# APPENDIX B

Laboratory Tests

Moisture Content (ASTM D2216) and Unit Weight (ASTM D2937) determinations were performed on selected samples as an aid in the classification and evaluation of soil properties. The test results are presented on the Logs of Borings at the appropriate sample depths.

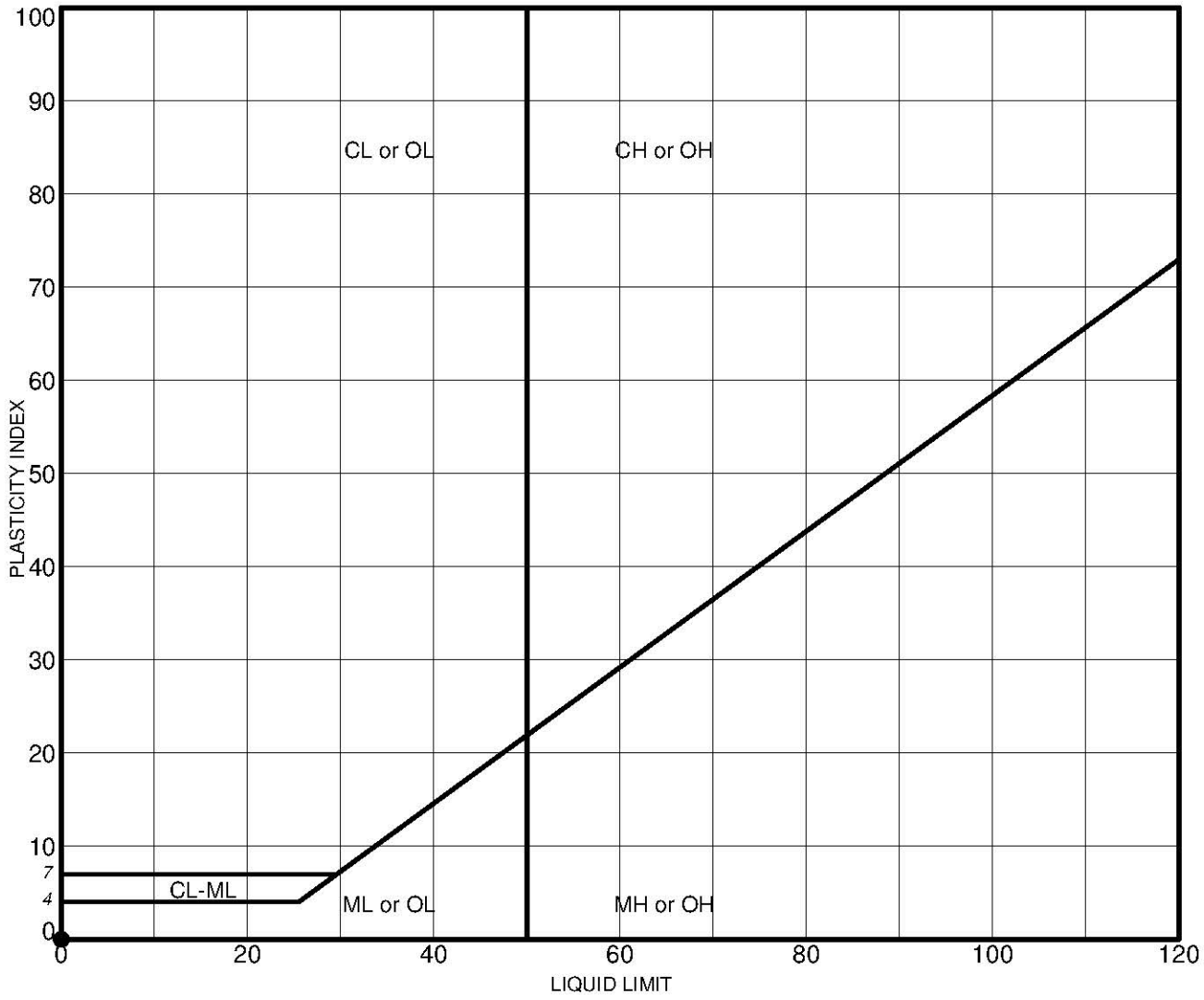
One Atterberg Limits test (ASTM D4318) was performed on a selected soil sample to evaluate the liquid and plastic limits. The test results are summarized on the Logs of Borings at the appropriate sample depth. Graphic presentation of the test results is provided on Plate B-1.

Three Sieve Analysis tests (ASTM D6913) were performed on selected soil samples to evaluate the gradation characteristics of the soils and to aid in soil classification. Graphic presentations of the test results are provided on Plate B-2.

Six Unconfined Compression tests (ASTM D7012, Method C) were performed on selected core samples to evaluate the unconfined compressive strength of the basalt formation encountered. The test results are presented on Plate B-3.

Two sets of Corrosion tests, including pH (ASTM G51), Minimum Resistivity (ASTM G57), Chloride Content (EPA 300.0), and Sulfate Content (EPA 300.0), were performed by our office and Eurofins TestAmerica on selected soil samples obtained from our field exploration. It should be noted the chloride content and sulfate content test results were not available at the time of this report. The test results are summarized on Plate B-4.

One Direct Shear test (ASTM D3080) is being performed on a selected sample to evaluate the peak shear strength characteristics of the materials tested. The test results will be presented on Plate B-5. (Pending)




| | Sample | Depth (ft) | LL | PL | PI | Description |
|---|---|---|---|---|---|---|
| ● | B-1 | 15.0-16.5 | NP | NP | NP | Brown with multi-color mottling sandy silt (NP) with some gravel |
| | | | | | | |
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NP = NON-PLASTIC

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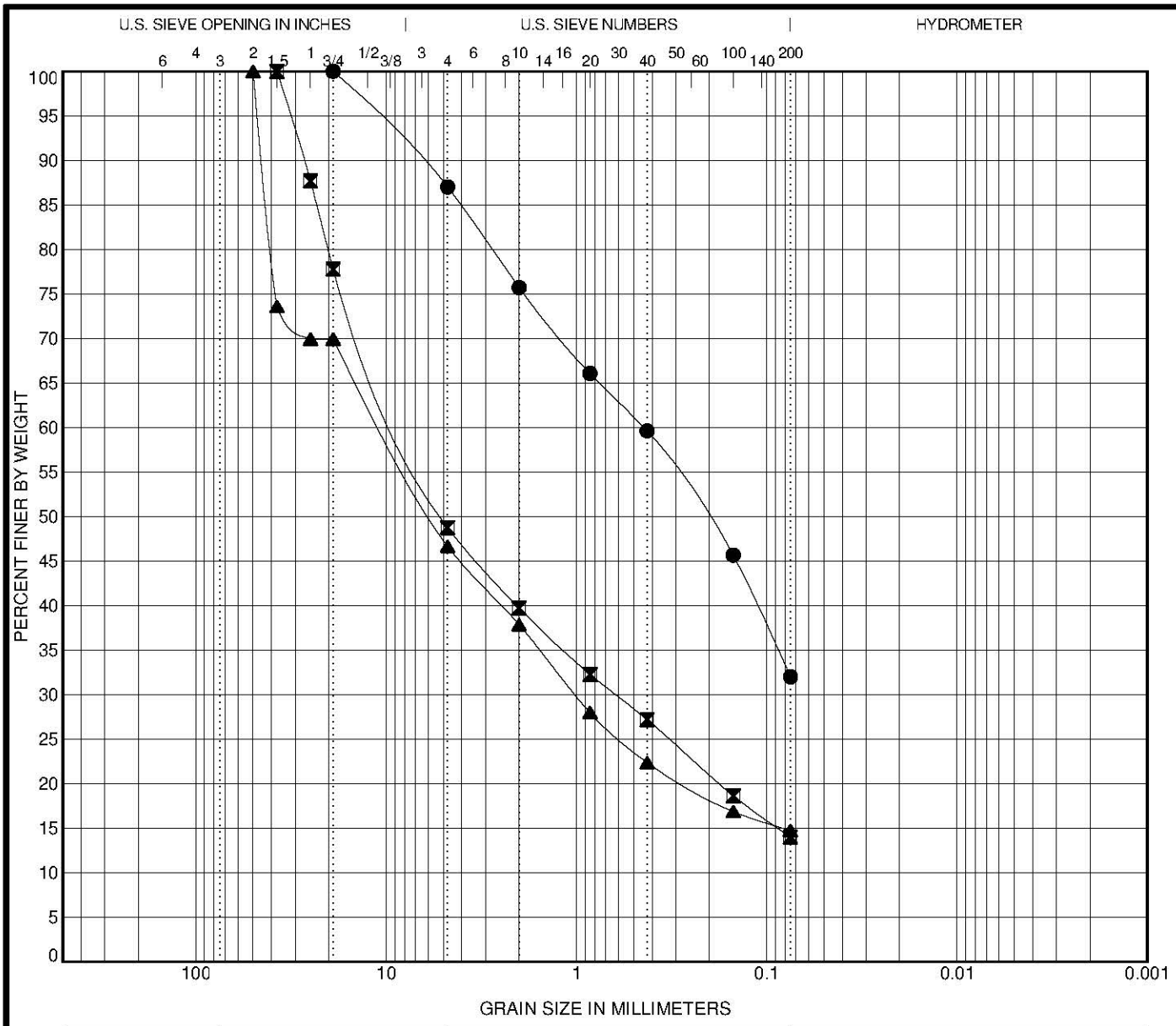
**ATTERBERG LIMITS TEST RESULTS - ASTM D4318**

KEKAULIKI AVENUE
EMERGENCY REPAIRS AT M.P. 8.2
REDERAL AID PROJECT NO. ER-25(001)
KULA, MAUI, HAWAII

Plate
B - 1

G ATTERBERG PI-100 LL-120 8424-00.GPJ GEOLABS.GDT 3/31/22




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Sample | Depth (ft) | Description | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 10.0-11.5 | Brown with multi-color mottling silty sand (SM) with some gravel | | | | | |
| ⧓ | B-2 | 5.0-6.5 | Brown with gray mottling silty gravel (GM) with some sand | | | | | |
| ▲ | B-2 | 35.0-36.5 | Brown with multi-color mottling silty gravel (GM) with some sand | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | Sample | Depth (ft) | D100 (mm) | D60 (mm) | D30 (mm) | D10 (mm) | %Gravel | %Sand | %Fine |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 10.0-11.5 | 19 | 0.443 | | | 13.0 | 55.0 | 32.0 |
| ⧓ | B-2 | 5.0-6.5 | 37.5 | 8.131 | 0.624 | | 51.3 | 34.7 | 14.0 |
| ▲ | B-2 | 35.0-36.5 | 50 | 10.522 | 1.013 | | 53.4 | 31.9 | 14.7 |
| | | | | | | | | | |
| | | | | | | | | | |

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**GRAIN SIZE DISTRIBUTION - ASTM D6913**

KEKAULIKI AVENUE
EMERGENCY REPAIRS AT M.P. 8.2
REDERAL AID PROJECT NO. ER-25(001)
KULA, MAUI, HAWAII

Plate
B - 2

G_GRAIN SIZE_MOD 8424-00.GPJ GEOLABS.GDT 3/31/22

| Location | Depth | Length | Diameter | Length/ Diameter Ratio | Density | Load | Compressive Strength |
|---|---|---|---|---|---|---|---|
| | (feet) | (inches) | (inches) | | (pcf) | (lbs) | (psi) |
| B-1 | 24 - 24.55 | 6.580 | 3.290 | 2.00 | 167.4 | 140,960 | 16,580 |
| B-1 | 35.75 - 36.3 | 6.560 | 3.280 | 2.00 | 173.6 | 183,250 | 21,690 |
| B-1 | 46.5 - 47.05 | 6.560 | 3.280 | 2.00 | 172.8 | 200,940 | 23,780 |
| B-2 | 19 - 19.55 | 6.540 | 3.270 | 2.00 | 1805.3 | 57,770 | 6,880 |
| B-2 | 25 - 25.55 | 6.560 | 3.270 | 2.01 | 185.5 | 164,060 | 19,540 |
| B-2 | 46.25 - 47 | 6.540 | 3.270 | 2.00 | 171.5 | 88,360 | 10,520 |

ASTM D7012 (METHOD C)

Note: Samples were not prepared in accordance with ASTM D4543. Therefore, results reported may differ from results obtained from a test speciment that meets the requirements of Practice D4543



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**UNIAXIAL COMPRESSIVE STRENGTH TEST**

KEKAULIKI AVENUE
EMERGENCY REPAIRS AT M.P. 8.2
REDERAL AID PROJECT NO. ER-25(001)
KULA, MAUI, HAWAII

Plate
B - 3

| Location | Depth (feet) | pH Value | Minimum Resistivity (ohm-cm) | Chloride Content (mg/kg) | Sulfate Content (mg/kg) |
|---|---|---|---|---|---|
| B-1 | 1.0 - 2.5 | 7.61* | 6000* | - | - |
| B-2 | 2.5 - 4.0 | 7.68* | 3000* | - | - |

**TEST METHODS (by Eurofins TestAmerica Laboratories, Inc.)**

| | |
|---|---|
| pH Value | Method 9045C |
| Minimum Resistivity | SM 2510B |
| Chloride Content | EPA 300.0 |
| Sulfate Content | EPA 300.0 |

**TEST METHODS (by Geolabs, Inc.)***

| | |
|---|---|
| pH Value | ASTM G51 |
| Minimum Resistivity | ASTM G57 |
| Chloride Content | N/A |
| Sulfate Content | N/A |

ND: Not Detected Within Reporting Limits

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**SUMMARY OF CORROSIVITY TESTS**

KEKAULIKI AVENUE
EMERGENCY REPAIRS AT M.P. 8.2
REDERAL AID PROJECT NO. ER-25(001)
KULA, MAUI, HAWAII

Plate
B - 4

G SUMMARY OF CORROSIVITY TESTS 8424-00.GPJ GEOLABS.GDT 3/31/22