

SOIL STRENGTH – UNBOUND FIELD MOISTURE

General Description

The moisture content of unbound materials is important for controlling and measuring compactive effort. The proper amount of moisture must be added to an unbound material when compacting with a roller. Construction QC/QA specification values are targeted based on the in place moisture content. When performing dynamic cone penetrometer (DCP) or lightweight deflectometer (LWD) tests, the moisture content of the material is also measured.

Data Collection and Processing

Moisture content testing is not performed on a regular basis, but rather only during construction and occasional forensic activities. Researchers typically test several points on each layer within a test section as it is being constructed. The test frequency ranges from every 50 feet in both lanes to a less intense testing pattern based on research needs and staff availability.

The material is sampled into a sealed plastic cup or baggie in order to prevent evaporation of any water into the atmosphere. The sample is labeled and brought back to the laboratory, where the gravimetric moisture content (u) is measured.

$$u = \frac{m_w}{m_t}$$

m_w = mass of water

m_t = mass of oven dry material

The table below shows the columns that are in the Data Product table entitled UNBOUND FIELD MOISTURE.

UNBOUND FIELD MOISTURE
CELL
DESIGN
STATION
OFFSET_FT
DAY
MOISTURE_PERCENT
COMMENTS
DATE_TEST
MOISTURE_TEST_NO
MATERIAL_TESTED

Note that table column definitions and units can be found in Section J of the Data Product.

For more information:

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www.mndot.gov/materials/researchdcp.html

