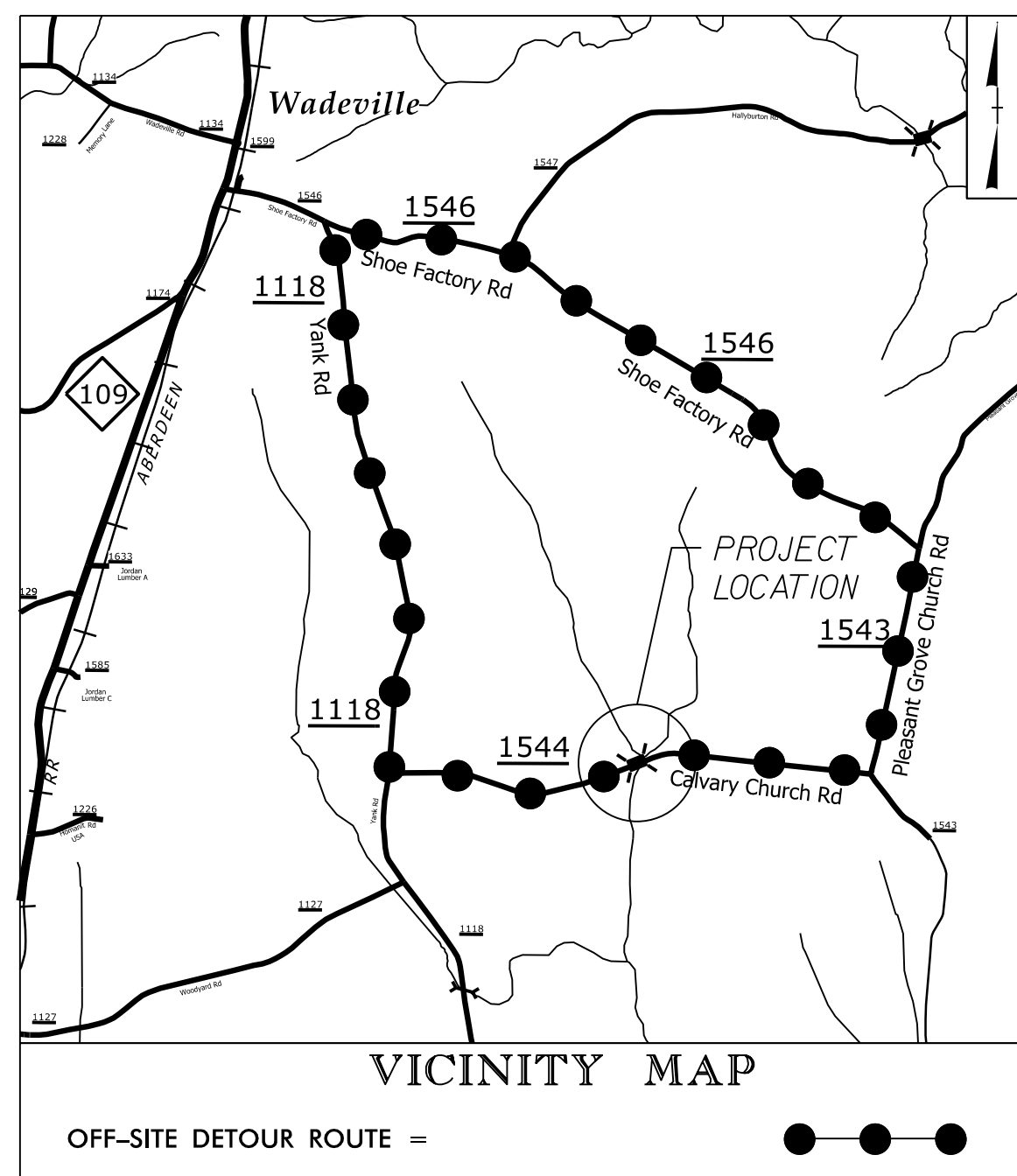


09.08/2019

**TIP PROJECT: 17BP.8.R.63**

**CONTRACT:**

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional symbols  
See Sheet 1C-1 For Survey Control Sheet



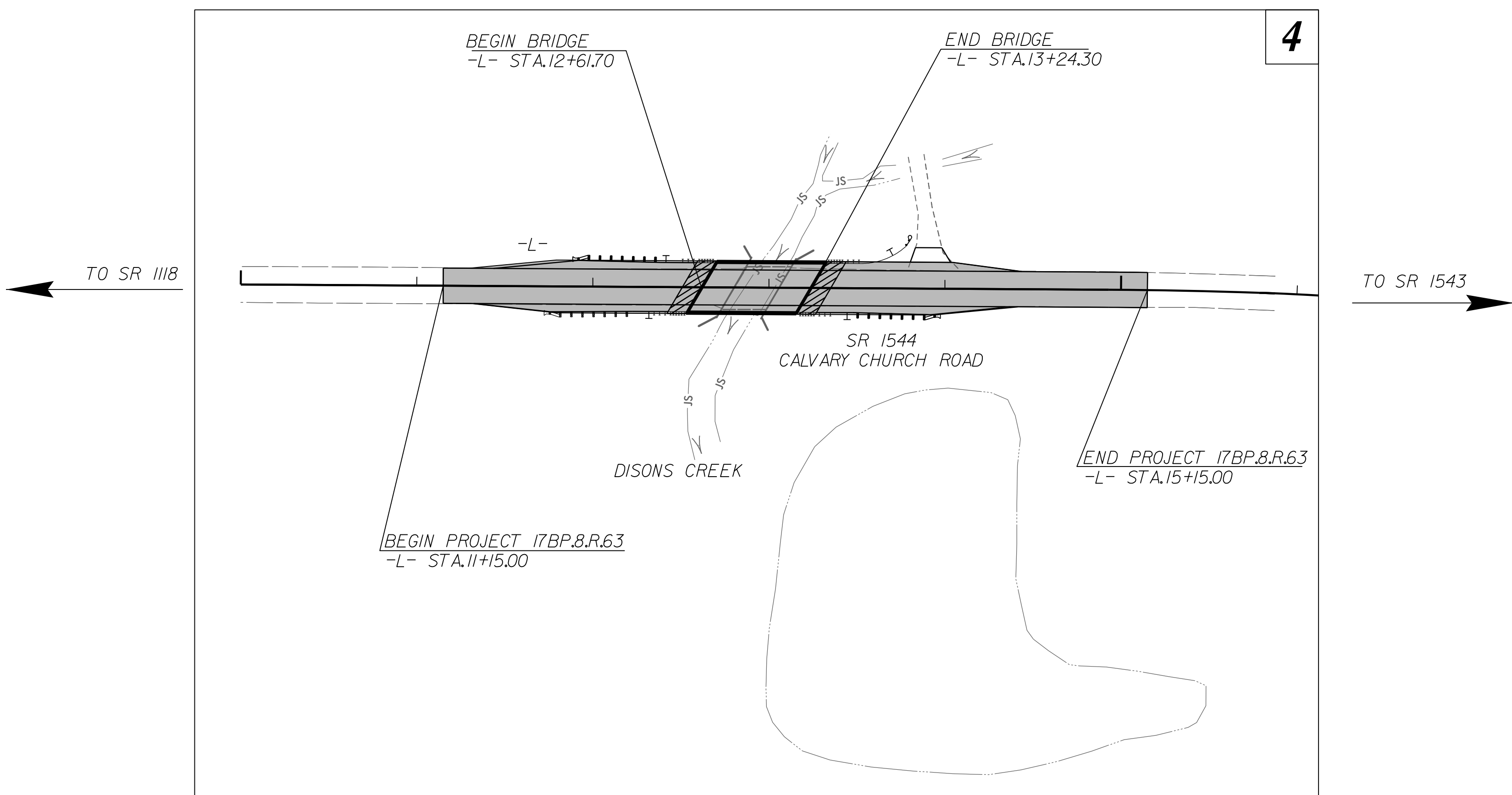
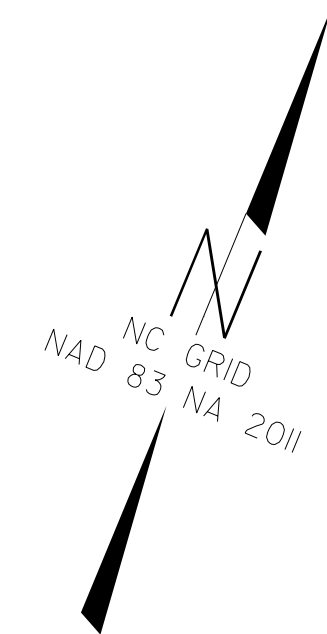
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# MONTGOMERY COUNTY

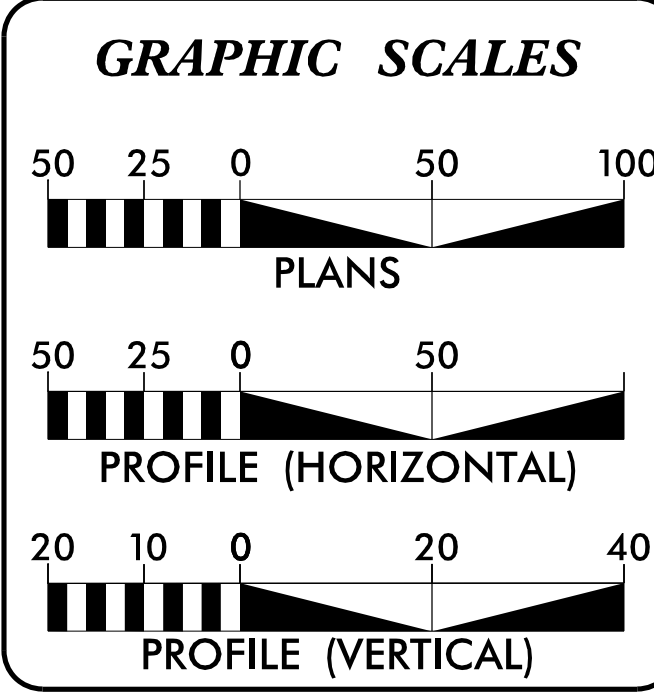
**LOCATION: BRIDGE NO. 36 OVER DISONS CREEK  
ON SR 1544 (CALVARY CHURCH ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.63	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.63		PE	
17BP.8.R.63		R/W & UTIL	
17BP.8.R.63		CONST.	



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



**DESIGN DATA**

ADT 2022 = 100

T = 6 % \*

V = 55 MPH

\* TTST = 3% DUAL 3%

FUNC CLASS = LOCAL

SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY PROJECT 17BP.8.R.63 = 0.064 MI

LENGTH OF STRUCTURE PROJECT 17BP.8.R.63 = 0.012 MI

TOTAL LENGTH OF PROJECT 17BP.8.R.63 = 0.076 MI

DESIGN EXCEPTION REQUIRED - VERTICAL CURVE

Prepared In the Office of:

**SEPI**  
Engineering & Construction, Inc.  
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

2018 STANDARD SPECIFICATIONS

**BENJAMIN CRAWFORD, PE**  
PROJECT ENGINEER

**WILLIAM POPE, PE**  
PROJECT DESIGN ENGINEER

**TIM WELCH, PE**  
NCDOT CONTACT

**RIGHT OF WAY DATE:**  
MARCH, 2014

**LETTING DATE:**  
SEPTEMBER 27, 2022

**HYDRAULICS ENGINEER**

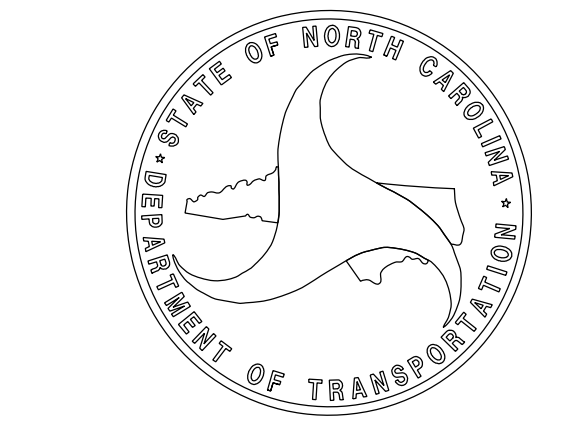
Seal: 33719

Signature: Brian Maggocchi

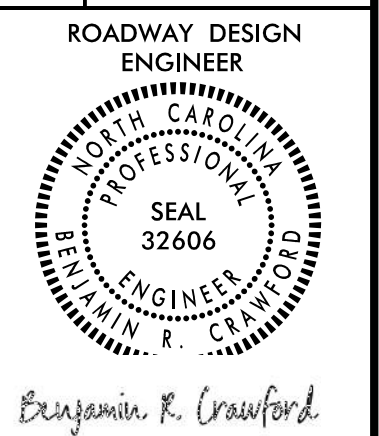
**ROADWAY DESIGN ENGINEER**

Seal: 32606

Signature: Benjamin R. Crawford



5/6/2022  
U:\Proj\1610036\_Rdy\_Tsh.dgn  
USER:rdgardner



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

EFF. 01-16-2018  
REV.

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	STRUCTURE ANCHOR UNITS
2C-2	GUARDRAIL AT-1 END UNIT DETAIL
2C-3	GUARDRAIL INSTALLATION DETAIL
3B-1	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, AND SHOULDER BERM GUTTER SUMMARY
3D-1	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-14	STRUCTURE PLANS

**GENERAL NOTES:** 2018 SPECIFICATIONS EFFECTIVE: 01-16-2018 REVISED:

**GRADE LINE:**  
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 III.

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

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

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

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

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

**SUBSURFACE PLANS:**  
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE DUKE (PROGRESS ENERGY). ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.02	Guide for Rip Rap at Pipe Outlets

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
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:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite RW Marker	○
Proposed Control of Access Line with Concrete CA Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Drainage / Utility Easement	-DUE-
Proposed Permanent Utility Easement	-PUE-
Proposed Temporary Utility Easement	-TUE-
Proposed Aerial Utility Easement	-AUE-
Proposed Permanent Easement with Iron Pin and Cap Marker	○

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-C-
Proposed Slope Stakes Fill	-F-
Proposed Curb Ramp	○
Existing Metal Guardrail	▭
Proposed Guardrail	▭
Existing Cable Guiderail	▭
Proposed Cable Guiderail	▭
Equality Symbol	⊕
Pavement Removal	▭
VEGETATION:	
Single Tree	☼
Single Shrub	☼
Hedge	▭
Woods Line	▭

Orchard	☼
Vineyard	▭

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	▭
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	-S-

## UTILITIES:

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	●
Recorded U/G Power Line	-P-
Designated U/G Power Line (S.U.E.*)	-P-

## TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	▭
Telephone Pedestal	▭
Telephone Cell Tower	▭
U/G Telephone Cable Hand Hole	▭
Recorded U/G Telephone Cable	-T-
Designated U/G Telephone Cable (S.U.E.*)	-T-
Recorded U/G Telephone Conduit	-TC-
Designated U/G Telephone Conduit (S.U.E.*)	-TC-
Recorded U/G Fiber Optics Cable	-T FO-
Designated U/G Fiber Optics Cable (S.U.E.*)	-T FO-

## WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-W-
Designated U/G Water Line (S.U.E.*)	-W-
Above Ground Water Line	-A/G Water-

## TV:

TV Satellite Dish	▭
TV Pedestal	▭
TV Tower	⊗
U/G TV Cable Hand Hole	▭
Recorded U/G TV Cable	-TV-
Designated U/G TV Cable (S.U.E.*)	-TV-
Recorded U/G Fiber Optic Cable	-TV FO-
Designated U/G Fiber Optic Cable (S.U.E.*)	-TV FO-

## GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-G-
Designated U/G Gas Line (S.U.E.*)	-G-
Above Ground Gas Line	-A/G Gas-

## SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-SS-
Above Ground Sanitary Sewer	-A/G Sanitary Sewer-
Recorded SS Forced Main Line	-FSS-
Designated SS Forced Main Line (S.U.E.*)	-FSS-

## MISCELLANEOUS:

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

8/17/99

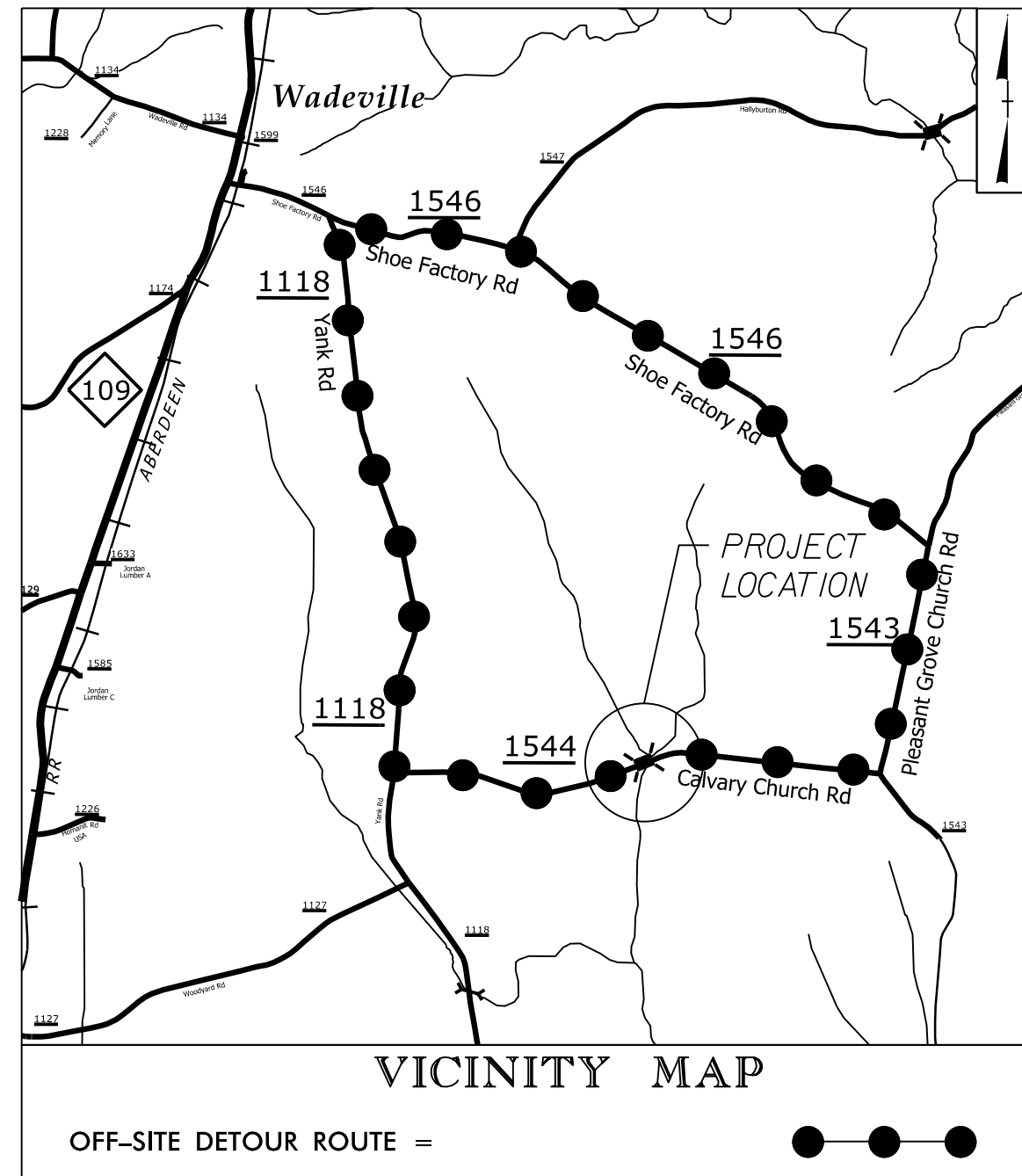
REVISIONS

5/16/2022  
T:\Roadway\Projects\610036-RDY\_1C.dgn  
JSE:fraser

# SURVEY CONTROL SHEET 17BP.8.R.63

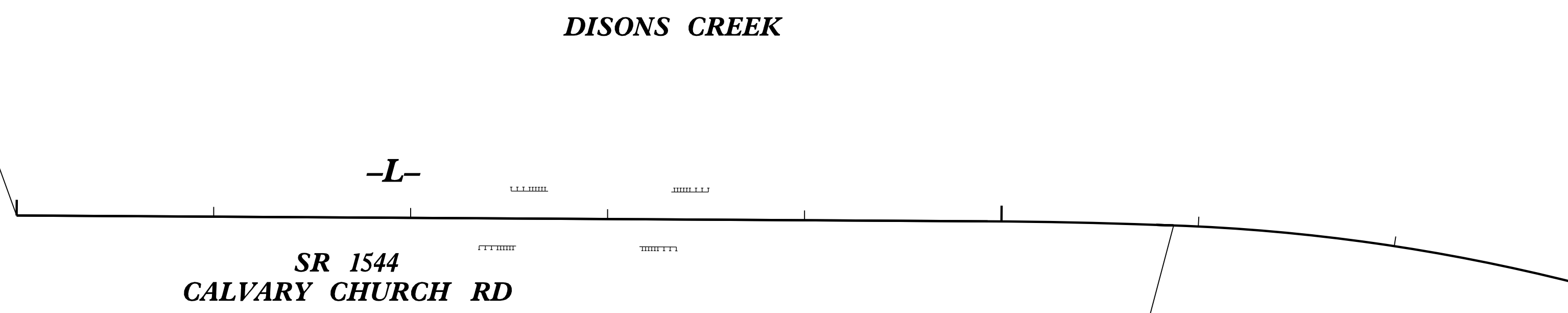


PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.63	1C-1
RW SHEET NO.	



BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
101	BL-101	548594.6310	1718074.2230	344.47	OUTSIDE PROJECT LIMITS	
102	BL-102	548691.6340	1718389.3470	330.45	13+02.05	15.79 RT
2	610036-2	548820.7210	1718630.9800	335.56	15+74.14	13.83 LT

**-L- STA. 10+00.00 BEGIN STATE PROJECT 17BP.8.R.63**  
**LOCALIZED PROJECT COORDINATES**  
**N = 548,592.41'                      E = 1,718,103.63'**



**-L- STA. 15+87.33 END STATE PROJECT 17BP.8.R.63**  
**LOCALIZED PROJECT COORDINATES**  
**N = 548,812.42'                      E = 1,718,648.28'**

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "610036-1" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548416.464(±) EASTING: 1717709.318(±) ELEVATION: 359.455(±)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998602216  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "610036-1" TO -L- STATION 10+00.00 IS 431.7821' N65°57'12.81"E  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

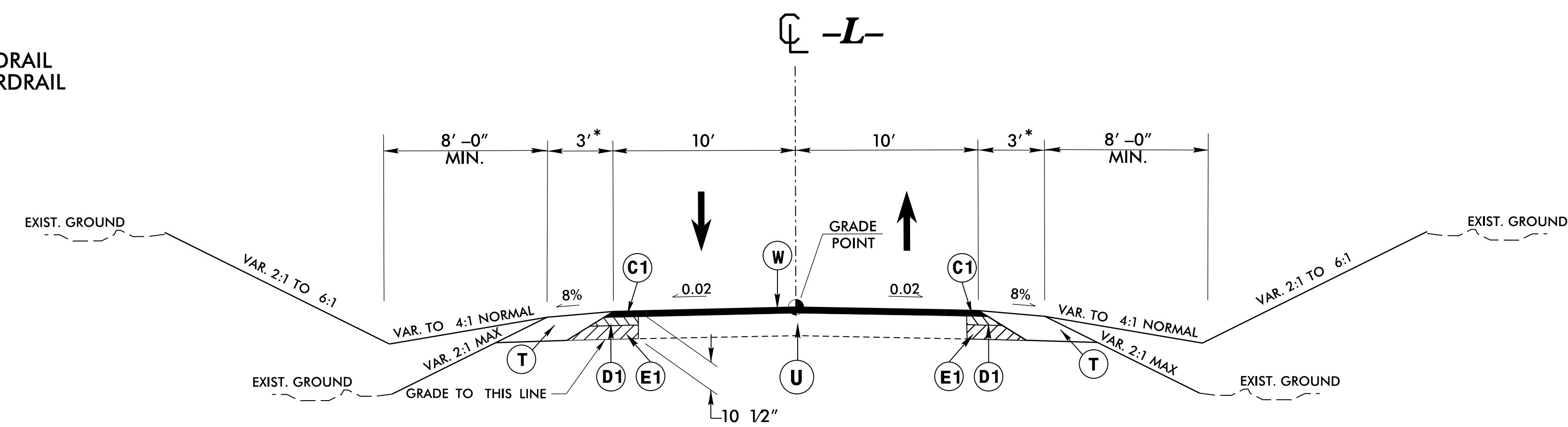
**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT WAS PROVIDED BY NCDOT. CONTROL POINTS PROVIDED ARE AS FOLLOWS:  
610036-1 N=548,416.464 E=1,717,709.318 ELEV=359.455'  
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
- ◆ INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY NCDOT.

NOTE: DRAWING NOT TO SCALE

5/14/99

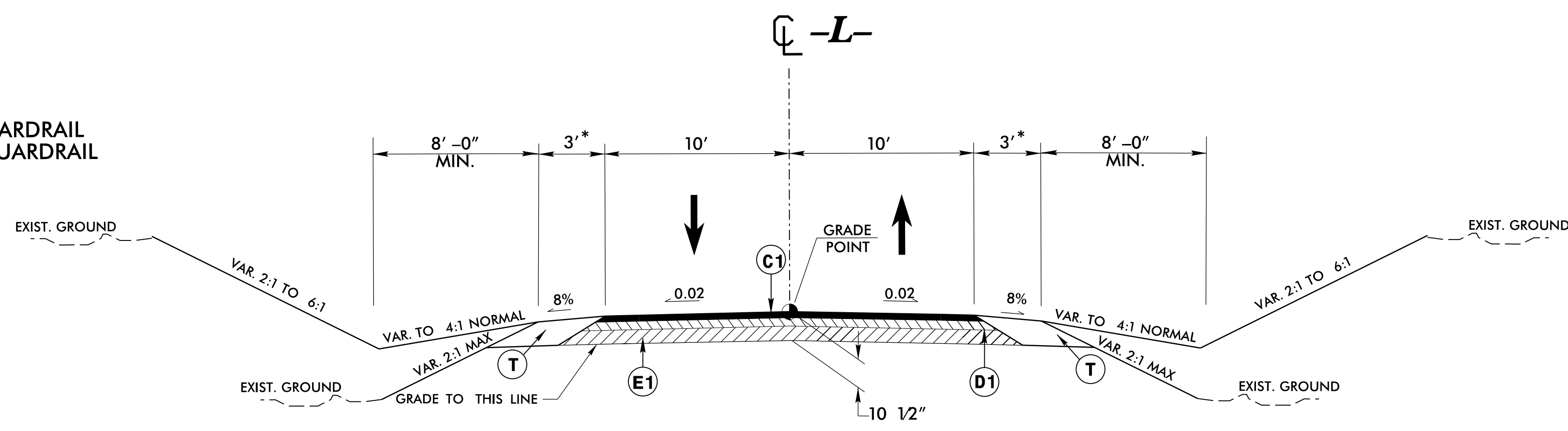
\* ADD 3' TO SHOULDERS FOR GUARDRAIL  
PAVE SHOULDER TO FACE OF GUARDRAIL



**TYPICAL SECTION NO. 1**

-L- STA. 11+15.00 TO -L- STA. 12+61.70 (BEGIN BRIDGE)

\* ADD 3' TO SHOULDERS FOR GUARDRAIL  
PAVE SHOULDER TO FACE OF GUARDRAIL

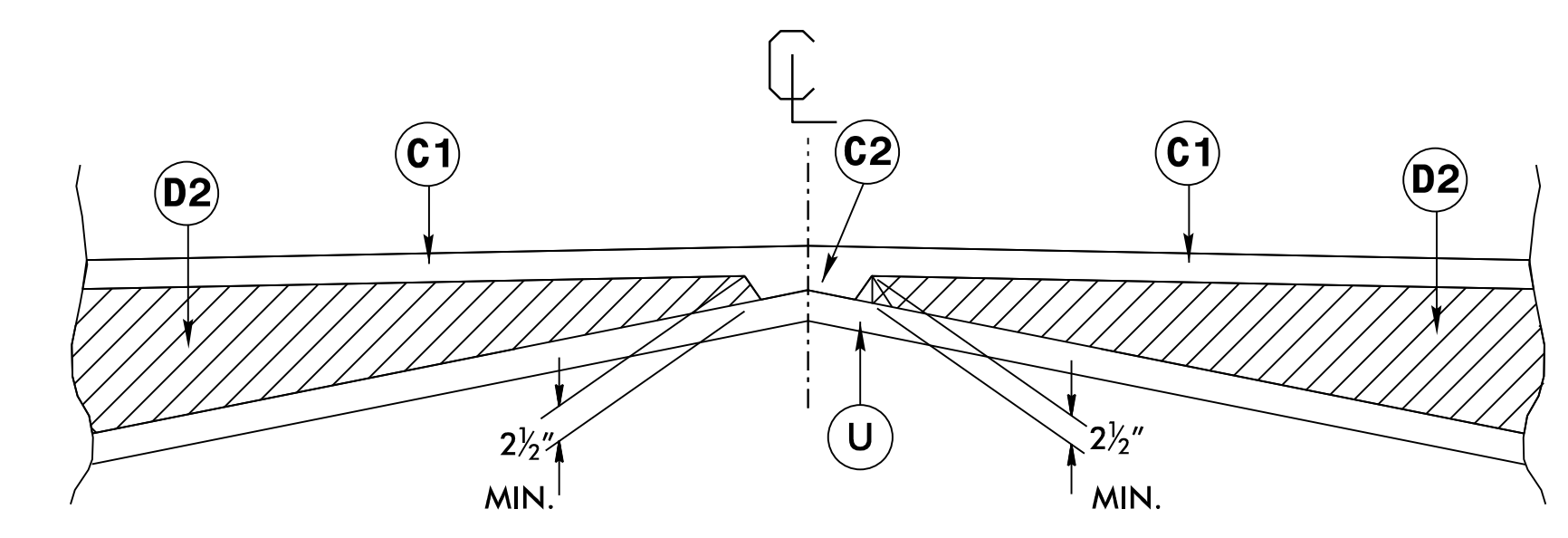


**TYPICAL SECTION NO. 2**

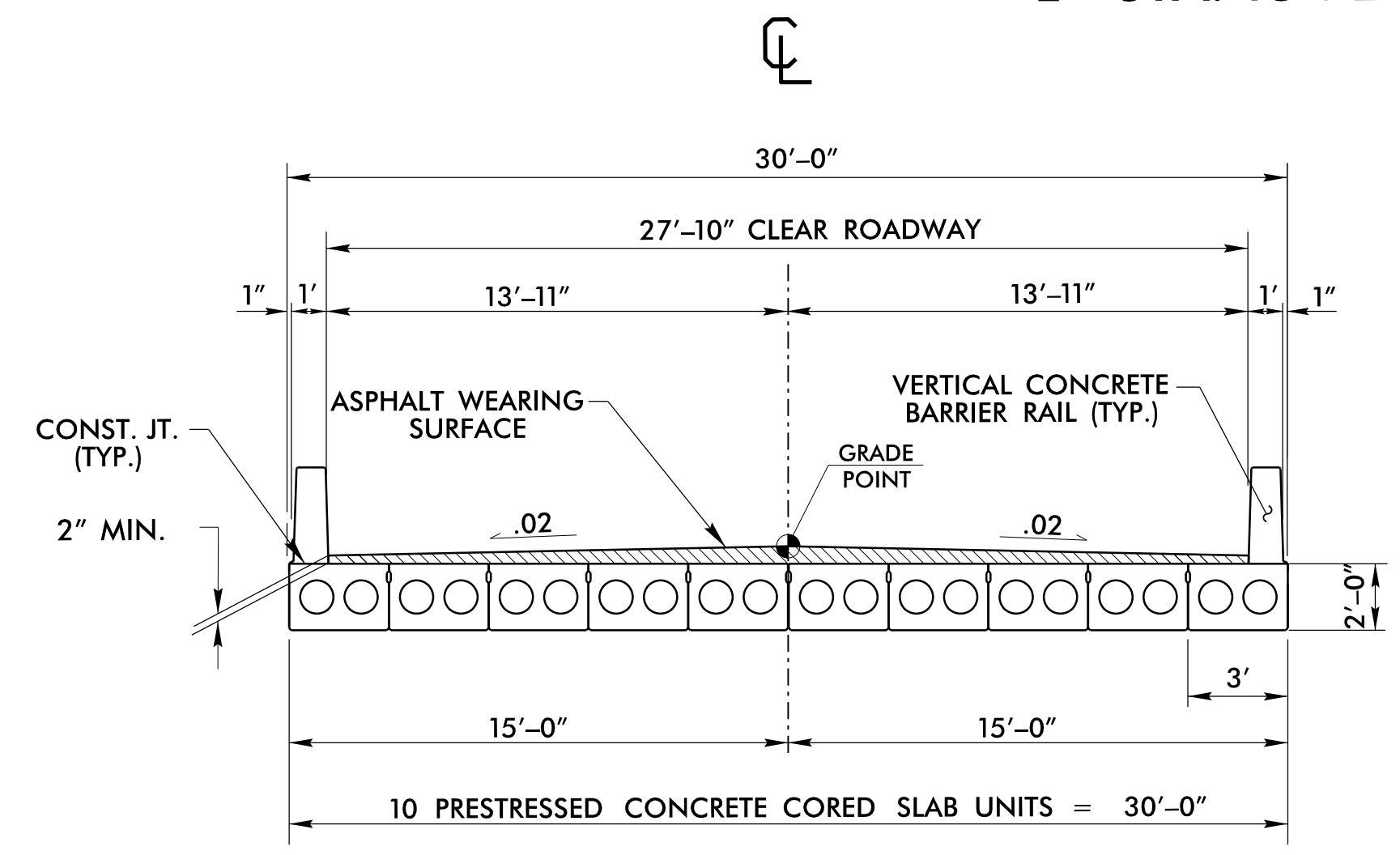
-L- STA. 13+24.30 (END BRIDGE) TO -L- STA. 15+15.00

<b>C1</b>	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
<b>C2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
<b>D1</b>	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
<b>D2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" OR GREATER THAN 4" IN DEPTH.
<b>E1</b>	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
<b>E2</b>	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" OR GREATER THAN 5 1/2" IN DEPTH.
<b>T</b>	EARTH MATERIAL.
<b>U</b>	EXISTING PAVEMENT.
<b>V</b>	MILLING.
<b>W</b>	WEDGING (SEE DETAIL)

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

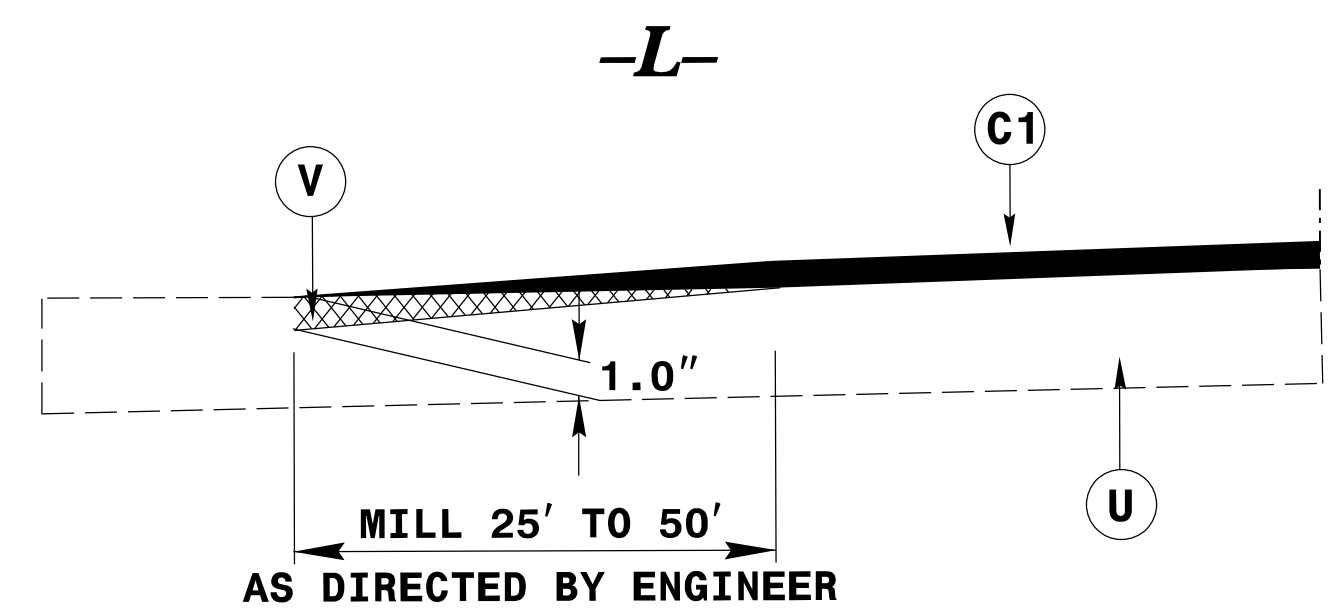


**Detail Showing Method of Wedging**



**TYPICAL BRIDGE SECTION NO. 1**

-L- STA. 12+61.70 TO -L- STA. 13+24.30



**MILLING DETAIL**  
-L- STA. 11+15.00

5/5/02 6:00:36 PM Rdy\_tup.dgn

I4-DEC-2017 10:36  
 S:\Contracts\2018\Standard Drawings\Special Details\Drawings\Division 8\0862d0301.dgn  
 Jhowerton AT CSU-212855

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE	SHEET 1 OF 7 <b>862D03</b>
<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.</li> <li>*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.</li> <li>-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.</li> <li>-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).</li> <li>-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.</li> <li>-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.</li> </ul>		
<b>GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE</b>		

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 <b>862D03</b>
<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.</li> <li>*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.</li> <li>-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.</li> <li>-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).</li> <li>-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.</li> <li>-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.</li> </ul>		
<b>GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER</b>		



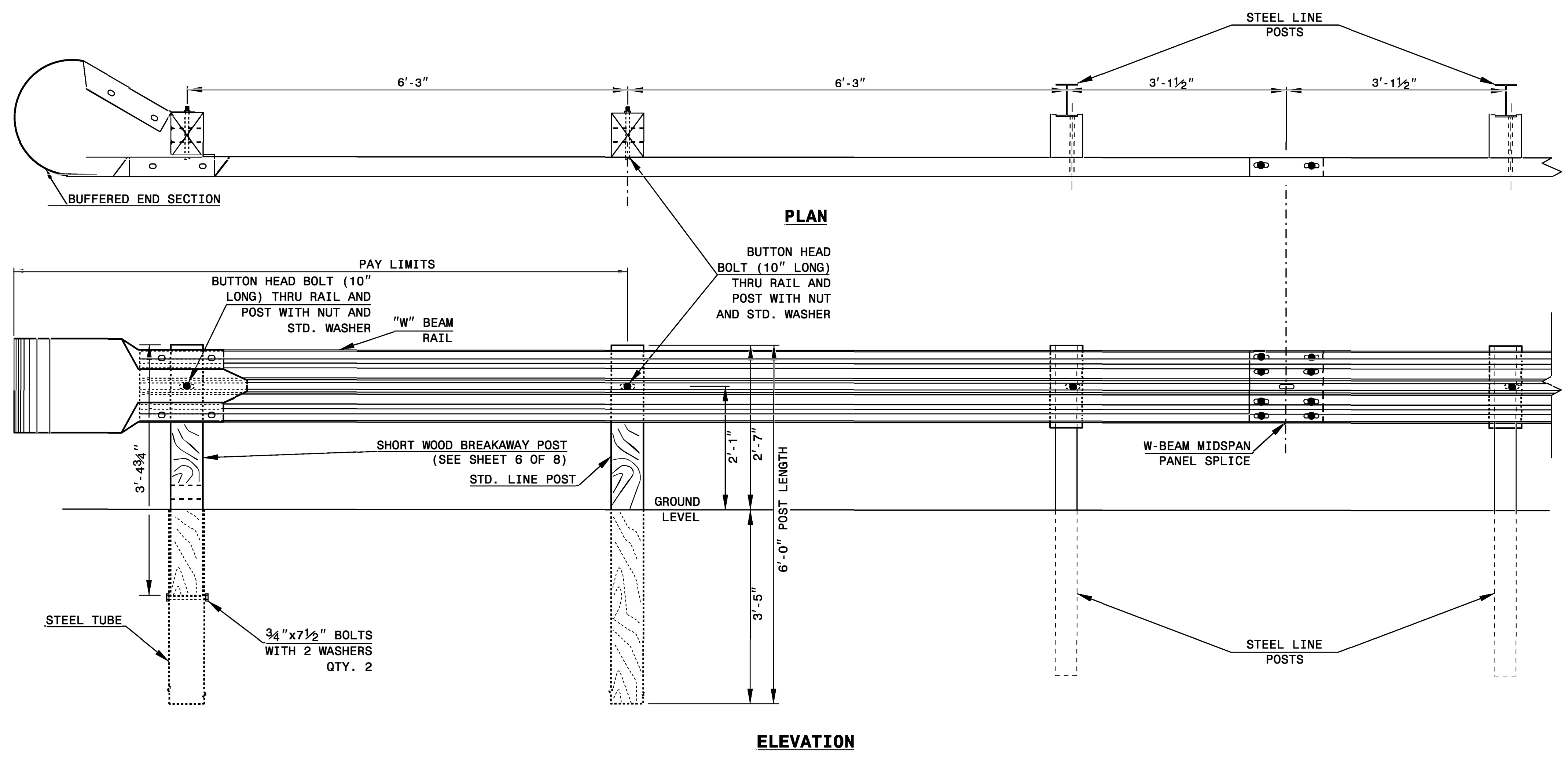
Ron Davenport

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b> Office 919-707-6950 FAX 919-250-4119	
<b>SEE TITLE BLOCK</b>	
ORIGINAL BY: J. HOWERTON MODIFIED BY: CHECKED BY: FILE SPEC.:	DATE: 06-22-12 DATE: DATE: DATE:

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

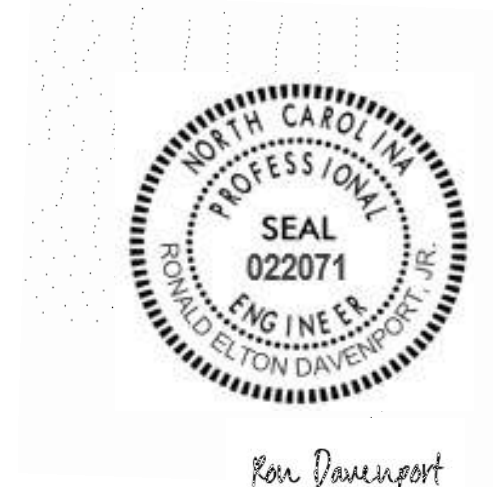


**TRAILING END UNIT ASSEMBLY**  
**A.T. - 1 SYSTEM**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

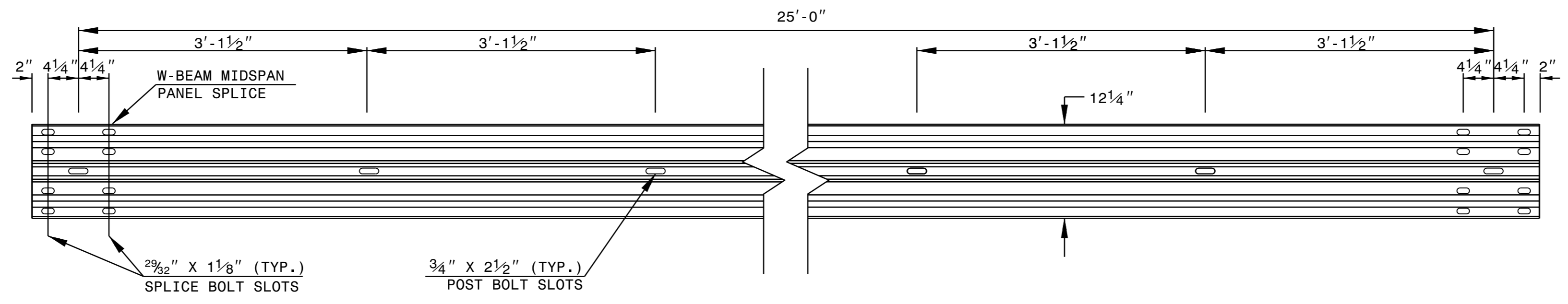
**A.T. - 1 SYSTEM**

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

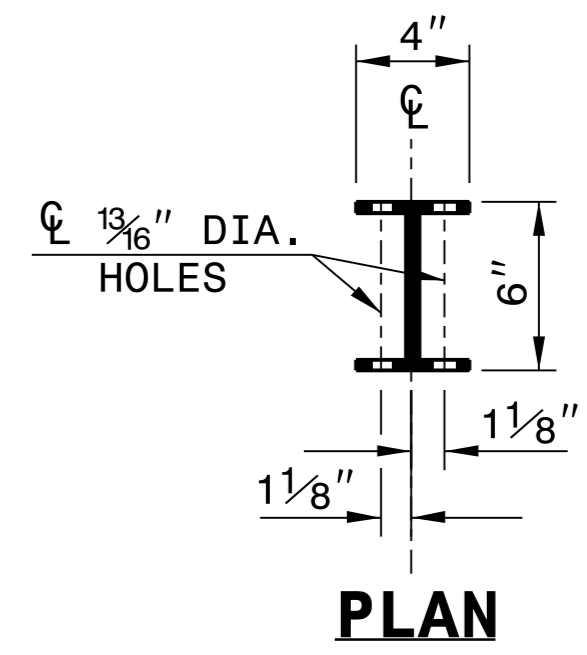
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

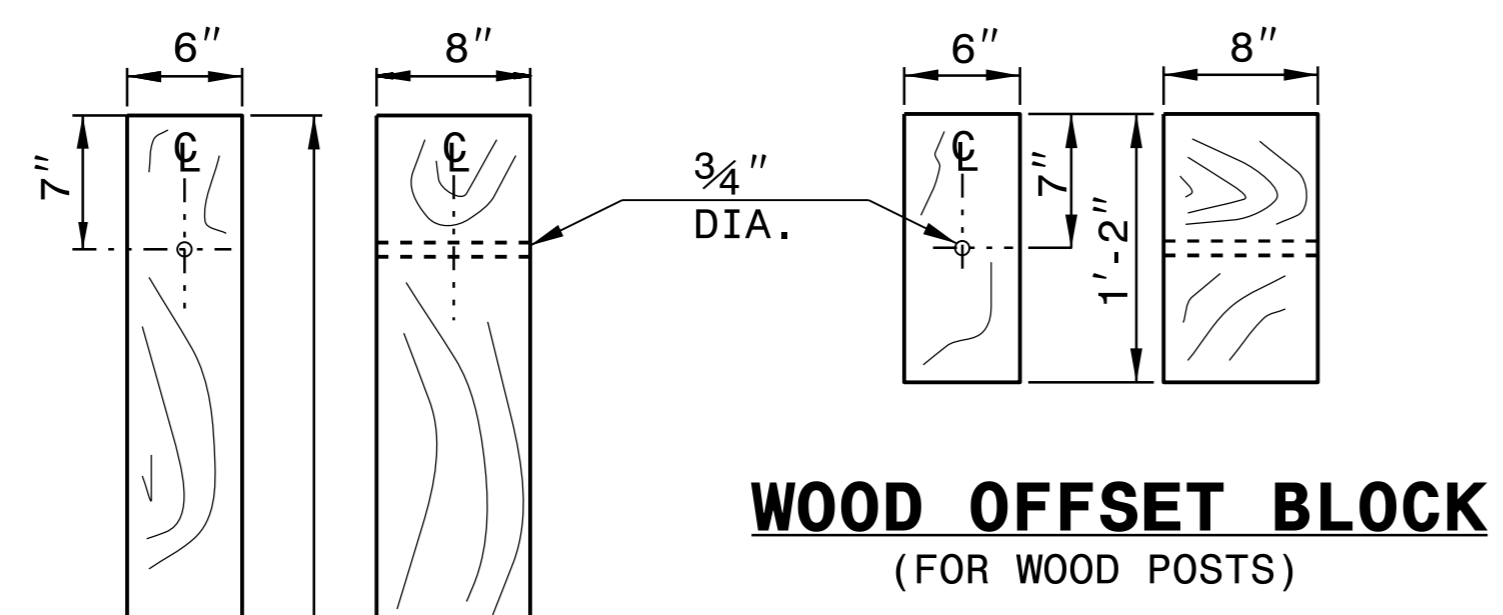
SHEET 6 OF 8  
**862D02**



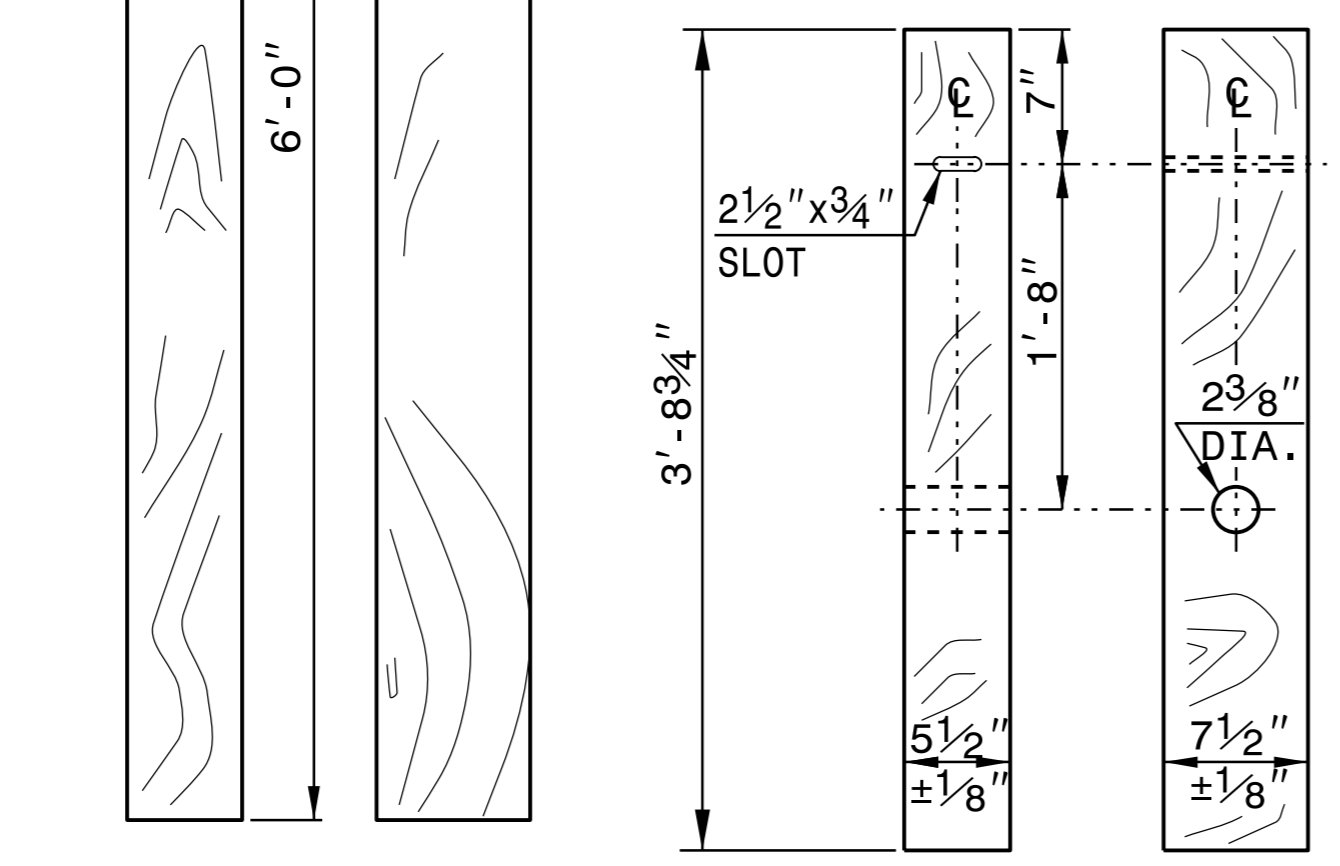
**STANDARD W-BEAM GUARDRAIL**



**PLAN**

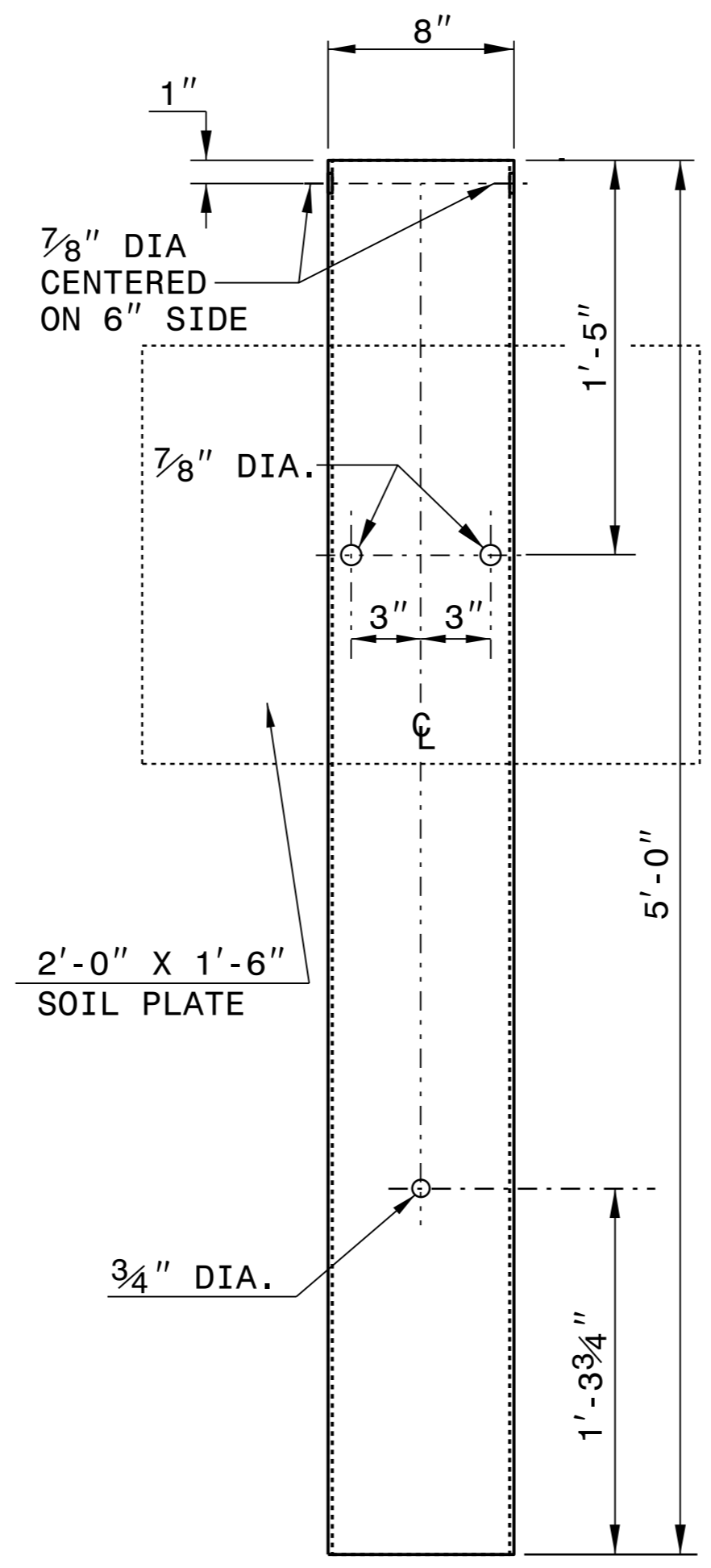


**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

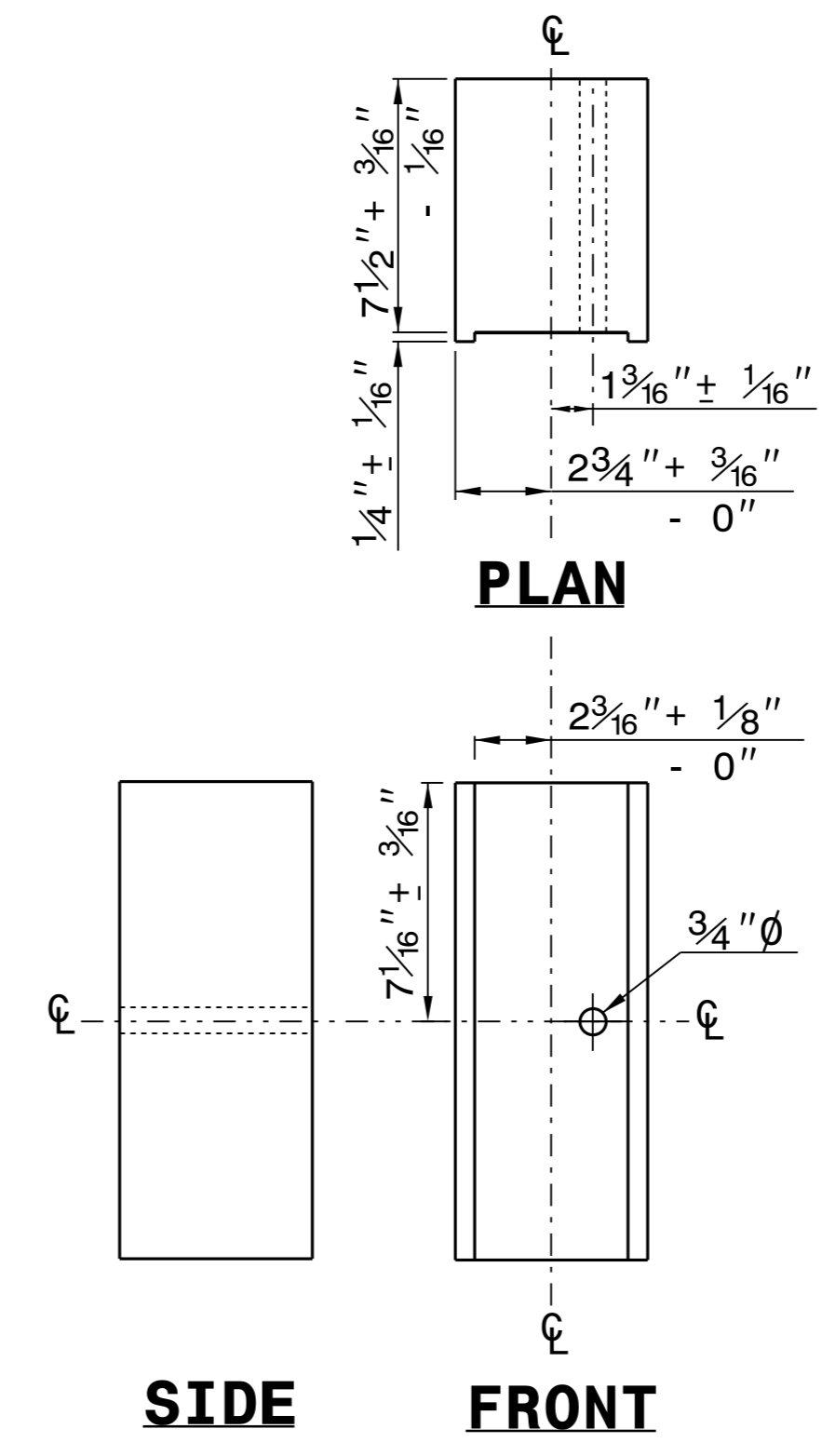


**STANDARD  
LINE POST**

**SHORT WOOD  
BREAKAWAY POST**



**STEEL TUBE  
TS 6"x8"x0.1875"**

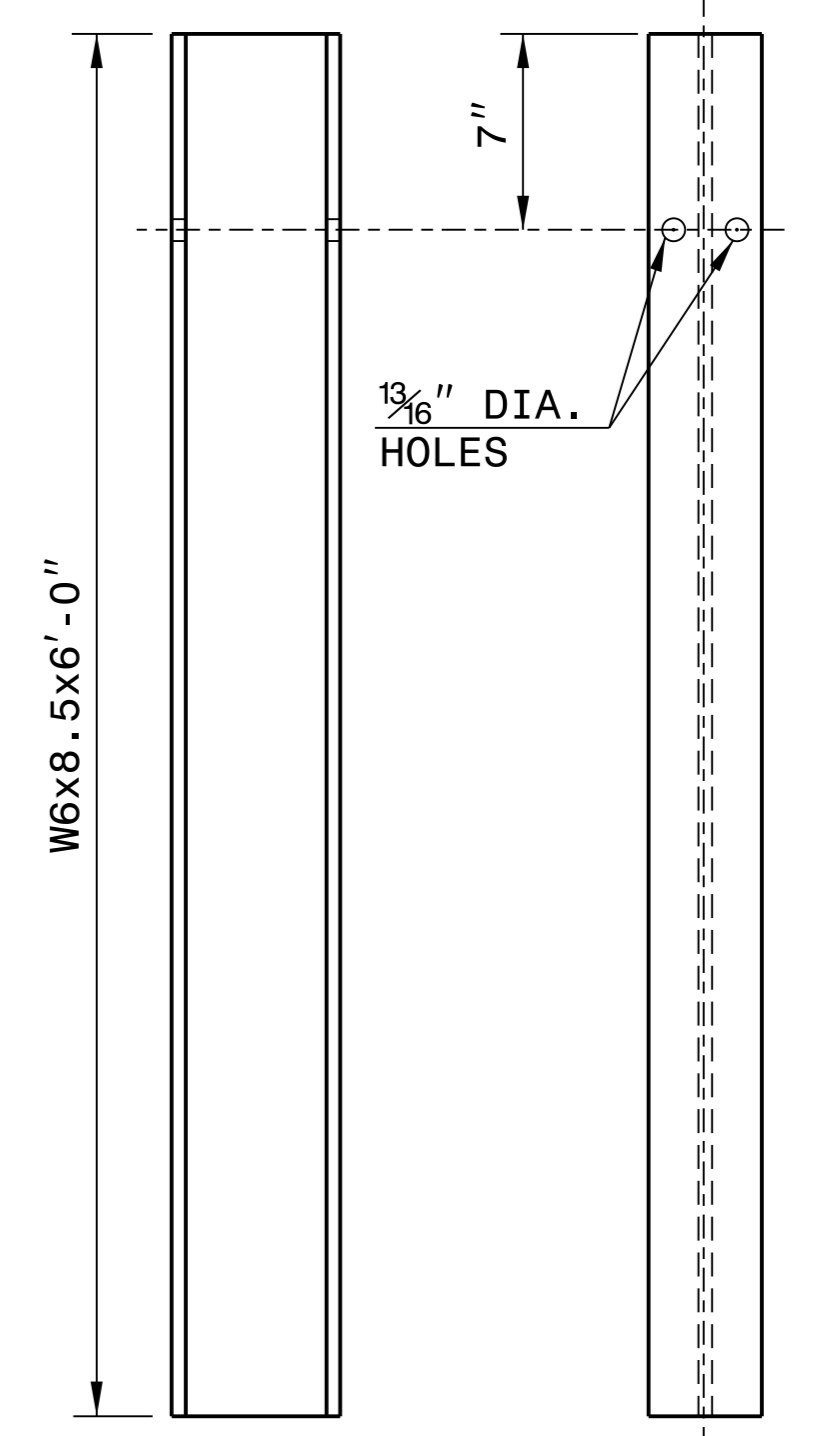


**PLAN**

**SIDE**

**FRONT**

**ROUTED  
OFFSET BLOCK**



**SIDE**

**FRONT**

**"W6" STEEL POST**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



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

**SEE TITLE BLOCK**

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018  
MODIFIED BY: DATE: \_\_\_\_\_  
CHECKED BY: DATE: \_\_\_\_\_  
FILE SPEC.: \_\_\_\_\_



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.63	3B-1

**SEPI**  
 Engineering & Construction, Inc.

1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9977  
 Fax: 919.789.9591  
 License: C-2197

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
SUMMARY NO. 1					
-L- STA. 11+15.00	-L- STA. 12+61.70 (BB)	10	78	68	0
TOTAL SUMMARY NO. 1		10	78	68	0
SUMMARY NO. 2					
-L- STA. 13+24.30 (EB)	-L- STA. 15+15.00	242	25	0	217
TOTAL SUMMARY NO. 2		242	25	0	217
SUMMARY TOTALS		252	103	68	217
WASTE IN LIEU OF BORROW				-68	-68
PROJECT TOTALS		252	103	0	149
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					
GRAND TOTALS		252	103	0	149
SAY		300			

Earthwork quantities are calculated by SEPI Engineering. These earthwork quantities are based in part on subsurface data provided by the NCDOT engineering group.

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

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

**GUARDRAIL SUMMARY**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS														
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE-III	AT-1											EA	G	NG											
-L-	11+72.42	12+53.67	RT	81.25'			12+53.67		3'-11"	6'-11"	62.50'		2.25'			1	1																								
-L-	13+16.27	13+97.52	RT	81.25'				13+16.27	3'-11"	6'-11"		6.25'	1.00'			1	1																								
-L-	13+32.33	13+81.26	LT	18.75'	43.75'			13+32.33	3'-11"	6'-11"		N/A	N/A			1	1																								
-L-	11+88.48	12+69.73	LT	81.25'			12+69.73		3'-11"	6'-11"	62.50'		1.00'			1	1																								
			SUBTOTAL	262.50	43.75'										3	4	1																								
			LESS ANCHOR DEDUCTION																																						
			GREU TL-3, 4 @ 50' =	150.00'																																					
			TYPE-III, 4 @ 18.75' =	75.00'																																					
			AT-1 @ 6.25' =		6.25'																																				
			TOTAL	37.5'	37.5'										3	4	1																								
			ADDITIONAL GUARDRAIL POSTS = 5 EACH												3	4	1																								
			SAY	50.00'	50.00'										3	4	1																								

**ASPHALT PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SQUARE YARDS
-L-	12+50.85	12+80.48	LT/RT.	67.96
-L-	13+05.67	15+15.00	LT./RT.	473.89
			TOTALS	541.85
			SAY	600

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	13+42.06	13+59.00	16.94
-L- RT.	13+28.27	13+42.25	13.98
		TOTALS	30.92
		SAY	40.00

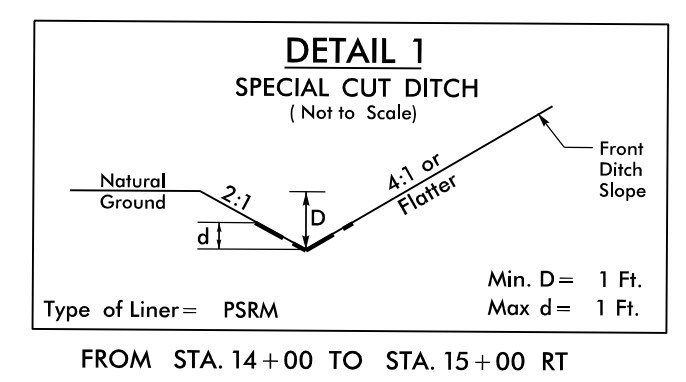
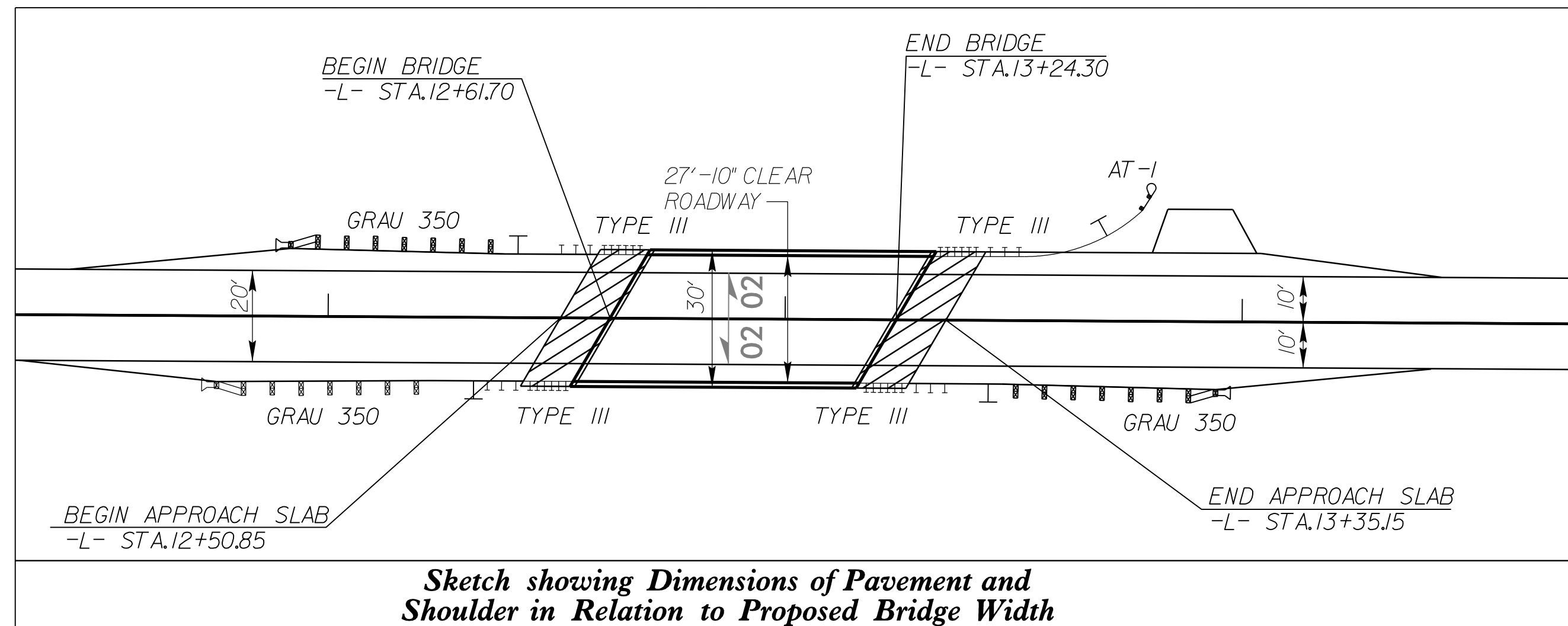


8/17/99

**SEPI**  
Engineering & Construction, Inc.

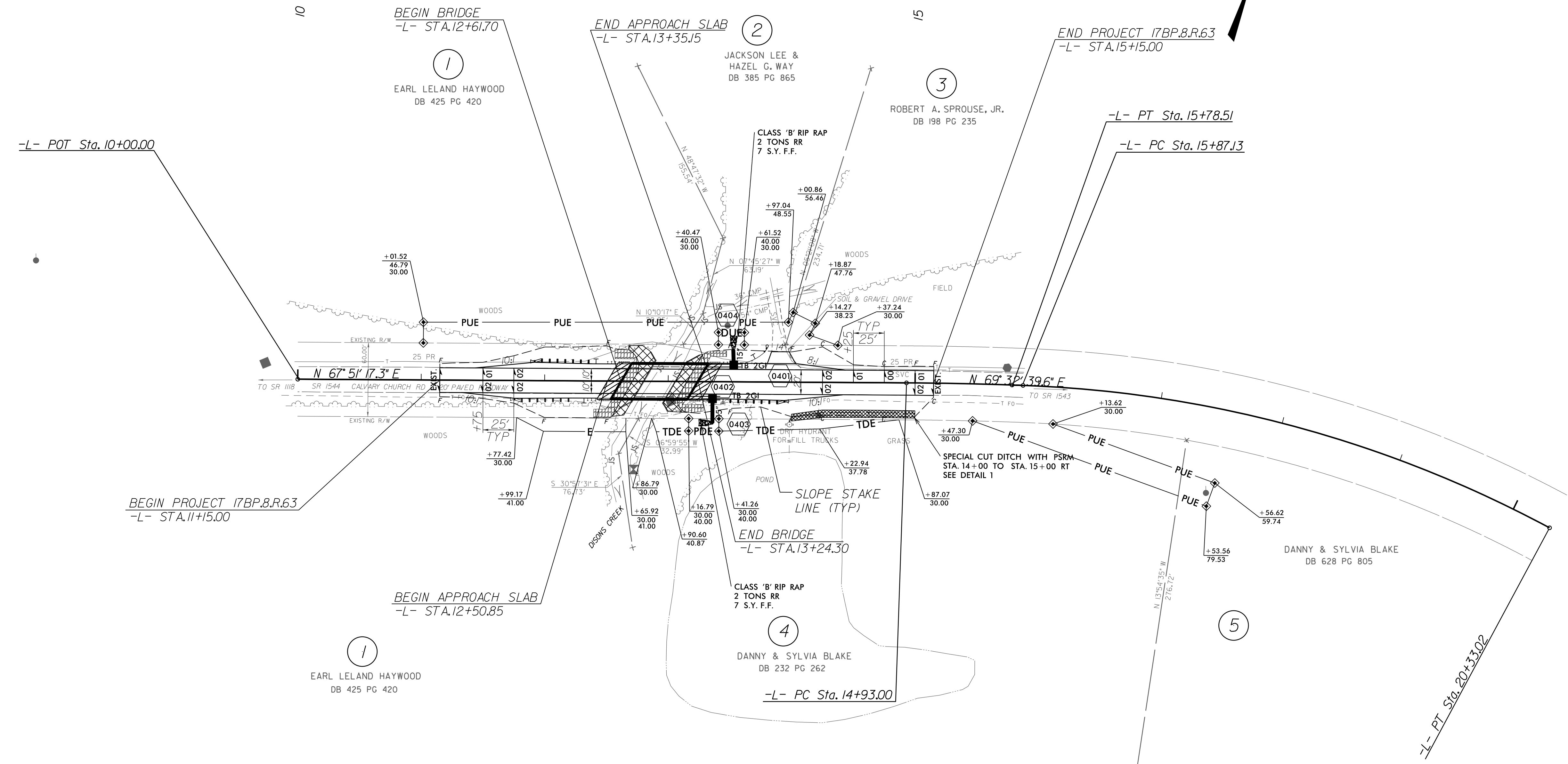
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

PROJECT REFERENCE NO. <b>17BP.8.R.63</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 32606 BENJAMIN R. CRAWFORD	HYDRAULICS ENGINEER SEAL 33719 BRIAN A. MATTICK
<p>Benjamin R. Crawford      Brian Mattick</p> <p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	



-L-

PI Sta 15+35.76	PI Sta 18+14.04
$\Delta = 1^{\circ}41'22.3''$ (RT)	$\Delta = 26^{\circ}12'08.1''$ (RT)
$D = 1^{\circ}58'32.6''$	$D = 5^{\circ}52'35.4''$
$L = 85.5'$	$L = 445.88'$
$T = 42.76'$	$T = 226.9'$
$R = 2,900.00'$	$R = 975.00'$



REVISIONS

8/5/2022  
P:\proj\1610036\_Pdy.psh\_4.dgn  
US:EF:cb:cb

NOTE: SEE PLAN SHEET 5 FOR PROFILE

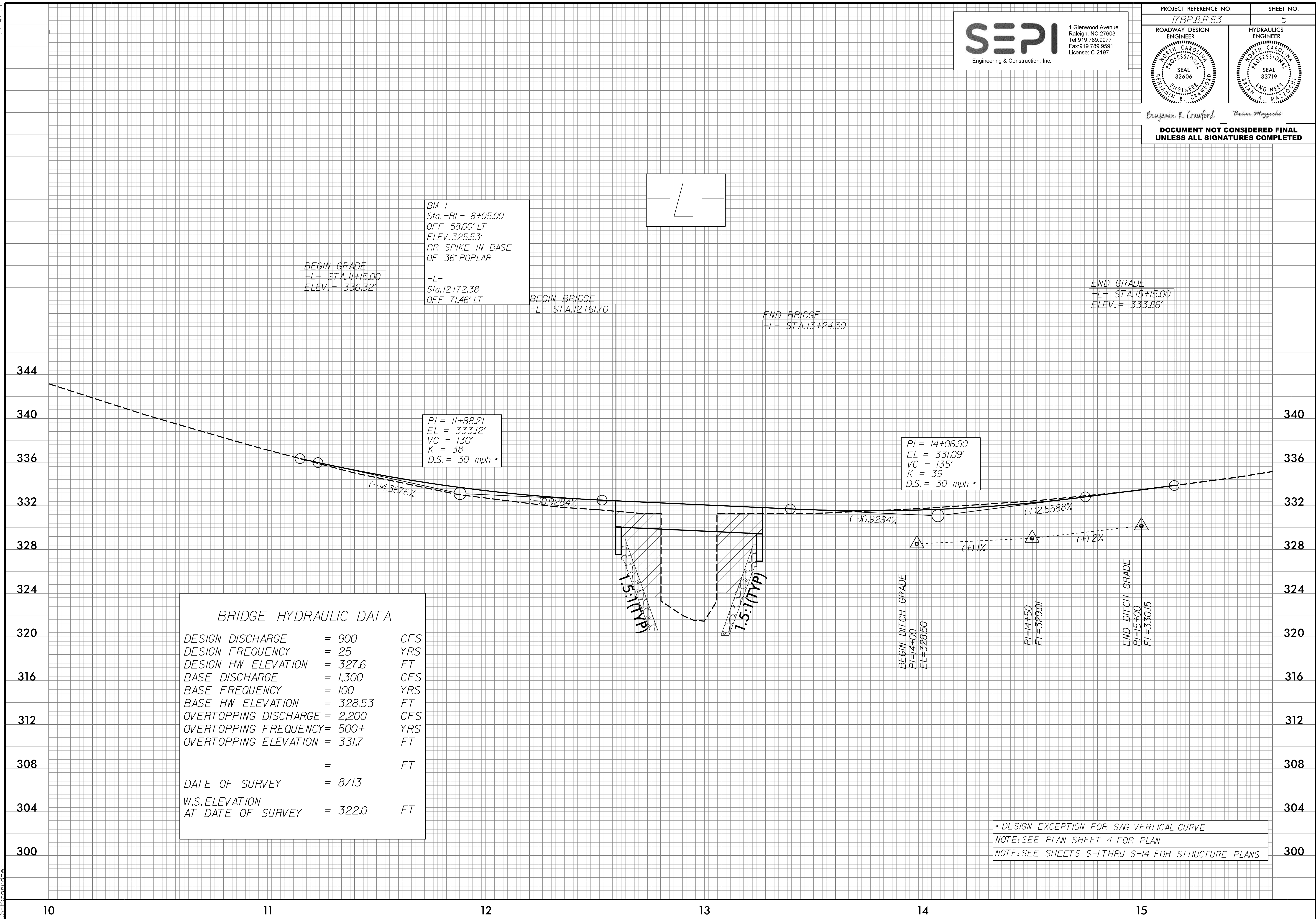
NOTE: SEE SHEETS S-1 THRU S-14 FOR STRUCTURE PLANS

5/14/99



1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

PROJECT REFERENCE NO. <b>17BP.8.R.63</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER SEAL 32606 BENJAMIN R. CRAWFORD	HYDRAULICS ENGINEER SEAL 33719 BRIAN MAGGIORI
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 327.6	FT
BASE DISCHARGE	= 1,300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 328.53	FT
OVERTOPPING DISCHARGE	= 2,200	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 331.7	FT
	=	FT
DATE OF SURVEY	= 8/13	
W.S. ELEVATION AT DATE OF SURVEY	= 322.0	FT

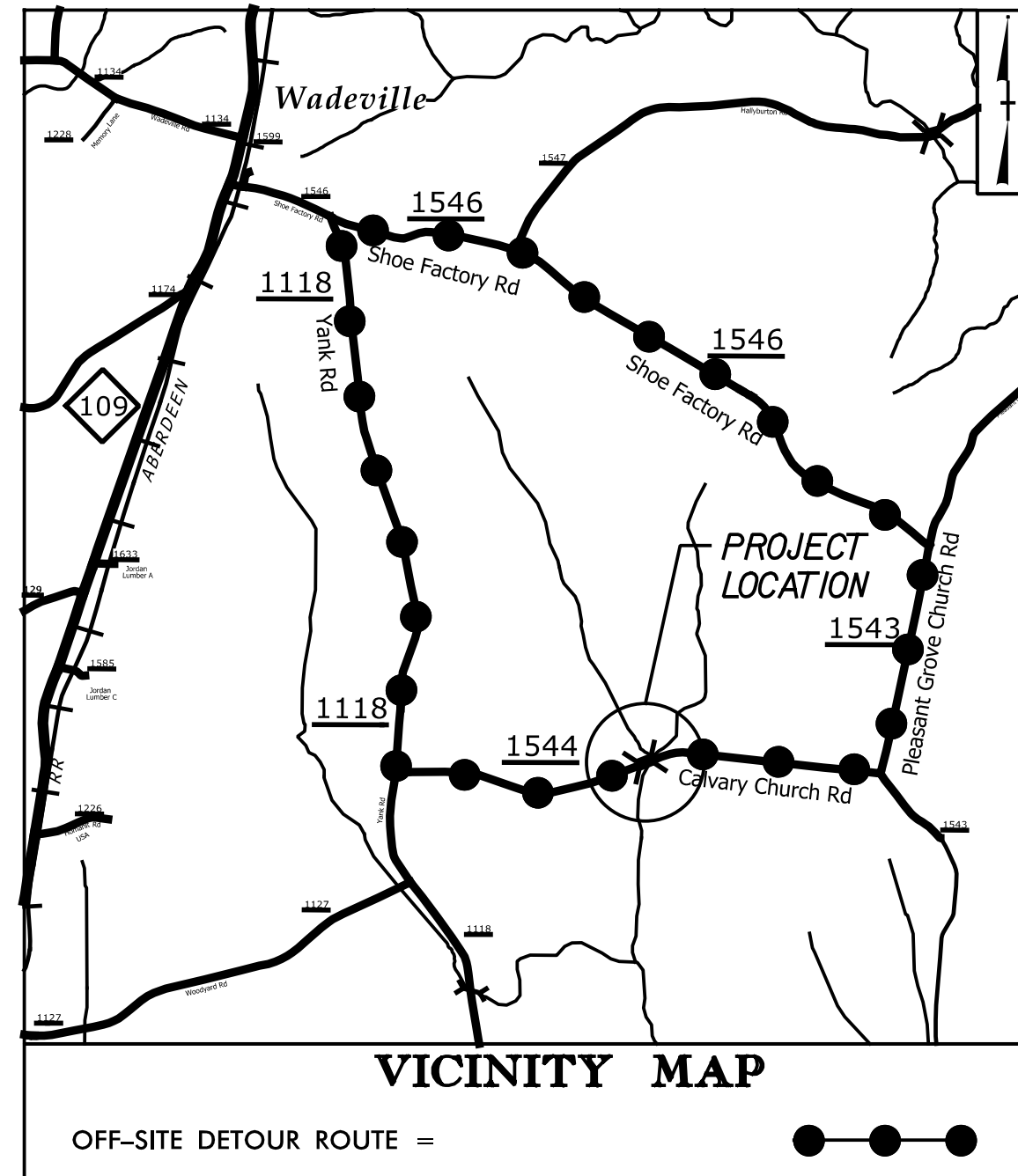
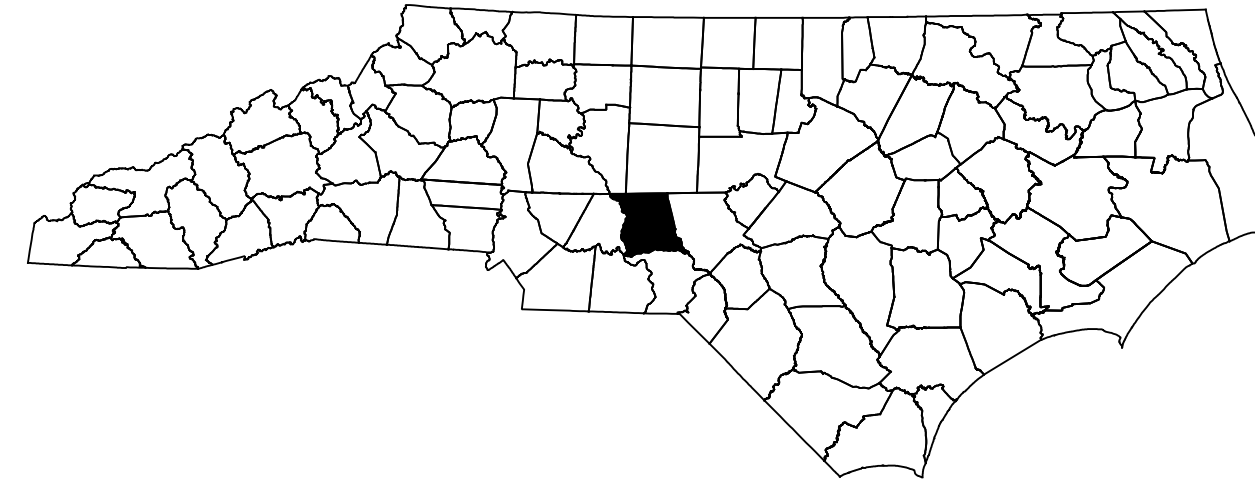
\* DESIGN EXCEPTION FOR SAG VERTICAL CURVE  
 NOTE: SEE PLAN SHEET 4 FOR PLAN  
 NOTE: SEE SHEETS S-1 THRU S-14 FOR STRUCTURE PLANS

5/14/2022 10:03:36 AM rdj-pl-5.dgn

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**MONTGOMERY COUNTY**



**LOCATION: BRIDGE NO. 36 OVER DISONS CREEK ON SR 1544  
(CALVARY CHURCH ROAD)**

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

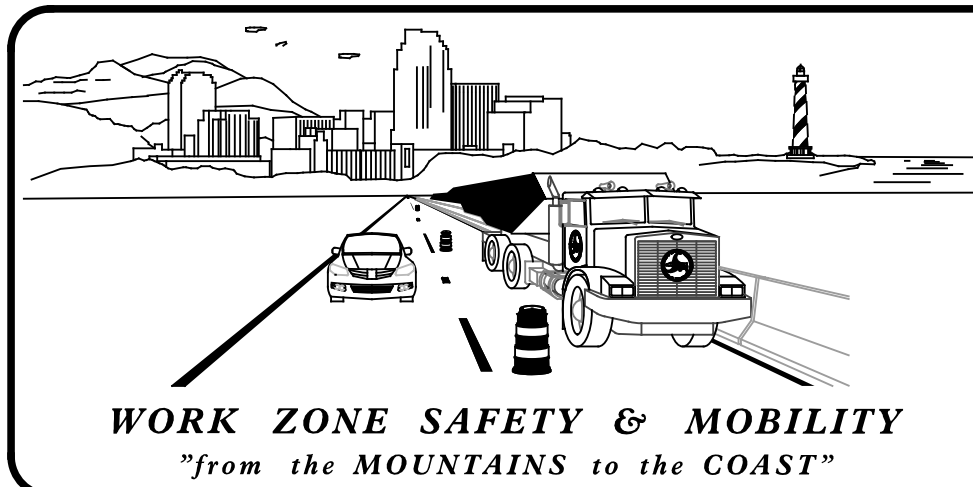
<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND PHASING)
TMP-2	SIGN DESIGN
TMP-3	OFF-SITE DETOURE
TMP-4	ROAD CLOSURE

SHEET NO.  
TMP-1

**17BP.8.R.63**

**TIP PROJECT:**

1/14/2022 X:\2023\TIP\8.63\TrafficControl\TCP\TMP-1.dgn jbauman



PLANS PREPARED BY:

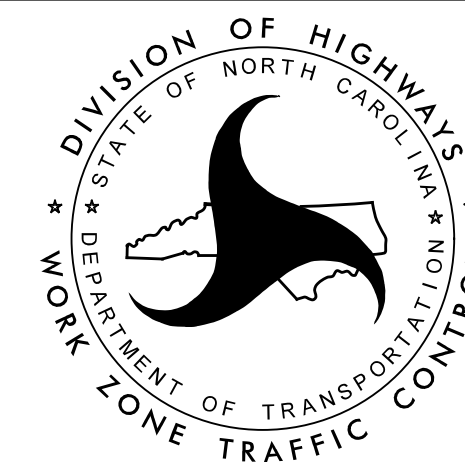
JOHN BAUMAN, P.E.

STEVE MILLER, P.E.

NCDOT CONTACTS:

JUSTIN BEAVER, P.E.

PROJECT ENGINEER



**SEPI**

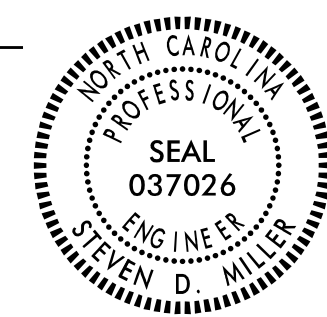
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

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

APPROVED: 

DATE: \_\_\_\_\_

SEAL



# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

# 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

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

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

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS

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

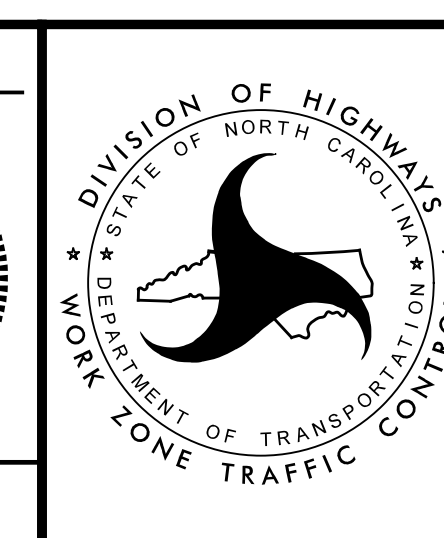
## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

1/14/2022 X:\2013\TR13,027,00 (B- 36 Montgomery 17BP.8.R.63)\TrafficControl\TCP\TMP-1A.dgn jbauman

**SEPI**  
 1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel:919.789.9977  
 Fax:919.789.9591  
 License: C-2197

APPROVED: DocuSigned by: Steve Miller 9FBC9C15CEE8496  
 DATE: \_\_\_\_\_  
 SEAL  
  
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



ROADWAY STANDARD DRAWINGS & LEGEND

## ***MANAGEMENT STRATEGIES***

- CLOSE SR 1544 (CALVARY CHURCH ROAD) AND DETOUR TRAFFIC OFF-SITE
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION

## ***GENERAL NOTES***

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

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

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

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

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

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

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

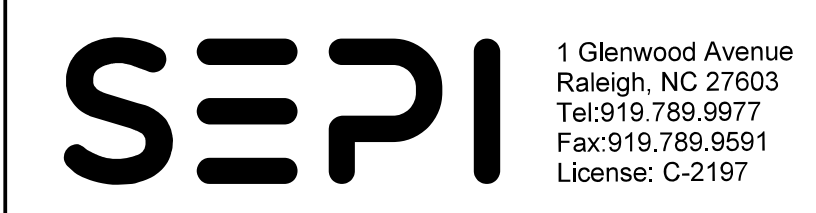
- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

## ***PHASING***

PROVIDE TWENTY-ONE DAYS NOTICE TO THE ENGINEER, MONTGOMERY COUNTY EMERGENCY SERVICES, AND MONTGOMERY COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE.

- STEP 1 USING RSD 1101.03 SHEET 1 OF 9, CLOSE CALVARY CHURCH ROAD (SR 1544) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.
- STEP 2 REMOVE THE EXISTING STRUCTURE.
- STEP 3 CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4 PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.
- STEP 5 OPEN CALVARY CHURCH ROAD (SR 1544) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

I:\14\2022\X:\2013\TR13,027,00 (B- 36 Montgomery 17BP.8.R.63)\Traffic\TrafficControl\TCP\TMP-1B.dgn  
Jbauman

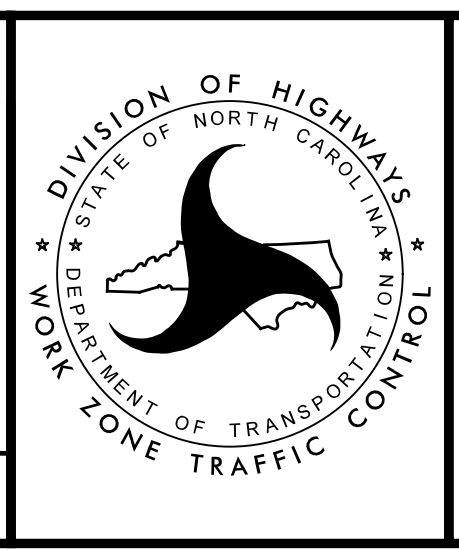


APPROVED: Steve Miller  
DocuSigned by: Steve Miller 9FBC9C15CEE8496

DATE: \_\_\_\_\_

SEAL

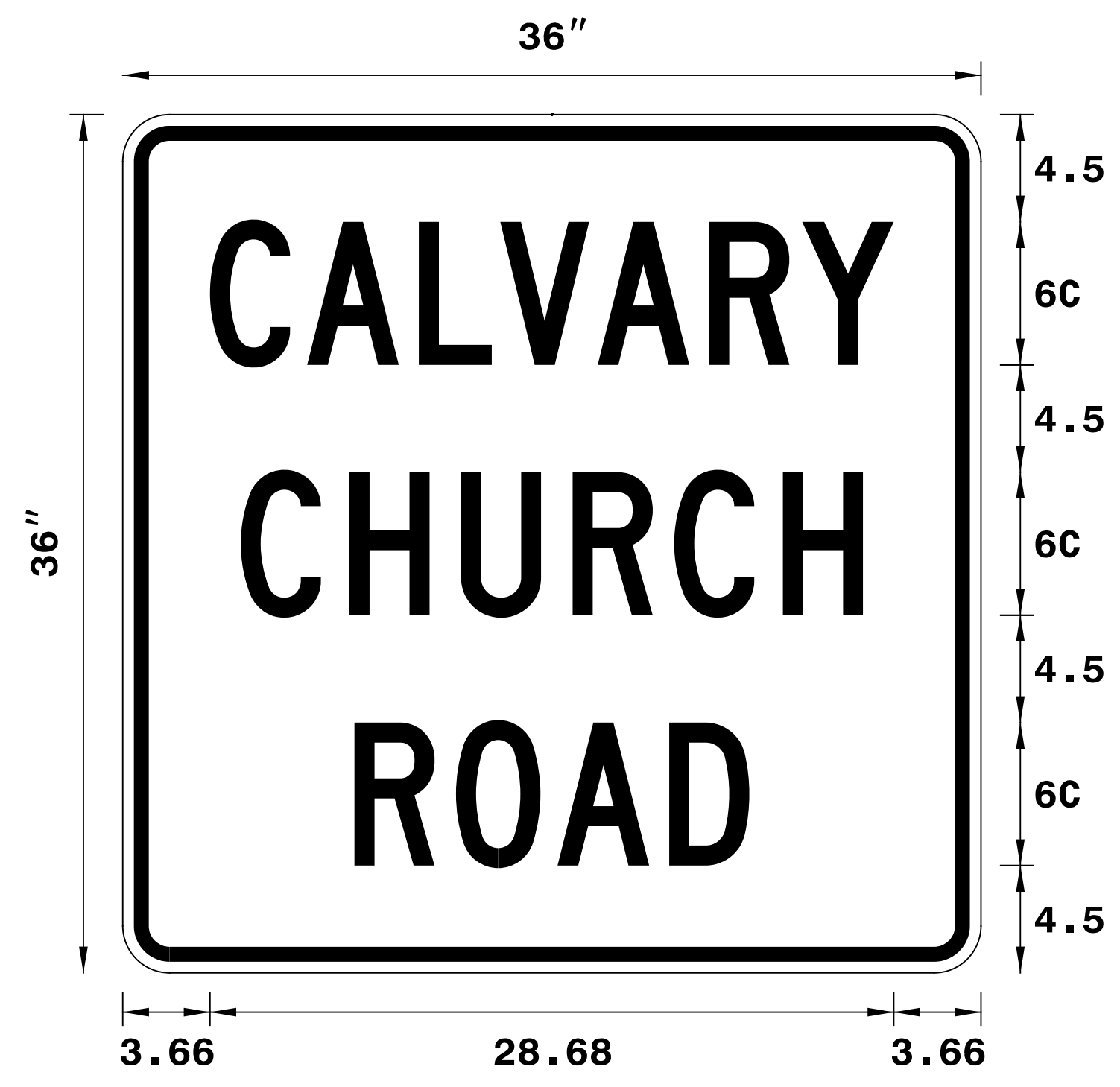
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



**TRANSPORTATION OPERATIONS PLAN**

**SIGN NUMBER: SP-1**      **BACKG COLOR: Fluorescent Orange**  
**TYPE: STATIONARY**      **COPY COLOR: Black**  
**QUANTITY: SEE PLANS**  
  
**SIGN WIDTH: 36"**  
**HEIGHT: 36"**  
**TOTAL AREA: 9.0 S.F.**  
  
**BORDER TYPE: RECESSED**  
**RECESS: 0.47"**  
**WIDTH: 0.63"**  
**RADII: 1.5"**  
  
**MAT'L: 0.125" (3.2 mm) ALUMINUM**  
**0.079" COMPOSITE**

**DESIGN BY: R. DRAYTON**      **CHECKED BY: S. MILLER**  
**PROJECT ID: 17BP.8.R.63**      **DIV: 8**      **DATE: Oct 31, 2013**



**USE NOTES**

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

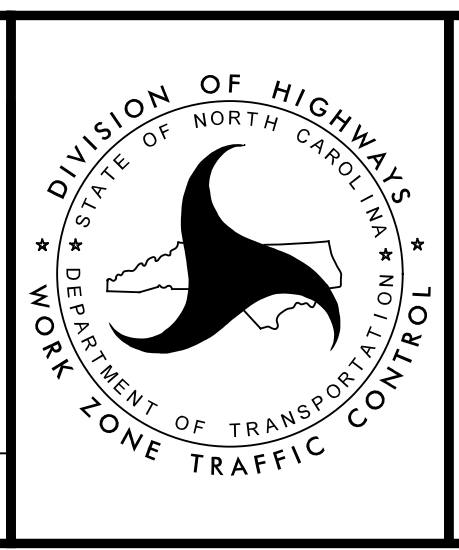
**LETTER POSITIONS**

Letter spacings are to start of next letter																			Series/Size Text Length	
	C	A	L	V	A	R	Y													C 2000
	3.66	4.08	4.68	3.42	4.08	4.68	3.9	3.84	3.66											28.68
	C	H	U	R	C	H														C 2000
	4.95	4.56	4.68	4.68	4.26	4.56	3.36	4.95												26.1
	R	O	A	D																C 2000
	9.72	4.26	4.26	4.68	3.36	9.72														16.56

I:\14\2022  
 X:\2013\TRIS\027.00 (B- 36 Montgomery 17BP.8.R.63)\TrafficControl\TCP\TMP-2.dgn  
 jbauman



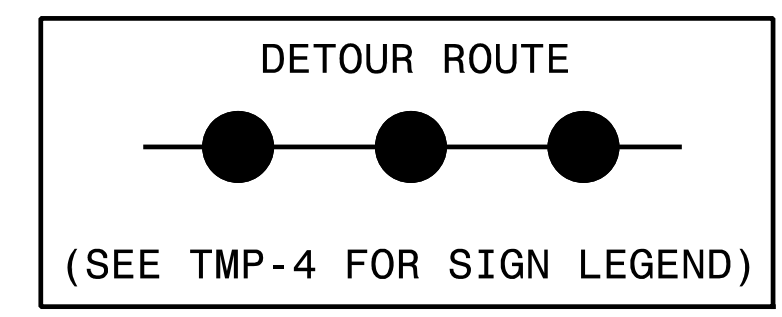
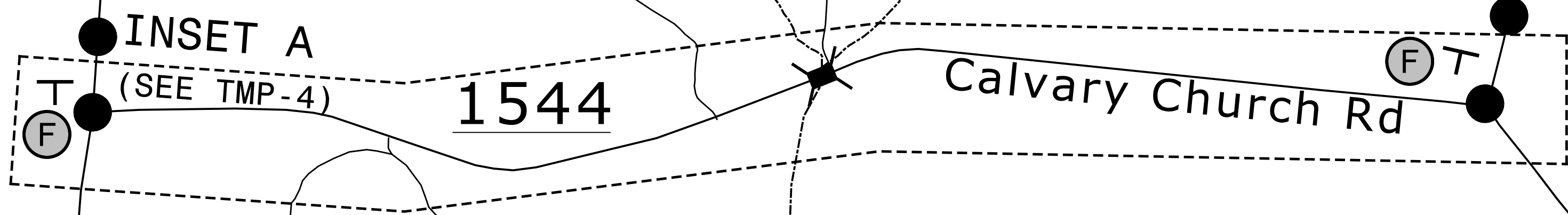
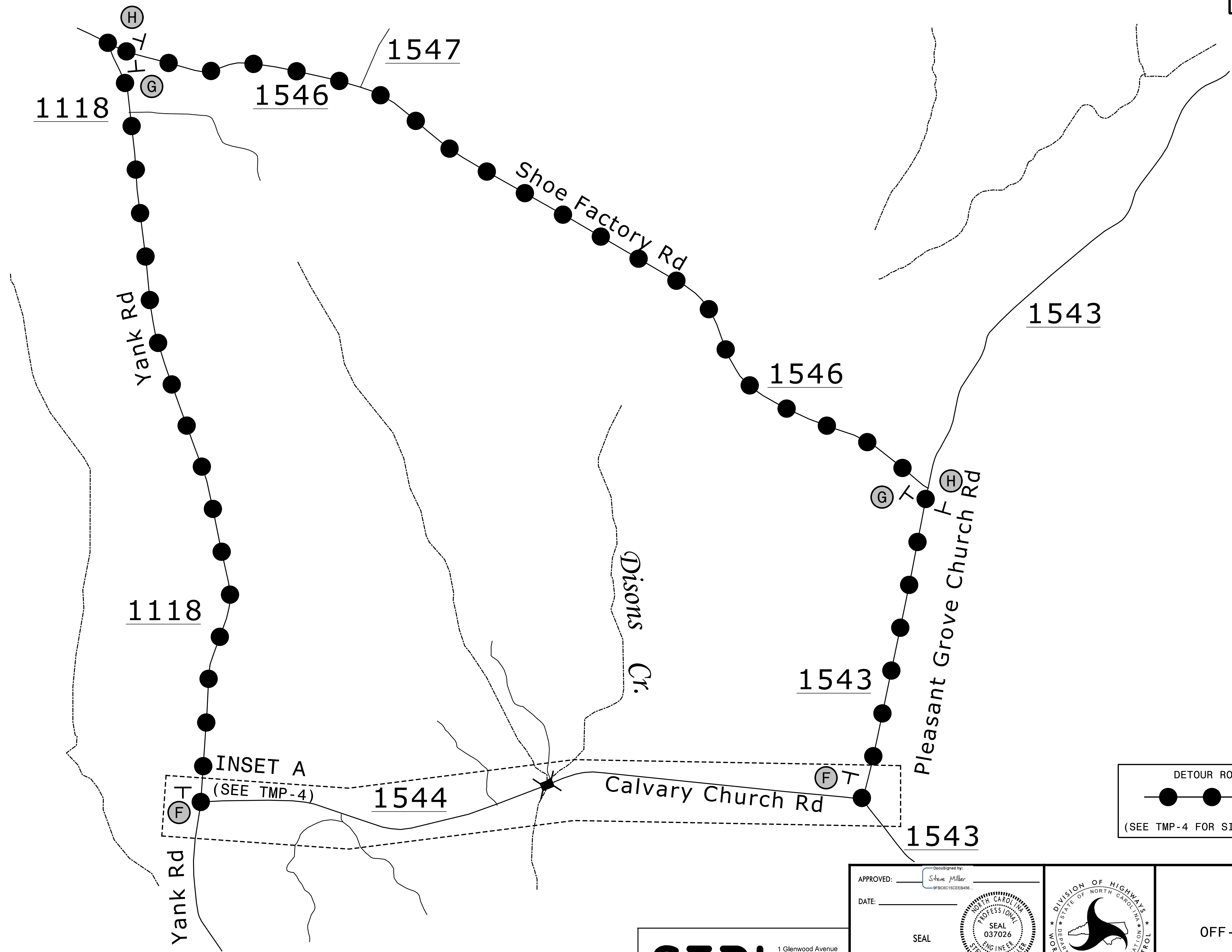
APPROVED: *Steven Miller*  
98BC8C15CEE8496  
 DATE: \_\_\_\_\_  
 SEAL



**SIGN DESIGN**

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

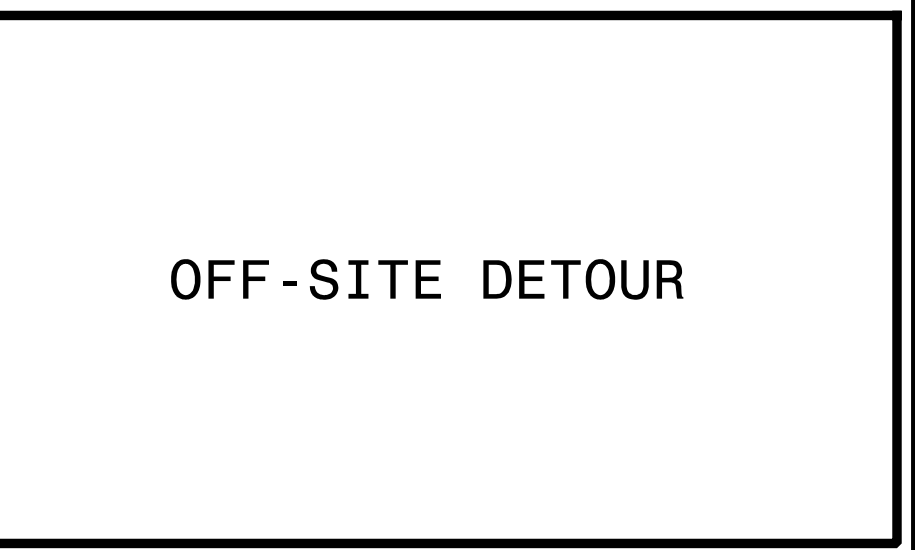




I:\14\2022  
 X:\2013\TRIS\027.00 (Br 36 Montgomery 17BP.8.R.63)\Traffic\TrafficControl\TCP\TMP-3.dgn  
 jbauman

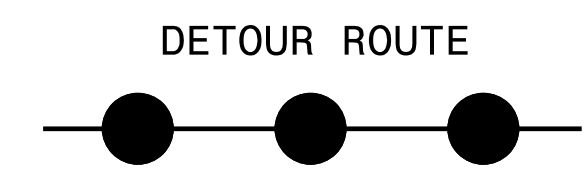
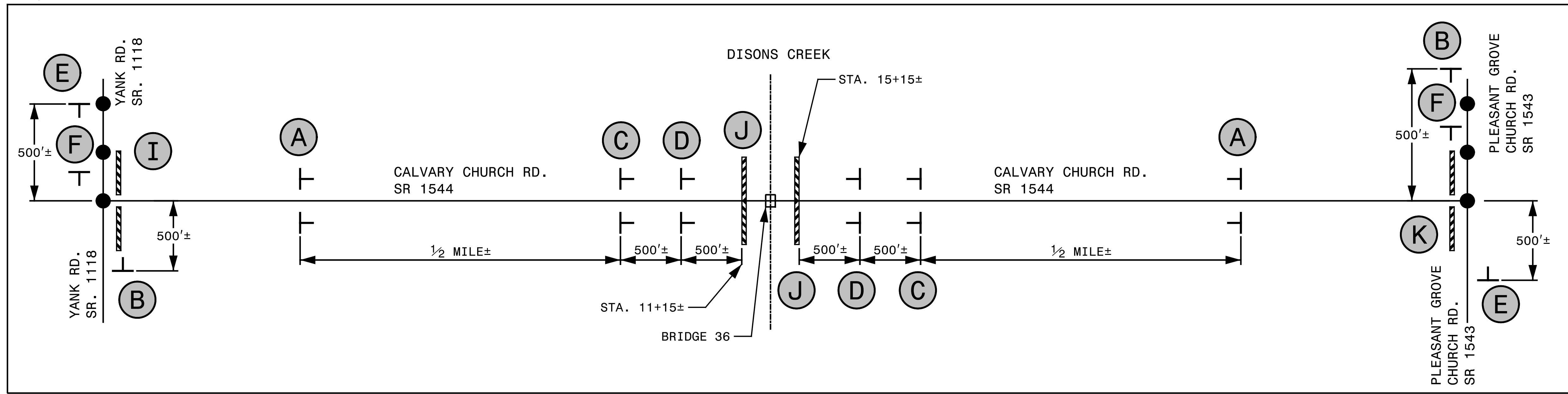
**SEPI**  
 1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9977  
 Fax: 919.789.9591  
 License: C-2197

APPROVED: *Steve Miller*  
98BC0C15CEE8496  
 DATE: \_\_\_\_\_  
 SEAL  
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

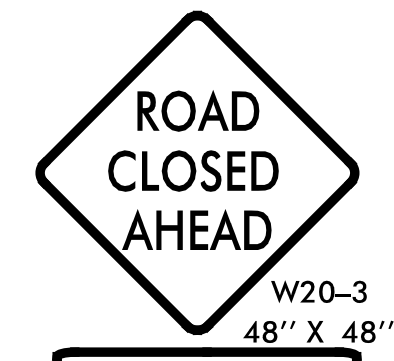


OFF-SITE DETOUR

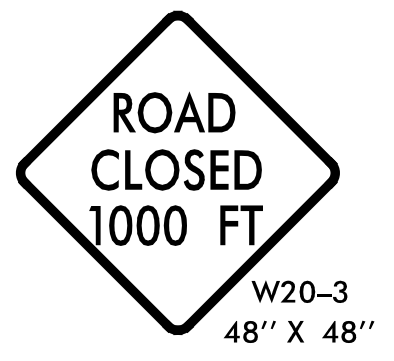
INSET A



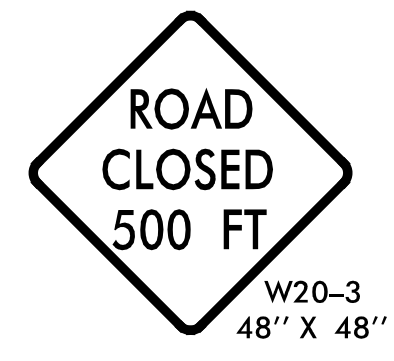
A



B



C



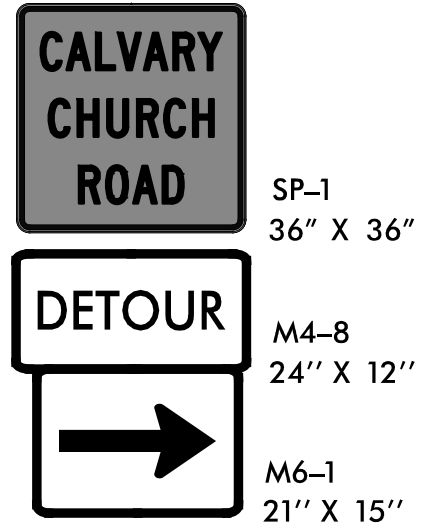
D



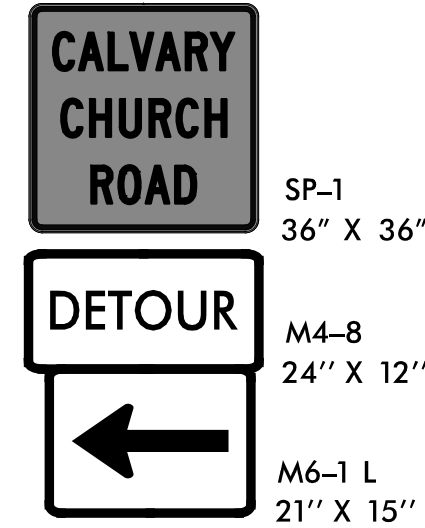
E



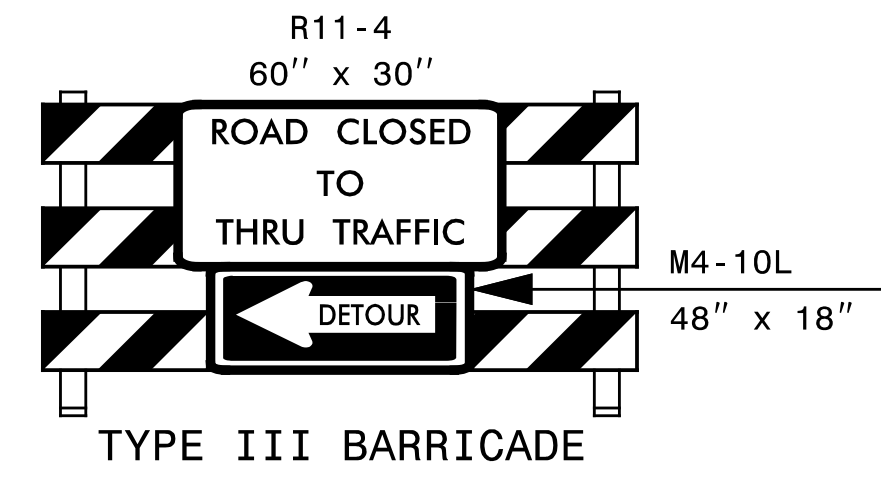
F



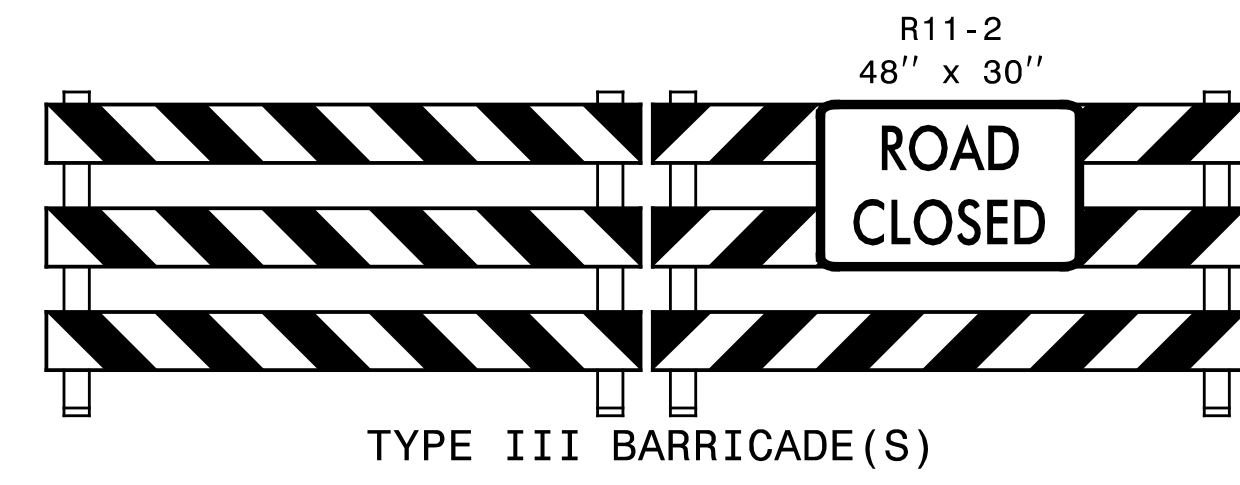
G



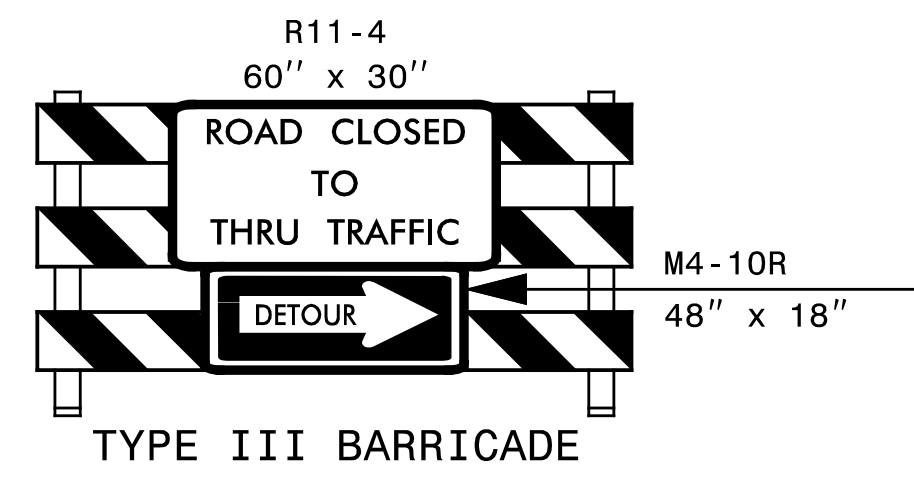
H



I

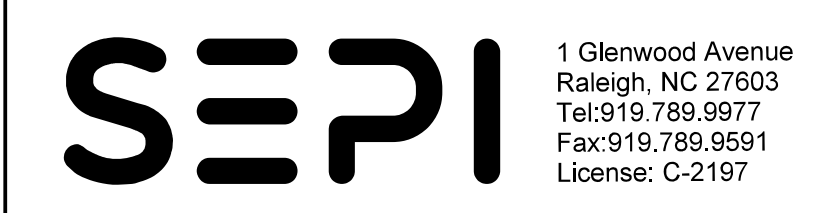


J



K

1/14/2022 X:\2013\TR13,027,00 (Br 36 Montgomery 17BP.8.R.63)\TrafficControl\TCP\TMP-4.dgn jbauman

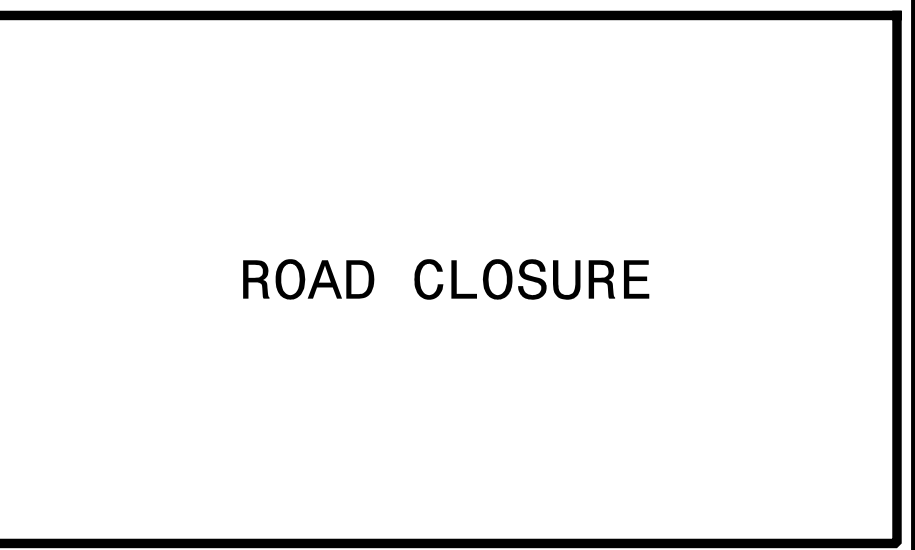
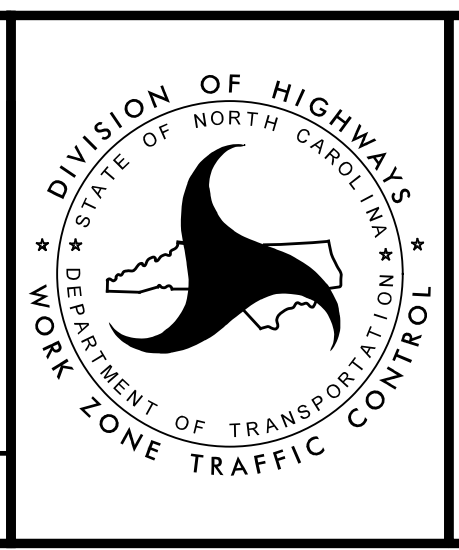


APPROVED: Steve Miller  
9FBC9C15CEEB496

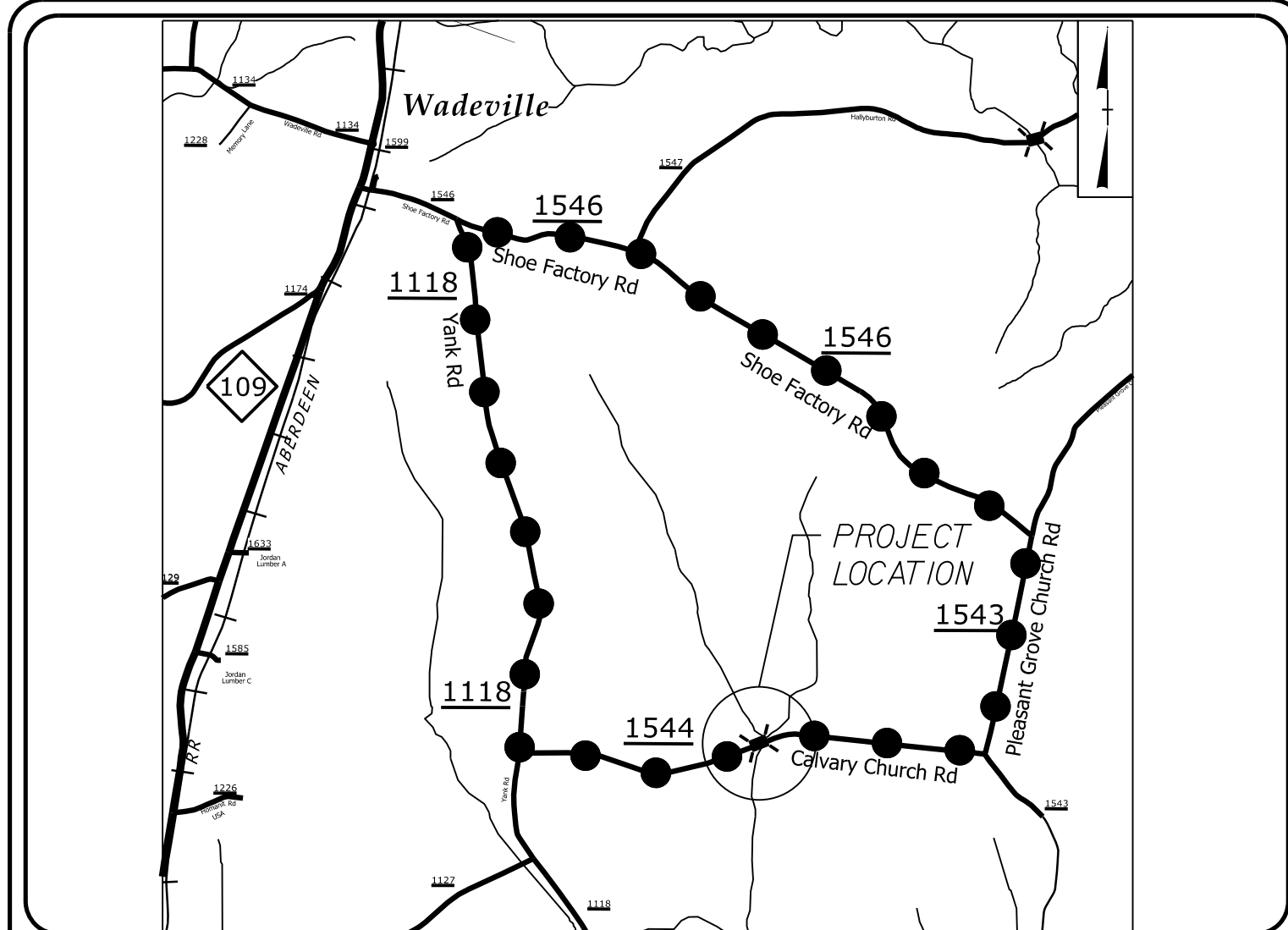
DATE: \_\_\_\_\_

SEAL

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



**TIP PROJECT: 17BP.8.R.63**



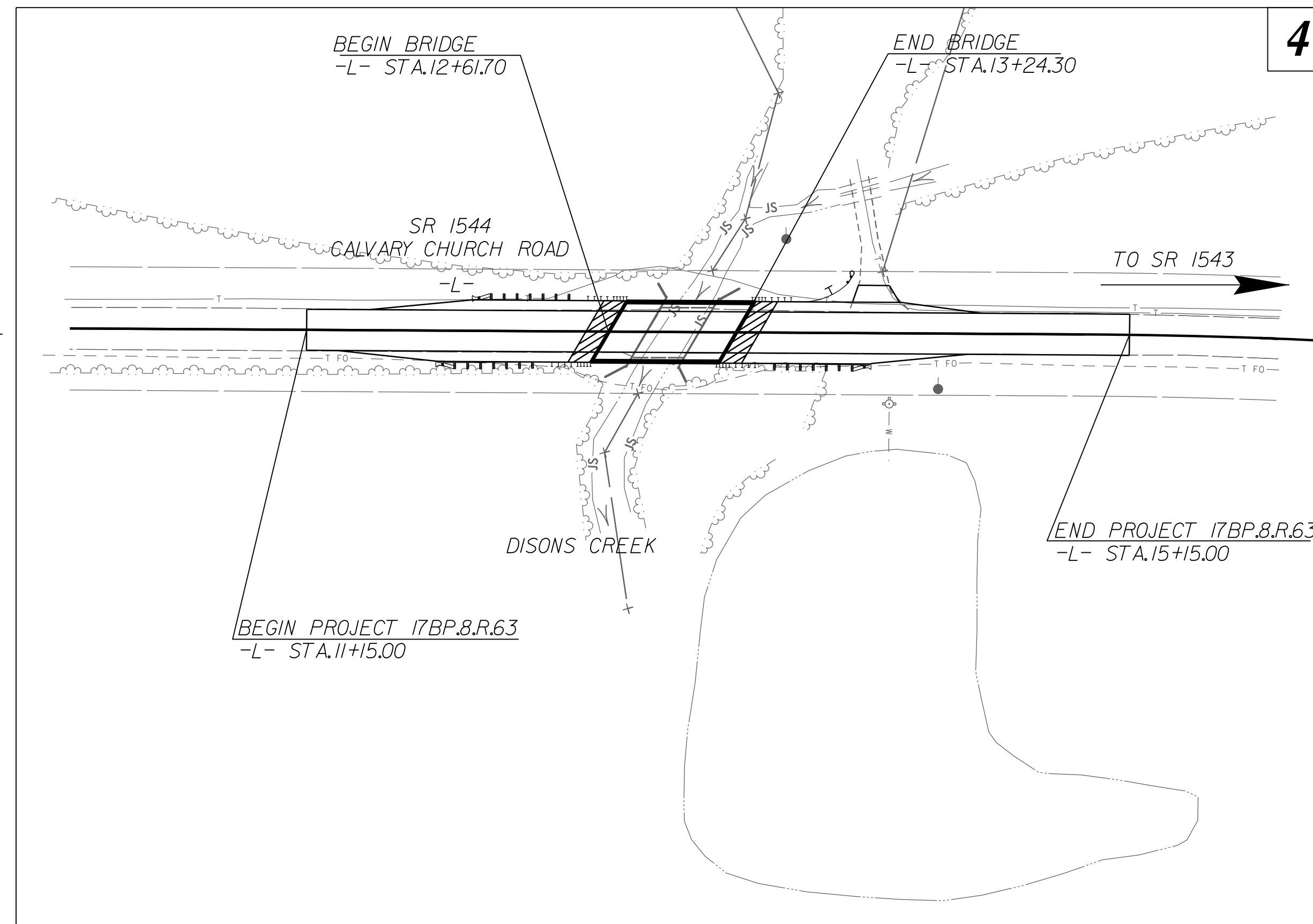
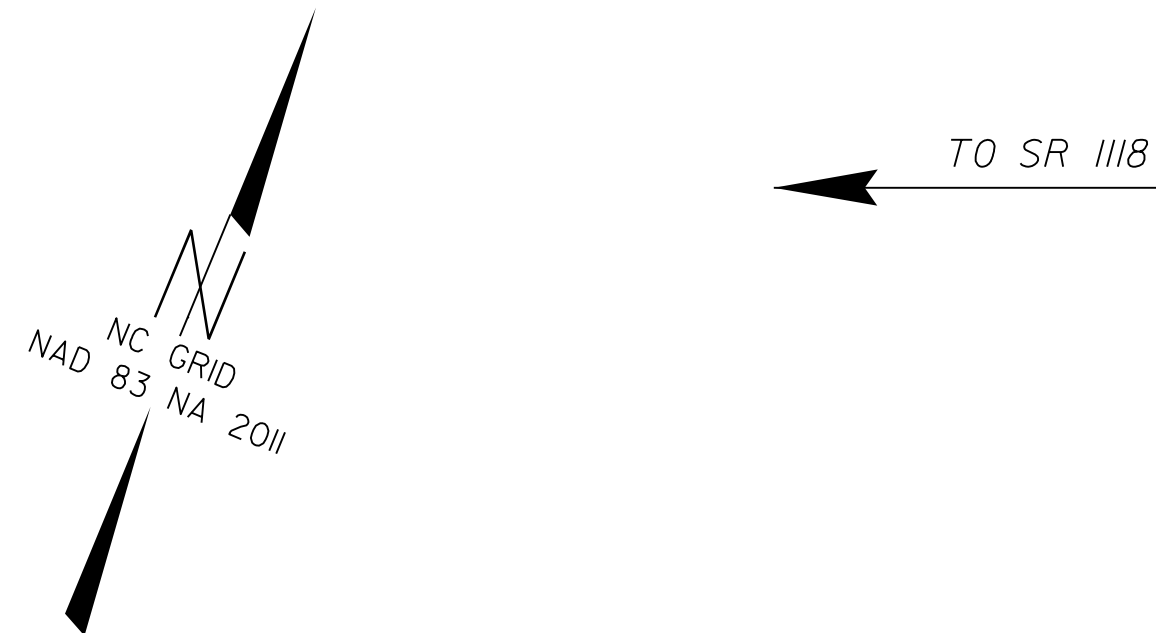
**VICINITY MAP**  
NOT TO SCALE

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

**MONTGOMERY COUNTY**

**LOCATION: BRIDGE NO. 36 OVER DISONS CREEK  
ON SR 1544 (CALVARY CHURCH ROAD)**

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



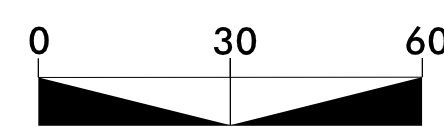
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.63	EC-1	6
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	△△△△△
1622.01	Temporary Berms and Slope Drains	— T —
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
1633.02	Temporary Rock Silt Check Type-B	▨
	Wattle/Coir Fiber Wattle	W
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	W
1634.01	Temporary Rock Sediment Dam Type-A	▨
1634.02	Temporary Rock Sediment Dam Type-B	▨
1635.01	Rock Pipe Inlet Sediment Trap Type-A	U
1635.02	Rock Pipe Inlet Sediment Trap Type-B	U
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

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

**GRAPHIC SCALE**



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



1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

Prepared In the Office of:

**SEPI, Inc.**  
1 Glenwood Avenue  
Raleigh, NC 27603

Designed by:

**ANDREW M. HOWELL, PE**      3105  
NAME      LEVEL III CERTIFICATION NO.

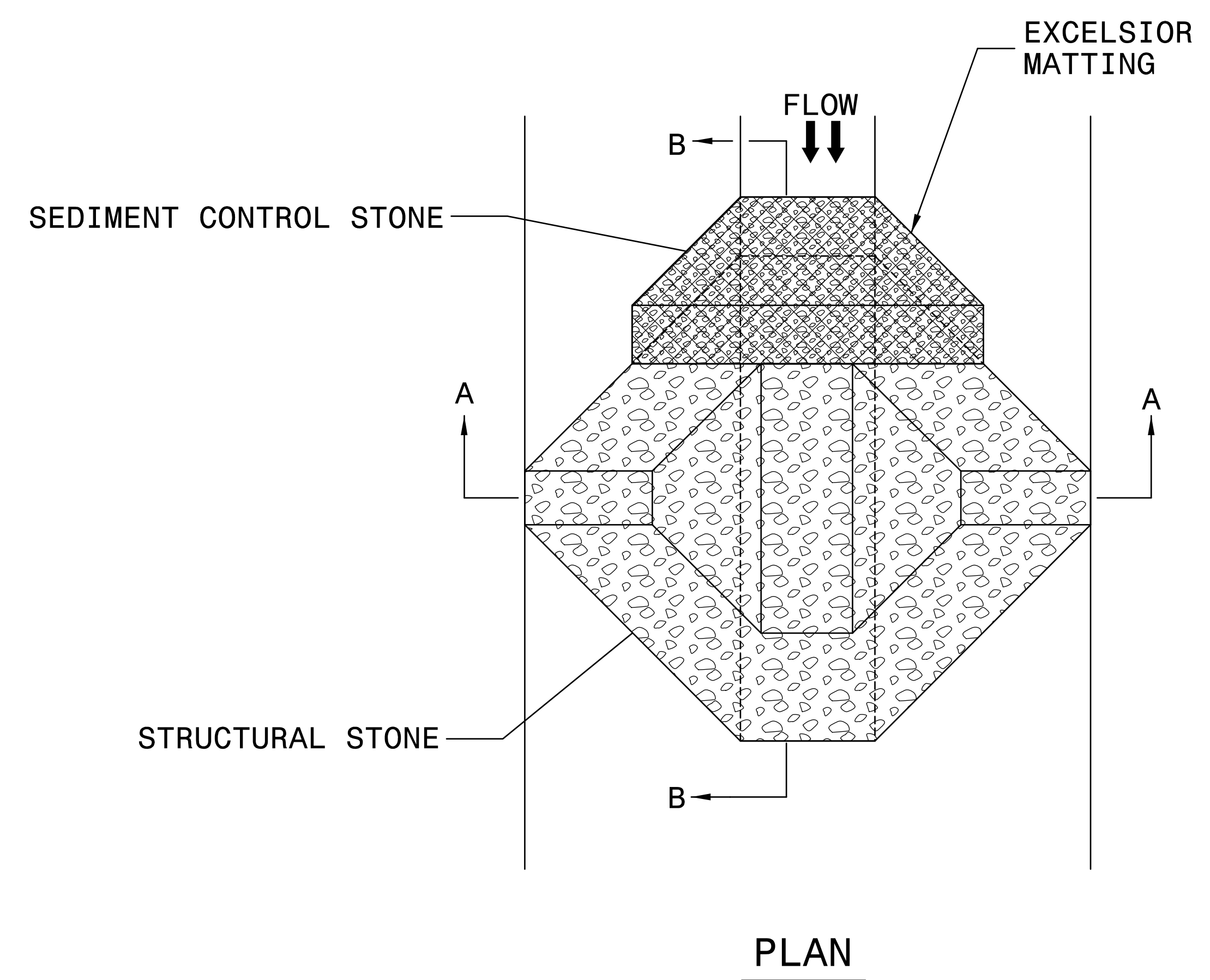
**Roadway Standard Drawings**

The following roadway english standards as appear in "Roadway Standard Drawings"— Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

PROJECT REFERENCE NO. BP17.8.R.63	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

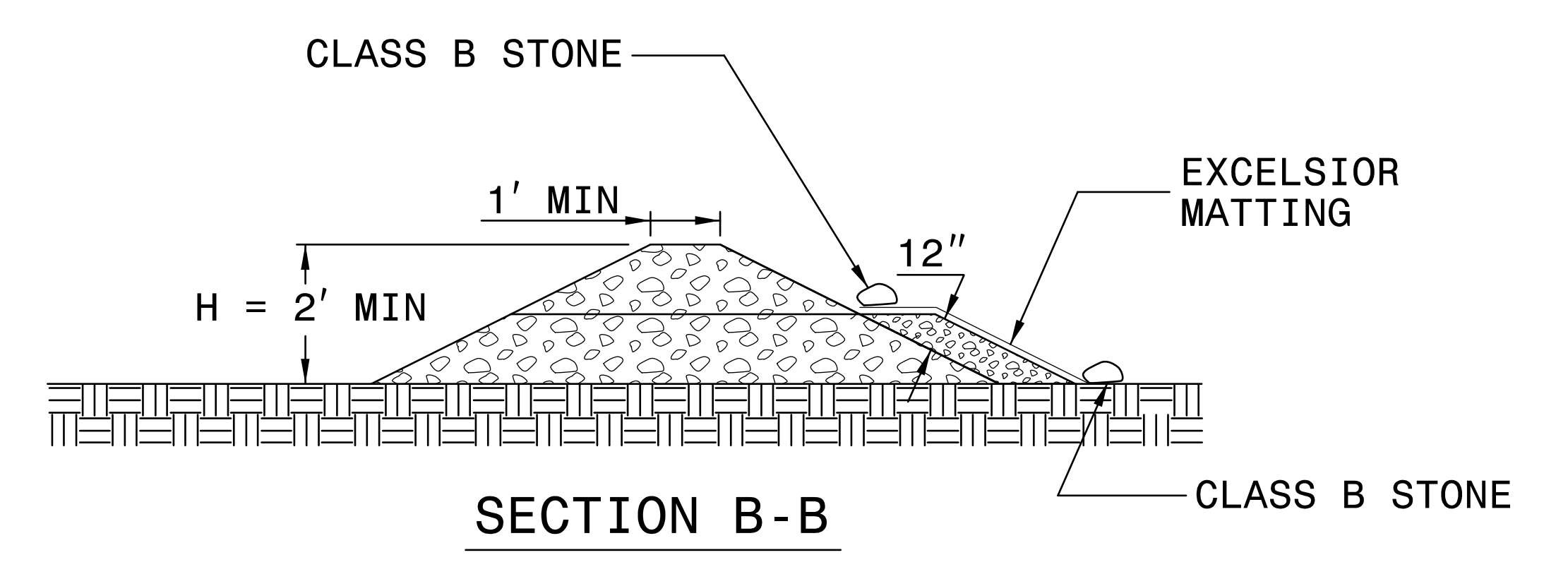
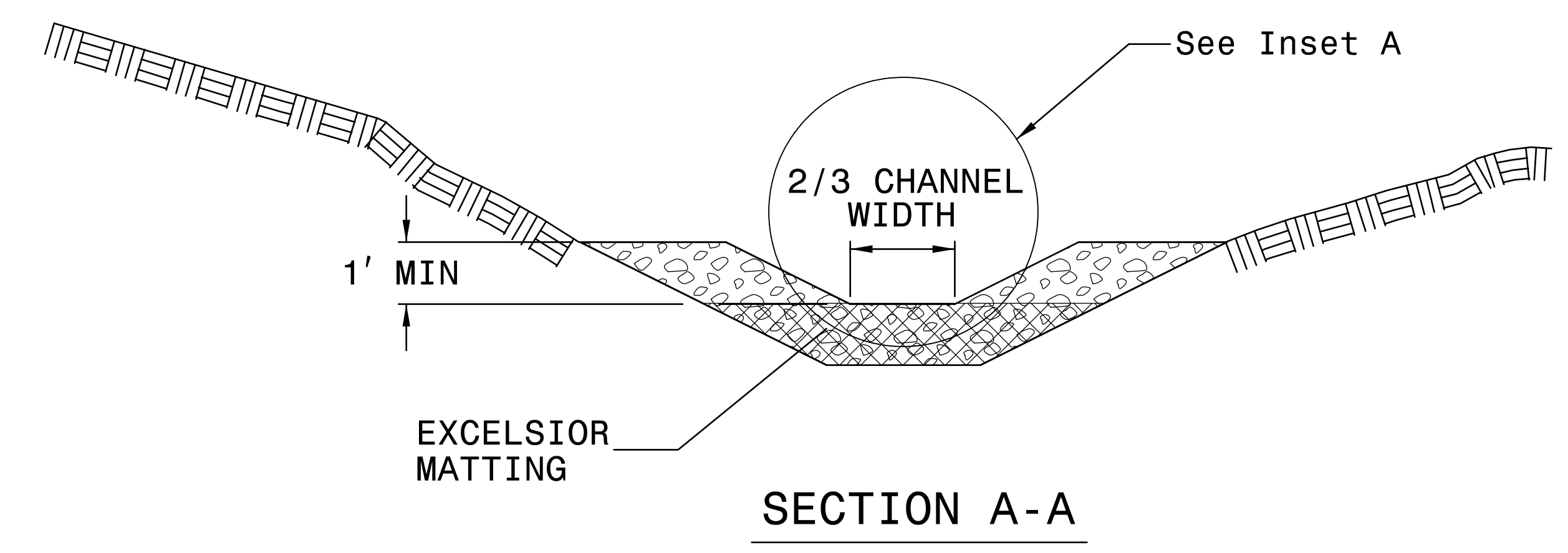
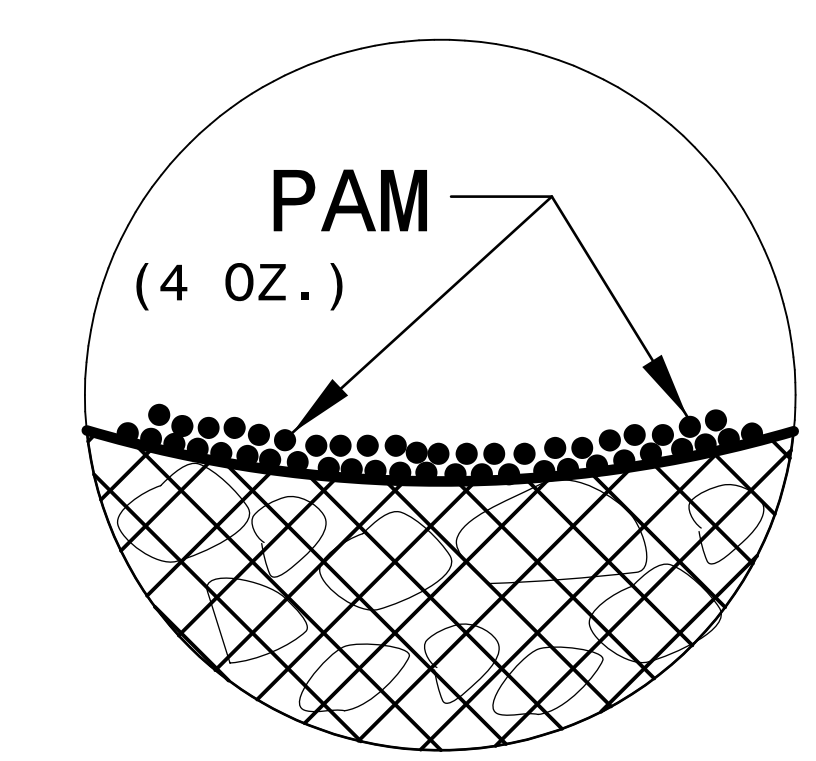


## NOTES

USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



NOT TO SCALE



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

---



---

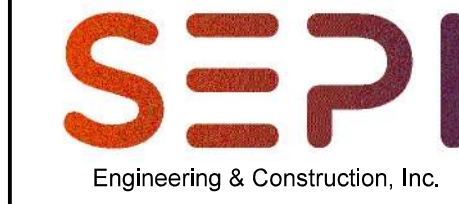
PROJECT REFERENCE NO. <i>17BP.8.R.63</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

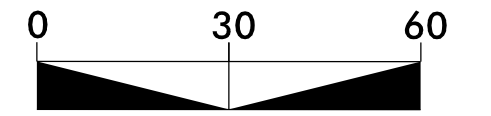
NOTE:  
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B  
 AND TEMPORARY ROCK SILT CHECKS TYPE - A AT  
 DRAINAGE OUTLETS.

CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 4

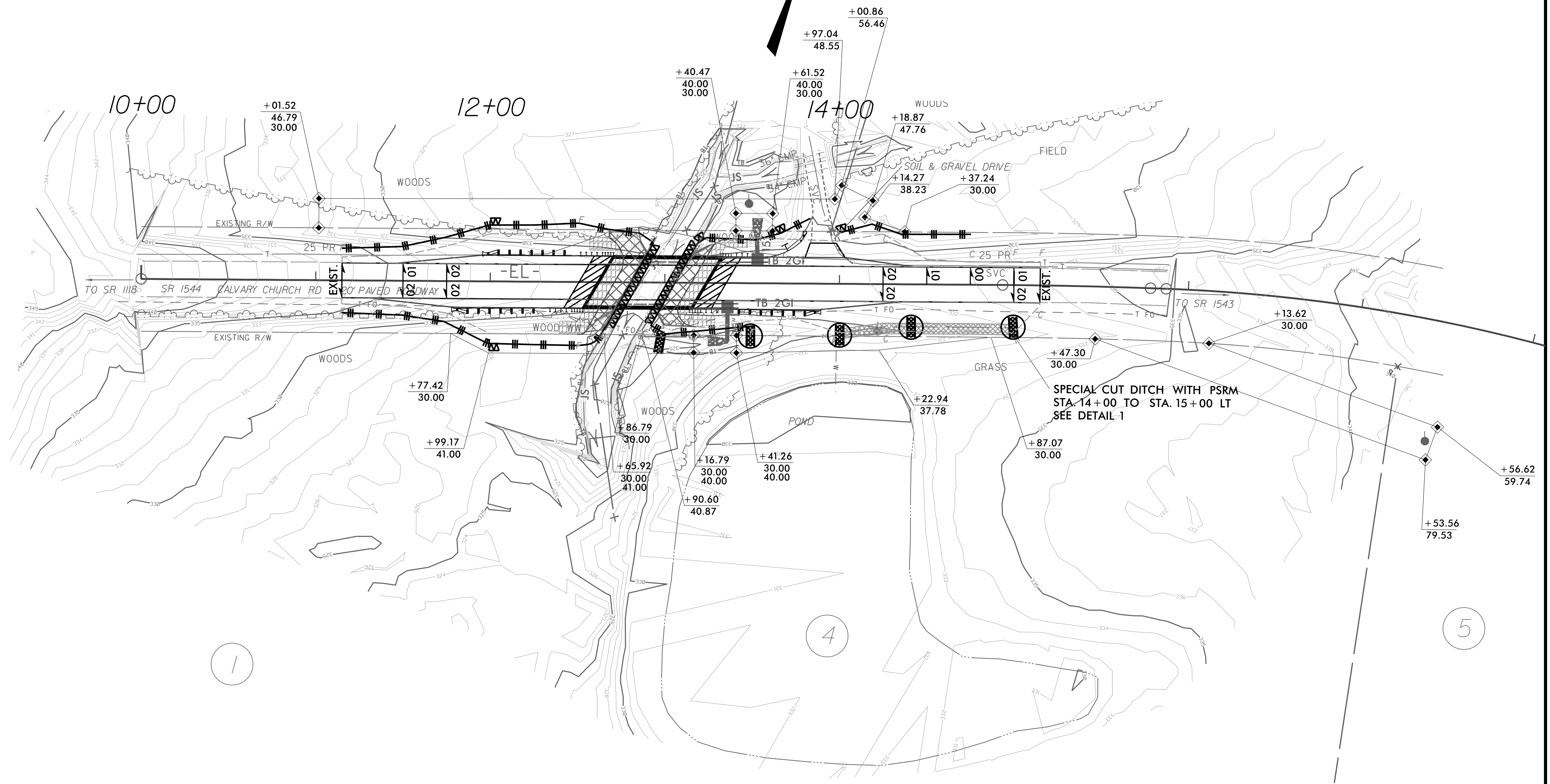


1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9977  
 Fax: 919.789.9591  
 License: C-2197

PROJECT REFERENCE NO. <b>17BP.B.R.63</b>	SHEET NO. <b>EC-4/CONST.4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



2  
 NC GRID  
 NAD 83 NA 2011

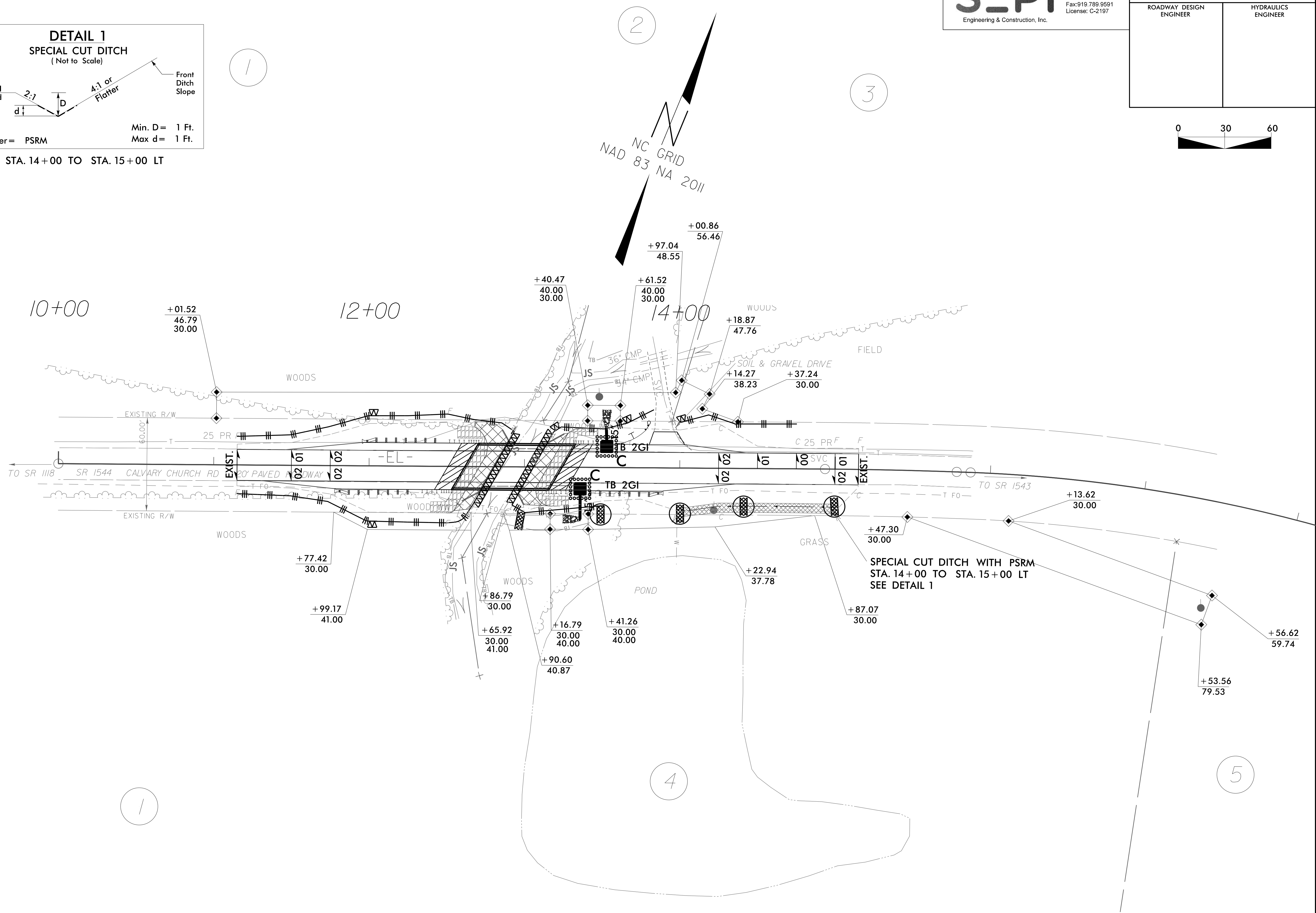
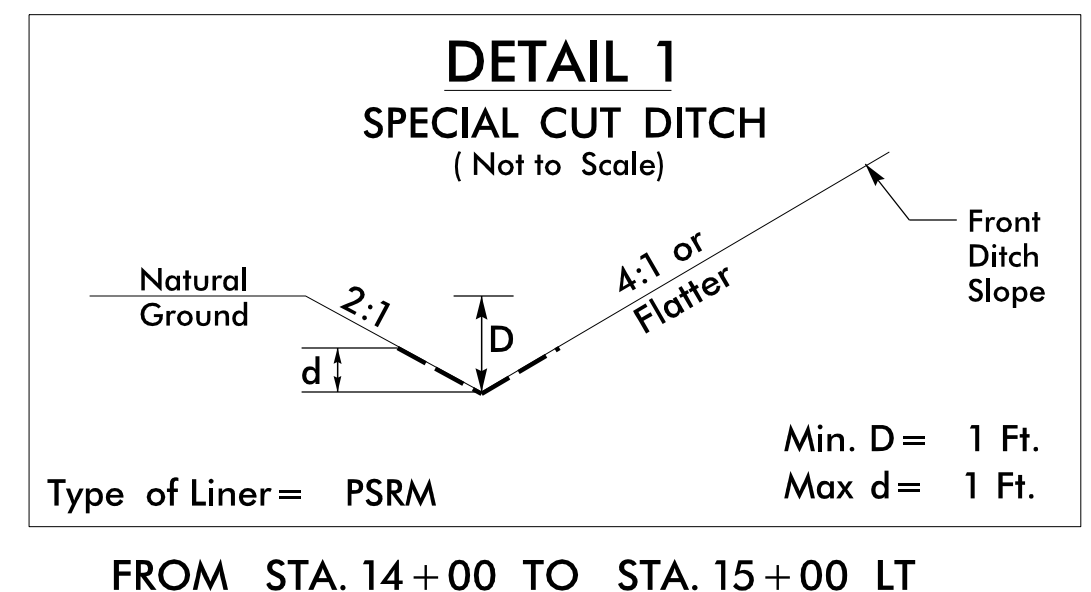
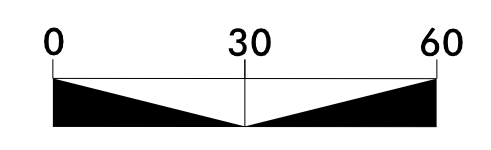


1

4

5

PROJECT REFERENCE NO. <i>17BP.8.R.63</i>	SHEET NO. <i>EC-5/CONST.4</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER





07/05/99

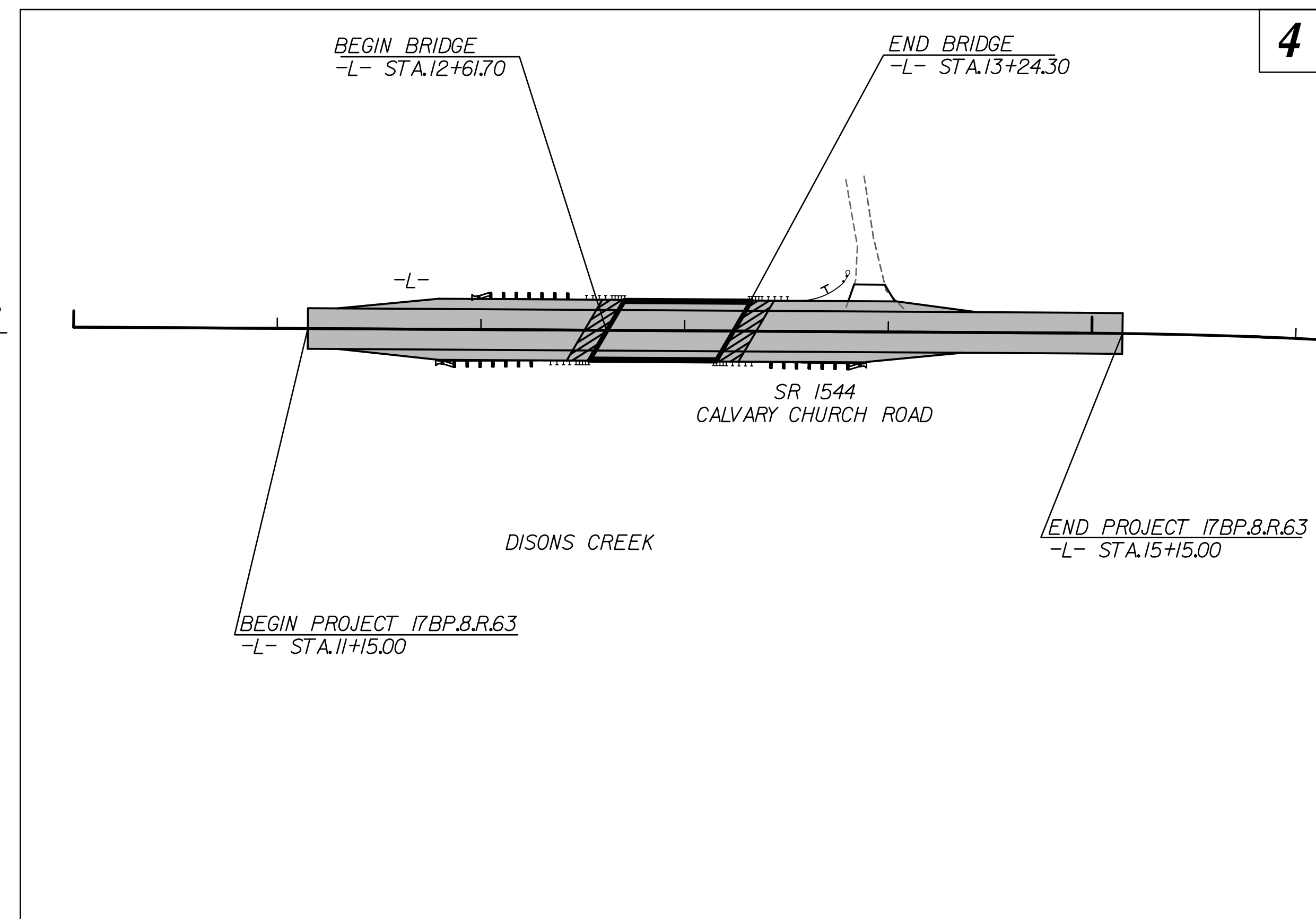
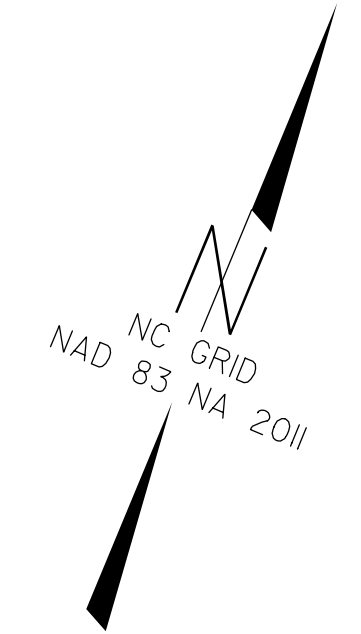
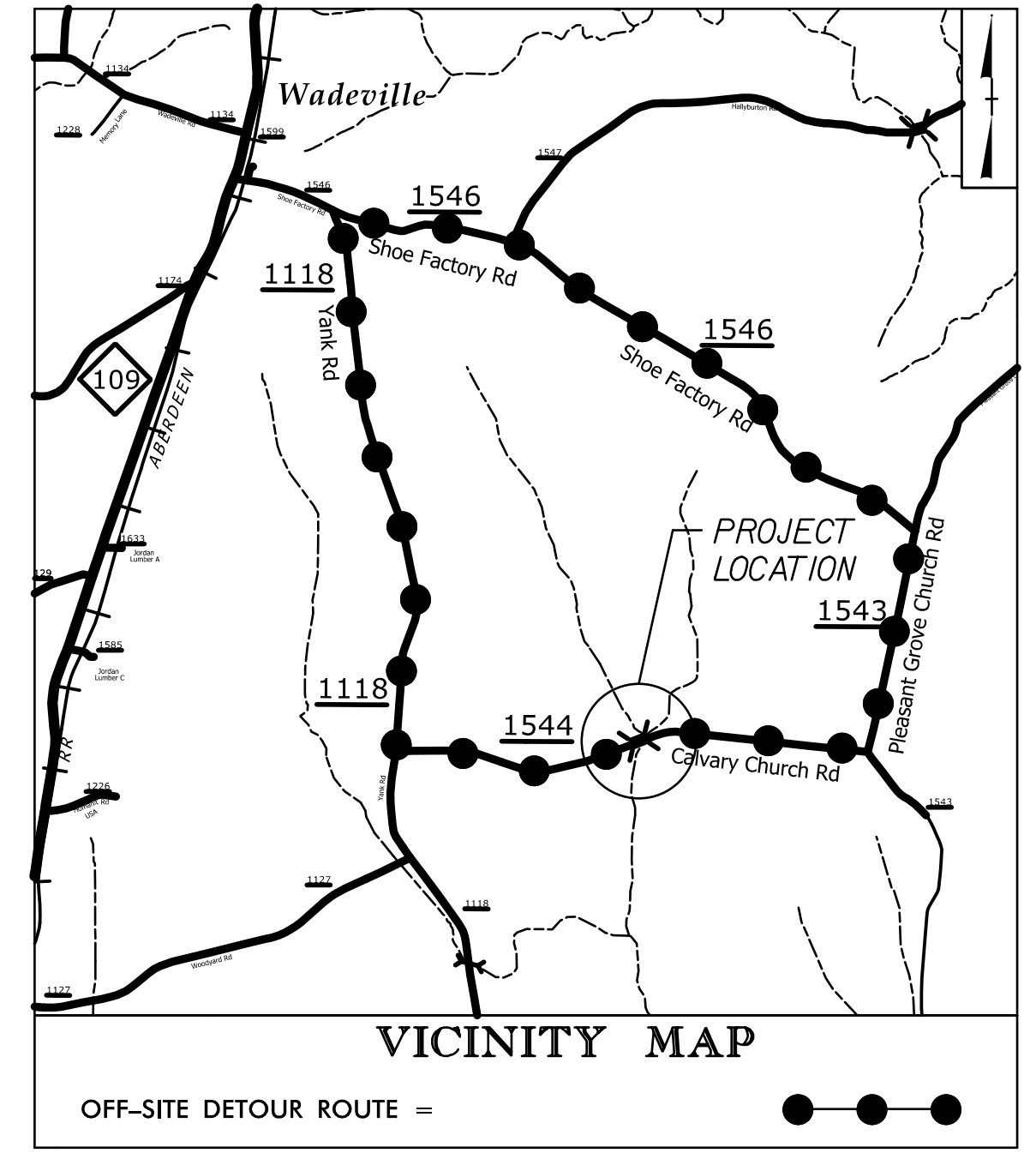
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.8.R.63	UO-1

**MONTGOMERY COUNTY**

LOCATION: BRIDGE NO. 36 OVER DISONS CREEK  
ON SR 1544 (CALVARY CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



TIP PROJECT: 17BP.8.R.63

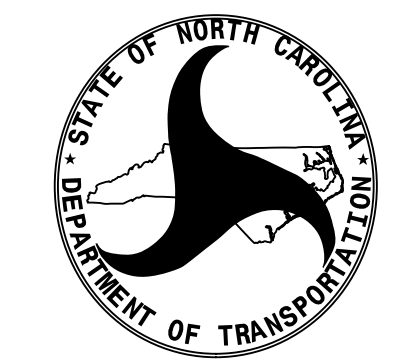
\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DCN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITIES BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

1) DUKE (PROGRESS ENERGY)



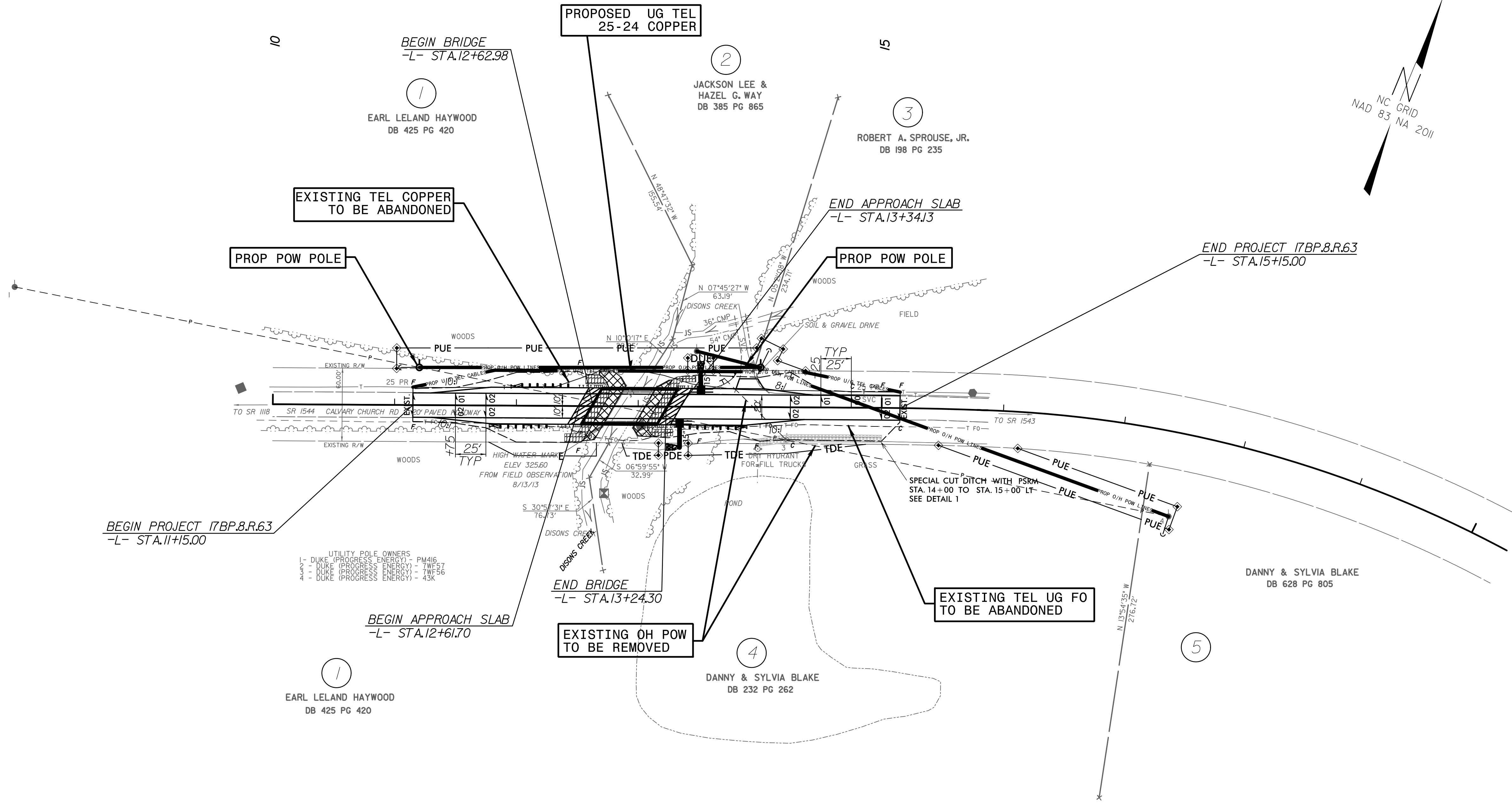
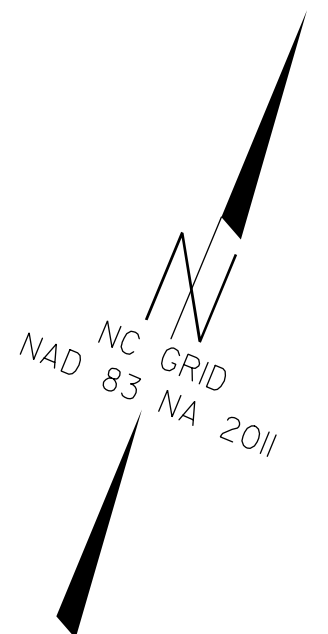
PREPARED IN THE OFFICE OF:  
DIVISION OF HIGHWAYS  
UTILITIES ENGINEERING SECTION

1591 MAIL SERVICES CENTER  
RALEIGH NC 27699-1591  
PHONE (919) 707-6690  
FAX (919) 250-4151

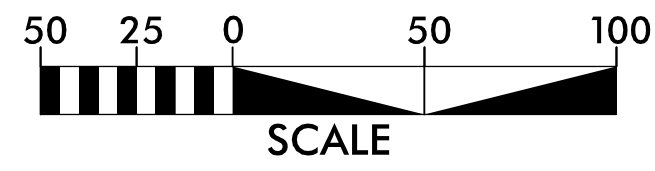
Roger Worthington, P.E. UTILITIES SECTION ENGINEER  
Ron Wilkins, PE UTILITIES SQUAD LEADER PROJECT ENGINEER  
Jamie Yow UTILITY COORDINATOR - DIVISION 8

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.63	U0-2
RW SHEET NO.	
UTILITIES BY OTHERS	
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS	

REVISIONS

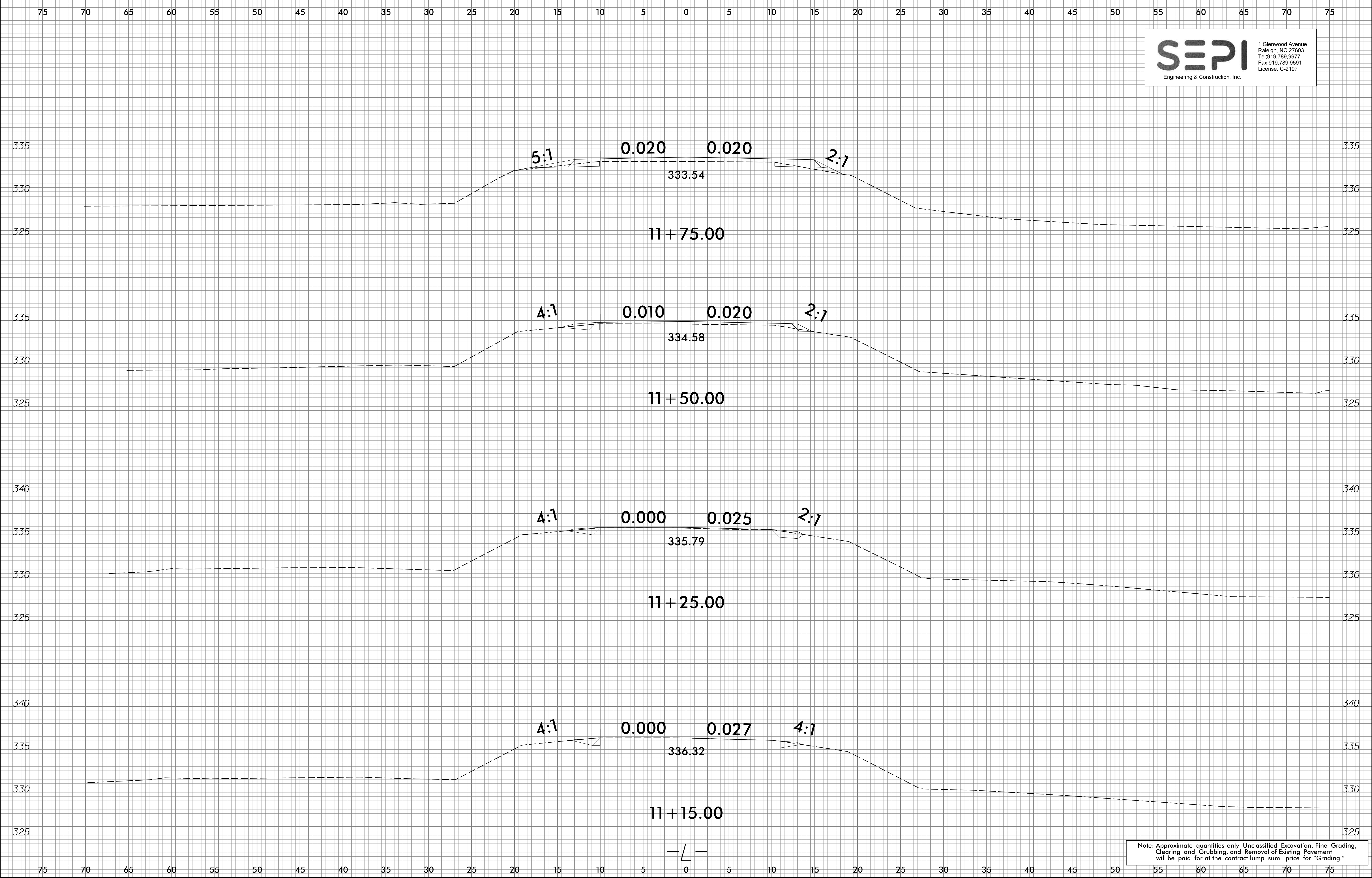


UTILITY POLE OWNERS  
 - DUKE (PROGRESS ENERGY) - PM416  
 - DUKE (PROGRESS ENERGY) - TW57  
 - DUKE (PROGRESS ENERGY) - TW56  
 - DUKE (PROGRESS ENERGY) - 45K



8/17/99

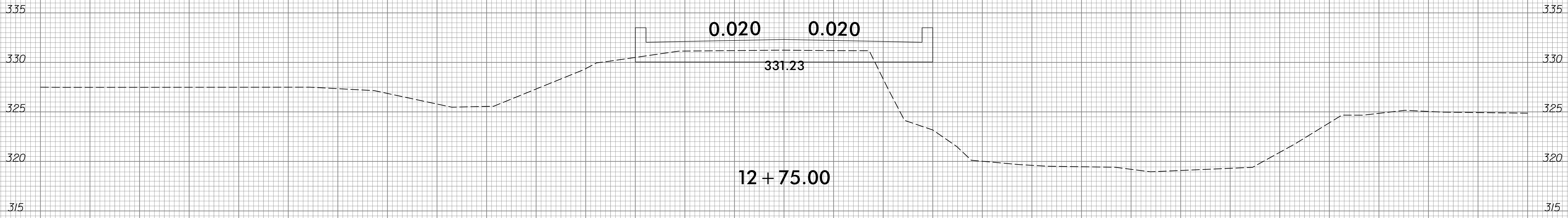
8/23/99



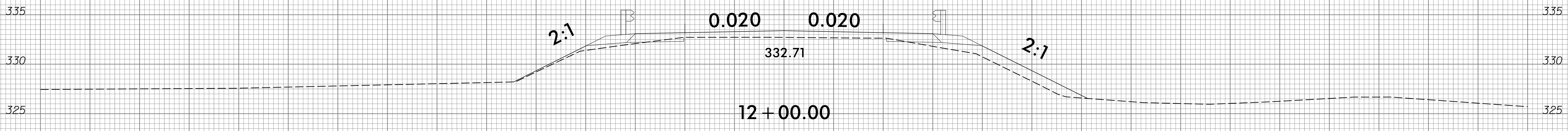
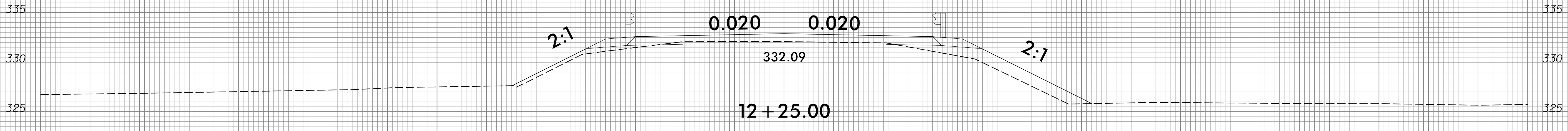
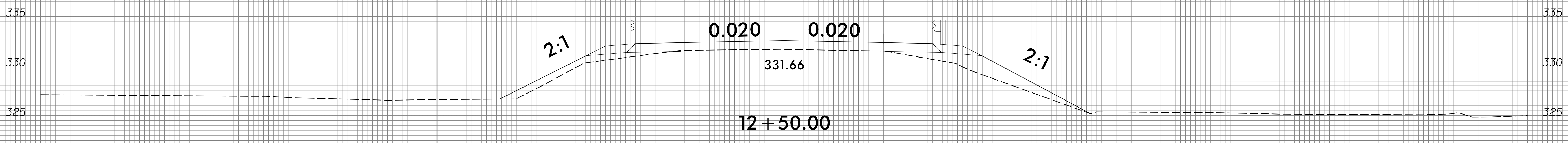
Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

5/5/2022  
 I:\Projects\17BP.8.R.63\17BP.8.R.63\_10036\_Rdy\_xpl.dgn  
 User: jgarcia

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



BEGIN BRIDGE -L- STA. 12+61.70



-L-

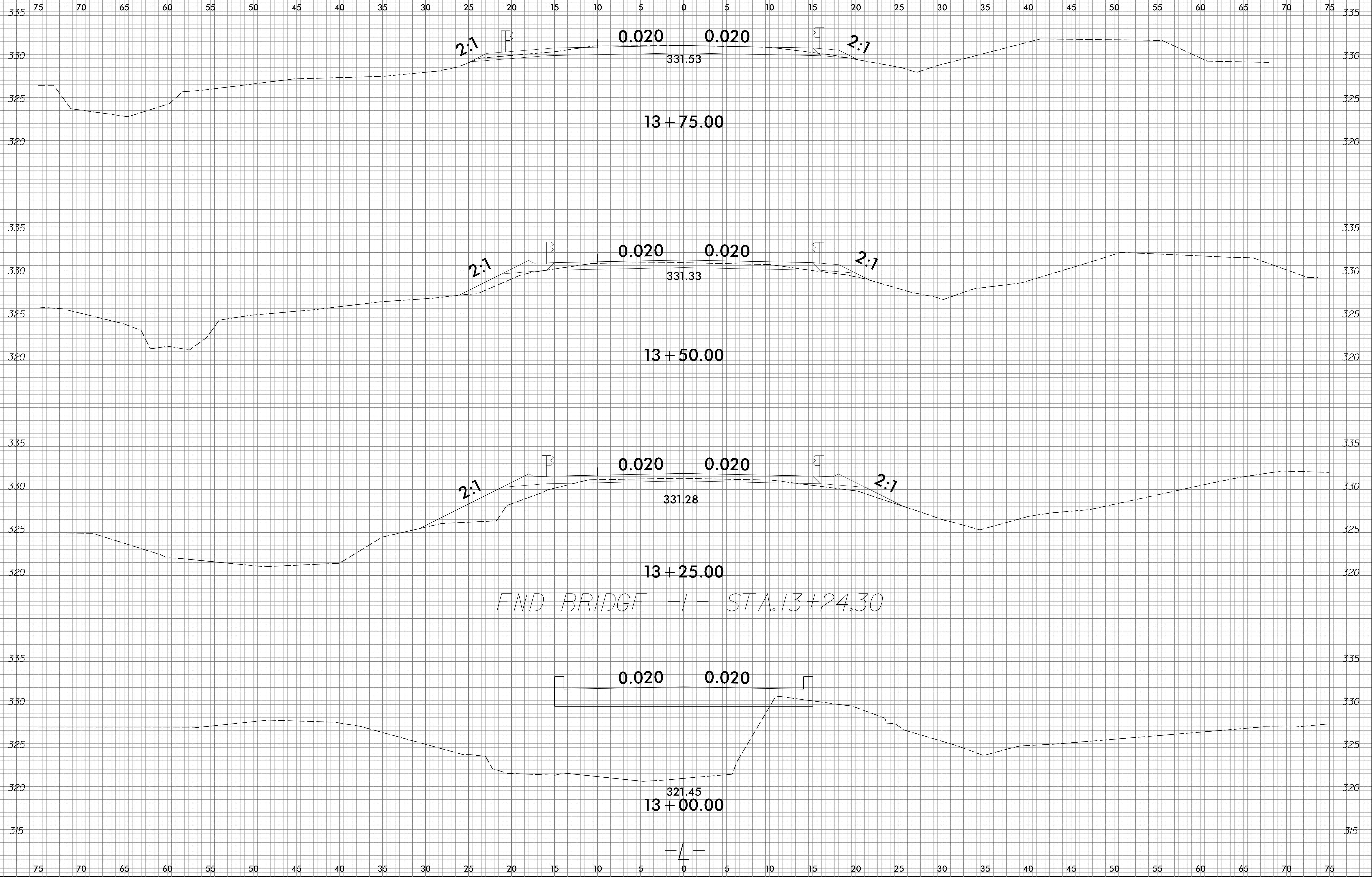
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99



PROJ. REFERENCE NO.  
17BP.8.R.63

SHEET NO.  
X-3



5/5/2022  
I:\31102022\17BP.8.R.63\17BP.8.R.63.X-3.dgn

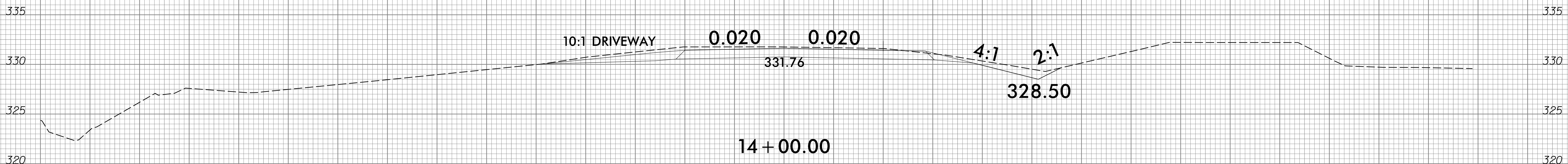
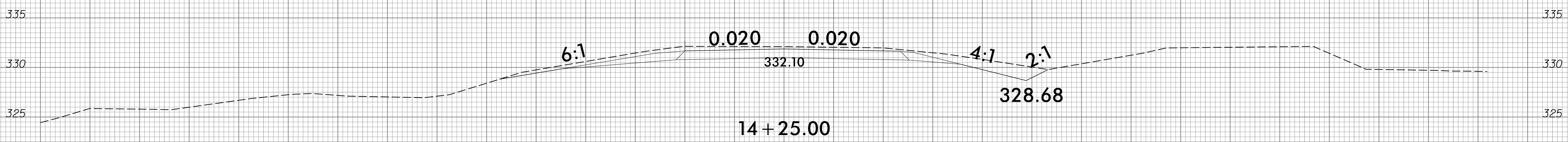
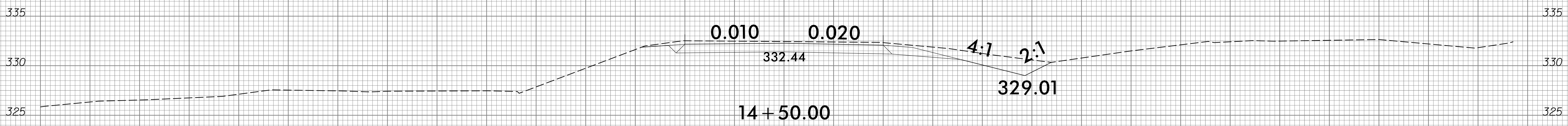
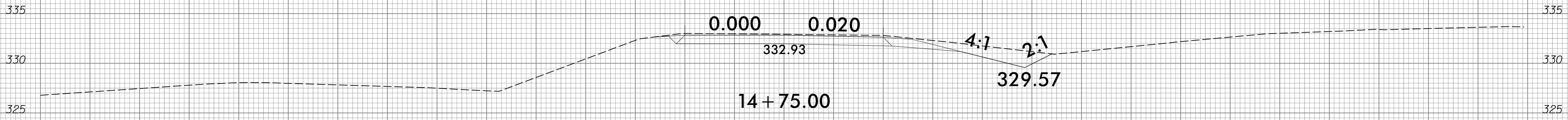
8/23/99



PROJ. REFERENCE NO.  
17BP.8.R.63

SHEET NO.  
X-4

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



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

5/5/2022  
I:\Projects\17BP.8.R.63\17BP.8.R.63.X-4.dgn

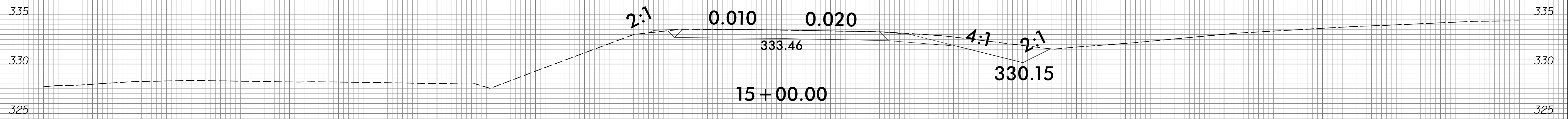
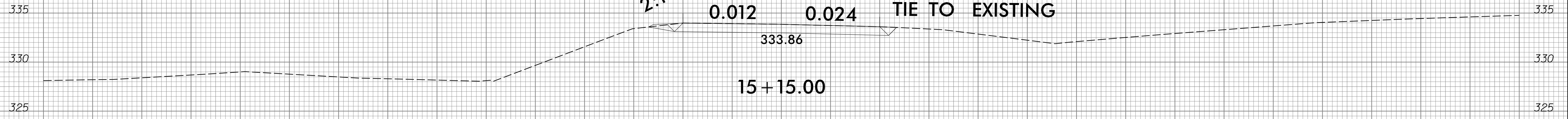
8/23/99



PROJ. REFERENCE NO.  
17BP.8.R.63

SHEET NO.  
X-5

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



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

5/5/2022  
I:\Projects\17BP\17BP.XSC\610036\_Rdyu\_xpl.dgn

**CONTRACT: PROJECT NO: 17BP.8.R.63**

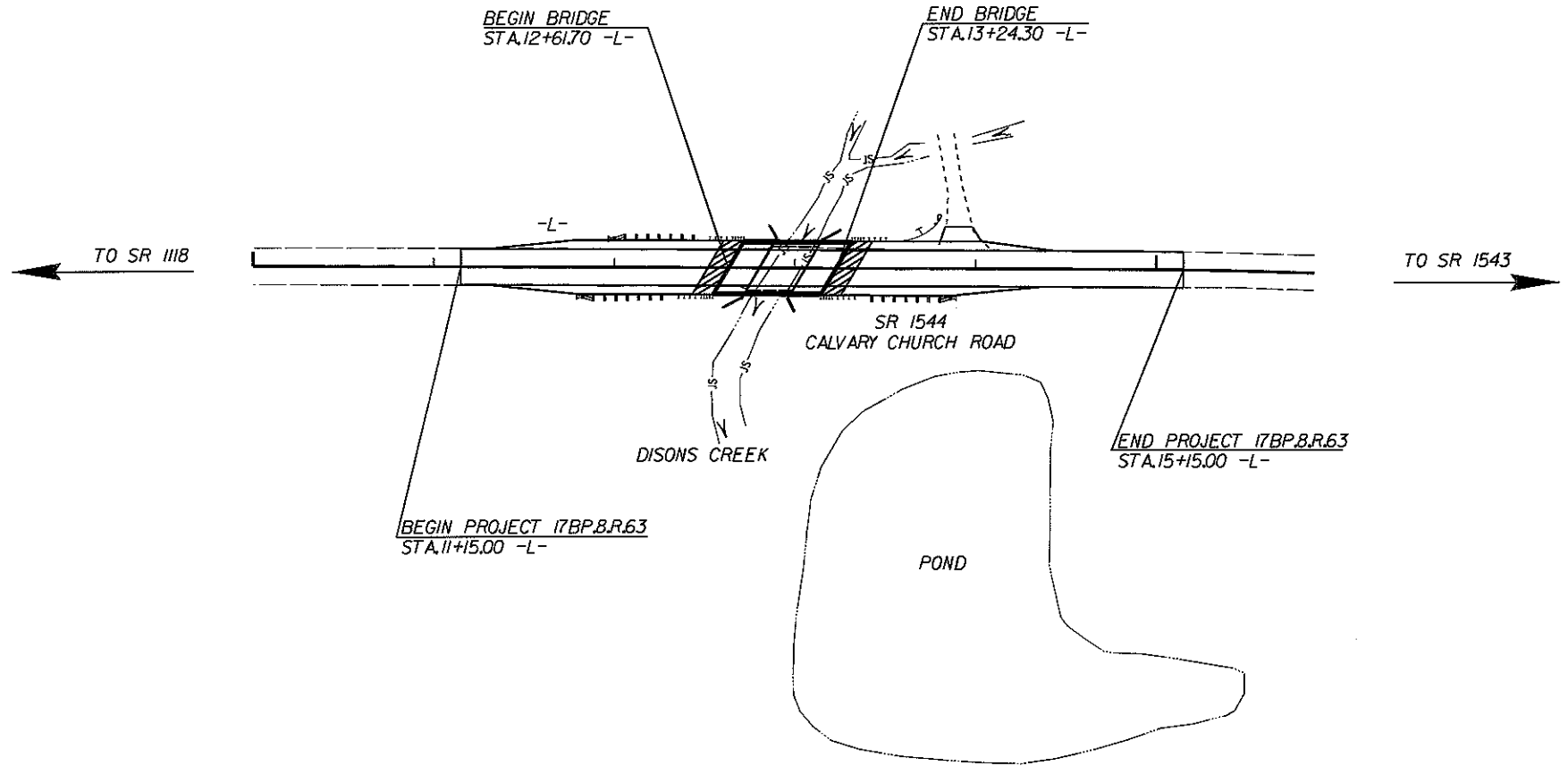
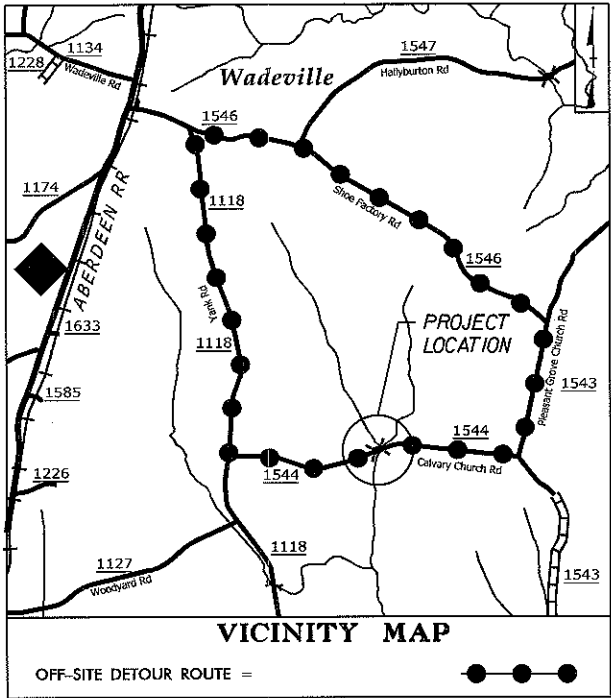
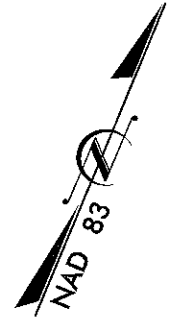
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**MONTGOMERY COUNTY**

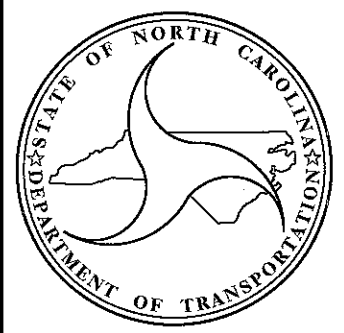
**LOCATION: BRIDGE NO. 36 OVER DISONS CREEK  
ON SR 1544 (CALVARY CHURCH ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.63		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.63		PE	
17BP.8.R.63		CONST.	



**STRUCTURE**



**DESIGN DATA**

ADT 2014 = 100  
 T = 6% \*  
 V = 55 MPH  
 \* TTST = 3% DUAL 3%  
 FUNC CLASS = RURAL LOCAL FACILITY

SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY PROJECT 17BP.8.R.63 = 0.064 MI  
 LENGTH OF STRUCTURE PROJECT 17BP.8.R.63 = 0.012 MI  
 TOTAL LENGTH OF PROJECT 17BP.8.R.63 = 0.076 MI

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
 STRUCTURES MANAGEMENT UNIT  
 1000 BIRCH RIDGE DR.  
 RALEIGH, N.C. 27610

---

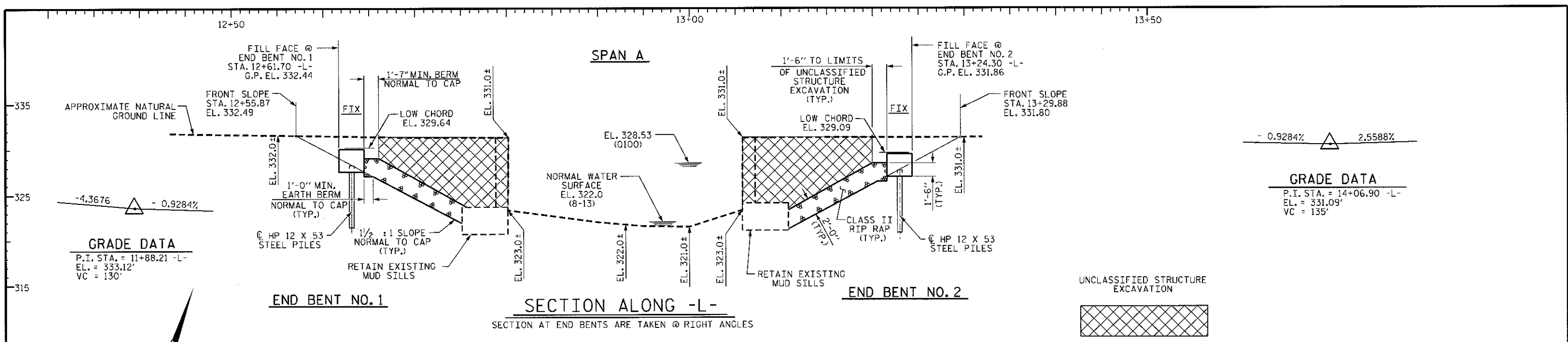
2012 STANDARD SPECIFICATIONS

LETTING DATE :  
 OCTOBER 28, 2014

**QUANG NGUYEN, P.E.**  
 PROJECT ENGINEER

**W. S. ARAFAT, P.E.**  
 PROJECT DESIGN ENGINEER

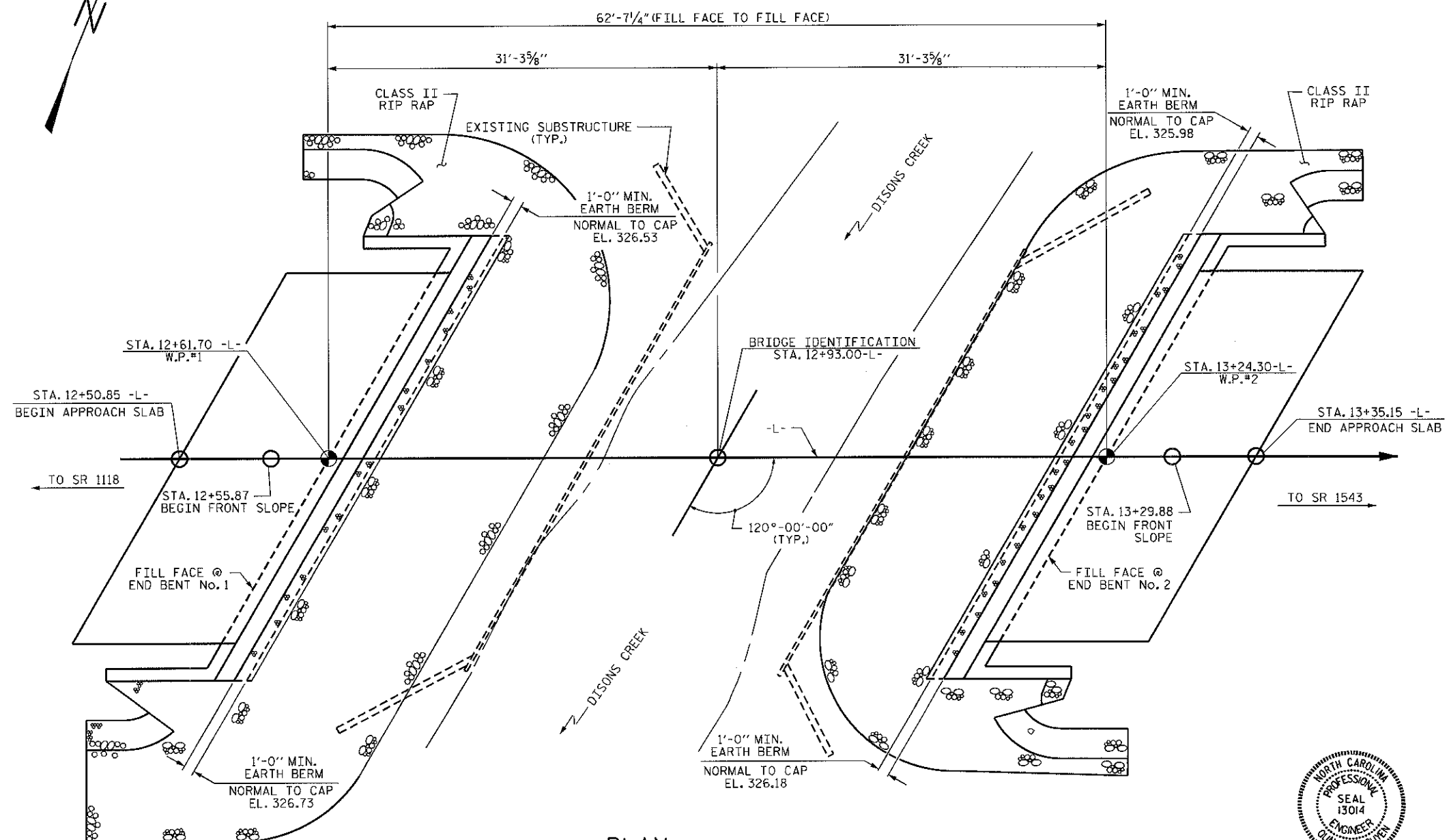




**GRADE DATA**  
 P.I. STA. = 11+88.21 -L-  
 EL. = 333.12'  
 VC = 130'

**GRADE DATA**  
 P.I. STA. = 14+06.90 -L-  
 EL. = 331.09'  
 VC = 135'

I HEREBY CERTIFY  
 THESE PLANS ARE  
 THE AS-BUILT PLANS



**PLAN**  
 PILES NOT SHOWN FOR CLARITY

DRAWN BY: V.X. NGUYEN DATE: 3-3-14  
 CHECKED BY: H.T. BABOUR DATE: 4-3-14  
 DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 6-16-14



PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #036

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR  
 BRIDGE ON SR 1544  
 OVER DISONS CREEK  
 BETWEEN SR 1118 AND SR 1543

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

**NOTES**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 94 TONS PER PILE.

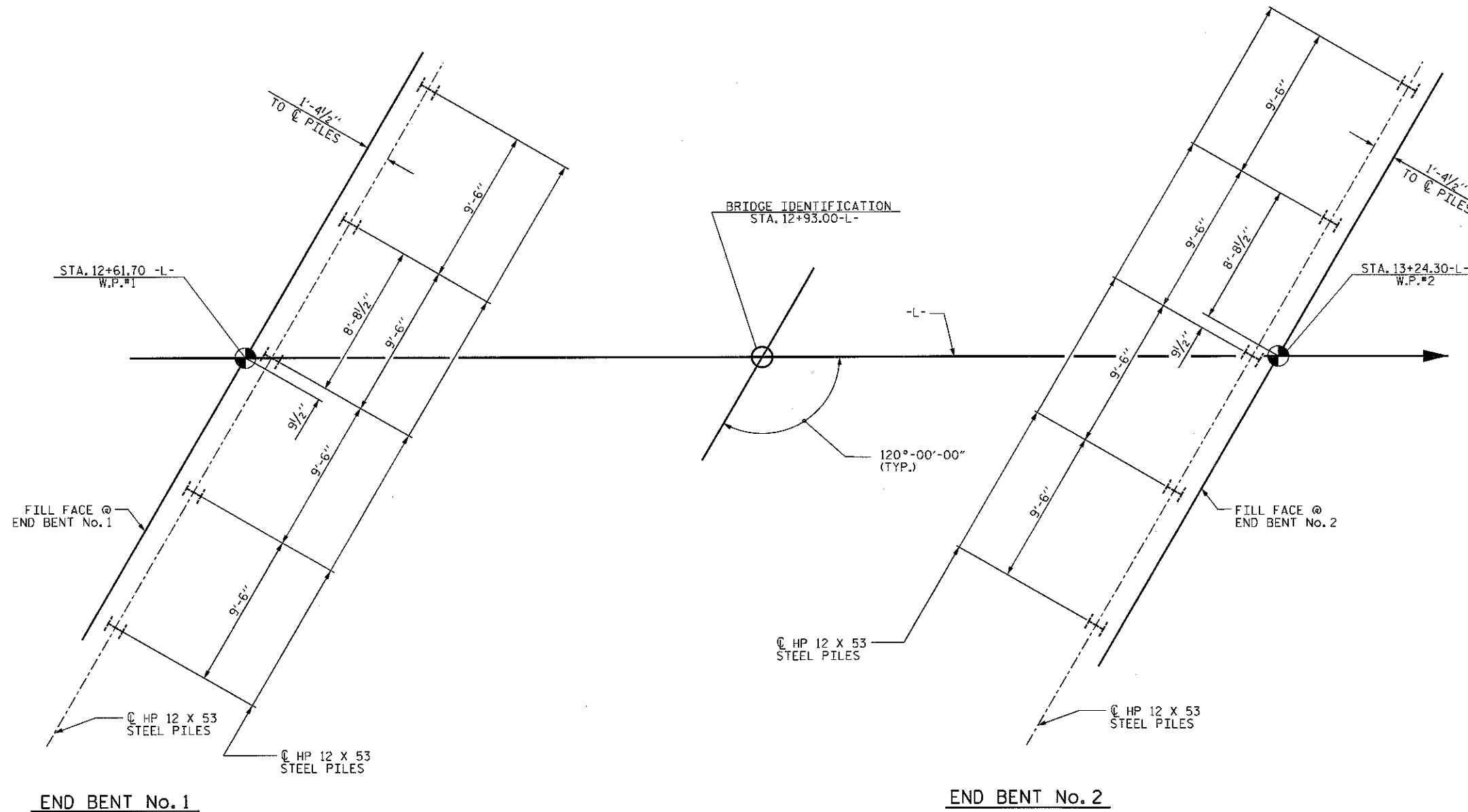
PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO.1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 317.5 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO.1.

DO NOT DRIVE PILES AT END BENT NO.1 AFTER PLACING PILES IN EXCAVATED HOLES.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

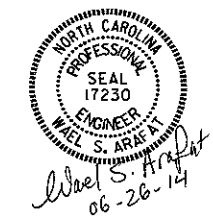


**FOUNDATION LAYOUT**

ALL DIMENSIONS LOCATING PILES ARE TO THE PILE CENTERLINE.

PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

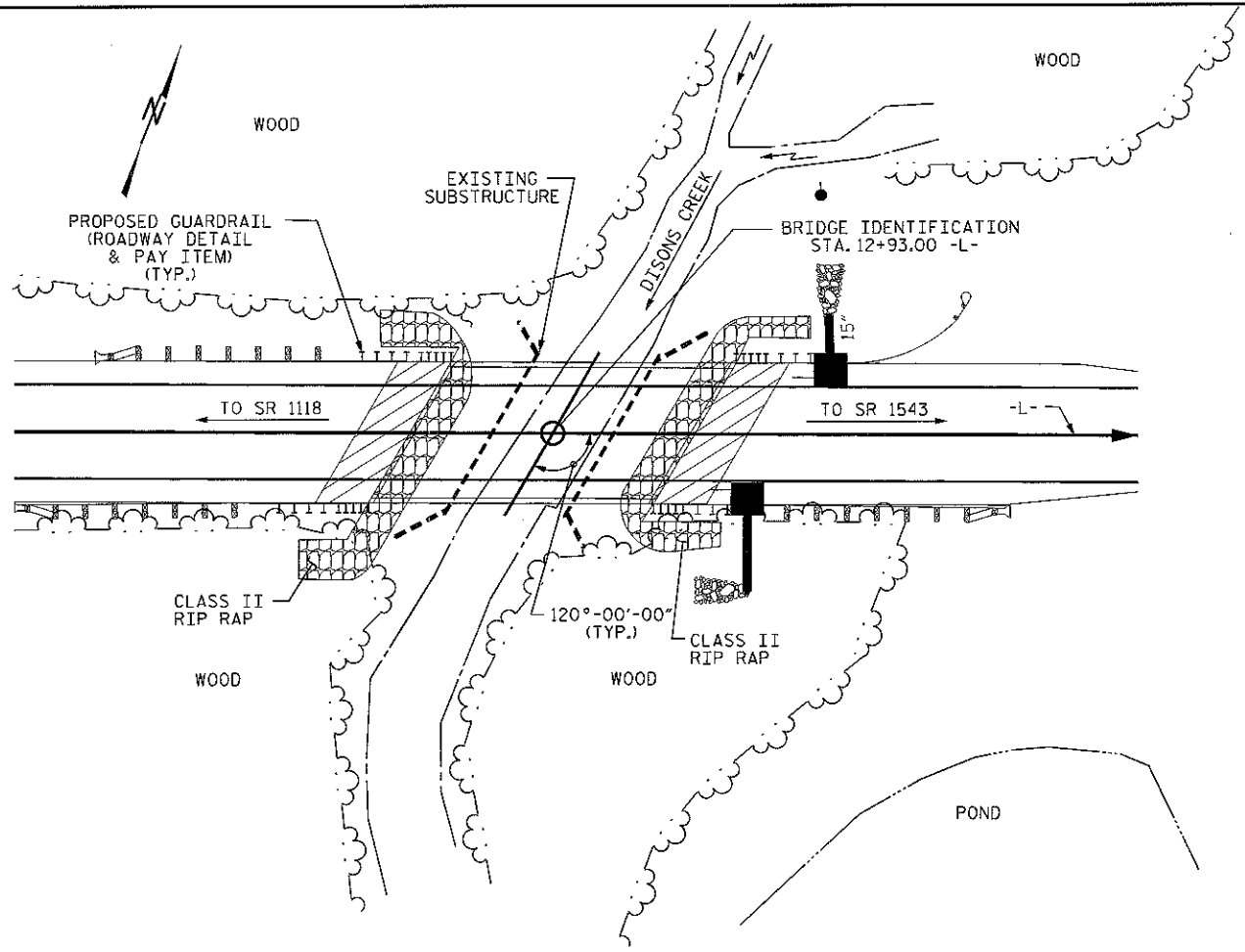
SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR  
 BRIDGE ON SR 1544  
 OVER DISONS CREEK  
 BETWEEN SR 1118 AND SR 1543



DRAWN BY : V.X. NGUYEN DATE : 4-7-14  
 CHECKED BY : H.T. BABOUR DATE : 4-7-14  
 DESIGN ENGINEER OF RECORD: A.M. LEE DATE : 6-16-14

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

B.M. #1: RR SPIKE IN BASE OF 36" Ø POPLAR TREE, 58' RIGHT OF STA. 8+05.00 -BL-, ELEV. 325.53', NAVD 88.



LOCATION SKETCH

NOTES

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 12+93.00 -L-'

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.

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

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- RETAIN EXISTING MUD SILLS AT END BENTS 1 & 2.

THE EXISTING STRUCTURE DESCRIBED BELOW AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

- EXISTING SUPERSTRUCTURE:
  - 1 SPAN @ 26'-4"
  - TIMBER DECK WITH AN ASPHALT WEARING SURFACE
  - 13 LINES OF I-BEAMS @ VARIOUS SPACING
  - 24.4 FT. CLEAR ROADWAY WIDTH.
- EXISTING SUBSTRUCTURE:
  - TIMBER CAPS & PILES ENCASED IN CONCRETE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

HYDRAULIC DATA

DESIGN DISCHARGE	=	900 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	25 YRS.
DESIGN HIGH WATER ELEVATION	=	327.6
DRAINAGE AREA	=	2.3 SQ. MI.
BASE DISCHARGE (Q100)	=	1300 C.F.S.
BASE HIGH WATER ELEVATION	=	328.53

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	2200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	500 YRS.+
OVERTOPPING FLOOD ELEVATION	=	331.7

TOTAL BILL OF MATERIAL

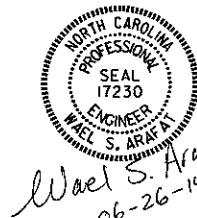
	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEX-TILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM					LUMP SUM					120			LUMP SUM	10	600
END BENT NO. 1		25	25	LUMP SUM	14.9		2,218	5	50			115	130			
END BENT NO. 2				LUMP SUM	14.9		2,218	5	50	5		110	120			
TOTAL	LUMP SUM	25	25	LUMP SUM	29.8	LUMP SUM	4,436	10	100	5	120	225	250	LUMP SUM	10	600

PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR  
 BRIDGE ON SR 1544  
 OVER DISONS CREEK  
 BETWEEN SR 1118 AND SR 1543



DRAWN BY: V.X. NGUYEN DATE: 3-3-14  
 CHECKED BY: H.T. BARBOUR DATE: 4-4-14  
 DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 6-16-14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-3
2			4			14

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

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93(InV)	N/A	①	1.133	--	1.75	0.249	1.48	60'	EL	29.423	0.649	<b>1.13</b>	60'	EL	<b>5.885</b>	0.80	0.249	1.52	60'	EL	29.423		
	HL-93(OPr)	N/A	--	1.468	--	1.35	0.249	1.91	60'	EL	29.423	0.649	1.47	60'	EL	5.885	N/A	--	--	--	--	--		
	HS-20(InV)	36,000	②	1.364	49.098	1.75	0.249	1.87	60'	EL	29.423	0.649	<b>1.36</b>	60'	EL	<b>5.885</b>	0.80	0.249	1.92	60'	EL	29.423		
	HS-20(OPr)	36,000	--	1.768	63.645	1.35	0.249	2.42	60'	EL	29.423	0.649	1.77	60'	EL	5.885	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500	--	3.938	53.159	1.4	0.249	5.03	60'	EL	29.423	0.649	3.94	60'	EL	5.885	0.80	0.249	4.13	60'	EL	29.423	
		SNGARBS2	20,000	--	2.837	56.744	1.4	0.249	3.85	60'	EL	29.423	0.649	2.84	60'	EL	5.885	0.80	0.249	3.17	60'	EL	29.423	
		SNAGRIS2	22,000	--	2.648	58.256	1.4	0.249	3.69	60'	EL	29.423	0.649	2.65	60'	EL	5.885	0.80	0.249	3.03	60'	EL	29.423	
		SNCOTTS3	27,250	--	1.97	53.671	1.4	0.249	2.5	60'	EL	29.423	0.649	1.97	60'	EL	5.885	0.80	0.249	2.06	60'	EL	29.423	
		SNAGGRS4	34,925	--	1.661	58.001	1.4	0.249	2.13	60'	EL	29.423	0.649	1.66	60'	EL	5.885	0.80	0.249	1.75	60'	EL	29.423	
		SNS5A	35,550	--	1.696	60.293	1.4	0.249	2.08	60'	EL	29.423	0.649	1.7	60'	EL	5.885	0.80	0.249	1.71	60'	EL	29.423	
		SNS6A	39,950	--	1.558	62.257	1.4	0.249	1.93	60'	EL	29.423	0.649	1.56	60'	EL	5.885	0.80	0.249	1.58	60'	EL	29.423	
	SNS7B	42,000	--	1.51	63.41	1.4	0.249	1.84	60'	EL	29.423	0.649	1.55	60'	EL	5.885	0.80	0.249	1.51	60'	EL	29.423		
	TTST	TNAGRIT3	33,000	--	1.846	60.907	1.4	0.249	2.36	60'	EL	29.423	0.649	1.85	60'	EL	5.885	0.80	0.249	1.94	60'	EL	29.423	
		TNT4A	33,075	--	1.787	59.108	1.4	0.249	2.37	60'	EL	29.423	0.649	1.79	60'	EL	5.885	0.80	0.249	1.95	60'	EL	29.423	
		TNT6A	41,600	--	1.607	66.863	1.4	0.249	1.96	60'	EL	29.423	0.649	1.67	60'	EL	5.885	0.80	0.249	1.61	60'	EL	29.423	
		TNT7A	42,000	--	1.598	67.1	1.4	0.249	1.97	60'	EL	29.423	0.649	1.6	60'	EL	5.885	0.80	0.249	1.62	60'	EL	29.423	
		TNT7B	42,000	--	1.499	62.942	1.4	0.249	2.06	60'	EL	29.423	0.649	1.5	60'	EL	5.885	0.80	0.249	1.69	60'	EL	29.423	
		TNAGRIT4	43,000	--	1.447	62.223	1.4	0.249	1.95	60'	EL	29.423	0.649	1.45	60'	EL	5.885	0.80	0.249	1.60	60'	EL	29.423	
TNAGT5A		45,000	--	1.455	65.474	1.4	0.249	1.83	60'	EL	29.423	0.649	1.45	60'	EL	5.885	0.80	0.249	1.50	60'	EL	29.423		
TNAGT5B	45,000	③	1.374	61.845	1.4	0.249	1.8	60'	EL	29.423	0.649	<b>1.37</b>	60'	EL	<b>5.885</b>	0.80	0.249	1.48	60'	EL	29.423			

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:

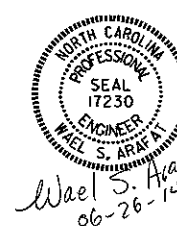
- 1.
- 2.
- 3.
- 4.

⊛	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** 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. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-

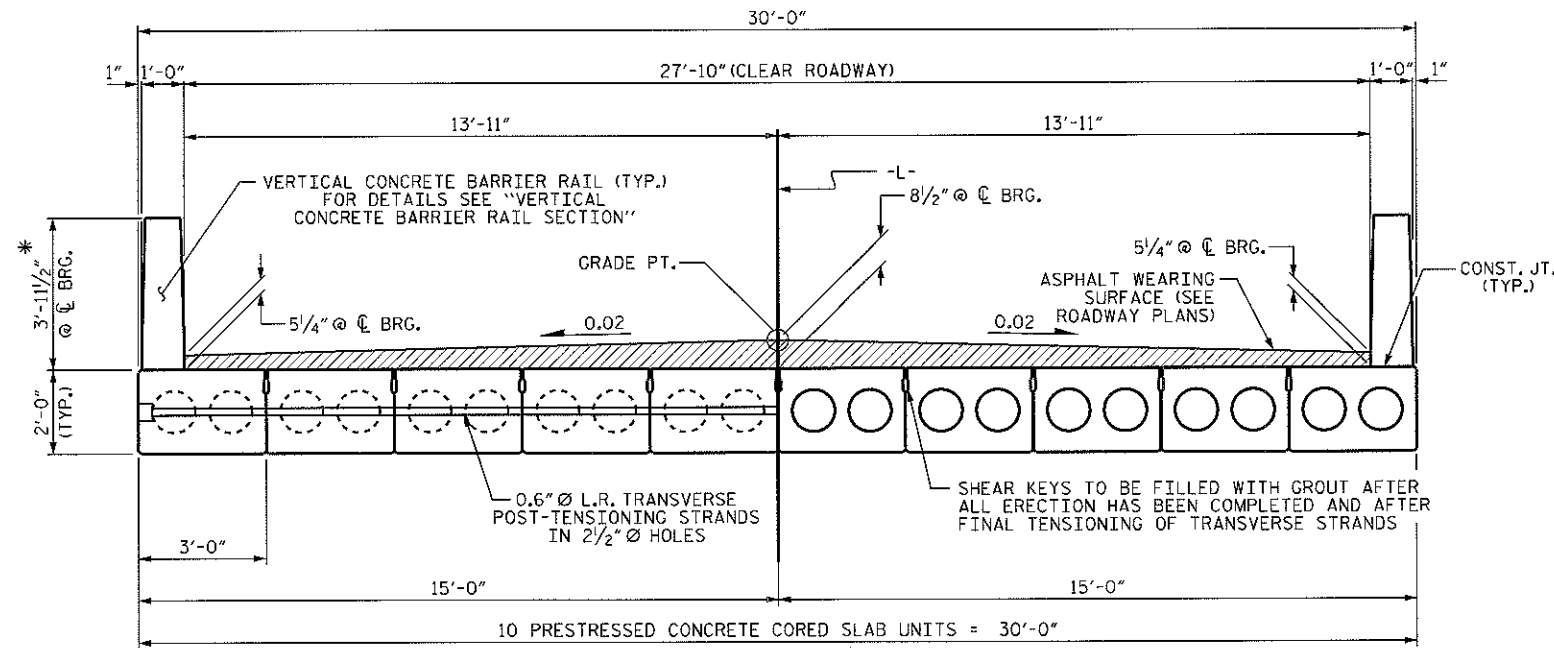


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
LRFR SUMMARY FOR  
60' CORED SLAB UNIT  
120° SKEW  
(NON-INTERSTATE TRAFFIC)

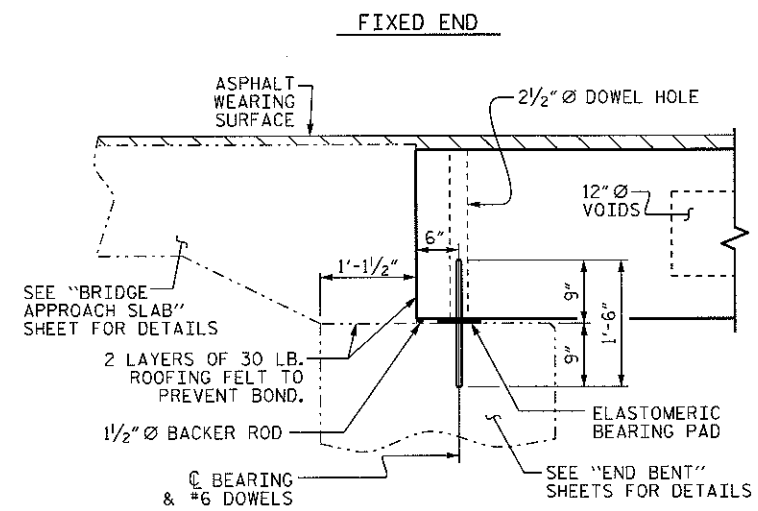
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			14

ASSEMBLED BY: V.X. NGUYEN DATE: 3-12-14  
CHECKED BY: H.T. BARBOUR DATE: 3-26-14  
DRAWN BY: CVC 6/10  
CHECKED BY: DNS 6/10

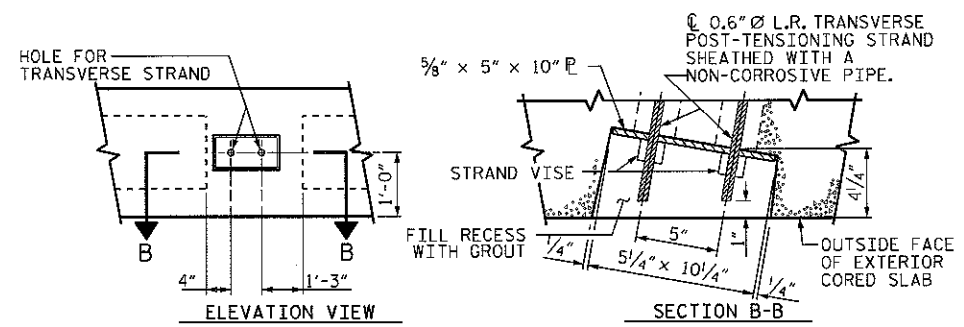


HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
**TYPICAL SECTION**  
 HALF SECTION THROUGH VOIDS

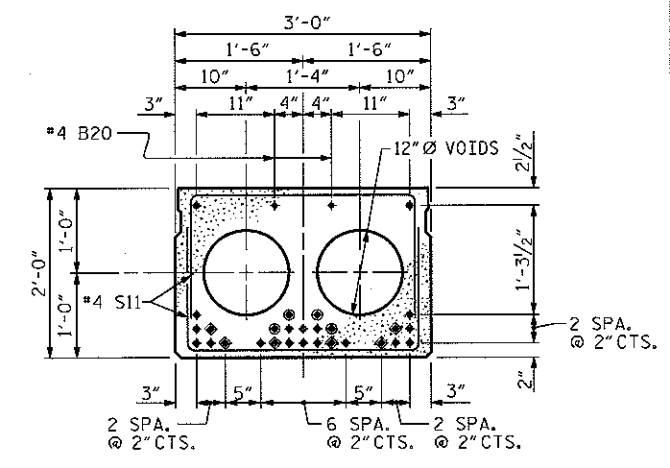
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



**SECTION AT END BENT**



**GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS**

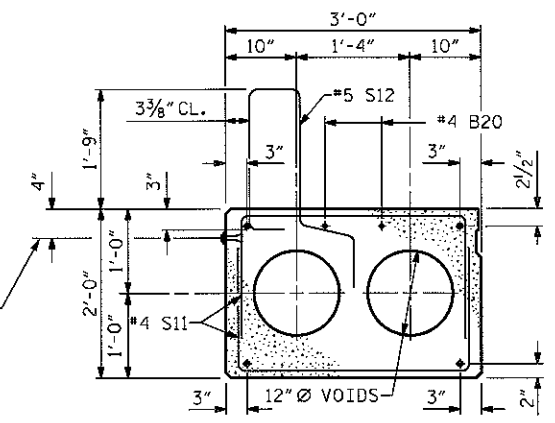


**INTERIOR SLAB SECTION (60' UNIT)**  
(24 STRANDS REQUIRED)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**

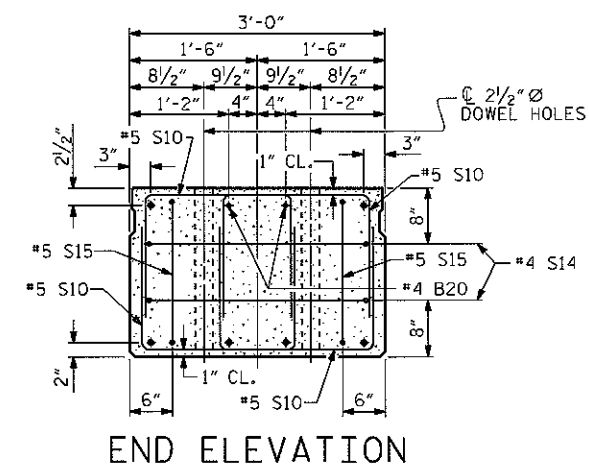
- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

**DEBONDING LEGEND**

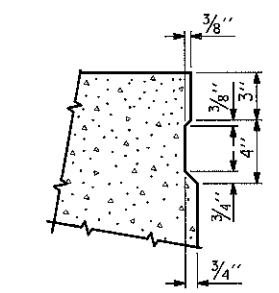


**EXTERIOR SLAB SECTION**  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

③ 3/4" Ø BOLTS WITH WASHERS IN APPROVED CONCRETE INSERTS CAST IN EXTERIOR CORED SLAB UNITS @ 10'-0" CTS. (SEE NOTES, SHEET 3 OF 3)



**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.



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

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER Wael S. Arafa 06-26-14

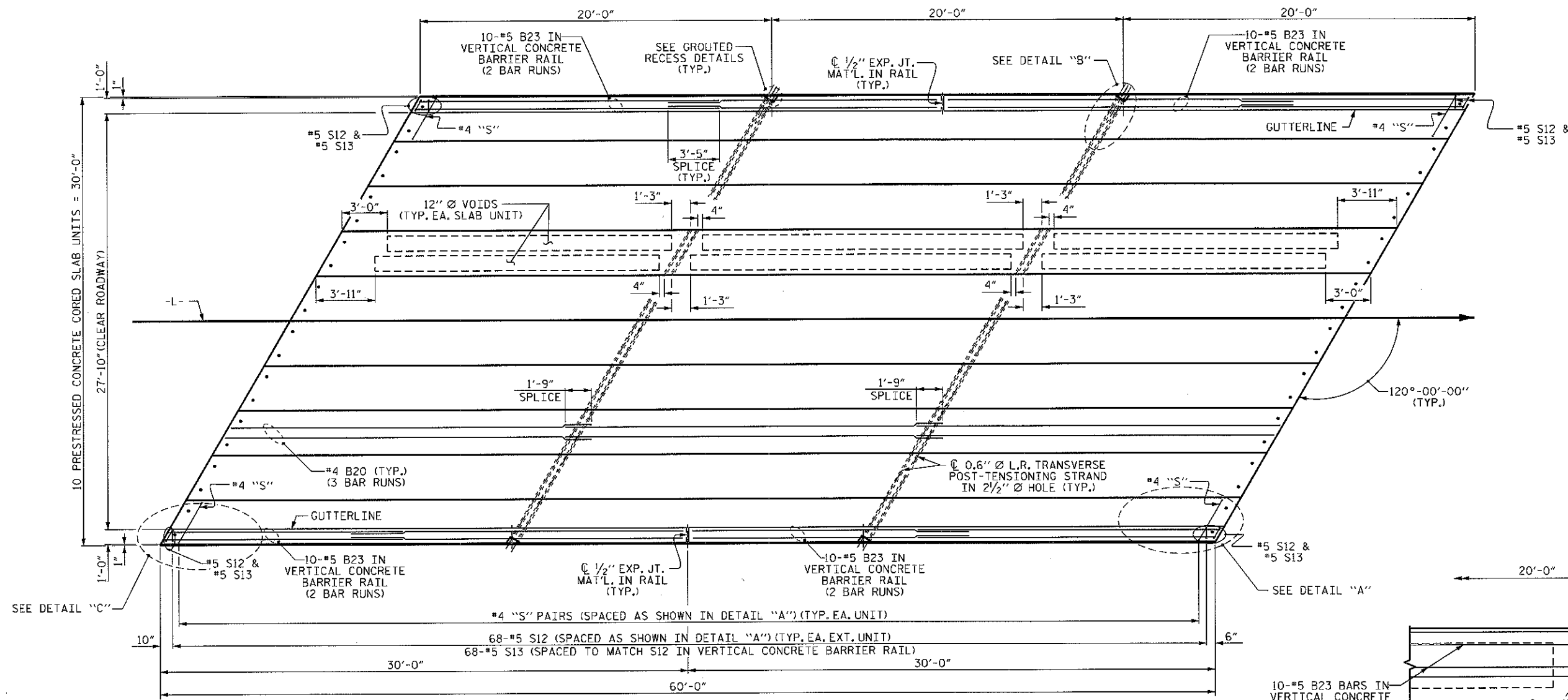
PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 1 OF 3

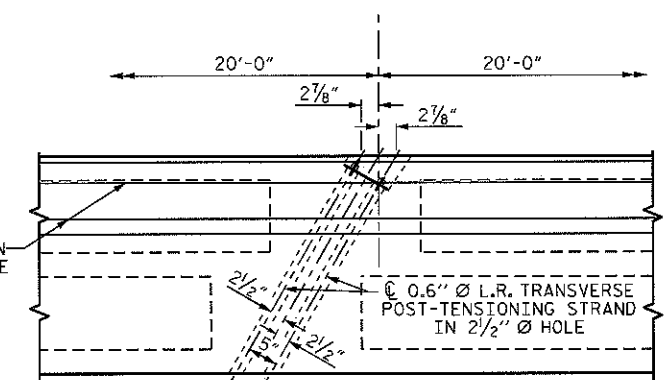
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-0"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	14
1			3			S-5
2			4			

ASSEMBLED BY: V.X. NGUYEN	DATE: 3-12-14
CHECKED BY: H.T. BARBOUR	DATE: 3-26-14
DRAWN BY: MAA	6/10
CHECKED BY: MKT	7/10
REV. 12/11	MAA/AAC

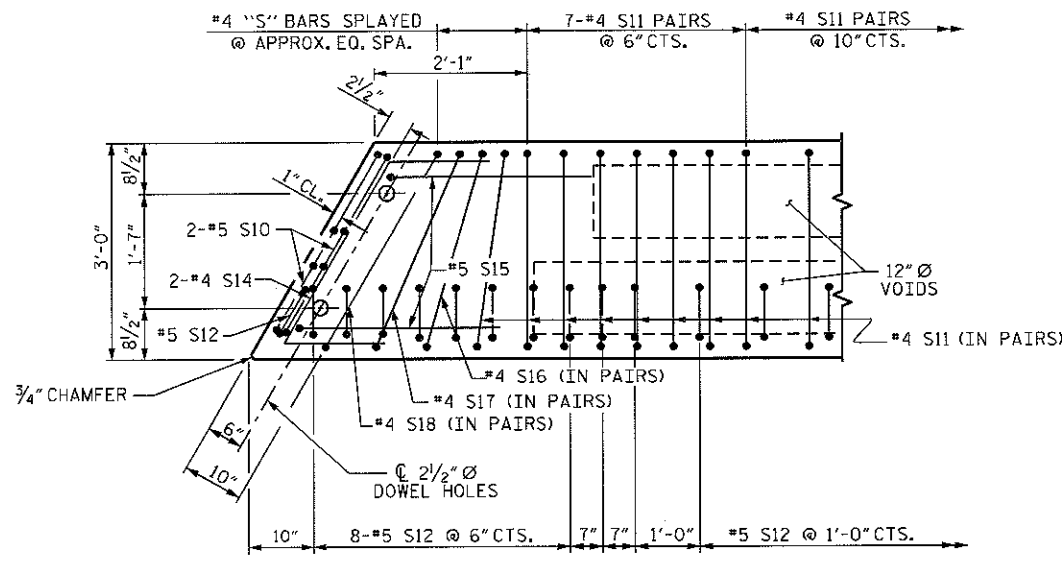


PLAN OF UNIT



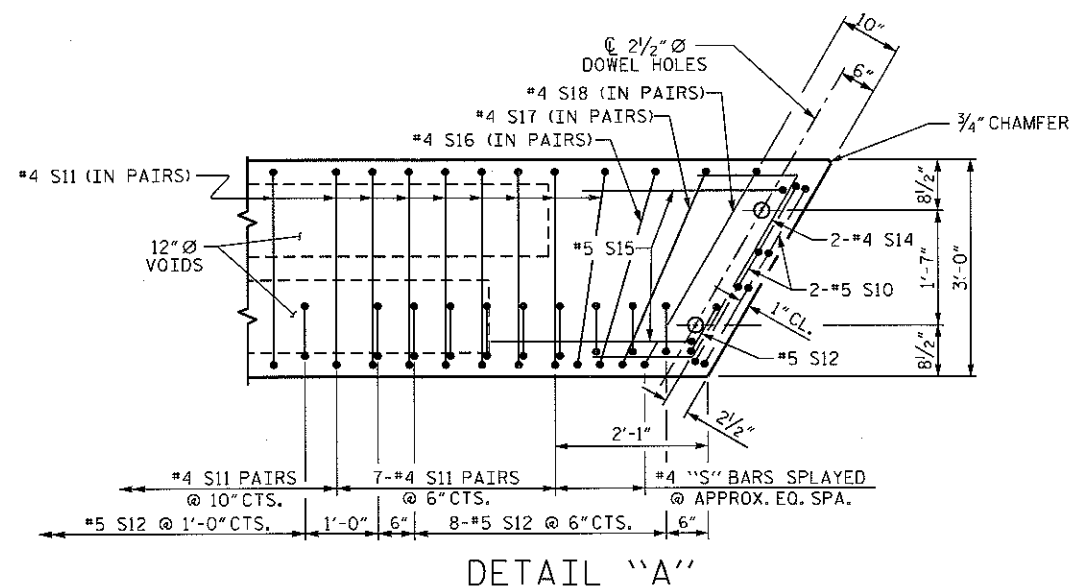
DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES



DETAIL "C"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "A"

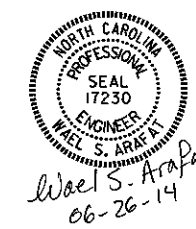
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN OF 60' UNIT  
27'-10" CLEAR ROADWAY  
120° SKEW



ASSEMBLED BY : V.X. NGUYEN	DATE : 3-12-14
CHECKED BY : H.T. BARBOUR	DATE : 3-26-14
DRAWN BY : MAA	6/10
CHECKED BY : MKT	7/10
REV. 12/5/11	MAA/AAC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			14

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDeways. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

CONCRETE INSERTS SHALL HAVE A MINIMUM WORKING LOAD SHEAR CAPACITY OF 2.5 KIPS.

THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS ARE PROVIDED AS AN OPTION FOR THE CONTRACTOR TO ATTACH MATERIALS TO PREVENT DEPRIS FROM DROPPING INTO THE WATER DURING CONSTRUCTION OF THE VERTICAL CONCRETE BARRIER RAILS.

UPON COMPLETION OF THE BRIDGE CONSTRUCTION, THE 3/4" Ø BOLTS AND WASHERS SHALL BE REMOVED AND THE CONCRETE INSERTS SHALL BE GROUTED.

THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 3 OF 3

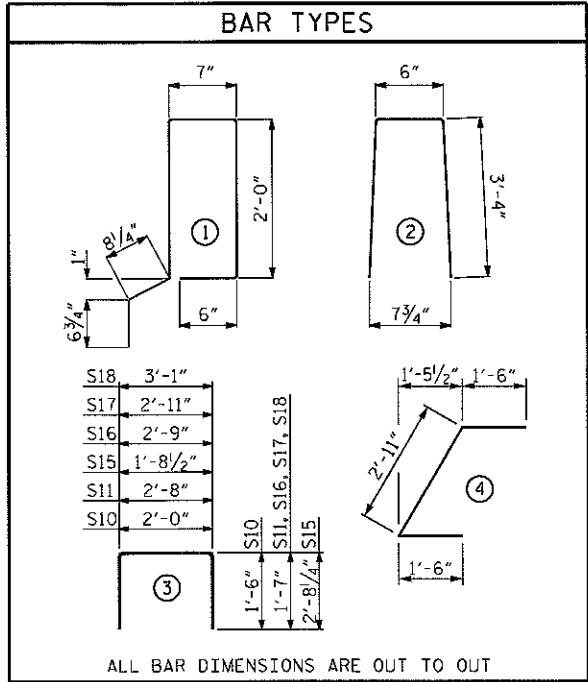
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-0"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT



*Noel S. Arafa*  
 06-26-14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-7
2			4			14

STD. NO. 24PCS3.30\_60&120S



CONCRETE RELEASE STRENGTH	
UNIT	PSI
60' UNITS	4800

CORED SLABS REQUIRED			
60' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	60'-0"	120'-0"
INTERIOR C.S.	8	60'-0"	480'-0"
TOTAL	10	60'-0"	600'-0"

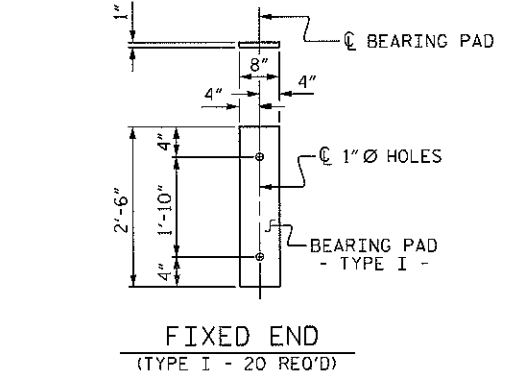
GRADE 270 STRANDS	
AREA ( SQUARE INCHES )	0.6" Ø L.R.
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
60' UNITS	2 3/8"	3'-8 5/8"

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

\*\* INCLUDES FUTURE WEARING SURFACE

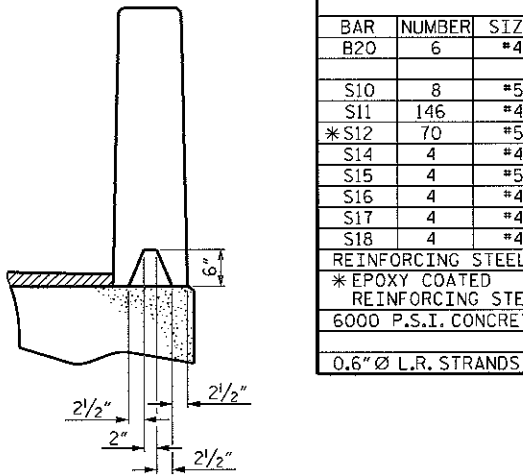
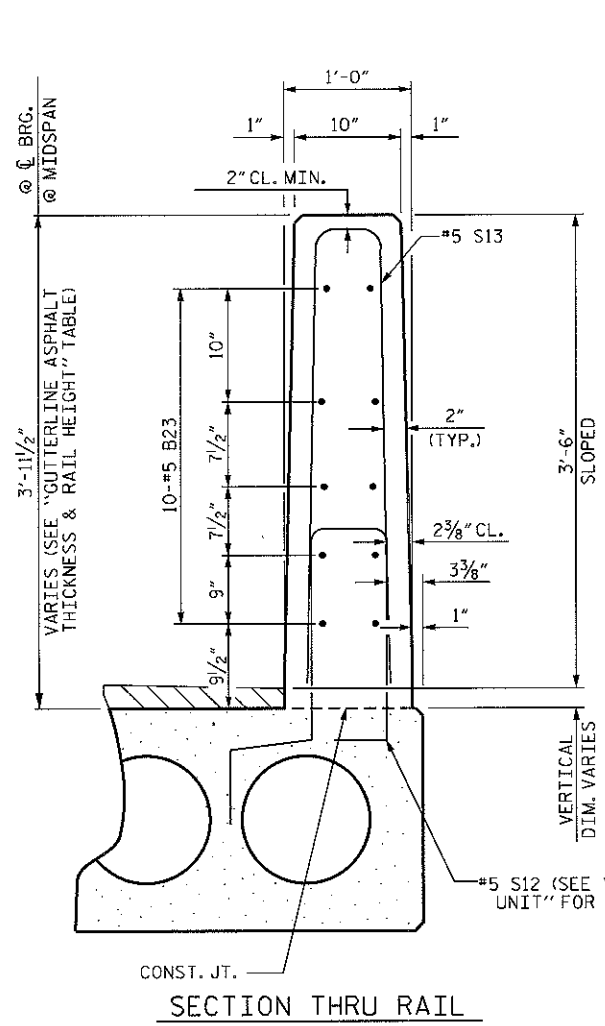
BILL OF MATERIAL FOR ONE 60' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B20	6	#4	STR	21'-2"	85	21'-2"	85
S10	8	#5	3	5'-0"	42	5'-0"	42
S11	146	#4	3	5'-10"	569	5'-10"	569
*S12	70	#5	1	6'-4"	462		
S14	4	#4	4	5'-11"	16	5'-11"	16
S15	4	#5	3	7'-1"	30	7'-1"	30
S16	4	#4	3	5'-11"	16	5'-11"	16
S17	4	#4	3	6'-1"	16	6'-1"	16
S18	4	#4	3	6'-3"	17	6'-3"	17
REINFORCING STEEL		LBS.			791		791
* EPOXY COATED REINFORCING STEEL		LBS.			462		
6000 P.S.I. CONCRETE		CU. YDS.			10.4		10.4
0.6" Ø L.R. STRANDS		No.			24		24



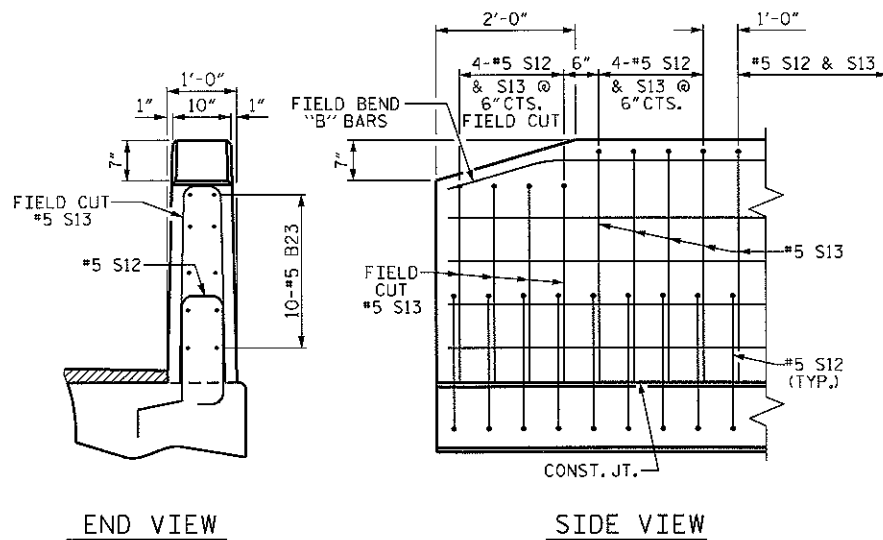
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
60' UNIT						
*B23	80	80	#5	STR	16'-11"	1412
*S13	140	140	#5	2	7'-2"	1046
* EPOXY COATED REINFORCING STEEL				LBS.		2458
CLASS AA CONCRETE				CU. YDS.		16.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		120



SECTION S-S  
 AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)  
 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



**END OF RAIL DETAILS**

**VERTICAL CONCRETE BARRIER RAIL DETAILS**

ASSEMBLED BY : V.X. NGUYEN	DATE : 3-12-14
CHECKED BY : H.T. BARBOUR	DATE : 3-26-14
DRAWN BY : MAA	6/10
CHECKED BY : MKT	7/10
REV. 12/11	MAA/AAC

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.)

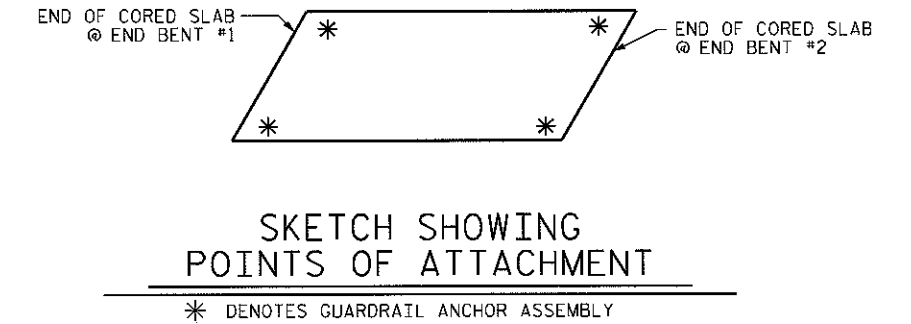
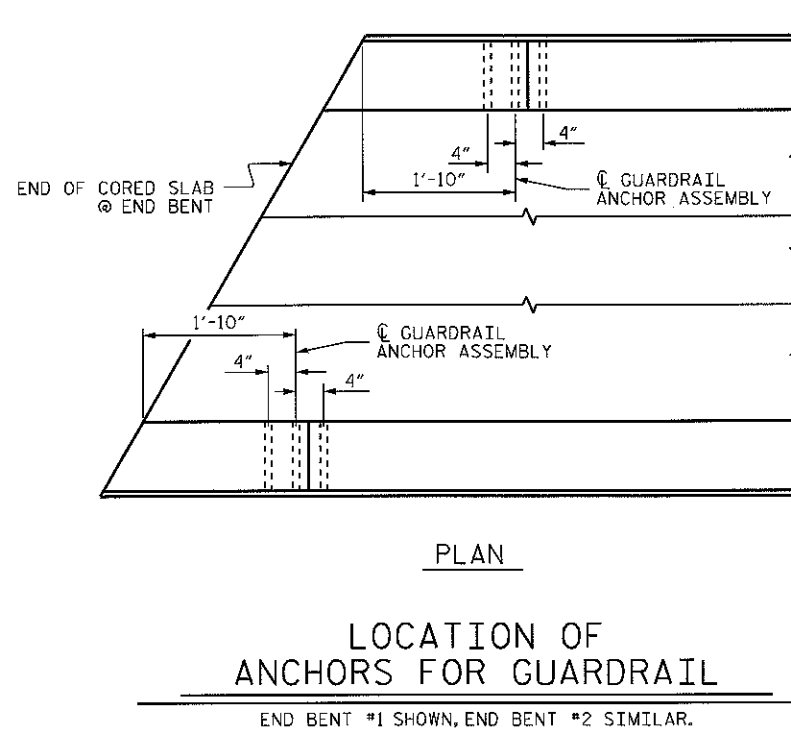
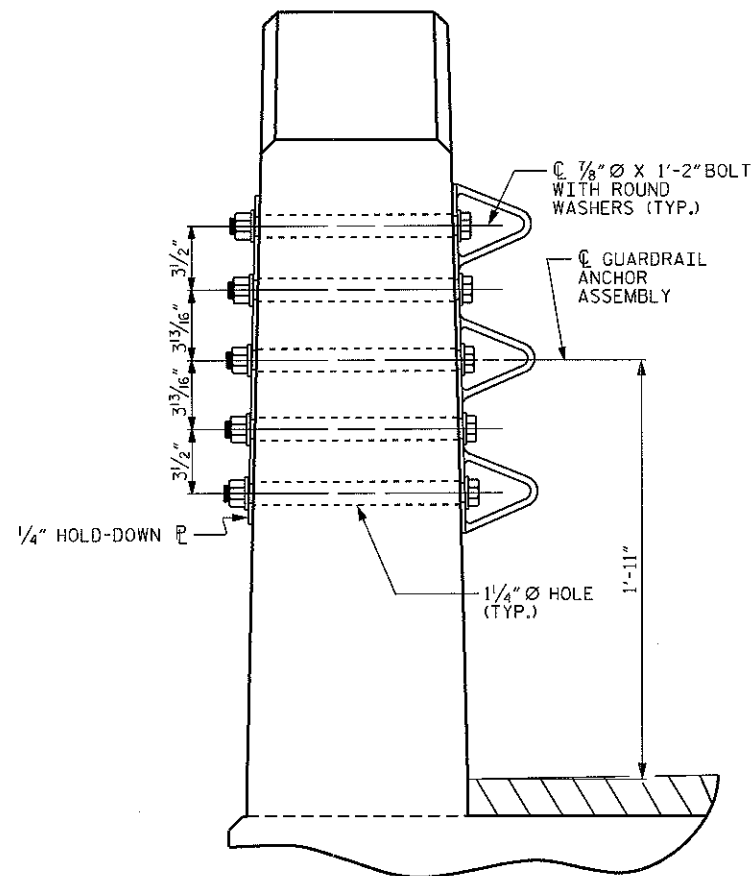
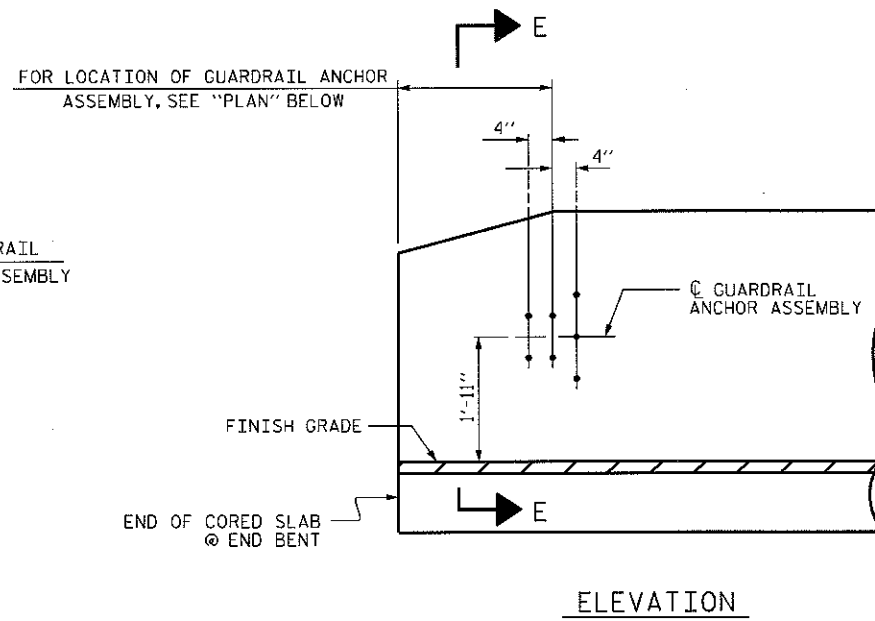
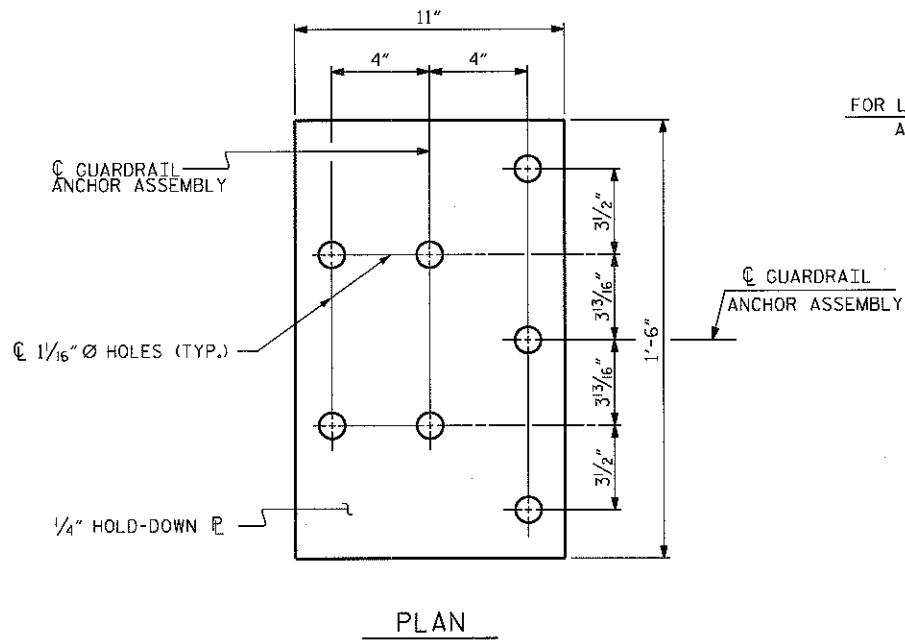
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

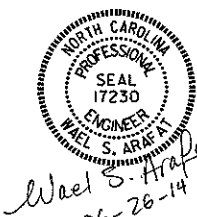
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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



PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-8
					TOTAL SHEETS 14

ASSEMBLED BY : V.X. NGUYEN	DATE : 5-6-14
CHECKED BY : D. HODGE	DATE : 5-14
DRAWN BY : MAA	5/10
CHECKED BY : GM	5/10
REV. 10/11	MAA/GM
REV. 12/5/11	MAA/GM
REV. 6/13	MAA/GM



**NOTES**

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

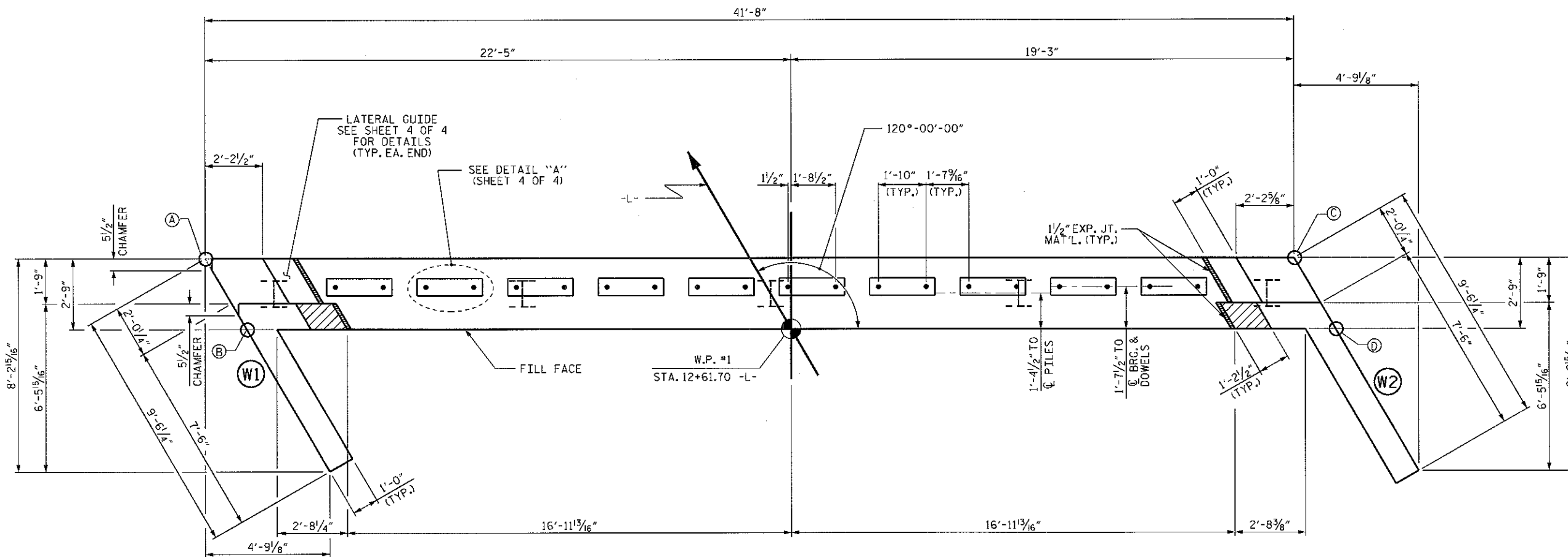
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

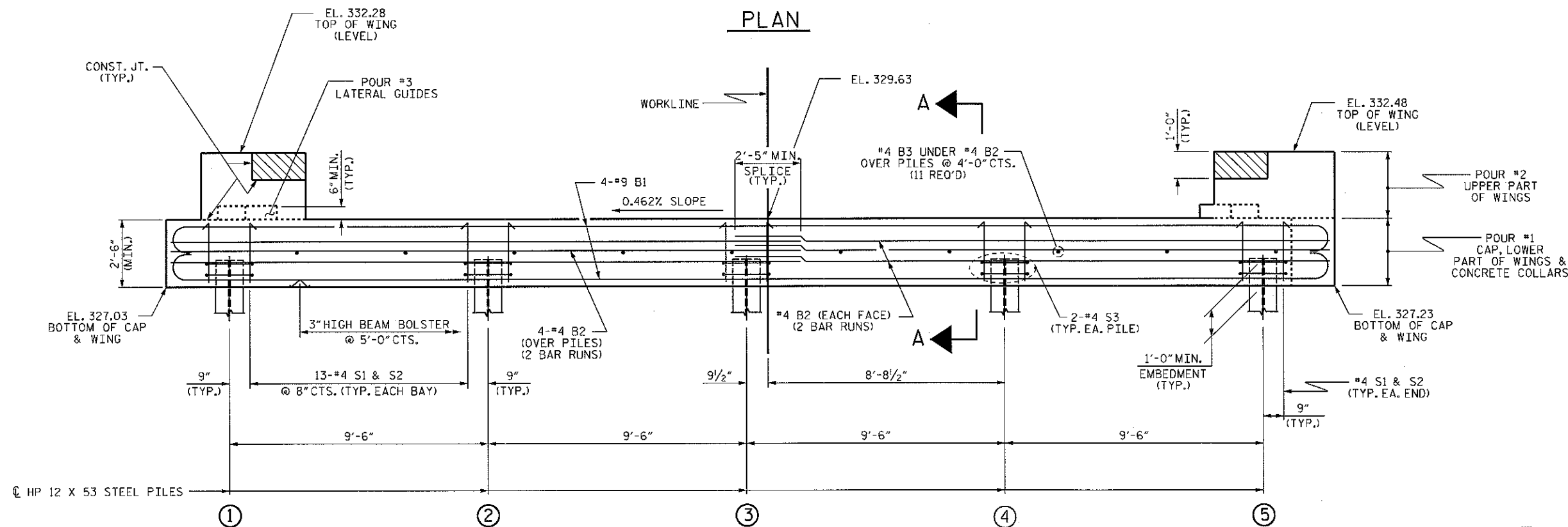
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



TOP OF CAP ELEVATIONS	
(A)	329.53
(B)	329.54
(C)	329.72
(D)	329.73

TOP OF PILE ELEVATIONS	
(1)	328.05
(2)	328.09
(3)	328.14
(4)	328.18
(5)	328.22

**PLAN**



**ELEVATION**

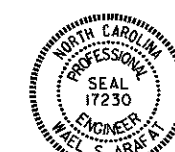
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1

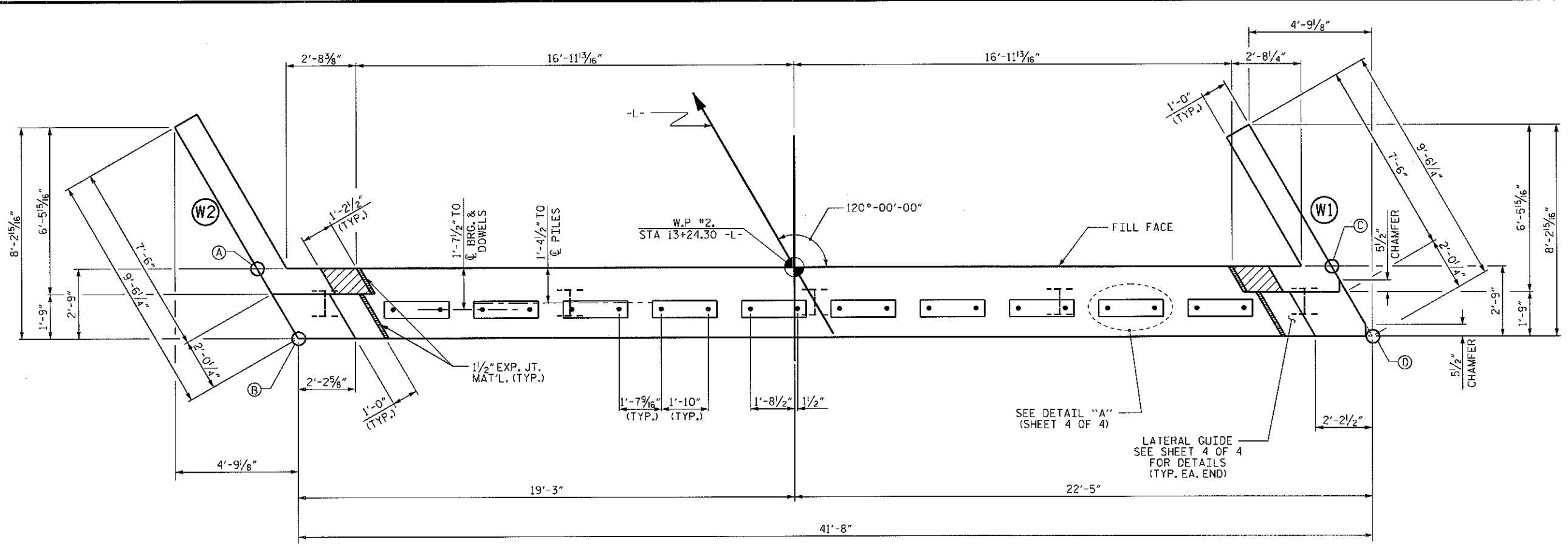


*Wael S. Arafat*  
06-26-14

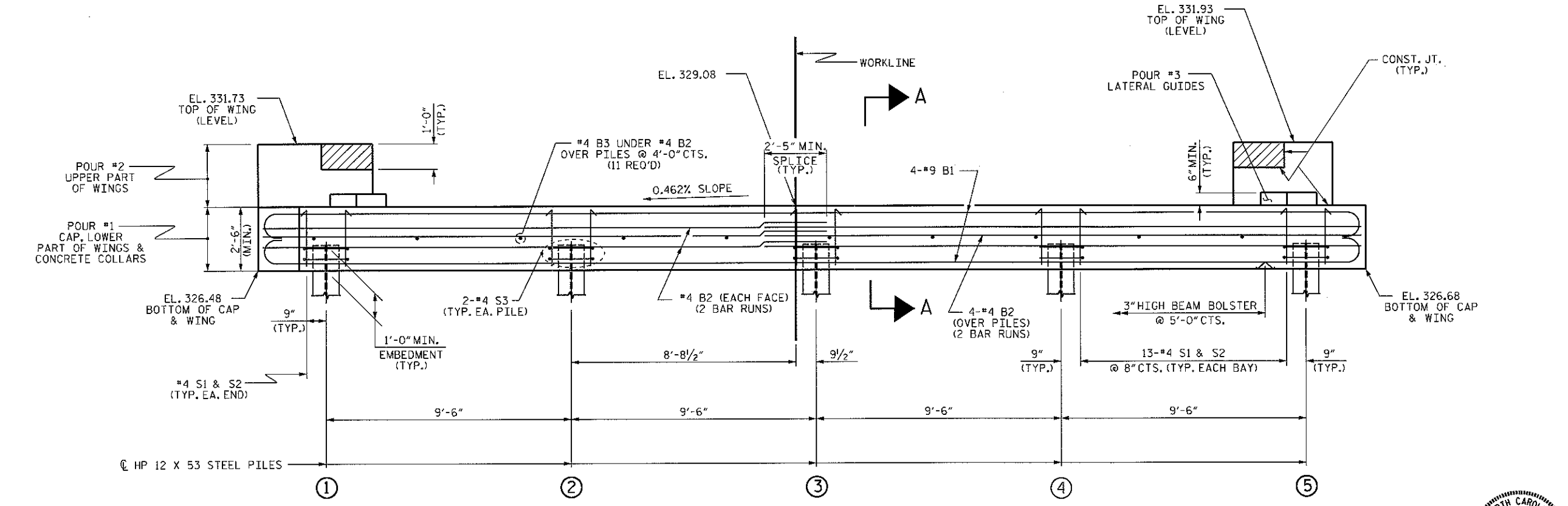
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			14

DRAWN BY: V.X. NGUYEN DATE: 3-12-14  
CHECKED BY: H.T. BABOUR DATE: 3-26-14  
DESIGN ENGINEER OF RECORD: H.P. KIM DATE: 5-17-14

DRAWN BY: DGE 02/10  
CHECKED BY: MKT 02/10



PLAN



ELEVATION

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

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
- FOR WING DETAILS, SEE SHEET 3 OF 4.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

TOP OF CAP ELEVATIONS	
(A)	328.98
(B)	328.99
(C)	329.17
(D)	329.18

TOP OF PILE ELEVATIONS	
(1)	327.49
(2)	327.54
(3)	327.58
(4)	327.63
(5)	327.67

PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 2 OF 4

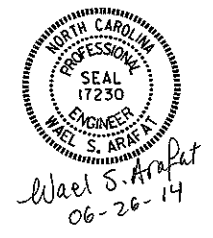
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

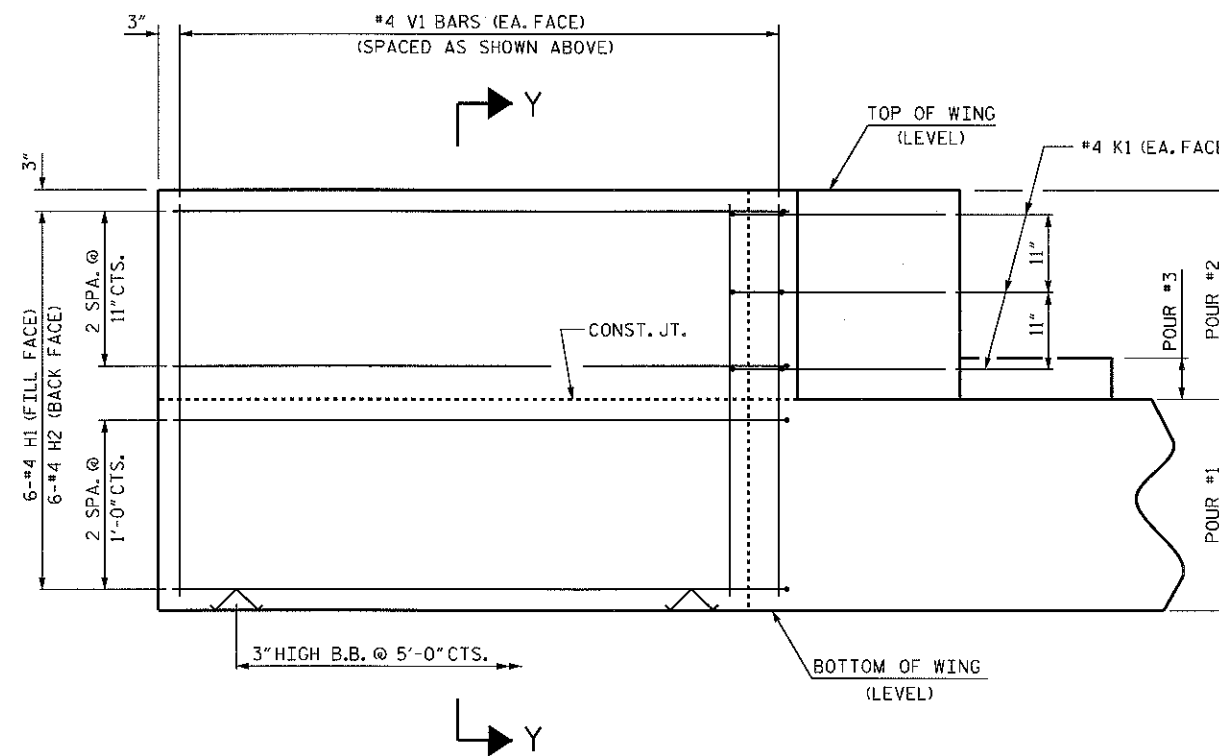
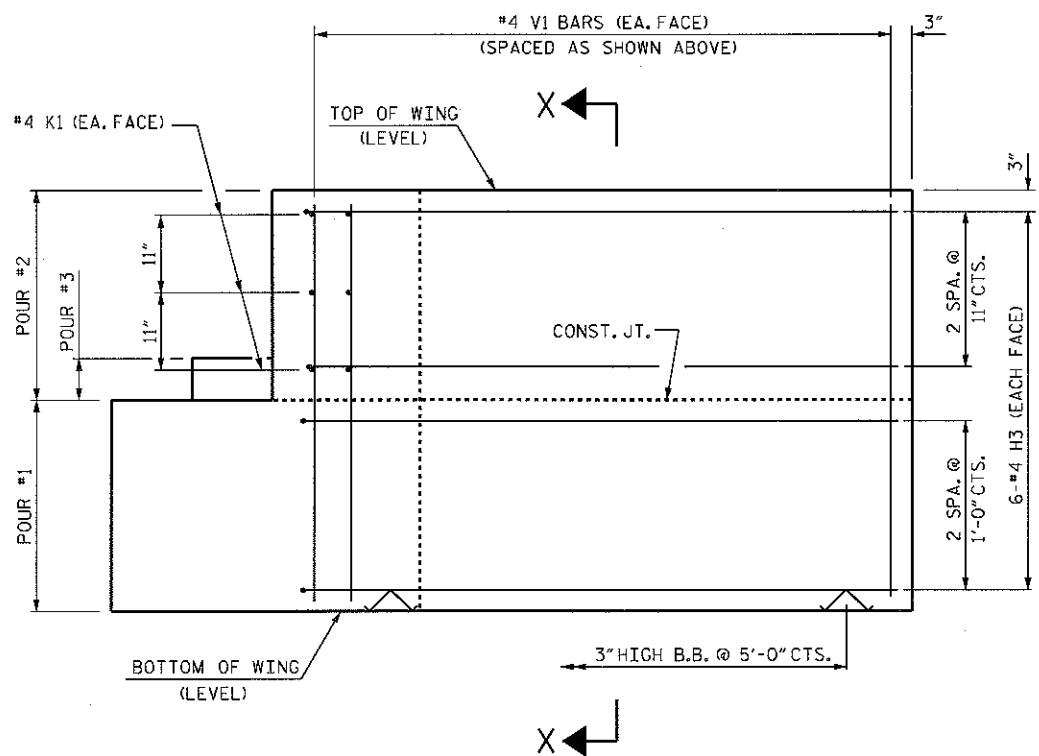
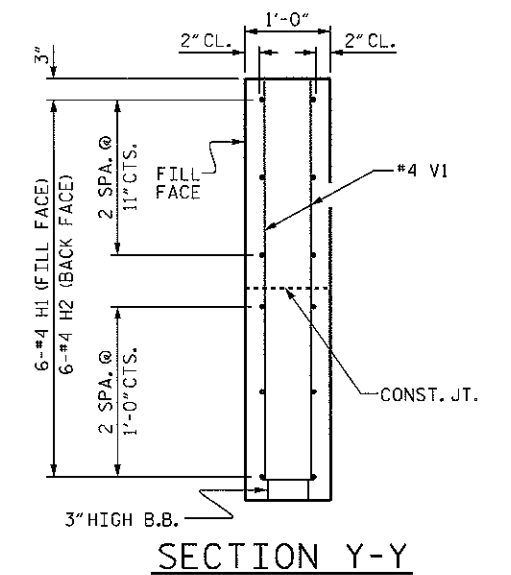
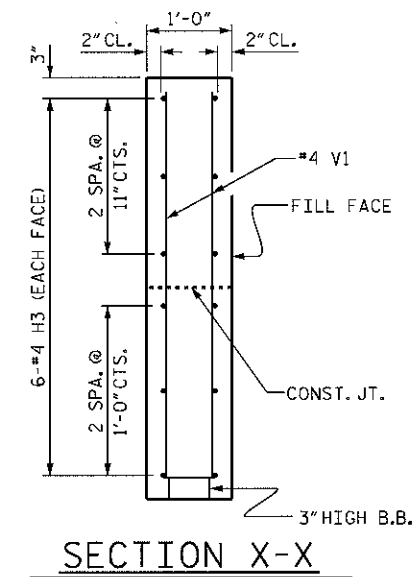
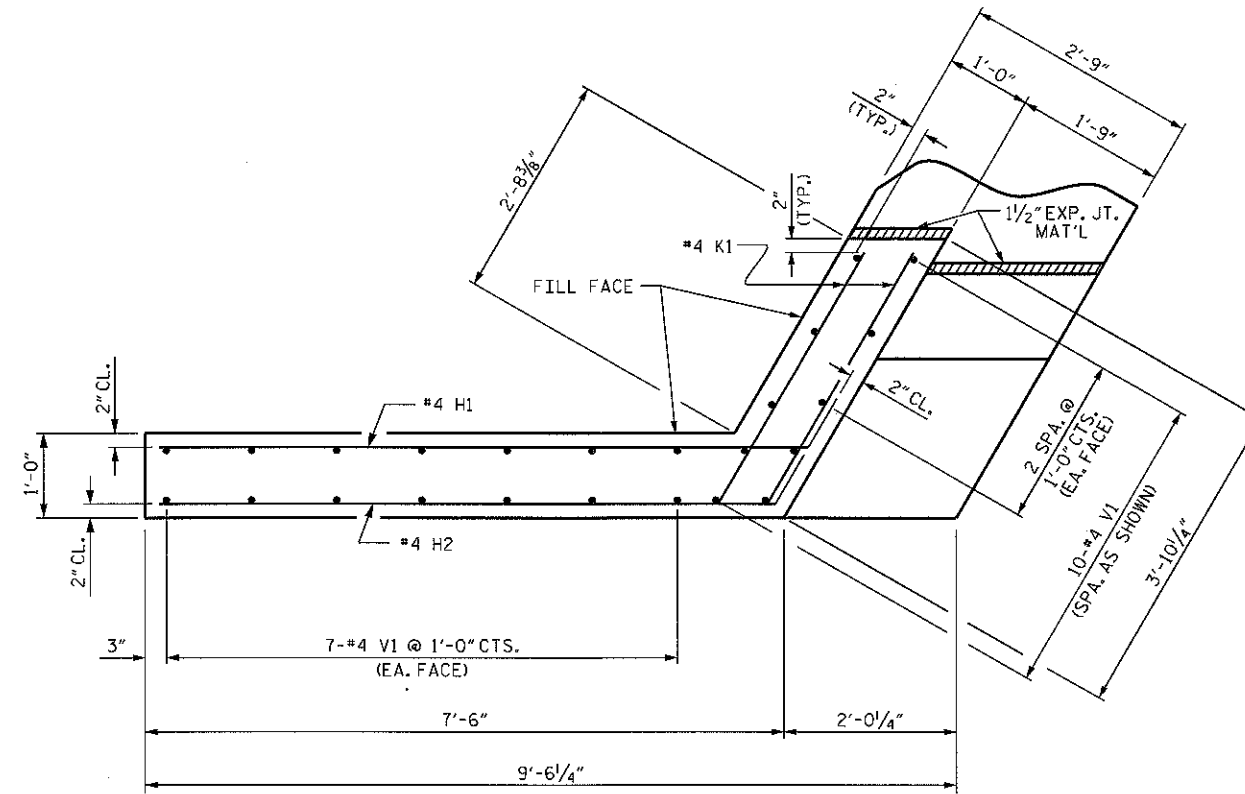
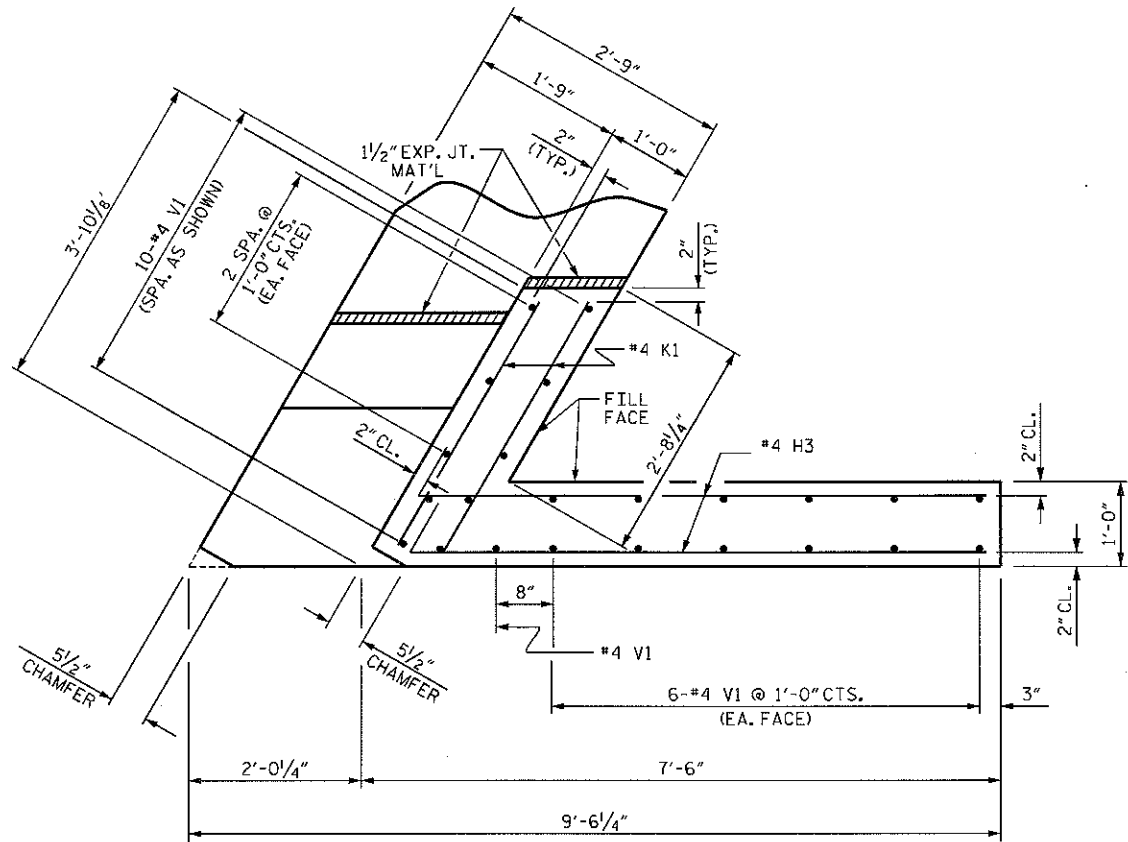
SUBSTRUCTURE  
 END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			14

DRAWN BY: V.X. NGUYEN DATE: 3-12-14  
 CHECKED BY: H.T. BABOUR DATE: 3-26-14  
 DESIGN ENGINEER OF RECORD: H.P. KIM DATE: 6-17-14

DRAWN BY: DGE 02/10  
 CHECKED BY: MKT 02/10





ELEVATION OF WING (W1)

ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WING DETAILS

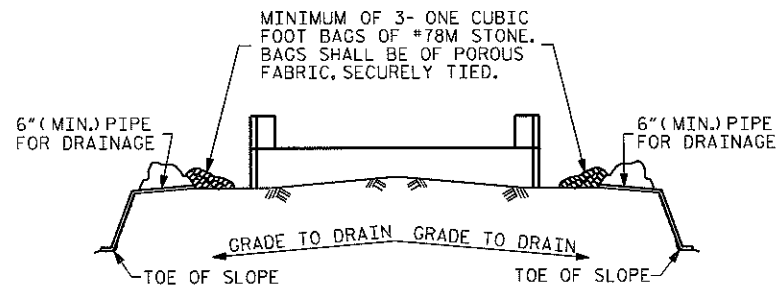
ASSEMBLED BY: V.X. NGUYEN DATE: 3-12-14  
 CHECKED BY: H.T. BARBOUR DATE: 3-26-14  
 DRAWN BY: DGE 12/09  
 CHECKED BY: MKT 01/10

19-JUN-2014 16:02  
 R:\Structures\17BP.8.R.63\FINAL\610036\_SD.E.dgn  
 vnguyen

NORTH CAROLINA  
 PROFESSIONAL  
 SEAL  
 17230  
 ENGINEER  
 WAEL S. ARAFAT  
 06-26-14

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	
2			4			14	

STD. NO. EB.30.120S

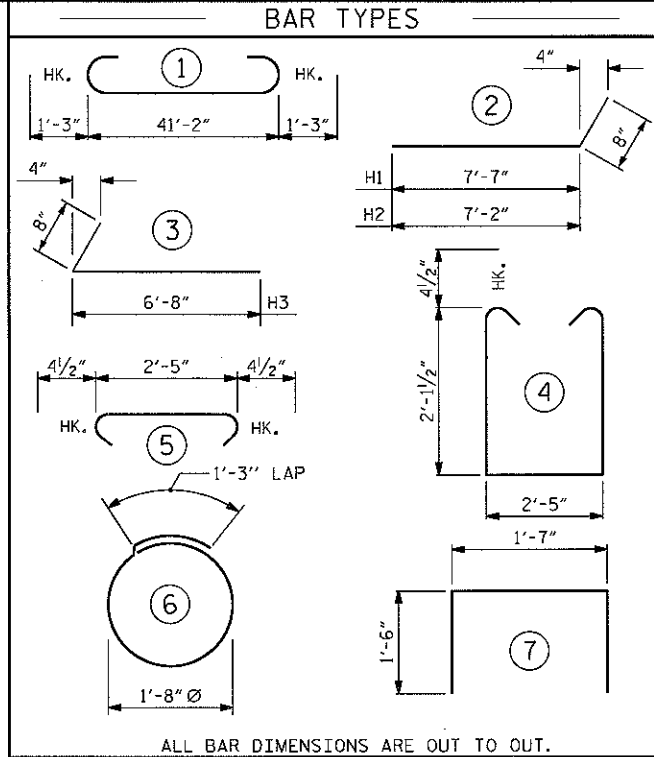
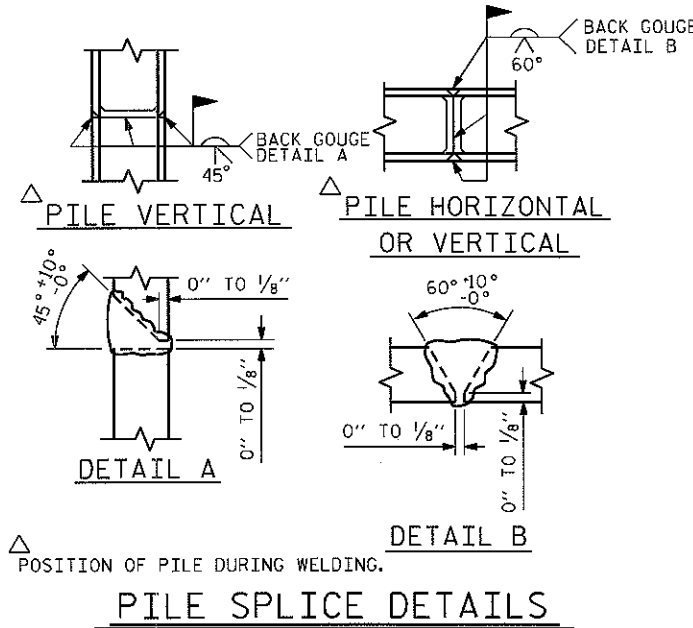


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

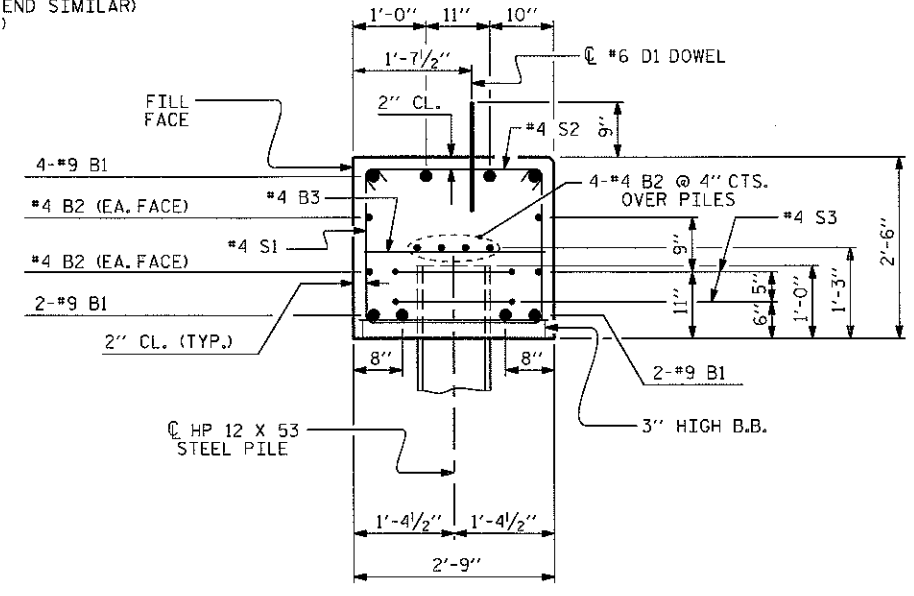
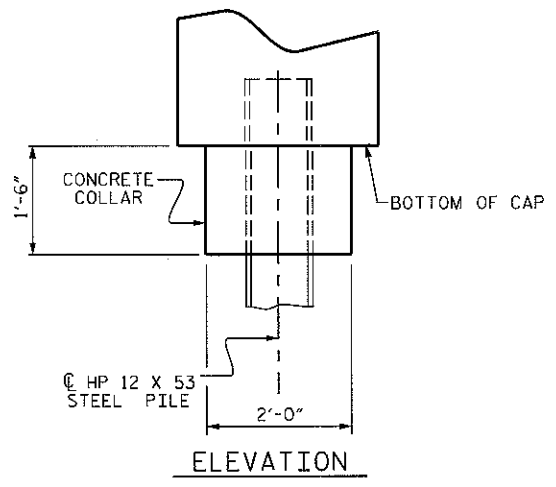
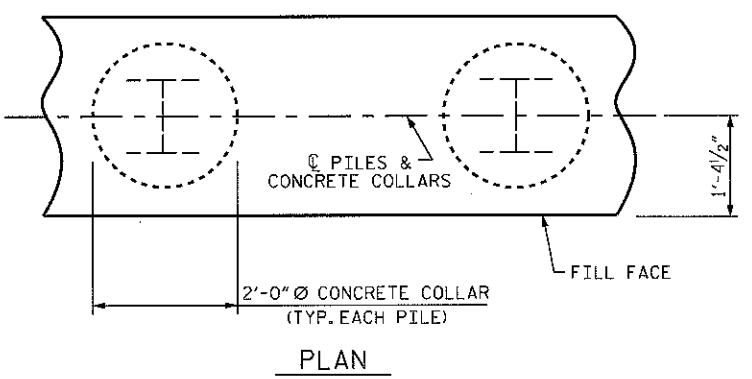
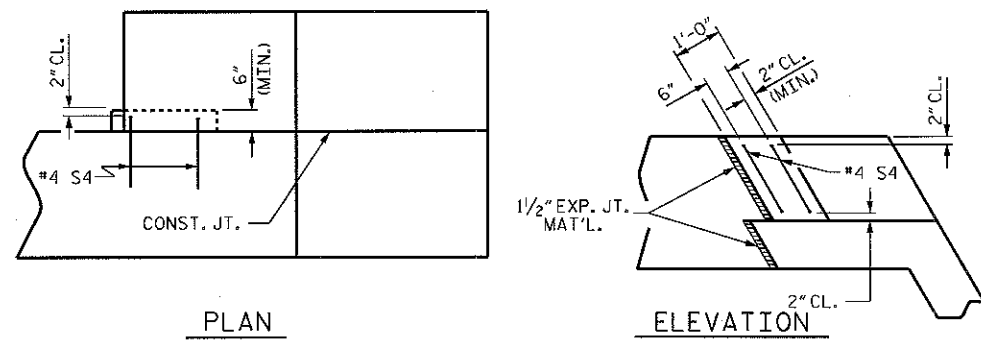
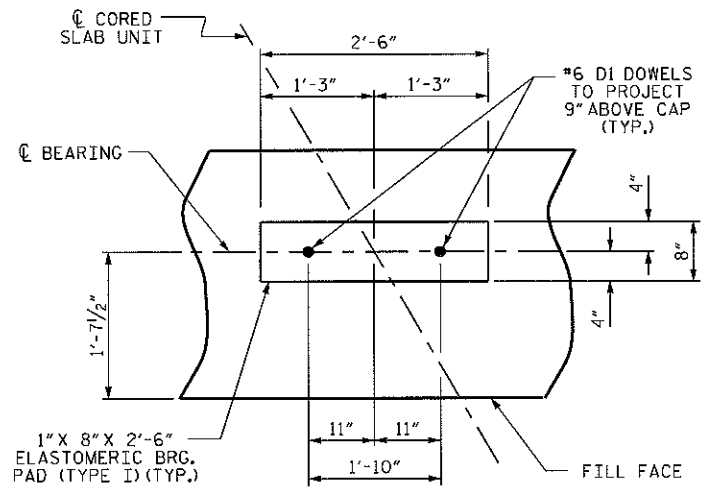
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



END BENT No. 1 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 50.0	END BENT No. 2 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 50.0 STEEL PILE POINTS 5 EACH
PILE EXCAVATION IN SOIL = 25.0 LIN. FT. NOT IN SOIL = 25.0 LIN. FT.	

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9		43'-8"	1188	
B2	#4	STR	21'-11"	234	
B3	#4	STR	2'-5"	18	
D1	#6	STR	1'-6"	45	
H1	#4	2	8'-3"	33	
H2	#4	2	7'-10"	31	
H3	#4	3	7'-4"	59	
K1	#4	STR	3'-3"	26	
S1	#4	4	7'-5"	268	
S2	#4	5	3'-2"	114	
S3	#4	6	6'-6"	43	
S4	#4	7	4'-7"	12	
V1	#4	STR	4'-8"	147	
REINFORCING STEEL (FOR ONE END BENT)				2218 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				12.7 C.Y.	
POUR #2 UPPER PART OF WINGS				2.1 C.Y.	
POUR #3 LATERAL GUIDES				0.1 C.Y.	
TOTAL CLASS A CONCRETE				14.9 C.Y.	

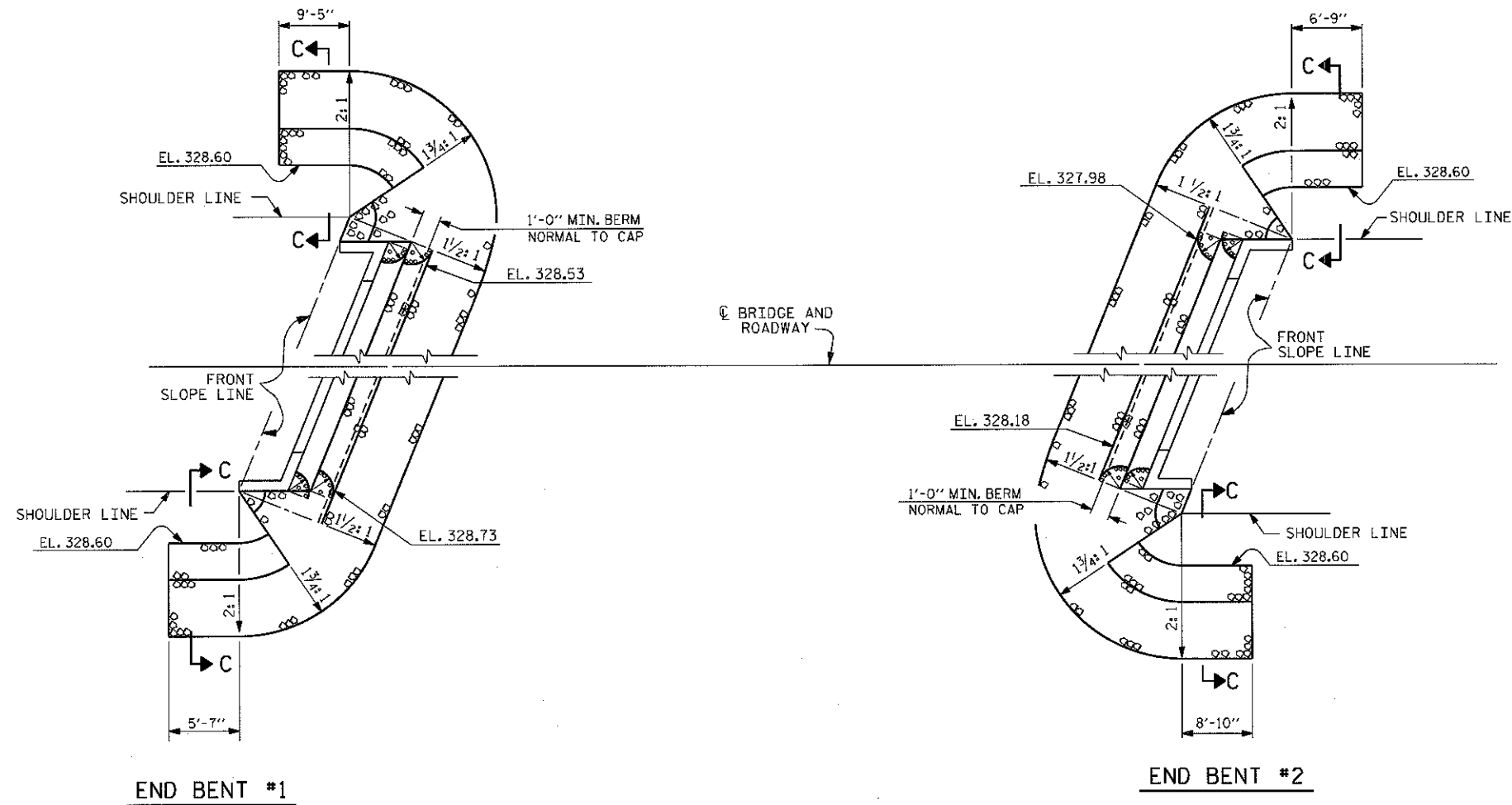


PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-  
SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1 & 2 DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 14

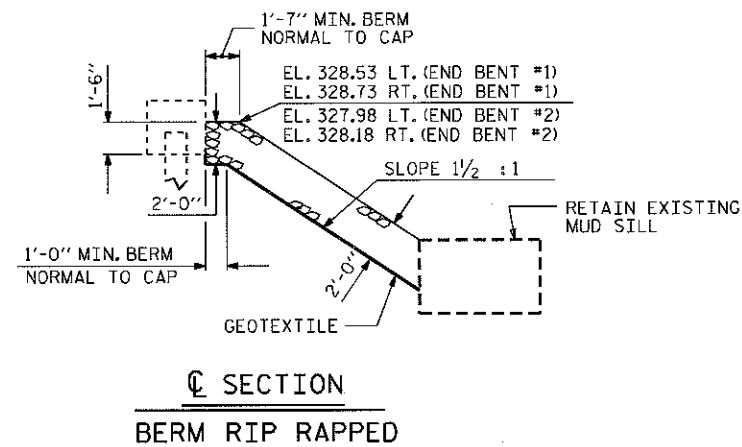
DRAWN BY: V.X. NGUYEN DATE: 3-12-14  
CHECKED BY: H.T. BABOUR DATE: 3-26-14  
DESIGN ENGINEER OF RECORD: H.P. KIM DATE: 6-17-14  
DRAWN BY: DGE 12/09  
CHECKED BY: MKT 01/10

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER Wael S. Arafa 06-26-14

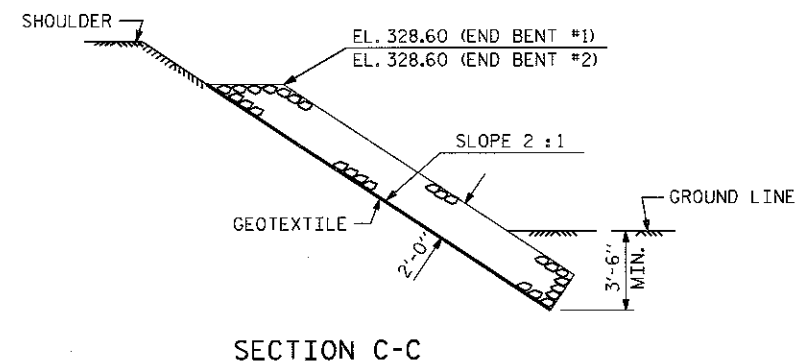


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+93.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	115	130
END BENT 2	110	120
TOTAL	225	250



SECTION  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.8.R.63  
MONTGOMERY COUNTY  
STATION: 12+93.00 -L-

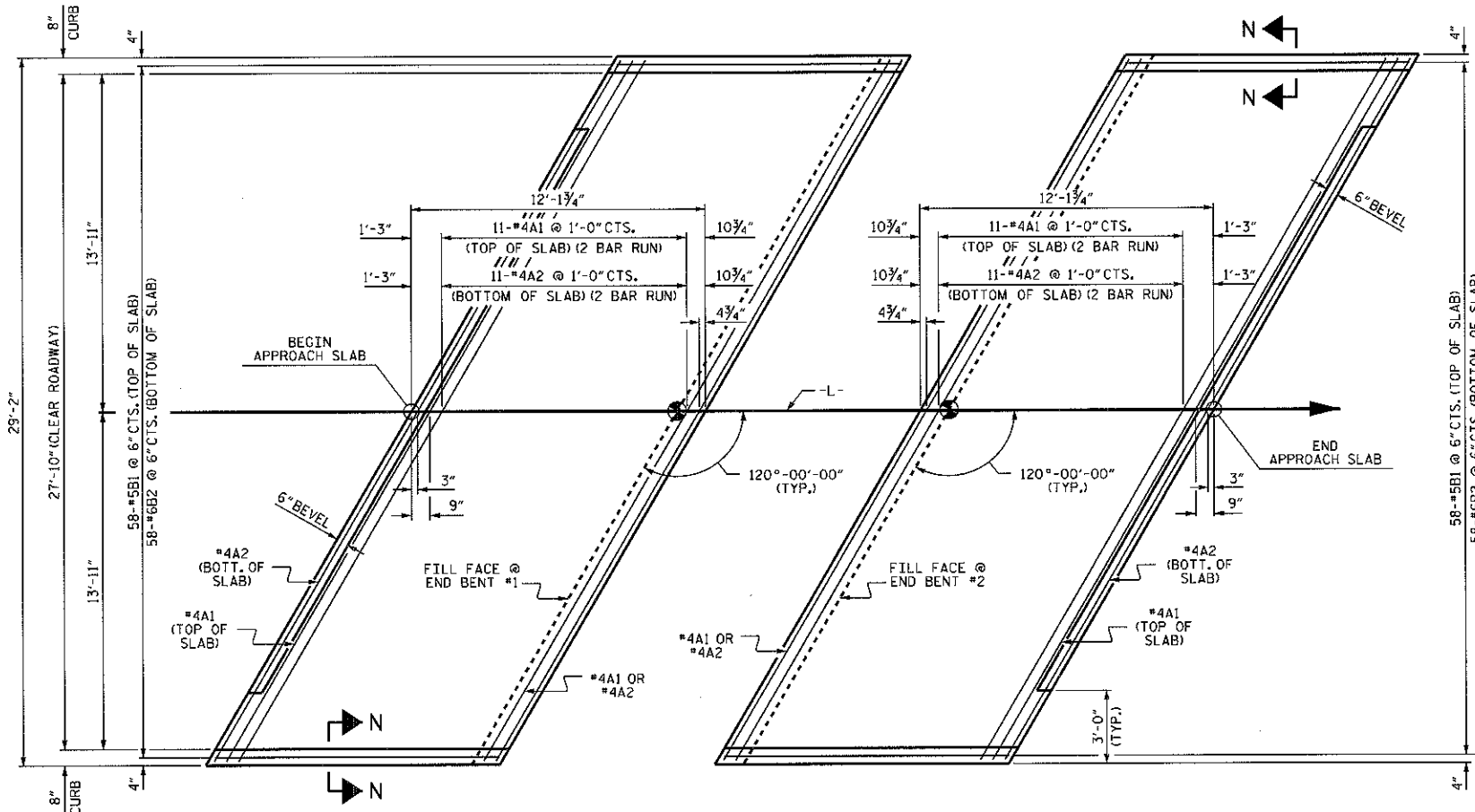


Wael S. Arafa  
06-26-14

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
—RIP RAP DETAILS—					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					14

ASSEMBLED BY: V.X. NGUYEN DATE: 3-12-14  
CHECKED BY: H.T. BARBOUR DATE: 3-27-14  
DRAWN BY: REK 1/84  
CHECKED BY: RDU 1/84

REV. 5/1/06R TLA/GM  
REV. 10/1/11 MAA/GM  
REV. 12/2/11 MAA/GM



**PLAN @ END BENT #1**      **PLAN @ END BENT #2**  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

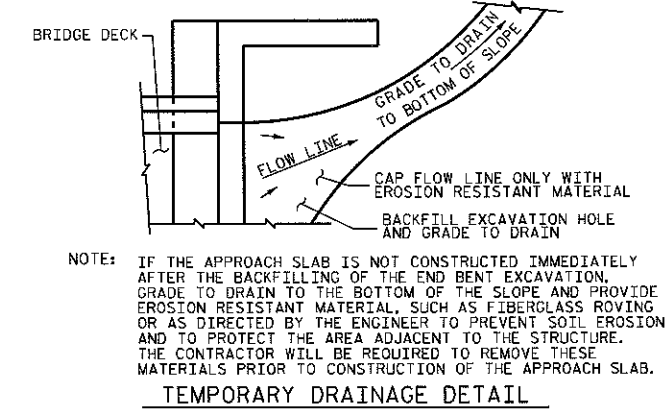
#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

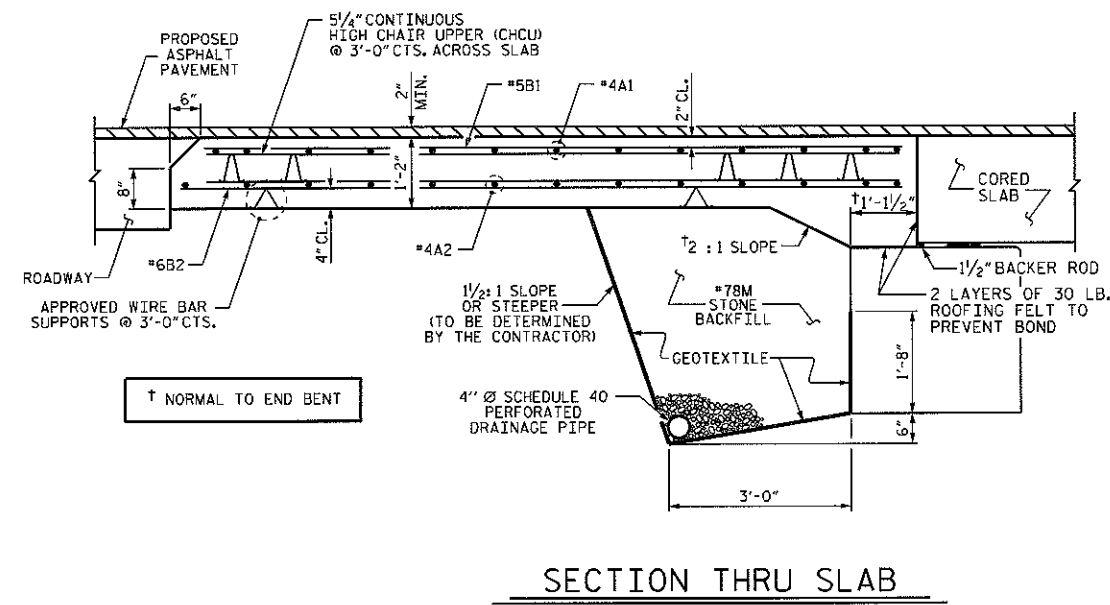
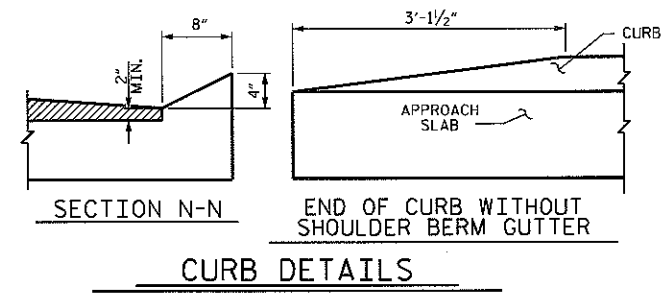
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

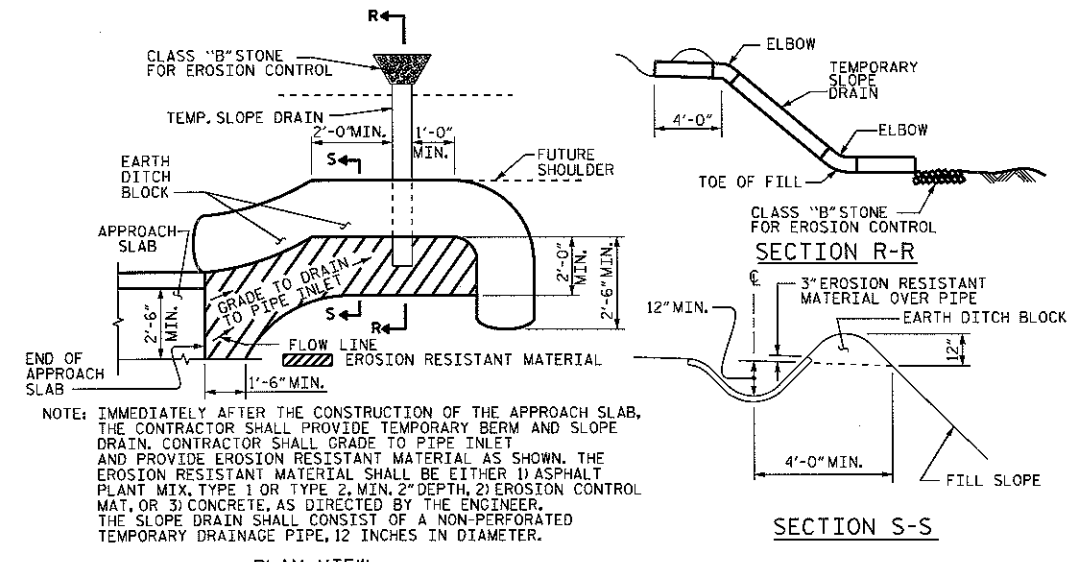
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-8"	307
A2	26	#4	STR	17'-7"	305
*B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL					LBS. 1314
* EPOXY COATED REINFORCING STEEL					LBS. 977
CLASS AA CONCRETE					C. Y. 18.5
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-8"	307
A2	26	#4	STR	17'-7"	305
*B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL					LBS. 1314
* EPOXY COATED REINFORCING STEEL					LBS. 977
CLASS AA CONCRETE					C. Y. 18.5



SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



**SECTION THRU SLAB**



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

PROJECT NO. 17BP.8.R.63  
 MONTGOMERY COUNTY  
 STATION: 12+93.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 120° SKEW**

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

TOTAL SHEETS: 14

ASSEMBLED BY: V.X. NGUYEN DATE: 3-12-14  
 CHECKED BY: H.T. BARBOUR DATE: 3-26-14  
 DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC  
 CHECKED BY: BCH 5-09