

SECTION 1. GENERAL

This report presents the results of our geotechnical engineering exploration performed for the *Kamehameha Highway Drainage and Safety Improvements, Vicinity of MP 3.06 to MP 3.54* project located in Waialua on the Island of Oahu, Hawaii. The project location and general vicinity are shown on the Project Location Map, Plate 1.

This report summarizes the findings and geotechnical recommendations resulting from our field exploration, laboratory testing, and engineering analyses for the project. These findings and geotechnical recommendations are intended for the design of bridge foundations, retaining structures, site grading, and underground utilities. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

1.1 **Project Considerations**

It is proposed to realign Kamehameha Highway in the mauka direction near the vicinity of Laniakea Beach due to safety concerns. The new roadway will be about 2,140 linear feet in length with a new bridge structure crossing Lauhulu Stream. It is our understanding that the new bridge will have two spans consisting of precast concrete planks supported on two abutments and one center pier. The total span length of the new bridge is about 102.5 feet, and the width is about 36.3 feet. The structural load demands provided for Strength I Limit State axial loads on top of each drilled shaft are 675 kips and 750 kips for the abutments and center pier, respectively.

1.2 **Purpose and Scope**

The purpose of our field exploration was to obtain an overview of the subsurface conditions to develop a soil/rock data set to formulate geotechnical engineering recommendations for the design of the proposed drainage and safety improvements project. The work was performed in general accordance with our revised fee proposal dated October 12, 2021. The scope of work for this exploration included the following tasks and work efforts:

1. Research and review of available in-house soils boring data and other information for the project.
2. Application for State excavation and street usage permits.
3. Mobilization/demobilization of trail clearing equipment and operator to and from the project site.
4. Mechanized equipment and operator rental for performing the trail clearing.
5. Coordination of boring stakeout and utility clearances by our engineer/geologist.
6. Provision of traffic control and safety devices during our field exploration.
7. Mobilization/demobilization of drilling equipment, water truck, and two operators to and from the project site.
8. Drilling and sampling of eight boreholes extending to depths of about 5.1 to 71.5 feet below the existing ground surface. In addition, bulk soil samples were collected for R-Value testing.
9. Coordination of the field exploration, including logging of the boreholes by our field engineer/geologist.
10. Laboratory testing of selected samples obtained during the field exploration as an aid in classifying the materials and evaluating their engineering properties.
11. Analyses of the field and laboratory data to formulate geotechnical recommendations for the proposed roadway realignment project.
12. Preparation of this report summarizing our work on the project and presenting our findings and recommendations.
13. Preparation of a pavement justification report, under separate cover, for the project.
14. Coordination of our overall work on the project by our project engineer.
15. Quality assurance of our work, and client/design team consultation by our principal engineer.
16. Miscellaneous work efforts, such as drafting, word processing, and clerical support.

Detailed descriptions of our field exploration methodology and the Logs of Borings are presented in Appendix A. Results of the laboratory tests performed on selected soil

samples are presented in Appendix B. Photographs of the core samples retrieved are presented in Appendix C.

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