Commentary

Study of structures in black cotton soil

A Sheron*

Department of Environmental Science, Gitam University, Visakhapatnam, Andhra Pradesh, India
*Corresponding author. E-mail: sheron.a@gmail.com

DESCRIPTION

In India deposition of Black cotton soil is excellent and good for farming. All the fundamental amenities of life i.e. food, clothes and house have been fulfilled by the soil, without soil It is just next to impossible to think about life on the earth. But on the other aspect in Civil Engineering factors Black cotton soil is very troublesome and complicated and hazardous because of its characteristics. Because of its high swelling and shrinkage characteristics, the black cotton soil has been a task to the Engineers. The black cotton soil is very hard while dry but loses its strength completely when it is in moist condition. Soil depostis in nature exist in an extremely erratic manner producing there by an infinite variety of feasible combination which will affect the energy of the soil and the method to make it purposeful. So in the precise case of Black cotton soil with wide variety of challenges related to the construction. All the Black cotton soils are not expansive soils and all the expansive soil are not Black in colour. These soils possessed excessive strength in summer and decreased rapidly in winter.

Swelling and shrinkage of expansive soil cause differential settlement resulting in intense harm to the foundation, buildings, roads, retaining structures and canal linings. This study deals with the formation of black cotton soil. Characteristics of black cotton soil, boundaries to construct structures in black cotton soil, causes of structures failed in black cotton soil, remedial measures to assemble the systems in black cotton soils. Due to disintegration of a black lava i.e. basalt rock through Sun, wind and rain formation of black cotton soil occurs, It is important to talk about the characteristics of black cotton soil due to which the problems comes in the construction of different projects, especially in Maharashtra, Gujrat, South Uttar Pradesh, East area of Madhya Pradesh and some of the part of Andhra Pradesh and Karnataka posses the black cotton soil in greater area. Black cotton soils are made of various properties of minerals like montmorinolite and kaolinite, chemical compounds like iron oxide and calcium carbonate and organic matter like humus. Montmorinolite is a most important mineral of black cotton soils. The swelling and shrinkage behavior of black cotton soils originate especially from this mineral. Clay minerals are hydra silicate of aluminium and magnesium.

CONCLUSION

They are made of sheets of silica and aluminium stacked is above the other forming sheet like structure with expanding lattice. The structure of some aluminium is through magnesium ions and the mineral becomes chemically active. Treatment with the sodium about base exchange and the soils becomes softer and more plastic. Organic matter in the form of humus makes these soils more plastic and compressible. The dark colour of the black cotton soils is believed to be either because of humus or titanium oxide. Before construction at site some properties of black cotton soil like swelling pressure, swelling index consolidation test and shear strength need to be known in laboratory. It enables to ascertain the suitability of soil for civil engineering structures. It is the test carried out to measure the degree of expansive variety of given soils.