MECHANICAL PROPERTIES OF COMPRESSED SOIL BRICK BY USING JUTE FIBER

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Bachelor of Engineering (Hons) Civil (Infrastructure)
UNIVERSITI TEKNOLOGI MARA
JULY 2019

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This report is submitted as a
partial requirement for the degree of
Bachelor of Engineering (Hons) Civil (Infrastructure)

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JULY 2019

AUTHOR'S DECLARATION

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 thesis 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 Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Title	Civil Engineering
	Mechanical Properties Of Compressed Soil Brick By
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Date	1 July 2019

ABSTRACT

Construction over brick is a major issue affecting cost and scheduling of projects. Many techniques have been conducted to strengthen the brick. Most of them are using additives or composite materials to strengthen the brick such as paddy straw, rice husk ash, fly ash and stone dust. The strength of the brick is commonly expressed as compression strength, flexural strength and water absorption. The objective of study is to determine the properties of soil in term of mix design with percentage of jute fiber that will be added to the compressed soil brick (CSB) starts with 1, 2 and 3 % by weight respectively. All the soil properties such as Plasticity Index (PI) must be in suitable range between 5 to 15 % to make the production of CSB successful and the result of it is 12 %. Moreover, the one of the most important things in production of bricks is it needs binder which is Ordinary Portland Cement (OPC). The binder usually used around minimum 5% to maximum 10% from the brick's weight. The composition of OPC used in CSB is 5 % as economical to faster the drying process. Next, to ensure the CSB's strength, several tests must be performed for instance compression, flexural and water absorption to the CSB together with the current addition of jute fiber. The results showed that the highest value of maximum force and stress of the sample for compression and flexural is better with 1 % of jute fiber. It is also showed the highest percentage of water absorption is at 13.14 % that is in range between 10 to 20 % of good quality of bricks in absorption of water from previous studies. It can be concluded that the CSB have a good potential towards wider usage of construction nowadays. Furthermore, it will give aesthetic value which is no use of fire in production of it that to make it different with the other production of bricks such as clay brick that use fire burning to increase its strength. Furthermore, CSB will be more recognizable as environmental friendly material used in development project that can save nature from various pollution and damage regarding to infrastructural and environmental element in Malaysia.

ACKNOWLEDGEMENT

In the name of Allah the Most Compassionate the Most Merciful

Syukur Alhamdulillah, firstly I would like to praise ALLAH S.W.T for His blessing and giving me the strength, patience and confidence to complete my final year project report in a time frame given and finally fulfill the requirement for this semester Bachelor of Engineering (Hons) Civil (Infrastructure) at UITM Pulau Pinang.

First and foremost, a great appreciation goes to my supervisor, Ir Zulfairul Bin Zakariah, who is responsible to guide and give me an advice from the beginning until the end of to complete my report. This work would not be completed on time without his support, guidance, effort, time, and patience. I fervently appreciate his contribution during the meeting as he has given a lot of constructive comments and the necessary guidelines in order to achieve and complete this academic task.

Besides, I would also like to draw sincere thanks to all the lecturers, lab assistants and tutors that have taught and shared their valuable knowledge and information with our in completing this research. Without them, I would not able to reach this stage and complete this report.

Lastly, I would like to thank to my beloved family and friends for all their continuous support, encouragement and enthusiasm. With the unlimited supports and advices that they provide, it really helped me to be stronger and patience to overcome the challenges in order to accomplish this task.