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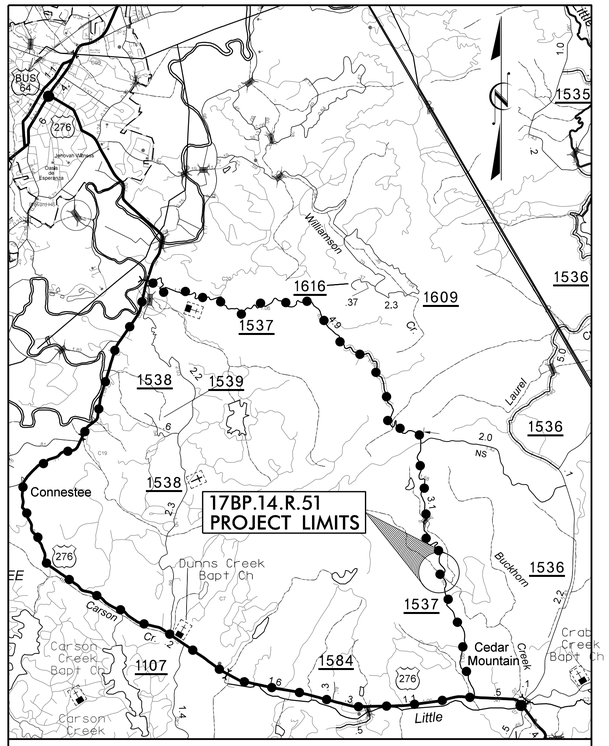
09/08/99

PROJECT: 17BP.14.R.51

CONTRACT: DN00177

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



VICINITY MAP

DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

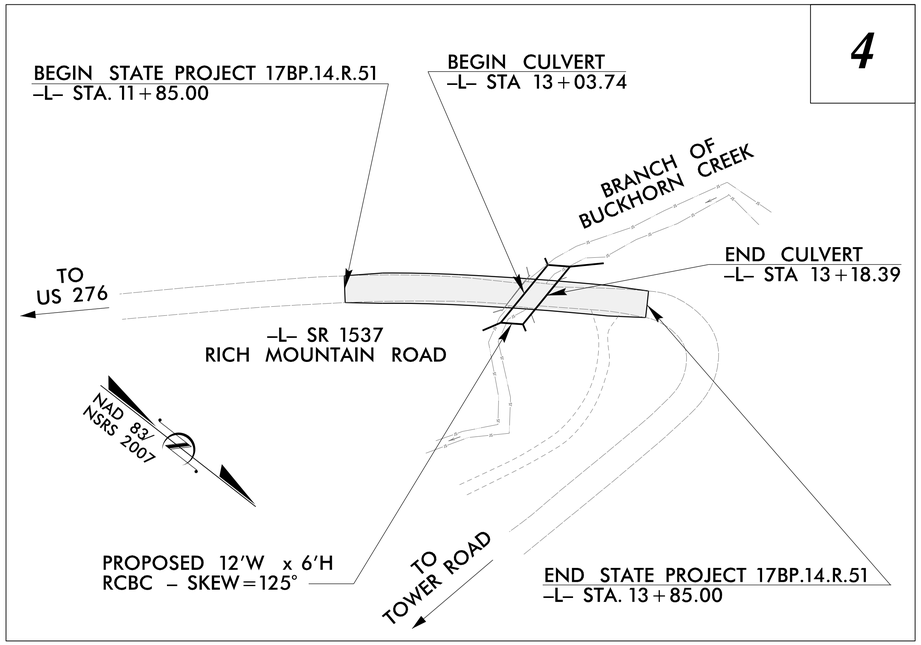
TRANSYLVANIA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.51	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.14.R.51		PE
17BP.14.R.51		ROW & UTIL
17BP.14.R.51		CONSTR

LOCATION: BRIDGE NO. 159 ON SR 1537 (RICH MOUNTAIN ROAD) OVER BRANCH OF BUCKHORN CREEK

TYPE OF WORK: PAVING, GRADING, GUARDRAIL, DRAINAGE AND CULVERT



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GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 40
ADT 2035 = 70
DHV = N/A %
D = N/A %
T = 6 % *
V = 30 MPH
* TTST = N/A DUAL 6%
FUNC CLASS = LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.14.R.51 = 0.038 mi.
LENGTH STRUCTURE PROJECT 17BP.14.R.51 = 0.000 mi.
TOTAL LENGTH PROJECT 17BP.14.R.51 = 0.038 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:
MARCH 7, 2013

LETTING DATE:
NOVEMBER 10, 2015

TIM REID, P.E.
PROJECT ENGINEER

TRENT HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

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

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. ROCK

DocuSigned by: Jeffrey L. Rock
SIGNATURE: *P.E.* 10/5/2015

ROADWAY DESIGN ENGINEER

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

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER TIMOTHY R. REID

DocuSigned by: Timothy R. Reid
SIGNATURE: *P.E.* 10/5/2015

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

10/5/2015
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID

DocuSign

10/5/2015

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

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INDEX OF SHEETS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS. GENERAL NOTES. AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	SUMMARY OF GUARDRAIL. EARTHWORK SUMMARY PARCEL INDEX. RIP RAP SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP- 3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1. EC-3 THRU EC- 6	EROSION CONTROL PLAN
RF-1	REFORESTATION PLAN
UO-1. UO-2	UTILITIES BY OTHERS PLANS
X-A. X-1 THRU X-6	CROSS-SECTION SUMMARY. CROSS-SECTIONS
C-1 THRU C-6	CULVERT PLANS
SN	STANDARD STRUCTURE NOTE SHEET

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. USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

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:
POWER - DUKE ENERGY
TELEPHONE - COMPORIUM

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
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE. BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
876.02	Guide for Rip Rap at Pipe Outlets

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	1B

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.

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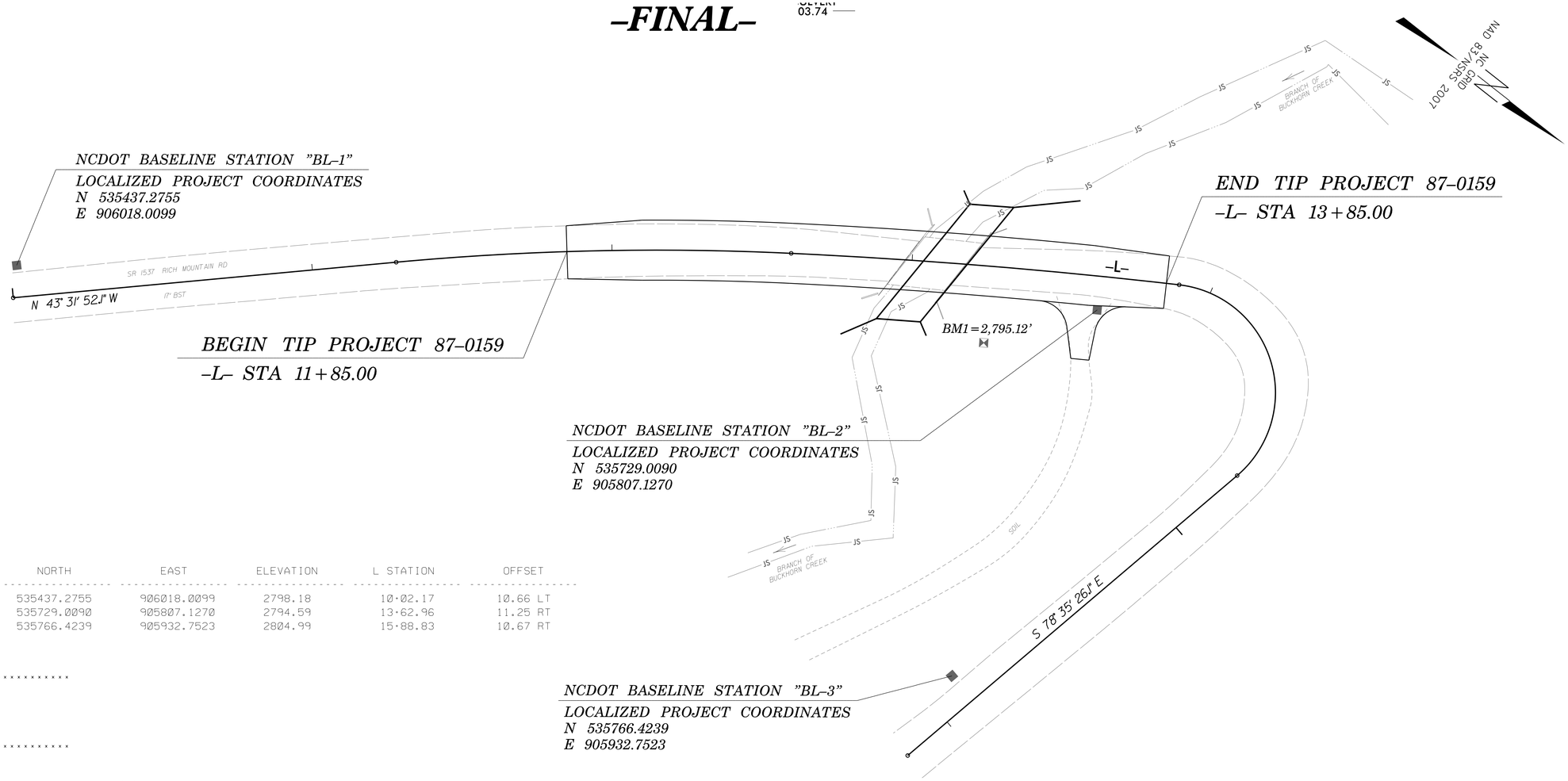
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	1C
Location and Surveys	

SURVEY CONTROL SHEET 87–0159
–FINAL–

03.74



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	535437.2755	906018.0099	2798.18	10+02.17	10.66 LT
2	BL-2	535729.0090	905807.1270	2794.59	13+62.96	11.25 RT
3	BL-3	535766.4239	905932.7523	2804.99	15+88.83	10.67 RT

****
BM1 ELEVATION = 2795.12
N 535706 E 905839
L STATION 8+22.71 12.48 RIGHT
RR SPIKE IN 18" WHITE PINE
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "870159 BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 535729.0090(ft) EASTING: 905807.1270(ft)
ELEVATION: 2794.59(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999744541
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "870159 BL-2" TO -L- STATION 11+85.00 IS S 31° 56' 51.49" E 177.5724'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

FINAL -L-

TYPE	STATION	NORTH	SOUTH
POT	10+00.00	535443.0451	906027.2320
PC	11+28.03	535637.3318	905939.0510
PCC	12+59.67	535637.3318	905855.3496
PCC	13+89.28	535745.2887	905783.6661
PT	14+73.30	535799.7339	905821.6127
POT	16+17.23	535771.2620	905962.6977

GEOIDAL MODEL –
NOTE: DRAWING NOT TO SCALE

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
87–0159_LS_CONTROL.TXT

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

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

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5/14/99

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
E1	PROP. APPROX. 5½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS SHEET)

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	2A-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DocuSigned by: Jennifer A. Sargent, PE, Professional Engineer, SEAL 015869, ENGINEER, J. R. REID, 10/5/2019

moffatt & nichol
8-16 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

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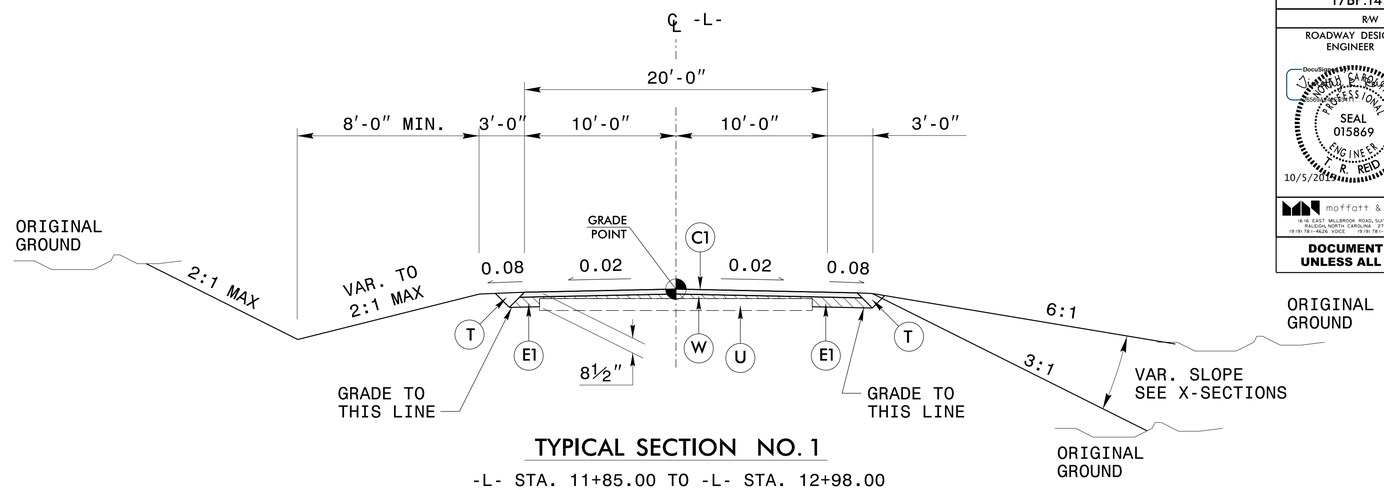
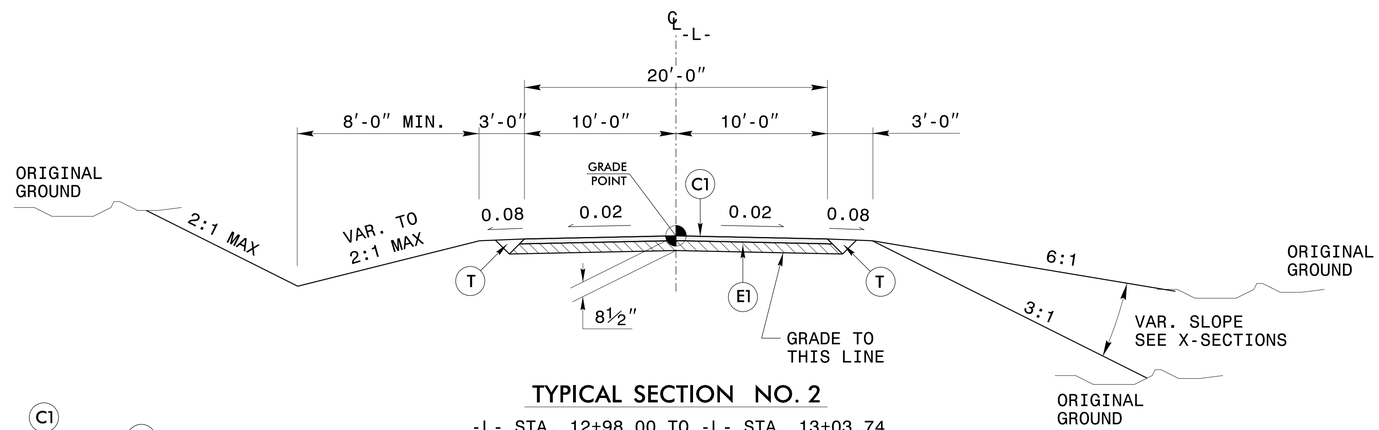


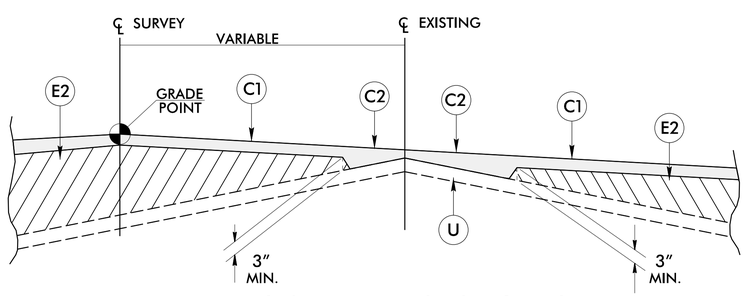
TYPICAL SECTION NO. 1

-L- STA. 11+85.00 TO -L- STA. 12+98.00
-L- STA. 13+18.39 TO -L- STA. 13+85.00

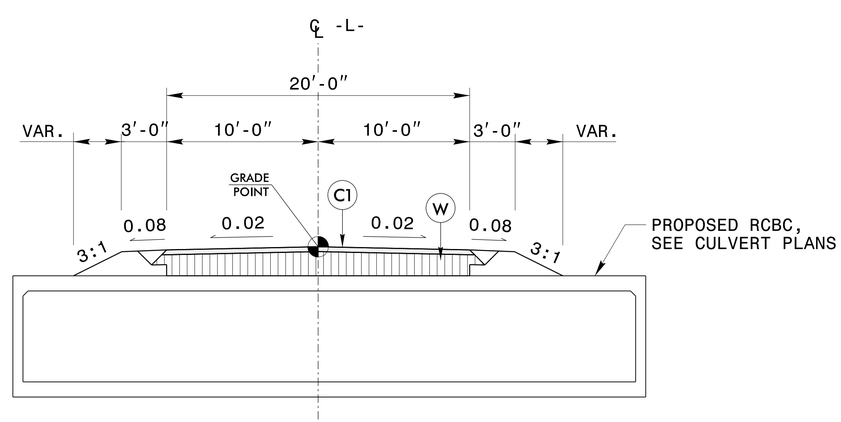


TYPICAL SECTION NO. 2

-L- STA. 12+98.00 TO -L- STA. 13+03.74



Detail Showing Method Of Wedging



TYPICAL SECTION NO. 3

-L- STA. 13+03.74 TO -L- STA. 13+18.39

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12/06/07

COMPUTED BY: DGM	DATE: 12/20/2013
CHECKED BY: TEH	DATE: 12/20/2013

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	3B-1

SUMMARY OF EARTHWORK

ALIGNMENT	STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
L	11+85.00	13+85.00	87	*62		25
SUBTOTALS:			87	62		25
PROJECT TOTALS:			87	62		25
5% TO REPLACE TOPSOIL ON BORROW PIT						
GRAND TOTALS:			87			
SAY:			90			

* INCLUDES REDUCTION DUE TO CULVERT

EST 50 CY UNDERCUT EXCAVATION (CONTINGENCY)
EST 50 CY SELECT GRANULAR MATERIAL (CONTINGENCY)
EST 50 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 (acres)	AREA TAKEN (acres)	AREA REMAINING RT. (acres)	AREA REMAINING LT. (acres)	CONST. EASE. (acres)	PERM. DRAIN. EASE. (acres)	TEMP. DRAIN. EASE. (acres)	PERM. UTIL. EASE. (acres)	PERM. DRAIN /UTIL. EASE. (acres)
1	VIRGINIA CLEVELAND WILLIAMS	61.498	–	61.498	–	0.006	–	–	–	0.048
2	DAVID SCLATTER	7.996	–	7.996	–	0.026	0.059	–	–	
3	DAVID ROBESON WILLIAMS	57.617	–	57.617	–	–	–	–	–	0.007

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+83.23	13+01.94	CL	22.55
-L-	13+13.42	13+36.48	CL	27.08
			TOTAL:	49.63
			SAY:	50

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"
13+54 -L-	RT	0401																													
TOTALS																															

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.36	G.D.I. FRAME WITH TWO GRATES STD. 840.37			CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71		PIPE REMOVAL LIN.FT.	REMARKS
13+54 -L-	32																																		32	REMOVE EXIST 15" CMP
TOTALS	32																																		32	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

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thuffman

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
DocuSigned by: T. R. REID
DocuSign Envelope ID: 7E8B3411...
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID
10/5/2015

HYDRAULICS ENGINEER
DocuSigned by: JEFFREY L. RECK
DocuSign Envelope ID: 7A51D425...
NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. RECK
10/5/2015

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

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

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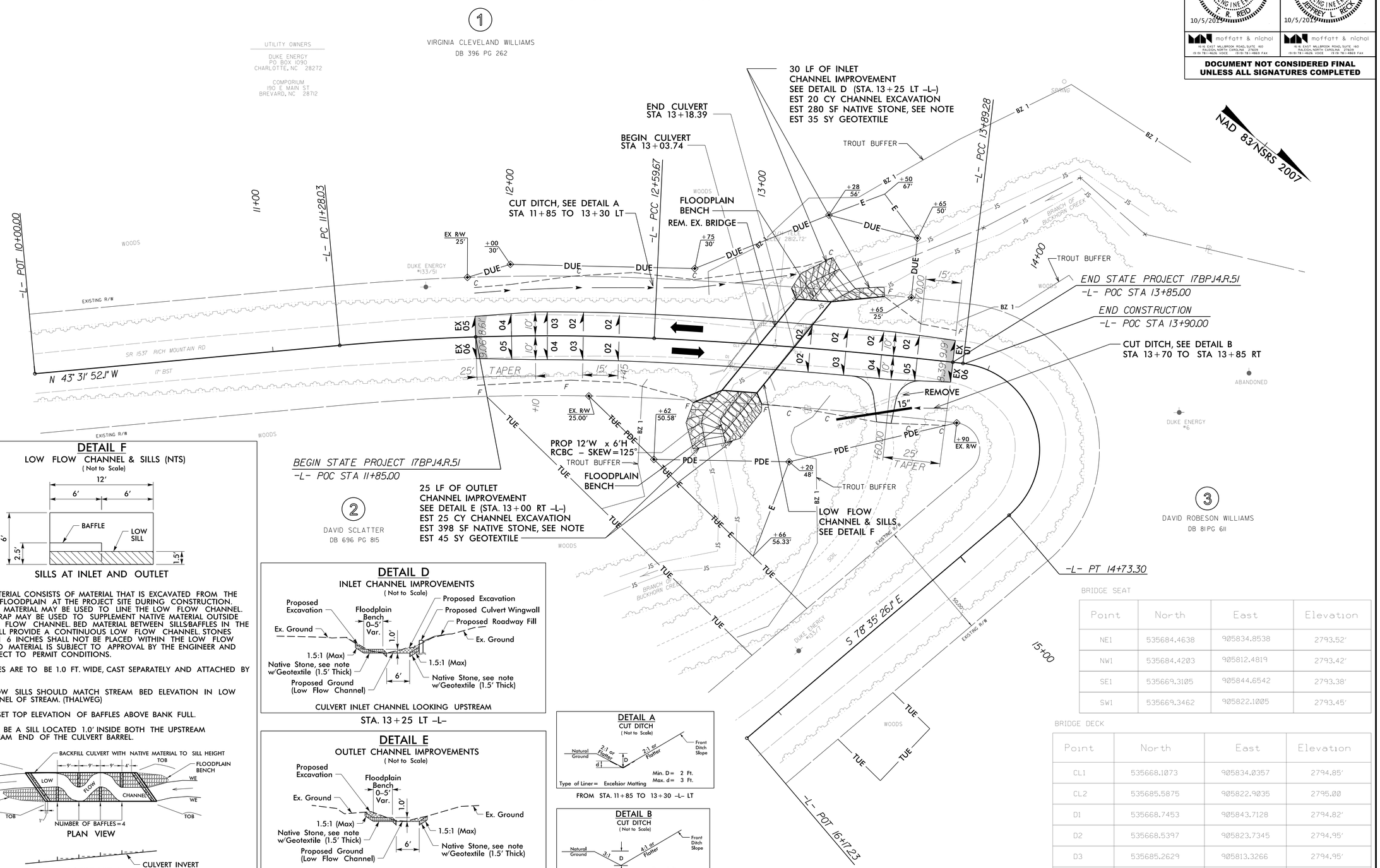
NOTES:

1. NATIVE STONE IS REQUIRED FOR CHANNEL IMPROVEMENTS PLEASE SEE PROJECT SPECIAL PROVISION FOR DETAIL OF NATIVE STONE REQUIREMENTS.
2. ALL TUE SHOWN ON THIS PLAN IS FOR A TEMPORARY UTILITY EASEMENT WHICH HAS ALREADY BEEN PURCHASED BY THE UTILITY OWNER. IT IS SHOWN HERE FOR INFORMATIONAL PURPOSES ONLY.

-L-

PI Sta 11+93.96	PI Sta 13+24.50	PI Sta 14+72.61
Δ = 8° 01' 17.5" (RT)	Δ = 3° 51' 02.7" (RT)	Δ = 133° 04' 05.8" (RT)
D = 6° 05' 36.6"	D = 2° 58' 15.5"	D = 158° 23' 24.4"
L = 131.64'	L = 129.61'	L = 84.01'
T = 65.93'	T = 64.83'	T = 83.33'
R = 940.27'	R = 1,928.52'	R = 36.17'
e = 6.0%	e = 6.0%	e = 6.0%
DS = 50 MPH	DS = 65 MPH	DS = 20 MPH
RO = 90'	RO = 90'	RO = 20 MPH



DETAIL F
LOW FLOW CHANNEL & SILLS (NTS)
(Not to Scale)

SILLS AT INLET AND OUTLET

*NOTES:

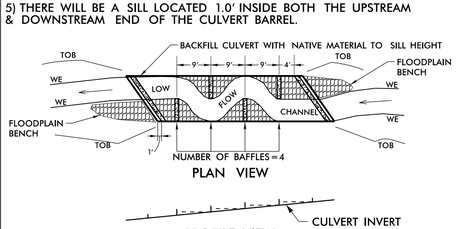
1) NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED/FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY NATIVE MATERIAL MAY BE USED TO LINE THE LOW FLOW CHANNEL. CLASS B RIP RAP MAY BE USED TO SUPPLEMENT NATIVE MATERIAL OUTSIDE OF THE LOW FLOW CHANNEL. BED MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. STONES LARGER THAN 6 INCHES SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF LOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET TOP ELEVATION OF BAFFLES ABOVE BANK FULL.

5) THERE WILL BE A SILL LOCATED 1.0' INSIDE BOTH THE UPSTREAM & DOWNSTREAM END OF THE CULVERT BARREL.



STA. 13+11 LT /RT –L–

DETAIL D
INLET CHANNEL IMPROVEMENTS
(Not to Scale)

CULVERT INLET CHANNEL LOOKING UPSTREAM

STA. 13+25 LT –L–

DETAIL E
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)

CULVERT OUTLET CHANNEL LOOKING DOWNSTREAM

STA. 13+00 RT –L–

DETAIL A
CUT DITCH
(Not to Scale)

FROM STA. 11+85 TO 13+30 –L– LT

DETAIL B
CUT DITCH
(Not to Scale)

FROM STA. 13+70 TO 13+85 –L– RT

BRIDGE SEAT

Point	North	East	Elevation
NE1	535684.4638	905834.8538	2793.52'
NW1	535684.4203	905812.4819	2793.42'
SE1	535669.3105	905844.6542	2793.38'
SW1	535669.3462	905822.1005	2793.45'

BRIDGE DECK

Point	North	East	Elevation
CL1	535668.1073	905834.0357	2794.85'
CL2	535685.5875	905822.9035	2795.00
D1	535668.7453	905843.7128	2794.82'
D2	535668.5397	905823.7345	2794.95'
D3	535685.2629	905813.3266	2794.95'
D4	535685.1421	905833.4311	2795.03'

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thuffman

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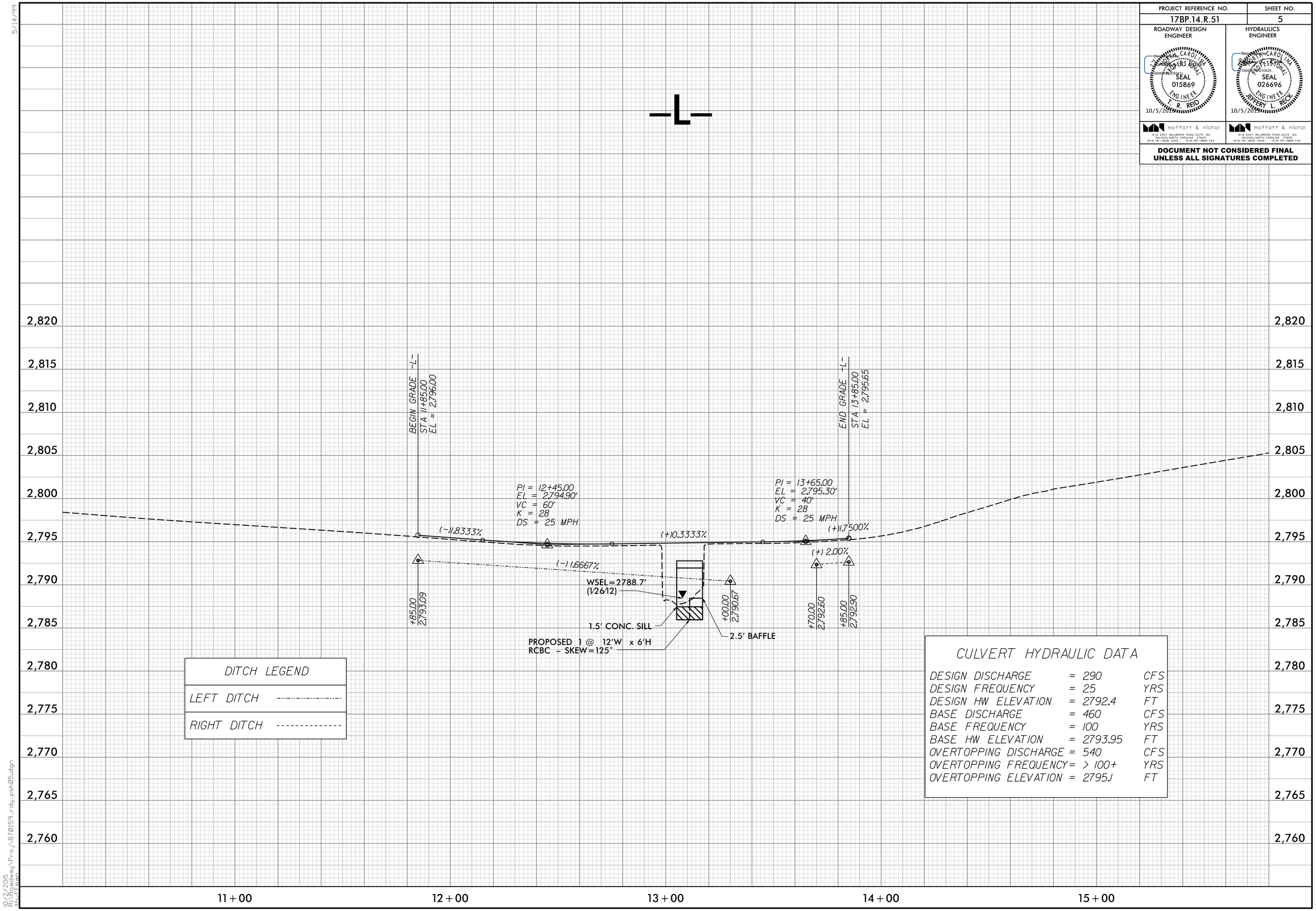
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID	NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK
10/5/2016	10/5/2016
moffatt & nichol 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 781-4626 VOICE (919) 781-4869 FAX	moffatt & nichol 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 781-4626 VOICE (919) 781-4869 FAX

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DITCH LEGEND	
LEFT DITCH	-·-·-·-·-
RIGHT DITCH	- - - - - -

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	290	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2792.4	FT
BASE DISCHARGE	=	460	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2793.95	FT
OVERTOPPING DISCHARGE	=	540	CFS
OVERTOPPING FREQUENCY	=	> 100+	YRS
OVERTOPPING ELEVATION	=	2795.1	FT

10/2/2015
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thuffman

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PROJECT: 17BP.14.R.51

CONTRACT: DN00177

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.51	TMP-1

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

TRANSYLVANIA COUNTY

BRIDGE NO. 159 ON SR 1537 (RICH MOUNTAIN ROAD)

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS FOR FACILITIES ≤ 55 MPH
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS. LEGEND AND INDEX OF SHEETS
TMP-2	GENERAL NOTES, PHASING
TMP-3	DETOUR SIGNING

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

APPROVED:__________ DATE:________

DocuSigned by:
Merrick A. Dugal III
35B7F44BDD564FE...

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A DUGAL, III

10/2/2015

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

ROADWAY STANDARD DRAWINGS, INDEX OF SHEETS & LEGEND

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

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.51	TMP-2

RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-6416 Fax.
www.rameykemp.com
NC License No. C-0910

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWING, 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 ENGINEERING.

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

B) INSTALL ADVANCED 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.

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

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

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

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

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

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

PAVEMENT MARKINGS AND MARKERS

G) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKERS
SR 1537	PAINT	NONE

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

I) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.

J) PASSING ZONE WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PHASING

PHASE I

PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER OFF-SITE DETOUR SIGNING AS SHOWN ON TCP-3 AND IN ACCORDANCE WITH RSD 1101.03 (SHEET 1 OF 9).

PHASE II

USING OFF-SITE DETOUR, UNCOVER DETOUR SIGNS, CLOSE -L- (SR 1537 / RICH MOUNTAIN ROAD) TO TRAFFIC AND CONSTRUCT CULVERT, APPROACHES AND ROADWAY UP TO AND INCLUDING FINAL LAYER OF SURFACE COURSE.

PHASE III

UPON COMPLETION OF CULVERT, APPROACHES AND ROADWAY, PLACE FINAL PAVEMENT MARKING IN ACCORDANCE WITH RSD 1205.02 AND 1205.12. REMOVE BARRICADES AND DETOUR SIGNS AND OPEN -L- (SR 1537/ RICH MOUNTAIN ROAD) TO TRAFFIC.

APPROVED:_____ DATE:_____

DocuSigned by:
Merrick A. Dugal, III
35B7F44BDD994A0...

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A. DUGAL, III

10/2/2015

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

GENERAL NOTES AND PHASING

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.51	TMP-3

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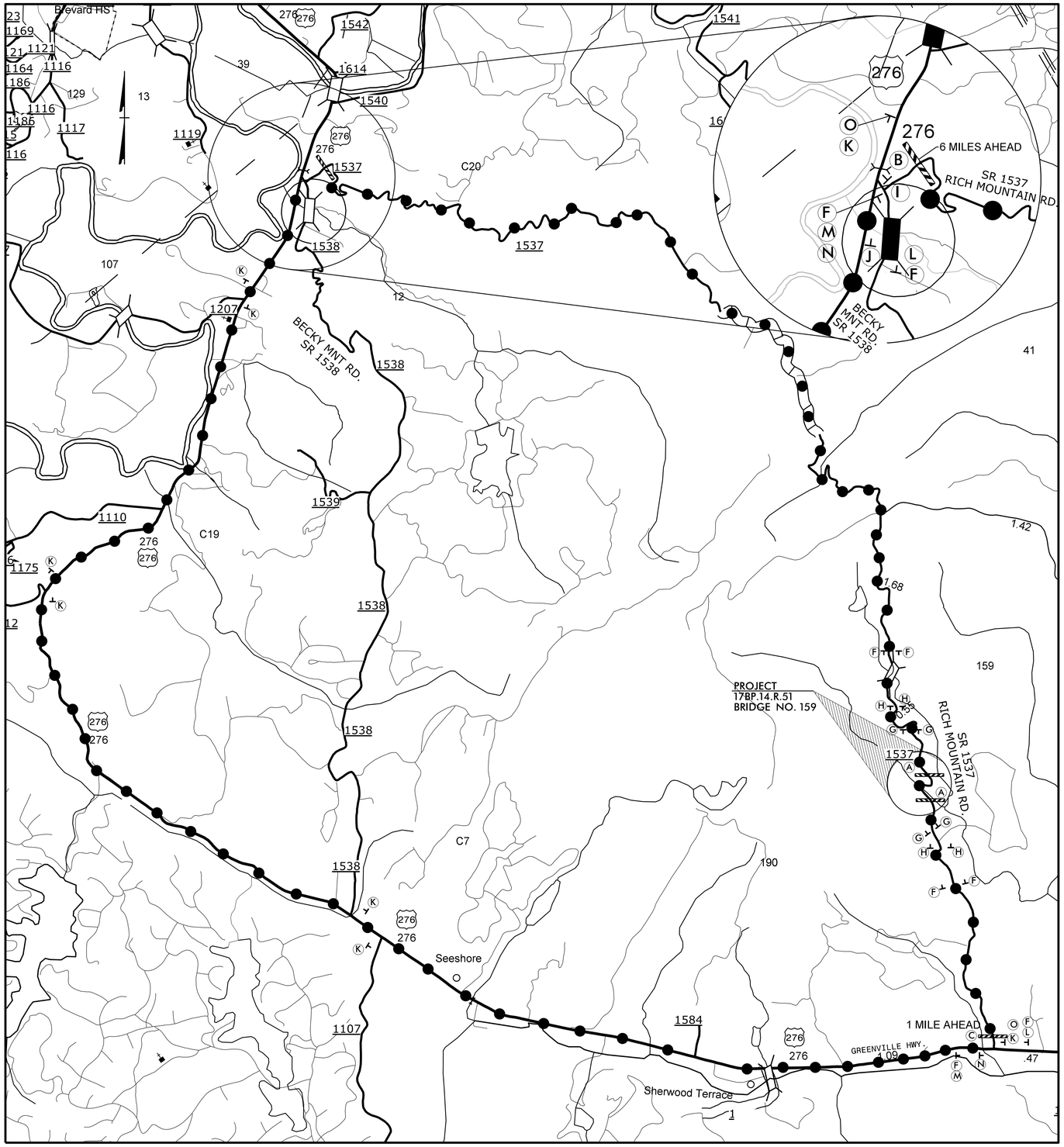
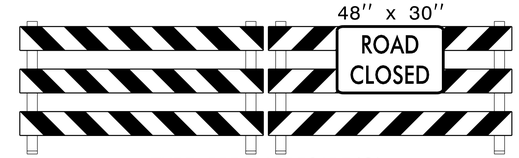
Transportation Engineers
5808 Farrington Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-8416 Fax.
www.rameykemp.com
NC License No. C-0910



R11-2
48" x 30"



TYPE III BARRICADE(S)
(A)

R11-3
60" x 30"

M4-10L
48" x 18"

TYPE III BARRICADE
(B)

R11-3
60" x 30"

M4-10L
48" x 18"

TYPE III BARRICADE
(C)

W20-3
48" X 48"
(F)

SIGN NUMBER: name
TYPE: D
QUANTITY: 1
SIGN WIDTH: 6'-0"
HEIGHT: 2'-6"
TOTAL AREA: 15.0 Sq.Ft.
BORDER TYPE: FLUSH
RECESS: 0.75"
WIDTH: 0.75"
RADII: 3"
NO. Z BARS:
LENGTH:

BACKG COLOR: Orange
COPY COLOR: Black

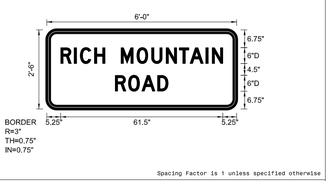
SYMBOL	X	Y	WID	HT

MAT'L: 0.125" (3.2 mm) ALUMINUM

USE NOTES:

1. Legend and border(except those that are colored black) shall be direct applied Grade B sheeting.
2. Background shall be Grade C reflective sheeting.
3. Shields; A, B, and C type arrows shall be on 0.032" (0.8mm) aluminum and demountable.

DESIGN BY: NE BURNS
PROJECT ID: 12084
CHECKED BY: MA DUGAL
DIV: DIV
DATE: Oct 09, 2013



Spacing Factor is 1 unless specified otherwise

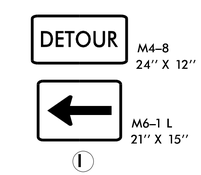
LETTER POSITIONS

Letter spacings are to start of next letter

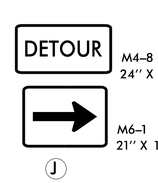
																						Series/Size	Text Length
	R	I	C	H		M	O	U	N	T	A	I	N									D 2000	
5.3	5.1	2.3	5.4	4.1	6	6	5.6	5.5	5	4.1	6	2.4	4.1	5.3									61.5
	R	O	A	D																		D 2000	
26	5	5	6	4.1	26																		20.1

FILENAME: Nicks Sign Designs
NORTH CAROLINA D.O.T. SIGN DETAIL
(O)

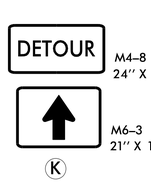
W20-3
48" X 48"
(G)



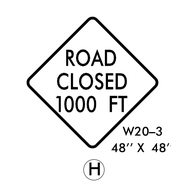
M4-8
24" X 12"
M6-1 L
21" X 15"
(I)



M4-8
24" X 12"
M6-1
21" X 15"
(J)



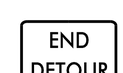
M4-8
24" X 12"
M6-3
21" X 15"
(K)



W20-3
48" X 48"
(H)

(L) SP-4R
48" X 12"

(M) SP-4L
48" X 12"



(N)
M4-8 A
24" X 18"

PROPOSED DETOUR

DETOUR ROUTE

DETOUR LENGTH 14 MILES

APPROVED:_____ DATE:_____

DocuSigned by:
Merrick A. Dugal
35B7F44BDD6B4...

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A DUGAL, III

10/2/2015

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

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

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8/17/99

PROJECT: 17BP.14.R.51

CONTRACT: DN00177

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	PMP-01

APPROVED: _____

DATE: _____

SEAL

DocuSigned by: Timothy R. Reid
2606BA2AE8D411...

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

10/2/2015

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

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

LOCATION: BRIDGE NO. 159 ON SR 1537 (RICH MOUNTAIN ROAD) OVER BRANCH OF BUCKHORN CREEK

ROADWAY STANDARD DRAWINGS

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

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

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1537	PAINT	NONE

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

C) REMOVE / REPLACE ANY CONFLICTING / DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PA - WHITE EDGE LINE (4")	PAINT
PI - YELLOW DOUBLE CENTER LINE (4")	PAINT

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET NOTES & SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

10/2/2015
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bhuffman

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	PMP-2

20 10 0 20 40
SCALE

APPROVED: _____

DATE: _____

SEAL

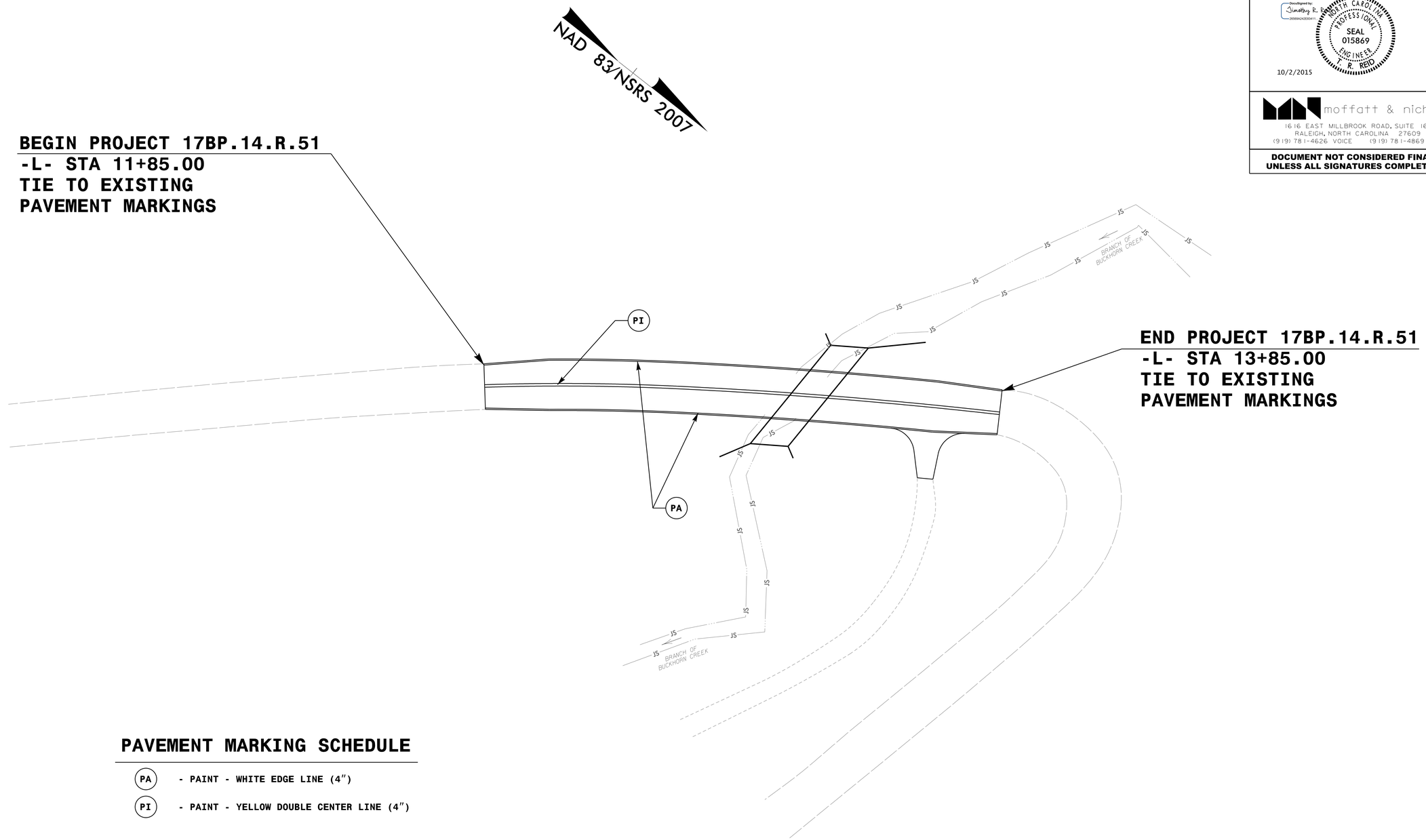
DocuSigned by: Timothy R. Reid
-2B5B6A2E3D411...

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

10/2/2015

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PAVEMENT MARKING SCHEDULE

PA	- PAINT - WHITE EDGE LINE (4")
PI	- PAINT - YELLOW DOUBLE CENTER LINE (4")

NOTE:

1. ALL STRIPING SHOWN SHALL HAVE TWO COATS

PAVEMENT MARKING DETAIL
RICH MOUNTAIN ROAD

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PROJECT: 17BP.14.R.51

CONTRACT: DN00177

BRIDGE 870159

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.51	EC-1	

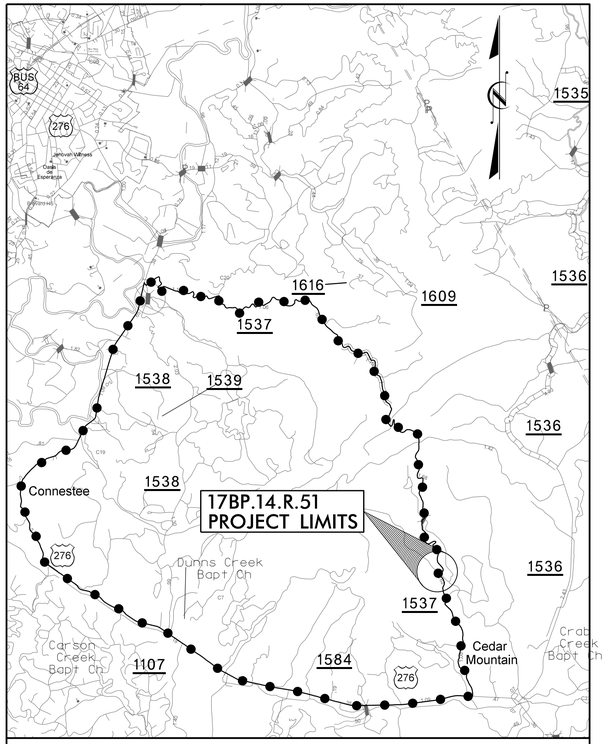
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17.BP.14.R.51		PE
17.BP.14.R.51		ROW & UTIL
17.BP.14.R.51		CONSTR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

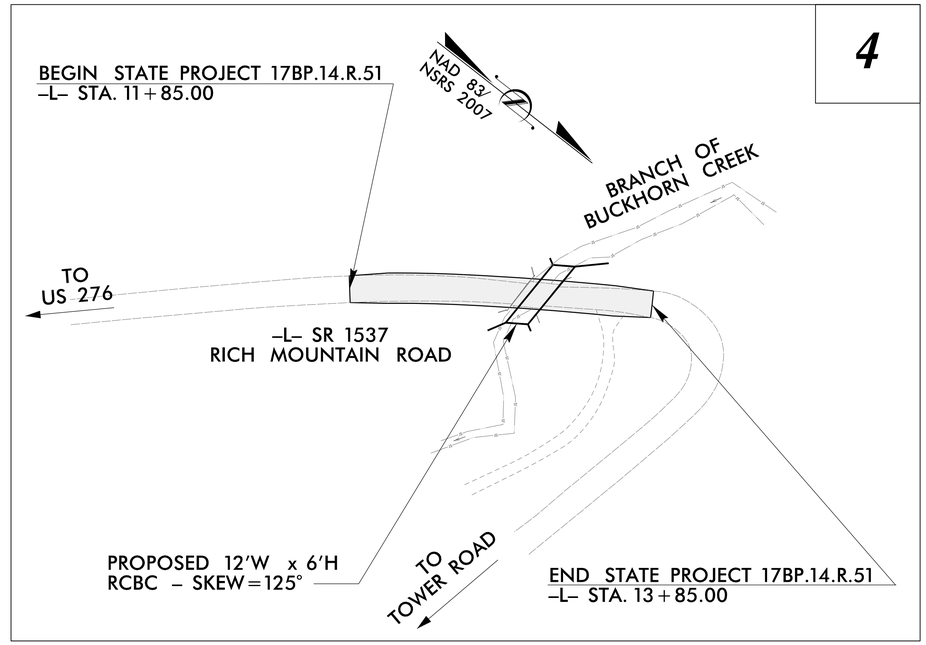
LOCATION: BRIDGE NO. 159 ON SR 1537 (RICH MOUNTAIN ROAD) OVER BRANCH OF BUCKHORN CREEK

TYPE OF WORK: PAVING, GRADING, DRAINAGE AND CULVERT



VICINITY MAP

DETOUR



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.

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

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 #132

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.51	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-	11+85	13+23	LT	150
4	-L-	13+25	13+85	LT	100
4	-L-	11+85	12+96	RT	150
4	-L-	12+98	13+25	RT	140
4	-L-	11+85	13+30	LT	145
				SUBTOTAL	685
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					100
				TOTAL	785
				SAY	800

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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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.51	EC-4\CONST-4

8/17/99

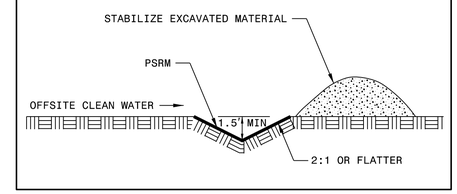
-L-

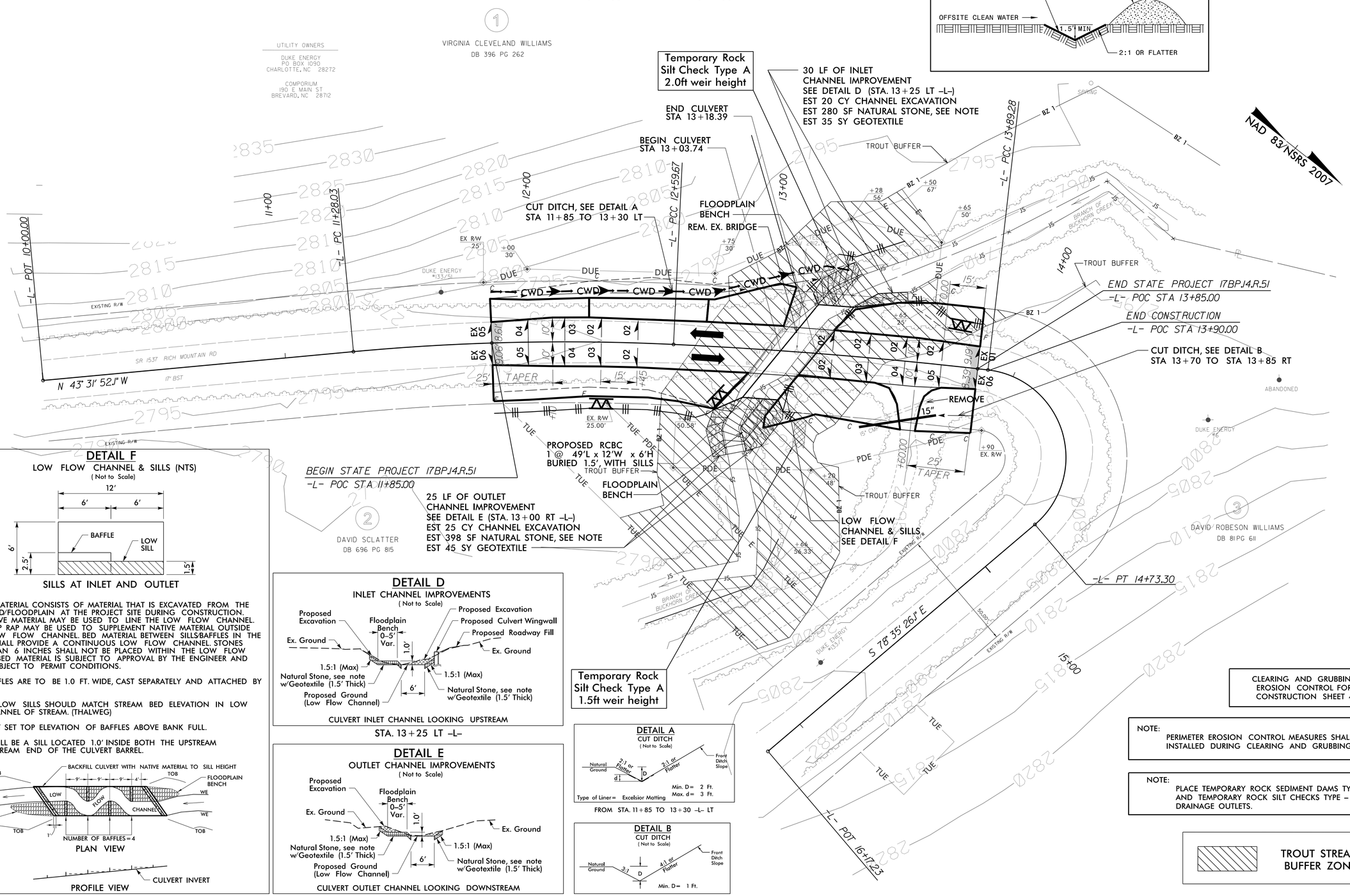
PI Sta 11+93.96	PI Sta 13+24.50	PI Sta 14+72.61
Δ = 8° 01' 17.5" (RT)	Δ = 3° 51' 02.7" (RT)	Δ = 133° 04' 05.8" (RT)
D = 6° 05' 36.6"	D = 2° 58' 15.5"	D = 158° 23' 24.4"
L = 131.64'	L = 129.61'	L = 84.01'
T = 65.93'	T = 64.83'	T = 83.33'
R = 940.27'	R = 1,928.52'	R = 36.17'
e = 6.0%	e = 6.0%	e = 6.0%
DS = 50 MPH	DS = 65 MPH	DS = 20 MPH
RO = 90'	RO = 90'	RO = 90'

CLEAN WATER DIVERSION

→→ CWD →→ CWD →→ CWD →→ CWD →

(Not to Scale)





DETAIL F

LOW FLOW CHANNEL & SILLS (NTS)

(Not to Scale)

SILLS AT INLET AND OUTLET

*NOTES:

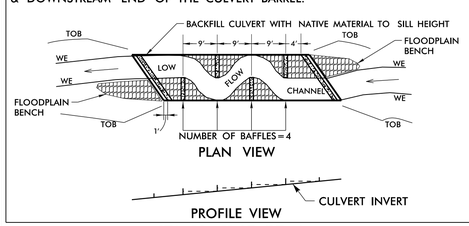
1) NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED/FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY NATIVE MATERIAL MAY BE USED TO LINE THE LOW FLOW CHANNEL. CLASS B RIP RAP MAY BE USED TO SUPPLEMENT NATIVE MATERIAL OUTSIDE OF THE LOW FLOW CHANNEL. BED MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. STONES LARGER THAN 6 INCHES SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF LOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET TOP ELEVATION OF BAFFLES ABOVE BANK FULL.

5) THERE WILL BE A SILL LOCATED 1.0' INSIDE BOTH THE UPSTREAM & DOWNSTREAM END OF THE CULVERT BARREL.



STA. 13+11 LT /RT -L-

DETAIL D

INLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT INLET CHANNEL LOOKING UPSTREAM

STA. 13+25 LT -L-

DETAIL E

OUTLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT OUTLET CHANNEL LOOKING DOWNSTREAM

STA. 13+00 RT -L-

DETAIL A

CUT DITCH

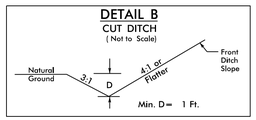
(Not to Scale)

FROM STA. 11+85 TO 13+30 -L- LT

DETAIL B

CUT DITCH

(Not to Scale)



FROM STA. 13+70 TO 13+85 -L- RT

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

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

TROUT STREAM BUFFER ZONE

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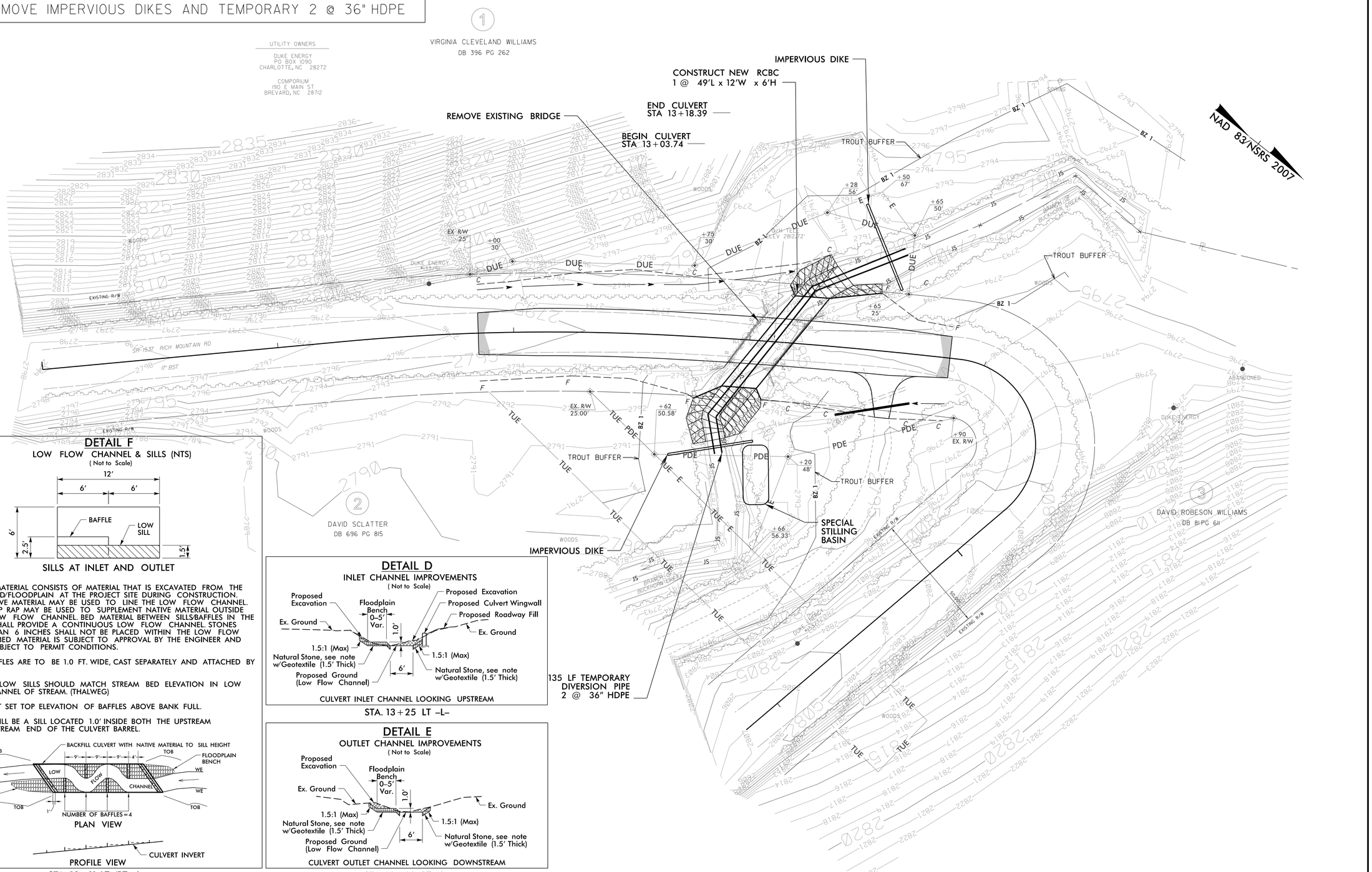
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	EC-5\CONST-4

CULVERT CONSTRUCTION SEQUENCE

1. INSTALL PORTABLE STILLING BASIN FOR PUMPED EFFLUENT
2. INSTALL IMPERVIOUS DIKES AND TEMPORARY 2 @ 36" HDPE
3. REMOVE EXISTING BRIDGE
4. CONSTRUCT NEW 1@ 12'X6' RCBC
5. COMPLETE U/S & D/S CHANNEL IMPROVEMENTS
6. REMOVE IMPERVIOUS DIKES AND TEMPORARY 2 @ 36" HDPE



DETAIL F

LOW FLOW CHANNEL & SILLS (NTS)

(Not to Scale)

SILLS AT INLET AND OUTLET

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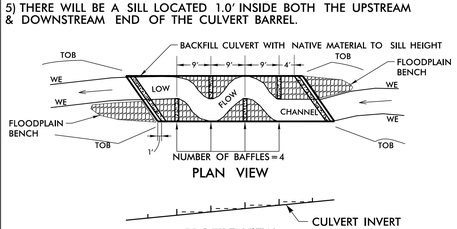

STA. 13+11 LT /RT –L–

DETAIL D

INLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT INLET CHANNEL LOOKING UPSTREAM

STA. 13+25 LT –L–

DETAIL E

OUTLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT OUTLET CHANNEL LOOKING DOWNSTREAM

STA. 13+00 RT –L–

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.51	EC-6\CONST-4

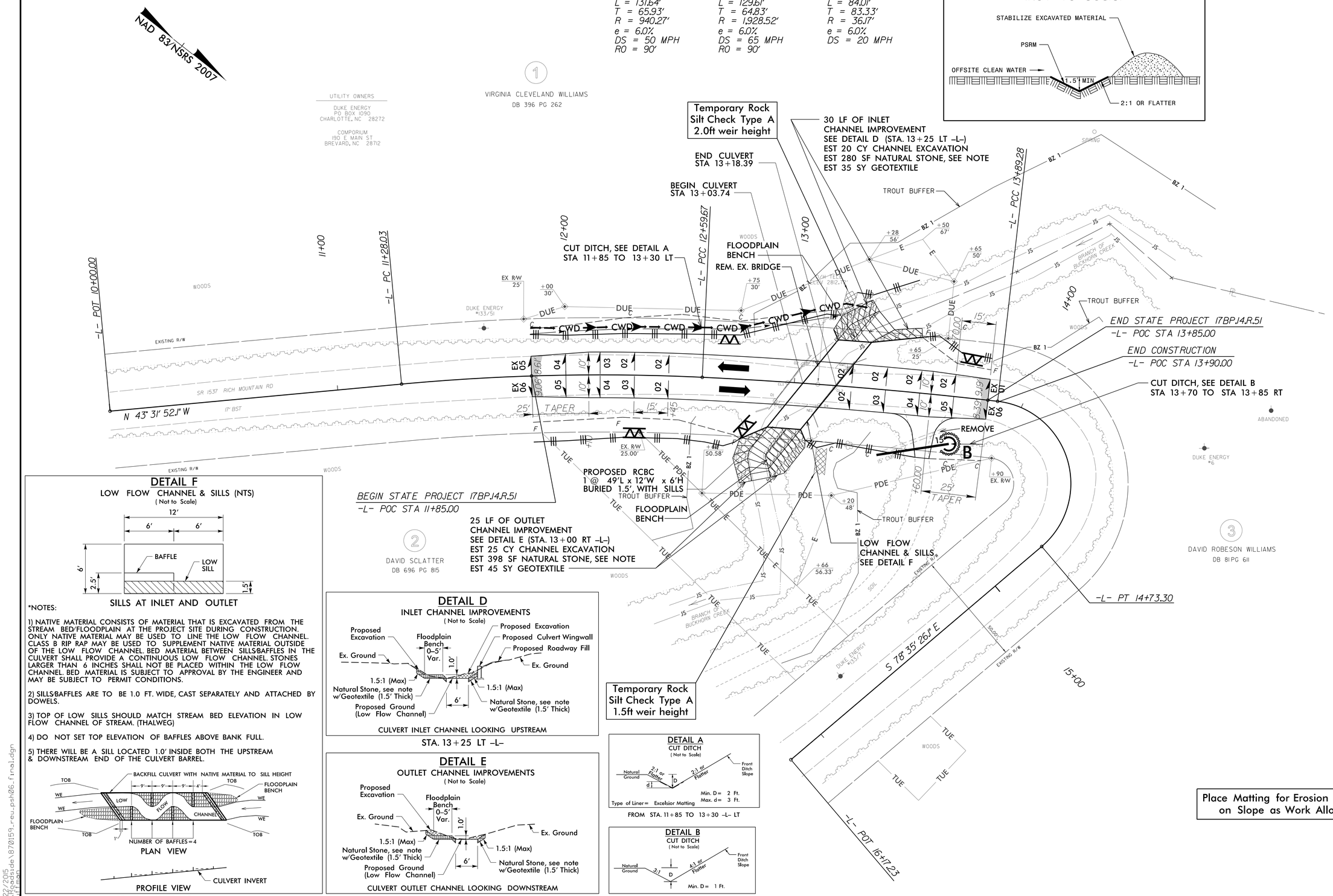
-L-

PI Sta 11+93.96	PI Sta 13+24.50	PI Sta 14+72.61
Δ = 8° 01' 17.5" (RT)	Δ = 3° 51' 02.7" (RT)	Δ = 133° 04' 05.8" (RT)
D = 6° 05' 36.6"	D = 2° 58' 15.5"	D = 158° 23' 24.4"
L = 131.64'	L = 129.61'	L = 84.01'
T = 65.93'	T = 64.83'	T = 83.33'
R = 940.27'	R = 1,928.52'	R = 36.17'
e = 6.0%	e = 6.0%	e = 6.0%
DS = 50 MPH	DS = 65 MPH	DS = 20 MPH
RO = 90'	RO = 90'	DS = 20 MPH

CLEAN WATER DIVERSION

→ → CWD → → CWD → → CWD → → CWD → –

(Not to Scale)



DETAIL F

LOW FLOW CHANNEL & SILLS (NTS)

(Not to Scale)

SILLS AT INLET AND OUTLET

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5) THERE WILL BE A SILL LOCATED 1.0' INSIDE BOTH THE UPSTREAM & DOWNSTREAM END OF THE CULVERT BARREL.

STA. 13+11 LT /RT -L-

DETAIL D

INLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT INLET CHANNEL LOOKING UPSTREAM

STA. 13+25 LT -L-

DETAIL E

OUTLET CHANNEL IMPROVEMENTS

(Not to Scale)

CULVERT OUTLET CHANNEL LOOKING DOWNSTREAM

STA. 13+00 RT -L-

DETAIL A

CUT DITCH

(Not to Scale)

FROM STA. 11+85 TO 13+30 -L- LT

DETAIL B

CUT DITCH

(Not to Scale)

FROM STA. 13+70 TO 13+85 -L- RT

Place Matting for Erosion Control on Slope as Work Allows.

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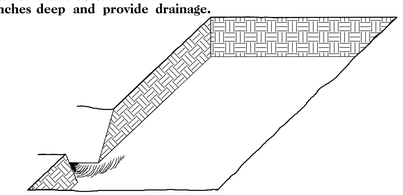
PLANTING DETAILS

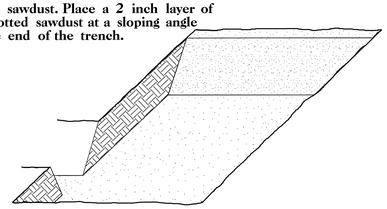
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

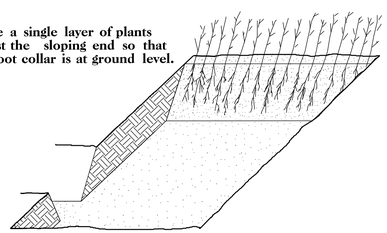
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



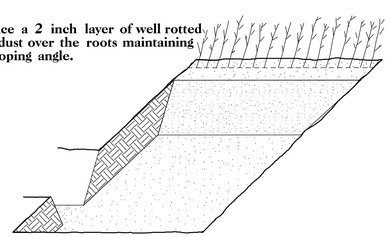
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

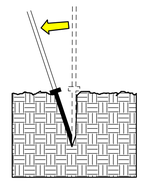


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

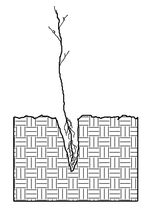


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

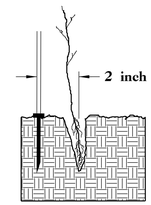
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



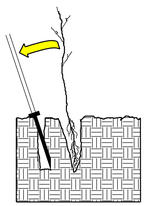
1. Insert planting bar as shown and pull handle toward planter.



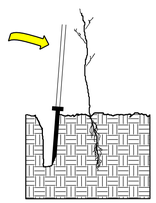
2. Remove planting bar and place seedling at correct depth.



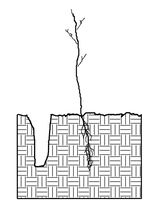
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

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

REFORESTATION DETAIL SHEET

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

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6/2/2015
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09/08/99

PROJECT: 17BP.14.R.51

CONTRACT: DN00177

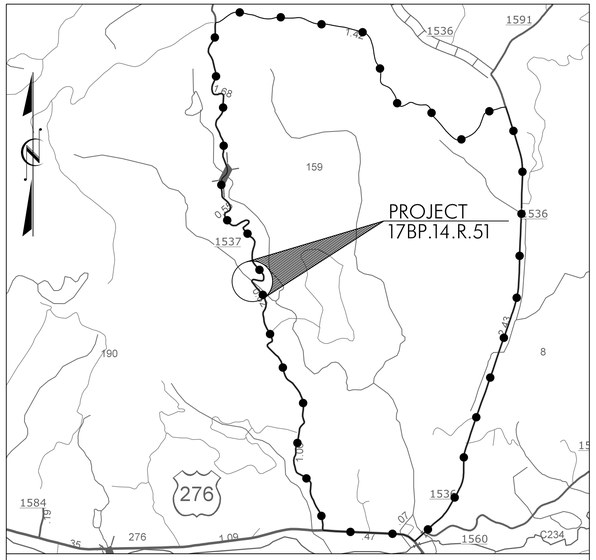
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.14.R.51	UO–1

UTILITIES BY OTHERS PLANS
TRANSYLVANIA COUNTY

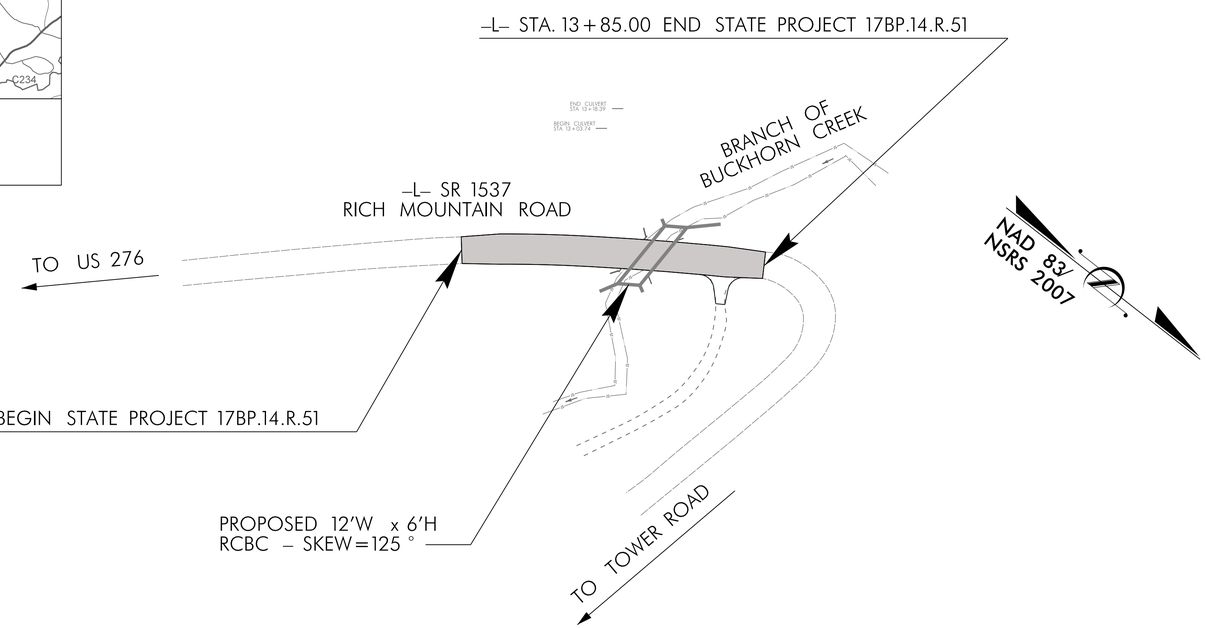
LOCATION: BRIDGE NO. 159 ON SR 1537 (RICH MOUNTAIN ROAD) OVER BRANCH OF BUCKHORN CREEK

TYPE OF WORK: UTILITIES BY OTHERS



VICINITY MAP

DETOUR



CLEARING ON THIS PROJECT
SHALL BE PREFORMED 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 – DUKE ENERGY
(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.51	UO-2

UTILITIES BY OTHERS

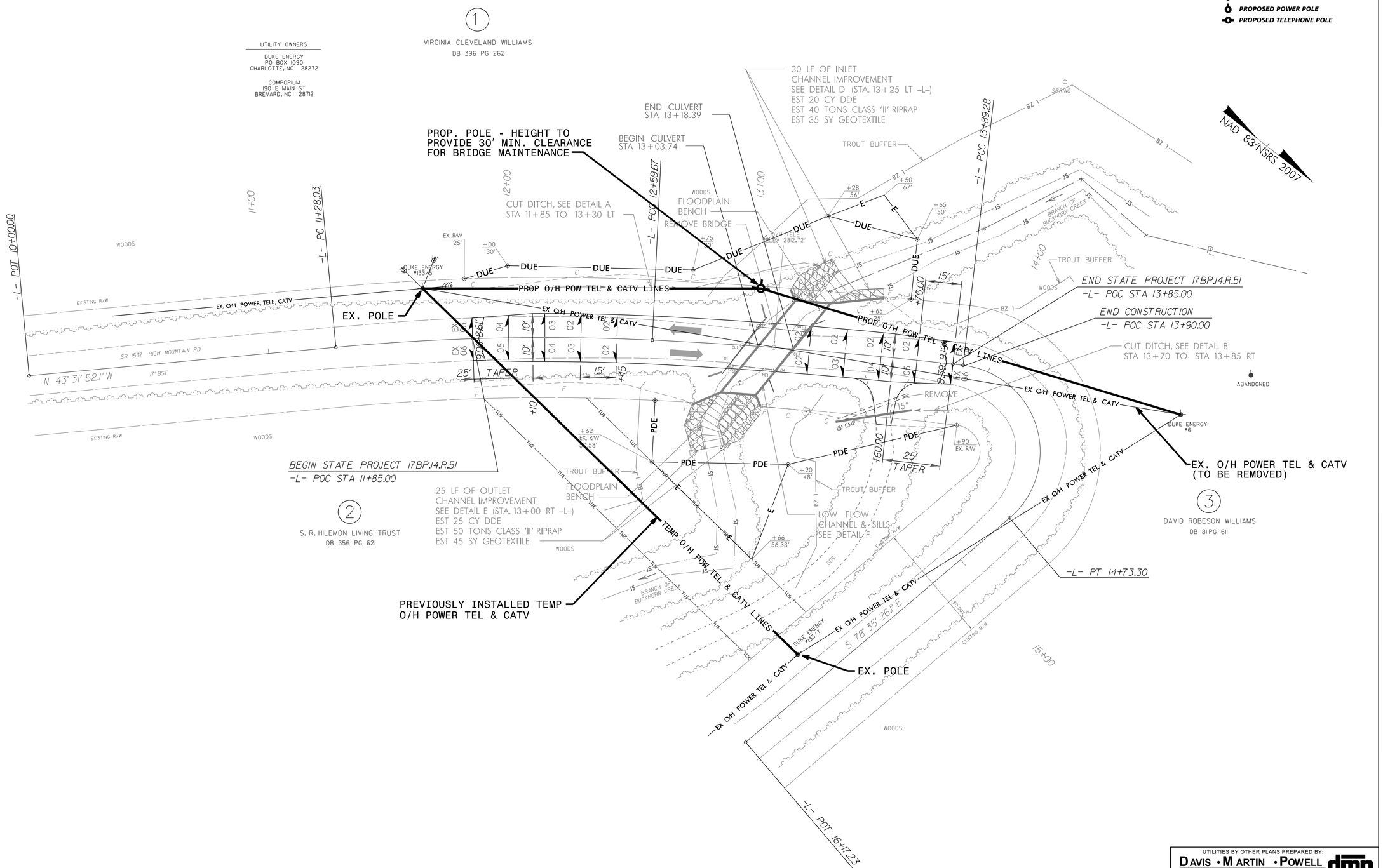
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

LEGEND

- PROPOSED JOINT-USE UTILITY POLE
- PROPOSED POWER POLE
- PROPOSED TELEPHONE POLE

-L-

PI Sta 11+93.96	PI Sta 13+24.50	PI Sta 14+72.61
△ = 8° 01′ 17.5″ (RT)	△ = 3° 51′ 02.7″ (RT)	△ = 133° 04′ 05.8″ (RT)
D = 6° 05′ 36.6″	D = 2° 58′ 15.5″	D = 158° 23′ 24.4″
L = 131.64′	L = 129.61′	L = 84.01′
T = 65.93′	T = 64.83′	T = 83.33′
R = 940.27′	R = 1,928.52′	R = 36.17′
e = 6.0%	e = 6.0%	e = 6.0%
DS = 50 MPH	DS = 65 MPH	DS = 20 MPH
R0 = 90′	R0 = 90′	



UTILITIES BY OTHER PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYO
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.51	X-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+85.00000	0	0
12+00.00000	3	3
12+25.00000	7	6
12+50.00000	13	6
12+75.00000	13	13
13+00.00000	12	67
13+11.08000	5	61
13+20.00000	3	43
13+35.00000	5	29
13+50.00000	3	7
13+70.00000	10	2
13+85.00000	13	1

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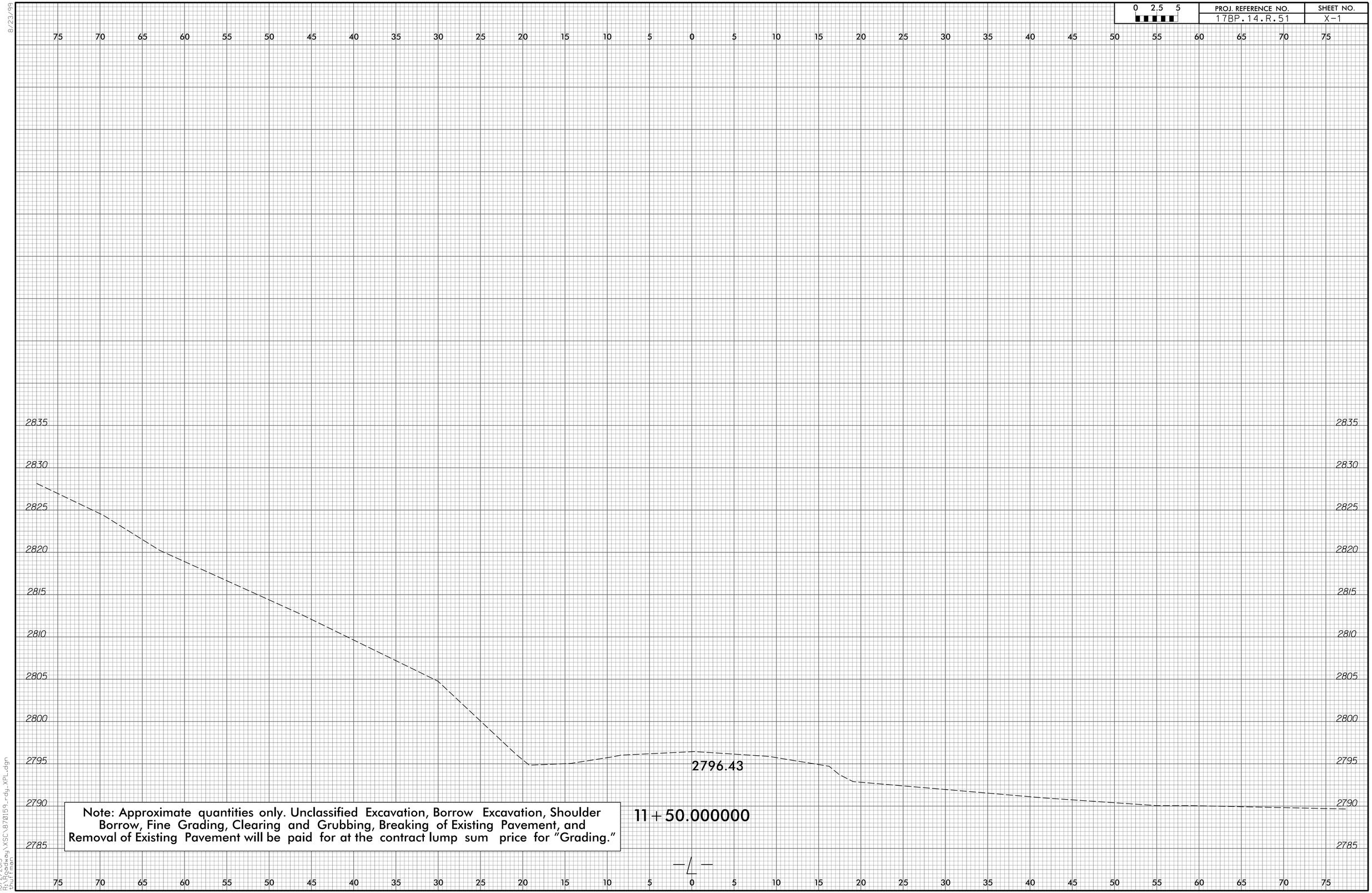
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.51	X-1



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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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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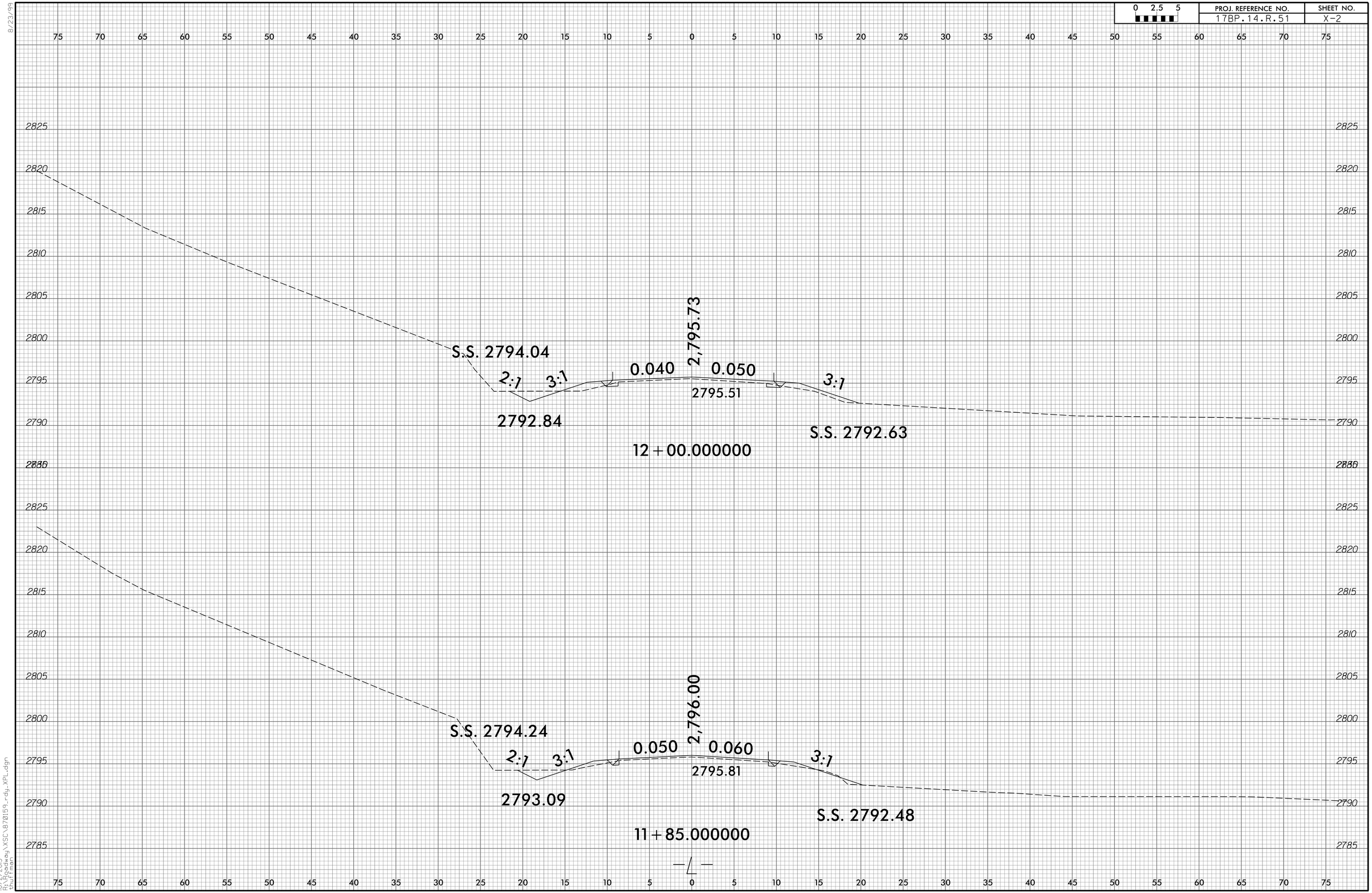

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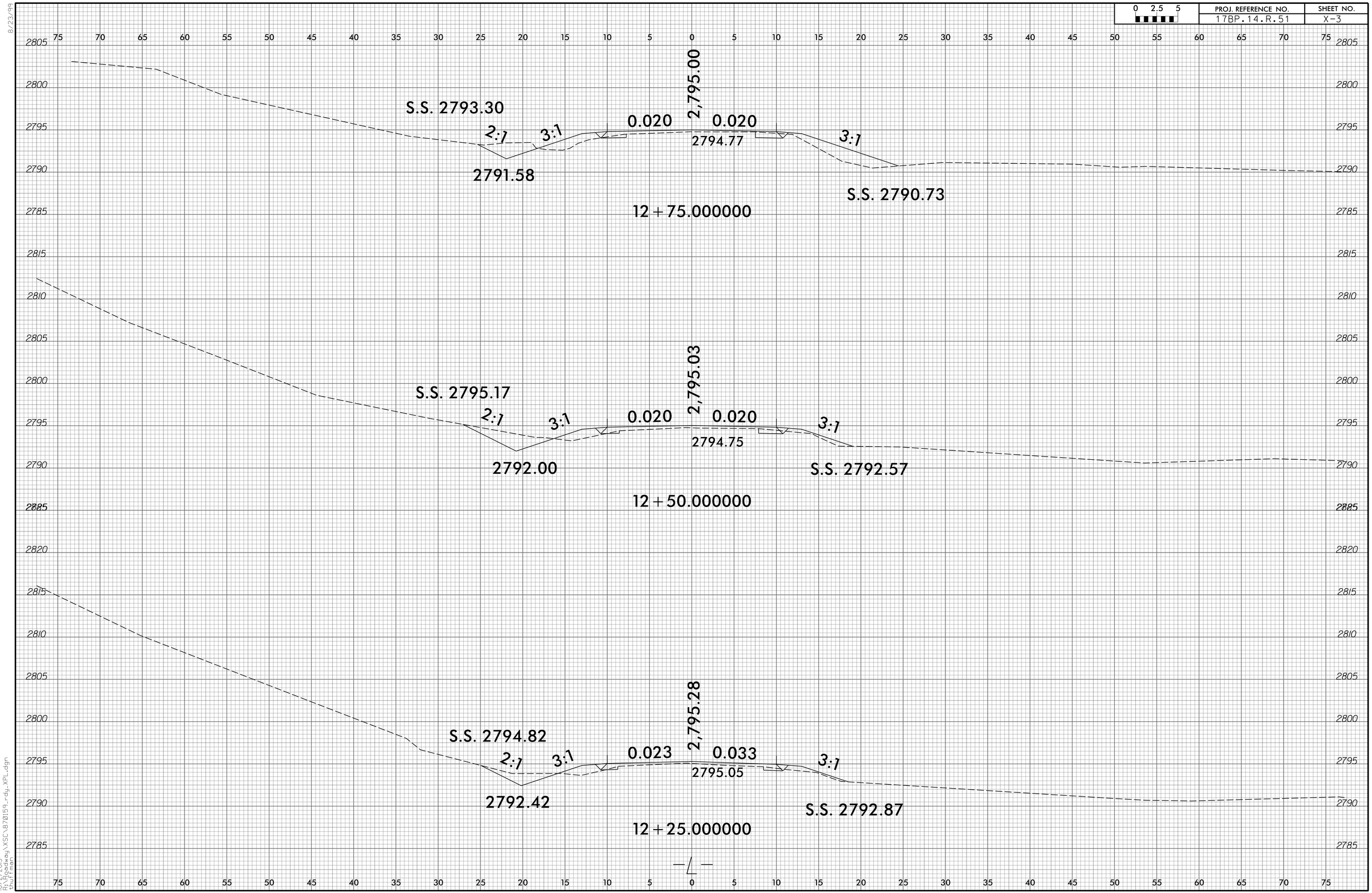

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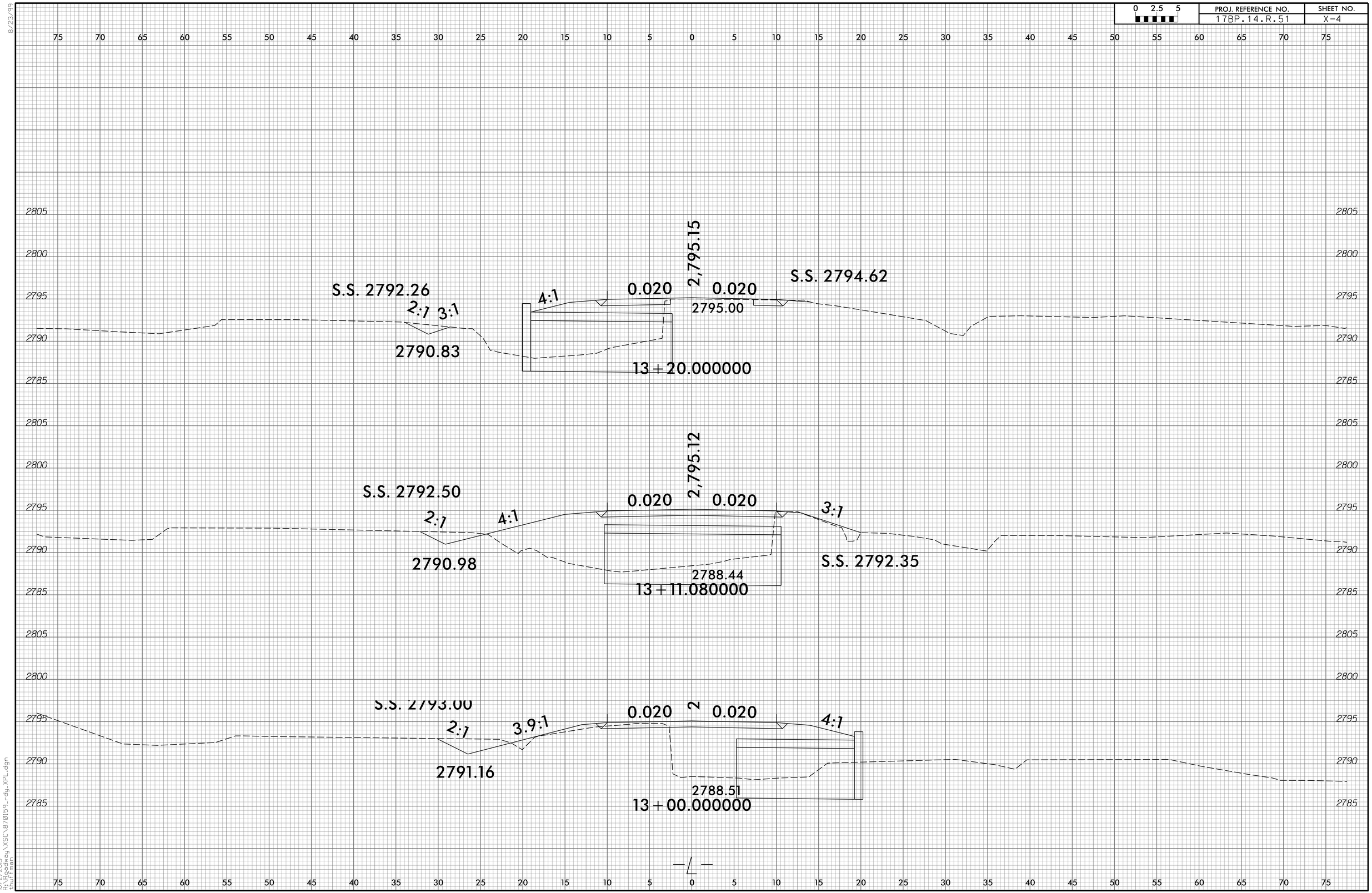

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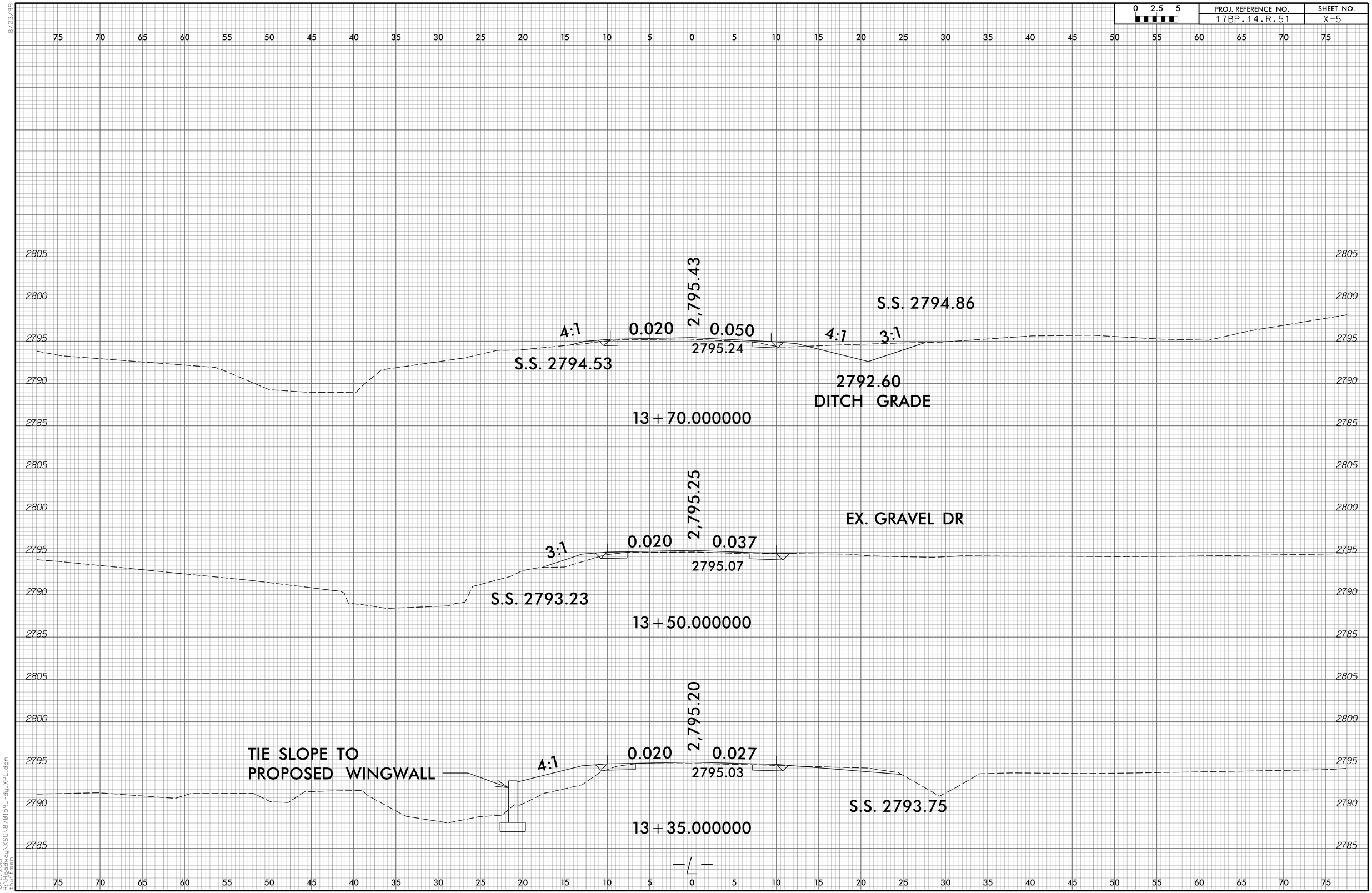

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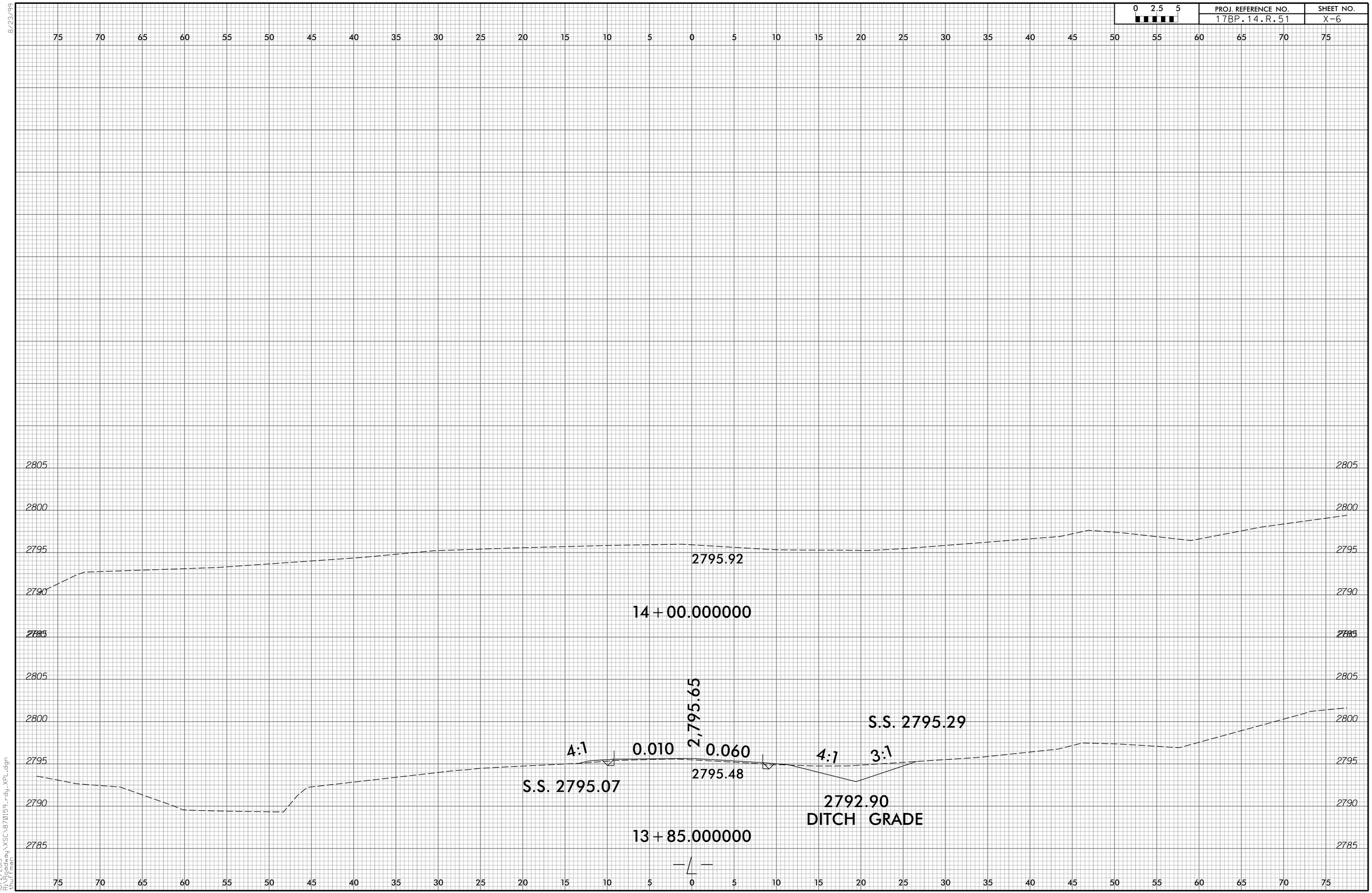

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