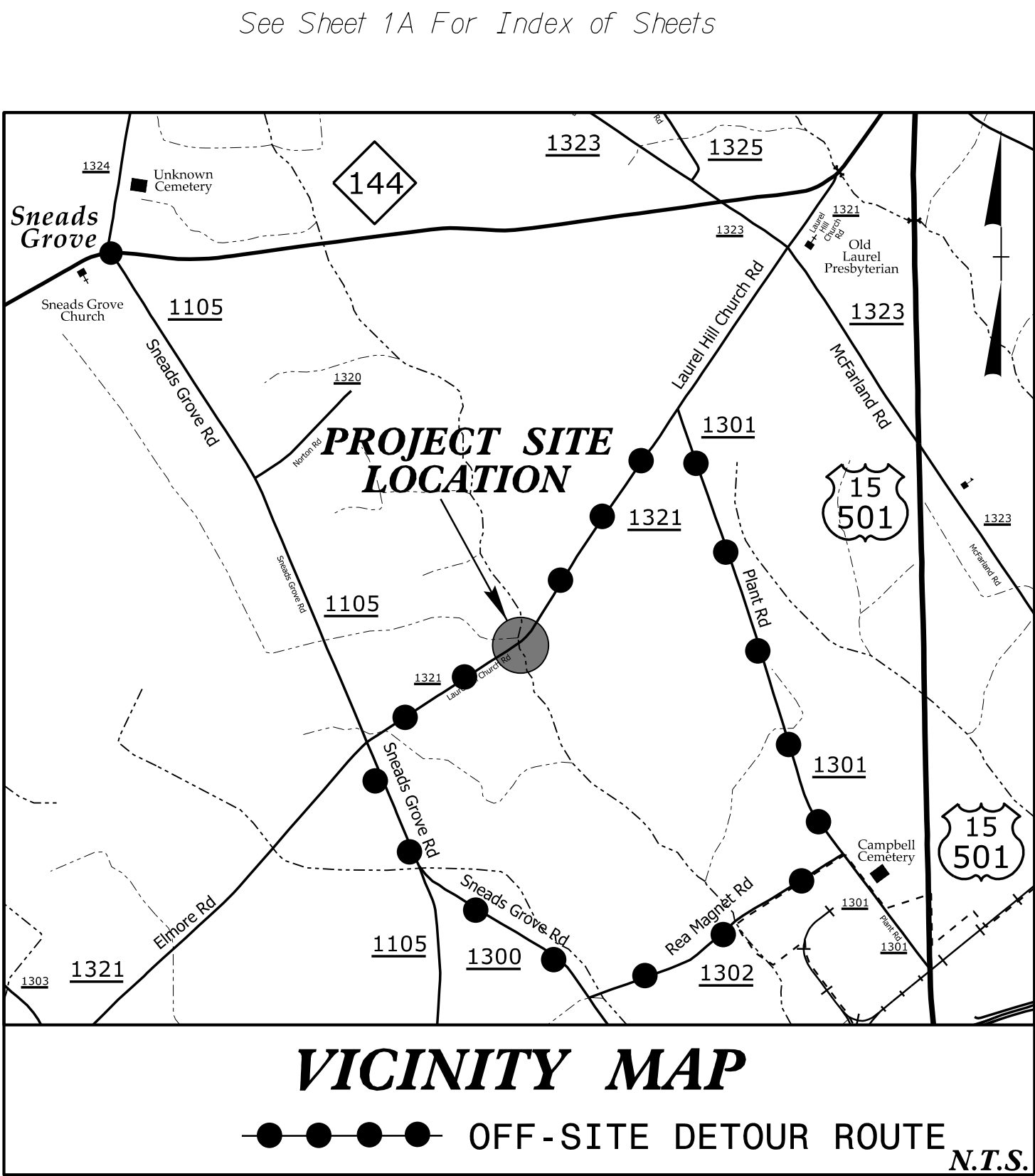


09/08/99

PROJECT: DF15408.2083804

CONTRACT:



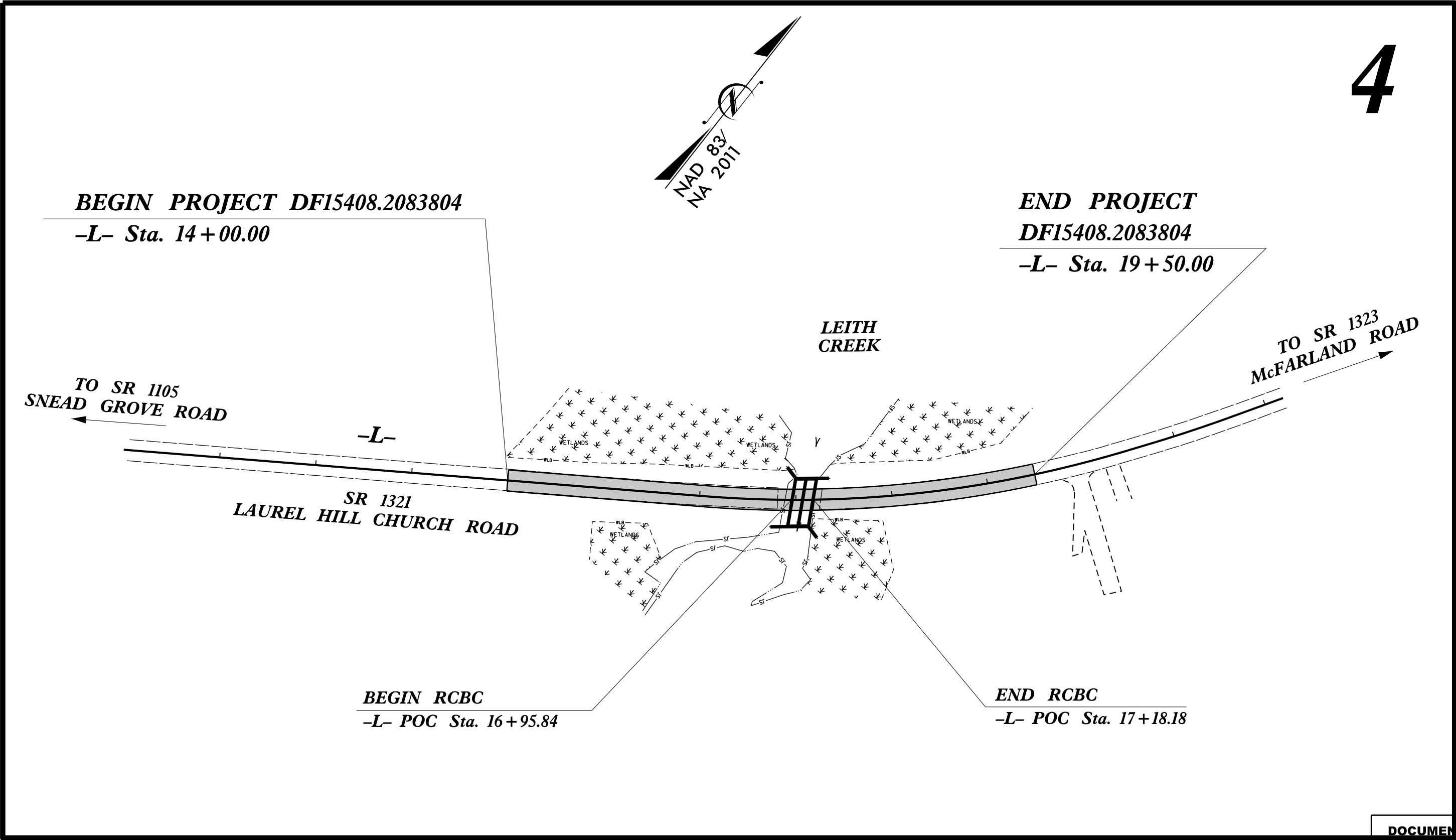
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SCOTLAND COUNTY

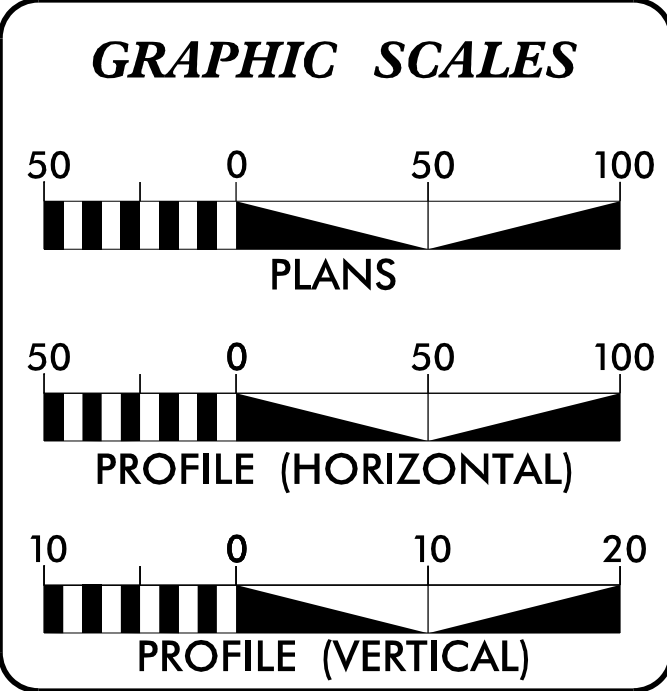
LOCATION: PIPE 82 2042 OVER LEITH CREEK
ON SR 1321 (LAUREL HILL CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & RCBC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15408.2083804	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
DF15408.2083804		PE	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT	=	
ADT	=	
K	=	%
D	=	%
T	=	% *
V	=	60 MPH
* TTST	=	DUAL
FUNC CLASS	=	LOCAL
SUBREGIONAL TIER		

PROJECT LENGTH

LENGTH ROADWAY PROJECT DF15408.2083804	=	0.100 mi
LENGTH STRUCTURE PROJECT DF15408.2083804	=	0.004 mi
TOTAL LENGTH OF PROJECT DF15408.2083804	=	0.104 mi

PLANS PREPARED BY:

CH ENGINEERING

3220 GLEN ROYAL RD., RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-8188

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 6, 2019

LETTING DATE:

PLANS PREPARED FOR:

**DIVISION OF HIGHWAYS
DIVISION 8**

121 DOT Drive
Carthage, NC 28327

BRIAN A. WILES, PE
PROJECT ENGINEER

TIM WELCH, PE
NCDOT CONTACT
DIV 8 BRIDGE PROGRAM MANAGER

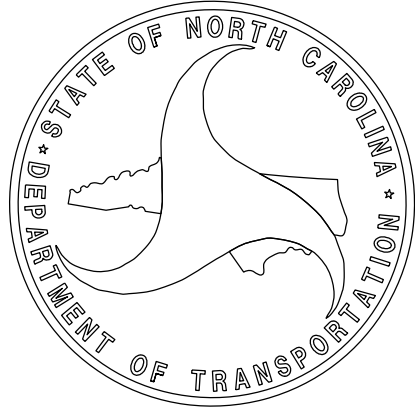
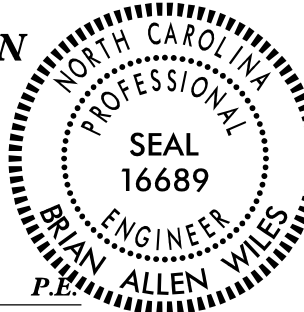
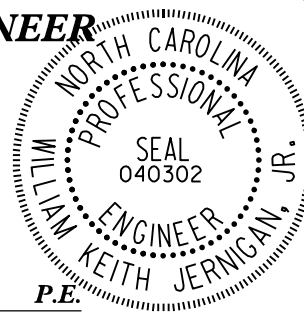
HYDRAULICS ENGINEER

MI ENGINEERING
1011 SCHUBS DRIVE, SUITE 100
RALEIGH, NC 27601
(919) 851-6609
FIRM #E NUMBER: F-06671

DocuSigned by:
Bill Jernigan
10/14/2019
SIGNATURE:

ROADWAY DESIGN ENGINEER

DocuSigned by:
Brian A Wiles
10/14/2019
SIGNATURE:



8/17/99

2/17/2019
N:\PROJECTS\SR1321.Rdy_tsh_01A.dgn

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, PAVED SHOULDER AND WEDGING DETAILS
2C-1	GUARDRAIL PLACEMENT - 25'-0" CLEAR SPAN DETAIL
2C-2	GUARDRAIL INSTALLATION - SHEET 6 OF 8
3B-1	SUMMARIES OF EARTHWORK, ASPHALT PAVEMENT REMOVAL AND GUARDRAIL
4	PLAN SHEET
5	PROFILE SHEET
RW-01 THRU RW-04	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION DETAIL SHEETS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-8	CROSS SECTIONS
C-1 THRU C-6	CULVERT PLANS

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 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.

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T Transmission - Communications.

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.

TEMPORARY DIVERSIONS WETLAND REPAIRS:

THE TEMPORARY DIVERSIONS IN THE WETLAND AREAS WILL BE RESTORED TO PRECONSTRUCTION SLOPE AND CONTOURS. EXCAVATED MATERIAL SHALL BE STRATEGICALLY STOCKPILED AND PROTECTED. THIS MATERIAL WILL BE USED TO BACKFILL THE EXCAVATED AREAS TO THE ORIGINAL DENSITY. THE AREA WILL THEN BE RESEEDED WITH THE APPROPRIATE NATIVE WETLAND SEED MIX.

CHENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.
DF15408.2083804

SHEET NO.
1A

ROADWAY DESIGN
ENGINEER

SEAL

19889

Allen Wiles

12/17/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

2018 ROADWAY ENGLISH STANDARD DRAWINGS

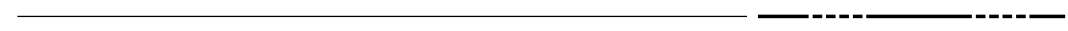
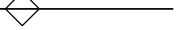
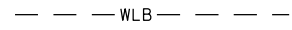
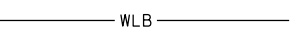
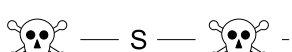
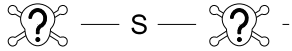
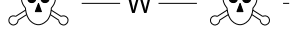
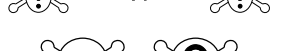
EFF. 01-16-2018
REV.

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:

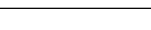
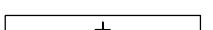
STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.04	Drainage Ditches with Class 'B' Rip Rap

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

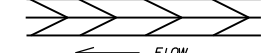
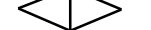
BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

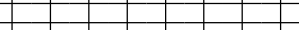
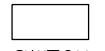
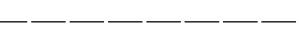
BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

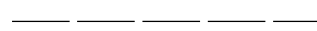
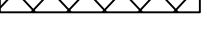
RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

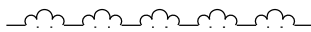
Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite RW Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

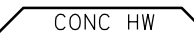
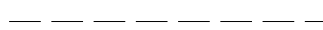
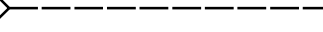
Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

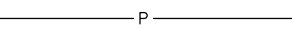
Single Tree	
Single Shrub	

Hedge	
Woods Line	
Orchard	
Vineyard	

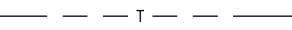
EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

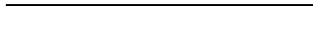
WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

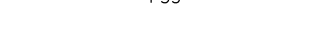
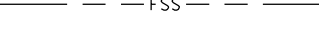
TV:

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

GAS:

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

SANITARY SEWER:

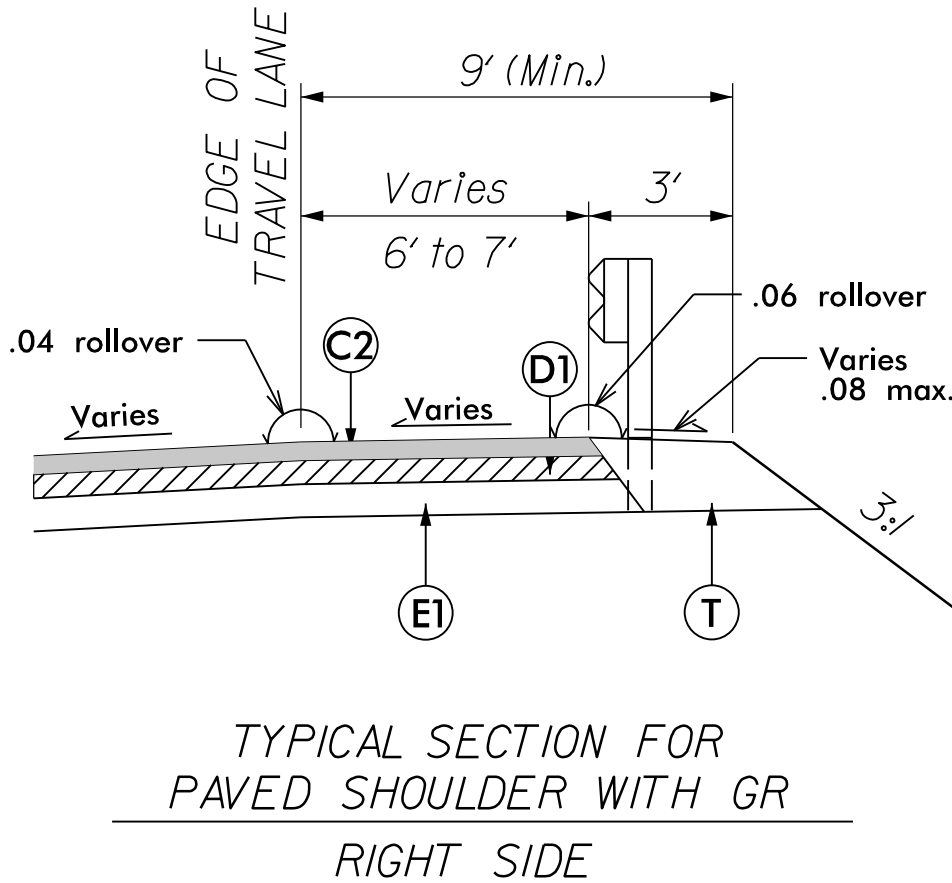
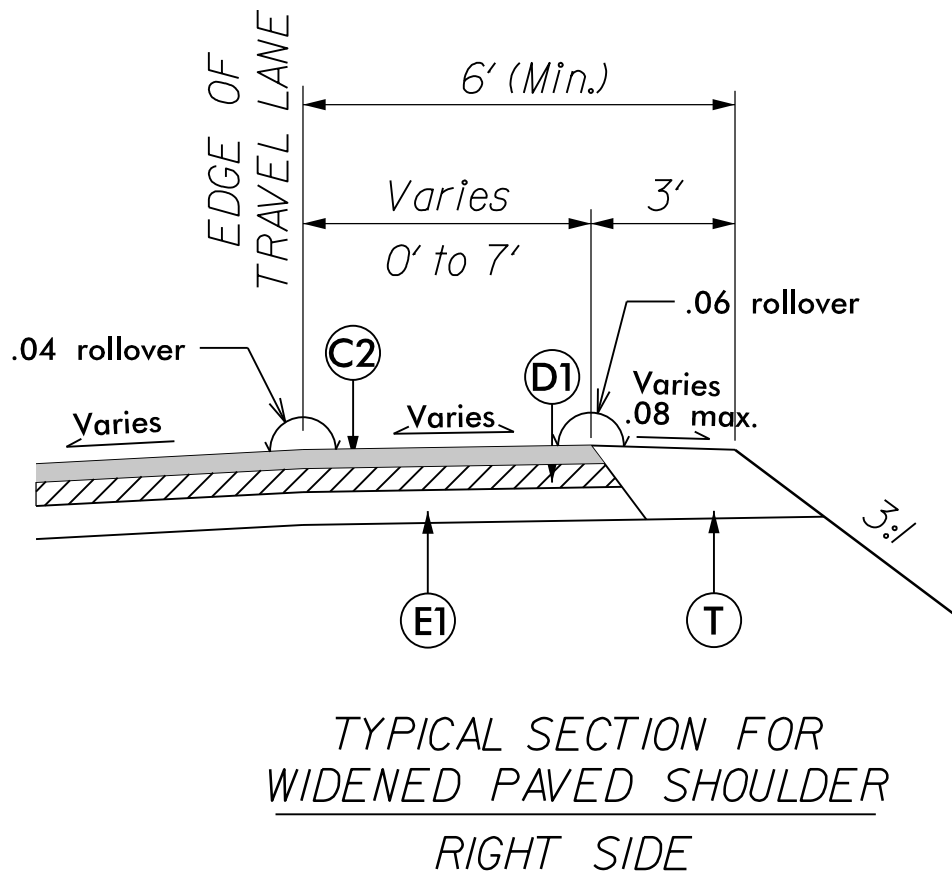
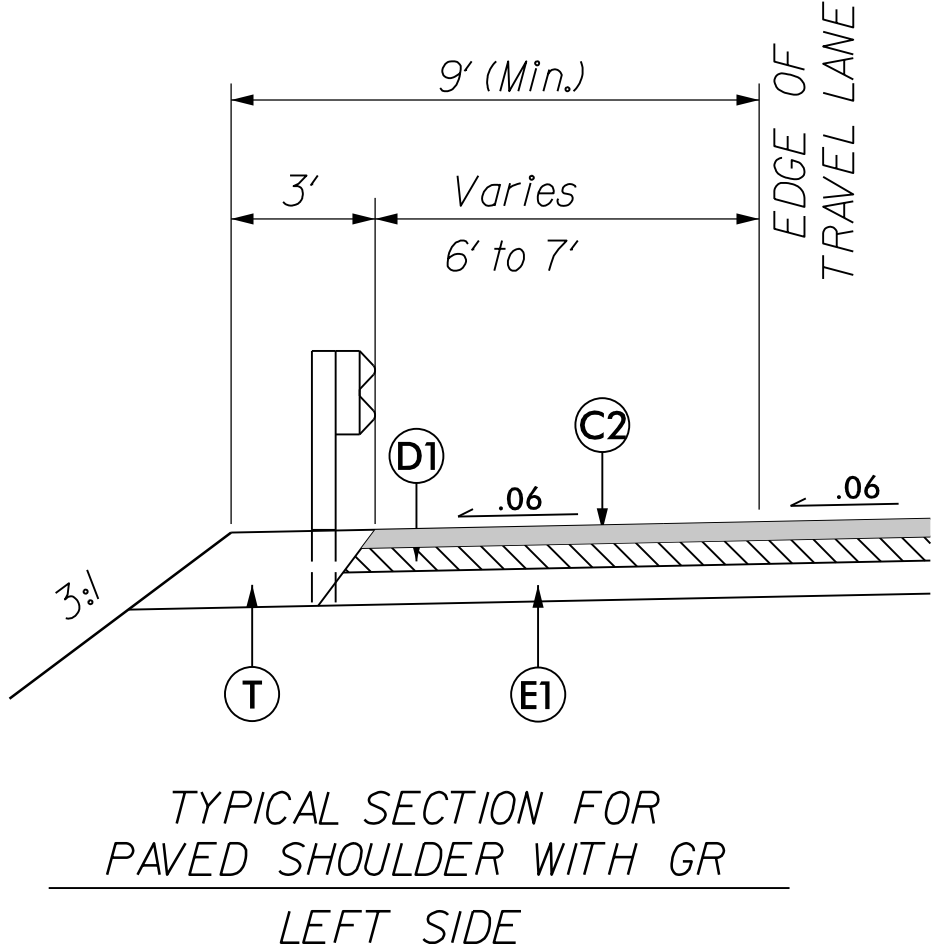
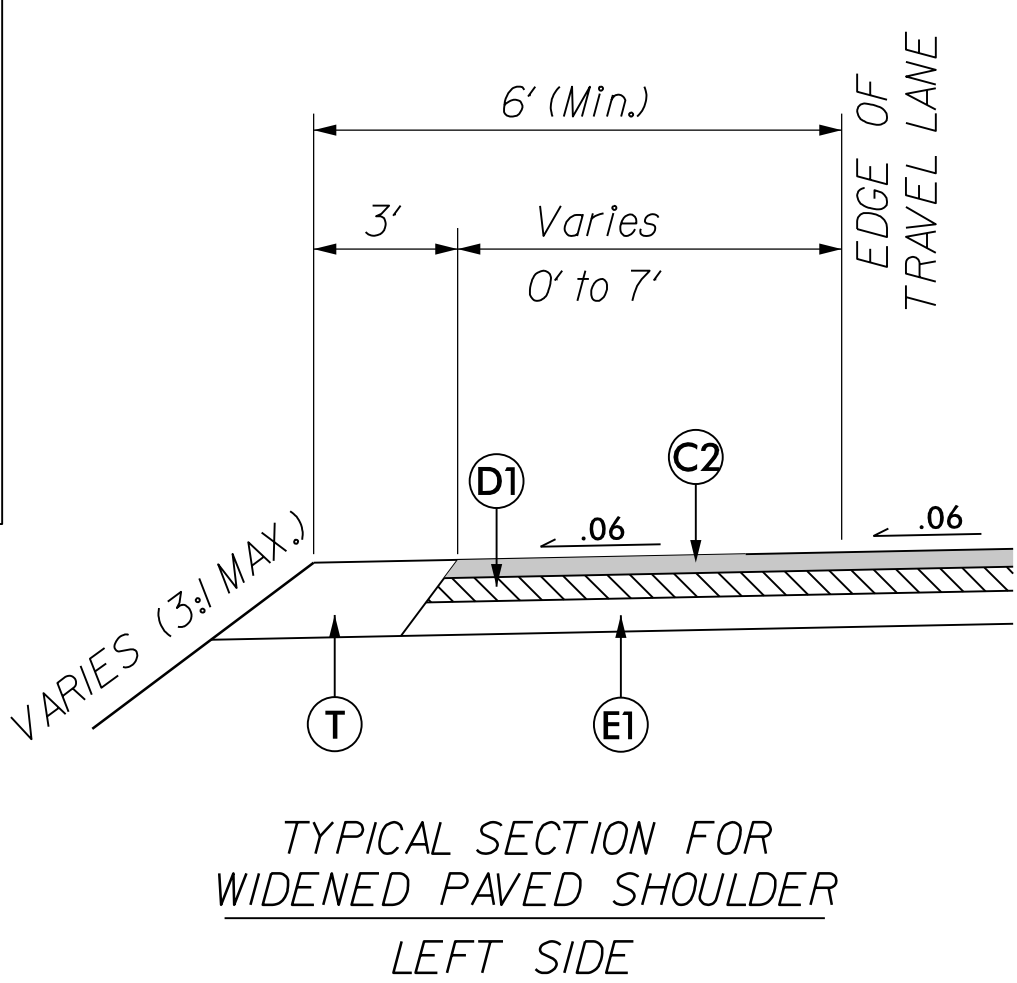
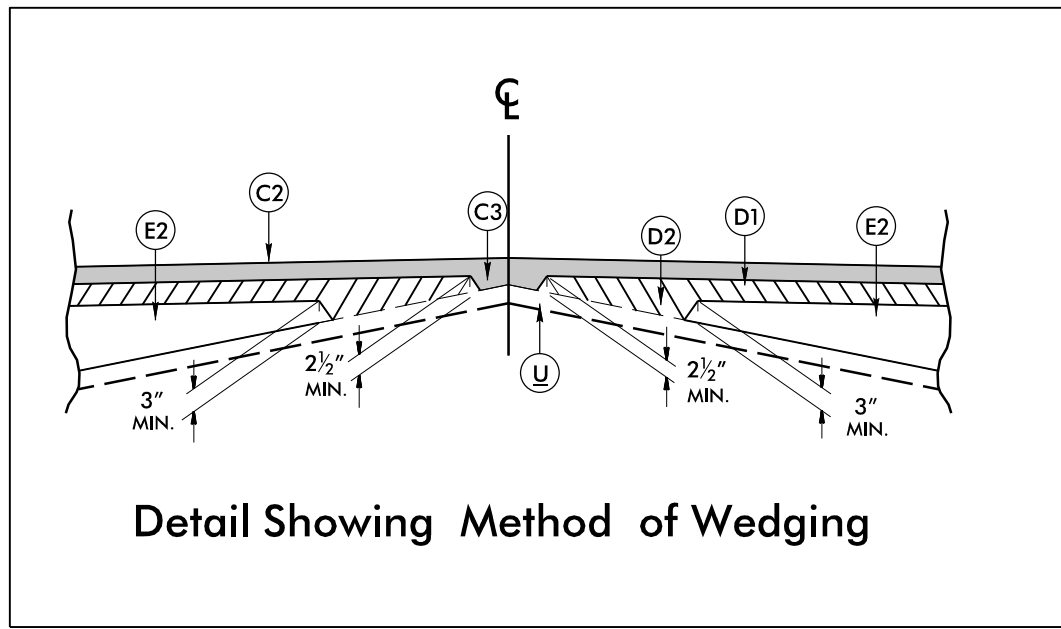
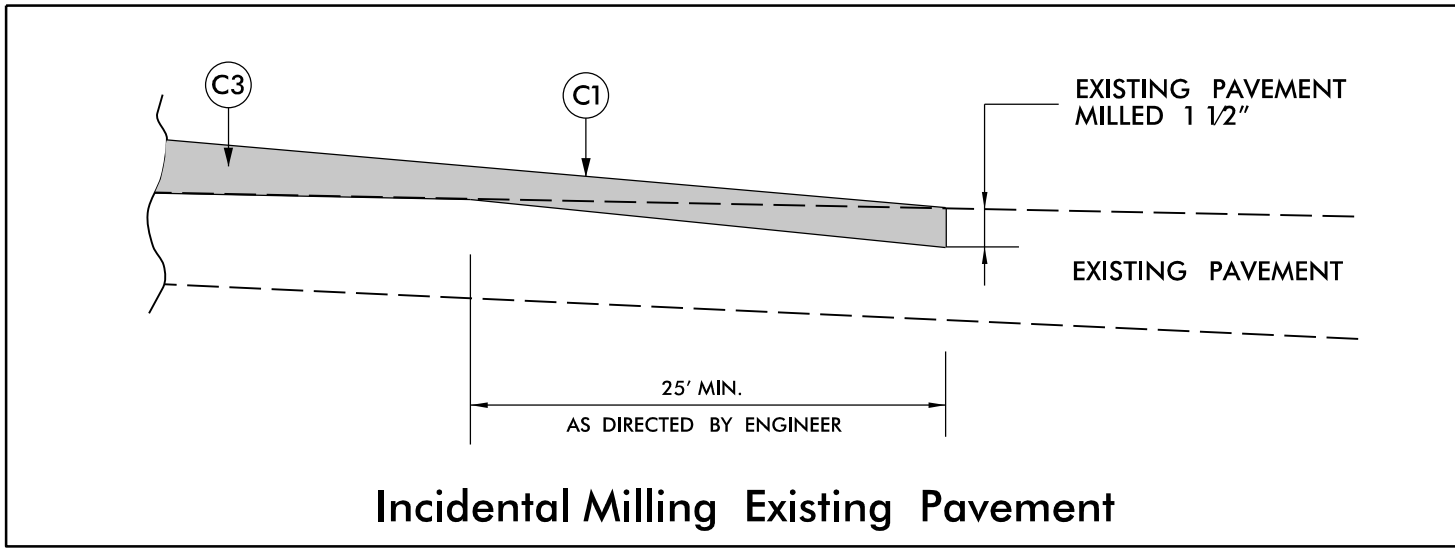
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
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.

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

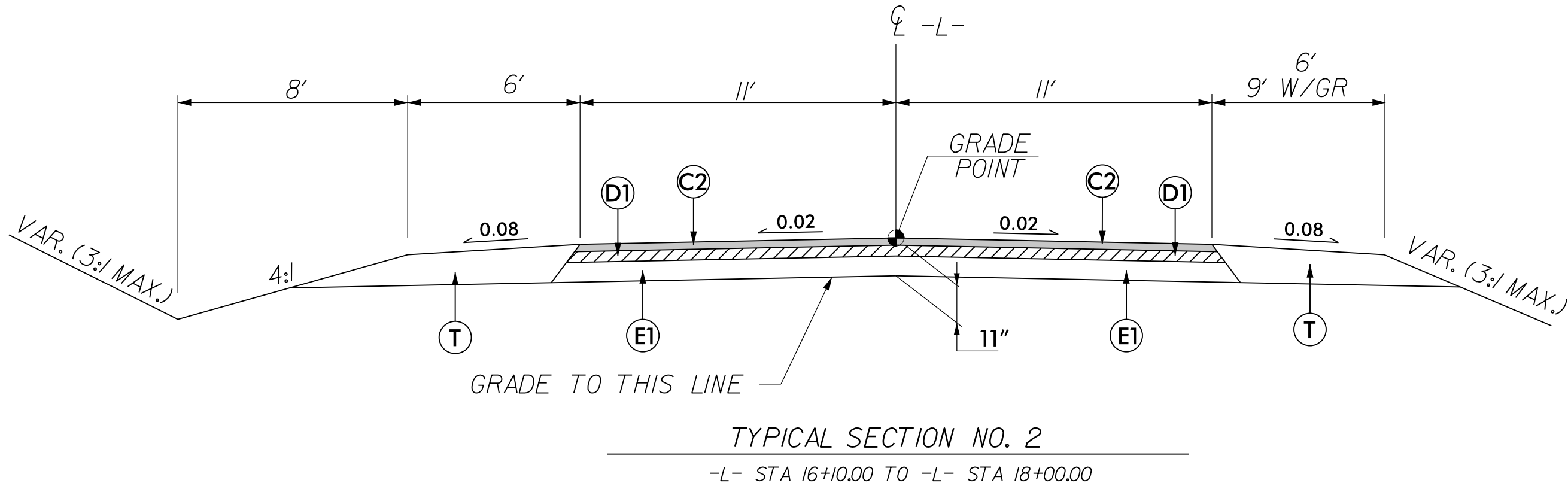
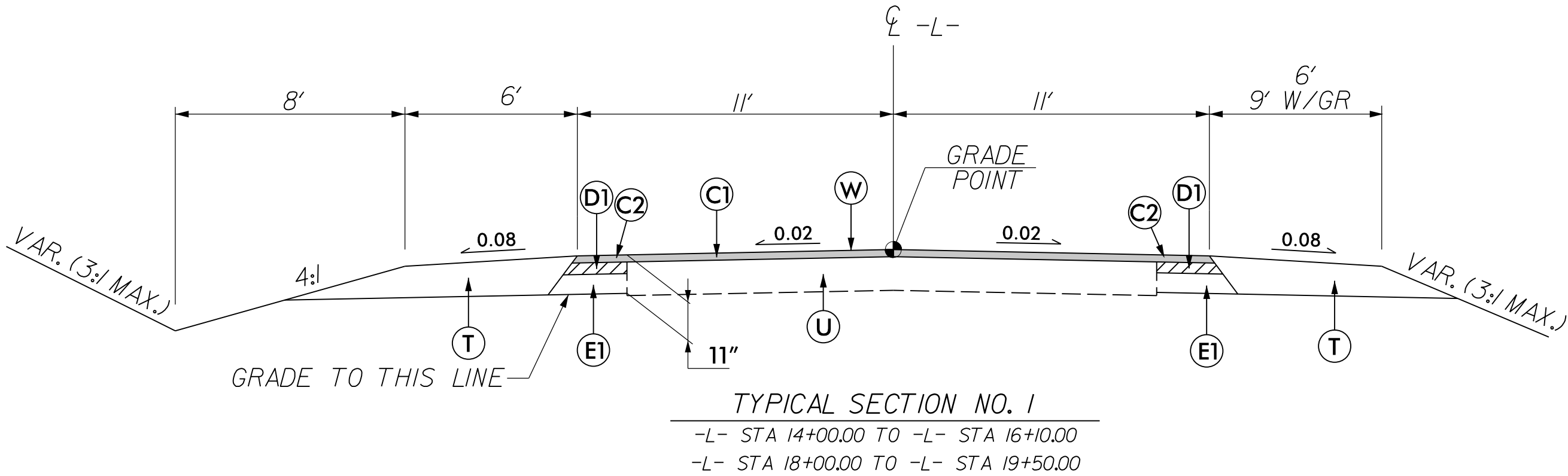
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



CHENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO. DF15408.2083804	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
Seal and signature area for Allen Wiles, Professional Engineer, License #16689, State of North Carolina. The seal includes the text 'NORTH CAROLINA PROFESSIONAL ENGINEER SEAL', '16689', 'ALLEN WILES', and '10/14/2019'.	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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

SPECIAL DETAIL FOR
GUARDRAIL PLACEMENT
25'-0" CLEAR SPAN

SHEET - OF -

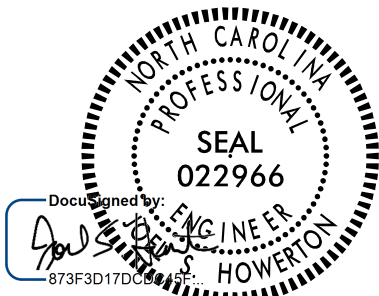
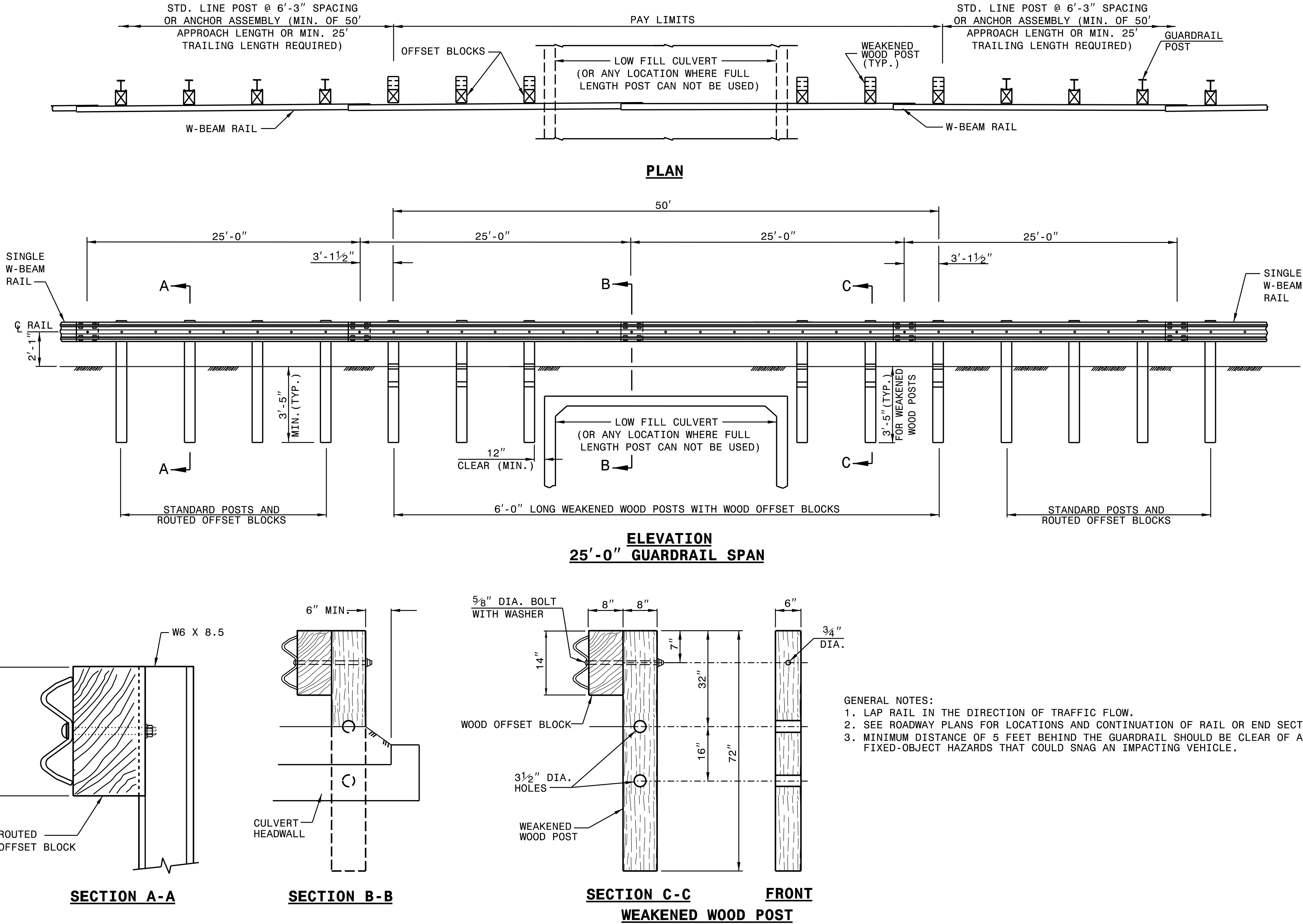
862D01

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

SPECIAL DETAIL FOR
GUARDRAIL PLACEMENT
25'-0" CLEAR SPAN

SHEET - OF -

862D01



10/14/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

25'-0" CLEAR SPAN
GUARDRAIL PLACEMENT

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

PROJECT REFERENCE NO.	SHEET NO.
DF15408.2083804	2C-2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STEEL TUBE
TS 6"x8"x0.1875"

**ROUTED
OFFSET BLOCK**

"W6" STEEL POST

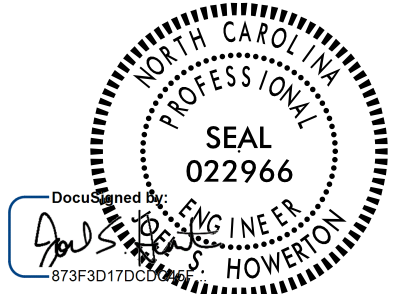
**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY 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



10/14/2019

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.:	

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
L	16 + 10	18 + 00	CL	464
TOTAL:				464
SAY:				470

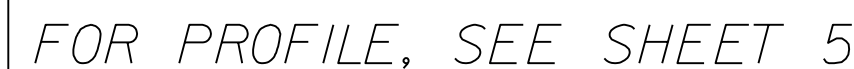
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. + %	BORROW	WASTE
-L- 14 + 00	19 + 50	256	492	236	
	SUBTOTAL	256	492	236	
TOTAL		256	492	236	
MATERIAL FOR SHOULDER CONSTRUCTION LOSS DUE TO CLEARING & GRUBBING WASTE IN LIEU OF BORROW			169	169	
PROJECT TOTAL		256	661	405	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				20	
GRAND TOTALS:		256		425	
SAY:		300		450	

GUARDRAIL SUMMARY

"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

[illegible]



5/14/99

CH

ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617

TELE 919.788.0224 FAX 919.788.0232

NC LICENSE #P-0189



MI ENGINEERING

1011 SCHAUB DRIVE, SUITE 100

RALEIGH, NC 27606

(919) 851-6606

FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.

DF15408.2083804

SHEET NO.

5

ROADWAY DESIGN ENGINEER

SEAL

16589

Allen W. Allen

Professional Engineer

North Carolina

43433752

10/14/2019

HYDRAULICS ENGINEER

SEAL

046302

William J. Allen, Jr.

Professional Engineer

North Carolina

43433752

10/14/2019

DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 620	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 231.3	FT
BASE DISCHARGE	= 940	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 232.8	FT
OVERTOPPING DISCHARGE	= 1053	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 233.9	FT

9/9/2019
P:\PROGRAMS\SR1321.Rdy.pfl_05.dgn

2 x 10' x 6' RCBC
BURIED 1'
WITH 1" SILLS

BM 1 ELEV = 233.74'
N 387.757 E 1,855.758
-L- STA 15+74 4' RIGHT
BENCH NAIL IN BASE OF 18" SYCAMORE

RIGHT DITCH -----

FOR PLAN, SEE SHEET 4

09/06/19

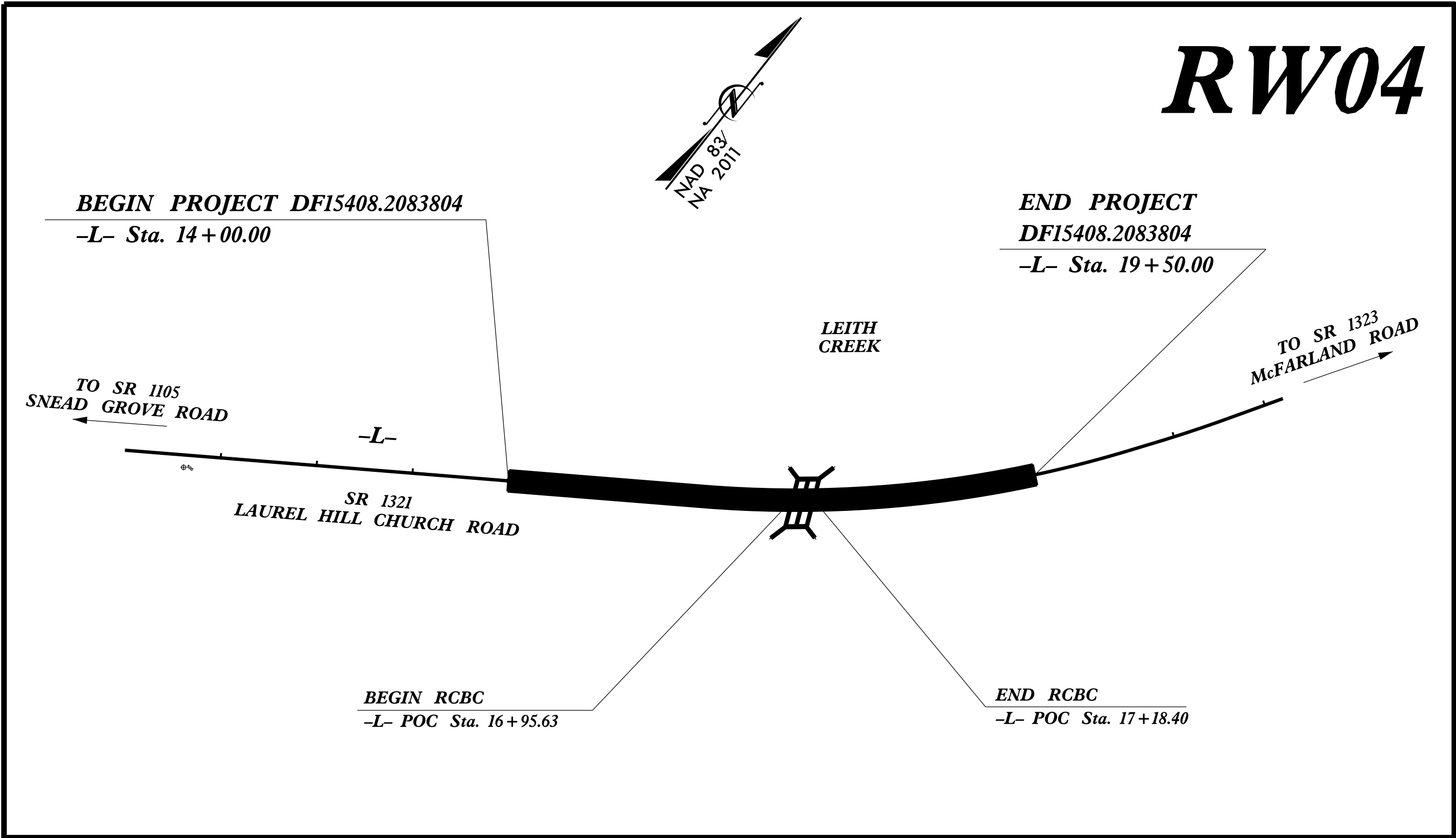
TIP PROJECT: SR 1321

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15408.2083804	RW01	

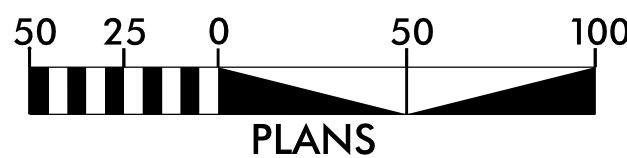
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SCOTLAND COUNTY



GRAPHIC SCALE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY GEL SOLUTIONS FOR MONUMENT "SR1321-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 387496.4510(ft) EASTING: 1855315.6550(ft) ELEVATION: 239.37(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989524 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SR1321-2" TO -L- STATION 14+00.00 IS N 54-08'42.7" E 337.9941(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

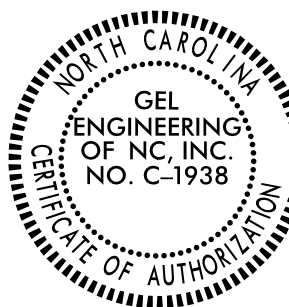
GEL SOLUTIONS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 6, 2019

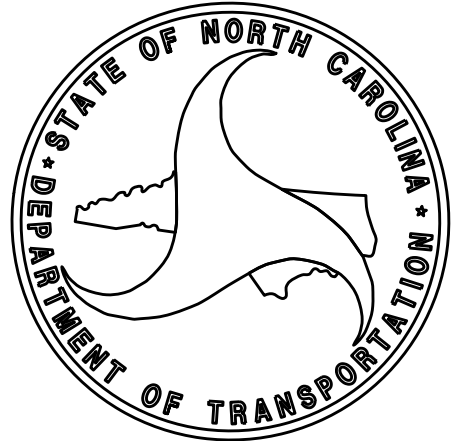
LETTING DATE:
SEPTEMBER 10, 2019

PROFESSIONAL LAND SURVEYOR



SIGNATURE:

Date:

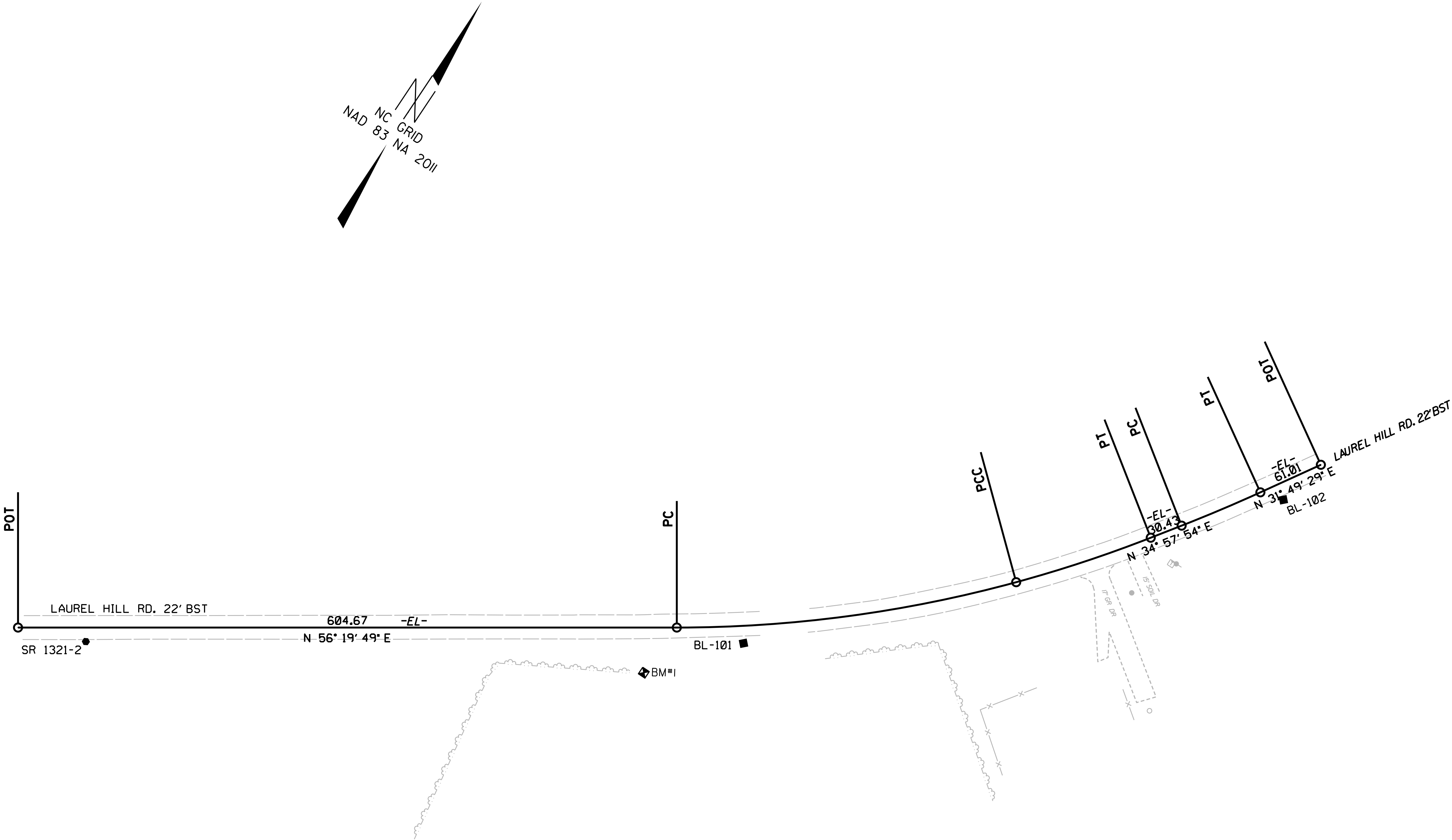


6/2/99

23 JUL 2019 11:25
C:\Users\jgarcia\OneDrive\Documents\Projects\SR1321\FIELDWORK\CONTROL-SHEET\sr1321-1s-rw02c-1.dgn
JGARCIA

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
DF15408.2083804	RW02C-1
Location and Surveys	
GEL SOLUTIONS	



SEE SHEET RW02C-2
FOR FUTHER
ALIGNMENT DETAILS

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

6/2/99

REVISIONS

23 JUL 2019 11:30
C:\del\projects\SR1321\FIELDWORK\CONTROL-SHEET\sr1321.ls-rw02c-2.dgn
G:\PROJECTS\SR1321\PRELIM\GEL

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.
DF15408.2083804

SHEET NO.
RW02C-2

Location and Surveys

GEL

SOLUTIONS

BL	POINT	DESC.	NORTH	EAST	ELEVATION	
2		SR 1321 GPS-2	387496.4510	1855315.6550	239.37	*****
101		SR 1321 BL-101	387829.8070	1855818.8640	233.82	BM1 ELEVATION = 233.74
102		SR 1321 BL-102	388214.1870	1856158.1970	236.49	N 387757 E 1855758
						BL STATION 10+12.00 27 RIGHT
						BENCH NAIL IN BASE OF 18" OAK

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
	POT	387472.664	1855256.701							
	LINE			N 56°19'49.3" E	604.67					
	PC	387807.898	1855759.941							
	CURVE			N 48°42'45.4" E	314.29	15°14'07.7"(LT)	04°50'00.0"	315.22	158.54	1185.43
	PCC	388015.277	1855996.100							
	CURVE			N 38°01'47.6" E	130.10	06°07'48.0"(LT)	04°42'34.7"	130.16	65.14	1216.56
	PT	388117.753	1856076.249							
	LINE			N 34°57'53.6" E	30.43					
	PC	388142.693	1856093.690							
	CURVE			N 33°23'41.1" E	78.50	03°08'25.0"(LT)	04°00'00.0"	78.51	39.26	1432.39
	PT	388208.230	1856136.895							
	LINE			N 31°49'28.6" E	61.01					
	POT	388260.066	1856169.066							

- NOTES:
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

REVISIONS

I:\JUL-2019\3307
C:\Users\6656\OneDrive\Documents\SR 1321\Drawings\Roadway\Proj\SR1321_Rdy_row.dgn
SR 1321 Laurel Hill Ch Rd RW plans\Roadway\Proj\SR1321_Rdy_row.dgn

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.
DF15408.2083804

SHEET NO.
RW02D-1

Location and Surveys

GEL

SOLUTIONS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	387472.6639	1855256.7013
PC	16+04.67	387807.8979	1855759.9408
PT	19+19.89	388015.2770	1855996.1004
PC	19+19.89	388015.2770	1855996.1004
PT	20+50.05	388117.7526	1856076.2492
PC	20+80.48	388142.6934	1856093.6901
PT	21+58.99	388208.2304	1856136.8952
POT	22+20.00	388260.0664	1856169.0657

- 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.

6/2/99

SR 1321 Laurel Hill Ch Rd RW plans\Roadway\Proj\SR1321_Rdy-row.dgn
12-JUL-2019 13:09
C:\projects\sr1321\row control sheets\2019 06 08 SR 1321 Laurel Hill Ch Rd RW plans\Roadway\Proj\SR1321_Rdy-row.dgn
George Hart

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.
DF15408.2083804

SHEET NO.
RW03E-1

Location and Surveys

GEL

SOLUTIONS

PROJECT SURVEYOR

NORTH CAROLINA
ENGINEERING
OF NC, INC.
NO. C-1938
STATE OF AUTHORITY

NORTH CAROLINA
PROFESSIONAL
SURVEYOR
SEAL
L-3996
PARKS H. ICENHOUR, JR.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ROW MARKER IRON PIN AND CAP - E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	18+50.00	- 30.00	387985.0068	1855927.2270
L	18+50.00	- 45.00	387995.5154	1855916.5233
L	16+04.67	- 45.00	387845.3490	1855734.9926
L	16+04.67	- 30.00	387832.8653	1855743.3087
L	16+04.67	30.00	387782.9305	1855776.5729
L	16+04.67	50.00	387766.2855	1855787.6610
L	18+50.00	50.00	387928.9609	1855984.3135
L	18+50.00	30.00	387942.9724	1855970.0418

I, Parks H. Icenhour, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further 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.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 11th day of July, 2019.

Professional Land Surveyor

L-3996
PLS #

Seal

- 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.

6/2/19

24 JUL 2019 07:23
C:\p00\cts\sr1321\control sheets\2019 06 06 SR 1321 Laurel Hill Ch Rd RW plans\Roadway\Pro\SRI321.Rdy.psh.04.dgn
George Hart

REVISIONS

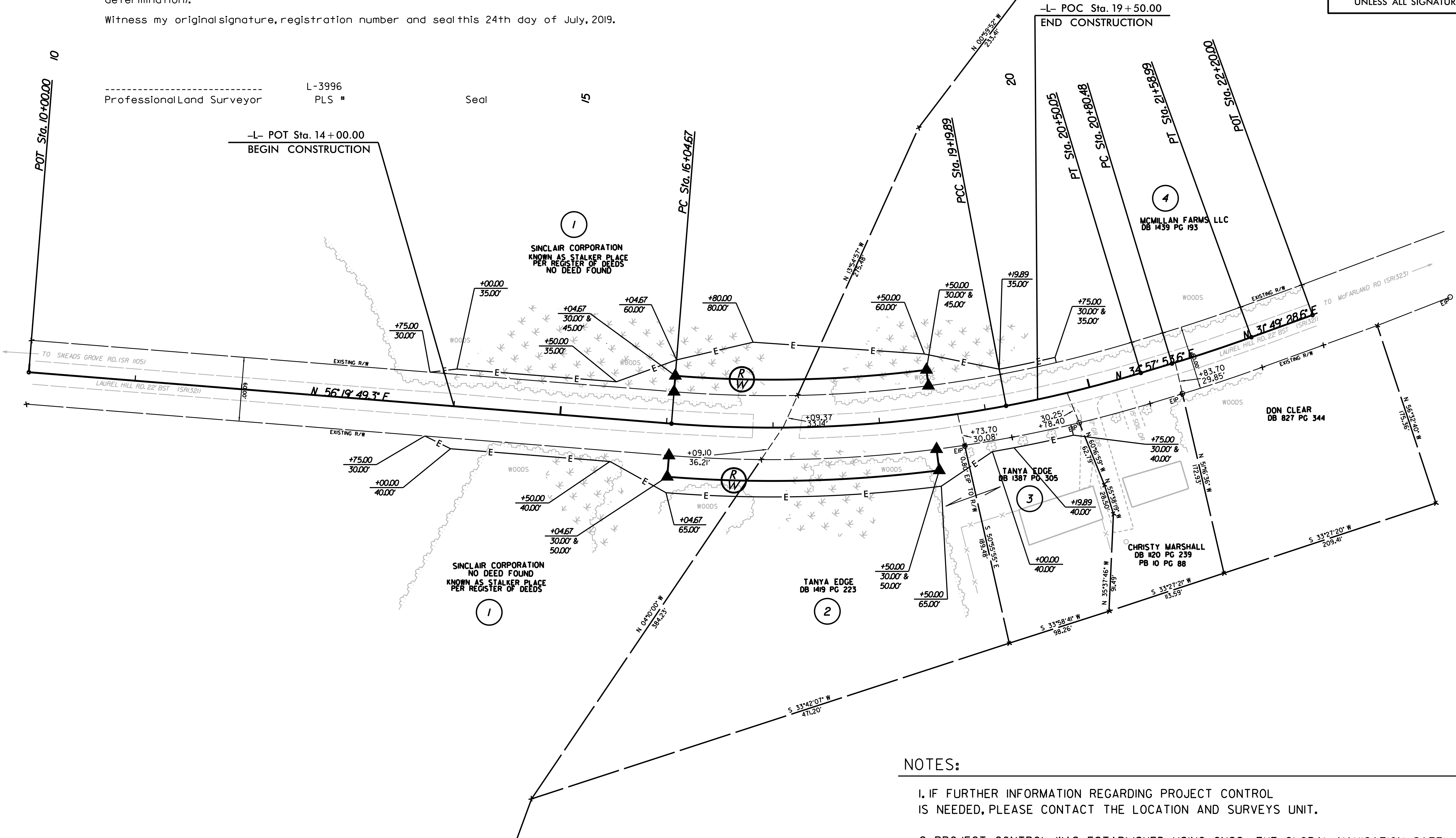
I, Parks H. Icenhour, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

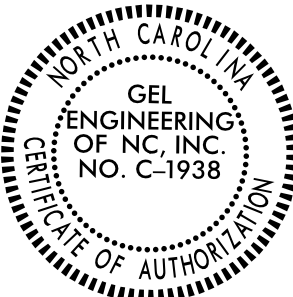
I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 24th day of July, 2019.

Professional Land Surveyor L-3996 PLS # Seal 15

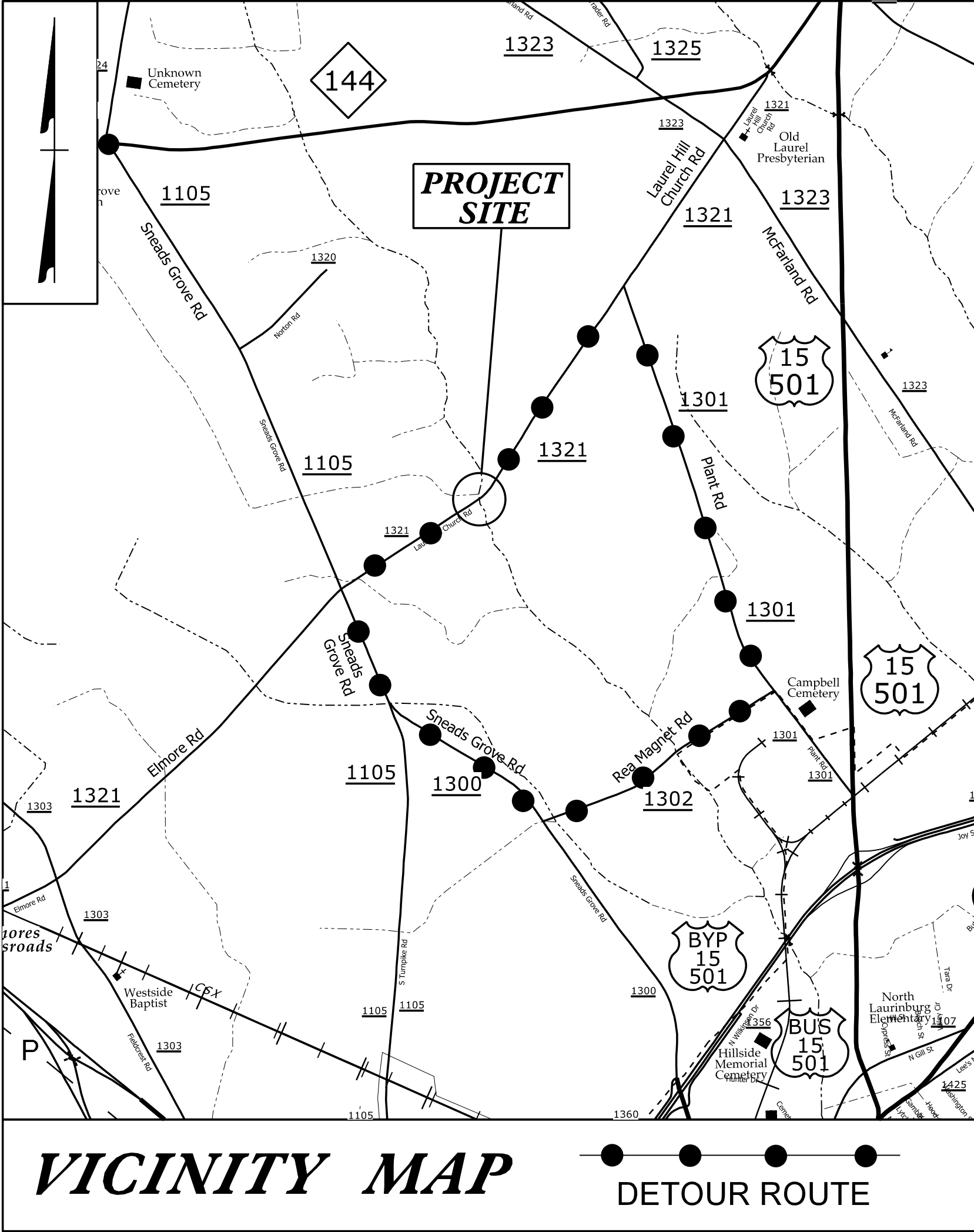
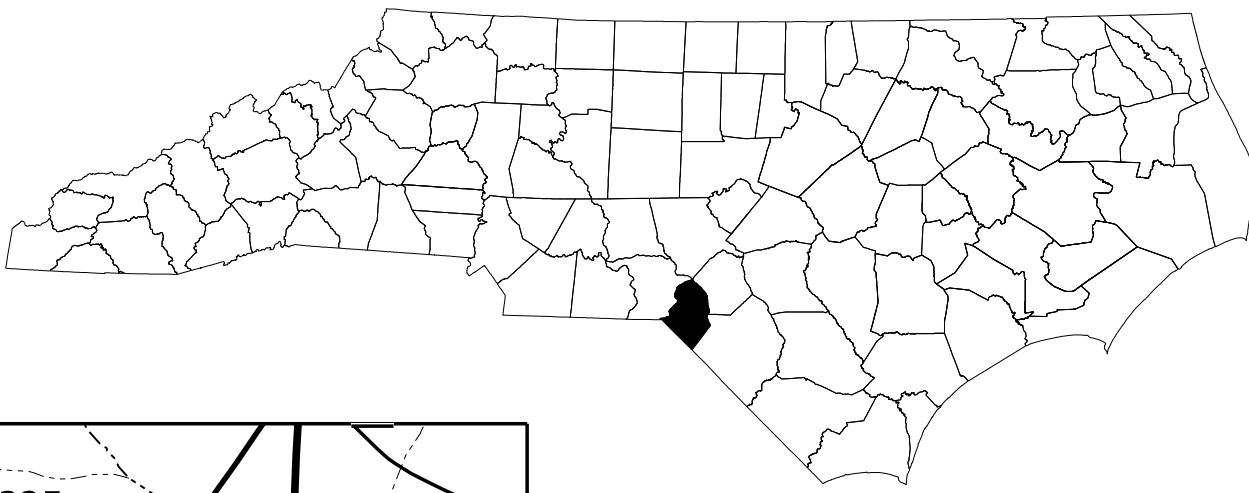


PROJECT REFERENCE NO.	SHEET NO.
DF15408.2083804	RW04
Location and Surveys	
GEL SOLUTIONS	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

SCOTLAND COUNTY



LOCATION: PIPE 82 2042 OVER LEITH CREEK
ON SR 1321 (LAUREL HILL CHURCH ROAD)

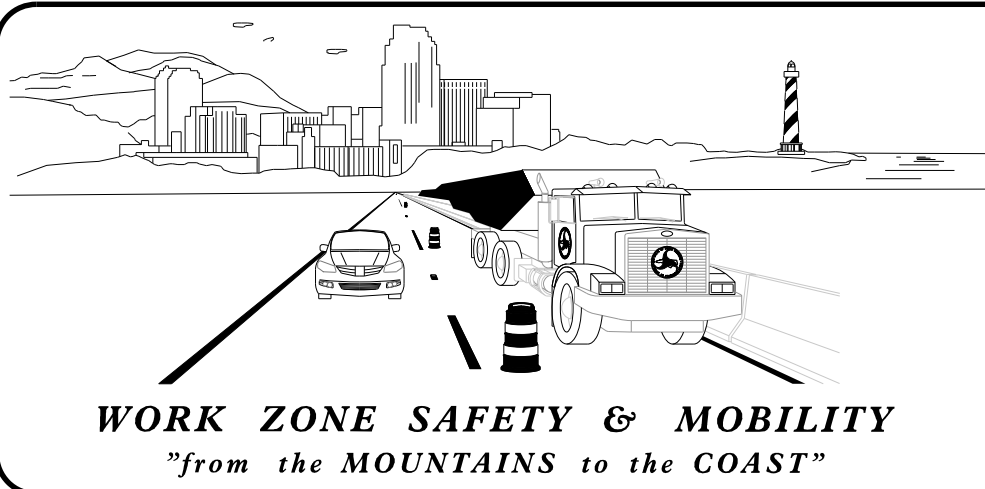
TYPE OF WORK: GRADING, DRAINAGE, PAVING,
& STRUCTURE

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE DETAIL AND DETOUR SIGNS

VICINITY MAP

DETOUR ROUTE

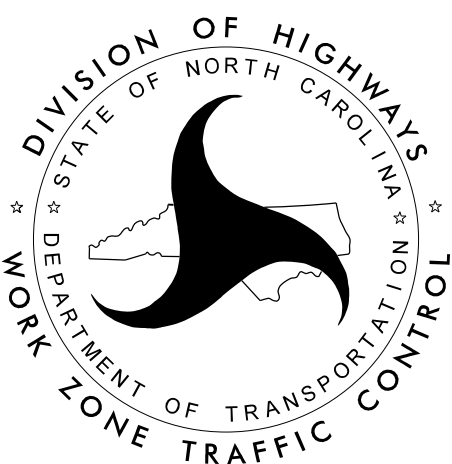


PLANS PREPARED BY:

BRIAN A. WILES, PE
PROJECT MANAGER

NCDOT CONTACTS:

TIM WELCH, PE
DIV. 8 BRIDGE PROGRAM MANAGER



PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 8
121 DOT Drive
Carthage, NC 28327

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: 
DATE: 10/14/2019

SEAL



DF15408.2083804

PROJECT:

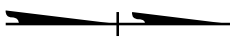
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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:

<u>STD. NO.</u>	<u>TITLE</u>
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

- EXIST. PVMT.
-  NORTH ARROW
- PROPOSED PVMT.

TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)

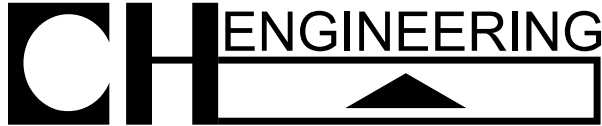
TEMPORARY SIGNING

-  STATIONARY SIGN

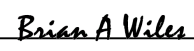
FINAL PAVEMENT MARKING

PAINT PAVEMENT MARKING LINES (4")	4,400 LF
PERMANENT RAISED PAVEMENT MARKERS	15 EACH

9/11/2019
R:\T\04\15408\TrafficControl\TCP\SR1321\TC_TMP_1A.dgn
USER:NAME



3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

APPROVED: 

DATE: 10/14/2019

DocuSigned by:
Brian A Wiles
8890D0FEAE34DE...



SEAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



ROADWAY STANDARD
DRAWINGS & LEGEND

MANAGEMENT STRATEGIES

- CLOSE SR 1321 (LAUREL HILL CHURCH ROAD) AND DETOUR TRAFFIC OFF-SITE
- MAINTAIN LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES 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.

SIGNING

- A) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.
- B) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

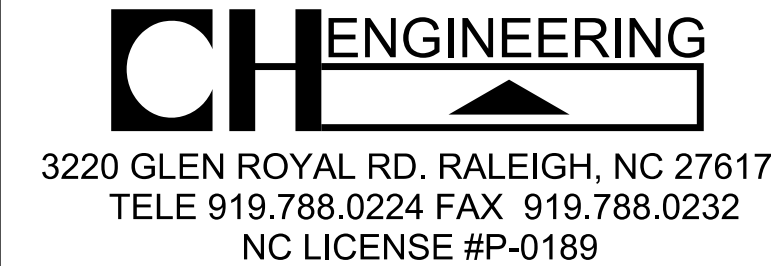
COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- C) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

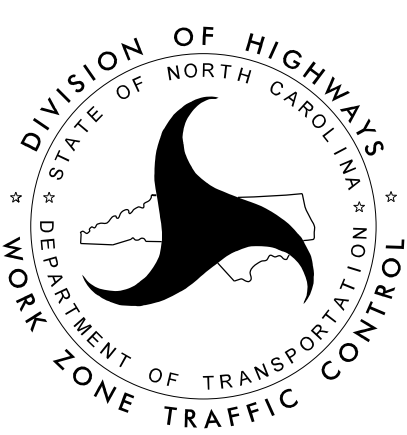
LOCAL NOTES

- 1) NOTIFY THE ENGINEER AT LEAST 30 DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- 2) NOTIFY THE SCOTLAND SCHOOLS TRANSPORTATION OFFICE OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.
- 3) NOTIFY THE SCOTLAND COUNTY EMERGENCY MANAGEMENT OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.

PHASING

- STEP 1) USING RSD 1101.03, SHEET 1 OF 9 AND TMP-4, CLOSE SR 1321 (LAUREL HILL CHURCH RD) 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.
- STEP 5) OPEN SR 1321 (LAUREL HILL CHURCH RD) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.



APPROVED: DocuSigned by: <i>Brian A Wilks</i> 899000FE4E254DE... DATE: 10/14/2019 SEAL   TRANSPORTATION OPERATIONS PLAN		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



3220 GLEN ROYAL RD. RALEIGH, NC 27603
 TELE 919.788.0224 FAX 919.788.0233
 NC LICENSE #P-0189

DocuSigned by:
Brian A Wiles
#NR0D0F6AE36ADE...

APPROVED: _____

DATE: 10/14/2019

SEAL

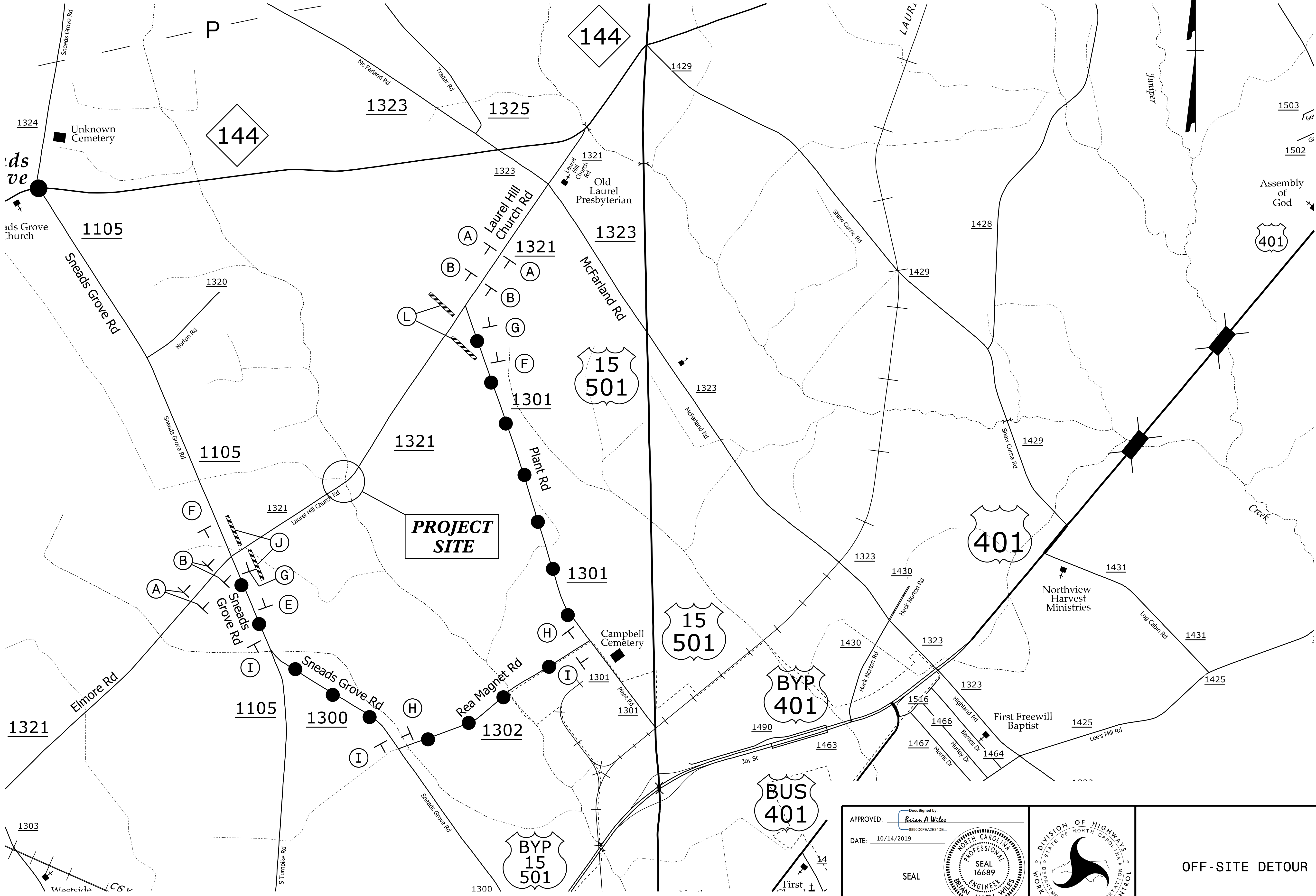


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

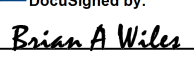


SPECIAL SIGN DESIGN

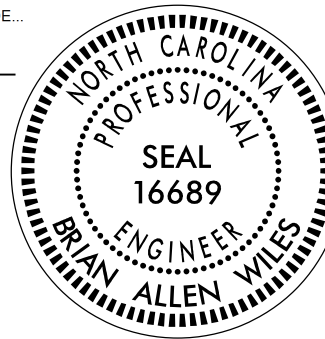
PROJ. REFERENCE NO.	SHEET NO.
DF15408.2083804	TMP-3



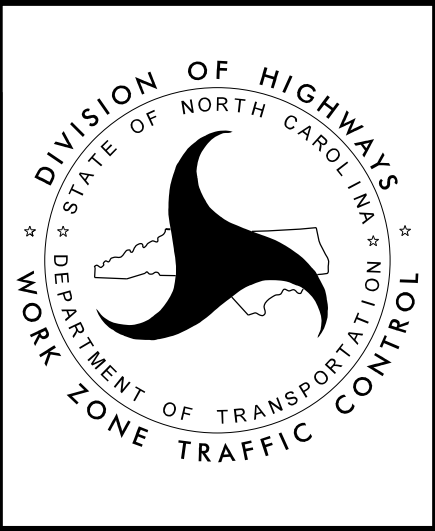
9/14/2019
R:\T\Offices\TrafficControl\TCP\SR1321\TC_TMP_3.dgn
USER:NAME

APPROVED: 
DATE: 10/14/2019

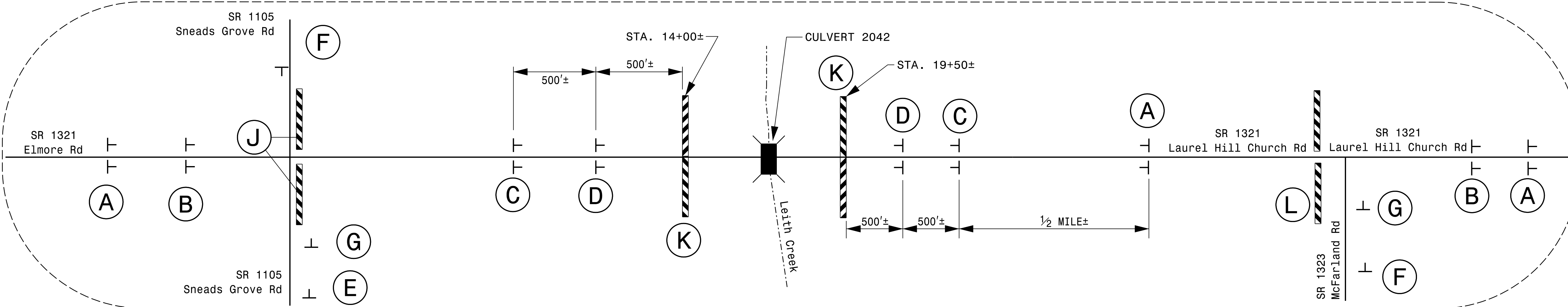
SEAL



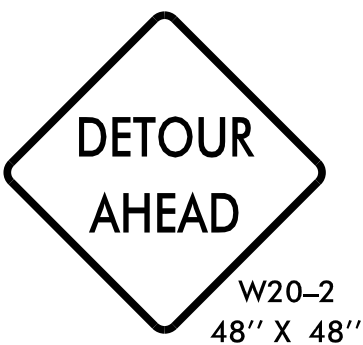
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



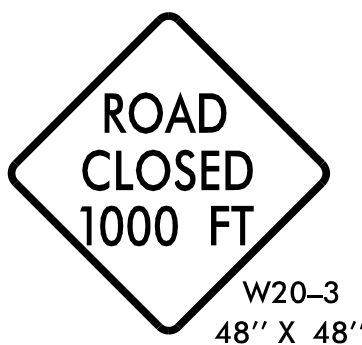
OFF-SITE DETOUR



A



B



C



D



NEXT RIGHT

SP-4R
42" x 12"

E



NEXT LEFT

SP-4L
42" x 12"

F

END
DETOUR

M4-8 A
24" x 18"

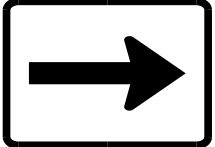
G

Laurel Hill
Church Road

SP-1
48" x 24"

DETOUR

M4-8
24" x 12"



M6-1
21" x 15"

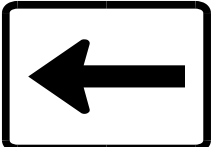
H

Laurel Hill
Church Road

SP-1
48" x 24"

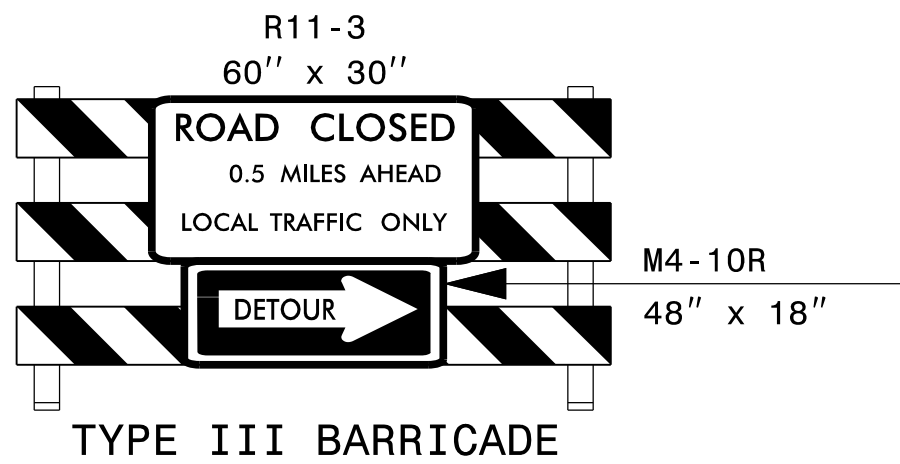
DETOUR

M4-8
24" x 12"



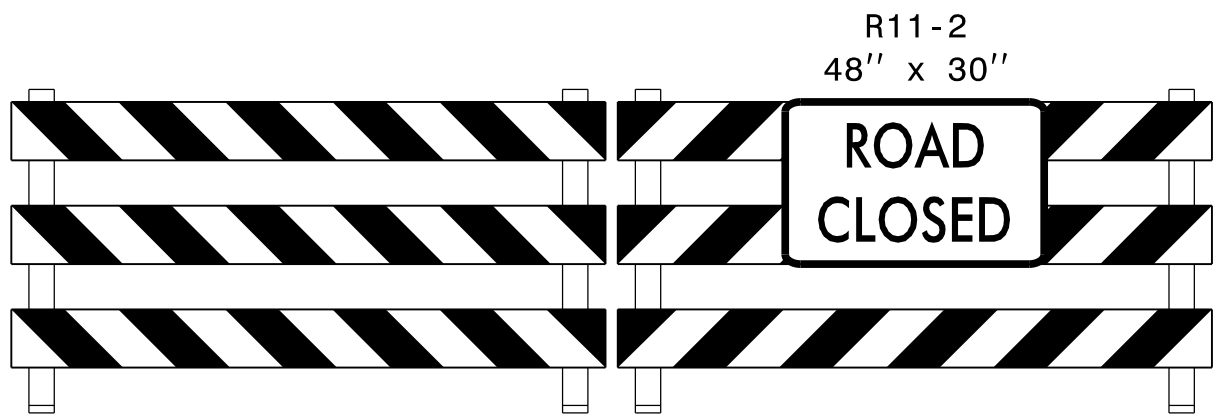
M6-1 L
21" x 15"

I



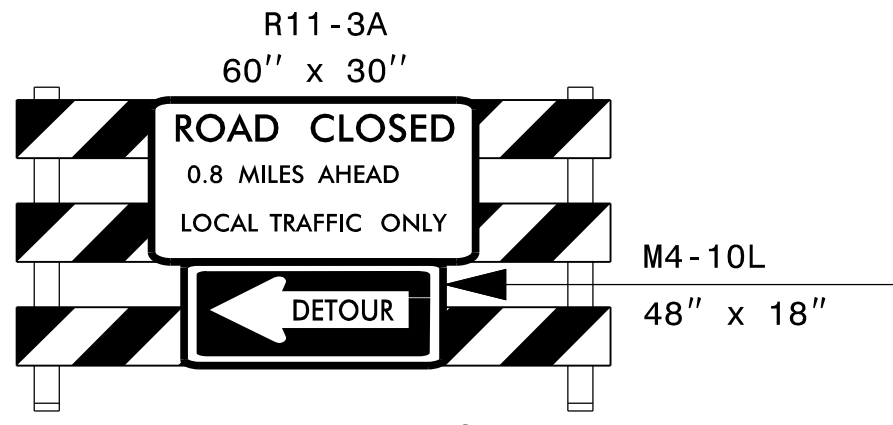
TYPE III BARRICADE

J



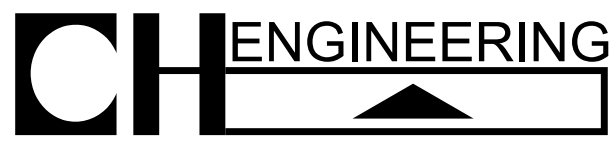
TYPE III BARRICADE(S)

K



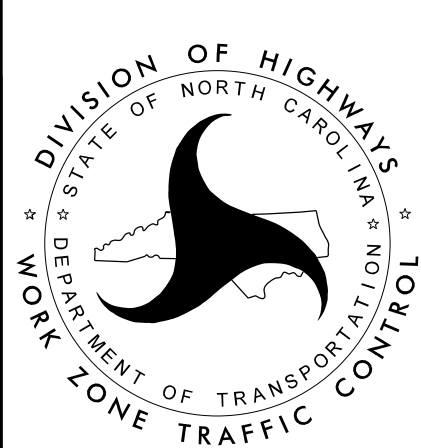
TYPE III BARRICADE

L



3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

APPROVED: <u>Brian A Wiles</u>	
DATE: 10/14/2019	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

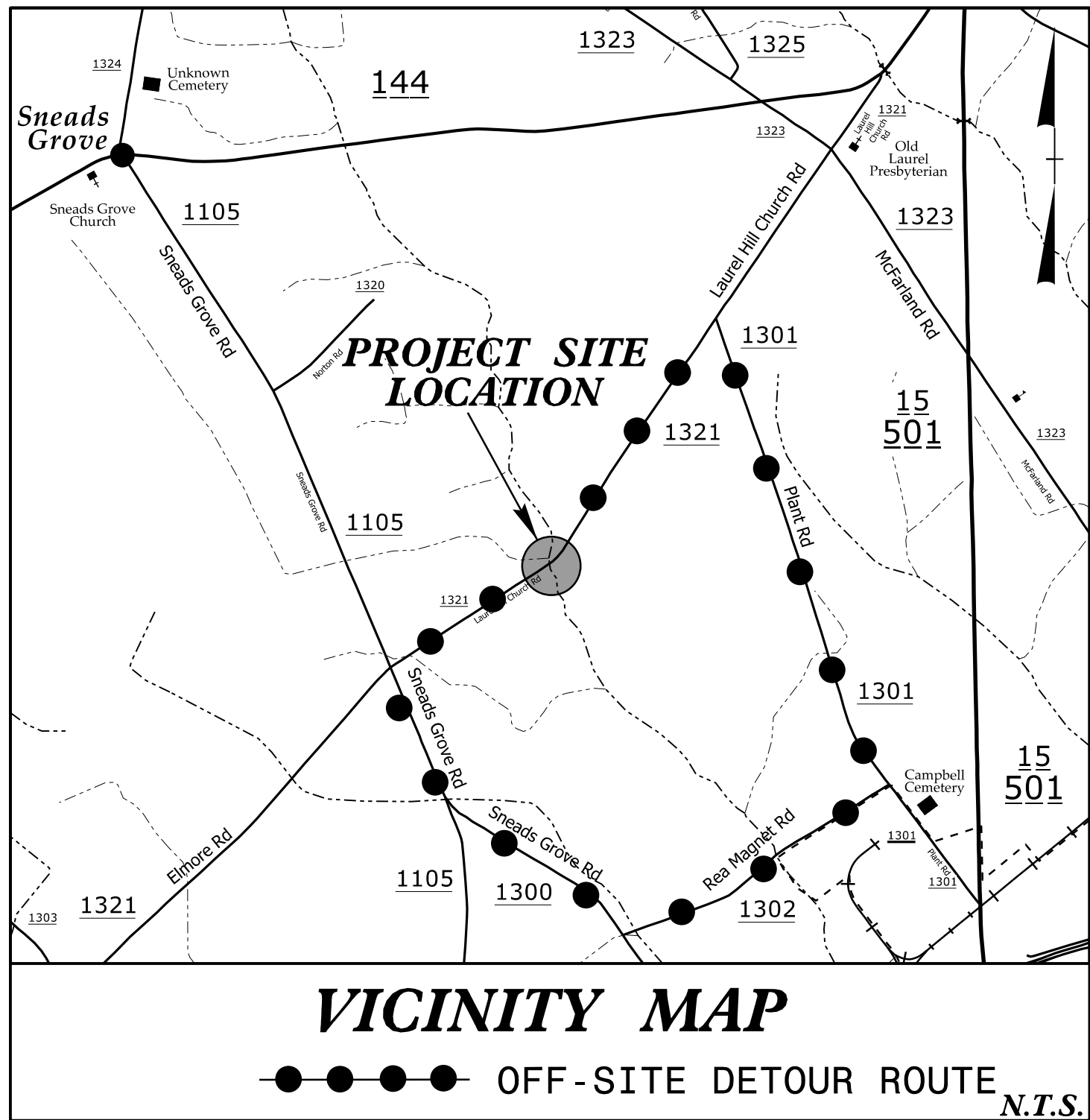


ROAD CLOSURE DETAIL
and
DETOUR SIGNS

1033.02-02-AUG-2019 09:38:21\\Erosion Control\\NCADD\\SR1321\\EC.tsd.dgn

PROJECT: DF15408.2083804

See Sheet 1A For Index of Sheets

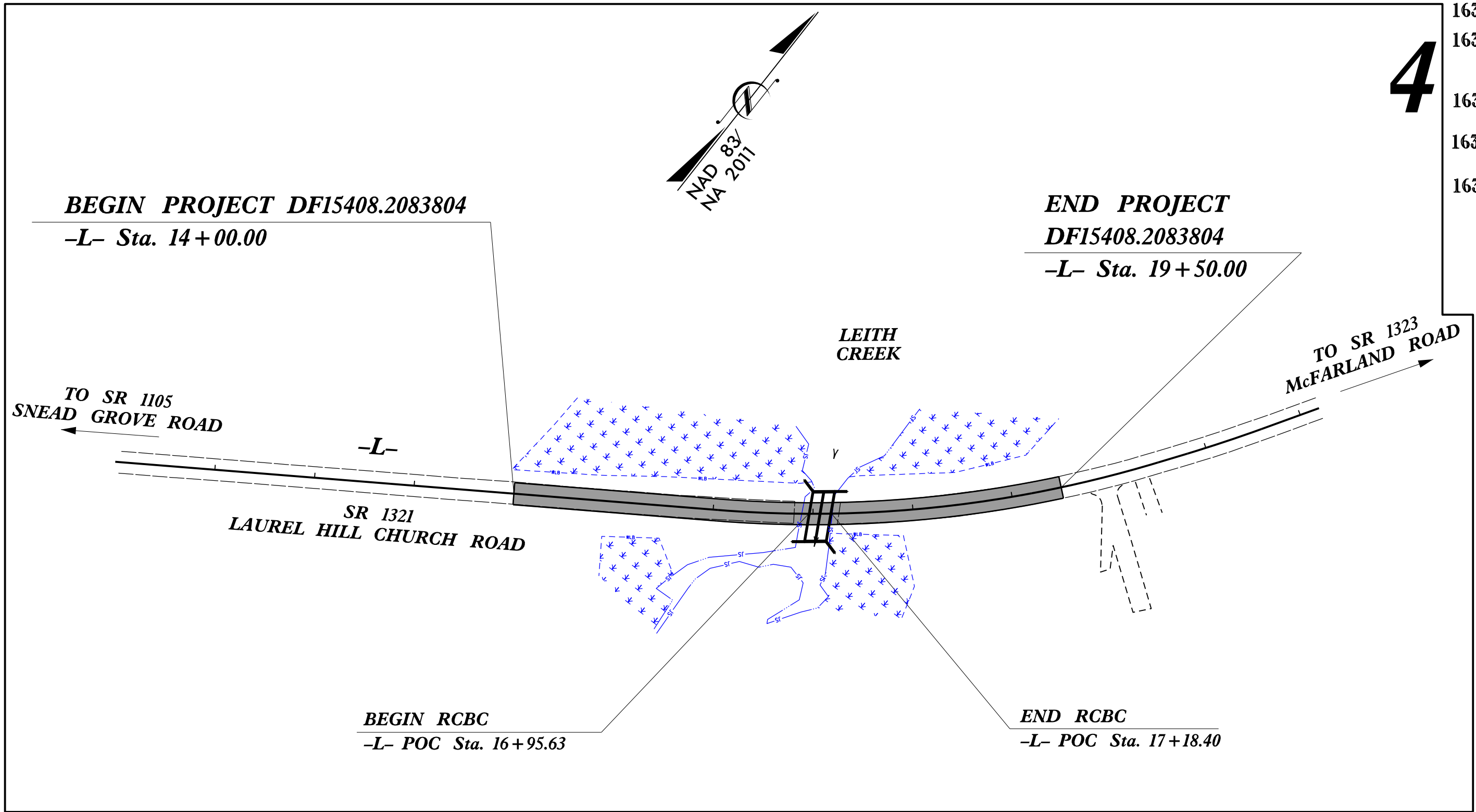


Right-of-Way PLANS 06/06/2019

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

LOCATION: PIPE 82 2042 OVER LEITH CREEK
ON SR 1321 (LAUREL HILL CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & RCBC



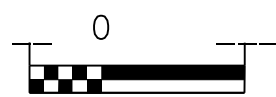
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15408.2083804	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

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

Prepared in the Office of:

MI ENGINEERING
1011 SCHAUB DR SUITE 100
RALEIGH, NC 27606

Designed by:

BILL JERNIGAN, JR., PE

NAME

3395

LEVEL III CERTIFICATION NO.

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

Reviewed by:

AARON HARPER, PE

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 J
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 J
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type J	1634.02	Temporary Rock Sediment Dam Type J
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 J
1630.05	Temporary Diversion	1640.01	Coir Fiber Jaffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

PROJECT REFERENCE NO. <i>DF150408.2083804</i>	SHEET NO. <i>EC-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

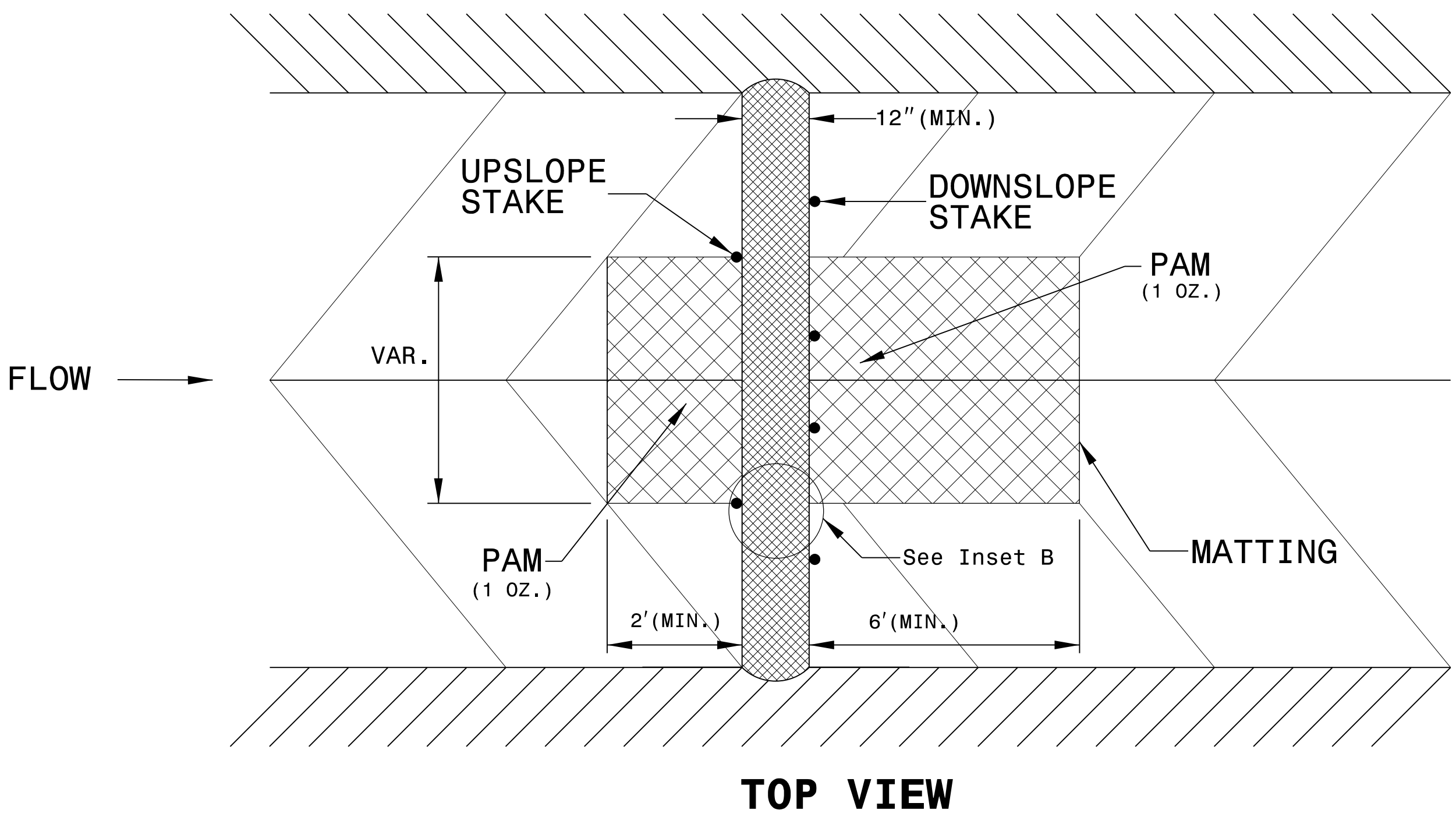
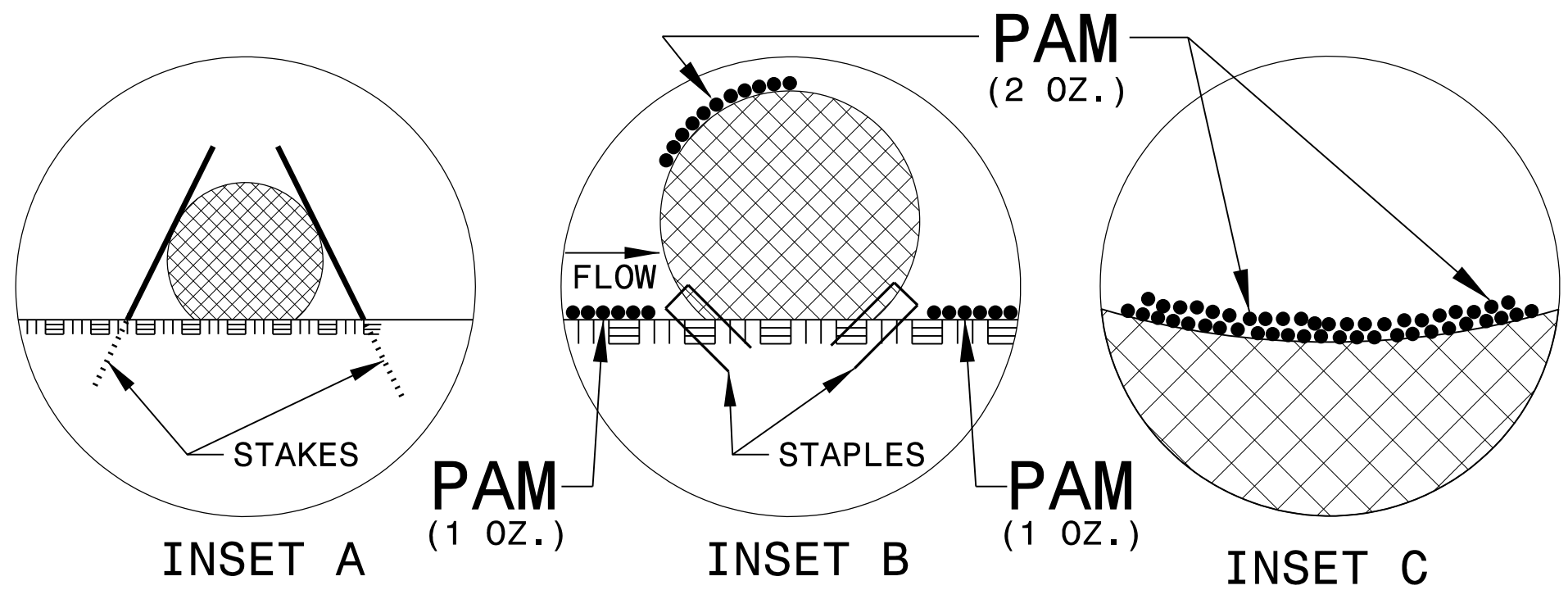
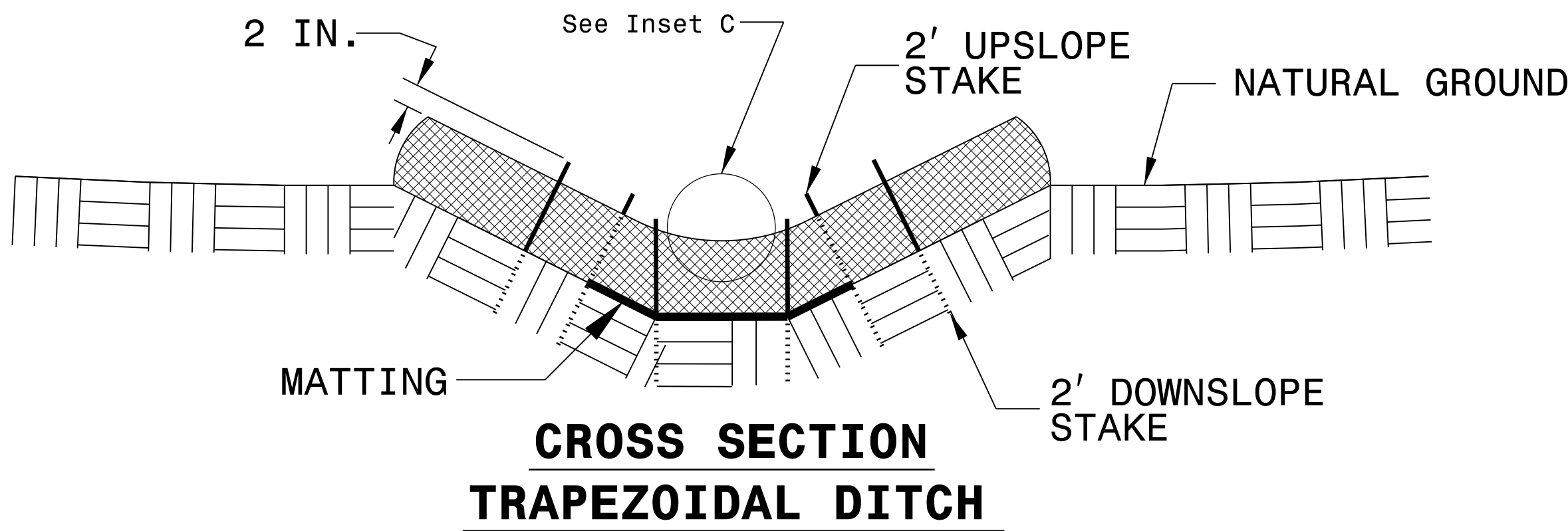
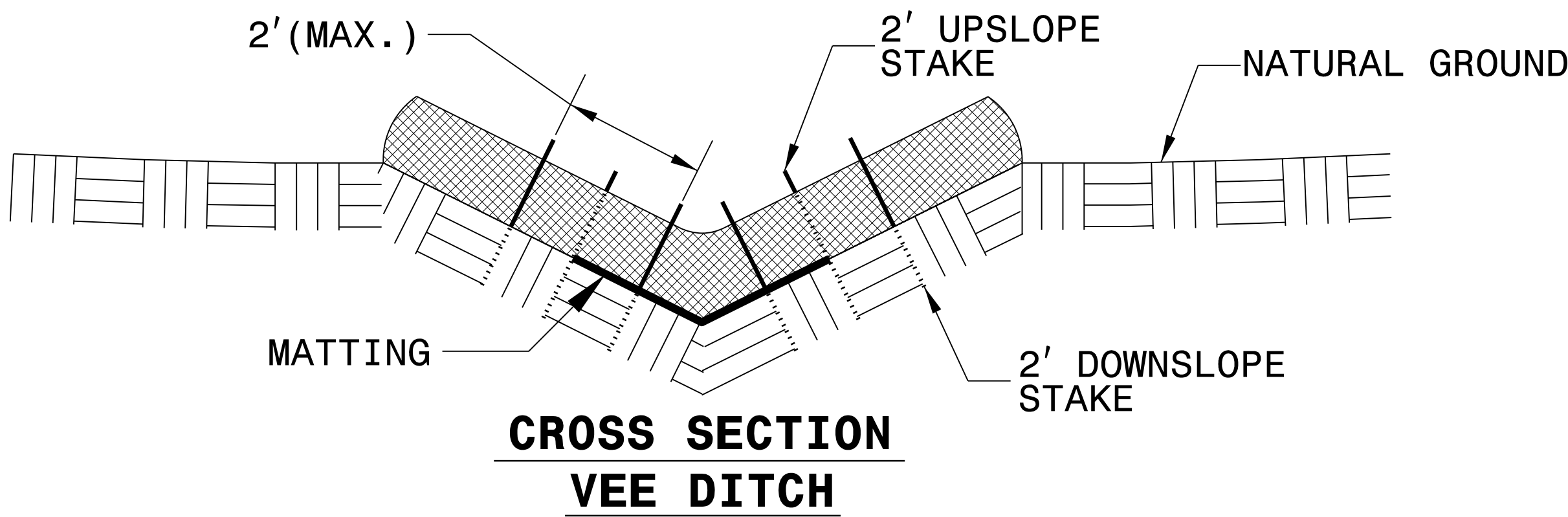
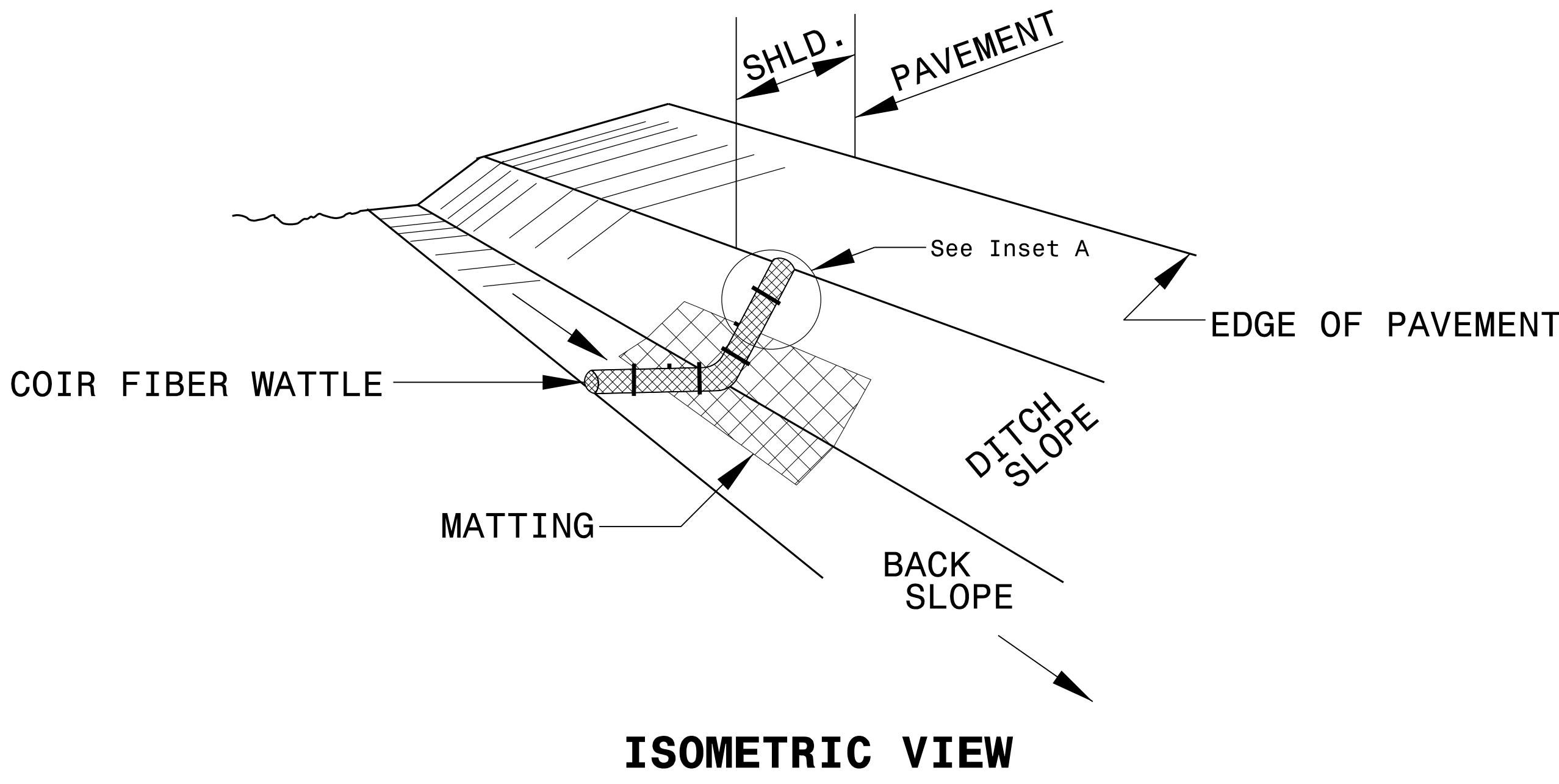
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

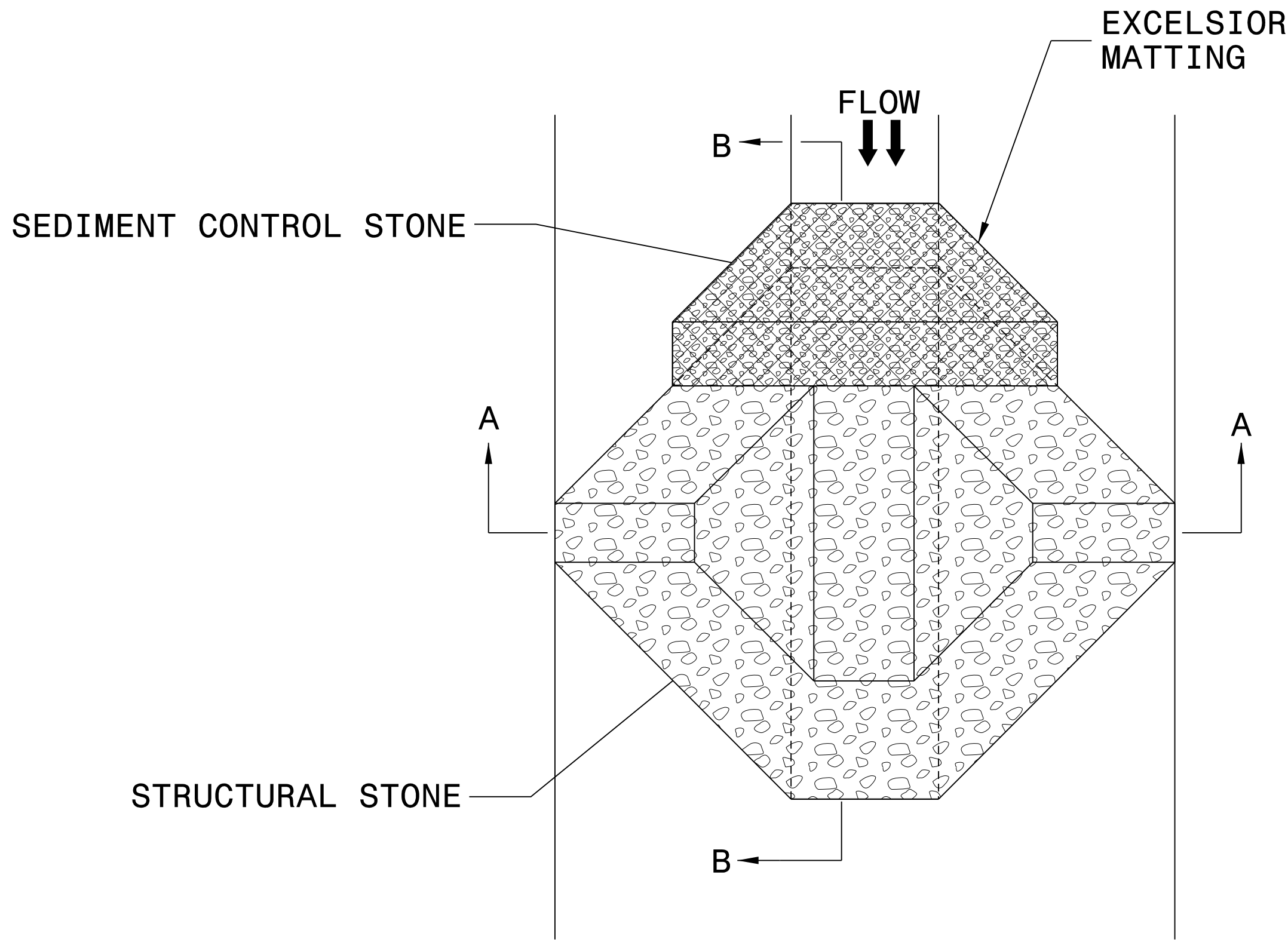
PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

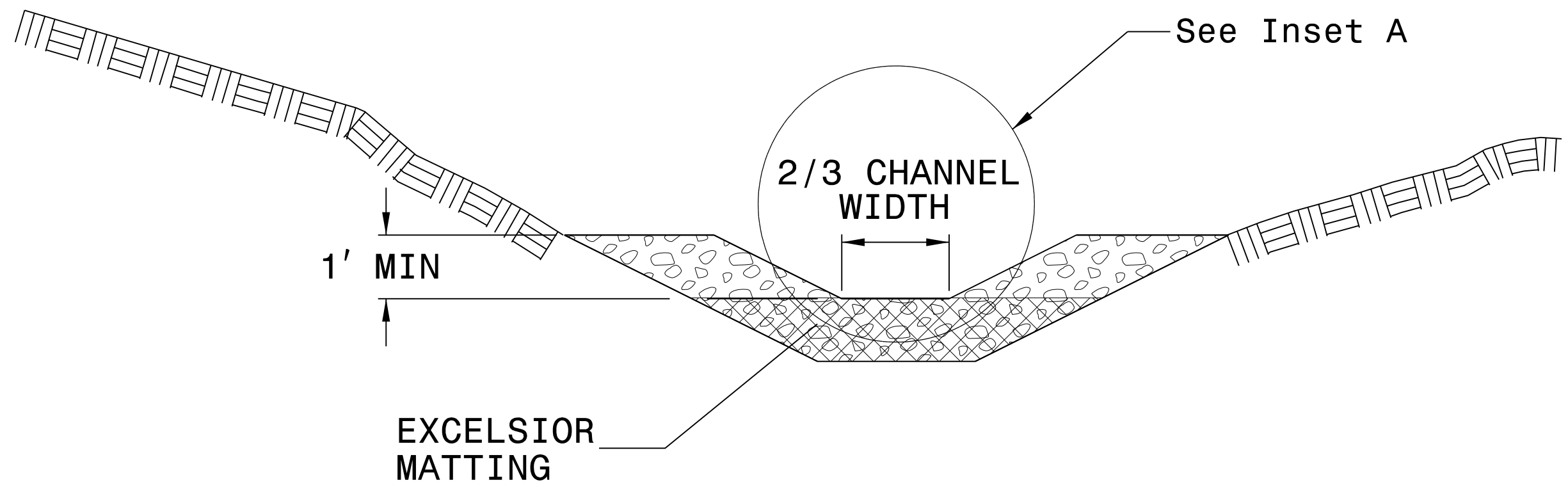


TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

PROJECT REFERENCE NO. DF150408.2083804	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PLAN



SECTION A-A

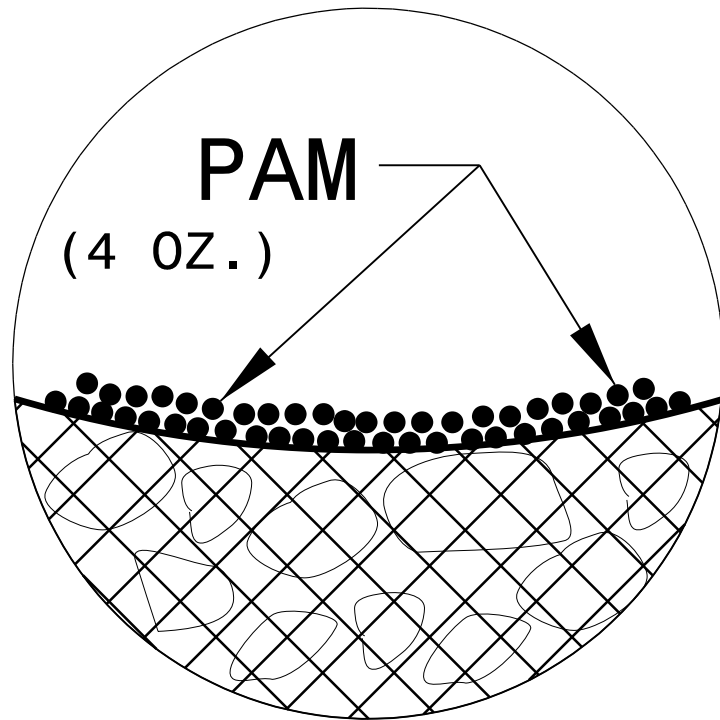
NOTES:

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

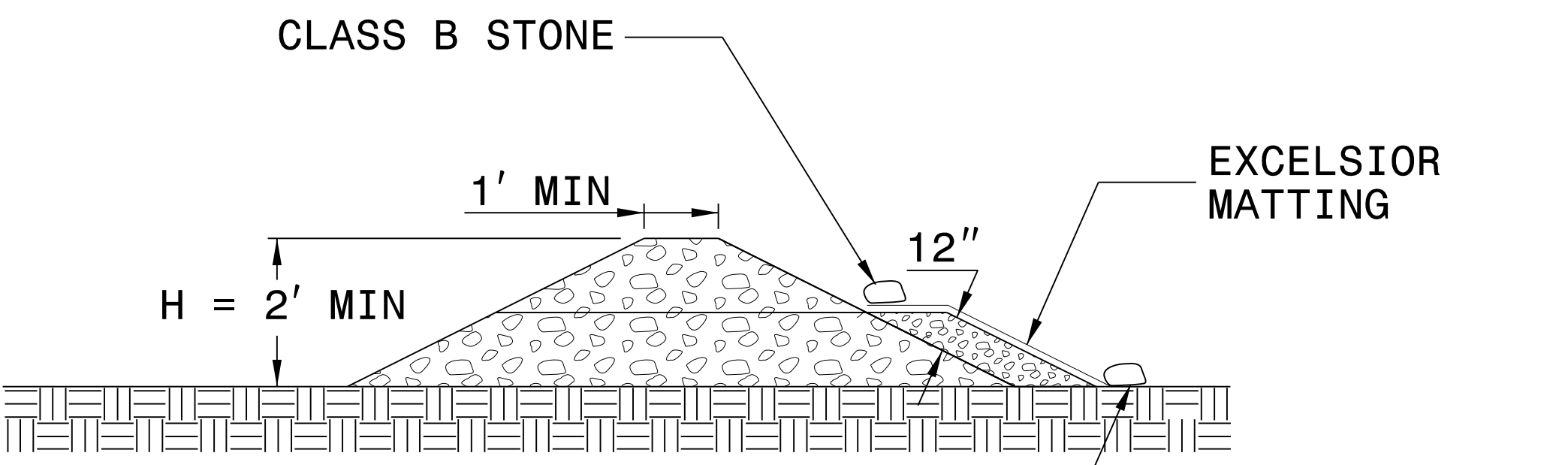
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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 B-B

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
DF150408.2083804	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

[illegible]

MATTING FOR EROSION CONTROL

[illegible]

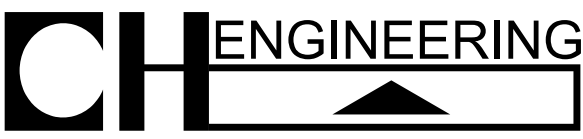
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
DF150408.2083804	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

CLEARING & GRUBBING PLAN



3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

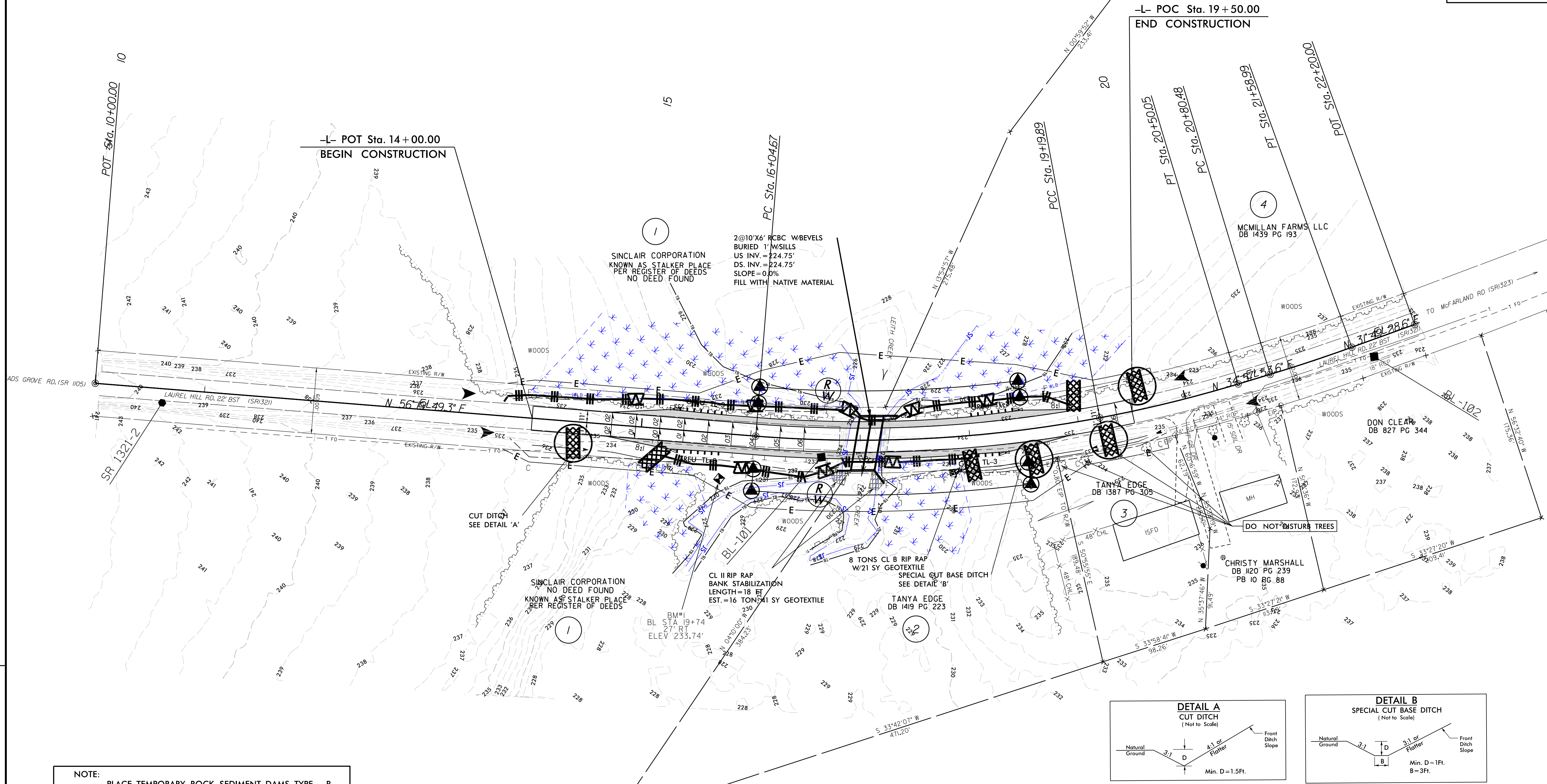


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO.	SHEET NO.
DF15408.2083804	EC-04/CONST.04
SCOTLAND COUNTY 82 2030	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

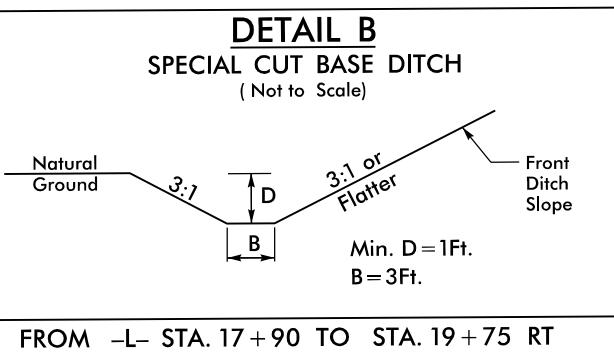
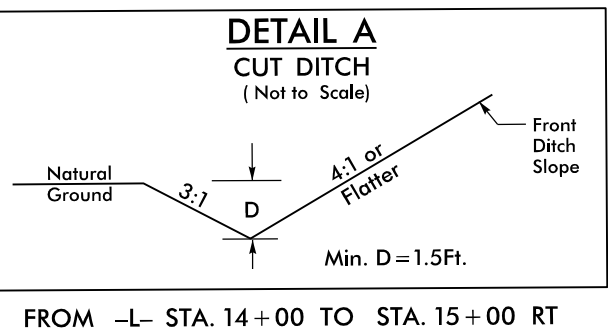
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

-L-		
PI Sta 17+63.22 Δ = 15° 14' 07.7" (LT) D = 4° 50' 00.0" L = 315.22' T = 158.54' R = 1,185.43'	PI Sta 19+85.03 Δ = 6° 07' 48.0" (LT) D = 4° 42' 34.7" L = 130.16' T = 65.14' R = 1,216.56'	PI Sta 21+19.75 Δ = 3° 08' 25.0" (LT) D = 4° 00' 00.0" L = 78.51' T = 39.26' R = 1,432.39'



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

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

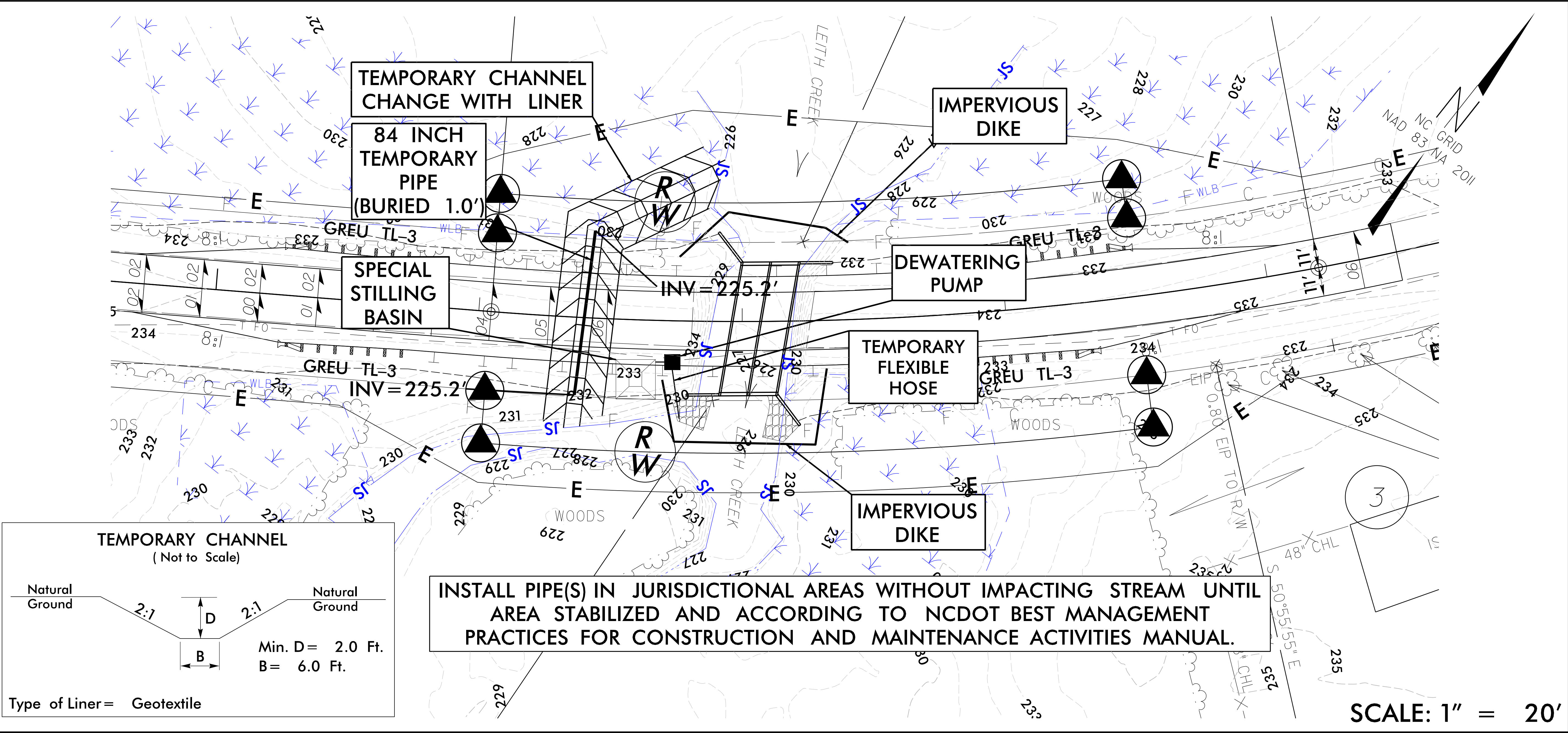


FOR PROFILE, SEE SHEET 5

LEITH CREEK CULVERT CONSTRUCTION SEQUENCE STA. 17+07 -L-

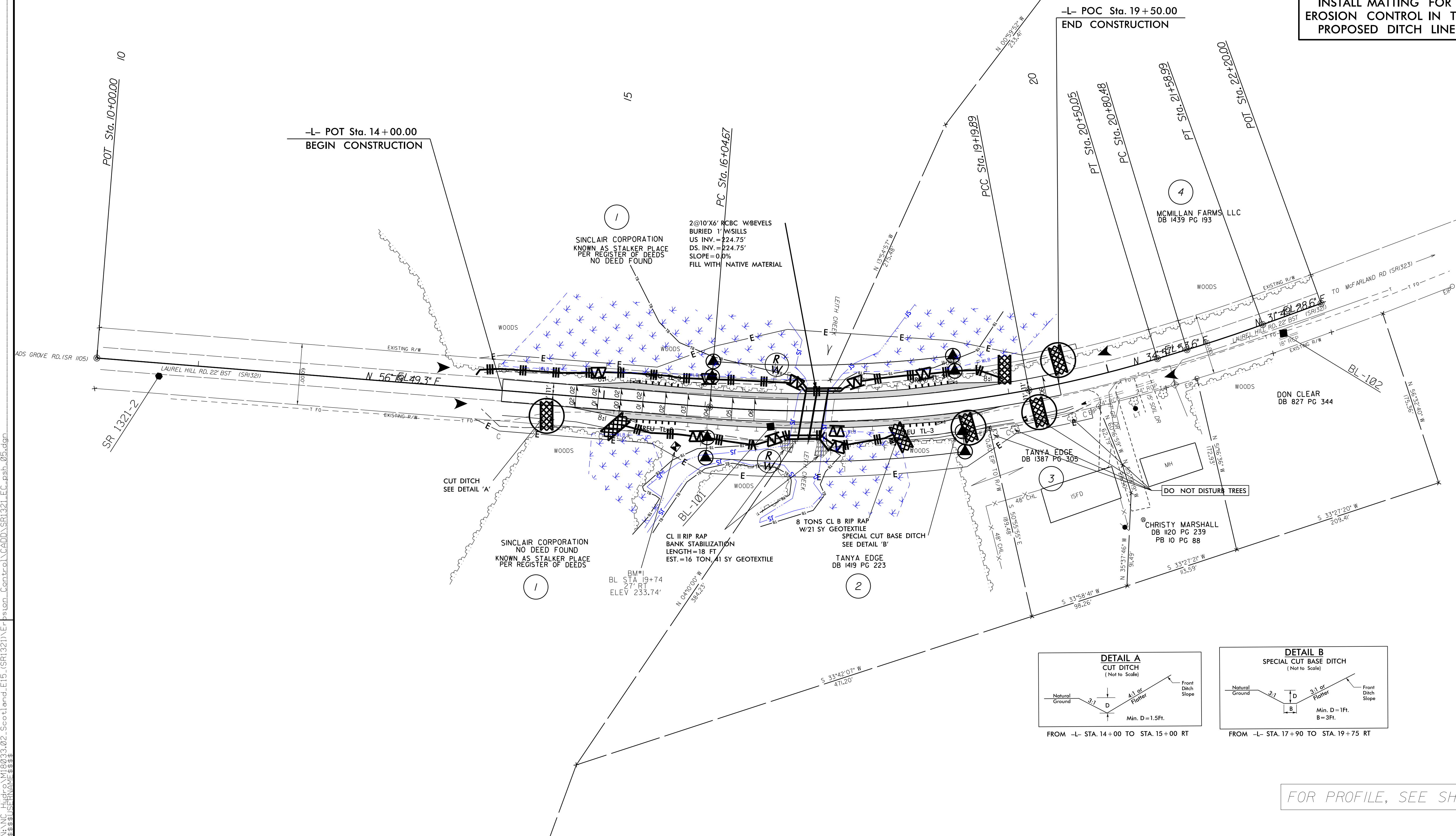
PROJECT REFERENCE NO. DF15048.2083804	SHEET NO. EC-04A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

1. CONSTRUCT SPECIAL STILLING BASIN PER NCDOT STANDARDS AT LOCATION SHOWN.
2. CONSTRUCT IMPREVIOUS DIKES AND DIVERSION CHANNEL AS SHOWN. DIVERSION CHANNEL TIE-INS SHOULD BE ISOLATED FROM JS FLOW. INSTALL 84" TEMPORARY PIPE AND BACKFILL
3. DIVERT CHANNEL FLOW THROUGH TEMPORARY DIVERSION CHANNEL AND PIPE.
4. CONSTRUCT CULVERT AND CHANNEL IMPROVEMENTS.
5. REMOVE IMPREVIOUS DIKES AND ALLOW FLOW THROUGH RCBC.
6. REMOVE STILLING BASIN AND TEMPORARY PIPE. FILL TEMPORARY DIVERSION CHANNEL TO EXISTING ELEVATIONS.
7. COMPLETE PROPOSED ROADWAY CONTRUCTION.



PROJECT REFERENCE NO.		SHEET NO.	
DF15408.2083804		EC-05/CONST.04	
SCOTLAND COUNTY 82 2030			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

INSTALL MATTING FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.

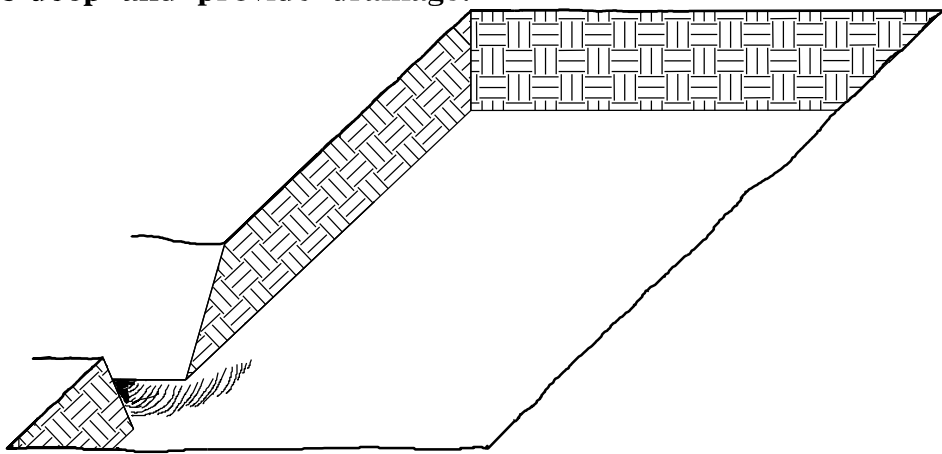


PLANTING DETAILS

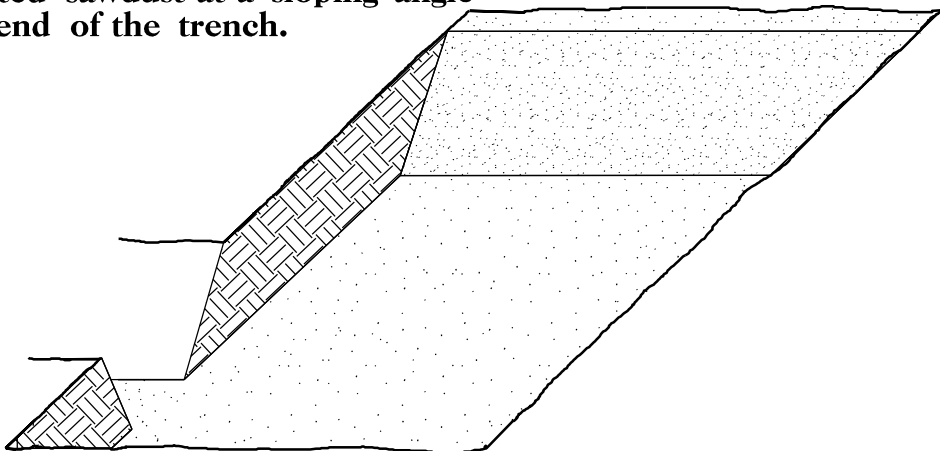
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

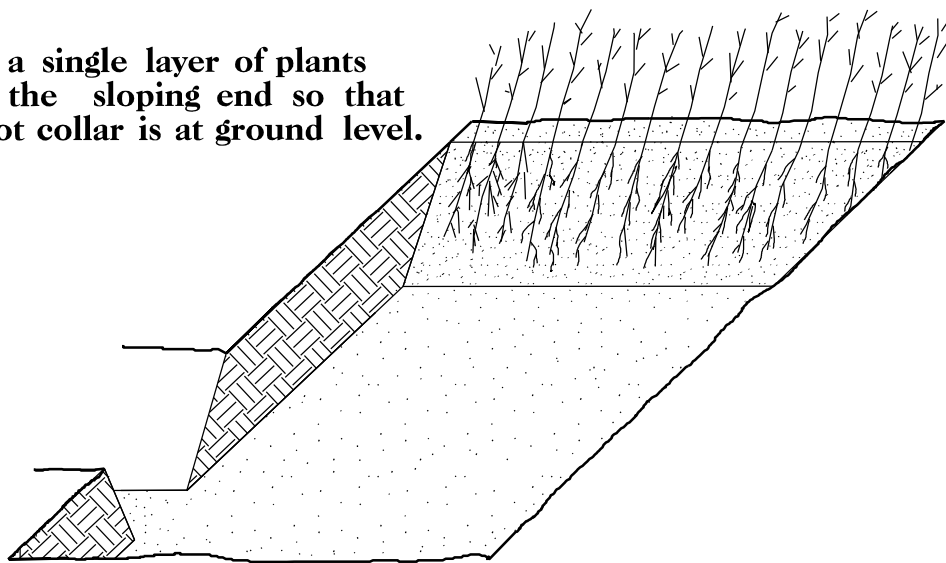
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



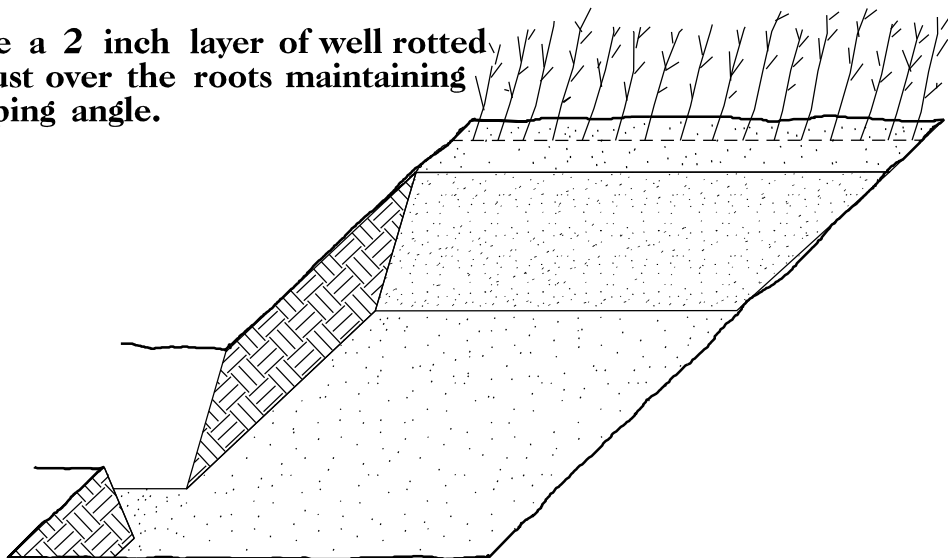
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

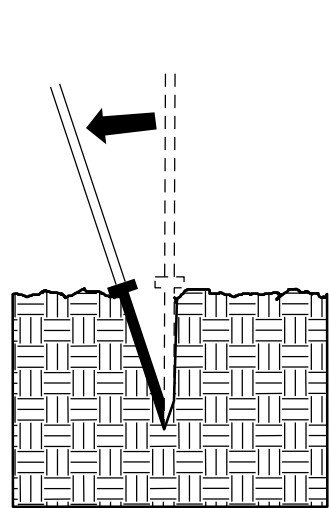


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

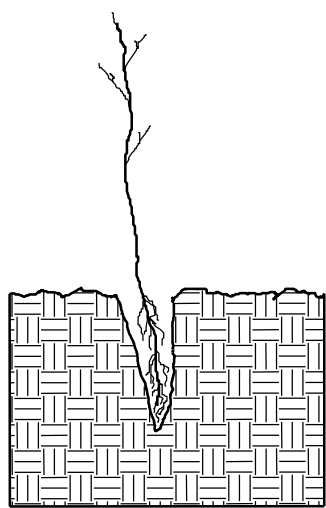


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

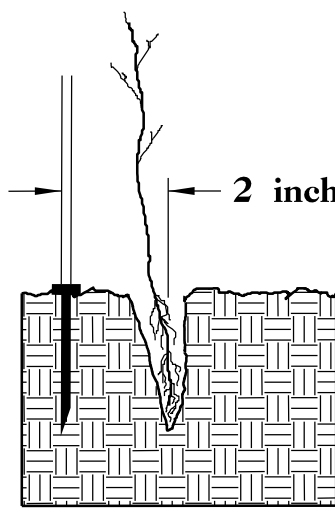
DOUBLE PLANTING METHOD
USING THE K3C PLANTING BAR



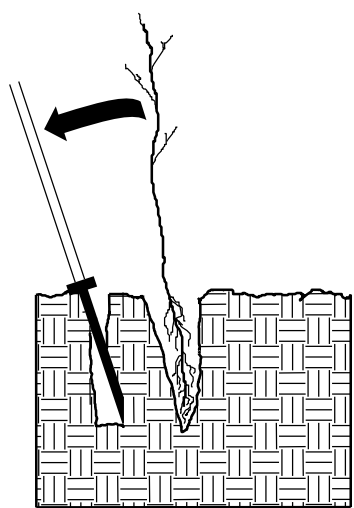
1. Insert planting bar as shown and pull handle toward planter.



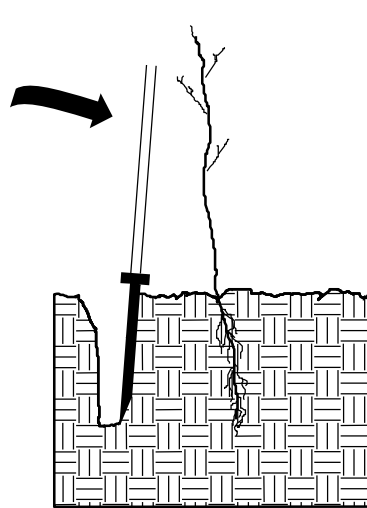
2. Remove planting bar and place seedling at correct depth.



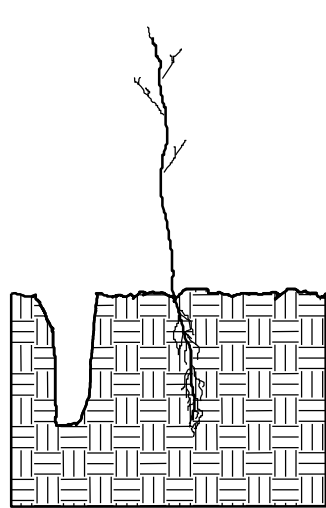
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



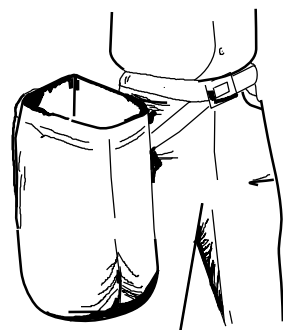
5. Push handle forward firming soil at top.



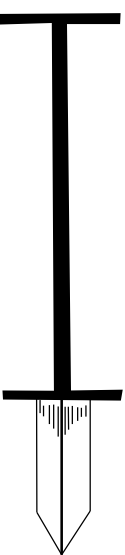
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

REFORESTATION

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

REFORESTATION

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

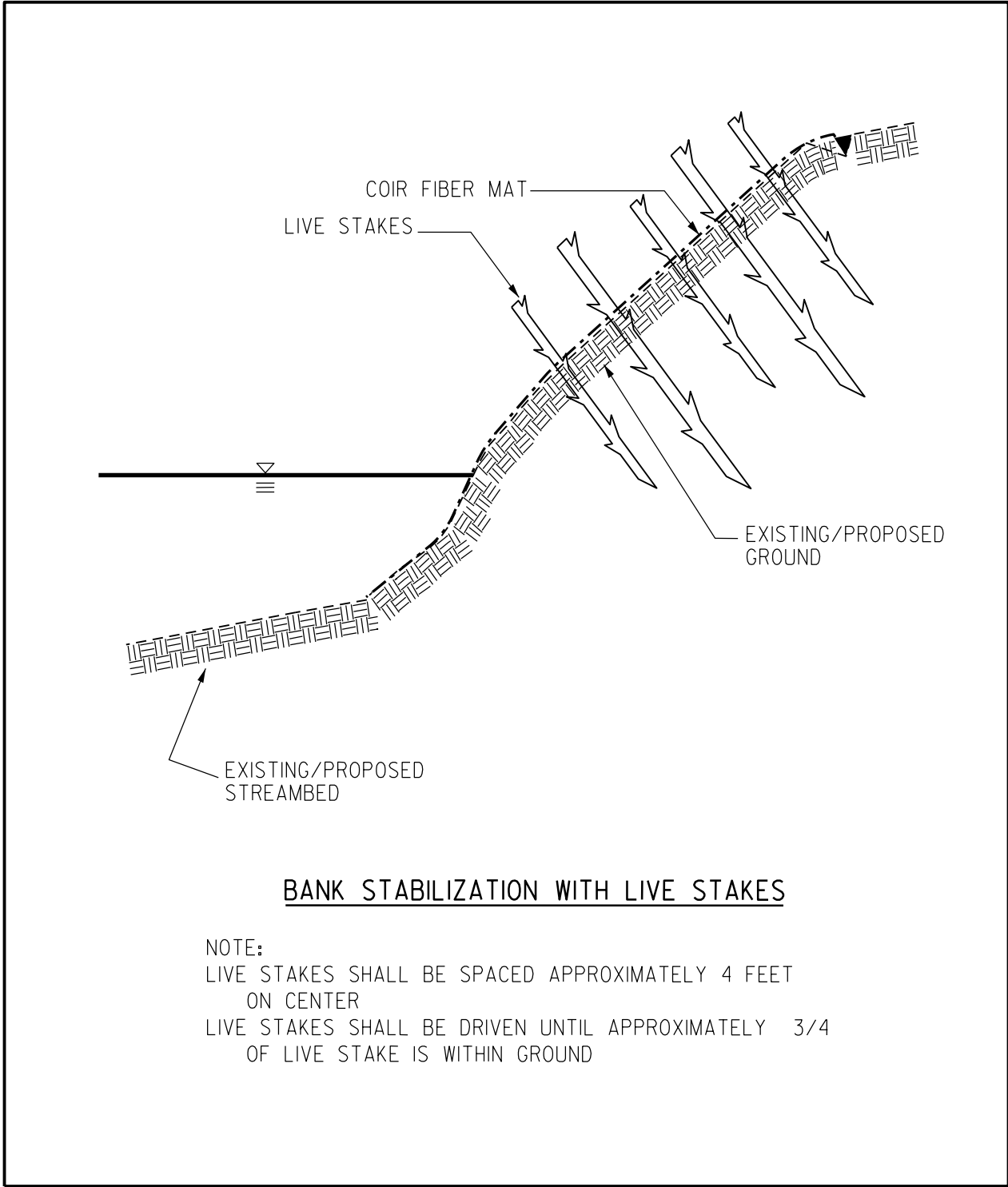
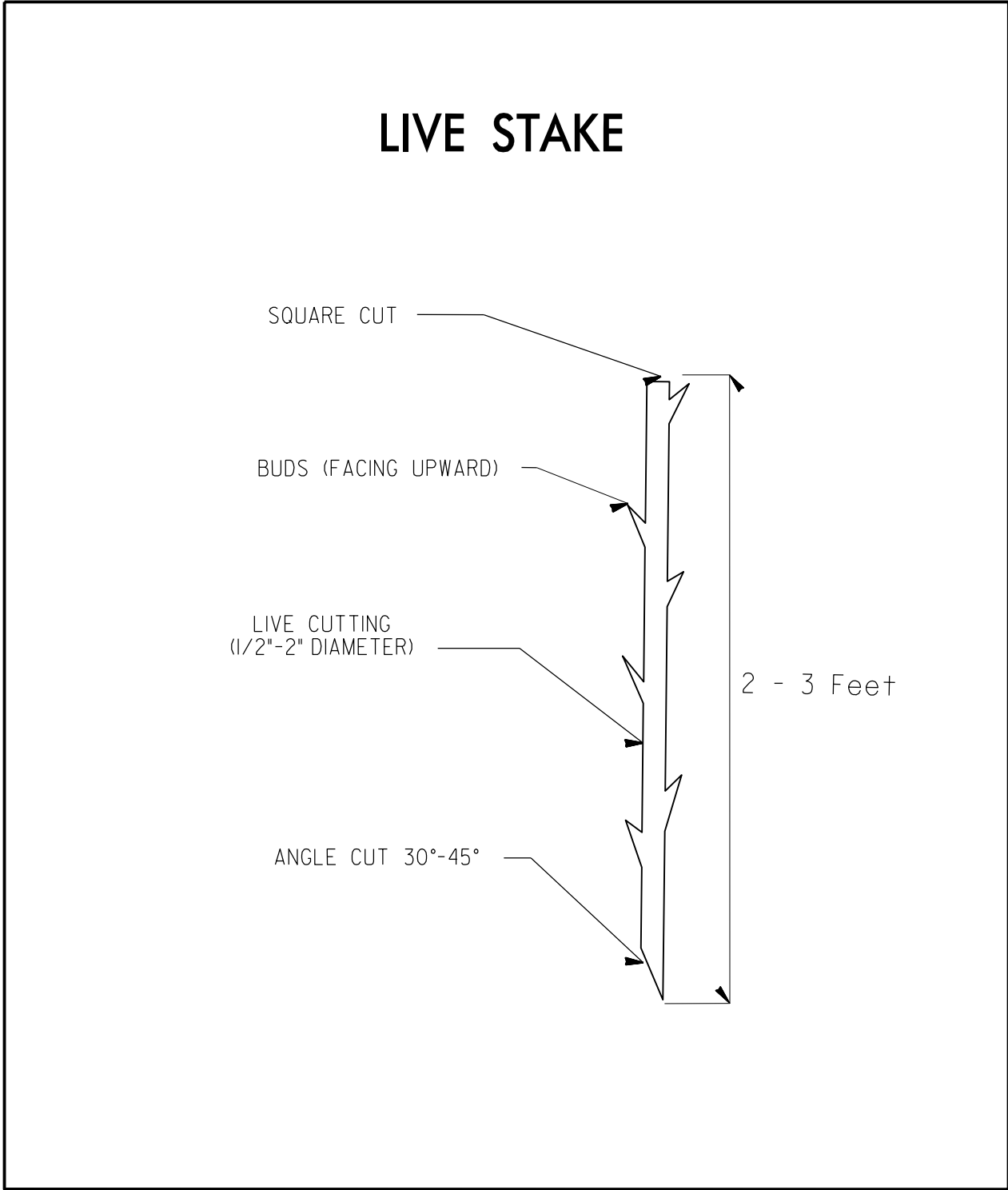
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in 3R
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

REFORESTATION DETAIL SHEET

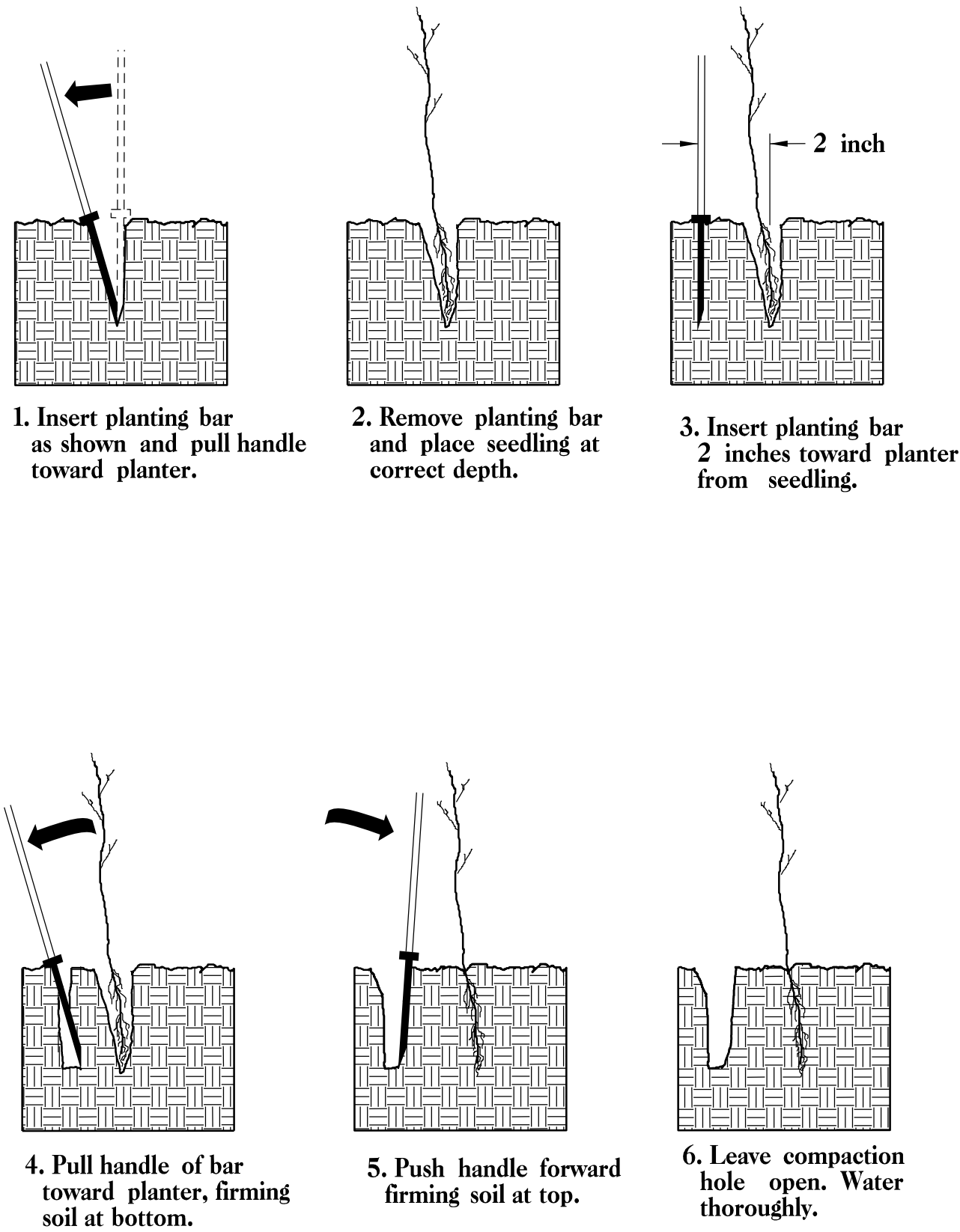
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL
DOUBLE PLANTING METHOD
USING THE KJC PLANTING BAR

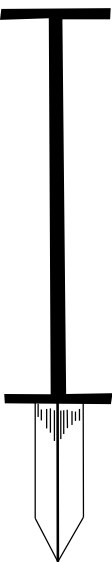


PLANTING NOTES:

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

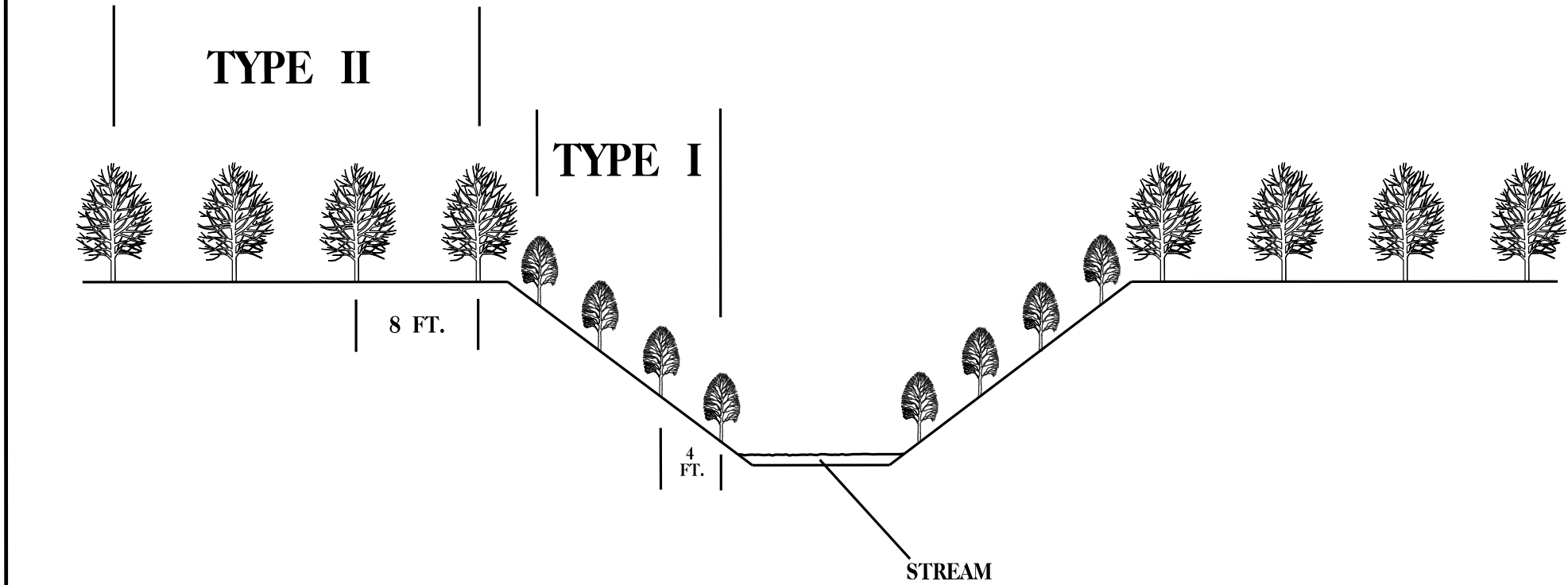
KJC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

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



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

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

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

TYPE 1

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

TYPE 2

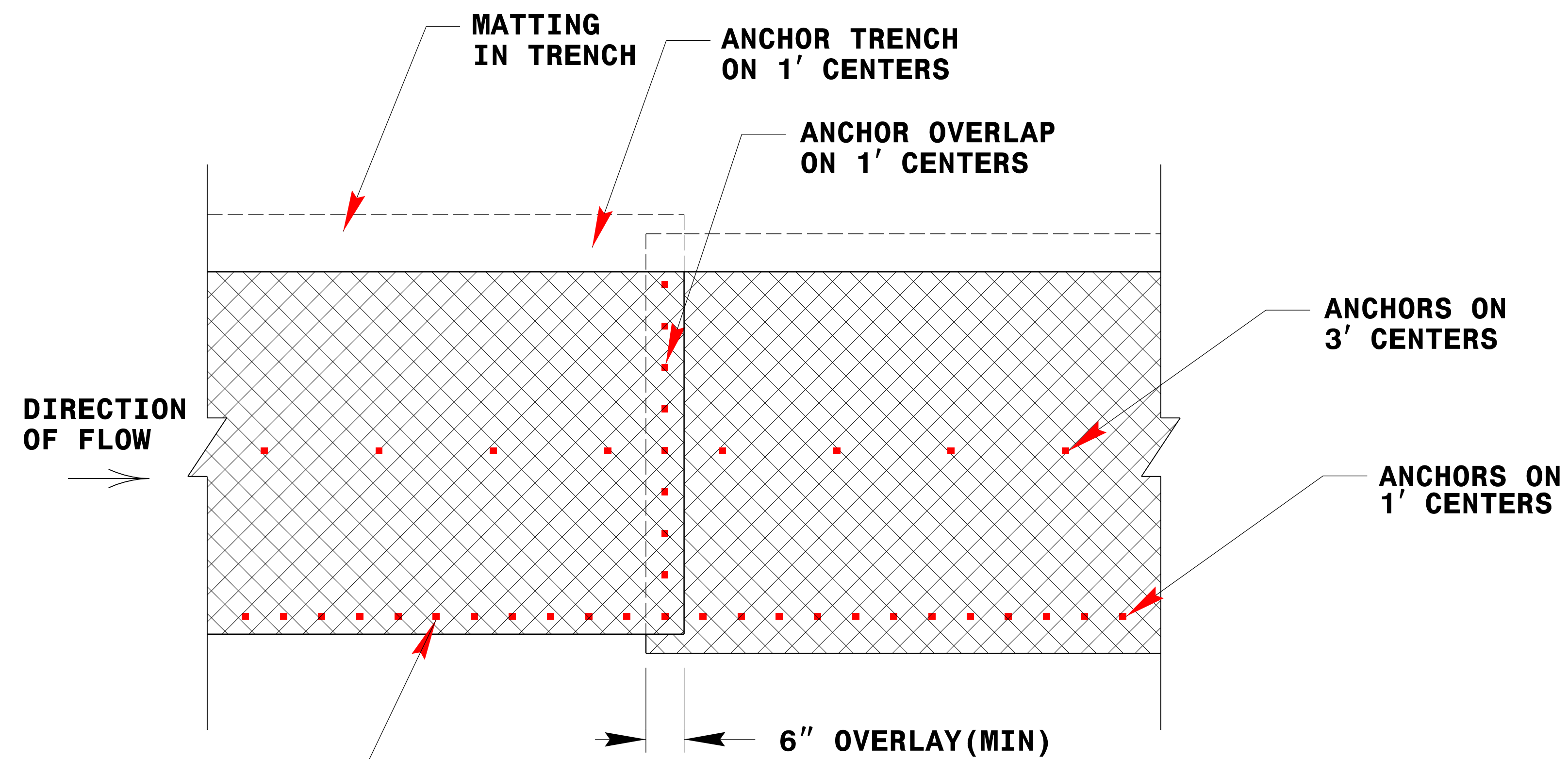
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in 3R
25% PRUNUS SEROTINA	BLACK CHERRY	12 in - 18 in 3R
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

- SEE PLAN SHEETS FOR AREAS TO BE PLANTED

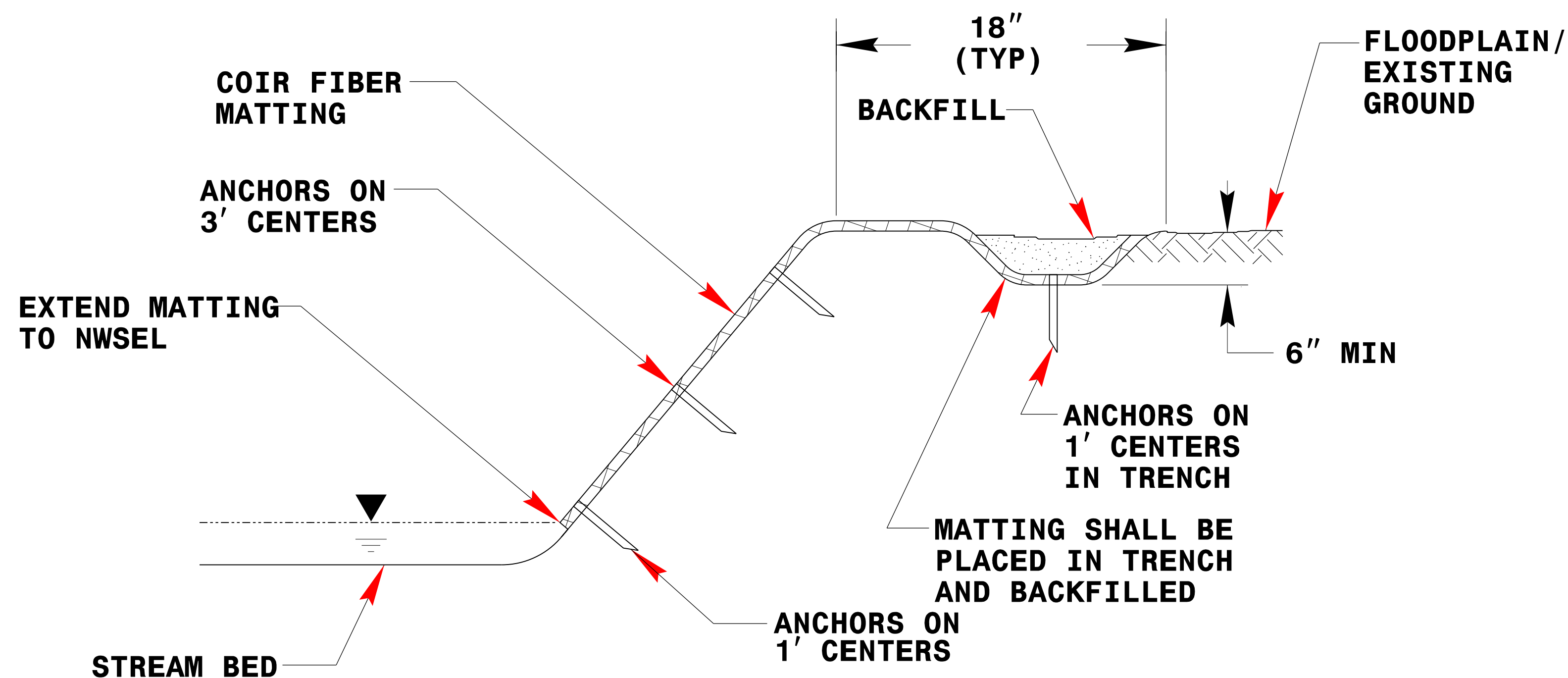
STREAMBANK REFORESTATION
DETAIL SHEET 1 OF 2

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

PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	RF-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



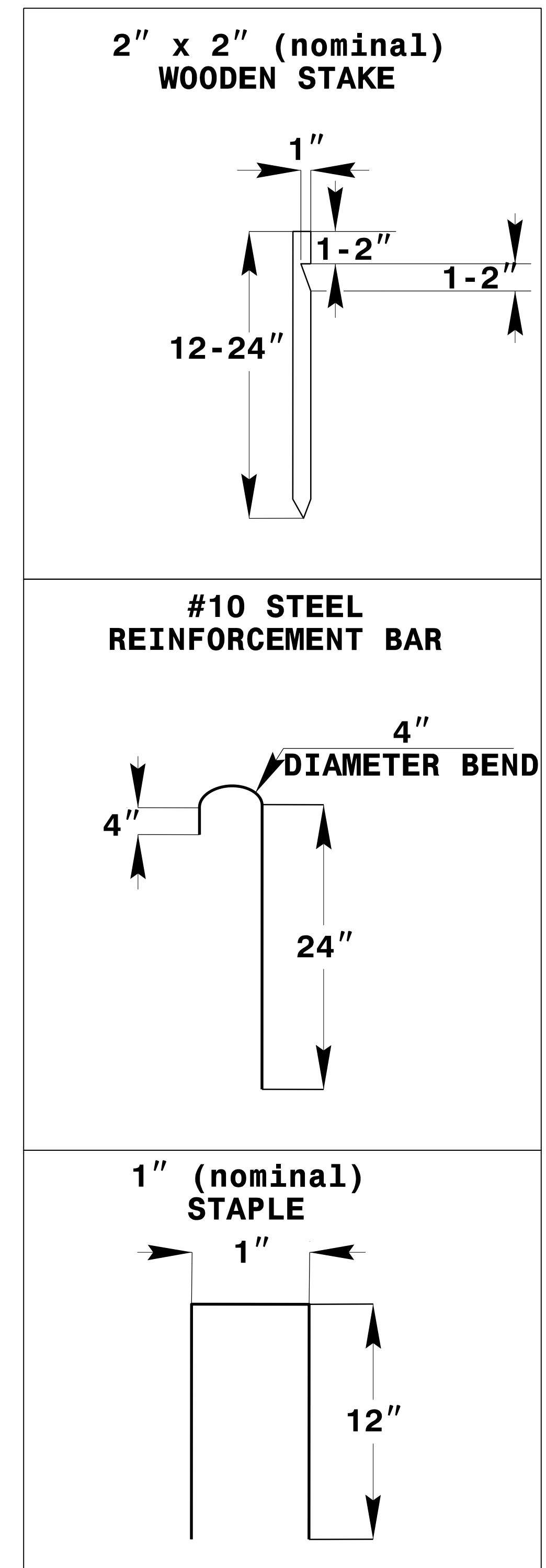
PLAN VIEW



TYPICAL CROSS SECTION

COIR FIBER MATTING DETAIL

NOT TO SCALE



ANCHOR OPTIONS

STREAMBANK REFORESTATION

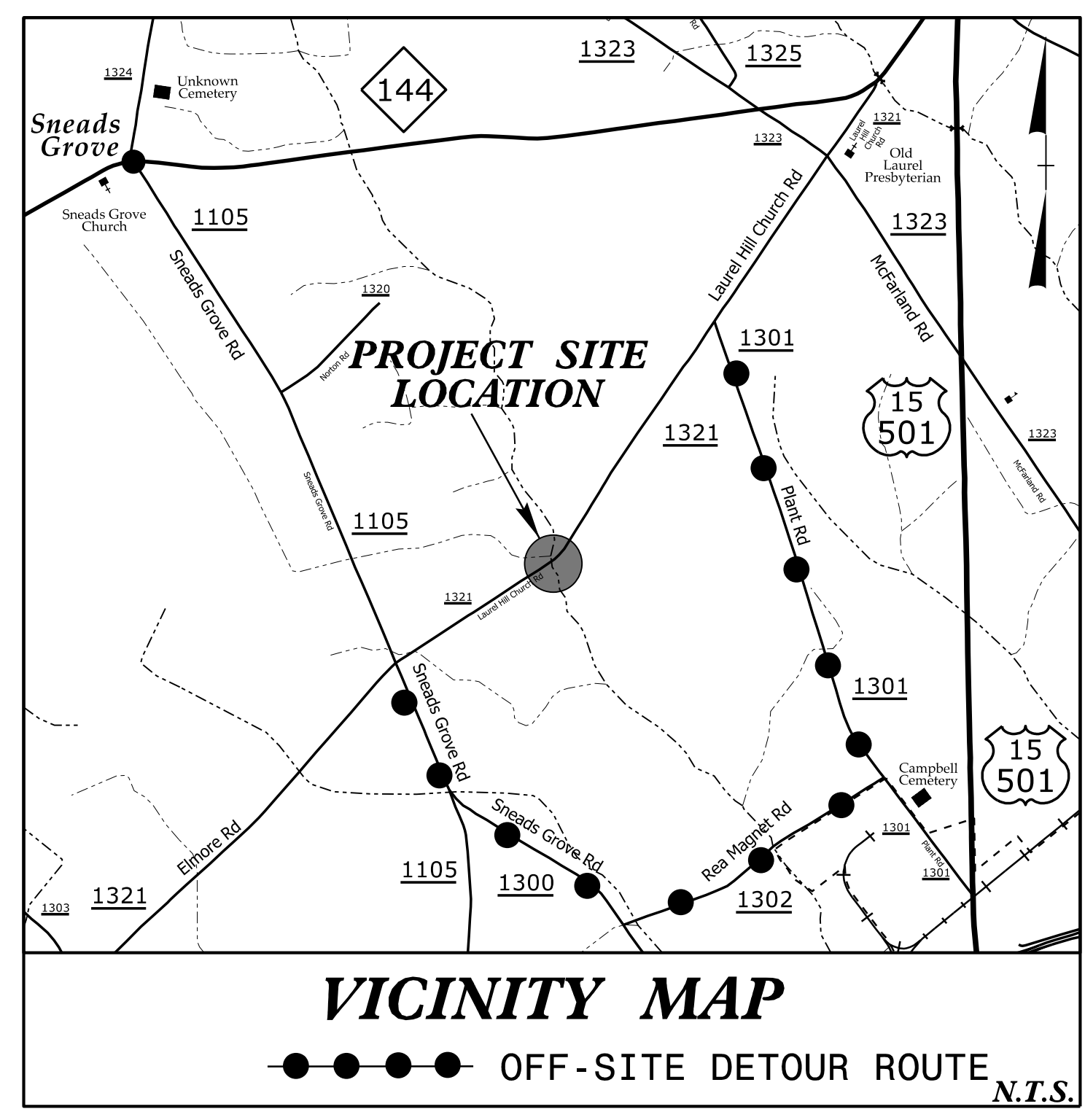
DETAIL SHEET 2 OF 2

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

12/16/2019 R:\Utilities\Engineering\UBO\Proj\SR132\ut_tsh_U001_psh.dgn -USERNAME-

09/08/99

TIP PROJECT: DF15408.2083804



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

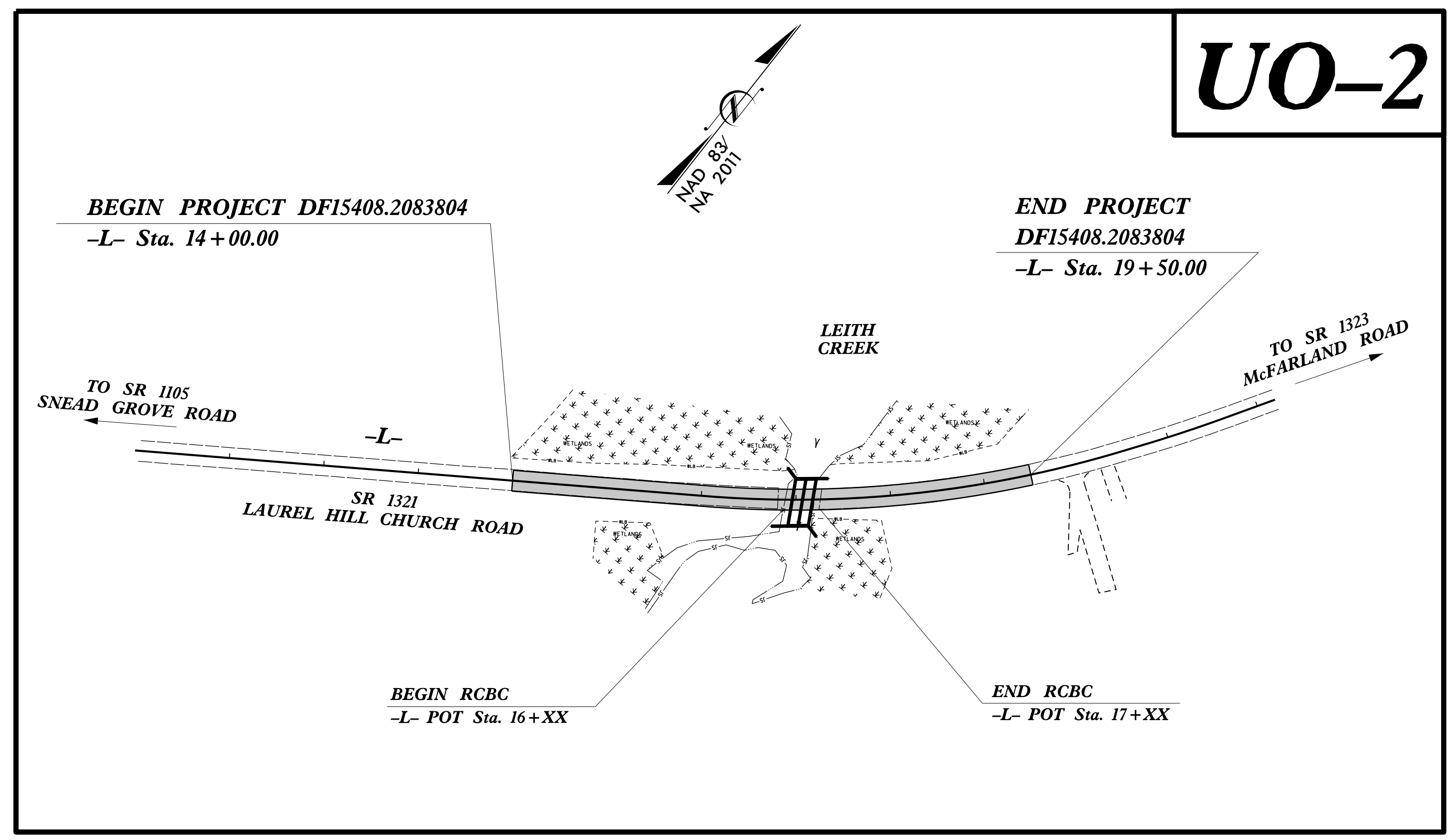
UTILITIES BY OTHERS PLANS
SCOTLAND COUNTY

LOCATION: PIPE 82 2042 OVER LEITH CREEK ON
SR 1321 (LAUREL HILL CHURCH ROAD)

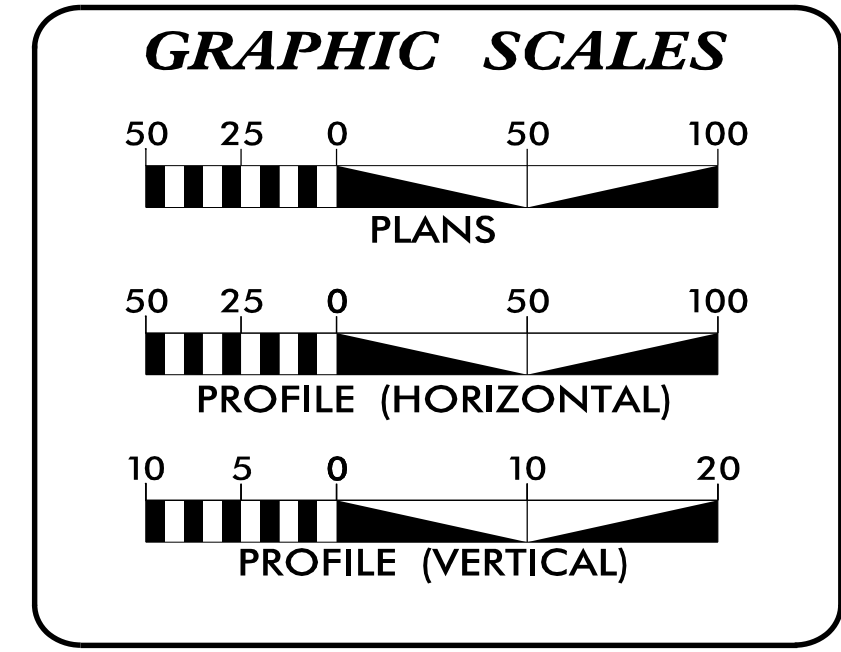
TYPE OF WORK: UTILITY RELOCATION

T.I.P. NO.	SHEET NO.
DF15408.2083804	UO-1

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



UO-2



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

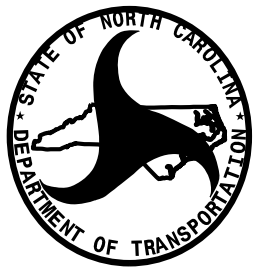
UTILITY OWNERS WITH CONFLICTS
(A) COMMUNICATIONS (TRANSMISSION) - AT&T

PREPARED IN THE OFFICE OF:

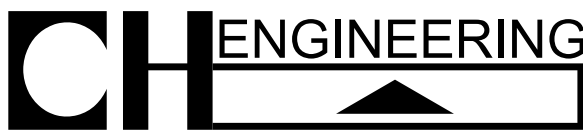
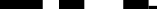
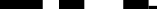
CH ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

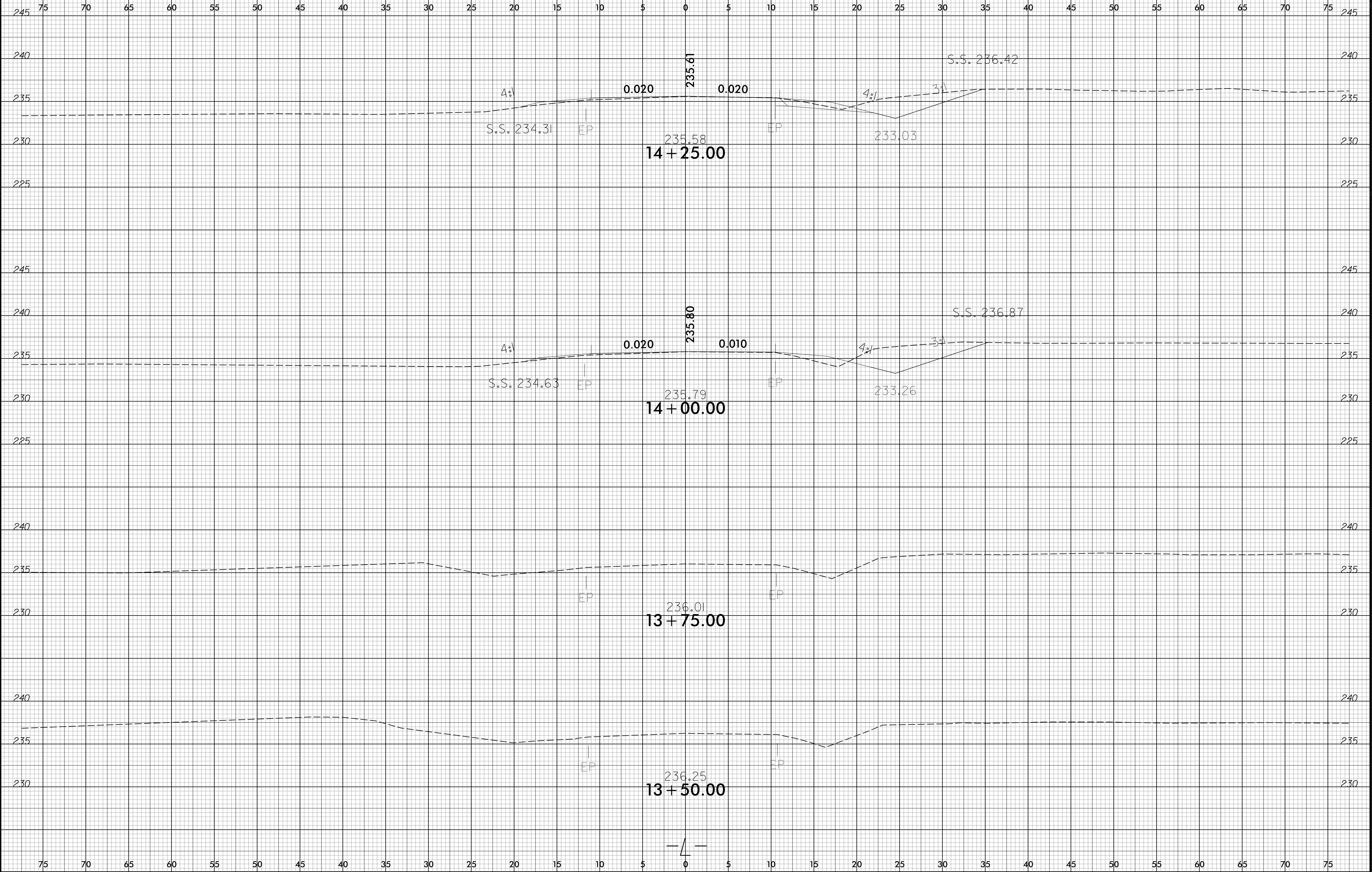
UTILITIES PROJECT ENGINEER
Mary Jo Lee, P.E.

 **DIVISION OF HIGHWAYS**
DIVISION 8
121 DOT DRIVE
CARTHAGE, NC 28327

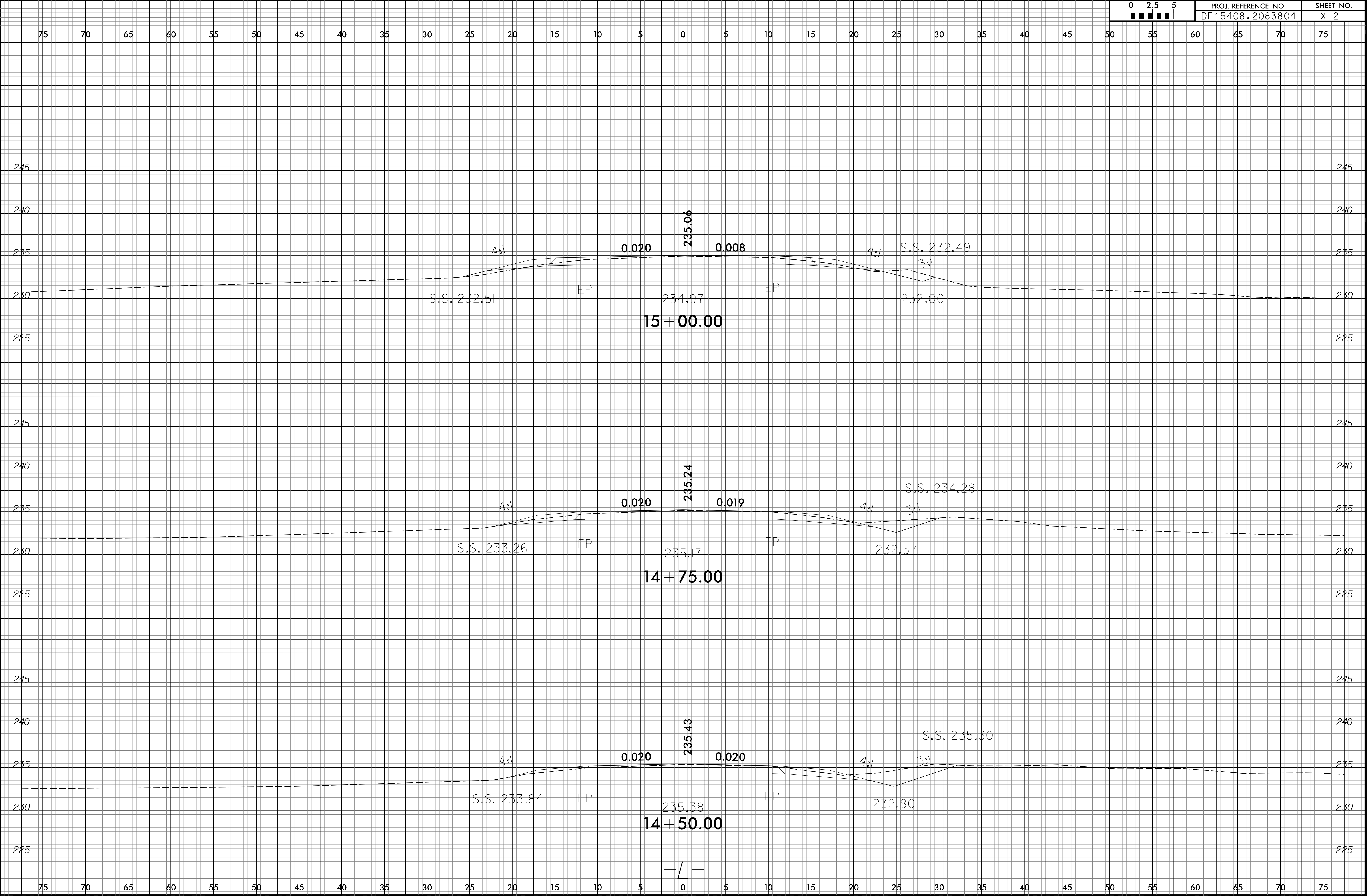
JAMIE YOW DIVISION CONTACT #1
TRAVIS MORGAN, PE DIVISION CONTACT #2
TIM WELCH, PE DIVISION CONTACT #3
DIVISION CONTACT #4



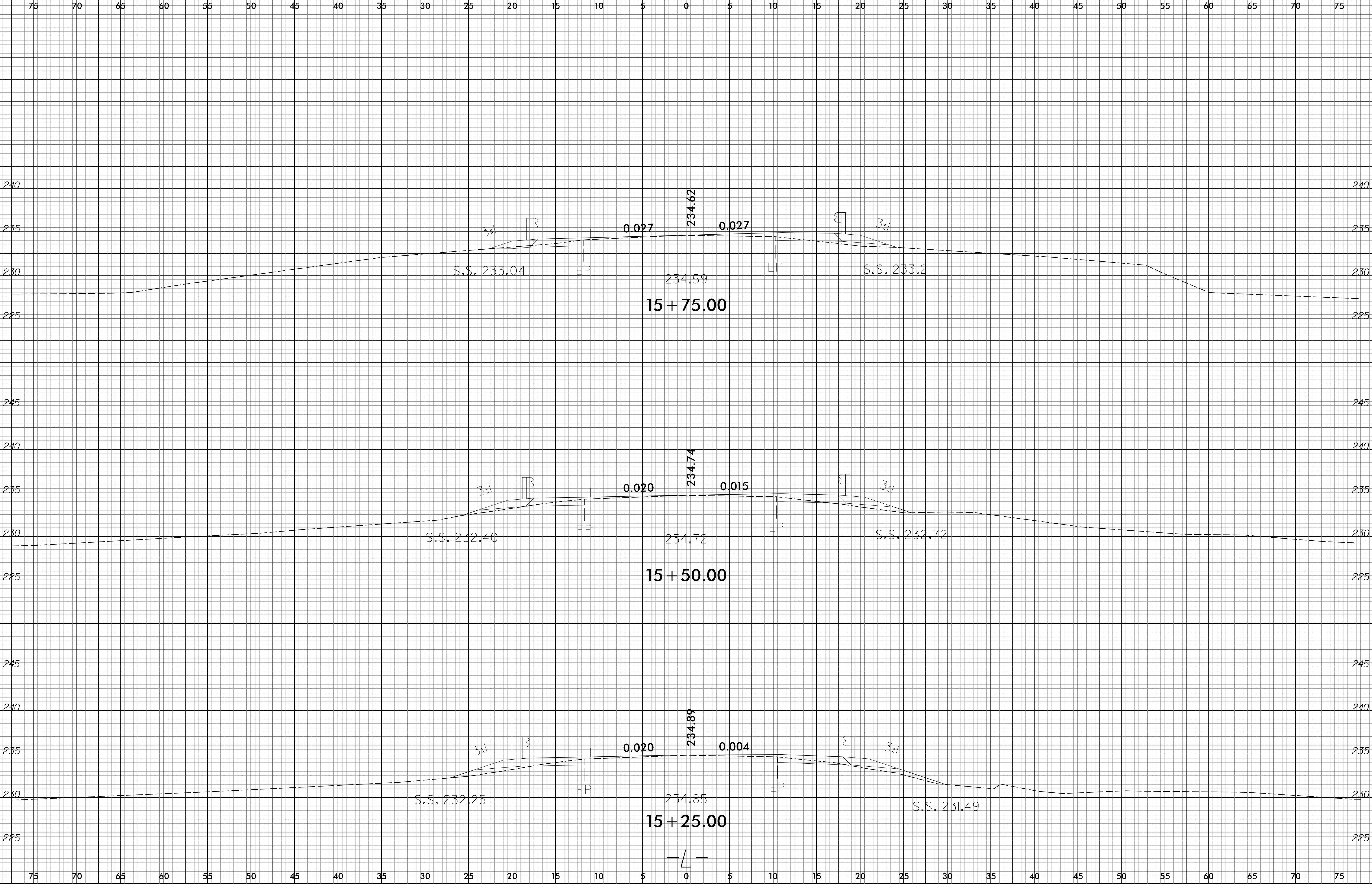
6/23/16



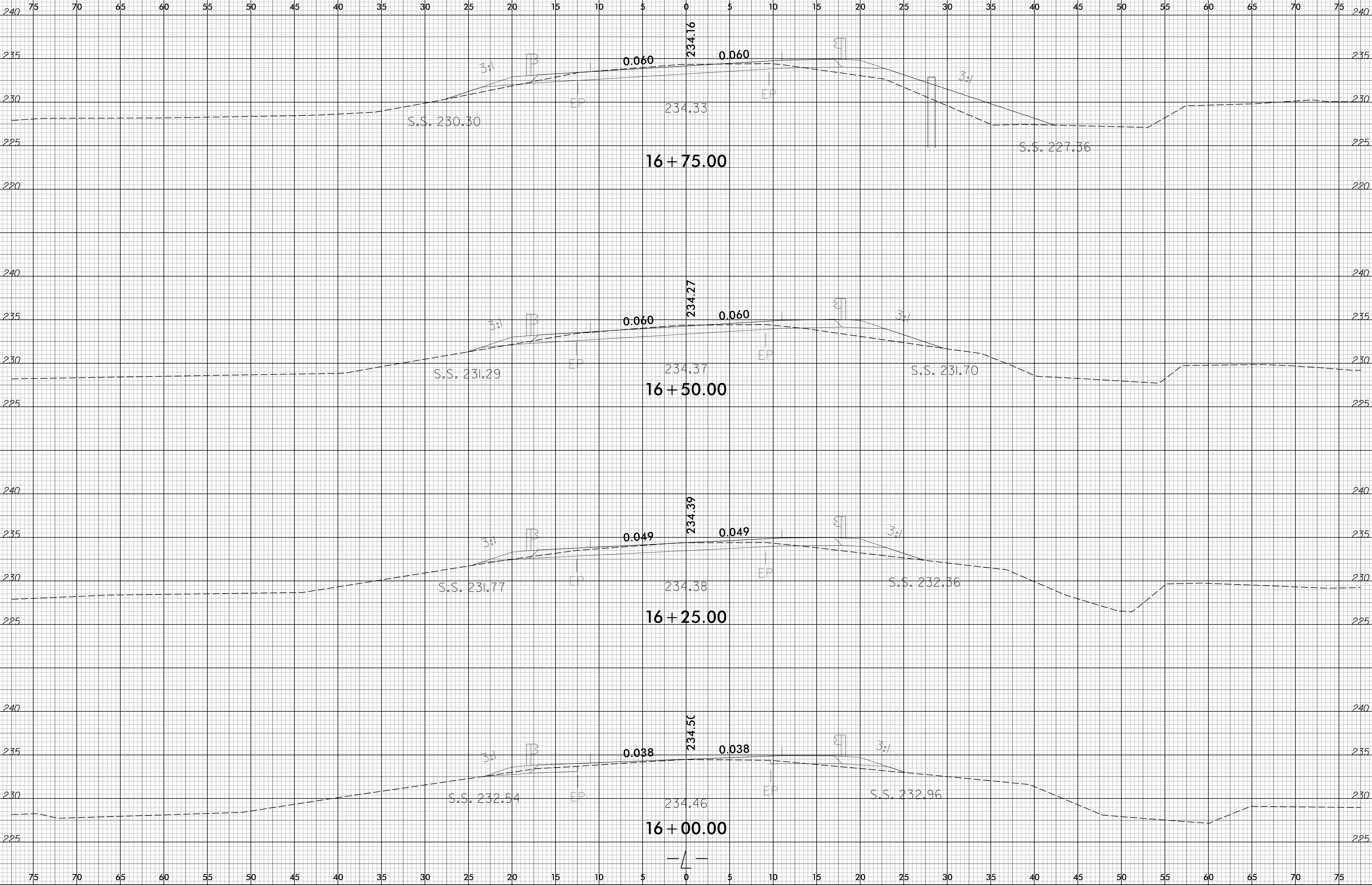
6/23/16



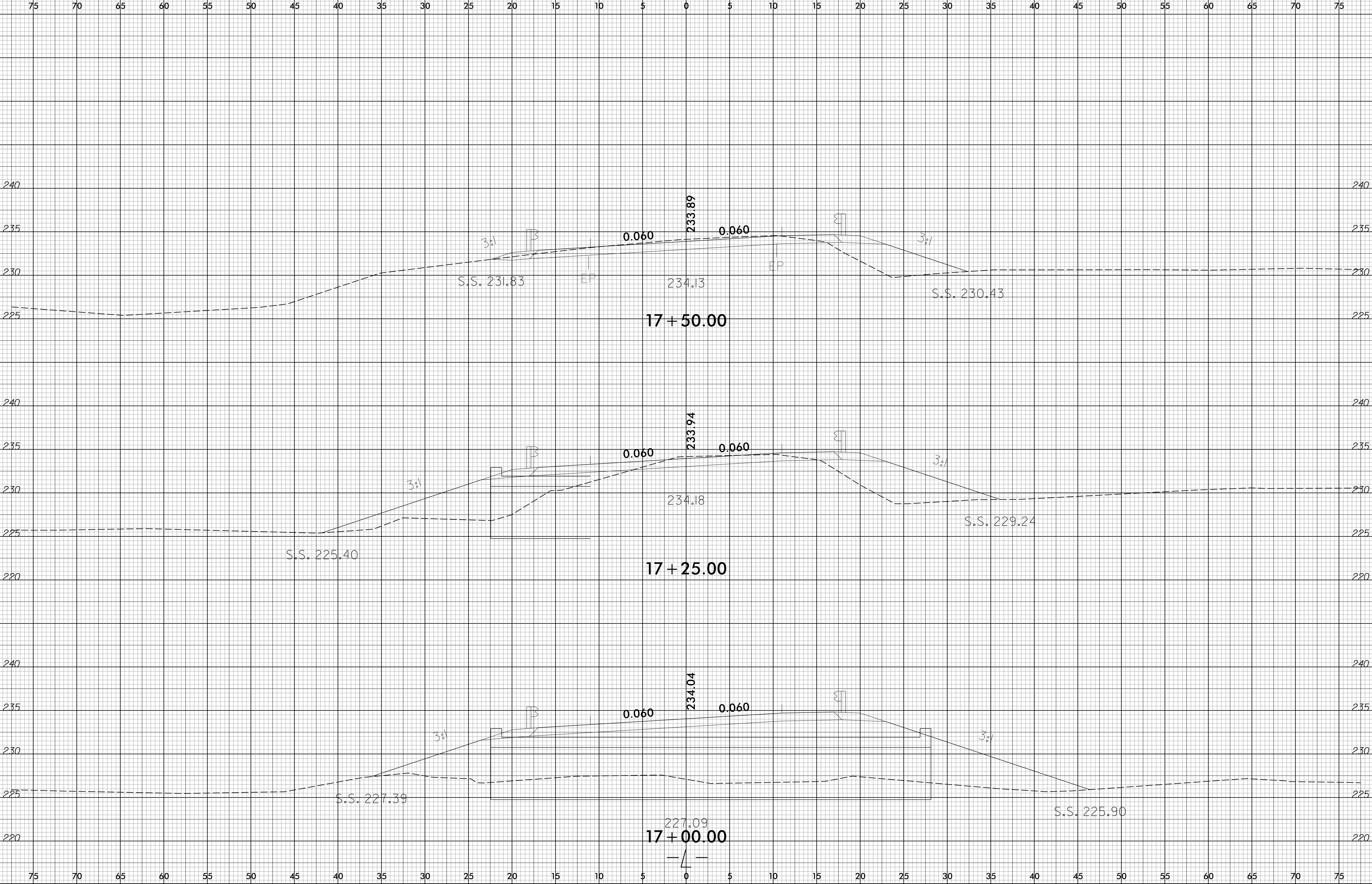
6/23/16



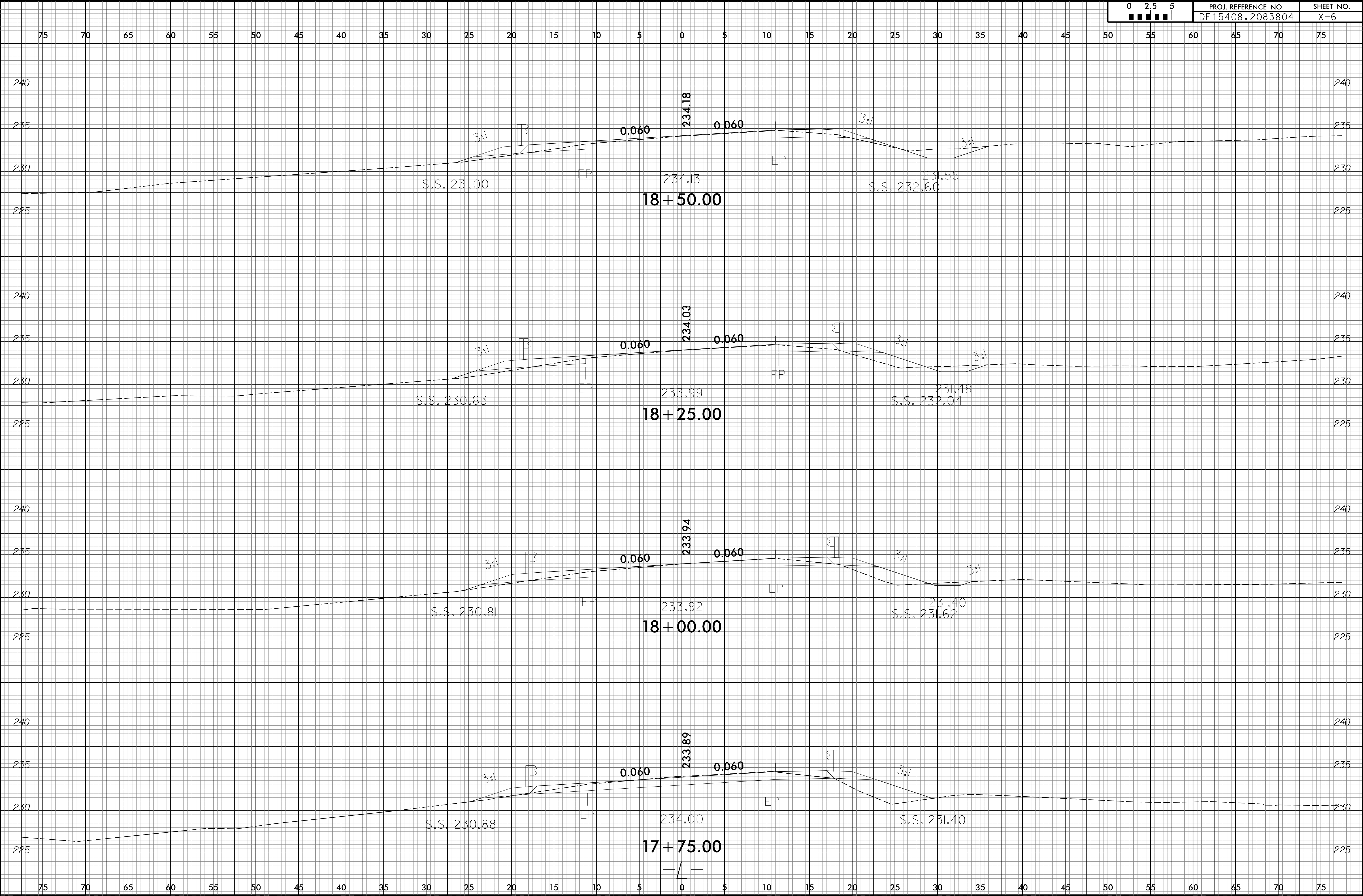
6/23/16



6/23/16



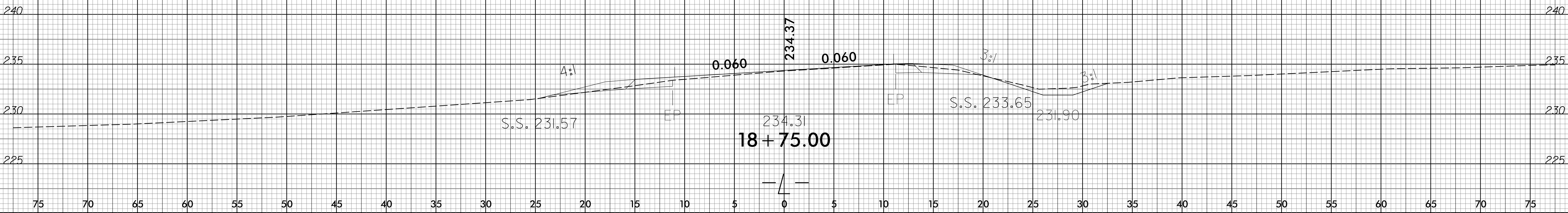
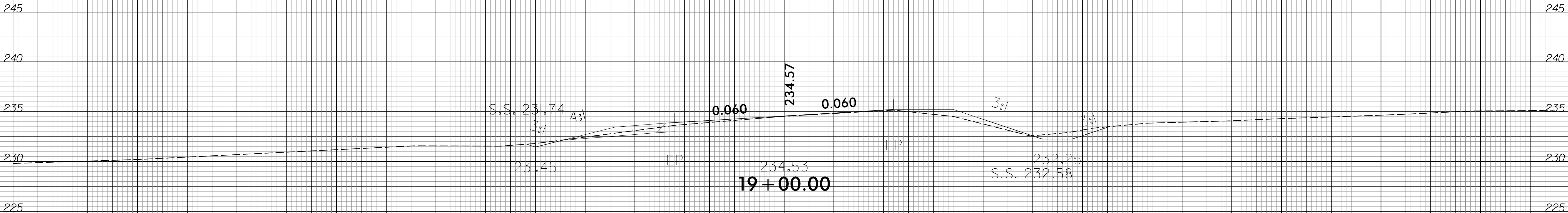
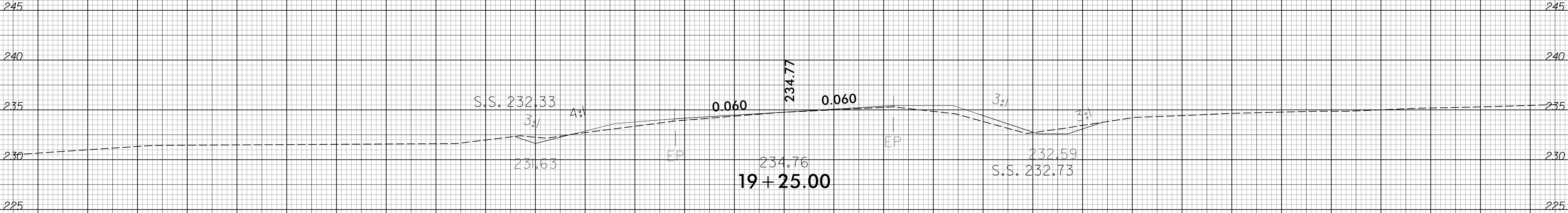
6/23/16



6/23/16

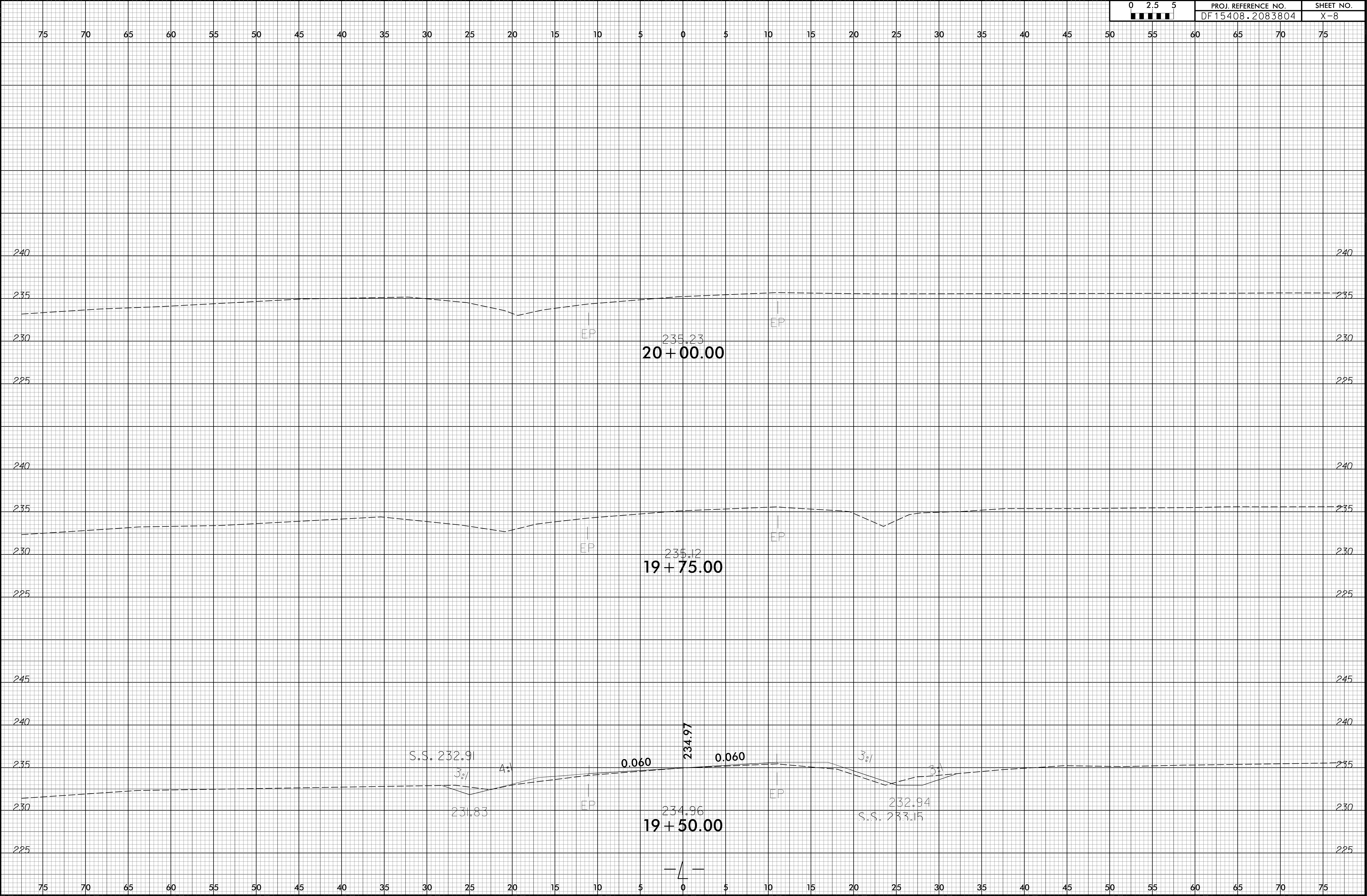
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	DF15408.2083804	X-7

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

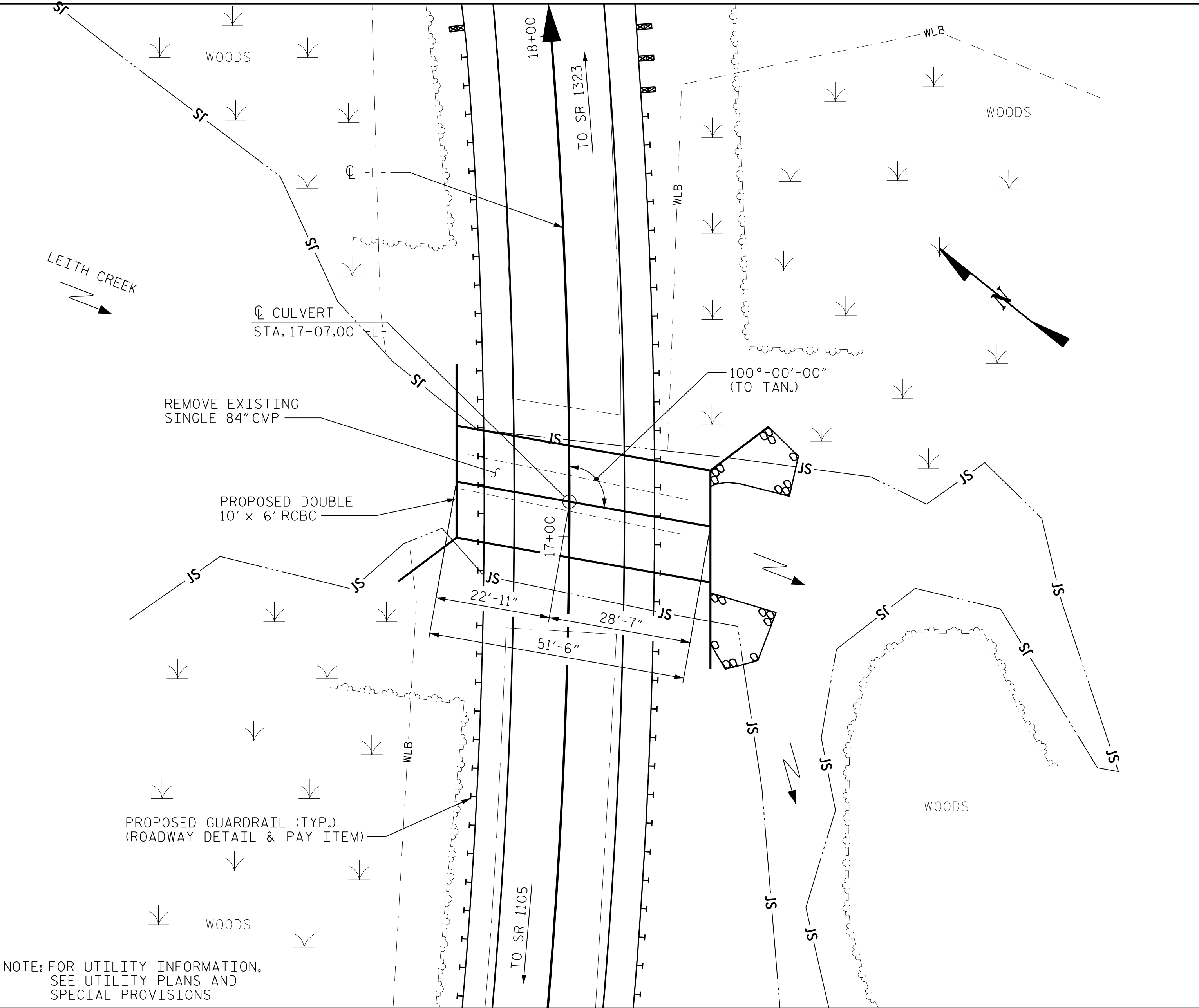


6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	DF15408.2083804	X-8



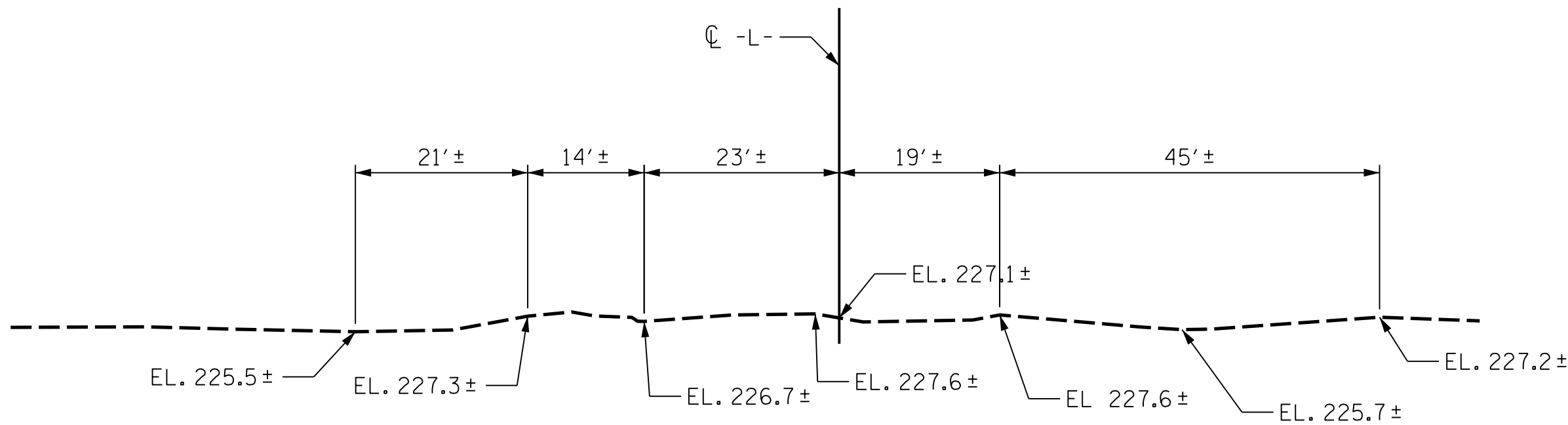
BM #1: BENCH NAIL IN BASE OF 18" SYCAMORE, 41' RT. OF STA. 15+74.00 -L-, EL. 233.74



NOTE: FOR UTILITY INFORMATION,
SEE UTILITY PLANS AND
SPECIAL PROVISIONS

LOCATION SKETCH

GRADE POINT ELEVATION @ 17+07.00 -L- = 234.01
BED ELEVATION @ 17+07.00 -L- = 224.75
ROADWAY SLOPES = 3:1



PROFILE ALONG CL CULVERT

DRAWN BY : J.I. BREWER DATE : 07/19
CHECKED BY : B.E. ATKINSON DATE : 08/19
DESIGN ENGINEER OF RECORD : J.I. BREWER DATE : 08/19

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.

DESIGN FILL-----1.00 FT.

FOR OTHER DESIGN DATA AND NOTES,SEE STANDARD NOTE SHEET.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION.EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION,HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT.THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS.EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT,TO THE ENGINEER FOR APPROVAL,DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS.THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN.FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 620 CFS
FREQUENCY OF DESIGN FLOOD = 25 YRS.
DESIGN HIGH WATER ELEVATION = 231.3 FT.
DRAINAGE AREA = 4.60 SQ. MI.
BASE DISCHARGE (Q100)..... = 940 CFS
BASE HIGH WATER ELEVATION = 232.8 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 1053 CFS
FREQUENCY OF OVERTOPPING FLOOD = 100+ YRS.
OVERTOPPING FLOOD ELEVATION = 233.9 FT.

-L- PROFILE DATA

PVI STA. 17+85.00 -L-
PVI EL. = 233.65
VC = 160.00
g1 = -0.4600%
g2 = +0.8000%

NOTES

THE EXISTING STRUCTURE CONSISTING OF 1 LINE OF 84" CM PIPE LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM,SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

EXCAVATE 1 FT.BELOW CULVERT AND 2 FT.BELOW WINGWALLS 2 AND 3 FOOTINGS AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.

THE TOTAL QUANTITY OF FOUNDATION CONDITIONING MATERIAL INCLUDES A CONTINGENCY AMOUNT OF 198 TONS TO BE USED AT THE DISCRETION OF THE ENGINEER.

CULVERT BACKFILL IS INCIDENTAL TO CULVERT EXCAVATION AND/OR LUMP SUM GRADING.

CULVERT BACKFILL SHOULD BE TYPE 3 SELECT MATERIAL (SECTION 1016) UP TO THE TOP OF WEEP HOLE ELEVATION.

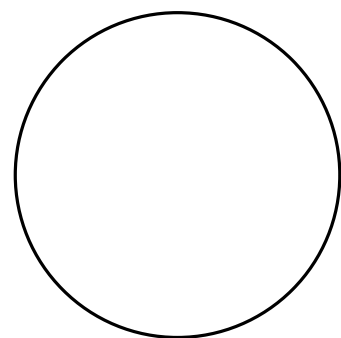
FOR SUBMITTAL OF WORKING DRAWINGS,SEE SPECIAL PROVISIONS.

FOR FALSWORK AND FORMWORK,SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY,SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES,SEE SPECIAL PROVISIONS.

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS



PROJECT NO. DF15408.2083804

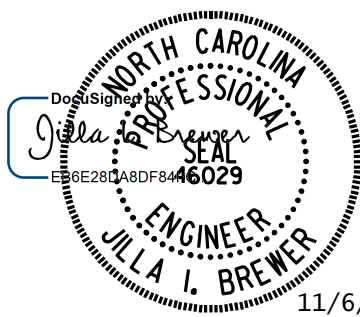
SCOTLAND COUNTY

STATION: 17+07.00 -L-

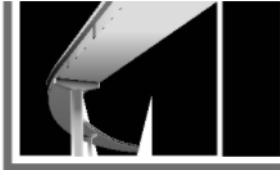
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 10 FT. X 6 FT.
CONCRETE BOX CULVERT
100° SKEW



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS

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

SHEET NO.

C-1

TOTAL SHEETS

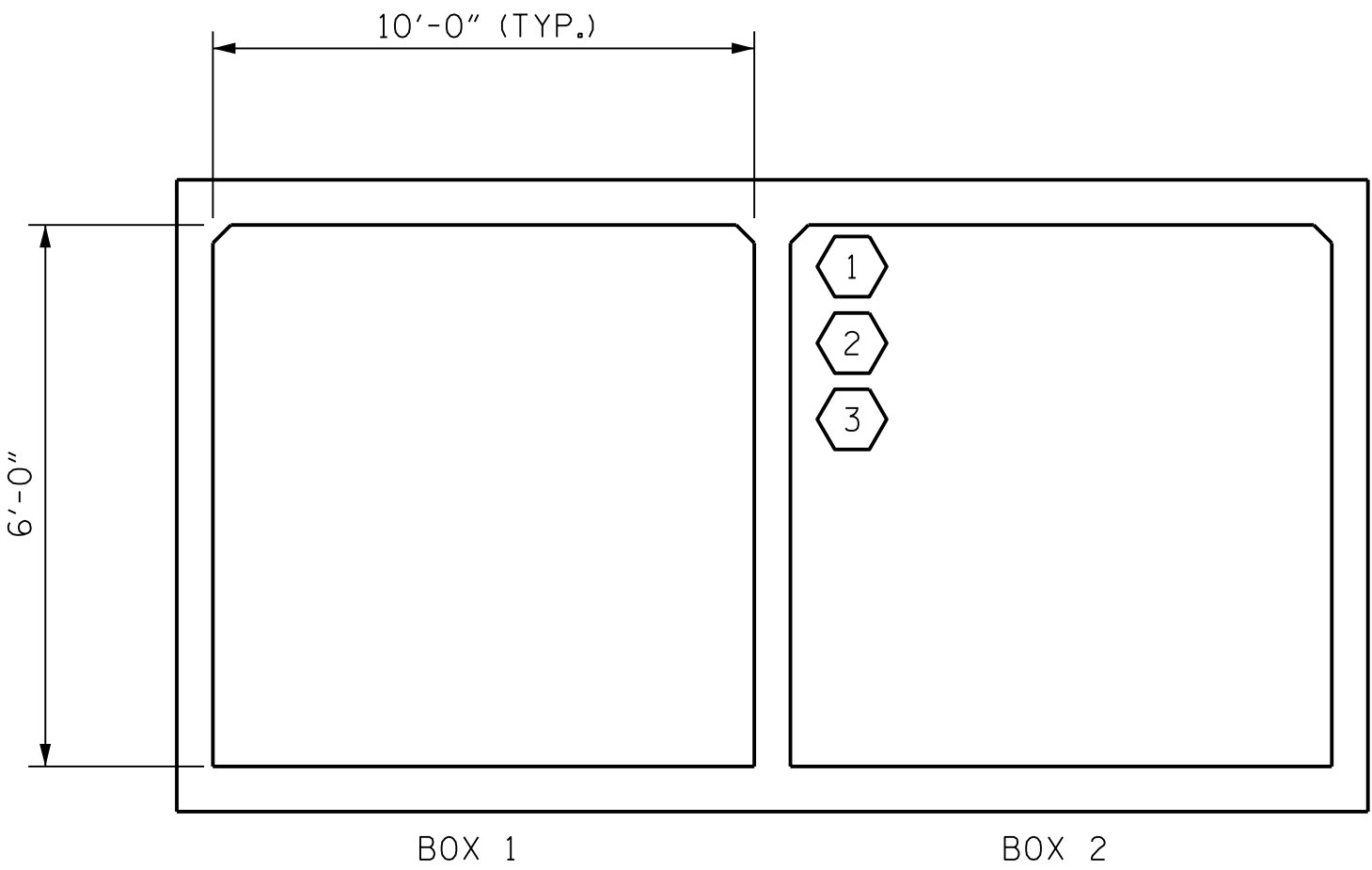
6

+

+

8/14/2019 9:39:04 AM User: jlsr qe naim File name: N:\NC Bridges\MI8033.02_Scotland.E15 (SR132)\DF15408.2083804\Structure\es\410.003.DF15408.2083804_SMU_CUL2.dgn

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS															
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
						LIVE-LOAD, FACTORS (γ _{LL})	MOMENT				SHEAR				
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬡1	1.08	--	1.75	1.74	1	EXTERIOR WALL	3.00	1.08	2	TOP SLAB	0.00	
	HL-93 (OPERATING)	N/A		1.39	--	1.35	2.25	1	EXTERIOR WALL	3.00	1.39	2	TOP SLAB	0.00	
	HS-20 (INVENTORY)	36.000	⬡2	1.08	38.88	1.75	1.74	1	EXTERIOR WALL	3.00	1.08	2	TOP SLAB	0.00	
	HS-20 (OPERATING)	36.000		1.40	50.40	1.35	2.25	1	EXTERIOR WALL	3.00	1.40	2	TOP SLAB	0.00	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.59	34.97	1.40	3.53	2	TOP SLAB	5.00	2.59	2	TOP SLAB	0.00	
		SNGARBS2		2.31	46.20	1.40	3.31	2	TOP SLAB	5.00	2.31	2	TOP SLAB	0.00	
		SNAGRIS2		2.46	54.12	1.40	3.53	2	TOP SLAB	5.00	2.46	2	TOP SLAB	0.00	
		SNCOTTS3	⬡3	1.11	30.25	1.40	1.88	2	EXTERIOR WALL	3.00	1.11	2	TOP SLAB	0.00	
		SNAGGRS4		1.37	47.85	1.40	2.18	2	EXTERIOR WALL	3.00	1.37	2	TOP SLAB	0.00	
		SNS5A		1.28	45.50	1.40	2.09	2	EXTERIOR WALL	3.00	1.28	2	TOP SLAB	0.00	
		SNS6A		1.23	49.14	1.40	2.14	2	EXTERIOR WALL	3.00	1.23	2	TOP SLAB	0.00	
		SNS7B		1.24	52.08	1.40	2.14	2	EXTERIOR WALL	3.00	1.24	2	TOP SLAB	0.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		2.02	66.66	1.40	2.97	1	BOTTOM SLAB	10.00	2.02	2	TOP SLAB	0.00	
		TNT4A		1.35	44.65	1.40	2.24	2	EXTERIOR WALL	3.00	1.35	2	TOP SLAB	0.00	
		TNT6A		1.26	52.42	1.40	2.10	2	EXTERIOR WALL	3.00	1.26	2	TOP SLAB	0.00	
		TNT7A		1.29	54.18	1.40	2.18	2	EXTERIOR WALL	3.00	1.29	2	TOP SLAB	0.00	
		TNT7B		1.28	53.76	1.40	2.14	2	EXTERIOR WALL	3.00	1.28	2	TOP SLAB	0.00	
		TNAGRIT4		1.27	54.61	1.40	2.24	2	EXTERIOR WALL	3.00	1.27	2	TOP SLAB	0.00	
		TNAGT5A		1.26	56.70	1.40	2.18	2	EXTERIOR WALL	3.00	1.26	2	TOP SLAB	0.00	
		TNAGT5B		1.26	56.70	1.40	2.18	2	EXTERIOR WALL	3.00	1.26	2	TOP SLAB	0.00	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

ASSEMBLED BY :	J.I. BREWER	DATE:	07/19
CHECKED BY :	B.E. ATKINSON	DATE:	08/19
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	08/19
DRAWN BY :	WMC 7/II	REV. 10/1/II	MAA/GM
CHECKED BY :	GM 7/II	REV. 12/17	MAA/THC

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

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

NOTE:
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

-
-
-
-

⬡ CONTROLLING LOAD RATING
⬡1 DESIGN LOAD RATING (HL-93)
⬡2 DESIGN LOAD RATING (HS-20)
⬡3 LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE

PROJECT NO. DF15408.2083804
SCOTLAND COUNTY
STATION: 17+07.00 -L-

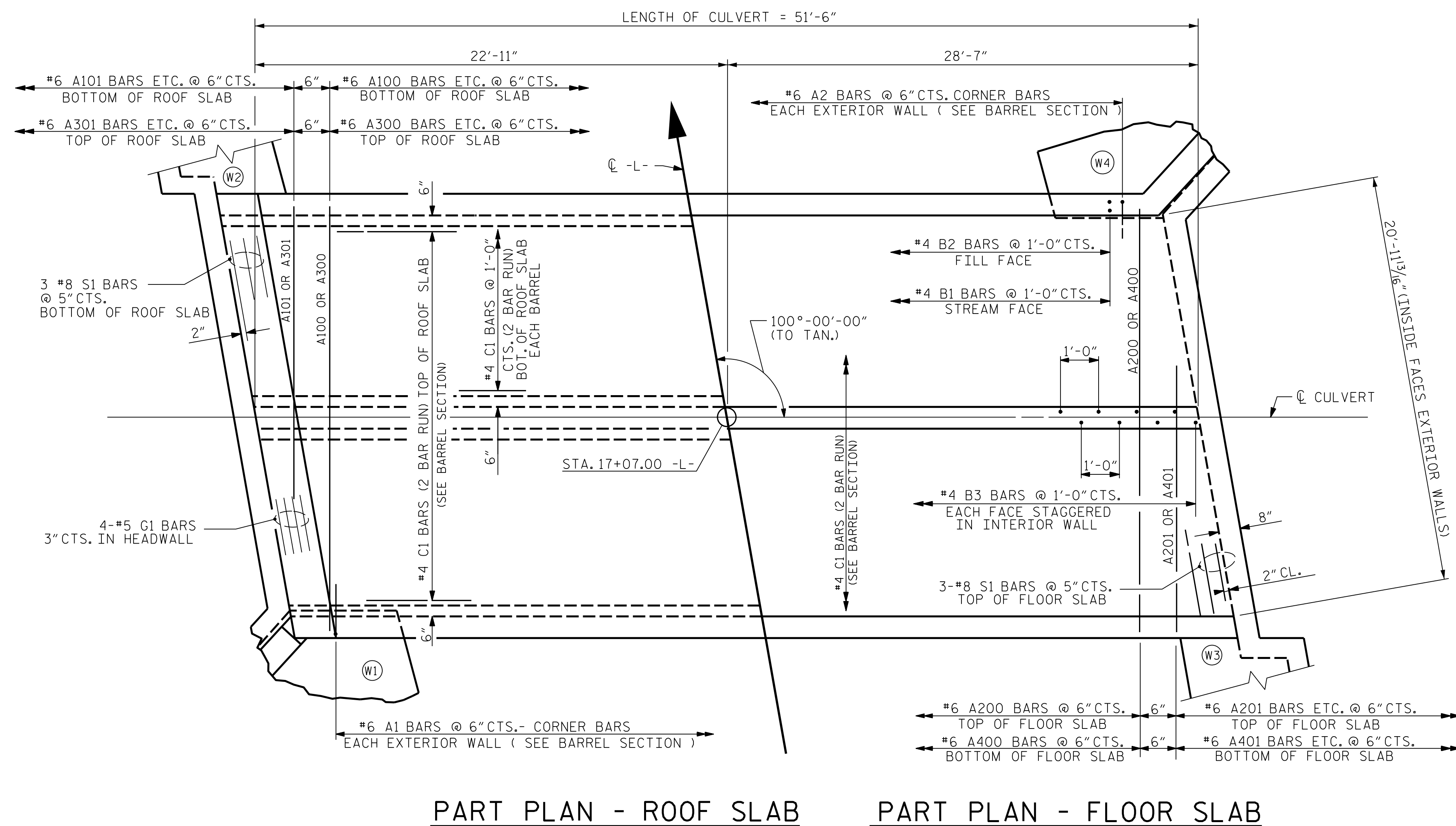
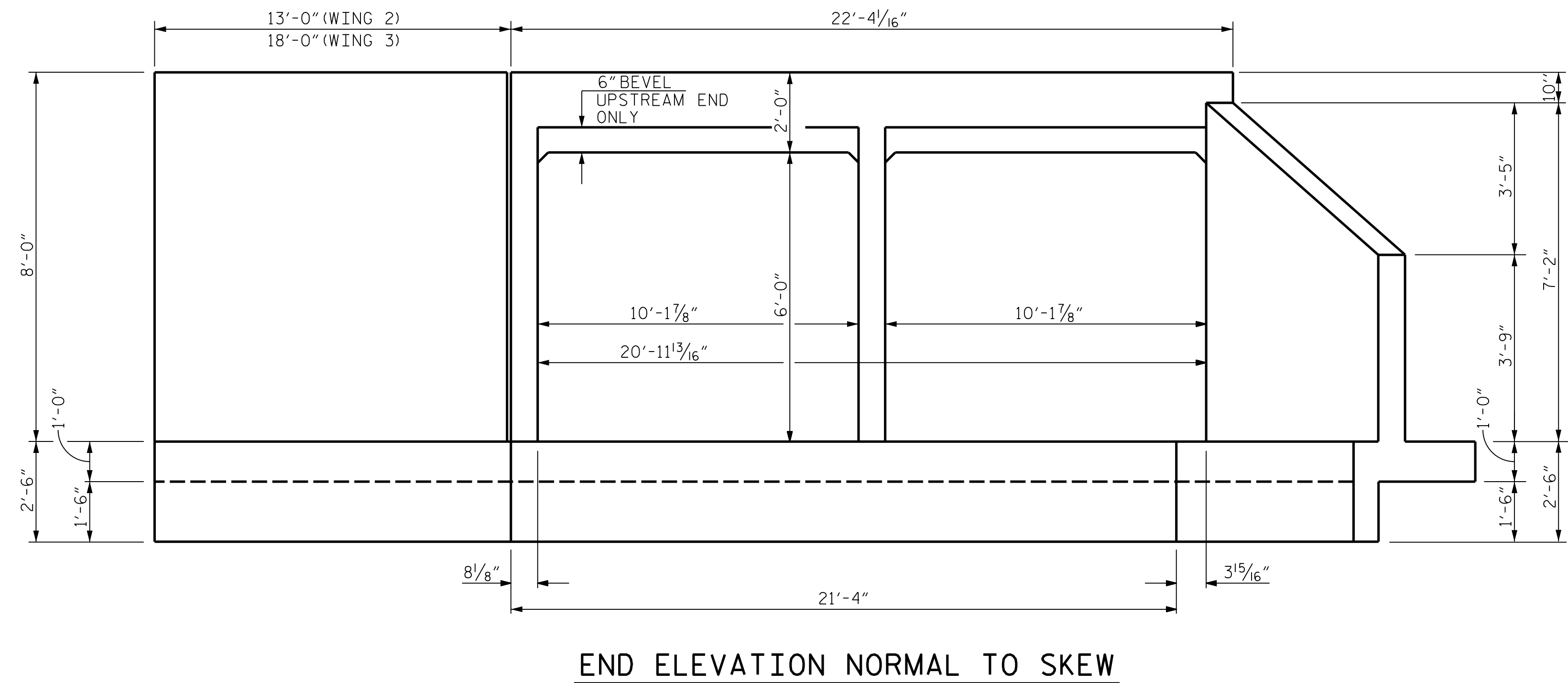
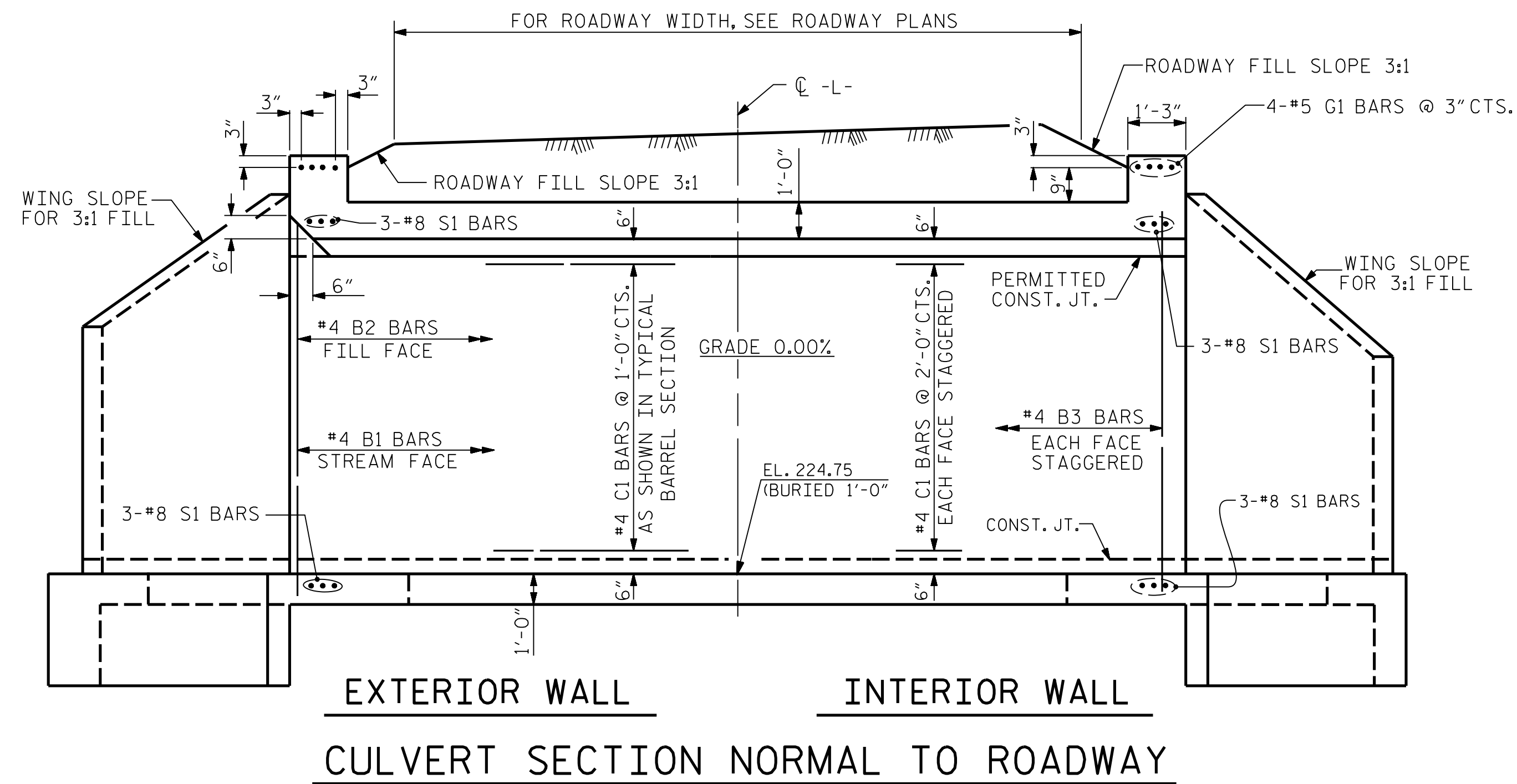
SHEET 2 OF 6



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671					

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. C-2					TOTAL SHEETS 6

STD. NO. LRFR5

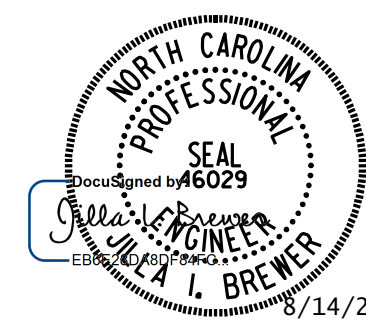


PROJECT NO. DF15408.2083804
SCOTLAND COUNTY
 STATION: 17+07.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 10 FT. X 6 FT.
CONCRETE BOX CULVERT
100° SKEW



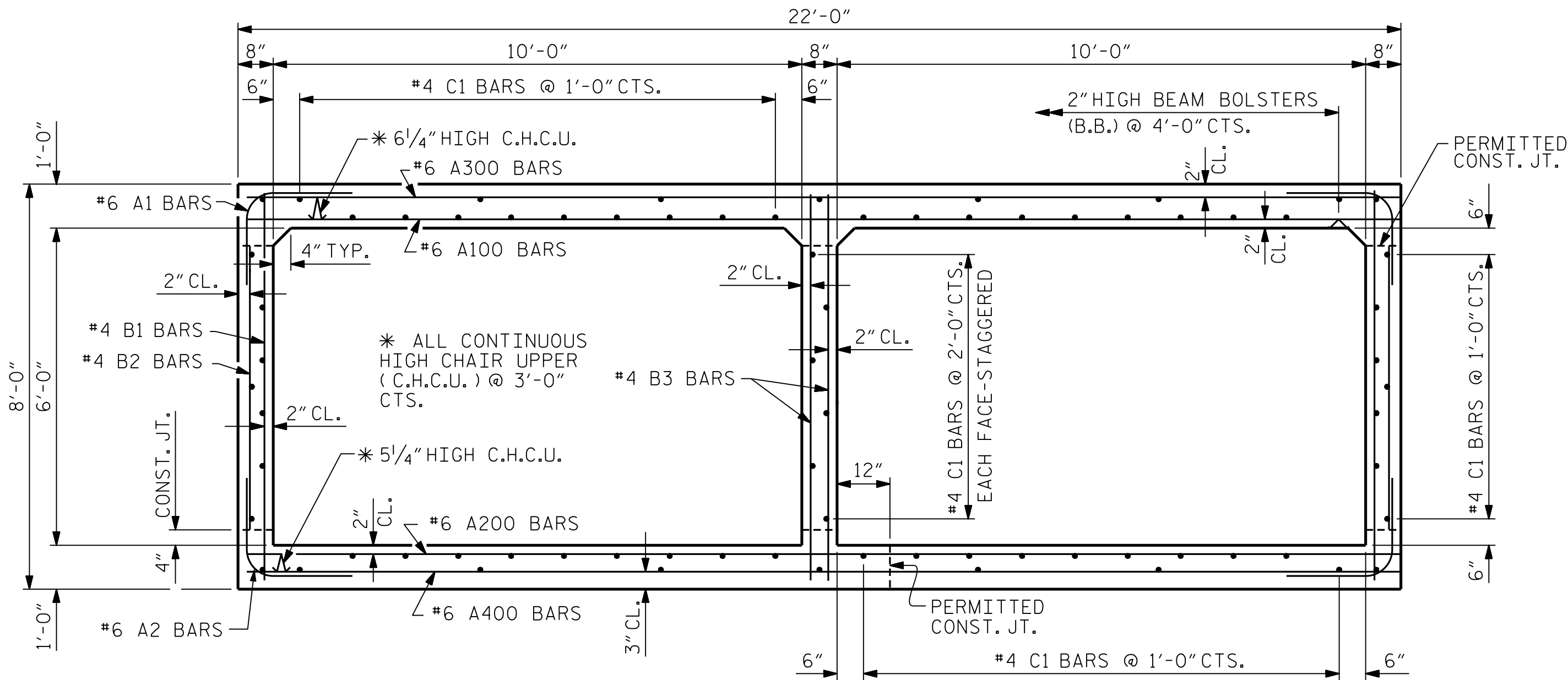
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

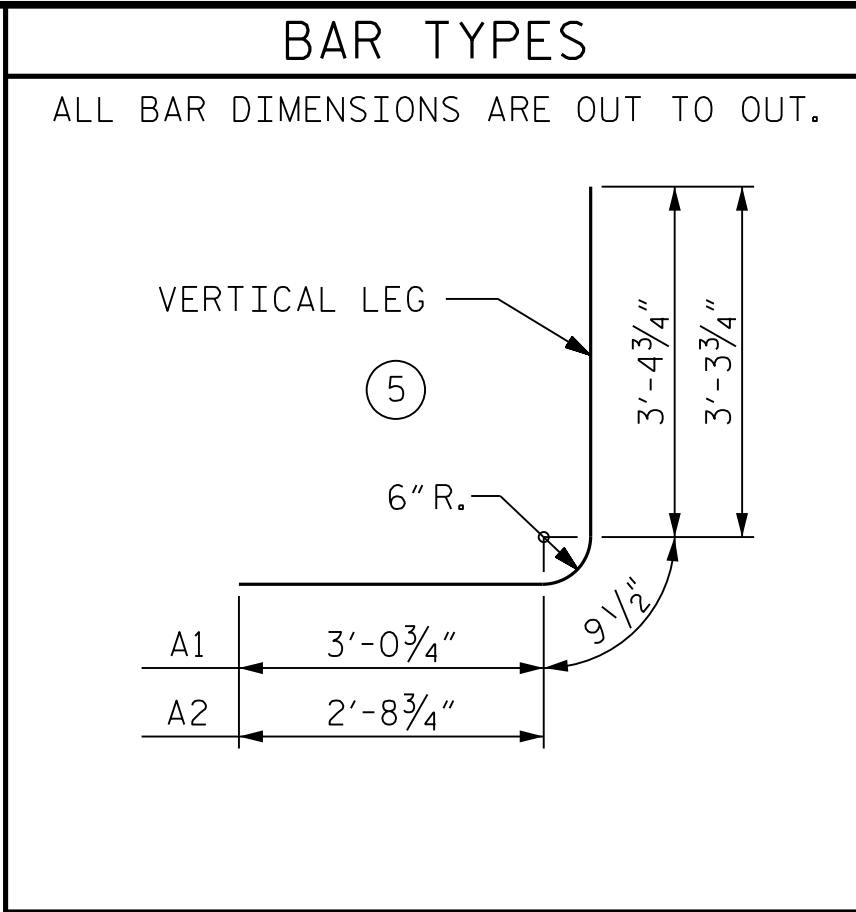
DRAWN BY : J.I. BREWER	DATE : 07/19
CHECKED BY : B.E. ATKINSON	DATE : 08/19
DESIGN ENGINEER OF RECORD : J.I. BREWER	DATE : 08/19

8/14/2019 9:40:14 AM User: jlsrceqinm Filename: N:\NC Bridges\MI8033.02_Scotland.E15 (SR132)\DF15408.2083804\Structure\es\410.007.DF15408.2083804_SMU_CU4.dgn



RIGHT ANGLE SECTION OF BARREL

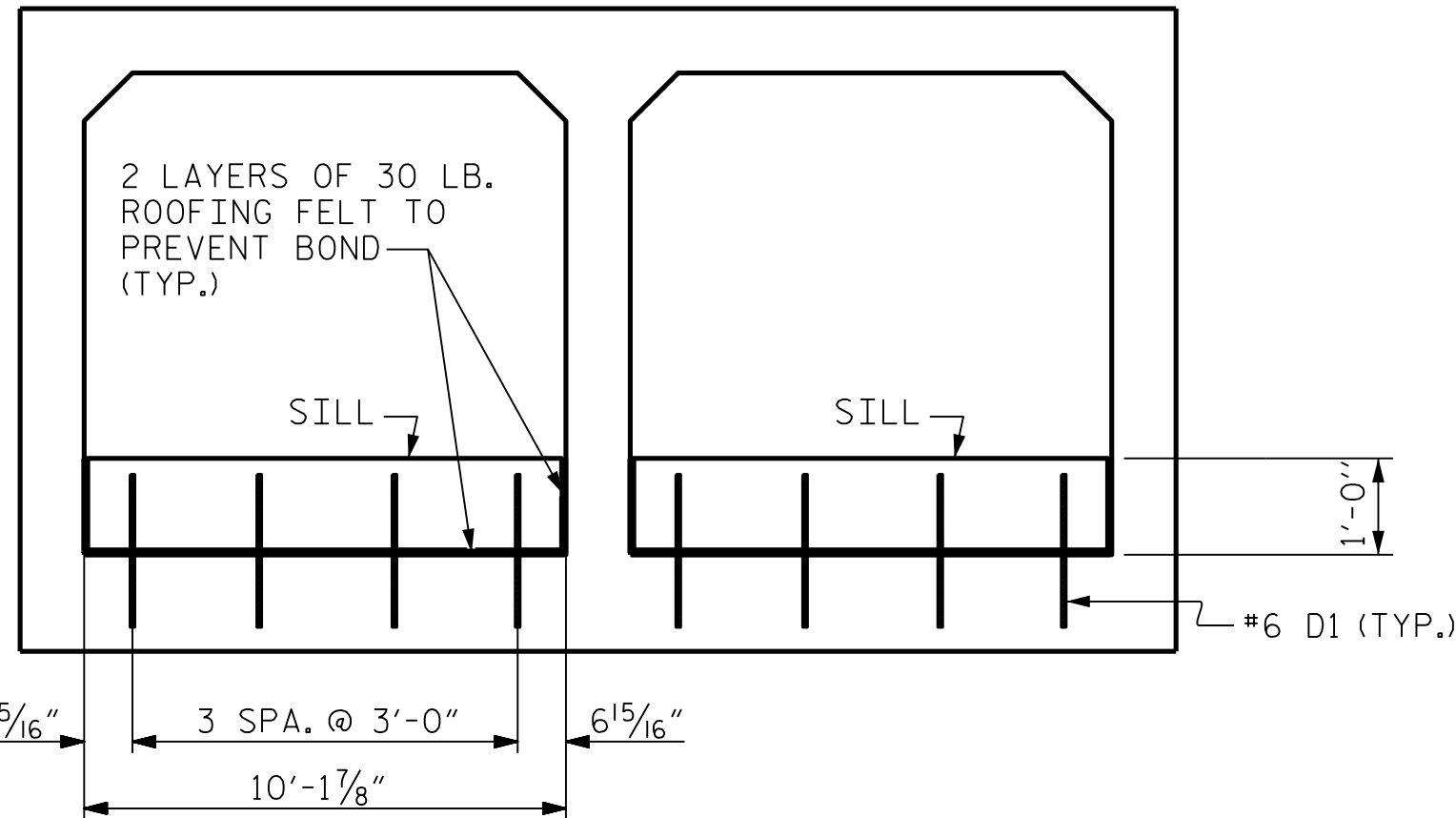
THERE ARE 74 "C" BARS IN SECTION OF BARREL.



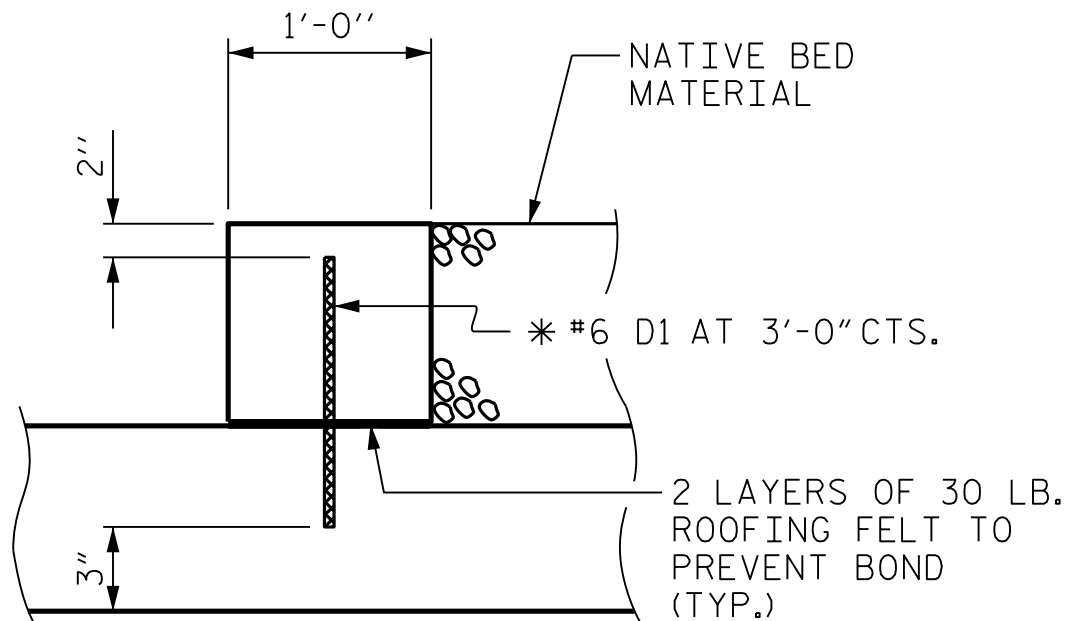
SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
A200	#6	2'-9"
A400	#6	2'-9"
B1	#4	1'-10"
B3	#4	1'-10"
C1	#4	2'-5"

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	206	#6	5	7'-2"	2217
A2	206	#6	5	6'-9"	2089
A100	95	#6	STR	21'-8"	3092
A101	2	#6	STR	19'-7"	59
A102	2	#6	STR	16'-9"	50
A103	2	#6	STR	13'-11"	42
A104	2	#6	STR	11'-1"	33
A105	2	#6	STR	8'-3"	25
A106	2	#6	STR	5'-5"	16
A200	95	#6	STR	21'-8"	3092
A201	2	#6	STR	19'-7"	59
A202	2	#6	STR	16'-9"	50
A203	2	#6	STR	13'-11"	42
A204	2	#6	STR	11'-1"	33
A205	2	#6	STR	8'-3"	25
A206	2	#6	STR	5'-5"	16
A300	95	#6	STR	21'-8"	3092
A301	2	#6	STR	19'-7"	59
A302	2	#6	STR	16'-9"	50
A303	2	#6	STR	13'-11"	42
A304	2	#6	STR	11'-1"	33
A305	2	#6	STR	8'-3"	25
A306	2	#6	STR	5'-5"	16
A400	95	#6	STR	21'-8"	3092
A401	2	#6	STR	19'-7"	59
A402	2	#6	STR	16'-9"	50
A403	2	#6	STR	13'-11"	42
A404	2	#6	STR	11'-1"	33
A405	2	#6	STR	8'-3"	25
A406	2	#6	STR	5'-5"	16
B1	104	#4	STR	7'-7"	527
B2	104	#4	STR	5'-4"	371
B3	103	#4	STR	7'-7"	522
C1	148	#4	STR	26'-10"	2653
D1	16	#6	STR	1'-7"	38
G1	8	#5	STR	21'-11"	183
S1	12	#8	STR	21'-11"	702
REINFORCING STEEL					21,670 LBS.



ELEVATION



SECTION THROUGH SILL

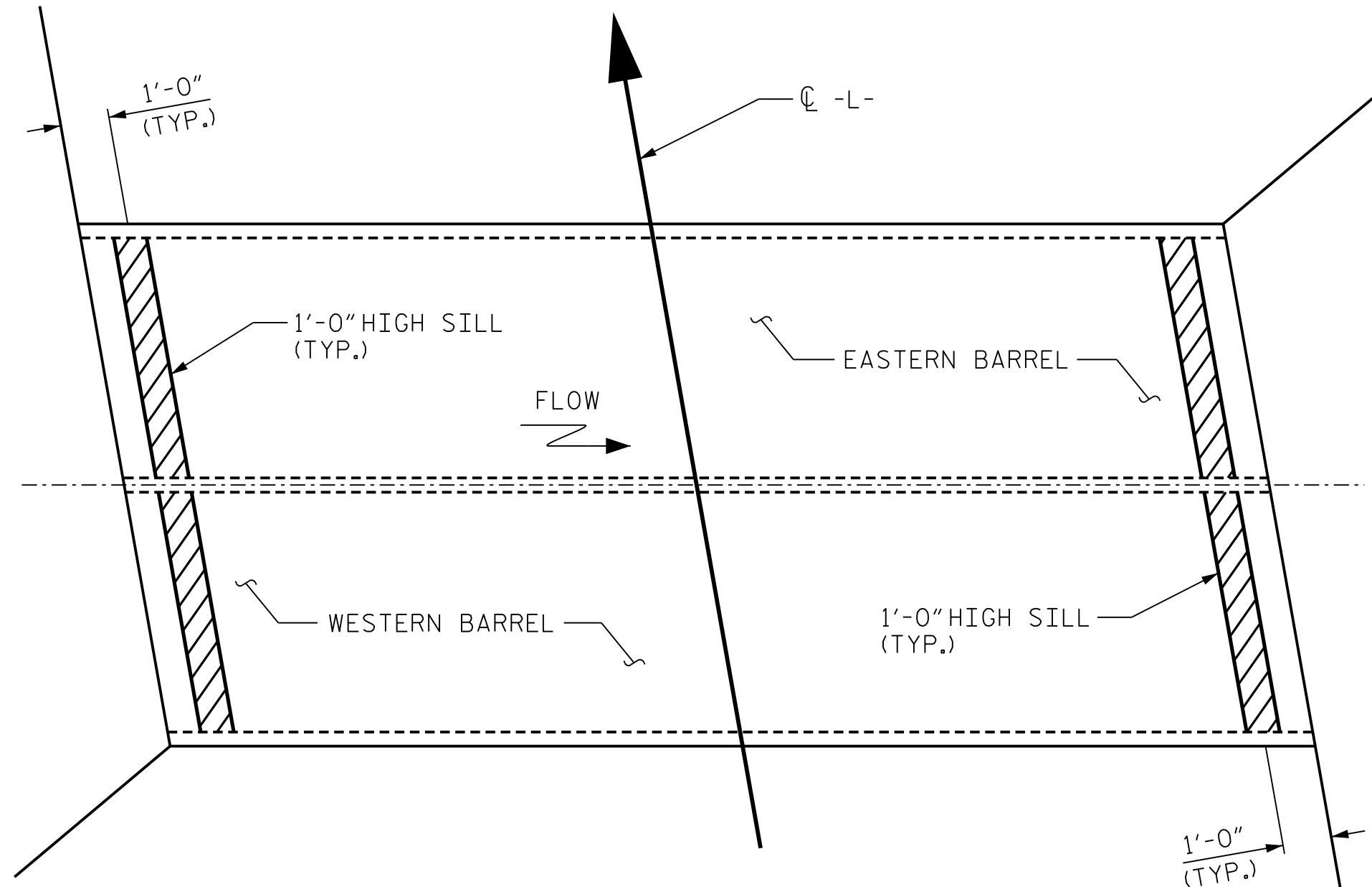
* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

CULVERT SILL DETAILS

MATERIAL EXCAVATED FROM THE EXISTING BED SHALL BE STOCKPILED FOR USE IN THE PROPOSED CULVERT, THE MATERIAL SHALL BE PLACED IN BOTH BARRELS TO A DEPTH OF 1 FOOT. BED MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

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

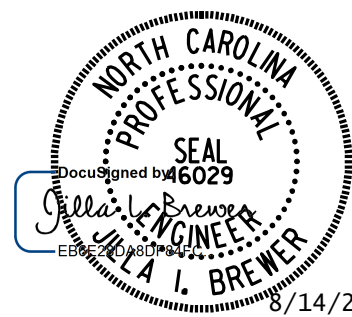
THE ENTIRE COST OF WORK REQUIRED TO CONSTRUCT THE SILL SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.



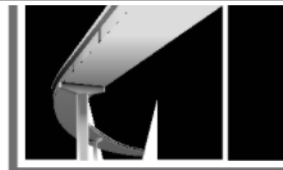
PLAN OF SILL LOCATIONS

PROJECT NO. DF15408.2083804
SCOTLAND COUNTY
STATION: 17+07.00 -L-

SHEET 4 OF 6



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

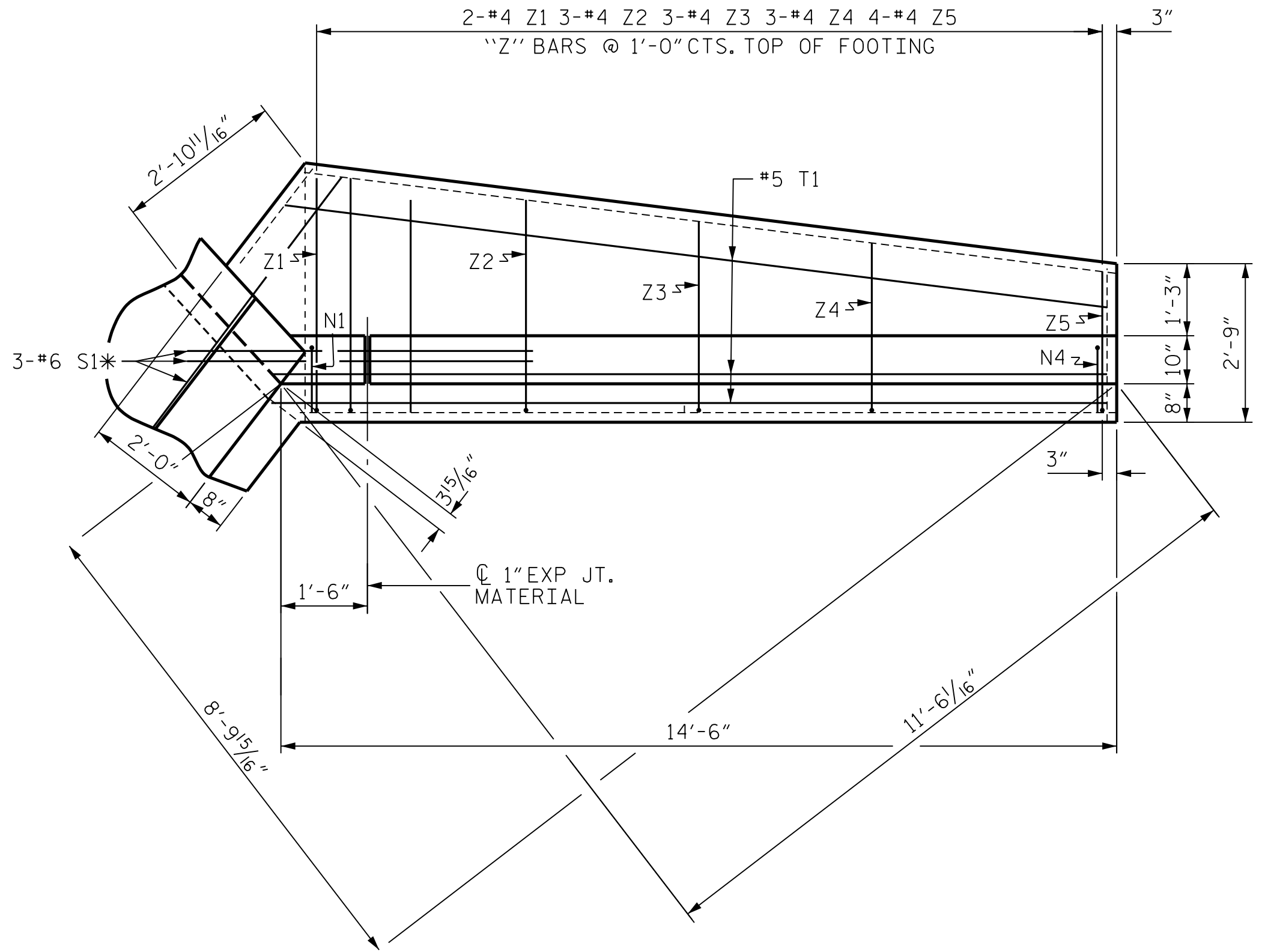


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

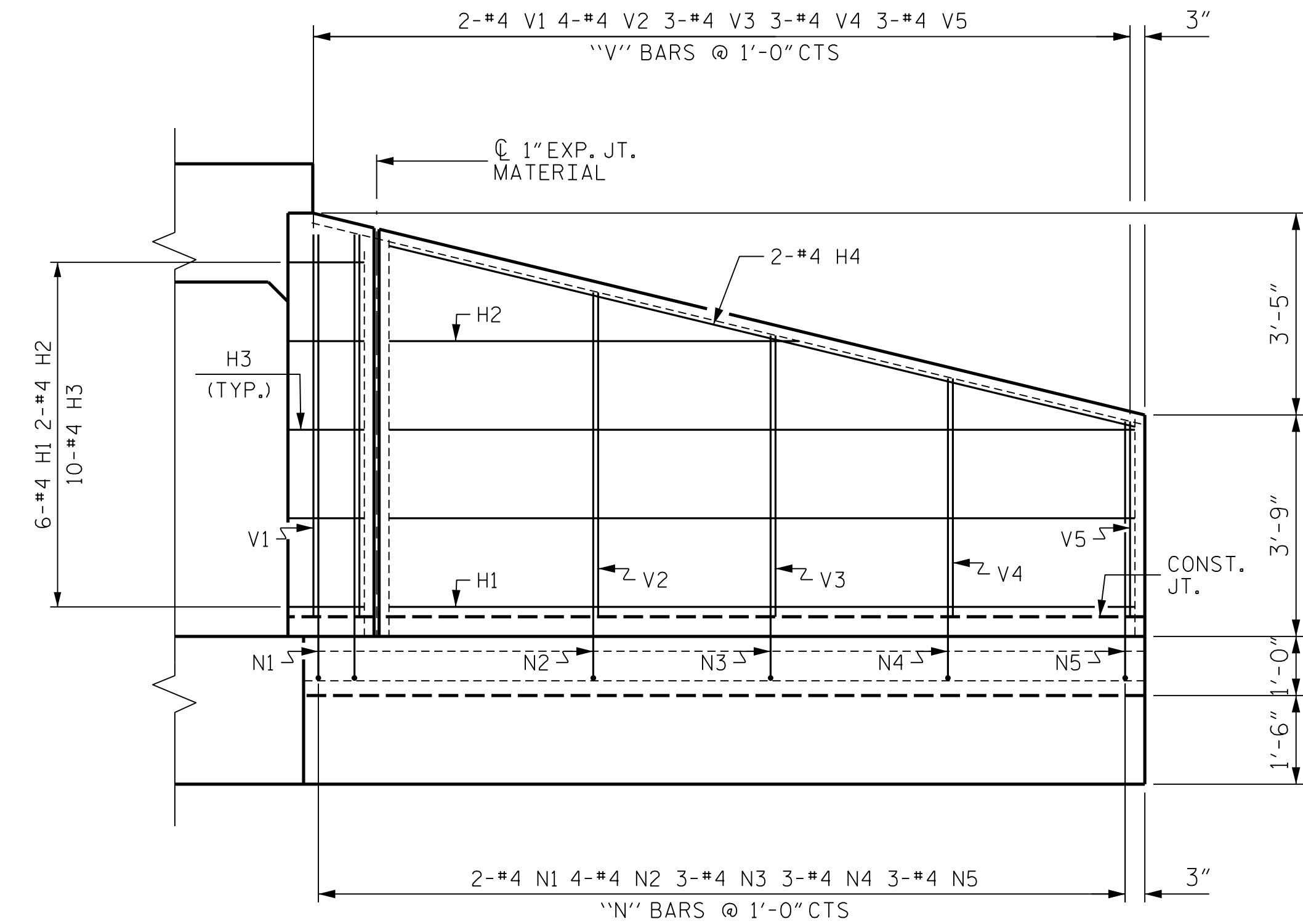
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DOUBLE 10 FT. X 6 FT. CONCRETE BOX CULVERT 100° SKEW					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					6

DRAWN BY : J.I. BREWER	DATE : 07/19
CHECKED BY : B.E. ATKINSON	DATE : 08/19
DESIGN ENGINEER OF RECORD : J.I. BREWER	DATE : 08/19

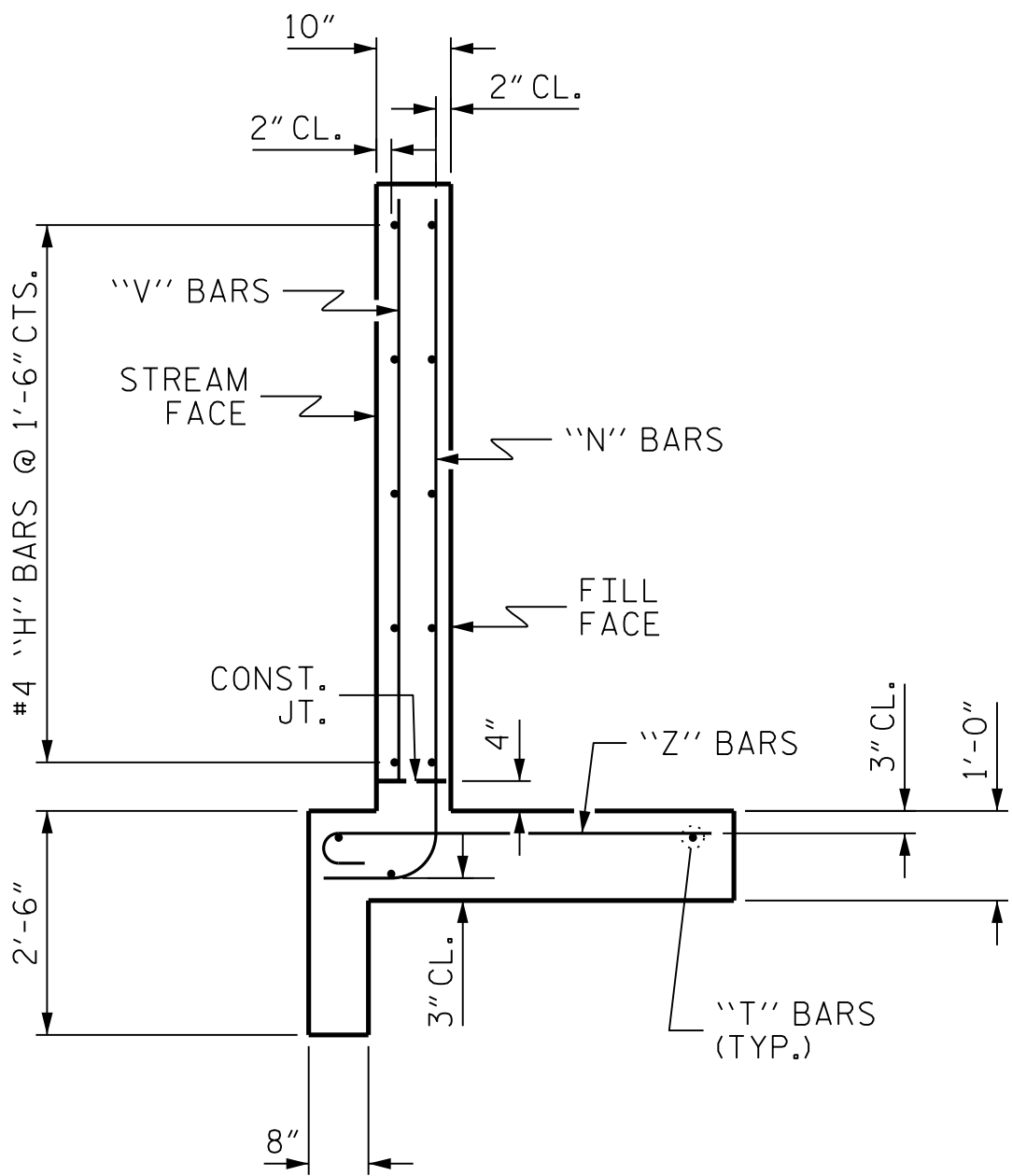
8/14/2019 9:40:55 AM User: jlsrgeinam Filename: N:\NC Bridges\MI8033.02_Scotland.E15_SRI321\DF15408.2083804\Structures\410.009.DF15408.2083804_SMU_CU5.dgn



PLAN OF W1 & W4



ELEVATION OF W1 & W4



TYPICAL WING SECTION

BAR TYPES		BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
H1	12	#4	STR	12'-7"	101		
H2	4	#4	STR	6'-10"	18		
H3	20	#4	1	3'-3"	43		
H4	4	#4	STR	12'-11"	35		
N1	4	#4	2	8'-5"	22		
N2	8	#4	2	7'-5"	40		
N3	6	#4	2	6'-9"	27		
N4	6	#4	2	6'-0"	24		
N5	6	#4	2	5'-3"	21		
S1	6	#6	STR	6'-0"	54		
T1	6	#5	STR	14'-6"	91		
V1	4	#4	STR	6'-5"	17		
V2	8	#4	STR	5'-5"	29		
V3	6	#4	STR	4'-9"	19		
V4	6	#4	STR	4'-0"	16		
V5	6	#4	STR	3'-3"	13		
Z1	4	#4	3	4'-6"	12		
Z2	6	#4	3	4'-1"	16		
Z3	6	#4	3	3'-9"	15		
Z4	6	#4	3	3'-5"	14		
Z5	8	#4	3	2'-11"	16		
REINFORCING STEEL FOR WINGS W1 & W4					643 LBS		
CLASS A CONCRETE FOR WINGS W1 & W4					10.1 CY		

ALL BAR DIMENSIONS ARE OUT TO OUT.



PROJECT NO. DF15408.2083804
SCOTLAND COUNTY
STATION: 17+07.00 -L-

SHEET 5 OF 6

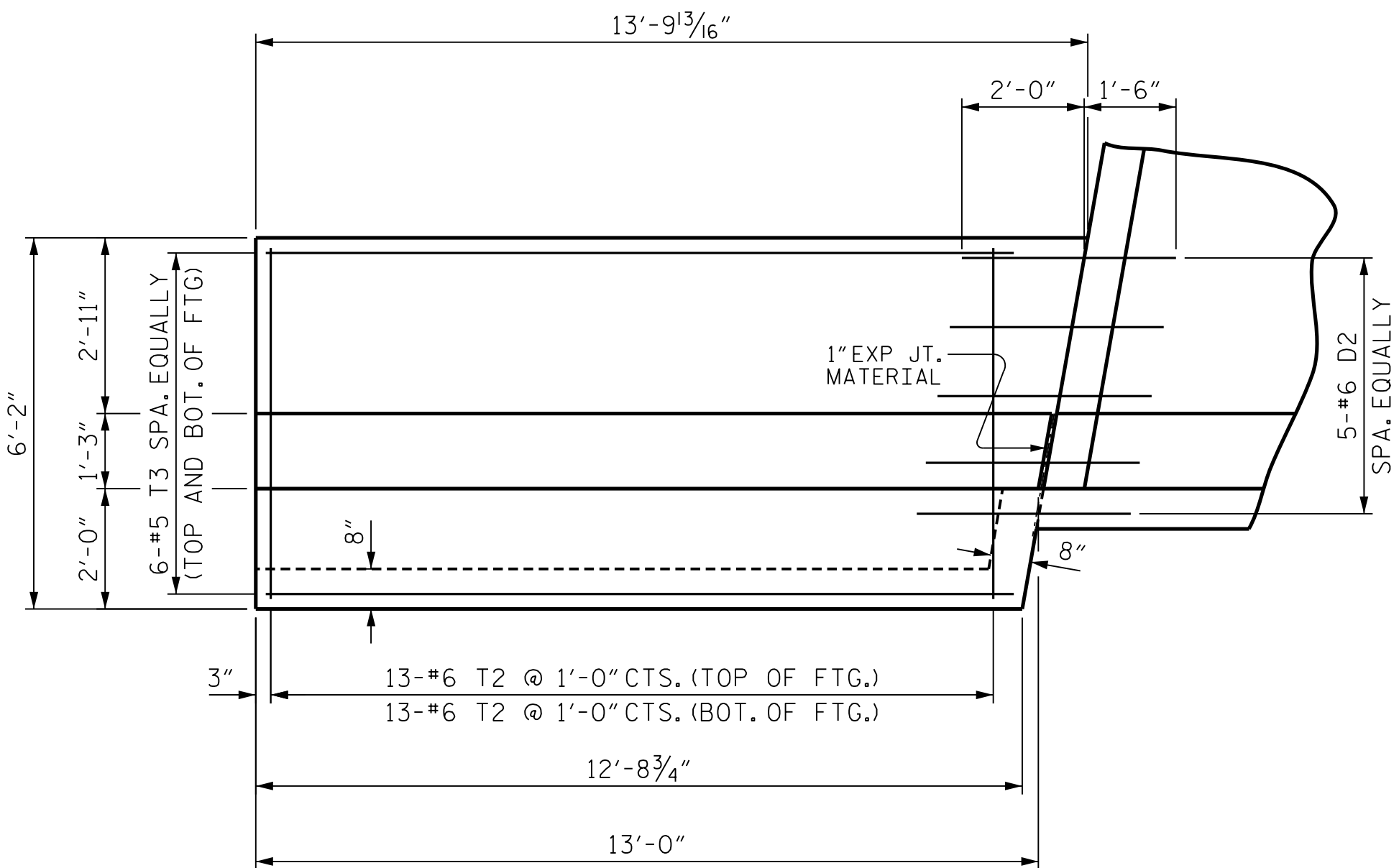
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
WING 1 & 4 FOR
CONCRETE BOX CULVERT
H = 6'-0" SLOPE = 3:1
100° SKEW

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

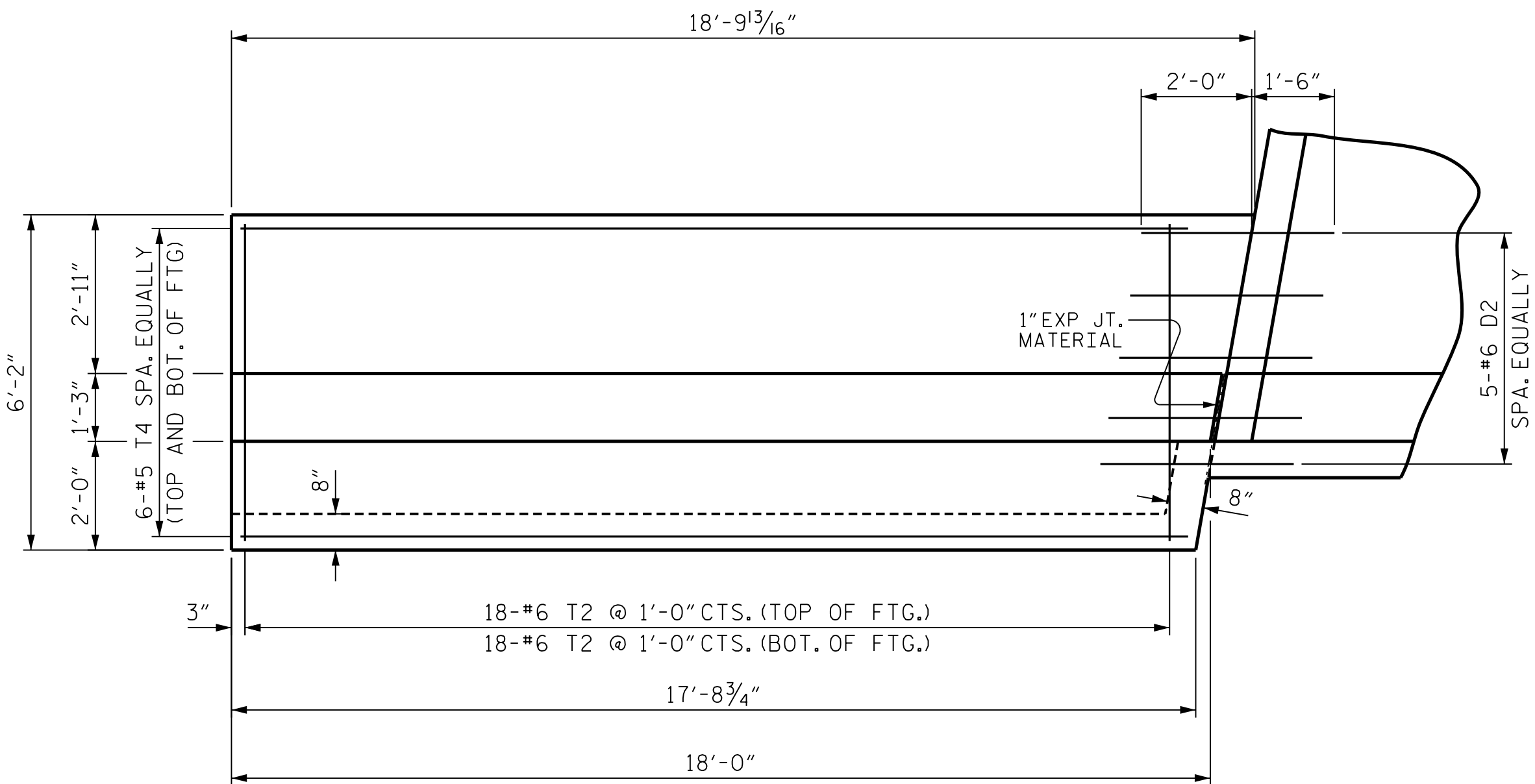
REVISIONS						SHEET NO. C-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 6
2			4			

DRAWN BY : J.I. BREWER DATE : 07/19
CHECKED BY : B.E. ATKINSON DATE : 08/19
DESIGN ENGINEER OF RECORD : J.I. BREWER DATE : 08/19

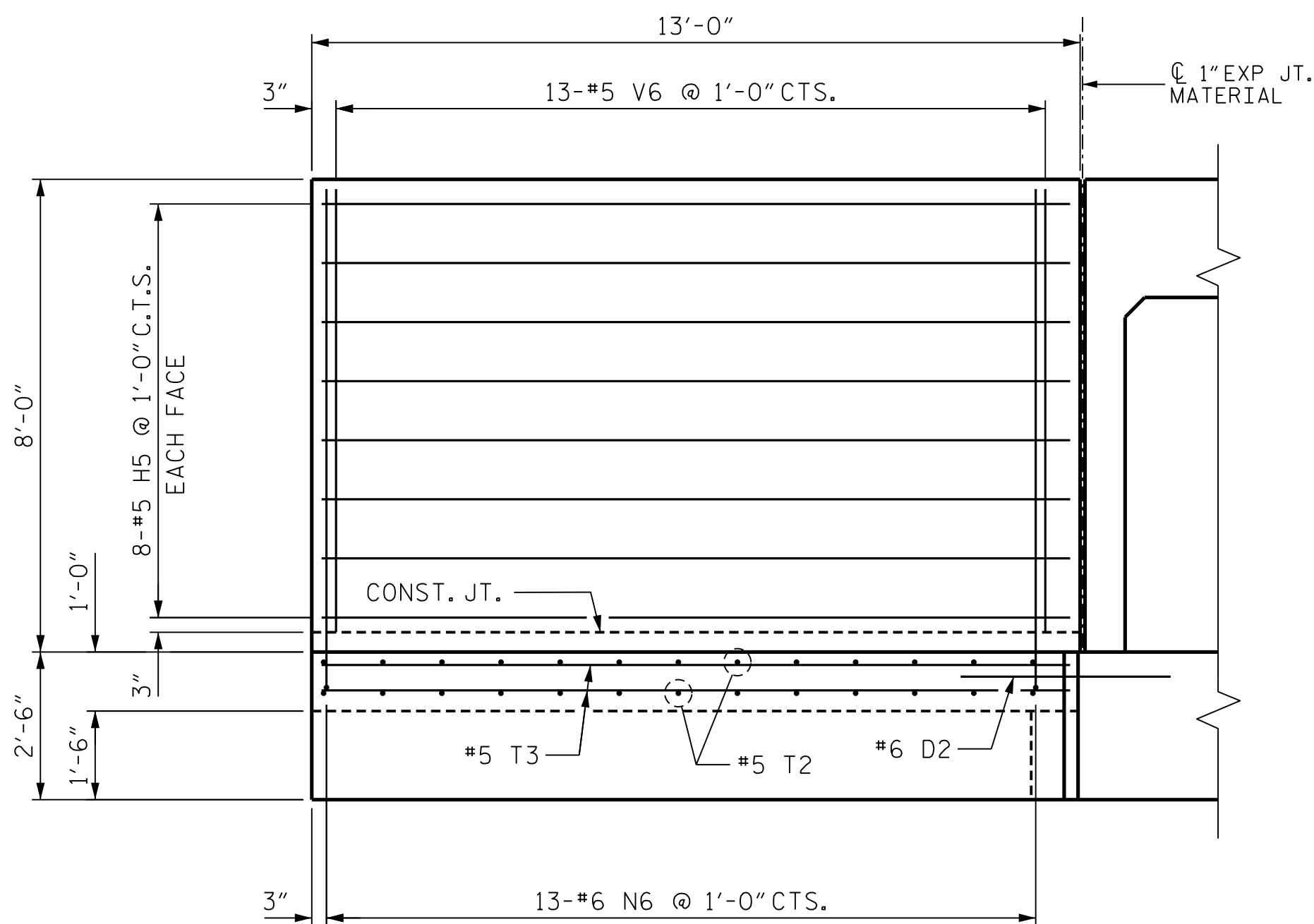
8/14/2019 9:41:36 AM User: jlsrqeqlm Filename: N:\NC Bridges\MI8033.02_Scotland.E15_SRI321\DF15408.2083804\Structures\410.01.DF15408.2083804_SMJ.CUI6.dgn



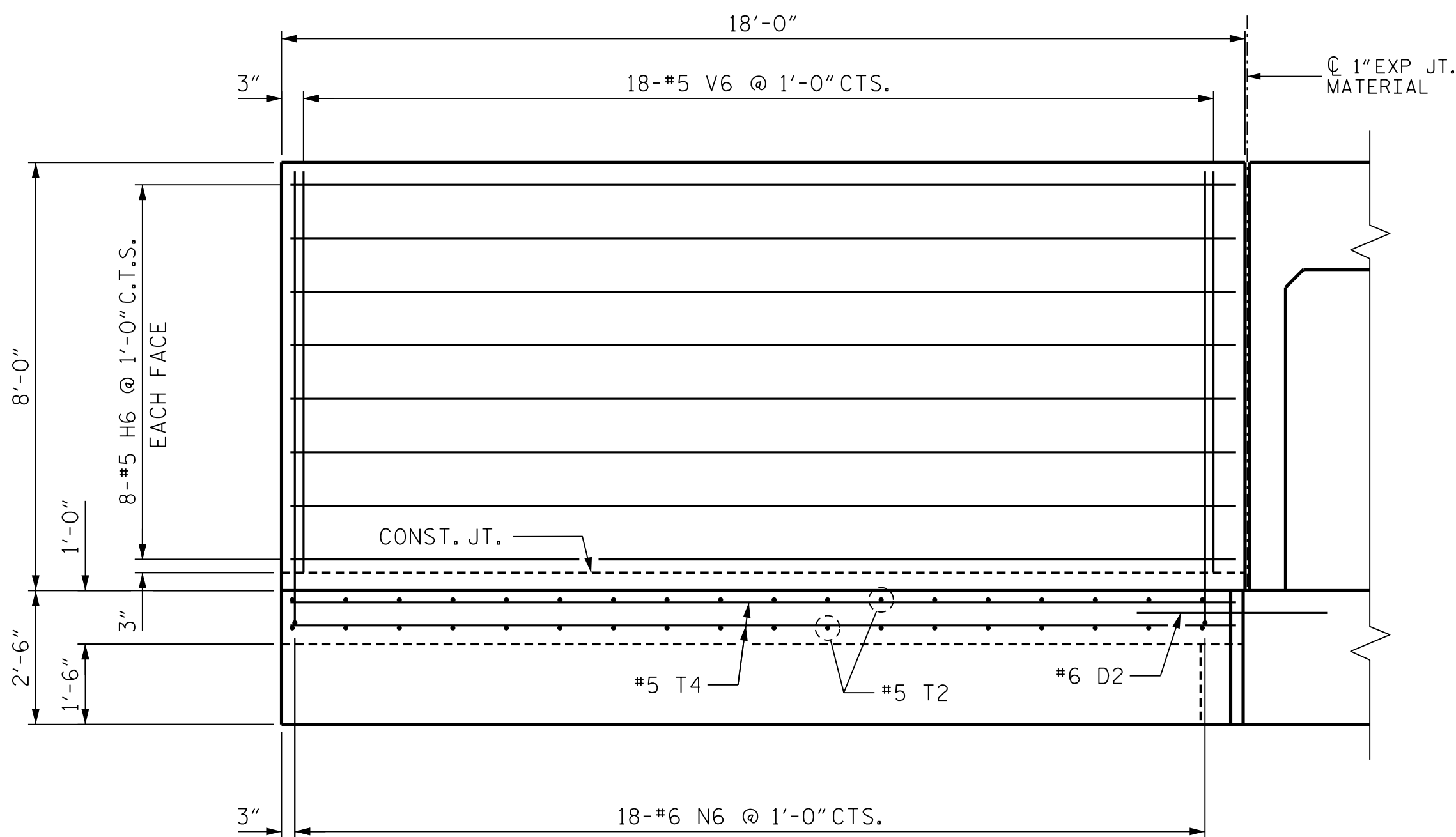
PLAN W2



PLAN W3

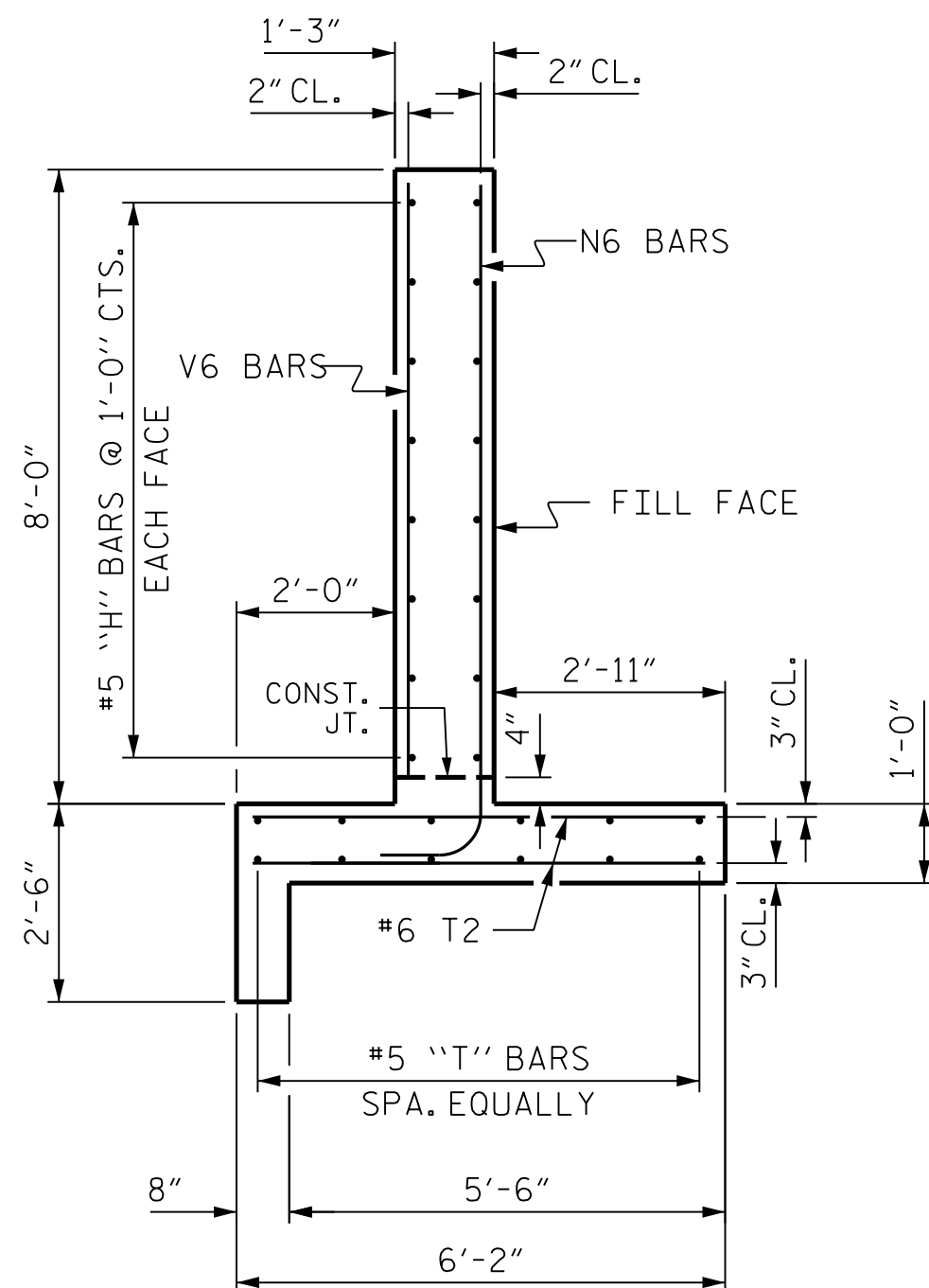


ELEVATION W2



ELEVATION W3

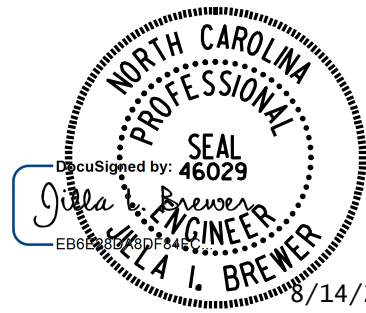
BAR TYPES		BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
D2	10	#6	STR	3'-6"	53		
H5	16	#5	STR	12'-8"	211		
H6	16	#5	STR	17'-8"	295		
N6	31	#6	1	9'-5"	438		
T2	62	#6	STR	5'-10"	543		
T3	12	#5	STR	12'-4"	154		
T4	12	#5	STR	17'-4"	217		
V6	31	#5	STR	7'-6"	242		
REINFORCING STEEL FOR WINGS W2 & W3						2153 LBS	
CLASS A CONCRETE							
WINGS W2 & W3						19.9	CY
2 HEADWALLS						2.1	CY
2 END CURTAIN WALLS						2.6	CY
TOTAL						24.6	CY



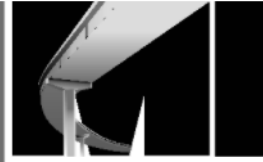
TYPICAL WING SECTION

PROJECT NO. DF15408.2083804
SCOTLAND COUNTY
STATION: 17+07.00 -L-

SHEET 6 OF 6



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

DRAWN BY :	R. ASENCIO	DATE :	08/19
CHECKED BY :	B.E. ATKINSON	DATE :	08/19
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE :	08/19

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.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE 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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" 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. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN