



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

March 26, 2018

MEMORANDUM TO: David Stark, P.E.
Priority Projects – Project Engineer

FROM: ^{DS}
JPB John L. Pilipchuk, L.G., P.E. ^{DocuSigned by:}
State Geotechnical Engineer *John Pilipchuk*
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PROJECT: 46307.1.1 (I-5870)
F.A. PROJECT: NHP-0440(023)
COUNTY: Wake
DESCRIPTION: I-440/US 1 from West of Ridge Rd. to East of US 70 (Glenwood Ave.) in Raleigh; Construct new interchange at Ridge Rd. and Realign and Widen Crabtree Valley Ave. between Edwards Mill Rd. and Ridge Rd.

SUBJECT: Pre-Scoping Comments

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

Techniques/Methodologies

The Eastern Regional Office has completed a limited pre-scoping investigation of the proposed interchange to provide early identification of any Geotechnical issues that might impact the project's planning, design or construction. The geotechnical investigation consisted of review of aerial photography, topographic maps, geologic mapping, review of nearby projects and a site visit. General foundation design practices were considered for this review including probable foundation types for structures, soil types and groundwater depth.

Findings

The proposed project lies within the Piedmont Physiographic Province. Topography along the project is gently rolling and is drained by the Crabtree Creek. Geology within the area consists of materials derived from the in-place weathering of granitic intrusions and felsic mica gneiss from the Raleigh Belt.

Soils present within the project area consist of roadway embankment and residual. Roadway embankment consist of tan, red, and orange-brown, soft to medium stiff, moist, sandy and silty clay (A-6, A-7-6) with some medium dense to dense silty sand (A-2-4). Residual soils consist of red, brown, and tan, medium stiff to hard, moist, silty and sandy clay (A-6, A-7-6) and sandy silt

(A-4) with some to abundant mica. Also, present in smaller amounts are tan-brown, orange, and white, loose to dense, moist, silty sand (A-2-4). Weathered and crystalline rock are expected to be encountered along the project corridor between 15.0 to 25.0 feet below the ground surface; however, rock surface is anticipated to be inconsistent. Rock encountered will consist of pink, white, and black foliated to massive granitic rock which varies from severely weathered to fresh and contains some to abundant mica.

Groundwater

Groundwater is not anticipated to cause problems during construction, and will be similar in elevation to nearby Crabtree Creek.

Anticipated Impacts

Based on subsurface conditions at the site, the most probable foundations types for the end bents would be driven piles and the interior bents would likely use drilled piers.

Based on previous experience with the adjoining projects in this area, 2:1 (H:V) or flatter side slopes will be required for stability.

For Geotechnical Engineering questions please contact Jamey Batts, P.E. or Jaime Love, L.G. at (919) 662-4710.