Abstract

Expansive soils cover a large area in the middle and east of Sudan. This type of soil has the ability to swell when exposed to water forming high pressure, this in turn causes damage to the structure constructed on it. Maintenance of these structures costs a lot of money and sometimes reaches to its primary cost. For this reason the need for extensive studies for expansive soil in Sudan has emerged in order to know its characteristics and classification and to find solution for its problems.

This study covers the characteristics of expansive soil in Elmanshia , east of Khartoum (Khartoum State), Shambat area in Khartoum North (Khartoum State), and Fao Village (33)

The research is mainly concerned with the study of the heave of expansive soil before and after reinforcement, and for the purpose of this study, laboratory work was carried out in the Sudan University of Science and Technology, College of Engineering, Civil Engineering department.

The laboratory work consisted of, Atterberg limits, particle size distribution, compaction, specific gravity, shrinkage limit and triaxial compression test.

A complete analysis has been done for the samples using, X-ray diffraction technique to find out the types of minerals and ratio of their

existence in the soil. The result of this test shows that the soil can be classified as a highly expansive soil.

The research also investigates, with an experimental model the concept of soil reinforcement as a solution of this problem. After these tests diagrams showing the relationship between the number of reinforced layers and the heave were produced

Map (3.1) Distribution of reported Instances of Expansive Soils
(Donldson 1973)

58 59 60 61 62 63 64 65 66 x (31)