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The Effect of the Low Plastic Fines on the Shear Strength and Mechanical Behavior of Granular Classes of Sand-Silt Mixtures

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Abstract : Shear strength of sandy soils has been considered as the important parameter to study the stability of different civil engineering structures when subjected to monotonic, cyclic and earthquake loading conditions. The objective of this laboratory investigation is to study the influence of the fraction of low plastic fines and gradation on the mechanical behavior of sand-silt mixtures reconstituted in the laboratory. For this purpose, a series of Casagrande shear box tests were carried out on different reconstituted samples of sand-silt mixtures with various gradations at two initial relative densities (Dr = 20 and 91 %) with different fines content ranging from 0 to 40 %. The soil samples were tested under different normal stresses (100, 200 and 300 kPa). The evaluation of the data indicates that the fines content and the gradation have significant influence on the friction angle and the cohesion.

Keywords : mechanical behavior, silty sand, friction angle, cohesion, fines content
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