

Mechanical and Hydraulic Behavior of Arid Zone Soils Treated with Lime: Case of Abadla, Bechar Clays, South of Algeria

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Abstract : Stabilization of clay with lime as bearing stratum is an alternative to replacement of original soil. By adding lime to clay soil, the soil workability is improved due to the combination of calcium ions to the clay minerals, which means, modified soil properties. The paper investigates the effect of hydrated lime on the behaviour of lime treated, arid zones clay (Abadla Clay). A number of mechanical and hydraulic tests were performed to identify the effect of lime dosage and compaction water content on the compressibility, permeability, and shear strength parameters of the soil. Test results show that the soil parameters can be improved through additives such as lime. Overall, the addition percentages of 6% and 9% lime give the best desired results. Also, results revealed that the compressibility behavior of lime-treated soil strongly affected by lime content. The results are presented in terms of modern interpretation of the behaviour of treated soils, in comparison with the parameters of the untreated soil.

Keywords : arid zones, compressibility, lime, soil behaviour, soil stabilization, unsaturated soil

Conference Title : ICSSMM 2019 : International Conference on Soil Stabilization Methods and Materials

Conference Location : Dublin, Ireland

Conference Dates : July 29-30, 2019