Soil Water Retention Curves for Remolded Expansive Soils

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ABSTRACT

Volume change in expansive soils occurs due to changes in the soil water system that change the stress equilibrium of the soil. Consequently, when determining the soil water retention relationship of an expansive soil, it is important to consider the volume change that occurs as the suction, and hence water content, changes during the test. Experiments using the Fredlund SWCC device and the filter paper method were conducted to take into account the effect of the volume changes on the soil water retention relationship of expansive soils. Claystone samples of the Denver and Pierre Shale Formations obtained near Denver, Colorado, USA were used in the study. A moist tamping system was used to obtain “identical” soil specimens. The observed experimental data were used to evaluate the previously published mathematical equations of SWRC. It is shown that the Fredlund and Xing equation is in the best agreement with the experimental data among the equations. In addition, a bilinear form was used to express the SWRCs for the expansive soils. It is concluded that the bilinear form of the SWRC gives the best fit to the measured experimental data.

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