

Model Studies on Shear Behavior of Reinforced Reconstituted Clay

Authors : B. A. Mir, A. Juneja

Abstract : In this paper, shear behavior of reconstituted clay reinforced with varying diameter of sand compaction piles with area replacement-ratio (s) of 6.25, 10.24, 16, 20.25 and 64% in 100mm diameter and 200mm long clay specimens is modeled using consolidated drained and undrained triaxial tests under different confining pressures ranging from 50kPa to 575kPa. The test results show that the stress-strain behavior of the clay was highly influenced by the presence of SCP. The insertion of SCPs into soft clay has shown to have a positive effect on the load carrying capacity of the clay, resulting in a composite soil mass that has greater shear strength and improved stiffness compared to the unreinforced clay due to increased reinforcement area ratio. In addition, SCP also acts as vertical drain in the clay thus accelerating the dissipation of excess pore water pressures that are generated during loading by shortening the drainage path and activating radial drainage, thereby reducing post-construction settlement. Thus, sand compaction piles currently stand as one of the most viable and practical techniques for improving the mechanical properties of soft clays.

Keywords : reconstituted clay, SCP, shear strength, stress-strain response, triaxial tests

Conference Title : ICCCE 2016 : International Conference on Civil and Construction Engineering

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 26-27, 2016