Effect of Fine-Grained Soil on Shear Strength of Wind Deposits to Reduce Erodibility (Case study: Golestan Province)

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(Received: Feb. 14-2012 ; Accepted : Dec. 8-2012)

Abstract

Fine-grained materials of Clayey Loess deposits of Gorgan region were mixed with sand dune in the lab with various rations and their shear behavior was measured and evaluated by direct shear test. The result of the study showed that the increase of fine-grained clay in sand dune was directly related to the adhesion force and inversely to the internal friction angle. The increase or reduction in shear strength was affected by the fine-grain percentage. Dry condition and saturation of the test and sand dune had a less influence on shear parameters but in the mixed samples in dry condition and saturation, shear parameters revealed a considerable difference. The results of this study can be used in sand stabilization, erosion prevention, slope stability, embankment construction, compaction increase, and environmental pollution, and dust and water channels avoidance.

Keywords: Sand dune, Shear strength, Internal friction angle, Adhesion force, Loess, Golestan province.

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[DOR: 20.1001.1.24763594.1393.18.70.4.3]