COMPRESSIVE STRENGTH OF POLYVINYL CHLORIDE (PVC) FILLED WITH CONCRETE CONTAINING RECYCLED CONCRETE AGGREGATE

MIMI AZNIRA BINTI MOHAMAD

Bachelor of Engineering (Hons) Civil (Infrastructure)
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By

MIMI AZNIRA BINTI MOHAMAD

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

UNIVERSITI TEKNOLOGI MARA
JULY 2018

DECLARATION BY THE CANDIDATE

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 results of my own work, unless otherwise indicated to any other academic institution or non-academic institution for any 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.

Name of Student	:	Mimi Aznira Binti Mohamad
Student I.D No.	:	2015832288
Programme	:	Bachelor of Engineering (Hons) Civil (Infrastructure)
Faculty	:	Civil Engineering (EC221)
Thesis Title	:	Compressive Strength of Polyvinyl Chloride (PVC) Filled with Concrete Containing Recycled Concrete Aggregate
Signature of Student	:	……..
Date	:	July 2018

ABSTRACT

Polyvinyl chloride (PVC) filled column or better known as recycled concrete aggregate filled tubes (RCFT) is one of the composite columns applied in the construction. This concept has evolved from the use of concrete filled tubular members. In this study, the main objective is to determine the compressive strength of RCFT columns with incorporations of varies percentage of recycled concrete aggregate (RCA). This RCFT columns are tested to determine the compressive strength with the different percentages of RCA in concrete filled PVC tubes. Axial shortening in the columns is investigated. There are three main activities involved which are material preparation, preliminary testing and RCFT column testing. Similar size of PVC tubes is used which are 300 mm in length and 150 mm in diameter. It is observed that the average experimental ultimate compressive load, $N_{exp,}$ is higher than theoretical ultimate compressive load, $N_{theo,}$ as per EC4 where the difference is in range of 25 % - 42 %. Lower percentage of RCA resulted in the increment of ultimate compressive load and failure mechanism is observed which is local buckling. RCFT shows a good potential to be utilized as a composite column system especially in structure with low load bearing capacity such as utility poles, lamp posts and signboards.

ACKNOWLEDGEMENT

Assalamualaikum w.r.t. Firstly, I would like to express my appreciation post to my supervisor, Dr. Goh Lyn Dee and my co-supervisor, Dr. Clotilda Petrus for their guidance, upon completing this study. Without their precious assistance, this research has not been done.

I also would like to express my sincere gratitude to all Final Year Project Team for FYP 1 and FYP 2 who give me their supports and their guidances by having a workshop session to write on the research that I conducted. In the meantime, I would like to thank the lab technicians especially Mr. Mohd Salleh Bin Abdullah and Mr. Habibullah Bin Mahmud that involve in my study for sharing their knowledge and guiding me with the laboratory work.

Besides that, I would like to thank my parents, my siblings and family for their advices, supports, and encouragement during this research. Special thanks to all volunteer who have participated in this study, directly or indirectly throughout this study.

Finally, this thesis is dedicated to my family for their vision and determination to educate me. This piece of victory is dedicated to them. Alhamdulillah.