

## SECTION 1. GENERAL

This report presents our geotechnical recommendations for design of the *Interstate Route H-1 Guardrail and Shoulder Improvements, Kapiolani Interchange to Ainakoa Avenue* in Honolulu 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 end post structures, concrete barrier walls, impact attenuator, retaining structures, shallow foundations, and light pole foundations for the Interstate Route H-1 Guardrail and Shoulder Improvements project only. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

### 1.1 **Project Considerations**

The project is located on Interstate Route H-1 between Kapiolani Interchange and Ainakoa Avenue in the Honolulu District on the Island of Oahu, Hawaii. The project includes upgrading and/or improving the existing shoulders and guardrail systems to reduce crash severity due to errant vehicle highway runoff. New concrete barrier walls, end posts, and an impact attenuator will be constructed as part of the improvements. The project also includes installation of new light poles and relocating existing light pole structures. Locations of the proposed new site improvements are presented on the General Site Plan, Plate 2, and Site Plans, Plates 3.1 through 3.6.

### 1.2 **Purpose and Scope**

The purpose of our field exploration was to obtain an overview of the surface and subsurface conditions to develop an idealized soil and/or rock data set to formulate geotechnical recommendations for the *Interstate Route H-1 Guardrail and Shoulder Improvements, Kapiolani Interchange to Ainakoa Avenue* project. The work was performed in general accordance with the scope of services outlined in our revised fee proposal dated August 20, 2009. The scope of work for this exploration included the following tasks and work efforts:

1. Application for permits from the applicable agencies and coordination of underground utility toning, site access and traffic control by our engineer.
2. Mobilization and demobilization of a truck-mounted drill rig and two operators to the project site and back.
3. Drilling and sampling eleven borings extending to depths from 10 to 16.5 feet below the existing ground surface for a total of 123.1 lineal feet of exploration.
4. Coordination of the field exploration and logging of the borings by our geologist.
5. Laboratory testing of selected soil and rock samples obtained during the field exploration as an aid in classifying the materials and evaluating their engineering properties.
6. Analyses of the field and laboratory data to formulate geotechnical recommendations for the design of the proposed new structures.
7. Preparation of this report summarizing our work and presenting our findings and recommendations.
8. Coordination of our overall work on the project by our project engineer.
9. Quality assurance of our work and client/design team consultation by our principal engineer.
10. 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 and rock samples are presented in Appendix B. Photographs of the recovered core samples are presented in Appendix C.

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END OF GENERAL