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with their signature on that page.**

**This file or an individual page  
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# 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	----->
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	----- FLOW
False Sump	▽

## RAILROADS:

Standard Gauge	----- CSX TRANSPORTATION
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale \*S.U.E. = Subsurface Utility Engineering

## 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	----- (R/W)
New Right of Way Line with Pin and Cap	----- (R/W) ▲
New Right of Way Line with Concrete or Granite R/W Marker	----- (R/W) ▲
New Control of Access Line with Concrete C/A Marker	----- (C/A)
Existing Control of Access	----- (C/A)
New Control of Access	----- (C/A)
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	☼

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	⊕
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	⊕
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	⊕
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	----- 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

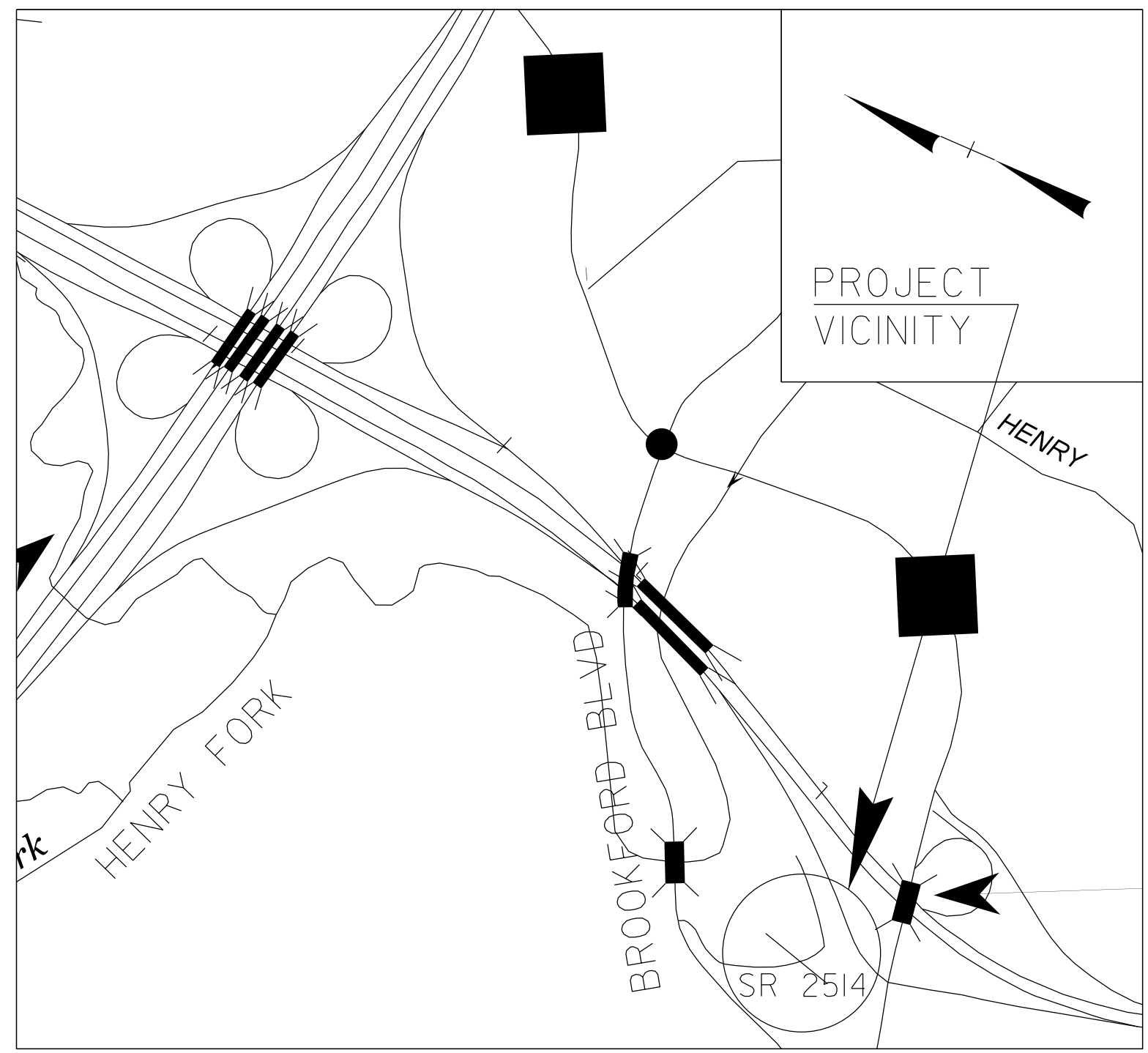
## MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- ?UTL
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.

02/25/21

PROJECT: DF15712.2018804

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

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

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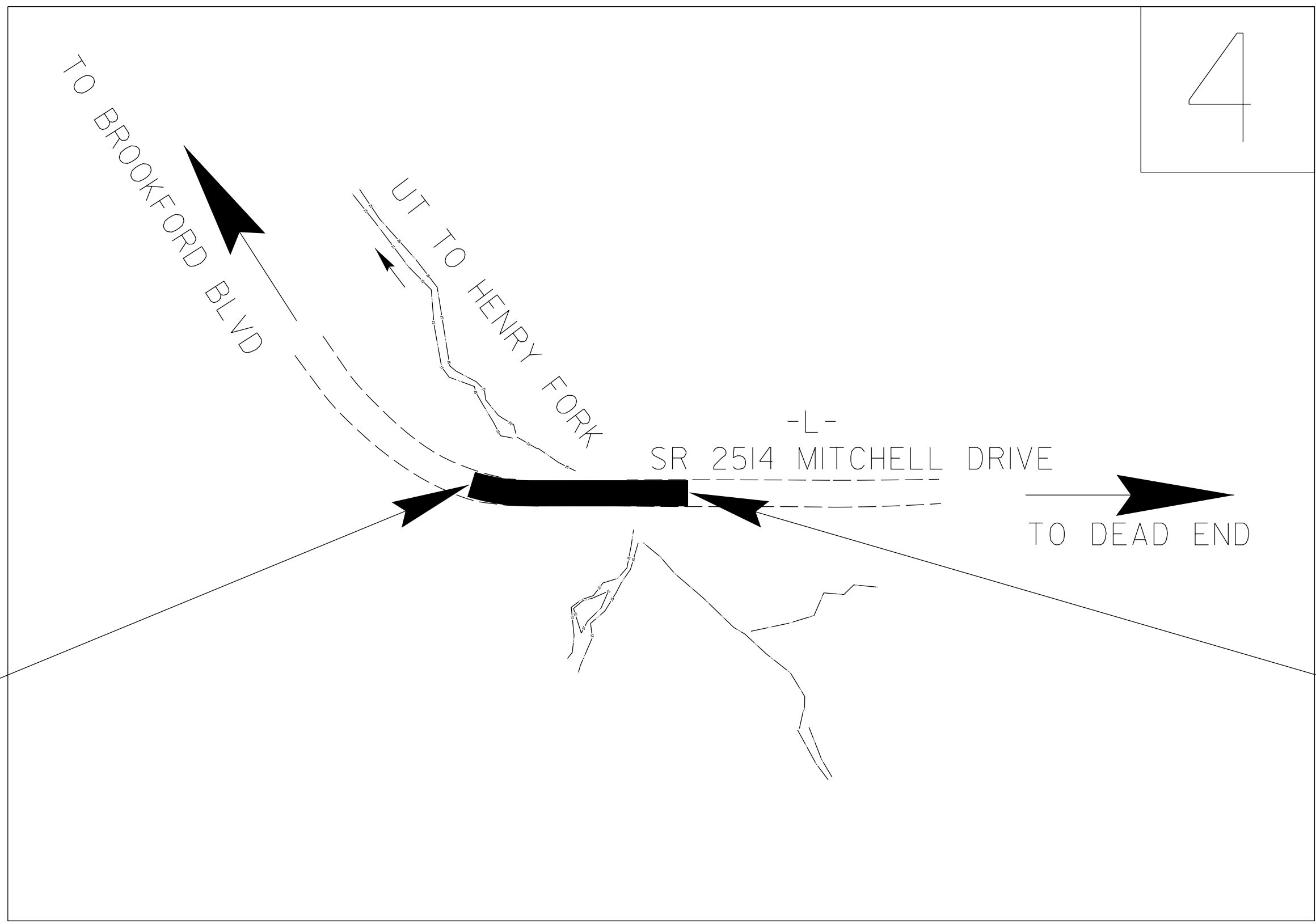
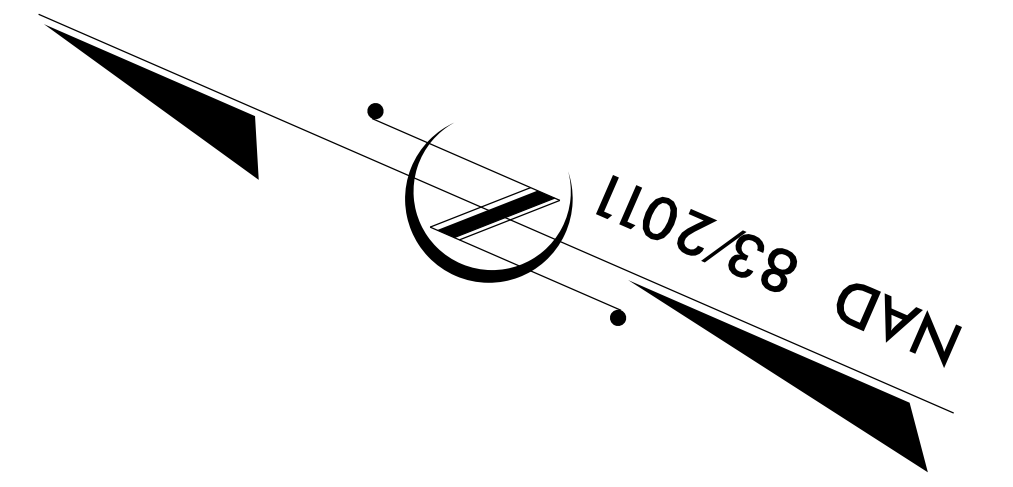
**CATAWBA COUNTY**

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LOCATION: REPLACE CULVERT ON UT TO HENRY FORK ON SR 2514 (MITCHELL DRIVE)

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

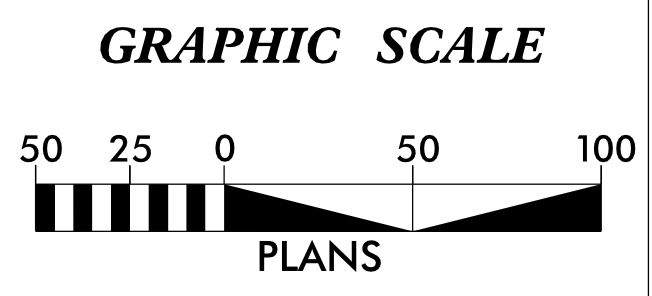
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF15712.2018804	RW01	05



STA. 11+50.00 -L-  
BEGIN PROJECT DF15712.2018804

STA. 13+00.00 -L-  
END TIP PROJECT DF15712.2018804

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "E0144-1" WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF NORTHING: 716,454.231(ft) EASTING: 1,300,569.902(ft) ELEVATION: 912.66(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986392

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "E0144-1" TO -L- STATION 10+00.00 IS N 7°34'29.0" E 143.13(ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

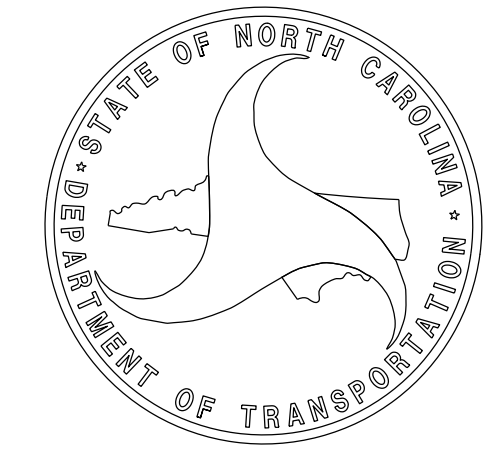
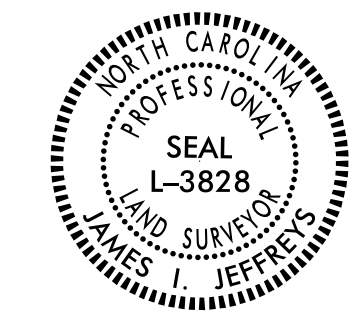
Prepared in the Office of:

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 15, 2021

LETTING DATE: TBD

PROFESSIONAL LAND SURVEYOR



DocuSigned by:  
 Signature  
 SIGNATURE:

2/25/2021  
 Date:

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

# SURVEY CONTROL SHEET

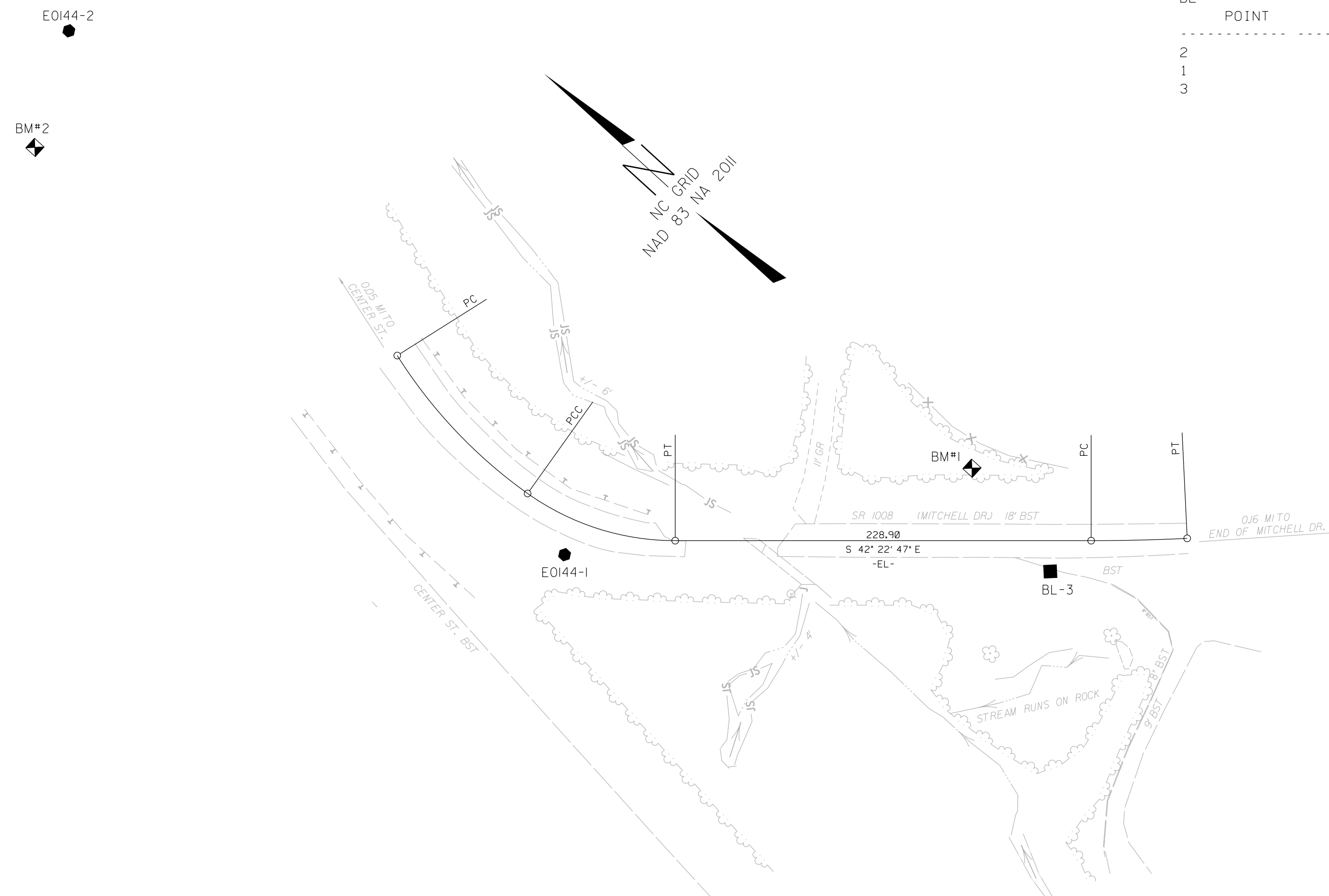
## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. DF15712.2018804	SHEET NO. RW02C-1
Location and Surveys	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

REVISIONS

### BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
2	E0144-2		716850.0540	1300598.9730	904.15
1	E0144-1		716454.2310	1300569.9020	912.66
3	BL-3		716250.5661	1300743.2157	922.82



### BENCHMARKS

```

.....
BM1      ELEVATION = 925.12
N 716321      E 1300756
BL STATION 11+19.00 55 LEFT
RR SPIKE DRIVEN VERTICALLY IN ROOT OF
20" SWEET GUM
.....
BM2      ELEVATION = 904.49
N 716821      E 1300539
BL STATION 5+34.00 58 RIGHT
RR SPIKE IN BASE OF 12" POPLAR
.....
    
```

### EXISTING CENTERLINE ALIGNMENT

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	716596.114	1300588.770							
CURVE			S 04°13'56.7" W	104.43	22°18'03.1"(LT)	21°13'14.4"	105.09	53.22	270.00
PCC	716491.971	1300581.062							
CURVE			S 24°38'55.9" E	85.27	35°27'42.0"(LT)	40°55'32.0"	86.65	44.76	140.00
PT	716414.468	1300616.626							
LINE			S 42°22'46.9" E	228.90					
PC	716245.378	1300770.917							
CURVE			S 43°45'24.8" E	52.88	02°45'15.7"(LT)	05°12'31.3"	52.88	26.45	1100.00
PT	716207.187	1300807.485							

### 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.

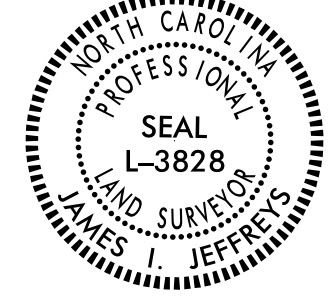
# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. DF15712.2018804	SHEET NO. RW02D-1
--	----------------------

## Location and Surveys

NCDOT LOCATION & SURVEYS UNIT

PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

This day 2/25/2021.

DocuSigned by:  
*James I. Jeffreys*  
A43045A2D7AE4CA

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

TYPE	STATION	NORTH	EAST
PC	10+00.00	716596.1141	1300588.7696
PCC	11+05.09	716491.9706	1300581.0625
PT	11+91.74	716414.4678	1300616.6260
PC	14+20.64	716245.3777	1300770.9166
PT	14+73.52	716207.1871	1300807.4850

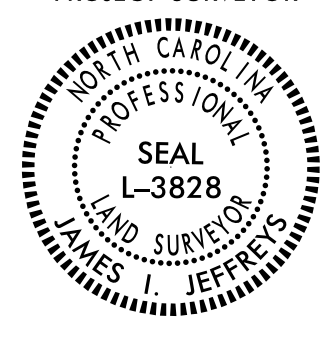
REVISIONS

2/25/21  
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James I. Jeffreys 01 L5-314519

### 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. DF15712.2018804	SHEET NO. RW03E-1
Location and Surveys	
NCDOT LOCATION & SURVEYS UNIT	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+00.00	-75.00	716504.6579	1300655.1081
L	11+00.00	-35.98	716500.6894	1300616.2935
L	12+00.00	30.00	716388.1447	1300600.0330
L	12+21.00	-50.00	716426.5553	1300673.2834
L	12+22.00	45.00	716361.7828	1300603.7815
L	12+58.00	-30.00	716385.7428	1300683.4491
L	12+61.00	-48.00	716395.6595	1300698.7677
L	12+93.00	45.00	716309.3355	1300651.6384
L	13+04.00	30.00	716311.3205	1300670.1333

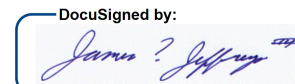
PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+58.05	68.84	716408.8935	1300536.6733
L	12+39.00	61.00	716338.4403	1300603.4211
L	12+93.00	77.00	716287.7662	1300628.0002
L	13+11.00	51.00	716291.9947	1300659.3390
L	14+27.00	45.00	716210.1713	1300742.1492
L	14+35.00	30.00	716214.3275	1300758.7673

<-- NOT SET

I, James I. Jeffreys, PE PLS, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 2/22/2021 to 2/24/2021, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This day 2/25/2021

DocuSigned by:  
  
 343045A2D7AE4CA  
 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.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 2/22/2021 TO 2/24/2021.

REVISIONS

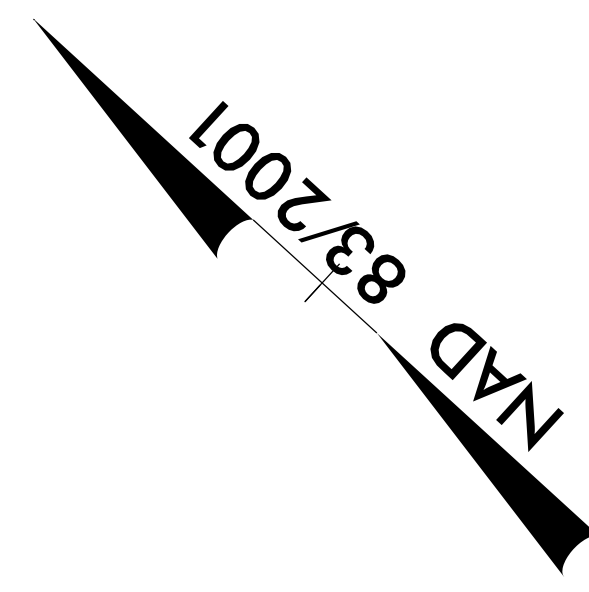
2/25/21

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 J. Jeffreys 01 LS-314519






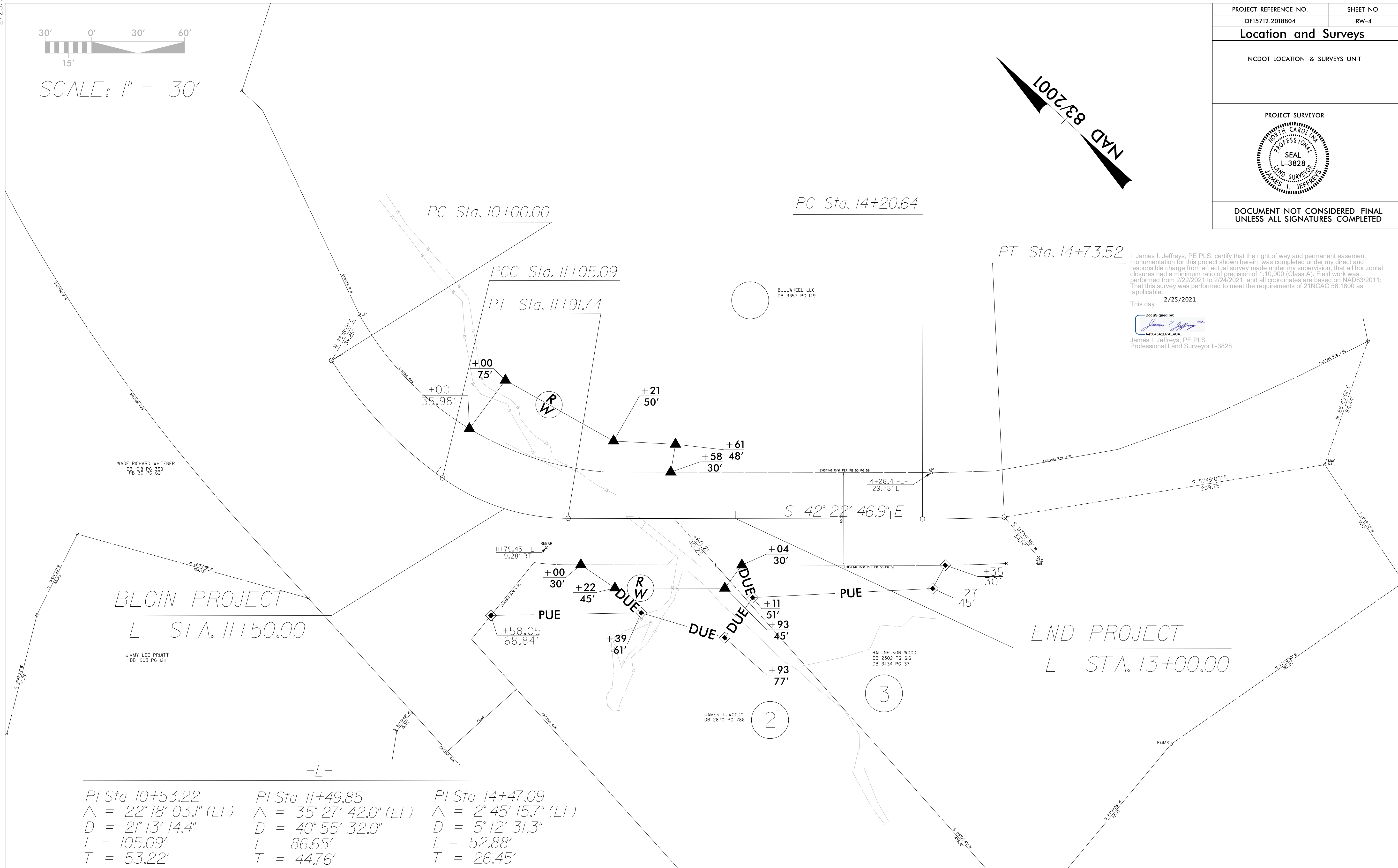
SCALE: 1" = 30'



I, James I. Jeffreys, PE, PLS, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 2/22/2021 to 2/24/2021, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This day 2/25/2021

DocuSigned by:  
  
 A43045A207AE4CA  
 James I. Jeffreys, PE PLS  
 Professional Land Surveyor L-3828



PI Sta 10+53.22	PI Sta 11+49.85	PI Sta 14+47.09
$\Delta = 22^\circ 18' 03.1''$ (LT)	$\Delta = 35^\circ 27' 42.0''$ (LT)	$\Delta = 2^\circ 45' 15.7''$ (LT)
$D = 21^\circ 13' 14.4''$	$D = 40^\circ 55' 32.0''$	$D = 5^\circ 12' 31.3''$
$L = 105.09'$	$L = 86.65'$	$L = 52.88'$
$T = 53.22'$	$T = 44.76'$	$T = 26.45'$
$R = 270.00'$	$R = 140.00'$	$R = 1,100.00'$

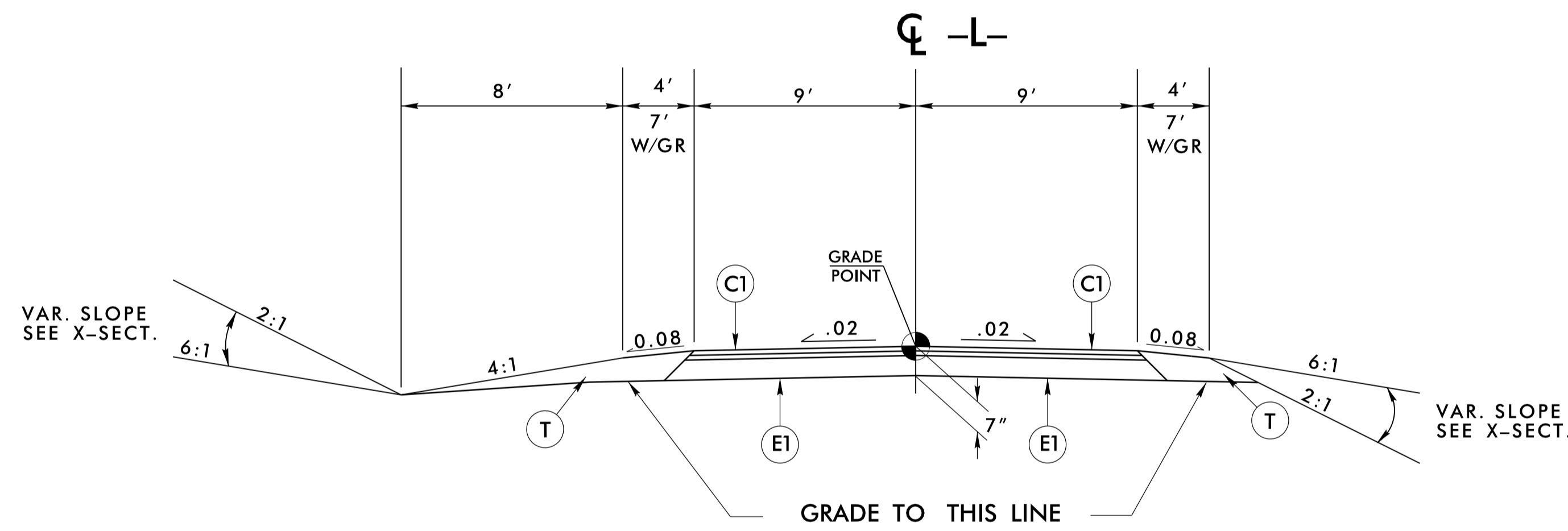
**NOTES:**

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2/25/21  
 C:\FEB-2021\2018804\2018804\_11s\_rw04.dgn  
 J. Jeffreys  
 01/15/2021 10:44 AM  
 C:\FEB-2021\2018804\2018804\_11s\_rw04.dgn  
 J. Jeffreys  
 01/15/2021 10:44 AM

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.

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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1  
-L- STA. 11+50.00 TO -L- STA. 13+00.00

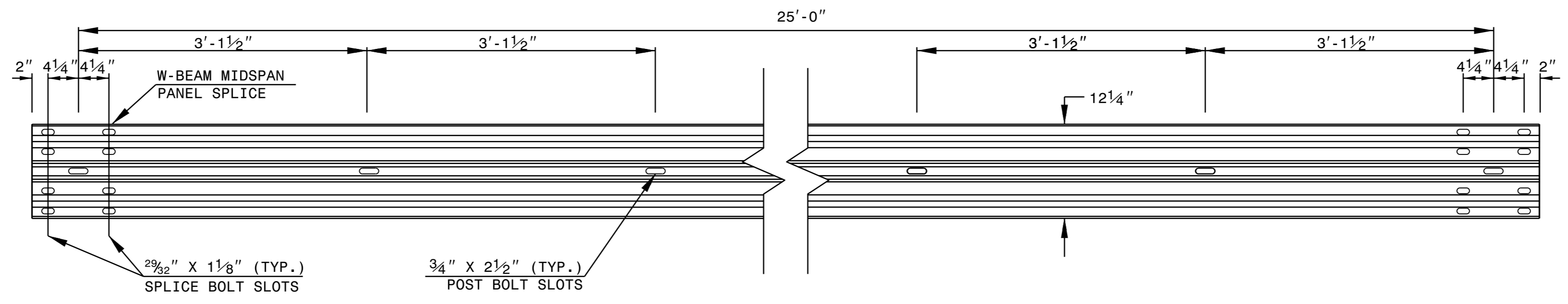
6/2/19

25-MAY-2021 11:13  
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tduncan

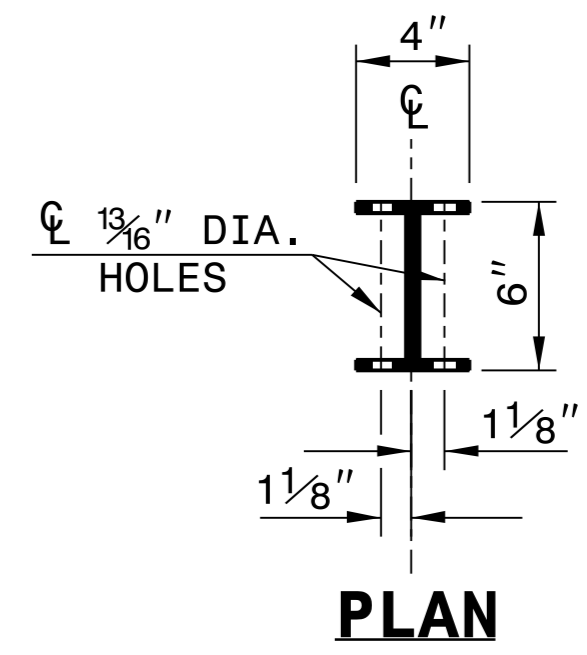
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

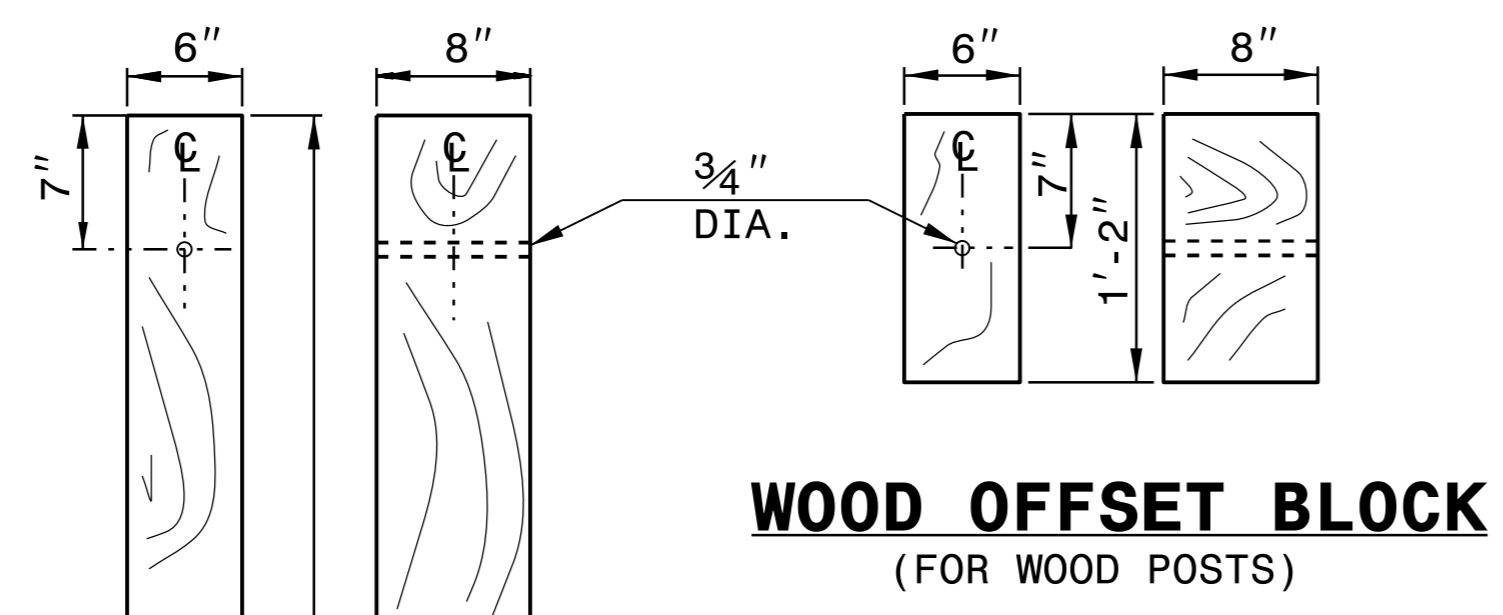
SHEET 6 OF 8  
**862D02**



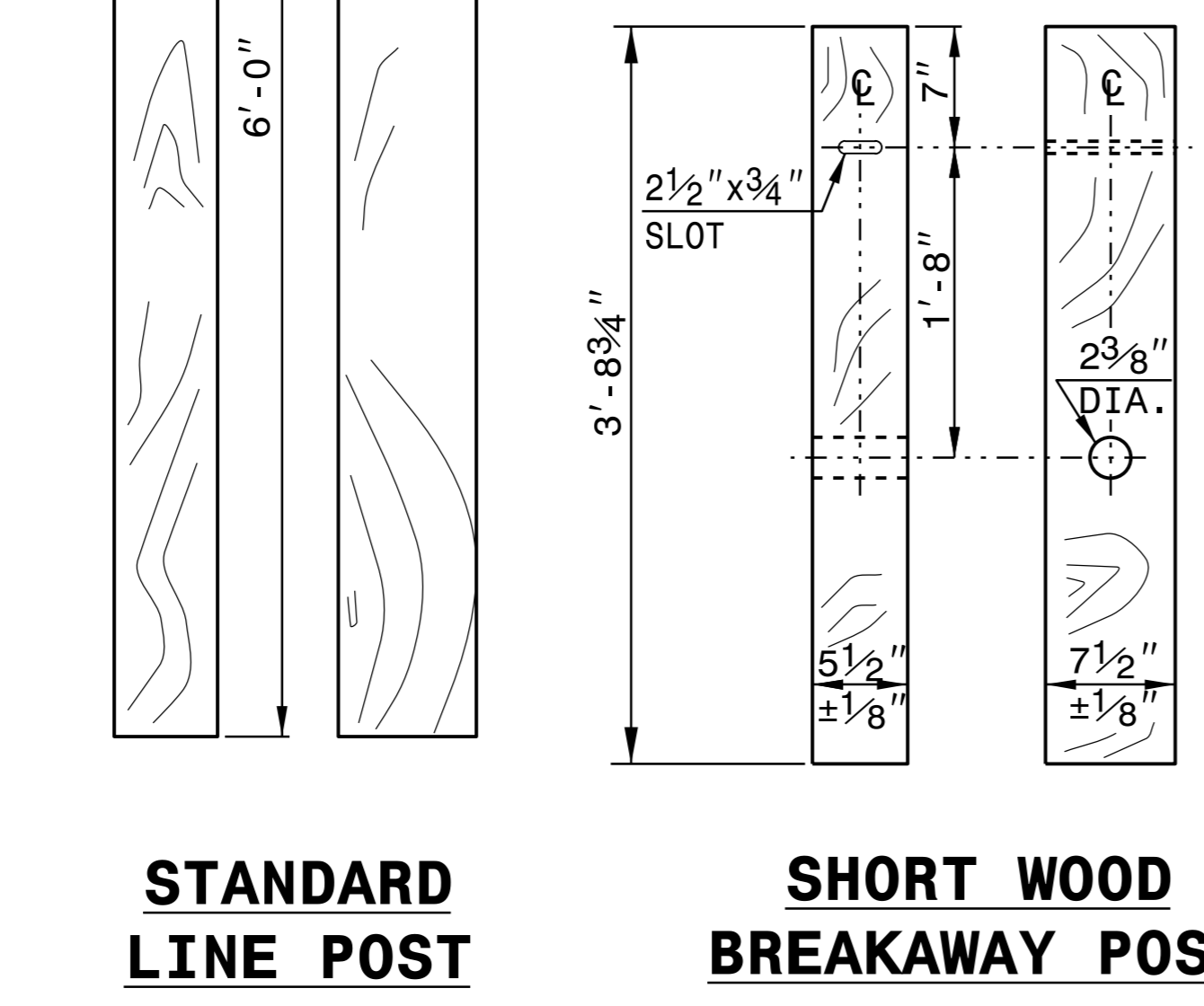
**STANDARD W-BEAM GUARDRAIL**



**PLAN**

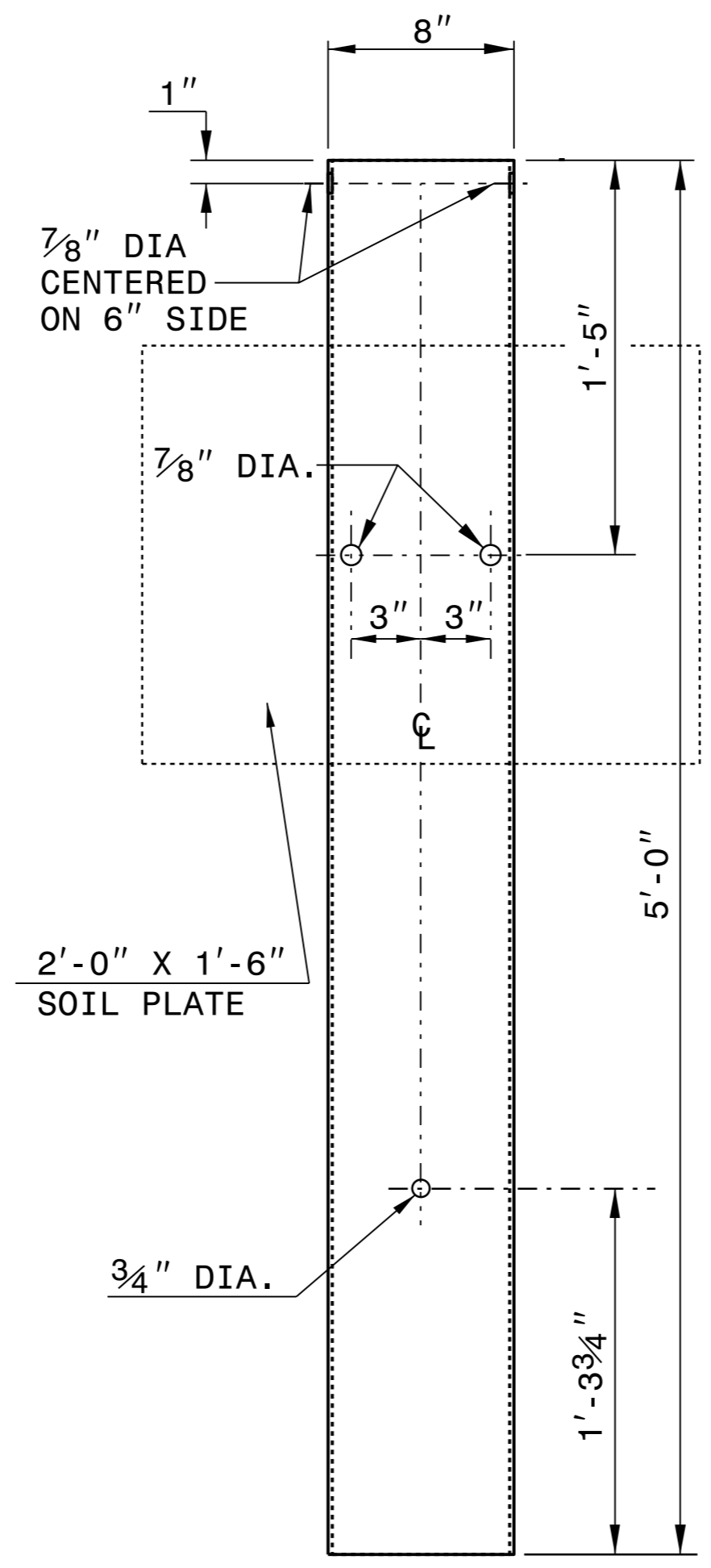


**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

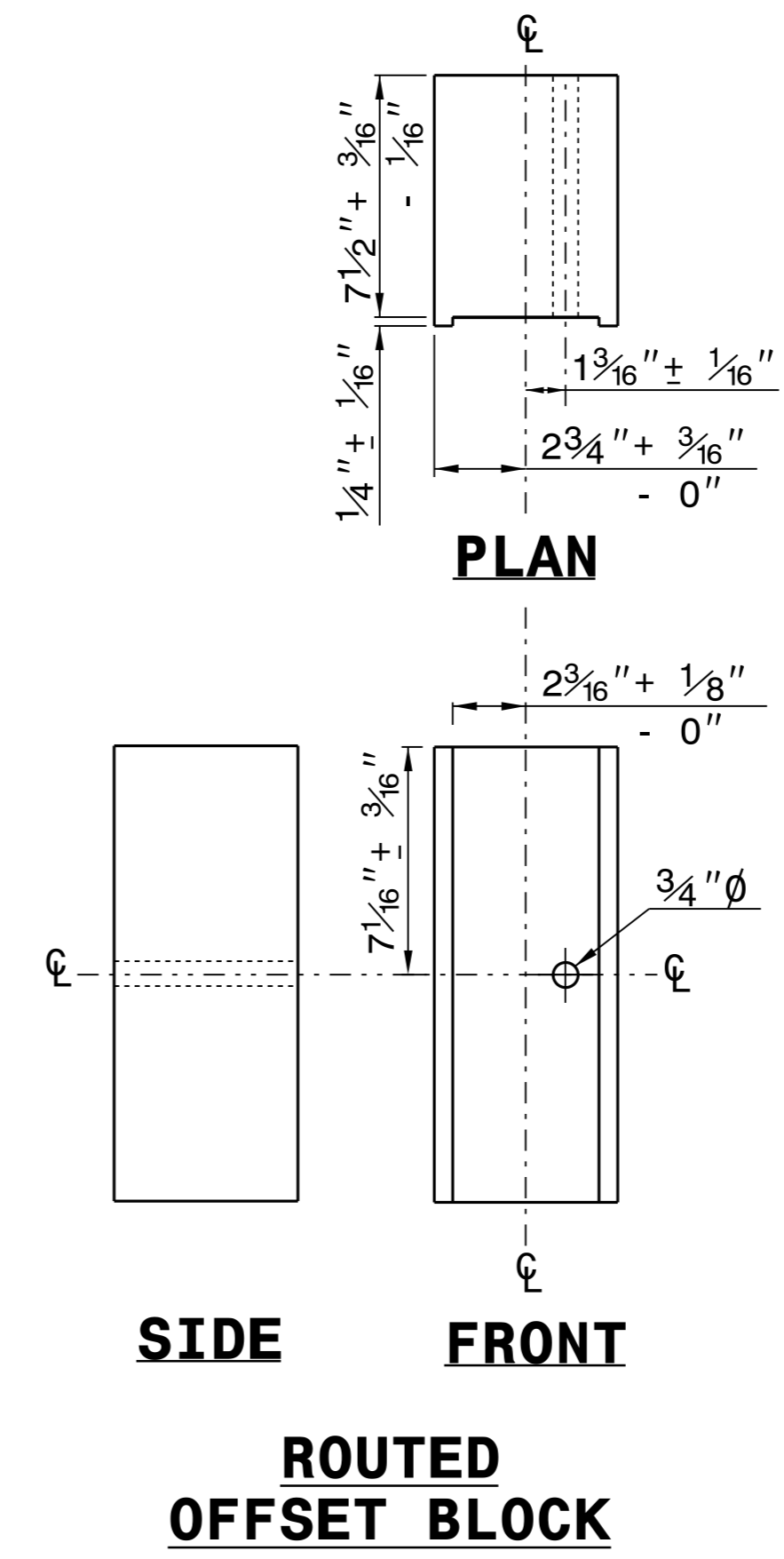


**STANDARD  
LINE POST**

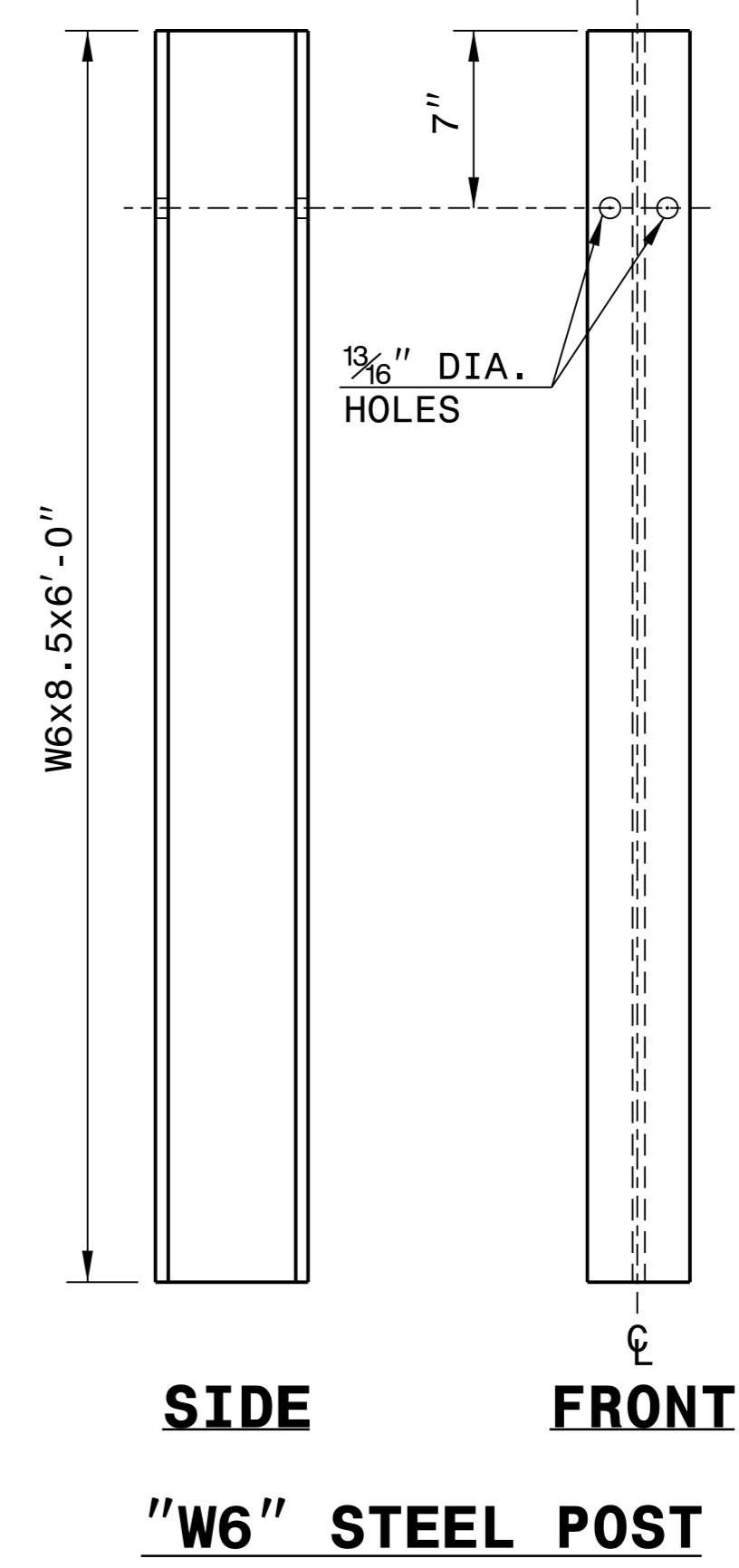
**SHORT WOOD  
BREAKAWAY POST**



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



**ROUTED  
OFFSET BLOCK**



**"W6" STEEL POST**

**SYSTEM PARTS**

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.

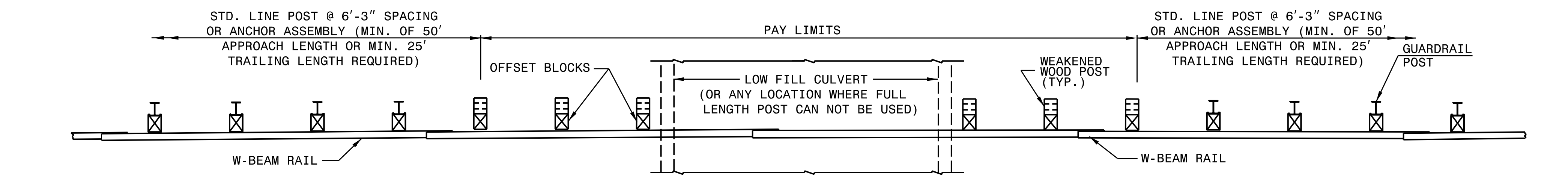
SPECIAL DETAIL FOR  
**GUARDRAIL PLACEMENT**  
25'-0" CLEAR SPAN

SHEET - OF -  
**862D01**

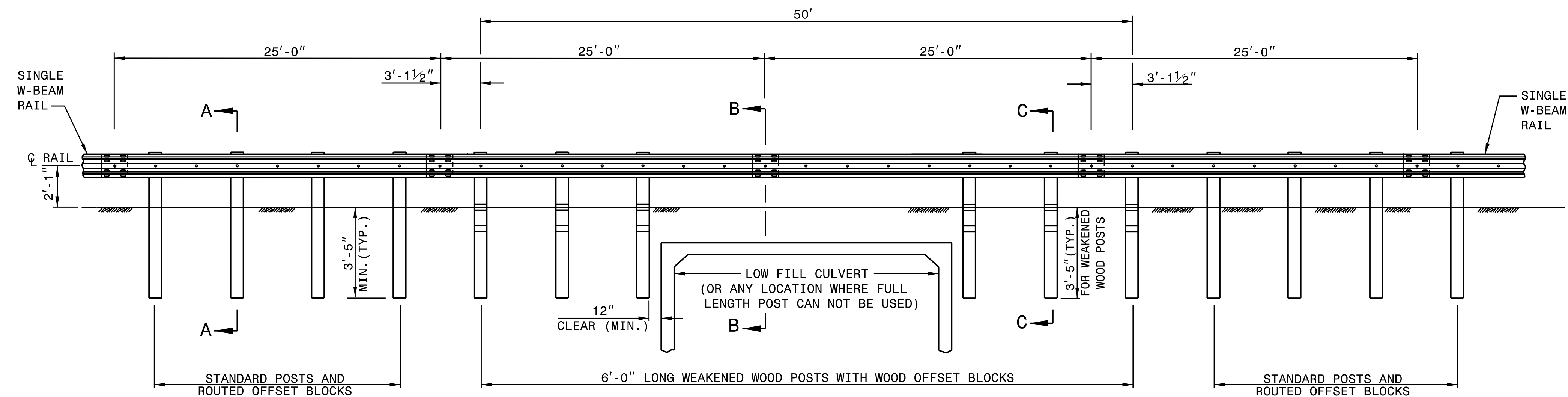
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

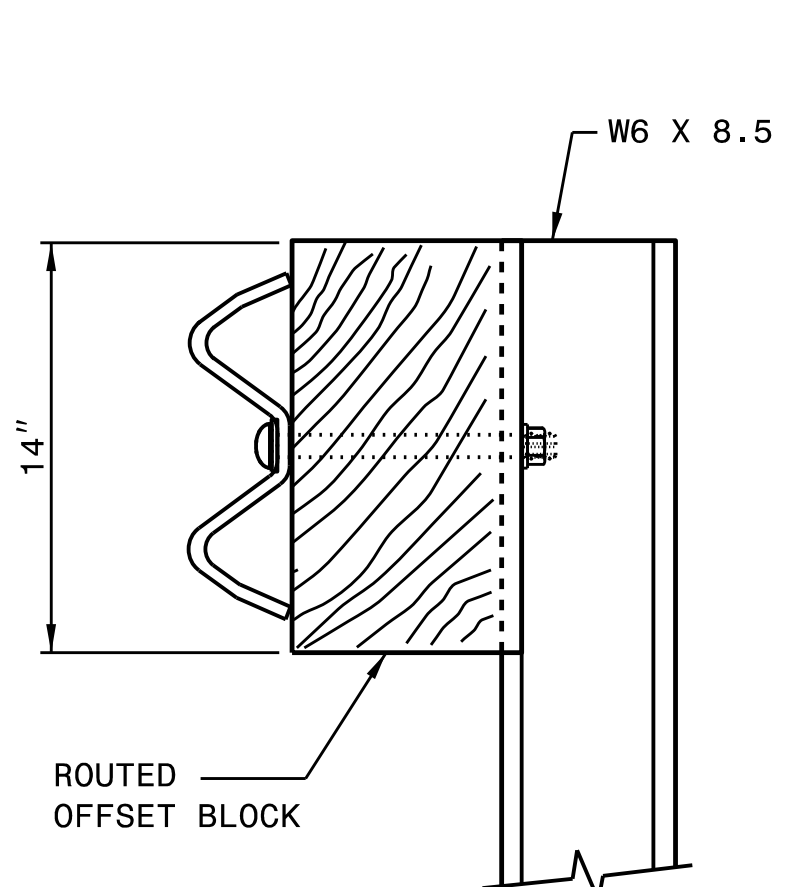
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**862D01**



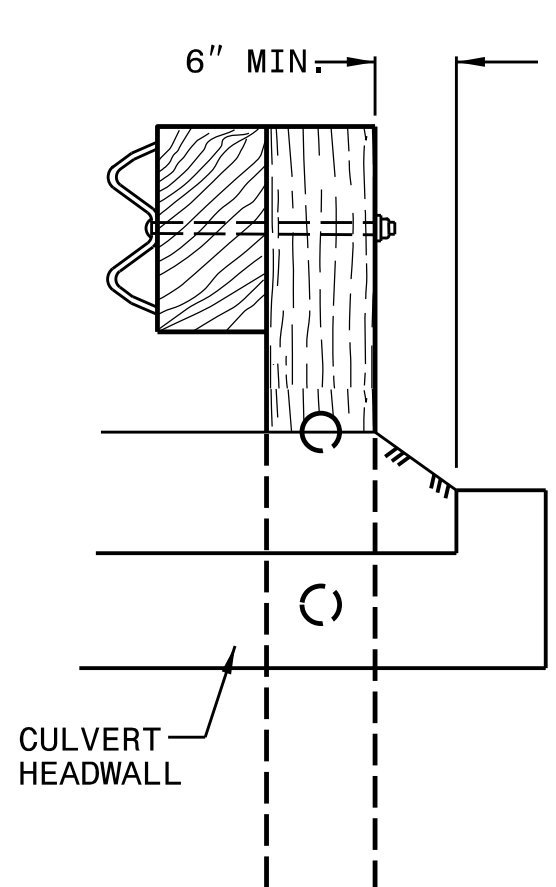
**PLAN**



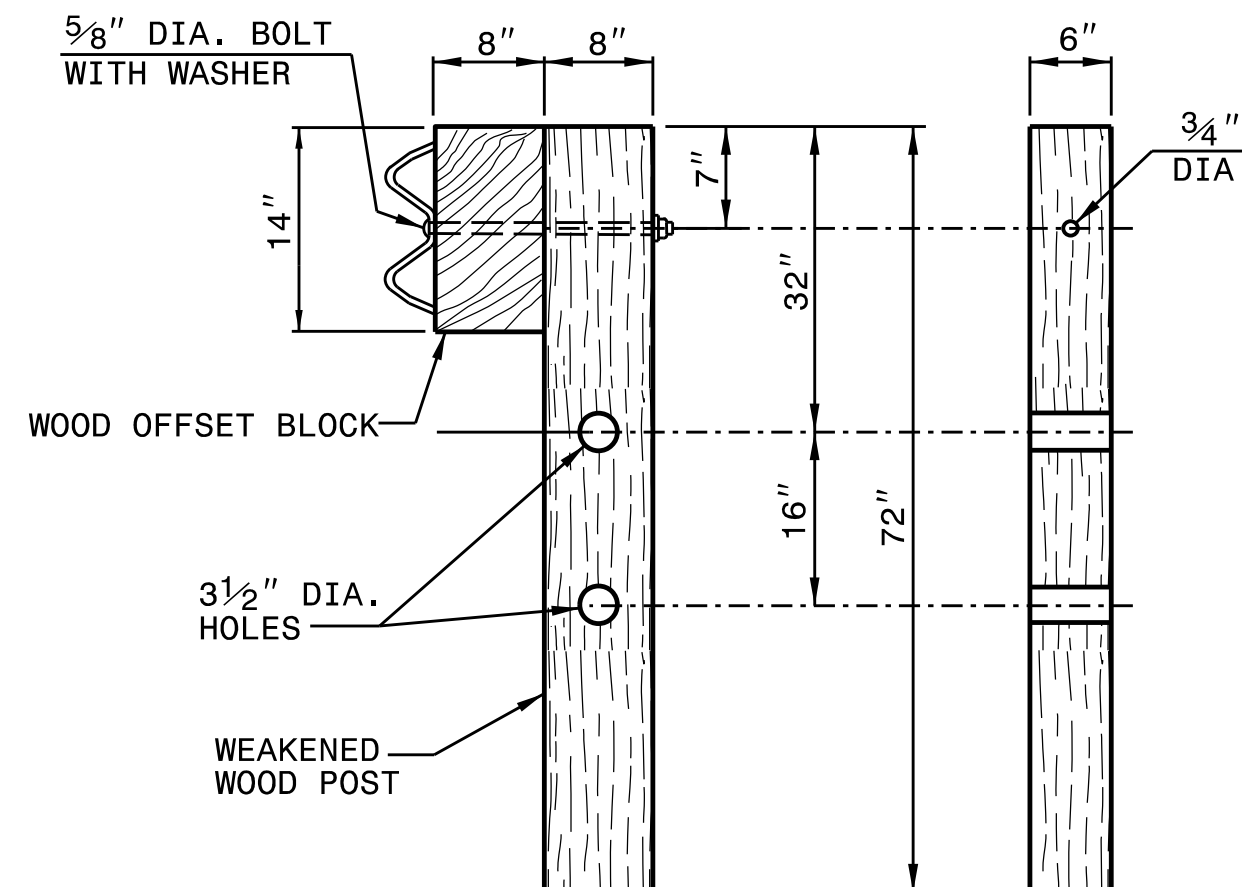
**ELEVATION  
25'-0" GUARDRAIL SPAN**



**SECTION A-A**

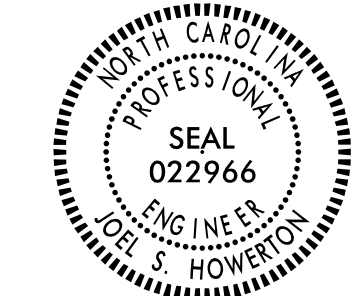


**SECTION B-B**



**SECTION C-C FRONT  
WEAKENED WOOD POST**

- GENERAL NOTES:  
 1. LAP RAIL IN THE DIRECTION OF TRAFFIC FLOW.  
 2. SEE ROADWAY PLANS FOR LOCATIONS AND CONTINUATION OF RAIL OR END SECTIONS.  
 3. MINIMUM DISTANCE OF 5 FEET BEHIND THE GUARDRAIL SHOULD BE CLEAR OF ANY FIXED-OBJECT HAZARDS THAT COULD SNAG AN IMPACTING VEHICLE.



DocuSigned by:  
GWS  
673F3D17DC0C45F  
6/16/2021

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UNLESS ALL SIGNATURES COMPLETED

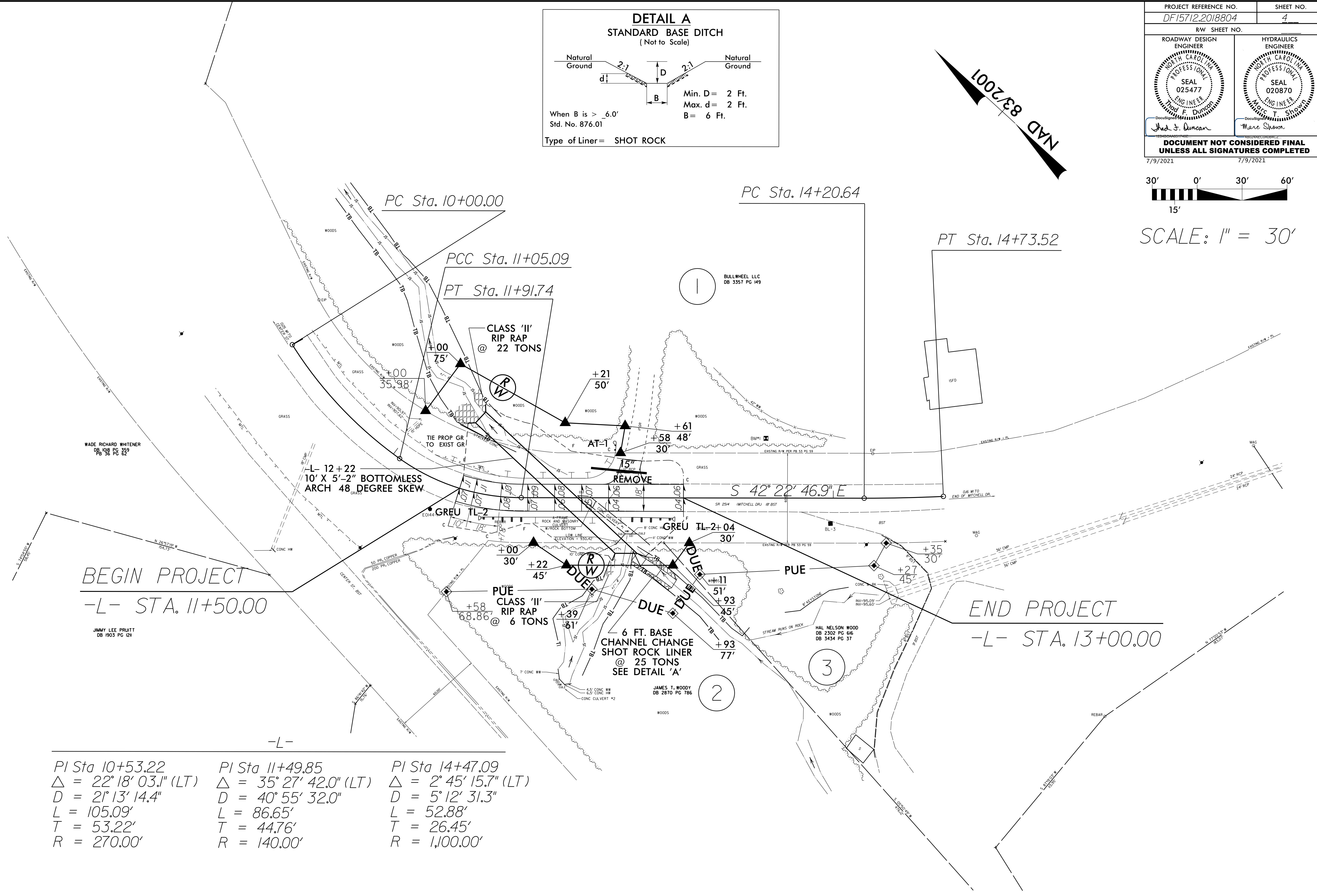
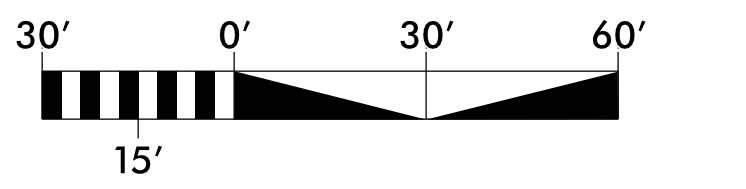
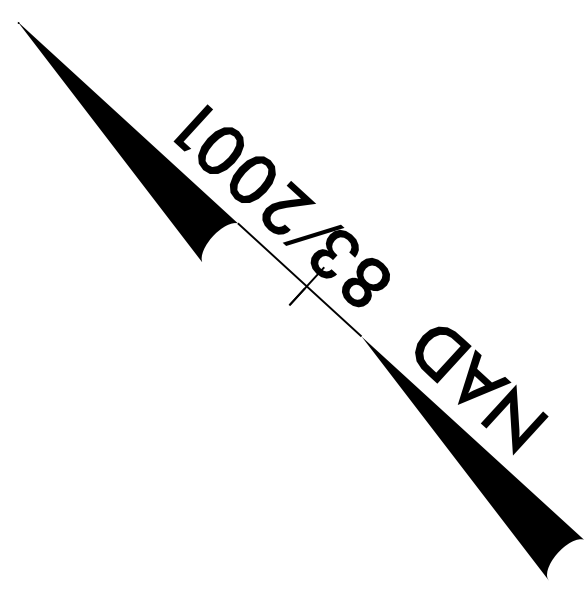
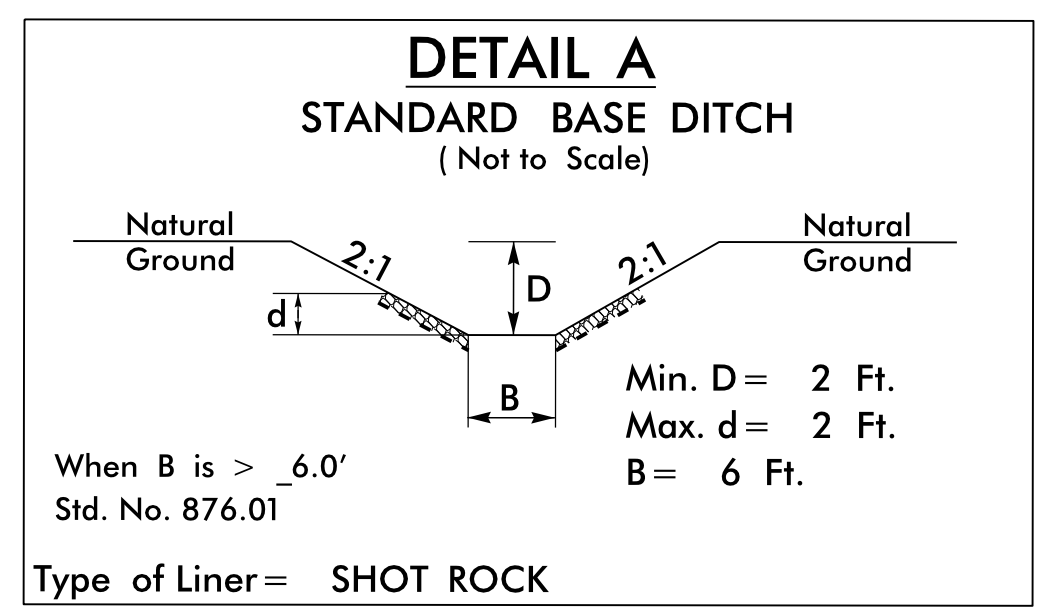
**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**25'-0" CLEAR SPAN GUARDRAIL PLACEMENT**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_







PI Sta 10+53.22	PI Sta 11+49.85	PI Sta 14+47.09
$\Delta = 22^\circ 18' 03.1''$ (LT)	$\Delta = 35^\circ 27' 42.0''$ (LT)	$\Delta = 2^\circ 45' 15.7''$ (LT)
$D = 21^\circ 13' 14.4''$	$D = 40^\circ 55' 32.0''$	$D = 5^\circ 12' 31.3''$
$L = 105.09'$	$L = 86.65'$	$L = 52.88'$
$T = 53.22'$	$T = 44.76'$	$T = 26.45'$
$R = 270.00'$	$R = 140.00'$	$R = 1,100.00'$

FOR -L- PROFILE SEE SHEET 5

8/17/99  
 25-MAY-2021 11:3  
 C:\Users\jpruitt\Documents\Projects\Projects\Colawba\Mitchell\Dr-Roadway\DF15712.2018804\_Rdy-psch.dgn

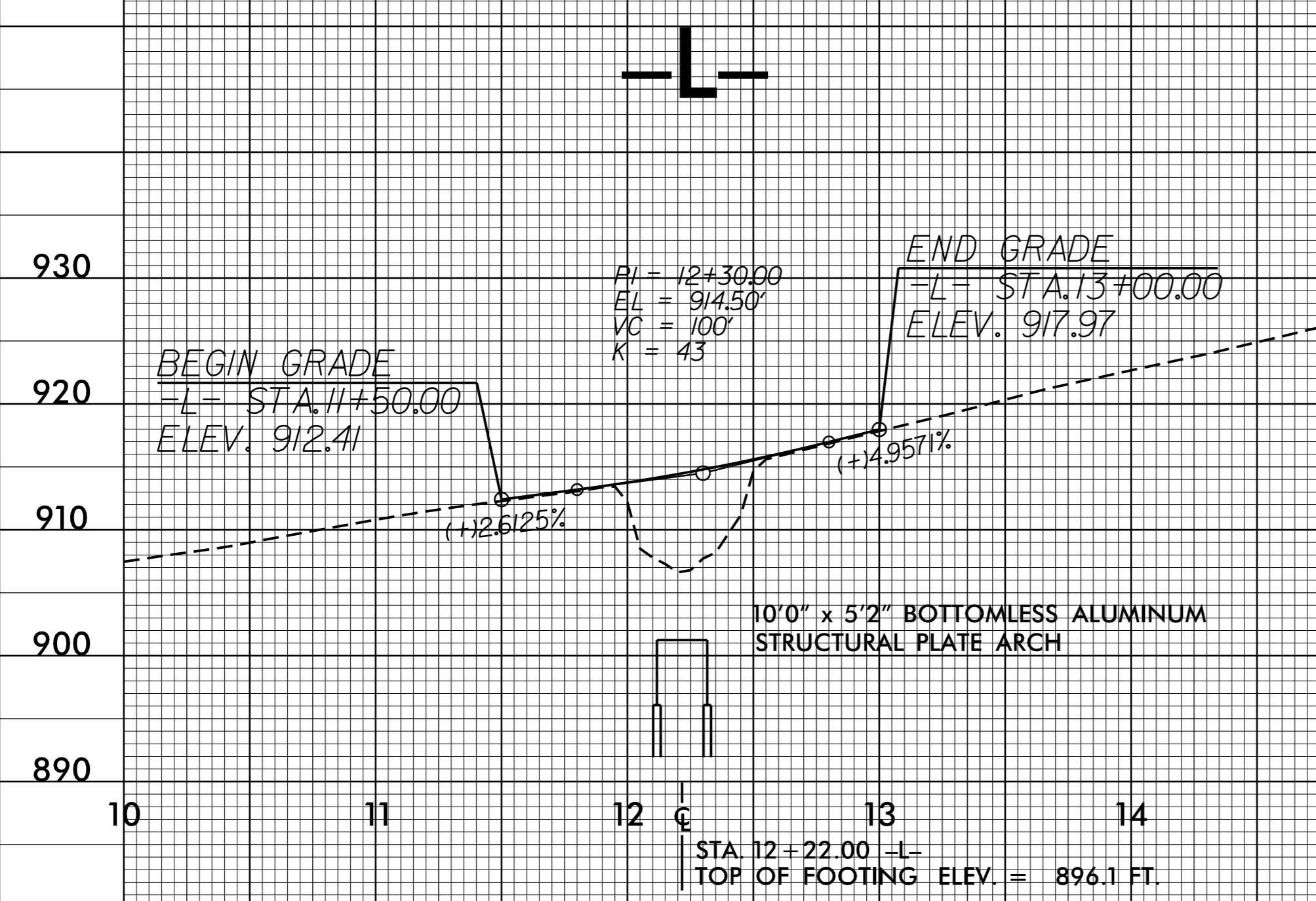
5/14/99

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11/12/2018 10:58:21 AM

PROJECT REFERENCE NO. DF15712.2018804	SHEET NO. 5
ROADWAY DESIGN ENGINEER SEAL 025477 J. F. DUNCAN	HYDRAULICS ENGINEER SEAL 020870 M. SHAW

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

7/9/2021 7/9/2021



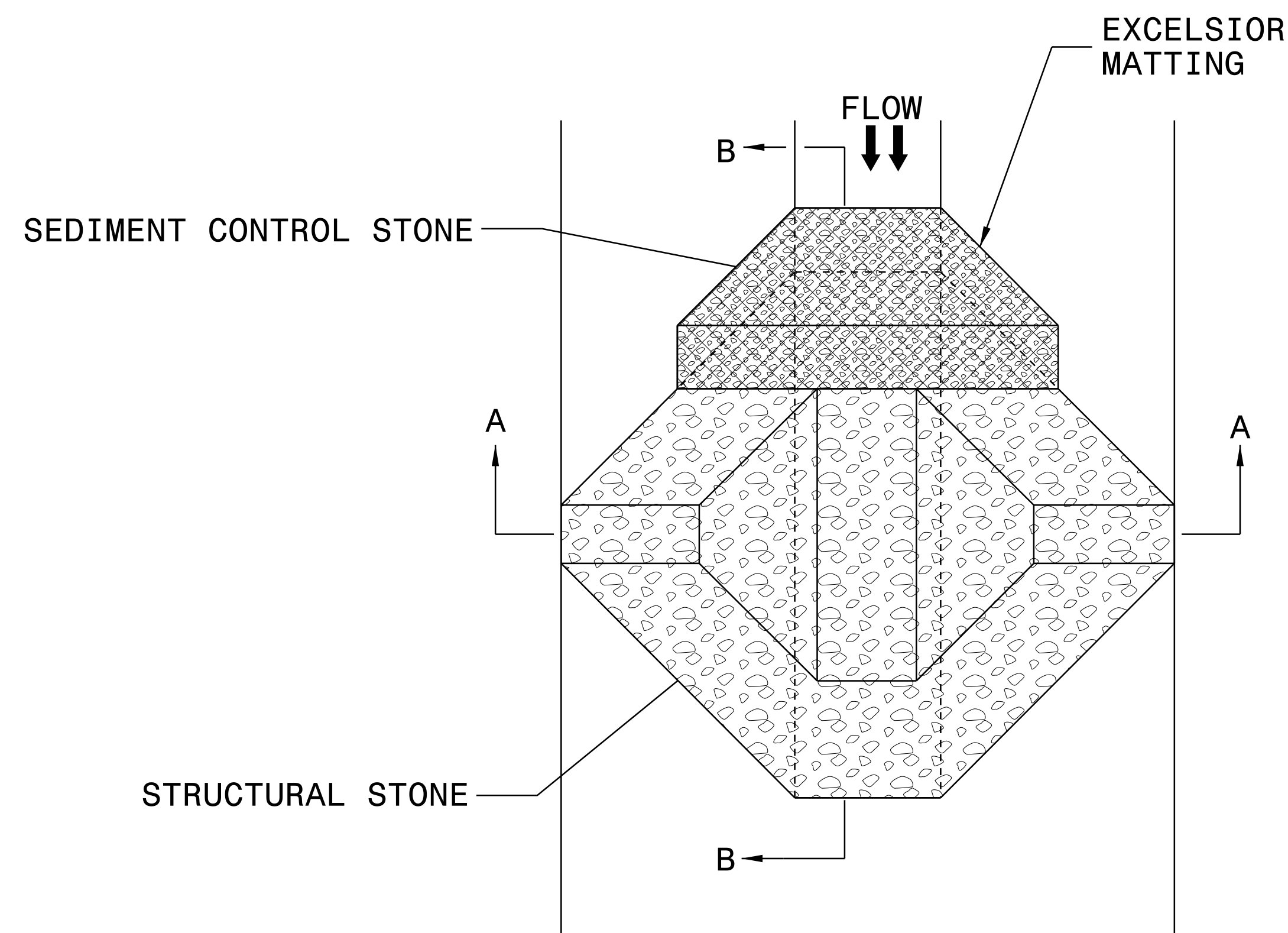
DESIGN DISCHARGE	= 180	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 902.3	FT
BASE DISCHARGE	= 210	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 902.7	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 911	FT





PROJECT REFERENCE NO. E-0144	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

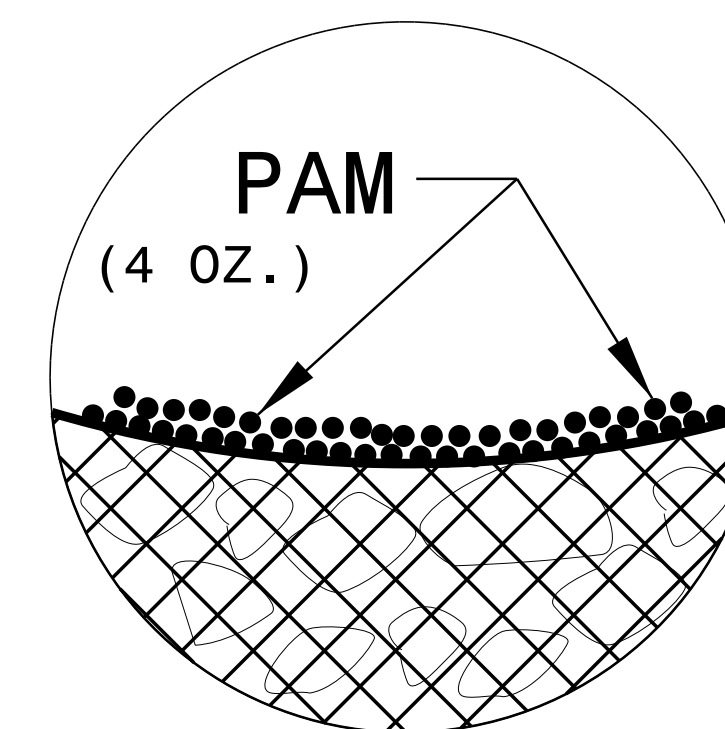
**NOTES:**

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

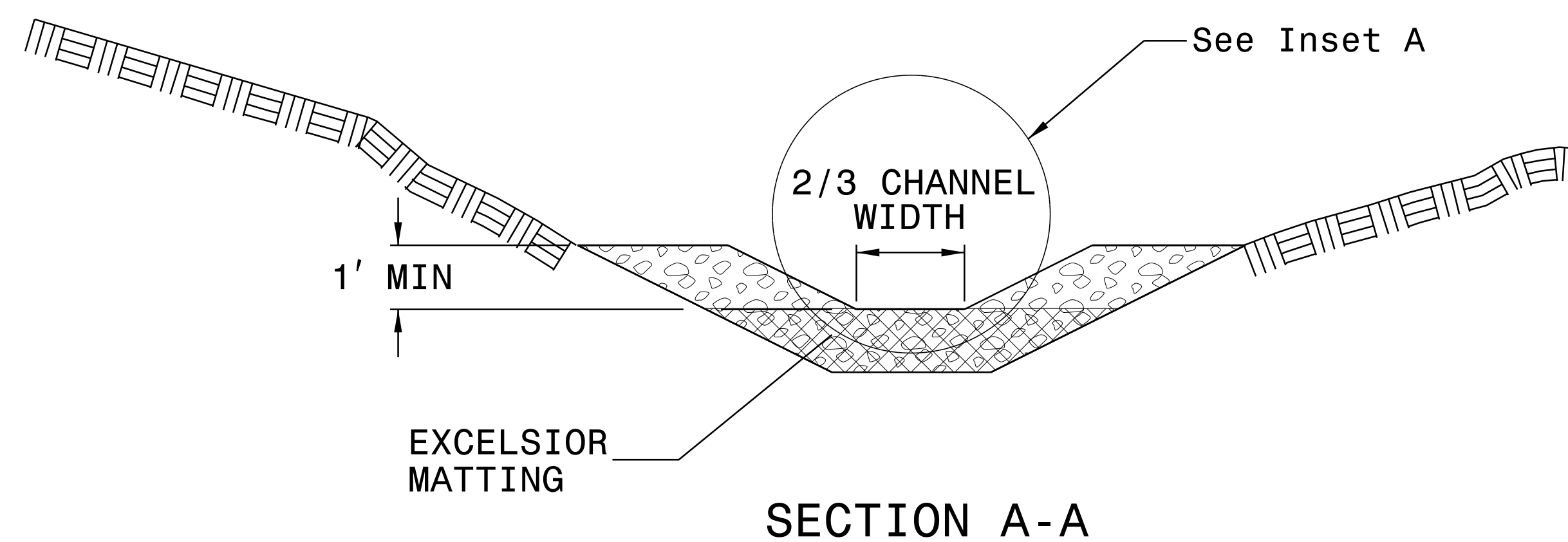
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

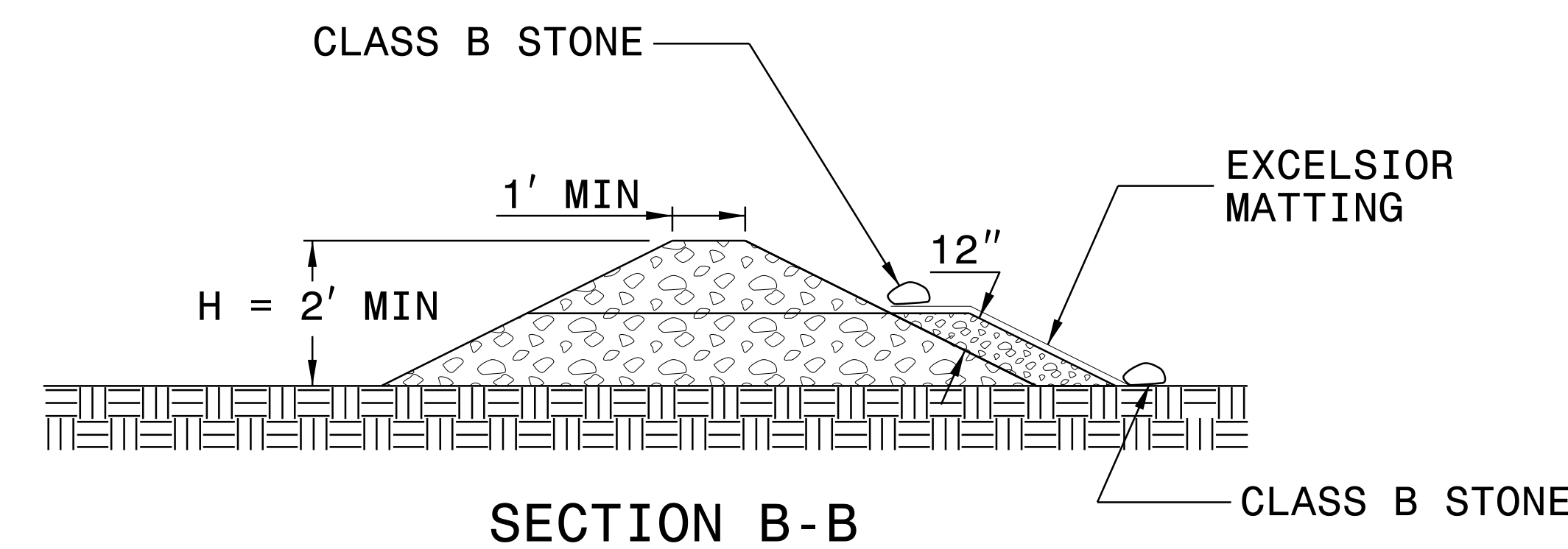
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

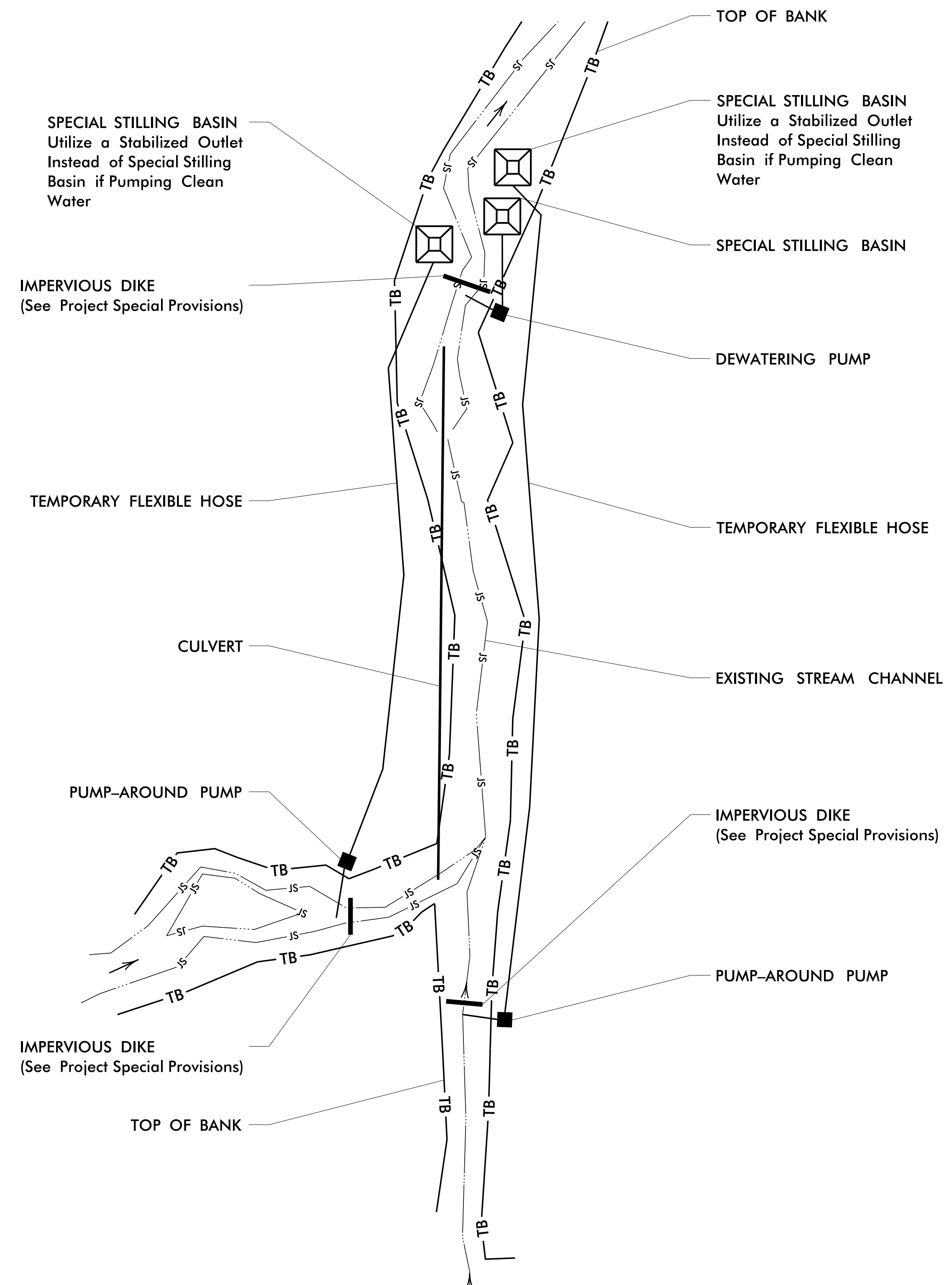
NOT TO SCALE

PROJECT REFERENCE NO. <i>E-0144</i>	SHEET NO. <i>EC-2</i>
R/W 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 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.

\* DETAIL NOT TO SCALE

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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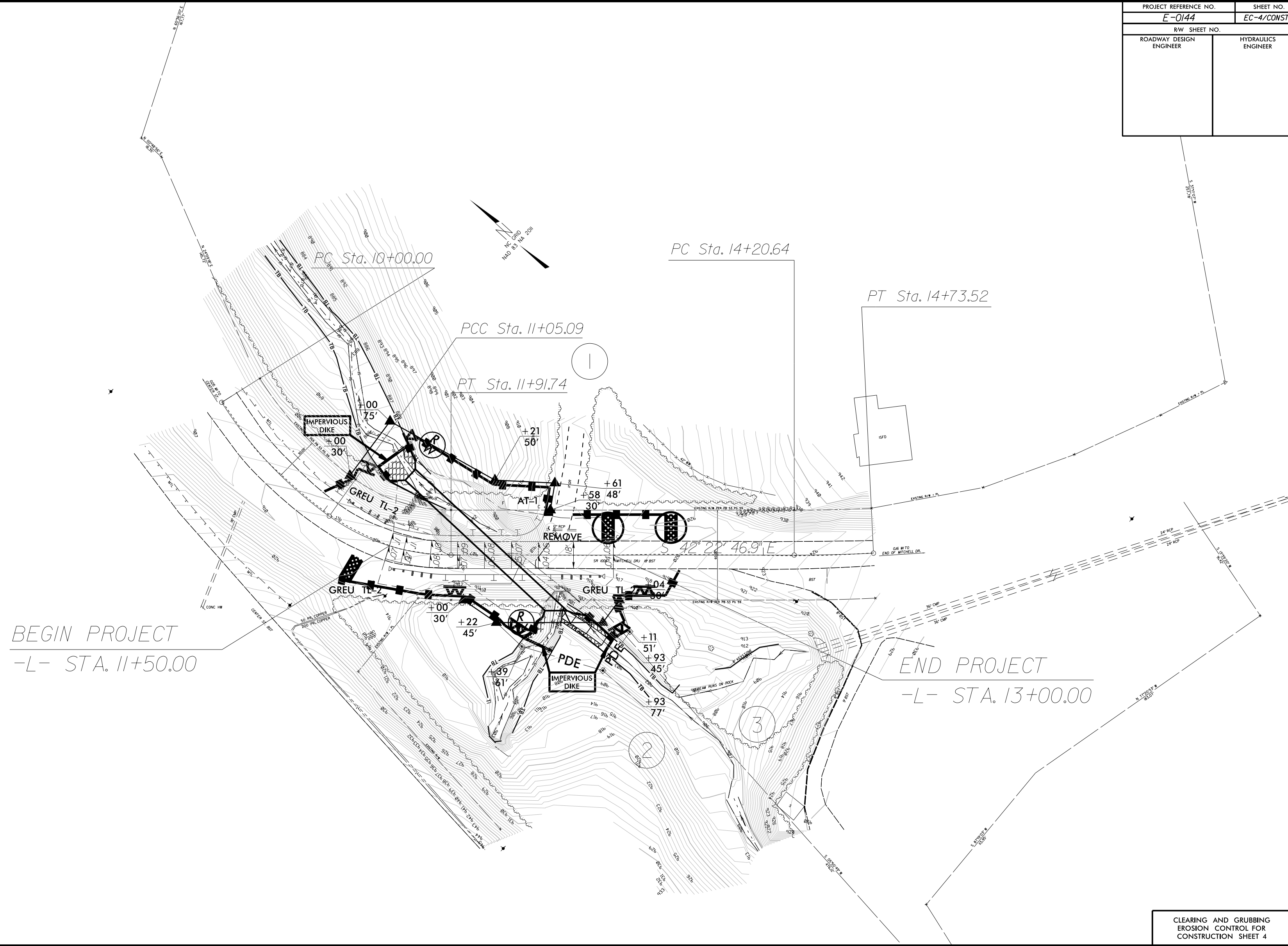
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PROJECT REFERENCE NO. <i>E-0144</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***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.

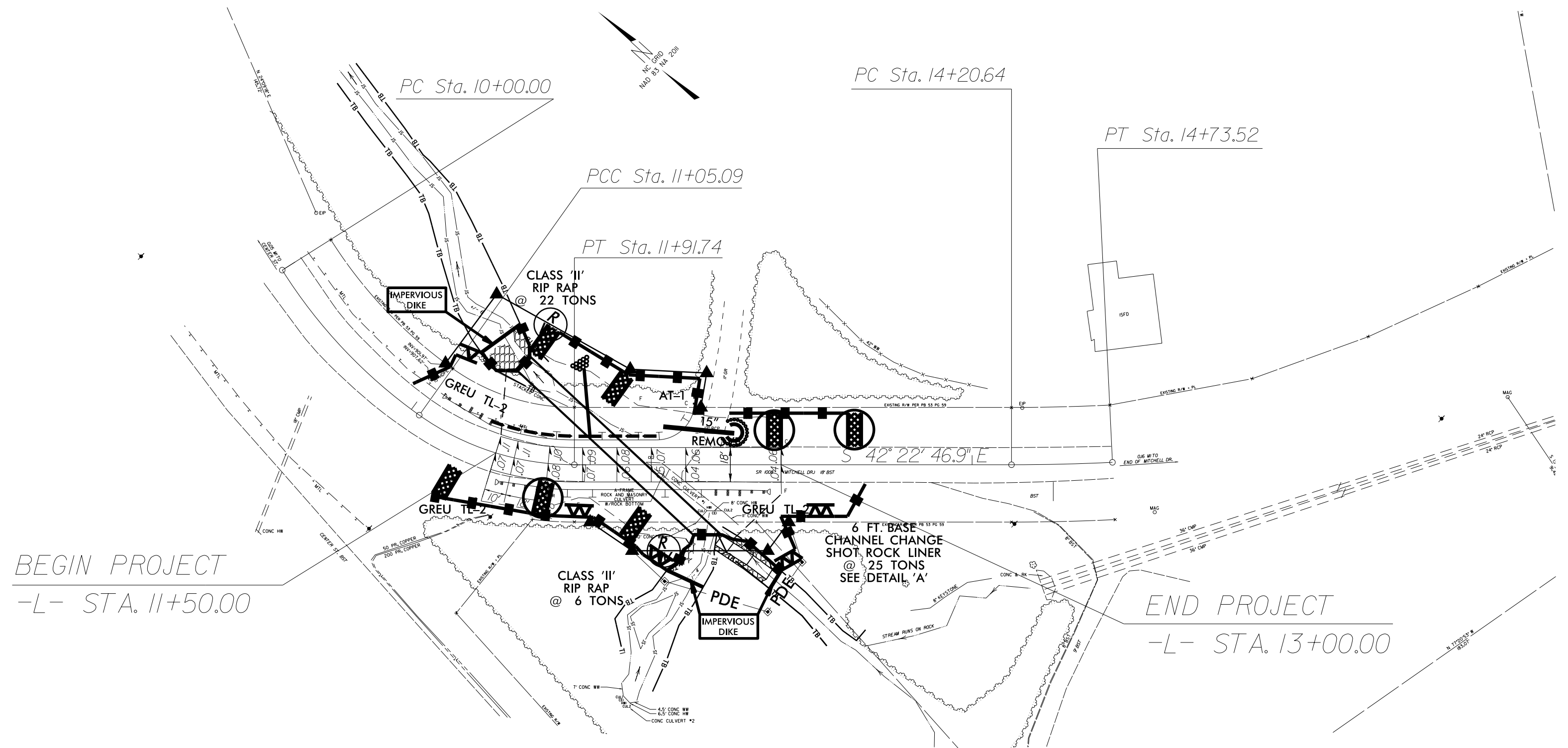
PROJECT REFERENCE NO.	SHEET NO.
E-0144	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



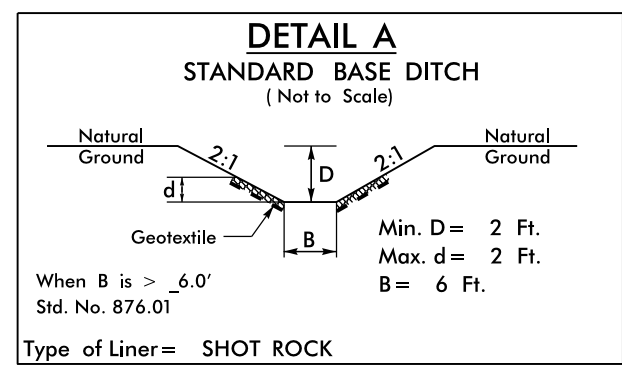
PROJECT REFERENCE NO.	SHEET NO.
E-0144	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# CULVERT CONSTRUCTION SEQUENCE STA. 12+21 -L-

1. Maintain closure of SR 2514 (Mitchell Dr.) 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 A Frame Rock and Masonry Culvert.
5. Install proposed 10' X 5'2" Bottomless Multi-Plate Culvert w/HW and Concrete Footings.
6. Complete any necessary Inlet/Outlet channel improvements.
7. Remove impervious dikes and allow flow through new culvert.
8. Complete roadway construction.



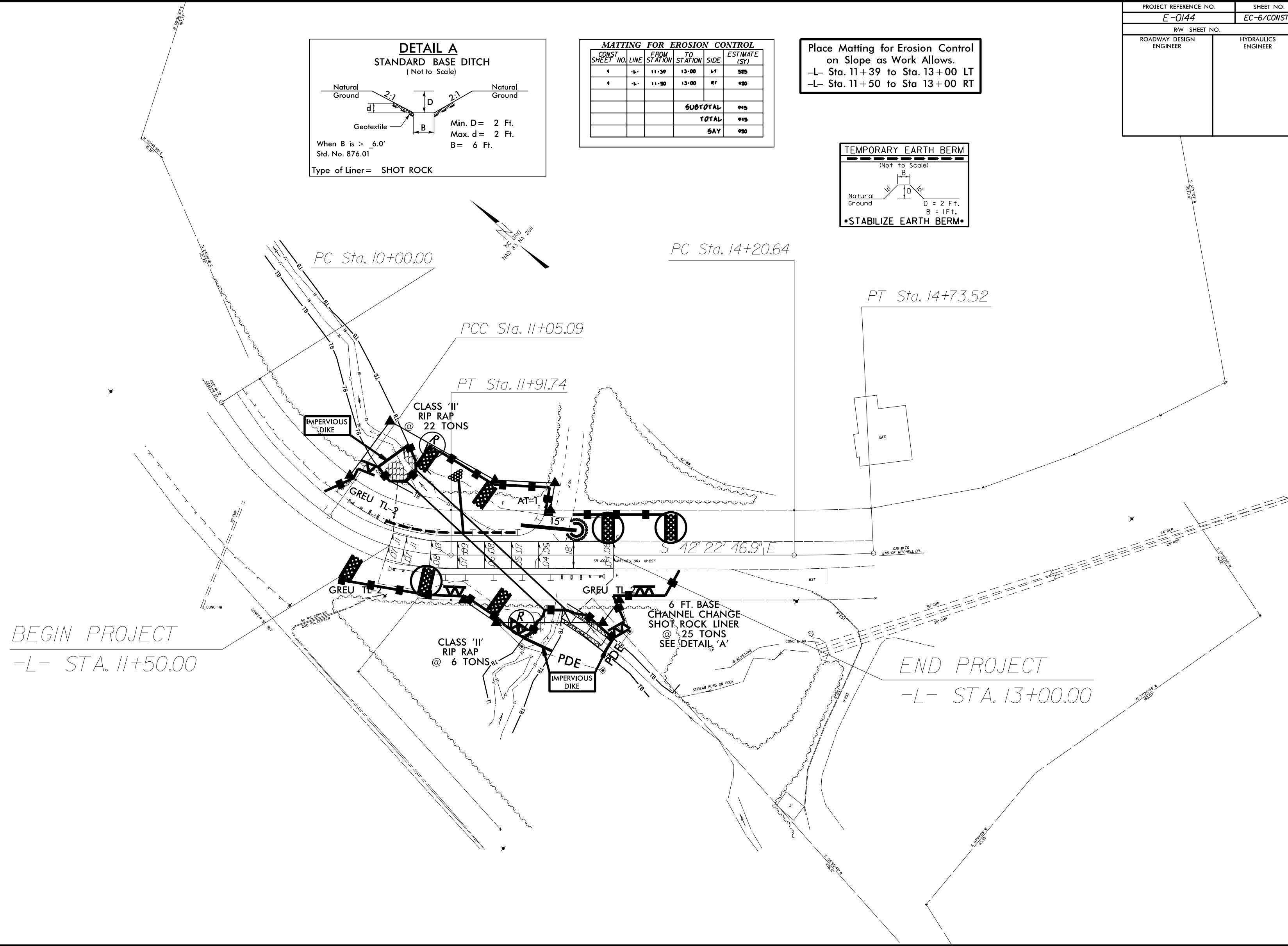
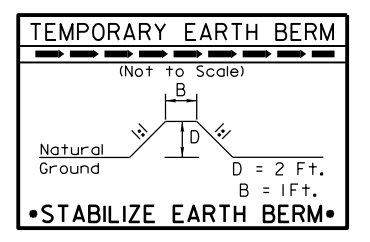
PROJECT REFERENCE NO.	SHEET NO.
E-0144	EC-6/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**MATTING FOR EROSION CONTROL**

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	14	11+30	13+00	LT	505
4	14	11+50	13+00	RT	120
<b>SUBTOTAL</b>					<b>625</b>
<b>TOTAL</b>					<b>625</b>
<b>SAY</b>					<b>625</b>

Place Matting for Erosion Control on Slope as Work Allows.  
-L- Sta. 11+39 to Sta. 13+00 LT  
-L- Sta. 11+50 to Sta. 13+00 RT



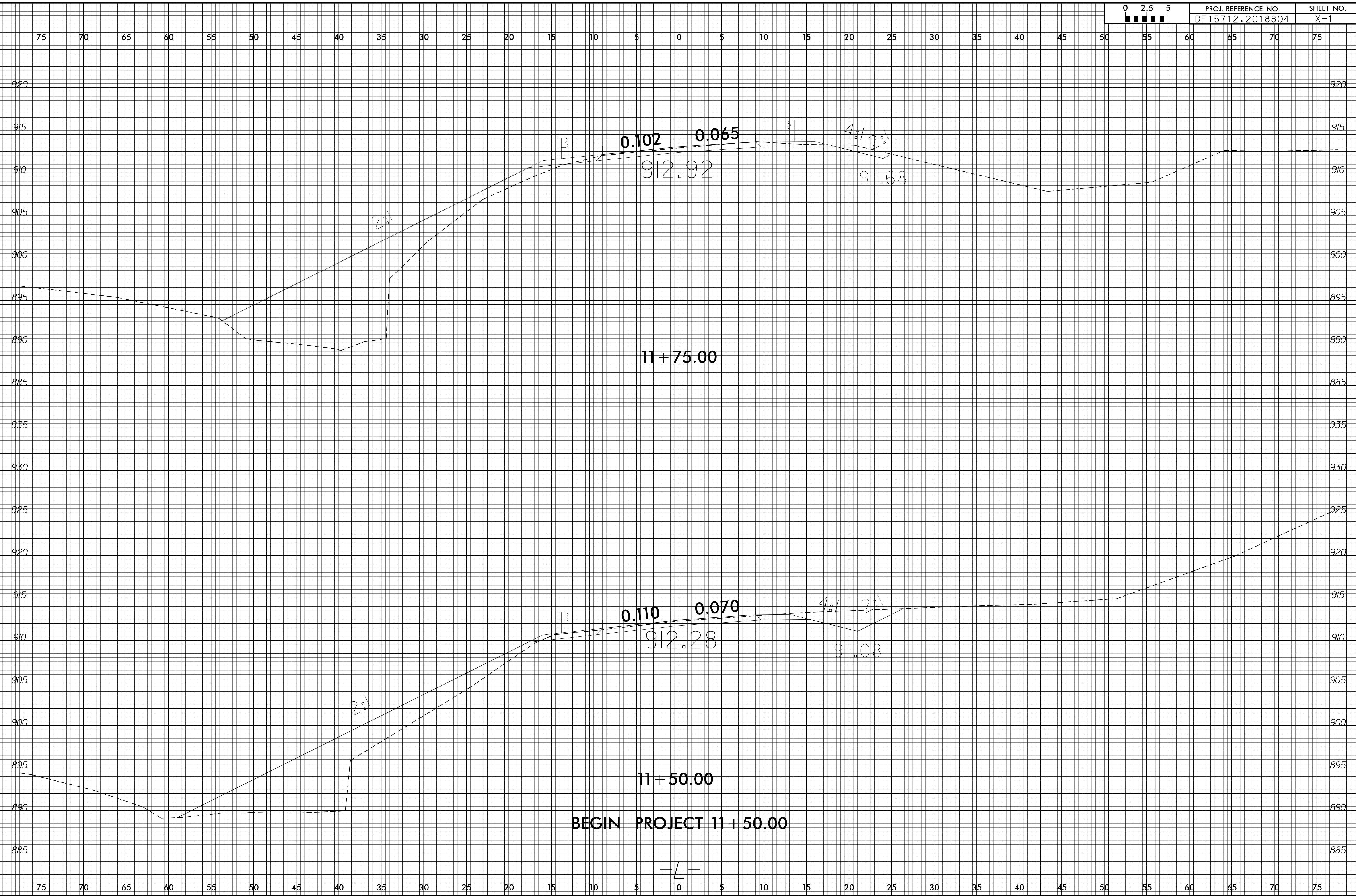






6/23/16

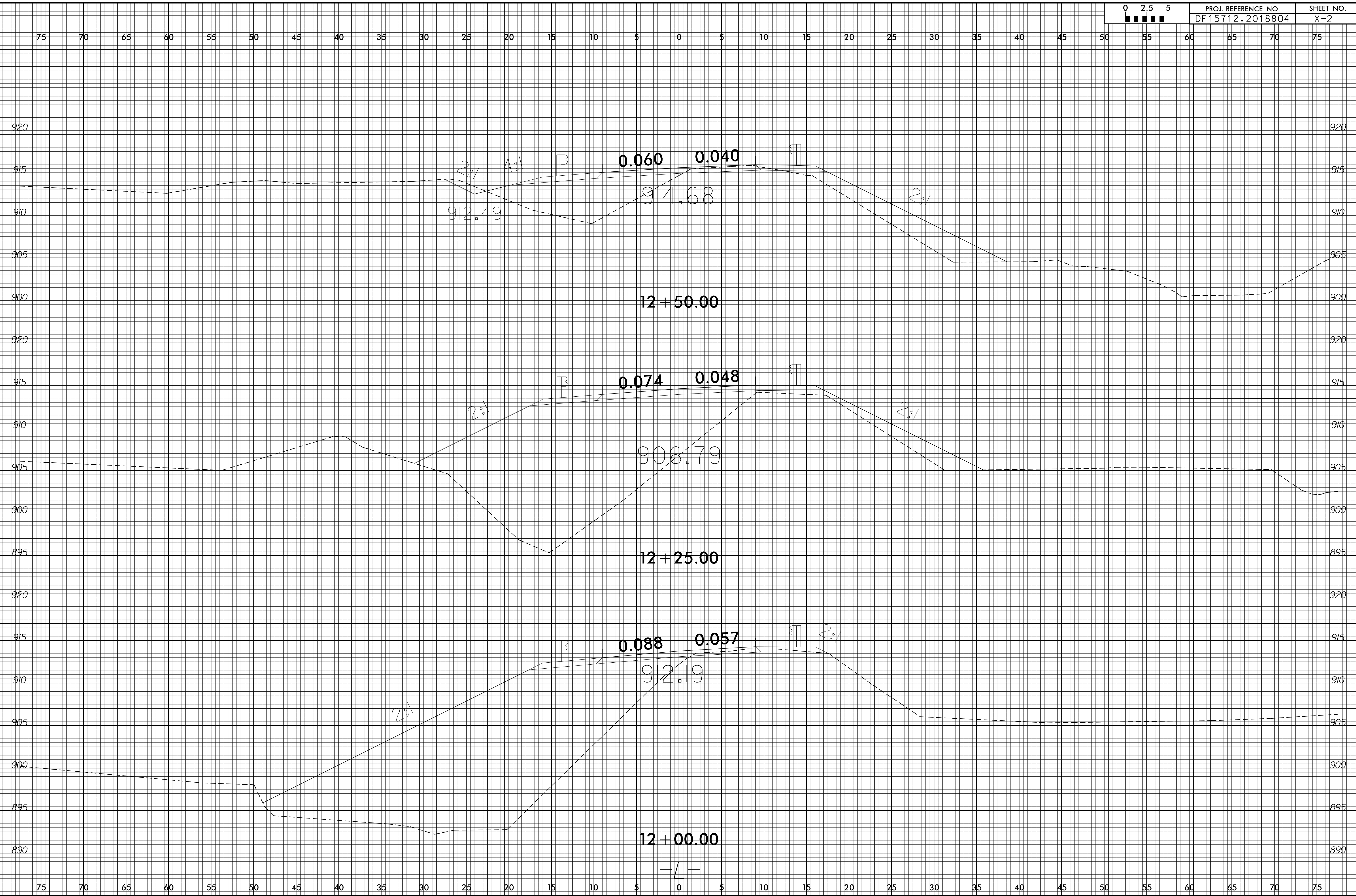
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	DF 15712.2018804	X-1



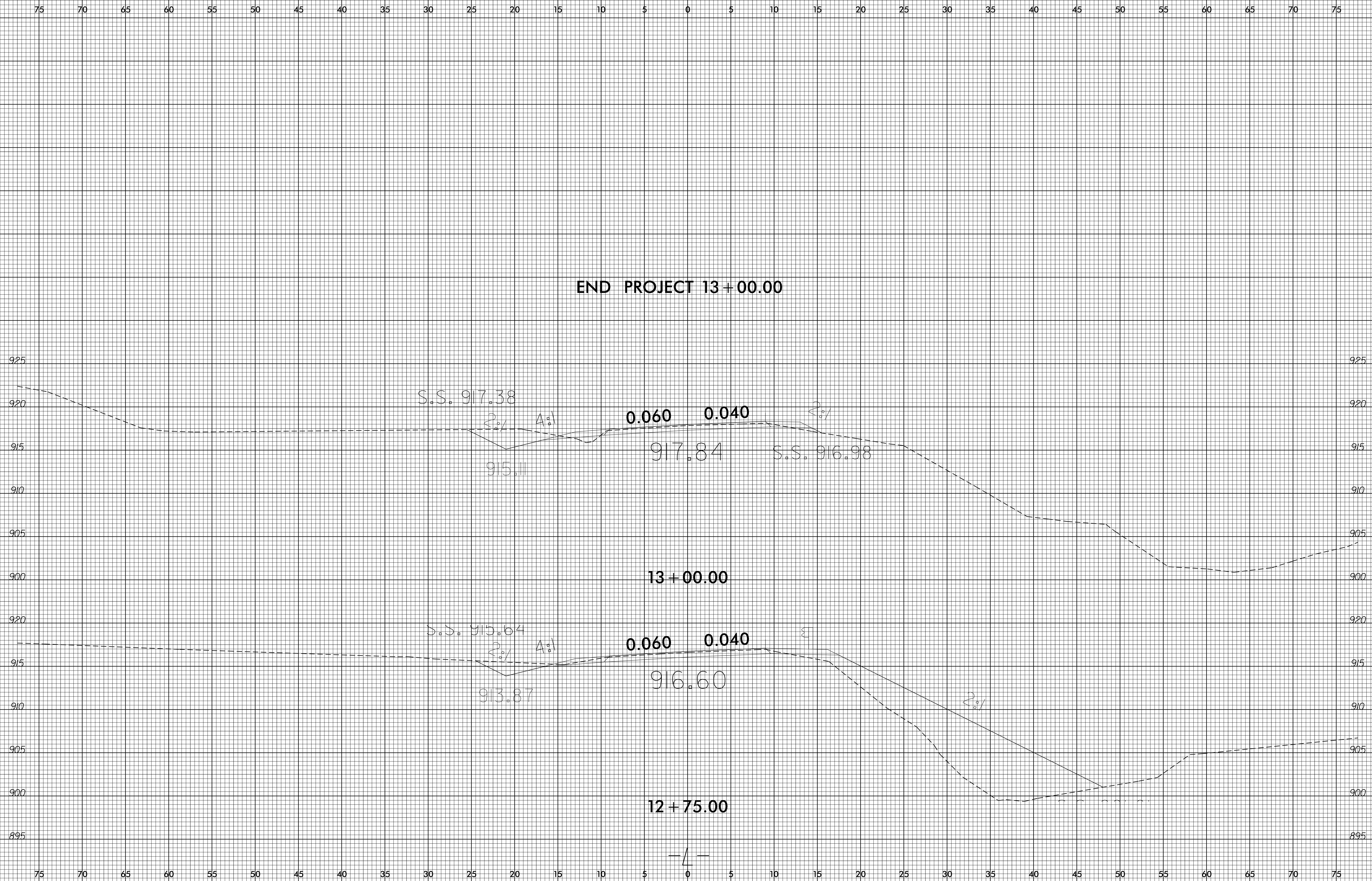
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BEGIN PROJECT 11+50.00

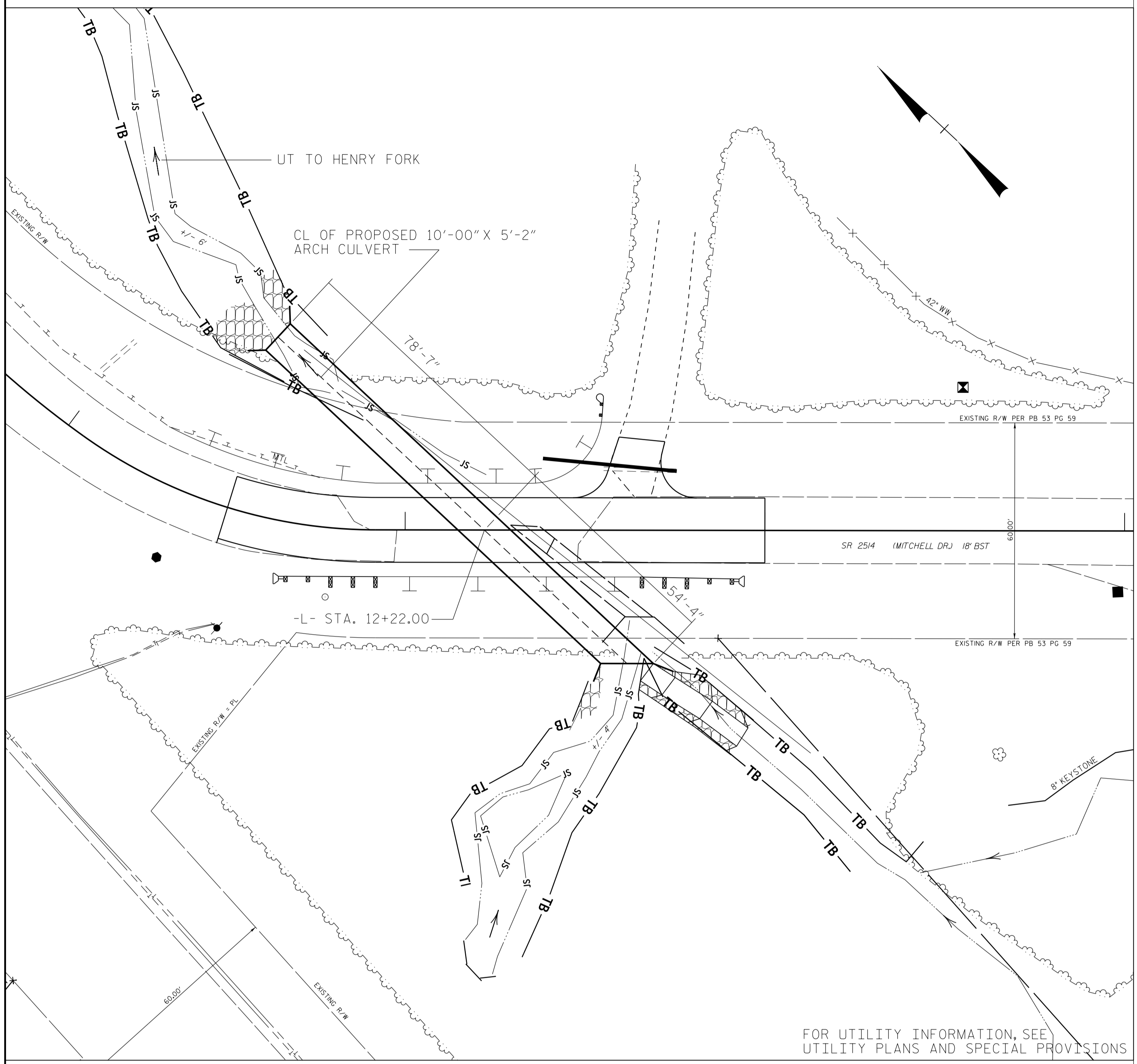
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LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

**ROADWAY DATA**

GRADE POINT ELEV. @ STATION 12+22.00 -L- = 914.5  
 BED ELEV. @ STATION 12+22.00 -L- = 896.1  
 ROADWAY SLOPES = 2:1

**HYDRAULIC DATA**

DESIGN DISCHARGE = 180 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YEARS  
 DESIGN HIGH WATER ELEVATION = 902.3  
 DRAINAGE AREA = 0.18 SQ. MI.  
 BASE DISCHARGE (Q100) = 210 C.F.S.  
 BASE HIGH WATER ELEVATION = 902.7

**OVERTOPPING DATA**

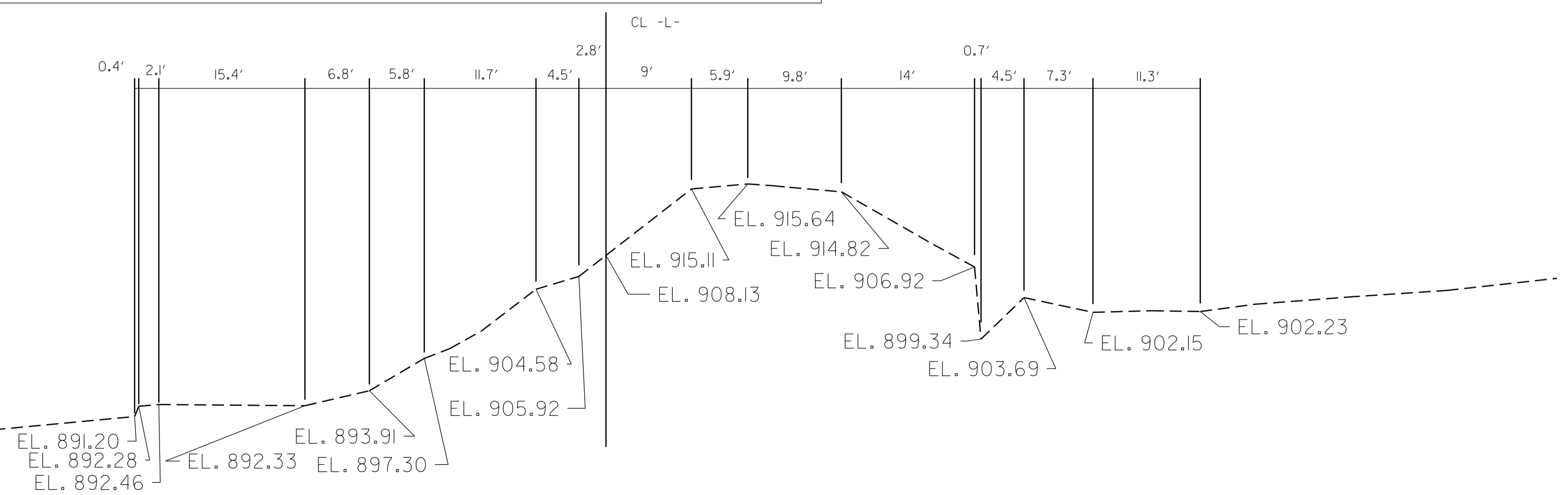
OVERTOPPING DISCHARGE = N/A  
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YEARS  
 OVERTOPPING HIGH WATER ELEVATION = 911.1

**TOTAL STRUCTURE QUANTITIES**

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

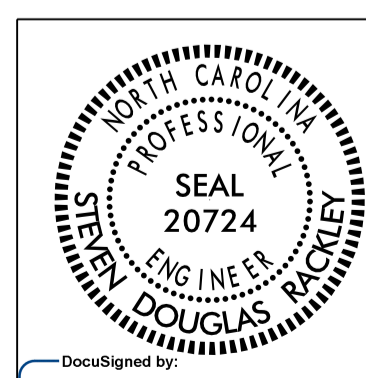
**NOTES**

ASSUMED LIVE LOAD ----- HL-93 OR ALTERNATE LOADING.  
 DESIGN FILL----- 18.4 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 ARCH CULVERT AND FOOTINGS SHALL BE PERFORMED SO AS NOT TO ALLOW ANY DEBRIS TO FALL INTO THE WATER, THE CONTRACTOR SHALL REMOVE THE 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.  
 SCOUR PROTECTION MAY BE REQUIRED.  
 RIP RAP NOT TO BE PLACED ABOVE THE STREAM BED.



PROFILE ALONG CULVERT

DRAWN BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 CHECKED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 DESIGN ENGINEER OF RECORD: \_\_\_\_\_ DATE : \_\_\_\_\_

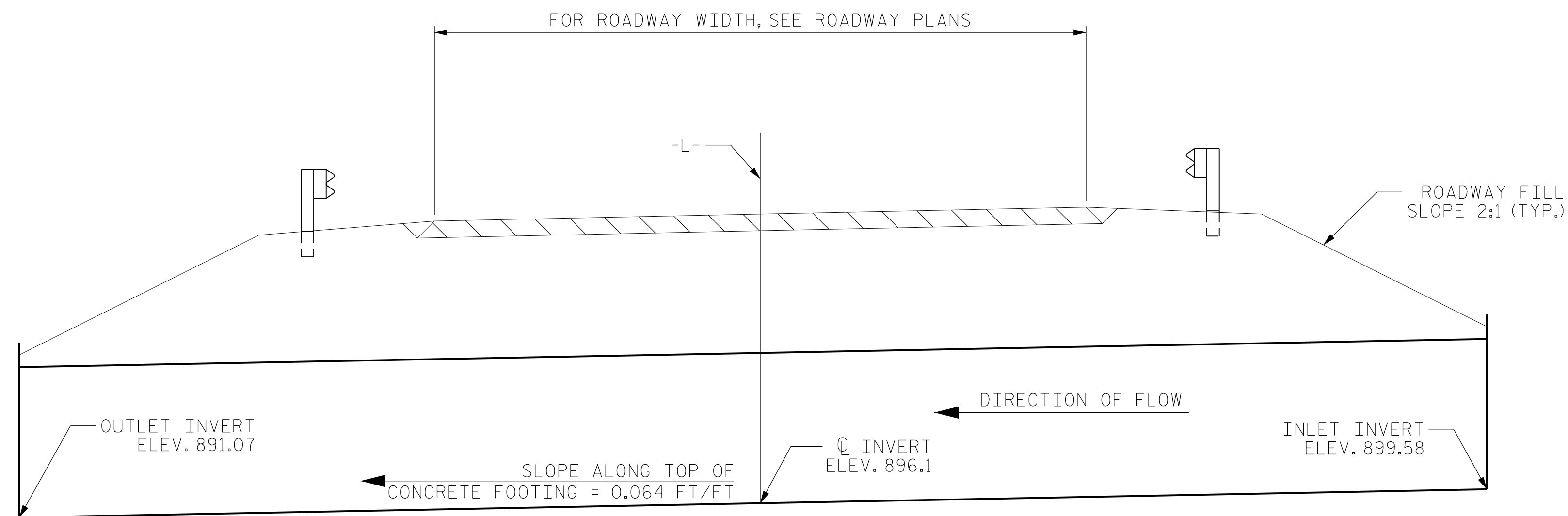


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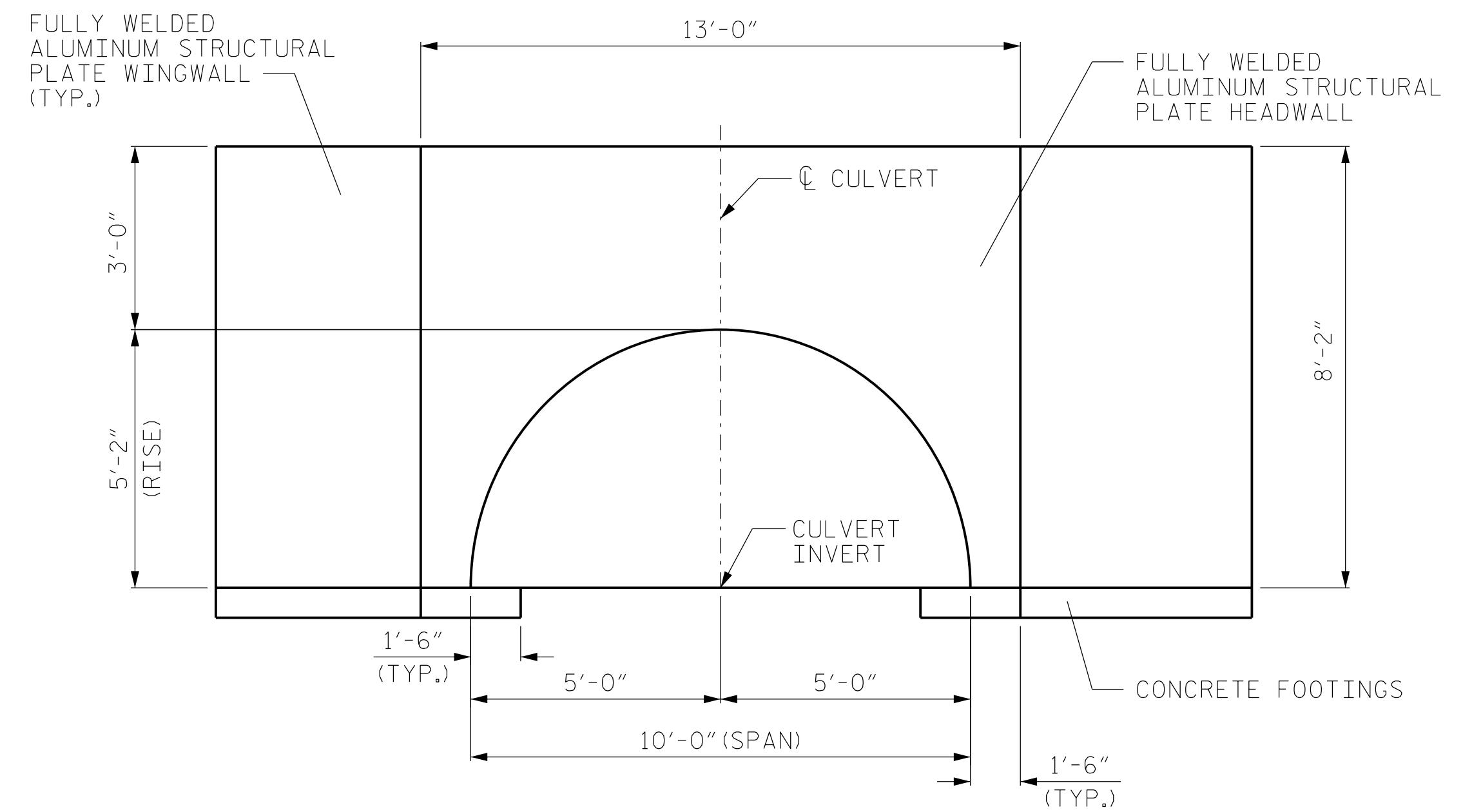
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PROJECT NO. DF15712.2018804  
CATAWBA COUNTY  
 STATION: 12+22.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
10'-0" X 5'-2" ALUMINUM ARCH CULVERT 43°-00'-00" SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. C-1 TOTAL SHEETS 4

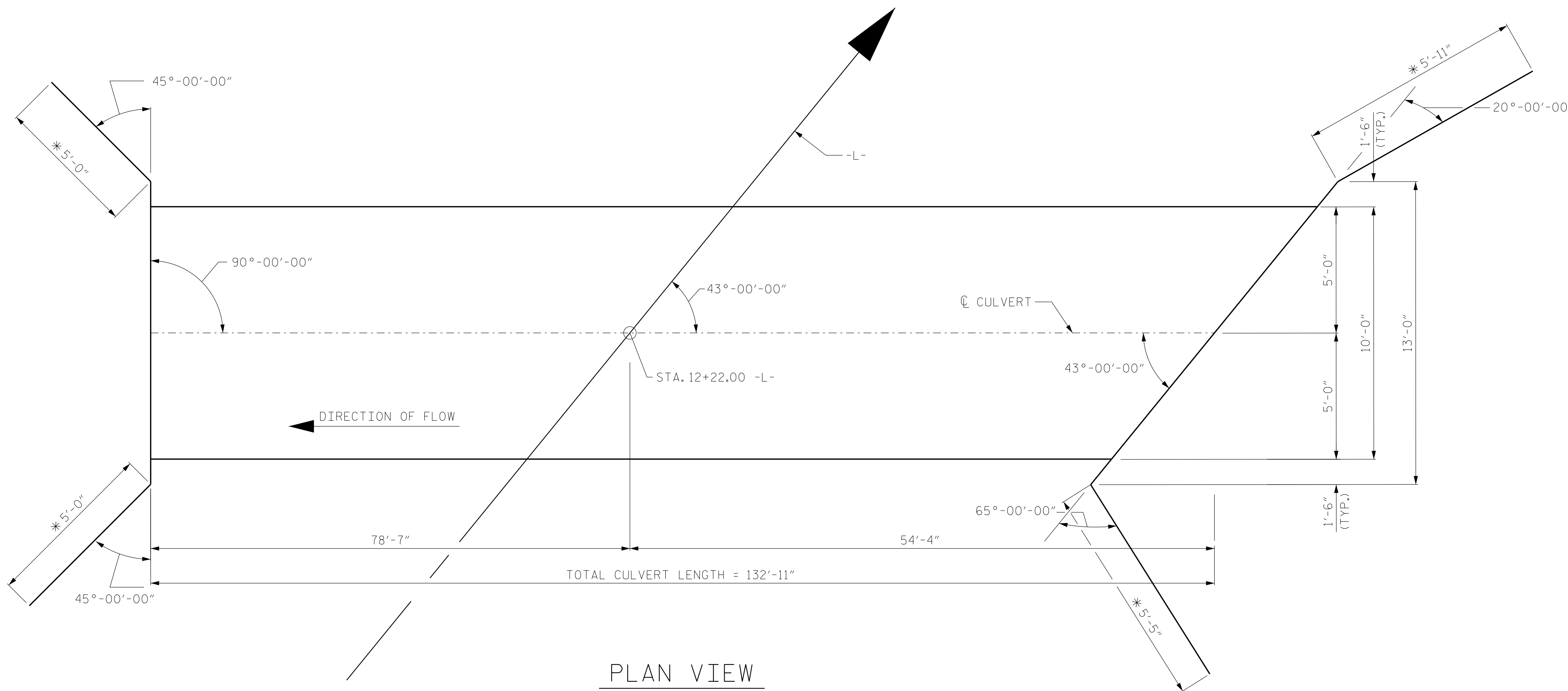


CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION

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



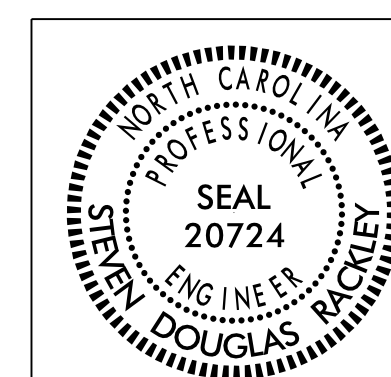
PLAN VIEW

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

PROJECT NO. DF15712.2018804  
CATAWBA COUNTY  
STATION: 12+22.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

10'-0" X 5'-2"  
ALUMINUM  
ARCH CULVERT  
43°-00'-00" SKEW



7/12/2021

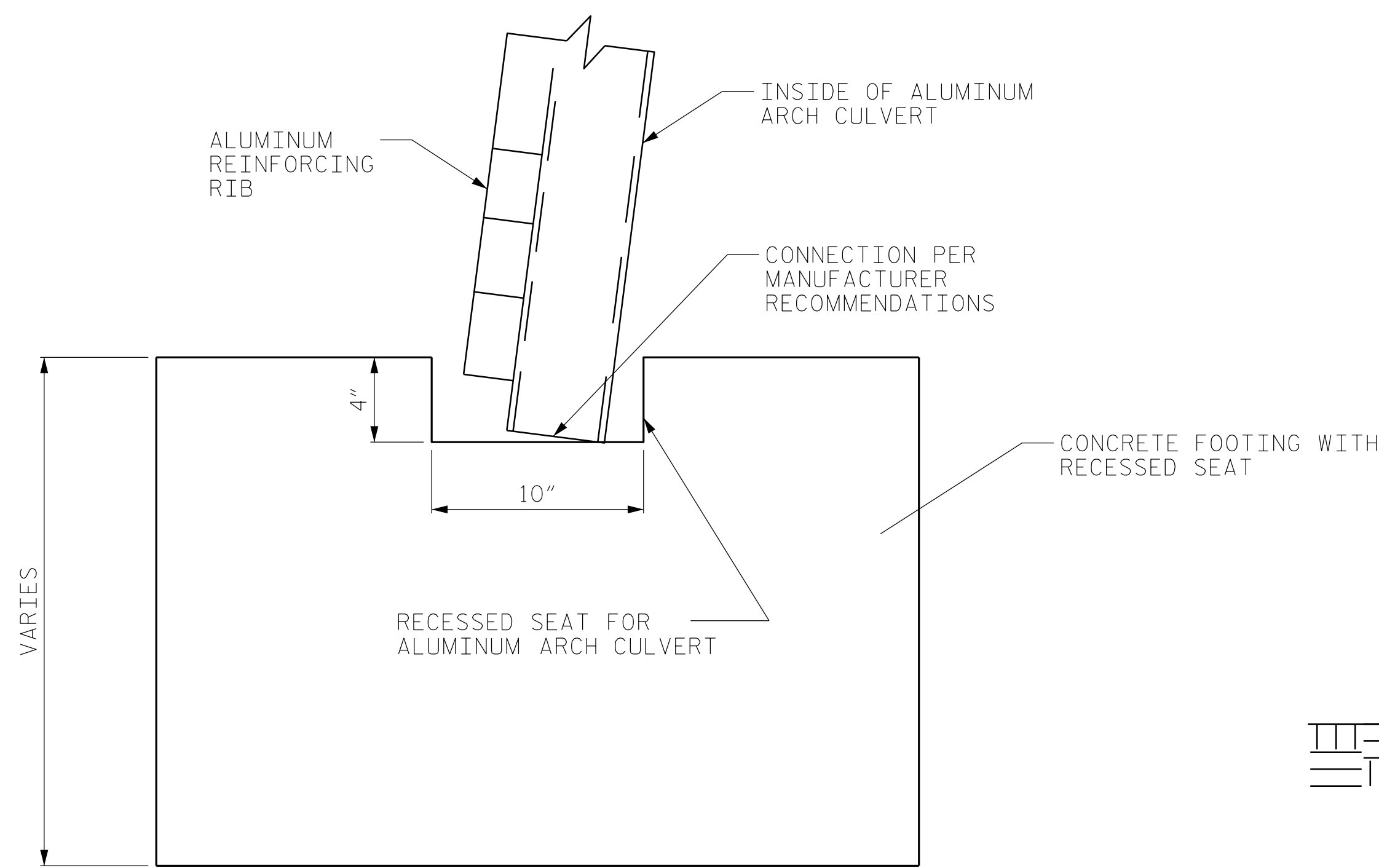
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2			4				4

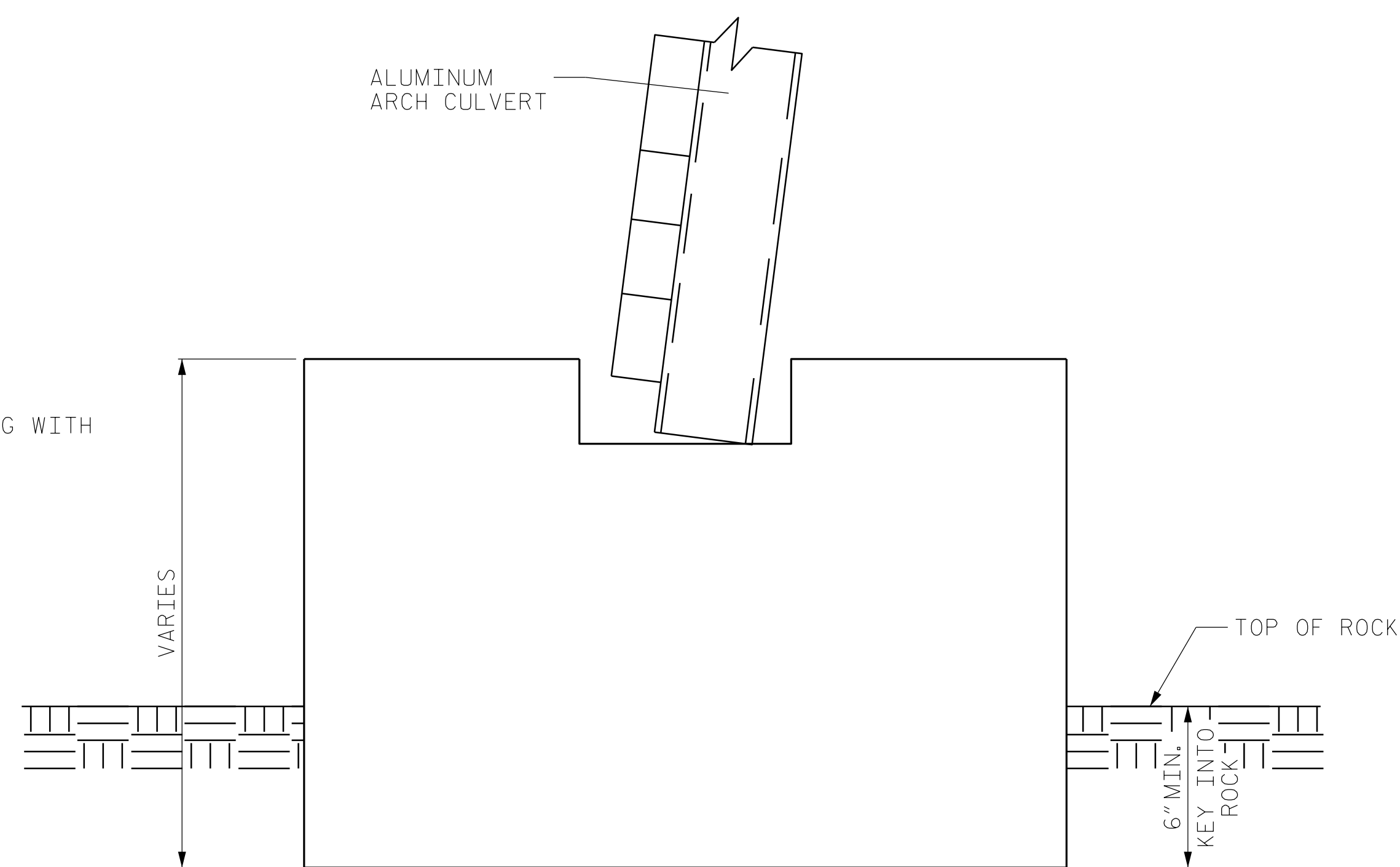
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CHECKED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
DESIGN ENGINEER OF RECORD: \_\_\_\_\_ DATE : \_\_\_\_\_

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.

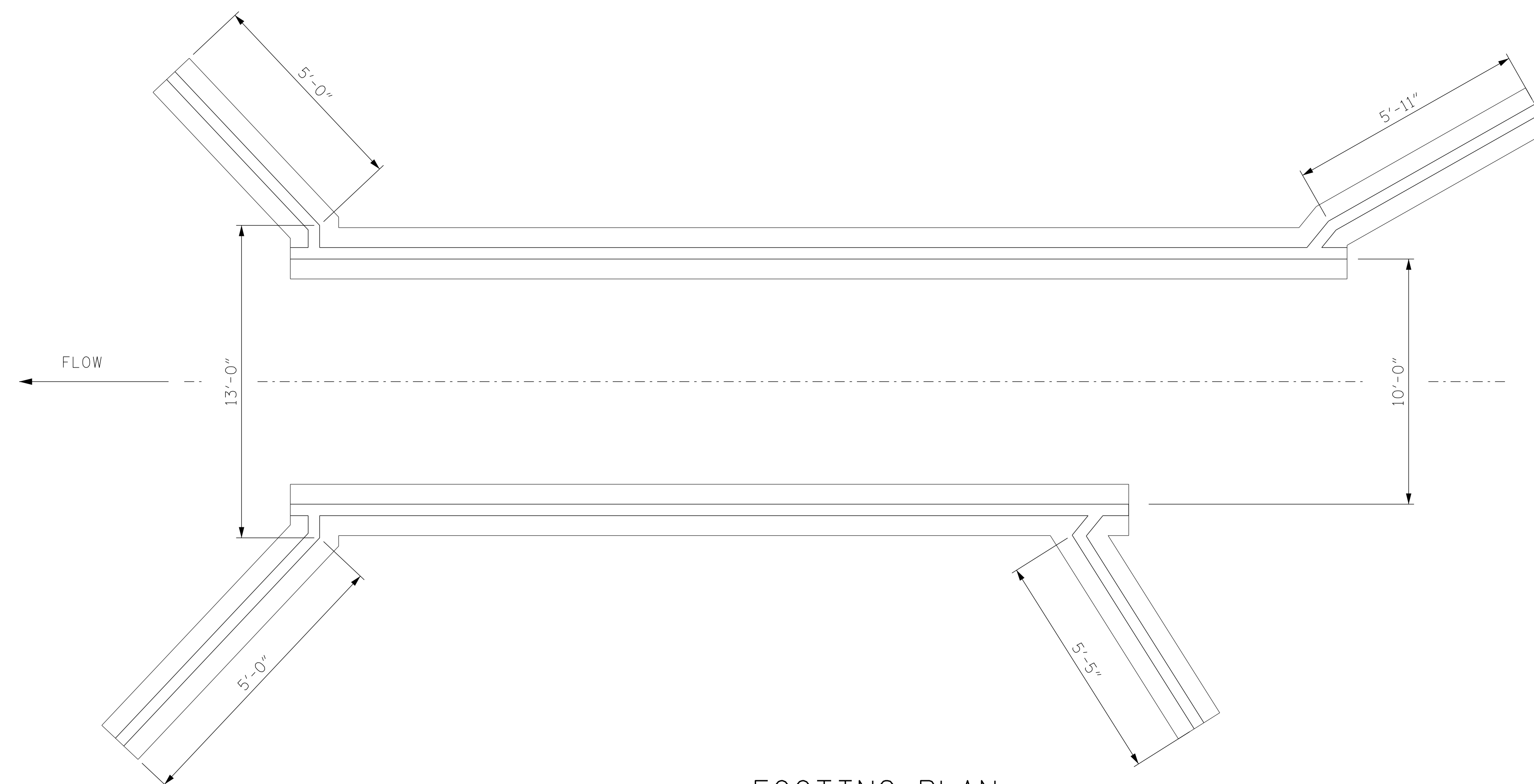


KEYWAY DETAIL



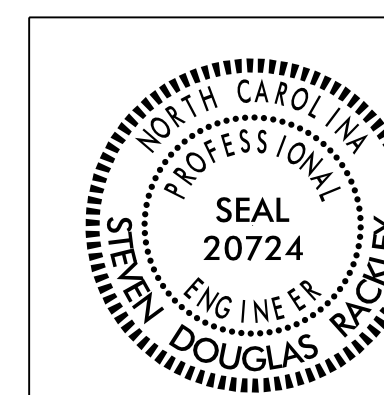
FOOTING DETAIL

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



FOOTING PLAN

PROJECT No. DF15712.2018804  
 CATAWBA COUNTY  
 STATION: 12+22.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

10'-0" X 5'-2"  
 ALUMINUM  
 ARCH CULVERT  
 43°-00'-00" SKEW

DRAWN BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 CHECKED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 DESIGN ENGINEER OF RECORD: \_\_\_\_\_ DATE : \_\_\_\_\_

7/12/2021

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

## 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		
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 2012 "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.