

THE UNDRAINED SHEAR STRENGTH OF
SOFT CLAY REINFORCED WITH
GROUP ENCAPSULATED LIME BOTTOM
ASH COLUMNS

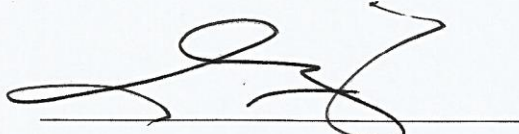
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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Civil Engineering.



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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

A handwritten signature in black ink, appearing to be 'Wong Suk Chee', is written above a horizontal line.

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THE UNDRAINED SHEAR STRENGTH OF SOFT CLAY REINFORCED WITH
GROUP ENCAPSULATED LIME BOTTOM ASH COLUMNS

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Thesis submitted in fulfillment of the requirements
for the award of the
Bachelor Degree in Civil Engineering

Faculty of Civil Engineering and Earth Resources
UNIVERSITI MALAYSIA PAHANG

MAY 2017

To my beloved family.

ACKNOWLEDGEMENTS

First and foremost, I would like to show my gratitude and thank to my supervisor, Dr. Muzamir Bin Hasan for his supervision, advice, guidance, encouragement and support in completing my research. His guidance helped me in all the time of research and writing of this thesis. I have been amazingly fortunate to have a supervisor who gave me the freedom to explore on my own, and at the same time the guidance to recover when my steps faltered.

In addition, I would like to give a big thank to Miss Haryani for providing information, guidance and advice in assisting me to complete my Final Year Project. Also, sincere thanks to all the technician assistants of Soil & Geotechnical Engineering Laboratory, Faculty of Civil Engineering and Earth Resources, University Malaysia Pahang (UMP) for helping me in performing the laboratory works.

I would like to give a special thanks to my beloved friend, Kwan Hui Yee who always working together with me to complete our Final Year Project and sincerely giving a free hand, ideas and suggestion regarding to my Final Year Project. Besides, I would like to take this opportunity to give my warmest thanks to all who have helping me with my work have collaborated the ideas to complete my thesis.

Lastly, I owe my loving thanks especially to my beloved mother, father and siblings who always give me their supports, encouragement and pray for my success. Their understanding and encouragement gave me strength to concentrate on my studies and complete my Final Year Project on time.

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LIST OF SYMBOLS

A_c	Area of a column
A_s	Area of a sample
H_c	Height of a column
H_s	Height of a sample
V_c	Volumes of a column
V_s	Volumes of a sample
D_c	Diameter of a column
S_i	Immediate settlement
S_c	Primary consolidation
τ	Shear strength of the soil
σ	Effective normal stress
ϕ	Cohesion
W_L	Liquid limit
W_p	Plastic limit
I_p	Plastic Index
W_{opt}	Optimum water content
q_u	Deviator stress
S_u	Undrained shear stress
ΔS_u	Improvement undrained shear strength
ρ_d	Dry density
R^2	Correlation cohesion

LIST OF ABBREVIATIONS

ACAA	American Coal Ash Association
AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society of Testing Material
BS	British Standard
BSCS	British Soil Classification System
EDS	Energy Dispersive Spectrometry
EPF	Employee Provided Fund
FHWA	Federal Highway Administration
MIT	Massachusetts Institute of Technology
ML	Low Plasticity Silt
USCS	Unified Soil Classification System
USDA	US Department of Agriculture
WV	West Virginia
XRF	X-Ray Fluorescence