

Experimental Investigations on Ultimate Bearing Capacity of Soft Soil Improved by a Group of End-Bearing Column

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Abstract : The in-situ deep mixing is an effective ground improvement technique which involves columnar inclusion into soft ground to increase its bearing capacity and reduce settlement. The first part of the study presents the results of unconfined compression on cement-admixed clay prepared at different cement content and subjected to varying curing periods. It is found that cement content is a prime factor controlling the strength of the cement-admixed clay. Besides cement content, curing period is important parameter that adds to the strength of cement-admixed clay. Increase in cement content leads to significant increase in Unconfined Compressive Strength (UCS) values especially at cement contents greater than 8%. The second part of the study investigated the bearing capacity of the clay ground improved by a group of end-bearing column using model tests under plain-strain condition. This study mainly focus to examine the effect of cement contents on the ultimate bearing capacity and failure stress of the improved clay ground. The study shows that the bearing capacity of the improved ground increases significantly with increase in cement contents of the soil-cement columns. A considerable increase in the stiffness of the model ground and failure stress was observed with increase in cement contents.

Keywords : bearing capacity, cement content, curing time, unconfined compressive strength, undrained shear strength

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