

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

BEHAVIOUR OF WAFFLE SLAB
FOUNDATION INCORPORATED
WITH WIRE MESH UNDER
CONCENTRATED LOAD

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SYNOPSIS

This experimental project compares the performance of 3 waffle slab foundations under concentrated load which is applied to the column stump to a maximum load of 400 kN. One of these slabs is the normally conventional reinforced concrete waffle slab and the other two slabs are two-way partially prestressed waffle slabs.

Specimen WSF01 is the normally reinforced concrete waffle slab with 4 number of 'waffles' or 'cell'. The other two specimens, WSF02 and WSF03 are two-way partially prestressed post-tensioned slabs with 4 and 16 number of 'waffles' respectively. All the specimens are incorporated with column stumps of 610 mm height.

This project seek to study the behaviour of waffle slab foundations under concentrated load applied on the stump. During testing, the strain, deflection and crack pattern were recorded under each load increments.

INTRODUCTION

1.1 GENERAL

Reinforced and prestressed waffle slab construction have been utilized in many building structures. The studies showed that waffle construction is more economical alternative to solid slab. This results in a reduction of cross-sectional dimensions and consequently weight saving (reduced dead load) and also to minimize or free from cracks and deflection i.e to improve resistance of the member under working load (at serviceability limit state)¹.

The prestressed concrete slab is stiffer than a reinforced concrete slabs with the same span and thickness. Prestressing of slabs also enable control of service load deflection, inhibits cracking and increases resistance to punching shear failure.