(metavolcanic rock). In general, the rock appears to be more crystalline than non-crystalline, and zones of weathered rock are relatively thin. The crystalline rock cored was highly variable in quality, ranging from very poor to excellent with the majority of the rock being poor to good in quality. In general, the first 15 to 20 feet of rock was highly fractured and of poorer quality, while the deeper sections of core were good to excellent in quality. The overlying residual soils at the site are the product from the physical and chemical weathering of the underlying crystalline rock.

Dip and dip direction measurements were taken on planar structures exposed in rock outcrops along the banks of Cane Creek approximately 200 feet up stream from the existing bridge. Three different joint set orientations were able to be identified and are represented on the Boring Identification Diagram located in Appendix A. One joint set had a dip of 70 to 75 degrees with the azimuthal dip direction of 280 degrees. The joints in the vicinity of where the measurement was taken were 2 inches to 2 feet wide. A second prominent joint set had a measured dip of 38 to 40 degrees with an azimuthal dip direction of 44 degrees. The spacing between the joints in this set averaged 3 to 5 inches. A third single, prominent joint was measured that had a dip of 80 degrees with an azimuthal dip direction of 314 degrees and extended across the bedrock exposed in the channel of Cane Creek upstream from the existing bridge. The existence of numerous joints intersecting at various angles has facilitated the shedding of rock fragments and boulders into the stream channel.

3.4 FOUNDATION MATERIALS

The generalized subsurface conditions indicated by the borings are described below. For soil descriptions and general stratification at a particular boring location, the respective Boring Log should be reviewed. For rock descriptions and stratification at a particular boring location, the respective Coring Log and/or core photographs should be reviewed. The Boring Identification Diagram, Boring Logs, Coring Logs, and Core Photographs are included in Appendix A. Representative subsurface cross-sections at each drilled bent location and a subsurface profile along the structure are also included in Appendix A. The subsurface properties for the project site are described below.

Foundation materials encountered at the site included roadway embankment fill, alluvial soils, residual soils, weathered rock, and crystalline rock.

Roadway embankment fill was encountered beginning at the existing ground surface at elevation ±435 feet at the end bent borings. Roadway embankment fill was not encountered at the interior bent borings. The roadway embankment fill extends to depths of ±8 feet to ±9 feet (Elevation ±427 feet to ±426 feet) at End Bent-1, and to depths of ±13 feet to ±17 feet (Elevations ±422 feet to ±418 feet) at End Bent-2. The roadway embankment fill encountered generally consists of medium stiff to very stiff, coarse to fine sandy, silty clay (A-6) and coarse to fine sandy silt (A-4). Gravel and traces of roots are present within most of the embankment fill. Standard Penetration Resistance values of 4 to 20 blows per foot (bpf) were measured within the roadway embankment fill, with the higher blow counts due to the presence of gravel.

Alluvial soils were absent at the end bent borings but were encountered beginning at the ground surface at elevations from ±421 to ±417 feet at all of the interior bent borings. The alluvium at the interior bents extends to depths ranging from ±3 feet to ±8 feet (Elevations ±415 feet to ±412 feet). The alluvium at the interior bent borings generally consists of soft to medium stiff, coarse to fine sandy silty clay (A-6) and coarse to fine sandy, clayey silt (A-4). Gravel and traces of organic matter are present within most of the alluvial soils. Standard Penetration Resistance values of 3 to 16 blows per foot (bpf) were measured within the alluvial material.

Residual soils were encountered underlying the roadway embankment fill at the End Bent-1 and End Bent-2 borings, and underlying the alluvium at Boring B1-B. Residual soils were not encountered at Borings B1-A, B2-A, or B2-B. A zone of weathered rock separates residual sandy silt layers at Boring EB2-B. The residual soils, where encountered, extend to the following depths and elevations: ±11 feet (Elevations ±424 feet) at End Bent-1; ±5 feet (Elevation ±413 feet) at B1-B; and ±25 feet to ±26 feet (Elevations ±410 feet to ±409 feet) at End Bent-2. The zone of weathered rock which separates the residual sandy silt layers at Boring EB2-B extends to a depth of ±23 feet (Elevation ±412 feet). The residual soils generally consist of stiff to hard, coarse to fine sandy silt (A-4) with rock fragments, and medium dense, silty, coarse to fine sand (A-2-4) with rock fragments. Standard Penetration Resistance values within the residuum ranged from 13 to 88 bpf.

Weathered rock was encountered underlying the alluvium at Boring B1-A, B2-A, and B2-B, and underlying the residuum at the remaining borings. The weathered rock consists predominantly of tan to green and brown metavolcanic rock. The weathered rock was encountered at the following depths and elevations: ±10 feet to ±11 feet (Elevations ±424 feet to ±423 feet) at End Bent-1, ±5 to ±6 feet (Elevations ±413 feet to ±411 feet) at Bent-1, ±8 feet (Elevation ±413 feet) at Bent-2, and ±25 feet to ±26 feet (Elevations ±410 feet to ±409 feet) at End Bent-2. As noted in the previous paragraph, weathered rock is also present as a relatively thin zone separating two layers of residual sandy silt at Boring EB2-B. This weathered rock zone occurs from a depth of