INVESTEGATING THE EFFECT OF BRACING AND NUMBER OF BAYS ON THE VALUE OF RESPONSE MODIFICATION FACTOR

By

Abdelrahman Sobhy Mohamed El Tanashy

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

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:
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Key Words:
Nonlinear static analysis; Response modification factor; Dual system; RC X-bracing, plastic hinge.

Summary:

The current study involves the parametric study of 2D reinforced concrete moment resisting frames to investigate the effect of having concrete X-bracing on response modification factor and it's components for RC frames which designed based on ECP-201, 2012 and ECP-203, 2007. This study carried out for three groups of systems with different configurations. The aim of this study gained after studying sixteen regular RC models. RC models were modeled and analyzed by SAP 2000 software by using non-linear static pushover analysis. The results of non-linear static pushover analysis are presented in parametric changing based on number of storeys and the position of X-bracing and their effect on response modification factor, ductility factor, overstrength factor, plastic hinge mechanism and pushover curve. Knowing that the gross moment of inertia was taken into account for all models, also it's considered nonlinearity of material.

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DEDICATION

I dedicate this thesis to my grandfathers and grandmother, the strongest persons I know. Allah Almighty rest and bless their souls.

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