

**STRUCTURAL BEHAVIOUR OF SHORT WALL PANEL UNDER
COMPRESSIVE LOAD COMPRISING 70% NATURAL AGGREGATE
(NA) 30% CRUSHED CONCRETE WASTED AGGREGATE (CCwA)**

By:

**ABDUL ALLIM BIN ABDUL RASHID
2009996771**

SUPERVISOR:

PROF. IR. DR. HJH. SITI HAWA HAMZAH

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

**UNIVERSITI TEKNOLOGI MARA
2012**

ACKNOWLEDGEMENT

In the name of ALLAH, most Gracious, most Merciful, alhamdulillah, with His permission for giving me the strength, and patience for get this research completed on time without any uncomfortable situation.

First of all, I would like to thanks and appreciate my supervisor Prof. Ir. Dr. Hajjah Siti Hawa Hamzah for her enthusiastic effort and concern throughout the project. Not forgotten to Mr. Suhelmiey as my mentor for my research project work. Without their continued support and interest, it is difficult for me to finish my research study.

I also want to dedicate this acknowledgement to my fellow friends, Aida Kartini Saidin, Nurul Aadila Salleh and Mohd Baihaqi Kamaruzzan, thank you for all information and cooperation that they give to me. Last but not least, I also would like to thanks to my family, colleagues and whoever who have provided assistance to me.

Thank You.

ABSTRACT

Reinforced concrete walls have gained greater acceptance in many countries in conjunction with the Industrialized Building System (IBS). As part of the development of an industrialized housing method, wall panels are designed and tested. This experimental research of structural behaviour of short wall panel under axial load comprising 70% Natural Aggregates and 30% Crushed Concrete Wasted Aggregates was carried out. The wall samples reinforced with one layer steel fabric size B7 and concrete Grade 30. The 150 mm x 150 mm x 150 mm concrete cubes were cast for 100% NA and another 30% CCWA and 70% NA to determine the compressive strength. Two samples of short wall panel of sized 75 mm x 500 mm x 1000 mm (Width : Height: Length) were tested under compressive load to determine the ultimate load and structural behaviour. From the analysis , it shows that ultimate load from mixing 70% NA and 30% CCWA at 115 kN. Mode of failure short wall panel are crushing.

TABLE OF CONTENT

ACKNOWLEDGEMENT	i
ABSTRACT	ii
TABLE OF CONTENT	iii
LIST OF FIGURES	vi
LIST OF TABLES	viii

CHAPTER 1 : INTRODUCTION **PAGE**

1.1	Project Background	1
1.2	Problem Statement	3
1.3	Objective	4
1.4	Scope Of Work	4
1.5	Significant Of Study	5
1.6	Limitation And Assumption	5

CHAPTER 2 : LITERATURE REVIEW

2.1	Introduction	6
2.2	Structural Behaviour	6
2.2.1	Stress – Strain	7
2.2.2	Displacement Profile	8
2.2.3	Ultimate Load	9
2.3	Short Wall Panel	11
2.3.1	Characteristic Short Wall Panel	11
2.4	Compressive Load	12
2.5	Natural Aggregate	13
2.5.1	Physical Properties Natural Aggregate	14
2.6	Crushed Concrete Wasted Aggregate	14

CHAPTER 1

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Reinforced concrete is the result of admixture and mix concrete and reinforcement bar itself. As part of the development of an industrialized housing method wall panels are designed and tested. The growth of construction activities in Malaysia is very fast and more complicated than ever before. The expertise such as engineer, architect, designer, developer and authorities are involved in this field should seek the better solution to face this issue and challenges in changing the construction industry environment (Mohd Suhelmiey Sobri et al.,(2011)). It can be classified the structural behavior as well as improvements in structural performance. Due to the improvements in structural performance, such as high strength and durability, it can provide the comparison between traditional and normal strength concrete.

Compressive load is a force or pressure that attempts to flatten or squeeze a material. To compressive load on the short wall panels, it must require vertical loads directly applied to short wall panel, second order effects, eccentricities calculated from a knowledge of the layout of the short wall panel, the interaction of the floor and the stiffening wall. Eccentricities resulting from the construction deviations and differences in the material properties of individual components also required. The material properties of individual components required to compare between crushed concrete wasted aggregate (CCWA) and natural aggregates (NA). The use of crushed concrete wasted aggregate (CCWA) as a coarse aggregate is seen as a potential replacement in concrete mix production.

Producing precast concrete in a controlled environment, the precast concrete is afforded the opportunity to properly cure and be closely monitored by plant employees. The concept of precast construction includes those buildings where the majority of structural components are standardized and produced in plants in a location away from the building, and then transported to