PARAMETRIC STUDY ON PUNCHING SHEAR OF POST-TENSIONED FLAT PLATES

By

Amr Reda Abdel-Kader Abdel-Lateef

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
Structural Engineering

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Under the Supervision of

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Title of Thesis:

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Key Words:
Punching shear; ANSYS ; Prestressing ; Flat plate; Slab column connections.

Summary:

3D non-linear finite element analyses are conducted to assess the overall punching shear behaviour of post-tensioned flat plates using ANSYS. A parametric study was conducted aiming to investigate the effect of several factors on punching shear. Group (B) of 15 models was conducted to study the effect of moment transfer through the slab-column connection and tendon layouts in plan on punching. Group (C) of 6 models was conducted to study the effect of column size and column rectangularity on punching. Group (D) of 3 models was conducted to study the effect of presstressing reinforcement ratio on punching. Group (E) of 5 models was conducted to study the effect of tendon eccentricity, the vertical distance from slab center to tendons' CG(s) over column, on punching. Then, analysis results were compared to the predictions of the following codes; the American code, the Egyptian code, the Canadian code, the European code, and the British code.

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Dedication

To my dear wife with all respect and love

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