

**UNIVERSITI TEKNOLOGI MARA**

**SEISMIC PERFORMANCE OF 3-STOREY  
TUNNEL FORM SYSTEM BUILDING WITH  
DOUBLE UNITS SUBJECTED TO LATERAL  
CYCLIC LOADING**

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for the degree of  
**Master of Science**

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## 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 topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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## ABSTRACT

Introduction of earthquake surrounding in Malaysia was need of problem statement to study on behaviour of building against seismic loading. Analysis is purposely to identify the behaviour of building under seismic loading in terms of level of damage. Commonly building in Malaysia is already practising BS8110: Part 1 under static load. This study is more or less concern on high-rise building which normally design on structure using shear wall and slab system. This study and analysis is under tunnel form system building which limited to 3-storey and double units. The design is according to BS8110: Part 1 Design specification for concrete. Material properties of the concrete practising to similar condition in construction in Malaysia where is concrete strength, reinforcement strength for high yield and mild steel, BRC wire mesh for wall, minimum concrete cover by 30N/mm<sup>2</sup>, 460 N/mm<sup>2</sup> (high yield steel) , 250 N/mm<sup>2</sup> (mild steel), 485 N/mm<sup>2</sup> (BRC wire mesh) and 25mm respectively. The prototype building will construct on one third (1:3) from actual scale for whole respective parameter that involved during construction until testing. The testing will be based on lateral cyclic loading. The testing on prototype building will be resulted the hysteresis loop of reinforced concrete behaviour under seismic loading. Yet the equivalent viscous damping is determined by the equivalent area of hysteresis loop in tension and compression zone that purposely to help by absorbing the energy induced from the ground shaking. The reinforced concrete behaviour, ductility, stiffness, equivalent viscous damping, cracks, tension and compression coupling will be focus in further experimental and laboratory stage.

*Keywords: reinforced concrete behaviour, ductility, stiffness, equivalent viscous damping, tunnel form system, lateral cyclic loading.*

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