**GROUND IMPROVEMENT TECHNIQUES**

**ABSTRACT**

It is due to rapid growth of population, fast urbanization and more development of infrastructures like buildings, highways , railways and other structures in recent past years has resulted in reduction of availability of good quality of land. Therefore engineers have no choice left except to use soft and weak soils around by improving their strength by means of suitable modern ground improvement techniques for construction activities. At present the available ground improvement techniques are replacement of soil, vertical drains, stone columns, vibro compaction , dynamic compaction, soil reinforcement, vibro piers, in-situ densification, pre-loadings, grouting and stabilization using admixtures.

The aim of these techniques are to increase the bearing capacity of soil and reduce the settlement. Ground improvement by reinforcing the soil is achieved by using fibers of steel, glass ,various polymers in the form of strips or grids and geosynthetics. Geosynthetics may be permeable or impermeable in nature depending on composition and its structure. The geosynthetics material can be used to perform different roles in different applications. It can be used as reinforcement, separation, filtration, protection , containment and confinement of soil to increase its bearing capacity. Depending upon the requirement and site condition a Geocell reinforcement may also be used. This paper presents a thorough study on various available modern ground improvement techniques and their applications in civil engineering in present scenario. On the basis of long term performance results of various ground improvement techniques and its analysis, an efficient design can be developed and a suitable method of ground improvement technique may be adopted for a particular application.

KEYWORDS: Geosynthetics, vertical drains, stone columns, vibro-compaction, dynamic compaction, soil reinforcement.