| | | | | | |
|---|---|---|---|---|---|
| Performed for: | AE Com | | | Location: | KoOlina |
| Project: | Waimanalo Gulch | | | Job No.: 239-011 | |
| Sample: | OPS-01 | | | Constant Head Test | |
| Performed by: | BT | | | Date of test: | 8.18.10 |
| wt of mold = | 10.60 | lbs. | | | |
| wt of mold+soil = | 13.75 | lbs. | | | |
| diameter = | 4 | inches --> | 10.16 | cm | |
| area = | 81.07 | sq. cm | | | |
| length = | 4.563 | inches --> | 11.59 | cm | |
| volume = | 939.64 | cu. cm | | | |
| mass soil = | 3.15 | lbs. --> | 1428.82 | g | |
| | | sq. cm | | | |
| % Void | 35.00 | Dry Density --> | 1.52 | g/cu. cm | |
| % over 3/4" removed | 0.00 | | | | |

| Trial Number | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| elapsed time (sec) | 60 | 120 | 180 | 360 | 480 | 600 |
| Water Volume (mL) | 8 | 15 | 21 | 44 | 52 | 59 |
| Δh of water (cm) | 96.52 | 96.52 | 96.52 | 96.52 | 96.52 | 96.52 |
| temp (deg C) | 25 | 25 | 25 | 25 | 25 | 25 |
| unit wt. of water | 0.9970 | 0.9970 | 0.9970 | 0.9970 | 0.9970 | 0.9970 |
| viscosity of water | 9.045 | 9.045 | 9.045 | 9.045 | 9.045 | 9.045 |
| coefficient of permeability | 1.185E-02 | 1.111E-02 | 1.037E-02 | 1.086E-02 | 9.627E-03 | 8.739E-03 |

| | | |
|---|---|---|
| **average** | **1.04E-02** | **cm/s** |

*sample lightly tamped in

MASA FUJIOKA & ASSOCIATES
PERMEABILITY CONSTANT HEAD

| | | | | | |
|---|---|---|---|---|---|
| Performed for: | AE Com | | | Location: | KoOlina |
| Project: | Waimanalo Gulch | | | Job No.: 239-011 | |
| Sample: | OPS-02 | | | Constant Head Test | |
| Performed by: | BT | | | Date of test: | 8.18.10 |
| wt of mold = | 10.60 | lbs. | | | |
| wt of mold+soil = | 13.30 | lbs. | | | |
| diameter = | 4 | inches --> | 10.16 | cm | |
| area = | 81.07 | sq. cm | | | |
| length = | 4.563 | inches --> | 11.59 | cm | |
| volume = | 939.64 | cu. cm | | | |
| mass soil = | 2.70 | lbs. --> | 1224.70 | g | |
| | | sq. cm | | | |
| % Void | 35.00 | Dry Density --> | 1.30 | g/cu. cm | |
| % over 3/4" removed | 0.00 | | | | |

| Trial Number | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| elapsed time (sec) | 5 | 10 | 20 | 30 | 45 | 60 |
| Water Volume (mL) | 115 | 191 | 373 | 530 | 803 | 1016 |
| Δh of water (cm) | 96.52 | 96.52 | 96.52 | 96.52 | 96.52 | 96.52 |
| temp (deg C) | 25 | 25 | 25 | 25 | 25 | 25 |
| unit wt. of water | 0.9970 | 0.9970 | 0.9970 | 0.9970 | 0.9970 | 0.9970 |
| viscosity of water | 9.045 | 9.045 | 9.045 | 9.045 | 9.045 | 9.045 |
| coefficient of permeability | 2.044E+00 | 1.697E+00 | 1.657E+00 | 1.570E+00 | 1.586E+00 | 1.505E+00 |

| | | |
|---|---|---|
| average | 1.68E+00 | cm/s |

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PERMEABILITY CONSTANT HEAD

## MASA FUJIOKA AND ASSOCIATES
### SIEVE TEST ANALYSIS

SAMPLE #: OPS-01

Project: Waimanalo Gulch
Location: Ko Olina
Soil Desc.: Well graded sand w/ silt
USCS: SW-SM

Job #: 10239-011
Depth: n/a
Tested By: BT
Test Date: 8/20/10

Weight of Sample+Tare (g): 797.4
Weight Tare (g): 14.1
Weight of Water (g): 0
Percent Water: 0%
Total Dry Sample Weight (g): 797.4

| Screen Size # | 3/4 | 3/8 | 4 | 10 | 40 | 60 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|
| in mm | 19 | 9.5 | 4.75 | 2 | 0.425 | 0.25 | 0.15 | 0.075 |
| Sieve Weight (g) | 497.8 | 490.4 | 471.6 | 426.6 | 352.4 | 320.7 | 351.5 | 297.1 |
| Wt. Sieve + Soil (g) | 497.8 | 496.6 | 568.2 | 581.2 | 638.1 | 394.9 | 407.4 | 344.5 |
| Soil on Sieve (g) | 0 | 6.2 | 96.6 | 154.6 | 285.7 | 74.2 | 55.9 | 47.4 |
| % Stopped at Filter | 0 | 0.79152 | 12.3324 | 19.737 | 36.4739 | 9.47274 | 7.136474 | 6.05132 |
| **% Passing Filter** | **100** | **99.2085** | **86.876** | **67.139** | **30.6651** | **21.1924** | **14.05592** | **8.0046** |

**#200 washed**

GRAIN SIZE ANALYSIS

Project: Waimanalo Gulch
Sample: OPS-01
Job No.: 10239-011
Depth: N/A

Soil Classification: Well graded sand w/ silt

UCSC: SW-SM

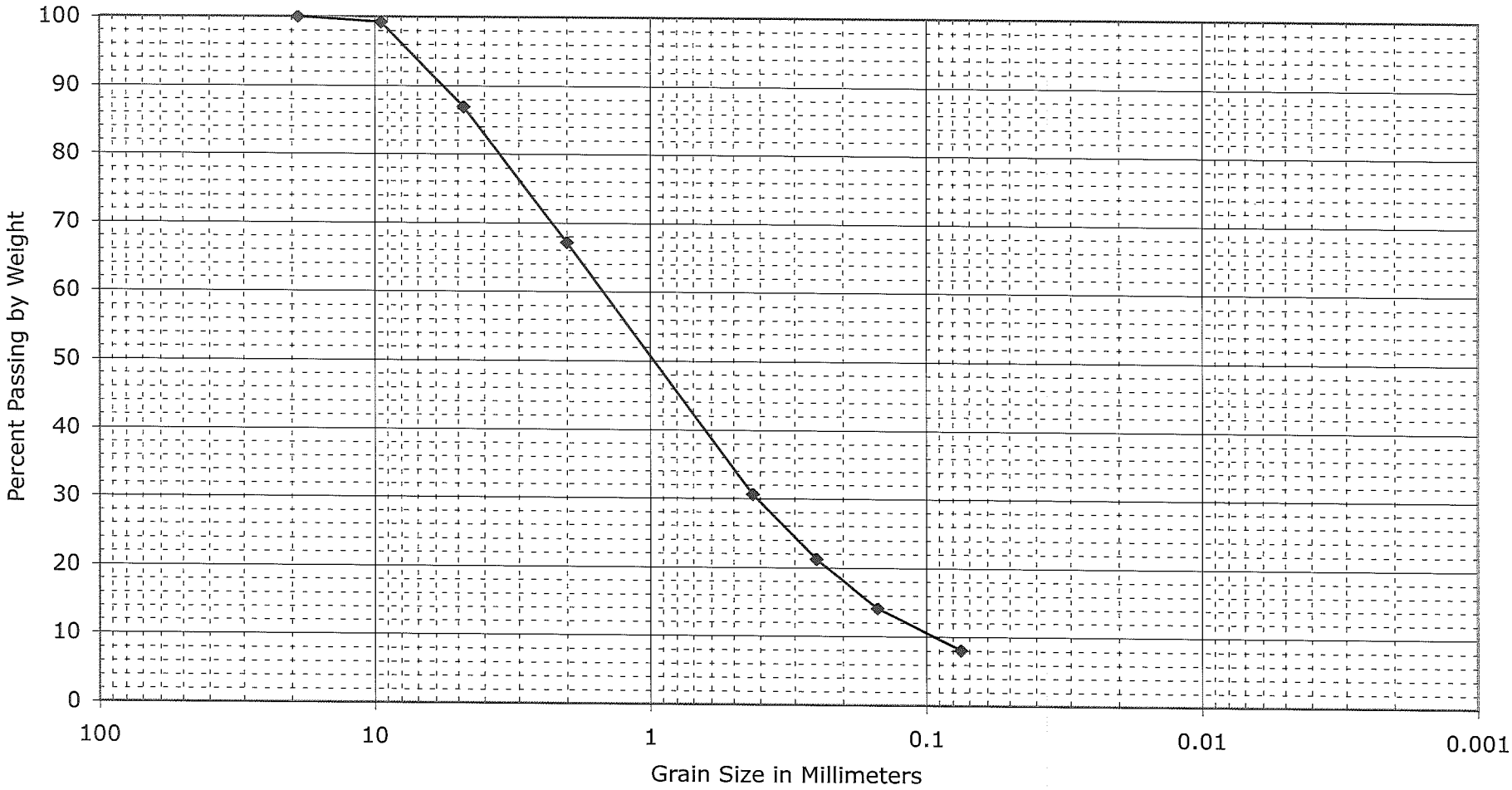


Figure:

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WMH001171

## MASA FUJIOKA AND ASSOCIATES
### SIEVE TEST ANALYSIS

SAMPLE #: OPS-02

Project: AE Com
Location: Waimanalo Gulch LF
Soil Desc.: Poorly graded gravel
USCS: GP

Job #: 10239-011
Depth: N/A
Tested By: BT
Test Date: 8/20/10

Weight of Sample+Tare (g): 1262.5
Weight Tare (g): 14.3
Weight of Water (g): 0
Percent Water: 0%
Total Dry Sample Weight (g): 1262.5

| Screen Size # | 2 | 1 1/2 | 3/4 | 4 | 10 | 40 | 60 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|
| in mm | 50 | 37.5 | 19 | 4.75 | 2 | 0.425 | 0.25 | 0.15 | 0.075 |
| Sieve Weight (g) | 540.5 | 508 | 497.8 | 471.6 | 426.6 | 352.4 | 320.9 | 351.5 | 297.1 |
| Wt. Sieve + Soil (g) | 540.5 | 658.9 | 1374.4 | 669.6 | 426.6 | 355.1 | 321.8 | 354.5 | 301.3 |
| Soil on Sieve (g) | 0 | 150.9 | 876.6 | 198 | 0 | 2.7 | 0.9 | 3 | 4.2 |
| % Stopped at Filter | 0 | 12.0894 | 70.2291 | 15.8628 | 0 | 0.21631 | 0.0721 | 0.240346 | 0.33648 |
| **% Passing Filter** | **100** | **87.9106** | **17.6815** | **1.81862** | **1.81862** | **1.60231** | **1.5302** | **1.289857** | **0.95337** |

GRAIN SIZE ANALYSIS

Project: AE Com
Job: 10239-011
Sample: OPS-02
Depth: NA

Soil Classification: Poorly graded gravel

UCSC: GP

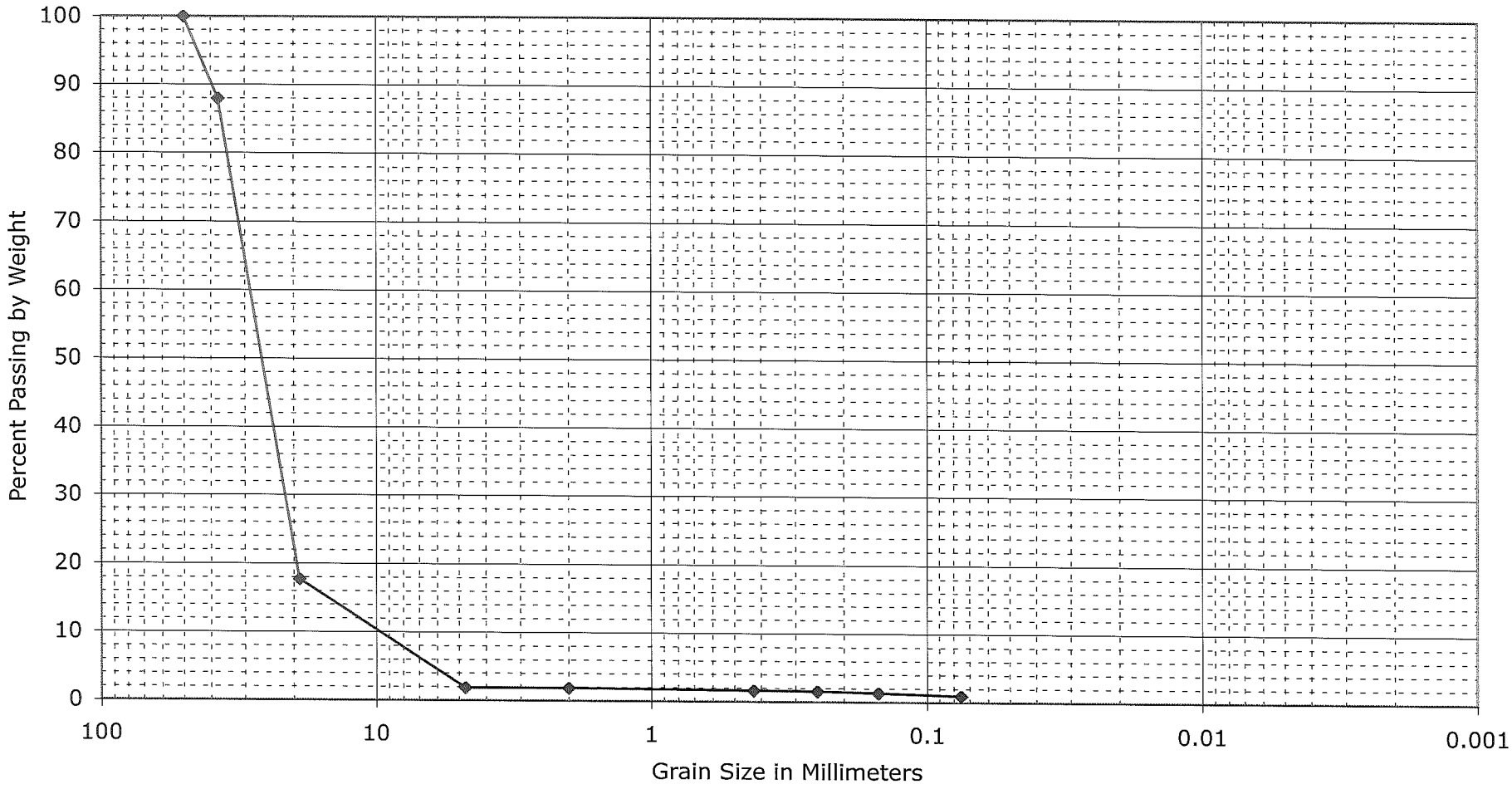


Figure:

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