A retaining wall is proposed on the south end of the proposed bridge. This retaining wall will be located approximately 39 feet left of the -SBL- centerline, and will extend from Station 22+25 to Station 25+15. The Structure Subsurface Investigation for the retaining wall will be issued as a separate report from the bridge structure.

The Bridge Survey & Hydraulic Design Report and the preliminary general drawings are in English units with feet as the primary unit of length.

3.0 SCOPE OF INVESTIGATION

3.1 FIELD TESTING

The as-drilled locations for the soil test borings were located by personnel from Trigon using the existing bridge for reference. Elevations at the as-drilled boring locations, along the existing ground surface at the bent locations, and along the bridge structure profile were surveyed by personnel from Trigon using the BM No. 2 benchmark elevation (Elevation 928.77 feet) established by an NCDOT survey crew as a reference point. As-drilled boring locations are shown on the Boring Identification Diagram (Drawing No. 2).

The subsurface exploration for the proposed bridge was conducted between March 22 and May 13, 2004. This exploration consisted of twenty soil test borings; two at each of the proposed bent locations. The borings for the concrete span structure were assigned a "CS" designation following the boring number, while the borings for the steel span structure were assigned an "SS" designation following the boring number. Bent-3 for the steel span structure and Bent-5 for the concrete span structure are proposed for the same location. The proposed end bent locations for both structures are also to be the same.

The End Bent-1 borings and Boring EB2-B were drilled with a truck-mounted Acker AD-2 drilling rig equipped with a 140-pound manual hammer. The interior bent borings performed on land (Bents 1, 4, 5 and 6 for the concrete span structure, and Bents 2 and 3 for the steel span structure) and Boring EB2-A were drilled with a track-mounted CME 850 drilling machine equipped with a 140-pound automatic hammer. The borings in the river, which consist of Bents 2 and 3 for the concrete span structure and Bent-1 for the steel span structure, were drilled using a CME 45 skid-drilling rig equipped with a 140-pound manual hammer mounted on a barge. The interior bent borings were advanced through soil utilizing 0.33-foot tricone/wash-drilling techniques. River water plus bentonite was used as the drilling fluid for the land borings, while river water

alone was used as the drilling fluid for the river borings. The mud density ranged from 63 to 64 pounds per cubic foot. The End Bent-1 borings and Boring EB2-B utilized 0.5-foot (O.D.) continuous-flight hollow-stem augering drilling techniques to advance the boreholes.

Standard Penetration Tests were performed in the soil and weathered rock materials in general accordance with NCDOT guidelines. In conjunction with this testing, split-barrel soil and weathered rock samples were recovered for visual classification and potential laboratory testing. Three undisturbed (Shelby Tube) samples of representative potential scourable material were obtained for EFA testing, one each near Borings B1-B CS and B3-B CS, and one from the stream channel at Station 26+63, 31 feet right of the -SBL- centerline. The EFA testing is to be performed by the NCDOT.

Rock coring was performed at the interior bent borings in order to evaluate the nature of the weathered rock/crystalline rock. The cored weathered rock/crystalline rock was returned to our laboratory for further classification and possible testing. The rock coring at the land borings was performed with an HQ size hollow double-tube core barrel, while the rock coring at the river borings was performed with an NQ size hollow double-tube core barrel. River water alone was used as the drilling fluid during rock coring at the borings in the river, while bentonite mud slurry with some polymer was used as the drilling fluid during coring at the land borings.

3.2 LABORATORY TESTING

Laboratory soil testing was performed on twenty-six representative split-barrel samples to aid in the assessment of AASHTO soil classification and to provide data for evaluation of engineering properties. The laboratory testing on the samples consisted of Natural Moisture Content, Atterberg Limit, and grain size analysis with hydrometer. In addition, six Unconfined Compressive Strength (Qu only) tests were performed on selected samples of the recovered rock core. Laboratory tests were performed in general accordance with AASHTO and NCDOT specifications. The results of the soil laboratory tests are included on Sheet 62. A summary of the rock tests is included on Sheet 63. Laboratory results of the rock testing are also included under separate cover in Appendix A.

3.3 SITE GEOLOGY

The site of the proposed project is located in the Sauratown Mountains Anticlinorium of the Piedmont Physiographic Province of North Carolina. According to The Geology of the Carolinas published by the