

GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: 8.2721501 ID: B-3808 COUNTY: Avery

WBS Element : 33263.1.1

DESCRIPTION(1): Bridge No. 58 over Henson Creek on SR 1126

INFORMATION ON EXISTING BRIDGES Information obtained from:  field inspection  
 microfilm(Reel:        Pos:   )  
 other Bridge Survey and Hydraulic Design Report dated 10/15/03  
 COUNTY BRIDGE NO. 58 BRIDGE LENGTH 26' NO. BENTS IN: CHANNEL 2 FLOOD PLAIN 0

FOUNDATION TYPE: Timber deck supported by steel I-beams with timber bulkhead abutments and timber pile foundations; a concrete cap is present on the End Bent-1 side.

**EVIDENCE OF SCOUR(2):**

ABUTMENTS OR END BENT SLOPES: Soil behind the End Bent-2 right side wing wall has been eroded away creating an approximately 4' diameter depression behind the wing wall.

INTERIOR BENTS: NA  
Scour pockets are present near the center of the channel both upstream and downstream of the bridge. An approximately 1' high waterfall is present under the existing bridge. Large boulders, cobbles, gravel, and sand are present within the channel.

CHANNEL BED: The channel banks are being undermined by the stream, and tree roots have been exposed along the bank. Large boulders from the colluvium are falling into the channel.

CHANNEL BANKS: Large boulders, logs, and plant debris has accumulated under the bridge near End Bent-2.

**EXISTING SCOUR PROTECTION:**

TYPE(3): Timber wing walls.

EXTENT(4): Both end bents  
Timber wingwall on the left side of End Bent-2 is failing (possibly due to mass movement of soil and rock downslope).

EFFECTIVENESS(5): Large boulders, logs, and plant debris has accumulated under the bridge near End Bent-2.

OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): Large boulders, logs, and plant debris has accumulated under the bridge near End Bent-2.

**DESIGN INFORMATION**

CHANNEL BED MATERIAL(7) (SAMPLE RESULTS ATTACHED): Majority of the channel bed is armored with large boulders, cobbles, gravel, and bedrock. Two grab samples of material close to the bank were obtained, one downstream and one upstream of the existing bridge; this material consists of gravel and fine to coarse sand (A-1-a).

CHANNEL BANK MATERIAL(8) (SAMPLE RESULTS ATTACHED): Clayey, silty, coarse to fine SAND (A-2-4); and gravel and silty, coarse to fine sand (A-1-a and A-1-b)

FOUNDATION BEARING MATERIAL(9): Weathered rock and crystalline rock - gneiss

CHANNEL BANK COVER(10): Various grasses and brush, hardwood trees, large boulders, and soil.

FLOOD PLAIN WIDTH(11): No floodplain is discernable

FLOOD PLAIN COVER(12): NA

**DESIGN INFORMATION CONT.**

STREAM IS  DEGRADING  AGGRADING (13)

OTHER OBSERVATIONS AND COMMENTS: A lot of float rock and/or bedrock is exposed within the creek channel. A drain pipe enters the creek just downstream of End Bent-1. Approximately 100 feet downstream of the bridge, a tributary creek has cut into a dumping site and is washing garbage into Henson Creek.

CHANNEL MIGRATION TENDENCY (14): Strong potential for lateral migration towards End Bent-2. A gravel bar has developed under the bridge adjacent to End Bent-1. End Bent-2 is on the outside of a meander.

REPORTED BY: *Pal...* DATE: 1/12/2004  
 Trigon Engineering Consultants, Inc.

GEOTECHNICALLY ADJUSTED SCOUR ELEVATION (15):       

We agree with the Bridge Survey and Hydraulic Design Report, dated 10-15-03.

REPORTED BY: *Bredley D. Wiley* DATE: 2-19-04  
 NCDOT GEOTECHNICAL UNIT

**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 (RIP RAP, 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 FOUNDATION BEARING MATERIAL,
- (10) DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, NONE, ETC.)
- (11) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
- (12) DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
- (13) CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING
- (14) DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE Laterally DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
- (15) GIVE THE GEOTECHNICALLY 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 GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVERY PERCENTAGE; PERCENTAGE RQD; DIFFERENTIAL WEATHERING, SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES; OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.