

Laboratory Investigation of Expansive Soil Stabilized with Calcium Chloride

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Abstract : Chemical stabilization is a technique commonly used to improve the expansive soil properties. In this regard, an attempt has been made to evaluate the influence of Calcium Chloride (CaCl₂) stabilizer on the engineering properties of expansive soil. A series of laboratory experiments including consistency limits, free swell, compaction, and shear strength tests were performed to investigate the effect of CaCl₂ additive with various percentages 0%, 2%, 5%, 10% and 15% for improving expansive soil. The results obtained shows that the increase in the percentage of CaCl₂ decreased the liquid limit and plasticity index leading to significant reduction in the free swell index. This, in turn, increased the maximum dry density and decreased the optimum moisture content which results in greater strength. The unconfined compressive strength of soil stabilized with 5% CaCl₂ increased approximately by 50% as compared to virgin soil. It can be concluded that CaCl₂ had shown promising influence on the strength and swelling properties of expansive soil, thereby giving an advantage in improving problematic expansive soil.

Keywords : calcium chloride, chemical stabilization, expansive soil, improving

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