

عنوان مقاله:

Simultaneous stabilization by lime and reinforcement by Polypropylene fiber of poorly graded sand

محل انتشار:

دهمین کنگره بین المللی مهندسی عمران (سال: 1394)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Alireza kalantari - Department of civil and environment engineering, shiraz university of technology, fars, iran

Ali Johari - Department of civil and environment engineering, shiraz university of technology, fars, iran

خلاصه مقاله:

This paper presents the results of applying lime-stabilization and fiber-reinforcement methods, separately and simultaneously, in improving the properties of a poor sandy soil. The effects of adding lime and discrete polypropylene fiber of various lengths, solely and in combination, were investigated. Untreated and treated specimens, organized into 64 groups, were first subjected to tests for optimum moisture contents; and at the optimum moisture contents were they tested for unconfined compressive and direct shear strengths. Amount of lime, length of fiber, amount of fiber, and curing period were the varied parameters. The results show that optimum moisture content increased, thus maximum dry density decreased, with increasing lime content, with increasing fiber content, and with increasing fiber length. Although, shear strength increased with increasing lime content, better results were realized after increasing the curing period, with 2 percent lime content and 7 days curing period considered optimum. However, when stabilized using lime alone, the specimens were found prone to brittleness. This drawback was improved with addition of the fiber, with 0.3 percent fiber content considered optimum, thus demonstrating the merit of using lime and fiber simultaneously. Unconfined compressive and shear strengths also increased with increasing fiber length. Finally, the sudden loss of post-peak strength due to brittle failures was avoided, suggesting a change of failure mode from brittle to ductile, due to the fiber reinforcement

کلمات کلیدی:

poorly graded sand, lime-stabilized, fiber-reinforced, polypropylene fiber

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