

PROJECT: 33243.1.1 ID: B-3703 COUNTY: Wake

DESCRIPTION(1): Bridge No. 317 on -L- (SR 1404, Johnson Pond Road) over Middle Creek

**INFORMATION ON EXISTING BRIDGE**

- Information obtained from:  field inspection  
 microfilm (Reel: \_\_\_ Pos: \_\_\_)  
 other: \_\_\_\_\_

BR. NO.: 317 BR. LENGTH: 137.3' NO. BENTS: 9 NO. BENTS IN: CHANNEL: 4 FLOODPLAIN: 5

FOUNDATION TYPE: Timber piles.

**EVIDENCE OF SCOUR(2):**

ABUTMENTS OR END BENT SLOPES: None.

INTERIOR BENTS: Elongate scour holes, up to 3' deep, around all interior bents except B2.

CHANNEL BED: Elongate scour holes, up to 3' deep, around all interior bents in channel.

CHANNEL BANKS: Large, shallow, vegetated scour hole in floodplain, immediately east of B2.

Approximately 5' of lateral scour of north bank under bridge, and 8' of south bank under bridge.

**EXISTING SCOUR PROTECTION:**

TYPE(3): Timber head walls at both end bents.

EXTENT(4): Head walls at both bents extend out from bridge about 5'.

EFFECTIVENESS(5): No scour around or behind head walls. < 0.5' of scour at base of walls, under bridge.

OBSTRUCTIONS(6) (DAMS, DEBRIS, ETC.): Tree trunk and large limbs lodged around B5.

**DESIGN INFORMATION**

CHANNEL BED MATERIAL(7): Silty sand, sand, and gravel.

CHANNEL BANK MATERIAL(8): Fine sand with gravel (SS-10).

CHANNEL BANK COVER(9): Grass, brush, and trees.

FLOOD PLAIN WIDTH(10): Approximately 500'.

FLOOD PLAIN COVER(11): Grass, brush, and trees.

**DESIGN INFORMATION CONT.**

STREAM IS: X DEGRADING        AGGRADING (12)

OTHER OBSERVATIONS AND COMMENTS: \_\_\_\_\_

CHANNEL MIGRATION TENDENCY (13): Low tendency to migrate towards north (towards EB2).

**GEOTECHNICALLY ADJUSTED SCOUR ELEVATIONS(14):**

Bent 1: 258.7' The geotechnically adjusted scour elevation agrees with the theoretical elevation shown on the Bridge Survey and Hydraulic Design Report.

Bent 2: 256.2' Geotechnical analysis of scourability verses material strength yields a geotechnically adjusted scour elevation 1.7' higher than the theoretical elevation shown on the Bridge Survey and Hydraulic Design Report.

REPORTED BY: S. P. Brown DATE: 02/18/04  
 S. P. Brown

**INSTRUCTIONS**

- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE, INCLUDING 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 BASED ON OBSERVATION AND/OR SAMPLES.
- (8) DESCRIBE THE CHANNEL BANK MATERIAL BASED ON OBSERVATION AND/OR SAMPLES.
- (9) DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, 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 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 THE RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. IF THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) 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.