

**STUDY THE EFFECTS OF PARTICLE SIZE AND  
OTHER ENGINEERING PROPERTIES OF  
GRANULAR SOILS ON COMPACTION**

A dissertation submitted to the  
Faculty of Science & Technology  
Uva Wellassa University

In partial fulfillment of the requirements for the award of the  
Degree of Bachelor of Science

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**2012**

## ABSTRACT

Granular soil is mostly used in construction field as a filling material. Compaction is the densification of soil material by the use of mechanical energy. Soil is compacted by removing air and water from its pore spaces. There exists a certain amount of moisture that a soil can have where the maximum unit weight is obtained. When the soil is compacted to this state, it is referred to as the maximum unit weight. Basically such moisture content, soil type, as well as force that applied to compact the soil is influenced on compaction of soil. In this experiment, peculiarly granular soil has been used because that is widely used in construction field. Particle size is the important parameter that varies during the experiment. Mainly, influence of gravel size particles on compaction has been determined. A common difficulty encountered when specifying compaction requirements is the natural variation in the gradation of the filling material as well as weakly compacted filling materials will cause to failures of construction.

This research basically performed to determine the compaction of granular soil that mixed with various percentages. Therefore first ten samples of experiment were selected from one soil type. All these samples were tested under the Standard proctor compaction test. Standard proctor test was little bit modified requirement of the experiment. These ten samples were taken by applying cone and quartering sampling method. Those samples were sieved and separated into different particle sizes using American standard sieve set with sieve shaker. Then measured gravel size fraction of each sample was mixed thoroughly with fraction of particle size that less than 2mm (particle size below the gravel size) with various percentages by using sample splitter (10% of gravel size with 90% of fines, 20% of gravels with 80% of fines etc.) are tested for proctor compaction tests were carried out for mixed samples. Some of the data have deviated from others. But considerably gradual increasing of dry density with increasing percentage of gravel size particles could be observed. As well as sample which has highest dry density has 80% of gavel size particles. The sample which has lowest dry density has 10% of gravel size particles.

**Key words:** Granular Soil, Compaction, Plasticity, Liquid Limit