



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

October 2, 2013

CONTRACT: DB00148  
TIP NUMBER: B-5547  
FA NUMBER: BRZ-1130(13)  
WBS ELEMENT: 50058.3.FD1  
COUNTY: Jones  
ROUTE: SR 1130 (Pleasant Hill Rd.)  
DESCRIPTION: Bridge-to-Pipe Replacement of Bridge #38  
**ADDENDUM NUMBER 1**

TO: Prospective Bidders

Please note the following addition to the contract documents for the above-referenced project.

- The Culvert Survey Report is included as an additional contract document. This report is included for informational purposes only for the fabrication/assembly of the aluminum box culvert, of which particular notice shall be made to the Sill Detail. This required sill shall be incorporated into the final structure.

If you should have any questions concerning this addendum, please call me at (252) 439-2807.

Sincerely,

A handwritten signature in cursive script that reads "Bullard".

Aaron Bullard, PE  
Division Contract Officer

Attachment

cc: Mr. Ed Eatmon, PE  
Mr. Johnny Metcalfe, PE  
Ms. Maria Rogerson, PE

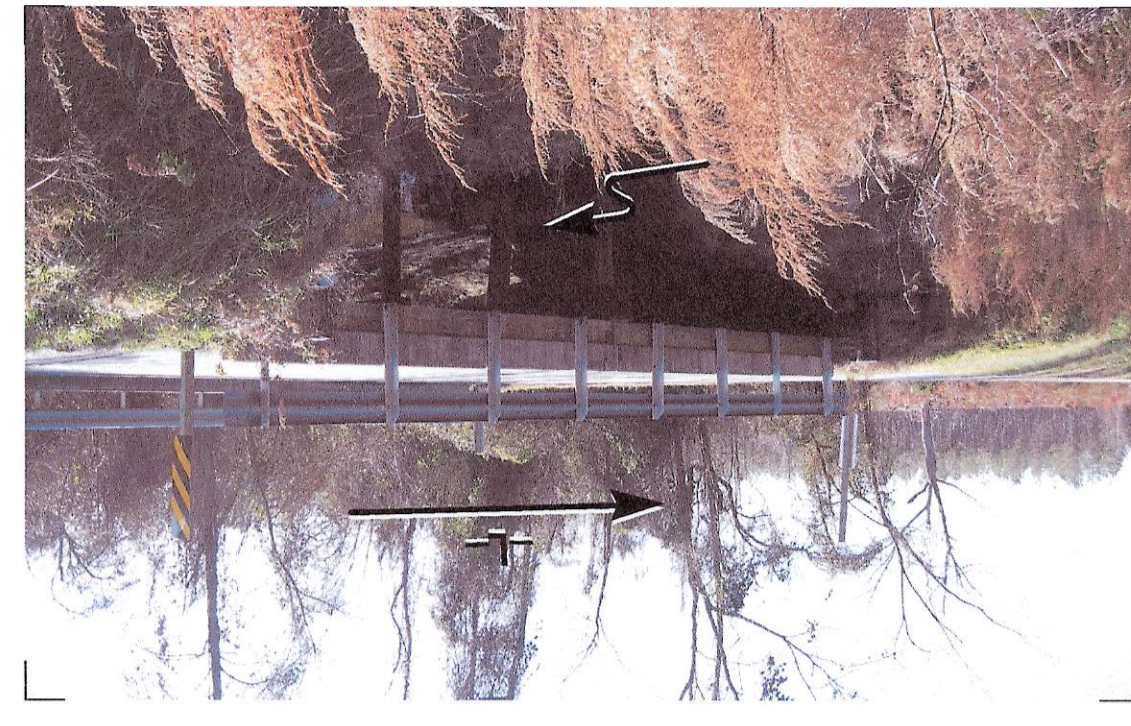
MAILING ADDRESS:  
DIVISION TWO - OPERATIONS  
P.O. Box 1587  
GREENVILLE, NC 27835

TELEPHONE: (252) 439-2800  
FAX: (252) 830-3341  
WEBSITE: WWW.NCDOT.GOV

LOCATION:  
1704 N GREENE ST  
GREENVILLE, NC



Project Engineer: JAMES A. BYRD, PE  
 Assisted by: RICARDO CINTRON, EI, BEN HENEGAR, EI  
 Designed by: **HNTB**  
 12-11-12 Date



**CULVERT SURVEY & HYDRAULIC DESIGN REPORT**  
 N.C. DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 HYDRAULICS UNIT  
 RALEIGH, N.C.

ID. No. B-5547 Project No. 500581.1  
 County: JONES Stream: LITTLE CHINGUAPIN BRANCH  
 On Highway: (PLEASANT HILL RD.) and (COOMBS FORK RD.)  
 Recommended Structure: 1 @ 33'-8" X 8'-3" ALUMINUM BOX CULVERT (ABC)  
 Recommended Width of Roadway: 20' (EP - EP) Skew: 90°  
 Recommended Location is (A) Down Stream from Existing Crossing.  
 Bench Mark is BENCHMARK "BM1" NAIL IN BASE OF POWER POLE #49, 43.6' LT. - STA. 15+91.2  
 Datum: NAVD 88 Elev. 44.62'  
 Temporary Crossing: NOT REQUIRED, OFF SITE DETOUR PROVIDED

**SITE DATA**  
 Drainage Area: 4.8 sq. Mi.  
 Source: USGS QUAD - PHILIPS CROSSROADS  
 River Basin: NEUSE  
 Character: RURAL COASTAL PLAIN  
 Stream Classification (such as Trout, High Quality Water, etc.): C, S, NSW  
 Data on Existing Structure: BRIDGE NO. 38 OVER LITTLE CHINGUAPIN BRANCH 1 @ 17'-6" X 17'-6" RC DECK  
 ON TIMBER JOIST, HT. GROWN TO BED = 9.0', L = 35.0', BUILT 1952, EXISTING WATERWAY AREA = 174 SF  
 Debris Potential: Low, X, Moderate, High  
 Data on Structures Up and Down Stream: UPTREAM (NO NC DOT STR #): 0.74 MI SR 1157, 1 @ 142' X 91' CSFA  
 HT. GROWN TO BED = 13'±  
 DOWNSTREAM (NC DOT STR #): 0.87 MI SR 1131, 2 @ 142' X 91' CSFA, HT. GROWN TO BED = 8'±  
 Gage Station No.: N/A  
 Period of Records: N/A  
 Max. Discharge: N/A  
 Date: 999 Elev. 46.0'± Est. Freq. 500 Source DENISE ADAMS  
 Period of 40 YRS  
 Allowable HW Elev.: 44.85'  
 Normal Water Surface Elev.: 38.5'±  
 Existing 100-YR WSEL @ RS 13176.5 (CORRECTED EFFECTIVE) FEMA FIS / Channel 0.05 Right 0.8, 0.15  
 Manning's n: Left 0.8, 0.15 Channel 0.05 Right 0.8, 0.15 Obtained from FIELD OBSERVATION  
 FEMA LIMITED DETAIL STUDY  
 Non Engineering: YES  
 With Non: 1035 c.f.s., W.S. Elev.: Encroachment 45.02', Error/Non 44.48', Area  
 Flood Study 100 Yr. Discharge: 1035 c.f.s.  
 @ RS 13176.5 (EFFECTIVE MODEL)  
 DESIGN DATA  
 USGS SIR 2009-5158 / FEMA FIS  
 Hydraulic Design Method: HEC-RAS v. 4.10  
 Design Tailwater: 0'10  
 4.1' ± 0.25 4.9' ± 0.50 4.2' ± 0.100  
 @ RS 13104.2  
 Inlet Control  
 Outlet Control  
 H.W./D. H.M., dc, h<sub>o</sub>, H L<sub>50</sub>, H.W.  
 Remarks  
 1 @ 33'-8" X 8'-3" ABC 650 cfs 0.5  
 1 @ 33'-8" X 8'-3" ABC 1035 cfs 0.5  
 1 @ 33'-8" X 8'-3" ABC 1035 cfs 0.5  
 H.S-5 CHART 16 - SCALE 1/L = 36.30', I/O = 45.0', A = 152.5 sf, P = 69.6'  
 NOTE: AGR MODELED WIDTH = 24.4' TO ACCOUNT FOR HEC-RAS CULVERT ROUTINE  
 NOTE: AGR REVISION REQUIRED  
 NOTE: MEETS MIN. 2% CREST, MAX DECREASE OF 0.1% AT RS 13968.7  
 Natural Channel Velocity (V<sub>10</sub>) 4.5 fps  
 Required Outlet Protection: CLASS 1 RIP-RAP ON BANKS AS SHOWN  
 INFORMATION TO BE SHOWN ON PLANS  
 Design: Discharge 650 c.f.s. Frequency 25-YR Elev. 43.6'  
 Discharge 1035 c.f.s. Frequency 100-YR Elev. 44.74'  
 Discharge 900 c.f.s. Frequency 100-YR (-) Elev. 44.33'  
 @ RS 13176.5  
 @ RS 13176.5  
 @ RS 13176.5  
 Overtopping: Discharge 900 c.f.s. Frequency 100-YR (-) Elev. 44.33'  
 @ SAG - STA. 21+25 ±

**PERFORMANCE TABLE @ RS 13176.5**  
 W.S. EL. (FT.)  
 DISCHARGE (CFS)  
 FREQUENCY (YR.)  
 PROPOSED  
 EXISTING  
 NATURAL  
 42.7  
 43.0  
 43.77  
 44.3  
 45.0  
 45.1  
 42.6  
 43.6  
 44.74  
 45.1  
 10  
 25  
 100 (FEMA)  
 500  
 1400  
 14000  
 OF PROPOSED CULVERT HEADWALL.  
 -RS 13176.5 IS LOCATED APPROXIMATELY 13' UPSTREAM

**ADDITIONAL INFORMATION AND COMPUTATIONS**  
 DENSE ADAMS HAS LIVED IN THE AREA FOR 40 YEARS AND STATED THAT WATER WAS 2" OVER THE BRIDGE DECK DURING HURRICANE FLOYD (SEPTEMBER 1999).  
 HAROLD LANNER (NC DOT BRIDGE MAINTENANCE SUPERVISOR) STATED THAT WATER WAS OVER THE TOP OF THE ROAD DURING HURRICANE FLOYD, BUT COULD NOT RECALL THE EXACT AMOUNT.  
 DISCHARGE CALCS. BY NC DOT GUIDELINES FOR DRAINAGE STUDIES AND HYDRAULIC DESIGN AND SIR 2009-5158.  
 RURAL Q: Q<sub>10</sub> = 174 (4.80) 0.617 = 458 cfs SAY 460 cfs  
 Q<sub>25</sub> = 245 (4.80) 0.609 = 634 cfs SAY 650 cfs  
 Q<sub>100</sub> = 380 (4.80) 0.594 = 965 cfs SAY 950 cfs  
 Q<sub>500</sub> = 550 (4.80) 0.583 = 1373 cfs SAY 1400 cfs  
 Q<sub>1000</sub> (FEMA) = 1035 cfs  
 SINCE Q<sub>100</sub> (FEMA) > Q<sub>1000</sub> (USGS), Q<sub>1000</sub> (FEMA) VALUE WILL BE USED FOR FEMA COMPLIANCE.  
 DESIGN FOLLOWS SUBREGIONAL TIER GUIDELINES.  
 OVERTOPPING: GP @ SAG STA. 21+25 ±, ELEV. = 44.33'  
 \*HEC-RAS - TOB @ RS 13104.2 & RS 13176.5 (CEM)

