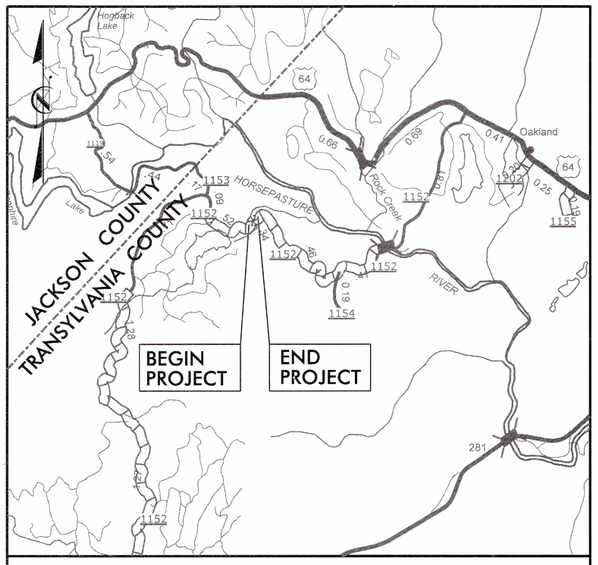
09/08/99

PROJECT: 17BP.14.R.17

CONTRACT: DN00150

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

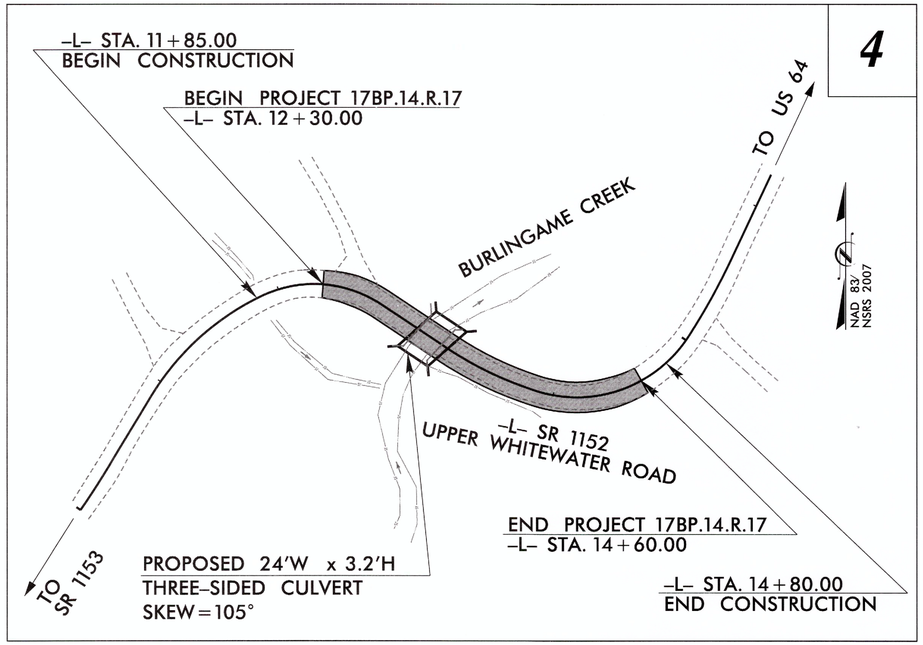
TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 23 ON SR 1152 (UPPER WHITEWATER ROAD) OVER BURLINGAME CREEK

TYPE OF WORK: GRADING, GUARDRAIL, DRAINAGE AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.17	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.17		PE
17BP.14.R.17		RW
17BP.14.R.17		UTILITY
17BP.14.R.17		CONSTR



GRAPHIC SCALES

PLANS: 20 10 0 20 40

PROFILE (HORIZONTAL): 20 10 0 20 40

PROFILE (VERTICAL): 5 2.5 0 5 10

DESIGN DATA

ADT 2013 = 110
ADT 2033 = 160
DHV = N/A %
D = N/A %
T = 6 % *
V = 20 MPH
* TTST = N/A DUAL 6%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.14.R.17 = 0.039 mi.
LENGTH STRUCTURE PROJECT 17BP.14.R.17 = 0.005 mi.
TOTAL LENGTH PROJECT 17BP.14.R.17 = 0.044 mi.

Prepared for NCDOT In the Office of:
moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 11, 2013

LETTING DATE: JUNE 10, 2014

TIM REID, P.E.
PROJECT ENGINEER

TRENT HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
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SIGNATURE: P.E. 5-23-2014

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SIGNATURE: P.E. 5/23/2014

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/23/2014
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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID 5/22/2014

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INDEX OF SHEETS

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
2-A	ON-SITE DETOUR PLAN AND PROFILE
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY PARCEL INDEX, RIP RAP SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-6	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES PLANS BY OTHERS
X-A, X-1 THRU X-9	CROSS-SECTION SUMMARY, CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS
SN	STRUCTURE STANDARD NOTES

GENERAL NOTES:

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

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
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:

HAYWOOD EMC - Power
COMPORIUM - 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 IN ACCORDANCE WITH SECTION 801 OF THE 2012 NORTH CAROLINA STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

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
225.01	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
876.01	Rip Rap in Channels

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bhuffman

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	1–B

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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	1-C
Location and Surveys	

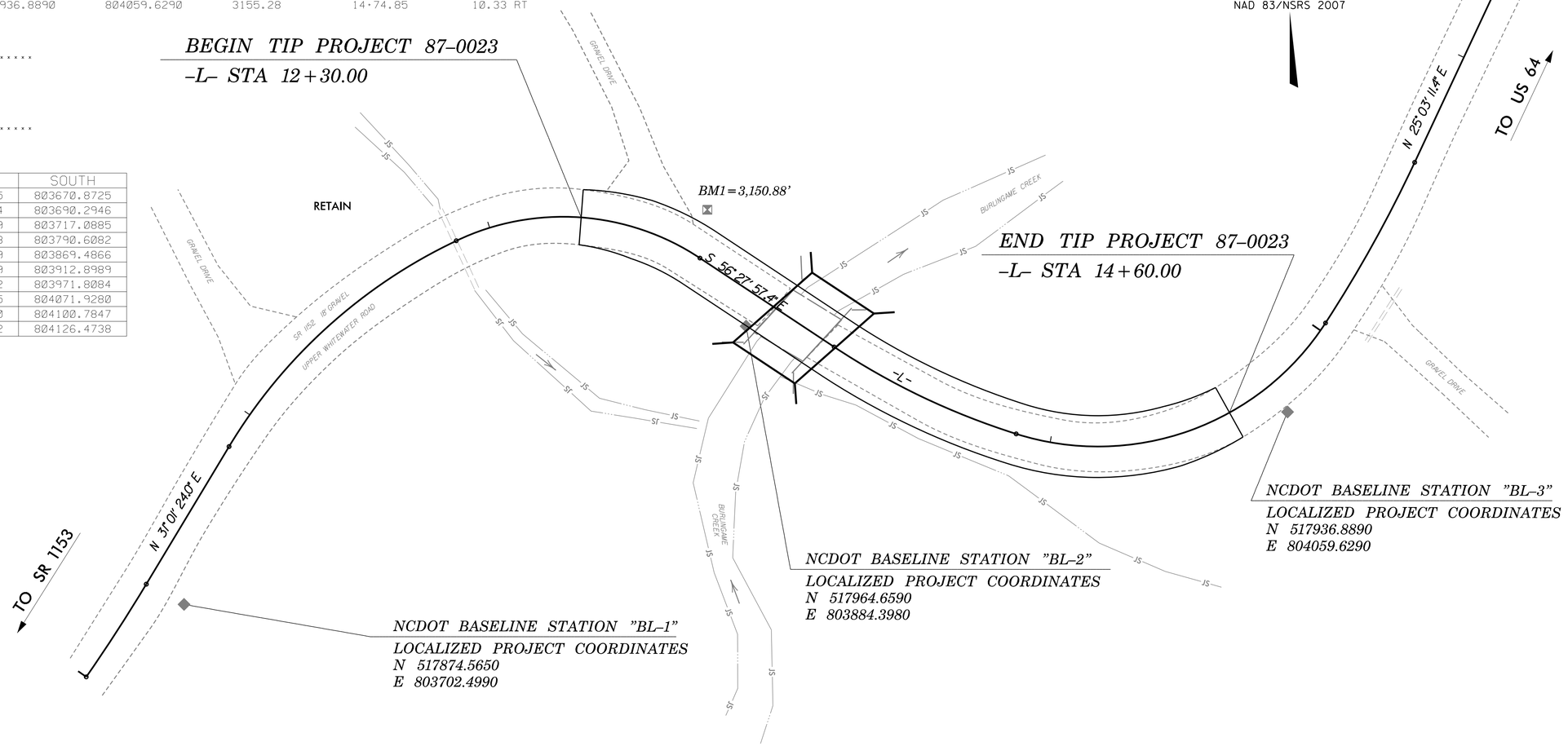
SURVEY CONTROL SHEET 87-0023 -FINAL-

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	517874.5650	803702.4990	3152.32	10+36.42	13.84 RT
2	BL-2	517964.6590	803884.3980	3149.40	12+95.68	10.14 RT
3	BL-3	517936.8890	804059.6290	3155.28	14+74.85	10.33 RT

****
BM1 ELEVATION = 3150.88
N 518002 E 803872
L STATION 12+65.42 14 LEFT
RR SPIKE IN 17" HEMLOCK
****

FINAL -L-

TYPE	STATION	NORTH	SOUTH
PC	10+00.00	517851.1135	803670.8725
PT	10+35.75	517881.1224	803690.2946
PC	10+87.74	517925.6739	803717.0885
PCC	11+88.40	517992.3128	803790.6082
PT	12+71.07	517986.7059	803869.4866
PC	13+23.16	517957.9349	803912.8989
PCC	13+88.66	517929.7752	803971.8084
PCC	15+02.92	517965.6805	804071.9280
PT	15+62.46	518017.7050	804100.7847
POT	16+23.13	518072.6622	804126.4738



NC GRID
NAD 83/NSRS 2007

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "870023 BL-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 517874.5650(ft) EASTING: 803702.4990(ft) ELEVATION: 3152.32(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999728532

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "870023 BL-1" TO -L- STATION 12+30.00 IS N 45° 44' 00.77" E 179.5097'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

FINAL ROW MARKER AND IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	SOUTH
L	12+25.00	-11.00	518011.0768	803826.1838
L	12+50.00	-30.00	518024.3734	803860.1266
L	12+71.07	-46.00	518025.0496	803894.8985
L	13+23.16	-70.00	518016.2815	803951.5728
L	13+88.66	-33.00	517961.2369	803981.7662
L	14+70.00	-25.00	517962.3722	804034.7768
L	14+80.00	-11.00	517956.4561	804049.7263
L	14+80.00	11.00	517940.1219	804064.4638
L	14+70.00	30.00	517917.6130	804066.7395
L	14+50.00	30.00	517904.6297	804043.3200
L	13+88.66	40.00	517891.6398	803959.7382
L	13+23.16	50.00	517916.2546	803885.2809
L	12+95.00	55.00	517927.6433	803859.0457
L	12+71.07	37.00	517955.8643	803849.0466
L	12+50.00	25.00	517972.2188	803842.6655
L	11+90.00	20.00	517974.7510	803800.2779
L	11+85.00	11.00	517980.9826	803792.4655

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   87-0023_LS_CONTROL.TXT

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

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

GEOIDAL MODEL –
NOTE: DRAWING NOT TO SCALE

5/23/2014
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phillipson

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID 5/23/2014

moffatt & nichol
16-16 EAST MILLBROOK ROAD, SUITE 160
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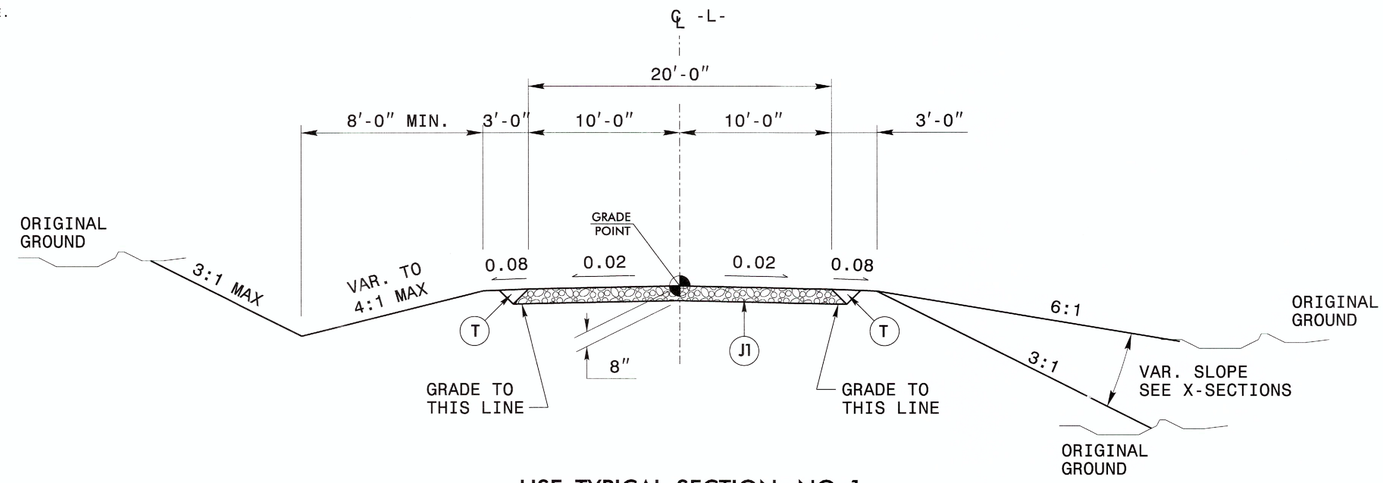
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

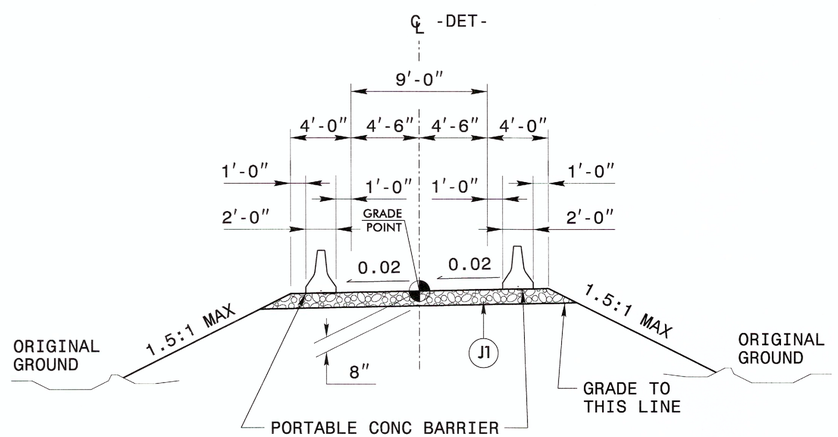
J1	PROP. 8" AGGREGATE BASE COURSE
T	EARTH MATERIAL
U	EXISTING GRAVEL PAVEMENT

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



USE TYPICAL SECTION NO. 1

-L- STA. 12+30.00 TO -L- STA. 14+60.00



USE TYPICAL SECTION NO. 2

-DET- STA. 12+00.00 TO -DET- STA. 14+60.00

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thuffman

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	2-A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID — 5/23/2014

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. BECK — 5-23-2014

moffatt & nichol — 8.5 EAST WILLBROOK ROAD, SUITE 150 RALEIGH, NORTH CAROLINA 27609 (919) 781-4626 VOICE (919) 781-4865 FAX

STAGE CONSTRUCTION ALIGNMENT -DET-

PI Sta 10+17.88
△ = 3° 46' 34.3" (LT)
D = 10° 33' 43.9"
L = 35.75'
T = 17.88'
R = 542.46'
e = 6.0%
DS = 40 MPH

PI Sta 11+39.56
△ = 33° 34' 27.7" (RT)
D = 33° 21' 14.7"
L = 100.66'
T = 51.82'
R = 171.78'
e = 6.0%
DS = 25 MPH

PI Sta 12+17.39
△ = 39° 40' 17.6" (RT)
D = 71° 17' 14.2"
L = 55.65'
T = 28.99'
R = 80.37'
e = 6.0%
DS = 20 MPH

PI Sta 12+55.54
△ = 25° 52' 35.2" (LT)
D = 114° 35' 29.6"
L = 22.58'
T = 11.49'
R = 50.00'
e = 6.0%
DS = 15 MPH

PI Sta 12+90.24
△ = 45° 08' 28.5" (RT)
D = 114° 35' 29.6"
L = 39.39'
T = 20.78'
R = 50.00'
e = 6.0%
DS = 15 MPH

BEGIN STAGE CONSTRUCTION
STA 12+00.00 -DET-

-DET- PCC 11+88.40

-DET- PRC 12+44.05

-DET- PRC 12+66.63

-DET- PC 12+69.45

-DET- PT 13+08.85

-DET- PC 13+33.53

-DET- PT 15+72.30

-DET- PCC 15+12.76

-DET- POT 16+32.96

END STAGE CONSTRUCTION
STA 14+60.00 -DET-

-DET- PC 10+87.74

-DET- PT 10+35.75

-DET- PRC 13+61.57

-DET- PCC 14+10.22

N 31° 01' 24.0" E

N 78° 23' 34.1" E

N 25° 07' 11.4" E

TEMPORARY SHORING
STA 13+00 TO 13+46 -DET- (LT)
STA 13+00 TO 13+40 -DET- (RT)

TOE PROTECTION, SEE DETAIL G
STA 12+65 TO 13+00 LT -DET-

SPECIAL CUT DITCH
SEE DETAIL H
STA 12+80 TO 13+12.4 RT -DET-

TEMPORARY SHORING
STA 13+00 TO 13+13 -DET- (RT)

SPECIAL CUT DITCH
SEE DETAIL H
STA 13+28 TO 13+60 RT -DET-

TEMPORARY SHORING
STA 13+27 TO 13+40 -DET- (RT)

1 MARY BALL, ETAL
DB 450 PG 487

2 MARY BALL
DB N/A PG N/A

3 TURNER & MARY BALL
DB 372 PG 427

+25 11'
+60.00 11' LT
+50 25'
+60.00 24' LT
+90 40'
+00 40'
+84 11'
+30 24'
+60.00 11' RT
+60.00 25' RT
+90.00 40' RT
+90 20'
+43.00 36' LT
+65 24'
+00 24'
+80 11'
+60 27'
+54.00 11' LT
+26.00 42' RT
+88.66 33' RT
+00.00 35' RT
+80.00 11' RT
+70.00 30' RT
+50.00 30' RT

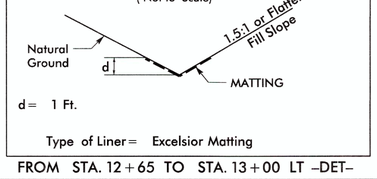
BM#1
-BL- STA 7+02.99
39.74' LT
ELEV=3150.88'

INV=3147.03'
INV=3146.47'
O/H TELE ELEV=3169.54'
O/H ELEC ELEV=3181.29'
O/H ELEC ELEV=3158.55'
DUKE ENERGY #TS2063
POSSIBLE U/G TELE
COMPORIUM TELE
EXIST. T
BT CMP
U/G TELE MARKER

WOODS
GRAVEL DRIVE
SR 1152 (S GRAVEL) UPPER WHITEWATER ROAD
BURLINGAME CREEK
EXISTING R/W
EXISTING ℄

NAD 83/NSRS 2007

DETAIL G
TOE PROTECTION
(Not to Scale)

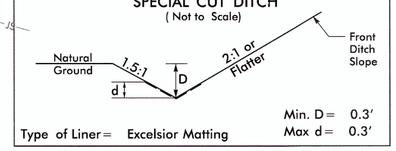


d = 1 Ft.

Type of Liner = Excelsior Matting

FROM STA. 12+65 TO STA. 13+00 LT -DET-

DETAIL H
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 0.3'
Max d = 0.3'

Type of Liner = Excelsior Matting

FROM STA. 12+80 TO STA. 13+12.4 RT -DET-
FROM STA. 13+28 TO STA. 13+60 RT -DET-

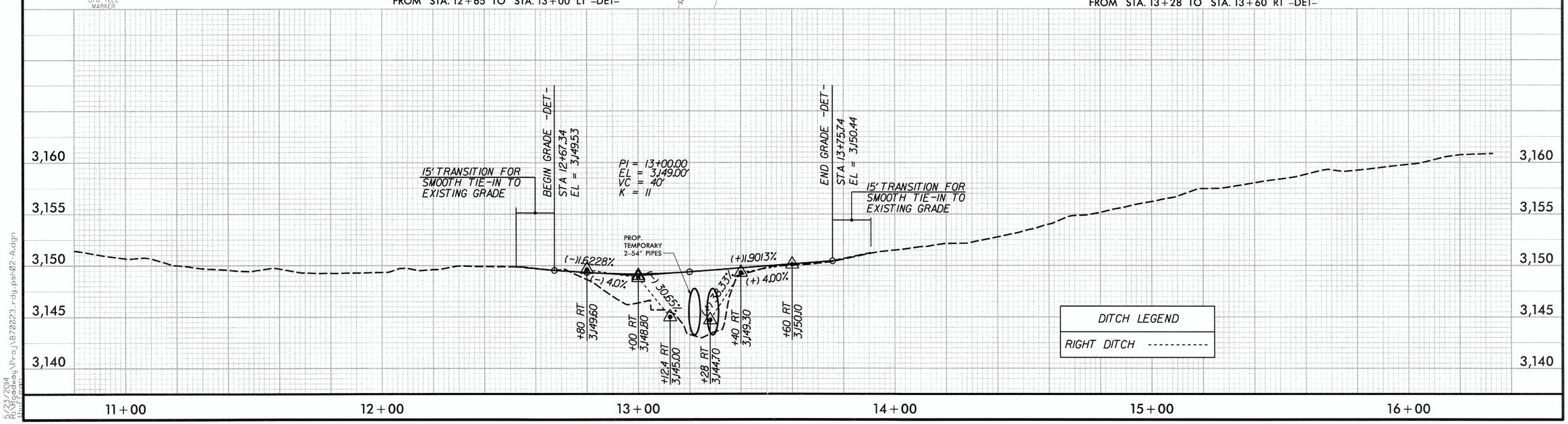
STAGE CONSTRUCTION ALIGNMENT -DET-

PI Sta 13+47.93
△ = 32° 07' 45.9" (RT)
D = 114° 35' 29.6"
L = 28.04'
T = 14.40'
R = 50.00'
e = 6.0%
DS = 15 MPH

PI Sta 13+88.02
△ = 55° 45' 09.3" (LT)
D = 114° 35' 29.6"
L = 48.65'
T = 26.45'
R = 50.00'
e = 6.0%
DS = 15 MPH

PI Sta 14+68.24
△ = 66° 55' 54.9" (LT)
D = 65° 16' 29.5"
L = 102.54'
T = 58.02'
R = 87.78'
e = 6.0%
DS = 30 MPH

PI Sta 15+42.58
△ = 7° 55' 32.9" (LT)
D = 13° 18' 43.0"
L = 59.54'
T = 29.82'
R = 430.41'
e = 6.0%
DS = 35 MPH



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bhuffman

12/06/07

COMPUTED BY: C. POWELL DATE: 5232014
CHECKED BY: T. HUFFMAN DATE: 5232014

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	3

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.17

Item Number	Sec #	Qunatity	Unit	Description
0000100000-N	800	1	LS	Mobilization
0000400000-N	801	1	LS	Construction Surveying
0043000000-N	226	1	LS	Grading
0050000000-E	226	0.25	ACR	Supplemental Clearing and Grubbing
0057000000-E	226	50	CY	Undercut Excavation (Contingency)
0195000000-E	265	50	CY	Select Granular Material (Contingency)
0196000000-E	270	100	SY	Geotextile for Soil Stablilization (Contingency)
0199000000-E	SP	440	SF	Temporary Shoring
0576000000-E	310	56	LF	54" CS Pipe Culverts, 0.138"
0995000000-E	340	56	LF	Pipe Removal
1121000000-E	520	350	TON	Aggregate Base Course
1220000000-E	545	50	TON	Incidental Stone Base (Contingency)
4400000000-E	1110	176	SF	Work Zone Signs (Stationary)
4410000000-E	1110	28	SF	Work Zone Signs (Barricade Mounted)
4430000000-N	1130	17	EA	Drums
4445000000-E	1145	16	LF	Barricades (Type III)
4450000000-N	1150	150	HR	Flagger
4485000000-E	1170	150	LF	Portable Concrete Barrier
6000000000-E	1605	895	LF	Temporary Silt Fence
6009000000-E	1610	30	TON	Stone for Erosion Control, Class B
6012000000-E	1610	55	TON	Sediment Control Stone
6015000000-E	1615	0.5	ACR	Temporary Mulching
6018000000-E	1620	50	LB	Seed for Temporary Seeding
6021000000-E	1620	0.25	TON	Fertilizer for Temporary Seeding
6029000000-E	SP	200	LF	Safety Fence
6030000000-E	1630	30	CY	Silt Excavation
6036000000-E	1631	1,000	SY	Matting for Erosion Control
6042000000-E	1632	60	LF	1/4" Hardware Cloth
6070000000-N	1639	2	EA	Special Stilling Basin
6071020000-E	SP	5	LB	Polyacrylamide (PAM)
6084000000-E	1660	0.5	ACR	Seeding & Mulching
6090000000-E	1661	50	LB	Seed for Repair Seeding
6093000000-E	1661	0.25	TON	Fertilizer for Repair Seeding
6096000000-E	1662	50	LB	Seed for Supplemental Seeding
6108000000-E	1665	0.25	TON	Fertilizer Topdressing
6111000000-E	SP	240	LF	Impervious Dike
6117000000-N	SP	9	EA	Response for Erosion Control
7980000000-N	SP	2	EA	Temporary Traffic Signal (Pre-timed)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.17

Item Number	Sec #	Qunatity	Unit	Description
8035000000-N	402	1	LS	Removal of Existing Structure at Sta 13+11.60
8070000000-E	410	40	CY	Foundation Excavation
8121000000-N	412	1	LS	Unclassified Structure Excavation, Sta 13+11.60
8196000000-E	420	27	CY	Class A Concrete (Culvert)
8245000000-E	425	2,000	LB	Reinforcing Steel (Culvert)
8622000000-E	876	40	TON	Rip Rap Class II
8622000000-E	876	60	SY	Geotextile for Drainage
8804000000-N	SP	1	LS	Precast Reinforced Conc Three-sided Culvert at Sta 13+11.60

5/23/2014
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thuffman

COMPUTED BY:	C. POWELL	DATE:	04-17-14
CHECKED BY:	T. HUFFMAN	DATE:	04-21-14

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SUMMARY OF EARTHWORK

ALIGNMENT	STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-DET-	12+00.00	14+60.00	5	156	151	
-L-	12+30.00	14+60.00	61	261	200	
-DET- REMOVAL	12+00.00	14+60.00	80			80
		SUBTOTALS:	146	417	351	80
REDUCTION FOR PREVIOUSLY PLACED FILL (-DET-)				-25	-25	
REDUCTION FOR CULVERT				-109	-109	
		PROJECT TOTALS:	146	283	217	
5% TO REPLACE TOPSOIL ON BORROW PIT					11	
		GRAND TOTALS:	146		227	80
		SAY:	150		250	

EST 50 CY UNDERCUT EXCAVATION (CONTINGENCY)
EST 50 CY SELECT GRANULAR MAT'L (CONTINGENCY)
EST 100 SY GEOTEXTILE FOR SOIL STABILIZATION (CONTINGENCY)
EST 50 TON INCIDENTAL STONE (CONTINGENCY)

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.

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

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	MARY BALL, ETAL	3.34 AC	0.12 AC	3.22 AC	–	0.02 AC	–	–
2	MARY BALL	22.14 AC	0.01 AC	–	22.13 AC	0.02 AC	–	–
3	TURNER & MARY BALL	0.49 AC	0.03 AC	–	0.37 AC	0.04 AC	–	–

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"		
13+22 -DET-	CL	0201													
13+29 -DET-	CL	0202													
TOTALS															

STATION	BITUMINOUS COATED C.S. PIPE TYPE B 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .138	72" .168	
13+22 -DET-		28										
13+29 -DET-		28										
TOTALS		56										

STATION	STRUCTURAL PLATE PIPE 60" 12	60" 10		66" 12	66" 10		72" 12	72" 10				
13+22 -DET-												
13+29 -DET-												
TOTALS												

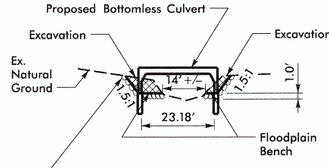
STATION	REINFORCED ENDWALLS WITH R.C. – C.Y.	REINFORCED ENDWALLS WITH C.S. – C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS												TEMPORARY SANDBAG HEADWALLS (S.F.)		REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS
13+22 -DET-															203							28	TEMP C.S. PIPE, TEMP HW LT
13+29 -DET-															137							28	TEMP C.S. PIPE, TEMP HW RT
TOTALS															340							56	TOTALS

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

8/17/99

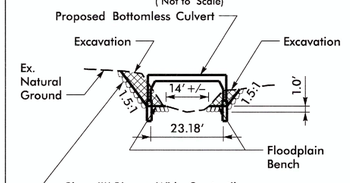
DETAIL C
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT INLET

STA. 13+07 RT –L–

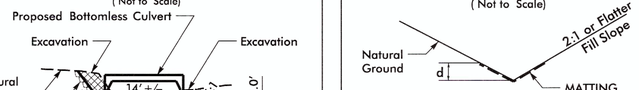
DETAIL D
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING UPSTREAM AT CULVERT OUTLET

STA. 13+15 LT –L–

DETAIL A
TOE PROTECTION
(Not to Scale)

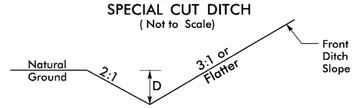


d= 1 Ft.

Type of Liner= Excelsior Matting

FROM STA. 12+60 TO STA. 13+00 LT –L–

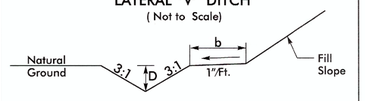
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM STA. 13+40 TO STA. 14+60 RT –L–

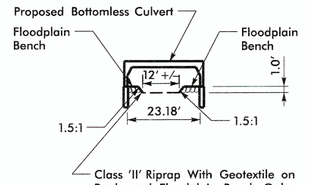
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 13+20 TO STA. 13+40 RT –L–

DETAIL E
CULVERT INTERNAL CHANNEL
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT OUTLET

STA. 13+10 –L–

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

5/23/2014

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK

5-23-2014

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX

NAD 83/NSRS 2007

BEGIN STATE PROJECT 17BPJ4.RJ7
-L- POC STA 12+30.00

-L- POC 16+23.13

-L- PC 11+88.40

-L- PT 12+71.07

-L- PC 13+23.16

-L- PT 15+62.46

N 25°03'11.4" E

-L- PCC 13+88.66

-L- PCC 15+02.92

END CONSTRUCTION
-L- POC STA 14+90.00

BEGIN CONSTRUCTION
-L- POC STA 11+85.00

N 31°01' 24.0" E

-L- PC 10+87.74

-L- PT 10+35.75

-L- PC 10+00.00

TURNER & MARY BALL
DB 372 PG 427

MARY BALL
DB N/A PG N/A

MARY BALL, ETAL
DB 450 PG 487

DOUGLAS LIDDEN & KAY WILLIAMS
DB 575 PG 216

BM#1
-BL- STA 7+02.99
39.74' LT
ELEV=3150.88'

TOE PROTECTION, SEE DETAIL A
STA 12+60 TO 13+00 LT –L–

16 LF OF OUTLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 18 TONS CLASS 'II' RIPRAP
EST 25 SY GEOTEXTILE
SEE DETAIL D, STA. 13+15 LT –L–

RETAIN

REMOVE EXISTING BRIDGE

16 LF OF INLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 20 TONS CLASS 'II' RIPRAP
EST 30 SY GEOTEXTILE
SEE DETAIL C, STA. 13+07 RT –L–

LATERAL 'V' DITCH
SEE DETAIL F
STA 13+20 TO 13+40 RT –L–

PROPOSED
23.18'W x 3.2H'
THREE-SIDED CULVERT
SKEW=105°

SPECIAL CUT DITCH
SEE DETAIL B
STA 13+40 TO 14+60 RT –L–

END STATE PROJECT 17BPJ4.RJ7
-L- POC STA 14+60.00

Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62'
2	517962.6920	803886.9470	3149.65'
3	517976.4400	803899.5080	3149.58'
4	517966.7170	803915.3300	3149.70'
5	517959.8330	803908.7750	3149.87'
6	517969.9760	803892.8920	3149.80'

-L-

PI Sta 10+17.88
Δ = 3° 46' 34.3" (LT)
D = 10° 33' 43.9"
L = 35.75'
T = 17.88'
R = 542.46'
e = 6.0%
DS = 40 MPH

PI Sta 11+39.56
Δ = 33° 34' 27.7" (RT)
D = 33° 21' 14.7"
L = 100.66'
T = 51.82'
R = 171.78'
e = 6.0%
DS = 25 MPH

PI Sta 12+33.81
Δ = 58° 56' 10.9" (RT)
D = 71° 17' 14.2"
L = 82.67'
T = 45.41'
R = 80.37'
e = 6.0%
DS = 20 MPH

PI Sta 13+56.12
Δ = 15° 58' 15.9" (LT)
D = 24° 22' 52.3"
L = 65.51'
T = 32.97'
R = 235.00'
e = 6.0%
DS = 30 MPH

PI Sta 14+55.51
Δ = 74° 35' 02.4" (LT)
D = 65° 16' 29.5"
L = 114.26'
T = 66.85'
R = 87.78'
e = 6.0%
DS = 30 MPH

PI Sta 15+32.74
Δ = 7° 55' 32.9" (LT)
D = 13° 18' 43.0"
L = 59.54'
T = 29.82'
R = 430.41'
e = 6.0%
DS = 35 MPH

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER R. REID

5/23/2014

moffatt & nichol
16 16 EAST MILLBROOK ROAD, SUITE 160
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HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK

5-23-2014

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51499

RIGHT DITCH ----------

3,165 / 3,160 / 3,155 / 3,150 / 3,145 / 3,140 / 3,135 / 3,130 / 3,125 / 3,120 / 3,115 / 3,110 / 3,105 / 3,100

30' TRANSITION FOR SMOOTH TIE IN

BEGIN GRADE -L-
STA 12+30.00
EL = 3,149.95

PI = 14+00.00
EL = 3,151.54
VC = 100'
K = 22
DS = 20 MPH

(+)0.9362%

(+)5.5636%

6.08%

END GRADE -L-
STA 14+60.00
EL = 3,154.88

30' TRANSITION FOR SMOOTH TIE IN

5.31%

PROPOSED 24'W x 3.2'H
THREE-SIDED CULVERT
SKEW = 105°

WSEL = 3144.2 (1/25/12)

+20 RT
3146.00

+50 RT
3147.59

+00 RT
3150.25

+50 RT
3153.31

+60 RT
3153.92

11+00 / 12+00 / 13+00 / 14+00 / 15+00 / 16+00

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 420	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3146.8	FT
BASE DISCHARGE	= 650	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3148.09	FT
OVERTOPPING DISCHARGE	= 960	CFS
OVERTOPPING FREQUENCY	= +100 (<500)	YRS
OVERTOPPING ELEVATION	= 3150.3	FT
DATE OF SURVEY	= 1/25/2012	
W.S. ELEVATION AT DATE OF SURVEY	= 3144.2	FT

5/23/2014
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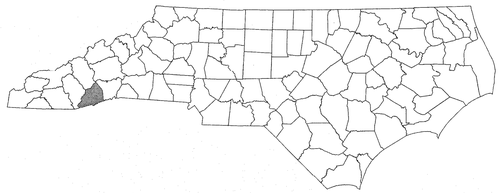
thuffman

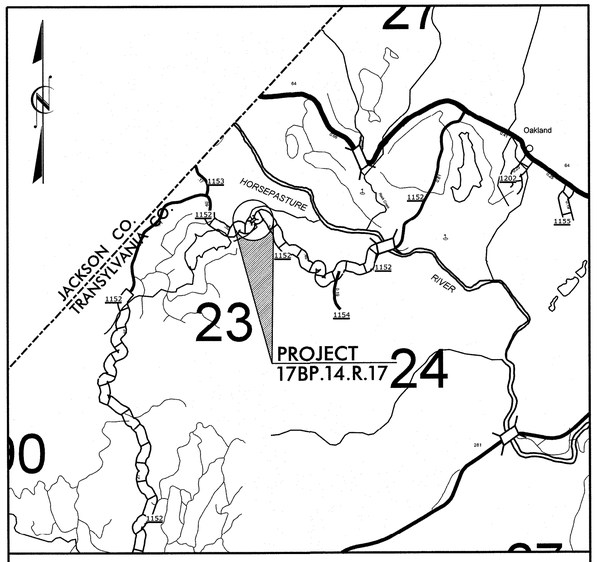
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

TRANSYLVANIA COUNTY

BRIDGE NO. 23 ON SR 1152 (UPPER WHITE WATER ROAD)





VICINITY MAP

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES AND LOCAL NOTES)
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-6	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL

SHEET NO.
TMP-1

PROJECT: 17BP.14.R.17

CONTRACT: DN00150

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

MERRICK "TRE" DUGAL III, PE — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
TRENT HUFFMAN, P.E. — *PROJECT ENGINEER*

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

APPROVED: _____
DATE: _____

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A. DUGAL III
5/21/14

5/21/2014
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User:kphinney

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-1A

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

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 JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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)

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 CONCRETE BARRIER

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PORTABLE SIGNAL

APPROVED:_____ DATE:_____

NORTH CAROLINA SEAL 022609 ENGINEER MERRICK A DUCAL III
5/21/14

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

ROADWAY STANDARD DRAWINGS & LEGEND

5/21/2014
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User:kphinrey

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-1B

RAMEY KEMP & ASSOCIATES, INC.
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NC License No. C-0910

GENERAL NOTES / LOCAL 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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

F) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON UPPER WHITEWATER ROAD.

G) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

H) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

K) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

N) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

O) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

P) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

APPROVED:_____ DATE:_____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022609 ENGINEER WERRICK A DUGAL III

5/21/14

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

GENERAL NOTES / LOCAL NOTES

5/21/2014
R-5821_10023_TC_TCP_3.dgn
User:kpinney

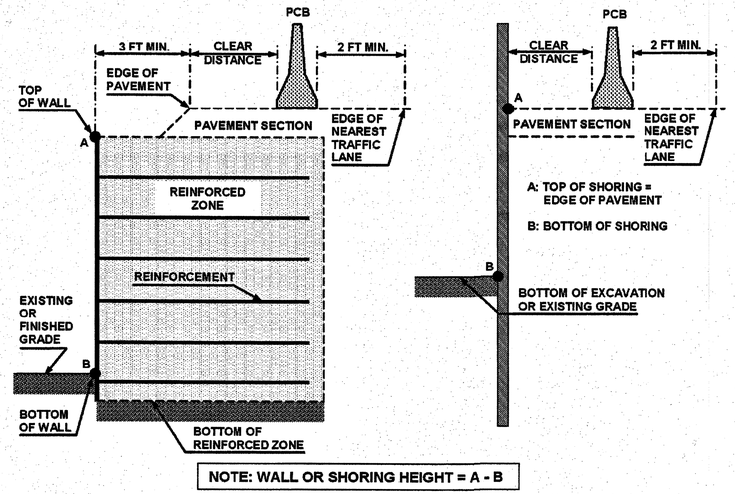

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-2A

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

*** See Figure Below**

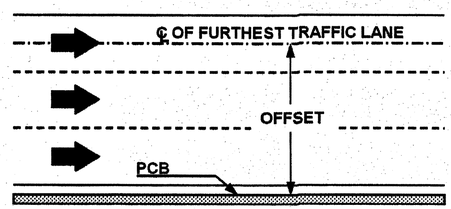

FIGURE B

APPROVED: _____ DATE: _____

SEAL

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

PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-3

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PHASING NOTES

PHASE I (SEE SHEET TMP-4)

STEP 1: - CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS PER RSD NO. 1101.01, SHEET 3 OF 3.

STEP 2: - AWAY FROM TRAFFIC USING RSD NO. 1101.02, SHEET 1 OF 15 AND FLAGGERS AS NECESSARY, CONTRACTOR SHALL:

- INSTALL TEMPORARY 54" DRAIN PIPES.

- INSTALL FILL MATERIAL FOR TEMPORARY ON-SITE DETOUR (-DET-). SEE ROADWAY PLANS.

STEP 3: - USING FLAGGERS, INSTALL PCB, ATTENUATORS AND TEMPORARY PORTABLE TRAFFIC SIGNALS AND SHIFT TRAFFIC TO ON-SITE DETOUR.

- NOTE: FLAGGERS MAY BE USED DURING DAYTIME CONSTRUCTION ACTIVITIES. TEMPORARY PORTABLE TRAFFIC SIGNALS SHALL REMAIN IN OPERATION WHEN CONTRACTOR IS NOT PRESENT ON SITE.

PHASE II (SEE SHEET TMP-5)

STEP 1: - UPON COMPLETION OF PHASE I, INSTALLATION OF PCB, ATTENUATORS, PORTABLE TRAFFIC SIGNALS AND SHIFTING OF TRAFFIC,CONTRACTOR SHALL BEGIN ONE-LANE, TWO-WAY TRAFFIC OPERATION UTILIZING NEWLY CONSTRUCTED TEMPORARY WIDENING SHOWN ON TMP-5.

STEP 2: - AWAY FROM TRAFFIC USING FLAGGERS AS NECESSARY (SEE NOTE IN PHASE I - STEP 3), CONTRACTOR SHALL:

- REMOVE EXISTING BRIDGE.

- INSTALL FIRST PHASE OF PROPOSED BOTTOMLESS CULVERT.

- REMOVE ANY TEMPORARY SHEETING/COFFERDAMS AND TEMPORARY HEADWALL. COMPLETE INLET RIPRAP BANK STABILIZATION.

- CONSTRUCT REMAINING PORTION OF ROADWAY FILL AND ROADSIDE DITCHES.

- INSTALL GUARDRAIL ON SOUTH SIDE OF UPPER WHITEWATER ROAD.

STEP 3: - USING FLAGGERS AS NECESSARY, SHIFT TRAFFIC TO FINAL ROAD ALIGNMENT.

PHASE III (SEE SHEET TMP-6)

STEP 1: - UPON COMPLETION OF PHASE II, INSTALLATION OF PCB, ATTENUATORS, PORTABLE TRAFFIC SIGNALS AND SHIFTING OF TRAFFIC,CONTRACTOR SHALL BEGIN ONE-LANE, TWO-WAY TRAFFIC OPERATION UTILIZING NEWLY CONSTRUCTED ROADWAY SHOWN ON TMP-6.

STEP 2: - AWAY FROM TRAFFIC USING FLAGGERS AS NECESSARY (SEE NOTE IN PHASE I - STEP 3), CONTRACTOR SHALL:

- REMOVE TEMPORARY FILL AND FINISH GRADE ROADWAY AT TIE POINTS.

- INSTALL REMAINDER OF PROPOSED BOTTOMLESS CULVERT.

- REMOVE ANY TEMPORARY SHEETING/COFFERDAMS AND TEMPORARY HEADWALL. COMPLETE OUTLET RIPRAP BANK STABILIZATION.

- CONSTRUCT REMAINDER OF ROADSIDE FILL AND ROADSIDE DITCHES.

- INSTALL GUARDRAIL ON NORTH SIDE OF UPPER WHITEWATER ROAD.

STEP 3: - UPON COMPLETION, OPEN ROAD TO TWO LANE TWO WAY TRAFFIC.

APPROVED:_____ DATE:_____

SEAL
5/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A DUGAL, III

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

PHASING NOTES

SYSTIME=$$$$$$$$$$ SYSNAME=$$$$$$$$$$ DGN=$$$$$$$$$$ DGNFILE=$$$$$$$$$$

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-4

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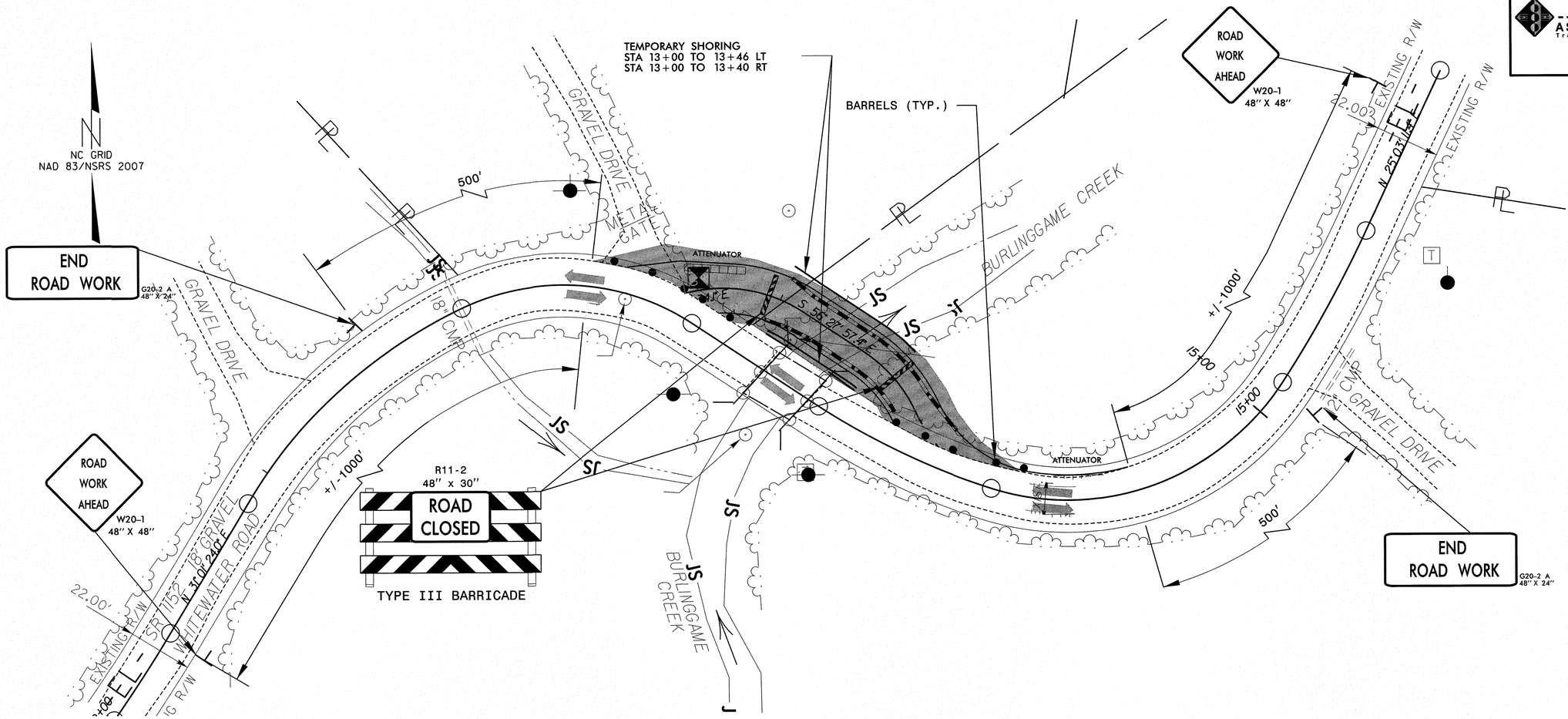

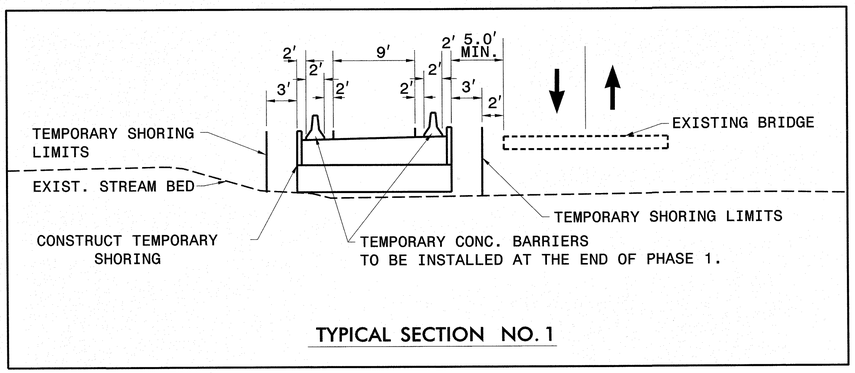

TYPICAL SECTION NO. 1

NOTES:

1. USE FLAGGER FOR WORK TO TIE DETOUR TO EXISTING ROAD. SEE FLAGGER SIGN LAYOUT ON SHEET TMP-5.
2. COORDINATE TRAFFIC CONTROL OPERATIONS WITH PROPERTY OWNERS PRIOR TO BEGINNING CONSTRUCTION.
3. FOR DETOUR AND TEMPORARY PIPES, SEE SHEET 2A.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022609 ENGINEER MERRICK A DUGAL III
5/23/19

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

TEMPORARY TRAFFIC CONTROL PHASE I

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$
$$$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-5

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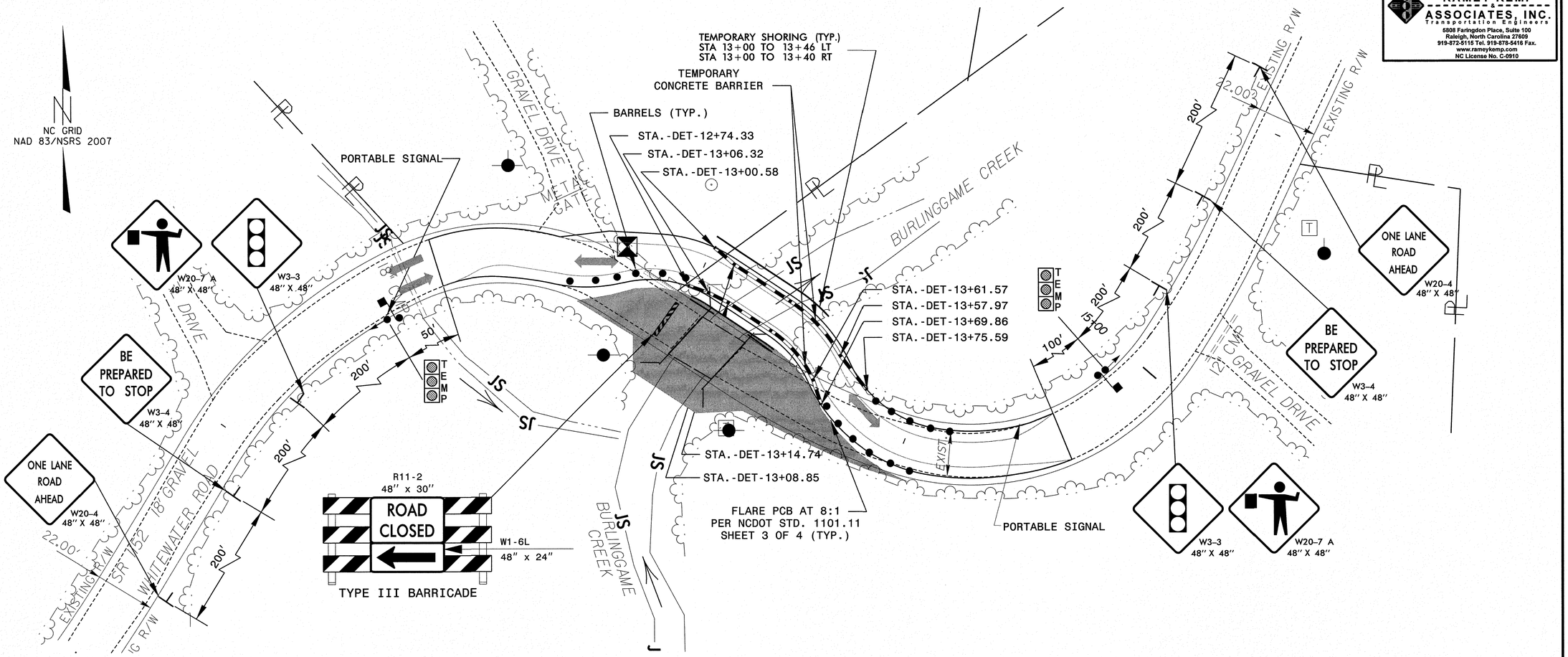

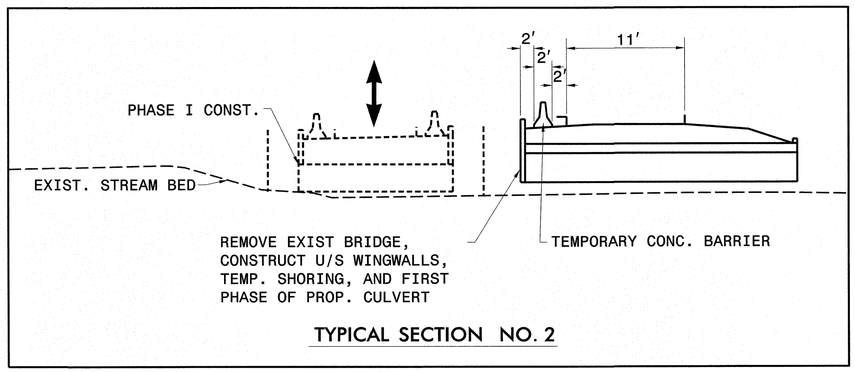

TYPICAL SECTION NO. 2

NOTES:

1. MAY USE FLAGGER OPERATION DURING DAY AND PORTABLE SIGNAL WHEN NO WORKERS ARE PRESENT.
2. COORDINATE TRAFFIC CONTROL OPERATION WITH PROPERTY OWNER PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR TO COORDINATE ACCESS POINT TO CONSTRUCTION ZONE AND PROVIDE TYPE III BARRICADES.

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022609 ENGINEER HERRICK A DUGAL, III

5/21/14

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

TEMPORARY TRAFFIC CONTROL PHASE II

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-6

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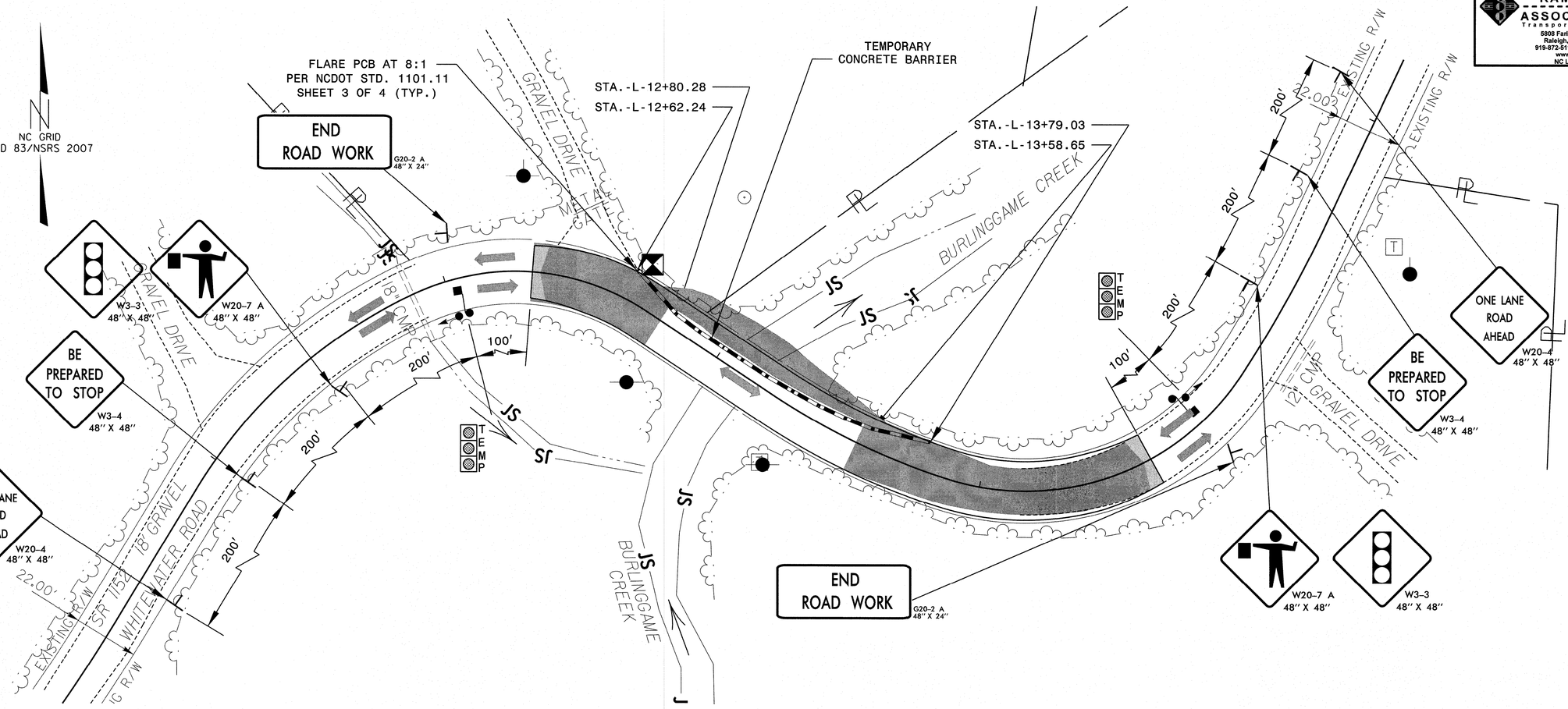

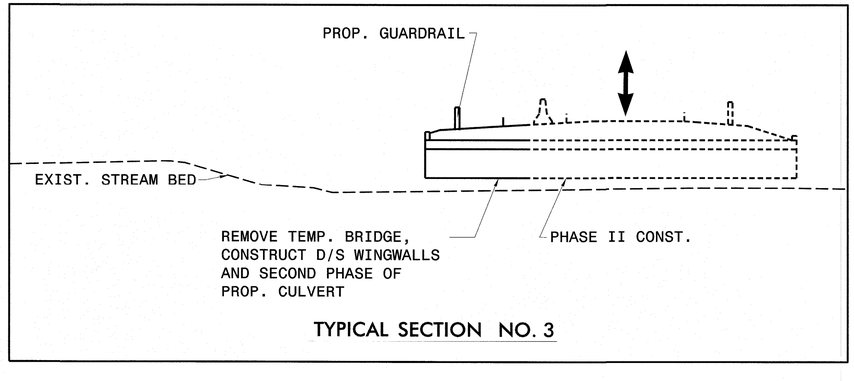

TYPICAL SECTION NO. 3

NOTE:

ENSURE PROPER TIES AT THE END OF EACH DAY FOR CONVERSION TO 2 LANE, 2-WAY TRAFFIC WHEN WORKERS NOT PRESENT. REMOVE/COVER FLAGGER SIGNING WHEN WORKERS NOT PRESENT.

APPROVED:_____ DATE:_____

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A DUGAL III

5/12/14

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

TEMPORARY TRAFFIC CONTROL PHASE III

5/21/2014
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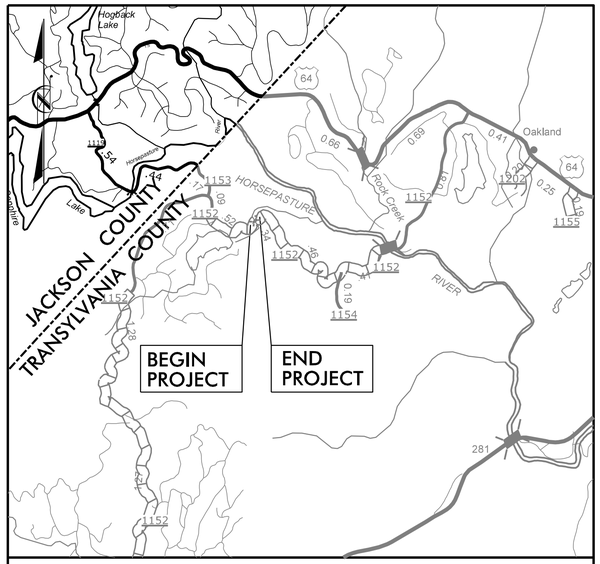
PROJECT: 17BP.14.R.17

CONTRACT: DN00150



VICINITY MAP

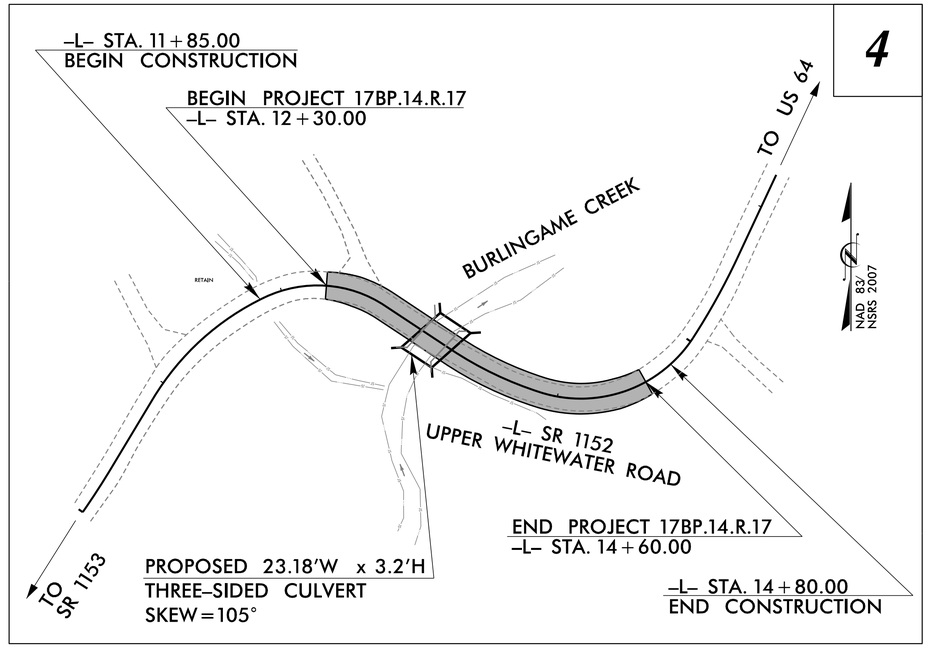
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 23 ON SR 1152 (UPPER WHITEWATER ROAD) OVER BURLINGAME CREEK

TYPE OF WORK: GRADING, GUARDRAIL, DRAINAGE AND CULVERT



BRIDGE 870023

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.17	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

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	EW 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.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. 11+90
to Sta. 14+70
Refer To E. C. Special Provisions for Special Considerations.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE

10 0 20
PLANS
10 0 20
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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 BY: moffatt & nichol
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DESIGN BY: *GREGORY W. BRICKHAM, PE*
NCDOT LEVEL III: DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS CERT #3006

REVIEWED BY: *JEFFREY L. RECK, PE*
NCDOT LEVEL III–A: DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS CERT #3585

Prepared for the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

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		

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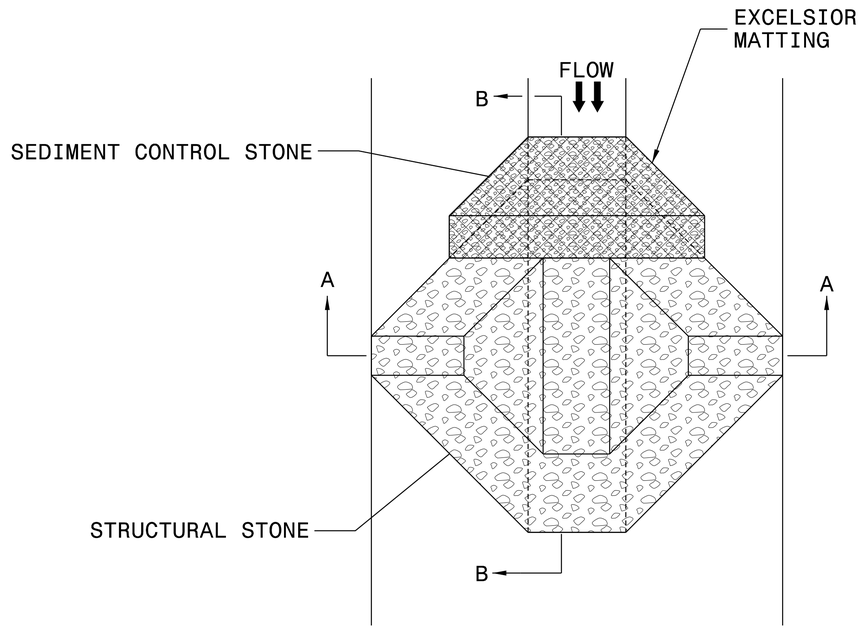
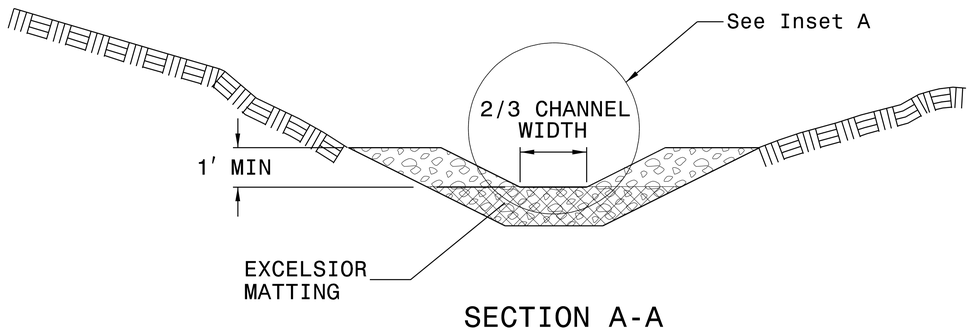
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-2

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



SECTION A-A

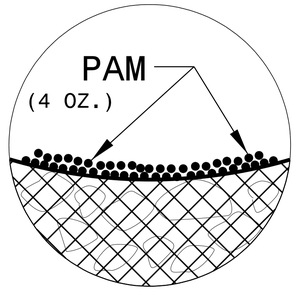
NOTES:

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

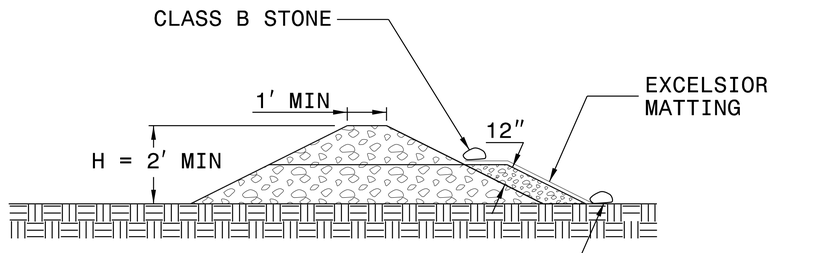
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

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



INSET A



SECTION B-B

NOT TO SCALE

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phillipson

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-3

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-	12+60	13+00	LT	30
2A	-DET-	12+65	13+00	LT	25
2A	-DET-	12+80	13+12.4	RT	25
2A	-DET-	13+28	13+60	RT	25
			SUBTOTAL		105
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					250
				TOTAL	355
				SAY	400

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		
		ADDITIONAL PSRM TO BE INSTALLED			
				TOTAL	
				SAY	

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

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.

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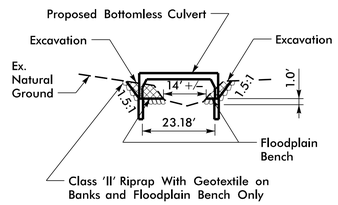
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-4\CONST-4

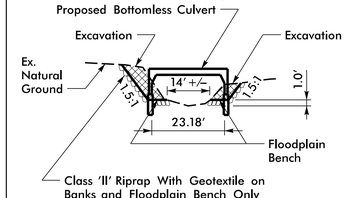
DETAIL C
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT INLET

STA. 13+07 RT –L–

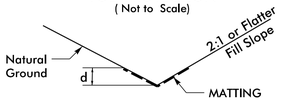
DETAIL D
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING UPSTREAM AT CULVERT OUTLET

STA. 13+15 LT –L–

DETAIL A
TOE PROTECTION
(Not to Scale)

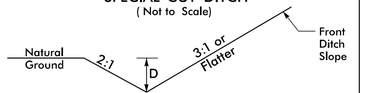


d= 1 Ft.

Type of Liner= Excelsior Matting

FROM STA. 12+60 TO STA. 13+00 LT –L–

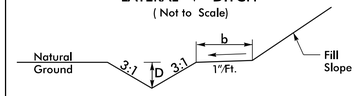
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM STA. 13+40 TO STA. 14+60 RT –L–

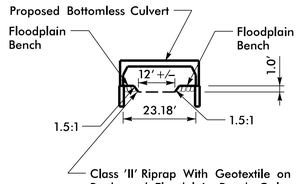
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 13+20 TO STA. 13+40 RT –L–

DETAIL E
CULVERT INTERNAL CHANNEL
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT OUTLET

STA. 13+10 –L–

NAD 83/NSRS 2007

BEGIN STATE PROJECT 17BPJ4.RJ7
–L– POC STA 12+30.00

–L– PCC 11+88.40

–L– PT 12+71.07

–L– PC 13+23.16

–L– POT 16+23.13

–L– PCC 13+88.66

–L– PCC 15+02.92

–L– PT 15+62.46

N 25°03' 11.4" E

END CONSTRUCTION
–L– POC STA 14+90.00

BEGIN CONSTRUCTION
–L– POC STA 11+85.00

N 31°01' 24.0" E

–L– PC 10+87.74

–L– PT 10+35.75

–L– PC 10+00.00

16 LF OF OUTLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 18 TONS CLASS 'II' RIPRAP
EST 25 SY GEOTEXTILE
SEE DETAIL D, STA. 13+15 LT –L–

TOE PROTECTION, SEE DETAIL A
STA 12+60 TO 13+00 LT –L–

16 LF OF INLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 20 TONS CLASS 'II' RIPRAP
EST 30 SY GEOTEXTILE
SEE DETAIL C, STA. 13+07 RT –L–

REMOVE EXISTING BRIDGE

RETAIN

Temporary Rock Silt Check Type A 1.0ft weir height

IMPERVIOUS DIKE

PROPOSED 23.18'W x 3.2'H THREE-SIDED CULVERT SKEW=105°

SPECIAL CUT DITCH
SEE DETAIL B
STA 13+40 TO 14+60 RT –L–

LATERAL 'V' DITCH
SEE DETAIL F
STA 13+20 TO 13+40 RT –L–

MARY BALL, ETAL
DB 450 PG 487

TURNER & MARY BALL
DB 372 PG 427

MARY BALL
DB N/A PG N/A

DOUGLAS LIDDEN & KAY WILLIAMS
DB 575 PG 216

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

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.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62'
2	517962.6920	803886.9470	3149.65'
3	517976.4400	803899.5080	3149.58'
4	517966.7170	803915.3300	3149.70'
5	517959.8330	803908.7750	3149.87'
6	517969.9760	803892.8920	3149.80'

–L–

PI Sta 10+17.88
Δ = 3° 46' 34.3" (LT)
D = 10° 33' 43.9"
L = 35.75'
T = 17.88'
R = 542.46'
e = 6.0%
DS = 40 MPH

PI Sta 11+39.56
Δ = 33° 34' 27.7" (RT)
D = 33° 21' 14.7"
L = 100.66'
T = 51.82'
R = 171.78'
e = 6.0%
DS = 25 MPH

PI Sta 12+33.81
Δ = 58° 56' 10.9" (RT)
D = 71° 17' 14.2"
L = 82.67'
T = 45.41'
R = 80.37'
e = 6.0%
DS = 20 MPH

PI Sta 13+56.12
Δ = 15° 58' 15.9" (LT)
D = 24° 22' 52.3"
L = 65.51'
T = 32.97'
R = 235.00'
e = 6.0%
DS = 30 MPH

PI Sta 14+55.51
Δ = 74° 35' 02.4" (LT)
D = 65° 16' 29.5"
L = 114.26'
T = 66.85'
R = 87.78'
e = 6.0%
DS = 30 MPH

PI Sta 15+32.74
Δ = 7° 55' 32.9" (LT)
D = 13° 18' 43.0"
L = 59.54'
T = 29.82'
R = 430.41'
e = 6.0%
DS = 35 MPH

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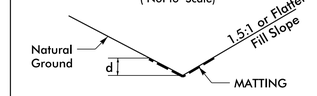
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-5\CONST-2A

STAGE 1 CONSTRUCTION SEQUENCE STA 13+11.61 –L–

1. INSTALL IMPERVIOUS DIKE AND STILLING BASINS.
2. INSTALL CLEAN WATER DIVERSION IN PERMANENT DITCH LINE.
3. REMOVE D/S SECTION OF EX. HEADWALL & EX. D/S WINGWALLS.
4. INSTALL TEMPORARY HEADWALLS FOR EX. ROADWAY FILL.
5. CONSTRUCT DETOUR ROADWAY – (1) 9′ WIDE LANE & 2@54″ TEMPORARY CSP CULVERTS.
6. SHIFT TRAFFIC TO DETOUR (–DET–) ROADWAY & CLOSE THROUGH SECTION OF UPPER WHITEWATER ROAD OVER EXISTING BRIDGE.

DETAIL G
TOE PROTECTION
(Not to Scale)

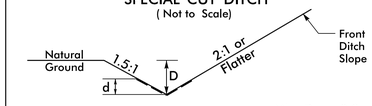


d = 1 Ft.

Type of Liner = Excelsior Matting

FROM STA. 12+65 TO STA. 13+00 LT –DET–

DETAIL H
SPECIAL CUT DITCH
(Not to Scale)



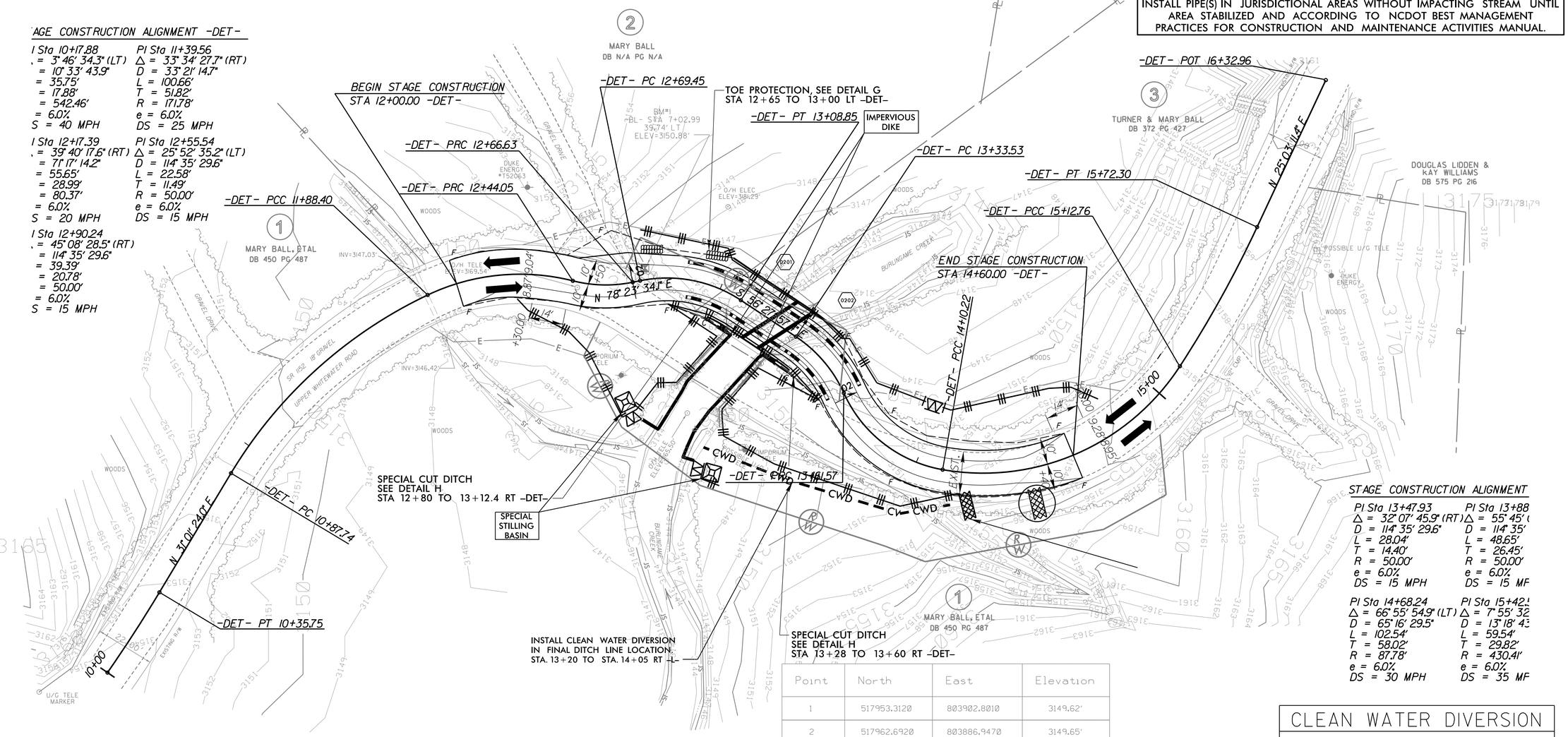
Type of Liner = Excelsior Matting

Min. D = 0.3′
Max d = 0.3′

FROM STA. 12+80 TO STA. 13+12.4 RT –DET–
FROM STA. 13+28 TO STA. 13+60 RT –DET–

NAD 83/NSRS 2007

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.



STAGE CONSTRUCTION ALIGNMENT -DET-

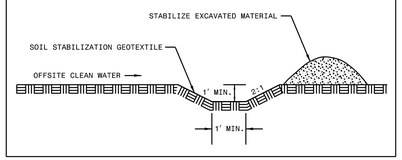
PI Sta 10+17.88	PI Sta 11+39.56
= 3° 46′ 34.3″ (LT)	△ = 33° 34′ 27.7″ (RT)
= 10° 33′ 43.9″	D = 33° 21′ 14.7″
= 35.75′	L = 100.66′
= 17.88′	T = 51.82′
= 542.46′	R = 171.78′
= 6.0%	e = 6.0%
S = 40 MPH	DS = 25 MPH
PI Sta 12+17.39	PI Sta 12+55.54
= 39° 40′ 17.6″ (RT)	△ = 25° 52′ 35.2″ (LT)
= 71° 17′ 14.2″	D = 114° 35′ 29.6″
= 55.65′	L = 22.58′
= 28.99′	T = 11.49′
= 80.37′	R = 50.00′
= 6.0%	e = 6.0%
S = 20 MPH	DS = 15 MPH
PI Sta 12+90.24	
= 45° 08′ 28.5″ (RT)	
= 114° 35′ 29.6″	
= 39.39′	
= 20.78′	
= 50.00′	
= 6.0%	
S = 15 MPH	

STAGE CONSTRUCTION ALIGNMENT

PI Sta 13+47.93	PI Sta 13+88
△ = 32° 07′ 45.9″ (RT)	△ = 55° 45′ (
D = 114° 35′ 29.6″	D = 114° 35′
L = 28.04′	L = 48.65′
T = 14.40′	T = 26.45′
R = 50.00′	R = 50.00′
e = 6.0%	e = 6.0%
DS = 15 MPH	DS = 15 MF
PI Sta 14+68.24	PI Sta 15+42.!
△ = 66° 55′ 54.9″ (LT)	△ = 7° 55′ 32
D = 65° 16′ 29.5″	D = 13° 18′ 4:
L = 102.54′	L = 59.54′
T = 58.02′	T = 29.82′
R = 87.78′	R = 430.4′
e = 6.0%	e = 6.0%
DS = 30 MPH	DS = 35 MF

Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62′
2	517962.6920	803886.9470	3149.65′
3	517976.4400	803899.5080	3149.58′
4	517966.7170	803915.3300	3149.70′
5	517959.8330	803908.7750	3149.87′
6	517969.9760	803892.8920	3149.80′

CLEAN WATER DIVERSION
(Not to Scale)



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PROJECT REFERENCE NO.	SHEET NO.
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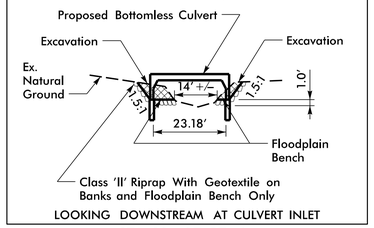
NAD 83/NSRS 2007

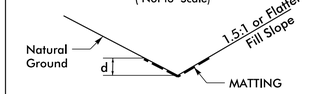
DETAIL C
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT INLET

STA. 13+07 RT –L–

DETAIL G
TOE PROTECTION
(Not to Scale)

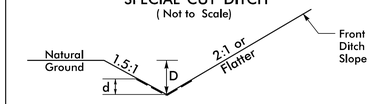


d= 1 Ft.

Type of Liner= Excelsior Matting

FROM STA. 12+65 TO STA. 13+00 LT –DET–

DETAIL H
SPECIAL CUT DITCH
(Not to Scale)



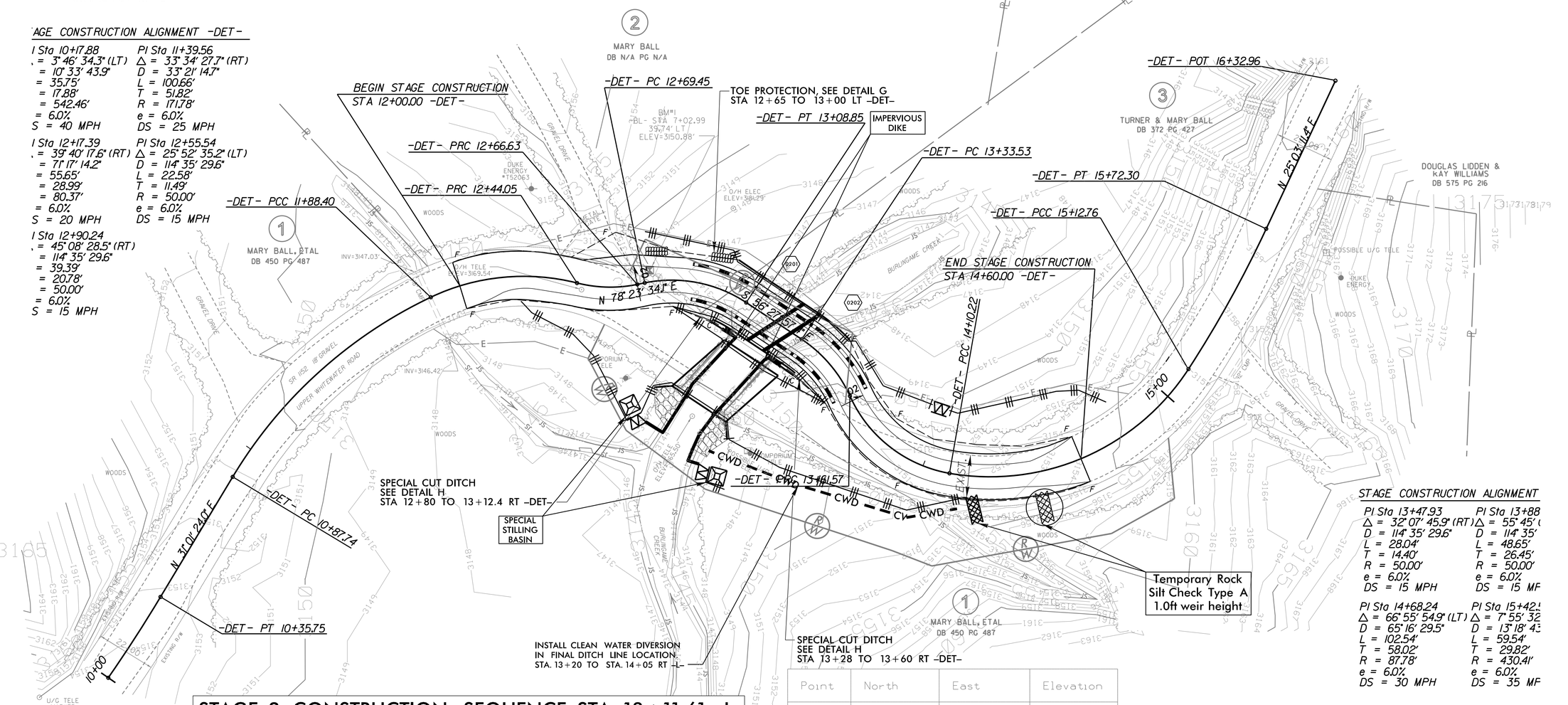
Type of Liner= Excelsior Matting

Min. D= 0.3'
Max d= 0.3'

FROM STA. 12+80 TO STA. 13+12.4 RT –DET–
FROM STA. 13+28 TO STA. 13+60 RT –DET–

STAGE CONSTRUCTION ALIGNMENT –DET–

PI Sta 10+17.88	PI Sta 11+39.56
Δ = 3° 46' 34.3" (LT)	Δ = 33° 34' 27.7" (RT)
D = 10° 33' 43.9"	D = 33° 21' 14.7"
L = 35.75'	L = 100.66'
T = 17.88'	T = 51.82'
R = 542.46'	R = 171.78'
e = 6.0%	e = 6.0%
S = 40 MPH	DS = 25 MPH
PI Sta 12+17.39	PI Sta 12+55.54
Δ = 39° 40' 17.6" (RT)	Δ = 25° 52' 35.2" (LT)
D = 71° 17' 14.2"	D = 114° 35' 29.6"
L = 55.65'	L = 22.58'
T = 28.99'	T = 11.49'
R = 80.37'	R = 50.00'
e = 6.0%	e = 6.0%
S = 20 MPH	DS = 15 MPH
PI Sta 12+90.24	
Δ = 45° 08' 28.5" (RT)	
D = 114° 35' 29.6"	
L = 39.39'	
T = 20.78'	
R = 50.00'	
e = 6.0%	
S = 15 MPH	



Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62'
2	517962.6920	803886.9470	3149.65'
3	517976.4400	803899.5080	3149.58'
4	517966.7170	803915.3300	3149.70'
5	517959.8330	803908.7750	3149.87'
6	517969.9760	803892.8920	3149.80'

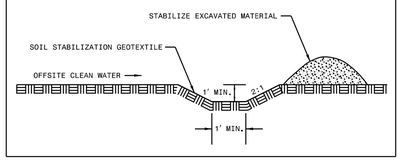
STAGE CONSTRUCTION ALIGNMENT

PI Sta 13+47.93	PI Sta 13+88
Δ = 32° 07' 45.9" (RT)	Δ = 55° 45' (
D = 114° 35' 29.6"	D = 114° 35'
L = 28.04'	L = 48.65'
T = 14.40'	T = 26.45'
R = 50.00'	R = 50.00'
e = 6.0%	e = 6.0%
DS = 15 MPH	DS = 15 MF
PI Sta 14+68.24	PI Sta 15+42.9
Δ = 66° 55' 54.9" (LT)	Δ = 7° 55' 32
D = 65° 16' 29.5"	D = 13° 18' 43
L = 102.54'	L = 59.54'
T = 58.02'	T = 29.82'
R = 87.78'	R = 430.41'
e = 6.0%	e = 6.0%
DS = 30 MPH	DS = 35 MF

STAGE 2 CONSTRUCTION SEQUENCE STA 13+11.61 –L–

1. REMOVE EX. BRIDGE & REMAINING SECTIONS OF EX. WINGWALLS.
2. EXCAVATE EXISTING ROAD BED TO FACILITATE CULVERT FOOTING CONSTRUCTION & REMOVE (2) TEMP. HEADWALLS FOR EX. ROADWAY.
3. INSTALL MINIMUM OF 26 LF OF CULVERT FOOTING.
4. INSTALL 25 LF OF PROPOSED BOTTOMLESS CULVERT. COMPLETE U/S CHANNEL IMPROVEMENTS DURING STAGE 2 CONSTRUCTION.
5. INSTALL PROP. FILL AND BRING ROADWAY BED TO FINAL GRADE ACROSS NEWLY INSTALLED 25' SECTION OF PROPOSED BOTTOMLESS CULVERT.

CLEAN WATER DIVERSION
(Not to Scale)



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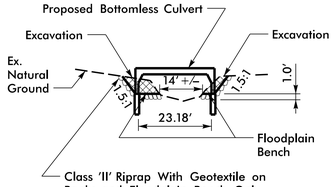
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-7\CONST-2A

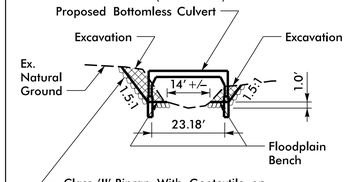
DETAIL C
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT INLET

STA. 13+07 RT –L–

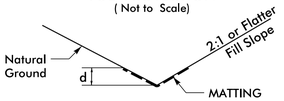
DETAIL D
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING UPSTREAM AT CULVERT OUTLET

STA. 13+15 LT –L–

DETAIL A
TOE PROTECTION
(Not to Scale)

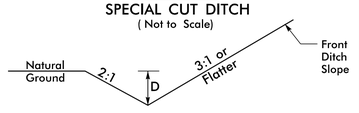


d= 1 Ft.

Type of Liner= Excelsior Matting

FROM STA. 12+60 TO STA. 13+00 LT –L–

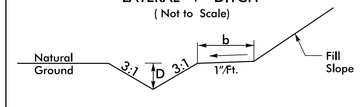
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM STA. 13+40 TO STA. 14+60 RT –L–

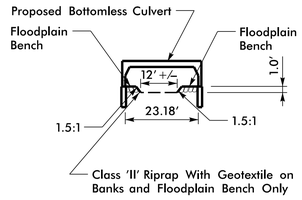
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 13+20 TO STA. 13+40 RT –L–

DETAIL E
CULVERT INTERNAL CHANNEL
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT OUTLET

STA. 13+10 –L–

NAD 83/NSRS 2007

16 LF OF OUTLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 18 TONS CLASS 'II' RIPRAP
EST 25 SY GEOTEXTILE
SEE DETAIL D, STA. 13+15 LT –L–

TOE PROTECTION, SEE DETAIL A
STA 12+60 TO 13+00 LT –L–

IMPERVIOUS DIKE

TURNER & MARY BALL
DB 372 PG 427

POT Sta. 16+23.59

PC Sta. 11+94.66
PT Sta. 11+88.40

MARY BALL
DB N/A PG N/A

BM#1
-BL- STA 7+02.99
39.74' LT
ELEV=3150.88'

MARY BALL, ETAL
DB 450 PG 487

RETAIN

N 64° 35' 51.7" E

S 56° 27' 57.4" E

PC Sta. 13+16.48

PCC Sta. 14+02.34

PT Sta. 12+56.38

PCC Sta. 15+03.38

15+00

N 25° 03' 11.4" E

PT Sta. 15+62.92

TURNER & MARY BALL
DB 372 PG 427

DOUGLAS LIDDEN & KAY WILLIAMS
DB 575 PG 216

N 31° 01' 24.0" E

PC Sta. 10+87.7

REMOVE EXISTING BRIDGE

16 LF OF INLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 20 TONS CLASS 'II' RIPRAP
EST 30 SY GEOTEXTILE
SEE DETAIL C, STA. 13+07 RT –L–

SPECIAL STILLING BASIN

PROPOSED 23.18'W x 3.2'H' THREE-SIDED CULVERT SKEW=105°

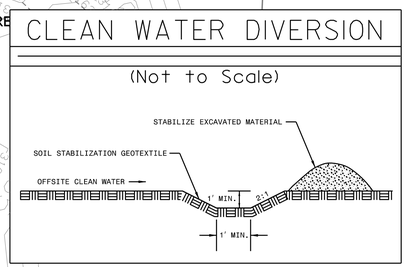
INSTALL CLEAN WATER DIVERSION IN FINAL DITCH LINE LOCATION.
STA. 13+20 TO STA. 14+05 RT –L–

LATERAL 'V' DITCH
SEE DETAIL F
STA 13+20 TO 13+40 RT –L–

SPECIAL CUT DITCH
SEE DETAIL B
STA 13+40 TO 14+60 RT –L–

Temporary Rock Silt Check Type A
1.0ft weir height

CLEAN WATER DIVERSION
(Not to Scale)



–L–

Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62'
2	517962.6920	803886.9470	3149.65'
3	517976.4400	803899.5080	3149.58'
4	517966.7170	803915.3300	3149.70'
5	517959.8330	803908.7750	3149.87'
6	517969.9760	803892.8920	3149.80'

PI Sta 10+17.88
Δ = 3° 46' 34.3" (LT)
D = 10° 33' 43.9"
L = 35.75'
T = 17.88'
R = 542.46'
e = 6.0%
DS = 40 MPH

PI Sta 11+39.56
Δ = 33° 34' 27.7" (RT)
D = 33° 21' 14.7"
L = 100.66'
T = 51.82'
R = 171.78'
e = 6.0%
DS = 25 MPH

PI Sta 12+28.56
Δ = 58° 56' 10.9" (RT)
D = 95° 29' 34.7"
L = 61.72'
T = 33.90'
R = 60.00'
e = 6.0%
DS = 20 MPH

PI Sta 13+60.08
Δ = 24° 35' 46.2" (LT)
D = 28° 38' 52.4"
L = 85.86'
T = 43.60'
R = 200.00'
e = 6.0%
DS = 30 MPH

PI Sta 14+59.29
Δ = 65° 57' 32.2" (LT)
D = 65° 16' 29.5"
L = 101.05'
T = 56.96'
R = 87.78'
e = 6.0%
DS = 30 MPH

PI Sta 15+33.20
Δ = 7° 55' 32.9" (LT)
D = 13° 18' 43.0"
L = 59.54'
T = 29.82'
R = 430.41'
e = 6.0%
DS = 35 MPH

STAGE 3 CONSTRUCTION SEQUENCE STA 13+11.61 –L–

1. REMOVE STAGE 2 TEMPORARY CONCRETE BARRIER.
2. INSTALL STAGE 3 TEMPORARY CONCRETE BARRIER.
3. SHIFT TRAFFIC TO STAGE 3 DETOUR ROADWAY 1 @ 9' WIDE LANE
4. REMOVE STAGE 2 DETOUR TEMP. ROADWAY, PIPES, HEADWALLS & FILL.
5. INSTALL ADDITIONAL TEMP. IMPERVIOUS DIKE PRIOR TO STAGE 3 CULVERT CONSTRUCTION.
6. INSTALL REMAINING SECTION OF CULVERT FOOTING & PROP. CULVERT. COMPLETE DOWNSTREAM CHANNEL IMPROVEMENTS. INSTALL REMAINING PORTION OF PROPOSED FILL & ROADWAY BED.
7. REM CWD. CONSTRUCT DITCH FROM STA 13+20 TO 14+60 –L– RT.
8. REMOVE TEMP. IMPERVIOUS DIKE AND STILLING BASINS.
9. REMOVE STAGE 3 DETOUR BARRIERS & OPEN UPPER WHITEWATER RD TO 2 LANE, 2 WAY TRAFFIC.

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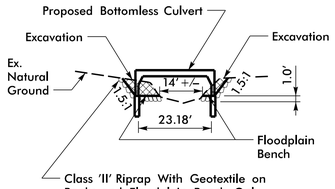
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	EC-8\CONST-4

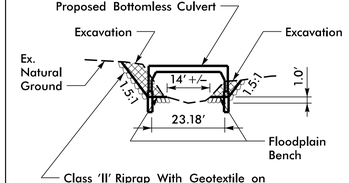
DETAIL C
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT INLET

STA. 13+07 RT –L–

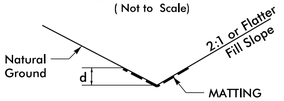
DETAIL D
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



LOOKING UPSTREAM AT CULVERT OUTLET

STA. 13+15 LT –L–

DETAIL A
TOE PROTECTION
(Not to Scale)

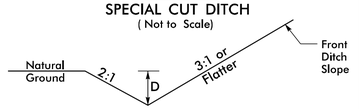


d= 1 Ft.

Type of Liner= Excelsior Matting

FROM STA. 12+60 TO STA. 13+00 LT –L–

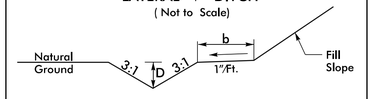
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM STA. 13+40 TO STA. 14+60 RT –L–

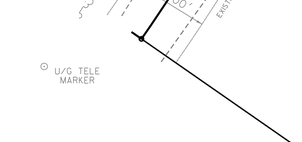
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 13+20 TO STA. 13+40 RT –L–

DETAIL E
CULVERT INTERNAL CHANNEL
(Not to Scale)



LOOKING DOWNSTREAM AT CULVERT OUTLET

STA. 13+10 –L–

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

NAD 83/NSRS 2007

BEGIN STATE PROJECT 17BPJ4.RJ7
–L– POC STA 12+30.00

BEGIN CONSTRUCTION
–L– POC STA 11+85.00

–L– PCC 11+88.40

–L– PT 12+71.07

–L– PC 13+23.16

–L– PCC 13+88.66

–L– PCC 15+02.92

–L– PT 15+62.46

–L– POT 16+23.13

–L– PC 10+87.74

–L– PT 10+35.75

–L– PC 10+00.00

END CONSTRUCTION
–L– POC STA 14+90.00

END STATE PROJECT 17BPJ4.RJ7
–L– POC STA 14+60.00

N 31°01'24.0" E

N 25°03'11.4" E

11+00
12+00
13+00
14+00
15+00
16+00

16 LF OF OUTLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 18 TONS CLASS 'II' RIPRAP
EST 25 SY GEOTEXTILE
SEE DETAIL D, STA. 13+15 LT –L–

TOE PROTECTION, SEE DETAIL A
STA 12+60 TO 13+00 LT –L–

16 LF OF INLET CHANNEL IMPROVEMENT AND FLOODPLAIN BENCH ON EACH SIDE
EST 20 TONS CLASS 'II' RIPRAP
EST 30 SY GEOTEXTILE
SEE DETAIL C, STA. 13+07 RT –L–

REMOVE EXISTING BRIDGE

PROPOSED
23.18'W x 3.2'H'
THREE-SIDED CULVERT
SKEW=105°

SPECIAL CUT DITCH
SEE DETAIL B
STA 13+40 TO 14+60 RT –L–

LATERAL 'V' DITCH
SEE DETAIL F
STA 13+20 TO 13+40 RT –L–

Temporary Rock Silt Check Type A 1.0ft weir height

RETAIN

IMPERVIOUS DIKE

BM#1
–BL– STA 7+02.99
39.74' LT
ELEV=3150.88'

1 MARY BALL, ETAL
DB 450 PG 487

2 MARY BALL
DB N/A PG N/A

3 TURNER & MARY BALL
DB 372 PG 427

TURNER & MARY BALL
DB 372 PG 427

DOUGLAS LIDDEN & KAY WILLIAMS
DB 575 PG 216

DUKE ENERGY #152063

DUKE ENERGY

POSSIBLE U/G TELE

O/H TELE ELEV=3169.54'

O/H ELEC ELEV=3181.29'

O/H ELEC ELEV=3150.50'

INV=3147.03'

INV=3146.42'

INV=3145.87

INV=3149.04

METAL FLUME

ABANDONED WATER PUMP

EMPORIUM CIRCLE

BURUNGAME CREEK

SR 1512 18' GRAVEL

UPPER WHITEWATER ROAD

GRAVEL DRIVE

EXISTING R/W

22.00'

WOODS

U/G TELE MARKER

Point	North	East	Elevation
1	517953.3120	803902.8010	3149.62'
2	517962.6920	803886.9470	3149.65'
3	517976.4400	803899.5080	3149.58'
4	517966.7170	803915.3300	3149.70'
5	517959.8330	803908.7750	3149.87'
6	517969.9760	803892.8920	3149.80'

–L–

PI Sta 10+17.88
Δ = 3° 46' 34.3" (LT)
D = 10° 33' 43.9"
L = 35.75'
T = 17.88'
R = 542.46'
e = 6.0%
DS = 40 MPH

PI Sta 11+39.56
Δ = 33° 34' 27.7" (RT)
D = 33° 21' 14.7"
L = 100.66'
T = 51.82'
R = 171.78'
e = 6.0%
DS = 25 MPH

PI Sta 12+33.81
Δ = 58° 56' 10.9" (RT)
D = 71° 17' 14.2"
L = 82.67'
T = 45.41'
R = 80.37'
e = 6.0%
DS = 20 MPH

PI Sta 13+56.12
Δ = 15° 58' 15.9" (LT)
D = 24° 22' 52.3"
L = 65.51'
T = 32.97'
R = 235.00'
e = 6.0%
DS = 30 MPH

PI Sta 14+55.51
Δ = 74° 35' 02.4" (LT)
D = 65° 16' 29.5"
L = 114.26'
T = 66.85'
R = 87.78'
e = 6.0%
DS = 30 MPH

PI Sta 15+32.74
Δ = 7° 55' 32.9" (LT)
D = 13° 18' 43.0"
L = 59.54'
T = 29.82'
R = 430.41'
e = 6.0%
DS = 35 MPH

5/23/2014
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Phil Fenn

09/08/99

PROJECT: 17BP.14.R.17

CONTRACT: DN00150

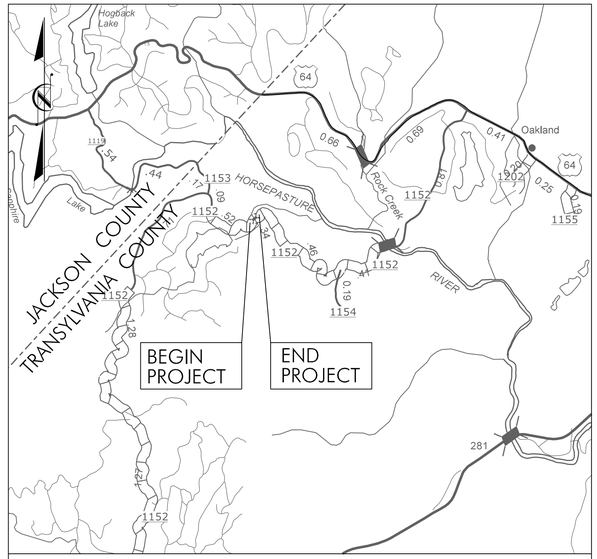
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.14.R.17	UO–1

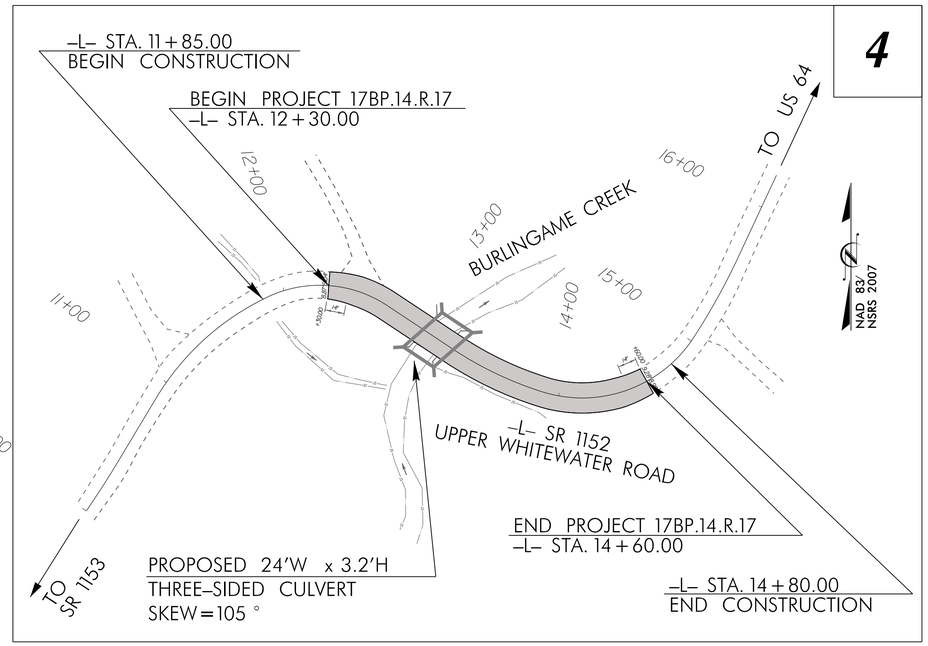
UTILITIES BY OTHERS PLANS
TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 23 ON SR 1152 (UPPER WHITEWATER ROAD) OVER BURLINGAME CREEK

TYPE OF WORK: UTILITIES BY OTHERS



VICINITY MAP



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

GRAPHIC SCALES

20 10 0 20 40
PLANS

INDEX OF SHEETS

SHEET NO.	*DESCRIPTION*
UO–1	*TITLE SHEET*
UO–2	*UTILITIES BY OTHERS PLAN SHEETS*

UTILITY OWNERS ON PROJECT

(1) POWER – HAYWOOD EMC

(2) TELEPHONE & CATV – COMPORIUM

UTILITIES BY OTHER PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
6415 OLD PLANK RD, HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMP-INC.COM LICENSE: F-0245

STATE • OF • NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

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Davis-Martin-Powell and Associates

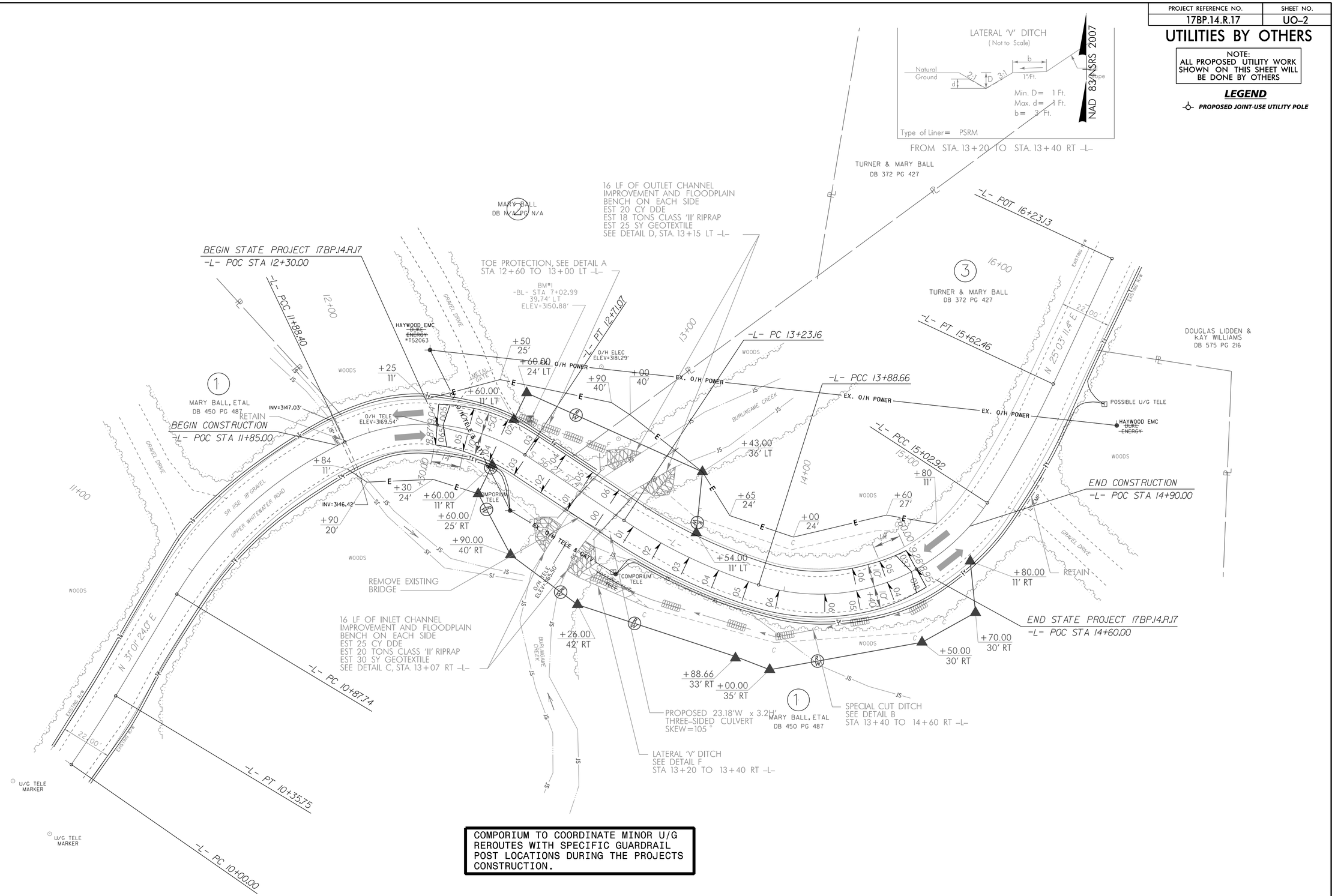
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	UO-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

LEGEND

PROPOSED JOINT-USE UTILITY POLE



COMPORIUM TO COORDINATE MINOR U/G REROUTES WITH SPECIFIC GUARDRAIL POST LOCATIONS DURING THE PROJECTS CONSTRUCTION.

UTILITIES BY OTHERS PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
6415 OLD PLANK RD. HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMP-INC.COM LICENSE: F-0245

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Davis-Martin-Powell and Associates

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	X-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station Det	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+80.00000	0	0
13+00.00000	0	18
13+20.00000	0	60
13+40.00000	1	51
13+60.00000	4	7

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+50.00000	0	0
13+00.00000	3	86
13+50.00000	10	102
14+00.00000	14	27
14+50.00000	27	12
14+60.00000	7	0

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.17	X-1

3149.95

0.005 0.065

3149.94

12+30.00

3149.33

12+00.00

3149.48

11+50.00

3150.68

11+00.00

3152.66

10+50.00

3154.37

10+00.00

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

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thuffman

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.17	X-2

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

3160 / 3155 / 3150 / 3145

S.S. 3150.85

3152.12

0.060 0.060 3:1 2:1

3151.82

3150.25

S.S. 3151.52

14+00.00

3155 / 3150 / 3145 / 3140

S.S. 3149.98

3151.07

0.060 0.024 3:1 2:1

3150.37

3147.59

S.S. 3149.53

13+50.00

3150 / 3145 / 3140

3150.61

0.049 0.013 2.07:1

S.S. 3149.35

2:1

3149.57

S.S. 3145.87

13+00.00

3155 / 3150 / 3145 / 3140

S.S. 3150.66

EXISTING DRIVEWAY

3150.14

0.010 0.050 4:1

S.S. 3149.19

3149.88

12+50.00

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

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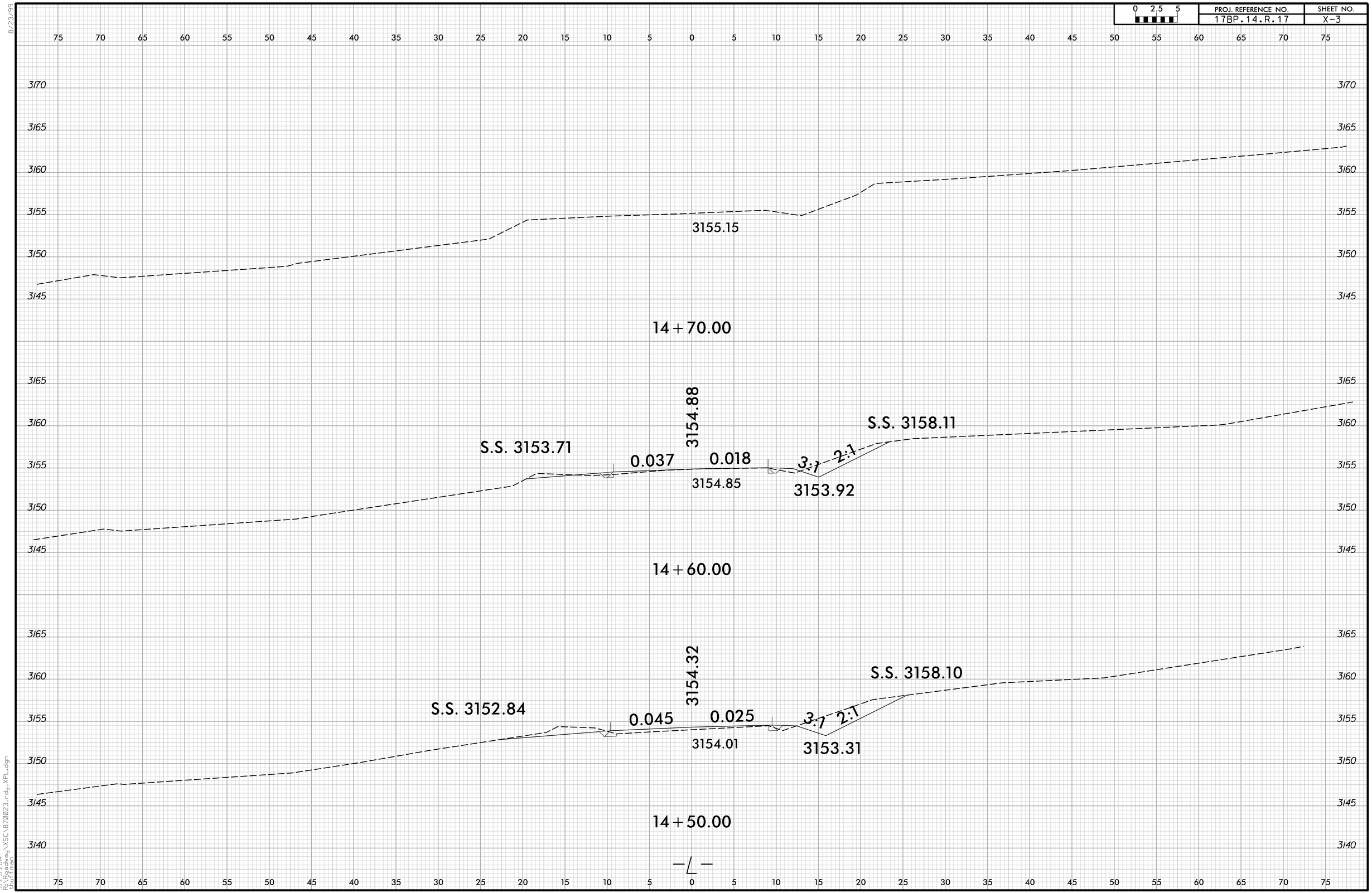
thuffman



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thuffman

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.17	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

3165
3160
3155
3150
3145

3156.72

15+00.00

3170
3165
3160
3155
3150
3145

3156.21

14+90.00

3170
3165
3160
3155
3150
3145

3155.70

14+80.00

—L—

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

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thuffman

6/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.17	X-5

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

3160
3155
3150
3145

EX EX
3149.90
12+40.000000

3160
3155
3150
3145

EX EX
3149.60
12+20.000000

3155
3150
3145

EX EX
3149.33
12+00.000000

3150
3145

3149.25
11+80.000000

3150
3145

3149.67
11+60.000000

3150
3145

3149.56
11+40.000000

-DET-

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

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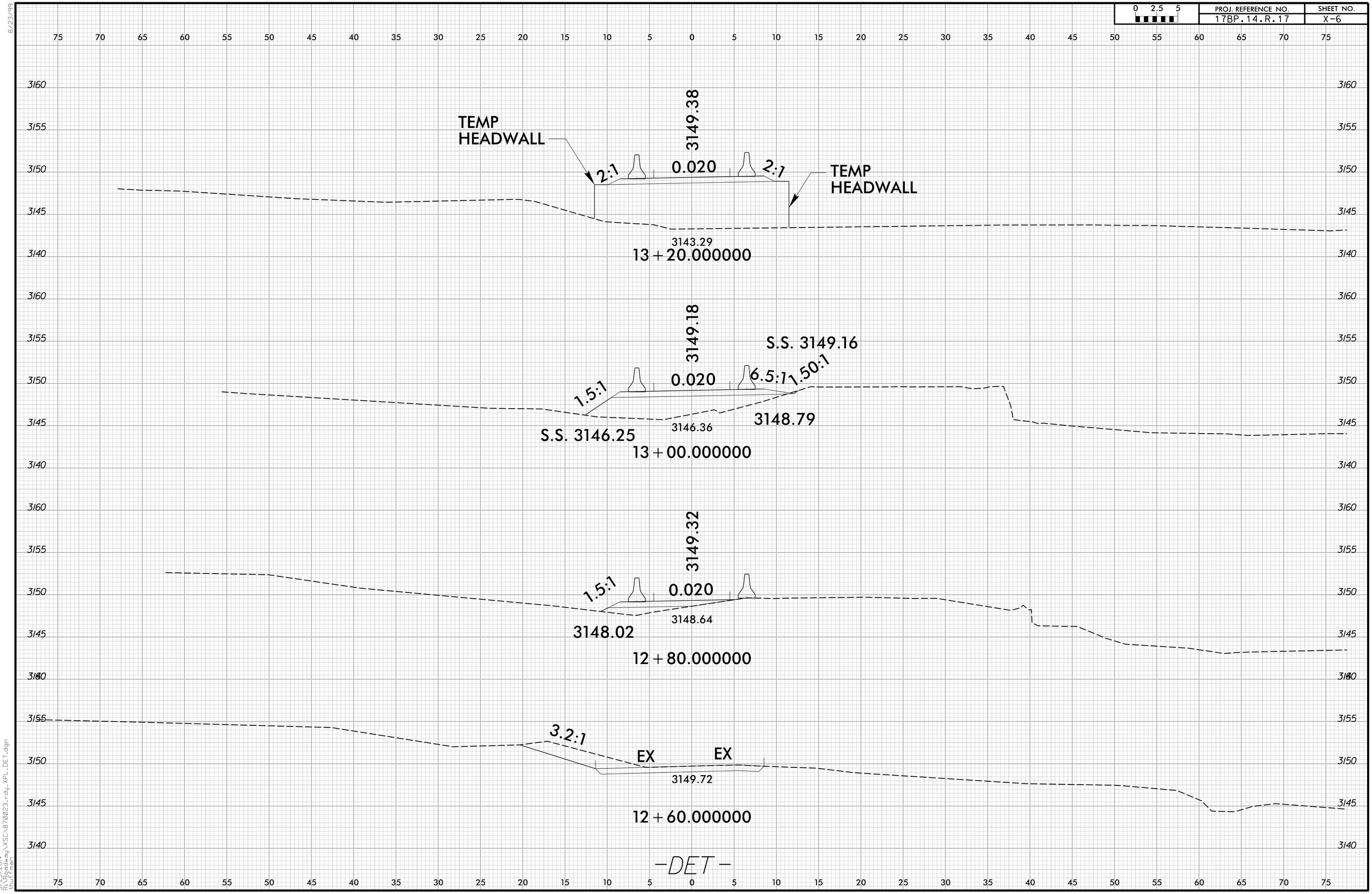

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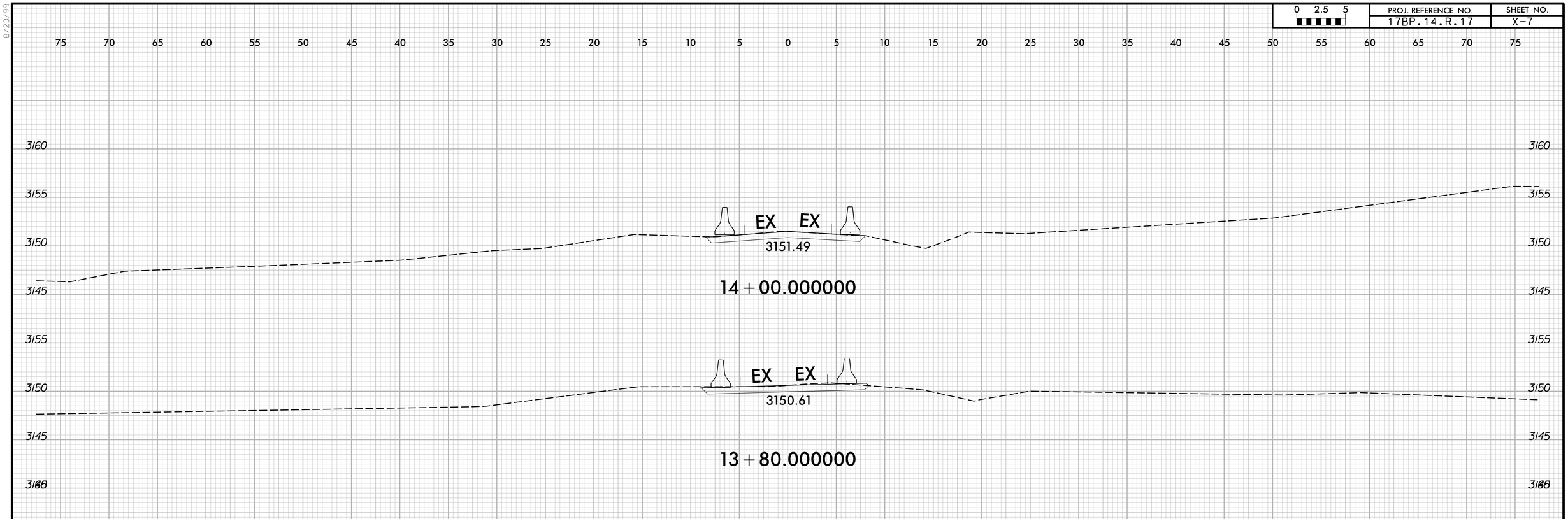
bulfman



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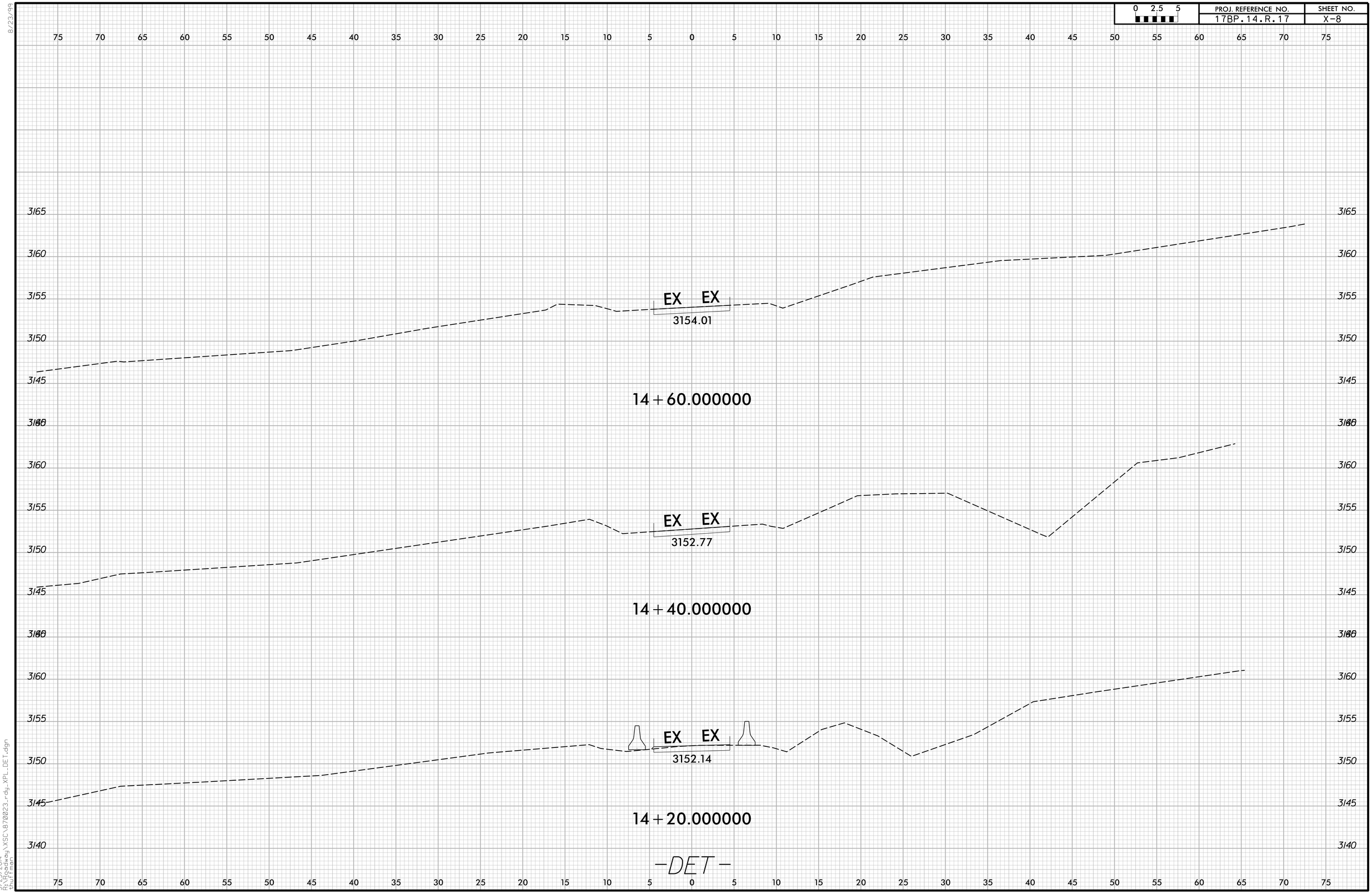
bulfman



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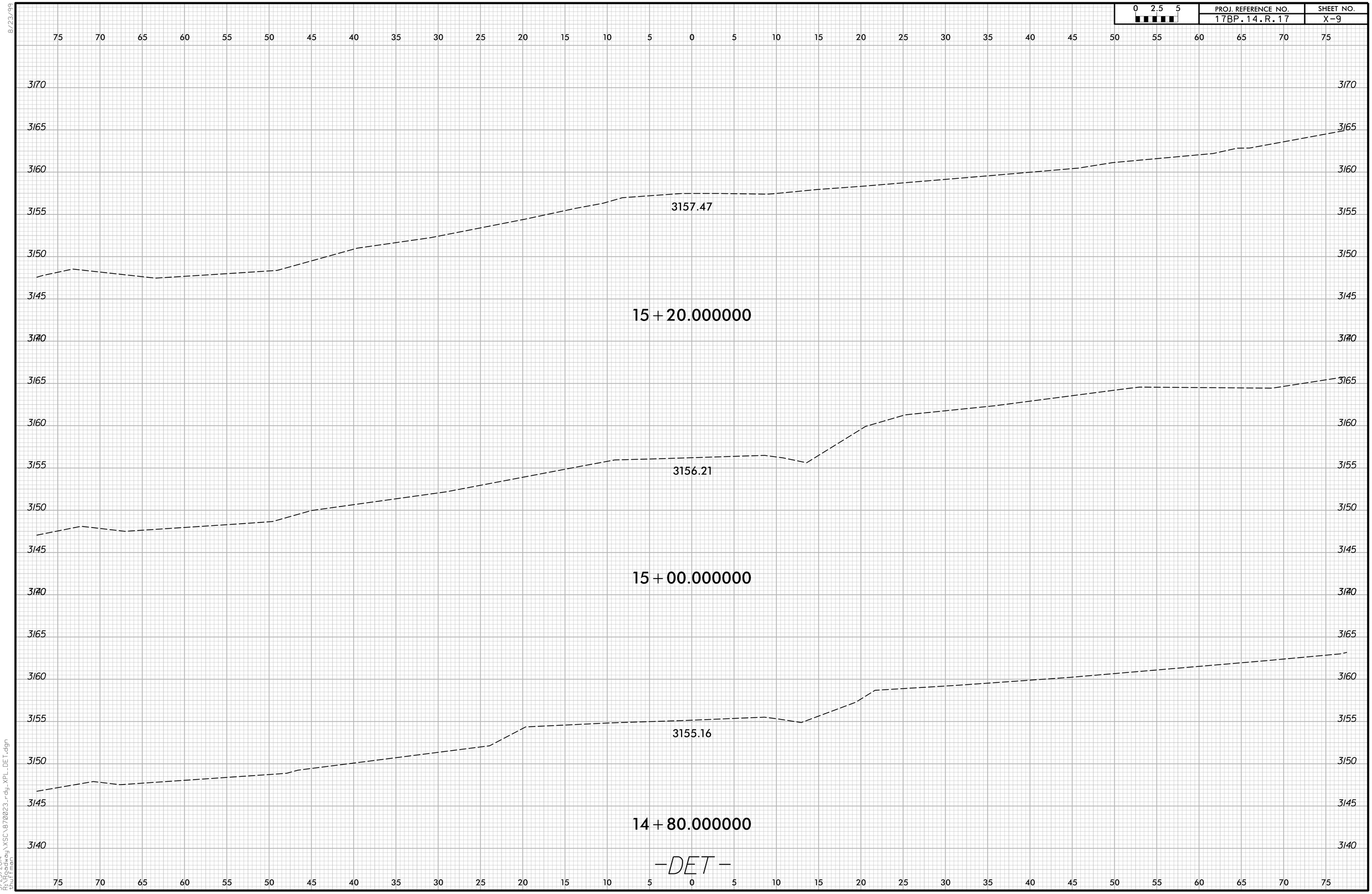
shuffman



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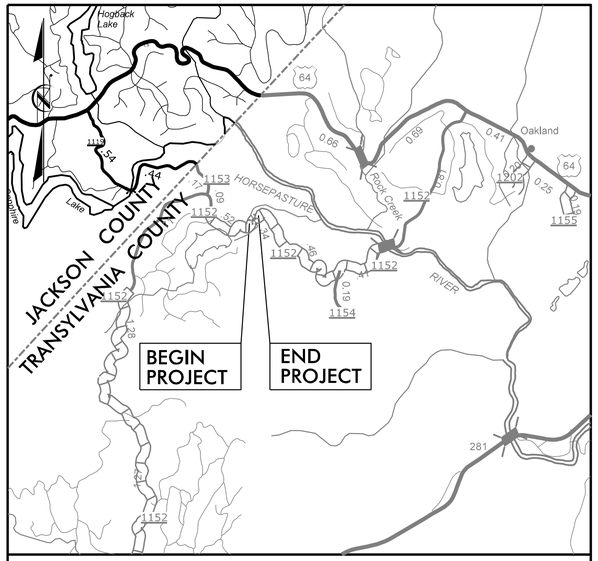
thuffman

PROJECT: 17BP.14.R.17

CONTRACT: DN00150



VICINITY MAP

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

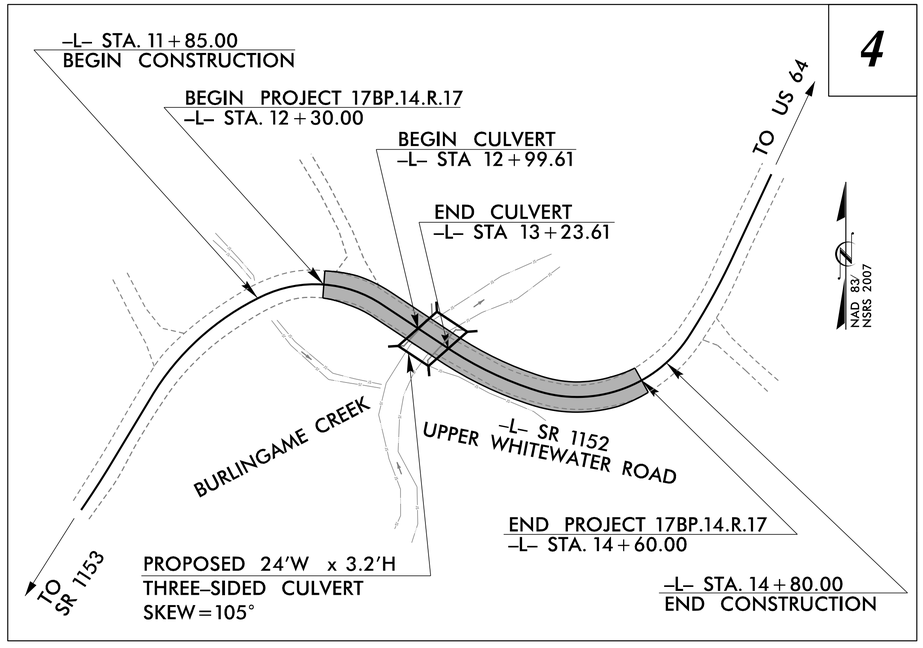
TRANSYLVANIA COUNTY

LOCATION: ***BRIDGE NO. 23 ON SR 1152 (UPPER WHITEWATER ROAD) OVER BURLINGAME CREEK***

TYPE OF WORK: GRADING, GUARDRAIL, DRAINAGE AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.17	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.17		PE
17BP.14.R.17		ROW & UTIL
17BP.14.R.17		CONST.



CULVERT

DESIGN DATA

ADT 2013 = 110
ADT 2033 = 160
DHV = N/A %
D = N/A %
T = 6 % *
V = 20 MPH
* TTST = N/A DUAL 6%
FUNC CLASS =
LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY OF PROJECT 17BP.14.R.17=0.039 mi.
LENGTH STRUCTURE OF PROJECT 17BP.14.R.17=0.005 mi.
TOTAL LENGTH OF STATE PROJECT 17BP.14.R.17=0.044mi.

Prepared for NCDOT In the Office of:
moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

2012 STANDARD SPECIFICATIONS

LETTING DATE :
JUNE 10, 2014

TIM REID, P.E.
PROJECT ENGINEER

MIKELE WINTERS, P.E.
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

5/23/2014
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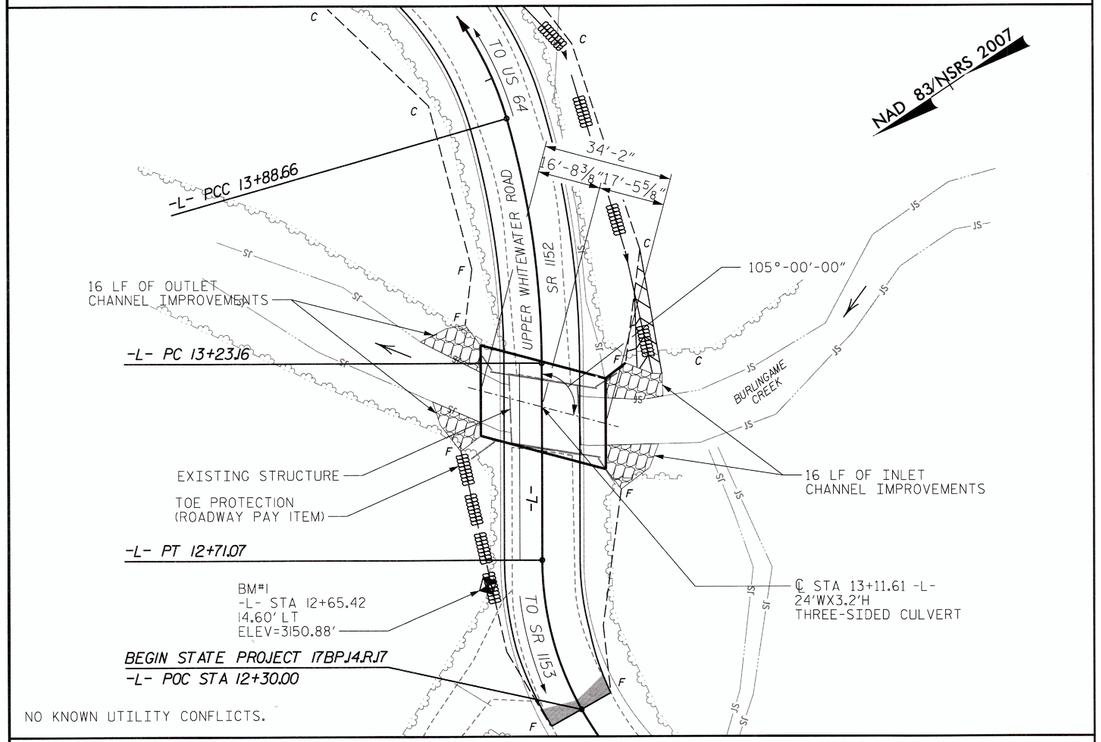
tshuffman

TBM BM#1 RR SPIKE IN 17"HEMLOCK LOCATED AT STA 12+65.42 -L-; 14.60' LT, EL 3150.88



NO KNOWN UTILITY CONFLICTS.

LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

DESIGN FILL = 3.3'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

FOR PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN, 18'-6" WITH AN AGGREGATE WEARING SURFACE ON A TIMBER DECK AND GIRDERS AND A CLEAR ROADWAY WIDTH; 19'-2" SUPPORTED ON A SUBSTRUCTURE OF TIMBER CAPS, POSTS, SILLS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED CULVERT, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATION.

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

THE SCOUR CRITICAL ELEVATION FOR THE EAST AND WEST SIDES OF THE CULVERT IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SPREAD FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 4.0 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 9.0 TSF JUST BEFORE PLACING CONCRETE.

KEY SPREAD FOOTINGS AT LEAST 12 INCHES INTO BEDROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, DO NOT CONSTRUCT SPREAD FOOTINGS AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

SCOUR PROTECTION IS REQUIRED FOR SPREAD FOOTINGS. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

NO WORK SHALL BE DONE UNTIL THE UNDERCUT TO RESIDUAL/SUITABLE MATERIAL AND PROPER DISPOSAL OF THE ALLUVIAL/UNSUITABLE BEARING MATERIAL HAS BEEN COMPLETED. THE LIMITS OF THIS UNDERCUT ELEVATION AT THE EAST SIDE OF CULVERT SHALL BE TO AN ELEVATION NO GREATER THAN 3144 FEET. THE LIMITS OF THIS UNDERCUT ELEVATION AT THE WEST SIDE OF CULVERT SHALL BE TO AN ELEVATION NO GREATER THAN 3144 FEET.

THE SPREAD FOOTING ELEVATIONS AT THE EAST AND WEST SIDES OF THE CULVERT MAY BE MAY BE LOWERED TO SATISFY THE REQUIRED RESISTANCE AND MINIMUM EMBANKMENT IN RESIDUAL MATERIAL.

TEMPORARY SHORING MAY BE REQUIRED FOR THE CULVERT AND WALL CONSTRUCTION.

TEMPORARY COFFERDAMS MAY BE REQUIRED FOR CONSTRUCTION OF CULVERT FOUNDATIONS.

NO WAITING PERIOD IS REQUIRED FOR CULVERT CONSTRUCTION.

SETTLEMENT OF THE ROADWAY APPROACH EMBANKMENT IS ANTICIPATED. PLACEMENT OF ROADWAY EMBANKMENT SHALL BE DONE SOON AFTER CONSTRUCTION HAS STARTED TO ALLOW FOR SETTLEMENT WITHIN THE EMBANKMENT TO OCCUR PRIOR TO SURFACE COURSE CONSTRUCTION SO AS NOT TO DELAY THE COMPLETION OF THE PROJECT.

IN AS MUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "STRUCTURE REMOVAL".

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON THE DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

A THREE FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

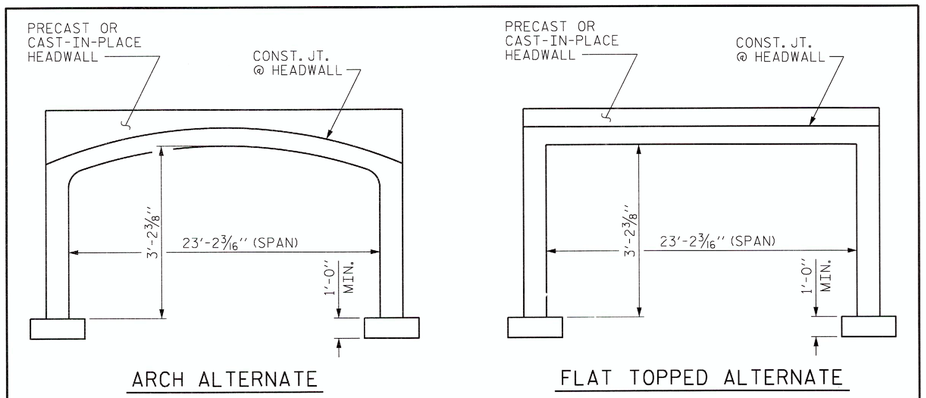
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES"

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATIONS ARTICLE 410-12.



RIGHT ANGLE SECTION OF PRECAST CONCRETE THREE-SIDED CULVERT

MIN. REQUIRED WATERWAY OPENING = 84 SQ. FT.
MIN. LOW CHORD ELEV. = 3147.6 @ ℄ CULVERT

HYDRAULIC DATA

DESIGN DISCHARGE	= 420 CFS
FREQUENCY OF DESIGN DISCHARGE	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 3146.9
DRAINAGE AREA	= 0.83 SQ MI
BASIC DISCHARGE (Q100)	= 650 CFS
BASIC HIGH WATER ELEVATION	= 3148.27

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 950 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+/- YR.
OVERTOPPING ELEVATION	= 3150.1

GRADE DATA

GRADE POINT ELEV. @ STATION 13+11.61	= 3149.25
BED ELEV. @ STATION 13+11.61	= 3143.5
ROADWAY SLOPES	= 2:1

TOTAL STRUCTURE QUANTITIES

STRUCTURE REMOVAL	LUMP SUM
PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT @ STA 13+11.60 -L-	LUMP SUM
CLASS A CONCRETE	
FOOTINGS	27.0 C.Y.
TOTAL	27.0 C.Y.
REINFORCING STEEL	
FOOTINGS	2,000 LBS.
TOTAL	2,000 LBS.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.14.R.17

TRANSYLVANIA COUNTY

STATION: 13+11.61 -L-

SHEET 1 OF 4 REPLACES BRIDGE No. 23

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 105° SKEW

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

STD. NO. CB12A

DRAWN BY : C. POWELL DATE : 12/2012	SPECIAL
CHECKED BY : M. WINTERS DATE : 04/2013	
DESIGN ENGINEER OF RECORD : M. WINTERS DATE : 05/2014	
DRAWN BY : R.W. WRIGHT DATE : JULY, 1990	STANDARD
CHECKED BY : D.A. GLADDEN DATE : JULY, 1990	

ADDED NOV. 1, 1990

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKKLE E. WINTERS
5/23/2014

5/23/2014
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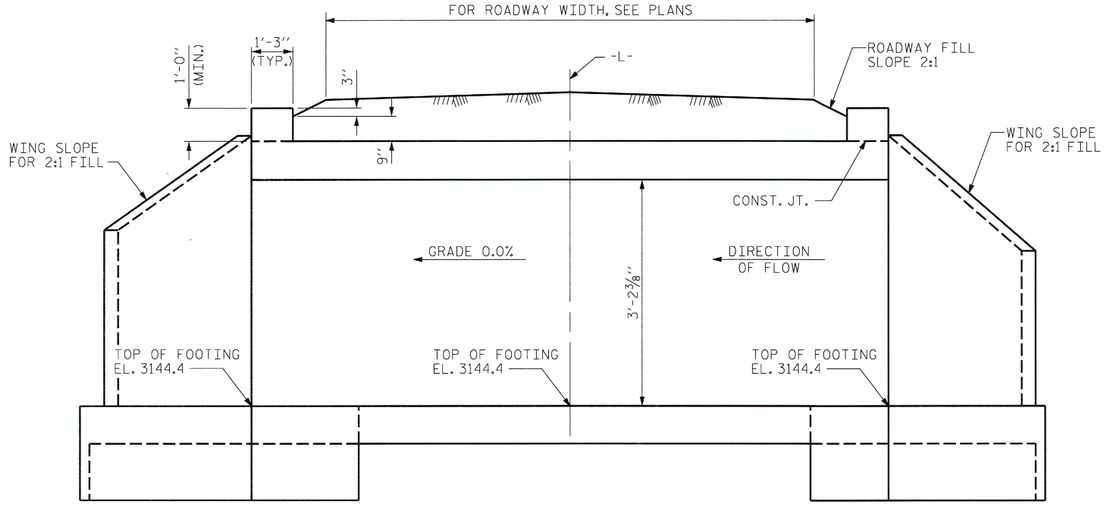
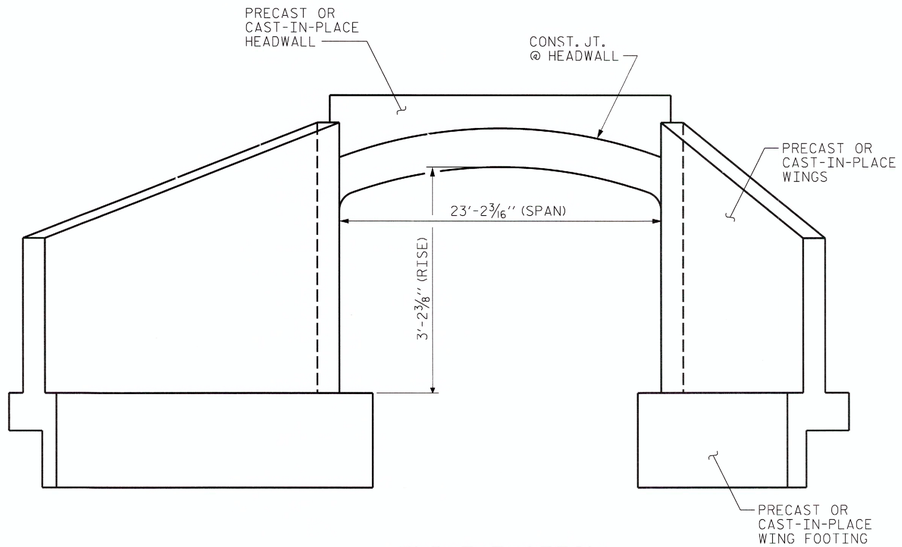
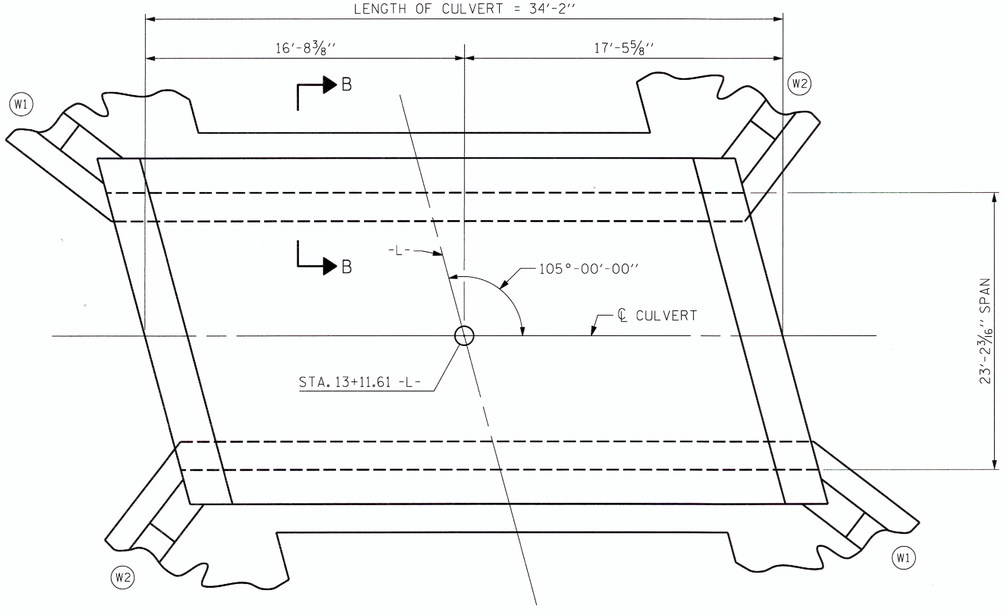
thuffman



CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION



LENGTH FOR PRECAST THREE-SIDED CULVERT

(SEE SHEET 3 OF 3 FOR SECTION B-B)

REVISED 8-28-92 BY E.L.R. CHECKED BY C.R.P.
REVISED 8-22-89 BY A.R.B. CHECKED BY C.R.K.
REDRAWN 8-22-89
REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.

ASSEMBLED BY : C. POWELL DATE : 12/2012 CHECKED BY : M. WINTERS DATE : 04/2013 DESIGN ENGINEER OF RECORD : M. WINTERS DATE : 05/2014	SPECIAL
DRAWN BY : R.W. WRIGHT DATE : AUG. 1989 CHECKED BY : A.R. BISSETTE DATE : AUG. 1989	STANDARD

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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER WINKELE E. WINTERS
5/23/2014

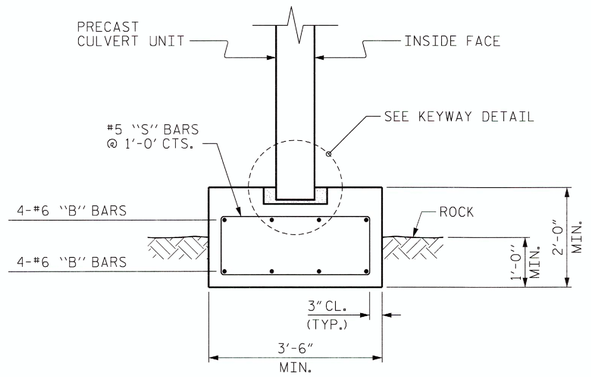
PROJECT NO. 17BP.14.R.17
TRANSYLVANIA COUNTY
STATION: 13+11.61 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 105° SKEW

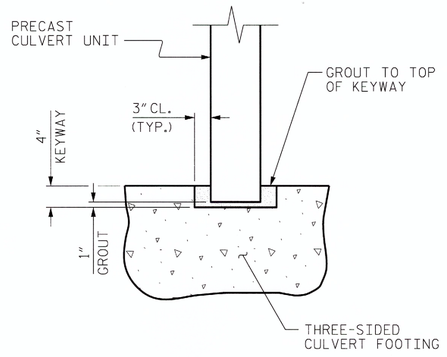
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			4



NOTE:
REINFORCEMENT SHOWN IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL PROVIDE REINFORCEMENT DETAILS TO ENGINEER FOR REVIEW AND APPROVAL.

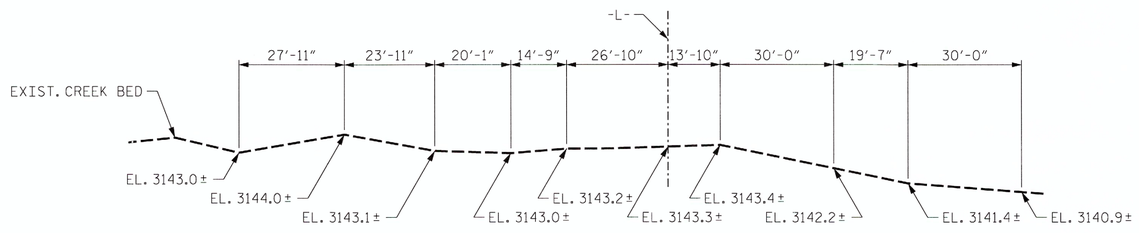
SECTION B-B

SIDES OF FOOTING SHALL BE IN CONTACT WITH UNDISTURBED MATERIAL FOR MINIMUM DIMENSION SHOWN



NOTE:
FILL ENTIRE KEYWAY, INCLUDING NOMINAL 1" VOID BETWEEN BOTTOM OF KEYWAY AND PRECAST CULVERT UNIT WITH NON-SHRINK GROUT.

KEYWAY DETAIL



PROFILE ALONG ℄ CULVERT

ASSEMBLED BY : C. POWELL DATE : 12/2012
CHECKED BY : M. WINTERS DATE : 04/2013
DESIGN ENGINEER OF RECORD : M. WINTERS DATE : 05/2014

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NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MICHELE E WINTERS
5/23/2014

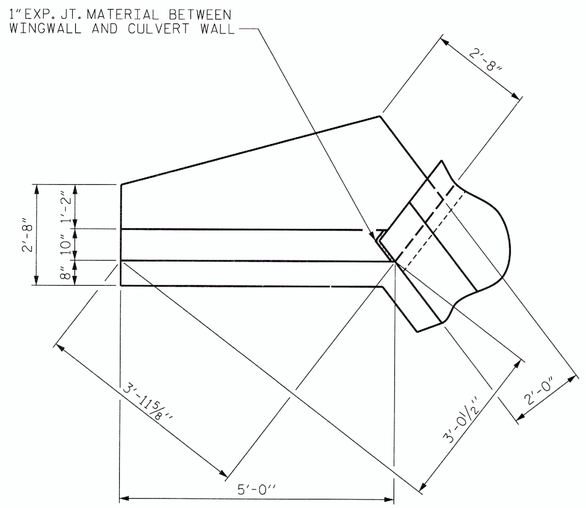
PROJECT NO. 17BP.14.R.17
TRANSYLVANIA COUNTY
STATION: 13+11.61 -L-

SHEET 3 OF 4

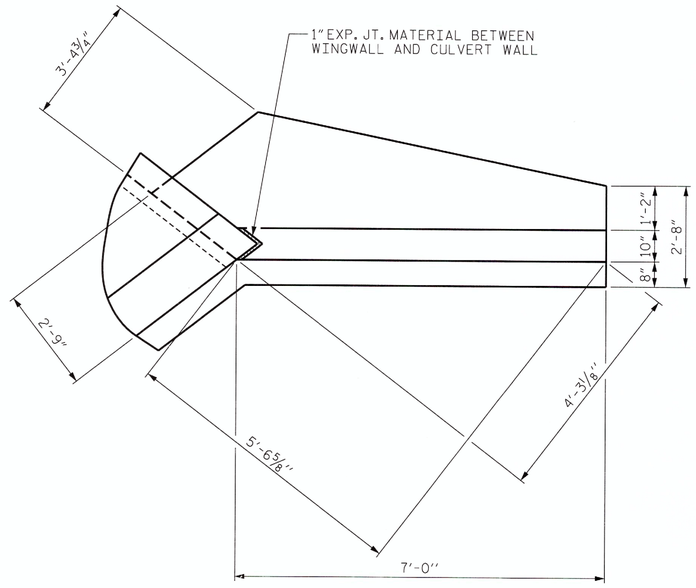
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 105° SKEW

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



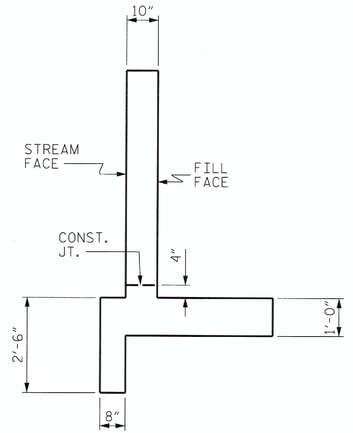
PLAN W2



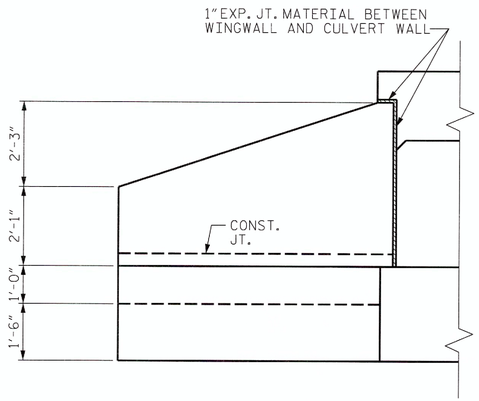
PLAN W1

NOTES:

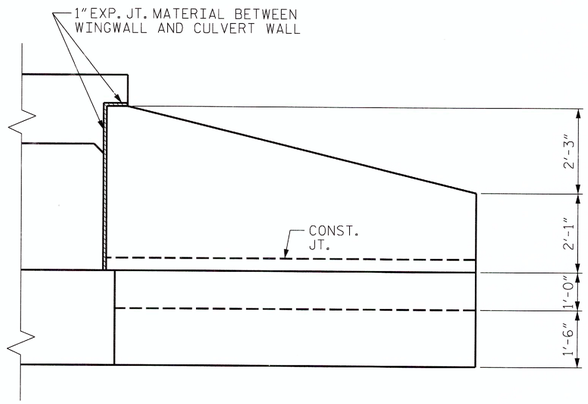
1. THE CONTRACTOR SHALL SUBMIT THE FOOTING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. PRECAST OR CAST-IN-PLACE WINGS WILL BE ALLOWED.
2. THE CONTRACTOR SHALL SUBMIT WING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. THE ENTIRE COST TO CONSTRUCT THE CULVERT WINGS, INCLUDING CONCRETE AND REINFORCING STEEL, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT".



TYPICAL WING
SECTION



ELEVATION W2



ELEVATION W1

PROJECT NO. 17BP.14.R.17
TRANSYLVANIA COUNTY
STATION: 13+11.61 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT

H = 3'-2" SLOPE = 2:1
105° SKEW

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

ASSEMBLED BY : C. POWELL	DATE : 12/2012	
CHECKED BY : M. WINTERS	DATE : 04/2013	
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 05/2014	
DRAWN BY : CCJ 12/99		
CHECKED BY : RWW 03/00		

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MAKELE E WINTERS
5/23/2014

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 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM
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