

Evaluation of Durability and Stability of Clay Soils Stabilized Using Hydrated Lime nearby Hydraulic Structures

J. Abedi Koupai^{1*}, K. Norouzian¹ and N. Abbas²

(Received: May. 09-2014; Accepted :July 25-2015)

Abstract

To improve the engineering properties of fine-grained soils, the use of various additives has always been considered important. In this study, the effect of hydrated lime on compressive strength of clay soils was studied in both optimum moisture and saturated modes. For this purpose, by adding varying amounts of hydrated lime (0, 1, 3 and 5%) to the clay, several samples were prepared and tested by the standard proctor and Harvard miniature compaction apparatus. Then the samples were tested for unconfined compressive strength in optimum moisture and saturated modes after different curing days (7, 14, 28 and 90 days). The results showed that by increasing the amount of hydrated lime, the maximum dry unit weight was reduced and the optimum moisture was increased. Increasing the hydrated lime also increased the compressive strength of the soil in both dry and saturated modes and this resistance increase was significantly influenced by cured days and the amounts of hydrated lime. The results showed that the rate of 5% hydrated lime was the maximum compressive strength, but with regard to softening factor, the amount of 3% hydrated lime was determined as the optimum value.

Keywords: Clay soil, hydrated lime, Standard compaction, Harvard miniature compaction apparatus, Unconfined compressive strength.

1. Dept. of Water Eng., College of Agric. Isf. Univ. of Technol., Isfahan, Iran.

2. Agricultural Engineering Research Institute

*: Corresponding Author, Email: koupai@cc.iut.ac.ir