STATE OF NORTH CAROLINA
# DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

August 19, 2014

US Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Dr., Suite 105
Wake Forest, NC 27587

Attention: Eric Alsmeyer
NCDOT Coordinator, Division 5

Subject: **Application forthe Modification to the Section 404 Individual Permit and Section 401 Water Quality Certification** for US 501 from NC 49 in Roxboro to SR 1602 (Jesse Banks Road) in Person County, Division 5. Federal Aid Project No. STP-501(11), WBS Element No. 34406.2.3, TIP No. R-2241A.

Reference: Section 404 Individual Permit, issued June 6, 2012 USACE Action ID 2009-00439; Modification Issued August 27, 2012; Modification Issued December 17, 2013
Section 401 Individual Water Quality Certification, April 5, 2012, NCDENR-DWQ Water Quality Certification Project No. 20120073; Modification issued August 13, 2012; Modification issued December 10, 2013

Dear Sir:

The North Carolina Department of Transportation (NCDOT) is constructing multiple lanes of US 501 from NC 49 in Roxboro to SR 1602 (Jesse Banks Road) in Person County.

This permit modification request is for a revision to Site 7A. Attached is a revised permit drawings 17, 18, 47 and 48 of 48, and rock vane detail.

**Site 7A**

Following construction of the culvert at permit Site 7A, there are some stream stability issues on the inlet side of this structure. The streambed to the inlet side of the culvert has head cut significantly from its original elevation. It is obvious that the stream will not

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WEBSITE:NCDOT.GOV

**LOCATION:**
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

stabilize naturally. Therefore, NCDOT proposes using a rock vane and backfilling of the existing stream channel to eliminate continued migration of the head cut upstream and to stabilize the portion of head cut that has taken place. Upstream of the box culvert is a main stream channel and tributary. It is proposed to set the rock vane at the confluence of these two channels. Presently the head cut continues upstream in the main channel approximately to the R/W line. It is proposed to backfill the portion upstream of the rock vane with Class I rip rap to reestablish and stabilize the bottom of channel. It is anticipated the voids in the rip rap will fill in with sediment/bed material over time. The tributary has yet to head cut and the rock vane should establish a boundary that prohibits any potential in the future.

Attached is a revised permit drawing, revised summary sheets, and rock vane detail. Changes to stream impacts are: **39ft of Temporary Stream Impact will now be Due to Addition of Rock Vane and backfill/stabilization with Class I rip rap in Main Channel.**

**Mitigation**

No mitigation is proposed for these impacts. The increase in impacts are associated with the rock vane proposed which will function as stream restoration and there will be no stream fill or stream loss.

**Regulatory Approvals**

Application is hereby made for a modification to the Department of the Army Section 404 Individual Permit as required for the above-described activities.

We are also hereby requesting a Modification to the Individual Section 401 Water Quality Certification from the Division of Water Quality.

A copy of this permit application will be posted on the NCDOT Website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Permit Applications*. A copy of the CE is also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Heather Montague at hwmontague@ncdot.gov or 252-492-0111 or Rachelle Beauregard at either rbeauregard@ncdot.gov or (919) 707-6105.

Sincerely,

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

METRIC

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2241A | 10 |
| R /W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

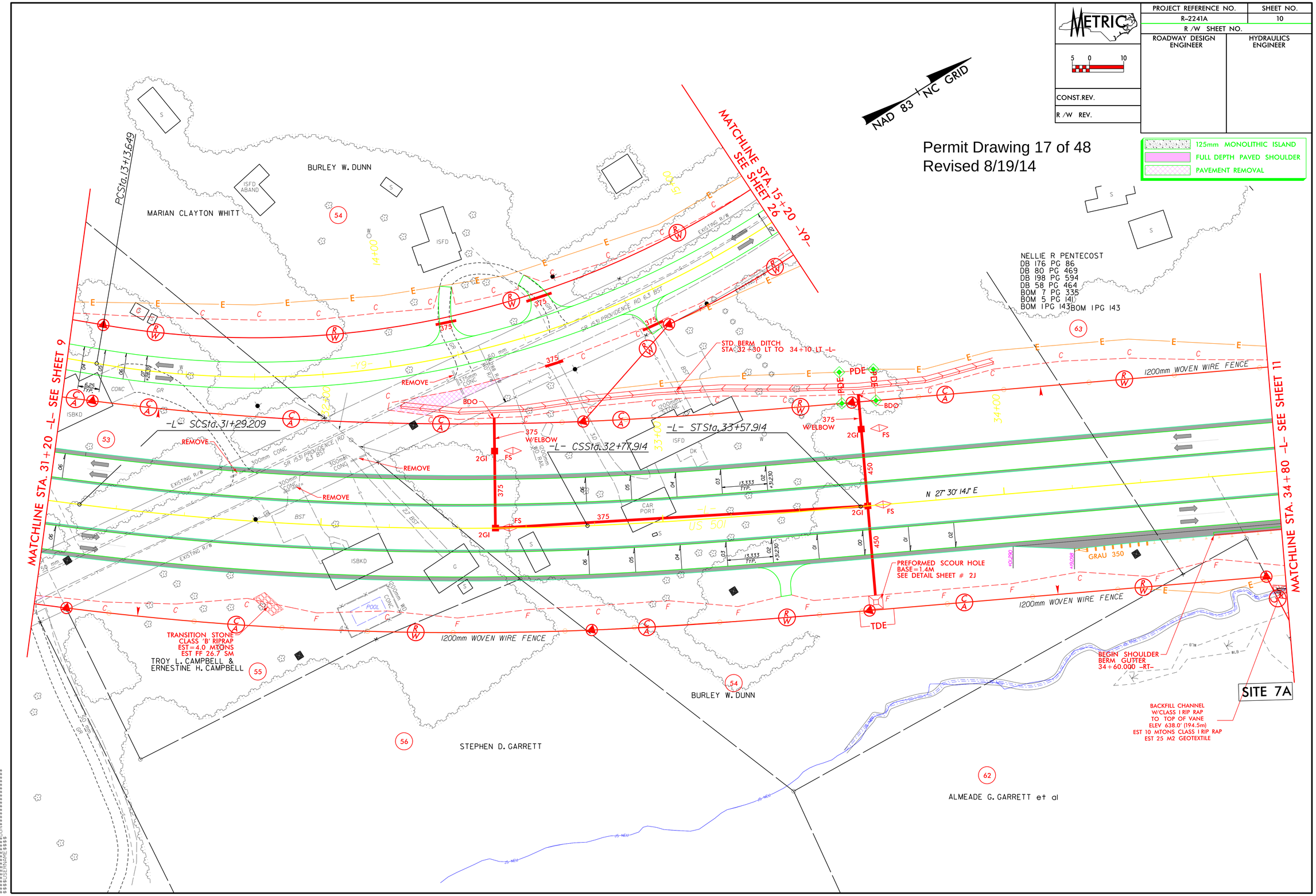
5 0 10

CONST.REV.

R /W REV.

Permit Drawing 17 of 48
Revised 8/19/14

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



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REVISIONS

08-04-14 – ADDED ROCK VANE AT +/- STA.34+85 RT.

METRIC

5 0 10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2241A | 11 |
| R /W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

CONST.REV.

R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Permit Drawing 18 of 48
Revised 8/19/14

NAD 83 / NC GRID

DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE STA. 34+80 –L– SEE SHEET 10

MATCHLINE STA. 38+40 –L– SEE SHEET 12

NELLIE R. PENTECOST
DB 176 PG 86
DB 80 PG 469
DB 198 PG 594
DB 58 PG 464
BOM 7 PG 335
BOM 5 PG 141
BOM 1 PG 143

HOWARD T. SMITH
DB 143 PG 619
DB 176 PG 92
BOM 1PG 143

MARY P. SMITH
DB 232 PG 389
BOM 8 PG 72-3

SYBIL P. WOOTEN
DB 232 PG 387
BOM 8 PG 72-3

ALMEADE G. GARRETT et al
DB 311 PG 448
BOM 21PG 143

CHARLES E. PERKINS
DB 204 PG 850
BOM 5 PG 607

LAT 0.6M BASE DITCH
W/1.5M BERM
LINED W/
CLASS 'B' RIPRAP
EST 133.5 MTONS
EST FF 454.6 SM
STA 35+20 LR TO
STA 36+17 LT –L–
EST DDE=561.41 CM
SEE DETAIL #7

BEGIN SHOULDER
BERM GUTTER
+40.00 LT

1200mm WOVEN WIRE FENCE

F1 @ 2.7m X 1.8m RCBC
W/SILLS

2GI W/FLAT
GRATE

CAT-1

SITE 7B

N 27° 30' 14" E

BDO

375 W/
ELBOW

PDE

CLASS 'II' RIPRAP
EST 45.0 MTONS
EST FF 70 SM
SEE DETAIL #20

BEGIN FENCE +30.800

PREFORMED SCOUR HOLE
BASE=1.4M
SEE DETAIL SHEET # 2J

END SHOULDER BERM GUTTER
+60.00 LT

END SHOULDER
BERM GUTTER
+81.01 RT

STD BERM DITCH
STA 36+20 RT TO
STA 36+80 RT –L–

TOE PROTECTTION
STA 35+00 RT TO
STA 35+80 RT –L–
SEE DETAIL #8

BEGIN FENCE +01.240

CLASS 'II' RIPRAP
EST 45 MTONS
EST FF 95 SM
SEE DETAIL #20

END FENCE +91.760

ROCK A VANE
SEE DETAIL
EST 18 MTN BOULDERS
EST 5 MTN #57 STONE
EST 5 MTN CLASS A RIP RAP
EST 16.7 M2 GEOTEXTILE

BACKFILL CHANNEL
W/CLASS I RIP RAP
TO TOP OF VANE
ELEV 638.0' (194.5m)
EST 10 MTONS CLASS I RIP RAP
EST 25 M2 GEOTEXTILE

CLASS 'II' RIPRAP
ON BANKS ONLY
3.0 MTONS
FF=26 SM
SEE DETAIL #20

LAT '0.6M' BASE DITCH
W/1.5M BERM
LINED W/CLASS 'B' RIPRAP
EST 27.5 MTONS
EST FF 93.72
STA 37+40 LT TO STA 37+60 LT –L–
EST DDE=33.25 CM
SEE DETAIL #7

CLASS 'B' RIPRAP
EST 2.7 MTONS
EST FF 8.4 SM

GRAU 350

TRANSITION STONE
CLASS 'B' RIPRAP
EST 3.0 MTONS
EST FF 28.8 SM

1.2M HEAD
BASE DITCH
DDE=5CM
SEE DETAIL #9

TOE PROTECTION
STA 37+34 RT TO
STA 37+51 RT –L–
SEE DETAIL #8

SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE
STA 37+56 (SAG) TO
STA 37+80 MED –L–

SITE 8

–L– PCSta. 37+95.343

US 501

APPROXIMATE CL OF PIEDMONT EMC

APPROXIMATE CL OF CP&L

ALMEADE G. GARRETT et al
DB 311 PG 448
BOM 21PG 143

MARY P. SMITH
DB 232 PG 389
BOM 8 PG 72-3

SYSTIME$$$$$
SYSTIME$$$$$
DGNFILE$$$$$
FORMNAME$$$$$

## WETLAND PERMIT IMPACT SUMMARY

| | | | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site No. | Station (From/To) | Structure Size / Type | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1 | 13+28/13+62 -L- | 3@3mx3m RCBC | | | | | | 0.03 | <0.01 | 138 | 26 | |
| | Stream Bank Stabilization | | | | | | | 0.03 | | 125 | | |
| 2 | 15+12/15+59 -L- LT | 750mm CSP | 0.11 | | 0.01 | 0.06 | | | | | | |
| 3 * | 19+21/19+23 -L- RT | Fill | | | | | | <0.01 | | 23 | | |
| 4 | 20+84/20+89 -L- | 2@2.4mx2.4m RCBC | | | | | | 0.02 | 0.01 | 112 | 39 | |
| | Stream Bank Stabilization | | | | | | | 0.02 | | 59 | | |
| 5 | 20+89/21+45 -L- | Fill | 0.22 | | | 0.06 | | | | | | |
| 6 * | 24+98/25+10 -L- RT | 900mm RCP | | | | | | <0.01 | <0.01 | 23 | 20 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 23 | | |
| 7A | 34+93/36+38 -L- | 2.7mx1.8m RCBC | 0.13 | | | <0.01 | | 0.03 | 0.01 | 518 | 69 | |
| | Stream Bank Stabilization | | | | | | | 0.02 | | 121 | | |
| 7B * | 35+38/35+51 -L- LT | Fill | | | | | | <0.01 | | 59 | | |
| 8 | 37+33/37+55 -L- | 1050mm RCP | 0.02 | | <0.01 | 0.03 | | 0.01 | <0.01 | 194 | 36 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 13 | | |
| 9 | 40+05/40+70 -L- | 1500mm RCP | | | | | | 0.04 | <0.01 | 279 | 33 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 16 | | |
| 10 * | 11+55/11+82 -Y13- LT | 900mm CSP | | | | | | 0.01 | <0.01 | 92 | 43 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 20 | | |
| 11 | 50+41/51+25 -L- | 1200mm RCP | <0.01 | | | | | 0.02 | 0.01 | 282 | 85 | |
| | Stream Bank Stabilization | | | | | | | 0.01 | | 52 | | |
| 12 | 51+47/51+91 -L- | 750mm RCP | 0.12 | | | | | | | | | |
| 13 | 53+13/53+79 -L- | 900mm RCP | 0.17 | | <0.01 | 0.07 | | 0.01 | <0.01 | 246 | 72 | |
| | | | | | | | | | | | | |
| SUB TOTALS: | | | 0.77 | | 0.01 | 0.21 | | 0.26 | 0.03 | 2395 | 423 | |

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)



Revised
8/13/2014

ATN Revised 3/31/05

## WETLAND PERMIT IMPACT SUMMARY

| | | | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site No. | Station (From/To) | Structure Size / Type | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 14 | 57+12/57+55 -L- | 1200mm RCP | 0.09 | | <0.01 | | | 0.02 | <0.01 | 262 | 23 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 13 | | |
| 15 | 63+41/66+32 -L- | 1350mm RCP | 0.36 | | | 0.03 | | 0.03 | <0.01 | 653 | 75 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 13 | | |
| 16 | 64+72/64+99 -L- LT | Pond Removal | | | | | | 0.10 | | | | |
| 17 | 67+35/69+11 -L- | 1350 RCP | 0.47 | | 0.15 | 0.18 | | 0.01 | <0.01 | 148 | 62 | |
| | Stream Bank Stabilization | | | | | | | 0.01 | | 36 | | |
| 18 * | 76+03/76+90 -L- | 750mm/900mm RCP | | | | | | 0.02 | 0.01 | 364 | 203 | |
| | Stream Bank Stabilization | | | | | | | <0.01 | | 10 | | |
| 19 | 77+72/79+54 -L- | Fill | 0.01 | | | 0.10 | | | | | | |
| SUB TOTALS: | | | 0.92 | | 0.15 | 0.31 | | 0.20 | 0.01 | 1499 | 364 | |
| TOTALS: | | | 1.69 | | 0.16 | 0.53 | | 0.45 | 0.04 | 3894 | 787 | |

* Note: Stream Impacts are Non-Mitigatable.

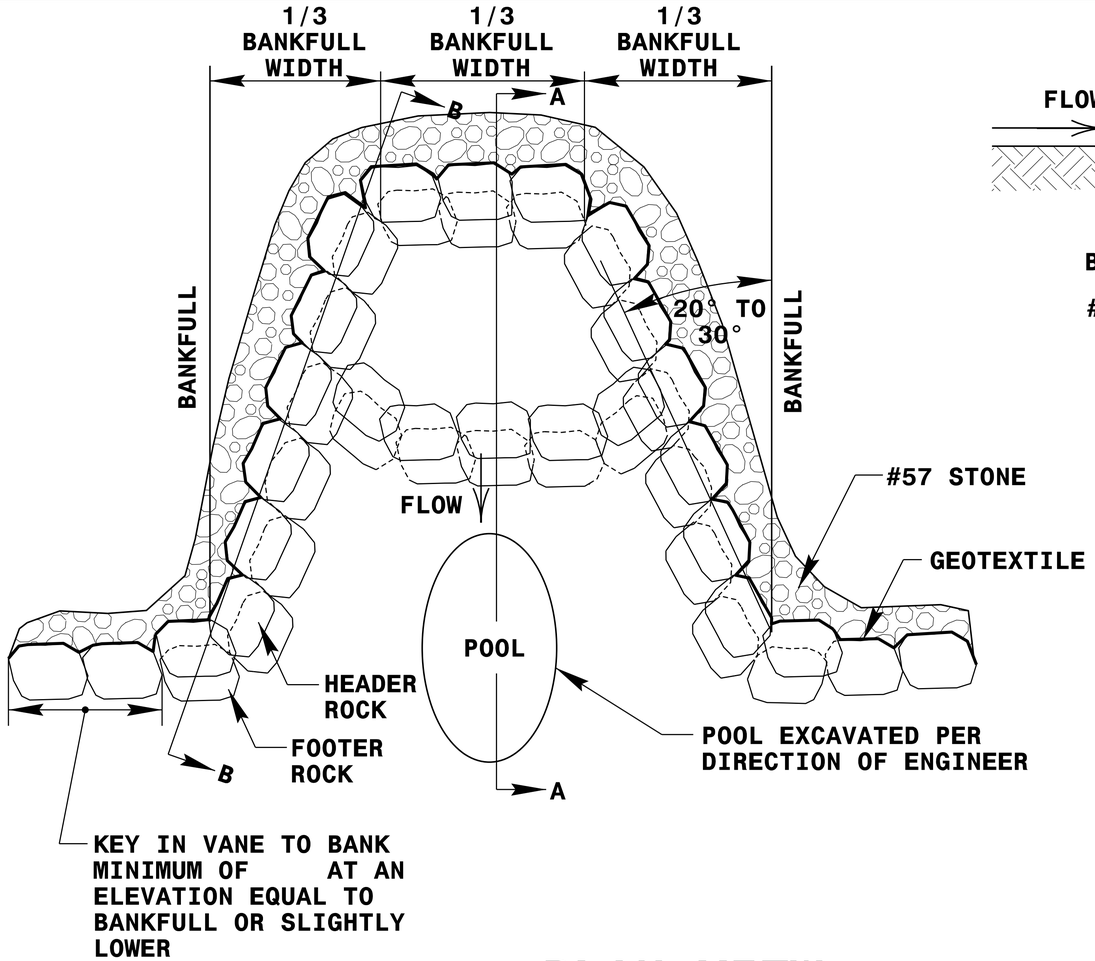
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

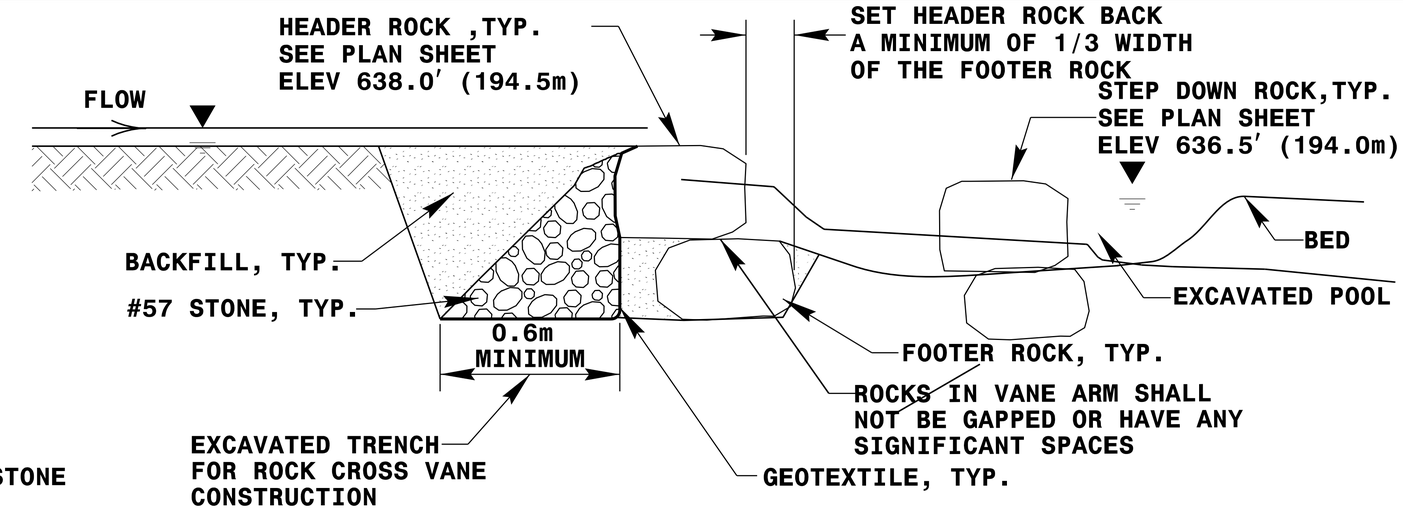


Revised
8/13/2014

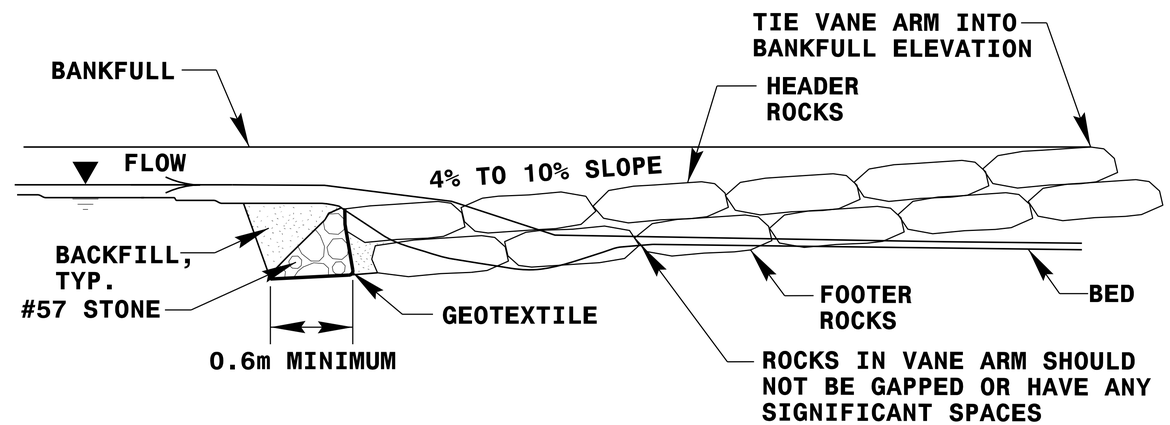
ATN Revised 3/31/05




## PLAN VIEW




## SECTION A-A




## SECTION B-B

| | BOULDER DIMENSIONS | | |
|---|---|---|---|
| SITE | HEIGHT | LENGTH | WIDTH |
| 34+85 RT | 4′ (1.2m) | 3′ (0.9m) | 2′ (0.6m) |
| | | | |
| | | | |
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| | | | |
| | | | |

# ROCK A VANE DETAIL

NOT TO SCALE

NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BANKFULL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.