Replacement Bridge No. 38

The borings encountered Roadway Embankment fill at the ground surface and extended to depths of 6.0 to 11.5 feet (elevations ±2418 to ±2413). The Roadway Embankment fill consisted of moist very loose to medium dense slightly micaceous silty fine to coarse sand (A-1-b, A-2-4). The Roadway Embankment fill did not indicate evidence of debris or trash. Alluvial soil was encountered from elevations ± 2408 feet to ± 2407 feet and consisted of very loose silty fine to coarse sand with cobbles (A-1-b, A-3). Residual soil was encountered at elevation ±2413 feet and consisted of very dense slightly micaceous silty fine to coarse sand (A-2-4). Weathered rock was encountered from elevations ± 2418 feet to ±2406 feet and consisted of a tan brown Muscovite Biotite Gneiss. Crystalline rock was encountered below elevations ±2418 feet to ± 2406 feet and consisted of a gray, white, and black Muscovite Biotite Gneiss.

Detour Bridge

The borings encountered Artificial fill at the ground surface and extended to depths of 5.0 to 13.0 feet (elevations ±2413 to ±2406). The Artificial fill consisted of moist to wet soft fine sandy silt (A-4) and silty fine sand (A-2-4). The Artificial fill did not indicate evidence of debris or trash. Alluvial soil was encountered from elevations ± 2416 feet to ± 2412 feet and consisted of very loose to dense silty fine to coarse sand with and cobbles. Residual soil was encountered at elevations ±2408 feet to ±2407 feet and consisted of dense to very dense slightly micaceous to micaceous silty fine to coarse sand (A-2-4). Weathered rock was encountered from elevations ± 2407 feet to ±2398 feet and consisted of a gray brown Muscovite Biotite Gneiss. Auger refusal and standard penetration test refusal was encountered at elevations ±2397 feet to ±2386 feet.

3.5 GROUNDWATER

Groundwater was present at the replacement bridge in all boring locations at elevations of ± 2412 feet to ± 2407 feet. Groundwater was present at the detour bridge in all boring locations at elevations of ± 2411 feet to ± 2406 feet. Fluctuation of groundwater levels can occur with seasonal and climatic variations.

4.0 NOTES TO THE DESIGNER

Replacement Bridge No. 38

Shallow groundwater and alluvial sandy soils are present at Bent 1. Cobbles were encountered within alluvium in borings B1-A and B1-B. Large boulder fill was observed on the east side of the roadway embankment south of the bridge.

Detour Bridge

Shallow groundwater and alluvial sandy soils are present at each End Bent.

5.0 CLOSURE

The geotechnical investigation is based on the Preliminary General Drawings, dated June 24, 2004, and the Bridge Survey & Hydraulic Design Reports, dated October 10, 2004, and the data obtained from our field and laboratory testing program. If the proposed location and geometry, or finished grades are changed or are different from those outlined above, it may be necessary to obtain additional data about foundation materials for the structure.

Cross-sections and profiles are generalized interpretations of soil conditions between borings and should not be considered accurate other than at the boring locations. Subsurface conditions between boring locations or elsewhere on the site may vary, and subsurface anomalies may exist which were not detected.

Engineering Consulting Services, Ltd. appreciates this opportunity to be of service to the NCDOT on this project. Should you have any questions concerning this report, please feel free to contact the undersigned.

Respectfully submitted,

ENGINEERING CONSULTING SERVICES, LTD.

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Attachments