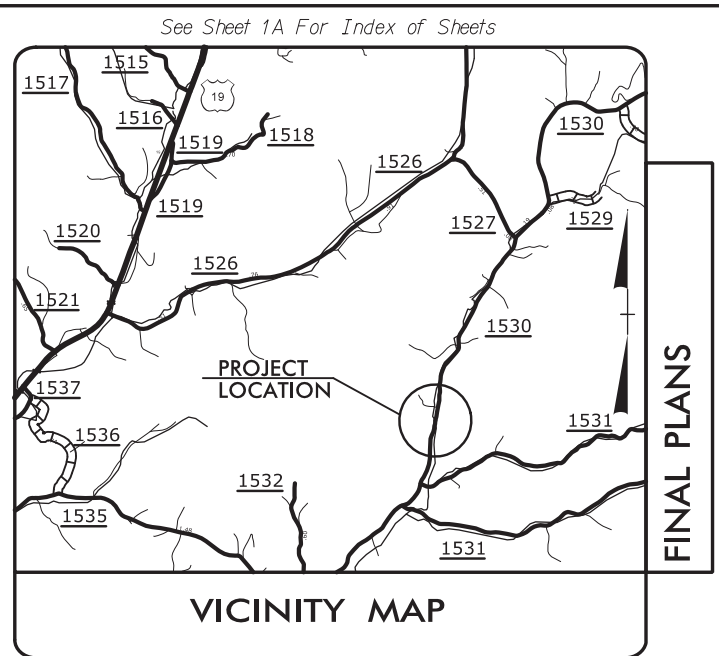


09/28/2019

10/10/2023
X:\NCDOT\Division 13\Madison 2019\Roadway\Proj\Madison 23_Rdy_tsh.dgn
User:smelvin

PROJECT: BP13.R019

CONTRACT: DM00425



FINAL PLANS

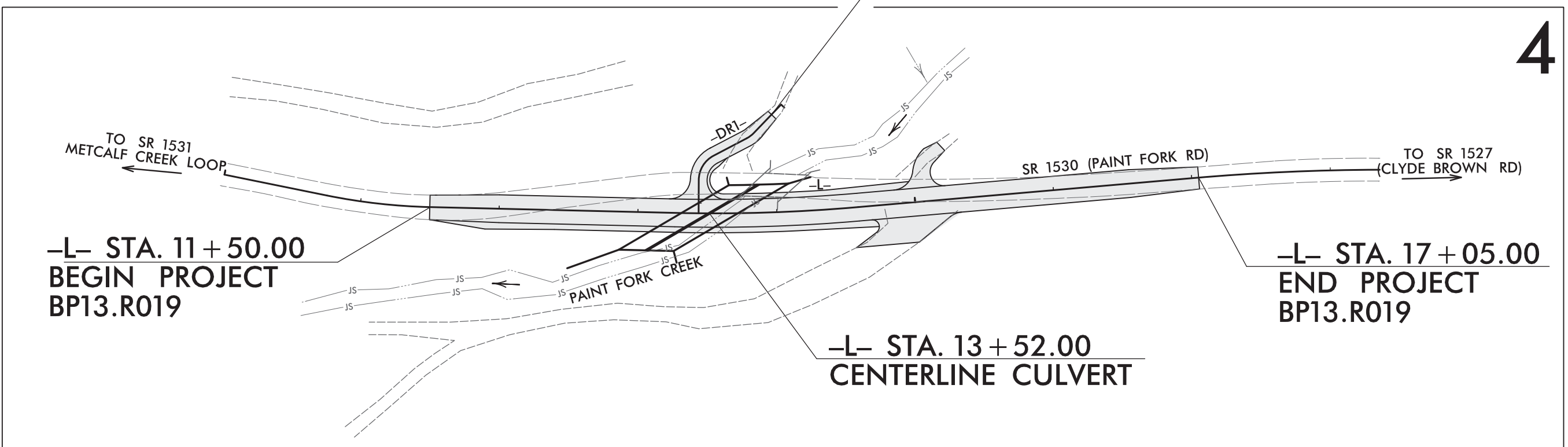
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

LOCATION: BRIDGE #560023 OVER PAINT FORK CREEK
ON SR 1530 (PAINT FORK RD)

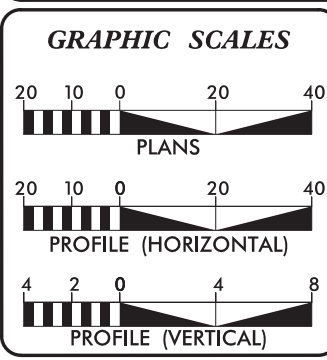
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13.R019	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP13.R019.1	N/A	PE	
BP13.R019.2	N/A	RW & UTIL.	
BP13.R019.3	N/A	CONST.	



A DESIGN EXCEPTION SHALL BE REQUIRED FOR DESIGN SPEED

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2020 = 100

T = 6 % *

V = 50 MPH

* TTST = 3% DUAL = 3%

FUNC CLASS =
MINOR COLLECTOR, RURAL

SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY #BP13.R019	= 0.105 MILES
LENGTH STRUCTURE #BP13.R019	= 0.008 MILES
TOTAL LENGTH #BP13.R019	= 0.097 MILES

NCDOT CONTACT: EDDIE DOUGLAS

<p>PLANS PREPARED BY:</p> <p>TGS ENGINEERS 201 W. WARREN ST. SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275</p>	<p>PLANS PREPARED FOR:</p> <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION</p> <p>DIVISION 13 20 OLD T4 Asheville, NC 288013</p>
<p>RIGHT OF WAY DATE: JUNE 30, 2023</p>	<p>JIMMY L. TERRY, PE PROJECT ENGINEER</p>
<p>LETTING DATE: MARCH 20, 2024</p>	<p>AUSTIN R. TURNER, PE PROJECT DESIGN ENGINEER</p>

2024 STANDARD SPECIFICATIONS

HYDRAULICS ENGINEER

11/28/2023

Seal: DAVID B. PETTY, ENGINEER, SEAL 038697

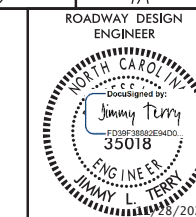
Seal: JIMMY L. TERRY, ENGINEER, SEAL 35018

ROADWAY DESIGN ENGINEER

11/28/2023

Seal: JIMMY L. TERRY, ENGINEER, SEAL 35018





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

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	ROADWAY & DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW-01 THRU RW-04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION INDEX
X-1B	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-19	CROSS-SECTIONS
C-1 THRU C-14	CULVERT PLANS
STRUCTURE STANDARD NOTES	

GENERAL NOTES

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

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

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

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

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

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

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

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

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE BLUE RIDGE ELECTRIC MEMBERSHIP CORP. AND FRONTIER
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

STANDARD DRAWINGS

2024 ROADWAY ENGLISH STANDARD DRAWINGS
EFF. 01-16-2024
REV.

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	①23
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-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-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	_____
Proposed Temporary Construction Easement	_____
Proposed Temporary Drainage Easement	_____
Proposed Permanent Drainage Easement	_____
Proposed Permanent Drainage/Utility Easement	_____
Proposed Permanent Utility Easement	_____
Proposed Temporary Utility Easement	_____
Proposed Aerial Utility Easement	_____

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	_____
Proposed Slope Stakes Fill	_____
Proposed Curb Ramp	_____
Existing Metal Guardrail	_____
Proposed Guardrail	_____
Existing Cable Guiderail	_____
Proposed Cable Guiderail	_____
Equality Symbol	⊕
Pavement Removal	_____
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	_____

Woods Line	_____
Orchard	_____
Vineyard	_____

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____
Bridge Wing Wall, Head Wall and End Wall	_____
MINOR:	
Head and End Wall	_____
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	_____
Paved Ditch Gutter	_____
Storm Sewer Manhole	_____
Storm Sewer	_____

UTILITIES:

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

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	□
Power Transformer	□
U/G Power Cable Hand Hole	□
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊗
U/G Power Line (SUE - LOS B)*	_____
U/G Power Line (SUE - LOS C)*	_____
U/G Power Line (SUE - LOS D)*	_____

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

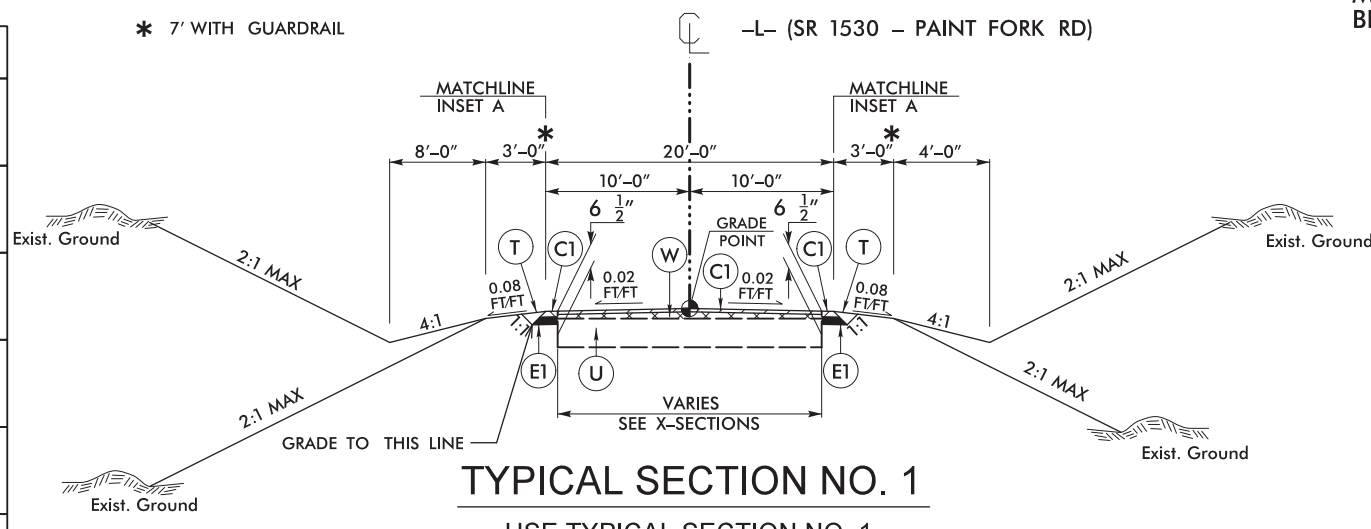
MISCELLANEOUS:

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

PROJECT REFERENCE NO. BP13.R019	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER JIMMY L. TERRY	PAVEMENT DESIGN ENGINEER ANDREW D. WARGO
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	

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J1	8" AGGREGATE BASE COURSE.
P1	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT (SEE MILLING DETAILS THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS THIS SHEET)

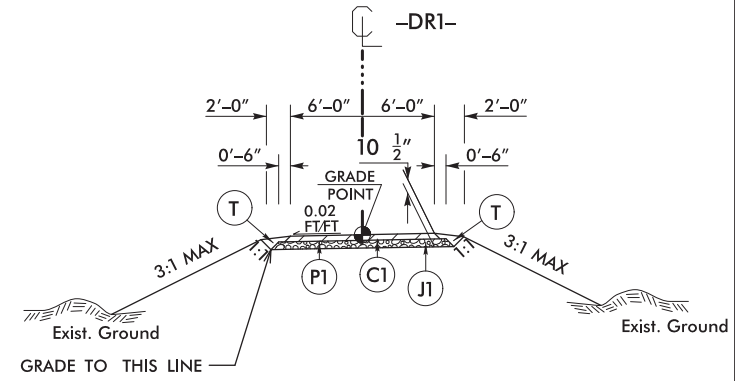
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 12+00.00 TO -L- STA. 12+75.00
-L- STA. 14+25.00 TO -L- STA. 16+55.00

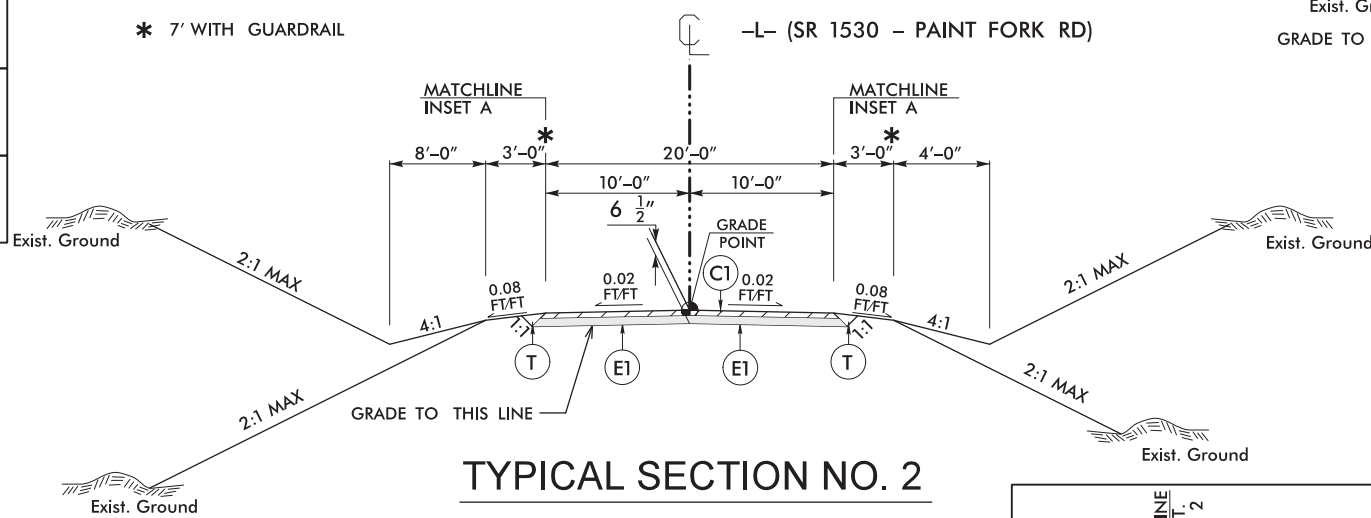
NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:
-L- STA. 11+50.00 TO -L- STA. 12+00.00
-L- STA. 16+55.00 TO -L- STA. 17+05.00



TYPICAL SECTION NO. 3

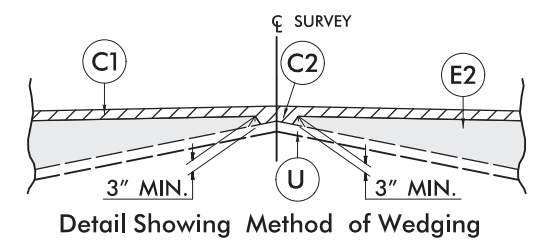
-DR1- STA. 10+10.00 TO -DR1- STA. 10+97.66

NOTE: USE -DR1- PAVEMENT DESIGN FOR OTHER DRIVEWAYS AS SHOWN ON PLAN SHEET 4.

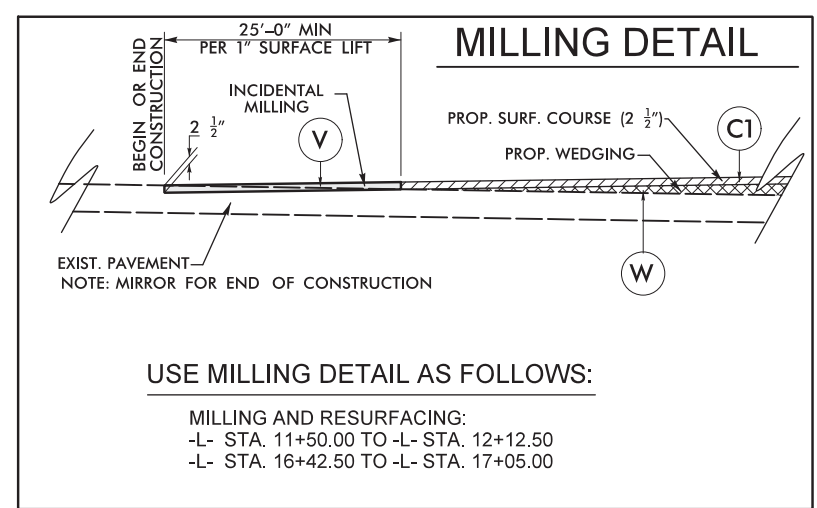


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 12+75.00 TO -L- STA. 14+25.00

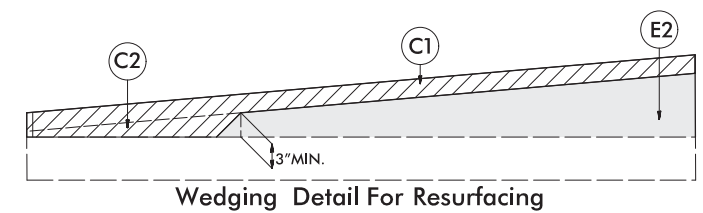


Detail Showing Method of Wedging

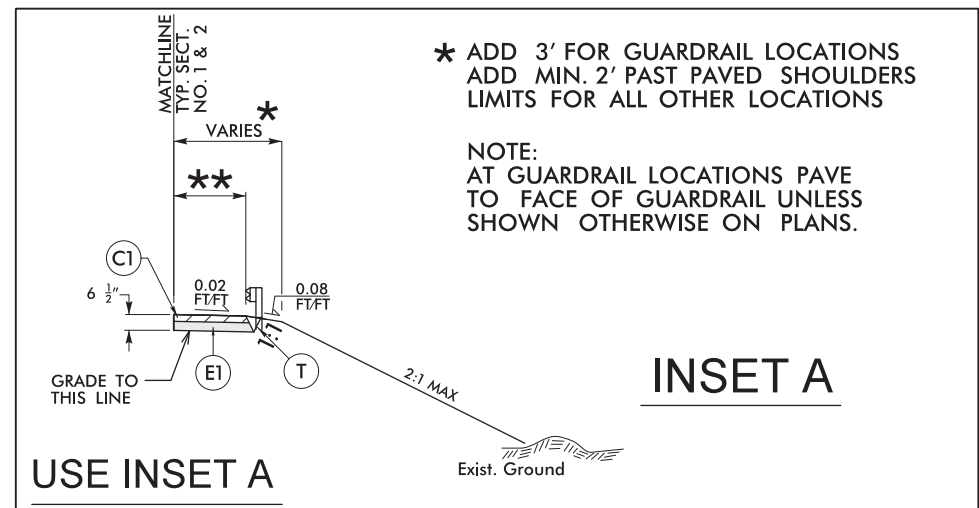


USE MILLING DETAIL AS FOLLOWS:

MILLING AND RESURFACING:
-L- STA. 11+50.00 TO -L- STA. 12+12.50
-L- STA. 16+42.50 TO -L- STA. 17+05.00



Wedging Detail For Resurfacing



INSET A

USE INSET A

** FDP5 WIDTH	STA. TO STA.
0'-0" TO 5'-0"	-L- STA. 11+50.00 RT TO -L- STA. 11+90.00 RT
5'-0" TO 4'-0"	-L- STA. 11+90.00 RT TO -L- STA. 12+40.00 RT
4'-0"	-L- STA. 12+40.00 RT TO -L- STA. 14+15.00 RT
4'-0" TO 5'-0"	-L- STA. 14+15.00 RT TO -L- STA. 14+72.80 RT
0'-0" TO 2'-5"	-DR1- STA. 10+53.92 LT TO -DR1- STA. 10+61.61 LT
2'-5" TO 4'-0"	-DR1- STA. 10+61.61 LT TO -L- STA. 13+62.00 LT
4'-0"	-L- STA. 13+62.00 LT TO -L- STA. 14+37.00 LT
4'-0" TO 5'-0"	-L- STA. 14+37.00 LT TO -L- STA. 14+96.72 LT

COMPUTED BY: D. Matthew Brewer, P.E. DATE: 1/26/23
 CHECKED BY: Robert E. Kral, P.E. DATE: 1/26/23

(12-17-19)
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
BP13.R019	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

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

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

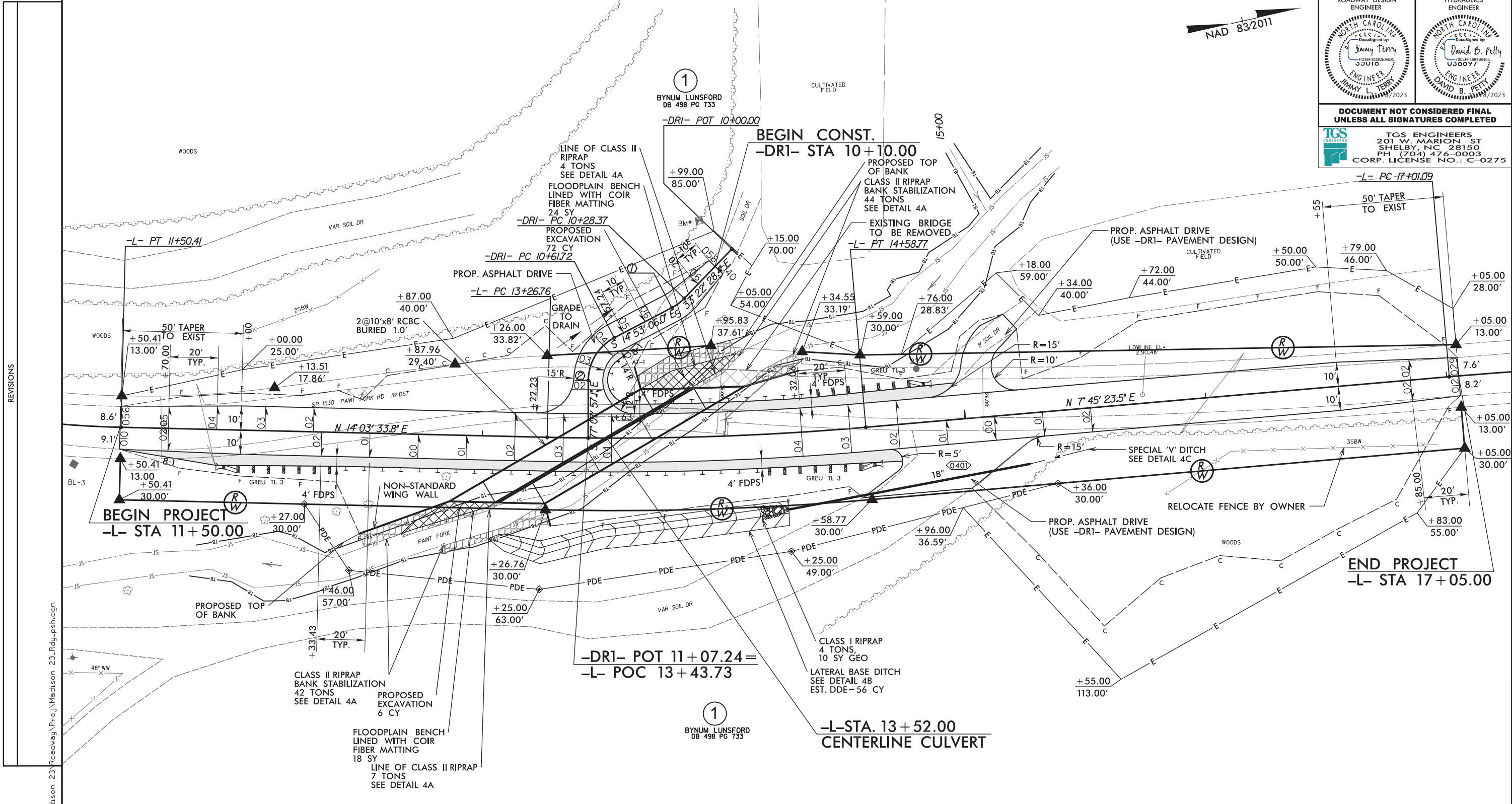
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			1	12	100	100	300		
TOTAL CY/TONS/SY:					100	100**	300**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

8/17/09

PROJECT REFERENCE NO. BPI3.R019	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA ENGINEERING SOCIETY JIMMY L. TERRY P.E. 3580 JULIO	HYDRAULICS ENGINEER NORTH CAROLINA ENGINEERING SOCIETY DAVID B. PETTY P.E. 4818 USBOY1
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	



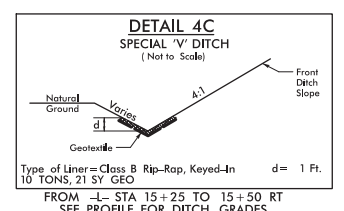
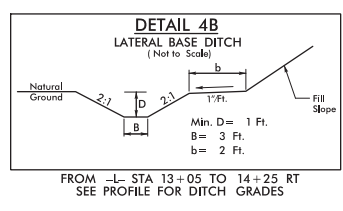
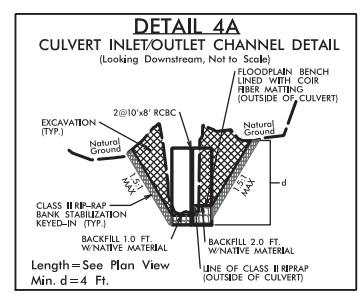
REVISIONS

I:\Projects\2019\Madison 2019\Roadway\Proj\Madison 23_Rdy_psh.dgn
User: jterry

SEE SHEET 5 FOR -L- PROFILE

SEE SHEET 5 FOR -DRI- PROFILE

PAVEMENT REMOVAL



FOR CULVERT PLANS, SEE SHEET C-1 THRU C-13

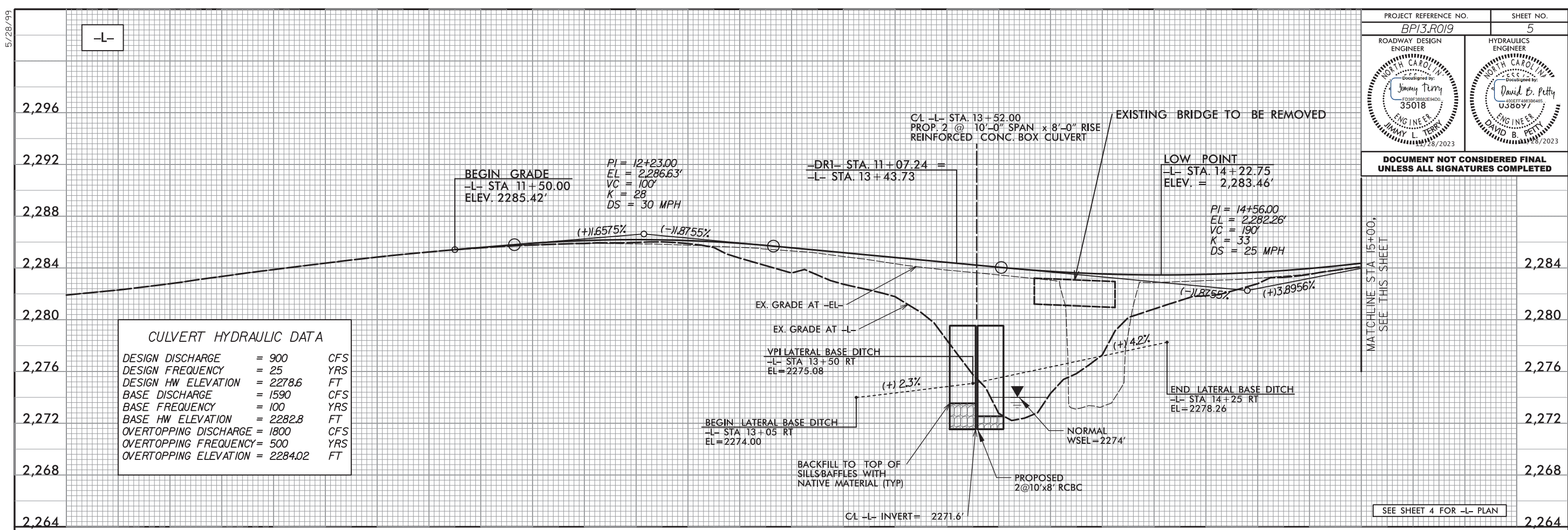
-L- CURVE DATA		-DRI- CURVE DATA	
PI Sta 11+2.97	PI Sta 13+92.83	PI Sta 17+68.40	PI Sta 10+73.80
$\Delta = 10^{\circ}07'12.2"$ (LT)	$\Delta = 6^{\circ}18'10.2"$ (LT)	$\Delta = 4^{\circ}49'05.0"$ (RT)	$\Delta = 62^{\circ}14'51.1"$ (LT)
D = 13'28" 52.9'	D = 4'46" 28.7'	D = 3'34" 51.6'	D = 286'28" 44.0'
L = 75.07'	L = 132.01'	L = 134.55'	L = 217.3'
T = 37.63'	T = 66.07'	T = 67.31'	T = 12.08'
R = 425.00'	R = 1,200.00'	R = 1,600.00'	R = 20.00'
SE = EXIST	SE = 0.04	SE = EXIST	
	DS = 55 MPH		
	RO = 80'		

① -DRI- PT 10+34.82
② -DRI- PT 10+83.45

5/28/99

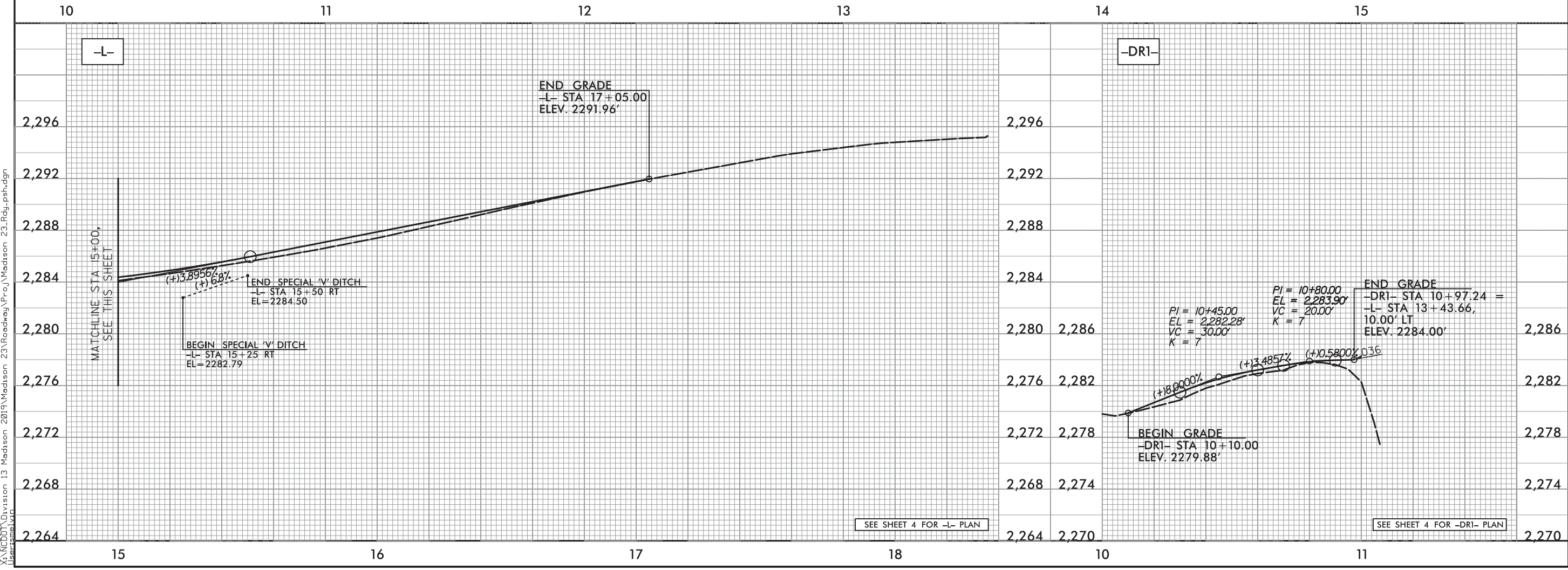
PROJECT REFERENCE NO. BP13.R019	SHEET NO. 5
ROADWAY DESIGN ENGINEER Jimmy Terry NORTH CAROLINA ENGINEER EXPIRES 08/2023 35018	HYDRAULICS ENGINEER David B. Petty NORTH CAROLINA ENGINEER EXPIRES 08/2023 038097

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2278.6	FT
BASE DISCHARGE	= 1590	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2282.8	FT
OVERTOPPING DISCHARGE	= 1800	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 2284.02	FT



I:\Projects\2019\Medison 23\Roadway\Proc\Medison 23.Rdy_psh.dgn

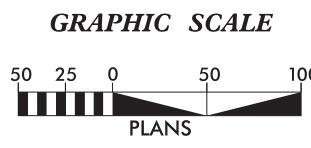
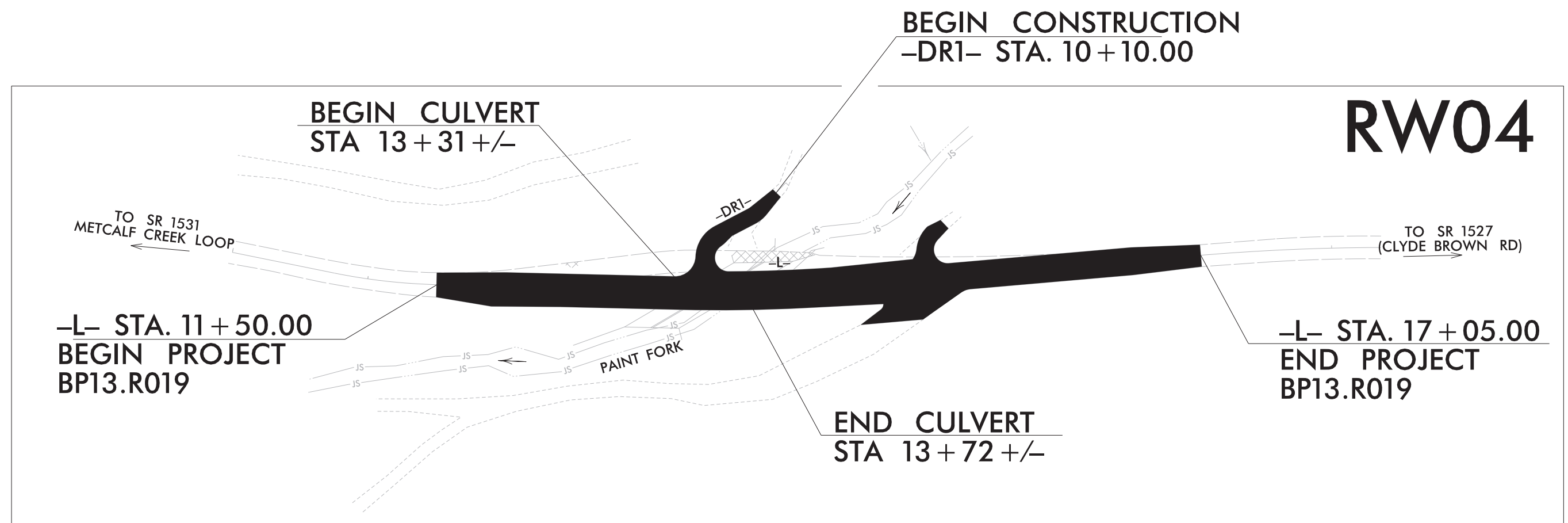
TIP PROJECT: BP13.R019

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13.R019	RW01	5

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

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

MADISON COUNTY



DATUM DESCRIPTION


THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "23-1" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 780,698.178(ft) EASTING: 975,890.983(ft) ELEVATION: 2,282.71(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99982167

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "23-1" TO -L- STATION 10+00.00 IS S 12°36'38.3" W 477.41(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


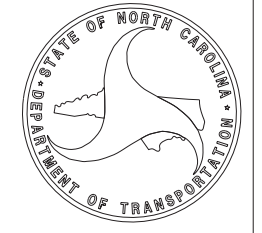
RIGHT OF WAY DATE: 6/30/2023

LETTING DATE: 3/20/2024

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
 Matthew Cornwell
 4/18/2023



SIGNATURE: _____ Date: _____

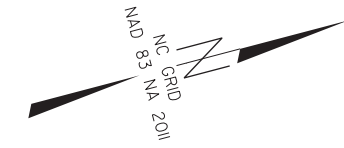



\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
 \$\$\$ USERNAME \$\$\$

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. BP13.R019	SHEET NO. RW02C-1
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	
	
Documented by: Matthew Cornwell ESD006114736475... 4/6/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



EXISTING CENTERLINE ALIGNMENT

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	780232.282	975786.752	N 24°18'46.0" E	75.34					
LINE									
PC	780301.011	975817.611	N 14°42'50.3" E	139.79	18°55'51.4"(L.T)	13°28'52.9"	140.42	70.86	425.00
CURVE									
PT	780436.212	975853.115	N 05°14'54.6" E	75.33					
LINE									
PC	780511.227	975860.006	N 11°18'01.8" E	103.32	12°06'14.4"(RT)	11°41'34.9"	103.51	51.95	490.00
CURVE									
PCC	780612.547	975880.253	N 14°35'45.7" E	125.04	05°30'46.5"(L.T)	04°24'26.5"	125.08	62.59	1300.00
CURVE									
PCC	780733.547	975911.762	N 09°47'53.0" E	181.68	04°04'58.9"(L.T)	02°14'48.8"	181.72	90.90	2550.00
CURVE									
PCC	780912.578	975942.680	N 10°09'56.0" E	134.51	04°49'05.0"(RT)	03°34'51.6"	134.55	67.31	1600.00
CURVE									
PT	781044.972	975966.419							

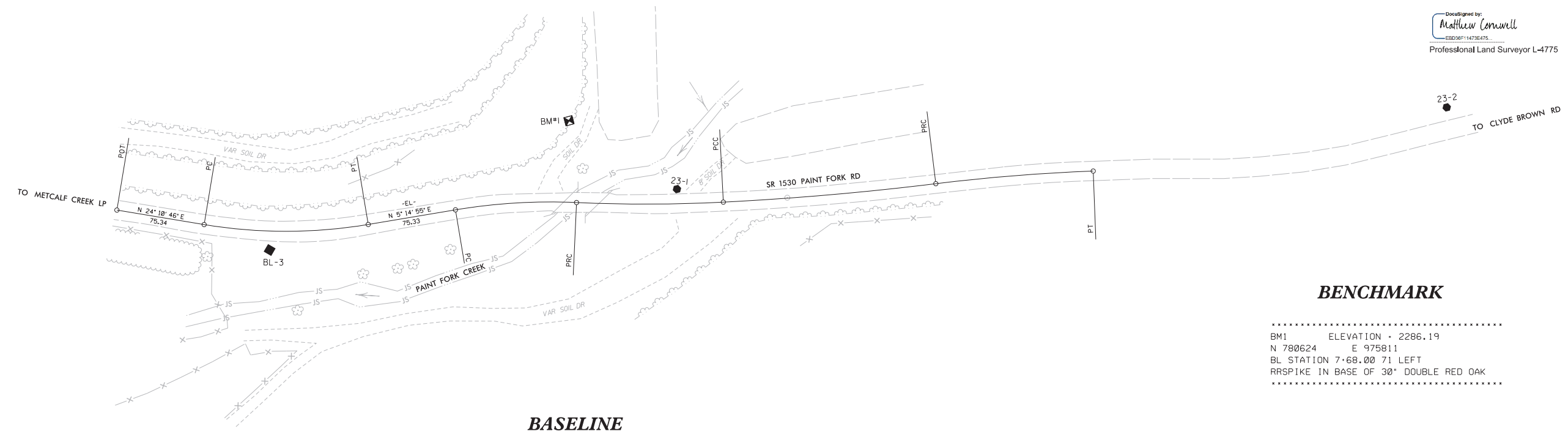
I, Matthew T. Cornwell, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: February 2022
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: N/A
 Localized around: 23-1
 Northing: 780698.178
 Easting: 975890.983
 Combined grid factor: 0.99982167
 Geoid model: GEOID18
 Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed February 2022, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 4/6/2022

Documented by:
Matthew Cornwell
 ESD006114736475...
 Professional Land Surveyor L-4775



BENCHMARK

.....
 BM1 ELEVATION = 2286.19
 N 780624 E 975811
 BL STATION 7+68.00 71 LEFT
 RR SPIKE IN BASE OF 30" DOUBLE RED OAK

BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
3		BL-3	780349.4437	975852.7220	2284.24
1		23-1	780698.1780	975890.9830	2282.71
2		23-2	781349.9800	975990.6990	2295.22


NOTES:

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

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP13.R019	RW02D-1

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

DocuSigned by:
Matthew Cornwell
ESD06F11473E475

4/18/2023



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 4/18/2023

DocuSigned by:
Matthew Cornwell
ESD06F11473E475
Professional Land Surveyor L-4775

REVISIONS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	780232.2817	975786.7521
PC	10+75.34	780301.0112	975817.6107
PT	11+50.41	780371.8453	975842.1660
PC	13+26.76	780542.9208	975885.0083
PT	14+58.77	780672.4767	975909.9755
PC	17+01.09	780912.5777	975942.6797
PT	18+35.63	781044.9719	975966.4191

DR1




TYPE	STATION	NORTH	EAST
POT	10+00.00	780634.6137	975825.7977
PC	10+28.37	780610.9254	975841.4023
PT	10+34.82	780605.0607	975844.0293
PC	10+61.72	780579.0637	975850.9393
PT	10+83.45	780564.7035	975865.8142
POT	11+07.24	780559.4042	975889.0126

NOTES:

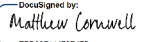
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

18-APR-2023 07:43
S:\Survey\2023\18-APR-2023\560023.RW.MTC\560023.1.s.rw02d-1.dgn
Matthew T. Cornwell

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP13.R019	RW03E-1
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	
DocuSigned by:  EB006F11473E475...	
4/18/2023	
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 from 4/13/2023 to 4/17/2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 4/18/2023
 DocuSigned by:

 EB006F11473E475...
 Professional Land Surveyor L-4775

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+50.41	13.00	780368.6872	975854.7766
L	11+50.41	30.00	780364.5575	975871.2674
L	11+50.41	-13.00	780375.0033	975829.5555
L	12+13.51	-17.86	780437.4014	975840.1697
L	12+87.96	-29.40	780512.4165	975847.0607
L	13+26.00	-33.82	780550.3953	975852.0137
L	13+26.76	30.00	780535.6330	975914.1096
L	13+95.83	-37.61	780617.3811	975862.9050
L	14+34.55	-33.19	780653.6539	975873.6714
L	14+58.77	30.00	780668.4278	975939.7010
L	14+59.00	-30.00	780676.7526	975880.2809
L	17+05.00	30.00	780912.3306	975972.9278
L	17+05.00	13.00	780914.6662	975956.0890
L	17+05.00	-13.00	780918.2382	975930.3356

MAGNAIL SET IN ROCK

POINT NOT SET - FALLS IN WATER
POINT NOT SET - FALLS IN CONC WINGWALL

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+27.00	30.00	780438.8568	975889.8741
L	12+46.00	57.00	780450.7286	975920.6809
L	13+25.00	63.00	780525.9046	975945.6924
L	14+25.00	49.00	780631.1065	975953.2938
L	15+36.00	30.00	780744.9502	975950.1242




POINT NOT SET - FALLS IN WATER

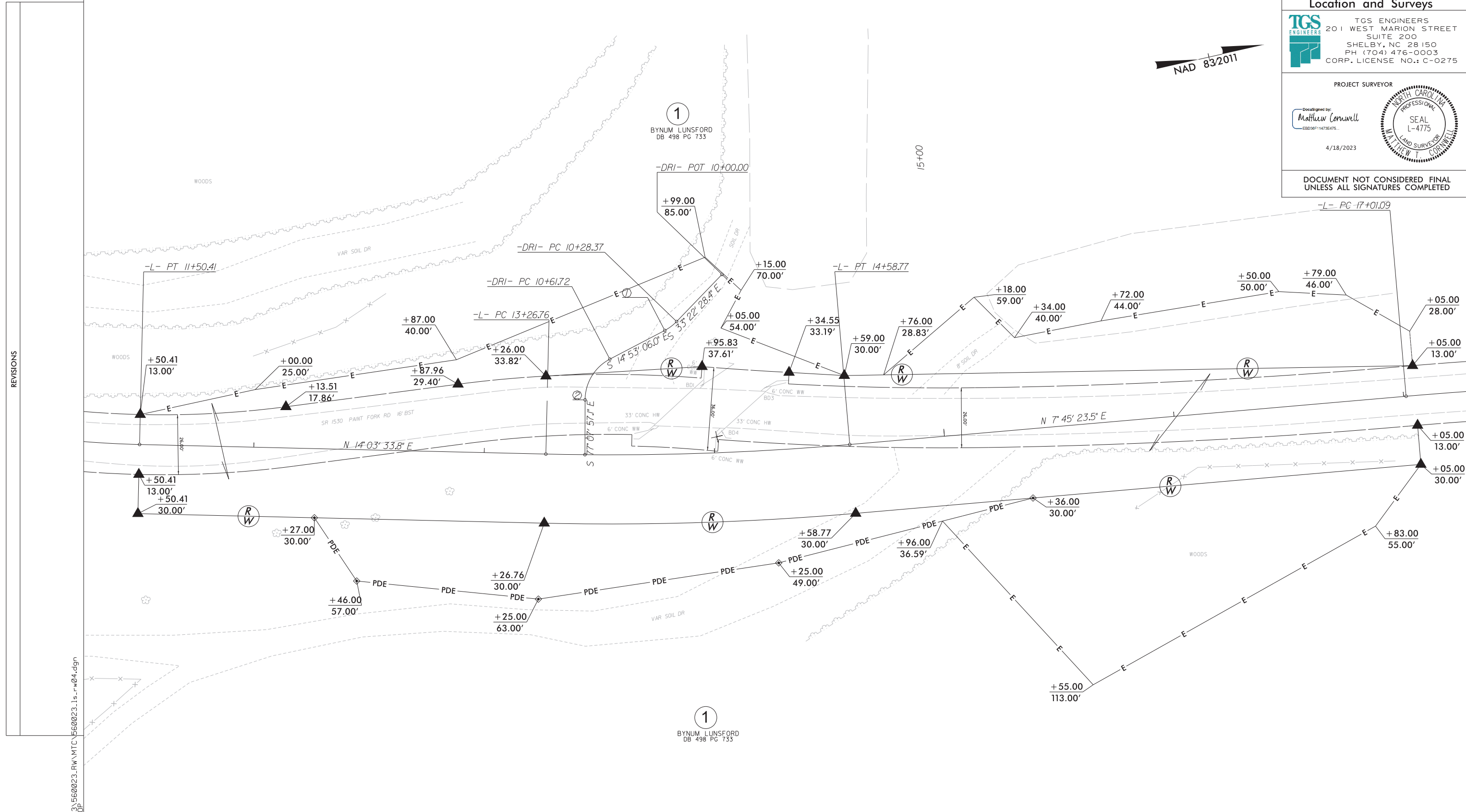
REVISIONS

18 APR 2023 07:53
 SA Surveyor
 MTCornwell
 560023.LIB\2023\560023.RW.MTC\560023.LS.rw03e-1.dgn
 A:\MTCORNWELL\AF\TOP

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 4/13/2023 TO 4/17/2023.

PROJECT REFERENCE NO. BP13.R019	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	
Designed by:  EBO06F1473E475...	
	
4/18/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

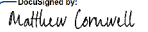
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Matthew T. Cornwell

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 4/13/2023 TO 4/17/2023.

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 from 4/13/2021 to 4/17/2021, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 4/18/2023

Designed by:

 EBO06F1473E475...
 Professional Land Surveyor L-4775

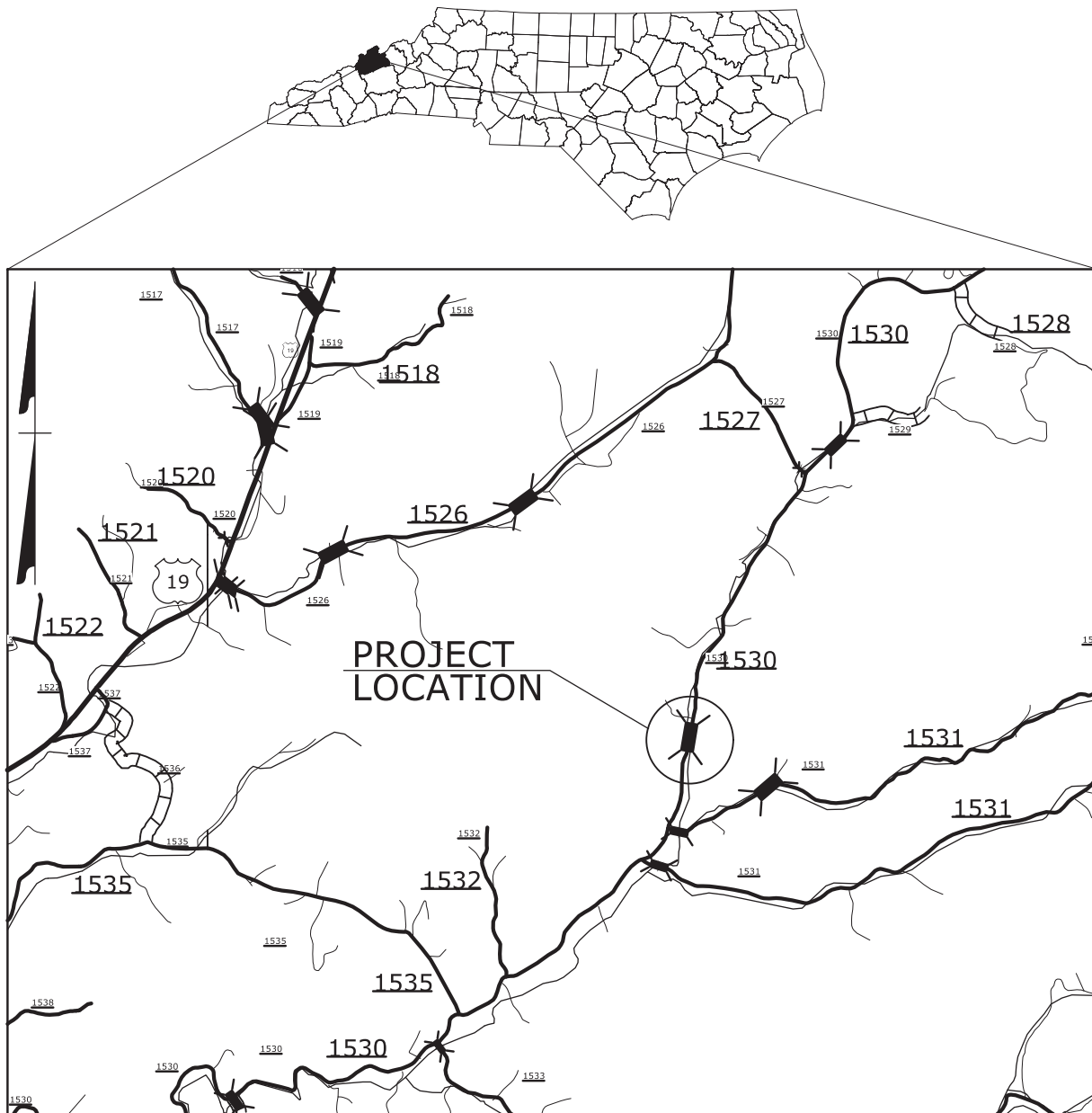
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PI Sta 11+12.97	PI Sta 13+92.83	PI Sta 17+68.40	PI Sta 10+73.80	PI Sta 10+31.62
$\Delta = 10^{\circ} 07' 12.2''$ (LT)	$\Delta = 6^{\circ} 18' 10.2''$ (LT)	$\Delta = 4^{\circ} 49' 05.0''$ (RT)	$\Delta = 62^{\circ} 14' 51.1''$ (LT)	$\Delta = 18^{\circ} 29' 22.5''$ (RT)
D = 13' 28' 52.9"	D = 4' 46' 28.7"	D = 3' 34' 51.6"	D = 286' 28' 44.0"	D = 286' 28' 44.0"
L = 75.07'	L = 132.01'	L = 134.55'	L = 217.3'	L = 6.45'
T = 37.63'	T = 66.07'	T = 67.31'	T = 12.08'	T = 3.26'
R = 425.00'	R = 1,200.00'	R = 1,600.00'	R = 20.00'	R = 20.00'
SE = EXIST	SE = 0.04	SE = EXIST		
	DS = 55 MPH			

① -DRI- PT 10+34.82
 ② -DRI- PT 10+83.45

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MADISON COUNTY



VICINITY MAP

INDEX OF SHEETS

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, AND GENERAL NOTES)
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2A	TEMPORARY TRAFFIC CONTROL PHASING
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL


SHEET NO.
TMP-1

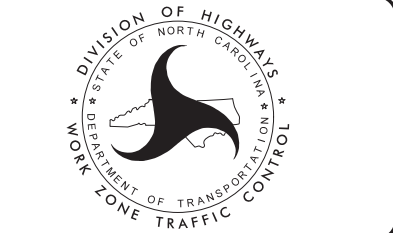
PROJECT: BP13.R019

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



PLAN PREPARED FOR N.C.D.O.T. BY:

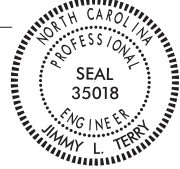
 <p>TGS ENGINEERS 201 W. MARION ST. STE. 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275</p>	<p>JIMMY TERRY, PE <u>PROJECT ENGINEER</u></p> <p>SANDRA MELVIN <u>DESIGN ENGINEER</u></p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------



APPROVED: Jimmy Terry
FO9873880E94DD

DATE: 11/28/2023

SEAL



9/27/2023
User: smelvin

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
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

- WORK AREA
- REMOVAL
- WEDGE EXISTING PAVEMENT
- USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY
- PORTABLE

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	PAVEMENT MARKINGS
	PAINT (4")
P1	(4") WHITE EDGELINE
P13	(4") YELLOW DOUBLE CENTER
	PAINT (24")
P61	(24") WHITE STOPBAR

10/6/2023 10:16:00 AM Division 13 Madison 2019\Madison 23\Traffic\TrafficControl\TCP\Madison 23_TC_TMP_01a.dgn User:tsme/vin

APPROVED: DATE: 11/28/2023 SEAL			ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:
 - BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
 - BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
 - BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 350 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- I) 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.
- J) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- K) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

- N) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

- O) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

- Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

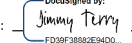
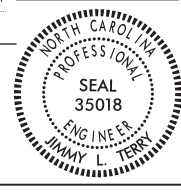

ROAD NAME	MARKING	MARKER
PAINT FORK RD (-L-)	PAINT	NONE

- R) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE.
- S) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- T) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- U) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MANAGEMENT STRATEGIES

PROPOSED SR 1530 (PAINT FORK RD) WILL BE CONSTRUCTED USING A COMBINATION OF DEVICES INCLUDING A PORTABLE TRAFFIC SIGNAL SYSTEM, TEMPORARY LANE CLOSURES UTILIZING FLAGGERS, ONE-LANE TWO-WAY TRAFFIC PATTERN, AND STAGED CULVERT CONSTRUCTION

9/27/2023 9:58:58 AM User: smelvin

<p>APPROVED:  Jimmy Terry DATE: 11/28/2023</p> <p style="text-align: center;">SEAL</p>			<h3>TRANSPORTATION OPERATIONS PLAN</h3>
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			

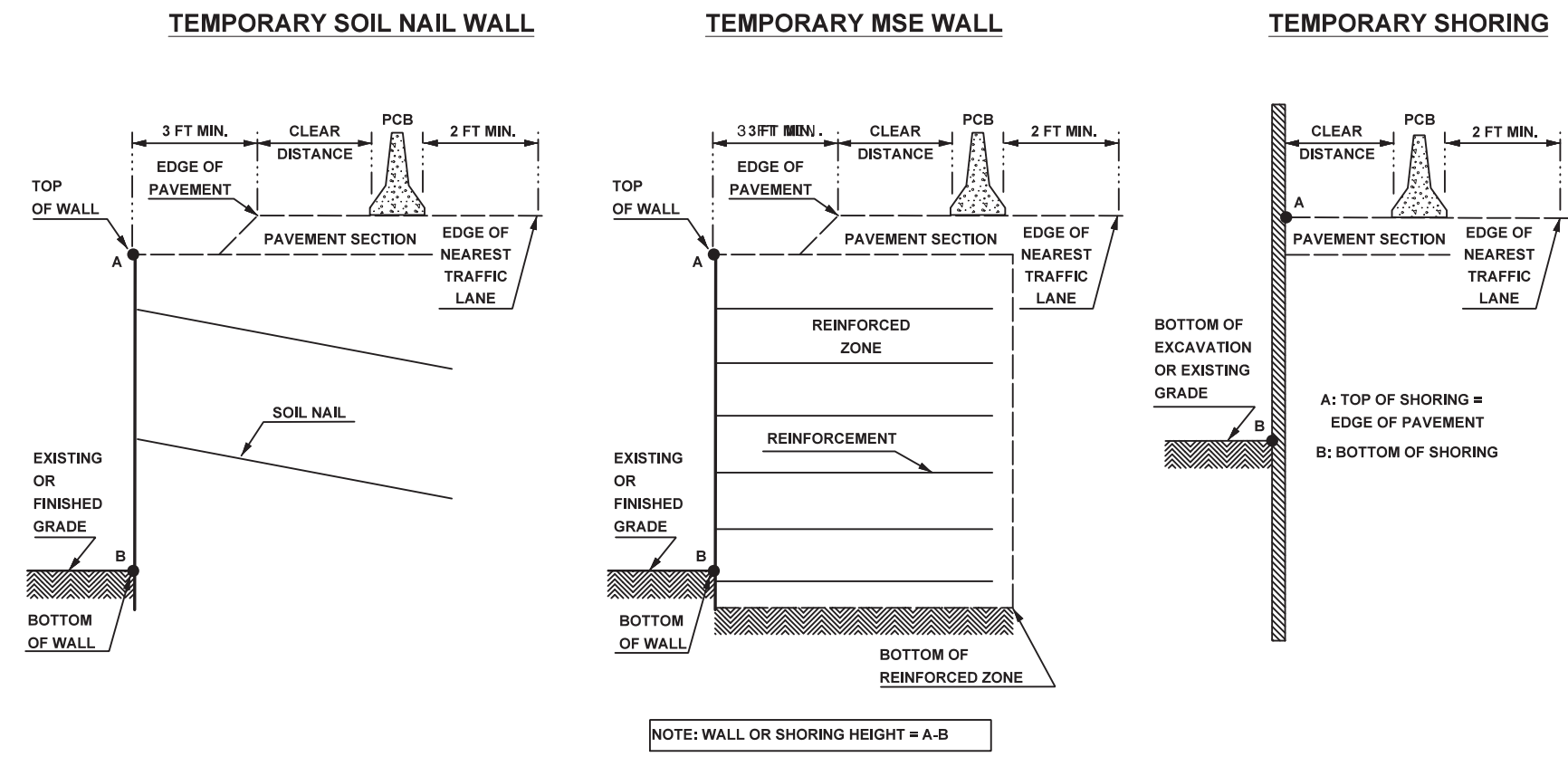


FIGURE A

NOTES

- 1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- 2- REFER TO THE "TEMPORARY SHORING" STANDARD PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- 3- PCB IS REQUIRED IF TEMPORARY SHORING/WALL IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT FOR APPLICABLE PAVEMENT DESIGN).
- 4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.
- 5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING/WALLS EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.
- 6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- 7- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS OR APPROVED BY THE ENGINEER.
- 8- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THIS MINIMUM REQUIRED DISTANCE IS NOT AVAILABLE, CONTACT THE ENGINEER.
- 9- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
	>56	32	36	42	45	47	51	
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
50-56		26	26	28	32	35	38	
>56	26	27	29	32	36	38		
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

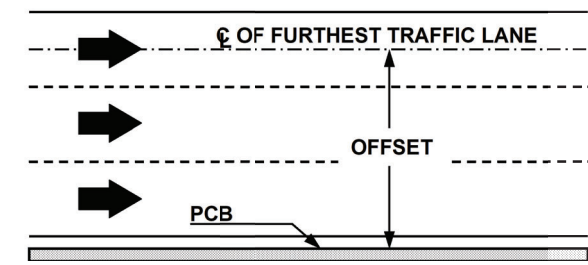



FIGURE B

APPROVED: <i>Matthew Brewer</i> DATE: 11/28/2023 SEAL			PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

10/16/2023 13: Madison 2019\Madison 23\Traffic\TrafficControl\TCP\Madison 23_TC_TMP_02 (PCB at Temporary Shoring Locations).dgn User:smelin

PHASING

MADISON COUNTY BRIDGE #560023	PROJ. REFERENCE NO. BP13.R019	SHEET NO. TMP-2A
 TGS ENGINEERS <small>201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275</small>		

NOTE : UNLESS OTHERWISE NOTED ACCESS TO LOCAL DRIVES MUST BE MAINTAINED AT ALL TIME.

PHASE I

STEP 1

PLACE ALL ADVANCED WORK ZONE WARNING SIGNS IN ACCORDANCE WITH NCDOT RDWY. STD. 1101.01, SHT 3 OF 3.

STEP 2 (TMP-3)

USING TEMPORARY LANE CLOSURES AND FLAGGERS IN ACCORDANCE WITH RDWY. STD. 1101.02, SHT 1 OF 14 INSTALL TEMPORARY PORTABLE TRAFFIC SIGNALS INCLUDING THE APPROPRIATE SIGNAGE. SEE TMP-3 AND NCDOT RDWY. STD 1101.02, SHT 14 OF 14.

PLACE TEMPORARY PAVEMENT MARKINGS, CLOSE EXISTING SR 1530 SOUTHBOUND LANE, ACTIVATE THE TEMPORARY SIGNALS, AND SHIFT TRAFFIC INTO A ONE-LANE TWO-WAY PATTERN ONTO THE EXISTING SR 1530 NORTHBOUND LANE.

INSTALL TEMPORARY SHORING NO. 1 AS SHOWN ON PLANS.

CONSTRUCT THE FIRST SECTION OF THE PROPOSED CULVERT (APPROX. 63 LF), INCLUDING TEMPORARY SHORING WALL NO.2 AS SHOWN ON PLANS.

PLACE TEMPORARY GUARDRAIL AND TEMPORARY PORTABLE CONCRETE BARRIER AS SHOWN ON PLANS.

USING FLAGGERS IF NEEDED DO THE FOLLOWING:

PERFORM WORK TO CONSTRUCT TIE-INS UP TO THE EXISTING EDGE OF PAVEMENT IN THE WORK AREA AS SHOWN ON TMP-3, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

CONSTRUCT -DR1- FROM -DR1- STA. 10+10± TO STA. 10+78± UP TO BUT NOT INCLUDING THE SURFACE COURSE. TIE-IN TO EXISTING EDGE OF SR 1503 PAVEMENT.

USING ABC RE-ALIGN THE DRIVEWAY AS SHOWN ON PLANS.

STEP 3 (TMP-3)

USING TEMPORARY LANE CLOSURES AND FLAGGERS IN ACCORDANCE WITH RDWY. STD. 1101.02, SHT 1 OF 14 DO THE FOLLOWING:

WEDGE EXISTING PAVEMENT TO CREATE A SMOOTH TRANSITION BETWEEN PROPOSED AND EXISTING PAVMENT AS SHOWN ON PLANS.

PLACE TEMPORARY PAVEMENT MARKINGS

CLOSE ALL EXISTING SR 1530 LANES USING BARRICADES AND DRUMS, AND SHIFT TRAFFIC INTO A ONE-LANE TWO-WAY PATTERN ONTO THE NEW PAVEMENT AS SHOWN ON PLANS.

PHASE II

STEP 1.A (TMP-4)

REMOVE THE EXISTING STRUCTURE AND TEMPORARY SHORING NO.1

PLACE TEMPORARY SHORING NO. 3 AS SHOWN ON PLANS.

CONSTRUCT THE REMAINING SECTION OF THE CULVERT.

AFTER COMPLETION OF CULVERT CONSTRUCTION REMOVE ALL TEMPORARY SHORING.

STEP 1.B (TMP-4)

WHILE TRAFFIC REMAINS IN EXISTING ONE-LANE TWO-TWO TRAFFIC PATTERN CONSTRUCT SR 1530 AS SHOWN ON PLANS UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 11+50± TO -L- STA. 16+00±.

STEP 2 (TMP-4)

DEACTIVATE THE PORTABLE TRAFFIC SIGNAL SYSTEM, REMOVE THE STOP BARS, AND SHIFT TRAFFIC INTO A TWO-LANE TWO-WAY PATTERN AS SHOWN ON PLANS.

USING TEMPORARY LANE CLOSERS AND FLAGGERS IN ACCORDANCE WITH NCDOT RDWY. STD. 1101.02, SHT 1 OF 14 PLACE PAVEMENT MARKINGS AS SHOWN ON PLAN.

WEDGE EXISTING PAVEMENT FROM -L- STA 11+50± TO -L- STA 13+00±, AND FROM -L- STA. 14+77± TO -L- STA 17+05± UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

CONSTRUCT -DR1- FROM -DR1- STA 10+78± TO -DR- STA. 10+97± UP TO BUT NOT INCLUDING THE SURFACE COURSE.

REMOVE REMAINING EXISTING PAVEMENT.

PHASE III

STEP 1 (TMP-5)




USING TEMPORARY LANE CLOSERS AND FLAGGERS IN ACCORDANCE WITH NCDOT RDWY. STD. 1101.02, SHT 1 OF 14 PLACE THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 11+50± TO -L- STA.17+05±.

PLACE THE SURFACE COURSE ON -DR1- FROM -DR1- STA. 10+10± TO -DR1- STA. 10+98±.

USING TEMPORARY LANE CLOSERS AND FLAGGERS IN ACCORDANCE WITH NCDOT RDWY. STD. 1101.02, SHT 1 OF 14 PLACE THE FINAL PAVEMENT MARKINGS AS SHOWN IN PAVEMENT MARKING PLANS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

10/6/2023 13 Madison 2019\Madison 23\Traffic\TrafficControl\TCP\Madison 23_TC_TMP_02A(Phasing).dgn User:smelvin

APPROVED:  DATE: 11/28/2023 SEAL			<h2 style="margin: 0;">TEMPORARY TRAFFIC CONTROL PHASING</h2>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PHASE I, STEP 2

SEE TMP-1A FOR TEMPORARY PAVEMENT SCHEDULE

NOTE 1: PROVIDE ADDITIONAL SIGNALIZATION FOR DRIVEWAY ACCESS AS DIRECTED BY THE ENGINEER.

1 QUANTITY = 690 SF

TEMPORARY SHORING FROM -L- STA. 12+87±, 5' LT TO -L- STA. 13+65±, 9.2' LT

2 QUANTITY = 940 SF

TEMPORARY SHORING FROM -L- STA. 13+28±, 10' LT TO -L- STA. 14+00±, 5' LT

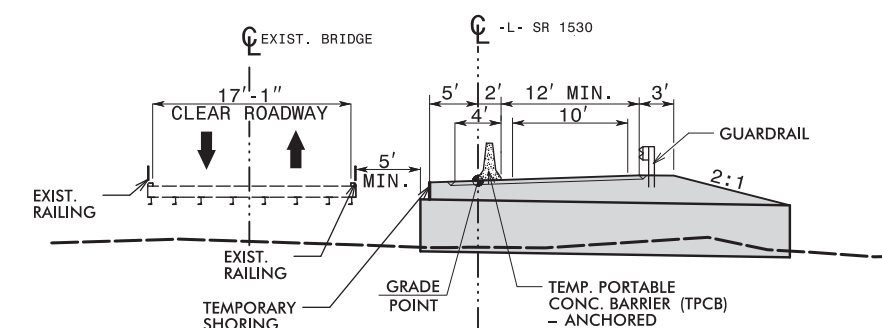
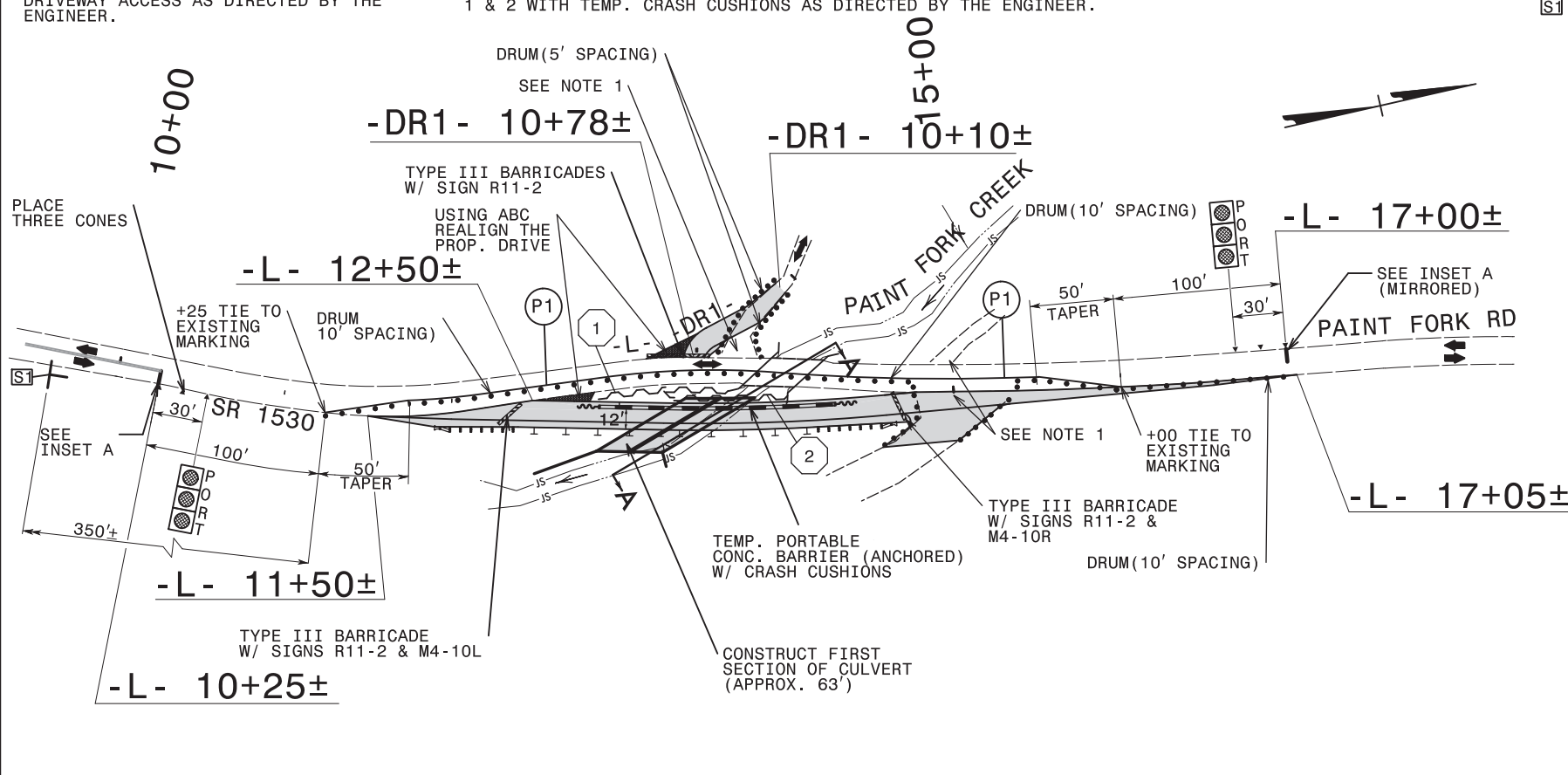
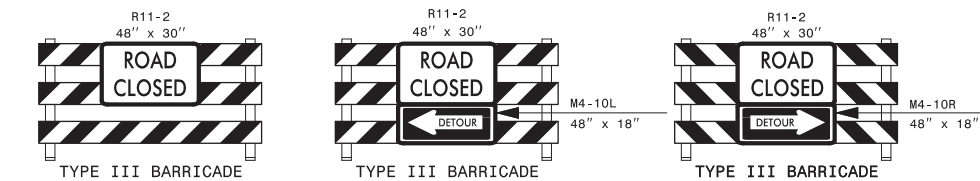


DRUM CONE TEMP. PORTABLE CONC. BARRIER (TPCB)

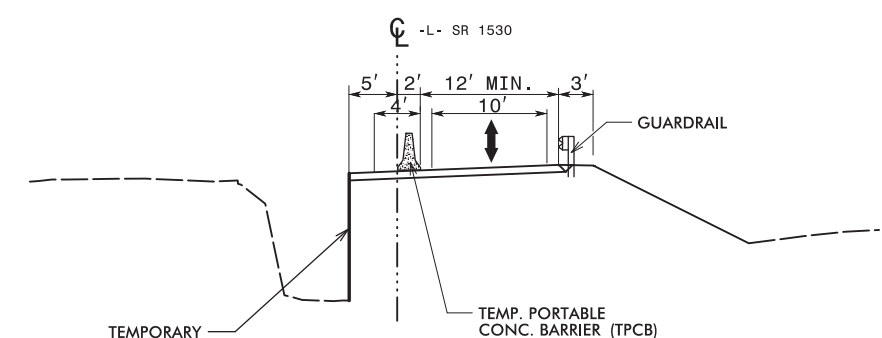
MADISON COUNTY BRIDGE #560023

PROJ. REFERENCE NO. SHEET NO. BP13.R019 TMP-3

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



SECTION A-A (PHASE 1, STEP 2) -L- STA. 13+65± (ALONG PROP. CULVERT SKEW 149) NTS

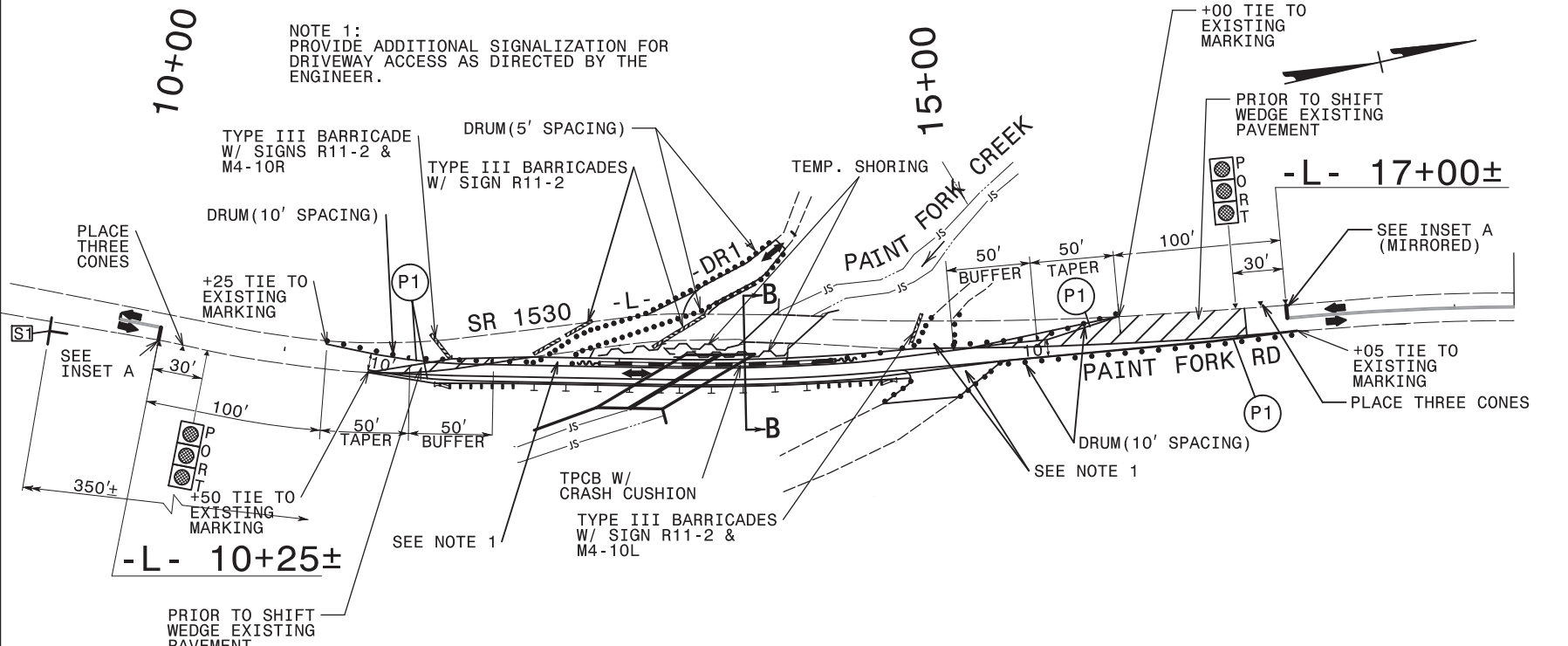


SECTION B-B (PHASE 1, STEP 3) -L- STA. 13+75± NTS

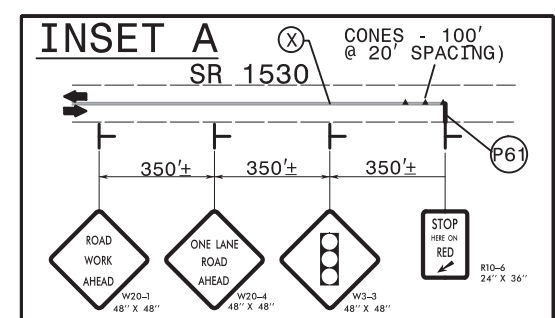
PHASE I, STEP 3

SEE TMP-1A FOR TEMPORARY PAVEMENT SCHEDULE

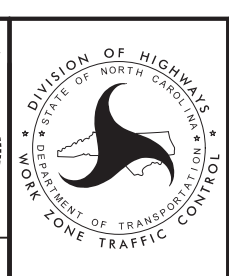
NOTE 1: PROVIDE ADDITIONAL SIGNALIZATION FOR DRIVEWAY ACCESS AS DIRECTED BY THE ENGINEER.



(X) DENOTES EXISTING DOUBLE YELLOW PAVEMENT MARKINGS



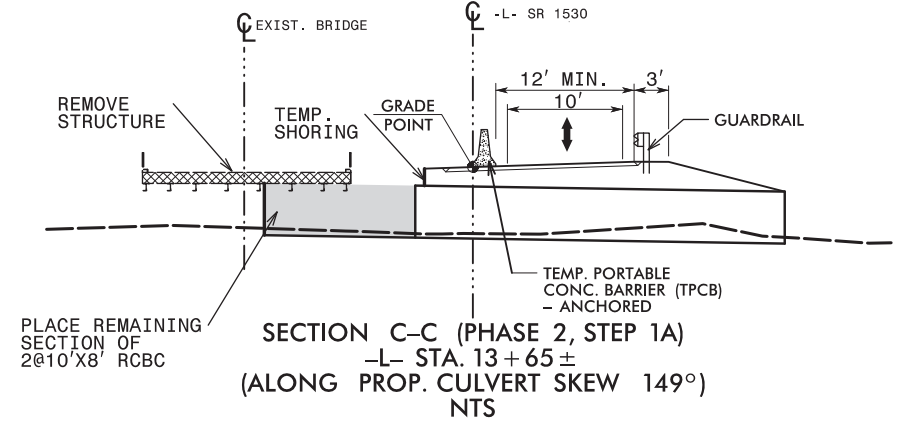
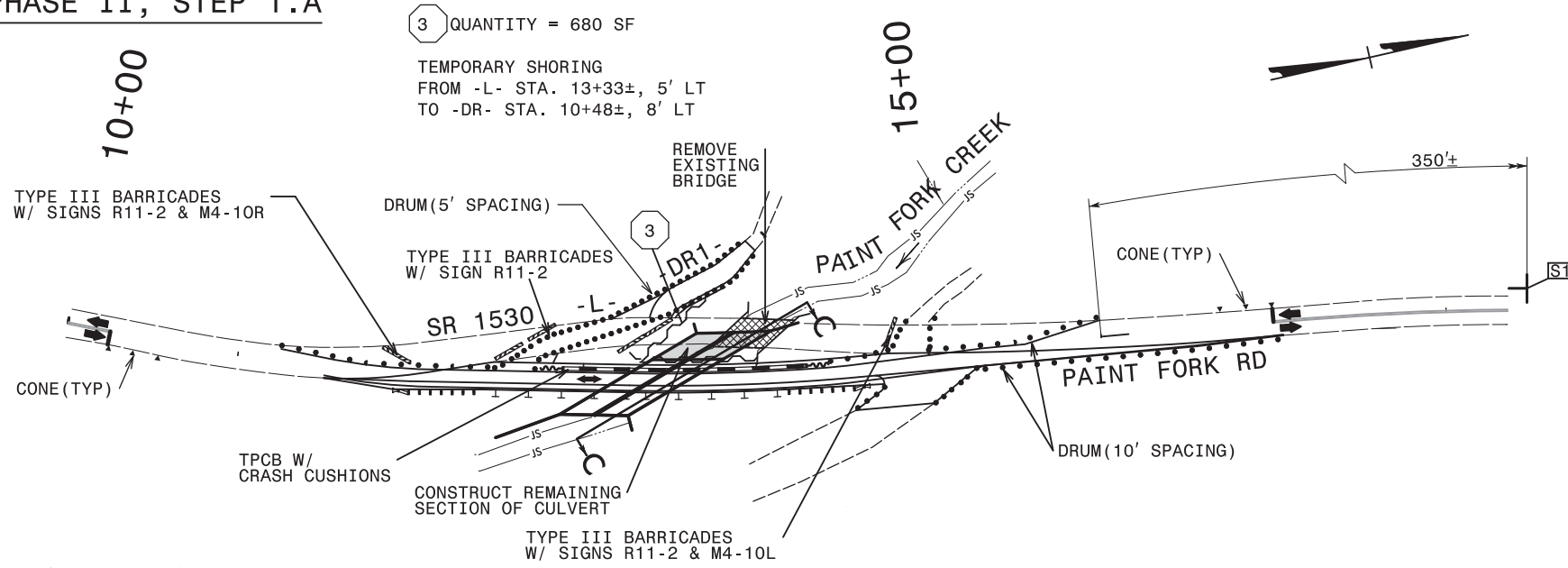
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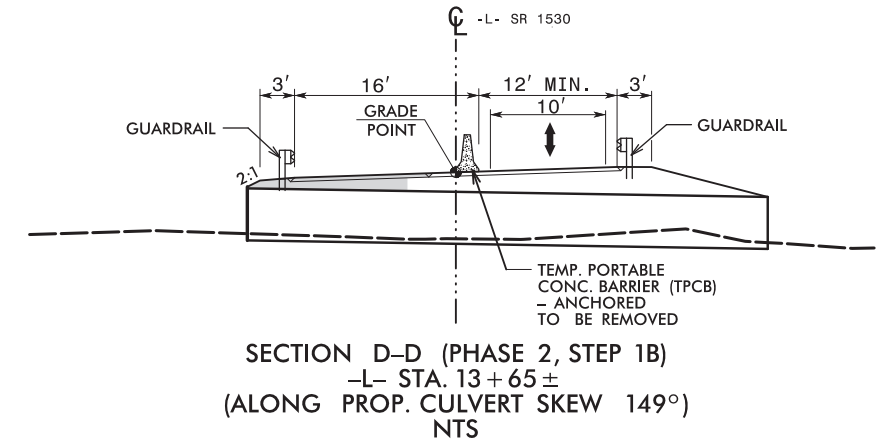
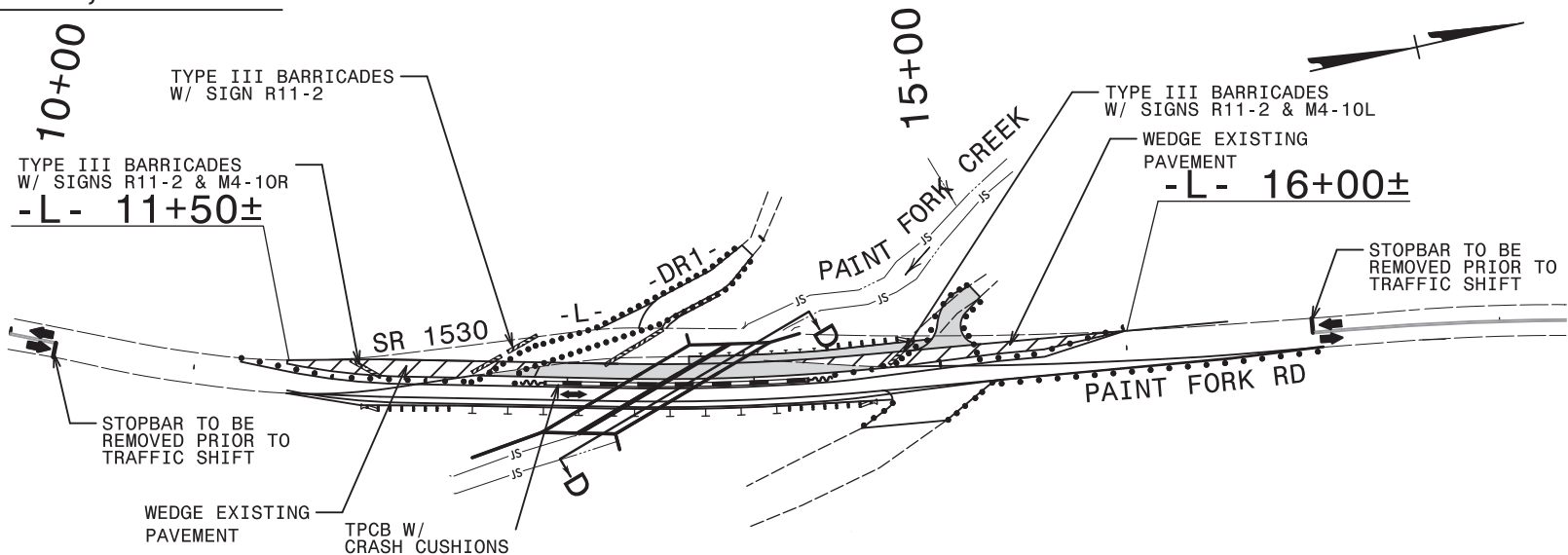
TEMPORARY TRAFFIC CONTROL PHASE I DETAIL

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PHASE II, STEP 1.A

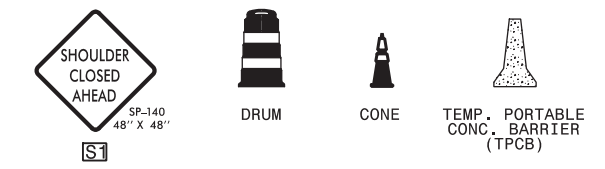
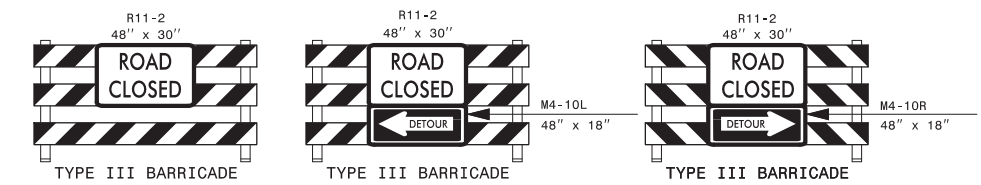
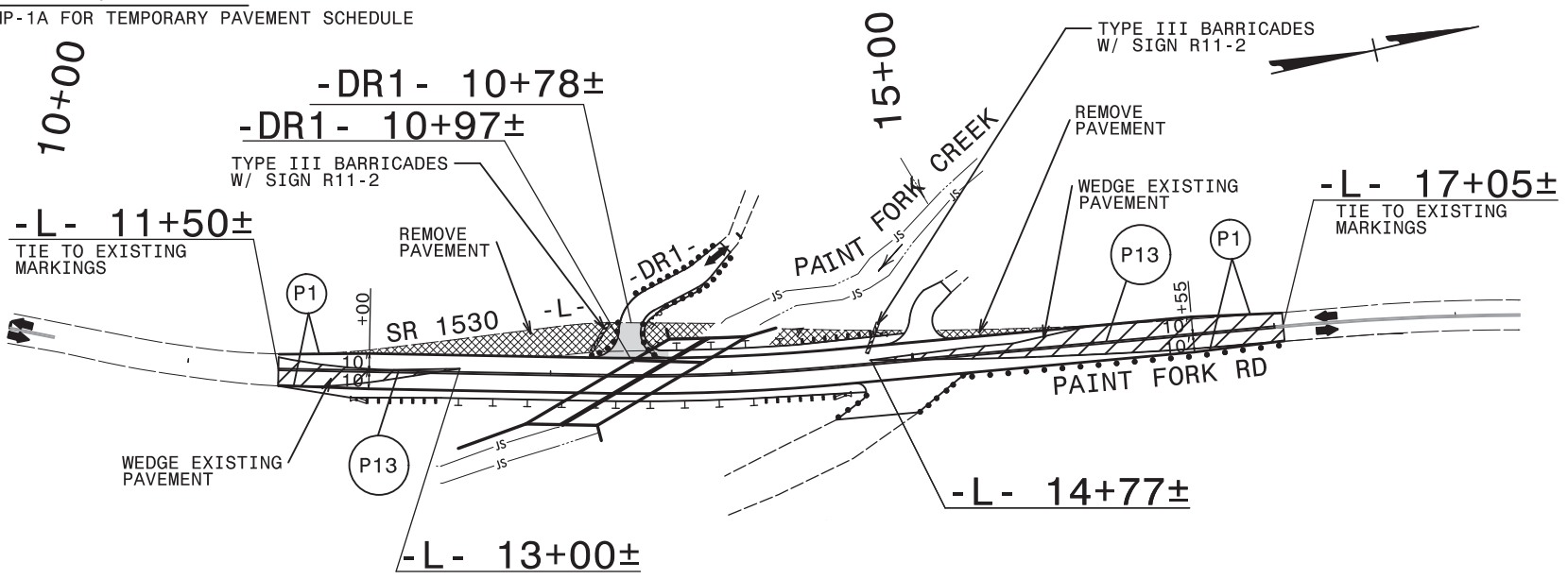


PHASE II, STEP 1.B



PHASE II, STEP 2

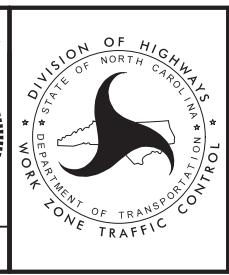
SEE TMP-1A FOR TEMPORARY PAVEMENT SCHEDULE



APPROVED: *Jimmy Terry*
 DATE: 11/28/2023

SEAL

PROFESSIONAL ENGINEER
 SEAL 35018
 JIMMY L. TERRY




TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

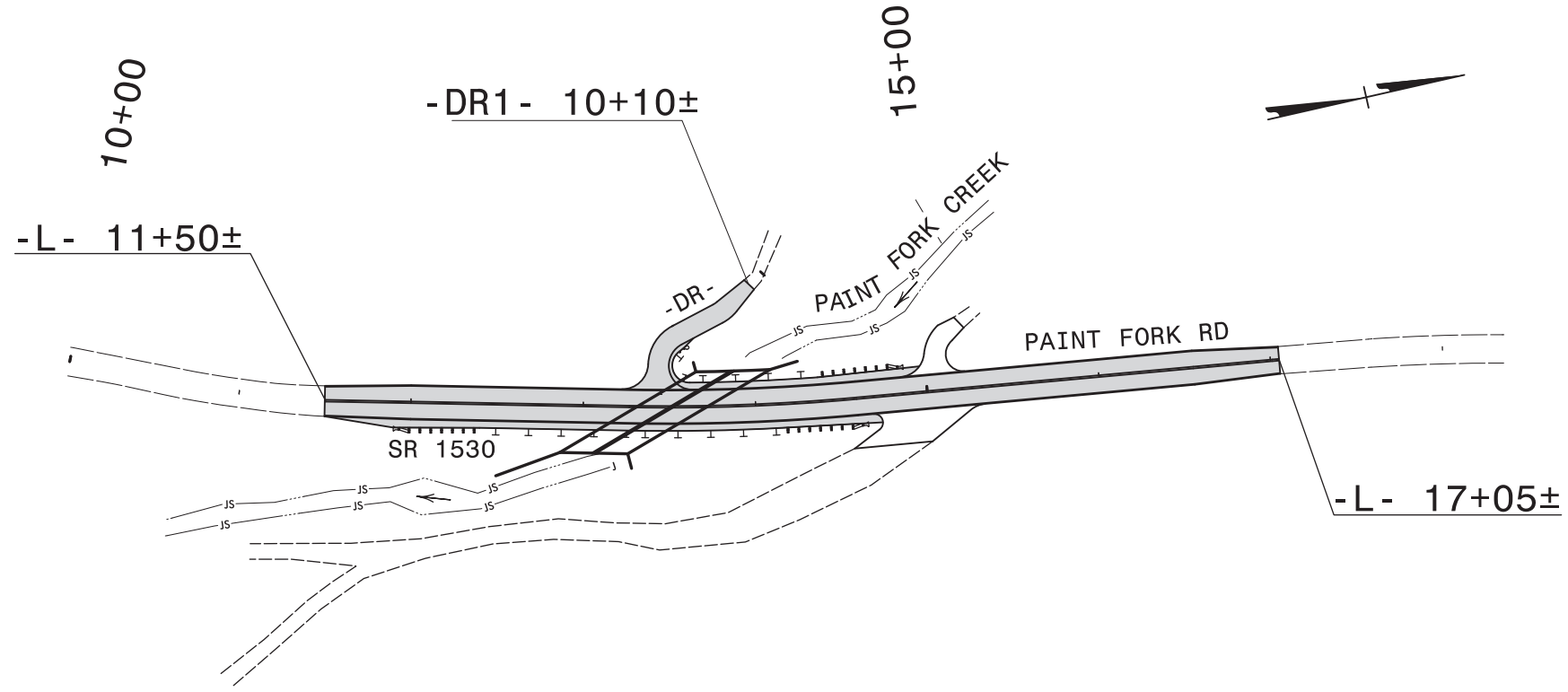
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PHASE III


MADISON COUNTY
BRIDGE #560023

PROJ. REFERENCE NO.	SHEET NO.
BP13.R019	TMP-5
 TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	

SEE PAVEMENT MARKING PLANS FOR FINAL PAVEMENT MARKING LAYOUT AND PAVEMENT MARKING SCHEDULE


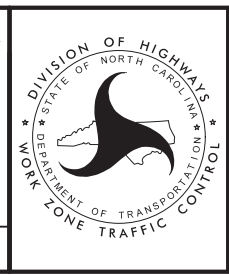


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User: smelvin

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Jimmy Terry
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DATE: 11/28/2023

SEAL

TEMPORARY TRAFFIC CONTROL PHASE III DETAIL




DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT: BP13.R019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
MADISON COUNTY

LOCATION: BRIDGE #560023 OVER PAINT FORK CREEK ON SR 1530 (PAINT FORK RD)

PROJECT NO. BP13.R019	SHEET NO. PMP-1
APPROVED:  DATE: 11/28/2023	
SEAL 	
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	

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
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
PAINT FORK RD (-L-)	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.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
PAINT (4")	
P1	WHITE EDGELINE
P13	YELLOW DOUBLE CENTER

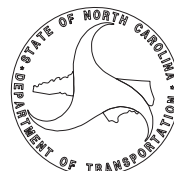
INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

PLAN PREPARED FOR N.C.D.O.T. BY:

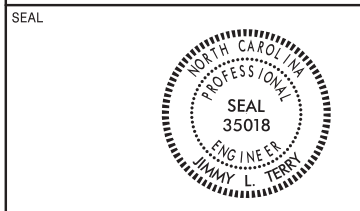

TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

JIMMY TERRY, PE PROJECT ENGINEER
SANDRA MELVIN DESIGN TECHNICIAN



10/6/2023 10:06:11 AM User: smelvin

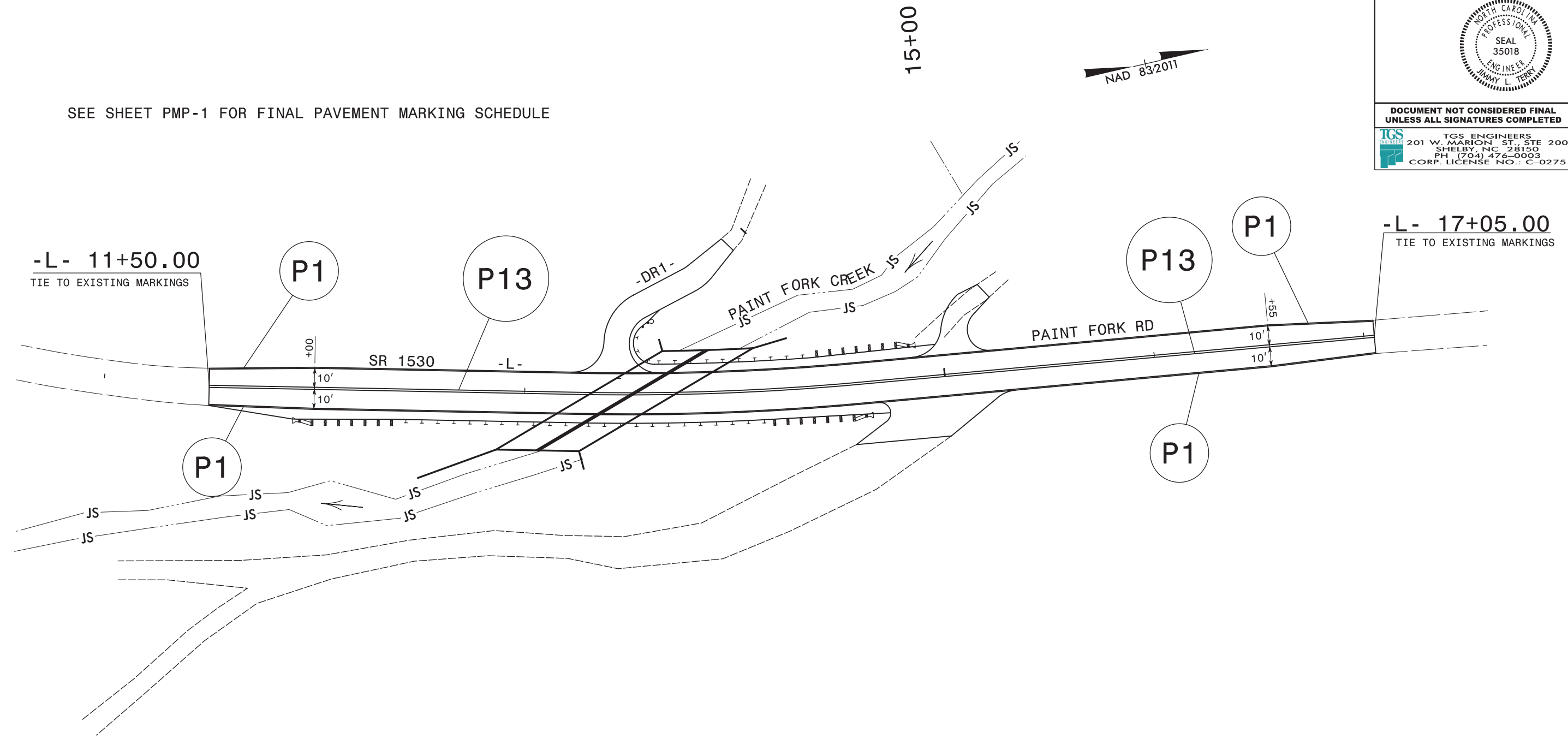
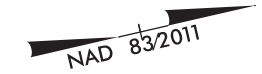
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 Jimmy Terry
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 DATE: 11/28/2023



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

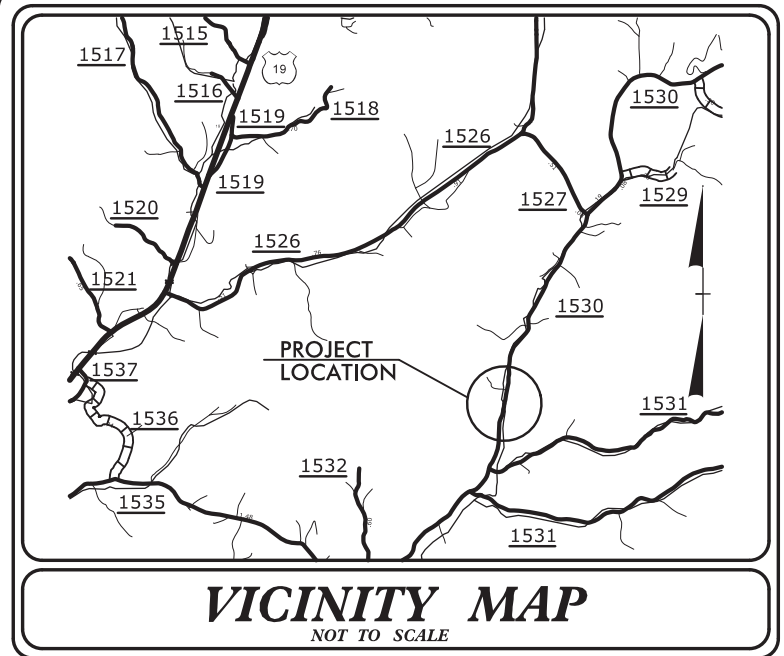
SEE SHEET PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE



PAVEMENT MARKING DETAIL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13.R019	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

CONTRACT: DM00425 PROJECT: BP13.R019



VICINITY MAP
NOT TO SCALE

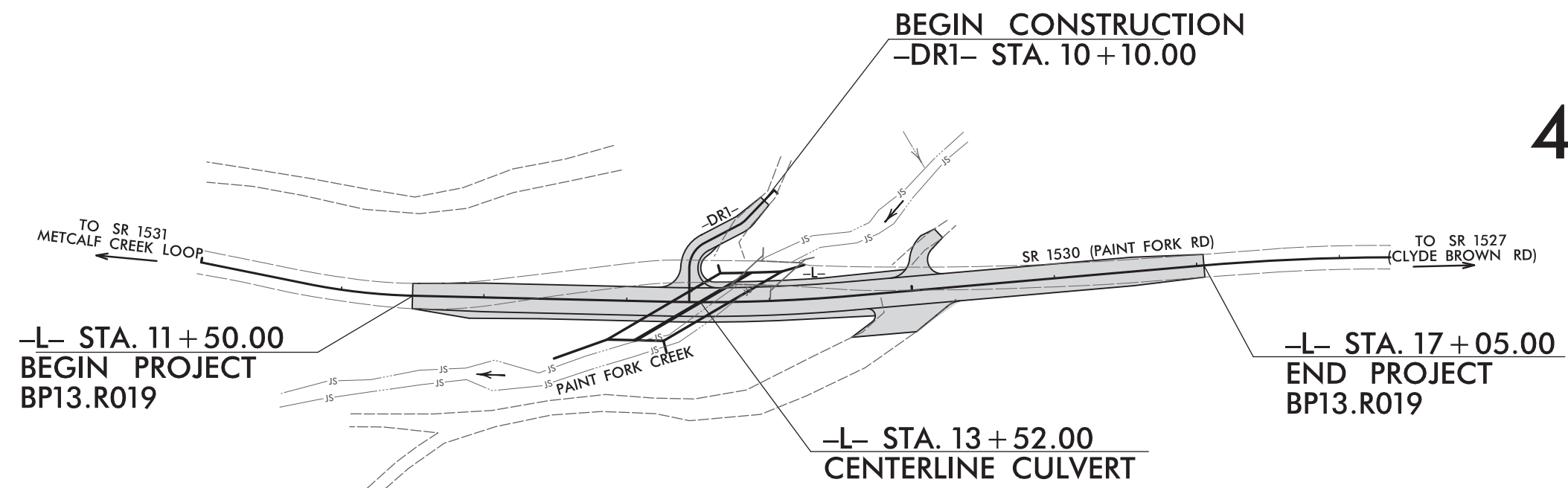
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MADISON COUNTY

LOCATION: BRIDGE # 560023 OVER PAINT FORK CREEK
ON SR 1530 (PAINT FORK RD)

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

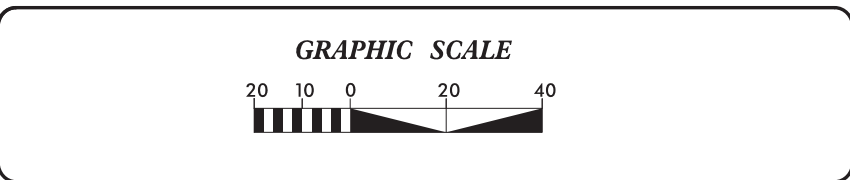


HIGH QUALITY WATER(S) EXIST ON THIS PROJECT
High Quality Water Zone(s) Exist
From Sta. -L- 10+95
to Sta. -L- 15+70
Refer To E. C. Special Provisions for Special Considerations.

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

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER 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

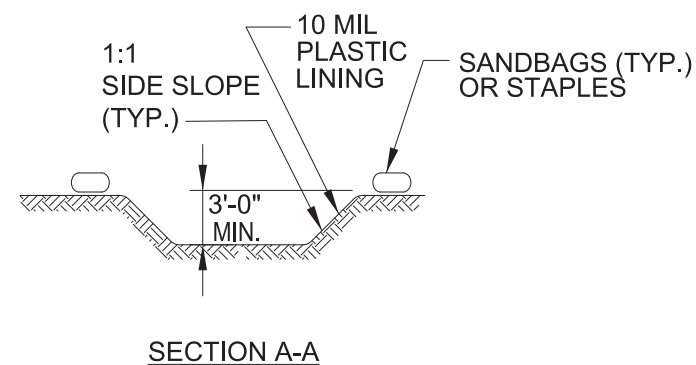
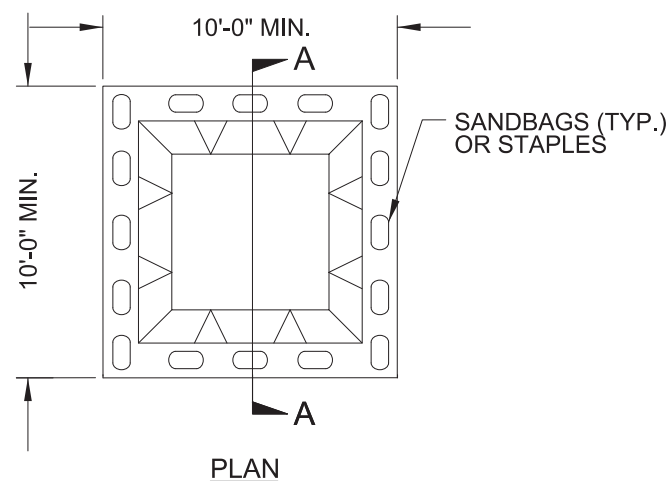
PROJECT REFERENCE NO. BP13.R019	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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				

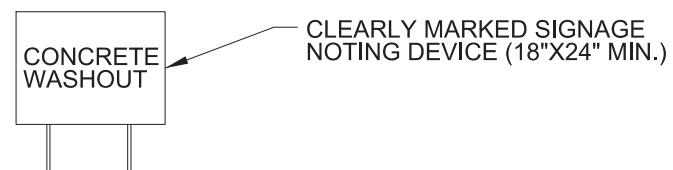
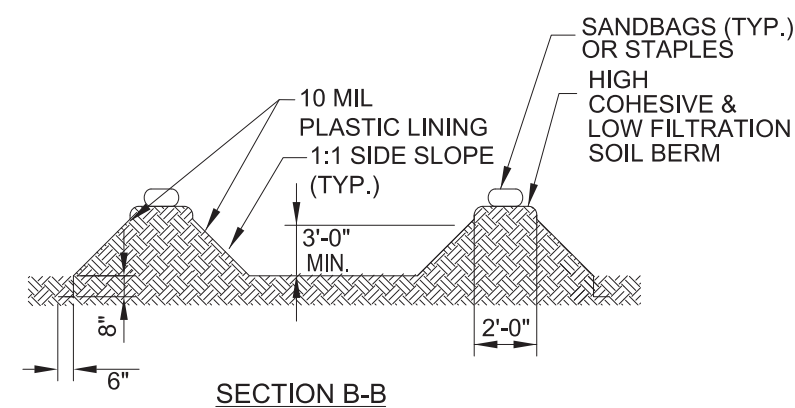
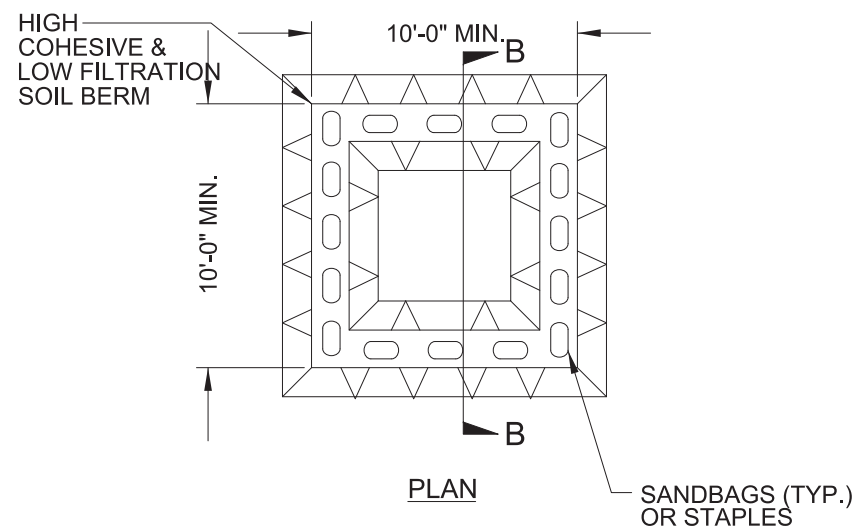
PROJECT REFERENCE NO. <i>BP13.R019</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BP13.R019</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)
4	-L-	11+50	12+35	LT	70
4	-L-	12+35	13+86	LT	125
4	-L-	13+05	13+50	RT	45
4	-L-	15+50	17+00	RT	120
SUBTOTAL					360

DITCHLINE EXCELSIOR MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	13+50	14+25	RT	70
SUBTOTAL					70

SLOPE MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+40	14+55	RT	395
4	-L-	13+50	15+20	LT	150
4	-L-	15+50	17+00	LT	395
4	-L-	15+00	17+00	RT	905
SUBTOTAL					1,845

MATTING FOR EROSION CONTROL TOTALS

	ESTIMATE (SY)
DITCHLINE STRAW MATTING SUBTOTAL	360
DITCHLINE EXCELSIOR MATTING SUBTOTAL	70
SLOPE MATTING SUBTOTAL	1,845
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	8,690
TOTAL	10,965
SAY	10,965

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BP13.R019</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

Madison County Bridge# 560023

PROJECT REFERENCE NO. BPI3.R019	SHEET NO. EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

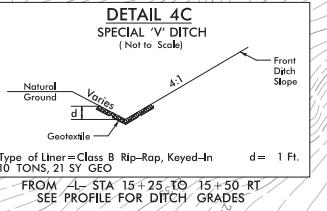
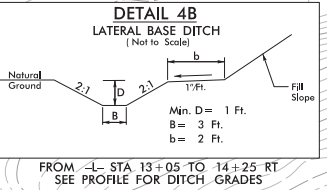
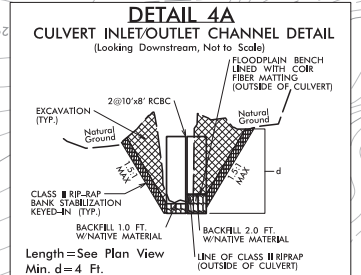
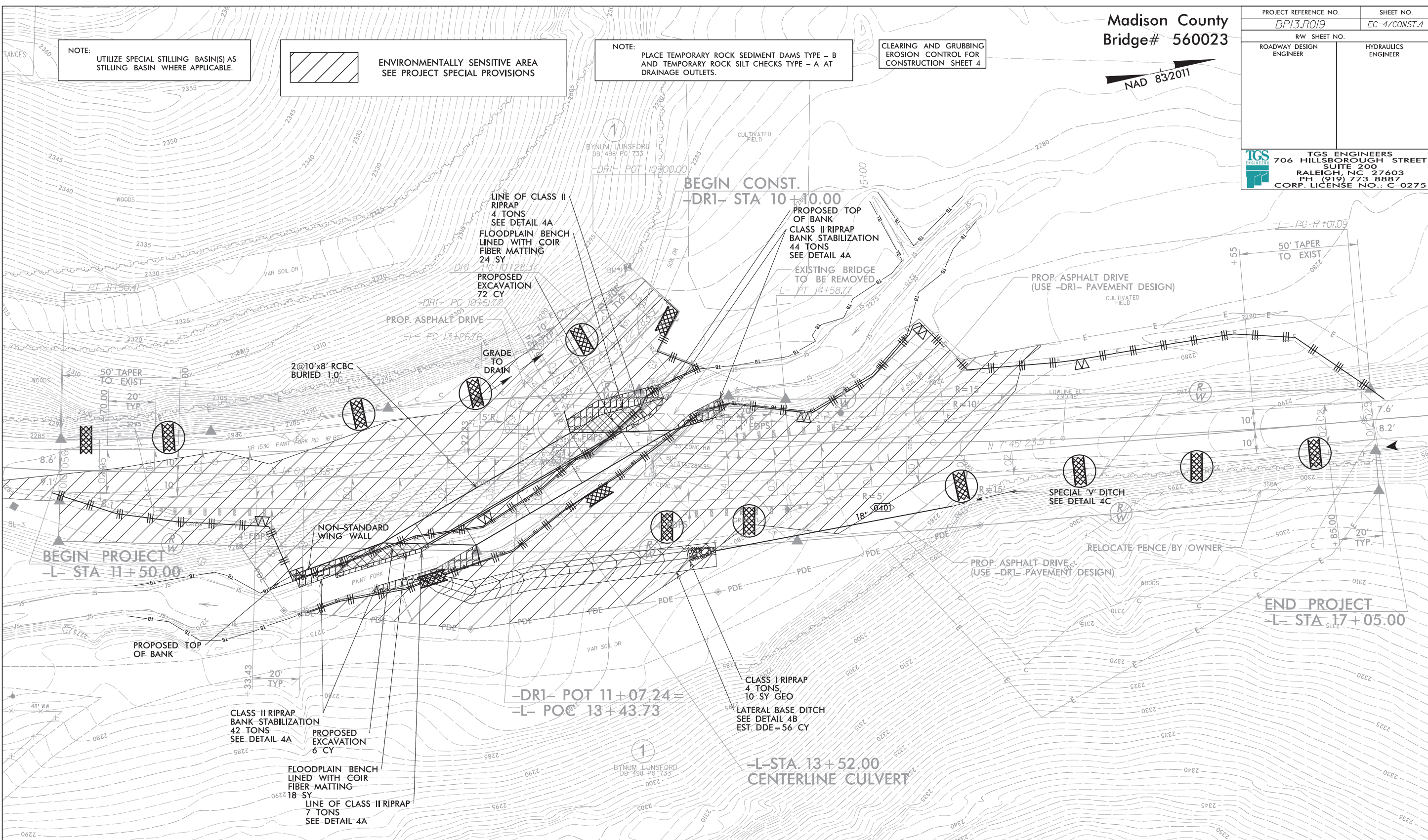


NOTE: UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4




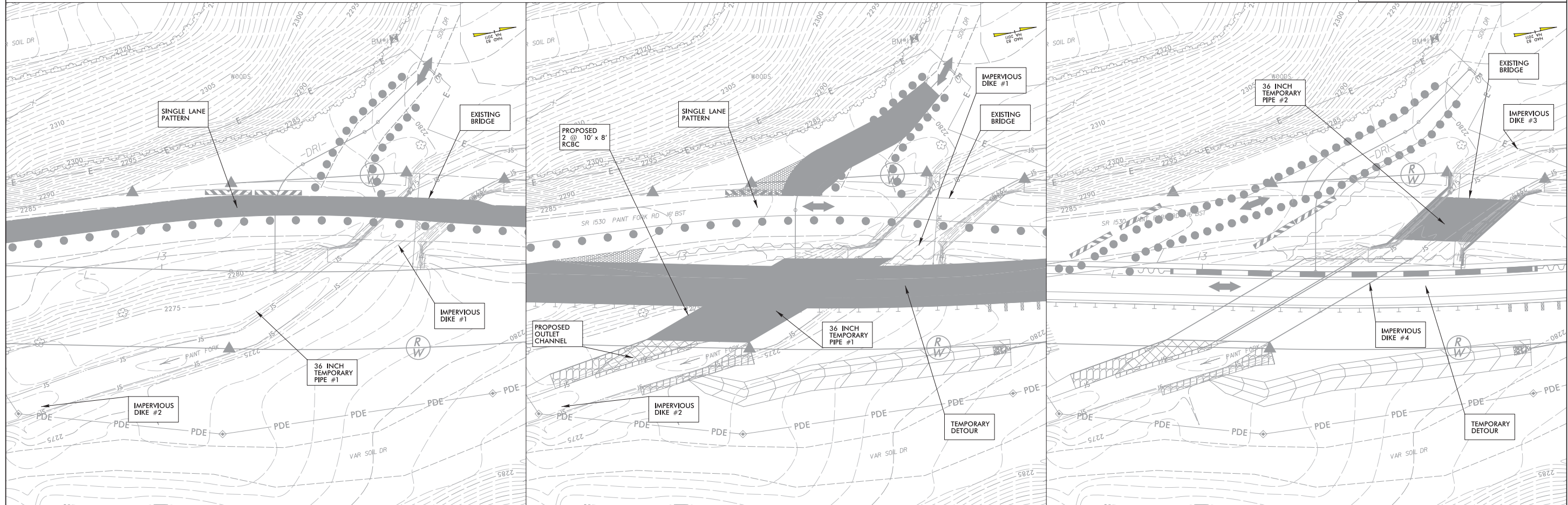
-L- CURVE DATA		-DRI- CURVE DATA	
PI Sta 11+12.97	PI Sta 13+92.83	PI Sta 17+68.40	PI Sta 10+73.80
$\Delta = 10^{\circ} 07' 12.2"$ (LT)	$\Delta = 6^{\circ} 18' 10.2"$ (LT)	$\Delta = 4^{\circ} 49' 05.0"$ (RT)	$\Delta = 6^{\circ} 14' 51.1"$ (LT)
D = 13^{\circ} 28' 52.9"	D = 4^{\circ} 46' 28.7"	D = 3^{\circ} 34' 51.6"	D = 286^{\circ} 28' 44.0"
L = 75.07'	L = 132.01'	L = 134.55'	L = 21.73'
T = 37.63'	T = 166.07'	T = 67.31'	T = 12.08'
R = 425.00'	R = 1,200.00'	R = 1,600.00'	R = 20.00'
SE = 0.04	SE = 0.04	SE = EXIST	SE = EXIST
D _{50%} = 55 MPH			
RO = 80'			

① -DRI- PT 10+34.82
② -DRI- PT 10+83.45

8/17/99

BP13.R019 PROP. 2 @ 10' X 8' RCBC PHASING -L- 13+52 SR 1530 (PAINT FORK RD.) OVER PAINT FORK CREEK MADISON COUNTY, 1" = 20'

PROJECT REFERENCE NO. BP13.R019	SHEET NO. EC-4A/CONST.4
RW SHEET NO.	
 TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	



PHASE 1

1. INSTALL SINGLE LANE PATTERN ON THE SOUTHBOUND LANE OF EXISTING SR 1530 (SEE TRAFFIC CONTROL PLANS).
2. INSTALL IMPERVIOUS DIKES #1 & #2, 36-INCH TEMPORARY PIPE #1, AND SPECIAL STILLING BASIN(S).
3. DEWATER CONSTRUCTION AREAS INTO SPECIAL STILLING BASIN(S) AS REQUIRED.

PHASE 2


1. CONSTRUCT 63 FT (DOWNSTREAM) OF PROPOSED 2 @ 10' X 8' RCBC, HEADWALL, WINGWALLS, AND PROPOSED OUTLET CHANNEL.
2. DEWATER CONSTRUCTION AREAS INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
3. CONSTRUCT SINGLE LANE TEMPORARY DETOUR ON NEWLY BUILT CULVERT SECTION (SEE TRAFFIC CONTROL PLANS).
4. REMOVE IMPERVIOUS DIKES #1 & #2, 36-INCH TEMPORARY PIPE #1, AND SPECIAL STILLING BASIN(S).
5. ALLOW FLOW THROUGH NEWLY CONSTRUCTED CULVERT.

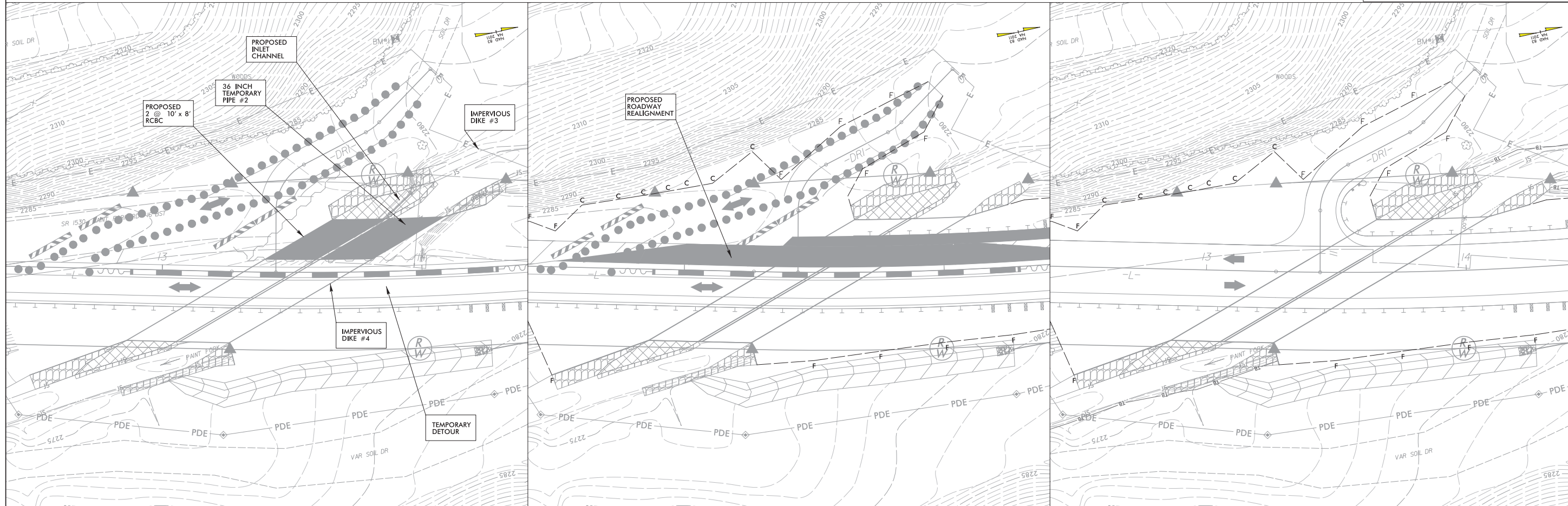
PHASE 3

1. SHIFT SINGLE LANE PATTERN ONTO TEMPORARY DETOUR (SEE TRAFFIC CONTROL PLANS).
2. INSTALL IMPERVIOUS DIKES #3 & #4, 36-INCH TEMPORARY PIPE #2, AND SPECIAL STILLING BASIN(S).
3. DEWATER CONSTRUCTION AREAS INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
4. REMOVE EXISTING BRIDGE.

8/17/99

BP13.R019 PROP. 2 @ 10' X 8' RCBC PHASING -L- 13+52 SR 1530 (PAINT FORK RD.) OVER PAINT FORK CREEK MADISON COUNTY, 1" = 20'

PROJECT REFERENCE NO. BP13.R019	SHEET NO. EC-4B/CONST.4
RW SHEET NO.	
 TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	



PHASE 4

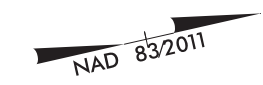
1. CONSTRUCT REMAINDER (UPSTREAM) OF PROPOSED 2 @ 10' X 8' RCBC, HEADWALL, WINGWALLS, AND PROPOSED INLET CHANNEL.
2. DEWATER CONSTRUCTION AREAS INTO SPECIAL STILLING BASIN(S) AS REQUIRED.
3. REMOVE IMPERVIOUS DIKES #3 & #4, 36-INCH TEMPORARY PIPE #2, AND SPECIAL STILLING BASIN(S).
4. ALLOW FLOW THROUGH NEWLY CONSTRUCTED CULVERT.

PHASE 5

1. CONSTRUCT REMAINDER OF PROPOSED ROADWAY REALIGNMENT.

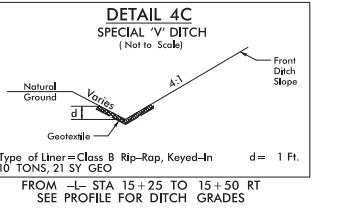
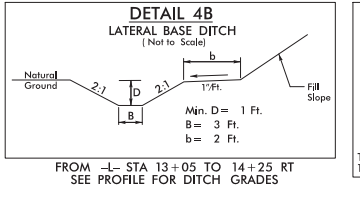
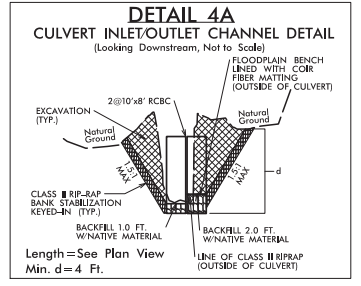
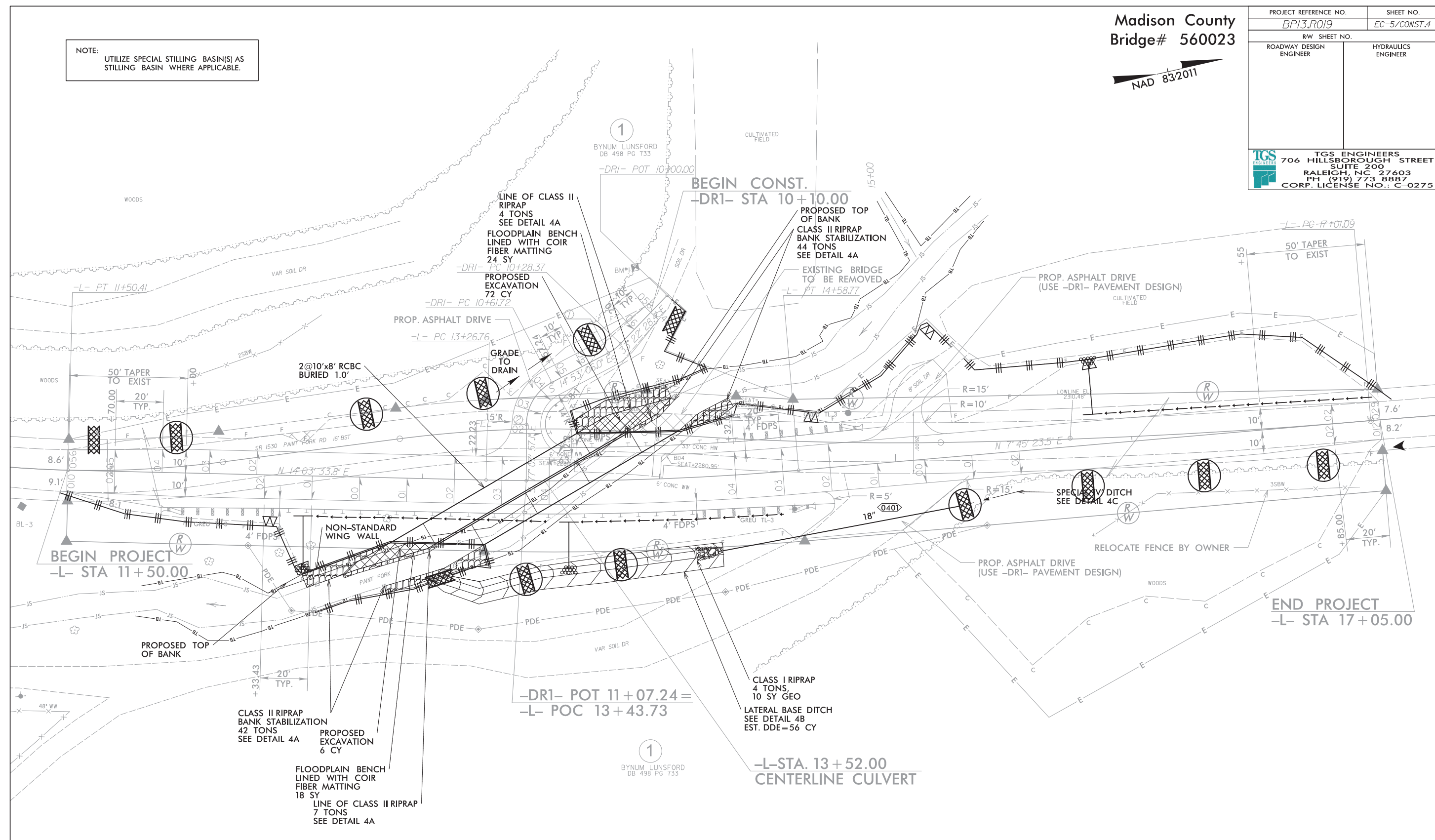
PHASE 6

1. SHIFT TRAFFIC TO FINAL PATTERN.



PROJECT REFERENCE NO. BPI3.R019		SHEET NO. EC-5/CONST.4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275			

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



-L- CURVE DATA			-DRI- CURVE DATA		
PI Sta 11+12.97	PI Sta 13+92.83	PI Sta 17+68.40	PI Sta 10+73.80	PI Sta 10+31.62	
$\Delta = 10^{\circ} 07' 12.2''$ (LT)	$\Delta = 6^{\circ} 18' 10.2''$ (LT)	$\Delta = 4^{\circ} 49' 05.0''$ (RT)	$\Delta = 62^{\circ} 14' 51.1''$ (LT)	$\Delta = 18^{\circ} 29' 22.5''$ (RT)	
D = 13' 28' 52.9"	D = 4' 46' 28.7"	D = 3' 34' 51.6"	D = 286' 28' 44.0"	D = 286' 28' 44.0"	
L = 75.07'	L = 132.01'	L = 134.55'	L = 217.3'	L = 6.45'	
T = 37.63'	T = 66.07'	T = 67.31'	T = 12.08'	T = 3.26'	
R = 425.00'	R = 1,200.00'	R = 1,600.00'	R = 20.00'	R = 20.00'	
SE = EXIST	SE = 0.04	SE = EXIST			
	DS = 55 MPH				
	RO = 80'				

① -DRI- PT 10+34.82
② -DRI- PT 10+83.45

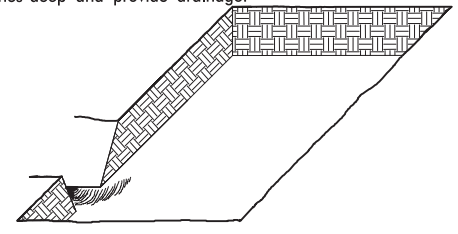
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	SHEETS
N.C.	BP13.R019	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

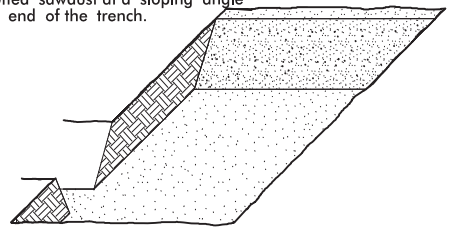
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

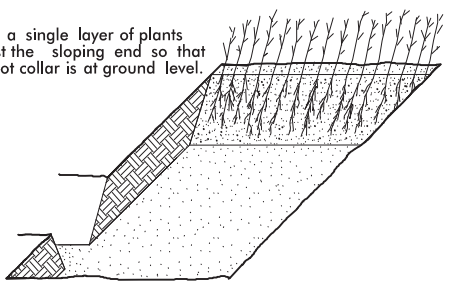
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



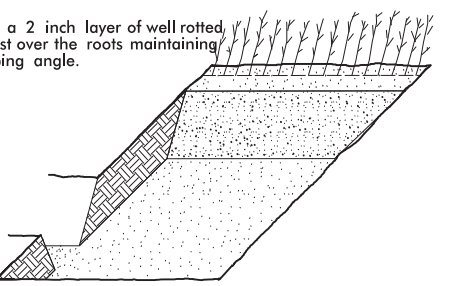
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

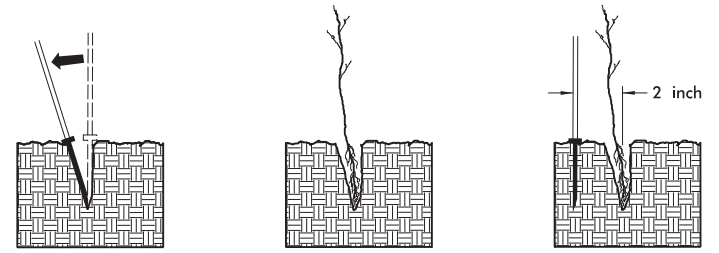


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

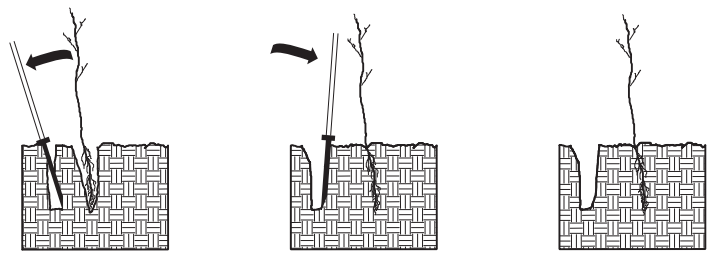


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



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



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

REFORESTATION

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

REFORESTATION

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

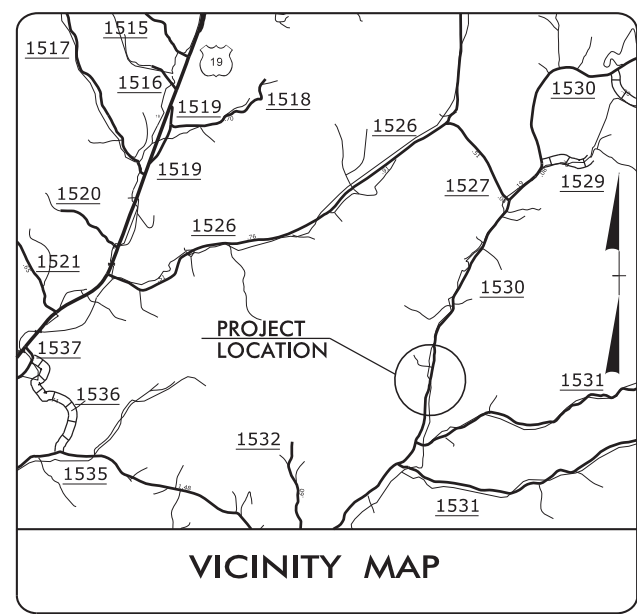
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR
25%	NYSSA SYLVATICA	BLACK GUM	12 in – 18 in BR

REFORESTATION DETAIL SHEET

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

09/08/99

TIP PROJECT: BP13.R019



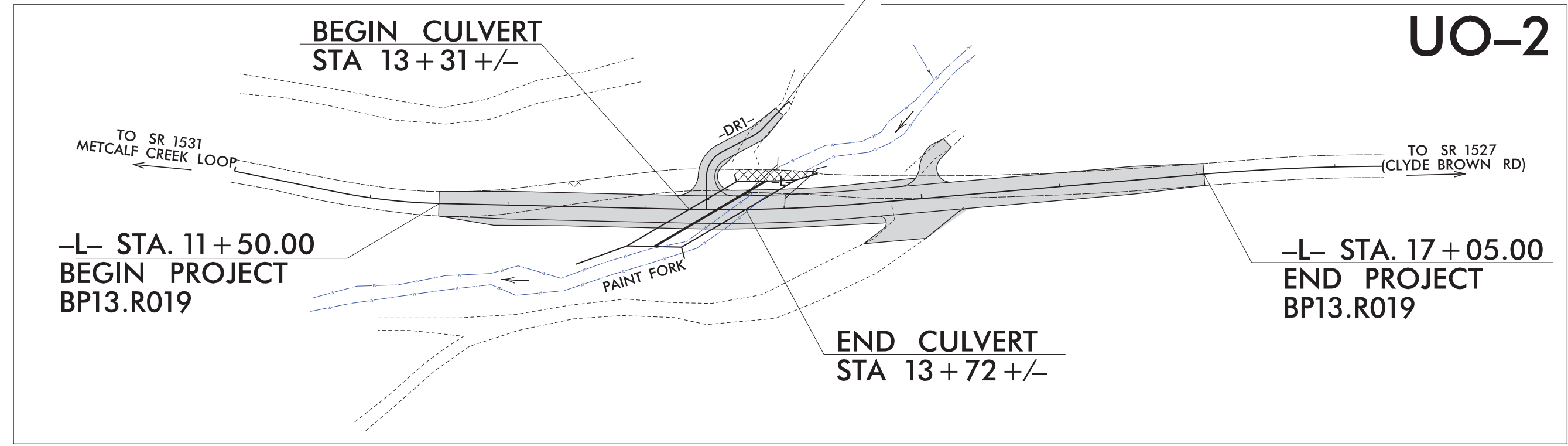
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
MADISON COUNTY**

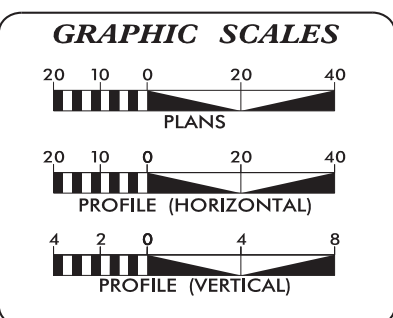
**LOCATION: BRIDGE #560023 OVER PAINT FORK
ON SR 1530 (PAINT FORK RD)**
TYPE OF WORK: DISTRIBUTION POWER, COMMUNICATIONS

T.I.P. NO.	SHEET NO.
BP13.R019	UO-1

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



UO-2



INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) DISTRIBUTION POWER - FRENCH BROAD EMC
(B) COMMUNICATIONS - FRONTIER

PREPARED IN THE OFFICE OF:

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

CORY WOOD UTILITY PROJECT MANAGER
CORY WOOD PROJECT UTILITY COORDINATOR

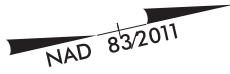
**DIVISION OF HIGHWAYS
DIVISION 13**
55 ORANGE STREET
ASHEVILLE, NC 28801

KEITH RADCLIFF SENIOR UTILITY ENGINEER
JOHN METCALF UTILITY COORDINATOR

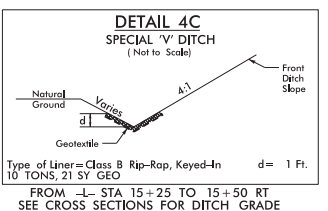
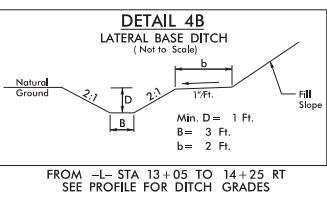
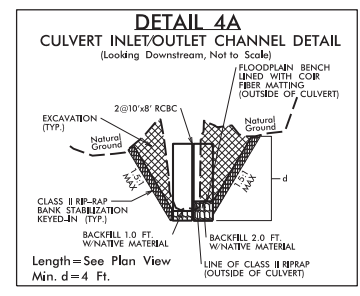
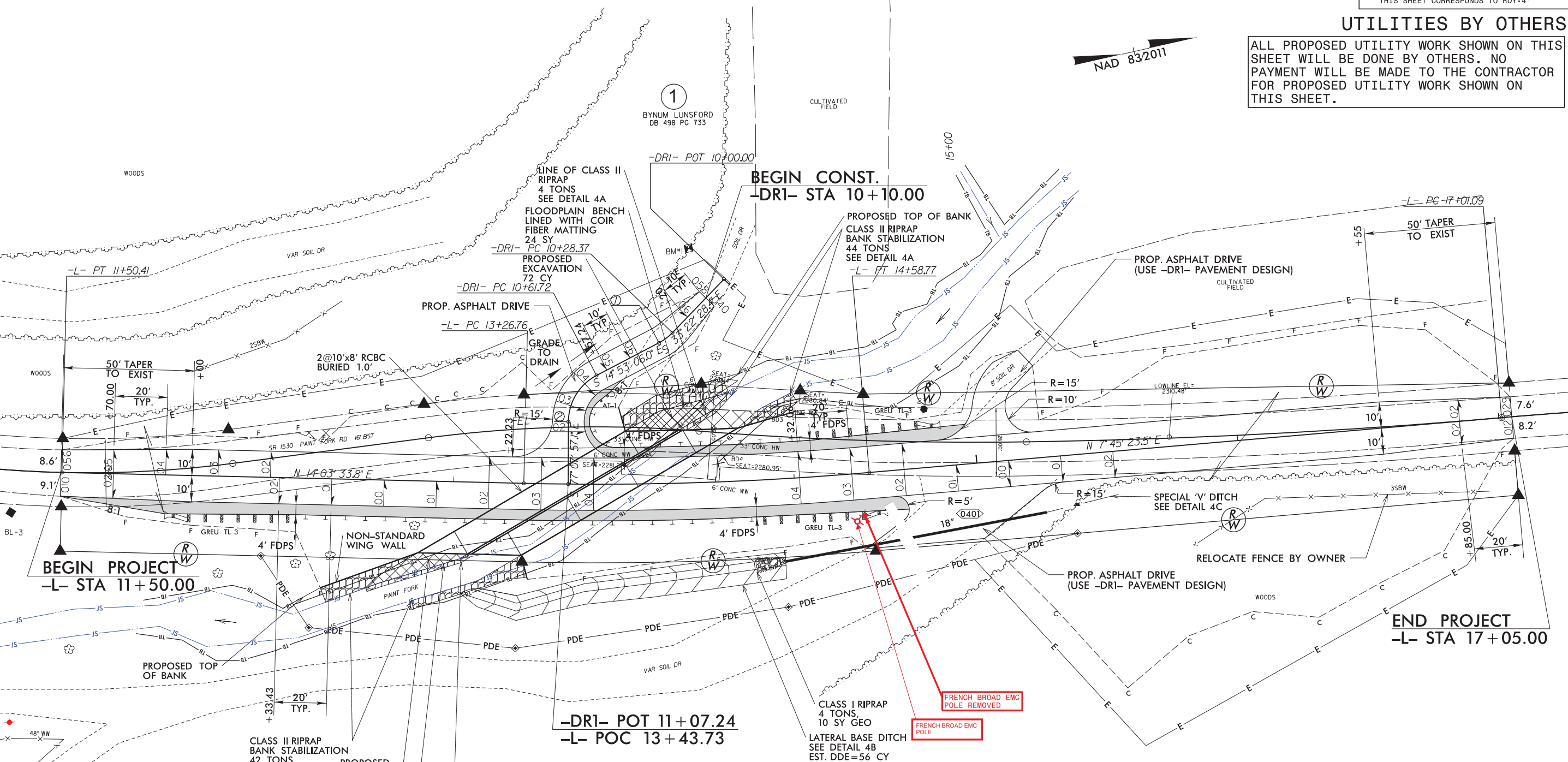
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UTILITIES BY OTHERS

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



5/14/99
27-SEP-2023 2:02
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-L- CURVE DATA			-DRI- CURVE DATA	
PI Sta 11+12.97	PI Sta 13+92.83	PI Sta 17+68.40	PI Sta 10+73.80	PI Sta 10+31.62
$\Delta = 10' 07'' 12.2''$ (LT)	$\Delta = 6' 18'' 10.2''$ (LT)	$\Delta = 4' 49'' 05.0''$ (RT)	$\Delta = 62' 14'' 51.1''$ (LT)	$\Delta = 18' 29'' 22.5''$ (RT)
$D = 13' 28'' 52.9''$	$D = 4' 46'' 28.7''$	$D = 3' 34'' 51.6''$	$D = 286' 28'' 44.0''$	$D = 286' 28'' 44.0''$
$L = 75.07'$	$L = 132.01'$	$L = 134.55'$	$L = 21.73'$	$L = 6.45'$
$T = 37.63'$	$T = 66.07'$	$T = 67.31'$	$T = 12.08'$	$T = 3.26'$
$R = 425.00'$	$R = 1,200.00'$	$R = 1,600.00'$	$R = 20.00'$	$R = 20.00'$
SE = EXIST	SE = 0.04	SE = EXIST		
	DS = 55 MPH			

① -DRI- PT 10+34.82
② -DRI- PT 10+83.45

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP13.R019	X-1A
RW SHEET NO.	

BP13.R019

CROSS-SECTION INDEX

XS - INDEX	X-1A
XS - SUMMARY	X-1B
- L -	X-1 THRU X-16
- DR1 -	X-17 THRU X-19

REVISIONS

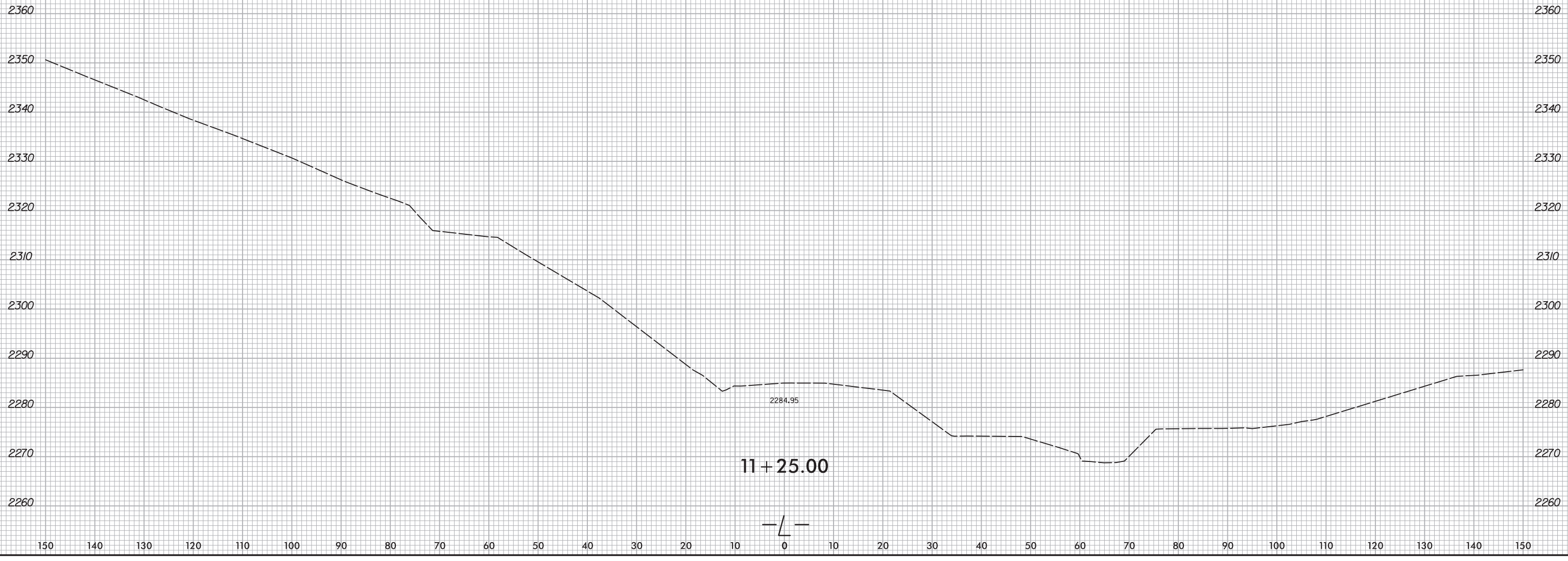
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6/23/16

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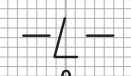
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11 + 25.00



6/23/16

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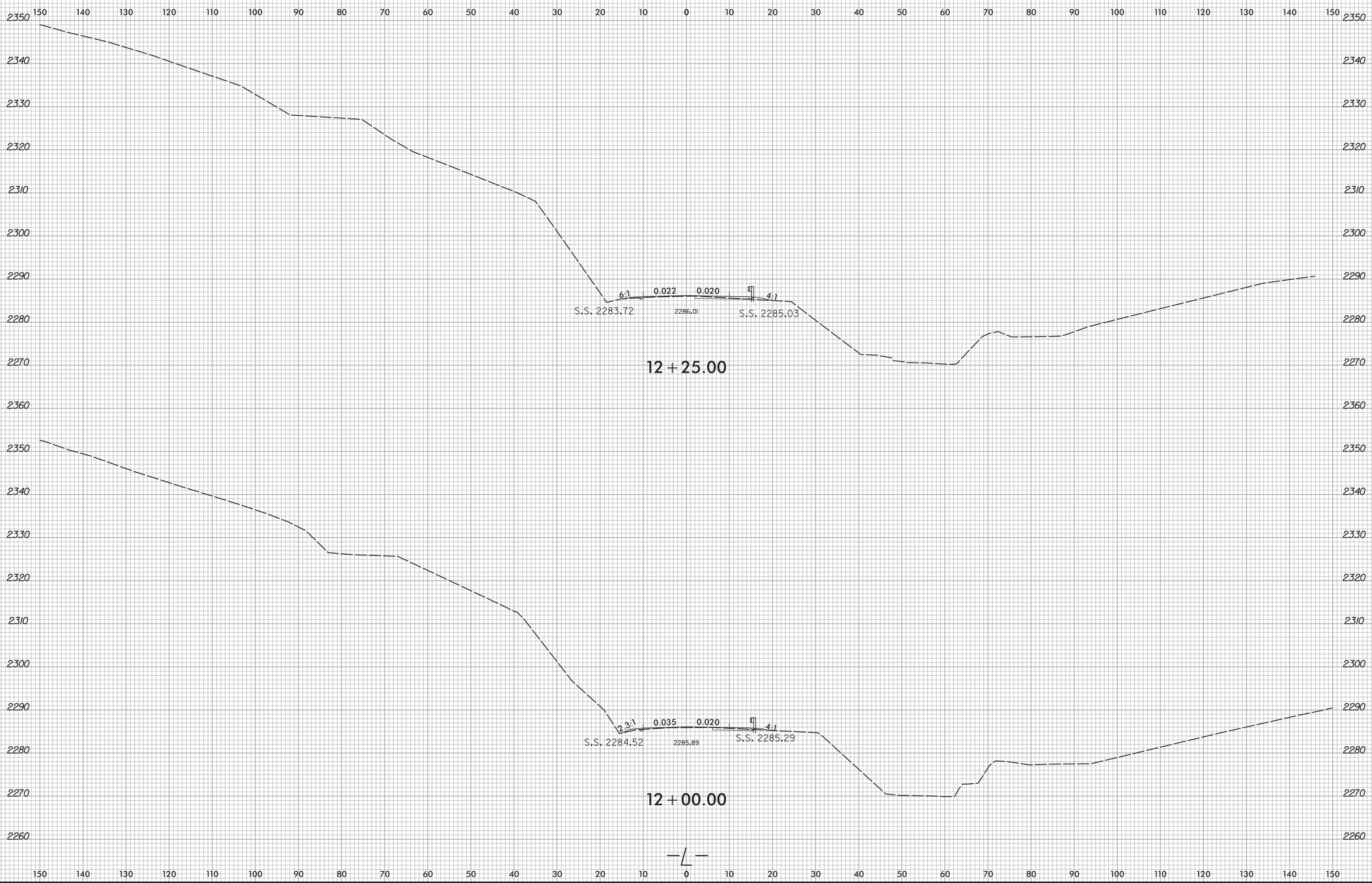
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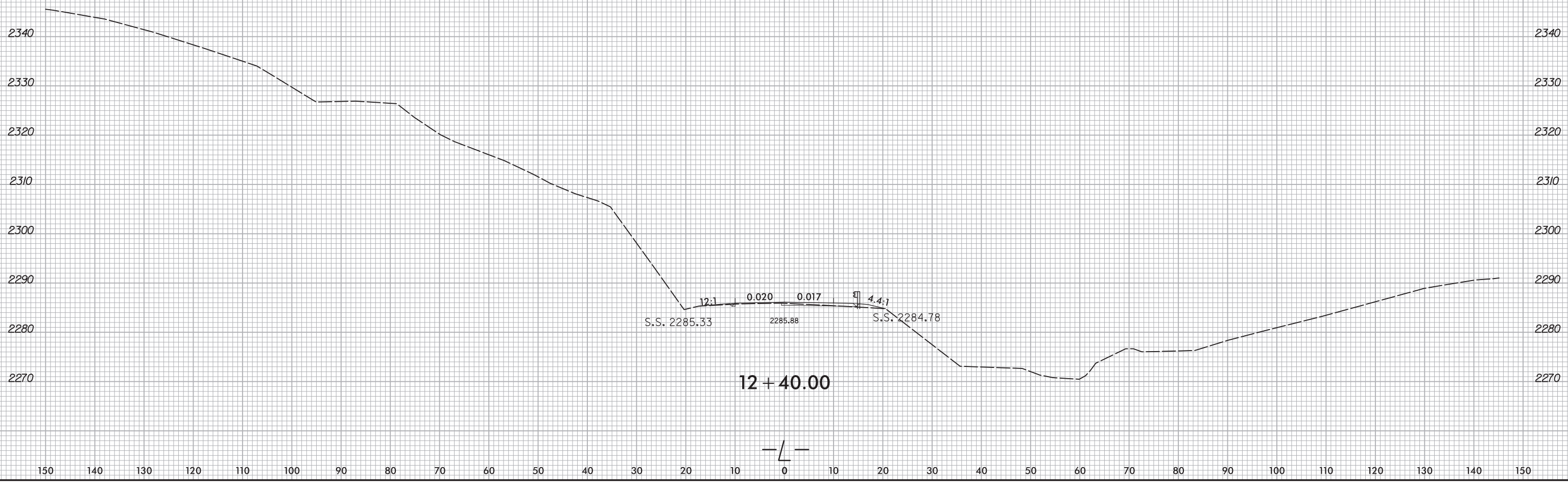
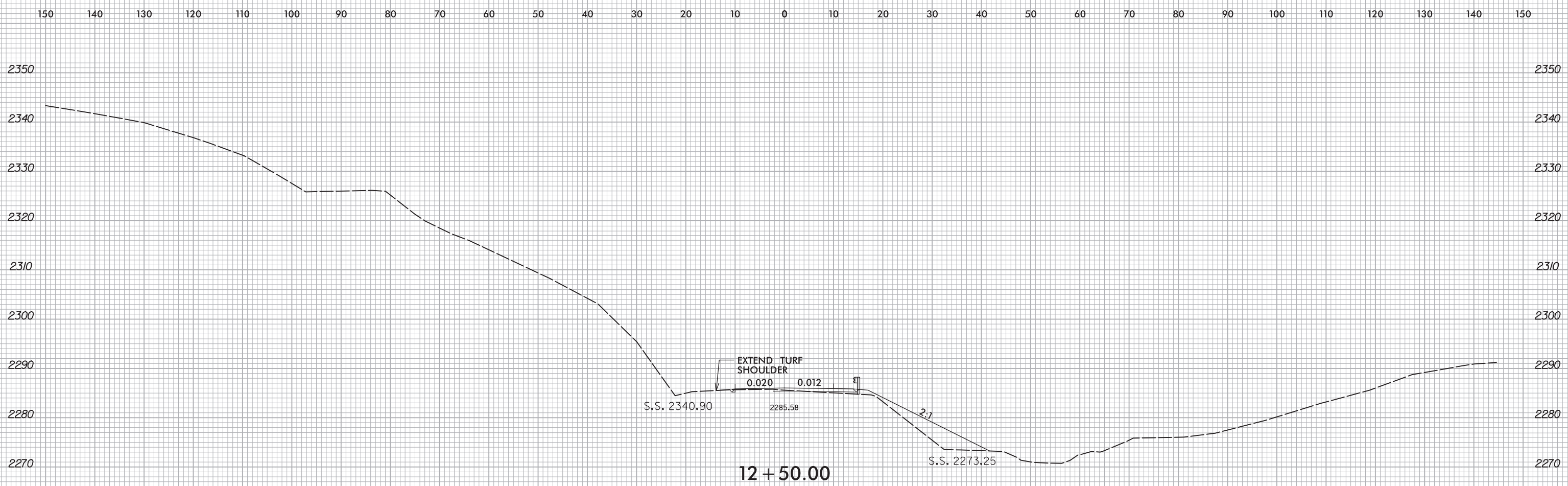
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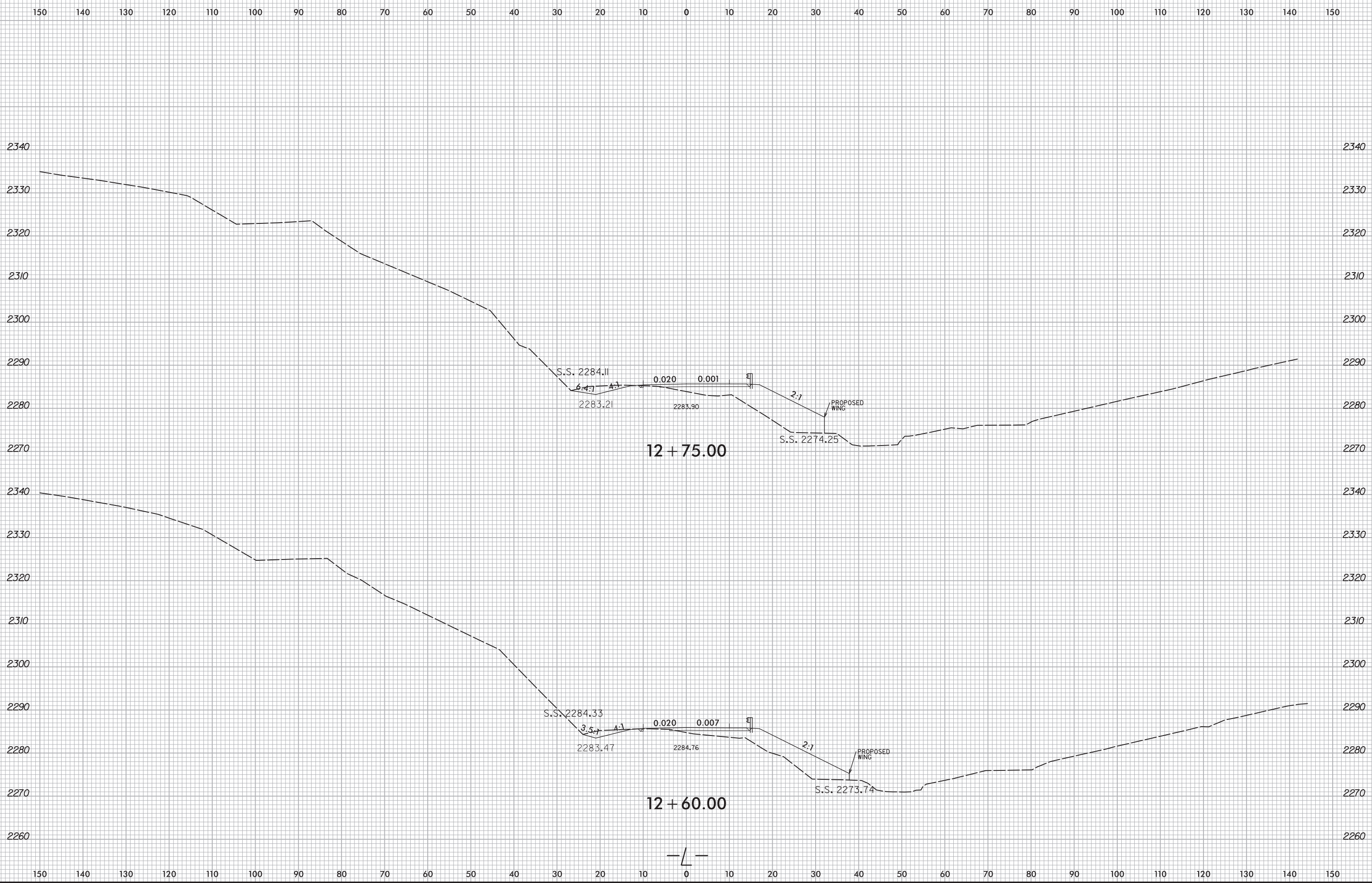
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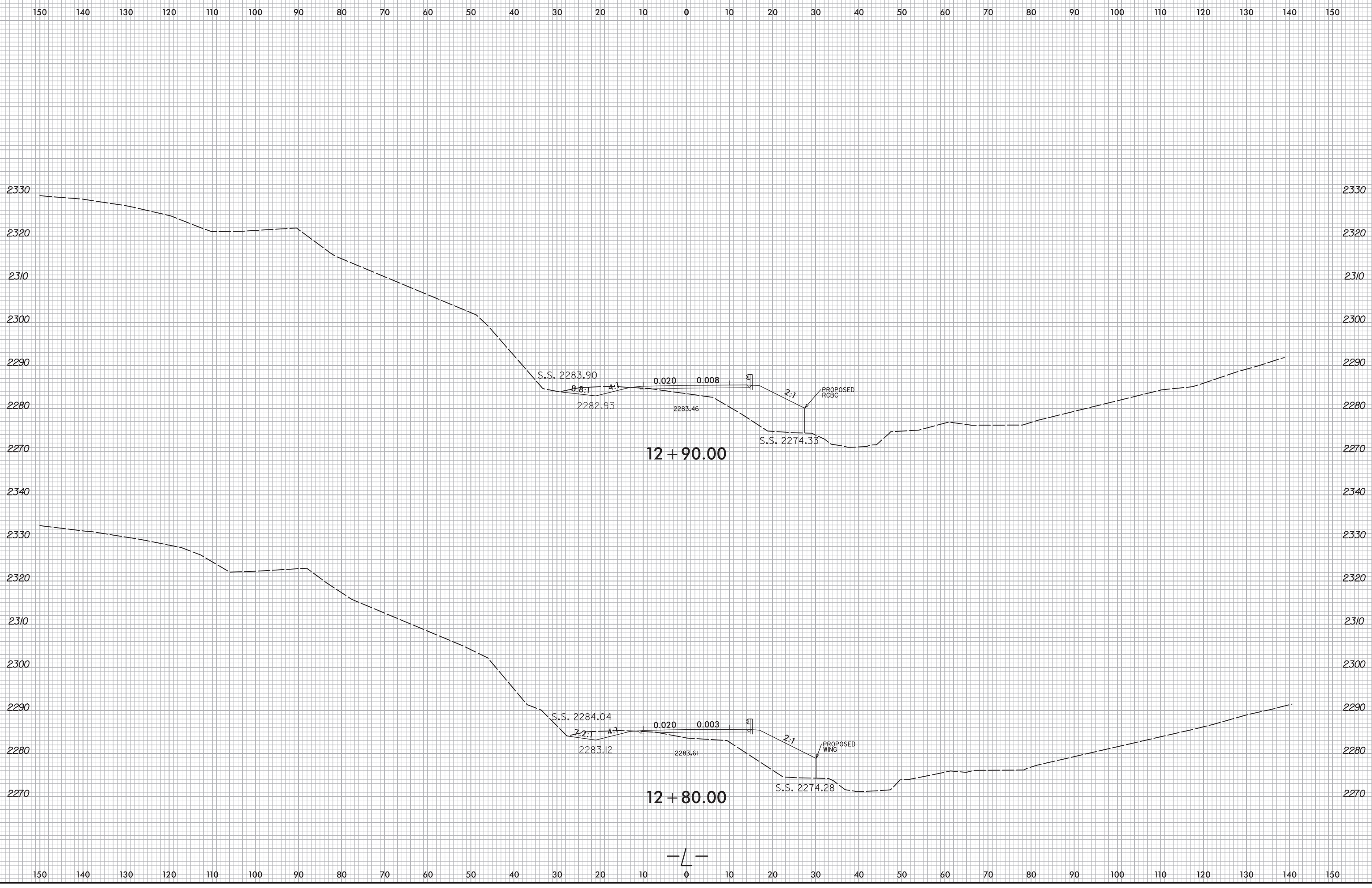
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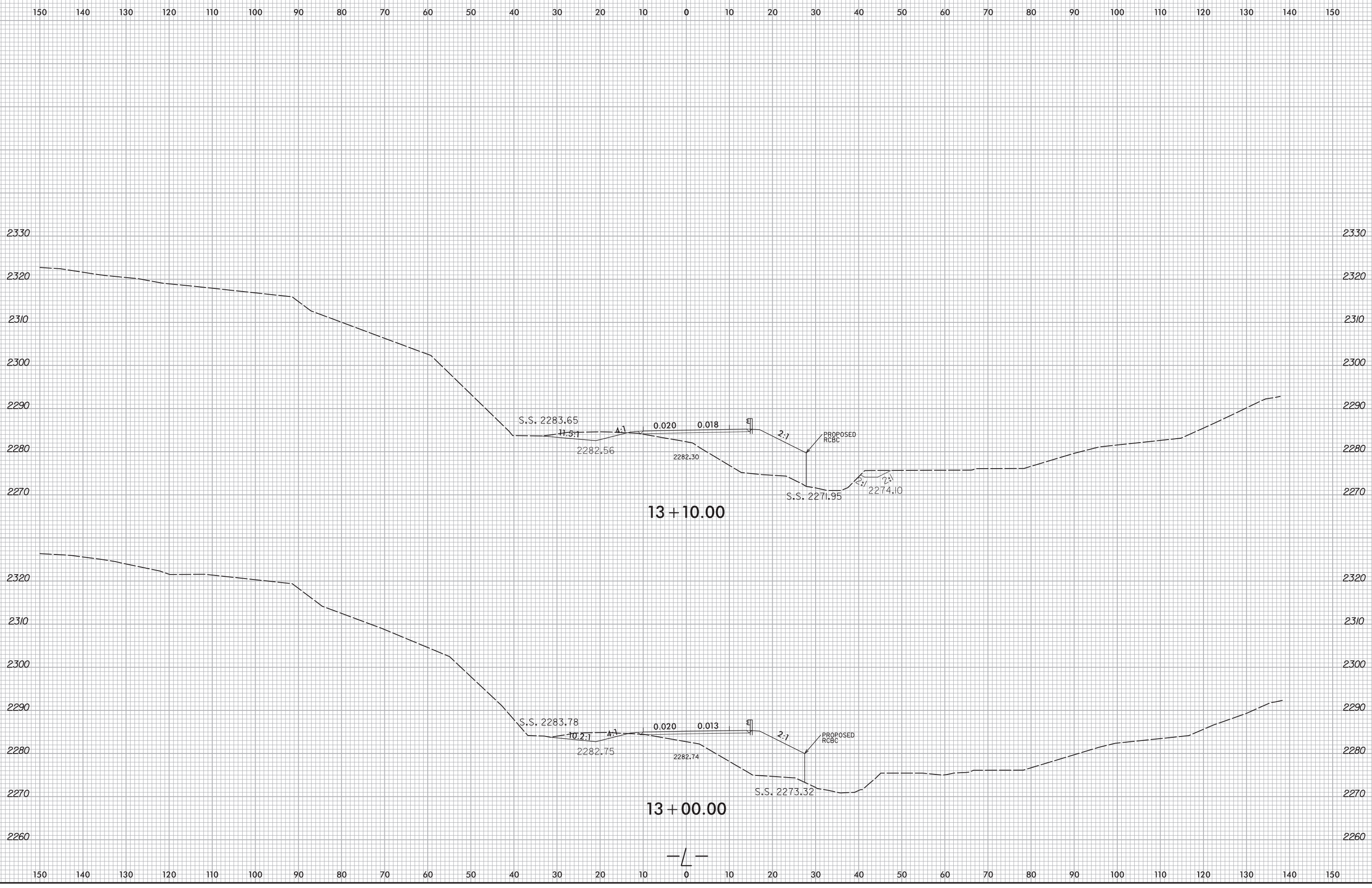
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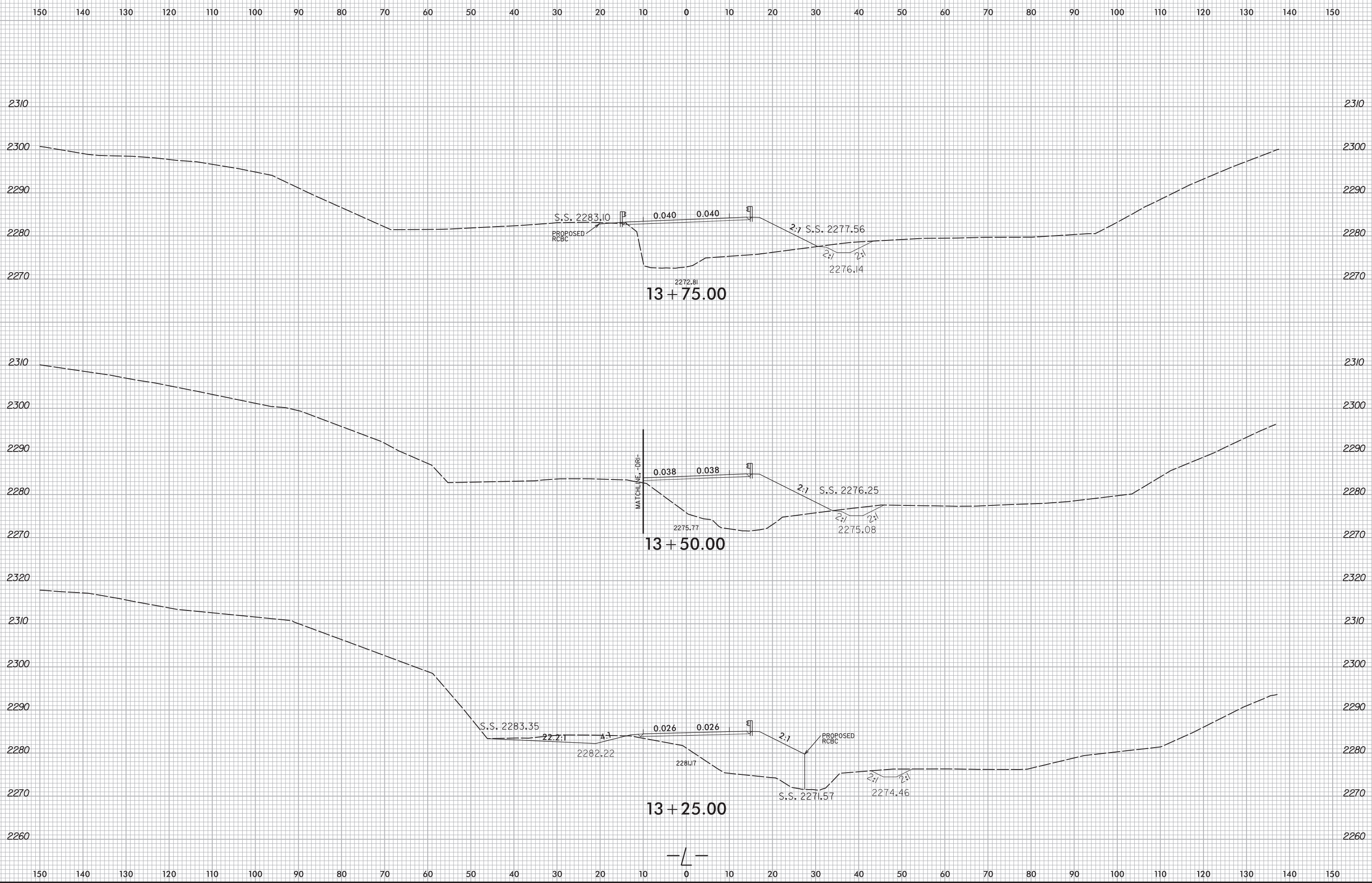
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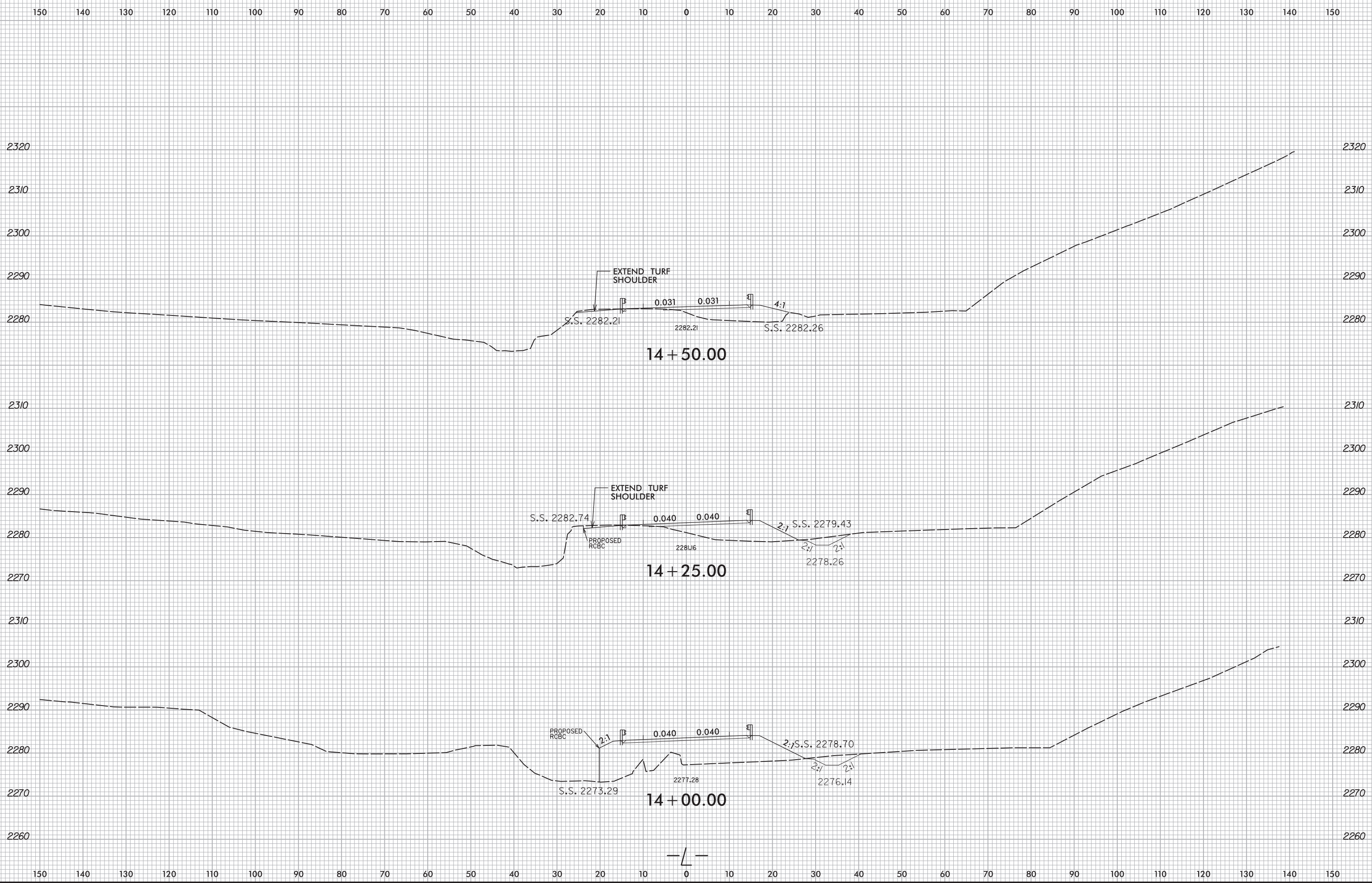
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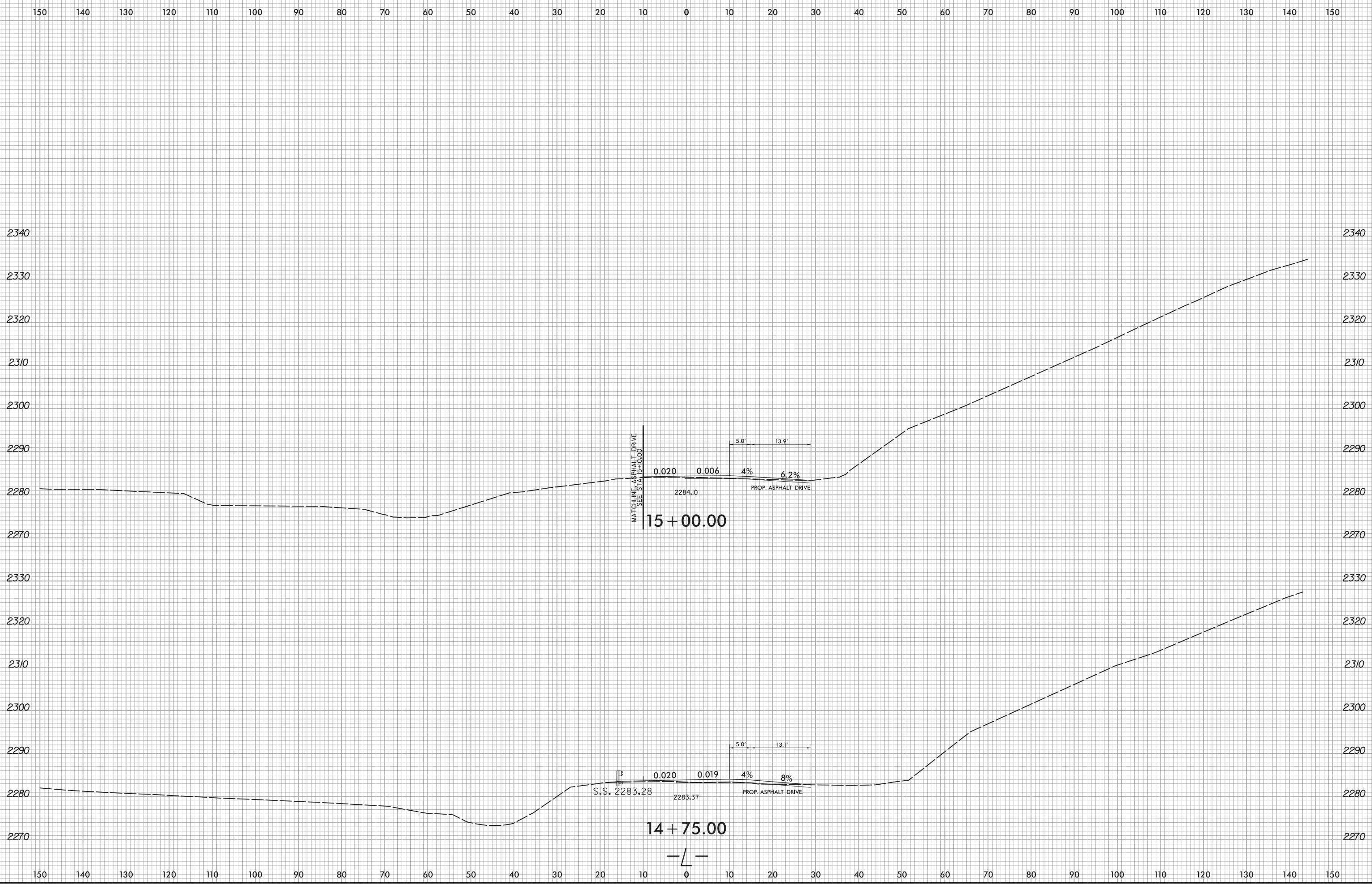
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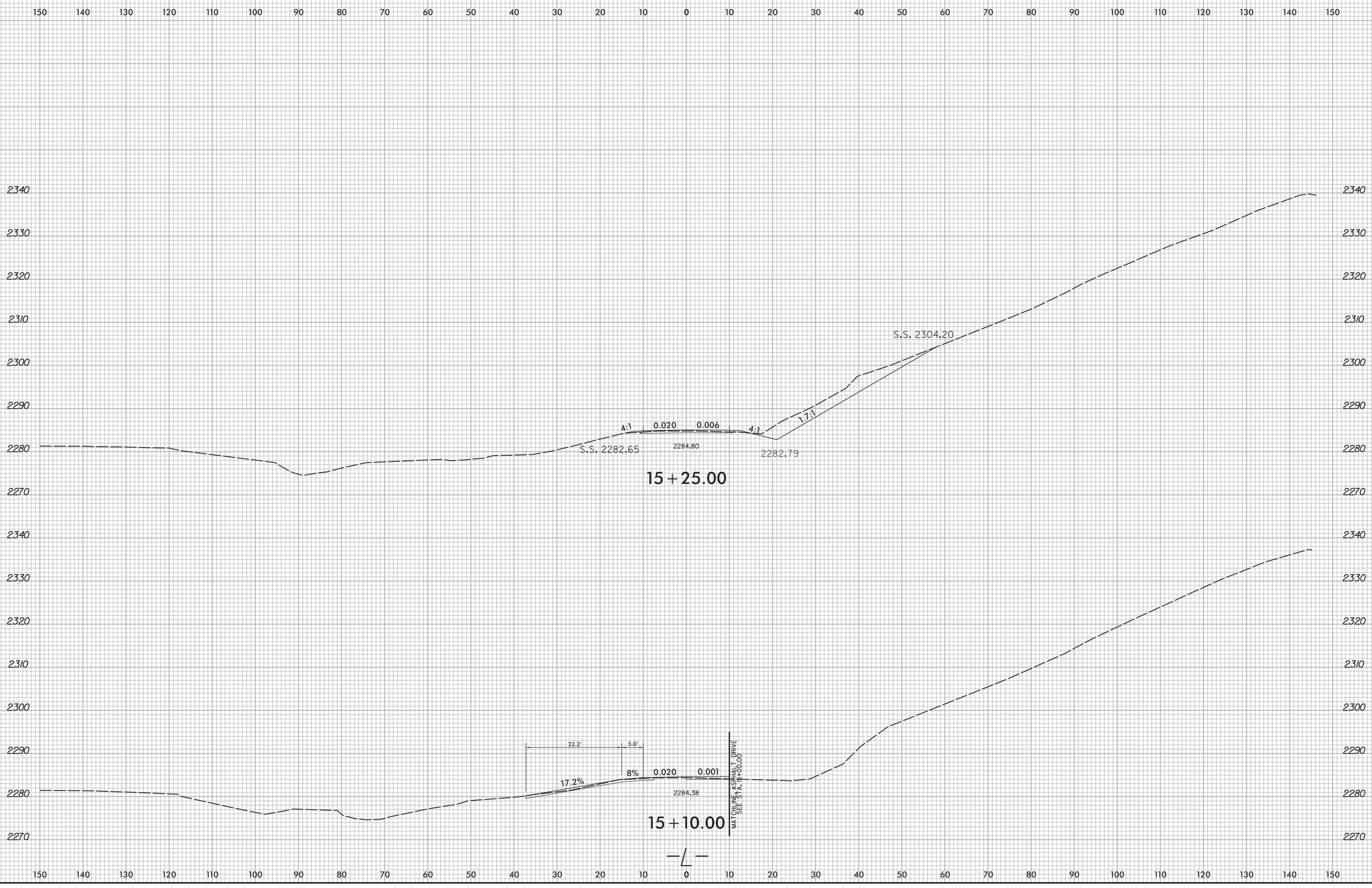
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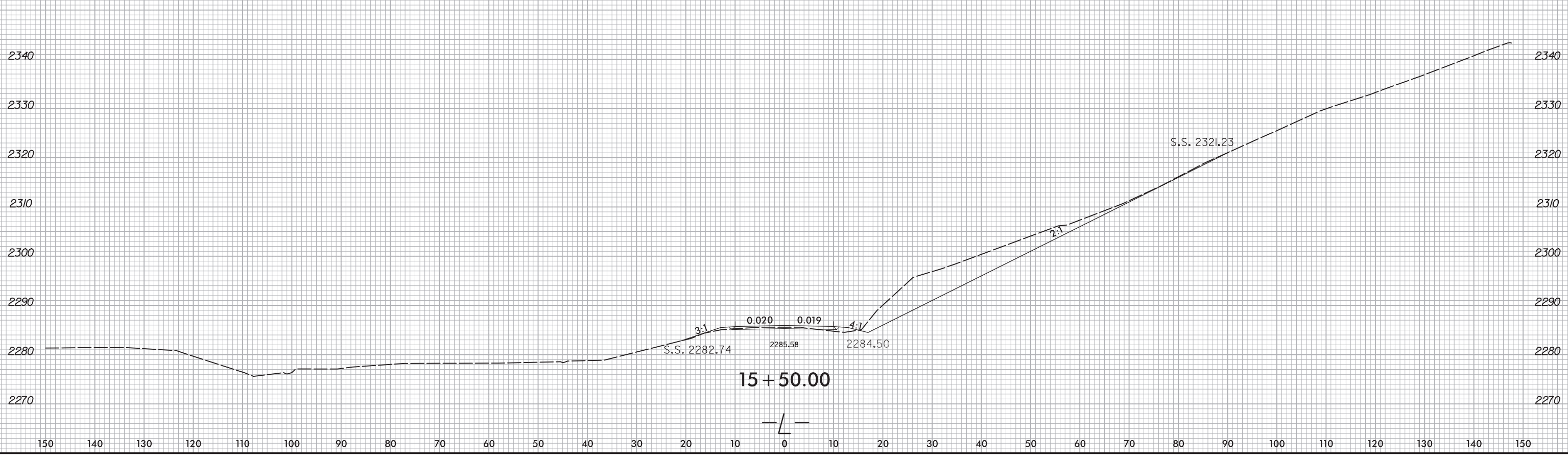
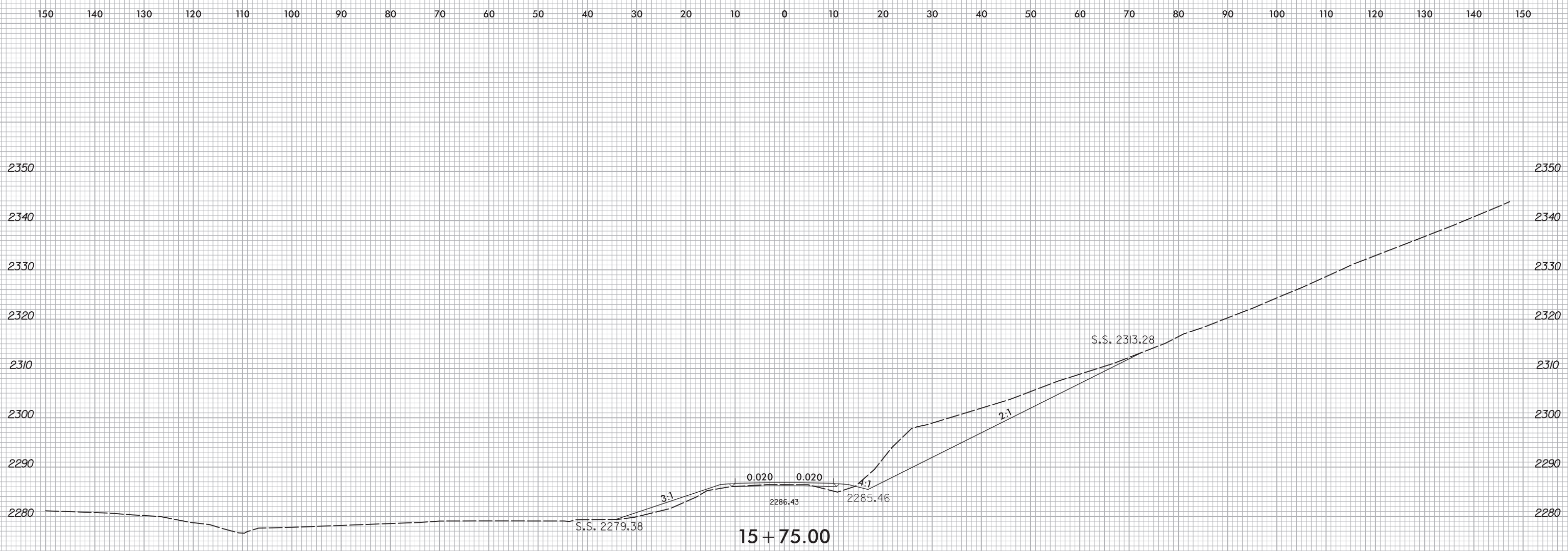
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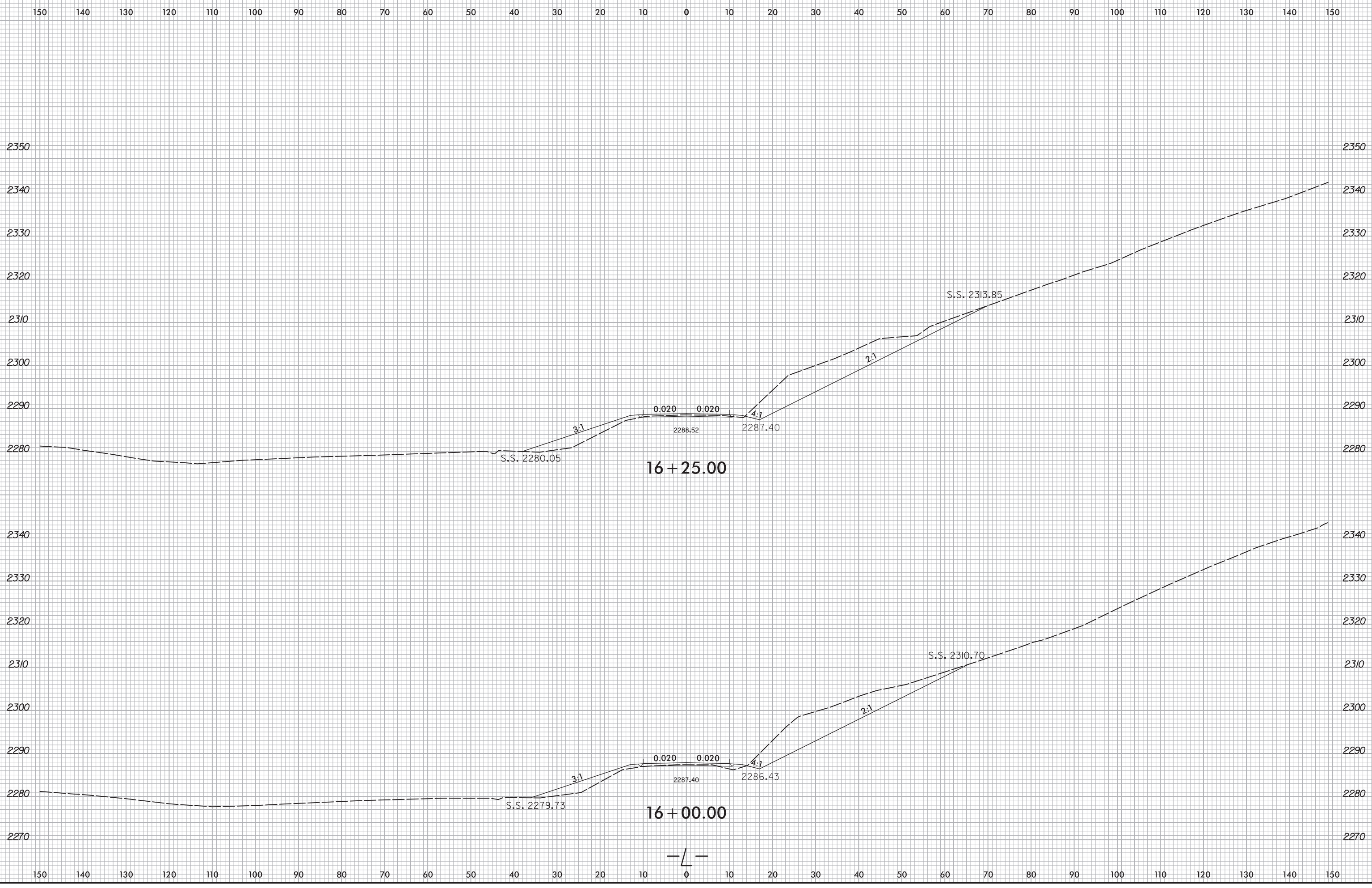
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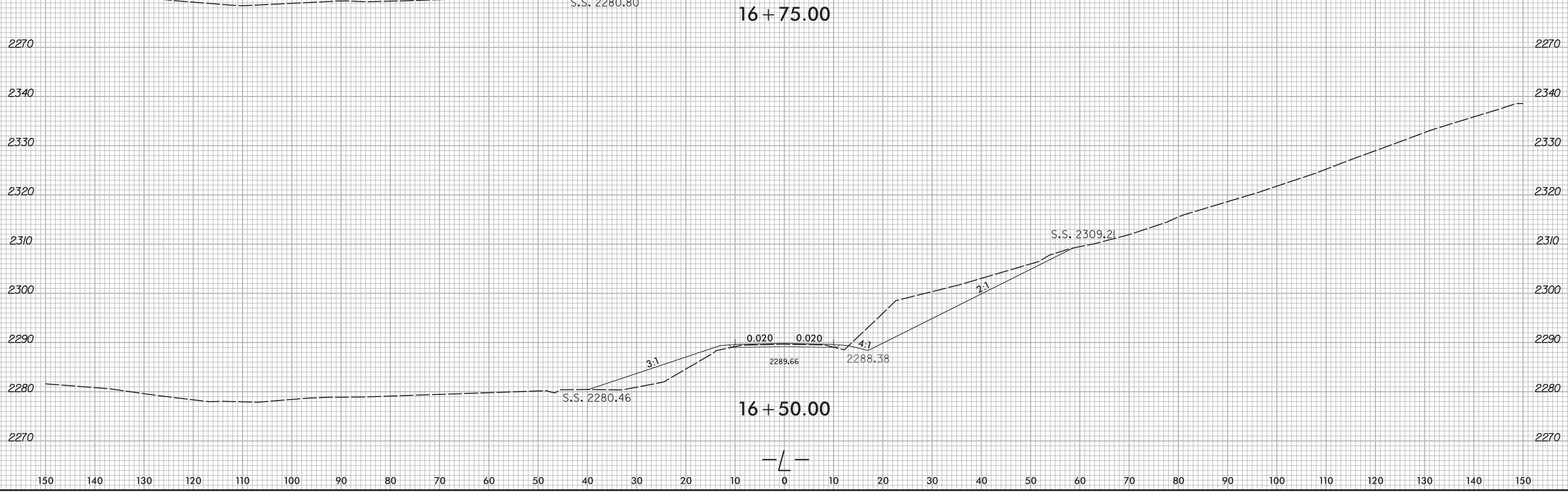
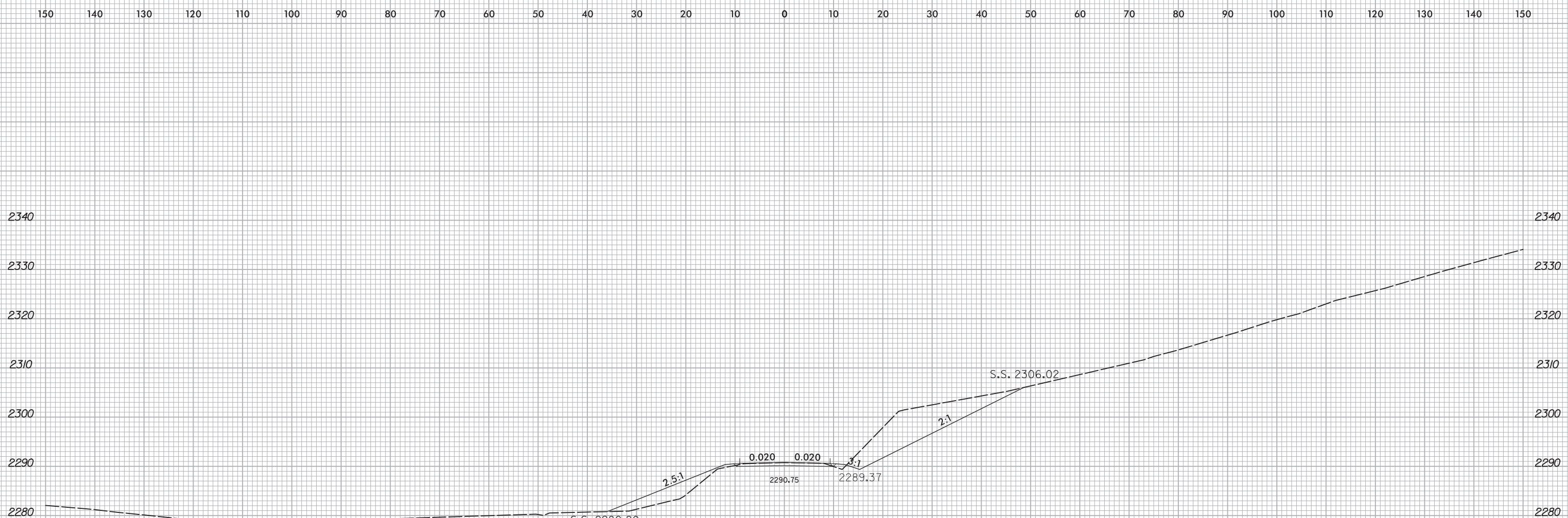
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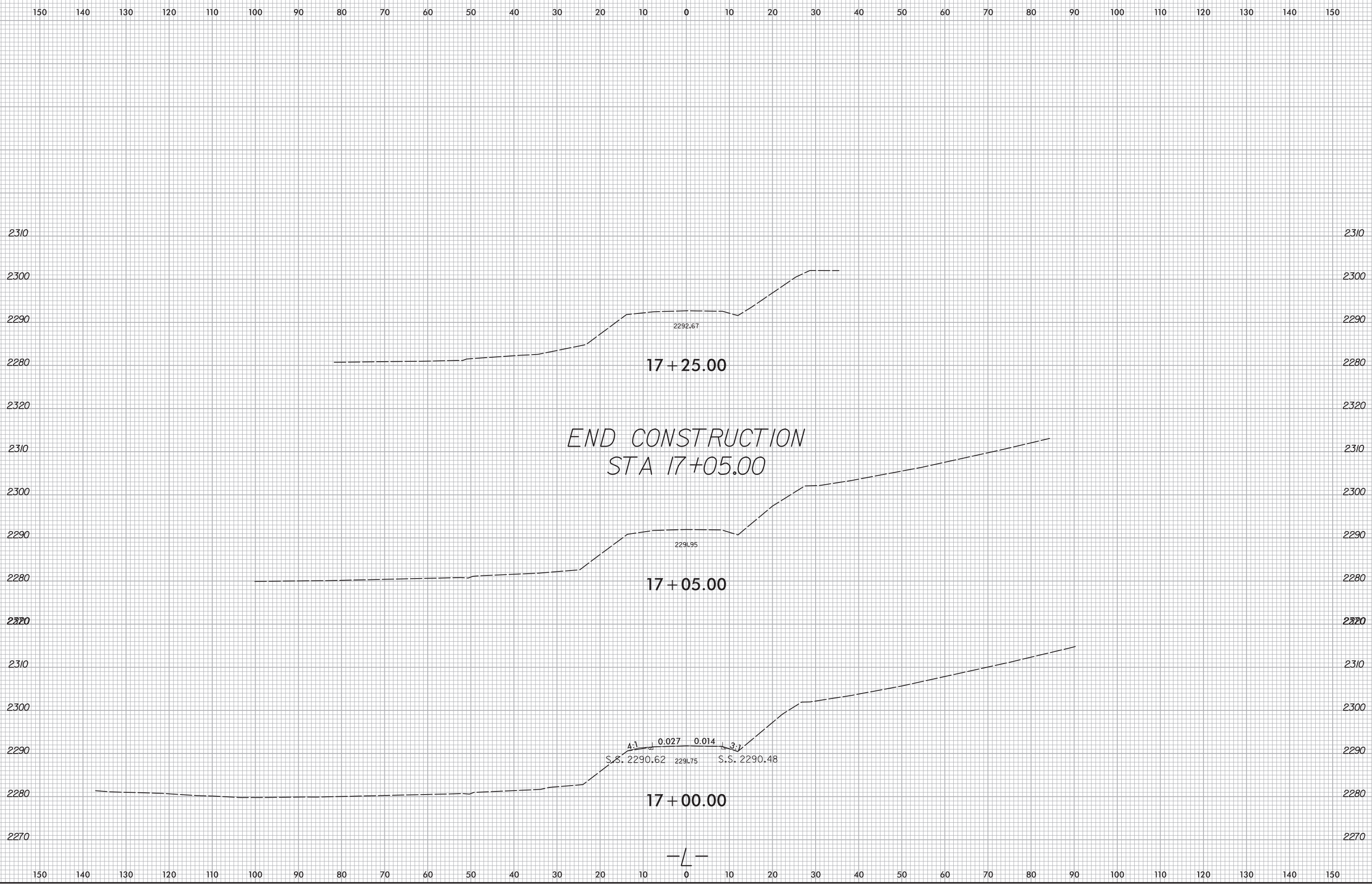
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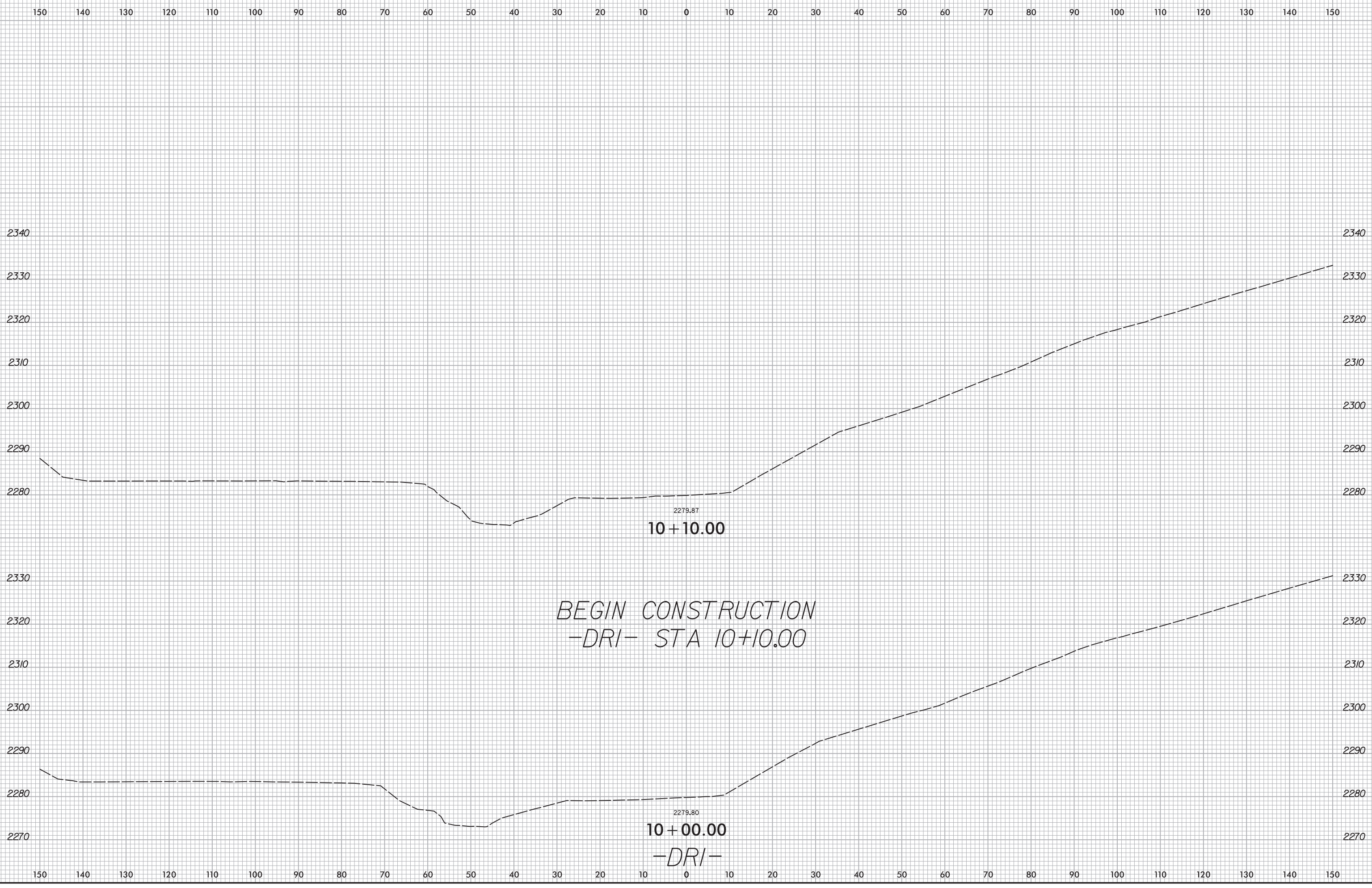
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6/23/16

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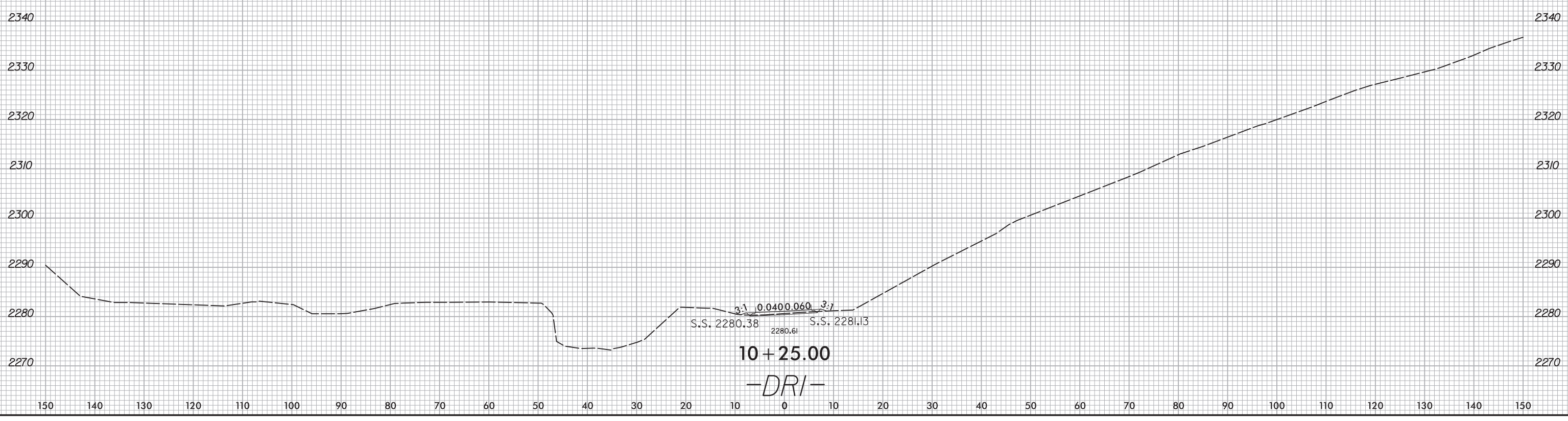
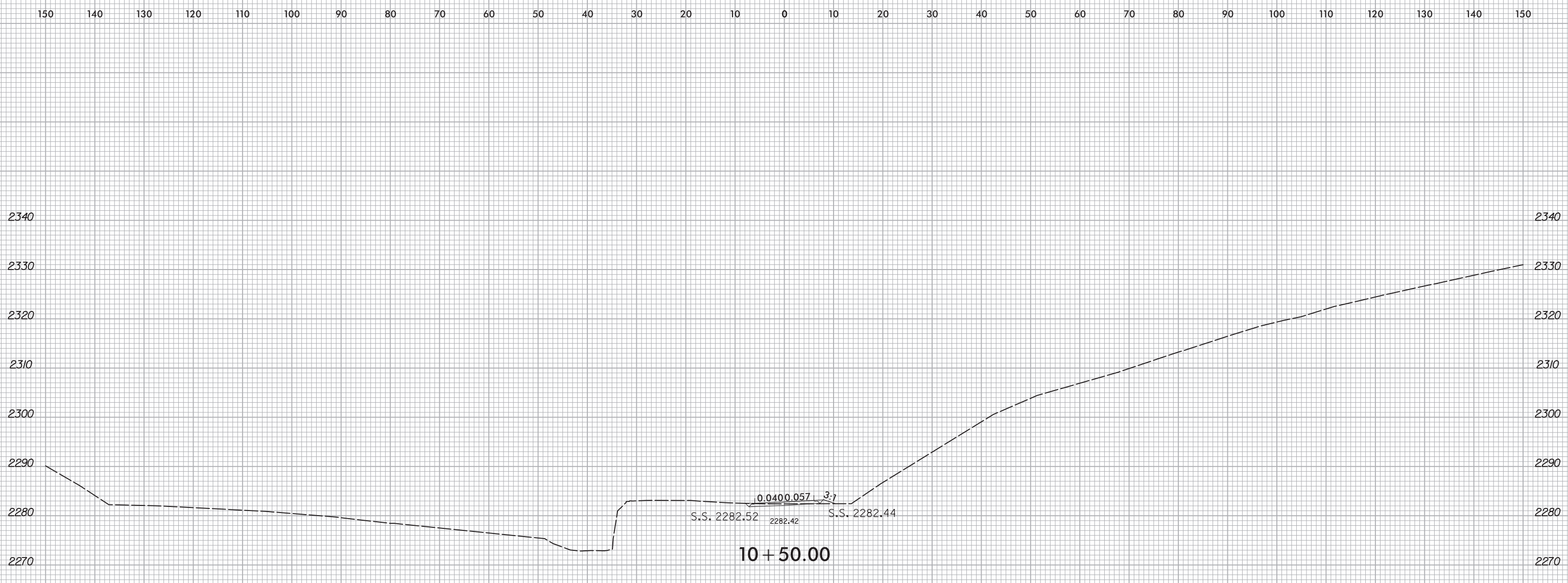
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-DRI- STA 10+10.00*

*10+00.00
-DRI-*

10/9/2023
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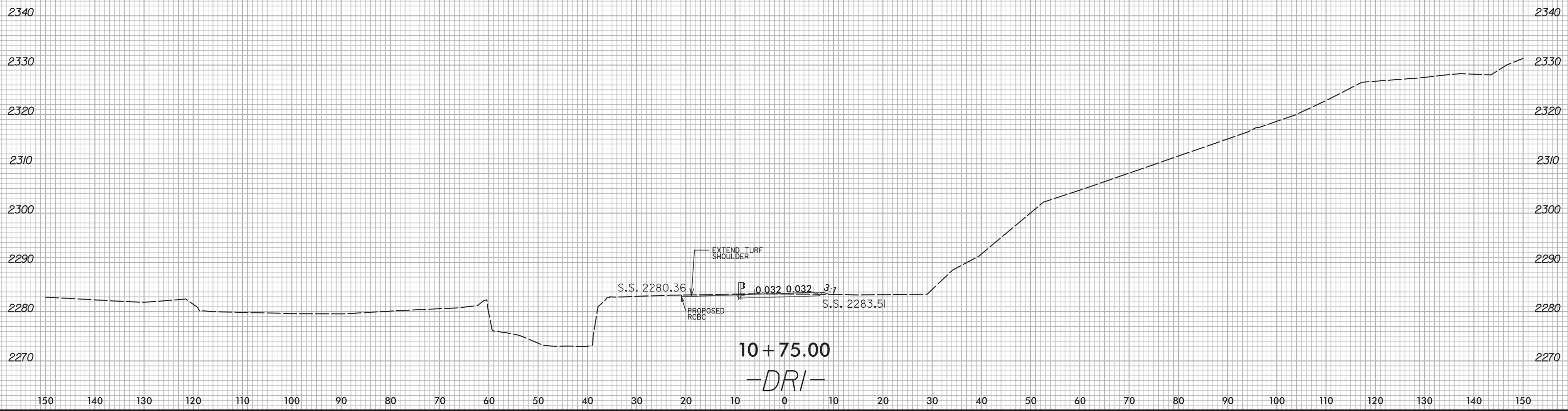
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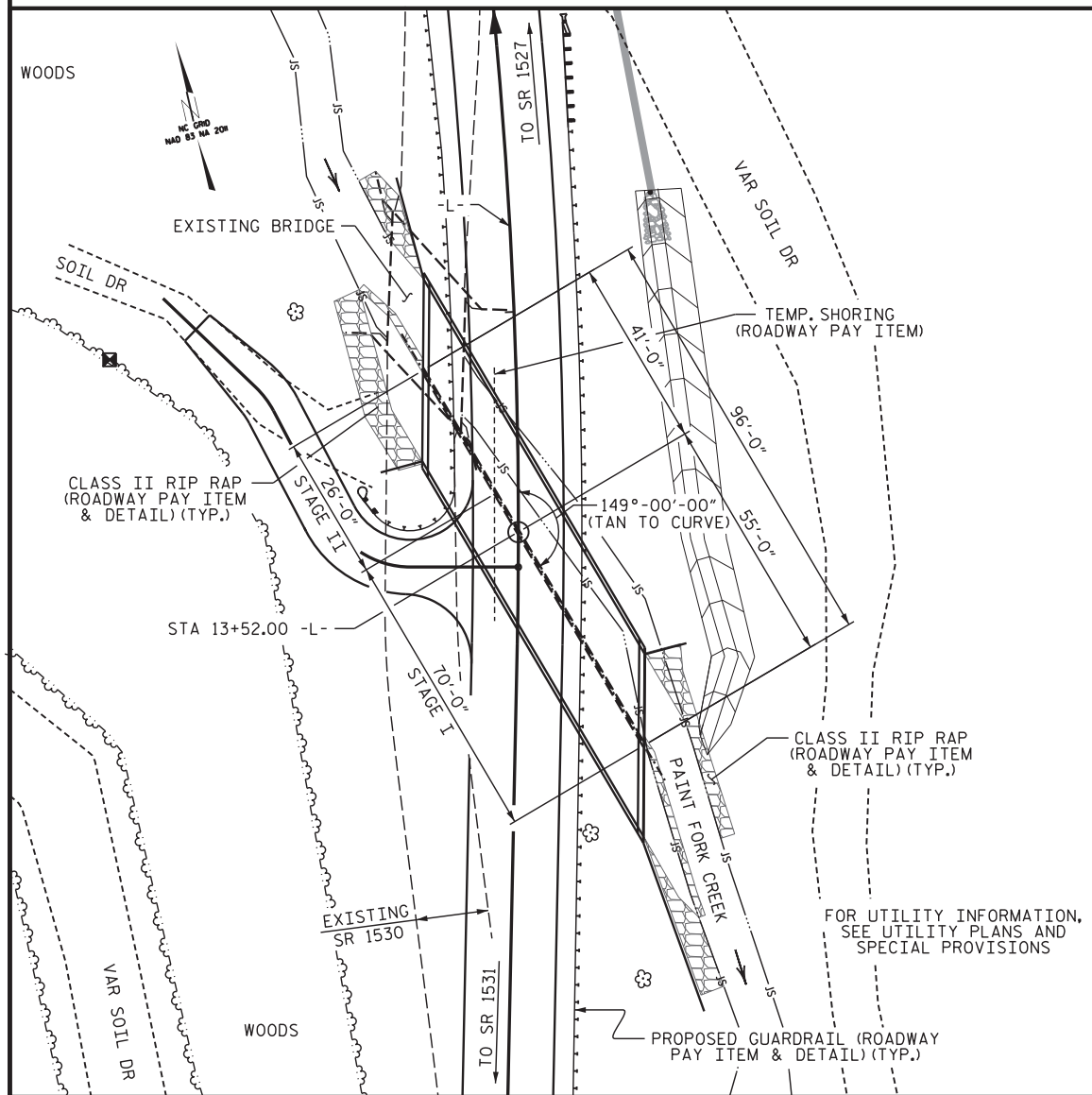
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10/9/2023
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User:zsmelvin

**BENCH MARK #1: RR SPIKE SET IN BASE OF 30" DOUBLE RED OAK;
90' LT OF STA. 13+92.48 -L-; ELEV. 2286.19**



LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES	
CLASS A CONCRETE	
STAGE I	214.6 C.Y.
STAGE II	94.1 C.Y.
TOTAL	308.7 C.Y.
REINFORCING STEEL	
STAGE I	25,632 LBS.
STAGE II	11,715 LBS.
TOTAL	37,347 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	
STAGE I	129 TONS
STAGE II	48 TONS
TOTAL	177 TONS
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
ASBESTOS ASSESSMENT	LUMP SUM

ROADWAY DATA

GRADE POINT ELEV. @ STA. 13+52.00 -L- = 2484.22'
BED ELEV. @ STA. 13+52.00 -L- = 2271.60'
ROADWAY SLOPES = 2:1

HYDRAULIC DATA

DESIGN DISCHARGE = 900 CFS
FREQUENCY OF DESIGN FLOOD = 25 YRS
DESIGN HIGH WATER ELEVATION = 2278.6'
DRAINAGE AREA = 3.09 SQ. MI.
BASE DISCHARGE (Q100) = 1590 CFS
BASE HIGH WATER ELEVATION = 2282.8'

OVERTOPPING FLOOD DATA

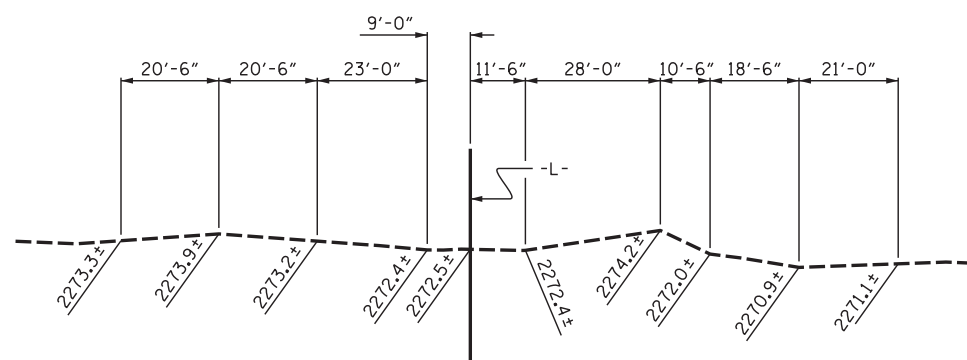
OVERTOPPING DISCHARGE = 1800 CFS
FREQUENCY OF OVERTOPPING FLOOD = 500 YRS
OVERTOPPING FLOOD ELEVATION = 2284.02' *

* OVERTOPPING OCCURS AT STA. 14+22.75 -L-, 14' RT

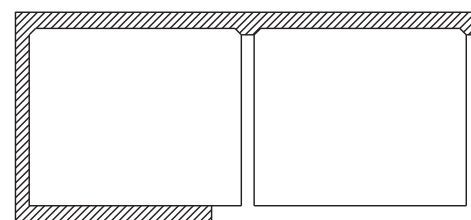
WS ELEV. TAKEN AT RIVER STATION 23853

NOTES:

- ASSUMED LIVE LOAD ----- HL-93 LOADING.
- DESIGN FILL ----- MIN: 0.9' MAX: 5.08'
- FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTES SHEET.
- 3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN STAGE I AND STAGE II TO BE POURED IN THE FOLLOWING ORDER:
 1. PHASE I WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
 2. THE REMAINING PORTIONS OF PHASE I WALLS AND PHASE I WINGS FULL HEIGHT.
 3. PHASE II WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
 4. THE REMAINING PORTIONS OF PHASE II WALLS AND PHASE II WINGS FULL HEIGHT.
 5. ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.
- EXCAVATE 1 FOOT BELOW CULVERT AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414 OF THE STANDARD SPECIFICATIONS. FOUNDATION CONDITIONING MATERIAL SHOULD CONSIST OF SELECT MATERIAL CLASS V OR VI FOR CULVERTS.
- IF REQUIRED, UNDERCUT LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS. FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.
- FOR LIMITS OF TEMPORARY SHORING, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING, SEE ROADWAY PLANS.
- AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 1 @ 32'; 16' CLEAR ROADWAY WIDTH AND TIMBER FLOOR ON I-BEAMS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+52.00".



PROFILE ALONG CULVERT



CONSTRUCTION PHASING

(LOOKING DOWNSTREAM)

- PHASE I CONSTRUCTION
- PHASE II CONSTRUCTION

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

PROJECT NO. BP13.R019
MADISON COUNTY
STATION: 13+52.00 -L-

SHEET 1 OF 14 REPLACES BRIDGE 560023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**DOUBLE 10 FT. X 8 FT.
CONCRETE BOX CULVERT
149° SKEW**

DRAWN BY : STM DATE : 12/22
CHECKED BY : MGC DATE : 06/23
DESIGN ENGINEER OF RECORD: STM DATE : 02/23

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

SHEET NO.	C-1
TOTAL SHEETS	14

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER		
						MOMENT				SHEAR						
						LIVE-LOAD FACTORS (γ _{LL})	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.25	--	1.75	1.25	1	TOP SLAB	5.00	1.32	1	BOTTOM SLAB	10.00		
	HL-93 (OPERATING)	N/A		1.62	--	1.35	1.62	1	TOP SLAB	5.00	1.71	1	BOTTOM SLAB	10.00		
	HS-20 (INVENTORY)	36.000	②	1.25	45.00	1.75	1.25	1	TOP SLAB	5.00	1.32	1	BOTTOM SLAB	10.00		
	HS-20 (OPERATING)	36.000		1.62	58.32	1.35	1.62	1	TOP SLAB	5.00	1.71	1	BOTTOM SLAB	10.00		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.41	32.54	1.40	2.41	1	TOP SLAB	5.00	3.46	1	TOP SLAB	0.00	
		SNGARBS2	20.000		2.25	45.00	1.40	2.25	1	TOP SLAB	5.00	2.72	1	BOTTOM SLAB	10.00	
		SNAGRIS2	22.000		2.41	53.02	1.40	2.41	1	TOP SLAB	5.00	2.41	1	BOTTOM SLAB	10.00	
		SNCOTTS3	27.250		1.56	42.51	1.40	1.56	1	TOP SLAB	5.00	1.73	1	TOP SLAB	0.00	
		SNAGGRS4	34.925		1.52	53.09	1.40	1.57	1	BOTTOM SLAB	10.00	1.52	1	BOTTOM SLAB	10.00	
		SNS5A	35.550		1.66	59.01	1.40	1.70	1	BOTTOM SLAB	5.00	1.66	1	BOTTOM SLAB	10.00	
		SNS6A	39.950		1.56	62.32	1.40	1.63	1	BOTTOM SLAB	10.00	1.56	1	BOTTOM SLAB	10.00	
	TRUCK TRACTOR SEMI-TRAILER (TTS1)	TNAGRIT3	33.000		1.62	53.46	1.40	1.72	1	BOTTOM SLAB	10.00	1.62	1	BOTTOM SLAB	10.00	
		TNT4A	33.075		1.86	61.52	1.40	1.86	1	TOP SLAB	5.00	1.95	1	BOTTOM SLAB	10.00	
		TNT6A	41.600		1.65	68.64	1.40	1.71	1	BOTTOM SLAB	10.00	1.65	1	BOTTOM SLAB	10.00	
		TNT7A	42.000		1.60	67.20	1.40	1.67	1	BOTTOM SLAB	10.00	1.60	1	BOTTOM SLAB	10.00	
		TNT7B	42.000		1.75	73.50	1.40	1.80	1	BOTTOM SLAB	10.00	1.75	1	BOTTOM SLAB	10.00	
		TNAGRIT4	43.000		1.64	70.52	1.40	1.72	1	BOTTOM SLAB	10.00	1.64	1	BOTTOM SLAB	10.00	
		TNAGT5A	45.000		1.55	69.75	1.40	1.62	1	BOTTOM SLAB	10.00	1.55	1	BOTTOM SLAB	10.00	
TNAGT5B	45.000		③	1.26	56.70	1.40	1.33	1	BOTTOM SLAB	10.00	1.26	1	BOTTOM SLAB	10.00		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.70	48.88	1.30	1.70	1	TOP SLAB	5.00	1.97	1	BOTTOM SLAB	10.00		
	EV3	43.000	④	1.36	58.48	1.30	1.36	1	TOP SLAB	5.00	1.39	1	TOP SLAB	0.00		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

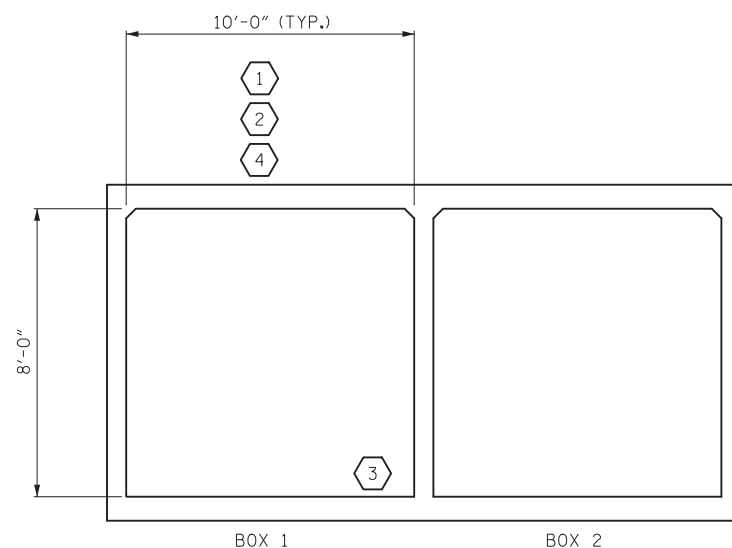
NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

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	

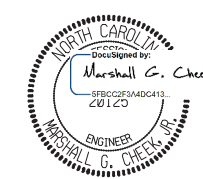


LRFR SUMMARY

LOOKING UPSTREAM

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-

SHEET 2 OF 14

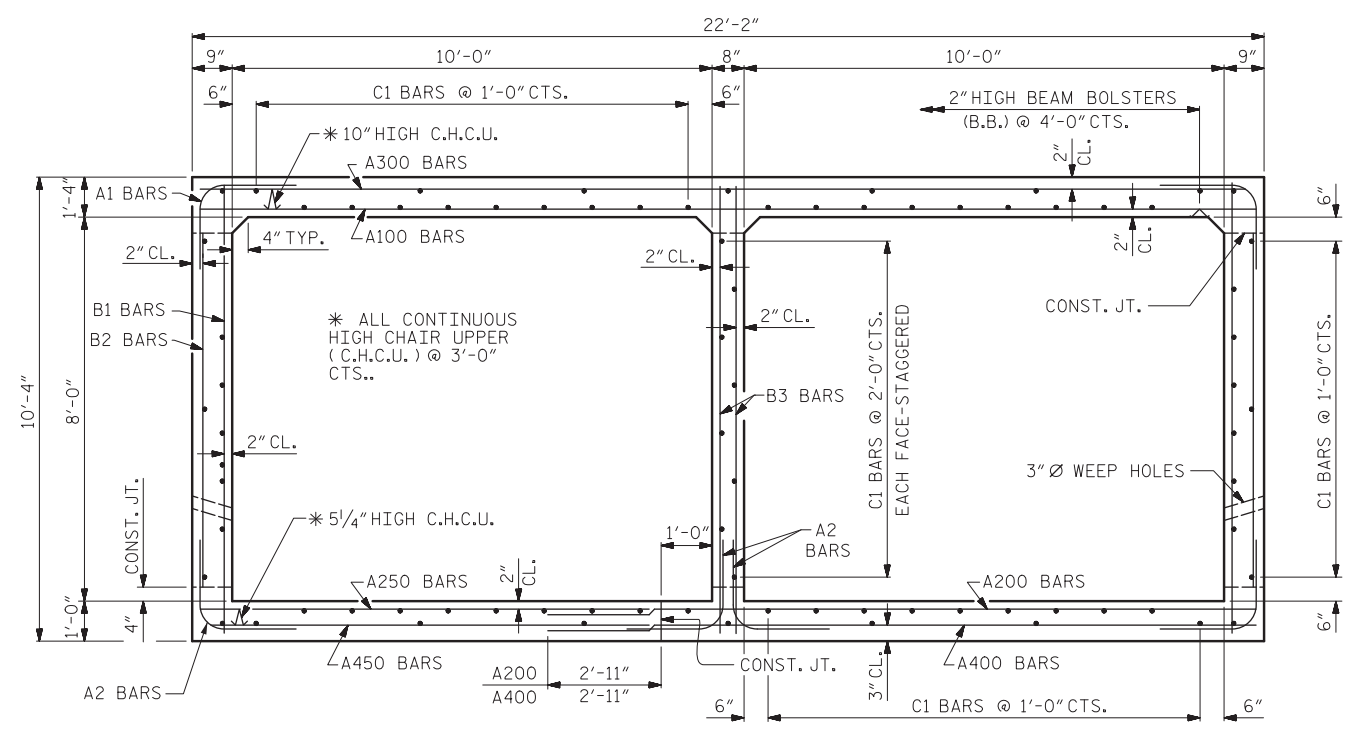


11/28/2023

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 REINFORCED CONCRETE
 BOX CULVERTS
 (NON-INTERSTATE TRAFFIC)

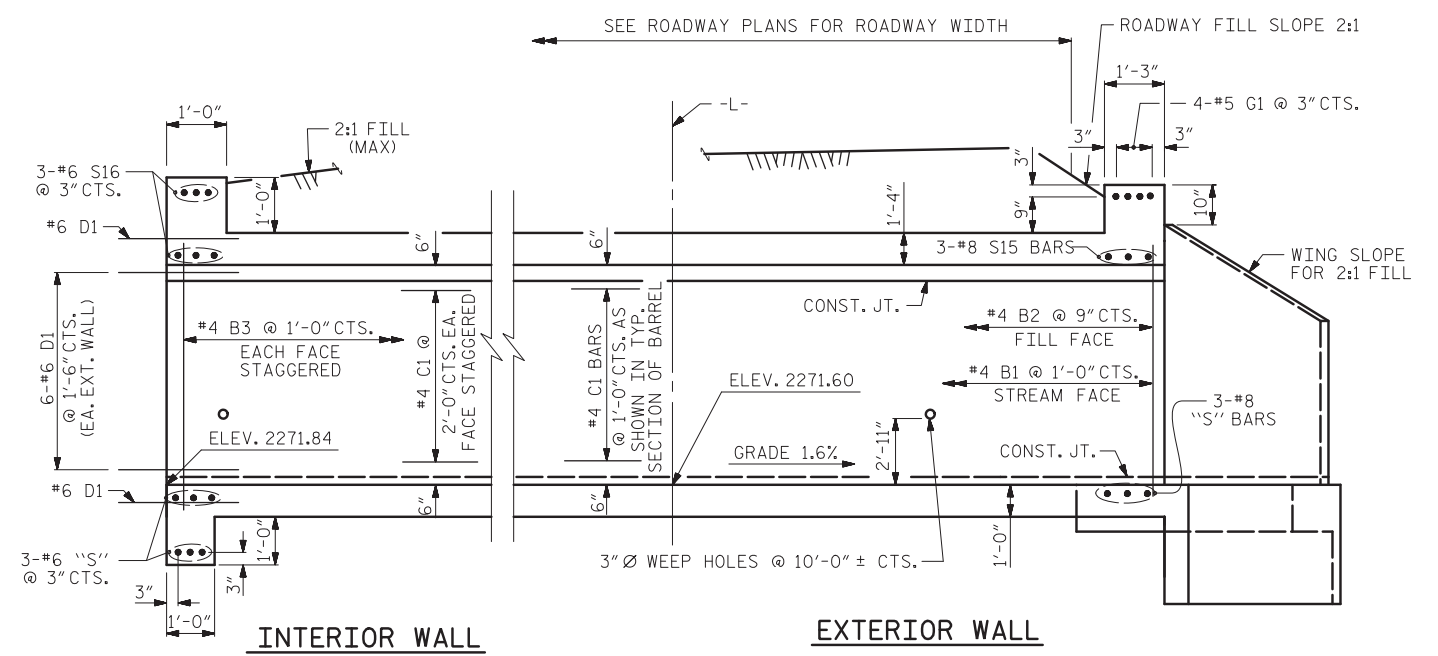
ASSEMBLED BY : STM	DATE : 07/23
CHECKED BY : MGC	DATE : 07/23
DRAWN BY : WMC	7/II
CHECKED BY : GM	7/II
REV. 10/1/II	MAA/GM
REV. 12/17	MAA/THC

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NO.	BY:	DATE:	NO.	BY:	DATE:	C-2			
1			3			TOTAL SHEETS			
2			4			14			



RIGHT ANGLE SECTION OF BARREL

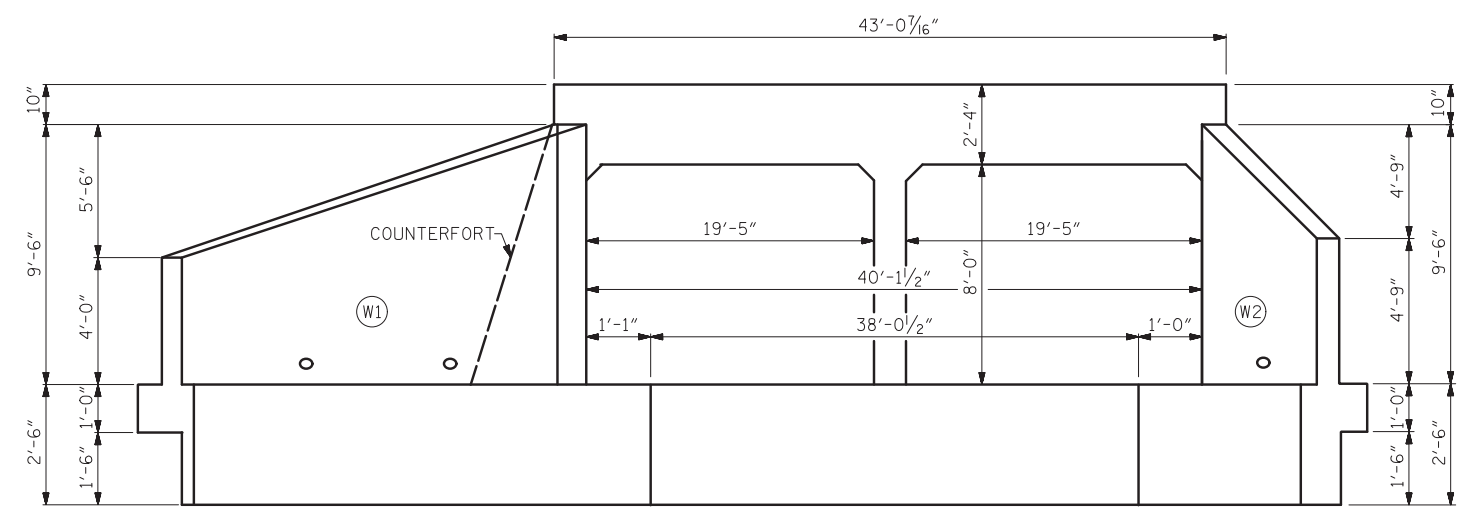
LOOKING DOWNSTREAM
THERE ARE 80 "C" BARS IN SECTION OF BARREL.



INTERIOR WALL

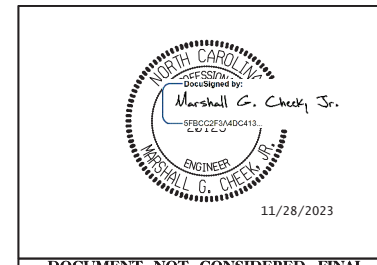
EXTERIOR WALL

CULVERT SECTION NORMAL TO ROADWAY



OUTLET ELEVATION NORMAL TO SKEW

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-
 SHEET 3 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE I**

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD : STM DATE : 07/23

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

70'-0" (STAGE I)

15'-0"

55'-0"

#6 A255-A260 @ 1'-0" CTS.
(2 BARS PER MARK)
(TOP OF FLOOR SLAB)
#6 A455-A459 @ 9" CTS.
(3 BARS PER MARK)
(BOTT. OF FLOOR SLAB)

#6 A250 BARS @ 1'-0" CTS. (TOP OF FLOOR SLAB)
#6 A450 BARS @ 9" CTS. (BOTTOM OF FLOOR SLAB)

#6 A251-A254 @ 1'-0" CTS.
(2 BARS PER MARK)
(TOP OF FLOOR SLAB)
#6 A451-A454 @ 9" CTS.
(3 BARS PER MARK)
(BOTT. OF FLOOR SLAB)

#4 B1 BARS @ 1'-0" CTS. (STREAM FACE)
#4 B2 BARS @ 9" CTS. (FILL FACE)
#4 A2 @ 9" CTS. CORNER BARS EACH
EXTERIOR WALL (SEE BARREL SECTION)

7-#5 A421 (BOTT. OF FLOOR SLAB)
& 7-#5 A221 (TOP OF FLOOR SLAB)
(SPLAY AT EQUAL SPACES)

3-#6 S14 @ 3" CTS.
(TOP OF FLOOR SLAB AND
BOTTOM OF EDGE BEAM)

149°-00'-00"
(TAN TO CURVE)

3-#8 S12 @ 5" CTS.
(TOP OF FLOOR SLAB)

40'-1/2"
(INSIDE FACES OF EXTERIOR WALLS)

149°-00'-00"
(TYP.)

PHASE I
PHASE II

3-#6 S13 @ 3" CTS.
(TOP OF FLOOR SLAB AND
BOTTOM OF EDGE BEAM)

STA. 13+52.00 -L-

#4 C1 @ 1'-0" CTS.
TOP OF FLOOR SLAB
EA. BARREL
(2 BAR RUNS)

#4 B3 & #4 A2 @ 1'-0" CTS.
STAGGERED EA. FACE

3-#8 S11 @ 5" CTS.
(TOP OF FLOOR SLAB)

7-#5 A421 (BOTT. OF FLOOR SLAB)
& 7-#5 A221 (TOP OF FLOOR SLAB)
(SPLAY AT EQUAL SPACES)

#6 A208-A213 @ 1'-0" CTS.
(3 BARS PER MARK)
(TOP OF FLOOR SLAB)
#6 A401-A408 @ 9" CTS.
(3 BARS PER MARK)
(BOTT. OF FLOOR SLAB)

#6 A200 BARS @ 1'-0" CTS. (TOP OF FLOOR SLAB)
#6 A400 BARS @ 9" CTS. (BOTTOM OF FLOOR SLAB)

#6 A201-A207 @ 1'-0" CTS.
(3 BARS PER MARK)
(TOP OF FLOOR SLAB)
#6 A401-A409 @ 9" CTS.
(3 BARS PER MARK)
(BOTT. OF FLOOR SLAB)

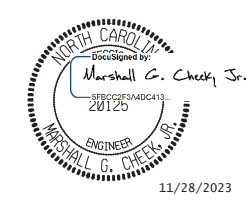
PROJECT NO. BP13.R019
MADISON COUNTY
STATION: 13+52.00 -L-

SHEET 4 OF 14

PLAN OF FLOOR SLAB

STAGE I

FOR S1 BARS IN FLOOR SLAB AND WING FOOTINGS, AND 'S' BARS IN COUNTERFORT, SEE WING SHEETS.

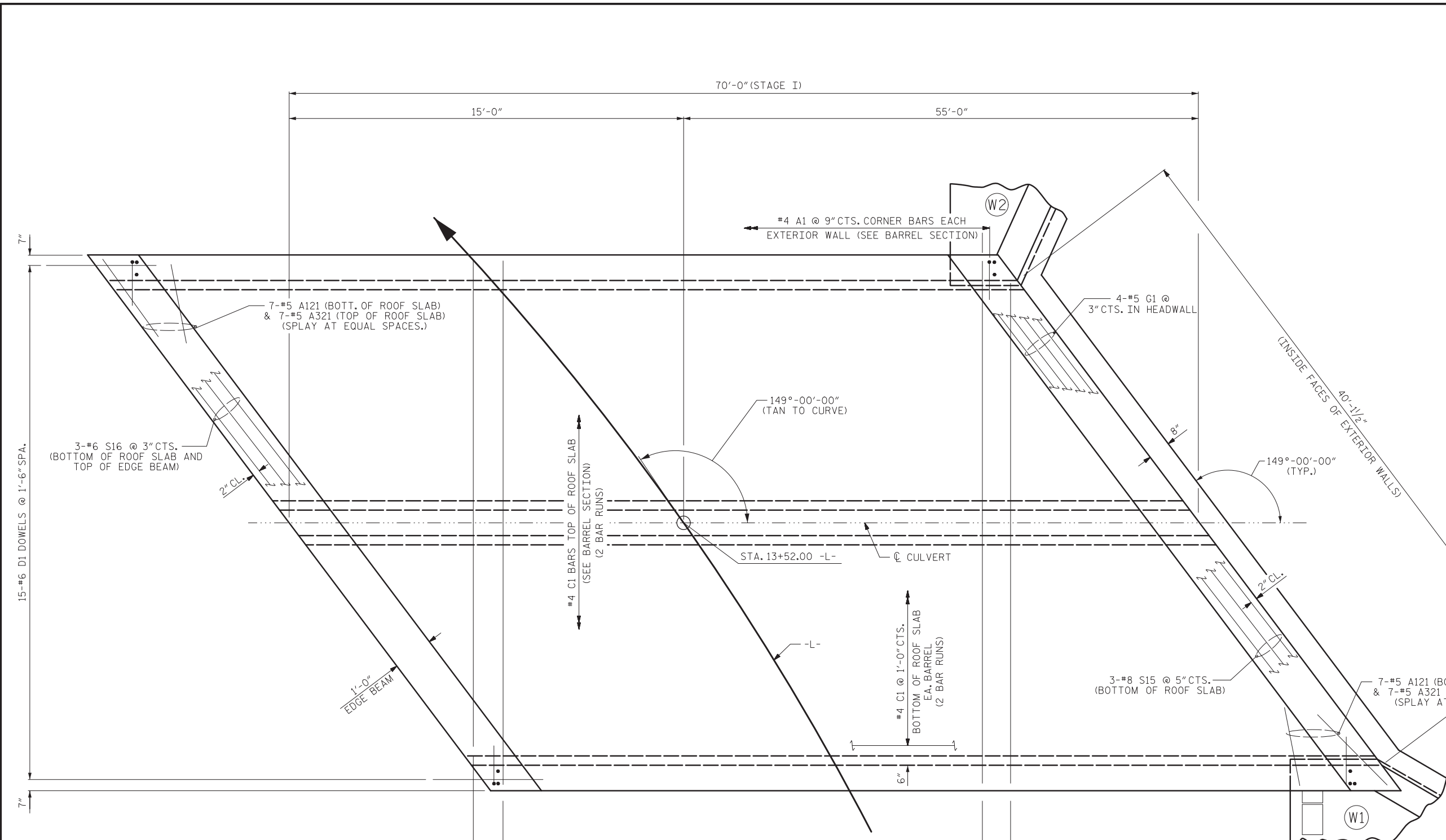


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**DOUBLE 10 FT. X 8 FT.
CONCRETE BOX CULVERT
149° SKEW
STAGE I**

DRAWN BY : STM DATE : 01/23
CHECKED BY : MGC DATE : 06/23
DESIGN ENGINEER OF RECORD: STM DATE : 03/23

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

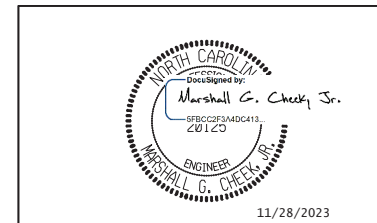
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			14



PLAN OF ROOF SLAB
STAGE I

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-

SHEET 5 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE I**

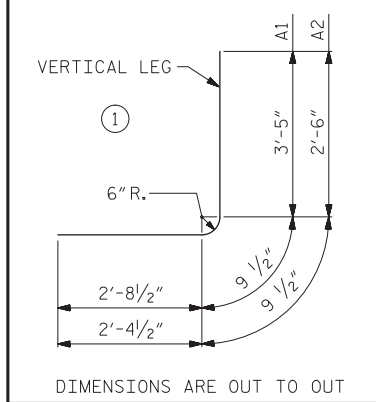
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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:	C-5
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD: STM DATE : 07/23

BAR TYPE



SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
A200	#6	2'-9"
A400	#6	2'-9"
"B"	#4	1'-10"
C1	#4	1'-10"
"S"	#6	2'-9"
"S"	#8	3'-8"

STAGE I BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	186	#4	1	6'-11"	859	A300	45	#7	STR	21'-10"	2008
A2	326	#4	1	5'-8"	1234	A301	6	#7	STR	20'-6"	251
						A302	6	#7	STR	19'-2"	235
A100	34	#6	STR	21'-10"	1115	A303	6	#7	STR	17'-10"	219
A101	6	#6	STR	20'-0"	180	A304	6	#7	STR	16'-6"	202
A102	6	#6	STR	18'-2"	164	A305	6	#7	STR	15'-1"	185
A103	6	#6	STR	16'-5"	148	A306	6	#7	STR	13'-9"	169
A104	6	#6	STR	14'-7"	131	A307	6	#7	STR	12'-5"	152
A105	6	#6	STR	12'-9"	115	A308	6	#7	STR	11'-1"	136
A106	6	#6	STR	11'-0"	99	A309	6	#7	STR	9'-8"	119
A107	6	#6	STR	9'-2"	83	A310	6	#7	STR	8'-4"	102
A108	6	#6	STR	7'-5"	67	A311	6	#7	STR	7'-0"	86
A109	6	#6	STR	5'-7"	50	A312	6	#7	STR	5'-8"	69
A110	6	#6	STR	3'-9"	34	A313	6	#7	STR	4'-4"	53
						A314	6	#7	STR	2'-11"	36
A121	14	#5	STR	7'-1"	103						
						A321	14	#5	STR	5'-4"	78
A200	44	#6	STR	15'-2"	1002						
A201	3	#6	STR	14'-1"	63	A400	60	#6	STR	15'-2"	1367
A202	3	#6	STR	12'-2"	55	A401	6	#6	STR	13'-9"	124
A203	3	#6	STR	10'-5"	47	A402	6	#6	STR	12'-5"	112
A204	3	#6	STR	8'-8"	39	A403	6	#6	STR	11'-1"	100
A205	3	#6	STR	6'-10"	31	A404	6	#6	STR	9'-9"	88
A206	3	#6	STR	5'-0"	23	A405	6	#6	STR	8'-4"	75
"B"	#4			1'-10"		A406	6	#6	STR	7'-0"	63
C1	#4			1'-10"		A207	3	#6	STR	3'-3"	15
"S"	#6			2'-9"		A208	3	#6	STR	13'-4"	60
"S"	#8			3'-8"		A209	3	#6	STR	11'-6"	52
						A210	3	#6	STR	9'-9"	44
						A211	3	#6	STR	7'-11"	36
						A212	3	#6	STR	6'-1"	27
						A213	3	#6	STR	4'-4"	20
						A450	72	#6	STR	9'-5"	1018
A221	14	#5	STR	5'-9"	84	A451	3	#6	STR	8'-2"	37
						A452	3	#6	STR	6'-9"	30
A250	54	#6	STR	9'-5"	764	A453	3	#6	STR	5'-5"	24
A251	2	#6	STR	8'-2"	25	A454	3	#6	STR	4'-1"	18
A252	2	#6	STR	7'-0"	21	A455	3	#6	STR	8'-4"	38
A253	2	#6	STR	5'-9"	17	A456	3	#6	STR	7'-0"	32
A254	2	#6	STR	4'-7"	14	A457	3	#6	STR	5'-8"	26
A255	2	#6	STR	8'-7"	26	A458	3	#6	STR	4'-4"	20
A256	2	#6	STR	7'-5"	22	A459	3	#6	STR	3'-0"	14
A257	2	#6	STR	6'-2"	19						
A258	2	#6	STR	5'-0"	15	B1	140	#4	STR	9'-8"	904
A258	2	#6	STR	3'-9"	11	B2	186	#4	STR	7'-6"	932
A260	2	#6	STR	2'-7"	8	B3	140	#4	STR	9'-8"	904
						C1	160	#4	STR	35'-10"	3830
						D1	42	#6	STR	2'-6"	158
						G1	4	#5	STR	42'-4"	177
						S11	3	#8	STR	27'-10"	223
						S12	3	#8	STR	18'-3"	146
						S13	6	#6	STR	26'-11"	243
						S14	6	#6	STR	18'-3"	164
						S15	3	#8	STR	42'-4"	339
						S16	6	#6	STR	42'-4"	382
						REINFORCING STEEL				22,791	LBS.

STAGE I QUANTITIES	
CLASS A CONCRETE	
BARREL @ 2.57 CY/FT	179.9 C.Y.
WINGS, ETC.	31.5 C.Y.
EDGE BEAMS	3.2 C.Y.
TOTAL	214.6 C.Y.
REINFORCING STEEL	
BARREL	22,791 LBS.
WINGS, ETC.	2,841 LBS.
TOTAL	25,632 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	129 TONS

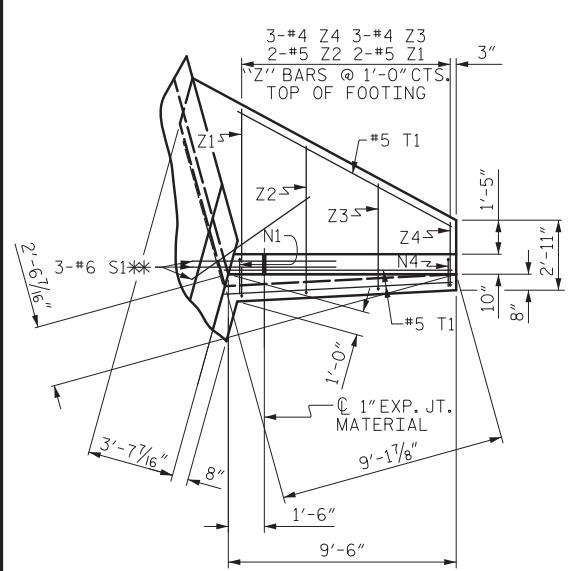
PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-
 SHEET 6 OF 14

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

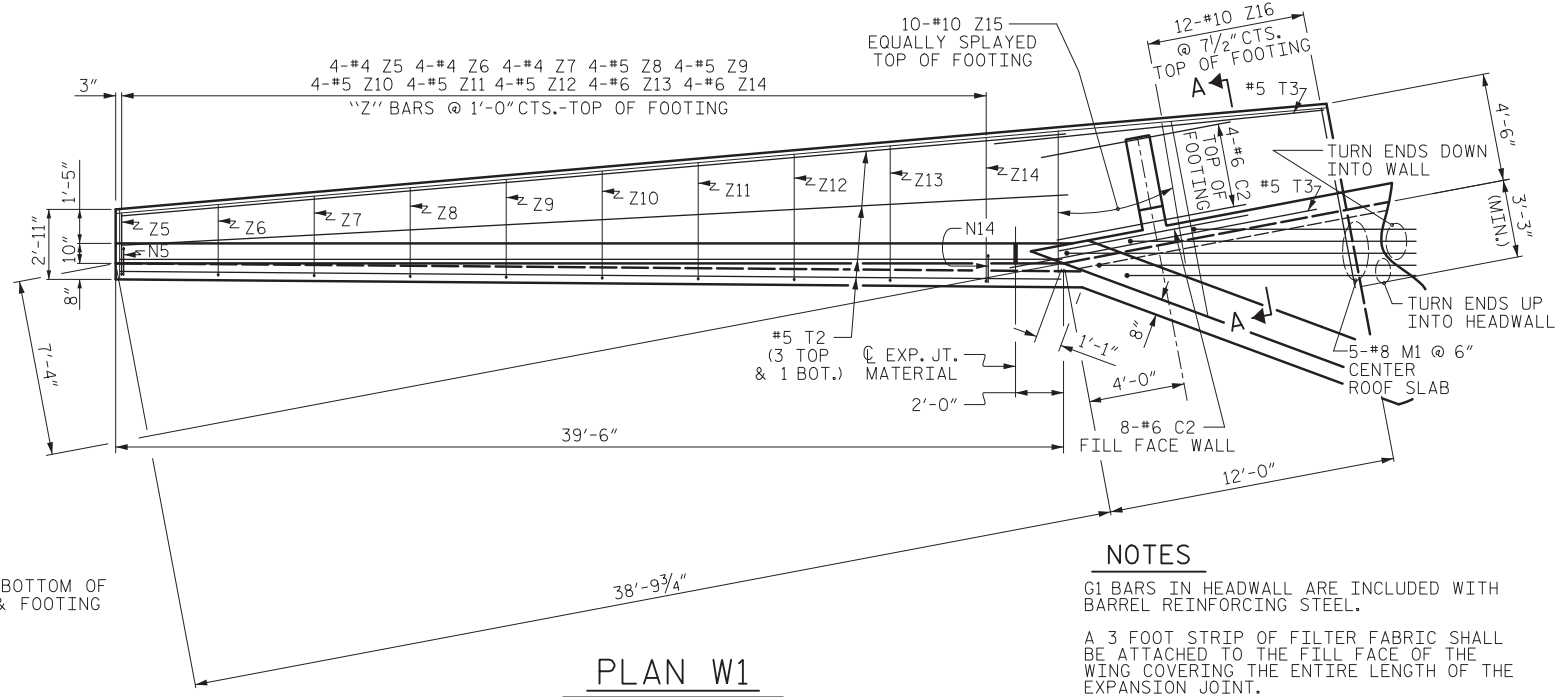
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE I**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6			
1			3			TOTAL SHEETS			
2			4			14			

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD: STM DATE : 07/23



PLAN W2

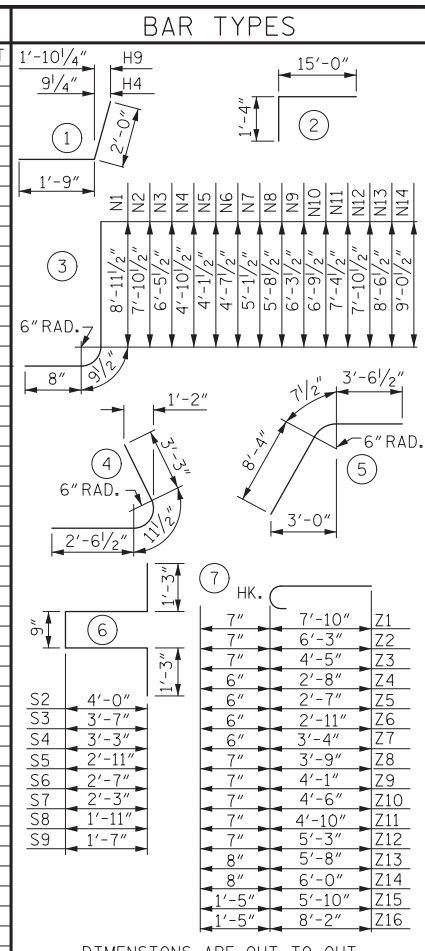


PLAN W1

* CENTER ALL #6 C2 BARS ON C CENTERFORT

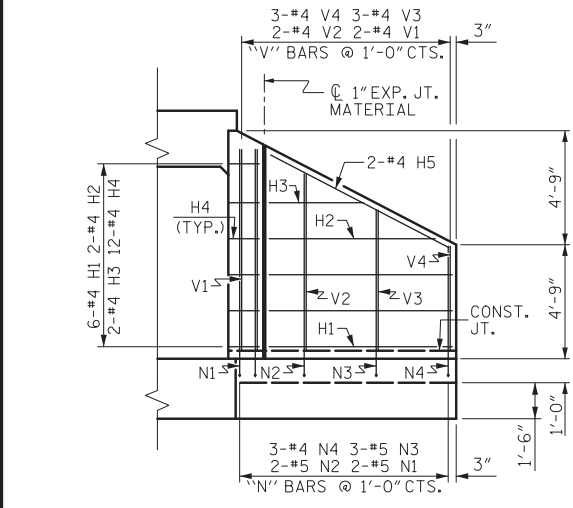
NOTES
 G1 BARS IN HEADWALL ARE INCLUDED WITH BARREL REINFORCING STEEL.
 A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	2	#4	STR	9'-0"	12
C2	12	#6	STR	8'-0"	144
H6	6	#4	STR	37'-1"	149
H7	2	#4	STR	28'-10"	39
H8	2	#4	STR	17'-11"	24
H9	2	#4	STR	7'-1"	9
H10	12	#4	STR	3'-9"	30
H11	2	#4	STR	37'-6"	50
M1	5	#8	2	16'-4"	218
N5	4	#4	3	5'-7"	15
N6	4	#4	3	6'-1"	16
N7	4	#4	3	6'-7"	18
N8	4	#4	3	7'-2"	19
N9	4	#5	3	7'-9"	32
N10	4	#5	3	8'-3"	34
N11	4	#5	3	8'-10"	37
N12	4	#5	3	9'-4"	39
N13	4	#5	3	10'-0"	42
N14	4	#5	3	10'-6"	44
P1	2	#9	4	6'-9"	46
P2	2	#9	5	12'-6"	85
S2	1	#4	6	11'-3"	8
S3	1	#4	6	10'-5"	7
S4	1	#4	6	9'-9"	7
S5	1	#4	6	9'-1"	6
S6	1	#4	6	8'-5"	6
S7	1	#4	6	7'-9"	5
S8	1	#4	6	7'-1"	5
S9	1	#4	6	6'-5"	4
T2	4	#5	STR	39'-6"	165
T3	2	#5	STR	13'-9"	29
V5	4	#4	STR	3'-6"	9
V6	4	#4	STR	4'-1"	11
V7	4	#4	STR	4'-7"	12
V8	4	#4	STR	5'-2"	14
V9	4	#4	STR	5'-8"	15
V10	4	#4	STR	6'-3"	17
V11	4	#4	STR	6'-10"	18
V12	4	#4	STR	7'-4"	20
V13	4	#4	STR	7'-10"	21
V14	4	#4	STR	8'-4"	22
V15	2	#4	STR	4'-0"	5
V16	2	#4	STR	8'-0"	11
Z5	4	#4	7	3'-1"	8
Z6	4	#4	7	3'-5"	9
Z7	4	#4	7	3'-10"	10
Z8	4	#5	7	4'-4"	18
Z9	4	#5	7	4'-8"	19
Z10	4	#5	7	5'-1"	21
Z11	4	#5	7	5'-5"	23
Z12	4	#5	7	5'-10"	24
Z13	4	#6	7	6'-4"	38
Z14	4	#6	7	6'-8"	40
Z15	10	#10	STR	7'-3"	312
Z16	12	#10	STR	9'-7"	495
REINFORCING STEEL FOR W1 WING				2,536	LBS.

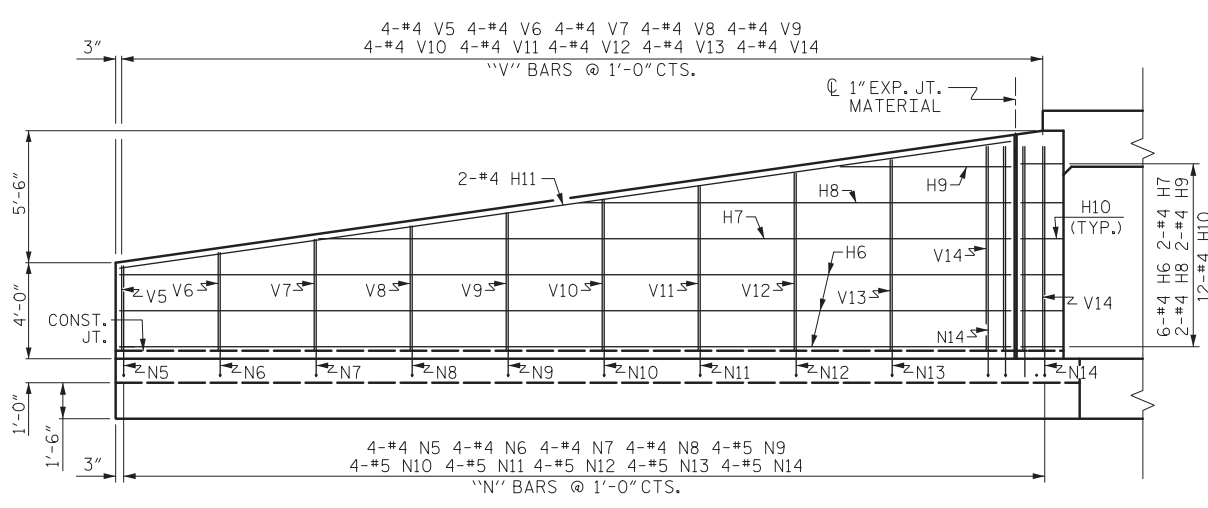


DIMENSIONS ARE OUT TO OUT

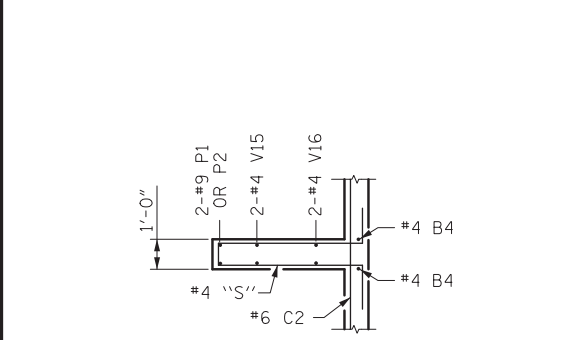
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	7'-7"	30
H2	2	#4	STR	6'-11"	9
H3	2	#4	STR	3'-11"	5
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	8'-6"	11
N1	2	#5	3	10'-5"	22
N2	2	#5	3	9'-4"	19
N3	3	#5	3	7'-11"	25
N4	3	#4	3	6'-4"	13
S1	3	#6	STR	6'-0"	27
T1	3	#5	STR	9'-6"	30
V1	2	#4	STR	8'-0"	11
V2	2	#4	STR	7'-1"	9
V3	3	#4	STR	5'-7"	11
V4	3	#4	STR	4'-4"	9
Z1	2	#5	7	8'-5"	18
Z2	2	#5	7	6'-10"	14
Z3	3	#4	7	5'-0"	10
Z4	3	#4	7	3'-2"	6
REINFORCING STEEL FOR W2 WING				305	LBS.



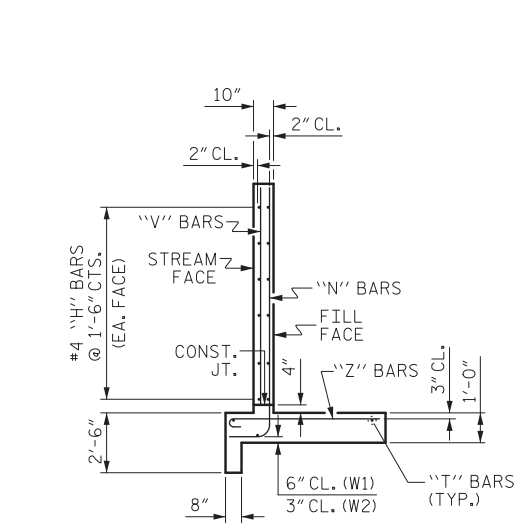
ELEVATION W2



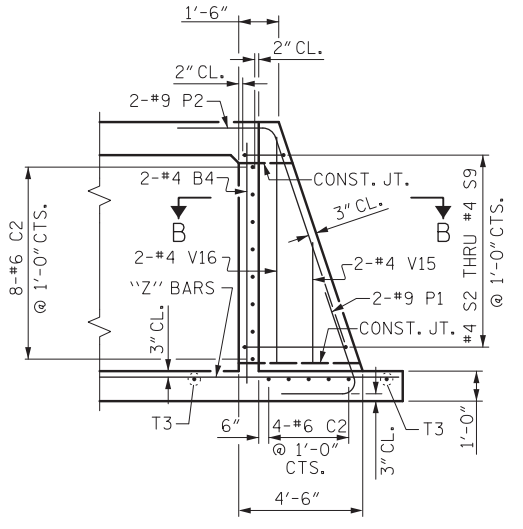
ELEVATION W1



SECTION B-B



WING SECTION



SECTION A-A

STANDARD REINFORCING STEEL IN BARREL NOT SHOWN

WING QUANTITIES	
REINFORCING STEEL FOR 2 WINGS	2,841 LBS.
CLASS A CONCRETE	
2 WINGS	27.2 C.Y.
1 END CURTAIN WALL	2.3 C.Y.
1 HEADWALL	2.0 C.Y.
TOTAL	31.5 C.Y.

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-

SHEET 7 OF 14

11/28/2023

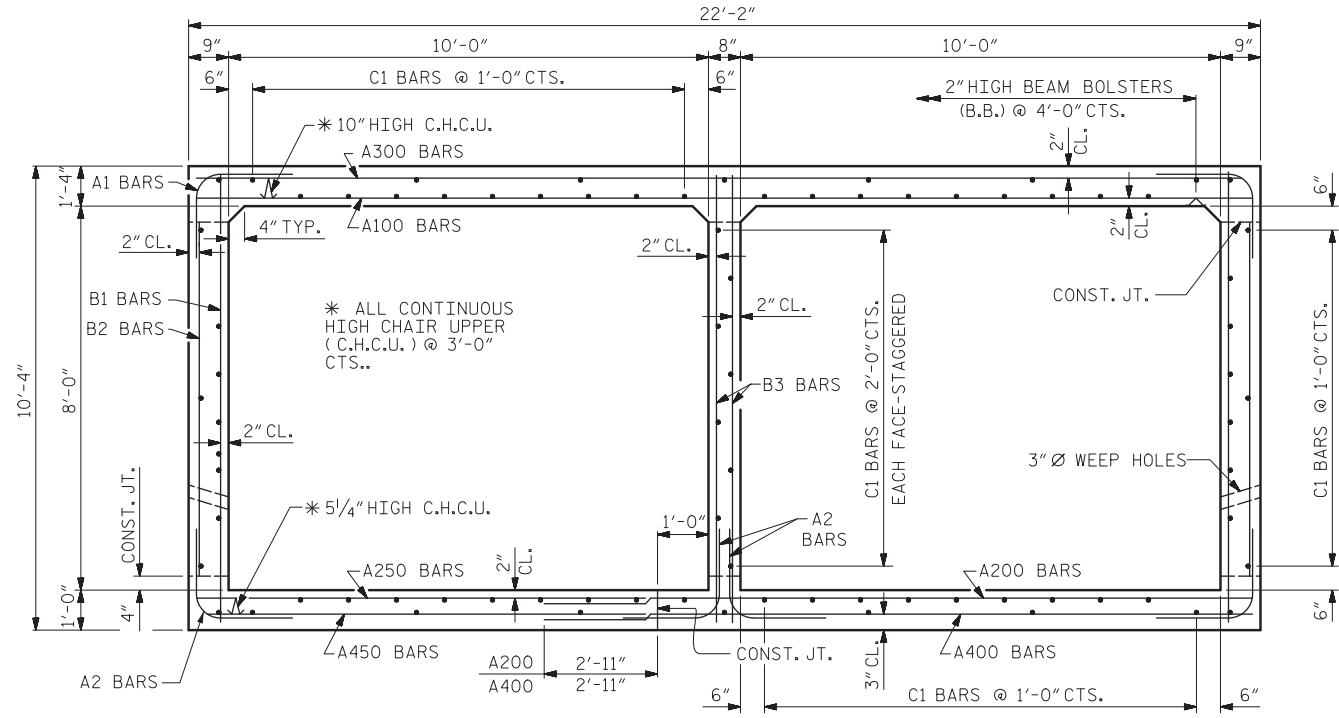
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
OUTLET WINGS FOR MULTIPLE BARREL CONCRETE BOX CULVERT H = 8'-0" SLOPE = 2:1 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

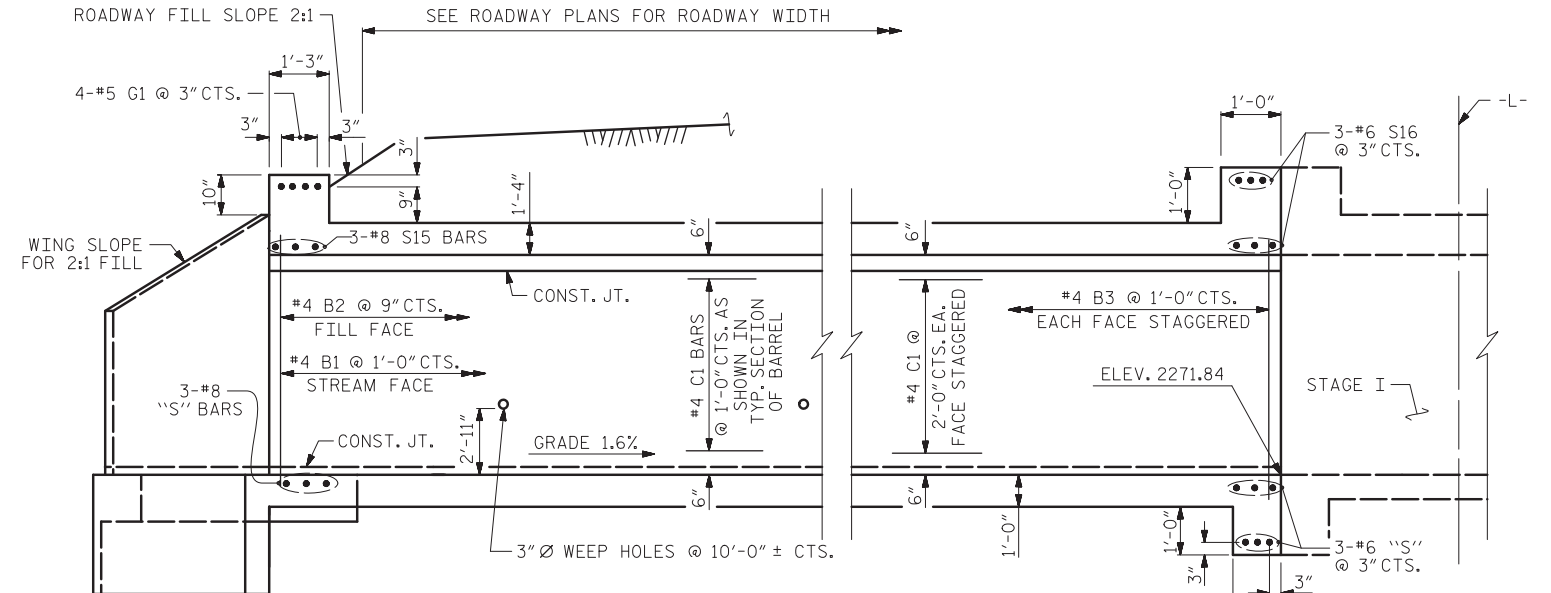
SHEET NO. C-7
 TOTAL SHEETS 14

ASSEMBLED BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD : STM DATE : 07/23



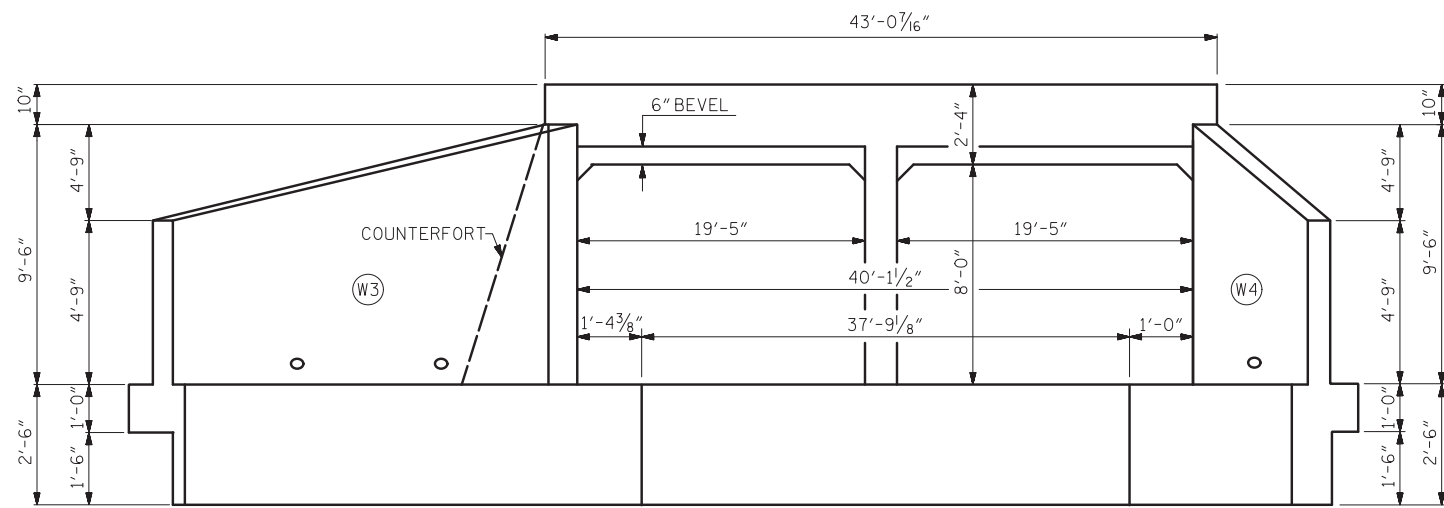
RIGHT ANGLE SECTION OF BARREL

LOOKING DOWNSTREAM
THERE ARE 80 "C" BARS IN SECTION OF BARREL.



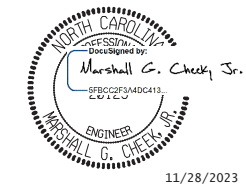
EXTERIOR WALL INTERIOR WALL

CULVERT SECTION NORMAL TO ROADWAY



INLET ELEVATION NORMAL TO SKEW

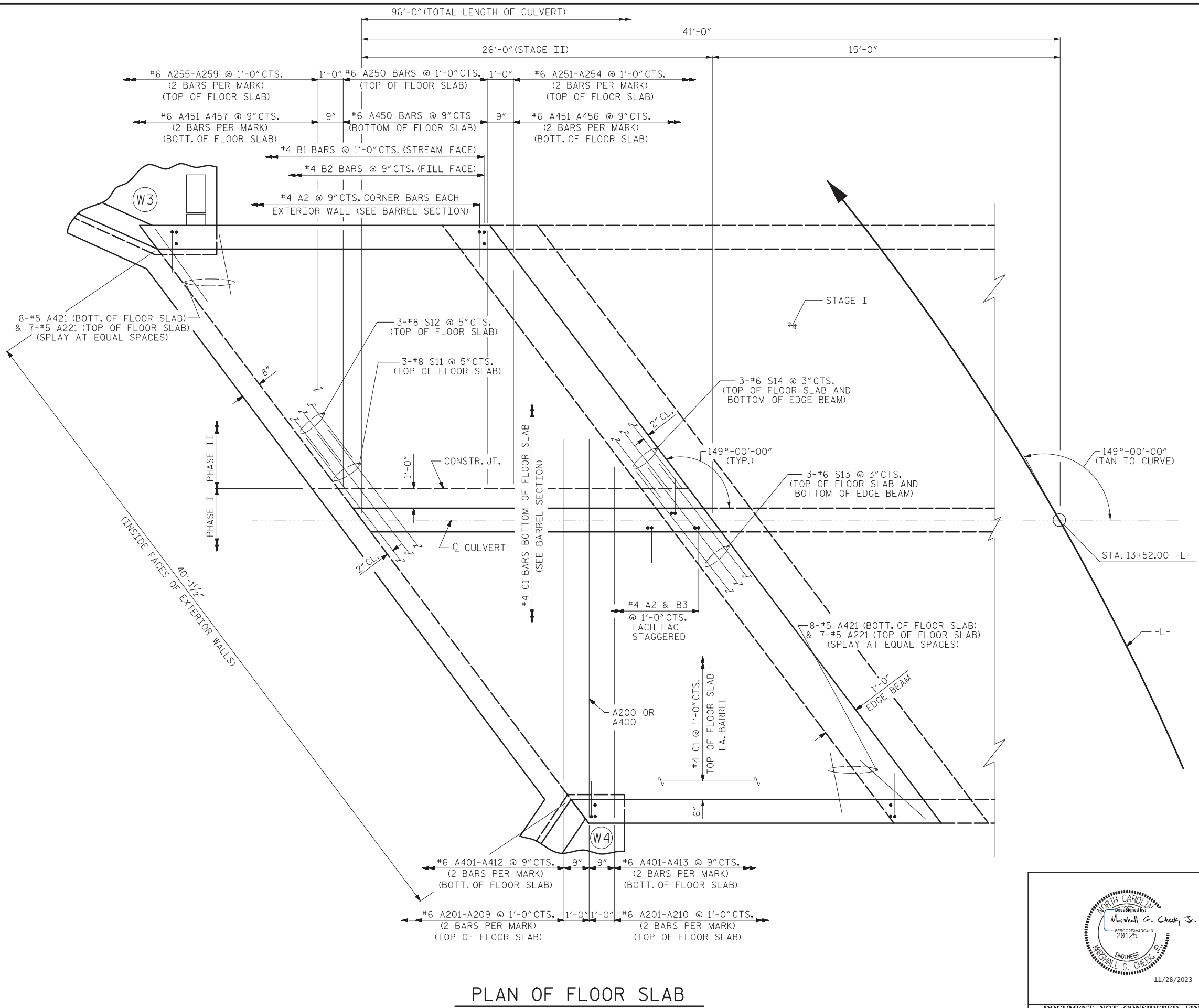
PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-
 SHEET 8 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE II**

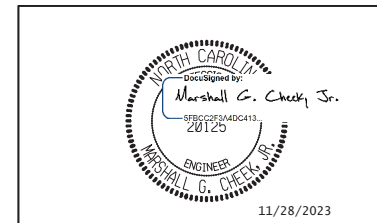
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.			
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	C-8
						1			3			TOTAL SHEETS
						2			4			14

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD : STM DATE : 07/23



PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-

SHEET 9 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE II**

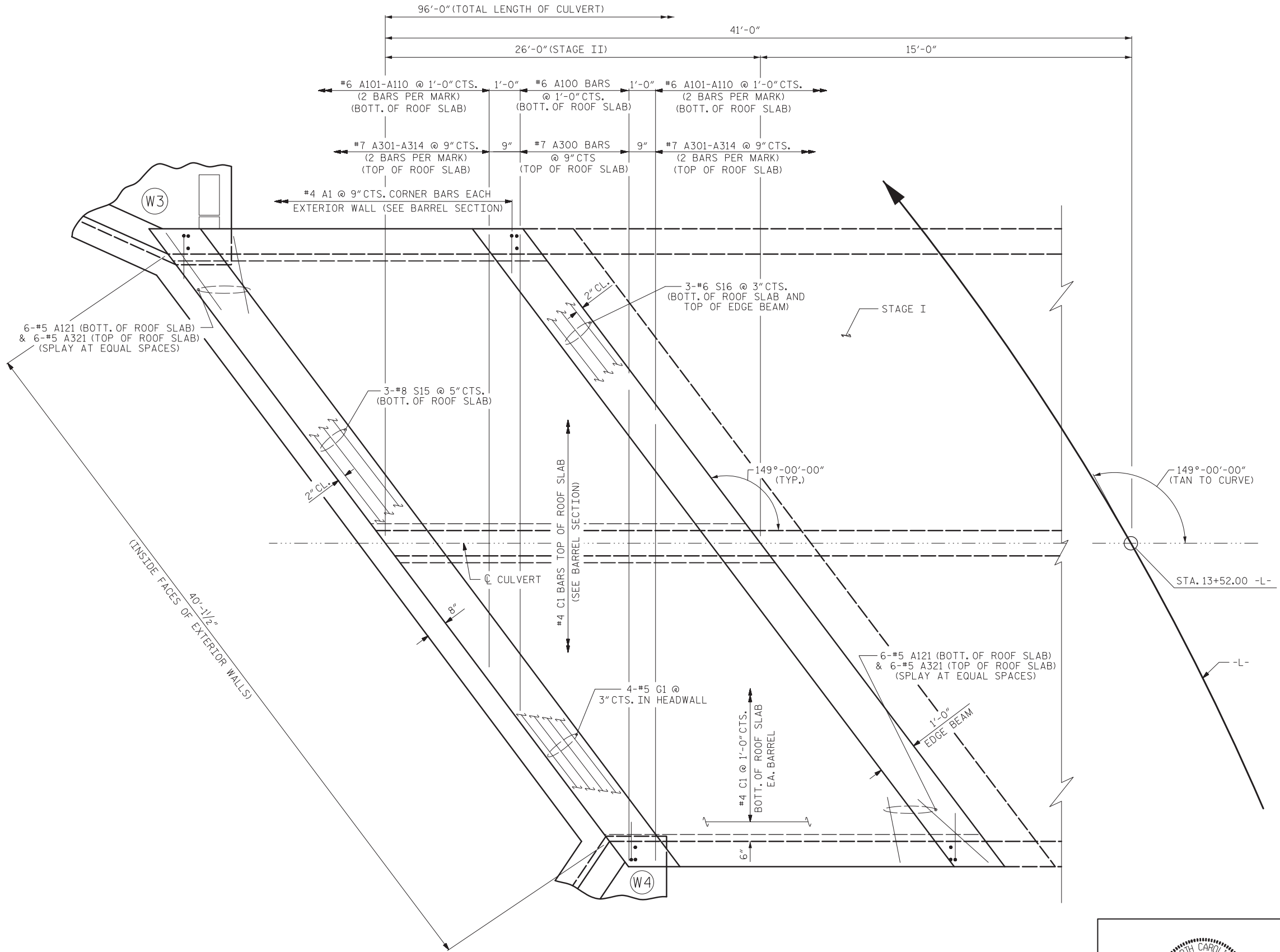
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. C-9
					TOTAL SHEETS 14

DRAWN BY : STM DATE : 01/23
 CHECKED BY : MGC DATE : 06/23
 DESIGN ENGINEER OF RECORD: STM DATE : 03/23

PLAN OF FLOOR SLAB

STAGE II

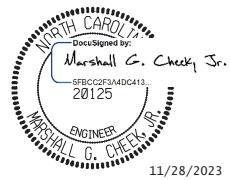
FOR S1 BARS IN FLOOR SLAB AND WING FOOTINGS, AND 'S' BARS IN COUNTERFORT, SEE WING SHEETS.



PLAN OF ROOF SLAB
STAGE II

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-

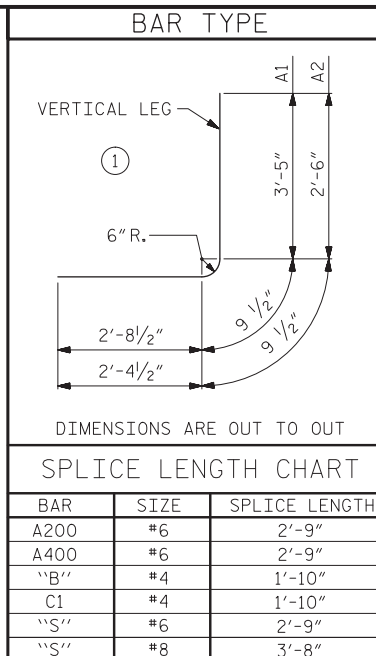
SHEET 10 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE II**

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:	C-10
						1			3			TOTAL SHEETS
						2			4			14

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD: STM DATE : 07/23



STAGE II BAR SCHEDULE											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	70	#4	1	6'-11"	323	A300	14	#7	STR	15'-2"	434
A2	122	#4	1	5'-8"	462	A301	4	#7	STR	14'-8"	120
						A302	4	#7	STR	13'-9"	112
A100	12	#6	STR	15'-2"	273	A303	4	#7	STR	12'-10"	105
A101	4	#6	STR	14'-0"	84	A304	4	#7	STR	12'-0"	98
A102	4	#6	STR	12'-9"	77	A305	4	#7	STR	11'-1"	91
A103	4	#6	STR	11'-7"	70	A306	4	#7	STR	10'-2"	83
A104	4	#6	STR	10'-5"	63	A307	4	#7	STR	9'-3"	76
A105	4	#6	STR	9'-2"	55	A308	4	#7	STR	8'-4"	68
A106	4	#6	STR	8'-0"	48	A309	4	#7	STR	7'-5"	61
A107	4	#6	STR	6'-9"	41	A310	4	#7	STR	6'-7"	54
A108	4	#6	STR	5'-7"	34	A311	4	#7	STR	5'-8"	46
A109	4	#6	STR	4'-4"	26	A312	4	#7	STR	4'-9"	39
A110	4	#6	STR	3'-2"	19	A313	4	#7	STR	3'-10"	31
						A314	4	#7	STR	2'-11"	24
A121	12	#5	STR	6'-0"	75						
						A321	12	#5	STR	5'-4"	67
A200	1	#6	STR	15'-2"	23	A400	1	#6	STR	15'-2"	23
A201	4	#6	STR	13'-11"	84	A401	4	#6	STR	14'-3"	86
A202	4	#6	STR	12'-9"	77	A402	4	#6	STR	13'-4"	80
A203	4	#6	STR	11'-7"	70	A403	4	#6	STR	12'-5"	75
A204	4	#6	STR	10'-4"	62	A404	4	#6	STR	11'-6"	69
A205	4	#6	STR	9'-2"	55	A405	4	#6	STR	10'-7"	64
A206	4	#6	STR	7'-11"	48	A406	4	#6	STR	9'-9"	59
A207	4	#6	STR	6'-9"	41	A407	4	#6	STR	8'-10"	53
A208	4	#6	STR	5'-6"	33	A408	4	#6	STR	7'-11"	48
A209	4	#6	STR	4'-4"	26	A409	4	#6	STR	7'-0"	42
A210	2	#6	STR	3'-2"	10	A410	4	#6	STR	6'-1"	37
						A411	4	#6	STR	5'-3"	32
A221	14	#5	STR	6'-11"	101	A412	4	#6	STR	4'-4"	26
						A413	2	#6	STR	3'-5"	10
A250	10	#6	STR	9'-5"	141						
A251	2	#6	STR	8'-3"	25	A421	16	#5	STR	6'-3"	104
A252	2	#6	STR	7'-0"	21						
A253	2	#6	STR	5'-10"	18	A451	13	#6	STR	9'-5"	184
A254	2	#6	STR	4'-7"	14	A452	4	#6	STR	8'-8"	52
A255	2	#6	STR	8'-6"	26	A453	4	#6	STR	7'-9"	47
A256	2	#6	STR	7'-4"	22	A454	4	#6	STR	6'-10"	41
A257	2	#6	STR	6'-2"	19	A455	4	#6	STR	5'-11"	36
A258	2	#6	STR	4'-11"	15	A456	4	#6	STR	5'-0"	30
A259	2	#6	STR	3'-9"	11	A457	2	#6	STR	4'-2"	25
						B1	52	#4	STR	9'-8"	336
						B2	70	#4	STR	7'-4"	343
						B3	52	#4	STR	9'-8"	336
						C1	80	#4	STR	25'-8"	1372
						D2	12	#6	STR	1'-7"	29
						D3	6	#6	STR	2'-7"	23
						G1	4	#5	STR	42'-4"	177
						S11	3	#8	STR	27'-10"	223
						S12	3	#8	STR	18'-3"	146
						S13	6	#6	STR	26'-11"	243
						S14	6	#6	STR	18'-3"	164
						S15	3	#8	STR	42'-4"	339
						S16	6	#6	STR	42'-4"	382
						REINFORCING STEEL				9,447	LBS.

STAGE II QUANTITIES		
CLASS A CONCRETE		
BARREL @	2.57	CY/FT
	66.8	C.Y.
WINGS, ETC.	24.1	C.Y.
EDGE BEAMS	3.2	C.Y.
TOTAL	94.1	C.Y.
REINFORCING STEEL		
BARREL	9,447	LBS.
WINGS, ETC.	2,268	LBS.
TOTAL	11,715	LBS.
CULVERT EXCAVATION	LUMP SUM	
FOUNDATION COND. MAT'L.	48 TONS	

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-
 SHEET 11 OF 14

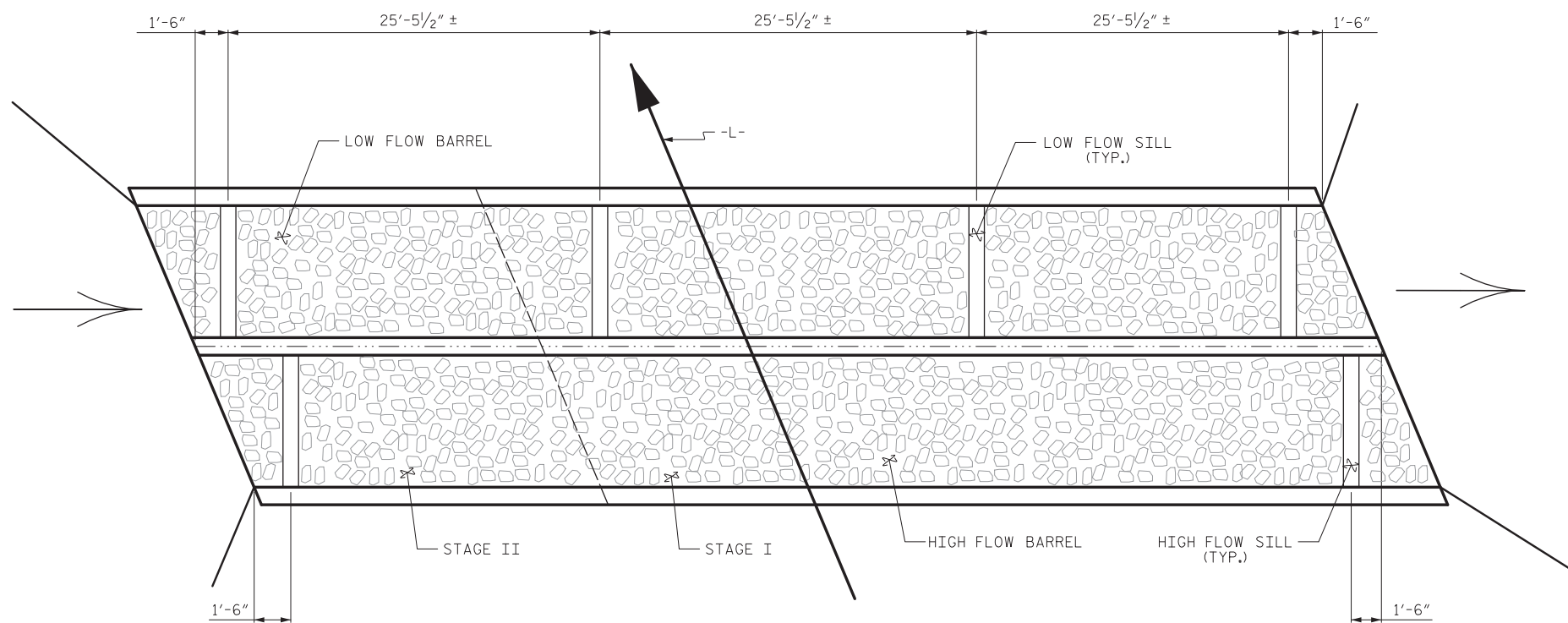
11/28/2023

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

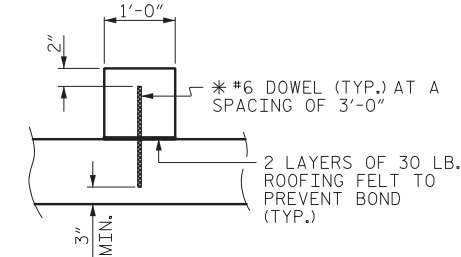
**DOUBLE 10 FT. X 8 FT.
 CONCRETE BOX CULVERT
 149° SKEW
 STAGE II**

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

DRAWN BY : STM DATE : 07/23
 CHECKED BY : MGC DATE : 07/23
 DESIGN ENGINEER OF RECORD: STM DATE : 07/23



PLAN OF FLOOR SILL LAYOUT



SECTION THROUGH SILL

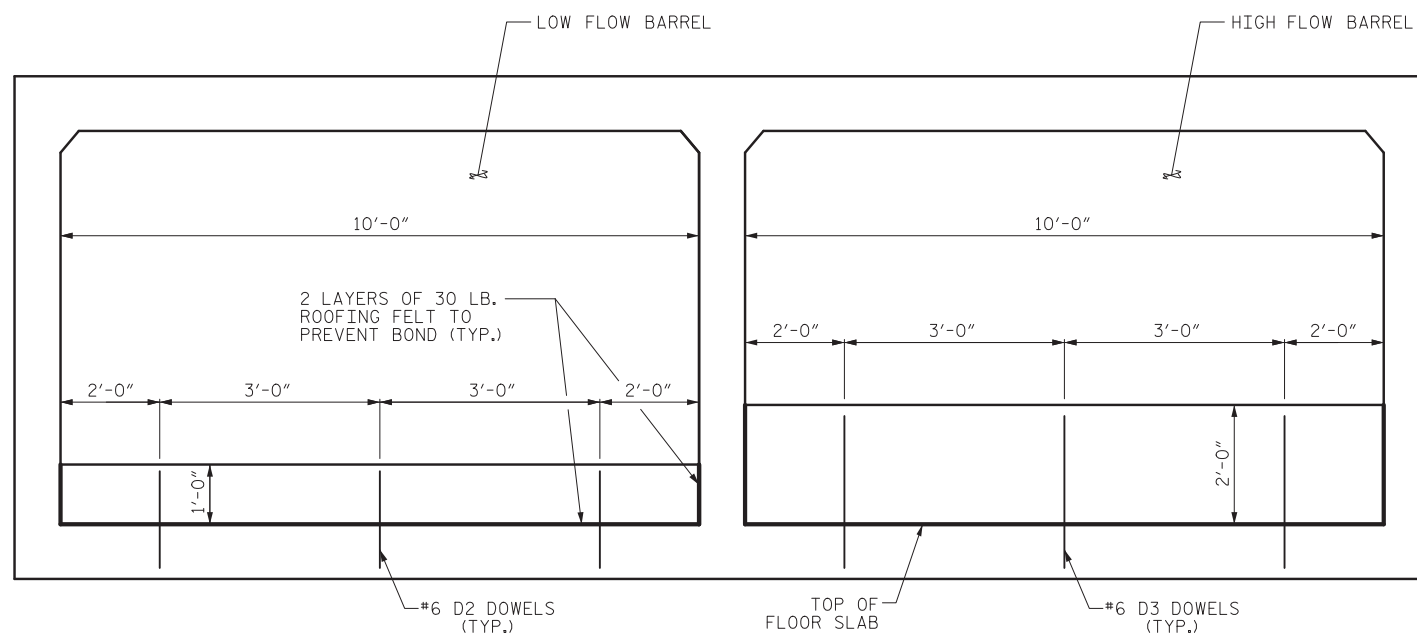
* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

NOTES

THE ENTIRE COST OF WORK REQUIRED TO PLACE EXCAVATED MATERIAL OR SUPPLEMENTAL MATERIAL AS SHOWN ON THE PLANS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

THE ENTIRE COST OF WORK REQUIRED TO CONSTRUCT THE SILLS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE ENGINEER, IN CONSULTATION WITH DEO STAFF, SHALL REVIEW ALL MATERIAL TO BE USED AS BACKFILL PRIOR TO CONDUCTING THE BACKFILL ACTIVITY. BACKFILL SHALL CONSIST OF NATIVE MATERIAL ONLY UNLESS THE ENGINEER, IN CONSULTATION WITH THE DEO STAFF, DETERMINES THAT (1) THE NATIVE MATERIAL IS UNSUITABLE, OR (2) ADDITIONAL MATERIAL IS REQUIRED TO SUPPLEMENT THE NATIVE MATERIAL. THE CHOSEN BACKFILL MATERIAL SHALL NOT HAVE ADVERSE EFFECTS TO AQUATIC LIFE, AQUATIC LIFE PASSAGE, OR WATER QUALITY. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION.



SILL DETAILS

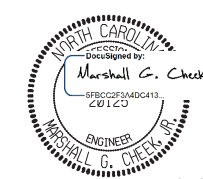
LOOKING DOWNSTREAM

PROJECT NO. BP13.R019

MADISON COUNTY

STATION: 13+52.00 -L-

SHEET 12 OF 14



11/28/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 10 FT. X 8 FT.
CONCRETE BOX CULVERT
149° SKEW

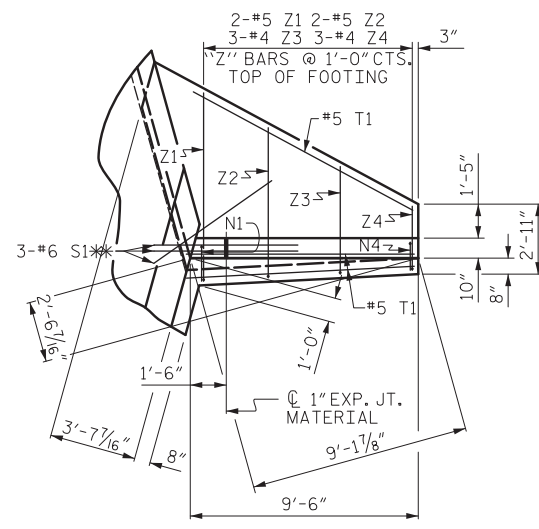
DRAWN BY : STM DATE : 03/23
CHECKED BY : MGC DATE : 06/23
DESIGN ENGINEER OF RECORD: STM DATE : 03/23

11/14/2023
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User:zsmith

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

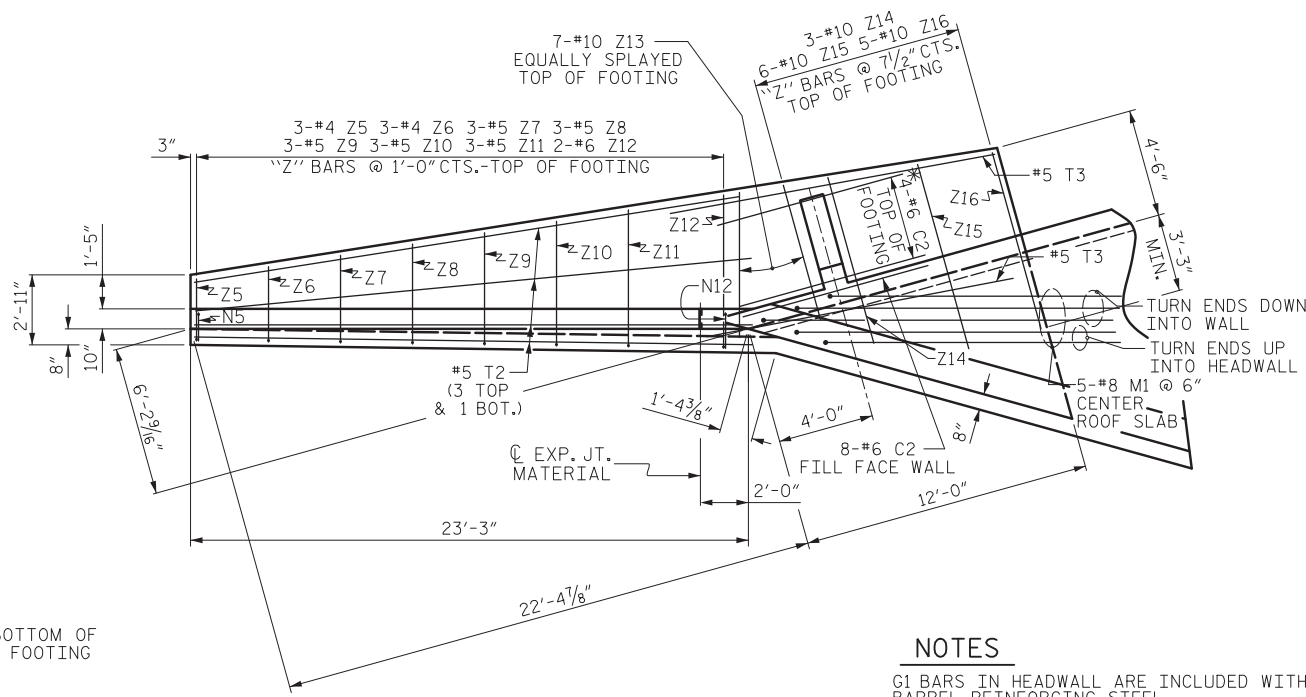
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-12
2			4			TOTAL SHEETS 14



PLAN W4

*S1 BARS @ BOTTOM OF FLOOR SLAB & FOOTING

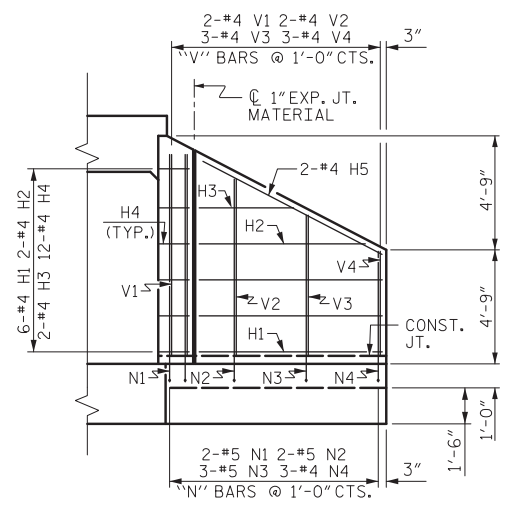


PLAN W3

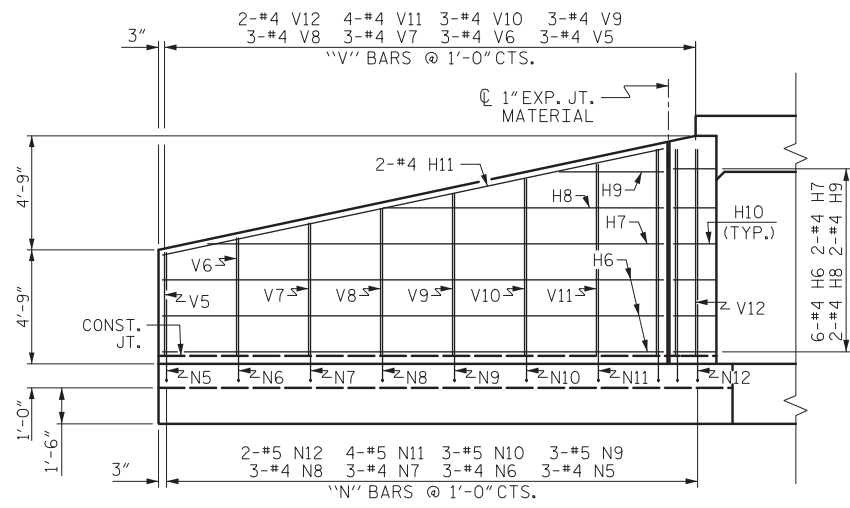
*CENTER ALL #6 C1 BARS ON C CENTERFORT

NOTES

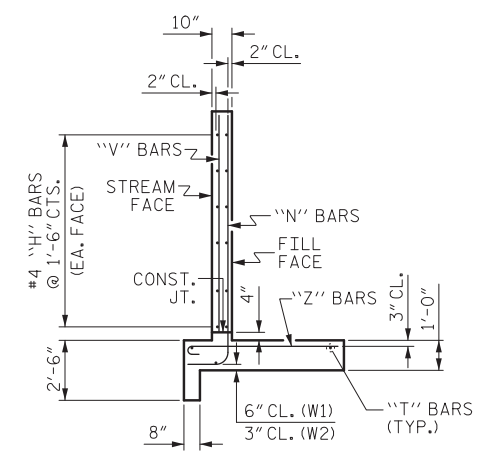
G1 BARS IN HEADWALL ARE INCLUDED WITH BARREL REINFORCING STEEL.
A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.



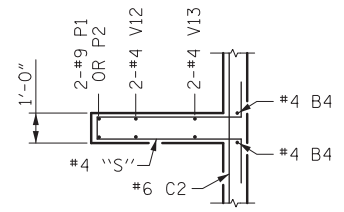
ELEVATION W4



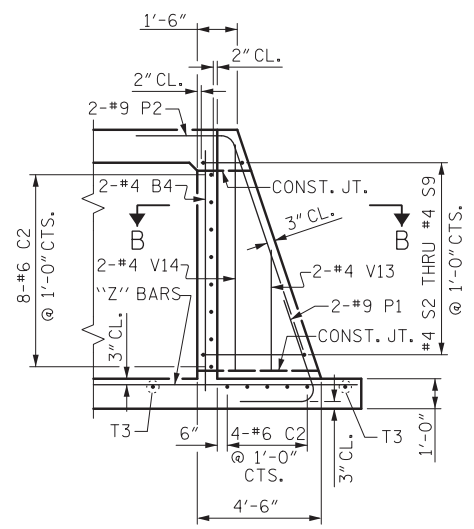
ELEVATION W3



WING SECTION



SECTION B-B

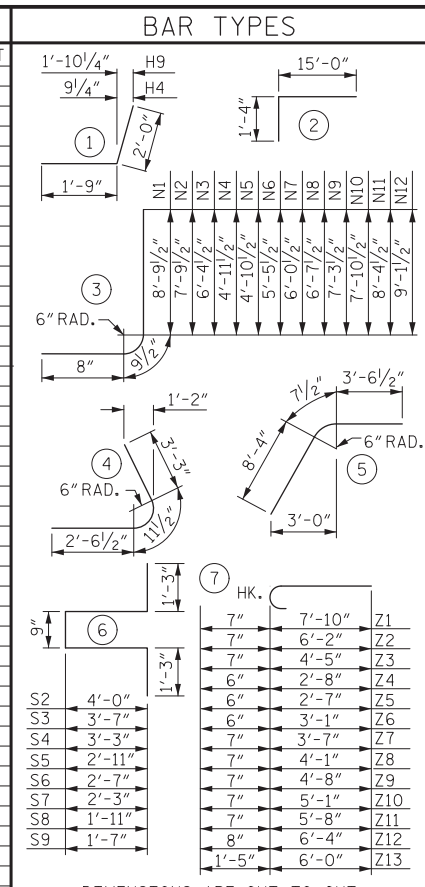


SECTION A-A

STANDARD REINFORCING STEEL IN BARREL NOT SHOWN

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	2	#4	STR	9'-0"	12
C2	12	#6	STR	8'-0"	144
H6	6	#4	STR	20'-10"	84
H7	2	#4	STR	18'-11"	25
H8	2	#4	STR	11'-8"	16
H9	2	#4	STR	4'-4"	6
H10	12	#4	STR	3'-9"	30
H11	2	#4	STR	21'-4"	29
M1	5	#8	2	16'-4"	218
N5	3	#4	3	6'-4"	13
N6	3	#4	3	6'-11"	14
N7	3	#4	3	7'-6"	15
N8	3	#4	3	8'-1"	16
N9	3	#5	3	8'-9"	27
N10	3	#5	3	9'-4"	29
N11	4	#5	3	9'-10"	41
N12	2	#5	3	10'-7"	22
P1	2	#9	4	6'-9"	46
P2	2	#9	5	12'-6"	85
S2	1	#4	6	11'-3"	8
S3	1	#4	6	10'-5"	7
S4	1	#4	6	9'-9"	7
S5	1	#4	6	9'-1"	6
S6	1	#4	6	8'-5"	6
S7	1	#4	6	7'-9"	5
S8	1	#4	6	7'-1"	5
S9	1	#4	6	6'-5"	4
T2	4	#5	STR	23'-3"	97
T3	2	#5	STR	13'-8"	29
V5	3	#4	STR	4'-3"	9
V6	3	#4	STR	4'-11"	10
V7	3	#4	STR	5'-6"	11
V8	3	#4	STR	6'-1"	12
V9	3	#4	STR	6'-8"	13
V10	3	#4	STR	7'-3"	15
V11	4	#4	STR	7'-10"	21
V12	2	#4	STR	8'-7"	11
V13	2	#4	STR	4'-0"	5
V14	2	#4	STR	8'-0"	11
Z5	3	#4	7	3'-1"	6
Z6	3	#4	7	3'-7"	7
Z7	3	#5	7	4'-2"	13
Z8	3	#5	7	4'-8"	15
Z9	3	#5	7	5'-3"	16
Z10	3	#5	7	5'-8"	18
Z11	3	#5	7	6'-3"	20
Z12	2	#6	7	7'-0"	21
Z13	7	#10	7	7'-5"	223
Z14	3	#10	STR	7'-2"	93
Z15	6	#10	STR	7'-11"	204
Z16	5	#10	STR	7'-7"	163
REINFORCING STEEL FOR 1 W3 WING					1,963 LBS.

LONG WING W3



DIMENSIONS ARE OUT TO OUT

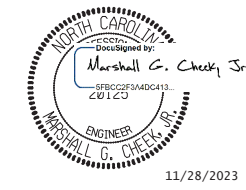
REINFORCING STEEL FOR 1 W4 WING					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	2	#4	STR	7'-7"	30
H2	2	#4	STR	6'-11"	9
H3	2	#4	STR	3'-11"	5
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	8'-6"	11
N1	2	#5	3	10'-4"	22
N2	2	#5	3	9'-3"	19
N3	3	#5	3	7'-10"	25
N4	3	#4	3	6'-5"	13
S1	3	#6	STR	6'-0"	27
T1	3	#5	STR	9'-6"	30
V1	2	#4	STR	8'-0"	11
V2	2	#4	STR	7'-1"	9
V3	3	#4	STR	5'-7"	11
V4	3	#4	STR	4'-4"	9
Z1	2	#5	7	8'-5"	18
Z2	2	#5	7	6'-9"	14
Z3	3	#4	7	5'-0"	10
Z4	3	#4	7	3'-2"	6
REINFORCING STEEL FOR 1 W4 WING					305 LBS.

SHORT WING W4

WING QUANTITIES	
REINFORCING STEEL FOR 2 WINGS	2,268 LBS.
CLASS A CONCRETE	
2 WINGS	19.8 C.Y.
1 END CURTAIN WALL	2.3 C.Y.
1 HEADWALL	2.0 C.Y.
TOTAL	24.1 C.Y.

PROJECT NO. BP13.R019
MADISON COUNTY
STATION: 13+52.00 -L-

SHEET 13 OF 14



11/28/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD WINGS
FOR MULTIPLE BARREL
CONCRETE BOX CULVERT
H = 8'-0" SLOPE = 2:1
STAGE II

ASSEMBLED BY : STM	DATE : 07/23
CHECKED BY : MGC	DATE : 07/23
DRAWN BY : MAA	9/15
CHECKED BY : BHB	9/15

REVISIONS	
NO.	DATE
1	
2	
3	
4	

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

SHEET NO.	
C-13	14

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".
 - B. 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS 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.)
 - C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

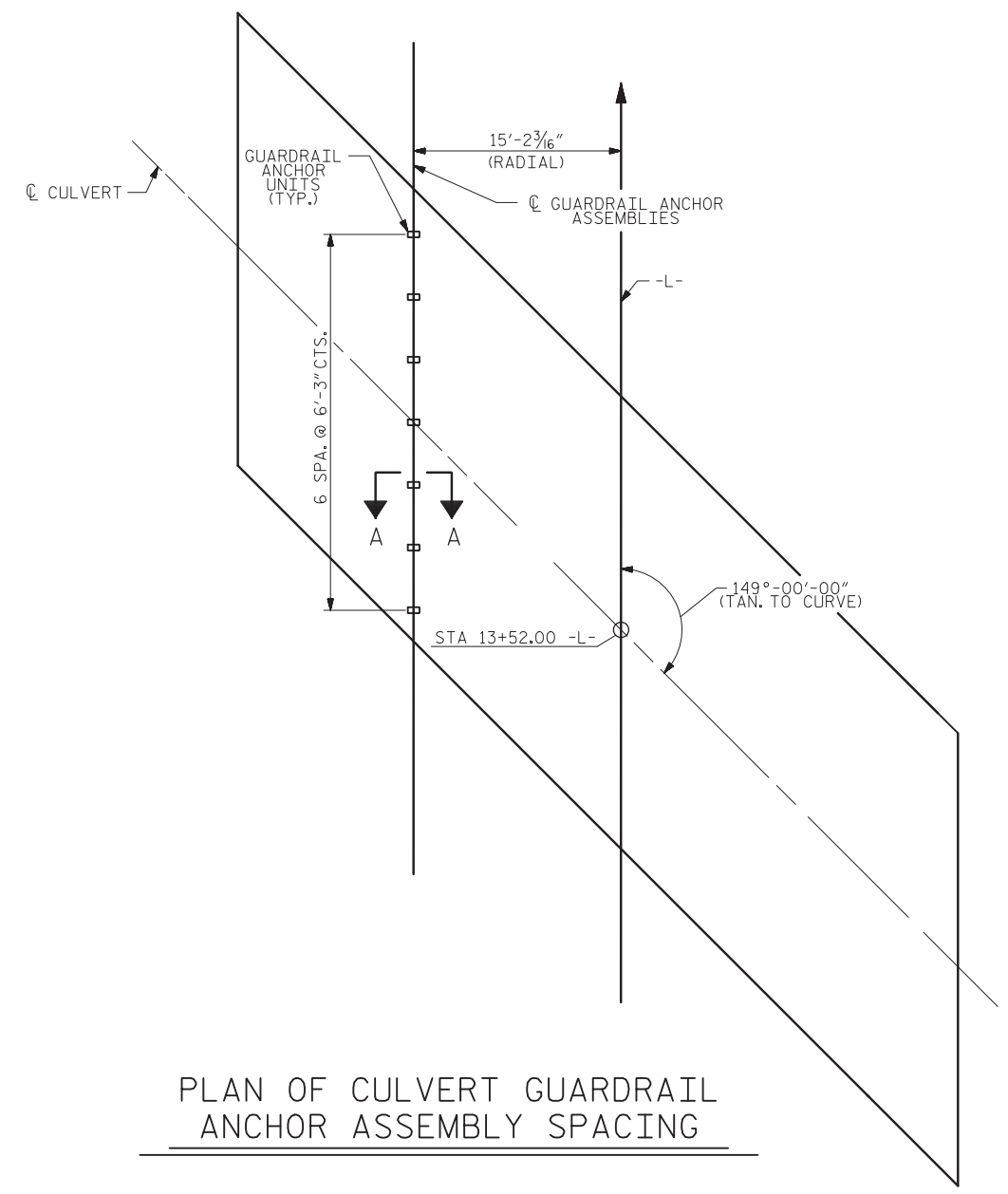
FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

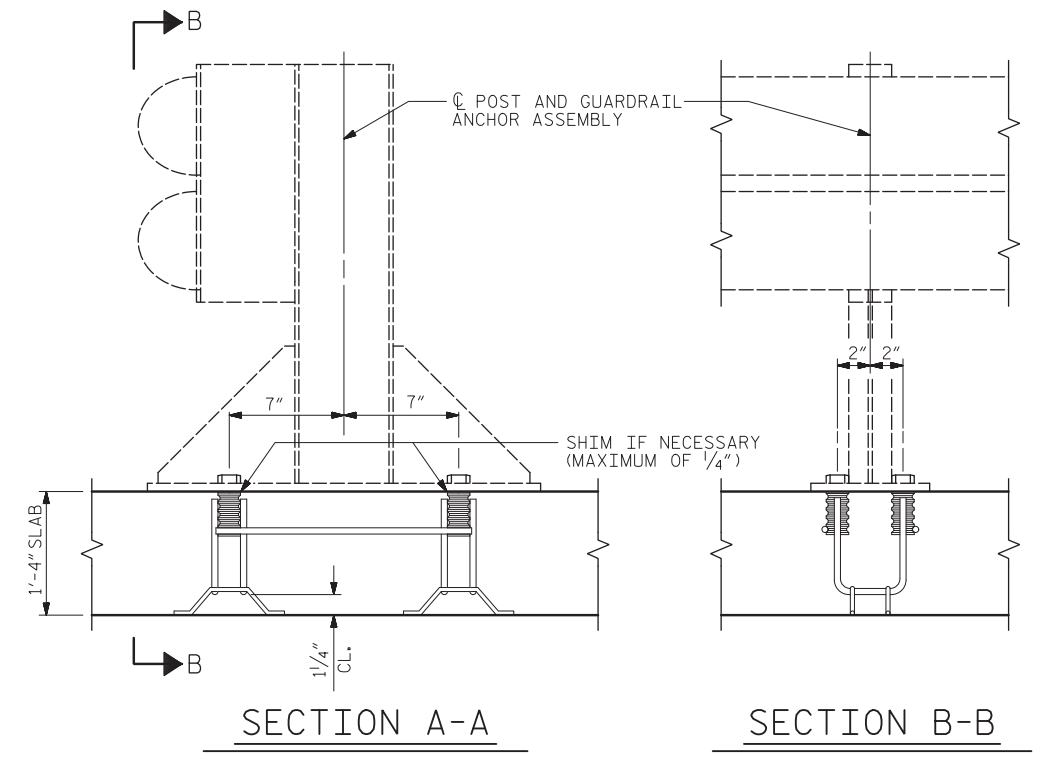
PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

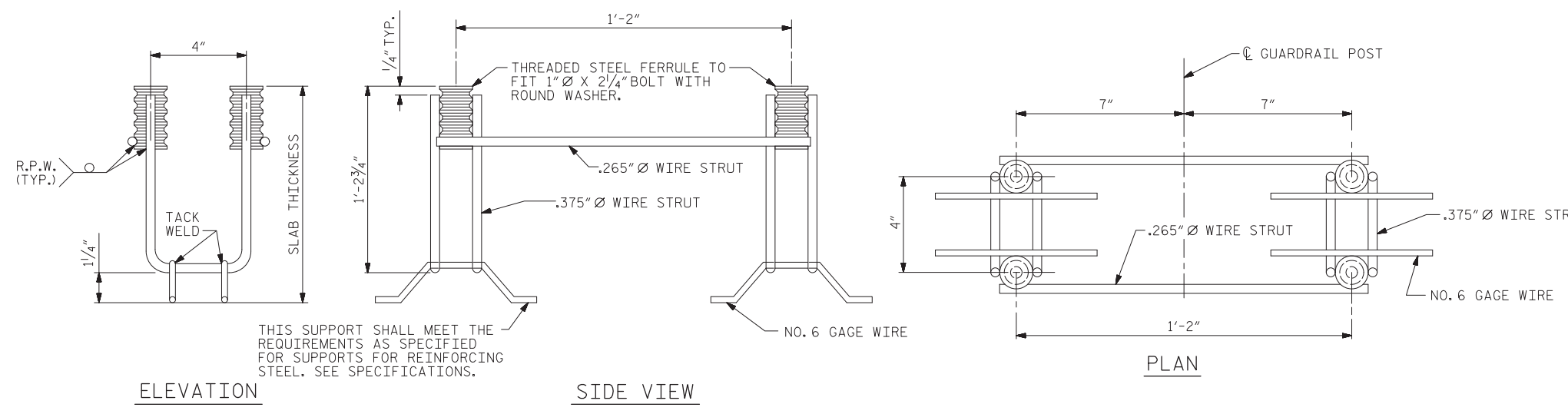


PLAN OF CULVERT GUARDRAIL ANCHOR ASSEMBLY SPACING



SECTION A-A

SECTION B-B



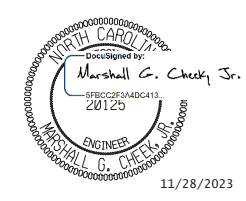
ELEVATION

SIDE VIEW

PLAN

THIS SUPPORT SHALL MEET THE REQUIREMENTS AS SPECIFIED FOR SUPPORTS FOR REINFORCING STEEL. SEE SPECIFICATIONS.

PROJECT NO. BP13.R019
MADISON COUNTY
 STATION: 13+52.00 -L-
 SHEET 14 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 ANCHORAGE DETAILS FOR
 GUARDRAIL ANCHOR ASSEMBLY
 FOR CULVERTS

ASSEMBLED BY :	STM	DATE :	09/23
CHECKED BY :	MGC	DATE :	09/23
DRAWN BY :	FCJ	REV. 10/1/11	MAA/GM
CHECKED BY :	ARB	REV. 12/17	MAA/THC
		REV. 6/19	MAA/THC

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

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:	C-14
1			3			TOTAL SHEETS
2			4			14

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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