

Effect of Nanobentonite Particles on Geotechnical Properties of Kerman Clay

Authors : A. Ghasemipanah, R. Ziaie Moayed, H. Niroumand

Abstract : Improving the geotechnical properties of soil has always been one of the issues in geotechnical engineering. Traditional materials have been used to improve and stabilize soils to date, each with its own advantages and disadvantages. Although the soil stabilization by adding materials such as cement, lime, bitumen, etc. is one of the effective methods to improve the geotechnical properties of soil, but nanoparticles are one of the newest additives which can improve the loose soils. This research is intended to study the effect of adding nanobentonite on soil engineering properties, especially the unconfined compression strength and maximum dry unit weight, using clayey soil with low liquid limit (CL) from Kerman (Iran). Nanobentonite was mixed with soil in three different percentages (i.e. 3, 5, 7% by weight of the parent soil) with different curing time (1, 7 and 28 days). The unconfined compression strength, liquid and plastic limits and plasticity index of treated specimens were measured by unconfined compression and Atterberg limits test. It was found that increase in nanobentonite content resulted in increase in the unconfined compression strength, liquid and plastic limits of the clayey soil and reduce in plasticity index.

Keywords : nanobentonite particles, clayey soil, unconfined compression stress, soil improvement.

Conference Title : ICSIGR 2020 : International Conference on Soil Improvement and Ground Reinforcement

Conference Location : Dubai, United Arab Emirates

Conference Dates : January 30-31, 2020