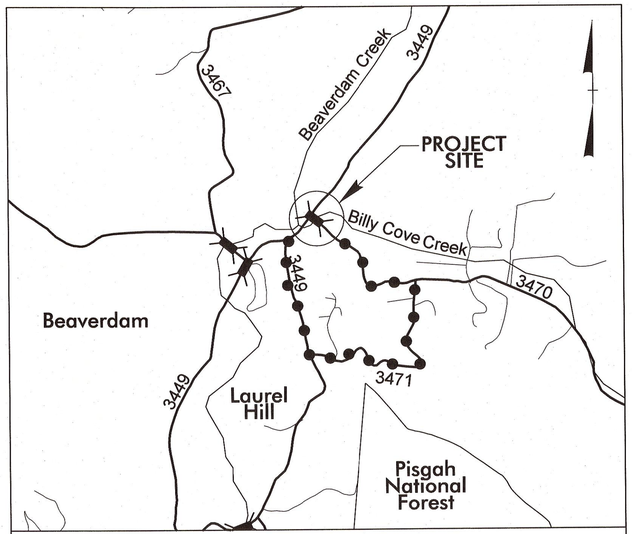
09/08/99

TIP PROJECT:

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 2 For Conventional Symbols



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.29	1	

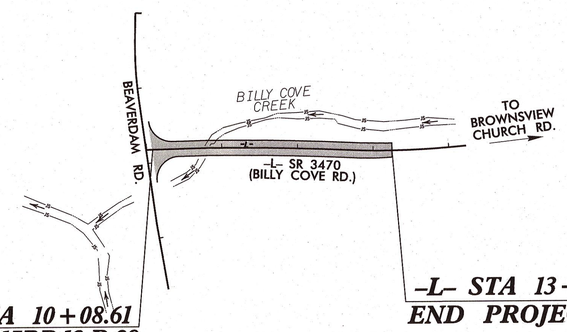
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
		PE
		R/W, UTIL

LOCATION: BRIDGE NO. 100401 OVER BILLY COVE CREEK ON SR 3470

TYPE OF WORK: GRADING, DRAINAGE, AND PAVING

NAD 83/86

4



-L- STA 10+08.61
BEGIN PROJECT 17BP.13.R.29

-L- STA 13+25.00
END PROJECT 17BP.13.R.29

02-MAY-2014 13:37
J:\Bunc_401\Roadway\Proj\BUNC_401_Rdy_tsh.dgn
$$$$USERNAME$$$$

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

LOCAL

ADT 2010 = 450
DHV = %
D = %
T = 6 % *
V = 60 MPH**

SUB-REGIONAL TIER

* (TTST =3% + DUAL 3%)

** NO EXCEPTION REQUIRED DUE TO STOP CONDITION

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.29 = 0.088 MILES

PARSONS
RALEIGH, NORTH CAROLINA

Prepared for the North Carolina Department of Transportation In the office of:
5540 Centerview Drive
Suite 217
Raleigh NC 27606
License No: F-0246
Bus: 919-851-1349
Fax: 919-851-2103

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

TIMOTHY D. GOINS, PE
PROJECT ENGINEER

J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: TROY S. WILSON

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER

5/15/14 P.E.
SIGNATURE:

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS

5-14-14 P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.: 17BP.13.R.29
SHEET NO.: 1-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. BOIS
Timothy D. Bois 5-14-19

INDEX OF SHEETS

SHEET NUMBER SHEET

1 TITLE SHEET

1-A INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS

2 CONVENTIONAL SYMBOLS

3 SUMMARY OF GUARDRAIL QUANTITIES AND EARTHWORK SUMMARY, REMOVAL OF EXISTING ASPHALT PAVEMENT.

4 PLAN/PROFILE SHEET

5 DRAINAGE DETAILS SHEET

TMP-1 THRU TMP-2 TRANSPORTATION MANAGEMENT PLANS

PMP-1 PAVEMENT MARKING PLAN

EC-1 THRU EC-6 EROSION CONTROL PLANS

SGN-1 SIGNING PLAN

UO-1 UTILITY BY OTHERS PLAN

X-0 CROSS-SECTION SUMMARY SHEET

X-1 THRU X-7 CROSS-SECTIONS

S-1 THRU S-2 STRUCTURE PLANS

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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:

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	
806.01	Concrete Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04
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 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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Duke/Progress Energy - Power

AT&T - Telephone

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

8/17/99
02-MAY-2014 13:37
J:\Proj\BUNC_401_Rdy_psh_1A.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	2

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 — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- 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 — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — W
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

COMPUTED BY: JMP	DATE: 10-2013
CHECKED BY: TDG	DATE: 10-2013

12/06/07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	3

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK.	BORROW	WASTE
12+10.00 -L-	14+30.00 -L-	140		243	103	
PROJECT TOTALS:		140		243	103	
SHOULDER BORROW				7.8	7.8	
LOSS DUE TO CLEARING & GRUBBING PER GEOTECH RECS		-20			20	
EST TO REPLACE TOP SOIL ON BORROW PIT					6.5	
GRAND TOTALS:		120		250.8	137.3	
SAY:		120			140	

UNDERCUT FOR SUBGRADE STABILITY CONTINGENCY PER GEOTECH RECS: 25 CY
GEOTEXTILE FOR SOIL STABILIZATION CONTINGENCY PER GEOTECH RECS: 25 SY
SELECT GRANULAR MATERIAL FOR EMBANKMENT/BACKFILL CONTINGENCY PER GEOTECH RECS: 25 CY
SELECT GRANULAR MATERIAL CONTINGENCY PER GEOTECH RECS: 10 CY

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	10+25	10+74 (BEGIN EX. BRIDGE)	CL	107.35
-L-	10+94 (END EX. BRIDGE)	11+50	CL	106.15
			TOTAL:	213.50
			SAY:	220

"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

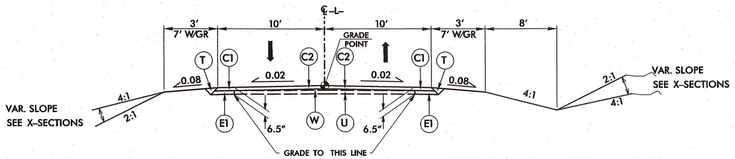
GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350 (TL-3)	M-350	III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	10+17.83	11+43.57	RT	106.25	37.5		10+55.00	10+86.00	4	7	6.25	50	1	1			1						1							
-L-	10+30.71	11+80.07	LT	150			11+17.00	10+87.00	4	7	50	50	1	1			2													
TOTAL				256.25	37.5												3						1							
		DEDUCT FOR ANCHOR UNITS																												
		GRAU 350 TL-3 3 @ 50' =		-150																										
		GRAU AT-1 1 @ 6.25' =		-6.25																										
SAY				100	37.5		2 EA ADDITIONAL GUARDRAIL POSTS										3						1							

20-DEC-2013 10:54
$$$$USERNAME$$$$ e:\Proj\BUNC_401_Rdy_psh_3.dgn

8/17/99

REVISIONS



ROADWAY TYPICAL SECTION NO. 1

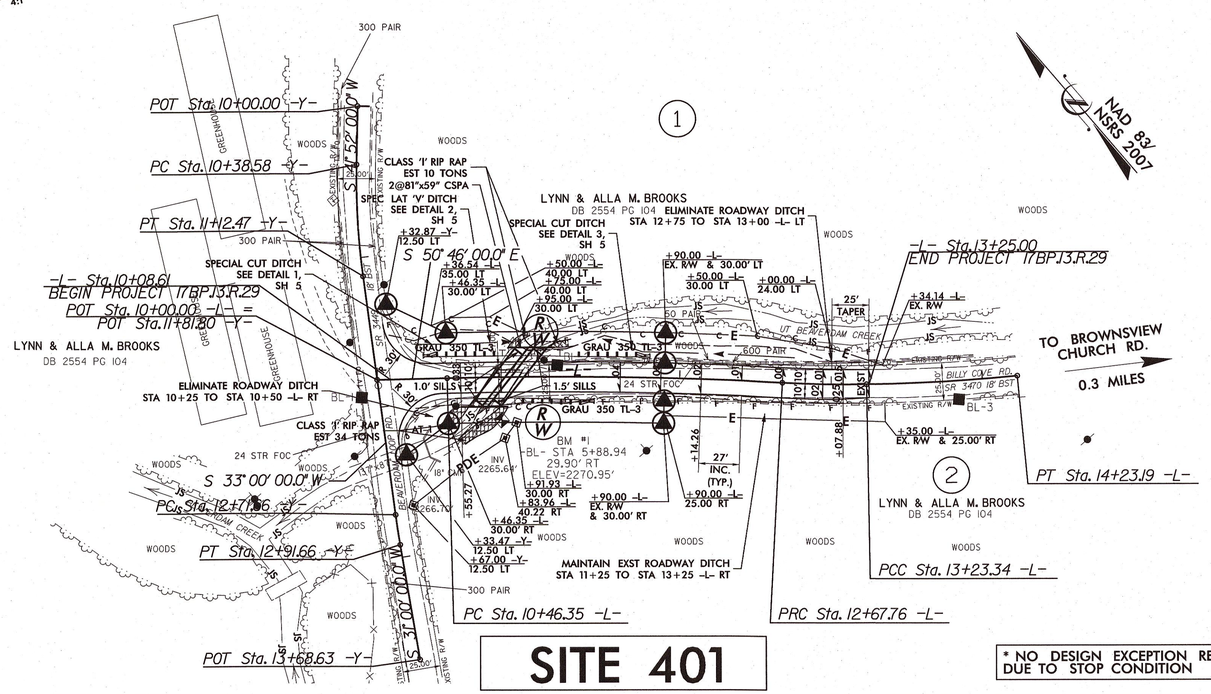
-L- STA. 10+08.16 TO STA. 10+25+/-
-L- STA. 10+25+/- TO STA. 11+50+/- (FULL DEPTH)
-L- STA. 11+50+/- TO STA. 13+25.00

PAVEMENT SCHEDULE	
C1	3" SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LIFTS
C2	3" OVERLAY, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LIFTS
E1	4" BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 456 LBS/SY
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W	WEDGING

-L-

PI Sta 11+57.11	PI Sta 12+95.56	PI Sta 13+73.29
Δ = 4° 25' 24.1" (RT)	Δ = 3° 58' 49.2" (LT)	Δ = 4° 29' 34.9" (LT)
D = 1° 59' 51.9"	D = 7° 09' 43.1"	D = 4° 30' 00.0"
L = 221.42'	L = 55.58'	L = 99.85'
T = 110.76'	T = 27.80'	T = 49.95'
R = 2,868.00'	R = 800.00'	R = 1,273.24'
SE = See plans	SE = See plans	
D.S. = 60 MPH	D.S. = 45 MPH	

RIGHT-OF-WAY AREAS										
PARCEL #	PROPERTY OWNER	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONST. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
1	LYNN & ALLA M. BROOKS	N/A	3975.10 SF	N/A	N/A	2551.31 SF	N/A	N/A	N/A
2	LYNN & ALLA M. BROOKS	N/A	2342.05 SF	N/A	N/A	1581.51 SF	1812.00 SF	N/A	N/A



SITE 401

* NO DESIGN EXCEPTION REQUIRED DUE TO STOP CONDITION

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. BOIN — Timothy D. Boin 5-19-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER MICHAEL S. ROBINSON — 5/15/14

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

EXISTING SPEED = 55-MPH (STAT.)
REASONABLE BRIDGE SPEED = 15-MPH
DESIGN SPEED = 60-MPH
ADT = 450 (2010)

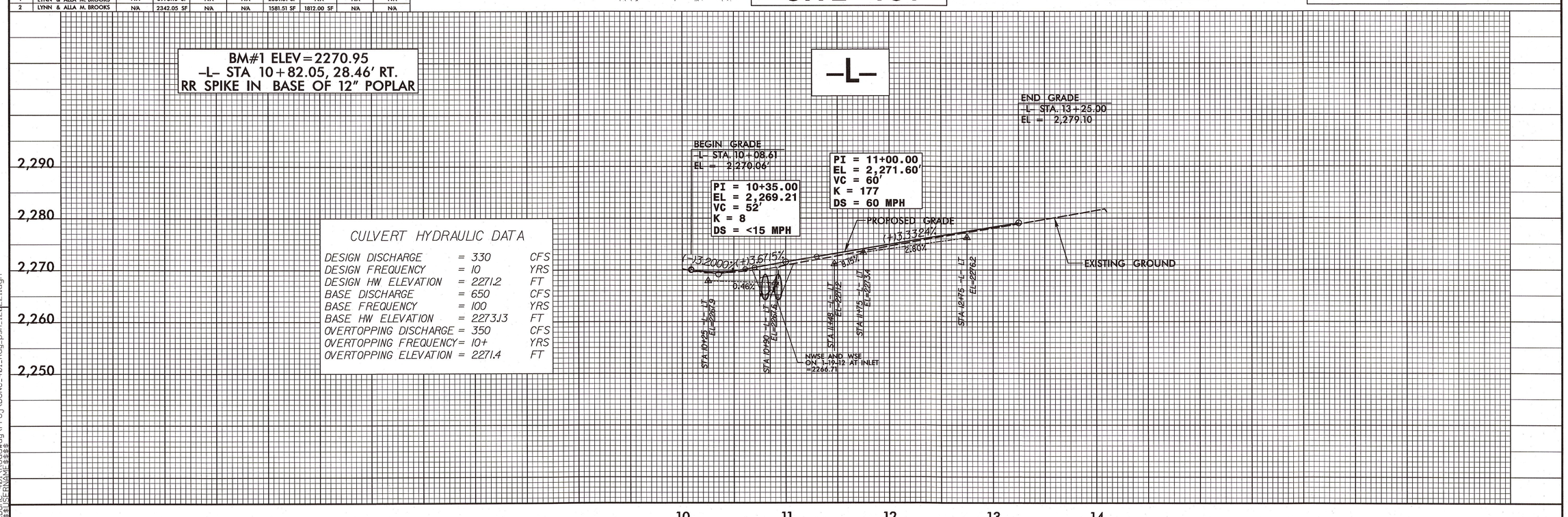
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "100401 BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 656379.5760(ft) EASTING: 903170.6650(ft)
ELEVATION: 2271.21(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999777802
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"100401 BL-2" TO -L- STATION 10+08.61 IS
N 54° 16' 56.15" W 110.81
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BM#1 ELEV = 2270.95
-L- STA 10+82.05, 28.46' RT.
RR SPIKE IN BASE OF 12" POPLAR

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 330	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 2271.2	FT
BASE DISCHARGE	= 650	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2273.13	FT
OVERTOPPING DISCHARGE	= 350	CFS
OVERTOPPING FREQUENCY	= 10+	YRS
OVERTOPPING ELEVATION	= 2271.4	FT



14-MAY-2014 15:03
J:\BUNC_401\Roadway\Proj\BUNC_401_Rdy_psh_120221.dgn
$$$$CSPRNWM$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	5
R/W SHEET NO.	
ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER KENNETH W. SNYDER

12/20/13

DETAIL

(NOT TO SCALE)

MULTI-BARREL LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN

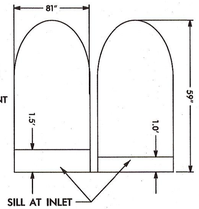
*NOTES:

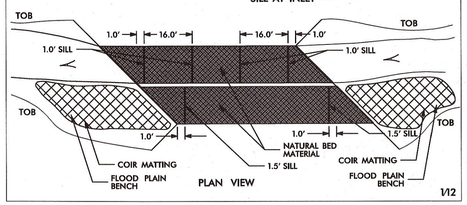
1) BED MATERIAL SHALL BE EXCAVATED AND STOCKPILED DURING INSTALLATION OF THE CULVERTS AND SILLS. THE NATURAL BED MATERIALS SHALL THEN BE PLACED IN THE CULVERT TO THE SPECIFIED ELEVATION.

2) SILLS ARE TO BE MADE OF ALUMINIZED STEEL AND MECHANICALLY ATTACHED TO THE INVERT OF THE CULVERT.

3) CLASS 'B' RIP RAP MAY BE USED TO SUPPLEMENT NATURAL BED MATERIAL.

4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.

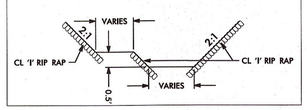




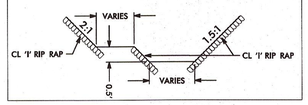
PLAN VIEW

1/12

TYPICAL INLET CHANNEL (NTS)



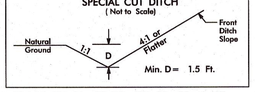
TYPICAL OUTLET CHANNEL (NTS)



DETAIL 1

SPECIAL CUT DITCH

(Not to Scale)

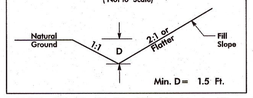


FROM STA. 10+25 TO STA. 10+50 -L- LT

DETAIL 2

SPECIAL LATERAL 'V' DITCH

(Not to Scale)

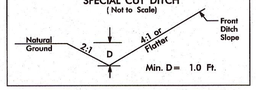


FROM STA. 10+50 TO STA. 10+90 -L- LT

DETAIL 3

SPECIAL CUT DITCH

(Not to Scale)



FROM STA. 11+48 TO STA. 12+75 -L- LT

5/14/99
14-NOV-2013 16:41
J:\Bunc.401\Drainage\BUNC_401_Hyd_DET.dgn
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS 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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.01	BARRICADES

PROJECT PHASING

PHASE 1

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, CONTRACTOR TO INSTALL ALL ADVANCE WARNING SIGNS FOR DETOUR, KEEPING SIGNS COVERED (SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEETS 1 OF 9 AND 2 OF 9).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 2.

STEP 2: CLOSE SR 3470 (BILLY COVE RD) TO TRAFFIC, UNCOVER ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE AND SHIFT TRAFFIC TO TEMPORARY DETOUR.

STEP 3: DISMANTLE AND REMOVE EXISTING BRIDGE NO. 401 OVER UT BEAVERDAM CREEK.

STEP 4: COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE, APPROACH ROADWAY WIDENING AND PAVING (SEE ROADWAY PLANS).

STEP 5: CONTRACTOR TO PLACE FINAL PAVEMENT MARKINGS (PAINT) ON SR 3470 (BILLY COVE RD).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 6.

STEP 6: USING ROADWAY STANDARD DRAWINGS NO. 1101.04, SHEET 1 OF 1, REMOVE ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE, ALL TRAFFIC CONTROL DEVICES AND OPEN SR 3470 (BILLY COVE RD) TO TRAFFIC.

PROJECT NOTES

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. MODIFICATIONS 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 CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

CONTRACTOR WILL PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS, UNLESS OTHERWISE NOTED.

C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE 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 SUFFICENT LENGTH TO CLOSE ENTIRE ROADWAY.

LOCAL NOTES

1. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE PROJECT LIMITS AT ALL TIMES.

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

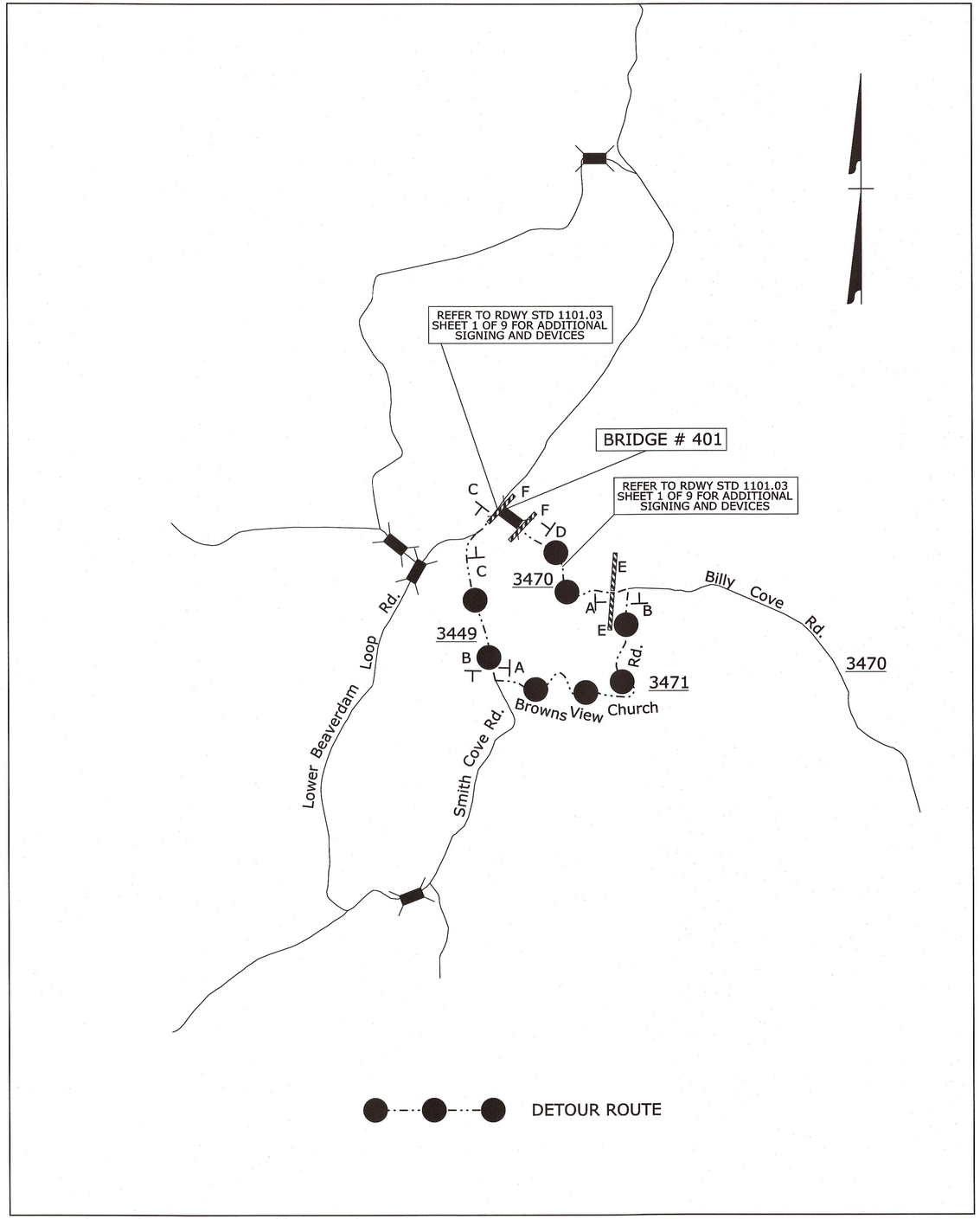
SEAL

EDWARD S. ROBBINS, PE *TRAFFIC CONTROL PROJECT ENGINEER*

J. MATTHEW PICKENS, PE *TRAFFIC CONTROL ENGINEER*

24-OCT-2013 16:19
$$$$USERNAME$$$$ c:\pwworking\Roadway\Proj\BUNC_401_Rdy_tmpl.dgn

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.29	TMP-2



A

DETOUR — M4-8 24" X 12"

SR 3470 BILLY COVE RD — 24" X 12"

M6-1 21" X 15"

B

DETOUR — M4-8 24" X 12"

SR 3470 BILLY COVE RD — 24" X 12"

M6-1 L 21" X 15"

C

DETOUR — M4-8 24" X 12"

SR 3470 BILLY COVE RD — 24" X 12"

M6-3 21" X 15"

D

DETOUR — M4-8 24" X 12"

SR 3470 BILLY COVE RD — 24" X 12"

END DETOUR — M4-8 A 24" X 18"

E

R11-4
60" x 30"

ROAD CLOSED TO THRU TRAFFIC

DETOUR

M4-10L
48" x 18"

TYPE III BARRICADE

F

R11-2
48" x 30"

ROAD CLOSED

TYPE III BARRICADE

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER JASON M. PICCIONE — 11/5/13

SR 3470 BILLY COVE RD.
OFF-SITE DETOUR

SCALE:	NONE
DATE:	10/2012
DWG. BY:	JMP
DESIGN BY:	JMP
REVIEWED BY:	ESR

REVISIONS

GADD RM: BUNC_401_Rdy_tmp2.dgn

21-OCT-2013 15:36
J:\Bunc 401\Roadway\Proj\BUNC_401_Rdy_tmp2.dgn
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	PMP-1

NORTH CAROLINA PROFESSIONAL SEAL 31850 ENGINEER JASON M. PICKENS
11/5/13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
BUNCOMBE COUNTY

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 - 2 LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	FINAL PAVEMENT MARKINGS
	PAINT(4")
PA	WHITE EDGELINE (2X)
PD	WHITE MINISKIP (2X)
PI	YELLOW DOUBLE CENTER (2X)
	PAINT (24")
PB	WHITE STOPBAR (2X)

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.

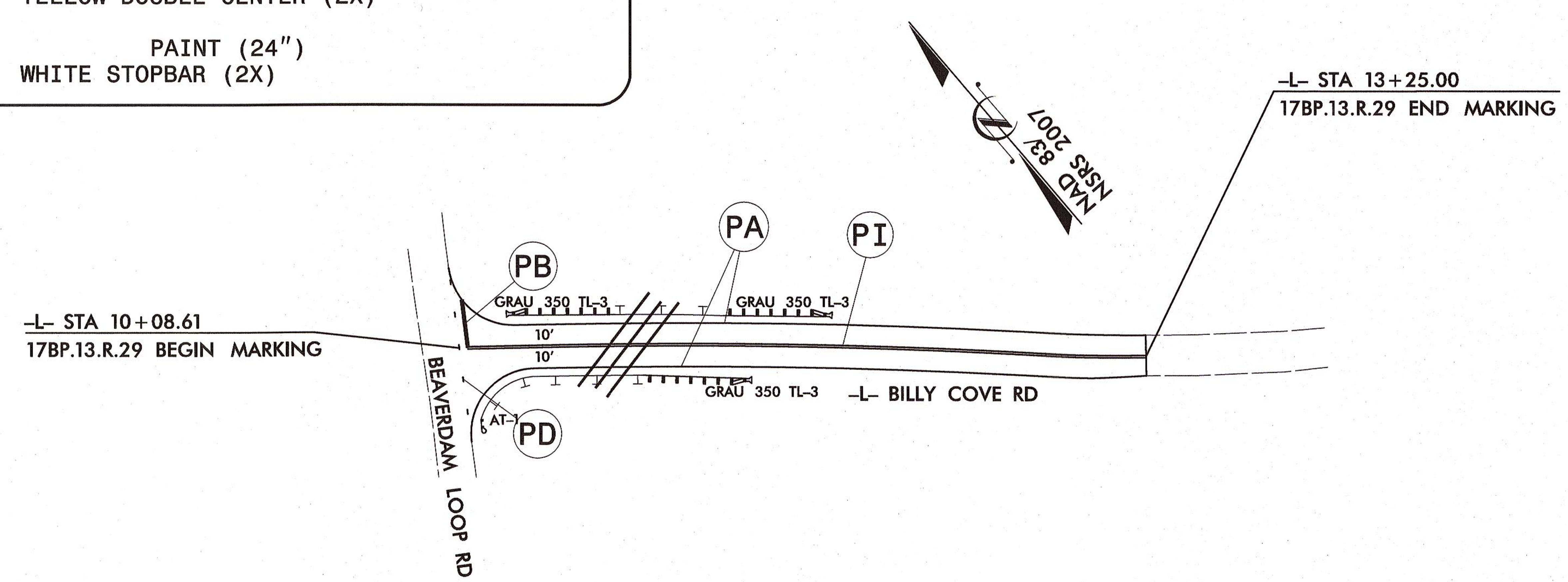
A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
SR 3470 (BILLY COVE RD)	PAINT

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

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

D) REFER TO TRAFFIC CONTROL PLAN FOR PROJECT NOTES CONCERNING PAVEMENT MARKINGS, MARKERS AND DELINEATION.



PLANS REVIEWED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT

________________ SIGNING & DELINEATION STANDARDS ENGINEER

________________ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL UNIT

PLANS PREPARED BY:

ED ROBBINS, P.E. PROJECT MANAGER

J. MATTHEW PICKENS, P.E. PROJECT ENGINEER

PLANS PREPARED BY :

PARSONS

FOR DIVISION OF HIGHWAYS

01-NOV-2013 13:56
J:\Bunc_401\Roadway\Proj\BUNC_401_PMP_PMP-1.dgn
$$$$USERNAME$$$$

PROJECT: 17BP.13.R.29

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.29	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
		PE
		R/W, UTIL

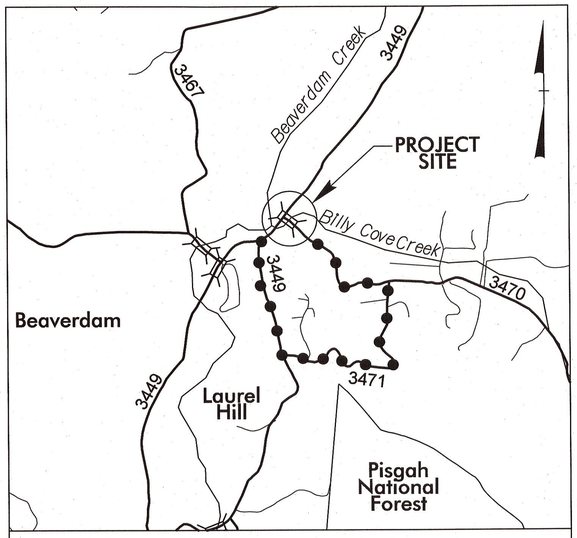
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

BUNCOMBE COUNTY

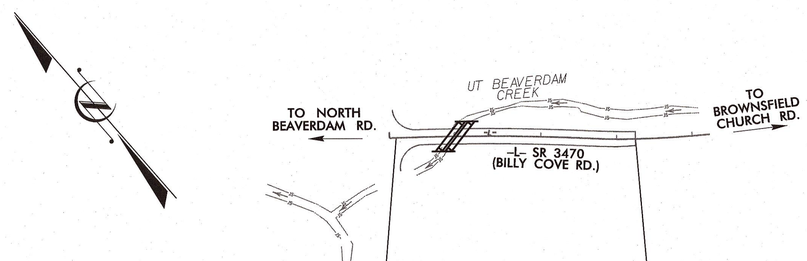
LOCATION: BRIDGE NO. 100401 OVER UT BEAVERDAM CREEK ON SR 3470

TYPE OF WORK: GRADING, DRAINAGE, AND PAVING



VICINITY MAP

DETOUR ROUTE



-L- STA 10+08.61
BEGIN PROJECT 17BP.13.R.29

-L- STA 13+25.00
END PROJECT 17BP.13.R.29

EROSION AND SEDIMENT CONTROL MEASURES

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

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

JOSHUA G. DALTON, PE, CPESC
LEVEL III NAME

3552
LEVEL III CERTIFICATION NO.

GRAPHIC SCALE

20 10 0 20 40
PLANS

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

Prepared In the Office of:

SUNGATE DESIGN GROUP, P.A.

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

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

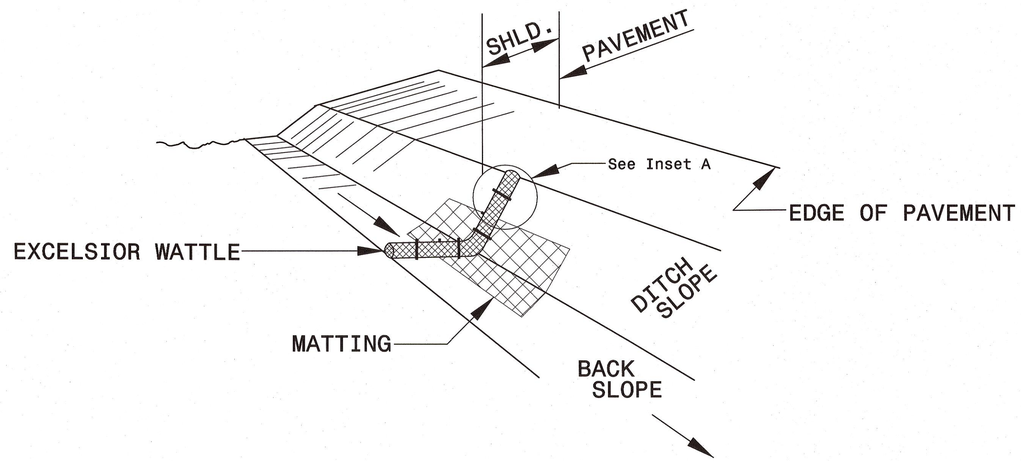
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

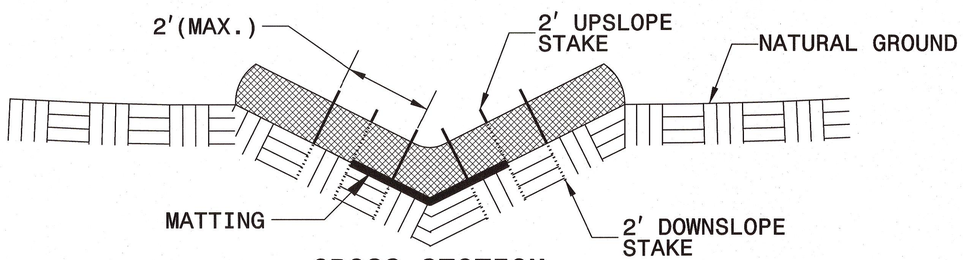
5/14/2014
100401_EC.tsh
bsmith

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

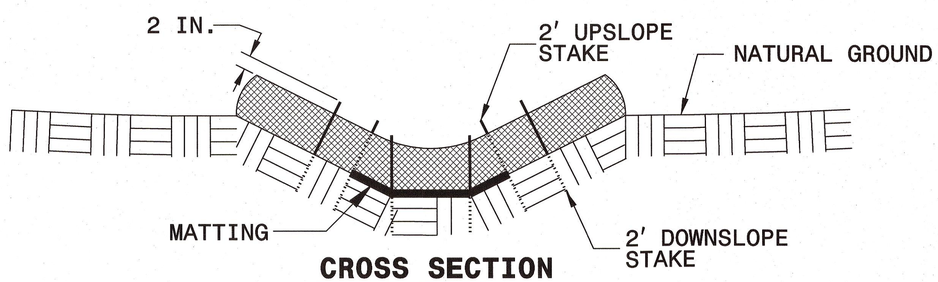
WATTLE DETAIL



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.

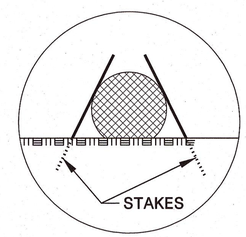
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

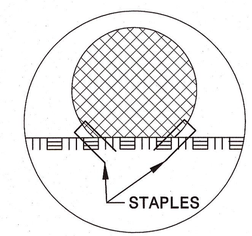
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

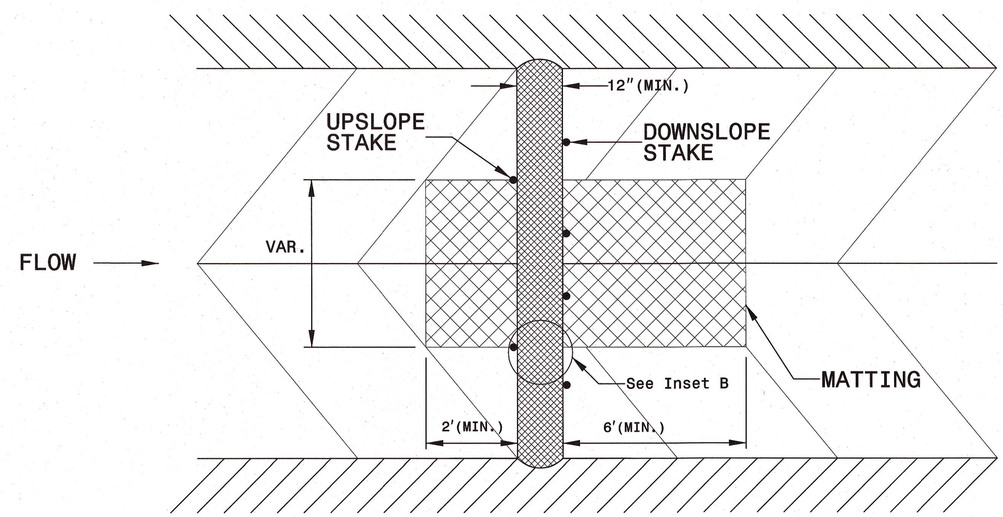
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+48	12+75	LT	95
				SUBTOTAL	95
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1000
				TOTAL	1095

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

EROSION CONTROL PLAN

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

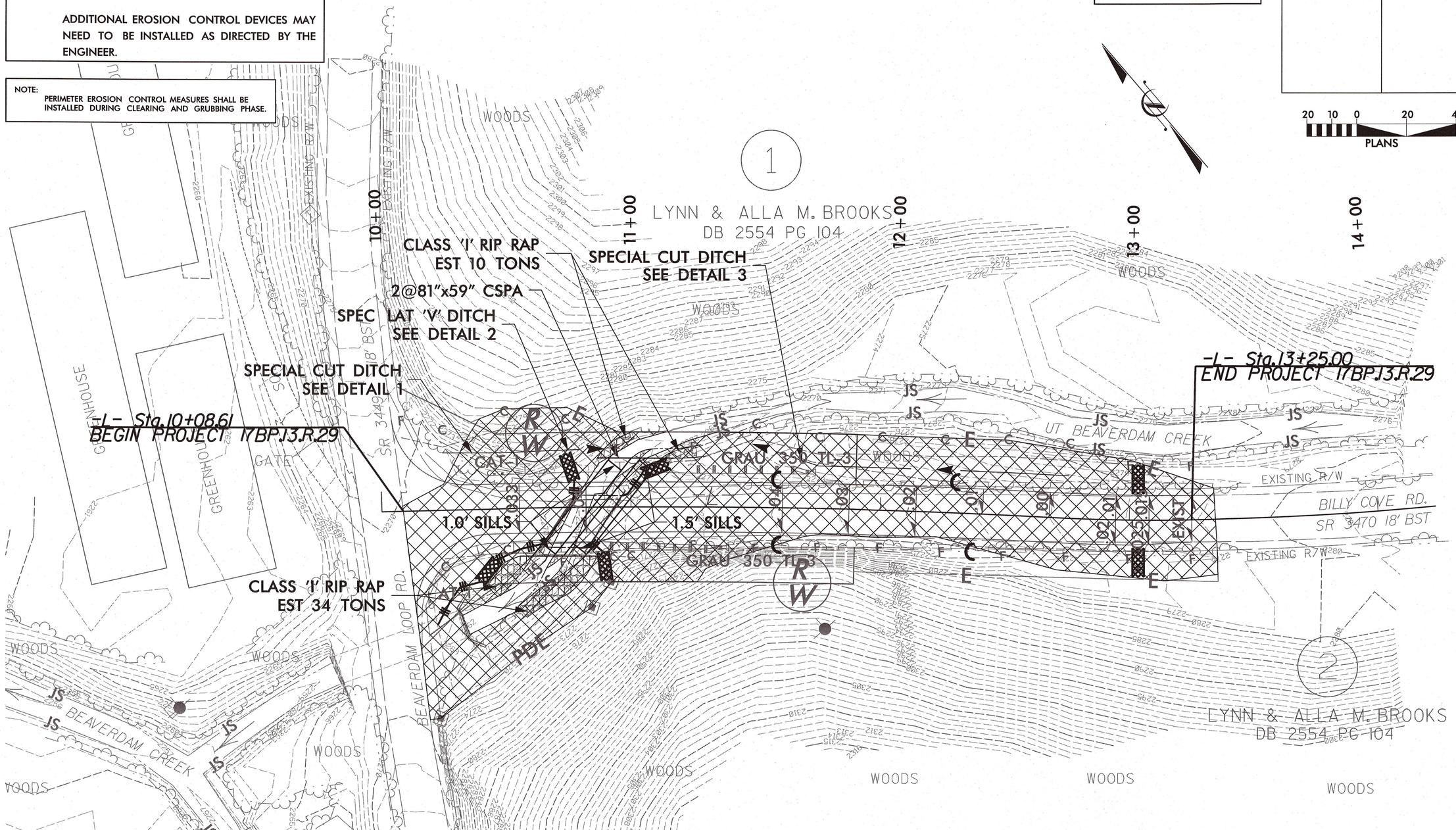
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

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

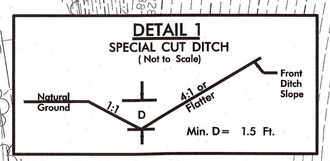
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

20 10 0 20 40
PLANS

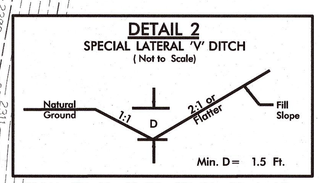


DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



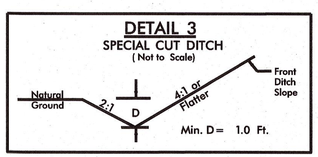
FROM STA. 10+25 TO STA. 10+50 -L- LT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 10+50 TO STA. 10+90 -L- LT

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 11+48 TO STA. 12+75 -L- LT

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

EROSION CONTROL PLAN

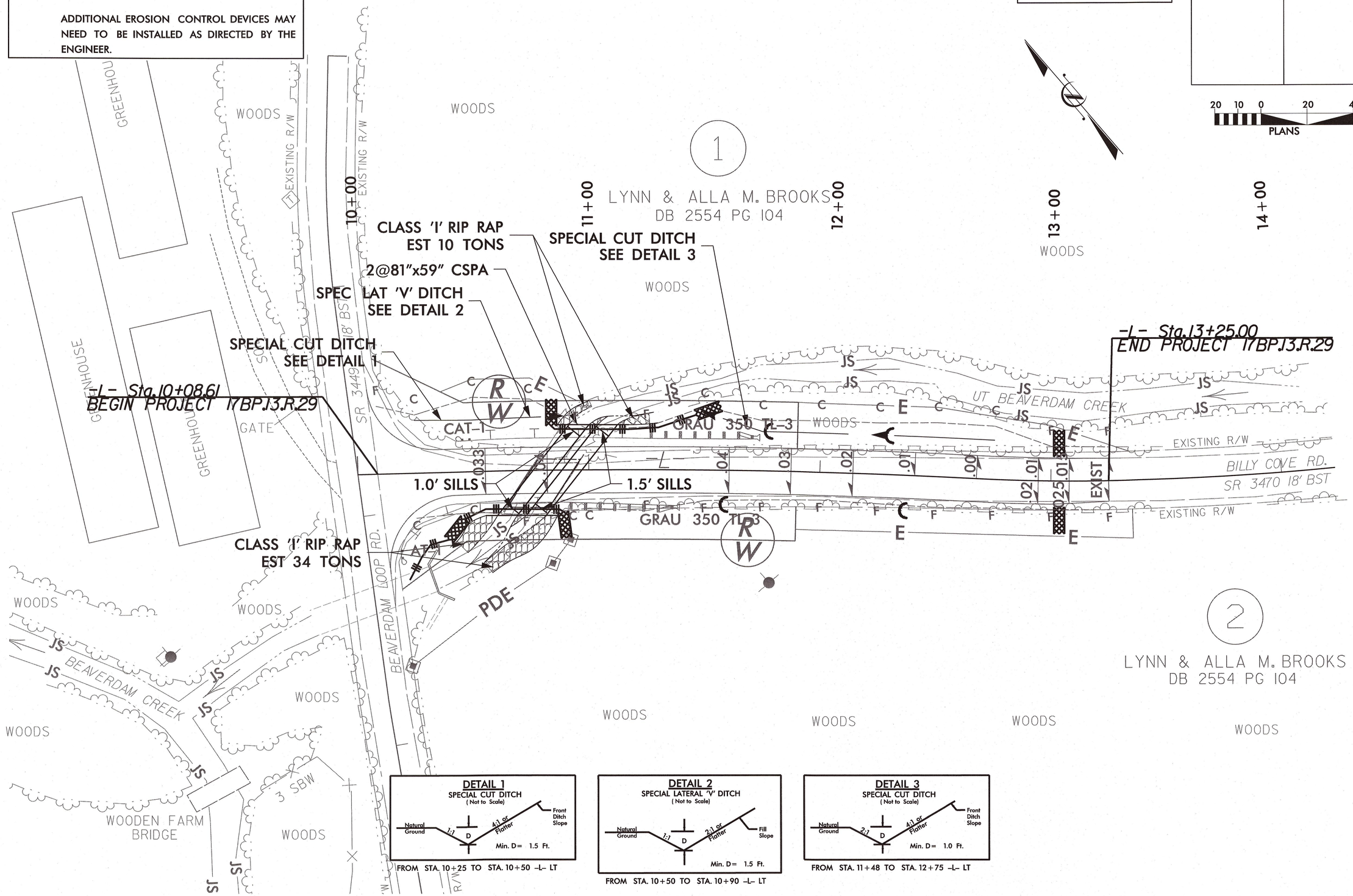
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

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

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 04

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

20 10 0 20 40
PLANS



DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 10+25 TO STA. 10+50 -L- LT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 10+50 TO STA. 10+90 -L- LT

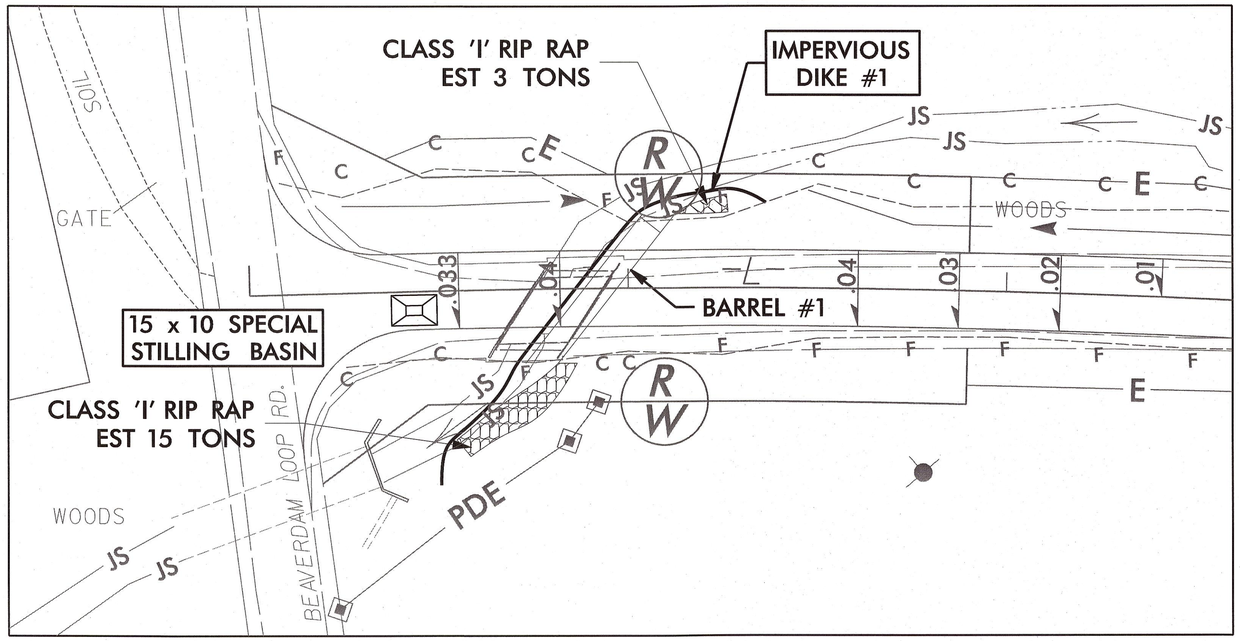
DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 11+48 TO STA. 12+75 -L- LT

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	EC-06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT INSTALLATION PHASING

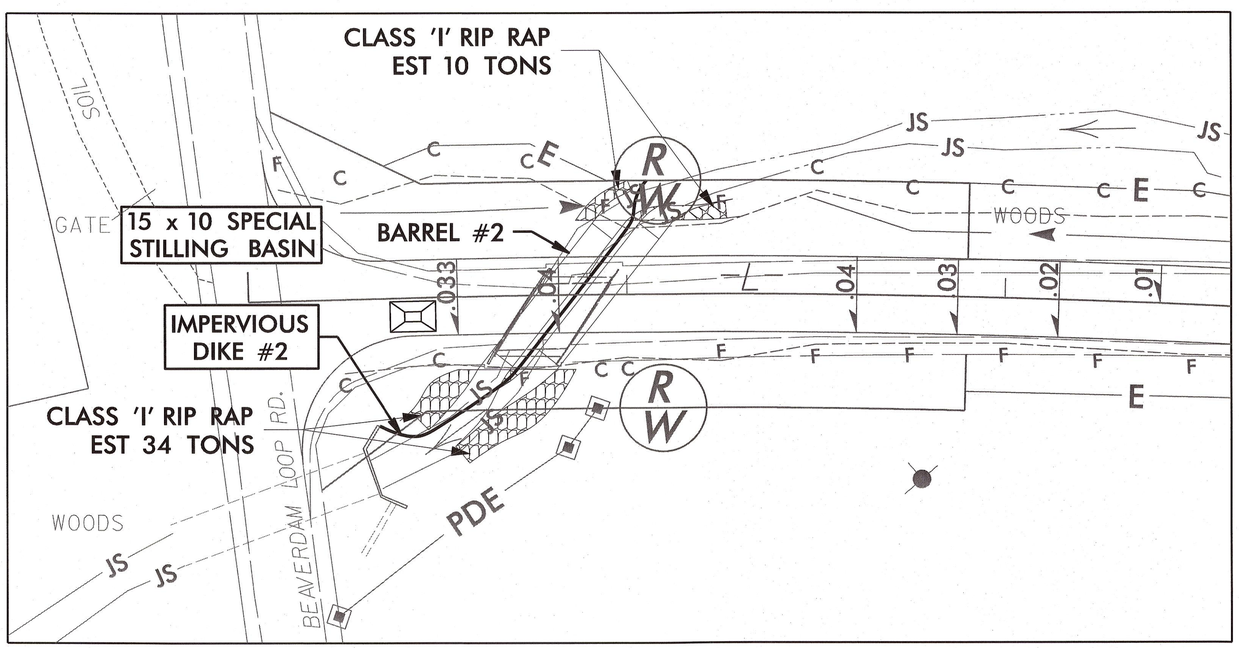
20 10 0 20 40
PLANS



PHASE 1

CONSTRUCTION SEQUENCE:

1) INSTALL SPECIAL STILLING BASIN
2) REMOVE EXISTING BRIDGE
3) CONSTRUCT TEMPORARY IMPERVIOUS DIKE #1 TO DIVERT STREAM FLOW NORTH
4) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
5) INSTALL BARREL #1
6) CONSTRUCT INLET AND OUTLET CHANNELS
7) STABILIZE BANKS WITH CLASS 'I' RIP RAP
8) REMOVE IMPERVIOUS DIKE #1



PHASE 2

CONSTRUCTION SEQUENCE:

1) CONSTRUCT TEMPORARY IMPERVIOUS DIKE #2 TO DIVERT FLOW SOUTH
2) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
3) INSTALL BARREL #2, WING WALLS, HEAD WALL, AND END WALL
4) CONSTRUCT INLET AND OUT CHANNELS
5) STABILIZE BANKS WITH CLASS 'I' RIP RAP
6) REMOVE SPECIAL STILLING BASIN AND IMPERVIOUS DIKE #2
7) RECONSTRUCT ROAD

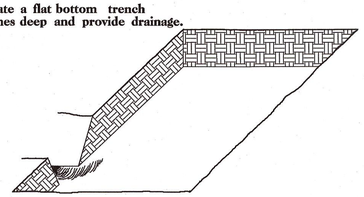
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.29	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

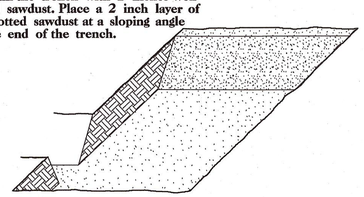
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

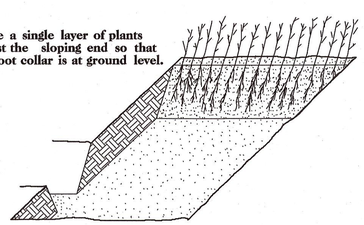
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



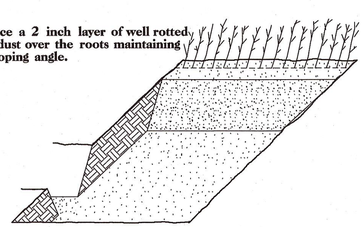
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

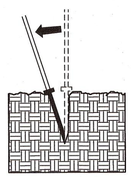


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

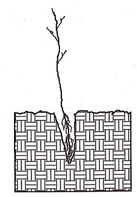


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

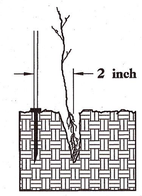
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



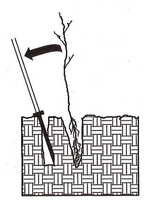
1. Insert planting bar as shown and pull handle toward planter.



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

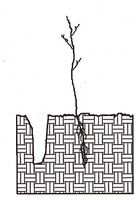


3. Insert planting bar 2 inches toward planter from seedling.



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

5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

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

REFORESTATION DETAIL SHEET

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	SGN-1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
BUNCOMBE COUNTY

NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER J. MATTHEW PICKENS
11/5/13

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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F" SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

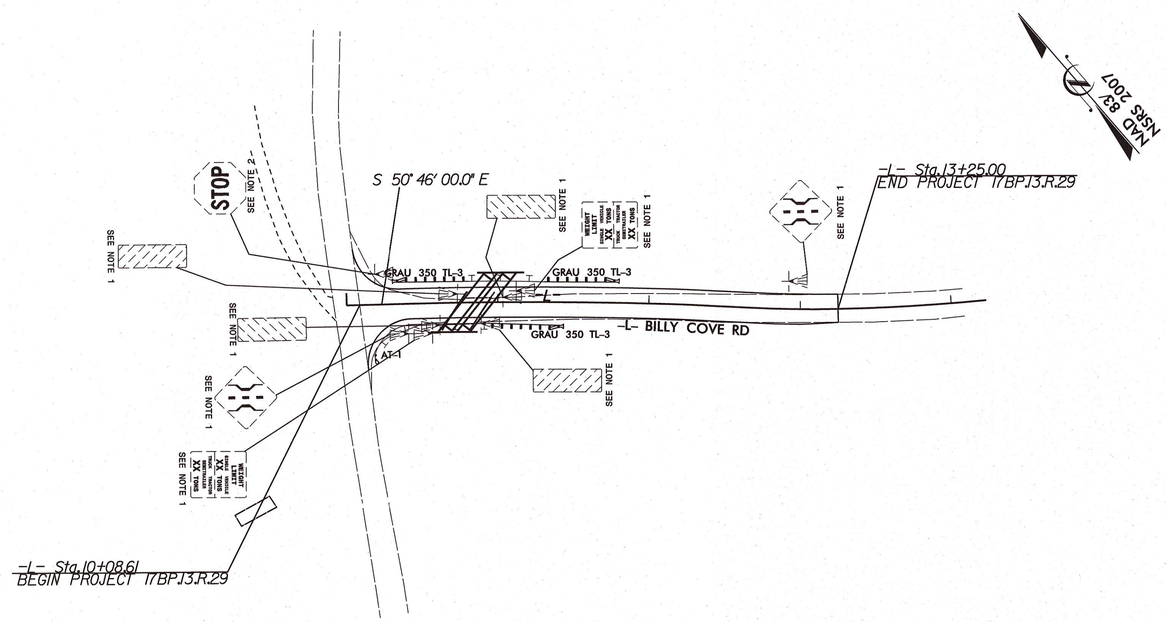
- SIGNS FURNISHED BY CONTRACTOR
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY CONTRACTOR.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	8	EA.

PAY ITEM NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2	SALVAGE EXISTING SIGN SYSTEM, U-CHANNEL



PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

_____ SIGNING & DELINEATION REGIONAL ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY:

ED ROBBINS, P.E. PROJECT MANAGER

J. MATTHEW PICKENS, P.E. PROJECT ENGINEER

PLANS PREPARED BY :

PARSONS

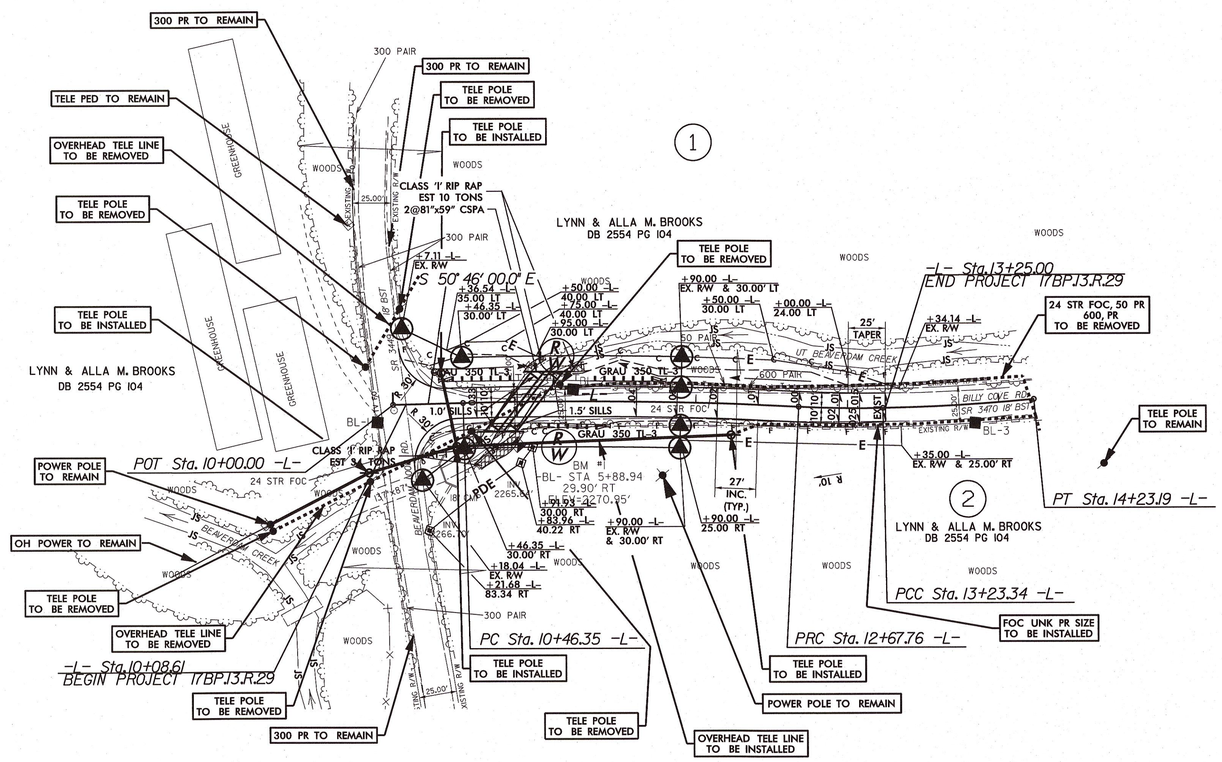
FOR DIVISION OF HIGHWAYS

01-NOV-2013 14:20
R:\Roadway\Proj\BUNC_401_SGN_SGN-1.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.29	U0-1
R/W SHEET NO.	

REVISIONS

8/17/99



-L-

PI Sta 11+57.11	PI Sta 12+95.56	PI Sta 13+73.29
Δ = 4° 25' 24.1" (RT)	Δ = 3° 58' 49.2" (LT)	Δ = 4° 29' 34.9" (LT)
D = 1° 59' 51.9"	D = 7° 09' 43.1"	D = 4° 30' 00.0"
L = 221.42'	L = 55.58'	L = 99.85'
T = 110.76'	T = 27.80'	T = 49.95'
R = 2,868.00'	R = 800.00'	R = 1,273.24'
SE = See plans	SE = See plans	
D.S. = 75 MPH	D.S. = 45 MPH	

NAD 83/ NSRS 2007

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

EXISTING SPEED = 55-MPH (STAT.)
REASONABLE BRIDGE SPEED = 15-MPH
DESIGN SPEED = 60-MPH
ADT = 450 (2010)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "100401 BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 656379.5760(ft) EASTING: 903170.6650(ft)
ELEVATION: 2271.21(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999777802
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "100401 BL-2" TO -L- STATION 10+08.61 IS N 54° 16' 56.15" W 110.81
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

*** NO DESIGN EXCEPTION REQUIRED DUE TO STOP CONDITION**

RIGHT-OF-WAY AREAS

PARCEL #	PROPERTY OWNER	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONST. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
1	LYNN & ALLA M. BROOKS	N/A	3975.10 SF	N/A	N/A	2551.31 SF	N/A	N/A	N/A
2	LYNN & ALLA M. BROOKS	N/A	2342.05 SF	N/A	N/A	1581.51 SF	1812.00 SF	N/A	N/A

08-NOV-2013 14:40
J:\BUNC_401\Roadway\Proj\BUNC_401_U0_psh.dgn
$$$$USERNAME$$$$

J:\Bunc 401\Roadway\XSC

5/14/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
BP17.13.R.29	X-0

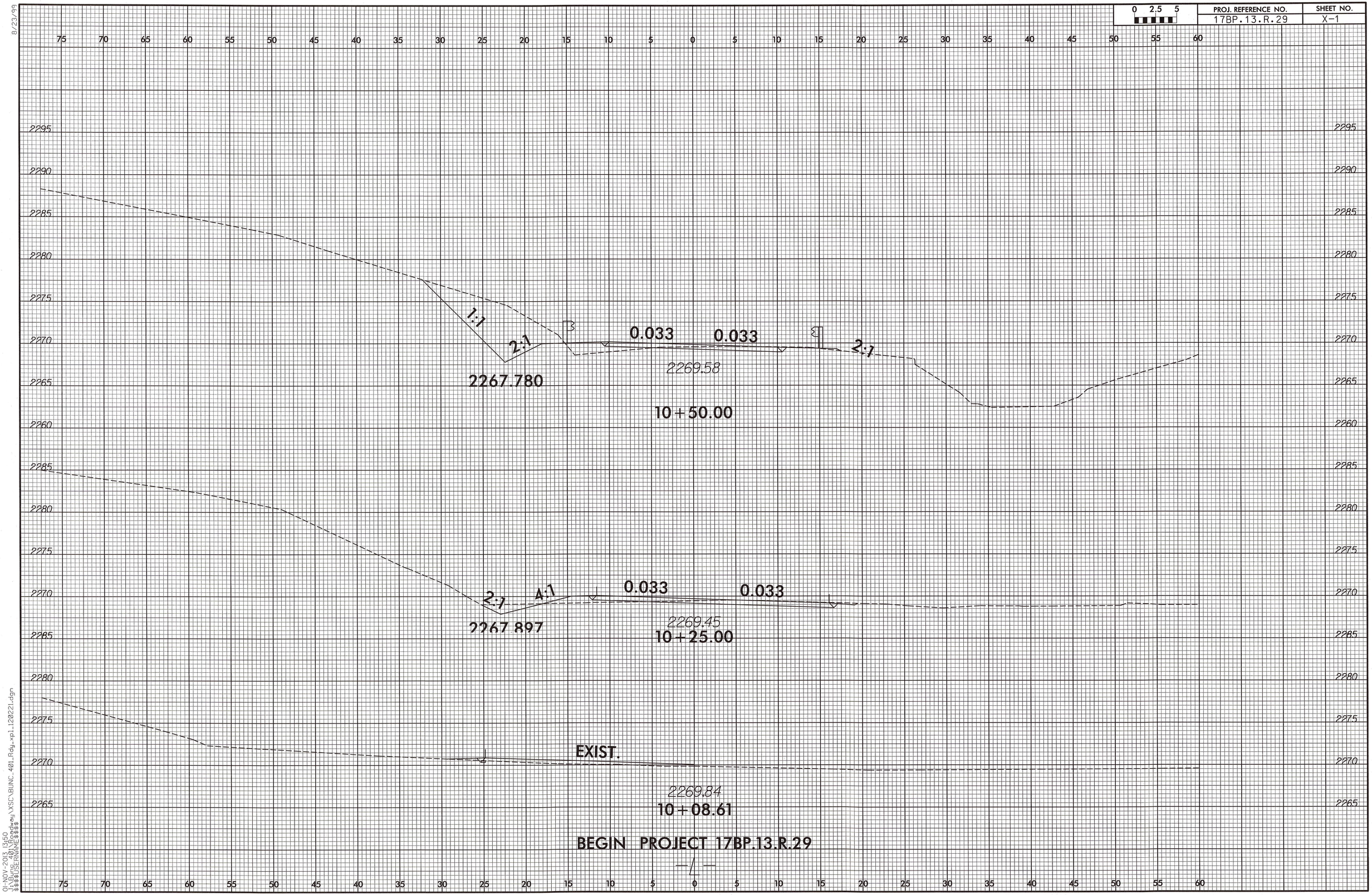
CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+08.61	0	0															
10+25.00	4	1															
10+50.00	36	6															
10+75.00	42	60															
10+93.72	10	72															
11+00.00	1	14															
11+25.00	2	24															
11+50.00	5	11															
11+75.00	6	7															
12+00.00	5	5															
12+25.00	6	3															
12+50.00	8	3															
12+75.00	9	2															
13+00.00	5	2															
13+25.00	1	1															

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

J:\Bunc 401\Roadway\XSC\BUNC_401_Rdy_xpl_x0.dgn
14-NOV-2013 16:41
$$$$USERNAME$$$$

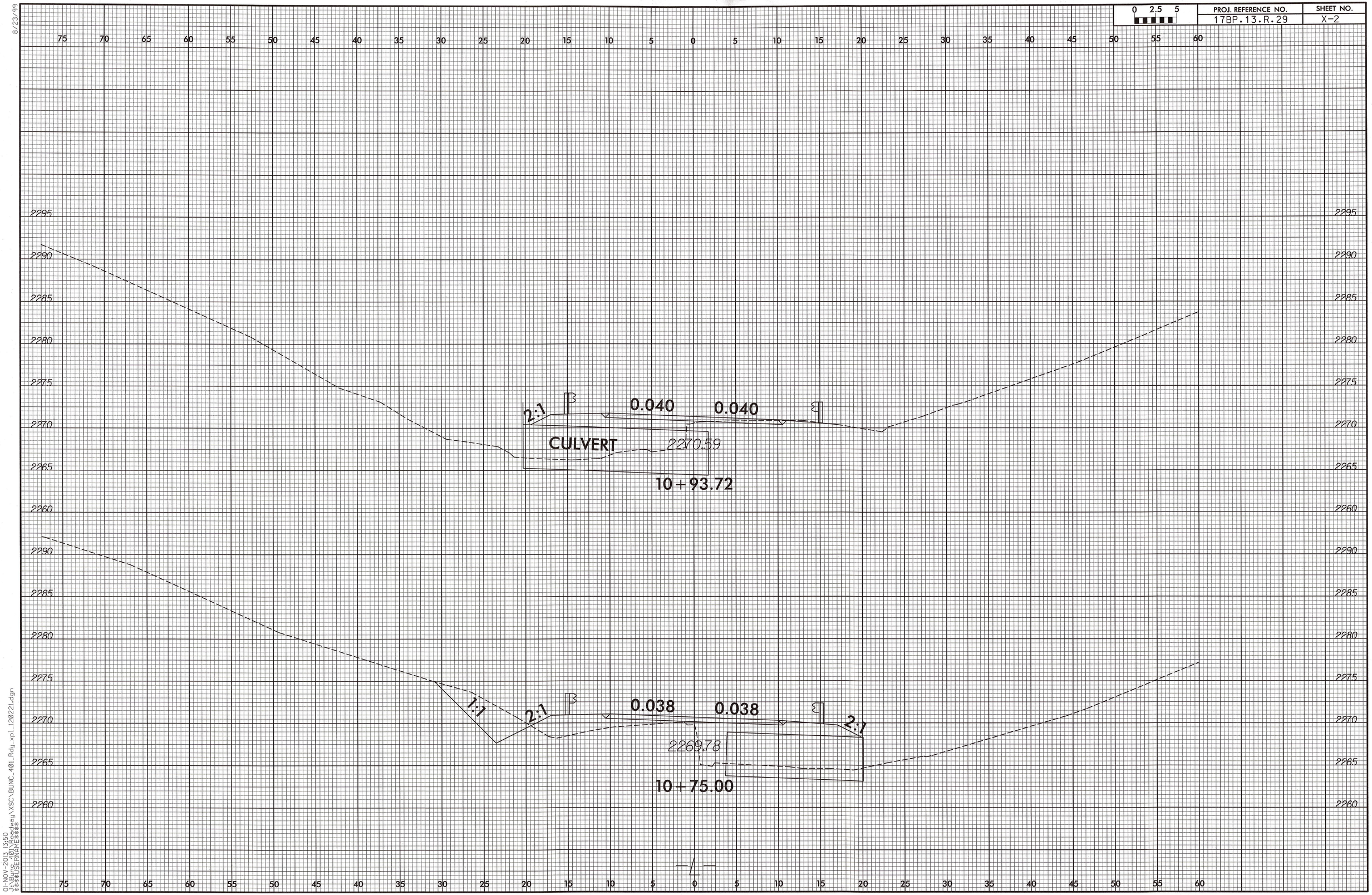
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-1



8/23/99

01-NOV-2013 13:50
USER: ADOTSS
MODE: ANIMESS

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-2

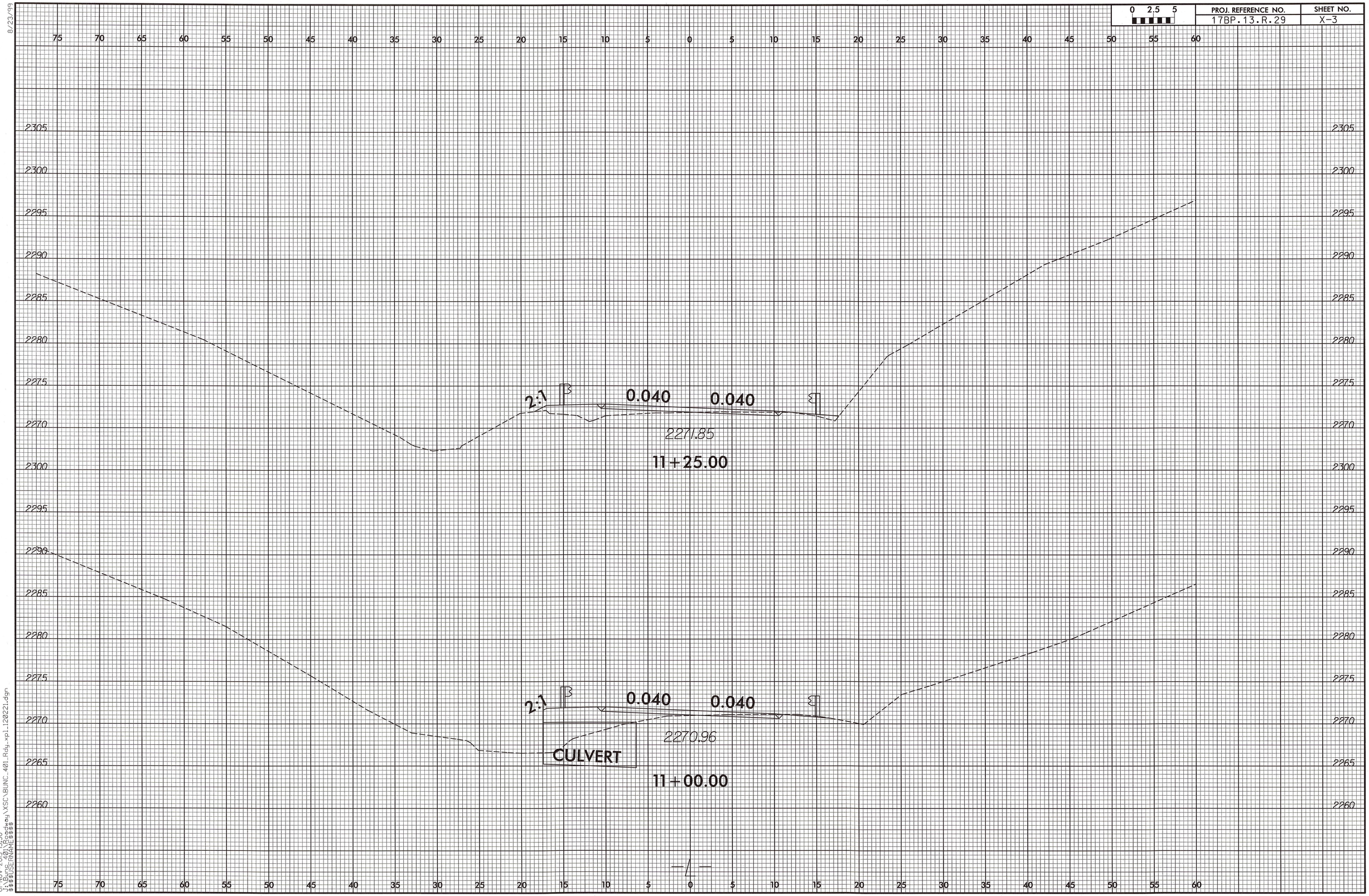


8/23/99

01-NOV-2013 13:50
s:\Bunc_Works\Roadway\XSC\BUNC_401_Rdy_xpl_120221.dgn
$$$$USERNAME$$$$

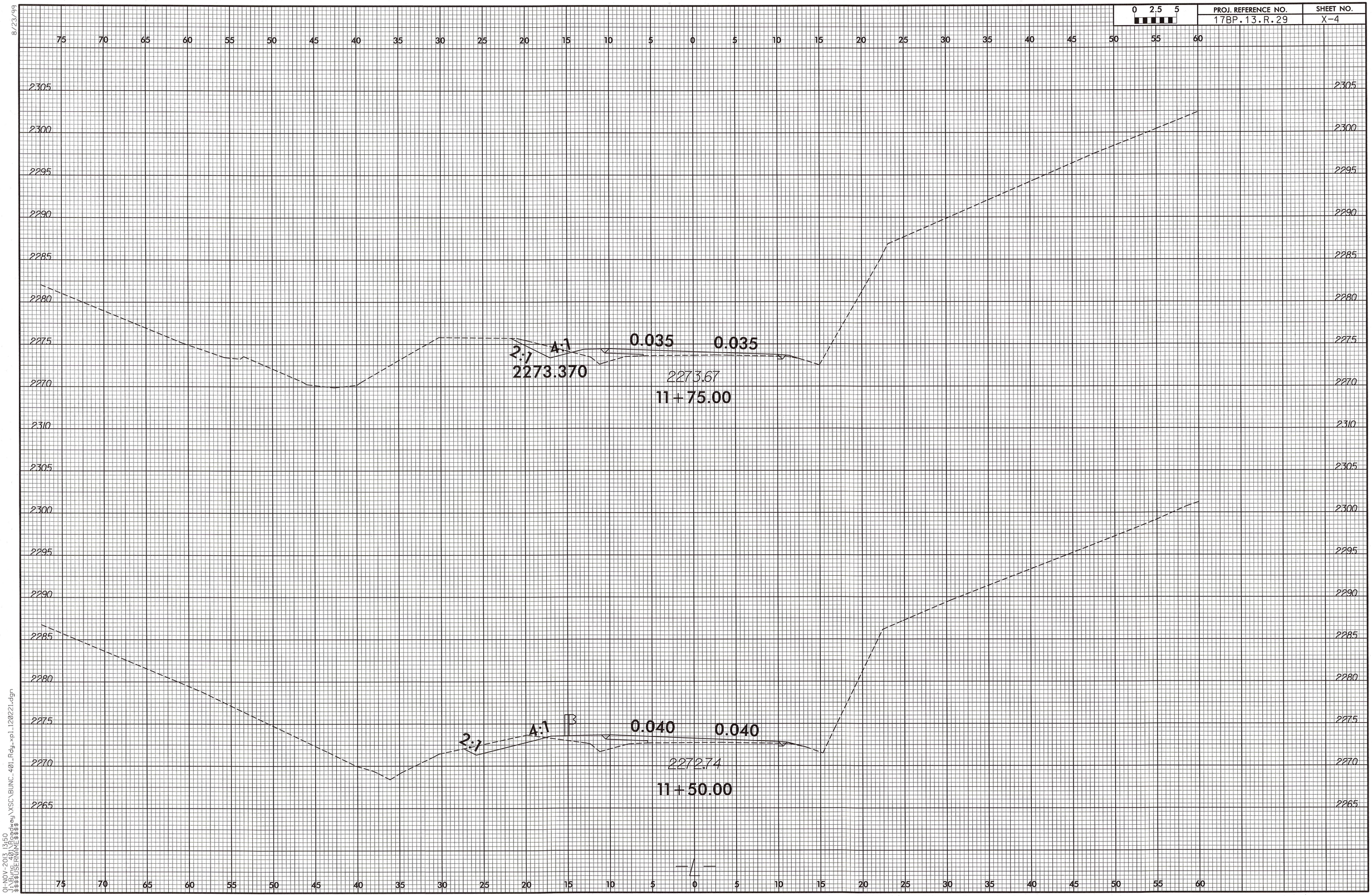
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-3



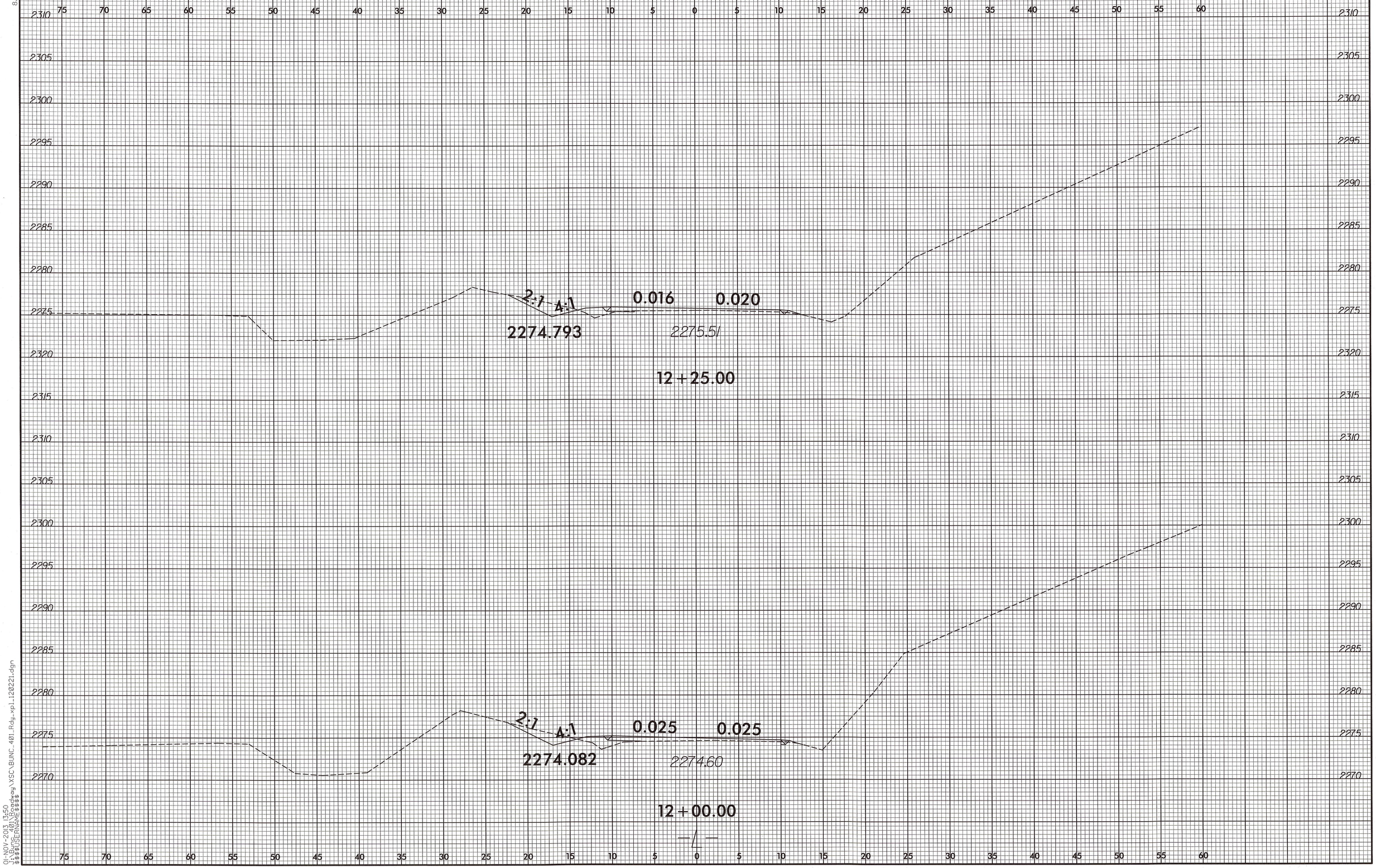
01-NOV-2013 13:50
$$$$USERNAME$$$$ d:\pw_work\pw_temp\XSC\BUNC_401_Rdy_xpl.120221.dgn

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.29	X-4



8/23/99
01-NOV-2013 13:50
J:\Bunc_401\Rdwy\XSC\BUNC_401_Rdy_xpl_120221.dgn
$$$$USERNAME$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-5

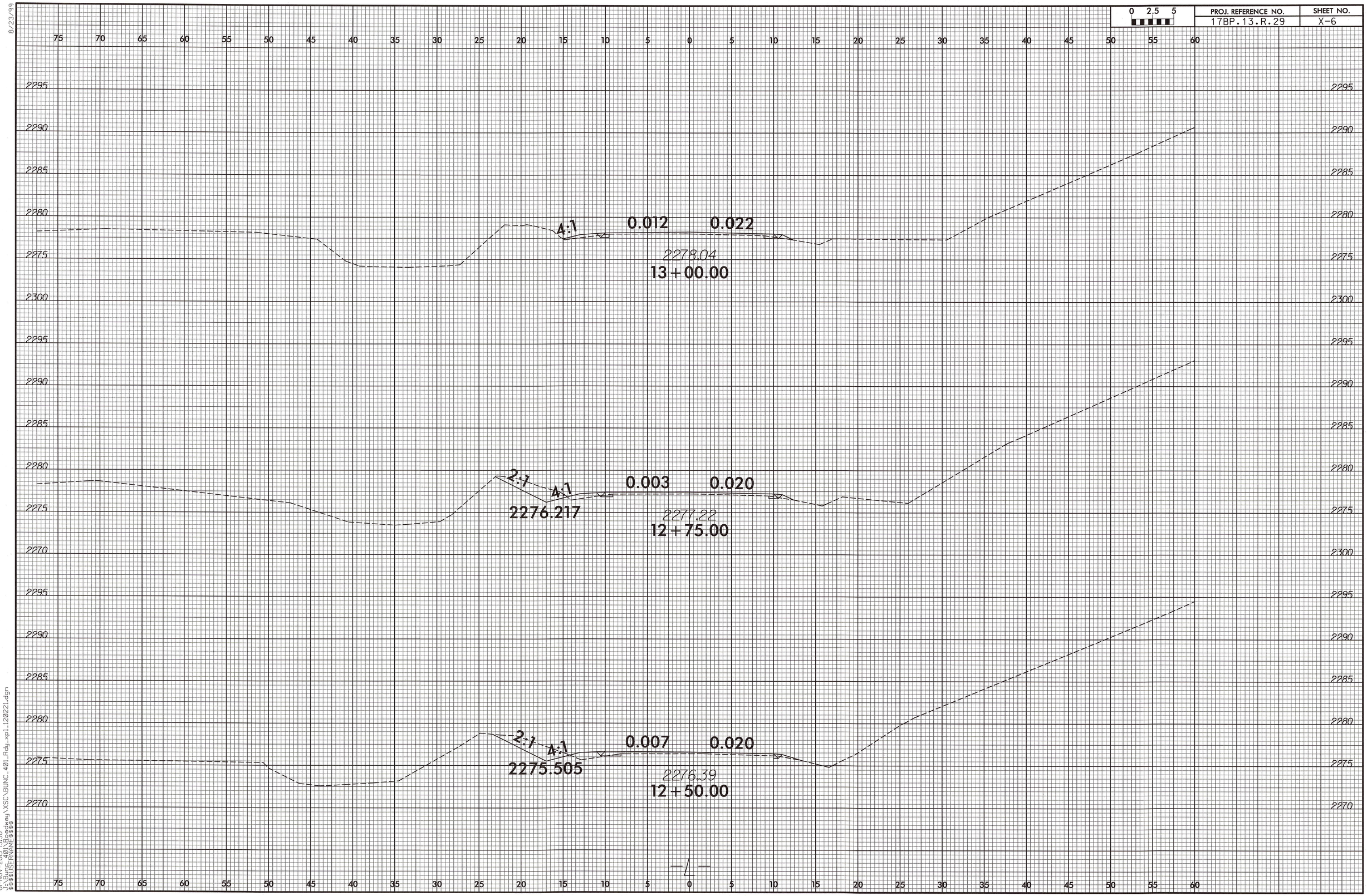


8/23/99

01-NOV-2013 13:50
$$BUNC_401_Roadway\XSC\BUNC_401_Rdy_xpl_120221.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-6

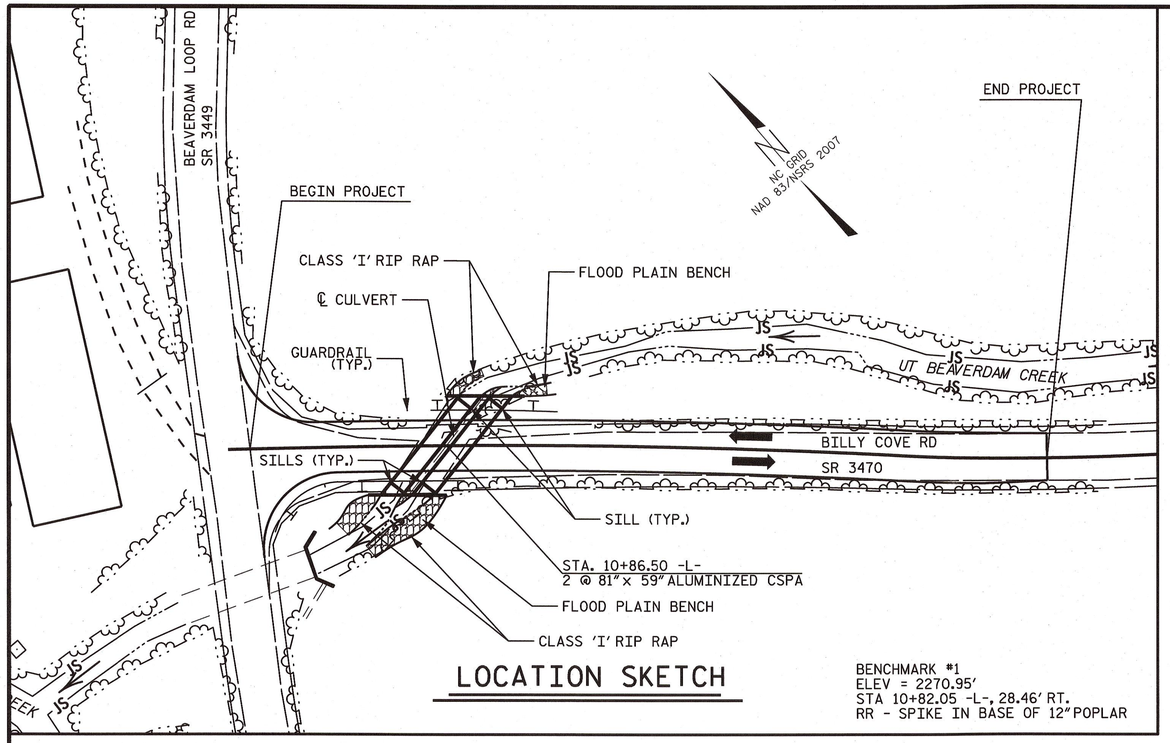


01-NOV-2013 13:50
J:\DESIGN\Highway\XSC\BUNC_401_Rdy_xpl_120221.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.29	X-7

01-NOV-2013 13:50
J:\Bunc_401\Roadway\XSC\BUNC_401_Rdy_xpl_120221.dgn
$$$$USERNAME$$$$



LOCATION SKETCH

BENCHMARK #1
ELEV = 2270.95'
STA 10+82.05 -L-, 28.46' RT.
RR - SPIKE IN BASE OF 12" POPLAR

GRADE DATA

GRADE POINT ELEV. @ STATION 12+04.00 -L- ... = 2271.10

DESCRIPTION OF EXISTING BRIDGE

1 SPAN @ 18'-10", CONSISTING OF TIMBER FLOOR ON TIMBER JOISTS; TIMBER CAPS, POSTS, AND SILLS @ VARIOUS CENTERS; 18.1' CLEAR ROADWAY

HYDRAULIC DATA

DESIGN DISCHARGE ..... = 330 CFS
FREQUENCY OF DESIGN FLOOD ..... = 10 YRS.
DESIGN HIGH WATER ELEVATION ..... = 2271.6
DRAINAGE AREA ..... = 1.22 SQ. MI.
BASIC DISCHARGE (Q100) ..... = 650 CFS
BASIC HIGH WATER ELEVATION ..... = 2273.26

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ..... = 330 CFS
FREQUENCY OF OVERTOPPING FLOOD ..... = 10 YRS.
OVERTOPPING FLOOD ELEVATION ..... = 2271.6

HORIZONTAL CURVE DATA

PI Sta 11+57.11 -L-
Δ = 4° 25' 24.1" (RT)
D = 1° 59' 51.9"
L = 221.42'
T = 110.76'
R = 2,868.00'

(+)3.6715% (+)3.3324%

GRADE DATA -L-

PI = 11+00.00
EL = 2,271.60'
VC = 60.00'

NOTES

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

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

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF 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.

ALUMINUM HEADWALLS AND WINGWALLS TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

THE COST FOR ALUMINUM HEADWALLS AND WINGWALLS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE CORRUGATED STEEL PIPE ARCH CULVERTS.

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".

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

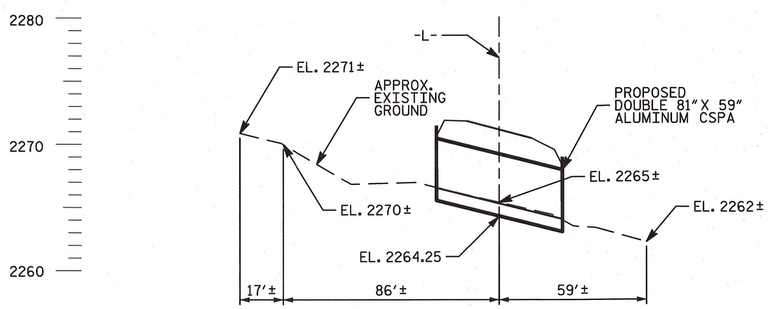
EXCAVATE AT LEAST 1 FOOT BELOW BOTTOM OF CULVERT AND FOOTINGS, AND BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

ENVELOPE ALL CLASS VI SELECT MATERIAL OR OTHER OPEN GRADED STONE PLACED IN THE VICINITY OF THE CULVERT WITH TYPE 1 ENGINEERING FABRIC MEETING THE REQUIREMENTS OF SECTION 1056 OF THE STANDARD SPECIFICATIONS, OVERLAPPING THE FABRIC A MINIMUM OF 2 FEET.

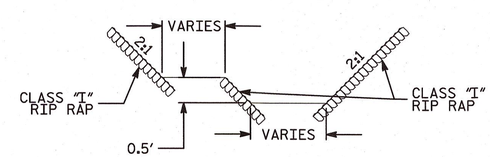
CONTRACTOR SHALL NOTE THE MINIMUM COVER MEASURED FROM THE BOTTOM OF THE FLEXIBLE PAVEMENT IS LESS THAN 18 INCHES. CONTRACTOR SHALL FURNISH AND INSTALL 81" X 59" CORRUGATED STEEL PIPE ARCH CULVERTS WHICH SATISFY THIS MINIMUM COVER CONDITION. PAYMENT SHALL BE MADE UNDER THE PAY ITEM FOR "81" X 59" CORRUGATED STEEL PIPE ARCH CULVERTS, ~~XXXX~~ THICK."

PLACE COIR FIBER MATTING ON ALL FLOOD PLAIN BENCHES

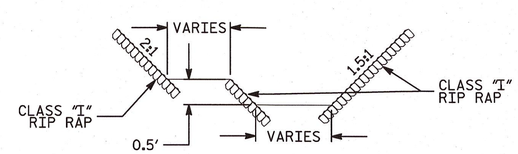
NOTE: PIPE IS TO BE CORRUGATED ALUMINUM ALLOY. ANY REFERENCE TO OTHER TYPES OF PIPE IS TO BE REGARDED AS CAA PIPE, ARCH.



PROFILE ALONG ℄ CULVERT



TYPICAL INLET CHANNEL
(LOOKING UPSTREAM)



TYPICAL OUTLET CHANNEL
(LOOKING DOWNSTREAM)

PROJECT NO. 17BP.13.R.29
BUNCOMBE COUNTY
STATION: 10+86.50 -L-
SHEET 1 OF 2 REPLACES BRIDGE NO. 401

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 81" x 59" ALUMINIZED CSPA 128° SKEW

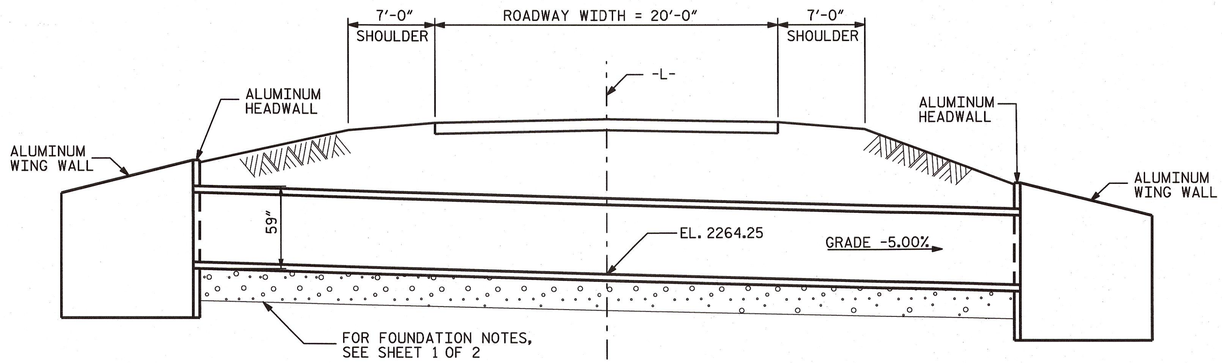
PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

NORTH CAROLINA PROFESSIONAL SEAL 29979 ENGINEER PAM D. SHAW
11/26/13

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

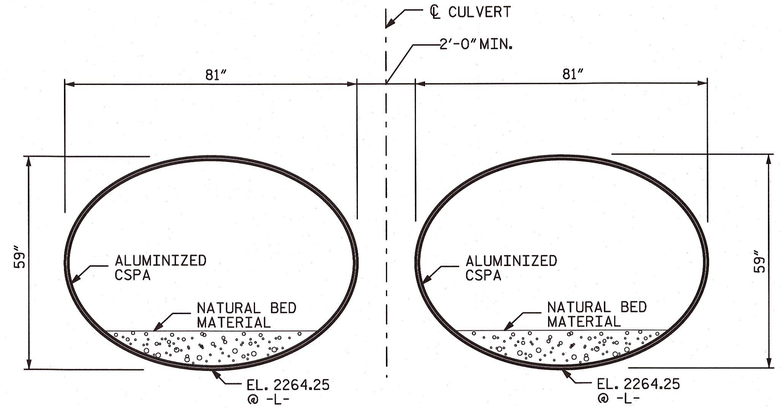
DRAWN BY : ADS DATE : 02/13
CHECKED BY : TMH DATE : 04/13

01-NOV-2013 08:52
u:\Bunc 401\Structures\Plans\BUNC_401_STRUCT_01.dgn
pd00c0a ATT1931V7B

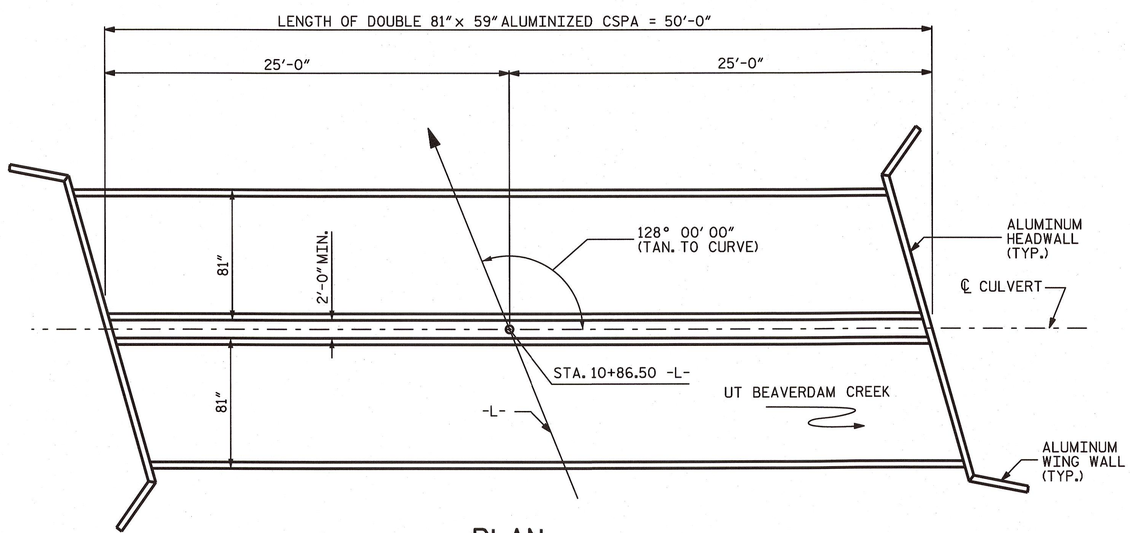


SECTION NORMAL TO ROADWAY

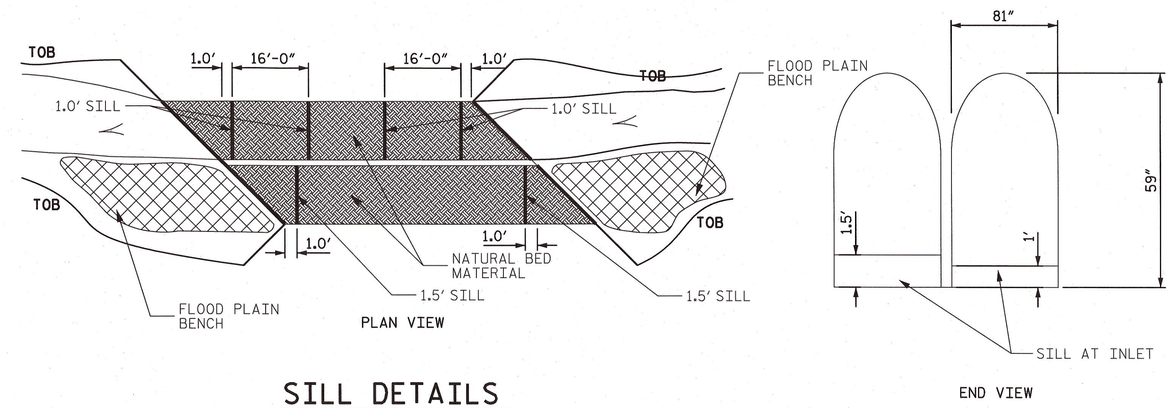
SILLS AND NATURAL BED MATERIAL NOT SHOWN FOR CLARITY



RIGHT ANGLE SECTION OF ALUMINIZED CSPA



PLAN



SILL DETAILS

NOTES:

BED MATERIAL SHALL BE EXCAVATED AND STOCKPILED DURING INSTALLATION OF THE CULVERTS AND SILLS. THE NATURAL BED MATERIALS SHALL THEN BE PLACED IN THE CULVERT TO THE SPECIFIED ELEVATION.

SILLS ARE TO BE MADE OF ALUMINIZED STEEL AND MECHANICALLY ATTACHED TO THE INVERT OF THE CULVERT.

CLASS 'B' RIP RAP MAY BE USED TO SUPPLEMENT NATURAL BED MATERIAL.

DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.

PROJECT NO. 17BP.13.R.29

BUNCOMBE **COUNTY**

STATION: 10+86.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 81" x 59" ALUMINIZED CSPA 128° SKEW

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

NORTH CAROLINA PROFESSIONAL SEAL 19979 ENGINEER TIMOTHY M. HAM D. SHAH
11/26/13

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

DRAWN BY : ADS DATE : 02/13
CHECKED BY : TMH DATE : 04/13

30-OCT-2013 11:48
J:\Bunc 401\Structures\Plans\BUNC_401_STRUCT_02.dgn
p001050A AT R9YVV7B