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 should be reviewed. The Boring Identification Diagram, Boring Logs, Coring Logs, and Core Photographs are located behind this report. Representative subsurface cross-sections at each bent location and a subsurface profile along the structure are also included behind this report. 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 the end bent borings. The fill extends to depths of between ±11 and ±16 feet (Elevations ±761 feet to ±756 feet). The roadway embankment fill encountered generally consists of loose, silty, fine to course sand (A-2-4); and soft to stiff, clayey, coarse to fine sandy silt (A-4), and fine to coarse sandy, silty clay (A-6 and A-7-5). Traces of organic material in the form of root fragments and decayed plant material, as well as traces of gravel and mica, were common within the roadway embankment fill. Standard Penetration Resistance values of 2 to 11 blows per foot (bpf) were encountered within the roadway embankment fill.

Alluvial soil was encountered underlying the roadway embankment fill at the end bent borings, and beginning at the existing mud line at the interior bent borings. The alluvium soil extends to a depth of ±34 feet (Elevation ±738 feet) at End Bent-1, to depths of ±25 feet to ±29 feet (Elevations ±735 feet to ±730 feet) at Bent-1, to depths of ±26 feet to ±25 feet (Elevations ±735 feet to ±736 feet) at Bent-2, and to depths of ±39 feet to ±37 feet (Elevations ±734 feet to ±735 feet) at End Bent-2. The alluvial soil generally consists of very loose to dense, variably silty, coarse to fine sand (A-1-b and A-2-4); and very soft to very stiff, fine to coarse sandy, silty clay (A-6 and A-7-5), and clayey, fine to coarse sandy silt (A-4). Traces of organic material in the form of decayed plant material, as well as traces of mica and traces to a little gravel, were common within the alluvium. Standard Penetration Resistance values within the alluvial soil ranged from Weight-of-Hammer to 53 blows per foot (bpf). However, the blow counts higher than 22 blows per foot were influenced by gravel.

Residual soils were encountered underlying the alluvium at all of the borings drilled for this project with the exception of Boring B1-B in which the alluvium is directly underlain by weathered rock. The residual soils

extend to depths of ±42 feet to ±44 feet (Elevations ±730 feet to ±728 feet) at End Bent-1, to a depth of ±34 feet (Elevation ±726 feet) at Boring B1-A, to depths of ±39 feet to ±37 feet (Elevations ±722 feet to ±724 feet) at Bent-2, and to a depth of ±44 feet (Elevation ±728 feet) at End Bent-2. Residual soil was also encountered as a zone within the weathered rock at Boring B1-A between depths of ±36 feet and ±41 feet (Elevations ±724 feet and ±719 feet), and at Boring EB2-A between depths of ±47 feet and ±52 feet (Elevations ±725 feet and ±720 feet). The residual soils generally consist of medium dense to very dense, variably silty, coarse to fine sand (A-1-b and A-2-4) with traces of rock fragments and mica. Standard Penetration Resistance values within the residuum ranged from 11 and 67 bpf.

Weathered rock was encountered underlying the residual soils at all of the borings drilled for this project. The weathered rock generally consists of metamorphosed granitic rock. The weathered rock was encountered between the following depths and elevations: 42.0 feet to the boring termination depth of 58.8 feet (Elevations 729.8 feet to 713.0 feet) at Boring EB1-A; 44.0 feet to 55.5 feet (Elevations 727.9 feet to 716.4 feet) feet at Boring EB1-B; 34.0 feet to 36.4 feet (Elevations 726.5 feet to 724.1 feet), 41.0 feet to 43.4 feet (Elevations 719.5 feet to 717.1 feet), and 45.0 feet to 46.0 feet (Elevations 715.5 feet to 714.5 feet) at Boring B1-A; 29.0 feet to 47.7 feet (Elevations 730.5 feet to 711.8 feet) at Boring B1-B; 39.0 feet to 46.3 feet (Elevations 722.0 feet to 714.7 feet) and 50.8 feet to 54.3 feet (Elevations 710.2 feet to 706.7 feet) at Boring B2-A; 37.0 feet to 48.0 feet (Elevations 723.9 feet to 712.9 feet) at Boring B2-B; 44.0 feet to 47.0 feet (Elevations 728.2 feet to 725.2 feet) and 52.0 feet to the boring termination depth of 63.9 feet (Elevations 720.2 feet to 708.3 feet) at Boring EB2-A; and 43.5 feet to the boring termination depth of 58.8 feet (Elevations 728.3 feet to 713.0 feet) at Boring EB2-B. As noted in the previous paragraph, residual soil was encountered as a zone within the weathered rock at Borings B1-A and EB2-B. Borings EB1-A, EB2-A, and EB2-B were terminated within weathered rock.

Crystalline rock was encountered at Boring EB1-B and the interior bent borings. Crystalline rock was not encountered within the depths explored at Borings EB1-A and the End Bent-2 borings. The crystalline rock generally consists of metamorphosed granitic rock. The top of the crystalline rock was encountered at the following depths and elevations: 55.5 feet (Elevation 716.4 feet) at EB1-B, 43.4 feet (Elevation 717.1 feet) at B1-A, 47.7 feet (Elevation 711.8 feet) at B1-B, 46.3 feet (Elevation 714.7 feet) at B2-A, and 48.0 feet (Elevation 712.9 feet) at B2-B.

Between ±23 and ±30 feet of weathered rock/crystalline rock was cored at the interior bent borings. Rock coring was not performed at the end bent borings. In general, the cored weathered rock is severely