ULTIMATE STRENGTH OF SINGLE LAYER STEEL FABRIC REINFORCED CONCRETE SHORT WALL PANEL

By

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partial
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ABSTRACT

Currently, the construction in Malaysia is using the common size for wall. The common size of wall is 102.5x3000x3200 (width: length: height). However, in the use of small size for wall panel which is called short wall panel has not been utilized. By using the short wall panel, time and cost can be reduced which in the end contributed to intelligent use of time and cost towards the economic recession. This research is conducted to determine the structural behaviour of the reinforced concrete wall panel using short wall panel. The wall panel is subjected to direct axial load through experimental work. Two wall panels reinforced with single layer steel fabric of type B375 (B7) with a dimension 75x500x1000 (Width: Height: Length) were prepared. The aspect ratio (H/L) and slenderness ratio (h/t) of the wall panel are 0.5 and 7 respectively. Grade 30 normal Ordinary Portland Cement (OPC) with water cement ratio of 0.55 was used. The wall tested under compressive axial load (without eccentricity). The end conditions of the wall panel for this study are fixed-pinned. Experimental results show that both wall panel failed in compression. The average ultimate load of both samples is 280.62 kN. The average maximum lateral displacement 5.06 mm, occurred at 375 mm height. The structural behaviour of single layer steel fabric reinforced concrete short wall panel is similar to double layer steel fabric reinforced concrete short wall panel. This research is hope to provide evidence of short wall panel and can be commercialized to the construction field. This research gives more benefits to the country and construction field by reducing cost and time.

Keywords: *reinforced concrete wall panel, short wall panel, steel fabric*

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TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 GENERAL

A wall is a usually solid structure that defines and sometimes protects an area. Commonly, a wall delineates a building and supports its superstructure, separates space in buildings into rooms, or protects or delineates a space in the open air. There are three principal types of structural walls which are building walls, exterior boundary walls, and retaining walls.

Building walls have two main purposes. There are to support roofs and ceilings, and to divide space, providing security against intrusion and weather. Building walls include brick wall and wall panel. Reinforced concrete (R.C) wall panel is load-bearing structural elements to slab, beams, and columns. Wall panel is similar with short wall panel, but it has different dimension. Short wall panel also has many differences dimension. The usage of short wall panel is depends on the market and the type of buildings. Short wall panel is use because it is easy to construct and has less time to construct than using brick wall. To construct the short wall panel, it will reduce the usage of brick in building brick wall. Reinforced concrete walls have gained greater acceptance as load carrying structural members due to the increased research undertaken on concrete walls and subsequent increases in allowable design stresses incorporated in various concrete codes, (Ongah et. al, 2001)