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نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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Ain Shams University
Faculty of Engineering
Structural Engineering Department

The Influence of Input Energy on Compactability of Soil

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A Thesis

Submitted in Partial Fulfillment for the Requirements of the Degree of Master of Science in Civil Engineering

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STATEMENT

This dissertation is submitted to Ain Shams University for the degree of M. SC. in Civil Engineering.

The work Included in The thesis was carried out by the author in the department of Structural Engineering, Ain Shams University, from Desmper, 1994 to June 2000

No part of this thesis has been submitted for a degree or a qualification at any other university or institution.

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Abstract of the M. Sc. thesis submitted by: Eng. ***Mohamed El Gedawy Shamndy***

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ABSTRACT

The determinism of construction at suggested site is considered the main important problem faces the Geotechnical engineering especially when the soil is less than ideal for the intended construction purpose. The soil may be week, highly compressible, or have a higher permeability than desirable from an engineering or economic point of view. In such case, the engineer found himself compelled to try to stabilize or improve the engineering properties of the soils at the site. The compaction is considered the more suitable method of soil improvement form economic consideration than other methods.

This research aims to study the influence of input energy to soil on its Compactability with chosen sand and gravel mix as example of cohesionless soil. That was achieved by studying the effect of increasing the number of layers, the number of blows, the weight of hammer, or the drop height in addition, the effect of grain size of the mixture. Several laboratory tests were preformed on the soil with changing the ratio of gravel to indicate the influence of input energy with differ of grain size of soil. The compactive energy can be increased by many ways either by increasing number of layers, number of blows, weight of hammer, or height of hammer drop.

Generally, the compactive energy increase leads to increase the maximum dry density and decrease optimum water content. This study illustrated that at high values of compactive energy the dry density increases with little or no change of optimum water content. Also, it illustrated that increasing number of layers gives higher dry density than increasing number of blows at the same energy. Curve fitting equations showed relationship between the rate of increase of compactive energy and either of the maximum dry density and optimum water content. Results are compared with standard and modified Proctor tests.

Key words: compactive, energy, optimum, water content, cohesionless, soil, compaction, effect, blows