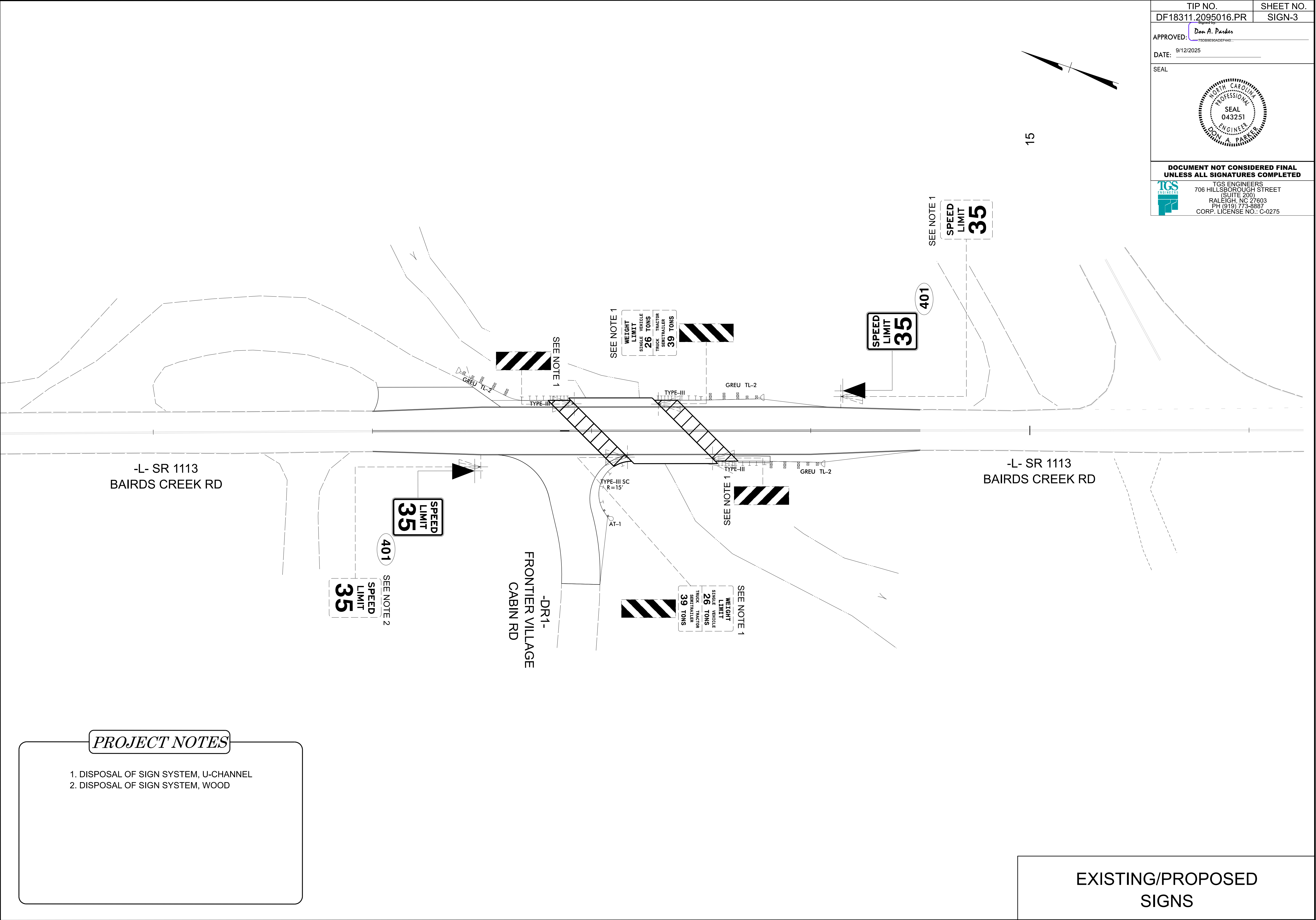


PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER
CODA BRANNAN, E.I. DESIGN ENGINEER



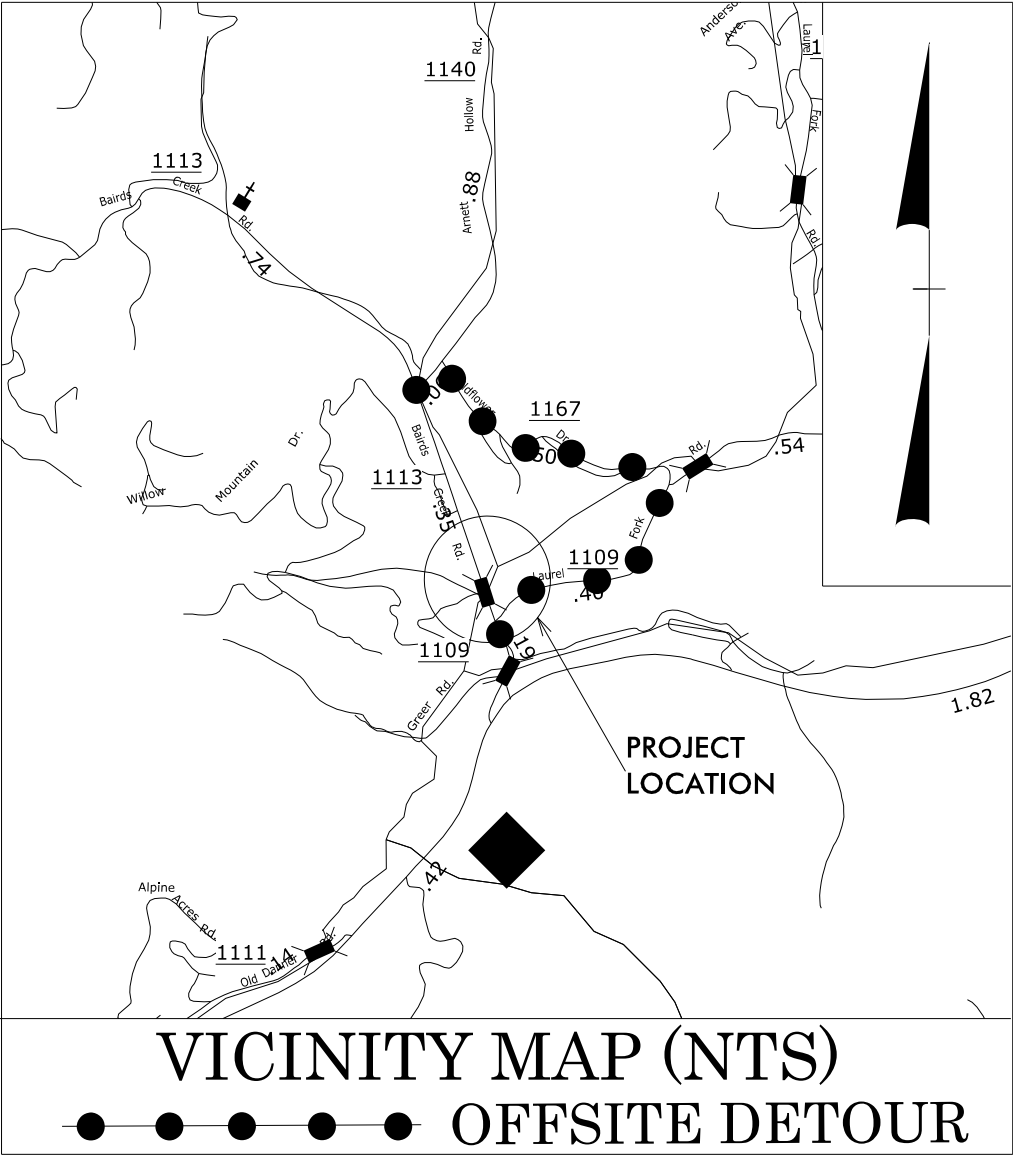
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275



09/08/99

TIP PROJECT: DF18311.2095016.PR

CONTRACT:



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

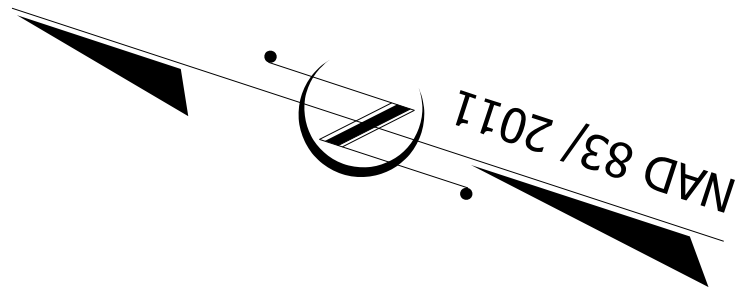
**UTILITIES BY OTHERS PLANS
WATAUGA COUNTY**

**LOCATION: BRIDGE #940322 OVER UPPER LAUREL FORK CREEK
ON SR 1113 BAIRDS CREEK ROAD**

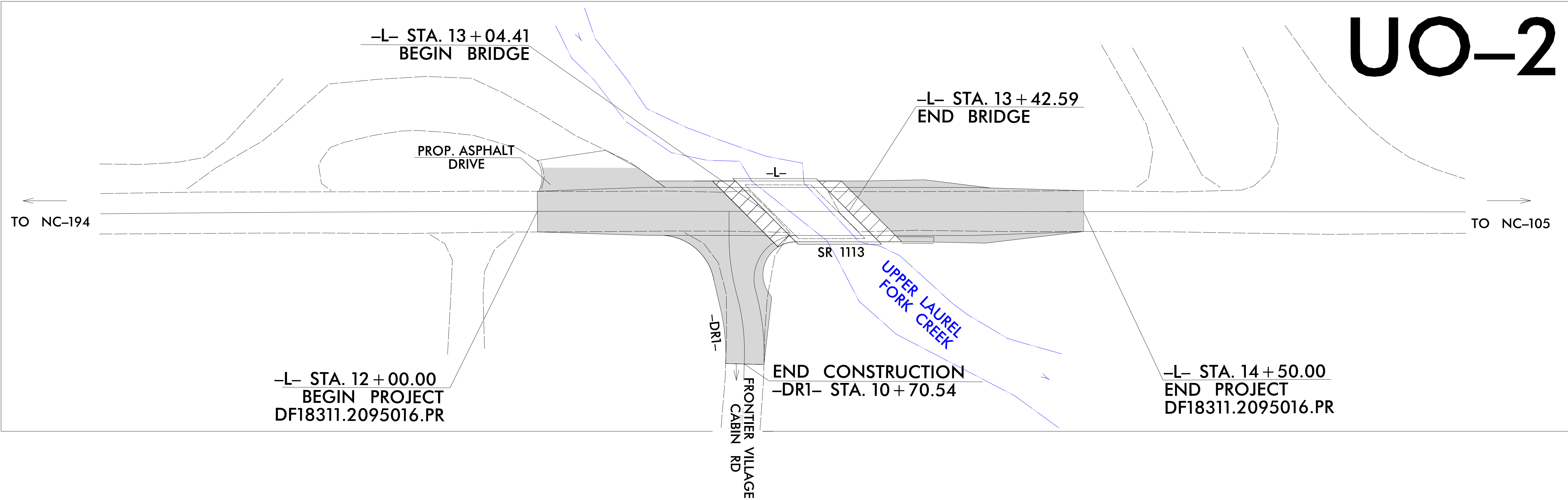
TYPE OF WORK: POWER & COMMUNICATIONS

T.I.P. NO.	SHEET NO.
DF18311.2095016.PR	UO-1

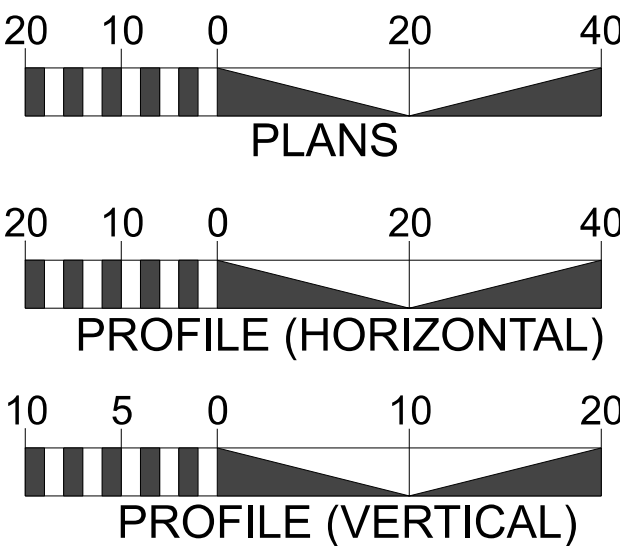
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



UO-2



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

- (A) POWER - BLUE RIDGE EMC
- (B) COMMUNICATIONS - SPECTRUM
- (C) COMMUNICATIONS - SKYLINE

PREPARED IN THE OFFICE OF



TELICS

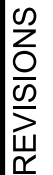
1598 WESTBROOK PLAZA DR.
SUITE 202
WINSTON SALEM, NC 27103
(336) 705 - 8844

CORY WOOD UTILITY PROJECT MANAGER
CORY WOOD UTILITY COORDINATOR



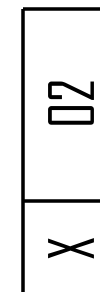
DIVISION OF HIGHWAYS
DIVISION II
801 STATESVILLE RD.
NORTH WILKESBORO NC 28659
PHONE (336) 903-9101
FAX (336) 667-4549

BRANDON GREER DIVISION UTILITIES ENGINEER

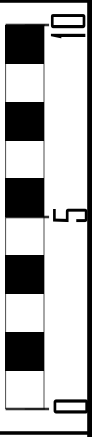
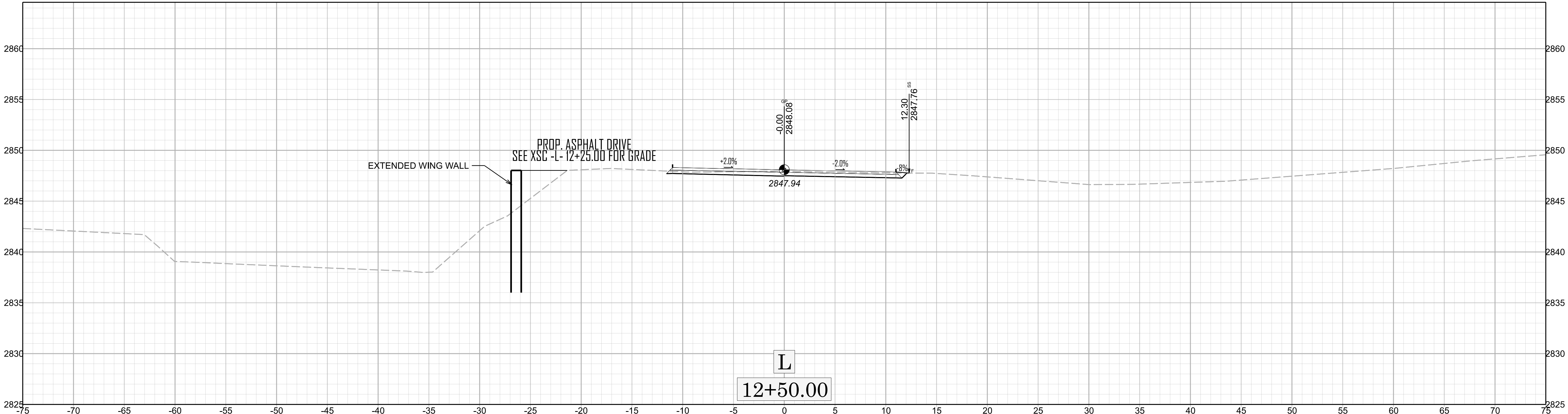
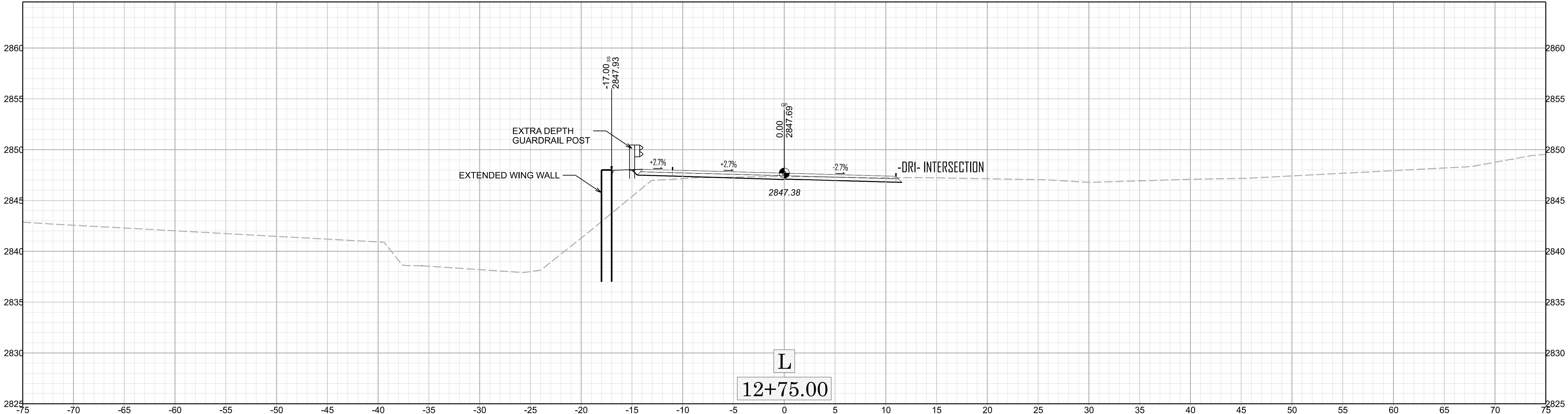


DF18311.2095016.PR
CROSS-SECTION INDEX

	X - INDEX		X - 1
CROSS - SECTION	SUMMARY		X - 1A
	- L -		X - 2 THRU X - 7
	- DR1 -		X - 8 THRU X - 9



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



X 03

DF1831.20195016.PR

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-L- STA. 13+42.69 END BRIDGE

-L- STA. 13+04.51 BEGIN BRIDGE

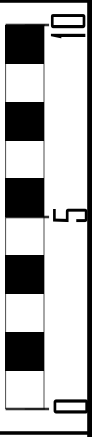
L

13+25.00

-DRI- Intersection

L

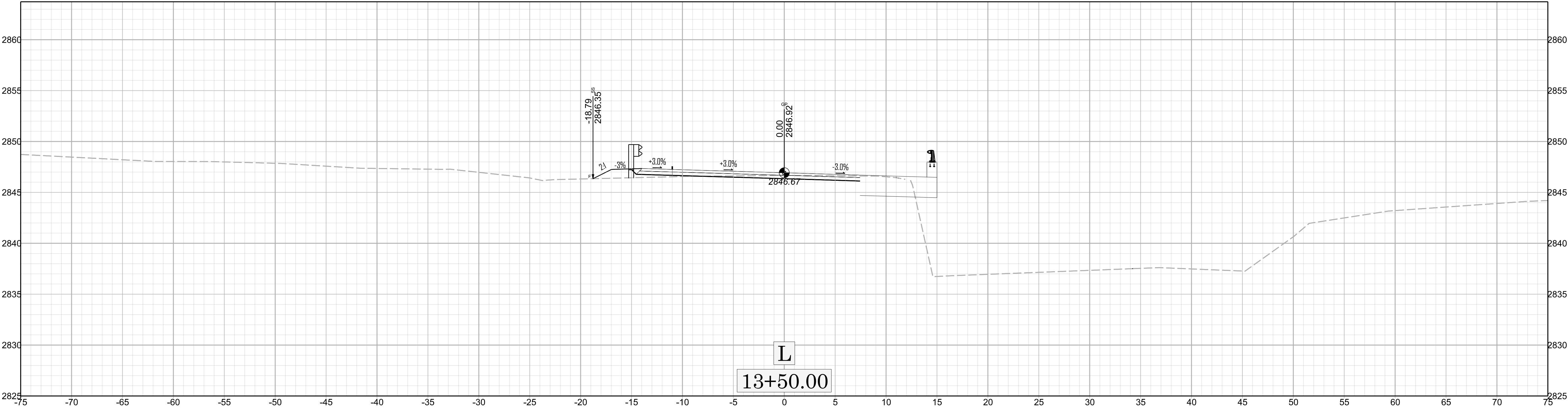
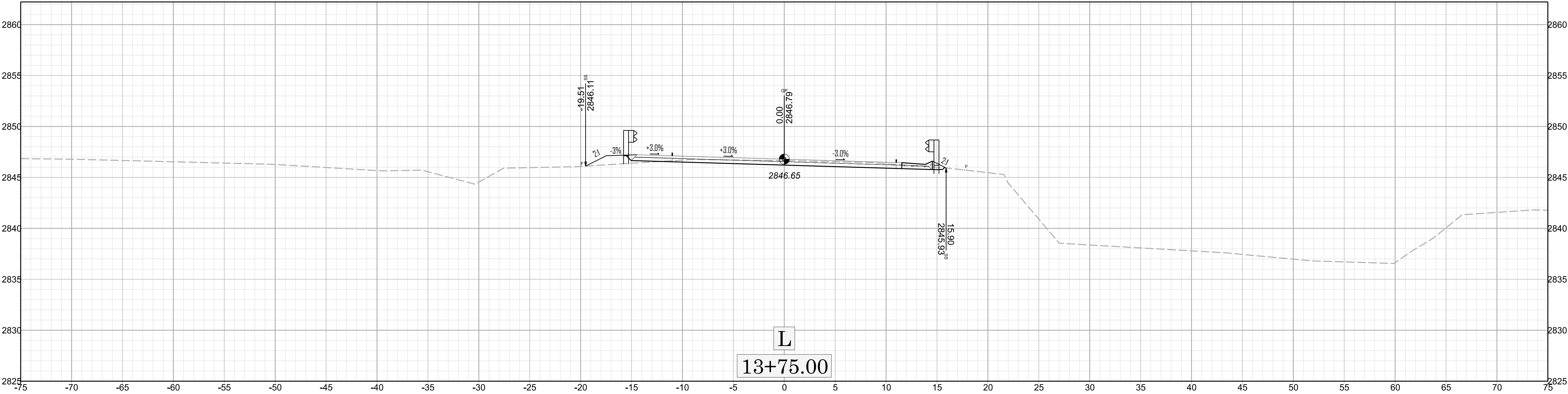
13+00.00



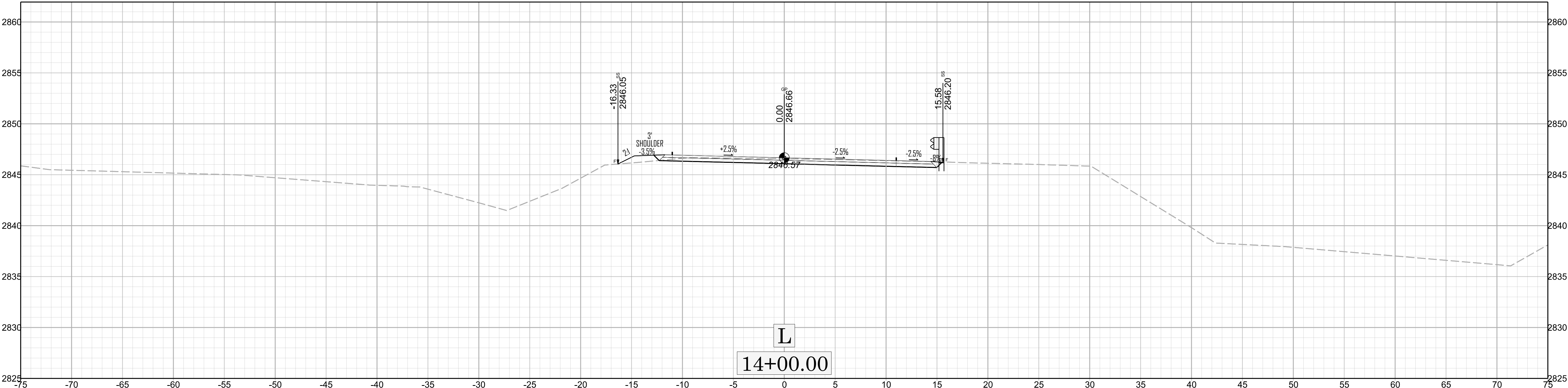
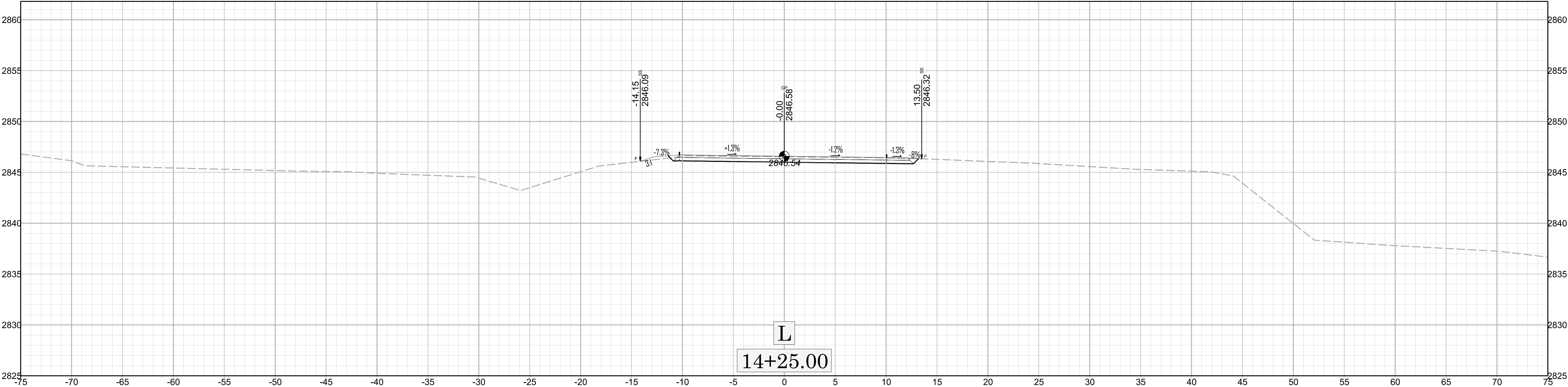
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UNLESS ALL SIGNATURES COMPLETED

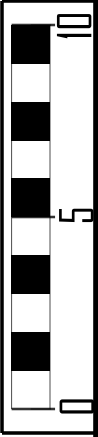


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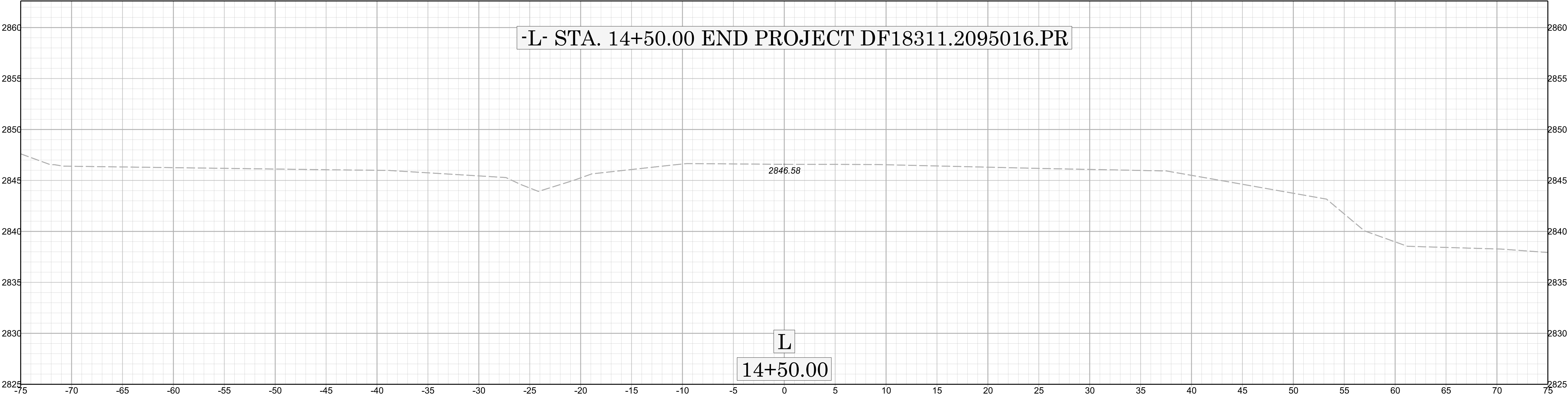


11/14/23

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UNLESS ALL SIGNATURES COMPLETED

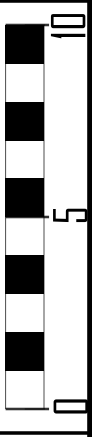
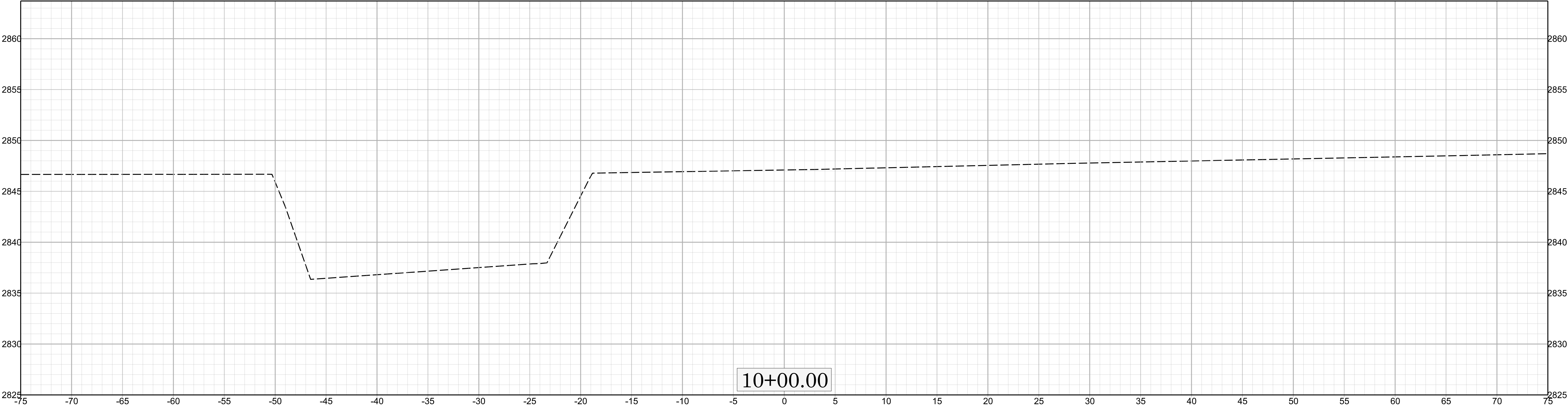
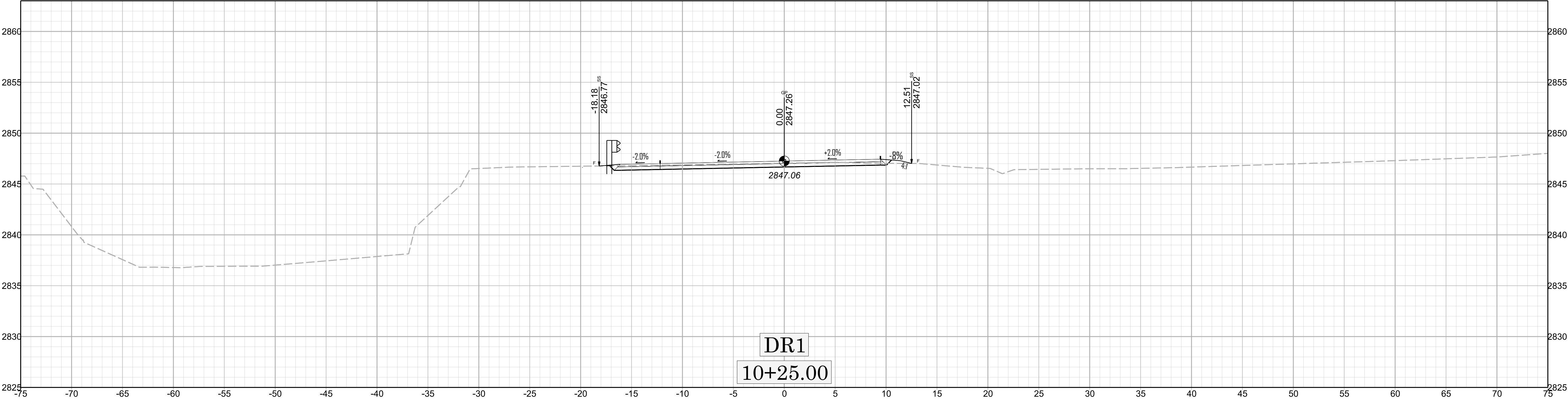


X 07



DF18311.2095016.PR

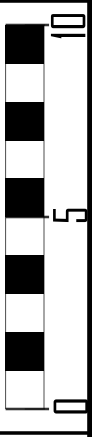
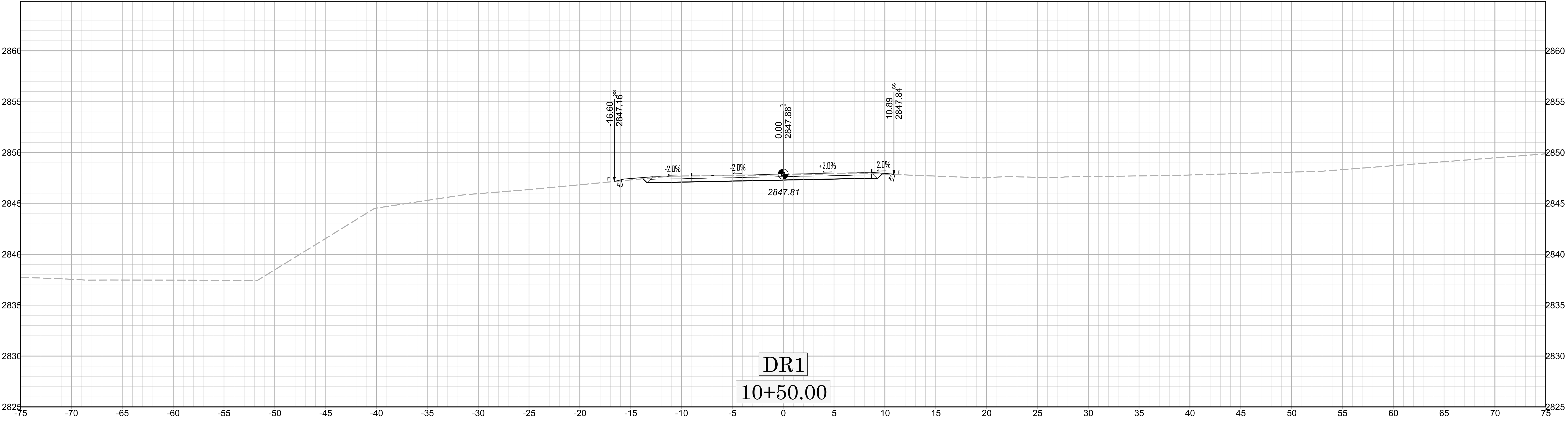
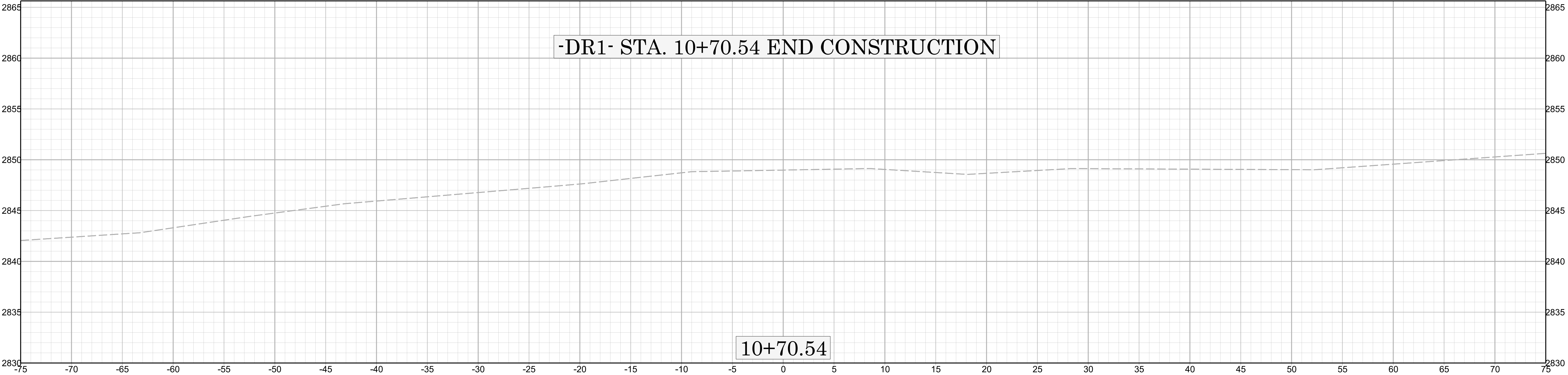
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UNLESS ALL SIGNATURES COMPLETED



X 08

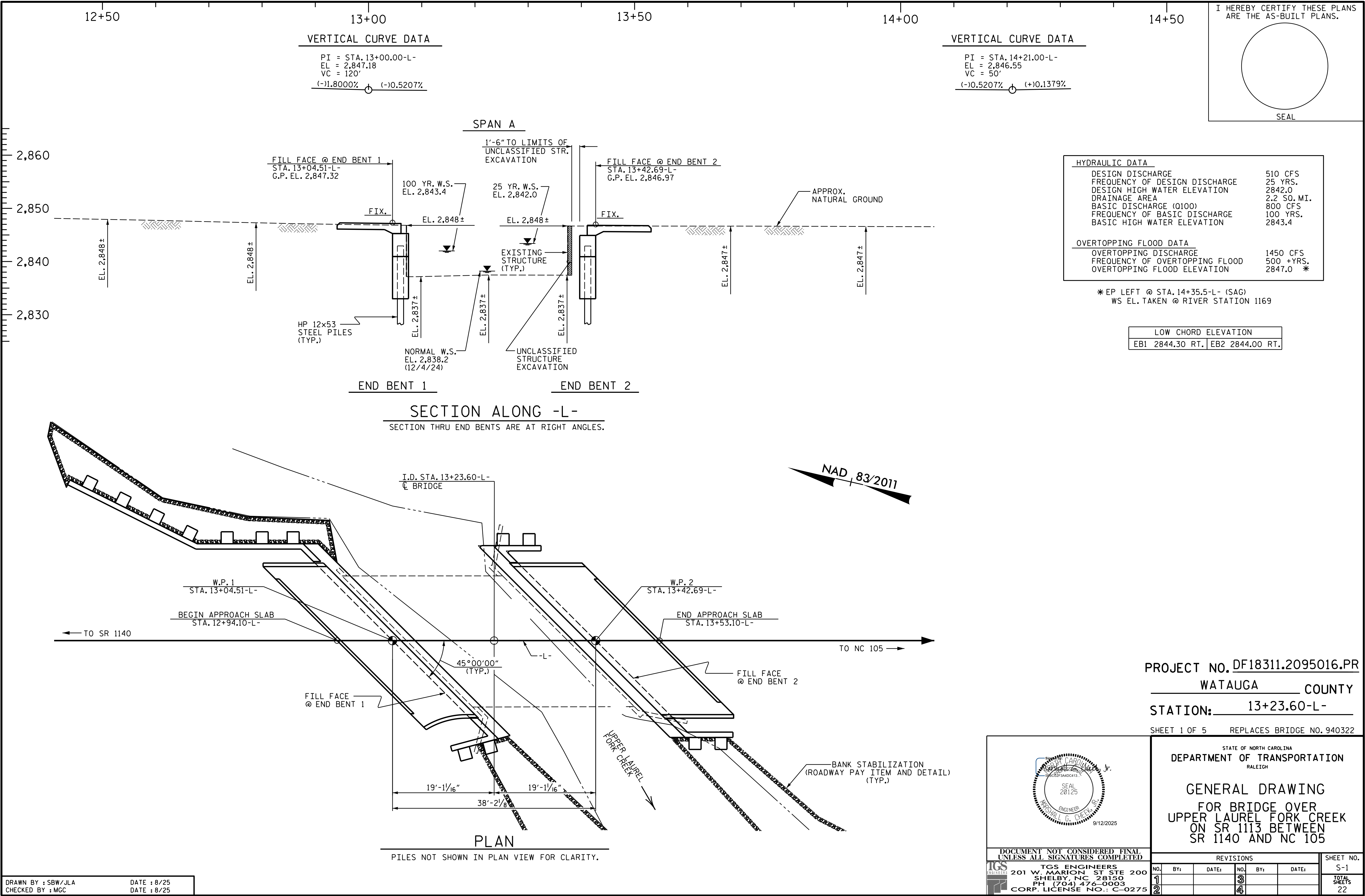
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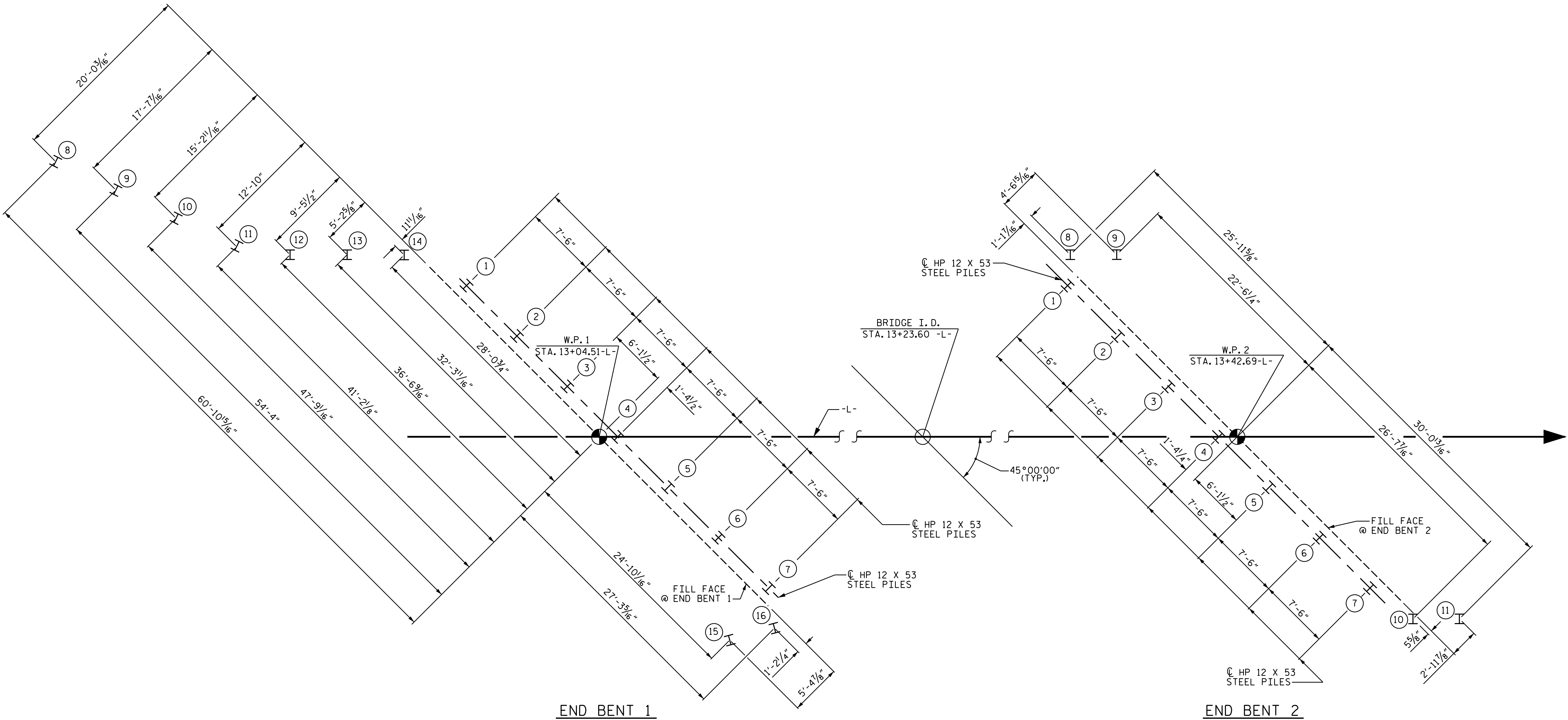
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UNLESS ALL SIGNATURES COMPLETED



X 09

DF1831.20195016.PR





FOUNDATION LAYOUT

ALL PILES ARE HP 12 X 53 STEEL PILES.
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

FOUNDATION NOTES

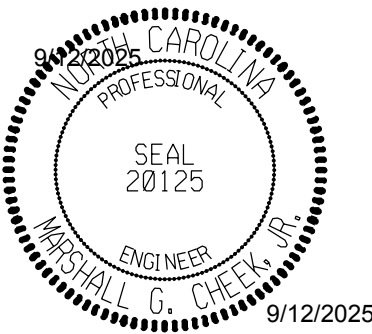
- FOR PILES,SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FILL HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2 WITH CONCRETE.
- IF WEATHERED ROCK IS ENCOUNTERED AFTER PILE EXCAVATION AT END BENT 1,DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE BEFORE BACKFILLING HOLES WITH CONCRETE.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20,000 TO 35,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. DF18311.2905016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
UPPER LAUREL FORK CREEK
ON SR 1113 BETWEEN
SR 1140 AND NC 105

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

ASSEMBLED BY : S. B. WILLIAMS
CHECKED BY : MGC

DATE : 7-25
DATE : 8/25

SUMMARY OF PILE INFORMATION/INSTALLATION
(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) *-# (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling For Piles *			Drilled-in-Piles		
						Min. Pile Tip (Tip No Higher Than) Elev. FT	Required Driving Resistance (RDR)** per Pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile LIN FT	Pile Exc In Soil per Pile LIN FT
End Bent 1, Piles 1-4, 8-14	11	130	SEE END BENT SHEETS	25								2822	4.60	7.50
End Bent 1, Piles 5-7	3	130		25			220					2823	4.60	6.50
End Bent 1, Piles 15-16	2	130		25								2823	4.60	6.50
End Bent 2, Piles 1-4, 8-9	6	130		20								2824	5.00	5.00
End Bent 2, Piles 5-7, 10-11	5	130		20								2827	5.20	1.80
TOTAL QUANTITY:													129.60	154.00

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

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

PILE DESIGN INFORMATION
(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) *-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-4, 8-14	130					
End Bent 1, Piles 5-7	130			0.6		
End Bent 1, Piles 15-16	130					
End Bent 2, Piles 1-4, 8-9	130					
End Bent 2, Piles 5-7, 10-11	130					

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

SUMMARY OF PILE ACCESSORIES
(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) *-# (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 5-7				3
TOTAL QUANTITY:				3

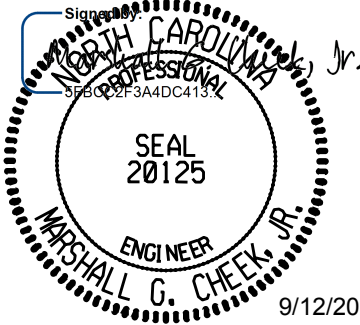
NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Michael J. Walko, #026917) on 06-27-2025 & 8-1-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, ie., the number of piles with a Required Driving Resistance.

DRAWN BY : S. B. WILLIAMS DATE : 7-25
CHECKED BY : MGC DATE : 7-25

PROJECT NO. DF18311.2095016.PR
WATAUGA COUNTY
STATION: 13+23.60-L-

SHEET 3 OF 5



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

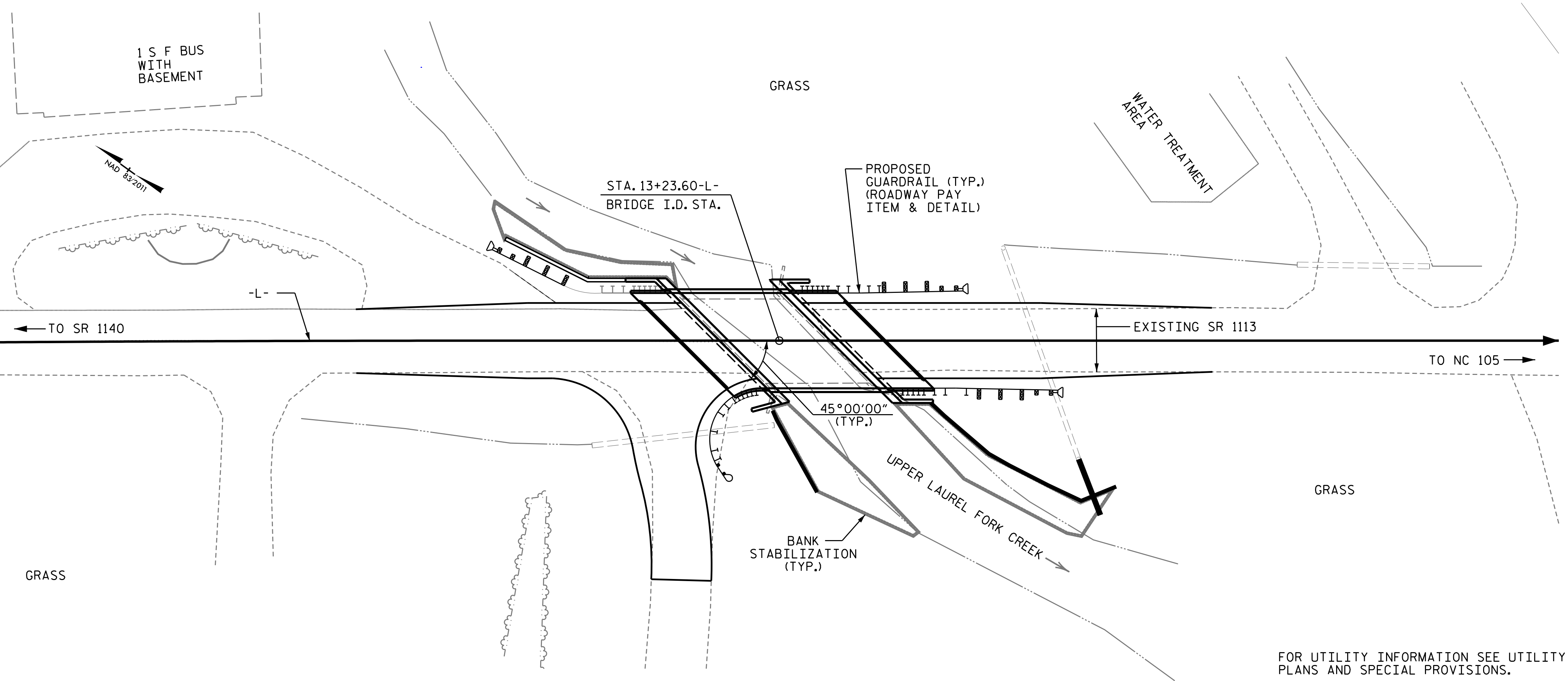
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOUNDATION
TABLES

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

BENCH MARK #1: RR SPIKE IN BASE OF 18" WHITE PINE; 247.0' RT. OF STA. 12+92-L-; ELEV. = 2,867.1



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE 1-SPAN BRIDGE (1 @ 30'-10\"/>

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

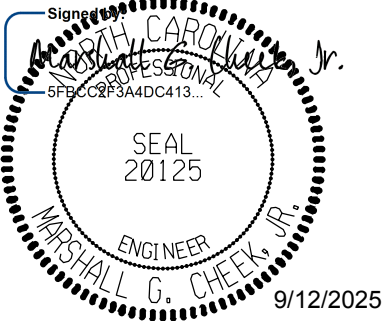
ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60-L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
UPPER LAUREL FORK CREEK
ON SR 1113 BETWEEN
SR 1140 AND NC 105

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

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

SHEET NO.
S-4
TOTAL
SHEETS
22

DRAWN BY : SBW/JLA
CHECKED BY : MGC

DATE : 7/25
DATE : 7-25

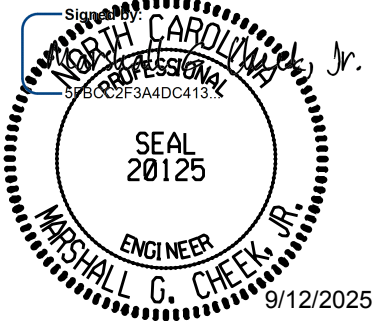
TOTAL BILL OF MATERIAL															
ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12x53 STEEL PILES		STEEL PILE POINTS	ONE BAR METAL RAIL	1'-0" X 2'-1" CONCRETE PARAPET	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	C.Y.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	LUMP SUM	NO. LIN. FT.
SUPERSTRUCTURE												53.00	70.00		10 350.00
END BENT 1			115.00	73.60	112.8		12,391	3	16	400	3				
END BENT 2			39.00	56.00	76.6		7,924		11	220					
TOTALS	LUMP SUM	LUMP SUM	154.00	129.60	189.4	LUMP SUM	20,315	3	27	620	3	53.00	70.00	LUMP SUM	10 350.00

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
UPPER LAUREL CREEK
ON SR 1113 BETWEEN
SR 1140 AND NC 105

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : S. B. WILLIAMS DATE : 7/25
CHECKED BY : MGC DATE : 7/25

8/26/21

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	# CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						LIVE-LOAD FACTORS (γ LL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γ LL)	MOMENT								
							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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.19	--	1.75	0.23	2.78	35'	EL	16.79	0.69	1.19	35'	EL	1.49	0.80	0.23	2.52	35'	EL	16.79		
	HL-93 (OPERATING)	N/A		2.11	--	1.35	0.23	3.60	35'	EL	16.79	0.69	2.11	35'	EL	1.49	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.61	57.96	1.75	0.23	3.66	35'	EL	13.29	0.69	1.61	35'	EL	1.49	0.80	0.23	3.35	35'	EL	13.29		
	HS-20 (OPERATING)	36.000		2.53	91.08	1.35	0.23	4.74	35'	EL	13.29	0.69	2.53	35'	EL	6.29	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.87	65.75	1.4	0.23	7.93	35'	EL	16.69	0.69	4.87	35'	EL	6.29	0.80	0.23	5.76	35'	EL	16.79	
		SNGARBS2	20.000		3.74	74.80	1.4	0.23	6.69	35'	EL	13.29	0.69	3.74	35'	EL	6.29	0.80	0.23	4.91	35'	EL	13.29	
		SNAGRIS2	22.000		3.61	79.42	1.4	0.23	6.65	35'	EL	13.29	0.69	3.61	35'	EL	6.29	0.80	0.23	4.88	35'	EL	13.29	
		SNCOTTS3	27.250		2.38	64.86	1.4	0.23	3.97	35'	EL	16.79	0.69	2.38	35'	EL	6.29	0.80	0.23	2.88	35'	EL	16.79	
		SNAGGRS4	34.925		2.19	76.49	1.4	0.23	3.68	35'	EL	16.79	0.69	2.19	35'	EL	6.29	0.80	0.23	2.67	35'	EL	16.79	
		SNS5A	35.550		2.33	82.83	1.4	0.23	3.58	35'	EL	16.79	0.69	2.33	35'	EL	6.29	0.80	0.23	2.60	35'	EL	16.79	
		SNS6A	39.950		2.19	87.49	1.4	0.23	3.45	35'	EL	16.79	0.69	2.19	35'	EL	6.29	0.80	0.23	2.50	35'	EL	16.79	
		SNS7B	42.000		2.23	93.66	1.4	0.23	3.29	35'	EL	16.79	0.69	2.23	35'	EL	6.29	0.80	0.23	2.39	35'	EL	16.79	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.64	87.12	1.4	0.23	4.27	35'	EL	16.79	0.69	2.64	35'	EL	6.29	0.80	0.23	3.10	35'	EL	16.79	
		TNT4A	33.075		2.44	80.70	1.4	0.23	4.25	35'	EL	16.79	0.69	2.44	35'	EL	6.29	0.80	0.23	3.09	35'	EL	16.79	
		TNT6A	41.600		2.34	97.34	1.4	0.23	3.73	35'	EL	16.79	0.69	2.34	35'	EL	6.29	0.80	0.23	2.71	35'	EL	16.79	
		TNT7A	42.000		2.23	93.66	1.4	0.23	3.86	35'	EL	16.79	0.69	2.23	35'	EL	6.29	0.80	0.23	2.80	35'	EL	16.79	
		TNT7B	42.000		2.08	87.36	1.4	0.23	3.78	35'	EL	16.79	0.69	2.08	35'	EL	1.49	0.80	0.23	2.75	35'	EL	16.79	
		TNAGRIT4	43.000		1.90	81.70	1.4	0.23	3.80	35'	EL	13.29	0.69	1.90	35'	EL	1.49	0.80	0.23	2.79	35'	EL	16.79	
		TNAGT5A	45.000		2.17	97.65	1.4	0.23	3.56	35'	EL	16.79	0.69	2.17	35'	EL	1.49	0.80	0.23	2.58	35'	EL	16.79	
		TNAGT5B	45.000	3	1.67	75.15	1.4	0.23	3.43	35'	EL	16.79	0.69	1.67	35'	EL	1.49	0.80	0.23	2.49	35'	EL	16.79	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.84	81.65	1.3	0.23	5.19	35'	EL	13.29	0.69	2.84	35'	EL	6.29	0.80	0.23	3.53	35'	EL	13.29		
	EV3	43.000	4	1.65	70.95	1.3	0.23	3.41	35'	EL	16.79	0.69	1.65	35'	EL	1.49	0.80	0.23	2.30	35'	EL	16.79		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

#

CONTROLLING LOAD RATING

1

DESIGN LOAD RATING (HL-93)

2

DESIGN LOAD RATING (HS-20)

3

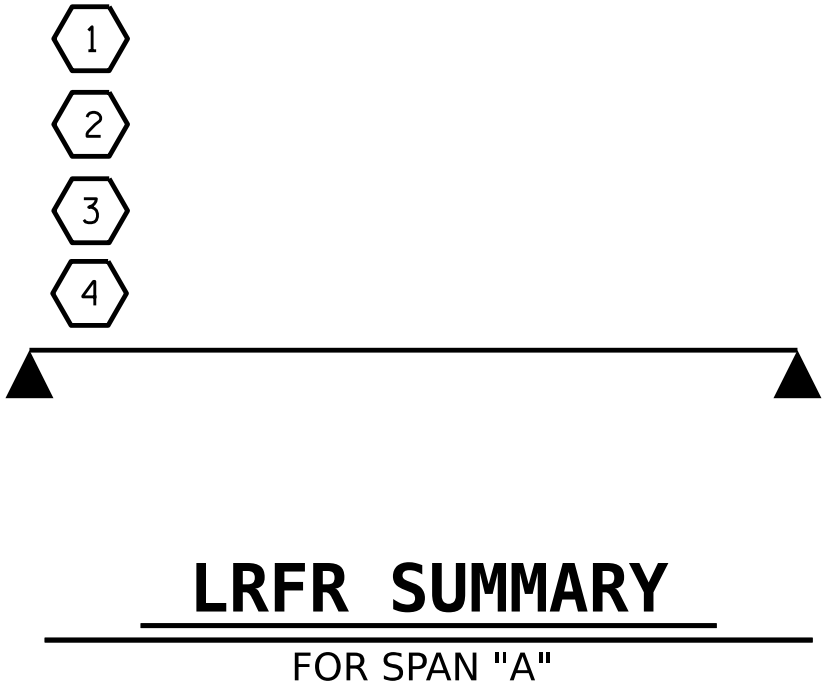
LEGAL LOAD RATING * *

4

EMERGENCY VEHICLE LOAD RATING **

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. DF18311.2095016.PR
WATAUGA COUNTY
STATION: 13+23.60 -L-

ASSEMBLED BY:	STM	DATE :	08/25
CHECKED BY :	ZCS	DATE :	08/25
DESIGN ENGINEER OF RECORD:	STM	DATE :	09/25

Seal

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROFESSIONAL ENGINEER
MARSHALL G. CHECK JR.
SEAL 20125
9/12/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

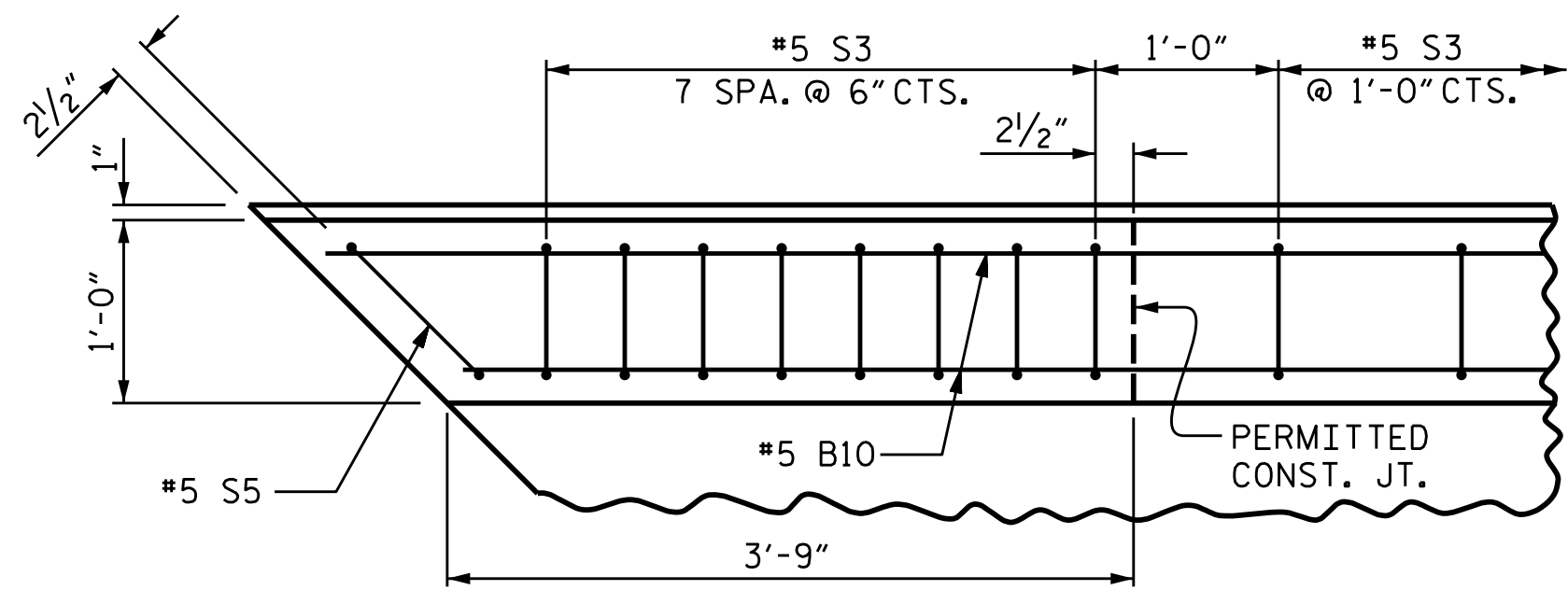
TGS ENGINEERS
201 WEST MARION ST
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

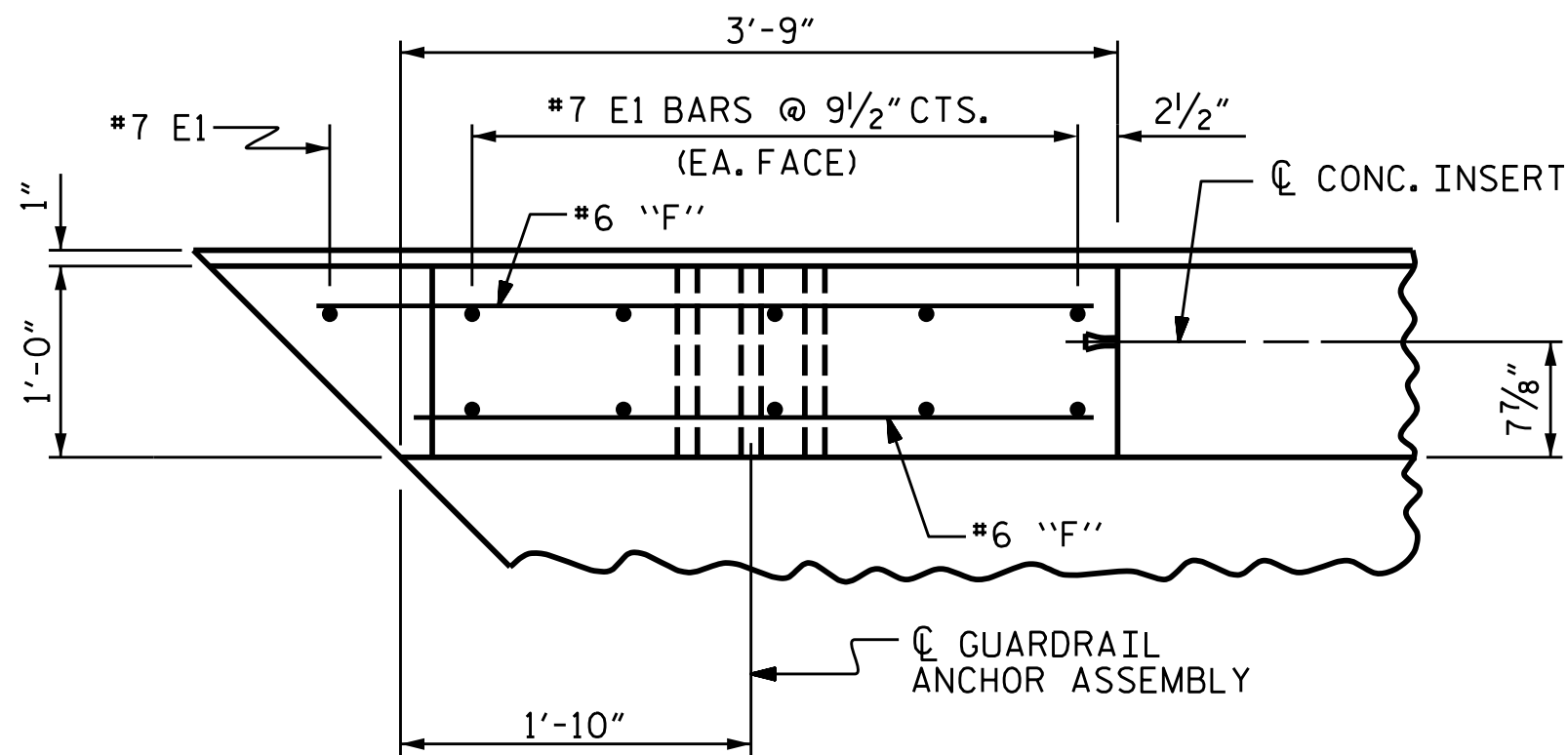
LRFR SUMMARY FOR
35' CORED SLAB UNIT
45° SKEW

(NON-INTERSTATE TRAFFIC)

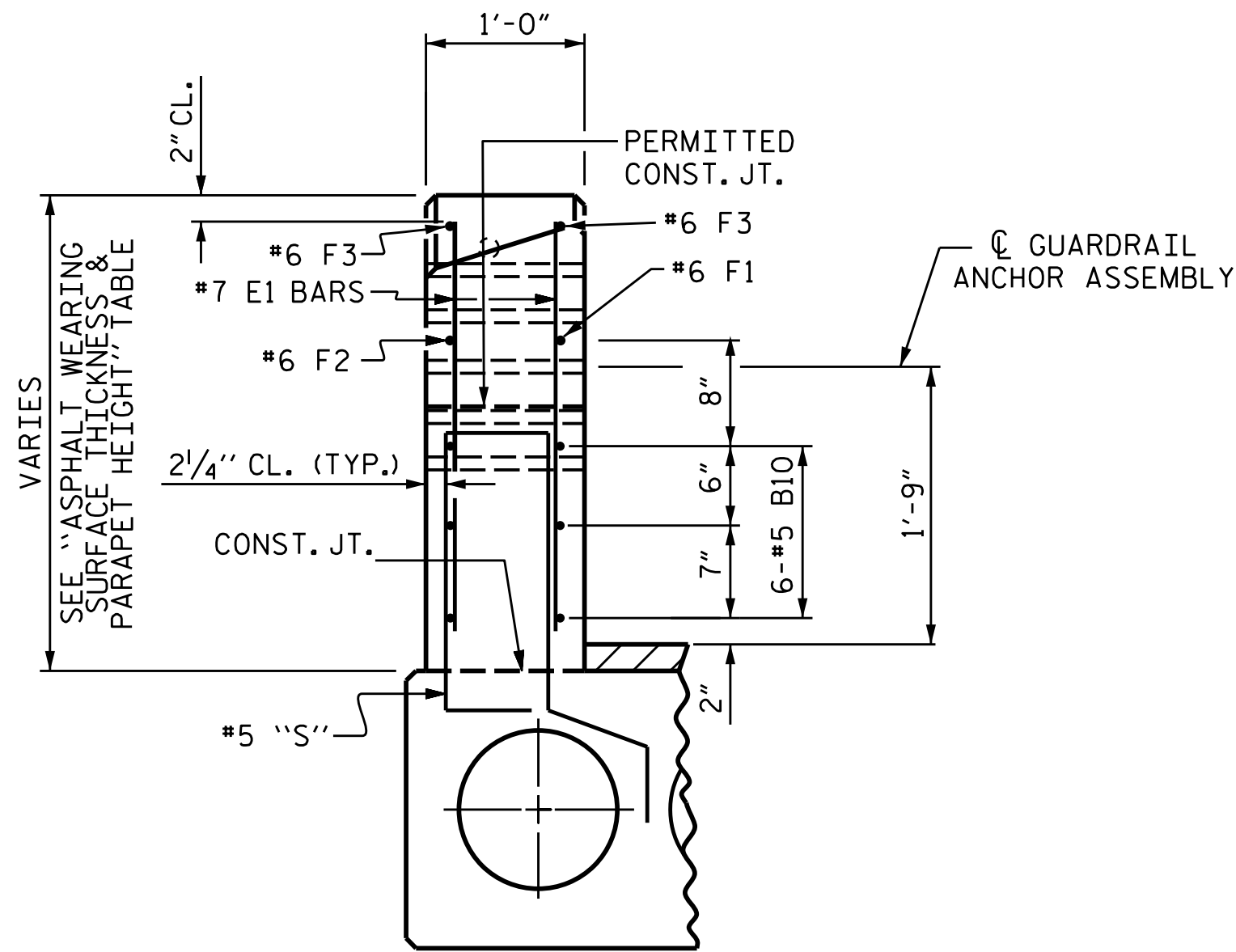
REVISIONS				SHEET NO.
NO.	BY:	DATE:		
1			3	S-6
2			4	TOTAL SHEETS 22



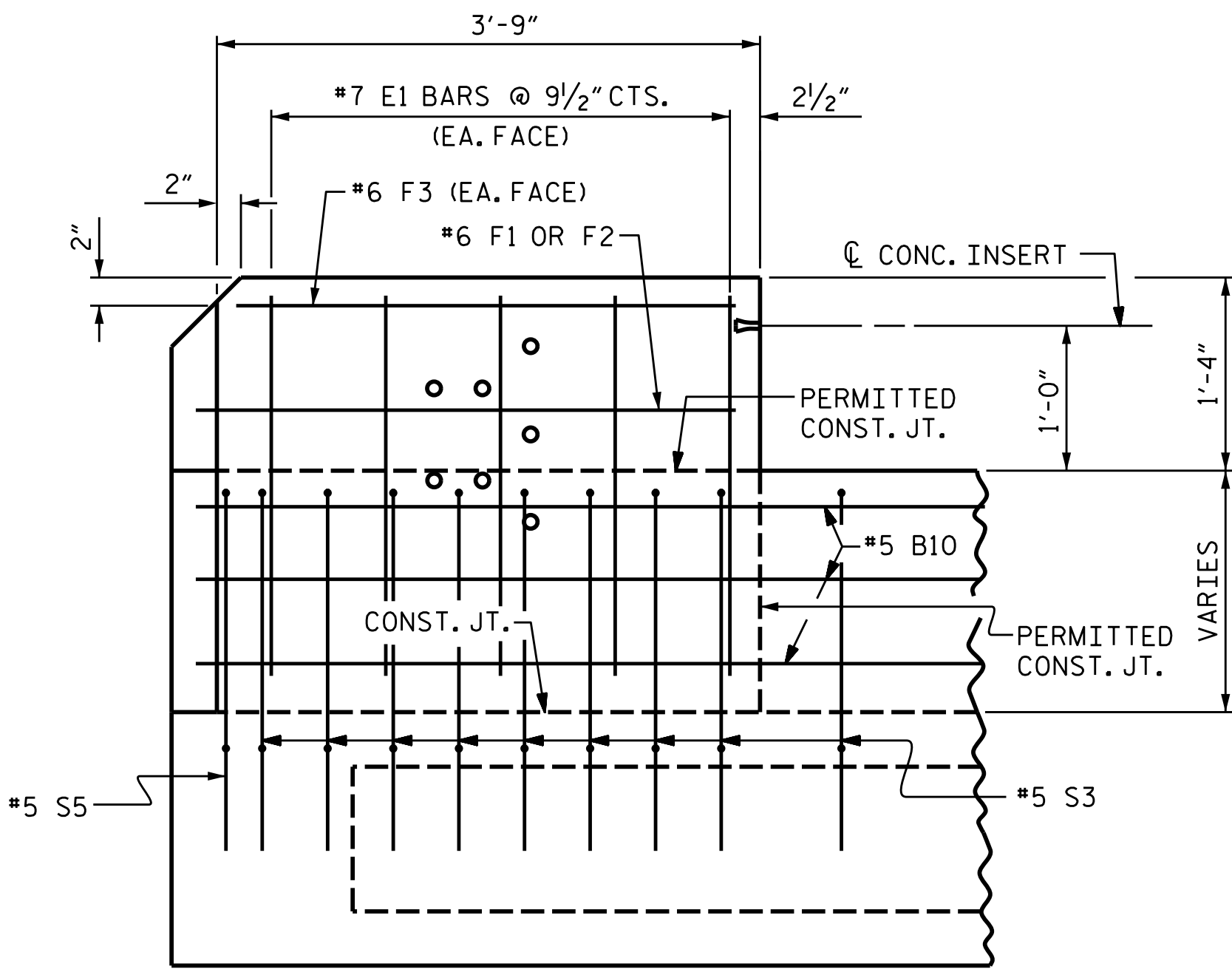
PLAN OF PARAPET



PLAN OF END POST



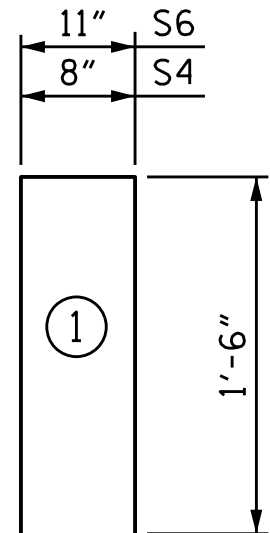
END VIEW



ELEVATION

PARAPET AND END POST FOR ONE BAR RAIL

BAR TYPES



BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR PARAPET & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B10	64	#5	STR	10'-8"	712
* E1	44	#7	STR	2'-7"	232
* F1	4	#6	STR	3'-6"	21
* F2	4	#6	STR	4'-2"	25
* F3	8	#6	STR	3'-5"	41
* S4	84	#5	1	3'-8"	321
* S6	4	#5	1	3'-11"	16

* EPOXY COATED REINFORCING STEEL LBS. 1,368

CLASS AA CONCRETE CU.YDS. 5.7

1'-0" X 2'-1" CONCRETE PARAPET 70.00 LIN. FT.

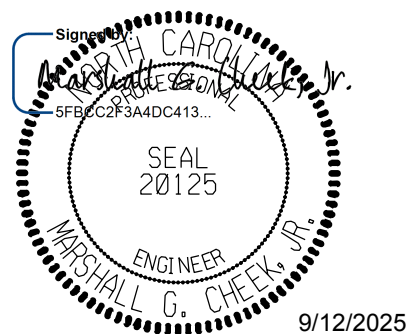
NOTES:
QUANTITIES FOR THE #5 S3 & #5 S5 ARE SHOWN IN THE CORED SLAB BILL OF MATERIAL.

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END POST DETAILS

DOCUMENT NOT CONSIDERED FINAL
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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

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

SHEET NO.

S-10

TOTAL SHEETS

22

DRAWN BY : ZCS
CHECKED BY : MGC
DATE : 5/25
DATE : 6/25



— ALUMINUM RAILS —

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

— GALVANIZED STEEL RAILS —

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

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

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

— GENERAL NOTES —

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR $\bar{r}$ SHALL BE ASTM A36 GRADE 36.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $\frac{3}{4}$ " $\varnothing$ BOLT IS 10 KIPS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

GROOVED CONTRACTION JOINTS $\frac{1}{2}$ " IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 53.00 LIN. FT.

PROJECT NO. DF18311.2095016.PR

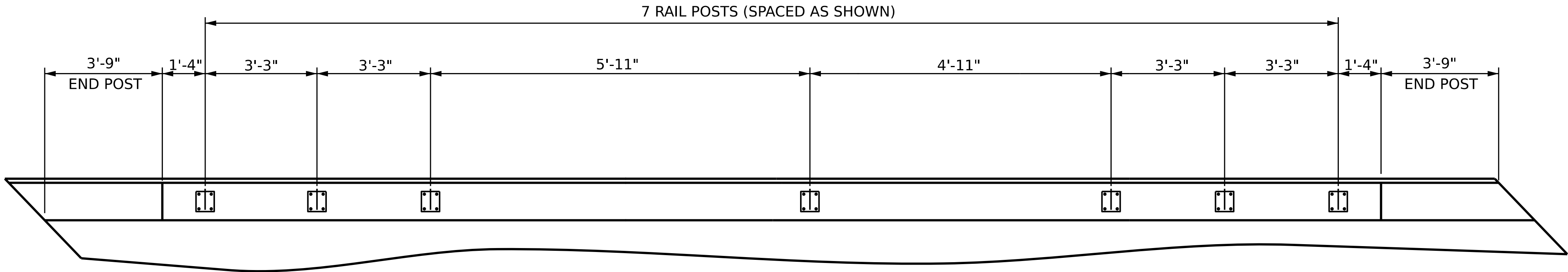
WATAUGA COUNTY

STATION: 13+23.60 -L-

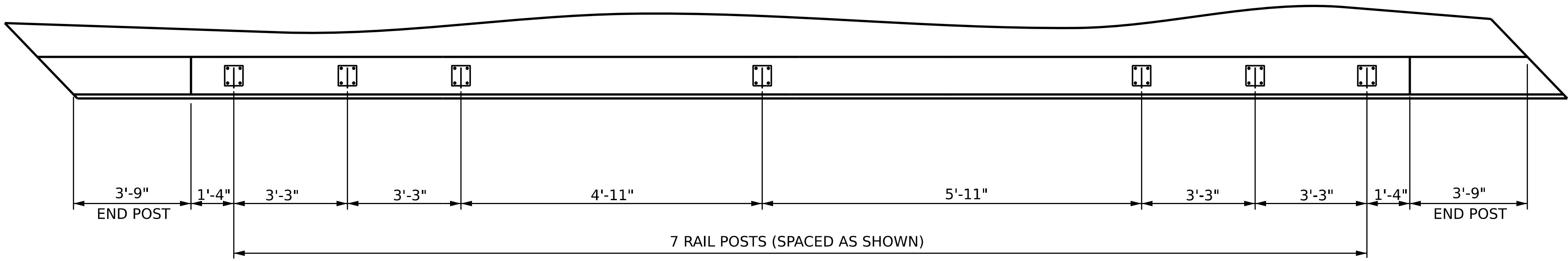
SHEET 2 OF 3



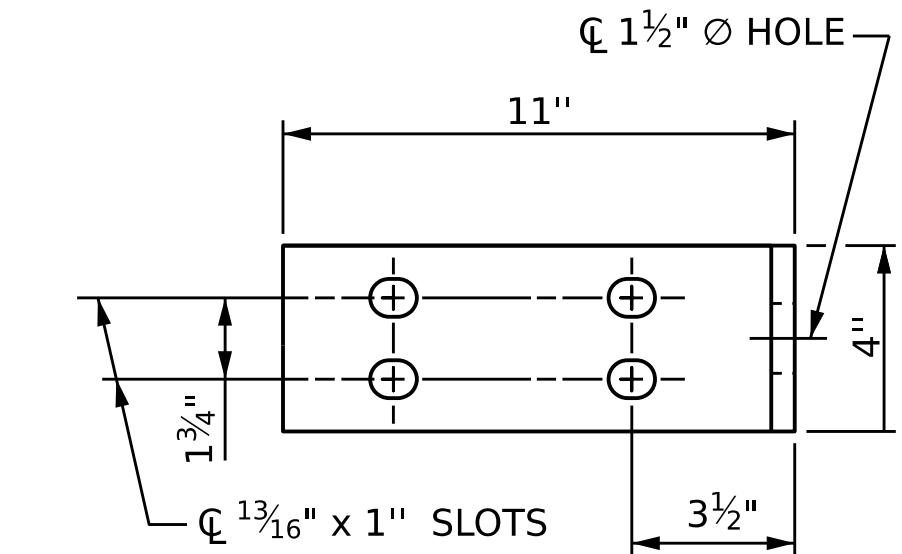
STD. NO. BMR1



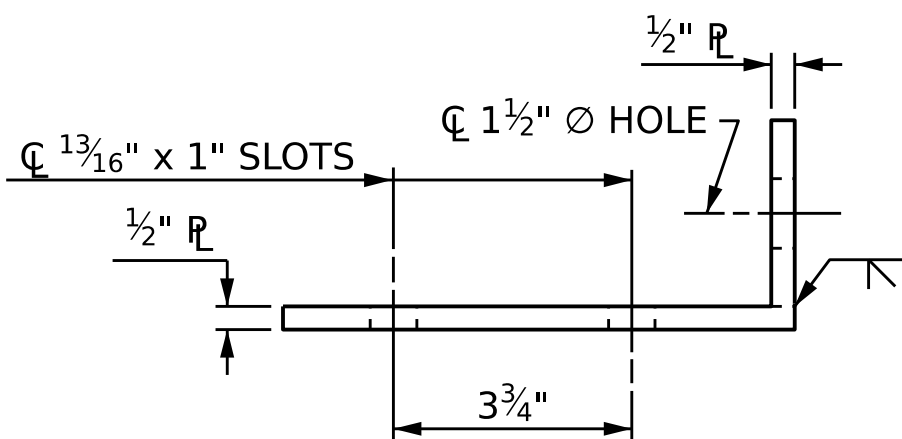
PLAN OF RAIL POST SPACINGS - LEFT SIDE



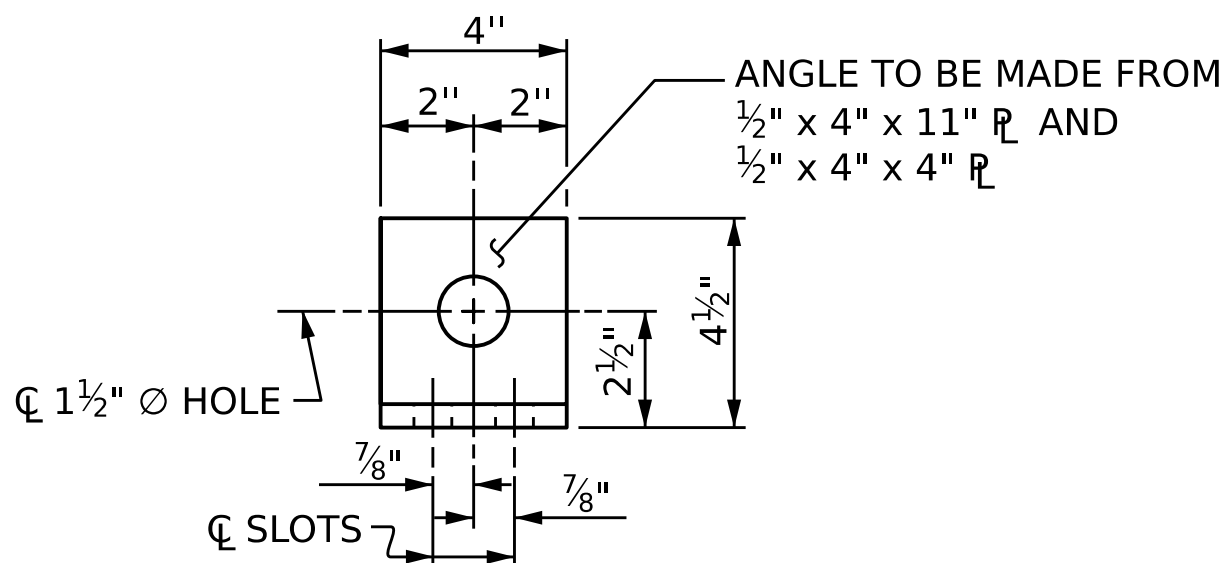
PLAN OF RAIL POST SPACINGS - RIGHT SIDE



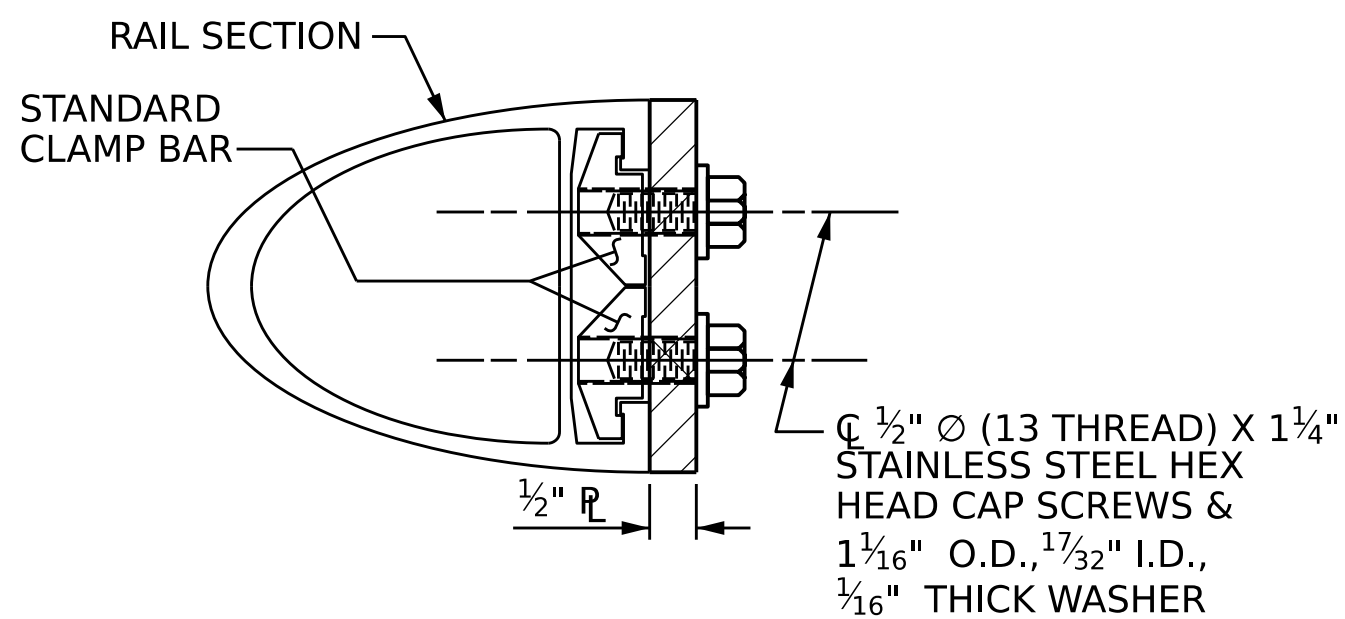
ELEVATION



TOP VIEW

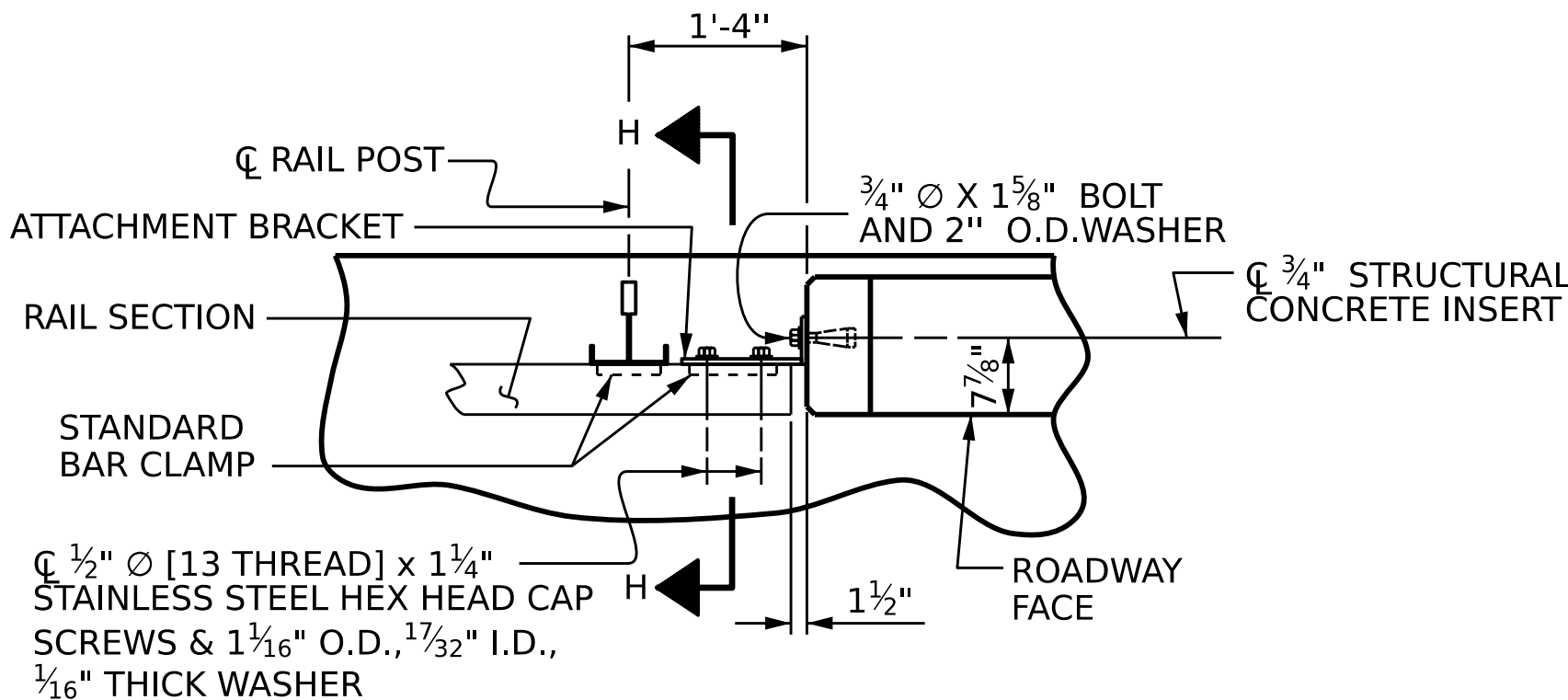


END VIEW (FIX AND EXP.)

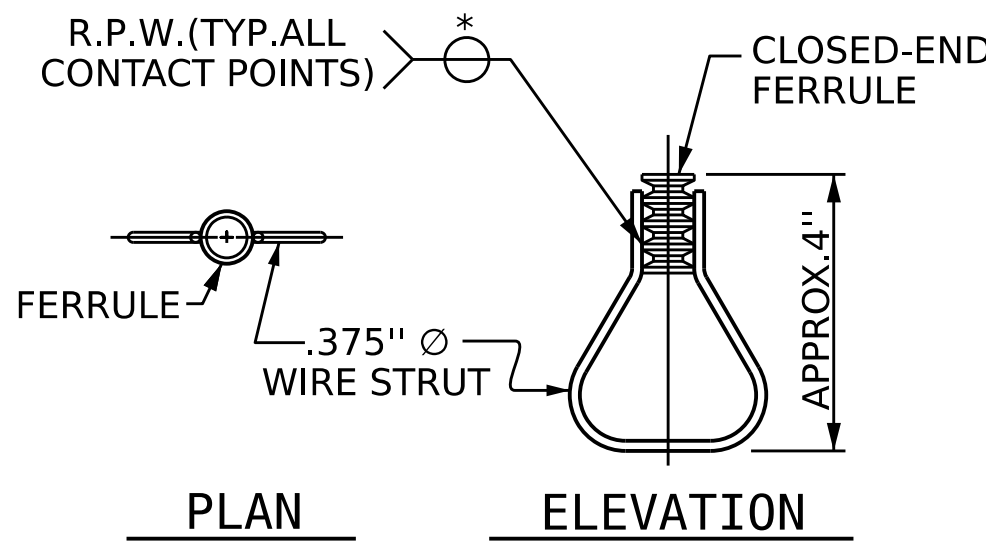


SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST



PLAN

ELEVATION

INSERT

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

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 3 OF 3

ASSEMBLED BY :	ZCS	DATE :	5/25
CHECKED BY :	MGC	DATE :	6/25
DRAWN BY :	FCJ 1/88	REV. 10/1/11	MAA/GM
CHECKED BY :	CRK 3/89	REV. 12/17	MAA/THC
		REV. 10/23	BNB/SNM

9/4/2025
c:\work\dlr\ncdot-pw.bentley.com.ncdot-pw-01\zachary.smith\d0404020\13.205721-SMU-CSU & Rails & App Slab.dgn
ZSmith

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø x 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø x 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

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

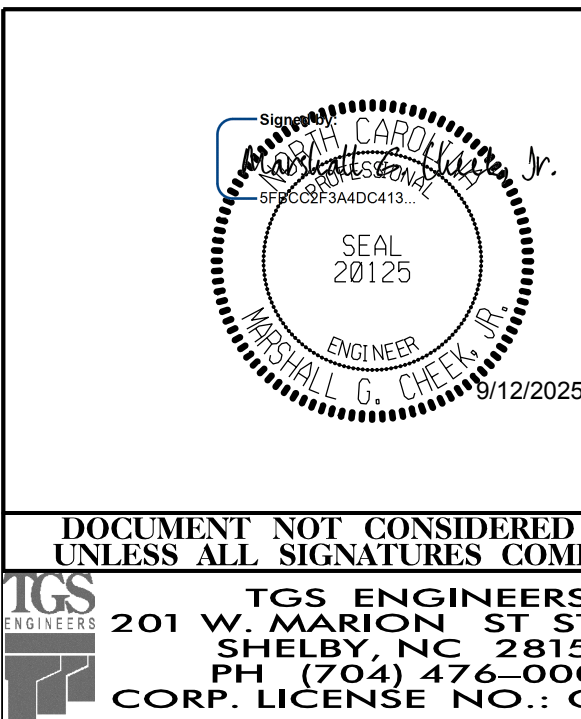
- 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø x 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø x 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

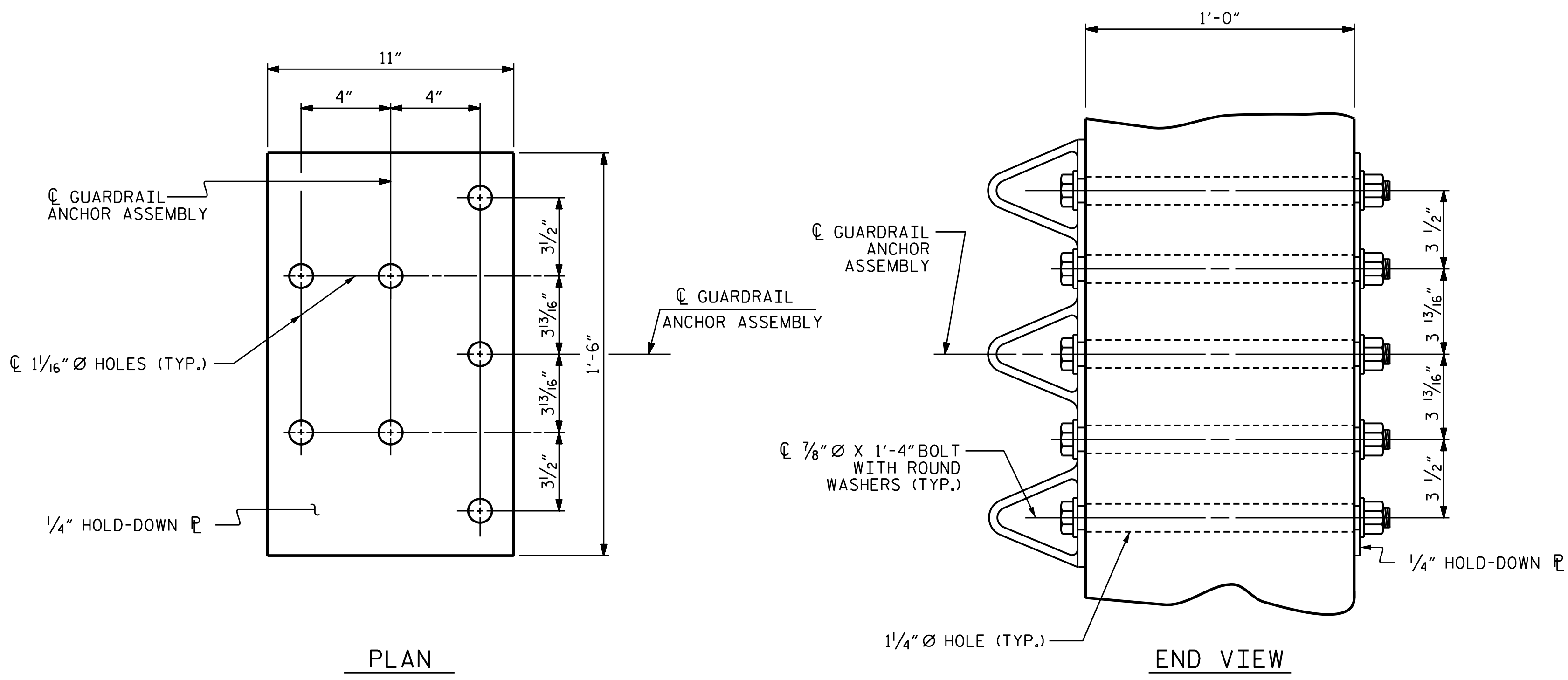
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø x 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø x 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø x 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø x 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



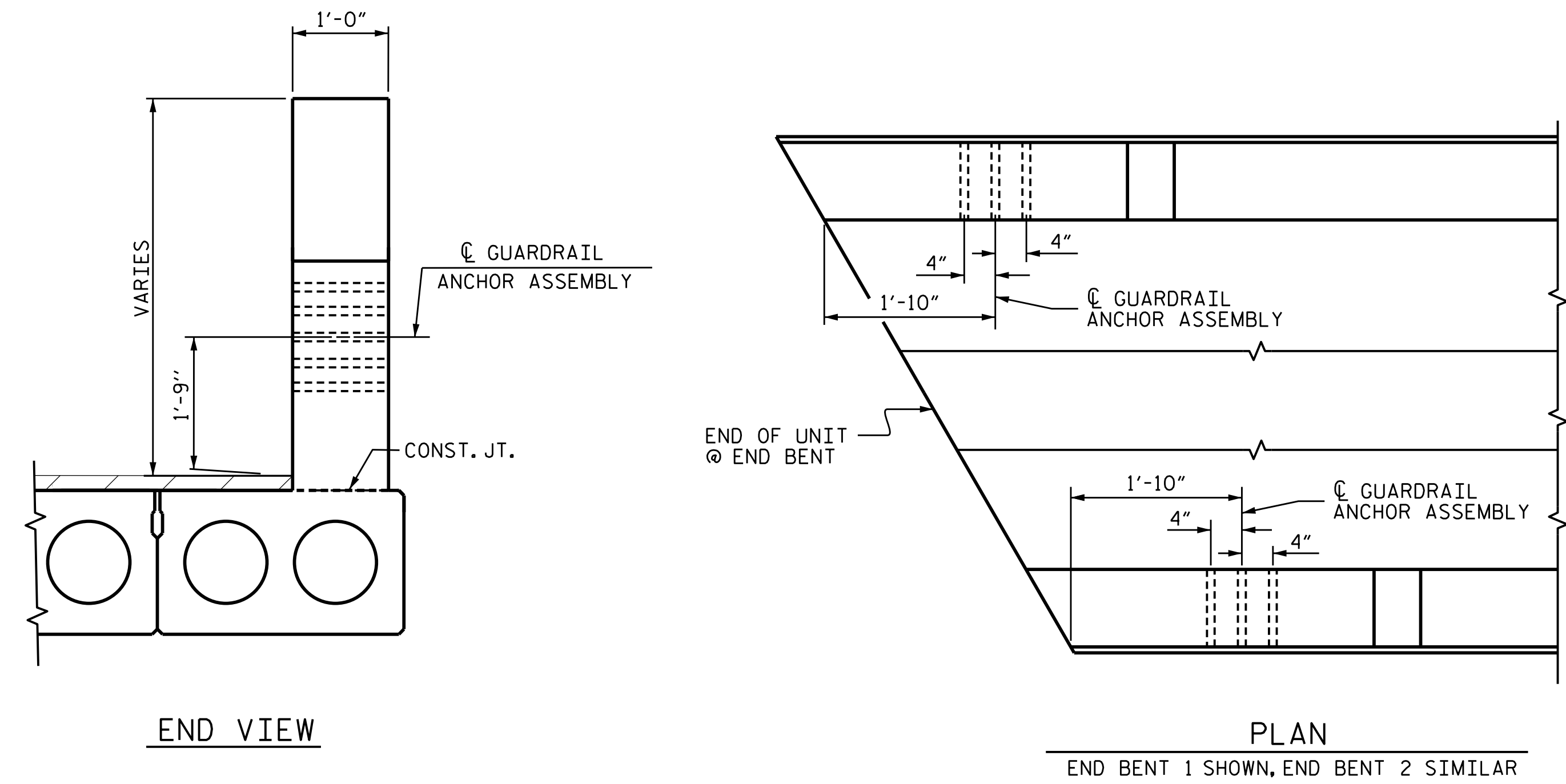
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR ONE BAR METAL RAILS

REVISIONS				SHEET NO.
NO.	BY:	DATE:	DATE:	
1			3	S-12
2			4	
TOTAL SHEETS				22

STD. NO. BMR2



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE 1 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.



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

ASSEMBLED BY :	ZCS	DATE :	5/25
CHECKED BY :	MGC	DATE :	6/25
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

SEAL 20125
ENGINEER
MARSHALL G. CHEEK, P.E.
9/12/2025

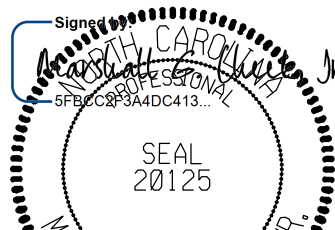
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

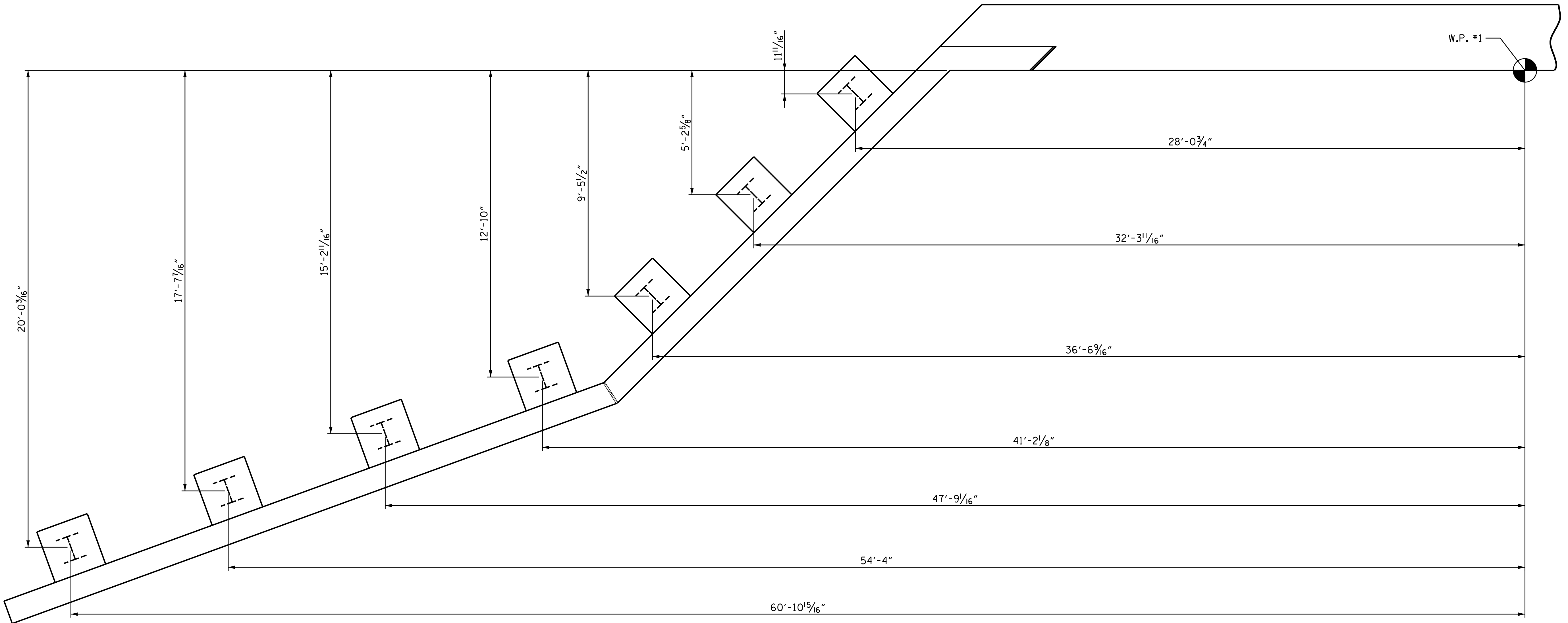
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 22
1			3			
2			4			

 9/12/2025	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE END BENT 1																											
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  TGS ENGINEERS 201 W. MARION ST. STE 200 SHELDON, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="text-align: center;">REVISIONS</th> <th style="text-align: center;">SHEET NO.</th> </tr> <tr> <th style="width: 5%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 20%;">DATE:</th> <th style="width: 5%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 20%;">DATE:</th> <th style="text-align: center; font-size: 24px;">S-14</th> </tr> <tr> <td style="text-align: center; font-size: 24px;">1</td> <td></td> <td></td> <td style="text-align: center; font-size: 24px;">3</td> <td></td> <td></td> <td rowspan="2" style="text-align: center; font-size: 24px;">TOTAL SHEETS 22</td> </tr> <tr> <td style="text-align: center; font-size: 24px;">2</td> <td></td> <td></td> <td style="text-align: center; font-size: 24px;">4</td> <td></td> <td></td> </tr> </table>	REVISIONS						SHEET NO.	NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	1			3			TOTAL SHEETS 22	2			4		
REVISIONS						SHEET NO.																						
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14																						
1			3			TOTAL SHEETS 22																						
2			4																									



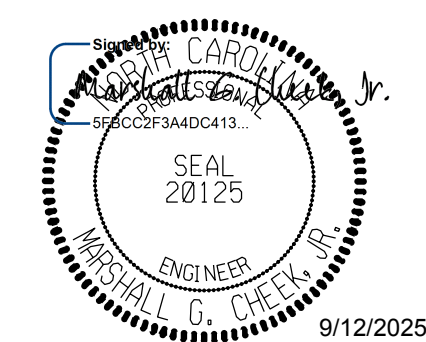
WING W1 BRACE PILE LAYOUT

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

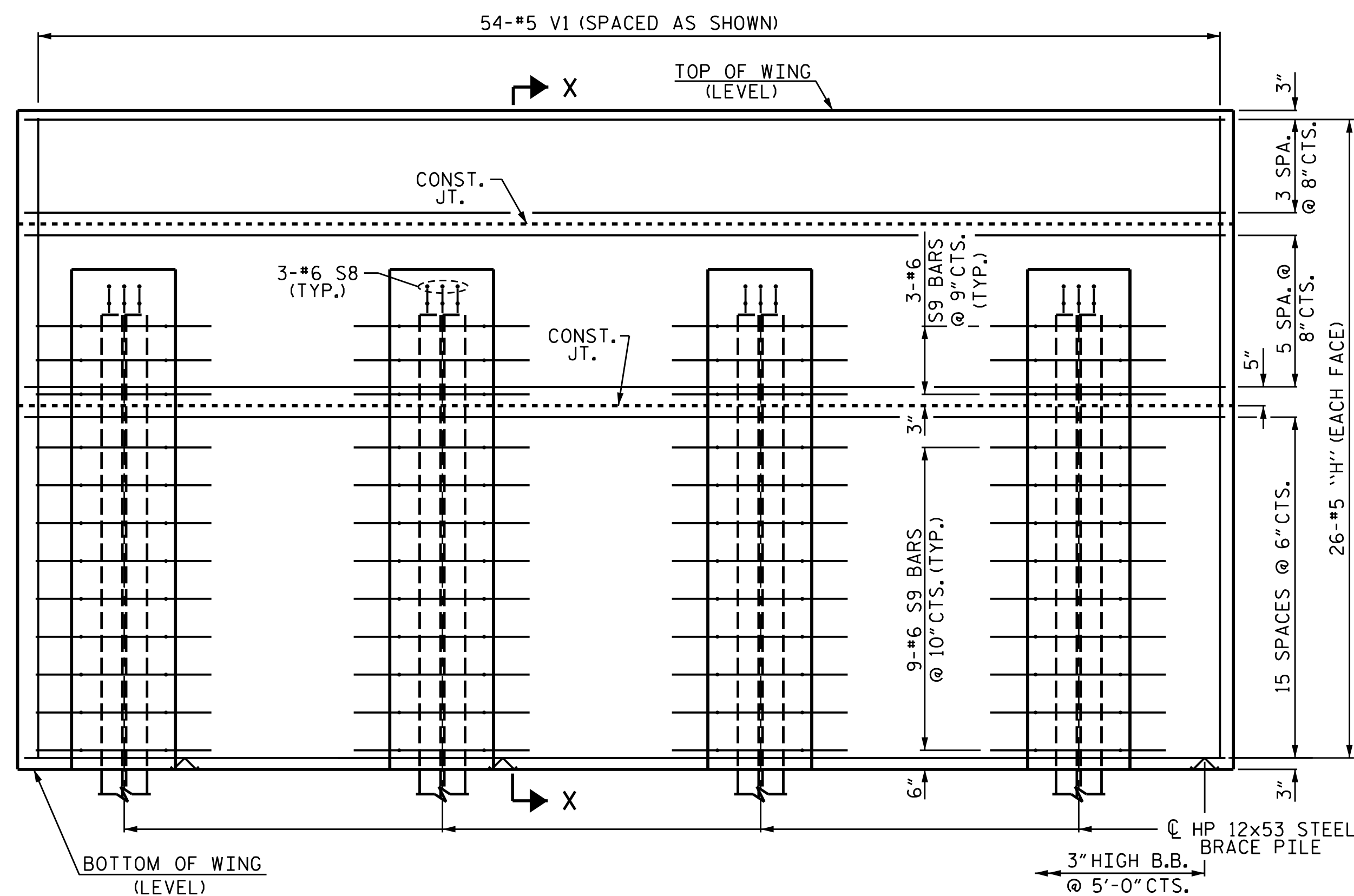
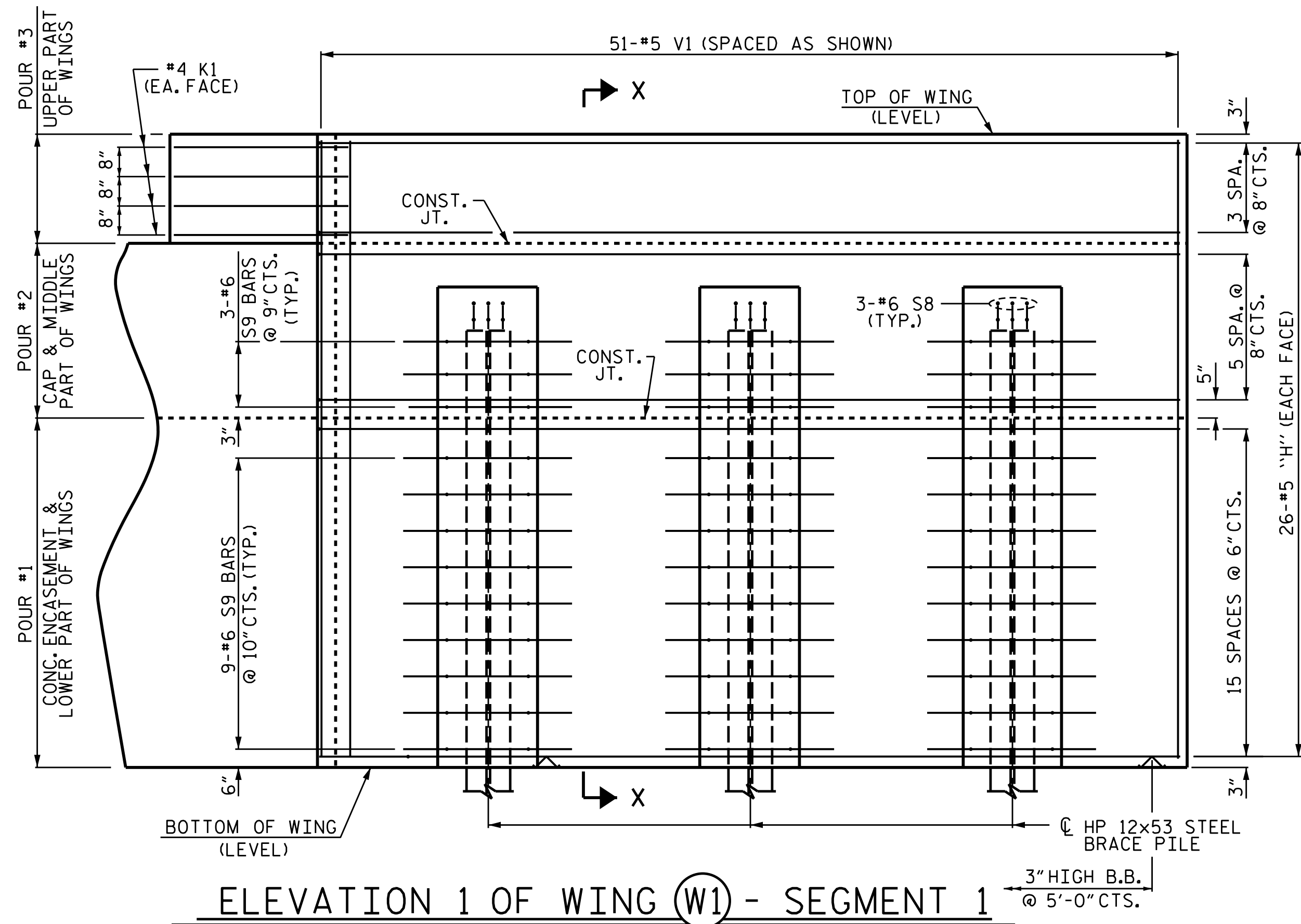
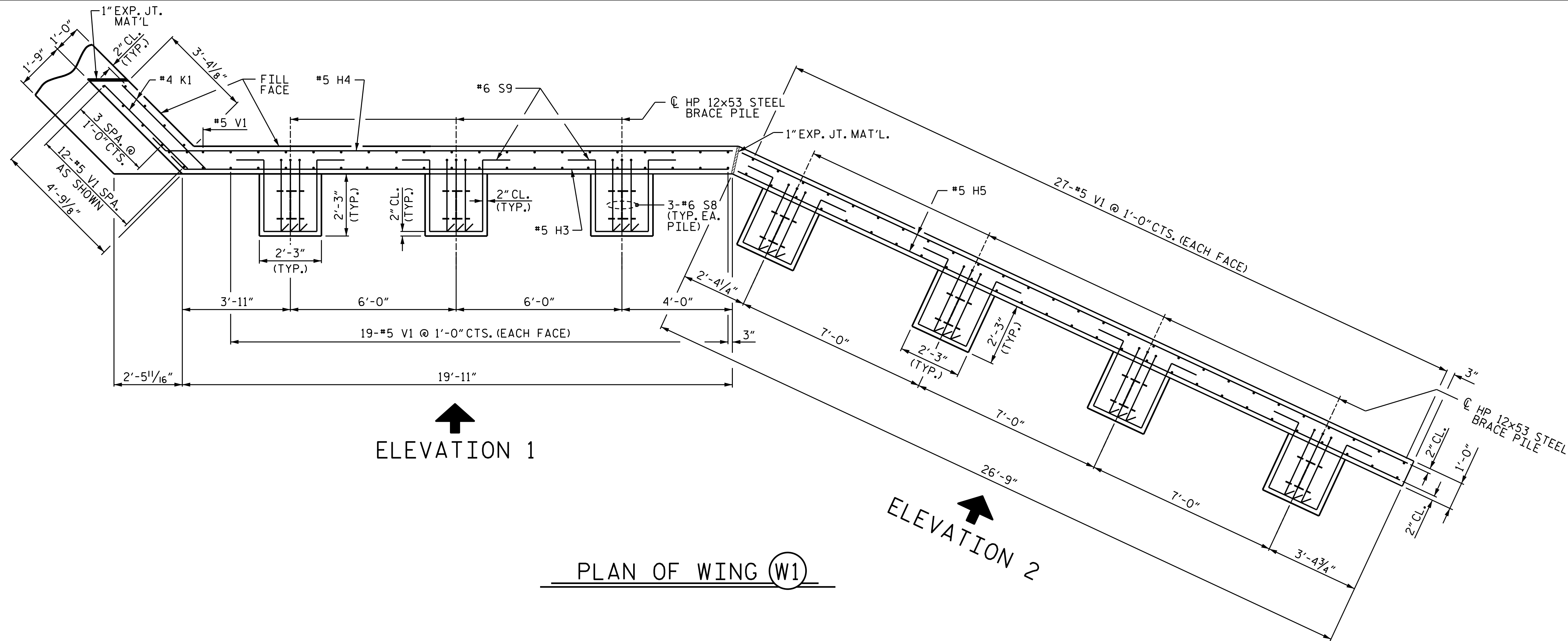
SUBSTRUCTURE
END BENT 1

DRAWN BY : STM DATE : 06/25
CHECKED BY : MGC DATE : 07/25
DESIGN ENGINEER OF RECORD : STM DATE : 09/25

DOCUMENT NOT CONSIDERED FINAL
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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-15
2			4			TOTAL SHEETS 22

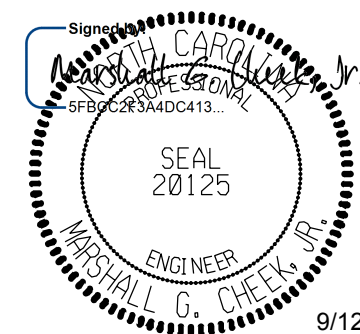


DRAWN BY : STM DATE : 06/25
CHECKED BY : MGC DATE : 07/25
DESIGN ENGINEER OF RECORD : STM DATE : 09/25

FOR SECTION X-X, SEE SHEET 4 OF 5.

ELEVATION 2 OF WING (W1) - SEGMENT 2

FOR SECTION X-X, SEE SHEET 4 OF 5.



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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT NO. DF18311.2095016.PR
WATAUGA COUNTY
STATION: 13+23.60 -L-

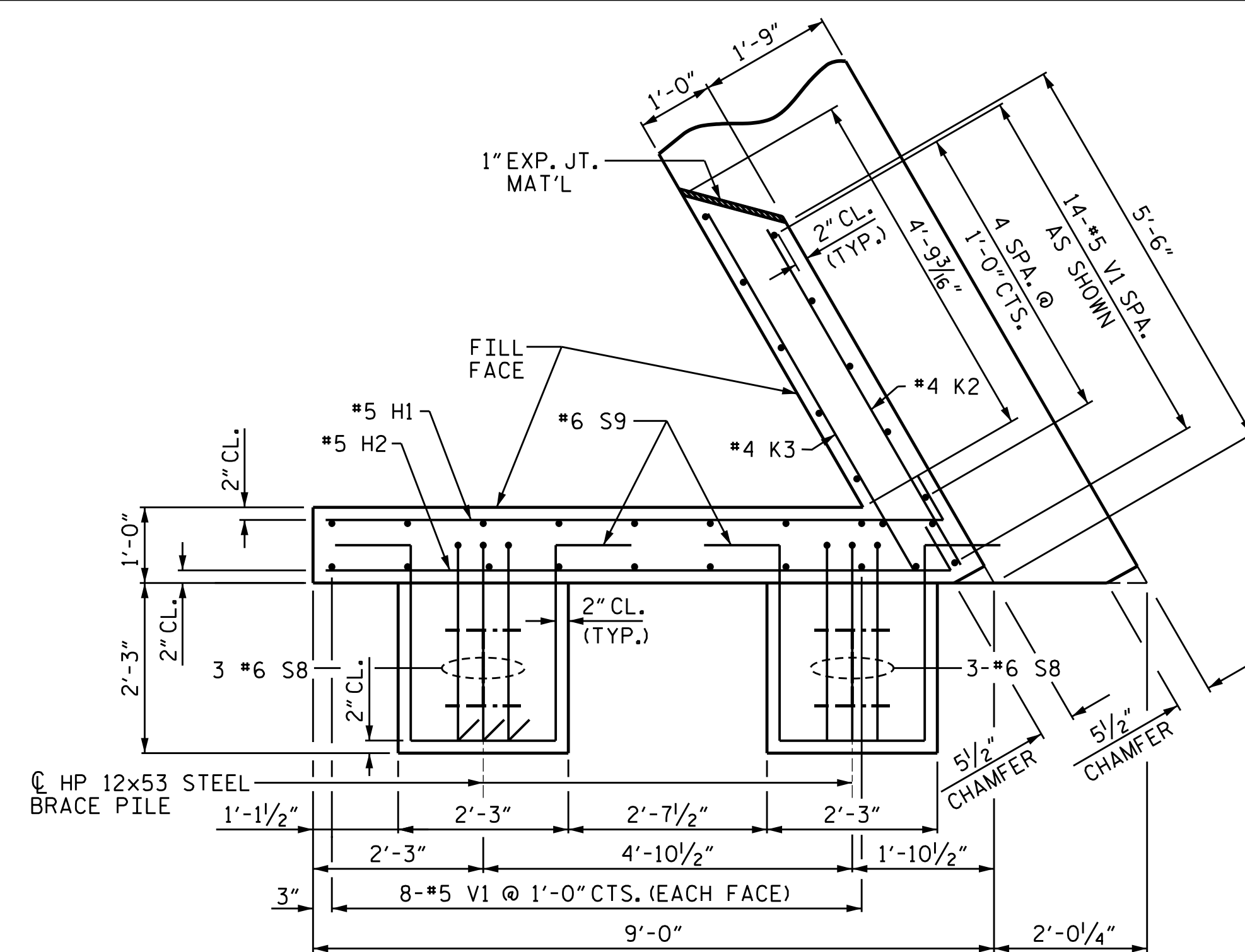
SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

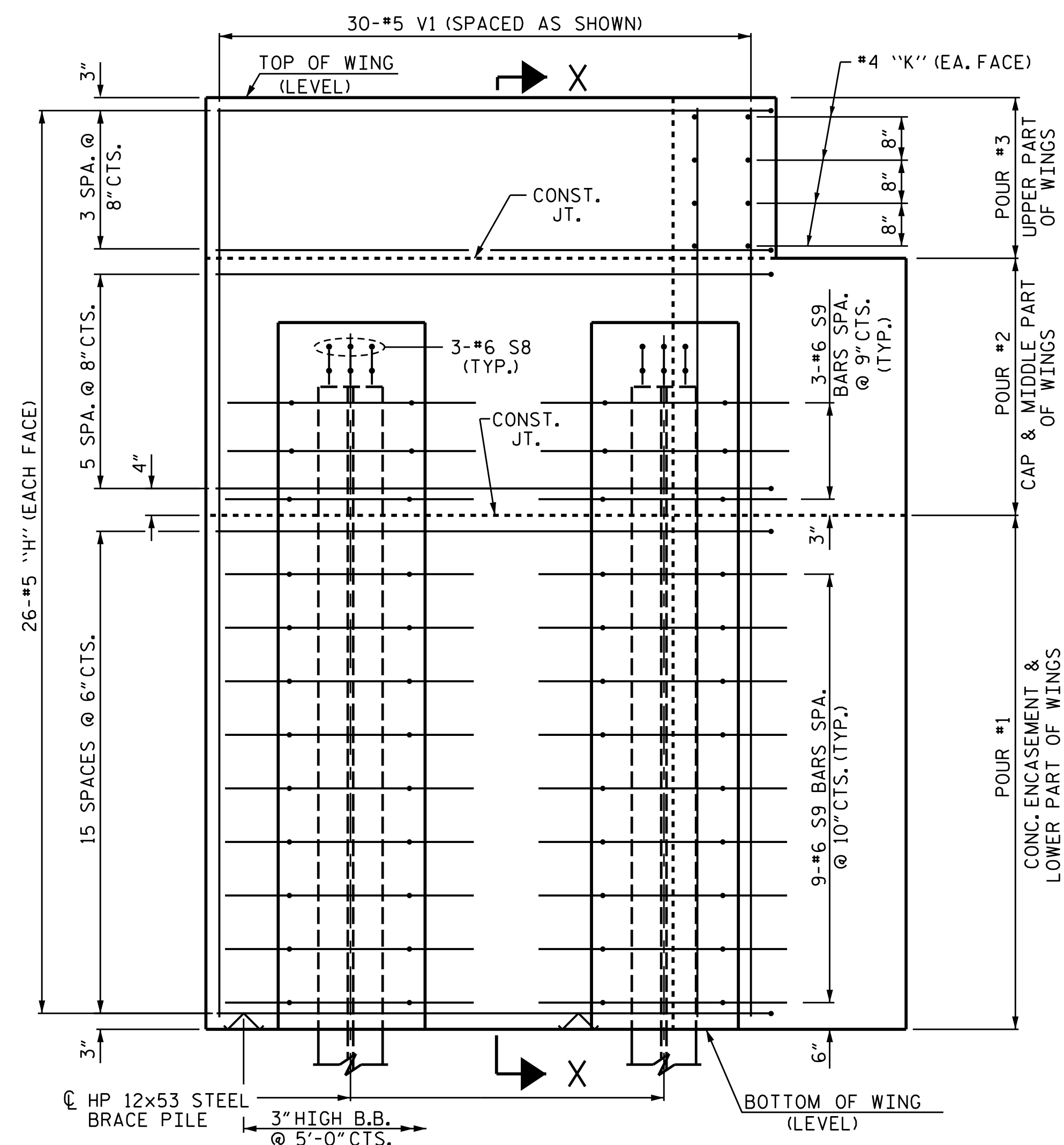
SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			S-16
2			4			TOTAL SHEETS 22

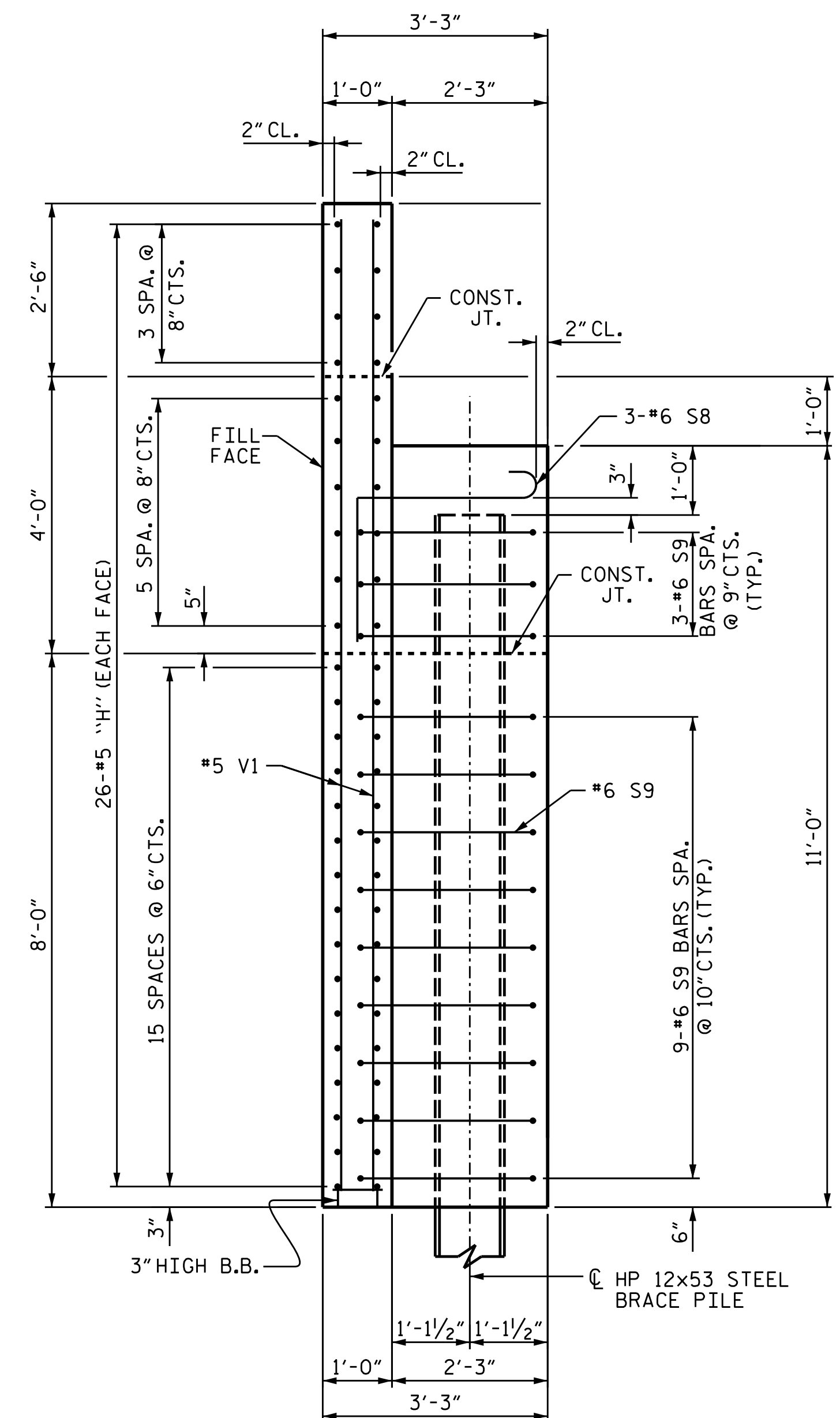
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PLAN OF WING (W2)



ELEVATION OF WING (W2)



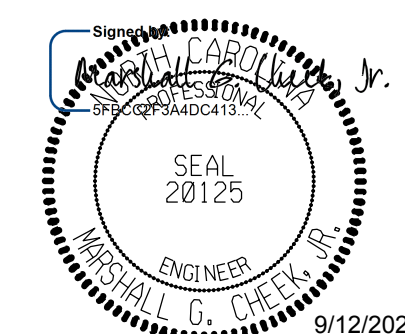
SECTION X-X

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

DRAWN BY : STM DATE : 06/25
CHECKED BY : MGC DATE : 07/25
DESIGN ENGINEER OF RECORD : STM DATE : 09/25

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-027

REVISIONS

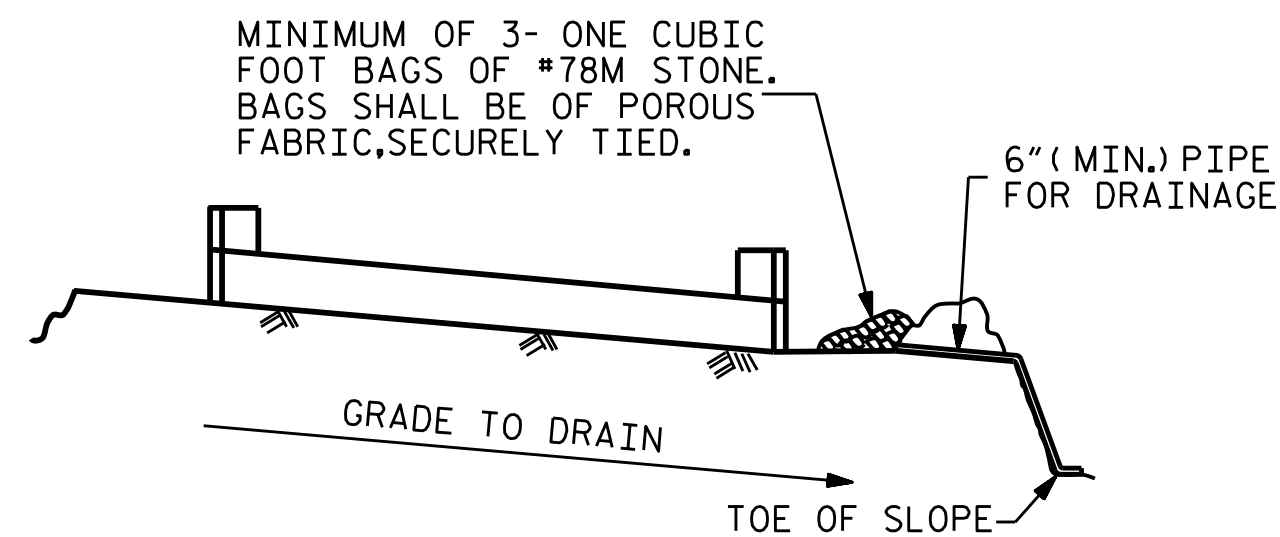
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

S-17

TOTAL
SHEETS

22

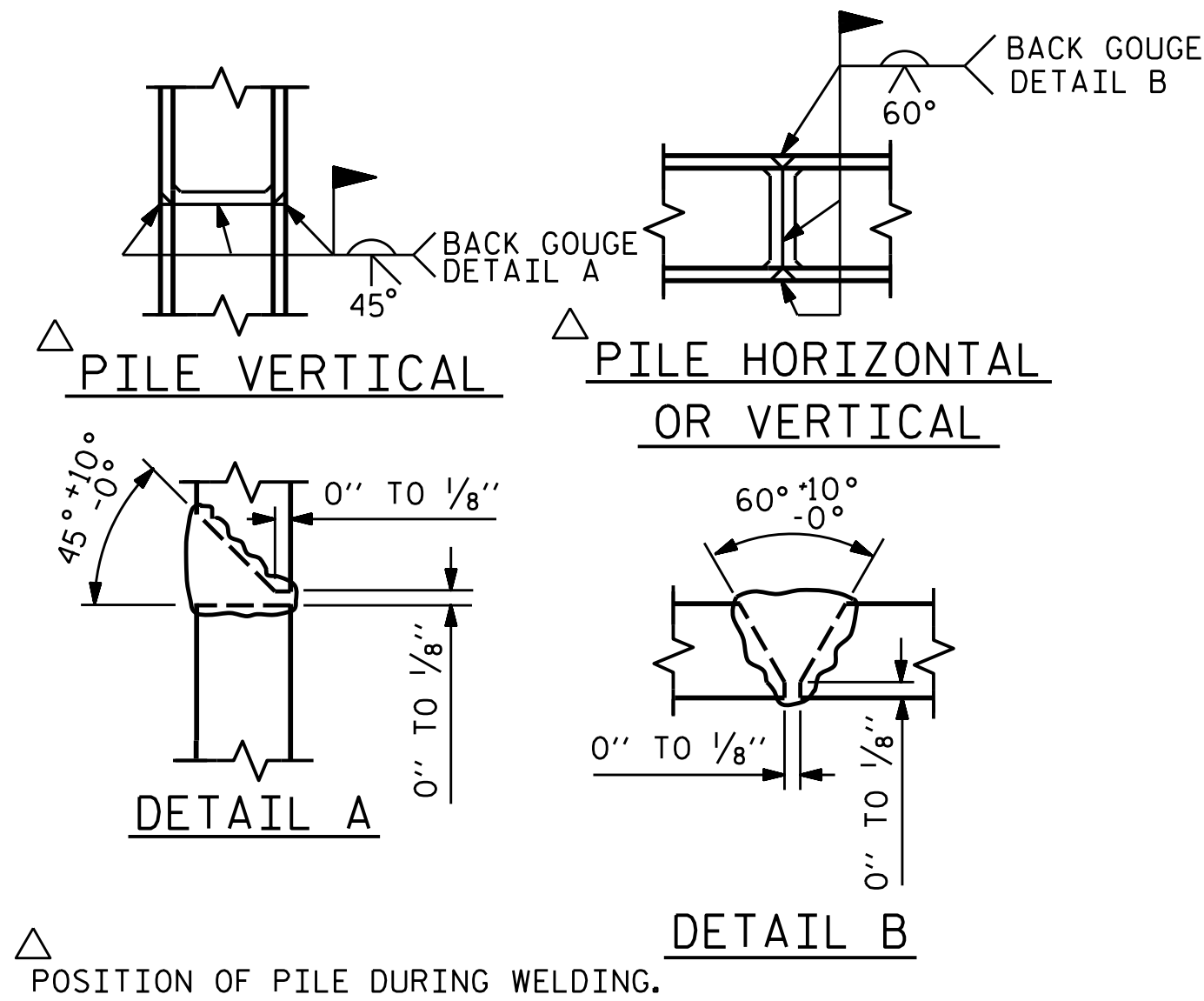
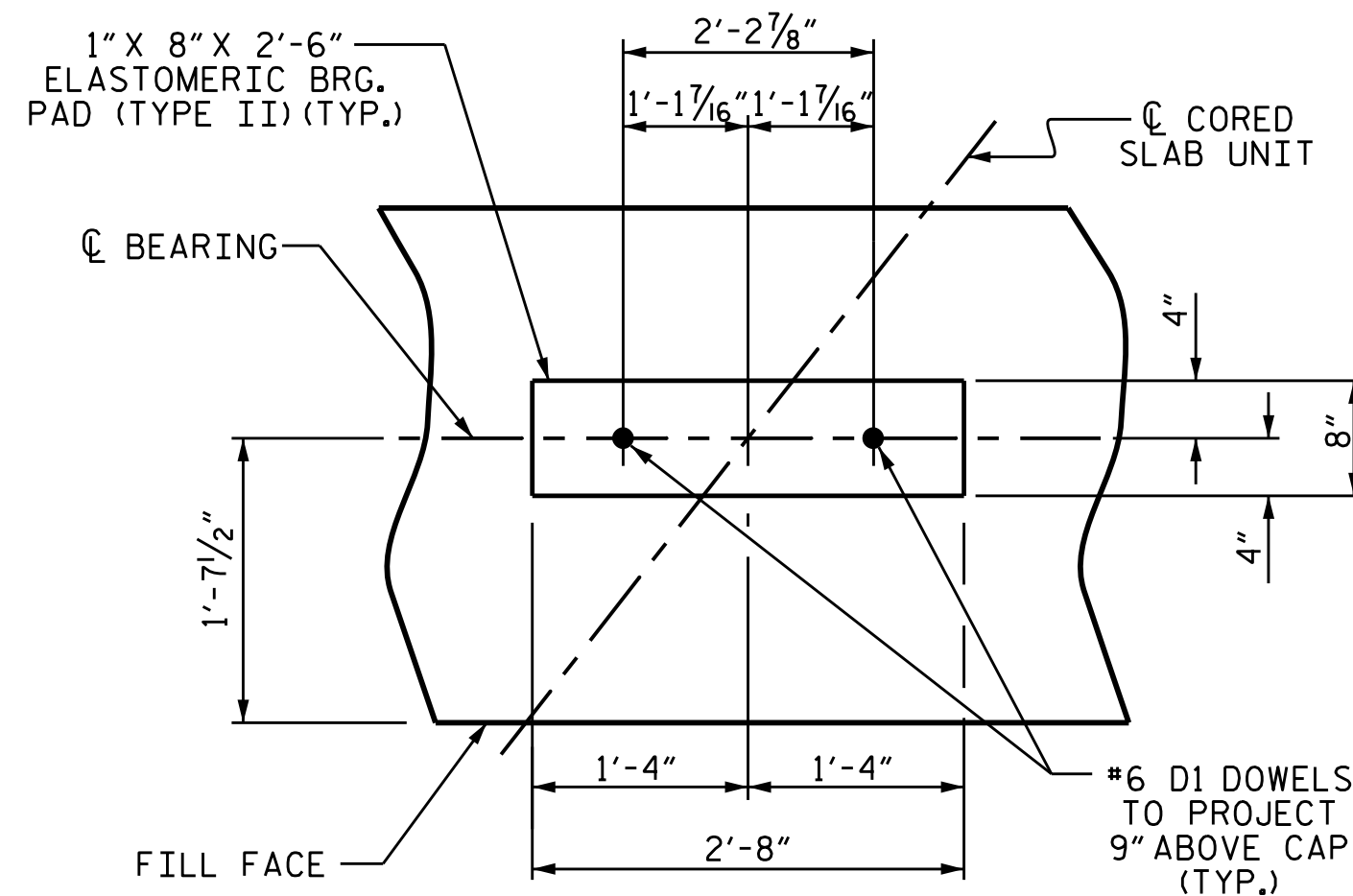


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

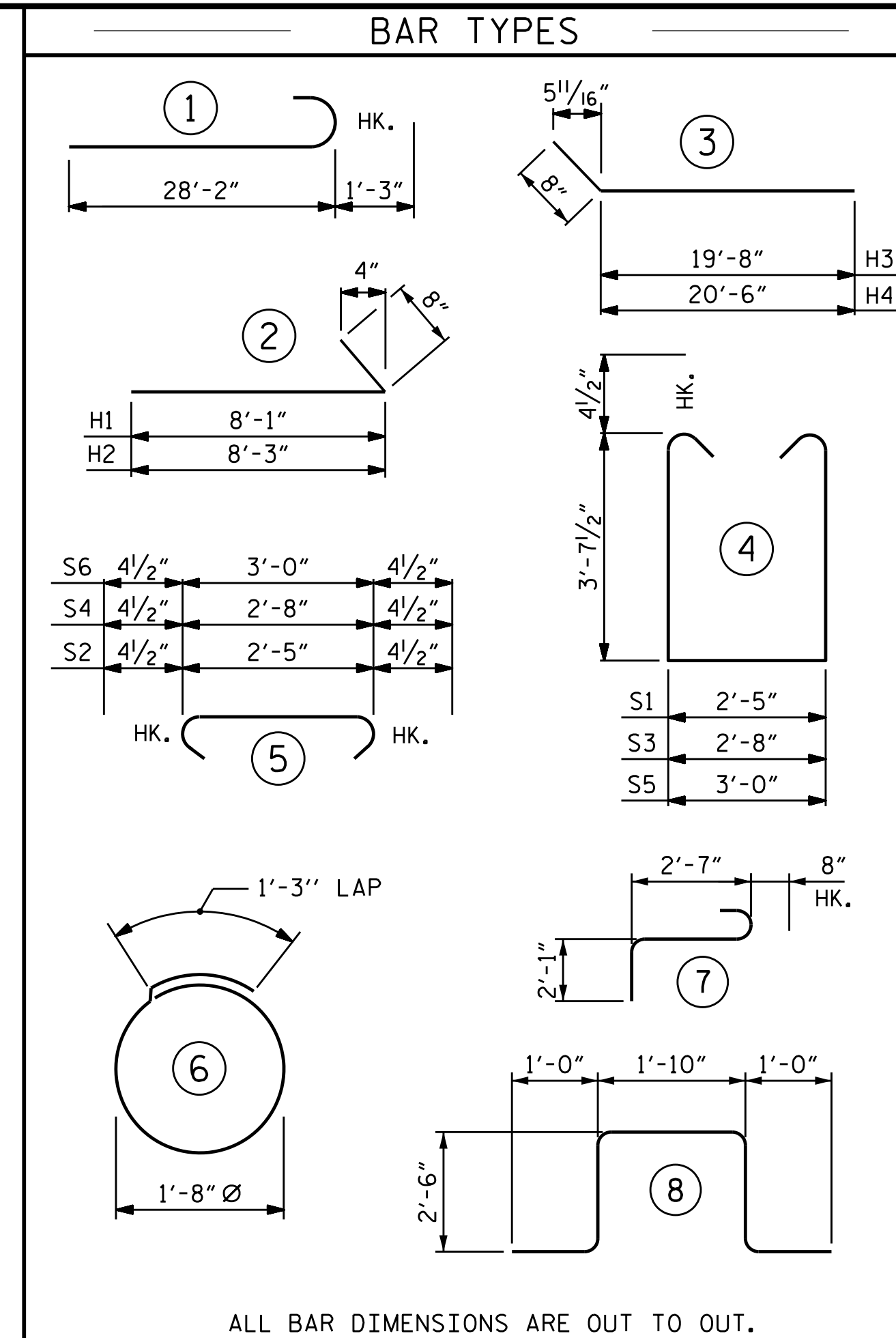
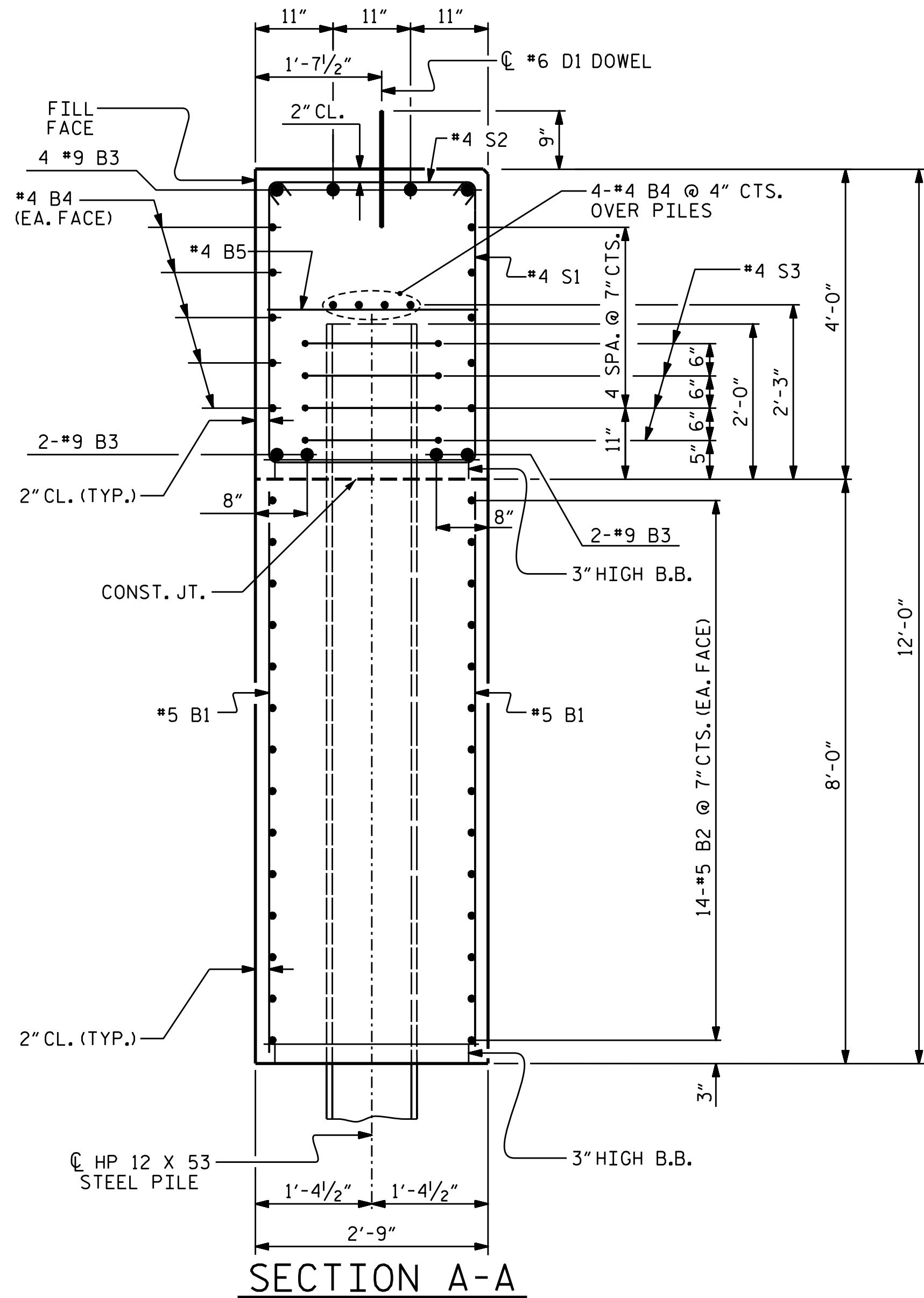
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



PILE SPLICE DETAILS



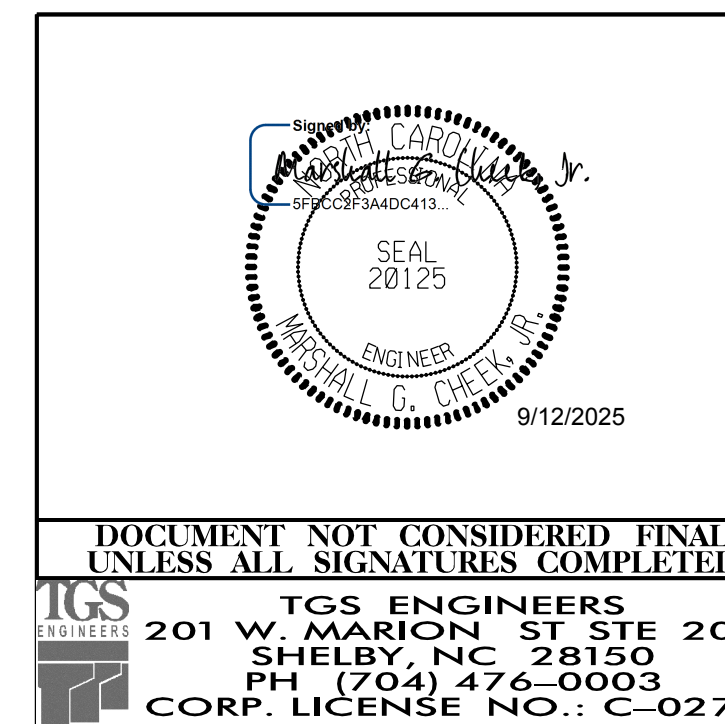
BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	152	#5	STR	7'-7"	1202
B2	56	#5	STR	26'-11"	1572
B3	16	#9	1	29'-5"	1600
B4	28	#4	STR	26'-7"	497
B5	13	#4	STR	2'-5"	21
D1	20	#6	STR	1'-6"	45
H1	26	#5	2	8'-9"	237
H2	26	#5	2	8'-11"	242
H3	26	#5	3	20'-4"	551
H4	26	#5	3	21'-2"	574
H5	52	#5	STR	26'-5"	1433
K1	8	#4	STR	4'-3"	23
K2	4	#4	STR	5'-0"	13
K3	4	#4	STR	5'-4"	14
S1	62	#4	4	10'-5"	431
S2	62	#4	5	3'-2"	131
S3	2	#4	4	10'-8"	14
S4	2	#4	5	3'-5"	5
S5	2	#4	4	11'-0"	15
S6	2	#4	5	3'-9"	5
S7	28	#4	6	6'-6"	122
S8	27	#6	7	5'-4"	216
S9	108	#6	8	8'-10"	1433
V1	135	#5	STR	14'-2"	1995
REINFORCING STEEL				12391 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CONC. ENCASEMENT & LOWER PART OF WINGS				71.4 C.Y.	
POUR #2 CAP & MIDDLE PART OF WINGS				35.5 C.Y.	
POUR #3 UPPER PART OF WINGS				5.9 C.Y.	
TOTAL CLASS A CONCRETE				112.8 C.Y.	

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

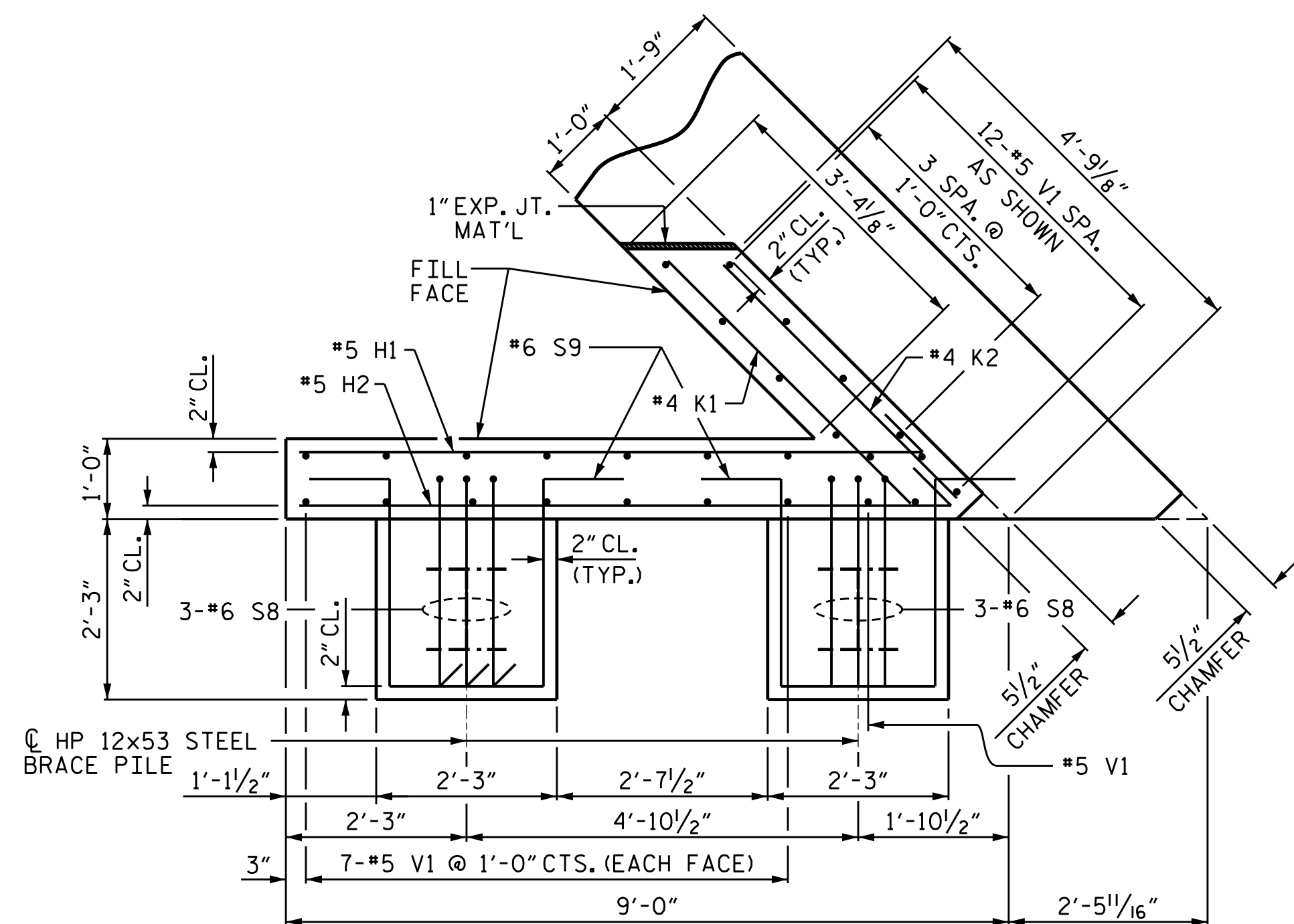
STATION: 13+23.60 -L-

SHEET 5 OF 5

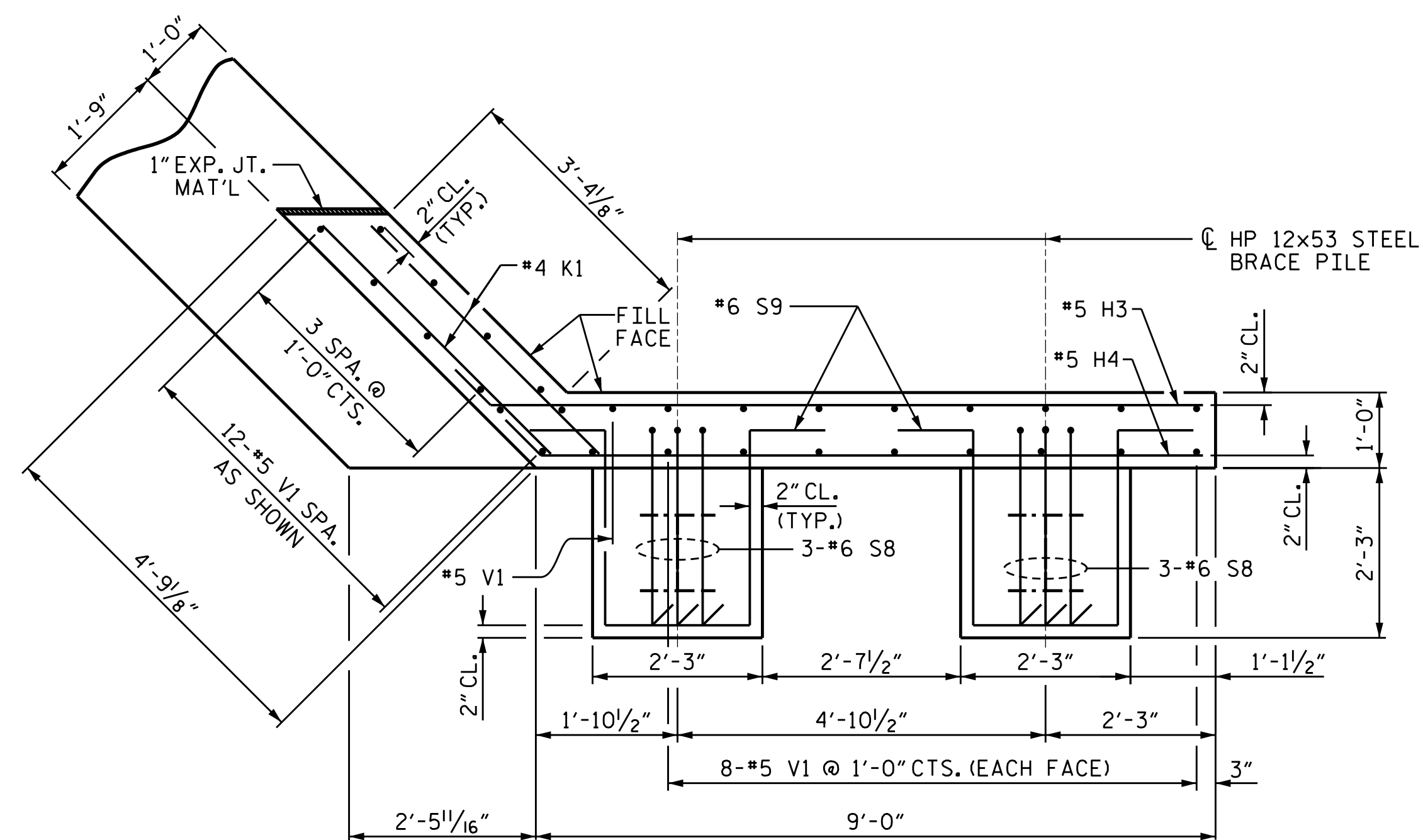


REVISONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

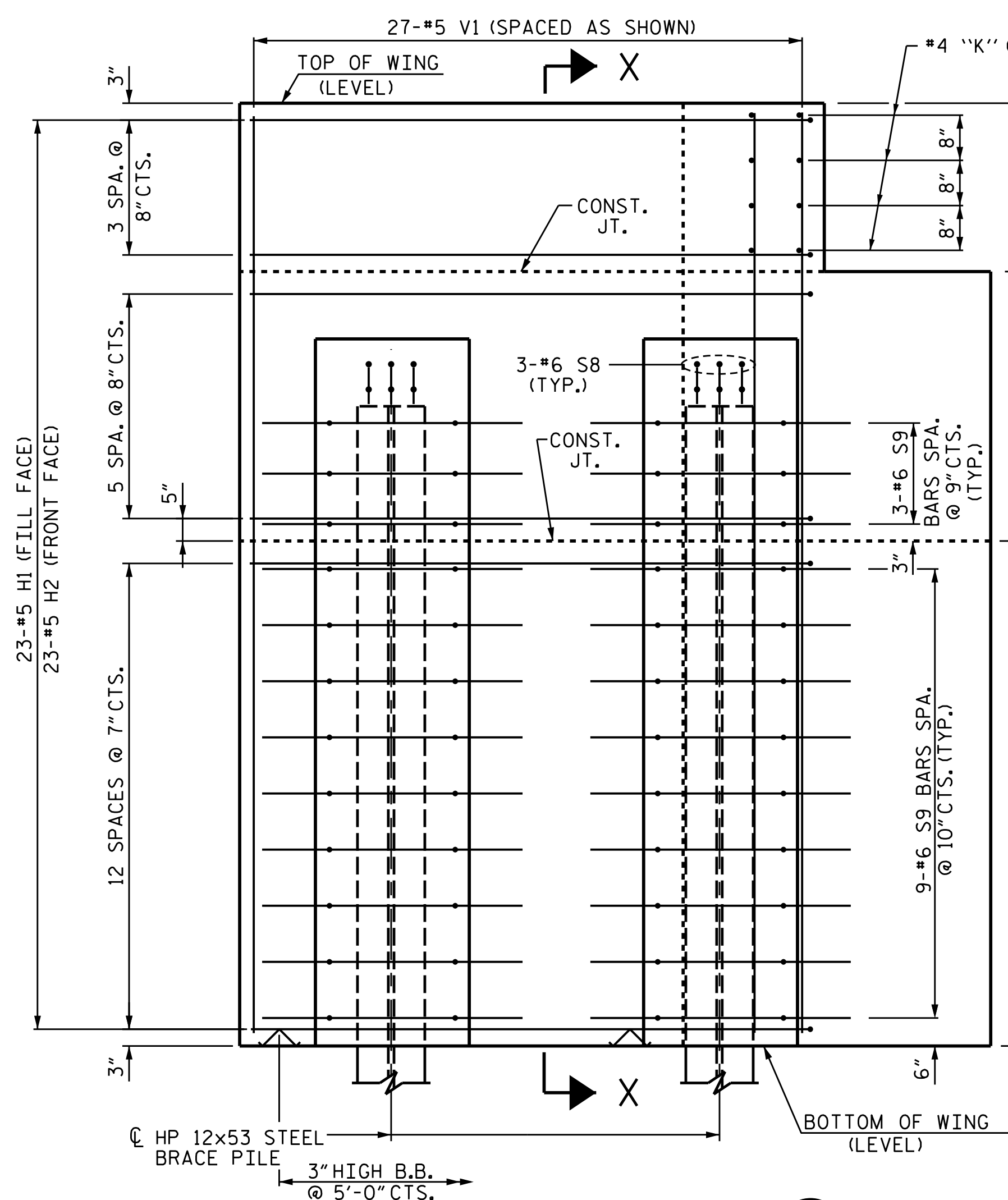
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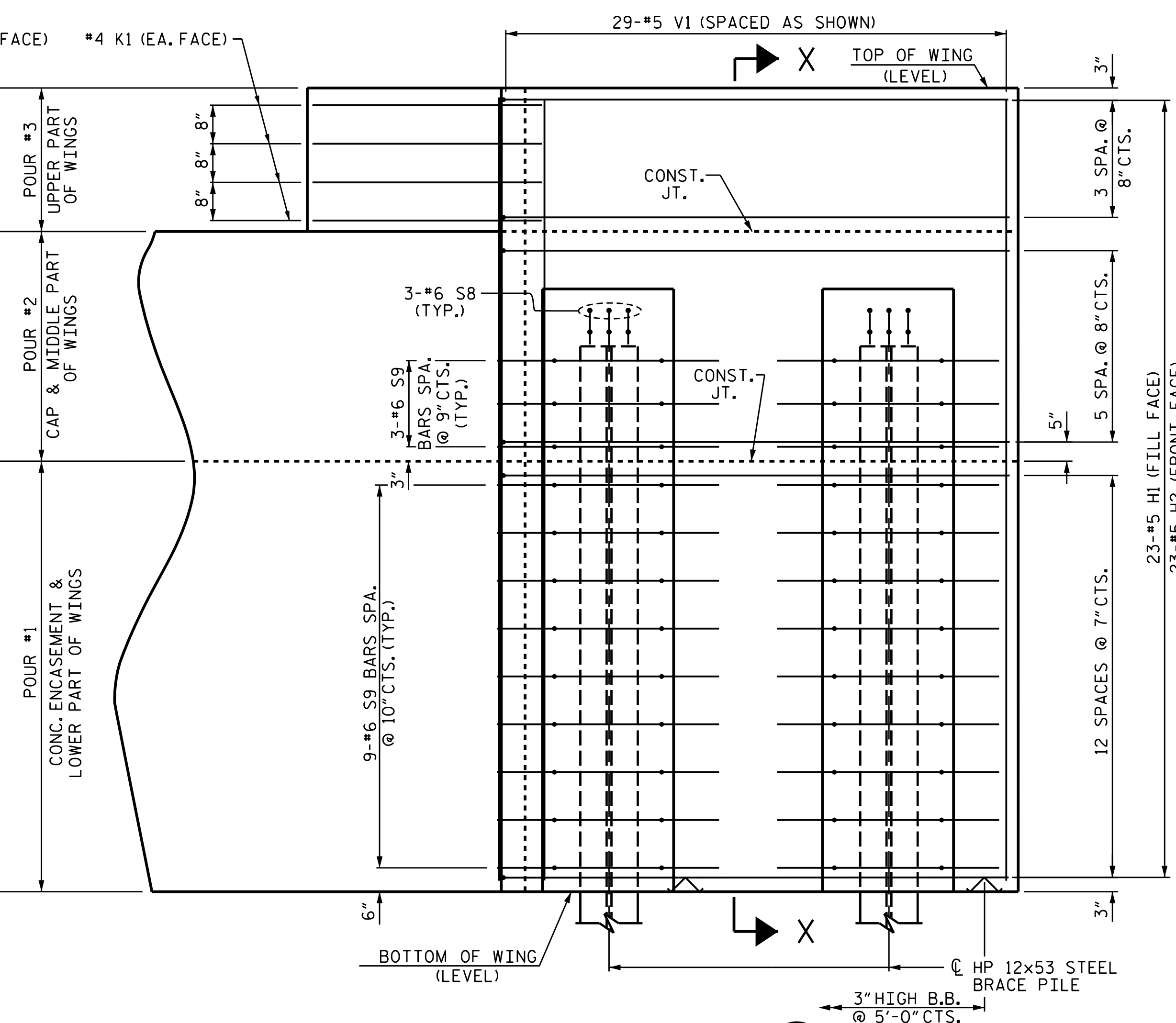
PLAN OF WING (W1)



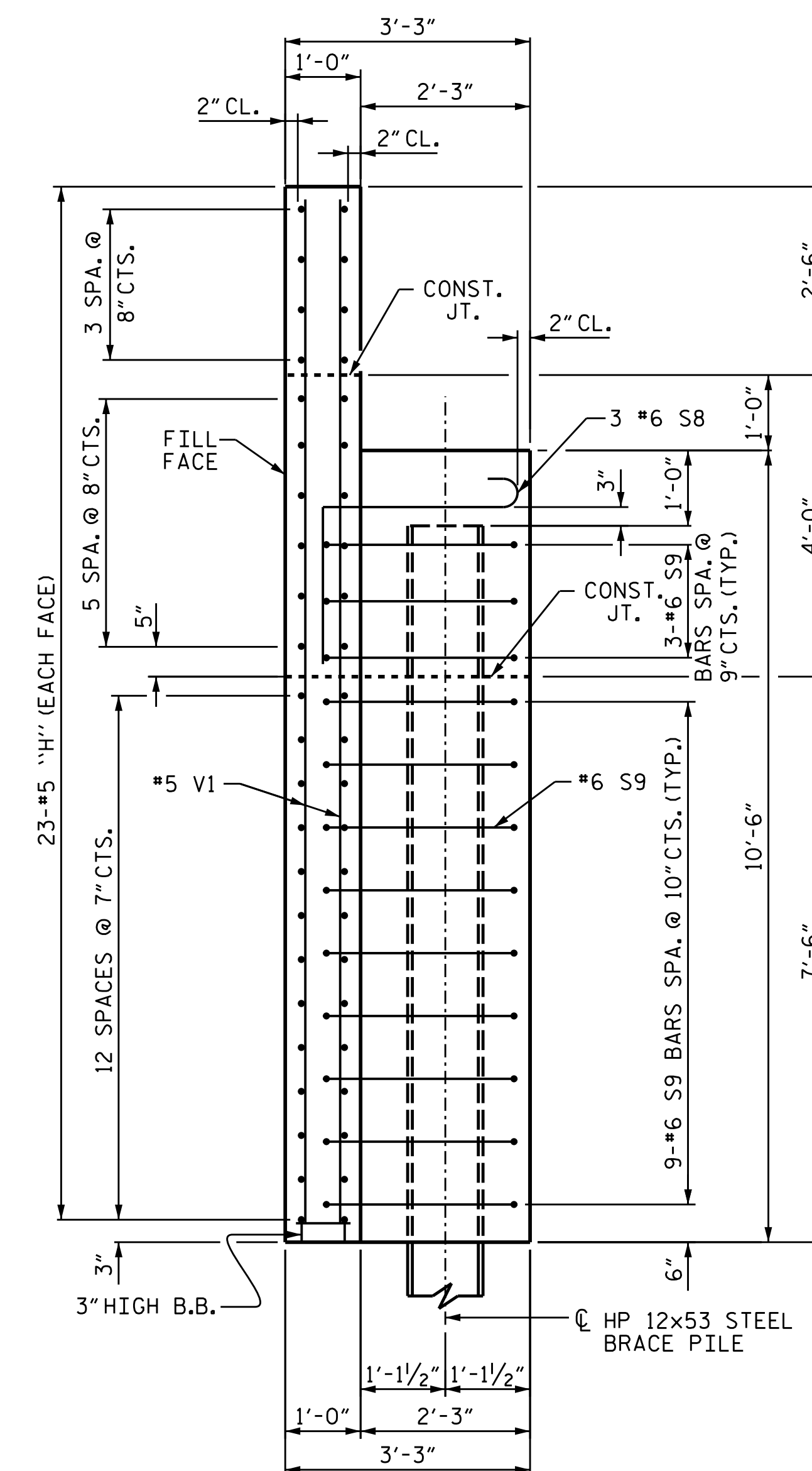
PLAN OF WING (W2)



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



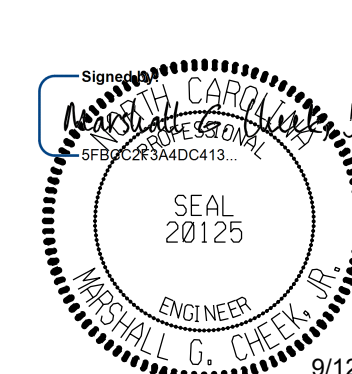
SECTION X-X

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

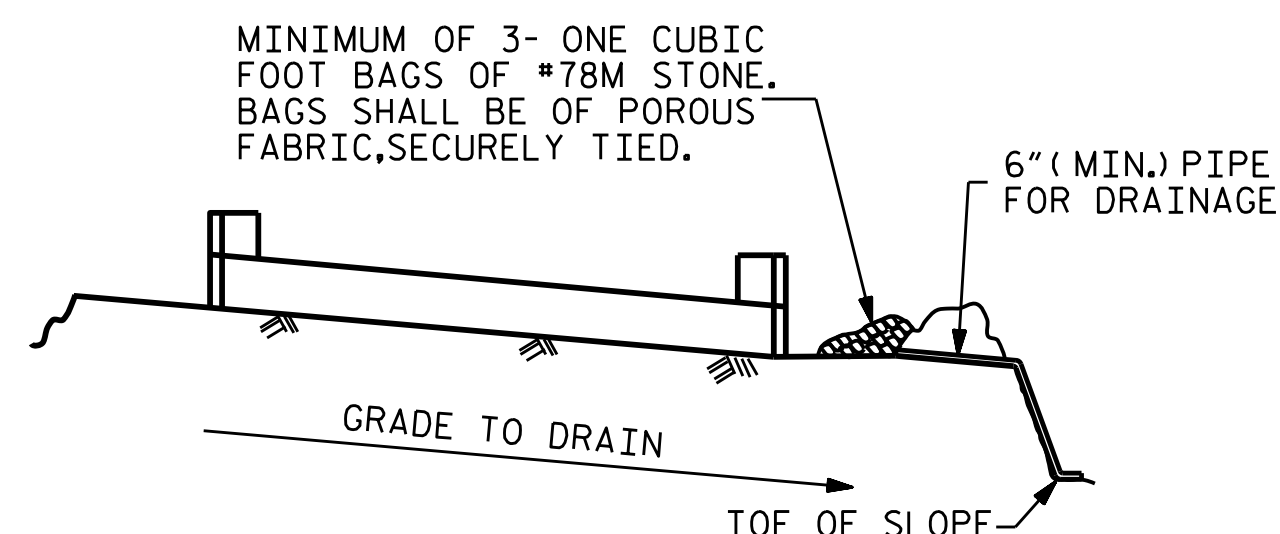
DRAWN BY :	STM	DATE :	05/25
CHECKED BY :	MGC	DATE :	07/25
DESIGN ENGINEER OF RECORD :	STM	DATE :	09/25

DOCUMENT NOT CONSIDERED FINAL
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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-027

		REVISIONS						SHEET NO.	
		NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1					3			TOTAL SHEETS	
2					4			22	

+

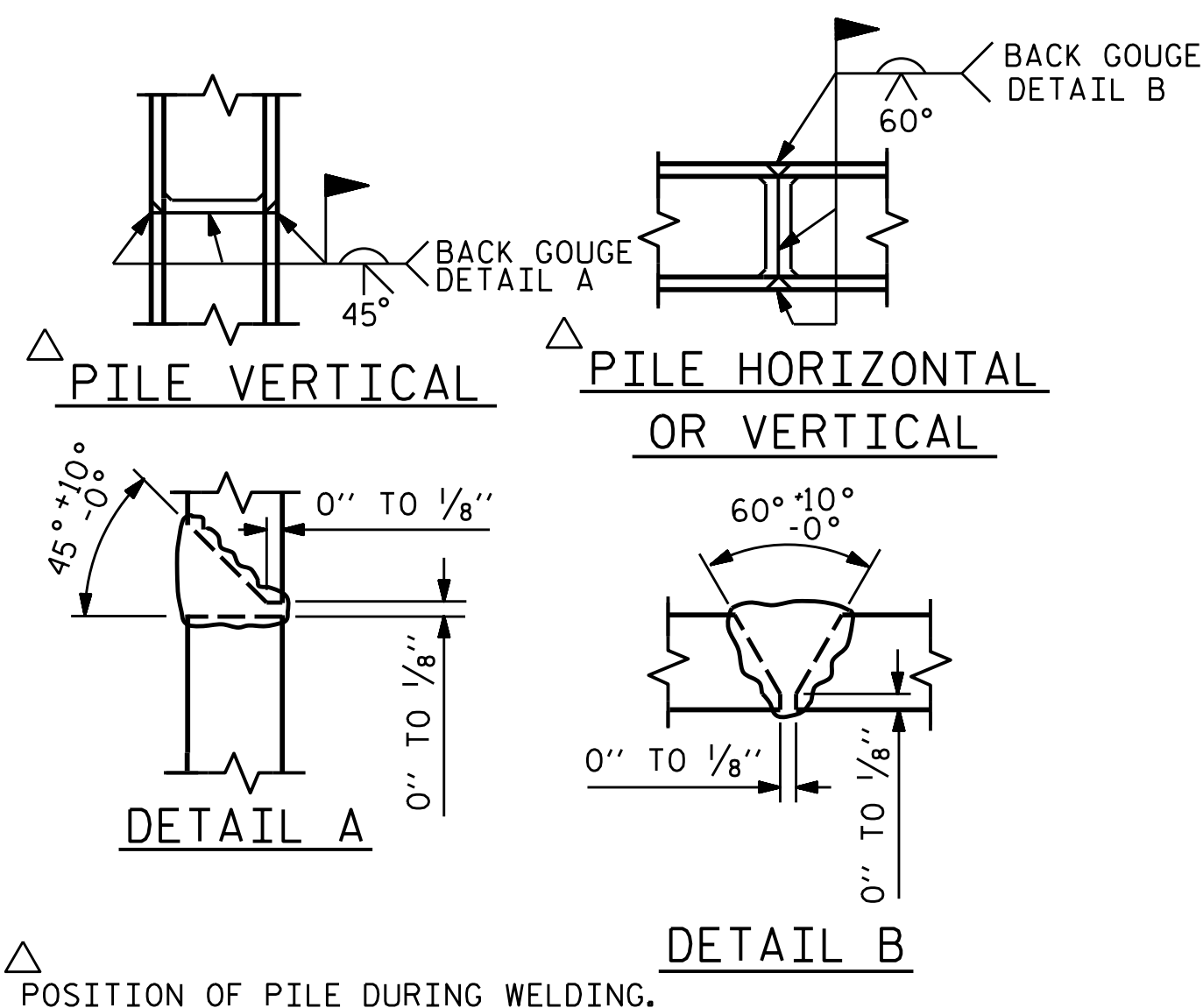


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

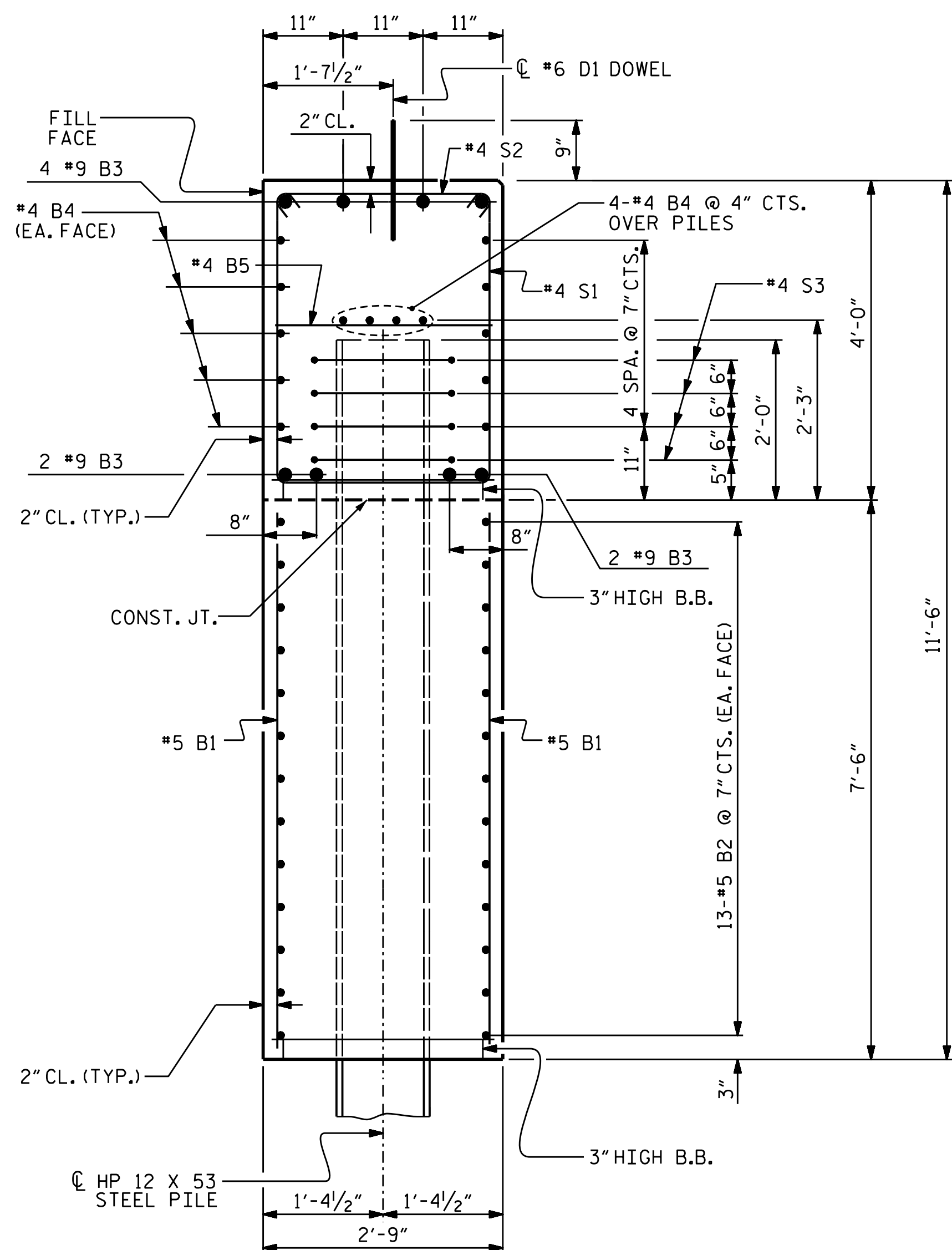
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

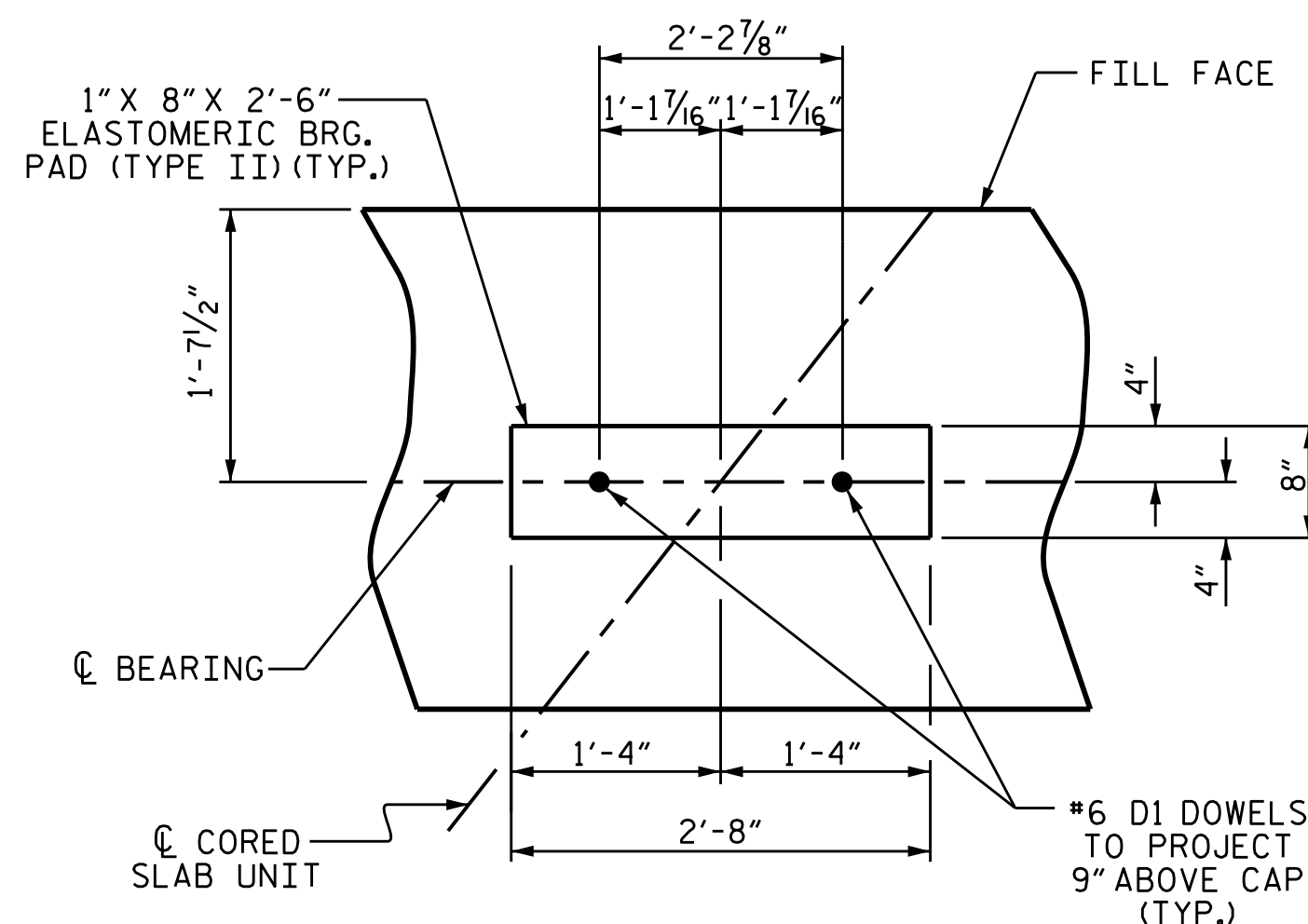
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



SECTION A-A



DETAIL ``A''

DRAWN BY :	STM	DATE :	06/25
CHECKED BY :	MGC	DATE :	07/25
DESIGN ENGINEER OF RECORD :	STM	DATE :	09/25

BAR TYPES

Bar Type 1: A straight bar with a hook. Total length: 28'-2". Hook length: 1'-3".

Bar Type 2: A bent bar. Dimensions: 7'-10" (H1), 8'-2" (H2). Hook length: 5 5/8". Bend angle: 8".

Bar Type 3: A bent bar. Dimensions: 9'-5" (H3), 8'-9" (H4). Hook length: 5 5/8". Bend angle: 8".

Bar Type 4: A U-shaped bar. Dimensions: 4 1/2" (H1), 3'-7 1/2" (H2). Hook length: 4 1/2".

Bar Type 5: A bent bar with multiple segments. Dimensions: 4 1/2" (S6), 3'-0" (S4), 2'-8" (S3), 2'-5" (S2). Hook length: 4 1/2".

Bar Type 6: A circular bar. Diameter: 1'-8" Ø. Lap length: 1'-3".

Bar Type 7: A bent bar. Dimensions: 2'-7" (S1), 2'-8" (S3), 3'-0" (S5). Hook length: 8".

Bar Type 8: A bent bar. Dimensions: 1'-0" (S1), 1'-10" (S3), 1'-0" (S5). Hook length: 8".

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	152	#5	STR	7'-1"	1123
B2	52	#5	STR	26'-10"	1455
B3	16	#9	1	29'-5"	1600
B4	28	#4	STR	26'-7"	497
B5	13	#4	STR	2'-5"	21
D1	20	#6	STR	1'-6"	45
H1	23	#5	2	8'-6"	204
H2	23	#5	2	8'-10"	212
H3	23	#5	3	10'-1"	242
H4	23	#5	3	9'-5"	226
K1	12	#4	STR	4'-5"	35
K2	4	#4	STR	3'-11"	10
S1	62	#4	4	10'-5"	431
S2	62	#4	5	3'-2"	131
S3	2	#4	4	10'-8"	14
S4	2	#4	5	3'-5"	5
S5	2	#4	4	11'-0"	15
S6	2	#4	5	3'-9"	5
S7	28	#4	6	6'-6"	122
S8	12	#6	7	5'-4"	96
S9	48	#6	8	8'-10"	637
V1	56	#5	STR	13'-8"	798

REINFORCING STEEL 7924 LBS.

CLASS A CONCRETE BREAKDOWN

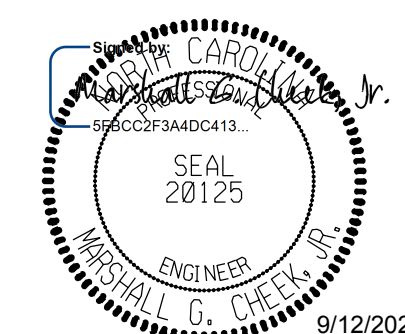
POUR #1	CONC. ENCASEMENT & LOWER PART OF WINGS	48.8 C.Y.
POUR #2	CAP & MIDDLE PART OF WINGS	26.0 C.Y.
POUR #3	UPPER PART OF WINGS	1.8 C.Y.
TOTAL CLASS A CONCRETE		76.6 C.Y.

PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-

SHEET 3 OF 3



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

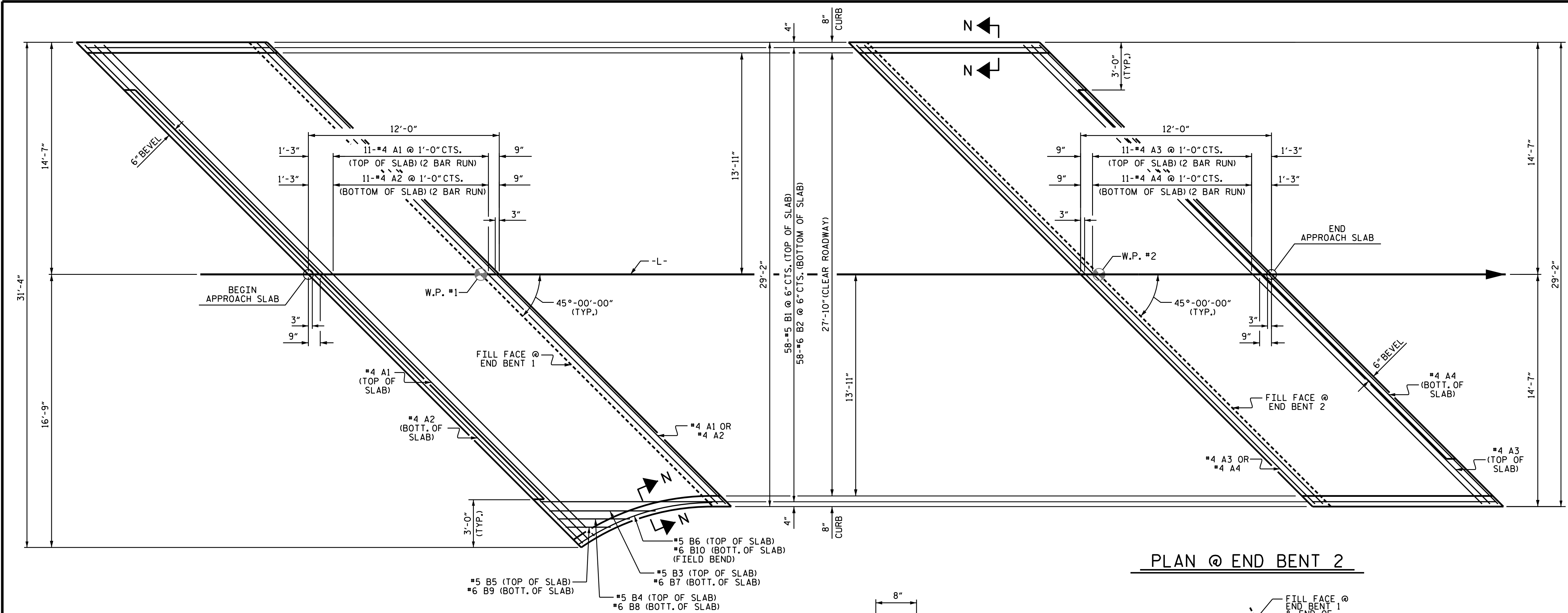
TGS ENGINEERS
201 W. MARION ST STE 20
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-027

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21 TOTAL SHEETS 22
1			3			
2			4			



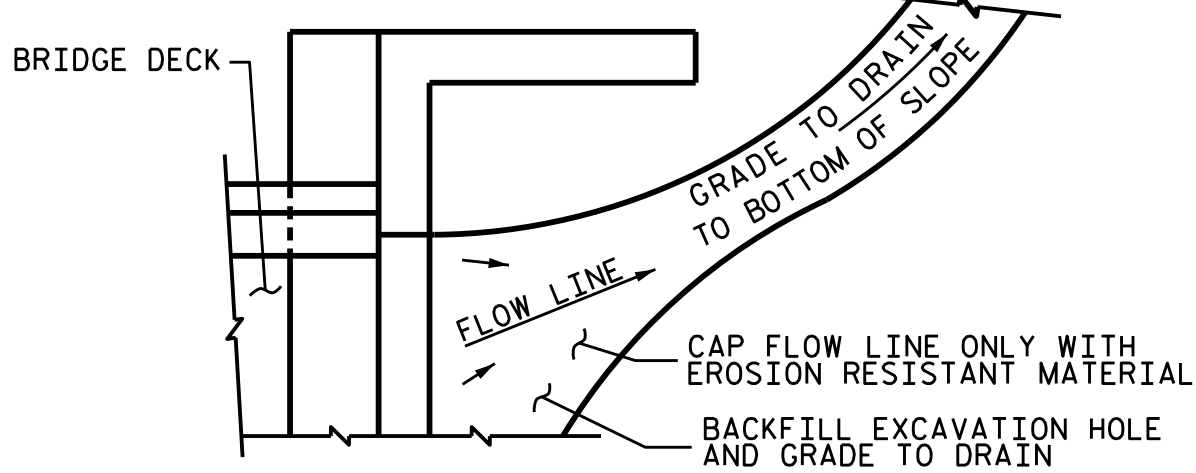
PLAN @ END BENT 1

PLAN @ END BENT 2

SECTION N-N

CURB DETAILS

ARC OFFSETS - RIGHT SIDE @ EB1



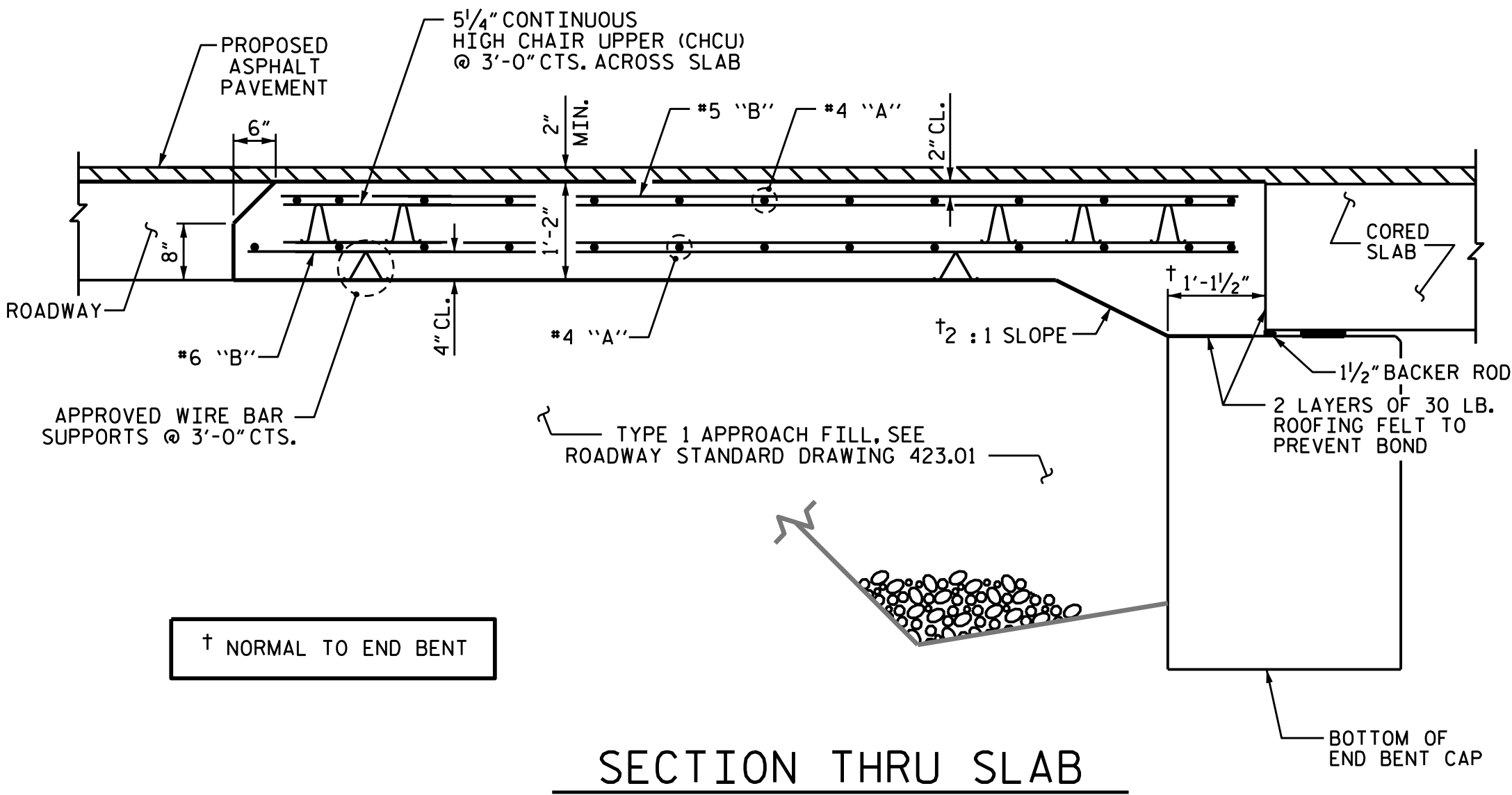
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

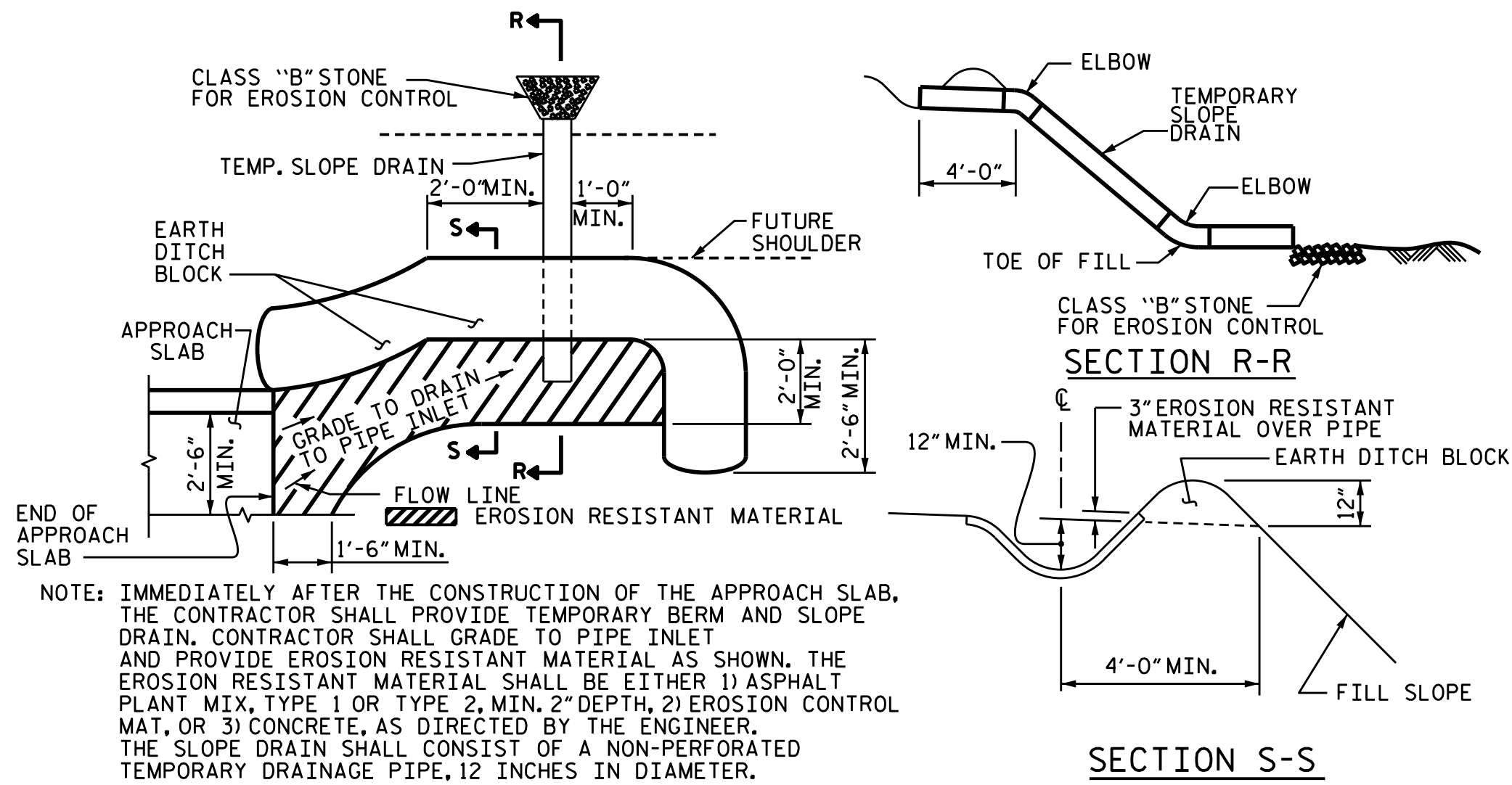
PROJECT NO. DF18311.2095016.PR

WATAUGA COUNTY

STATION: 13+23.60 -L-



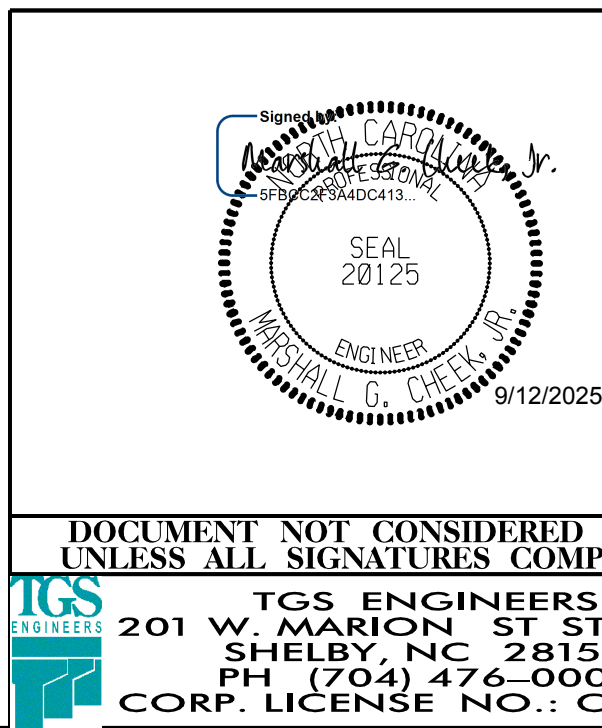
SECTION THRU SLAB



PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
45° SKEW

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

ASSEMBLED BY : ZCS DATE : 5/25
CHECKED BY : MGC DATE : 6/25

8/26/21

+

+

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO ½" 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 ⅝" 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 ⅛" 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.