A PROCEDURE FOR SOIL SUCTION DETERMINATIONS USING WHATMAN'S NO 42 FILTER PAPER.

REFERENCE: A LOW-COST METHOD OF ASSESSING CLAY DESICCATION FOR LOW-RISE BUILDINGS.

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Proc. Instn. Civ. Engrs. Civ Engng, 1992, 92, May, 82-89.
METHOD: BRE IP4/93

INTRODUCTION:

Calibration (using various different techniques, and carried out by several different investigators) shows that the Equilibrium water content of this particular brand of filter paper placed in contact with a sealed soil sample enables the magnitude of the soil suction to be established with an accuracy of about 25%. This can be improved upon if a reasonable number of samples are tested, and an average suction or trend of suction with depth is determined.

TEST PROCEDURE:

This is carried out to a documented procedure based on the BRE Information Paper IP 4/93, but using **DISTURBED** samples which have been lightly recompacted into a 70mm internal diameter stainless steel tube. The soil is compacted in 3 equal layers to give a specimen of approximately 100mm height, using a BS 2.5 kg rammer dropped 15 times per layer, from the top of the 460mm high tube. The specimen is then extruded from the tube, the top and bottom trimmed, and then cut into 4 roughly equal disks of at least 10mm thickness. Should samples other than those of stiff consistency be encountered, i.e. very soft, or very stiff to hard, the compaction procedure may be varied, to ensure that the specimen produced is a regular cylinder and void free. Where necessary the soil slices may be individually compacted into a 75mm diameter consolidation test ring, and carefully extruded after ensuring the faces are flat and parallel.

A Summary is given showing the soil suction calculated from the average moisture content of the 3 filter papers which have been sealed in-between the soil slices at a temperature of 20+/-2 °C for a period of between 5 and 10 days,

CALCULATION:

The average moisture content of the filter papers is taken and the corresponding soil suction established using Equation 1 found in BRE IP 4/93 (Amended). The possibility of rogue results from individual filter papers can occur, where an unusually high suction is recorded, possibly due to poor paper/soil contact. If this situation arises the individual result may be discarded. The soil suction test results are then plotted on a graph against depth.