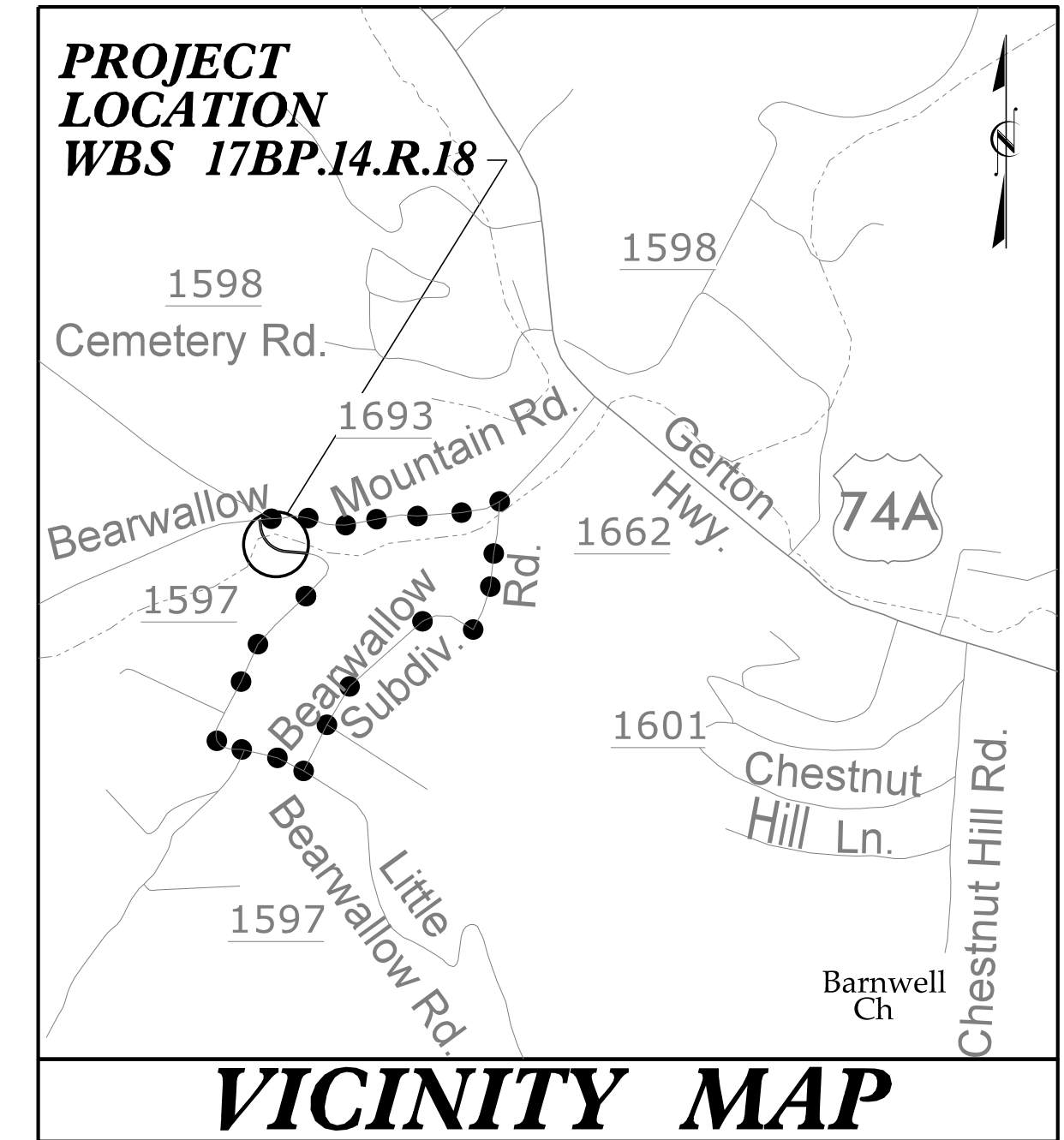


4/20/2012

PROJECT: WBS 17BP.14.R.18

CONTRACT: DN00151

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

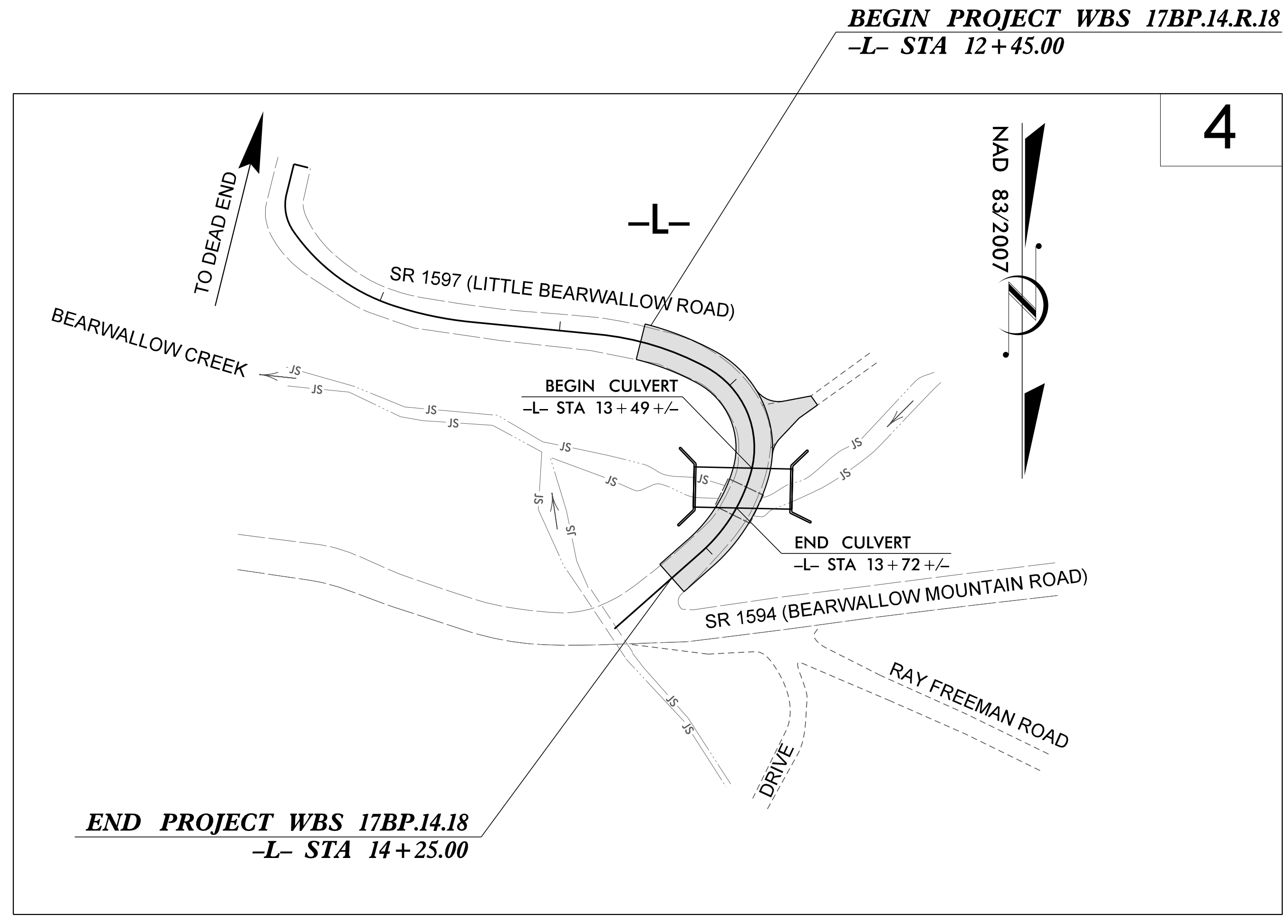
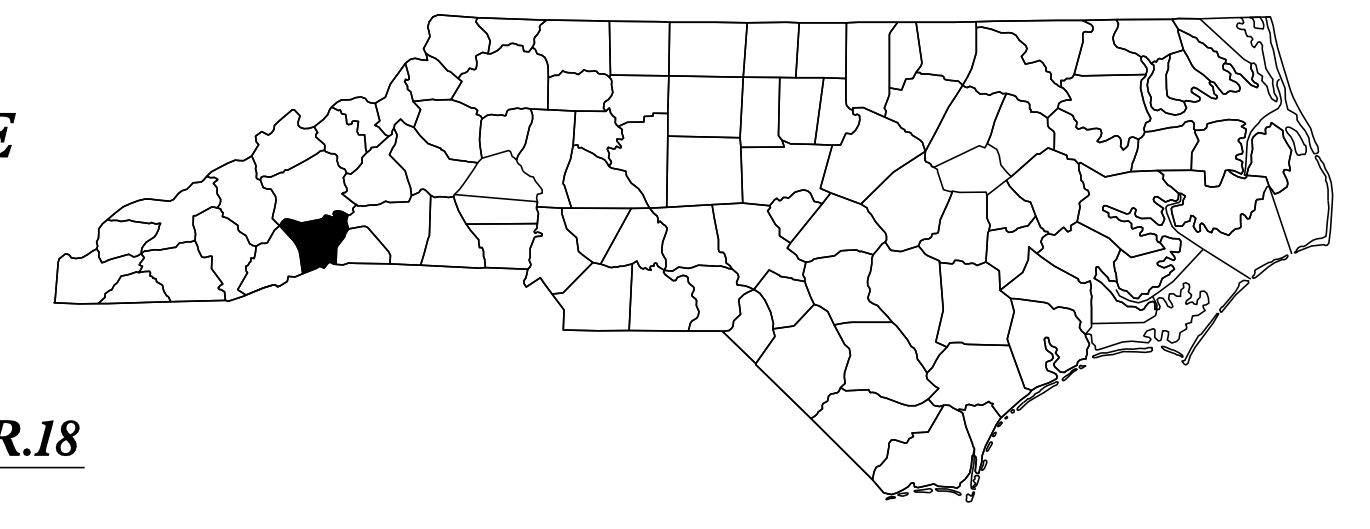


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

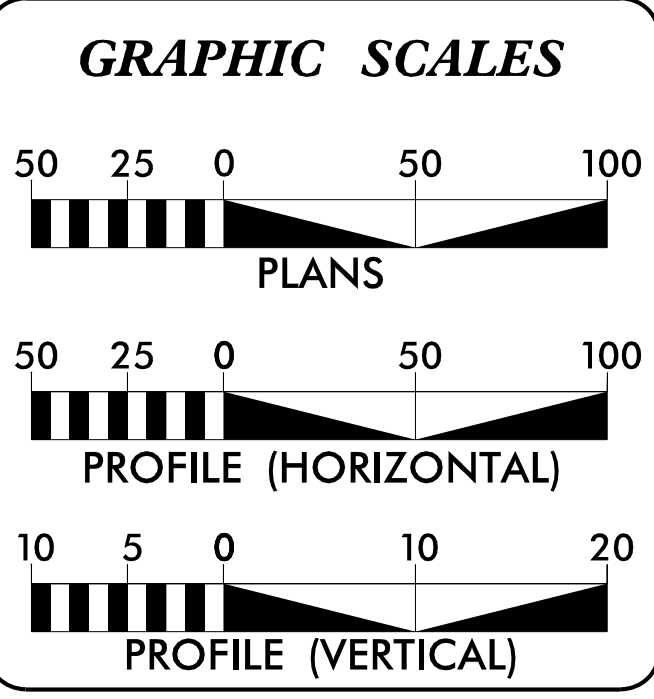
HENDERSON COUNTY

**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

2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	MARCH 14, 2014
LETTING DATE:	
	JAMES E. BECK, P.E. PROJECT ENGINEER
	MICHAEL D. HAGE, P.E. 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

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	WLB
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

ROADS AND RELATED FEATURES:

Proposed Permanent Easement with Iron Pin and Cap Marker	◆
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	XXXX
Single Tree	☘
Single Shrub	☙
Hedge	-----
Woods Line	-----

VEGETATION:

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	-----
Designated U/G Water Line (S.U.E.*)	-----
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	SS
Designated SS Forced Main Line (S.U.E.*)	SS

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	☑
Utility Unknown U/G Line	U/G
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

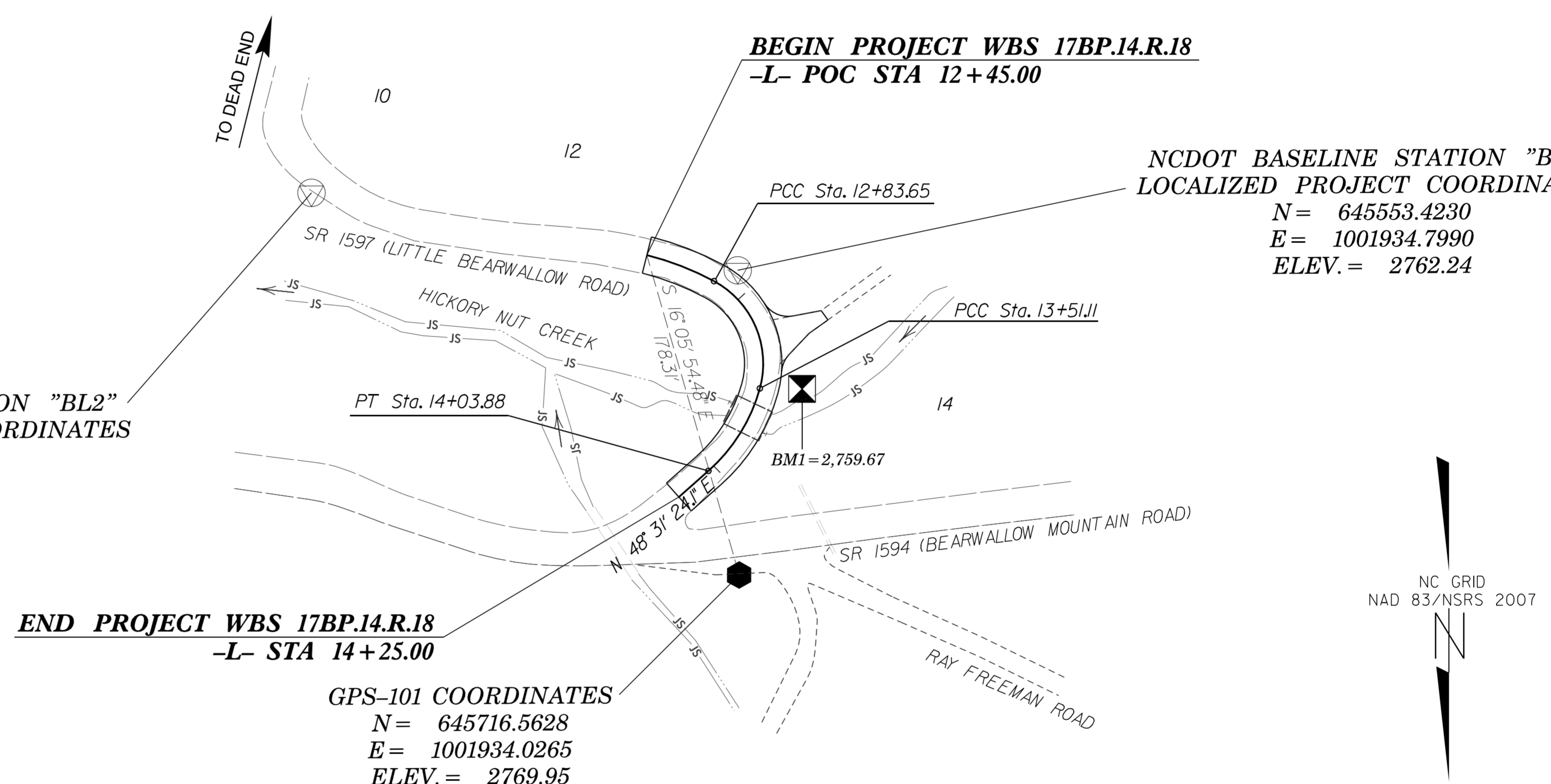
NCDOT BASELINE STATION "BL1"
LOCALIZED PROJECT COORDINATES
 N = 645398.9070
 E = 1002149.5530
 ELEV. = 2783.04

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

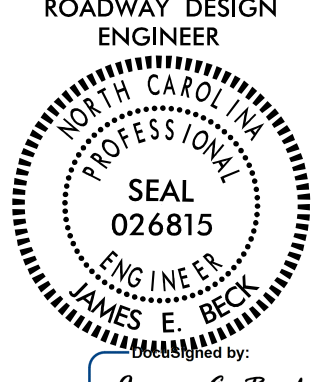

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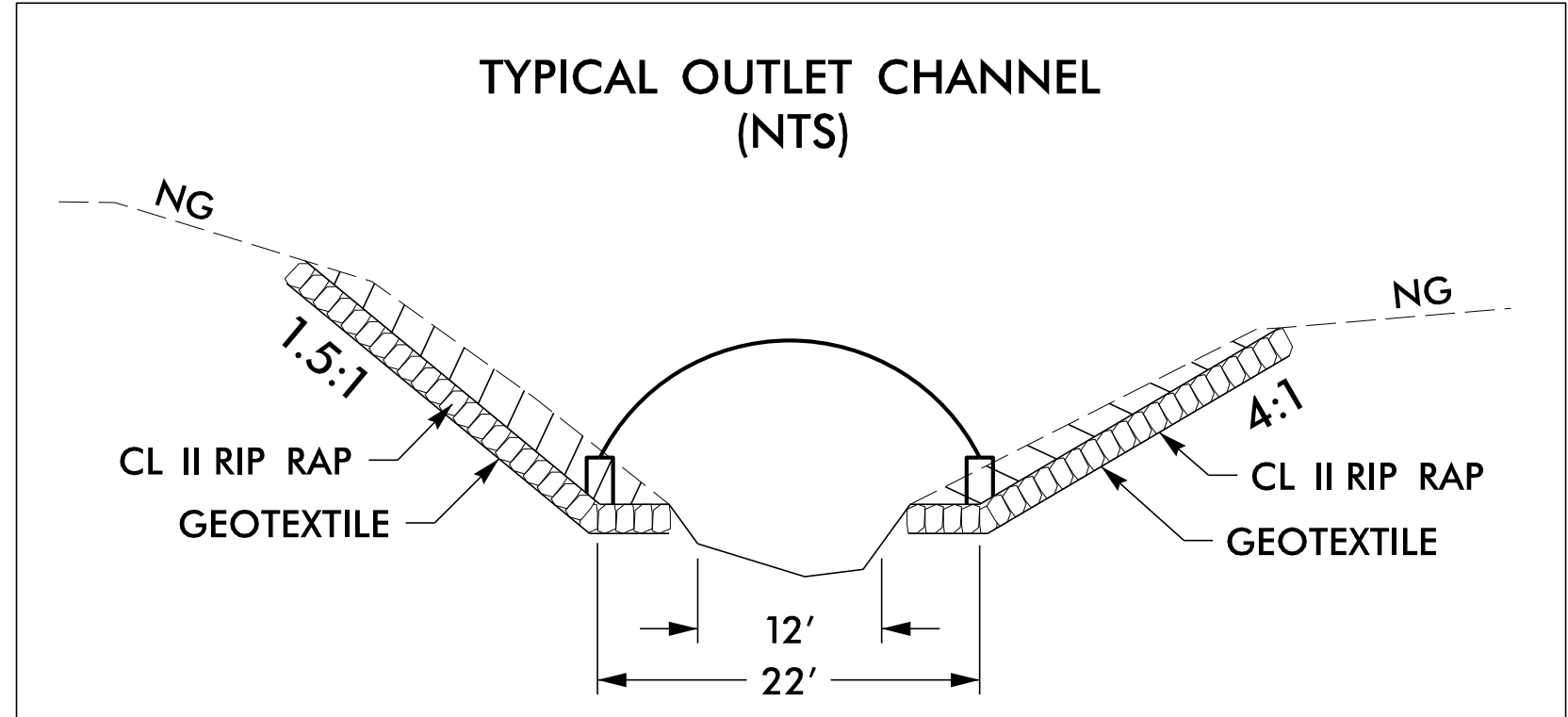
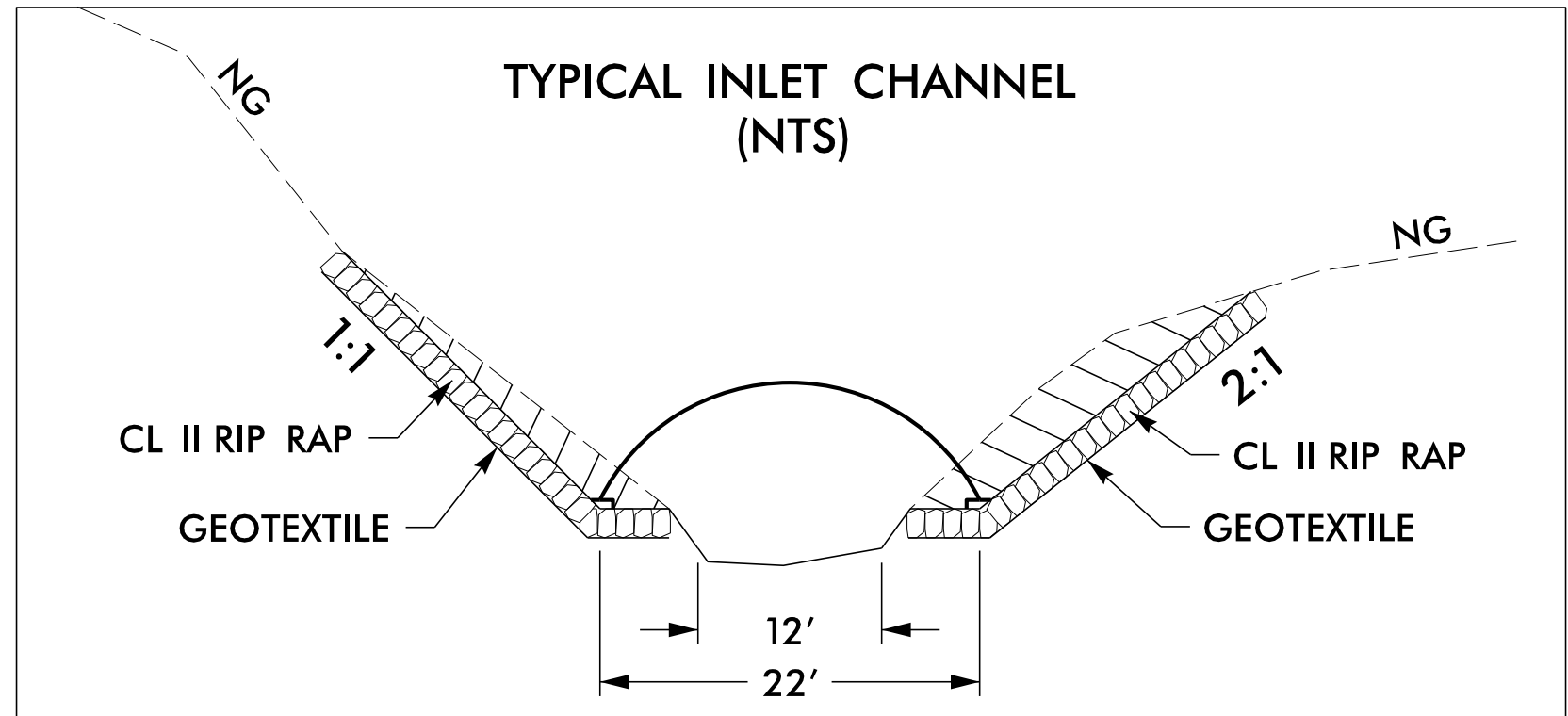
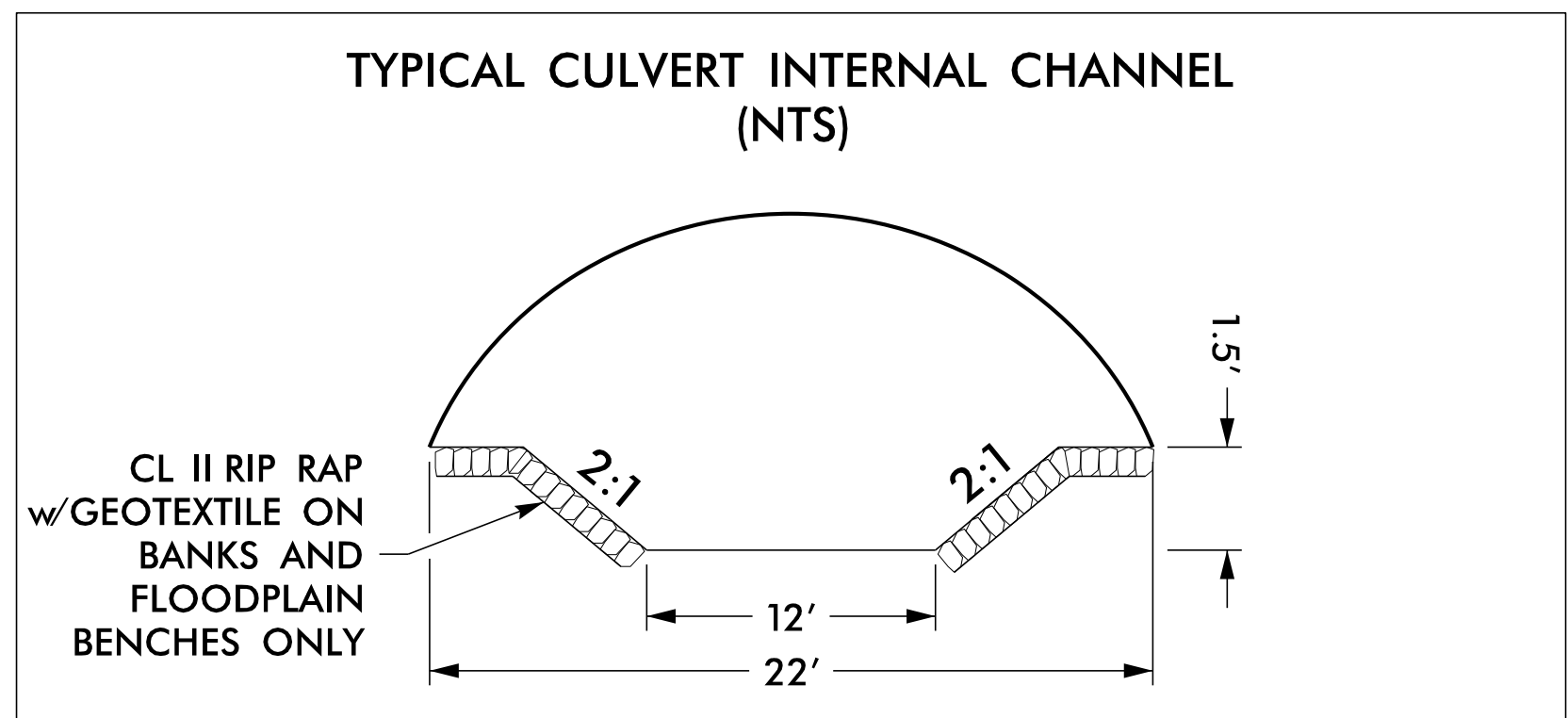
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 440261_LS_CONTROL.TXT
- SITE CALIBRATION INFORMATION HAS NOT BEEN 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.

2/29/02 PM
 W:\Projects\11-1-0481\003_Produces\No261\NCDOT_17BP_14_R18\Posdrew\Pro\144-0261_Pdu_5HT_1-C.dwg
 6/2/09

REVISIONS

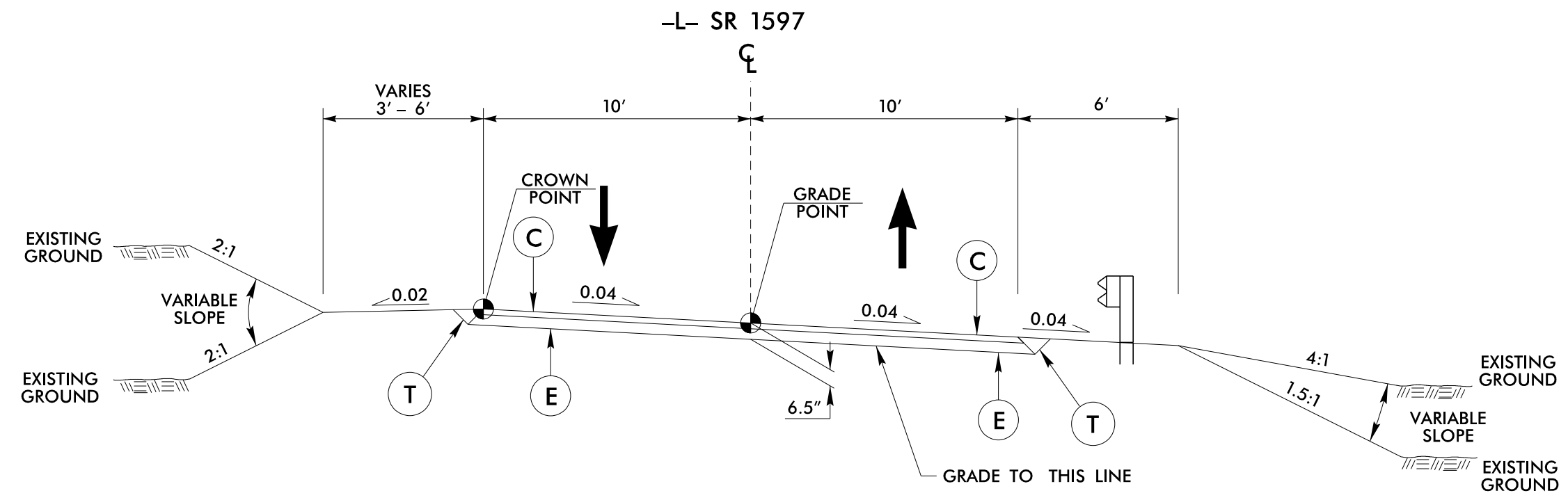
12:38:32 PM
 W:\Projects\11-0481-003-BrIDGE-No261-NCDD01-17BP-14-R18-Roadway\Proj\44-0261-Rdy-tjpr.dgn

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

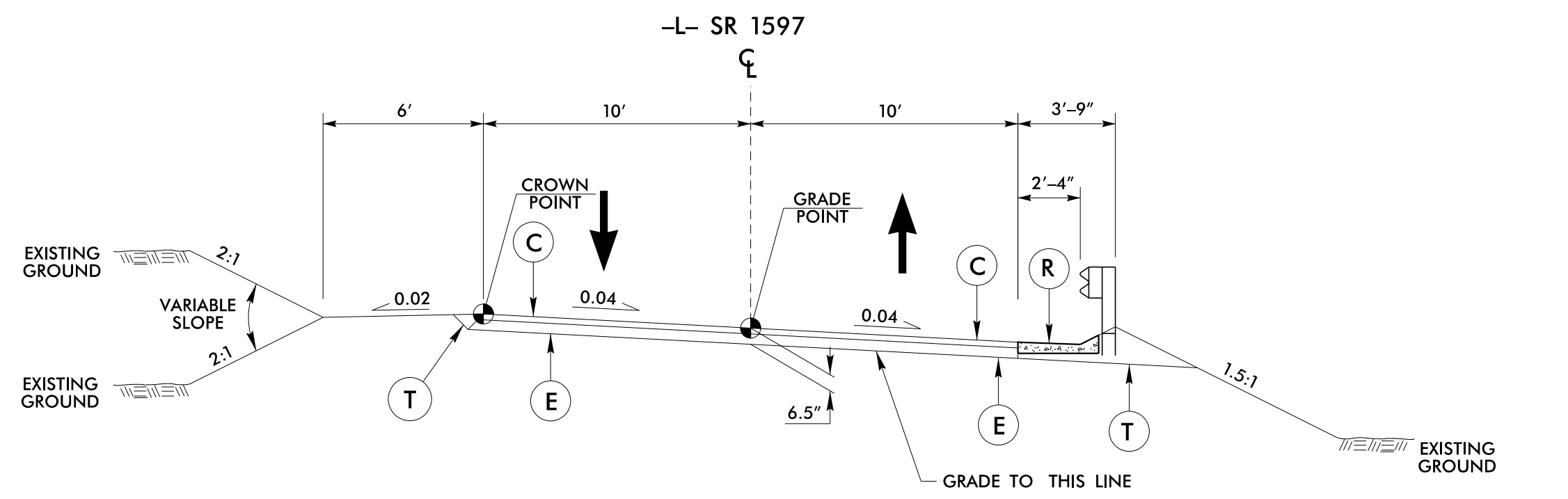


PAVEMENT SCHEDULE	
C	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	EXPRESSWAY GUTTER
T	EARTH MATERIAL

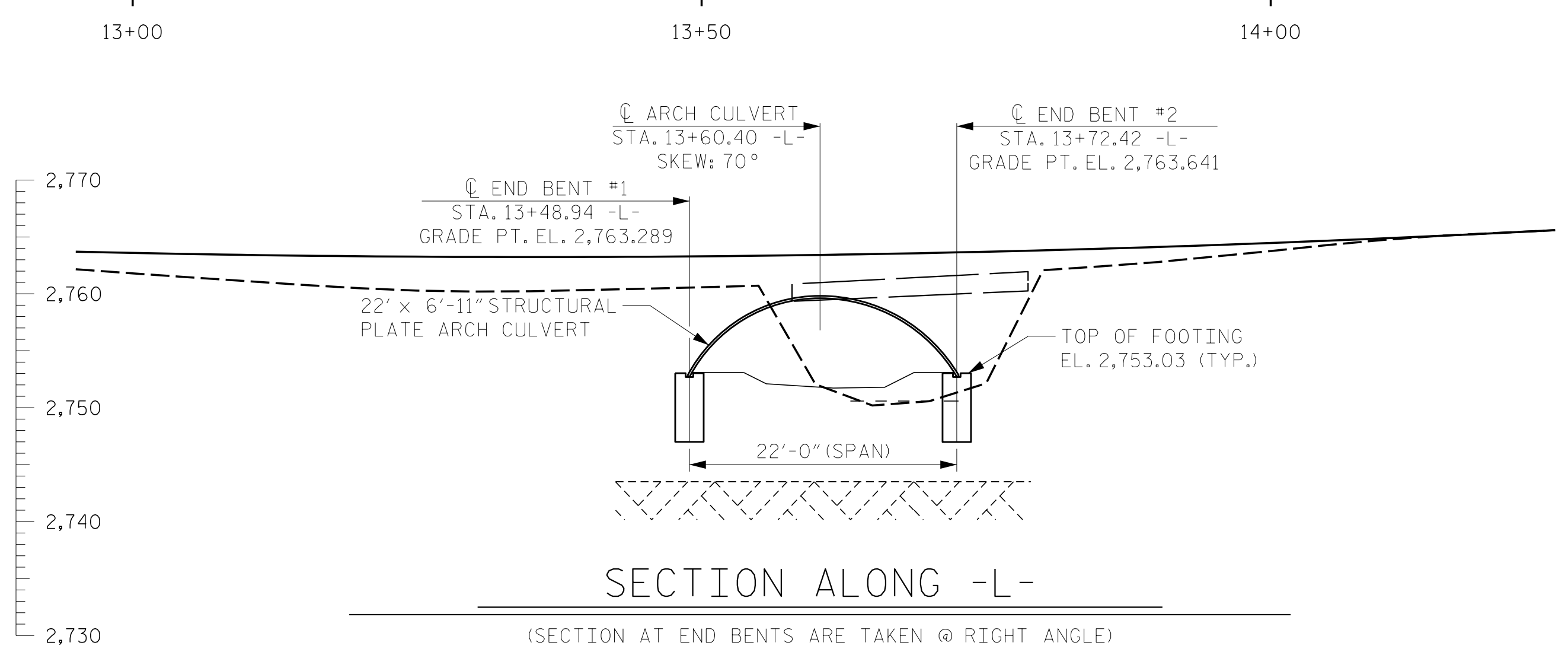
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



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

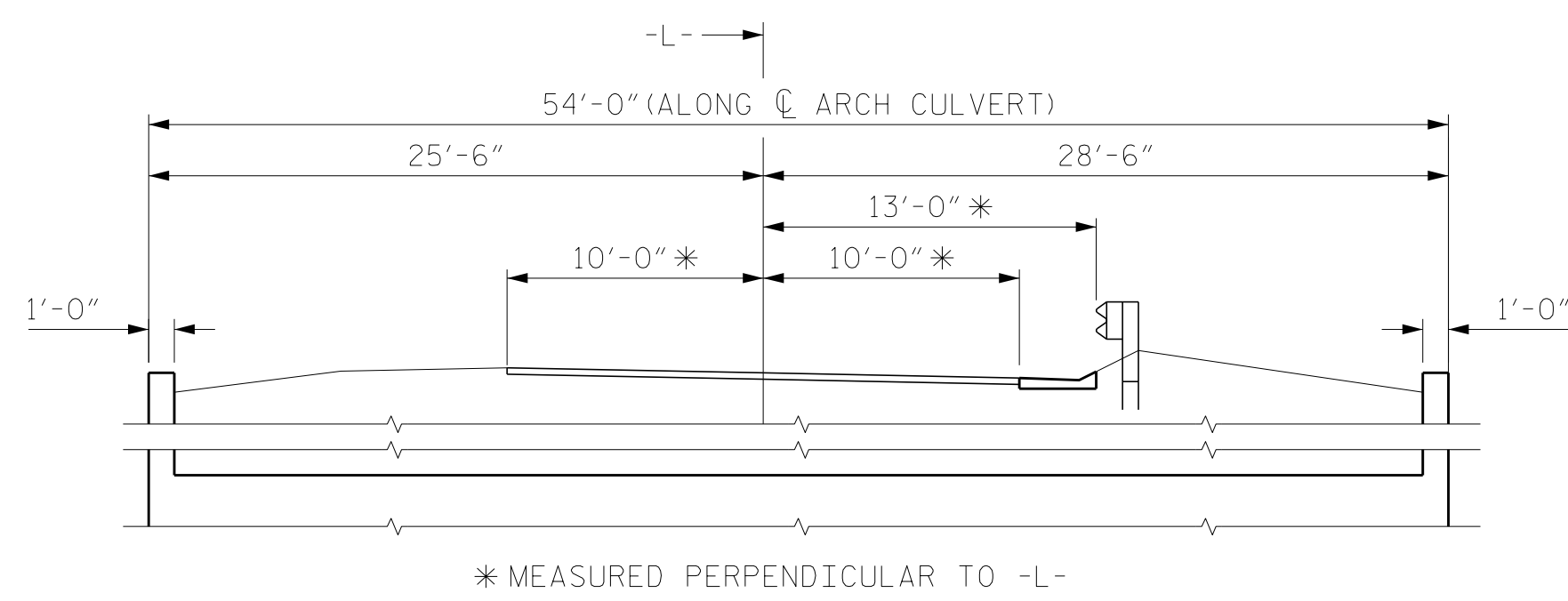


TYPICAL SECTION NO. 2
 -L- STA 12+83.65 TO -L- STA 14+03.88



SECTION ALONG -L-

(SECTION AT END BENTS ARE TAKEN @ RIGHT ANGLE)



SECTION A-A

(THRU CULVERT)

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

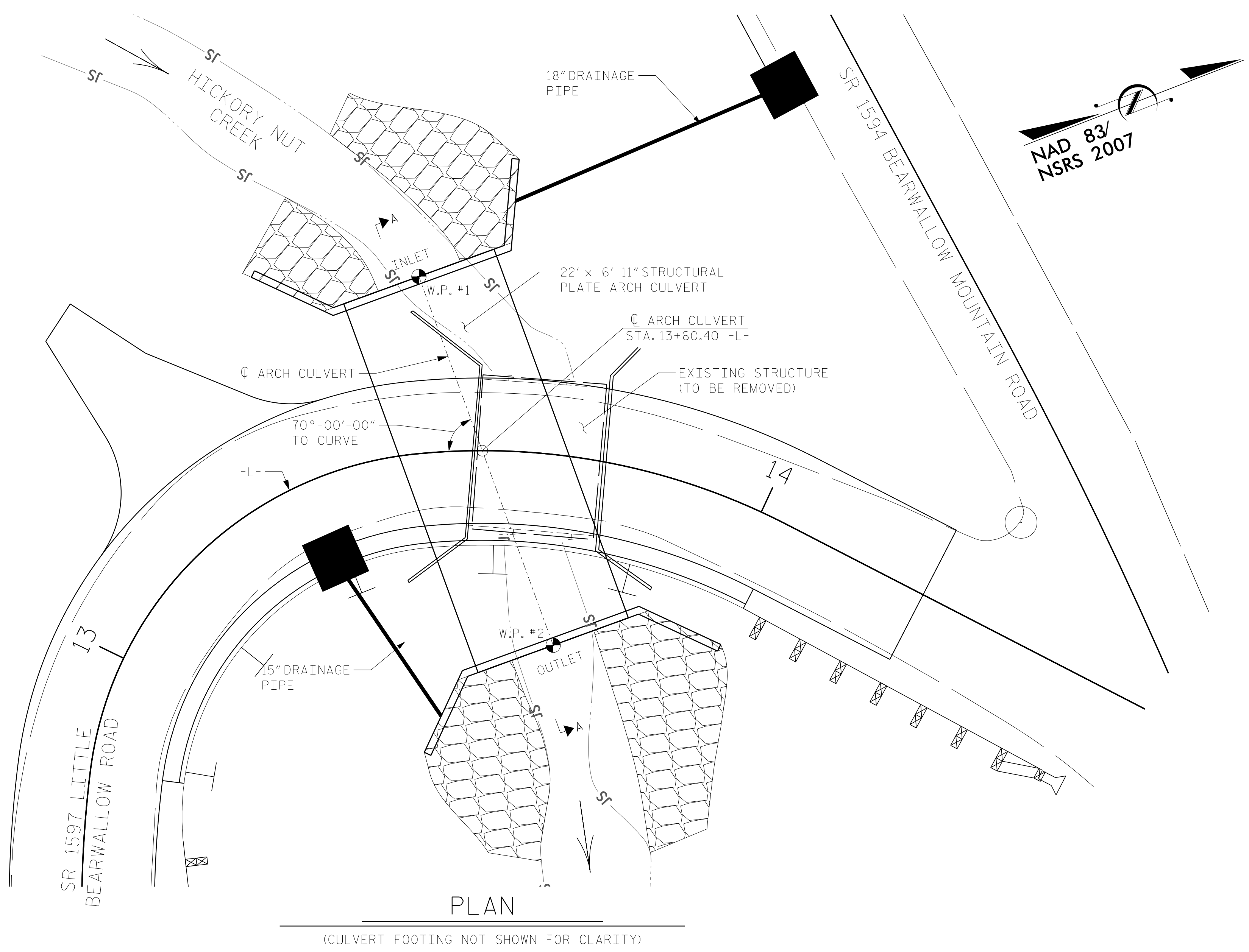
DESIGN DISCHARGE	= 490 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEV.	= 2,757.80 FT.
DRAINAGE AREA	= 0.89 SQ. MI.
BASE FLOOD DISCHARGE (Q ₁₀₀)	= 800 CFS
BASE FLOOD HIGH WATER ELEV.	= 2,760.68 FT.

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.



PLAN

(CULVERT FOOTING NOT SHOWN FOR CLARITY)

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

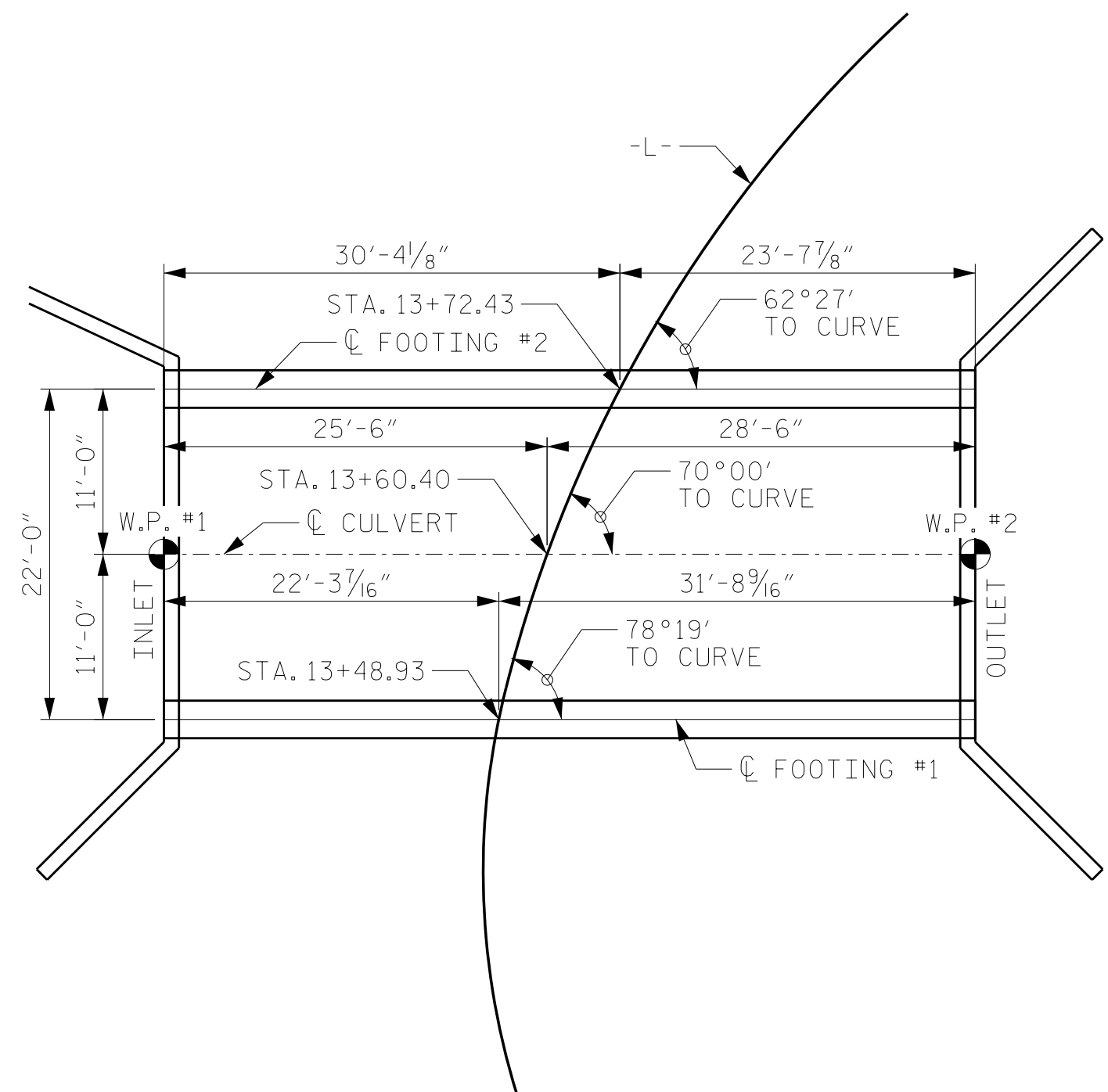
DRMP
 ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS
 941 LAKE BALDWIN LANE, ORLANDO, FLORIDA 32814
 PHONE: (407) 896-0594 FAX: (407) 896-4836
 NORTH CAROLINA LICENSE NO. C-2213



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

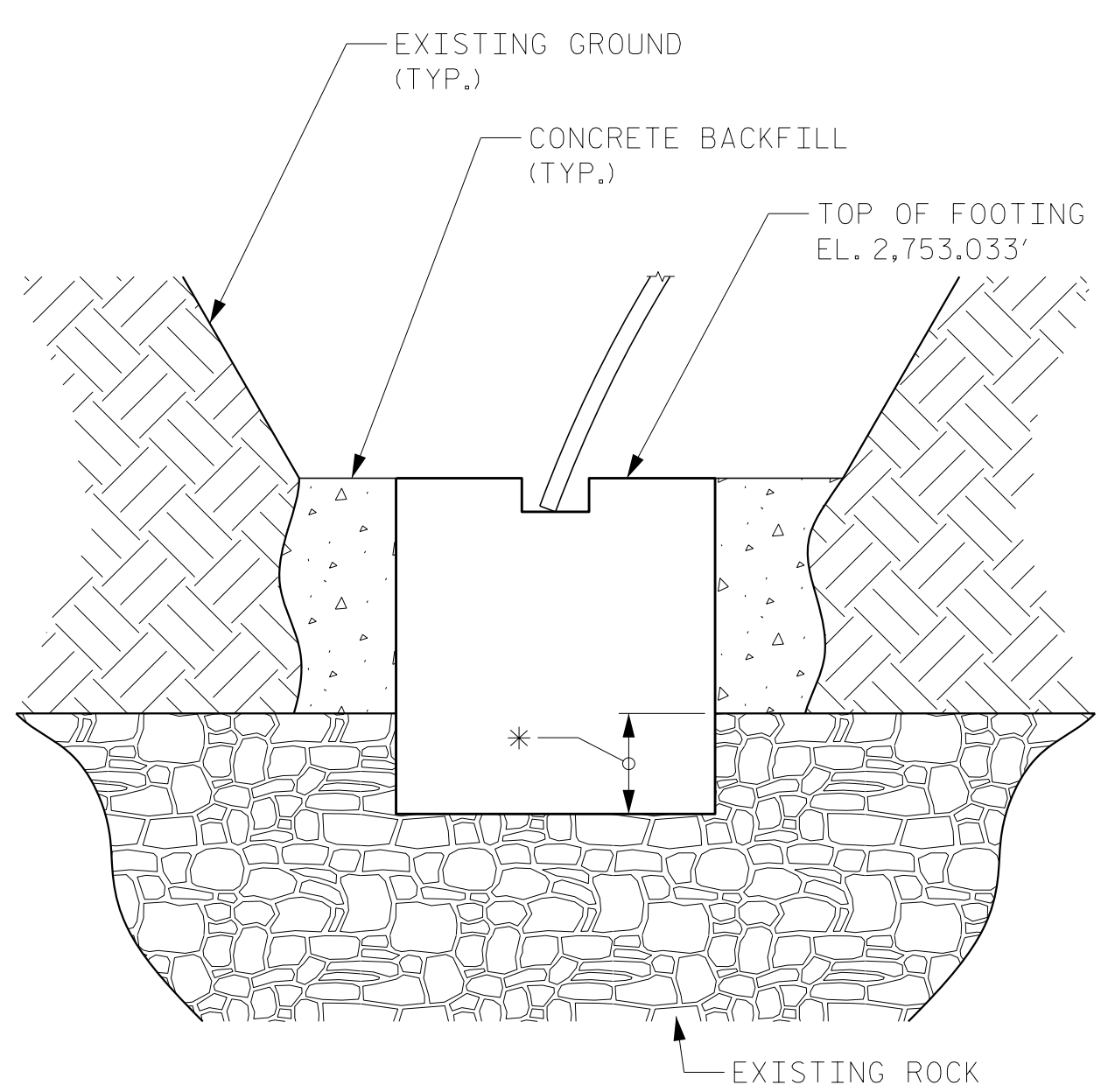
SHEET OF
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE #261 ON SR 1597
 OVER HICKORY NUT
 CREEK
 20' CL. ROADWAY 70°-00' SKEW

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



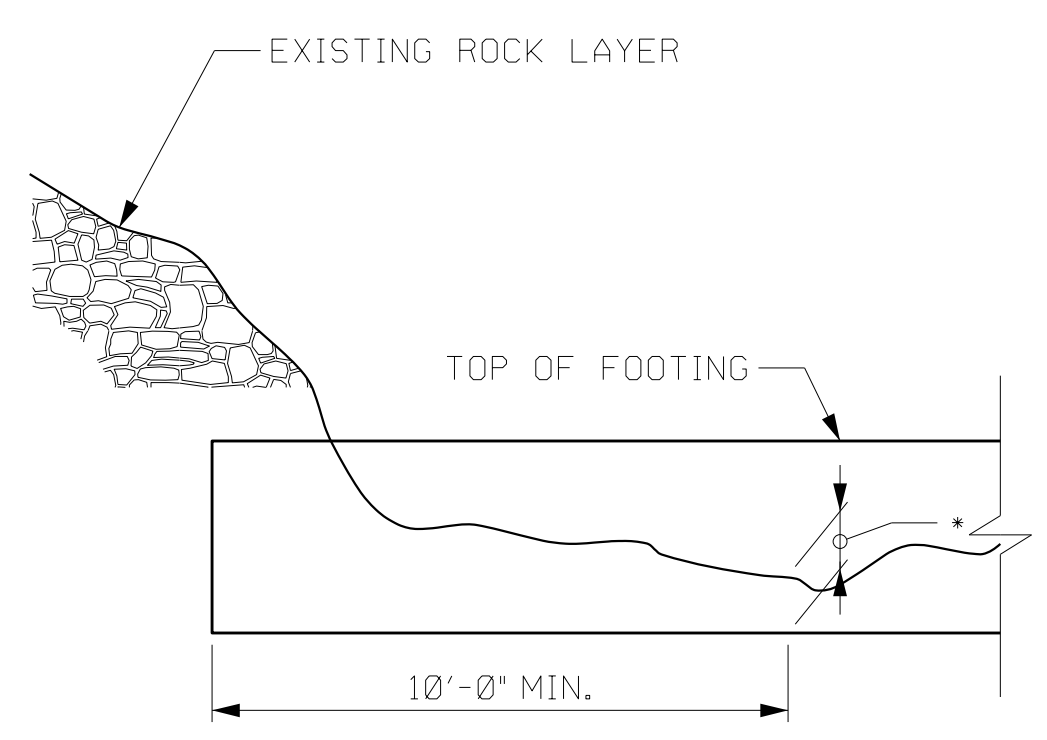
FOUNDATION PLAN

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



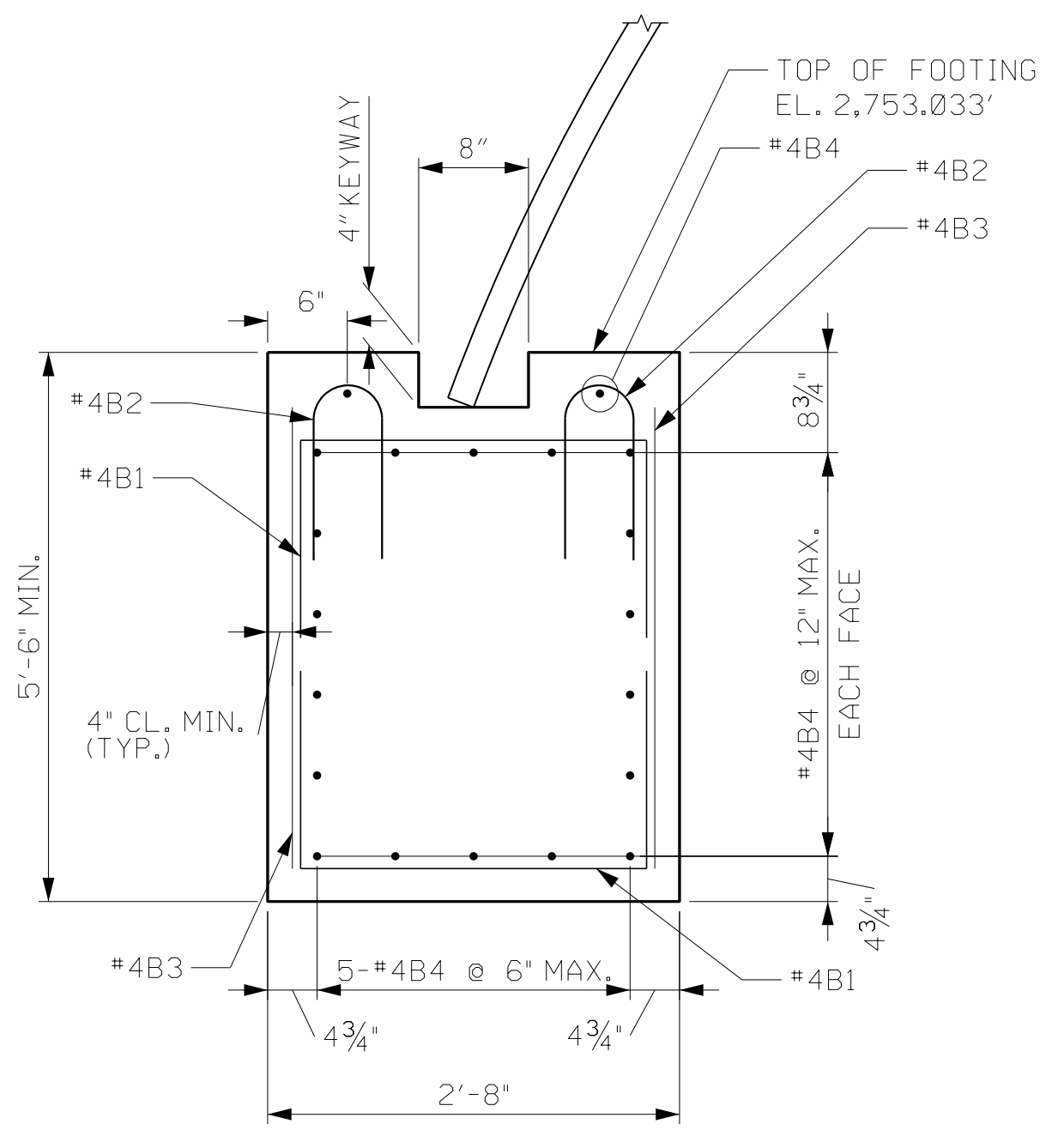
DETAIL OF CONCRETE BACKFILL

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

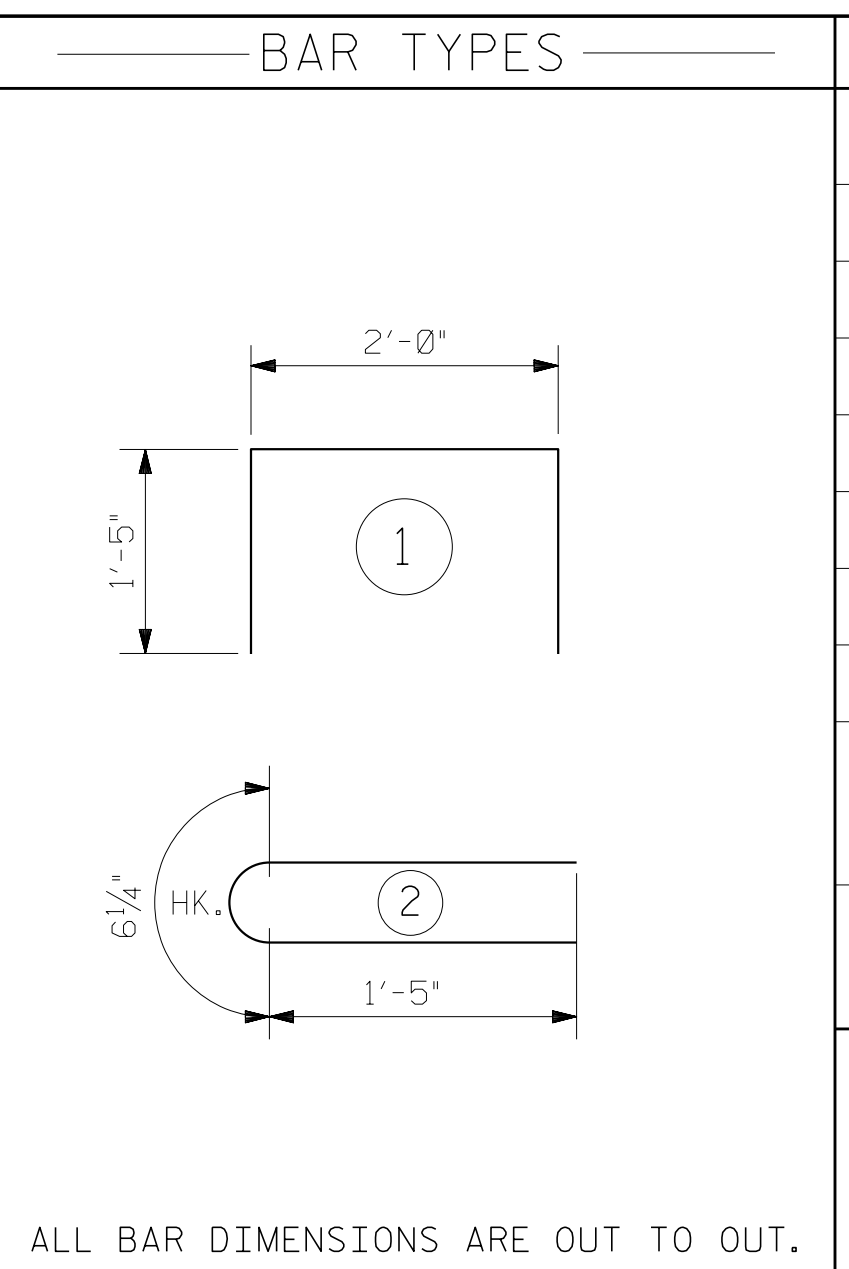


SECTION B-B

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



FOOTING SECTION



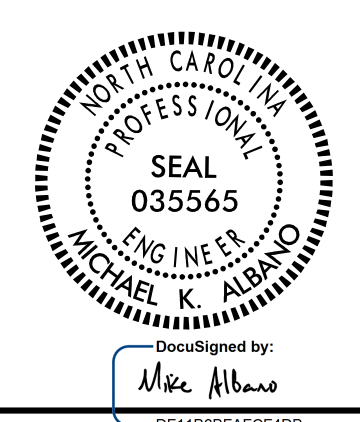
BAR TYPES		BILL OF REINFORCING				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	432	4	1	4'-10"	1395	
B2	432	4	2	3'-4 1/4"	968	
*B3	432	4	STR	10'-0"	2886	
B4	40	4	STR	53'-4"	1426	
TOTAL REINFORCING STEEL					6,675 LBS.	

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.

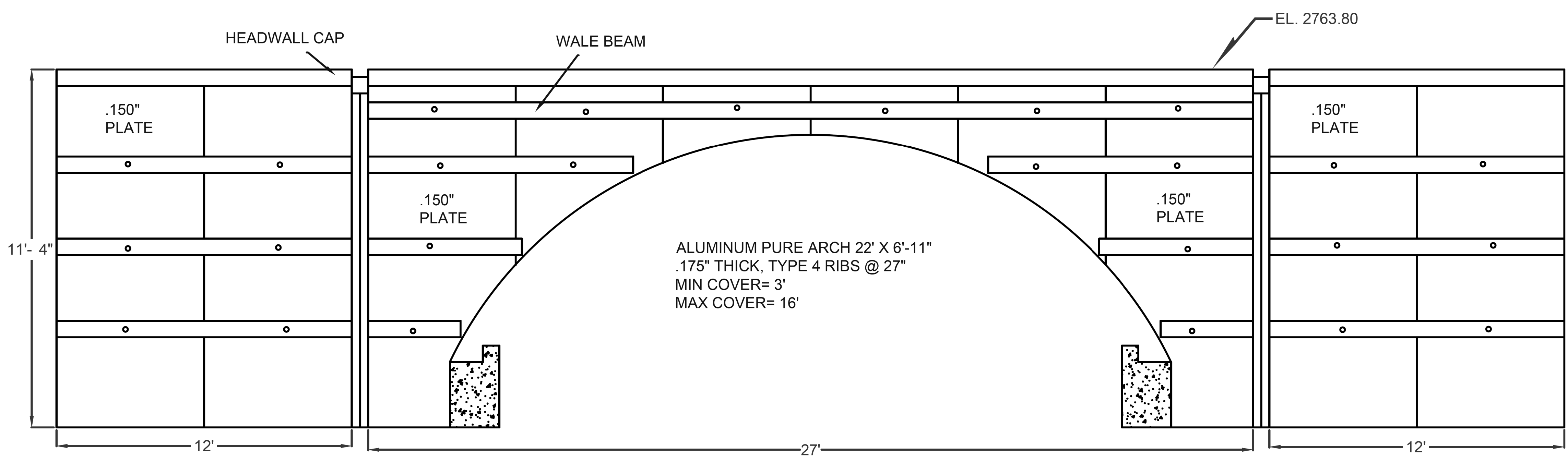
DRAWN BY : J. TUELL DATE : 08-2013
CHECKED BY : J. HERRERA DATE : 12-2013



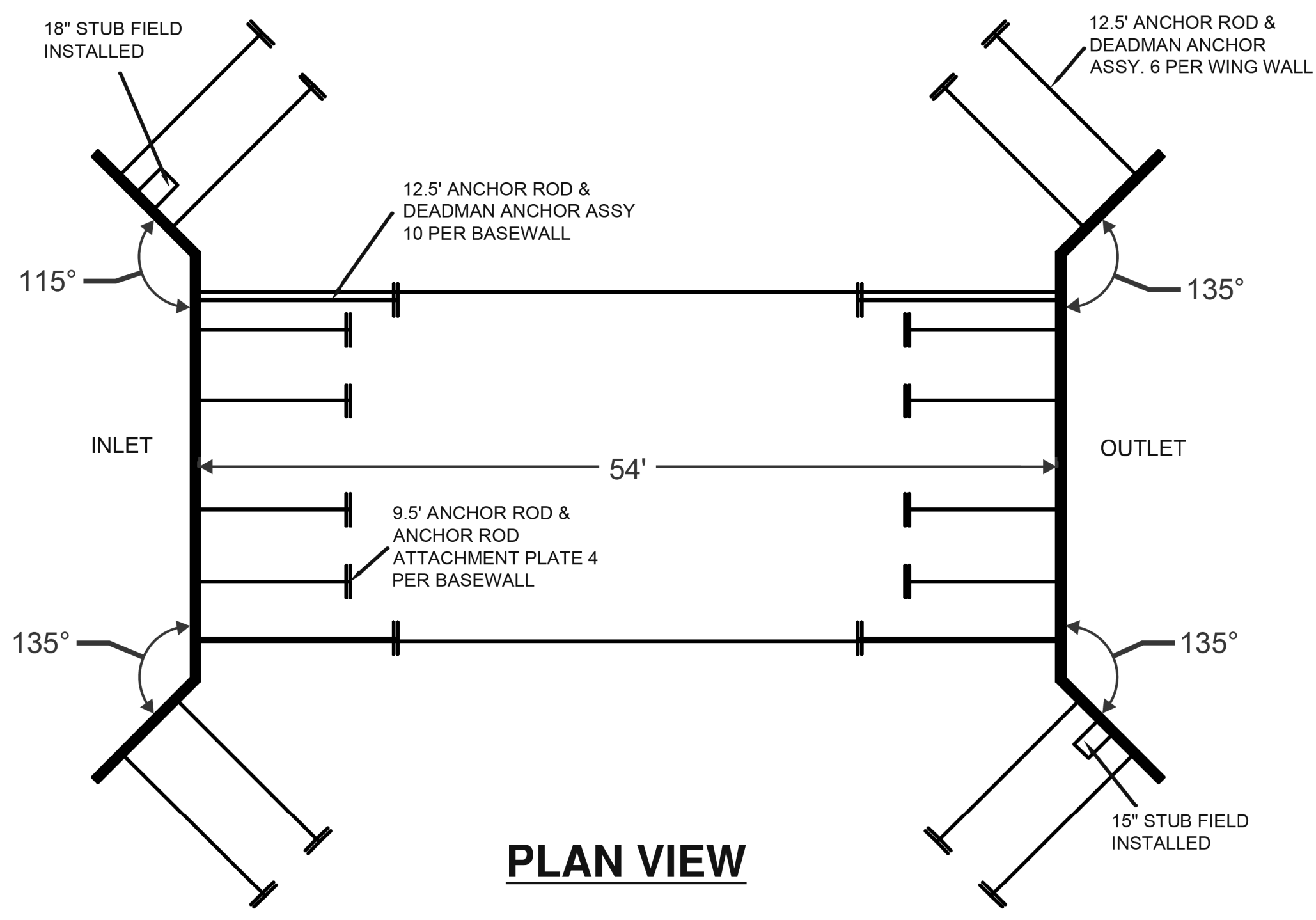
PROJECT NO. 44-0261
HENDERSON COUNTY
STATION: 13+60.40 -L-

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STRUCTURAL PLATE
ARCH CULVERT
DETAILS AND
FOUNDATION LAYOUT



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			

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

STATE OF NORTH CAROLINA
 PROFESSIONAL SEAL
 035565
 ENGINEER
 MICHAEL K. ALBANO
 DocuSigned by:
 Mike Allano
 DF-1188DF-APCF-426

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

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>APPROVED: _____ DATE: _____</p> <p style="text-align: center;">SEAL</p> <div style="text-align: center;"> <p style="font-size: x-small;">DocuSigned by: Tim Arey</p> </div>	<p style="text-align: center; font-size: small;">PLAN PREPARED BY: PROGRESSIVE DESIGN GROUP, INC.</p> <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>
---	--

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.

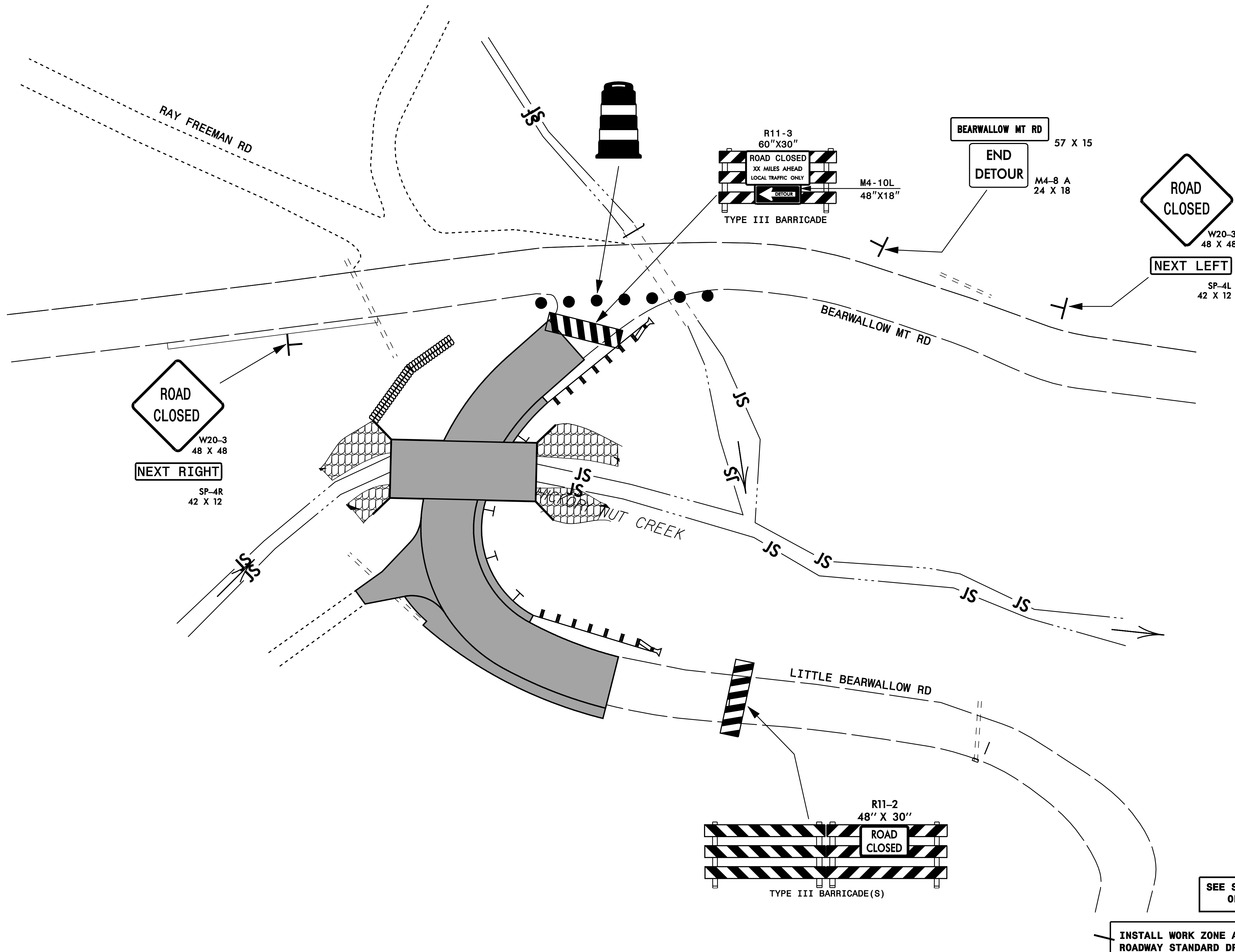
TRAFFIC CONTROL DEVICES

- 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: _____	PROJECT NOTES & PHASING		
				SCALE:
		DATE: 06/02/13	REVISIONS	
		DWG. BY: LDA		
		DESIGN BY: TMA		
DocuSigned by: Tim Arey		REVIEWED BY: TMA	CADD FILE	



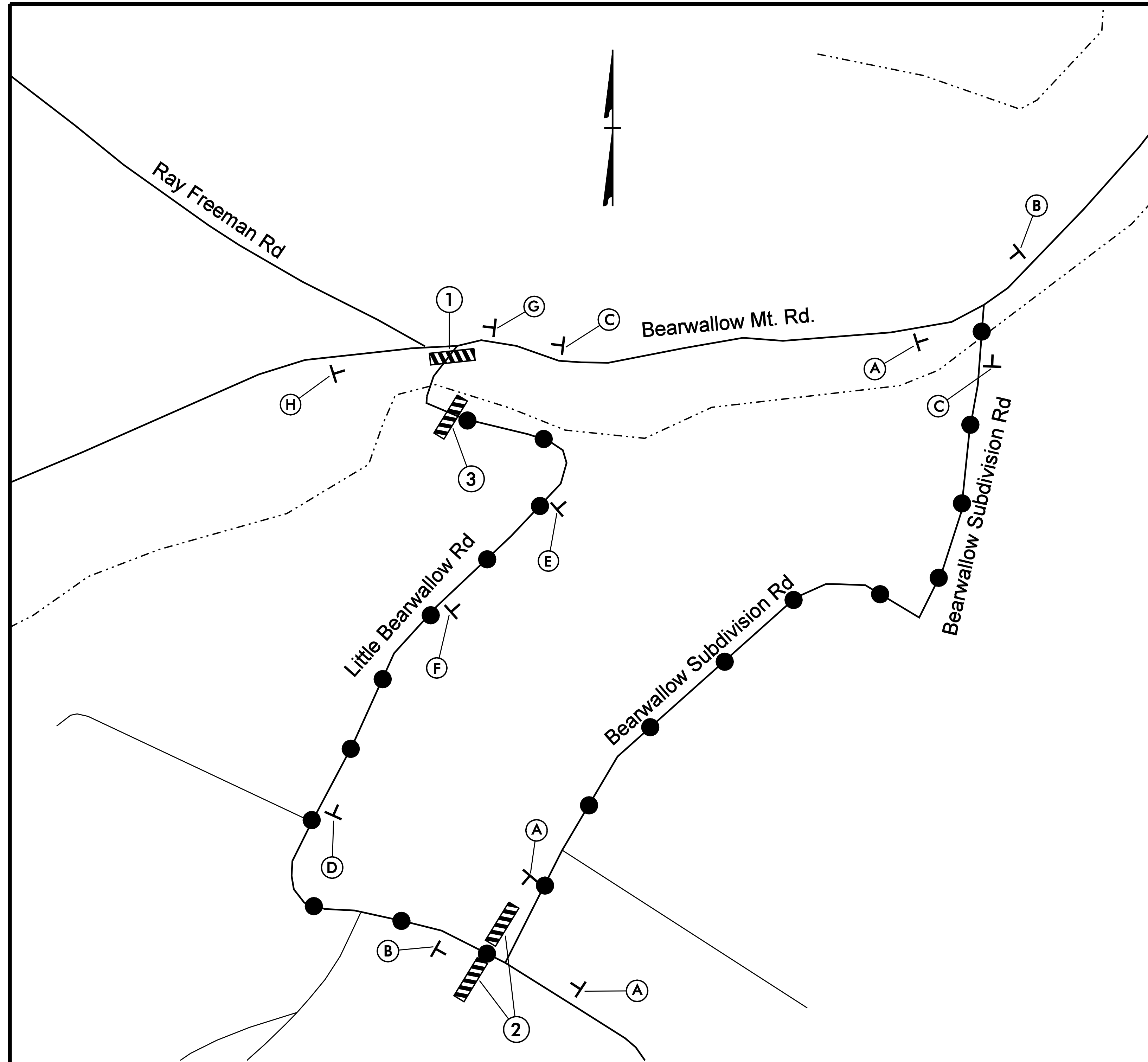
SEE SHEET TCP-04 FOR REMAINING OFF SITE DETOUR DEVICES

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

PROGRESSIVE
DESIGN GROUP, INC.
ENGINEERS • CONSULTANTS

APPROVED: _____ DATE: _____
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
TIM AREY
SEAL 025465

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



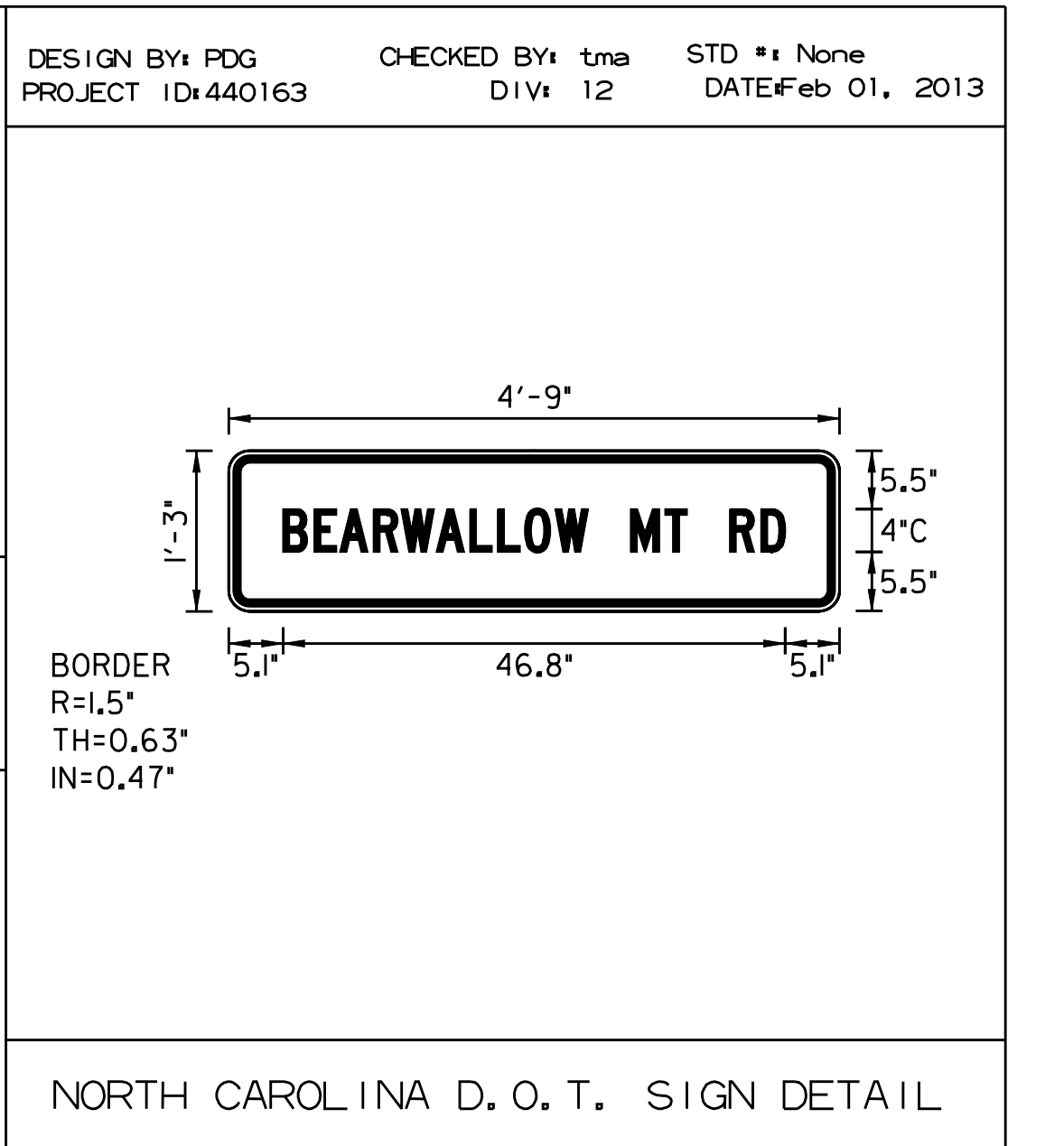
SIGN NUMBER: 301
 TYPE: D
 QUANTITY: 4
 SIGN WIDTH: 4'-9"
 HEIGHT: 1'-3"
 TOTAL AREA: 5.9 Sq. Ft.
 BORDER TYPE: FLUSH
 RECESS: 0.47"
 WIDTH: 0.63"
 RADII: 1.5"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Orange
 COPY COLOR: Black
 MAJ. COPY SERIES: 'C'
 ROUTE MARKERS:
 ARROW TYPES:
 MAT: 1/16 mm ALUMINUM

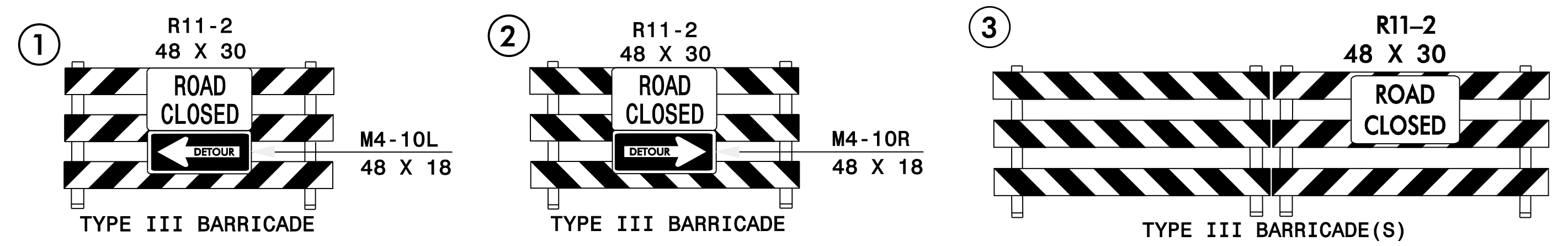
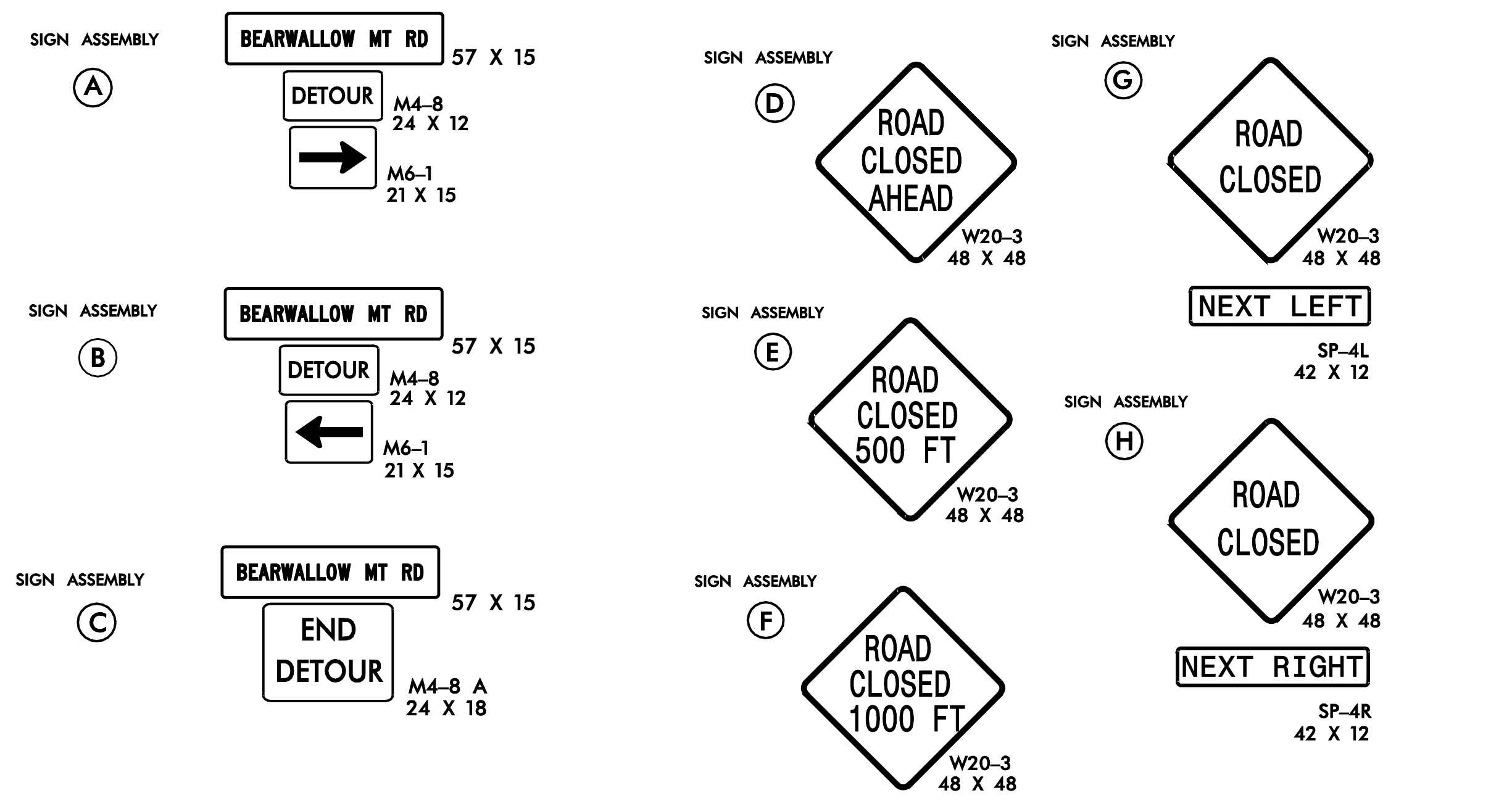
LETTER POSITIONS
 B 2.2 2
 E 2.6 2
 A 2.2 3
 L 2.6 2
 L 2.4 3
 O 2.6 2
 W 2.2 2
 M 2.2 2
 T 46.8
 R 2.2 2
 D 46.8

Letter positions are to the lower left corners

USE NOTES:
 1. Legend and border shall be direct applied encapsulated lens reflective sheeting.
 2. Legend and border shall be direct applied enclosed lens reflective sheeting.
 3. Shields shall be encapsulated lens reflective sheeting on 0.8mm aluminum and demountable.
 4. Background shall be encapsulated lens reflective sheeting.
 5. Background shall be enclosed lens reflective sheeting.
 6. Center arrows vertically on sign.



●—●—● 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
 DATE: 06/02/13
 DWG. BY: LDA
 DESIGN BY: TMA
 REVIEWED BY: TMA

REVISIONS

CADD FILE

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. 17BP.14.R.18	SHEET NO. PMP-1
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

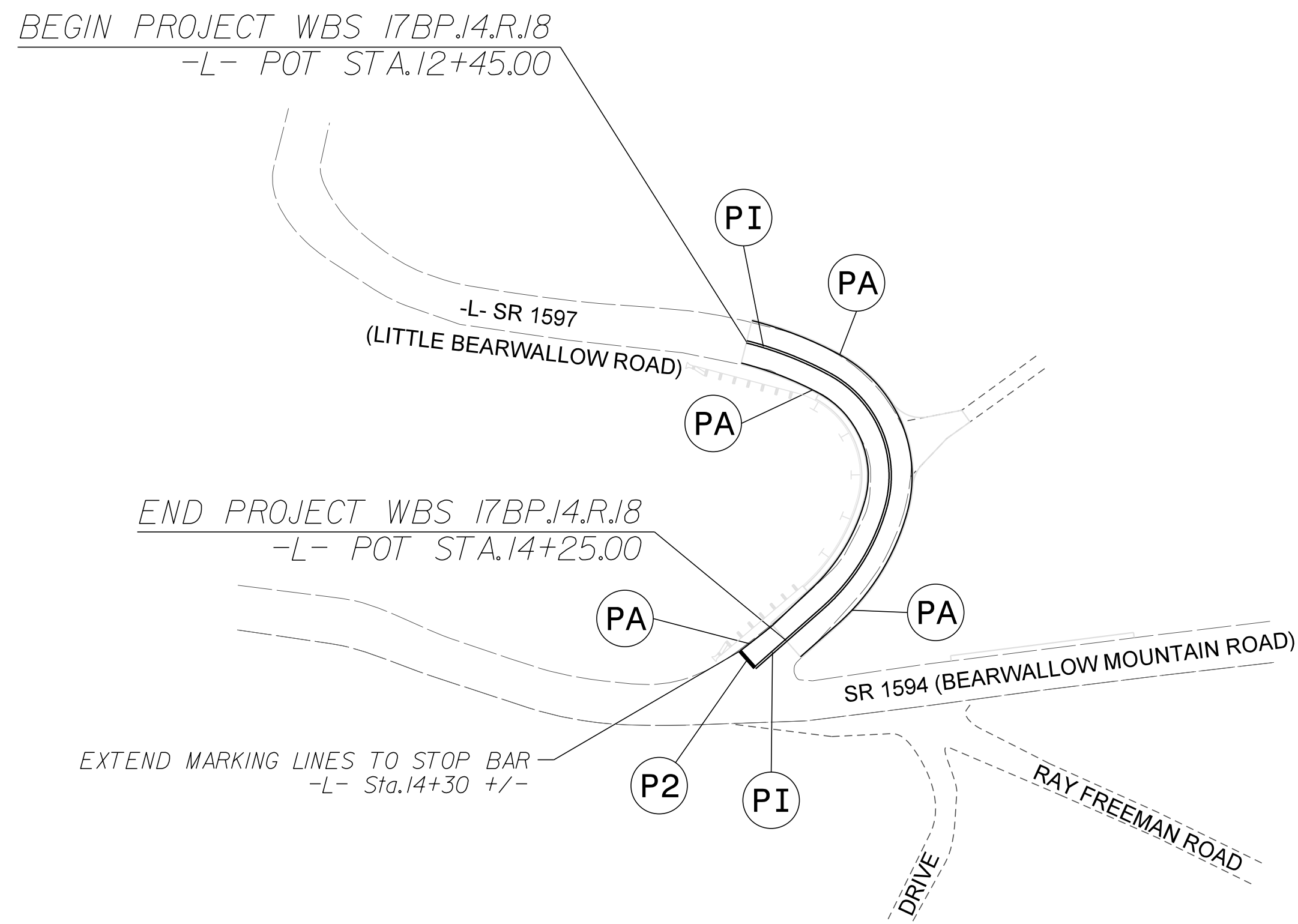
FINAL PAVEMENT MARKINGS

PAVEMENT MARKING LINES

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

SYMBOL & MARKING LEGEND

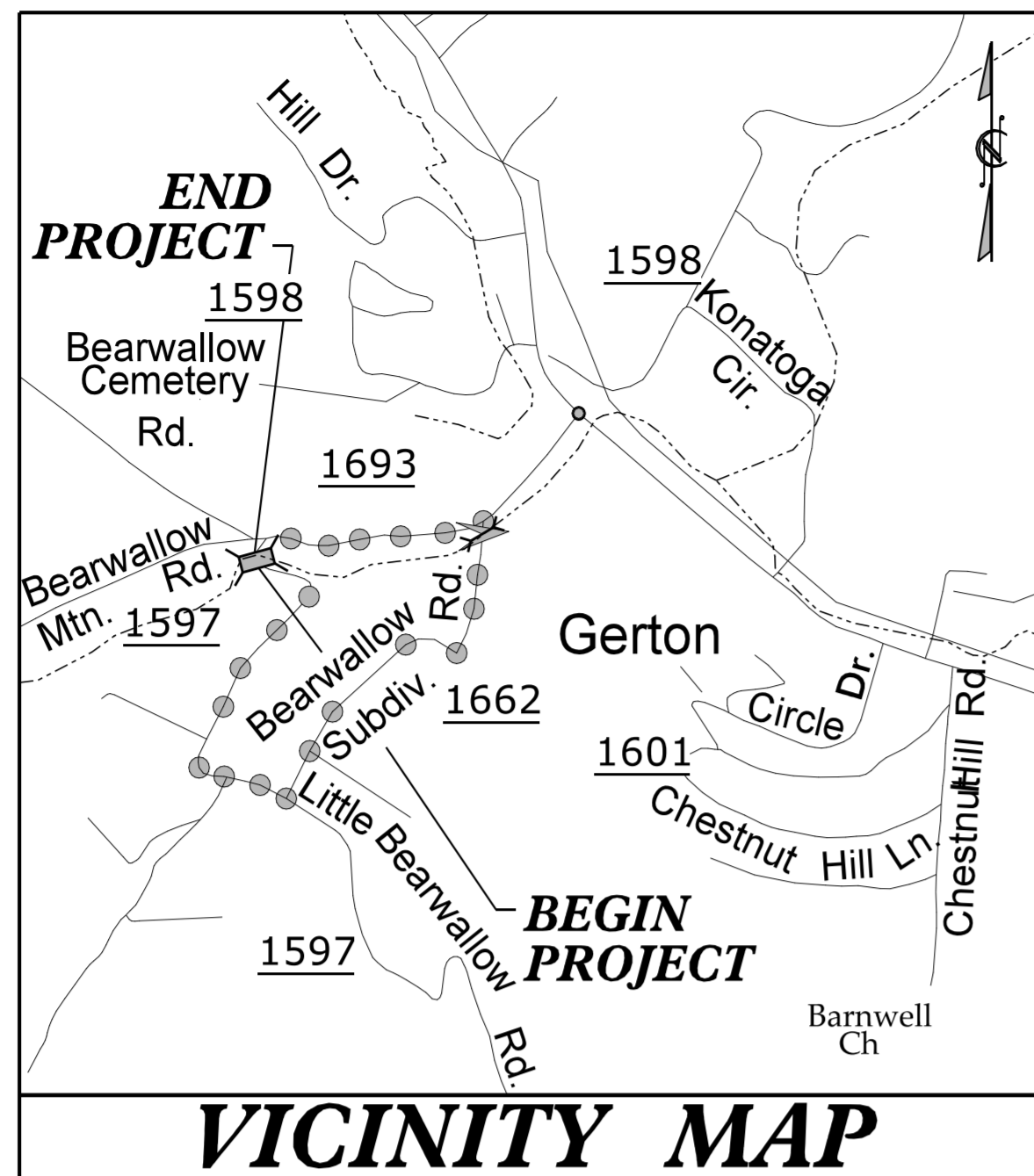
	PAINT	-	WHITE EDGELINE (4")
	PAINT	-	YELLOW DOUBLE CENTER LINE (4")
	PAINT	-	STOP BAR (24")



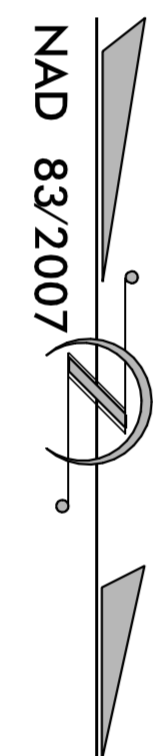
NAD 83/2007

PROJECT: WBS 17BP.14.R.18

CONTRACT: DN00151

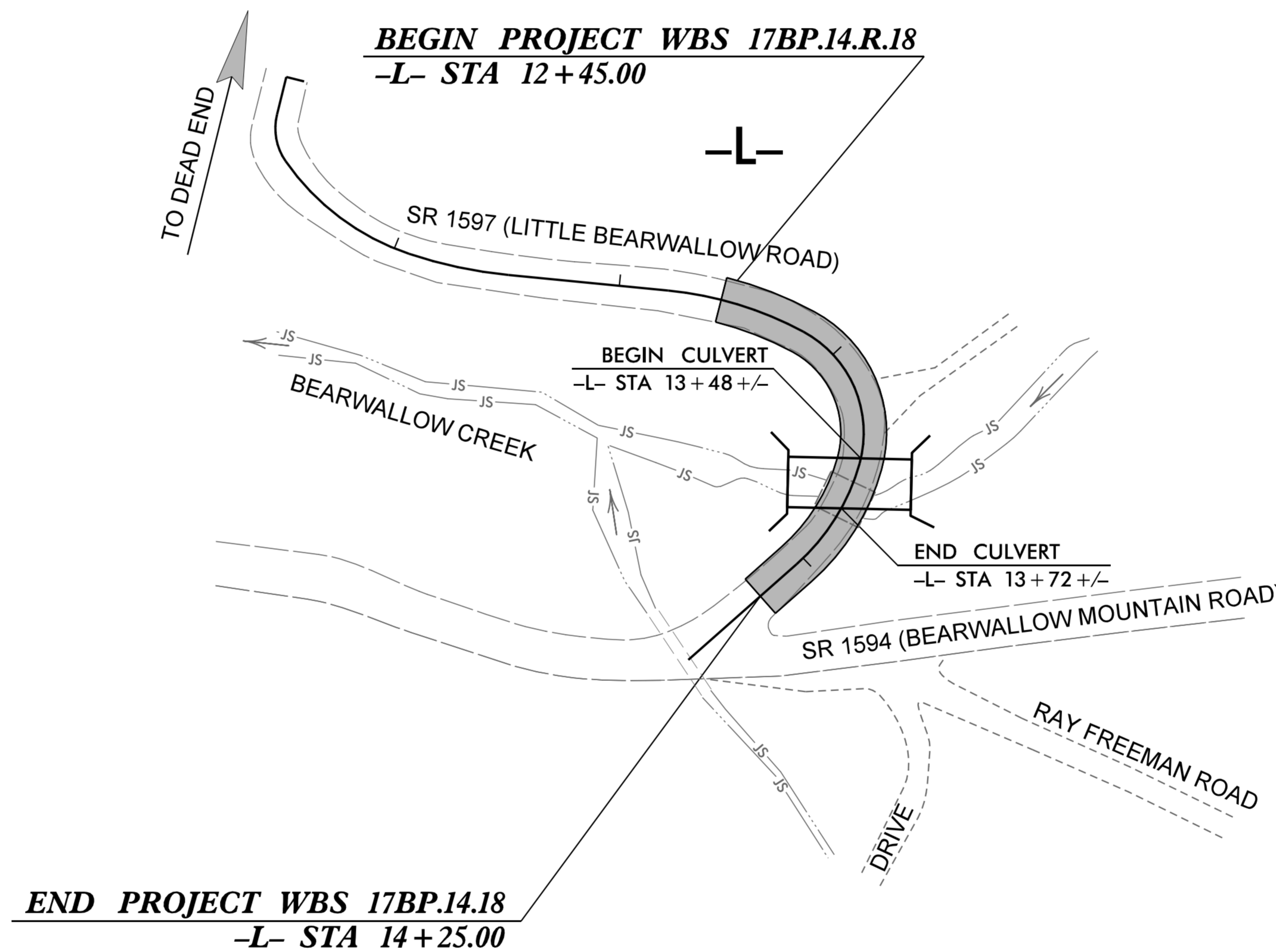


● OFFSITE DETOUR



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**



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.

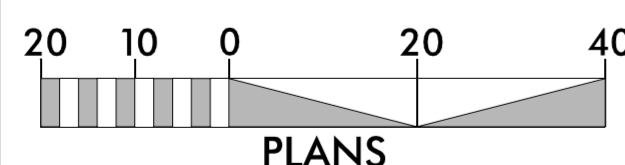
ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT

*Refer To E. C. Special Provisions
for Special Considerations.*

BRAD T. SMITH, EI
LEVEL III NAME

3520
LEVEL III CERTIFICATION NO.

GRAPHIC SCALE



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

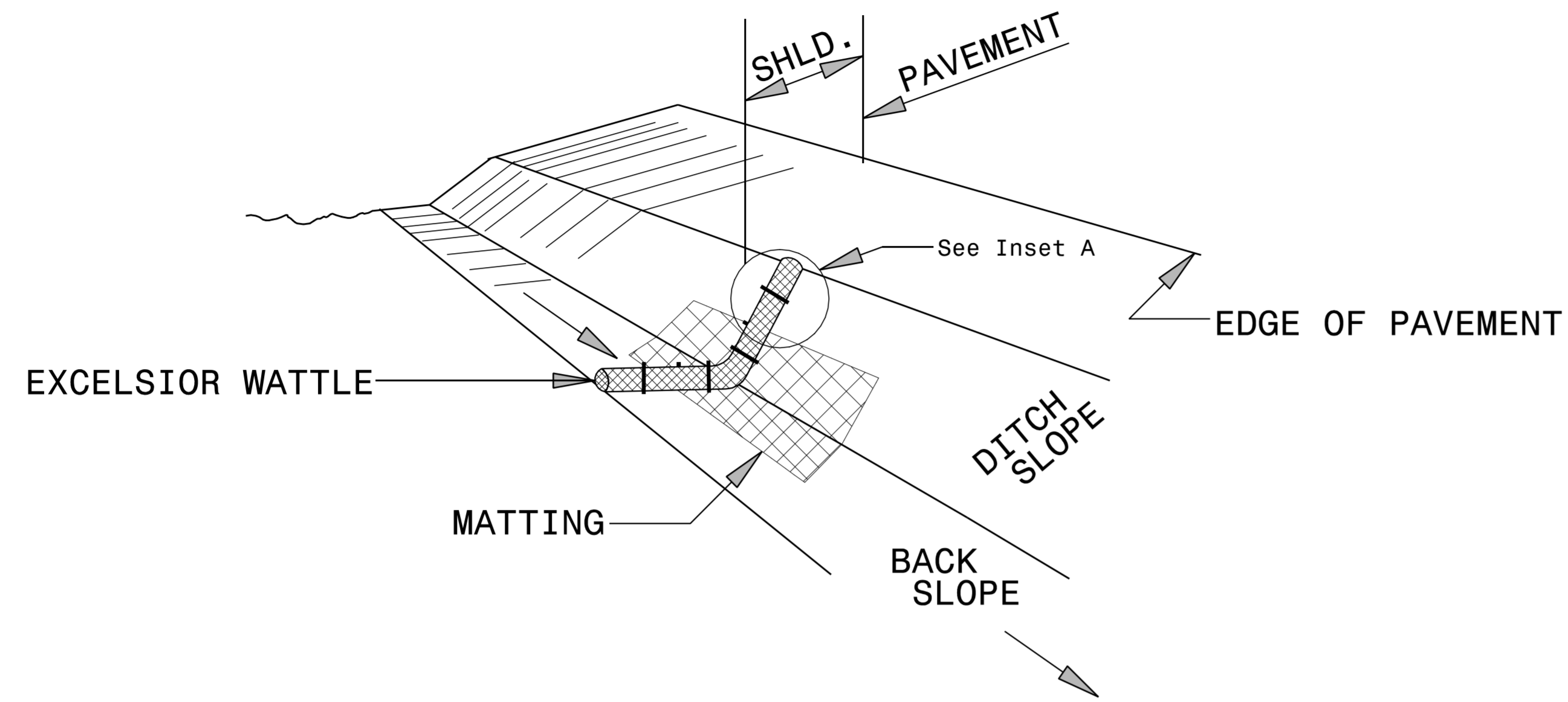
Roadway Standard Drawings

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.

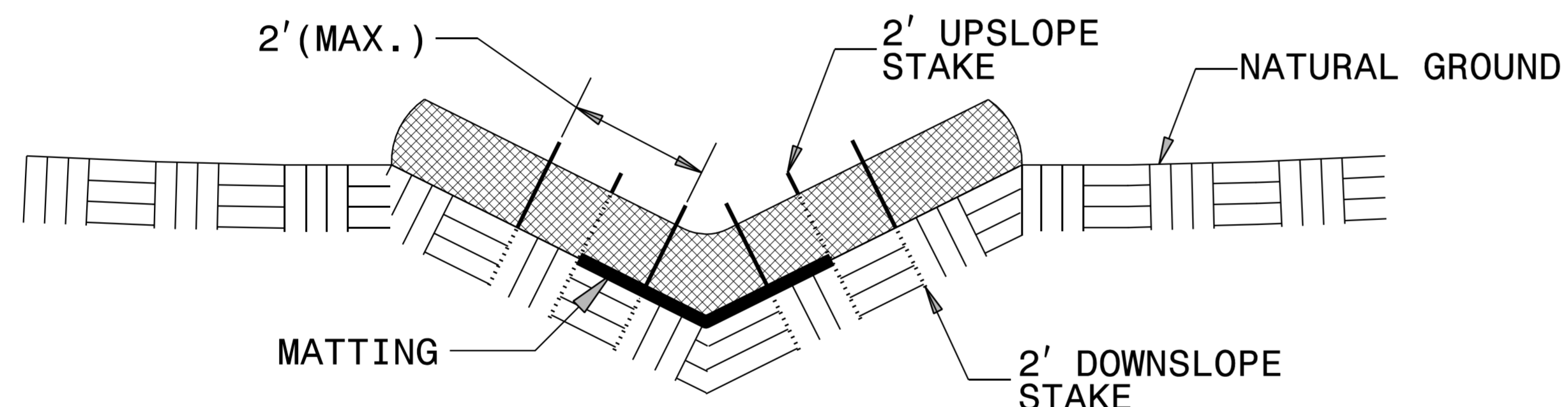
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type 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	

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

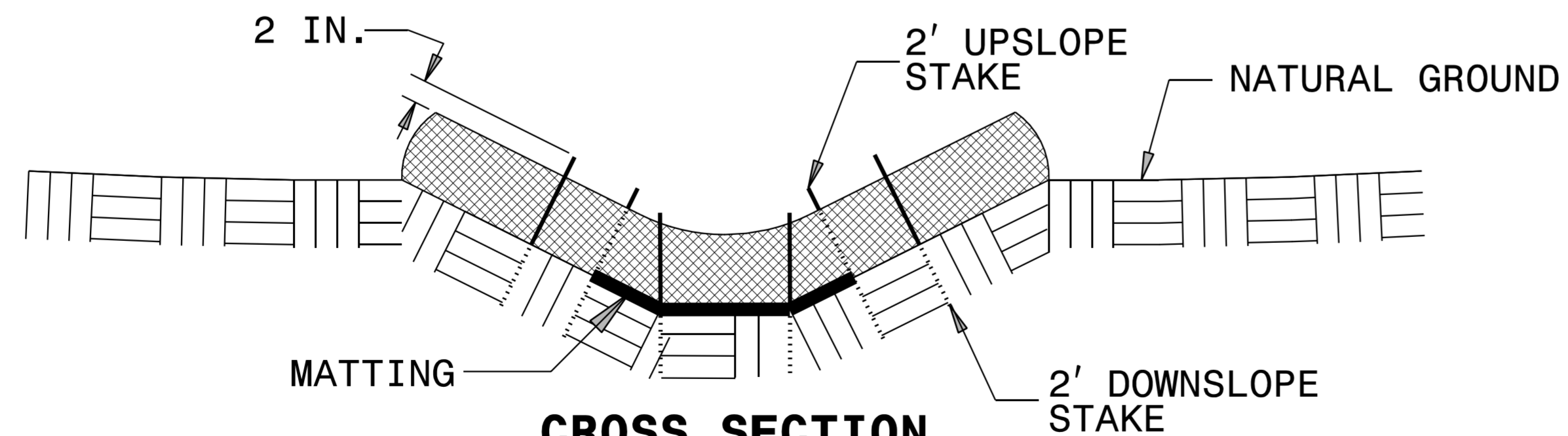
WATTLE DETAIL



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.

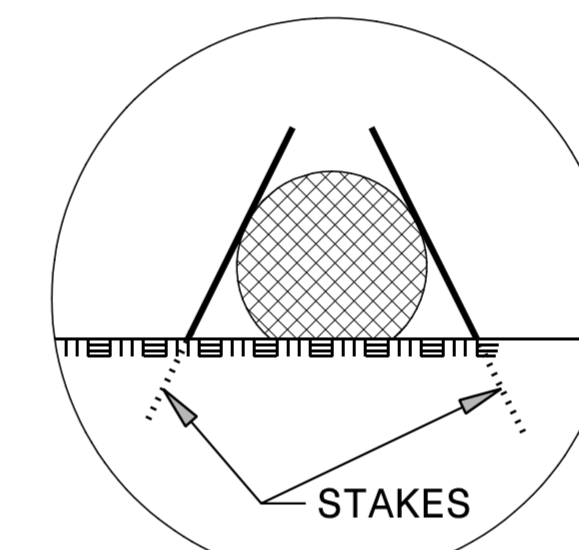
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

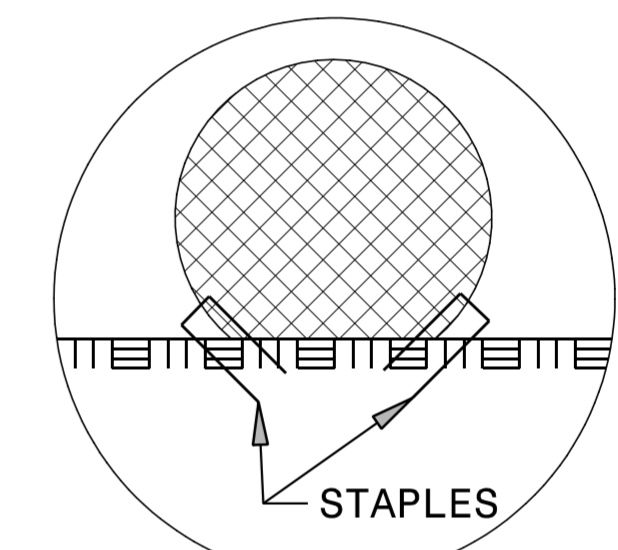
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

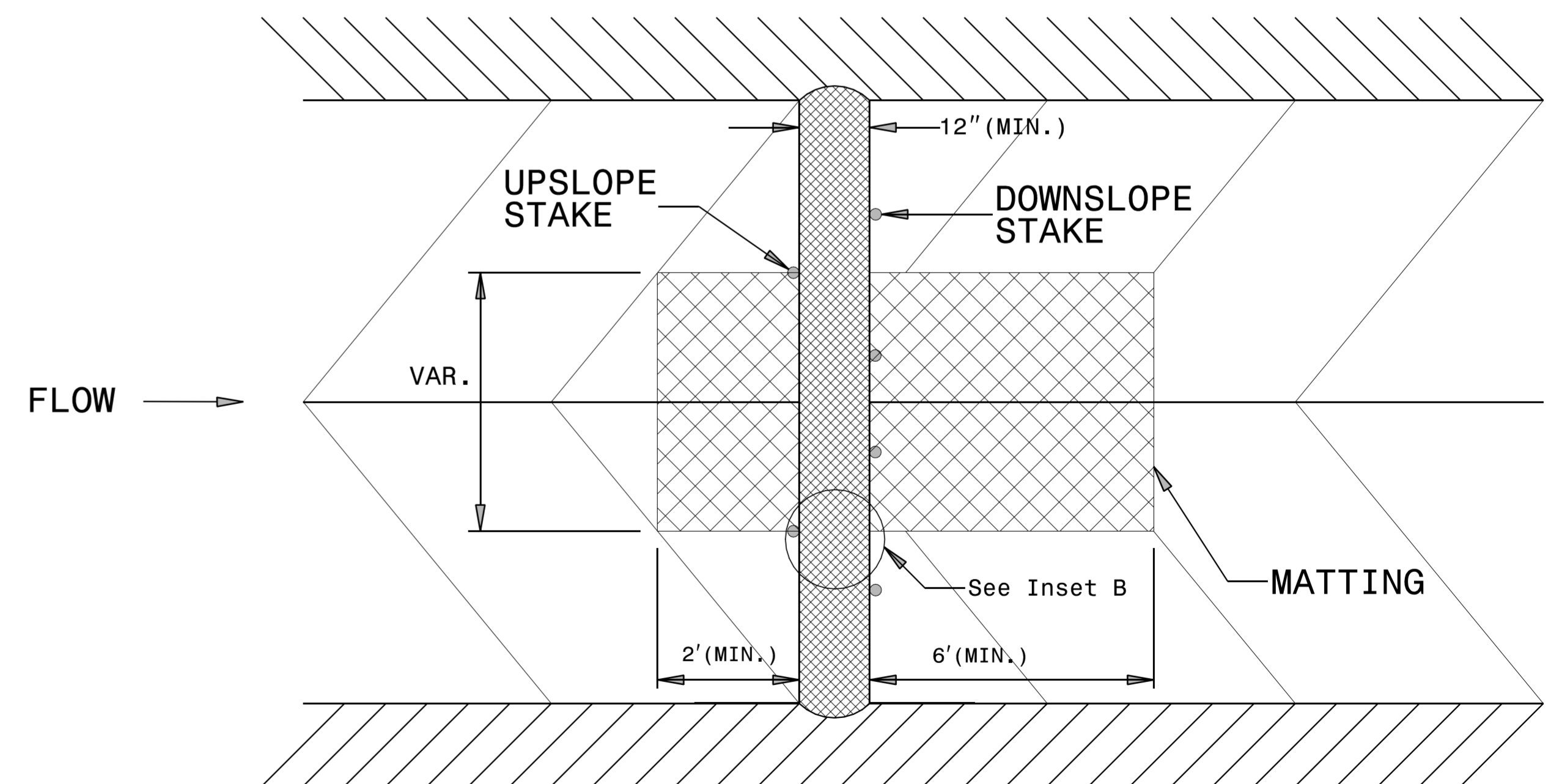
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.18	EC-3
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.

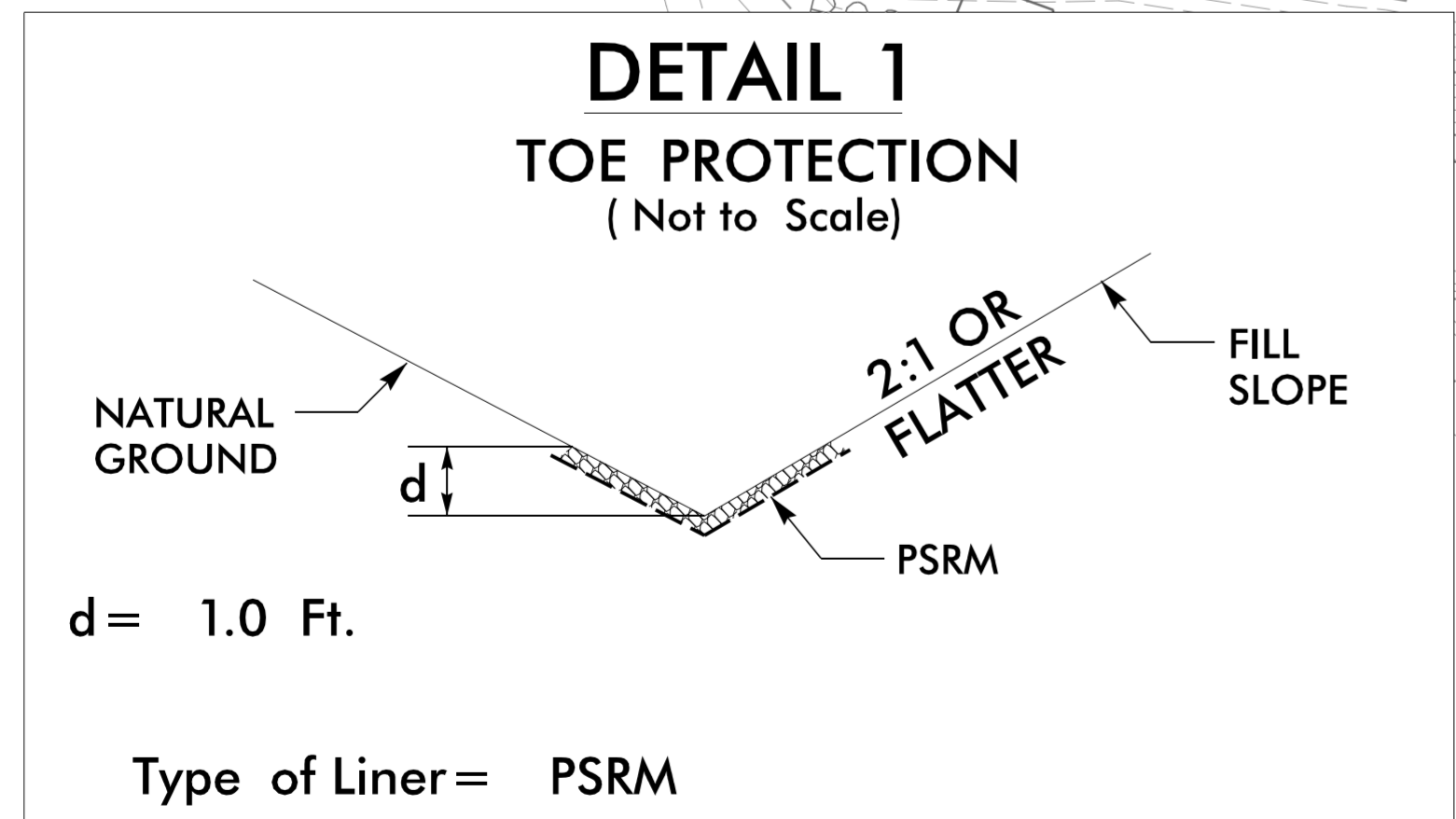
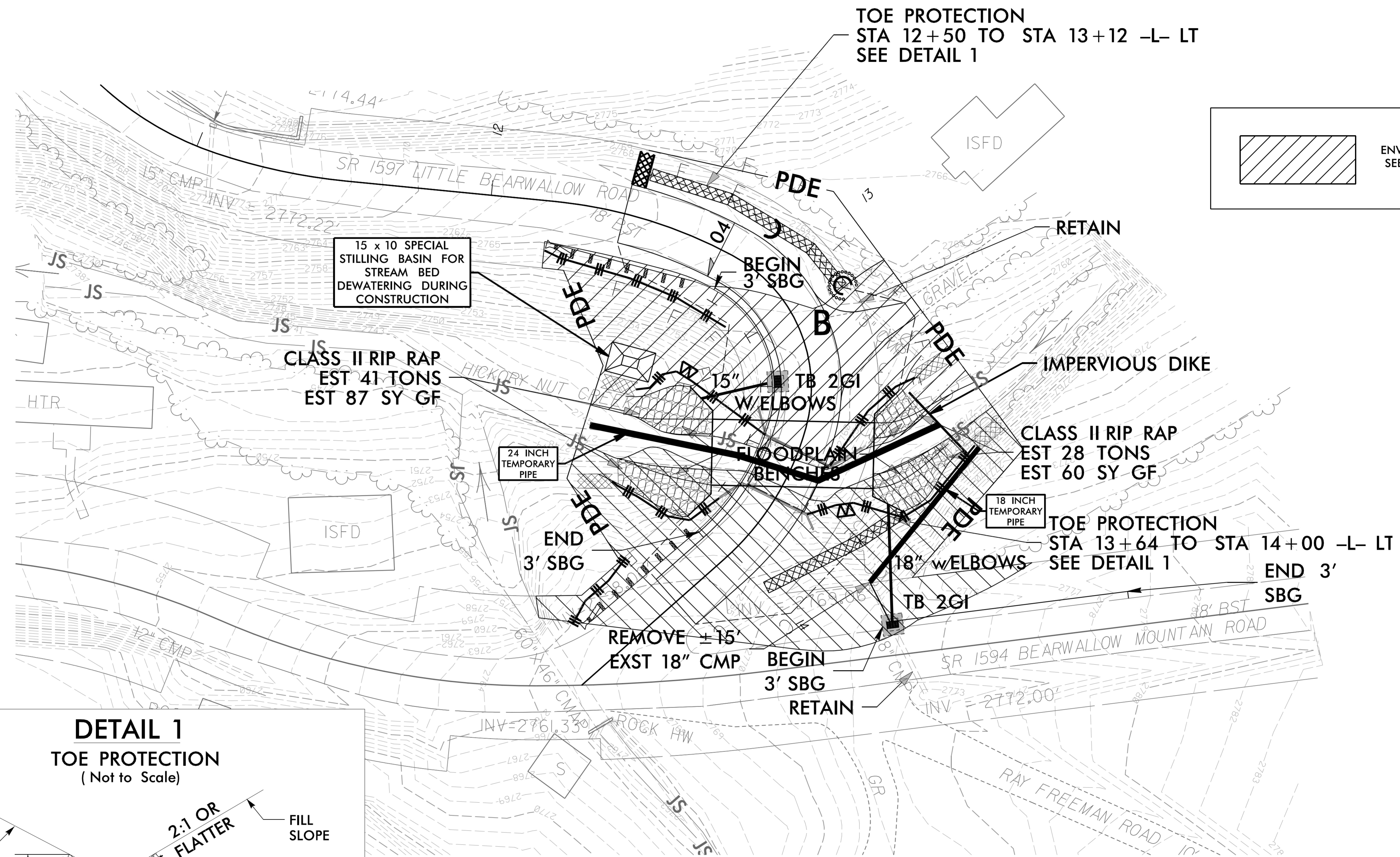
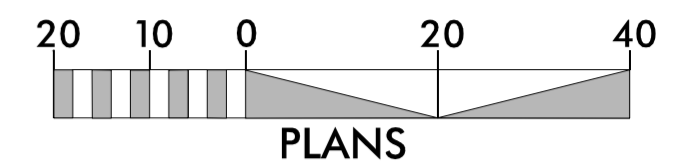
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

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. 17BP.14.R.1B	SHEET NO. EC-04/CONST.04
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

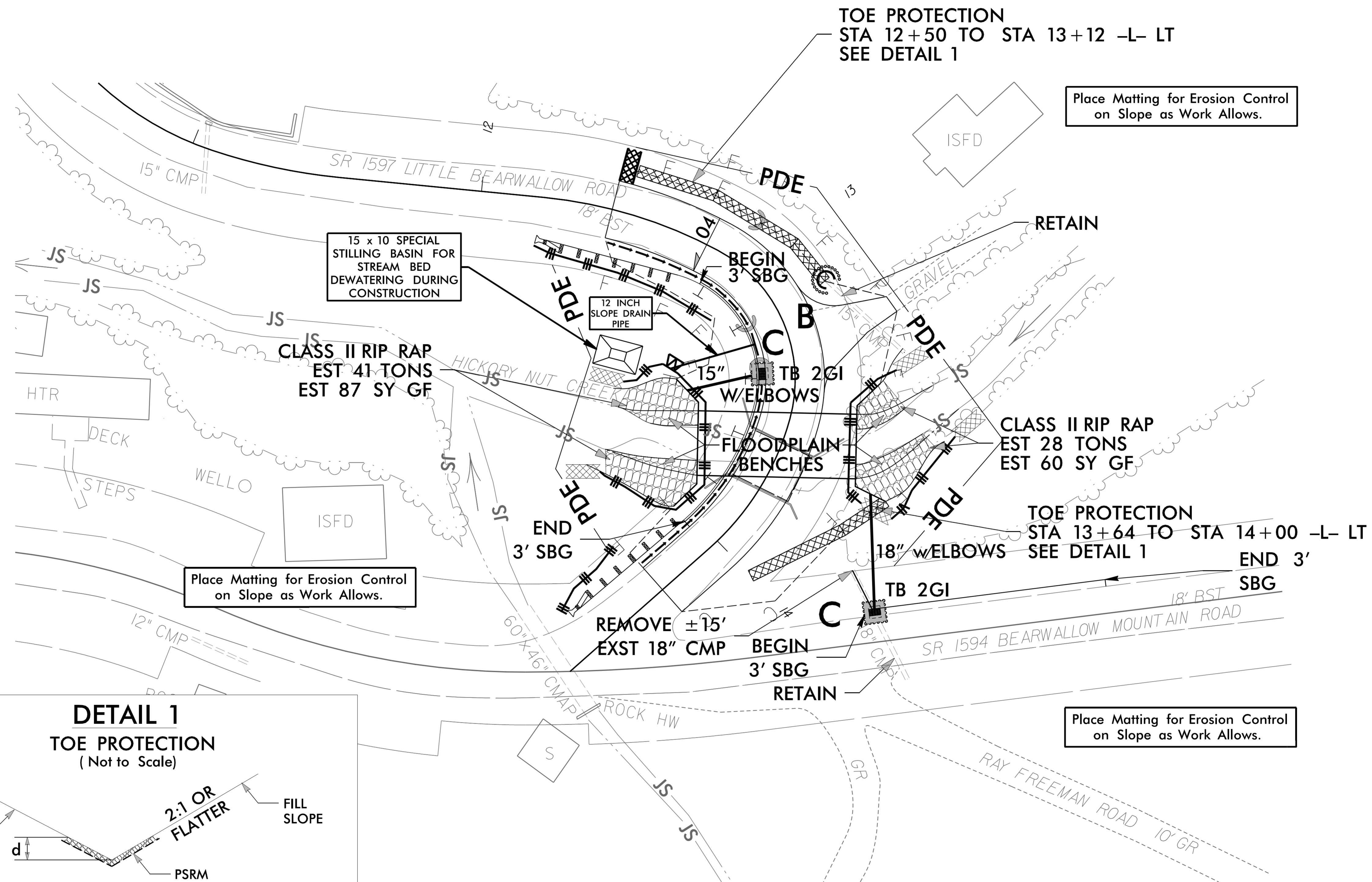
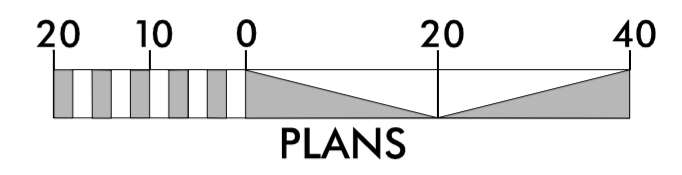
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

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

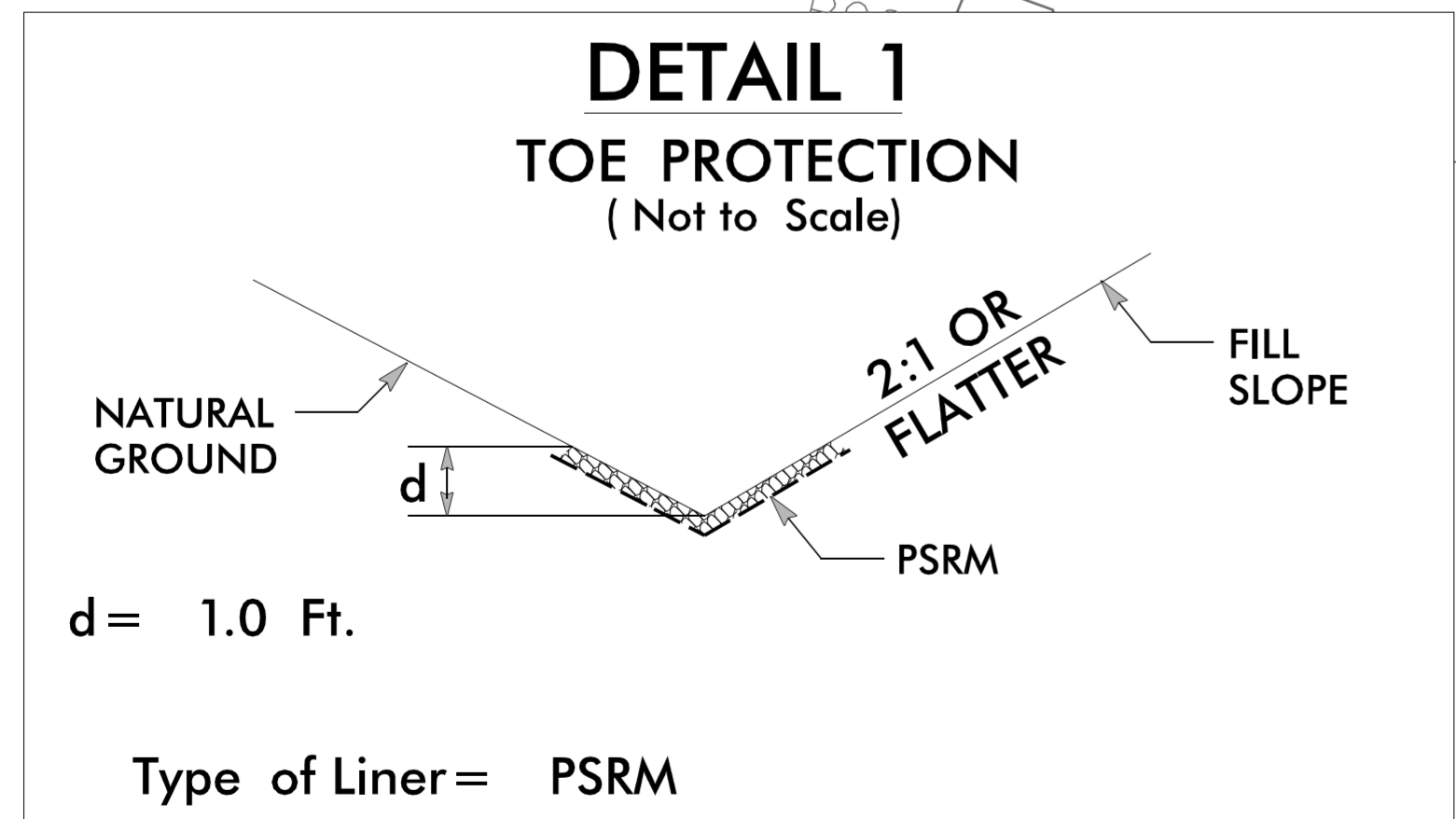
PROJECT REFERENCE NO. 17BP.14.R.18	SHEET NO. EC-05/CONST.04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



Place Matting for Erosion Control on Slope as Work Allows.

Place Matting for Erosion Control on Slope as Work Allows.

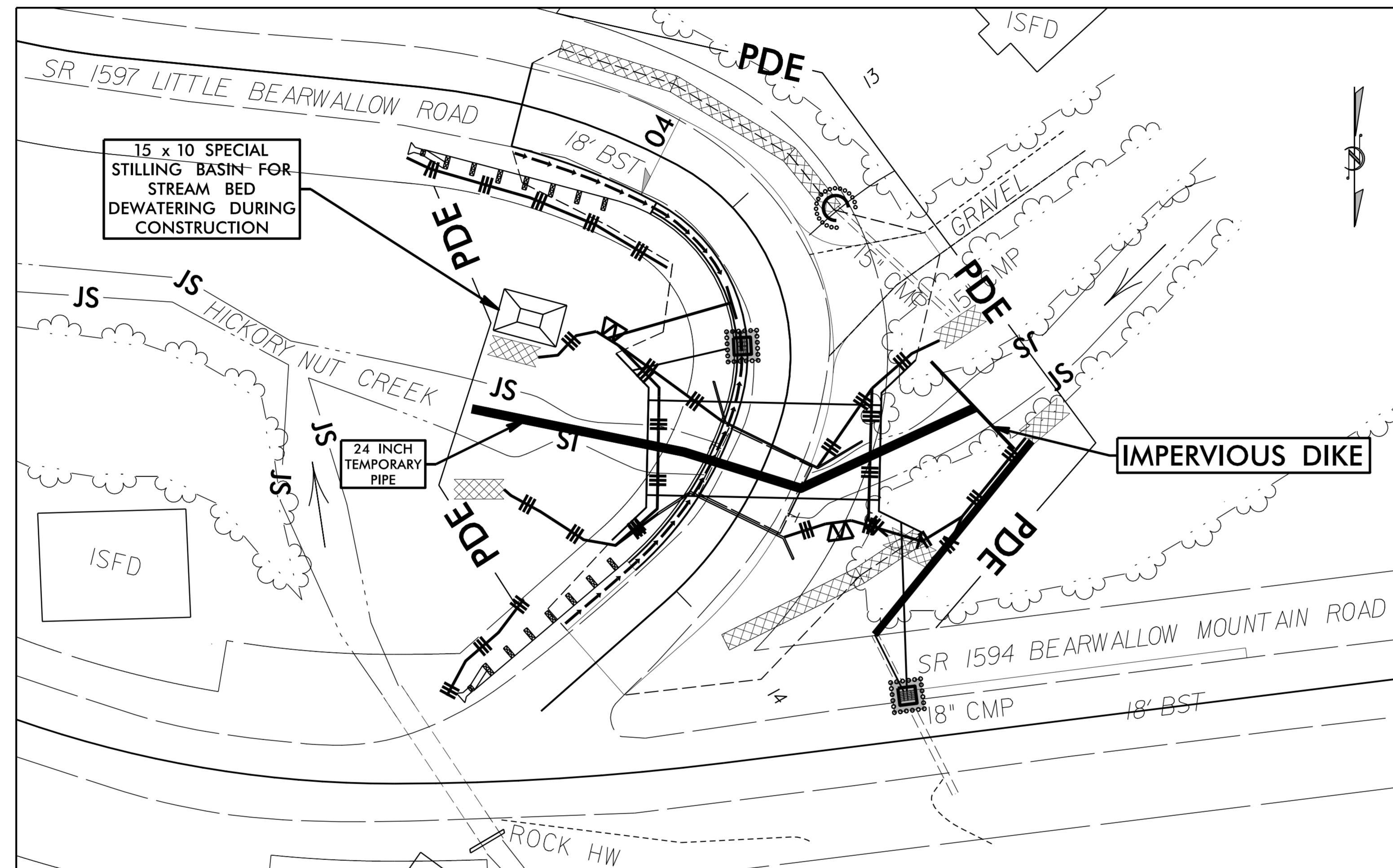
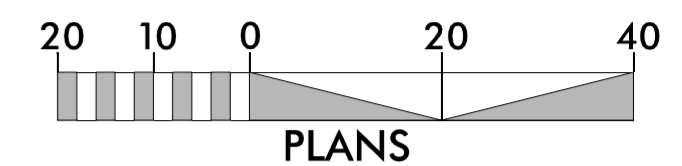
Place Matting for Erosion Control on Slope as Work Allows.



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

PROJECT REFERENCE NO.	SHEET NO.
17BP14R1B	EC-06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT INSTALLATION PHASING



CONSTRUCTION SEQUENCE:

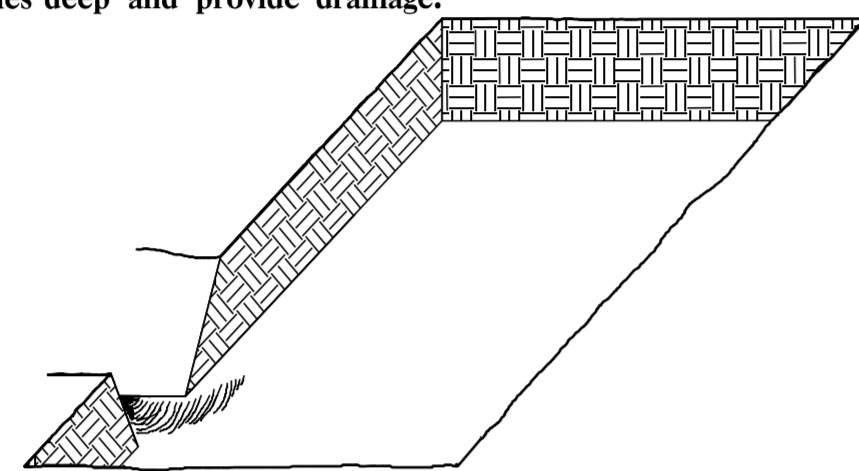
- 1) INSTALL SPECIAL STILLING BASIN
- 2) INSTALL TEMPORARY PIPE AND IMPERVIOUS DIKE
- 3) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
- 4) REMOVE EXISTING BRIDGE
- 5) INSTALL 22'-0"X6'11" STRUCTURAL PLATE ARCH
- 6) REMOVE SPECIAL STILLING BASIN, TEMPORARY PIPE AND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

PLANTING DETAILS

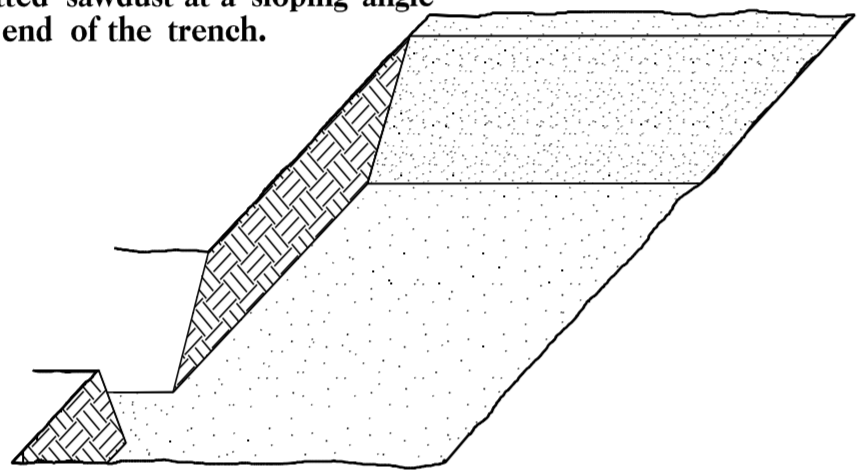
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

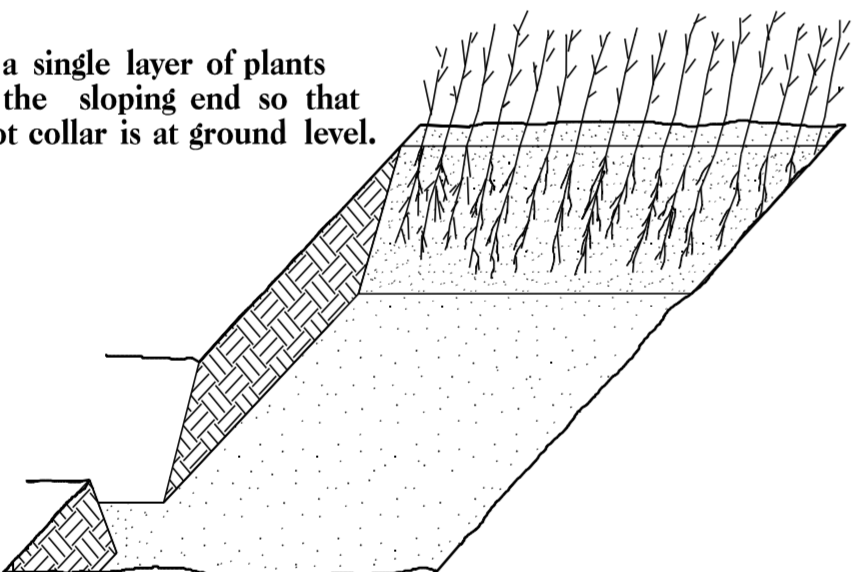
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



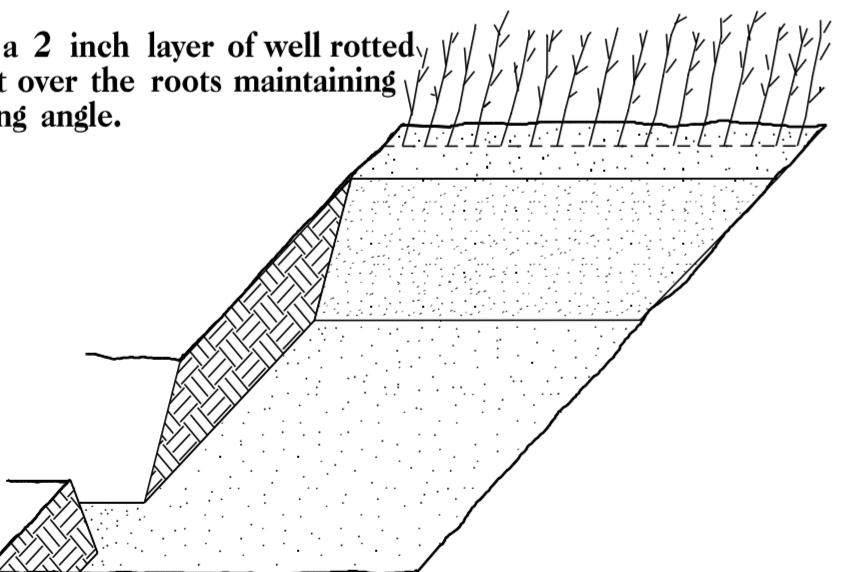
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

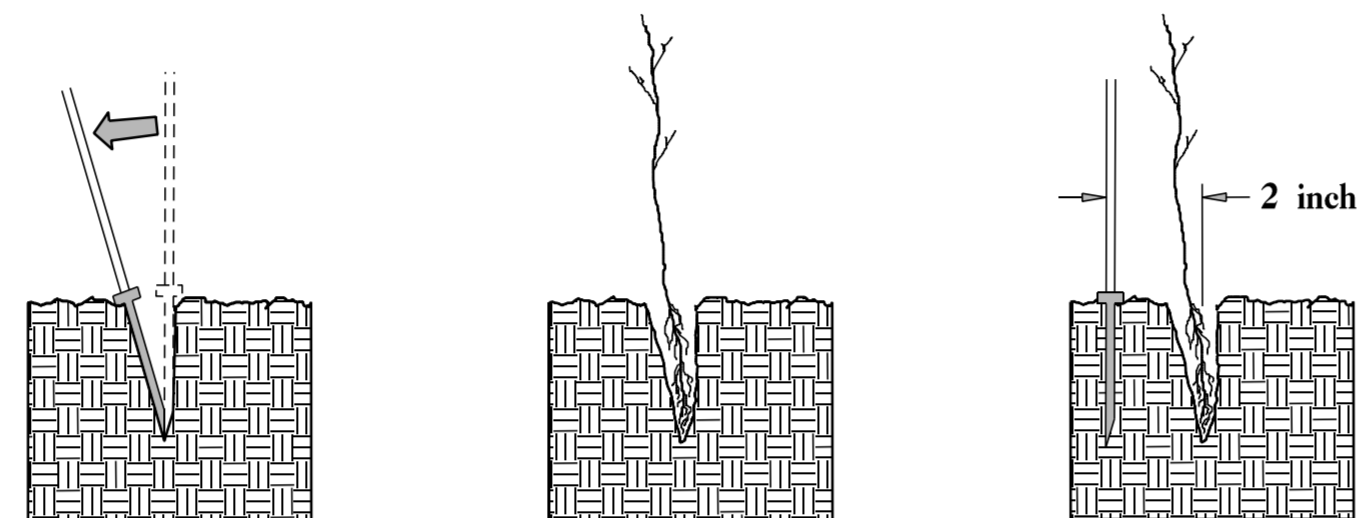


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

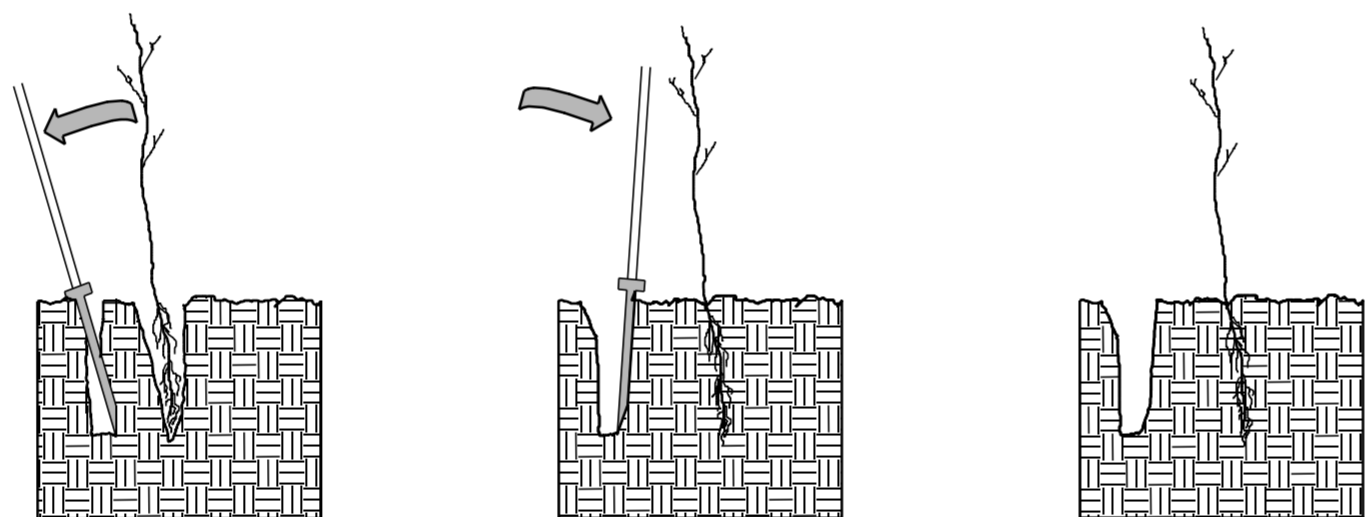


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

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.



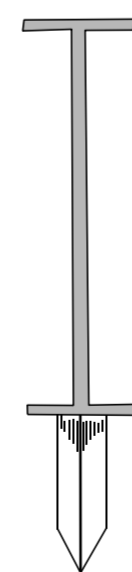
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

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

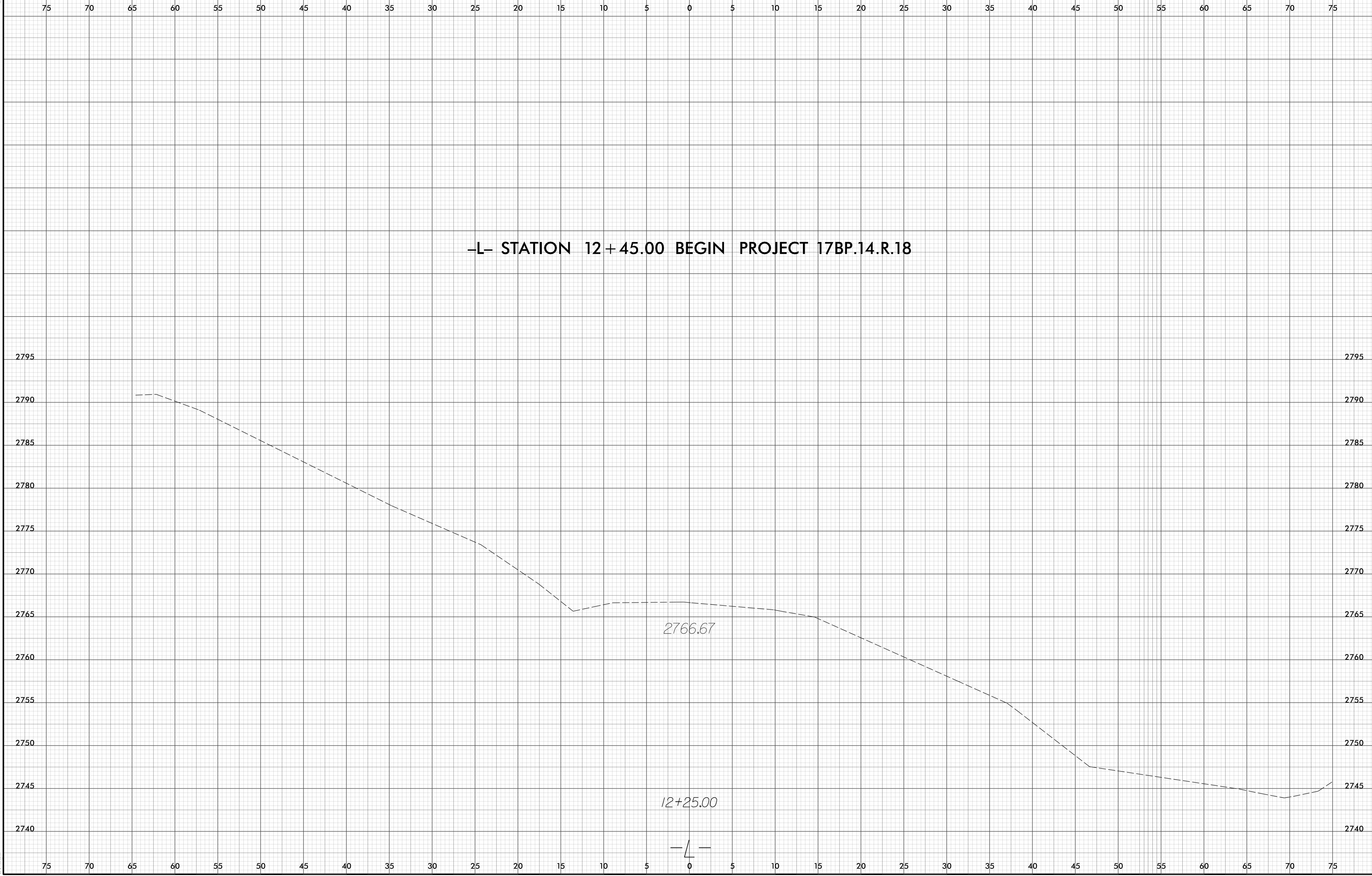
EMBANKMENT COLUMN DOES NOT INCLUDE
BACKFILL FOR UNDERCUT.

12/06/07

44855_PIM
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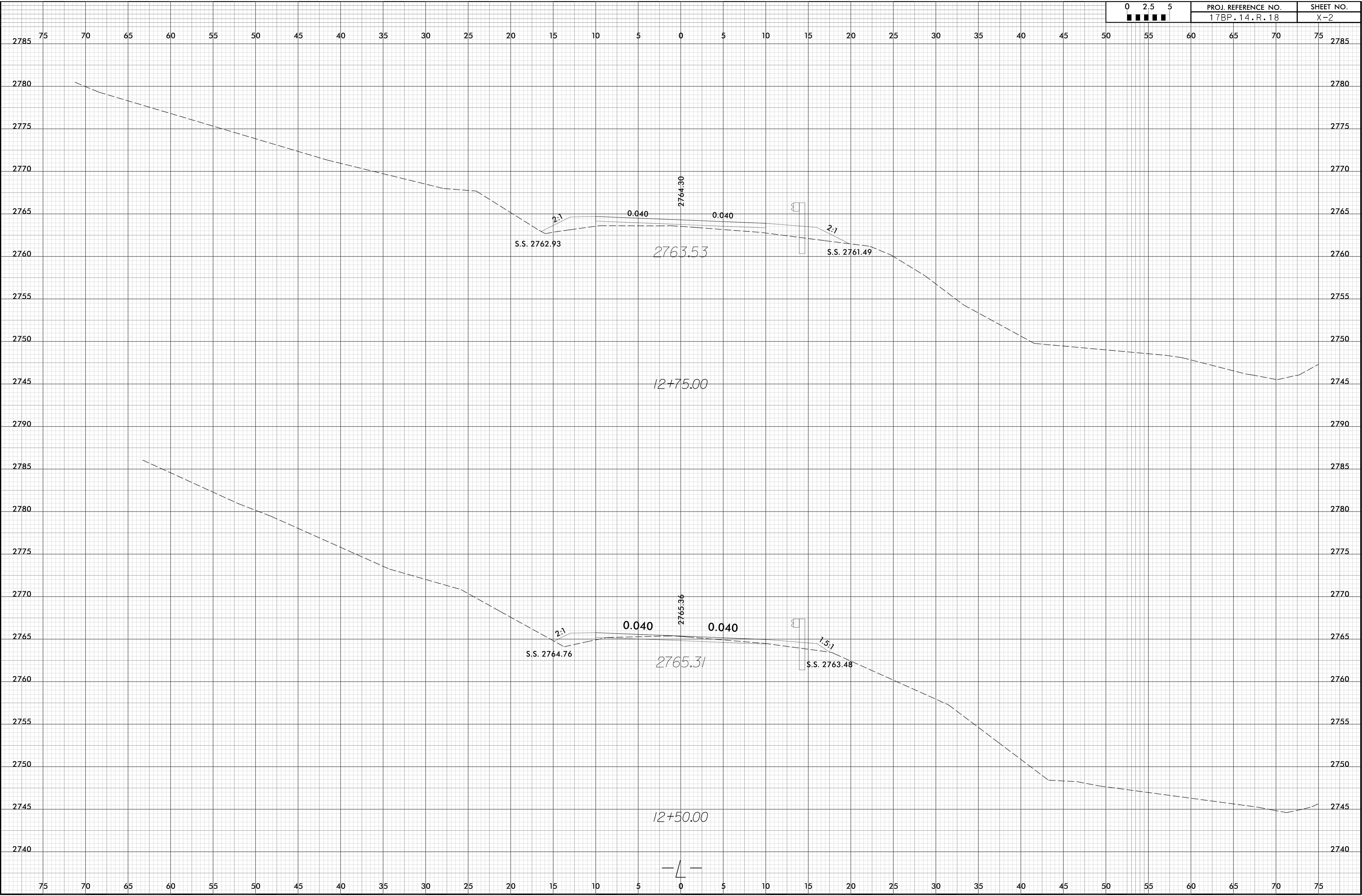
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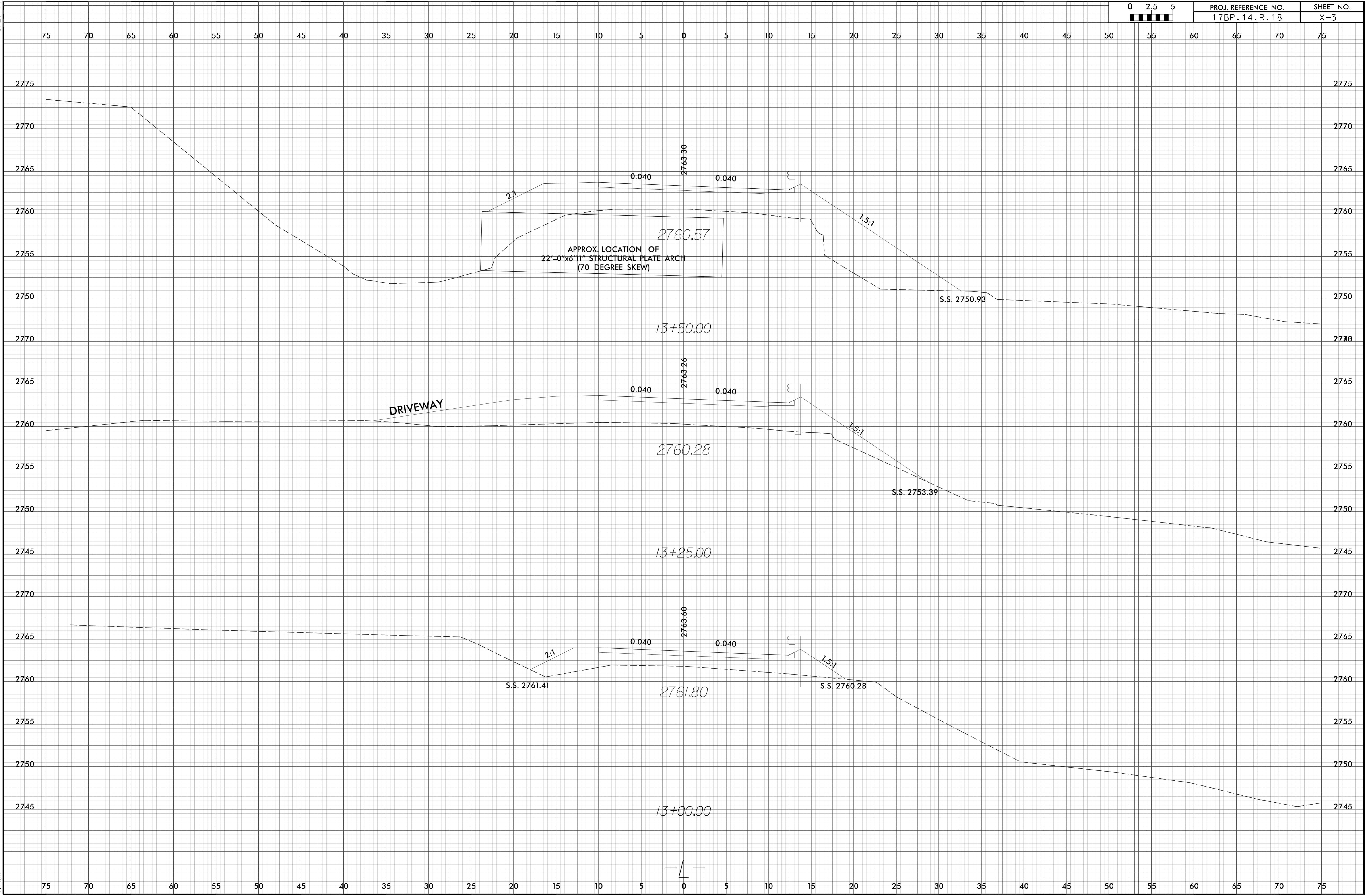
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-L- STATION 12+45.00 BEGIN PROJECT 17BP.14.R.18

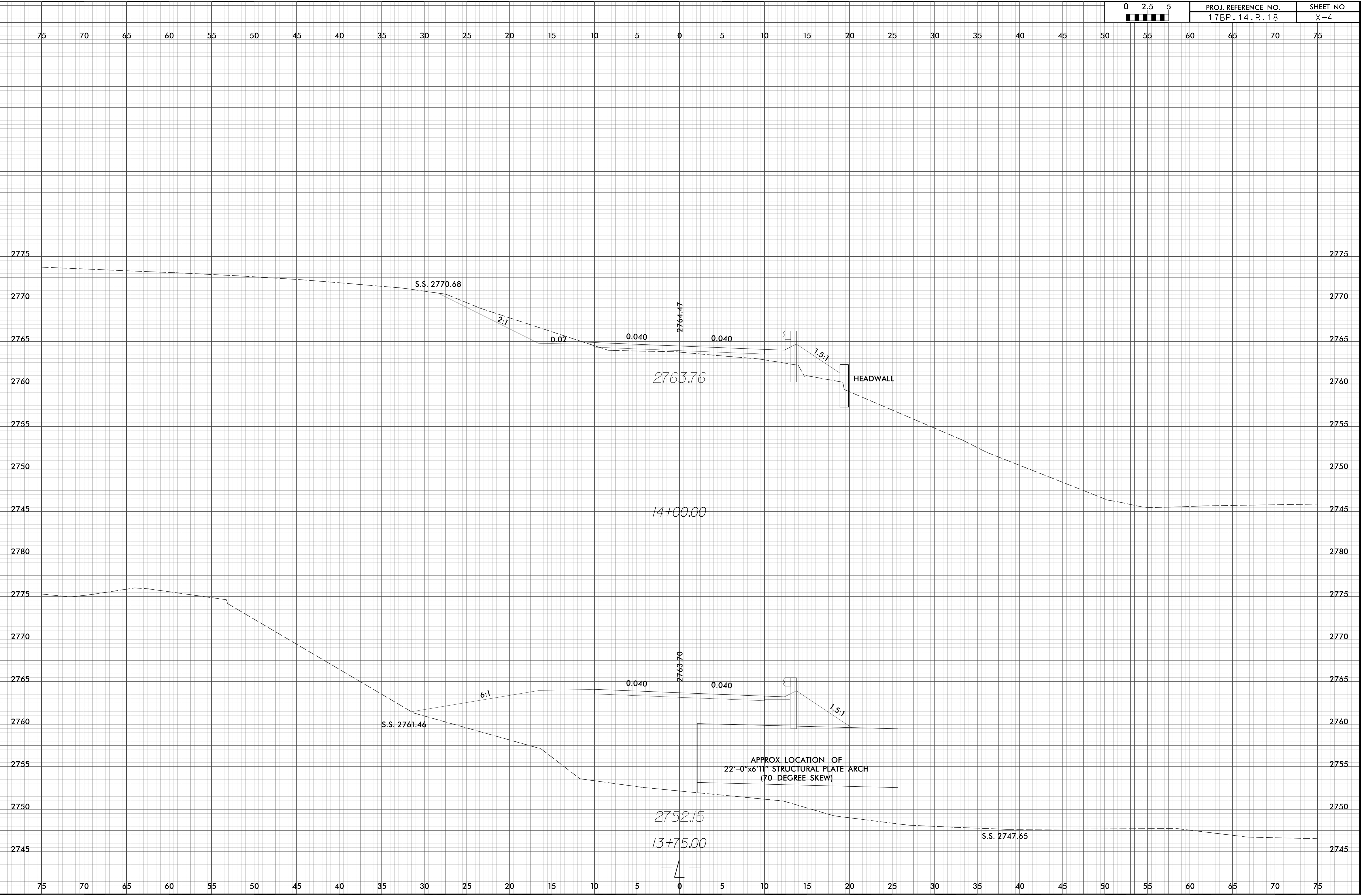
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