

(54) Title of the invention : Compressibility Behaviour of Compacted Soils – Hyperbolic Modeling.

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(57) Abstract :

Compacted soils constitute most engineering projects such as earth dams, embankments, pavements, and engineered slopes because of their high shear strength and low compressibility. The compressibility behavior of compacted soils is a key soil parameter in the design of earth structures but it is not determined correctly owing to partly saturated state. The compressibility of compacted soils can be better evaluated under the framework of hyperbolic behavior. One dimensional Consolidation tests on compacted specimens were conducted using conventional oedometer apparatus under constant water content condition. Tests were conducted by compact the soil specimens at respective optimum moisture contents for eight different soil samples, of varying grain size characteristics and consistency limits, collected from Tirupati Region. The main objective of this study is to examine the compressibility behavior of compacted soils to propose a phenomenological model. It is observed that the compressibility behavior can be captured by hyperbolic modeling with model parameters involved in the behavior being initial void ratio,  $e_0$ , representing the initial state of soil and other hyperbolic constants linked to this state. The data of 6 samples were used for developing the model and the data of remaining two samples were used for predicting the observed response from the model proposed. The data of published literature has also been used to predict the experimental behavior to bring out the merits of the model proposed.

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