

**FINITE ELEMENT ANALYSIS ON LIGHTWEIGHT
CONCRETE WALL PANEL WITH SQUARE OPENING
UNDER AXIAL LOAD**

By

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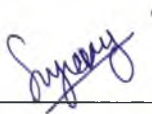
This report is submitted as a
partial requirement for the degree of
Bachelor of Engineering (Hons) Civil

UNIVERSITI TEKNOLOGI MARA

DECEMBER 2012

DECLARATION BY CANDIDATE

I (SYERRY SHAFIKHA BT MAT NOR HAIRI, 2010861664) confirm that the work in this report is my own work and appropriate credit has been given where the references have been made of the other researchers.

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Date : 5th December 2012

ABSTRACT

Wall panel is one of the structure that being used in completing a structure. It acts as the medium of a load transfer before the load can be disperses to the foundation. Nowadays, we being awaken by a severe construction failure that will make a harmful environment to the human being. In ensuring that our structure component especially wall panel are being build safely and will not give a risk of harmful environment, one of the method is by doing a research on finite element analysis by using LUSAS Modeller Program Version 14.3.

The objectives of this research are to determine the stress concentration around the opening and to determine the mode of failure of the wall with and without opening. In this research, LUSAS Modeller Program Version 14.3 was being used to analyse of wall panel model sizing 1500mm x 1500mm x 75mm (Length x Height x Width). In order to perform this analysis, the model geometry was entered in terms of geometry features which are subdivided into finite elements. The wall were modelled using 3-dimensional axis, that is horizontal, vertical and thickness which numbered as x, y, and z-axis. The concrete and reinforcement assumes was perfectly bounded due to superposition of nodal degrees of freedom. Grade C20 concrete was used for material properties. The lightweight concrete that was being used has a several specifications. It is made from OPC and contains fine sand, steel fibre and polystyrene beads. The wall panel was analysed due to axially loaded at the top of wall and it was fully fixed support at the bottom of the wall panel and fixed in X-Z direction at the top of it.

The result that we gained is the deformation of the shape for both of the wall is different. And the stress concentration for wall with opening is higher than the wall without opening.

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