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EXPERIMENTAL INVESTIGATION ON THE STRENGTH AND BEHAVIOR OF REINFORCED CONCRETE SHORT COLUMNS UNDER AXIAL COMPRESSION LOADS

By

Youssef Mohamed Mounir

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE

In

CIVIL ENGINEERING (STRUCTURES)

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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ABSTRACT

Axial compression tests were carried out on nine columns specimens to investigate the effect of dimensional ratio of cross-section and vertical reinforcement percentage, on the behavior and strength of axialy loaded columns, the specimens were divided into three groups based on the investigated parameters. The specimen cross-sectional dimensions were 10 cm width and variable length from 30 cm to 70 cm and 160 cm height including the end caps, the vertical reinforcement percentage was varied from 1.05% to 2.26%.

The experimental values of a maximum load capacity for each specimen were compared with the theoretical axial load capacity using the American Concrete Institute (ACI 318), the British Standard (BS 8110) and the Egyptian Code EC95.

It was concluded from the test results that the dimensional ratio of cross-section and the vertical reinforcement percentage have a significant effect on the strength of the column specimens.

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