CHARACTERISTICS OF GYPSIES SOILS TREATED WITH CALCIUM CHLORIDE SOLUTION

Dr. Saad Farhan Al-Abdullah Highway Engineering Dept., Al-Mustansiria University
Nabeel Shaker Mahmood Al-Dulaimi (M.sc. Civil Engineering)

ABSTRACT

Gypseous Soils are distributed in many regions in the world including Iraq, which cover about (31.7%) of the surface area of the country. Existence of these soils, some times with high gypsum content, caused difficult problems to the buildings and strategic projects due to dissolution and leaching of the gypsum slates by the action of water flow through the soil mass.

In this study the effect of treatment with Dihydrate Calcium Chloride ($CaCl_2.2H_2O$) as water solution on compaction, compressibility, leaching, permeability and shear strength characteristics of Gypseous soil is investigated.

It is found that the maximum dry unit weight increases while optimum moisture content decreases with the increase in the concentration of calcium chloride in the molding water.

It is concluded that the engineering properties of the samples are highly improved when the samples are soaked in calcium chloride solution at (20%) concentration. Where, considerable reduction is observed in compressibility, collapsibility, coefficient of permeability, percentage of dissolved gypsum and leaching strain. Also, the treatment minimizes the reduction in cohesion component (c) upon soaking in water and slightly decreases the angle of internal friction (ϕ).

Analysis of the tests results showed that the using of calcium chloride solution in improvement the gypseous soil is more efficient than using it in any other form (powder).