CRUSHED COCONUT SHELLS AS AN ADDITIVE FOR STABILIZATION TREATMENT OF SUBGRADE MATERIALS

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Bachelor of Engineering (Hons) Civil

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JANUARY 2019

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This report is submitted as a

partial requirement for the degree of

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JANUARY 2019

DECLARATION BY THE CANDIDATE

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

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

Road pavement is one of the most important, reliable and widely used infrastructure in transportation system. It consists of base, subbase and subgrade course. Subgrade layer is the most essential in road pavement constructions as it will receive stresses from above pavement layers. However, soil settlement is commonly occurred in Malaysia road due to poorly stabilized subgrade layer. Therefore, it is important that subgrade layer have properly stabilized to withstand stresses applied from above to prevent from soil settlement frequently occurs as cost of repair and maintenance are expensive. The purpose of this study is to identify the improvement of subgrade material strength by integrating Crushed Coconut Shell into the Laterite Soil as a subgrade material. To find the possibility, a series of laboratory tests for Laterite Soil has been performed. This includes Particle Size Distribution, Hydrometer, Standard Proctor and California Bearing Ratio (CBR) Testing carried out at the Laboratory of Geotechnics in Faculty of Civil Engineering UiTM Penang. Crushed Coconut Shell with variations of 2%, 4%, 6% and 8% percentage inclusion are being mixed to Laterite Soil as a subgrade material. The CBR value which indicating soil strength parameter for these variations of soils then being compared and lastly, the outcomes from the laboratory testing then validated through comparison with data from previous researches having the same field of study. The highest CBR value of 27.5% where recorded at 4% of Crushed Coconut Shell being added as compared to initial CBR value of 9.06% for unsoaked soil. While for soaked soil, CBR value of 7% were recorded at initial Laterite Soil condition and improved to CBR value of 24.13% when the Laterite Soil was mixed with 4% of Crushed Coconut Shell.

ACKNOWLEDGEMENT

I would like to take this opportunity to express my gratitude and most sincere thanks to several individuals that supporting me throughout completion of this bachelor's Degree study. First and foremost, I wish to express my sincere thankfulness towards my supervisor, Mdm. Faizah bt Kamarudin for her guidance and advices throughout this study. She has helped me tremendously in my research by sharing helpful information, practical advices and supports in completing this research and writing of this thesis. Her guidance has motivated me to complete this research successfully.

Also, many thanks to Mr. Muhamad Azrul Aswad and Mr. Salahuddin Abdullah for their help in laboratory exercise in the completion of this project. They have assists me and sharing their knowledges throughout carrying out laboratory testing for this study.

I also wish to express my deepest thanks to my parents. Their unwavering financial support and encouragement is my source of strength. Not to forget to all my fellow friends that have helping in preparing for sample to be used in this research and their moral supports throughout completion of this project.