



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PATRICK L. MCCRORY
GOVERNOR

ANTHONY J. TATA.
SECRETARY

December 18, 2014

MEMORANDUM TO: Rob Hanson, P.E.
Project Development Section Head
PDEA Project Development – Eastern Region

ATTENTION: Kim Gillespie, P.E.
Project Development Engineer

FROM: John Pilipchuk, L.G., P.E. DocuSigned by:
John Pilipchuk
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State Geotechnical Engineer

STATE PROJECT: 55007.1.1 (B-5507)
F.A. PROJECT: N/A
COUNTY: Chowan
DESCRIPTION: Bridge No. 20 over Dillard Creek, No. 21 over Sand Run,
and No. 24 over Warwick Swamp on NC 32

SUBJECT: Geotechnical Report for Planning

The Geotechnical Engineering Unit has completed the Geotechnical Impact Report, and presents the following information.

Techniques/Methodologies

A limited subsurface investigation was completed for this project. Hand auger holes and surficial probes of alluvial deposits were done in the adjacent floodplain. Subsurface conditions have been evaluated in order to determine the most geotechnically favorable design.

Findings

Bridge No. 20 over Dillard Creek:

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-707-6850
FAX: 919-250-4237
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LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

The proposed project lies within the Coastal Plain Physiographic Province. Topography along the project area is flat and is drained by Dillard Creek. Subsurface drainage is typically poor. The surficial soils within the study are alluvial in nature and are composed of 1± foot of organic soils underlain by sand and clay. The organic and cohesive alluvial soils exhibit poor engineering properties.

Ground water levels were measured at 0.2± feet below the ground surface.

Bridge No. 21 over Sand Run Creek:

The proposed project lies within the Coastal Plain Physiographic Province. Topography along the project area is flat and is drained by Sand Run Creek. Subsurface drainage is typically poor. The surficial soils within the study are alluvial in nature and are composed of sandy silt, sand and clay. The cohesive alluvial soils exhibit poor engineering properties.

Ground water levels were measured at 3± feet below the ground surface.

Bridge No. 24 over Warwick Swamp:

The proposed project lies within the Coastal Plain Physiographic Province. Topography along the project area is flat and is drained by Warwick Swamp. Subsurface drainage is typically poor. The surficial soils within the study are alluvial in nature and are composed of sand and clay. The cohesive alluvial soils exhibit poor engineering properties.

Ground water levels were measured at 0.3± feet below the ground surface.

Recommendations

The most probable foundations types for the end bents would be driven piles and the interior bents would likely use driven piles also, depending on the depth of scour and depth to dense materials.

Based on previous experience with the adjoining projects in this area, 3:1 (H:V) or flatter side slopes are needed to establish vegetation and assist in erosion control.

There is no geotechnical preference for a detour.

For Geotechnical Engineering questions please contact Dean Argenbright at (252) 355-9054 or Jamey Batts, P.E. at (919) 662-3576.