PROGRESSIVE COLLAPSE ASSESSMENT FOR MULTI-STORY STEEL STRUCTURES UNDER SEISMIC LOADING

By

Yara Maged Mahmoud Soliman

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:
Progressive collapse; Moment Resisting Frames; Braced Frames; Column Removal; Seismic Loads.

Summary:

The progressive collapse of steel structures is initiated when one or more vertical load carrying members are removed. The building's applied loads transfer to neighboring columns in the structure, leads to the failure of partial or whole structural system. In this study, two types of steel structures are evaluated as per Unified Facilities Criteria (UFC) guidelines. Non-linear dynamic analysis is carried out using software SAP2000. Gravity Loads and Seismic Loads combinations were applied to the structures to study the progressive collapse resistance of each structure.

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Hoping this thesis would be a step towards a better understanding of our current needs and a better development of our country.

Yara M.M.

Dedication

I lovingly dedicate this work to *my father* and *my mother*, for their care, guidance, help and patience. I do believe that, I could not success in all my life steps without their continuous support and prayers. May Allah bless them

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