

UNIVERSITI TEKNOLOGI MARA

**RESPONSE TO VIBRATION OF A SINGLE PILE
EMBEDDED IN REMOULDED PRAI MARINE
ALLUVIAL SOIL**

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Thesis submitted in fulfillment
of the requirements for the degree of
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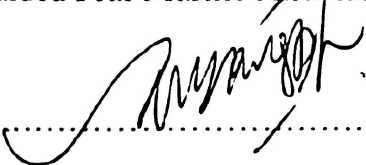
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AUTHOR'S DECLARATION

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 result of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any other 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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ABSTRACT

Peninsular Malaysia is located on the stable Sunda Shelf with low to moderate level of seismic activity. Even though the peninsular has not been seriously affected by any earthquake, some Northern areas were quite badly engulfed by the Tsunami of 2004. Frequent earthquakes in the region have also caused panic and emergency evacuation of high rise structures resulting in the government now requiring consideration of seismic loadings in the design of critical infrastructures in Malaysia. Piled foundation is used to transmit loading of high rise structures to competent ground thus will be greatly affected by an earthquake. Due to seismic loading, the piles in soft ground will likely to be sheared and buckled by the horizontal movements. In studying the behavior of soft soil in marine alluvial environment, the study described in this thesis has carried out the vibrating table test (VTT), as also by many other researches around the world. The study has involved a vibrating table with frequency control and a container filled with marine alluvial silt of high plasticity, which has originated from Prai, near Penang. A pile was inserted in the soil medium and the table was then allowed to vibrate. Liquefaction and boiling phenomena were observed, among others, and the acceleration on top of the pile was found amplified to as much as 3.3648 times from the acceleration of the vibrating table during VTT.

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