

## Effect of Radial Drainage on the Behavior of Normally Consolidated Clay in Triaxial Compression

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### ABSTRACT

Because the triaxial test is able to closely simulate field conditions, the engineer is largely dependent on its results.

The test may be performed in various ways. In order to dissipate pore water from a low permeability clay in the consolidation stage, it may be necessary to use Filter paper to allow radial drainage. However, it has been suggested that cylindrical soil samples consolidated with radial drainage may develop non-uniform stresses, strains, and water contents.

The concentration of effective stress near the boundary and the variation of the final water content may affect the test result. An aim of this research was to determine if non-uniformity of water content does develop in cylindrical specimens during consolidation by performing a series of laboratory tests. Three typical clays, kaolinite, bentonite and San Francisco Bay mud, were tested under both vertical and radial drainage conditions.

The physical characteristics of each clay can be obtained by analyzing the test data. Once the tested specimens were sheared to failure, they were taken away from the triaxial cell and cut concentrically to determine the water content distribution. Results indicated that the variation of water content was not significant under both drainage conditions for kaolinite and San Francisco Bay mud. In the case of bentonite, the tests could not be completed due to its low permeability. Thus, it appears that effects of radial drainage of cylindrical triaxial specimens will be insignificant for most clays.