Numerical assessment of multistorey reinforced concrete framed structures subjected to blast loading using the Applied Element Method

By

Mohamed Ramadan Ibrahim Hafez Albady

A Thesis Submitted to the

Faculty of Engineering, Cairo University

In Partial Fulfillment of the

Requirements for the Degree of

MASTER OF SCIENCE

In

STRUCTURAL ENGINEERING

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Title of Thesis: **Numerical assessment of multistorey reinforced concrete framed structures subjected to blast loading using the Applied Element Method**

Key Words: Blast load – Progressive collapse – Strengthening

Summary:

Explosions beside a structure can lead to severe damage in the building structural elements. There are number of factors that can cause loss of life and injuries such as structural collapse, fire, smoke, debris impact and direct blast effects. There are also indirect effects that need evacuation, which may cause additional casualties. During the last three decades, number of efforts has been made to reach new design to resist blast loads. Studies about the structural concrete behavior to blast loads have promoted understanding the role of structural details that effects on the behavior.

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Dedication

I can't forget to mention my father (may **Allah** bless him), as he have always been encouraging me to finish my master, and learn me how to face live even in hardest time. My mother (may **Allah** bless her) for her contentious Doaa for me to success in my life and work, I can't forget to thank my sister (may **Allah** bless her) and her husband's Mahmoud said special thanks for him , my little brother also my oldest son Mosad (may **Allah** bless him).

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