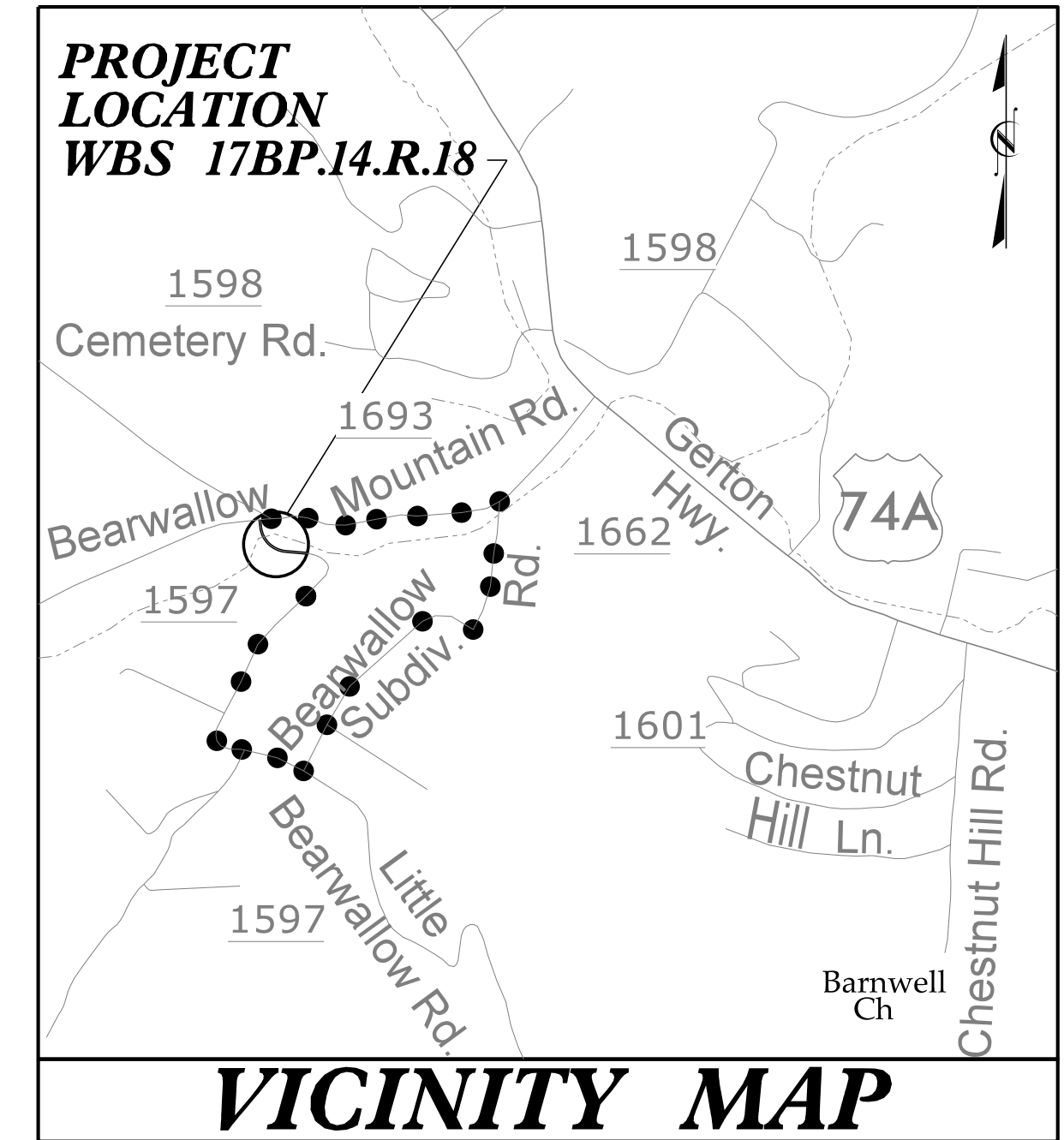


4/20/2012

**PROJECT: WBS 17BP.14.R.18**

**CONTRACT: DN00151**

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Conventional Symbols

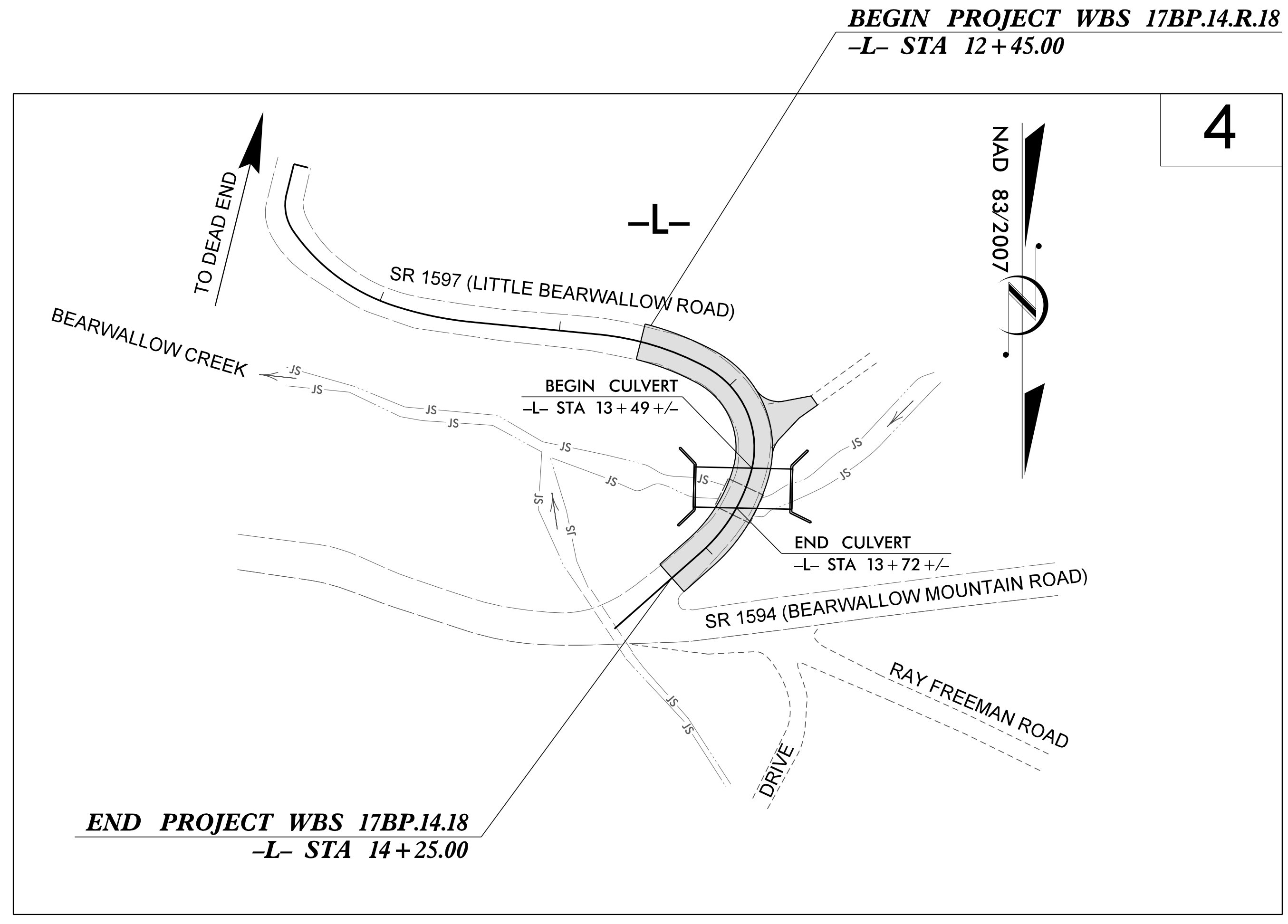
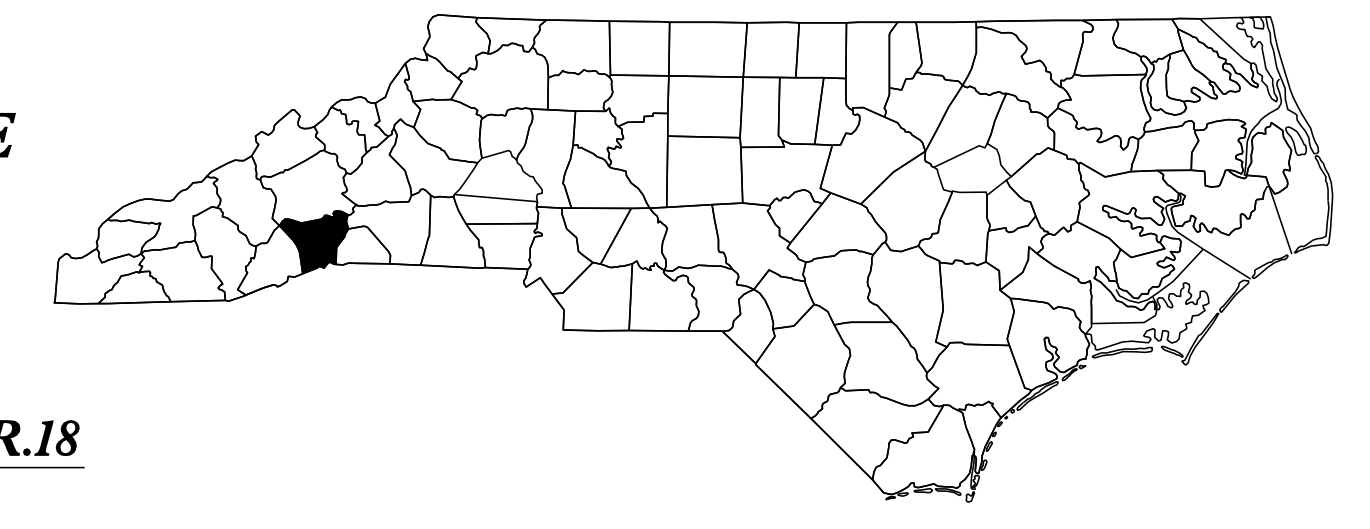


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

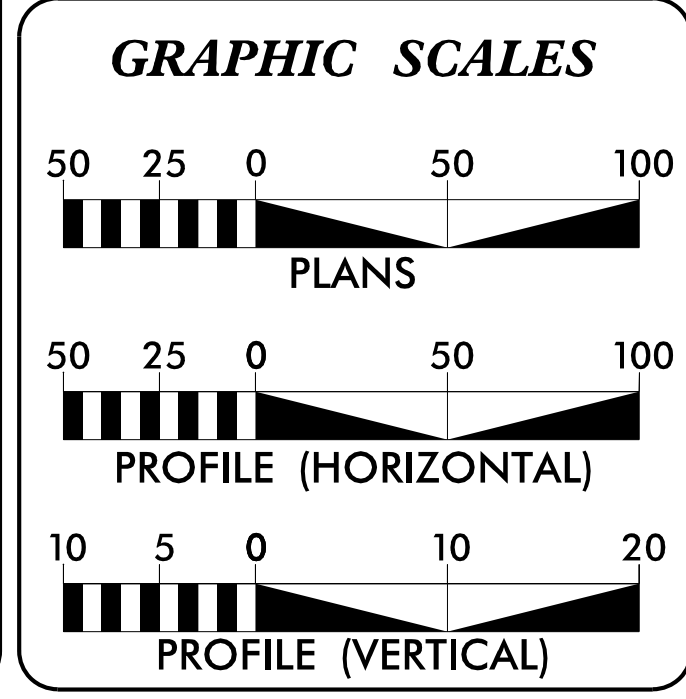
**HENDERSON COUNTY**

**LOCATION: BRIDGE NO. 261 ON SR 1597 (LITTLE BEARWALLOW ROAD)  
OVER BEARWALLOW CREEK  
.02 MILES SOUTH OF JUNCTION OF SR 1594  
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.18	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.14.R.18		P.E., ROW, UTIL	
17BP.14.R.18		CONST.	



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.



**DESIGN DATA**

ADT 2008 =	50
ADT 2025 =	100
DHV =	N/A %
D =	N/A %
T =	N/A % *
V =	20 MPH
* (TTST 0% + DUAL 0%)	
FUNC CLASS =	RURAL LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT WBS 17BP.14.R.18 =	0.030 MILES
LENGTH STRUCTURE PROJECT WBS 17BP.14.R.18 =	0.004 MILES
TOTAL LENGTH PROJECT WBS 17BP.14.R.18 =	0.034 MILES

NCDOT Contact:  
JOSHUA B. DEYTON, P.E.

Prepared in the Office of  
DRMP, INC.  
5950 FAIRVIEW ROAD, SUITE 320  
CHARLOTTE, NORTH CAROLINA 28210  
(704) 332-2289 NC LICENSE NO. C-2213

<b>RIGHT OF WAY DATE:</b> MARCH 14, 2014	<b>JAMES E. BECK, P.E.</b> PROJECT ENGINEER
<b>LETTING DATE:</b>	<b>MICHAEL D. HAGE, P.E.</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

Seal: NORTH CAROLINA PROFESSIONAL ENGINEERS SEAL 026971 JOSHUA G. DALRYMPLE

DocuSigned by: Joshua G. Dalrymple  
E4AD4F3FA914B1

SIGNATURE: \_\_\_\_\_

**ROADWAY DESIGN ENGINEER**

Seal: NORTH CAROLINA PROFESSIONAL ENGINEERS SEAL 026815 JAMES E. BECK

DocuSigned by: James E. Beck, P.E.  
15685C94C5D14AB

SIGNATURE: \_\_\_\_\_

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

Note: Not to Scale

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

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

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

## BUILDINGS AND OTHER CULTURE:

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

## HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▭
Proposed Lateral, Tail, Head Ditch	← FLOW
False Sump	◊

## RAILROADS:

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

## RIGHT OF WAY:

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

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Curb Ramp	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	⊕
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	PH
H-Frame Pole	●
Recorded U/G Power Line	P
Designated U/G Power Line (S.U.E.*)	P
TELEPHONE:	
Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	☐
Telephone Pedestal	☐
Telephone Cell Tower	●
U/G Telephone Cable Hand Hole	PH
Recorded U/G Telephone Cable	T
Designated U/G Telephone Cable (S.U.E.*)	T
Recorded U/G Telephone Conduit	TC
Designated U/G Telephone Conduit (S.U.E.*)	TC
Recorded U/G Fiber Optics Cable	T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	T FO

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

TV:	
TV Satellite Dish	☼
TV Pedestal	☐
TV Tower	⊗
U/G TV Cable Hand Hole	PH
Recorded U/G TV Cable	TV
Designated U/G TV Cable (S.U.E.*)	TV
Recorded U/G Fiber Optic Cable	TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	TV FO

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

SANITARY SEWER:	
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
Recorded SS Forced Main Line	RSS
Designated SS Forced Main Line (S.U.E.*)	RSS

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

# SURVEY CONTROL SHEET 44-0261 FINAL

FINAL - PERMANENT DRAINAGE EASEMENT - MARKER

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+47.24	-22.50	645524.0795	1001975.4509
L	12+95.00	-37.00	645537.8630	1001913.7959
L	13+46.00	-72.48	645623.7400	1001850.3667
L	13+76.00	-52.83	645666.7046	1001887.4595
L	14+30.00	22.50	645661.2528	1001984.9721
L	14+25.00	55.00	645633.5913	1002002.7512
L	12+53.00	50.75	645595.9183	1001990.6555
L	12+27.25	22.50	645564.1812	1002003.8678

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		BL-1	645398.9070	1002149.5530	2783.04	OUTSIDE PROJECT LIMITS	
2		BL-2	645511.9390	1002162.9890	2778.29	10+64.57	10.24 RT
3		BL-3	645553.4230	1001934.7990	2762.24	12+90.52	11.70 LT
101		GPS-101	645716.5628	1001934.0265	2769.95	14+28.46	52.68 LT

.....  
 BMI ELEVATION = 2759.67  
 N 645617 E 1001900  
 L STATION 13+47.00 22 LEFT  
 RR SPIKE IN 12' MAPLE  
 .....

FINAL -L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	645447.8775	1002173.4657
PC	10+16.79	645464.1751	1002177.5002
PCC	10+38.28	645484.6850	1002173.7250
PCC	11+06.90	645525.1497	1002119.7688
PT	11+51.29	645534.3912	1002076.4402
PC	12+21.45	645541.2133	1002006.6160
PCC	12+83.65	645559.2113	1001947.5055
PCC	13+51.11	645616.6636	1001922.9459
PT	14+03.88	645660.8135	1001950.5034
POT	14+67.04	645702.6413	1001997.8200

**NCDOT BASELINE STATION "BL2"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 645511.9390  
 E = 1002162.9890  
 ELEV. = 2778.29

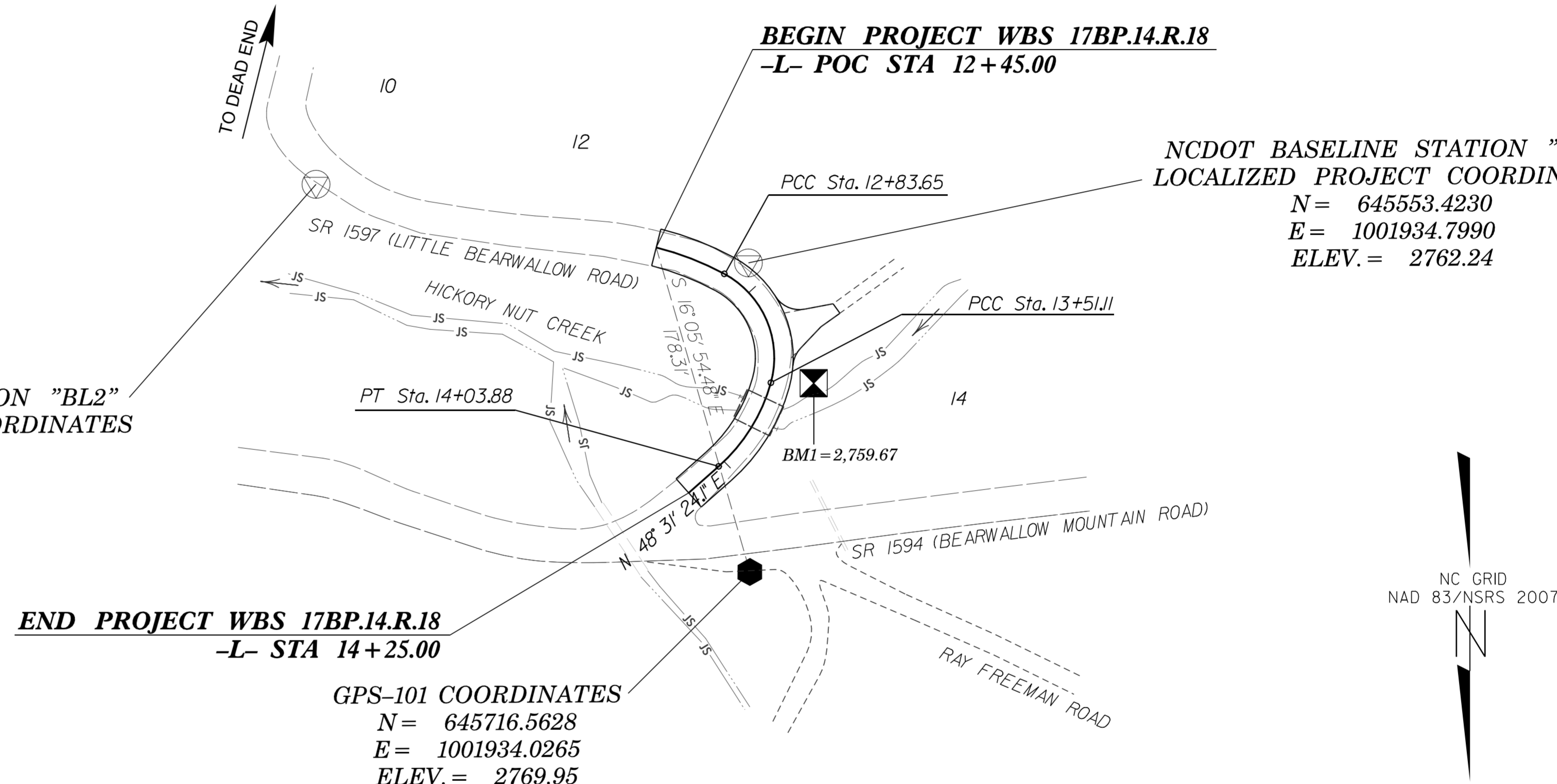
**NCDOT BASELINE STATION "BL1"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 645398.9070  
 E = 1002149.5530  
 ELEV. = 2783.04

**NCDOT BASELINE STATION "BL3"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 645553.4230  
 E = 1001934.7990  
 ELEV. = 2762.24

**END PROJECT WBS 17BP.14.R.18**  
**-L- STA 14+25.00**

**BEGIN PROJECT WBS 17BP.14.R.18**  
**-L- POC STA 12+45.00**

**GPS-101 COORDINATES**  
 N = 645716.5628  
 E = 1001934.0265  
 ELEV. = 2769.95



### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-101" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 645716.5628 (ft) EASTING: 1001934.0265 (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997518434 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-101" TO -L- STATION 12+45.00 IS S 16° 05' 54.48" E 178.31'

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

STRUCTURE: 44-0261  
 COUNTY: HENDERSON

**GEOIDAL MODEL - G09NC**  
**NOTE: DRAWING NOT TO SCALE**

### NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 440261\_LS\_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

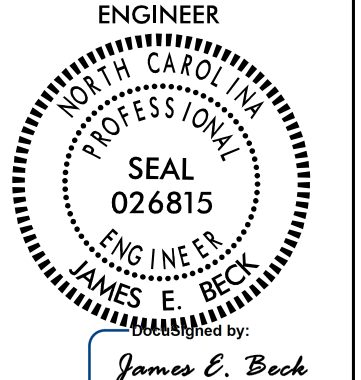
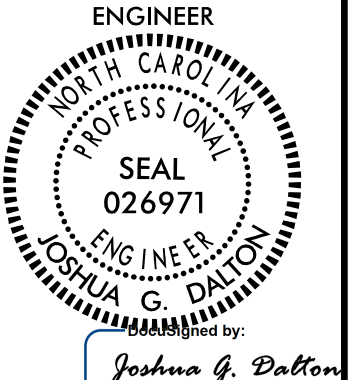
⊗ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

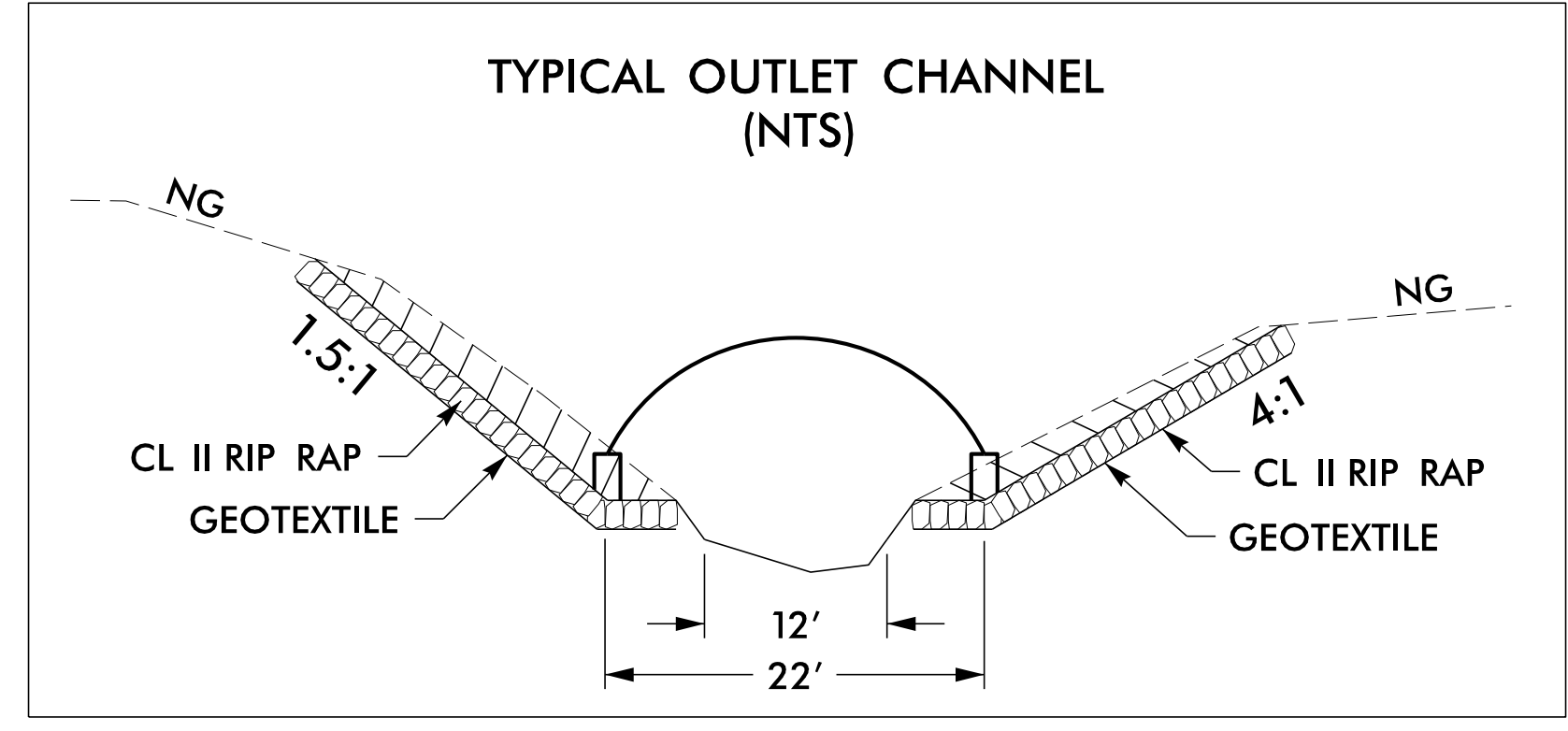
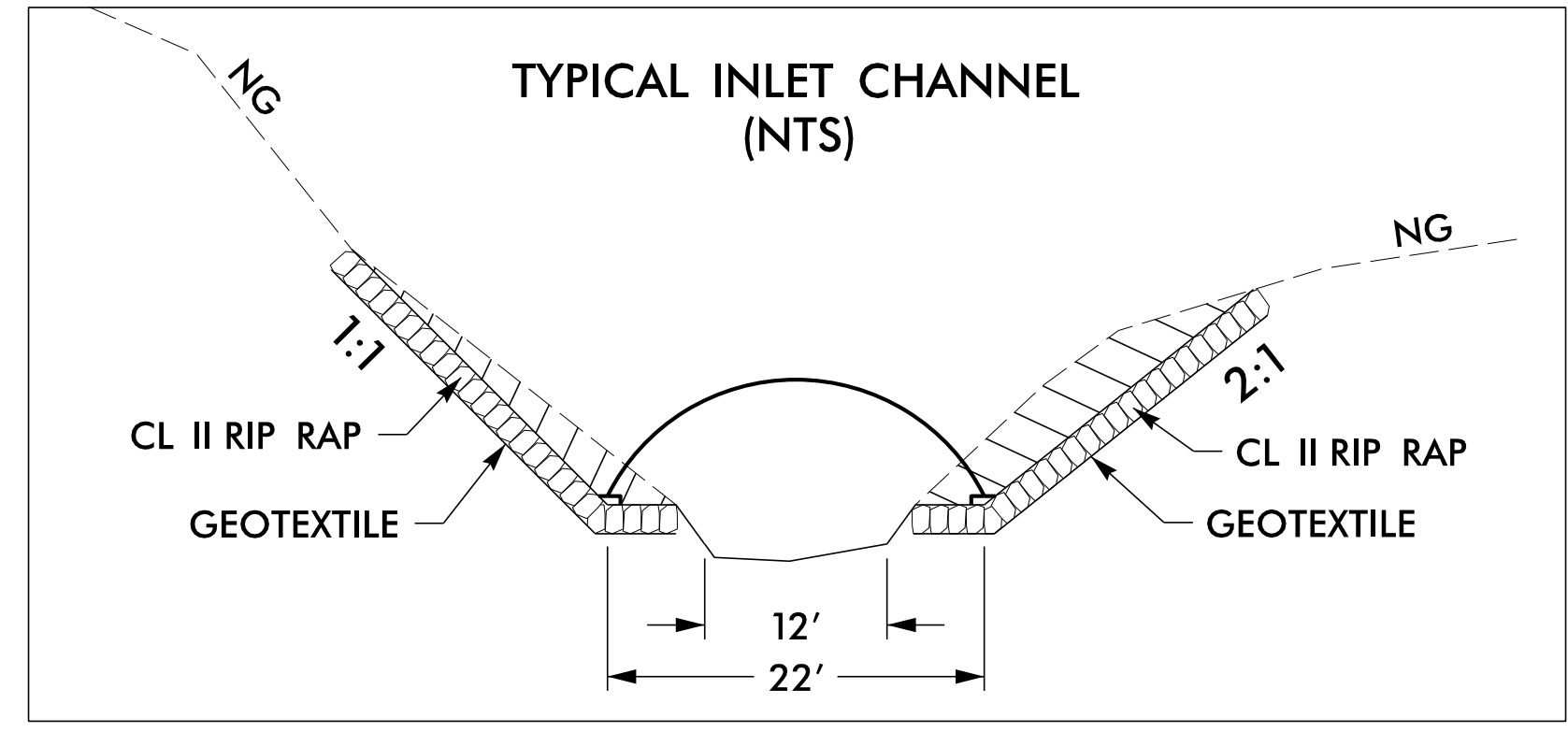
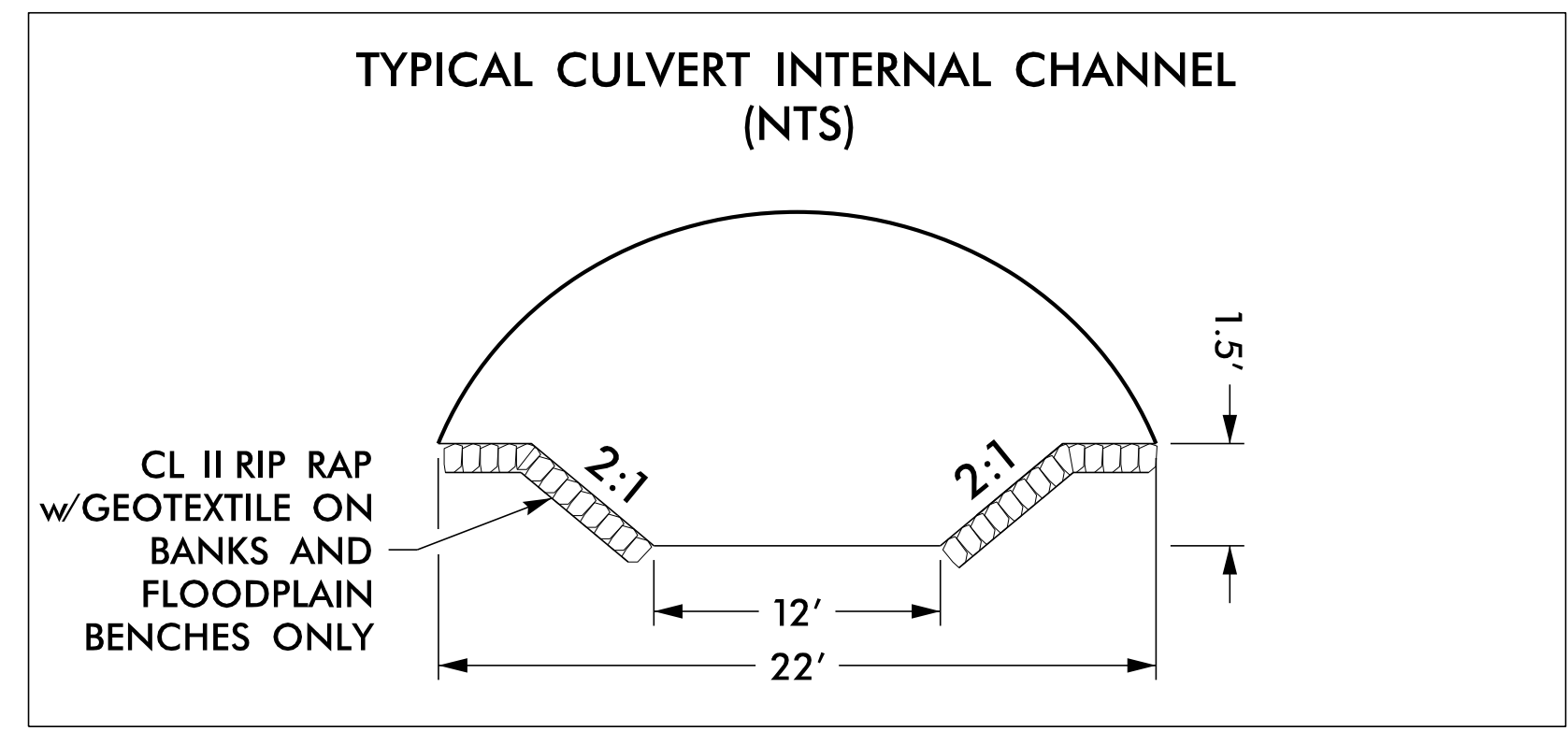
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 6/2/09

8/17/99

REVISIONS

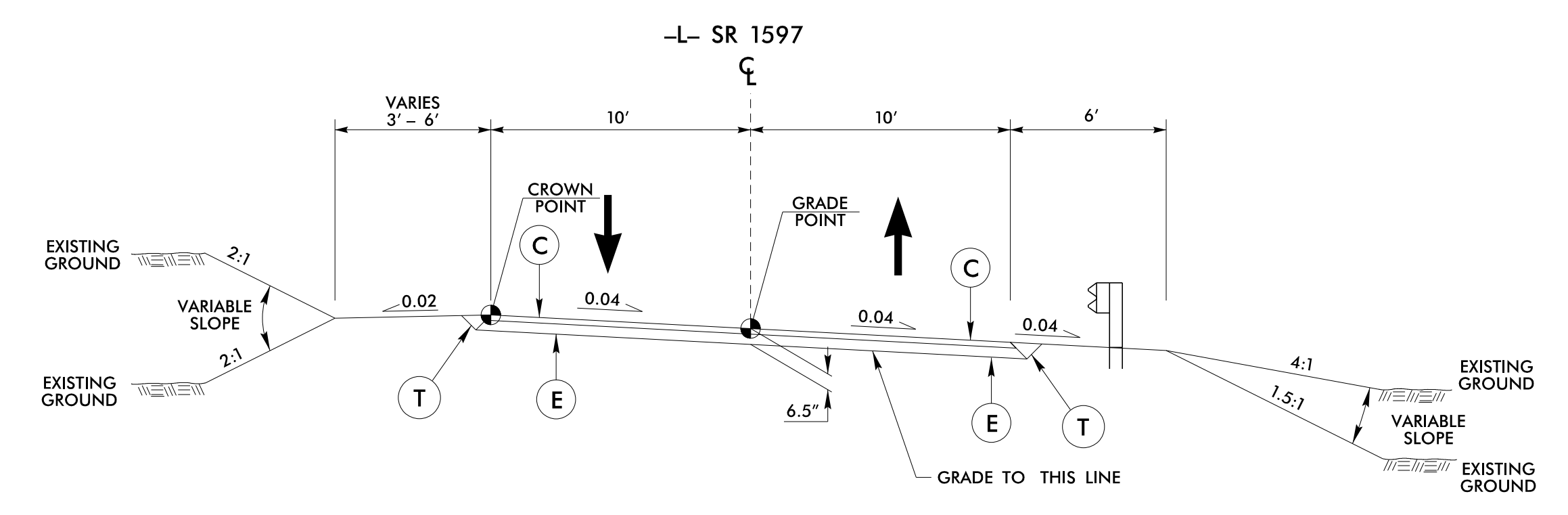
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PROJECT REFERENCE NO. 17BP-14-R-18	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER  James E. Beck	HYDRAULICS ENGINEER  Joshua G. Dalton

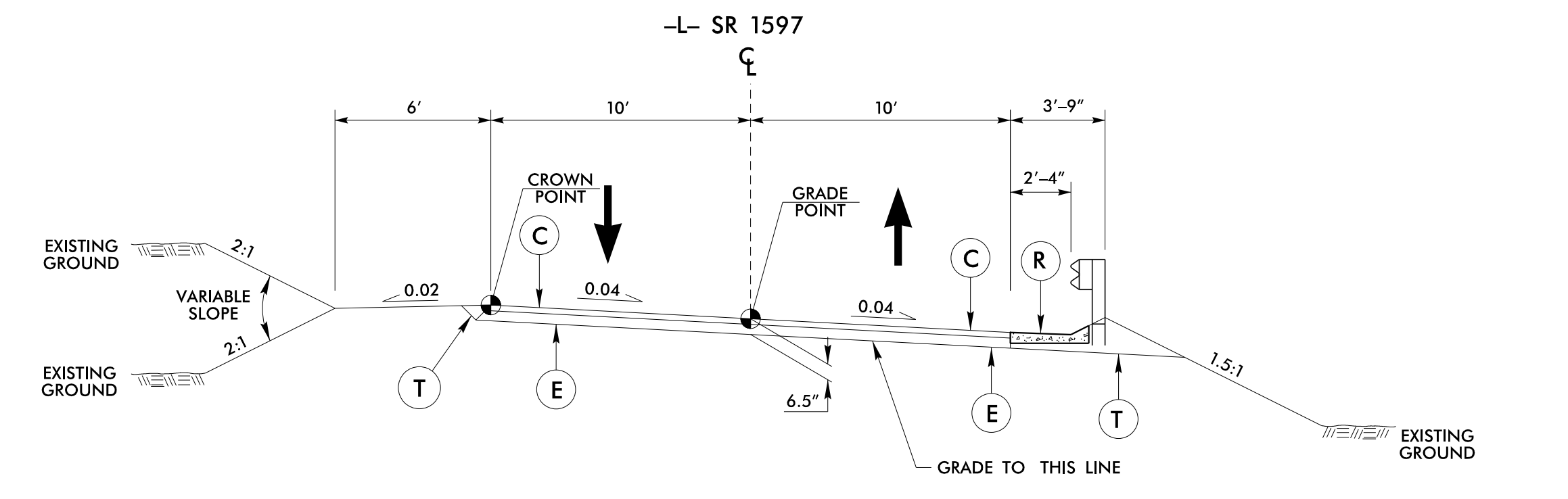


PAVEMENT SCHEDULE	
C	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	EXPRESSWAY GUTTER
T	EARTH MATERIAL

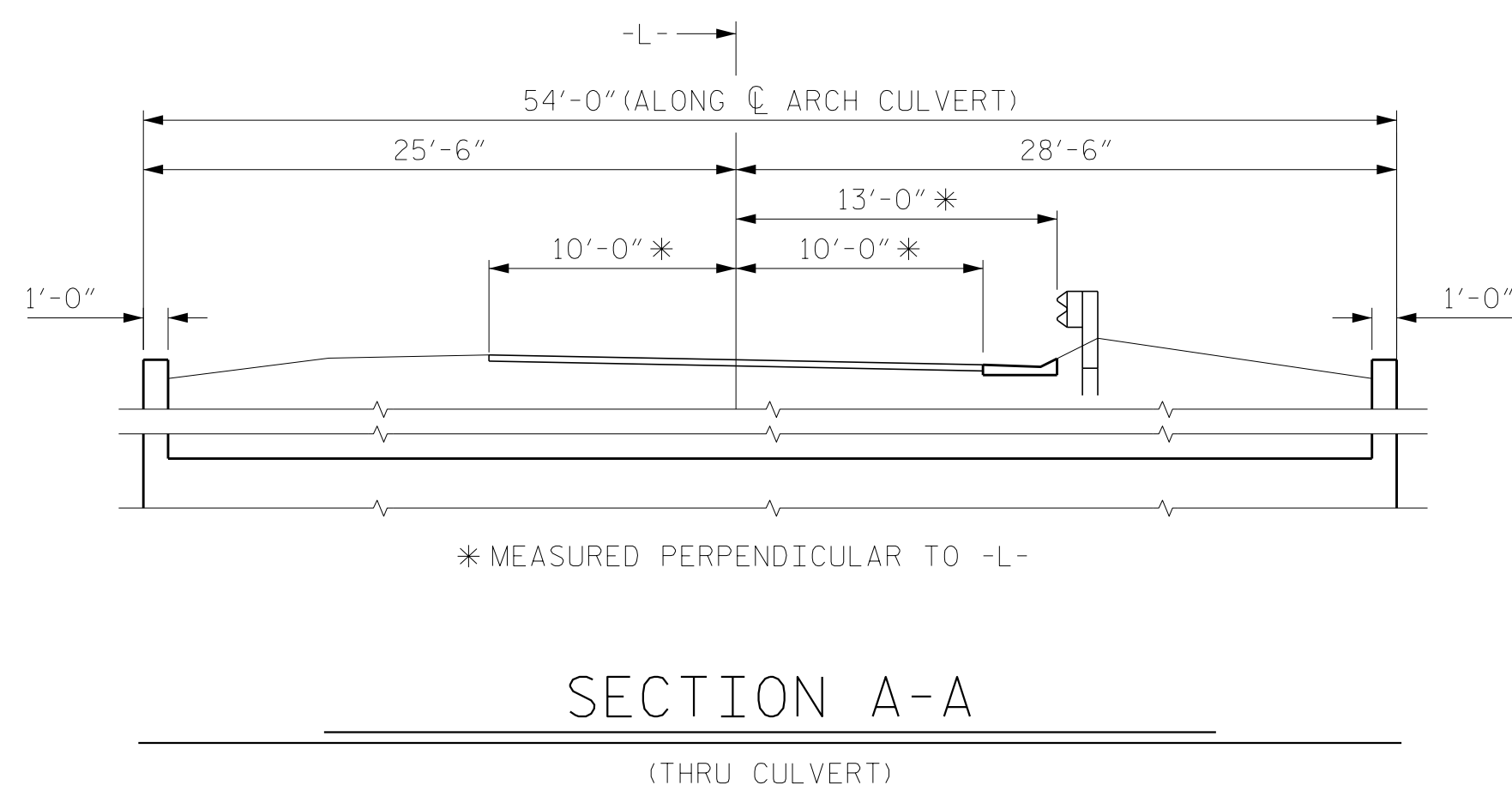
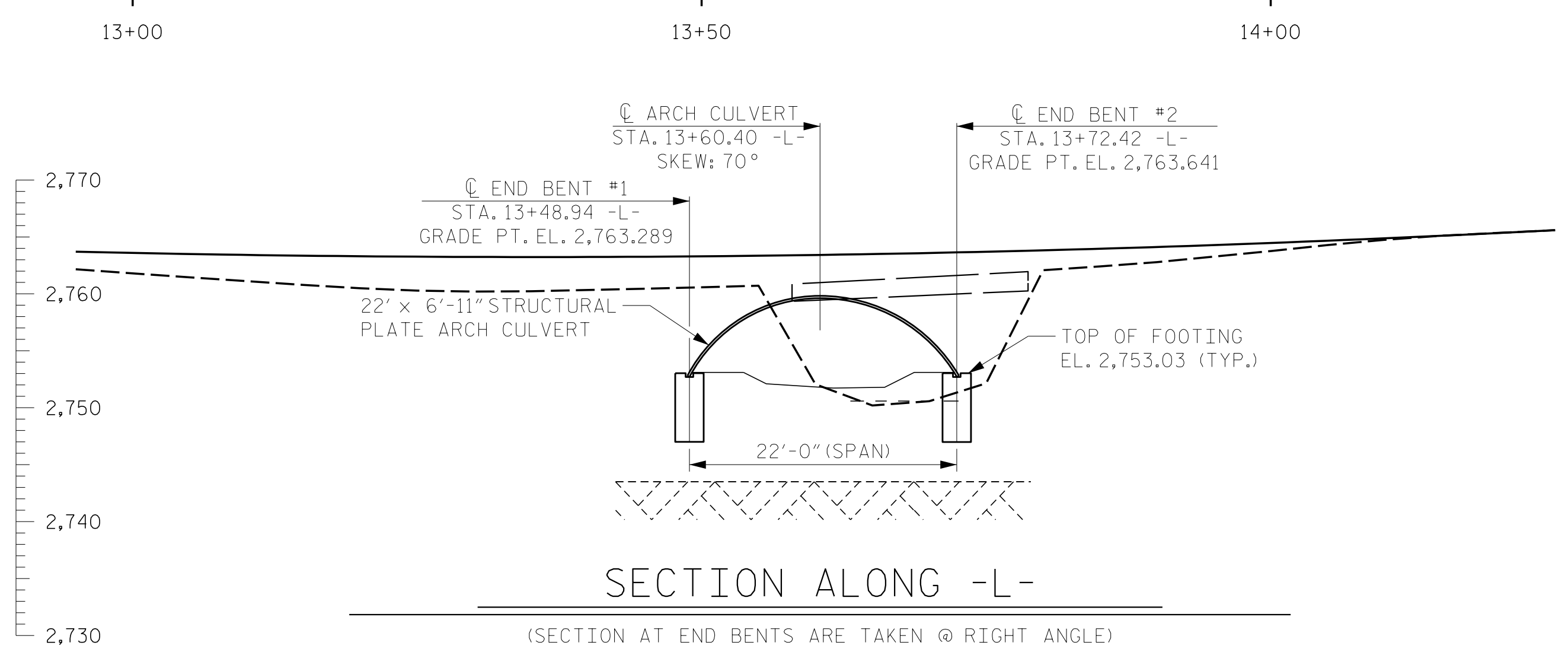
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1  
 -L- STA 12+45.00 TO -L- STA 12+83.65  
 -L- STA 14+03.88 TO -L- STA 14+25.00



TYPICAL SECTION NO. 2  
 -L- STA 12+83.65 TO -L- STA 14+03.88



**NOTES**

1. ASSUME LIVE LOAD = HL-93 OR ALTERNATE.
2. 22' x 6'-11" STRUCTURAL PLATE ARCH CULVERT AND WING WALLS TO BE DESIGNED BY A N.C. REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.
3. REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER, IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
4. FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.
5. FOR COMPLETE HORIZONTAL AND VERTICAL ALIGNMENT DATA, SEE ROADWAY PLANS.

**EXISTING BRIDGE**

SUPERSTRUCTURE: 1 SPAN @ 18'-8" TIMBER DECK  
SUBSTRUCTURE: TIMBER ABUTMENTS AND TIMBER PILES

**HYDRAULIC DATA**

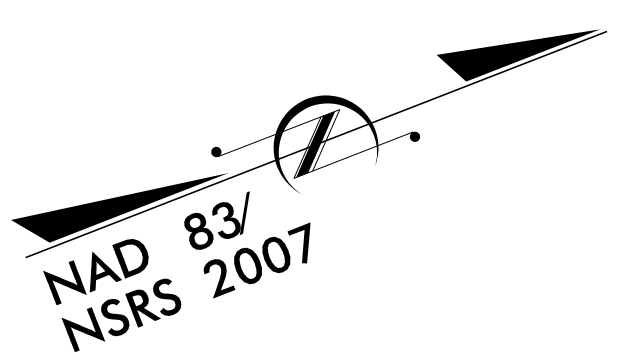
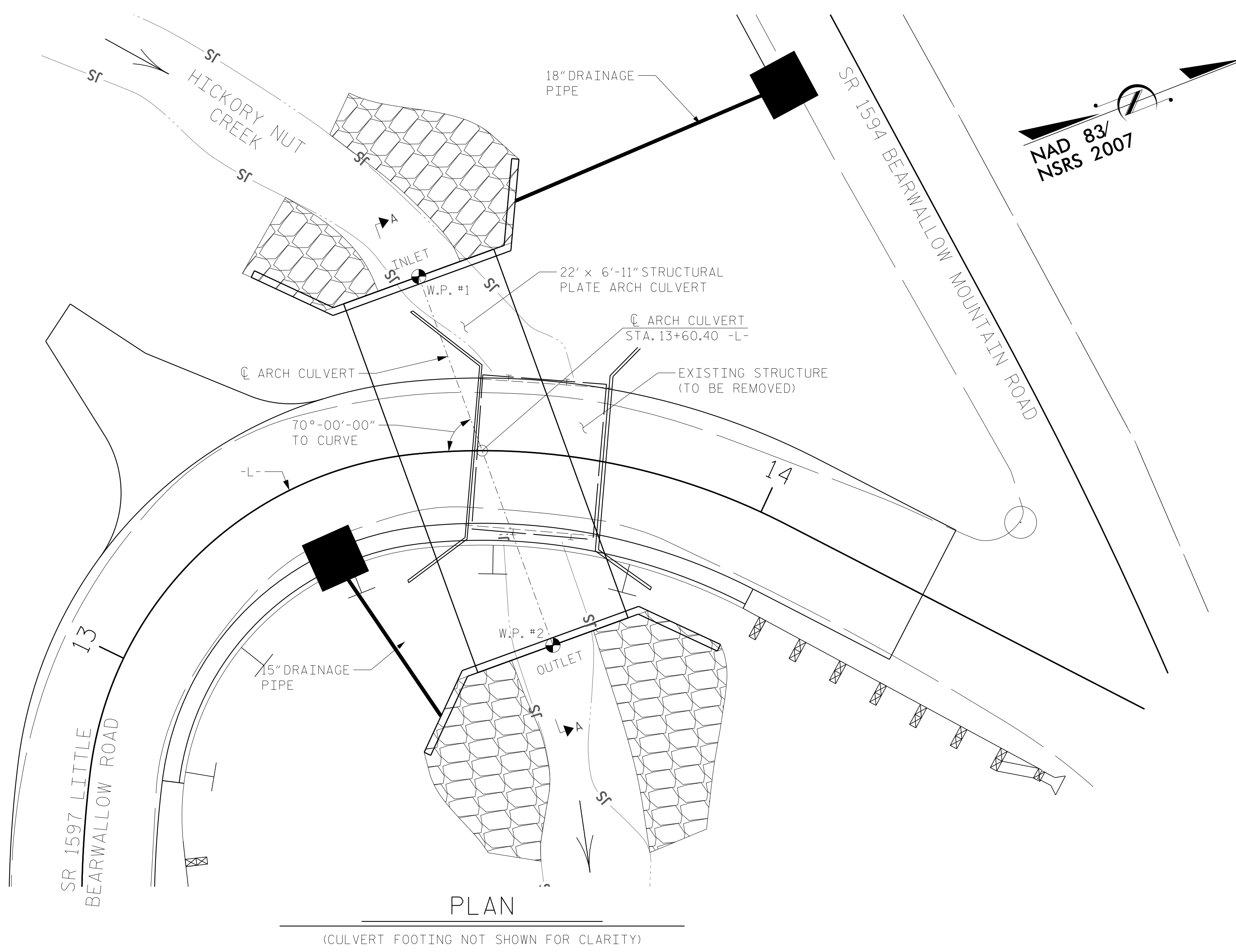
DESIGN DISCHARGE	= 490 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEV.	= 2,757.80 FT.
DRAINAGE AREA	= 0.89 SQ. MI.
BASE FLOOD DISCHARGE (Q <sub>100</sub> )	= 800 CFS
BASE FLOOD HIGH WATER ELEV.	= 2,760.68 FT.

**OVERTOPPING INFO.**

ELEVATION	= 2,762.90 FT.
FREQUENCY	= 500+ YR.
DISCHARGE	= 1,200 CFS

**WORK POINTS**

WORK POINT	STATION	OFFSET
#1	13+53.50 -L-	24.29' LT.
#2	13+74.09 -L-	26.05' RT.



PROJECT NO. 44-0261  
HENDERSON COUNTY  
STATION: 13+60.40 -L-

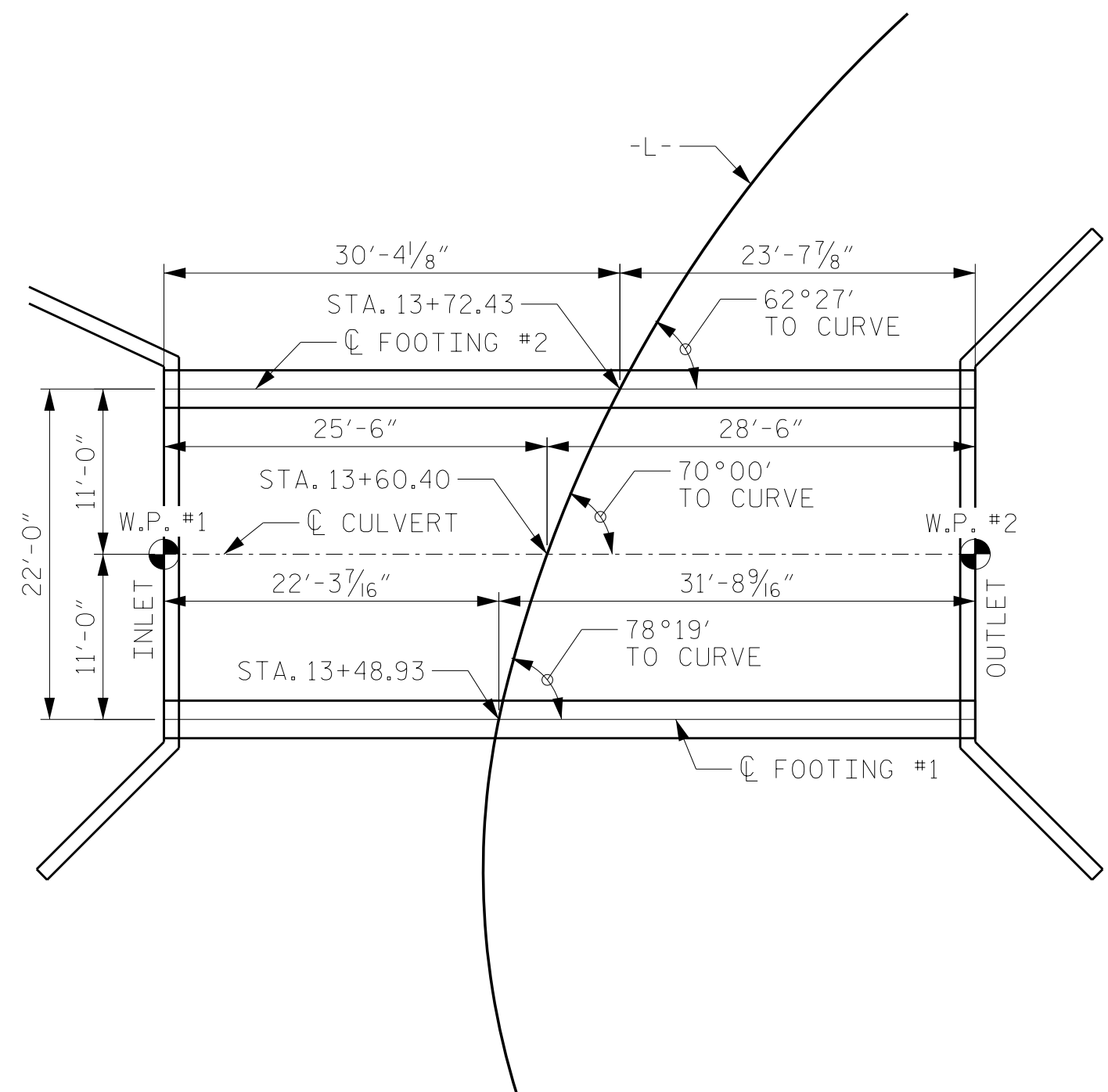
SHEET 2 OF 2  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**BRIDGE #261 ON SR 1597  
OVER HICKORY NUT  
CREEK**  
20' CL. ROADWAY 70°-00' SKEW

**DRMP**  
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS  
941 LAKE BALDWIN LANE, ORLANDO, FLORIDA 32814  
PHONE: (407) 896-0594 FAX: (407) 896-4836  
NORTH CAROLINA LICENSE NO. C-2213



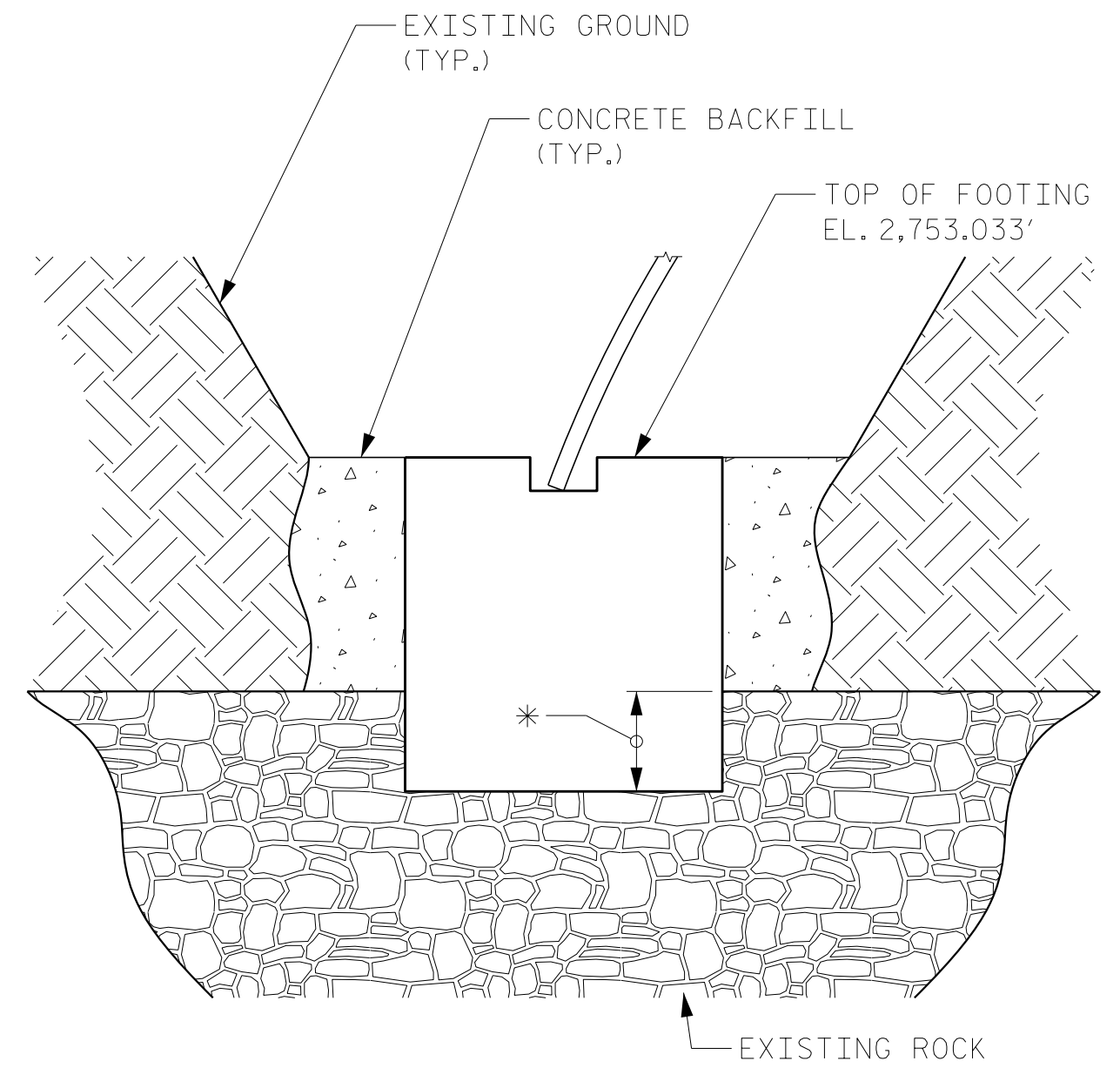
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	2-A	
1			3			TOTAL SHEETS	
2			4				

DRAWN BY : J. TUELL DATE : 08-2013  
CHECKED BY : J. HERRERA DATE : 12-2013



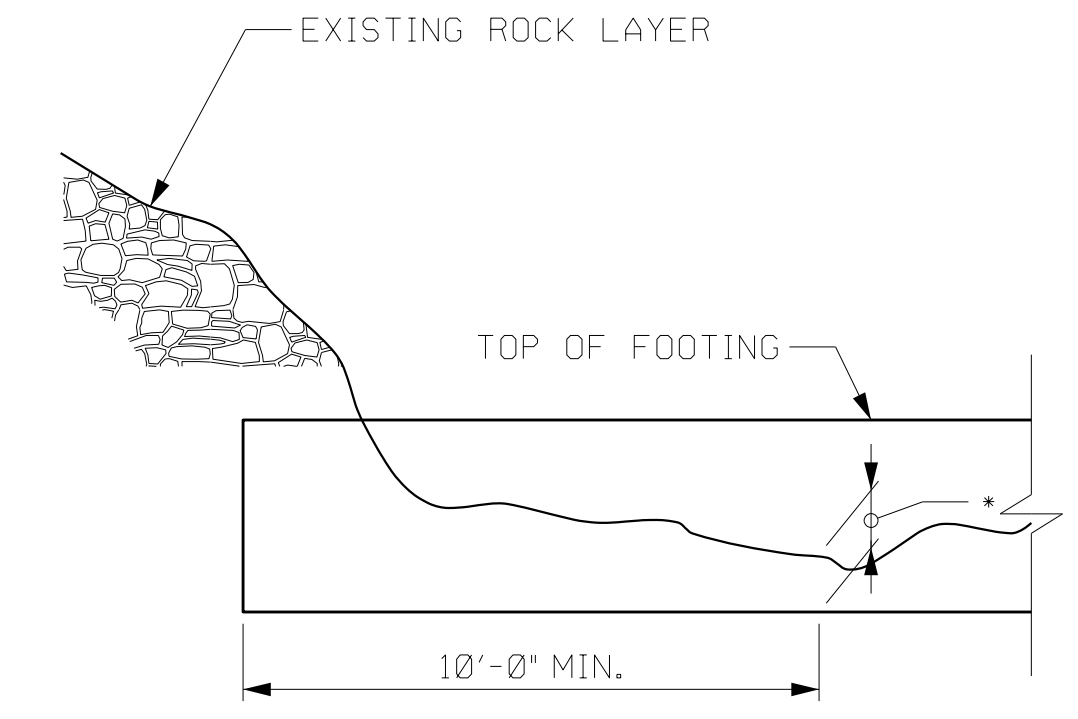
FOUNDATION PLAN

NOTE: WING WALLS AND WING WALL FOOTINGS SHALL BE DESIGNED BY CULVERT SUPPLIER. WING WALL FOOTINGS SHALL ATTACH TO CULVERT FOOTING.



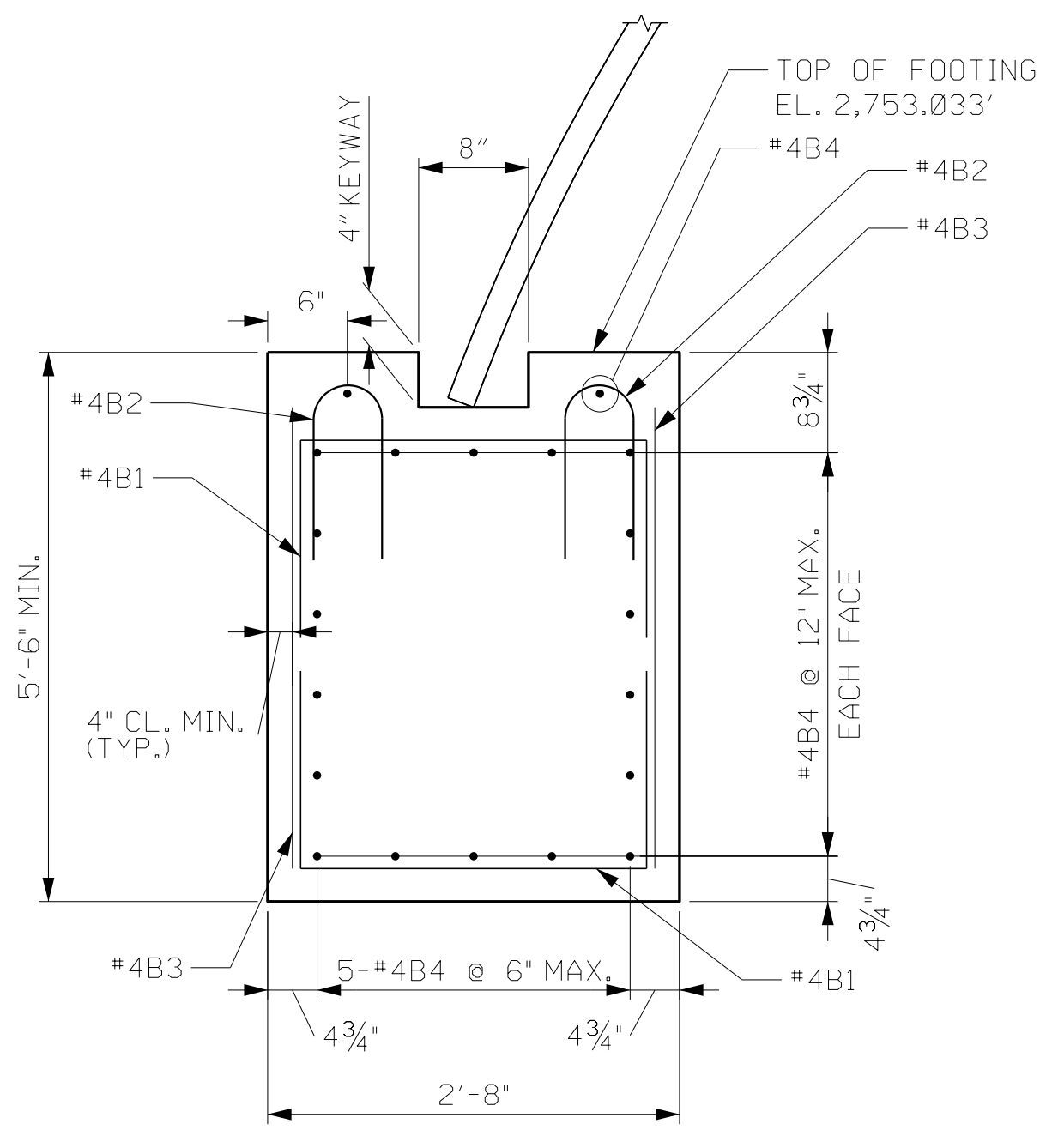
DETAIL OF CONCRETE BACKFILL

(SEE SPECIAL PROVISIONS)  
\* WHERE INDICATED IN SECTION B-B,  
6" MIN. FOR CRYSTALLINE ROCK OR  
12" MIN. FOR WEATHERED ROCK.



SECTION B-B

\* 6" MIN. FOR CRYSTALLINE ROCK OR  
12" MIN. FOR WEATHERED ROCK.



FOOTING SECTION

BAR TYPES		BILL OF REINFORCING					
	1	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
	2	B1	432	4	1	4'-10"	1395
		B2	432	4	2	3'-4 1/4"	968
		*B3	432	4	STR	10'-0"	2886
		B4	40	4	STR	53'-4"	1426
TOTAL REINFORCING STEEL						6,675 LBS.	
CLASS AA CONCRETE - 4,000 PSI							
FOOTINGS						CU. YDS.	57.8
TOTAL						CU. YDS.	57.8
*BARS TO BE FIELD CUT TO MEET ADEQUATE CLEARANCE							
NOTES:							
1. CONCRETE QUANTITY IS CALCULATED USING THE MINIMUM DEPTH SHOWN. ACTUAL DEPTH MAY VARY TO ACHIEVE THE REQUIRED MINIMUM EMBEDMENT INTO ROCK AS SHOWN IN SECTION B-B.							
2. ADDITIONAL #4B4 BARS MAY BE REQUIRED WHERE FOOTING DEPTH INCREASES. MAXIMUM SPACING BETWEEN BARS ON EACH FACE SHALL BE AS SHOWN IN THE FOOTING SECTION.							
ALL BAR DIMENSIONS ARE OUT TO OUT.							

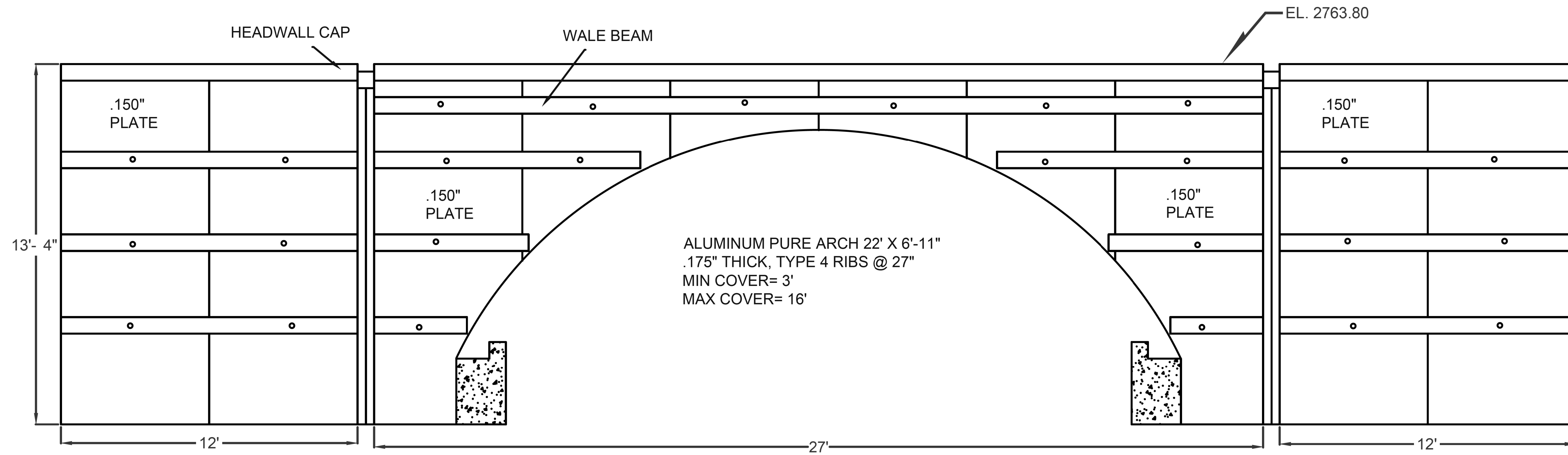
DRAWN BY : J. TUELL DATE : 08-2013  
CHECKED BY : J. HERRERA DATE : 12-2013



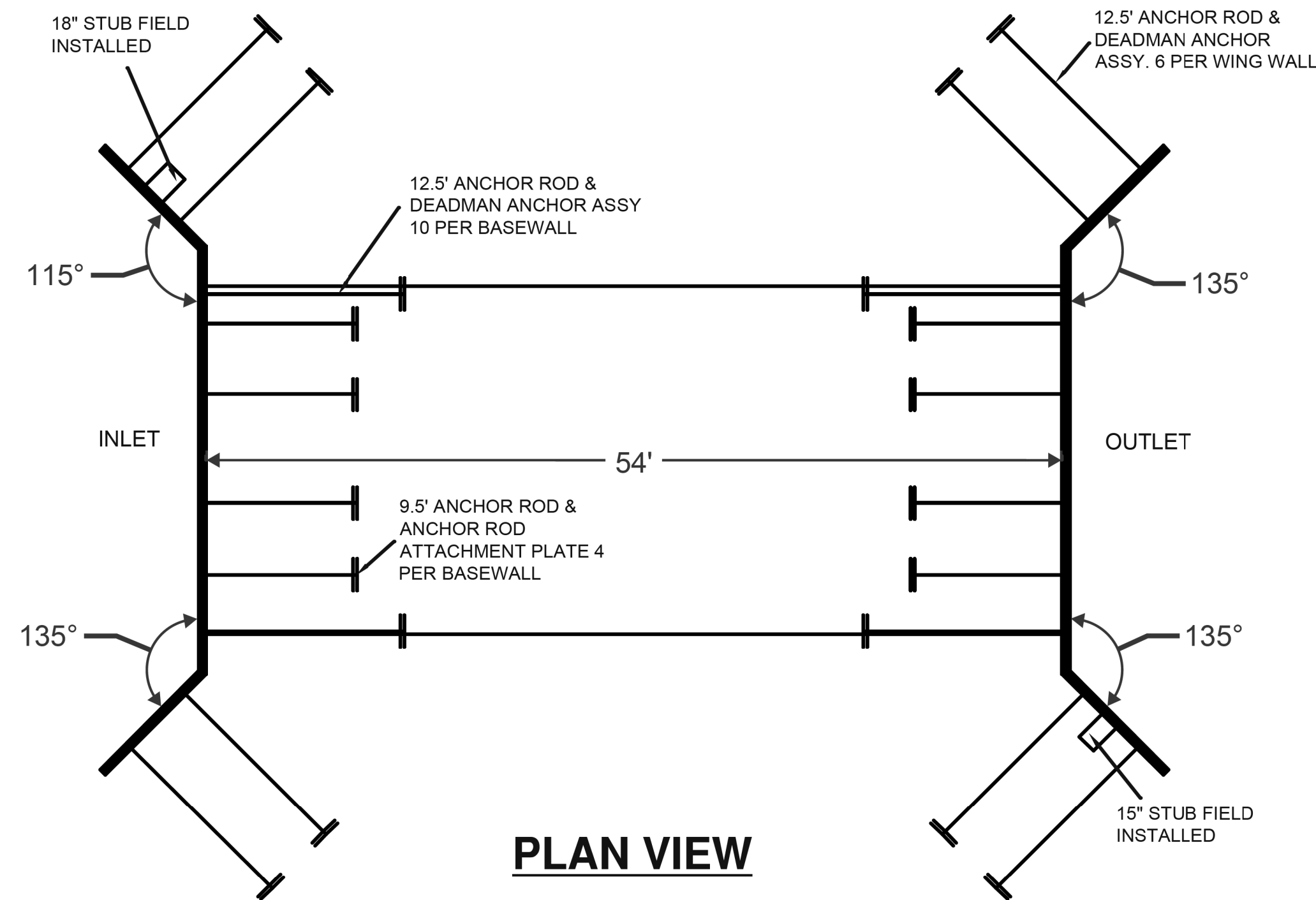
PROJECT NO. 44-0261  
HENDERSON COUNTY  
STATION: 13+60.40 -L-

SHEET OF

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STRUCTURAL PLATE ARCH CULVERT					
DETAILS AND FOUNDATION LAYOUT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. 2-B					TOTAL SHEETS



**EXPANDED END VIEW-INLET & OUTLET HEADWALL**



**PLAN VIEW**

**NOTE**

1. SEE NOTE 2 ON SHEET 2-A.

PROJECT NO. 44-0261  
HENDERSON COUNTY  
 STATION: 13+60.40 -L-

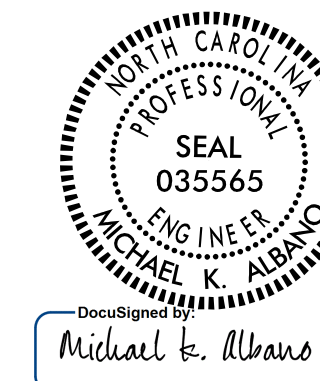
SHEET OF

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STRUCTURAL PLATE  
 ARCH CULVERT**

HEADWALL DETAILS

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



DRAWN BY : J. TUELL DATE : 08-2013  
 CHECKED BY : J. HERRERA DATE : 12-2013



12/06/07

COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: MDH DATE: 09/26/13

PROJECT REFERENCE NO. 17BP.14.R.18  
SHEET NO. 3-A

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

SUB-REGIONAL & REGIONAL  
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

NOTE: INVERT ELEVATIONS INDICATED ARE FOR BID PURPOSES ONLY AND SHALL NOT BE USED FOR PROJECT CONSTRUCTION STAKEOUT. SEE "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 300-5".

Main table for pipe and endwall details with columns for station, size, thickness, drainage pipe, C.S. pipe, R.C. pipe, endwalls, and remarks.

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

GUARDRAIL SUMMARY

Table for guardrail summary with columns for survey line, beg. sta., end sta., location, length, warrant point, total should. width, flare length, w, anchors, impact attenuator type 350, single faced guardrail, remove existing guardrail, and remove and stockpile existing guardrail.

Anchor unit deductions table showing subtotal and deductions for GRAU 350 TL-2, TYPE III, TEMP GRAU 350, and TEMP B-77.

SHOULDER BERM GUTTER SUMMARY

Table for shoulder berm gutter summary with columns for survey line, station, station, and length.

PAVEMENT REMOVAL SUMMARY

Table for pavement removal summary with columns for survey line, station, station, location, and yd.

RIGHT OF WAY AREA DATA

Table for right of way area data with columns for parcel no., property owners names, total acreage, area taken, area remaining rt., area remaining lt., const. ease., perm. drain. ease., and temp. drain. ease.

2/10/2015 11:11:04 AM W:\P-Projects\11-0481-003-Bridge-No261-NC001-17BP-14-R18-Roadway\Proj\44-0261-Rdwy\_SHT\_3-A.dgn

COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT REFERENCE NO. SHEET NO.  
17BP14R18 3-B

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# SUMMARY OF EARTHWORK

## IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
-L- 12+50.00	-L- 14+25.00	178	771	593	
SUBTOTALS:		178	771	593	
SUBTOTALS:					
SUMMARIES SUBTOTAL:					
PROJECT TOTALS:		178	771	593	
EST. 5% FOR REPLACING TOP SOIL ON				30	
BORROW PITS					
GRAND TOTALS:		178	771	622	
SAY:		180	780	630	

**NOTE:**

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.

Approximate quantities only. Unclassified Excavation, Borrow Excavation, Clearing & Grubbing, and Removal & Breakup of existing pavement will be paid at the lump sum price for "Grading".

Excavation for proposed culvert will be paid at the lump sum price for "Culvert Excavation".

EST. GRANULAR MATERIAL = 50 CY (CONTINGENCY)  
EST. GEOTEXTILE FOR SOIL STABILIZATION = 50 SY (CONTINGENCY)  
EST. UNDERCUT EXCAVATION = 50 CY (CONTINGENCY)  
EST. INCIDENTAL STONE BASE = 50 TONS (CONTINGENCY)

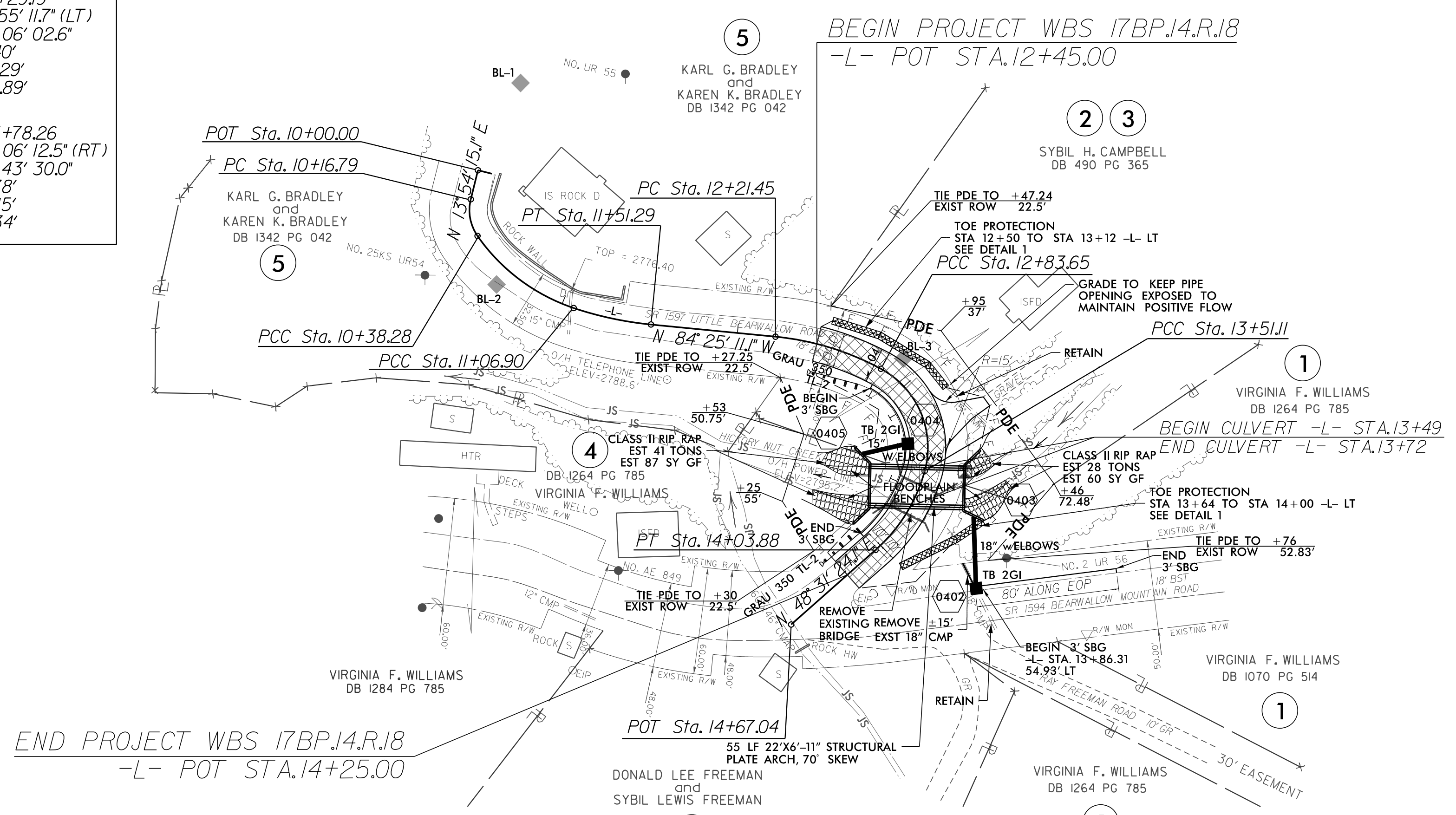
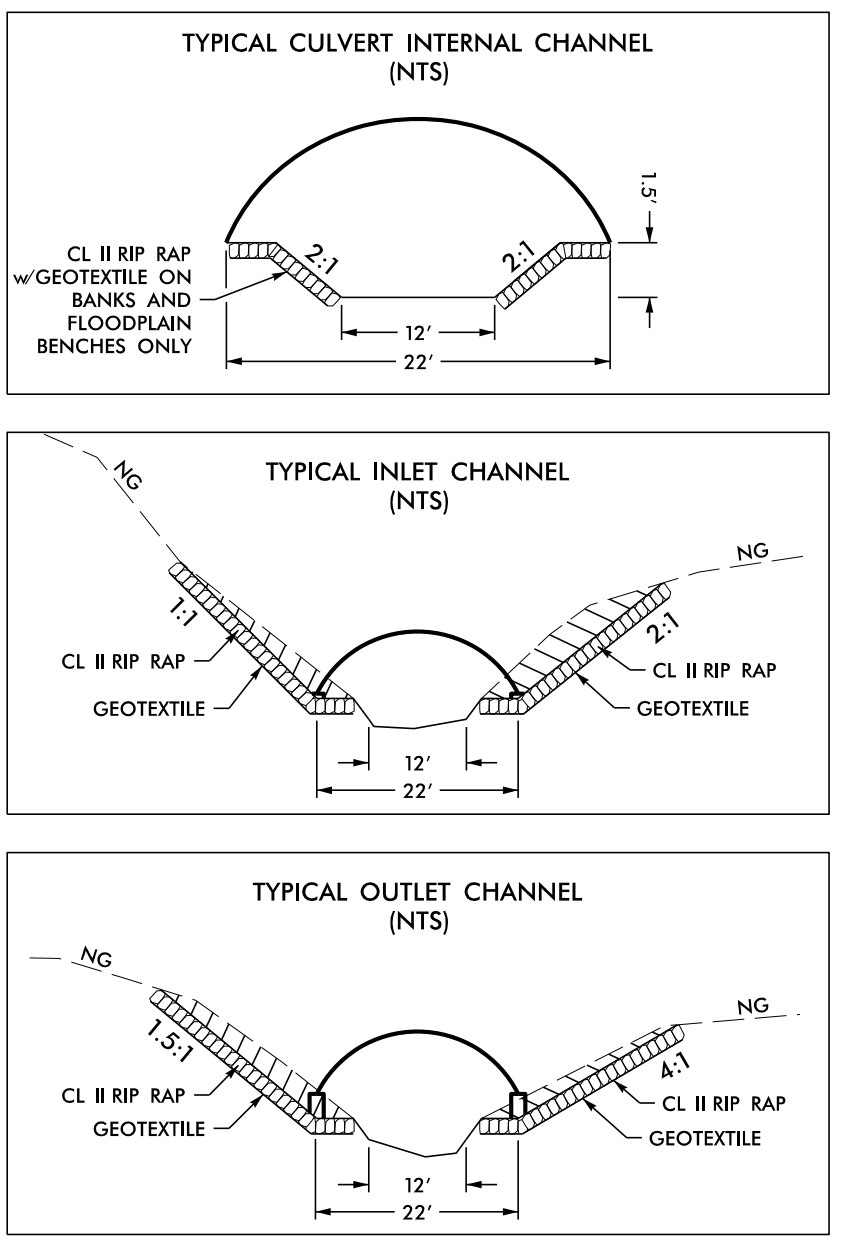


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PROJECT REFERENCE NO. 17BP.14.R.18	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 026815 JAMES E. BECK	HYDRAULICS ENGINEER SEAL 026971 JOSHUA G. DALTON

**-L- CURVE DATA**

PI Sta 10+28.23 Δ = 48° 40' 04.5" (LT) D = 226' 24' 59.8" L = 21.49' T = 11.44' R = 25.31'	PI Sta 10+73.82 Δ = 36° 44' 10.1" (LT) D = 53' 32' 28.0" L = 68.61' T = 35.53' R = 107.01'	PI Sta 11+29.19 Δ = 12° 55' 11.7" (LT) D = 29' 06' 02.6" L = 44.40' T = 22.29' R = 196.89'
PI Sta 12+52.96 Δ = 22° 42' 30.7" (RT) D = 36' 30' 40.1" L = 62.20' T = 31.51' R = 156.93'	PI Sta 13+23.60 Δ = 77° 07' 52.1" (RT) D = 114' 20' 01.8" L = 67.46' T = 39.96' R = 50.11'	PI Sta 13+78.26 Δ = 33° 06' 12.5" (RT) D = 62' 43' 30.0" L = 52.78' T = 27.15' R = 91.34'



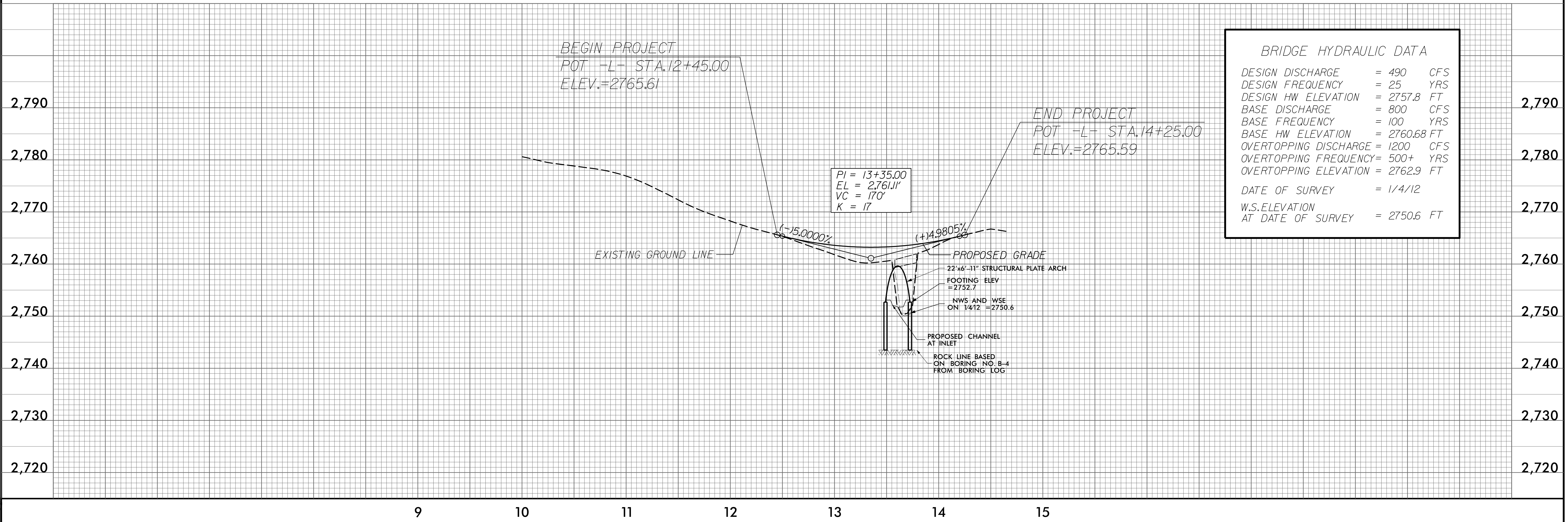
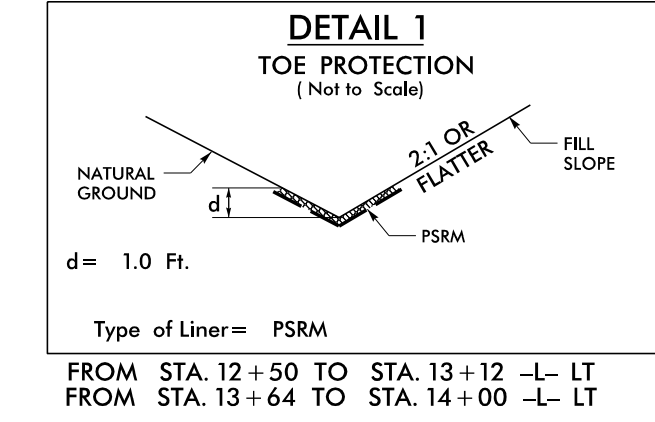
NAD 83 NSRS 2007

**DRMP**  
ENGINEERS - PLANNERS - SCIENTISTS  
5950 FAIRVIEW ROAD, SUITE 320  
CHARLOTTE, NORTH CAROLINA 28210  
17041 332-2299  
NC LICENSE NO. C-2213

**SUNGATE DESIGN GROUP, P.A.**  
115 JONES FRANKLIN ROAD  
CHARLOTTE, NORTH CAROLINA 28210  
17041 332-2299  
NC LICENSE NO. C-2007

UTILITY OWNERS:  
PROGRESS ENERGY  
P.O. BOX 1551  
RALEIGH, N.C. 27602-1551

AT&T  
24 O'HENRY AVENUE  
ASHEVILLE, NC 28801



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 490	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2757.8	FT
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2760.68	FT
OVERTOPPING DISCHARGE	= 1200	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2762.9	FT
DATE OF SURVEY	= 1/4/12	
W.S. ELEVATION	= 2750.6	FT
AT DATE OF SURVEY		

8/17/99  
2/10/2015  
W:\Projects\11-0481-003-Bridge-No261-NC001-17BP-14-Roadway\Proj\44-0261-Rdy-pln.dgn

**PROJECT: WBS 17BP.14.R.18**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PLAN FOR PROPOSED  
TRAFFIC CONTROL**

**HENDERSON COUNTY**

STATE PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.18	TCP-01

**LEGEND**

- GENERAL**
- DIRECTION OF TRAFFIC FLOW
  - NORTH ARROW
  - PROPOSED PVMT.    EXIST. PVMT.
  - WORK AREA
  - ONGOING CONSTRUCTION
  - REMOVAL OF EXISTING PAVEMENT
  - GRADING ONLY
- TRAFFIC CONTROL DEVICES**
- TYPE I BARRICADE
  - TYPE II BARRICADE
  - TYPE III BARRICADE
  - CONE
  - DRUM
  - FLASHING ARROW PANEL (TYPE C)
  - TYPE 'B' WARNING LIGHT
  - STATIONARY SIGN
  - PORTABLE SIGN
  - STATIONARY OR PORTABLE SIGN
  - WARNING FLAGS
  - CRASH CUSHION
  - CHANGEABLE MESSAGE SIGN
  - TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
  - POLICE
  - FLAGGER
- PAVEMENT MARKINGS**
- CRYSTAL/CRYSTAL PAVEMENT MARKER
  - YELLOW/YELLOW PAVEMENT MARKER
  - CRYSTAL/RED PAVEMENT MARKER
  - PAVEMENT MARKING SYMBOLS

**ROADWAY STANDARD DRAWINGS**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ENGLISH ROADWAY STANDARD DRAWINGS" - ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1180.01	SKINNY DRUM

**INDEX OF SHEETS**

<u>SHEET NO.</u>	<u>TITLE</u>
TCP-01	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS
TCP-02	PROJECT NOTES/WRITTEN PHASING
TCP-03	DETAIL SHEET
TCP-04	OFFSITE DETOUR SHEET

PLAN PREPARED IN THE OFFICE OF  
**PROGRESSIVE**  
DESIGN GROUP, INC.  
  
ENGINEERS • CONSULTANTS  
CHARLOTTE, NC 704.573.3003

<p><b>APPROVED:</b> _____ <b>DATE:</b> _____</p> <p style="text-align: center;"><b>SEAL</b></p> <div style="text-align: center;"> </div> <p style="font-size: x-small;">DocuSigned by: Tim Arey</p>	<p style="text-align: center; font-size: small;"><b>PLAN PREPARED BY: PROGRESSIVE DESIGN GROUP, INC.</b></p> <hr/> <p>TIM AREY, P.E.    <i>TRAFFIC CONTROL ENGINEER</i></p> <p>DONALD SPENCE, P.E.    <i>TRAFFIC CONTROL PROJECT ENGINEER</i></p> <p>_____    <i>TRAFFIC CONTROL PROJECT DESIGN ENGINEER</i></p> <p>L.D. ASHLEY    <i>TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN</i></p>
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# GENERAL NOTES

# PROJECT NOTES & PHASING

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.18	TCP-02
RW SHEET NO.	

## PHASING

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.

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

- F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:  
  
BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.  
  
BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 100 ft IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

- H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

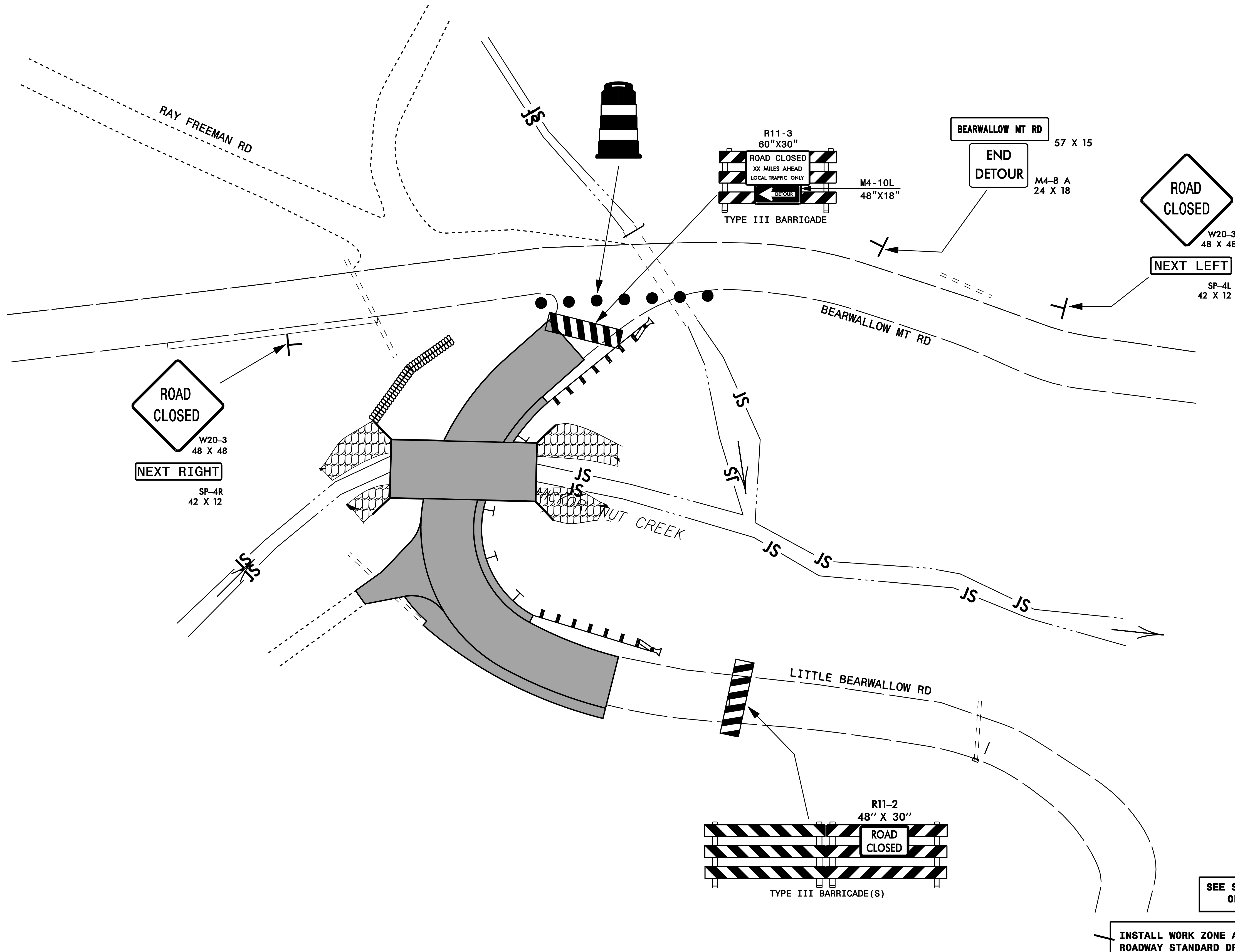
### TRAFFIC CONTROL DEVICES

- L) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- M) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

- STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS AS SHOWN ON ROADWAY STANDARD DRAWING NO. 1101.01
- STEP 2: INSTALL OFFSITE DETOUR SIGNS AND DEVICES AS SHOWN ON SHEETS TCP-03 AND TCP-04 AND CLOSE LITTLE BEARWALLOW RD TO THRU TRAFFIC.
- STEP 3: CONSTRUCT THE PROPOSED CULVERT AND ROADWAY APPROACHES FOR LITTLE BEARWALLOW ROAD AS SHOWN ON SHEET TCP-03. REMOVE ALL TRAFFIC CONTROL DEVICES AND PLACE BEARWALLOW ROAD TRAFFIC IN THE FINAL PATTERN.



APPROVED: _____	DATE: _____	<b>PROJECT NOTES &amp; PHASING</b>		
				SCALE:
		DATE: 06/02/13	REVISIONS	
		DWG. BY: LDA		
		DESIGN BY: TMA		
DocuSigned by: Tim Arey	REVIEWED BY: TMA	CADD FILE		



SEE SHEET TCP-04 FOR REMAINING OFF SITE DETOUR DEVICES

INSTALL WORK ZONE ADVANCE WARNING SIGNS AS SHOWN ON ROADWAY STANDARD DRAWING NO. 1101.01 AND GENERAL NOTE I

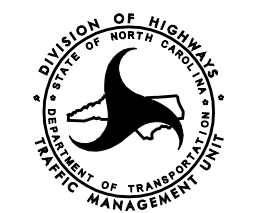


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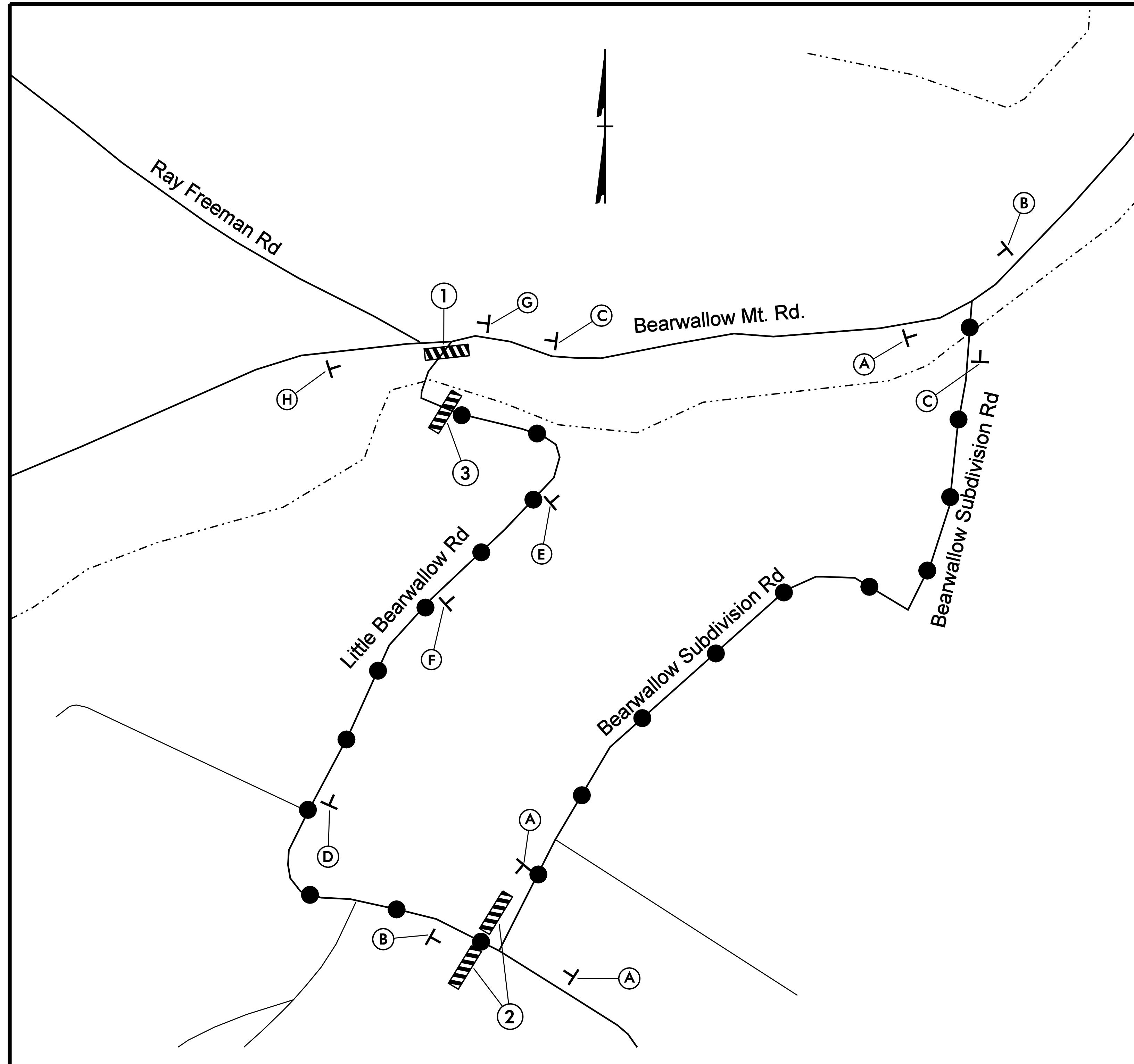
SEAL

DocuSigned by:  
Tim Arvey

DETAILS		REVISIONS
SCALE: 1" = 20'	DATE: 06/02/13	
DWG. BY: LDA	DESIGN BY: TMA	
REVIEWED BY: TMA		



CADD FILE



SIGN NUMBER: 301  
 TYPE: D  
 QUANTITY: 4  
 SIGN WIDTH: 4'-9"  
 HEIGHT: 1'-3"  
 TOTAL AREA: 5.9 Sq. Ft.  
 BORDER TYPE: FLUSH  
 RECESS: 0.47"  
 WIDTH: 0.63"  
 RADII: 1.5"  
 NO. Z BARS:  
 LENGTH:  
 BACKG COLOR: Orange  
 COPY COLOR: Black  
 MAJ. COPY SERIES: 'C'  
 ROUTE MARKERS:  
 ARROW TYPES:  
 MAT: 1.6 mm ALUMINUM

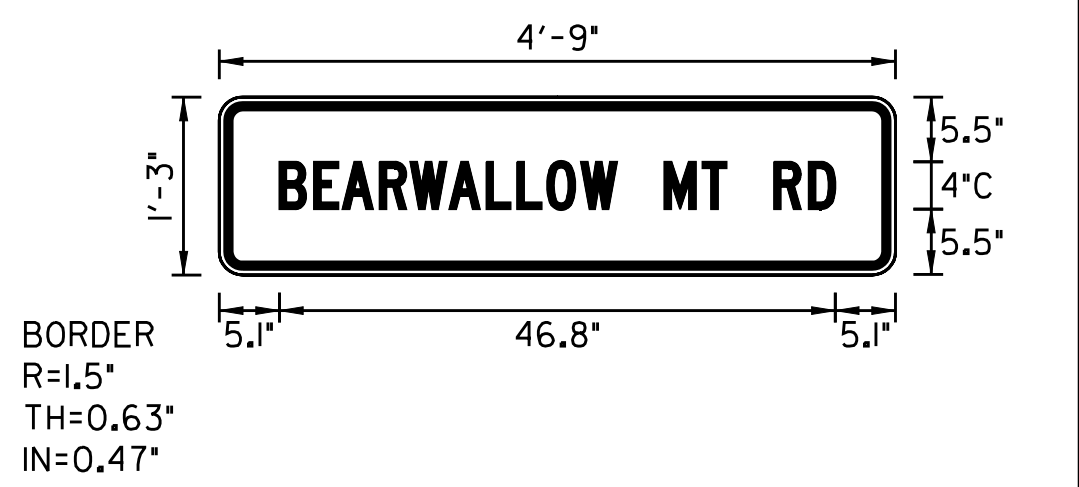
DESIGN BY: PDG  
 PROJECT ID: 440163  
 CHECKED BY: tma  
 DIV: 12  
 STD #: None  
 DATE: Feb 01, 2013

LETTER POSITIONS

B	E	A	R	W	A	L	L	O	W	M	T	R	D	46.8
2.22	2.62	2.23	2.62	2	2.43	2.62	2.22	2.2	46.8					

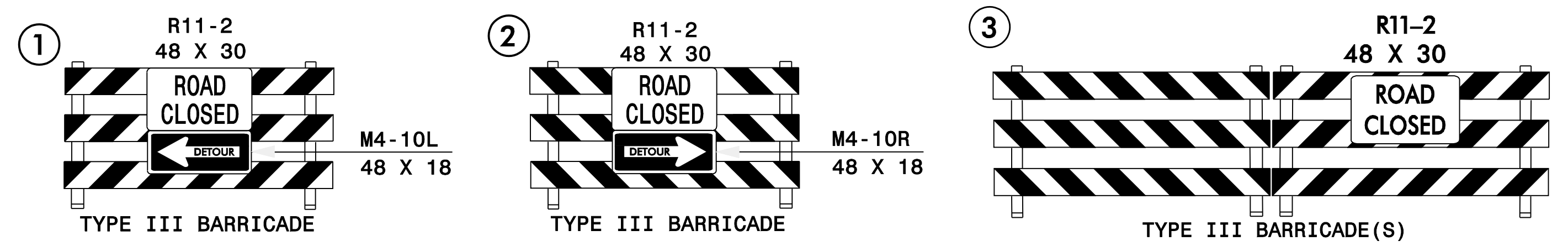
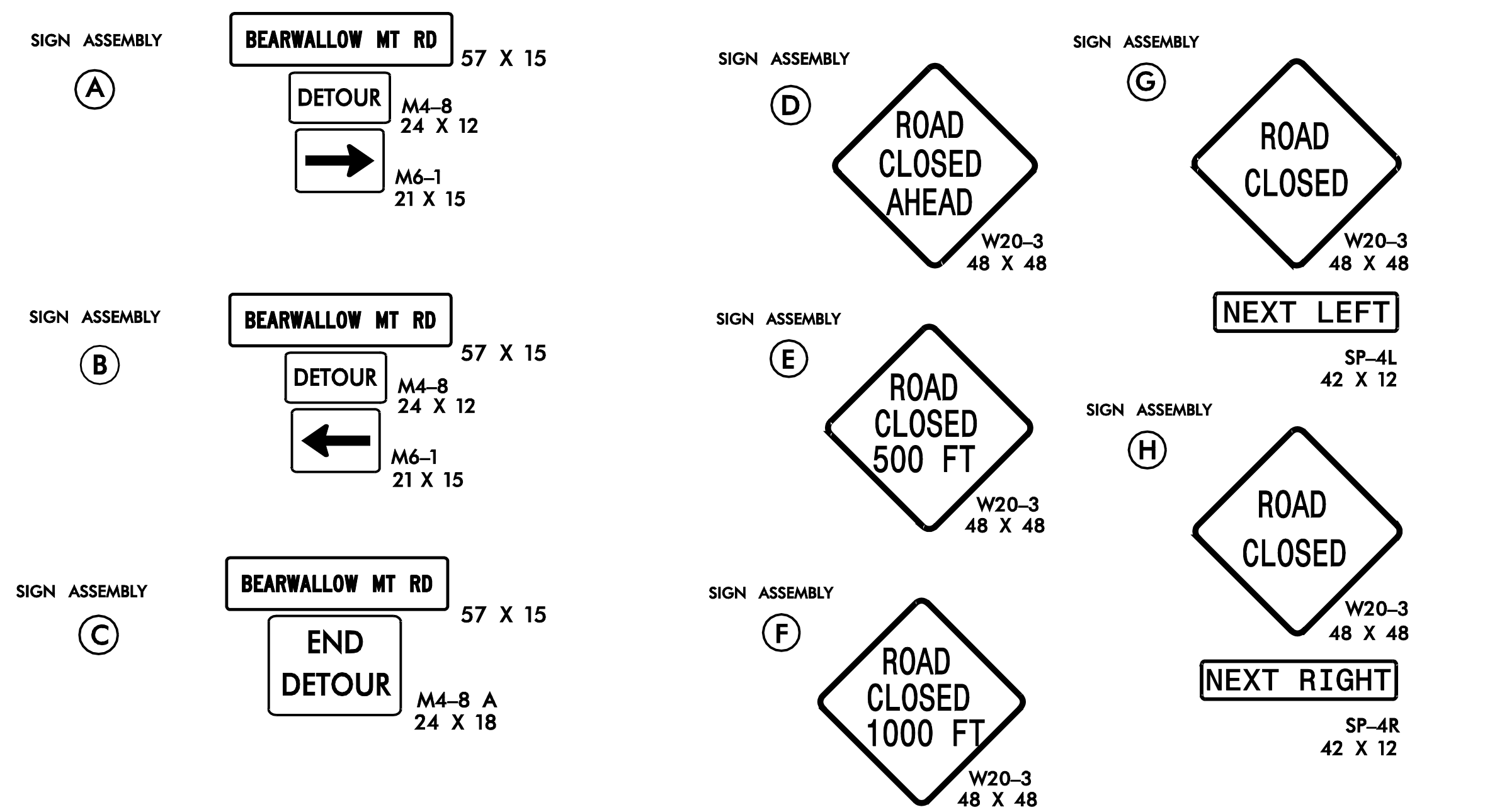
Letter positions are to the lower left corners

- USE NOTES:
- Legend and border shall be direct applied encapsulated lens reflective sheeting.
  - Legend and border shall be direct applied enclosed lens reflective sheeting.
  - Shields shall be encapsulated lens reflective sheeting on 0.8mm aluminum and demountable.
  - Background shall be encapsulated lens reflective sheeting.
  - Background shall be enclosed lens reflective sheeting.
  - Center arrows vertically on sign.



NORTH CAROLINA D. O. T. SIGN DETAIL

●—●—● OFFSITE DETOUR ROUTE



PROGRESSIVE  
 DESIGN GROUP, INC.  
 ENGINEERS • CONSULTANTS

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 025465  
 ENGINEER  
 TIM AREY  
 DocuSigned by:  
 Tim Arey

LITTLE BEARWALLOW RD  
 OFFSITE DETOUR ROUTE

SCALE: NONE	REVISIONS
DATE: 06/02/13	
DWG. BY: LDA	
DESIGN BY: TMA	
REVIEWED BY: TMA	

SEAL OF THE DIVISION OF HIGHWAY TRANSPORTATION MANAGEMENT

**PROJECT: WBS 17BP.14.R.18**

**CONTRACT: DN00151**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**HENDERSON COUNTY**

**LOCATION: BRIDGE NO. 261 ON SR 1597 (LITTLE BEARWALLOW ROAD)  
OVER BEARWALLOW CREEK  
.02 MILES SOUTH OF JUNCTION OF SR 1594  
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE**

PROJECT REFERENCE NO. <i>17BP.14.R.18</i>	SHEET NO. <i>PMP-1</i>
APPROVED:	DATE:
ROADWAY DESIGN ENGINEER	

DocuSigned by:  
*James E. Beck*  
63A2F1304F0144A



**ROADWAY STANDARD DRAWINGS**

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE 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

**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 UNDESIRABLE 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.

PAVEMENT MARKINGS AND MARKERS

- A) STATE FORCES WILL INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.
- B) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

**PAVEMENT MARKING SCHEDULE**

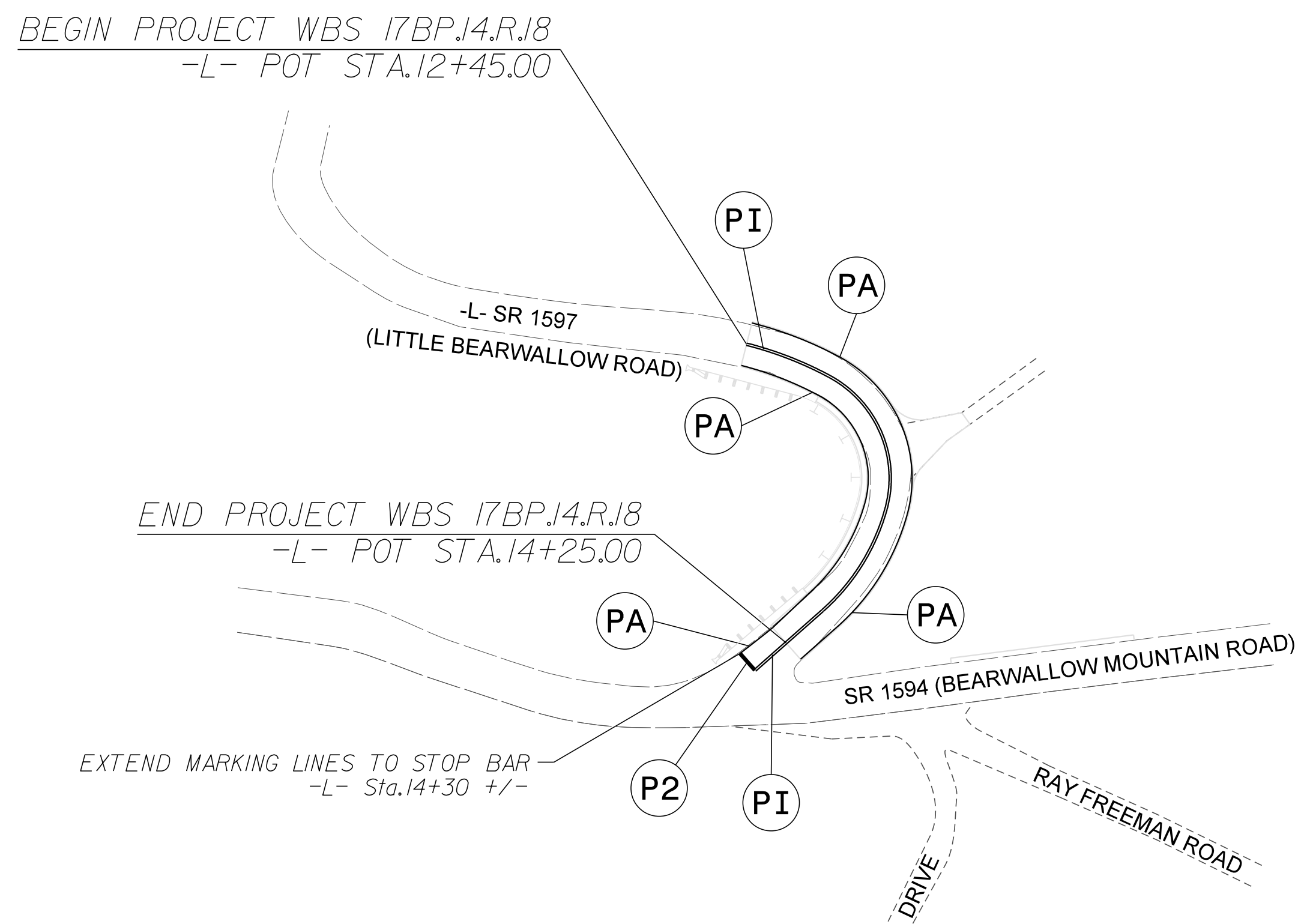
FINAL PAVEMENT MARKINGS

**PAVEMENT MARKING LINES**

PA	WHITE EDGELINE (4")	PAINT
PI	YELLOW DOUBLE CENTER LINE (4")	PAINT
P2	STOP BAR	PAINT

**SYMBOL & MARKING LEGEND**

	PAINT	-	WHITE EDGELINE (4")
	PAINT	-	YELLOW DOUBLE CENTER LINE (4")
	PAINT	-	STOP BAR (24")

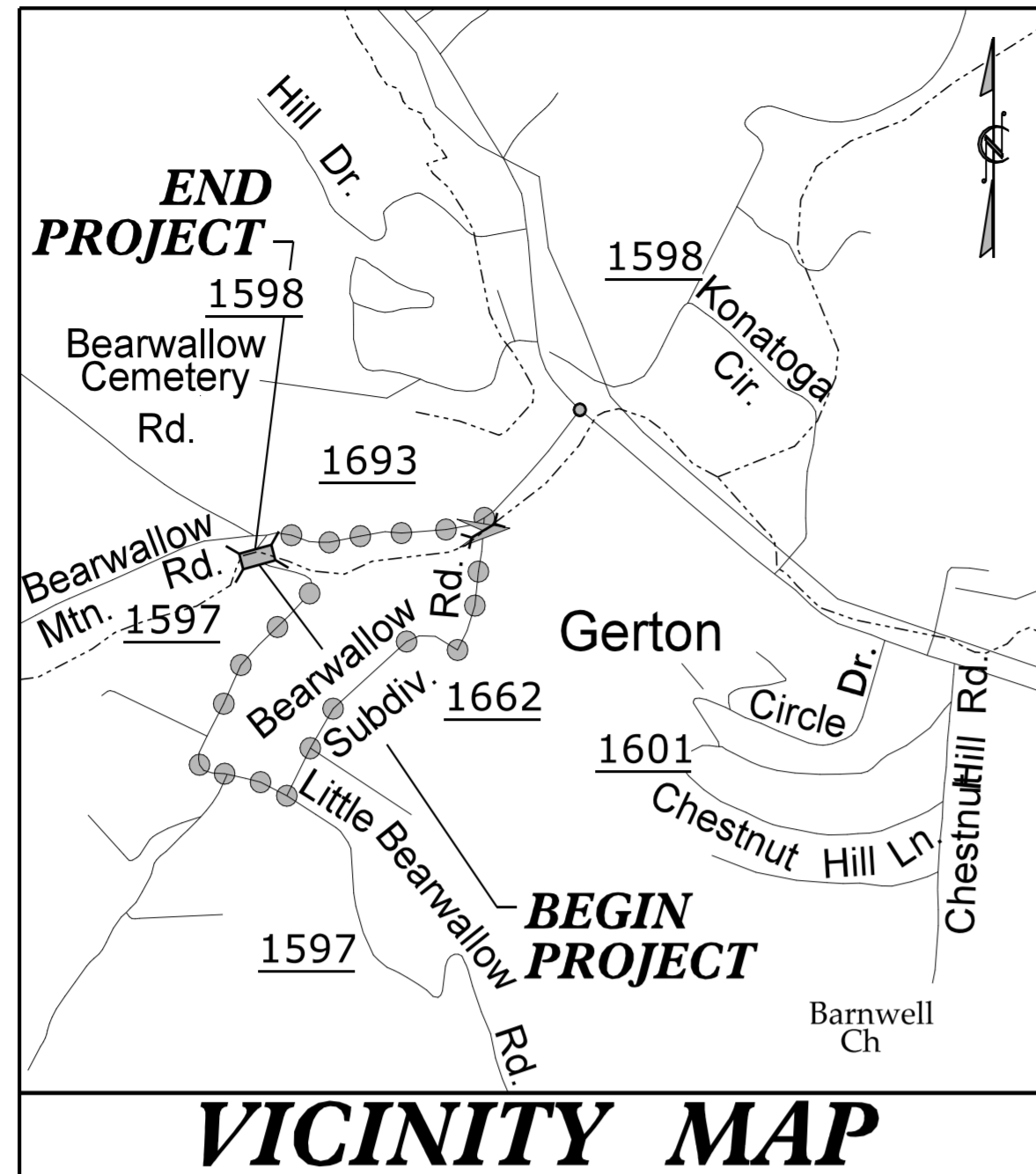


NAD 83/2007

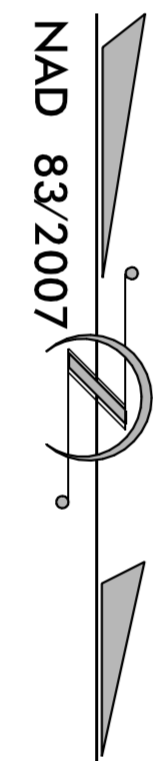


PROJECT: WBS 17BP.14.R.18

CONTRACT: DN00151

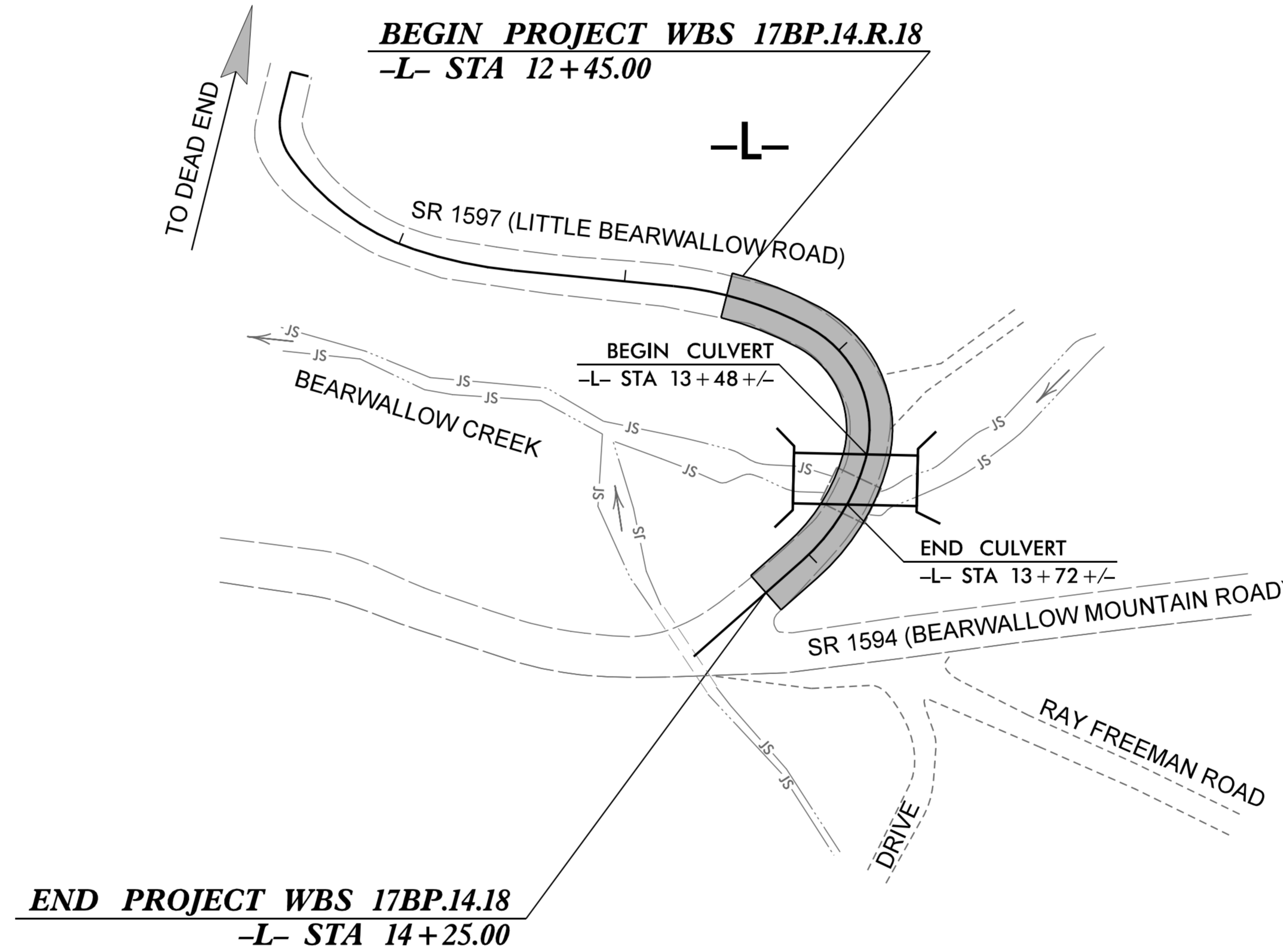


● OFFSITE DETOUR



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

**LOCATION: BRIDGE NO. 261 ON SR 1597 (LITTLE BEARWALLOW ROAD)  
OVER BEARWALLOW CREEK  
.02 MILES SOUTH OF JUNCTION OF SR 1594  
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE**



BRAD T. SMITH, EI  
LEVEL III NAME  
  
3520  
LEVEL III CERTIFICATION NO.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.18	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.R.18		P.E., ROW, UTIL	

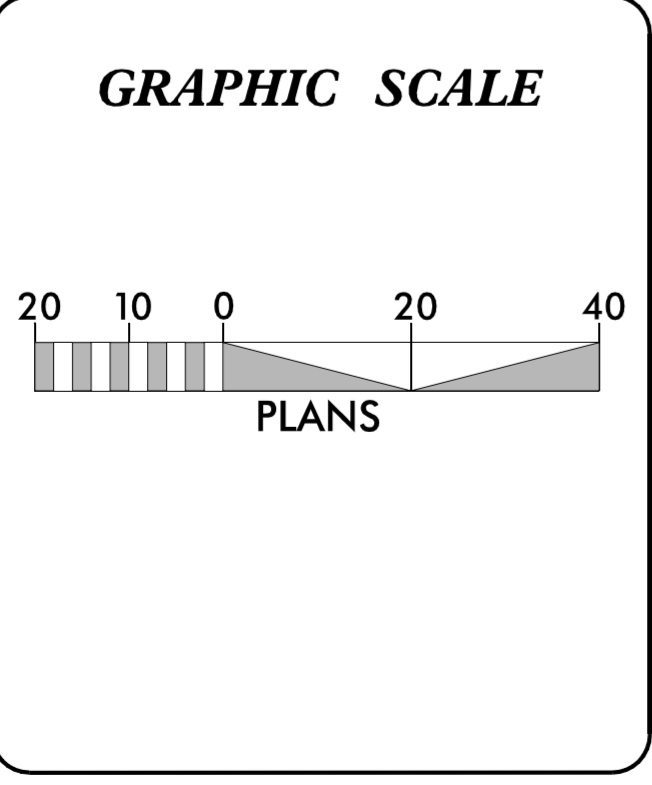
**EROSION AND SEDIMENT CONTROL MEASURES**

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

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

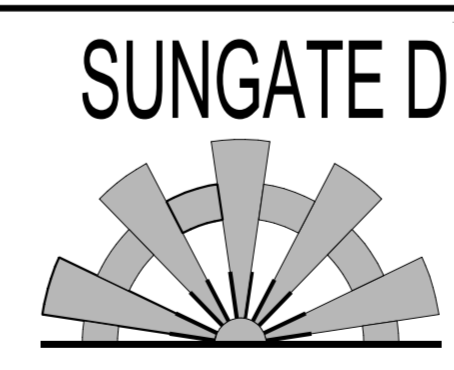
THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:



**SUNGATE DESIGN GROUP, P.A.**

915 JONES FRANKLIN ROAD  
RALEIGH, NORTH CAROLINA 27606  
TEL (919) 859-2243 FAX (919) 859-6258  
ENG FIRM LICENSE NO. C-890

**2012 STANDARD SPECIFICATIONS**

Roadway Standard Drawings

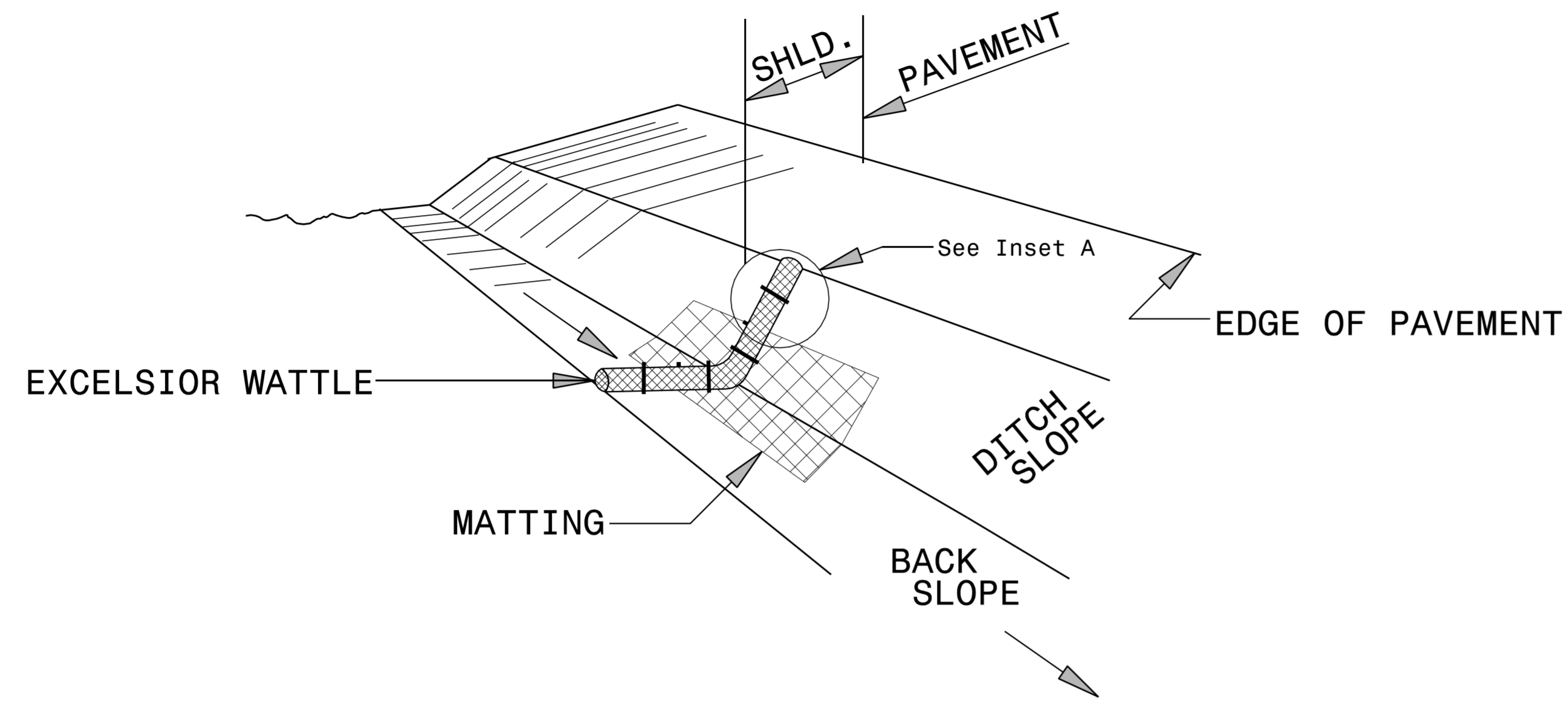
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

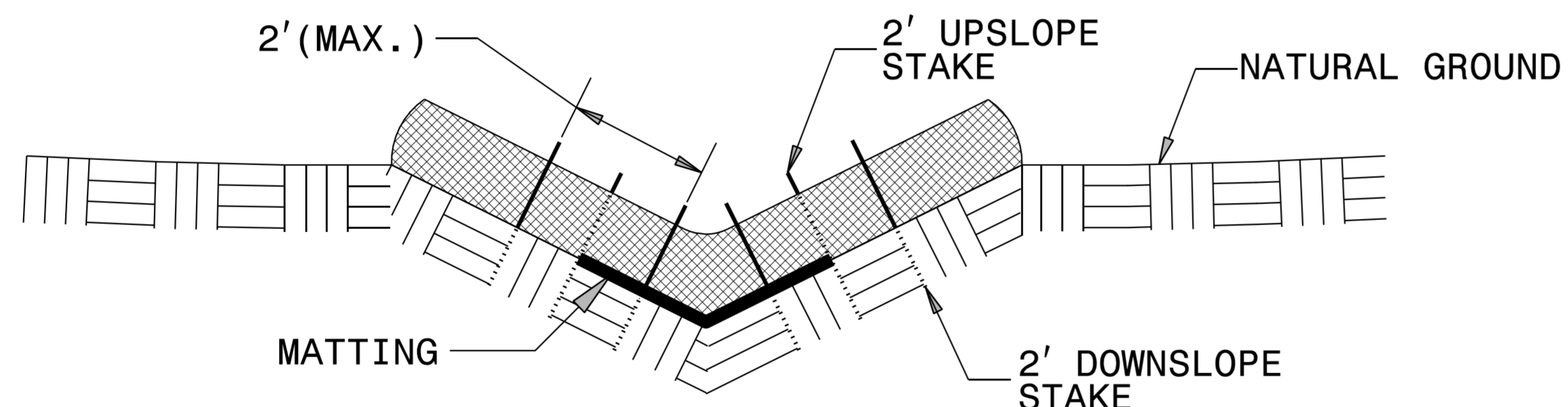
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PROJECT REFERENCE NO. 17BP14R1B	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

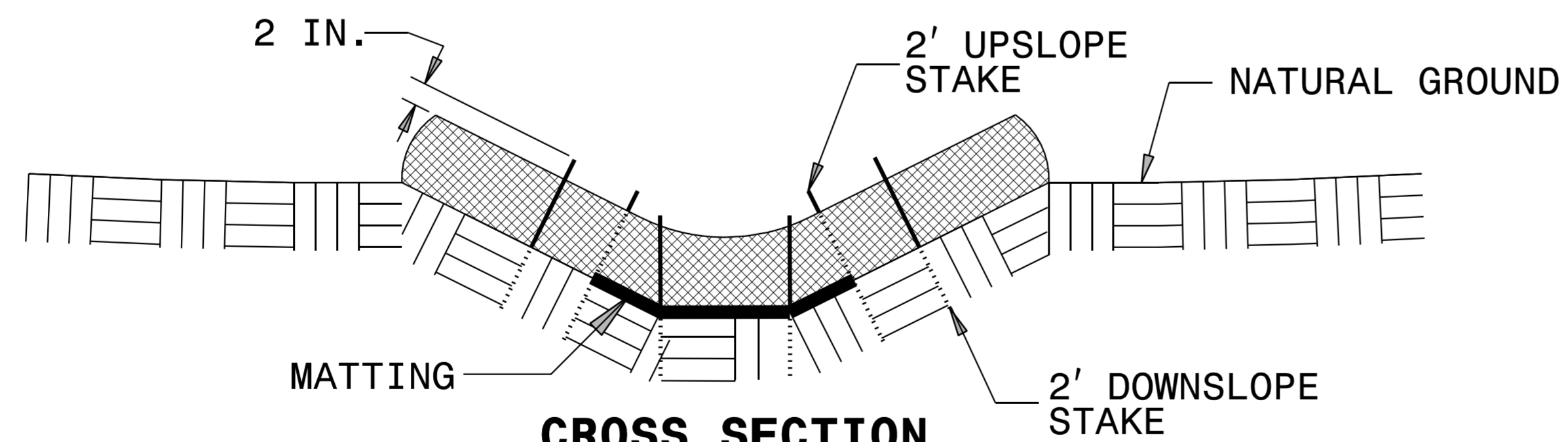
# WATTLE DETAIL



**ISOMETRIC VIEW**



**CROSS SECTION  
VEE DITCH**



**CROSS SECTION  
TRAPEZOIDAL DITCH**

**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

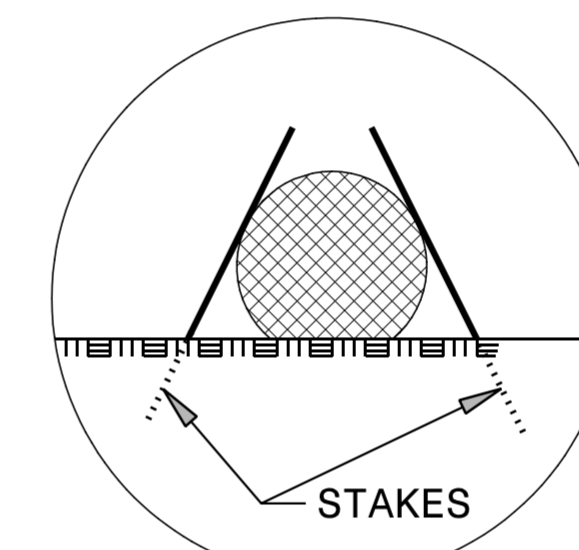
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

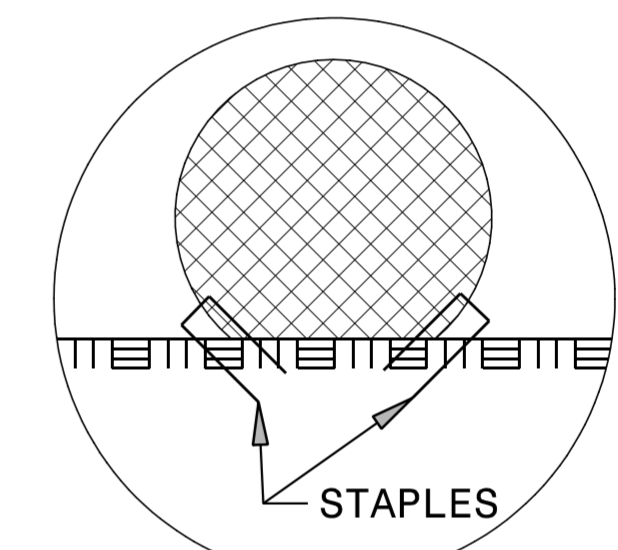
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

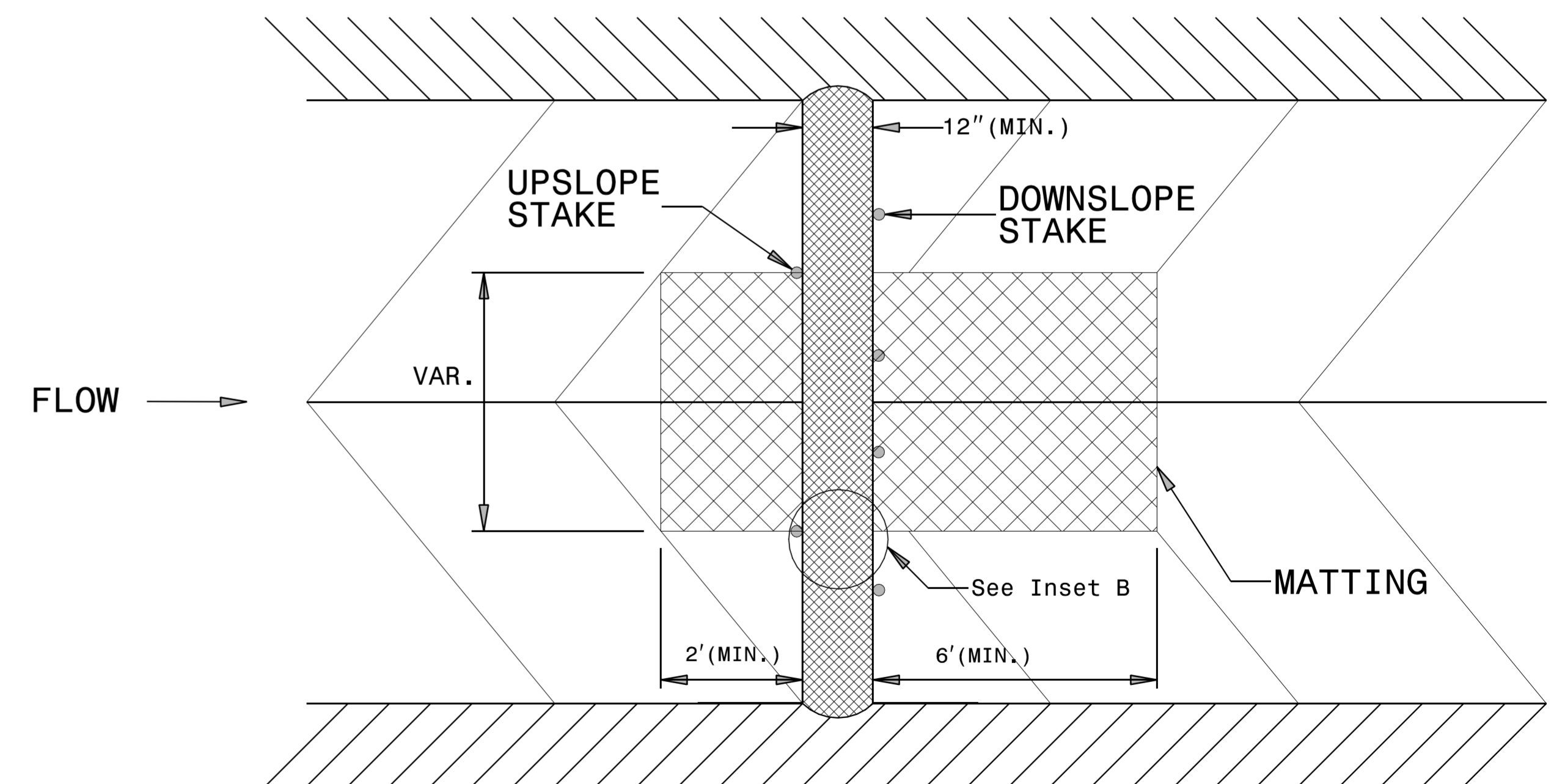
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



**INSET A**



**INSET B**



**TOP VIEW**

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
<i>17BPJ4.R.18</i>	<i>EC-3</i>
RW SHEET NO.	
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.

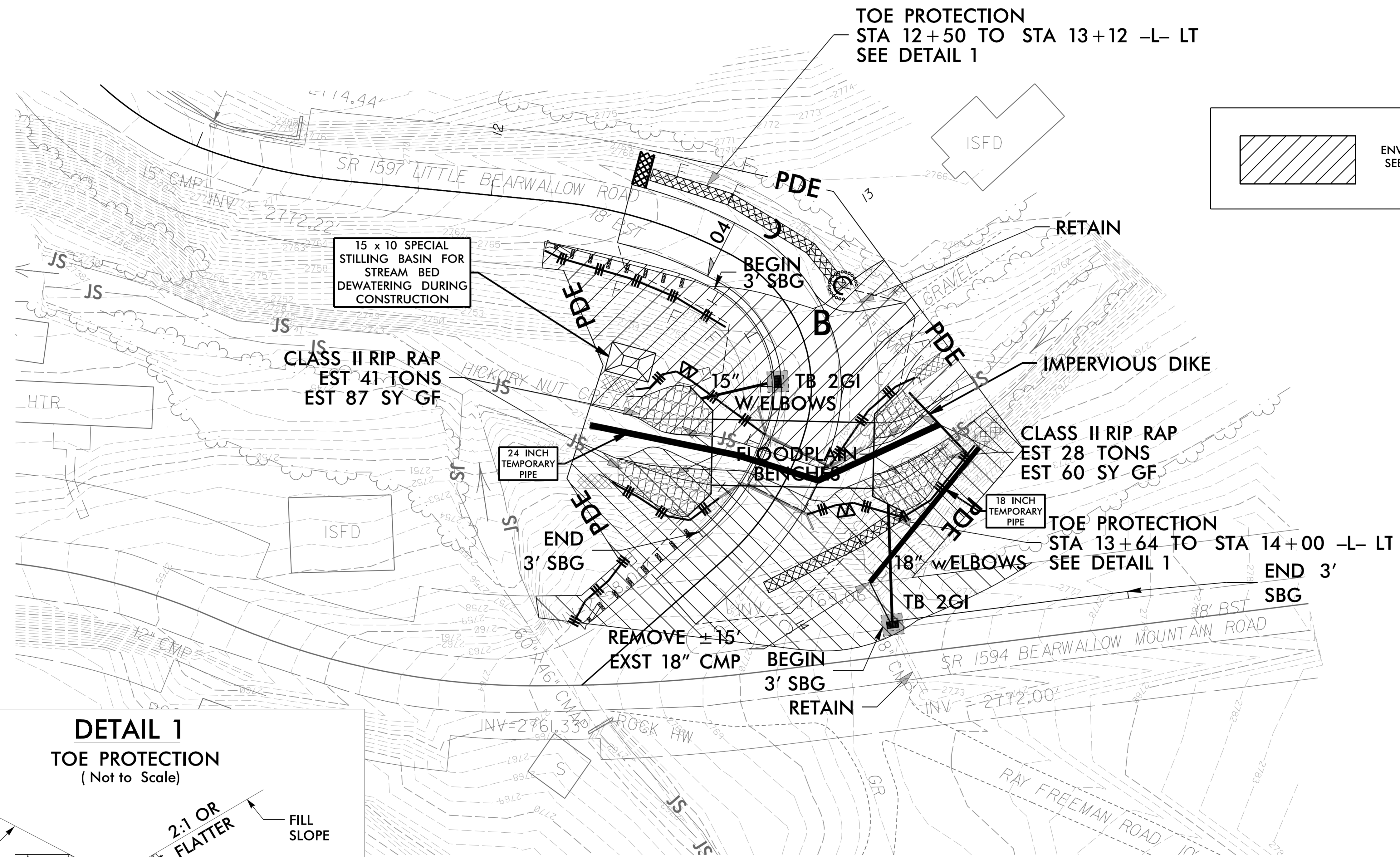
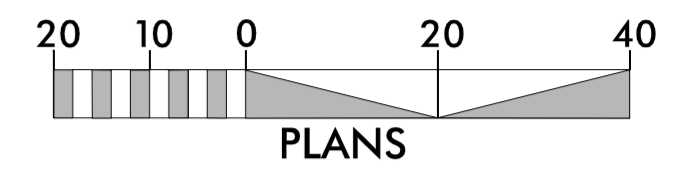
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

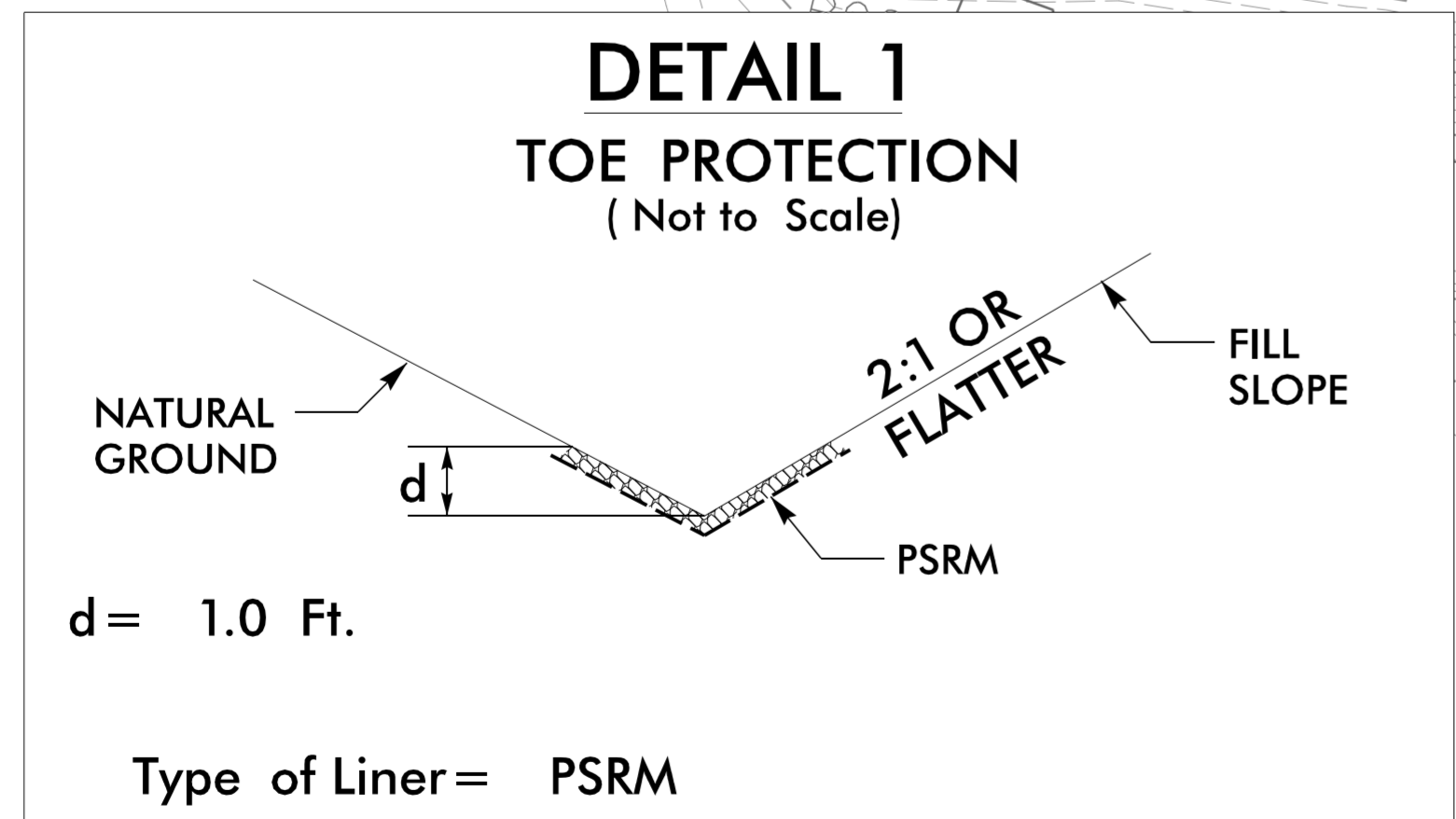
# EROSION CONTROL PLAN

CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 04

PROJECT REFERENCE NO. 17BP14R1B	SHEET NO. EC-04/CONST.04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



 ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS



FROM STA. 12+50 TO STA. 13+12 -L- LT  
FROM STA. 13+64 TO STA. 14+00 -L- LT

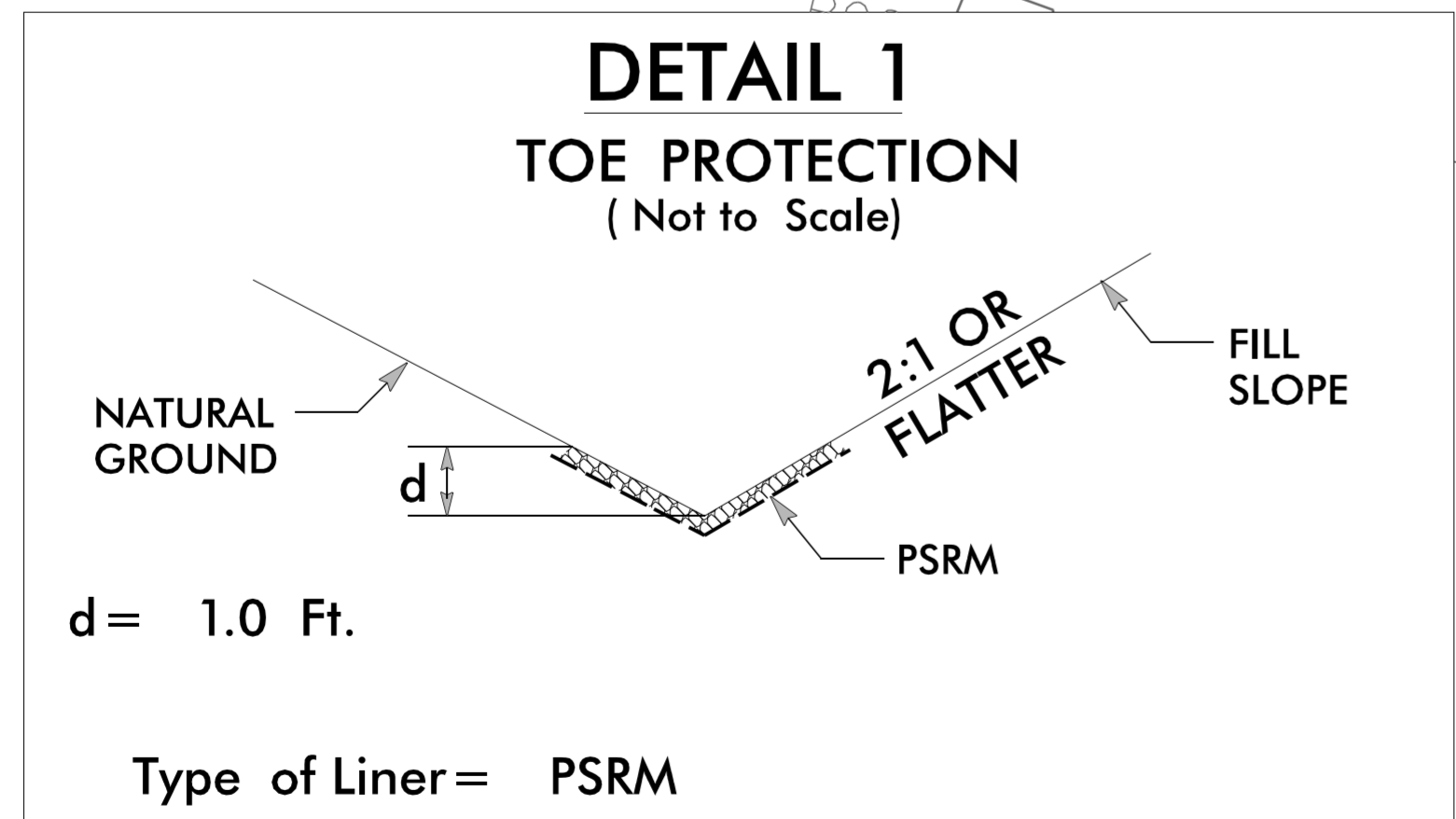
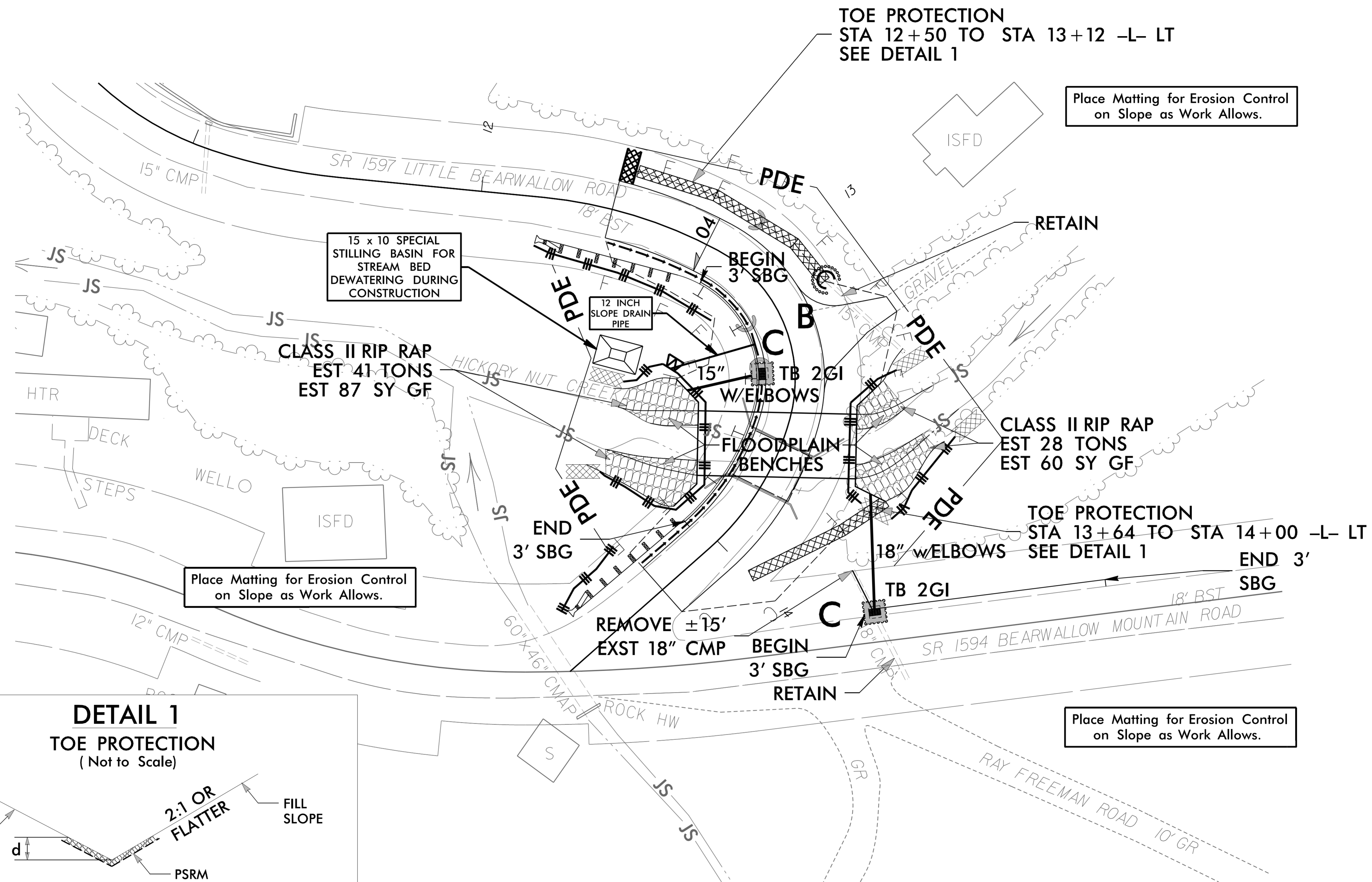
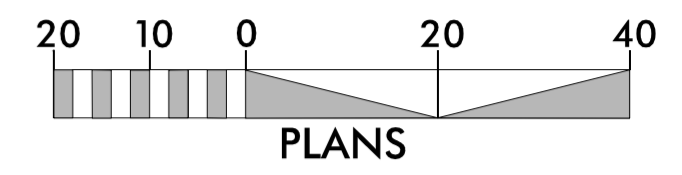
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

# EROSION CONTROL PLAN

FINAL GRADE  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 04

PROJECT REFERENCE NO. 17BP14R1B	SHEET NO. EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



FROM STA. 12+50 TO STA. 13+12 -L- LT  
FROM STA. 13+64 TO STA. 14+00 -L- LT

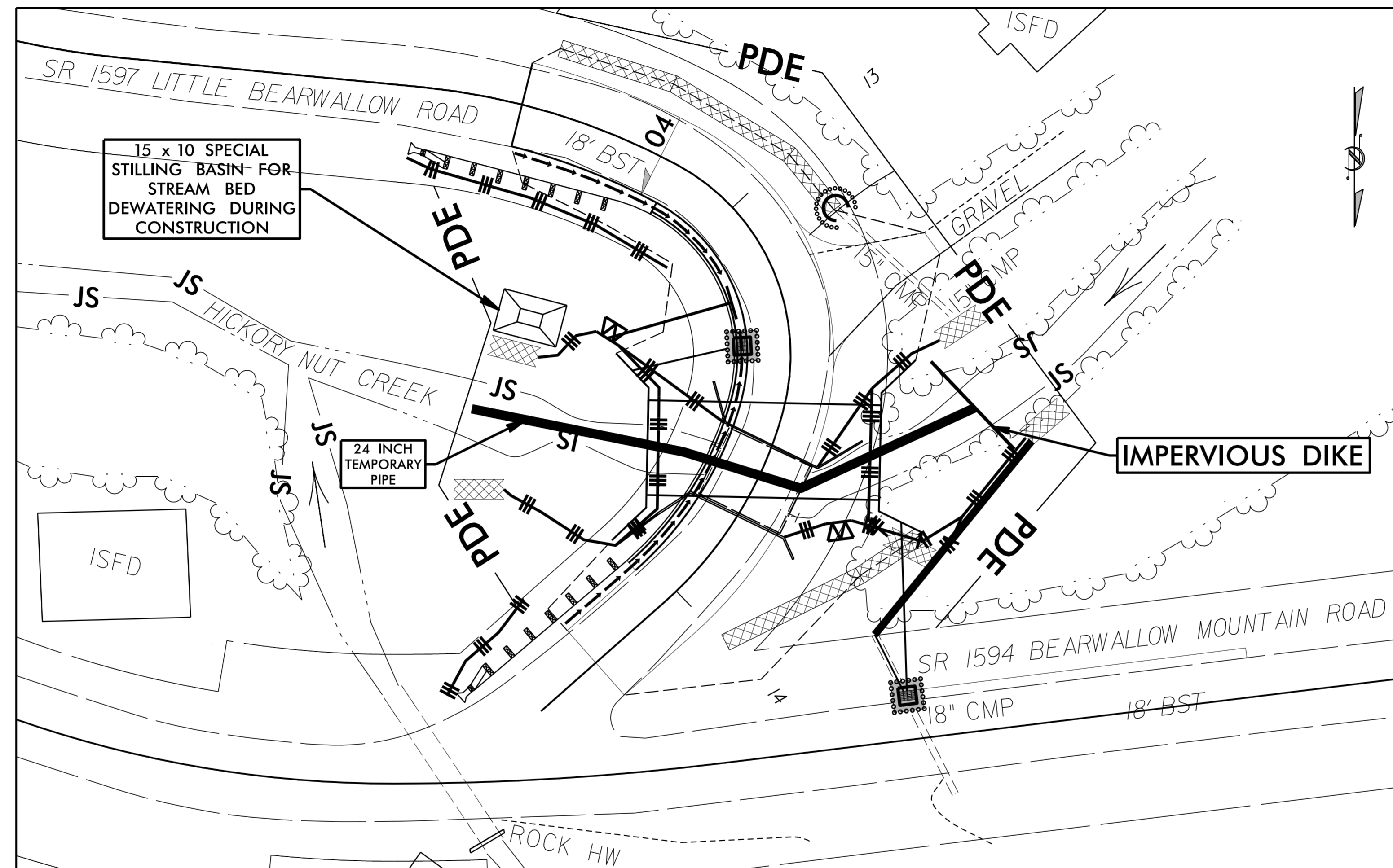
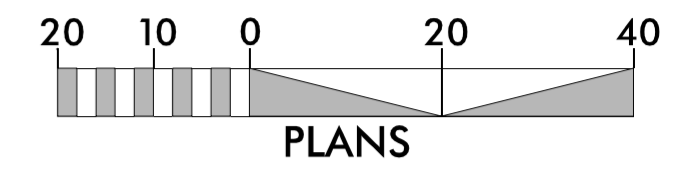
Place Matting for Erosion Control on Slope as Work Allows.

Place Matting for Erosion Control on Slope as Work Allows.

Place Matting for Erosion Control on Slope as Work Allows.

PROJECT REFERENCE NO. 17BP.14.R.1B	SHEET NO. EC-06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# CULVERT INSTALLATION PHASING



## CONSTRUCTION SEQUENCE:

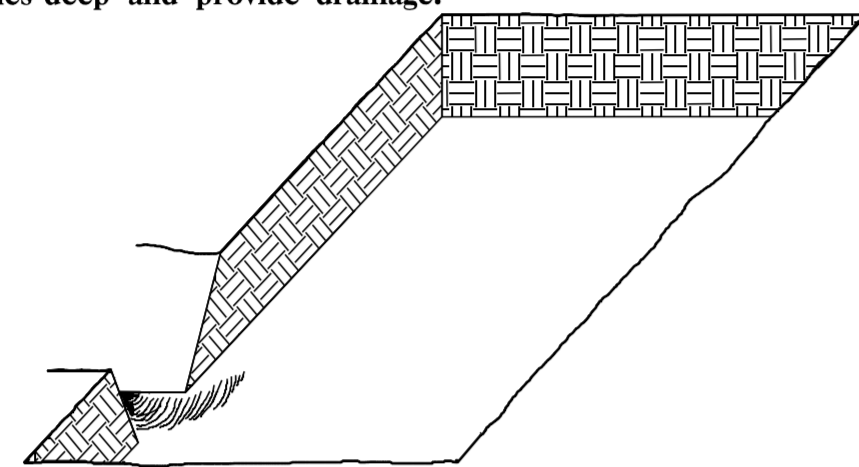
- 1) INSTALL SPECIAL STILLING BASIN
- 2) INSTALL TEMPORARY PIPE AND IMPERVIOUS DIKE
- 3) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
- 4) REMOVE EXISTING BRIDGE
- 5) INSTALL 22'-0"X6'11" STRUCTURAL PLATE ARCH
- 6) REMOVE SPECIAL STILLING BASIN, TEMPORARY PIPE AND IMPERVIOUS DIKE

## PLANTING DETAILS

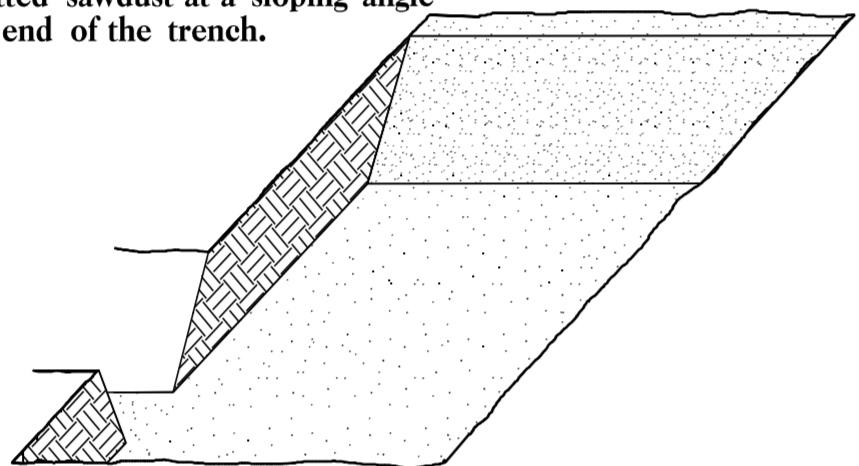
### SEEDLING / LINER BAREROOT PLANTING DETAIL

#### HEALING IN

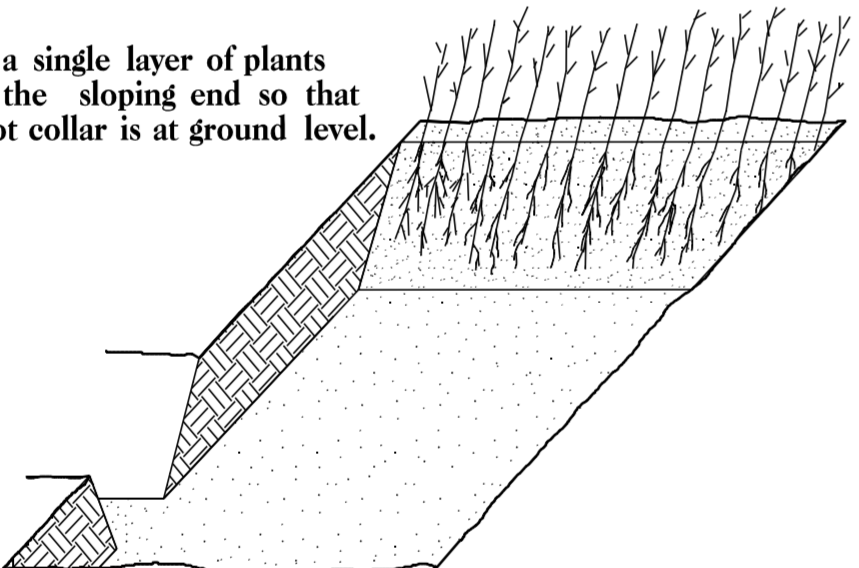
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



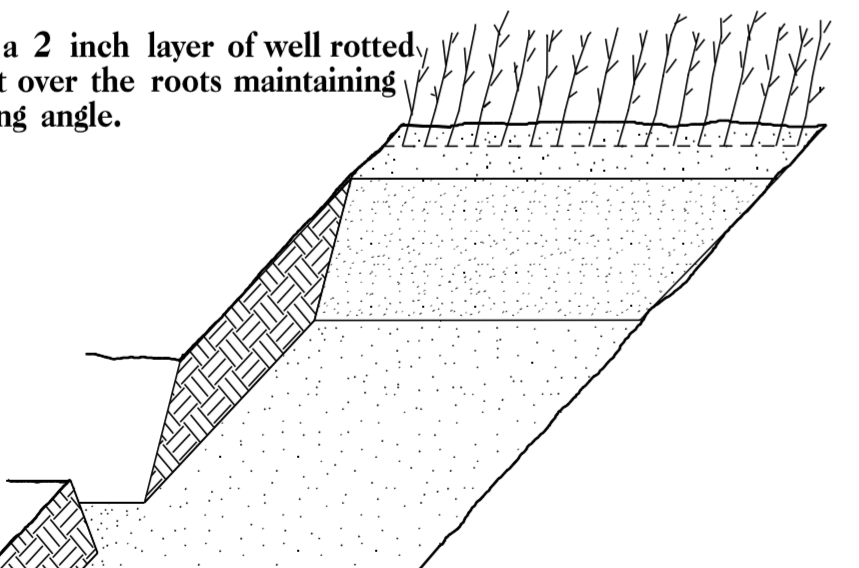
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

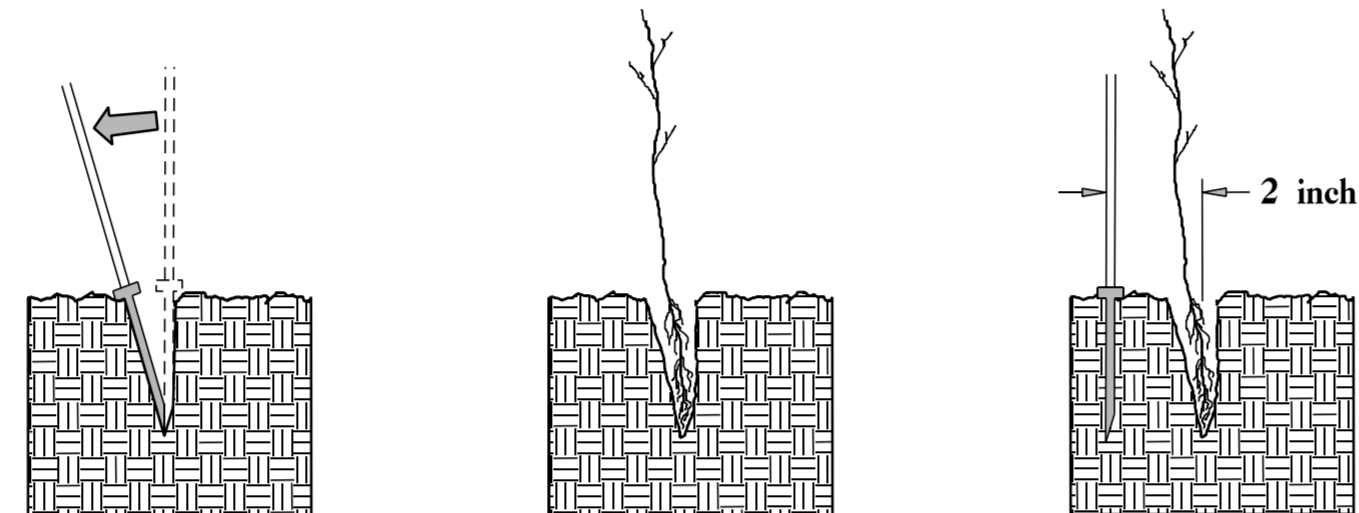


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

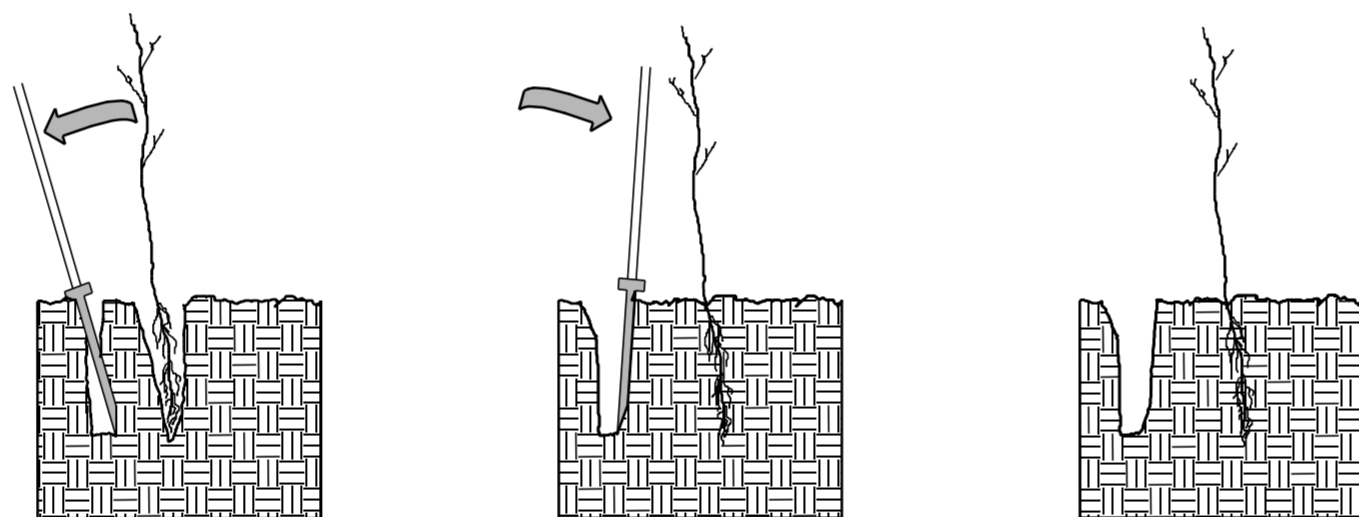


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

#### DIBBLE PLANTING METHOD USING THE KBC 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.



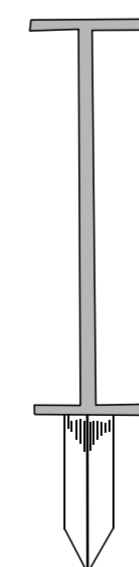
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

#### 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.



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



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

## 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 BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

## REFORESTATION DETAIL SHEET

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**CROSS SECTION IN SUMMARY**

LOCATION	UNCLASSIFIED EXCAVATION	EMBANKMENT
12+50	0	0
12+75	3	19
13+00	0	45
13+25	0	110
13+50	77	171
13+75	77	247
14+00	8	166
14+25	13	13

EMBANKMENT COLUMN DOES NOT INCLUDE  
BACKFILL FOR UNDERCUT.

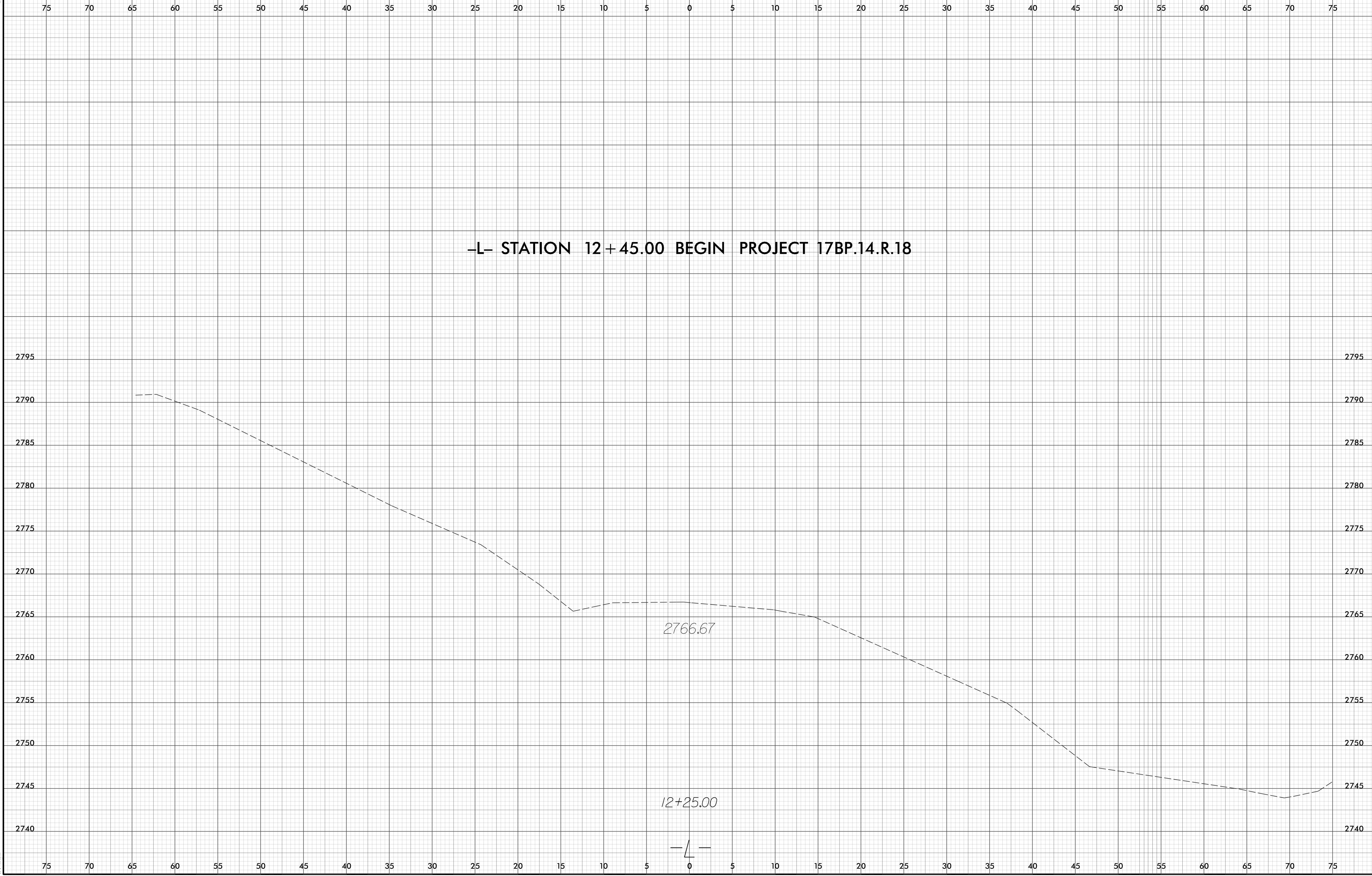
12/06/07

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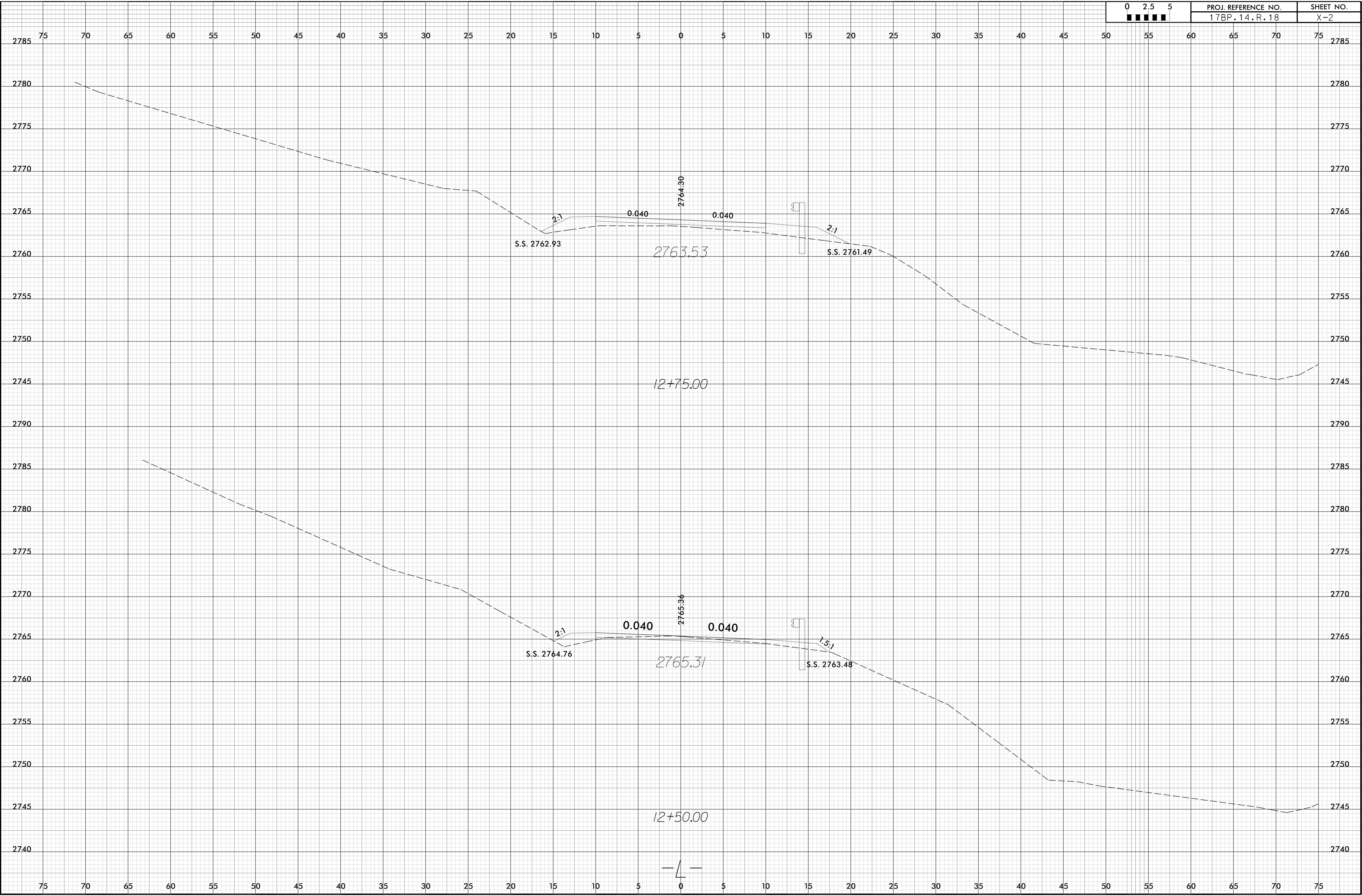
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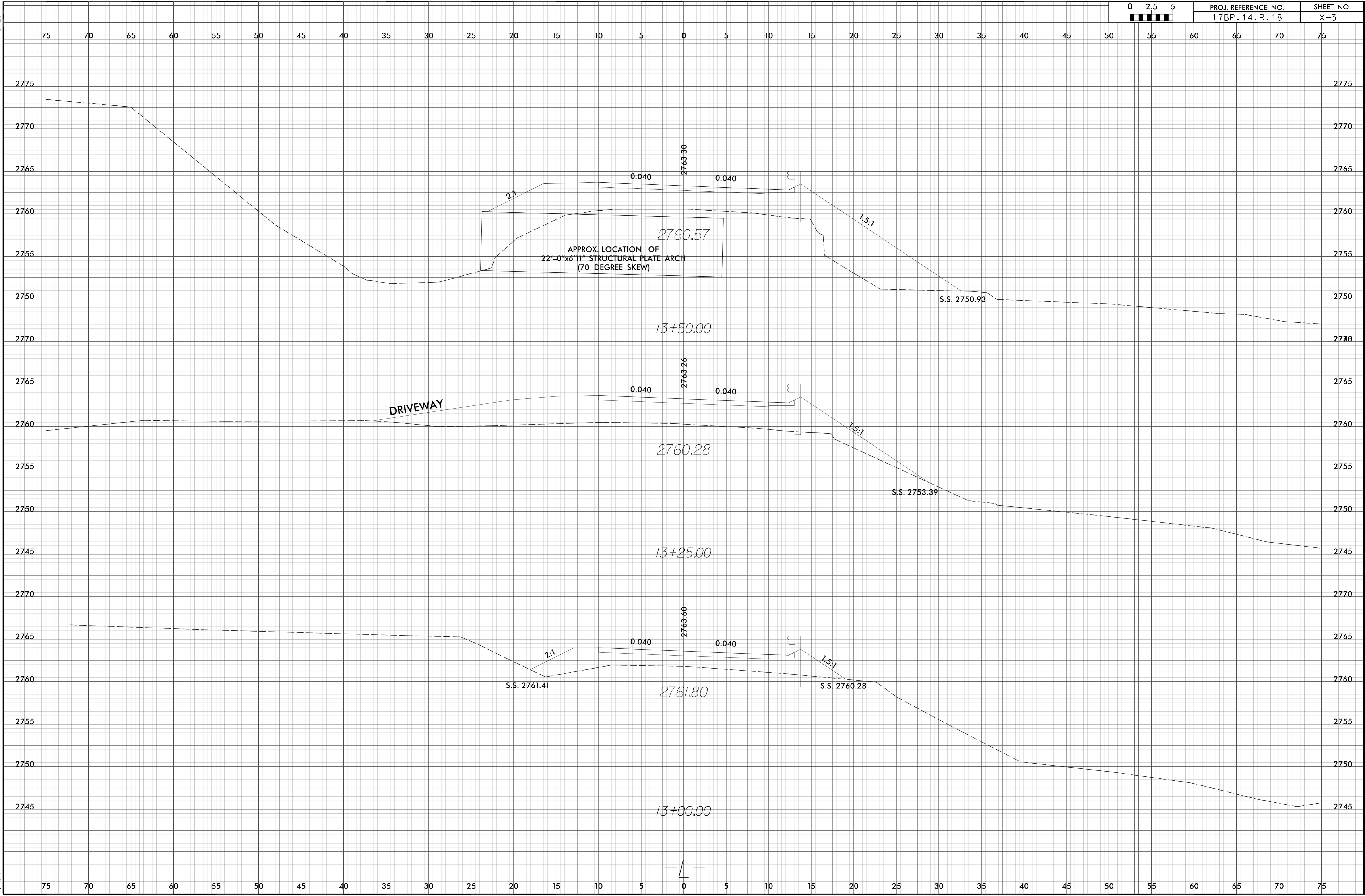


07/23/09

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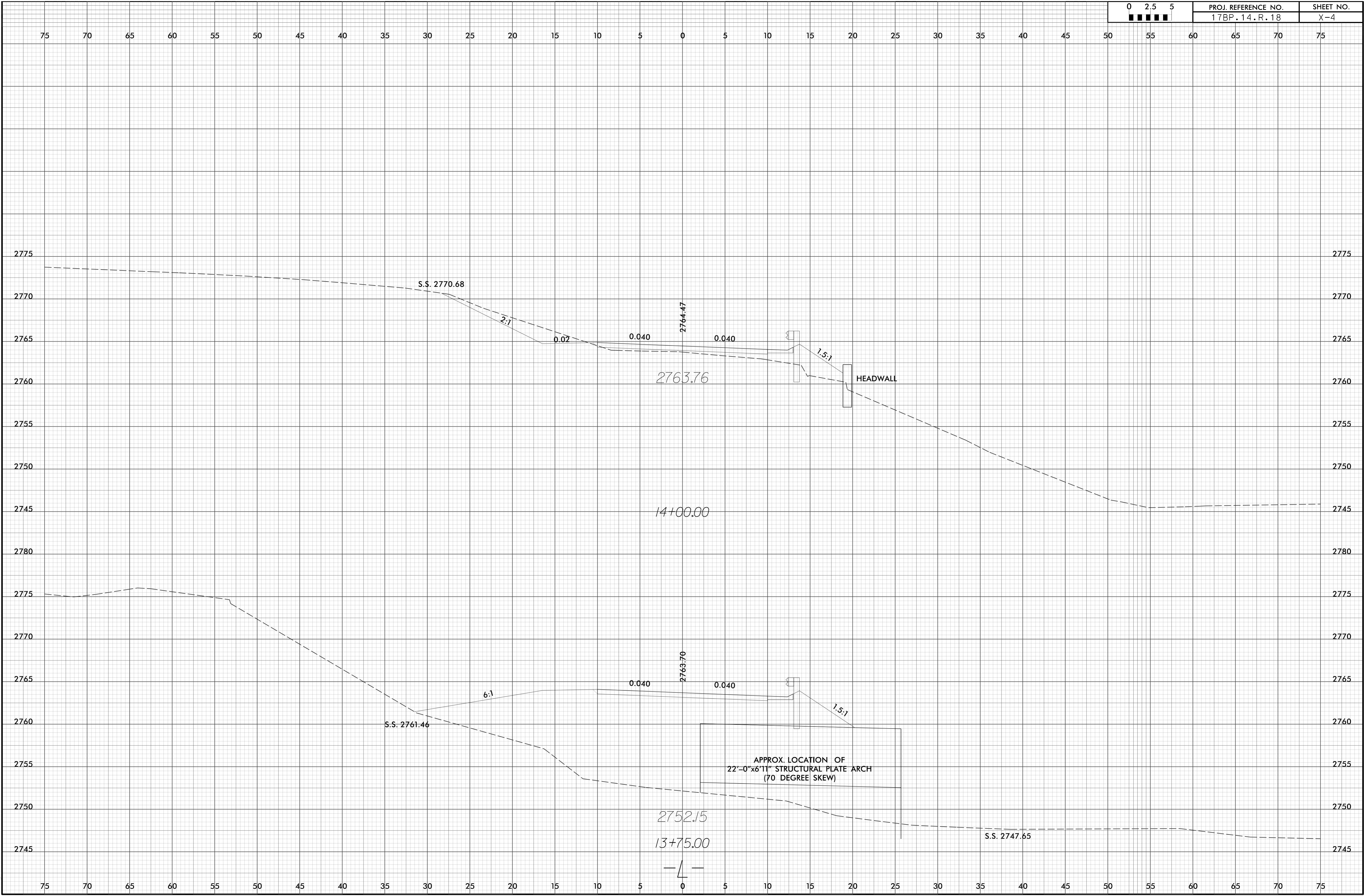


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