

**SOFT SOIL STABILIZATION USING COCONUT COIR  
AGRICULTURE WASTE**

By

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## DECLARATION BY THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## **ABSTRACT**

Soil is the basic element for engineering structures, it is required to cater load from the superstructure above the ground. It is important for that soil to have enough strength to become a best supportive material. In some places, due to the environment factors, soil maybe weak in strength which have poor bearing capacity. As a result, soil stabilization is needed for a weak soil. Soil stabilization is a process of improving shear strength parameters and thus increase the bearing capacity of soil. There're several methods that are available for soil stabilization. However, some of the methods such chemical stabilization effects the condition of the soil because of its chemical composition.

In this study, coconut coir was mixed with pure clay to investigate the relative strength, bearing capacity and compaction capability of the soil. The effect of coconut coir on the geotechnical characteristics was scrutinized by conducting unconfined compression test. The pure clay sample from Bertam was brought for testing to determine its physical properties. In this test also, without additives, the clay was tested to find optimum moisture content, plasticity index and unconfined compression strength. The coconut coir was added in varying percentage which are 0.25%, 0.5%, 1% and 3% respectively and that fraction is for which maximum strength is obtained was found out.

The optimum value is determined by running the Unconfined Compression Test for each different portion of coconut coir fiber. Overall, the optimum Unconfined Compression Test indicate an increment of about 128% in the soil strength.

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