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Numerical Assessment on the Unsaturated Behavior of Silty Sand

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Abstract : This investigation presents the behavior of the unsaturated silty sand by calculating the shear resistance of the specimens by numerical method. In order to investigate this behavior, a series of triaxial tests have been simulated in constant water condition. The finite difference software FLAC3D has been carried out for analyzing the shear resistance and the results are compared with findings from a previous laboratory tests. Constant water tests correspond to a field condition where the rate of the loading is much quicker than the rate at which the pore water is able to drain out of the soil. Tests were simulated on two groups of the silty sands. The obtained results show that the FLAC software may be able to simulate the behavior of specimens with the low suction value magnitude. As the initial suction increased, the differences between numerical and experimental results increased, especially in loose sand. Since some assumptions were used for input parameters, a conclusive result needs more investigations.

Keywords : finite difference, shear resistance, unsaturated silty sand, constant water test
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