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Effect of Mineral Additives on Improving the Geotechnical Properties of Soils in Chlef

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Abstract : The reduction of available land resources and the increased cout associated with the use of hight quality materials have led to the need for local soils to be used in geotecgnical construction however, poor engineering properties of these soils pose difficulties for constructions project and need to be stabilized to improve their properties in oyher works unsuitable soils with low bearing capacity, high plasticity coupled with high insatbility are frequently encountered hense, there is a need to improve the physical and mechanical charateristics of these soils to make theme more suitable for construction this can be done by using different mechanical and chemical methods clayey soil stabilization has been practiced for quite sometime bu mixing additives, such us cement, lime and fly ash to the soil to increase its strength. The aim of this project is to study the effect of using lime, natural pozzolana or combination of both on the geotecgnical cherateristics of clayey soil. Test specimen were subjected to atterberg limits test, compaction test, box shear test and uncomfined compression test Lime or natural pozzolana was added to clayey soil at rangs of 0-8% and 0-20% respectively. In addition combinations of lime –natural pozzolana were added to clayey soil at the same ranges specimen were cured for 1-7, and 28 days after which they were tested for uncofined compression tests. Based on the experimental results, it was concluded that an important decrease of plasticity index was observed for thr samples stabilized with the combinition lime-natural pozzolana in addition, the use of the combination lime-natural pozzolana modifies the clayey soil classification according to casagrand plasiticity chart. Moreover, based on the favourable results of shear and compression strength obtained, it can be concluded that clayey soil can be successfuly stabilized by combined action of lime and natural pozzolana also this combination showed an appreciable improvement of the shear parameters. Finally, since natural pozzolana is much cheaper than lime ,the addition of natural pozzolana in lime soil mix may particulary become attractive and can result in cost reduction of construction.

Keywords : clay, soil stabilization, natural pozzolana,atterberg limits, compaction, compressive strength shear strength, curing
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