

## **PERFORMANCE OF GEOSYNTHETICS IN CONTROLLING SWELL-SHRINK POTENTIAL OF EXPANSIVE CLAY**

**E. RAVI AND V. K. STALIN**

### **Abstract**

Undesirable movements caused by swelling and shrinkage of expansive soils results in distress of many structures resting on such soils. In this investigation, an attempt is made to study the performance of geosynthetics in controlling swell-shrink characteristics of expansive clay in which type of geosynthetics material and number of layer were varied. Swelling and shrinkage tests were independently conducted under varying type, number of layer of geosynthetics without end confinement. It is observed from the results that the two layer of geo membrane placed horizontally controlled swelling much higher than geotextile, geogrid and geocomposite. The shrinkage control is high as 45 % clay with two layer of horizontally placed geomembrane compared to other geosynthetic material. The reduction in shrinkage is mainly attributed to the geomembrane acting as moisture barrier and thereby loss of water is controlled. In the case of soil with geogrid and geotextile control of shrinkage and swelling is attributed to the mobilization of friction between the soil and the material. It is concluded that control of swell-shrink potential of expansive clay can be effectively carried out using geomembrane compared to other geosynthetic materials.

-----  
**Keywords:** Geosynthetics, swelling, shrinkage, expansive clay