# LIQUEFACTION RISKS ON BULK CARGOES CARRYING UNAMENDED & AMENDED GEBENG BAUXITE IN ACCORDANCE TO INTERNATIONAL MARITIME SOLID BULK CARGOES (IMSBC) CODE

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## THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR IN CIVIL ENGINEERING

## FACULTY OF CIVIL ENGINEERING AND EARTH RESOURCES UNIVERSITI MALAYSIA PAHANG

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#### SUPERVISOR'S DECLARATION

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

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#### **STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is my own except for quotations and summaries, which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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#### LIST OF SYMBOLS

- *c'* Cohesion angle
- *o'* Friction angle
- $\tau_f$  Effective stress
- *u* Pore water pressure
- $\omega$  Moisture content
- *c'* Cohesion angle
- % Percentage
- *mm* Millimeter
- *m* Meter
- g Gram
- kg Kilogram
- °C Degree Celsius
- μ*m* Micrometer

#### LIST OF ABBREVIATIONS

Al	Aluminum
ASTM	American Society for Testing and Materials
Fe	Iron
FESEM	Field Emission Scanning Electron Microscope
IMSBC	International Maritime of Solid Bulk Cargoes
LI	Liquidity Index
LL	Liquid Limit
Na	Sodium
0	Oxygen
рН	Potential Hydrogen
PI	Plasticity Index
Ti	Titanium
Si	Silicon
XRF	X-Ray Fluorescence