GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: *33337.1.1* TIP NO.: *B-3901* COUNTY: *Rockingham*

DESCRIPTION(1): *Bridge #181 on SR 1501 over Matrimony Creek*

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

COUNTY BRIDGE NO. *181* BRIDGE LENGTH *75.8* NO. BENTS *3* NO. BENTS IN: CHANNEL *1* FLOODPLAIN *3*

FOUNDATION TYPE: *Spread footings with timber deck on steel girders*

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: *Erosion around wingwalls due to flow and runoff over land*

INTERIOR BENTS: *Scour around entire concrete spread footing*

CHANNEL BED: *None*

CHANNEL BANKS: *None*

♦ ***EXISTING SCOUR PROTECTION:***

TYPE(3): *None*

EXTENT(4):

EFFECTIVENESS(5):

OBSTRUCTIONS(6) (DAMS, DEBRIS, ETC.): *High debris potential - Trees and limbs in channel and on existing sandbars*

♦ ***DESIGN INFORMATION***

CHANNEL BED MATERIAL(7) (Sample Results Attached): *Sand, Gravel, Boulders*

CHANNEL BANK MATERIAL(8) (Sample Results Attached): *Sand (S-1)*

CHANNEL BANK COVER(10): *Mature Trees, Grass, Shrubs*

FLOOD PLAIN WIDTH(11): *Approximately 250 feet*

FLOOD PLAIN COVER(12): *Mature trees, Grass, Shrubs*

STREAM IS: ☐ DEGRADING ☒ AGGRADING (13)

OTHER OBSERVATIONS AND COMMENTS:

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♦ ***DESIGN INFORMATION CONT.***

CHANNEL MIGRATION TENDENCY(14): *Slight*

GEOTECHNICAL ADJUSTED SCOUR ELEVATIONS (15):

Based on boring data collected at this site the Geotechnical Unit expects potential scour to be deeper at Bent 1and shallower at Bent 2 than what was predicted on the NCDOT Hydraulics Report.For Bent 1, if the theoretical 500 year scour of 6 feet is subtracted from the top of alluvium, then an elevation of 604.4 feet is derived. This elevation looks reasonable when plotted against boring data for this bent. Additionally, the top of weathered rock for Bent 1 is elevation 603.7 feet.For Bent 2 we recommend the top of weathered rock be used to define the scour line. Top of weathered rock at Bent 2 occurrs at elevation 607.5 feet

Bent 1 scour elevation: 604.4'

Bent 2 scour elevation: 607.5'

REPORTED BY: *JEB / JKS* DATE: *8-4-03*

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 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.