

DSS Test Results Using Wire-Reinforced Membranes and Stacked Rings

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ABSTRACT

Recently developed American Society for Testing and Materials (ASTM) standards for direct simple shear (DSS) testing require that the sample be laterally confined in either a wire-reinforced membrane or stack of thin rings. Although wire-reinforced membranes are more commonly used in practice, it is uncertain how the results of the two confinement methods compare. This paper presents the results of direct simple shear tests performed on high plasticity clay and low plasticity organic silt to compare the effects of using either wire-reinforced membranes or Teflon-coated rings for lateral confinement. Comparisons are made for both the consolidation and shear phases of the test. The consolidation data suggest that the rings may provide increased lateral stiffness relative to the wire membranes. When appropriate system corrections were applied to the measured soil test data, the results of both confinement systems produced comparable results in terms of stress-strain behavior and strength.

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