

GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: 33377.1.1 TIP NO.: B-4009 COUNTY: ANSON

DESCRIPTION(1): BRIDGE NO. 33 OVER BROWN CREEK ON US 74 WBL

◆ **INFORMATION ON EXISTING BRIDGES** Information obtained from Field Inspection
 Microfilm (Reel: Position:)
 Other

COUNTY BRIDGE NO. 33 BRIDGE LENGTH 643 NO. BENTS 16 NO. BENTS IN: CHANNEL 5 FLOODPLAIN 16

FOUNDATION TYPE: UNKNOWN

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: ABUTMENT 1: MODERATE SCOUR HAS CREATED A POOL BETWEEN ABUTMENT 1 & BENT 1.
 ABUTMENT 2 HAS MODERATE EROSION DUE TO HIGH WATER.

INTERIOR BENTS: BENTS 1, 2, & 3 ARE IN CHANNEL. BENTS 4 THRU 12 HAVE NO SCOUR. BENT 7 THRU 12 HAVE STANDING WATER

UNDER THE DECK CAUSED BY DECK DRAINS. THIS HAS CAUSED SOME EROSION.

CHANNEL BED: UNKNOWN

CHANNEL BANKS: NONE

◆ **EXISTING SCOUR PROTECTION:**

TYPE(3): NONE

EXTENT(4): N/A

EFFECTIVENESS(5): N/A

OBSTRUCTIONS(6) (DAMS, DEBRIS, ETC.): BRIDGE AREA CLEAR OF MAJOR DEBRIS PROBABLY DUE TO RAPID RISE & FALL OF WATER

LEVEL.

◆ **DESIGN INFORMATION**

CHANNEL BED MATERIAL(7) (Sample Results Attached): BRN-TAN SANDY CLAYEY SILT. SS-57 (A-4)

GRAY & WHITE & BRN SAND. SS-58 (A-1-B)

CHANNEL BANK MATERIAL(8) (Sample Results Attached): GRAY SILTY CLAY. SS-67 (A-6)

CHANNEL BANK COVER(9): TREES, ALL STRAIGHT

FLOOD PLAIN WIDTH(10): 1500ft. +/-

FLOOD PLAIN COVER(11): WOODS

STREAM IS: DEGRADING AGGRADING (12)

OTHER OBSERVATIONS AND COMMENTS: 3/28/05 & 3/29/05: WATER ELEV. 246.0 DUE TO HEAVY RAIN. ENTIRE BRIDGE AREA UNDER

WATER FROM END BENT 1 TO END BENT 2.

◆
 ◆ **DESIGN INFORMATION CONT.**

CHANNEL MIGRATION TENDENCY(13): NO MIGRATION ANTICIPATED DUE TO STABLE CHANNEL BANKS.

GEOTECHNICAL ADJUSTED SCOUR ELEVATIONS (14): NO SCOUR ANTICIPATED ON END BENTS ASSUMING ADEQUATE RIP-RAP
 IS USED. THE FOLLOWING ARE OUR GEOTECHNICAL ADJUSTED SCOUR ELEVATIONS FOR THE INTERIOR BENTS:

BENT ONE – 237.20' (100 YR.), 237.00' (500 YR.). *BENT TWO – 219.00' (100 YR.), 218.10' (500 YR.). BENT THREE – 224.90' (100 YR.),
 *223.10' (500 YR.). BENT FOUR – 242.00' (100 YR.), 241.90' (500 YR.). BENT FIVE – 242.00' (100 YR.), 241.90' (500 YR.). BENT SIX –
 242.20' (100 YR.), 242.00' (500 YR.). BENT SEVEN – 243.00' (100 YR.), 242.80' (500 YR.). BENT EIGHT – 243.20' (100 YR.), 243.00' (500
 YR.). BENT NINE – 242.90' (100 YR.), 243.10' (500 YR.). BENT TEN – 243.30' (100 YR.), 243.10' (500 YR.). BENT ELEVEN – 243.50' (100
 YR.), 243.20' (500 YR.). BENT TWELVE – 242.00' (100 YR.), 241.90' (500 YR.). BENT THIRTEEN – 243.00' (100 YR.), 242.80' (500 YR.).

THESE ELEVATIONS MATCH THE SCOUR ELEVATIONS PREDICTED BY THE HYDRAULICS UNIT.

* - THE 100 & 500 YR. SCOUR ELEVATIONS AT BENT TWO & THE 500 YR. SCOUR ELEVATION AT BENT THREE ARE LOCATED
 IN HARD TRIASSIC ROCK AND WEATHERED TRIASSIC ROCK, RESPECTIVELY. DUE TO THE POTENTIALLY HIGH SCOURABILITY
 OF THESE TRIASSIC MATERIALS, WE DO NOT RECOMMEND RAISING THE SCOUR ELEVATIONS AT THESE LOCATIONS ABOVE
 THOSE PREDICTED BY THE HYDRAULICS UNIT.

REPORTED BY: RWTODD DATE: 03/24/05

INSTRUCTIONS

- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE GIVING ROUTE NUMBER AND BODY OF WATER CROSSED.
- (2) NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING, SLOUGHING, SCOUR LOCATIONS DEGRADATIONS, ETC.)
- (3) NOTE ANY EXISTING SCOUR PROTECTION (RIPRAP, ETC.)
- (4) DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION.
- (5) DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING.
- (6) NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC.
- (7) DESCRIBE THE CHANNEL BED MATERIAL; A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- (8) DESCRIBE THE CHANNEL BANK MATERIAL; A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS.
- (9) DESCRIBE THE BANK COVERING (GRASS, TREES, RIPRAP, NONE, ETC.)
- (10) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
- (11) DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
- (12) CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING.
- (13) DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE Laterally DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
- (14) GIVE THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION EXPECTED OVER THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS). THIS CAN BE GIVEN AS AN ELEVATION RANGE ACROSS THE SITE, OR ON A BENT BY BENT BASIS WHERE VARIATIONS EXIST. DISCUSS RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION. IF THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) THE GEOTECHNICAL ADJUSTED SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVERY PERCENTAGE; PERCENT RQD; DIFFERENTIAL WEATHERING; SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES; OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.