

Effect of Compaction and Degree of Saturation on the Unconsolidated Undrained Shear Strength of Sandy Clay

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Abstract : For geotechnical engineers, one of the most important properties of soil to consider in various stability analyses is its shear strength which is governed by a number of factors. The objective of this research is to ascertain the effect of compaction and degree of saturation on the shear strength of fine-grained soil. For this purpose, three different dry densities such as in-situ, maximum standard proctor, and maximum modified proctor, were determined for the sandy clay soil. The soil samples were then prepared to keep dry density constant and varying degrees of saturation. These samples were tested for (UU) unconsolidated undrained shear strength in triaxial compression tests. The decrease in shear strength was observed with the decrease in density and increase in the saturation. The values of the angle of internal friction followed the same trend. However, the change in cohesion with the increase in saturation showed a different behavior, analogous to the compaction curve.

Keywords : compaction, degree of saturation, dry density, geotechnical investigation, laboratory testing, shear strength

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