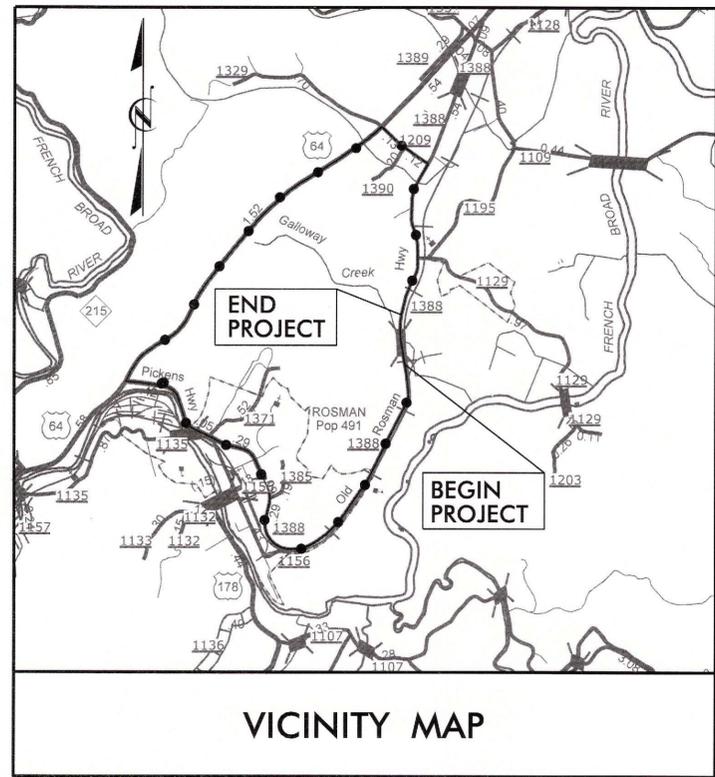


09/28/19

PROJECT: 17BP.14.R.19

CONTRACT: DN00152

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



●●●●● DETOUR

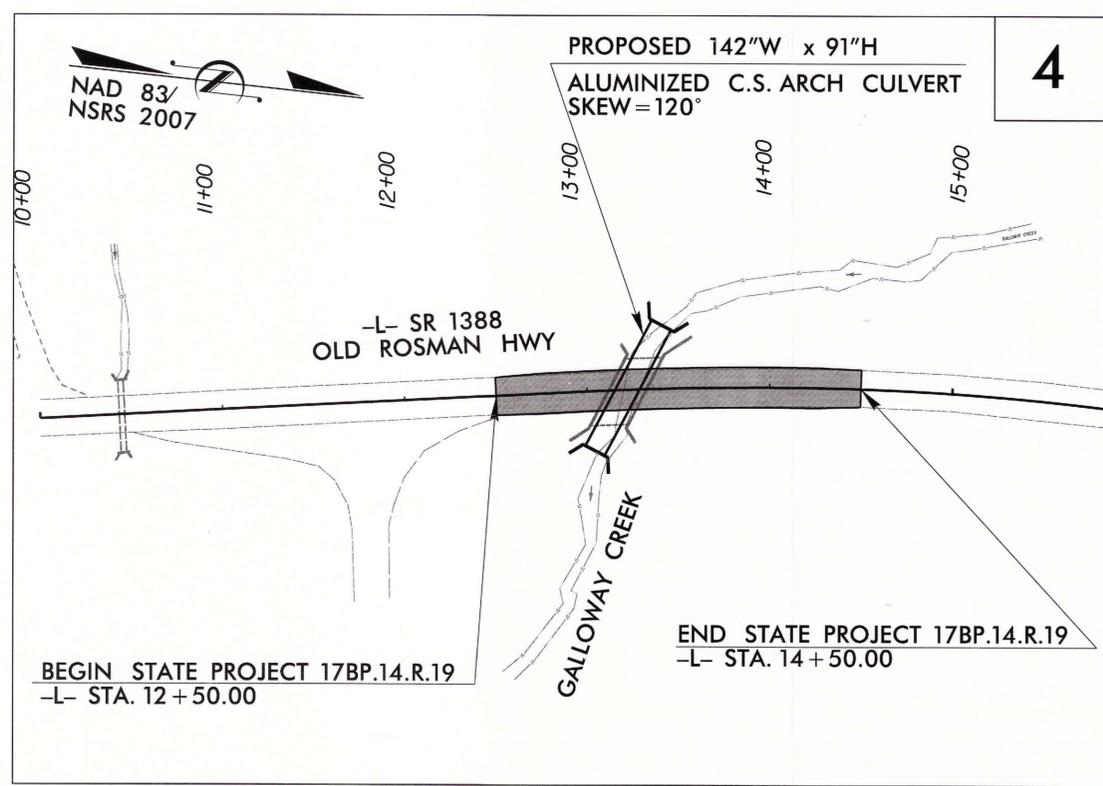
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

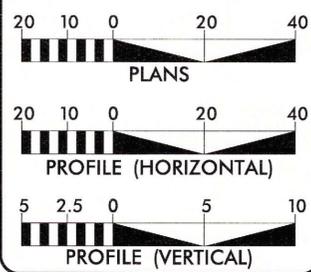
**LOCATION: BRIDGE NO. 221 ON SR 1388 (OLD ROSMAN HWY)
OVER GALLOWAY CREEK**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.19	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.R.19		PE	
17BP.14.R.19		ROW & UTIL	
17BP.14.R.19		CONSTR	



GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 1,970
ADT 2033 = 2,940
DHV = N/A %
D = N/A %
T = 7 % *
V = 50 MPH
* TTST = N/A DUAL 7%
FUNC CLASS = MAJOR COLLECTOR SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.14.R.19 = 0.038 mi.
LENGTH STRUCTURE PROJECT 17BP.14.R.19 = 0.000 mi.
TOTAL LENGTH PROJECT 17BP.14.R.19 = 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:
JANUARY 11, 2013

LETTING DATE:
TBD

TIM REID, P.E.
PROJECT ENGINEER

TRENT HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

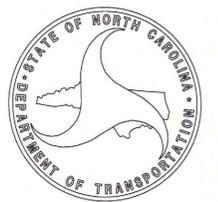
moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

John Reid 4/16/2014 P.E.
SIGNATURE:

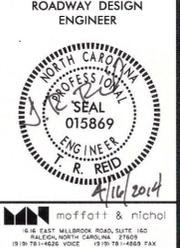
ROADWAY DESIGN ENGINEER

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

J.R. Reid 4/16/2014 P.E.
SIGNATURE:



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T.Huffman



INDEX OF SHEETS

SHEET NUMBER	INDEX OF SHEETS 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
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-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1, EC-3 THRU EC-6	EROSION CONTROL PLAN
UO-1 THRU UO-2	UTILITIES PLANS BY OTHERS
X-A THRU X-2	CROSS-SECTION SUMMARY, CROSS-SECTIONS
C-1 THRU C-3	CULVERT PLANS
SN	STANDARD STRUCTURE NOTES 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 III.

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:

COMPOR:UM - Telephone & CTV
TOWN OF ROSMAN - Water Main and Sewer Force Main

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels

8/17/99

4/15/2014
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moffatt & nichol

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ☠

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ 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	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite R/W Marker	-----
Proposed Control of Access Line with Concrete CA Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
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	-----

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	-----

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	□
Telephone Cell Tower	●
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	----- T
Designated U/G Telephone Cable (S.U.E.*)	----- T
Recorded U/G Telephone Conduit	----- TC
Designated U/G Telephone Conduit (S.U.E.*)	----- TC
Recorded U/G Fiber Optics Cable	----- T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	----- T FO

WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

TV:

TV Satellite Dish	☼
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	----- TV
Designated U/G TV Cable (S.U.E.*)	----- TV
Recorded U/G Fiber Optic Cable	----- TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	----- TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	----- G
Designated U/G Gas Line (S.U.E.*)	----- G
Above Ground Gas Line	----- A/G Gas

SANITARY SEWER:

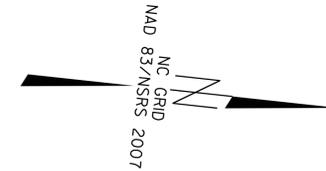
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

MISCELLANEOUS:

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

SURVEY CONTROL SHEET 87-0221 -FINAL-

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.19	1-C
Location and Surveys	

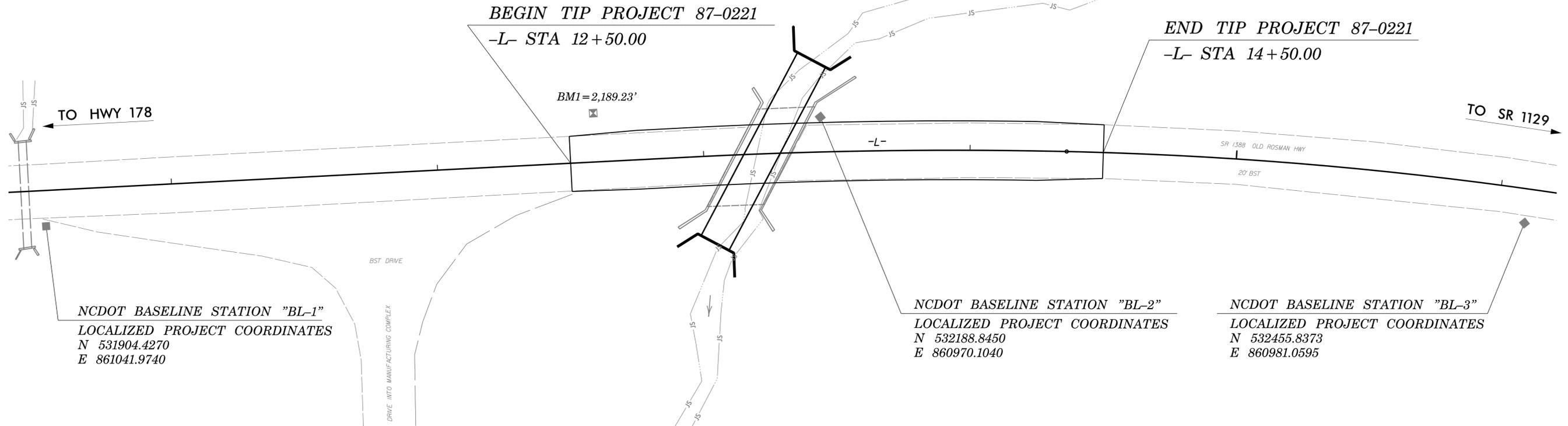


BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	531904.4270	861041.9740	2189.95	10+52.20	13.36 RT
2	BL-2	532188.8450	860970.1040	2188.08	13+44.10	13.06 LT
3	BL-3	532455.8372	860981.0595	2187.33	16+10.48	12.82 RT

 BM1 ELEVATION = 2189.23
 N 532104 E 860978
 L STATION 12+59.41 18.26 LEFT
 RR SPIKE IN 30" POPLAR

FINAL -L-

TYPE	STATION	NORTH	SOUTH
POT	10+00.00	531850.7635	860990.2524
PC	12+94.76	532141.7807	803690.2946
PCC	14+36.27	532282.1976	860972.9540
PT	11+88.40	532490.8255	860969.7350



NCDOT BASELINE STATION "BL-1"
 LOCALIZED PROJECT COORDINATES
 N 531904.4270
 E 861041.9740

NCDOT BASELINE STATION "BL-2"
 LOCALIZED PROJECT COORDINATES
 N 532188.8450
 E 860970.1040

NCDOT BASELINE STATION "BL-3"
 LOCALIZED PROJECT COORDINATES
 N 532455.8373
 E 860981.0595

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "870221 BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 532188.8450(ft) EASTING: 860970.1040(ft) ELEVATION: 2188.08(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999774159

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "870221 BL-2" TO -L- STATION 12+50.0000 IS S 16° 37' 51.07" E 95.2393'

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+00.00	-11.00	532046.4772	860994.4435
L	12+00.00	-30.00	532043.4593	860975.6847
L	12+94.76	-36.75	532135.9426	860953.9643
L	13+55.00	-65.00	532193.0958	860917.1529
L	14+05.00	-30.00	532248.0120	860946.0386
L	14+60.00	-24.00	532304.1850	860947.1713
L	14+60.00	-11.00	532305.0901	860960.1398
L	14+60.00	11.00	532306.6218	860982.0864
L	14+60.00	24.00	532307.5269	860995.0548
L	13+55.00	30.00	532205.2287	861011.3750
L	13+15.00	65.00	532171.4269	861051.4234
L	12+80.00	70.00	532138.3275	861061.7081
L	12+70.00	40.00	532123.6893	861033.6773
L	12+30.00	24.00	532081.6557	861024.2340
L	12+30.00	11.00	532079.5908	861011.3990

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 87-0221_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

6/2/99

4/15/2014
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 thf:fm

12/06/07

COMPUTED BY: C. POWELL DATE: 4/12/2014
 CHECKED BY: T. HUFFMAN DATE: 4/14/2014

PROJECT REFERENCE NO. SHEET NO.
 17BP.14.R.19 3

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.19

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.19

Item Number	Sec #	Quantity	Unit	Description
0000100000-N	800	1	LS	Mobilization
0000400000-N	801	1	LS	Construction Surveying
0043000000-N	226	1	LS	Grading
0050000000-E	226	1	ACR	Supplemental Clearing and Grubbing
0057000000-E	226	50	CY	Undercut Excavation (Contingency)
0134000000-E	240	36	CY	Drainage Ditch Excavation (DDE)
0195000000-E	265	50	CY	Select Granular Material (Contingency)
0196000000-E	270	50	SY	Geotextile For Soil Stabilization (Contingency)
0654000000-E	310	78	LF	142" x 91" CS Pipe Arch Culvert, .138" Thick
1121000000-E	520	100	TON	Aggregate Base Course
1220000000-E	545	50	TON	Incidental Stone Base (Contingency)
1231000000-E	560	70	CY	Shoulder Borrow
1489000000-E	610	30	TON	Asphalt Conc Base Course, Type B 25.0 B
1525000000-E	610	110	TON	Asphalt Conc Surface Course, Type SF 9.5 A
1575000000-E	620	10	TON	AsphBinder for Plant Mix PG64-22
3030000000-E	862	325.0	LF	Steel Beam Guardrail
3150000000-N	862	4	EA	Additional Guardrail Posts
3165000000-E	SP	4	EA	Guardrail Anchor Units, Type 350 (TL-2)
3360000000-E	863	232	LF	Remove Existing Guardrail
4400000000-E	1110	379	SF	Work Zone Signs (Stationary)
4410000000-E	1110	76	SF	Work Zone Signs (Barricade Mounted)
4445000000-E	1145	48	LF	Barricades (Type III)
4810000000-E	1205	1,610	LF	Paint Pavement Marking Lines (4")
6000000000-E	1605	675	LF	Temporary Silt Fence
6012000000-E	1610	45	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
6024000000-E	1622	200	LF	Temporary Slope Drains
6036000000-E	1631	1,000	SY	Matting for Erosion Control
6038000000-E	SP	140	SY	Permanent Soil Reinforcing Mat
6045000000-E	SP	290	LF	36" Temporary Pipe
6042000000-E	1632	60	LF	1/4" Hardware Cloth
6070000000-N	1639	2	EA	Special Stilling Basins
6084000000-E	1660	0.5	ACR	Seeding & Mulching
6087000000-E	1660	0.5	ACR	Mowing
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

Item Number	Sec #	Quantity	Unit	Description
6108000000-E	1665	0.25	TON	Fertilizer Topdressing
6111000000-E	SP	63.00	LF	Impervious Dike
6117000000-N	SP	7	EA	Response for Erosion Control
8035000000-N	402	1	LS	Removal of Existing Structure at Sta 13+31.90
8121000000-N	412	1	LS	Unclassified Str Excavation at Sta 13+21.90
8133000000-E	414	70	TON	Foundation Conditioning Material, Box Culvert
8608000000-E	876	71	TON	Rip Rap Class II (2'-0" Thick)
8622000000-E	876	63	SY	Geotextile For Drainage

4/16/2014
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 T. Huffman

PI Sta 13+65.55
 $\Delta = 4' 13" 58.3" (RT)$
 $D = 2' 59" 28.3"$
 $L = 141.51'$
 $T = 70.79'$
 $R = 1,915.49'$
 $e = 6.0\%$
 $DS = 65 MPH$

PI Sta 15+40.85
 $\Delta = 8' 02" 43.0" (RT)$
 $D = 3' 51" 09.6"$
 $L = 208.82'$
 $T = 104.58'$
 $R = 1,487.17'$
 $e = 6.0\%$
 $DS = 60 MPH$

NAD 83/NSRS 2007

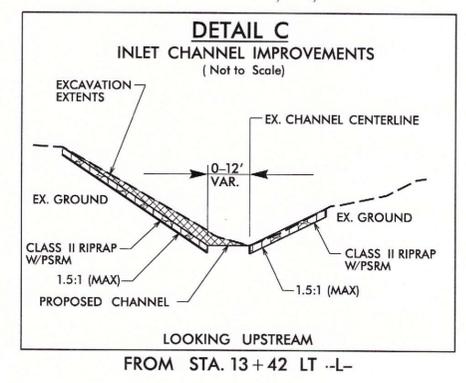
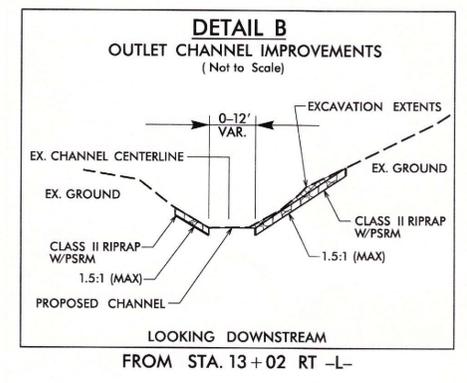
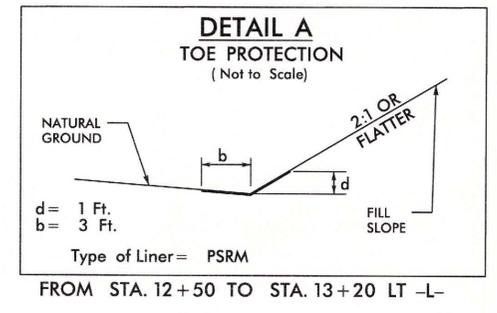
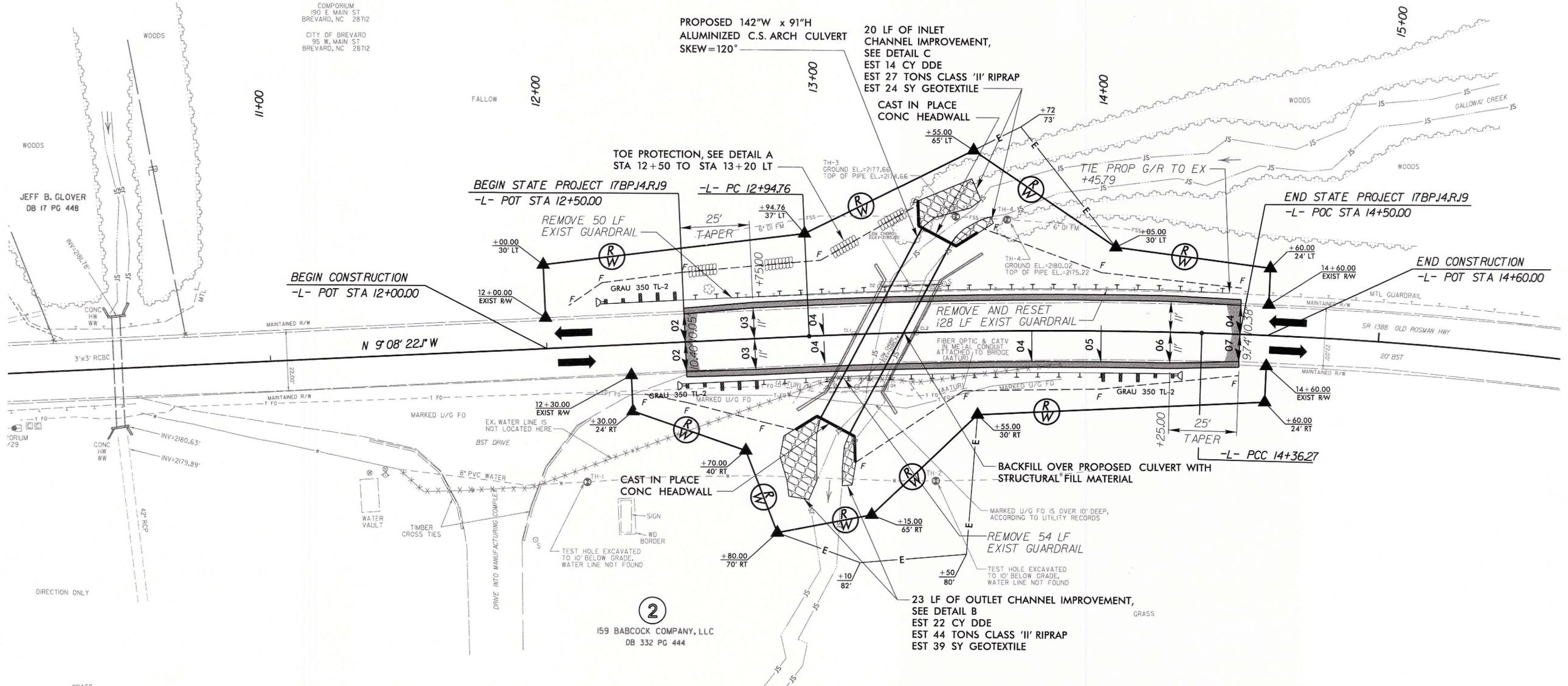
1
PAULETTE G. LANKFORD
DB 246 PG 374

UTILITY OWNERS

DUKE ENERGY
PO BOX 1090
CHARLOTTE, NC 28272

COMPTORIUM
190 E MAIN ST
BREVARD, NC 28712

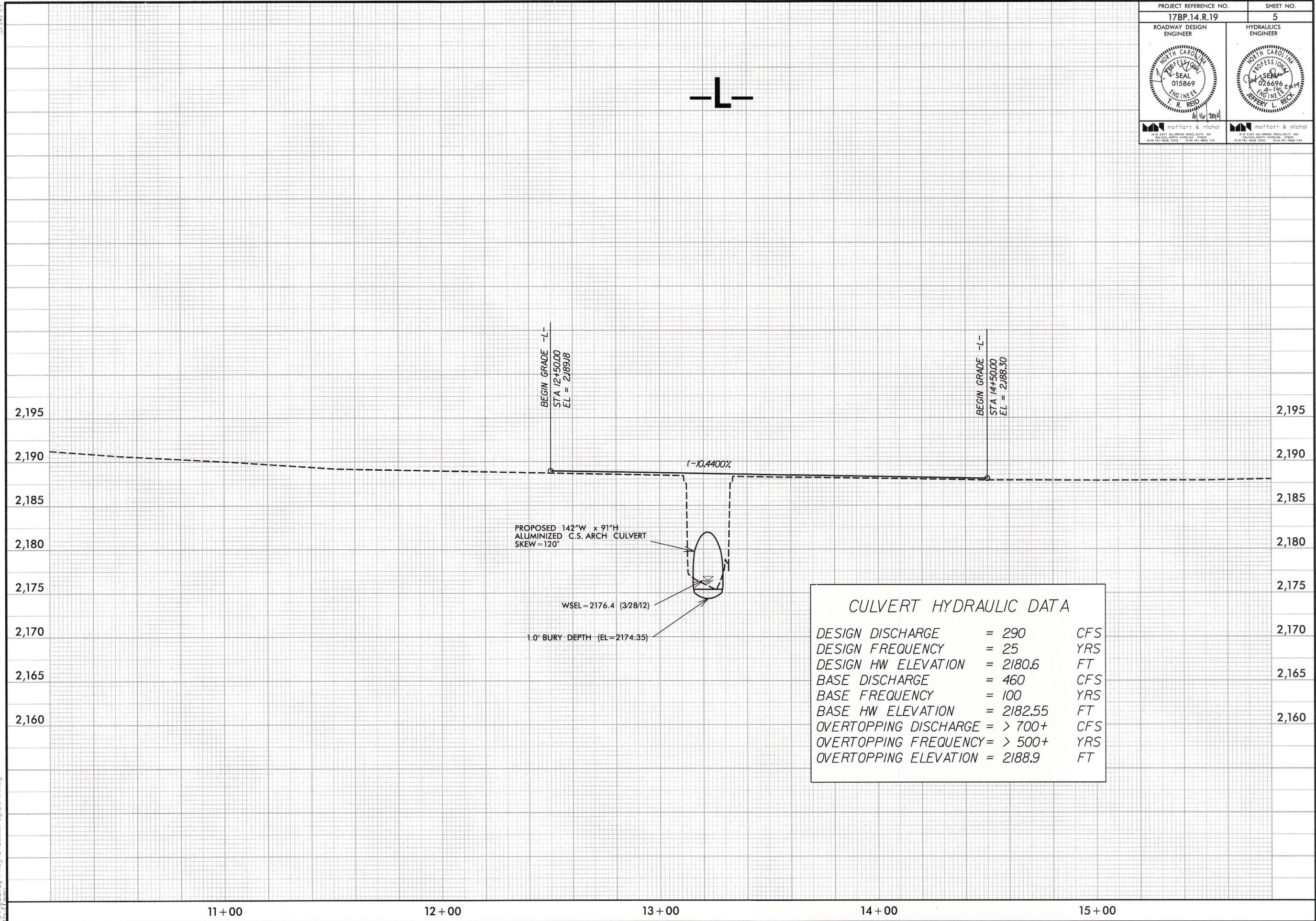
CITY OF BREVARD
95 W. MAIN ST
BREVARD, NC 28712



8/17/09
 4/15/2014
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5/14/99

PROJECT REFERENCE NO. 17BP.14.R.19	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<small>Moffatt & Nichol 1401 EAST WILMINGTON ROAD, SUITE 400 RALEIGH, NORTH CAROLINA 27609 919 781-4666 VOICE 919 781-4666 FAX</small>	<small>Moffatt & Nichol 1401 EAST WILMINGTON ROAD, SUITE 400 RALEIGH, NORTH CAROLINA 27609 919 781-4666 VOICE 919 781-4666 FAX</small>



PROPOSED 142"W x 91"H
ALUMINIZED C.S. ARCH CULVERT
SKEW = 120°

WSEL = 2176.4 (3/28/12)

1.0' BURY DEPTH (EL = 2174.35)

DESIGN DISCHARGE	= 290	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2180.6	FT
BASE DISCHARGE	= 460	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2182.55	FT
OVERTOPPING DISCHARGE	= > 700+	CFS
OVERTOPPING FREQUENCY	= > 500+	YRS
OVERTOPPING ELEVATION	= 2188.9	FT

4/15/2014
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11+00

12+00

13+00

14+00

15+00

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

TRANSYLVANIA COUNTY

BRIDGE NO. 221 ON SR 1388 (OLD ROSMAND HIGHWAY)

PROJ. REFERENCE NO. 17BP.14.R.19	SHEET NO. TMP-1
-------------------------------------	--------------------

RAMEY KEMP ASSOCIATES, INC.
TRANSPORTATION ENGINEERS
1000 Fortification Place, Suite 100
Raleigh, North Carolina 27605
919-875-5100 Fax: 919-875-5014
www.rameykemp.com
NC License No. C-2019

PROJECT: 17BP.14.R.19

CONTRACT: DN00152

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 WORKING 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
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
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: _____		ROADWAY STANDARD DRAWINGS, INDEX OF SHEETS & LEGEND

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

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

SIGNING

- D) 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.
- E) 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.
- F) 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.
- G) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- I) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROAD.

PAVEMENT MARKINGS AND MARKERS

- J) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKERS
SR 1388 (OLD ROSMAN HIGHWAY)	PAINT	RAISED

- K) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- L) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.
- M) PASSING ZONE WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PHASING

PHASE I

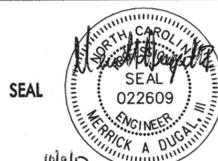
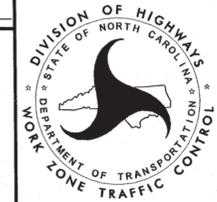
PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER OFF-SITE DETOUR SIGNING AS SHOWN ON TMP-3 AND IN ACCORDANCE WITH RSD 1101.03 (SHEET 1 OF 9).

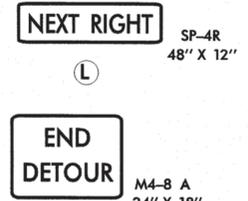
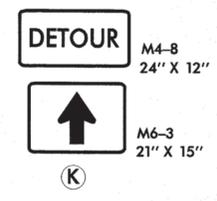
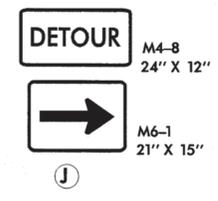
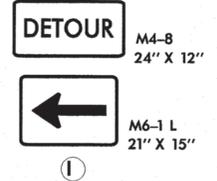
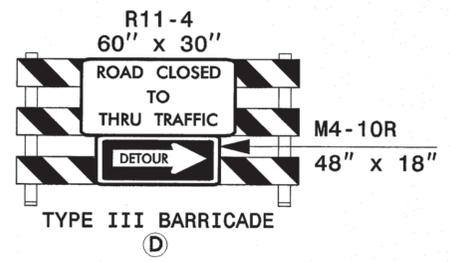
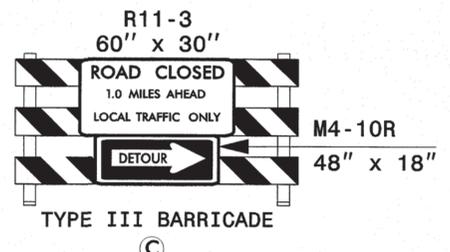
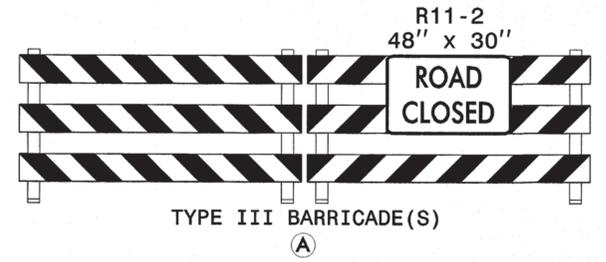
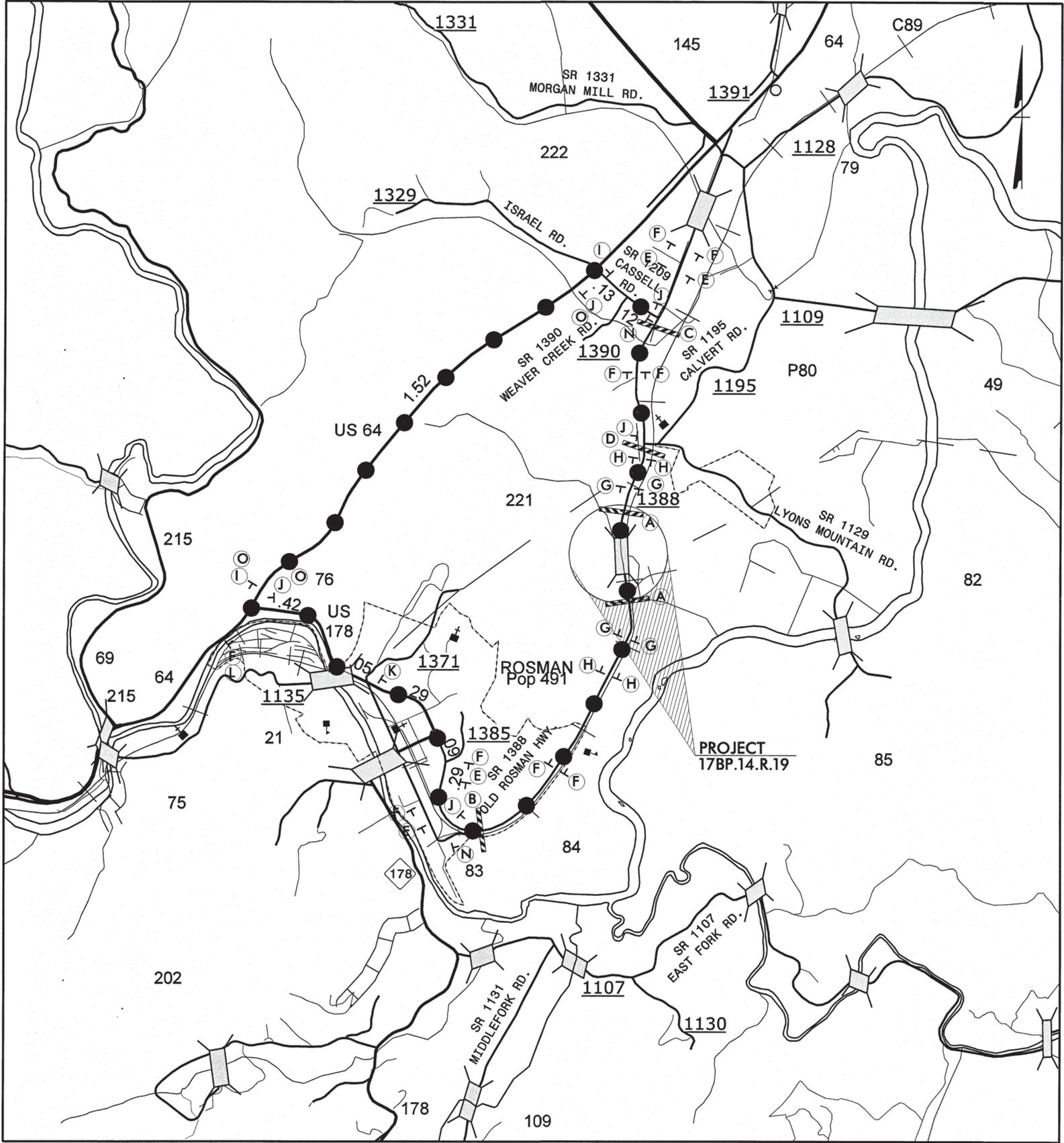
PHASE II

USING OFF-SITE DETOUR, UNCOVER DETOUR SIGNS, CLOSE -L- (SR 1388 / OLD ROSMAN HWY.) 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. REMOVE BARRICADES AND DETOUR SIGNS AND OPEN -L- (SR 1388/ OLD ROSMAN HWY.) TO TRAFFIC.

APPROVED: _____ DATE: _____ 		<h1 style="margin: 0;">GENERAL NOTES AND PHASING</h1>
--	---	---



OLD ROSMAN HIGHWAY

5'-6" x 2'-6"
W6" LETTERING

PROPOSED DETOUR
 DETOUR ROUTE ●●●●●
 DETOUR LENGTH 5 MILES

APPROVED: _____ DATE: _____
 SEAL

 10/6/13

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

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CONTRACT: DN00152 PROJECT: 17BP.14.R.19

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

LOCATION: BRIDGE NO. 221 ON SR 1388 (OLD ROSMAN HWY) OVER GALLOWAY CREEK

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.19	PMP-01
APPROVED: _____	
DATE: _____	
SEAL	
	

ROADWAY STANDARD DRAWINGS

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

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 1388	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

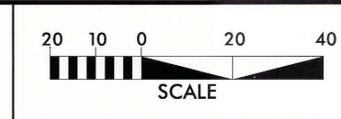
SYMBOL	DESCRIPTION
PA - WHITE EDGE LINE (4")	PAINT
PI - YELLOW DOUBLE CENTER LINE (4")	PAINT

INDEX

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

8/17/99

NAD 83/NSRS 2007



PROJECT REFERENCE NO. 17BP.14.R.19	SHEET NO. PMP-2
APPROVED: _____	
DATE: _____	
SEAL	

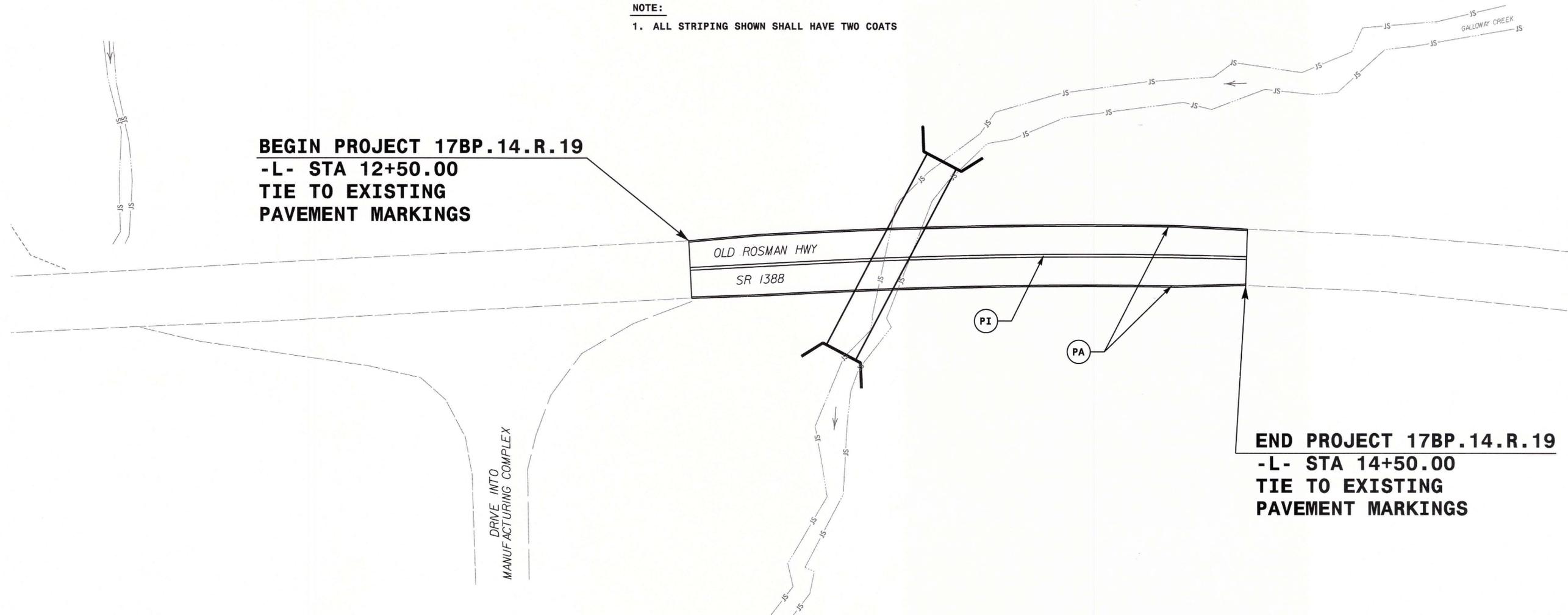
J. R. REID
15869
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL

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



BEGIN PROJECT 17BP.14.R.19
-L- STA 12+50.00
TIE TO EXISTING
PAVEMENT MARKINGS

END PROJECT 17BP.14.R.19
-L- STA 14+50.00
TIE TO EXISTING
PAVEMENT MARKINGS

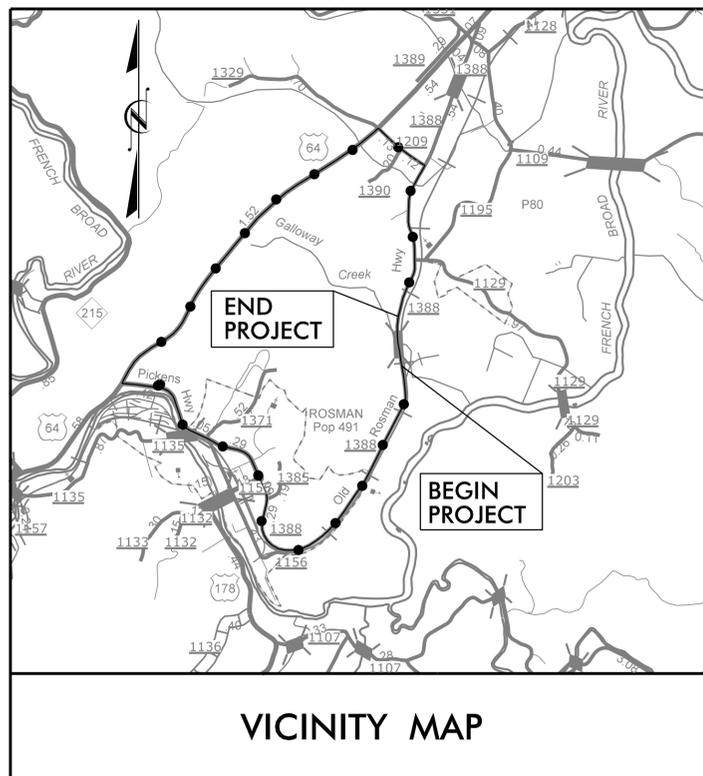
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PROJECT: 17BP.14.R.19

CONTRACT: DN00152

BRIDGE 870221

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.19	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.R.19		PE	
17BP.14.R.19		ROW & UTIL	
17BP.14.R.19		CONSTR	



VICINITY MAP

DETOUR

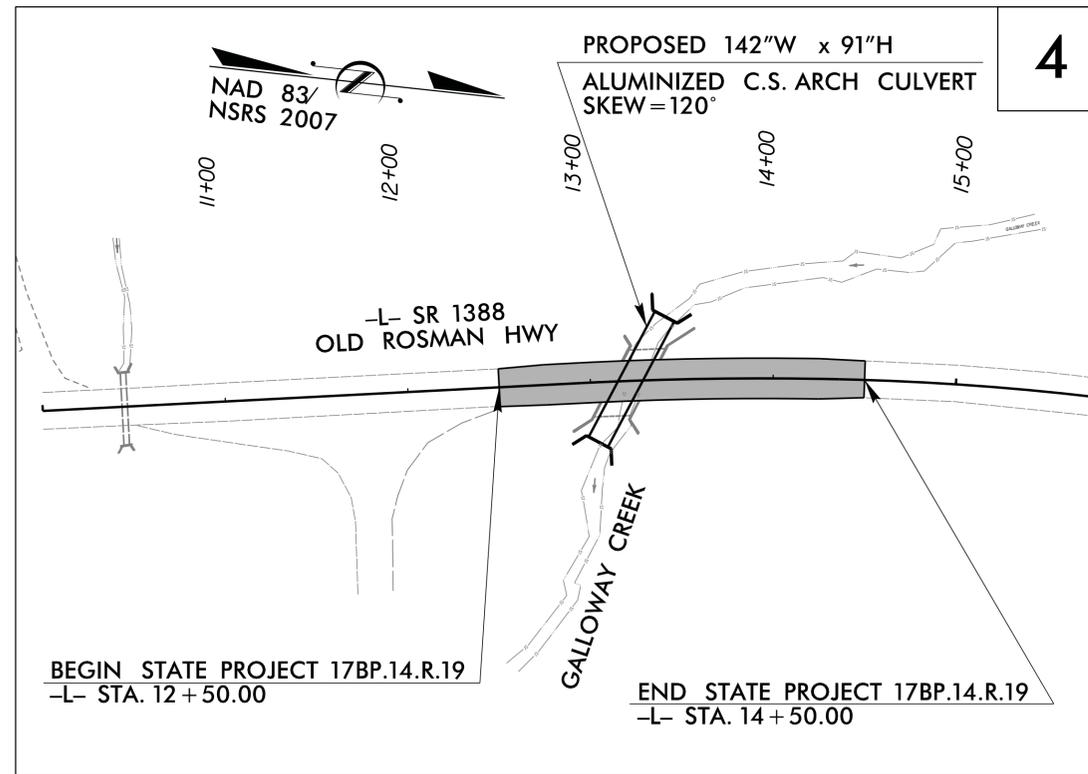
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 221 ON SR 1388 (OLD ROSMAN HWY)
OVER GALLOWAY CREEK

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

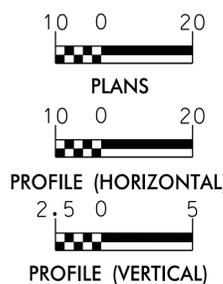


EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE



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

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.19	EC-3A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

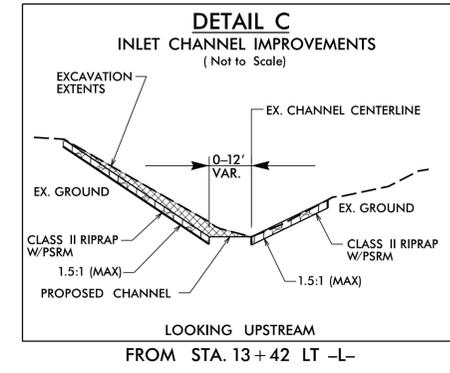
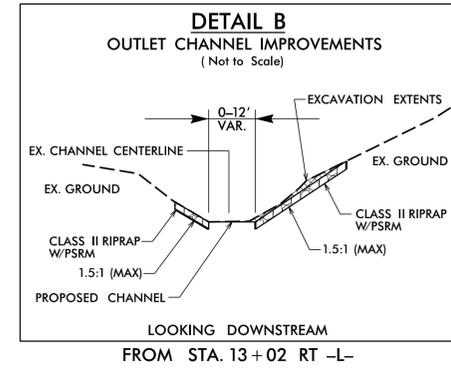
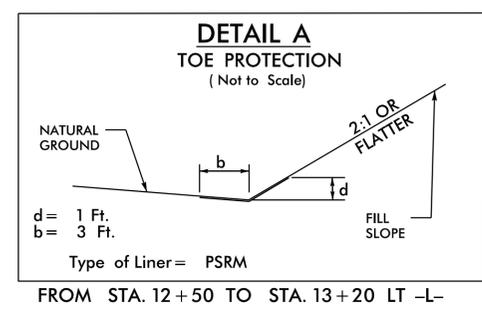
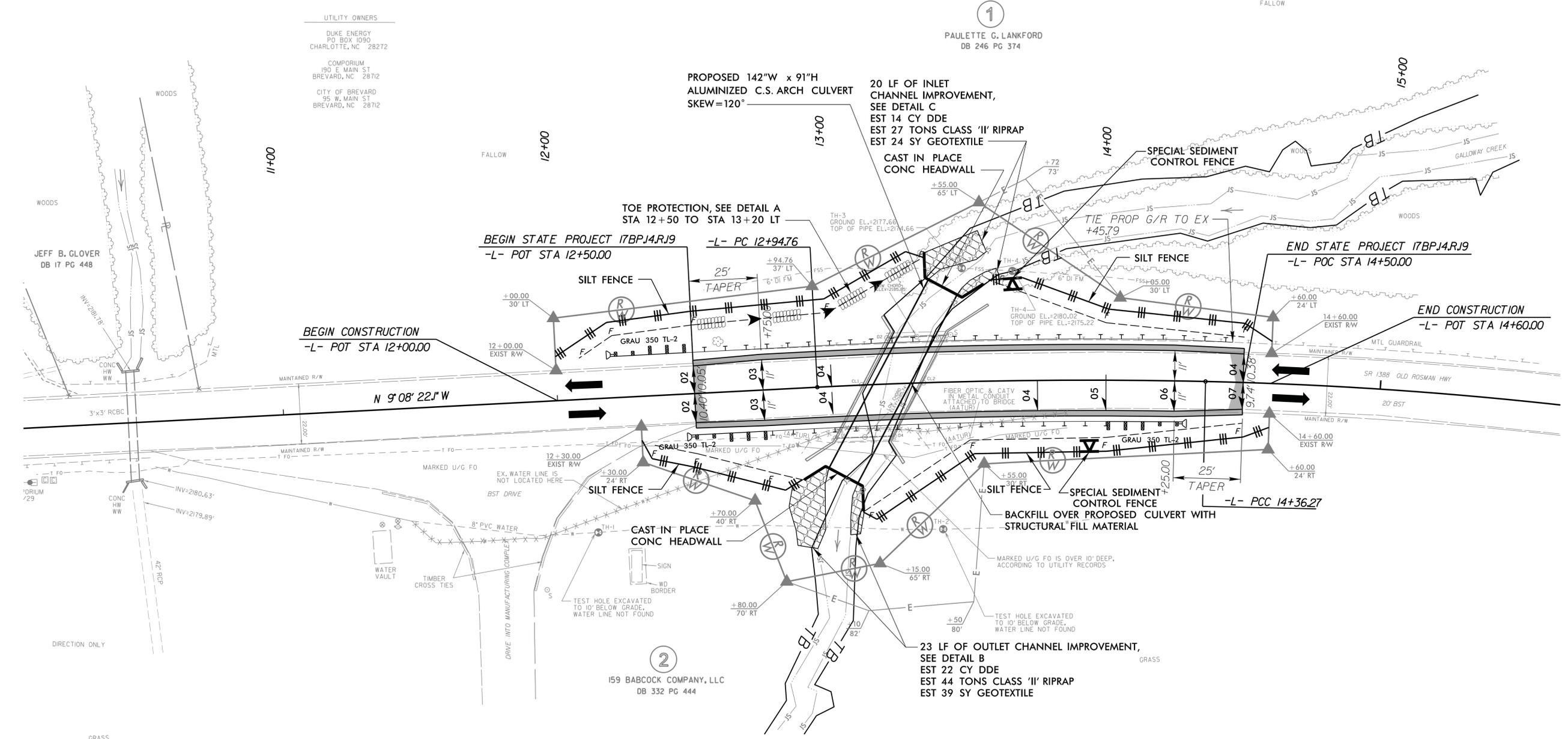
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES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

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.19	EC-6\CONST-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PI Sta 13+65.55
 $\Delta = 4' 13" 58.3" (RT)$
 $D = 2' 59" 28.3"$
 $L = 141.51'$
 $T = 70.79'$
 $R = 1,915.49'$
 $e = 6.0\%$
 $DS = 65 MPH$

PI Sta 15+40.85
 $\Delta = 8' 02" 43.0" (RT)$
 $D = 3' 51" 09.6"$
 $L = 208.82'$
 $T = 104.58'$
 $R = 1,487.17'$
 $e = 6.0\%$
 $DS = 60 MPH$

NAD 83/NSRS 2007



8/17/99
 4/15/2014
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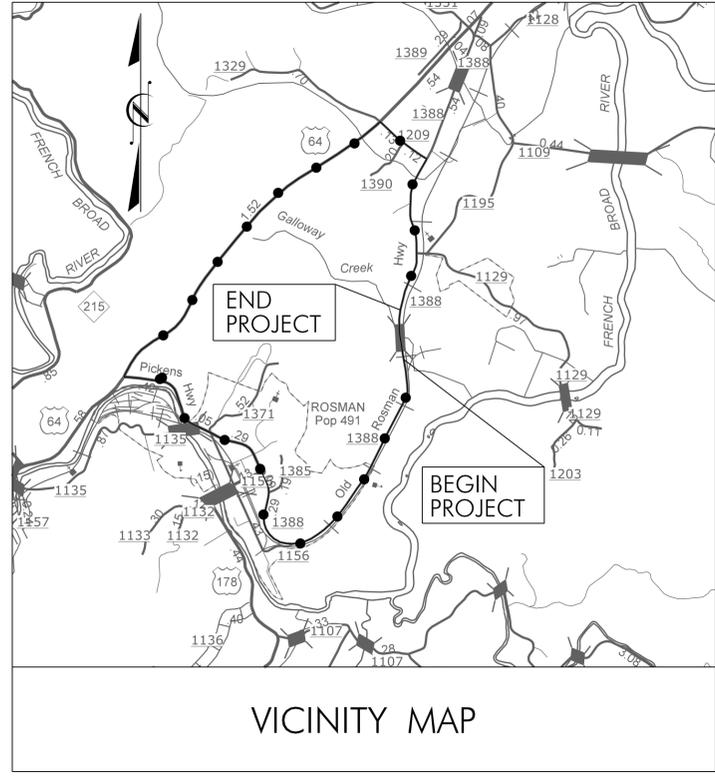
09/08/19

PROJECT: 17BP.14.R.19

PROJECT: 17BP.14.R.19

CONTRACT: DN00152

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



●-●-●-●- DETOUR

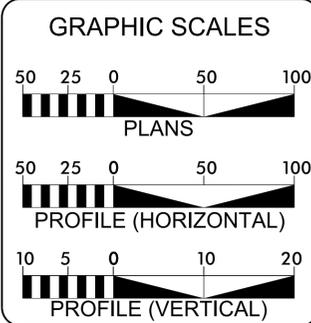
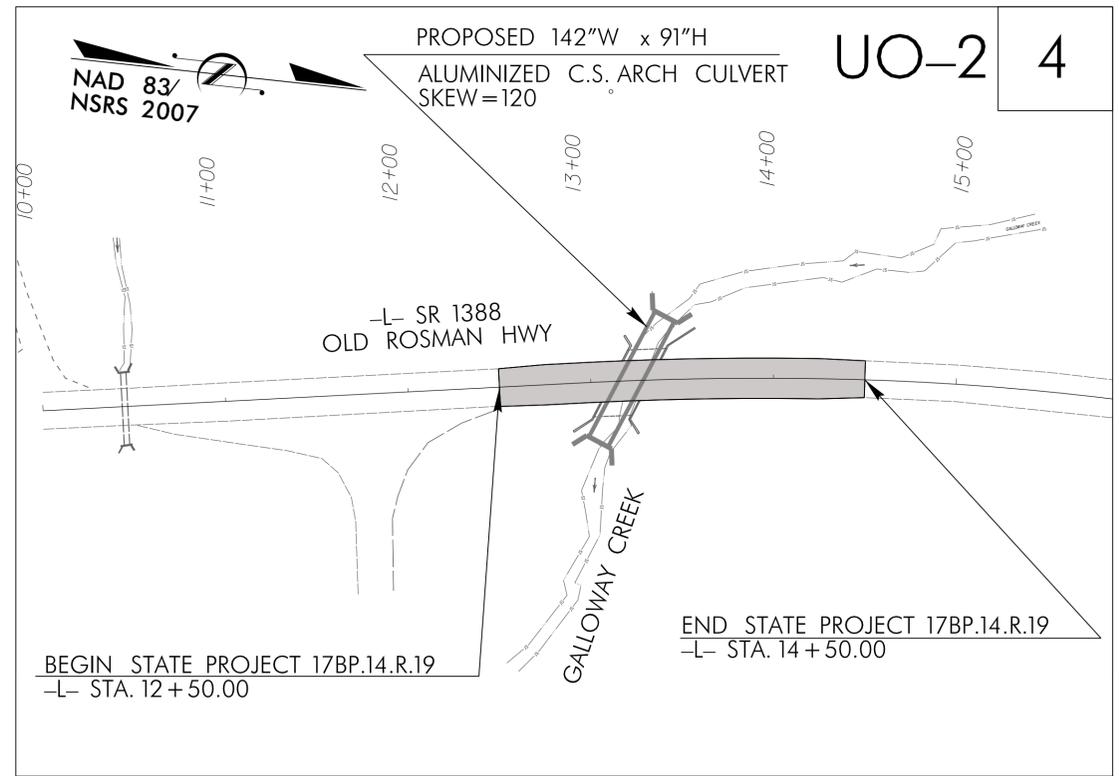
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 221 ON SR 1388 (OLD ROSMAN HWY)
OVER GALLOWAY CREEK

TYPE OF WORK: UTILITIES BY OTHERS

T.I.P. NO.	SHEET NO.
17BP.14.R.19	UO-1



INDEX OF SHEETS

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

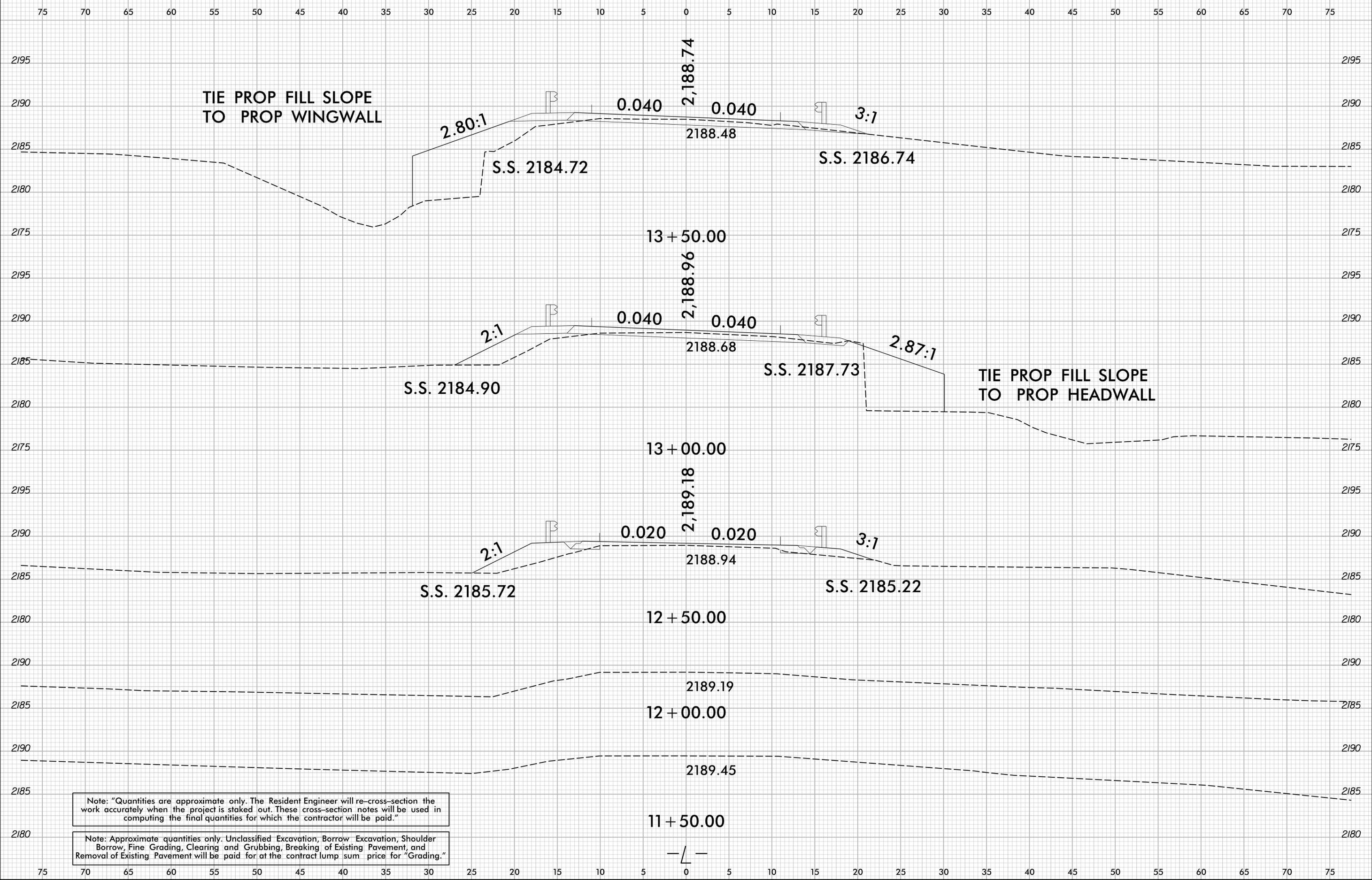
- UTILITY OWNERS ON PROJECT**
- WATER & SEWER FORCE MAIN - TOWN OF ROSMAN
 - TELEPHONE & CATV - COMPORIUM

UTILITIES BY OTHER PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
 ENGINEERS & SURVEYORS **dmp**
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

8/23/99



Note: "Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid."

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."

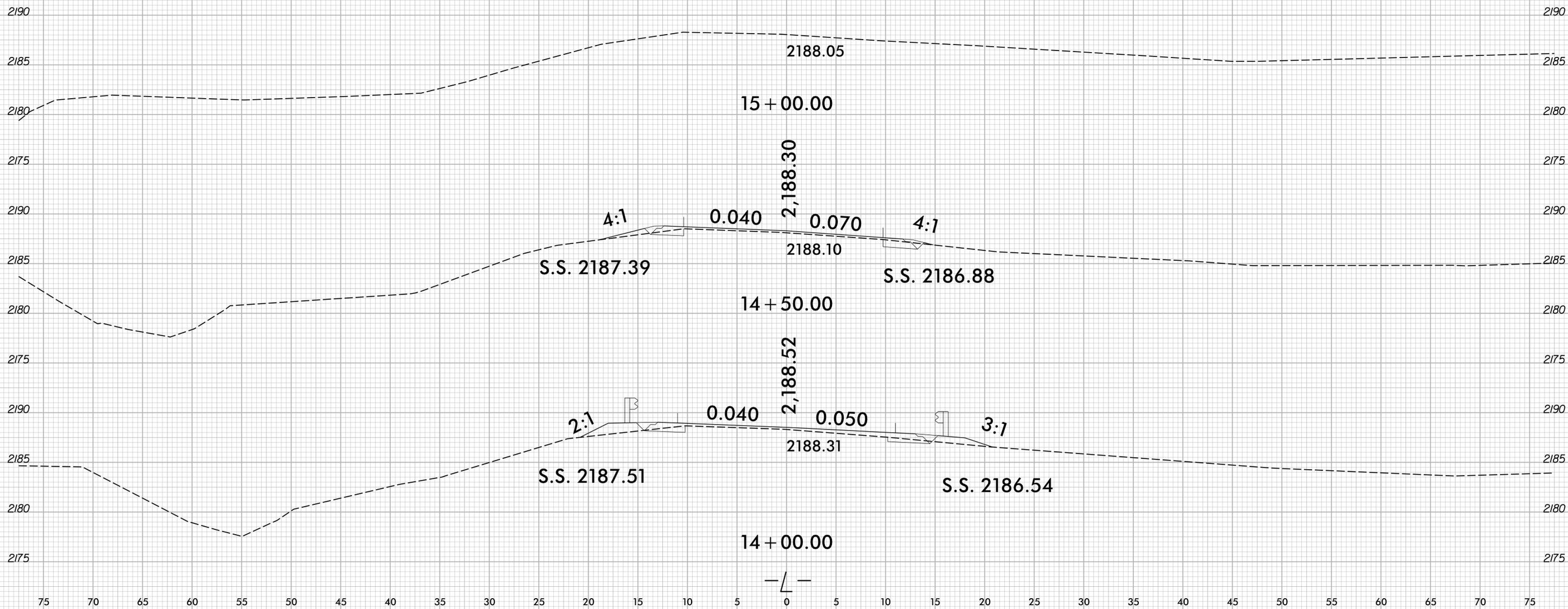
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.19	X-2

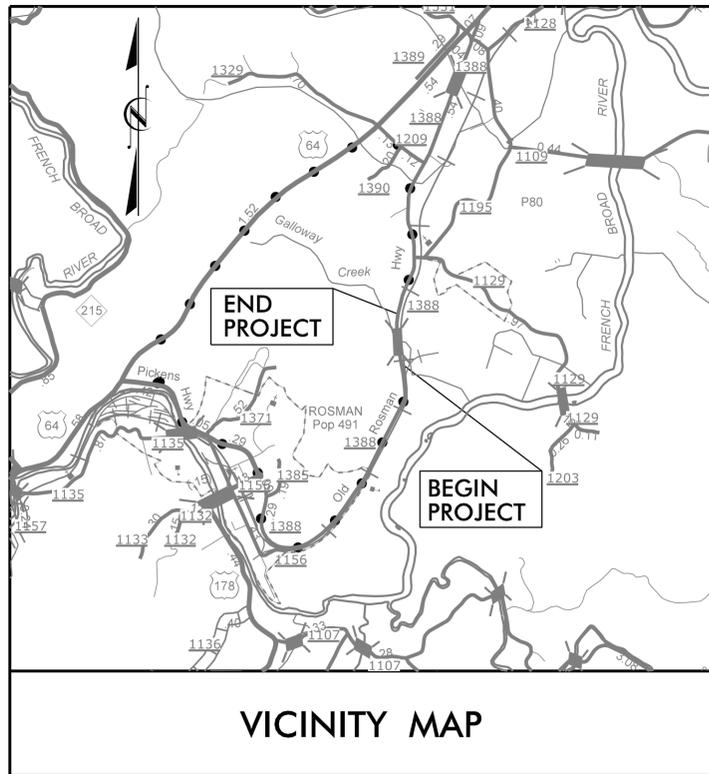
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4/15/2014
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 gnu111man

PROJECT: 17BP.14.R.19

CONTRACT: DN00152



VICINITY MAP

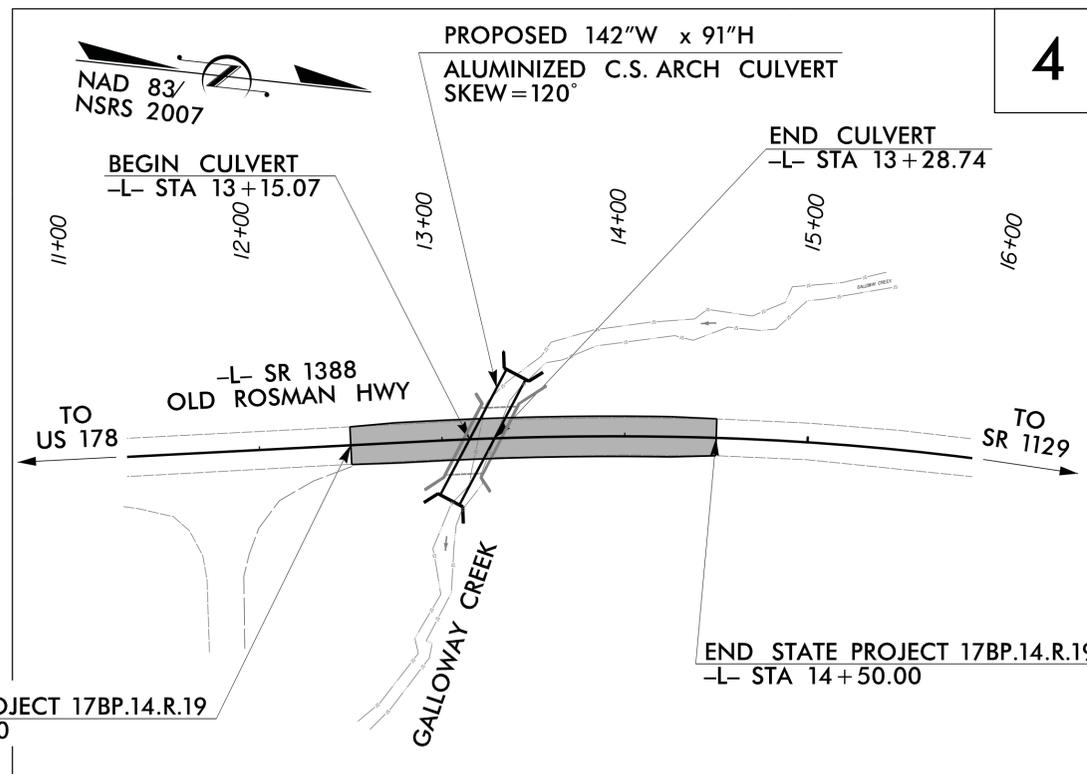
● ● ● ● DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

**LOCATION: BRIDGE NO. 221 ON SR 1388 (OLD ROSMAN HWY)
OVER GALLOWAY CREEK**

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

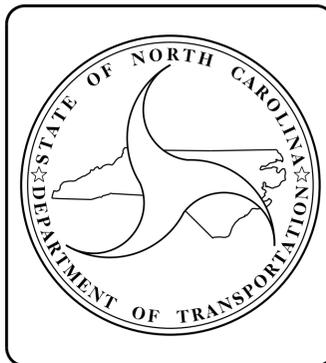


4

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.19	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.R.19		PE	
17BP.14.R.19		ROW & UTIL	
17BP.14.R.19		CONST.	



CULVERT



DESIGN DATA

ADT 2013	=	1,970
ADT 2033	=	2,940
DHV	=	NA %
D	=	NA %
T	=	7 % *
V	=	50 MPH
* TTST	=	NA DUAL 7%
FUNC CLASS	=	MAJOR COLLECTOR SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY OF PROJECT 17BP.14.R.19	=	0.038 mi.
LENGTH STRUCTURE OF PROJECT 17BP.14.R.19	=	0.000 mi.
TOTAL LENGTH OF STATE PROJECT 17BP.14.R.19	=	0.038mi.

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

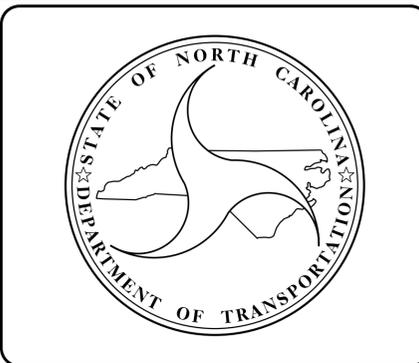
2012 STANDARD SPECIFICATIONS

LETTING DATE :
TBD

TIM REID, P.E.
PROJECT ENGINEER

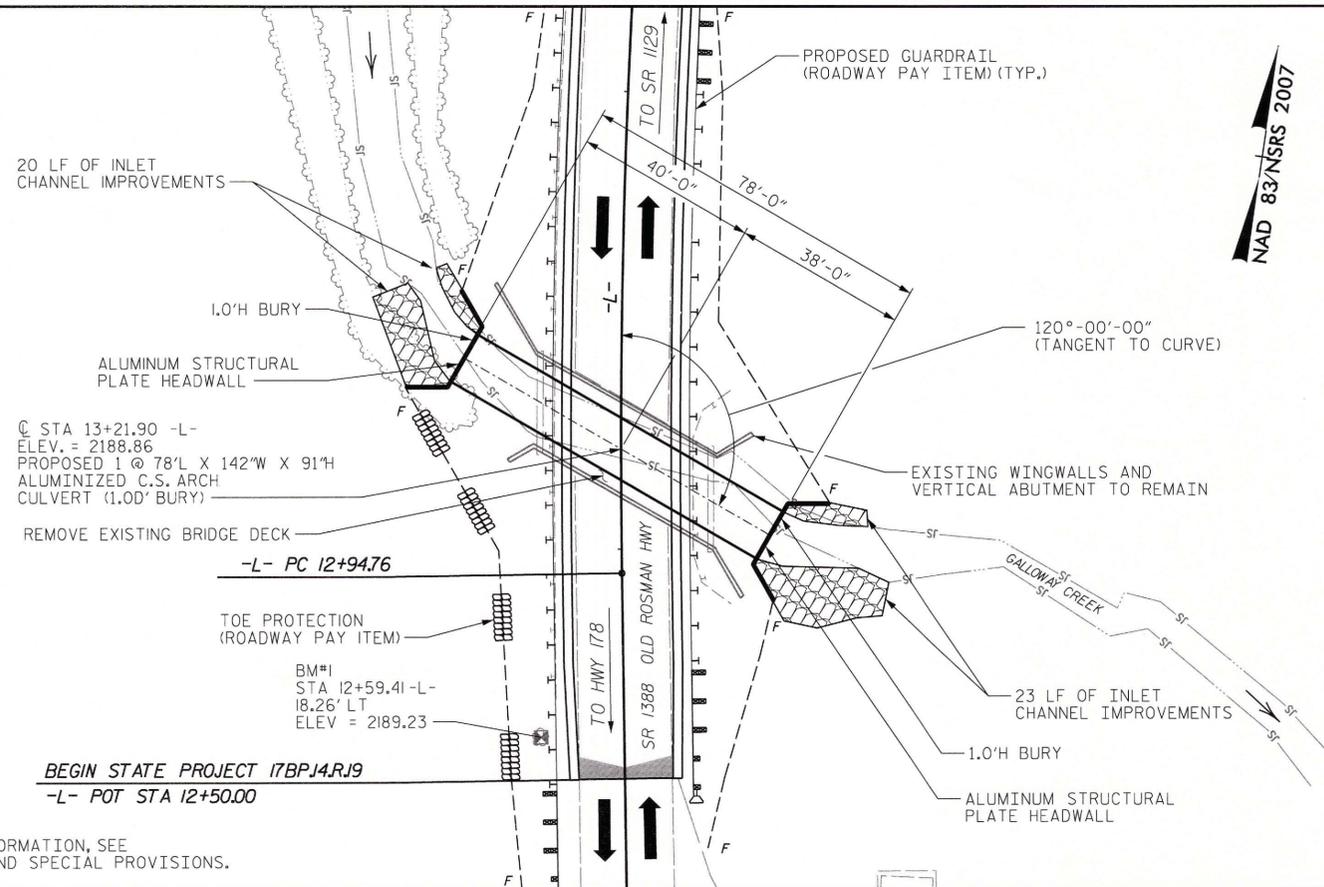
MIKELE WINTERS, P.E.
PROJECT DESIGN ENGINEER

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



4/16/2014 R:\structures\870221\str_tsh.dgn thuffman

TBM BM#1 RR SPIKE IN 30" POPLAR LOCATED AT STA 12+59.41 -L-; 18.26' LT, EL 2189.23



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- DESIGN FILL = 7.3'
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- SINGLE ALUMINIZED C.S. ARCH CULVERT, HEADWALL AND WINGWALLS SHALL BE CONSTRUCTED PER THESE PLANS AND PER MANUFACTURER'S RECOMMENDATIONS.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JULY 2012.
- THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY. THE SUPPLIER SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12, AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.
- UNLESS OTHERWISE INDICATED, THE SUPPLIER SHALL DESIGN, DETAIL, AND FURNISH ALL STRUCTURAL ELEMENTS AND HARDWARE.
- GUARDRAIL POST LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ENSURE ADEQUATE COVER FOR INSTALLATION.
- THE EXISTING STRUCTURE CONSISTING OF 1 SPAN, 1 @ 22'-4"; AND A CLEAR ROADWAY WIDTH, 20'-6" AND A CONCRETE SLAB ON CONCRETE ABUTMENTS (WIDENED) LOCATED AT THE 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 BRIDGE, 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 SPECIFICATIONS.
- 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 HEAD WALL AND WING FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 1.5 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 3.5 TSF JUST BEFORE CONSTRUCTION.
- BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.
- 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 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.
- FOR CULVERT DIVERSION DETAILS, SEE EROSION CONTROL PLANS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- ALUMINIZED C.S. PIPE ARCH CULVERT SHALL BE 142" X 91" 10 GAUGE AND EXHIBIT A 3" X 1" CORRUGATION PATTERN. MATERIAL SHALL COMPLY WITH AASHTO M36. LENGTH OF PIPE SHALL BE 78' FROM HEADWALL TO HEADWALL, AND MEET BASEWALL AT A 90 DEGREE ANGLE.
- FREE ENDS OF PIPE SHALL BE RE-ROLLED TO AN ANNULAR CONFIGURATION AND BANDS SHALL BE 2.0' WIDE WITH A CONTINUOUS NEOPRENE GASKET, 2.0' WIDE AND 3/8" THICK.
- INTEGRAL HEADWALL SYSTEM SHALL BE FABRICATED OF ALUMINUM STRUCTURAL PLATE AS SPECIFIED IN ASTM B746, AND SHALL BE .150" THICK EXHIBITING A 9" X 2.5" CORRUGATION PATTERN. BASEWALLS SHALL BE FULLY ASSEMBLED AND CONTINUOUSLY WELDED INSIDE AND OUT TO THE ENDS OF A 6' SECTION OF A 142" X 91" 10 GAUGE ALUMINIZED C.S. PIPE. BASEWALL SHALL BE 9' WIDE X 9' HIGH WITH 9.0' WINGWALLS AT 45 DEGREE ANGLE ON EVERY CORNER.
- A REPRESENTATIVE OF THE MANUFACTURER SHALL BE ON THE SITE TO AID IN THE ASSEMBLY AND INSTALLATION OF THE CULVERT AND HEADWALL SYSTEM FOR THE LENGTH OF THE PROJECT.

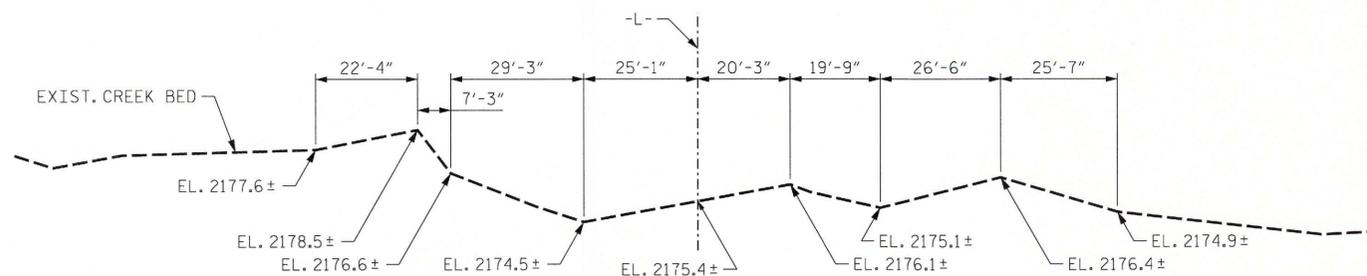
HYDRAULIC DATA	
DESIGN DISCHARGE	= 290 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 2180.6
DRAINAGE AREA	= 0.51 SQ MI
BASIC DISCHARGE (Q 100)	= 460 CFS
BASIC HIGH WATER ELEVATION	= 2182.55
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= >700+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= >500+ YR.
OVERTOPPING FLOOD ELEVATION	= 2188.9
GRADE DATA	
GRADE POINT ELEV. @ STATION 13+21.90	= 2188.86
BED ELEV. @ STATION 13+21.90	= 2175.4
ROADWAY SLOPES	= 2:1

TOTAL STRUCTURE QUANTITIES	
STRUCTURE REMOVAL	LUMP SUM
CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDITIONING MATERIAL	70.0 TONS
ALUMINIZED C.S. ARCH CULVERT	78.0 LF

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.14.R.19
TRANSYLVANIA COUNTY
STATION: 13+21.90 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 221



PROFILE ALONG CULVERT

DRAWN BY: C. POWELL DATE: 12/2012
CHECKED BY: M. WINTERS DATE: 12/2012
DESIGN ENGINEER OF RECORD: M. WINTERS DATE: 12/2012

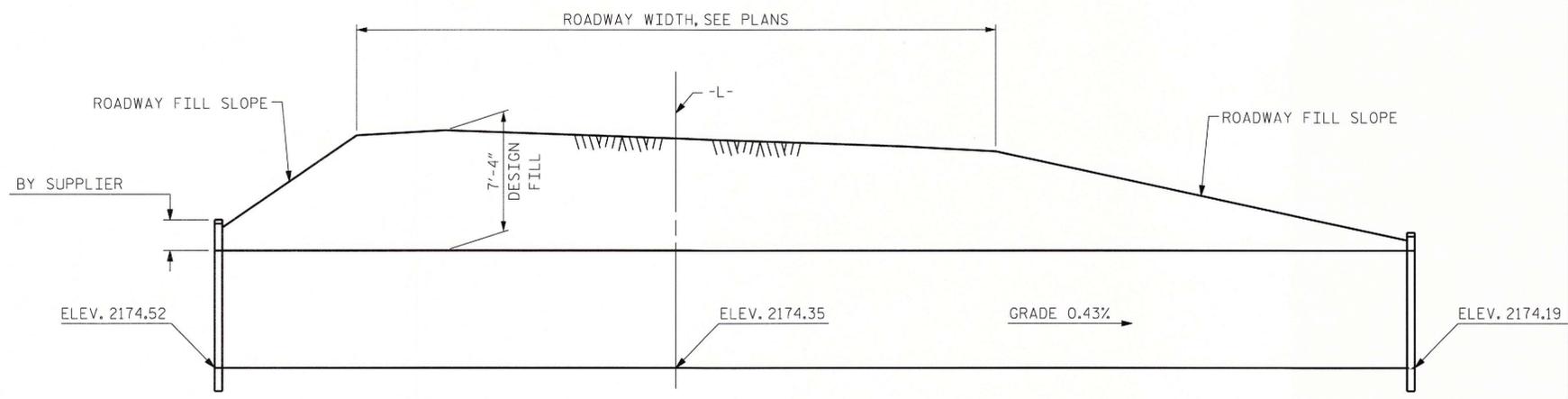
moftatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX



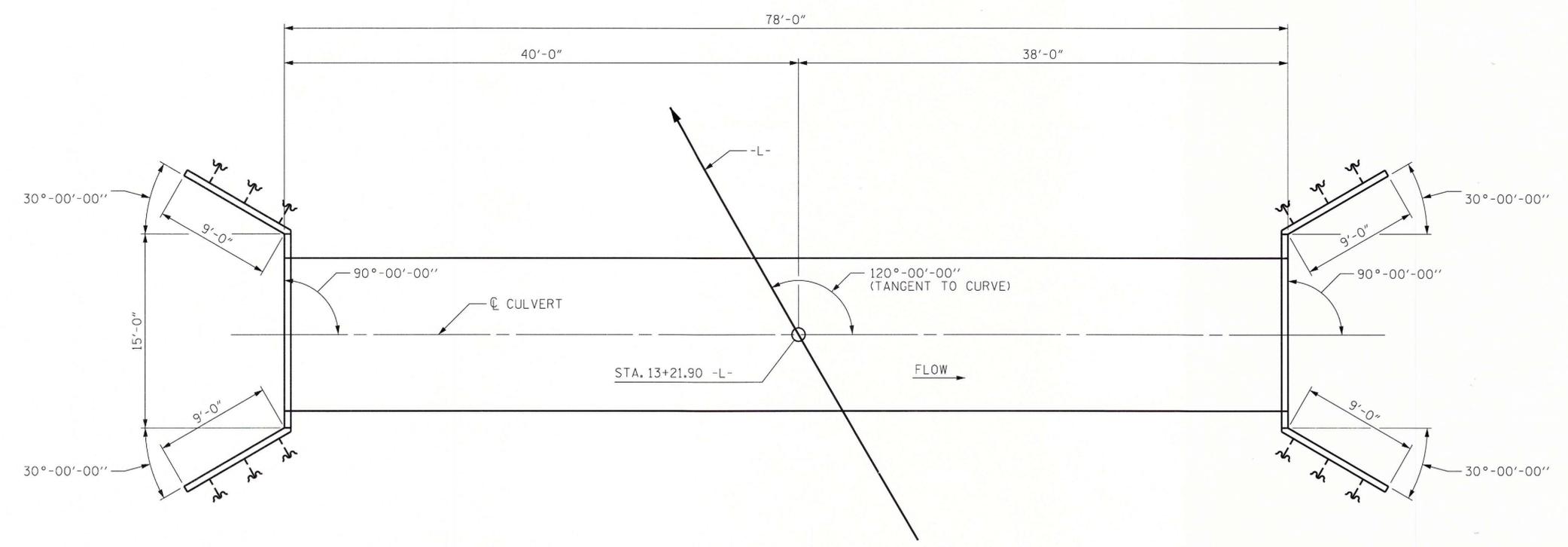
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SINGLE BARREL
ALUMINIZED C.S.
ARCH CULVERT
142 IN. X 91 IN.
120° SKEW**

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



CULVERT SECTION NORMAL TO ROADWAY



PLAN VIEW

PROJECT NO. 17BP.14.R.19
TRANSYLVANIA COUNTY
STATION: 13+21.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SINGLE BARREL
ALUMINIZED C.S.
ARCH CULVERT
142 IN. X 91 IN.
120° SKEW**

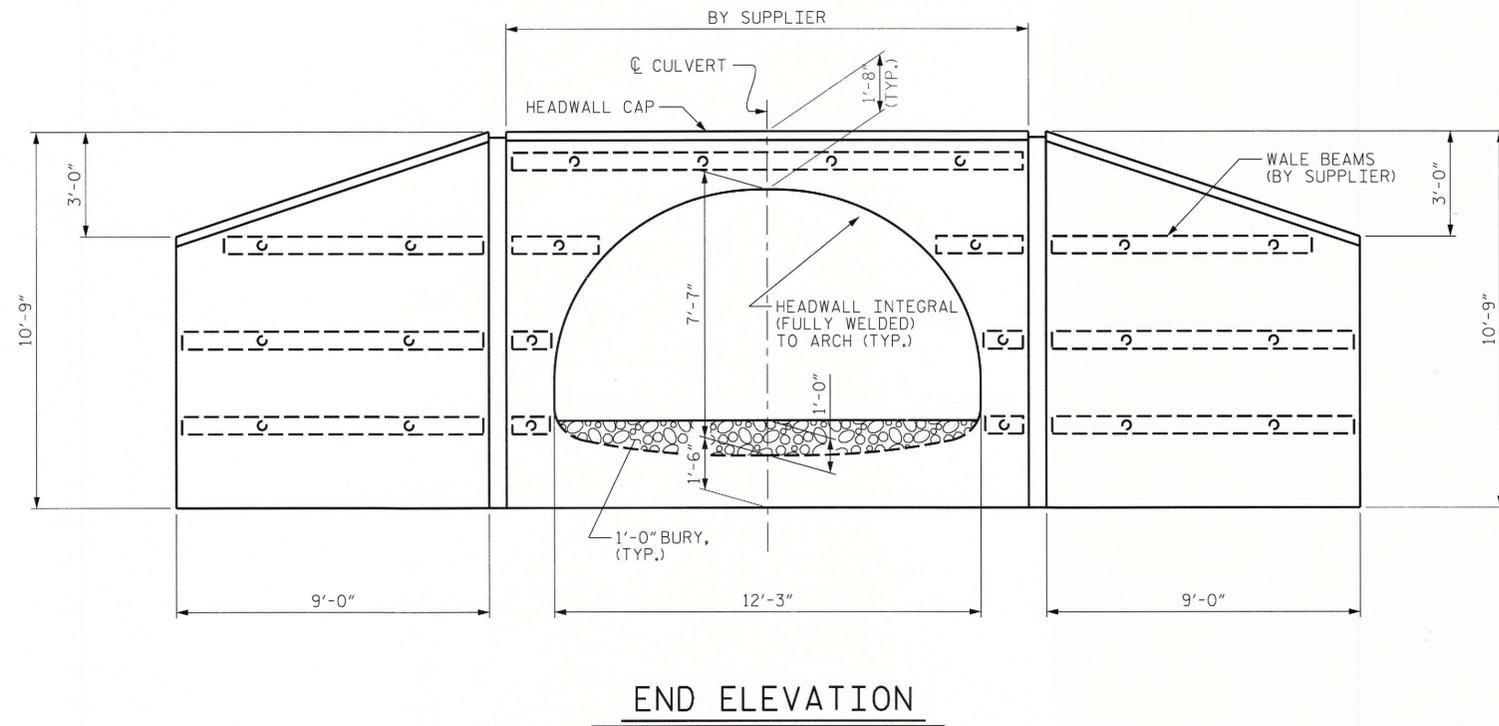


moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 761-4626 VOICE (919) 761-4863 FAX

ASSEMBLED BY : <u>C. POWELL</u> DATE : <u>12/2012</u>	SPECIAL
CHECKED BY : <u>M. WINTERS</u> DATE : <u>04/2013</u>	
DESIGN ENGINEER OF RECORD : <u>M. WINTERS</u> DATE : _____	STANDARD
DRAWN BY : <u>RALPH D. UNDERWOOD</u> DATE : <u>MAY 1971</u>	
CHECKED BY : <u>JOEL A. JOHNSON</u> DATE : <u>JULY 1971</u>	

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

REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.
REDRAWN NOV. 1990 BY TSS CHECKED BY ARB



END ELEVATION

PROJECT NO. 17BP.14.R.19
TRANSYLVANIA COUNTY
 STATION: 13+21.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SINGLE BARREL
 ALUMINIZED C.S.
 ARCH CULVERT
 142 IN. X 91 IN.
 120° SKEW**



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

REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.
 REDRAWN NOV. 1990 BY TSS CHECKED BY ARB

ASSEMBLED BY : <u>C. POWELL</u> DATE : <u>12/2012</u>	SPECIAL
CHECKED BY : <u>M. WINTERS</u> DATE : <u>04/2013</u>	
DESIGN ENGINEER OF RECORD : <u>M. WINTERS</u> DATE : _____	
DRAWN BY : <u>RALPH D. UNDERWOOD</u> DATE : <u>MAY 1971</u>	STANDARD
CHECKED BY : <u>JOEL A. JOHNSON</u> DATE : <u>JULY 1971</u>	

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. FINIS 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