

**FINAL YEAR PROJECT**  
**ADVANCED DIPLOMA IN CIVIL ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**MARA INSTITUTE OF TECHNOLOGY**  
**SHAH ALAM**

**BEHAVIOUR OF TWO-WAY PARTIALLY**  
**PRESTRESSED WAFFLE SLAB**  
**INCORPORATED WITH WIRE MESH**

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## ACKNOWLEDGEMENT

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## SYNOPSIS

This experimental research involved the preparing, fabricating, testing and analysing of three two-way partially prestressed post-tensioned waffle slab test specimens incorporated with wire mesh (BRC).

The test specimens, namely SL01, SL02 and SL03 are of similar dimensions but differ in the different sizes and numbers of waffles, and different numbers of ribs within them.

Testing were done by applying a concentrated load at the centre of each of the test specimen until failure of concrete.

The performance and behaviour of the test specimens were observed through their load-deflection relationship, load-strain relationship, ultimate load and service load of each slab system.

Results from the tests demonstrate a similar pattern or trend in behaviour of two of the test specimens. One specimen is different for not having ribs intersection at its centre.

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**INTRODUCTION**

1.1 GENERAL

Prestressing may be defined as the purposeful and controlled technique of introduction of permanent stresses in a structural member, before the application of the full dead and live loads, so as to counteract all or parts of these loads. Benefits from prestressing include improved resistance of the member to the dead and live loads (service load) and modified behaviour of the member in such a way as to make it more suitable for its purpose. [1]

It is well known that post-tensioned prestressed concrete slabs are stiffer and possess higher rigidity than normal reinforced concrete slabs, exhibiting improved qualities under service load. [2]

Prestressing can be categorised into full prestressing and partial prestressing. Full prestressing occurs when in the design of a structural member, the limiting tensile stress in the