

**PERFORMANCE OF CRUSHED  
COCONUT SHELL IN UNCONFINED  
COMPRESSION TEST (UCT) OF  
RESIDUAL SOIL**

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**UNIVERSITI TEKNOLOGI MARA**

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By

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This report submitted as a  
partial requirement for the degree of  
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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

Failure cases occur on residual soil are due to the infiltration of the surface runoff that occurred during the heavy rainstorm. Generally, this factor have resulted many incidents which is commonly occur in Malaysia mostly are soil erosion, slope failure, and landslide. This phenomenon always happen in natural slope or engineering slope. Besides, the poor of residual soil behavior always leads to the settlement due to the foundations of heavy structure are constructed on compressible and weak of soil behavior. There are a lots of methods to improve engineering properties of residual soil. The poor behavior of soil can be improve by increase the compressive strength of residual soil added with various percentage of crushed coconut shell for the soil stabilization. The study conducted is to determine the basic properties of residual soil that are collected from the field site at Teluk Bahang, Balik Pulau, Penang. Apart from that, the main objective of this study is focuses on analyzing and compare the effectiveness of crushed coconut shell in stabilizing the residual soil that are collected from the field site at Teluk Bahang Balik Pulau, Penang. Coconut shells are commonly available and economical materials. Coconut shell has been crushed into small pieces using aggregate impact apparatus and sieve passing through size 4.25 mm retained on 1.18 mm. This study are to improve compressive strength of residual soil added with various percentage of crushed coconut shell 0 %, 3 %, 6%, 9 % and 12 % CCS. The tests were conducted for various percentage of crushed coconut shell which is directly being tested by performing Unconfined compression Test (UCT) to analyze the shear strength of the soil. From the results inferred that crushed coconut shell are effective in improving the engineering properties of residual soil. The most effective results for the optimum value of Unconfined Compressive Strength (UCS) of the soil were obtained with addition of 9% crushed coconut shell (CCS).