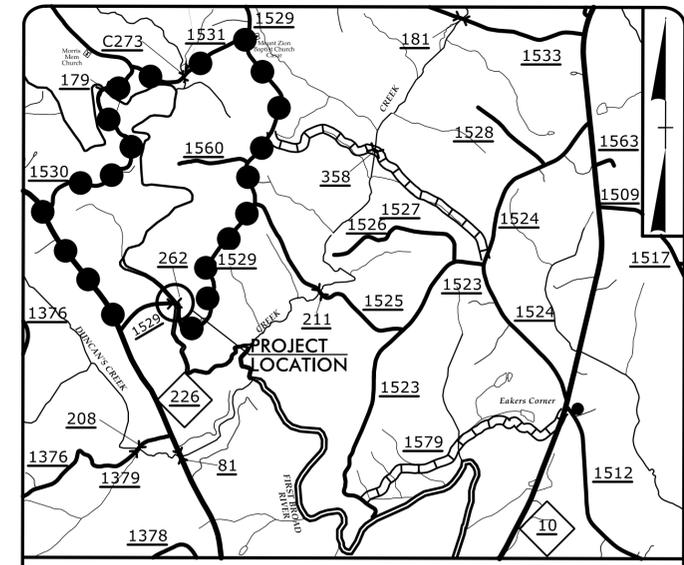


09_08/2019

PROJECT: DF18312.2023011

CONTRACT: DL00380

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)
OFFSITE DETOUR

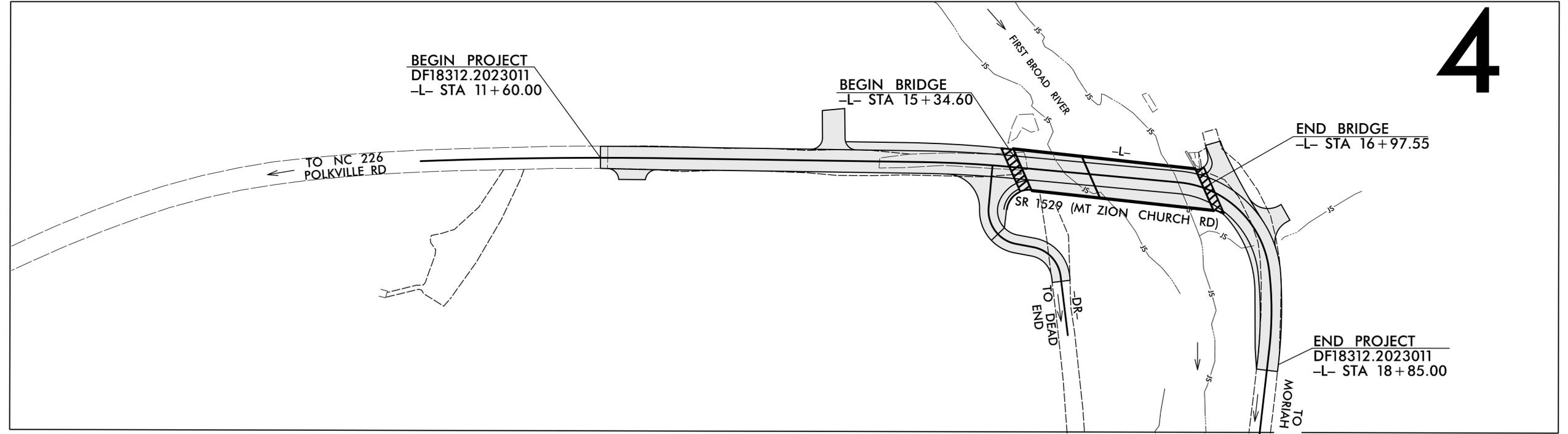
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

LOCATION: REPLACEMENT OF STRUCTURE #220262
ON SR 1529 (MT. ZION CHURCH RD) OVER
FIRST BROAD RIVER

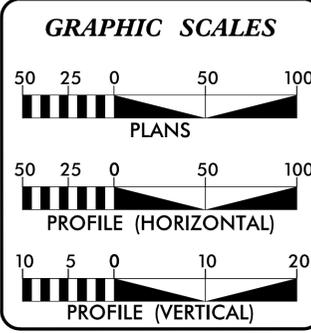
TYPE OF WORK: GRADING, DRAINAGE,
PAVING, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18312.2023011	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
DF18312.2023011		PE	
DF18312.2023011		R/W	
DF18312.2023011		UTIL.	
DF18312.2023011		CONST.	



DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE & HORIZONTAL STOPPING SIGHT DISTANCE.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2025 = 210
ADT 2050 = 270
V = 60 MPH
TTST = 3% DUAL = 3%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT DF18312.2023011 = 0.106 MILES
LENGTH OF STRUCTURE PROJECT DF18312.2023011 = 0.031 MILES
TOTAL LENGTH OF PROJECT DF18312.2023011 = 0.137 MILES

PLANS PREPARED BY:
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:
AUG. 14, 2025

LETTING DATE:
MARCH 24, 2026

PLANS PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12
1710 E. MARION ST
SHELBY, NC 28152

JIMMY L. TERRY, PE
PROJECT ENGINEER

KATELYN S. ALMOND
PROJECT DESIGN ENGINEER

JOSH WHITE, PE, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER

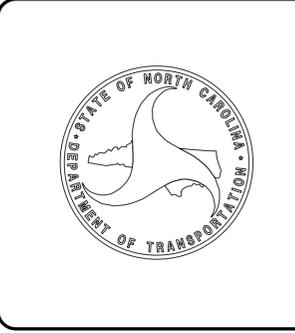
2/25/2026

Signed by:
David B. Petty
SIGNATURE: 038697

ROADWAY DESIGN ENGINEER

2/25/2026

Signed by:
Jimmy Terry
SIGNATURE: 35018



2/25/2026
X:\NCDOT\Div 12\Cleveland_262\Roadway\Proj\Cleveland_262_Rdy_tsh.dgn
User:cpurgett

05/20/24

Note: Not to Scale

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

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	⑩
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	---S---
Potential Contamination Area: Soil	---S---
Known Contamination Area: Water	---W---
Potential Contamination Area: Water	---W---
Contaminated Site: Known or Potential	☠ ☢
BUILDINGS AND OTHER CULTURE:	
Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	—
HYDROLOGY:	
Stream or Body of Water	_____
Hydro, Pool or Reservoir	□
Jurisdictional Stream	---JS---
Buffer Zone 1	---BZ 1---
Buffer Zone 2	---BZ 2---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	✕
Proposed Lateral, Tail, Head Ditch	→
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	—E—
Proposed Temporary Construction Easement	—E—
Proposed Temporary Drainage Easement	—TDE—
Proposed Permanent Drainage Easement	—PDE—
Proposed Permanent Drainage/Utility Easement	—DUE—
Proposed Permanent Utility Easement	—PUE—
Proposed Temporary Utility Easement	—TUE—
Proposed Aerial Utility Easement	—AUE—
ROADS AND RELATED FEATURES:	
Existing Edge of Pavement	---
Existing Curb	---
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	○
Existing Metal Guardrail	—
Proposed Guardrail	—
Existing Cable Guiderail	—
Proposed Cable Guiderail	—
Equality Symbol	⊕
Pavement Removal	⊗
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	—

Woods Line	_____
Orchard	○
Vineyard	□
EXISTING STRUCTURES:	
MAJOR:	
Bridge, Tunnel or Box Culvert	—CONC—
Bridge Wing Wall, Head Wall and End Wall	—CONC WW—
MINOR:	
Head and End Wall	—CONC HW—
Pipe Culvert	—
Footbridge	—
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	—
Storm Sewer Manhole	○
Storm Sewer	—S—
UTILITIES:	
* SUE - Subsurface Utility Engineering LOS - Level of Service - A,B,C or D (Accuracy)	
POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
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)*	---

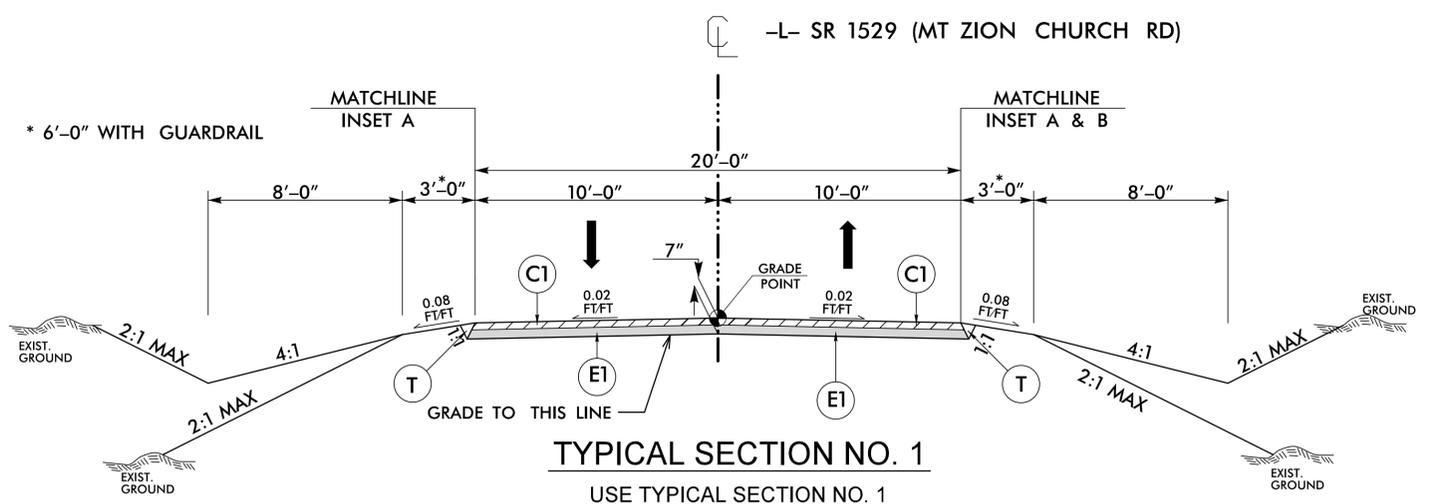
WATER:

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	—A/G Water—
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	—A/G Gas—
SANITARY SEWER:	
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	---SS---
Above Ground Sanitary Sewer	—A/G Sanitary Sewer—
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	---
SS Force Main Line (SUE - LOS C)*	---
SS Force Main Line (SUE - LOS D)*	---
MISCELLANEOUS:	
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line (SUE - LOS B)*	---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/2026

FINAL PAVEMENT SCHEDULE (MARCH 11, 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.
J1	PROP. 8" AGGREGATE BASE STONE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

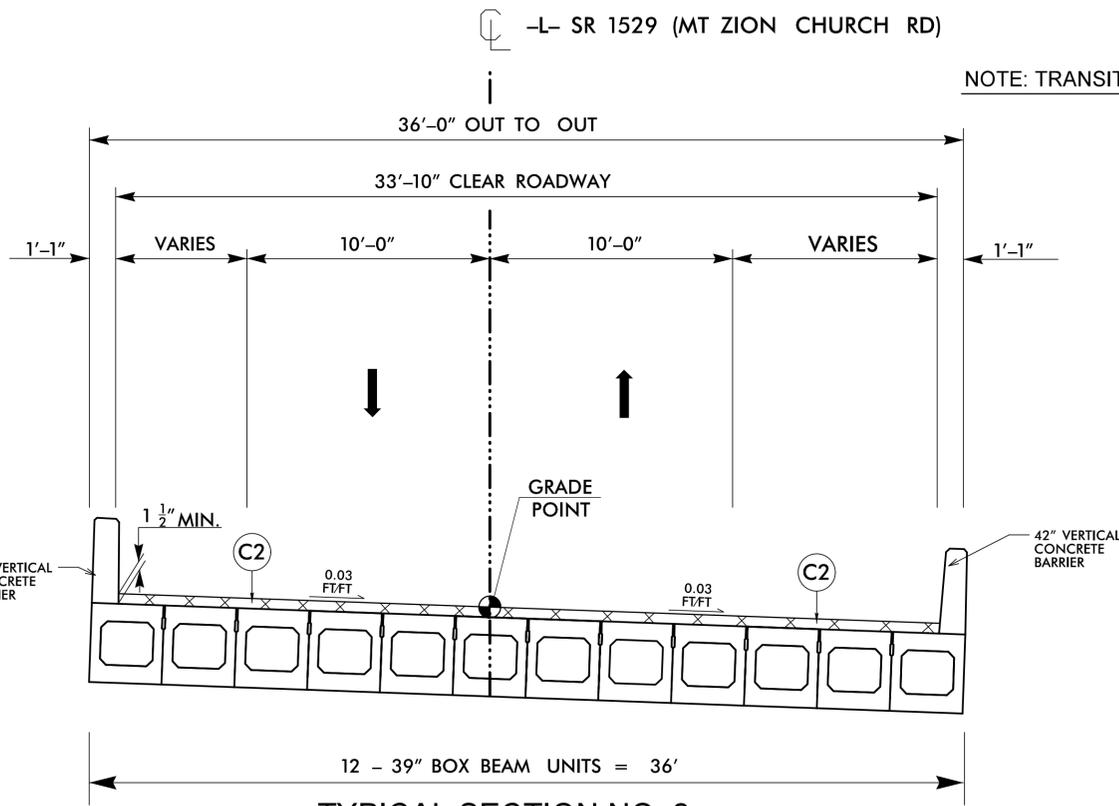
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



-L- STA. 12+60.00 TO -L- STA. 15+34.60 (BEGIN BRIDGE)
-L- STA. 16+97.55 (END BRIDGE) TO -L- STA. 17+96.38

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

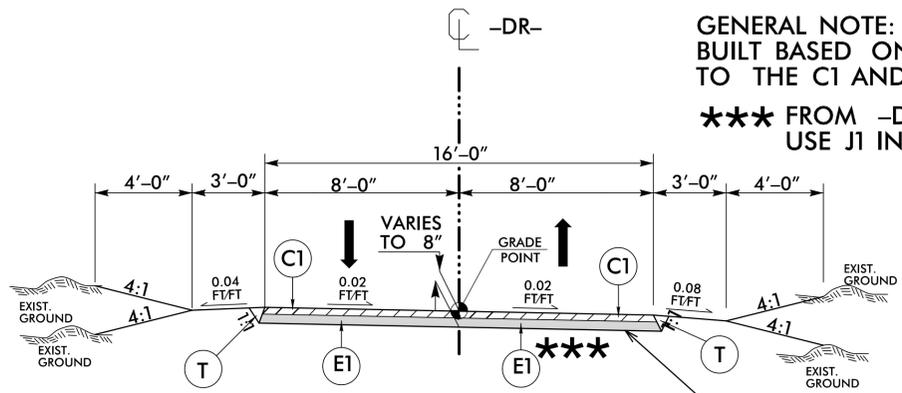
-L- STA. 11+60.00 TO -L- STA. 12+60.00
-L- STA. 17+96.38 TO -L- STA. 18+85.00



-L- STA. 15+34.60 TO -L- STA. 16+97.55

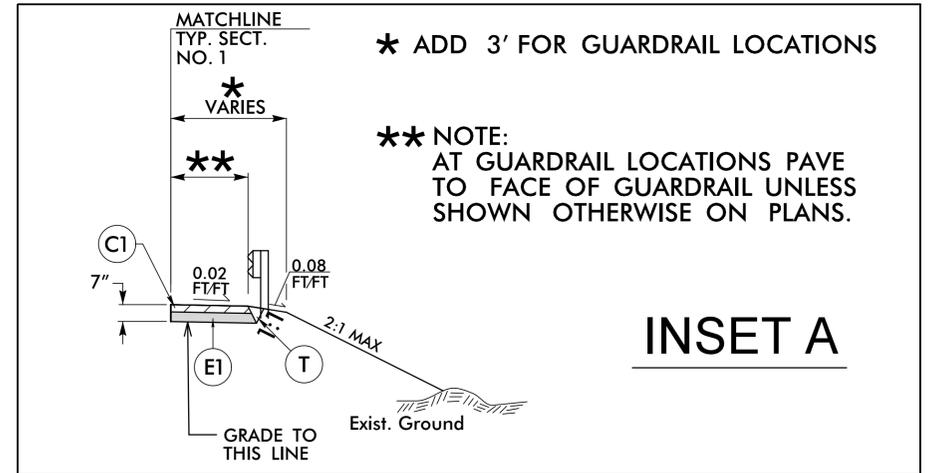
GENERAL NOTE: ALL ASPHALT DRIVES SHOULD BE BUILT BASED ON TYPICAL SECTION NO. 3 ADHERING TO THE C1 AND E1 PAVEMENT SCHEDULE.

*** FROM -DR- 10+63.24 TO 11+40.00
USE J1 IN LIEU OF C1 & E1



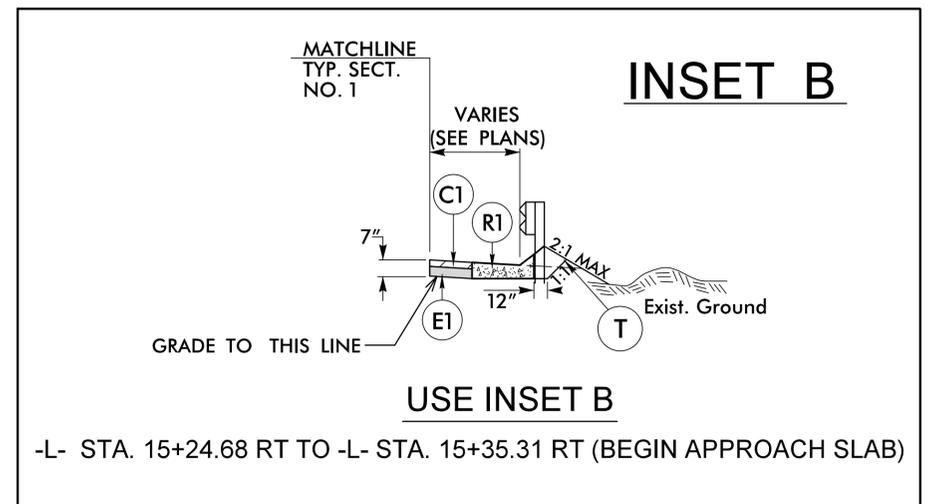
-DR- STA. 10+10.00 TO -DR- STA. 11+40.00

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 201 W. MARION ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



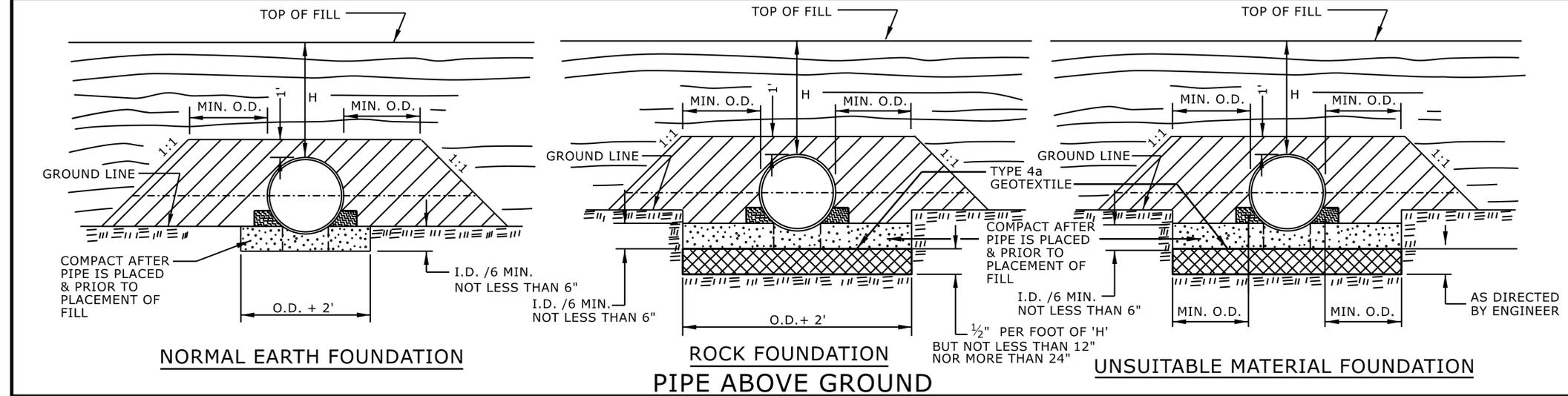
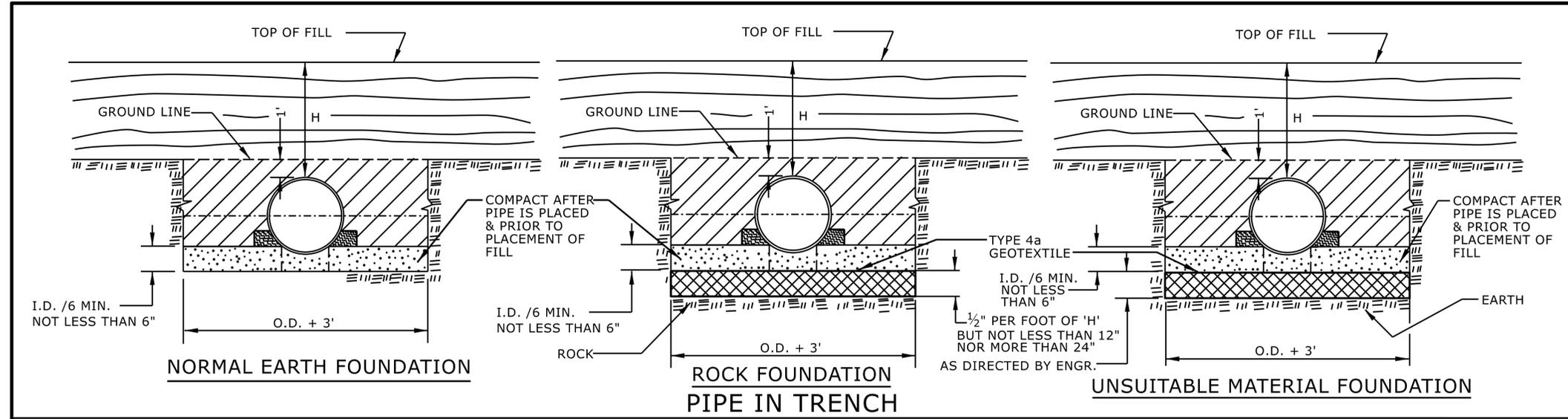
* ADD 3' FOR GUARDRAIL LOCATIONS

** NOTE:
AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL UNLESS SHOWN OTHERWISE ON PLANS.



-L- STA. 15+24.68 RT TO -L- STA. 15+35.31 RT (BEGIN APPROACH SLAB)

X:\2026\06\06\Draw 12 Cleveland 262\Roadway\Proj\Cleveland_262_Rdy_typ.dgn



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

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

SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

SHEET 1 OF 2
300.01

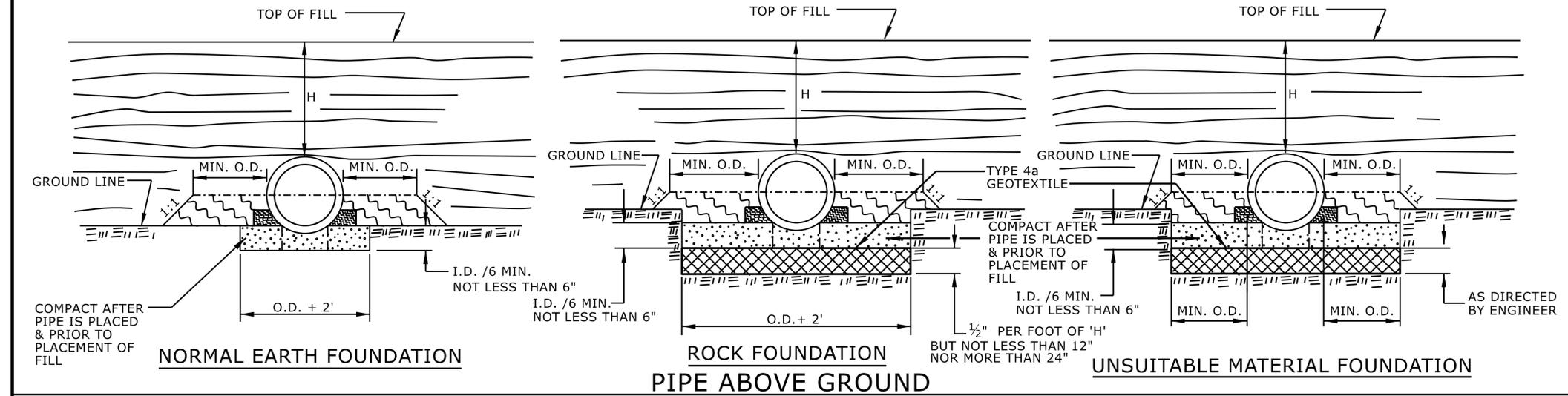
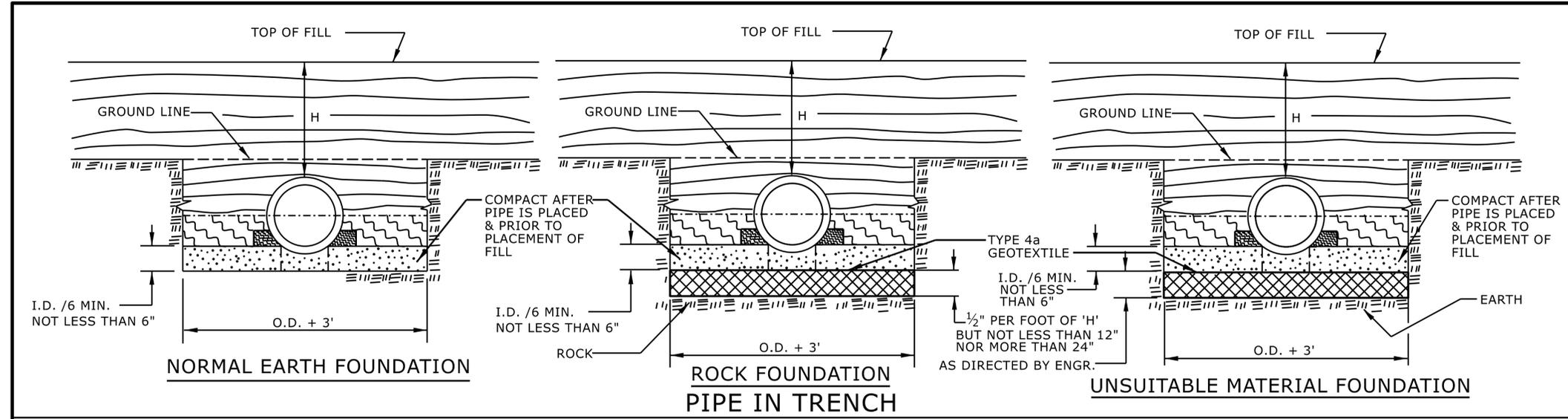


DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

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

SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 2
300.01

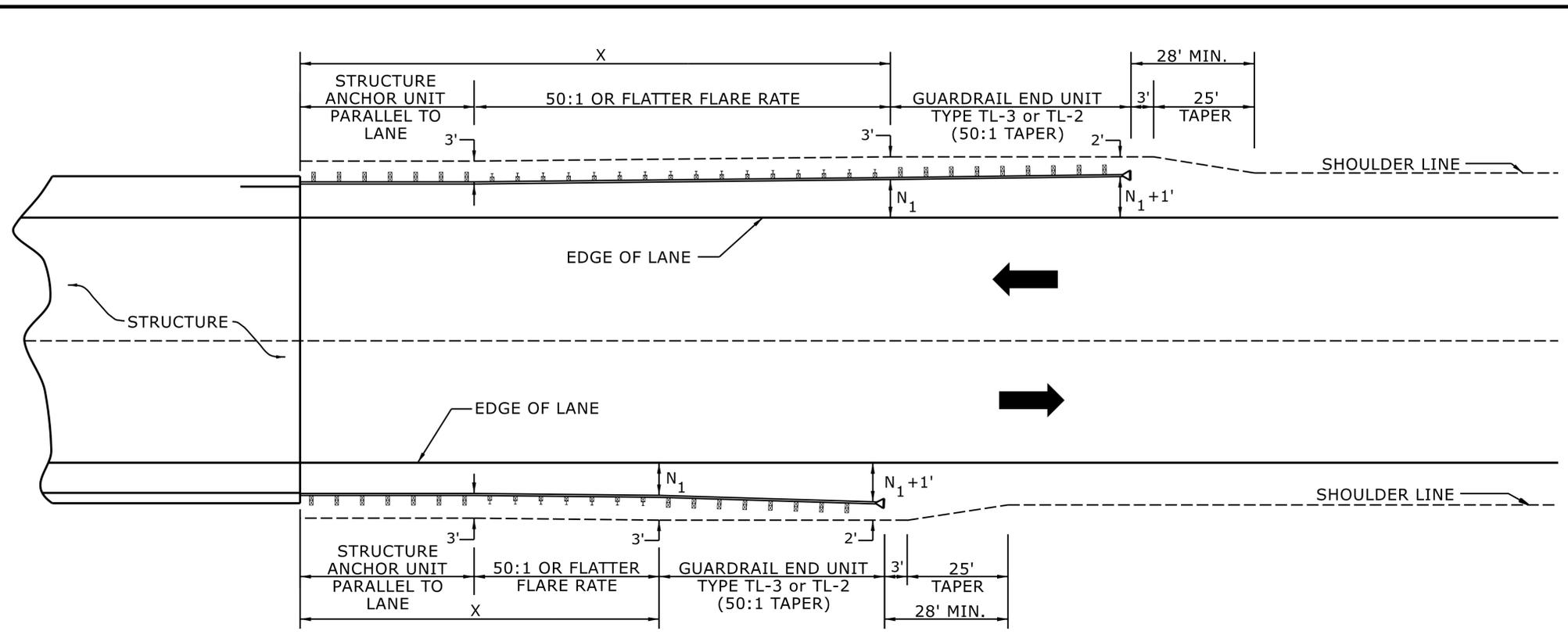


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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



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.

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



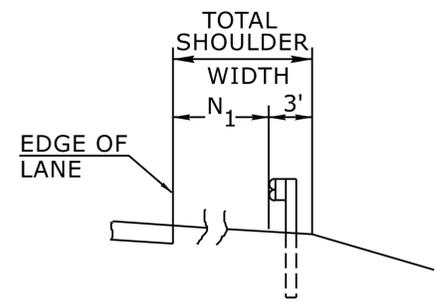
SHEET 4 OF 15
862D01

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

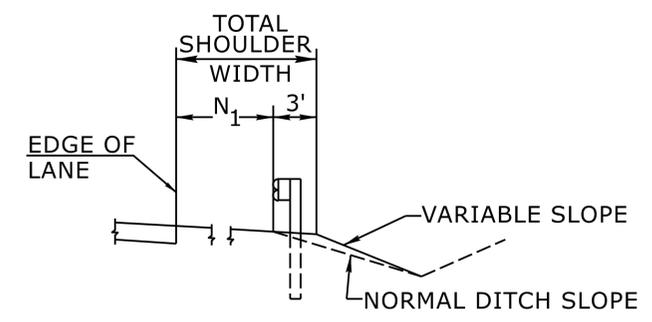
**CONTRACTS STANDARDS
 AND DEVELOPMENT UNIT**
 Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

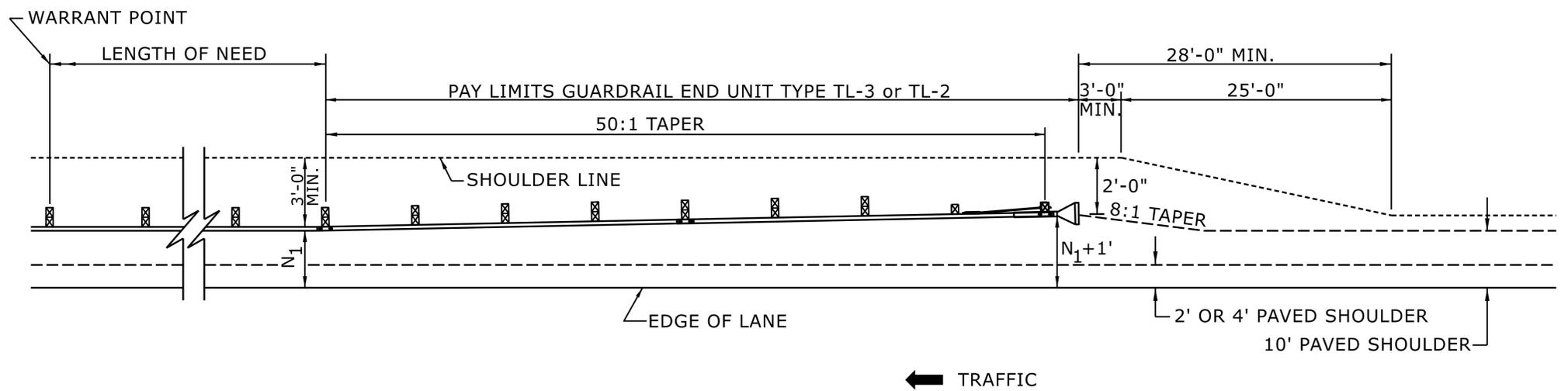


FILL SECTION



CUT SECTION

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

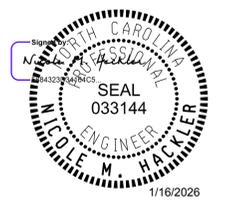


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



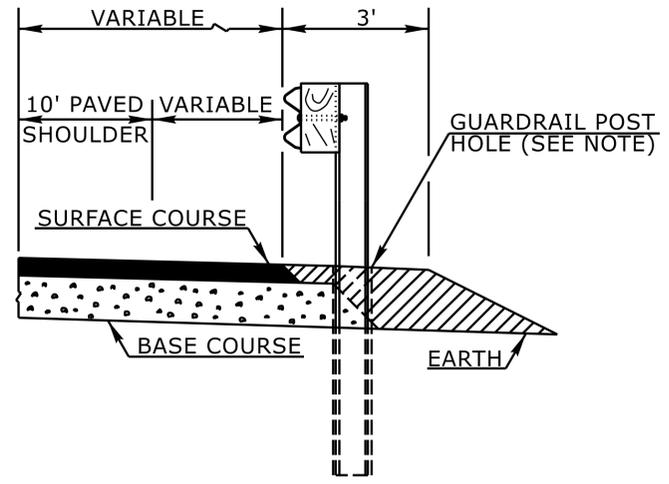
SHEET 6 OF 15
862D01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

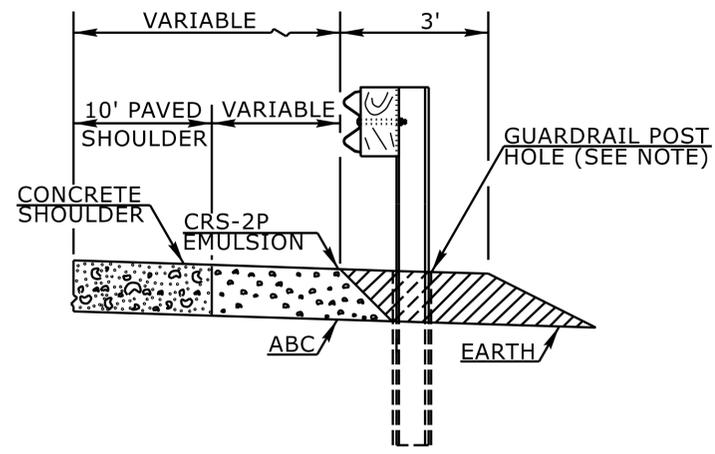
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

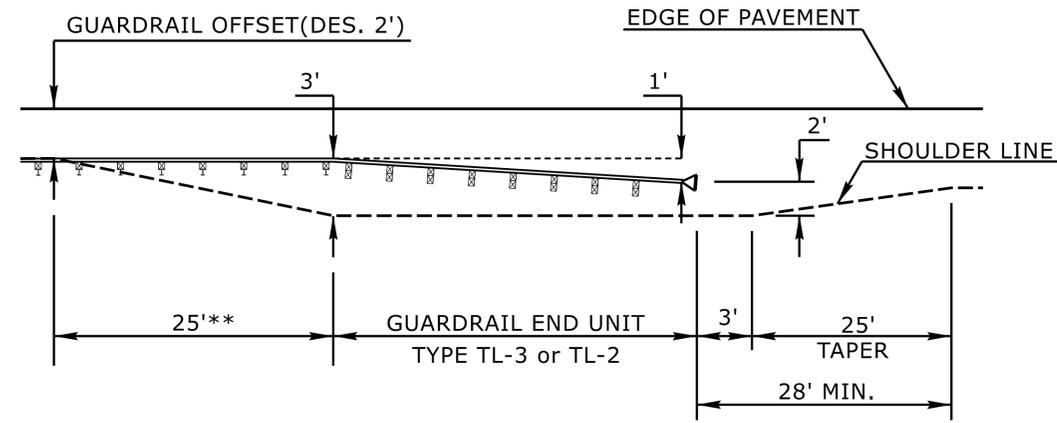
ORIGINAL BY: S.CALHOUN	DATE: 7-25-2024
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	



FLEXIBLE PAVED SHOULDER

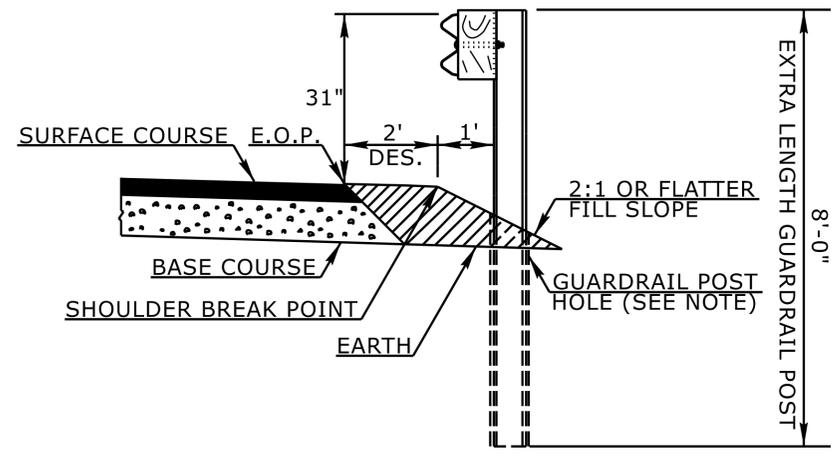


CONCRETE PAVED SHOULDER



**8' GUARDRAIL POST ON 2:1 SLOPE-END UNIT TRANSITION*
PLAN VIEW**

* THE 8' GUARDRAIL POST ON 2:1 SLOPE DETAIL IS INTENDED FOR USE ONLY IN SEVERELY CONSTRAINED AREAS WITH A POSTED SPEED ≤ 60 MPH. GUARDRAIL END UNITS MAY NOT BE PLACED ON THE 2:1 SLOPE AND MUST TRANSITION TO THE SHOULDER.
** 8' GUARDRAIL POST SHOULD BE USED IN THIS RANGE



8' GUARDRAIL POST ON 2:1 SLOPE*

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



SHEET 11 OF 15
862D01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

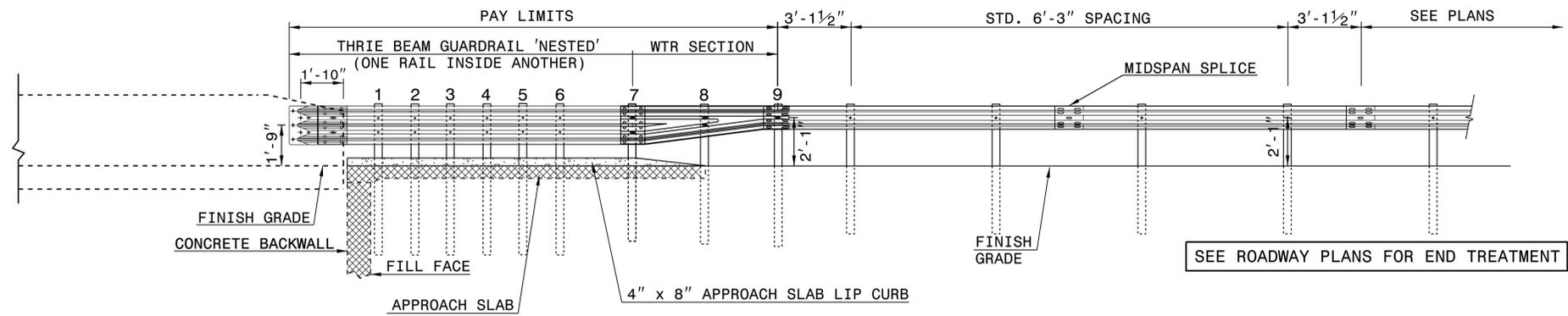
SEE TITLE BLOCK

ORIGINAL BY: L.SMITH DATE: 10-14-2025
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**

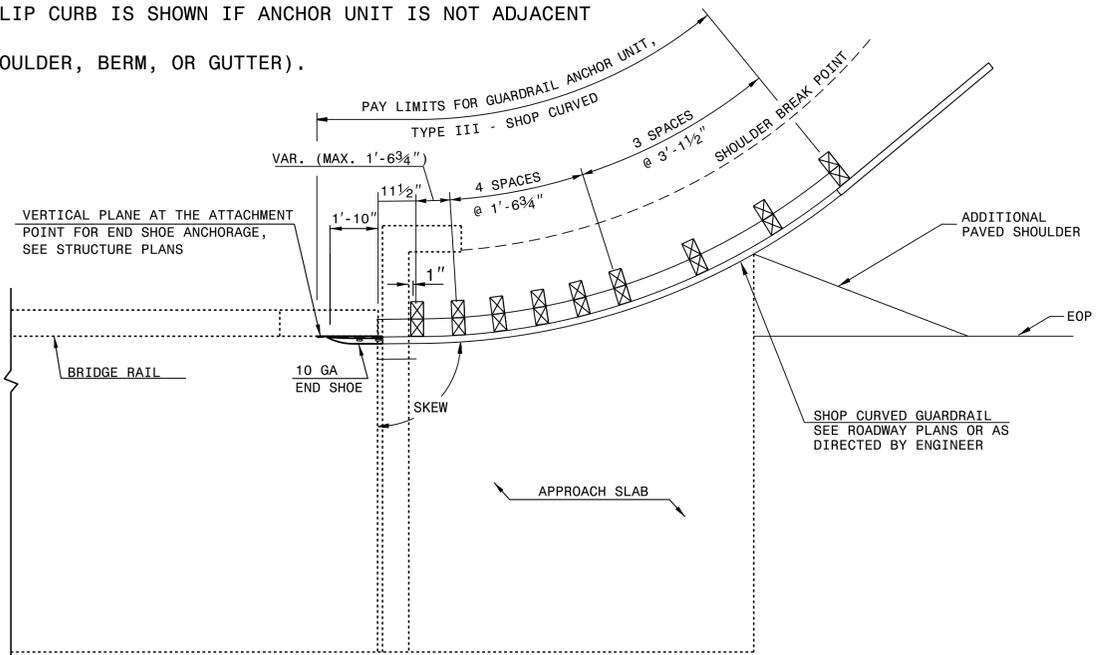
SHEET 1 OF 1
TYPE III SC



ELEVATION

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 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.



PLAN VIEW

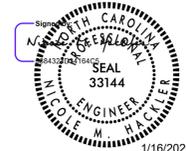
**GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED
FOR ATTACHMENT TO RAIL ON BRIDGE**

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

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\Guardrail\31 inch Guardrail\type_iii_sc.dgn Jhowerton AT CSD-292595

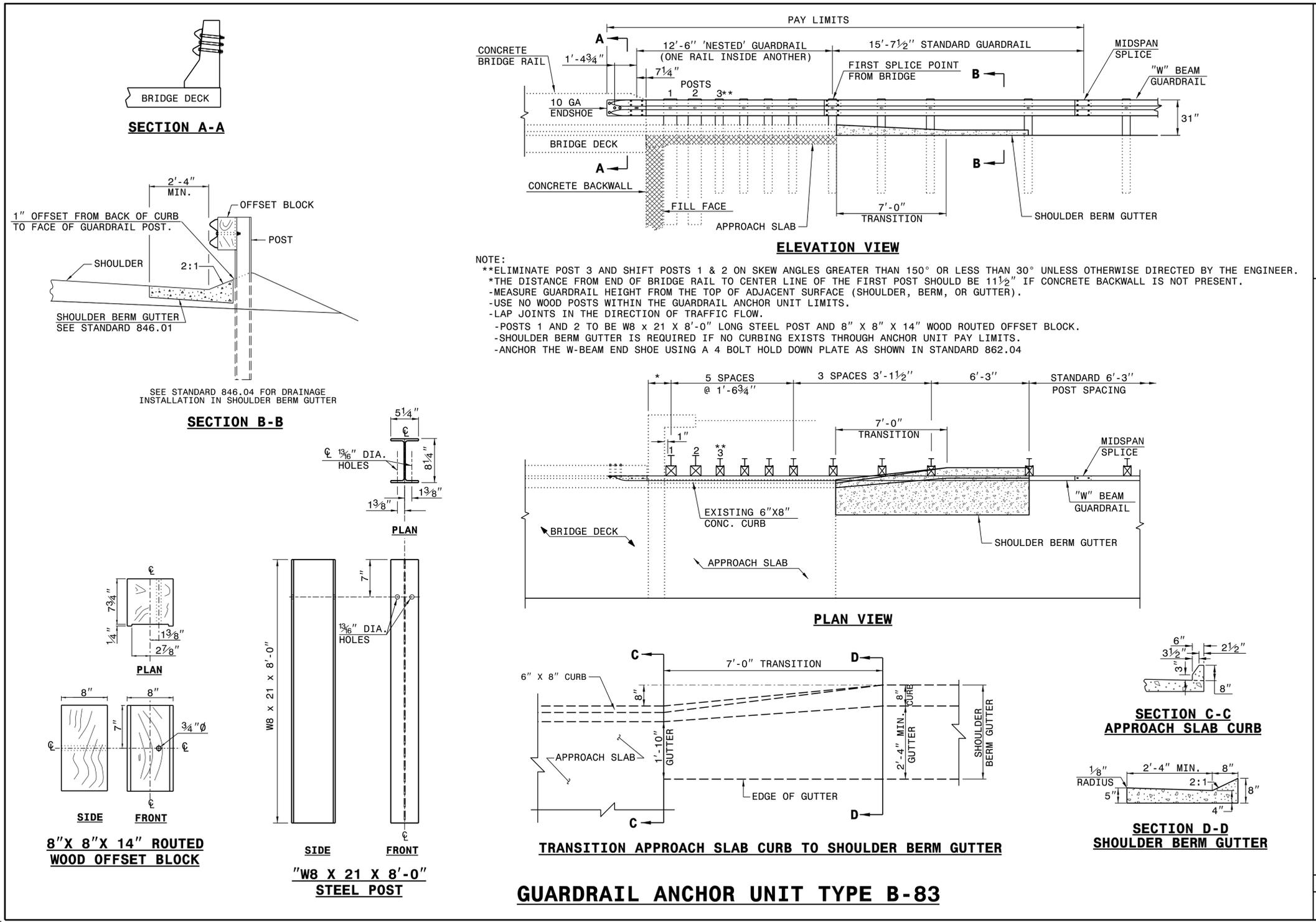


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**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.: Jhowerton\guardrail\31inguardrail\typeiiiisc.dgn



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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT TYPE B-83



SHEET 6 OF 9
862D03

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: K. Aldridge DATE: 06-02-2025
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +15%	Borrow	Waste
-L- 11+60.00	-L- 15+34.60	153	221	68	
BRIDGE					
-L- 16+97.55	-L- 18+85.00	39	278	239	
-DR- 10+10.00	-DR1- 11+40.00	25	20		5
TOTALS:		217	519	307	5
LOSS DUE TO CLEARING & GRUBBING					
ROCK WASTE TO REPLACE BORROW					
ADJUST FOR ROCK WASTE					
WASTE IN LIEU OF BORROW					
PROJECT TOTALS:		217	519	302	0
Est. 5% to Replace Top Soil on Borrow Pit					
GRAND TOTALS:		217	519	317	0
SAY		240		350	

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

Note: Earthwork quantities are calculated by TGS Engineers. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

DRAINAGE DITCH EXCAVATION = 98 CUBIC YARDS
 SELECT GRANULAR MATERIAL = 200 CUBIC YARDS
 PER GEOTECH RECOMMENDATION, ESTIMATED 225 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	STATION	STATION	LENGTH
-L-, RT	15+24.68	15+35.31	23.58
TOTAL:			23.58
SAY			25

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	11+60.00	11+66.25	CL	13.89			
TOTAL:				13.89			
SAY				20			

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

GUARDRAIL SUMMARY

IN FEET

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH		W		ANCHORS					IMP. ATTN. TYPE 350			EXTRA LENGTH GUARDRAIL POSTS (8" STEEL)	REMOVE EXISTING GUARDRAIL	REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	TYPE III	TYPE III SC	TYPE B-83 SC	TL-3	AT-1	EA	G	NG							
-L-	13+82.33	15+26.08	LT	143.75				15+26.08	5.6'	8.6'		50		1	1			1											
-L-	15+24.55	15+45.03	RT		37.5		15+45.03		8.6'	11.6'					1				1									R=20'	
-L-	16+87.02	16+89.80	LT		37.5		16+87.02		3.6'	6.6'									1									R=10'	
-L-	17+15.15	18+66.97	RT	50.00	87.5			17+15.15	4.0'	7.0'		50		1		1		1										R=20'	
SUB-TOTALS				193.75	162.5										1	2	1	2	2										
LESS ANCHOR DEDUCTIONS																													
	TYPE III				1 @ 18.75 ft																								
	TYPE III SHOP CURVED				2 @ 18.75 ft																								
	TYPE TL-3				2 @ 50.00 ft																								
	AT-1				2 @ 6.25 ft																								
	TYPE B-83 SHOP CURVED				1 @ 25.00 ft																								
ANCHOR TOTALS				118.75	75																								
GRAND-TOTALS				75.00	87.50											1	2	1	2	2									
SAY				87.50	87.50										1	2	1	2	2										

ADDITIONAL GUARDRAIL POSTS = 5 EA

COMPUTED BY: ___ JKS JULY 24, 2025
CHECKED BY: ___ CRL JULY 24, 2025

PROJECT NO. SHEET NO.
DF18312.2023011 3G-1

(9-17-24)

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

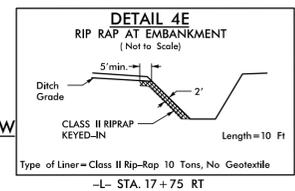
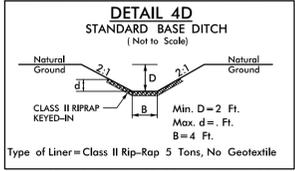
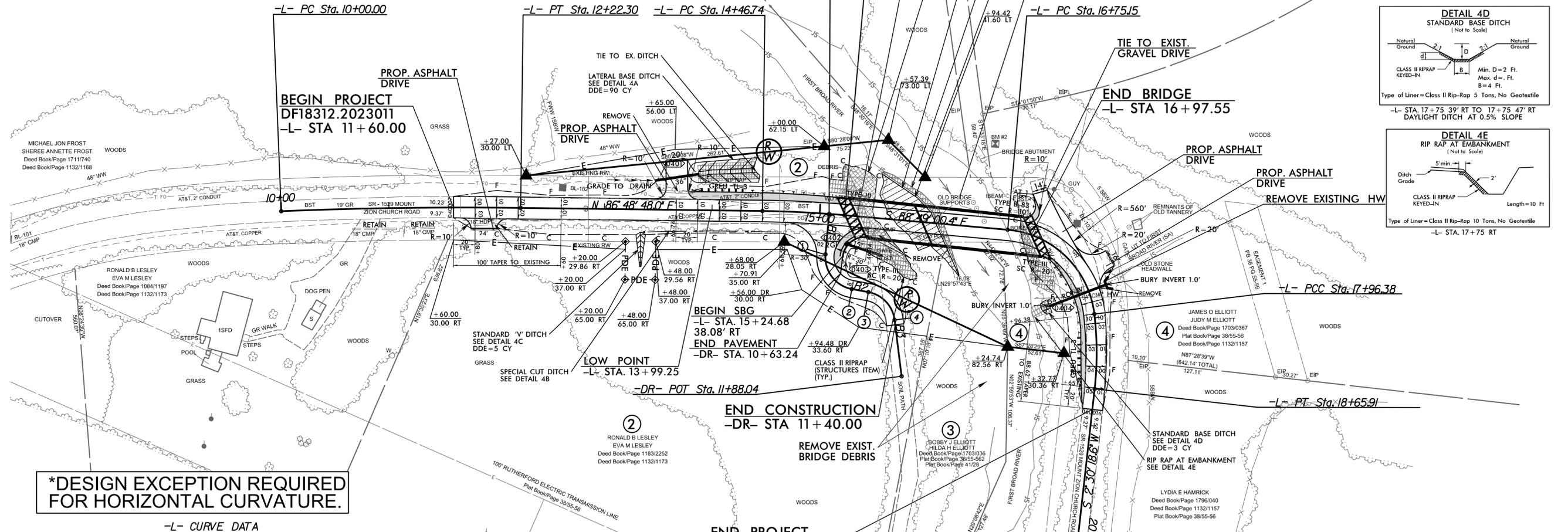
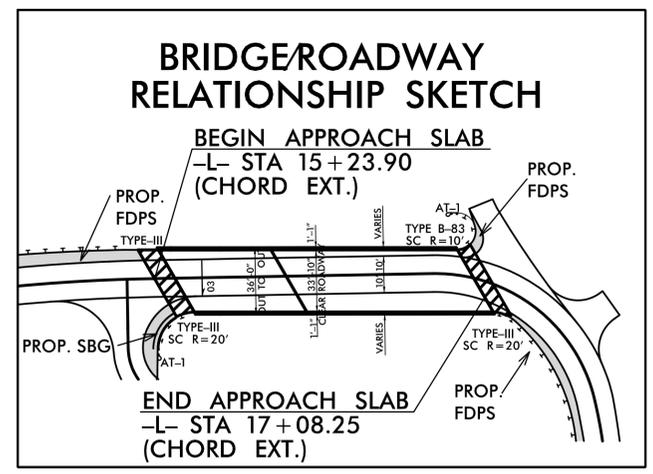
SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY					
				TOTAL LF:	100

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

8/17/99

PROJECT REFERENCE NO. DF18312.2023011		SHEET NO. 4	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
TGS ENGINEERS 201 W. MARION ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			



***DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE.**

-L- CURVE DATA

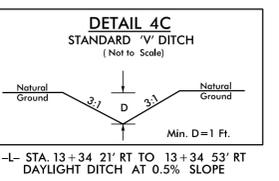
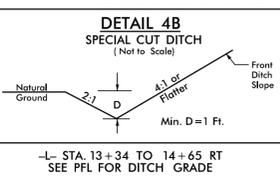
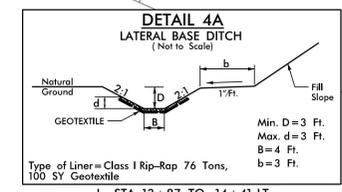
PI Sta 11+11.7 $\Delta = 3^{\circ}02' 23.2''$ (RT) $D = 1^{\circ}22' 02.8''$ $L = 222.30'$ $T = 111.17'$ $R = 4,190.00'$ $SE = EXIST.$	PI Sta 14+84.90 $\Delta = 4^{\circ}22' 11.6''$ (RT) $D = 5^{\circ}43' 46.5''$ $L = 76.27'$ $T = 38.15'$ $R = 1,000.00'$ $DS = 45$ MPH	PI Sta 17+47.28 $\Delta = 7^{\circ}02' 34.2''$ (RT) $D = 6^{\circ}22' 38.2''$ $L = 121.23'$ $T = 72.13'$ $*R = 89.00'$ $SE = 3.0\%$ $DS = 20$ MPH	PI Sta 18+31.30 $\Delta = 13^{\circ}16' 44.8''$ (RT) $D = 19^{\circ}05' 54.9''$ $L = 69.53'$ $T = 34.92'$ $R = 300.00'$ $SE = EXIST.$
---	--	---	--

-DR- CURVE DATA

PI Sta 10+64.90 $\Delta = 8^{\circ}40' 36.2''$ (LT) $D = 190^{\circ}59' 09.4''$ $L = 44.34'$ $T = 27.33'$ $R = 30.00'$ $SE = -2\%$	PI Sta 11+19.53 $\Delta = 7^{\circ}28' 35.0''$ (RT) $D = 190^{\circ}59' 09.4''$ $L = 37.95'$ $T = 21.99'$ $R = 30.00'$ $SE = 2\%$
---	--

(B1) - S 110° 59.6' W
 (B2) - S 83° 29' 36.6" E
 (B3) - S 11° 01' 01.6" E

(1) -DR- PC Sta. 10+37.57
 (2) -DR- PT Sta. 10+81.90
 (3) -DR- PC Sta. 10+97.54
 (4) -DR- PT Sta. 11+35.49



FOR -L- PROFILE, SEE SHEET NO. 5
FOR -DR- PROFILE, SEE SHEET NO. 5
SEE S-1 TO S-27 FOR STRUCTURE PLANS

REVISIONS

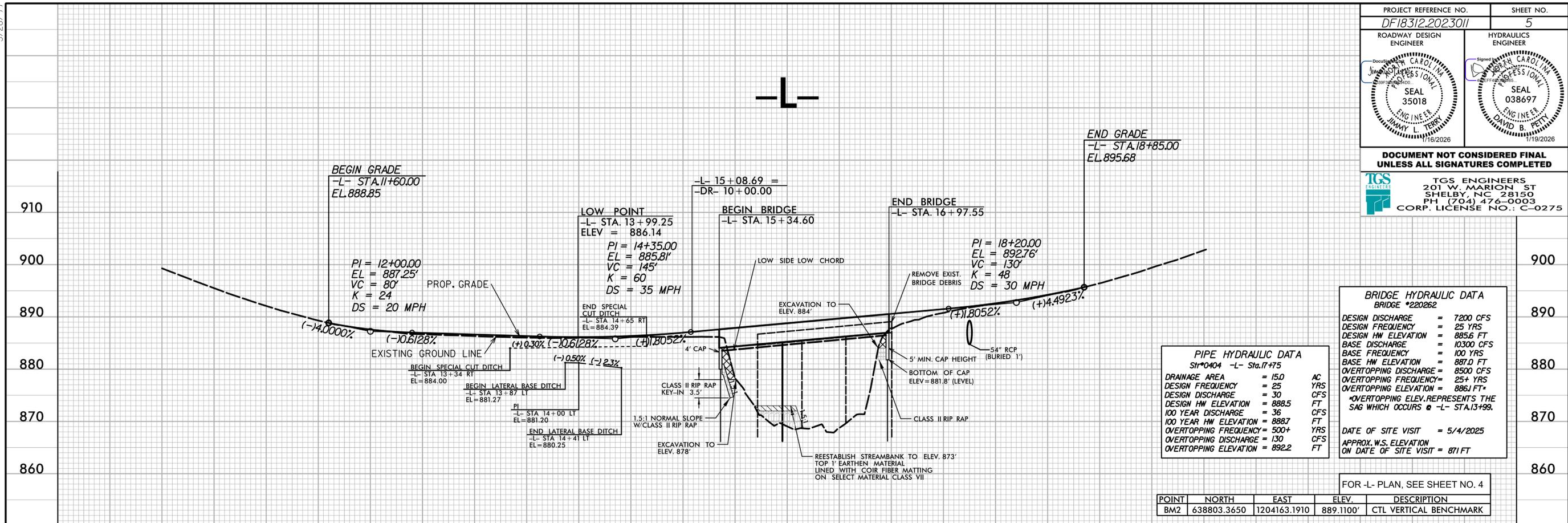
X:\N0001\Div 12 Cleveland 262\Roadway\Proj\NC\leveland 262_Rdy_psh.dgn 1/13/2026 1:13:00 PM

5/28/24

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. 5
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

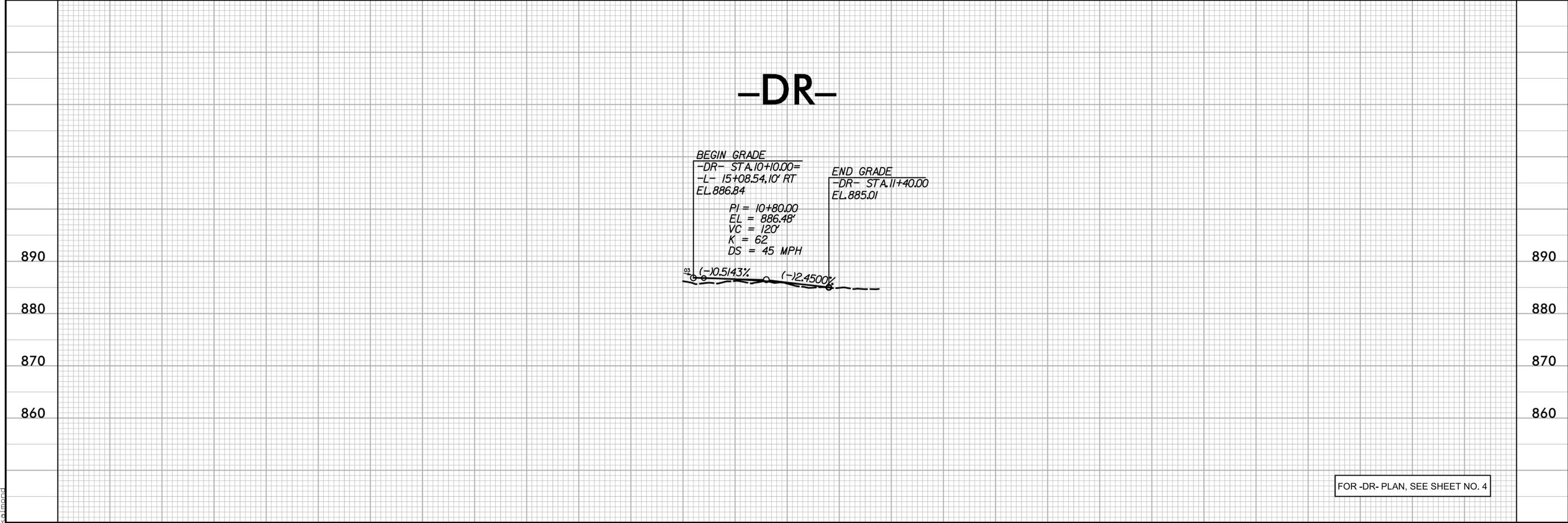
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



10 11 12 13 14 15 16 17 18 19 20

-DR-



10 11

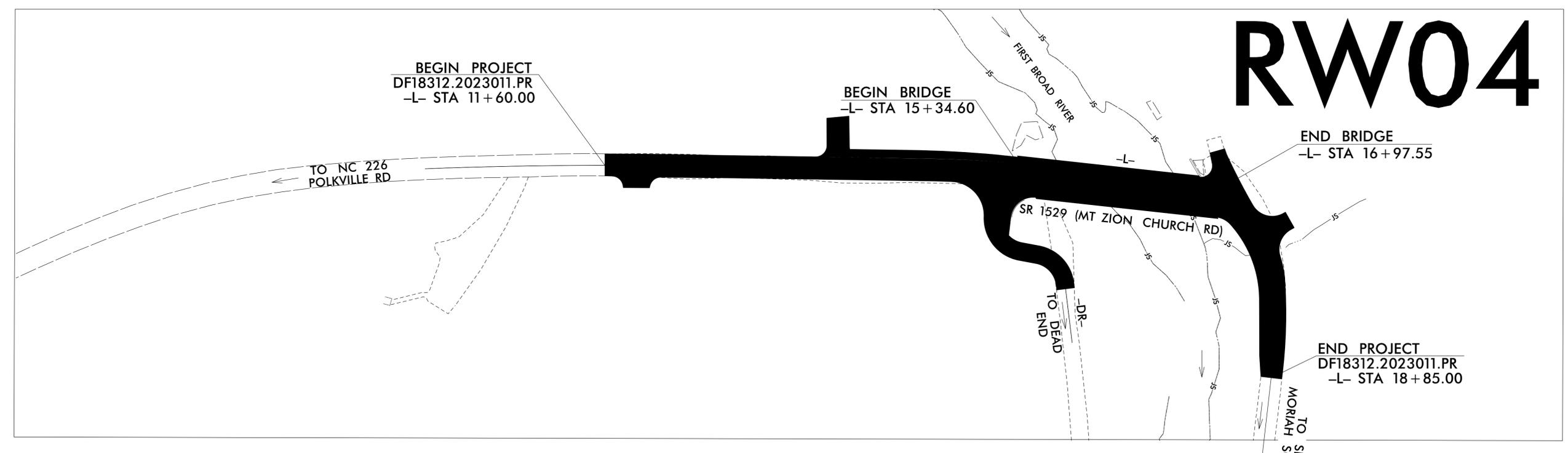
I:\2023\12_Cleveland_262_Roadway\Proj\Cleveland_262_Rdy_pfl.dgn

8/2025

PROJECT: DF18312.2023011

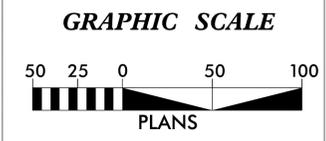
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18312.2023011	RW01	7

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
CLEVELAND COUNTY



RW04

14-AUG-2025 08:08 SA:\surveyors\projects\LIB\220262\RW STAKING 2025\MTC\220262_is_r_w01.dgn mcornewell AT MORNWELL\TOP



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 638,314.688(ft) EASTING: 1,202,801.764(ft) ELEVATION: 951.98(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99983959
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-2" TO -L- STATION 10+00.00 IS N 61°35'15.65" E 800.835(ft)
 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:
 8/14/2025

LETTING DATE:
 3/24/2026

PROFESSIONAL LAND SURVEYOR

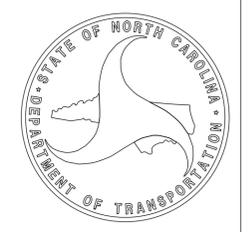
Signed by:
 Matthew Cornwell
 E-0029611473E475

8/14/2025

SIGNATURE:



Date:



SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

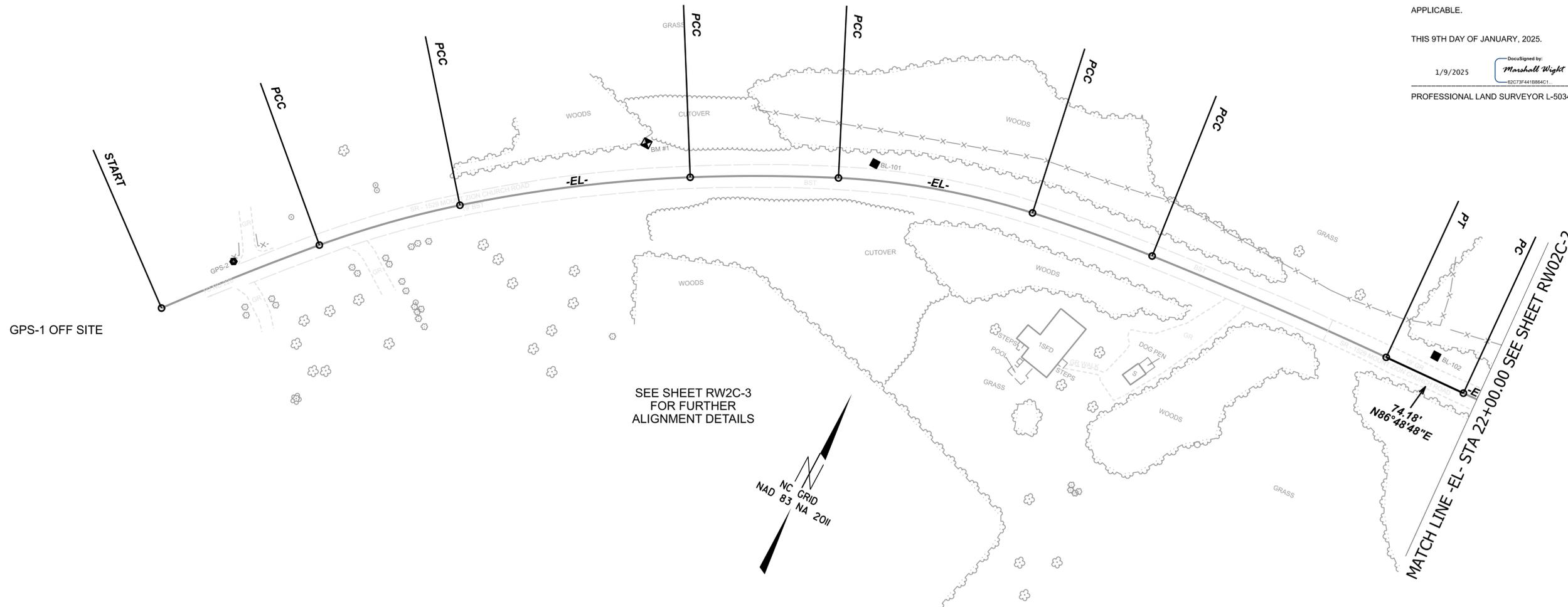
I, MARSHALL WIGHT, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: AA
TYPE OF GPS FIELD PROCEDURE: VRS
DATES OF SURVEY: 12/9/24 - 12/17/24
DATUM/EPOCH: NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: GPS-2
NORTHING: 638,314.688
EASTING: 1,202,801.764
COMBINED GRID FACTOR: 0.99983959
GEOID MODEL: GEOID 18
UNITS: SURVEY FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 12/9/24 TO 12/17/24, 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 9TH DAY OF JANUARY, 2025.

1/9/2025
DocuSigned by:
Marshall Wight
62C73F4418B64C1
PROFESSIONAL LAND SURVEYOR L-5034



SEE SHEET RW2C-3 FOR FURTHER ALIGNMENT DETAILS

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.

DF18312.2023011

R/W 02C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



PROFESSIONAL LAND SURVEYOR



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

PROJECT: DF18312.2023011
County: Cleveland

PREPARED FOR



LOCATION AND SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

I, MARSHALL WIGHT, PLS. CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: AA
TYPE OF GPS FIELD PROCEDURE: VRS
DATES OF SURVEY: 12/9/24 - 12/17/24
DATUM/EPOCH: NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: GPS-2
NORTHING: 638,314.688
EASTING: 1,202,801.764
COMBINED GRID FACTOR: 0.99983959
GEOID MODEL: GEOID 18
UNITS: SURVEY FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 12/9/24 TO 12/17/24, 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 9TH DAY OF JANUARY, 2025.

1/9/2025

DocuSigned by:
Marshall Wight
62C73F41B86AC1

PROFESSIONAL LAND SURVEYOR L-5034

DF18312.2023011

R/W 02C-2

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

PROJECT: DF18312.2023011
County: Cleveland

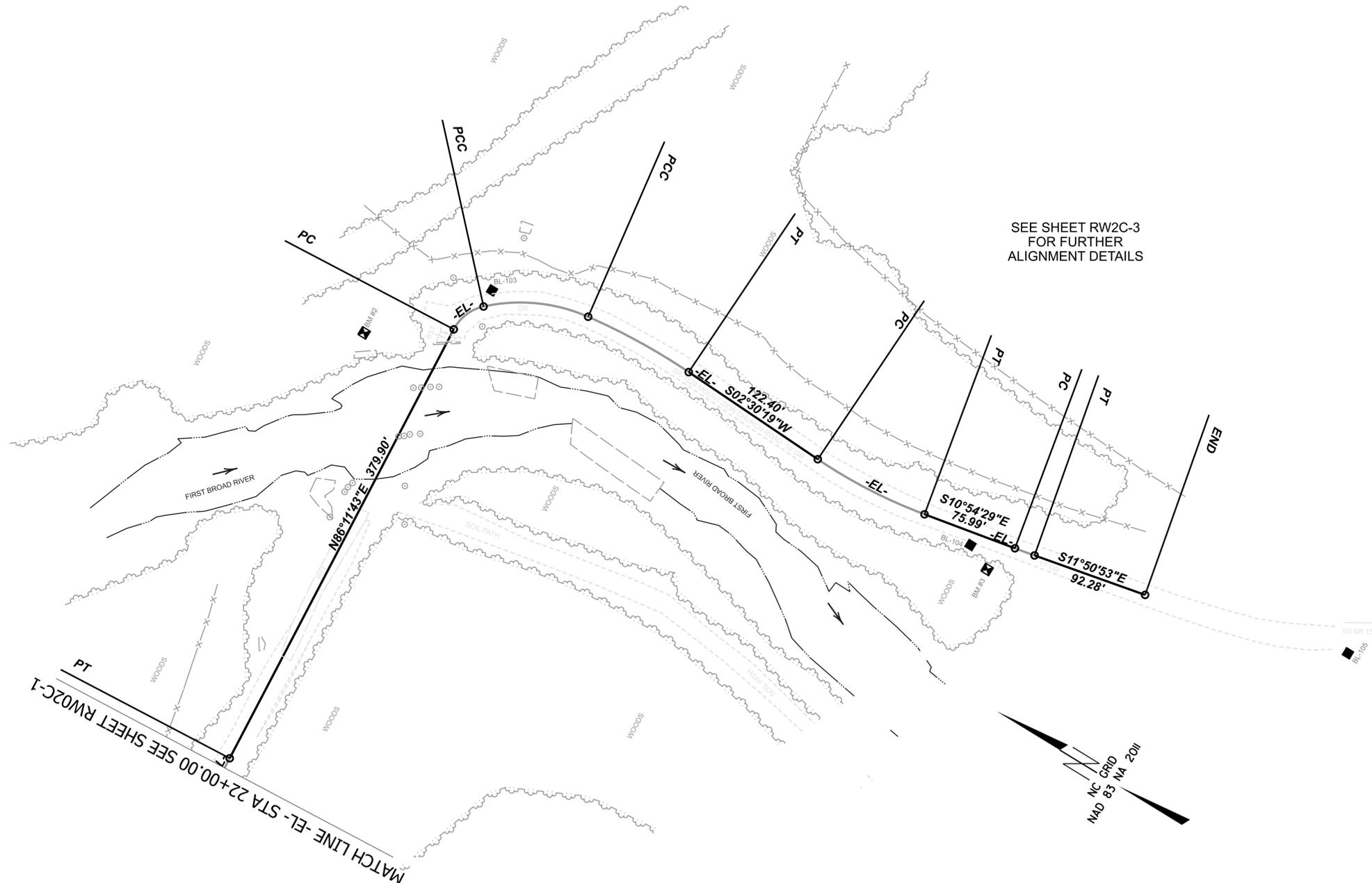
PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479



SEE SHEET RW2C-3
FOR FURTHER
ALIGNMENT DETAILS

MATCH LINE -EL- STA 22+00.00 SEE SHEET RW02C-1

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.

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	GPS-1	637901.164	1202515.188	994.22
2	GPS-2	638314.688	1202801.764	951.98
3	GPS-3	637964.457	1204863.200	962.60
4	GPS-4	638343.806	1205209.914	998.39
101	BL-101	638652.885	1203254.973	918.47
102	BL-102	638735.349	1203765.277	886.12
103	BL-103	638734.891	1204244.048	890.57
104	BL-104	638309.579	1204269.888	910.98
105	BL-105	638011.957	1204352.322	930.81
106	BL-106	637884.489	1204632.949	949.63

BENCHMARK TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
BM1	BM TIE IN BASE OF 16" OAK	638574.9	1203071.0	928.14
BM2	BM TIE IN BASE OF 20" POPLAR	638803.4	1204163.2	889.11
BM3	BM TIE IN BASE OF 24" POPLAR	638288.4	1204260.5	906.75

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	638249.409	1202765.449							
CURVE					03°23'30.0" Right	02°17'22.9"	148.128	74.086	2502.340
PCC	638362.513	1202861.069							
CURVE					08°26'38.0" Right	06°37'27.6"	127.468	63.849	864.928
PCC	638450.772	1202952.878							
CURVE					09°20'19.7" Right	04°36'47.8"	202.432	101.441	1241.972
PCC	638566.694	1203118.559							
CURVE					04°59'07.1" Right	03°51'23.6"	129.268	64.675	1485.676
PCC	638626.998	1203232.853							
CURVE					14°55'51.9" Right	08°39'38.4"	172.401	86.692	661.563
PCC	638679.720	1203396.483							
CURVE					04°10'01.3" Right	03°45'34.1"	110.840	55.445	1524.032
PCC	638695.736	1203506.136							
CURVE					03°02'22.8" Right	01°22'02.6"	222.297	111.175	4190.166
PT	638713.974	1203727.657							
LINE			N86°48'47.528"E	74.177					
PC	638718.098	1203801.720							
CURVE					00°37'04.5" Left	02°51'53.2"	21.569	10.785	2000.000
PT	638719.413	1203823.249							
LINE			N86°11'43.038"E	379.904					
PC	638744.622	1204202.315							
CURVE					49°51'50.5" Right	163°42'08.0"	30.460	16.270	35.000
PCC	638733.986	1204229.840							
CURVE					36°07'27.8" Right	42°58'46.3"	84.050	43.475	133.309
PCC	638659.611	1204265.920							
CURVE					10°19'17.3" Right	11°25'13.3"	90.378	45.312	501.699
PT	638569.452	1204270.102							
LINE			S02°30'18.617"W	122.402					
PC	638447.166	1204264.752							
CURVE					13°24'47.7" Left	14°10'32.2"	94.622	47.528	404.186
PT	638353.014	1204271.668							
LINE			S10°54'29.114"E	75.990					
PC	638278.397	1204286.048							
CURVE					00°56'23.5" Left	05°43'46.5"	16.404	8.202	1000.000
PT	638262.316	1204289.284							
LINE			S11°50'52.587"E	92.285					
END	638171.997	1204308.231							

I, MARSHALL WIGHT, PLS, CERTIFY THAT THE PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: **AA**
TYPE OF GPS FIELD PROCEDURE: VRS
DATES OF SURVEY: 12/9/24 - 12/17/24
DATUM/EPOCH: NAD 83/2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: GPS-2
NORTHING: 638,314.688
EASTING: 1,202,801.764
COMBINED GRID FACTOR: 0.99983959
GEOID MODEL: GEOID 18
UNITS: SURVEY FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM 12/9/24 TO 12/17/24, 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 9TH DAY OF JANUARY, 2025.

1/9/2025
DocuSigned by:
Marshall Wight
62C73F418B64C1

PROFESSIONAL LAND SURVEYOR L-5034

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.

DF18312.2023011

R/W 02C-3

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

PROJECT: DF18312.2023011
County: Cleveland

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. RW02D-1
Location and Surveys	
 <p>TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275</p>	
PROJECT SURVEYOR	
<p>Signed by: <i>Matthew Cornwell</i> EBD09F11473E475</p>  <p>8/14/2025</p>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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 8/14/2025

Signed by:
Matthew Cornwell
EBD09F11473E475
Professional Land Surveyor L-4775

REVISIONS

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	638695.7360	1203506.1355
PT	12+22.30	638713.9740	1203727.6573
POT	12+22.30	638713.9740	1203727.6573
PC	14+46.74	638726.4509	1203951.7577
PT	15+23.01	638727.7839	1204027.9968
POT	15+23.01	638727.7839	1204027.9968
PC	16+75.15	638724.6423	1204180.1042
PCC	17+96.38	638652.2985	1204265.6975
PT	18+65.91	638583.1052	1204270.6991
POT	20+02.00	638447.1444	1204264.7506

DR

TYPE	STATION	NORTH	EAST
POT	10+00.00	638727.9772	1204013.6732
PC	10+37.57	638690.4172	1204012.8975
PT	10+81.90	638659.9910	1204039.4916
PC	10+97.54	638658.2195	1204055.0240
PT	11+35.49	638634.1458	1204081.0716
POT	11+88.04	638582.5594	1204091.1150

NOTES:

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

14-AUG-2025 07:36
 S:\S\Projects\LIB\220262\NRW STAKING 2025\WTC\220262_1s.rw02d-1.dgn
 m.cornwell

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. RW03E-1
Location and Surveys	
 <p>TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275</p>	
PROJECT SURVEYOR	
<p>Signed by: <i>Matthew Cornwell</i> EBD09F11473E475...</p>	
8/14/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Matthew T. Cornwell, 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 8/13/2025, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 8/14/2025

Signed by:
Matthew Cornwell
EBD09F11473E475...
Professional Land Surveyor L-4775

REVISIONS

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+27.00	-30.00	638744.1892	1203730.6840
L	14+68.00	28.05	638699.3691	1203973.9548
L	15+00.00	-62.15	638790.1425	1204004.8374
L	15+57.39	-73.00	638800.0570	1204063.8733
L	15+94.42	-41.60	638767.9000	1204100.2418
L	18+24.74	82.56	638616.5235	1204187.4728
L	18+32.77	30.36	638614.2056	1204240.0287

NOT SET - FALLS IN RIVER
NOT SET - FALLS IN RIVER
NOT SET - FALLS IN RIVER

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+20.00	29.86	638689.5875	1203826.8690
L	13+20.00	65.00	638654.5057	1203828.8222
L	13+48.00	65.00	638656.0622	1203856.7789
L	13+48.00	29.56	638691.4456	1203854.8089

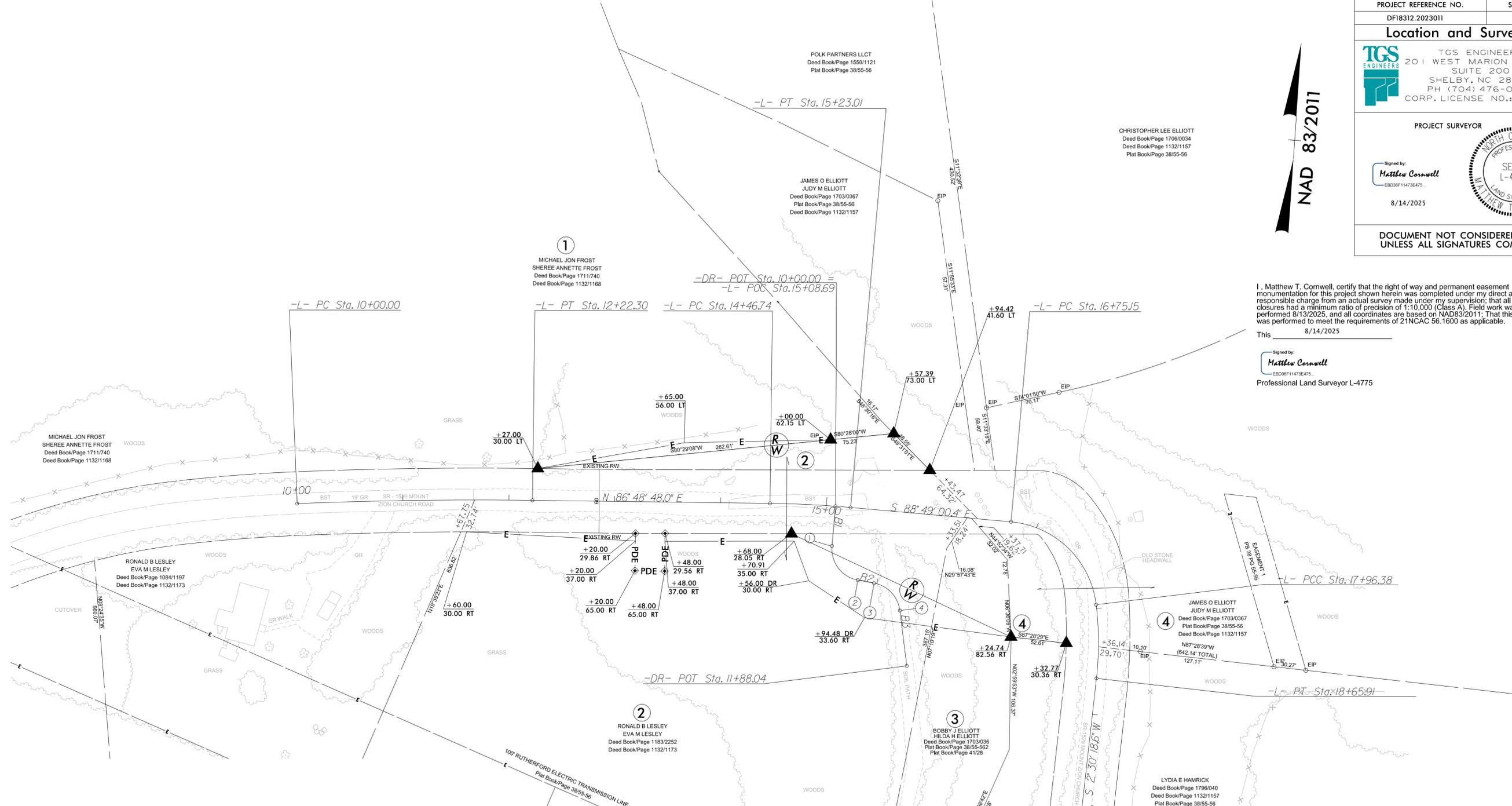
NOT SET - FALLS IN TREE

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/13/2025.

14-AUG-2025 07:49
 S:\S\Projects\LIB\220262\NRW STAKING 2025\WTC\220262.1s.rw03e-1.dgn
 Matthew T. Cornwell
 MATTHEW T. CORNWELL

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. RW04
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
Signed by:  EBO39F11473E475 8/14/2025	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-L- CURVE DATA

PI Sta 11+11.7 Δ = 3° 02' 23.2" (RT) D = 1' 22' 02.8" L = 222.30' T = 111.17' R = 4,190.00' SE = EXIST.	PI Sta 14+84.90 Δ = 4° 22' 11.6" (RT) D = 5' 43' 46.5" L = 76.27' T = 38.15' R = 1,000.00' SE = 3.0% DS = 45 MPH	PI Sta 17+47.28 Δ = 78° 02' 34.2" (RT) D = 64' 22' 38.2" L = 121.23' T = 72.13' • R = 89.00' SE = 3.0% DS = 20 MPH	PI Sta 18+31.30 Δ = 13° 16' 44.8" (RT) D = 19° 05' 54.9" L = 69.53' T = 34.92' R = 300.00' SE = EXIST.
---	---	---	--

-DR- CURVE DATA

PI Sta 10+64.90 Δ = 84° 40' 36.2" (LT) D = 190° 59' 09.4" L = 44.34' T = 27.33' R = 30.00' SE = -2%	PI Sta 11+19.53 Δ = 72° 28' 35.0" (RT) D = 190° 59' 09.4" L = 37.95' T = 21.99' R = 30.00' SE = 2%
---	--

(B1) - S 1° 10' 59.6" W ① -DR- PC Sta. 10+37.57
 (B2) - S 83° 29' 36.6" E ② -DR- PT Sta. 10+81.90
 (B3) - S 11° 01' 01.6" E ③ -DR- PC Sta. 10+97.54
 ④ -DR- PT Sta. 11+35.49

I, Matthew T. Cornwell, 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 8/13/2025, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 8/14/2025

Signed by:

 EBO39F11473E475
 Professional Land Surveyor L-4775

- NOTES:**
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/13/2025.

REVISIONS

15-AUG-2025 07:16
 S:\S\Projects\18312\2025\WTC\2025\WTC\2025\WTC\18312\18312.rw04.dgn
 M:\Users\mccormwell\OneDrive\Documents\18312\18312.dgn

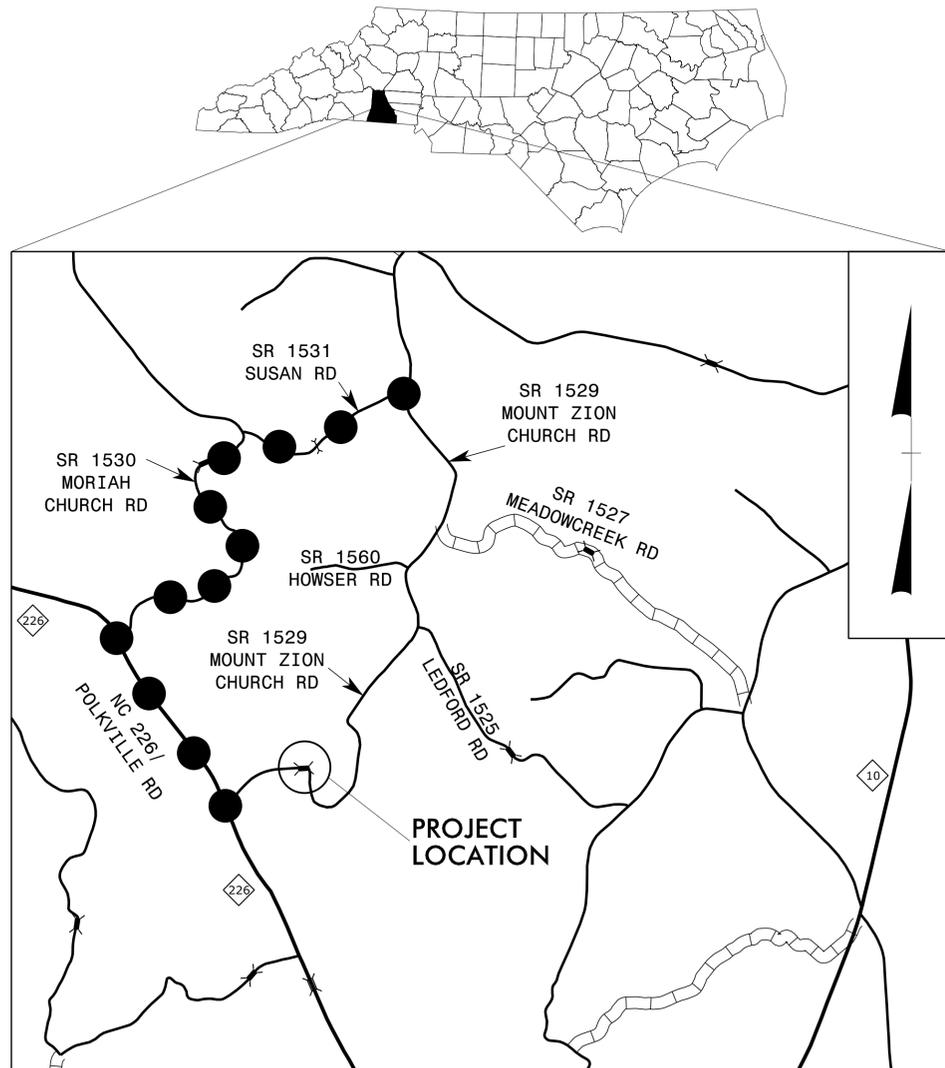
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CLEVELAND COUNTY

**LOCATION: REPLACEMENT OF STRUCTURE #220262 ON SR 1529
(MT. ZION CHURCH RD) OVER FIRST BROAD RIVER**

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



**VICINITY MAP
OFF-SITE DETOUR**

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1A	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND PHASING)
TMP-2	SIGN DESIGN
TMP-2A	DETOUR DETAIL

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1145.01	BARRICADES

LEGEND

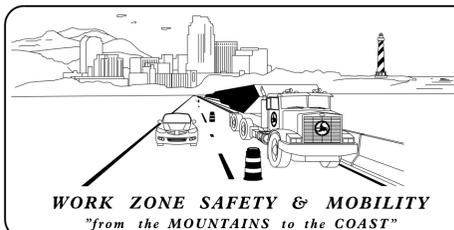
- BARRICADE (TYPE III)
- STATIONARY SIGN

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

APPROVED: *Don A. Parker*
DATE: 1/16/2026



I:\13\2026 X:\NCDOT\Div 12 Cleveland 262\TrafficControl\Tcp\Cleveland 262_TC_TMP_01.dgn User: tbrannan



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

JAMES J. LAPLANTE, E.I.
DESIGN ENGINEER



PROJECT: DF18312.2023011

PROJ. REFERENCE NO.	SHEET NO.
DF18312.2023011	TMP - 1A
 TGS 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 UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

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

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

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

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

TRAFFIC CONTROL DEVICES

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

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

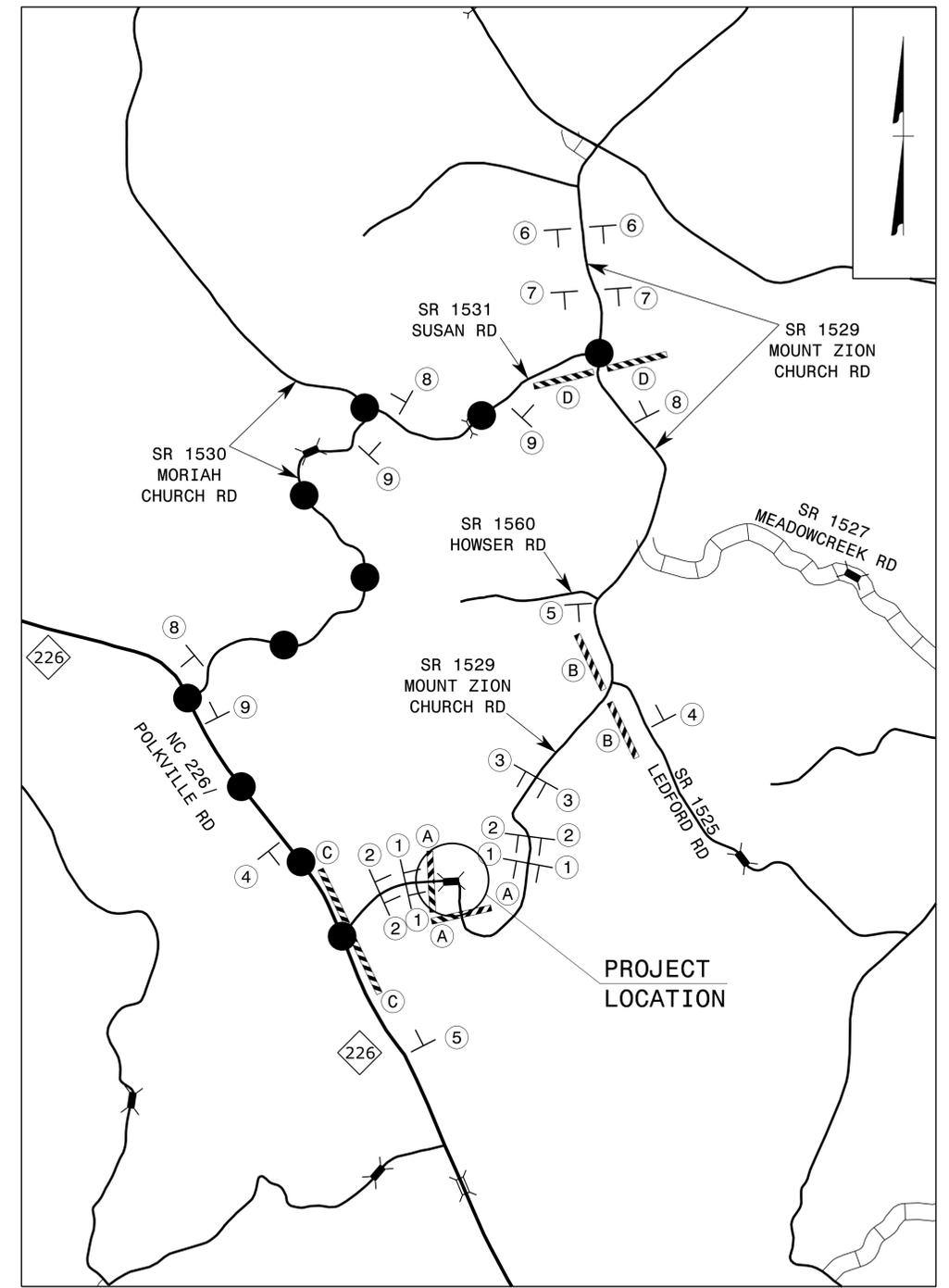
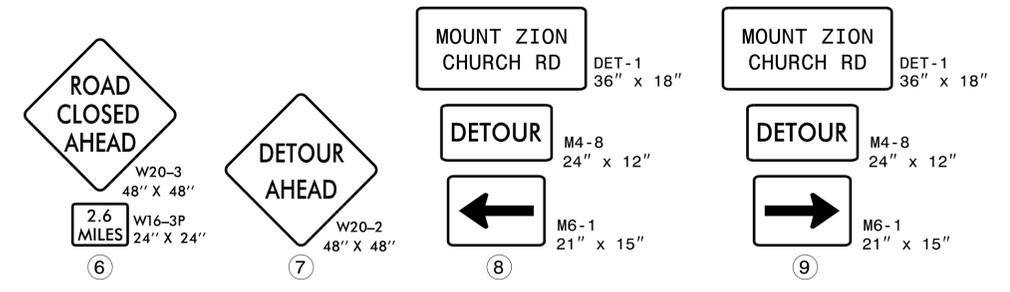
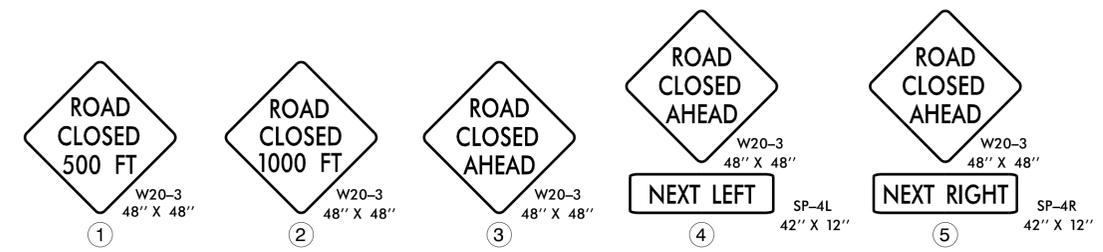
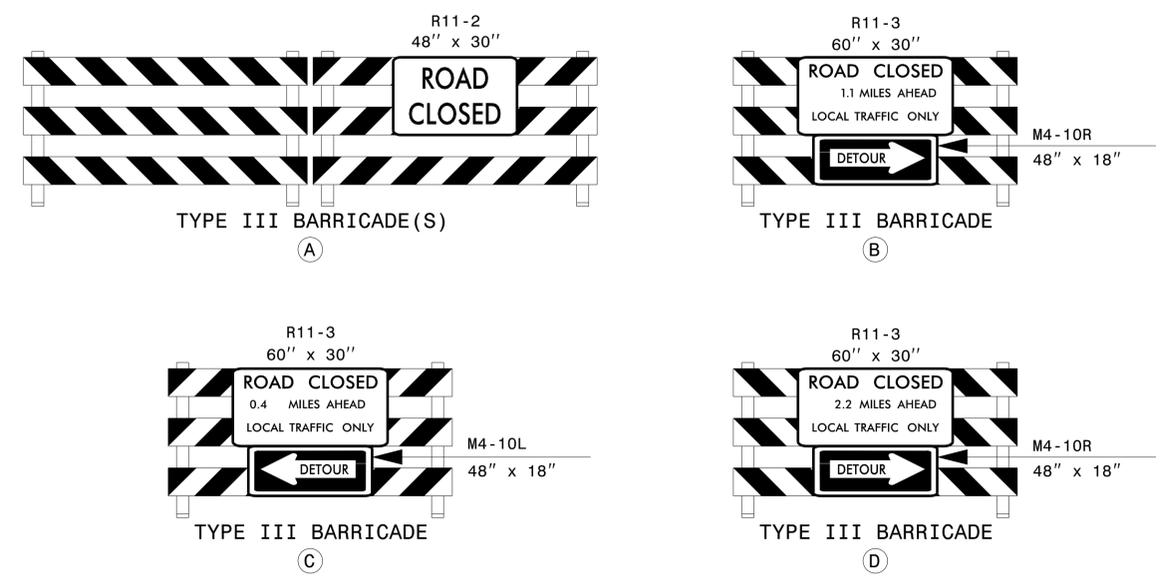
- TRAFFIC MANAGEMENT STRATEGIES:
 - FULL ROADWAY CLOSURES
 - OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

PHASING

- STEP 1 -- INSTALL AND COVER DETOUR SIGNING. (SEE RSD 1101.03 AND TMP-2A).
- STEP 2 -- UNCOVER DETOUR SIGNING AND CLOSE SR 1529 (MOUNT ZION CHURCH RD.) (-L-).
- STEP 3 -- AWAY FROM TRAFFIC, INSTALL PROPOSED BRIDGE AND CONSTRUCT ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 11+60 +/- TO -L- STA. 18+85 +/-.
- STEP 4 -- AWAY FROM TRAFFIC, INSTALL FINAL PAVEMENT MARKINGS.
- STEP 5 -- COVER OR REMOVE DETOUR SIGNING AND RE-OPEN SR 1529 (MOUNT ZION CHURCH RD.) (-L-) TO TRAFFIC.
- STEP 6 -- REMOVE ALL TRAFFIC CONTROL DEVICES.

1/8/2026 X:\NC001\Div 12 Cleveland 262\TrafficControl\Tcp\Cleveland 262_TC_TMP_1A.dgn User:cbbrannan

APPROVED:  <small>730898304DF440...</small> DATE: 1/16/2026 		TRANSPORTATION OPERATIONS PLAN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



VICINITY MAP
● ● ● OFF-SITE DETOUR

NOTE: SEE RSD 1101.03, SHEET 1 FOR ADDITIONAL NOTES AND DETAILS

APPROVED: <i>Don A. Parker</i> DATE: 1/16/2026 		<h2 style="text-align: center;">DETOUR DETAIL</h2>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

I:\8\2026
 X:\NCDOT\Div 12 Cleveland 262\TrafficControl\TCP\Cleveland 262_TC_TMP_2A.dgn
 User: cbrannan

PROJECT: DF18312.2023011

CONTRACT:

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
CLEVELAND COUNTY**

**LOCATION: REPLACEMENT OF STRUCTURE #220262 ON SR 1529
(MT. ZION CHURCH RD) OVER FIRST BROAD RIVER**

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

TIP NO. DF18312.2023011	SHEET NO. PMP - 1
APPROVED: <i>Don A. Parker</i> 1208260ADEF440	
DATE: 1/16/2026	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

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 1529 (MOUNT ZION CHURCH RD)	PAINT	NONE

- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
PAVEMENT MARKINGS		
PAINT (4")		
P1	(4") WHITE EDGELINE (2X)	2900 LF
P13	(4") YELLOW DOUBLE CENTER (2X)	2900 LF
		5800 LF

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

PLAN SUBMITTED TO: NCDOT

JOSHUA B. WHITE, PE, PLS DIVISION 12 PROJECT TEAM LEAD



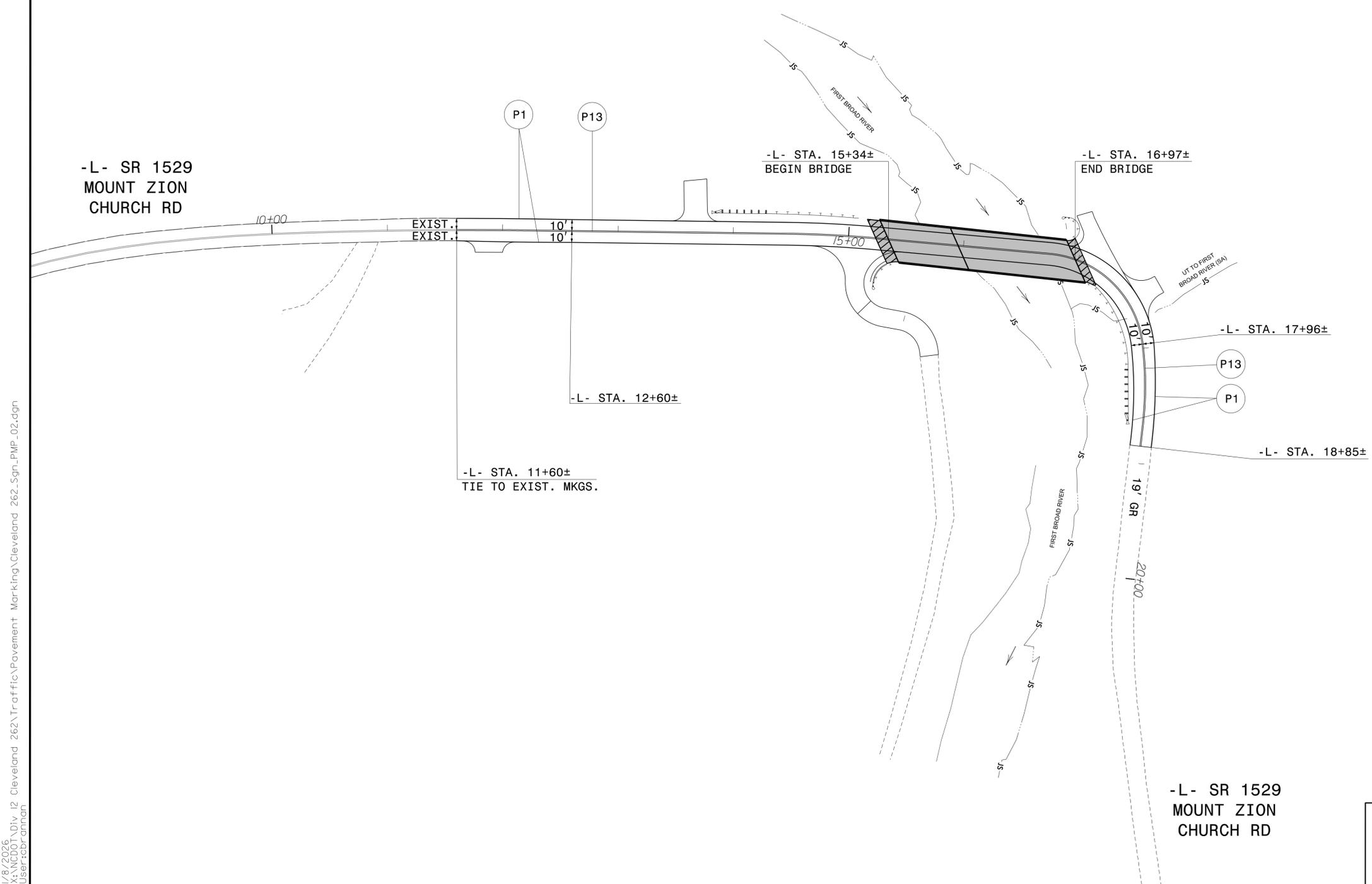
PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER
JAMES J. LAPLANTE, E.I. DESIGN ENGINEER



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

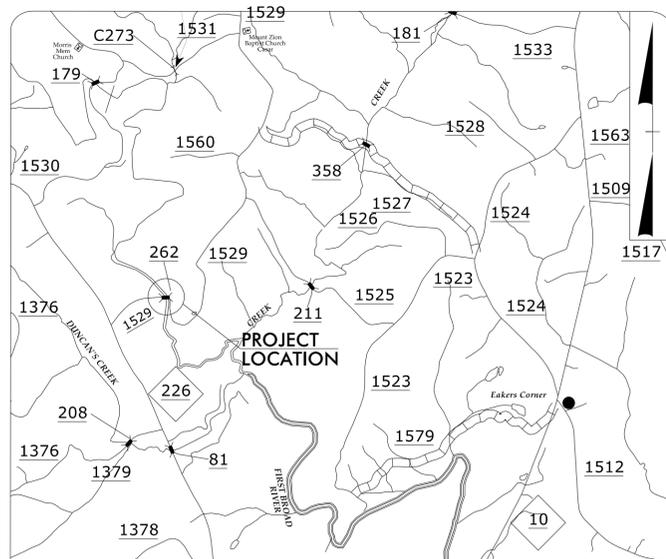
TIP NO. DF18312.2023011	SHEET NO. PMP - 2
APPROVED: <i>Don A. Parker</i> <small>750839304DF440</small>	
DATE: 1/16/2026	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 706 HILLSBOROUGH STREET (SUITE 200) RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	



1/8/2026
 X:\V\001\Div_12\Cleveland_262\Traffic\Pavement_Markings\Cleveland_262_Sgn_PMP_02.dgn
 User:scbrannon

PAVEMENT MARKING DETAIL

PROJECT: DF18312.2023011



VICINITY MAP (NTS)

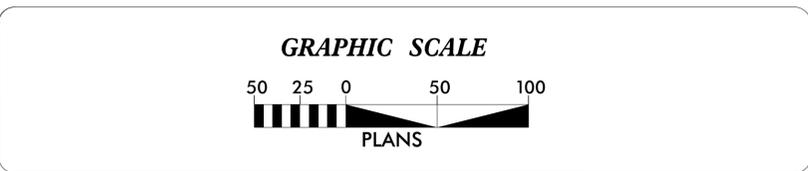
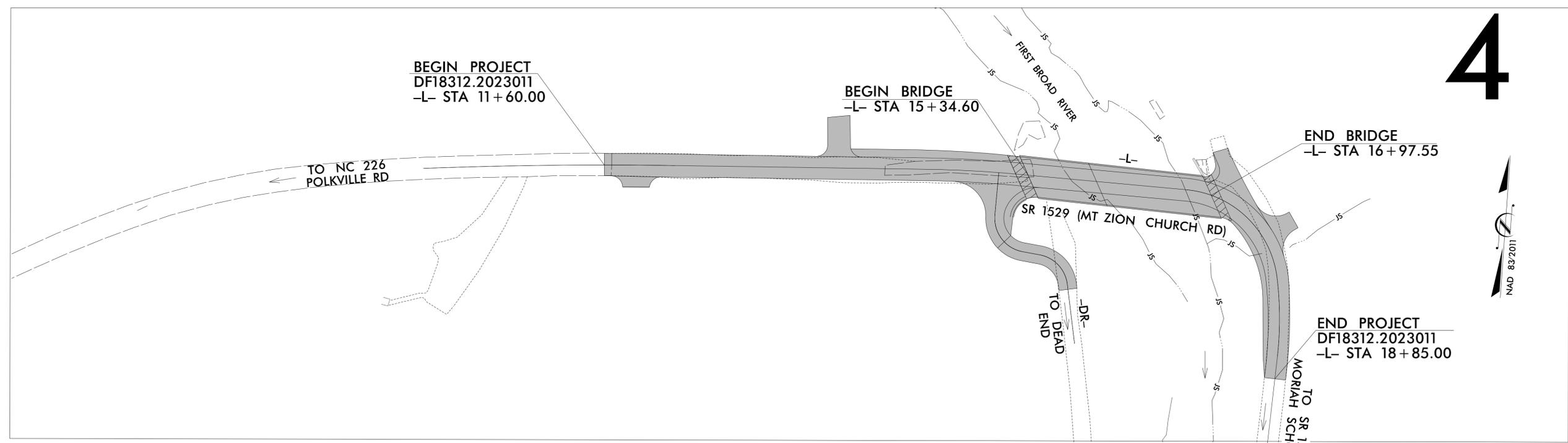
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 PLAN FOR PROPOSED
 HIGHWAY EROSION CONTROL
CLEVELAND COUNTY

**LOCATION: REPLACEMENT OF STRUCTURE #220262
 ON SR 1529 (MT. ZION CHURCH RD) OVER
 FIRST BROAD RIVER**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18312.2023011	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

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



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



Prepared in the Office of:
TGS ENGINEERS
 706 HILLSBOROUGH ST. - SUITE 200
 RALEIGH, NC 27603

Designed by:
Ben Henegar, PE 3564
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

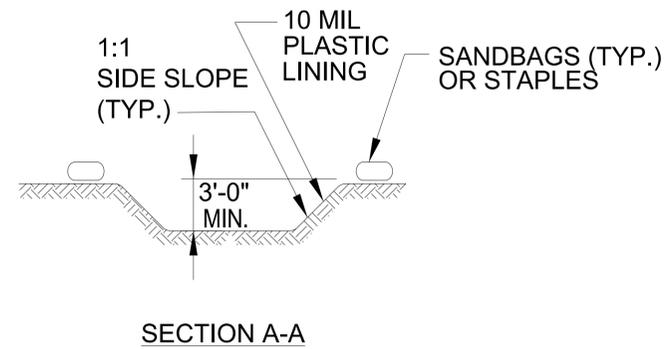
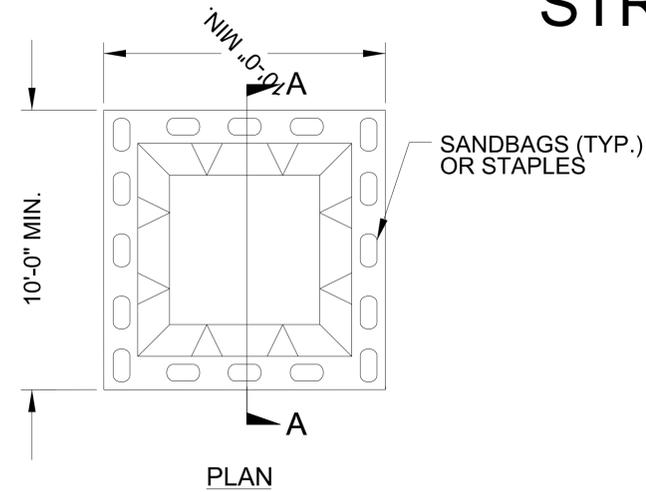
PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				

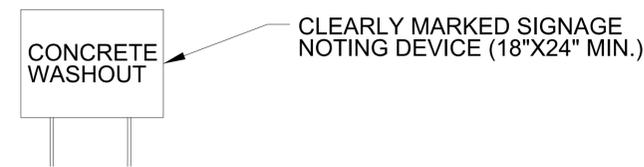
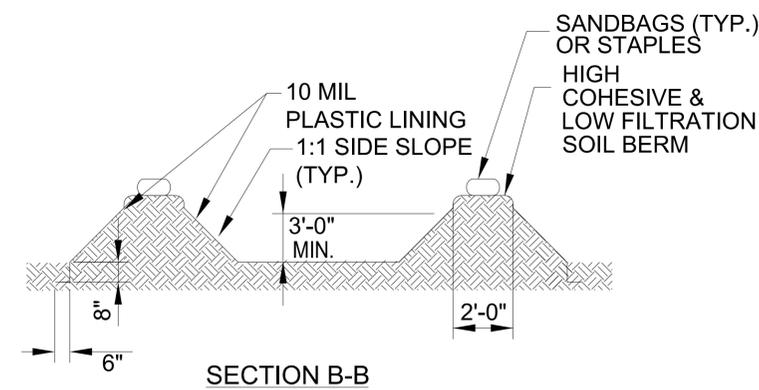
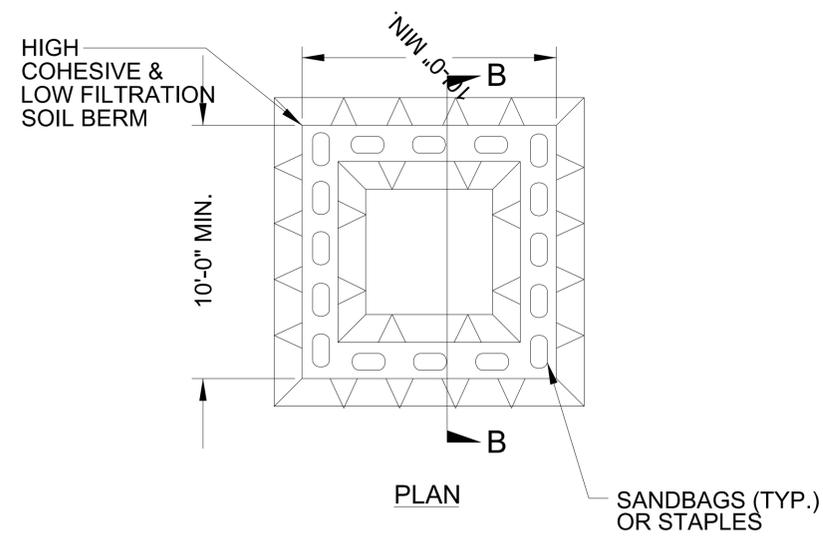
PROJECT REFERENCE NO. <i>DF18312.2023011</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



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

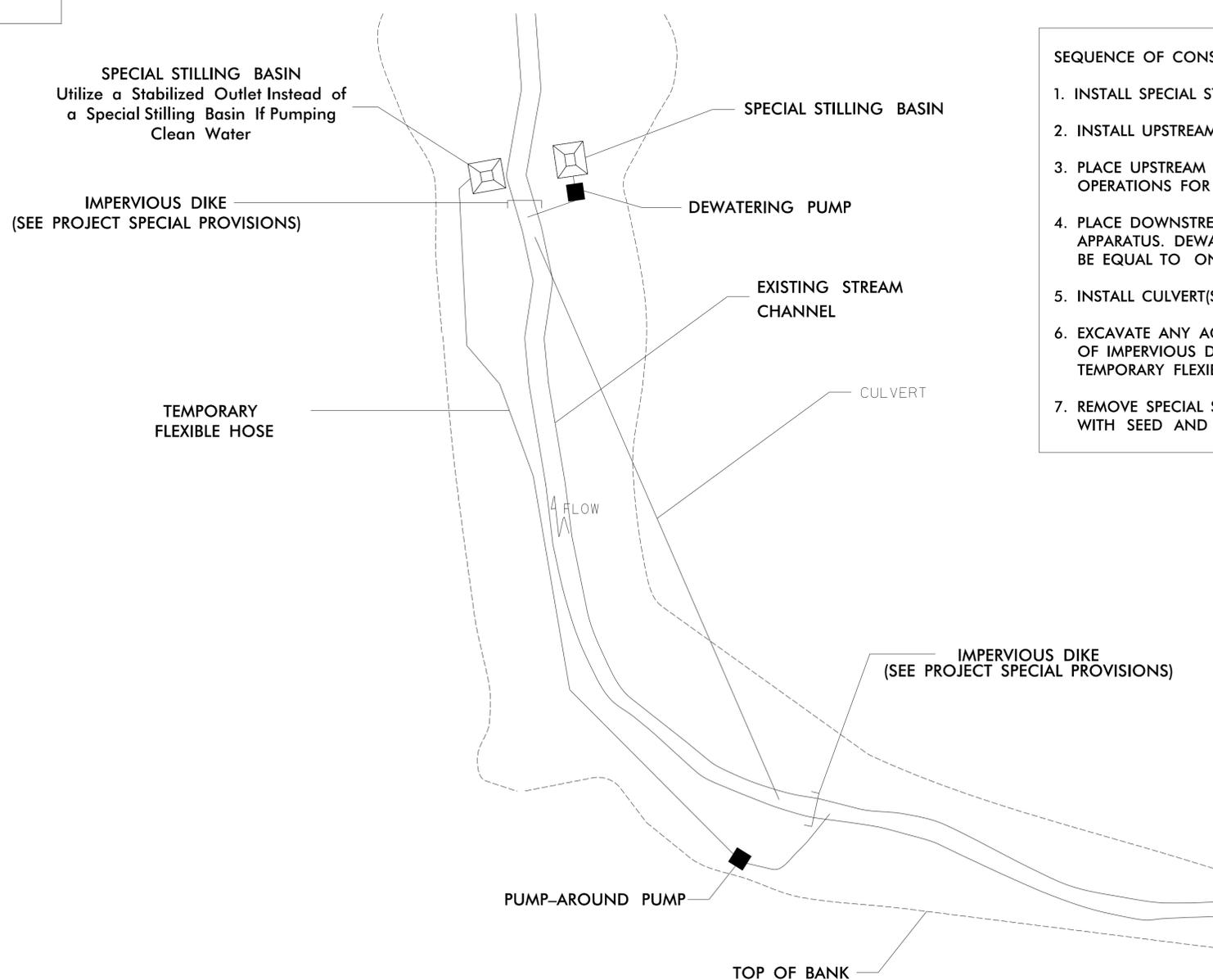
- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED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

PROJECT REFERENCE NO. <i>DF18312.2023011</i>	SHEET NO. <i>EC-2B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EXAMPLE OF PUMP-AROUND OPERATION

NOTES:

- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
- 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
- 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
- 4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>DF18312.2023011</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION SUMMARY SHEET

DITCHLINE STRAW MATTING FOR EROSION CONTROL

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

DITCHLINE EXCELSIOR MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	17+80	18+50	LT	40
SUBTOTAL					40

SLOPE MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	14+50	15+10	LT	70
4	-L-	17+50	18+50	RT	110
SUBTOTAL					180

MATTING FOR EROSION CONTROL TOTALS

	ESTIMATE (SY)
DITCHLINE STRAW MATTING SUBTOTAL	N/A
DITCHLINE EXCELSIOR MATTING SUBTOTAL	40
SLOPE MATTING SUBTOTAL	180
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	270
TOTAL	490
SAY	800

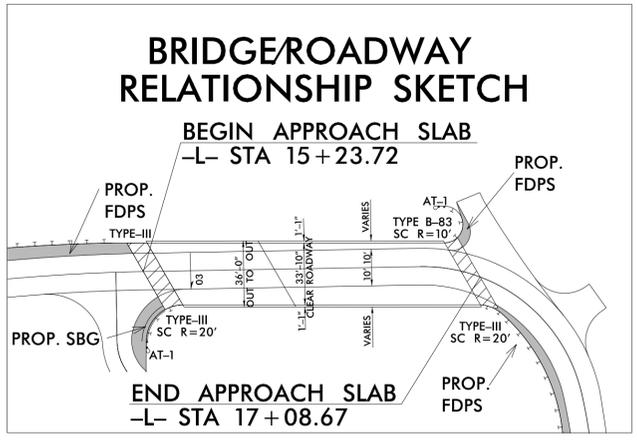
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>DF18312.2023011</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



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

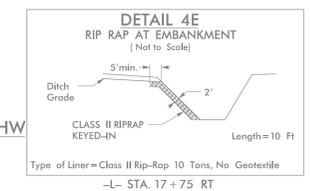
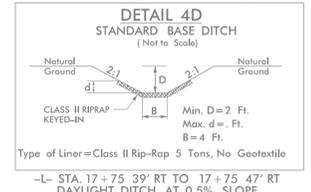
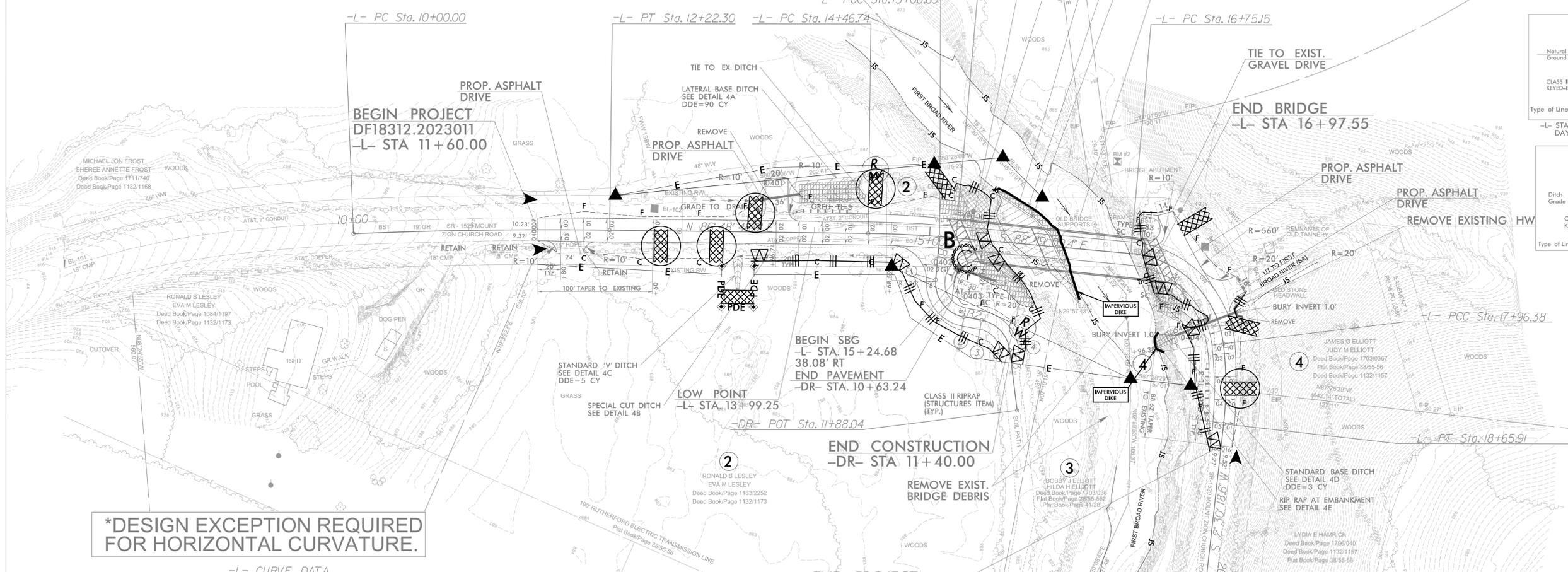
NOTE: PLACE TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

POLK PARTNERS LLC
JUDY M ELLIOTT
Deed Book/Page 1550/1121
Plat Book/Page 38/55-56

BEGIN BRIDGE
-L- STA 15 + 34.60

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

CHRISTOPHER LEE ELLIOTT
Deed Book/Page 1706/0034
Deed Book/Page 1132/1157
Plat Book/Page 38/55-56



*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE.

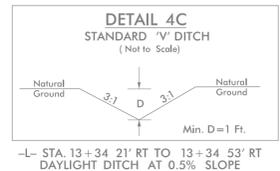
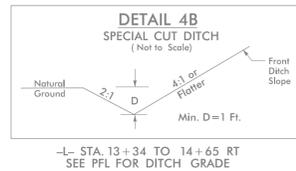
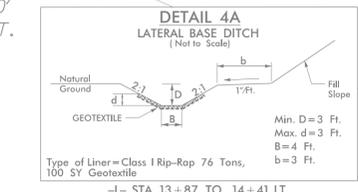
-L- CURVE DATA

PI Sta 11+11.7 Δ = 3° 02' 23.2" (RT) D = 1° 22' 02.8" L = 222.30' T = 111.7' R = 4,190.00' SE = EXIST.	PI Sta 14+84.90 Δ = 4° 22' 11.6" (RT) D = 5° 43' 46.5" L = 76.27' T = 38.15' R = 1,000.00' SE = 3.0% DS = 45 MPH	PI Sta 17+47.28 Δ = 78° 02' 34.2" (RT) D = 64° 22' 38.2" L = 121.23' T = 72.13' * R = 89.00' SE = 3.0% DS = 20 MPH	PI Sta 18+31.30 Δ = 13° 16' 44.8" (RT) D = 19° 05' 54.9" L = 69.53' T = 34.92' R = 300.00' SE = EXIST.
--	---	---	--

-DR- CURVE DATA

PI Sta 10+64.90 Δ = 84° 40' 36.2" (LT) D = 190° 59' 09.4" L = 44.34' T = 27.33' R = 30.00' SE = -2%	PI Sta 11+19.53 Δ = 72° 28' 35.0" (RT) D = 190° 59' 09.4" L = 37.95' T = 21.99' R = 30.00' SE = 2%
---	--

(B1) - S 1° 10' 59.6" W (1) -DR- PC Sta. 10+37.57
 (B2) - S 83° 29' 36.6" E (2) -DR- PT Sta. 10+81.90
 (B3) - S 11° 01' 01.6" E (3) -DR- PC Sta. 10+97.54
 (4) -DR- PT Sta. 11+35.49

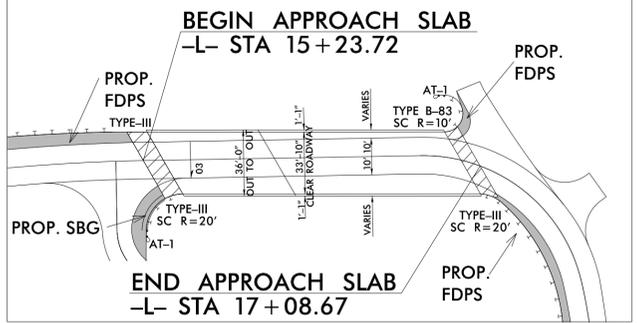


BOBBY J ELLIOTT
HILDA H ELLIOTT
Deed Book/Page 1703/036
Deed Book/Page 1132/1157
Plat Book/Page 38/55-56
Plat Book/Page 41/28

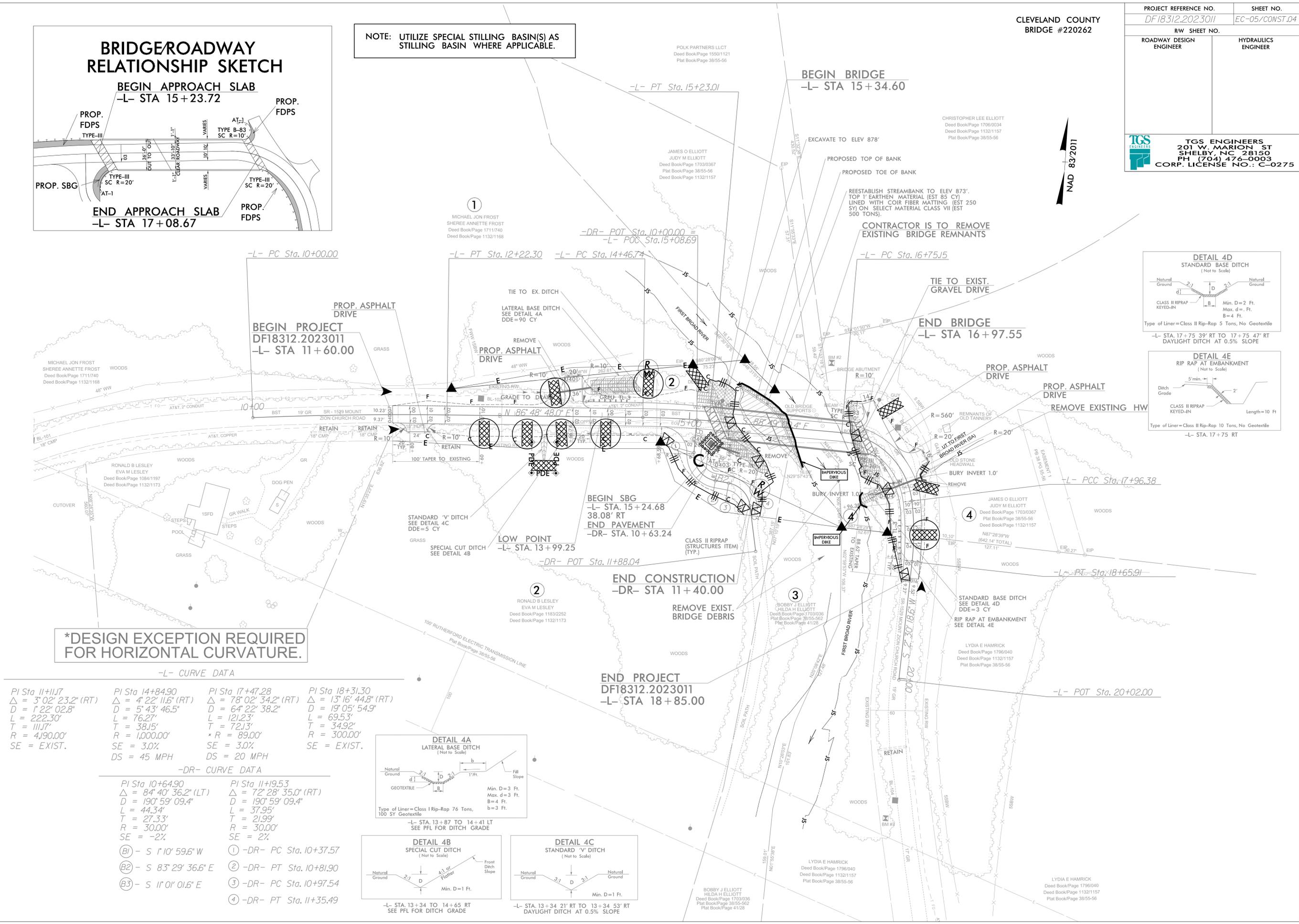
LYDIA E HAMRICK
Deed Book/Page 1796/040
Deed Book/Page 1132/1157
Plat Book/Page 38/55-56

PROJECT REFERENCE NO. DF18312.2023011	SHEET NO. EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 201 W. MARION ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

BRIDGE/ROADWAY RELATIONSHIP SKETCH



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



*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE.

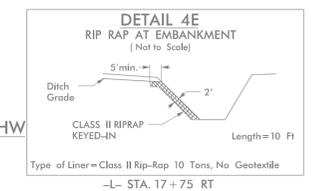
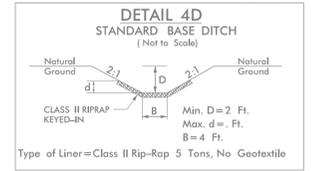
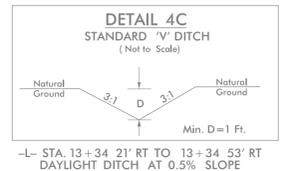
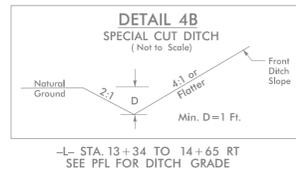
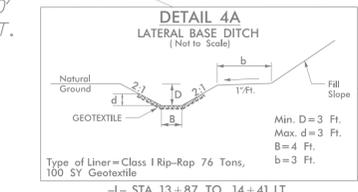
-L- CURVE DATA

PI Sta 11+11.7 Δ = 3° 02' 23.2" (RT) D = 1' 22' 02.8" L = 222.30' T = 111.7' R = 4190.00' SE = EXIST.	PI Sta 14+84.90 Δ = 4° 22' 11.6" (RT) D = 5' 43' 46.5" L = 76.27' T = 38.15' R = 1,000.00' SE = 3.0% DS = 45 MPH	PI Sta 17+47.28 Δ = 78° 02' 34.2" (RT) D = 64' 22' 38.2" L = 121.23' T = 72.13' * R = 89.00' SE = 3.0% DS = 20 MPH	PI Sta 18+31.30 Δ = 13° 16' 44.8" (RT) D = 19' 05' 54.9" L = 69.53' T = 34.92' R = 300.00' SE = EXIST.
---	---	---	--

-DR- CURVE DATA

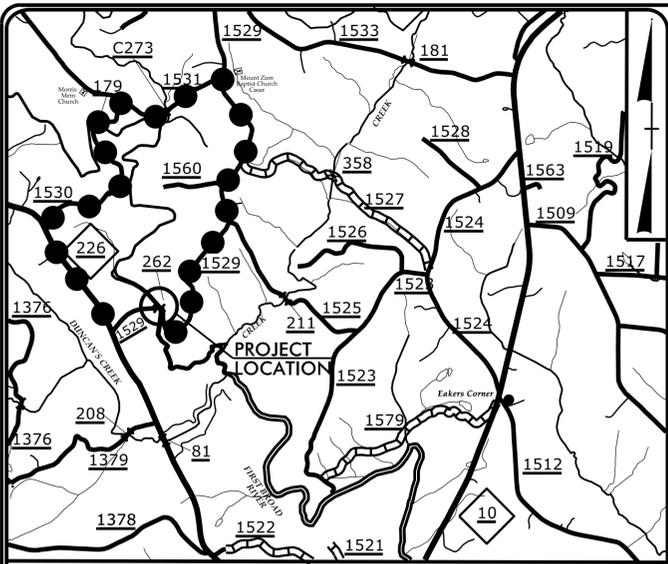
PI Sta 10+64.90 Δ = 84° 40' 36.2" (LT) D = 190' 59' 09.4" L = 44.34' T = 27.33' R = 30.00' SE = -2%	PI Sta 11+9.53 Δ = 72° 28' 35.0" (RT) D = 190' 59' 09.4" L = 37.95' T = 21.99' R = 30.00' SE = 2%
---	---

① -S 1° 10' 59.6" W ① -DR- PC Sta. 10+37.57
 ② -S 83° 29' 36.6" E ② -DR- PT Sta. 10+81.90
 ③ -S 11° 01' 01.6" E ③ -DR- PC Sta. 10+97.54
 ④ -DR- PT Sta. 11+35.49



09_08/2011

PROJECT: DF18312.2023011



DF18312.2023011 CROSS-SECTION INDEX

XS - INDEX	X-1A
XS - SUMMARY	X-1B
- L -	X-1 THRU X-5
- DR -	X-6

REVISIONS

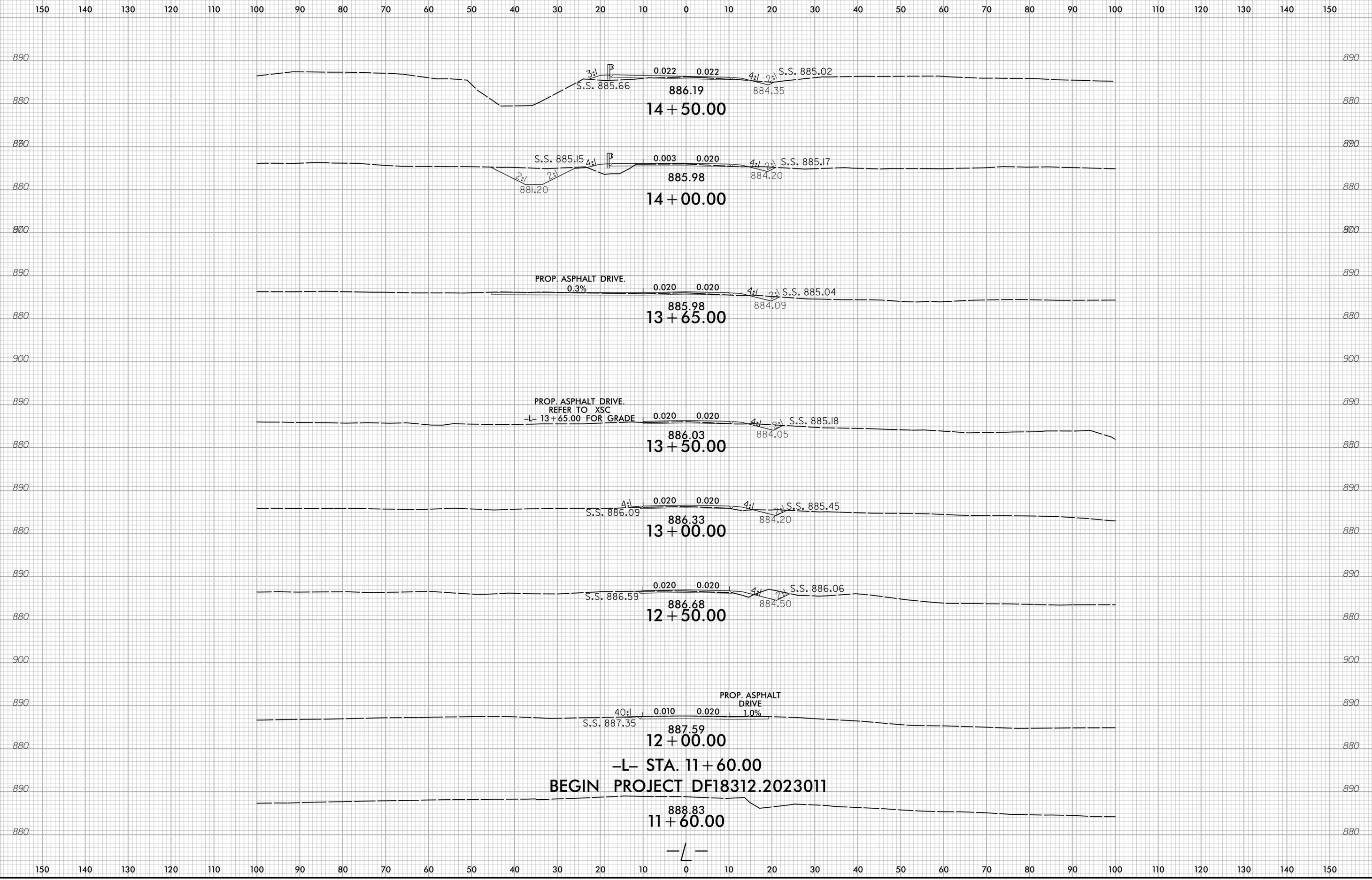
8/17/99

I:\9\2026
 X:\NEEDOT\Div 12 Cleveland 262\Roadway\XSC\Cleveland 262_Rel\xp1_Index.dgn
 Isertko\mard

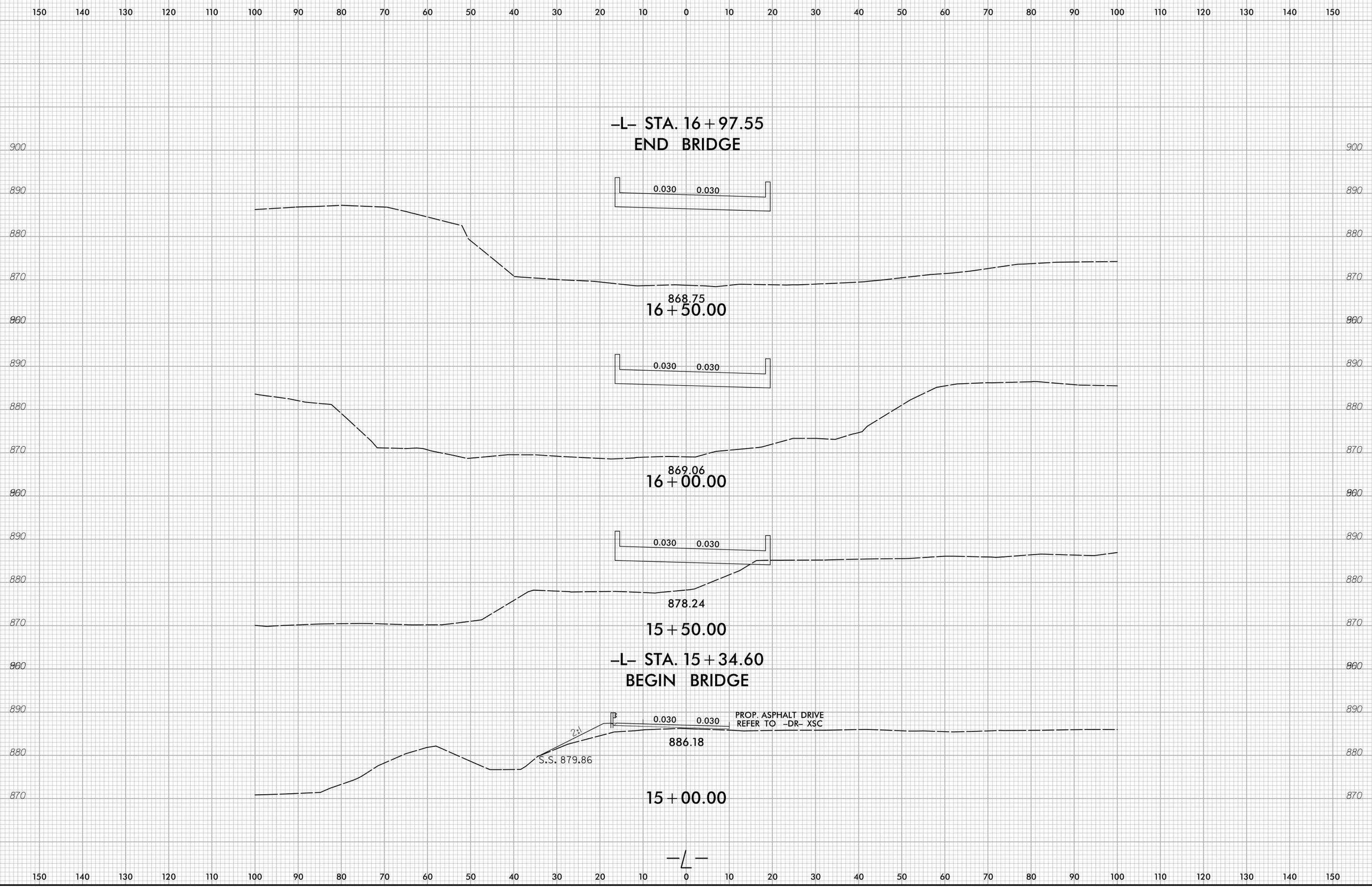
6/23/16



PROJ. REFERENCE NO.	SHEET NO.
DF18312.2023011	X-1

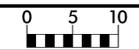


1/8/2016 1:18:00 PM \\server\kalmind

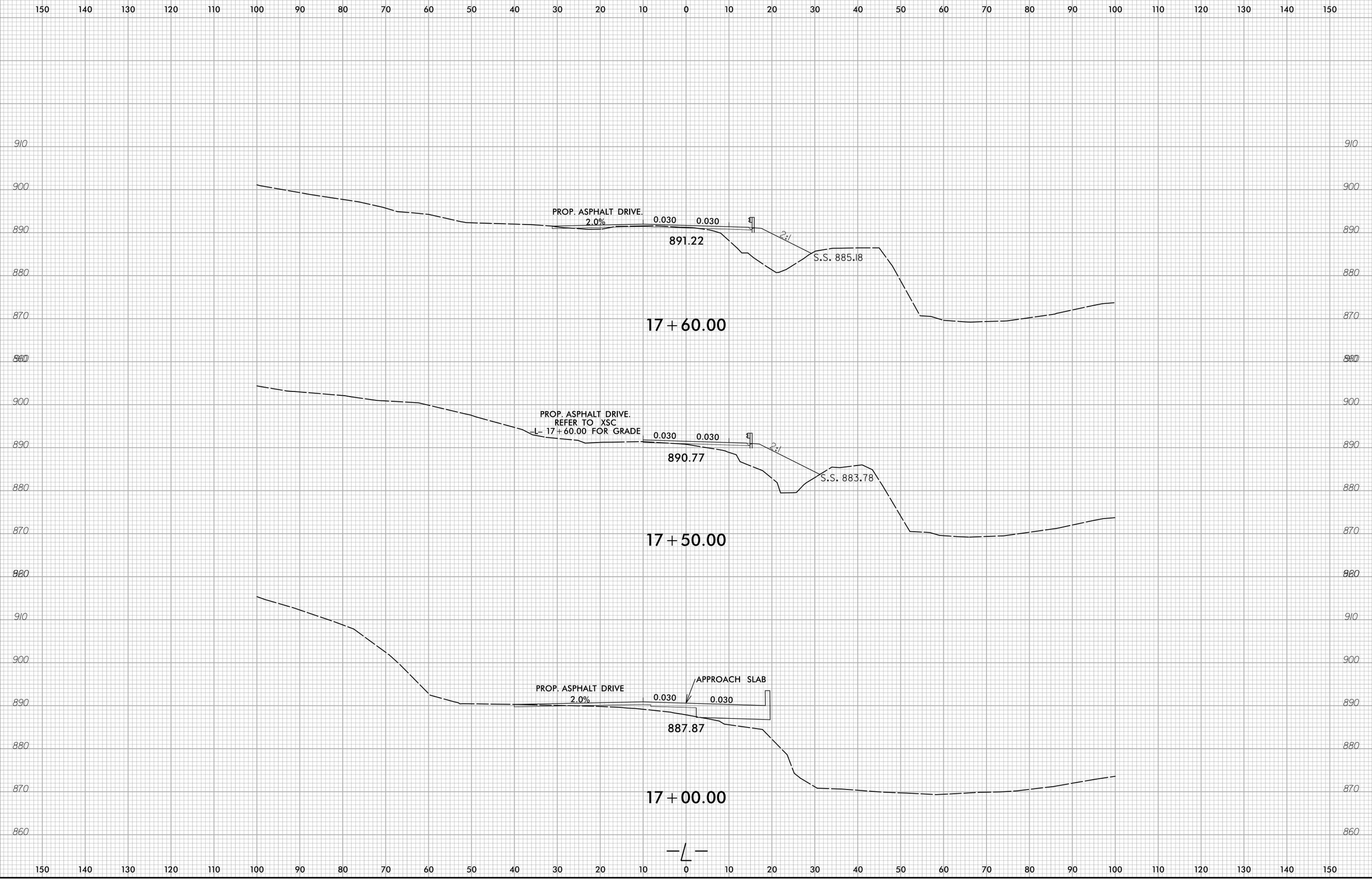


I:\3\2016
X:\N0606\Draw 12 Cleveland 262\Roadway\XSC\Cleveland 262_Rdy_xpl.dgn
User:kalmond

6/23/16



PROJ. REFERENCE NO. DF18312.2023011	SHEET NO. X-3
--	------------------



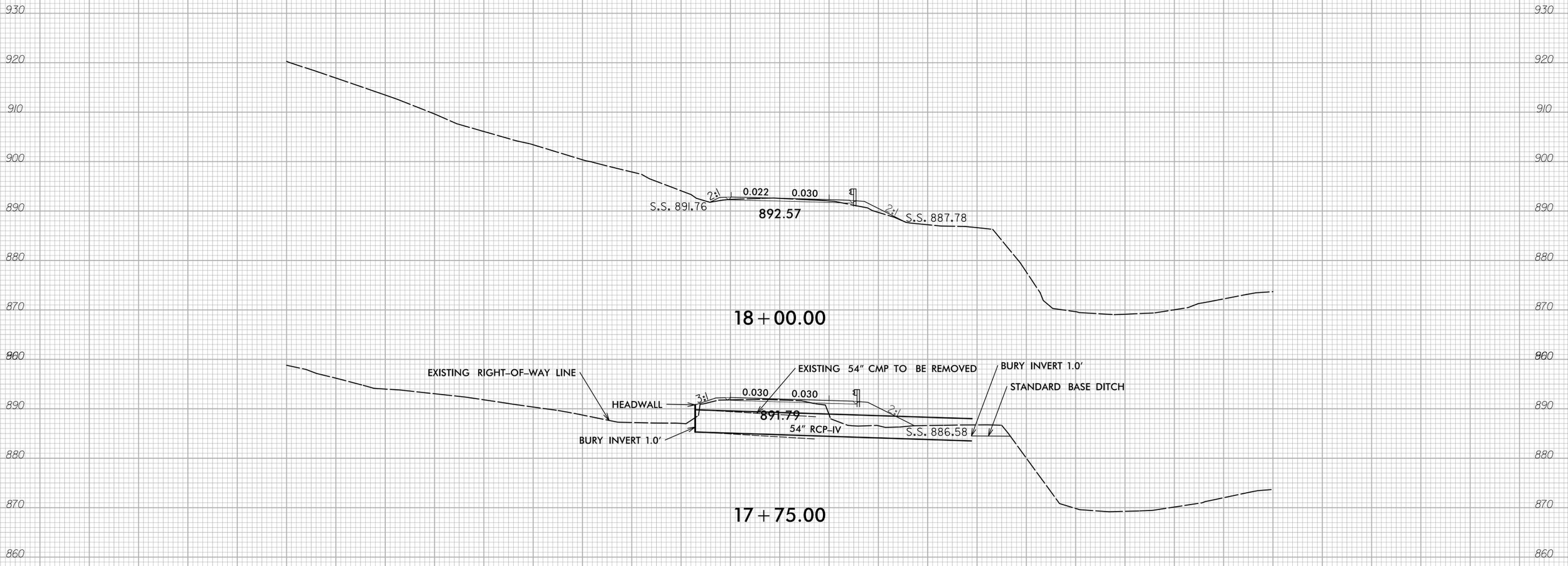
1/8/2016
X:\NCD001_Div 12 Cleveland 262\Roadway\XSC\Cleveland 262_Rdy_xpl.dgn
User:Kalinand

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
DF18312.2023011	X-4

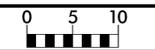
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



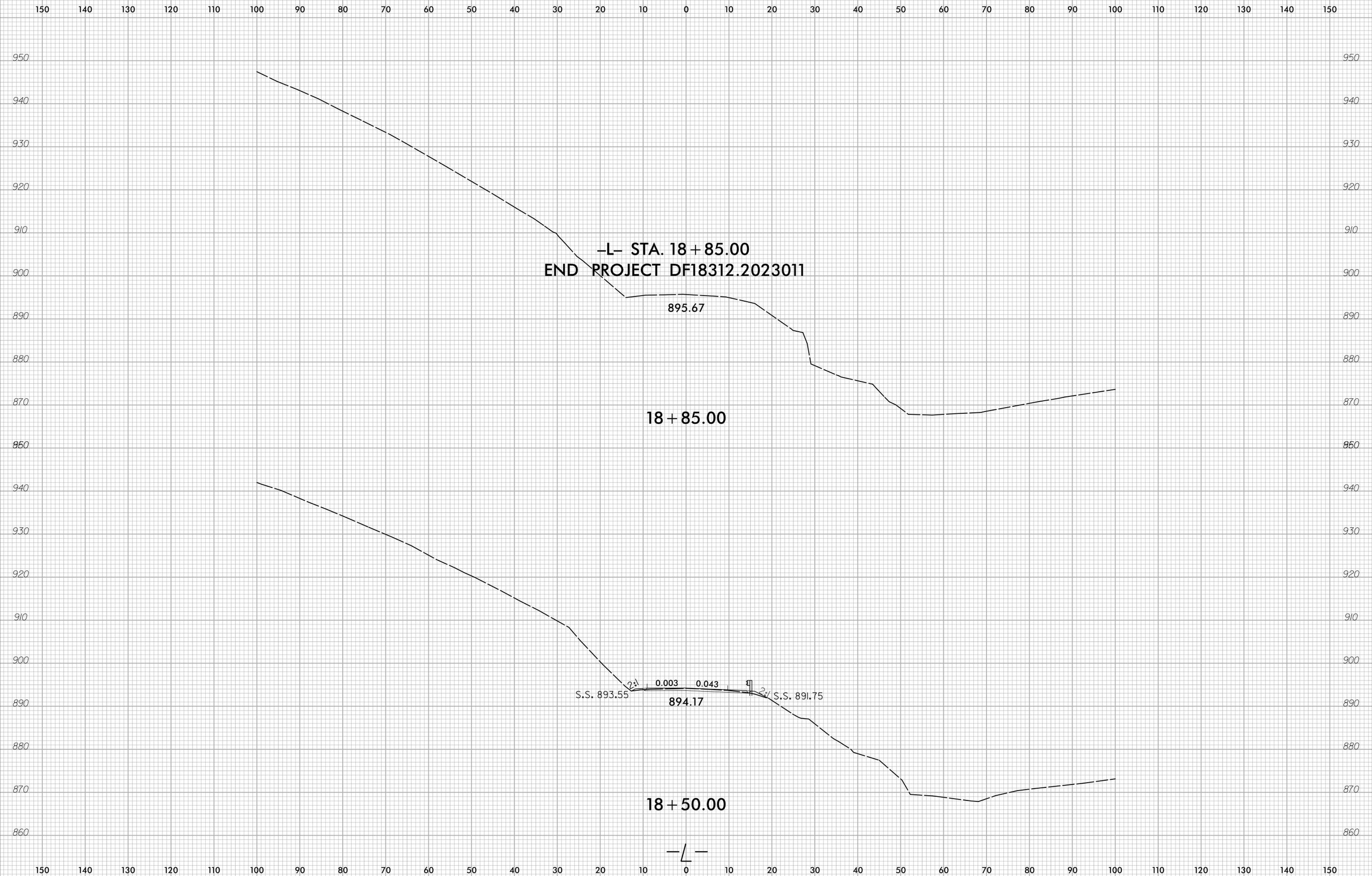
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1/8/2016
 X:\NCD001_Div 12 Cleveland 262\Roadway\XSC\Cleveland 262_Rdy_xpl.dgn
 User:Kalmend

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
DF18312.2023011	X-5



1/8/2016
X:\N0001\Dir 12 Cleveland 262\Roadway\XSC\Cleveland 262_Rdy_xpl.dgn
User:Kalinand

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

-DR- STA. 11 + 40.00
END -DR- CONSTRUCTION

885.00
11 + 40.00

S.S. 884.92 0.020 0.020 S.S. 885.51
884.95

11 + 25.00

S.S. 885.54 0.020 0.020 S.S. 886.45
885.74

11 + 00.00

S.S. 886.21 0.020 0.020 S.S. 885.80
886.10

10 + 75.00

S.S. 885.53 0.020 0.020
886.24

10 + 50.00

S.S. 885.57 0.020 0.020 S.S. 886.46
885.91

10 + 25.00

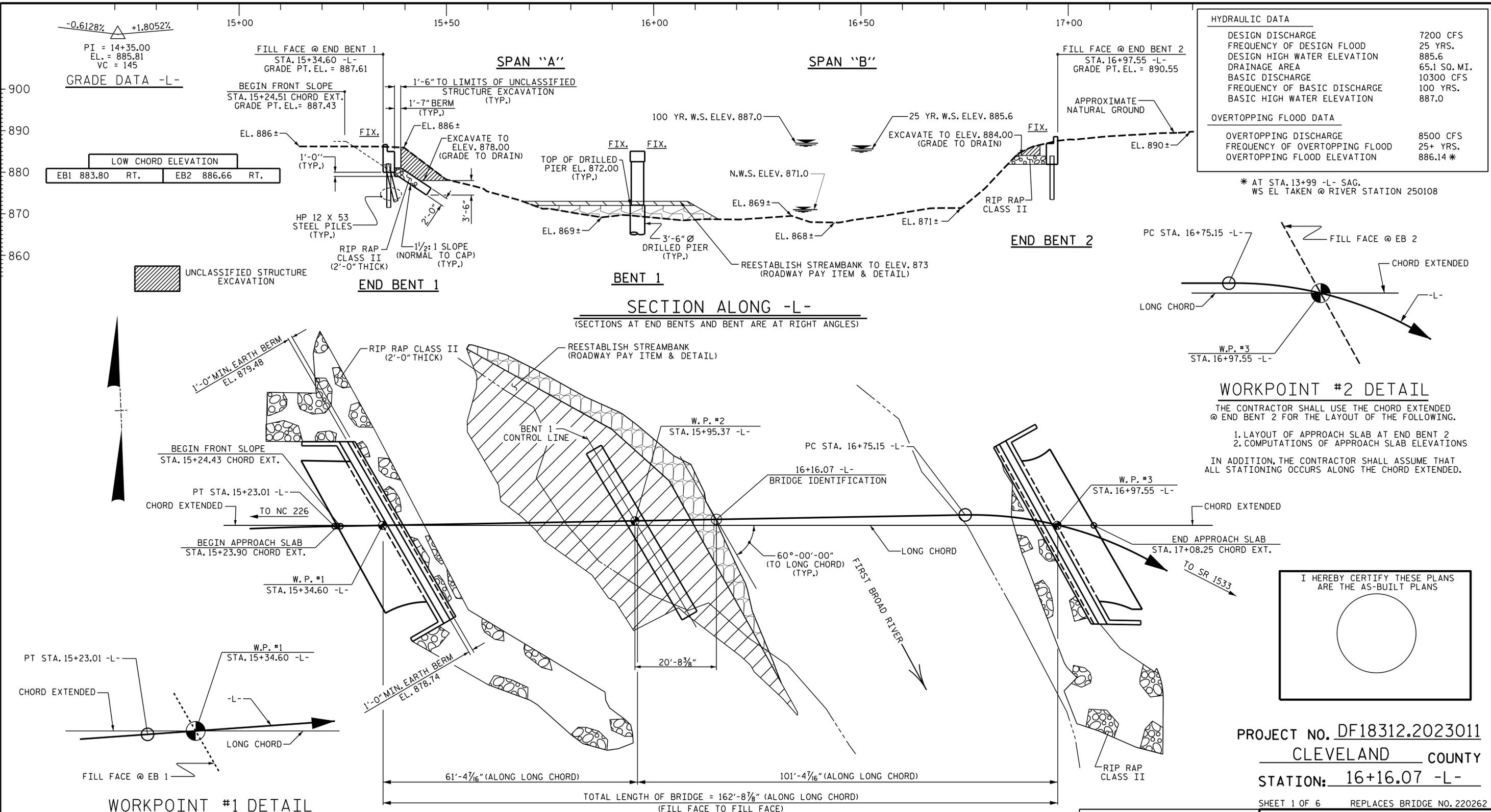
-DR- STA. 10 + 10.00
BEGIN -DR- CONSTRUCTION

886.19

10 + 00.00

-DR-

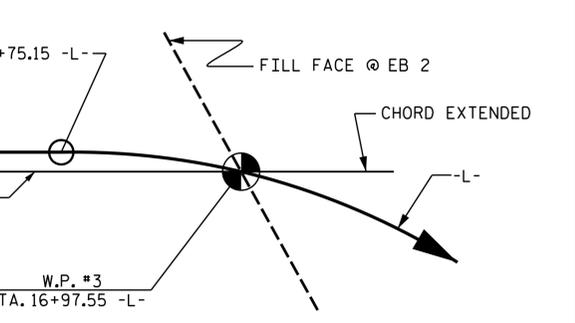
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



HYDRAULIC DATA	
DESIGN DISCHARGE	7200 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	885.6
DRAINAGE AREA	65.1 SQ. MI.
BASIC DISCHARGE	10300 CFS
FREQUENCY OF BASIC DISCHARGE	100 YRS.
BASIC HIGH WATER ELEVATION	887.0
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	8500 CFS
FREQUENCY OF OVERTOPPING FLOOD	25+ YRS.
OVERTOPPING FLOOD ELEVATION	886.14 *

* AT STA. 13+99 -L- SAG.
WS EL TAKEN @ RIVER STATION 250108

PC STA. 16+75.15 -L-
FILL FACE @ EB 2
CHORD EXTENDED
LONG CHORD
W.P. #3
STA. 16+97.55 -L-



WORKPOINT #2 DETAIL
THE CONTRACTOR SHALL USE THE CHORD EXTENDED @ END BENT 2 FOR THE LAYOUT OF THE FOLLOWING.
1. LAYOUT OF APPROACH SLAB AT END BENT 2
2. COMPUTATIONS OF APPROACH SLAB ELEVATIONS
IN ADDITION, THE CONTRACTOR SHALL ASSUME THAT ALL STATIONING OCCURS ALONG THE CHORD EXTENDED.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-

SHEET 1 OF 6 REPLACES BRIDGE NO. 220262

WORKPOINT #1 DETAIL
THE CONTRACTOR SHALL USE THE CHORD EXTENDED @ END BENT 1 FOR THE LAYOUT OF THE FOLLOWING.
1. LAYOUT OF APPROACH SLAB AT END BENT 1
2. COMPUTATIONS OF APPROACH SLAB ELEVATIONS
IN ADDITION, THE CONTRACTOR SHALL ASSUME THAT ALL STATIONING OCCURS ALONG THE CHORD EXTENDED.

DRAWN BY : S. B. WILLIAMS DATE : 7-25
CHECKED BY : M. G. CHEEK DATE : 12-25

HORIZONTAL CURVE DATA

PI STA. =	17+47.28 -L-
Δ =	78°-02'-34.2" (RT)
D =	64'-22"-38.2"
L =	121.23
T =	72.13
R =	89.00

PLAN
(PILES AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY)

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER FIRST BROAD RIVER ON SR 1529 BETWEEN NC 226 AND SR 1533

1/8/2026
G:\work\dir\ncdot+pw.bentley.com.ncdot+pw-01\zachary smith\d0474612\Total.Cleveland.262.dgn
ZSmith

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

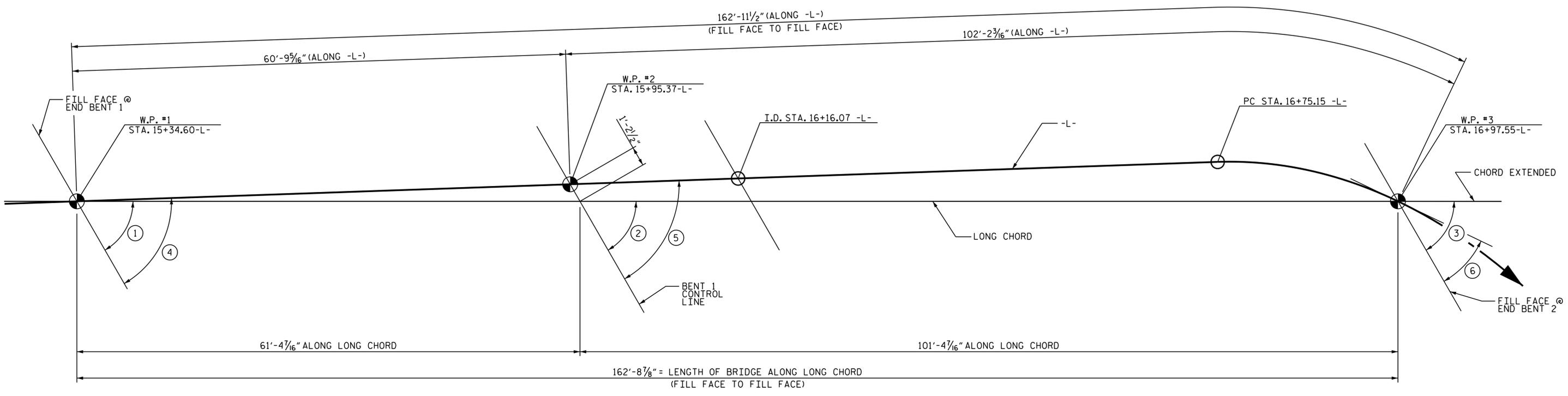
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			27

- ① 60°-00'-00" (LONG CHORD TO F.F. @ EB1)
- ② 60°-00'-00" (LONG CHORD TO BENT 1 CONTROL LINE)
- ③ 60°-00'-00" (LONG CHORD/ CHORD EXTENDED TO F.F. @ EB2)
- ④ 60°-59'-13" (-L- TO F.F. @ EB1)
- ⑤ 60°-59'-13" (-L- TO BENT 1 CONTROL LINE)
- ⑥ 46°-33'-57.4" (TAN. TO CURVE TO F.F. @ EB2)

HORIZONTAL CURVE DATA

PI STA. = 17+47.28 -L-
 Δ = 78°-02'-34.2" (RT)
 D = 64°-22'-38.2"
 L = 121.23
 T = 72.13
 R = 89.00



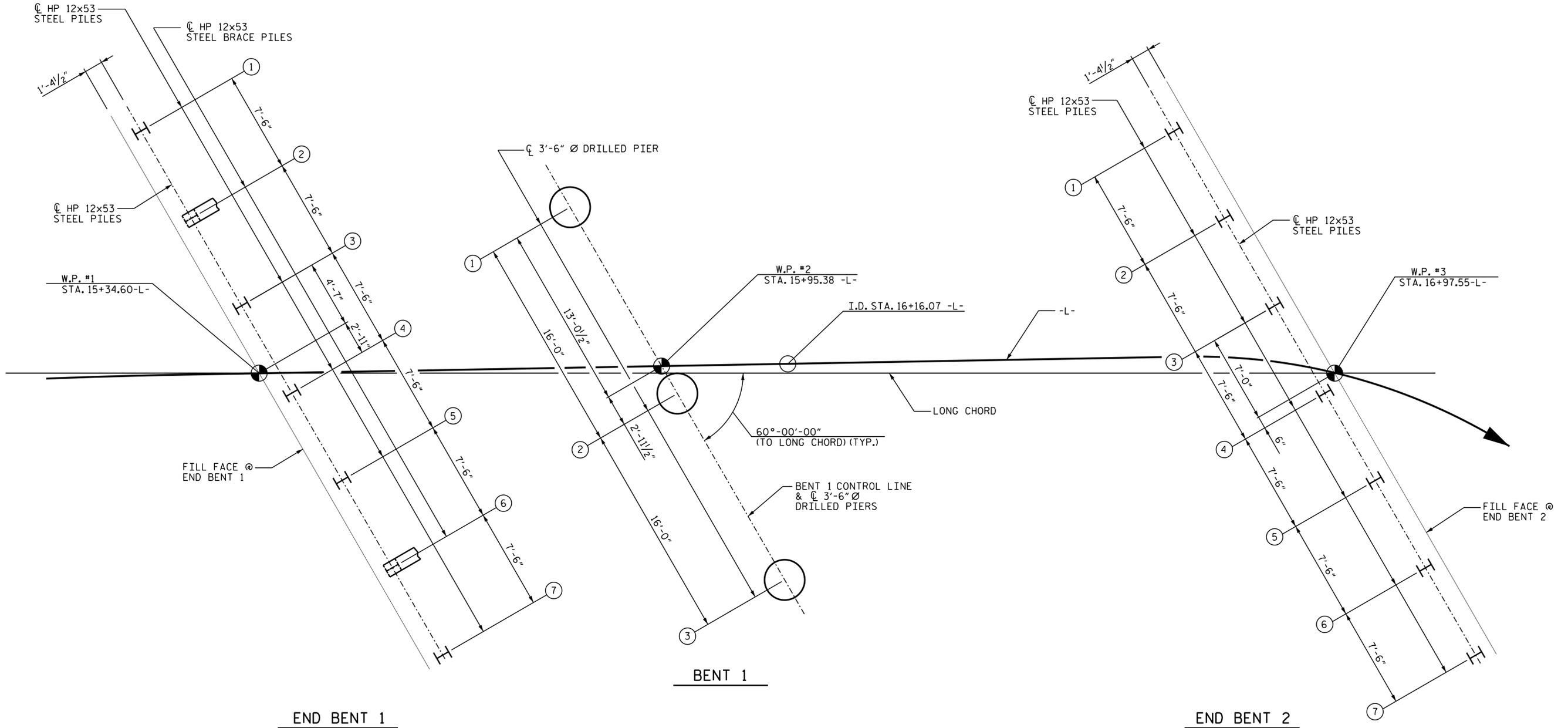
LONG CHORD LAYOUT
 ALL SUBSTRUCTURE UNITS ARE PARALLEL

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 2 OF 6

		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING BRIDGE OVER FIRST BROAD RIVER ON SR 1529 BETWEEN NC 226 AND SR 1533		SHEET NO.	
				S-2	
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		
TOTAL SHEETS					27

DRAWN BY : ZCS DATE : 1/26
 CHECKED BY : MGC DATE : 1/26



FOUNDATION LAYOUT PLAN

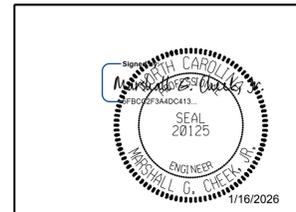
ALL END BENT PILES ARE HP 12x53 STEEL PILES. DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 3 OF 6

FOUNDATION NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FILL HOLES FOR PILE EXCAVATION AT END BENT 2 WITH CONCRETE.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER FIRST BROAD
 RIVER ON SR 1529
 BETWEEN NC 226
 AND SR 1533

DRAWN BY : ZCS DATE : 12/25
 CHECKED BY : MGC DATE : 12/25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS		SHEET NO.				
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
						1			3			TOTAL SHEETS
						2			4			27

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 Exc 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 1-3	3	197	SEE END BENT SHEETS	55			330							
End Bent 1, Piles 4-7	4	197		60			330							
End Bent 2, Piles 1-3	3	239		15			400				871	3.50	7.40	
End Bent 2, Piles 4-7	4	239		20			400				868	3.50	10.40	
TOTAL QUANTITY:												24.50	63.80	

* 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 1-7	197			0.6		
End Bent 2, Piles 1-7	239			0.6		
TOTAL QUANTITY:						

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

SUMMARY OF DRILLED PIER TESTING

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pier(s) *-* (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) Required? EACH	Pile Integrity Test (PIT) Required? EACH
Bent 1, Piers 1-3		1			
TOTAL QUANTITY:		1			

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pier(s) *-* (e.g., "Bent 1, Piers 1-3")	Number of Piles per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance Per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1	1	991	821.00	10	847.50	9.1	17.80	33.20		YES	847.50	24.50
Bent 1, Piers 2-3	2	991	821.00	10	852.60	12.8	22.20	28.80		YES	852.60	19.40
TOTAL QUANTITY:							62.20	90.80				63.30

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "___ Dia. Drilled Piers" or "___ Dia. Drilled Piers Not in Soil" and "___ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "___ Dia. Drilled Piers in Soil."

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

NOTES:

- 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 12-05-2025.
- 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.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPS, CSL Testing, SID Inspections and PITs when necessary.

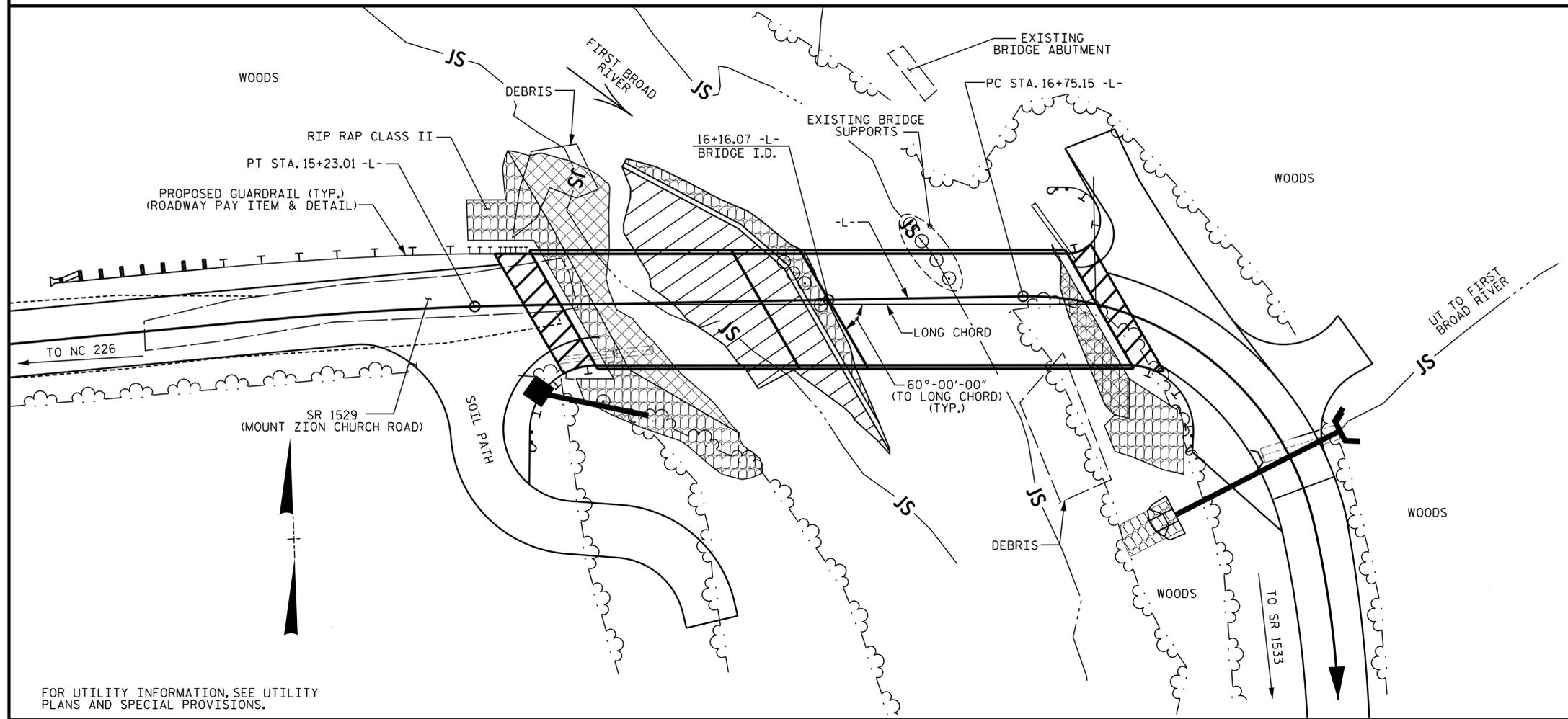
DRAWN BY : ZCS DATE : 12/25
 CHECKED BY : MGC DATE : 12/25

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 4 OF 6

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOUNDATION TABLES																		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONS																		
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td style="text-align: center;">4</td> <td></td> <td></td> </tr> </tbody> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
NO.	BY:	DATE:	NO.	BY:	DATE:														
1			3																
2			4																
	SHEET NO. S-4 TOTAL SHEETS 27																		

BENCHMARK #2 : CTL VERTICAL BENCHMARK; 78 FT LEFT OF STA 16+56.62 -L-; ELEV. 889.11



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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.
 BRIDGE 220262 WAS WASHED OUT DURING HURRICANE HELENE (SEPTEMBER 2024). THE REMOVAL OF THE REMAINING COMPONENTS 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.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR THE DISTANCE OF 50 FT. LT. AND 50 FT. RT. OF -L- @ EB1 AND 10 FT. LT AND 55 FT. RT. OF -L- @ EB2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".

FOR 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.
 FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.
 THE SCOUR CRITICAL ELEVATION FOR BENT 1, PIER 1 IS ELEVATION 847.50 AND FOR BENT 1, PIER 2 IS 852.60. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
BRIDGE OVER FIRST BROAD RIVER ON SR 1529 BETWEEN NC 226 AND SR 1533

1/16/2026

ENGINEER
 MARSHALL G. CHECK
 SEAL 20125

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : ZCS DATE : 9/25
 CHECKED BY : MGC DATE : 12/25

TOTAL BILL OF MATERIAL											
ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	C.Y.	LUMP SUM
SUPERSTRUCTURE											
END BENT 1									LUMP SUM	34.2	
BENT 1					90.80	62.20	63.30	1		29.5	
END BENT 2			63.80	24.50					LUMP SUM	42.4	
TOTALS	LUMP SUM	LUMP SUM	63.80	24.50	90.80	62.20	63.30	1	LUMP SUM	106.1	LUMP SUM

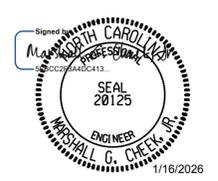
TOTAL BILL OF MATERIAL												
ITEM	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12x53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LBS.	LBS.	EA.	NO.	LIN. FT.	LIN. FT.	TONS	TONS	S.Y.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						320.29					24	1920.00
END BENT 1	5474		7	7	405			185	200			
BENT 1	18367	3861										
END BENT 2	6157		7	7	125		90		100			
TOTALS	29998	3861	14	14	530	320.29	90	185	300	LUMP SUM	24	1920.00

PROJECT NO. DF18312.2023011

CLEVELAND COUNTY

STATION: 16+16.07 -L-

SHEET 6 OF 6

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING BRIDGE OVER FIRST BROAD RIVER ON SR 1529 BETWEEN NC 226 AND SR 1533	
	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:	SHEET NO.	
1 2	S-6 TOTAL SHEETS: 27	

DRAWN BY : ZCS DATE : 12/25
 CHECKED BY : MGC DATE : 12/25

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.22	--	1.75	0.260	1.74	60'	EL	29.130	0.610	2.04	60'	EL	11.130	0.80	0.260	1.22	60'	EL	29.130		
	HL-93 (OPERATING)	N/A		2.26	--	1.35	0.260	2.26	60'	EL	29.130	0.610	2.69	60'	EL	11.130	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.55	55.800	1.75	0.260	2.20	60'	EL	29.130	0.610	2.46	60'	EL	11.130	0.80	0.260	1.55	60'	EL	29.130		
	HS-20 (OPERATING)	36.000		2.85	102.600	1.35	0.260	2.85	60'	EL	29.130	0.610	3.24	60'	EL	11.130	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SN5H		3.32	44.820	1.4	0.260	5.91	60'	EL	29.130	0.610	7.26	60'	EL	11.130	0.80	0.260	3.32	60'	EL	29.130		
		SNGARBS2	20.000		2.55	51.000	1.4	0.260	4.53	60'	EL	29.130	0.610	7.27	60'	EL	11.130	0.80	0.260	2.55	60'	EL	29.130	
		SNAGRIS2	22.000		2.44	53.680	1.4	0.260	4.35	60'	EL	29.130	0.610	4.89	60'	EL	11.130	0.80	0.260	2.44	60'	EL	29.130	
		SNCOTTS3	27.250		1.65	44.963	1.4	0.260	2.94	60'	EL	29.130	0.610	3.55	60'	EL	11.130	0.80	0.260	1.65	60'	EL	29.130	
		SNAGGRS4	34.925		1.41	49.244	1.4	0.260	2.51	60'	EL	29.130	0.610	3.00	60'	EL	11.130	0.80	0.260	1.41	60'	EL	29.130	
		SNS5A	35.550		1.38	49.059	1.4	0.260	2.45	60'	EL	29.130	0.610	3.09	60'	EL	11.130	0.80	0.260	1.38	60'	EL	29.130	
		SNS6A	39.950		1.28	51.136	1.4	0.260	2.27	60'	EL	29.130	0.610	2.84	60'	EL	11.130	0.80	0.260	1.28	60'	EL	29.130	
	SNS7B	42.000		1.21	50.820	1.4	0.260	2.16	60'	EL	29.130	0.610	2.84	60'	EL	11.130	0.80	0.260	1.21	60'	EL	29.130		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.480	1.4	0.260	2.77	60'	EL	29.130	0.610	3.39	60'	EL	11.130	0.80	0.260	1.56	60'	EL	29.130	
		TNT4A	33.075		1.57	51.928	1.4	0.260	2.79	60'	EL	29.130	0.610	3.26	60'	EL	11.130	0.80	0.260	1.57	60'	EL	29.130	
		TNT6A	41.600		1.29	53.664	1.4	0.260	2.30	60'	EL	29.130	0.610	3.14	60'	EL	11.130	0.80	0.260	1.29	60'	EL	29.130	
		TNT7A	42.000		1.31	55.020	1.4	0.260	2.32	60'	EL	29.130	0.610	2.90	60'	EL	11.130	0.80	0.260	1.31	60'	EL	29.130	
		TNT7B	42.000		1.37	57.540	1.4	0.260	2.43	60'	EL	29.130	0.610	2.74	60'	EL	11.130	0.80	0.260	1.37	60'	EL	29.130	
		TNAGRIT4	43.000		1.29	55.470	1.4	0.260	2.29	60'	EL	29.130	0.610	2.63	60'	EL	11.130	0.80	0.260	1.29	60'	EL	29.130	
TNAGT5A		45.000		1.21	54.450	1.4	0.260	2.15	60'	EL	29.130	0.610	2.67	60'	EL	11.130	0.80	0.260	1.21	60'	EL	29.130		
TNAGT5B	45.000		3	1.19	53.550	1.4	0.260	2.12	60'	EL	29.130	0.610	2.49	60'	EL	11.130	0.80	0.260	1.19	60'	EL	29.130		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.81	52.038	1.3	0.260	3.47	60'	EL	29.130	0.610	3.93	60'	EL	11.130	0.80	0.260	1.81	60'	EL	29.130		
	EV3	43.000		4	1.18	50.740	1.3	0.260	2.25	60'	EL	29.130	0.610	2.60	60'	EL	11.130	0.80	0.260	1.18	60'	EL	29.130	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
4	EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER	
EL - EXTERIOR LEFT GIRDER	
ER - EXTERIOR RIGHT GIRDER	

- 1
- 2
- 3
- 4



PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
	LRFR SUMMARY FOR 60' BOX BEAM UNIT 60° SKEW (NON-INTERSTATE TRAFFIC)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONS	
TGS ENGINEERS 201 W. MARION ST. SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	NO. 1 BY: [Signature] DATE: [Date]	NO. 2 BY: [Signature] DATE: [Date]
		SHEET NO. 5-7 TOTAL SHEETS 27

DRAWN BY: ZCS DATE: 8/25
 CHECKED BY: MGC DATE: 9/25
 DESIGN ENGINEER OF RECORD: ZCS DATE: 9/25

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE								COMMENT NUMBER
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.146	--	1.75	0.246	1.40	100'	EL	49.134	0.614	1.15	100'	EL	9.827	0.80	0.246	1.15	100'	EL	49.134		
	HL-93 (OPERATING)	N/A		1.486	--	1.35	0.246	1.81	100'	EL	49.134	0.614	1.49	100'	EL	9.827	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.519	54.686	1.75	0.246	1.95	100'	EL	49.134	0.614	1.52	100'	EL	9.827	0.80	0.246	1.60	100'	EL	49.134		
	HS-20 (OPERATING)	36.000		1.969	70.889	1.35	0.246	2.52	100'	EL	49.134	0.614	1.97	100'	EL	9.827	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SN5H		3.795	51.239	1.4	0.246	5.76	100'	EL	49.134	0.614	4.67	100'	EL	9.827	0.80	0.246	3.80	100'	EL	49.134		
		SNGARBS2	20.000		2.750	55.000	1.4	0.246	4.18	100'	EL	49.134	0.614	3.27	100'	EL	9.827	0.80	0.246	2.75	100'	EL	49.134	
		SNAGRIS2	22.000		2.573	56.599	1.4	0.246	3.91	100'	EL	49.134	0.614	3.02	100'	EL	9.827	0.80	0.246	2.57	100'	EL	49.134	
		SNCOTTS3	27.250		1.886	51.405	1.4	0.246	2.86	100'	EL	49.134	0.614	2.32	100'	EL	9.827	0.80	0.246	1.89	100'	EL	49.134	
		SNAGGRS4	34.925		1.546	54.002	1.4	0.246	2.35	100'	EL	49.134	0.614	1.9	100'	EL	9.827	0.80	0.246	1.55	100'	EL	49.134	
		SNS5A	35.550		1.514	53.825	1.4	0.246	2.30	100'	EL	49.134	0.614	1.9	100'	EL	9.827	0.80	0.246	1.51	100'	EL	49.134	
		SNS6A	39.950		1.377	55.004	1.4	0.246	2.09	100'	EL	49.134	0.614	1.72	100'	EL	9.827	0.80	0.246	1.38	100'	EL	49.134	
	SNS7B	42.000		1.311	55.050	1.4	0.246	1.99	100'	EL	49.134	0.614	1.68	100'	EL	9.827	0.80	0.246	1.31	100'	EL	49.134		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.675	55.287	1.4	0.246	2.54	100'	EL	49.134	0.614	2.06	100'	EL	9.827	0.80	0.246	1.68	100'	EL	49.134	
		TNT4A	33.075		1.679	55.547	1.4	0.246	2.55	100'	EL	49.134	0.614	2.02	100'	EL	9.827	0.80	0.246	1.68	100'	EL	49.134	
		TNT6A	41.600		1.362	56.644	1.4	0.246	2.07	100'	EL	49.134	0.614	1.76	100'	EL	9.827	0.80	0.246	1.36	100'	EL	49.134	
		TNT7A	42.000		1.362	57.220	1.4	0.246	2.07	100'	EL	49.134	0.614	1.73	100'	EL	9.827	0.80	0.246	1.36	100'	EL	49.134	
		TNT7B	42.000		1.395	58.575	1.4	0.246	2.12	100'	EL	49.134	0.614	1.65	100'	EL	9.827	0.80	0.246	1.39	100'	EL	49.134	
		TNAGRIT4	43.000		1.338	57.520	1.4	0.246	2.03	100'	EL	49.134	0.614	1.6	100'	EL	9.827	0.80	0.246	1.34	100'	EL	49.134	
TNAGT5A		45.000		1.266	56.990	1.4	0.246	1.92	100'	EL	49.134	0.614	1.57	100'	EL	9.827	0.80	0.246	1.27	100'	EL	49.134		
TNAGT5B	45.000	3	1.256	56.510	1.4	0.246	1.91	100'	EL	49.134	0.614	1.53	100'	EL	9.827	0.80	0.246	1.26	100'	EL	49.134			
EMERGENCY VEHICLE (EV)	EV2	28.750		2.124	61.078	1.3	0.246	3.18	100'	EL	49.13	0.614	2.12	100'	EL	9.827	0.80	0.246	2.37	100'	EL	49.134		
	EV3	43.000	4	1.428	61.424	1.3	0.246	2.10	100'	EL	49.13	0.614	1.43	100'	EL	9.827	0.80	0.246	1.56	100'	EL	49.134		

LOAD FACTORS:

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

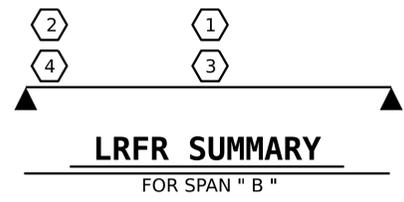
NOTES:

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	



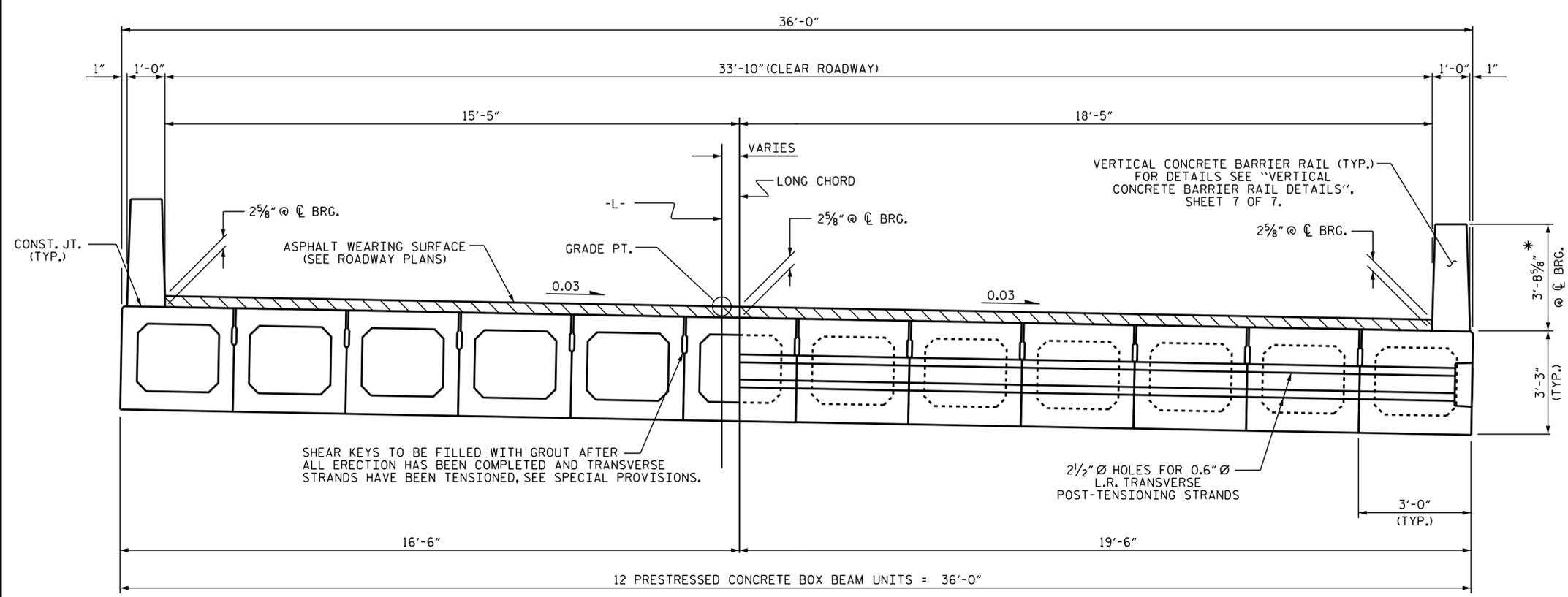
PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-

ASSEMBLED BY: ZCS DATE: 8/25
CHECKED BY: MGC DATE: 9/25
DRAWN BY: TMG II/II REV. 06/23 AKP/AAI
CHECKED BY: AAC II/II

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH																	
	STANDARD LRFR SUMMARY FOR 100' BOX BEAM UNIT 60° SKEW (NON-INTERSTATE TRAFFIC)																	
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED																	
TGS ENGINEERS 201 W. MARION ST. SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	<table border="1"> <tr> <th colspan="3">REVISIONS</th> <th>SHEET NO.</th> </tr> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>S-8</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>TOTAL SHEETS</td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>27</td> </tr> </table>		REVISIONS			SHEET NO.	NO.	BY:	DATE:	S-8	1			TOTAL SHEETS	2			27
REVISIONS			SHEET NO.															
NO.	BY:	DATE:	S-8															
1			TOTAL SHEETS															
2			27															

NOTES

- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.
- FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.
- RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.
- THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
- THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI FOR SPAN A AND NOT LESS THAN 5,500 PSI FOR SPAN B.
- ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.
- THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.
- THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.
- THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



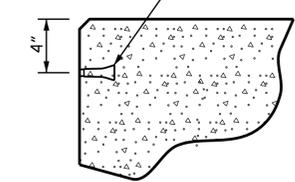
PART SECTION THROUGH VOIDS

PART SECTION AT INTERMEDIATE DIAPHRAGMS

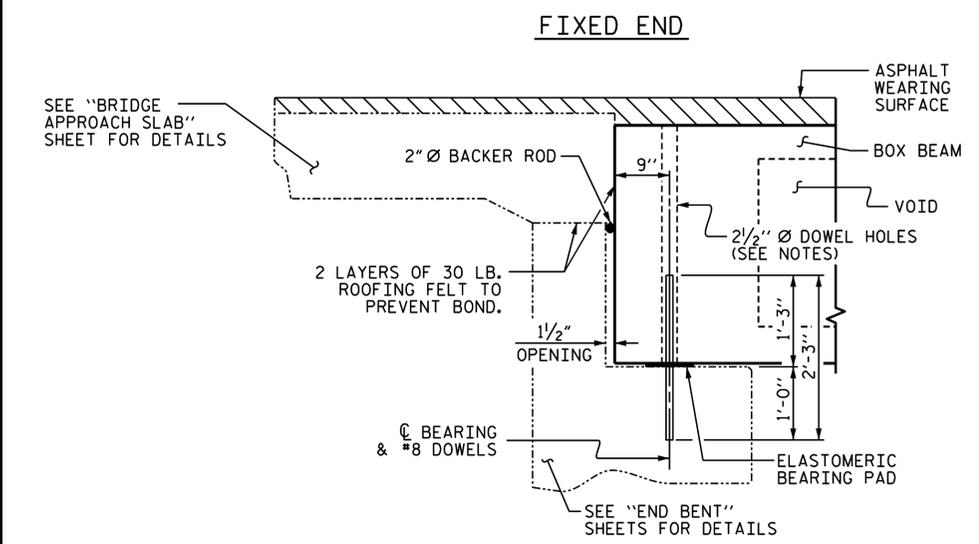
TYPICAL SECTION

* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL, SHEET 7 OF 7.

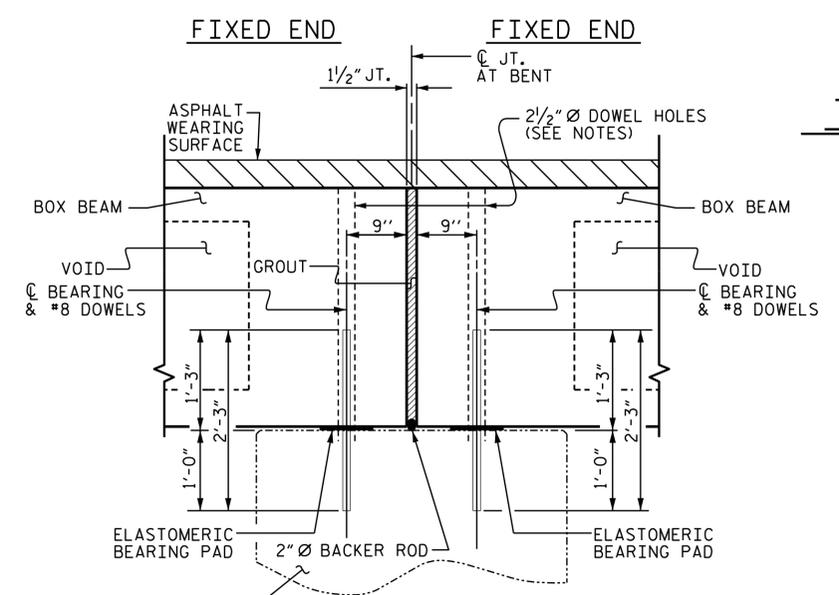
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



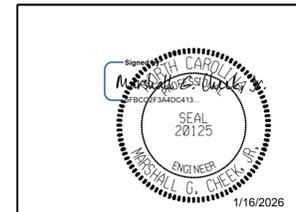
SECTION AT END BENT



SECTION AT BENT 1

ASSEMBLED BY : ZCS DATE : 8/25
 CHECKED BY : MGC DATE : 10/25
 DESIGN ENGINEER OF RECORD: ZCS DATE : 10/25

1/7/2026
 c:\work\dir\ncdot+pw.bentley.com.ncdot+pw-01\zachary smith\d0474612\Total.Cleveland 262.dgn
 ZSmith

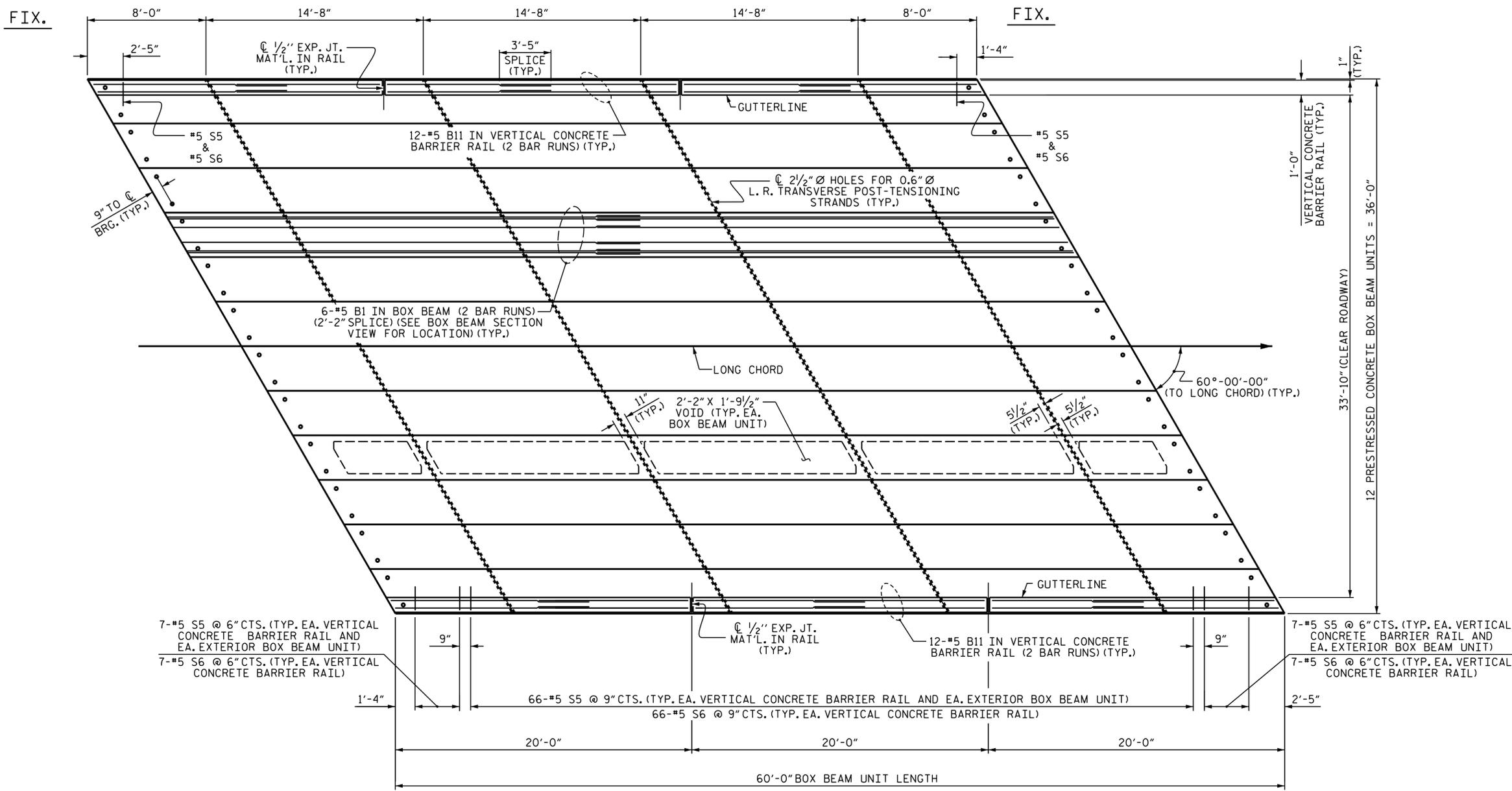


PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 1 OF 7

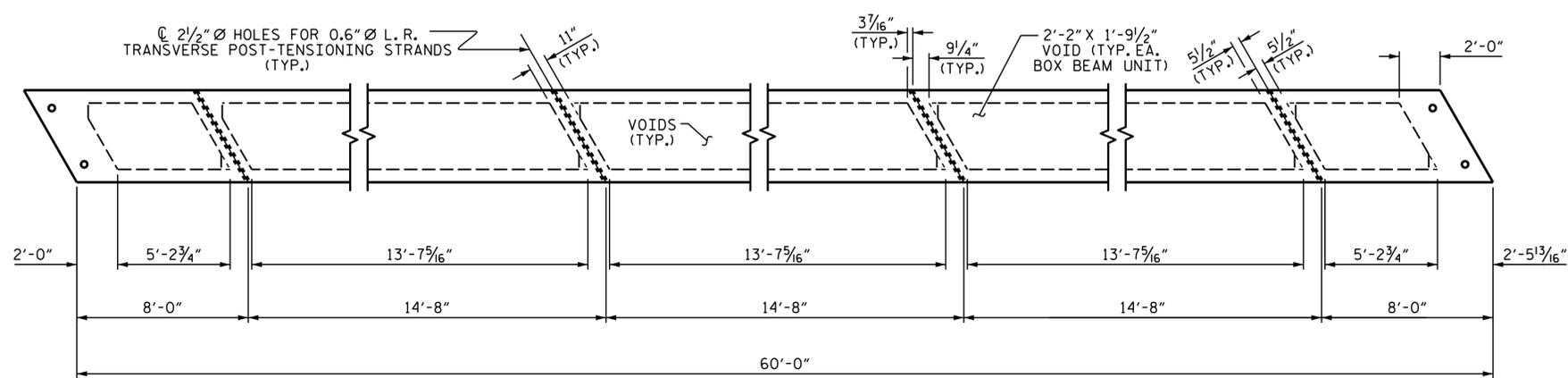
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:				
1			3			S-9			
2			4			TOTAL SHEETS 27			

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



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 2 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 60' UNIT
 33'-10" CLEAR ROADWAY
 60° SKEW
 SPAN A

1/16/2026

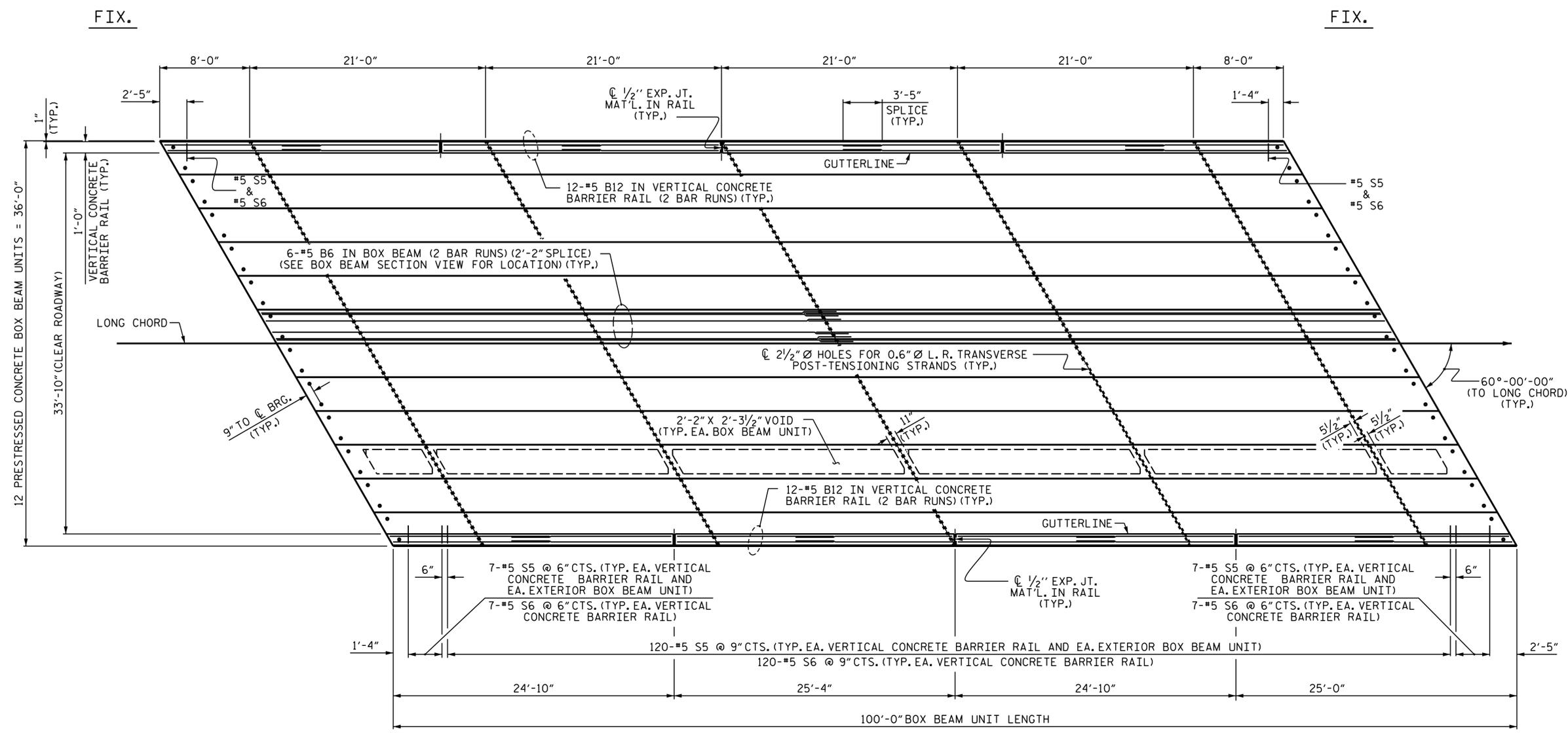
ENGINEER
 MARSHALL G. CHECK, III

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

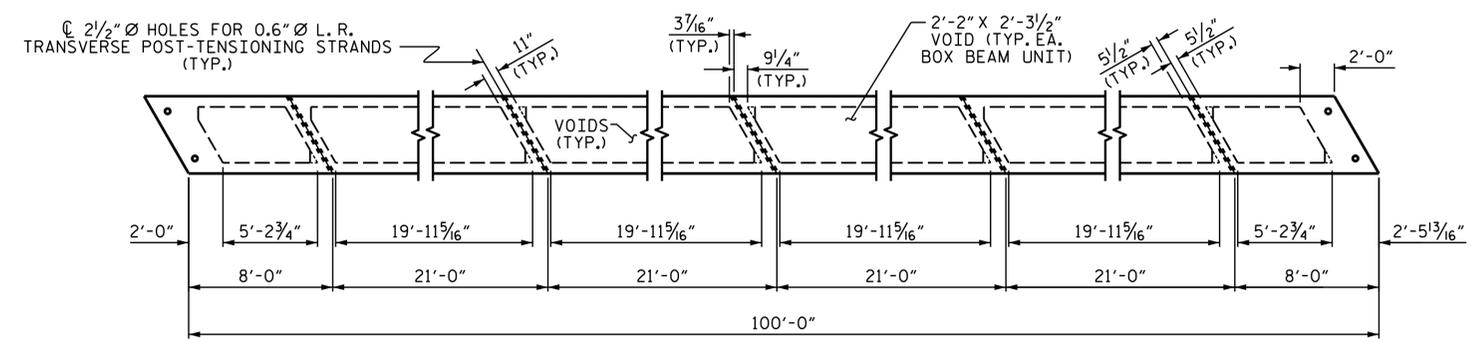
TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : ZCS DATE : 8/25
 CHECKED BY : MGC DATE : 9/25
 DESIGN ENGINEER OF RECORD : ZCS DATE : 9/25



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 100' UNIT
 33'-10" CLEAR ROADWAY
 60° SKEW
 SPAN B

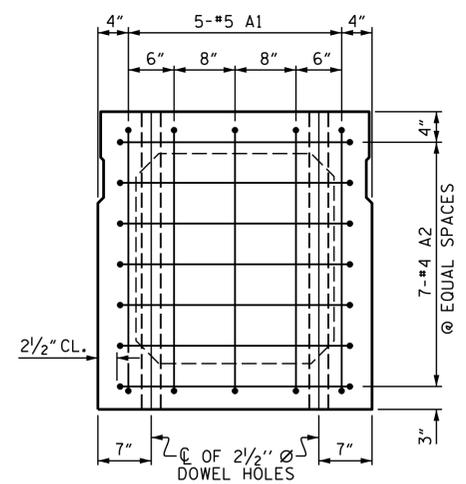
1/16/2026
 SEAL
 20125
 ENGINEER
 MARSHALL G. CHECK, III

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

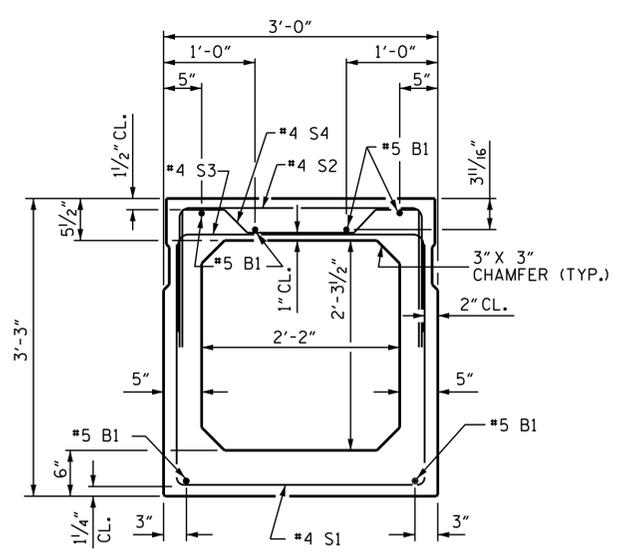
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			27

ASSEMBLED BY :	ZCS	DATE :	8/25
CHECKED BY :	MGC	DATE :	9/25
DRAWN BY :	DGE 10/II	REV. 8/14	MAA/TMG
CHECKED BY :	TMG 11/II		



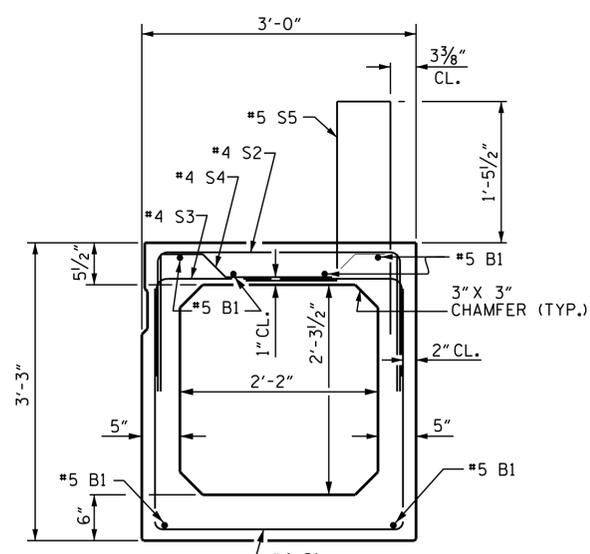
END ELEVATION

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



INTERIOR BOX BEAM SECTION

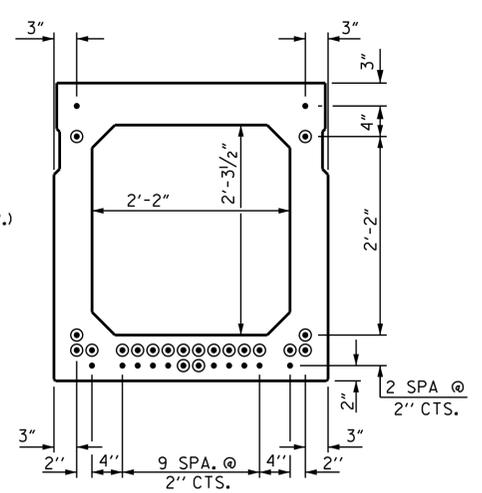
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT

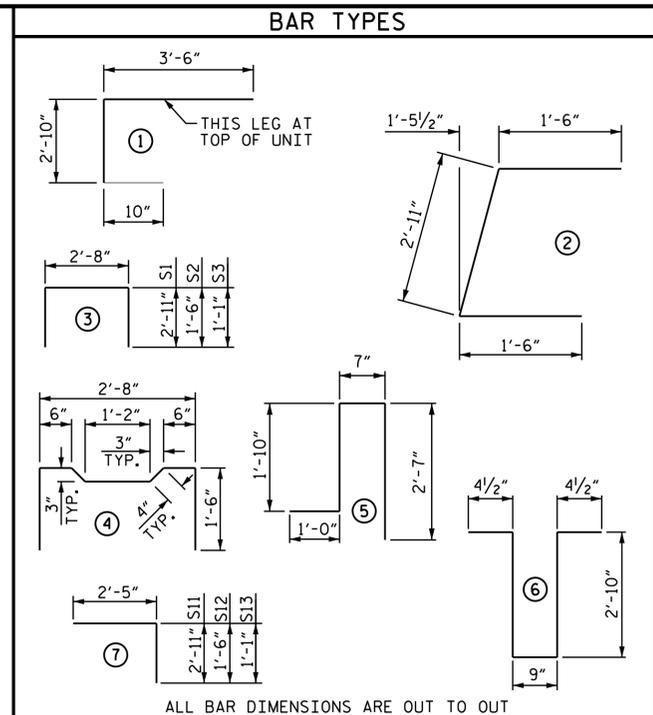


TYPICAL STRAND LOCATION

(12 STRANDS REQUIRED)

DEBONDING LEGEND

- FULLY BONDED STRANDS
 - ⊙ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE BOX BEAM UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST.
- BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

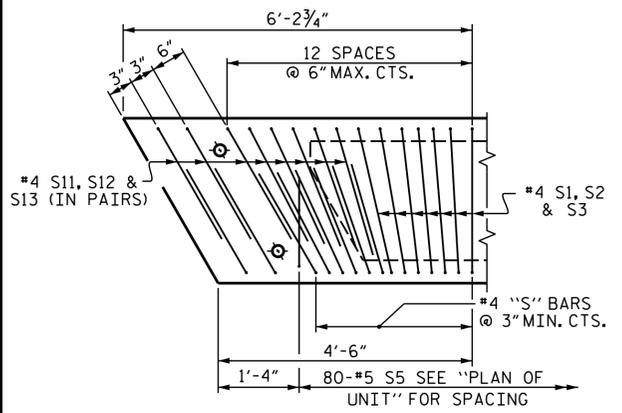


BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

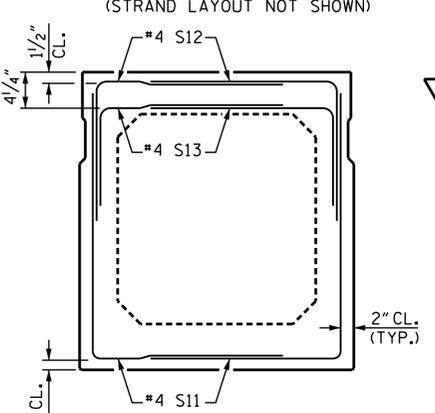
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	38	#4	2	5'-11"	150	5'-11"	150
B1	12	#5	STR	30'-11"	387	30'-11"	387
K1	12	#4	6	7'-2"	57	7'-2"	57
K2	8	#4	STR	2'-10"	15	2'-10"	15
S1	47	#4	3	8'-6"	267	8'-6"	267
S2	47	#4	3	5'-8"	178	5'-8"	178
S3	79	#4	3	4'-10"	255	4'-10"	255
S4	32	#4	4	5'-10"	125	5'-10"	125
S11	32	#4	7	5'-4"	114	5'-4"	114
S12	32	#4	7	3'-11"	84	3'-11"	84
S13	32	#4	7	3'-6"	75	3'-6"	75
* S5	80	#5	5	6'-0"	501		
REINFORCING STEEL				1782	LBS.	1782	LBS.
* EPOXY COATED REINF. STEEL				501	LBS.		
5000 P.S.I. CONCRETE				12.5	CU. YDS.	12.4	CU. YDS.
0.6" Ø L.R. STRANDS				No.	12	No.	12



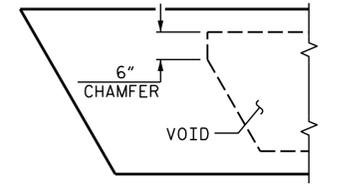
DETAIL "B"

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



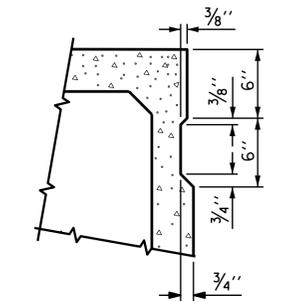
END VIEW

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



CHAMFER DETAIL

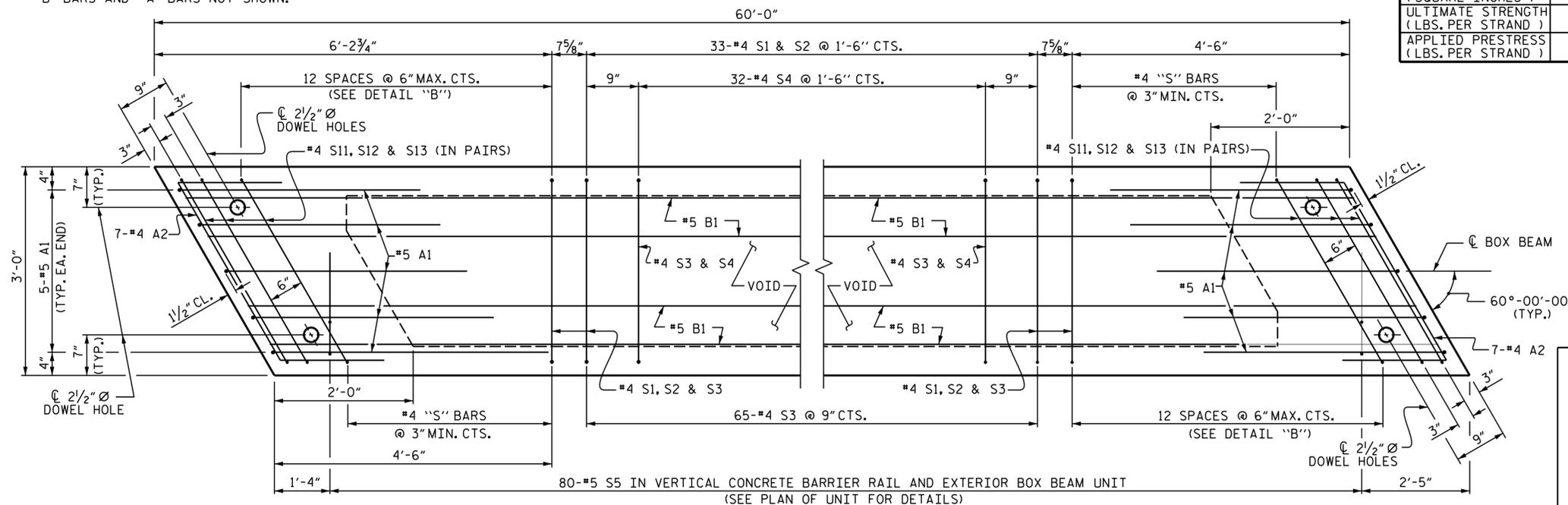
SHOWING 6" VOID CHAMFER



SHEAR KEY DETAIL

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

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF 60' UNIT", SHEET 2 OF 7. FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL", SHEET 1 OF 7. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS", SHEET 6 OF 7.

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 4 OF 7



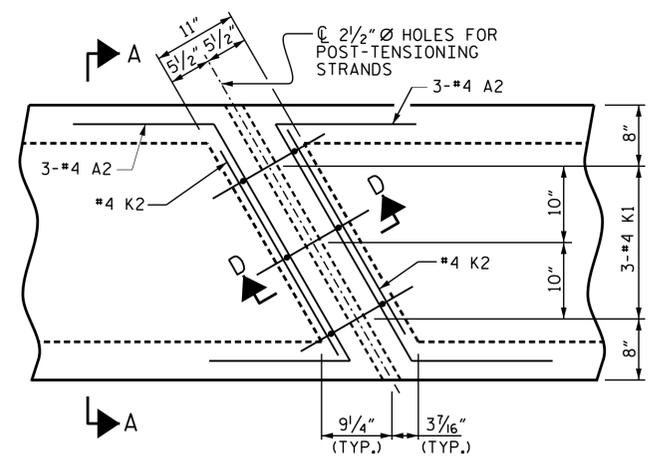
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

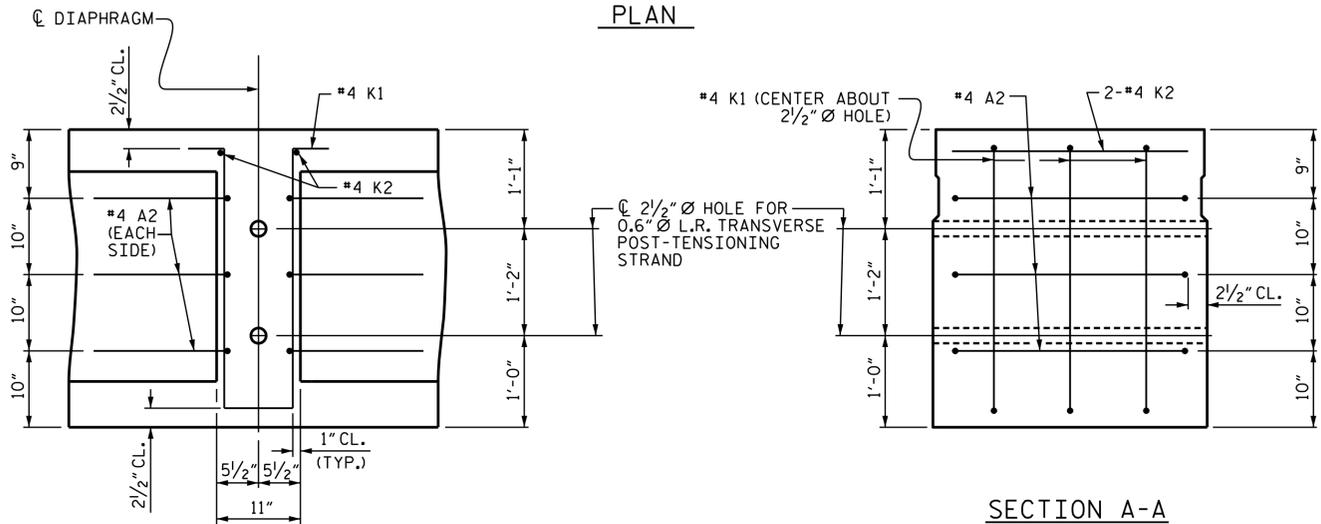
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : ZCS DATE : 8/25
 CHECKED BY : MGC DATE : 9/25
 DESIGN ENGINEER OF RECORD: ZCS DATE : 9/25

SHEET NO.
 S-12
 TOTAL SHEETS
 27



PLAN

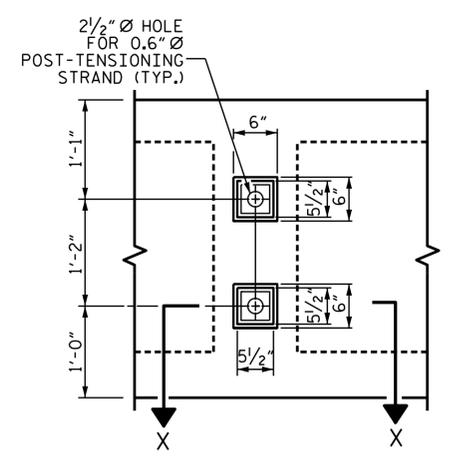


SECTION A-A
VOIDS NOT SHOWN

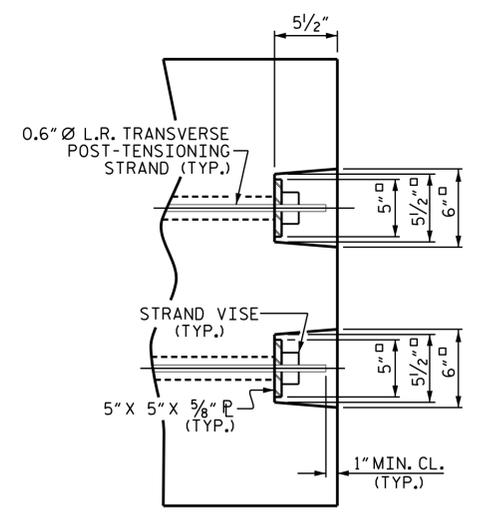
SECTION D-D

DOUBLE DIAPHRAGM DETAILS

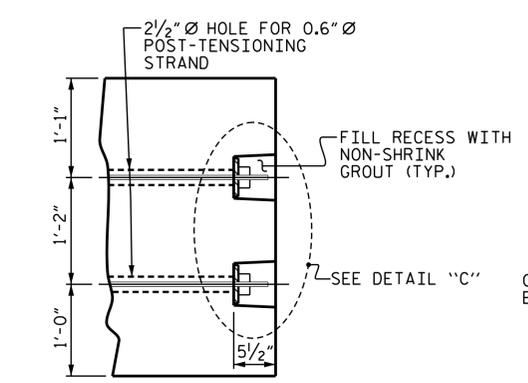
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



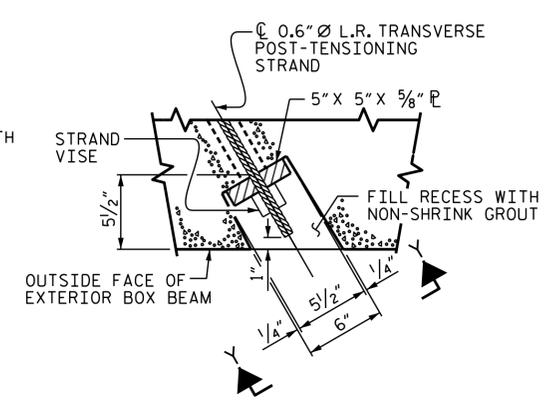
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

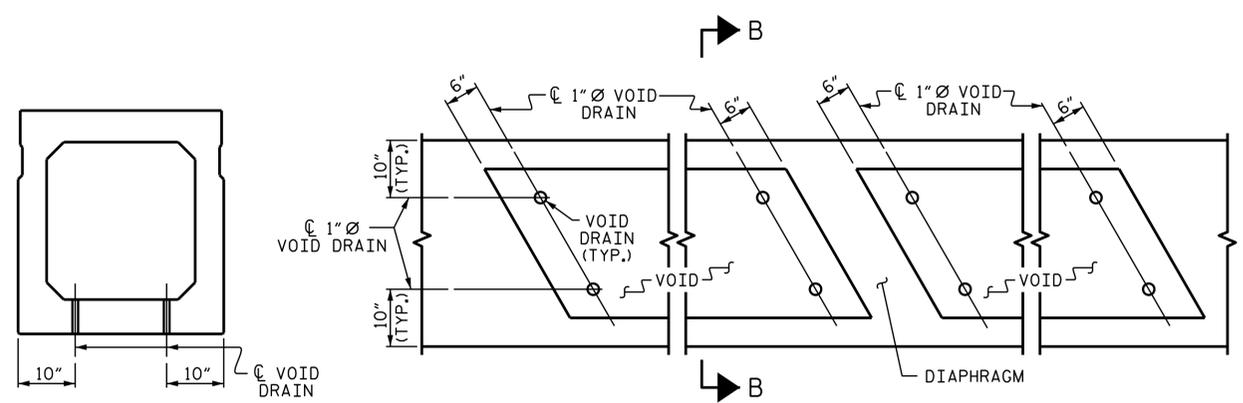


PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

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



SECTION B-B

PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
100' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	7/8" ↓
FINAL CAMBER	1/8" ↑

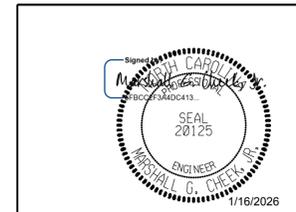
** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
60' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/4" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

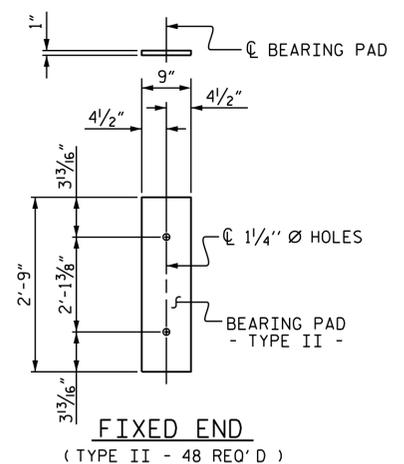
SHEET 6 OF 7



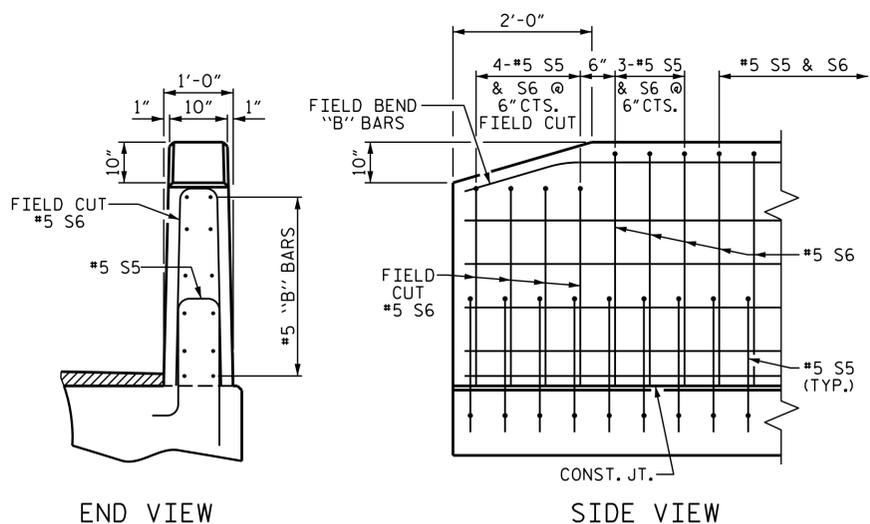
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:				
1			3			S-14			
2			4			TOTAL SHEETS 27			

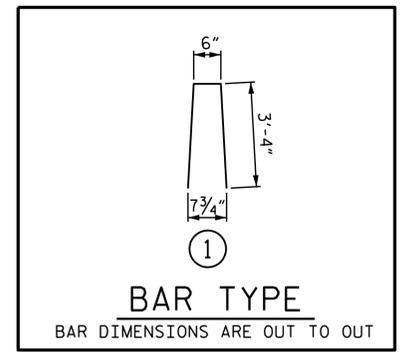
ASSEMBLED BY : ZCS DATE : 8/25
 CHECKED BY : MGC DATE : 9/25
 DESIGN ENGINEER OF RECORD : ZCS DATE : 9/25



ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

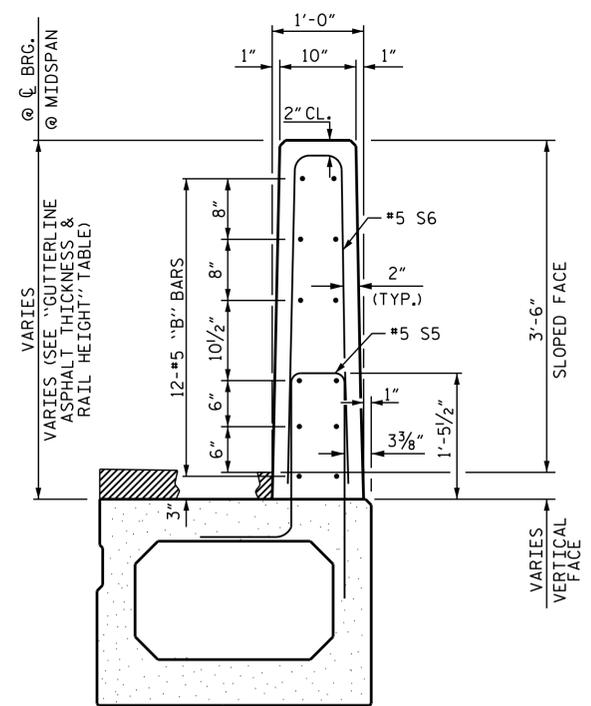


END OF RAIL DETAILS

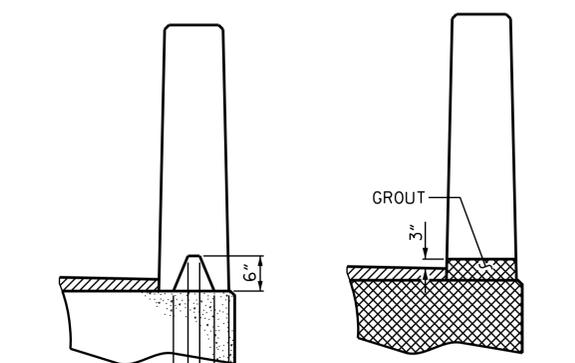


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT

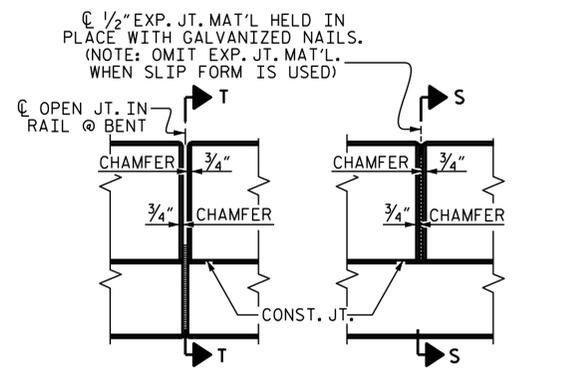
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL							
BAR	BARS PER PAIR OF EXTERIOR UNITS			SIZE	TYPE	LENGTH	WEIGHT
	60' UNIT	100' UNIT	TOTAL				
*B11	144		144	#5	STR	11'-10"	1777
*B12		192	192	#5	STR	14'-3"	2854
*S6	160	268	428	#5	1	7'-2"	3199
* EPOXY COATED REINFORCING STEEL						LBS.	7830
CLASS AA CONCRETE						CU.YDS.	40.4
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT.	320.29



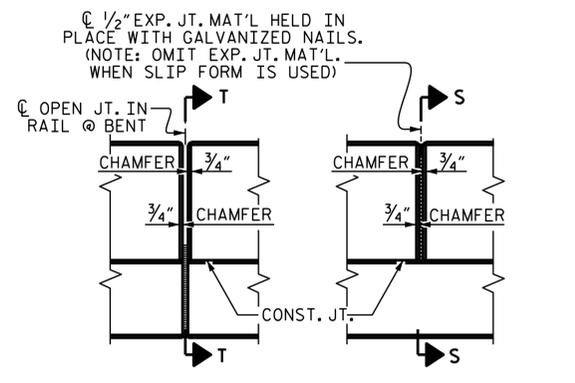
SECTION THRU RAIL
VERTICAL CONCRETE BARRIER RAIL DETAILS



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



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



ELEVATION AT EXPANSION JOINTS

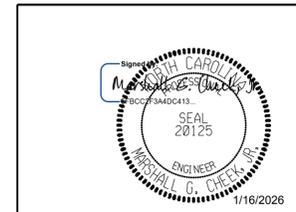
CONCRETE RELEASE STRENGTH	
UNIT	PSI
60' UNITS	4000
100' UNITS	5500

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
60' UNITS	2 3/8"	3'-8 3/8"
100' UNITS	1 1/2"	3'-7 1/2"

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	60'-0"	120'-0"
INTERIOR B.B.	10	60'-0"	600'-0"
TOTAL	12		720'-0"

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	100'-0"	200'-0"
INTERIOR B.B.	10	100'-0"	1000'-0"
TOTAL	12		1200'-0"

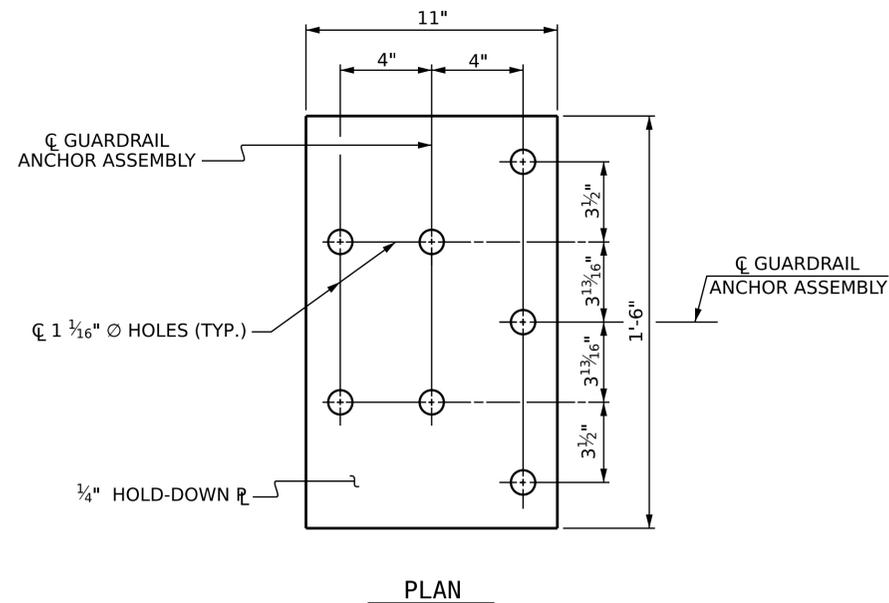
PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-
SHEET 7 OF 7



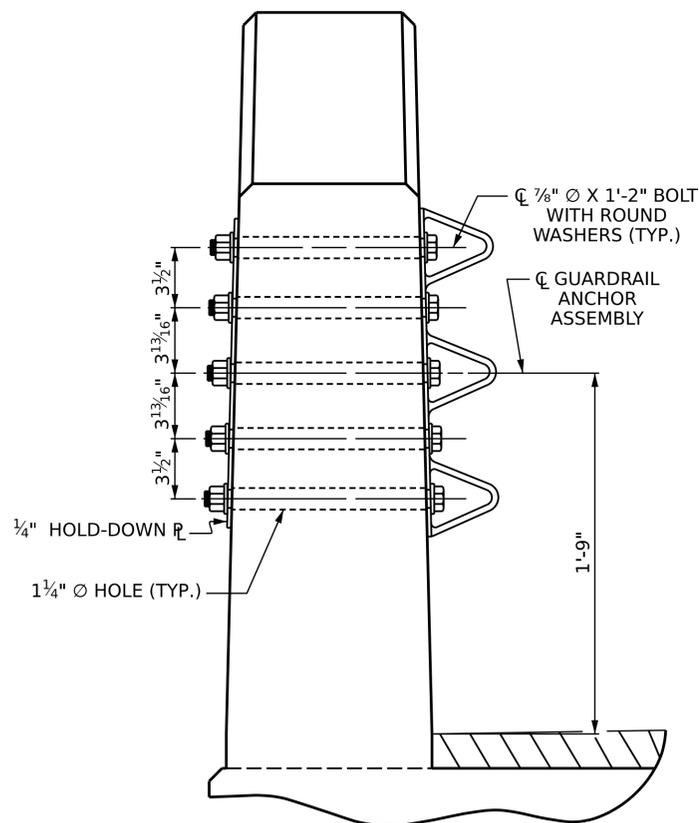
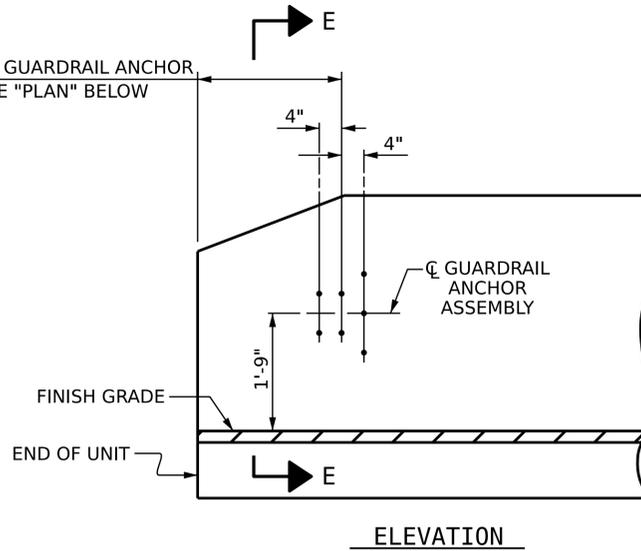
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15			
1			3			TOTAL SHEETS			
2			4			27			

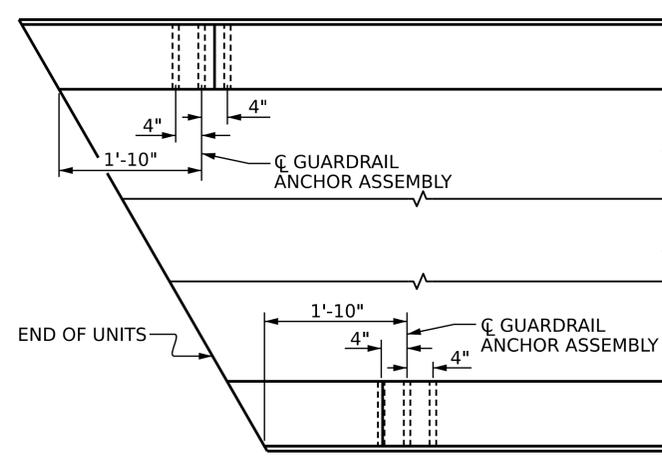
ASSEMBLED BY : ZCS DATE : 8/25
CHECKED BY : MGC DATE : 9/25
DESIGN ENGINEER OF RECORD: ZCS DATE : 9/25



FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

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

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

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

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

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

PROJECT NO. DF18312.2023011

CLEVELAND COUNTY

STATION: 16+16.07 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL**

ASSEMBLED BY :	ZCS	DATE :	8/25
CHECKED BY :	MGC	DATE :	9/25
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

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.	DATE:
1			3	
2			4	
				TOTAL SHEETS
				27

NOTES

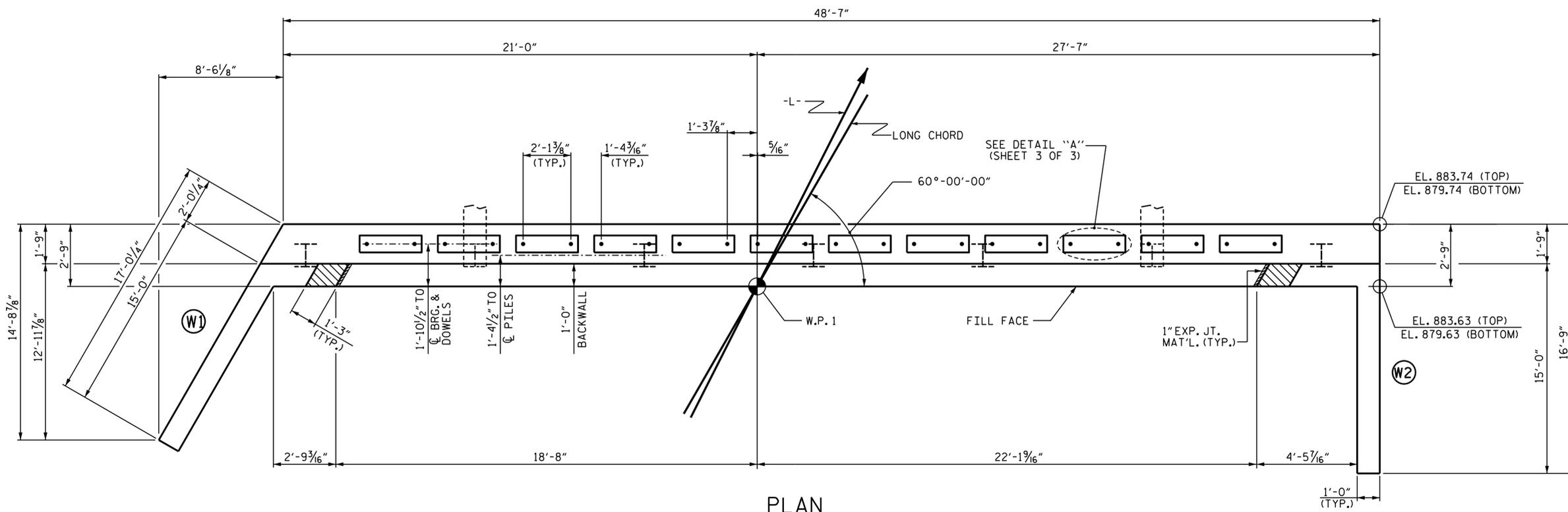
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

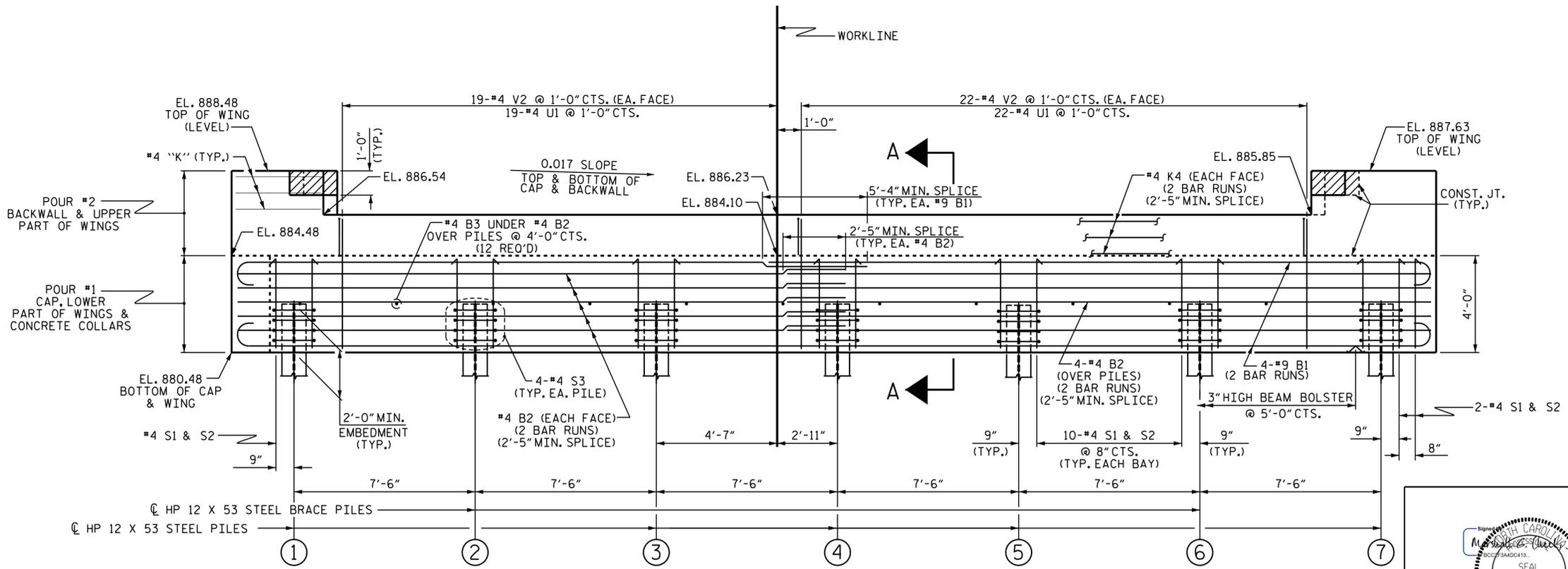
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

INSTALL THE 6" Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN

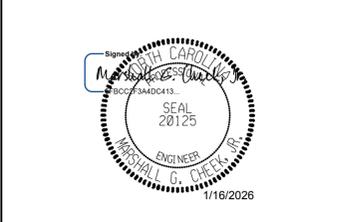


TOP OF PILE ELEVATIONS	
①	882.44
②	882.32
③	882.19
④	882.06
⑤	881.93
⑥	881.81
⑦	881.68

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-
SHEET 1 OF 3

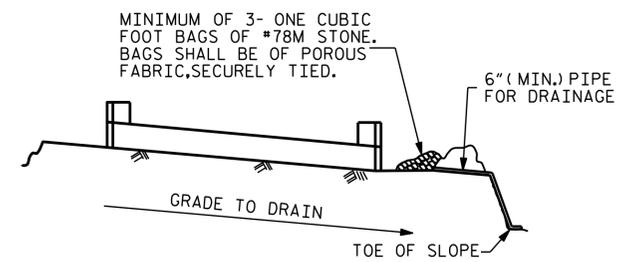


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUBSTRUCTURE
END BENT 1**

ASSEMBLED BY : ZCS	DATE : 9/25
CHECKED BY : MGC	DATE : 10/25
DRAWN BY : WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY : AAC 12/11	

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-17
1			3			TOTAL SHEETS
2			4			27

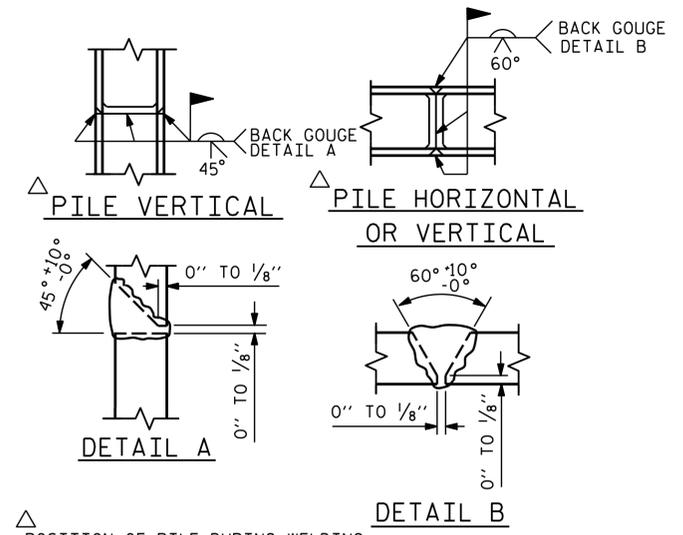


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

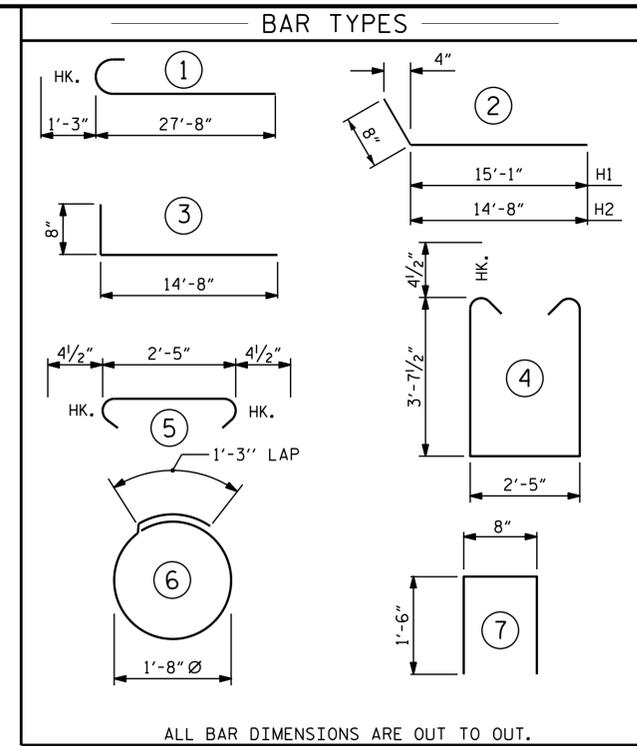
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

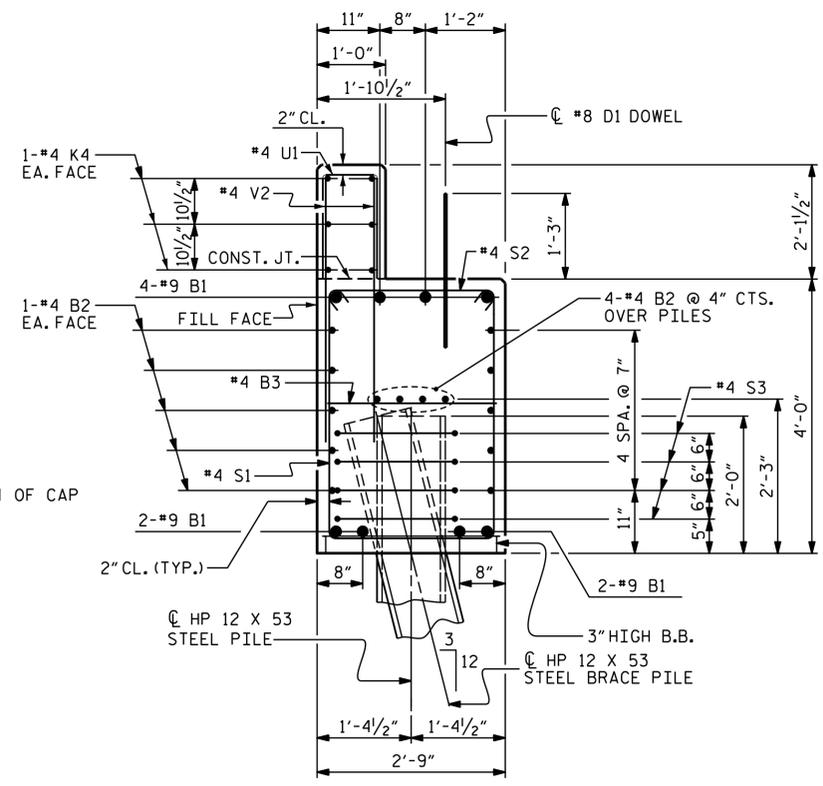
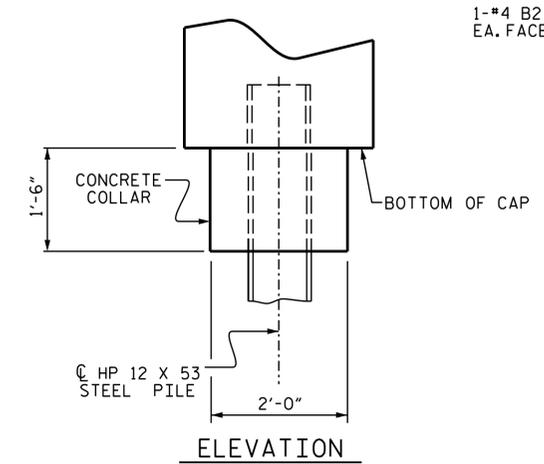
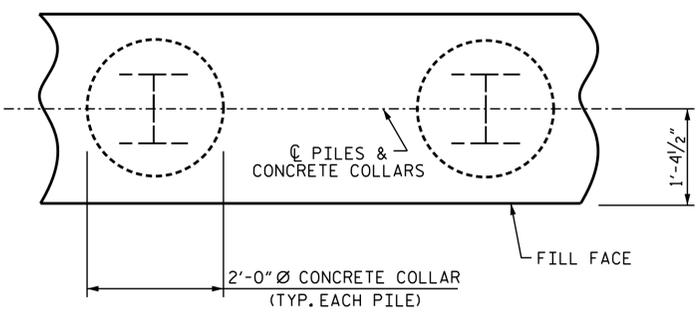
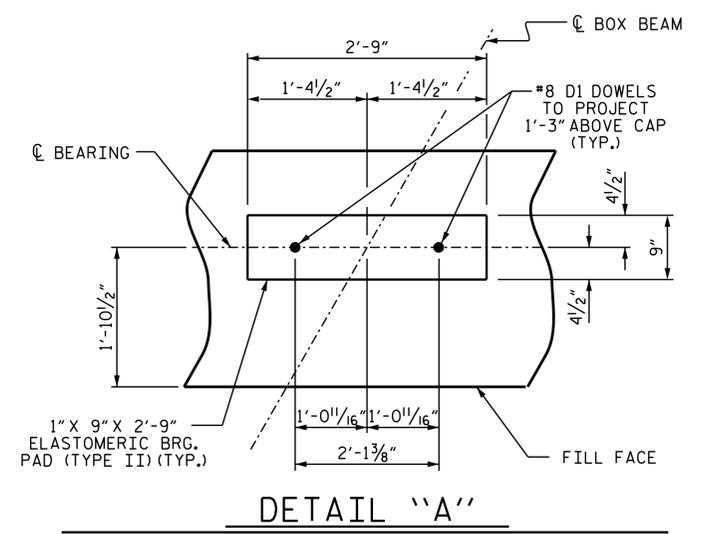
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

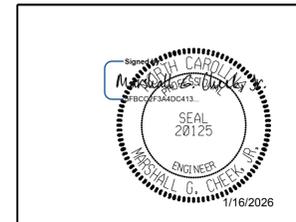


BILL OF MATERIAL FOR END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#9	1	28'-11"	1573
B2	28	#4	STR	26'-2"	489
B3	12	#4	STR	2'-5"	19
D1	24	#8	STR	2'-3"	144
H1	16	#6	2	15'-9"	379
H2	16	#6	2	15'-4"	368
H3	32	#6	3	15'-4"	737
K1	6	#4	STR	3'-4"	13
K2	3	#4	STR	4'-7"	9
K3	3	#4	STR	4'-11"	10
K4	12	#4	STR	26'-2"	210
S1	63	#4	4	10'-5"	438
S2	63	#4	5	3'-2"	133
S3	28	#4	6	6'-6"	122
U1	41	#4	7	3'-8"	100
V1	81	#4	STR	7'-8"	415
V2	82	#4	STR	5'-9"	315
REINFORCING STEEL					5474 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					25.5 C.Y.
POUR #2 BACKWALL & UPPER PART OF WINGS					8.7 C.Y.
TOTAL CLASS A CONCRETE					34.2 C.Y.



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

PROJECT NO. DF18312.2023011
 CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 3 OF 3

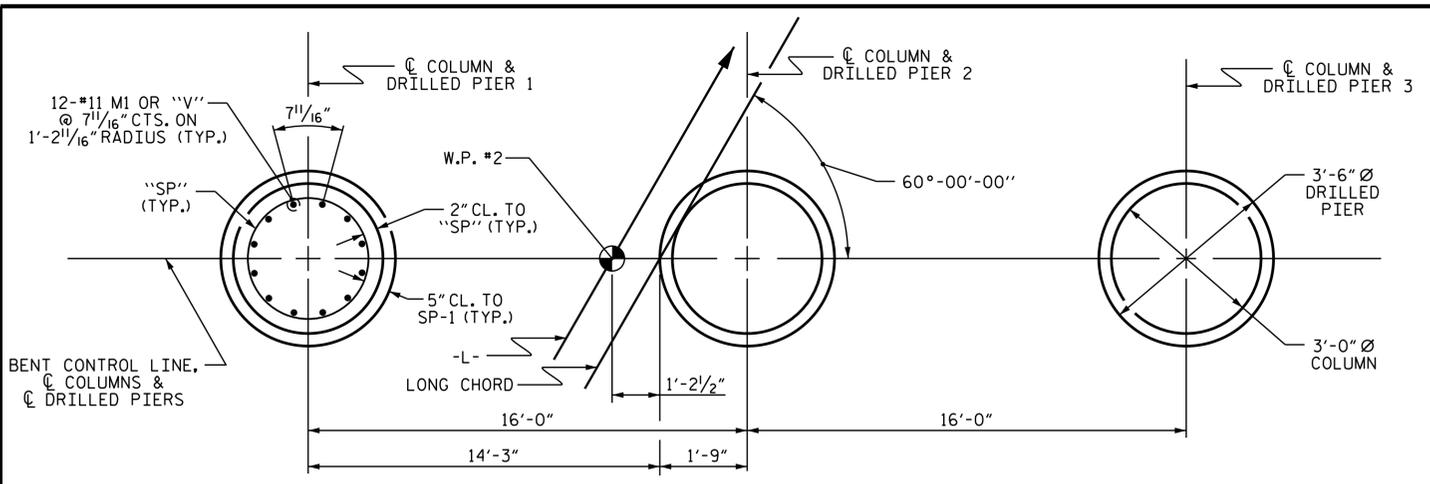


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 DETAILS

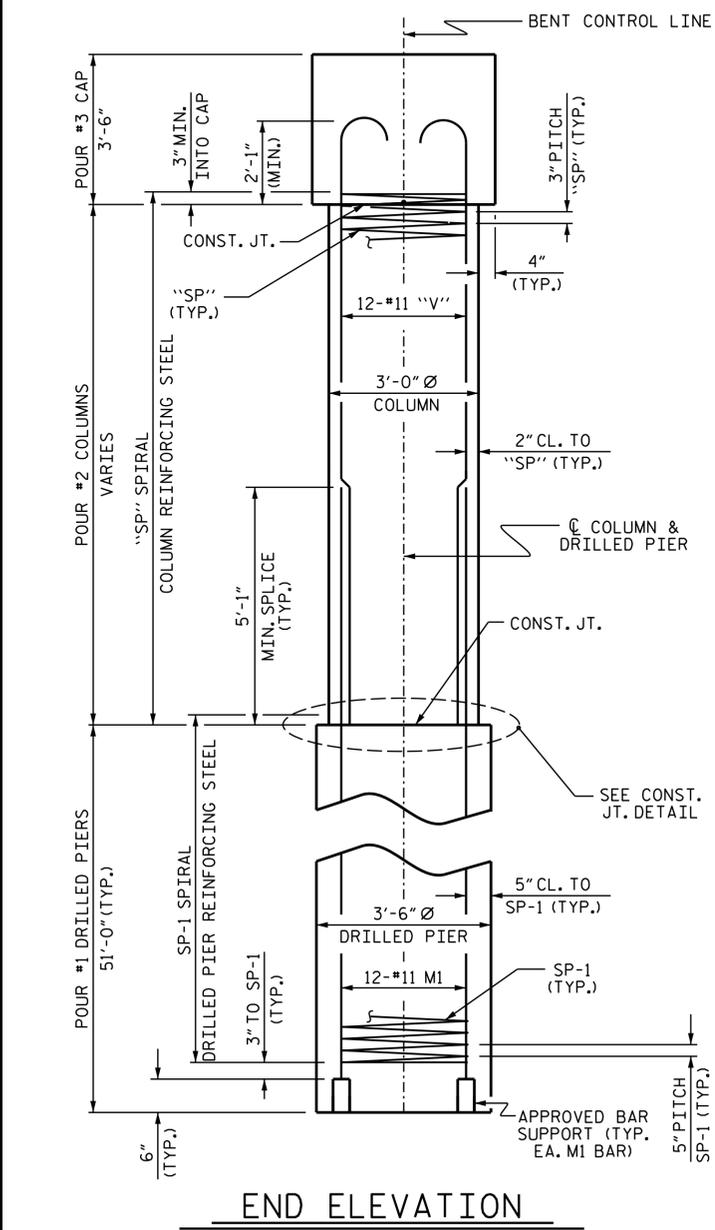
ASSEMBLED BY :	ZCS	DATE :	9/25
CHECKED BY :	MGC	DATE :	10/25
DRAWN BY :	WJH	12/11	REV. 4/17
CHECKED BY :	AAC	12/11	MAA/THC

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		

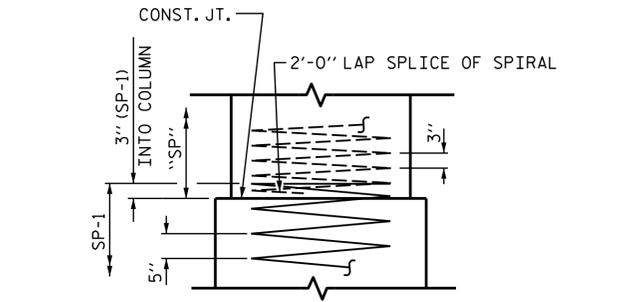
SHEET NO. S-19	
TOTAL SHEETS	27



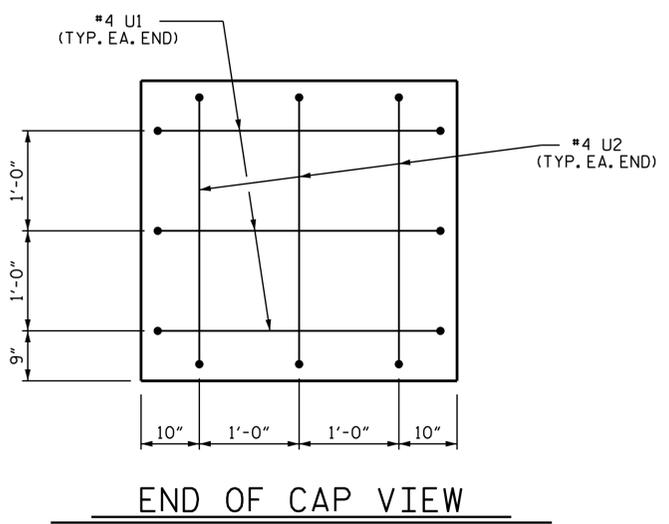
PLAN OF DRILLED PIERS & COLUMNS



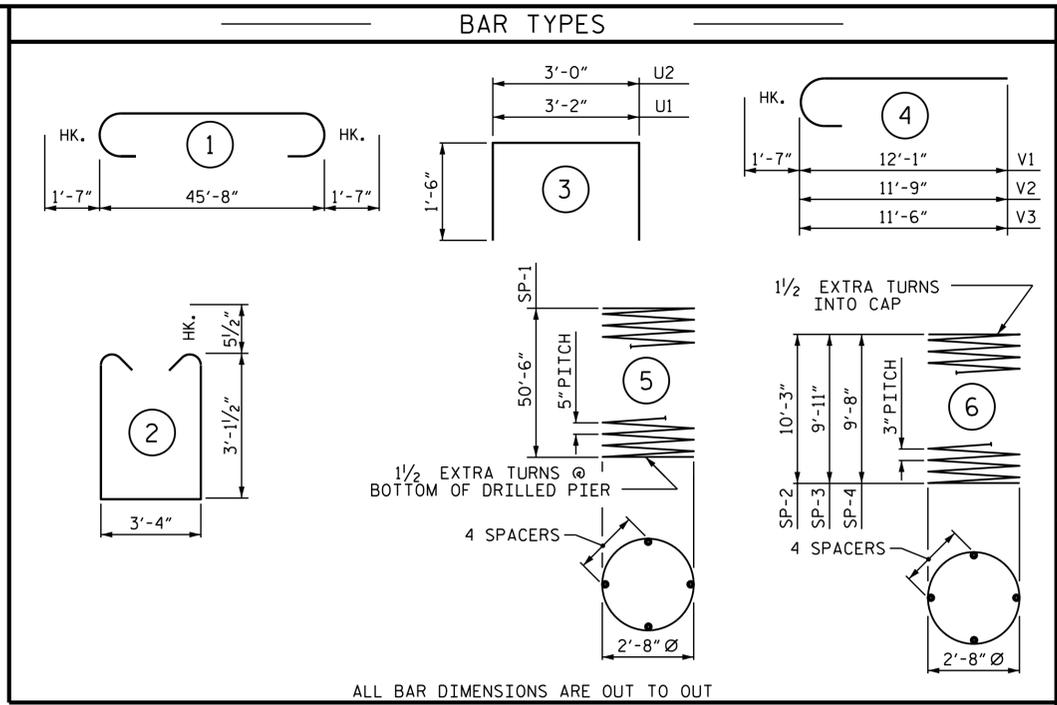
END ELEVATION



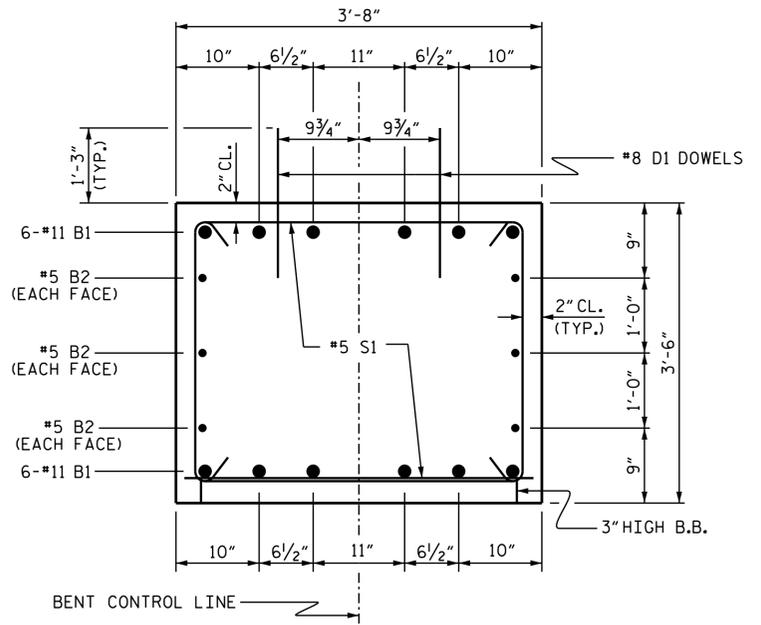
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL FOR BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	48'-10"	3113
B2	6	#5	STR	45'-10"	287
D1	48	#8	STR	2'-3"	288
M1	36	#11	STR	58'-8"	11221
S1	78	#5	2	10'-6"	854
U1	6	#4	3	6'-2"	25
U2	6	#4	3	6'-0"	24
V1	12	#11	4	13'-8"	871
V2	12	#11	4	13'-4"	850
V3	12	#11	4	13'-1"	834
REINFORCING STEEL 18,367 LBS.					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	5	1011'-8"	3166
SP-2	1	**	6	354'-10"	237
SP-3	1	**	6	346'-7"	232
SP-4	1	**	6	338'-4"	226
SPIRAL COLUMN REINFORCING STEEL 3,861 LBS.					
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2, SP-3, SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					7.6 C.Y.
POUR #3 (CAP)					21.9 C.Y.
TOTAL CLASS A CONCRETE					29.5 C.Y.
DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					54.5 C.Y.

PROJECT NO. DF18312.2023011
 CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

1/16/2026

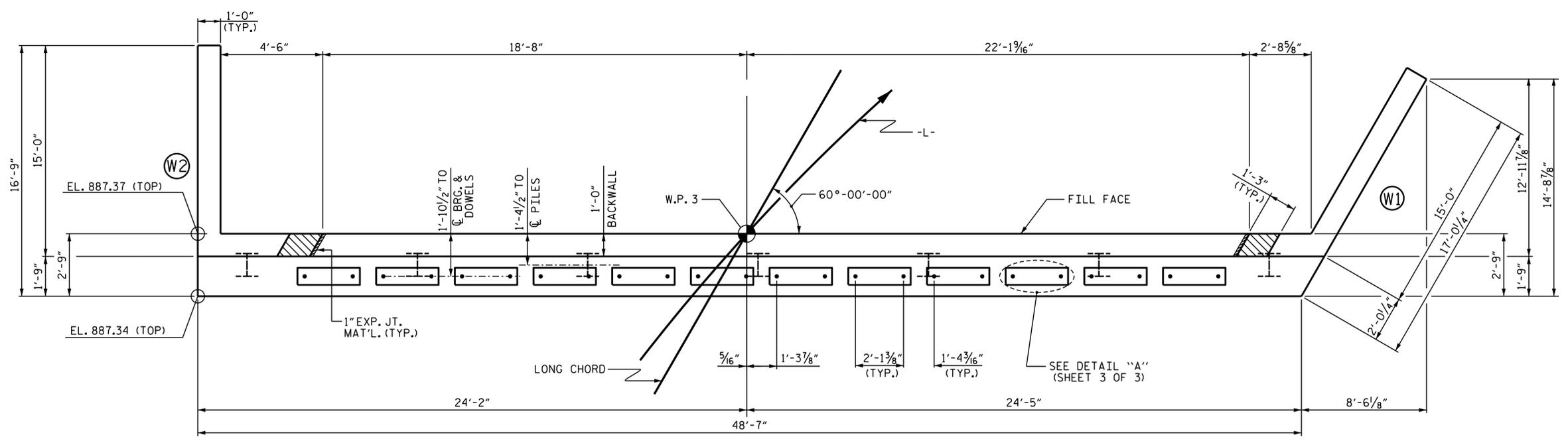
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

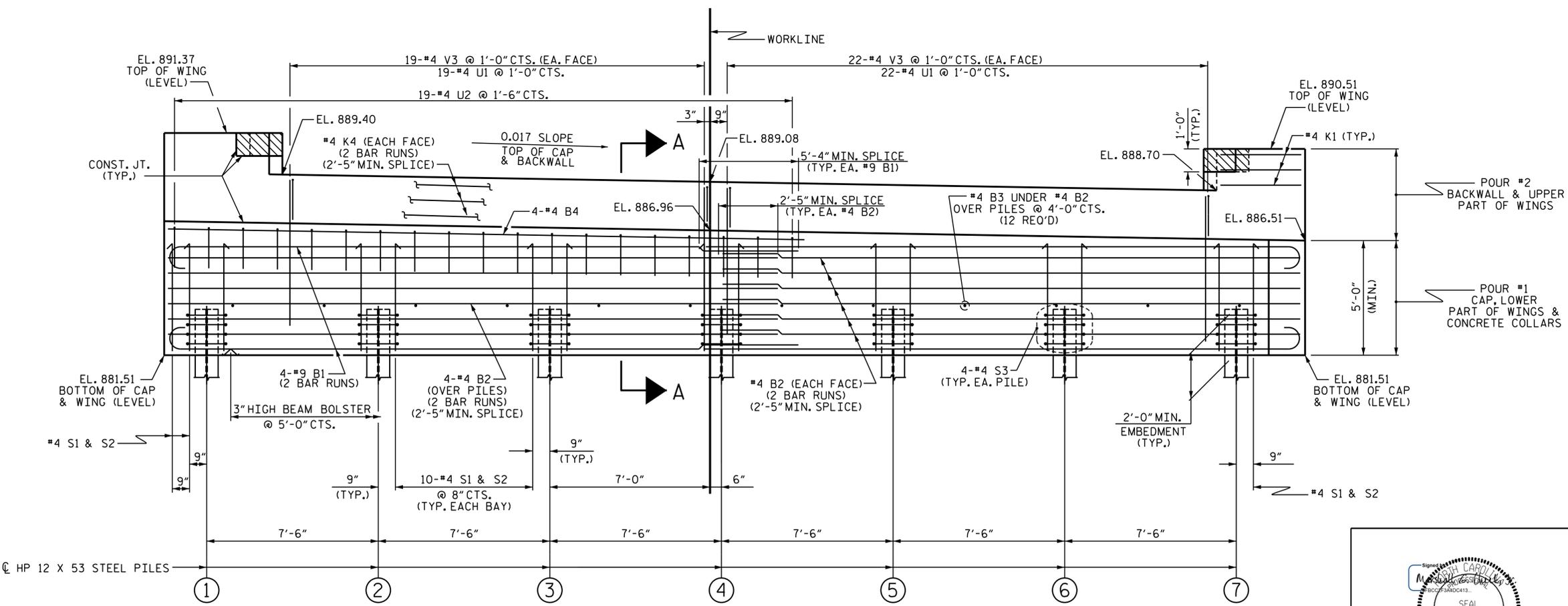
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-21
 TOTAL SHEETS 27

DRAWN BY : ZCS DATE : 11/25
 CHECKED BY : MGC DATE : 12/25
 DESIGN ENGINEER OF RECORD: ZCS DATE : 12/25



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
- FOR WING DETAILS, SEE SHEET 2 OF 3.
- INSTALL THE 6" Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

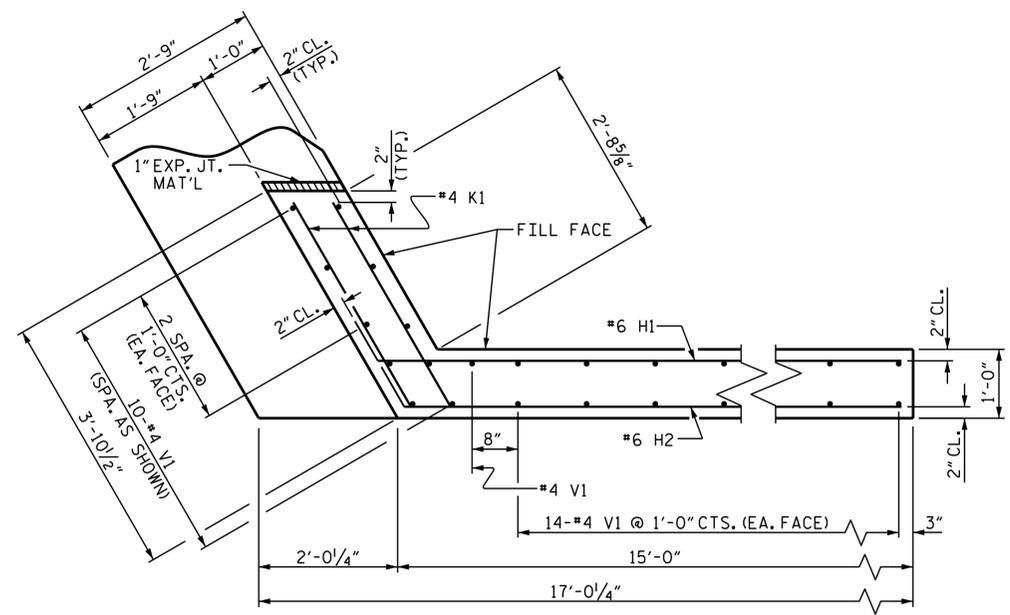
SEAL 20125
 ENGINEER
 MARSHALL G. CHECK, III
 1/16/2026

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

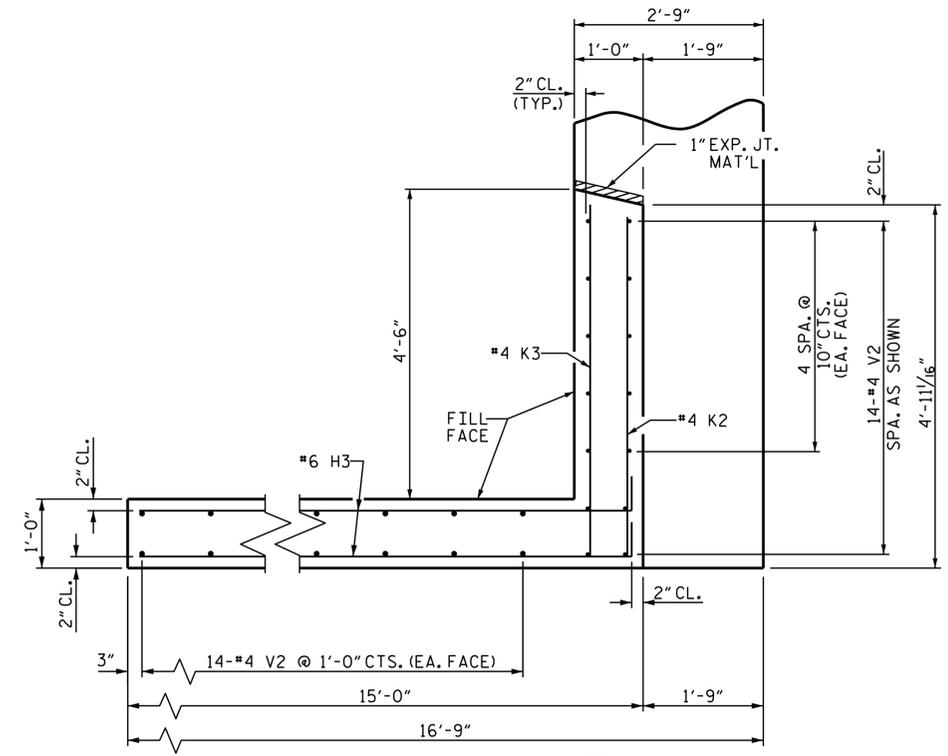
TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			27

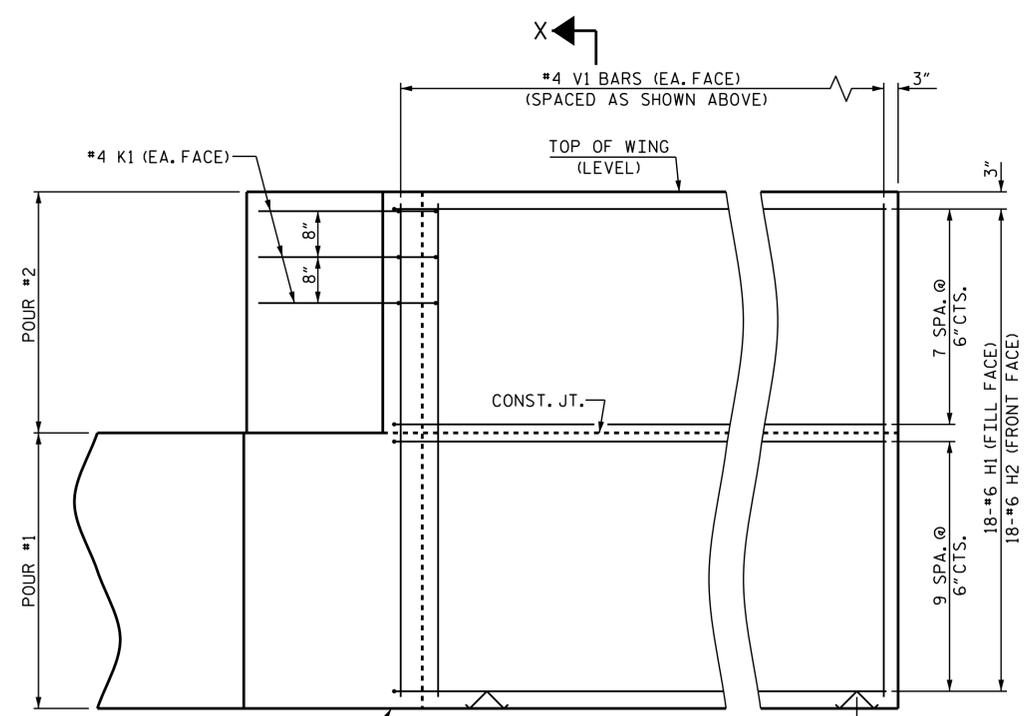
ASSEMBLED BY : ZCS DATE : 9/25
 CHECKED BY : MGC DATE : 11/25
 DESIGN ENGINEER OF RECORD: ZCS DATE : 11/25



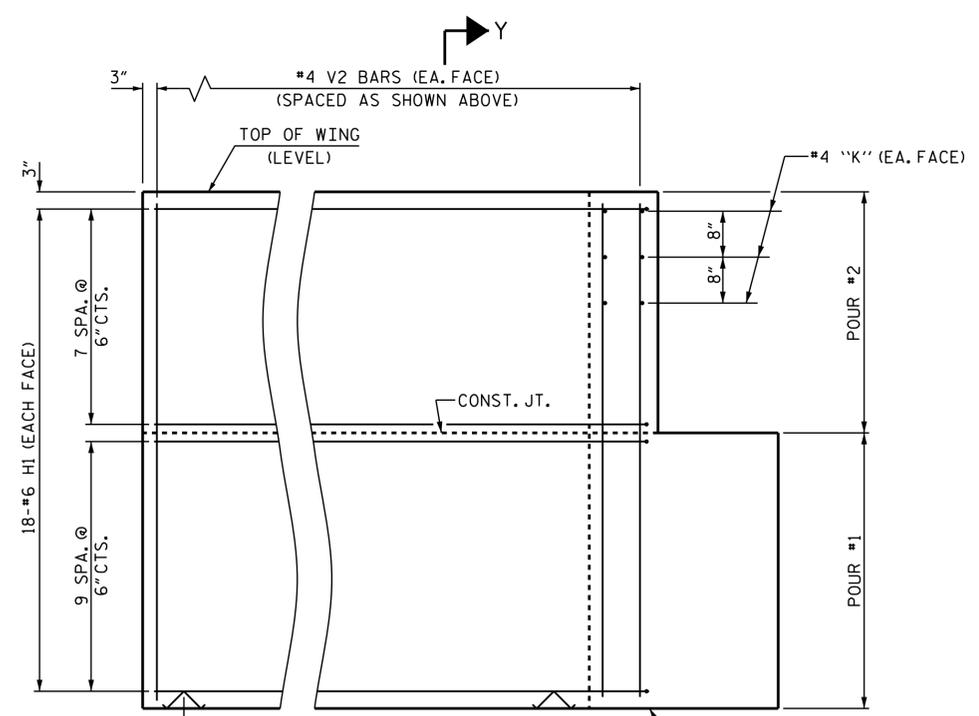
PLAN OF WING (W1)



PLAN OF WING (W2)

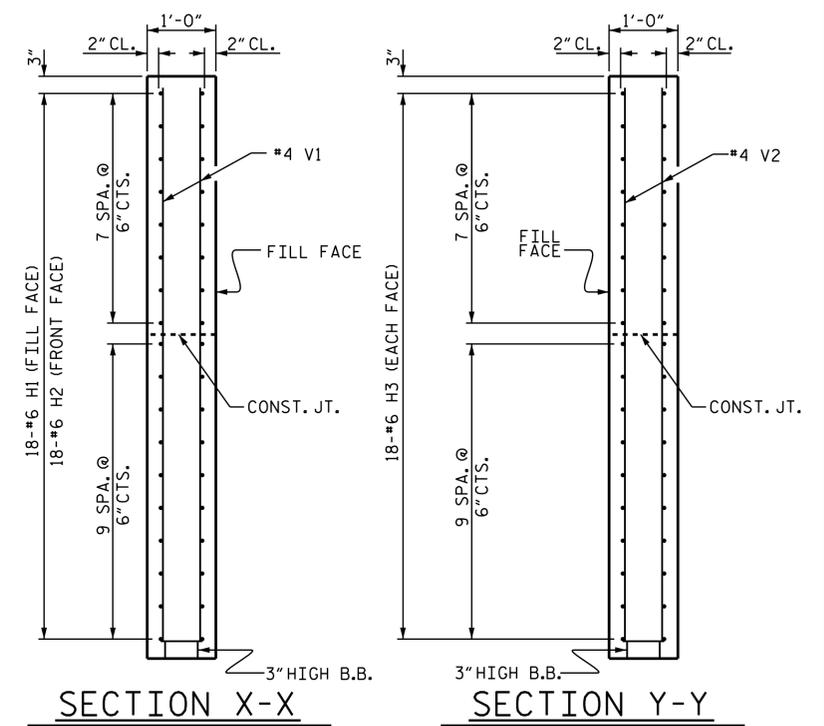


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X

SECTION Y-Y

PROJECT NO. DF18312.2023011
 CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 2 OF 3

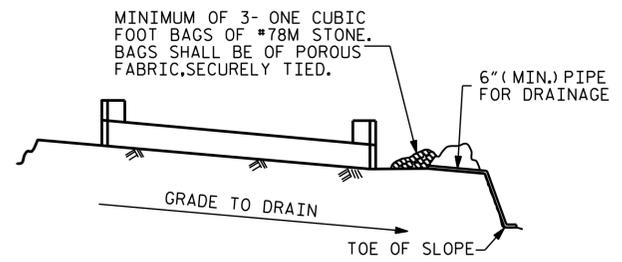
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : ZCS	DATE : 9/25	SHEET NO. S-23
CHECKED BY : MGC	DATE : 10/25	
DESIGN ENGINEER OF RECORD: MGC	DATE : 10/25	

ASSEMBLED BY : ZCS DATE : 9/25
 CHECKED BY : MGC DATE : 10/25
 DESIGN ENGINEER OF RECORD: MGC DATE : 10/25

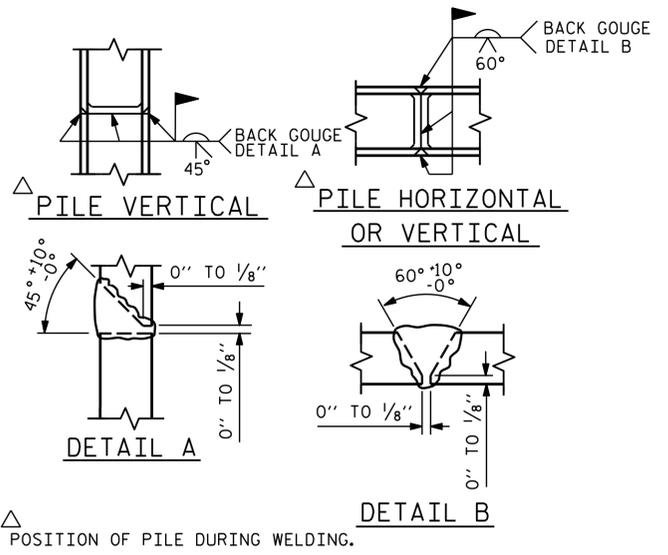


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

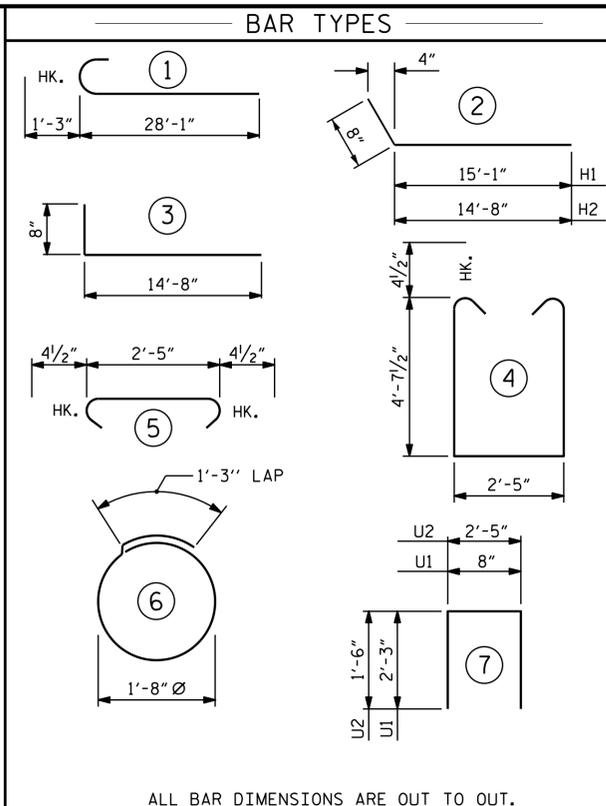
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

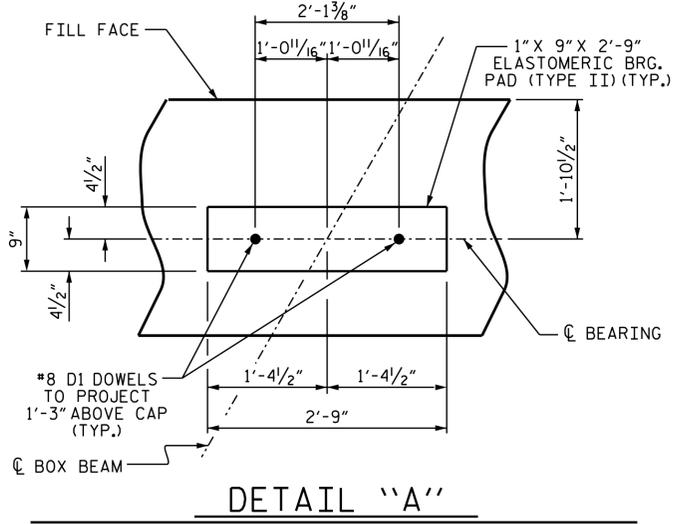


PILE SPLICE DETAILS

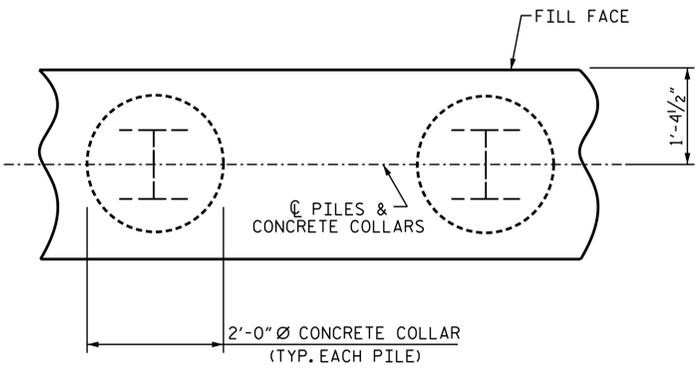


ALL BAR DIMENSIONS ARE OUT TO OUT.

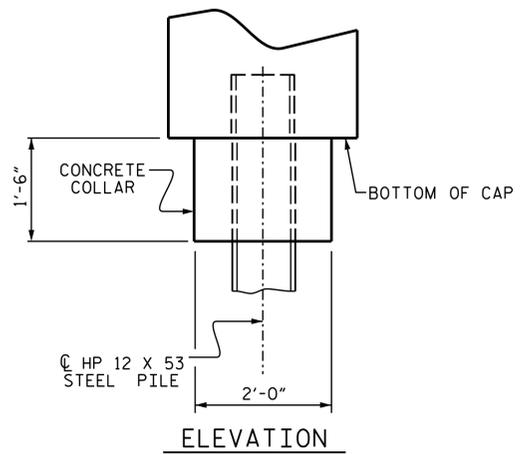
BILL OF MATERIAL FOR END BENT 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	16	#9	1	29'-4"	1596
B2	32	#4	STR	26'-2"	559
B3	12	#4	STR	2'-5"	19
B4	4	#4	STR	27'-9"	74
D1	24	#8	STR	2'-3"	144
H1	18	#6	2	15'-9"	426
H2	18	#6	2	15'-4"	415
H3	36	#6	3	15'-4"	829
K1	6	#4	STR	3'-4"	13
K2	3	#4	STR	4'-7"	9
K3	3	#4	STR	4'-11"	10
K4	12	#4	STR	26'-2"	210
S1	63	#4	4	12'-5"	523
S2	63	#4	5	3'-2"	133
S3	28	#4	6	6'-6"	122
U1	41	#4	7	5'-2"	142
U2	19	#4	7	5'-5"	69
V1	39	#4	STR	9'-6"	247
V2	42	#4	STR	8'-8"	243
V3	82	#4	STR	6'-10"	374
REINFORCING STEEL				6157 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				33.7 C.Y.	
POUR #2 BACKWALL & UPPER PART OF WINGS				8.7 C.Y.	
TOTAL CLASS A CONCRETE				42.4 C.Y.	



DETAIL "A"

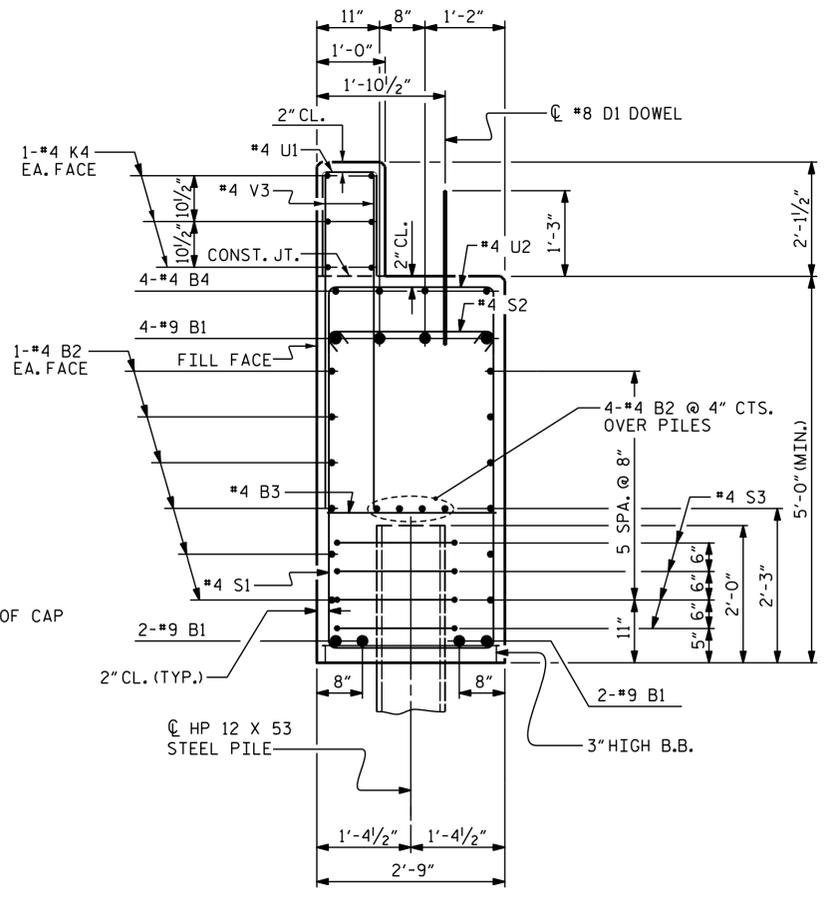


PLAN



ELEVATION

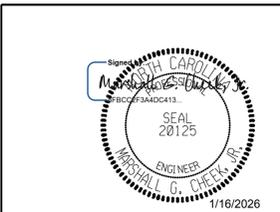
CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

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

PROJECT NO. DF18312.2023011
 CLEVELAND COUNTY
 STATION: 16+16.07 -L-
 SHEET 3 OF 3

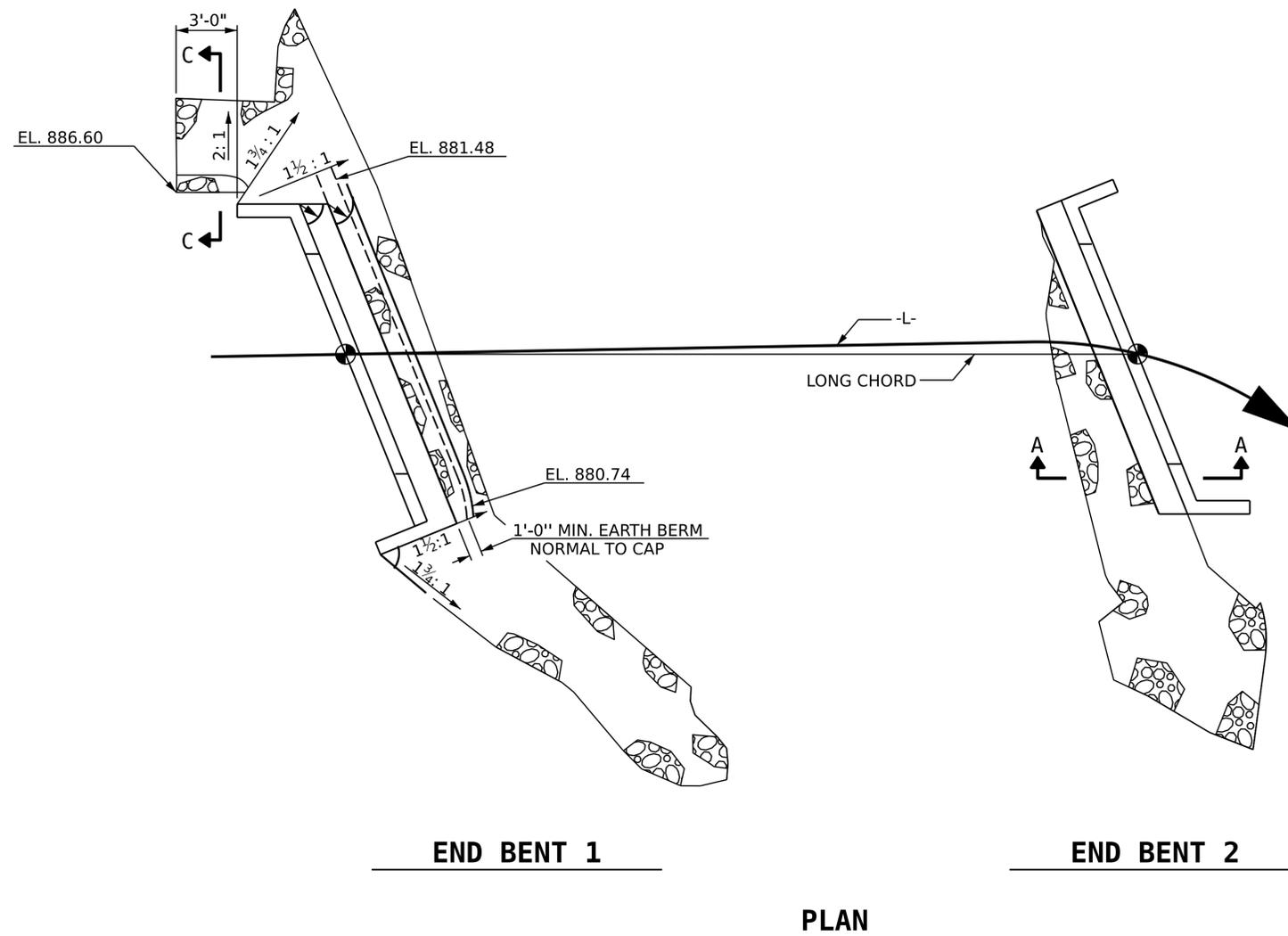


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275					SHEET NO. S-24
					TOTAL SHEETS 27

DRAWN BY : ZCS DATE : 9/25
 CHECKED BY : MGC DATE : 10/25
 DESIGN ENGINEER OF RECORD: ZCS DATE : 10/25

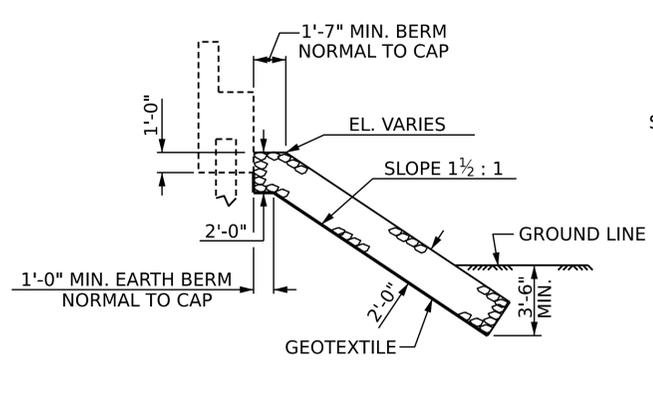


END BENT 1

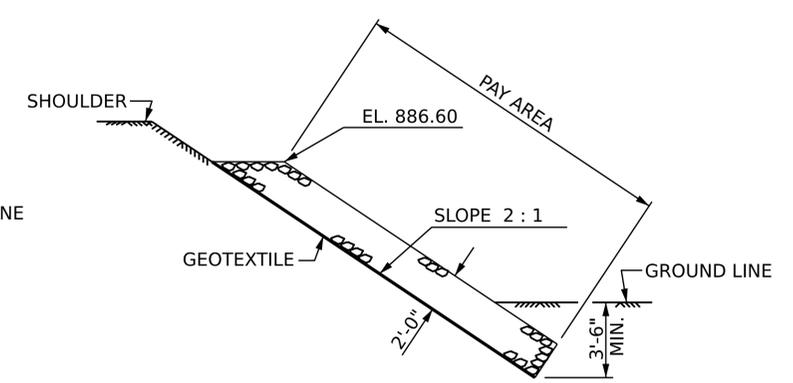
END BENT 2

PLAN

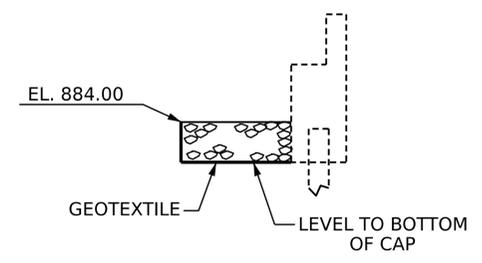
ESTIMATED QUANTITIES			
BRIDGE @ STA. 16+16.07 -L-	RIP RAP CLASS II (2'-0" THICK)	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE
	TONS	TONS	SQUARE YARDS
END BENT 1	185		200
END BENT 2		90	100



EB1 C SECTION - BERM RIP RAPPED

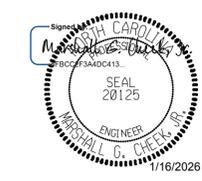


SECTION C-C



SECTION A-A

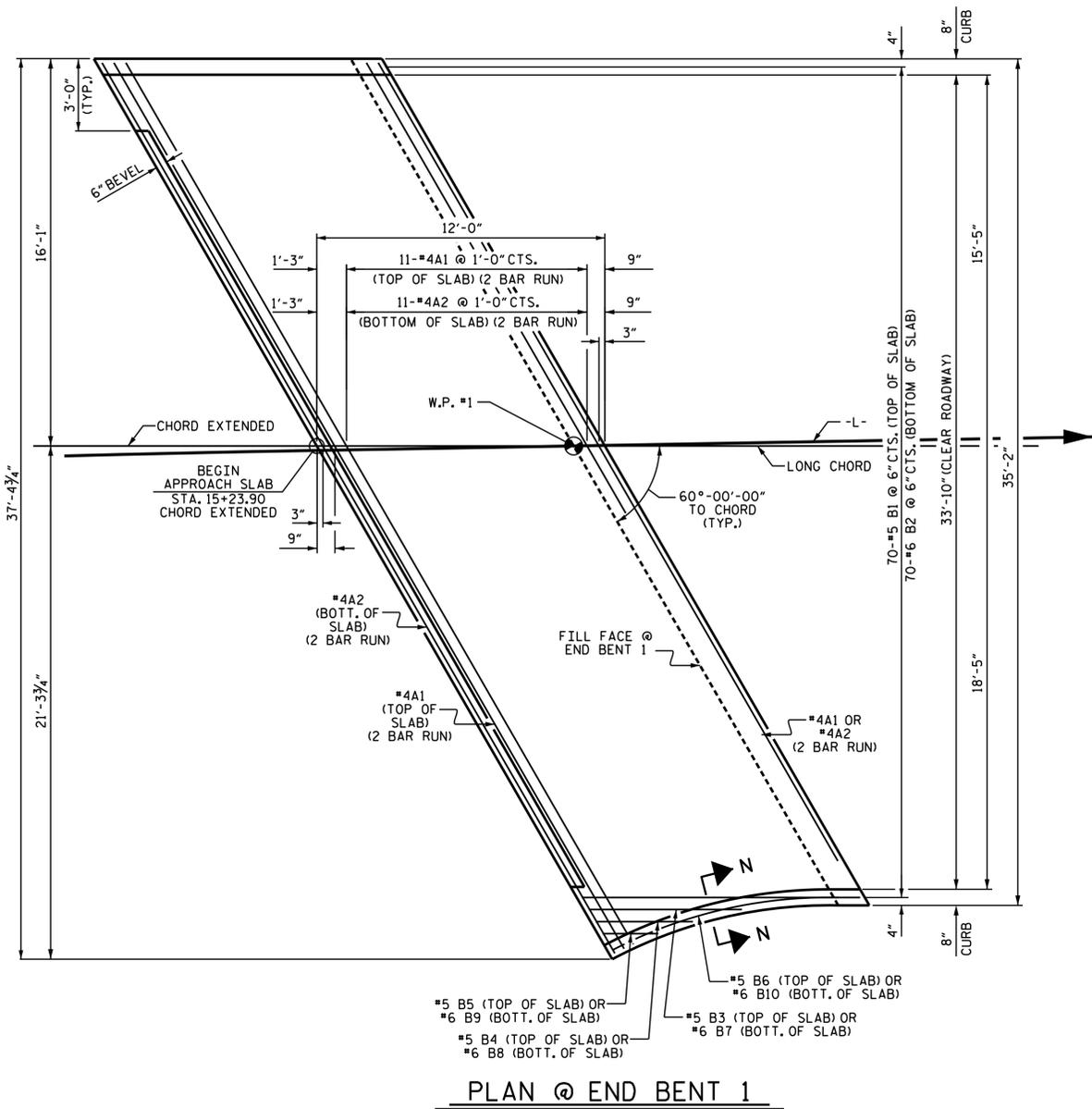
PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
 STATION: 16+16.07 -L-



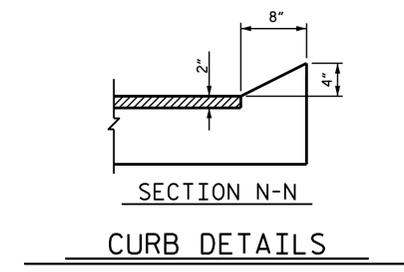
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
RIP RAP DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3						TOTAL SHEETS
2			4						27

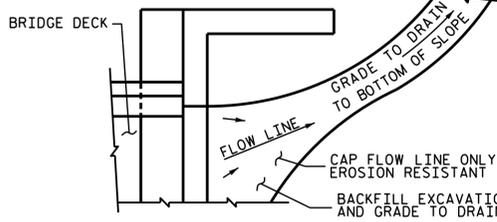
ASSEMBLED BY : ZCS DATE : 10/25
 CHECKED BY : MGC DATE : 10/25



PLAN @ END BENT 1



SECTION N-N
CURB DETAILS

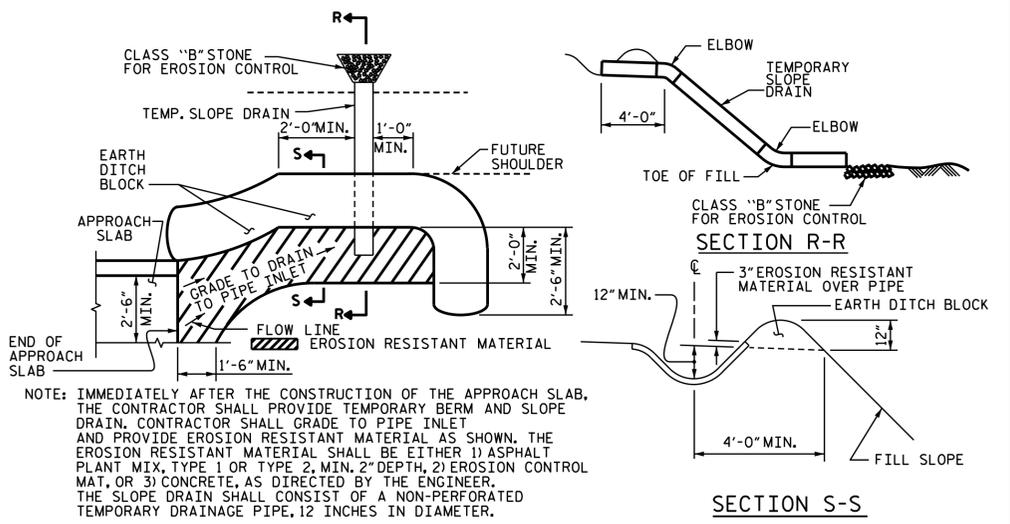


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

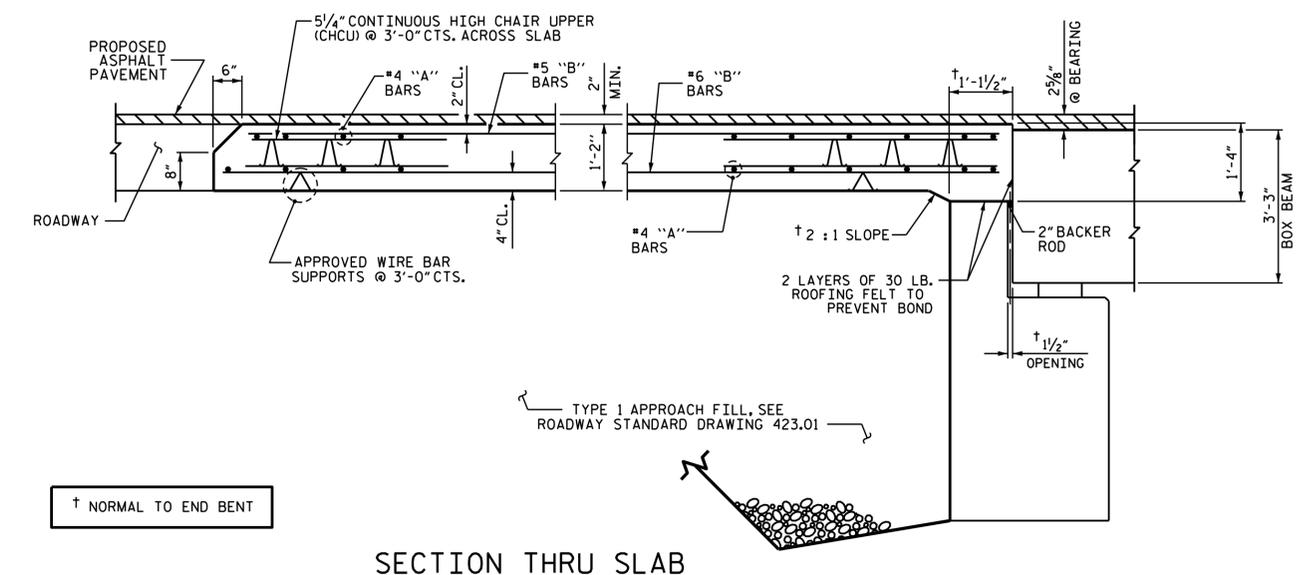
TEMPORARY DRAINAGE DETAIL

BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	22'-4"	388
A2	26	#4	STR	22'-2"	385
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
*B3	1	#5	STR	6'-4"	7
*B4	1	#5	STR	4'-0"	4
*B5	1	#5	STR	2'-3"	2
*B6	1	#5	STR	9'-9"	10
B7	1	#6	STR	6'-4"	10
B8	1	#6	STR	4'-0"	6
B9	1	#6	STR	2'-3"	3
B10	1	#6	STR	9'-9"	15
REINFORCING STEEL				LBS.	1637
* EPOXY COATED REINFORCING STEEL				LBS.	1220
CLASS AA CONCRETE				C. Y.	18.6

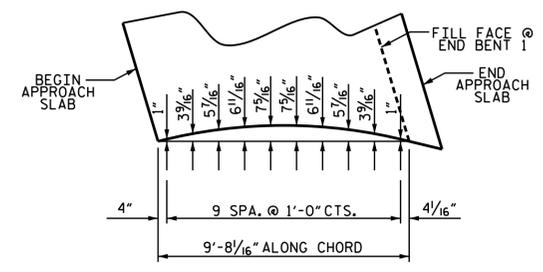
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



SECTION R-R
SECTION S-S
PLAN VIEW
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB



ARC OFFSETS - RIGHT SIDE

PROJECT NO. DF18312.2023011
CLEVELAND COUNTY
STATION: 16+16.07 -L-
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

1/8/2026
C:\work\dir\ncdot+pw.bentley.com\ncdot+pw-01\zachary.smith\d0474612\Total.Cleveland.262.dgn
ZSmith

1/8/2026
DRAWN BY: ZCS DATE: 9/25
CHECKED BY: MGC DATE: 10/25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

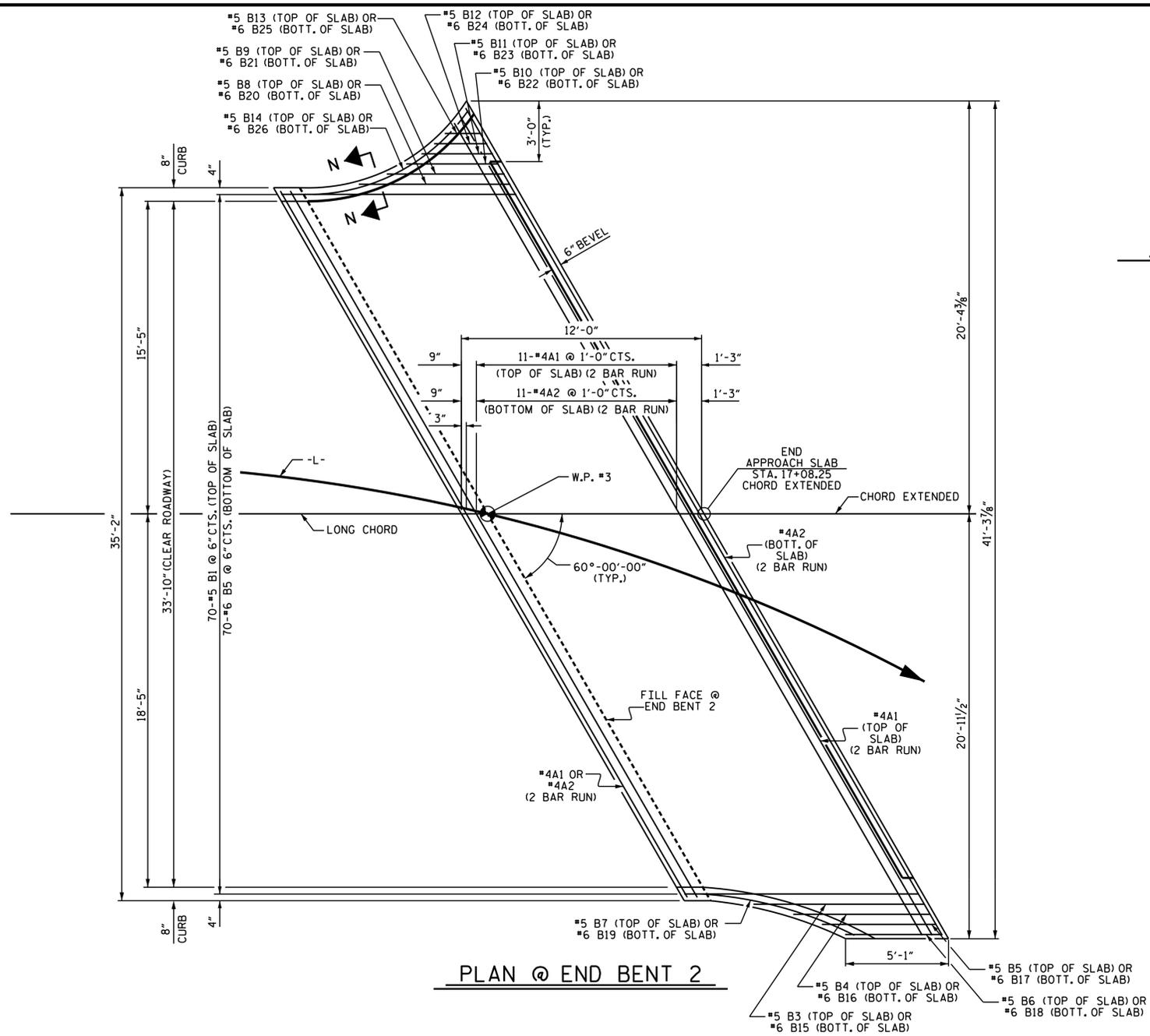
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

SEAL 20125
MICHAEL G. CHECK, P.E.
1/16/2026

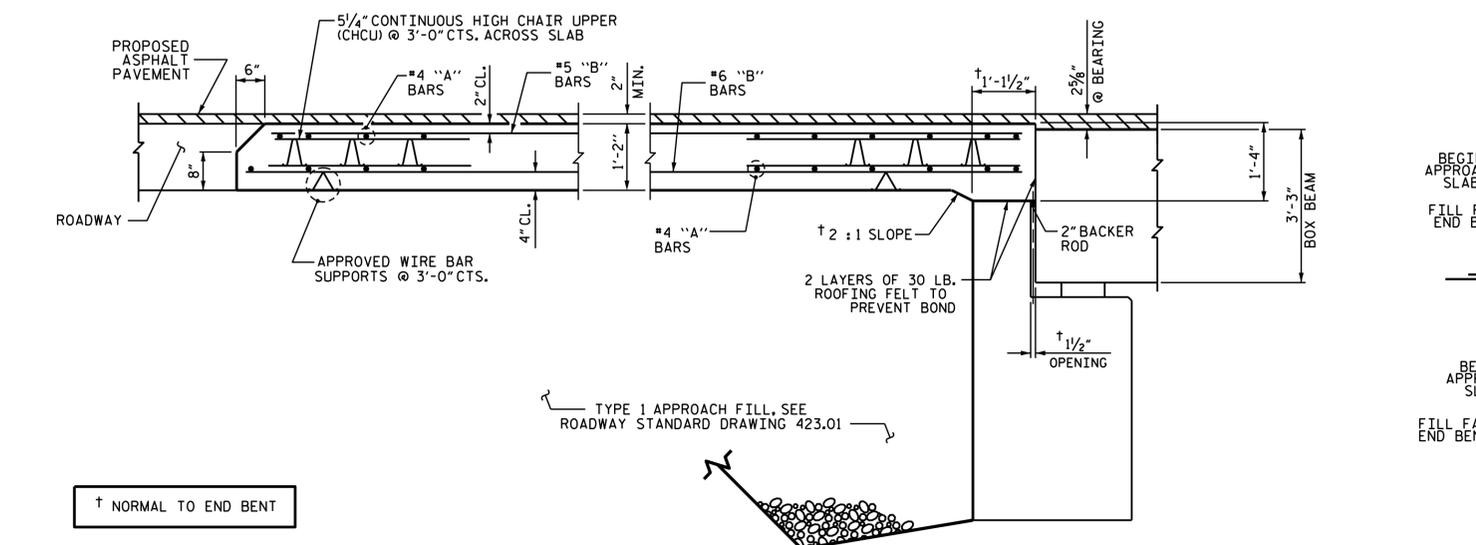
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-26	TOTAL SHEETS 27

DRAWN BY: ZCS DATE: 9/25
CHECKED BY: MGC DATE: 10/25

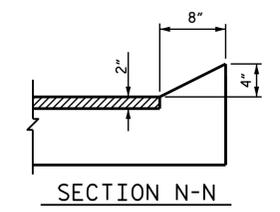


PLAN @ END BENT 2



SECTION THRU SLAB

DRAWN BY : ZCS DATE : 9/25
 CHECKED BY : MGC DATE : 10/25

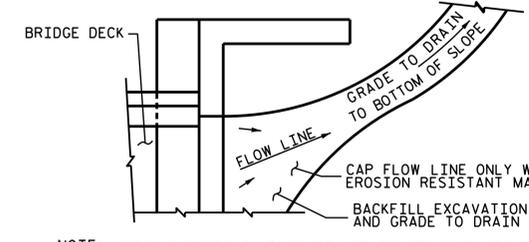


SECTION N-N CURB DETAILS

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

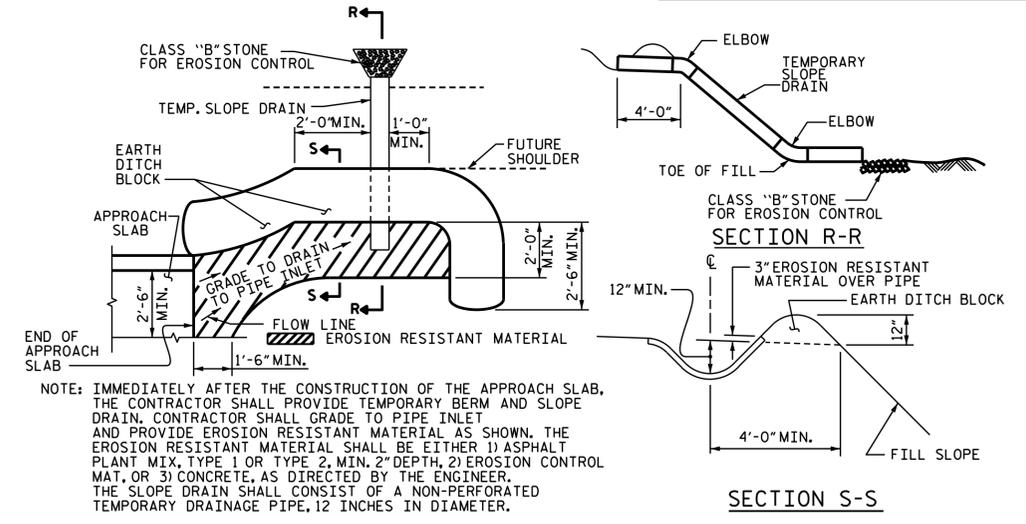
NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.

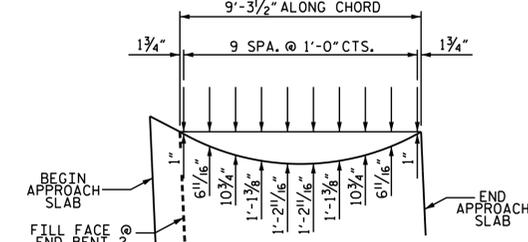


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

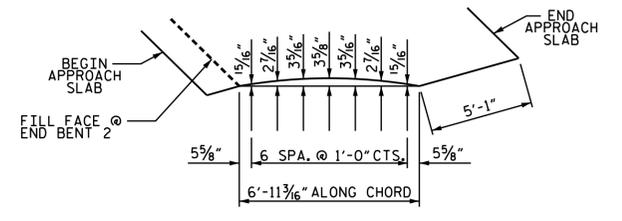
TEMPORARY DRAINAGE DETAIL



PLAN VIEW
 TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



ARC OFFSETS - LEFT SIDE



ARC OFFSETS - RIGHT SIDE

BILL OF MATERIAL					
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	24'-6"	426
A2	26	#4	STR	24'-4"	423
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
*B3	1	#5	STR	8'-5"	9
*B4	1	#5	STR	6'-9"	7
*B5	1	#5	STR	5'-7"	6
*B6	1	#5	STR	4'-9"	5
*B7	1	#5	STR	8'-0"	8
*B8	1	#5	STR	7'-0"	7
*B9	1	#5	STR	5'-4"	6
*B10	1	#5	STR	4'-1"	4
*B11	1	#5	STR	3'-6"	4
*B12	1	#5	STR	2'-7"	3
*B13	1	#5	STR	1'-9"	2
*B14	1	#5	STR	9'-1"	9
B15	1	#6	STR	8'-5"	13
B16	1	#6	STR	6'-9"	10
B17	1	#6	STR	5'-7"	8
B18	1	#6	STR	4'-9"	7
B19	1	#6	STR	8'-0"	12
B20	1	#6	STR	7'-6"	11
B21	1	#6	STR	5'-10"	9
B22	1	#6	STR	4'-7"	7
B23	1	#6	STR	3'-6"	5
B24	1	#6	STR	2'-7"	4
B25	1	#6	STR	1'-9"	3
B26	1	#6	STR	9'-1"	14
REINFORCING STEEL				LBS.	1744
*EPOXY COATED REINFORCING STEEL				LBS.	1305
CLASS AA CONCRETE				C. Y.	19.4

PROJECT NO. DF18312.2023011
 CLEVELAND COUNTY
 STATION: 16+16.07 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

1/16/2026

ENGINEER: MICHAEL G. CHECK, S.E.
 SEAL 20125

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0033
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-27
2			4			TOTAL SHEETS 27

