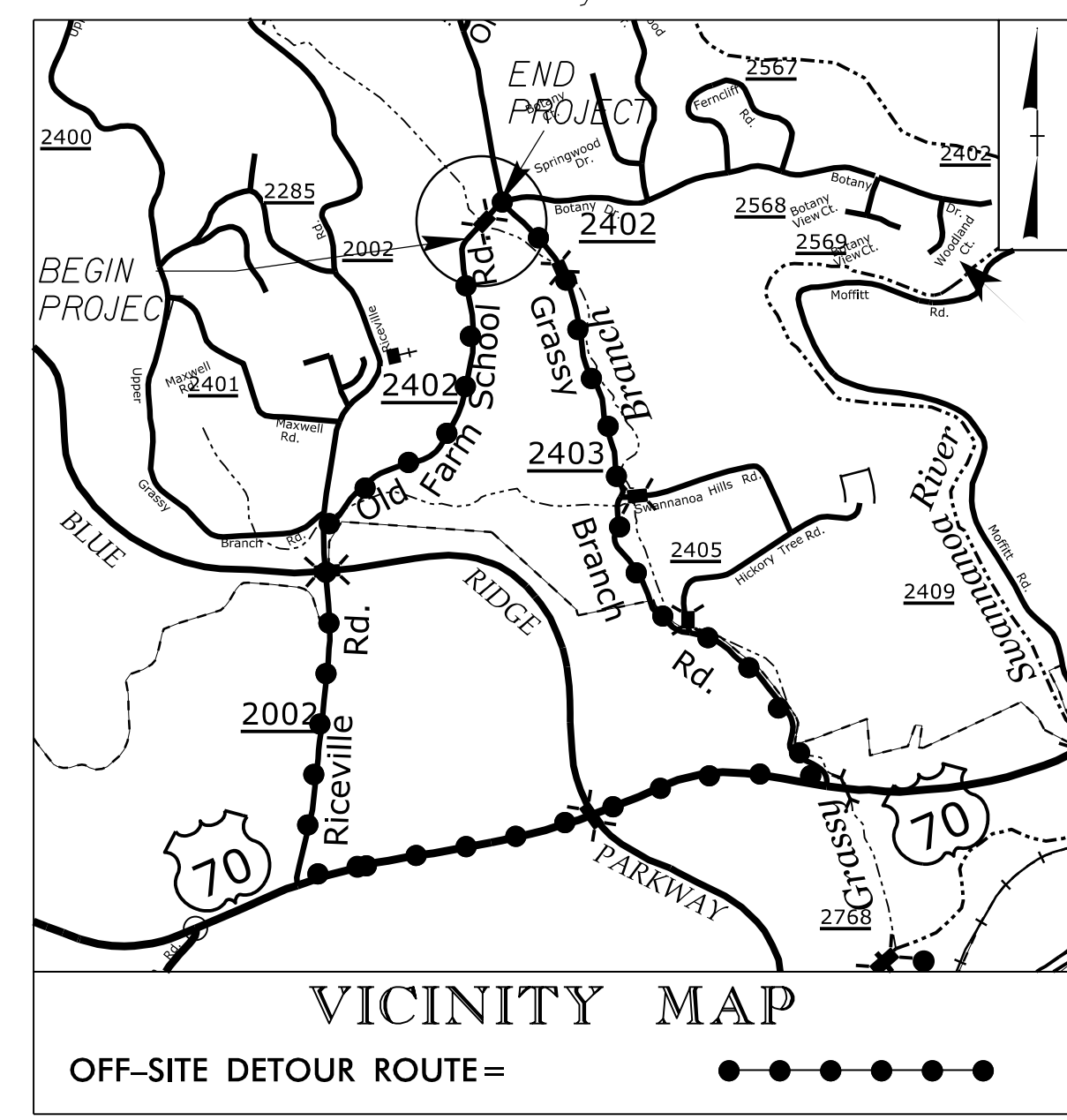


09.05/2016

PROJECT: 17BP.13.R.23

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols
See Sheet 1-C For Survey Control Sheet



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

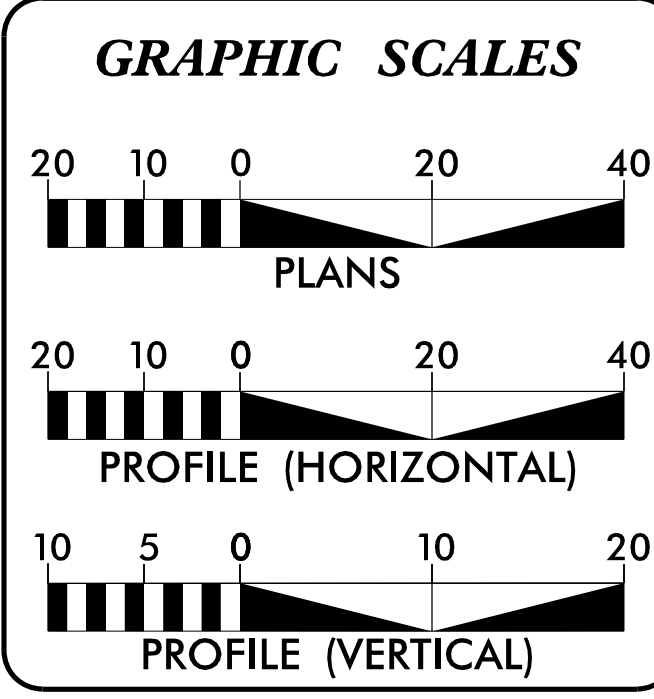
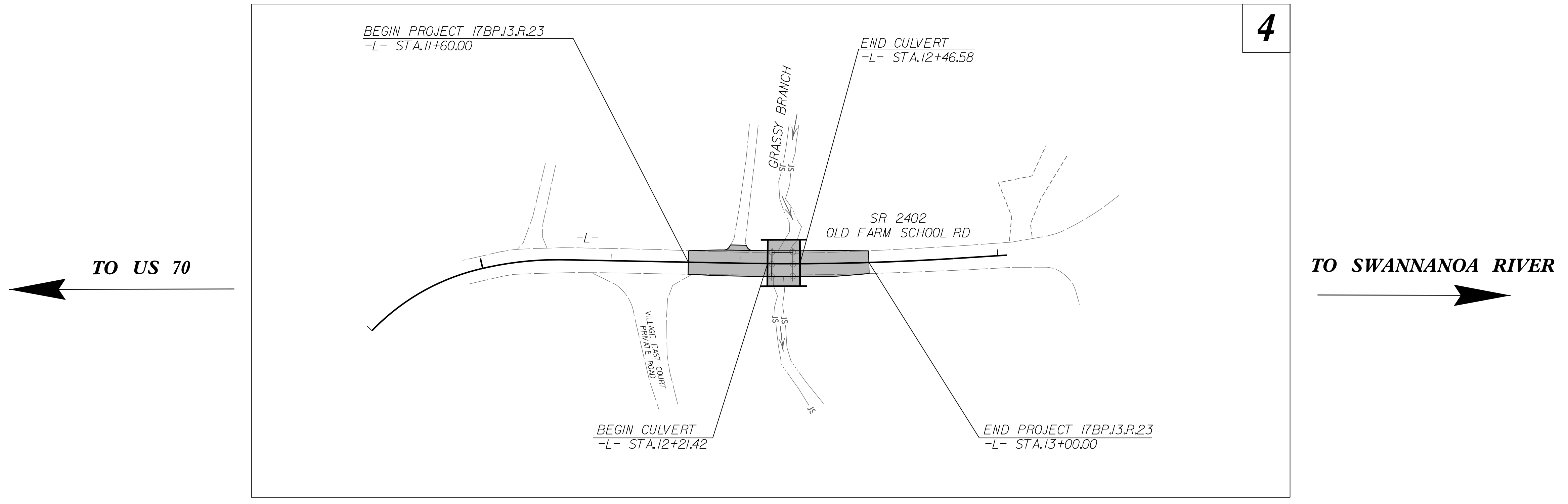
**LOCATION: BRIDGE NO. 100217 OVER GRASSY BRANCH ON
SR 2402 (OLD FARM SCHOOL ROAD)**

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.23	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.23	N/A	PE	
17BP.13.R.23	N/A	RW & UTIL	
17BP.13.R.23	N/A	CONST.	



NOTE: All references to 2012 Standard Specifications and 2012 Standard Drawings shown in these plans shall be replaced with 2018 Standard Specifications and 2018 Standard Drawings.



DESIGN DATA
ADT 2010 = 1500

T = 7 % *
V = 35 MPH
* TTST = 4 DUAL 3
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.23 = 0.022 MI
LENGTH OF STRUCTURE PROJECT 17BP.13.R.23 = 0.005 MI
TOTAL LENGTH OF PROJECT 17BP.13.R.23 = 0.027 MI

Prepared in the Office of:
SEPI 1025 Wade Avenue
ENGINEERING & CONSTRUCTION Raleigh, NC 27605
Fax: 919-789-9977 License: C-2197

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

BEN CRAWFORD, PE
PROJECT ENGINEER

MATTHEW COPPLE, PE
PROJECT DESIGN ENGINEER

TROY WILSON, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER
5/25/2016


DocuSigned by:
David Webb
SIGNATURE

ROADWAY DESIGN ENGINEER
5/25/2016

DocuSigned by:
Matthew Copple
SIGNATURE



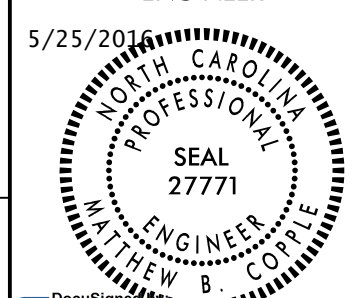
8/17/99



1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

ROADWAY DESIGN ENGINEER

5/25/2016



Matthew Copple

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07/30/12

2012 ROADWAY ENGLISH STANDARD DRAWINGS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3-A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY
3-B	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU RF-1	EROSION CONTROL PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
X-1 THRU X-4	CROSS-SECTION SHEETS
S-1 THRU S-4	STRUCTURE PLANS

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - 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:

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement

SUPERELEVATION:

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

DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1

SHOULDER CONSTRUCTION:

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

DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
840.22	Frames and Wide Slot Sag Grates
840.72	Pipe Collar
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

5/25/2016 10:02:17 AM Rdw_psh_1A.dgn

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

Table listing boundary symbols: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Known Soil Contamination: Area or Site, Potential Soil Contamination: Area or Site.

BUILDINGS AND OTHER CULTURE:

Table listing building and culture symbols: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

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

RAILROADS:

Table listing railroad symbols: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing right of way symbols: 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 RW Marker, Proposed Control of Access Line with Concrete CA Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing road and related features symbols: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing vegetation symbols: Single Tree, Single Shrub, Hedge, Woods Line.

Table listing orchard and vineyard symbols: Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing existing structures symbols: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing utility symbols: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.*).

WATER:

Table listing water symbols: 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.

TV:

Table listing TV symbols: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.*).

GAS:

Table listing gas symbols: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.*), Above Ground Gas Line.

SANITARY SEWER:

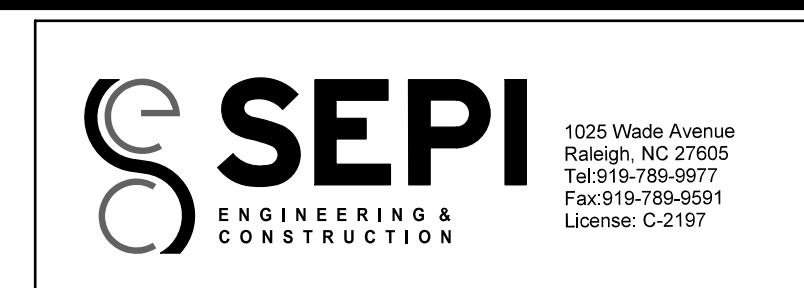
Table listing sanitary sewer symbols: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.*).

MISCELLANEOUS:

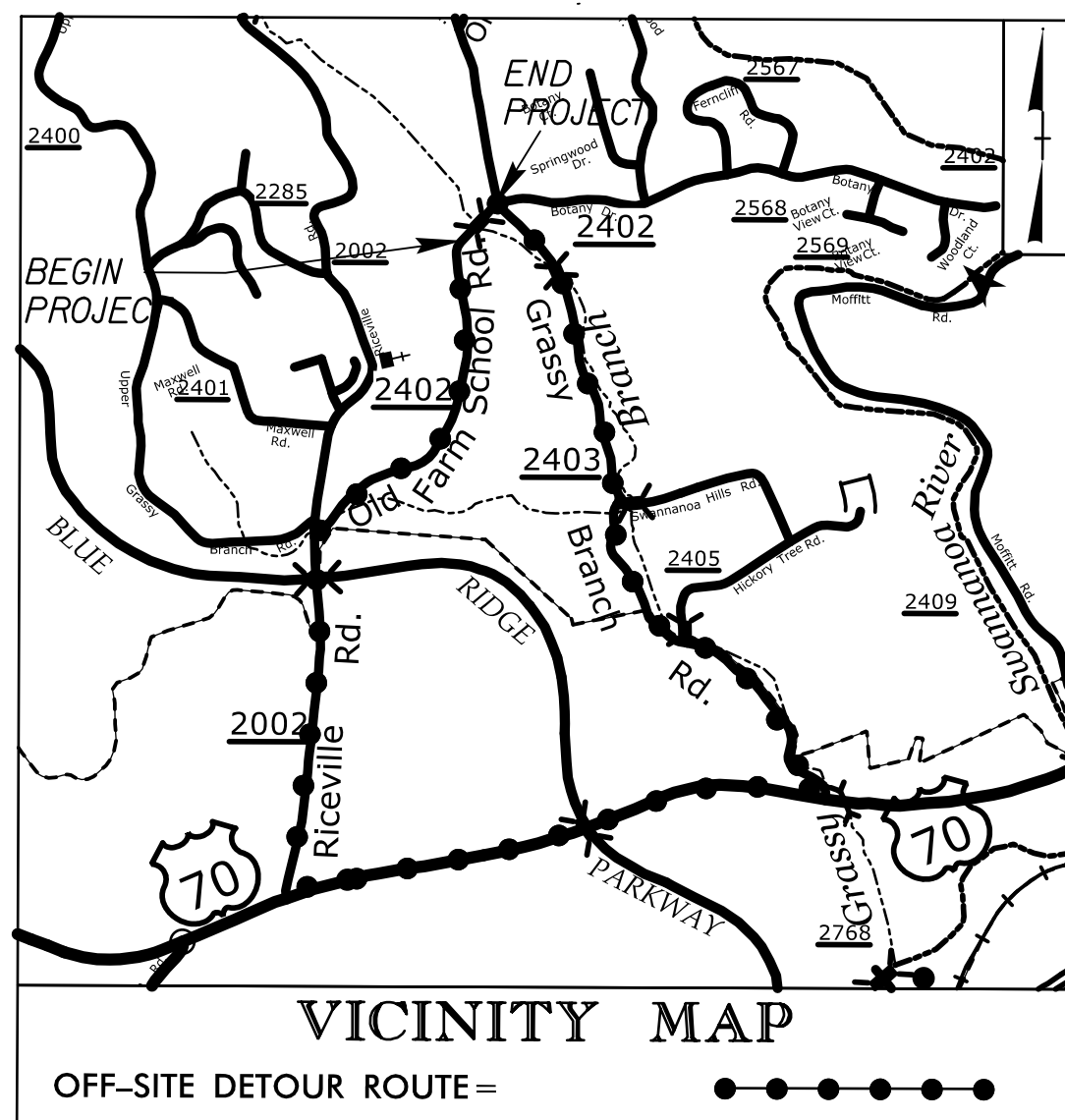
Table listing miscellaneous symbols: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, U/G Test Hole (S.U.E.*), Abandoned According to Utility Records, End of Information.

04.16/11

SURVEY CONTROL SHEET 10-0217



PROJECT REFERENCE NO. 17BP.13.R.23	SHEET NO. 1-C
Location and Surveys	



BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	BL-1	691451.5720	966604.4510	2152.14	OUTSIDE PROJECT LIMITS	
2	BL-2	691547.8060	966871.5660	2134.77	12+58.91	11.36 RT
3	BL-3	691628.5719	967060.8266	2138.88	OUTSIDE PROJECT LIMITS	

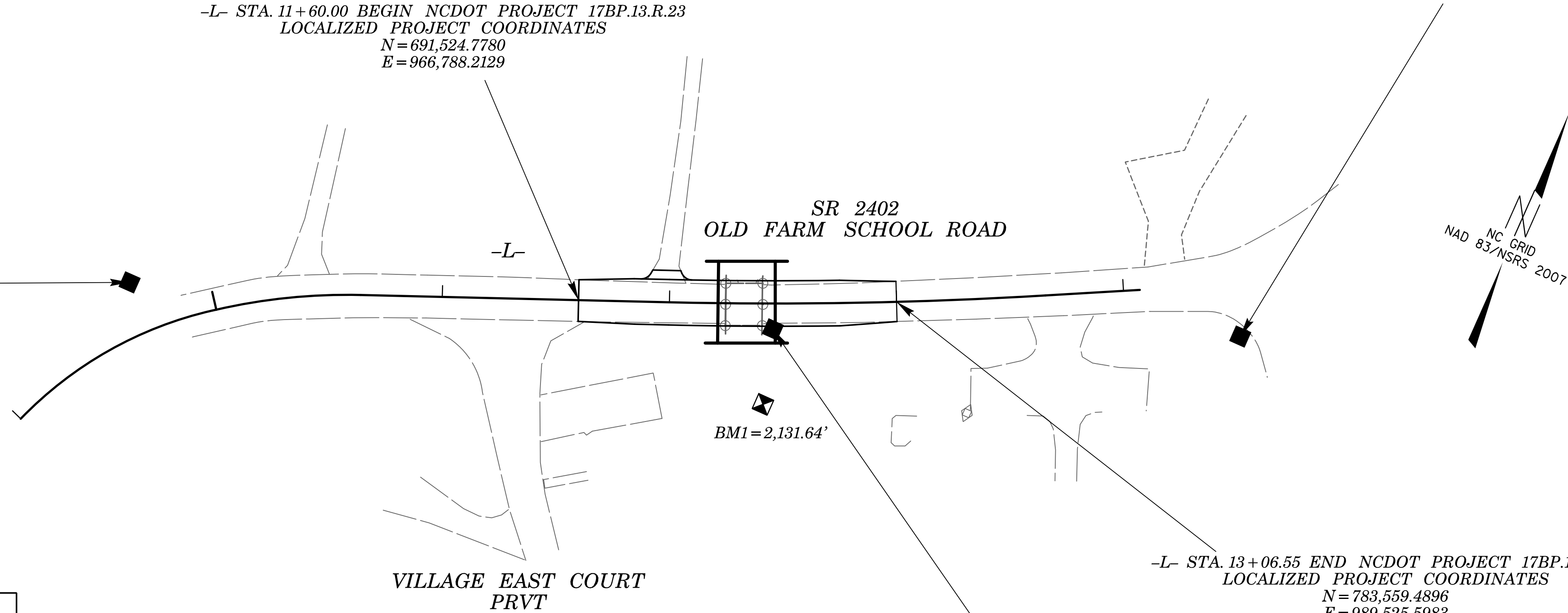
TYPE	STATION	FINAL -L-	
		NORTH	EAST
PC	9+00.00	691377.2713	966585.0574
PT	9+98.15	691455.0196	966642.7225
PC	10+00.00	691456.1211	966644.2032
PT	10+64.04	691487.8367	966699.6538
PC	11+99.83	691540.1102	966824.9687
PT	13+65.63	762182.2322	986677.8871
POT	14+07.21	691610.2105	966975.1769

 BM1 ELEVATION = 2131.64
 N 691516 E 966881
 EL STATION 12+55.00 44.39' RIGHT
 RR SPIKE SET IN 8" BLACK WALNUT ON
 SOUTH SIDE OF ROAD

NCDOT BASELINE MONUMENT 100217 BL-3
 LOCALIZED PROJECT COORDINATES
 N = 691,628.5719
 E = 966,060.8266
 ELEV. = 2,138.88'

-L- STA. 11+60.00 BEGIN NCDOT PROJECT 17BP.13.R.23
 LOCALIZED PROJECT COORDINATES
 N = 691,524.7780
 E = 966,788.2129

NCDOT BASELINE MONUMENT 100217 BL-1
 LOCALIZED PROJECT COORDINATES
 N = 691,451.5720
 E = 966,604.4510
 ELEV. = 2,152.14'



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "11-0217 BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 691547.8060(±) EASTING: 966871.5660(±) ELEVATION: 2134.77(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979385

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "11-0217 BL-2" TO -L- STATION 10+00.00 IS S68°02'17"W 245.15'

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

NOTE: DRAWING NOT TO SCALE

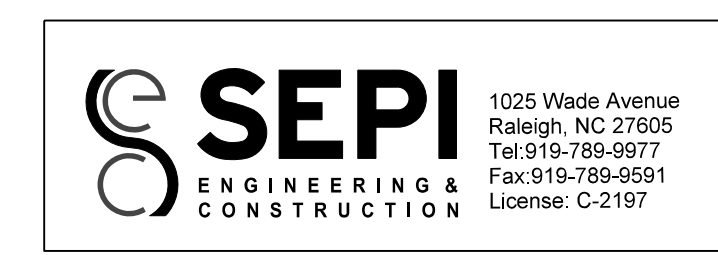
NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 100217_LS_CONTROL_130920.TXT

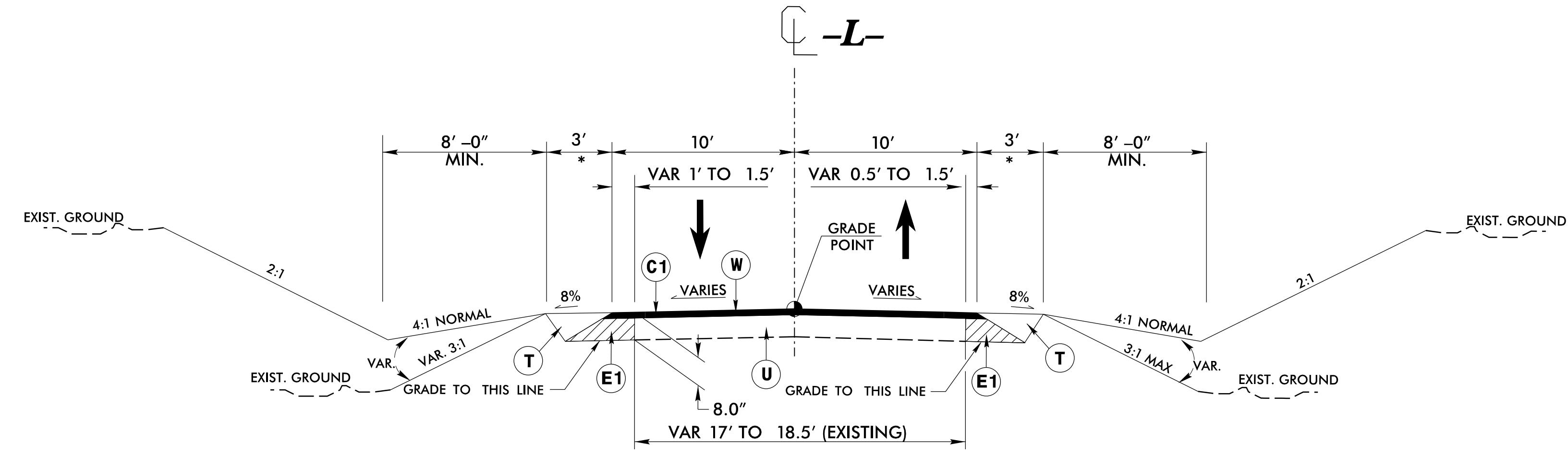
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

5/14/99



PROJECT REFERENCE NO. 17BP13.R.23	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT MANAGEMENT
5/25/2016 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27771 Matthew Lyle	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22896



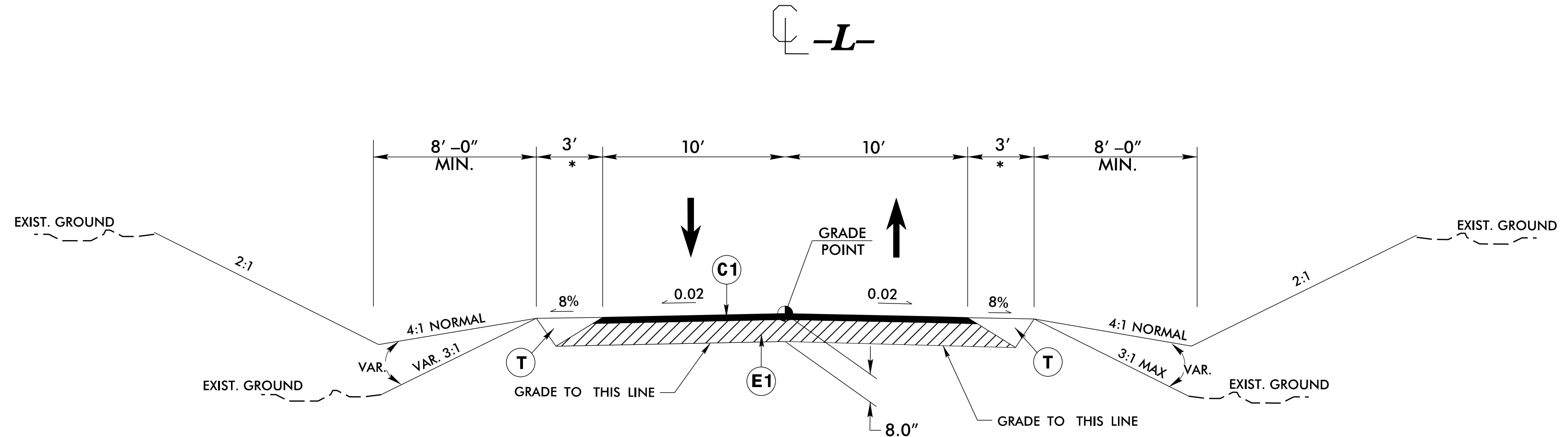
TYPICAL SECTION NO. 1

-L- STA. 11+60.00 TO -L- STA. 11+85.00
-L- STA. 12+75.00 TO -L- STA. 13+00.00

* ADD 3' TO SHOULDERS FOR GUARDRAIL

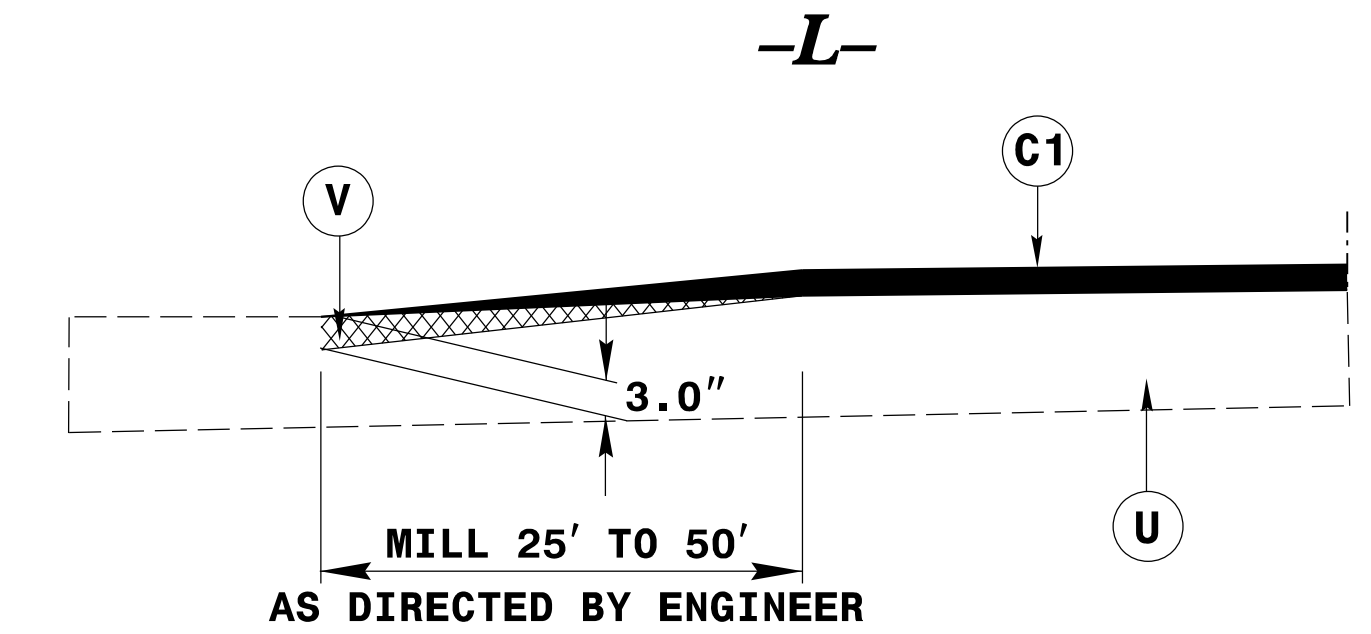
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3.0" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	3.0" MILLING.
W	WEDGING.

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



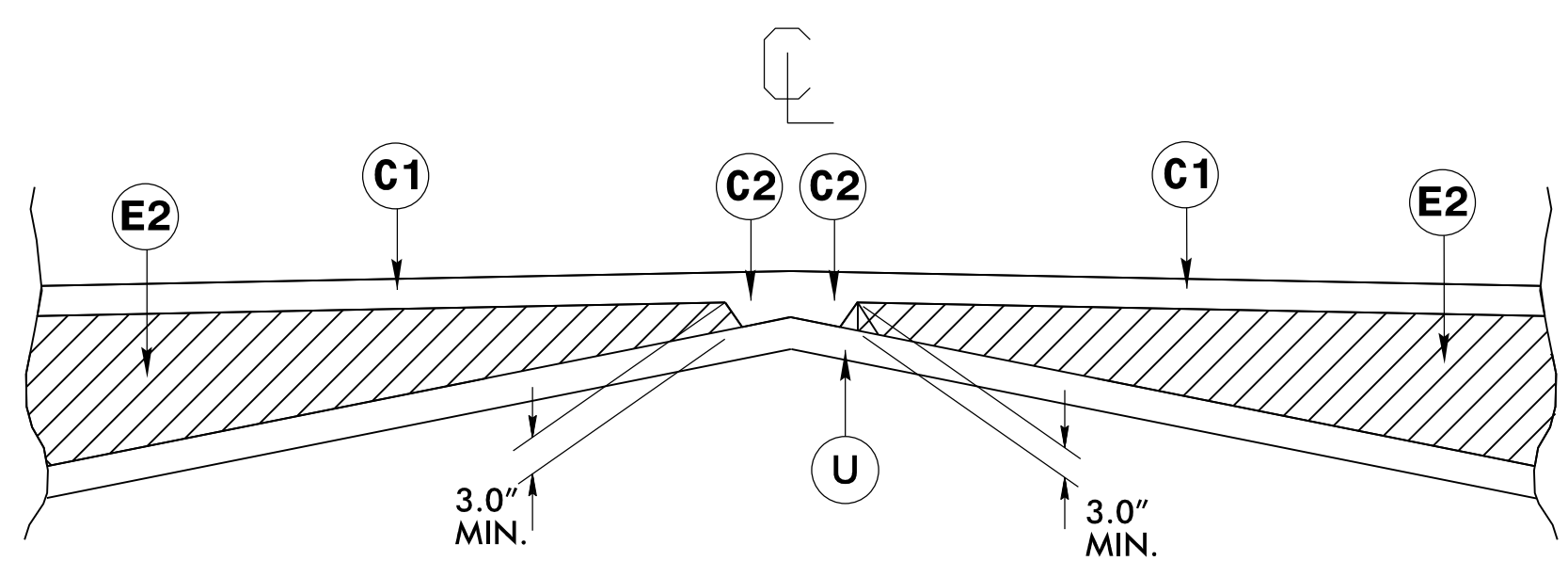
TYPICAL SECTION NO. 2

-L- STA. 11+85.00 TO -L- STA. 12+75.00



MILLING DETAIL

-L- 11+60.00, -L- 13+00.00



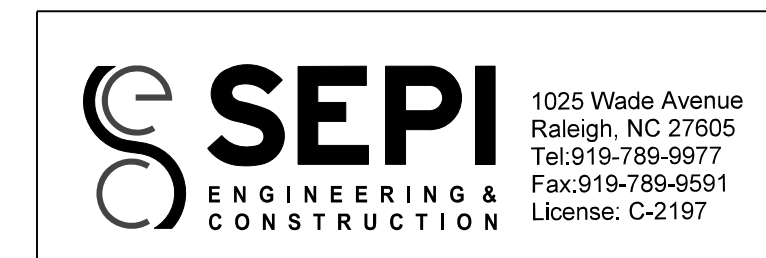
Detail Showing Method of Wedging

5/25/2016 100217_Rdy.tup.dgn
USER:ncopple

12/06/07

COMPUTED BY: CJT DATE: 10/14/2013
 CHECKED BY: DATE:

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. SHEET NO.
 17BP.J3.R.23 3-A

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
11+60.00	13+00.00	137	98		39
SUBTOTALS:		137	98		39
PROJECT TOTALS:		137	98		39
GRAND TOTALS:		137	98		39
SAY:		140			

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, Fine Grading, and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading"

"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

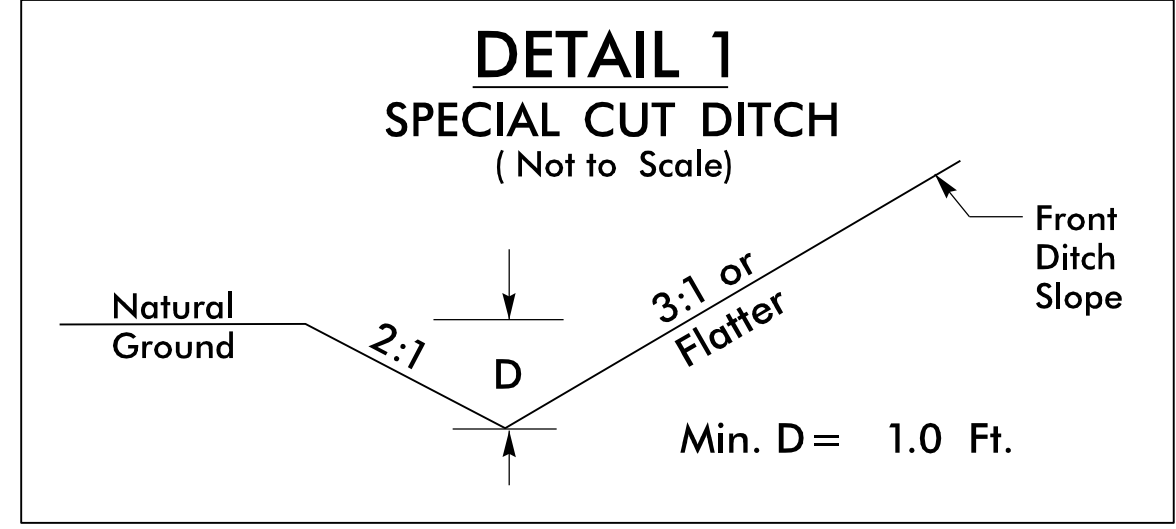
SURVEY LINE	BEGINNING STATION	END STATION	LOCATION	LENGTH			WARRENT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU-350 TL-2	AT-1	TYPE III	
-L-	11+69.75	12+99.71	RT	125.00'			12+16.27	12+51.95	3'	6'					2			
-L-	12+98.89	12+08.52	LT	81.25'	25.00'		12+52.05	12+15.71	3'	6'					1	1		
SUBTOTAL				206.25'														
LESS ANCHOR DEDUCTIONS																		
GRAU-350 TL-2, 3 @ 25' =				-75.00'														
AT-1 1 @ 6.25' =				-6.25'														
TOTAL				125.00'			ADDITIONAL GUARDRAIL POSTS - 5 EA											
SAY				125.00'											3	1		

5/25/2016 10:00:21.7 Rdwy_sum.dgn

5/14/17

1

HERMAN WILSON & SHARON M. GOSNELL
DB 1237 PG 237



FROM STA. 11+50 TO STA. 11+88 -L- LT
FROM STA 12+75 TO STA 13+15 -L- LT

WILLIAM A. & JOYCE S. RIEBELL
DB 1735 PG 686

2

PI Sta 12+82.78
 $\Delta = 4^{\circ} 45' 00.2''$ (LT)
 $D = 2^{\circ} 51' 53.2''$
 $L = 165.81'$
 $T = 82.95'$
 $R = 2,000.00'$

3

BOBBY WAYE ANGEL
DB 1544 PG 237



1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

PROJECT REFERENCE NO. 17BP.13.R.23	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 5/25/2016 Matthew Luff	HYDRAULICS ENGINEER 5/25/2016 David Webb

-L-

PI Sta 9+50.48 PI Sta 10+32.19
 $\Delta = 33^{\circ} 04' 45.8''$ (RT) $\Delta = 14^{\circ} 15' 00.0''$ (RT)
 $D = 33^{\circ} 42' 12.2''$ $D = 22^{\circ} 15' 00.0''$
 $L = 98.15'$ $L = 64.04'$
 $T = 50.48'$ $T = 32.19'$
 $R = 170.00'$ $R = 257.51'$

BEGIN PROJECT 17BP.13.R.23
-L- STA. 11+60.00

SPECIAL CUT DITCH
SEE DETAIL 1

PT Sta. 10+64.04

BEGIN CONST. 17BP.13.R.23
-L- STA. 11+50.00

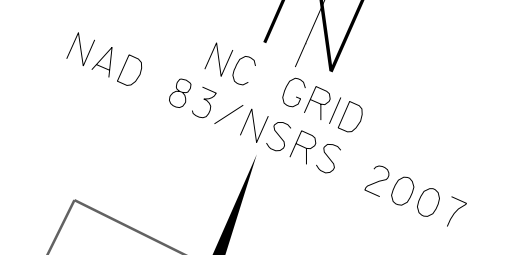
BEGIN CULVERT
-L- STA. 12+21.42

PC Sta. 11+99.83

END PROJECT 17BP.13.R.23
-L- STA. 13+00.00

END CULVERT
-L- STA. 12+46.58

END CONST. 17BP.13.R.23
-L- STA. 13+15.00



N 53° 06' 25.7" E

PT Sta. 9+98.15

PC Sta. 10+00.00

PATRICIA KAUFMANN YOUNG
DB 4480 PG 1800
PB 80 PG 154

PC Sta. 9+00.00

HARESH V. & NITA H. DAVE
DB 4818 PG 120
PB 80 PG 154

RETAIN
25'2" X 7'0"
BOX CULVERT

WILLIAM G. & KATHERYN BROSS
DB 2844 PG 313
PB 80 PG 154

HUO-JIN & WON-LIHUANG
DB 4048 PG 247
PB 80 PG 154

ZU QIN & MING ZHU LI
DB 4188 PG 1437
PB 80 PG 154

5
LOWER GRASSY COTTAGES INC. 449
DB 4890 PG 32
PB 124 PG 59

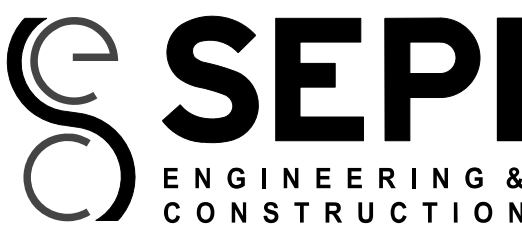
ELIZABETH S. SAVAGE
DB 4769 PG 1253
PB 126 PG 59

KRISTY LAUREN RICE
DB 4793 PG 1246
PB 126 PG 59

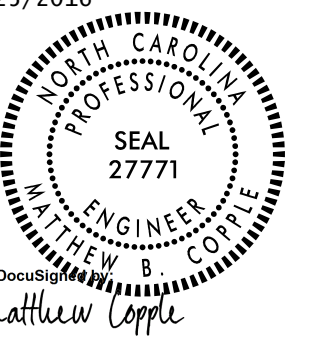
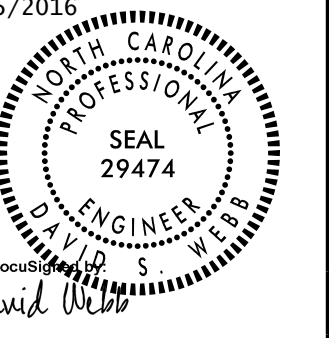
NOTE: SEE PLAN SHEET 5 FOR PROFILE
NOTE: SEE SHEETS S-1 THRU S-4 FOR STRUCTURE PLANS

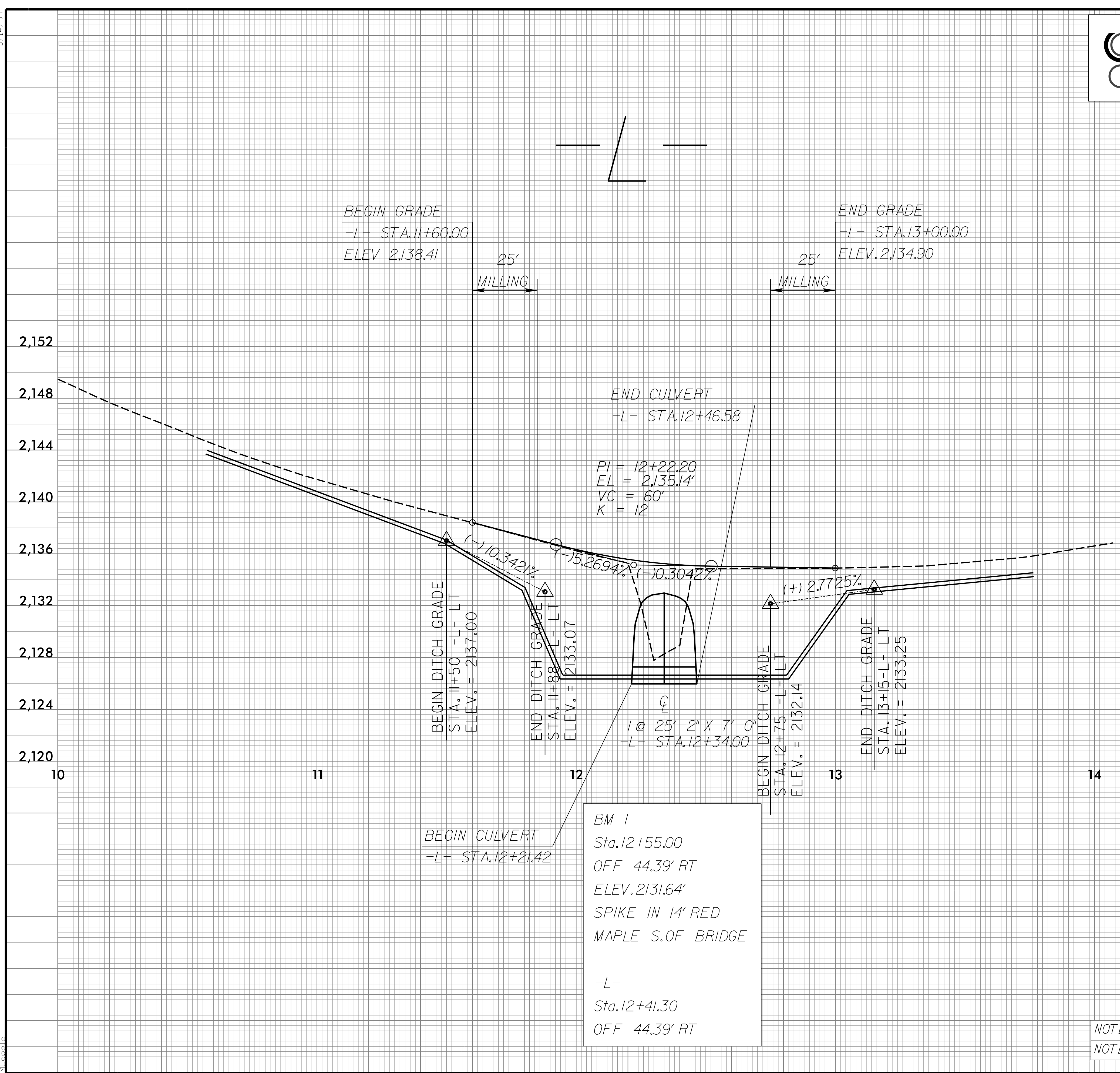
5/25/2016 00217_Rdy_psh_4.dgn
USFB:MR:Gable

5/14/99



1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

PROJECT REFERENCE NO. 17BP.13.R.23	SHEET NO. 5
ROADWAY DESIGN ENGINEER 5/25/2016  Matthew Copple	HYDRAULICS ENGINEER 5/25/2016  David Webb



BEGIN GRADE
-L- STA. 11+60.00
ELEV. 2,138.41

END GRADE
-L- STA. 13+00.00
ELEV. 2,134.90

END CULVERT
-L- STA. 12+46.58

PI = 12+22.20
EL = 2,135.14'
VC = 60'
K = 12

DESIGN DISCHARGE	= 810	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2134.5	FT
BASE DISCHARGE	= 1490	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2136.36	FT
OVERTOPPING DISCHARGE	= 875	CFS
OVERTOPPING FREQUENCY	= 25+	YRS
OVERTOPPING ELEVATION	= 2135.0	FT

BEGIN DITCH GRADE
STA. 11+50 -L- LT
ELEV. = 2137.00

END DITCH GRADE
STA. 11+88 -L- LT
ELEV. = 2133.07

BEGIN DITCH GRADE
STA. 12+75 -L- LT
ELEV. = 2132.14

END DITCH GRADE
STA. 13+15 -L- LT
ELEV. = 2133.25

1 @ 25'-2" X 7'-0"
-L- STA. 12+34.00

BEGIN CULVERT
-L- STA. 12+21.42

BM 1
Sta. 12+55.00
OFF 44.39' RT
ELEV. 2131.64'
SPIKE IN 14' RED
MAPLE S.OF BRIDGE

-L-
Sta. 12+41.30
OFF 44.39' RT

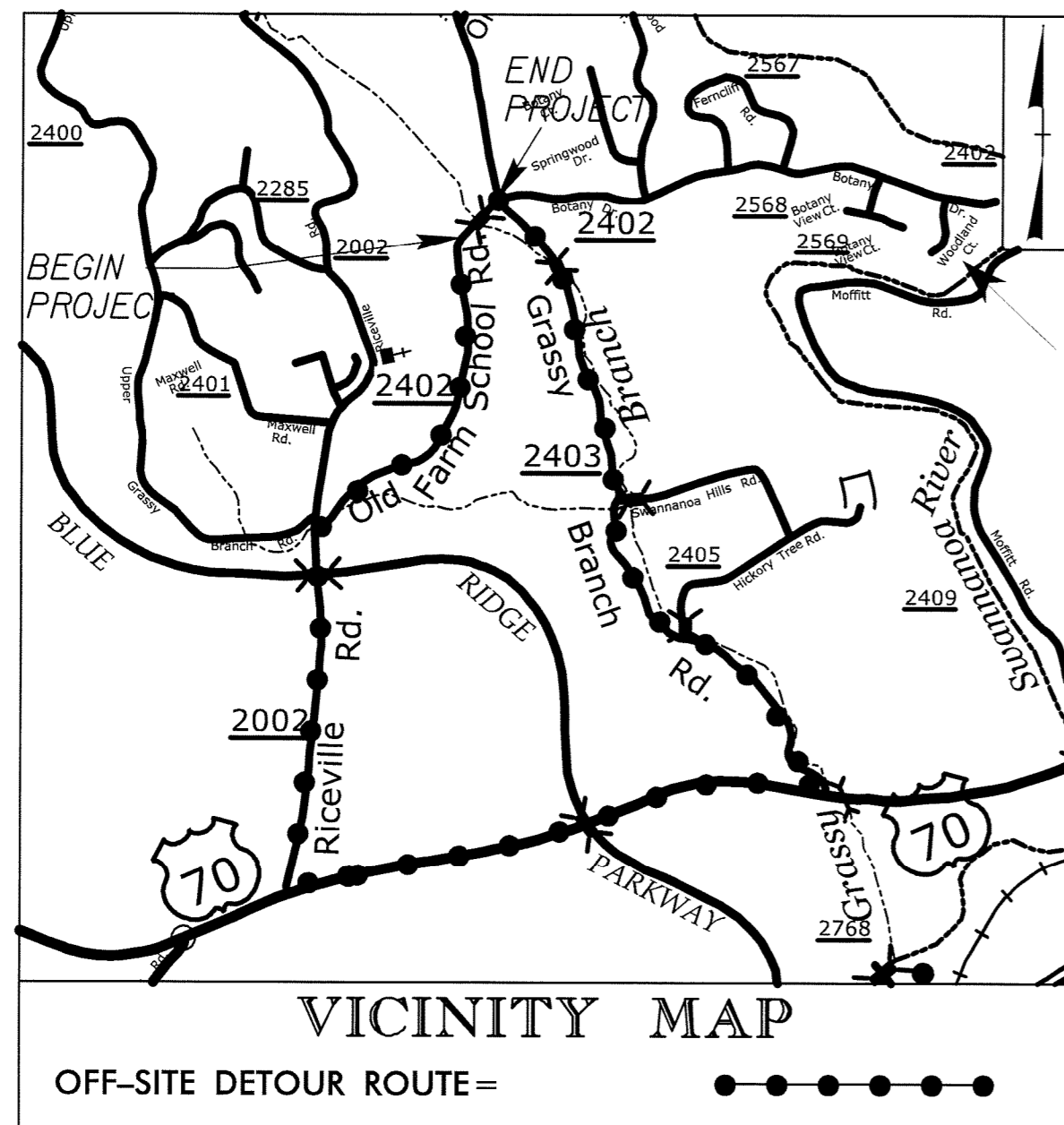
NOTE: SEE PLAN SHEET 4 FOR PLAN
NOTE: SEE SHEETS S-1 THRU S-4 FOR STRUCTURE PLANS

5/25/2016 10:02:17 - Rdg.pfl.5.dgn
11:58:00 AM
Matthew Copple

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY



**LOCATION: BRIDGE NO.100217 ON SR 2402 (OLD FARM SCHOOL ROAD)
OVER GRASSY BRANCH**

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

INDEX OF SHEETS

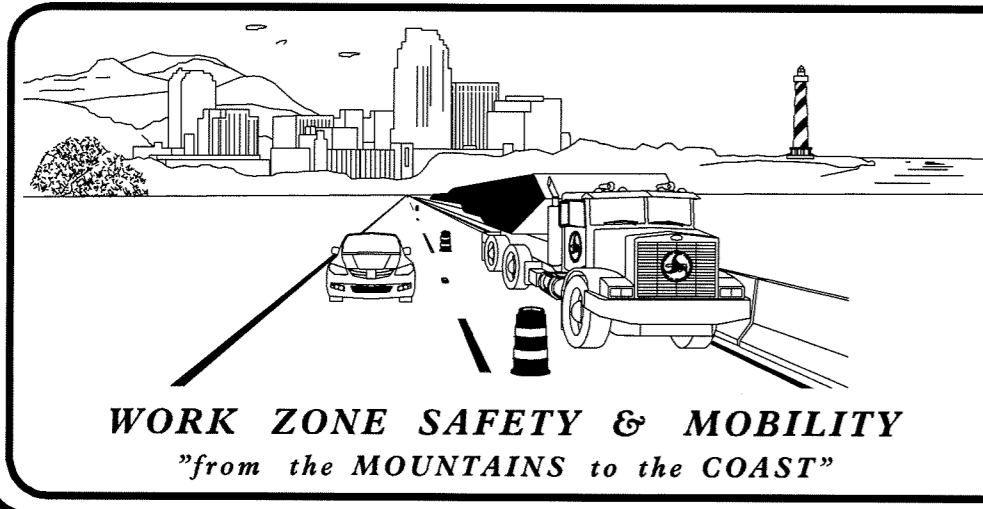
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE

SHEET NO.
TMP-1

17BP.13.R.23

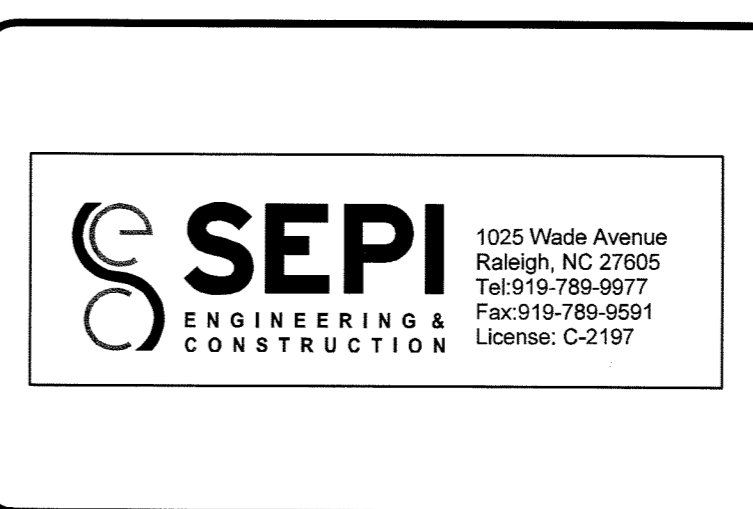
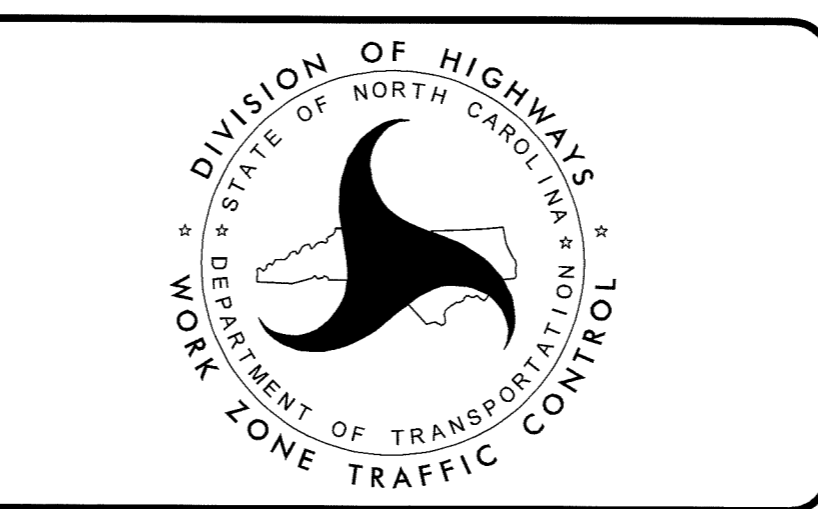
PROJECT:

\$\$\$\$\$SYSTEM\$\$\$\$\$
\$\$\$\$\$USER\$\$\$\$\$



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER
J. W. WOOLARD, P.E. TRAFFIC CONTROL PROJECT ENGINEER
TRAFFIC CONTROL PROJECT DESIGN ENGINEER
TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: *[Signature]*
DATE: 8-19-14

SEAL

ROADWAY STANDARD DRAWINGS

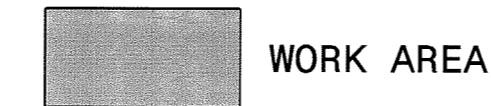
THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES-TYPE III

LEGEND

GENERAL

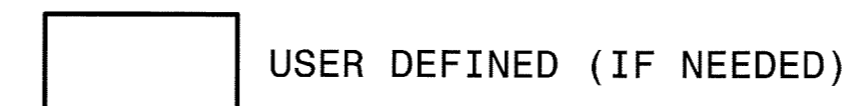
- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)



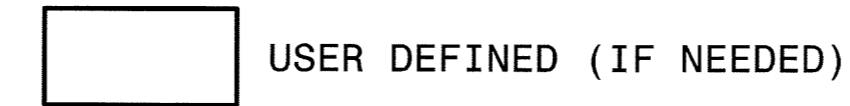
WORK AREA



REMOVAL



USER DEFINED (IF NEEDED)



USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

\$\$\$SYTIME\$\$\$\$
 \$\$\$DON\$\$\$\$
 \$\$\$NAME\$\$\$\$

APPROVED: DATE: 8-19-14 		<h3>ROADWAY STANDARD DRAWINGS & LEGEND</h3>
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MANAGEMENT STRATEGIES

- CLOSE SR 2402 (OLD FARM SCHOOL ROAD) AND DETOUR TRAFFIC OFF-SITE
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION
- PROVIDE TWENTY-ONE DAYS NOTICE TO THE ENGINEER, BUNCOMBE COUNTY EMERGENCY SERVICES, AND BUNCOMBE COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE

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 UNDESIRE 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

- C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- E) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PHASING

- STEP 1 USING RSD 1101.03 SHEET 1 OF 9, CLOSE OLD FARM SCHOOL ROAD (SR 2402) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.
- STEP 2 REMOVE EXISTING STRUCTURE.
- STEP 3 CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4 PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.
- STEP 5 OPEN OLD FARM SCHOOL ROAD (SR 2402) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DCN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

APPROVED: DATE: 8-19-14			<h3>TRANSPORTATION OPERATIONS PLAN</h3>
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SIGN NUMBER: SP-1 **BACKG COLOR: Fluorescent Orange**
TYPE: STATIONARY **COPY COLOR: Black**
QUANTITY: SEE PLANS

SIGN WIDTH: 42"
HEIGHT: 36"
TOTAL AREA: 10.5 Sq. Feet

BORDER TYPE: RECESSED
RECESS: 0.5"
WIDTH: 0.75"
RADII: 1.38"

MAT'L: 0.125" (3.2 mm) ALUMINUM
0.079" COMPOSITE

USE NOTES:

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

DESIGN BY: R DRAYTON
PROJECT ID: 17BP.13.R.23

CHECKED BY: S. MILLER
DIV: 13

DATE: Mar 15, 2013



Spacing Factor is 1 unless specified otherwise

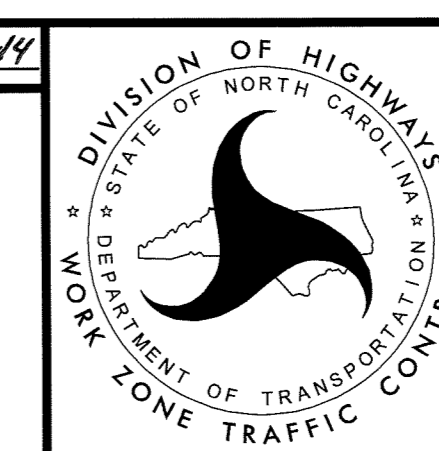
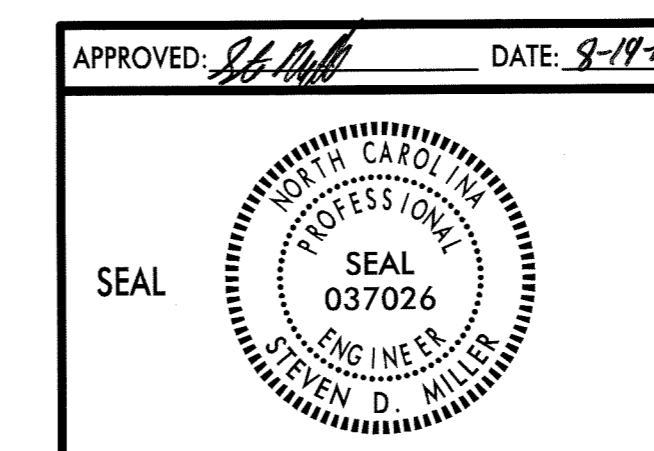
LETTER POSITIONS

Letter locations are panel edge to lower left corner												Series/Size
												Text Length
O	L	D		F	A	R	M					C 2000
3.78	8.52	12.42	15.78	21.78	25.2	29.88	34.26					34.44
S	C	H	O	O	L							C 2000
8.1	12.36	16.92	21.48	26.1	30.84							25.8
R	O	A	D									C 2000
12.72	16.98	21.24	25.92									16.56

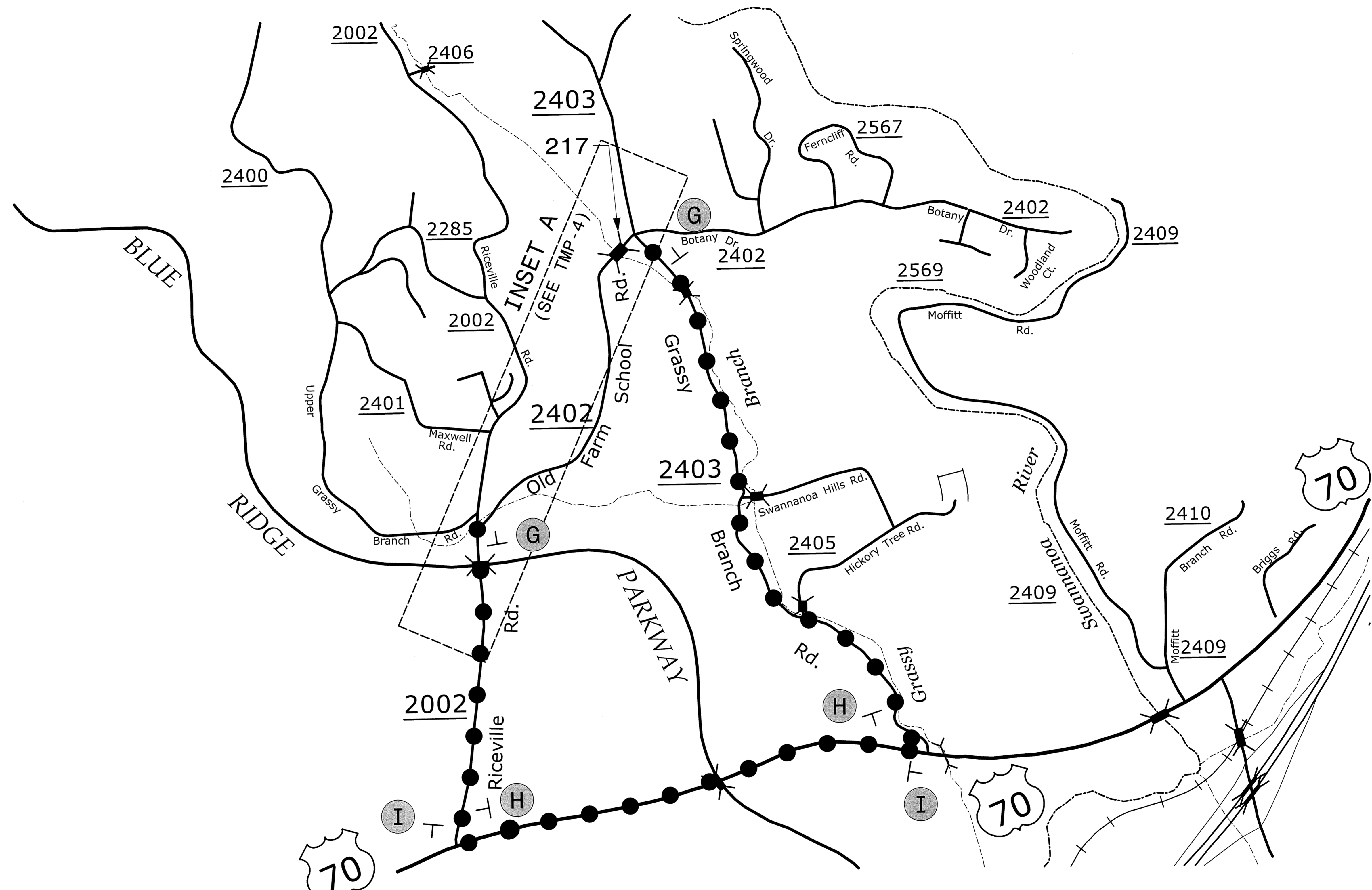
FILENAME: sign designs

SEPI ENGINEERING & CONSTRUCTION SIGN DETAIL

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



SPECIAL SIGN DESIGN

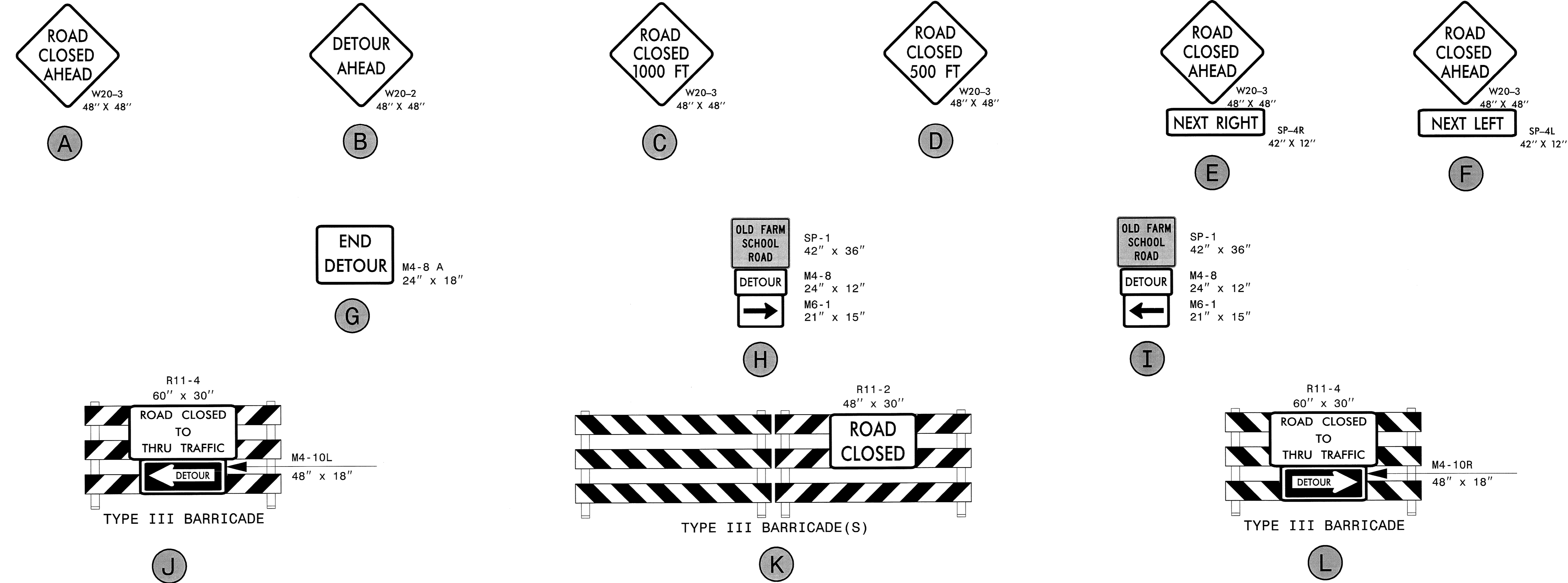
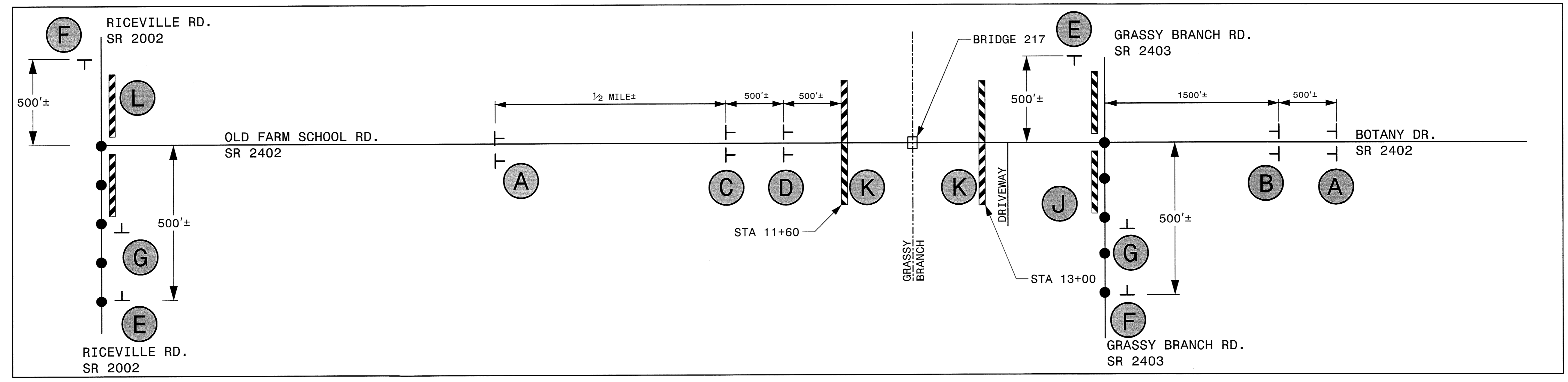


(SEE TMP-4 FOR SIGN LEGEND)
 OFF-SITE DETOUR ROUTE = ●—●—●

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDON\$\$\$\$\$
 \$\$\$SERNAME\$\$\$\$\$


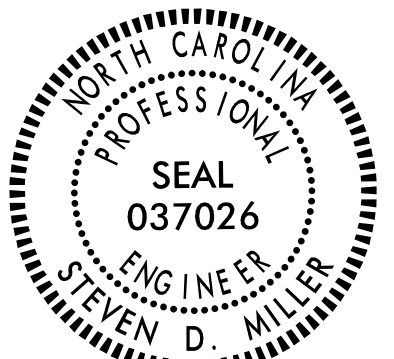
APPROVED: <i>[Signature]</i> DATE: 9-19-14			<p>OFF-SITE DETOUR</p>
SEAL			

INSET A



\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDGDCN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

APPROVED: <i>[Signature]</i> DATE: 8-14-11			ROAD CLOSURE
SEAL			

NO.	SHEET NO.
17BP.13.R.23	PMP-1
APPROVED: 	
DATE: 5/25/2016	
SEAL	
	

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
BUNCOMBE COUNTY**

**LOCATION: BRIDGE NO. 100217 ON SR 2408 (OLD FARM SCHOOL ROAD)
OVER GRASSY BRANCH**

17BP.13.R.23

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
OLD FARM SCHOOL ROAD (2408)	PAINT	NONE

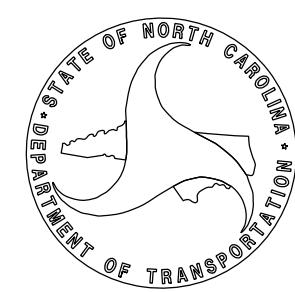
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE SHEET
PMP-2	PAVEMENT MARKING DETAIL AND SCHEDULE

N.C.D.O.T. SIGNING AND DELINEATION UNIT

KELVIN L. JORDAN SIGNING & DELINEATION REGIONAL ENGINEER
SIGNING & DELINEATION PROJECT DESIGN ENGINEER/TECHNICIAN

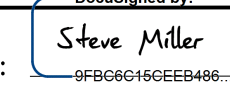
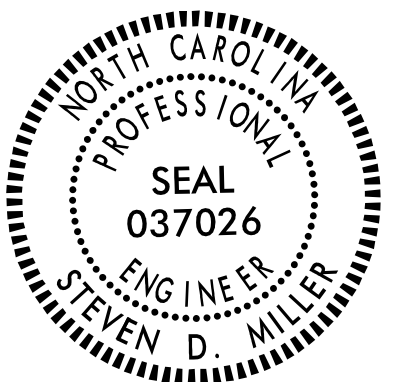


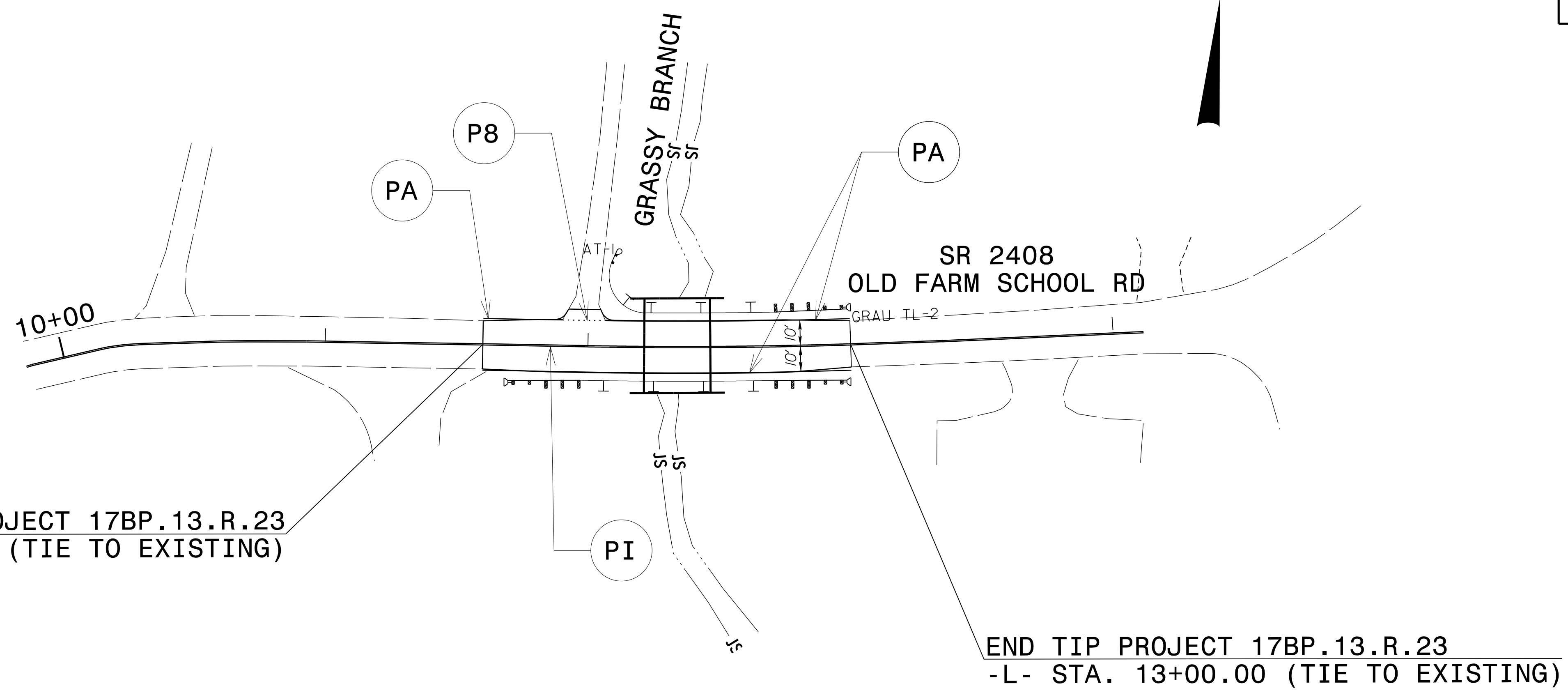
PLAN PREPARED BY: SEPI ENGINEERING & CONSTRUCTION

RICHARD DRAYTON PROJECT DESIGN ENGINEER
STEVE MILLER, PE TRANSPORTATION ENGINEER



CONTRACT:

NO. 17BP.13.R.23	SHEET NO. PMP-2
APPROVED:  DocuSigned by: Steve Miller 9FB06160EEB486	
DATE: 5/25/2016	
SEAL 	



BEGIN TIP PROJECT 17BP.13.R.23
-L- STA. 11+60.00 (TIE TO EXISTING)

END TIP PROJECT 17BP.13.R.23
-L- STA. 13+00.00 (TIE TO EXISTING)

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAINT (4")
P8	2 FT. - 6 FT./SP WHITE MINISKIP	
PA	WHITE EDGELINE	
PI	YELLOW DOUBLE CENTER	

PAVEMENT MARKING DETAIL AND SCHEDULE

5/25/2016
C:\Users\jmcopple\Documents\17BP.13.R.23\17BP.13.R.23_PMP-2.dgn
USER: jmcopple

09.08/99

PROJECT: 17BP.13.R.23

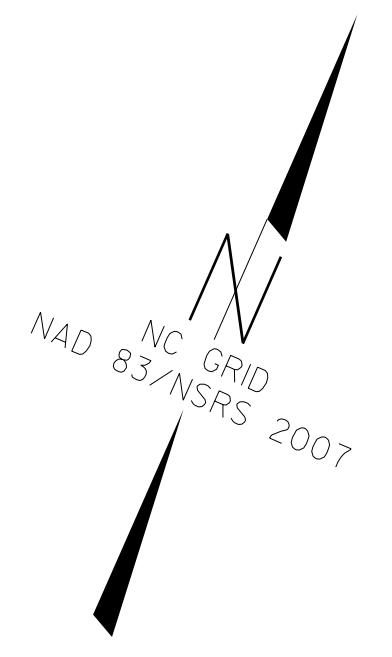
CONTRACT:

CONTRACT:

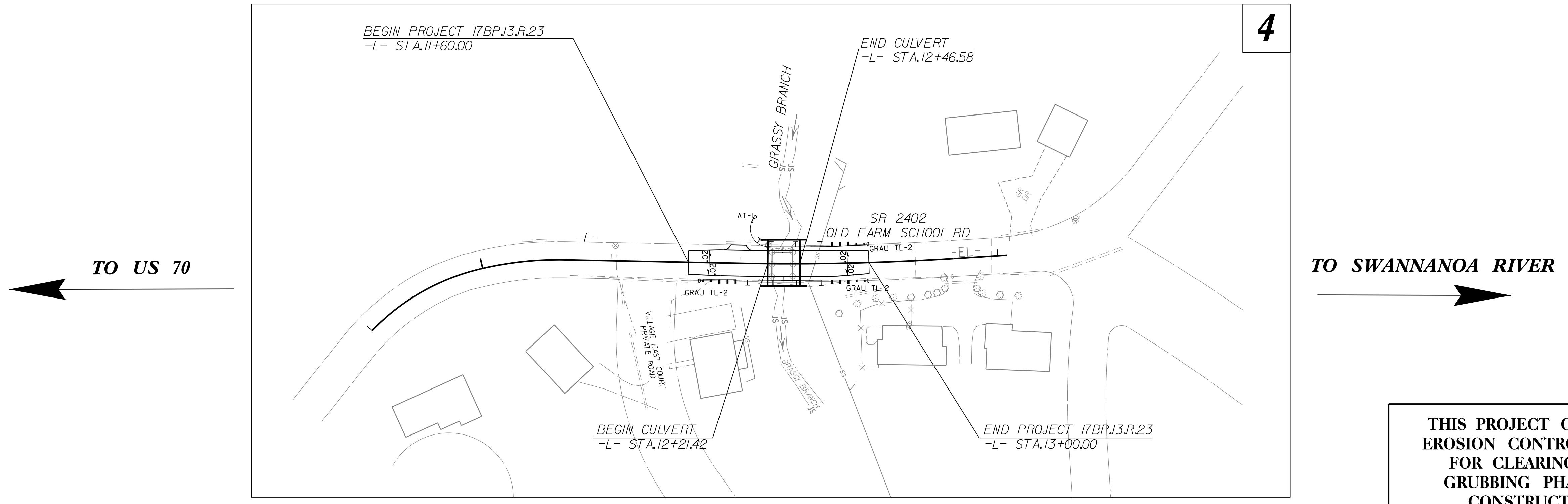
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.23	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

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

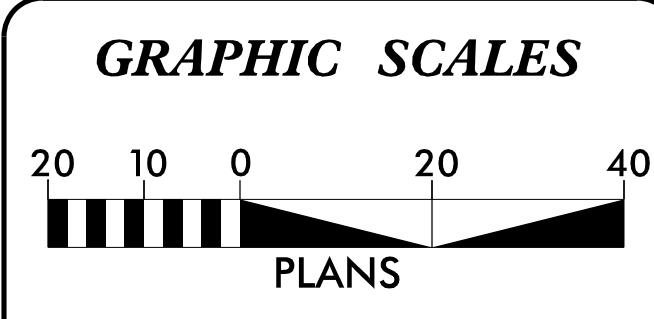
BRIDGE NO. 217 ON SR 2408 (OLD FARM SCHOOL RD)
 OVER GRASSY BRANCH



Std. #	Description	Symbol
1605.01	Temporary Silt Fence	||| ||| |||
1606.01	Special Sediment Control Fence	△△△△△△△△
1622.01	Temporary Berms and Slope Drains	—●—
1630.02	Silt Basin Type B	▨
1630.03	Temporary Silt Ditch	—TSD—
1630.05	Temporary Diversion	—TD—
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	□
1633.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
	Temporary Rock Silt Check Type-B	▶
	Wattle	⤵
	Wattle with Polyacrylamide (PAM)	⤵
1634.02	Temporary Rock Sediment Dam Type-B	▣
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⤵



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



ROADSIDE ENVIRONMENTAL UNIT
 DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

DAVID S. WEBB, PE
 LEVEL III DESIGNER OF EROSION
 AND SEDIMENT CONTROL PLANS
 3244
 LEVEL III CERTIFICATION NO.

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.

ROADSIDE ENVIRONMENTAL UNIT
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 2012 STANDARD SPECIFICATIONS

Prepared in the Office of:

 ENGINEERING & CONSTRUCTION
 1025 Wade Avenue
 Raleigh, NC 27605
 Tel: 919-789-9977
 Fax: 919-789-9591
 License: C-2197

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	

5/13/2016
 \\s:\ec\dsm\TSH.dgn
 USER:RKEYS

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>17BP13.R.23</i>	SHEET NO. <i>EC-02</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

5/14/99

NOTES:

1. CULVERT CONSTRUCTION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
6. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DE-WATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.

CONSTRUCTION SEQUENCE

1. SET UP OFFSITE DETOUR AND RE-ROUTE PER APPROVED TRAFFIC CONTROL PLANS.
2. INSTALL PERIMETER EROSION CONTROL MEASURES INCLUDING SPECIAL STILLING BASIN, DEWATERING AND BYPASS PUMPS.
3. INSTALL IMPERVIOUS DIKES AND BEGIN BYPASS OF CREEK.
4. DEWATER WORK AREA THROUGH SPECIAL STILLING BASIN.
5. REMOVE EXISTING BRIDGE & HEADWALLS.
6. INSTALL CULVERT AND CONNECTED HEADWALLS.
7. BACKFILL CULVERT, STABILIZE DISTURBED AREAS.
8. COMPLETE ROADWAY.
9. ENSURE DISTURBED LAND IS STABILIZED.
10. REMOVE TEMPORARY EROSION CONTROL DEVICES.

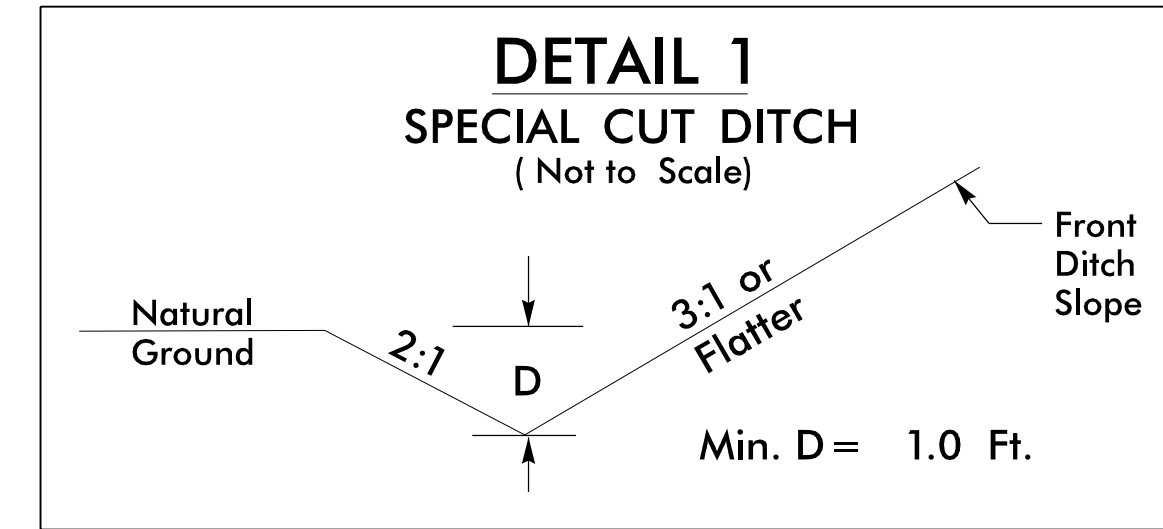
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

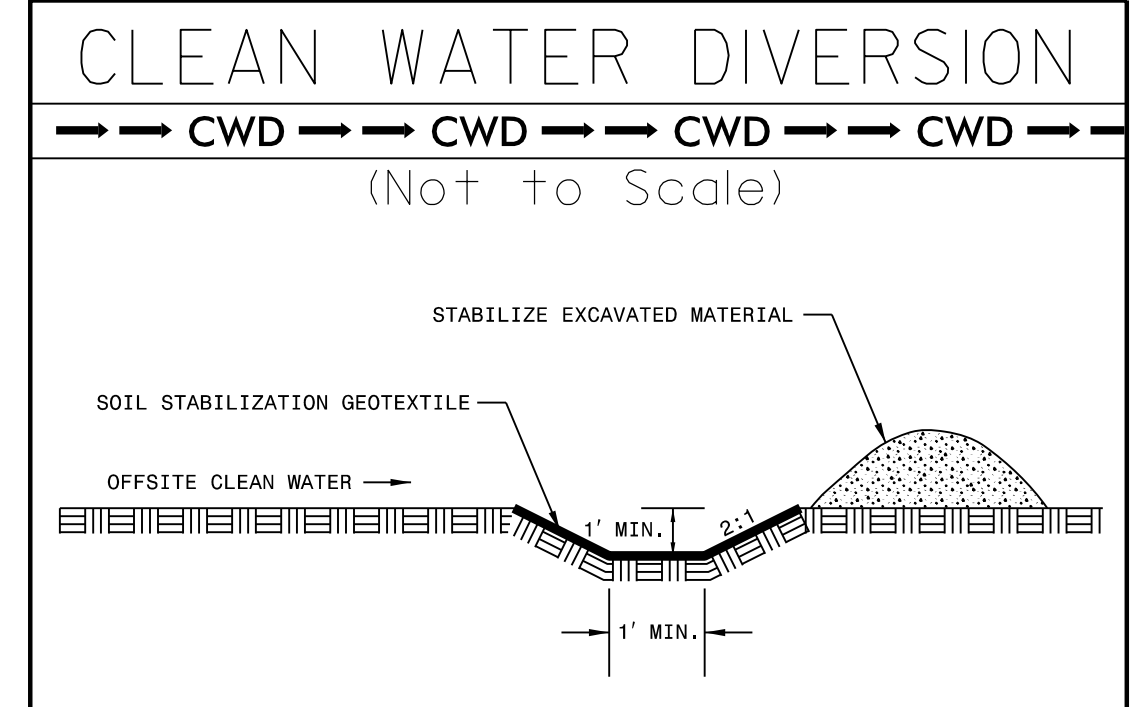
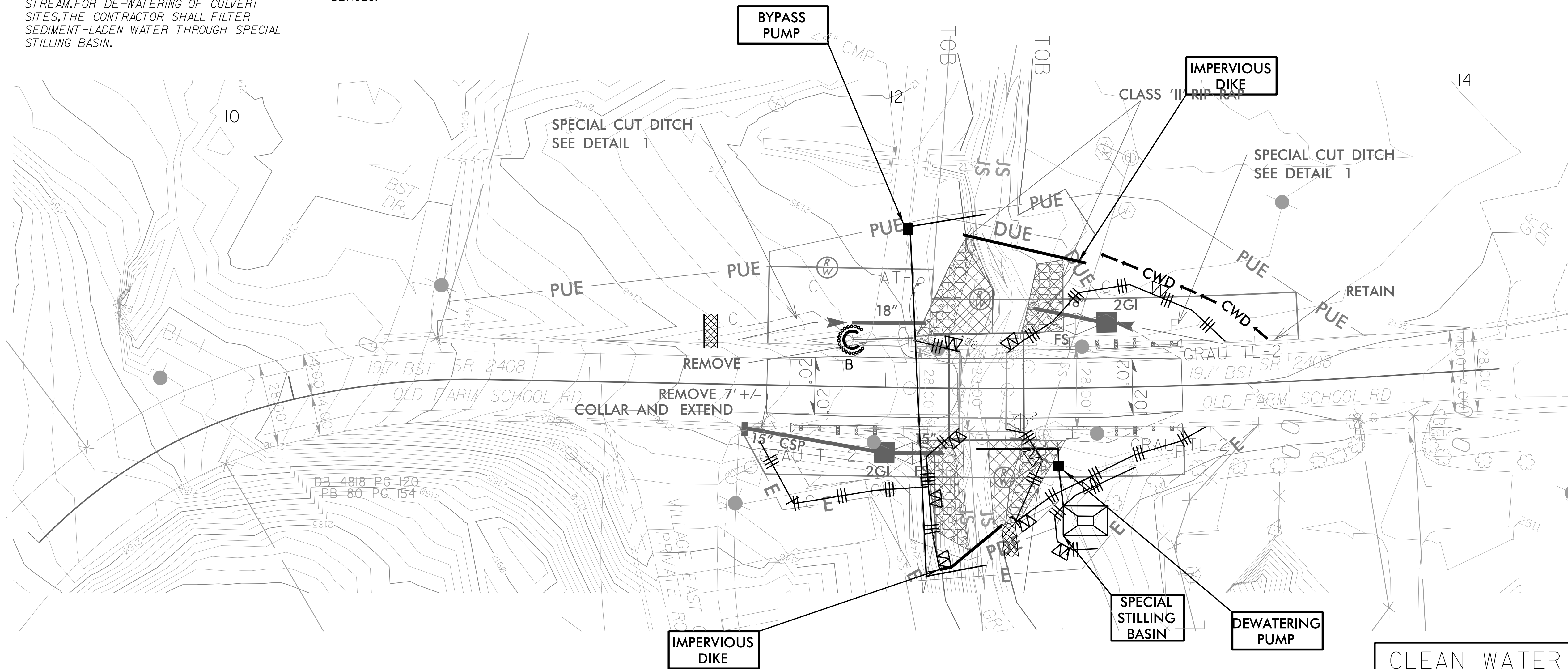
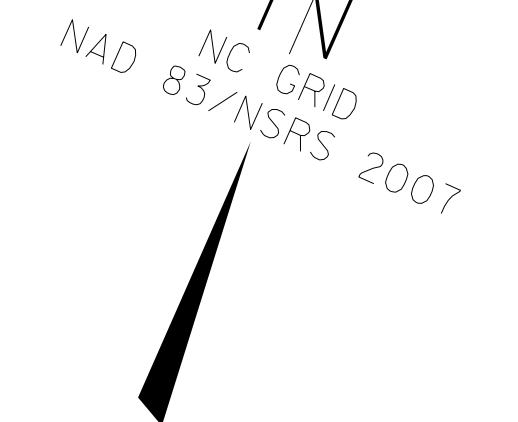
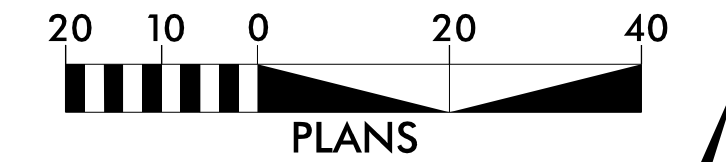
SEPI
ENGINEERING & CONSTRUCTION

1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

PROJECT REFERENCE NO. 17BP13R.23	SHEET NO. EC4/CONST.4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



FROM STA. 11+50 TO STA. 11+88 -L- LT
FROM STA 12+75 TO STA 13+15 -L- LT



5/13/2019 EC-dsn-SHT4.dgn

5/14/99

NOTES:

- 1. CULVERT CONSTRUCTION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
- 2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
- 3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
- 4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
- 5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
- 6. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DE-WATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.

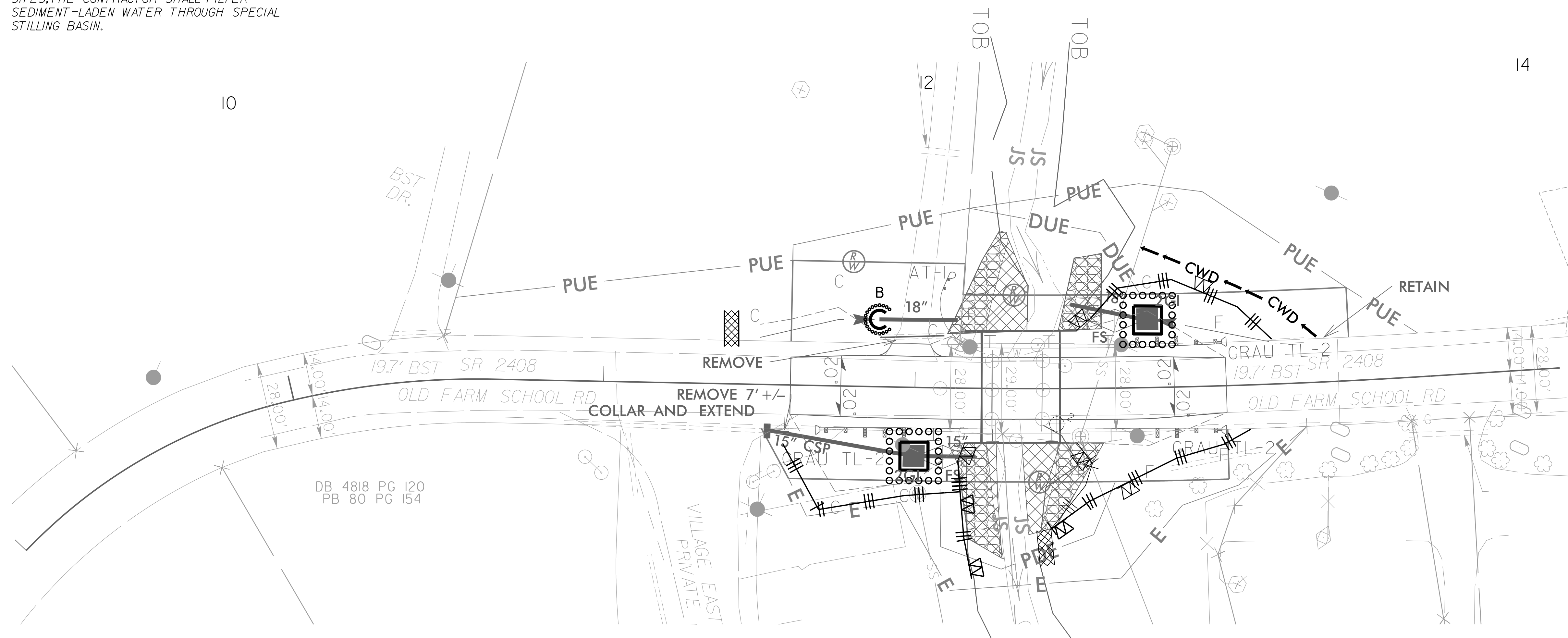
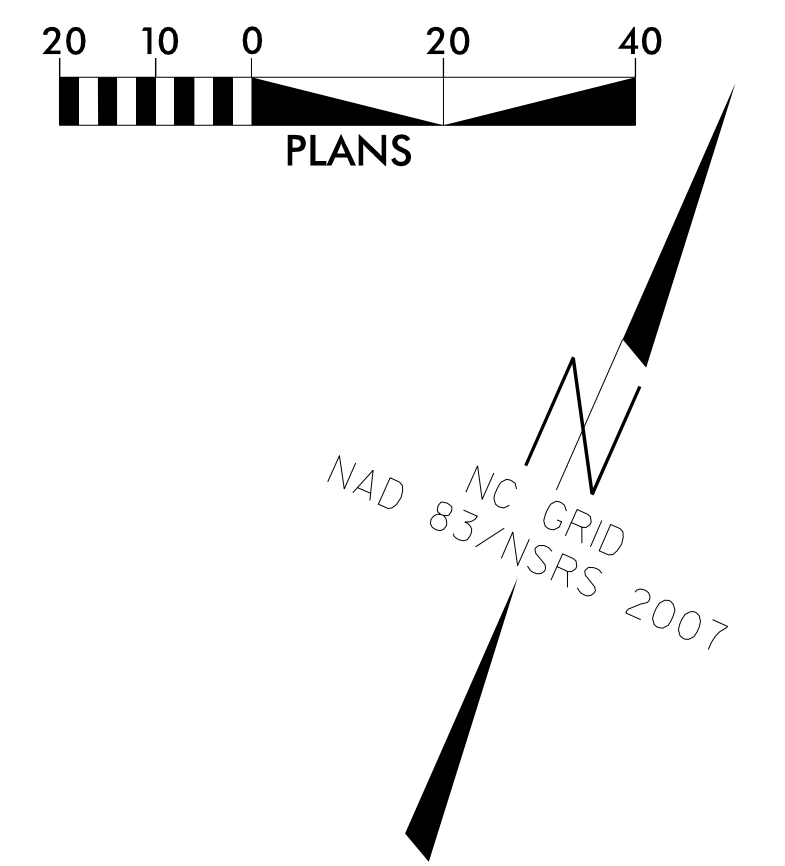
CONSTRUCTION SEQUENCE

- 1. SET UP OFFSITE DETOUR AND RE-ROUTE PER APPROVED TRAFFIC CONTROL PLANS.
- 2. INSTALL PERIMETER EROSION CONTROL MEASURES INCLUDING SPECIAL STILLING BASIN, DEWATERING AND BYPASS PUMPS.
- 3. INSTALL IMPERVIOUS DIKES AND BEGIN BYPASS OF CREEK.
- 4. DEWATER WORK AREA THROUGH SPECIAL STILLING BASIN.
- 5. REMOVE EXISTING BRIDGE & HEADWALLS.
- 6. INSTALL CULVERT AND CONNECTED HEADWALLS.
- 7. BACKFILL CULVERT, STABILIZE DISTURBED AREAS.
- 8. COMPLETE ROADWAY.
- 9. ENSURE DISTURBED LAND IS STABILIZED.
- 10. REMOVE TEMPORARY EROSION CONTROL DEVICES.

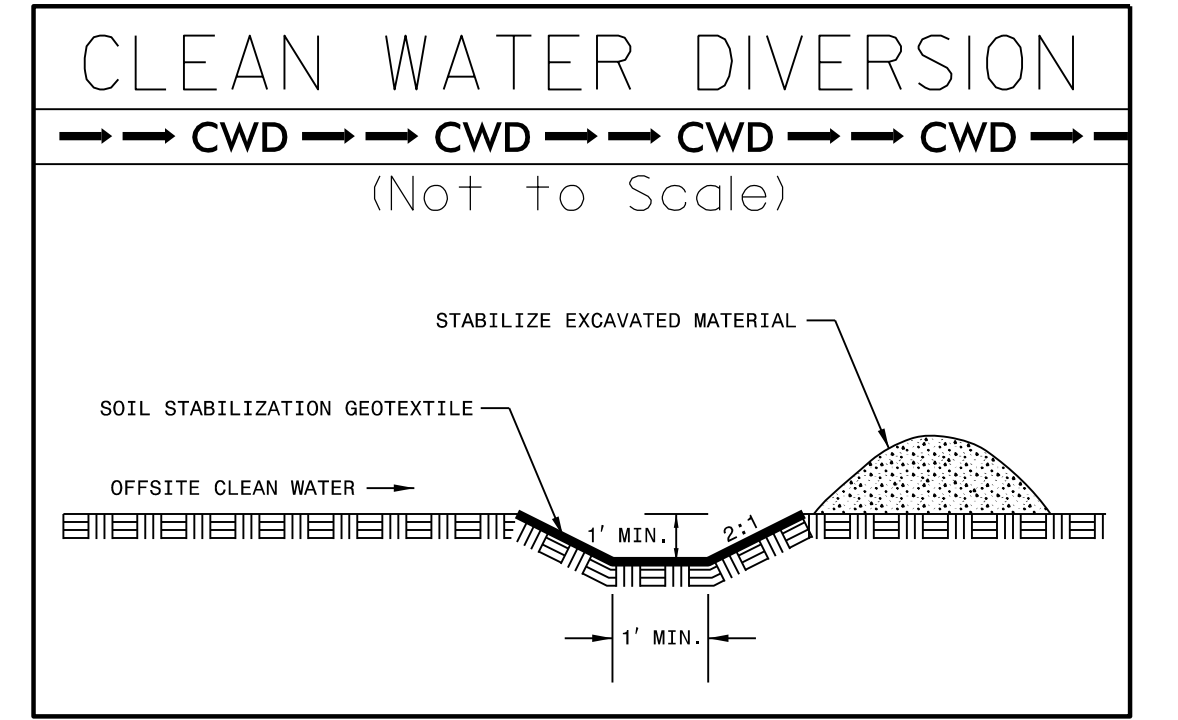
SEPI
ENGINEERING & CONSTRUCTION

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Raleigh, NC 27605
Tel: 919-789-9977
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License: C-2197

PROJECT REFERENCE NO. 17BP13.R.23	SHEET NO. EC5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DB 488 PG 120
PB 80 PG 154



5/13/2016 EC.dsn_SHT5.dgn
USER: kaha

09.08/199

PROJECT: 17BP.13.R.23

PROJECT: 17BP.13.R.23

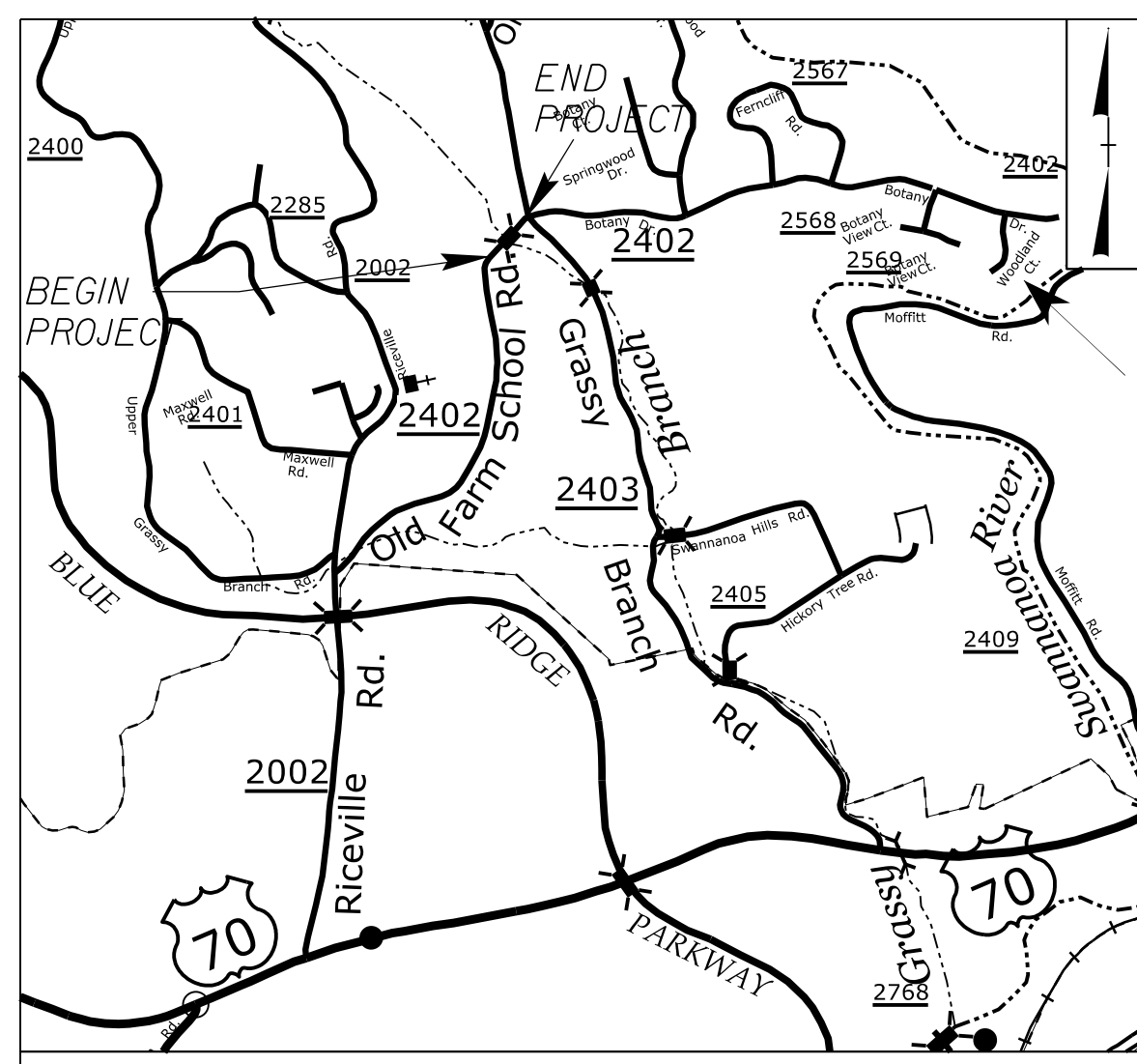
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
100217	UC-1

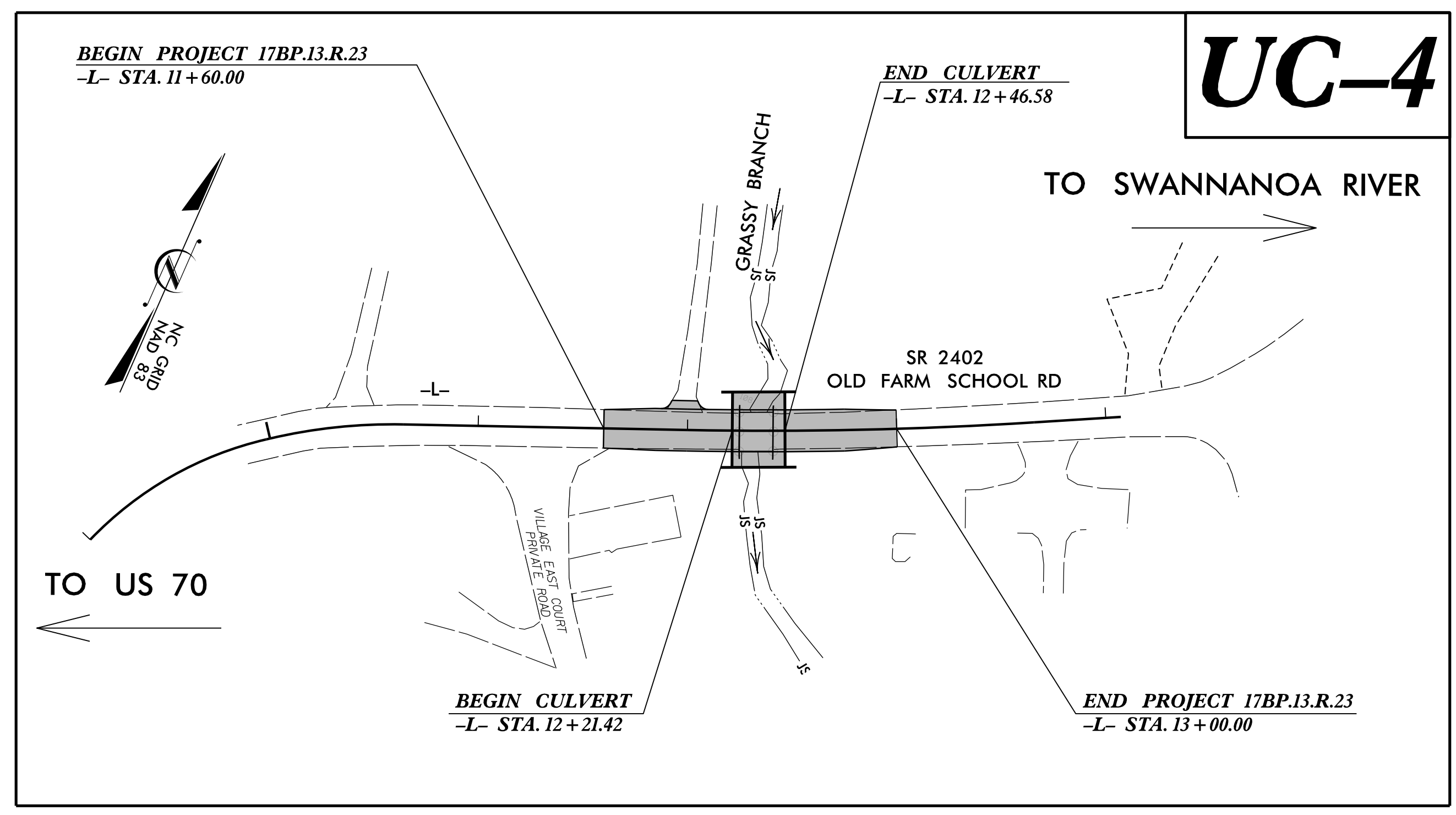
BUNCOMBE COUNTY

**LOCATION: BRIDGE NO.100217 OVER GRASSY BRANCH ON
SR 2402 (OLD FARM SCHOOL ROAD)**

TYPE OF WORK: WATER LINE

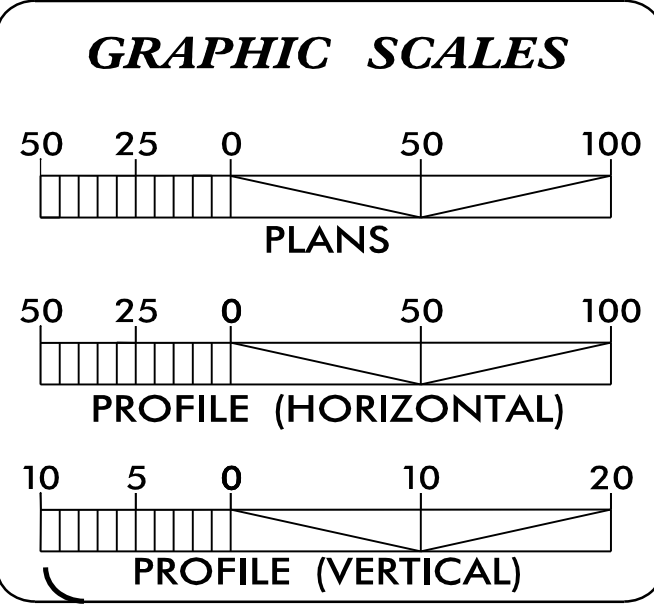


VICINITY MAP



UC-4

SEPI ENGINEERING & CONSTRUCTION
 1025 Wade Avenue
 Raleigh, NC 27605
 Tel: 919-789-9977
 Fax: 919-789-9591
 License: C-2197

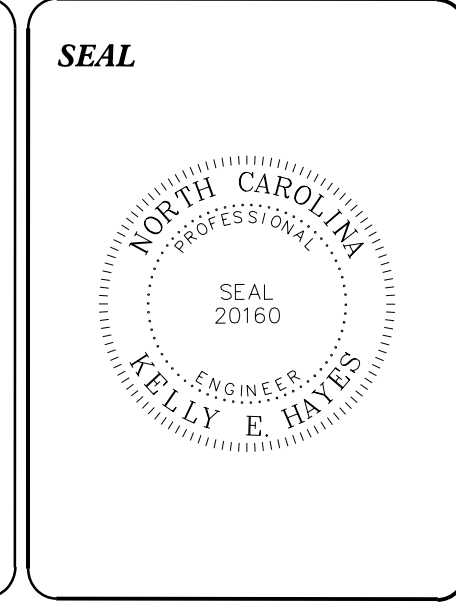


INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-3B	DETAILS
UC-4	UTILITY CONSTRUCTION SHEETS

WATER AND SEWER OWNERS ON PROJECT

- 1) WATER - CITY OF ASHEVILLE
- 2) SANITARY SEWER - METROPOLITAN SEWER DISTRICT



DEPARTMENT OF TRANSPORTATION

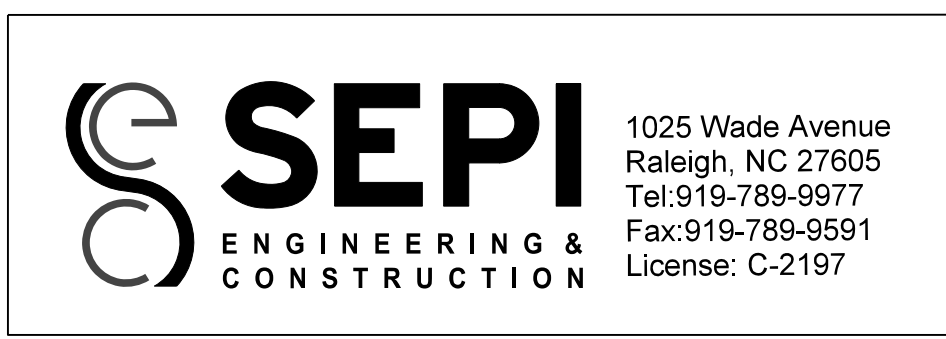
PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
 UTILITIES ENGINEERING
 SECTION**

1591 MAIL SERVICES CENTER
 RALEIGH NC 27699-1591
 PHONE (919) 707-6690
 FAX (919) 250-4151

Micheal Bright UTILITIES REGIONAL ENGINEER
Micheal Bright UTILITIES SECTION ENGINEER
Amy Dupree UTILITIES AREA COORDINATOR

2/26/2018
T:\BUN217_Ut_1\Title_UC1.psh.dgn
USER:tneal

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS



UTILITIES PLAN SHEET SYMBOLS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	_____
11¼ Degree Bend	↗↘
22½ Degree Bend	↗↘↗↘
45 Degree Bend	↗↘↗↘↗↘
90 Degree Bend	⊕
Plug	⊥
Tee	⊕
Cross	⊕
Reducer	▶
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PH
Relocate Fire Hydrant	PH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	PWM
Remove Water Meter	REM WM
Water Pump Station	PSTW
RPZ Backflow Preventer	RPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RPZ
Relocate DCV Backflow Preventer	PBFP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	_____
Force Main Sewer Line (Sized as Shown)	_____
Manhole (Sized per Note)	•
Sewer Pump Station	PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	⦿
Telephone Pole	⦿
Joint Use Pole	⦿
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	_____
Trenchless Installation	_____
Encasement by Open Cut	_____
Encasement	_____

Thrust Block	⊥
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	•
Telephone Pole	•
Joint Use Pole	•
Utility Pole	•
Utility Pole with Base	□
H-Frame Pole	•—•
Power Transmission Line Tower	⊠
Water Manhole	⊗
Power Manhole	⊗
Telephone Manhole	⊗
Sanitary Sewer Manhole	⊗
Hand Hole for Cable	⊠
Power Transformer	⊠
Telephone Pedestal	⊠
CATV Pedestal	⊠
Gas Valve	◇
Gas Meter	◇
Located Miscellaneous Utility Object	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

*Underground Power Line	_____
*Underground Telephone Cable	_____
*Underground Telephone Conduit	_____
*Underground Fiber Optics Telephone Cable	_____
*Underground TV Cable	_____
*Underground Fiber Optics TV Cable	_____
*Underground Gas Pipeline	_____
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	_____
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	_____
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	_____
Underground Unknown Utility Line	_____
SUE Test Hole	⦿
Water Meter	⦿
Water Valve	⦿
Fire Hydrant	⦿
Sanitary Sewer Cleanout	⦿

*For Existing Utilities

Utility Line Drawn from Record (Type as Shown) _____

Designated Utility Line (Type as Shown) _____

5/14/99
2/20/2018
\\proj\BUN217_UT_UC2_psh.dgn
USER:rneal

UTILITY CONSTRUCTION

PROJECT SPECIFIC NOTES:



PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.23	UC-3
DESIGNED BY: JB	
DRAWN BY: TD	
CHECKED BY: KH	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF CITY OF ASHEVILLE AND THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" AND STANDARD DRAWINGS DATED JANUARY 2018.
2. THE EXISTING WATER LINE BELONGS TO CITY OF ASHEVILLE (I.E. UTILITY OWNER).
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION AND CITY OF ASHEVILLE. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE UTILITY OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.
6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

1. PROPOSED 6" WATER LINE FROM -L- STATION 11+35 TO -L- STATUIB 13+00 SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE, PC 350
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRATOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO STREAM, WELANDS, OR BUFFER ZONES.
3. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
4. CONTRACTOR SHALL OBTAIN THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
5. THE CONTRACTOR SHALL COORDINATE ISOLATION OF THE EXISTING WATER MAIN FOR TIE-INS WITH THE CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. CALL CHAD PIERCE, PE (828) 259-5420.
6. ALL VALVES SHALL BE RESILIENT WEDGE VALVES.
7. PRIOR TO MAKING TIE-INS, FACILITATE FILLING, FLUSHING, TESTING, STERILIZATION AND BLOWOFF TO PROPOSED WATERMAIN BY INSTALLING 6" X 2" TAPPING SADDLE AND VALVE ON THE SECTION OF EXISTING 6" MAIN. HARDPIPE FROM TAPPING VALVE TO STUBBED OUT END OF PROPOSED 6" WATER MAIN WITH 2" SOLVENT WELD SCH40 PVC PIPE. PROVIDE RESTRAINED 6" CAP TAPPED FOR 2" CONNECTION. PROVIDE TEMPORARY 2" BLOWOFF ON OPPOSITE END OF PROPOSED MAIN WITH LIKE MATERIALS INCLUDING 2" ISOLATION VALVE.
8. FLUSH PROPOSED 6" MAIN AT 2.5 FPS VELOCITY AND PRESSURE TEST PROPOSED 6" WATER MAIN AT MINIMUM 200 PSI FOR A MINIMUM OF 2 HOURS PER CITY OF ASHEVILLE AND NCDOT SPECIFICATIONS.
9. AFTER SATISFACTORY BACTERIOLOGICAL SAMPLING AND PRESSURE TEST, RECEIVE FINAL APPROVAL FROM CITY OF ASHEVILLE. MAKE TIE-INS BY ABANDONING EXISTING 6" MAIN AND CONNECTING 6" RESTRAINED JOINT BEND WITH CONCRETE THRUST BLOCK PER DETAIL. CONCRETE SHALL BE POURED A MINIMUM 24 HOURS BEFORE MAKING CONNECTION.
10. THE CONTRACTOR SHALL RESTRAIN ALL FITTINGS AND PIPE.

11. COVER OVER CARRIER PIPE AT STREAM CROSSING SHALL BE 2' MIN BELOW STREAM BOTTOM TO TOP OF CARRIER PIPE.
12. AN NCDOT AND CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT REPRESENTATIVE SHALL BE PRESENT FOR ALL TESTS.
13. CONTRACTOR SHALL COORDINATE WATER LINE INSTALLATION AND CONNECTION WITH CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. EXISTING WATER LINE SHALL REMAIN IN SERVICE UNTIL BORE, TESTING AND DISINFECTION OF NEW WATER LINE IS COMPLETE.
14. IF TEMPORARY SHUT DOWN IS REQUIRED THE CONTRACTOR WILL COORDINATE THIS SHUT DOWN WITH CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. IN A MANNER THAT IS MOST CONVENIENT FOR CUSTOMERS AND CITY OF ASHEVILLE.
15. CONTRACTOR TO PLACE CONCRETE THRUST BLOCK AROUND THE EXISTING DI PIPE WEST OF THE 6" VALVE AT APPROXIMATE -L- STA. 11+50 AND EAST OF THE VALVE AT APPROXIMATE -L- STA. 13+25
16. ABANDON AND REMOVE EXISTING 6" DI PIPE
17. COVER OVER DIP PIPE AT STREAM CROSSING SHALL BE 5' MINIMUM BELOW STREAM BOTTOM TO TOP OF DIP PIPE.
18. ALL WATER MAINS SHALL BE PRESSURE TESTED WITH A TEST PRESSURE AT THE HIGH POINT OF THE MAIN TWICE THE WORKING PRESSURE OR 200 PSI, WHICHEVER IS GREATER. TEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF 3 HOURS. MAKE UP WATER SHALL NOT EXCEED THE FOLLOWING AMOUNTS IN GALLONS PER 1,000 FEET OF MAIN: 2"LINE 0.50, 3"LINE 0.74, 4"LINE 1.11, 6"LINE 1.65, 8"LINE 2.22, 12"LINE 3.3, 16"LINE 3.96 AND 24"LINE 5.97.
19. ALL WATER MAINS SHALL BE FLUSHED AND DISINFECTED PRIOR TO BEING PUT IN SERVICE. FLUSHING SHALL BE ACCOMPLISHED WITH SUFFICIENT WATER VELOCITY (MINIMUM OF 2.5 FPS) TO THOROUGHLY CLEAN THE MAIN. THE MAINS SHALL BE DISINFECTED USING A CHLORINE SOLUTION EQUAL TO OR GREATER THAN 50 MILLIGRAMS PER LITER (50 PPM). THE CHLORINE SOLUTION SHALL REMAIN IN THE MAINS FOR A MINIMUM OF 24 HOURS. BACTERIOLOGICAL TEST SAMPLES SHALL BE TAKEN BY CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT FOR EVALUATION AND LINE DISINFECTANT APPROVAL. AFTER DISINFECTION IS COMPLETE, THE NEW LINES SHALL BE FLUSHED SUFFICIENTLY SO THAT THE CHLORINE CONCENTRATION LEVEL IN THE NEW LINES DO NOT EXCEED EXISTING LINE CONCENTRATION.

UTILITY CONSTRUCTION

5/14/99
2/20/08 UN217_Ut_UC3.psh.dgn

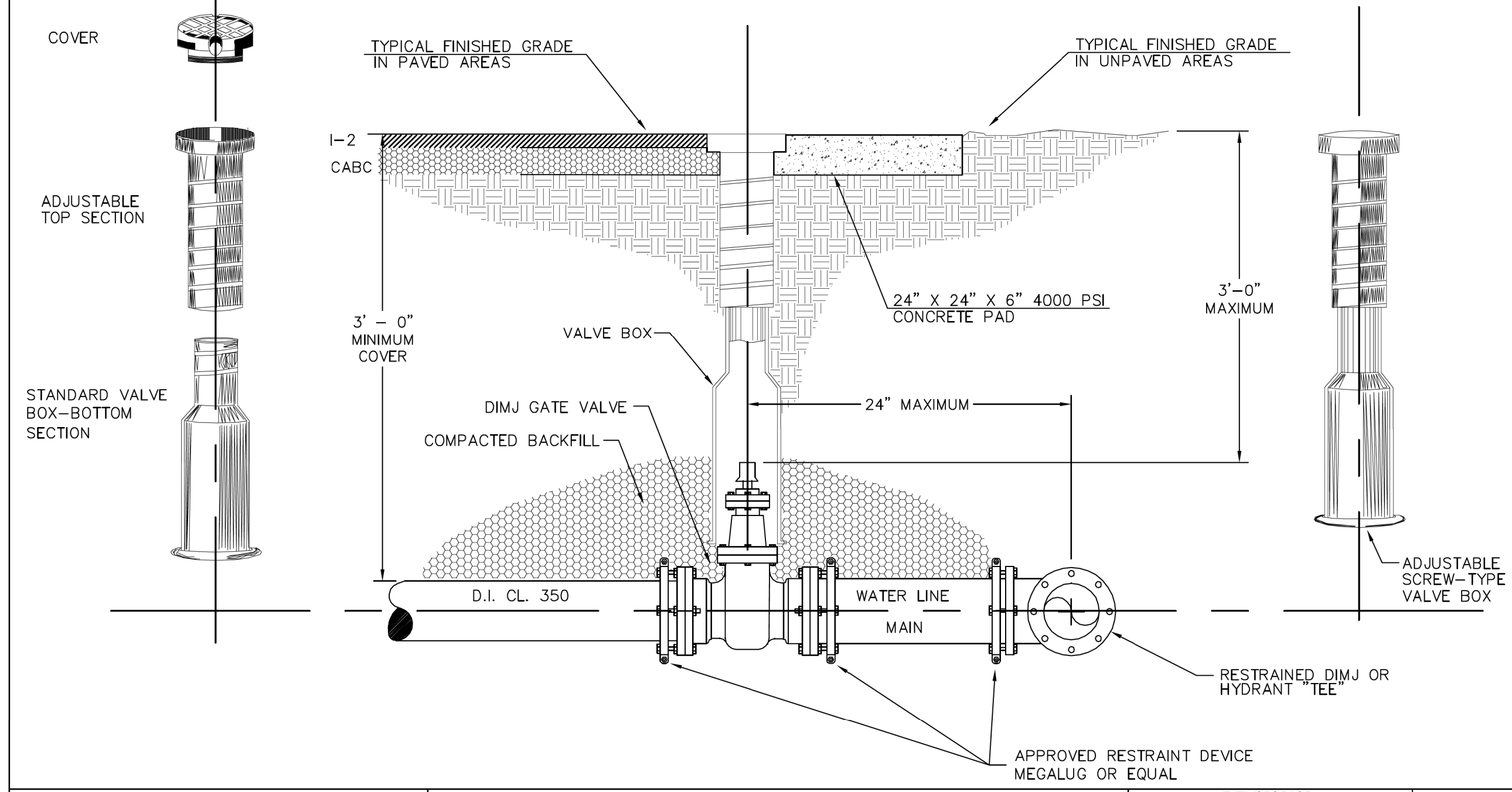
UTILITIES DETAIL SHEET

SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

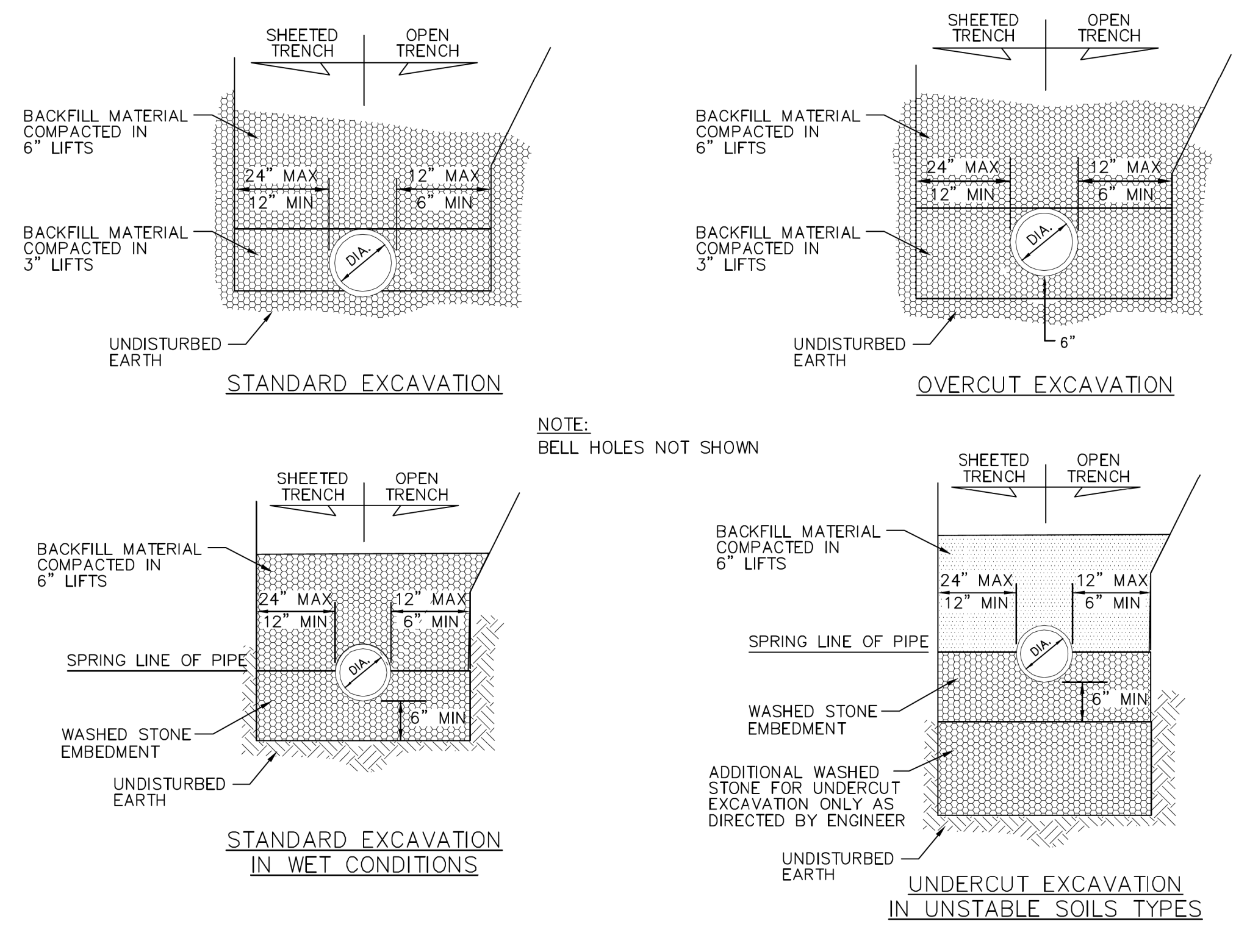
PROJECT REFERENCE NO. 17BP13R.23
SHEET NO. UC-3A



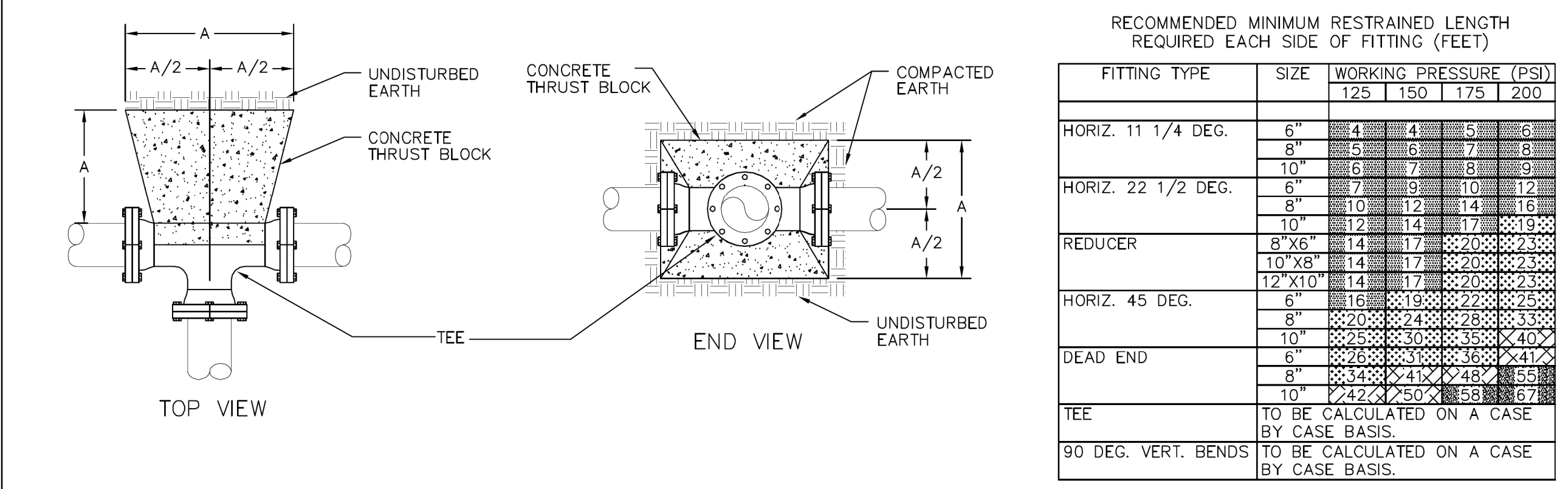
- GENERAL NOTES:**
1. VALVE BOX SHALL NOT CONTACT WATER MAIN OR VALVE.
 2. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR IMPROVED PAVED SURFACES.
 3. VALVE BOX ADJUSTMENT MUST BE DONE BY ADJUSTING/RAISING THE TOP SECTION OF THE EXISTING ADJUSTABLE SCREW-TYPE VALVE BOX TO GRADE OR BY INSTALLING A NEW VALVE BOX TOP SECTION. THE USE OF PAVING RINGS OR ADJUSTING C.I. SLEEVES IS NOT ALLOWED.



City of Asheville, NC
WATER ENGINEERING DIVISION
TYPICAL VALVE & VALVE BOX INSTALLATION / ADJUSTMENT
DATE: 6/2009
REVISIONS: 1. REVISED DETAIL FROM 6.06
STD. NO. **W.18**



City of Asheville, NC
WATER ENGINEERING DIVISION
TYPICAL TRENCH DETAIL
DATE: 6/2009
REVISIONS: 1. REVISED DETAIL FROM 6.19
STD. NO. **W.21**



RECOMMENDED MINIMUM RESTRAINED LENGTH REQUIRED EACH SIDE OF FITTING (FEET)

FITTING TYPE	SIZE	WORKING PRESSURE (PSI)			
		125	150	175	200
HORIZ. 11 1/4 DEG.	6"	4	4	5	6
	8"	5	6	7	8
	10"	6	7	8	9
HORIZ. 22 1/2 DEG.	6"	7	9	10	12
	8"	10	12	14	16
	10"	12	14	17	19
REDUCER	8" X 6"	14	17	20	22
	10" X 8"	14	17	20	22
	12" X 10"	14	17	20	22
HORIZ. 45 DEG.	6"	16	19	22	25
	8"	20	24	28	33
	10"	25	30	35	40
DEAD END	6"	28	33	38	44
	8"	34	41	48	56
	10"	42	50	58	67
TEE	TO BE CALCULATED ON A CASE BY CASE BASIS.				
90 DEG. VERT. BENDS	TO BE CALCULATED ON A CASE BY CASE BASIS.				

- GENERAL NOTES:**
1. RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATERLINES. THRUST BLOCKS ARE PERMITTED WHERE THE USE OF MECHANICAL RESTRAINT IS NOT FEASIBLE.
 2. DIMENSION TABLE GIVEN IS A GUIDE ONLY. TO ENGINEER SHALL BE RESPONSIBLE TO CALCULATE THRUST BLOCK DIMENSIONS AND/OR BASED ON RESTRAINED LENGTH ACTUAL SOIL AND OPERATING PRESSURE CONDITIONS.
 3. FITTING JOINTS SHALL BE KEPT FREE OF CONCRETE. A LAYER OF POLYETHYLENE PLASTIC SHALL BE PLACED BETWEEN THE FITTING AND THE CONCRETE.
 4. PRE-CAST THRUST BLOCKS ARE NOT ACCEPTABLE.
 5. CONCRETE SHALL HAVE 4000 P.S.I. COMPRESSIVE STRENGTH.

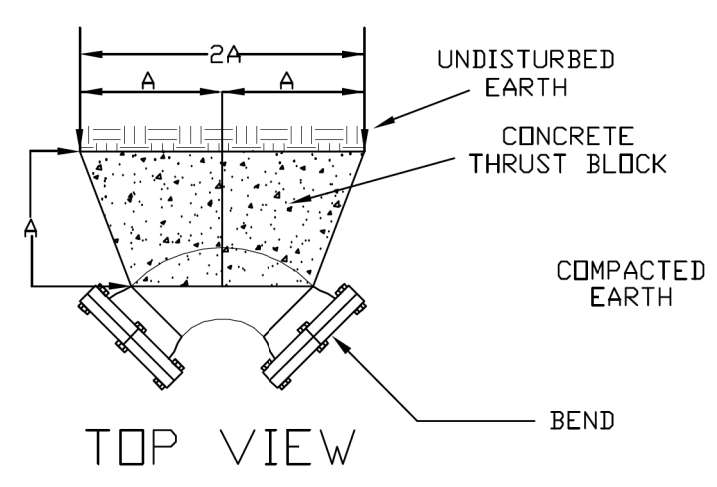
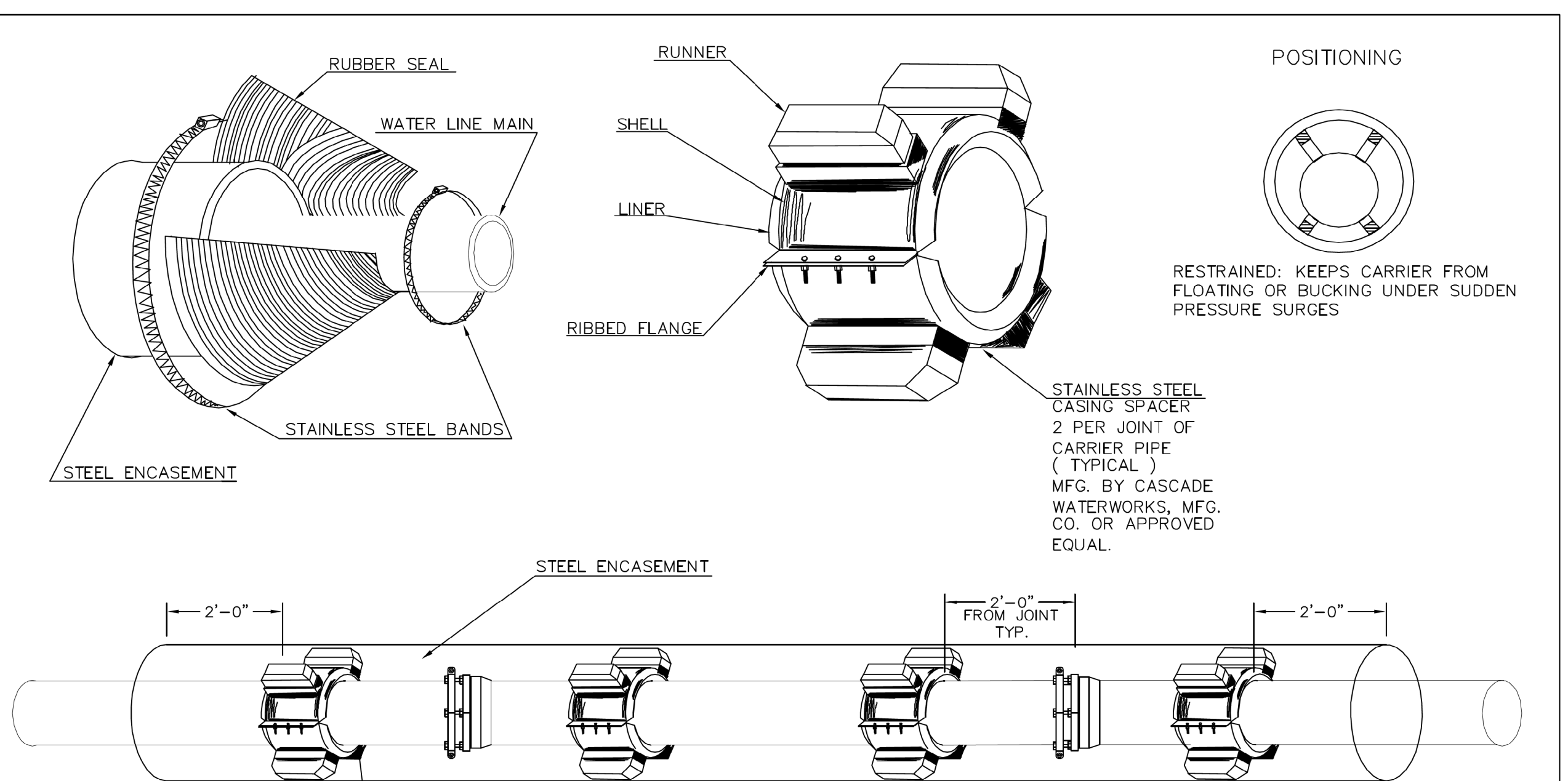


TABLE OF "A" DIMENSIONS (IN FEET)

BEND	90	45	22 1/2	11 1/4	TEE
6	1.4	1.1	1.0	1.0	1.2
8	1.9	1.5	1.5	1.5	1.6
10	2.4	1.8	1.8	1.8	2.0
12	2.8	2.1	2.0	2.0	2.4
16	3.8	2.8	2.5	2.5	2.8
24	5.6	4.2	3.0	3.0	4.5

City of Asheville, NC
WATER ENGINEERING DIVISION
THRUST BLOCK FOR FITTINGS & RESTRAINING REQUIREMENTS
DATE: 6/2009
REVISIONS: 1. REVISED DETAIL FROM 6.13
2. NOTE 1 REVISED
STD. NO. **W.22**



- GENERAL NOTES:**
1. RESTRAINED POSITIONING TO BE USED AT ALL TIMES.
 2. CARRIER PIPE JOINTS SHALL BE RESTRAINED.
 3. CONTRACTOR MAY USE BRICK MASONRY AND NON-SHRINK GROUT TO SEAL ENCASEMENT ENDS IN LIEU OF RUBBER SEAL. A 3/4" WEEP HOLE MUST BE PROVIDED AT LOW POINT OF CASING.

City of Asheville, NC
WATER ENGINEERING DIVISION
CARRIER PIPE IN STEEL ENCASEMENT
DATE: 6/2009
REVISIONS: 1. REVISED DETAIL FROM 6.08
STD. NO. **W.26**

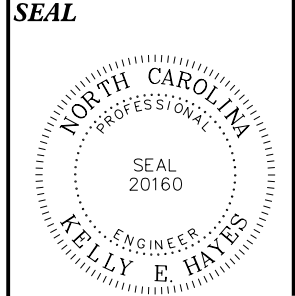
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2/14/2018
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USER: tneal

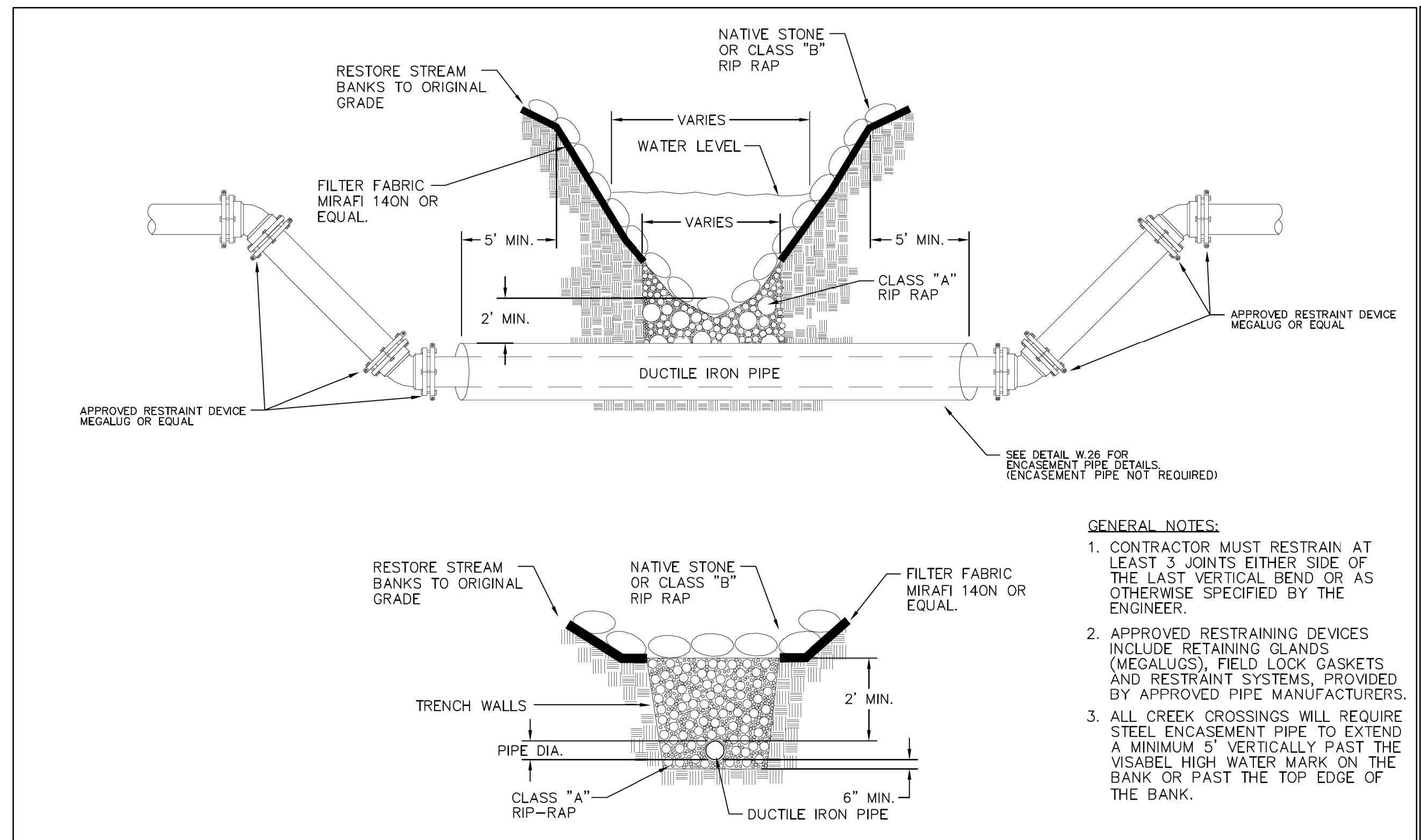
5/14/99

UTILITIES DETAIL SHEET

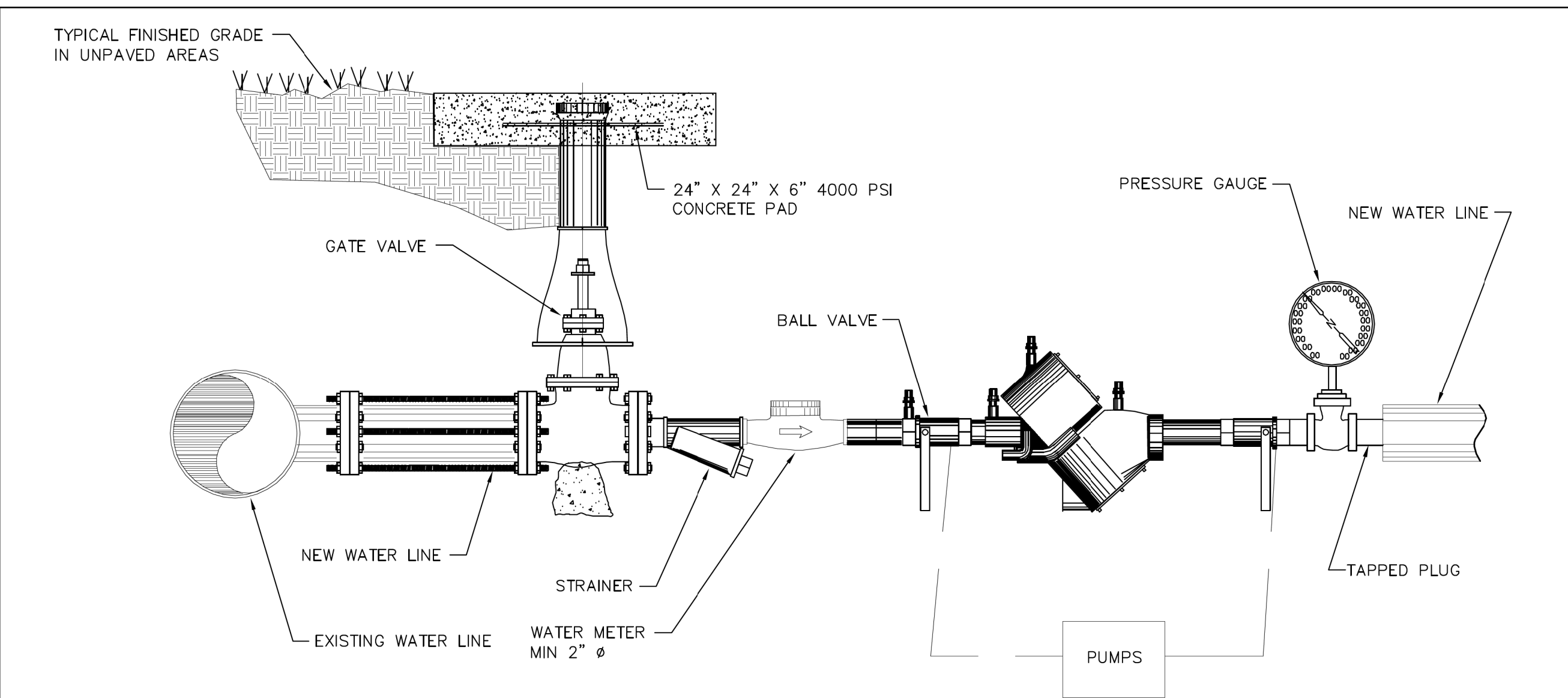
SEPI
ENGINEERING & CONSTRUCTION

1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197


PROJECT REFERENCE NO. 17BP.13.R.23	SHEET NO. UC-3B
SEAL	
	




- GENERAL NOTES:**
1. CONTRACTOR MUST RESTRAIN AT LEAST 3 JOINTS EITHER SIDE OF THE LAST VERTICAL BEND OR AS OTHERWISE SPECIFIED BY THE ENGINEER.
 2. APPROVED RESTRAINING DEVICES INCLUDE RETAINING GLANDS (MEGALUGS), FIELD LOCK GASKETS AND RESTRAINT SYSTEMS, PROVIDED BY APPROVED PIPE MANUFACTURERS.
 3. ALL CREEK CROSSINGS WILL REQUIRE STEEL ENCASEMENT PIPE TO EXTEND A MINIMUM 5' VERTICALLY PAST THE VISABEL HIGH WATER MARK ON THE BANK OR PAST THE TOP EDGE OF THE BANK.



- GENERAL NOTES:**
1. PRIOR TO CONNECTING TO THE EXISTING WATERLINE, THE NEW WATER LINE WILL BE PRESSURE TESTED, DISINFECTED AND A CLEAR WATER SAMPLE OBTAINED.
 2. ALL WATER FOR FILLING AND FLUSHING OF NEW WATER LINE WILL BE DRAWN THROUGH THE DOUBLE CHECK VALVE ASSEMBLY.
 3. THE COSTS FOR PROVIDING DOUBLE CHECK VALVE ASSEMBLY AND SLEEVE NECESSARY FOR FINAL CONNECTION WILL BE INCIDENTAL TO THE WATER LINE INSTALLATION.
 4. CONTRACTOR WILL BE REQUIRED TO HAVE WATER METER TESTED TO MEET ACCURACY STANDARDS OF AWWA C700, BY THE CITY OF ASHEVILLE WATER MAINTENANCE DIVISION ANNUALLY. METER MUST BEAR A CERTIFICATION TAG AT ALL TIMES.

 City of Asheville, NC
WATER ENGINEERING DIVISION

CREEK CROSSING BELOW CREEK BOTTOM		STD. NO. W.27
REVISIONS	DATE	DESCRIPTION
	6/2009	REVISED DETAIL FROM 6.23

 City of Asheville, NC
WATER ENGINEERING DIVISION

NEW WATER LINE PRESSURE TEST BACKFLOW PREVENTION ASSEMBLY		STD. NO. W.28
REVISIONS	DATE	DESCRIPTION
	6/2009	REVISED DETAIL FROM 6.21

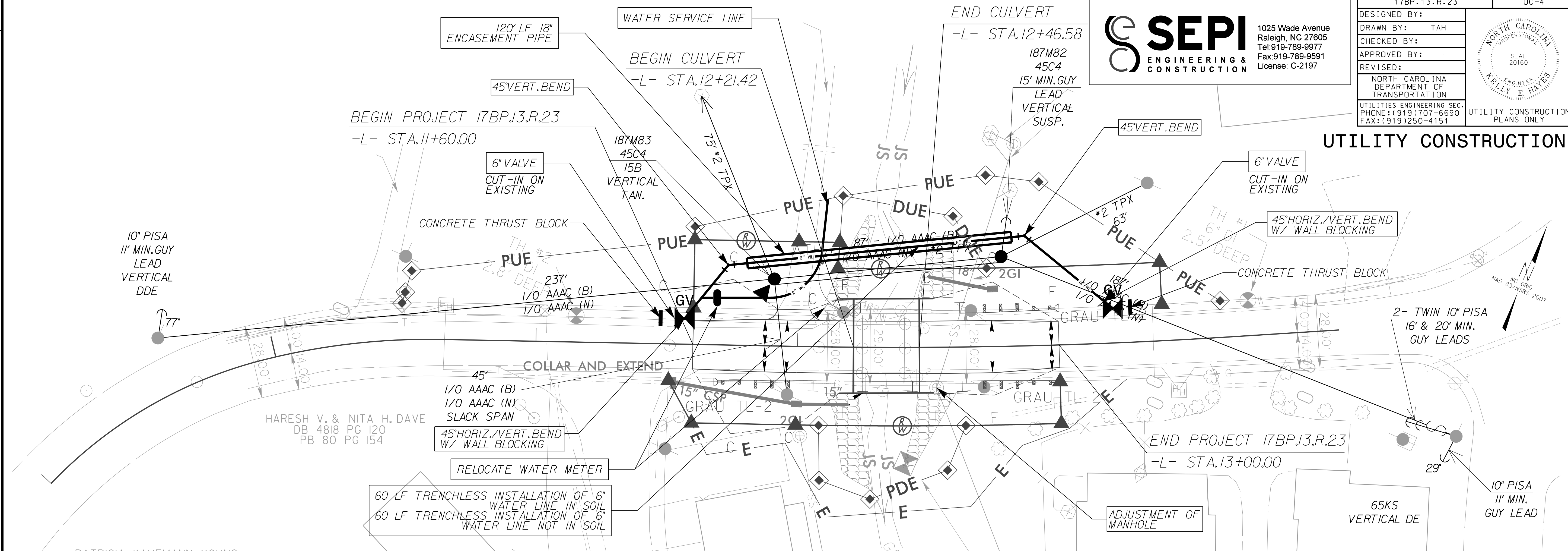
2/14/2018
U:\Proj\BUN217_Ut_dtl-2.dgn
USER:rneel

8/17/99

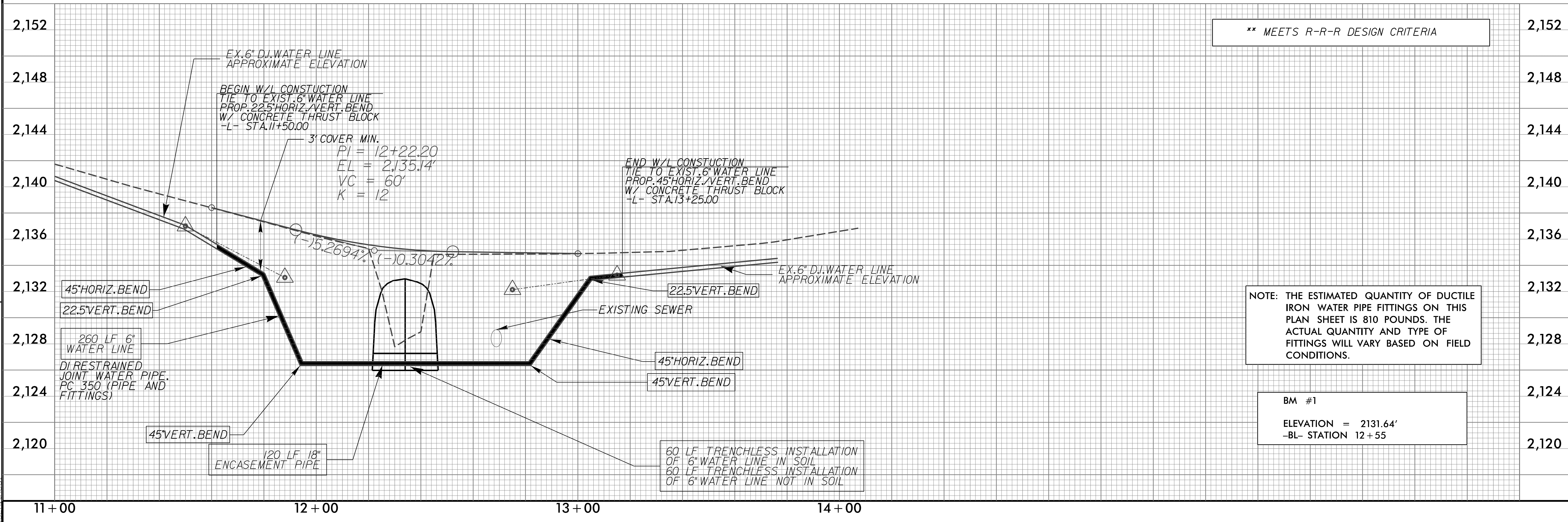
PROJECT REFERENCE NO. 17BP.13.R.23	SHEET NO. UC-4
DESIGNED BY: TAH	
DRAWN BY: TAH	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

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ENGINEERING & CONSTRUCTION
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Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

UTILITY CONSTRUCTION



REVISIONS



** MEETS R-R-R DESIGN CRITERIA

NOTE: THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 810 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

BM #1
ELEVATION = 2131.64'
-BL- STATION 12+55

2/27/2018 11:51 AM I:\Projects\BUN217_Ut_UC4_psh.dgn

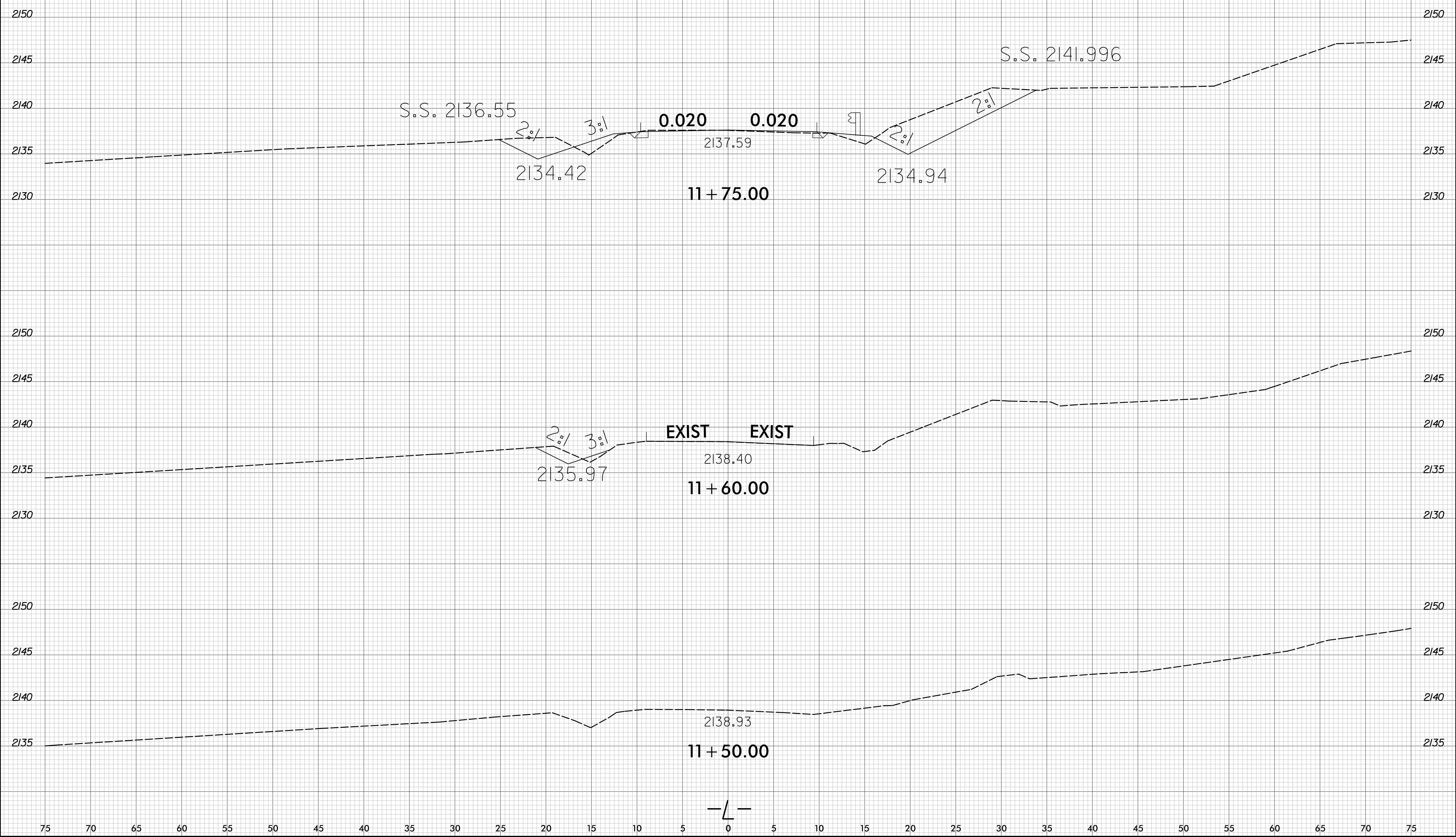
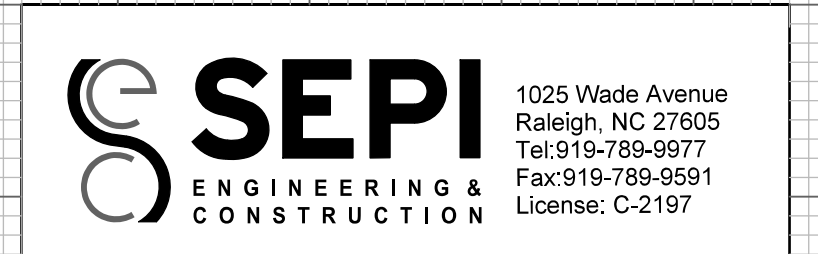
8/23/99



PROJ. REFERENCE NO.
17BP.13.R.23

SHEET NO.
X-2

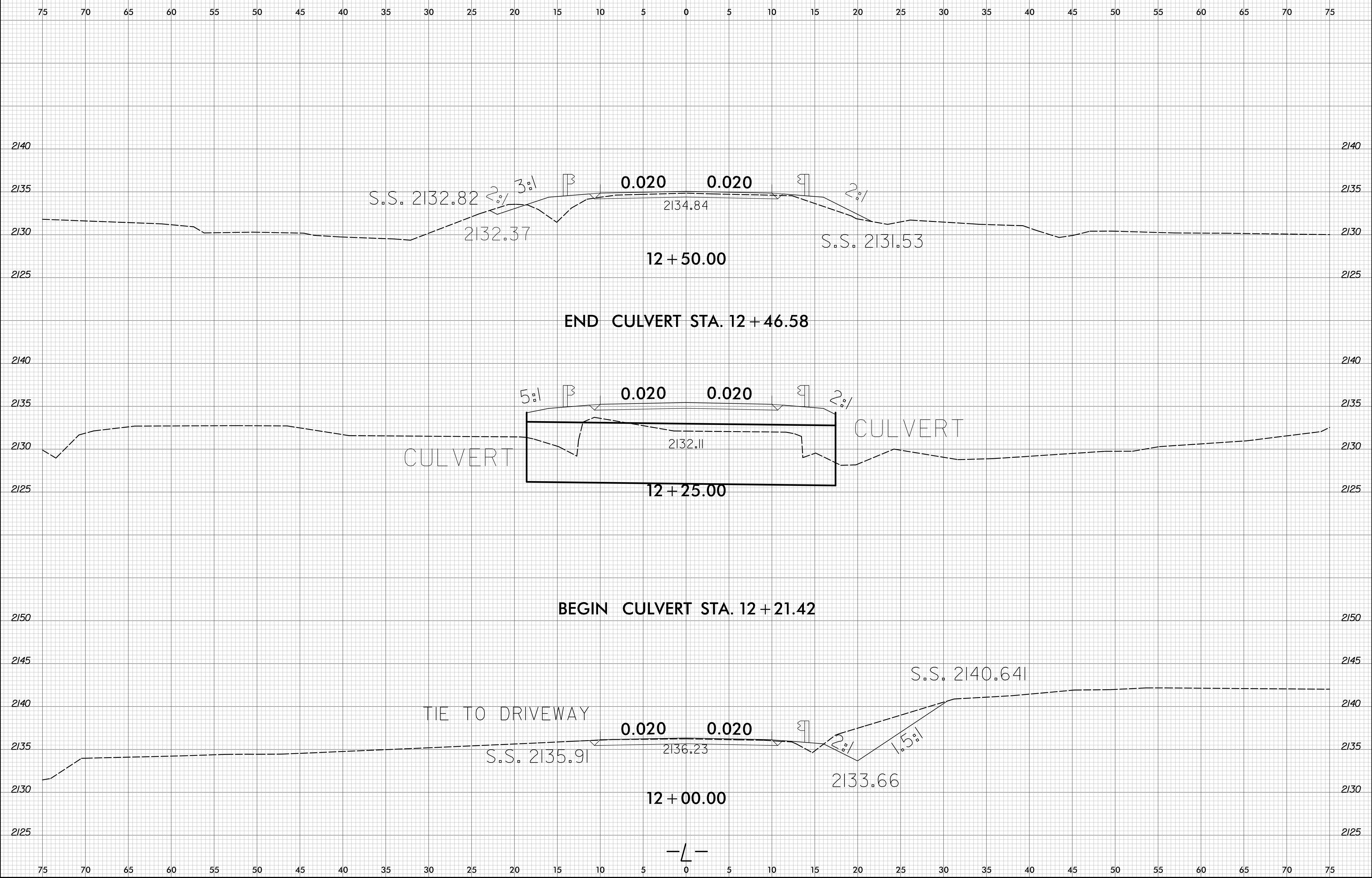
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-L-

8/23/99
17BP.13.R.23
X-2

8/23/99



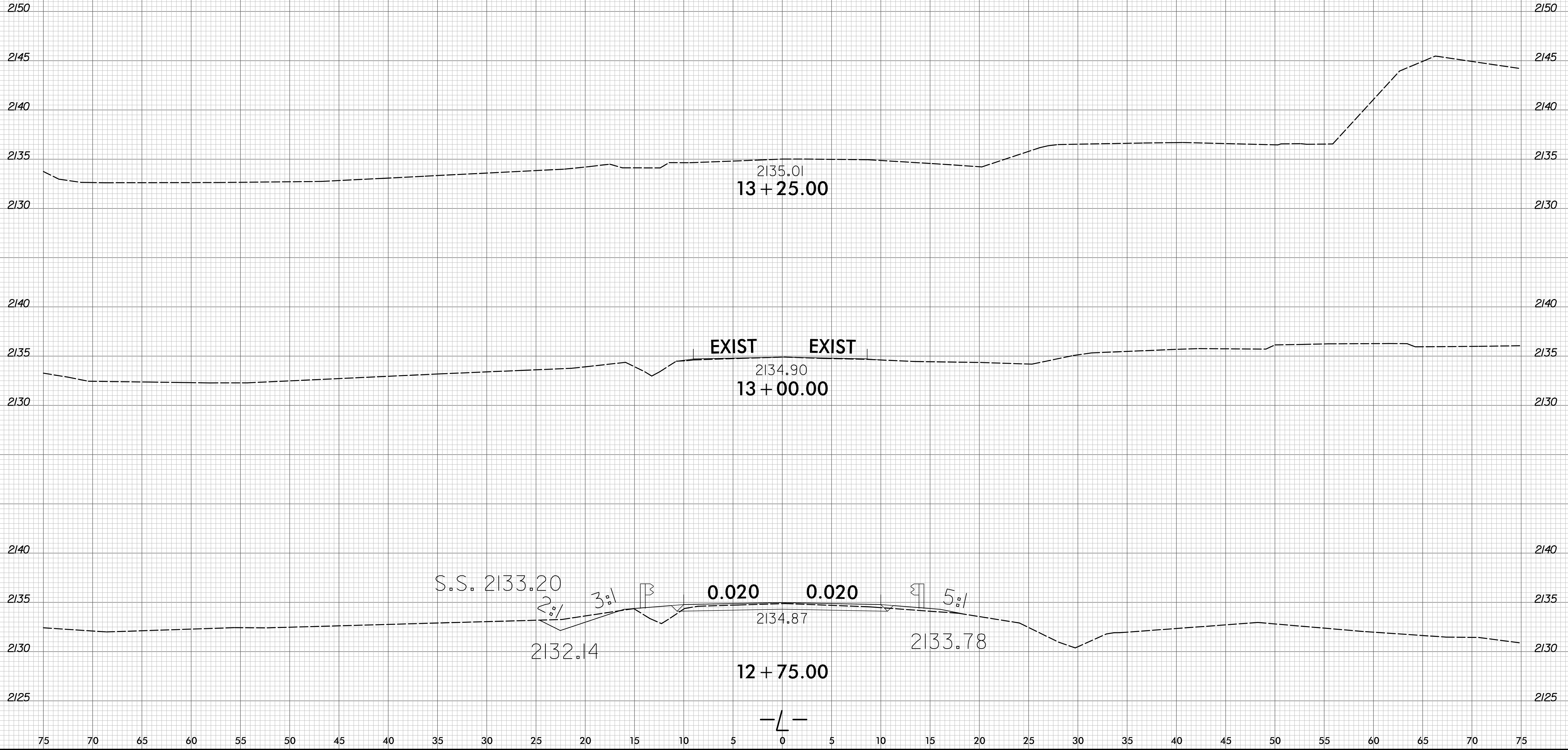
8/23/99



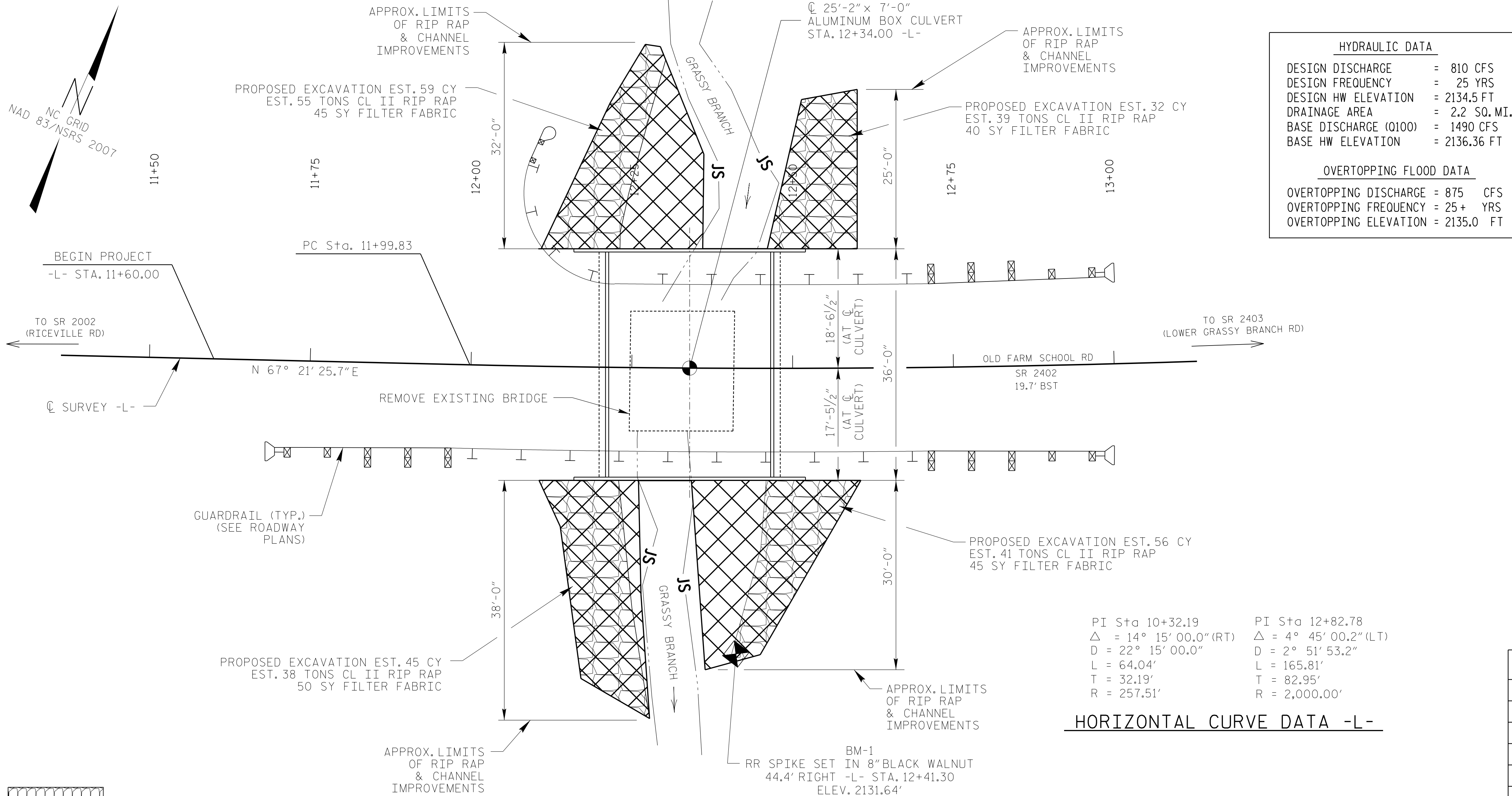
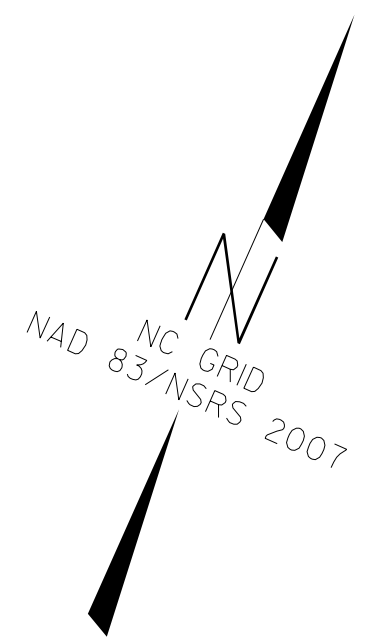
PROJ. REFERENCE NO.
17BP.13.R.23

SHEET NO.
X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



DATE TIME LOCATION



HYDRAULIC DATA	
DESIGN DISCHARGE	= 810 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2134.5 FT
DRAINAGE AREA	= 2.2 SQ. MI.
BASE DISCHARGE (Q100)	= 1490 CFS
BASE HW ELEVATION	= 2136.36 FT

OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 875 CFS
OVERTOPPING FREQUENCY	= 25+ YRS
OVERTOPPING ELEVATION	= 2135.0 FT

DESCRIPTION OF EXISTING BRIDGE	
1 SPAN @ 16'-6"; 2" ASPHALT WEARING SURFACE ON	
4"x8" TIMBER FLOOR ON 6"x12" TIMBER JOISTS;	
END BENTS 1 & 2; TIMBER CAP/TIMBER POST & SILLS;	
20.0' DECK OUT-TO-OUT	

NOTES

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED ON TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON. PLAIN RIP RAP CLASS II (2'-0" THICK).

EXISTING BRIDGE SHALL BE REMOVED BY SAVING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE WATER.

MINIMUM DESIGN FILL IS 1.5'
MAXIMUM DESIGN FILL IS < 4.0'

ASSUMED LIVE LOAD - HL-93 OR ALTERNATE.

ALUMINUM BOX CULVERT TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

NATIVE MATERIAL REMOVED FROM THE CHANNEL TO ALLOW FOR THE INSTALLATION OF THE CULVERT SHALL BE USED FOR BACKFILLING INSIDE THE CULVERT. SELECT BACKFILL AND COIR FIBER MATTING SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "EXCAVATION AND EMBANKMENT."

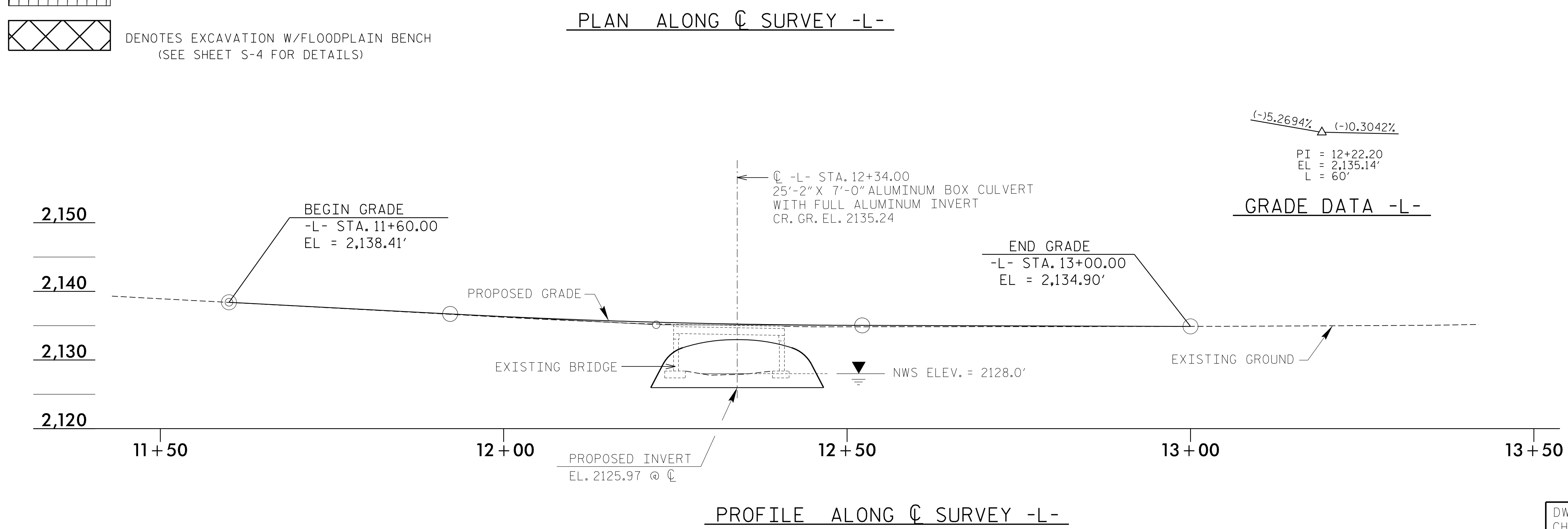
ADT = 2400 VPD FOR YEAR 2025.

DENOTES CLASS II RIP RAP

DENOTES EXCAVATION W/FLOODPLAIN BENCH (SEE SHEET S-4 FOR DETAILS)

HORIZONTAL CURVE DATA -L-	
PI Sta 10+32.19	PI Sta 12+82.78
Δ = 14° 15' 00.0" (RT)	Δ = 4° 45' 00.2" (LT)
D = 22° 15' 00.0"	D = 2° 51' 53.2"
L = 64.04'	L = 165.81'
T = 32.19'	T = 82.95'
R = 257.51'	R = 2,000.00'

TOTAL STRUCTURE QUANTITIES	
ALUMINUM BOX CULVERT	LUMP SUM
REMOVAL OF EXISTING STRUCTURE, STA. 12+34	LUMP SUM
CULVERT EXCAVATION, STA. 12+34	LUMP SUM
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	35 TONS
CHANNEL EXCAVATION	192 CY
RIP RAP, CLASS II (2'-0" THK.)	173 TONS
GEOTEXTILE FOR DRAINAGE	180 SY
COIR FIBER MAT	30 SY
CLASS AA CONCRETE (GUARDRAIL FOOTING)	5.0 CY
REINFORCING STEEL (GUARDRAIL FOOTING)	510 LBS



GRADE DATA -L-	
(-).5,2694%	(-).0,3042%
PI = 12+22.20	
EL = 2,135.14'	
L = 60'	

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828-253-2196

Charlotte, North Carolina
704-357-0588

Tri-Cities, Tennessee
423-467-9409

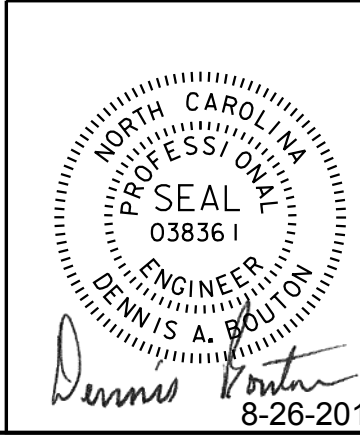
Knoxville, Tennessee
865-546-5800

Middlesboro, Kentucky
606-248-6600

Spartanburg, South Carolina
864-574-4715

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PROJECT NO. 17BP.13.R.23
BUNCOMBE COUNTY
STATION: 12+34.00 -L-
REPLACES BRIDGE NO. 217



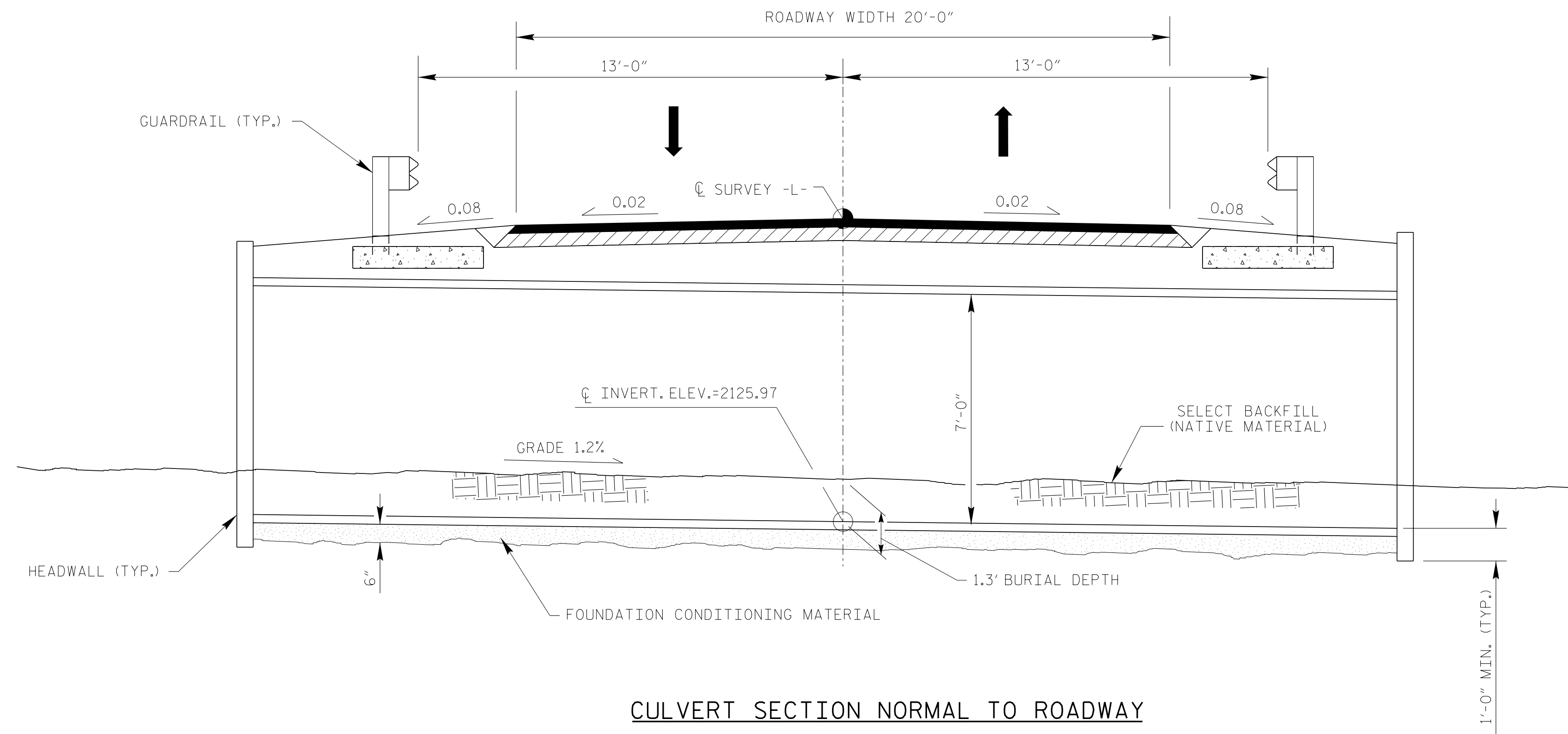
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 217 ON SR 2402
OVER GRASSY BRANCH

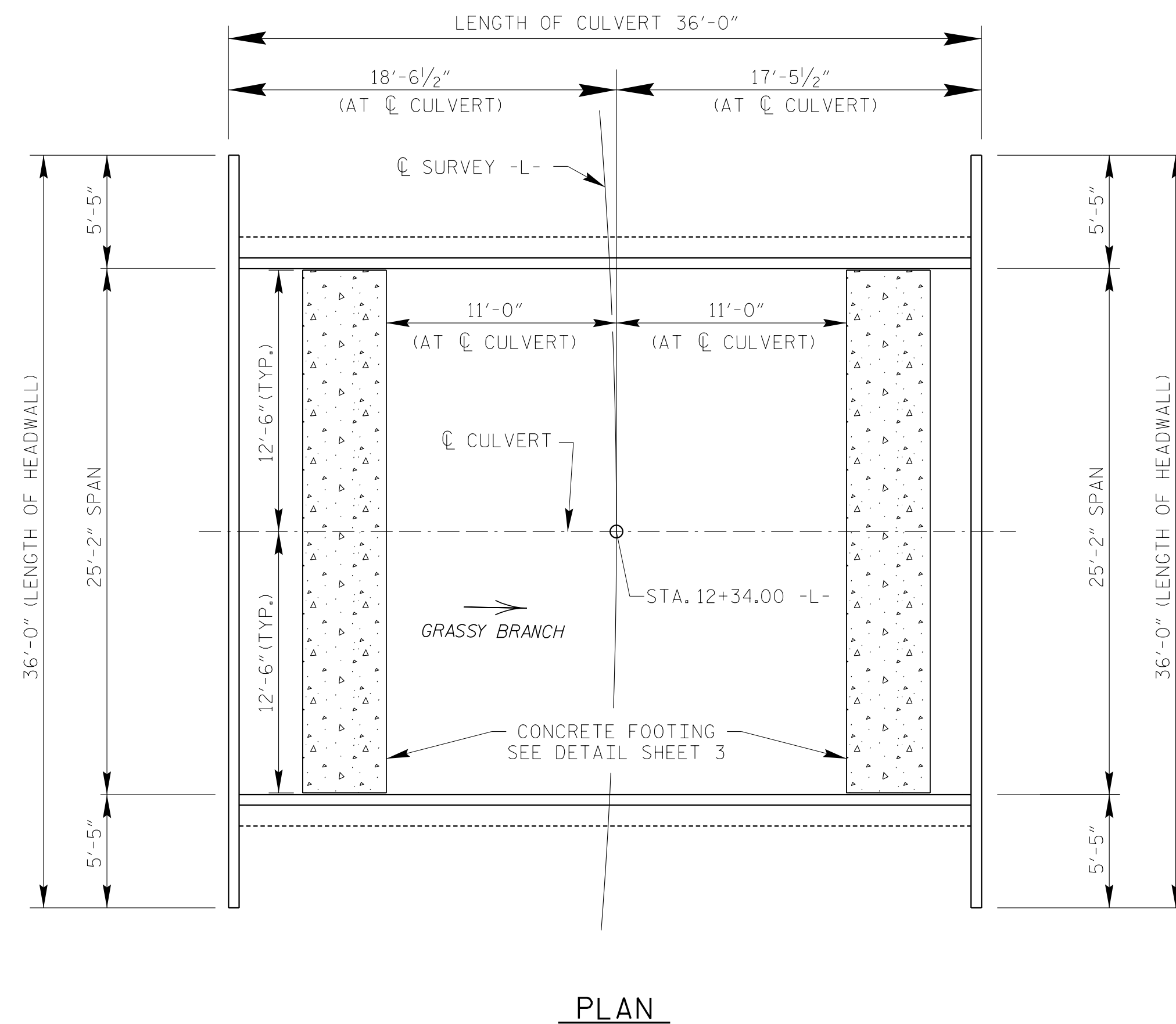
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS	
2			4			4	

DWN. BY: DAB
CHKD. BY: HLW
DES. EGR. OF RECORD: DAB

DATE: 11/13
DATE: 7/14
DATE: 7/14



CULVERT SECTION NORMAL TO ROADWAY



PLAN

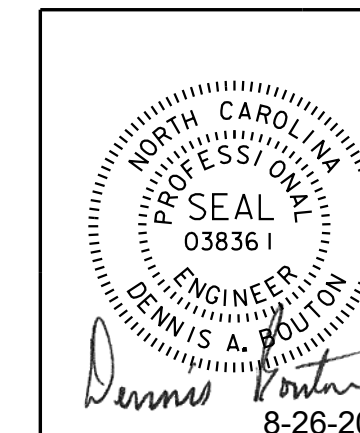
NOTES:

1. CURVATURE OF CL SURVEY -L- HAS BEEN EXAGGERATED FOR CLARIFICATION.
2. CL CULVERT IS PERPENDICULAR TO CL SURVEY -L- AT STA. 12+34.00.

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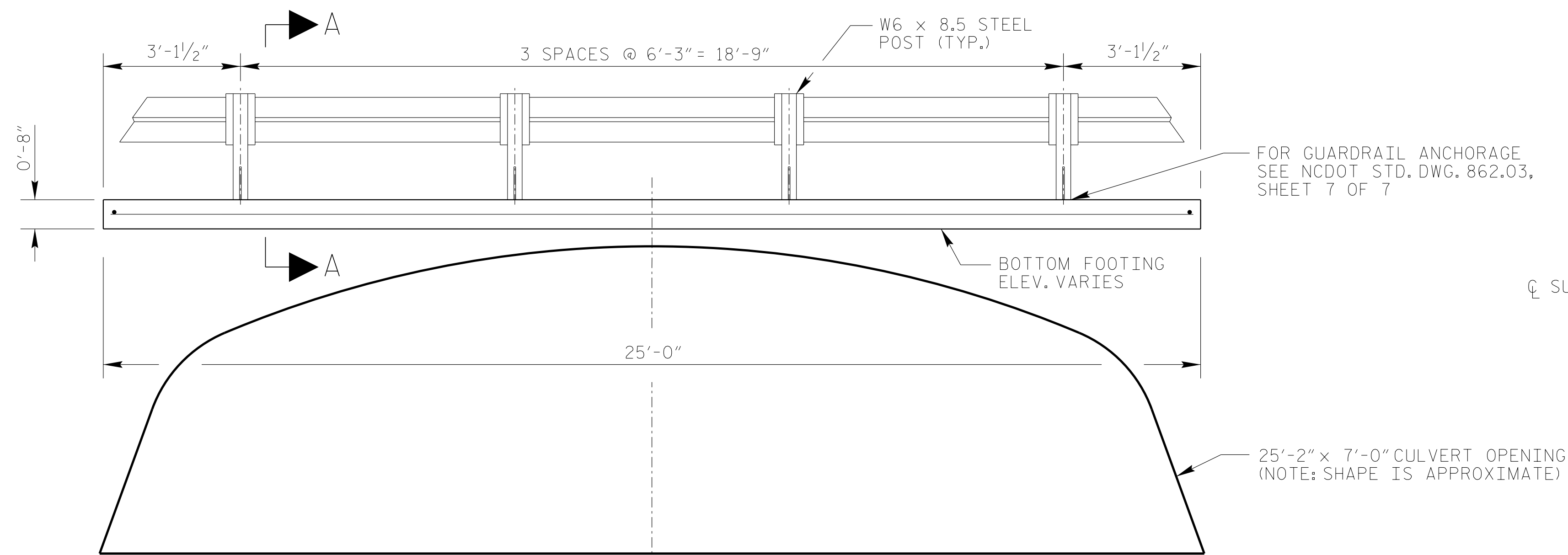
PROJECT NO. 17BP.13.R.23
 BUNCOMBE COUNTY
 STATION: 12+34.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

25'-2" x 7'-0"
 ALUMINUM BOX
 CULVERT

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

DWN. BY: DAB DATE: 11/13
 CHKD. BY: HLW DATE: 7/14
 DES. EGR. OF RECORD: DAB DATE: 7/14

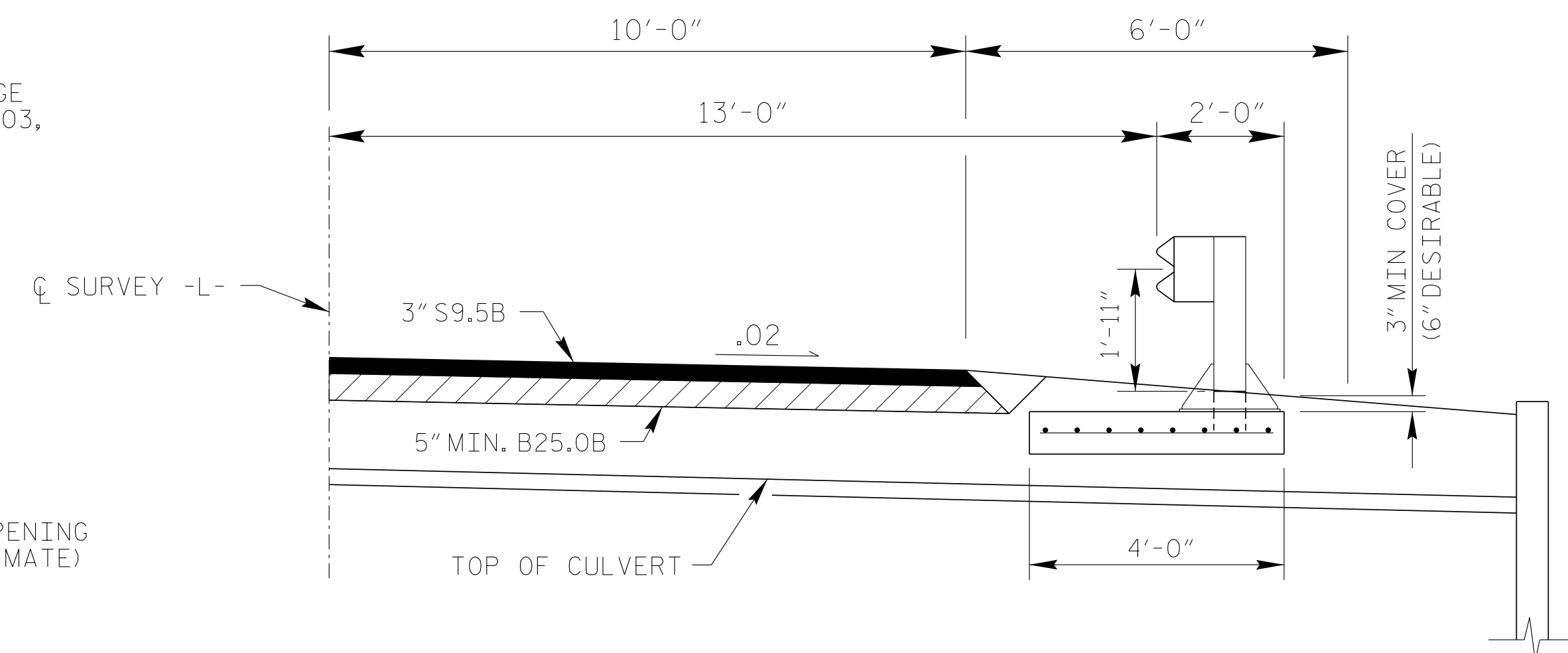


END ELEVATION

FOR GUARDRAIL ANCHORAGE SEE NCDOT STD. DWG. 862.03, SHEET 7 OF 7

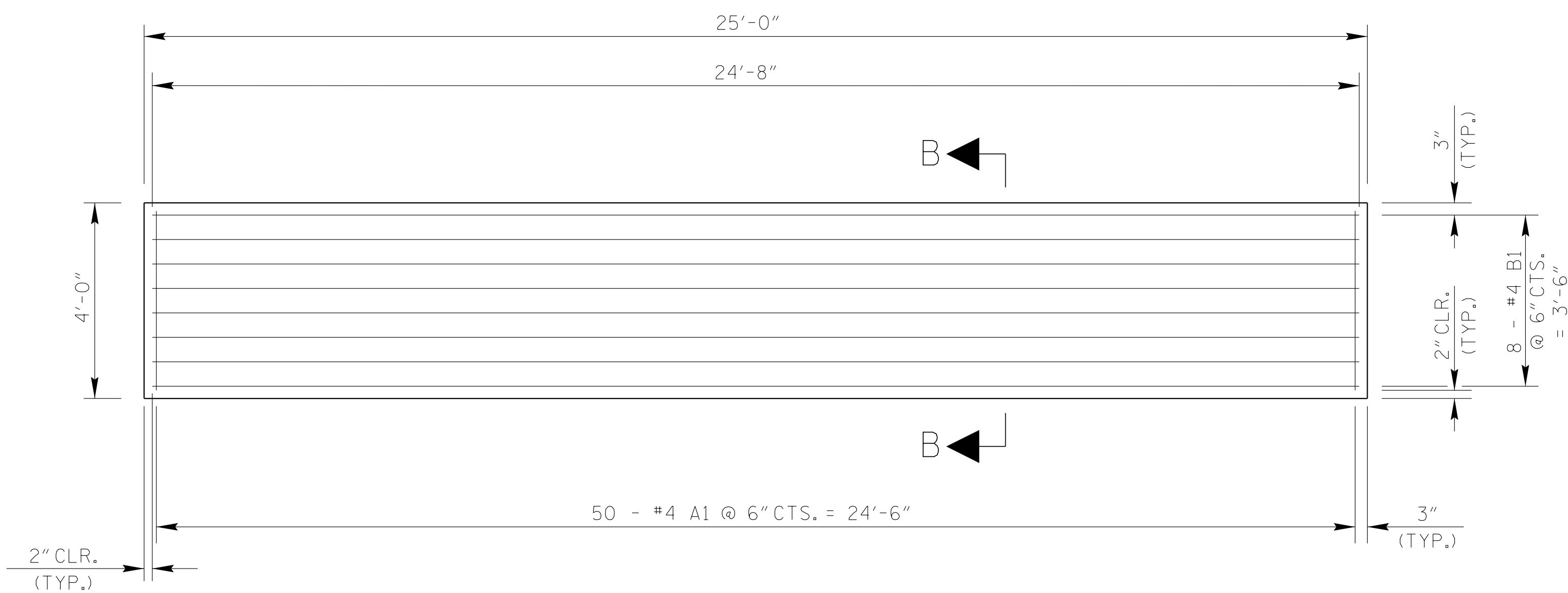
BOTTOM FOOTING ELEV. VARIES

25'-2" x 7'-0" CULVERT OPENING (NOTE: SHAPE IS APPROXIMATE)

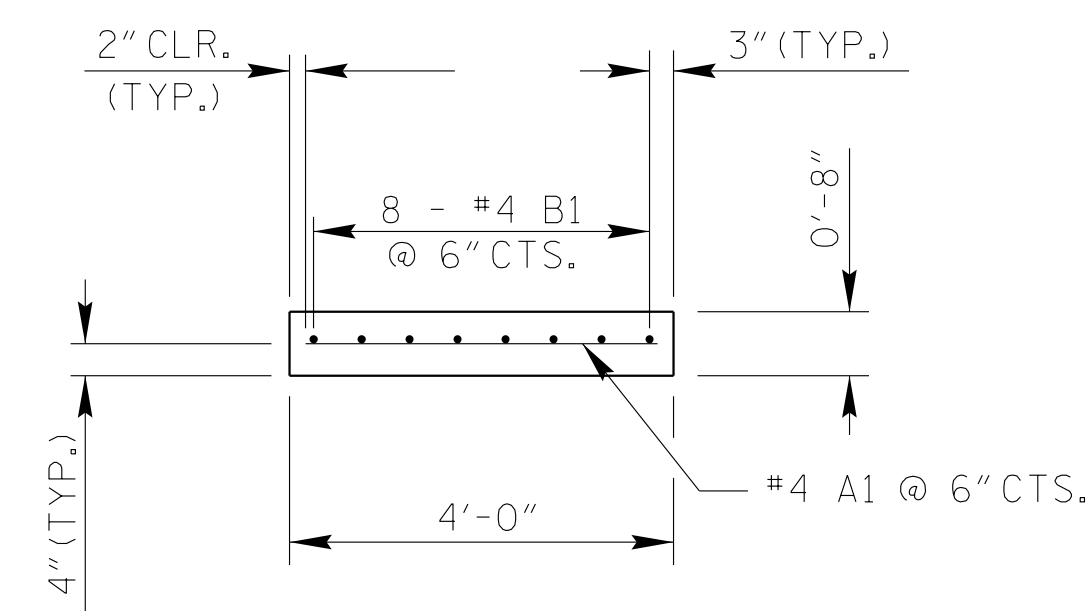


SECTION A-A

NOTE: FOR GUARDRAIL ANCHORAGE TO FOOTING DETAILS SEE NCDOT STD. DWG. 862.03, SHEET 7 OF 7



FOOTING PLAN



SECTION B-B

BILL OF MATERIAL					
FOR ONE SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	50	4	STR.	3'-8"	123
B1	8	4	STR.	24'-8"	132
REINFORCING STEEL LBS. =					255
CLASS AA CONCRETE CU. YDS. =					2.5

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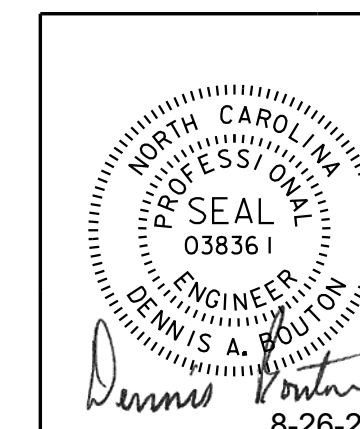
Charlotte, North Carolina 704-397-0588
 Tri-Cities, Tennessee 423-467-9409
 Knoxville, Tennessee 865-546-5800
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 Middlesboro, Kentucky 606-248-6600
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PROJECT NO. 17BP.13.R.23
 BUNCOMBE COUNTY
 STATION: 12+34.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GUARDRAIL ASSEMBLY
 DETAILS

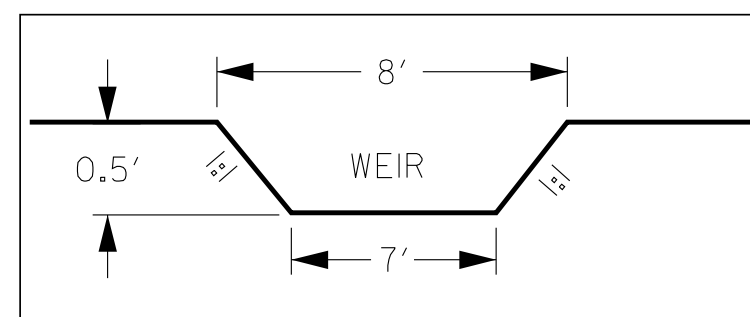
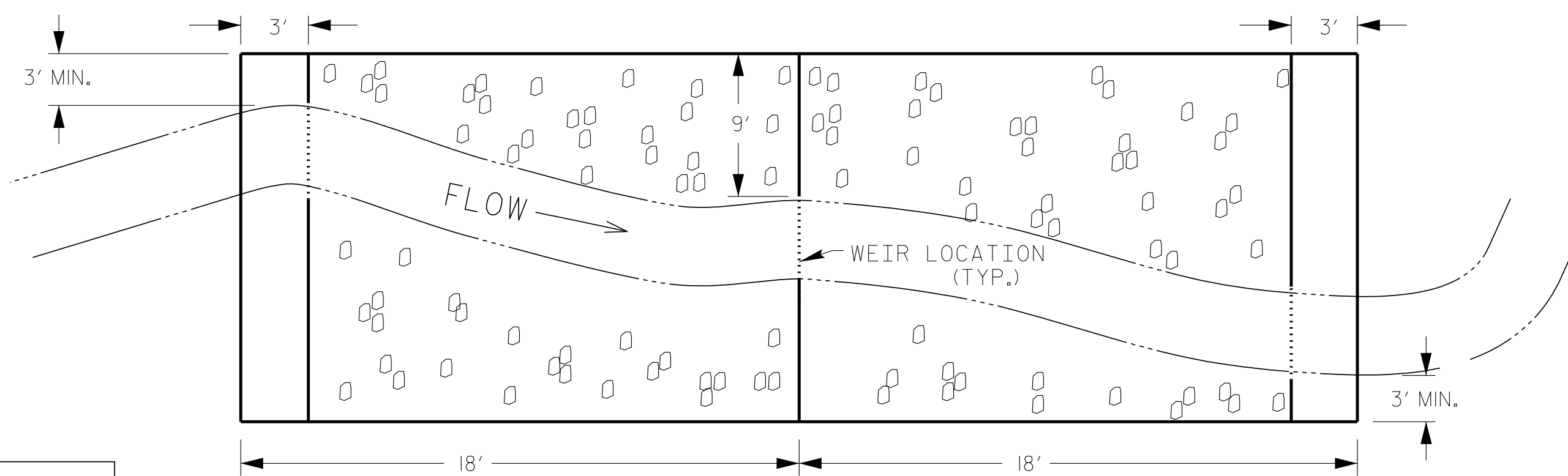


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1		11/13	3		
2		7/14	4		
		7/14			

DWN. BY: DAB DATE: 11/13
 CHKD. BY: HLW DATE: 7/14
 DES. EGR. OF RECORD: DAB DATE: 7/14

SHEET NO. S-3
 TOTAL SHEETS 4

BAFFLE PLACEMENT DETAIL
(NOT TO SCALE)

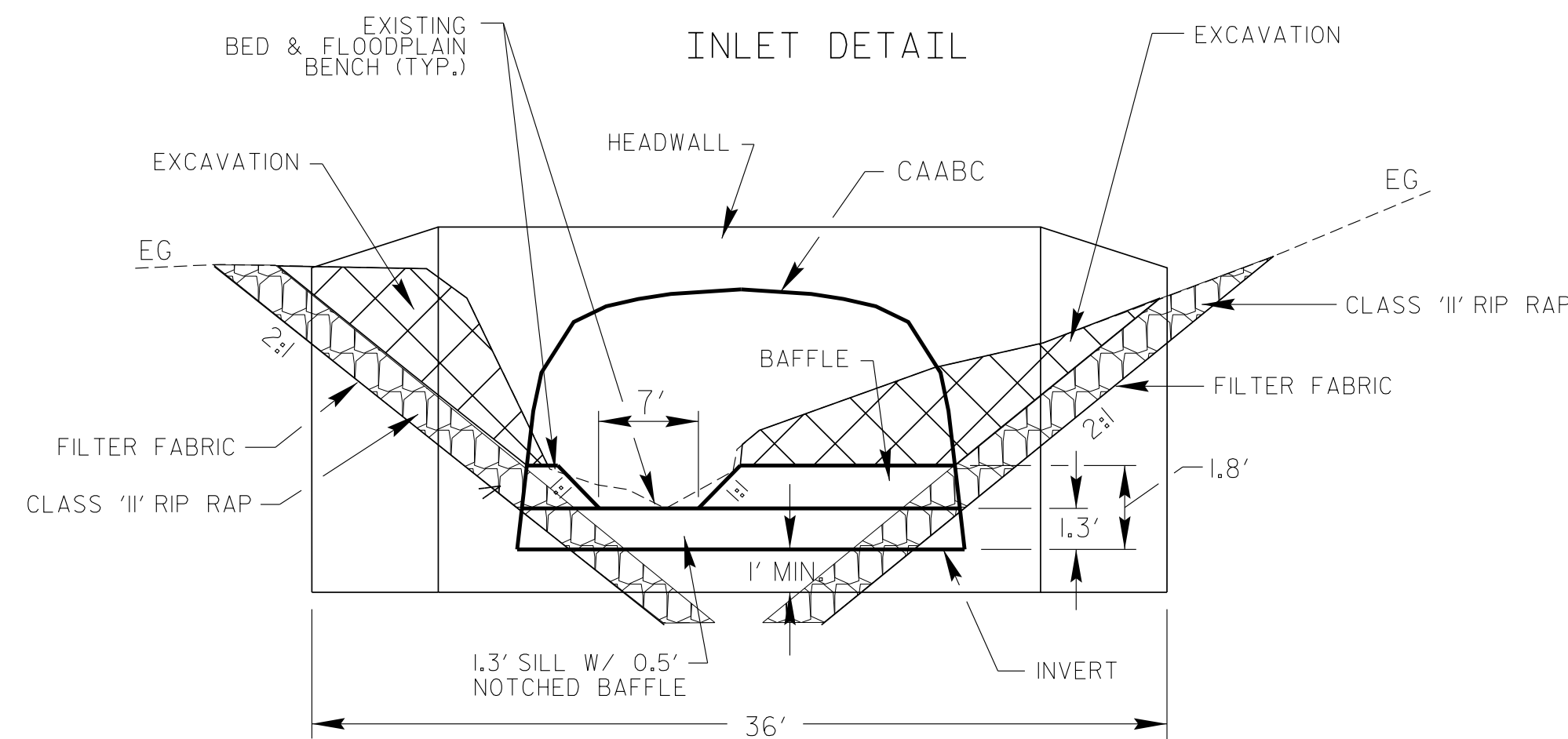


BAFFLE DIMENSIONS

*NOTES:

- 1) BED MATERIAL BETWEEN SILLS/BAFFLES IN THE FLOW CHANNEL SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. THE MATERIAL SHALL BE NATIVE BED MATERIAL THAT IS EXCAVATED FROM STREAM BED DURING CONSTRUCTION OF CULVERT. MATERIAL LARGER THAN 12 INCHES SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. CLASS 'I' RIP RAP MAY BE USED TO SUPPLEMENT NATIVE BED MATERIAL. BED MATERIALS SUBJECT TO APPROVAL BY THE ENGINEER.
- 2) FILTER FABRIC TO BE USED BENEATH CLASS II RIP RAP IN ALL AREAS.
- 3) COIR FIBER MATTING TO BE USED THROUGH CULVERT INTERNAL CHANNEL

STREAM CROSS SECTIONS
(NOT TO SCALE)

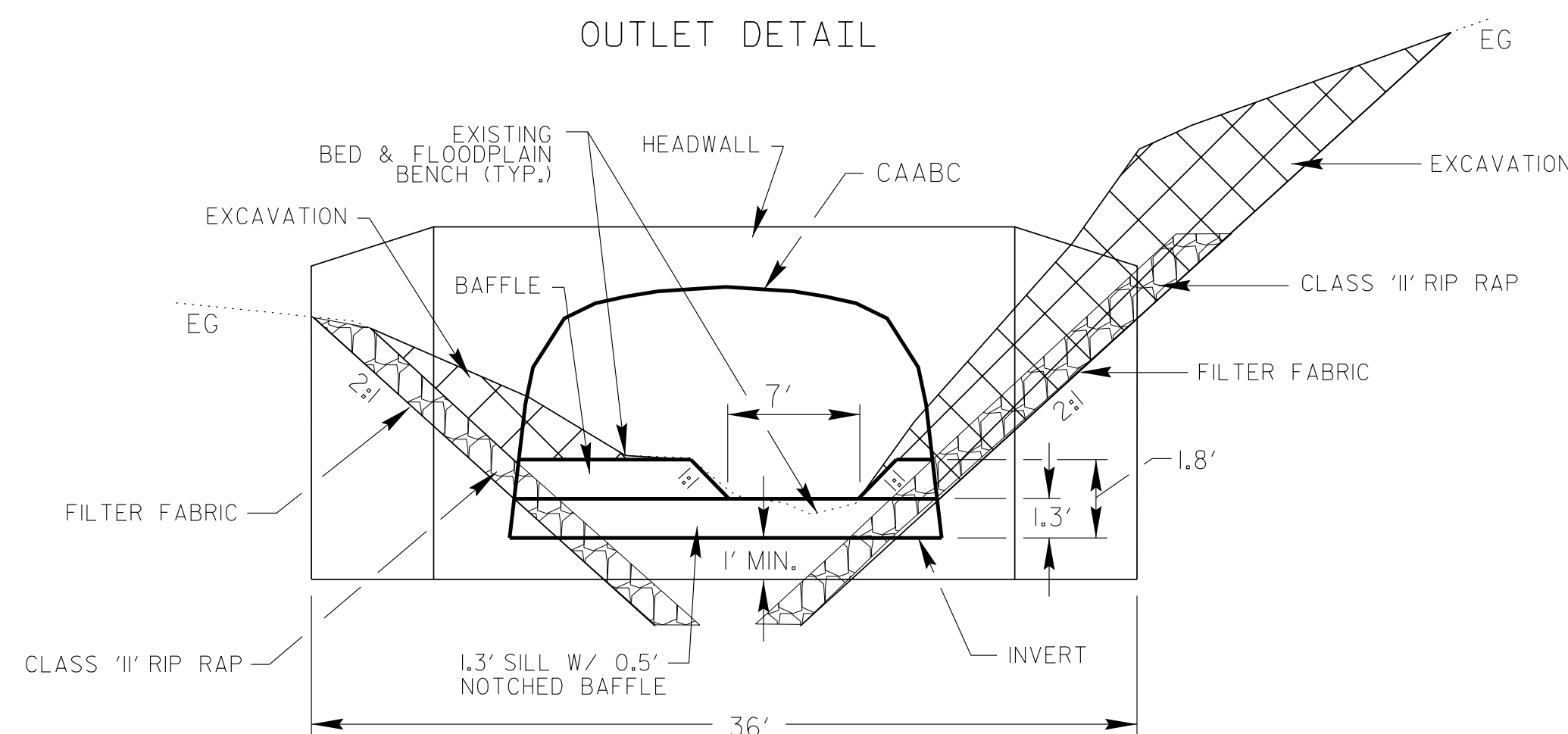


NOTES:

1. EXCAVATE LOW FLOW BENCH 0.5' ABOVE STREAM BED TO MATCH WIDTH OF CULVERT
2. LAY BACK BANK SLOPES TO 2:1
3. LINE BENCH AND SLOPES WITH CLASS 'II' RIP RAP

TOTAL EST. EXCAVATION @ INLET = 91CY.
TOTAL EST. CLASS 'II' RIP RAP @ INLET = 94 TONS

OUTLET DETAIL



NOTES:

1. EXCAVATE LOW FLOW BENCH 0.5' ABOVE STREAM BED TO MATCH WIDTH OF CULVERT
2. LAY BACK BANK SLOPES TO 2:1
3. LINE BENCH AND SLOPES WITH CLASS 'II' RIP RAP

TOTAL EST. EXCAVATION @ OUTLET = 101CY.
TOTAL EST. CLASS 'II' RIP RAP @ OUTLET = 79 TONS

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PROJECT NO. 17BP.13.R.23
BUNCOMBE COUNTY
STATION: 12+34.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SILL/BAFFLE &
STRUCTURE EXCAVATION
DETAILS

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

DWN. BY: DAB DATE: 11/13
CHKD. BY: HLW DATE: 7/14
DES. EGR. OF RECORD: DAB DATE: 7/14

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.39	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.39	N/A	P.E.	
17BP.13.R.39	N/A	RW	
17BP.13.R.39	N/A	CONST.	

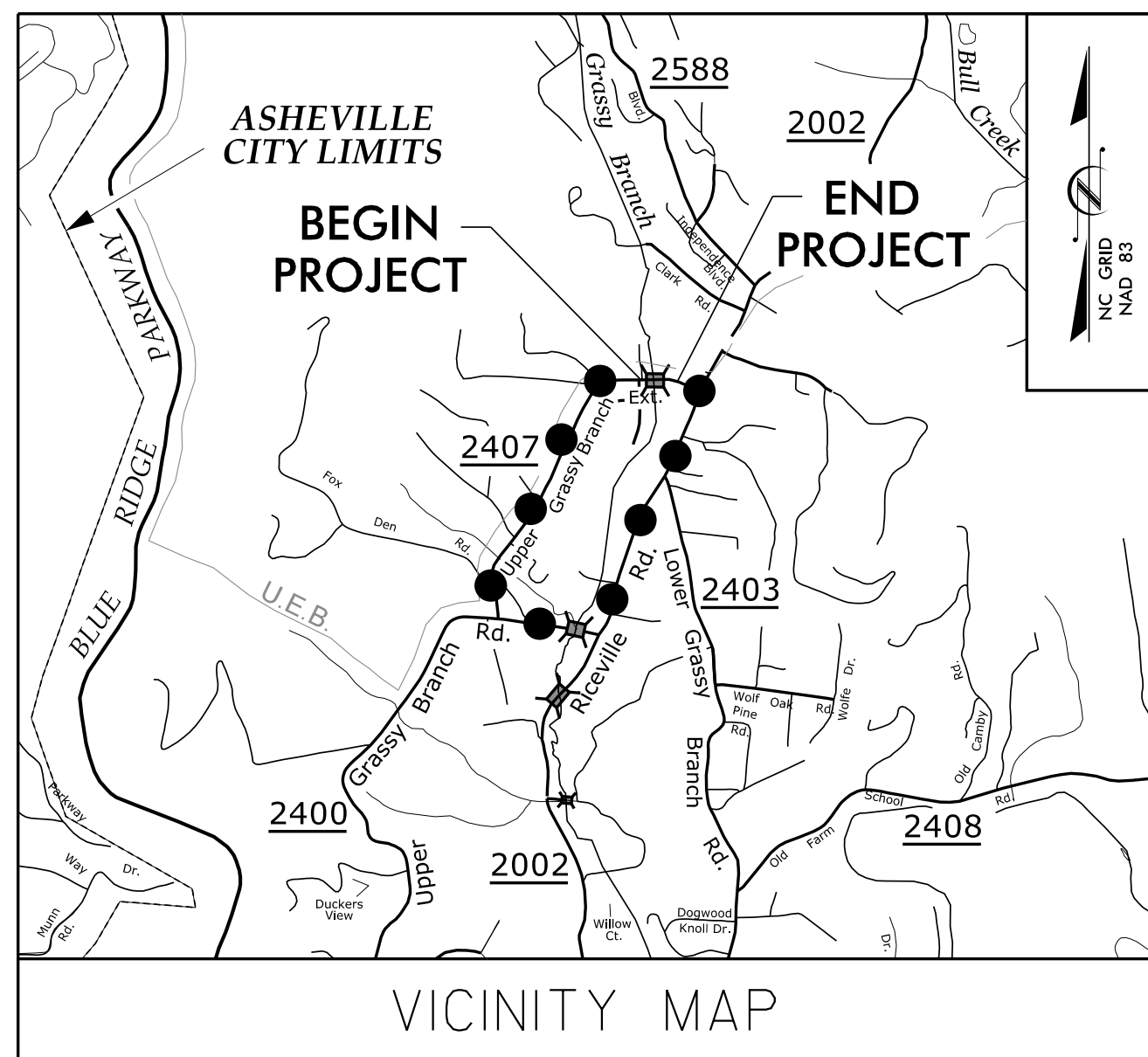
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 686 OVER GRASSY BRANCH
ON SR 2407 (UPPER GRASSY BRANCH EXT.)

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

NOTE: All references to 2012 Standard Specifications and 2012 Standard Drawings shown in these plans shall be replaced with 2018 Standard Specifications and 2018 Standard Drawings.



● — ● — ● — DETOUR ROUTE

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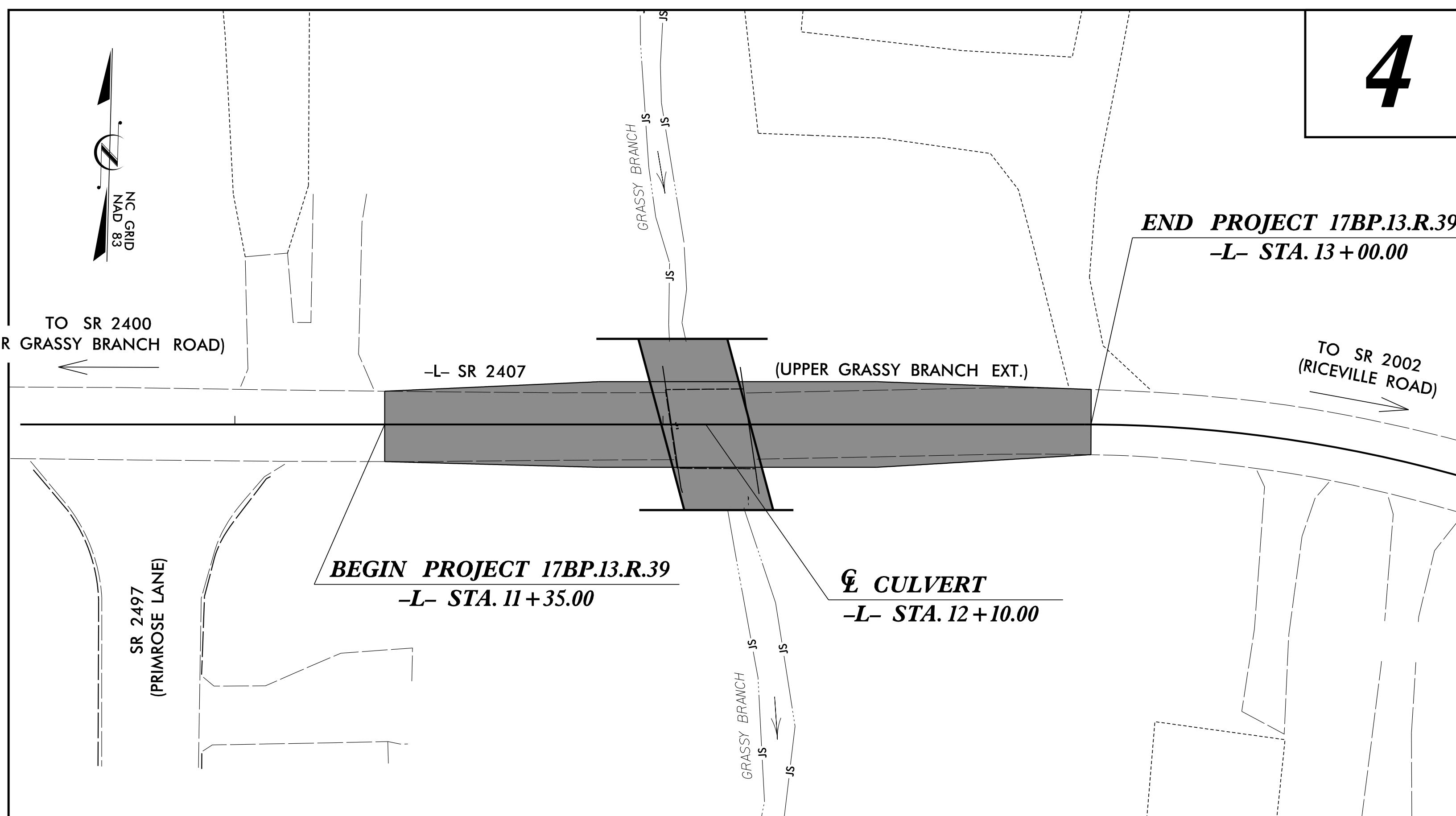
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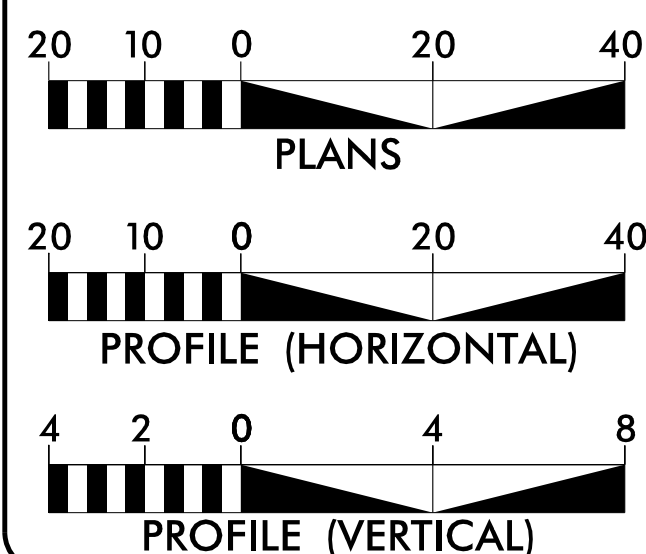
1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197



PROJECT: 17BP.13.R.39

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT 2010 = 400
ADT 2025 = 600

* T = 6 %
V = 35 MPH
* TTST = 3 DUAL = 3

FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.13.R.39 = 0.027 MI.
LENGTH STRUCTURE TIP PROJECT 17BP.13.R.39 = 0.004 MI.
TOTAL LENGTH OF TIP PROJECT 17BP.13.R.39 = 0.031 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806

FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 26, 2013

LETTING DATE:
JULY 15, 2014

REECE SCHULER, PE
PROJECT ENGINEER

DENNIS BOUTON, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
PAUL SPROUSE, PE
PROJECT ENGINEER - ROADWAY DESIGN

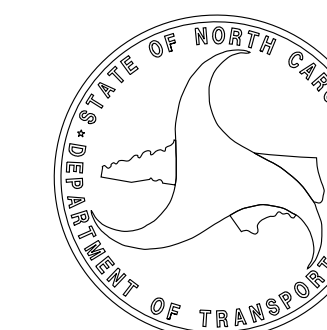
HYDRAULICS ENGINEER

7-10-2014
Bradley S. Reimann P.E.
SIGNATURE:

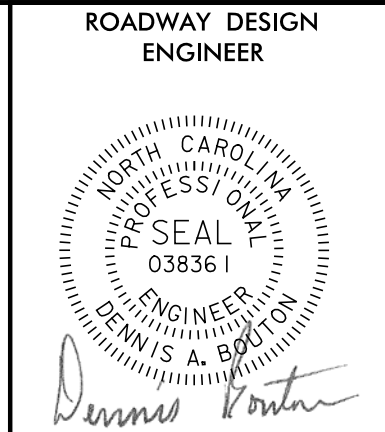
ROADWAY DESIGN ENGINEER

7-10-2014
Dennis Bouton P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



\$\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



7-10-2014

	INDEX OF SHEETS
SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3A	SUMMARY OF GUARDRAIL AND ASPHALT PAVEMENT REMOVAL SUMMARY
3B	EARTHWORK SUMMARY
4	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-2	TRAFFIC MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN
EC-1 THRU EC-3	EROSION CONTROL PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
X-0	CROSS-SECTION SUMMARY
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-3	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12

2012 ROADWAY ENGLISH STANDARD DRAWINGS

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: TELEPHONE - AT&T
POWER - PROGRESS ENERGY
WATER - CITY OF ASHEVILLE
SANITARY SEWER - METROPOLITAN SEWAGE DISTRICT

-RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January 17, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence
876.01	Rip Rap in Channels

17BPJ3R.39

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----x
Property Monument	□ ECM
Parcel/Sequence Number	⑩23
Existing Fence Line	-x-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---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	↑
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	---JS---
Buffer Zone 1	---BZ 1---
Buffer Zone 2	---BZ 2---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Swamp Marsh	▽
Proposed Lateral, Tail, Head Ditch	→
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ 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	-----R/W
Proposed Right of Way Line with Iron Pin and Cap Marker	-----R/W
Proposed Right of Way Line with Concrete or Granite Marker	-----R/W
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 Utility Easement	-----PUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Wheel Chair Ramp	WCR
Proposed Wheel Chair Ramp Curb Cut	WCC
Curb Cut for Future Wheel Chair Ramp	CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊗

VEGETATION:

Single Tree	☆
Single Shrub	☆
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----Vineyard

EXISTING STRUCTURES:

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

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
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	⊕
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	⊕
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	-----FSS
Designated SS Forced Main Line (S.U.E.*)	-----FSS

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	-----U/L
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

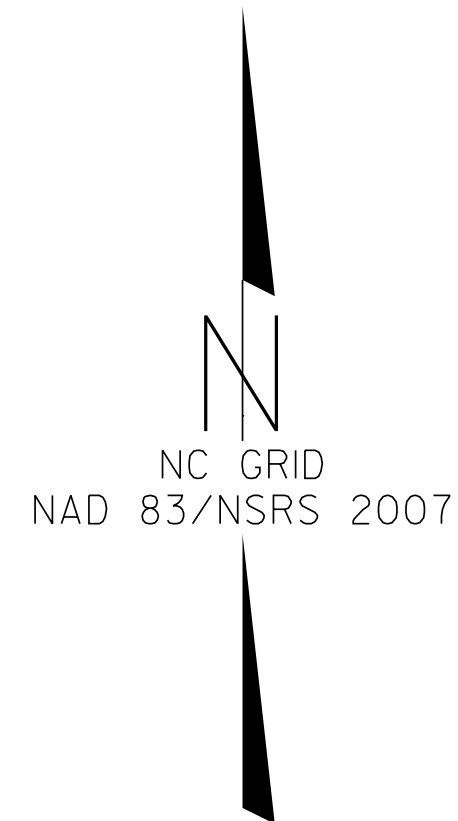
SURVEY CONTROL SHEET 10-0686

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.39	1-C
Location and Surveys	

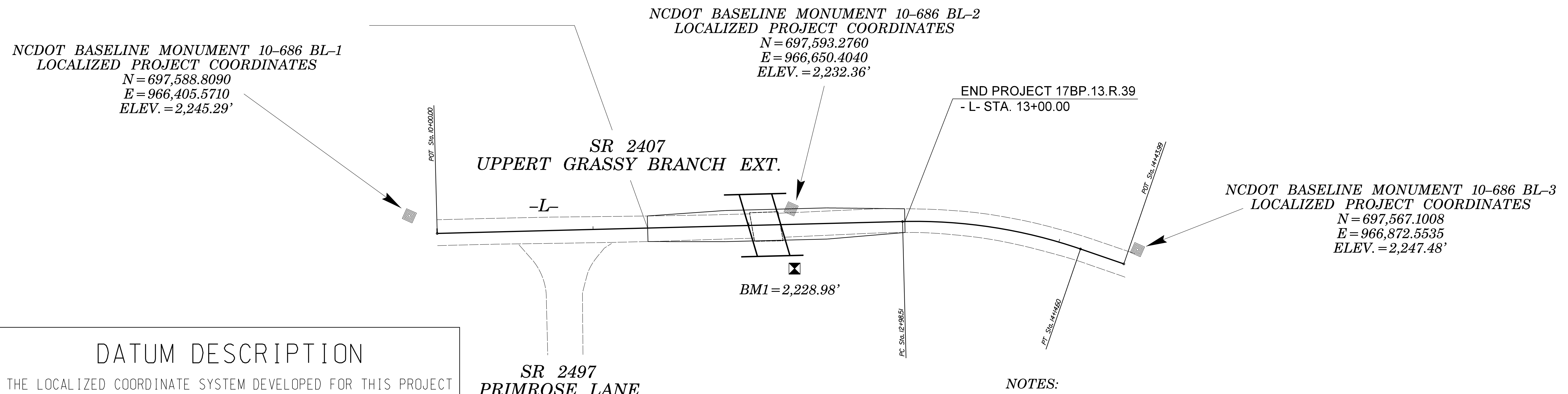
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1		697588.8090	966405.5710	2245.29	OUTSIDE PROJECT LIMITS	
2	BL-2		697593.2760	966650.4040	2232.36	12+27.30	9.97 LT
3	BL-3		697567.1008	966872.5535	2247.48	OUTSIDE PROJECT LIMITS	

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+80.00	-30.00	697612.0850	966602.6052
L	11+80.00	-45.00	697627.0801	966602.2213
L	11+92.00	30.00	697552.4118	966616.1370
L	11+92.00	45.00	697537.4168	966616.5210
L	12+30.00	-30.00	697613.3648	966652.5889
L	12+30.00	-45.00	697628.3599	966652.2049
L	12+45.00	30.00	697553.7684	966669.1197
L	12+45.00	45.00	697538.7733	966669.5036

 BM1 ELEVATION = 2228.98
 N 697555 E 966653
 BL STATION 7+52.00 38 RIGHT
 R/R SPIKE SET IN BASE OF 16" WALNUT



TYPE	STATION	NORTH	EAST
POT	10+00.00	697577.4877	966423.4321
PC	12+98.51	697585.1282	966721.8431
PT	14+14.60	697567.5282	966835.9713
POT	14+43.99	697557.9595	966863.7608



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "10-0686 BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 697593.2760(ft) EASTING: 966650.4040(ft) ELEVATION: 2232.36(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999481357

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "10-0686 BL-2" TO -L- STATION 10+00.00 IS S 86°01'15" W 227.52'

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

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 100686_LS_CONTROL_130920.TXT
- SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

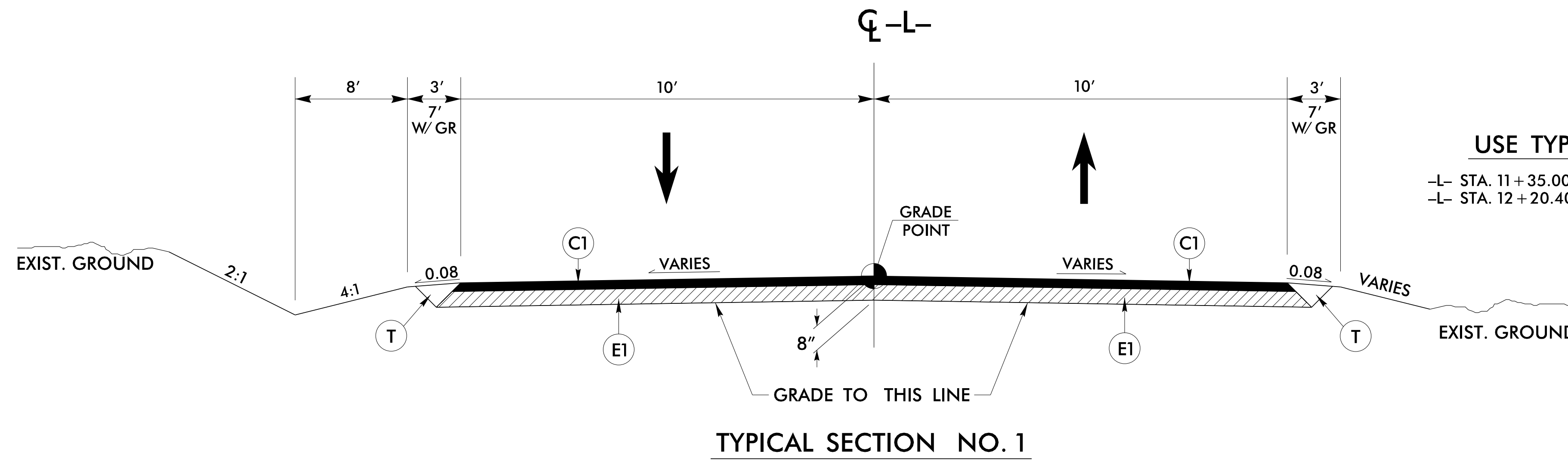
☐ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

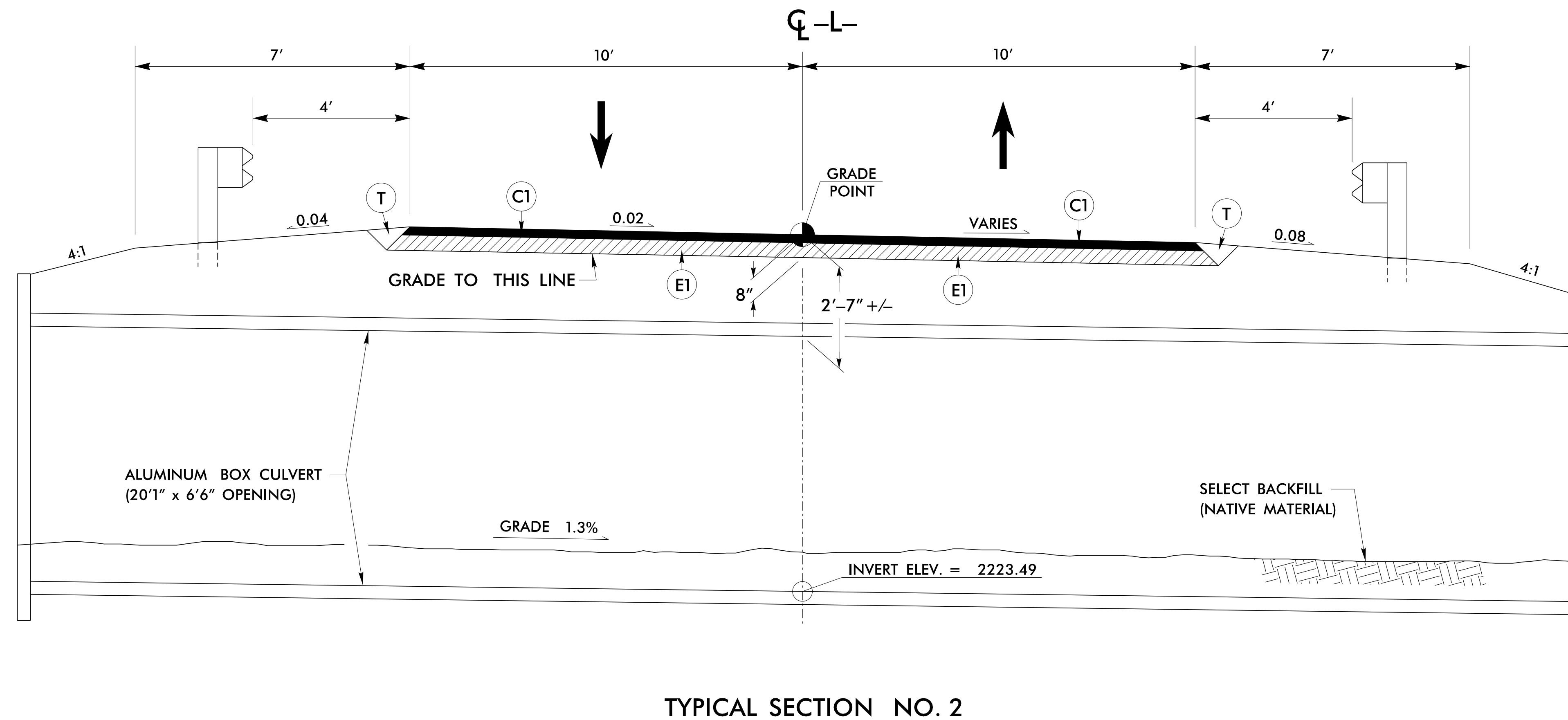
6/2/99

6/2/14

PROJECT REFERENCE NO. 17BP.13.R.39	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
BRIDGE #100686	



USE TYPICAL SECTION NO. 1
 -L- STA. 11+35.00 TO STA. 11+99.60 (BEGIN CULVERT)
 -L- STA. 12+20.40 (END CULVERT) TO STA. 13+00.00



USE TYPICAL SECTION NO. 2
 -L- STA. 11+99.60 (BEGIN CULVERT)
 TO -L- STA. 12+20.40 (END CULVERT)

- NOTES: 1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
 2. SEE STD. DWG. 862D01 FOR CLEAR SPAN GUARDRAIL PLACEMENT
 3. SEE CROSS SECTIONS FOR POSSIBLE VARIATIONS TO TYPICAL SECTIONS.

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
T	EARTH MATERIAL

6/2/14

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

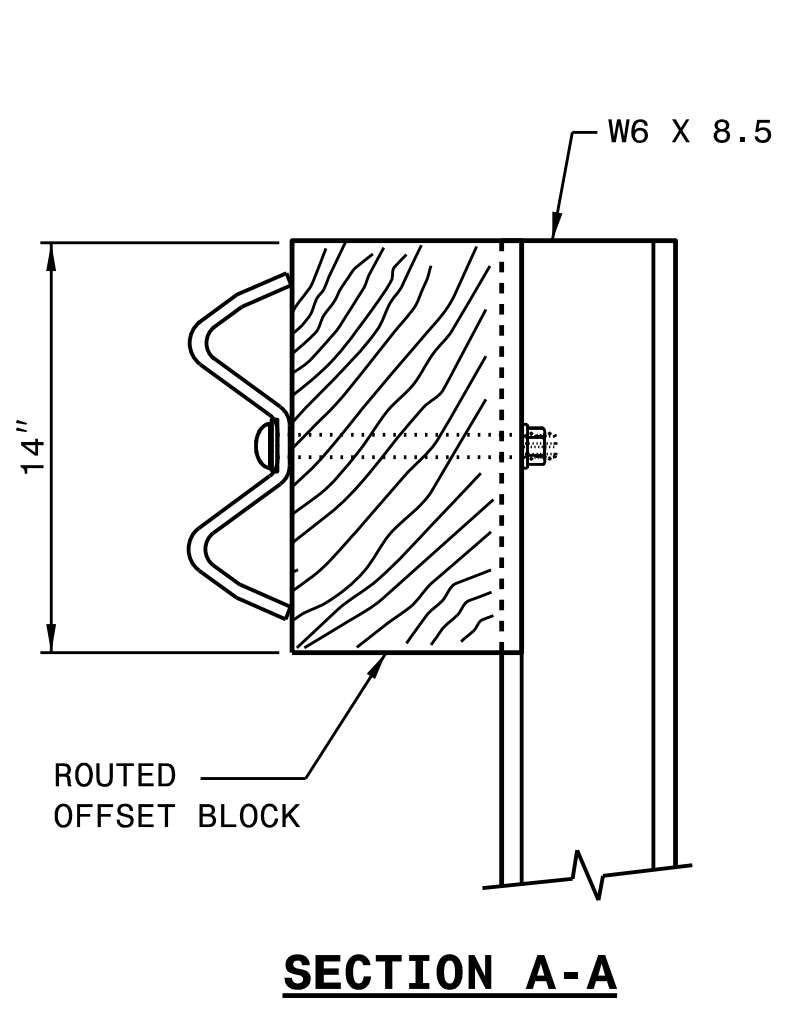
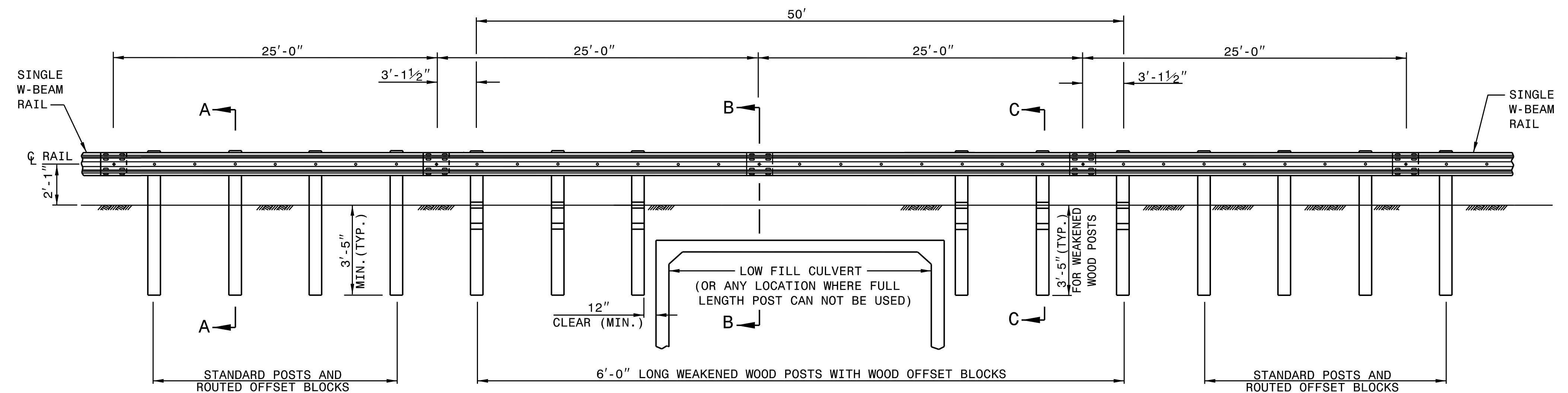
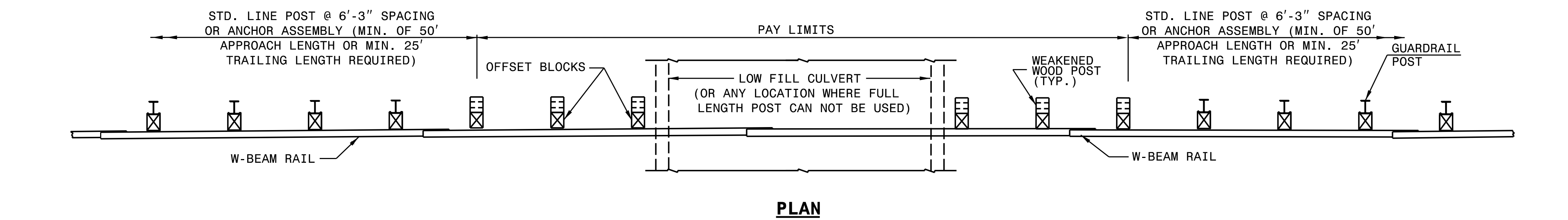
SPECIAL DETAIL FOR
GUARDRAIL PLACEMENT
25'-0" CLEAR SPAN

SHEET - OF -
862D01

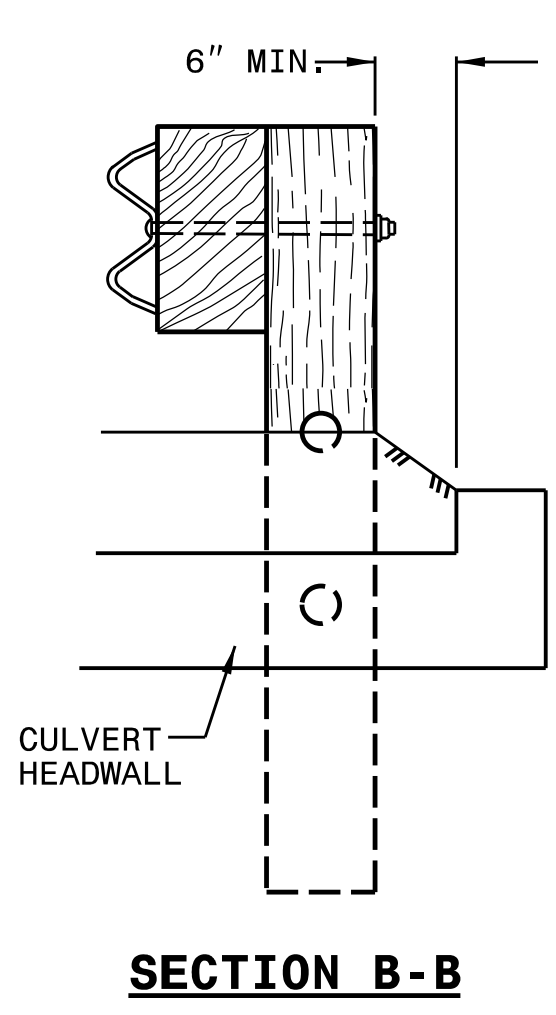
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

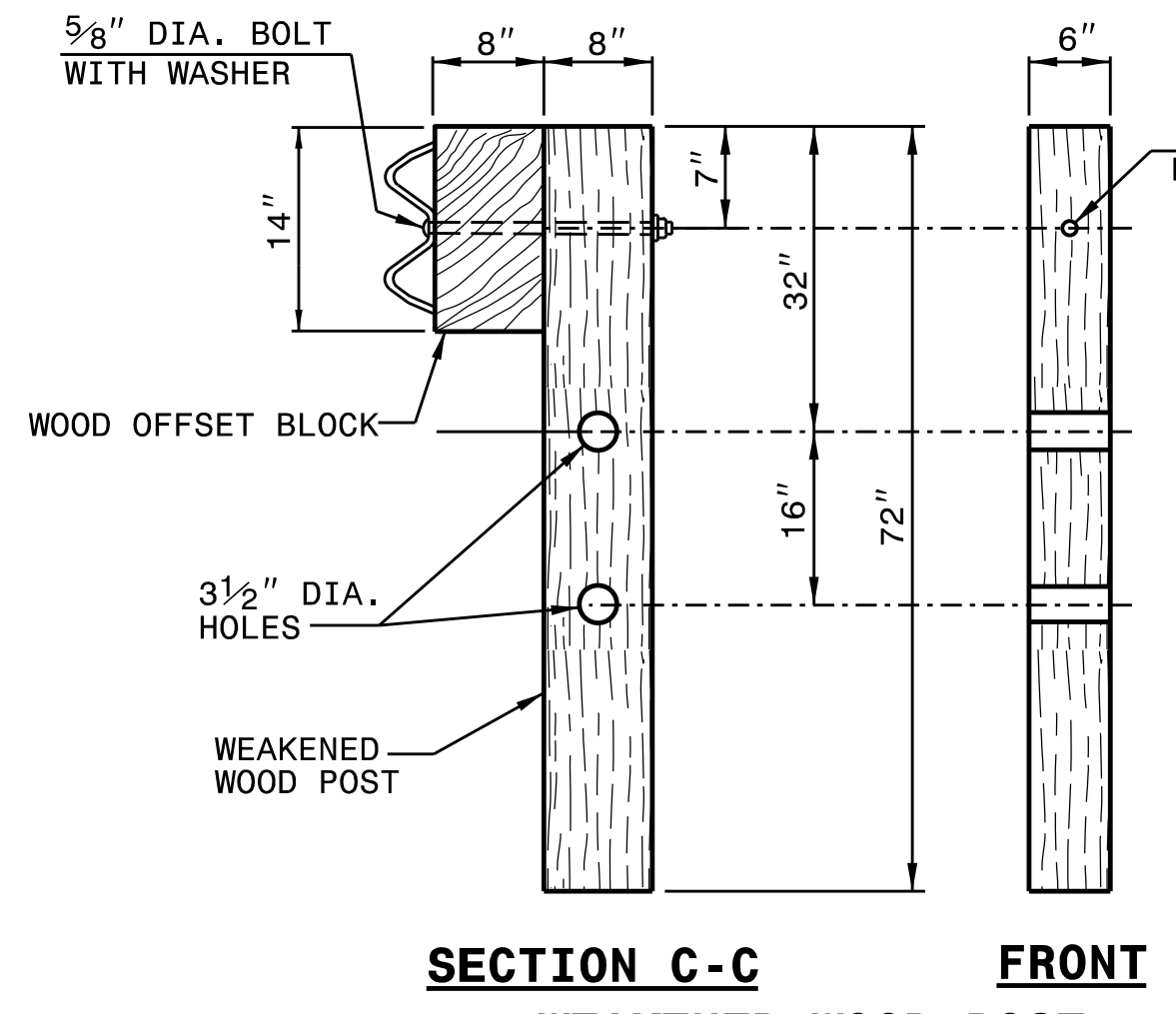
SHEET - OF -
862D01



SECTION A-A



SECTION B-B



SECTION C-C FRONT WEAKENED WOOD POST

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



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

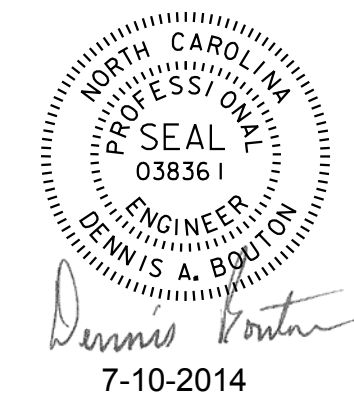
25'-0" CLEAR SPAN GUARDRAIL PLACEMENT

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK
 IN CUBIC YARDS



LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO.1					
-L- STA. 11+35 TO STA. 11+99.60 (BEGIN CULVERT)	3		21	18	
SUBTOTAL SUMMARY NO.1	3		21	18	
SUMMARY NO.2					
-L- STA. 11+99.60 (BEGIN CULVERT)					
TO STA. 12+20.40 (END CULVERT)	0		31	31	
SUBTOTAL SUMMARY NO.2	0		31	31	
SUMMARY NO.3					
-L- STA. 12+20.40 (END CULVERT) TO STA. 13+00	0		92	92	
SUBTOTAL SUMMARY NO.3	0		92	92	
PROJECT SUBTOTAL	3		144	141	
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS				7	
GRAND TOTAL	3		144	134	
SAY	10			140	

CONTINGENCY ITEMS:
 INCIDENTAL STONE = 20 TONS
 UNDERCUT EXCAVATION = 20 CY
 SELECT GRANULAR MATERIAL = 20 CY
 CLASS IV SUBGRADE STABILIZATION = 25 TONS
 GEOTEXTILE FOR SOIL STABILIZATION = 25 SY

Approximate quantities only. Pavement removal, unclassified excavation, borrow excavation, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for "grading".

BRIDGE NUMBER 100686

SEE S-1 THRU S-3 FOR STRUCTURE PLANS

V&M
Vaughn & Melton
Consulting Engineers

Asheville, North Carolina
828-253-2796

Charlotte, North Carolina
704-537-0488

Tri-Cities, Tennessee
423-481-9488

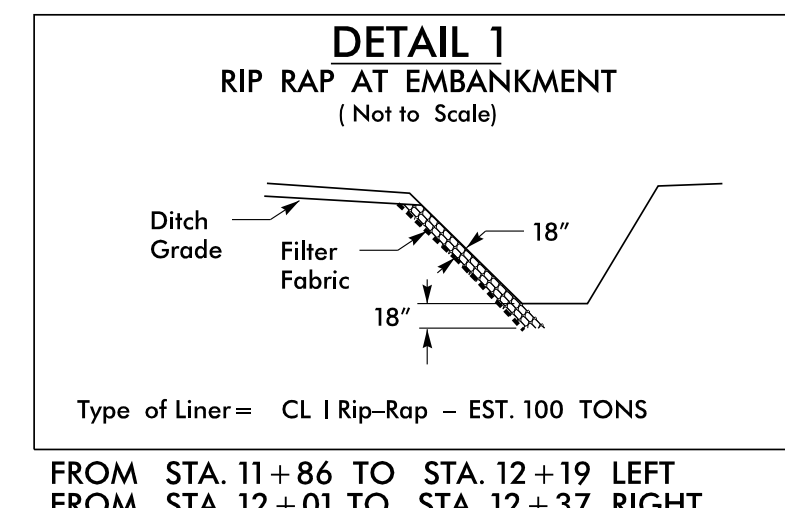
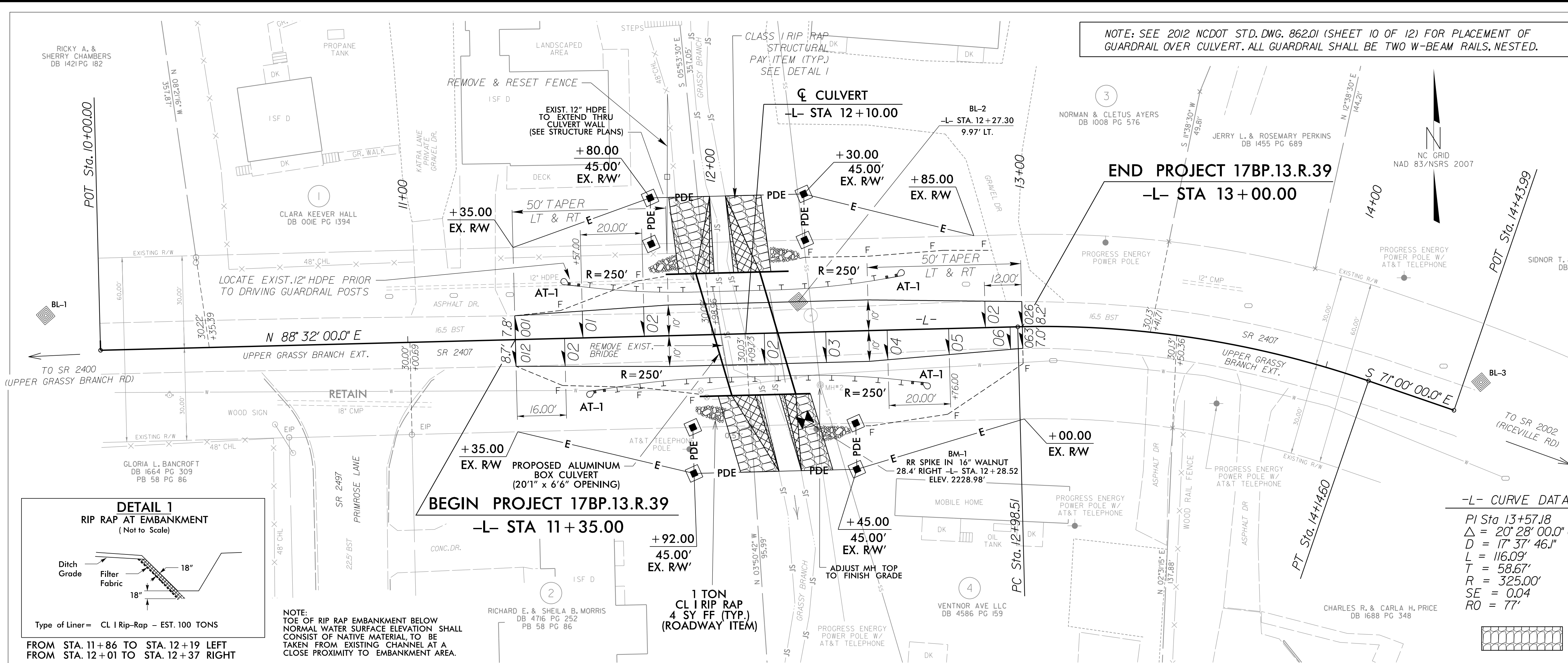
Knoxville, Tennessee
865-546-5800

Middlesboro, Kentucky
606-248-6600

Spokane, Washington
509-425-7775

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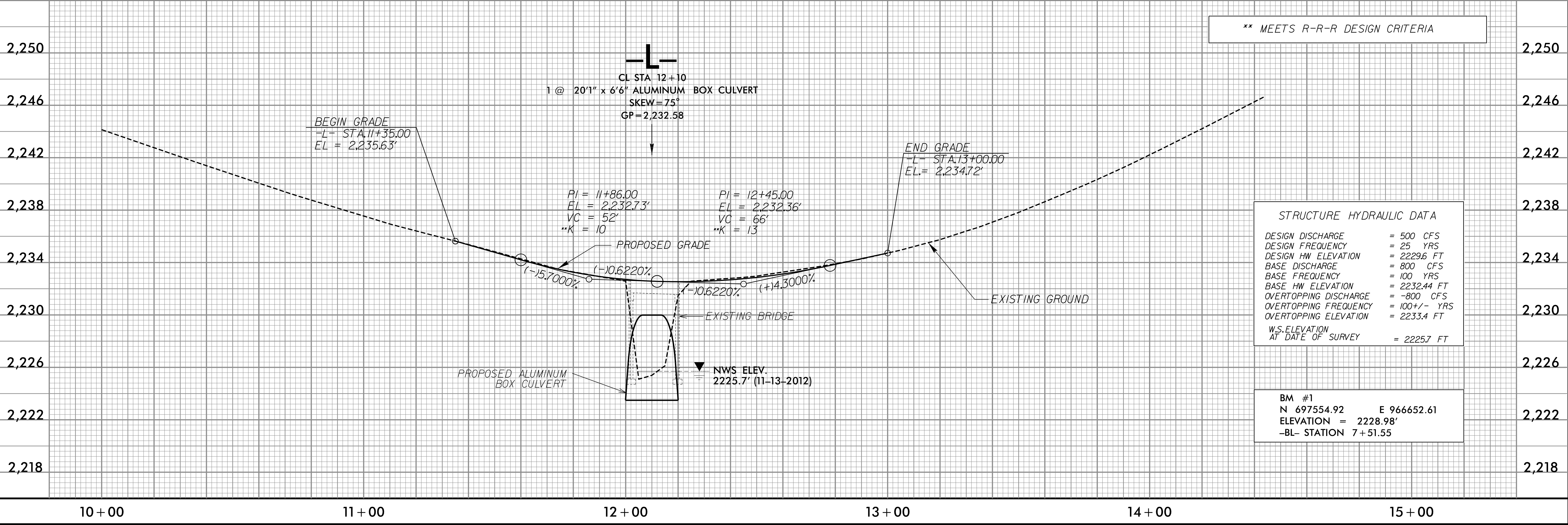
NOTE: SEE 2012 NCDOT STD. DWG. 862.01 (SHEET 10 OF 12) FOR PLACEMENT OF GUARDRAIL OVER CULVERT. ALL GUARDRAIL SHALL BE TWO W-BEAM RAILS, NESTED.



-L- CURVE DATA

PI Sta 13+57.18
 $\Delta = 20^\circ 28' 00.0''$ (RT)
 $D = 17^\circ 37' 46.1''$
 $L = 116.09'$
 $T = 58.67'$
 $R = 325.00'$
 $SE = 0.04$
 $RO = 77'$

DENOTES CLASS 1 RIP RAP (STRUCTURAL ITEM)



REVISIONS

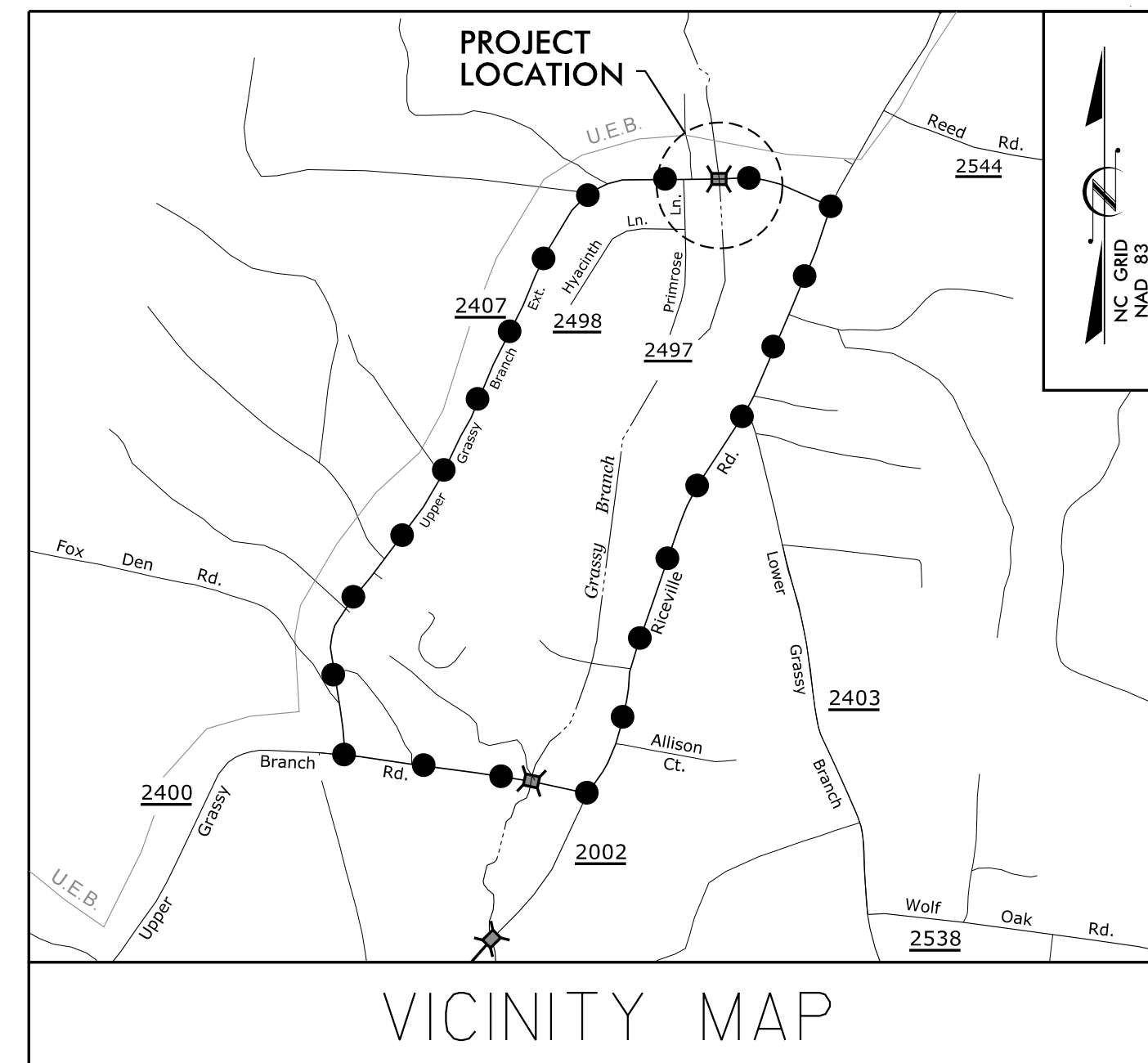
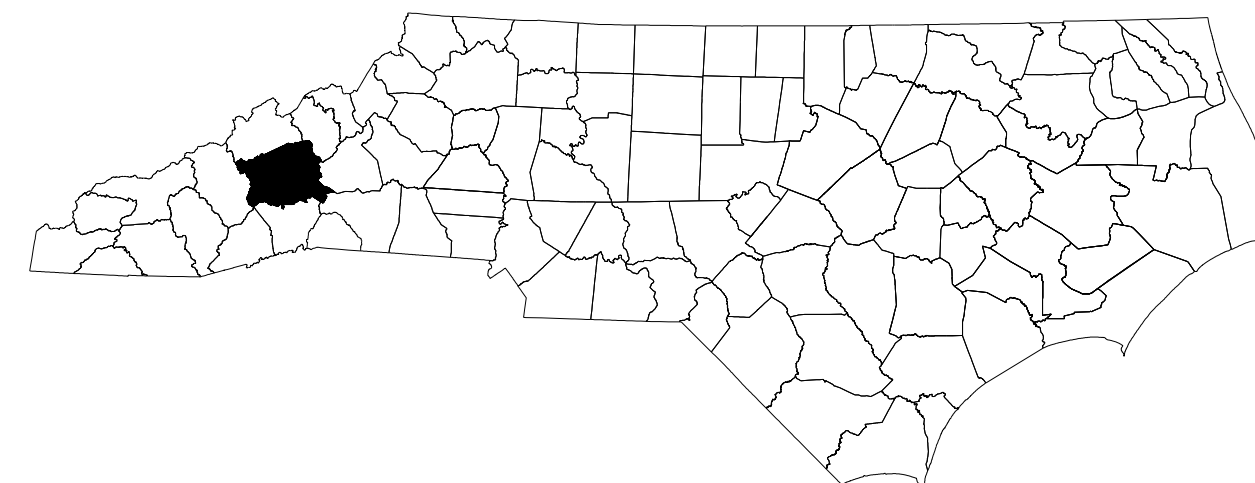
8/17/14

8/17/14

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY
DIVISION 13



VICINITY MAP

OFF-SITE DETOUR ROUTE —●—●—●—●—

LOCATION: BRIDGE NO. 686 OVER GRASSY BRANCH ON SR 2407 (UPPER GRASSY BRANCH EXT.)

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, LEGEND, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES AND TRANSPORTATION OPERATIONS
TMP-2	TEMPORARY TRAFFIC CONTROL DETAIL, PHASING NOTES OFFSITE DETOUR SIGNING AND ROAD CLOSURE
SD-1	SPECIAL SIGN DESIGN

LEGEND

GENERAL

—▶— NORTH ARROW

TRAFFIC CONTROL DEVICES

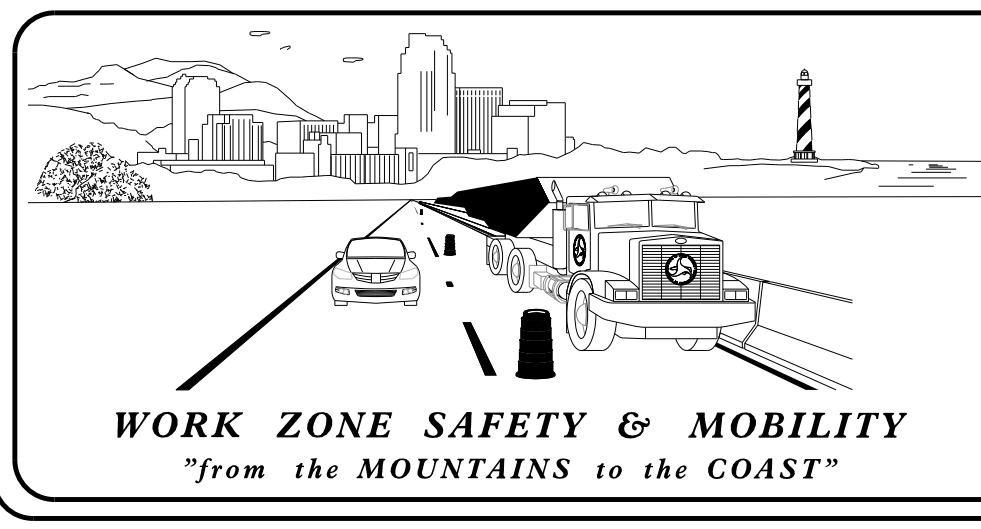
▨ BARRICADE (TYPE III)

TEMPORARY SIGNING

┌ STATIONARY SIGN

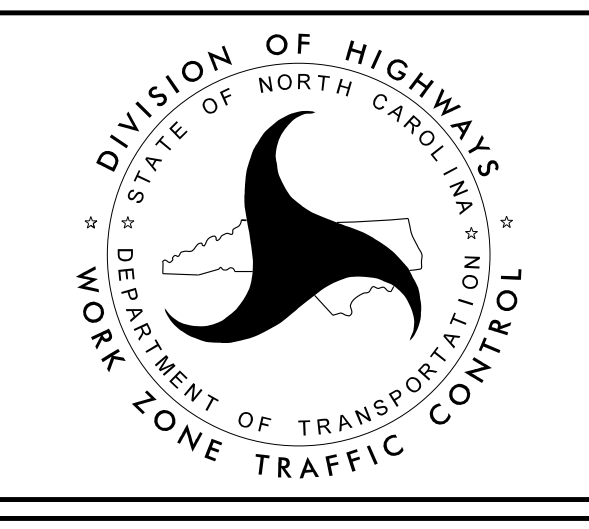
SHEET NO.
TMP-1

PROJECT: 17BP.13.R.39



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1580 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1580
1020 BIRCH RIDGE DRIVE, RALEIGH, NC 27610 (DELIVERY)
PHONE: (919) 250-4094 FAX: (919) 250-4098

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER
LLOYD D. BROWN, P.E. TRAFFIC CONTROL PROJECT ENGINEER
DENNIS BOUTON, P.E. TRAFFIC CONTROL PROJECT DESIGN ENGINEER
DENNIS BOUTON, P.E. TRAFFIC CONTROL DESIGN ENGINEER



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Consulting Engineers
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PROJECT ENGINEER LLOYD D. BROWN, P.E.
DESIGN ENGINEER DENNIS BOUTON, P.E.

APPROVED:
DATE: 7-10-2014

SEAL

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
\$\$\$\$\$ DESIGN \$\$\$\$\$\$
\$\$\$\$\$ DRAWING \$\$\$\$\$\$
\$\$\$\$\$ NUMBER \$\$\$\$\$\$
\$\$\$\$\$ SHEET \$\$\$\$\$\$

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
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES

TRANSPORTATION OPERATIONS

CONSTRUCTION

REMOVE AND REPLACE EXISTING STRUCTURE AND APPROACHES ALONG THE EXISTING ROADWAY ALIGNMENT AS SHOWN IN THE CONSTRUCTION PLANS.

TMP DESIGN PARAMETERS

TRAFFIC WILL BE DETOURED OFF-SITE DURING THE CONSTRUCTION PERIOD.

THE OFF-SITE DETOUR WILL INCLUDE SR 2407 (UPPER GRASSY BRANCH EXT.), SR 2400 (UPPER GRASSY BRANCH ROAD) AND SR 2002 (RICEVILLE ROAD) (SEE SHEET TMP-2).

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

B) PROVIDE PERMANENT SIGNING.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

F) PLACE TYPE III BARRICADES WITH "ROAD CLOSED" SIGN R-11-2 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

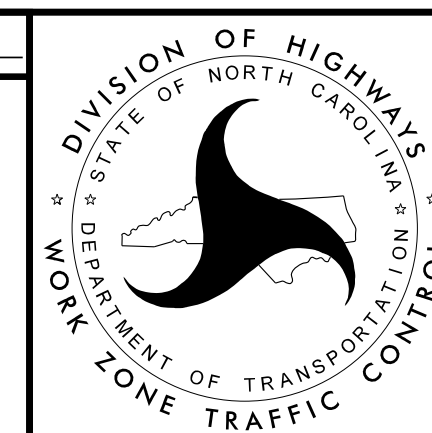
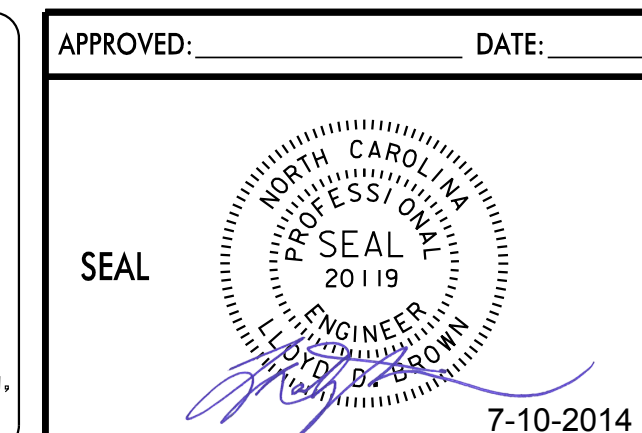
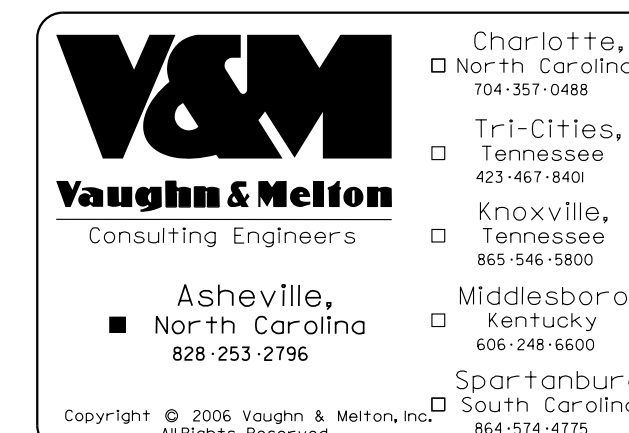
G) INSTALL PAVEMENT MARKINGS (PAINT) ON THE FINAL SURFACE OF THE ENTIRE PROJECT.

H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

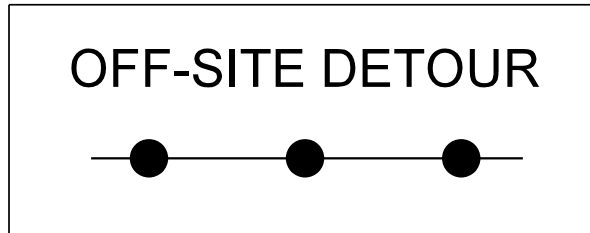
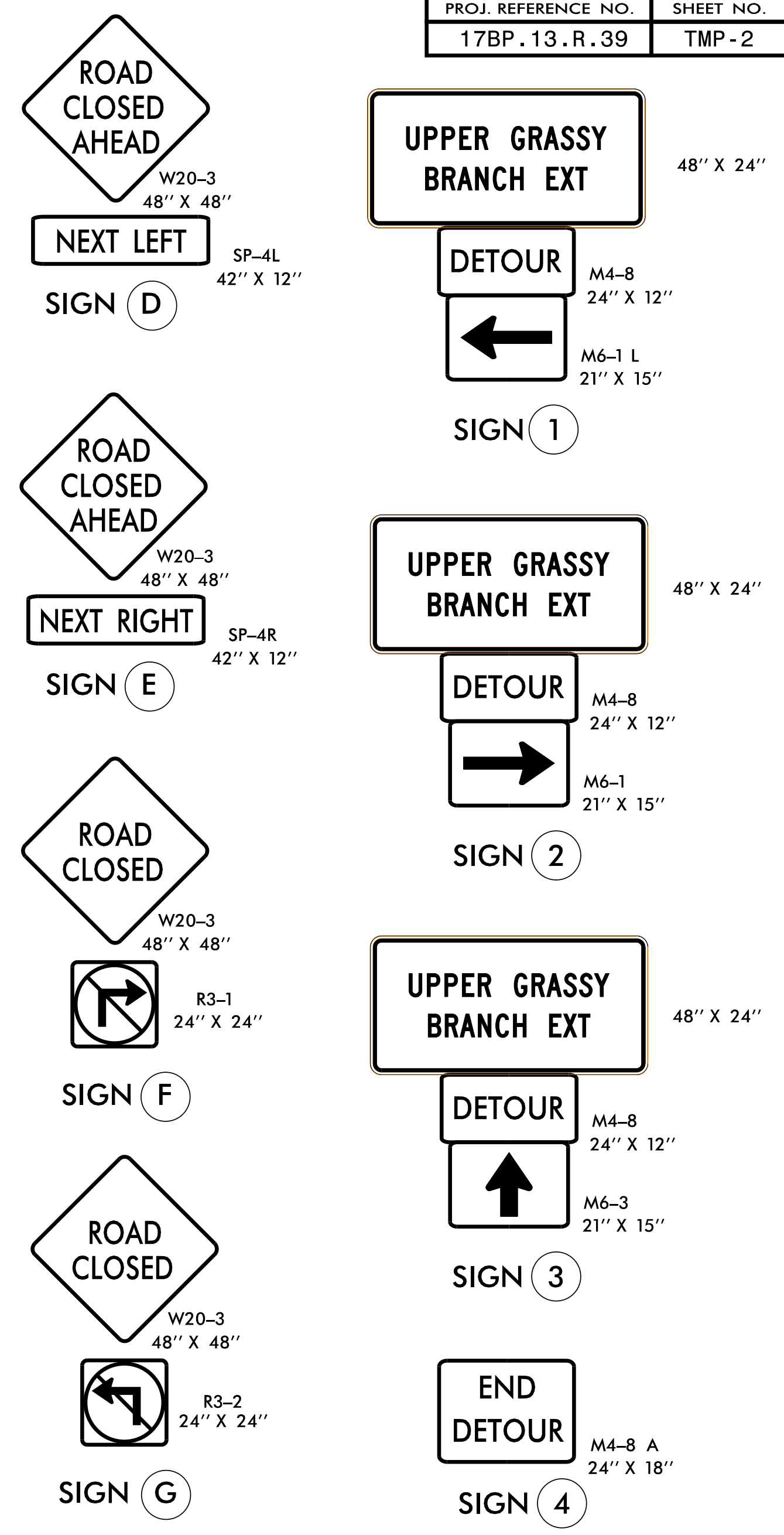
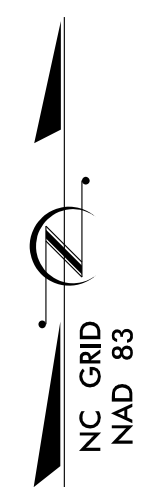
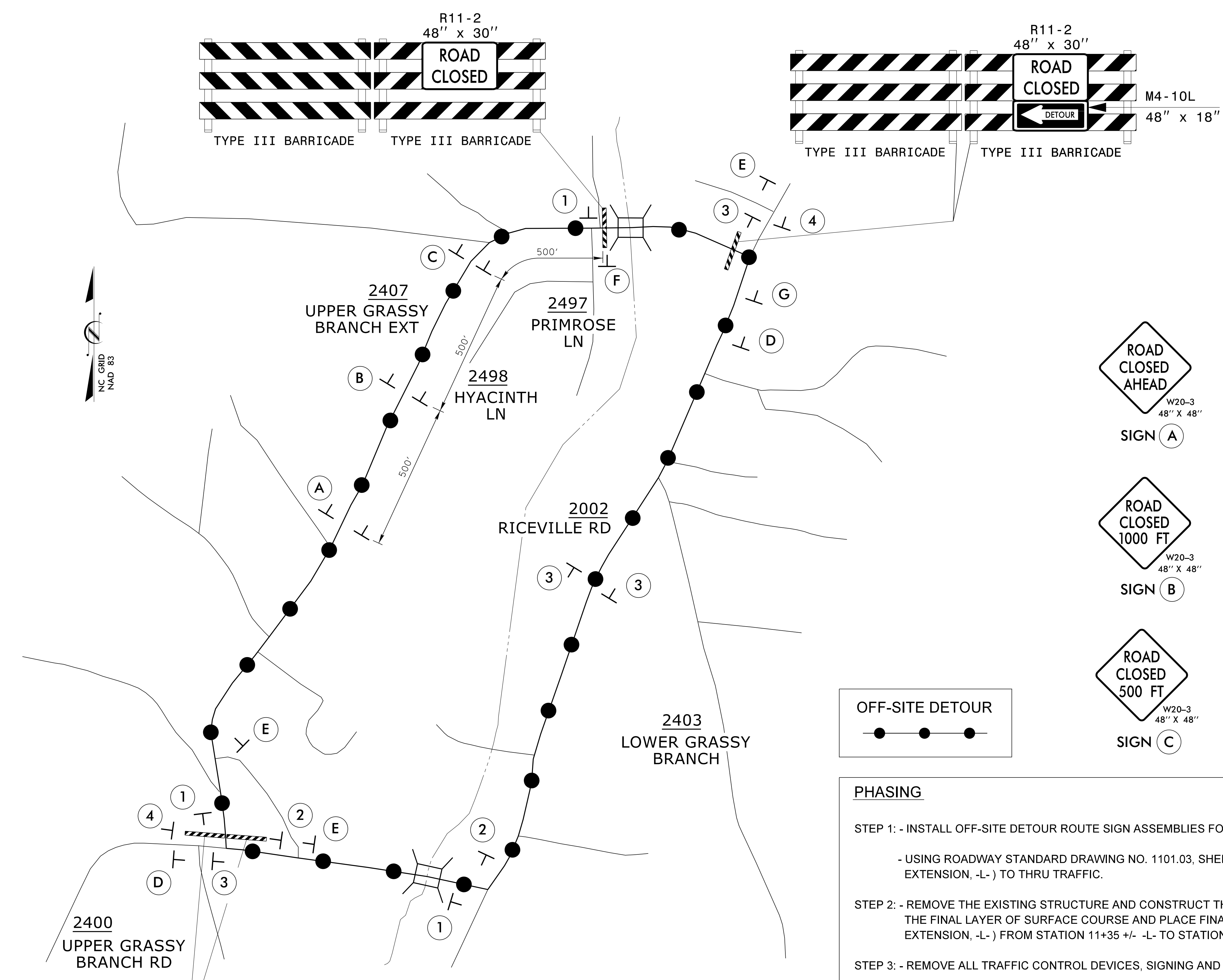
LOCAL NOTES

1. NOTIFY BUNCOMBE COUNTY EMERGENCY SERVICES AND PUBLIC SCHOOLS AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
\$\$\$\$\$ ADDITION \$\$\$\$\$\$
\$\$\$\$\$ CANCEL \$\$\$\$\$\$
\$\$\$\$\$ SERIAL \$\$\$\$\$\$



ROADWAY STANDARD DRAWINGS,
GENERAL NOTES &
TRANSPORTATION OPERATIONS



PHASING

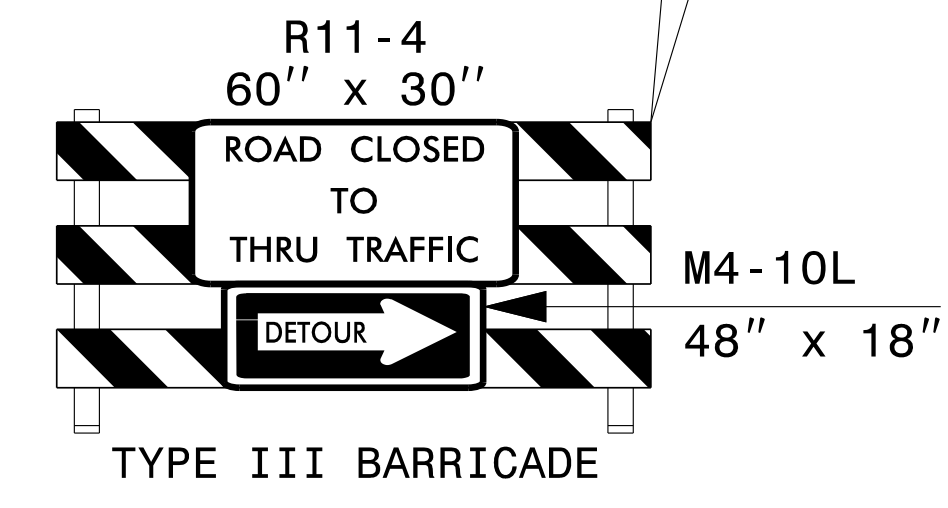
STEP 1: - INSTALL OFF-SITE DETOUR ROUTE SIGN ASSEMBLIES FOR THE CLOSING OF SR 2407 (UPPER GRASSY BRANCH EXTENSION, -L-).
 - USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEETS 1 OF 9 AND 2 OF 9, CLOSE SR 2407 (UPPER GRASSY BRANCH EXTENSION, -L-) TO THRU TRAFFIC.

STEP 2: - REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS ON SR 2407 (UPPER GRASSY BRANCH EXTENSION, -L-) FROM STATION 11+35 +/- -L- TO STATION 13+00 +/- -L-. (SEE CONSTRUCTION PLANS).

STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES, SIGNING AND DETOUR ROUTE SIGNING.
 - OPEN TO FINAL TRAFFIC PATTERN.

NOTES:

- ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.
- ALL DETOUR SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE NOTED.
- TRAFFIC CONTROL DEVICES (A) THROUGH (F) SHALL BE INSTALLED ACCORDING TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9.
- TRAFFIC CONTROL DEVICES (1) THROUGH (4) SHALL BE INSTALLED AS PER ENGINEER'S INSTRUCTIONS, AND AS SHOWN HEREON.
- SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9 AND 2 OF 9, FOR ADDITIONAL WORK ZONE SIGNS.



V&M
Vaughn & Melton
 Consulting Engineers

Charlotte, North Carolina 704-351-0488
 Tri-Cities, Tennessee 423-467-8401
 Knoxville, Tennessee 865-546-5900
 Middleboro, Kentucky 606-248-6600
 Spartanburg, South Carolina 864-574-4175

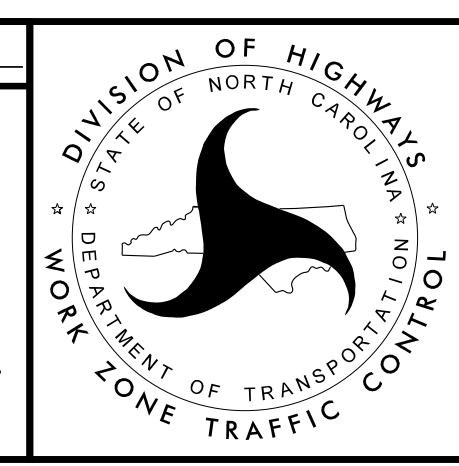
Asheville, North Carolina 828-253-2796

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APPROVED: _____ DATE: _____

SEAL

7-10-2014



TEMPORARY TRAFFIC CONTROL DETAIL, PHASING NOTES, OFFSITE DETOUR SIGNING AND ROAD CLOSURE

\$\$\$\$\$ SYSTEM TIME\$\$\$\$\$
 \$\$\$'S' C'AD'ONS\$\$\$\$\$
 \$\$\$'S' C'AD'ONS\$\$\$\$\$
 \$\$\$'S' C'AD'ONS\$\$\$\$\$

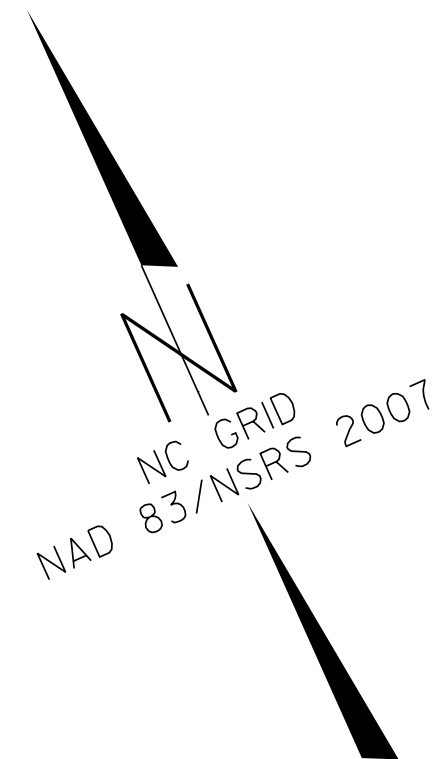
ROADSIDE ENVIRONMENTAL UNIT
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 2012 STANDARD SPECIFICATIONS

EROSION CONTROL PLAN

PROJECT REFERENCE NO. 17BP.13.R.39	SHEET NO. EC-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET _



Std. #	Description	Symbol
1605.01	Temporary Silt Fence	||| ||| |||
1633.01	Temporary Rock Silt Check Type-A	▣
1633.02	Wattle / Coir Fiber Wattle	⤿ EW

Level III: Designer of Erosion and Sediment Control Plans
 MICHAEL CLARK
 Date Issued: June 5, 2013
 Date Expires: December 31, 2016
 Certification Number: 3376

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.

PROJECT NO. 17BP.13.R.39
 COUNTY BUNCOMBE
 STATION: 12+10 -L-
 REPLACES BRIDGE NO. 686

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE #686 ON SR 2407
 OVER UPPER GRASSY BRANCH

REVISIONS						SHEET NO. EC-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 5
2			4			

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3R.39	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

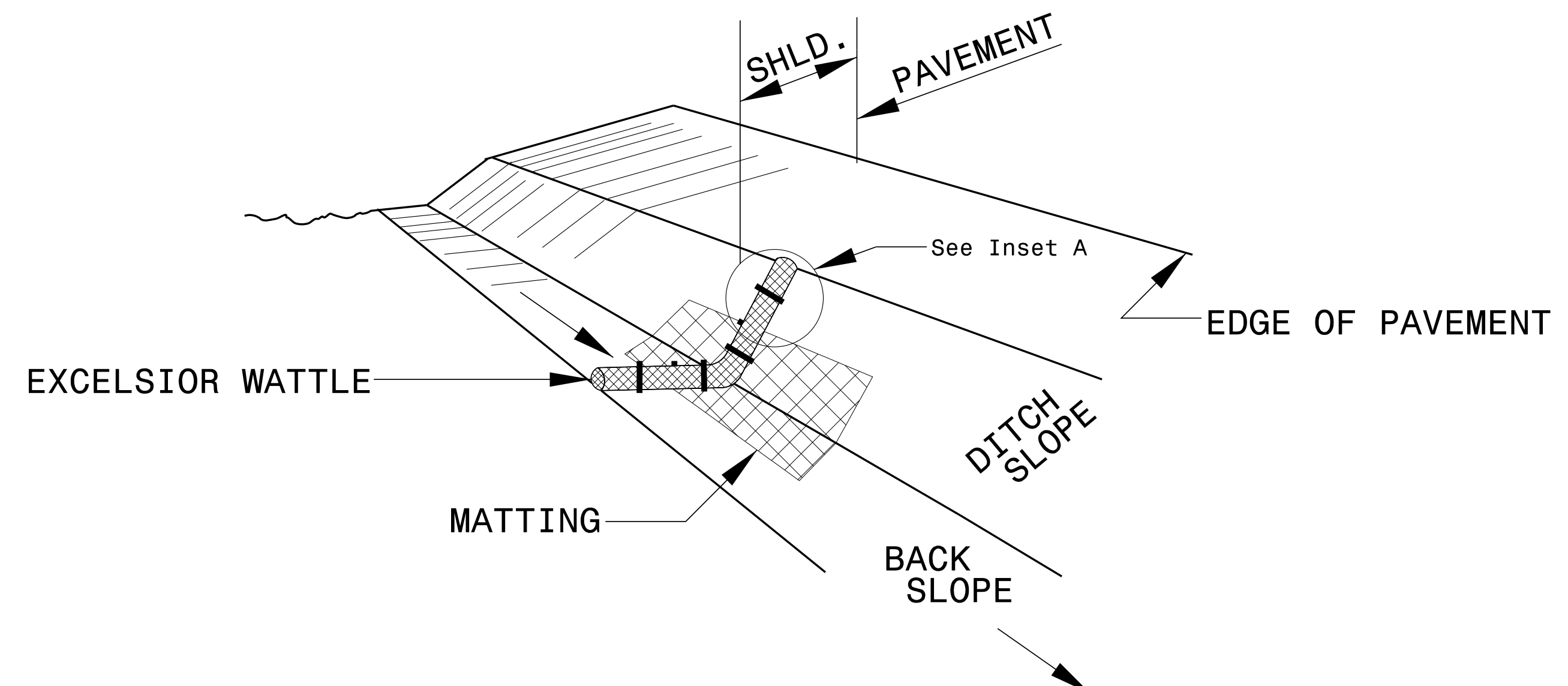
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SOIL STABILIZATION TIMEFRAMES

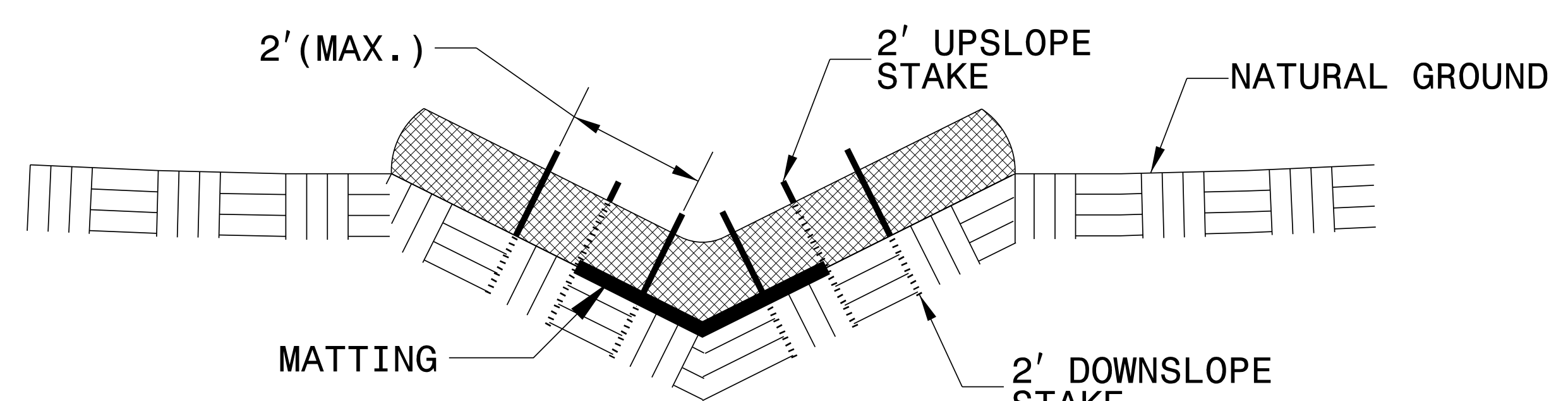
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES, AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO. 17BP.13.R.39	SHEET NO. EC-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

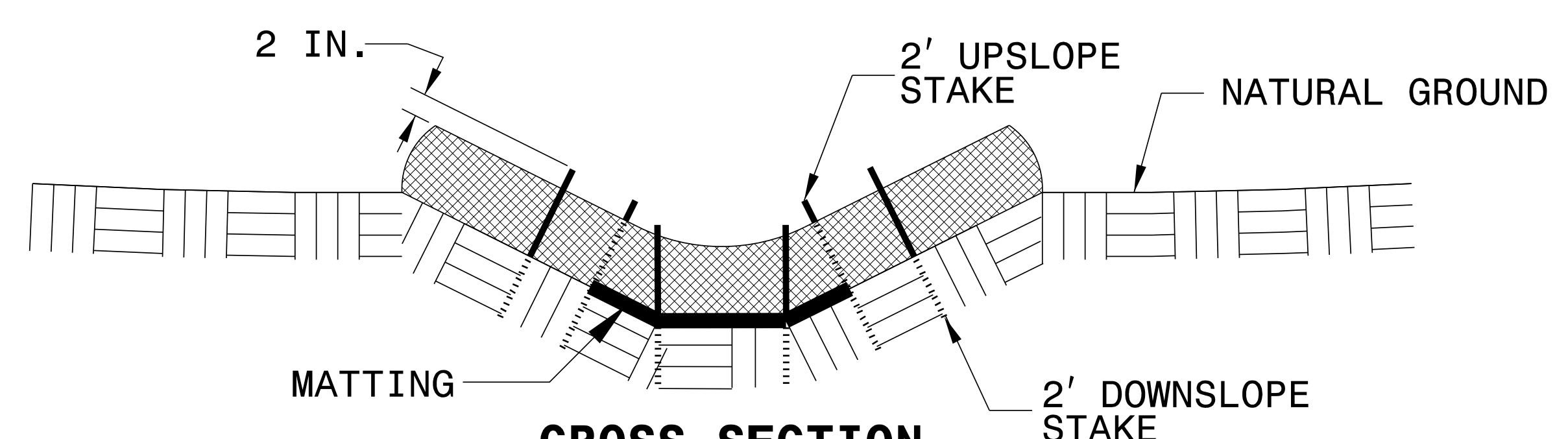
WATTLE DETAIL



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.

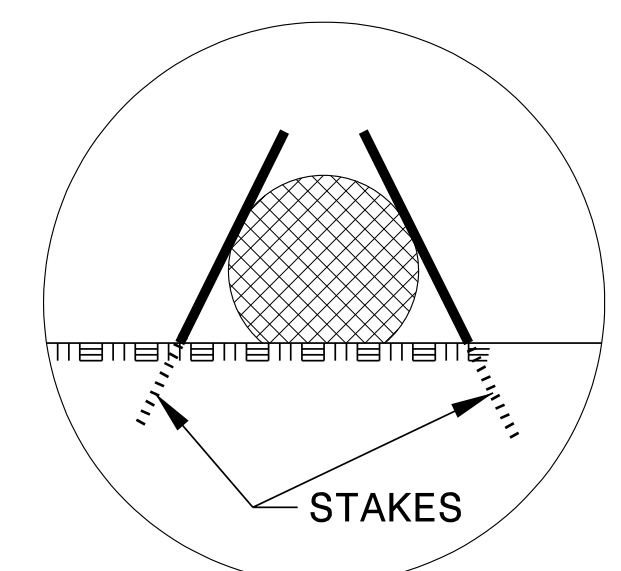
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

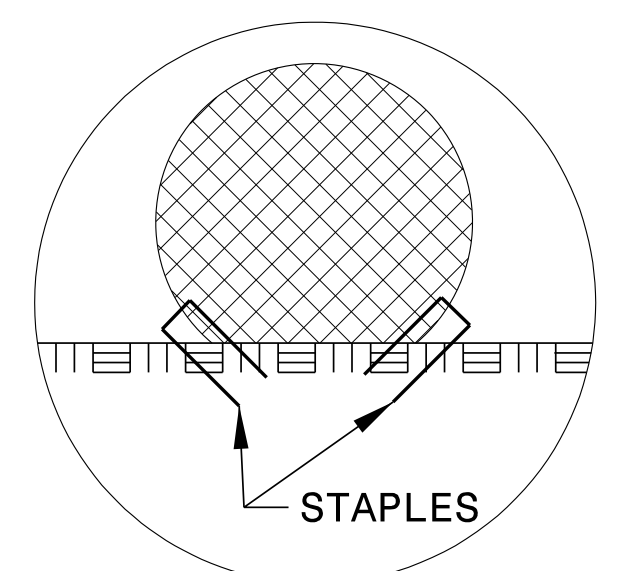
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

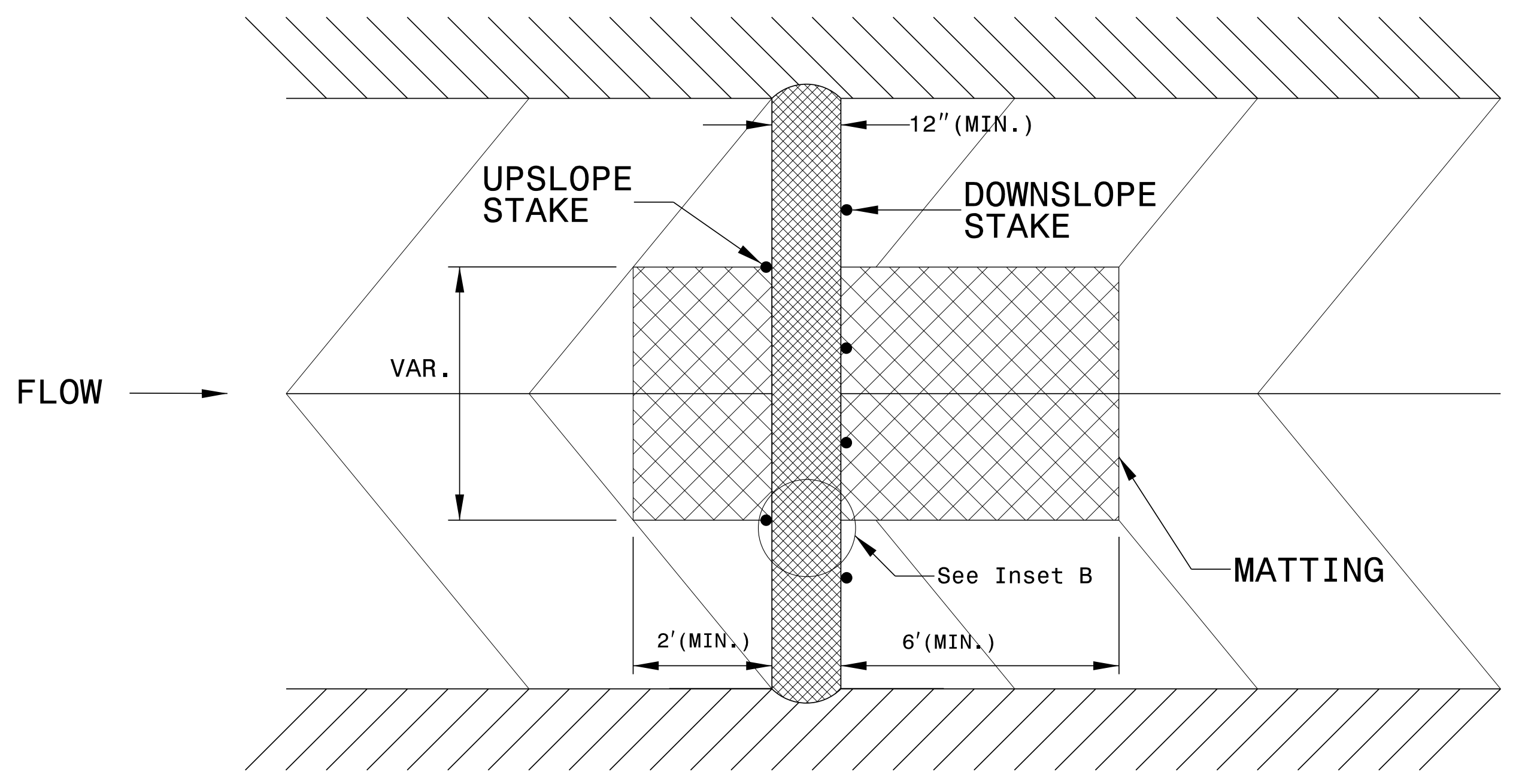
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



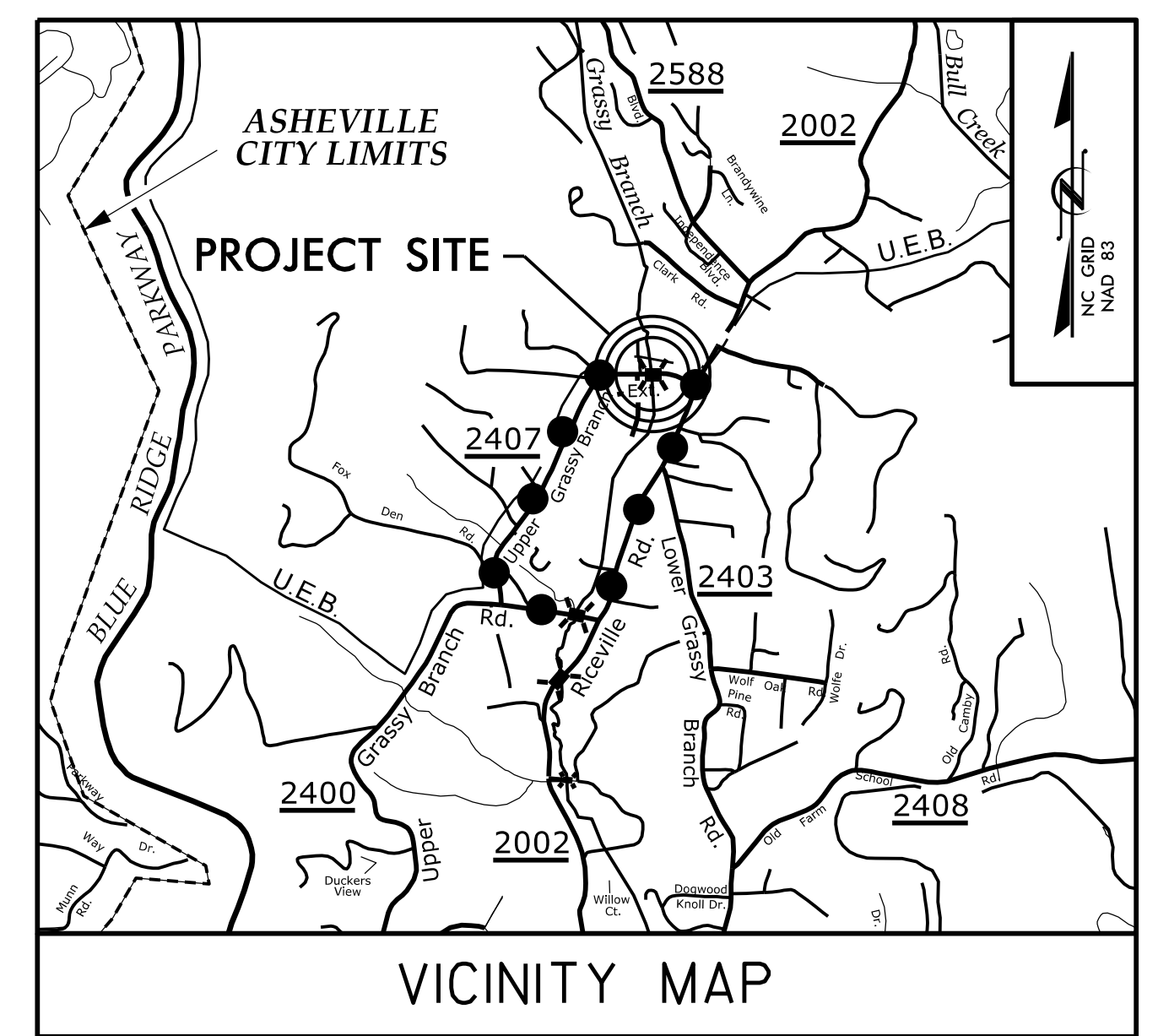
TOP VIEW

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.39	UC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.39	N/A	P.E.	
17BP.13.R.39	N/A	R/W	
17BP.13.R.39	N/A	CONST.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BUNCOMBE COUNTY

**LOCATION: BRIDGE NO. 686 OVER GRASSY BRANCH
ON SR 2407 (UPPER GRASSY BRANCH EXT.)**

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



●—●—●—● DETOUR ROUTE

V&M
Vaughn & Melton
Consulting Engineers

Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Asheville, North Carolina 828-253-2796

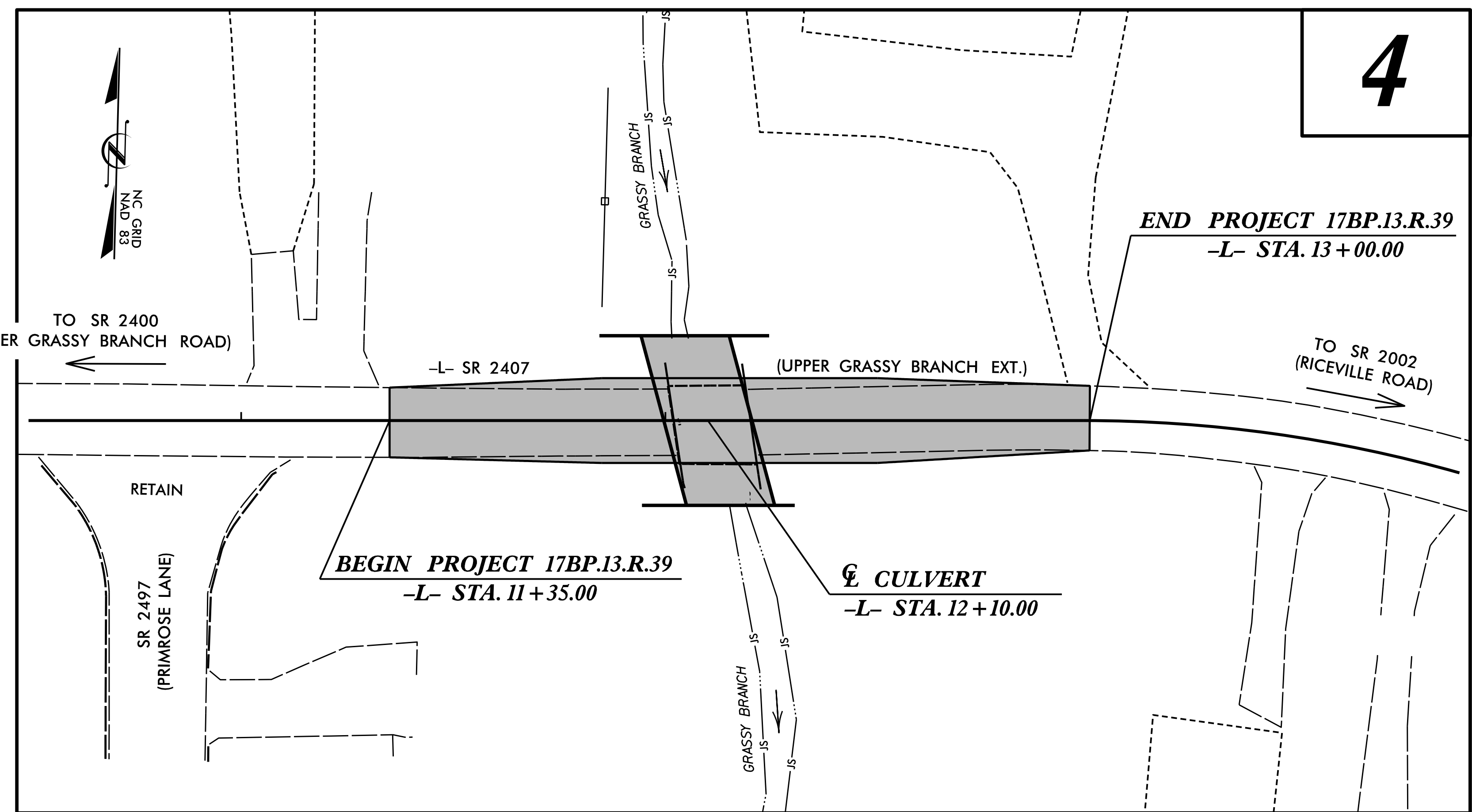
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

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FOR

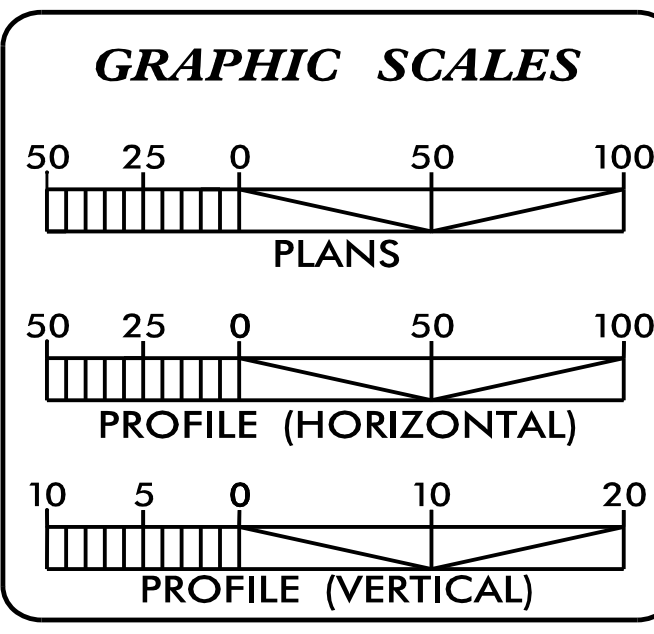
SEPI
ENGINEERING & CONSTRUCTION

1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197



PROJECT: 17BP.13.R.39

CONTRACT:

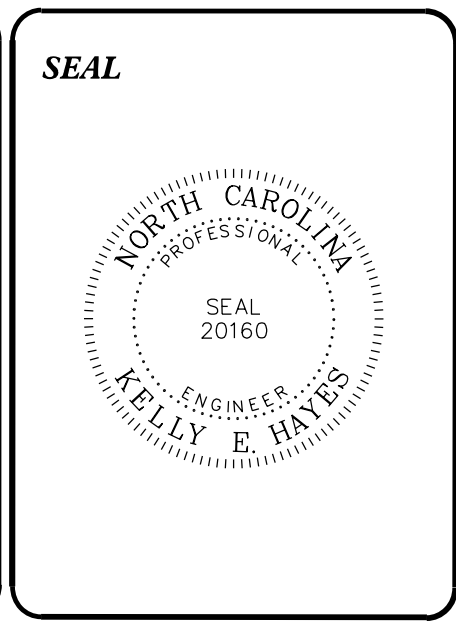


INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY CONSTRUCTION PLAN SHEETS
UC-3	UTILITY CONSTRUCTION DETAILS

WATER AND SEWER OWNERS ON PROJECT

1) WATER - CITY OF ASHEVILLE
2) SANITARY SEWER - METROPOLITAN SEWER DISTRICT



PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION**

1591 MAIL SERVICES CENTER
RALEIGH, NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Kelly E. Hayes, P.E. UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO. 17BP13.R.39	SHEET NO. UC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	.....
11¼ Degree Bend	.....
22½ Degree Bend	.....
45 Degree Bend	.....
90 Degree Bend	.....
Plug	.....
Tee	.....
Cross	.....
Reducer	.....
Gate Valve	.....
Butterfly Valve	.....
Tapping Valve	.....
Line Stop	.....
Line Stop with Bypass	.....
Blow Off	.....
Fire Hydrant	.....
Relocate Fire Hydrant	.....
Remove Fire Hydrant	.....
Water Meter	.....
Relocate Water Meter	.....
Remove Water Meter	.....
Water Pump Station	.....
RPZ Backflow Preventer	.....
DCV Backflow Preventer	.....
Relocate RPZ Backflow Preventer	.....
Relocate DCV Backflow Preventer	.....

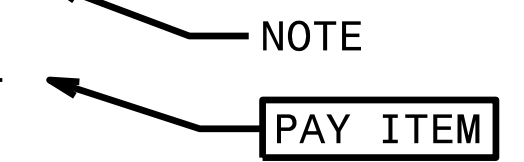
PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	.....
Force Main Sewer Line (Sized as Shown)	.....
Manhole (Sized per Note)	.....
Sewer Pump Station	.....

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	.....
Telephone Pole	.....
Joint Use Pole	.....
Telephone Pedestal	.....
Utility Line by Others (Type as Shown)	.....
Trenchless Installation	.....
Encasement by Open Cut	.....
Encasement	.....

Thrust Block	.....
Air Release Valve	.....
Utility Vault	.....
Concrete Pier	.....
Steel Pier	.....
Plan Note	.....
Pay Item Note	.....



EXISTING UTILITIES SYMBOLS

Power Pole	.....
Telephone Pole	.....
Joint Use Pole	.....
Utility Pole	.....
Utility Pole with Base	.....
H-Frame Pole	.....
Power Transmission Line Tower	.....
Water Manhole	.....
Power Manhole	.....
Telephone Manhole	.....
Sanitary Sewer Manhole	.....
Hand Hole for Cable	.....
Power Transformer	.....
Telephone Pedestal	.....
CATV Pedestal	.....
Gas Valve	.....
Gas Meter	.....
Located Miscellaneous Utility Object	.....
Abandoned According to Utility Records	.....
End of Information	.....

*Underground Power Line	.....
*Underground Telephone Cable	.....
*Underground Telephone Conduit	.....
*Underground Fiber Optics Telephone Cable	.....
*Underground TV Cable	.....
*Underground Fiber Optics TV Cable	.....
*Underground Gas Pipeline	.....
Aboveground Gas Pipeline	.....
*Underground Water Line	.....
Aboveground Water Line	.....
*Underground Gravity Sanitary Sewer Line	.....
Aboveground Gravity Sanitary Sewer Line	.....
*Underground SS Forced Main Line	.....
Underground Unknown Utility Line	.....
SUE Test Hole	.....
Water Meter	.....
Water Valve	.....
Fire Hydrant	.....
Sanitary Sewer Cleanout	.....

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown)
 Designated Utility Line (Type as Shown)

REVISIONS

4/3/2015 G:\Transportation\TR12.018 (Div 13 Bridge Replacements)\BR 686 Buncombe\Utilities\Proj\BUN686_Ut_UC2_psh.dgn
 8/17/99

UTILITY CONSTRUCTION

PROJECT SPECIFIC NOTES:



PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.23	UC-3
DESIGNED BY: JB	
DRAWN BY: TD	
CHECKED BY: KH	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF CITY OF ASHEVILLE AND THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" AND STANDARD DRAWINGS DATED JANUARY 2018.
2. THE EXISTING WATER LINE BELONGS TO CITY OF ASHEVILLE (I.E. UTILITY OWNER).
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION AND CITY OF ASHEVILLE. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE UTILITY OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.
6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

1. PROPOSED 6" WATER LINE FROM -L- STATION 11+35 TO -L- STATUIB 13+00 SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE, PC 350
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRATOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO STREAM, WELANDS, OR BUFFER ZONES.
3. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
4. CONTRACTOR SHALL OBTAIN THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
5. THE CONTRACTOR SHALL COORDINATE ISOLATION OF THE EXISTING WATER MAIN FOR TIE-INS WITH THE CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. CALL CHAD PIERCE, PE (828) 259-5420.
6. ALL VALVES SHALL BE RESILIENT WEDGE VALVES.
7. PRIOR TO MAKING TIE-INS, FACILITATE FILLING, FLUSHING, TESTING, STERILIZATION AND BLOWOFF TO PROPOSED WATERMAIN BY INSTALLING 6" X 2" TAPPING SADDLE AND VALVE ON THE SECTION OF EXISTING 6" MAIN. HARDPIPE FROM TAPPING VALVE TO STUBBED OUT END OF PROPOSED 6" WATER MAIN WITH 2" SOLVENT WELD SCH40 PVC PIPE. PROVIDE RESTRAINED 6" CAP TAPPED FOR 2" CONNECTION. PROVIDE TEMPORARY 2" BLOWOFF ON OPPOSITE END OF PROPOSED MAIN WITH LIKE MATERIALS INCLUDING 2" ISOLATION VALVE.
8. FLUSH PROPOSED 6" MAIN AT 2.5 FPS VELOCITY AND PRESSURE TEST PROPOSED 6" WATER MAIN AT MINIMUM 200 PSI FOR A MINIMUM OF 2 HOURS PER CITY OF ASHEVILLE AND NCDOT SPECIFICATIONS.
9. AFTER SATISFACTORY BACTERIOLOGICAL SAMPLING AND PRESSURE TEST, RECEIVE FINAL APPROVAL FROM CITY OF ASHEVILLE. MAKE TIE-INS BY ABANDONING EXISTING 6" MAIN AND CONNECTING 6" RESTRAINED JOINT BEND WITH CONCRETE THRUST BLOCK PER DETAIL. CONCRETE SHALL BE POURED A MINIMUM 24 HOURS BEFORE MAKING CONNECTION.
10. THE CONTRACTOR SHALL RESTRAIN ALL FITTINGS AND PIPE.

11. COVER OVER CARRIER PIPE AT STREAM CROSSING SHALL BE 2' MIN BELOW STREAM BOTTOM TO TOP OF CARRIER PIPE.
12. AN NCDOT AND CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT REPRESENTATIVE SHALL BE PRESENT FOR ALL TESTS.
13. CONTRACTOR SHALL COORDINATE WATER LINE INSTALLATION AND CONNECTION WITH CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. EXISTING WATER LINE SHALL REMAIN IN SERVICE UNTIL BORE, TESTING AND DISINFECTION OF NEW WATER LINE IS COMPLETE.
14. IF TEMPORARY SHUT DOWN IS REQUIRED THE CONTRACTOR WILL COORDINATE THIS SHUT DOWN WITH CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. IN A MANNER THAT IS MOST CONVENIENT FOR CUSTOMERS AND CITY OF ASHEVILLE.
15. CONTRACTOR TO PLACE CONCRETE THRUST BLOCK AROUND THE EXISTING DI PIPE WEST OF THE 6" VALVE AT APPROXIMATE -L- STA. 11+50 AND EAST OF THE VALVE AT APPROXIMATE -L- STA. 13+25
16. ABANDON AND REMOVE EXISTING 6" DI PIPE
17. COVER OVER DIP PIPE AT STREAM CROSSING SHALL BE 5' MINIMUM BELOW STREAM BOTTOM TO TOP OF DIP PIPE.
18. ALL WATER MAINS SHALL BE PRESSURE TESTED WITH A TEST PRESSURE AT THE HIGH POINT OF THE MAIN TWICE THE WORKING PRESSURE OR 200 PSI, WHICHEVER IS GREATER. TEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF 3 HOURS. MAKE UP WATER SHALL NOT EXCEED THE FOLLOWING AMOUNTS IN GALLONS PER 1,000 FEET OF MAIN: 2"LINE 0.50, 3"LINE 0.74, 4"LINE 1.11, 6"LINE 1.65, 8"LINE 2.22, 12"LINE 3.3, 16"LINE 3.96 AND 24"LINE 5.97.
19. ALL WATER MAINS SHALL BE FLUSHED AND DISINFECTED PRIOR TO BEING PUT IN SERVICE. FLUSHING SHALL BE ACCOMPLISHED WITH SUFFICIENT WATER VELOCITY (MINIMUM OF 2.5 FPS) TO THOROUGHLY CLEAN THE MAIN. THE MAINS SHALL BE DISINFECTED USING A CHLORINE SOLUTION EQUAL TO OR GREATER THAN 50 MILLIGRAMS PER LITER (50 PPM). THE CHLORINE SOLUTION SHALL REMAIN IN THE MAINS FOR A MINIMUM OF 24 HOURS. BACTERIOLOGICAL TEST SAMPLES SHALL BE TAKEN BY CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT FOR EVALUATION AND LINE DISINFECTANT APPROVAL. AFTER DISINFECTION IS COMPLETE, THE NEW LINES SHALL BE FLUSHED SUFFICIENTLY SO THAT THE CHLORINE CONCENTRATION LEVEL IN THE NEW LINES DO NOT EXCEED EXISTING LINE CONCENTRATION.

UTILITY CONSTRUCTION

EXHIBIT C

AGREEMENT PLANS

5/14/99 3/19/2018 17-UT-UC3_pesh.dgn USER: rtd

BRIDGE NUMBER 100403

SEE S-1 THRU S-3 FOR STRUCTURE PLANS

CHARLES & JULIA CARECCIA DB 3442 PG 649

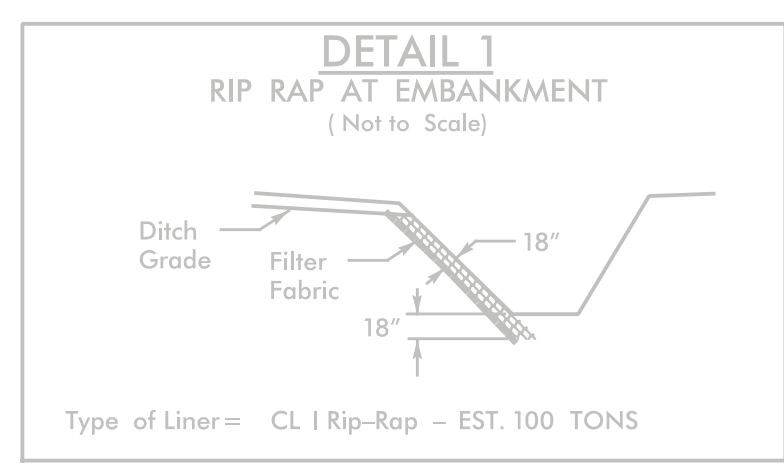
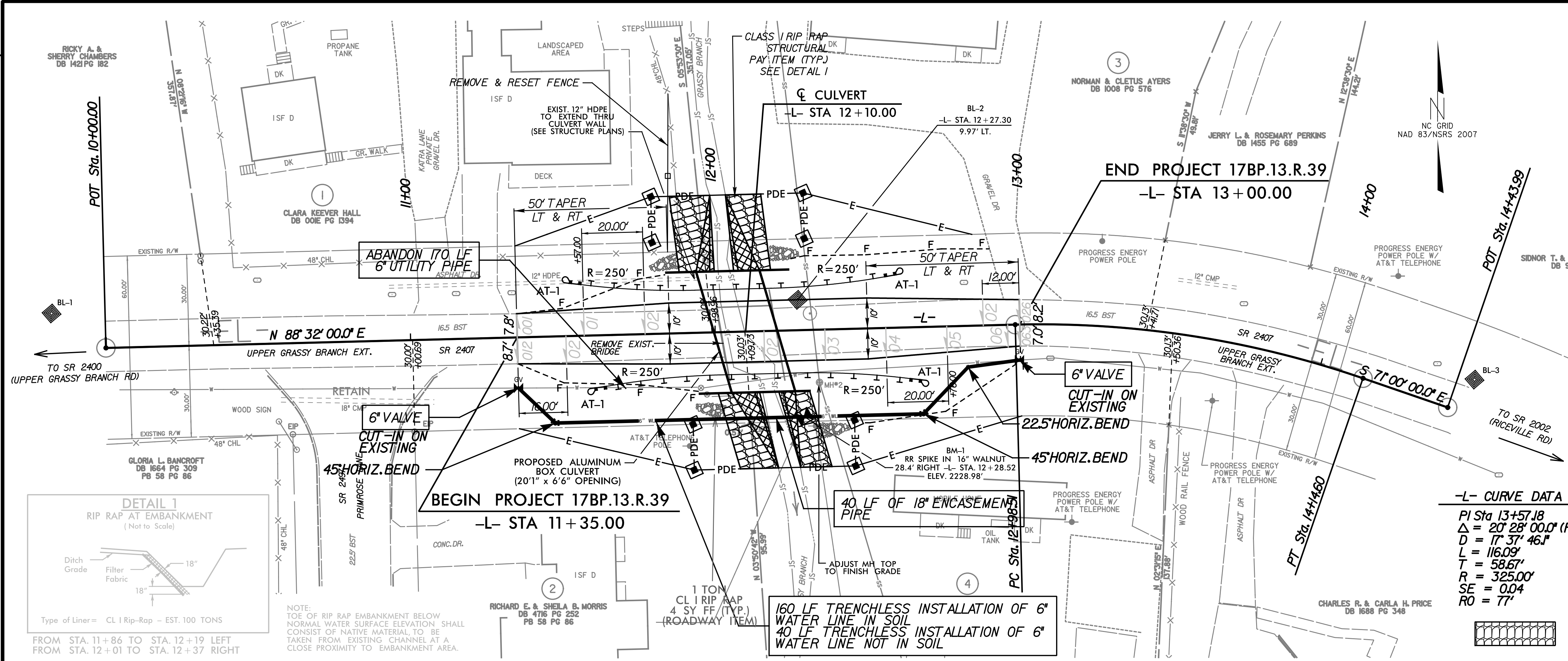
Charlotte, North Carolina 704-357-0488
 Tri-Cities, Tennessee 423-461-9401
 Knoxville, Tennessee 865-544-6900
 Middleboro, Kentucky 606-546-6600
 Spartanburg, South Carolina 864-574-4775

Asheville, North Carolina 828-253-2796

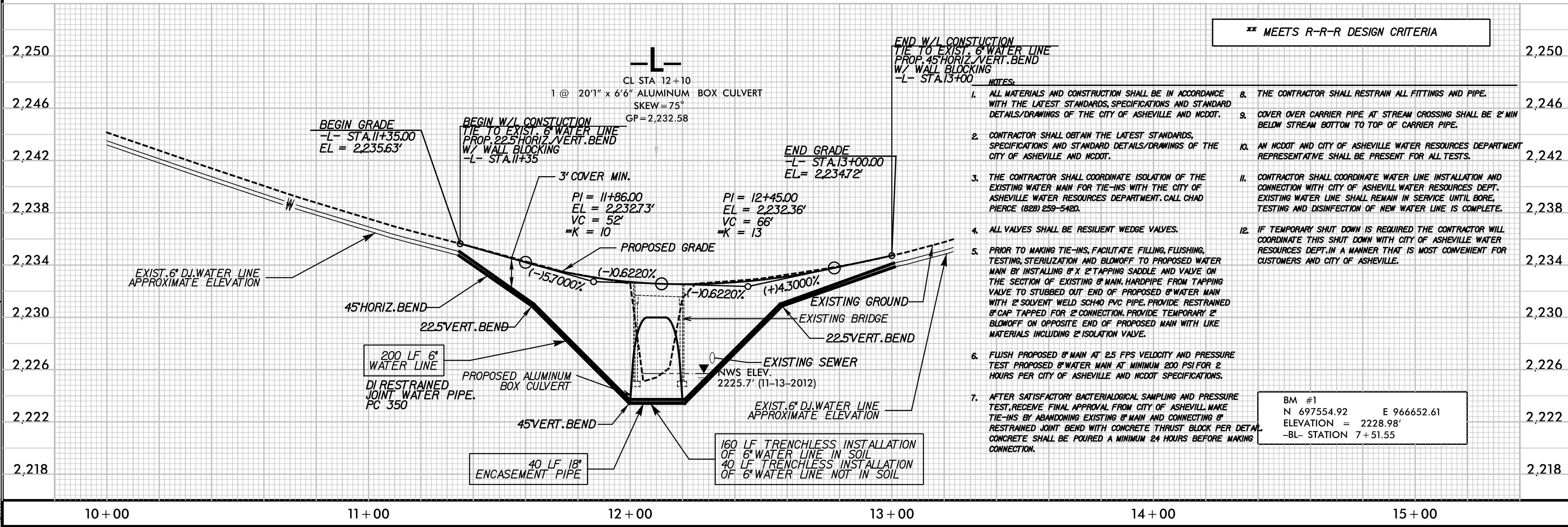
Copyright © 1994 Vaughn & Melton, Inc. All Rights Reserved.

-L- CURVE DATA
 PI Sta 13+57.18
 $\Delta = 20^\circ 28' 00.0''$ (RT)
 $D = 17^\circ 37' 46.1''$
 $L = 116.09'$
 $T = 58.67'$
 $R = 325.00'$
 $SE = 0.04$
 $RO = 77'$

DENOTES CLASS 1 RIP RAP (STRUCTURAL ITEM)



NOTE: TOE OF RIP RAP EMBANKMENT BELOW NORMAL WATER SURFACE ELEVATION SHALL CONSIST OF NATIVE MATERIAL TO BE TAKEN FROM EXISTING CHANNEL AT A CLOSE PROXIMITY TO EMBANKMENT AREA.



- ** MEETS R-R-R DESIGN CRITERIA**
- END W/L CONSTRUCTION TIE TO EXIST. 6\"/>

NOTES:

 - ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
 - CONTRACTOR SHALL OBTAIN THE LATEST STANDARDS, SPECIFICATIONS AND STANDARD DETAILS/DRAWINGS OF THE CITY OF ASHEVILLE AND NCDOT.
 - THE CONTRACTOR SHALL COORDINATE ISOLATION OF THE EXISTING WATER MAIN FOR TIE-INS WITH THE CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. CALL CHAD PIERCE (828) 259-5420.
 - ALL VALVES SHALL BE RESILIENT WEDGE VALVES.
 - PRIOR TO MAKING TIE-INS, FACILITATE FILLING, FLUSHING, TESTING, STERILIZATION AND BLOWOFF TO PROPOSED WATER MAIN BY INSTALLING 8\"/>
 - FLUSH PROPOSED 8\"/>
 - AFTER SATISFACTORY BACTERIOLOGICAL SAMPLING AND PRESSURE TEST, RECEIVE FINAL APPROVAL FROM CITY OF ASHEVILLE MAKE TIE-INS BY ABANDONING EXISTING 8\"/>

8. THE CONTRACTOR SHALL RESTRAIN ALL FITTINGS AND PIPE.

9. COVER OVER CARRIER PIPE AT STREAM CROSSING SHALL BE 2' MIN BELOW STREAM BOTTOM TO TOP OF CARRIER PIPE.

10. AN NCDOT AND CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT REPRESENTATIVE SHALL BE PRESENT FOR ALL TESTS.

11. CONTRACTOR SHALL COORDINATE WATER LINE INSTALLATION AND CONNECTION WITH CITY OF ASHEVILLE WATER RESOURCES DEPT. EXISTING WATER LINE SHALL REMAIN IN SERVICE UNTIL BORE, TESTING AND DISINFECTION OF NEW WATER LINE IS COMPLETE.

12. IF TEMPORARY SHUT DOWN IS REQUIRED THE CONTRACTOR WILL COORDINATE THIS SHUT DOWN WITH CITY OF ASHEVILLE WATER RESOURCES DEPT. IN A MANNER THAT IS MOST CONVENIENT FOR CUSTOMERS AND CITY OF ASHEVILLE.

BM #1
 N 697554.92 E 966652.61
 ELEVATION = 2228.98'
 -BL- STATION 7+51.55

8/17/99
 REVISIONS
 4/24/2015
 6:\transportation\TR12.018 (Div 13 Bridge Replacements)\B1 686 Buncombe\Ut11.ttes\Fdy_Ut_Proj\BUN686.Ut_UC3.psh.dgn

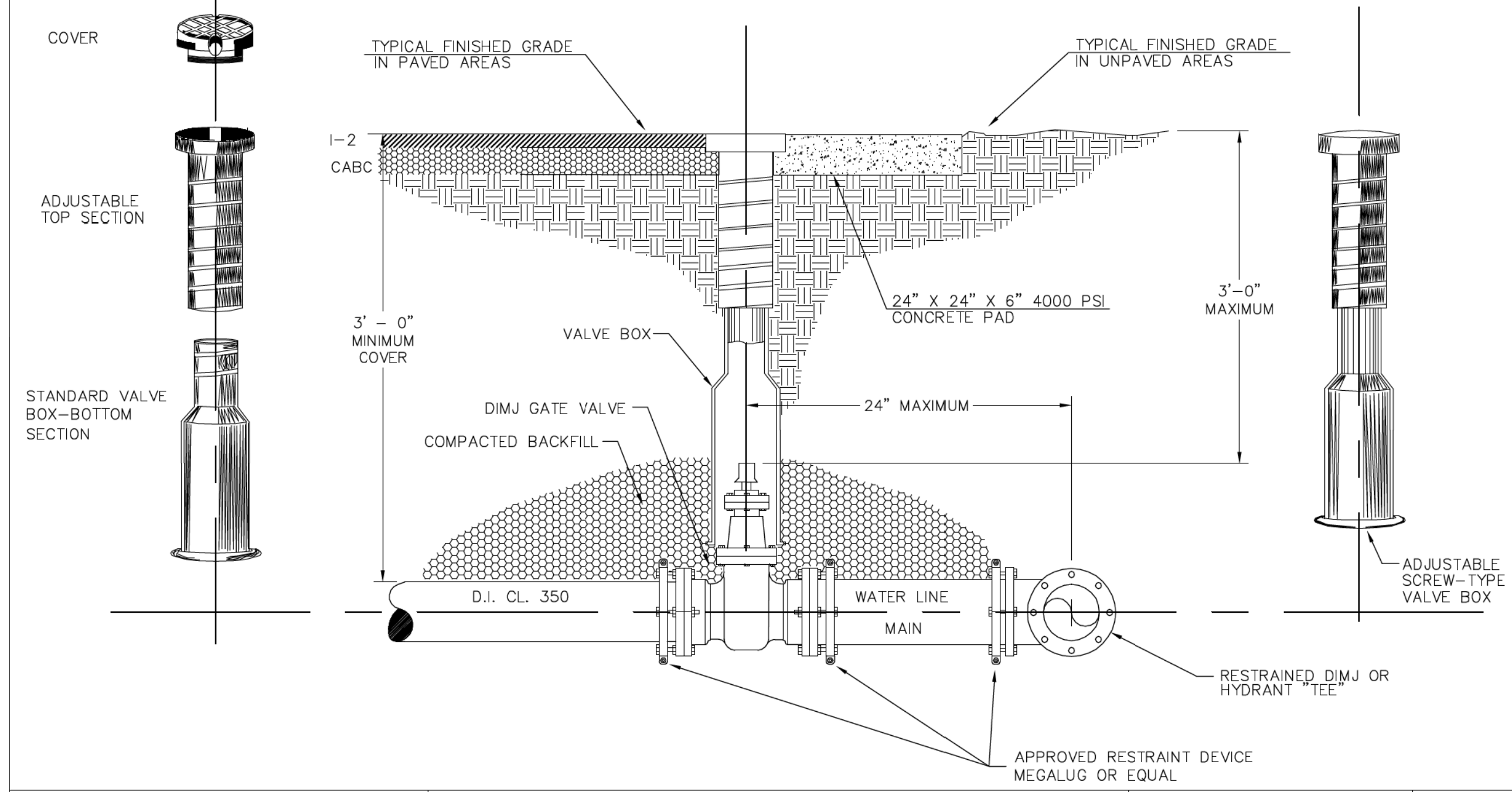
UTILITIES DETAIL SHEET

SEPI ENGINEERING & CONSTRUCTION
 1025 Wade Avenue
 Raleigh, NC 27605
 Tel: 919-789-9977
 Fax: 919-789-9591
 License: C-2197

PROJECT REFERENCE NO. **17BP13.R.39**
 SHEET NO. **UC-4**

GENERAL NOTES:

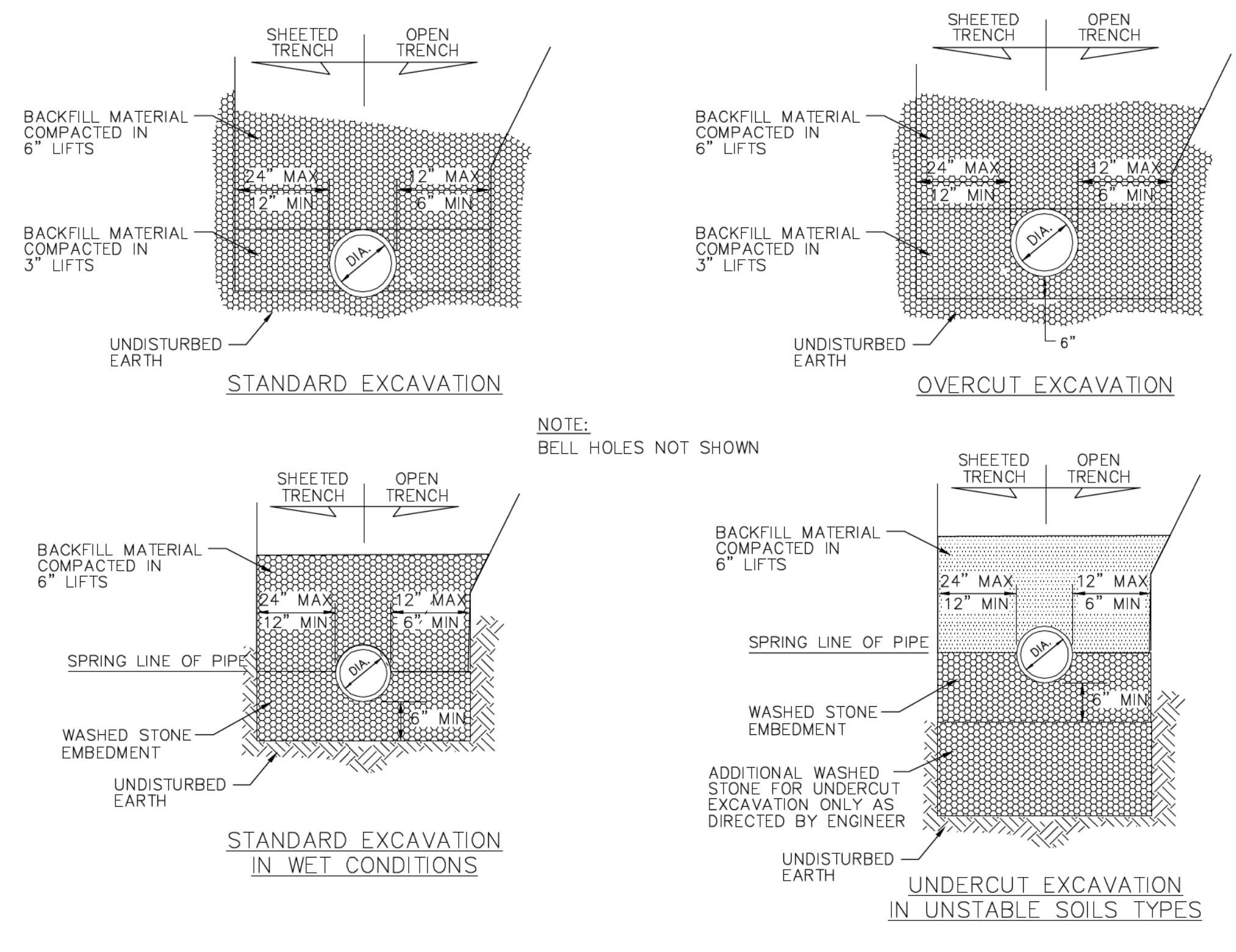
1. VALVE BOX SHALL NOT CONTACT WATER MAIN OR VALVE.
2. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR IMPROVED PAVED SURFACES.
3. VALVE BOX ADJUSTMENT MUST BE DONE BY ADJUSTING/RAISING THE TOP SECTION OF THE EXISTING ADJUSTABLE SCREW-TYPE VALVE BOX TO GRADE OR BY INSTALLING A NEW VALVE BOX TOP SECTION. THE USE OF PAVING RINGS OR ADJUSTING C.I. SLEEVES IS NOT ALLOWED.



City of Asheville, NC
WATER ENGINEERING DIVISION

TYPICAL VALVE & VALVE BOX INSTALLATION / ADJUSTMENT

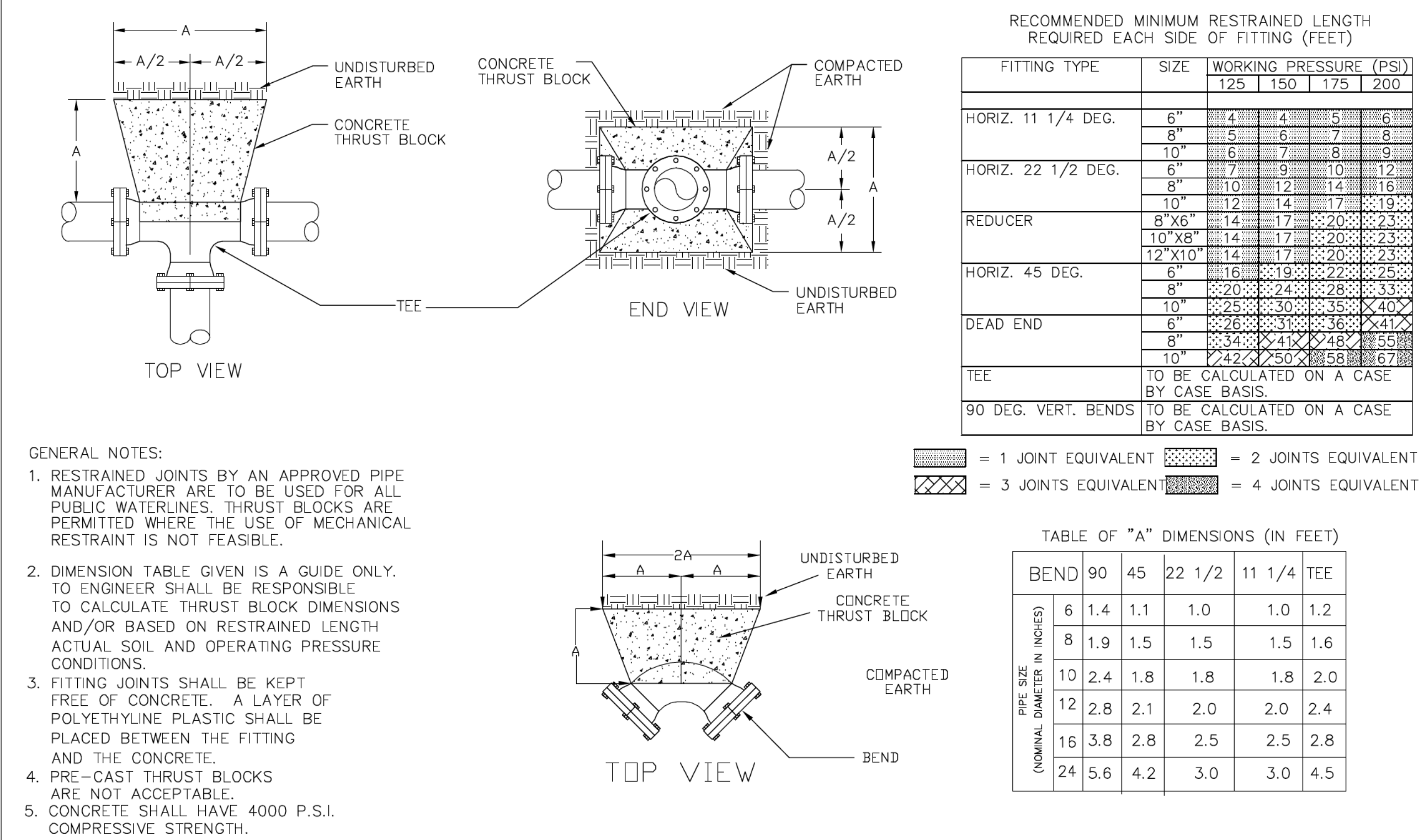
DATE	REVISIONS DESCRIPTION	STD. NO.
6/2009	REVISED DETAIL FROM 6.06	W.18



City of Asheville, NC
WATER ENGINEERING DIVISION

TYPICAL TRENCH DETAIL

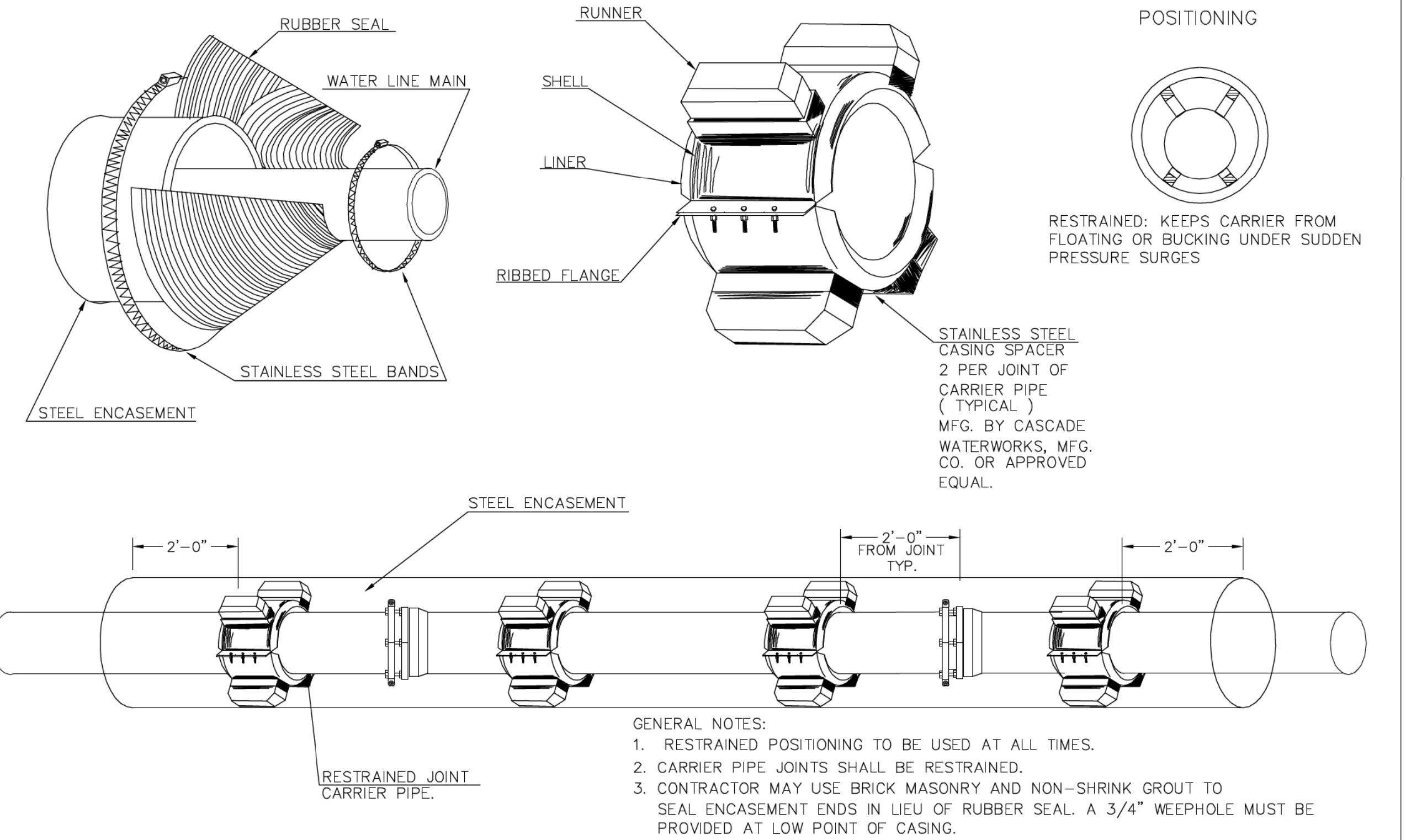
DATE	REVISIONS DESCRIPTION	STD. NO.
6/2009	REVISED DETAIL FROM 6.19	W.21



City of Asheville, NC
WATER ENGINEERING DIVISION

THRUST BLOCK FOR FITTINGS & RESTRAINING REQUIREMENTS

DATE	REVISIONS DESCRIPTION	STD. NO.
6/2009	REVISED DETAIL FROM 6.13	W.22
10/2011	NOTE 1 REVISED	



City of Asheville, NC
WATER ENGINEERING DIVISION

CARRIER PIPE IN STEEL ENCASEMENT

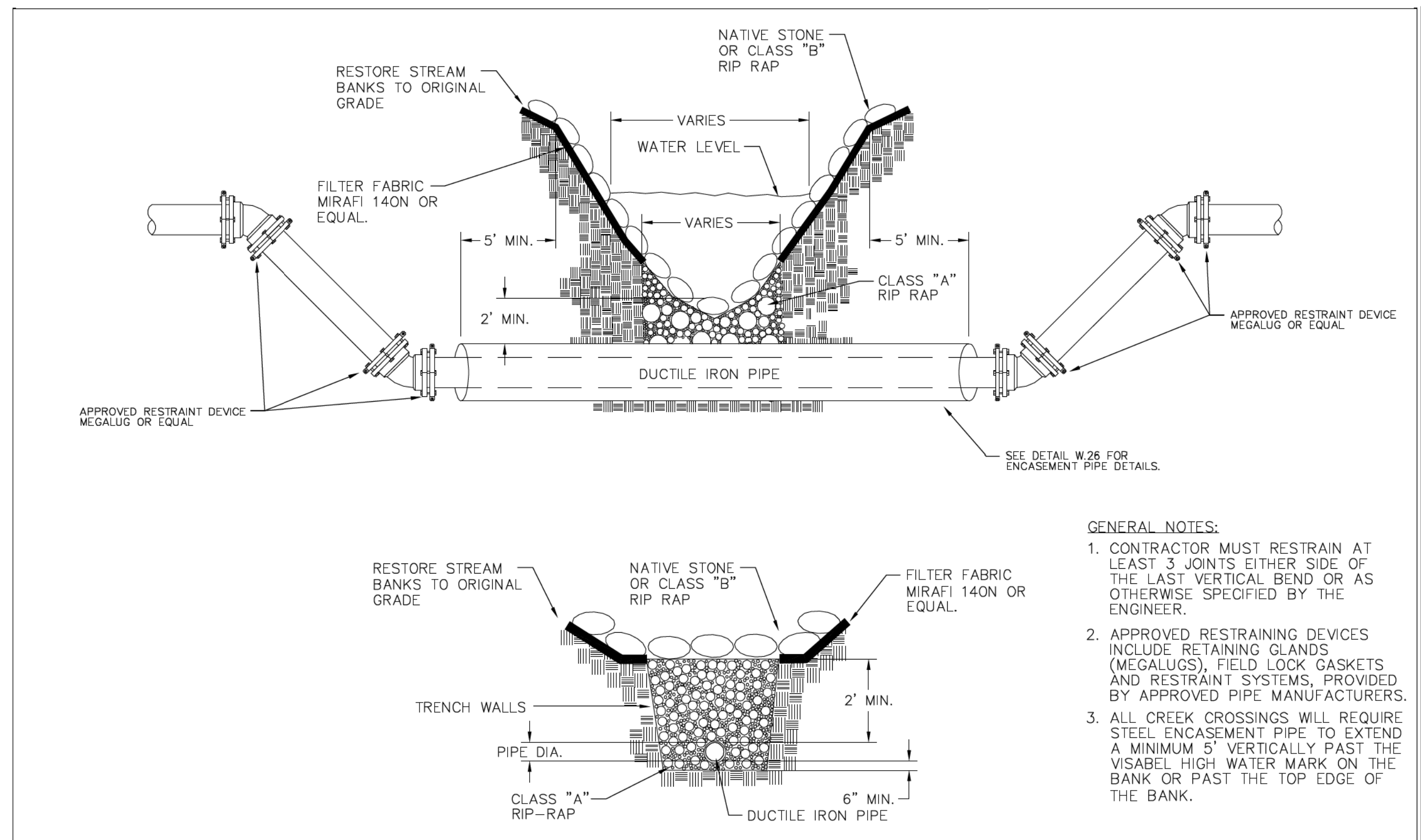
DATE	REVISIONS DESCRIPTION	STD. NO.
6/2009	REVISED DETAIL FROM 6.08	W.26

5/14/99
 4/24/2015
 G:\Transportation\TR12.08 (Div 13 Bridge Replacements)\BR 686 Buncombe\Utilities\UT\Pro\BUN686_UT_dtl-I.dgn
 miles

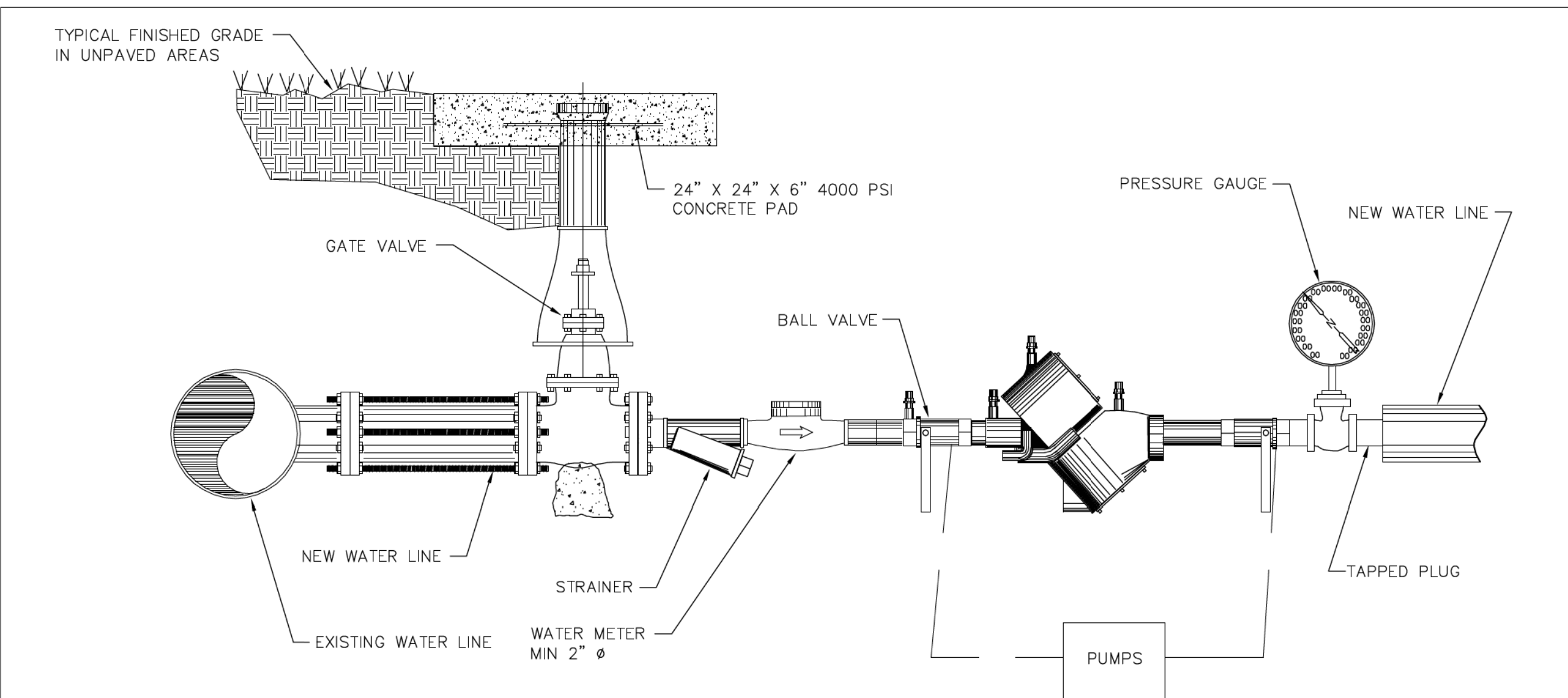
UTILITIES DETAIL SHEET

SEPI
ENGINEERING & CONSTRUCTION

1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197



- GENERAL NOTES:**
1. CONTRACTOR MUST RESTRAIN AT LEAST 3 JOINTS EITHER SIDE OF THE LAST VERTICAL BEND OR AS OTHERWISE SPECIFIED BY THE ENGINEER.
 2. APPROVED RESTRAINING DEVICES INCLUDE RETAINING GLANDS (MEGALUGS), FIELD LOCK GASKETS AND RESTRAINT SYSTEMS, PROVIDED BY APPROVED PIPE MANUFACTURERS.
 3. ALL CREEK CROSSINGS WILL REQUIRE STEEL ENCASEMENT PIPE TO EXTEND A MINIMUM 5' VERTICALLY PAST THE VISABEL HIGH WATER MARK ON THE BANK OR PAST THE TOP EDGE OF THE BANK.



- GENERAL NOTES:**
1. PRIOR TO CONNECTING TO THE EXISTING WATERLINE, THE NEW WATER LINE WILL BE PRESSURE TESTED, DISINFECTED AND A CLEAR WATER SAMPLE OBTAINED.
 2. ALL WATER FOR FILLING AND FLUSHING OF NEW WATER LINE WILL BE DRAWN THROUGH THE DOUBLE CHECK VALVE ASSEMBLY.
 3. THE COSTS FOR PROVIDING DOUBLE CHECK VALVE ASSEMBLY AND SLEEVE NECESSARY FOR FINAL CONNECTION WILL BE INCIDENTAL TO THE WATER LINE INSTALLATION.
 4. CONTRACTOR WILL BE REQUIRED TO HAVE WATER METER TESTED TO MEET ACCURACY STANDARDS OF AWWA C700, BY THE CITY OF ASHEVILLE WATER MAINTENANCE DIVISION ANNUALLY. METER MUST BEAR A CERTIFICATION TAG AT ALL TIMES.

City of Asheville, NC
WATER ENGINEERING DIVISION

CREEK CROSSING BELOW CREEK BOTTOM		STD. NO.
		W.27
DATE	REVISIONS	
6/2009	REVISED DETAIL FROM 6.23	

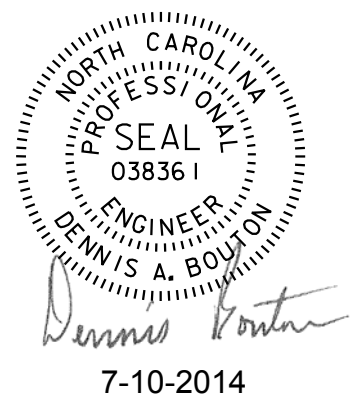
City of Asheville, NC
WATER ENGINEERING DIVISION

NEW WATER LINE PRESSURE TEST BACKFLOW PREVENTION ASSEMBLY		STD. NO.
		W.28
DATE	REVISIONS	
6/2009	REVISED DETAIL FROM 6.21	

4/24/2015 6:00 AM G:\Transportation\TR12.018 (Div 13 Bridge Replacements)\BR 686 Buncombe\Utilities\Rdy_UT\Pro\BUN686_UT_dH-2.dgn

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

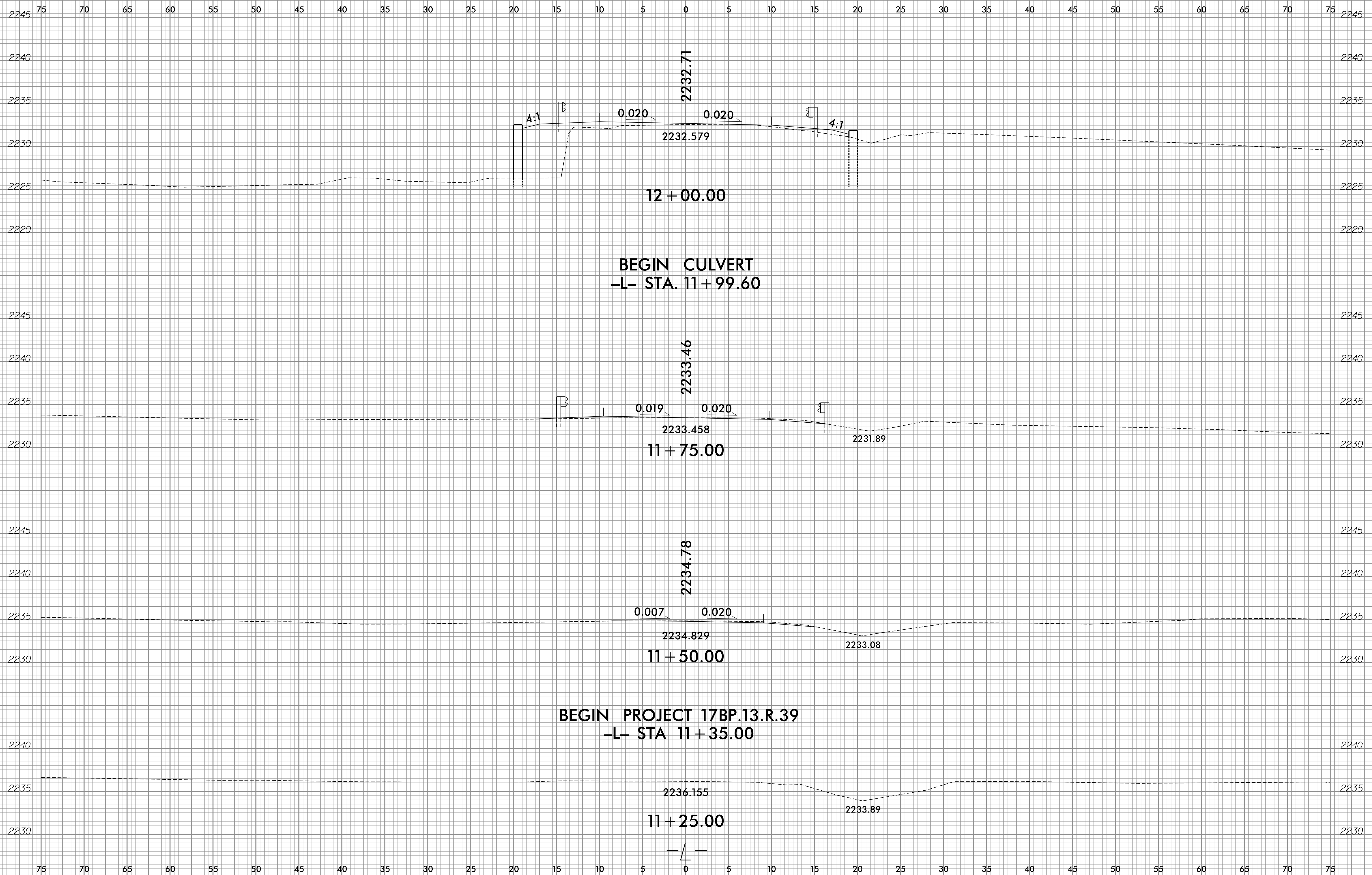
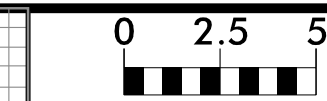
CROSS SECTION SUMMARY
 IN CUBIC YARDS



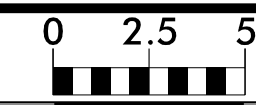
-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
11+35	0	0
11+50	1	0
11+75	1	1
11+99.60 BEGIN CULVERT	1	20
12+20.40 END CULVERT	0	31
12+25	0	8
12+50	0	36
12+75	0	34
13+00	0	14

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

Approximate quantities only. Pavement removal, unclassified excavation, borrow excavation, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for "grading".



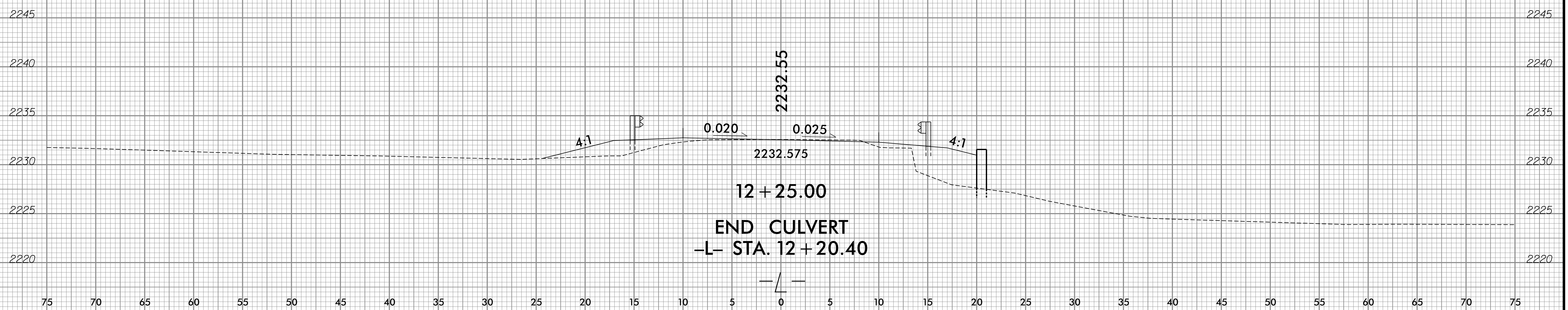
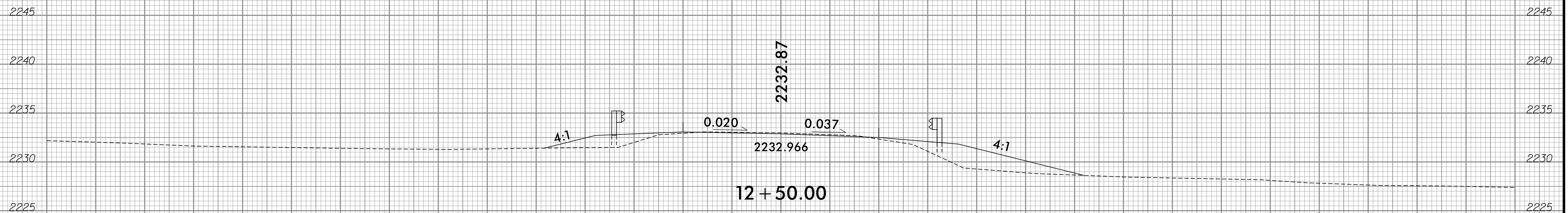
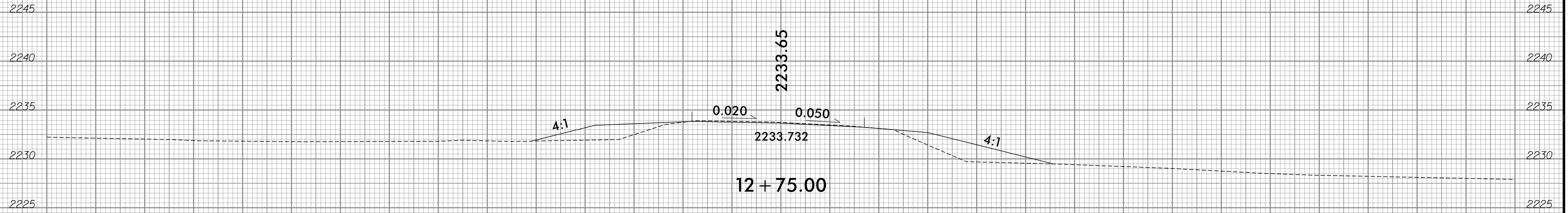
8/23/99



PROJ. REFERENCE NO.
17BP.13.R.39

SHEET NO.
X-2

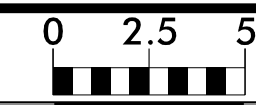
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75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

***** SYSTEM *****
***** DRAWING *****
***** PLANVIEW *****

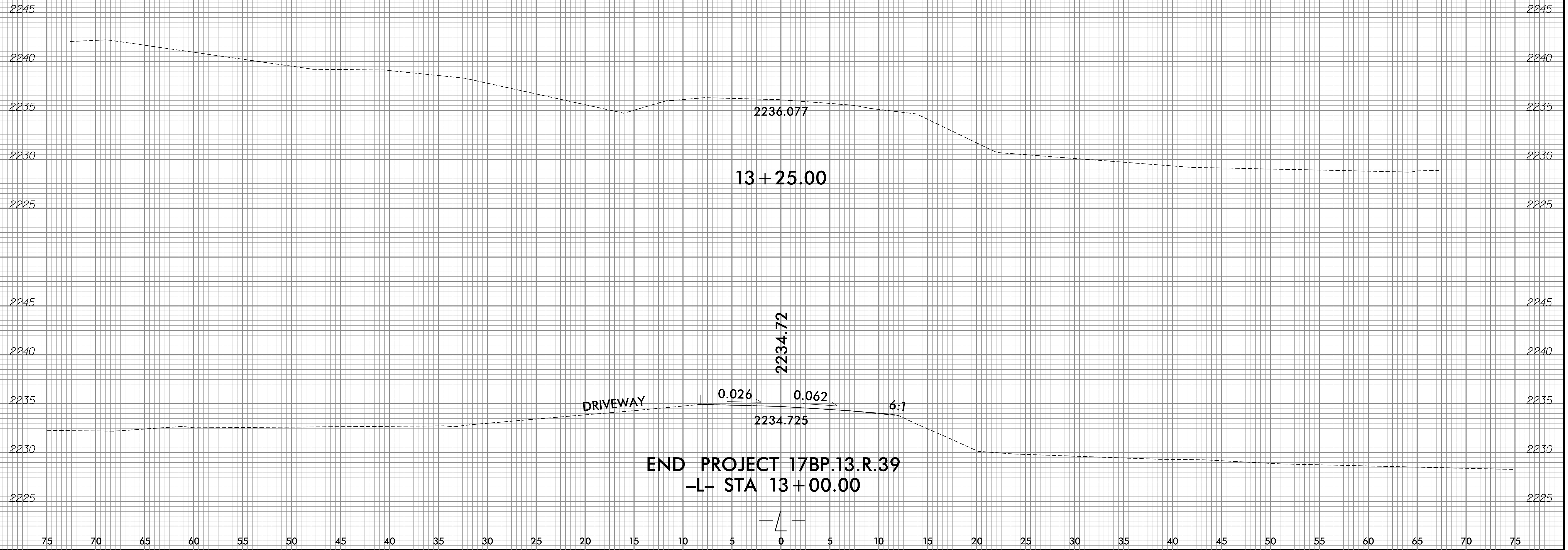
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PROJ. REFERENCE NO. 17BP.13.R.39

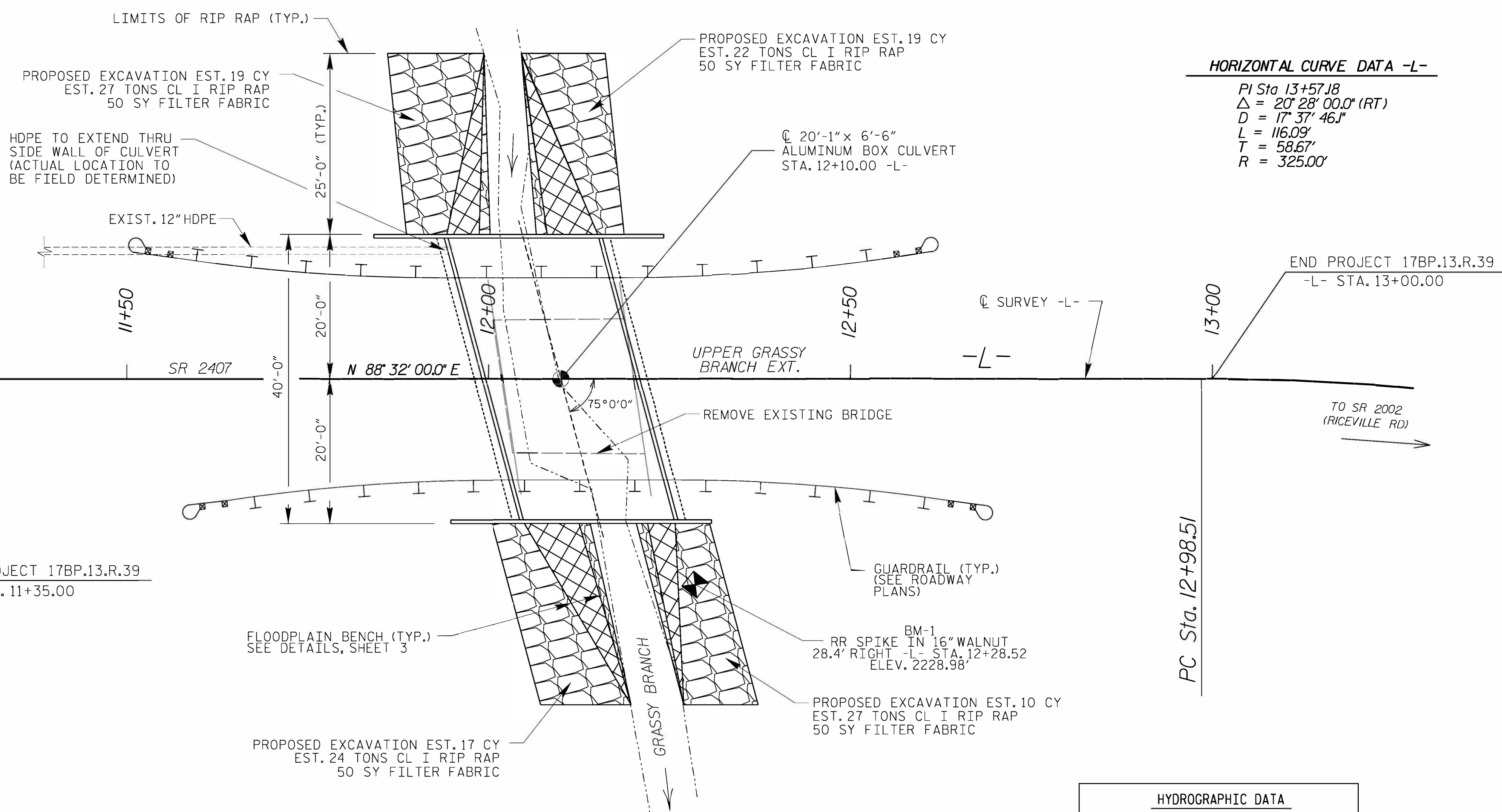
SHEET NO. X-3

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PLANNING SYSTEMS, INC.
10000 W. CENTURY BLVD.
SUITE 100
DENVER, CO 80231
TEL: 303.755.4000
WWW.PSINC.COM

NC GRID
NAD 83/NSRS 2007



HORIZONTAL CURVE DATA -L-
 PI Sta 13+57.18
 $\Delta = 20^\circ 28' 00.0''$ (RT)
 $D = 17^\circ 37' 46.1''$
 $L = 116.09'$
 $T = 58.67'$
 $R = 325.00'$

DESCRIPTION OF EXISTING BRIDGE
 1 SPAN @ 18'-3" 1/2" ASPHALT WEARING SURFACE ON
 4"x8" TIMBER FLOOR ON 6"x12" TIMBER JOISTS;
 END BENTS: TIMBER CAPS/TIMBER POST & SILLS; 19'-10" CLEAR ROADWAY

NOTES

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED ON TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON. PLAIN RIP RAP CLASS I (1'-6" THICK).

EXISTING BRIDGE SHALL BE REMOVED BY SAVING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE WATER.

MINIMUM DESIGN FILL IS 1.8'
 MAXIMUM DESIGN FILL < 4.0'

ASSUMED LIVE LOAD - HL-93 OR ALTERNATE.

ALUMINUM BOX CULVERT TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

NATIVE MATERIAL REMOVED FROM THE CHANNEL TO ALLOW FOR THE INSTALLATION OF THE CULVERT SHALL BE USED FOR BACKFILLING INSIDE THE CULVERT. SELECT BACKFILL AND COIR FIBER MATTING SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "EXCAVATION AND EMBANKMENT."

ADT = 600 VPD FOR YEAR 2025.

(-15.7000%
 (-10.6220%
 (-10.6220% (+4.3000%)

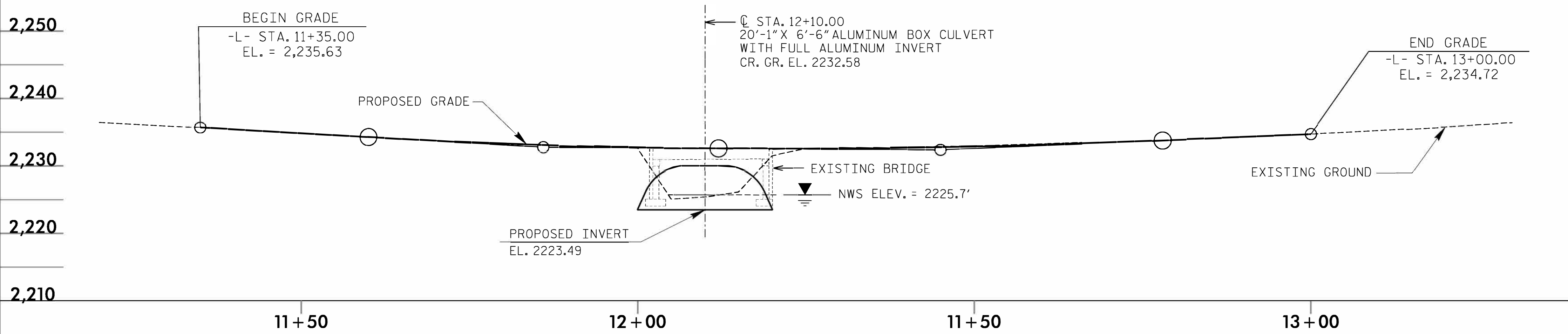
PI = 11+86.00 EL = 2,232.73' L = 52'
 PI = 12+45.00 EL = 2,232.36' L = 66'

GRADE DATA -L-

HYDROGRAPHIC DATA
 DESIGN DISCHARGE = 500 CFS
 DESIGN FREQUENCY = 25 YRS
 DESIGN HW ELEVATION = 2229.6 FT
 DRAINAGE AREA = 0.92 SQ. MI.
 BASE DISCHARGE (Q100) = 800 CFS
 BASE HW ELEVATION = 2232.47 FT

OVERTOPPING FLOOD DATA
 OVERTOPPING DISCHARGE = 800 CFS
 OVERTOPPING FREQUENCY = 100% YRS
 OVERTOPPING ELEVATION = 2233.6 FT

TOTAL STRUCTURE QUANTITIES	
ALUMINUM BOX CULVERT	LUMP SUM
REMOVAL OF EXISTING STRUCTURE, STA. 12+10	LUMP SUM
CULVERT EXCAVATION, STA. 12+10	LUMP SUM
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	30 TONS
CHANNEL EXCAVATION	65 CY
RIP RAP, CLASS I (1'-6" THK.)	100 TONS
GEOTEXTILE FOR DRAINAGE	200 SY
COIR FIBER MAT	30 SY



PROFILE ALONG C SURVEY -L-

V&M
Vaughn & Melton
 Consulting Engineers

Charlotte, North Carolina 704-397-0568
 Tri-Cities, Tennessee 423-467-4400
 Knoxville, Tennessee 865-548-5800
 Asheville, North Carolina 828-253-2796
 Middlesboro, Kentucky 606-348-8600
 Spartanburg, South Carolina 864-574-4775

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7-10-2014

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 038361
 ENGINEER
 DENNIS A. BOULTON

Dennis A. Boulton

PROJECT NO. 17BP.13.R.39
 BUNCOMBE COUNTY
 STATION: 12+10.00 -L-
 REPLACES BRIDGE NO. 686

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

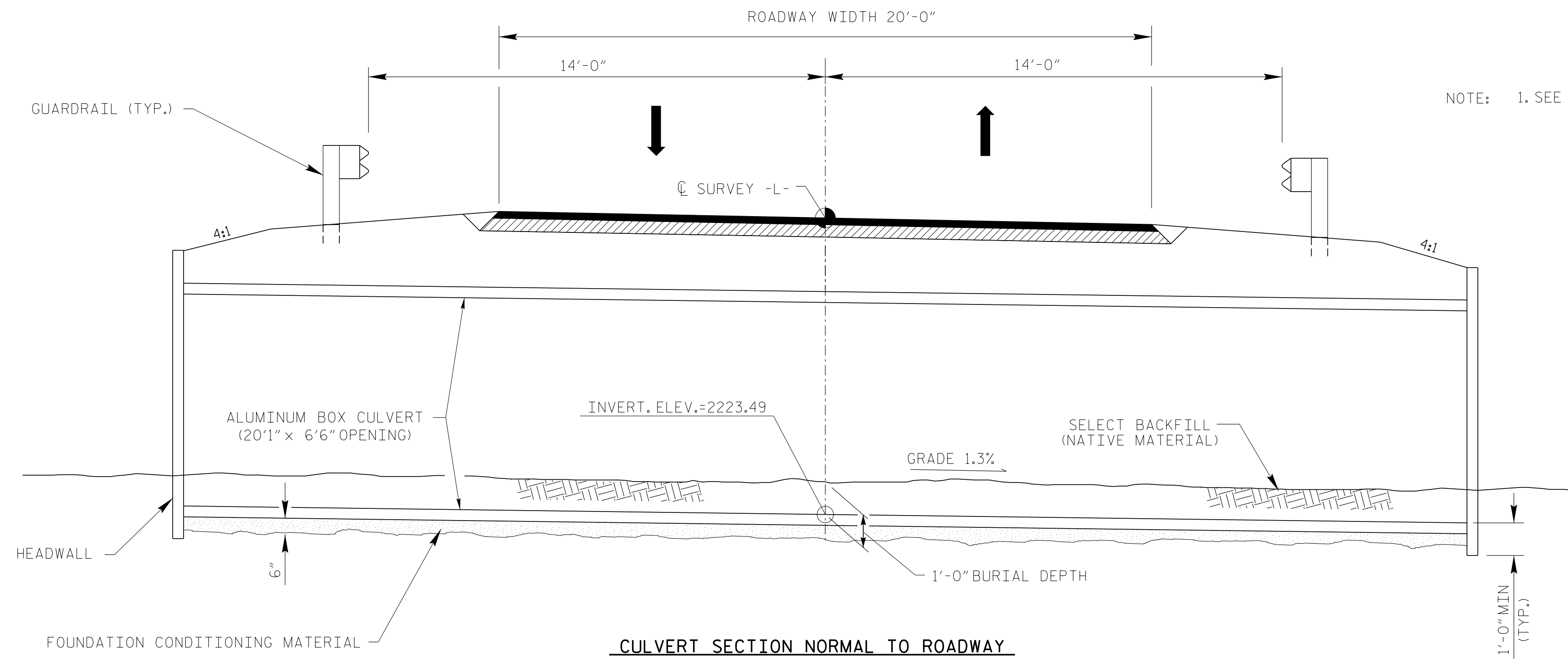
BRIDGE NO. 686 ON SR 2407
 OVER GRASSY BRANCH

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1		7/13	3		
2		11/13	4		
		11/13			

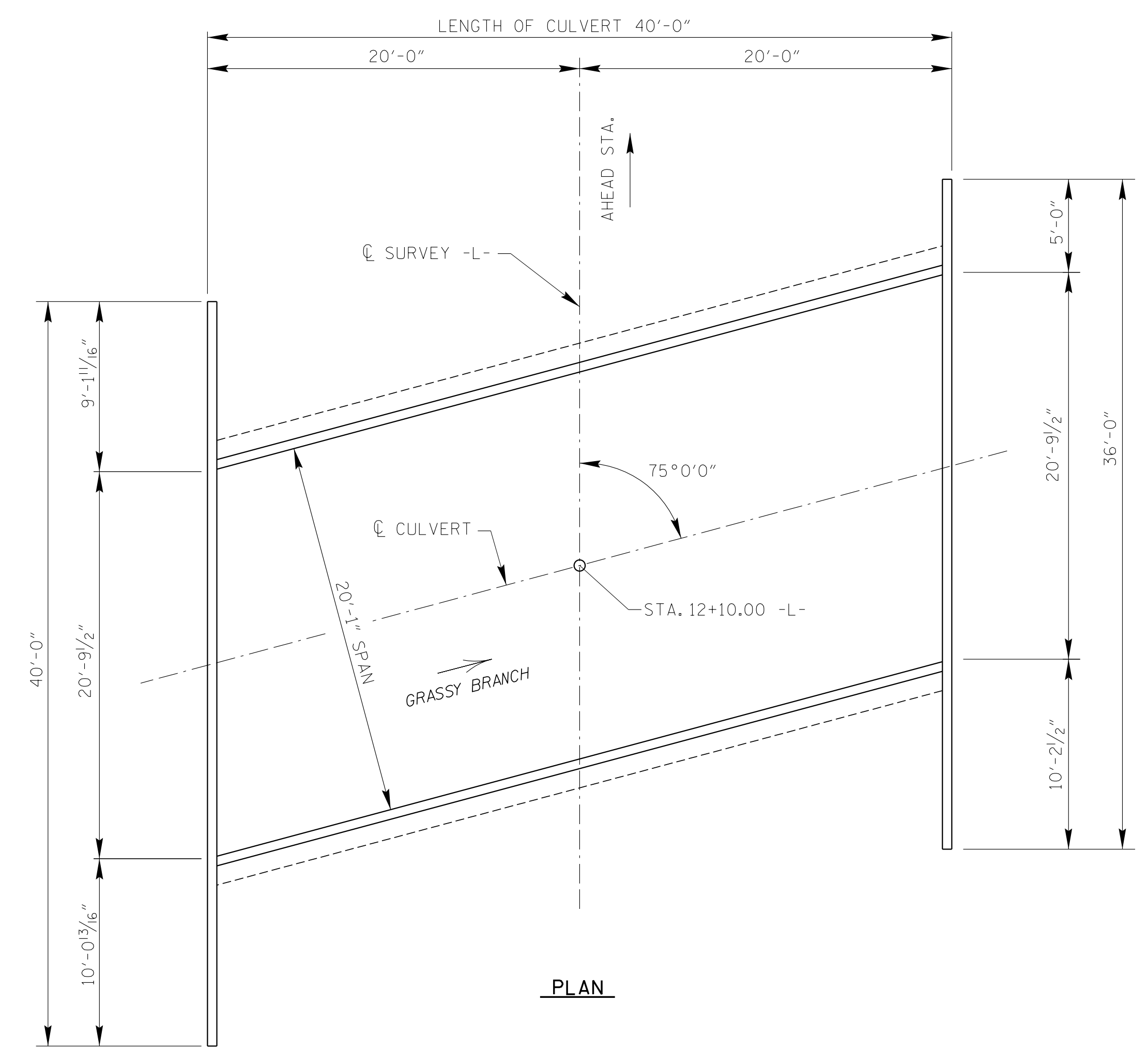
DWN. BY: DAB
 CHKD. BY: HLW
 DES. EGR. OF RECORD: DAB

DATE: 7/13
 DATE: 11/13
 DATE: 11/13

SHEET NO. S-1
 TOTAL SHEETS 3



NOTE: 1. SEE STD. DWG. 862.01 (SHEET 10 OF 12) FOR GUARDRAIL PLACEMENT OVER CULVERT.



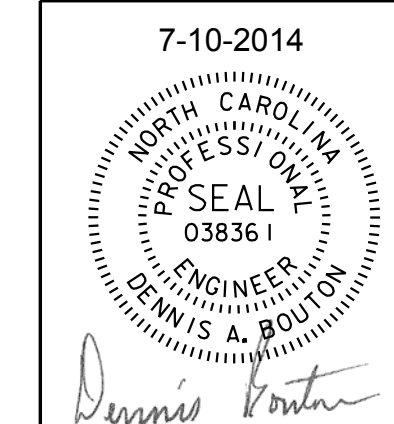
V&M
Vaughn & Melton
 Consulting Engineers

Charlotte, North Carolina 704-357-0588
 Tri-Cities, Tennessee 423-467-8408
 Knoxville, Tennessee 865-546-5800
 Middlesboro, Kentucky 606-248-6600
 Spartanburg, South Carolina 864-574-4715

Asheville, North Carolina 828-253-2796

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PROJECT NO. 17BP.13.R.39
BUNCOMBE COUNTY
 STATION: 12+10.00 -L-
 REPLACES BRIDGE NO. 686



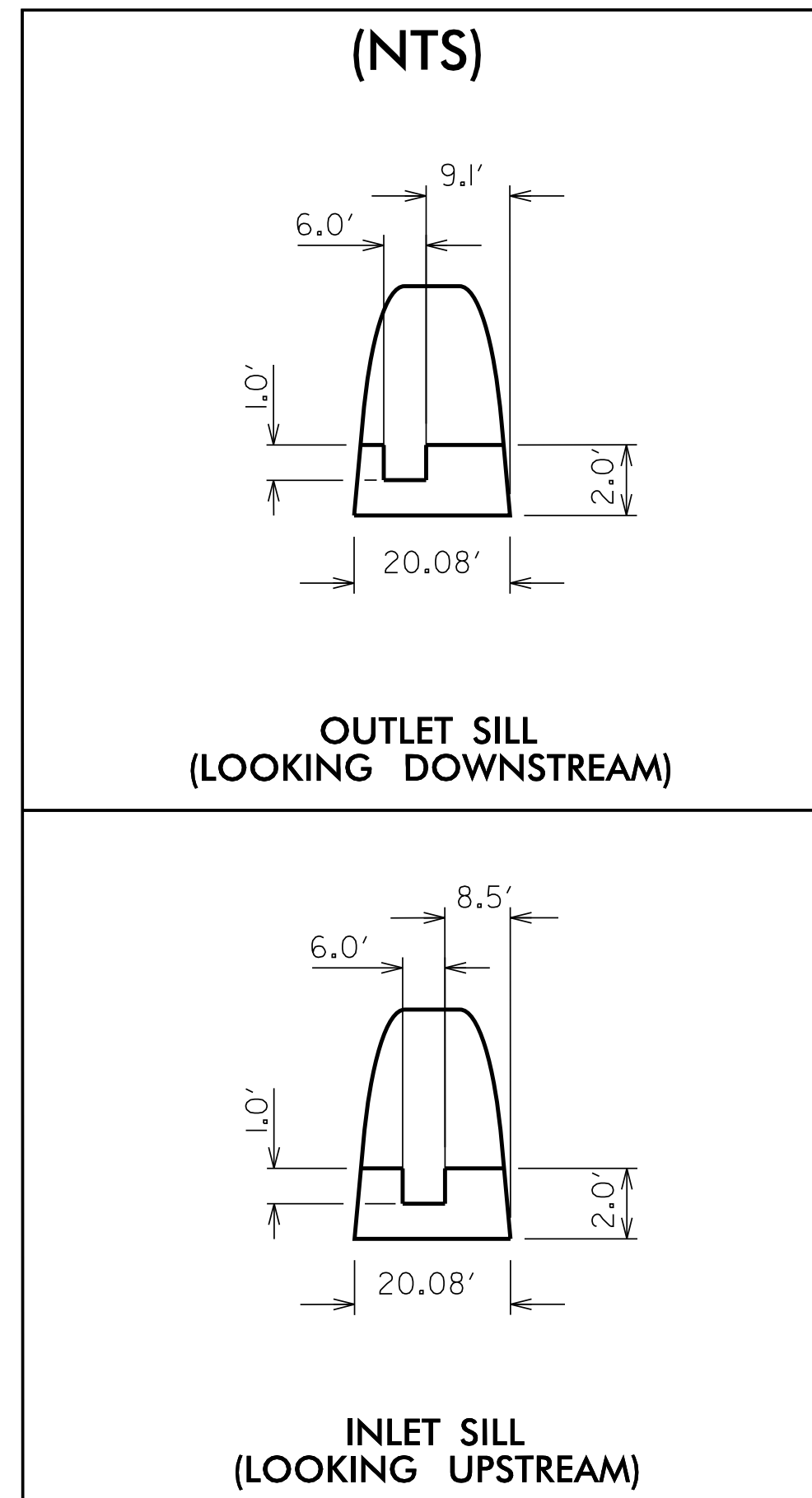
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**20'-1" x 6'-6"
 ALUMINUM BOX
 CULVERT**

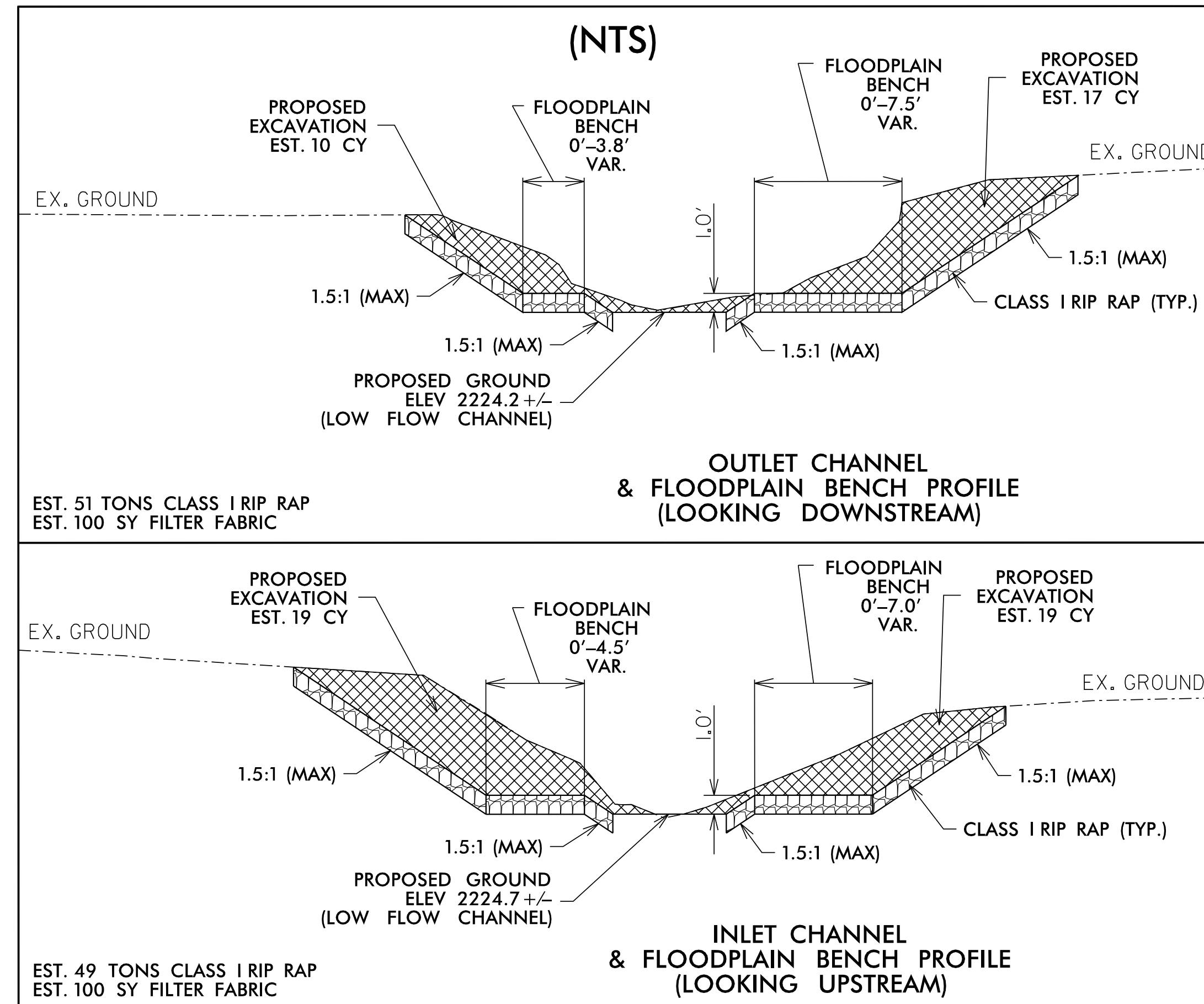
NO.	REVISIONS		REVISIONS		SHEET NO.
	BY:	DATE:	NO.	BY:		DATE:
1	DAB	7/13	3		S-2
2	HLW	11/13	4		
					TOTAL SHEETS
					3

DWN. BY: DAB DATE: 7/13
 CHKD. BY: HLW DATE: 11/13
 DES. EGR. OF RECORD: DAB DATE: 11/13

**DETAIL C:
SILL DETAILS @ INLET & OUTLET**



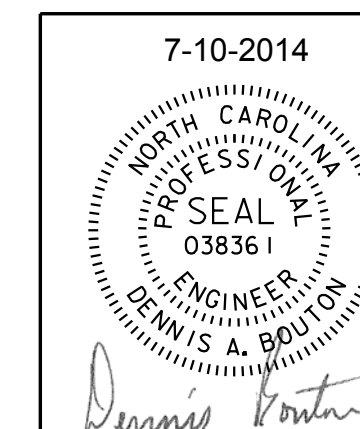
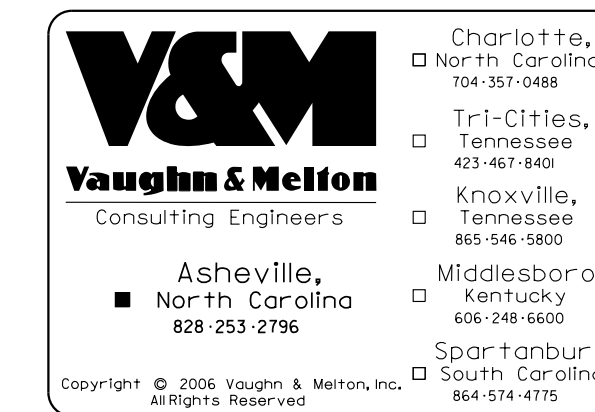
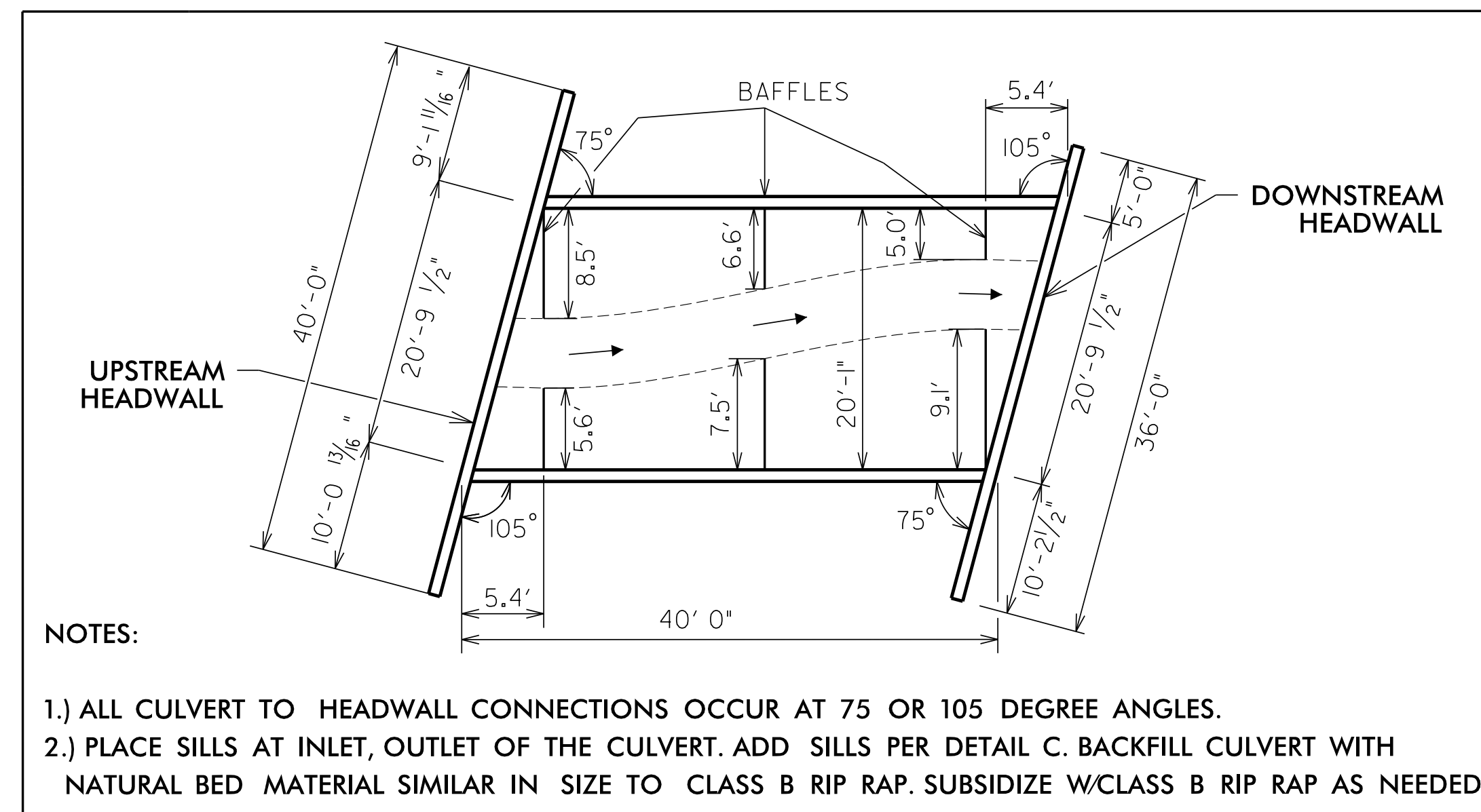
DETAIL A: US & DS FLOODPLAIN BENCH PROFILE



NOTES:

- 1.) FILTER FABRIC TO BE USED BENEATH CLASS I RIP RAP IN ALL AREAS.
- 2.) COIR FIBER MATTING TO BE USED THROUGH CULVERT INTERNAL CHANNEL.
- 3.) RIP RAP IS TO BE CLASS II

DETAIL B: WINGWALL & BAFFLE LAYOUT



PROJECT NO. 17BP.13.R.39
BUNCOMBE COUNTY
 STATION: 12+10.00 -L-
 REPLACES BRIDGE NO. 686

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SILL & BAFFLE DETAILS

DWN. BY:		DATE:		NO.		BY:		DATE:		SHEET NO.	
DAB		7/13		1		3				S-3	
CHKD. BY:		DATE:		NO.		BY:		DATE:		TOTAL SHEETS	
HLW		11/13		2		4				3	
DES. EGR. OF RECORD:		DATE:		NO.		BY:		DATE:		TOTAL SHEETS	
DAB		11/13		2		4				3	

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	- -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	- - - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN		
OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.
IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.
DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.
WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".
EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.
WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.
METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN