horizontal and vertical excavation, with vertical excavation extending to approximately 5 feet below the existing top-of-soil at the -L- centerline and to approximately 13 feet below the existing top-of-soil on the right side of the proposed bridge (the existing roadway embankment). Slopes on the order of 1.5(H):1(V) are proposed for the new embankment slopes.

The Bridge Survey & Hydraulic Design Report and the Preliminary General Drawing are in English units with feet as the primary unit of length.

3.0 SCOPE OF INVESTIGATION

3.1 FIELD TESTING

The proposed replacement of Bridge No. 83 was initially proposed to be a replacement-in-place with a temporary detour bridge constructed left of the existing bridge to carry traffic while the replacement bridge was constructed. A subsurface investigation for the replacement-in-place structure and detour structure was performed by the NCDOT Asheville Geotechnical Field Office in July 2003. A total of four soil test borings ((DOT EB1-A(DET), DOT EB1-B, DOT EB2-A, and DOT EB2-B)) were performed as part of the NCDOT's subsurface investigation. The boring and coring data from the NCDOT's exploration are included in this report, and the locations of the NCDOT's soil test borings are shown on the Boring Identification Diagram (Drawing No. 2) which follows this report.

The as-drilled locations for the soil test borings performed by Trigon for the investigation were located by personnel from Trigon using the -L- centerline, which was staked by an NCDOT survey crew, for reference. Elevations at the as-drilled boring locations, along the existing ground surface at the bent locations, and along the structure profile were surveyed by personnel from Trigon using the BM #2 benchmark elevation (Elevation 994.15 feet) established by an NCDOT survey crew as a reference point.

Trigon's subsurface investigation for the proposed bridge was conducted between November 30 and December 16, 2004. This exploration consisted of five soil test borings: two (TEB1-A and TEB1-C) at the proposed End Bent-1 location, two (TB1-A and TB1-B) at the proposed Bent-1 location, and one (TEB2-A) at the proposed End Bent-2 location. Access for drilling equipment to perform soil test borings at the proposed Bent-2 location and right of the left end of the proposed End Bent-2 location was not possible due to the previously discussed drainage ditch and the existing roadway embankment slopes. Therefore, two bridge rod soundings (TS2-A and TS2-B) were performed at the proposed Bent-2 location, and only one soil test boring was drilled by Trigon at

the proposed End Bent-2 location. As-drilled soil test boring and sounding locations are shown on the Boring Identification Diagram (Drawing No. 2) following this report.

The NCDOT's soil test borings were drilled using a CME 550 drilling machine equipped with a 140-pound automatic hammer. Trigon's Borings TEB1-A, TEB1-B, and TEB2-A were drilled with an ATV-mounted CME 57 drilling machine equipped with a 140-pound manual hammer, while Borings TB1-A and TB1-B were drilled with a track-mounted CME 850 drilling machine equipped with a 140-pound automatic hammer. All of Trigon's soil test borings were advanced through soil utilizing 0.33-foot tricone/wash-drilling techniques with creek water plus bentonite as the drilling fluid. The mud density ranged from 63.5 to 71.8 pounds per cubic foot. Boring Logs and coring logs are located following this report.

The bridge-rod soundings were performed utilizing ½-inch steel rods driven to a minimum of 100 blows per foot using an approximately 16-pound hammer with a 24-inch drop. The soil stratification from the soil test borings was used to interpolate soil stratification in the bridge-rod soundings. Bridge-Rod Sounding Observation Summary logs are located following this report.

Standard Penetration Tests were performed in the soil and weathered rock materials in the soil test borings 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.

Rock coring was performed by the NCDOT at the DOT EB1-A(DET) boring, and by Trigon at the Bent-1 borings in order to evaluate the nature of the weathered rock/crystalline rock. The cored weathered rock/crystalline rock from Bent-1 was returned to our laboratory for further classification and possible testing. The rock coring performed by the NCDOT utilized NX size coring equipment, while the rock coring performed by Trigon was performed with an HQ or NQ size hollow double-tube core barrel. Creek water alone was used as the drilling fluid during the rock coring performed by Trigon.

3.2 LABORATORY TESTING

Laboratory soil testing was performed by the NCDOT on seventeen representative split-barrel samples as part of their previous investigation at the site. Laboratory soil testing was performed by Trigon on nine representative split-barrel samples and three grab samples (two from the streambed and one from the stream bank) 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