

Effect of Cement Amount on California Bearing Ratio Values of Different Soil

Authors : Ayse Pekrioglu Balkis, Sawash Mecid

Abstract : Due to continued growth and rapid development of road construction in worldwide, road sub-layers consist of soil layers, therefore, identification and recognition of type of soil and soil behavior in different condition help to us to select soil according to specification and engineering characteristic, also if necessary sometimes stabilize the soil and treat undesirable properties of soils by adding materials such as bitumen, lime, cement, etc. If the soil beneath the road is not done according to the standards and construction will need more construction time. In this case, a large part of soil should be removed, transported and sometimes deposited. Then purchased sand and gravel is transported to the site and full depth filled and compacted. Stabilization by cement or other treats gives an opportunity to use the existing soil as a base material instead of removing it and purchasing and transporting better fill materials. Classification of soil according to AASHTOO system and USCS help engineers to anticipate soil behavior and select best treatment method. In this study soil classification and the relation between soil classification and stabilization method is discussed, cement stabilization with different percentages have been selected for soil treatment based on NCHRP. There are different parameters to define the strength of soil. In this study, CBR will be used to define the strength of soil. Cement by percentages, 0%, 3%, 7% and 10% added to soil for evaluation effect of added cement to CBR of treated soil. Implementation of stabilization process by different cement content help engineers to select an economic cement amount for the stabilization process according to project specification and characteristics. Stabilization process in optimum moisture content (OMC) and mixing rate effect on the strength of soil in the laboratory and field construction operation have been performed to see the improvement rate in strength and plasticity. Cement stabilization is quicker than a universal method such as removing and changing field soils. Cement addition increases CBR values of different soil types by the range of 22-69%.

Keywords : California Bearing Ratio, cement stabilization, clayey soil, mechanical properties

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