A STUDY OF CONCRETE PERFORMANCE USING TREATED KAOLIN AS A PARTIAL REPLACEMENT IN CEMENT

MOHD SHAHMIN BIN MOHAMMAD SHATER

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(Infrastructure)
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By
MOHD SHAHMIN BIN MOHAMMAD SHATER

This report is submitted as a
partial requirement for the degree of

Bachelor of Engineering (Hons) Civil (Infrastructure)
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JANUARY 2019

AUTHOR'S DECLARATION

I declare that the work in this dissertation 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.

Name of student	:	Mohd Shahmin Bin Mohammad Shater
Student I.D. No.	:	2016209792
Programme	:	Bachelor of Civil Engineering (Hons) Infrastructure
Faculty	:	Civil Engineering
Dissertation Title	:	A Study of Concrete Performance using Treated Kaolin as a Partial Replacement in Cement
Signature of Student	:	……
Date	:	15 December 2018

ABSTRACT

Concrete is widely used construction materials. However, the production of Portland cement releases significant amount of CO_2 (carbon dioxide) and a greenhouse gas. 1 ton of Portland cement clinker production releases approximately 1 ton of CO_2 and other gases. Therefore, the study of kaolin as a partial replacement in cement has been widely study by other researcher. In this study, kaolin will be used to replace the cement by 10%. However, the kaolin will be treat by using sulphuric acid, H_2SO_4 before replace it in the cement. The objective of this study to investigate the compressive strength and water absorption of concrete using treated kaolin for various molarity of sulphuric acid H_2SO_4 as a partial replacement in cement. Kaolin was treated by using sulphuric acid, H_2SO_4 with different concentrations 3 M, 5M, 7M and 9M. Then, the concrete was designed at grade 30 of concrete. The compressive strength test and water absorption test had been done. From the findings, the 5 molar treated kaolin produced the highest compressive strength among the other sample. The optimum molarity of sulphuric acid, H_2SO_4 is 5 molar. The result of water absorption test shows that different molarity will give a different effect of absorption of water.

ACKNOWLEDGEMENT

First of all, I am grateful to The Almighty God for establishing me to complete this final year project.

I wish to express my sincere thanks to Dr. Salina, Coordinator for this subject CES592, for providing me with all the necessary facilities and guidelines to me to complete the project.

I place on record, my sincere gratitude to Mr. Md Rasul, my supervisor his constant encouragement. I also thank to all the laboratory assistant Mr. Faizal, Mr. Habib, and Mr. Salleh for helping me to conduct the laboratory exercise in the completion of this project.

I take this opportunity to record my sincere thanks to parents for their unceasing encouragement and support. Not to forget also to my partner Mohd Afiq for sharing and helping me throughout the completion of the project.

I also place on record, my sense of gratitude to one and all who directly or indirectly have lent their helping hand in this venture.