

GEOTECHNICAL UNIT FIELD SCOUR REPORT

Project: 8.1040601 **TIP No.:** B-3445 **County:** Currituck
Description: Replacement of Bridge No. 7 on NC Hwy 615 Over Corey's Ditch

INFORMATION ON EXISTING BRIDGES:

Information obtained from: Field Inspection
 Microfilm (Reel: _____ Position: _____)
 Other: Bridge Survey & Hydraulic Design Report

County Bridge No.: 7 **Bridge Length:** 96' **No. Bents:** 5
Number of Bents in: **Channel:** 3 **Flood Plain:** 2

FOUNDATION TYPE (1): Timber pile supported.

EVIDENCE OF SCOUR (2):

Abutments or End Bent Slopes: Excessive erosion has required sheet piling to be installed adjacent to timber abutments and along the northern shoreline.

Interior Bents: No evidence of major erosion observed. All interior bents are within the channel.

Channel Bed: No evidence of major erosion observed.

Channel Banks: The channel has eroded to the sheet piling.

EXISTING SCOUR PROTECTION

TYPE (3): Timber Abutments, metal bulk head (sheet piling) and Rip-rap

EXTENT (4): Sheet piles extend approx. 20' to 30' beyond timber abutments along southern shoreline. Sheet piling extends approx. 50' to 60' beyond abutments along the northern shoreline. Rip-rap extends approx. 100' to 130' from the east and west abutments, adjacent the sheet piling, along the northern shoreline.

EFFECTIVENESS (5): Relatively effective with no significant erosion adjacent to metal bulk head. However, void was observed beneath the pavement behind the metal bulk head near End Bent No. 1 (this void was patched by NCDOT Bridge Maintenance during the time of drilling)

OBSTRUCTIONS (6) (DAMS, DEBRIS, ETC.): Old timber piles cut off at water line both north and south of existing Interior Bent No. 3.

DESIGN INFORMATION

CHANNEL BANK MATERIAL (7) (SAMPLE RESULTS ATTACHED): Gray slightly fine sandy silty CLAY (A-6)(13), gray fine sandy clayey SILT (A-4)(3), gray clayey silty fine to coarse SAND (A-2-4)(0) and gray fine sandy clayey SILT (A-4)(6)

CHANNEL BOTTOM MATERIAL (8) (SAMPLE RESULTS ATTACHED): Gray fine sandy silty CLAY (A-6)(16)

FOUNDATION BEARING MATERIAL (9): Coastal Plain deposits consisting of medium dense sands and medium stiff to stiff clays.

CHANNEL BANK COVER (10): Marsh grass

FLOOD PLAIN WIDTH (11): Ditch width 140'±, Coastal plain barrier island.

FLOOD PLAIN COVER (12): Marsh grass and small brush

Stream is: DEGRADING AGGRADING (13)

OTHER OBSERVATIONS AND COMMENTS:

CHANNEL MIGRATION TENDENCY (14): Recent alluvial deposits are much deeper along the Eastern shore line. Migration tendency to the west.

CRITICAL SCOUR ELEVATION (15):
 Scour elevations to be determined by NCDOT.

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 FOUNDATION BEARING MATERIAL.
- (10) DESCRIBE THE BANK COVERING (GRASS, TREES, RIPRAP, 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 CRITICAL 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 CRITICAL SCOUR ELEVATION. IF THE CRITICAL SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) THE CRITICAL SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVER PERCENTAGE; PERCENT RQD; DIFFERENTIAL WEATHERING; SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES; OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.