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Evaluation of Total and Matric Suction of Clayey Soil by Filter Paper Method

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Abstract–*Suction is the most important parameter required to study the soil in unsaturated condition. Filter paper method is the easy and economical method for suction measurement in which the calibration of filter paper is indispensable.The total suction calibration curve is not applicable for measuring suctions less than 1000 k Pa. Thus it is necessary to develop separate calibration curves for measuring matric suction. It is convenient to develop total suction calibration curve from filter paper technique but for matric suction calibration curve is quite difficult. Normally the pressure plate and pressure membrane were preferred fordeveloping calibration curves, neverthelessthese methods are having some limitations such as time consuming, skill and unavailability of equipment. The objective of this paper is to sidestep those limitations by adopting the prescribed procedure of establishing both total and matric suction calibration curves from filter paper method. In this paper, thetotal suction calibration equation was obtained by developing wetting calibration curve for Whatman No. 42 filter papers and compared with calibration equations developed by several other researchers. Thetotal suction calibration equationwas so selected that percentage error between obtained and selected must be less than 5%. Then the drying calibration curve developed by the same researcher for the same filter paper was used for measuring matric suction of clayey soil used in this study. The prescribed procedure reduces the efforts and additional time required for developing drying calibration curves. This technique can be appropriate in case of unavailability of equipment required for constructing drying calibration curve.*

Keywords: *Filter paper method, Calibration, Total suction, Matric suction, Clayey soil*