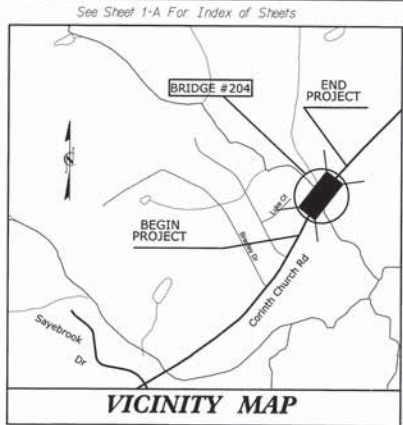


**PROJECT: WBS 17BP.10.R.4**

**CONTRACT:**



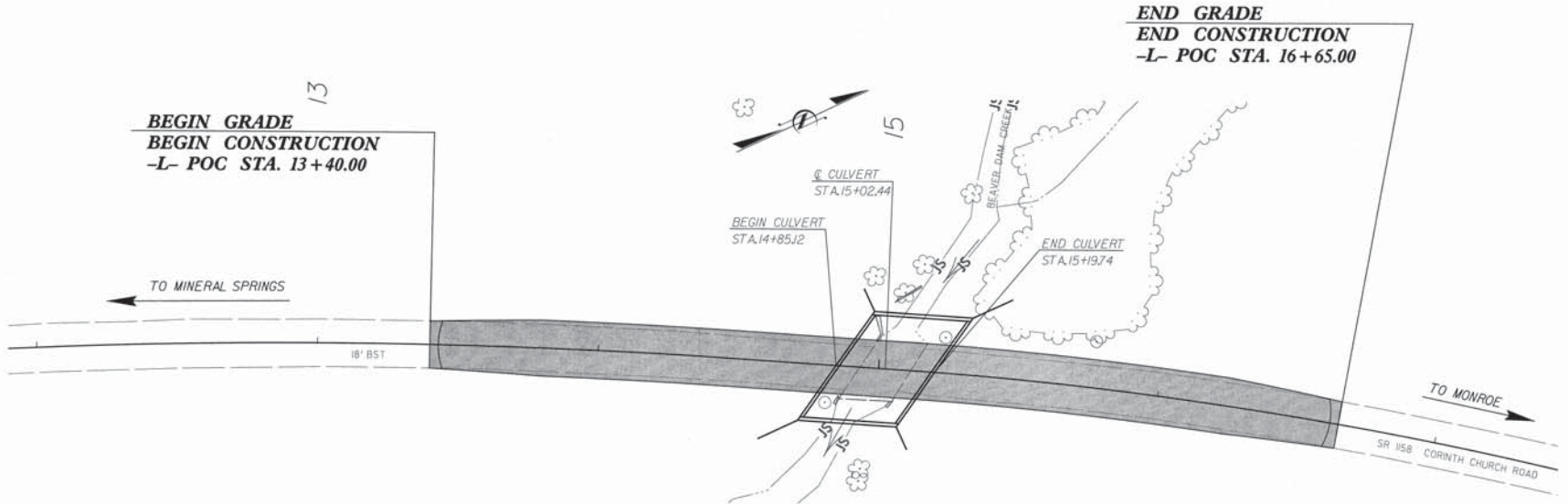
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UNION COUNTY**

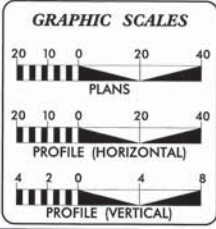
**LOCATION: BRIDGE NO. 204 ON SR 1158 (CORINTH CHURCH ROAD)  
OVER BEAVER DAM CREEK**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES AND  
TRAFFIC CONTROL**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.4	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.4		PE ROW/UTIL. CONST.	



**- CLEARING SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.**



**DESIGN DATA**

ADT 2009 = 580
ADT 2029 = 950
DHV = NA %
D = NA %
T = 6 %
V = 45 MPH
FUNC CLASS = LOCAL SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY T.I.P. PROJECT 17BP.10.R.4	= 0.062 MI.
LENGTH OF STRUCTURE T.I.P. PROJECT 17BP.10.R.4	= 0.000 MI.
TOTAL LENGTH OF T.I.P. PROJECT 17BP.10.R.4	= 0.062 MI.

NCDOT CONTACT: GARLAND HAYWOOD, PE  
BRIDGE PROGRAM MANAGER

PREPARED IN THE OFFICE OF:  
**Stantec**  
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
2012 STANDARD SPECIFICATIONS

Stantec Consulting Inc.  
801 Jones Branch Road, Suite 300  
Farmingdale, NC, USA  
27604

Tel: (919) 851-4866  
Fax: (919) 851-7524  
www.stantec.com  
License No. T-0617

**RIGHT OF WAY DATE:** MAY 15, 2013  
**LETTING DATE:** MAY 15, 2013

**GARLAND HAYWOOD, PE**  
PROJECT ENGINEER

**ROBERT WILLIAMS, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULIC ENGINEER**

**ROADWAY DESIGN ENGINEER**

Professional Engineer Seal for Robert Williams, License No. 29885, State of North Carolina, expires 12/31/13.

Professional Engineer Seal for Robert Williams, License No. 30932, State of North Carolina, expires 12/31/13.

Signature: Robert Williams  
Date: 4/10/13



4/10/2013 11:51:04 AM C:\Users\jrdy\Documents\Roadway\Projects\17BP10R4\rdy\_tsh.dgn



### INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	PAVEMENT SCHEDULE & TYPICAL SECTIONS
3	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND DRAINAGE
4	PLAN/PROFILE SHEET
5	DRAINAGE SHEET
TMP-1 THRU TMP-3	TRAFFIC MAINTENANCE PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UD-1 THRU UD-2	UTILITY BY OTHER PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
X-1 THRU X-3	CROSS-SECTIONS
C-1 THRU C-3	CULVERT PLANS

### GENERAL NOTES

**GENERAL NOTES:** 2012 SPECIFICATIONS  
EFFECTIVE: 01/15/12  
REVISED: 11/01/11

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

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

**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 TYPICAL SECTIONS. 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. 960-01.

**SIDE ROADS:**  
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**DRIVEWAYS:**  
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848-03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE UNION POWER CO-OP, CITY OF MONROE (GAS), UNION COUNTY (WATER), TIME WARNER CABLE, AND FRONTIER COMMUNICATIONS. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

### ROADWAY STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as target 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 11
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
DIVISION 5 - SHOULDER, BASES AND SHOULDER	
960.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
806.02	Granite Right-of-Way Marker
882.01	Guardrail Placement
882.02	Guardrail Installation
882.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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04/16/11

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.  
17BPJQR.4

SHEET NO.  
1-B

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	✕
Property Monument	□
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---W---
Proposed Wetland Boundary	---W---
Existing Endangered Animal Boundary	---E---
Existing Endangered Plant Boundary	---P---
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	○
Well	○
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	---W---
Proposed Lateral, Tail, Head Ditch	---L---
False Sump	▽

## RAILROADS:

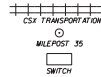
Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

## 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 C/A Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	---CR---
Existing Metal Guardrail	---T---
Proposed Guardrail	---T---
Existing Cable Guiderail	---G---
Proposed Cable Guiderail	---G---
Equality Symbol	○
Pavement Removal	---X---
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 HW---
MINOR:	
Head and End Wall	---CONC HW---
Pipe Culvert	---P---
Footbridge	---FB---
Drainage Box: Catch Basin, DI or JB	---DB---
Paved Ditch Gutter	---P---
Storm Sewer Manhole	○
Storm Sewer	---S---

## UTILITIES:

POWER:	
Existing Power Pole	○
Proposed Power Pole	○
Existing Joint Use Pole	○
Proposed Joint Use Pole	○
Power Manhole	○
Power Line Tower	□
Power Transformer	□
U/G Power Cable Hand Hole	○
H-Frame Pole	○
Recorded U/G Power Line	---
Designated U/G Power Line (S.U.E.*)	---

## TELEPHONE:

Existing Telephone Pole	○
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	○
U/G Telephone Cable Hand Hole	○
Recorded U/G Telephone Cable	---
Designated U/G Telephone Cable (S.U.E.*)	---
Recorded U/G Telephone Conduit	---
Designated U/G Telephone Conduit (S.U.E.*)	---
Recorded U/G Fiber Optics Cable	---
Designated U/G Fiber Optics Cable (S.U.E.*)	---

## WATER:

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

## TV:

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

## GAS:

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

## SANITARY SEWER:

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

## MISCELLANEOUS:

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

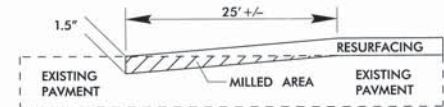
AATUR  
E.O.I.

**PAVEMENT SCHEDULE**

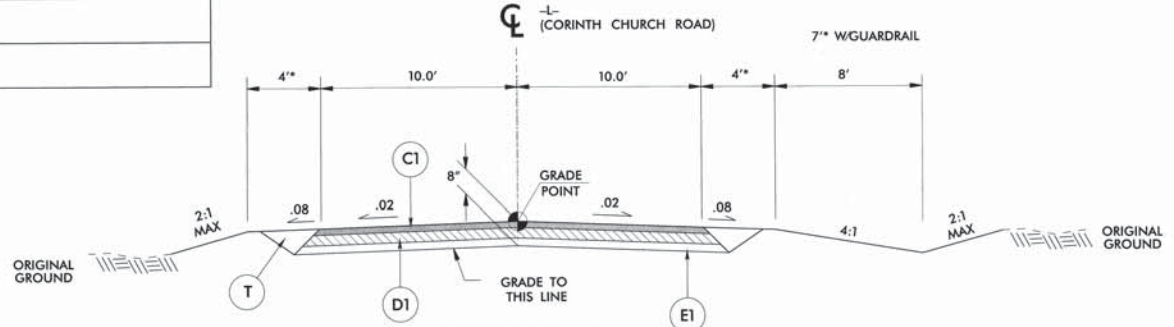
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE. TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER. SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2.0"
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE. TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER. SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4.0"
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 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" OR GREATER THAN 5.5"
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
Z	VARIABLE DEPTH MILLING

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

PROJECT REFERENCE NO. 7BPFJ04A	SHEET NO. 2
SHEET NO.	
ROADWAY DESIGN ENGINEER STATE OF NORTH CAROLINA PROFESSIONAL SEAL 30932	HYDRAULICS ENGINEER STATE OF NORTH CAROLINA PROFESSIONAL SEAL 29185
JOSEPH A. WILLIAMS	RICHARD L. HINES

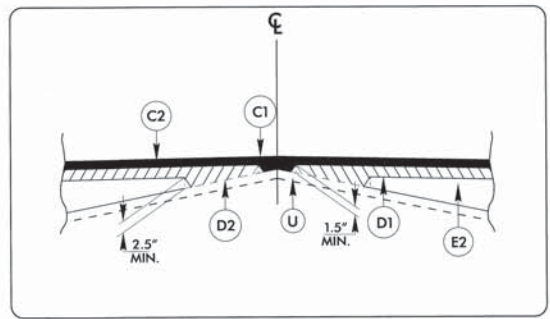


**MILLING DETAIL**

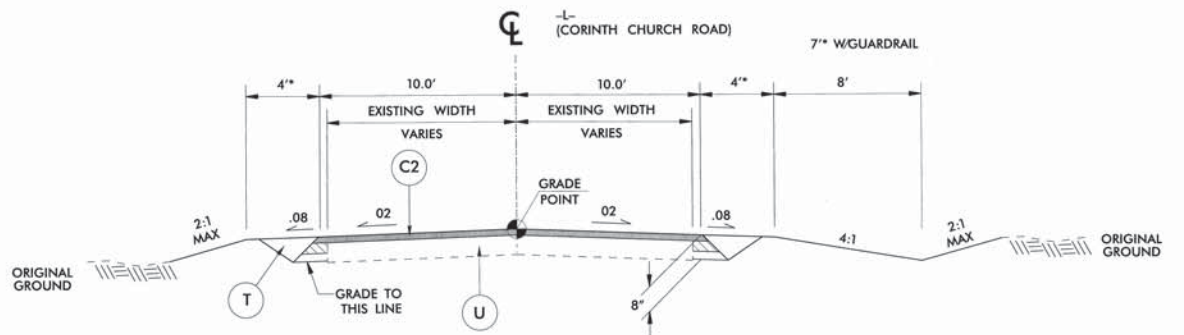


**TYPICAL SECTION NO. 1**

-L- STA. 13+40.00 TO STA. 16+65.00



**WEDGING DETAIL**



**TYPICAL SECTION NO. 2**

AS NEEDED

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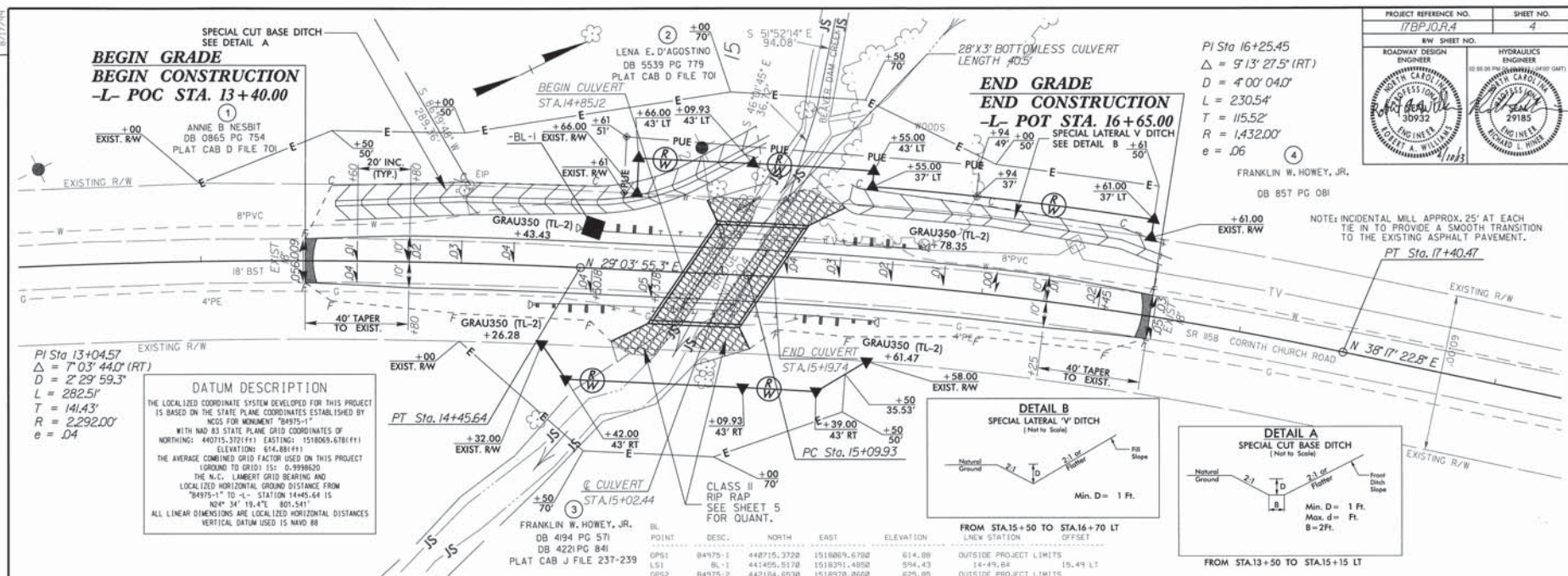


PROJECT REFERENCE NO.	SHEET NO.
ITB/JORA	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PI Sta 16+25.45  
 $\Delta = 9' 13" 27.5" (RT)$   
 $D = 4' 00" 04.0"$   
 $L = 230.54'$   
 $T = 115.52'$   
 $R = 1,432.00'$   
 $e = .06$

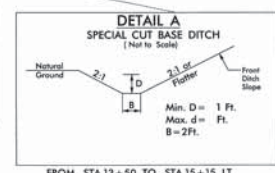
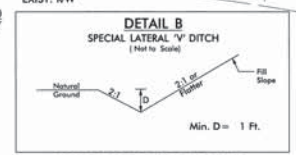
**BEGIN GRADE**  
**BEGIN CONSTRUCTION**  
**-L- POC STA. 13+40.00**

**END GRADE**  
**END CONSTRUCTION**  
**-L- POT STA. 16+65.00**  
 SPECIAL LATERAL V DITCH  
 SEE DETAIL B

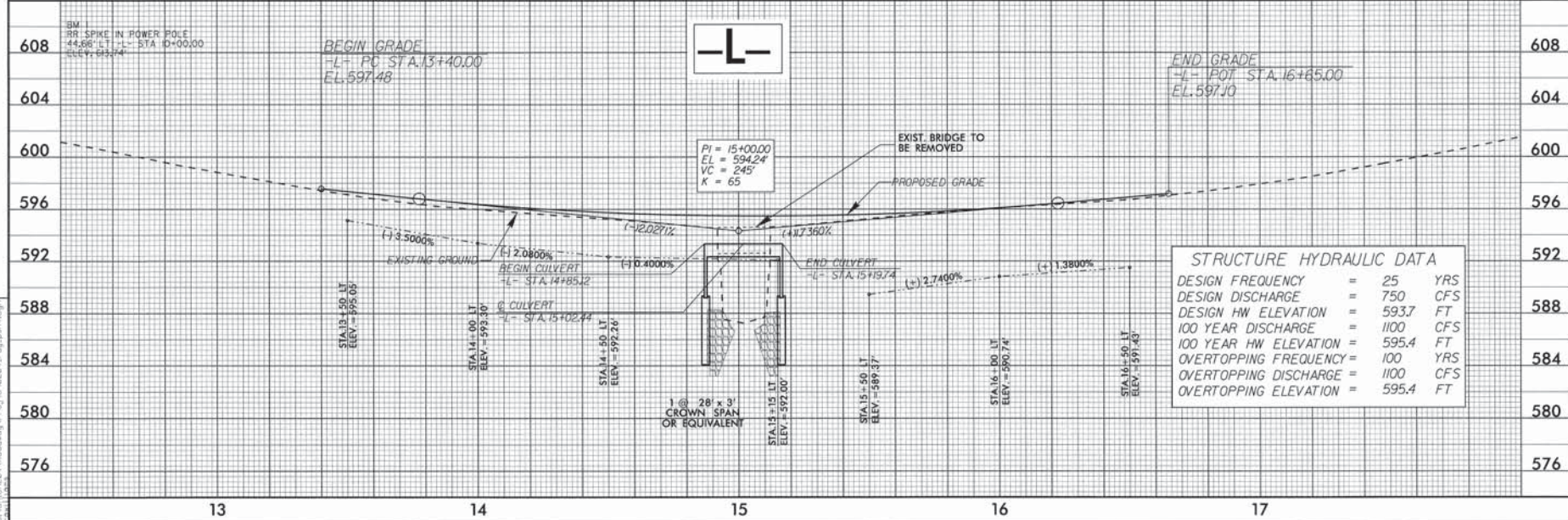


PI Sta 13+04.57  
 $\Delta = 7' 03" 44.0" (RT)$   
 $D = 2' 29" 59.3"$   
 $L = 282.51'$   
 $T = 141.43'$   
 $R = 2,292.00'$   
 $e = .04$

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCS FOR MONUMENT "84975-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 440715.372(+); EASTING: 1518009.678(+); ELEVATION: 614.88(+). THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999820. THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "84975-1" TO -L- STATION 14+45.64 IS  $N24^{\circ} 34' 19.4"E$  801.541'. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. VERTICAL DATUM USED IS NAVD 88.



BL POINT	DESC.	NORTH	EAST	ELEVATION	FROM STA.15+50 TO STA.16+70 LT
OP91	B4975-1	440715.3728	1518009.6788	614.88	OUTSIDE PROJECT LIMITS
L51	B41455-1	441455.5170	1518391.4850	594.43	14.49, 64
OP92	B4975-2	442184.6030	1518970.8660	625.85	15.49 LT




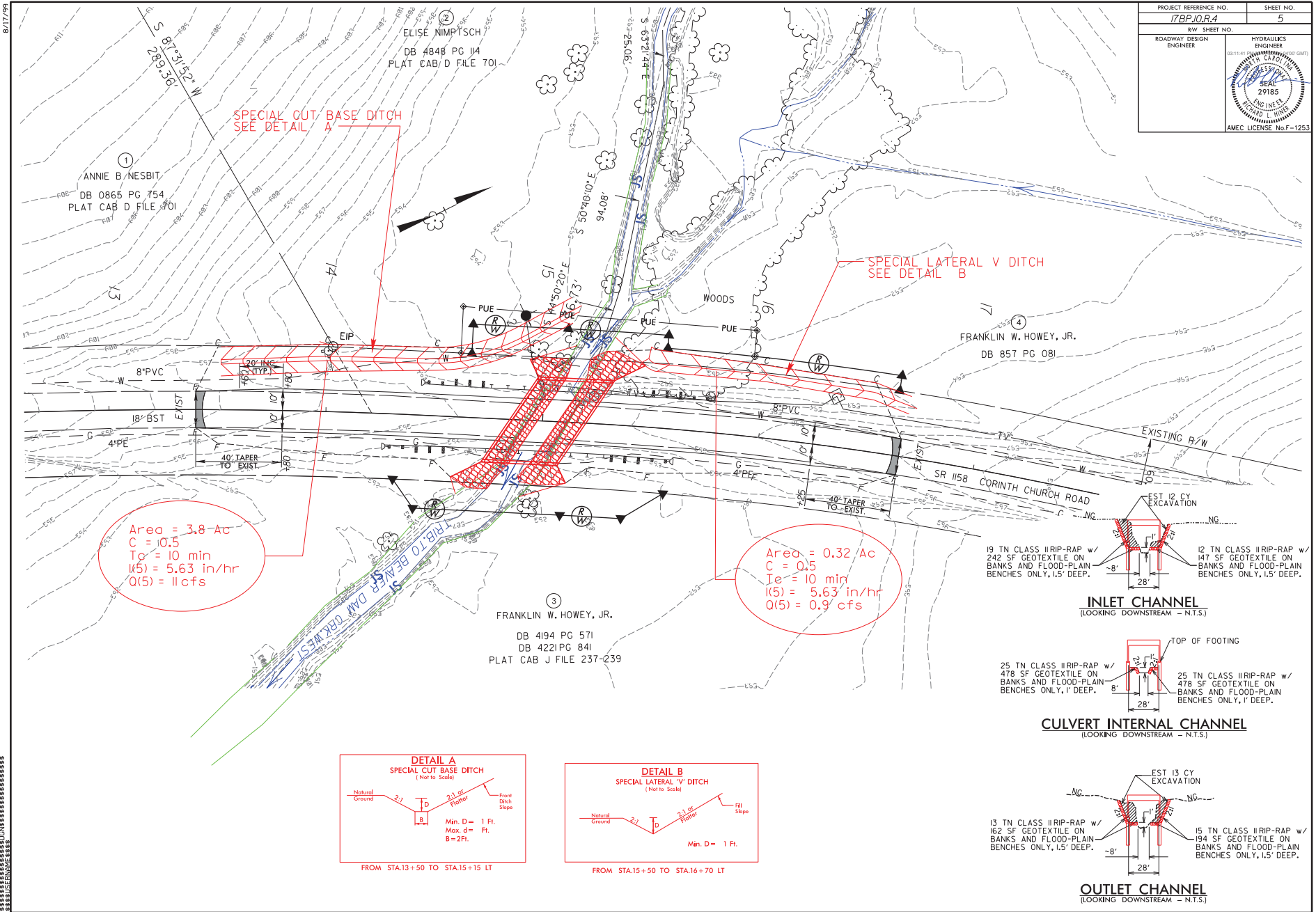
**STRUCTURE HYDRAULIC DATA**

DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 750 CFS
DESIGN HW ELEVATION	= 593.7 FT
100 YEAR HW ELEVATION	= 1100 CFS
100 YEAR HW ELEVATION	= 595.4 FT
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 1100 CFS
OVERTOPPING ELEVATION	= 595.4 FT

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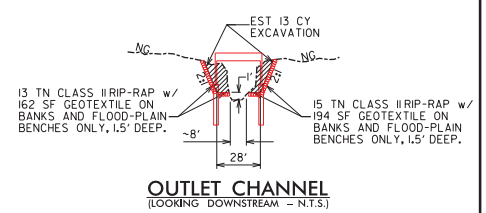
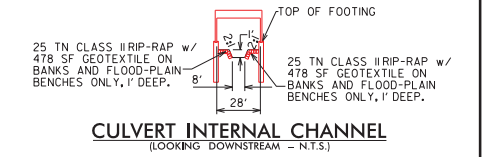
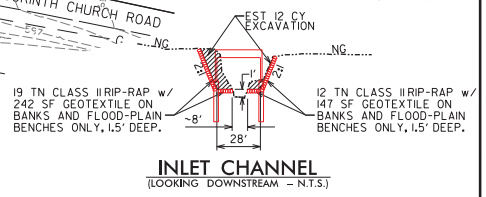
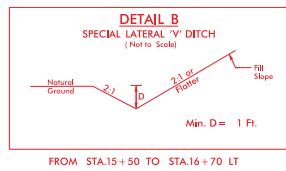
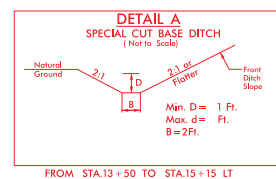
REVISIONS

PROJECT REFERENCE NO. 17BP10.R.4	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	



Area = 3.8-Ac  
 C = 10.5  
 Tc = 10 min  
 K(5) = 5.63 in/hr  
 Q(5) = 11 cfs

Area = 0.32 Ac  
 C = 0.5  
 Tc = 10 min  
 K(5) = 5.63 in/hr  
 Q(5) = 0.9 cfs



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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

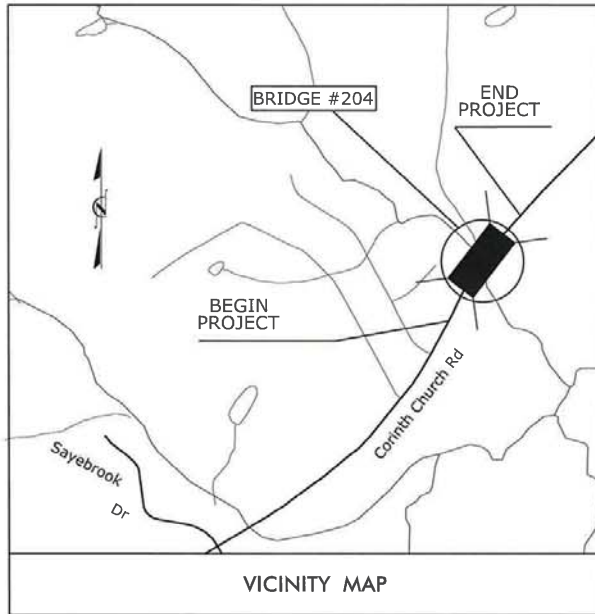
**TRANSPORTATION MANAGEMENT PLAN**

**UNION COUNTY**

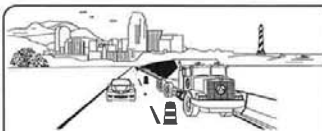
**DIVISION 10**



**BRIDGE #204 - SR 1158 (CORINTH CHURCH ROAD) OVER BEAVER DAM CREEK**



VICINITY MAP



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



PLAN PREPARED BY:  
Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300  
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BETSY L. WATSON, P.E.

TRAFFIC ENGINEER

GEORGE KARAGEORGE

WORK ZONE TRANSPORTATION DESIGN MANAGER

APPROVER: *Betsy L. Watson*  
DATE: 4/8/13



SHEET NO.  
TMP-1

**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	LEGEND AND LIST OF ROADWAY STANDARD DRAWINGS
TMP-2	GENERAL NOTES AND PHASING
TMP-3	BRIDGE #204 - ROAD CLOSURE AND DETOUR ROUTE

**TRAFFIC MANAGEMENT STRATEGY**

PROPOSED REPLACEMENT OF BRIDGE #204 WILL BE PERFORMED USING A ROAD CLOSURE WITH OFF-SITE DETOUR ROUTE. REFER TO SHEET TMP-2 FOR PHASING.

**WBS 17BP.10.R.4**



**LEGEND**

- DIRECTION OF TRAFFIC FLOW
  - DIRECTION OF PEDESTRIAN TRAFFIC FLOW
  - WORK AREA
  - PAVEMENT REMOVAL
  - NORTH ARROW
  - TYPE III BARRICADE
  - CONE
  - DRUM
  - SKINNY DRUM
  - TUBULAR MARKER
  - CHANGEABLE MESSAGE SIGN (CMS)
  - FLAGGER
  - AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)
  - FLASHING ARROW BOARD (TYPE C)
  - LAW ENFORCEMENT
  - TRUCK MOUNTED ATTENUATOR (TMA)
  - PORTABLE CONCRETE BARRIER (PCB)
  - TEMPORARY CRASH CUSHION
  - TEMPORARY SHORING
  - WORK ZONE SIGN-PORTABLE
  - WORK ZONE SIGN-STATIONARY
  - WORK ZONE SIGN-STATIONARY OR PORTABLE
- SIGNALS**
- EXISTING
  - PROPOSED
  - TEMPORARY
- PAVEMENT MARKINGS**
- EXISTING PAVEMENT MARKING (GRAY)
  - SKIP LINES
  - MINI-SKIP LINES
  - SOLID LINES
- PAVEMENT MARKING SYMBOLS**
- PAVEMENT MARKING SYMBOLS
  - EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)
  - ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS
- PAVEMENT MARKERS**
- CRYSTAL/CRYSTAL
  - CRYSTAL/RED
  - YELLOW/YELLOW

**ROADWAY STANDARD DRAWINGS**

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
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

4/1/2013 U:\Projects\17BP\10\TrafficControl\TCP\Plans\sheep\17BP\_10\_R.4\_TC\_TMP\_DIA\_ROWYSTDLEGEND.dgn

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27605 Tel: (919) 851-0800 Fax: (919) 851-7054 www.stantec.com License No. F-0917</p>	APPROVED: _____	DATE: _____	<p>STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION TRAFFIC CONTROL</p>	<p>LEGEND &amp; ROADWAY STANDARD DRAWINGS</p>
	<p>7/6/13</p>			

**GENERAL NOTES**

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

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

**ROAD CLOSURES**

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY ROAD CLOSURE.
- B) FURNISH AND INSTALL SIGNING AND DEVICES FOR ROAD CLOSURES ACCORDING TO THE TRANSPORTATION MANAGEMENT PLAN. COVER OR REMOVE ALL SIGNS AND DEVICES FOR ROAD CLOSURES WHEN NOT IN EFFECT.
- C) FURNISH AND INSTALL OFFSITE-DETOUR ROUTE SIGNING AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLAN. COVER OR REMOVE OFFSITE-DETOUR SIGNING WHEN THE DETOUR IS NOT IN OPERATION. ALL DETOUR ROUTES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTING.
- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- E) OTHER BRIDGE PROJECTS MAY BE ONGOING IN THE AREA. COORDINATE ALL DETOUR ROUTES WITH ENGINEER AND OTHER CONTRACTORS.

**PAVEMENT MARKINGS AND MARKERS**

- F) RECORD ALL LOCATIONS AND TYPES OF EXISTING PAVEMENT MARKINGS AS THEY WILL BE REPLACED IN THE SAME LOCATION ON THE NEW SURFACE.
- G) UPON COMPLETION OF ALL OTHER CONSTRUCTION OPERATIONS INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	PAVEMENT MARKER
SR 1158 CORINTH CHURCH RD.	PAINT	NONE

- H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- I) REPLACE PAVEMENT MARKINGS BEFORE OPENING LANES TO TRAFFIC.

**PHASING**

REFER TO SHEET TMP-3

**STEP 1:**

INSTALL DETOUR ROUTE SIGNS.

**STEP 2:**

CLOSE SR 1158 CORINTH CHURCH RD. IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.03 SHEET 1 OF 9, TEMPORARY ROAD CLOSURES-CLOSURE BEYOND DETOUR POINT.

**STEP 3:**

WITH SR 1158 CLOSED TO TRAFFIC, REPLACE BRIDGE #204 AND COMPLETE ALL CONSTRUCTION OPERATIONS.




**STEP 4:**

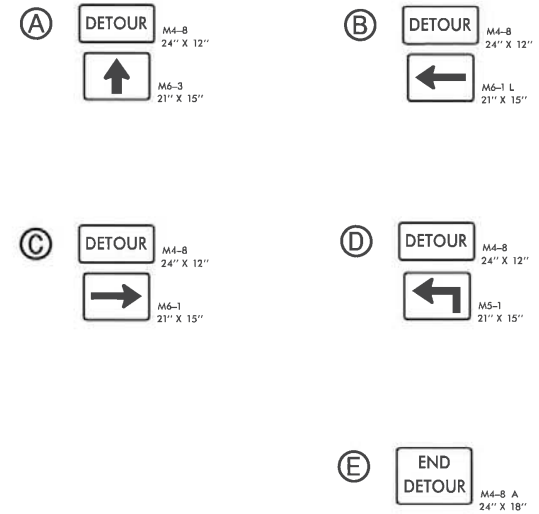
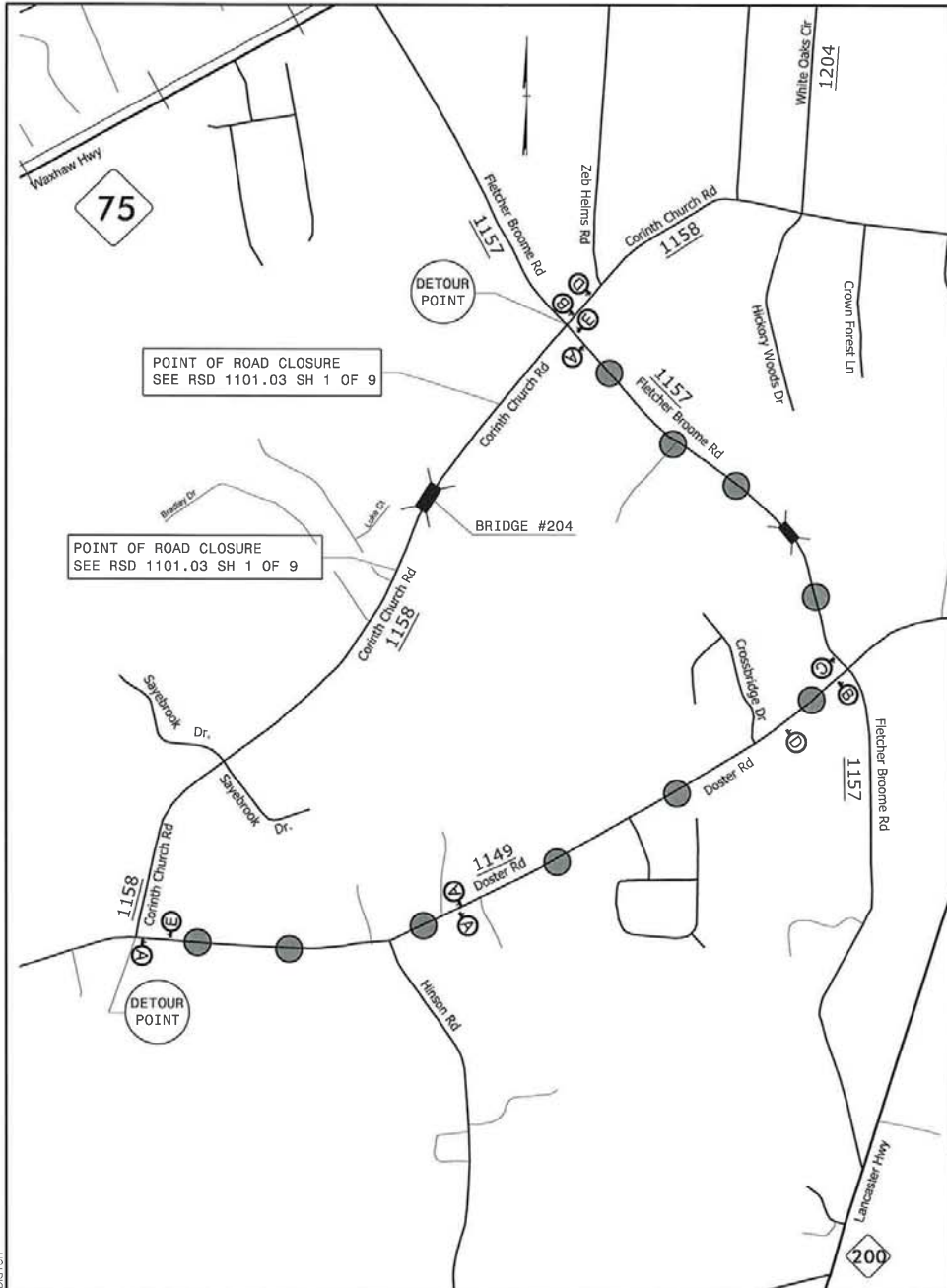
INSTALL FINAL PAVEMENT MARKINGS.

**STEP 5:**

OPEN SR 1158 TO TRAFFIC.

4/10/2013 10:41:04 AM C:\Users\jg2041\Traffic\TrafficControl\TDM\plan\sheet\17BP-10.R.4.TC-TMP-02-GENERAL NOTES-PHASING.dgn

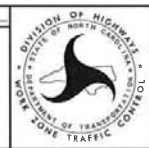
 <p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No F-0672</p>	<p>APPROVED: _____ DATE: _____</p> 		<p align="center">GENERAL NOTES AND PHASING</p>
	<p align="center">4/10/2013 10:41:04 AM C:\Users\jg2041\Traffic\TrafficControl\TDM\plan\sheet\17BP-10.R.4.TC-TMP-02-GENERAL NOTES-PHASING.dgn</p>		



6/1/2013  
 U:\Union\04\Traf\Trf\Trf\Control\CP\Plansheets\17BP.0.4.1C.TMP.03.DETOUR ROUTE SHEET.dgn  
 dia101

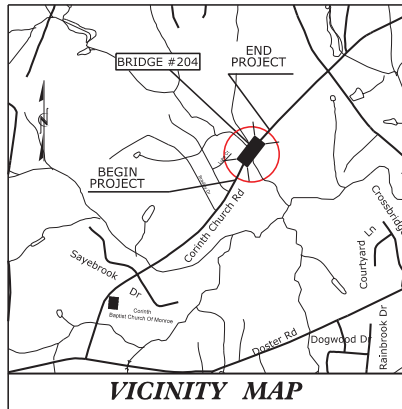
  
 Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
 Suite 300  
 Raleigh, NC 27606  
 Tel. (919) 951-6900  
 Fax. (919) 951-7024  
 www.stantec.com  
 License No. F-9672

APPROVED:  DATE:



UNION CO. BRIDGE #204  
 ROAD CLOSURE &  
 DETOUR ROUTE

TIP PROJECT: 17BP.10.R.4



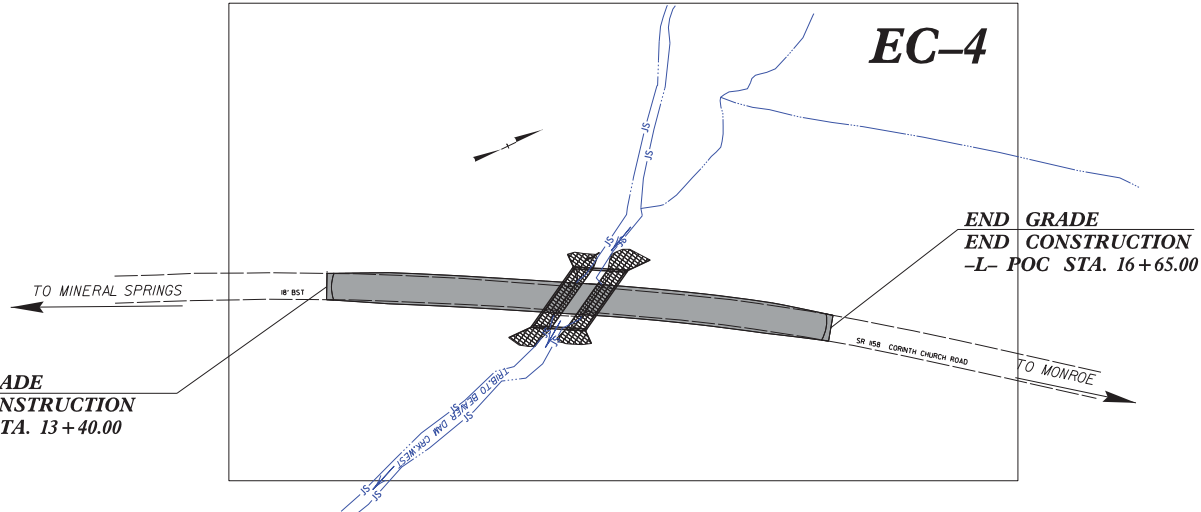
# STATE OF NORTH CAROLINA

## DIVISION OF HIGHWAYS

### PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

# UNION COUNTY

**LOCATION:**  
BRIDGE NO. 204 ON SR 1158 (CORINTH CHURCH ROAD)  
OVER TWELVE MILE CREEK



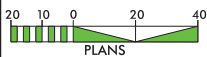
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.4	EC-1	4
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.4		PE ROW/UTIL. CONST.	

#### EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1650.03	Temporary Silt Ditch	---
1650.05	Temporary Diversion	YD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	---X---
1622.01	Temporary Berms and Slope Drains	---T---
1650.02	Silt Basin Type B	---S---
1635.01	Temporary Rock Silt Check Type-A	---R---
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	---R+---
1635.02	Temporary Rock Silt Check Type-B	---R----
	Wattle / Coir Fiber Wattle	---W---
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	---W+---
1634.01	Temporary Rock Sediment Dam Type-A	---D---
1634.02	Temporary Rock Sediment Dam Type-B	---D----
1635.01	Rock Pipe Inlet Sediment Trap Type-A	---P---
1635.02	Rock Pipe Inlet Sediment Trap Type-B	---P----
1650.04	Stilling Basin	---S---
1650.06	Special Stilling Basin	---S+---
	Rock Inlet Sediment Trap	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	---S---
	Tiered Skimmer Basin	---S+---
	Infiltration Basin	---I---

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

#### GRAPHIC SCALES



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

03:17:20 PM 03-08-2013 (-05'00' GMT)



AMEC LICENSE No.F-1253

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

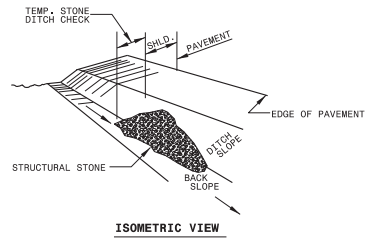
Prepared in the Office of:  
**amec**  
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
2012 STANDARD SPECIFICATIONS

#### Roadway Standard Drawings

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

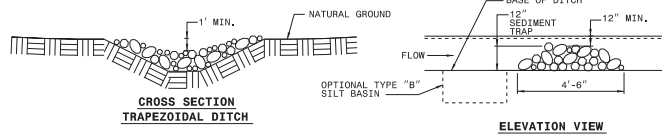
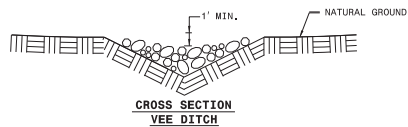
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type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

## TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL

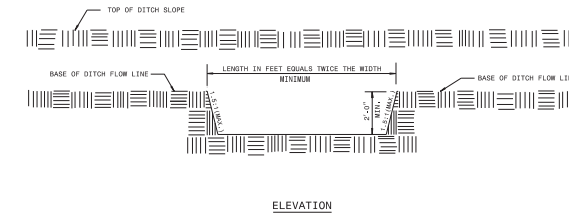
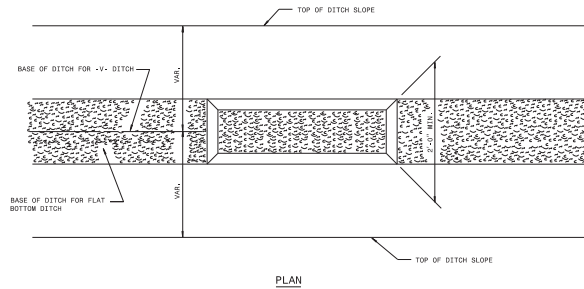


NOTES:  
USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.

THE ENGINEER MAY DIRECT THE OPTION OF CLASS 'A' STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.

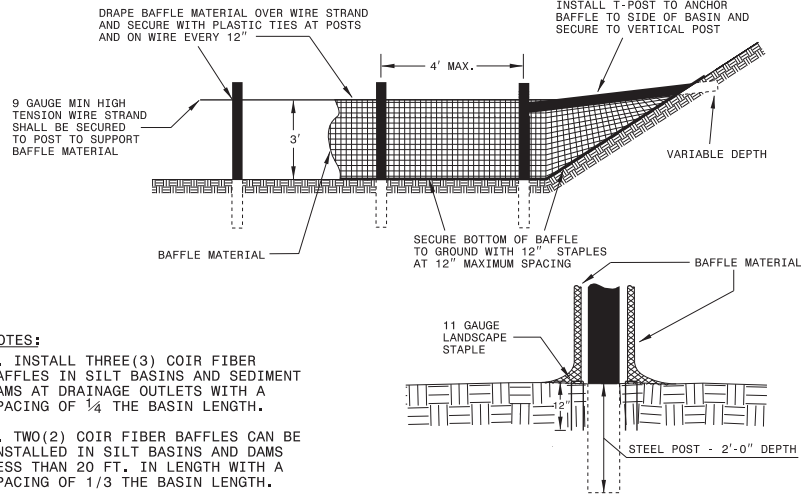


## SILT BASIN 'B' DETAIL



PROJECT REFERENCE NO. 17BPJ0.R.4	SHEET NO. EC-2
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	0318-22 P.E. (000) (GMT) STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER CIVIL ENGINEERING NO. 29185 S.B.A.L. AMEC LICENSE No.F-1253

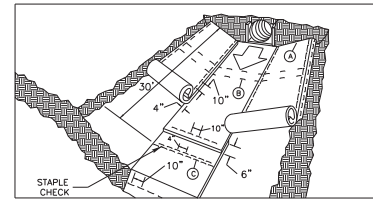
## COIR FIBER BAFFLE DETAIL



- NOTES:
1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF  $\frac{1}{4}$  THE BASIN LENGTH.
  2. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF  $\frac{1}{3}$  THE BASIN LENGTH.
  3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

BAFFLE MATERIAL SHALL BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES

## MATting INSTALLATION DETAIL



MATting IN DITCHES

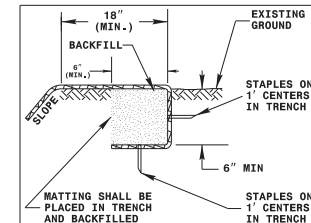
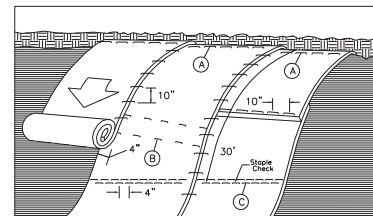


DIAGRAM (A)



MATting ON SLOPES

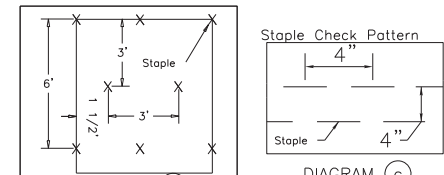


DIAGRAM (B)

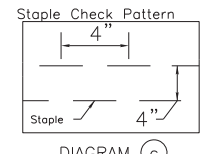
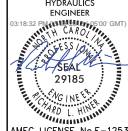


DIAGRAM (C)

NOTES:  
THIS DETAIL APPLIES TO STAKE, EXCELSION, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.  
STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. 17BPJ0.R.4	SHEET NO. EC-3
ROADWAY DESIGN ENGINEER	

**SOIL STABILIZATION SUMMARY SHEET**

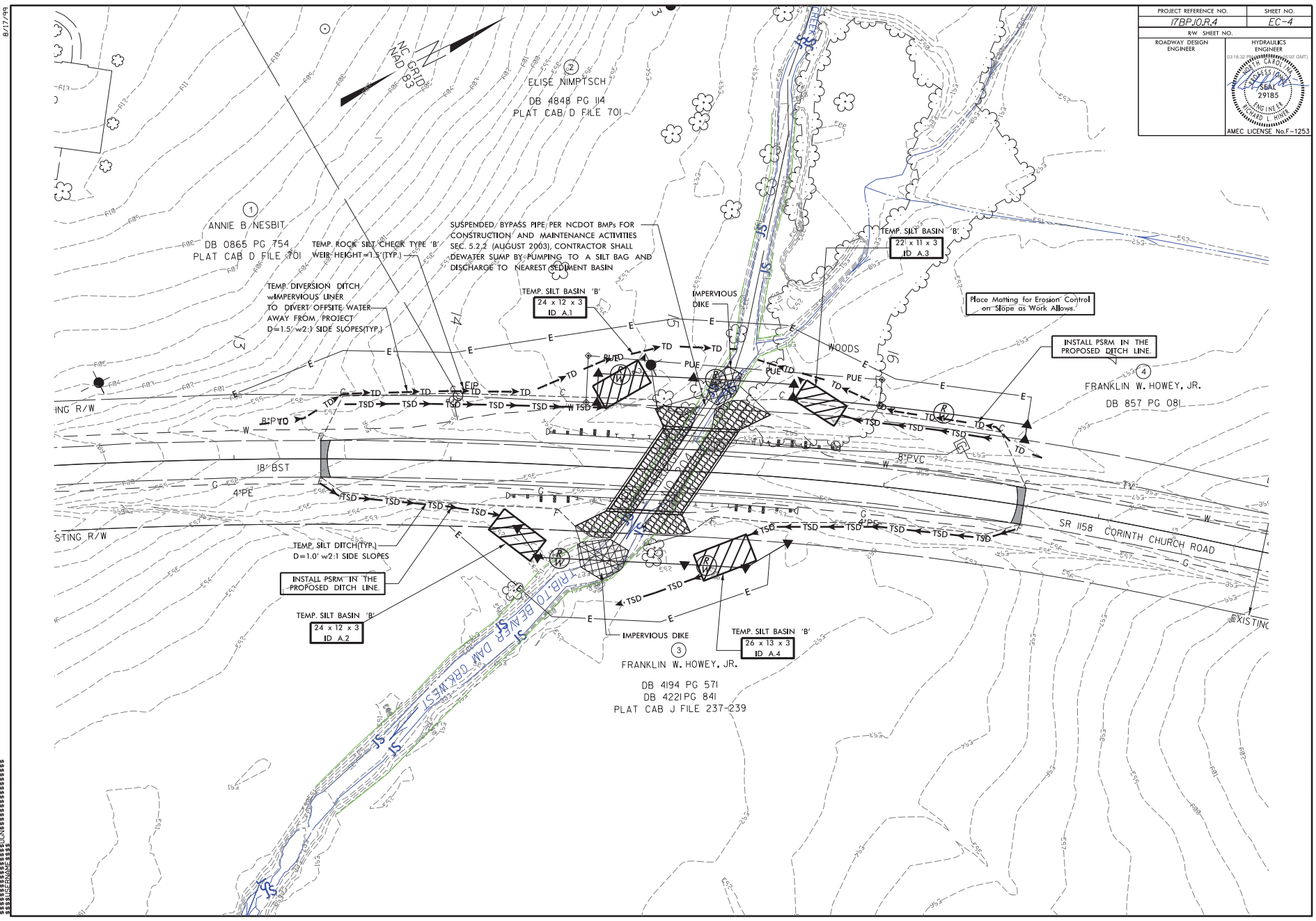
**MATTING FOR EROSION CONTROL  
(FOR SLOPE STABILIZATION)**

**PERMANENT SOIL REINFORCEMENT MAT  
(FOR TEMP. SILT DITCH STABILIZATION)**

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	13+40	14+85	LT	355
4	-L-	15+20	16+65	LT	330
4	-L-	13+40	14+85	RT	145
4	-L-	15+20	16+65	RT	145
				SUBTOTAL	975
				MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	0
				TOTAL	975
				SAY	1000
<b>IMPERVIOUS LINER (FOR TEMP. DIVERSION DITCHES)</b>					
4	-L-	13+12	15+29	LT	205
4	-L-	15+38	16+70	LT	130
				SUBTOTAL	335
				MISCELLANEOUS LINING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	0
				TOTAL	335
				SAY	350
<b>TEMPORARY SILT FENCE (FOR STOCK PILES)</b>					
				TOTAL	300 LF
<b>SILT BAG</b>					
				TOTAL	1
<b>SPECIAL STILLING BASIN</b>					
				TOTAL	1

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	13+51	14+70	LT	110
4	-L-	15+78	16+48	LT	65
4	-L-	13+38	14+23	RT	80
4	-L-	14+83	15+19	RT	35
4	-L-	15+39	16+67	RT	120
				SUBTOTAL	410
				ADDITIONAL PERM TO BE INSTALLED	0
				TOTAL	410
				SAY	430
<b>COIR FIBER MATTING (STREAM BANK AT TEMP. DIKE)</b>					
				SUBTOTAL	20
				ADDITIONAL MATTING TO BE INSTALLED	0
				TOTAL	20
				SAY	25
<b>CLASS II RIP RAP (WING WALLS AND CULVERT)</b>					
				SUBTOTAL	109
				ADDITIONAL STONE TO BE INSTALLED	0
				TOTAL	109
				SAY	110 TON
<b>GEOTEXTILE (BANKS AND FLOODPLAIN BENCHES)</b>					
				SUBTOTAL	1700
				ADDITIONAL GEOTEXTILE TO BE INSTALLED	0
				TOTAL	1700
				SAY	1750 SF

PROJECT REFERENCE NO. <b>17BP10.R.4</b>	SHEET NO. <b>EC-4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	AMEC LICENSE No.F-1253



B/17/99

\*\*\*\*\*  
 17BP10.R.4  
 EC-4  
 \*\*\*\*\*

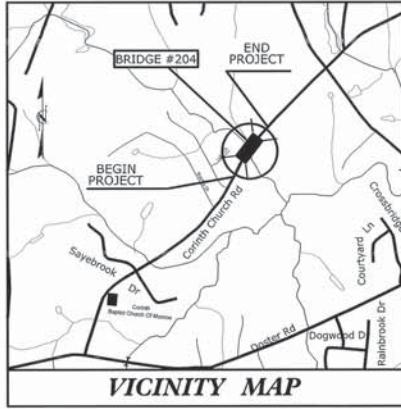
T.I.P. NO.	SHEET NO.
WBS 17BP.10.R.4	UC-1

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
UNION COUNTY**

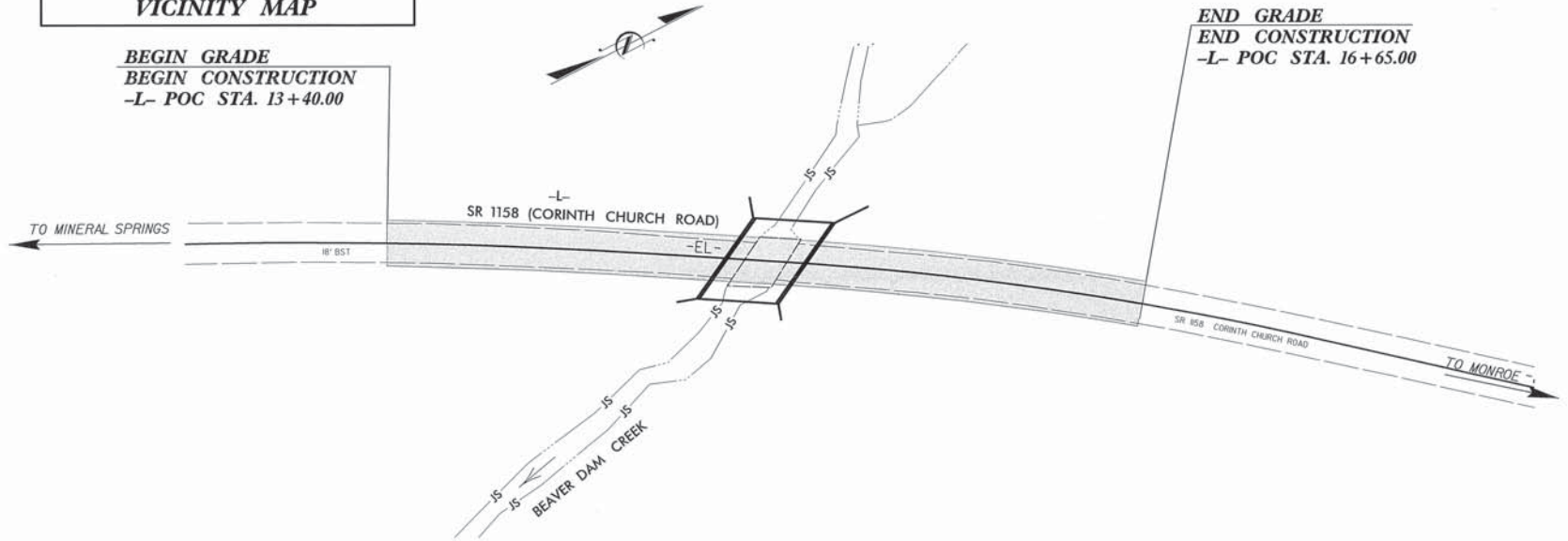
LOCATION: BRIDGE NO. 204 ON SR 1158 (CORINTH CHURCH ROAD)  
OVER BEAVER DAM CREEK

TYPE OF WORK: WATER CONSTRUCTION



VICINITY MAP

BEGIN GRADE  
BEGIN CONSTRUCTION  
-L- POC STA. 13+40.00



TIP PROJECT:

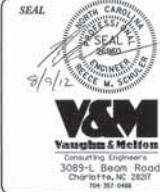
CONTRACT:

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	SYMBOLGY SHEET
UC-3	UTILITY PLAN AND PROFILE SHEET
UC-4	DETAIL SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) WATER - UNION COUNTY PUBLIC WORKS



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

1501 MAIL SERVICES CENTER  
RALEIGH, NC 27605-2501  
PHONE (919) 236-4423  
FAX (919) 256-4109

Roger Worthington, P.E. UTILITIES SECTION ENGINEER  
XXXXX XXXXX, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER  
Reece Schuler, PE UTILITIES PROJECT DESIGNER



Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS



Atlanta, Georgia  
 North Carolina  
 Tri-Cities, Tennessee  
 Knoxville, Tennessee  
 Middleboro, Kentucky  
 Spartanburg, South Carolina

PROJECT REFERENCE NO. 17BP.10.R.4	SHEET NO. UC-2
DESIGNED BY: RMS	
DRAWN BY: NVA	
CHECKED BY: RMS	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119	

UTILITY CONSTRUCTION PLANS ONLY

Water

Proposed Back Flow Preventor	
Relocate Back Flow Preventor	
Existing Water Valve	
Proposed Valve	
Proposed Tapping Valve	
Existing Water Meter	
Proposed Water Meter	
Proposed Water Meter / Vault	
Relocate Water Meter	
Remove Water Meter	
Existing Hydrant	
Prop Hydrant	
Relocate Hydrant	
Remove Hydrant	

Proposed RPZ Back Flow Preventor	
Relocate RPZ Back Flow Preventor	
45° Bend w/Thrust Block	
Water Plug	
Water Cross	
Water Plug	
Water Reducer	
Water Tee	
Water Pump Station	
Water Thrust Block	
Blow Off Valve	
Air Release Valve	
Water Line Stop	
Water Line Stop w Bypass	

Utility By Other Symbols

Proposed Tel Pole	
Proposed Power Pole	
Proposed Joint Use Power, Tel Pole	
Proposed Joint Use Power, CATV Pole	
Proposed Joint Use Power, Tel, CATV Pole	
Proposed Joint Use Tel, CATV Pole	

Sewer

Existing Manhole	
Proposed UT Manhole	
Remove UT Manhole	
Abandon Utility Manhole	
Sewer Line Stop	
Sewer Line Stop w Bypass	
U/G Sanitary Sewer Line	

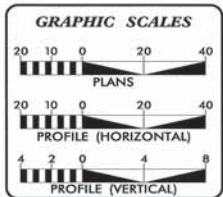
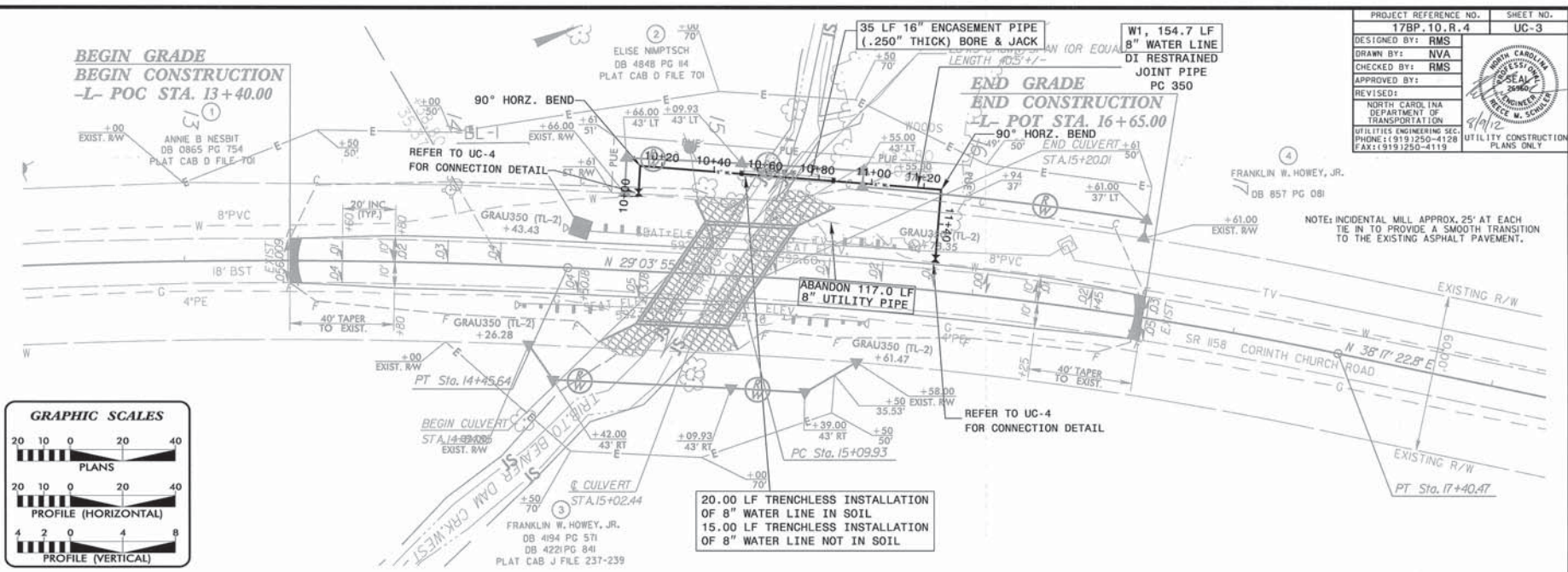
Sewer Cross	
Sewer Plug	
Sewer Reducer	
Sewer Tee	
Sewer Pump Station	
Sewer Thrust Block	

PUE Monument	
Concrete Pier	
Steel Pile Pier	
Test Hole (SUE)	
Prop Utility Vault	

PROJECT REFERENCE NO.	17BP.10.R.4	SHEET NO.	UC-3
DESIGNED BY:	RMS		
DRAWN BY:	NVA		
CHECKED BY:	RMS		
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITIES ENGINEERING SECTION	
PHONE: (919) 250-4128		FAX: (919) 250-4119	
		UTILITY CONSTRUCTION PLANS ONLY	

**BEGIN GRADE  
BEGIN CONSTRUCTION  
-L- POC STA. 13+40.00**

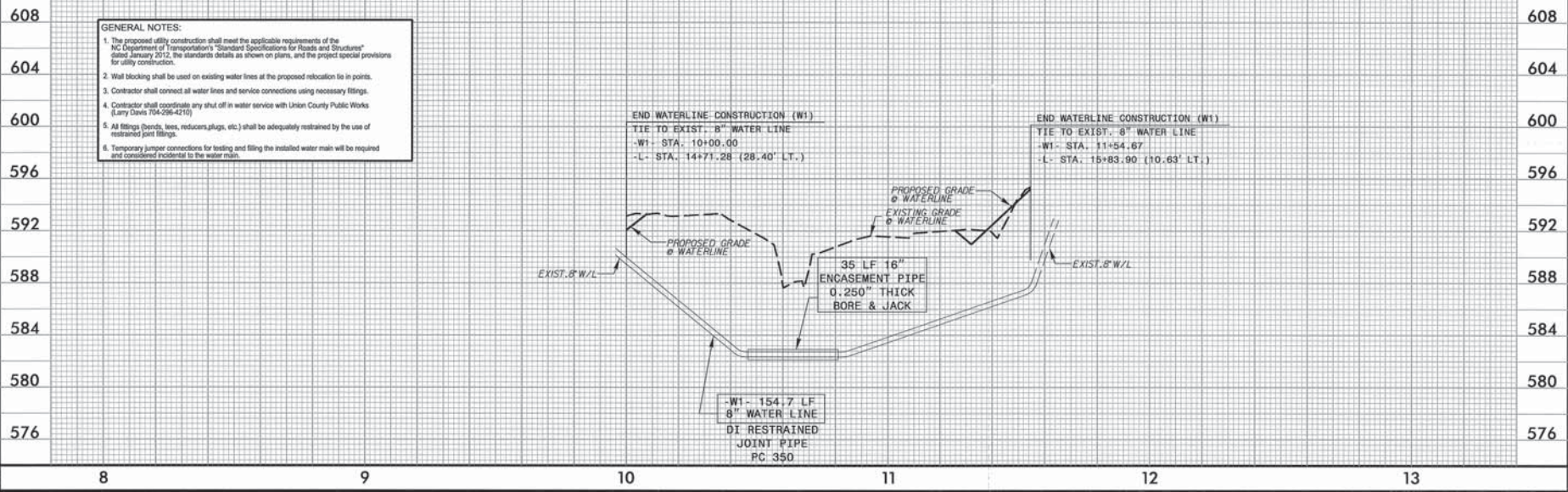
**END GRADE  
END CONSTRUCTION  
-L- POT STA. 16+65.00**



20.00 LF TRENCHLESS INSTALLATION OF 8" WATER LINE IN SOIL  
15.00 LF TRENCHLESS INSTALLATION OF 8" WATER LINE NOT IN SOIL

NOTE: INCIDENTAL MILL APPROX. 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

- GENERAL NOTES:**
- The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2012, the standards details as shown on plans, and the project special provisions for utility construction.
  - Wall blocking shall be used on existing water lines at the proposed relocation tie in points.
  - Contractor shall connect all water lines and service connections using necessary fittings.
  - Contractor shall coordinate any shut off in water service with Union County Public Works (Larry Davis 704-298-4310)
  - All fittings (bends, tees, reducers, plugs, etc.) shall be adequately restrained by the use of restrained joint fittings.
  - Temporary jumper connections for testing and filling the installed water main will be required and considered incidental to the water main.



Note: Not to Scale


\*S.U.E. = Subsurface Utility Engineering

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS UTILITIES PLAN SHEET DETAILS

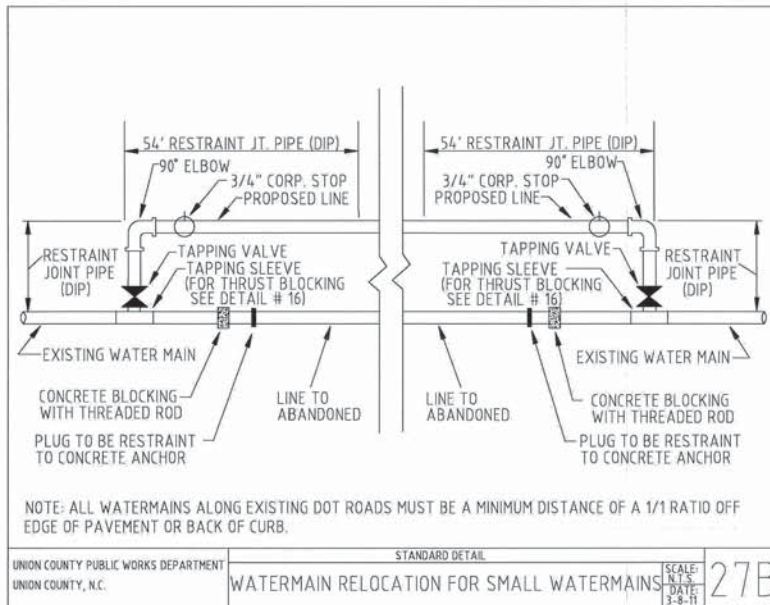
**V&M**  
Vaughan & Melton  
Consulting Engineers

Charlotte,  
North Carolina  
Tel: 252-261-1111

Asheville, North Carolina 28801  
Tri-City, Tennessee 37040  
Knoxville, Tennessee 37912  
Middleboro, Kentucky 40350  
Spartanburg, South Carolina 29583

PROJECT REFERENCE NO. 17BP, 10, R. 4	SHEET NO. UC-4
DESIGNED BY: RMS	
DRAWN BY: NVA	
CHECKED BY: RMS	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: 1-919-250-4128 FAX: 1-919-250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



27B

07/08/12

**CONTRACT:** TIP PROJECT: WBS 17BP.10.R.4

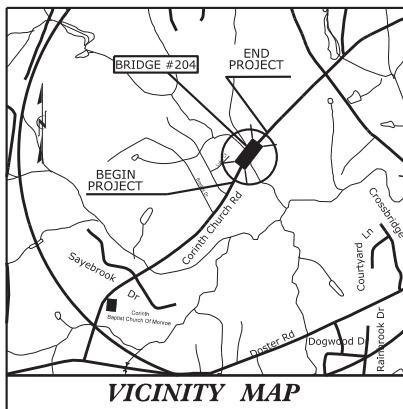
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
WBS 17BP.10.R.4	UO-1

**UTILITIES BY OTHERS PLANS  
UNION COUNTY**

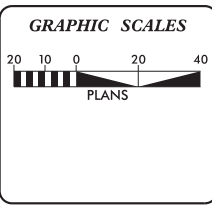
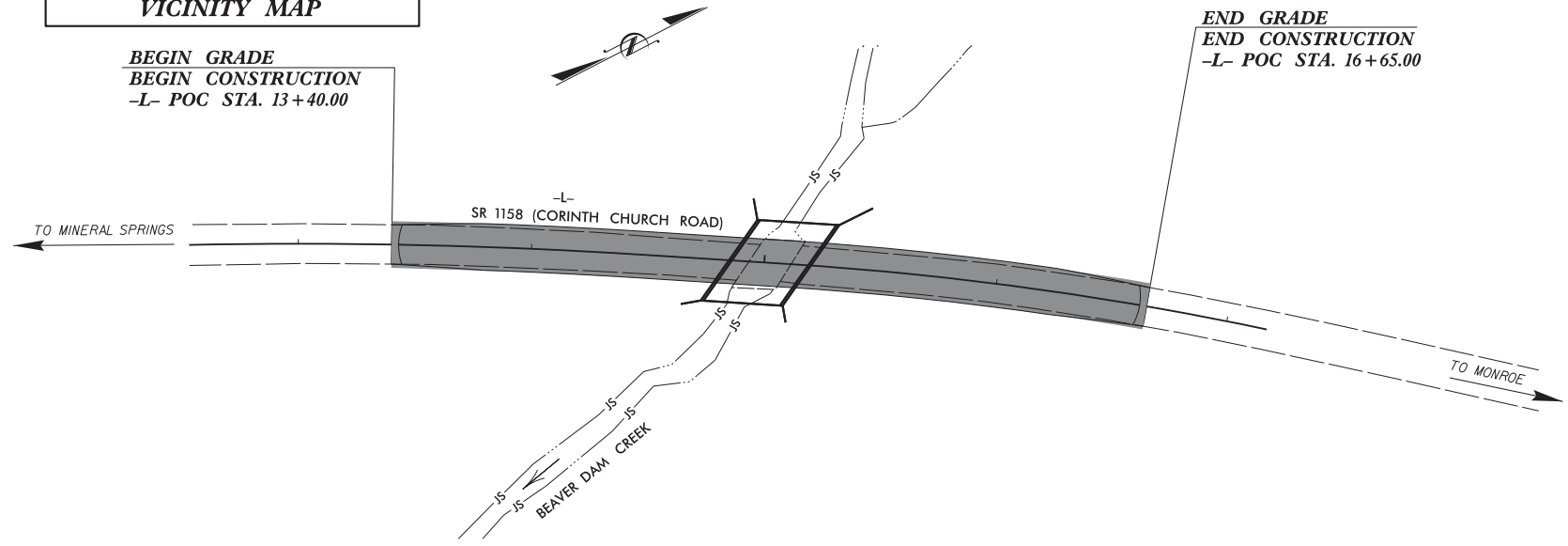
LOCATION: BRIDGE NO. 204 ON SR 1158 (CORINTH CHURCH ROAD)  
OVER BEAVER DAM CREEK

TYPE OF WORK: UNDERGROUND GAS & CABLE



**BEGIN GRADE  
BEGIN CONSTRUCTION**  
-L- POC STA. 13+40.00

**END GRADE  
END CONSTRUCTION**  
-L- POC STA. 16+65.00



**INDEX OF SHEETS**

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

- WATER AND SEWER OWNERS ON PROJECT**
- (1) GAS - CITY OF MONROE
  - (2) CABLE - TIME WARNER

SEAL

10/8/2012

**V&M**  
Vaughan & Melton  
Consulting Engineers  
3089-L Beam Road  
Charlotte, NC 28217  
704-597-0488

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

1591 MAIL SERVICES CENTER  
RALEIGH, NC 27699-1591  
PHONE (919) 250-4128  
FAX (919) 250-4119

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Xxxxx Xxxxx, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Reece Schuler, PE** UTILITIES PROJECT DESIGNER

SYSTEMS TIME & MATERIALS

UTILITIES BY OTHERS

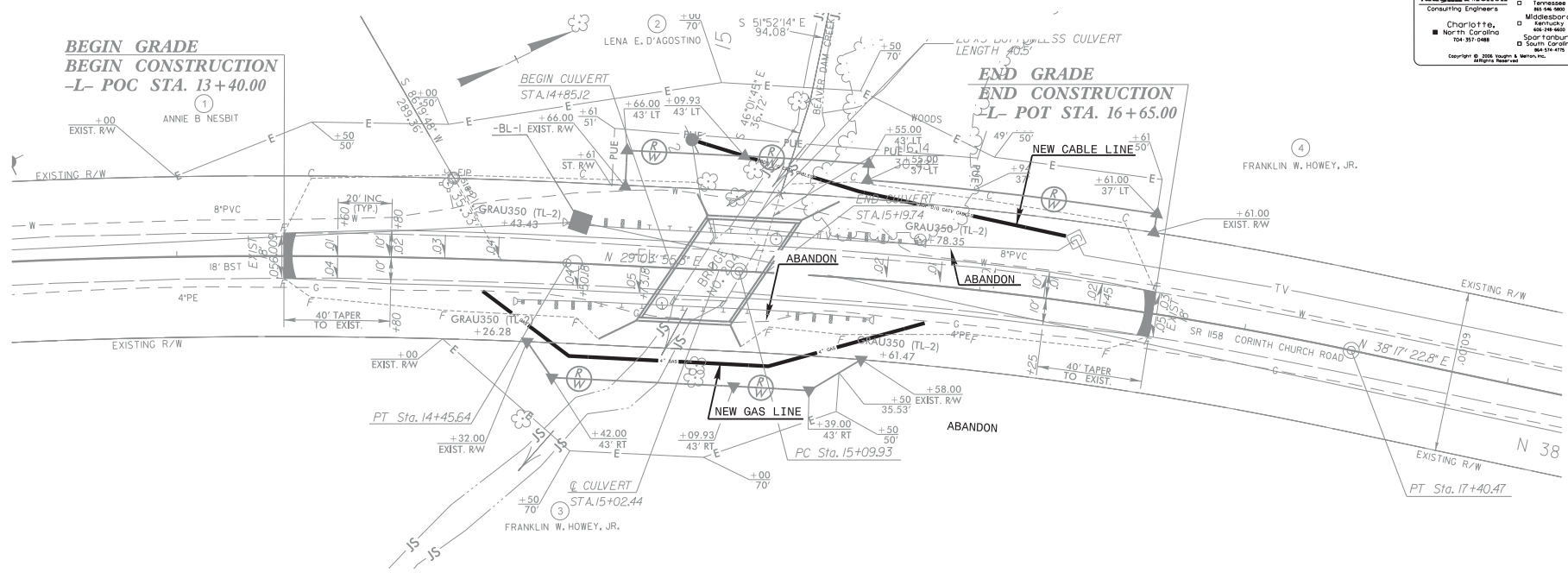
NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

**V&M**  
Vaughn & Melton  
Consulting Engineers

Asheville, North Carolina 28825-2766  
Charlotte, North Carolina 28203-1048  
Chickasaw, Tennessee 37018-0001  
Cincinnati, Ohio 45202-0001  
Columbus, Georgia 31906-0001  
Columbia, South Carolina 29202-0001  
Dayton, Ohio 45424-0001  
Denver, Colorado 80202-0001  
Detroit, Michigan 48202-0001  
Houston, Texas 77002-0001  
Indianapolis, Indiana 46204-0001  
Jacksonville, Florida 32202-0001  
Kansas City, Missouri 64108-0001  
Little Rock, Arkansas 72202-0001  
Louisville, Kentucky 40202-0001  
Memphis, Tennessee 38102-0001  
Miami, Florida 33102-0001  
Milwaukee, Wisconsin 53202-0001  
Minneapolis, Minnesota 55402-0001  
New York, New York 10002-0001  
Omaha, Nebraska 68102-0001  
Orlando, Florida 32802-0001  
Portland, Oregon 97202-0001  
Raleigh, North Carolina 27602-0001  
San Antonio, Texas 78202-0001  
San Diego, California 92102-0001  
Seattle, Washington 98102-0001  
Tampa, Florida 33602-0001  
Wichita, Kansas 67202-0001

**BEGIN GRADE  
BEGIN CONSTRUCTION  
-L- POC STA. 13+40.00**

**END GRADE  
END CONSTRUCTION  
-L- POT STA. 16+65.00**

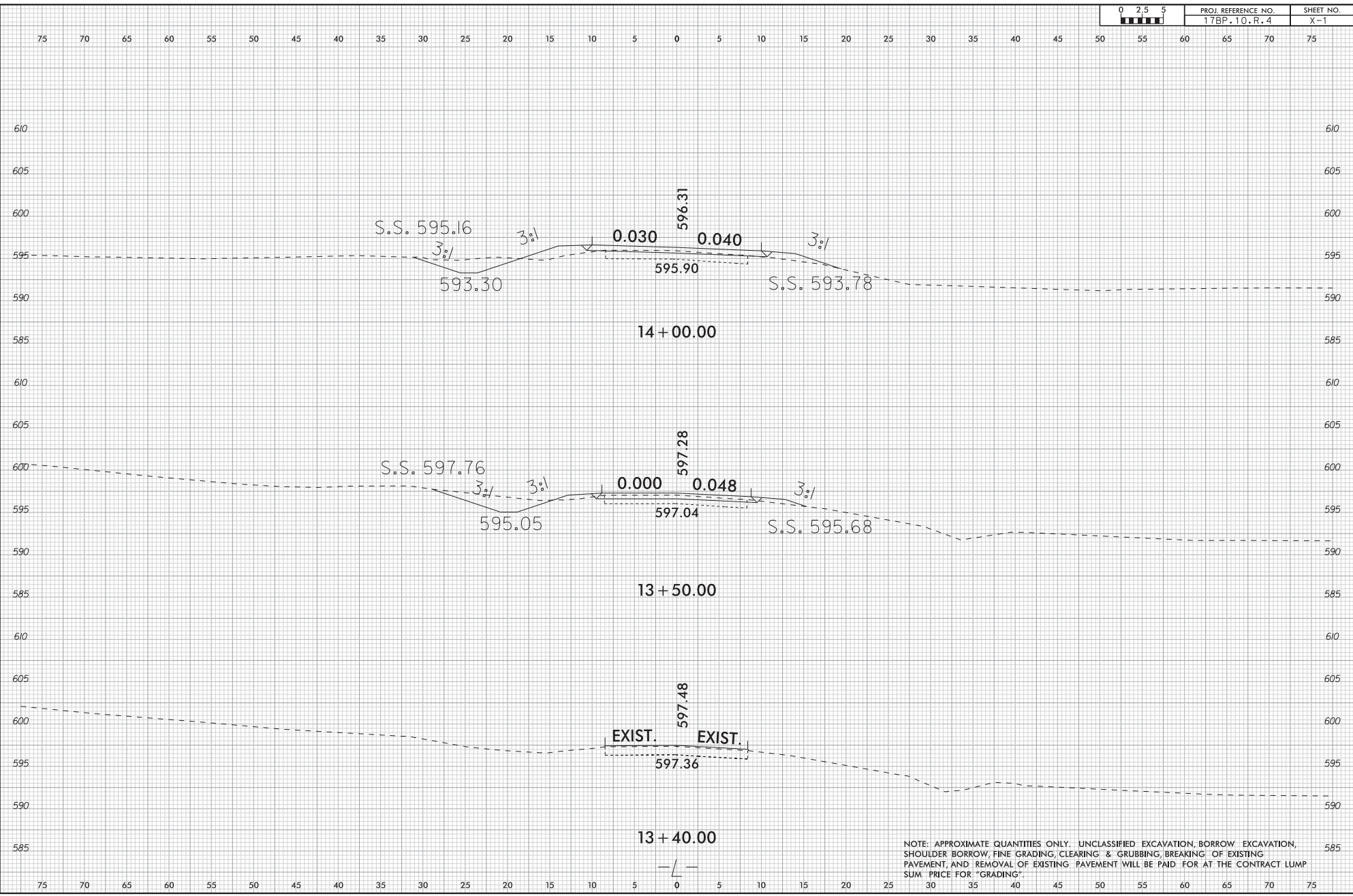


REVISIONS

8/17/08

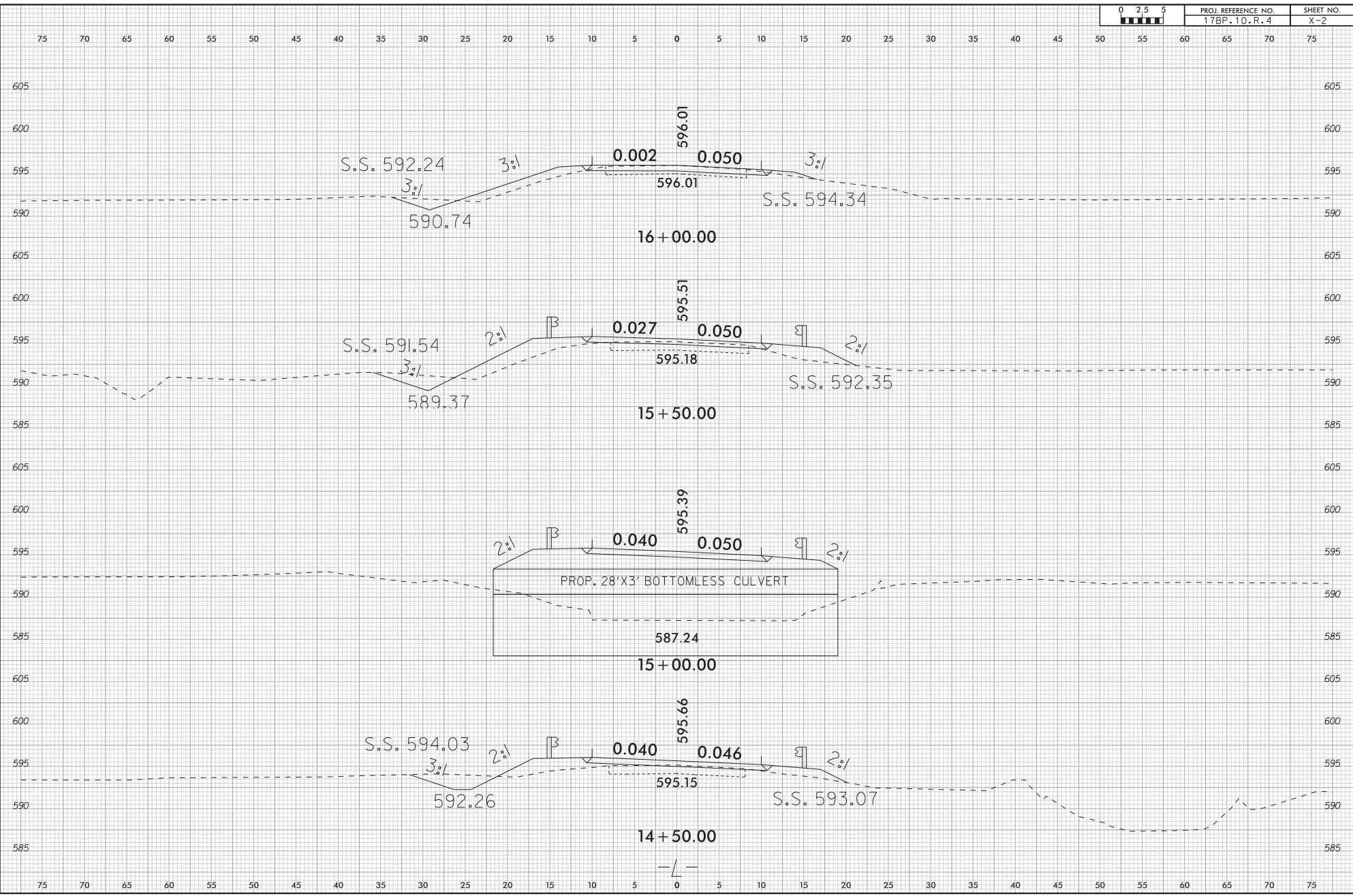
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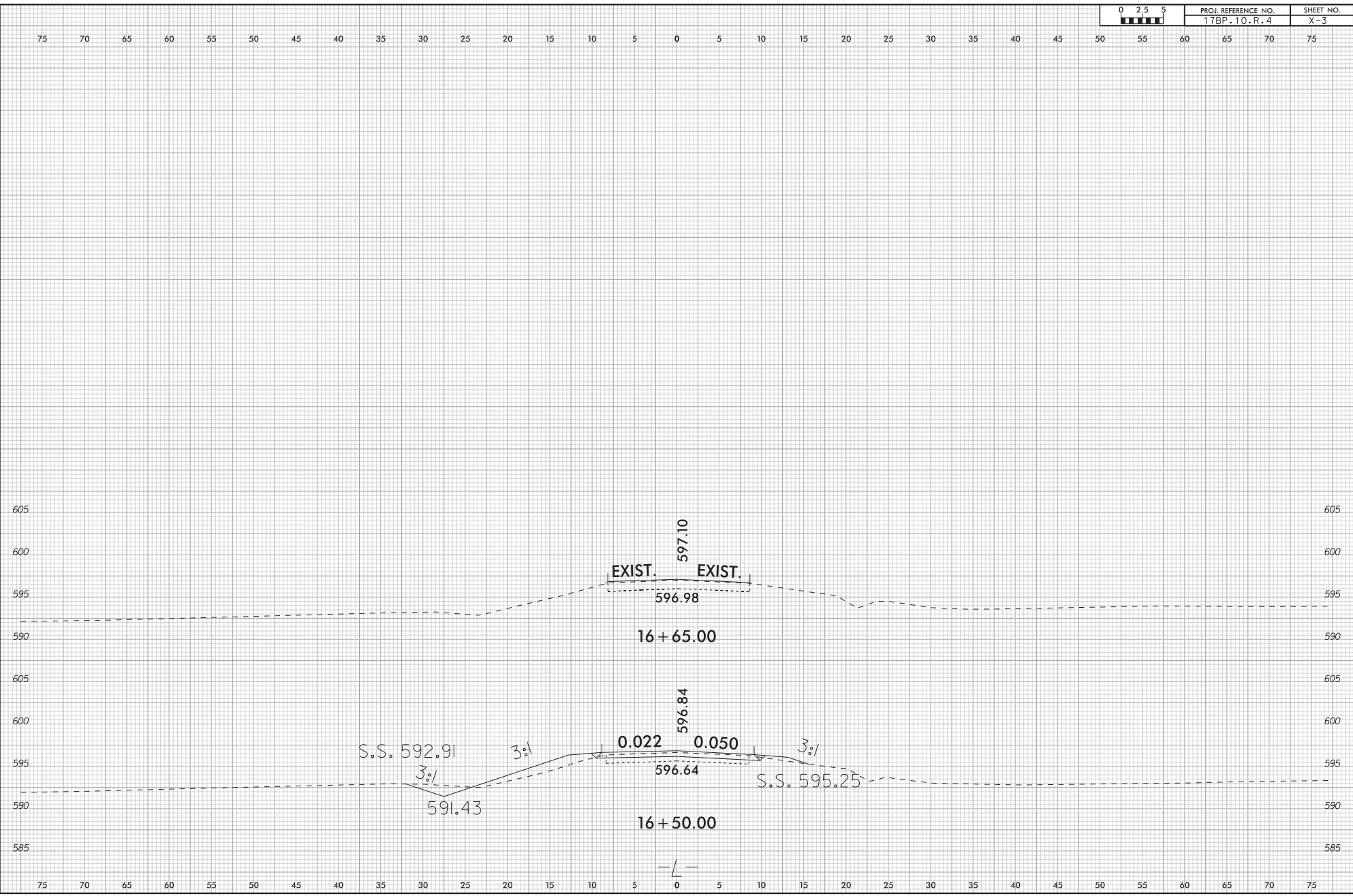
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	17BP.10.R.4	X-2



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	17BP.10.R.4	X-3



S.S. 592.91

3%

3%

0.022

596.64

596.84

0.050

S.S. 595.25

3%

591.43

EXIST.

597.10

EXIST.

596.98

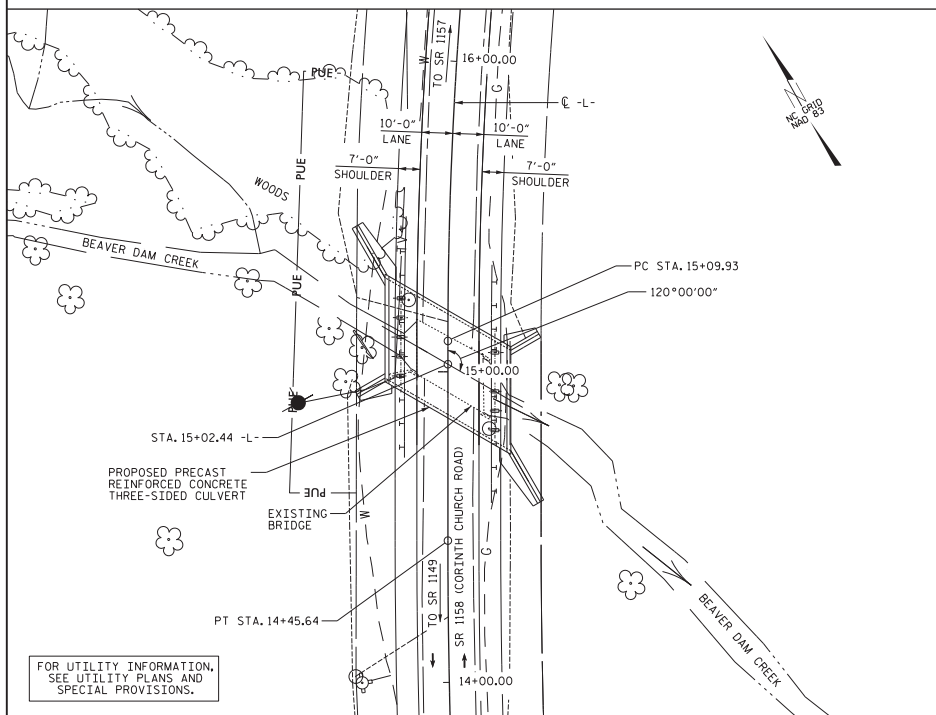
16 + 65.00

16 + 50.00

—L—



BM: RR SPIKE IN POWER POLE, 44.66' LT, STA. 14+67.50, EL. 613.74



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE	= 750 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 593.68
DRAINAGE AREA	= 1.72 SQ. MI.
BASIC DISCHARGE (Q100)	= 1100 CFS
BASIC HIGH WATER ELEVATION	= 595.35

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1100 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100 YRS.
OVERTOPPING FLOOD ELEVATION	= 595.35

GRADE DATA

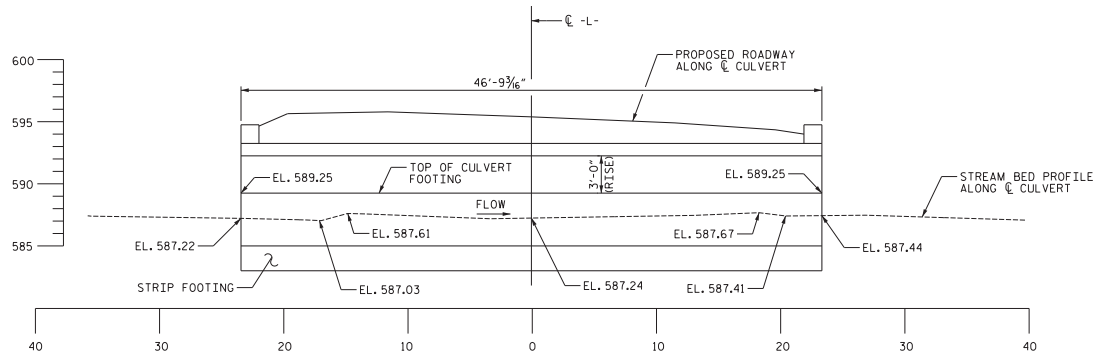
GRADE POINT ELEVATION @ STA. 15+02.44 -L-	= 595.39
BED ELEVATION @ STA. 15+02.44 -L-	= 586.60
ROADWAY SLOPES	= 2:1 MAX

NOTES:

- ASSUMED LIVE LOAD -----HL93 OR ALTERNATE LOADING.
- MAXIMUM DESIGN FILL -----3.0'
- MINIMUM DESIGN FILL -----0.5'
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
- THE SPREAD FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 4.0 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 9 TSF JUST BEFORE PLACING CONCRETE.
- KEY SPREAD FOOTINGS AT LEAST 12 INCHES INTO WEATHERED ROCK OR ROCK WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.
- TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTINGS SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.
- SCOUR PROTECTION SHALL BE REQUIRED. RIP RAP NOT TO BE PLACED ABOVE THE STREAMBED.
- THE SCOUR CRITICAL ELEVATION IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- THE BOTTOM OF THE FOOTING ELEVATIONS MAY BE LOWERED IN ORDER TO SATISFY THE REQUIRED BEARING RESISTANCE AND MINIMUM ROCK EMBEDMENT REQUIREMENTS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATION SCOUR AT BRIDGES".
- FOR PRECAST REINFORCED CONCRETE THREE SIDED CULVERT, SEE SPECIAL PROVISIONS.
- THE EXISTING STRUCTURE CONSISTING OF A 20'-1" LONG SINGLE SPAN; A 19'-2" CLEAR ROADWAY WIDTH WITH A TIMBER JOIST SUPPORTED TIMBER DECK ON THE ABUTMENTS WITH TIMBER CAPS, POSTS, BULKHEADS AND CONCRETE SILLS AT THE PROPOSED STRUCTURE SITE, SHALL BE REMOVED.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATION.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- ALL REINFORCING STEEL FOR THE HEADWALL AND GUARDRAIL PEDESTALS SHALL BE EPOXY COATED.
- CONCRETE USED FOR THE HEADWALL AND GUARDRAIL PEDESTALS SHALL MEET THE MINIMUM REQUIREMENTS OF CLASS AA CONCRETE.
- NO PRECAST WING OR HEADWALL OPTION WILL BE ALLOWED.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- RIP RAP CLASS II IS INCLUDED IN THE QUANTITY SHOWN ON THE DRAINAGE PLANS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

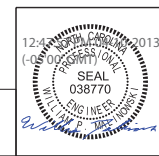
TOTAL STRUCTURE QUANTITIES	
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT @ STA. 15+02.44 -L-	LUMP SUM
CLASS A CONCRETE	79.4 CU. YDS.



PROFILE ALONG CULVERT

PROJECT NO. 17BP.10.R.4  
 UNION COUNTY  
 STATION: 15+02.44 -L-  
 SHEET 1 OF 3 REPLACES BR. NO. 204

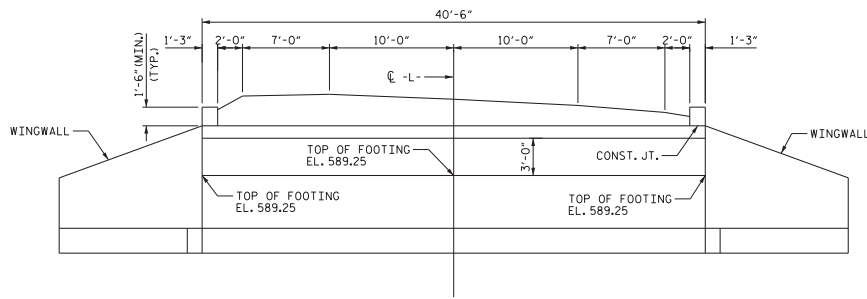
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 PRECAST REINFORCED CONCRETE  
 THREE-SIDED CULVERT  
 SR 1158 (CORINTH CHURCH ROAD)  
 OVER BEAVER DAM CREEK  
 120° SKEW



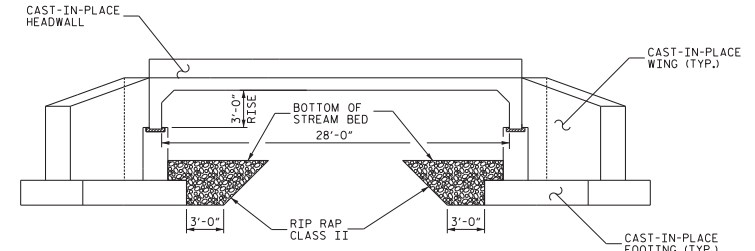
DRAWN BY : JY DATE : 06/22/12  
 CHECKED BY : WPM DATE : 06/29/12

PREPARED IN THE OFFICE OF:  
 AMEC Environment & Infrastructure, Inc.  
 4025 Spring Creek Drive, Suite 100  
 Durham, North Carolina, 27713  
 NC Exp. License #E-1253  
 Tel. (919) 381-9900  
 Fax. (919) 381-9901  
 www.amec.com  
**amec**  
 FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

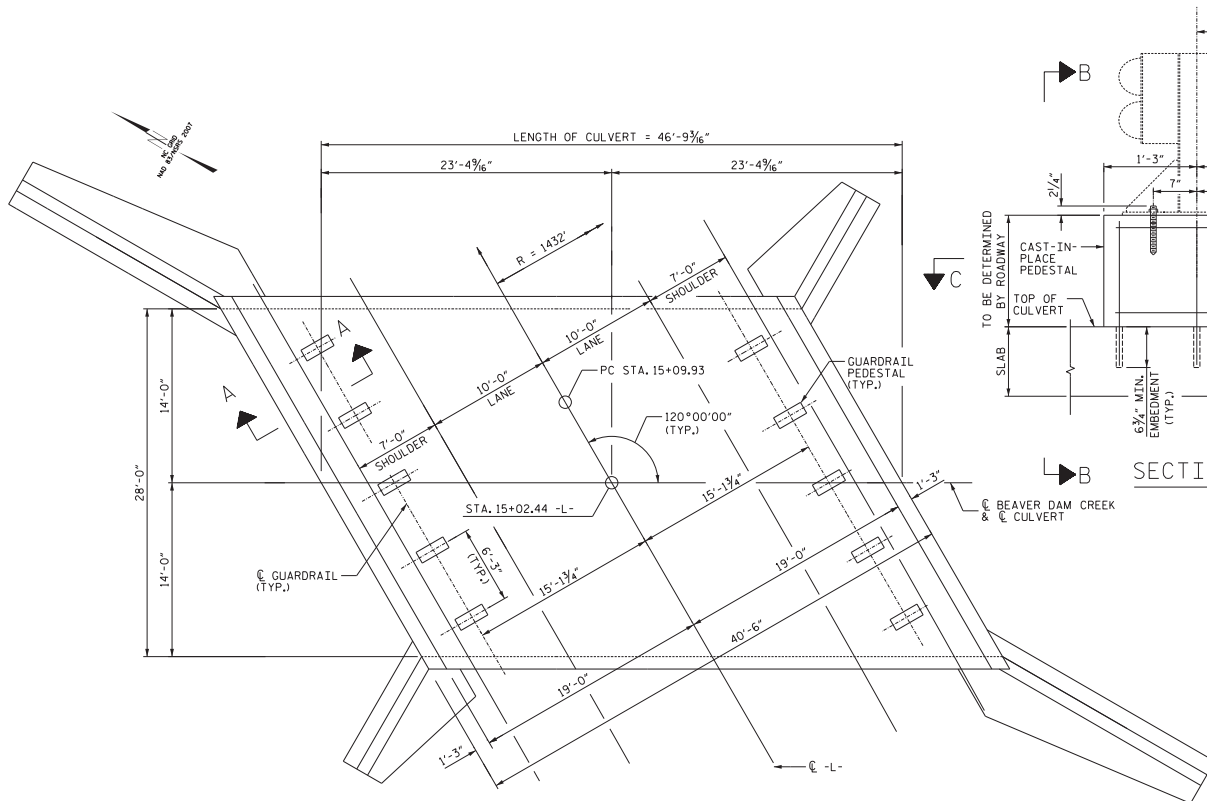
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NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
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2			4			



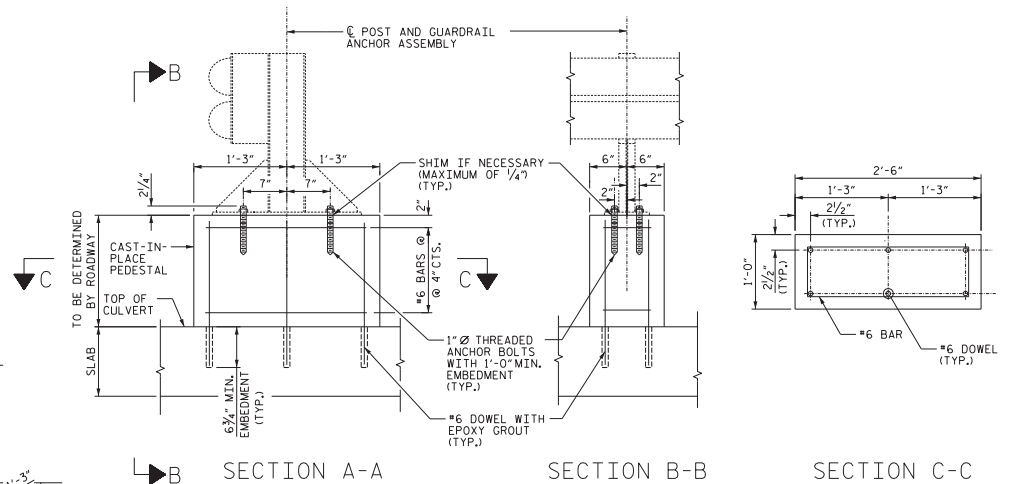
CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION



CULVERT PLAN

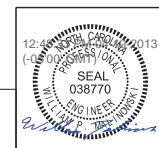


GUARDRAIL PEDESTAL DETAILS

SEE GUARDRAIL AND GUARDRAIL PEDESTAL NOTES ON SHEET 3 OF 3.

PROJECT NO. 17BP.10.R.4  
 UNION COUNTY  
 STATION: 15+02.44 -L-  
 SHEET 2 OF 3 REPLACES BR. NO. 204

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN, SECTION & ELEVATION  
 PRECAST REINFORCED CONCRETE  
 THREE-SIDED CULVERT  
 SR 1158 (CORINTH CHURCH ROAD)  
 OVER BEAVER DAM CREEK  
 120° SKEW

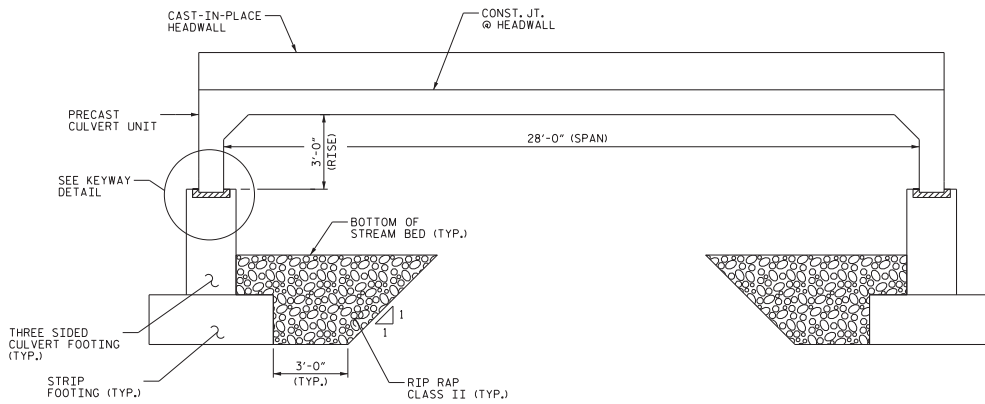


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 4021 Spring Creek Drive, Suite 100  
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 www.amec.com  
 Tel. (919) 381-2900  
 Fax. (919) 381-9991  
 FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

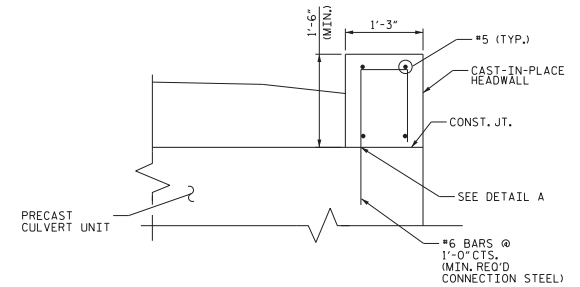
DRAWN BY : JY DATE : 06/22/12  
 CHECKED BY : WPM DATE : 06/29/12

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

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*06/29/12\*\*\*\*\*  
 MACTIC



RIGHT ANGLE SECTION OF  
PRECAST CONCRETE THREE-SIDED CULVERT

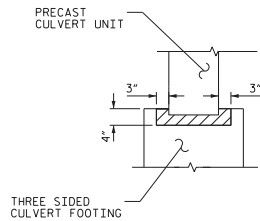


SECTION THRU HEADWALL

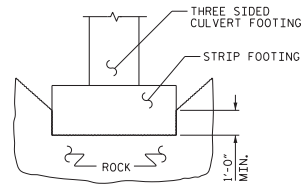


DETAIL A

APPROVED GALVANIZED CONCRETE INSERTS HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 2.5 KIPS. DIA. = 3/4"



KEYWAY DETAIL



KEYED FOOTING DETAIL

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

NOTES

ALL GUARDRAIL ATTACHMENTS SHALL BE MADE USING ADHESIVELY ANCHORED ANCHOR BOLTS. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1"Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE 1"Ø AND MEET THE REQUIREMENTS OF ASTM A307. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

GUARDRAIL PEDESTALS AND DOWELS MUST CLEAR ALL JOINTS OF PRECAST CONCRETE CULVERT UNITS.

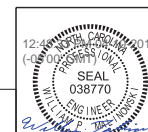
PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

COST OF GUARDRAIL PEDESTALS IS INCLUDED IN THE LUMP SUM FOR PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT.

PROJECT NO. 17BP.10.R.4  
UNION COUNTY  
STATION: 15+02.44 -L-

SHEET 3 OF 3 REPLACES BR. NO. 204

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
DETAILS  
PRECAST REINFORCED CONCRETE  
THREE-SIDED CULVERT  
SR 1158 (CORINTH CHURCH ROAD)  
OVER BEAVER DAM CREEK  
120° SKEW



DRAWN BY : JY DATE : 06/22/12  
CHECKED BY : WPM DATE : 06/29/12

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Fax: (919) 381-9901

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

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*CNC\*\*\*\*\*  
\*\*\*\*\*MATIC\*\*\*\*\*