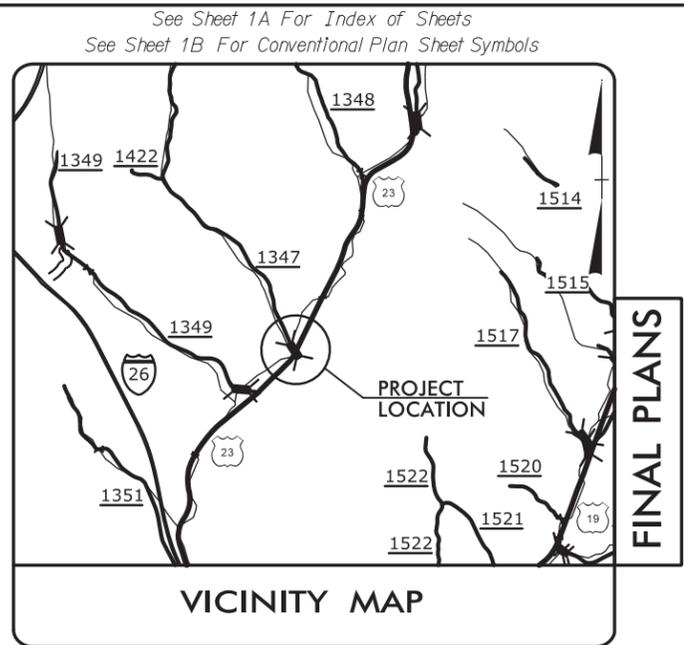


09/28/2025

PROJECT: BP13-R023

CONTRACT: DM00448



FINAL PLANS

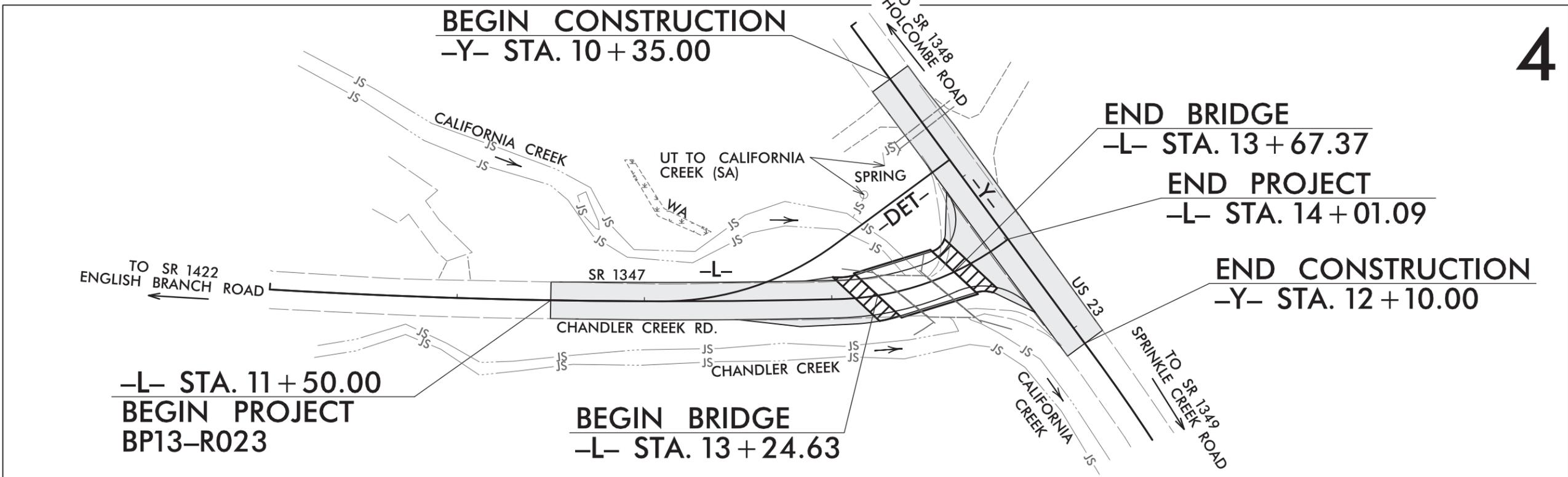
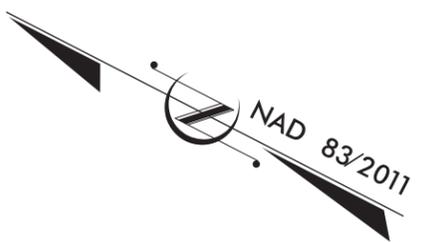
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

LOCATION: BRIDGE #560087 OVER CALIFORNIA CREEK
ON SR 1347 (CHANDLER CREEK RD)

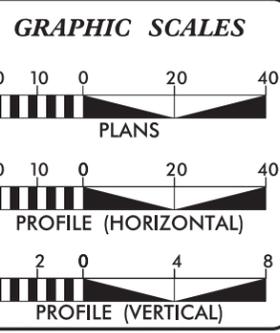
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND UTILITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R023	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP13.R023.1	N/A	PE	
BP13.R023.2	N/A	RW & UTIL.	
BP13.R023.3	N/A	CONST.	



4

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DESIGN DATA

ADT 2024 = 250
T = 6% *
V = 40 MPH
* TTST = 3% DUAL = 3%

FUNC CLASS = LOCAL, RURAL

SUB-REGIONAL TIER

PROJECT LENGTH

TOTAL LENGTH ROADWAY PROJECT #BP13-R023 = 0.040 MILES
TOTAL LENGTH STRUCTURE PROJECT #BP13-R023 = 0.008 MILES
TOTAL LENGTH PROJECT #BP13-R023 = 0.048 MILES

NCDOT CONTACT: JOEL M DAVIS

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

PLANS PREPARED FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, DIVISION 13, 29 OLD T4, ASHEVILLE, NC 288013

RIGHT OF WAY DATE: APRIL 7, 2024

LETTING DATE: OCTOBER 15, 2025

2024 STANDARD SPECIFICATIONS

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN R. TURNER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

7/15/2025

Seal: DAVID B. PETTY, ENGINEER, SEAL 038697

ROADWAY DESIGN ENGINEER

7/15/2025

Seal: JIMMY L. TERRY, ENGINEER, SEAL 35018



7/15/2025 X:\NCDOT\Division 13\Madison 2019\Roadway\Proj\Madison 87_Rdy_rsh.dgn User:cpue11

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BPI3-R023	1A



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INDEX OF SHEETS

GENERAL NOTES

STANDARD DRAWINGS

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
2B-1	ROADWAY DETAIL - DETOUR
2C-1	SPECIAL DETAIL - TYPE III SHOP CURVED ANCHOR UNIT
2C-2	SPECIAL DETAIL - TYPE B-83 SHOP CURVED ANCHOR UNIT
3B-1	ROADWAY AND DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1 THRU RF-2	STREAMBANK REFORESTATION DETAIL SHEETS
UC-1 THRU UC-5	UTILITIES CONSTRUCTION PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-6	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS
	STRUCTURE STANDARD NOTES

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

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

RIGHT-OF-WAY MARKERS:

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

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills. - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels and Ditches

6/19/2024
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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	⑩②③
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	_____
End of Information	_____

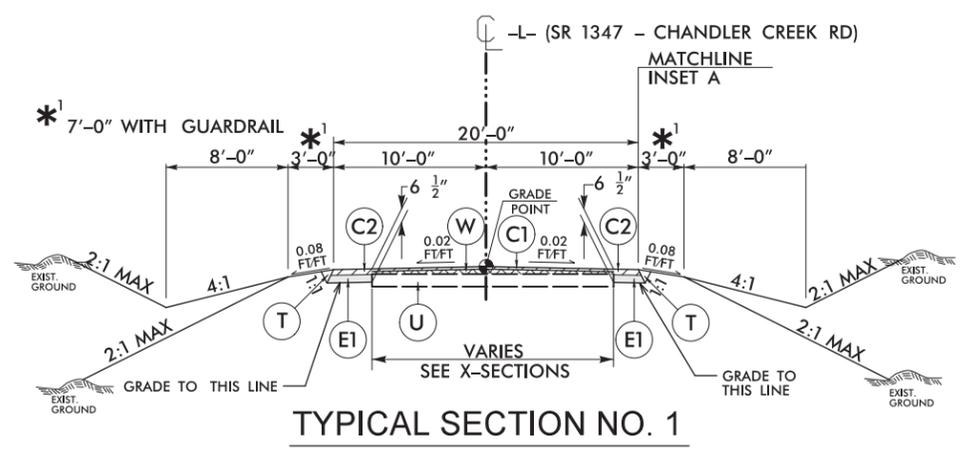
6/2/2024

MADISON COUNTY
BRIDGE #560087

PROJECT REFERENCE NO. BP13-R023	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER JIMMY L. TERRY 044590	PAVEMENT DESIGN ENGINEER ANDREW D. WARGO 044590
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. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	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.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	6" AGGREGATE BASE COURSE
P1	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1 1/4" MILLING EXISTING PAVEMENT (SEE MILLING DETAILS THIS SHEET)
V2	INCIDENTAL MILLING (SEE MILLING DETAILS THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS THIS SHEET)

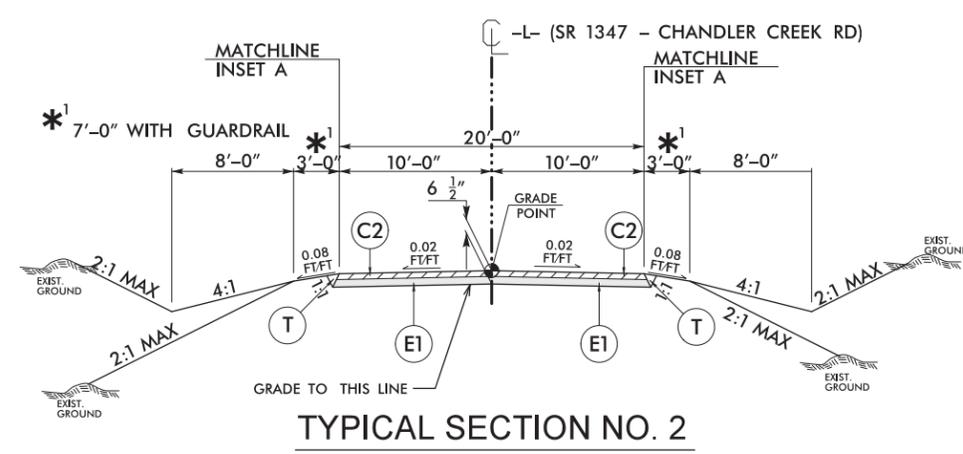
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



TYPICAL SECTION NO. 1

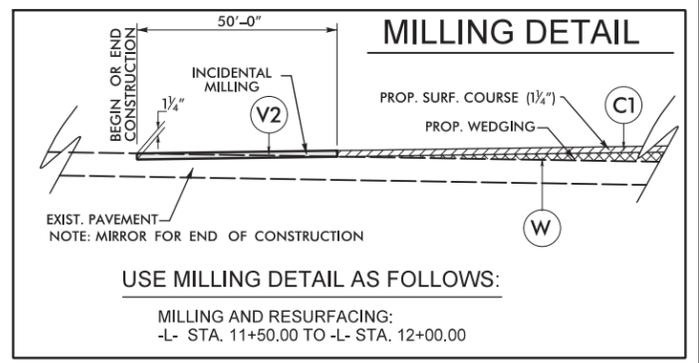
USE TYPICAL SECTION NO. 1
-L- STA. 12+00.00 TO -L- STA. 12+75.00

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

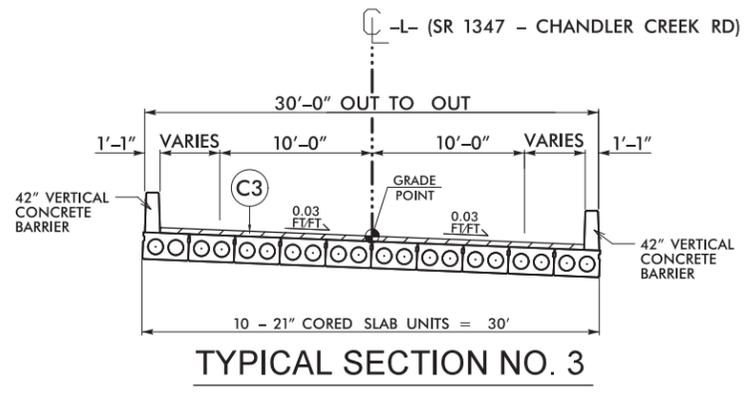


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 12+75.00 TO -L- STA. 13+24.63 (BEGIN BRIDGE)
-L- STA. 13+67.37 (END BRIDGE) TO -L- STA. 13+89.71

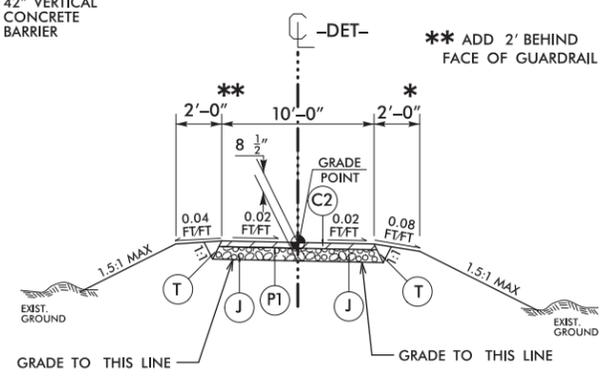


USE MILLING DETAIL AS FOLLOWS:
MILLING AND RESURFACING:
-L- STA. 11+50.00 TO -L- STA. 12+00.00



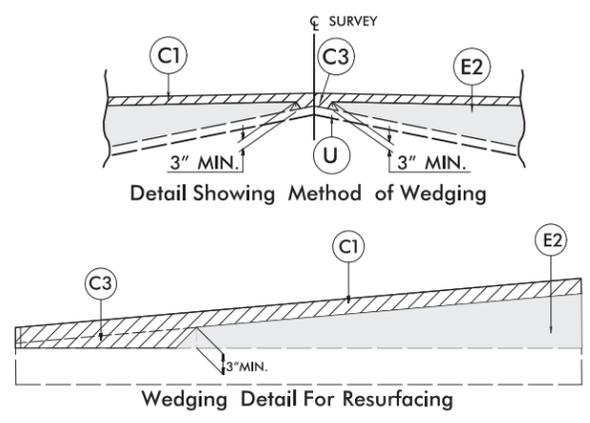
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L- STA. 13+24.63 TO -L- STA. 13+67.37



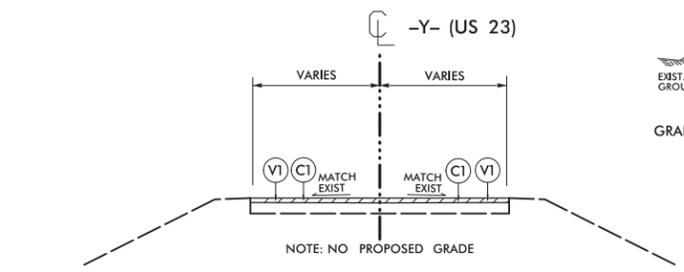
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-DET- STA. 12+48.49 TO -DET- STA. 13+73.15



Detail Showing Method of Wedging

Wedging Detail For Resurfacing



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-Y- STA. 10+35.00 TO -Y- STA. 12+10.00

INSET A

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

* ADD 3' FOR GUARDRAIL LOCATIONS

** FDPS WIDTH	STA. TO STA.
0'-0" TO 4'-2"	-L- STA. 12+49.78 TO -L- STA. 13+23.50 (BEGIN APPROACH SLAB) RT
0'-0" TO 1'-10"	-L- STA. 12+85.85 TO -L- STA. 13+00.73 (BEGIN APPROACH SLAB) LT
4'-1" TO 0'-0"	-L- STA. 13+79.94 (END APPROACH SLAB) RT TO -Y- STA. 11+81.26 RT
4'-9" TO 0'-0"	-L- STA. 13+70.47 (END APPROACH SLAB) LT TO -Y- STA. 11+01.28 RT

6/13/2024 Madison 2019\Medison 87\Roadway\Proc\Medison 87_Rdy_tup.dgn User:stam.vrn

MADISON COUNTY
BRIDGE #560087

PROJECT REFERENCE NO. **BP13-R023** SHEET NO. **2B-1**

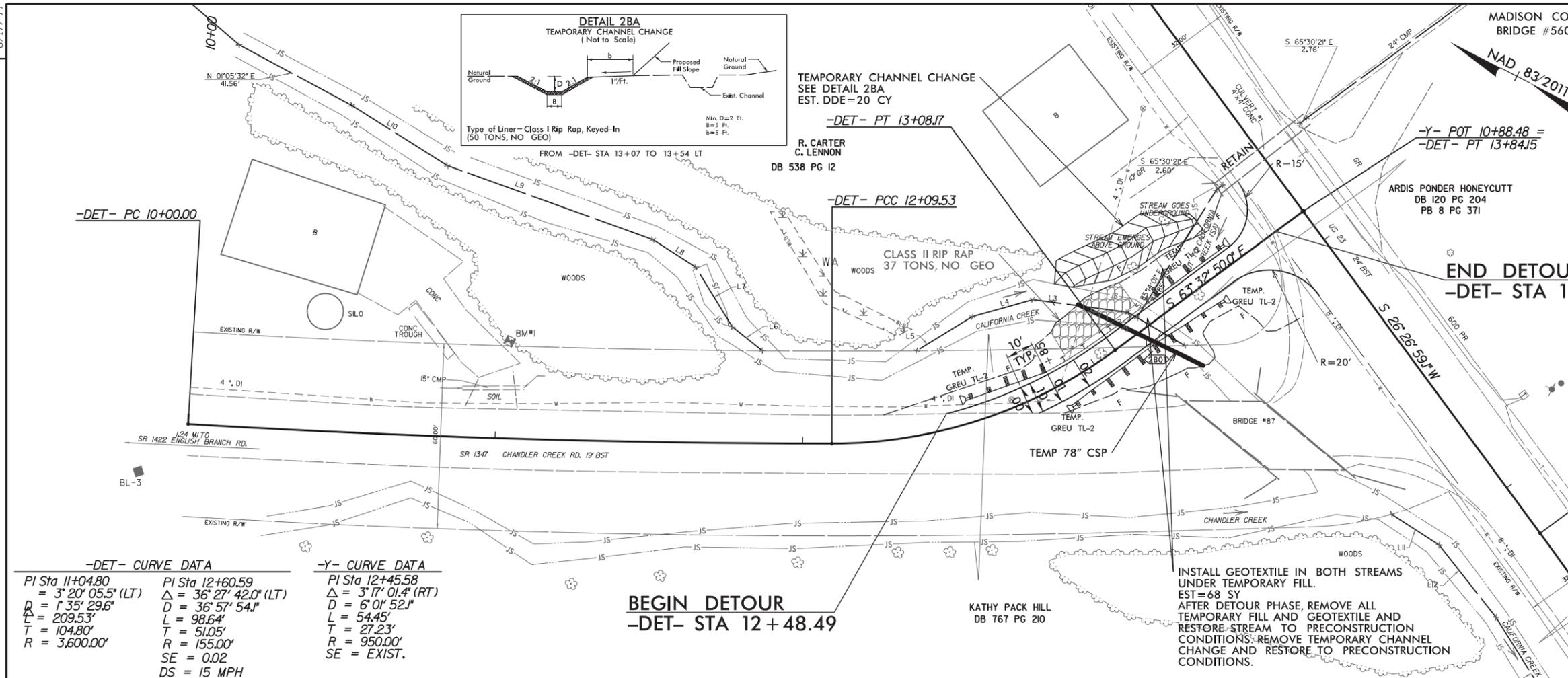
RW SHEET NO.

ROADWAY DESIGN ENGINEER
JIMMY L. TERRY
35018
11/2024

HYDRAULICS ENGINEER
DAVID B. PETTY
63669
11/2024

**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



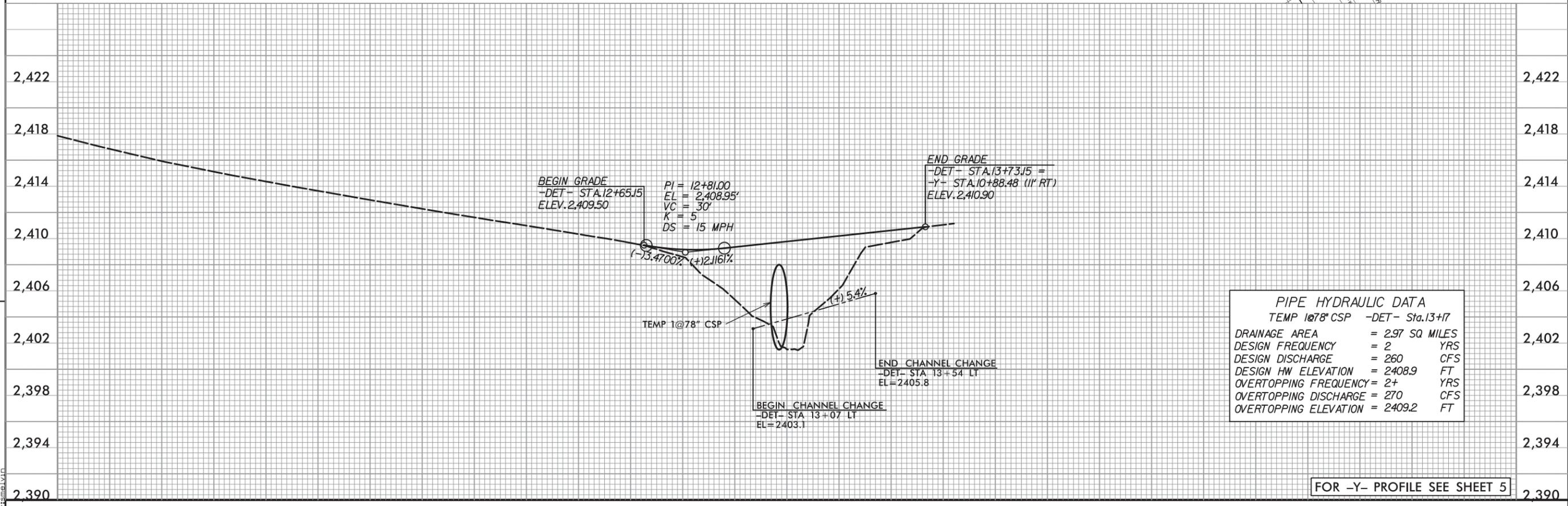
-DET- CURVE DATA		-Y- CURVE DATA	
PI Sta 11+04.80	PI Sta 12+60.59	PI Sta 12+45.58	
= 3' 20' 05.5" (LT)	Δ = 36' 27' 42.0" (LT)	Δ = 3' 01' 01.4" (RT)	
D = 1' 35' 29.6"	D = 36' 57' 54.1"	D = 6' 01' 52.1"	
L = 209.53'	L = 98.64'	L = 54.45'	
T = 104.80'	T = 51.05'	T = 27.23'	
R = 3,600.00'	R = 155.00'	R = 950.00'	
	SE = 0.02	SE = EXIST.	
	DS = 15 MPH		

BEGIN DETOUR
-DET- STA 12 + 48.49

END DETOUR
-DET- STA 13 + 73.15

DETOUR

INSTALL GEOTEXTILE IN BOTH STREAMS UNDER TEMPORARY FILL.
EST=68 SY
AFTER DETOUR PHASE, REMOVE ALL TEMPORARY FILL AND GEOTEXTILE AND RESTORE STREAM TO PRECONSTRUCTION CONDITIONS. REMOVE TEMPORARY CHANNEL CHANGE AND RESTORE TO PRECONSTRUCTION CONDITIONS.



PIPE HYDRAULIC DATA
TEMP 1@78" CSP -DET- Sta.13+17

DRAINAGE AREA	= 2.97 SQ MILES
DESIGN FREQUENCY	= 2 YRS
DESIGN DISCHARGE	= 260 CFS
DESIGN HW ELEVATION	= 2408.9 FT
OVERTOPPING FREQUENCY	= 2+ YRS
OVERTOPPING DISCHARGE	= 270 CFS
OVERTOPPING ELEVATION	= 2409.2 FT

FOR -Y- PROFILE SEE SHEET 5

REVISIONS

6/13/2024 Madison 13 Madison 2019\Division 13 Madison 2019\Medison 87\Roadway\Proc\Medison 87_Rdy_psh detour.dgn
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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

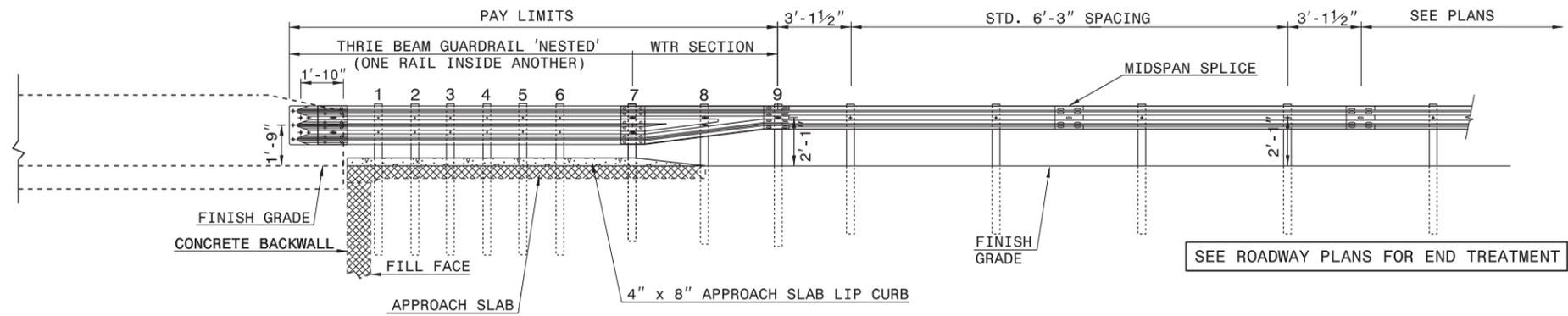
ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC

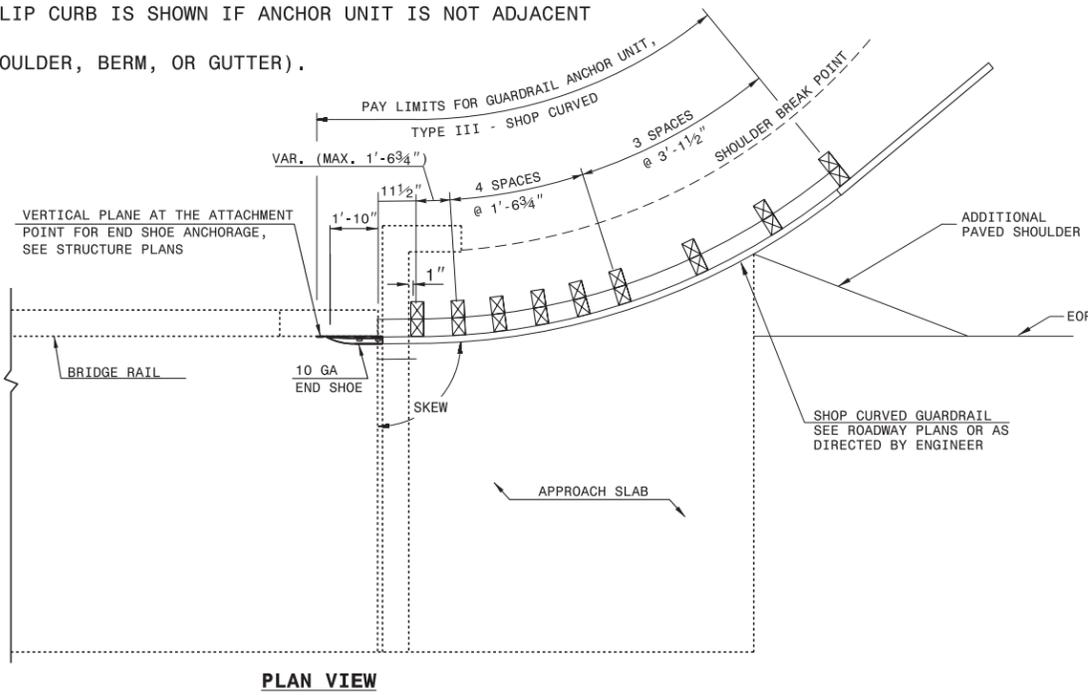
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

SHEET 1 OF 1
TYPE III SC



- NOTE:
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 - *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 - SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 - MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 - USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 - SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



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

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\guardrail\31 inch Guardrail\type_iii.sc.dgn

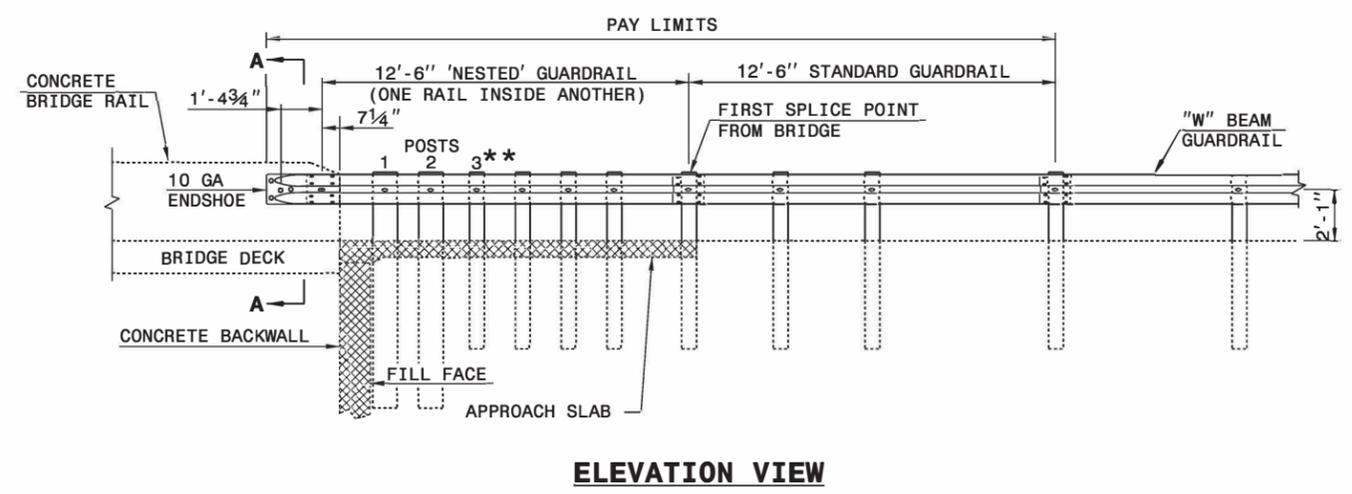
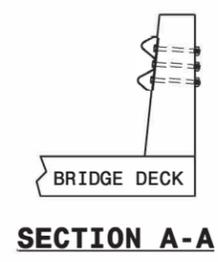


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

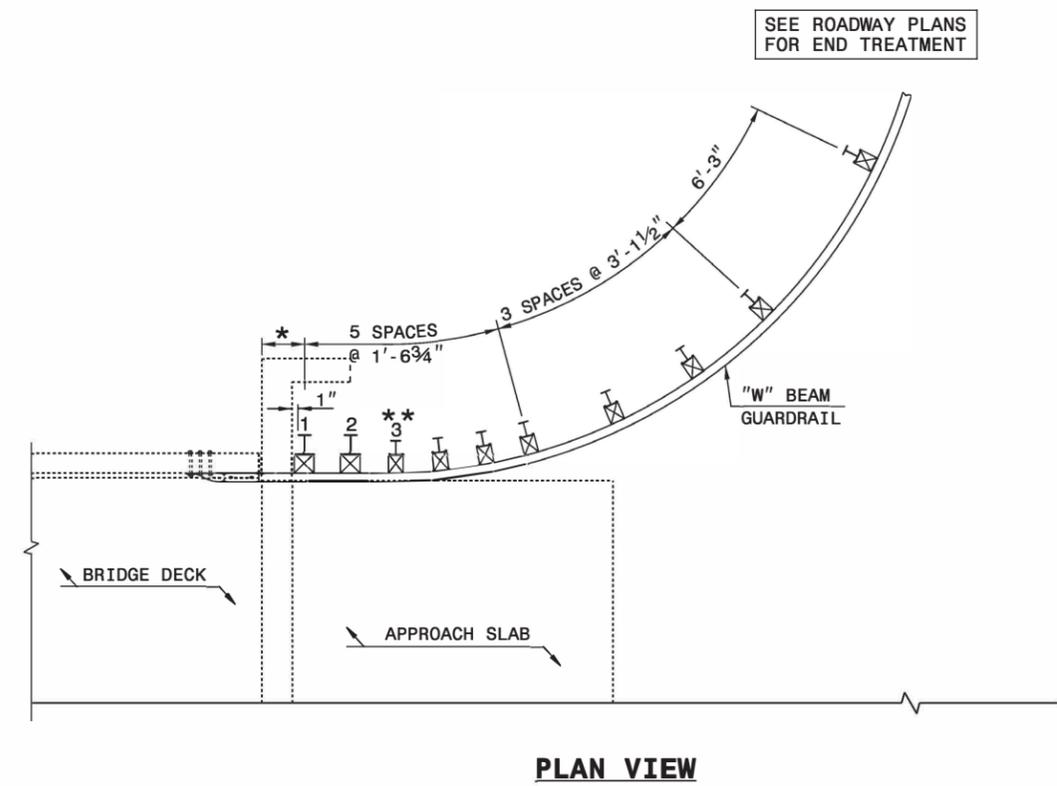
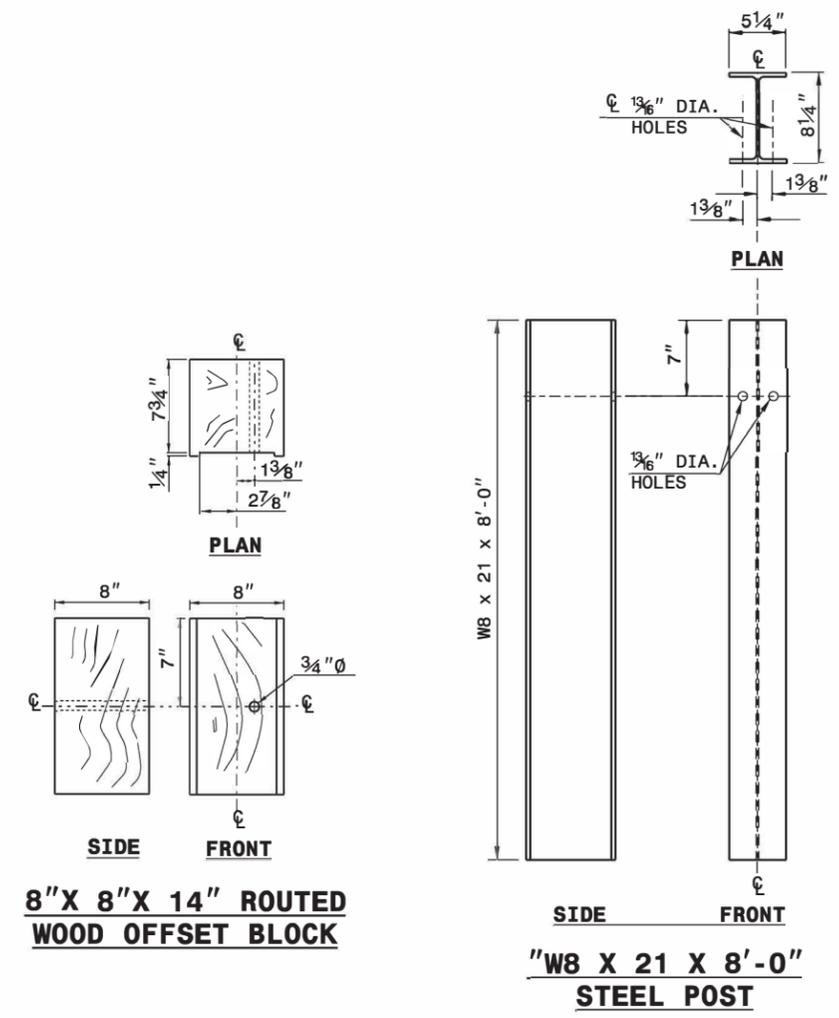
SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: jhowerton\guardrail\31inchguardrail\typeiiiisc.dgn



NOTE:

- **ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- POSTS 1 AND 2 TO BE W8 x 21 x 8'-0" LONG STEEL POST AND 8" x 8" x 14" WOOD ROUTED OFFSET BLOCK.



19-NOV-2018 08:26
 S:\Contracts\Special Details\Vertical\Misc. guardrail\NCHRP350 Approved\8-83_minndot.dgn
 J:\overton AT_CSD-292595



6/24/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GUARDRAIL ANCHOR UNIT TYPE B-83 SHOP CURVED

ORIGINAL BY: E.E. WARD	DATE: 6-10-02
MODIFIED BY: E.E. WARD	DATE: 7-14-04
CHECKED BY:	DATE:
FILE SPEC.:	

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

Table with columns: Station, Station, Uncl. Excav., Embank. +%, Borrow, Waste. Rows include DETOUR CONSTRUCTION, BRIDGE, DETOUR REMOVAL, and GRAND TOTALS.

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

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

EST. DDE = 20 CUBIC YARDS
EST. SHALLOW UNDERCUT = 100 CUBIC YARDS
EST. SELECT GRANULAR MATERIAL = 400 CUBIC YARDS
PER GEOTECH RECOMMENDATION, ESTIMATED 400 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, Station, Station, LOCATION LT/RT/CL, ASPHALT REMOVAL, ASPHALT BREAKUP, CONCRETE REMOVAL, CONCRETE BREAKUP. Includes TOTAL and SAY rows.

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

GUARDRAIL SUMMARY

Main table for GUARDRAIL SUMMARY with columns: LINE, BEG. STA., END STA., LOC., LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPR. END, TRAIL END), "N" DIST. FROM E.O.L., TOTAL SHLDR WIDTH, FLAIR LENGTH (APPR. END, TRAIL END), W (APPR. END, TRAIL END), ANCHORS (AT-1, TYPE III SC, B-83 SC, TL-2), IMP. ATTN. TYPE (EA, G, NG), REMOVE EXISTING GUARDRAIL, REMOVE & RESET EXISTING GUARDRAIL, REMARKS.

TEMPORARY GUARDRAIL SUMMARY

Table for TEMPORARY GUARDRAIL SUMMARY with columns: LINE, BEG. STA., END STA., LOC., LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPR. END, TRAIL END), "N" DIST. FROM E.O.L., TOTAL SHLDR WIDTH, FLAIR LENGTH (APPR. END, TRAIL END), W (APPR. END, TRAIL END), ANCHORS (AT-1, TYPE III SC, B-83 SC, TL-2), IMP. ATTN. TYPE (EA, G, NG), REMOVE EXISTING GUARDRAIL, REMOVE & RESET EXISTING GUARDRAIL, REMARKS.

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

COMPUTED BY: Zachary Richard, PE DATE: 3/8/2024
CHECKED BY: David Petty, PE DATE: 3/21/2024

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

Large table for LIST OF PIPES, ENDWALLS, ETC. with columns: STATION, LOCATION (L, R, OR CL), STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, ENDWALLS, REINFORCED ENDWALLS, QUANTITIES PER EACH (IF THRU LIFT), PER EACH (IF THRU LIFT), LIN. FT., FRAME, GRATES, AND HOOD STANDARD (A, B), TYPE OF GRATE, CONCRETE ENDWALL SECTION, CONCRETE COLLARS CL, CONC. & BRICK PIPE PLUG, CONC. COLLARS CL, CONC. COLLARS CL, REMARKS.

COMPUTED BY: REK DATE: 10/6/2023
 CHECKED BY: DMB DATE: 10/6/2023

(2-3-23)

PROJECT NO. SHEET NO.
 BP13-R023 3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

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 Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	100	200	300		
					TOTAL CY/TONS/SY:	100	200**	300**	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 Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

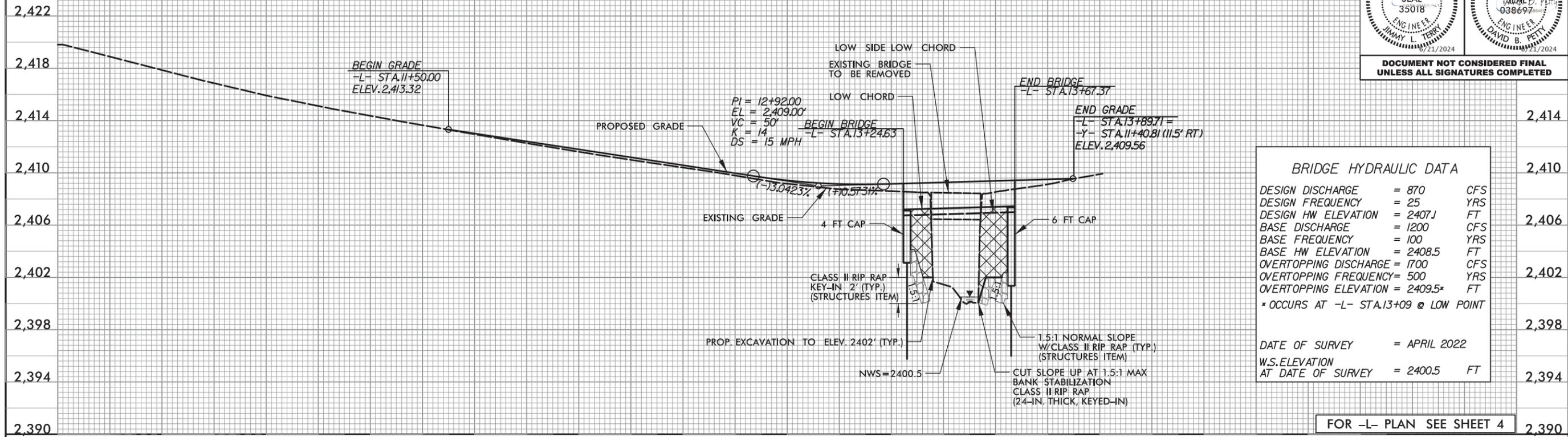
LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
-L-	1:5:1	12+75	1:5:1	13+73	LT			65	
-L-	1.5:1	13+00	1.5:1	13+50	RT			40	
						TOTAL SY:	0	0	105*

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

5/28/99

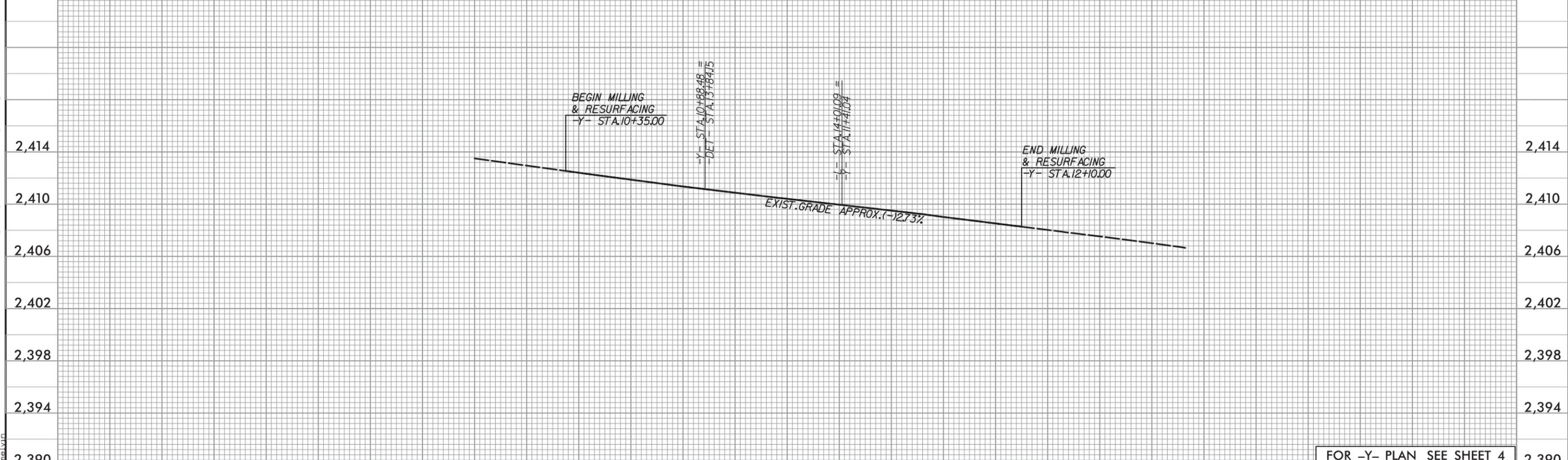
-L-

PROJECT REFERENCE NO. BPI3-R023	SHEET NO. 5
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FOR -L- PLAN SEE SHEET 4

-Y-



FOR -Y- PLAN SEE SHEET 4

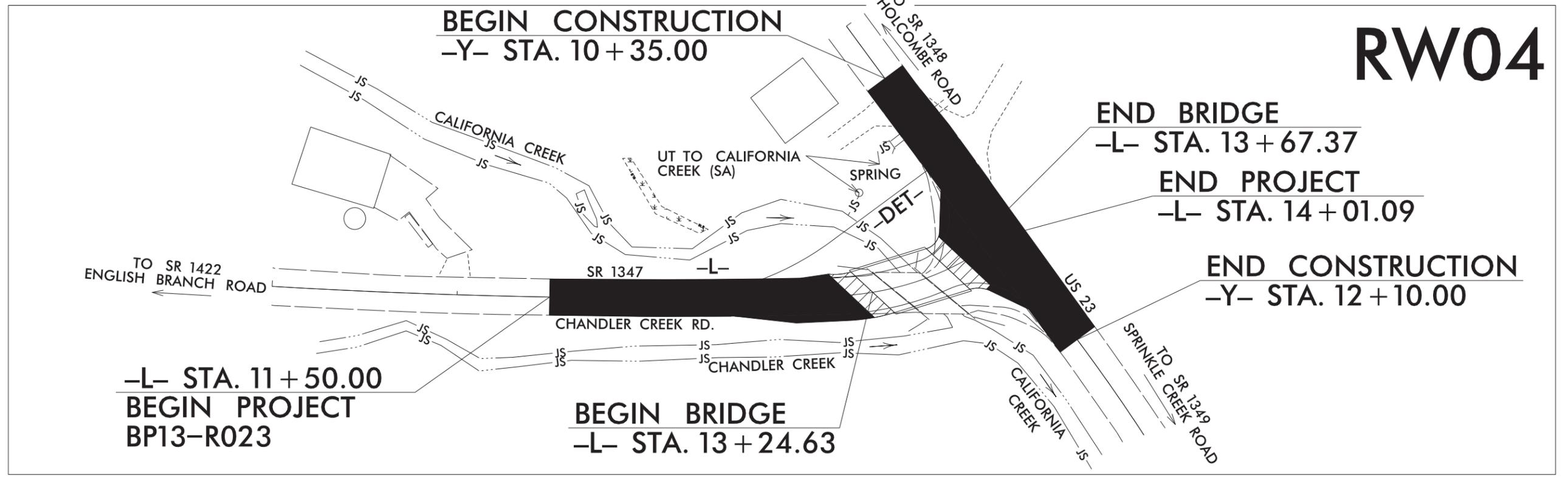
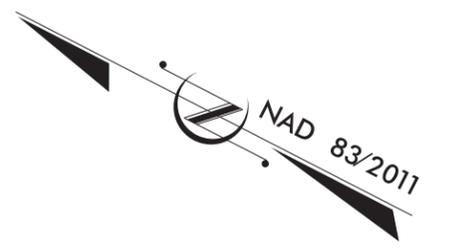
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10/2/2023

PROJECT: BP13-R023

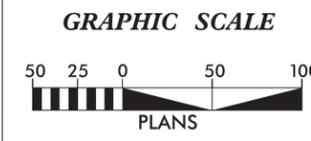
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R023	RW01	5

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



RW04

09-OCT-2023 08:34
S:\surveyors\projects\LIB\560087\2023 RW Staking\MTC\560087.is_rw01.dgn
micornwell AT MORNWELLAPTOP



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CORN" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 789,972.492(ft) EASTING: 958,397.962(ft) ELEVATION: 2,414.18(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99981838
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CORN" TO -L- STATION 10+00.00 IS N 62°05'21.0" W 313.262(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

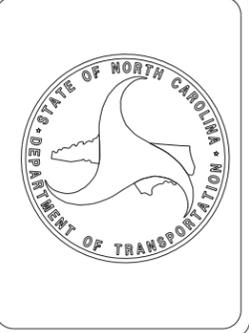
RIGHT OF WAY DATE: 4/7/2024	LETTING DATE: 10/15/2025
---------------------------------------	------------------------------------

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
Matthew Cornwell
10/9/2023

SEAL
L-4775
MATTHEW T. CORNWELL
NORTH CAROLINA PROFESSIONAL LAND SURVEYOR

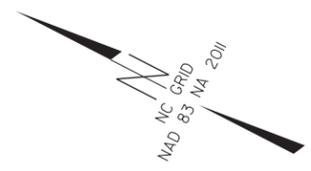
10/9/2023
SIGNATURE: _____ Date: _____



SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. BP13-R023	SHEET NO. RW02C-1
Location and Surveys	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
 SEAL L-4775 MATTHEW T. CORNWELL LAND SURVEYOR	
DocuSigned by: Matthew Cornwell 1147781475 4/6/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BASELINE

BL POINT	DESC.	NORTH	EAST	ELEVATION
3	BL -3	790126.5109	958100.1004	2419.87
4	BL -4	789717.2579	958325.5300	2414.41
1	NCGS CORN	789972.4920	958397.9620	2414.18
5	BL -5	790834.9599	958862.2460	2459.73
2	NCGS MASH	792245.4070	959565.4820	2503.93

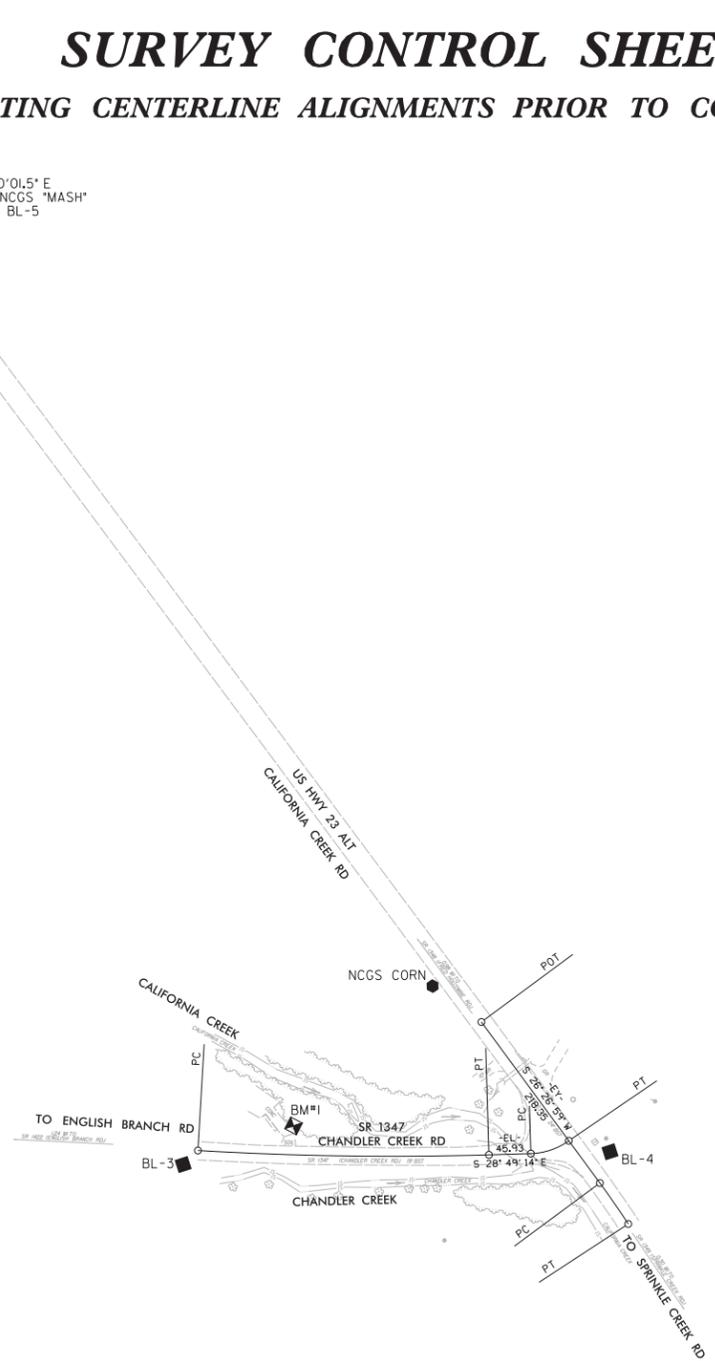
I, Matthew T. Cornwell, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: N/A
 Dates of survey: 1/31/2022
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: NCGS "CORN"
 Localized around: NCGS "CORN"
 Northing: 789972.492
 Easting: 958397.962
 Combined grid factor: 0.99981838
 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 from 2/7/2022 to 2/15/2022, 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

DocuSigned by:
 Matthew Cornwell
 1147781475
 Professional Land Surveyor L-4775



BENCHMARK

.....
 BM1 ELEVATION = 2416.13
 N 790038 E 958193
 BL STATION 6+22.00 39 LEFT
 RR SPIKE IN BASE OF 14' WALNUT

EXISTING HORIZONTAL ALIGNMENTS

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	790119.129	958121.140							
CURVE			S 26°17'08.3" E	318.45	05°04'11.6"(LT)	01°35'29.6"	318.55	159.38	360.00
PT	789833.611	958262.163							
LINE			S 28°49'14.1" E	45.93					
PC	789793.373	958284.303							
CURVE			S 45°47'45.7" E	43.79	33°57'03.2"(LT)	76°23'39.7"	44.44	22.89	75.00
PT	789762.839	958315.697							

EY POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	789907.075	958387.453							
LINE			S 26°26'59.1" W	218.35					
PC	789711.585	958290.199							
CURVE			S 28°05'29.8" W	54.44	03°17'01.4"(RT)	06°01'52.1"	54.45	27.23	950.00
PT	789663.559	958264.565							

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. BP13-R023	SHEET NO. 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:  <small>EB036F11473E475</small>	
10/9/2023	
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 10/9/2023

DocuSigned by:

EB036F11473E475
 Professional Land Surveyor L-4775

REVISIONS

L			
TYPE	STATION	NORTH	EAST
PC	10+00.00	790119.1288	958121.1399
PCC	13+03.64	789846.6868	958255.0032
PT	13+98.24	789782.0690	958322.0731
POT	14+01.09	789780.7965	958324.6310

Y			
TYPE	STATION	NORTH	EAST
POT	10+00.00	789907.0749	958387.4529
PC	12+18.35	789711.5846	958290.1989
PT	12+72.79	789663.5591	958264.5647

NOTES:

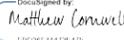
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

09-OCT-2023 08:18
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 Matthew T. Cornwell
 PLSSURVEYOR

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP13-R023	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:  <small>1182092 114278 475</small>	
10/9/2023	
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 10/3/2023, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 10/9/2023
 DocuSigned by:

1182092 114278 475
 Professional Land Surveyor L-4775

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+25.00	-30.00	789929.9241	958244.7860

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+58.00	16.00	789862.2726	958347.2937

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+68.00	-53.66	789903.2719	958285.4734

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+35.00	54.00	789899.7908	958323.5158
Y	10+35.00	16.00	789882.8651	958357.5382

REVISIONS

09-OCT-2023 08:17
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 Matthew T. Cornwell
 Professional Land Surveyor L-4775

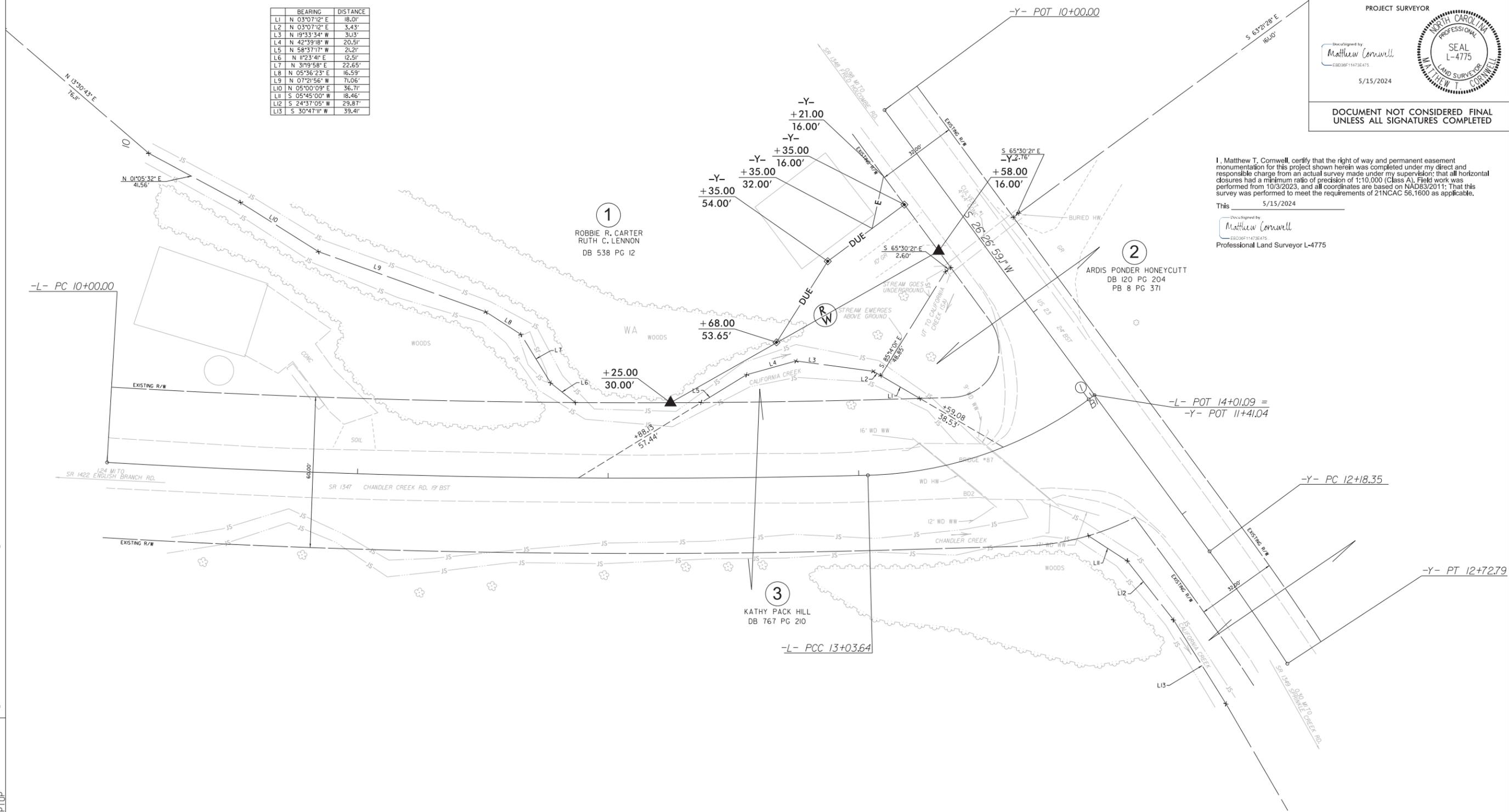
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 10/3/2023.

PROJECT REFERENCE NO. BP13-R023	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	
 5/15/2024	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BEARING	DISTANCE
L1 N 03°07'12" E	18.01'
L2 N 03°07'12" E	3.43'
L3 N 19°33'34" W	31.13'
L4 N 42°39'18" W	20.51'
L5 N 58°37'17" W	21.21'
L6 N 11°23'41" E	12.51'
L7 N 31°19'58" E	22.65'
L8 N 05°36'23" E	16.59'
L9 N 07°21'56" W	71.06'
L10 N 05°00'09" E	36.71'
L11 S 05°45'00" W	18.46'
L12 S 24°37'05" W	29.87'
L13 S 30°47'11" W	39.41'

ROBBIE R. CARTER
RUTH C. LENNON
DB 538 PG 12



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 10/3/2023, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This: 5/15/2024

DocuSigned by:
Matthew Cornwell
Professional Land Surveyor L-4775

REVISIONS

-L- CURVE DATA		-Y- CURVE DATA	
PI Sta 11+51.91	PI Sta 13+52.46	PI Sta 12+45.58	
$\Delta = 4' 49'' 57.4''$ (LT)	$\Delta = 34' 58'' 00.9''$ (LT)	$\Delta = 3' 17'' 01.4''$ (RT)	
$D = 1' 35'' 29.6''$	$D = 36' 57'' 54.1''$	$D = 6' 01'' 52.1''$	
$L = 303.64'$	$L = 94.59'$	$L = 54.45'$	
$T = 151.91'$	$T = 48.82'$	$T = 27.23'$	
$R = 3,600.00'$	$R = 155.00'$	$R = 950.00'$	
SE = EXIST.	SE = -0.03	SE = EXIST.	
	DS = <15 MPH		
	BI = S 63° 33' 00.9" E		
	① -L- PT 13+98.24		

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 10/3/2023.

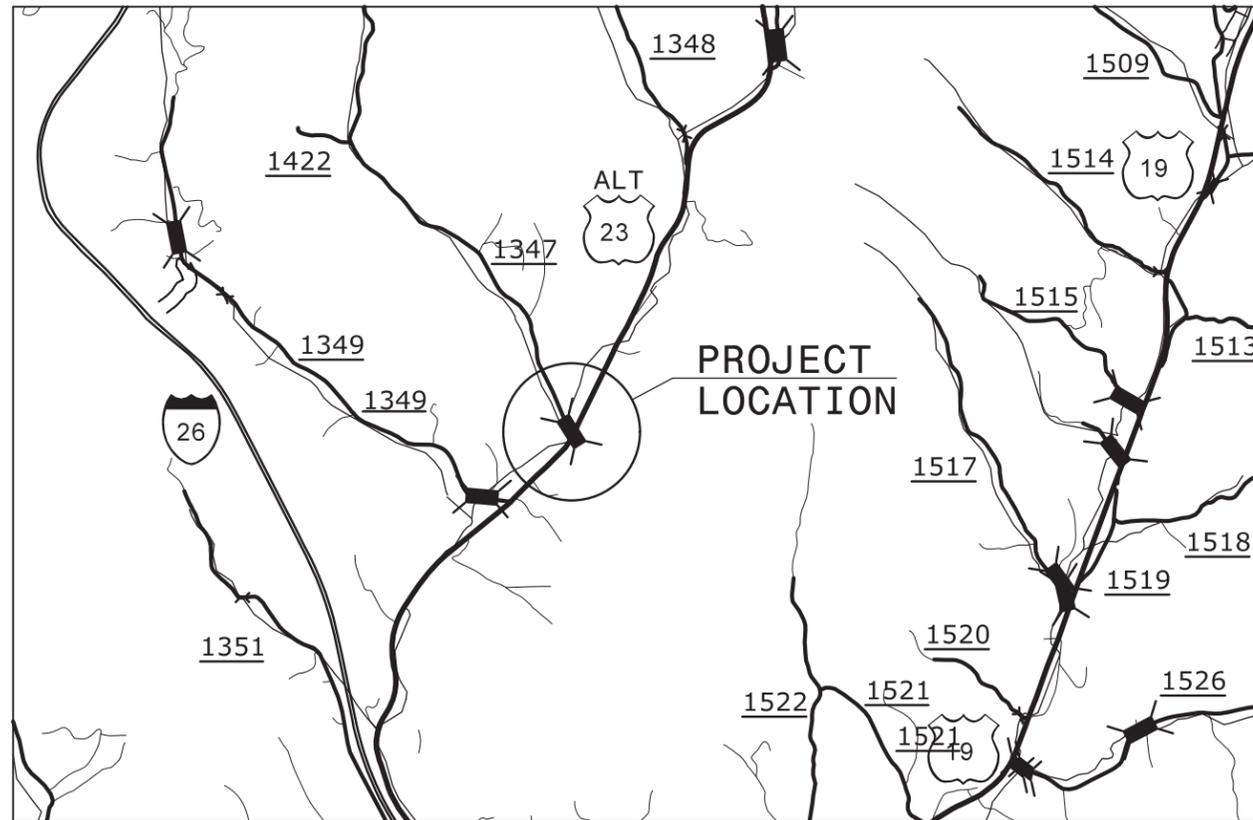
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 Matthew T. Cornwell
 Professional Land Surveyor L-4775

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MADISON COUNTY

LOCATION: BRIDGE #560087 OVER CALIFORNIA CREEK ON SR 1347 (CHANDLER CREEK RD)

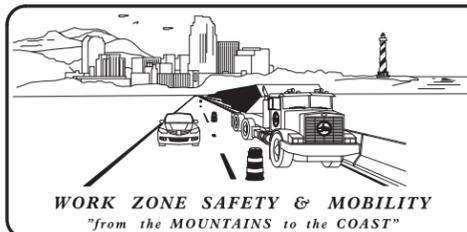


INDEX OF SHEETS

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

SHEET NO.
TMP-1
PROJECT: BP13-R023

6/13/2024 13: Madison 2019\Madison 87\TrafficControl\TCP\Madison 87_TC_TMP_01.dgn User: smelvin



PLANS PREPARED BY:
DON PARKER, PE **PROJECT ENGINEER**
SANDRA MELVIN **DESIGN ENGINEER**

NCDOT CONTACTS:
EDDIE DOUGLAS
DIVISION BRIDGE PROGRAM MANAGER



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

APPROVED: 
DATE: 6/21/2024


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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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
- MILL EXISTING PAVEMENT

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY
- PORTABLE
- DRIVEWAY

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

- PAINT (4")
- P1 (4") WHITE EDGELINE
- P13 (4") YELLOW DOUBLE CENTER
- PAINT (24")
- P61 (24") WHITE STOPBAR

6/13/2024 1:13:00 PM Division 13 Madison 2019\Madison 87\TrafficControl\TCP\Madison 87_TC_TMP_01a.dgn User:rsmevin

APPROVED: DATE: 6/21/2024 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		ROADWAY STANDARD DRAWINGS & LEGEND
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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.

TIME RESTRICTIONS

A) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION / OPERATION
SR 1347 (-L-)	MON THRU FRI	30 MINUTES
US 23 ALT (-Y-)	6:00 AM TO 9:00 AM 3:00 PM TO 7:00 PM	MATERIAL AND EQUIPMENT DELIVERY

LANE AND SHOULDER CLOSURE REQUIREMENTS

- B) 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.
- C) 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.
- D) 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.

- E) 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.
- F) 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

G) 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.

H) 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) 200 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- J) 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.
- K) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- L) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- M) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- N) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

- O) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- 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
CHANDLER CREEK RD (-L-)	PAINT	NONE
US 23 (-Y-)	PAINT	NONE

- R) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS 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 1347 (CHANDLER CREEK RD) WILL BE CONSTRUCTED USING A COMBINATION OF DEVICES INCLUDING AN ONSITE DETOUR IN A ONE-LANE TWO-WAY PATTERN, A PORTABLE TRAFFIC SIGNAL SYSTEM, AND TEMPORARY LANE CLOSURES UTILIZING FLAGGERS.

6/13/2024 13: Madison 2019\Madison 87\Traffic\TrafficControl\TCP\Madison 87_TC_TMP_01B.dgn User:tsme/vin

APPROVED: <i>Don A. Parker</i> <small>7508969A26F44C</small> DATE: 6/21/2024			TRANSPORTATION OPERATIONS PLAN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PROJ. REFERENCE NO.	SHEET NO.
BP13-R023	TMP-2
 TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

PHASING

NOTE: UNLESS OTHERWISE NOTED ACCESS TO ALL DRIVEWAYS MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT AREA.

PHASE I (TMP-3)

STEP 1

PLACE ADVANCED WORK WARNING SIGNS IN ACCORDANCE WITH TMP-3. SEE NCDOT RSD 1101.01, SHT 3 OF 3 FOR ADDITIONAL INFORMATION.

STEP 2

WITH TRAFFIC IN EXISTING PATTERN AND USING TEMPORARY LANE CLOSURES AS NEED CONSTRUCT -DET- FROM -DET- STA. 12+65± TO STA. 13+73±.

PLACE TEMPORARY 78" CSP.

STEP 3

INSTALL TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM. (SEE SPECIAL PROVISION)

PLACE SIGNAGE ALONG SR 1347 AND US 23, KEEP COVERED.

PLACE TEMPORARY PAVEMENT MARKINGS.

PHASE II (TMP-4)

STEP 1

ACTIVATE TEMPORARY PORTABLE SIGNALS, UNCOVER SIGNAGE, SHIFT TRAFFIC ONTO DETOUR, AND CLOSE SR 1347 CHANDLER CREEK (-L-) TO TRAFFIC.

STEP 2

REMOVE THE EXISTING STRUCTURE OVER CALIFORNIA CREEK.

CONSTRUCT THE PROPOSED STRUCTURE OVER CALIFORNIA CREEK FROM -L- STA. 13+24.63 TO STA. 13+67.37, INCLUDING ASPHALT OVERLAY.

CONSTRUCT BRIDGE APPROACHES

CONSTRUCT TIE-INS TO EXISTING PAVEMENT AS SHOWN ON PLANS.

PLACE TEMPORARY PAVEMENT MARKINGS ON BRIDGE AND APPROACHES AS SHOWN ON PLANS(TMP-4)

PHASE III (TMP-5)

STEP 1

DEACTIVATE THE PORTABLE TRAFFIC SIGNAL SYSTEM, REMOVE SIGNAGE AND CONFLICTING PAVEMENT MARKINGS. CLOSE THE DETOUR TO TRAFFIC AND SHIFT TRAFFIC ONTO NEWLY CONSTRUCTED BRIDGE.

STEP 2

USING FLAGGERS REMOVE DETOUR AND RESTORE LANDSCAPE.

STEP 3

USING FLAGGERS, MILL EXISTING US 23 ALT (-Y-) AND PLACE FINAL LAYER OF SURFACE COURSE THROUGHOUT PROJECT LIMITS.

STEP 4

USING FLAGGERS PLACE FINAL PAVEMENT MARKINGS.

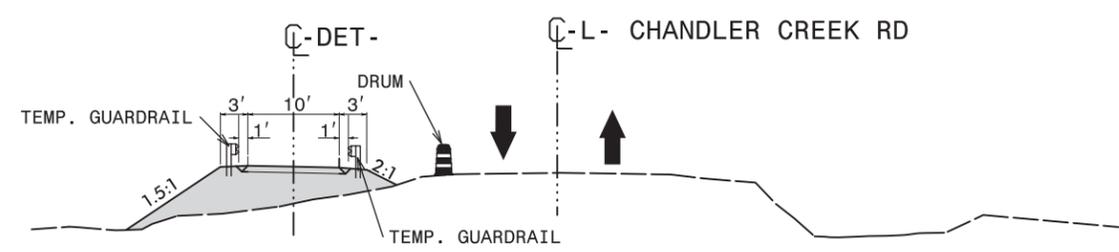
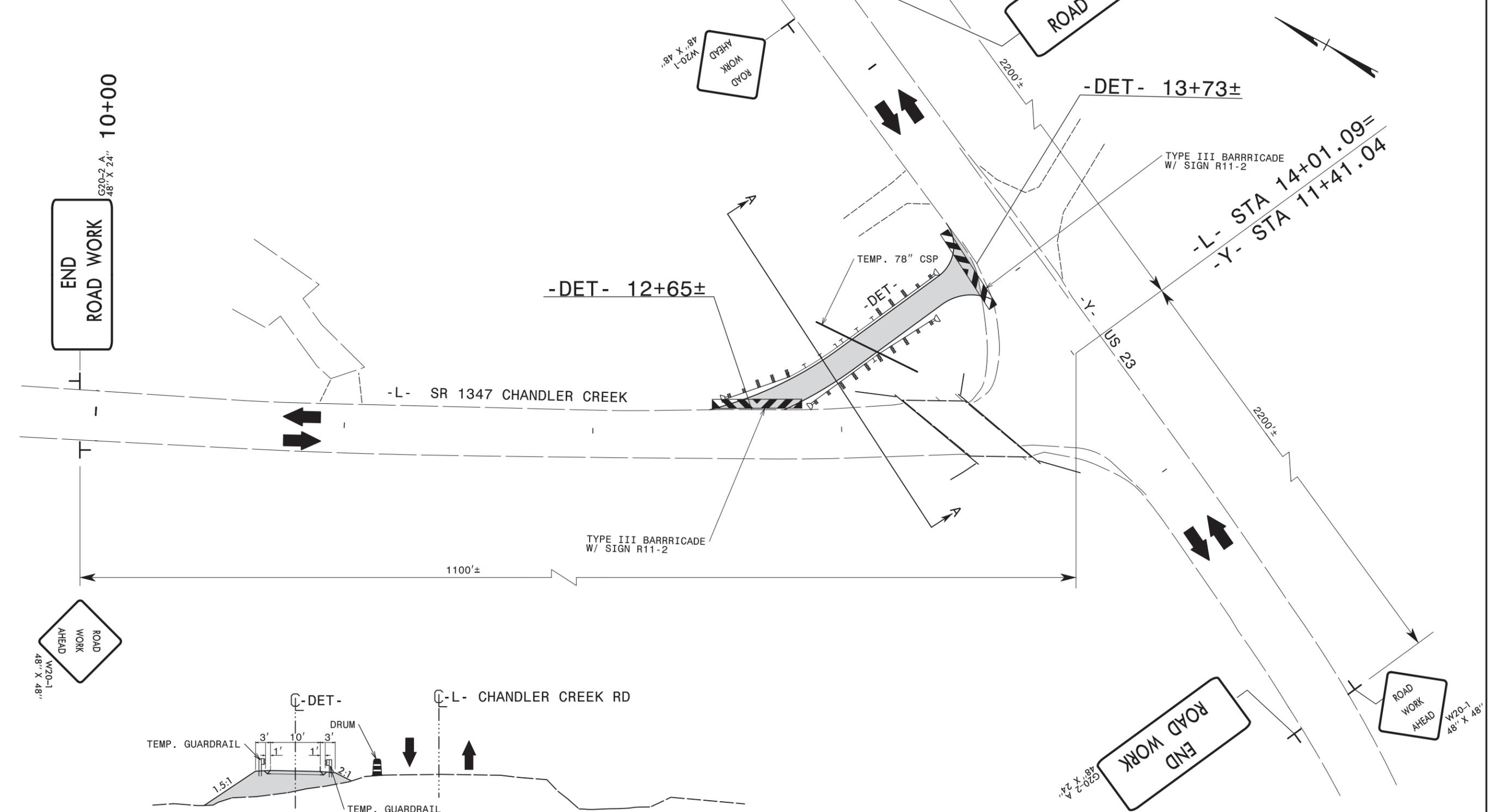
STEP 5

REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES.

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APPROVED:  DATE: 6/21/2024	SEAL 		TEMPORARY TRAFFIC CONTROL PHASING
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PHASE I



SECTION A-A
-DET- STA. 13+00



TYPE III BARRICADE



DRUM

APPROVED: *Don A. Parker*
DATE: 6/21/2024

SEAL

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**TEMPORARY
TRAFFIC CONTROL**

PHASE I

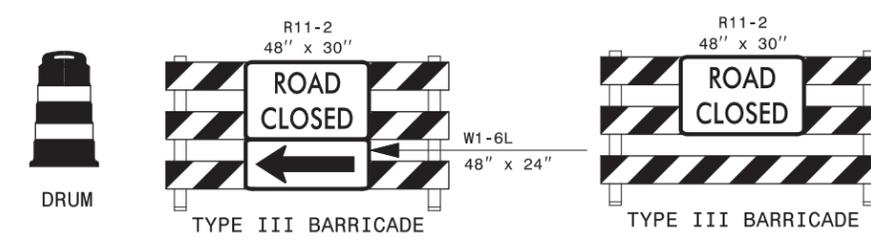
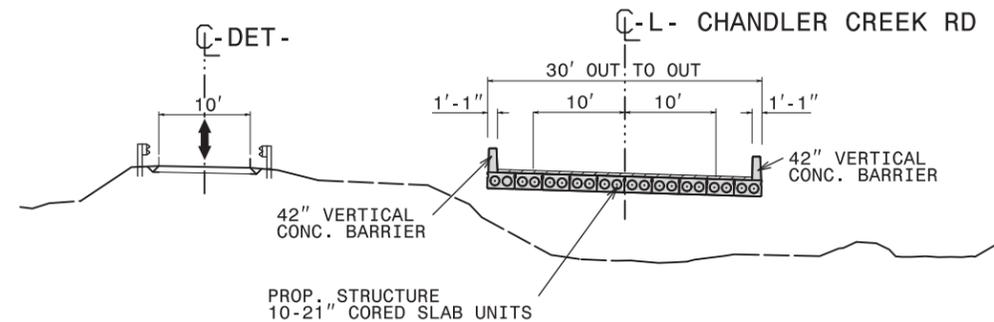
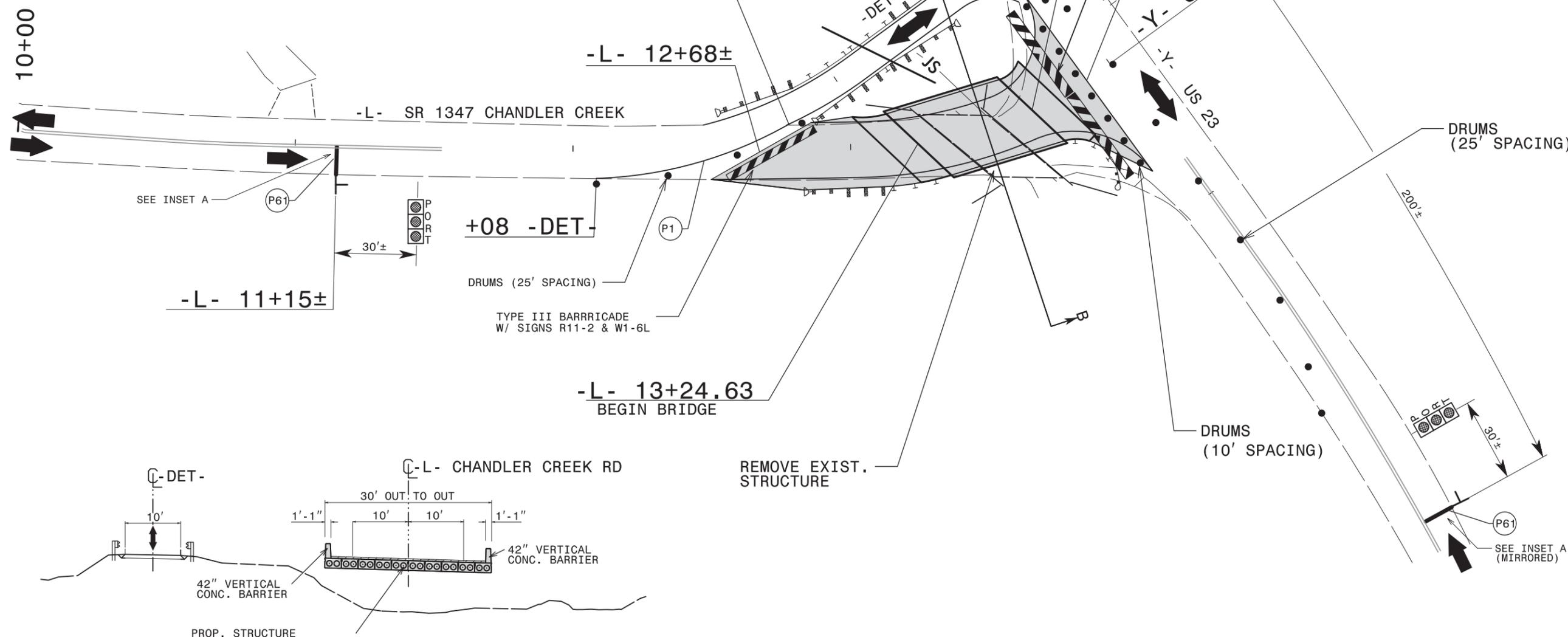
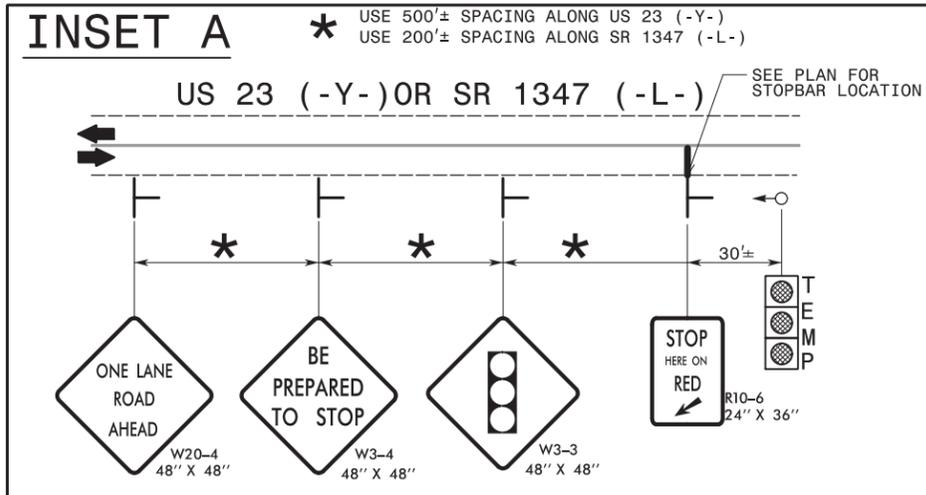
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PHASE II

MADISON COUNTY
BRIDGE #560087

PROJ. REFERENCE NO.	SHEET NO.
BP13-R023	TMP-4
 TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	

NOTE:
 NOTIFY ZACHARY CLARK, PE WESTERN REGIONAL PROJECT ENGINEER
 WITH THE WORK ZONE TRAFFIC CONTROL SECTION AT 919-814-4937
 OR ZTCLARK@NCDOT.GOV PRIOR TO ACTIVATING DRIVEWAY SIGNAL.



APPROVED: *Don A. Parker*
 DATE: 6/21/2024

SEAL

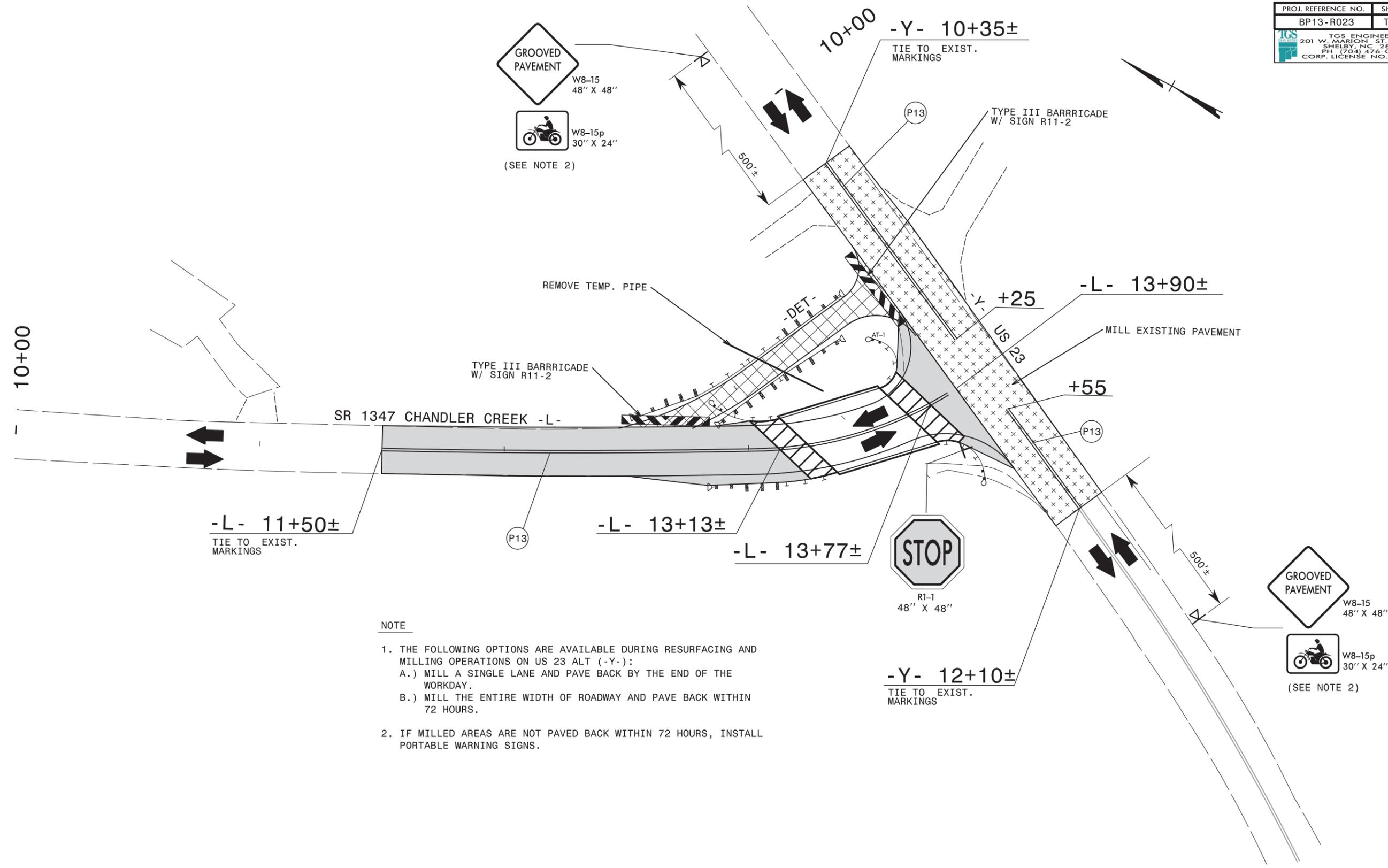


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**TEMPORARY
TRAFFIC CONTROL
PHASE II**

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NOTE

- THE FOLLOWING OPTIONS ARE AVAILABLE DURING RESURFACING AND MILLING OPERATIONS ON US 23 ALT (-Y-):
 - MILL A SINGLE LANE AND PAVE BACK BY THE END OF THE WORKDAY.
 - MILL THE ENTIRE WIDTH OF ROADWAY AND PAVE BACK WITHIN 72 HOURS.
- IF MILLED AREAS ARE NOT PAVED BACK WITHIN 72 HOURS, INSTALL PORTABLE WARNING SIGNS.



APPROVED: *Don A. Parker*
 DATE: 6/21/2024

SEAL



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**TEMPORARY
TRAFFIC CONTROL
PHASE III**

6/13/2024
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PROJECT:BP13-R023

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
MADISON COUNTY**

LOCATION: BRIDGE #560087 OVER CALIFORNIA CREEK ON SR 1347 (CHANDLER CREEK RD)

TIP NO. BP13-R023	SHEET NO. PMP-1
APPROVED: <u>Don A. Parker</u> <small>75028650ADEF480</small>	
DATE: 6/21/2024	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

ROADWAY STANDARD DRAWING

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

<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1347 CHANDLER CREEK (-L-)	PAINT	NONE
US 23 (-Y-)	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	(4") WHITE EDGELINE
P5	(4") 2 FT. - 6 FT./SP WHITE MINISKIP
P13	(4") YELLOW DOUBLE CENTER

PLAN SUBMITTED TO:

EDDIE DOUGLAS
DIVISION BRIDGE PROGRAM MANAGER



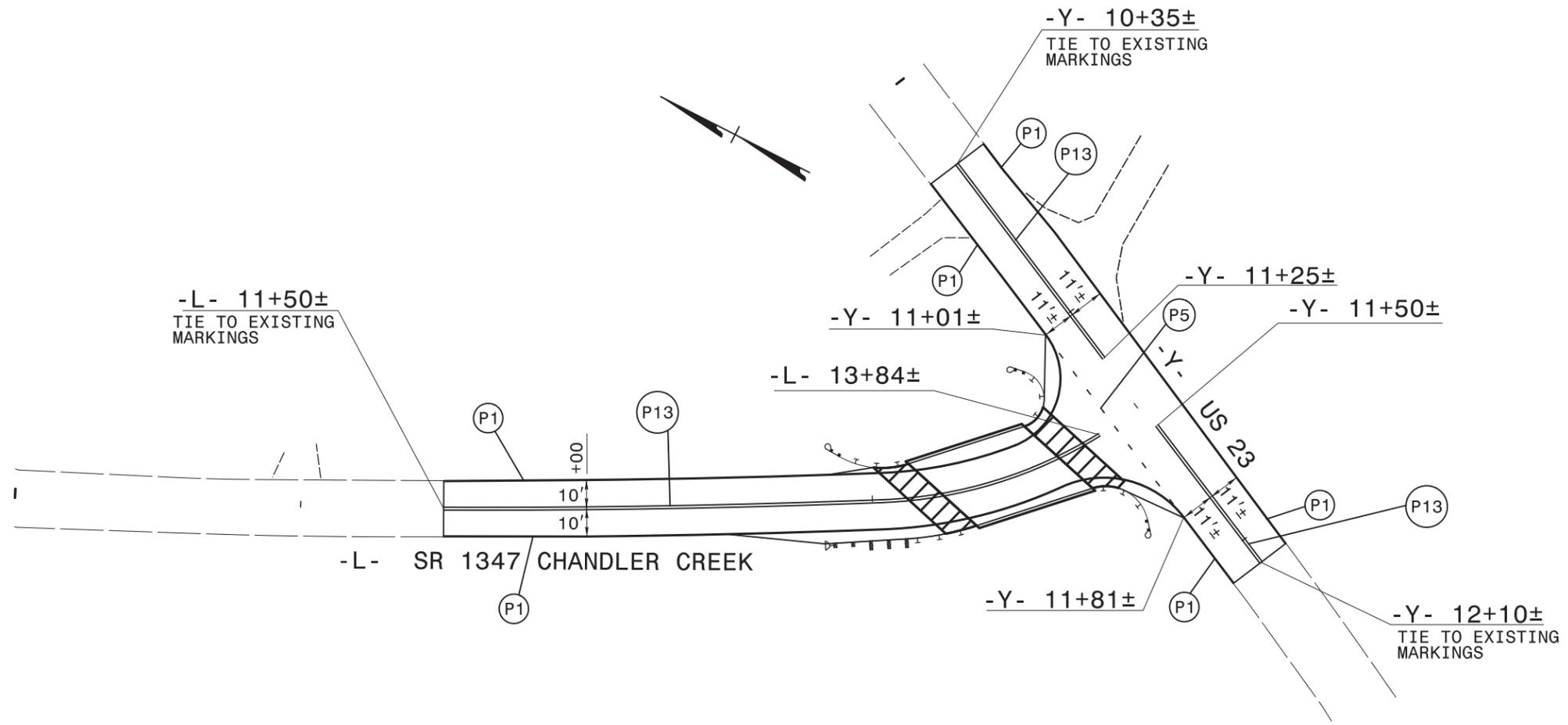
PLAN PREPARED BY: TGS ENGINEERS

<u>DON PARKER, PE</u>	PROJECT ENGINEER
<u>SANDRA MELVIN</u>	DESIGN TECHNICIAN



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

TIP NO. BP13-R023	SHEET NO. PMP-2
APPROVED: <i>Don A. Parker</i>	
DATE: 6/21/2024	
SEAL	
	
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 TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	



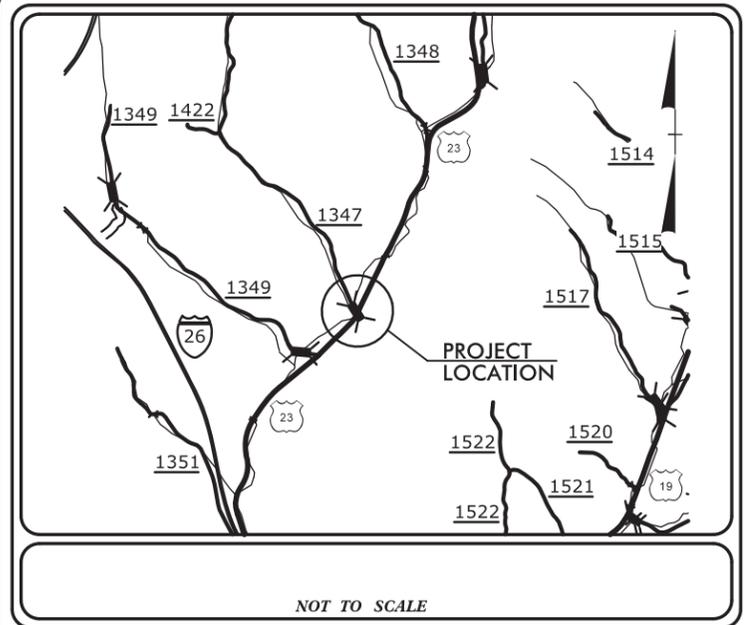
SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

PAVEMENT MARKING DETAIL

6/13/2024 X:\NC\DOT\Division 13\Madison 2019\Madison 87\Traffic\Pavement Markings\Madison 87_Sgn_PMP_02.dgn User:smelvin

PROJECT: BP13-R023

CONTRACT: DM00448



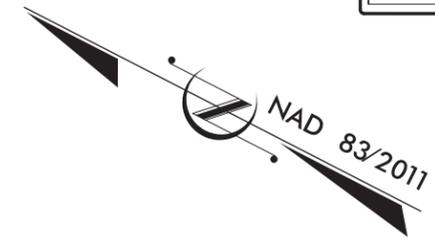
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 PLAN FOR PROPOSED
 HIGHWAY EROSION CONTROL

MADISON COUNTY

LOCATION: BRIDGE NO. 560087 OVER CALIFORNIA CREEK
 ON SR 1347 (CHANDLER CREEK RD ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R023	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP13.R023.1	N/A	PE	
BP13.R023.2	N/A	RW & UTIL	
BP13.R023.3	N/A	CONST.	

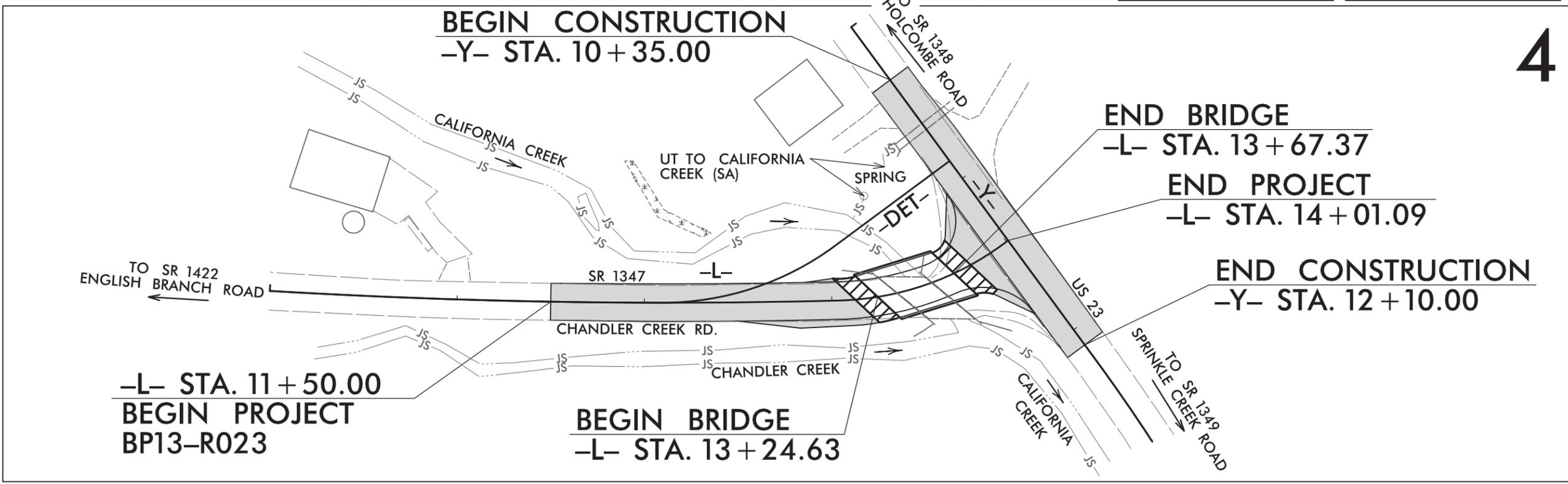


THIS PROJECT CONTAINS
 EROSION CONTROL PLANS
 FOR CLEARING AND
 GRUBBING PHASE OF
 CONSTRUCTION.

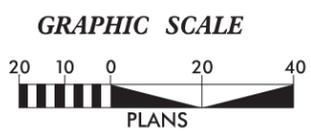
THIS PROJECT HAS
 BEEN DESIGNED TO
 SENSITIVE WATERSHED
 STANDARDS.

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

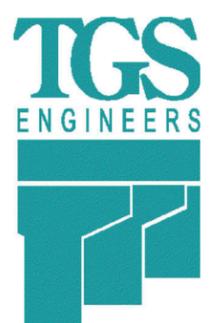
HIGH QUALITY WATER(S) EXIST
 ON THIS PROJECT
 High Quality Water Zone(s) Exist
 From Sta. Begin
 to Sta. End
 Refer To E. C. Special Provisions
 for Special Considerations.



4



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH
 THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000
 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2024
 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF
 ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.



Prepared In the Office of:
TGS ENGINEERS
 201 W. MARION ST-STE 200
 SHELBY, NC 28150

Designed by:
Andrew H. Cochrane, PE 3015
 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

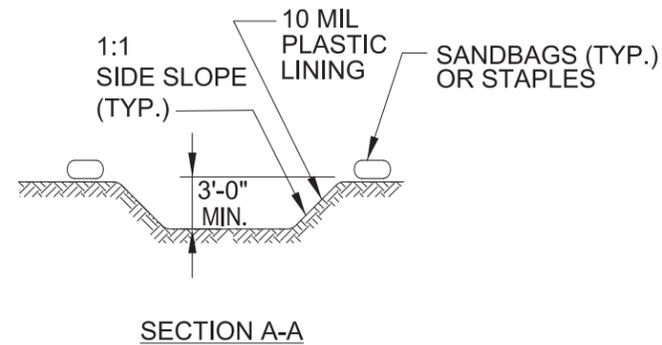
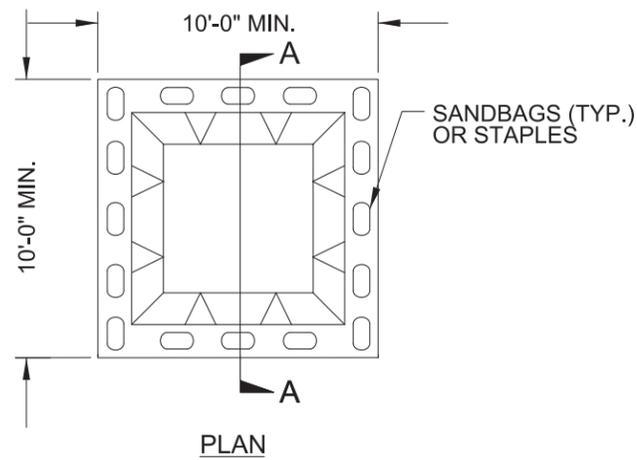
PROJECT REFERENCE NO. BP13-R023	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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				

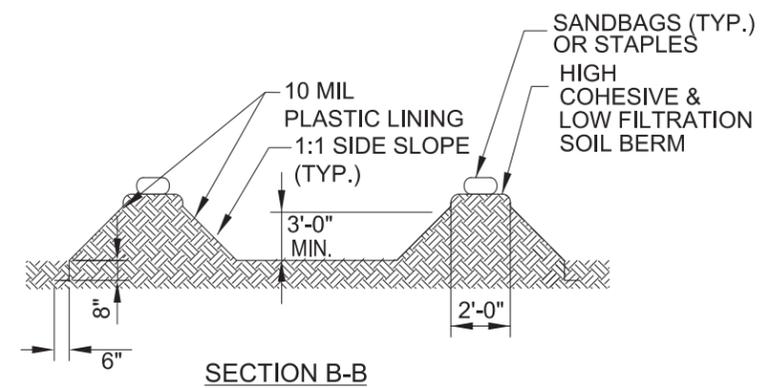
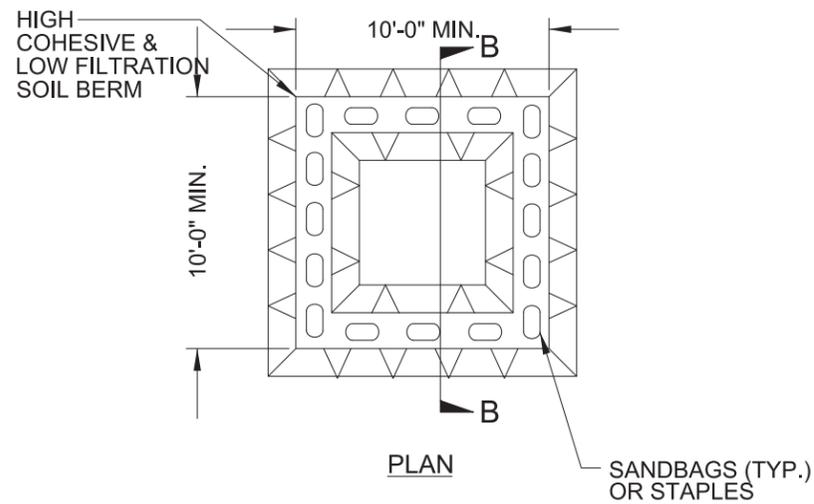
PROJECT REFERENCE NO.	SHEET NO.
<i>BP13-R023</i>	<i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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>BPI3-R023</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

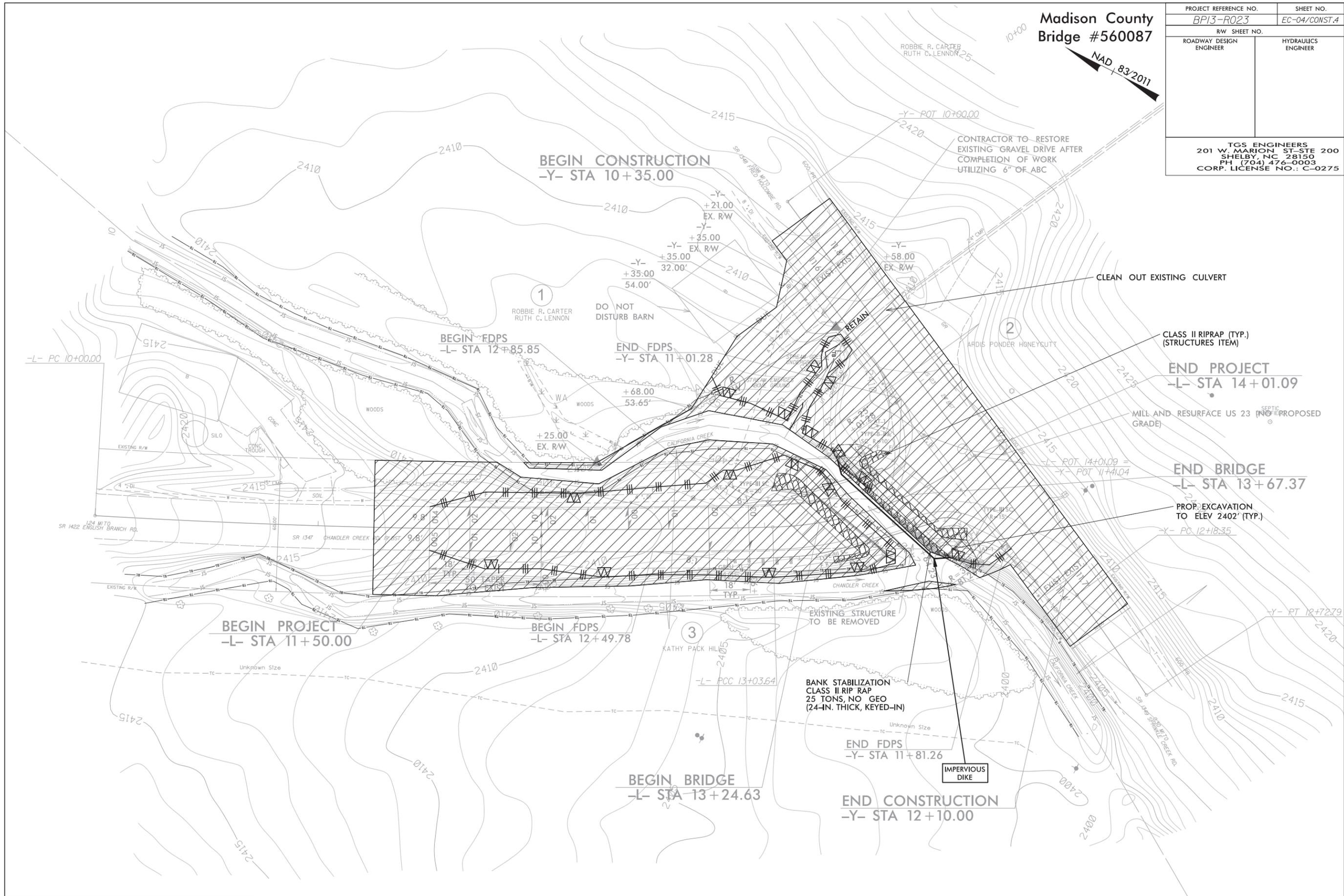
SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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 #560087

PROJECT REFERENCE NO. BPI3-R023	SHEET NO. EC-04/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

NAD 83/2011



 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

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

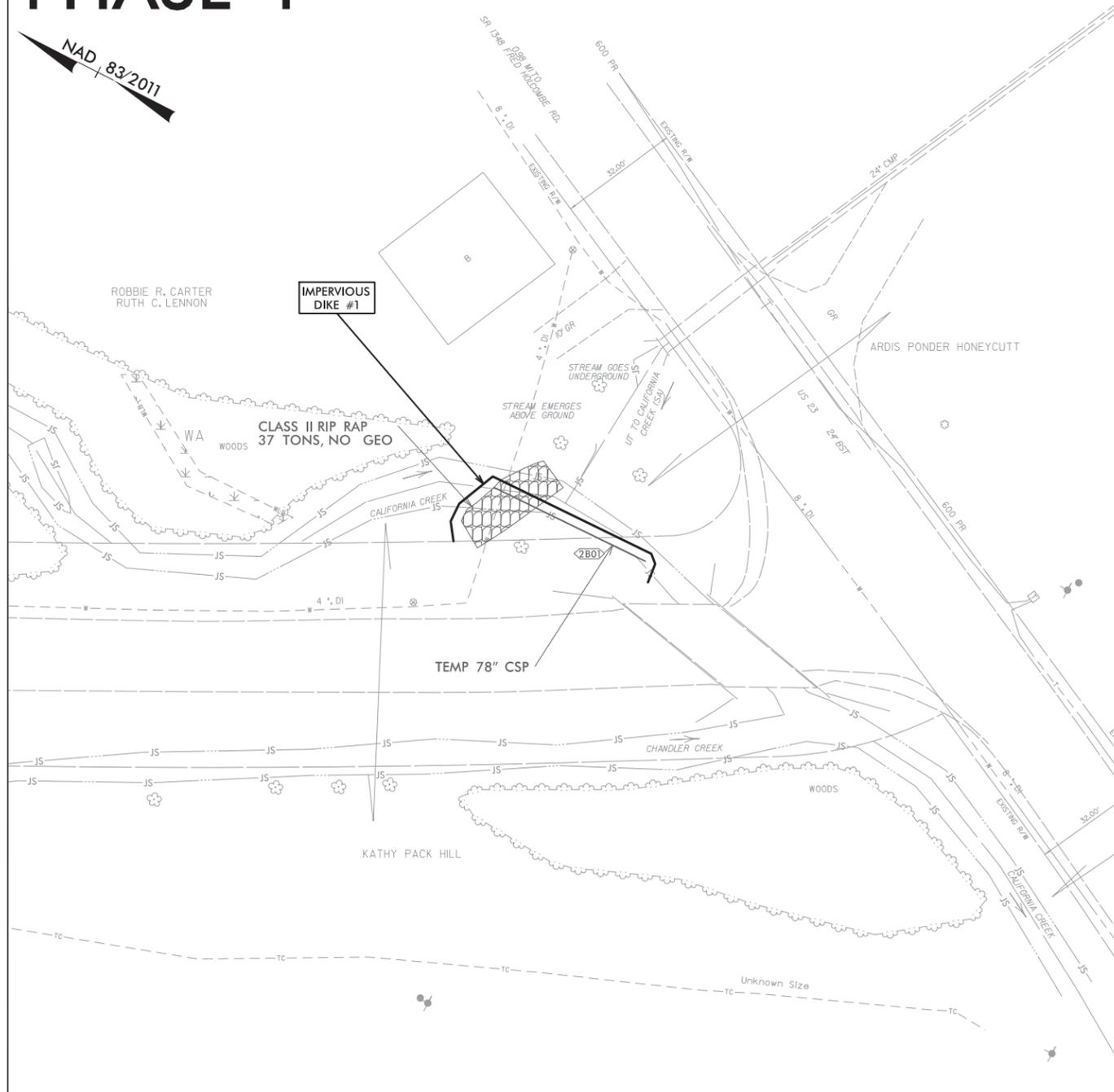
PROJECT REFERENCE NO. BPI3-R023	SHEET NO. EC-05/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PIPE CONSTRUCTION SEQUENCE STA. 13+17 -DET-

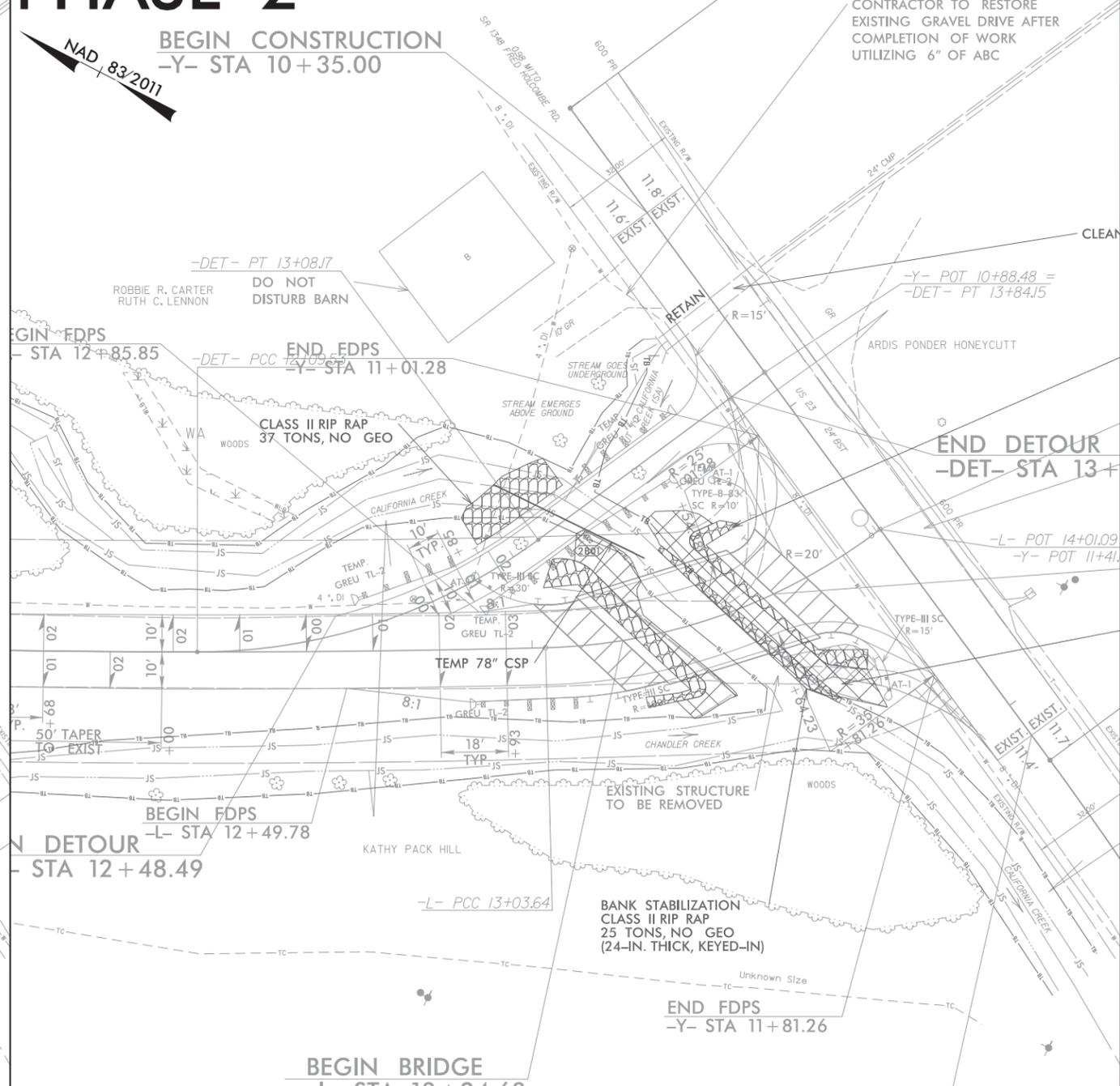
1. INSTALL TRAFFIC CONTROL DEVICES AS DESCRIBED ON TMP-3.
2. INSTALL IMPERVIOUS DIKE #1.
3. DEWATER WORK SITE AS NEEDED INTO SPECIAL STILLING BASIN(S).
4. INSTALL TEMPORARY 78" DRAINAGE PIPE PER NCDOT RDY STD. 1645.01.
5. REMOVE IMPERVIOUS DIKE #1 AND INSTALL APPROX. 37 TONS OF CLASS II RIP RAP, DIVERTING FLOW INTO TEMPORARY 78" DRAINAGE PIPE.

1. CONSTRUCT DETOUR ROADWAY AND SHIFT TRAFFIC.
2. REMOVE EXISTING BRIDGE, INSTALL NEW BRIDGE, AND CONSTRUCT PROPOSED -L- ROADWAY.
3. SHIFT TRAFFIC TO PROPOSED -L- ROADWAY.
4. REMOVE DETOUR ROADWAY, TEMPORARY DRAINAGE PIPE, AND CLASS II RIP RAP.
5. DISPOSE OF TEMPORARY DRAINAGE PIPE AS DESCRIBED IN DRAINAGE PLANS.
6. COMPLETE ANY NECESSARY INLET/OUTLET CHANNEL IMPROVEMENTS AND REESTABLISH STREAM ACCORDING TO CONST. PLANS.
7. REMOVE ANY REMAINING SPECIAL STILLING BASIN(S) AND COMPLETE ROADWAY.

PHASE 1



PHASE 2



DETOUR

MAINTAIN EROSION CONTROL PERIMETER PROTECTION FROM EC-04/CONST.4 AS APPROPRIATE FOR FINAL DETOUR PHASE.

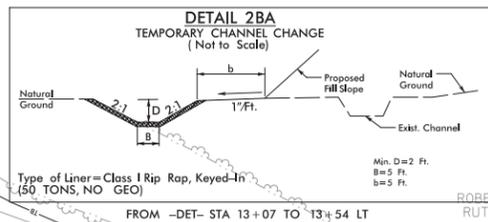
Madison County
Bridge #560087

ROBBIE R. CARTER
RUTH C. LENNON

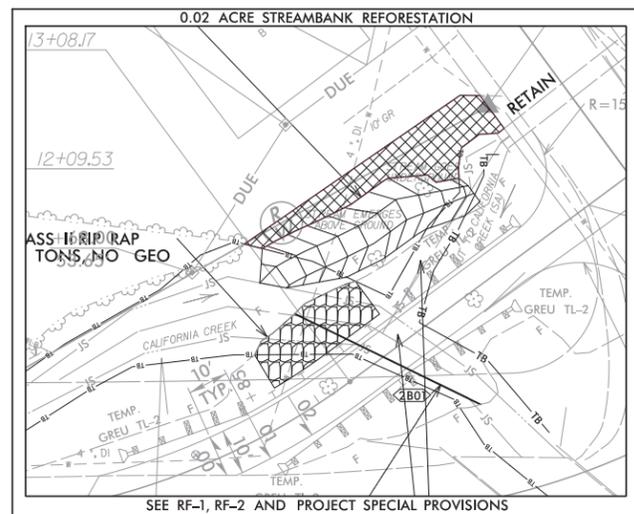
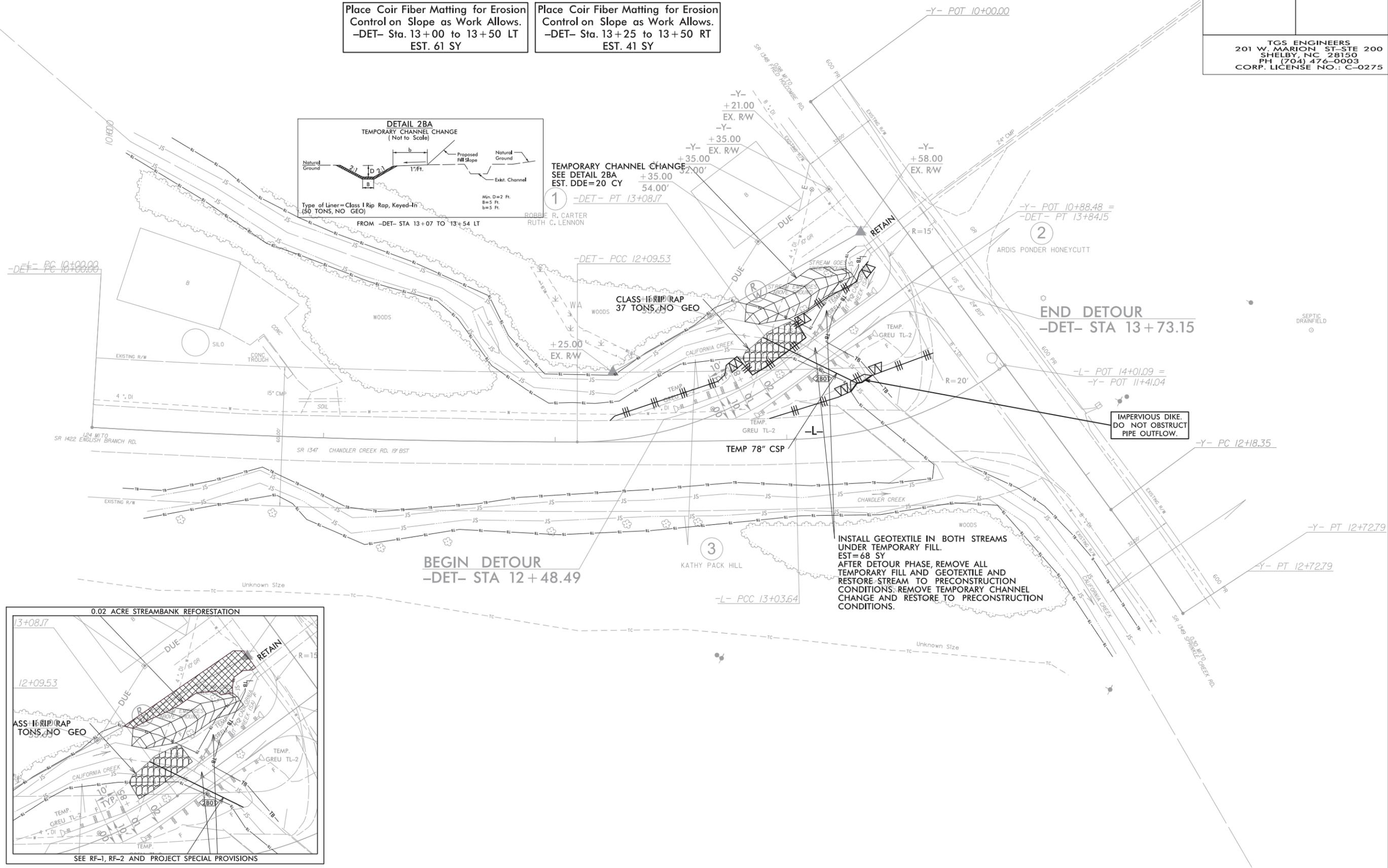
PROJECT REFERENCE NO. BPI3-R023	SHEET NO. EC-06/CONST.2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

Place Coir Fiber Matting for Erosion Control on Slope as Work Allows.
-DET- Sta. 13+00 to 13+50 LT
EST. 61 SY

Place Coir Fiber Matting for Erosion Control on Slope as Work Allows.
-DET- Sta. 13+25 to 13+50 RT
EST. 41 SY



TEMPORARY CHANNEL CHANGE
SEE DETAIL 2BA
EST. DDE=20 CY
1 -DET- PT 13+08.17



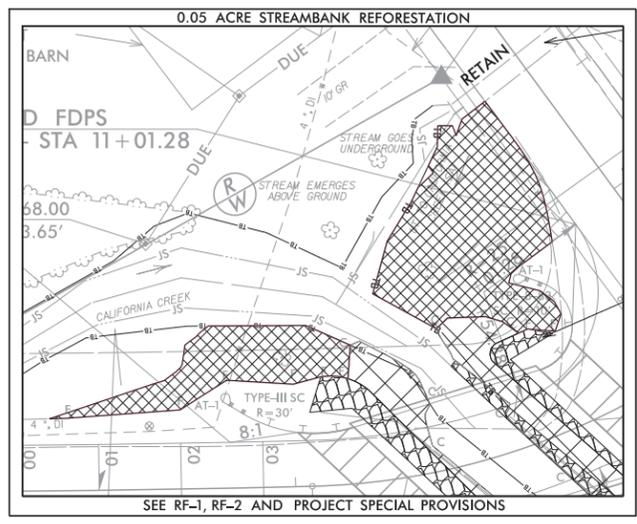
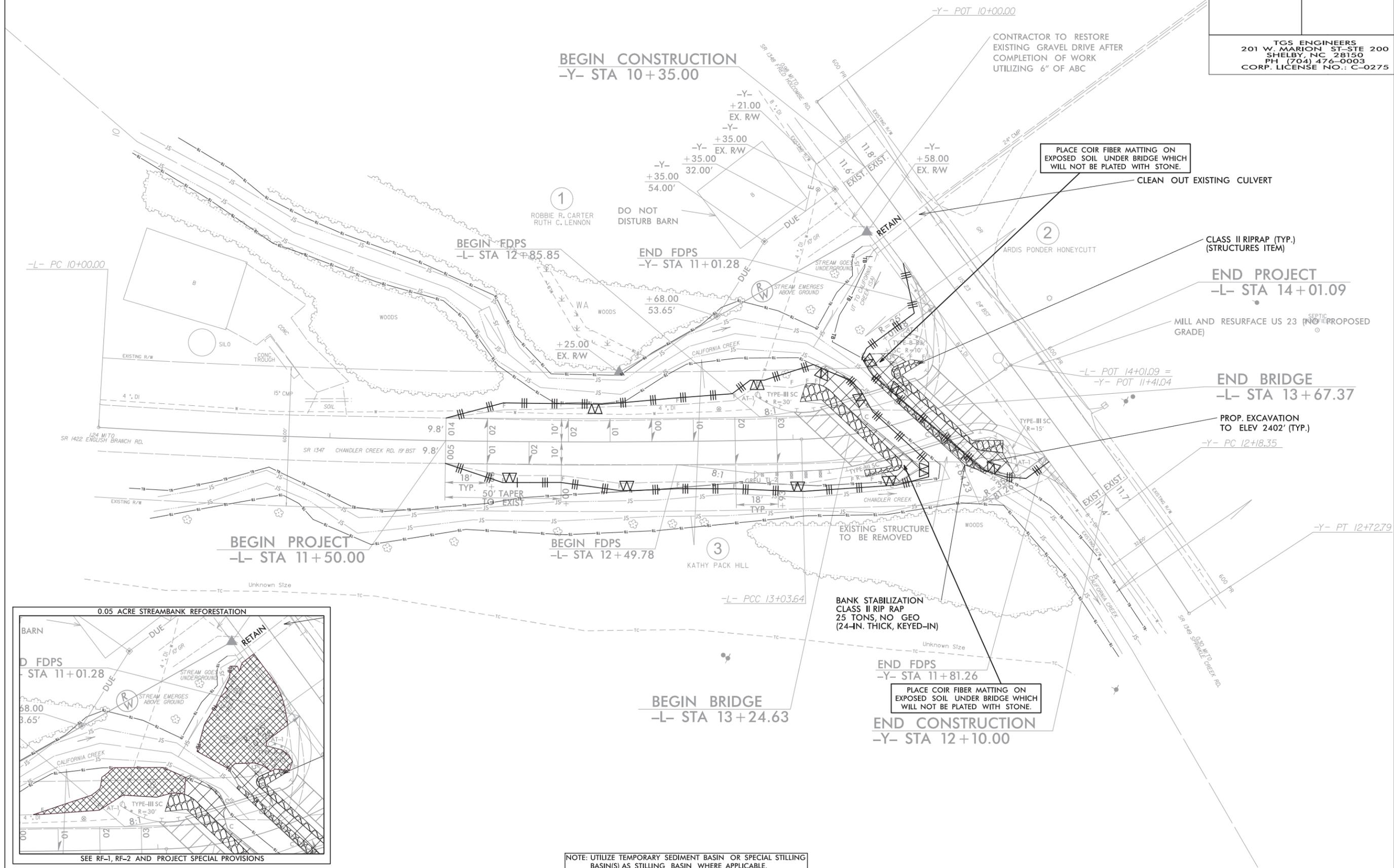
SEE RF-1, RF-2 AND PROJECT SPECIAL PROVISIONS

Madison County Bridge #560087

ROBBIE R. CARTER
RUTH C. LENNON

10+00
NAD 83/2011

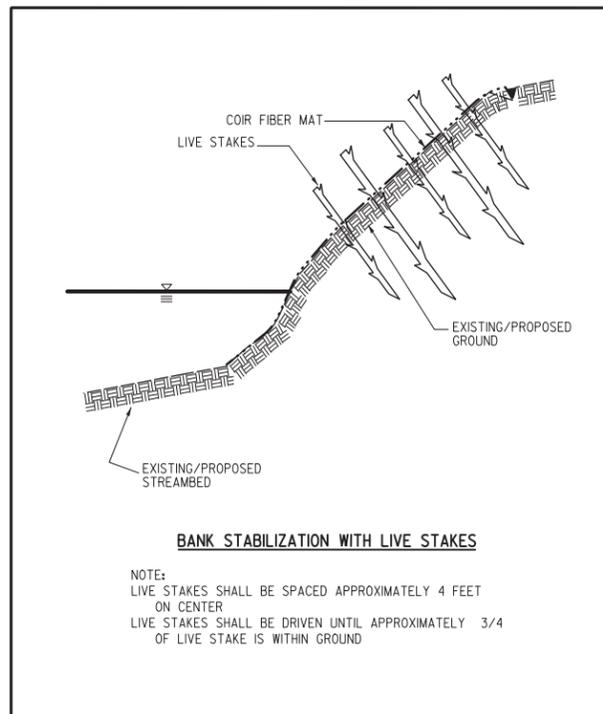
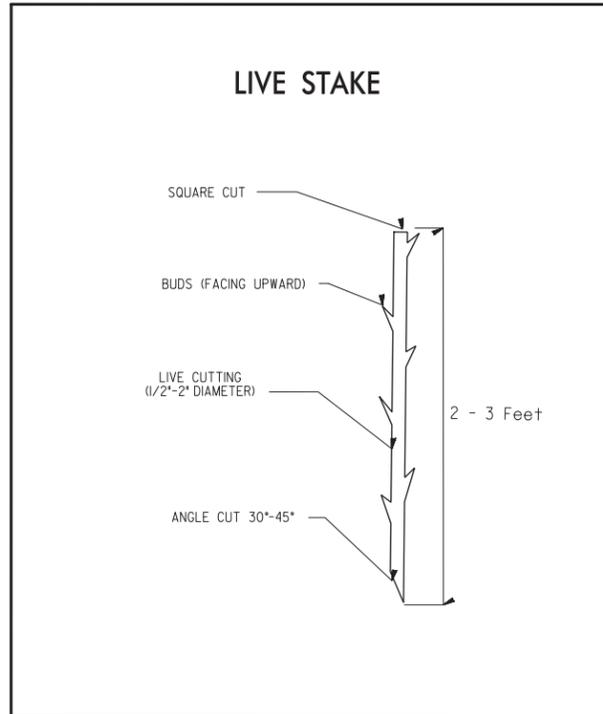
PROJECT REFERENCE NO. BPI3-R023	SHEET NO. EC-07/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 201 W. MARION ST-STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



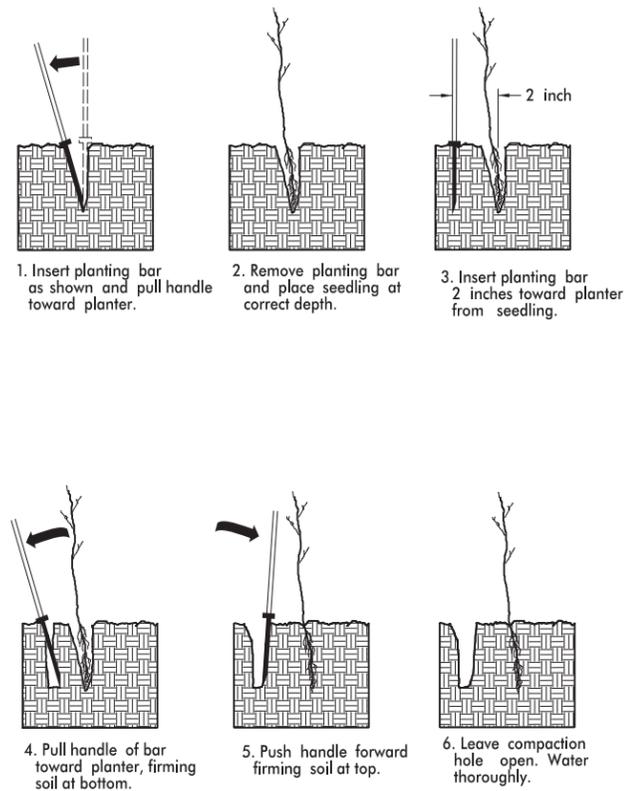
NOTE: UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



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.



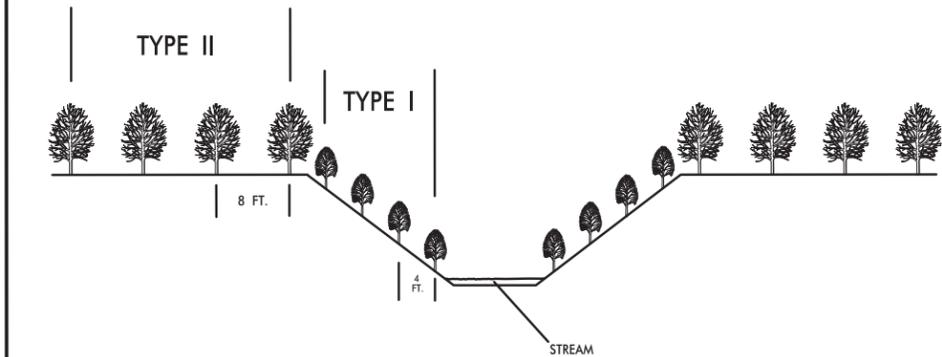
KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

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

TYPE 1

50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES

TYPE 2

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

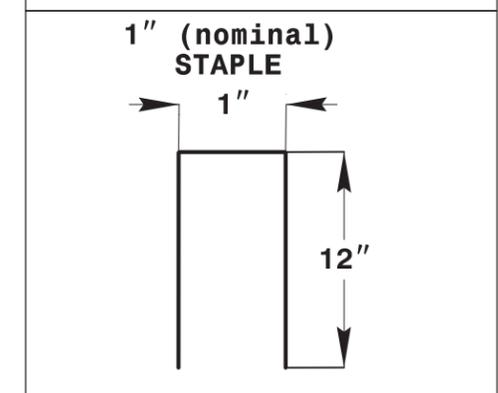
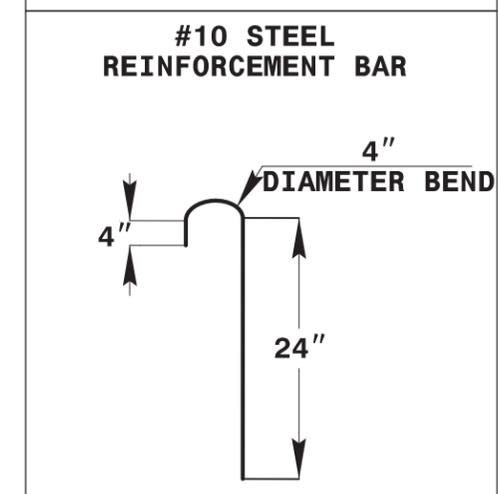
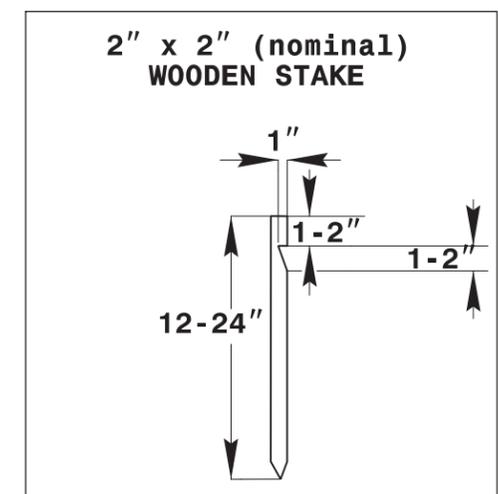
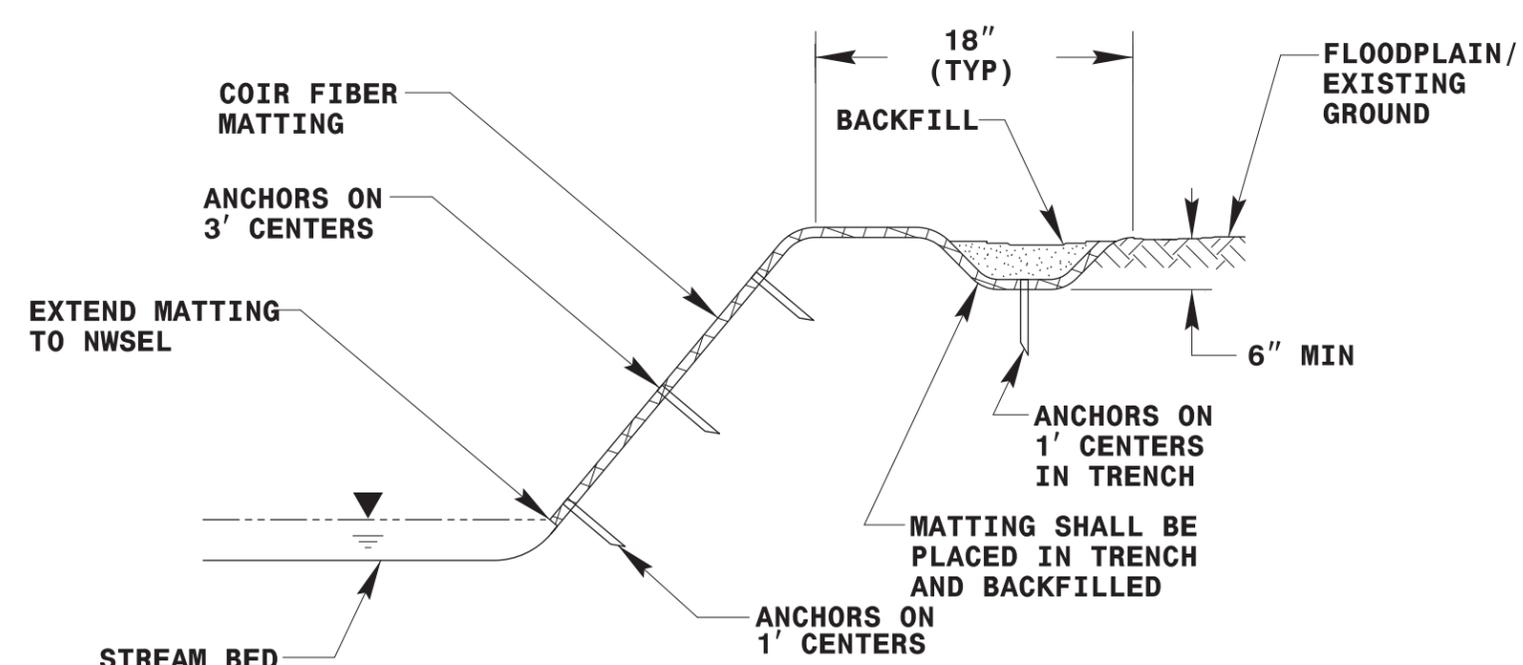
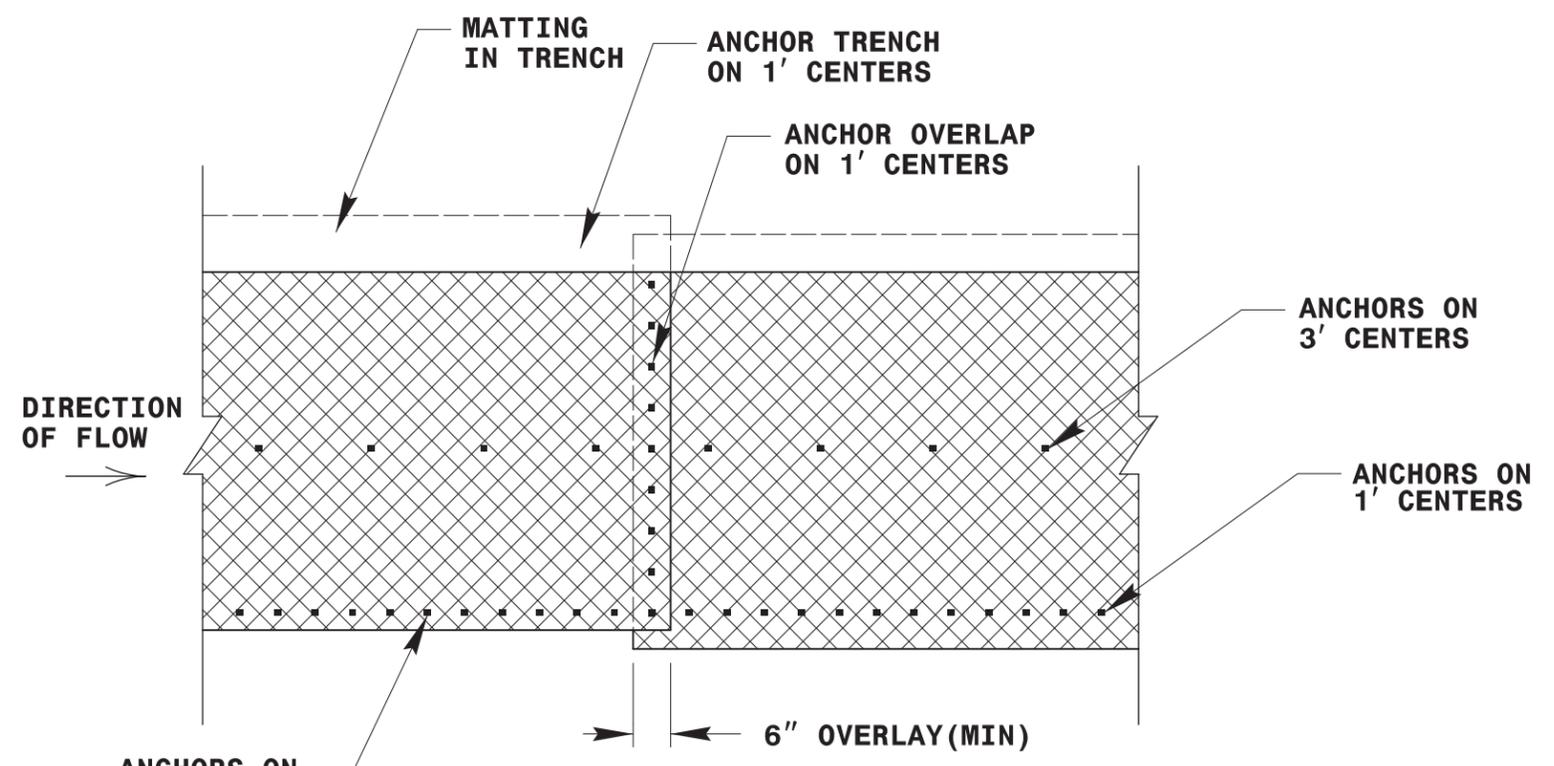
- SEE PLAN SHEETS FOR AREAS TO BE PLANTED

STREAMBANK REFORESTATION

DETAIL SHEET 1 OF 2

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

PROJECT REFERENCE NO. <i>BPI3-R023</i>	SHEET NO. <i>RF-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ANCHOR OPTIONS

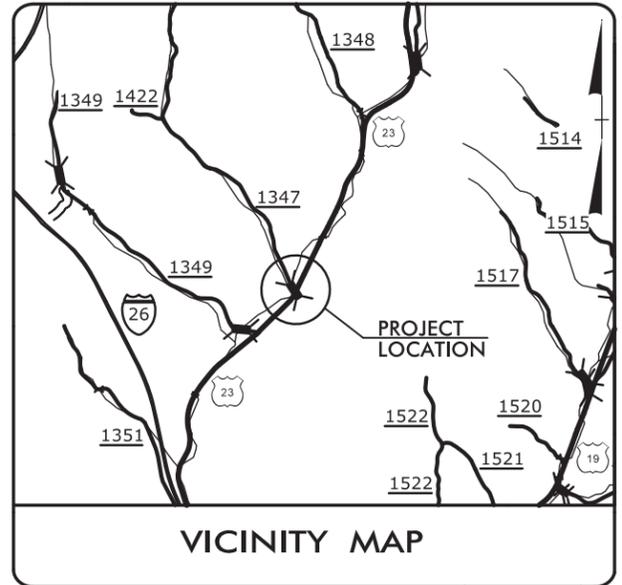
COIR FIBER MATTING DETAIL

NOT TO SCALE

STREAMBANK REFORESTATION
DETAIL SHEET 2 OF 2
 N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

T.I.P. NO.	SHEET NO.
BP13-R023	UC-1

PROJECT: BP13-R023

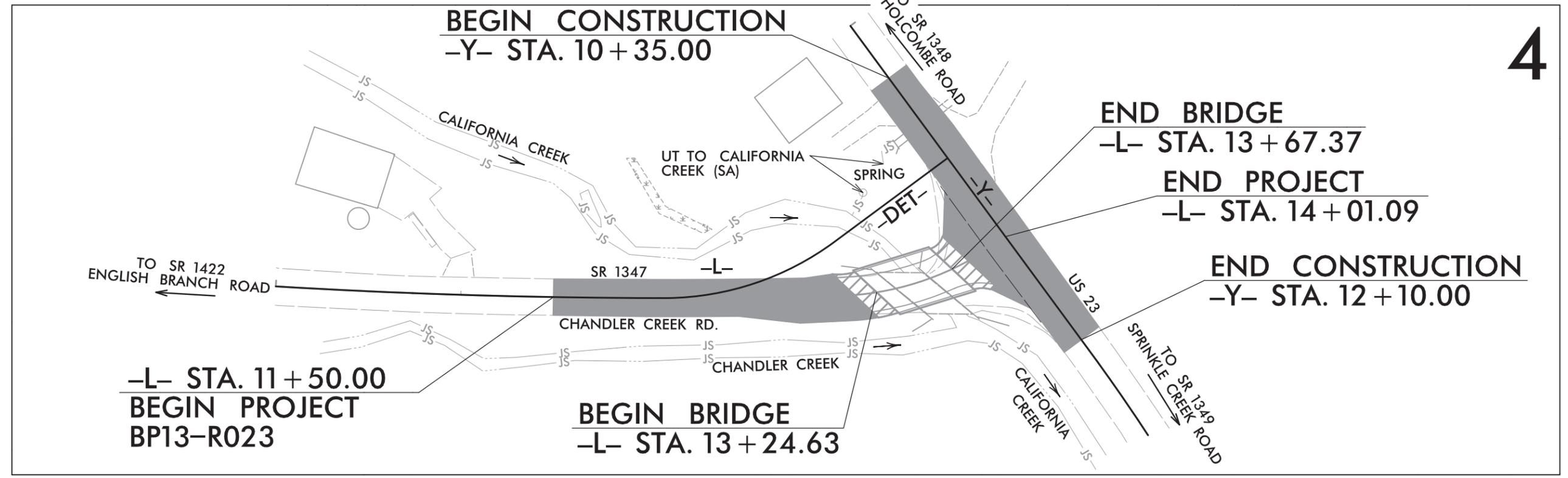
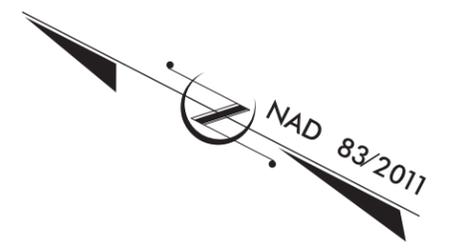


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS MADISON COUNTY

**LOCATION: BRIDGE #560087 OVER CALIFORNIA CREEK
ON SR 1347 (CHANDLER CREEK RD)**

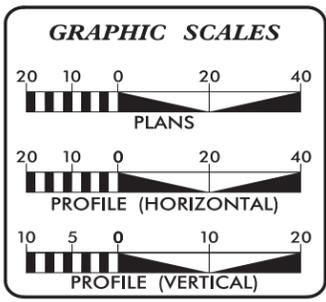
TYPE OF WORK: WATER LINE RELOCATION



4

CONTRACT: DM00448

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4	UTILITY CONSTRUCTION SHEET
UC-5	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(A) WATER - TOWN OF MARS HILL

PREPARED IN THE OFFICE OF

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

CHAD HOUSER, PE, PLS UTILITIES DESIGN ENGINEER

SEAL

4/19/2024

**DIVISION OF HIGHWAYS
UTILITIES UNIT**
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

R. KEITH RADCLIFF SENIOR UTILITY COORDINATOR
JOHN D. METCALF DIVISION UTILITY COORDINATOR

4/2/2024 X:\NCDOT\Division 13 Madison 2019\Madison 87\Utilities\Engineering\UC\Proj\Madison 87_UT-1\0226157.AM

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	
End of Information	

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown) W
 Designated Utility Line (Type as Shown) W

UTILITY CONSTRUCTION NOTES

GENERAL NOTES:

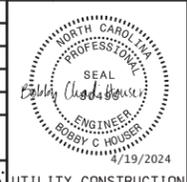
1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. THE EXISTING UTILITIES BELONG TO THE TOWN OF MARS HILL.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

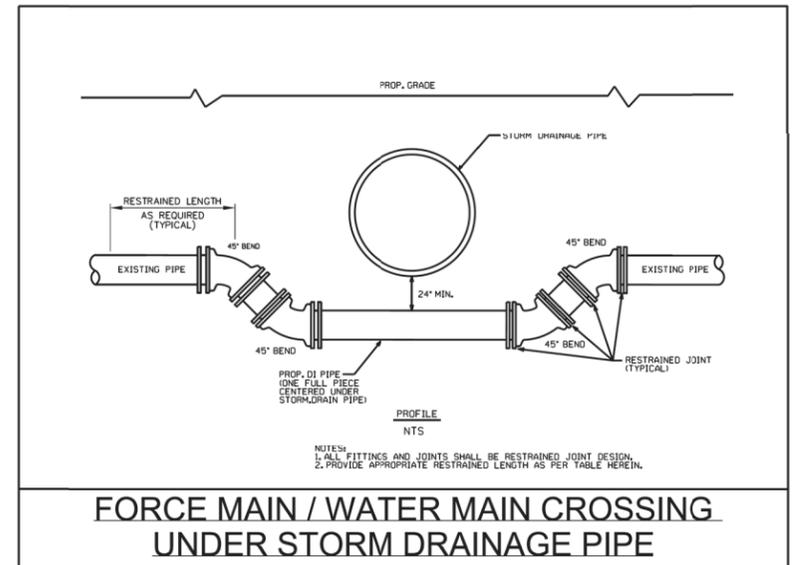
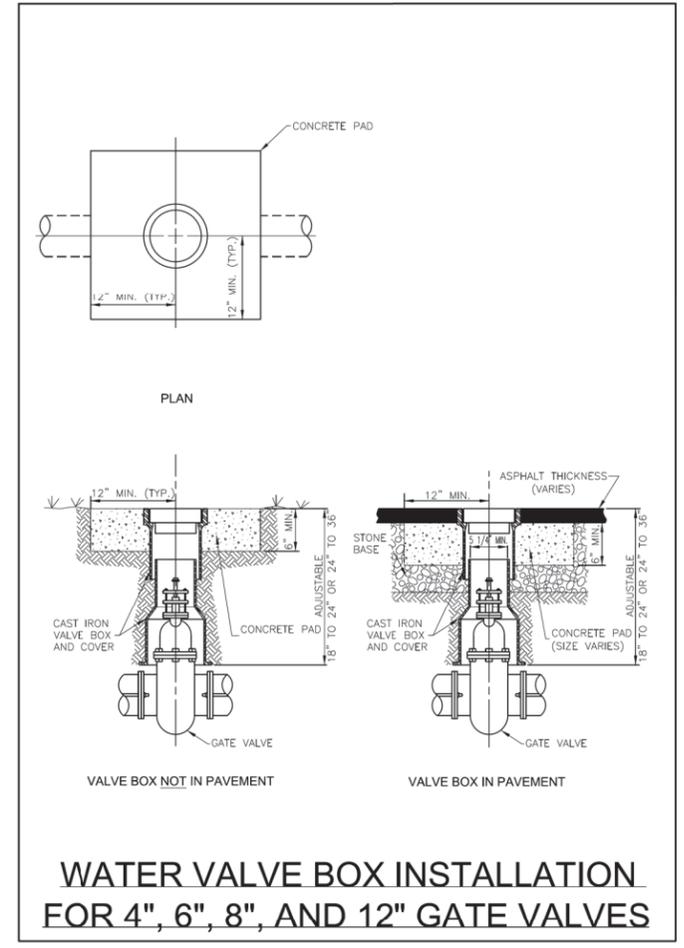
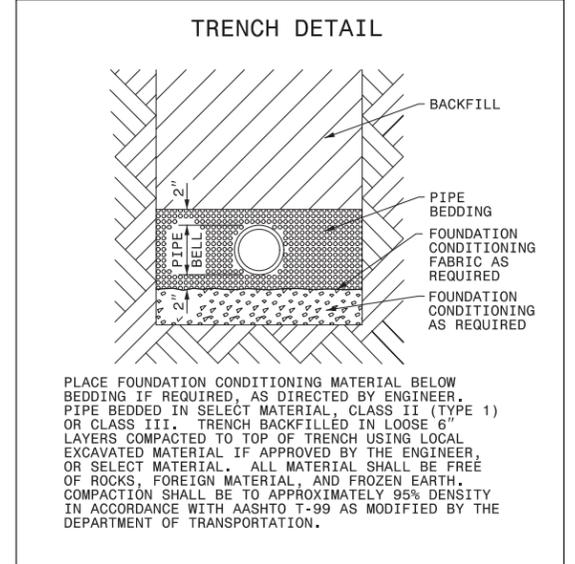
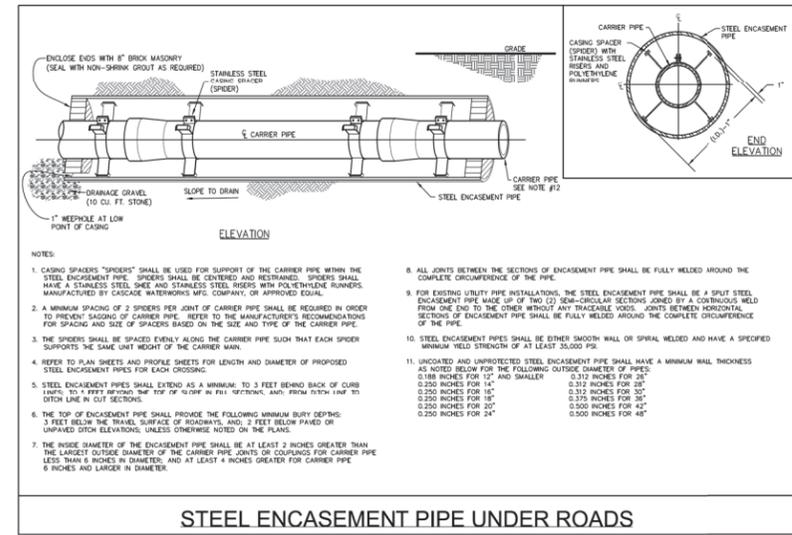
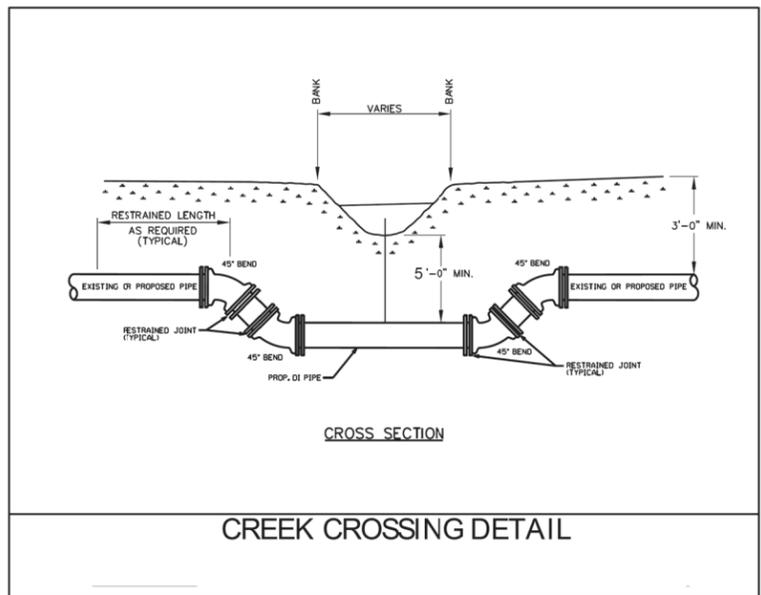
1. ALL PROPOSED WATER LINE 4 TO 16 INCHES IN DIAMETER, SHALL BE DUCTILE IRON PIPE - PRESSURE CLASS 350 AND UTILIZE FLEXIBLE PUSH-ON RESTRAINED JOINTS.
2. ALL PROPOSED STEEL ENCASEMENTS SHALL BE SMOOTH WALL WITH A MINIMUM THICKNESS OF 0.25 INCHES.
3. ALL WATER LINE FITTINGS 4 TO 16 INCHES IN DIAMETER, SHALL BE PRESSURE CLASS 350 DUCTILE IRON RESTRAINED JOINT IN ACCORDANCE WITH ANSI A21.10 / AWWA C110 AND ANSI A21.4 / AWWA C104.
4. WATER LINE UTILIZING RESTRAINED JOINTS SHALL BE TYTON JOINT, HP LOK, AMERICAN "FAST GRIP", US PIPE "FIELD-LOK" OR APPROVED EQUAL.
5. ALL WATERLINE SHALL HAVE COATED TRACER WIRE NO SMALLER THAN 12 AWG SOLID COPPER.
6. ALL VALVES - 2" THROUGH 16" SHALL BE RESILIENT WEDGE GATE, CAST IRON BODY, CONFORMING TO AWWA C509, LATEST VERSION. SEALING MECHANISM SHALL PROVIDE ZERO LEAKAGE AT THE WATER WORKING PRESSURE AGAINST THE LINE FLOW FROM EITHER DIRECTION AND BE DESIGNED SUCH THAT NO EXPOSED METAL SEAMS, EDGES, SCREWS, ETC. ARE WITHIN THE WATERWAY IN THE CLOSED POSITION. THE GATE SHALL NOT BE WEDGED INTO A POCKET NOR SLIDE ACROSS THE SEATING SURFACE TO OBTAIN TIGHT CLOSURE. ALL INTERNAL AND EXTERNAL FERROUS SURFACES OF THE VALVE, INCLUDING THE INTERIOR OF THE GATE, SHALL BE COATED WITH A PROTECTIVE COATING CONFORMING TO AWWA C550, LATEST VERSION. COATING SHALL BE APPLIED TO CASTINGS PRIOR TO ASSEMBLY TO ASSURE ALL EXPOSED AREAS WILL BE COVERED. VALVES SHALL BE RATED AT 200 PSI WORKING PRESSURE. UNLESS OTHERWISE NOTED, UNDERGROUND VALVES SHALL HAVE AN OPERATING NUT AND EXPOSED VALVES SHALL HAVE A HAND WHEEL OPERATOR. OPERATING NUT SHALL BE 2"x2", OPEN LEFT.
7. EACH VALVE BURIED IN THE GROUND SHALL BE PROVIDED WITH AN APPROVED TYPE OF VALVE BOX AND COVER. THE BOXES SHALL BE ADJUSTABLE SCREW TYPE 24-INCH OR 36-INCH.

8. ALL VALVE BOXES SHALL BE CONSTRUCTED OF CAST IRON THAT COMPLIES WITH THE REQUIREMENTS OF ASTM A48. VALVE BOXES SHALL BE THE APPROPRIATE RANGE OF ADJUSTMENT FOR THE SITE AND CONTRACTOR SHOULD MINIMIZE THE USE OF EXTENSIONS.
9. PROVIDE THRUST RESTRAINT ON THE EXISTING WATER LINE WHERE TIE-INS ARE MADE AS NECESSARY.
10. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.
11. ANY BENDS OF PVC WATER PIPE NOT SPECIFICALLY CALLED OUT WITH A 90, 45, 22.5, OR 11.25 DEGREE BEND FITTING, SHALL BE CONSTRUCTED BY A RADIAL BEND OF THE PIPE AS NOTED ON THE PLANS OR IN ACCORDANCE WITH PIPE MANUFACTURER'S SPECIFICATIONS (WHICHEVER IS MORE STRINGENT) - OR A COMBINATION OF BEND FITTINGS AND A RADIAL BEND OF THE PIPE. DEFLECTION OF THE PIPE JOINTS ON PVC PIPE MATERIAL IS NOT AN ACCEPTABLE METHOD OF PIPE BENDING.
12. ALL MATERIALS, EQUIPMENT, LABOR, AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
13. UTILITY OWNER MUST BE PRESENT FOR ANY TESTING OR CONNECTIONS TO THE EXISTING SYSTEM INCLUDING BUT NOT LIMITED TO ALL TAPS AND TEMPORARY CONSTRUCTION CONNECTIONS. A NOTICE OF 72 HOURS MUST BE PROVIDED.

PROJECT REFERENCE NO.	SHEET NO.
RP13-R023	UC-3
DESIGNED BY: BCH	
DRAWN BY: ADC	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
BP13-R023	UC-3A
DESIGNED BY: BCH	
DRAWN BY: ADC	
CHECKED BY:	
APPROVED BY:	
REVISED:	4/19/2024
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
UTILITY CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

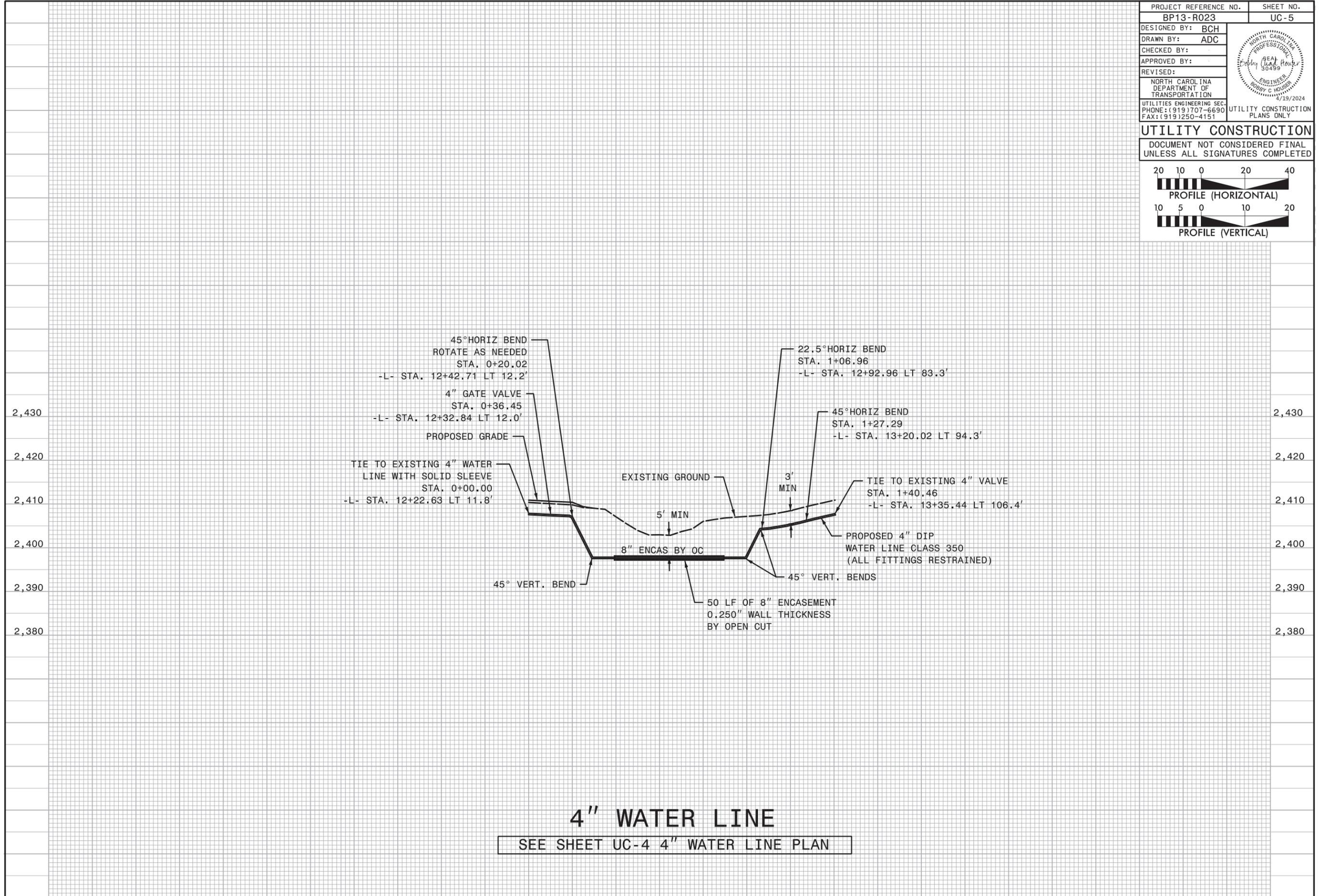
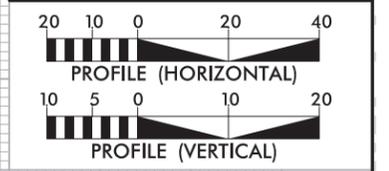


WATER VALVE BOX INSTALLATION FOR 4", 6", 8", AND 12" GATE VALVES

FORCE MAIN / WATER MAIN CROSSING UNDER STORM DRAINAGE PIPE

PROJECT REFERENCE NO. BP13-R023	SHEET NO. UC-5
DESIGNED BY: BCH	
DRAWN BY: ADC	
CHECKED BY:	
APPROVED BY:	
REVISD:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



4" WATER LINE
SEE SHEET UC-4 4" WATER LINE PLAN

-+00 0+20 0+40 0+60 0+80 1+00 1+20 1+40

PROJECT REFERENCE NO.	SHEET NO.
BP13-R023	X-1
RW SHEET NO.	

BP13 - R023

CROSS-SECTION INDEX

XS - INDEX	X-1
XS - SUMMARY	X-1A
-L-	X-2 THRU X-3
-Y-	X-4 THRU X-5
-DET-	X-6

REVISIONS

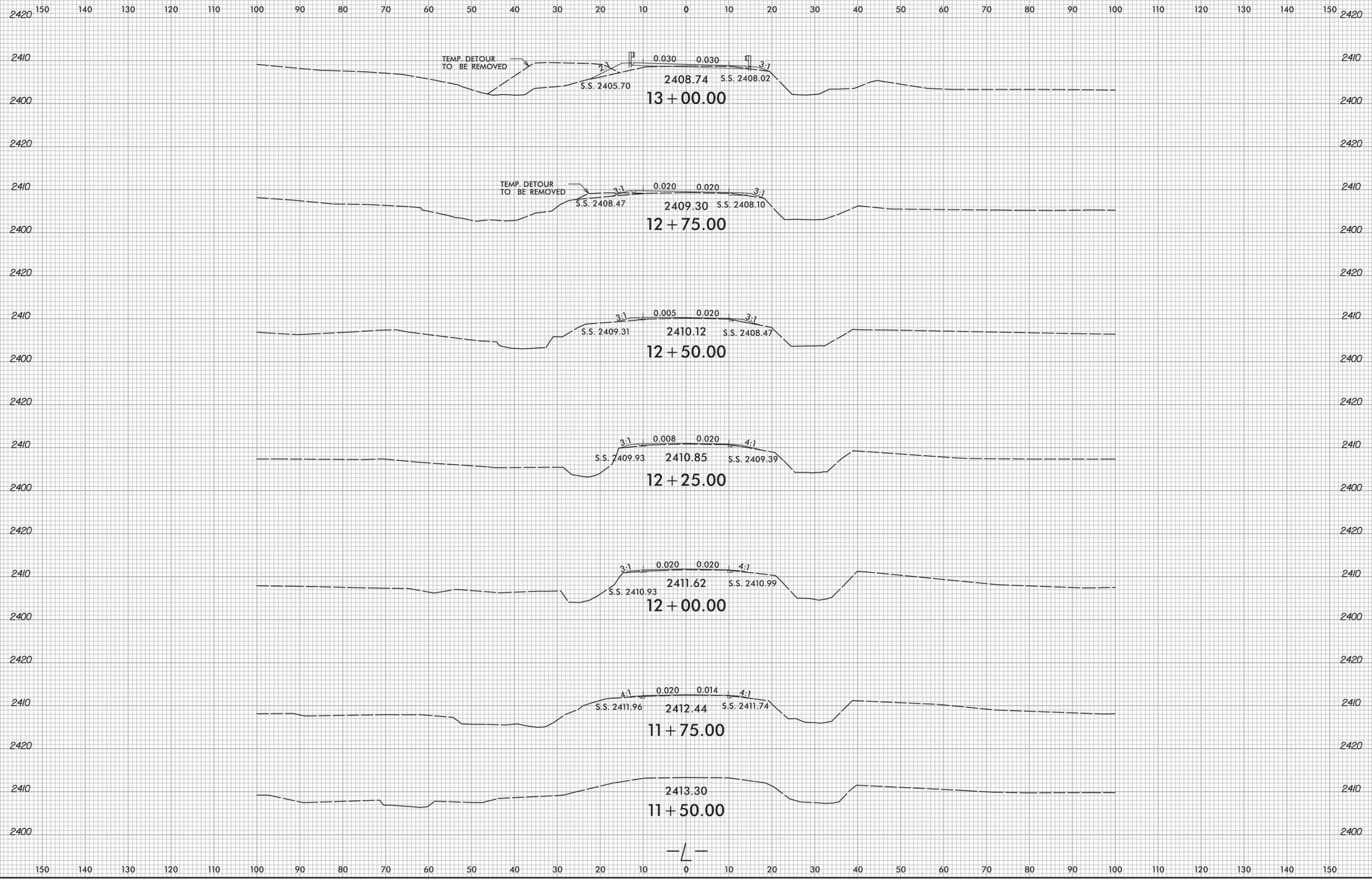
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6/19/2024
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
BP13-R023	X-2



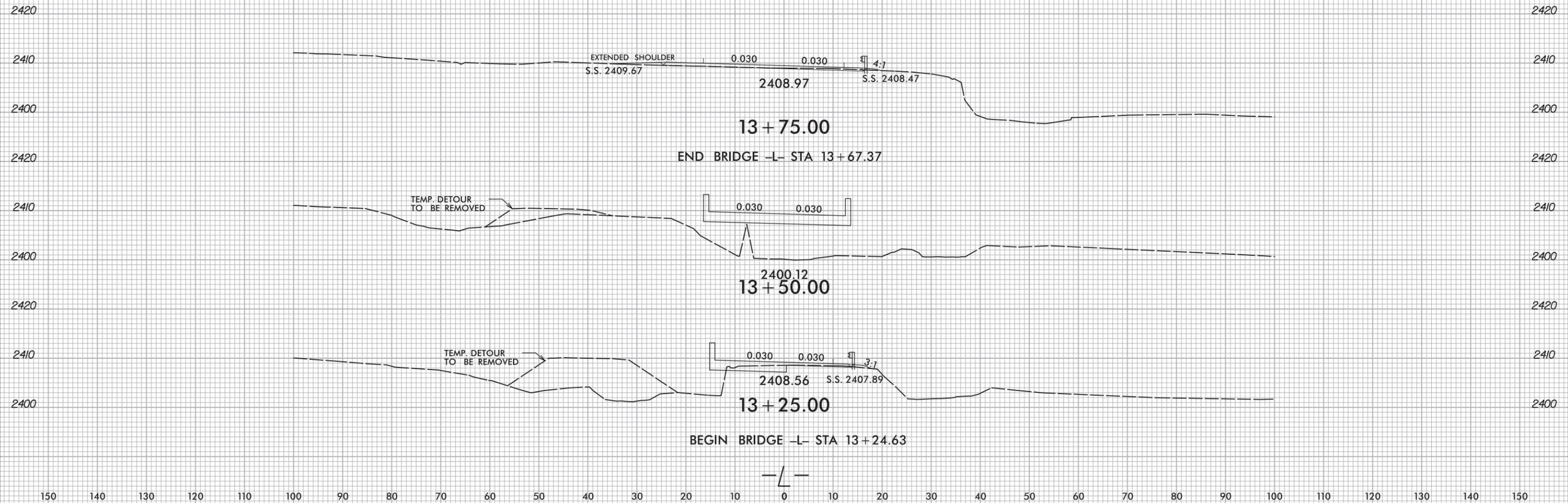
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6/23/16



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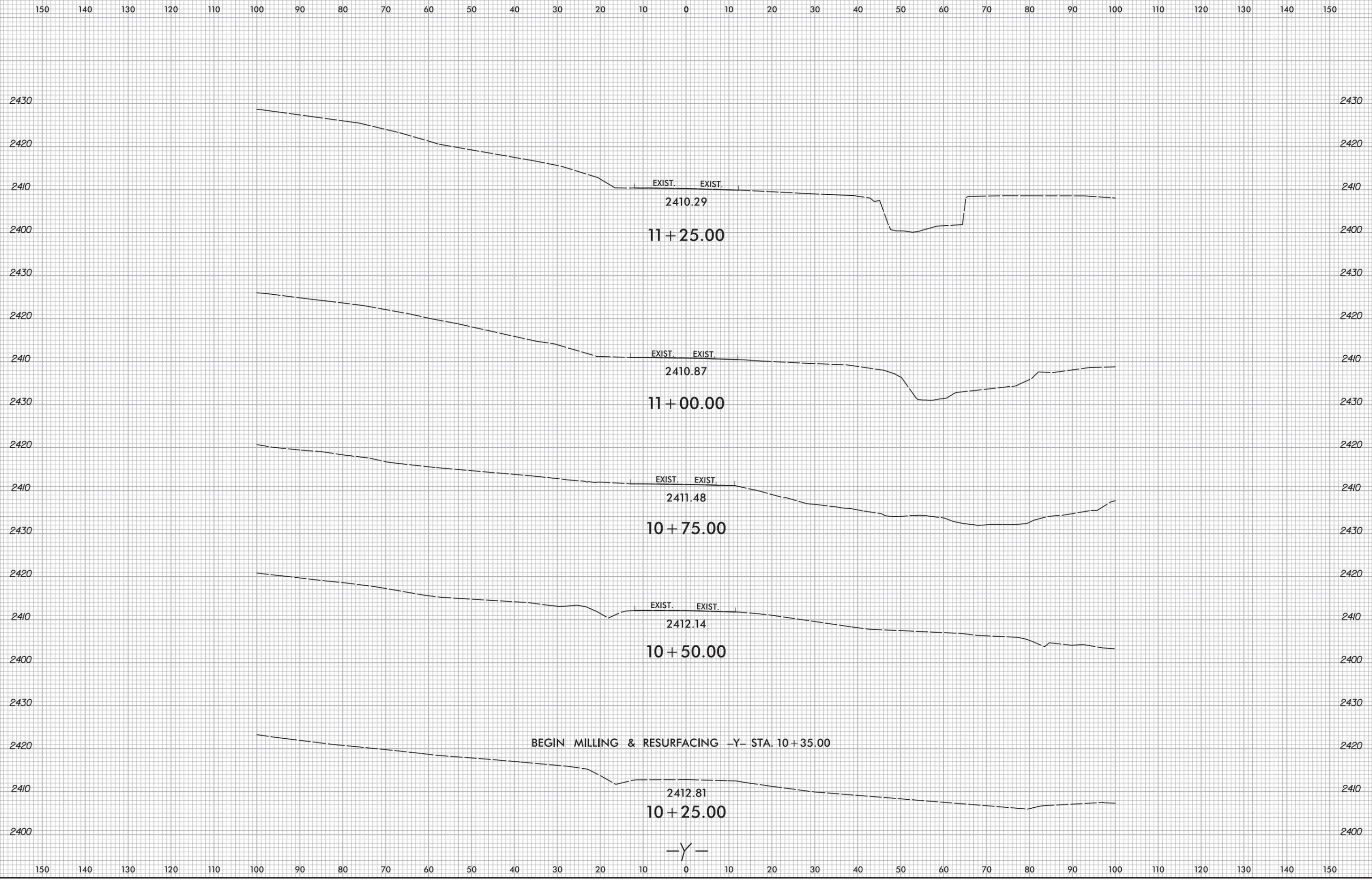
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 User:rsme1vm

6/23/16



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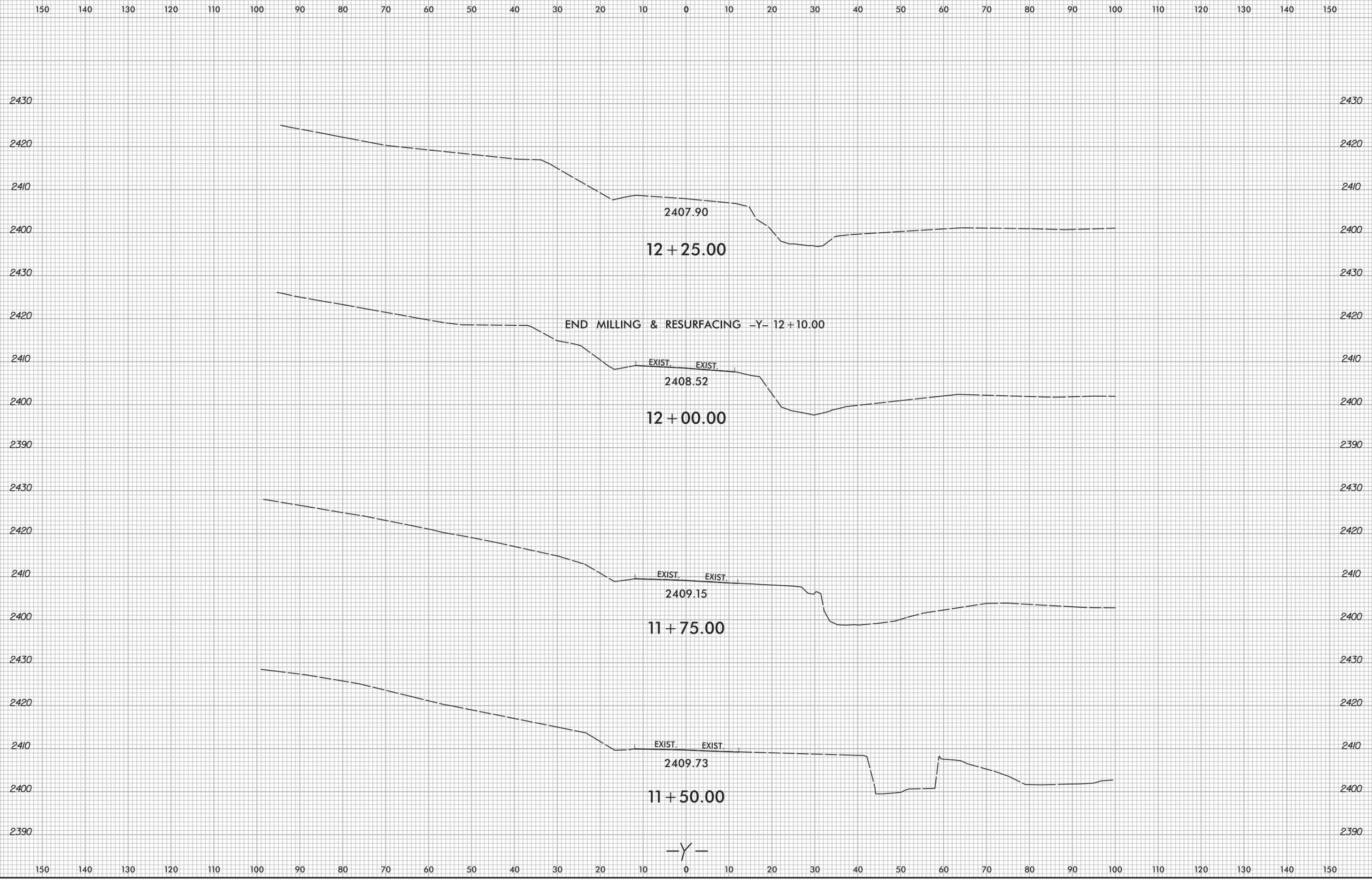


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User:rsmeivm

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
BP13-R023	X-5



6/19/2024
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User:rsme1vm

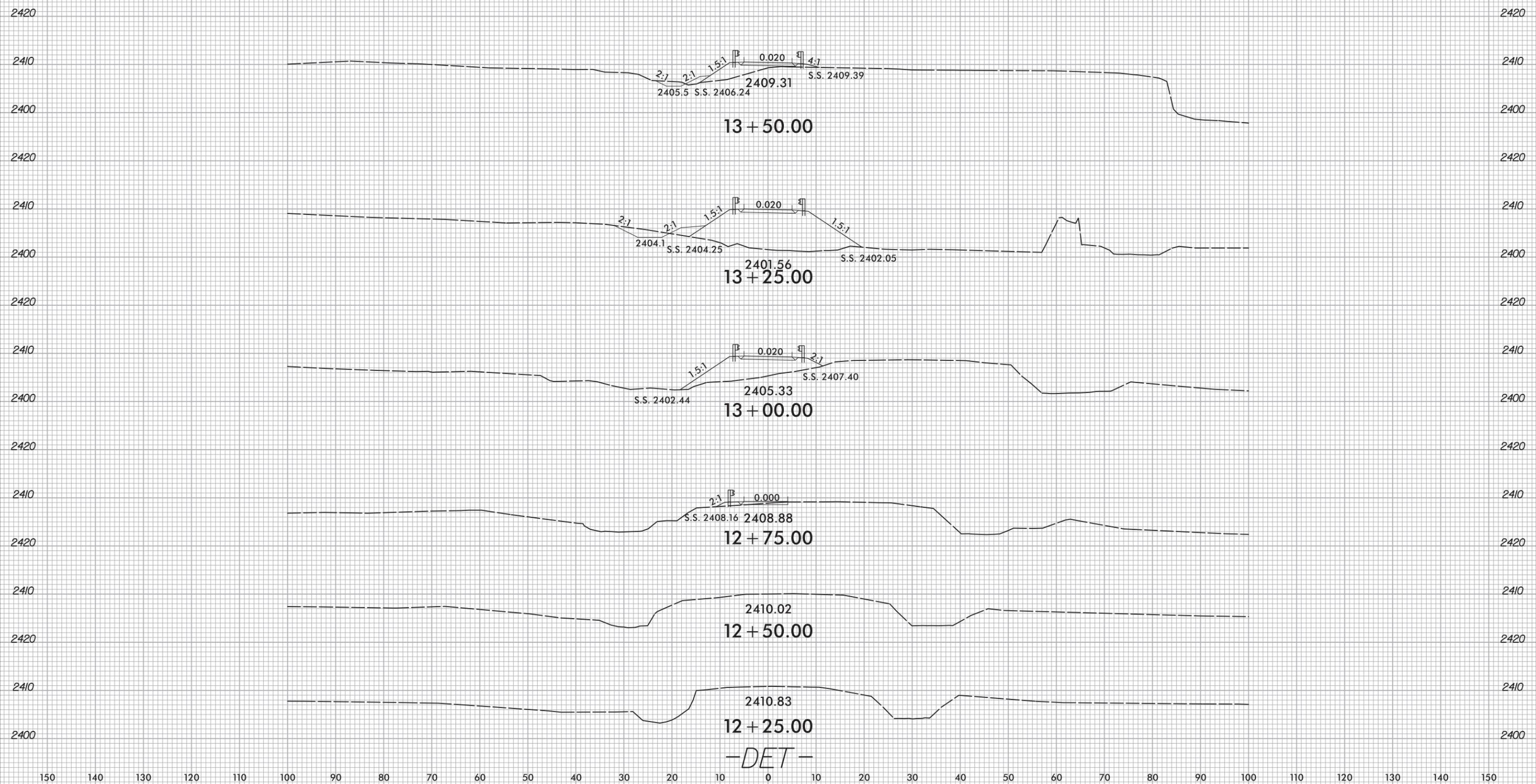
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6/23/16



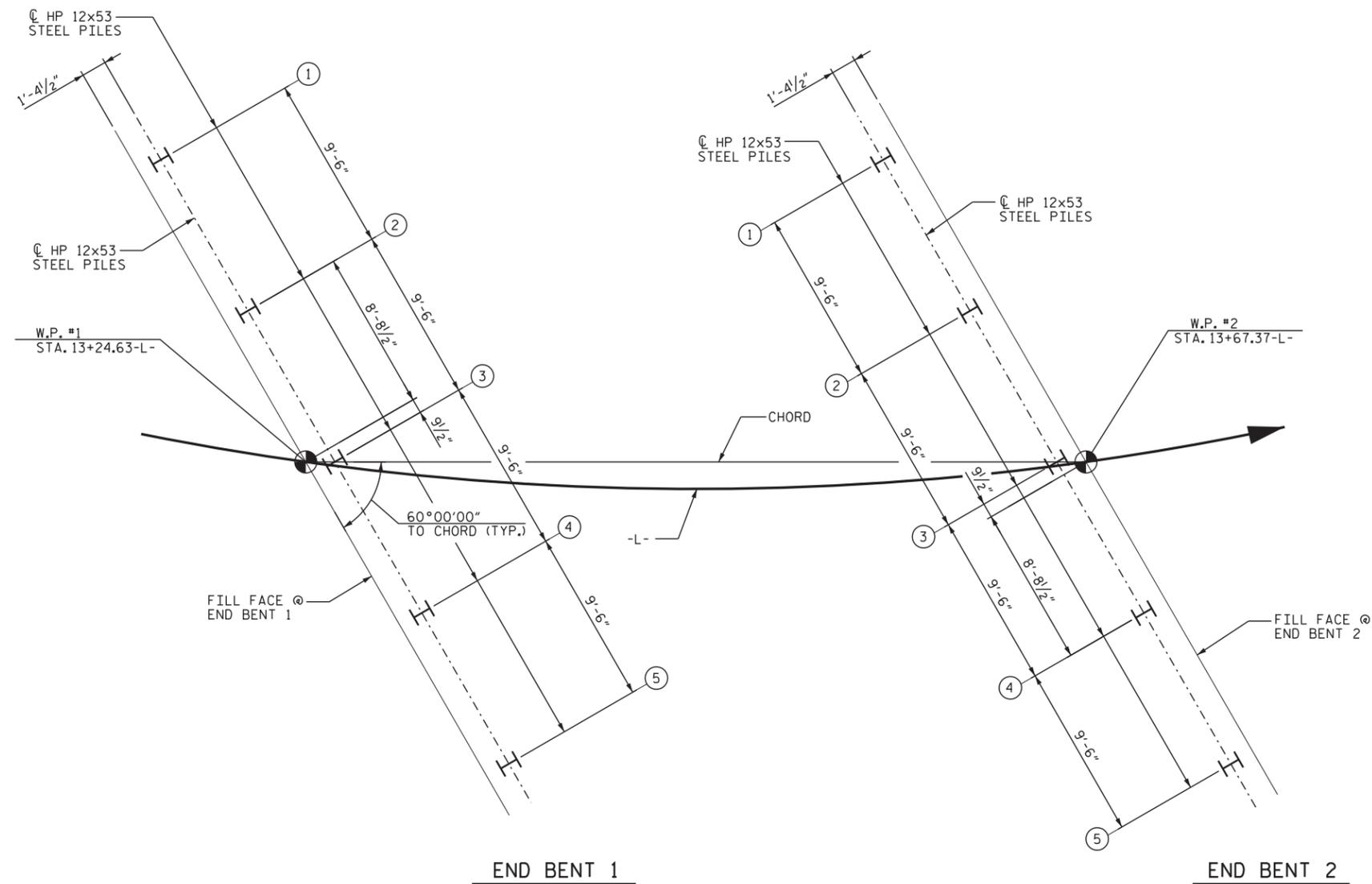
PROJ. REFERENCE NO.	SHEET NO.
BP13-R023	X-6

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6/19/2024
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FOUNDATION LAYOUT PLAN

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

FOUNDATION RECOMMENDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILE EXCAVATION REQUIRED TO INSTALL PILES 1-3 AT END BENT 1 TO MINIMUM PENETRATION OF 10.0 FEET BELOW BOTTOM OF CAP.

PILE EXCAVATION REQUIRED TO INSTALL PILES AT END BENT 2 TO MINIMUM PENETRATION OF 9.0 FEET INTO WEATHERED ROCK AND/OR CRYSTALLINE ROCK.

BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH A EQUIVALENT RATED ENERGY IN THE RANGE OF 15,000 TO 25,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FILL THE HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2 WITH CONCRETE.

PROJECT NO. BP13-R023

MADISON COUNTY

STATION: 13+46.00-L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER CALIFORNIA CREEK
ON SR 1347 BETWEEN
SR 1422 AND US 23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.			
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
						1			3			TOTAL SHEETS
						2			4			19

DRAWN BY : NMW DATE : 7/23
CHECKED BY : MGC DATE : 10/23

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

End Bent/ Bent No. Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling For Piles *			Drilled-in-Piles			
					Min. Pile Tip (Tip No Higher Than) Elev. FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile LIN FT	Pile Exc In Soil per Pile LIN FT	
End Bent 1, Piles 1-3 (WR)	70	See End Bent Sheets	20			120					2393.1	1.9	8.1	
End Bent 1, Piles 4-5	70			20		120								
End Bent 2, Piles 1-2 (Rock)	72			15		120						2390.9	9.0	1.5
End Bent 2, Piles 3-5 (WR)	72			20		120						2386.5	9.0	5.9

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

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

PILE DESIGN INFORMATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load * per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-5	70			0.60			1.00
End Bent 2, Piles 1-5	72			0.60			1.00

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

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Robert E. Kral, 042642) on 10/08/2023.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer will determine the need for Dynamic Pile Testing and Pipe Pile Plates when DPTs or plates may be required.

SUMMARY OF DPT / PILE ORDER LENGTHS
(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

Dynamic Pile Testing (DPT)				Pile Order Lengths	
End Bent/ Bent No.	DPT Required? YES or MAYBE	DPT Test Pile Length FT	Total DPT Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis * EST or DPT
End Bent 1, Piles 1-5	MAYBE		1		
End Bent 2, Piles 1-5	MAYBE				

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

SUMMARY OF PILE ACCESSORIES

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) # (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-5				YES	
End Bent 2, Piles 1-5				YES	
TOTAL QUANTITY:				10	

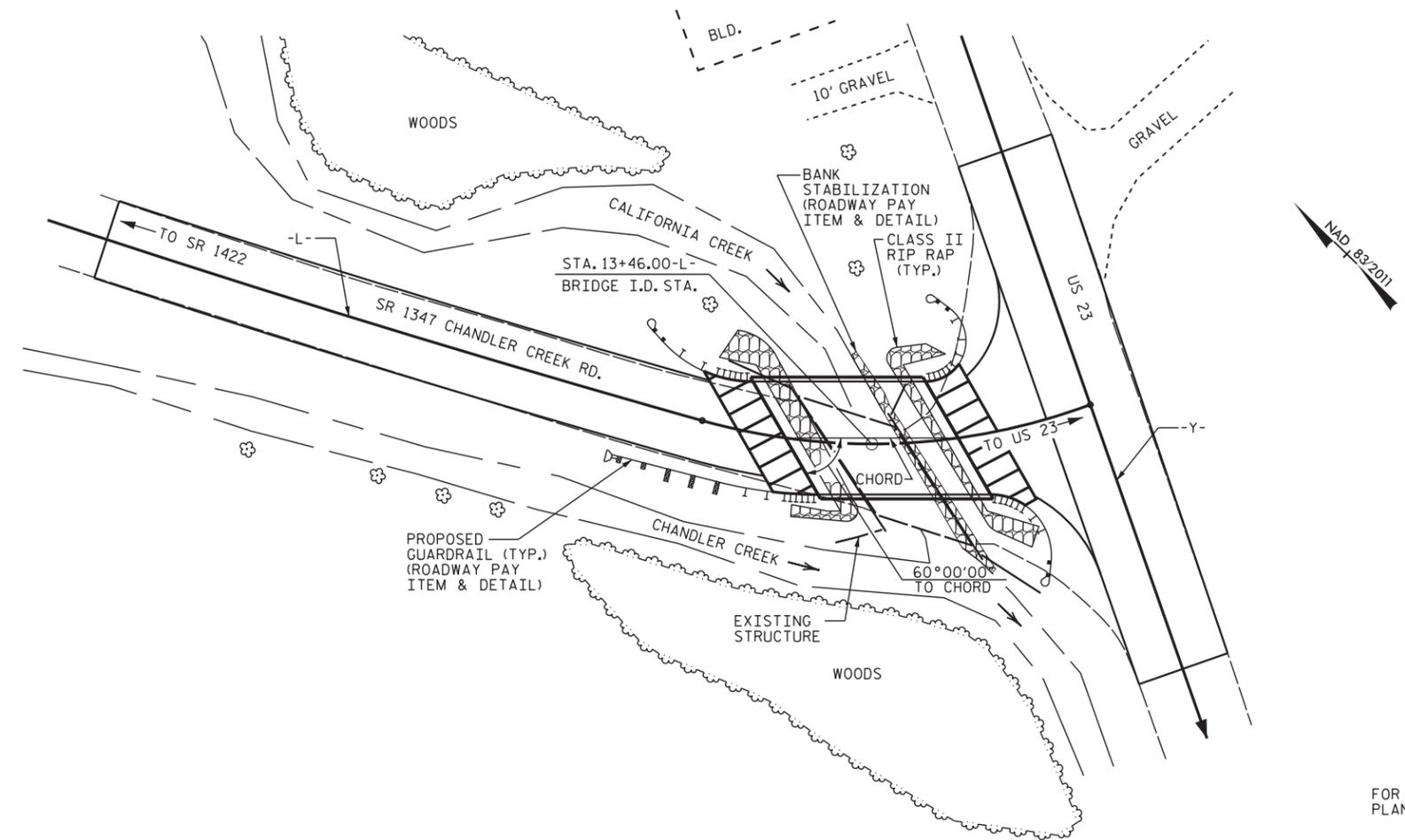
PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

SHEET 3 OF 5

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH																							
	PILE FOUNDATION TABLES																							
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	<table border="1"> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4			<table border="1"> <tr> <th>SHEET NO.</th> </tr> <tr> <td>S-3</td> </tr> <tr> <th>TOTAL SHEETS</th> </tr> <tr> <td>19</td> </tr> </table>	SHEET NO.	S-3	TOTAL SHEETS	19
NO.	BY:	DATE:	NO.	BY:	DATE:																			
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SHEET NO.																								
S-3																								
TOTAL SHEETS																								
19																								

DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MCC DATE : 10/23

BENCH MARK #1: RR SPIKE IN BASE OF 14" WALNUT; 32.0' LT. OF STA. 11+03.77-L-; ELEV. = 2416.13'



FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE STANDARD NOTES SHEET.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR THE DISTANCE OF 30 FT. (LT.) AND 25 FT. (RT.) @ END BENT 1 AND 30 FT. (LT.) AND 35 FT. (RT.) @ END BENT 2 EACH SIDE OF THE CENTERLINE OF THE BRIDGE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 THE EXISTING SINGLE SPAN STRUCTURE (1 @ 26'-8") WITH A SUPERSTRUCTURE CONSISTING OF A TIMBER FLOOR ON STEEL BEAMS & STEEL PLATE GIRDERS WITH A CLEAR ROADWAY WIDTH OF 22'-0" AND 4 1/2" ASPHALT WEARING SURFACE AND A SUBSTRUCTURE CONSISTING OF VERTICAL TIMBER ABUTMENTS AND LOCATED AT THE SITE OF THE PROPOSED BRIDGE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE APPLIED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER CALIFORNIA CREEK
 ON SR 1347 BETWEEN
 SR 1422 AND US 23

6/24/2024

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

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

DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MGC DATE : 8/23

TOTAL BILL OF MATERIAL

ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12x53 STEEL PILES		DYNAMIC PILE TESTING	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP, CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS	
										EA.	NO.							LIN. FT.	EA.
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	C.Y.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	EA.	LIN. FT.	TONS	S.Y.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE														80.00				10	400.00
END BENT 1			24.30	5.70	LUMP SUM	22.5		2935	5	5	100		5		120	130			
END BENT 2			20.70	45.00	LUMP SUM	33.0		3650	5	5	90		5		125	140			
TOTALS	LUMP SUM	LUMP SUM	45.00	50.70	LUMP SUM	55.5	LUMP SUM	6585	10	10	190	1	10	80.00	245	270	LUMP SUM	10	400.00

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER CALIFORNIA CREEK
 ON SR 1347 BETWEEN
 SR 1422 AND US 23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED										REVISIONS						SHEET NO.
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275										NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
										1			3			TOTAL SHEETS
										2			4			19

DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MGC DATE : 10/23

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.352	--	1.75	0.252	1.95	40'	EL	19.423	0.653	1.35	40'	EL	7.769	0.80	0.252	1.72	40'	EL	19.423		
	HL-93 (OPERATING)	N/A		1.753	--	1.35	0.252	2.52	40'	EL	19.423	0.653	1.75	40'	EL	7.769	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.544	55.583	1.75	0.252	2.45	40'	EL	19.423	0.653	1.54	40'	EL	7.769	0.80	0.252	2.14	40'	EL	19.423		
	HS-20 (OPERATING)	36.000		2.001	72.053	1.35	0.252	3.17	40'	EL	19.423	0.653	2.00	40'	EL	7.769	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.929	53.037	1.4	0.252	5.64	40'	EL	19.423	0.653	3.93	40'	EL	7.769	0.80	0.252	3.99	40'	EL	19.423		
		SNGARBS2	20.000		2.985	59.708	1.4	0.252	4.63	40'	EL	15.538	0.653	2.99	40'	EL	7.769	0.80	0.252	3.28	40'	EL	19.423	
		SNAGRIS2	22.000		2.852	62.746	1.4	0.252	4.53	40'	EL	15.538	0.653	2.85	40'	EL	7.769	0.80	0.252	3.23	40'	EL	15.538	
		SNCOTTS3	27.250		1.980	53.947	1.4	0.252	2.82	40'	EL	19.423	0.653	1.98	40'	EL	7.769	0.80	0.252	1.99	40'	EL	19.423	
		SNAGGRS4	34.925		1.782	62.222	1.4	0.252	2.54	40'	EL	19.423	0.653	1.78	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		SNS5A	35.550		1.746	62.059	1.4	0.252	2.47	40'	EL	19.423	0.653	1.89	40'	EL	7.769	0.80	0.252	1.75	40'	EL	19.423	
		SNS6A	39.950		1.662	66.381	1.4	0.252	2.35	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
	SNS7B	42.000		1.585	66.556	1.4	0.252	2.24	40'	EL	19.423	0.653	1.86	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.045	67.476	1.4	0.252	2.89	40'	EL	19.423	0.653	2.07	40'	EL	7.769	0.80	0.252	2.04	40'	EL	19.423	
		TNT4A	33.075		1.951	64.520	1.4	0.252	2.93	40'	EL	19.423	0.653	1.95	40'	EL	7.769	0.80	0.252	2.07	40'	EL	19.423	
		TNT6A	41.600		1.757	73.106	1.4	0.252	2.49	40'	EL	19.423	0.653	1.91	40'	EL	7.769	0.80	0.252	1.76	40'	EL	19.423	
		TNT7A	42.000		1.795	75.386	1.4	0.252	2.55	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.80	40'	EL	19.423	
		TNT7B	42.000		1.729	72.638	1.4	0.252	2.61	40'	EL	19.423	0.653	1.73	40'	EL	7.769	0.80	0.252	1.84	40'	EL	19.423	
		TNAGRIT4	43.000		1.661	71.441	1.4	0.252	2.53	40'	EL	15.538	0.653	1.66	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
TNAGT5A		45.000		1.659	74.644	1.4	0.252	2.35	40'	EL	19.423	0.653	1.77	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423		
TNAGT5B	45.000		③	1.568	70.561	1.4	0.252	2.28	40'	EL	19.423	0.653	1.57	40'	EL	7.769	0.80	0.252	1.61	40'	EL	19.423		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.266	65.134	1.3	0.252	3.56	40'	EL	15.538	0.653	2.27	40'	EL	7.769	0.80	0.252	2.38	40'	EL	15.538		
	EV3	43.000		④	1.532	65.869	1.3	0.252	2.32	40'	EL	19.423	0.653	1.55	40'	EL	7.769	0.80	0.252	1.53	40'	EL	19.423	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

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



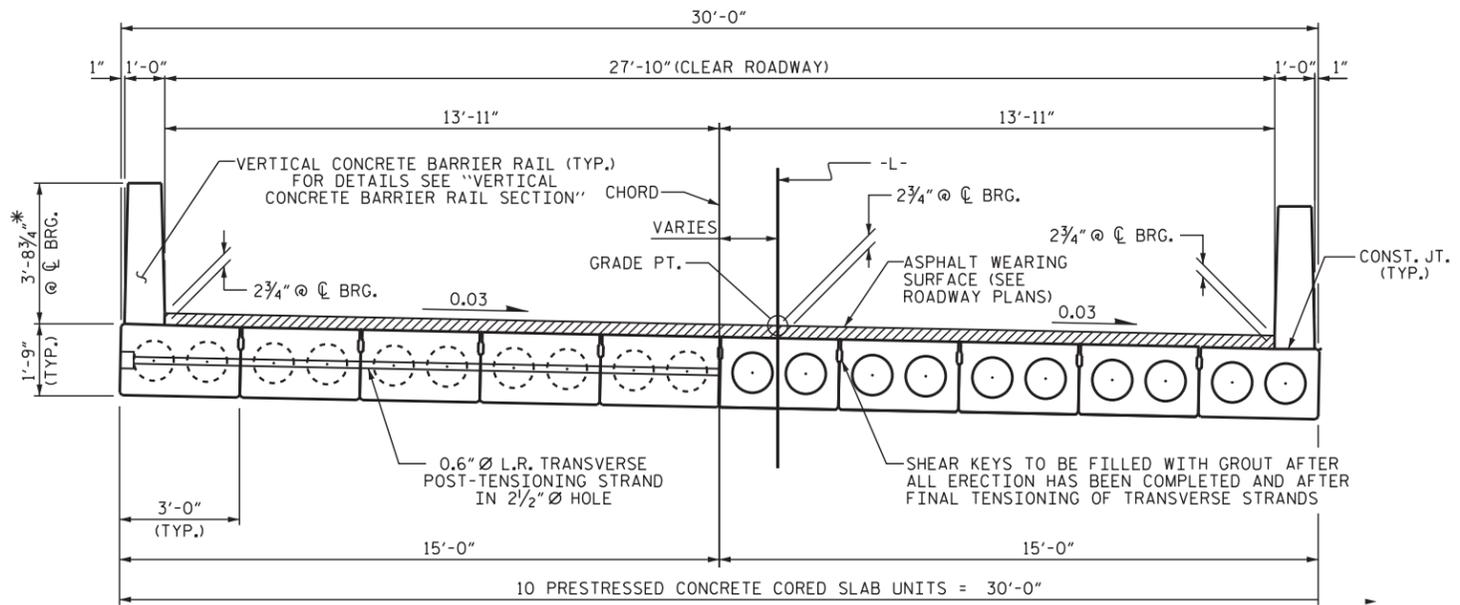
LRFR SUMMARY

FOR SPAN " A "

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

ASSEMBLED BY: NMW	DATE: 8/23
CHECKED BY: MGC	DATE: 8/23
DRAWN BY: MAA 1/08	REV. 11/12/08RR
CHECKED BY: GM/DI 2/08	REV. 10/1/11
	REV. 04/23
MAA/GM	MAA/GM
MAA/GM	BNB/AAI

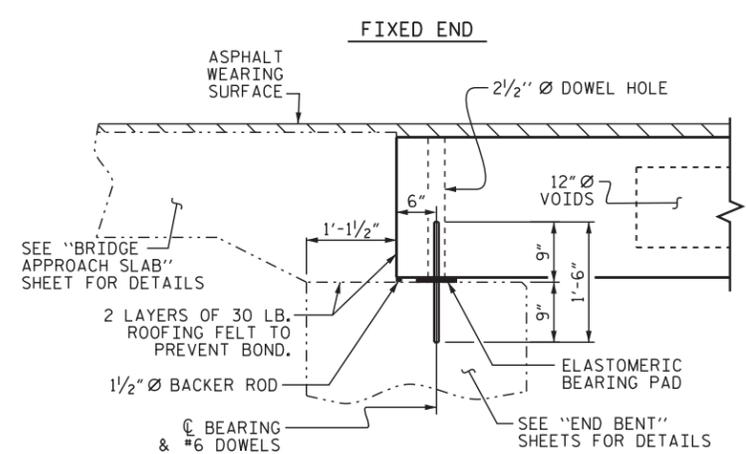
	STATE OF NORTH CAROLINA		SHEET NO.
	DEPARTMENT OF TRANSPORTATION		
RALEIGH		TOTAL SHEETS	
STANDARD		19	
LRFR SUMMARY FOR			
40' CORED SLAB UNIT			
60° SKEW			
(NON-INTERSTATE TRAFFIC)			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		REVISIONS	
TGS ENGINEERS		NO.	
201 W. MARION ST STE 200		BY:	
SHELBY, NC 28150		DATE:	
PH (704) 476-0003		NO.	
CORP. LICENSE NO.: C-0275		BY:	
		DATE:	



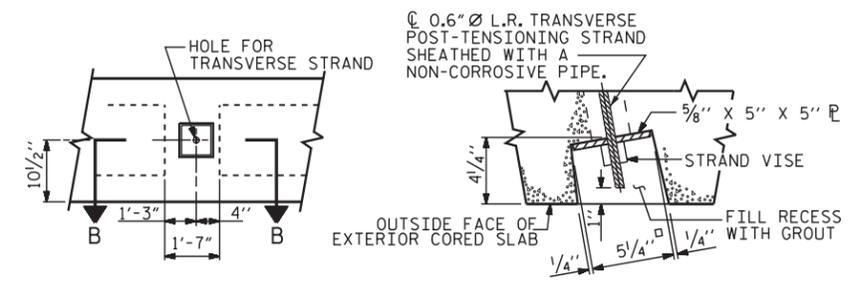
HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS

TYPICAL SECTION

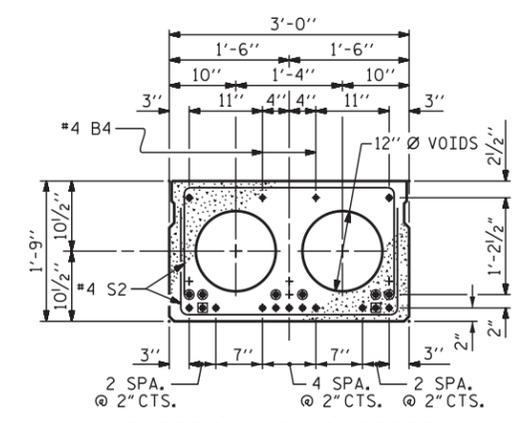
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



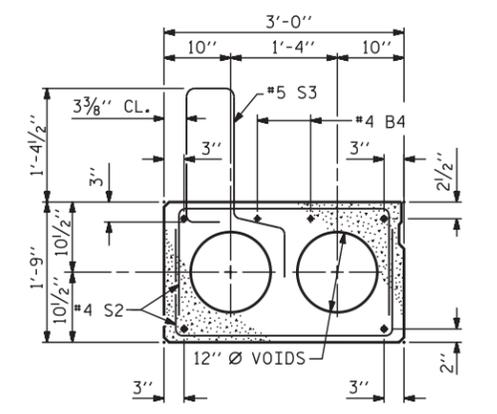
SECTION AT END BENT



ELEVATION VIEW SECTION B-B
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



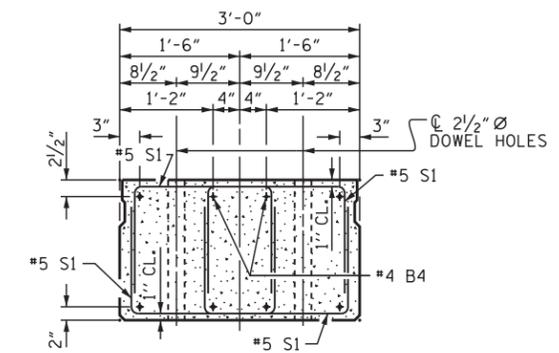
INTERIOR SLAB SECTION (40' UNIT)
 (13 STRANDS REQUIRED)



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

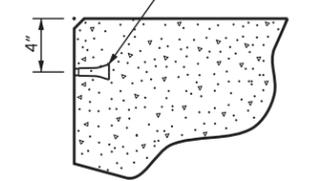
- ☐ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

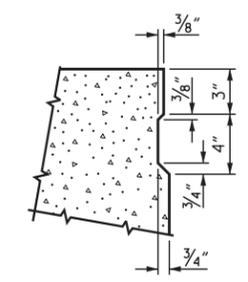


END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

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



THREADED INSERT DETAIL



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

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 1 OF 3

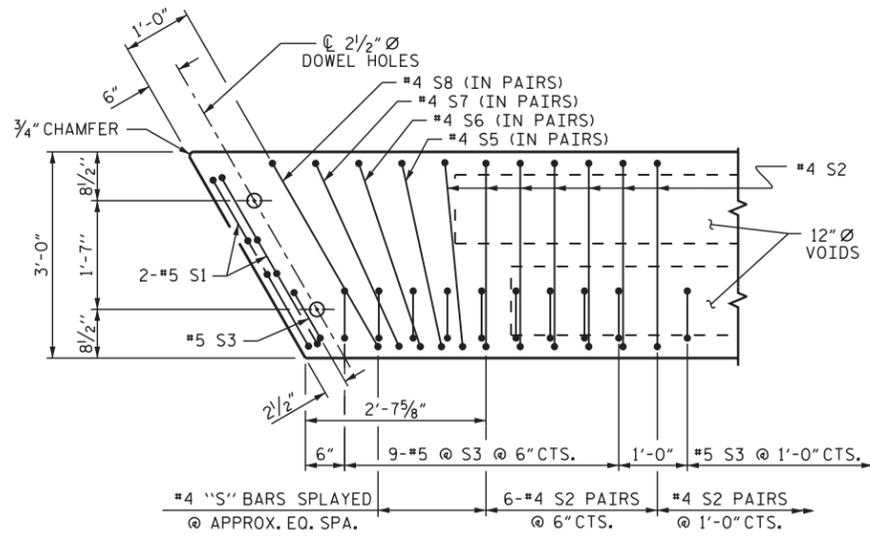
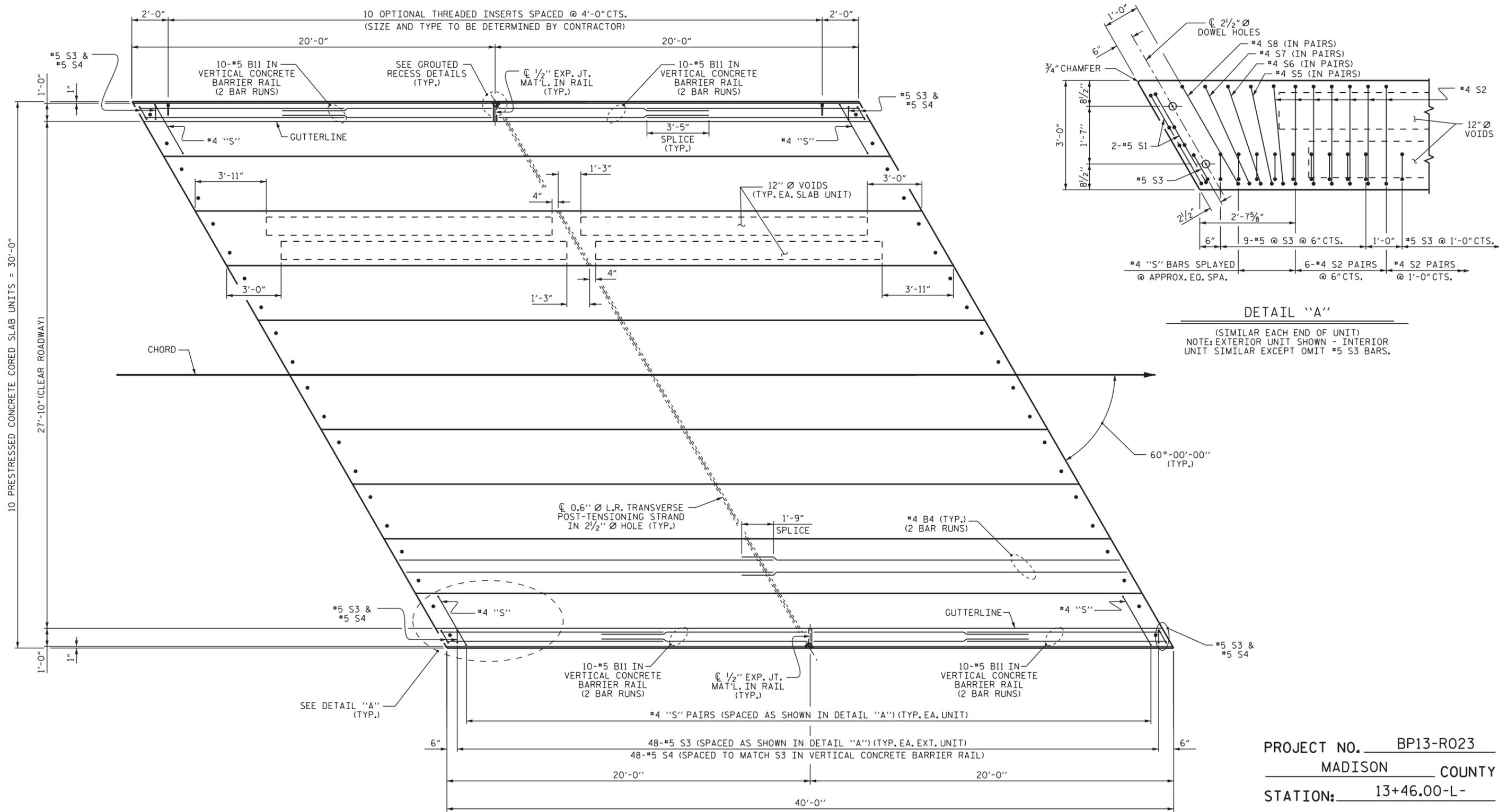
STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 Marshall G. Check, Inc.
 SEAL
 20125
 ENGINEER
 MARSHALL G. CHECK, INC.
 6/24/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 60° SKEW					
NO.		BY:		DATE:	
1		3		4	
SHEET NO.		TOTAL SHEETS			
S-7		19			

ASSEMBLED BY :	NMW	DATE :	8/23
CHECKED BY :	MGC	DATE :	4/24
DRAWN BY :	DGE 5/09	REV. 8/14	MAA/TMG
CHECKED BY :	BCH 6/09	REV. 5/23	BNB/AAI



DETAIL "A"
 (SIMILAR EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF 40' UNIT
 27'-10" CLEAR ROADWAY
 60° SKEW**

6/24/2024

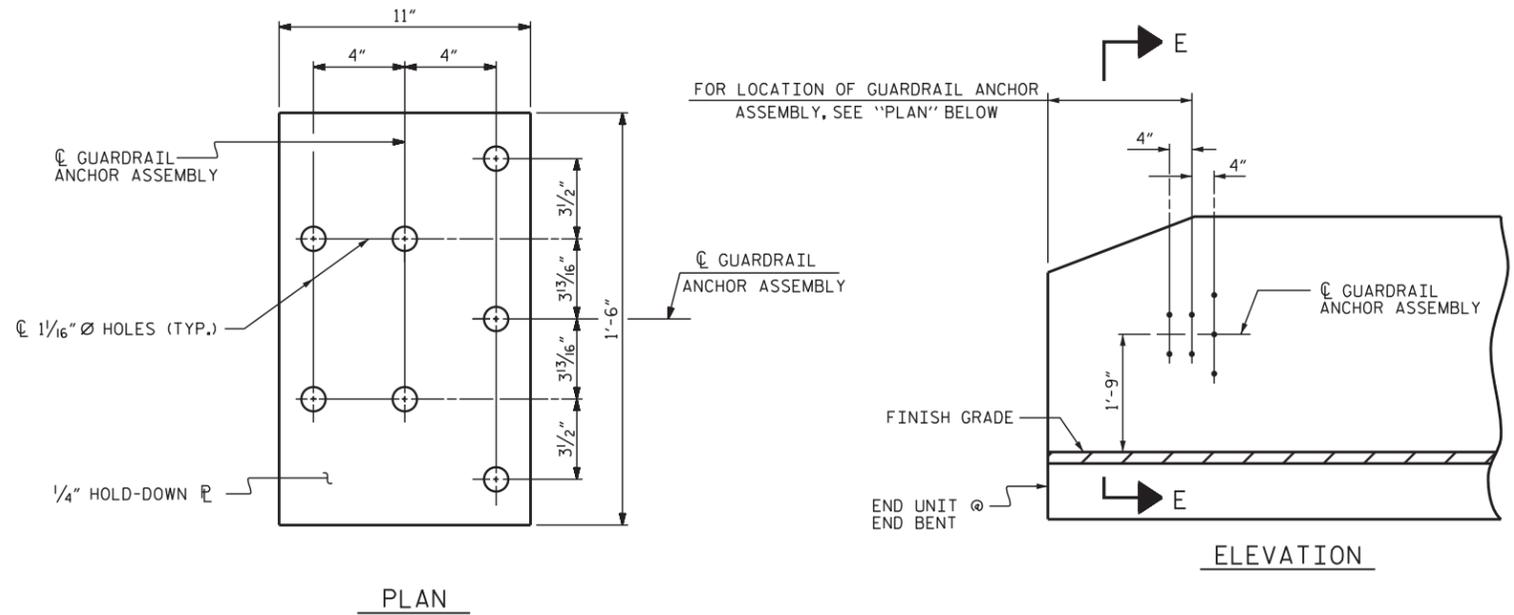
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

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

SHEET NO. S-8
 TOTAL SHEETS 19

ASSEMBLED BY : NMW	DATE : 8/23
CHECKED BY : MGC	DATE : 4/24
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG



PLAN

ELEVATION

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

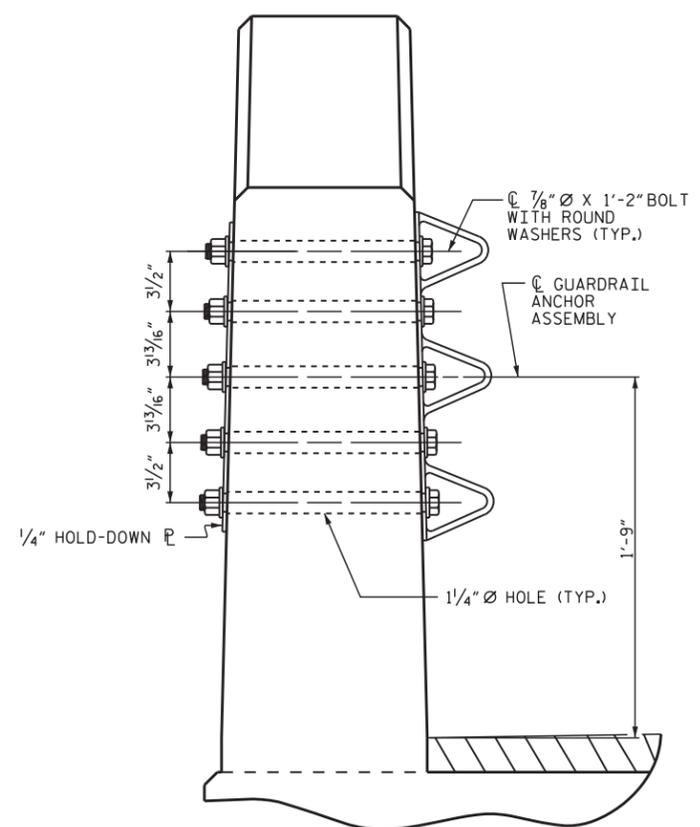
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

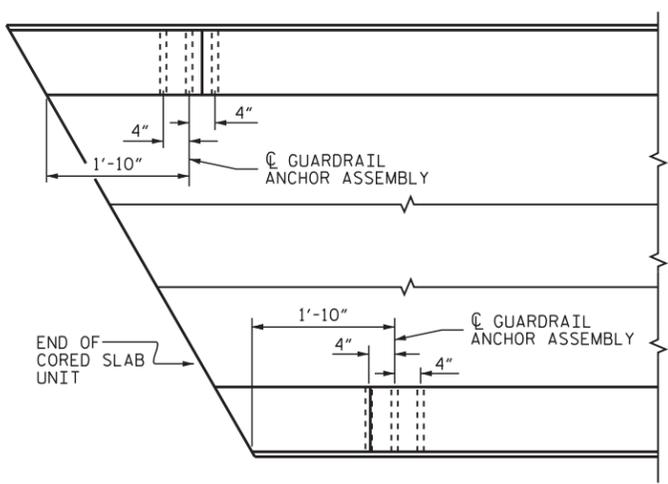
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



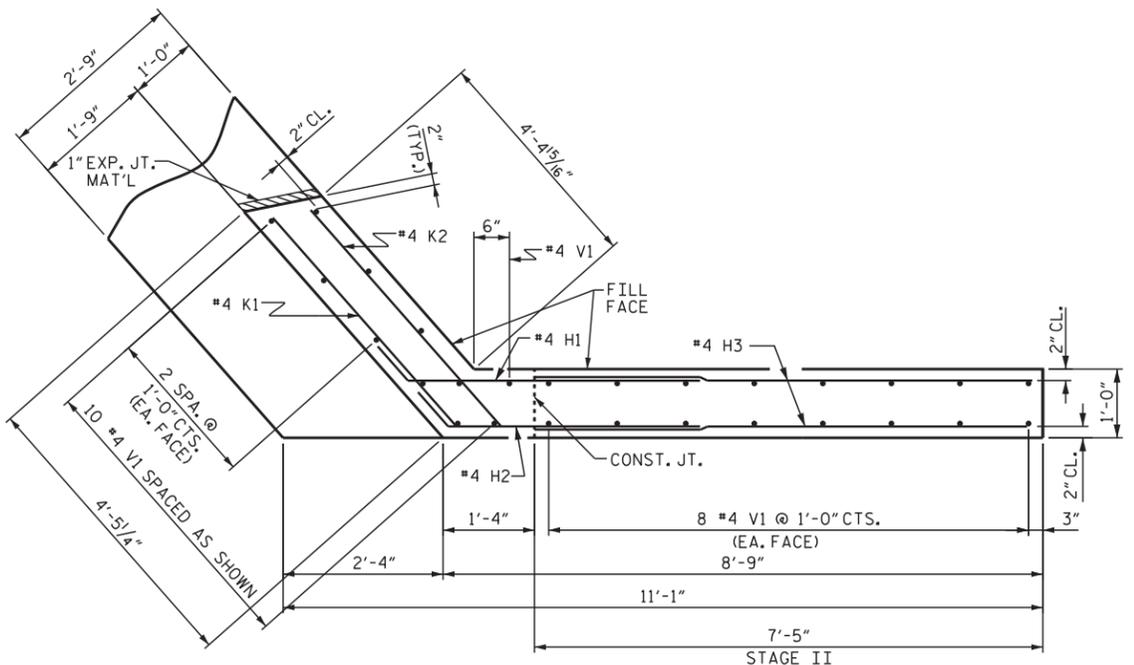
SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

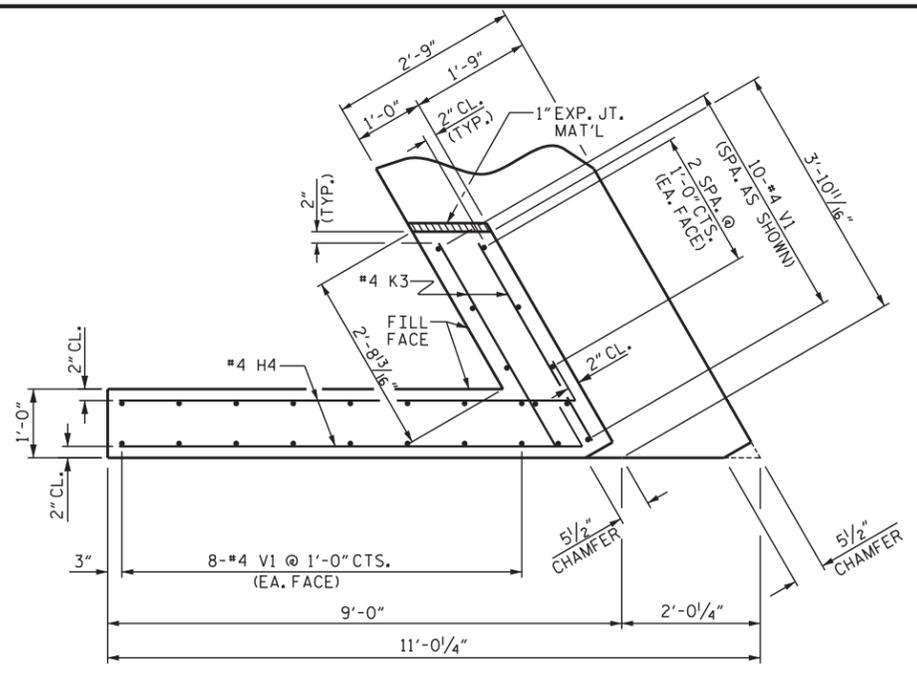
PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

		STATE OF NORTH CAROLINA		SHEET NO.				
		DEPARTMENT OF TRANSPORTATION			S-10			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		RAVISIONS			TOTAL SHEETS			
		NO.	BY:	DATE:		NO.	BY:	DATE:
TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275		1			3			19
		2			4			

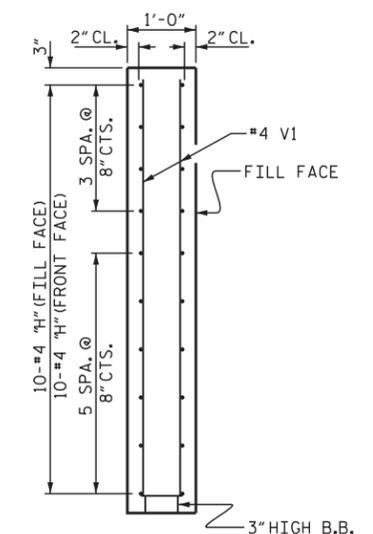
ASSEMBLED BY :	NMW	DATE :	8/23
CHECKED BY :	MGC	DATE :	8/23
DRAWN BY :	MAA	REV. 1/15	MAA/TMG
CHECKED BY :	GM	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC



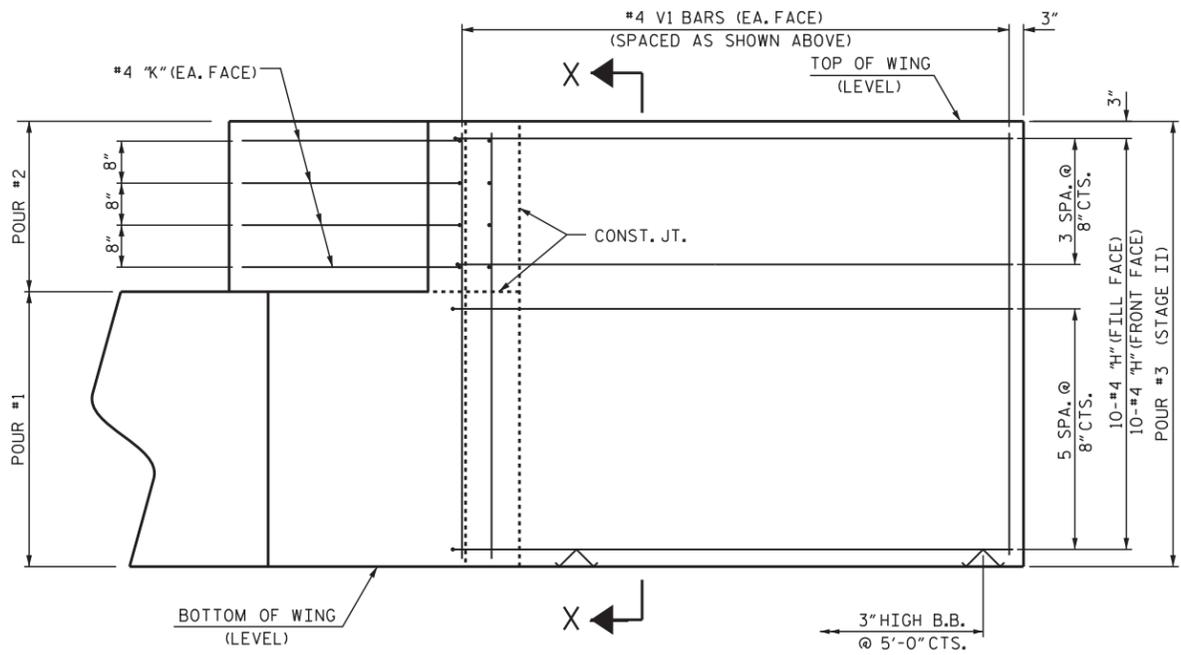
PLAN OF WING (W1)



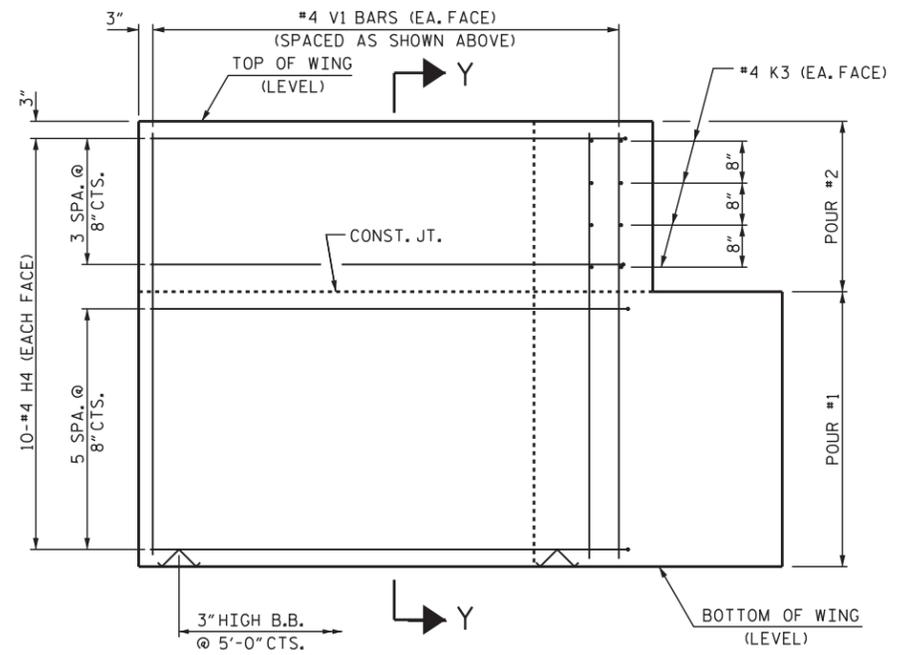
PLAN OF WING (W2)



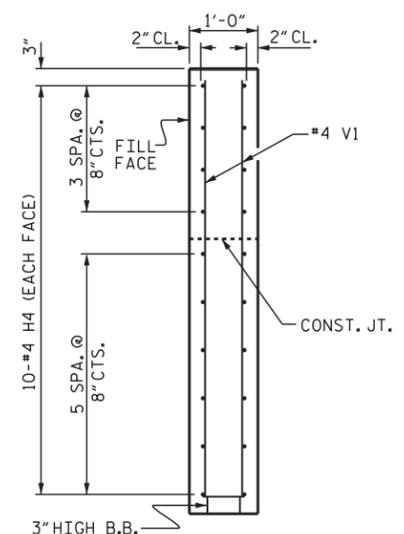
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. BP13-R023

MADISON COUNTY

STATION: 13+46.00-L-

SHEET 2 OF 3



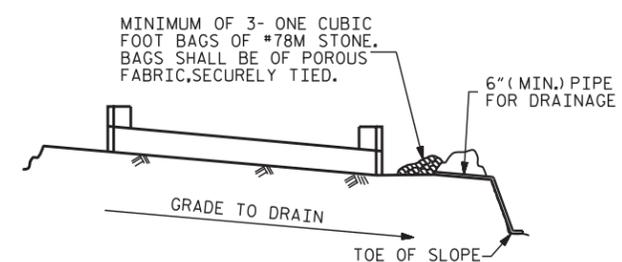
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WING DETAILS

DRAWN BY : NMW DATE : 8/23
CHECKED BY : MGC DATE : 8/23
DESIGN ENGINEER OF RECORD : MGC DATE : 1/24

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

SHEET NO.	S-12
TOTAL SHEETS	19

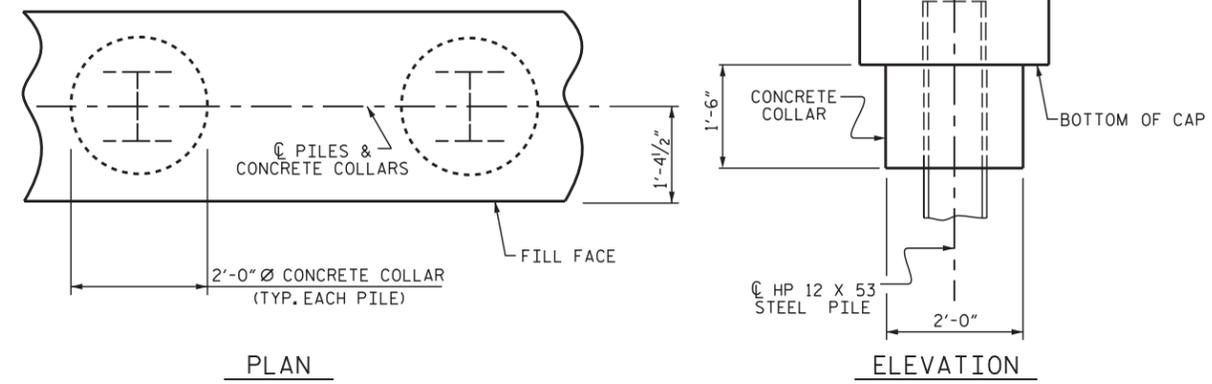
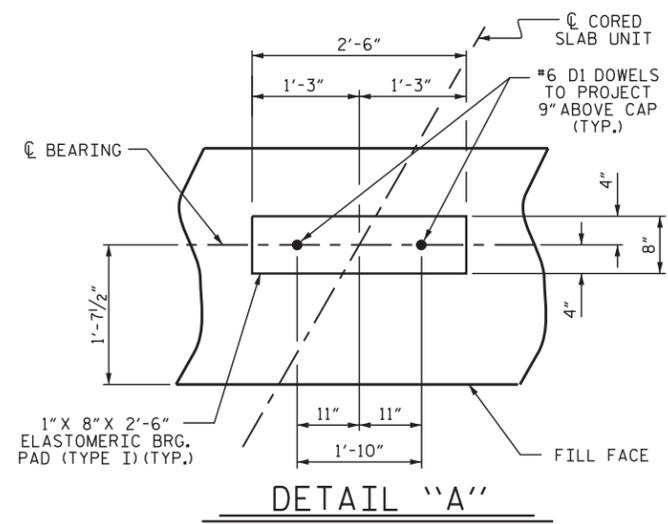


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

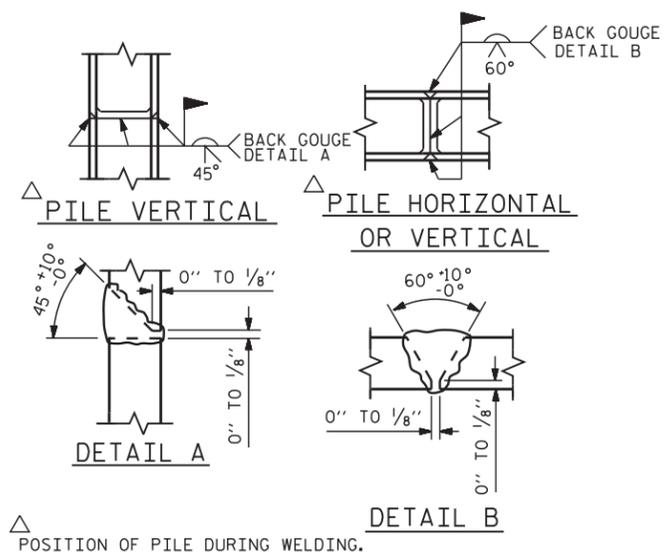
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

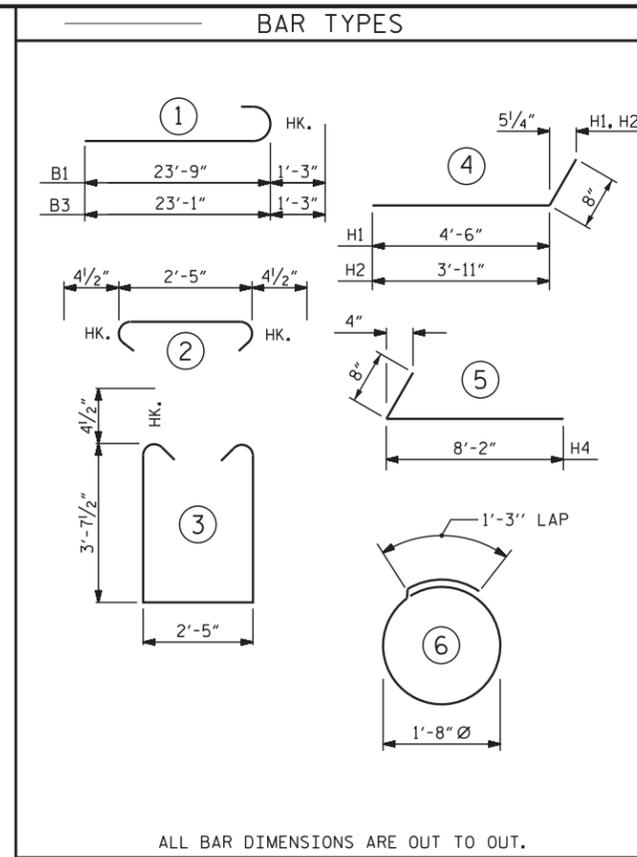
TEMPORARY DRAINAGE AT END BENT



CORROSION PROTECTION FOR STEEL PILES DETAIL

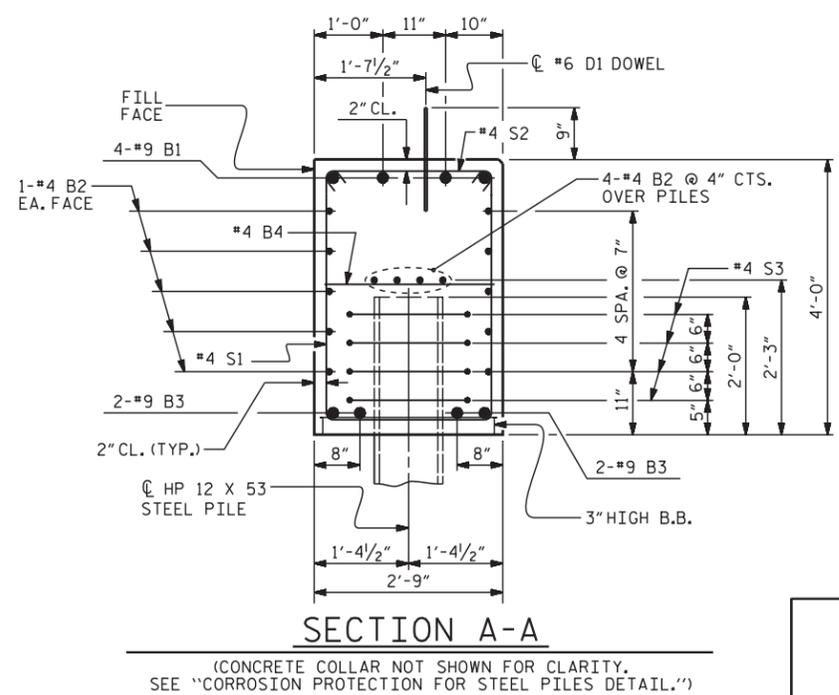


PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		25'-0"	680	
B2	#4	STR	22'-3"	416	
B3	#9		24'-4"	662	
B4	#4	STR	2'-5"	18	
D1	#6	STR	1'-6"	45	
H1	#4	4	5'-2"	35	
H2	#4	4	4'-7"	31	
H3	#4	STR	7'-2"	96	
H4	#4	5	8'-10"	118	
K1	#4	STR	4'-0"	11	
K2	#4	STR	4'-2"	11	
K3	#4	STR	3'-3"	17	
S1	#4	3	10'-5"	376	
S2	#4	2	3'-2"	114	
S3	#4	6	6'-6"	87	
V1	#4	STR	6'-2"	218	
REINFORCING STEEL				2935 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				19.2 C.Y.	
POUR #2 UPPER PART OF WING W1, W2				1.5 C.Y.	
POUR #3 WING W1				1.8 C.Y.	
TOTAL CLASS A CONCRETE				22.5 C.Y.	



PROJECT NO. BP13-R023

MADISON COUNTY

STATION: 13+46.00-L-

SHEET 3 OF 3



DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
DETAILS

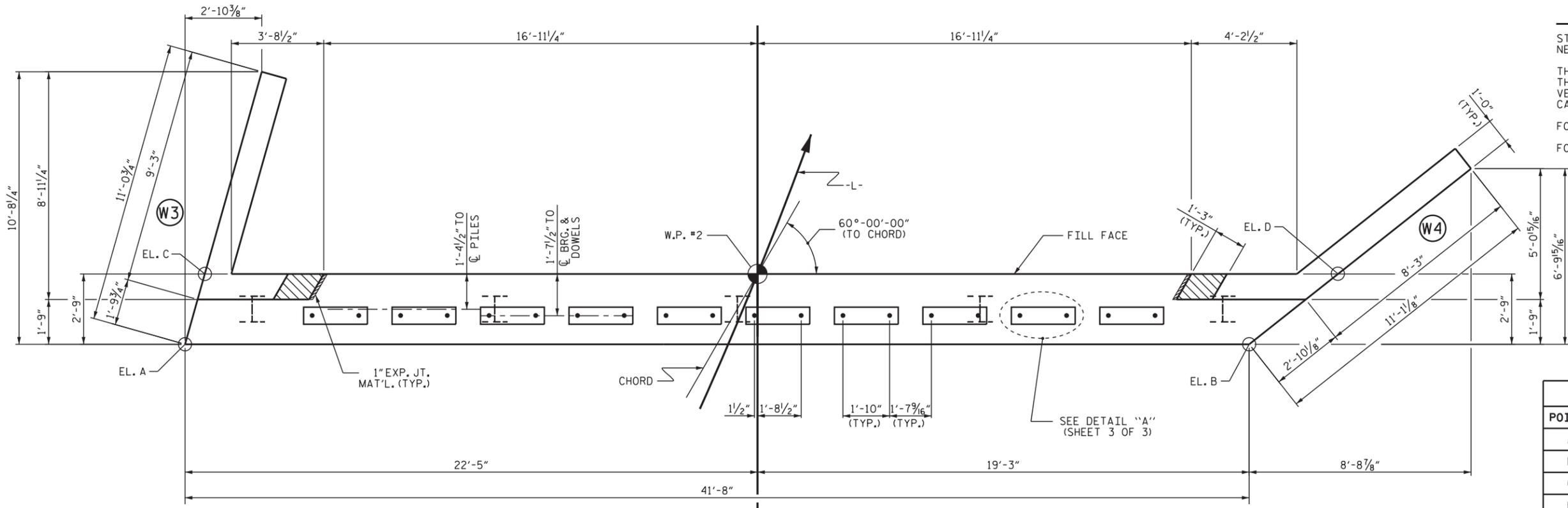
DRAWN BY : NMW DATE : 8/23
CHECKED BY : MGC DATE : 8/23
DESIGN ENGINEER OF RECORD : MGC DATE : 1/24

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

SHEET NO.	S-13
TOTAL SHEETS	19

NOTES

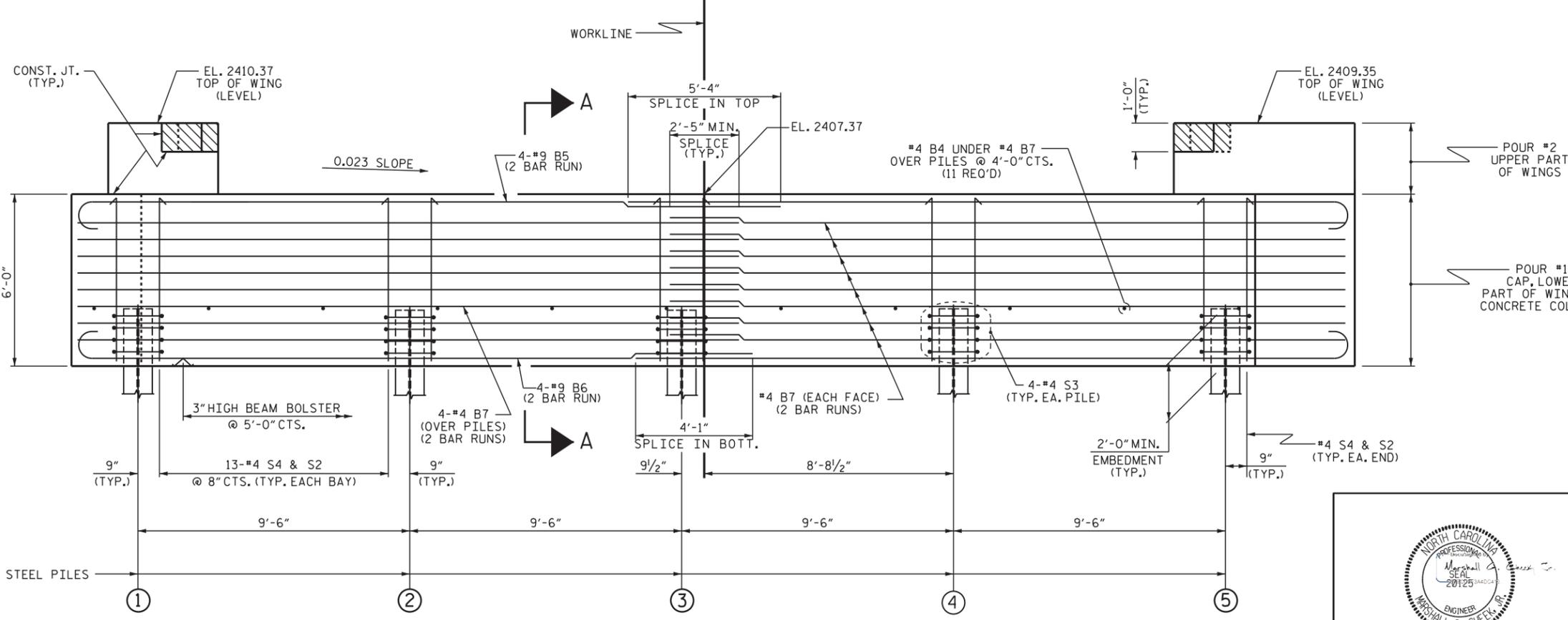
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.



CAP ELEVATIONS

POINTS	TOP OF CAP	BOTTOM OF CAP
A	2407.85	2401.85
B	2406.89	2400.89
C	2407.87	2401.87
D	2406.85	2400.85

PLAN



TOP OF PILE ELEVATIONS

①	2403.83
②	2403.61
③	2403.39
④	2403.17
⑤	2402.95

PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ENGINEER
 MARSHALL G. CHECK, JR.
 6/24/2024

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

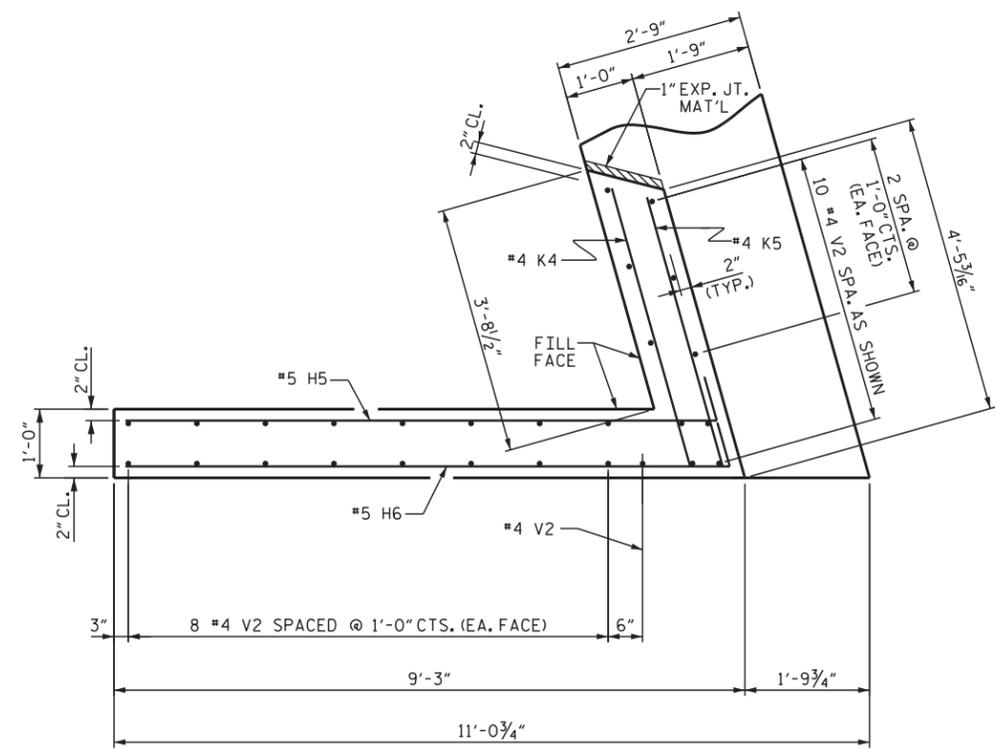
**SUBSTRUCTURE
 END BENT 2**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-14
2			4			TOTAL SHEETS 19

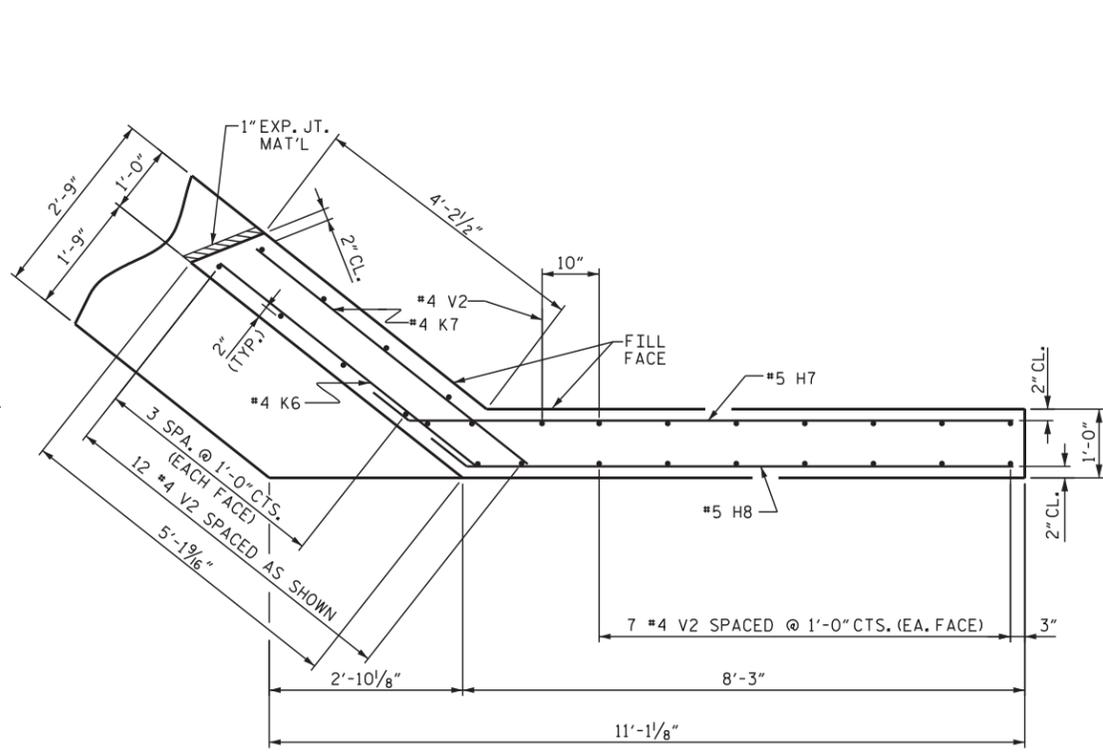
DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MGC DATE : 8/23
 DESIGN ENGINEER OF RECORD : MGC DATE : 1/24

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

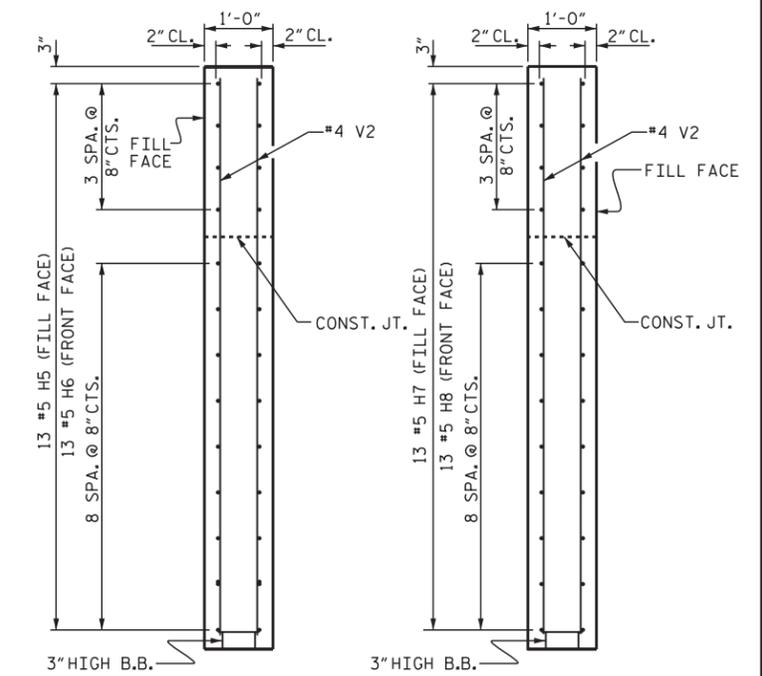
ELEVATION



PLAN OF WING (W3)

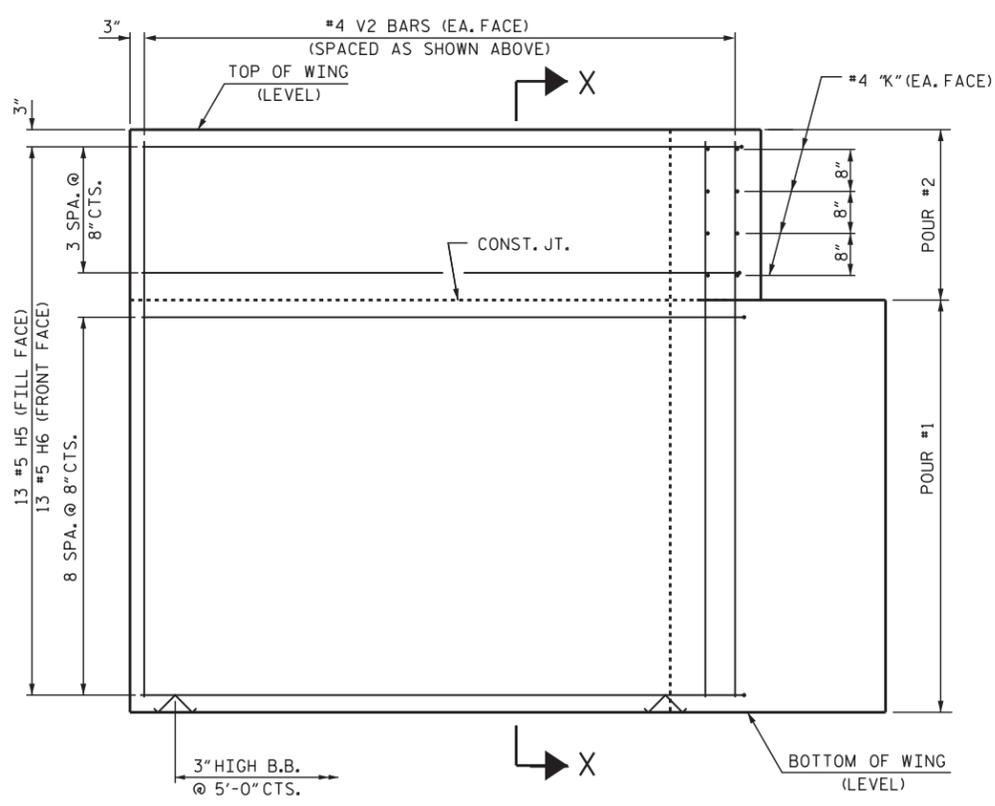


PLAN OF WING (W4)

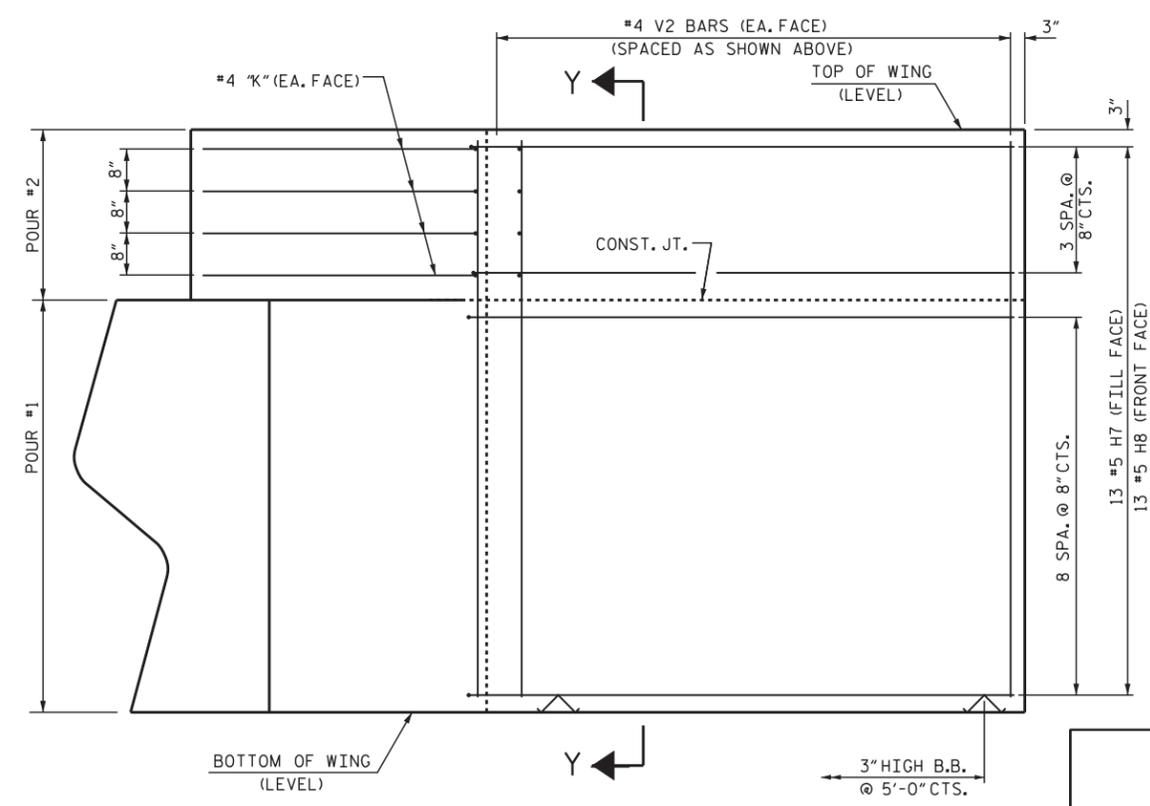


SECTION X-X

SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

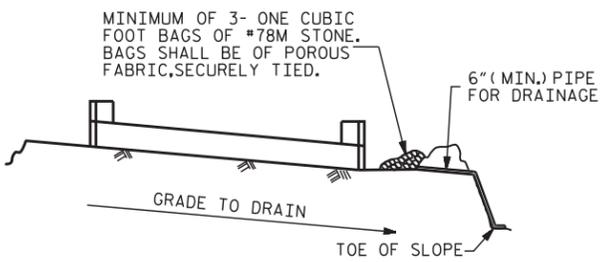
PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 2 OF 3



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

DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MGC DATE : 8/23
 DESIGN ENGINEER OF RECORD : MGC DATE : 1/24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			REVISIONS			SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:				S-15			
1			3						TOTAL SHEETS			
2			4						19			

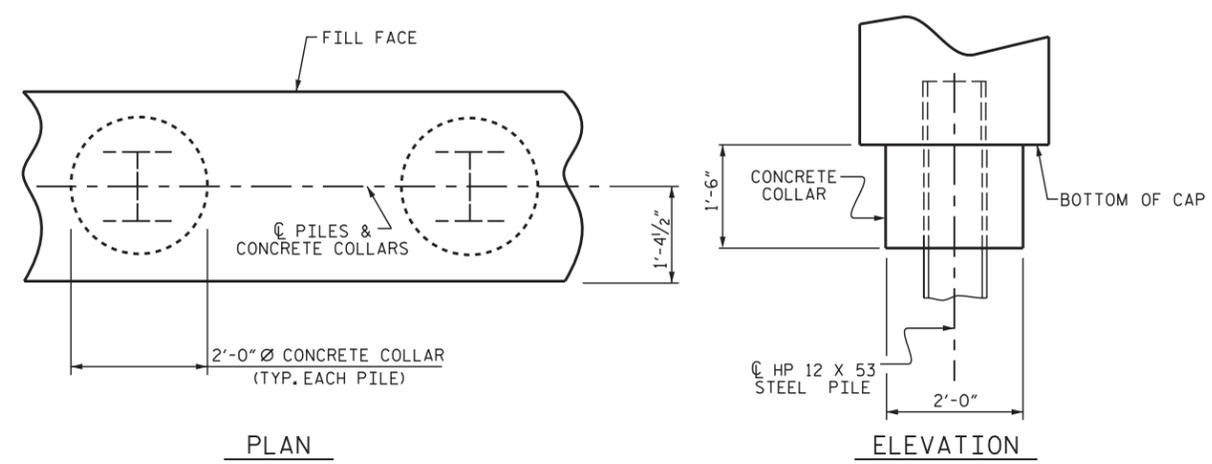
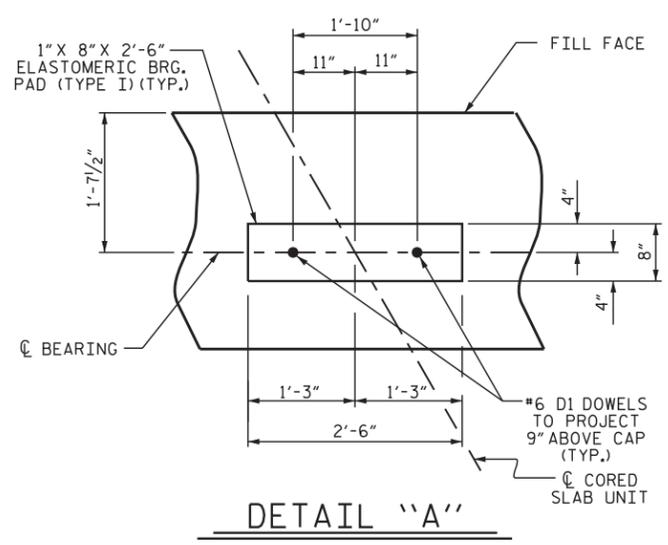


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

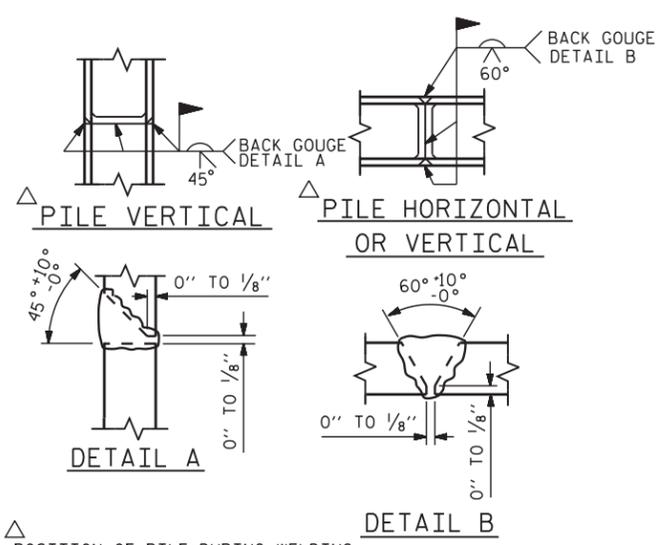
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



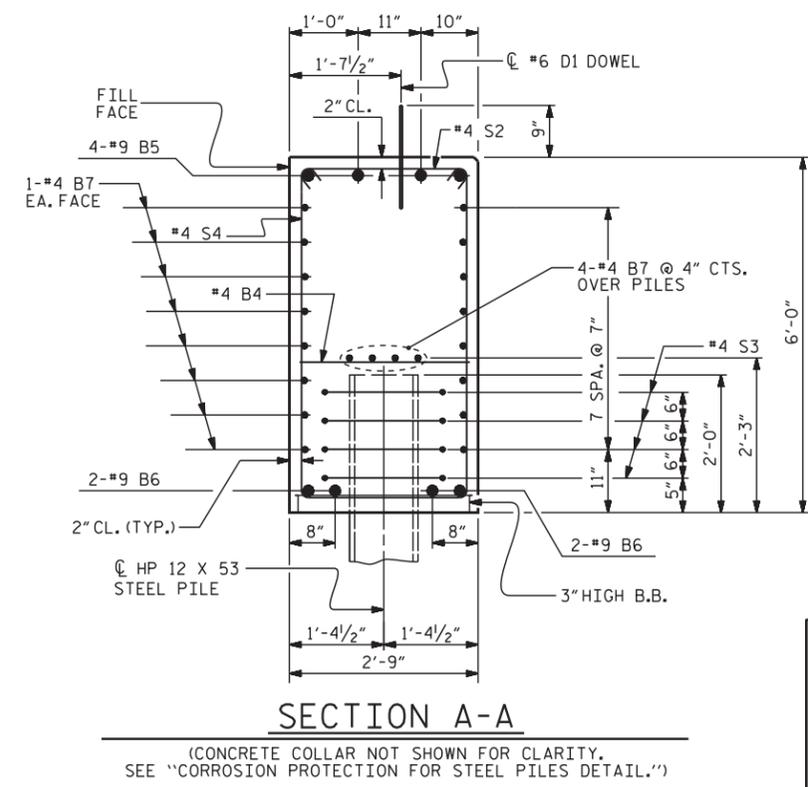
CORROSION PROTECTION FOR STEEL PILES DETAIL



PILE SPLICE DETAILS

BAR TYPES					BILL OF MATERIAL	
					END BENT 2	
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B4	#4	STR	2'-5"	18		
B5	#9	1	25'-11"	705		
B6	#9	1	25'-4"	689		
B7	#4	STR	23'-4"	623		
D1	#6	STR	1'-6"	45		
H5	#5	4	9'-4"	127		
H6	#5	4	9'-6"	129		
H7	#5	5	9'-7"	130		
H8	#5	5	8'-9"	119		
K4	#4	STR	4'-2"	11		
K5	#4	STR	4'-0"	11		
K6	#4	STR	4'-9"	13		
K7	#4	STR	5'-3"	14		
S4	#4	3	14'-5"	520		
S2	#4	2	3'-2"	114		
S3	#4	6	6'-6"	87		
V2	#4	STR	8'-2"	295		
REINFORCING STEEL					3650 LBS.	
CLASS A CONCRETE BREAKDOWN						
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					30.6 C.Y.	
POUR #2 UPPER PART OF WINGS					2.4 C.Y.	
TOTAL CLASS A CONCRETE					33.0 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.



PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

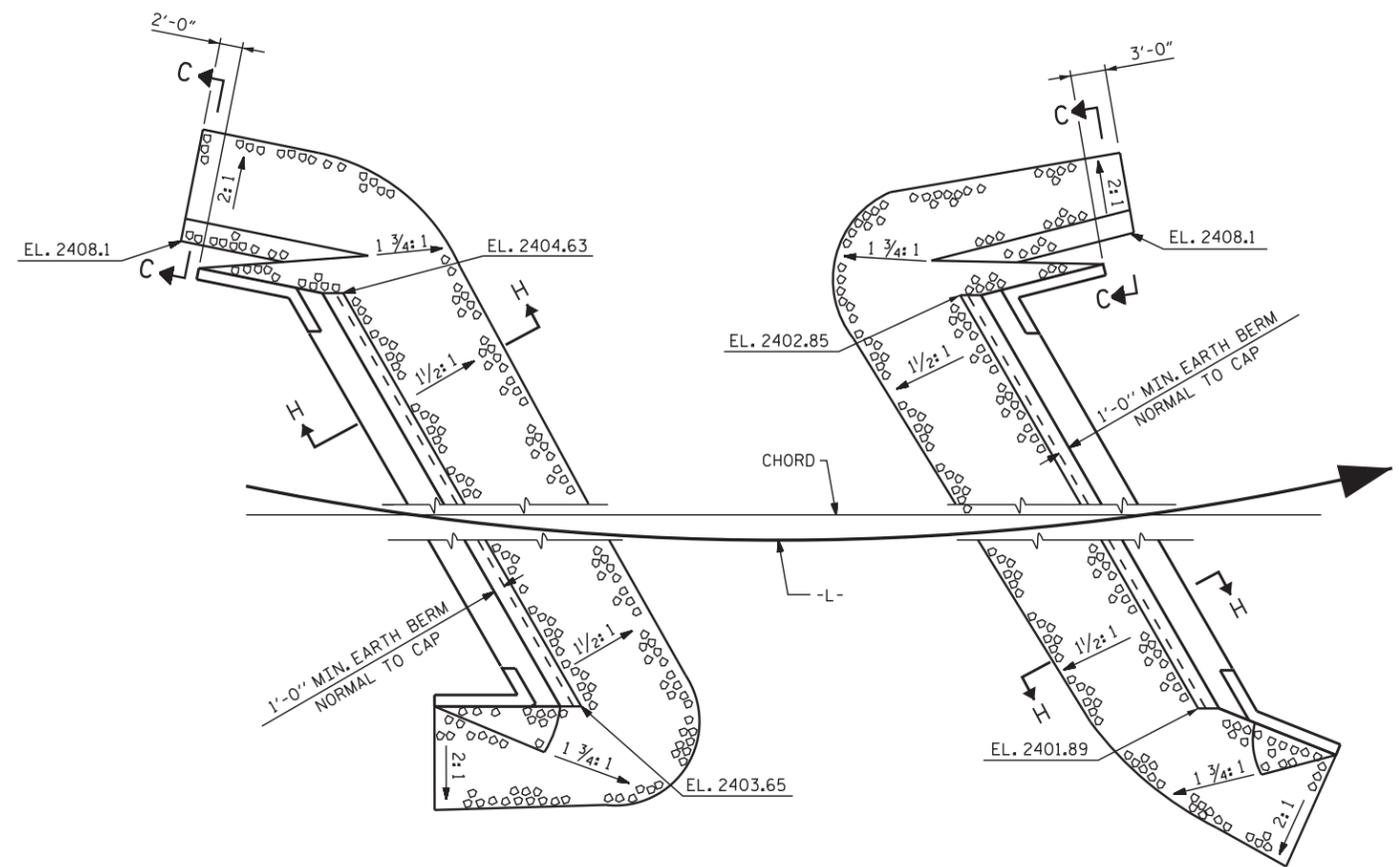
PROFESSIONAL ENGINEER
 Marshall G. Cheek, Jr.
 SEAL
 20125
 6/24/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

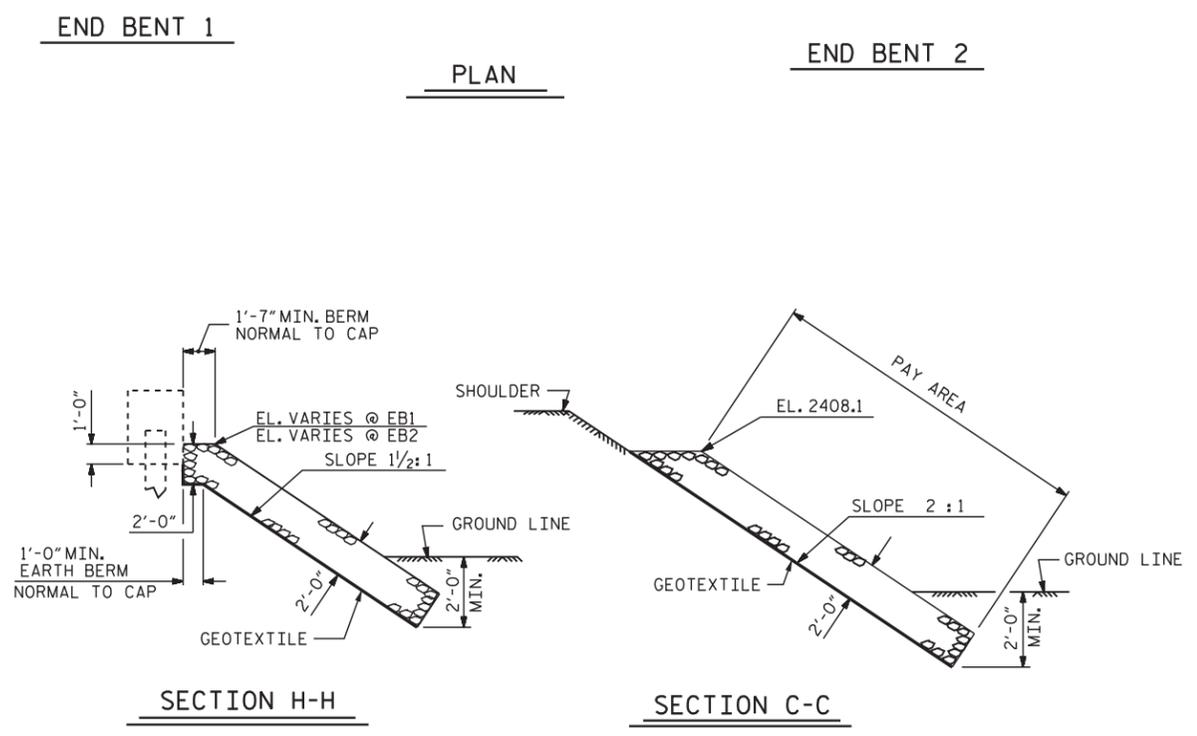
TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-16
2			4			TOTAL SHEETS 19

DRAWN BY : NMW DATE : 8/23
 CHECKED BY : MGC DATE : 8/23
 DESIGN ENGINEER OF RECORD : MGC DATE : 1/24



ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+46.00-L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	120	130
END BENT 2	125	140



PROJECT NO. BP13-R023
MADISON COUNTY
 STATION: 13+46.00-L-

6/24/2024

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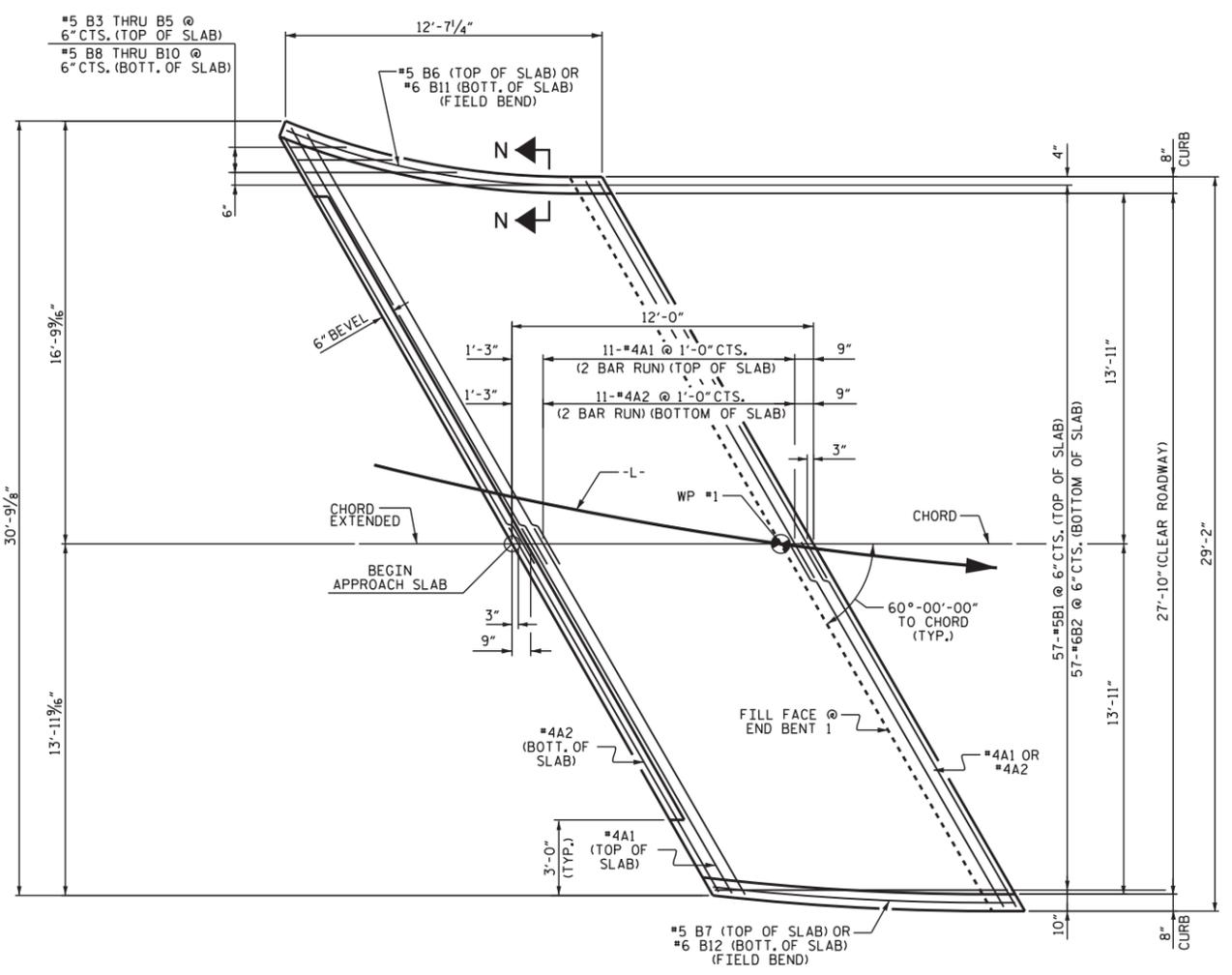
TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

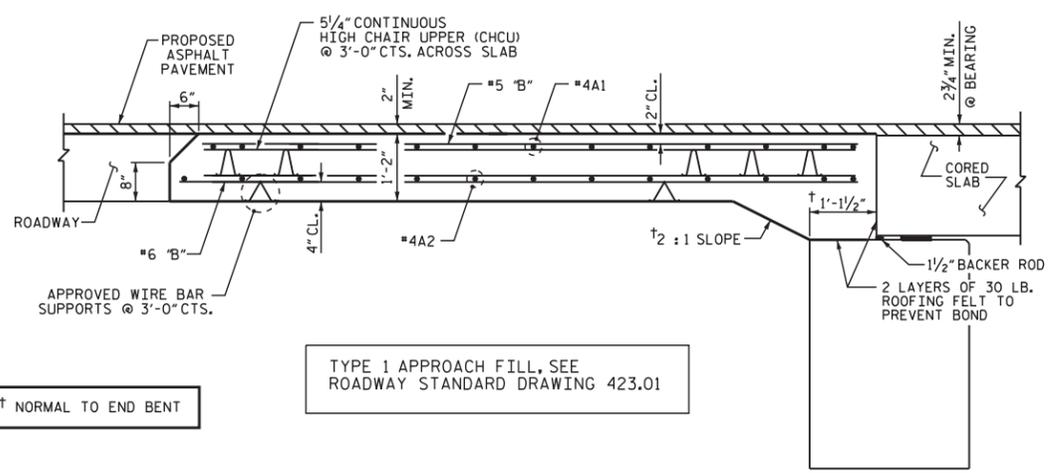
ASSEMBLED BY : NMW	DATE : 8/23	SHEET NO. S-17
CHECKED BY : MGC	DATE : 8/23	
DRAWN BY : REK	1/84	TOTAL SHEETS 19
CHECKED BY : RDU	1/84	

ASSEMBLED BY : NMW	DATE : 8/23
CHECKED BY : MGC	DATE : 8/23
DRAWN BY : REK	1/84
CHECKED BY : RDU	1/84

REV. 10/1/11	MAA/GM
REV. 12/21/11	MAA/GM
REV. 12/17	MAA/THC



PLAN @ END BENT 1



SECTION THRU SLAB

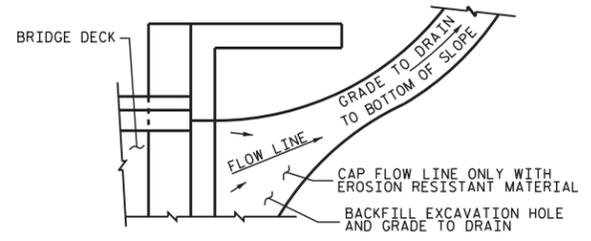
↑ NORMAL TO END BENT

TYPE 1 APPROACH FILL, SEE ROADWAY STANDARD DRAWING 423.01

ASSEMBLED BY : NMW	DATE : 8/23
CHECKED BY : MGC	DATE : 8/23
DRAWN BY : EEM 3/95	REV. 6/13 MAA/GM
CHECKED BY : VAP 3/95	REV. 12/17 MAA/THC
	REV. 07/23 BNB/SNM

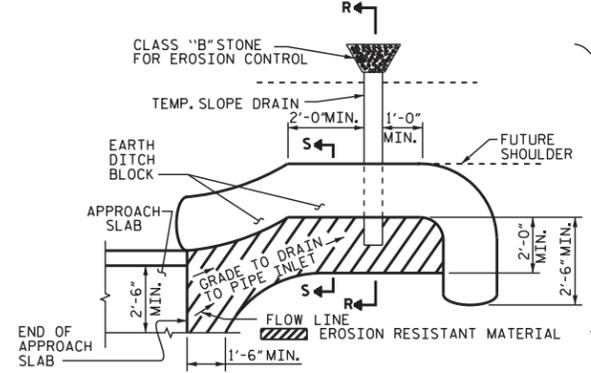
NOTES

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



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

TEMPORARY DRAINAGE DETAIL

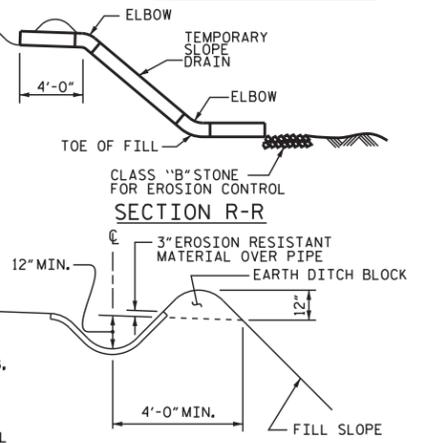


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

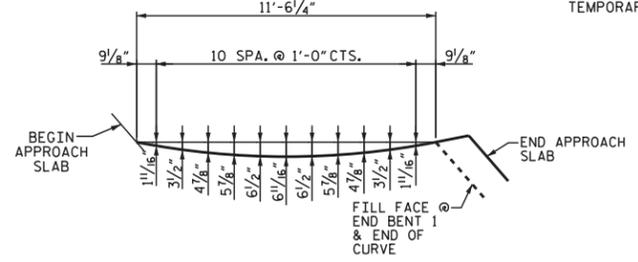
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

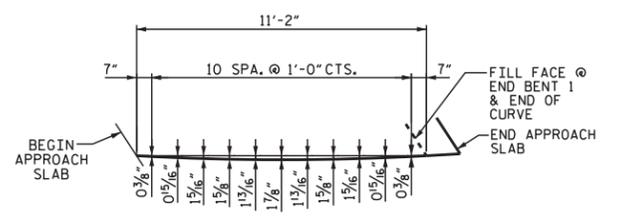
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S



ARC OFFSETS - LEFT SIDE



ARC OFFSETS - RIGHT SIDE

BILL OF MATERIAL						
APPROACH SLAB AT EB 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	18'-7"	323	
A2	26	#4	STR	18'-5"	320	
*B1	57	#5	STR	11'-1"	659	
B2	57	#6	STR	11'-7"	992	
*B3	1	#5	STR	6'-0"	6	
*B4	1	#5	STR	3'-9"	4	
*B5	1	#5	STR	2'-2"	2	
*B6	1	#5	STR	11'-6"	12	
*B7	1	#5	STR	12'-0"	13	
B8	1	#6	STR	6'-0"	9	
B9	1	#6	STR	3'-9"	6	
B10	1	#6	STR	2'-2"	3	
B11	1	#6	STR	11'-6"	17	
B12	1	#6	STR	12'-0"	18	
REINFORCING STEEL				LBS.	1365	
* EPOXY COATED REINFORCING STEEL				LBS.	1019	
CLASS AA CONCRETE				C. Y.	16.9	

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

PROJECT NO. BP13-R023
 MADISON COUNTY
 STATION: 13+46.00-L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

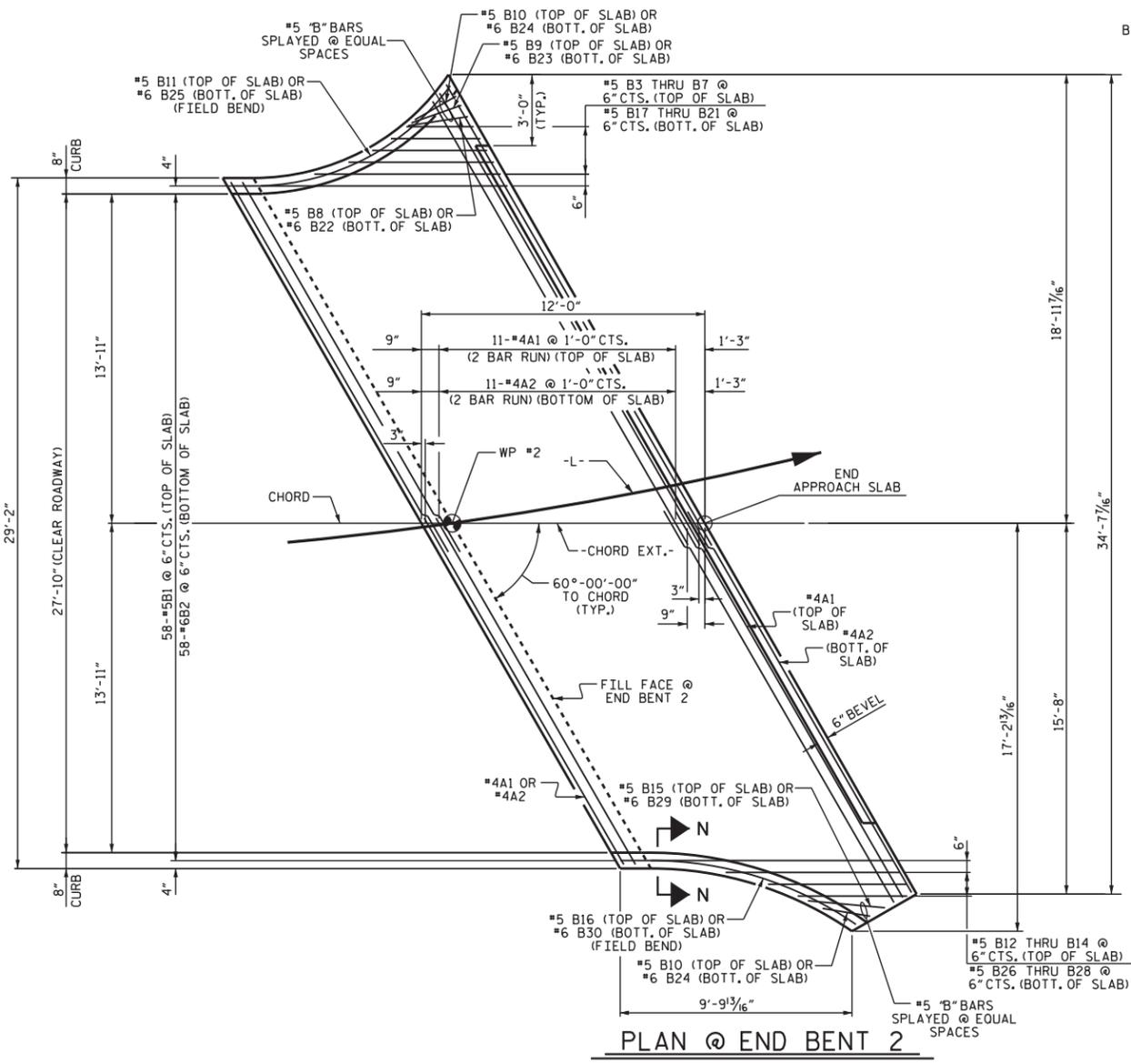
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 60° SKEW

6/24/2024

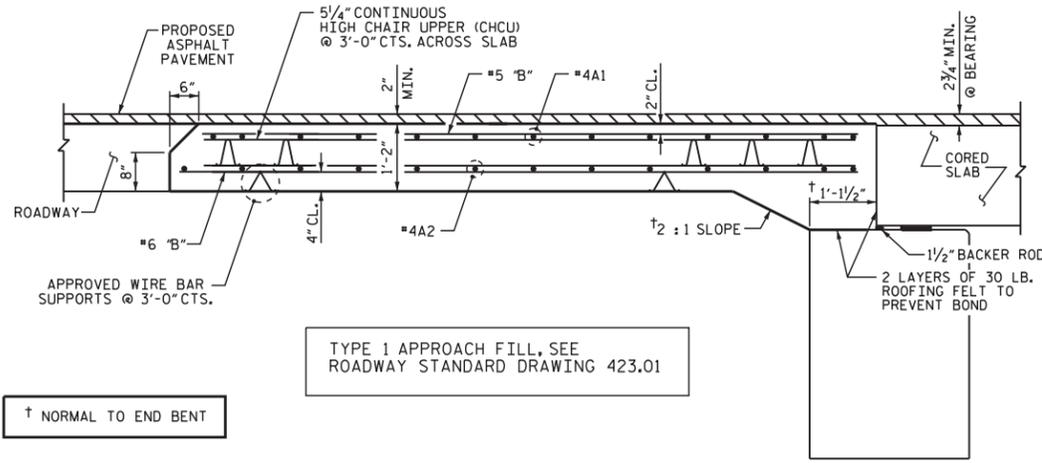
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TGS ENGINEERS
 201 W. MARION ST STE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-18
2			4			19



PLAN @ END BENT 2

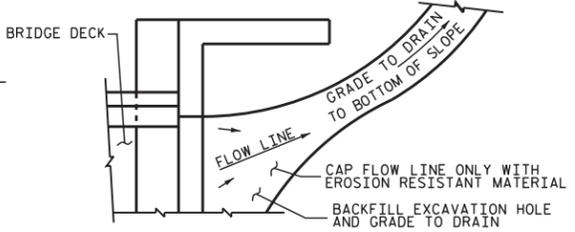


SECTION THRU SLAB

ASSEMBLED BY : NMW	DATE : 8/23
CHECKED BY : MGC	DATE : 8/23
DRAWN BY : EEM 3/95	REV. 6/13 MAA/GM
CHECKED BY : VAP 3/95	REV. 12/17 MAA/THC
	REV. 07/23 BNB/SNM

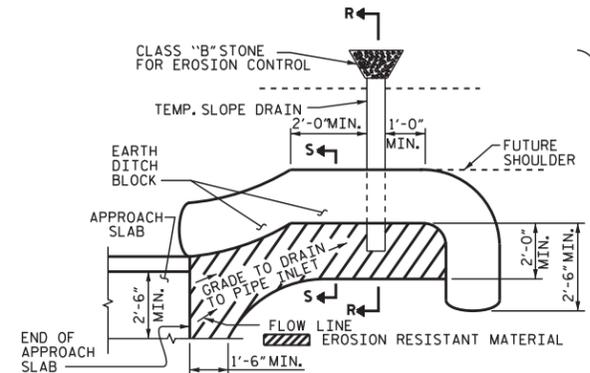
↑ NORMAL TO END BENT

TYPE 1 APPROACH FILL, SEE ROADWAY STANDARD DRAWING 423.01



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

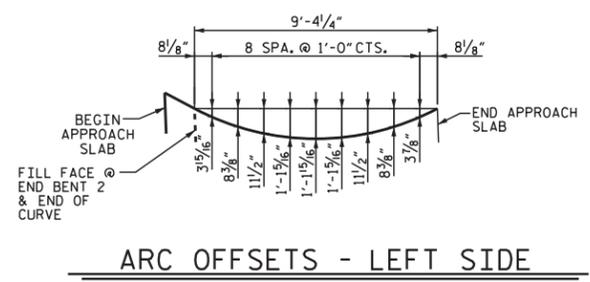
TEMPORARY DRAINAGE DETAIL



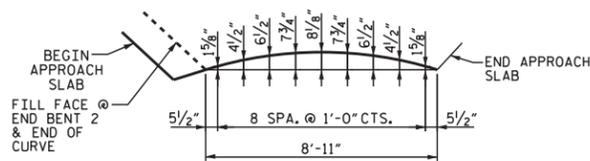
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



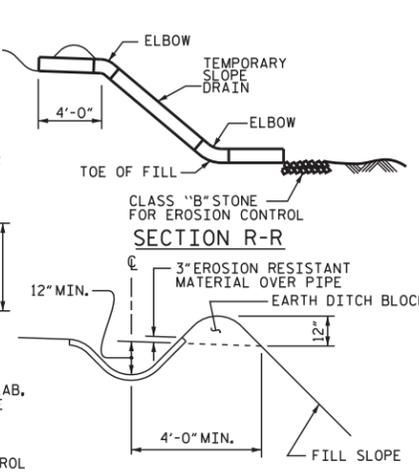
ARC OFFSETS - LEFT SIDE



ARC OFFSETS - RIGHT SIDE

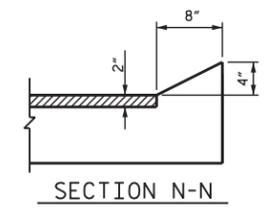
NOTES

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



SECTION S-S

SECTION R-R



SECTION N-N

BILL OF MATERIAL					
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	20'-8"	359
A2	26	#4	STR	20'-6"	356
*B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
*B3	1	#5	STR	7'-4"	8
*B4	1	#5	STR	5'-7"	6
*B5	1	#5	STR	4'-4"	5
*B6	1	#5	STR	3'-9"	4
*B7	1	#5	STR	2'-10"	3
*B8	1	#5	STR	2'-6"	3
*B9	1	#5	STR	2'-3"	2
*B10	2	#5	STR	2'-0"	4
*B11	1	#5	STR	9'-4"	10
*B12	1	#5	STR	7'-3"	8
*B13	1	#5	STR	5'-10"	6
*B14	1	#5	STR	4'-10"	5
*B15	1	#5	STR	3'-3"	3
*B16	1	#5	STR	9'-3"	10
B17	1	#6	STR	7'-10"	12
B18	1	#6	STR	6'-1"	9
B19	1	#6	STR	4'-10"	7
B20	1	#6	STR	3'-9"	6
B21	1	#6	STR	2'-10"	4
B22	1	#6	STR	2'-6"	4
B23	1	#6	STR	2'-3"	3
B24	2	#6	STR	2'-0"	6
B25	1	#6	STR	9'-4"	14
B26	1	#6	STR	7'-3"	11
B27	1	#6	STR	5'-10"	9
B28	1	#6	STR	4'-10"	7
B29	1	#6	STR	3'-3"	5
B30	1	#6	STR	9'-3"	14
REINFORCING STEEL				LBS.	1476
* EPOXY COATED REINFORCING STEEL				LBS.	1106
CLASS AA CONCRETE				C. Y.	18.0

SPLICE LENGTHS

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

PROJECT NO. BP13-R023
MADISON COUNTY
STATION: 13+46.00-L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

6/24/2024

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:	TOTAL SHEETS
1			3			S-19
2			4			19

