

عنوان مقاله:

Modeling of soil slope stability improved by urease enzyme in saturated and unsaturated states

محل انتشار:

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خلاصه مقاله:

Nowadays biologically and environmentally friendly methods are used as a subset of environmental geotechnics for soil stabilization. One of these methods is using urease enzyme for hydrolyzing urea and formation of calcium carbonate precipitation in soil pores, which results in increment of soil strength and cohesion. Therefore, many studies have been carried out to identify the behavior of soils improved with this method, but limited modeling has been done on the real issues of stabilization. The main issue in the analysis of slope stability is to determine the critical slip surface, that is, the surface that has the least slip factor of safety. In this study, the effect of calcite precipitation in sandy soil was investigated by using direct shear test and modeling the results by limit equilibrium analysis method in two states, one in presence of groundwater and the other without considering it. The results show that in this method, soil stabilization has increased the stability factor of safety. Also the stability factor of safety in unsaturated state was higher than saturated state.

کلمات کلیدی:

Soil slope, Limit equilibrium, Factor of safety, Sandy soil, Urease enzyme

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