# Memo

From: Flagstaff Fireshed Hydrology

Date: 11/13/2013

Re: Soil Moisture Content Report

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The moisture content of a soil is very important. A small design change in moisture content can significantly alter the properties of soils. Soils may be composed of a combination of solid materials, water, and air. While all three of these phases may occupy volume, only the solids and water are considered to have weight. The moisture content of a soil is usually represented by the small letter, w.

w = Weight Water/Weight Solid = $W_w/W_s$

The moisture content may be expressed as a decimal number or, multiplied by 100 and expressed as a percentage. The total weight of a soil sample is the weight of solids plus the weight of the water.

$W_t = W_s + W_w$

From the above equation,

$W_w = wW_s$, So, $W_t = W_s + wW_s = W_s(1+w)$

The following report contains data obtained by conducting a moisture content test on a soil sample taken from our design project region.

**NAME:** Garrett Freer, Kristie Marriot, Binyu Wang

**LAB TITLE:** Moisture Content

**AIM:** To determine the moisture content of a sample of soil taken from the design project region.

OBJECTIVES:

The moisture content analysis is used to determine the amount and percentage of moisture in soils. The water content is the ratio of the mass of water in a given mass of soil to the mass of the dry soil solids. The water content of soils aids in ascertaining soil properties and behavior.

APPARATUS AND MATERIALS:

1) 1 containers (can A)
2) Balance
3) Electric Oven

PRODECURE:

1. The container was labeled using the letter A.
2. Weight of can 'A' and it was measured and recorded as W1(g)
3. The soil was added to the can and its weight was measured
4. The measured weight was then recorded as W2(g)
5. The electric oven was set at 110°C and the cans were then placed in the oven for 24 hours.
6. The cans were then taken out from the oven and the new weight of the cans were measured and recorded as W3(g)

RESULTS:

| Sample | A |
|---|---|
| Units | grams |
| W1 | 14.4 |
| W2 | 64.4 |
| W3 | 62.99 |
| MS | 48.59 |
| MW | 1.41 |
| Water Content % | 2.9 |

CALCULATING RESULTS:

1) Mass of Soil MS = W3 – W1
2) Mass of Pore water MW = W2 – W3
3) Water Content (%) W(%) = (MW/MS) x 100

CONCLUSION:

The moisture content of the sample in terms of water by volume was a calculated value of 2.9%.

## REFERENCES:

CENE 383L Geotechnical Engineering Lab: Moisture Content, retired from

http://www.scribd.com/doc/59681738/Geotechnics-Moisture-Content-Lab-Report