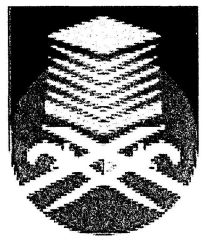

DESIGN TEST FIXTURE FOR HIGH CYCLE FATIGUE ON POLYMER MIXED CONCRETE

ROSLIEZAN B MD HUSAIN
(2001641599)
YUSNIZAM B ABD JALIL
(2000338430)

A thesis submitted in partial fulfillment of the requirements for the award of Bachelor Engineering (Hons) Mechanical

Faculty of Mechanical Engineering
Universiti Teknologi MARA (UiTM)

MARCH 2004

"We declare that this thesis is the result of our own work except the ideas and summaries which we have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed : .....
Date : 1/4/04

Yusnizam B Abd Jalil
UiTM No : 2000338430

Signed : .....
Date : 1/4/04

Rosliezan B Md Husain
UiTM No : 2001641599

ACKNOWLEDGEMENT

In The Name Of Allah S.W.T, The Most Beneficent And Merciful

I am grateful to the people who have made it possible for me to accomplish this work. First and foremost, I would like to greatly thank my supervisor Assoc. Prof. Yakub Md Taib for his constant encouragement, invaluable guidance, patience and understanding throughout the length of our candidature. Assoc. Prof Yakub Md Taib, tremendous help especially during my writing-up this thesis had made it possible for me to submit this thesis.

Special thank to the Dynamic Laboratory Technician, Mr Khalili Mat Som for their kindness to help us to get information and giving us permission to use all apparatus that involved in this project. Without their guidance, impossible to us to get crucial review of the literature related to our project. I am especially grateful to the gracious help and concern of my classmates who shared together the information and opinion to do this thesis.

Finally, words must be mentioned of our beloved parents. Without their understanding, encouragement and support, it would have been impossible for me to complete this thesis. Again, to everyone who has helped are in one way or another, I will like to say big thank you.

ABSTRACT

Fixture is defined as a production tool that locates, holds and supports the work or specimen securely, so the required processing can be performed successfully. Therefore fixture is one of the important component parts as far as such process is concerned. High cycle fatigue is fatigue that occurs at relatively large numbers of cycle and in caused by high frequency vibrations in both static and rotating hardware.

The distinction between high cycle fatigue and low cycle fatigue is made by determining whether the dominant component of the strain imposed during cyclic loading is elastic (high cycle) or plastic (low cycle), which in turn depends on the properties of the material and on the magnitude of the stress.

The main objectives in this research are to design and fabricated the test fixture to perform high frequency fatigue test on compact tension and 3 point bend specimen configuration and to study the fatigue crack growth rate of Polymer Mixed Concrete due to high frequency fatigue. From this work, the both of test fixture were successfully built that provide rigidity and reliability. Initial investigation on the effect of high frequency fatigue load on Polymer Mixed Concrete was also conducted.

TABLE OF CONTENTS