

Predicting Consolidation Coefficient of Busan Clay by Time-Displacement-Velocity Methods

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Abstract : The coefficient of consolidation is a parameter governing the rate at which saturated soil particularly clay undergoes consolidation when subjected to an increase in pressure. The rate and amount of compression in soil varies with the rate that pore water is lost; and hence depends on soil permeability. Over many years, various methods have been proposed to determine the coefficient of consolidation, c_v , which is an indication of the rate of foundation settlement on soft ground. However, defining this parameter is often problematic and heavily relies on graphical techniques, which are subject to some uncertainties. This paper initially presents an overview of many well-established methods to determine the vertical coefficient of consolidation from the incremental loading consolidation tests. An array of consolidation tests was conducted on the undisturbed clay samples, collected at various depths from a site in Nakdong river delta, Busan, South Korea. The consolidation test results on these soft sensitive clay samples were employed to evaluate the targeted methods to predict the settlement rate of Busan clay. In relationship of time-displacement-velocity, a total of 3 method groups from 10 common procedures were classified and compared together. Discussions on study results will be also provided.

Keywords : Busan clay, coefficient of consolidation, constant rate of strain, incremental loading

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