**RESEARCH PROPOSAL**

**RESEARCH TOPIC: A COMPREHENSIVE STUDY OF THE BEHAVIOR OF WEAK SOILS UNDER DIFFERENT LOADING CONDITIONS.**

**INTRODUCTION:**

Loose earth materials e.g., soils, sands, gravels, etc. are very important for the design and construction of road and airfield pavements or foundation support and other earth-fill structures. The determination of the different physical and engineering properties of these materials at the site i.e., when they exist as base, subbase, subgrade or fill layer in terms of moisture content, density, strength, etc., is important, as well. Coarse grained soil (A1-A4) possesses good strength properties and its behavior does not vary considerably with climatic changes, whereas, fine grained soil (A5-A7) possesses very low strength properties, its behavior changes considerably with the increase in moisture content and it creates construction and post construction problems. So, if the soil present at the site is coarse grained, it can readily be used as a subgrade material or foundation support but if its fine grained soil, its properties must be improved by adding some admixtures.

The purpose of my work is to evaluate the behavior of weak soils under different loading conditions, to select the most economical admixture, to find out optimum proportions of different available admixtures to get the minimum recommended strength and to correlate the strength of improved soil with its different physical properties. For this purpose different strength properties of the soil will be determined i.e; CBR, ClV, MR etc. The different cheap and locally available admixture will be used.

**SCOPE OF WORK**

The following tasks will be undertaken as a part of the proposed research.

**TASK-1:-LITERATURE REVIEW:**

A previous research data regarding behavior of fine grained soils under static and dynamic loading will be collected through internet, Books, International Journal articles and international conferences. The area where there is deficiency of research will be selected in order to further propagate the research work

**TASK-2:-ACQUIRING SKILL OF ANALYTICAL MODELING:**

The literature regarding analytical modeling may be acquired through previous research work. Suitable software relating with finite element may be selected for analytical modeling of proposed research work.

**TASK-3:-PERFORMING LAB. AND FIELD TESTS TO COLLECT ALL THE REQUIRED DATA:**

In addition to Lab. Testing, sufficient tests will also be performed at the site to assess the true behavior of in-situ weak soils. All the relevant data that would be required in analysis and design will be collected.

**TASK-4:-ANALYSING THE COLLECTED DATA:**

In this stage all the collected data will be analyzed using different approaches and under different loading conditions. The analysis will provide quick, cost effective and reliable guidelines for assessing the behavior of weak soils under different loading conditions and finally to select the best method to improve the properties of weak soils, in future.

**TASK-5:-REPORT WRITING AND PUBLICATIONS**

Draft and final project reports will be developed documenting recommended approach to analyze the properties of fine grained soils using different admixtures under different loading conditions. Conference presentations and/or journal papers will be written to disseminate the major findings of this research project.

**AIMS AND OBJECTIVES:**

The main objectives of this research are;

1- To evaluate the behavior of weak soils under different loading conditions.

2- To select the most economical admixture.

3- To find out optimum proportions of different available admixtures to get the minimum recommended strength for any specific purpose.

4- To correlate the strength of these improved soils with its different physical properties

**CONCLUSIONS AND FUTURE RECOMMENDATIONS:**

A detailed list of conclusions along with future recommendations will be provided showing how this research can be helpful to others.