

Study the Effects of Particle Size and Other Engineering Properties of Granular Soils on Compaction

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Abstract

Granular soil is mostly used in construction field as a filling material. Soil is compacted by removing air and water from its pore spaces. Particle size is the important parameter that varies during the experiment. Mainly, influence of gravel size particles on compaction has been determined. Present study was intended to fulfill certain objectives such as to develop a relevant grain size mixture of granular soil, for better filling purposes in construction field. Ten samples were selected from one soil type. All these samples were tested under the Standard proctor compaction test. Samples were sieved and separated into different particle sizes using American standard sieve set with sieve shaker. Weight of each separation fractions were measured and recorded. 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. Maximum dry density was calculated. Considerably gradual increasing of dry density with increasing percentage of gravel size particles could be observed. The sample which has the highest dry density has 80% of gavel size particles. The sample which has lowest dry density has 10% of gravel size particles. Dry density values of other samples were spreaded out among the highest and lowest values of dry density. This study showed that the maximum dry density is increased with increasing of percentage of gravel size particles in granular soil sample. Therefore it can be concluded that the compaction of granular soil will be intensified with increasing of gravel size particles as the compaction is expressed by dry density.

