



**SEISMIC RESPONSE MODIFICATION FACTOR FOR
REINFORCED CONCRETE FRAMES BASED ON NON-
LINEAR PUSHOVER ANALYSIS AND ITS EFFECT ON
SEISMIC GAPS**

By

WALAA MOHAMMED ABD EL SALAM EL-HEREBY

A Thesis Submitted to the
Faculty of Engineering at Cairo University

In Partial Fulfilment of the
Requirements for the Degree of
MASTER OF SCIENCE

In
Structural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY

GIZA, EGYPT

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Under Supervision of
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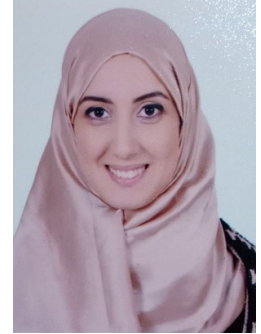
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Title of Thesis:

Seismic response modification factor for reinforced concrete frames based on non-linear pushover analysis and its effect on seismic gaps.

Key words:

Response modification factor, Ductility, Reinforced Concrete Frames, Seismic Gaps, Pushover Analysis.

Summary:

This research is studying the response modification factor of RC frames by studying the effect of number of stories and the relative inertia of beam to column on the ductility of the reinforced concrete frames which have a significant effect on the response reduction factor by performing non-linear static analysis, then comparing these values with the mentioned values of same RC frames in ECP. In addition, a verification analysis was conducted to guarantee the calculation method of the R-factor. The change of the R-value affects the top plastic displacement and the seismic gap as well. The study shows the difference between seismic gap values using the R-factor resulted from the study and the mentioned values in the ECP using the SRSS method for seismic gap calculation. Based on the study results, the conclusions illustrate the base shear, displacement, ductility and seismic gap change due to using different R-values for same system.

DISCLAIMER

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name:

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Signature:

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I would like to express my honour and gratefulness for working on the degree to all who encouraged me and believed in me specially my family members who worked too hard for this day and all days and I wish they are proud of me. I also want to share my happiness with my true friends too who were like sisters and brothers all time and wishing my luck and success in my study, work and life.

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TABLE OF CONTENTS

DISCLAIMER	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
NOMENCLATURE	xviii
ABSTRACT	xx
Chapter 1: Introduction.....	1
1.1. Introduction.....	1
1.2. Research Objectives.....	2
1.3. Thesis Organization	2
Chapter 2: Literature Review	3
2.1 Introduction.....	3
2.2 Response Reduction /Modification Factor.....	3
2.3 Ductility	7
2.4 Pushover Analysis.....	10
2.5 Critical Gap Between Adjacent Buildings.....	12
Chapter 3: Effects Of Number of Stories and Relative Inertia on Response Modification Factor for Ductile RC frames	21
3.1. Introduction.....	21
3.2. Objectives	21

3.3. Response Reduction Factor.....	21
3.3.1. Ductility Reduction Factor (R_μ).....	23
3.3.2. Structural Over Strength (R_s)	24
3.3.3. Damping Factor (R_ξ)	24
3.3.4. Redundancy Factor (R_R).....	24
3.3.5. Response Reduction/ Modification Factor (R) in ECP	24
3.4. Pushover Analysis.....	25
3.5. Response Parameters	25
3.5.1. Yield Deformations	26
3.5.2. Ultimate Deformation	28
3.6. Elasto-Plastic Idealization Curve Used In The Study.....	29
3.7. Verification of Analytical Models	29
3.8. Case Study Reinforced Concrete (RC) Frames Configuration	34
3.9. Applied Loads on RC Frames of Parametric Study.....	40
3.10. Material Properties And model of Parametric Study	40
3.1. Concrete Material.....	40
3.2. Reinforcing Steel Material	42
3.11. SeismoStruct Models	43
3.12. Results of The Parametric Study.....	48
Chapter 4: Separation Distance of Adjacent Buildings Due to Seismic Effect.....	64
4.1. ECP Code Requirements:	64
4.1.1. Section Modifiers	64

4.1.2. Mass Sources.....	65
4.1.3. Damping.....	65
4.1.4. Static Method For Seismic Base Shear	65
4.1.5. Response Spectrum Analysis	66
4.2. Configuration of Frames Systems.....	67
4.3. Results.....	68
4.4. Seismic Gap Calculations	111
Chapter 5: Conclusion.....	114
5.1. Conclusion	114
5.2. Recommendations for Future Works.....	116
REFERENCES	117
APPENDICES.....	125
APPENDIX (A): Design of case study frames due to gravity and seismic loads	125
APPENDIX (B): Definition of static and dynamic seismic load using ETABS software.....	129
APPENDIX (C): Calculation of ultimate base shear force according to ECP.....	145