**STABILIZATION OF SOIL USING GEOPOLYMER AND BIO POLYMER**

**ABSTRACT**

As stabilization of soil improves its engineering properties, chemical and mechanical stabilization processes are in use. In the present study two difficult soils; expansive soil and dispersive soil are stabilized with geopolymer and biopolymer. Sodium based alkaline activators and fly ash as an additive is used as geopolymer and Xanthan gum and Guar gum are used as biopolymers. The effectiveness of geopolymer is studied in terms of unconfined compressive strength (UCS), differential free swelling (DFS), swelling pressure (SP), durability and dispersion tests. The swelling pressure got reduced by 97.14% finally with addition of 40% fly ash and 15% bentonite. The dispersion test showed bentonite to be an extremely dispersive soil, whose dispersiveness is controlled by addition of alkali activated fly ash. From UCS and durability test it is observed that bentonite added with 40% fly ash and 10% solution gave better results. The effectiveness of biopolymer is studied based on UCS tests on dispersive soil and pond ash at their moisture content. For dispersive soil, durability, dispersion and DFS tests are also done. It is observed that dispersive soil and pond ash mixed with various percentages of Xanthan gum and Guar gum are not dispersive and are more durable than ordinary bottom ash and dispersive soil samples. Guar gum is found to imparts higher confined compressive strength and durability than Xanthan gum.