THE ONE DIMENSIONAL BEHAVIOUR OF SAND

by

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Abstract

This study examines the one dimensional response of sand. For this purpose a compression shear apparatus based on a multi-ring consolidometer has been developed in which one dimensional loading and unloading tests can be performed without wall friction, and in which simple shear distortion of an enclosed sand can be evaluated. The apparatus is also used to examine one dimensional unloading following horizontal shearing of a vertically loaded sample, which is of special interest for one dimensional behaviour in liquefaction associated phenomena.

The one dimensional experimental results obtained from this apparatus are modelled using a mechanistic theory proposed by Dr G.R. Martin. In addition, particulate techniques are developed to investigate the underlying mechanisms occurring in the sand. To assist in this investigation special one dimensional, triaxial, and shear tests were performed and use was made of experimental results from published sources.

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