SECTION 2. SITE CHARACTERIZATION

2.1 Regional Geology

The Island of Oahu was built by the extrusion of basalt and basaltic lavas from the Waianae and Koolau shield volcanoes. The older Waianae Volcano is estimated to be middle to late Pliocene in age and forms the majority of the western one-third of the island. The younger Koolau Volcano is estimated to be late Pliocene to early Pleistocene (Ice Age) in age and forms the bulk of the eastern two-thirds of the island. After a long period of volcanic inactivity, during which time erosion incised deep valleys into the Koolau Shield, volcanic activity returned with a series of lava flows followed by cinder and tuff cone formations. These series are referred to as the Honolulu Volcanic Series.

The project site is on the southern flank of the Koolau Volcano. The project area is generally composed of basaltic rock built by extrusion of the lavas of the Koolau Volcanic Series. These rocks are generally characterized by flows of jointed dense vesicular basalt with interbedded thin clinker layers. In-situ chemical weathering of the Koolau lava flows has occurred for the last 1 to 2 million years. The weathering process has formed a mantle of residual and saprolitic soils. In general, saprolite is composed mainly of silty material while residual soils are more clayey. Both residual and saprolitic soils are typical of the tropical weathering of volcanic rocks. The residual soils and saprolite grade to basaltic rock formation with increased depth.

2.2 Site Description

The project site is located at the intersection of Kahuapaani Street and Ulune Street in Halawa on the Island of Oahu, Hawaii. The intersection is generally bounded by residential homes to the north and the Interstate Route H-201, and Moanalua Freeway to the south.

Based on our field observations, the project site was relatively flat with a gentle slope in the southbound direction of Kahuapaani Street. Based on the provided project drawings, the existing ground surface elevations of the intersection range from about +116 to +120 feet Mean Sea Level (MSL) with a slope gradient of about 5 percent. At

this intersection, Kahuapaani Street generally consists of two lanes of traffic in each direction with additional left turn only lanes onto Ulune Street in either direction. Ulune Street generally consists of two lanes in each direction with an additional left turn only lane onto Kahuapaani Street in the southbound direction.

Based on the information provided, we understand that the existing traffic signals on the four corners of the intersection will be replaced by Standard Type II Traffic Signals. The 50-foot mast arm traffic signal pole will replace both the existing single pole and mast arm traffic signals on the northwest corner of the intersection serving the westbound lanes of Ulune Street. The layout of the intersection and proposed traffic signal replacement location are presented on the Site Plan, Plate 2.

2.3 Subsurface Conditions

We explored the subsurface conditions at the project site by drilling and sampling one boring, designated as Boring No. 1, to a depth of about 28 feet below the existing ground surface. The approximate boring location is shown on the Site Plan, Plate 2.

Our boring generally encountered a pavement structure consisting of about 6 inches of Portland cement concrete underlain by about 12 inches of gravelly sand fill. Below the pavement, fill material consisting of stiff silty clay was encountered at a depth of approximately 4 feet followed by residual soil consisting of stiff to hard silty clay extending to a depth of about 15 feet below the existing ground surface. Underlying the residual soil, saprolite was encountered at a depth of approximately 21.5 feet followed by basalt rock formation extending to the maximum depth explored of about 28 feet below the existing ground surface. The saprolite generally consisted of very dense silty sand and the basalt rock formation was moderately to highly weathered and medium hard to hard in nature.

We did not encounter groundwater in the boring at the time of our field exploration. However, it should be noted that groundwater levels are subject to change due to rainfall, time of year, seasonal precipitation, surface water runoff, and other factors.

Detailed descriptions of the field exploration methodology are presented in Appendix A. Descriptions and graphic representations of the materials encountered in the boring are presented on the Log of Boring in Appendix A. Results of the laboratory tests performed on selected soil samples are presented in Appendix B. Photograph of core samples recovered from our field exploration is provided in Appendix C.

END OF SITE CHARACTERIZATION