GREGG DRILLING LLC

FAST VANE SHEAR TESTING

Overview

Gregg Drilling operates a modified digital iVane from A.P. van den Berg to measure undrained shear strengths in silty materials. It differs from the standard iVane in that the motor has been modified to run at high speeds. This ensures an undrained test in silty materials such as mine tailings deposits.

Fast Vane Improvements

- Rotation rates from 1-60 deg/sec
- Ensure test is undrained even in silts
- Various dimensions and sizes based on site conditions (2H:1D with D = 40, 50, 55 or 75mm)
- Data frequency unaffected by rotation rate (data recorded at 0.1 degrees)
- Estimate speed of rotation based on t50 from dissipation tests

Methodology

The Fast Vane consists of four rectangular blades fixed at 90° angles that are pushed into the ground to the desired depth. Once this depth is reached, the blades are rotated at a high speed.

The resistance of the soil, and consequently the required torque, will increase until the soil shears. Shearing happens in milliseconds due to the increased rates of rotation. From the point the soil is sheared, the torque value will generally decrease. The highest measured value to shear the soil is a measure of the undrained shear strength. After the first test to measure the peak undrained shear strength, the soil is remolded by rotating the vane at a high speed 20 times. Then the test is repeated to measure the remolded shear strength.

The test fully complies with ASTM D2573.

Features

- Torque sensor and drive motor located close to the vane for most accurate measurements.
- Entire rod string does not have to be rotated to rotate the vane.
- Rotation rates from 1-60 deg/sec
- Blade sizes available: 40, 50, 55 75mm diameter.
- Data recorded every 0.1 degrees

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