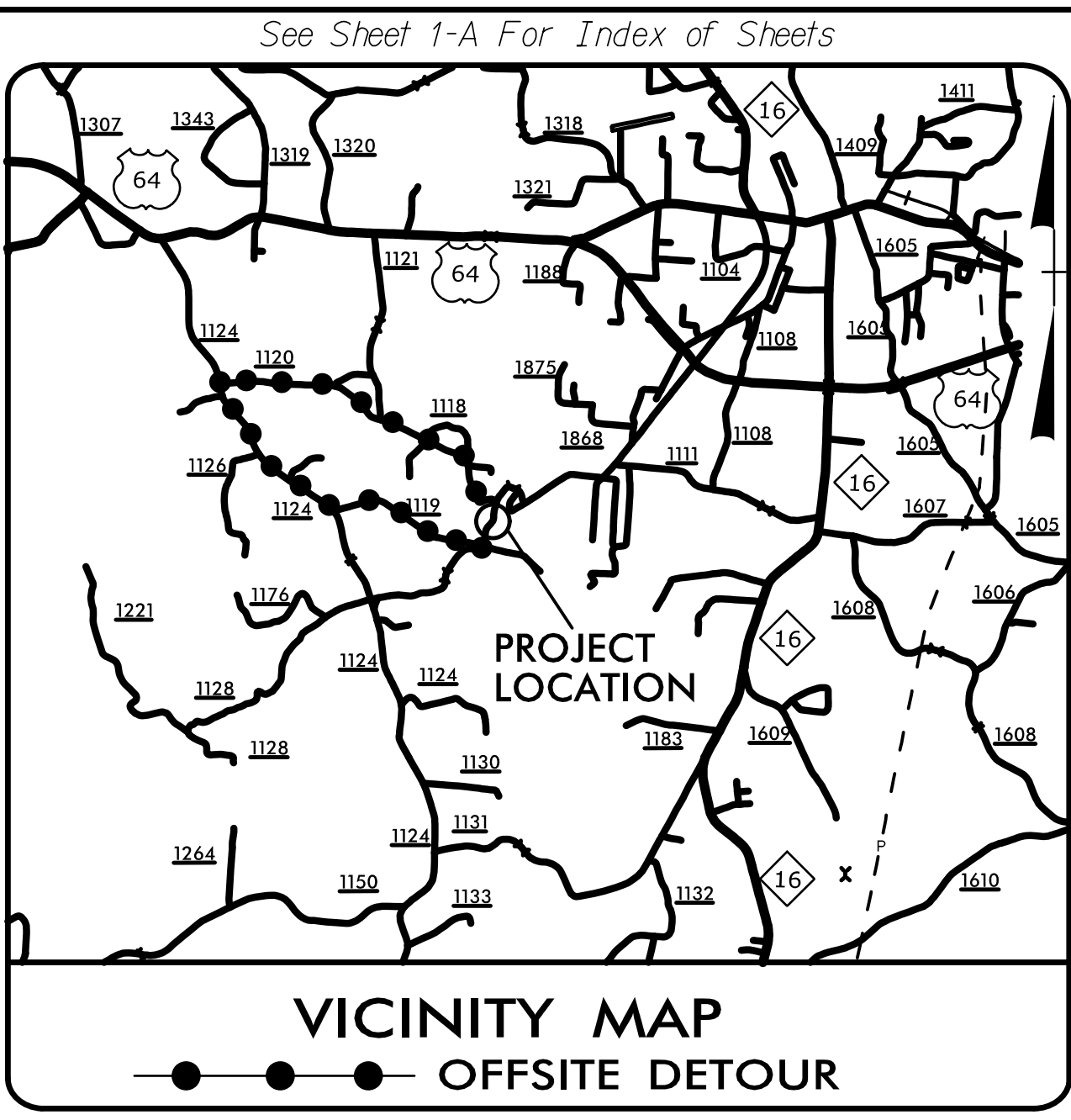


09/08/2019

8/19/2020 X:\NCDOT\Div 12 2019 Emergency Culverts\Alexander Liledoun Rd\Roadway\Proj\NSF-012273\_L\_Rdy\_fsh.dgn User:smelvin

**PROJECT: DF15712.2002803**

**CONTRACT: DL00221**

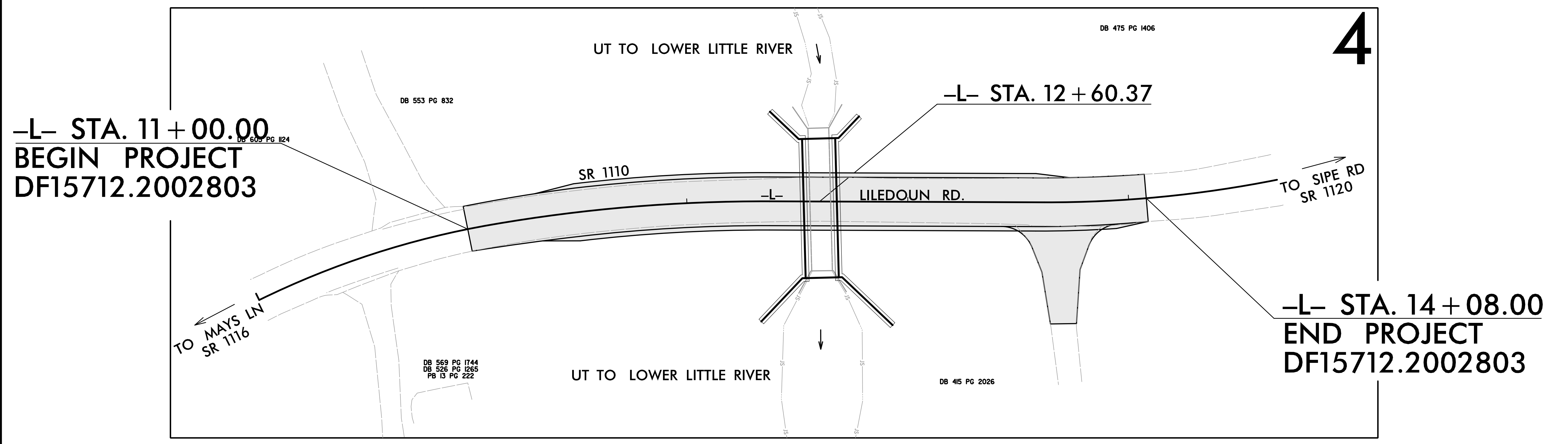
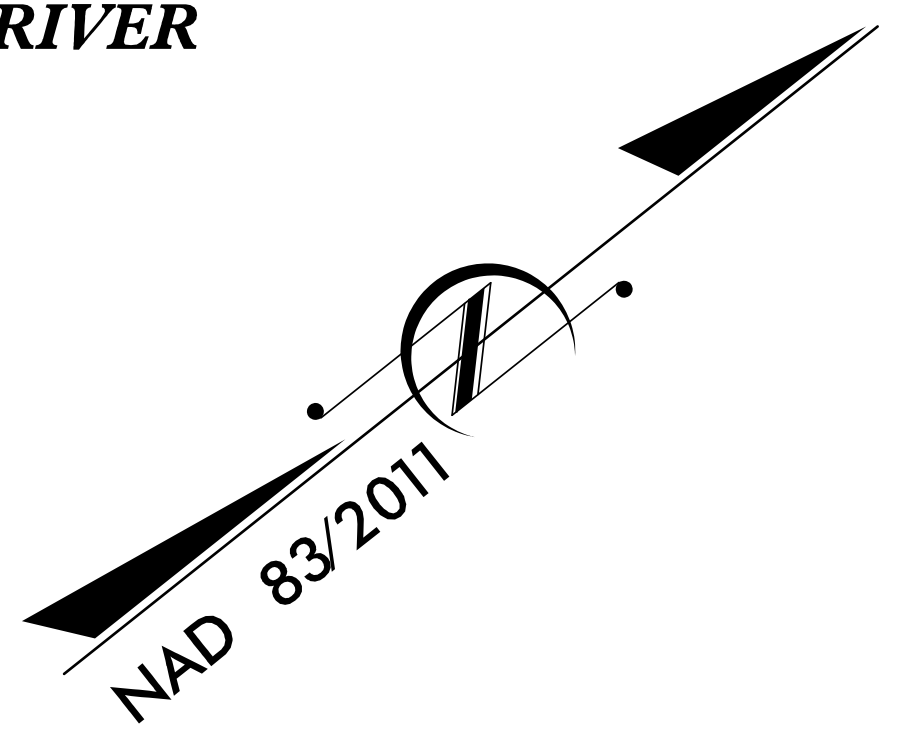


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**ALEXANDER COUNTY**

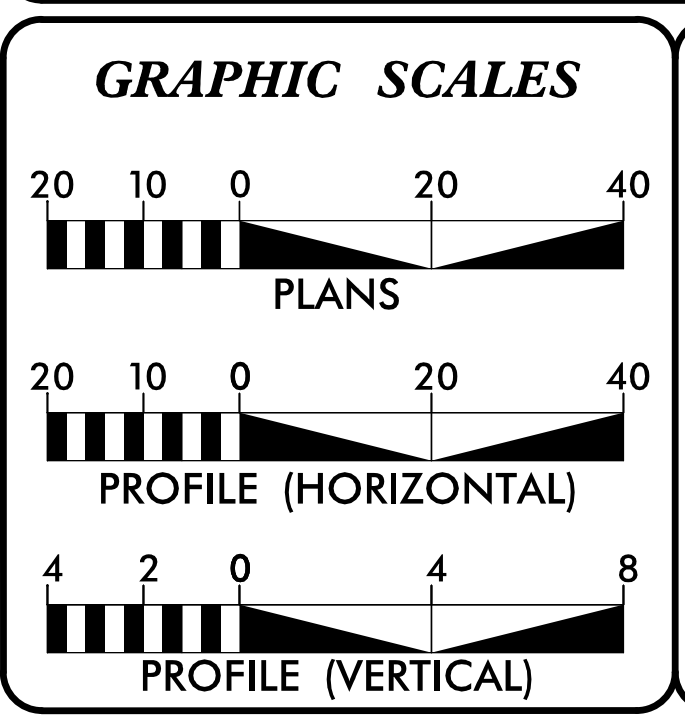
**LOCATION: CULVERT NO. 01 2273 (E-0019) OVER UT TO LOWER LITTLE RIVER ON SR 1110 (LILEDOUN ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15712.2002803	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
DF15712.2002803	N/A	PE	
DF15712.2002803	N/A	RW & UTIL.	
DF15712.2002803	N/A	CONST.	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2018 = 2100

V = 40 MPH

FUNC CLASS = LOCAL - RURAL

SUB REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT DF15712.2002803 E-0019 = 0.058

TOTAL LENGTH PROJECT DF15712.2002803 E-0019 = 0.058

**NCDOT CONTACT: STEVE RACKLEY, PE**

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

PLANS PREPARED FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION 12  
1710 E. MARION ST.  
SHELBY, NC 28150

**RIGHT OF WAY DATE:**  
JULY 24, 2020

**LETTING DATE:**  
SEPTEMBER 8, 2020

2018 STANDARD SPECIFICATIONS

**JIMMY L. TERRY, PE**  
PROJECT ENGINEER

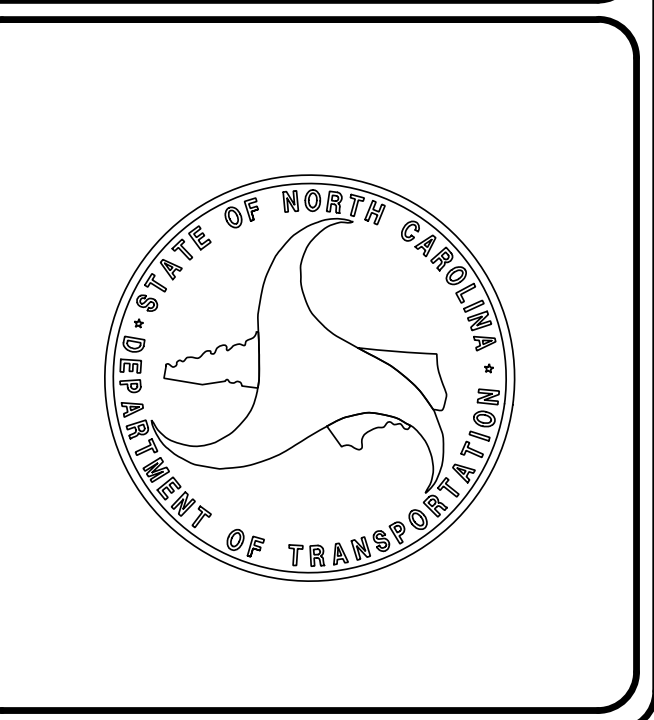
**AUSTIN R. TURNER, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**  
8/19/2020

David E. Petty  
400EFT488386465  
SIGNATURE: P.E.

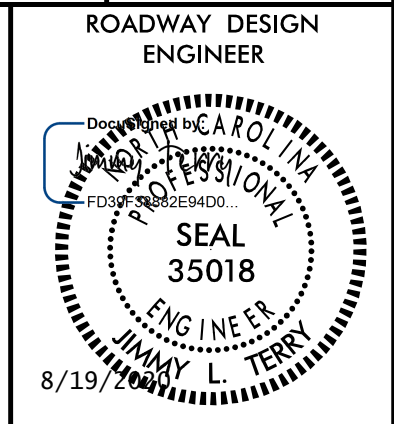
**ROADWAY DESIGN ENGINEER**  
8/19/2020

Jimmy Terry  
400EFT488386465  
SIGNATURE: P.E.



8/17/99

PROJECT REFERENCE NO. <i>DF15712.2002803</i>	SHEET NO. <i>1A</i>
---	------------------------



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

# INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
RW-01 THRU RW-04	SURVEY CONTROL, ALIGNMENT CONTROL, RIGHT OF WAY CONTROL AND PROPERTY TIES
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	SPECIAL DETAIL - W BEAM RAIL SECTION
2C-2	SPECIAL DETAIL - A.T.-1 END UNIT ASSEMBLY
3B-1	ROADWAY SUMMARIES
4	PLAN AND PROFILE SHEET
EC-1 THRU EC-6	EROSION CONTROL PLANS
X-1A	CROSS-SECTION INDEX
X-1 THRU X-2	CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS

# GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS

EFFECTIVE: 01-16-2018  
REVISED:

GRADE LINE:  
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T, CHARTER COMMUNICATION, DUKE ENERGY AND CITY OF HICKORY - WATER & SEWER.

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.

# STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018  
REV.

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	
200.02	Method of Clearing - Modified Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation (Special Detail for Sheet 6 of 8)
876.01	Rip Rap in Channels

8/19/2019 Emergency Culverts\Alexander Lilledoun Rd\Roadway\Proj\SF-012273\_Rdy\_tsh.dgn  
 8/19/2019 Emergency Culverts\Alexander Lilledoun Rd\Roadway\Proj\SF-012273\_Rdy\_tsh.dgn  
 8/19/2019 Emergency Culverts\Alexander Lilledoun Rd\Roadway\Proj\SF-012273\_Rdy\_tsh.dgn

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

## BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Computed Property Corner	_____ X
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 ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	--- S ---
Potential Contamination Area: Soil	--- S ---
Known Contamination Area: Water	--- W ---
Potential Contamination Area: Water	--- W ---
Contaminated Site: Known or Potential	☠ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ 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	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	_____
RR Dismantled	_____

## RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	_____
New Right of Way Line	_____ (RW)
New Right of Way Line with Pin and Cap	_____ (RW) ◆
New Right of Way Line with Concrete or Granite R/W Marker	_____ (RW) ▲
New Control of Access Line with Concrete C/A Marker	_____ (CA) ▲
Existing Control of Access	_____ (CA)
New Control of Access	_____ (CA)
Existing Easement Line	--- E ---
New Temporary Construction Easement	--- E ---
New Temporary Drainage Easement	--- TDE ---
New Permanent Drainage Easement	--- PDE ---
New Permanent Drainage / Utility Easement	--- DUE ---
New Permanent Utility Easement	--- PUE ---
New Temporary Utility Easement	--- TUE ---
New Aerial Utility Easement	--- AUE ---

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	_____ (CR)
Existing Metal Guardrail	_____
Proposed Guardrail	_____
Existing Cable Guiderail	_____
Proposed Cable Guiderail	_____
Equality Symbol	⊕
Pavement Removal	_____

## VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

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

Hedge	_____
Woods Line	_____
Orchard	_____
Vineyard	_____ (Vineyard)

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____ (CONC)
Bridge Wing Wall, Head Wall and End Wall	_____ (CONC WW)
MINOR:	
Head and End Wall	_____ (CONC HW)
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	_____
Storm Sewer Manhole	○ S
Storm Sewer	--- S ---

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	⊠
Power Transformer	⊞
U/G Power Cable Hand Hole	_____
H-Frame Pole	_____
U/G Power Line LOS B (S.U.E.*)	--- P ---
U/G Power Line LOS C (S.U.E.*)	--- P ---
U/G Power Line LOS D (S.U.E.*)	--- P ---

## TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	_____
U/G Telephone Cable LOS B (S.U.E.*)	--- T ---
U/G Telephone Cable LOS C (S.U.E.*)	--- T ---
U/G Telephone Cable LOS D (S.U.E.*)	--- T ---
U/G Telephone Conduit LOS B (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS C (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS D (S.U.E.*)	--- TC ---
U/G Fiber Optics Cable LOS B (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS C (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS D (S.U.E.*)	--- T FO ---

## WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	--- W ---
U/G Water Line LOS C (S.U.E.*)	--- W ---
U/G Water Line LOS D (S.U.E.*)	--- W ---
Above Ground Water Line	--- A/G Water ---

## TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	_____
U/G TV Cable LOS B (S.U.E.*)	--- TV ---
U/G TV Cable LOS C (S.U.E.*)	--- TV ---
U/G TV Cable LOS D (S.U.E.*)	--- TV ---
U/G Fiber Optic Cable LOS B (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS C (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS D (S.U.E.*)	--- TV FO ---

## GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	--- G ---
U/G Gas Line LOS C (S.U.E.*)	--- G ---
U/G Gas Line LOS D (S.U.E.*)	--- G ---
Above Ground Gas Line	--- A/G Gas ---

## SANITARY SEWER:

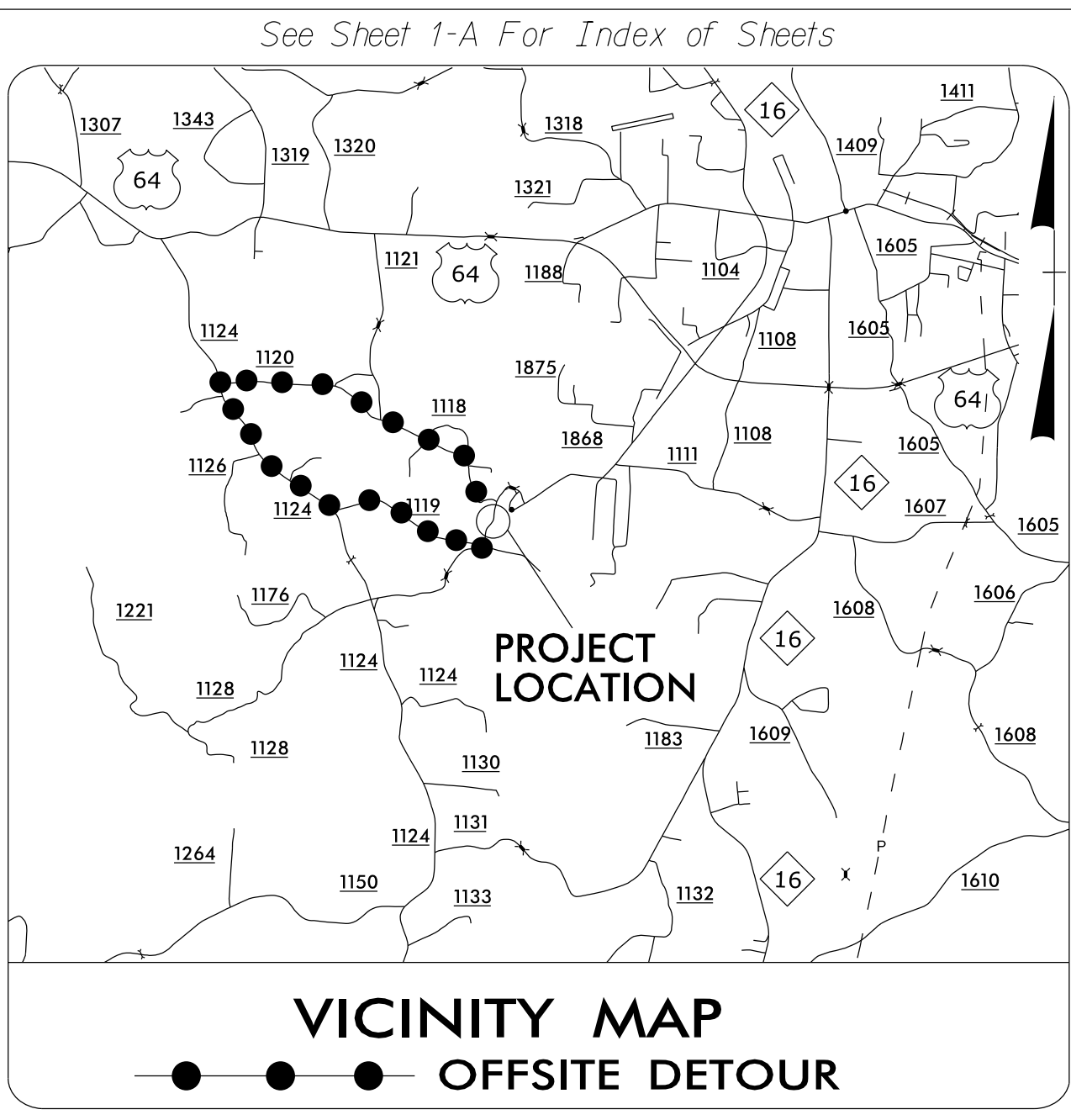
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
SS Forced Main Line LOS B (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS C (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS D (S.U.E.*)	--- FSS ---

## MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 2UTL ---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	□ (UST)
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

08/19/20

PROJECT: DF15712.2002803



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

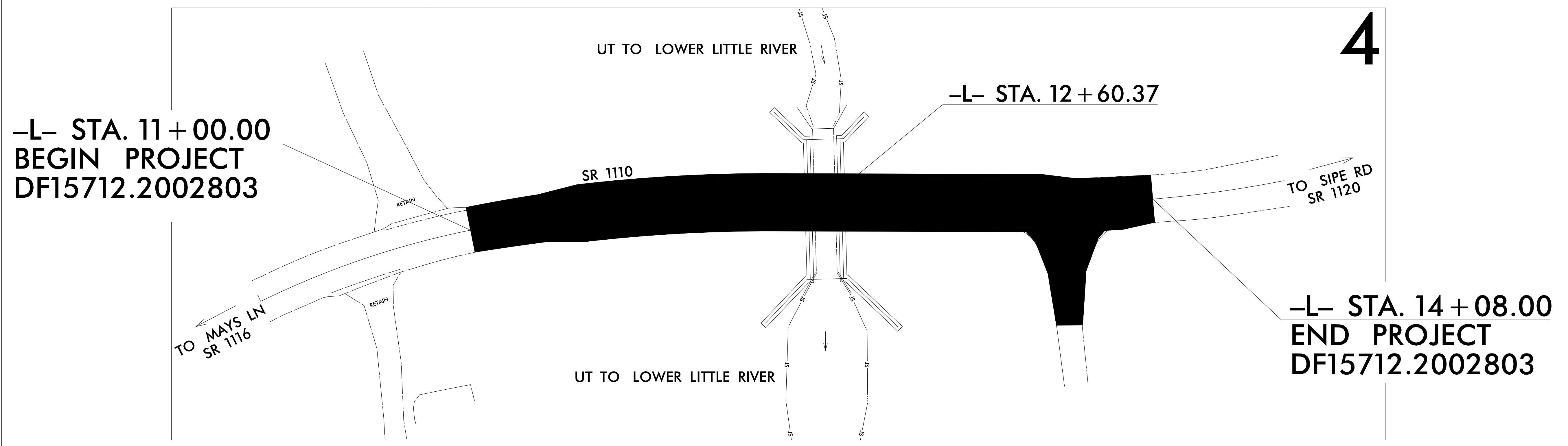
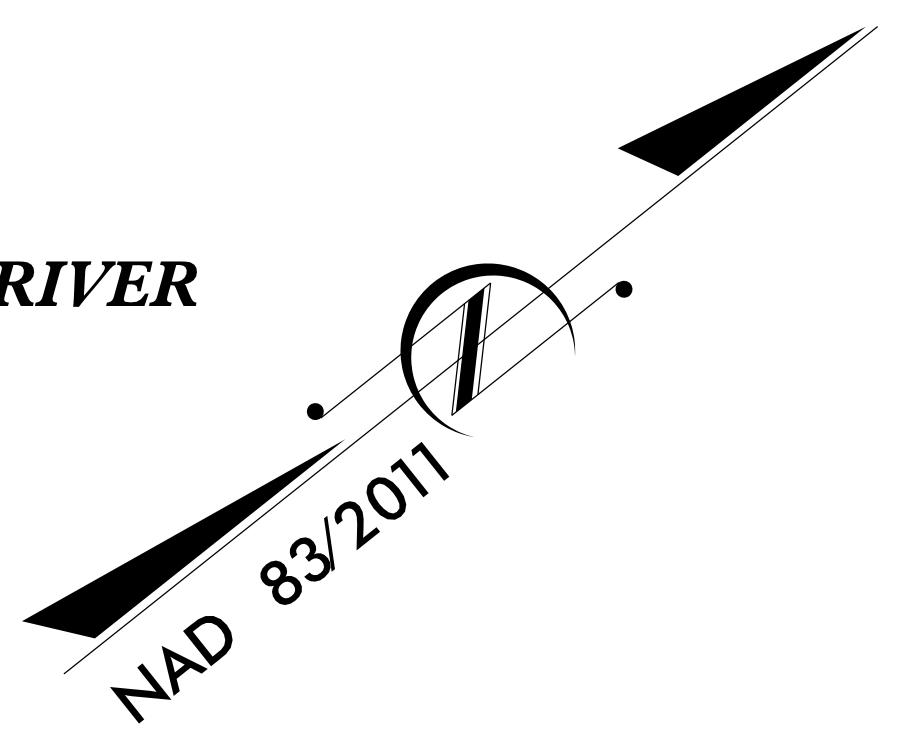
SURVEY CONTROL, EXISTING CENTERLINES,  
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

**ALEXANDER COUNTY**

LOCATION: CULVERT NO. 01 2273 (E-0019) OVER UT TO LOWER LITTLE RIVER  
ON SR 1110 (LILEDOWN ROAD)

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

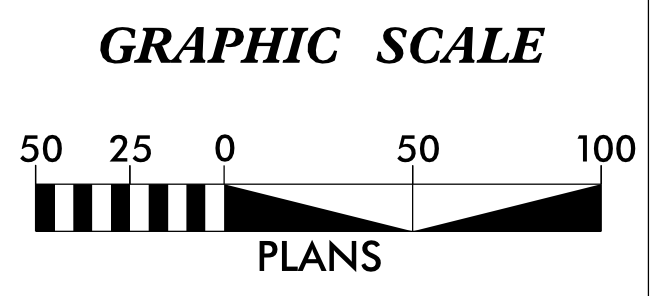
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15712.2002803	RW01	



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "E0019-2" WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF NORTHING: 787,348.539(ft) EASTING: 1,343,826.779(ft) ELEVATION: 1,041.58(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989042 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "E0019-2" TO -L- STATION 10+00.00 IS S 21°30'38.8" W 198.826(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

2018 STANDARD SPECIFICATIONS

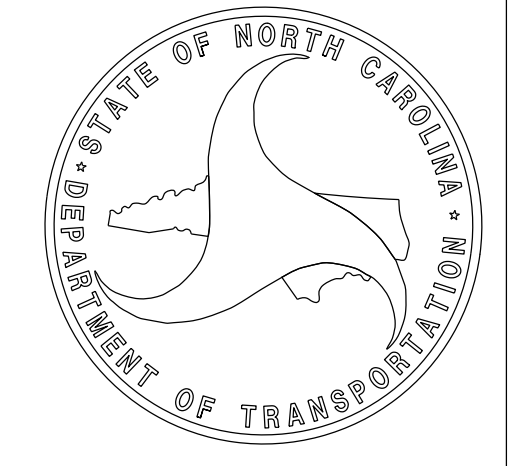
RIGHT OF WAY DATE: JULY 24, 2020 LETTING DATE: TBD

PROFESSIONAL LAND SURVEYOR



DocuSigned by:  
James L. Jeffries  
44005A207AE4CA  
SIGNATURE:

8/19/2020  
Date:



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



# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
DF15712.2002803	RW02D-1

## Location and Surveys



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

I, James I. Jeffreys, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This day 8/19/2020.

DocuSigned by:  
  
 A43045A2D7AEACA

James I. Jeffreys, PE PLS  
Professional Land Surveyor L-3828

TYPE	STATION	NORTH	EAST
PC	10+00.00	787163.5615	1343753.8742
PCC	11+11.21	787267.2680	1343792.9683
PT	12+37.40	787371.9881	1343863.0991
PC	13+61.85	787468.9778	1343941.0712
PT	14+67.83	787557.6452	1343998.8021


REVISIONS

IS: AUC-2020\_08/09  
 C:\Users\alexander.L\OneDrive\OneDrive\Jeffreys\AT\_LS-314519  
 J. Jeffreys

### NOTES:

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

# RIGHT OF WAY CONTROL SHEET

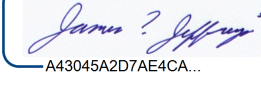
PROJECT REFERENCE NO.	SHEET NO.
DF15712.2002803	RW03E-1
<b>Location and Surveys</b>	
	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

PERMANENT EASEMENT MARKER IRON PIN & CAP				
ALIGN	STATION	OFFSET	NORTH	EAST
L	11+27.00	-30.00	787296.0549	1343774.7716
L	11+35.00	30.00	787272.6034	1343830.5738
L	11+60.00	-43.00	787332.4101	1343781.7193
L	11+92.00	42.00	787311.5217	1343870.0958
L	12+28.00	72.00	787320.2431	1343913.9522
L	12+40.00	-67.00	787415.9937	1343812.5098
L	12+98.00	-67.00	787461.1974	1343848.8501
L	13+10.00	72.00	787383.4585	1343964.7020
L	13+20.00	-30.88	787455.7172	1343890.7852
L	13+53.00	29.93	787443.3286	1343958.8539

REVISIONS

I, James I. Jeffreys, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on 8/18/2020, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.


This day 8/19/2020 .

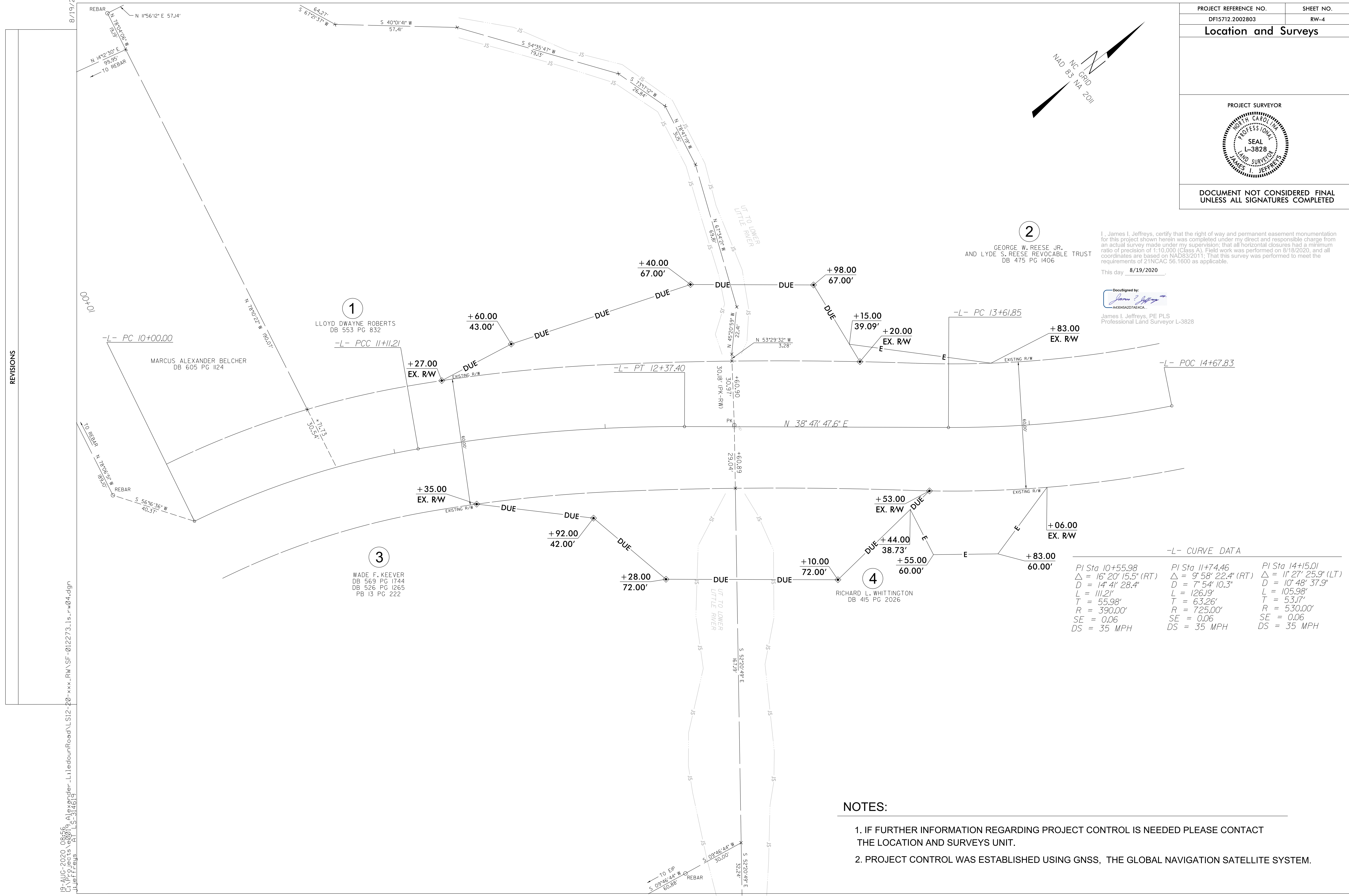
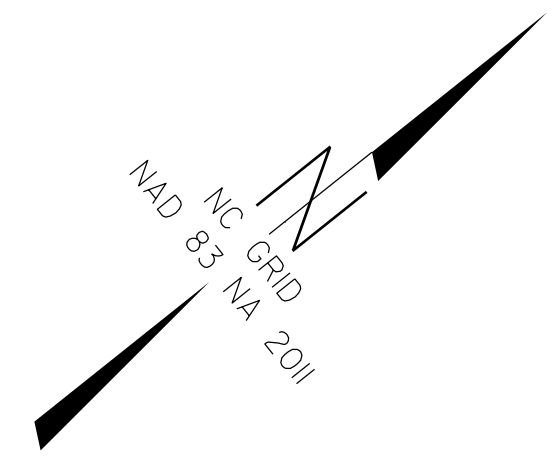
DocuSigned by:  
  
 A43045A207AE4CA.

James I. Jeffreys, PE PLS  
 Professional Land Surveyor L-3828

### NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

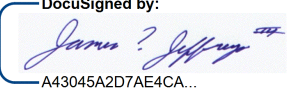
PROJECT REFERENCE NO.	SHEET NO.
DF15712.2002803	RW-4
<b>Location and Surveys</b>	
PROJECT SURVEYOR  JAMES I. JEFFREYS	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



I, James I. Jeffreys, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on 8/18/2020, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This day 8/19/2020

**2**  
 GEORGE W. REESE JR.  
 AND LYDE S. REESE REVOCABLE TRUST  
 DB 475 PG 1406

DocuSigned by:  
  
 443045A2037AE4CA  
 James I. Jeffreys, PE PLS  
 Professional Land Surveyor L-3828

**1**  
 LLOYD DWAYNE ROBERTS  
 DB 553 PG 832

**3**  
 WADE F. KEEVER  
 DB 569 PG 1744  
 DB 526 PG 1265  
 PB 13 PG 222

**4**  
 RICHARD L. WHITTINGTON  
 DB 415 PG 2026

-L- CURVE DATA

PI Sta 10+55.98 Δ = 16° 20' 15.5" (RT) D = 14' 4" 28.4" L = 111.21' T = 55.98' R = 390.00' SE = 0.06 DS = 35 MPH	PI Sta 11+74.46 Δ = 9° 58' 22.4" (RT) D = 7' 54" 10.3" L = 126.19' T = 63.26' R = 725.00' SE = 0.06 DS = 35 MPH	PI Sta 14+15.01 Δ = 11° 27' 25.9" (LT) D = 10' 48' 37.9" L = 105.98' T = 53.17' R = 530.00' SE = 0.06 DS = 35 MPH
---	--	--

**NOTES:**

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

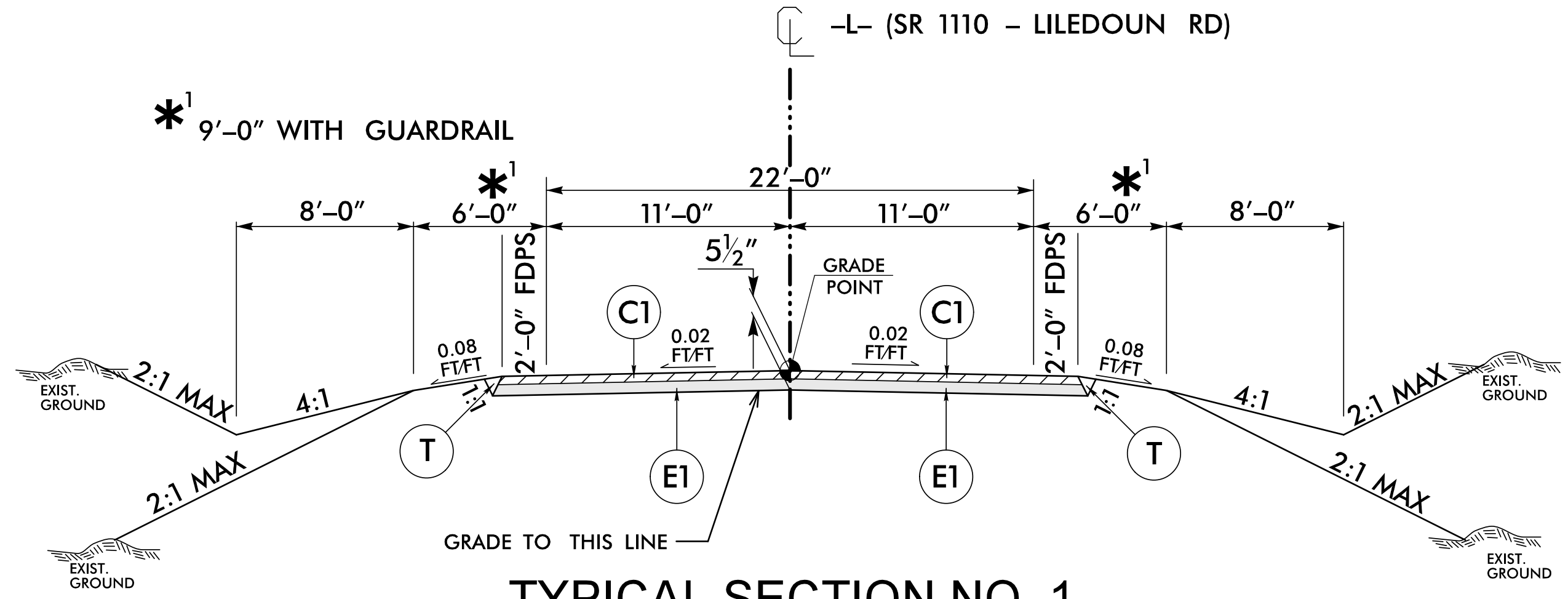
IS: AUC-2020\_08/19/20  
 C:\Users\jjeffreys\OneDrive\Documents\Projects\2020\20-xxx-RW\SF-0122273-1s-rw04.dgn  
 J. Jeffreys AT LS-31461g



6/2/19

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT (SEE MILLING DETAILS THIS SHEET)

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



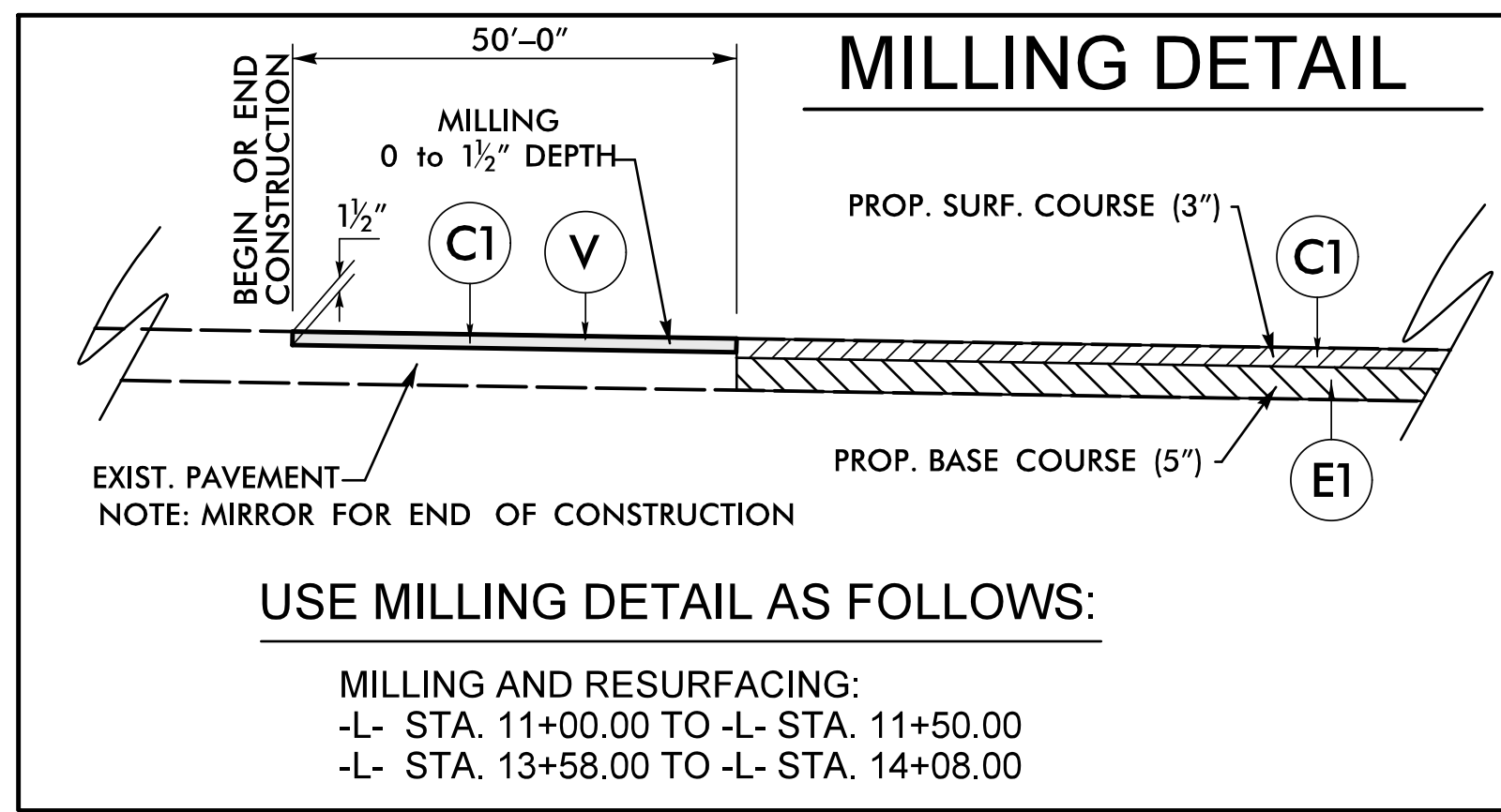
**TYPICAL SECTION NO. 1**

USE TYPICAL SECTION NO. 1

-L- STA. 11+50.00 TO -L- STA. 13+58.00

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

-L- STA. 11+00.00 TO -L- STA. 11+50.00  
 -L- STA. 13+58.00 TO -L- STA. 14+08.00



USE MILLING DETAIL AS FOLLOWS:

MILLING AND RESURFACING:  
 -L- STA. 11+00.00 TO -L- STA. 11+50.00  
 -L- STA. 13+58.00 TO -L- STA. 14+08.00

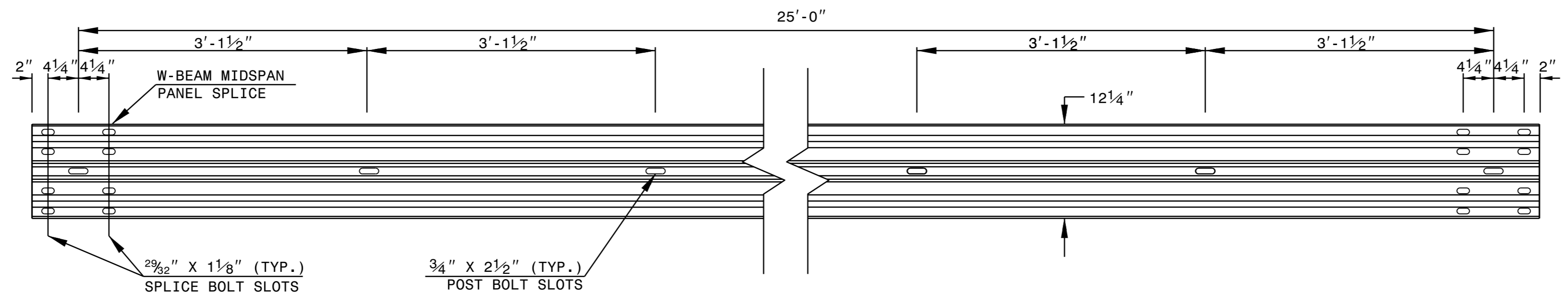
PROJECT REFERENCE NO. DF15712.2002803	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

8/19/2019 12:20:19 Emergency Culverts\Alexander Liledoun Rd\Roadway\Proj\SF-012273\_Rdy\_typ.dgn  
 User: sam1111

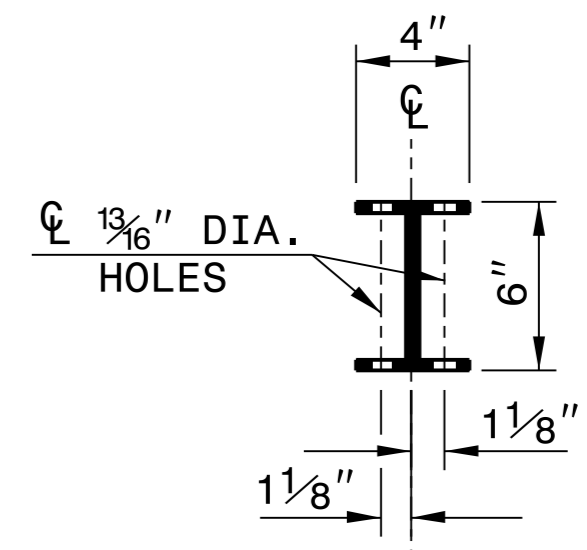
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

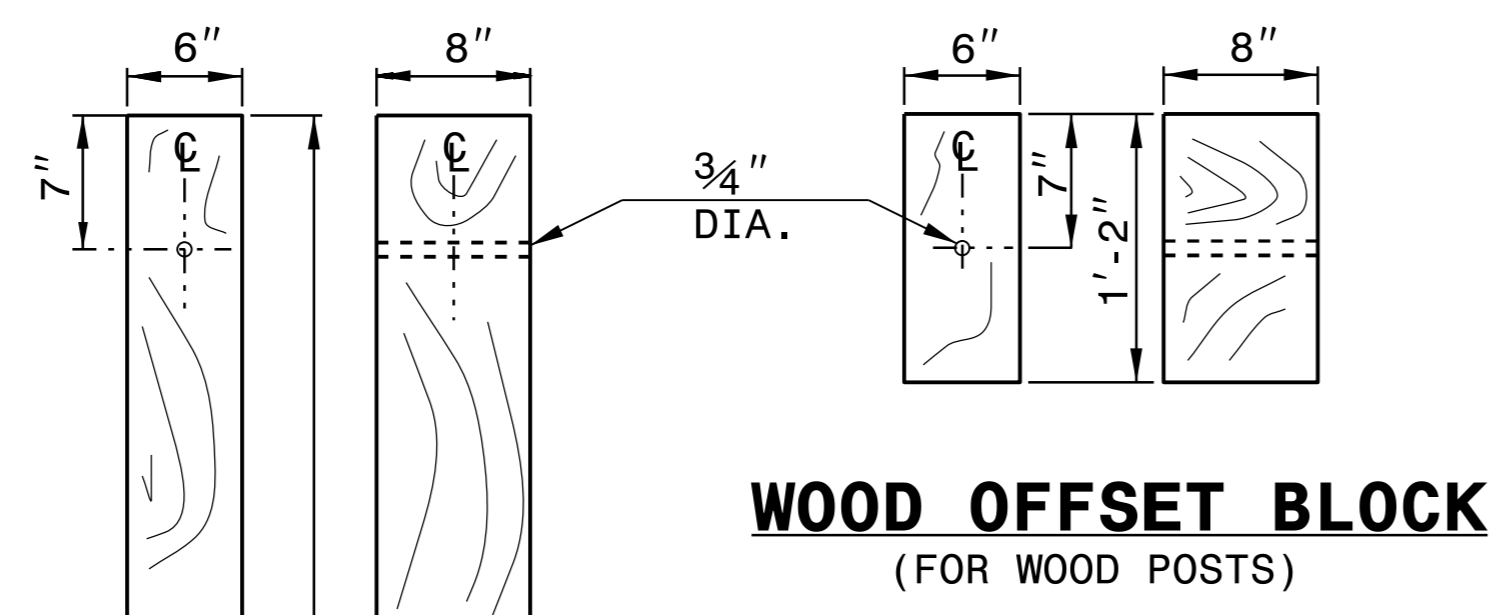
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**

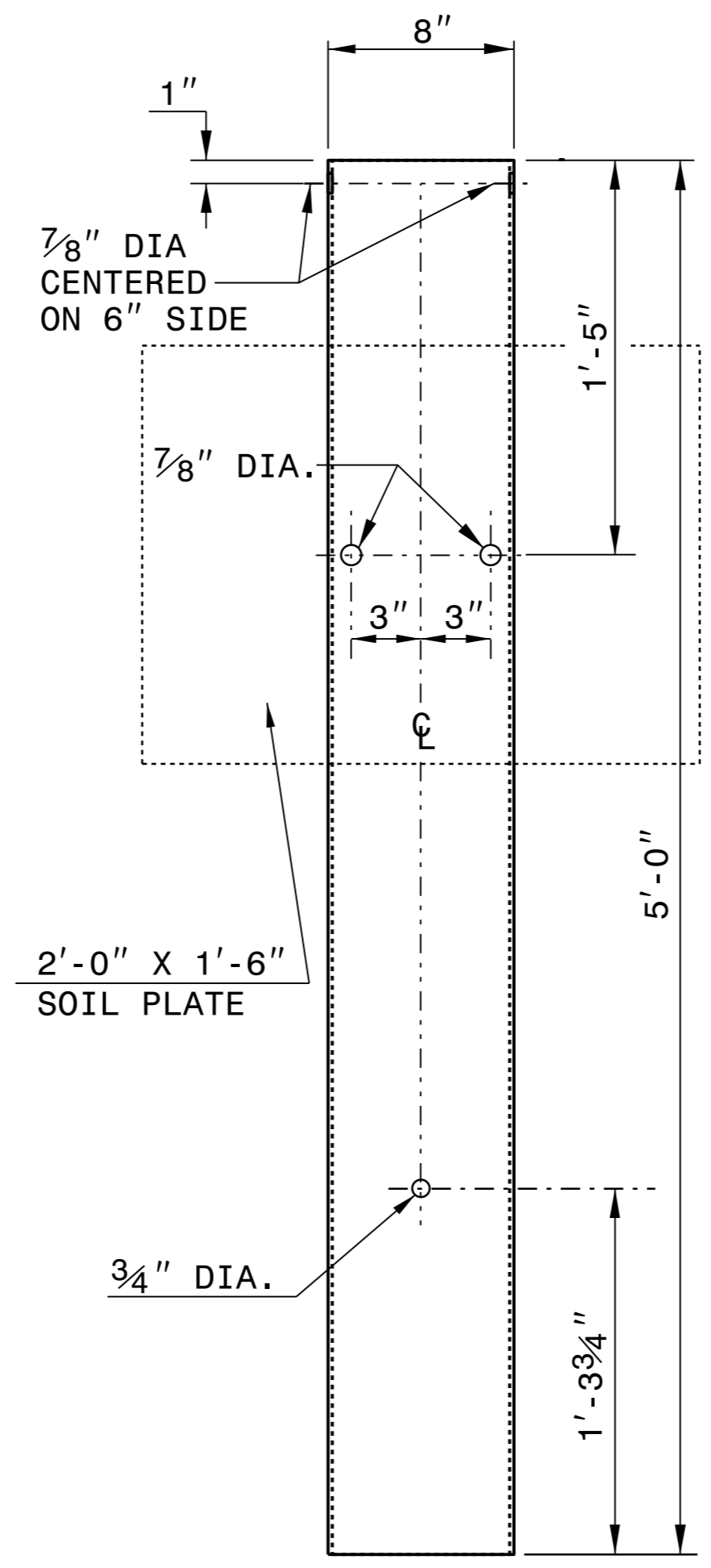


**PLAN**

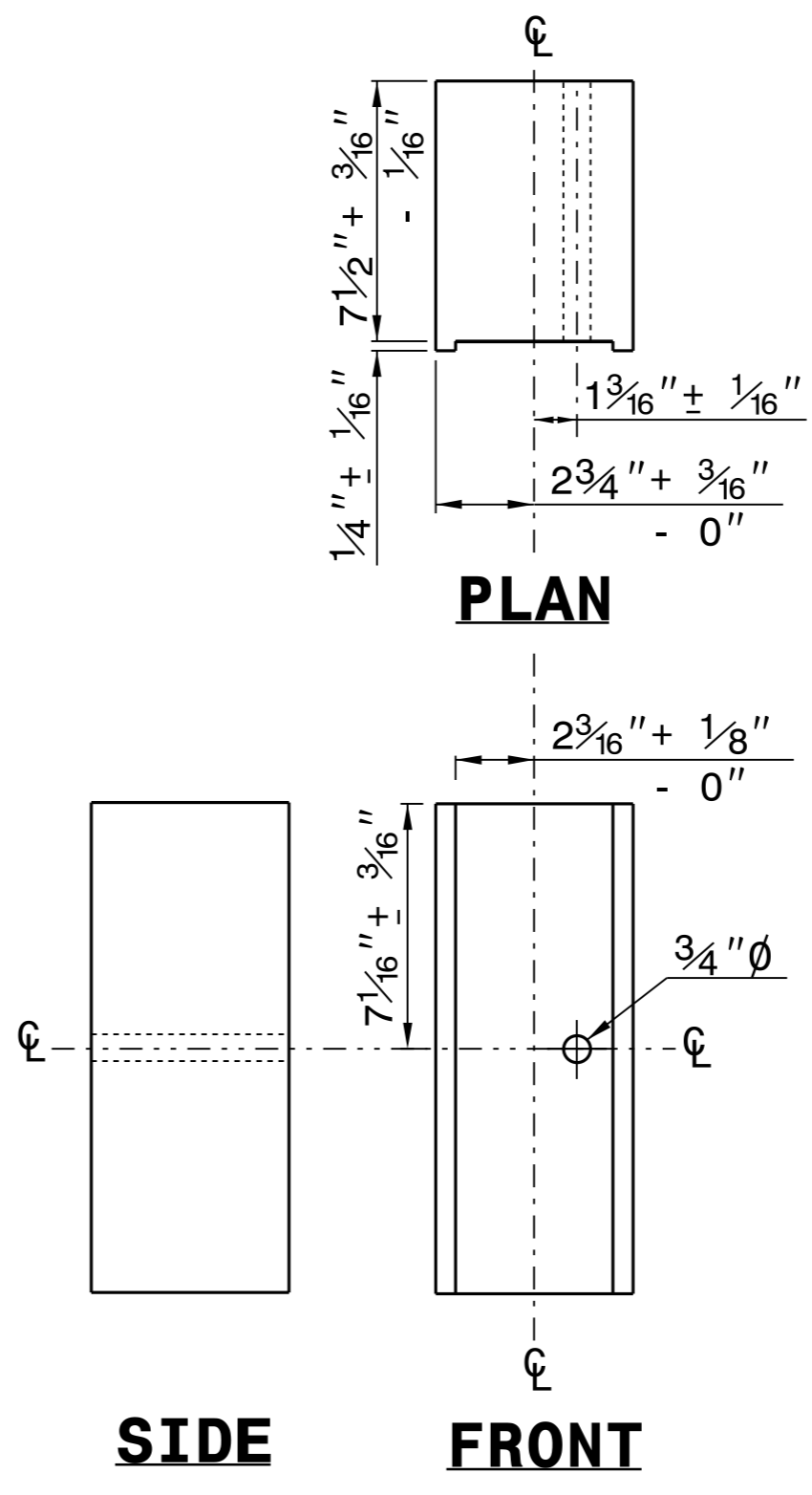


**STANDARD LINE POST**

**SHORT WOOD BREAKAWAY POST**



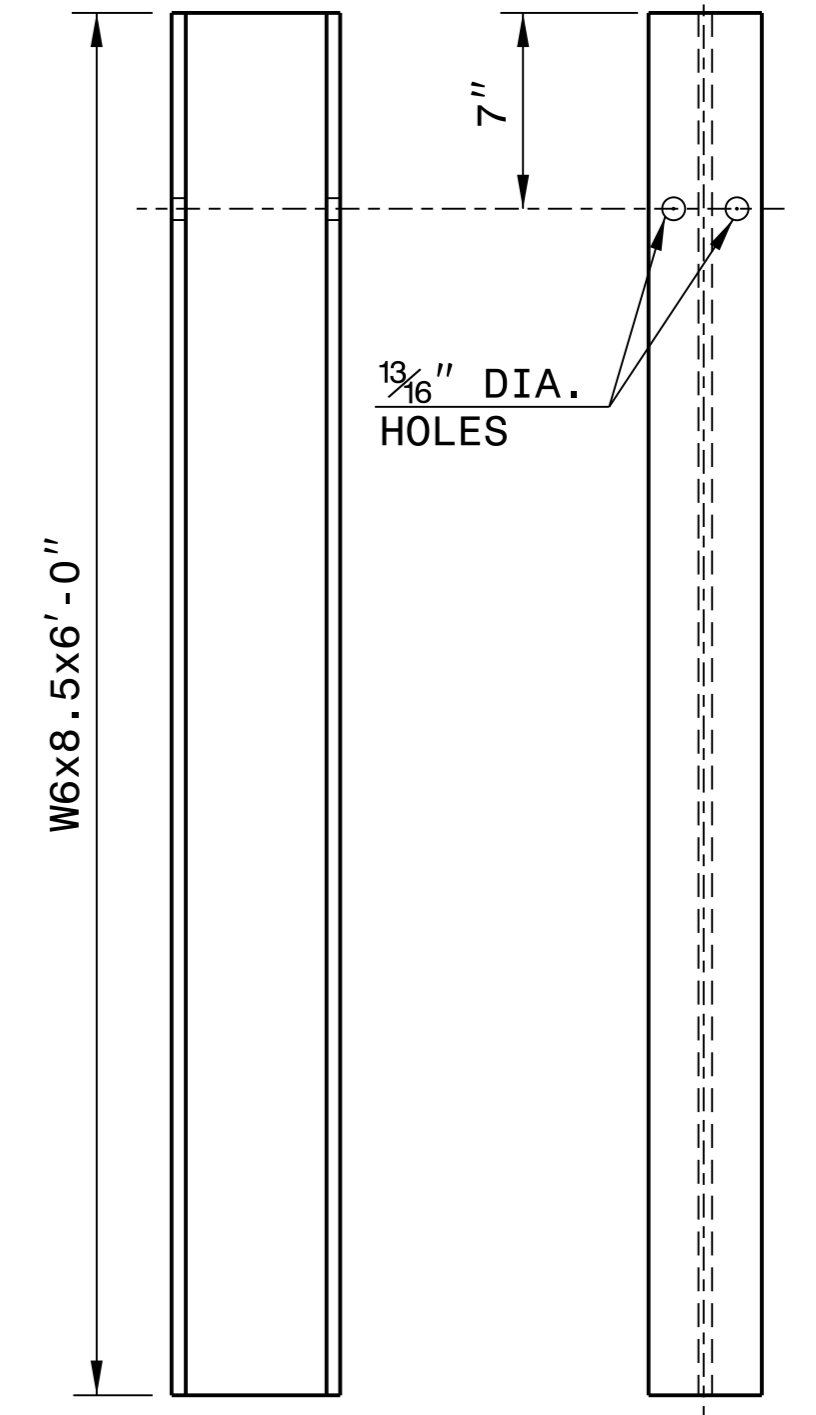
**STEEL TUBE**  
TS 6"x8"x0.1875"



**SIDE**

**FRONT**

**ROUTED OFFSET BLOCK**



**SIDE**

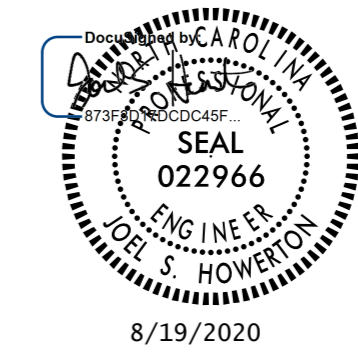
**FRONT**

**"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  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

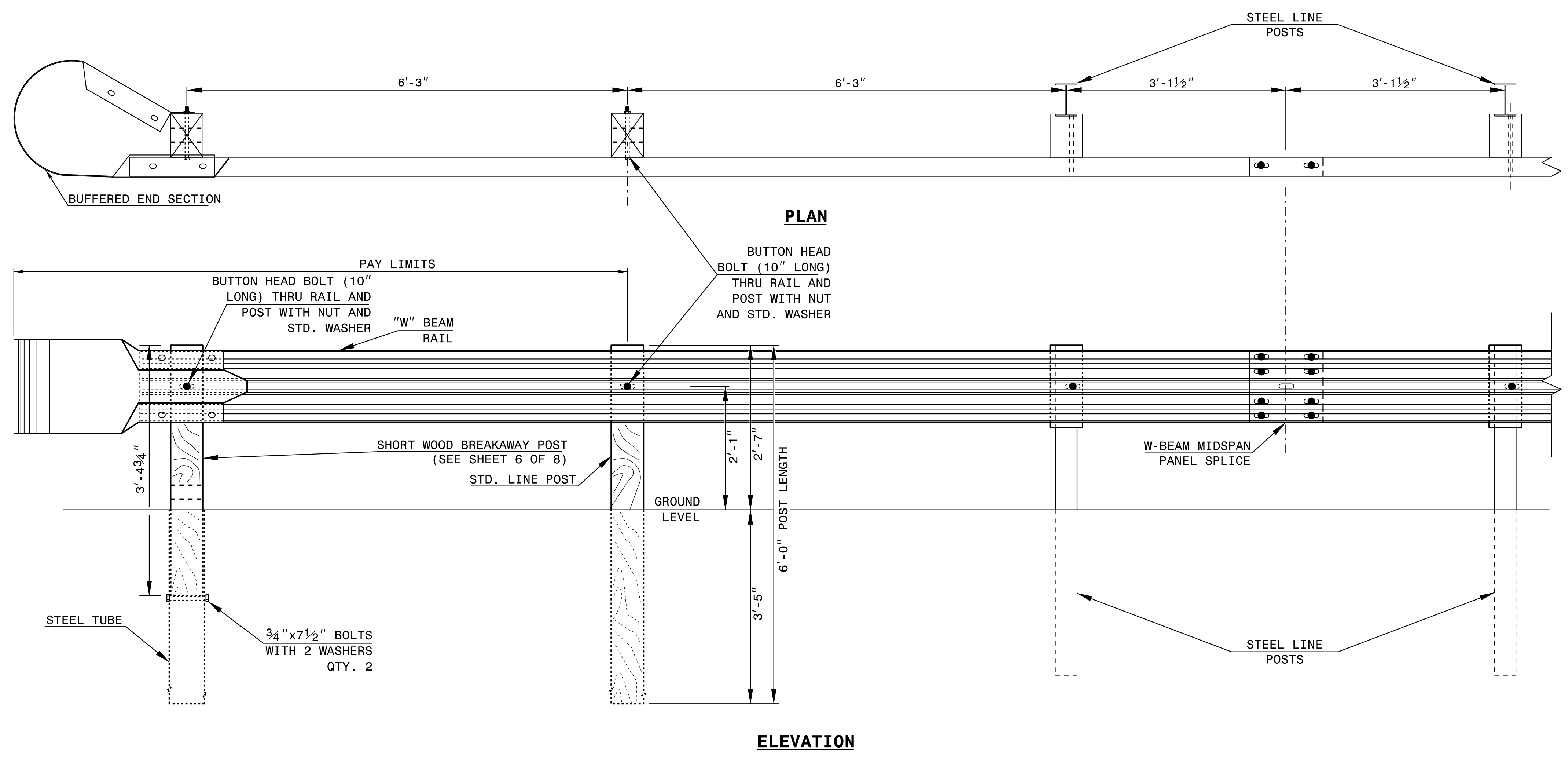
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

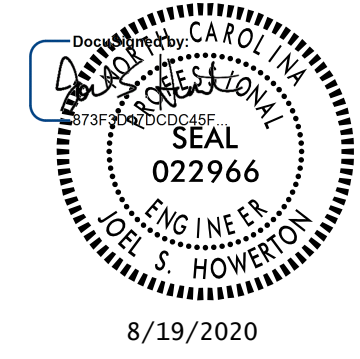
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



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



8/19/2020

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.: \_\_\_\_\_

COMPUTED BY: SGM DATE: 8/17/2020  
 CHECKED BY: JLT DATE: 8/18/2020

PROJECT NO. SHEET NO.  
 DF1572.2002803 3B-1

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+00.00	-L- 14+08.00	24	848	824	
<b>PROJECT TOTALS:</b>		24	848	824	
Est. 5% to Replace Top Soil on Borrow Pit				41	
<b>GRAND TOTALS:</b>		24	848	865	
<b>SAY:</b>		<b>50</b>		<b>900</b>	

EST. DDE = 10 CUBIC YARDS

**Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".**

### PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	11+50	13+58	CL	459.59			
<b>TOTAL</b>				459.59			
<b>SAY</b>				<b>460</b>			

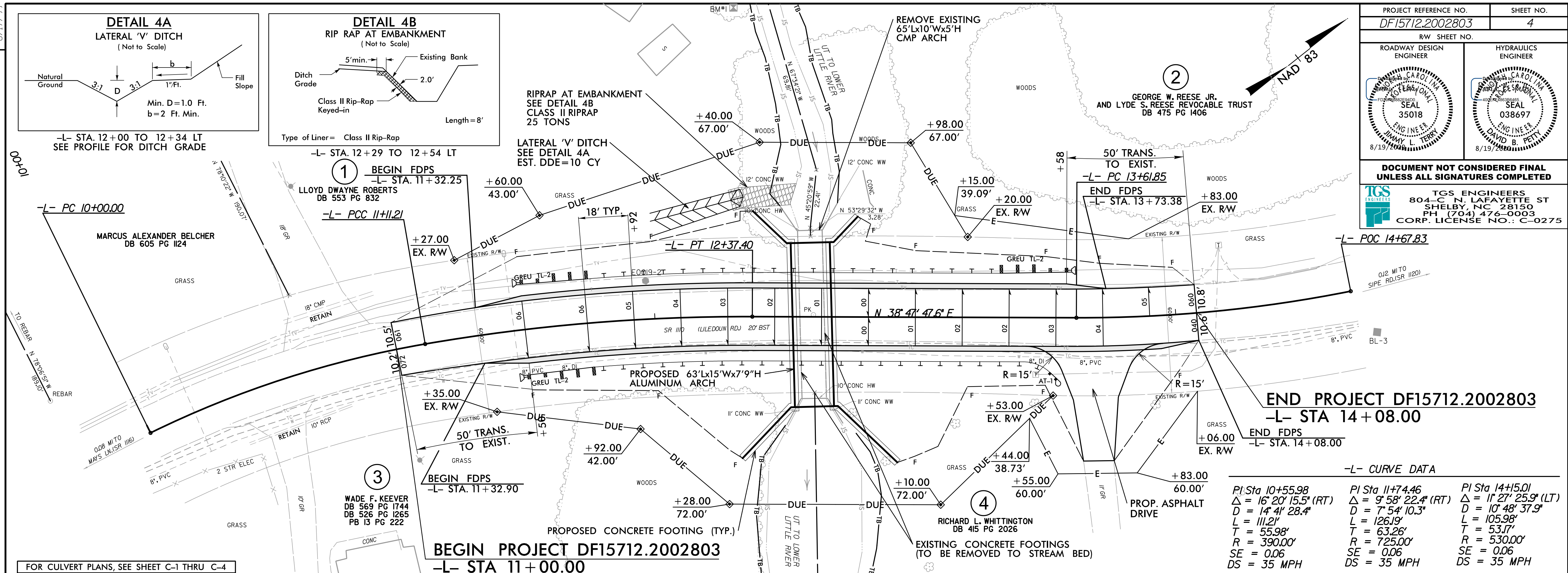
"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL. 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

### GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH		W		ANCHORS				IMP. ATTN. TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	GREU TL-2	AT-1	EA	G	NG						
-L-	11+45.50	13+58.00	LT	212.50					6'	9'	25'	25'	0.5	0.5			2								
-L-	11+45.50	13+54.32	RT	187.50	18.75				6'	9'	25'		0.5				1	1						R=15'	
<b>SUB-TOTALS:</b>				400.00	18.75												3	1							
<b>LESS ANCHOR DEDUCTIONS</b>																									
	GREU TL-2	3@25.00 ft		75																					
	AT-1	1@6.25 ft			6.25																				
<b>ANCHOR TOTALS</b>				75	6.25																				
<b>GRAND TOTALS</b>				<b>325.00</b>	<b>12.50</b>													<b>3</b>	<b>1</b>						
<b>SAY</b>				<b>325.00</b>	<b>12.50</b>																				

ADDITIONAL GUARDRAIL POSTS = 5 EA

PROJECT REFERENCE NO. DF15712.2002803	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p><b>DOCUMENT NOT CONSIDERED FINAL</b>  <b>UNLESS ALL SIGNATURES COMPLETED</b></p>	
<p>TGS ENGINEERS              804-C N. LAFAYETTE ST              SHELBY, NC 28150              PH: (704) 476-0003              CORP. LICENSE NO.: C-0275</p>	

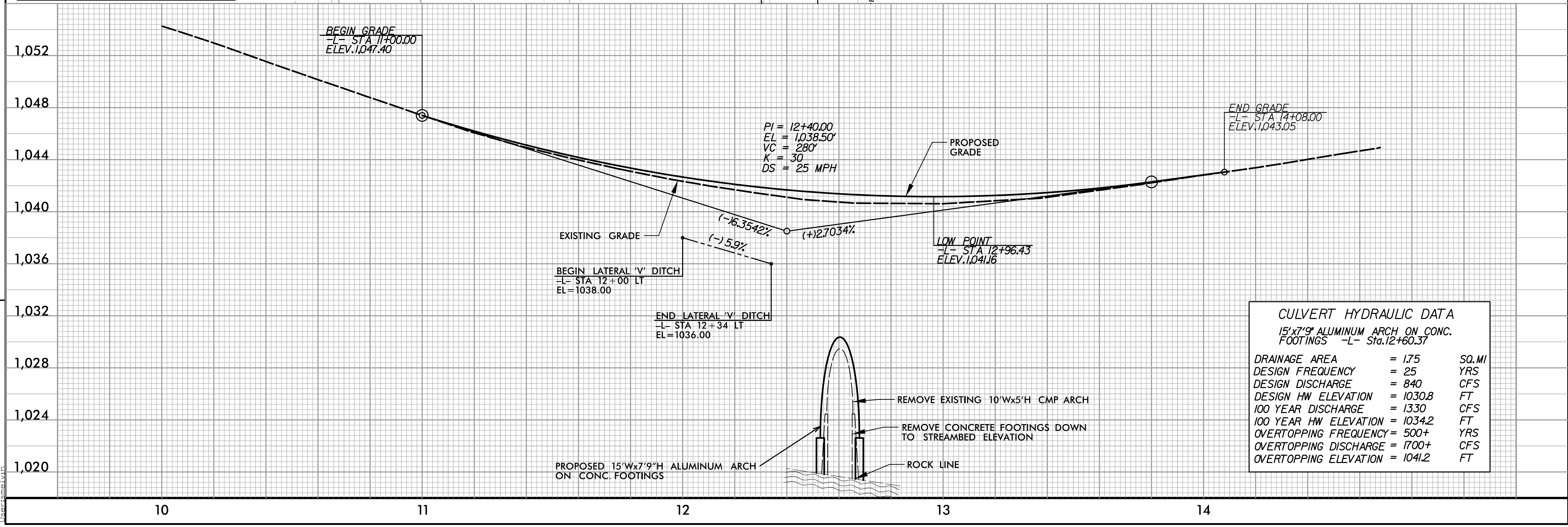


**END PROJECT DF15712.2002803**  
 -L- STA 14+08.00

**END FDPS**  
 -L- STA. 14+08.00

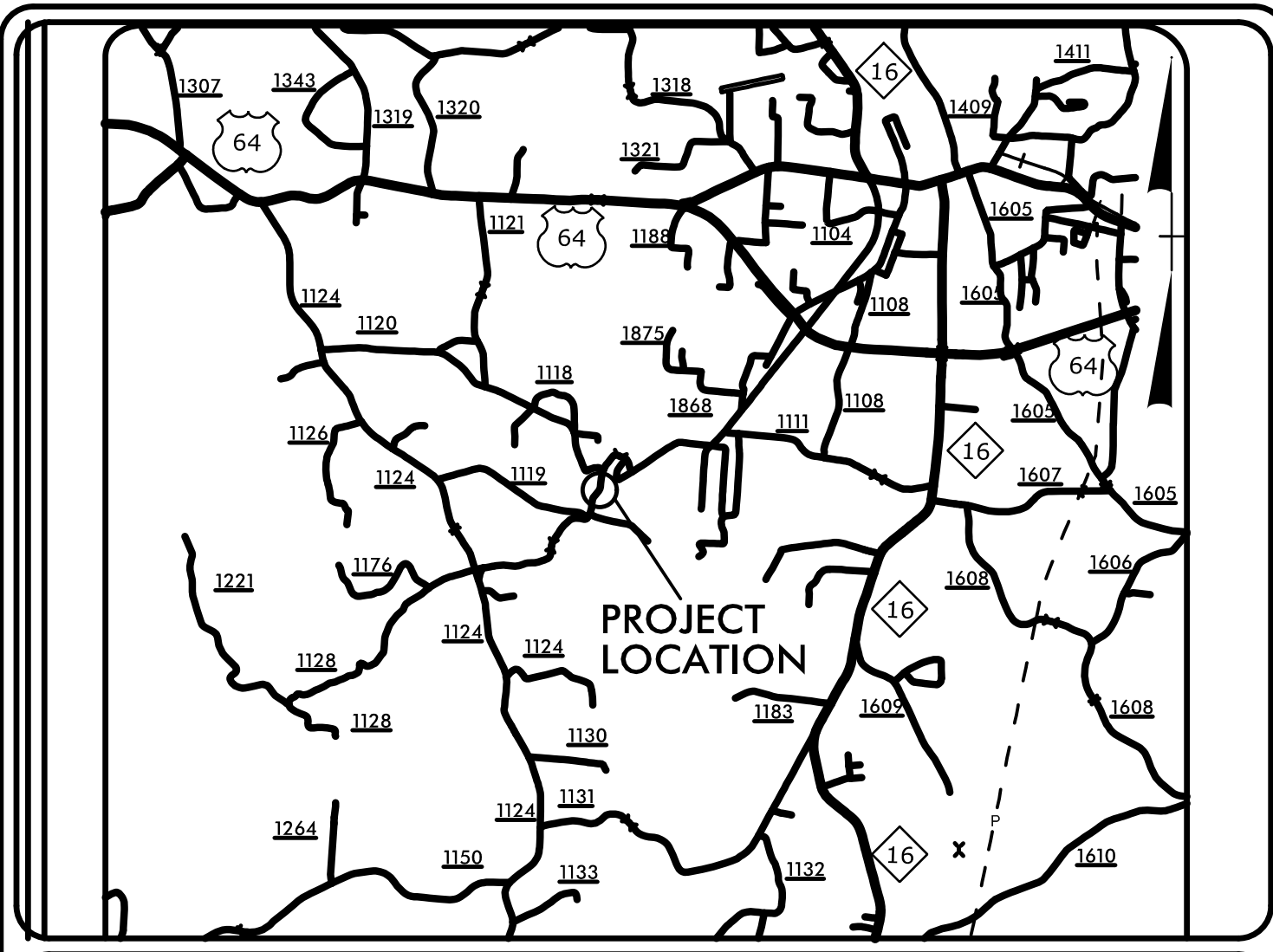
**-L- CURVE DATA**

PI Sta	PI Sta	PI Sta
10+55.98	11+74.46	14+15.01
$\Delta = 16' 20'' 15.5'' (RT)$	$\Delta = 9' 58'' 22.4'' (RT)$	$\Delta = 11' 27'' 25.9'' (LT)$
$D = 14' 4'' 28.4''$	$D = 7' 54'' 10.3''$	$D = 10' 48'' 37.9''$
$L = 111.21'$	$L = 126.19'$	$L = 105.98'$
$T = 55.98'$	$T = 63.26'$	$T = 53.17'$
$R = 390.00'$	$R = 725.00'$	$R = 530.00'$
$SE = 0.06$	$SE = 0.06$	$SE = 0.06$
$DS = 35 MPH$	$DS = 35 MPH$	$DS = 35 MPH$



8/17/19  
 REVISIONS  
 00401  
 8/19/2020  
 Emergency Culverts\Alex\pdr\Proj\SF-012273\_Rdy\_psh.dgn  
 L:\ledoun\Roadway\Proj\SF-012273\_Rdy\_psh.dgn  
 L:\ledoun\Culverts\Alex\pdr\Proj\SF-012273\_Rdy\_psh.dgn

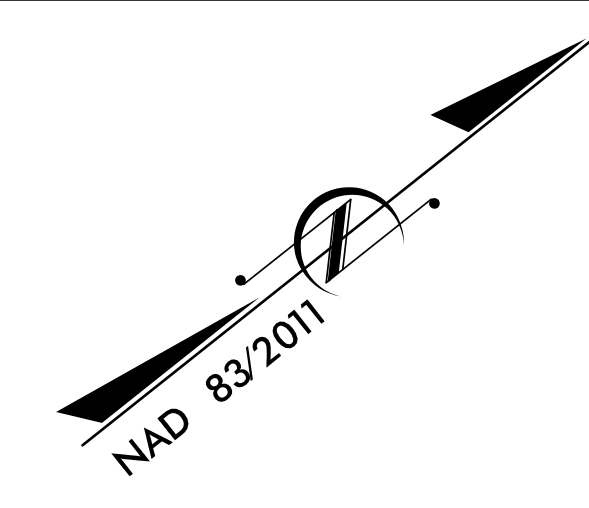
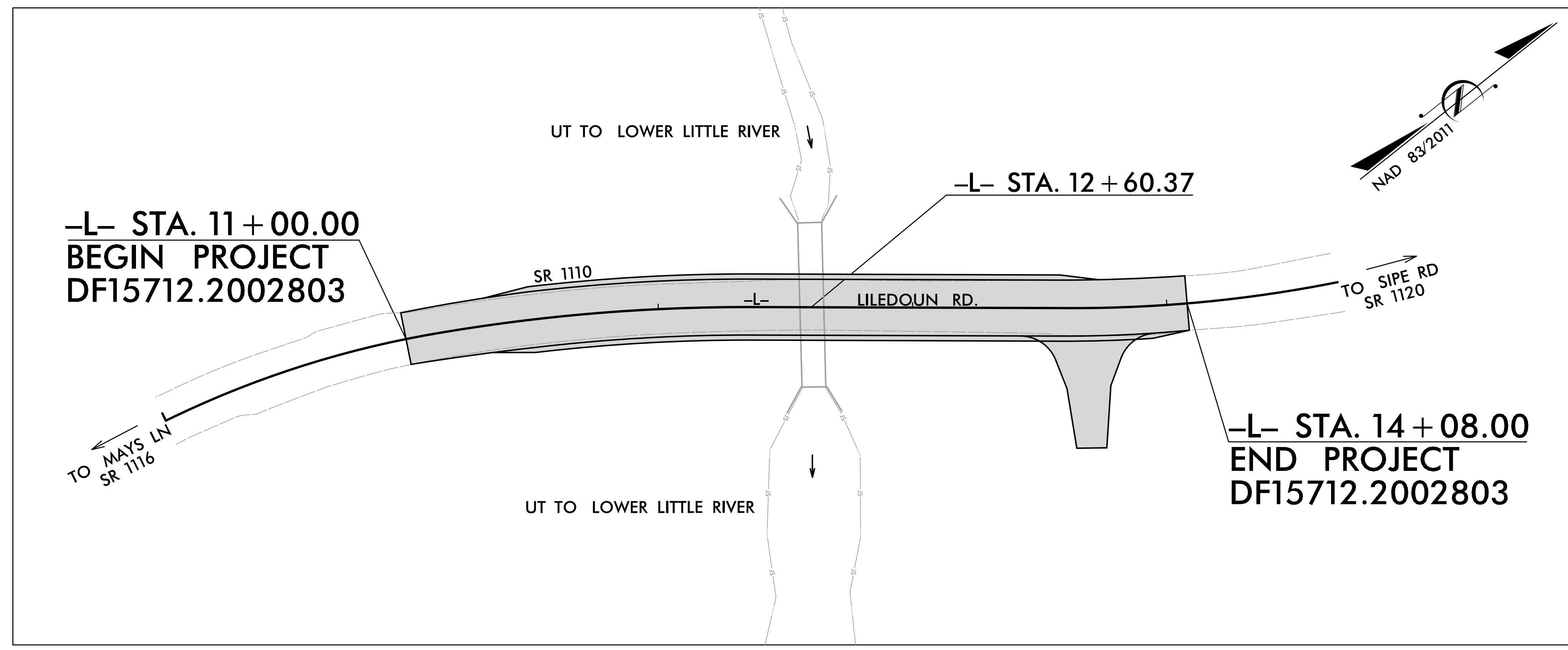
**PROJECT: DF15712.2002803**



**VICINITY MAP**  
NOT TO SCALE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL  
  
ALEXANDER COUNTY  
LOCATION: CULVERT NO. 01 2273 (E-0019) OVER UT TO LOWER LITTLE RIVER  
ON SR 1110 (LILEDOWN ROAD)

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

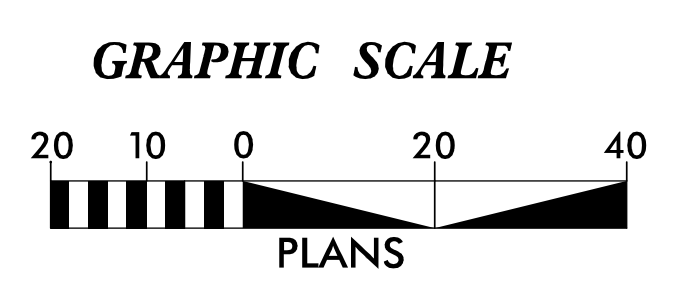


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15712.2002803	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
DF15712.2002803	N/A	PE	
DF15712.2002803	N/A	RW & UTIL	
DF15712.2002803	N/A	CONST	

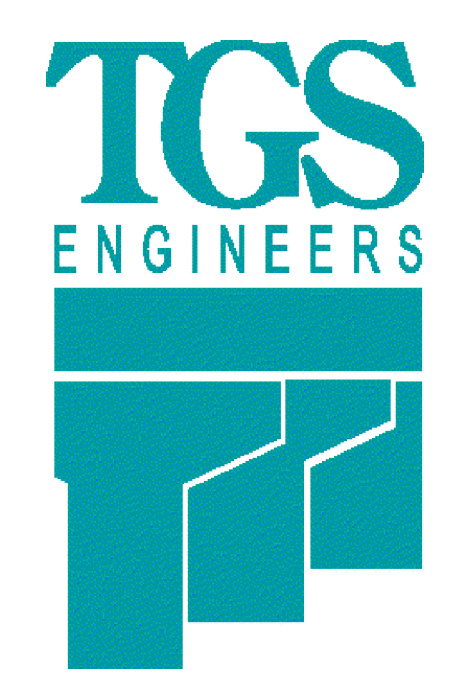
**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSCF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSCA-PAM
1633.02	Temporary Rock Silt Check Type-B	TRSCB
	Wattle / Coir Fiber Wattle	WF
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	WF-PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSDA
1634.02	Temporary Rock Sediment Dam Type-B	TRSDB
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPISTRA
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPISTRB
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SKB
	Tiered Skimmer Basin	TSKB
	Infiltration Basin	IB

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



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



Prepared In the Office of:  
**TGS ENGINEERS**  
804-C N. LAFAYETTE ST.  
SHELBY, NC 28150

Designed by:  
**Andrew H. Cochran, PE** 3015  
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

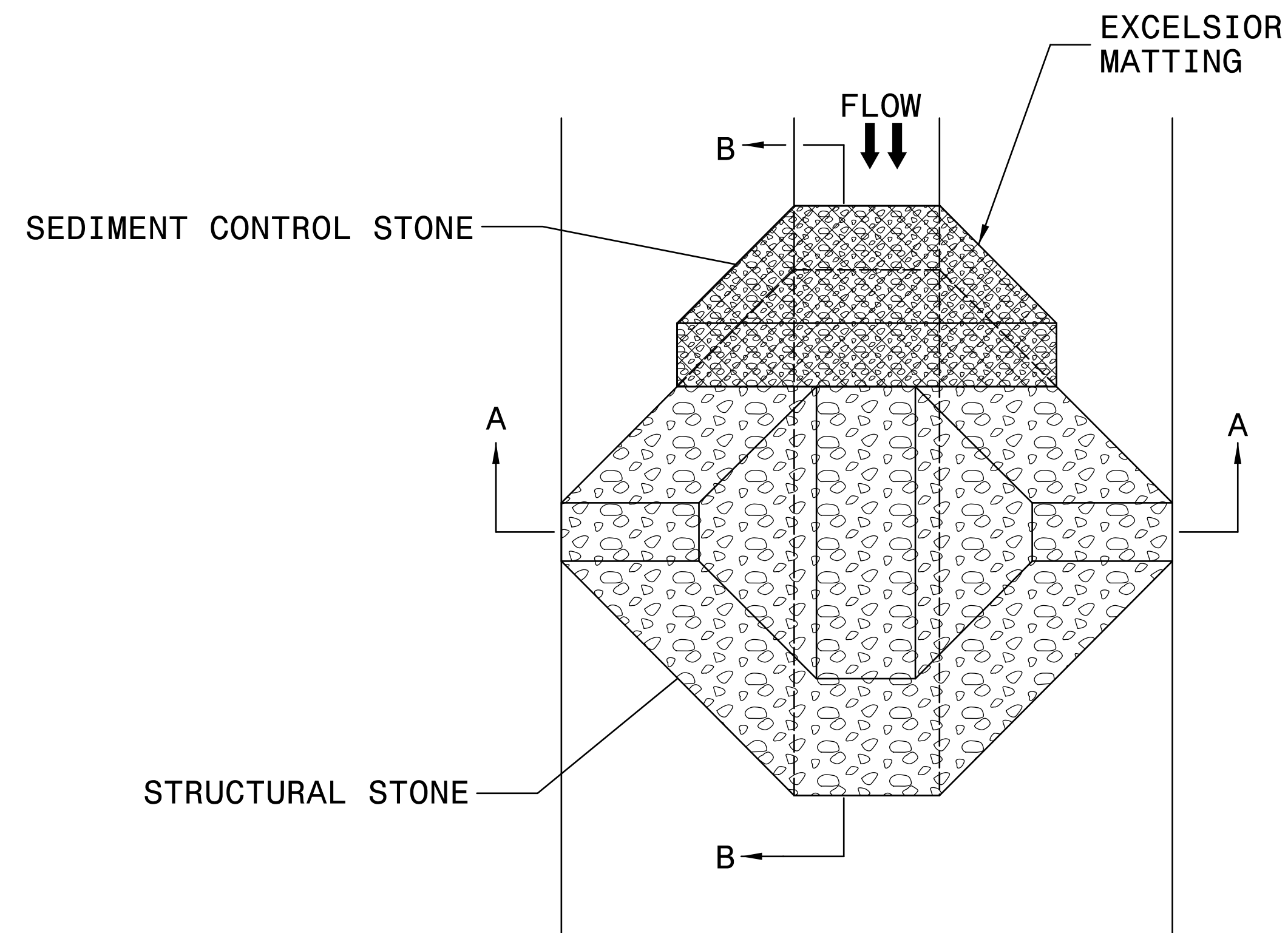
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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	1640.01 Temporary Stream Crossing
1631.01 Matting Installation	

8/14/2020 C:\Users\Alexandra.Liledoun\RoADrainage\Erosion Control\ASF-012273\_EC.dwg - TSHudgn

PROJECT REFERENCE NO. DF15712.2002803	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

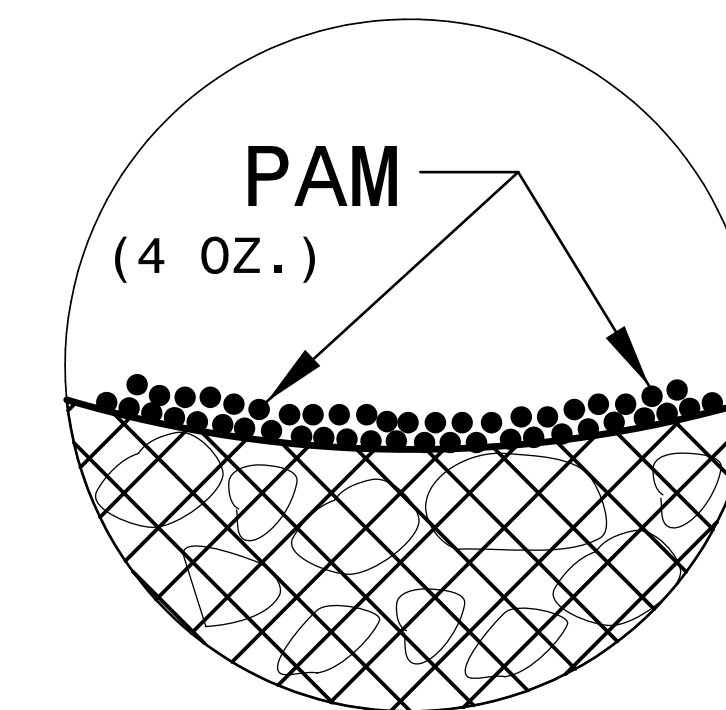
## NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

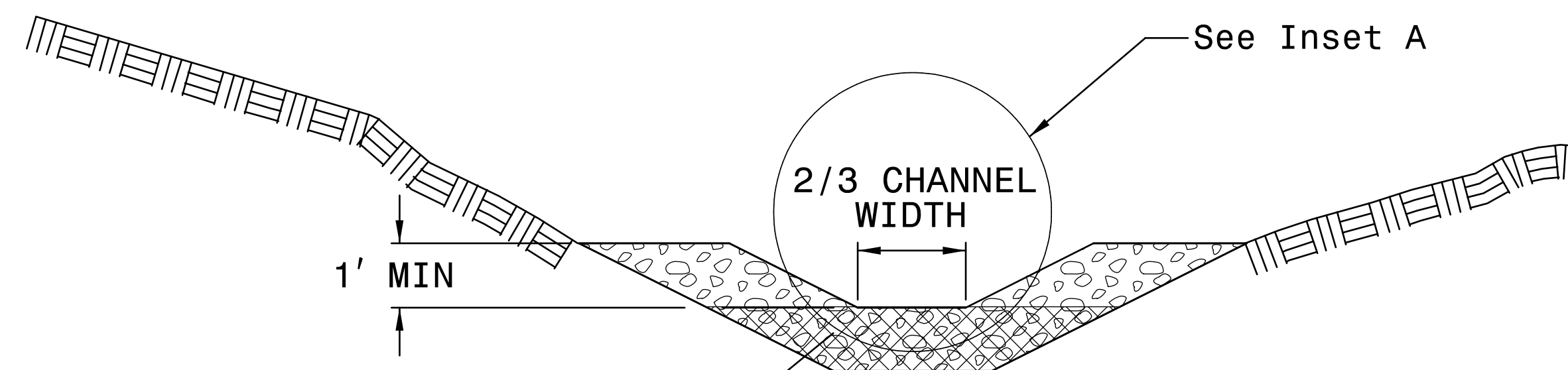
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

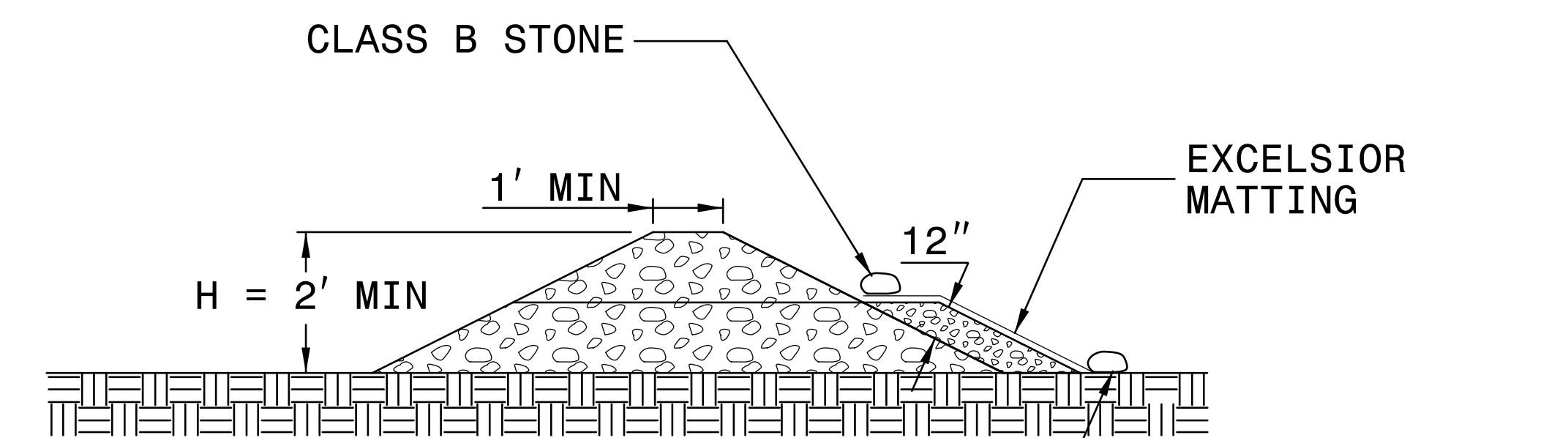
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

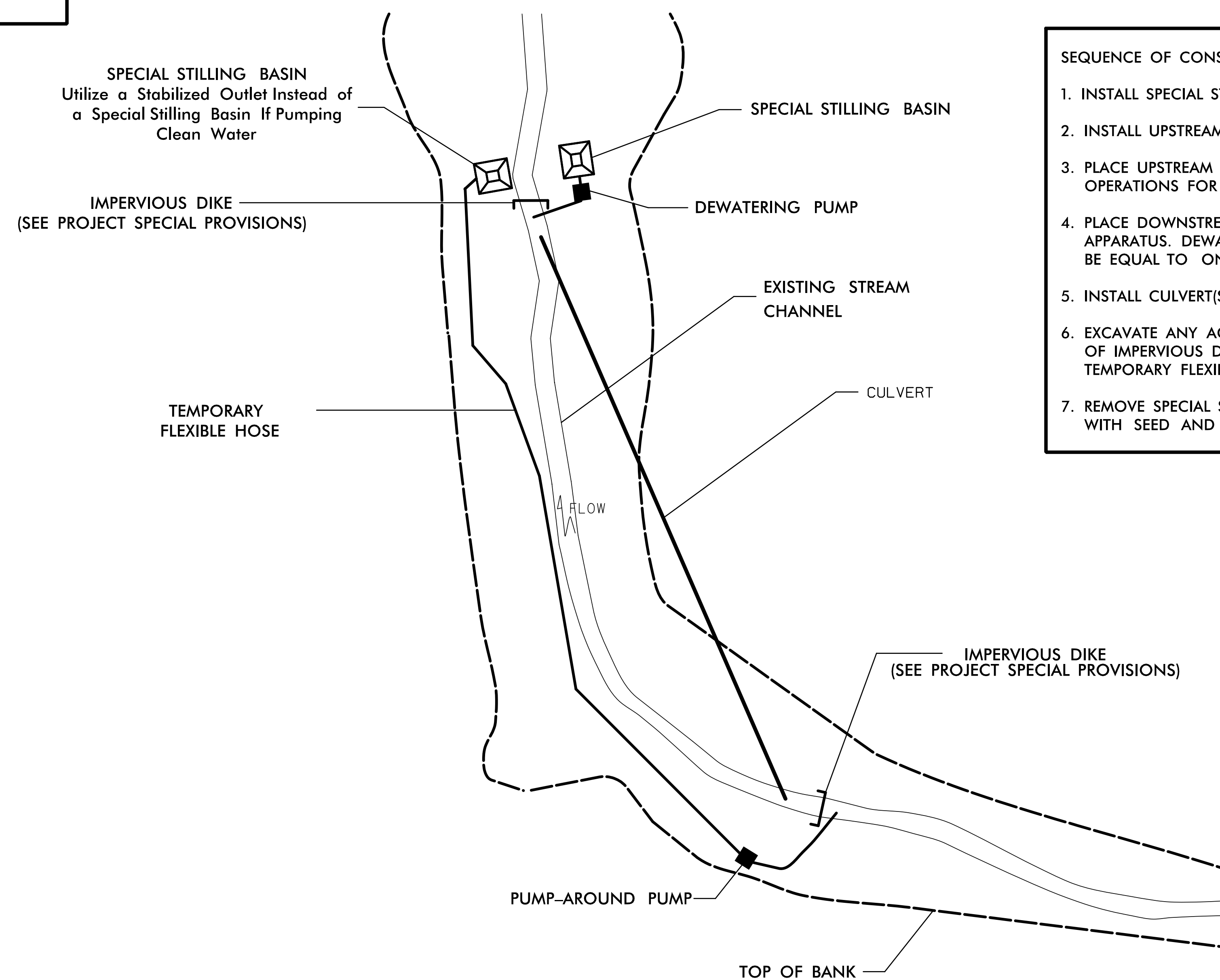
NOT TO SCALE

PROJECT REFERENCE NO. <i>DF15712.2002803</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# EXAMPLE OF PUMP-AROUND OPERATION

**NOTES:**

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



**SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA**

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



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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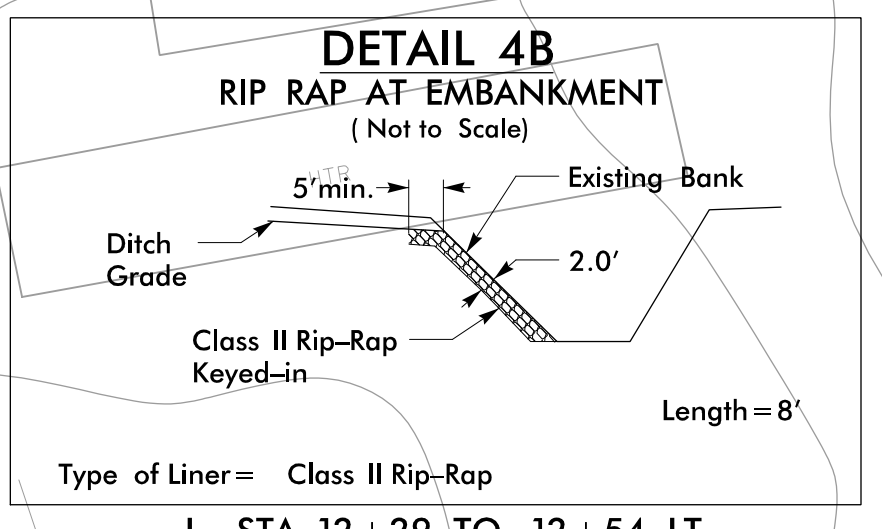
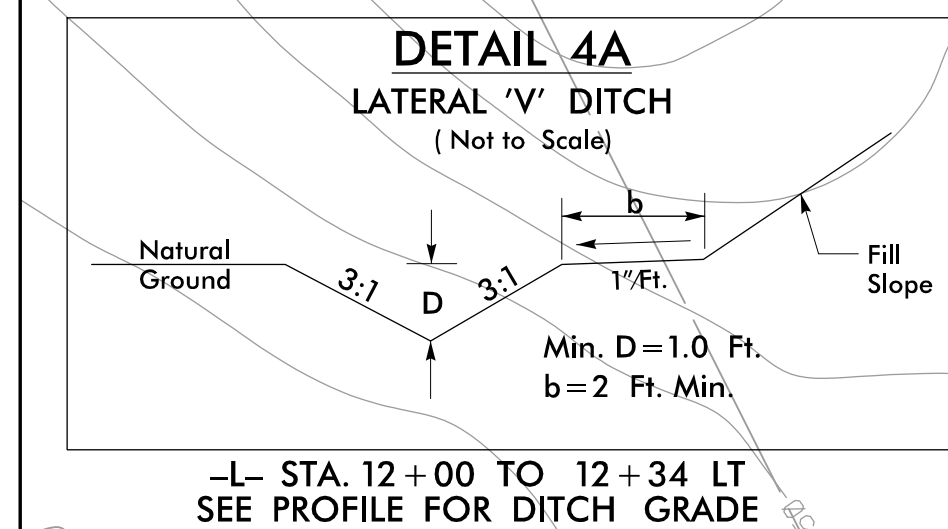
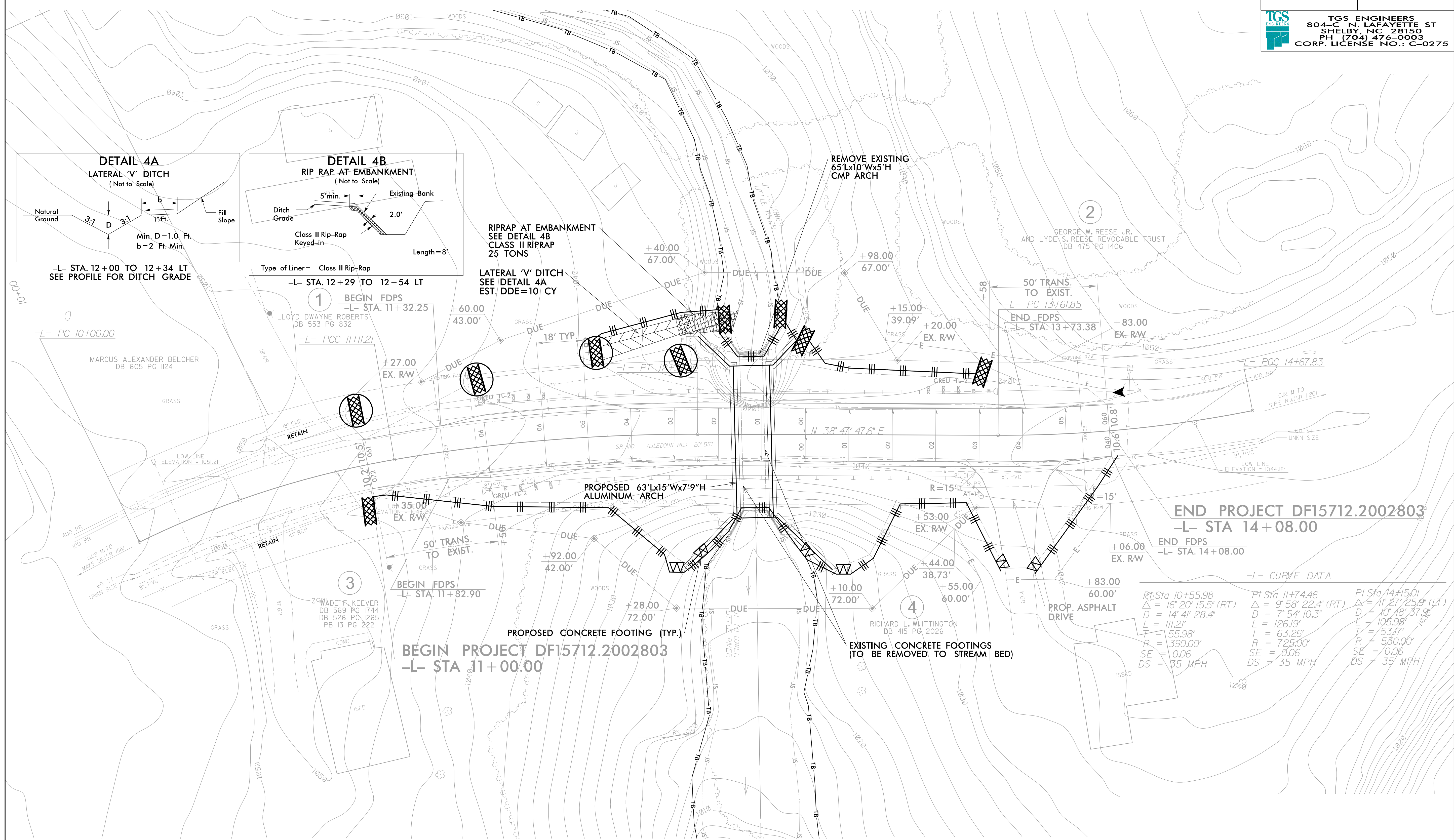
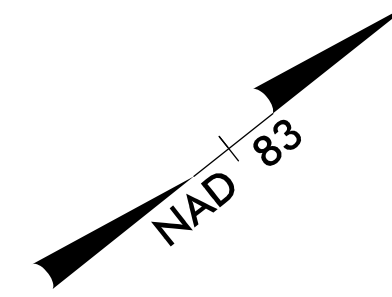
PROJECT REFERENCE NO. <i>DF15712.2002803</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***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.

PROJECT REFERENCE NO. DF15712.2002803	SHEET NO. EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**TGS ENGINEERS**  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275



RIPRAP AT EMBANKMENT  
 SEE DETAIL 4B  
 CLASS II RIPRAP  
 25 TONS

LATERAL 'V' DITCH  
 SEE DETAIL 4A  
 EST. DDE=10' CY

**END PROJECT DF15712.2002803**  
 -L- STA 14+08.00

END FDPS  
 -L- STA. 14+08.00

-L- CURVE DATA

Sta	Δ	D	L	T	R	SE	DS
Sta 10+55.98	16° 20' 15.5" (RT)	14' 4" 28.4"	111.21'	55.98'	390.00'	0.06	35 MPH
Sta 11+74.46	9° 58' 22.4" (RT)	7' 54" 10.3"	126.19'	63.26'	725.00'	0.06	35 MPH
Sta 14+15.01	11° 27' 25.9" (LT)	10' 48" 37.3"	105.98'	53.17'	530.00'	0.06	35 MPH

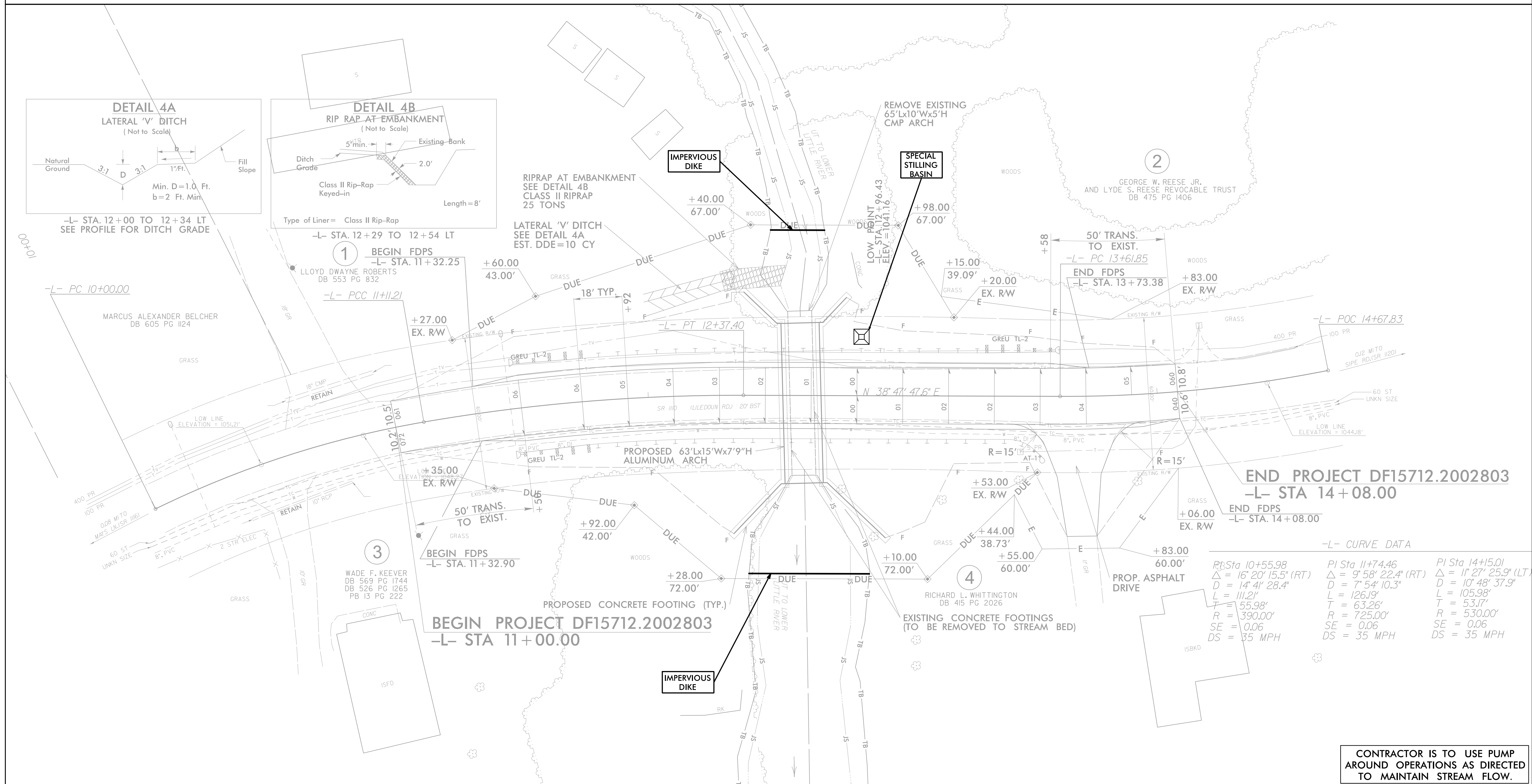
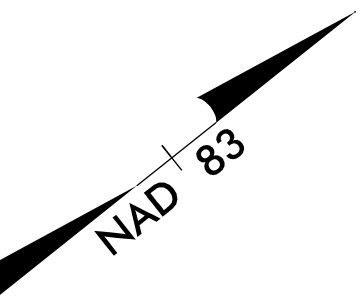
**NOTE:**  
 CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4  
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO. DF15712.2002803	SHEET NO. EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

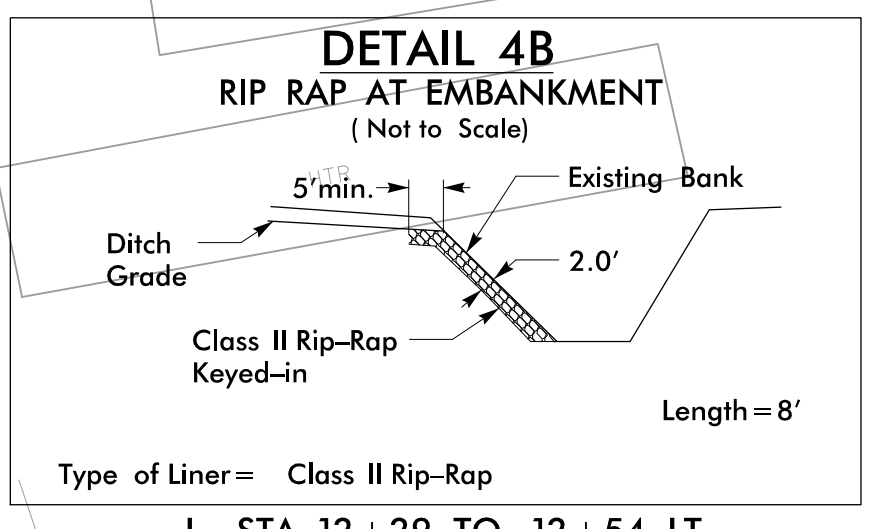
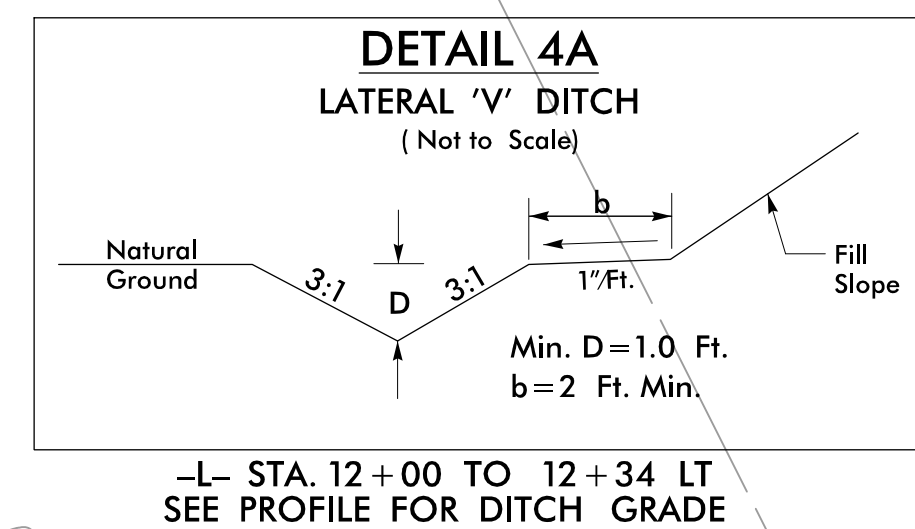
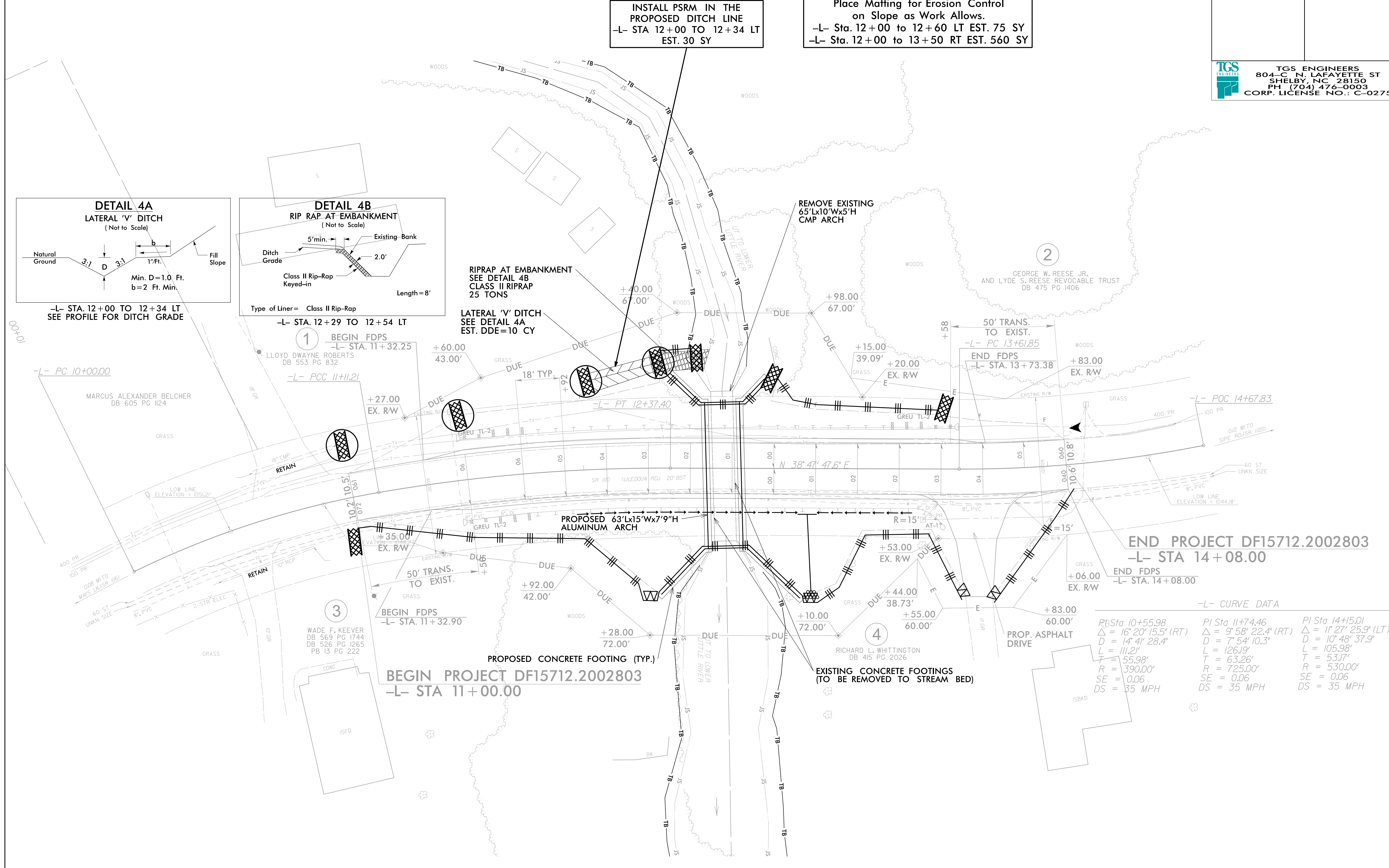
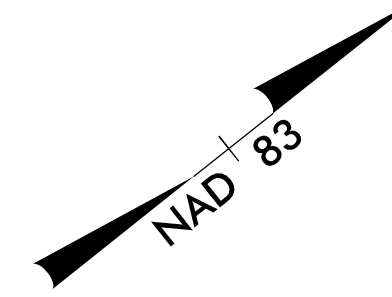
# CULVERT CONSTRUCTION SEQUENCE STA. 12+60 -L-

1. Maintain closure of SR 1110 (Liledoun Rd) to traffic as shown in traffic management plans.
2. Install perimeter erosion control devices as shown on EC-04.
3. Construct impervious dikes to restrain stream and begin pump around operations.
4. Remove existing 65'Lx10'Wx5'H CMP Arch Culvert.

5. Install proposed 63'Lx15'Wx7'9"H Aluminum Arch Culvert.
6. Remove impervious dikes and allow flow through new culvert.
7. Complete any necessary Inlet/Outlet channel improvements.
8. Complete roadway construction.



CONTRACTOR IS TO USE PUMP AROUND OPERATIONS AS DIRECTED TO MAINTAIN STREAM FLOW.



RIPRAP AT EMBANKMENT  
SEE DETAIL 4B  
CLASS II RIPRAP  
25 TONS

LATERAL 'V' DITCH  
SEE DETAIL 4A  
EST. DDE=10 CY

INSTALL PSRM IN THE  
PROPOSED DITCH LINE  
-L- STA 12+00 TO 12+34 LT  
EST. 30 SY

Place Matting for Erosion Control  
on Slope as Work Allows.  
-L- Sta. 12+00 to 12+60 LT EST. 75 SY  
-L- Sta. 12+00 to 13+50 RT EST. 560 SY

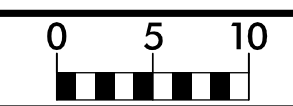
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-L- STA 14+08.00

-L- CURVE DATA

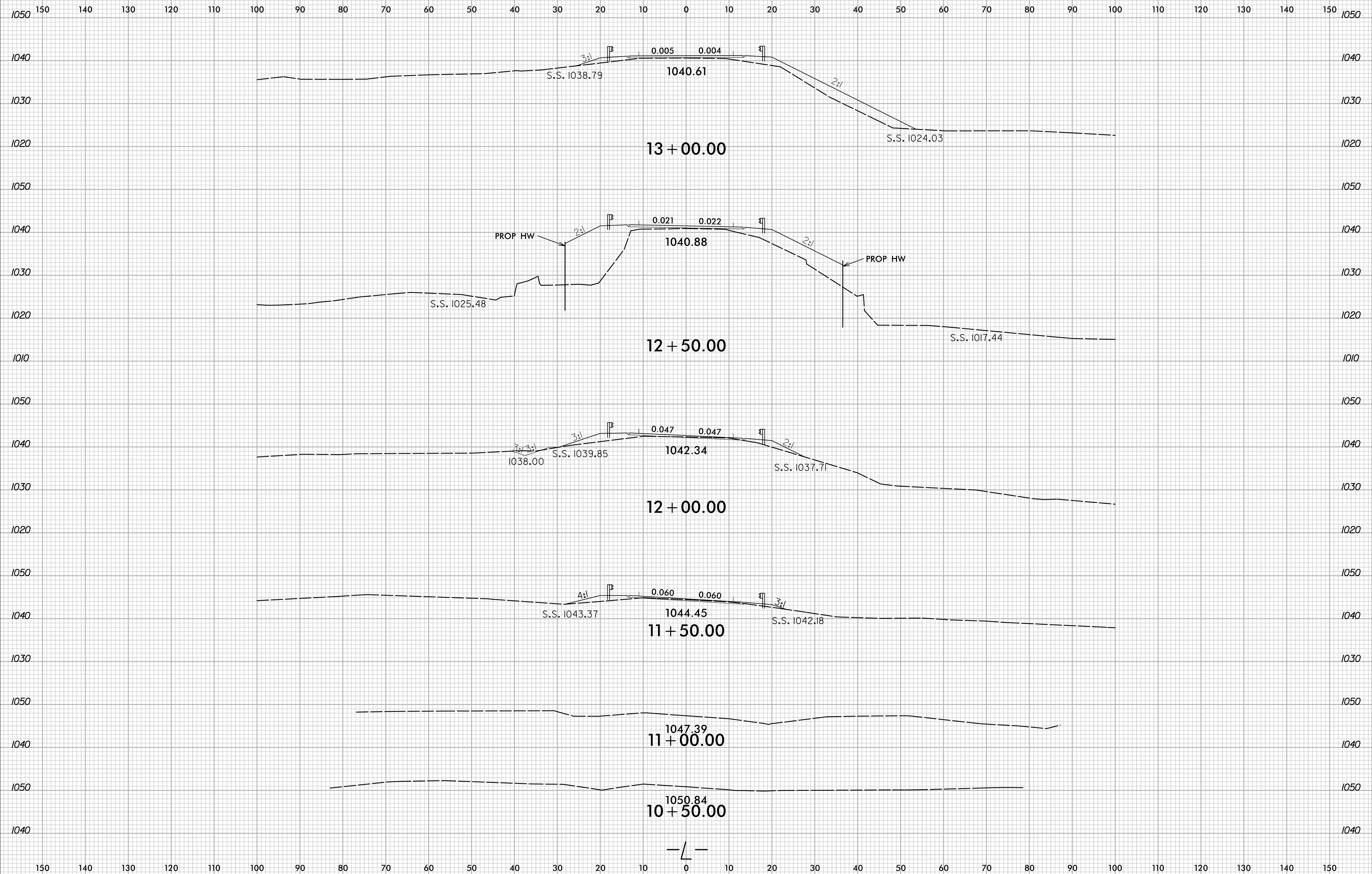
Station	Delta	D	L	T	R	SE	DS
PI Sta 10+55.98	$\Delta = 16^\circ 20' 15.5''$ (RT)	$D = 14^\circ 41' 28.4''$	$L = 111.21'$	$T = 55.98'$	$R = 390.00'$	$SE = 0.06$	$DS = 35$ MPH
PI Sta 11+74.46	$\Delta = 9^\circ 58' 22.4''$ (RT)	$D = 7^\circ 54' 10.3''$	$L = 126.19'$	$T = 63.26'$	$R = 725.00'$	$SE = 0.06$	$DS = 35$ MPH
PI Sta 14+15.01	$\Delta = 11^\circ 27' 25.9''$ (LT)	$D = 10^\circ 48' 37.9''$	$L = 105.98'$	$T = 53.17'$	$R = 530.00'$	$SE = 0.06$	$DS = 35$ MPH



6/23/16

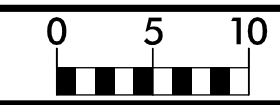


PROJ. REFERENCE NO.	SHEET NO.
DF 15712.2002803	X-1



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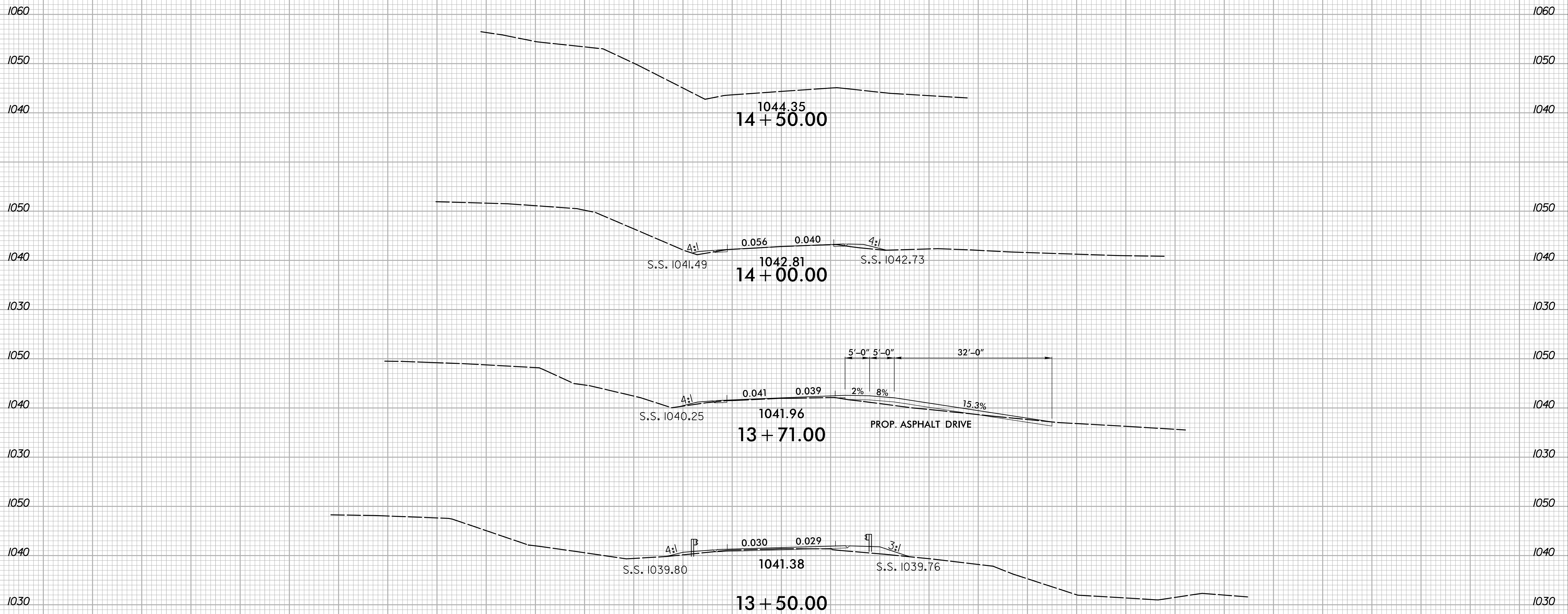
6/23/16



PROJ. REFERENCE NO.  
DF15712.2002803

SHEET NO.  
X-2

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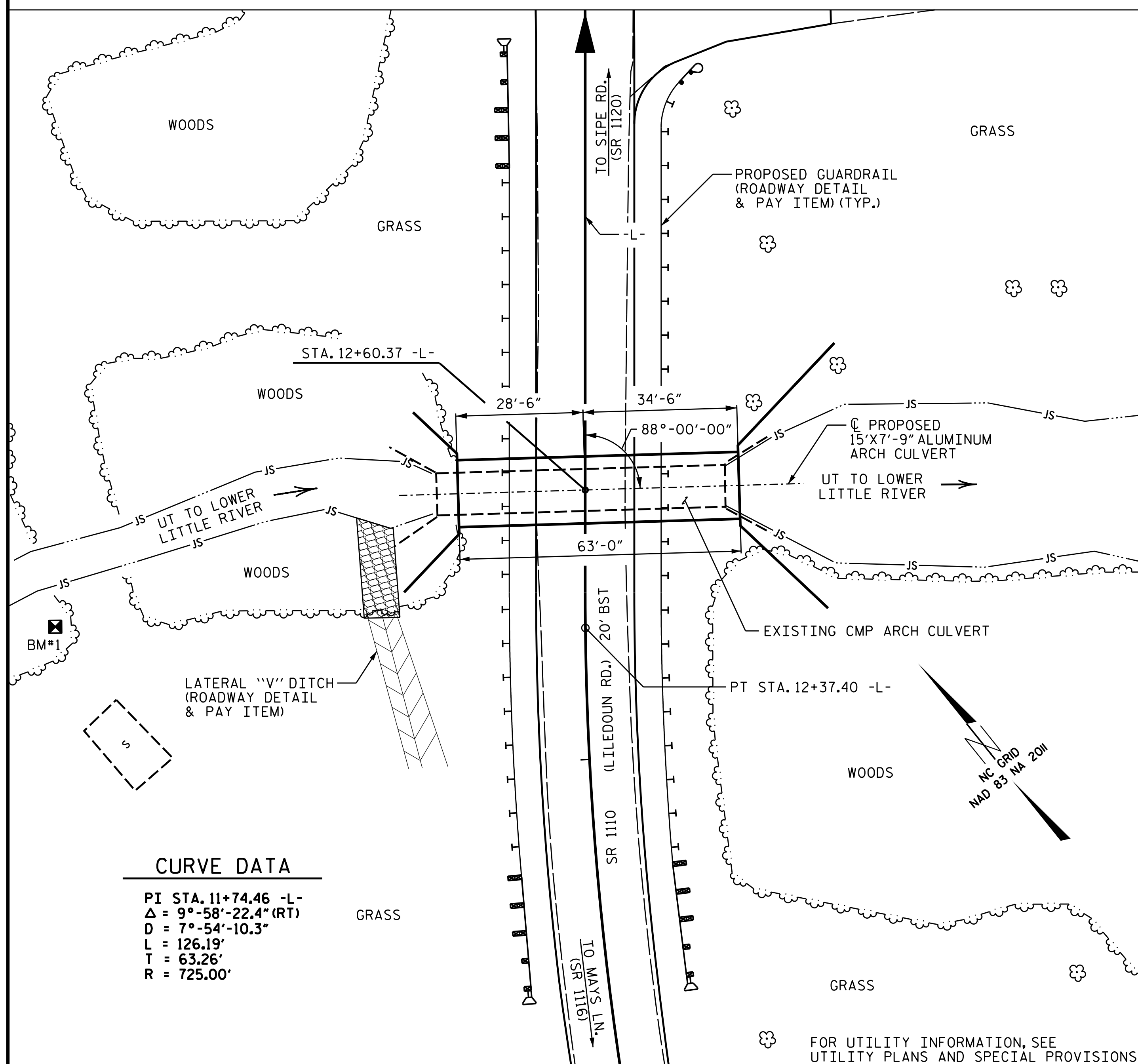


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8/18/2020  
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BENCHMARK #1: RAILROAD SPIKE IN BASE OF 35" POPLAR TREE 119' LT OF STA 12+31 -L-; ELEV. 1030.63



**CURVE DATA**

PI STA. 11+74.46 -L-  
 $\Delta = 9^\circ-58'-22.4"$  (RT)  
 $D = 7^\circ-54'-10.3"$   
 $L = 126.19'$   
 $T = 63.26'$   
 $R = 725.00'$

LOCATION SKETCH

**ROADWAY DATA**

GRADE POINT ELEV. @ STATION 12+60.37 -L- = 1041.37  
 BED ELEV. @ STATION 12+60.37 -L- = 1022.60  
 ROADWAY SLOPES = 2:1

**HYDRAULIC DATA**

DESIGN DISCHARGE = 840 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YEARS  
 DESIGN HIGH WATER ELEVATION = 1030.8  
 DRAINAGE AREA = 1.75 SQ. MI.  
 BASE DISCHARGE (Q100) = 1330 C.F.S.  
 BASE HIGH WATER ELEVATION = 1034.2

**OVERTOPPING DATA**

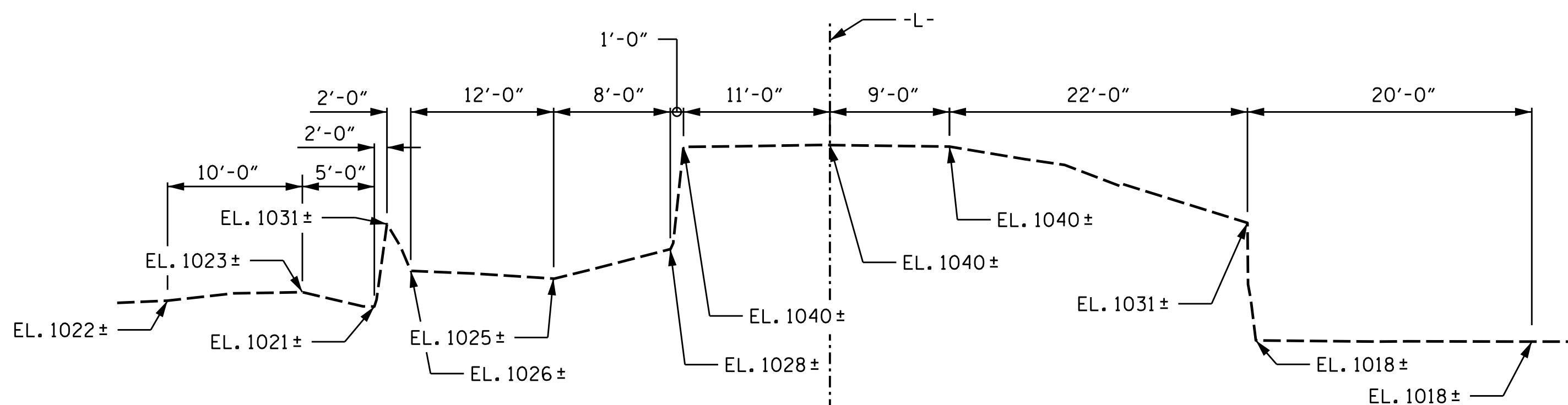
OVERTOPPING DISCHARGE = 1700+ C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YEARS  
 OVERTOPPING HIGH WATER ELEVATION = 1041.2

**TOTAL STRUCTURE QUANTITIES**

REMOVAL OF EXISTING STRUCTURE	LUMP SUM
ALUMINUM ARCH CULVERT	LUMP SUM
CULVERT EXCAVATION	LUMP SUM

**NOTES**

- ASSUMED LIVE LOAD ----- HL-93 OR ALTERNATE LOADING.
- DESIGN FILL----- 12.1 FT. MAX.
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTES SHEET.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY, THE SUPPLIER SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12 AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR FALSEWORK & FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ALUMINUM ARCH CULVERT, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- REMOVAL OF THE EXISTING CMP ARCH CULVERT AND FOOTINGS SHALL BE PERFORMED SO AS NOT TO ALLOW ANY DEBRIS TO FALL INTO THE WATER, THE CONTRACTOR SHALL REMOVE THE CMP ARCH CULVERT AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE MANUFACTURER OF THE ALUMINUM ARCH CULVERT SHALL PROVIDE LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY PER NCDOT REQUIREMENTS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."
- THE REQUIRED BEARING CAPACITY OF THE SPREAD FOOTINGS IS 5 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.
- FOOTINGS SHALL BE KEYED A MINIMUM OF 6 INCHES INTO ROCK OR DOWELED INTO ROCK BY AN APPROVED METHOD.
- TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTING SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.
- THE SCOUR CRITICAL ELEVATION IS THE AS BUILT BOTTOM OF FOOTING ELEVATION. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATIONS ARTICLE 410-9.
- THE BOTTOM OF FOOTING ELEVATION MAY BE LOWERED IN ORDER TO SATISFY BEARING CAPACITY AND MINIMUM ROCK EMBEDMENT REQUIREMENTS.
- FOR CULVERT BACKFILL, SEE SPECIAL PROVISIONS.



PROFILE ALONG Q CULVERT

DRAWN BY : STM DATE : 07/20  
 CHECKED BY : MGC DATE : 08/20  
 DESIGN ENGINEER OF RECORD: MGC DATE : 08/20

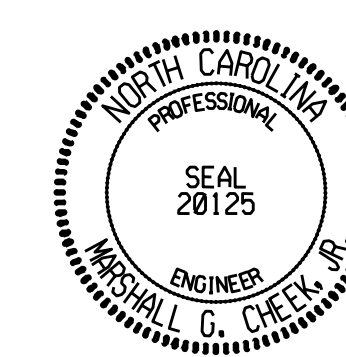
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PROJECT NO. DF15712.2002803

ALEXANDER COUNTY

STATION: 12+60.37 -L-

SHEET 1 OF 3



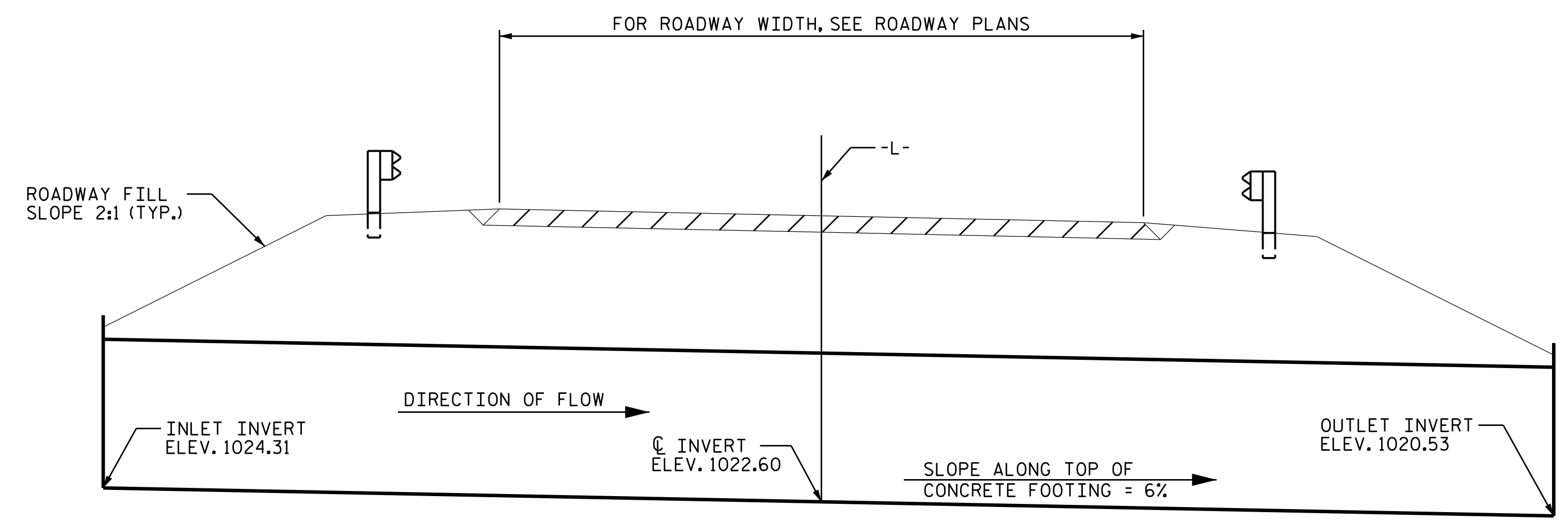
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

15'-0" X 7'-9"  
 ALUMINUM  
 ARCH CULVERT  
 88°-00'-00" SKEW

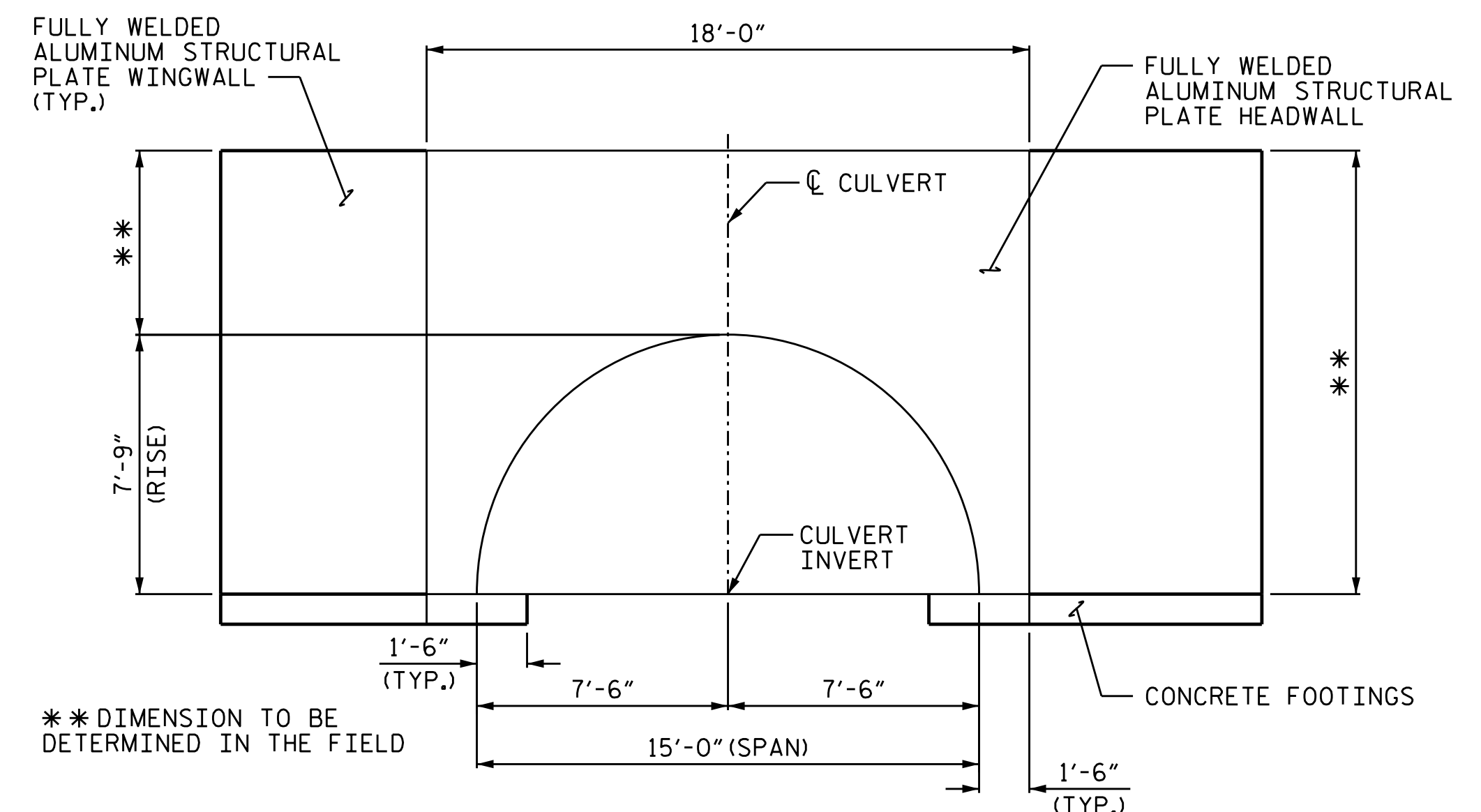
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 UNLESS ALL SIGNATURES COMPLETED  
 TGS ENGINEERS  
 706 HILLSBOROUGH STREET  
 SUITE 200  
 RALEIGH, NC 27603  
 PH (919) 773-8887  
 CORP. LICENSE NO.: C-0275

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



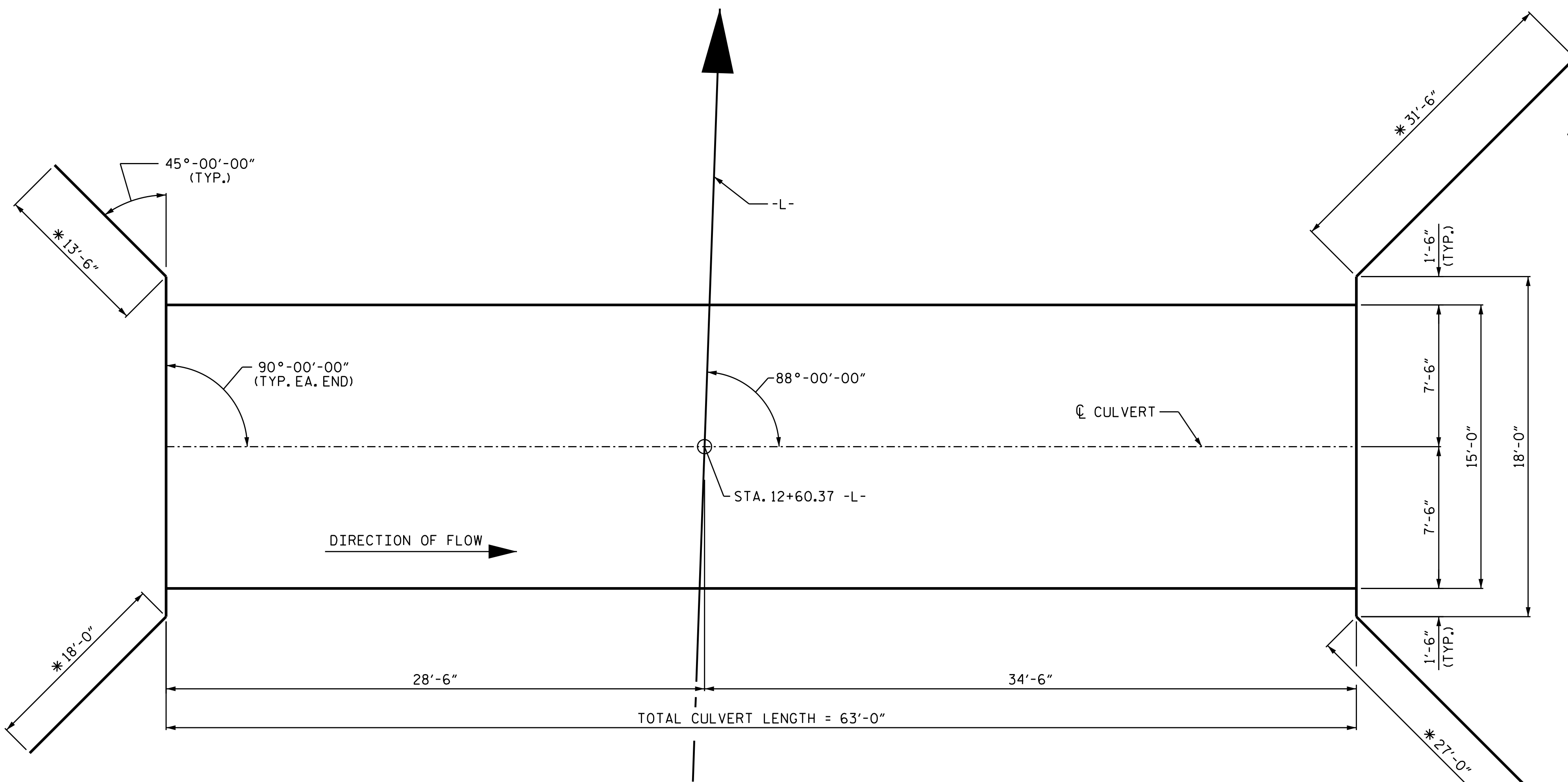


**CULVERT SECTION NORMAL TO ROADWAY**



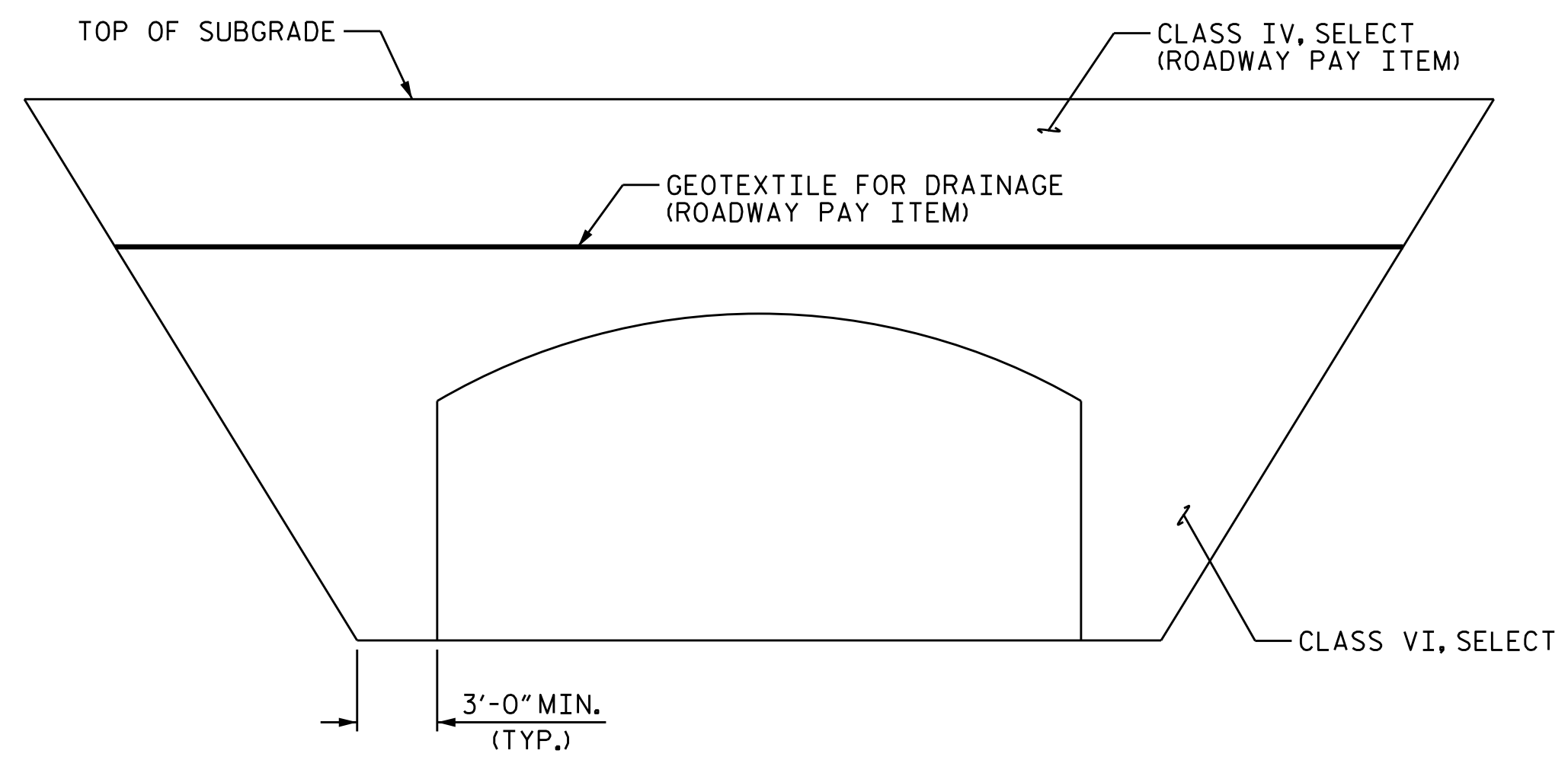
**END ELEVATION**

INLET AND OUTLET  
NOTE: THE CULVERT HEADWALL MAY BE FABRICATED TO 1 FOOT ABOVE THE ROADWAY FILL SLOPES.



**PLAN VIEW**

FOOTINGS NOT SHOWN FOR CLARITY  
\* WING LENGTHS MAY BE ADJUSTED PER MANUFACTURER'S DETAILS AND WITH APPROVAL OF THE ENGINEER.



**CULVERT BACKFILL DETAIL**

PROJECT NO. DF15712.2002803  
ALEXANDER COUNTY  
STATION: 12+60.37 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

8/20/2020

SEAL 20125  
ENGINEER  
MARSHALL G. CHECK, JR.  
5F80C2F344DC413...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

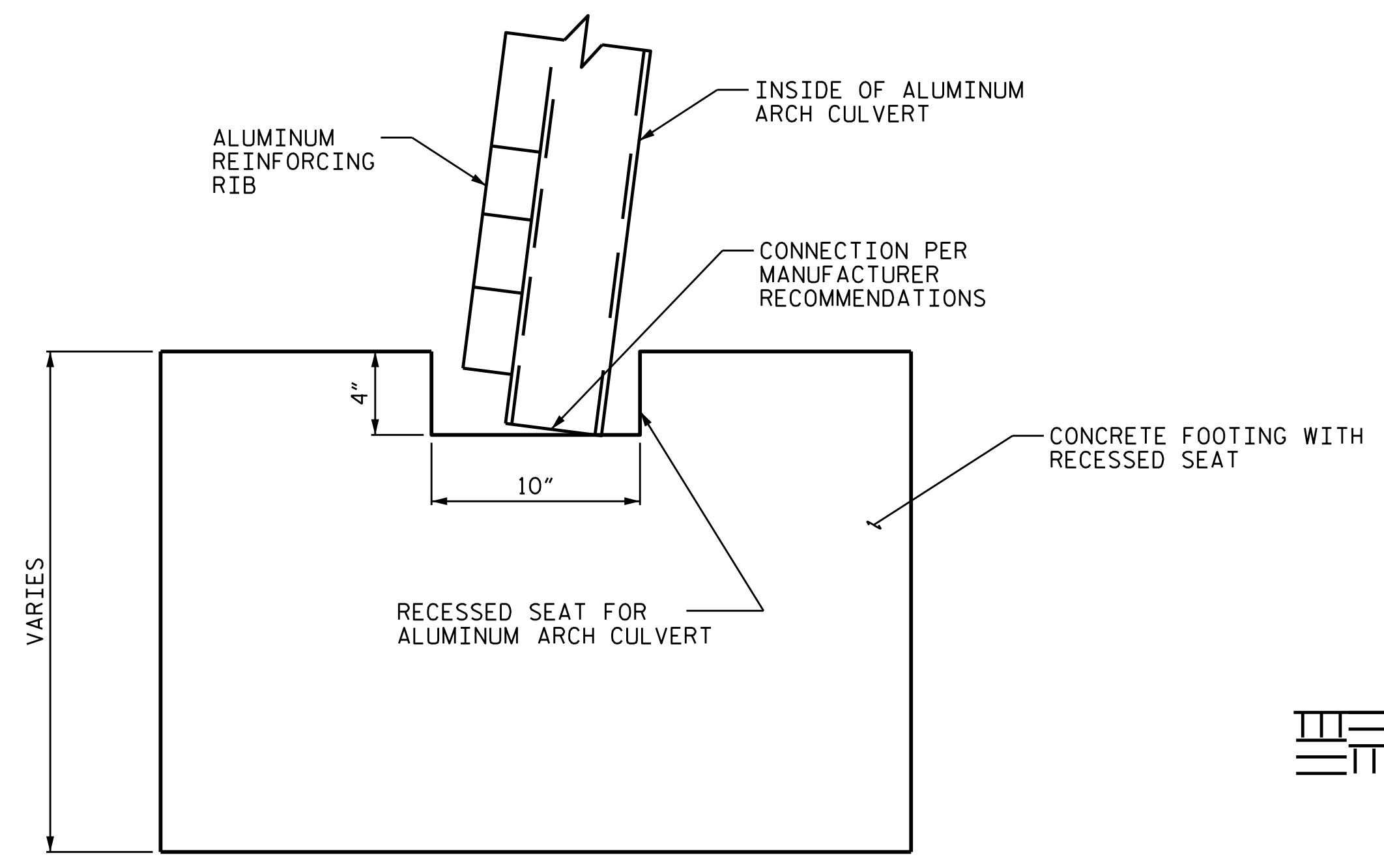
TGS ENGINEERS  
706 HILLSBOROUGH STREET  
SUITE 200  
RALEIGH, NC 27603  
PH (919) 773-8887  
CORP. LICENSE NO.: C-0275

15'-0" X 7'-9" ALUMINUM ARCH CULVERT 88°-00'-00" SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C-2					TOTAL SHEETS 3

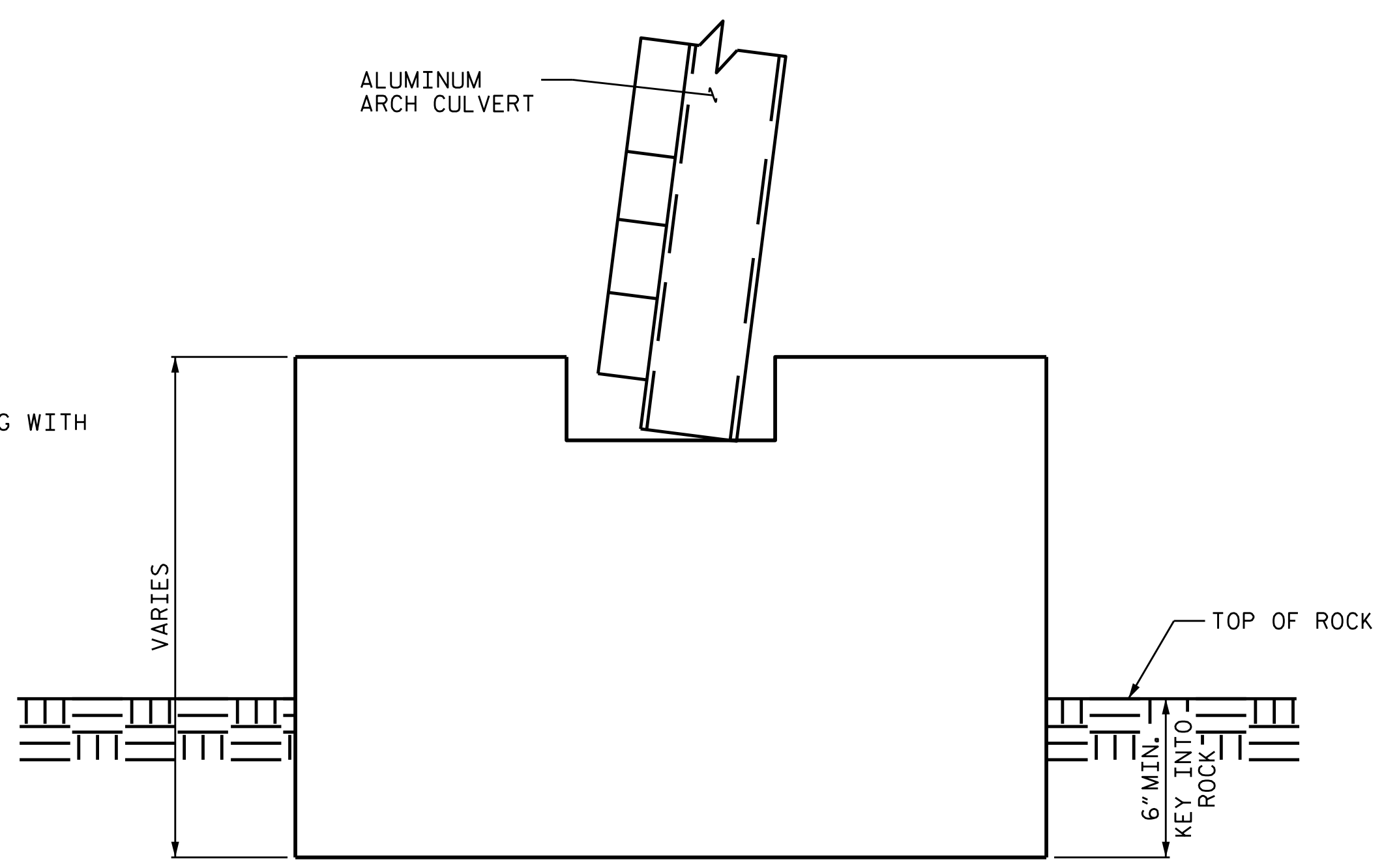
DRAWN BY : STM	DATE : 07/20
CHECKED BY : MGC	DATE : 08/20
DESIGN ENGINEER OF RECORD: MGC	DATE : 08/20

NOTES

FOOTING PLAN & DETAILS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE FOOTING DESIGN. THE ENTIRE COST OF THE WORK REQUIRED TO CONSTRUCT THE CULVERT FOOTING SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ALUMINUM ARCH CULVERT. SEE ALUMINUM ARCH CULVERT SPECIAL PROVISION.

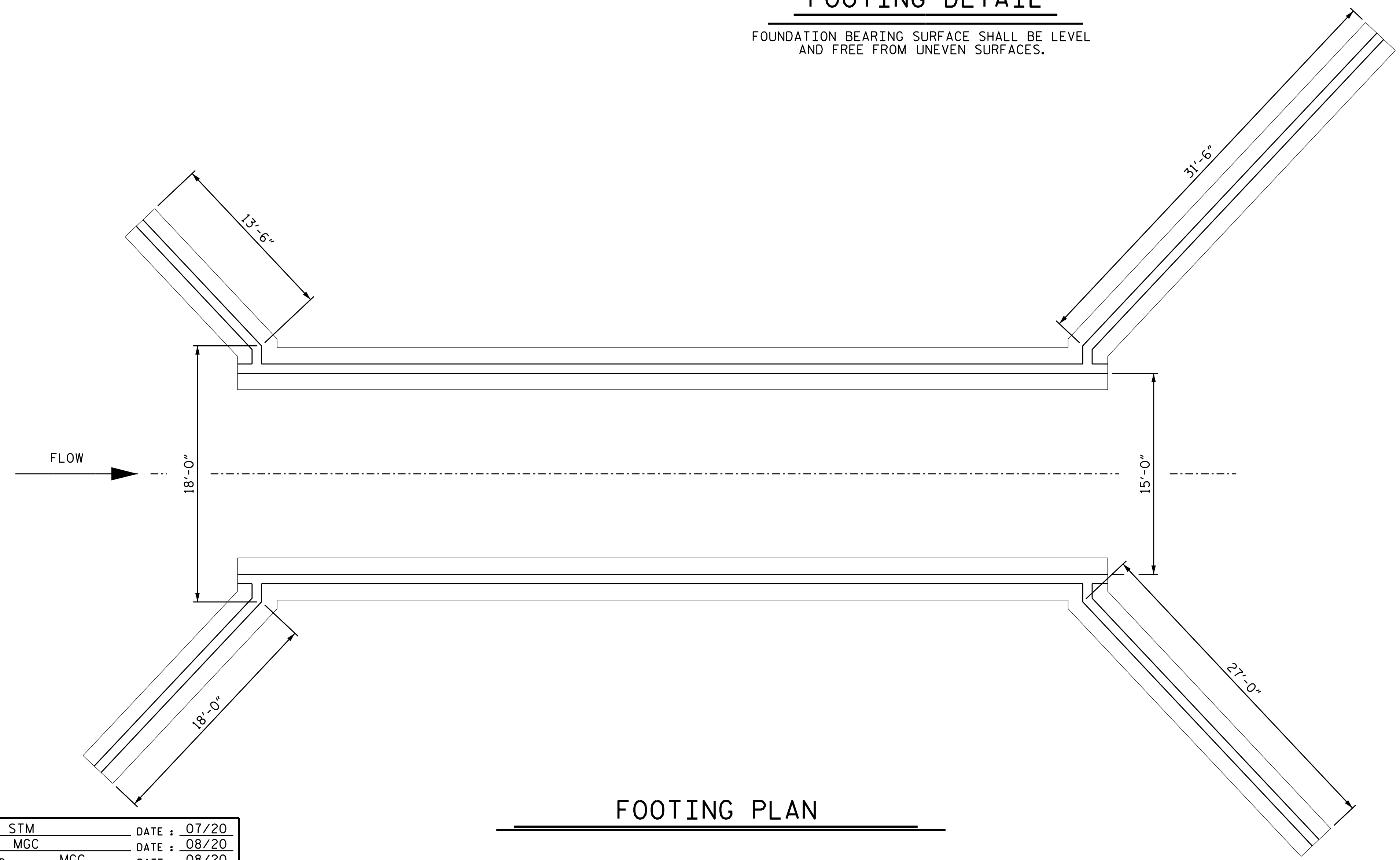


KEYWAY DETAIL



FOOTING DETAIL

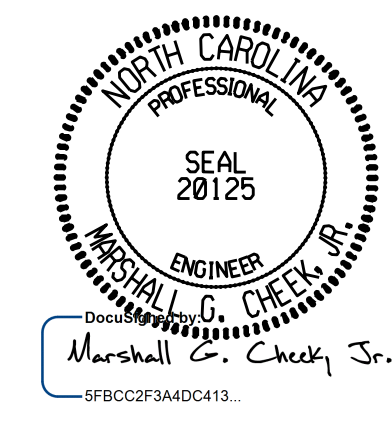
FOUNDATION BEARING SURFACE SHALL BE LEVEL AND FREE FROM UNEVEN SURFACES.



FOOTING PLAN

PROJECT NO. DF15712.2002803  
ALEXANDER COUNTY  
 STATION: 12+60.37 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 15'-0" X 7'-9"  
 ALUMINUM  
 ARCH CULVERT  
 88°-00'-00" SKEW

DRAWN BY :	STM	DATE :	07/20
CHECKED BY :	MGC	DATE :	08/20
DESIGN ENGINEER OF RECORD:	MGC	DATE :	08/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS			SHEET NO.			
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
						1			3			TOTAL SHEETS
						2			4			3

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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



# ENGLISH

JANUARY, 1990

STD. NO. SN