

GEOTECHNICAL ENGINEERING EXPLORATION
INTERSTATE ROUTE H-1 GUARDRAIL AND SHOULDER IMPROVEMENTS
KAPIOLANI INTERCHANGE TO AINAKOA AVENUE
HONOLULU, OAHU, HAWAII

W.O. 6099-00 JULY 22, 2016

SUMMARY OF FINDINGS AND RECOMMENDATIONS
--

Our field exploration indicates the existing Interstate Route H-1 within the project limits is covered with concrete pavement between Sta. 52+00 and 162+60, and asphaltic concrete pavement between Sta. 162+60 and 175+62.50. Our borings indicate the concrete pavement ranged between 9.0 to 12.0 inches thick and was underlain by 6 to 10 inches of aggregate base course material. The asphaltic concrete pavement encountered in our borings ranged between 4.0 and 11.0 inches thick and were underlain by 12 to 24 inches of aggregate base material.

Variable subsurface conditions were encountered below the pavement sections along the project alignment, generally consisting of medium dense to very dense and medium stiff to very stiff fills, soft and medium dense to dense alluvium, and weathered to hard basalt formations extending to the maximum depth explored of about 16.5 feet below the existing ground surface. We did not encounter groundwater in the drilled borings during our field exploration, except for Boring No. 11, where groundwater was encountered at about 13-foot depth.

New concrete barrier walls, end posts, an impact attenuator, and light poles will be constructed along the project alignment. Subsurface conditions at the new structure locations were generalized as either soil or rock conditions. Based on the subsurface soil conditions encountered along the project alignment, we believe that the new structures at the improvement sites may be supported on shallow foundations bearing on either on-site soil or rock. Service limit state bearing pressures of up to 3,000 psf and 5,000 psf may be used to design the shallow foundations bearing on the recompacted on-site soil or rock, respectively. Footings should be embedded a minimum of 24 inches below the lowest adjacent finished grades for retaining wall footings.

Based on the subsurface soil conditions encountered in the vicinity of the proposed light pole locations and the structural loading conditions provided, consideration may be given to the use of drilled shaft foundations for the support of the new light pole structures. A single cast-in-place concrete drilled shaft may be used to support each light pole structure. The cast-in-place concrete drilled shafts would derive vertical support from friction between the concrete shaft and the surrounding weathered and hard basalt rock formation. A 2.0-foot diameter drilled shaft extending to a minimum depth of 10 feet below the bottom of footing into the weathered and hard basalt rock formation should be used to support each of the new light pole structures.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The text of this report should be referred to for detailed discussions and specific geotechnical recommendations for design of the project.

END OF SUMMARY OF FINDINGS AND RECOMMENDATIONS