



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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Forced-Performance Correlation Factor for Seismic Design of Moment Resisting RC Frames

A Thesis Submitted in Partial Fulfillment of the Requirements of the degree
of

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(Structural Engineering)

by

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STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Master of Science in Civil Engineering (Structural Engineering).

The work included in this thesis has been carried out by the author in the department of structural engineering, Ain Shams University.

No part of this thesis has been submitted for a degree or a qualification at any other university or institution.

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ABSTRACT

The principal objective of seismic engineering is to design the buildings to resist the force generated from ground motion in a safe manner, which prevents the total damage of the building. When the earthquake motion occurs, it was observed that the structure might not totally collapse, but there is a damage level to structures, economic loss because of the inability of the building function, and the cost of the repair was unpredictably high. Current seismic codes are forced based controlled design, using the concept of base shear. The importance of changes in the existing seismic design methodology existing in seismic codes has been widely recognized. One of the main developments in seismic design over the past ten years has been increased emphasis on investigation the performance of the structures when earthquake motion occurs, now generally termed Performance-based Seismic Design (PBSD). Performance seismic engineering aims to monitor the damage in the structure depends on precise estimations of the structure's proper response using nonlinear seismic design analysis. This thesis discusses the seismic capacity of the structure to resist earthquake forces for moment resisting frames with limited ductility class (ordinary moment resisting frames) using (PBSD) by the capacity spectrum method. A parametric study is conducted to calculate the performance factor (P-Factor) and correlation factor (ρ -Factor) for different levels of damage that can be used in seismic design instead of response modification factor (R-Factor) to overcome the limitation in response modification factor and to represent the real performance of the structure. The performance factor values are calculated for different RC moment resisting frames (MRFs) for peak ground acceleration (PGA) levels as given in the Egyptian code equals 0.25g and soil type (D) as mentioned in the code. This study focuses on the assessment of the ductility and overstrength factors which are considered the main components of the reduction factor.

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