

Aphisak Yimchoy 2015: The Study of Friction during Consolidation Test that Influence the Behavior of Soil Sample. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering.
Thesis Advisor: Mr. Somchai Prayongphan, D.Eng. 125 pages.

The consolidation test is conducted for predicting the parameter to calculate settlement and time for consolidation process of soil under the foundation of structure. During the test, consolidation ring confines specimen preventing lateral displacement. Only vertical displacement is allowed during consolidation test using consolidation ring. The contact area between soil and consolidation ring induce the frictional force. That frictional force may effect the resulting of consolidation test in both qualitative and quantitative.

In this research, the effect of frictional force during consolidation test is observed for clay, sandy clay and silty clay respectively three types of consolidation test are adopted, fixed-ring test, floating-ring test and triaxial test. Vertical stress during the test is controlled in the range of 0.16-2.53 ksc.

The results show that the frictional force caused effect to the coefficient of consolidation, compression index and recompression index. The research found that, the coefficient of consolidation is decreasing when the frictional force is increasing. When comparing to triaxial test, compression index and recompression index of fixed-ring test are smaller around 26.05% and 2.67% respectively. For floating-ring test, compression index and recompression index are 19.57% and 7.53% lower comparing to triaxial test. The correction factors are introduced to modify compression index of the consolidation test. For clay, sandy clay and silty clay, during fixed-ring test, the correction factors of 1.35, 1.14 and 1.23 is introduced for revising compression index. During floating-ring test, the factors of 1.25, 1.11 and 1.18 is included to improve compression index.

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