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Effect of Scalping on the Mechanical Behavior of Coarse Soils

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Abstract : This paper aims at presenting a study of the effect of scalping methods on the mechanical properties of coarse soils by resorting to numerical simulations based on the discrete element method (DEM) and experimental triaxial tests. Two reconstitution methods are used, designated as scalping method and substitution method. Triaxial compression tests are first simulated on a granular materials with a grap graded particle size distribution by using the DEM. We study the effect of these reconstitution methods on the stress-strain behavior of coarse soils with different fine contents and with different ways to control the densities of the scalped and substituted materials. Experimental triaxial tests are performed on original mixtures of sands and gravels with different fine contents and on their corresponding scalped and substituted samples. Numerical results are qualitatively compared to experimental ones. Agreements and discrepancies between these results are also discussed.

Keywords : coarse soils, mechanical behavior, scalping, replacement, triaxial devices
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