



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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MONA MAGHRABY



RISK-BASED ASSESSMENT OF THE RESPONSE MODIFICATION FACTOR FOR ADEQUATE- DUCTILITY RC FRAMES

By

Ehab Emad Fawzy Ayad

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
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MASTER OF SCIENCE
in
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Risk-based assessment of the response modification factor for adequate-ductility RC frames

Key Words:

R-factor; collapse; fragility; spectral shape; OpenSees

Summary:

The collapse risk of adequate-ductility RC space frames as stipulated in the Egyptian Code of Practice is calculated. Working within the FEMA P695 framework, the conditional probability of is shown to be below the acceptable probability of collapse. This indicates an R-factor of 7 is appropriate. Some discrepancy is shown to be found between the EMME14 project hazard information and the ECP-201 seismic action. Where there is major discrepancy, the site-specific collapse risk is shown to be high – given the hazard curves used. On the other hand, where there is no to little discrepancy, the frames exhibit satisfactory collapse performance suggesting that the R-factor used is appropriate. Assuming the validity of the EMME14's probabilistic seismic hazard analysis results, use of both Type I and Type II response spectra in the Gulf of Aqaba coast is shown to be the appropriate choice of seismic action.

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.

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Table of Contents

LIST OF TABLES.....	VI
LIST OF FIGURES.....	VII
ABSTRACT.....	X
CHAPTER 1 : INTRODUCTION	1
1.1. Introduction.....	1
1.2. Thesis Objective.....	2
1.3. Thesis Outline	2
CHAPTER 2 : LITERATURE REVIEW	4
2.1. Introduction.....	4
2.2. Seismic Engineering Evolution.....	4
2.3. History of Response Modification Factors	4
2.3.1. Modern Concept of the R-Factor.....	5
2.4. Disaggregation of the Response Modification Factor	6
2.4.1. Ductility Reduction Factor R_μ	7
2.4.2. Overstrength Factor R_s	7
2.5. Evaluation of the Response Modification Factor.....	8
2.6. Non-linear Static Analysis (Pushover).....	17
2.6.1. Conventional Pushover Analysis Load Patterns.....	18
2.6.2. Conventional Pushover Analysis Methods.....	18
2.7. Incremental Dynamic Analysis (IDA)	20
2.8. Collapse.....	22
2.8.1. Collapse Case Studies.....	23
2.8.2. Analytical Studies of Collapse	24
2.9. Basic Concepts in Probability.....	25
2.9.1. Normal Distribution.....	26
2.9.2. Lognormal Distribution.....	26
2.10. Fragility Curves	26
2.11. FEMA P-695 Methodology	27
2.11.1. Develop System Concept.....	27
2.11.2. Obtain Required Information.....	27
2.11.3. Characterize Behavior	27
2.11.4. Develop Models.....	28
2.11.5. Analyze Models.....	28
2.11.6. Evaluate Performance.....	29
2.12. Probability of Collapse	30
2.12.1. Integrating Fragility with Seismic Hazard Curves	30
2.12.2. Collapse Performance Evaluation.....	31
2.13. Non-Linear Structural Analysis Modelling	33
2.13.1. Hysteresis	35

2.13.2.	Cyclic Stiffness Deterioration	36
2.13.3.	Strength Deterioration	36
2.13.4.	Structural Analysis Model Types	38
2.13.5.	Concentrated Plasticity vs. Fiber Models	38
2.13.6.	Deteriorating Hysteretic models.....	39
2.13.7.	The Ibarra-Medina-Krawinkler Hysteretic (IMK) Model	39
CHAPTER 3 : METHODOLOGY		43
3.1.	Introduction.....	43
3.2.	Archetype Frames Configurations	43
3.2.1.	Two-Dimensional vs. Three-Dimensional Archetypes	43
3.2.2.	Archetype Design Properties	44
3.2.3.	Performance Groups	45
3.3.	Archetype Structural Modeling.....	47
3.3.1.	Analysis Software: OpenSees.....	47
3.3.2.	Boundary Conditions	48
3.3.3.	Joint Modelling.....	49
3.3.4.	Beam-Columns Rotational Springs	50
3.3.5.	Damping	54
3.3.6.	Yield Strength.....	54
3.3.7.	Gravity Load.....	55
3.3.8.	Numerical Issues and Convergence.....	55
3.4.	Automated OpenSees Model Generation.....	56
3.5.	Verification	56
3.6.	Nonlinear Static (Pushover) Analysis.....	59
3.7.	Ground Motion.....	60
3.7.1.	Ground Motion Selection	60
3.7.2.	Ground Motion Scaling	60
3.7.3.	Spectral Shape	61
3.7.4.	Collapse of Reinforced Concrete Buildings	63
3.7.5.	Total System Collapse Uncertainty	65
3.8.	Collapse Risk Assessment	66
3.8.1.	Seismic Performance Requirements	66
3.8.2.	Seismic Hazard and Risk.....	67
3.8.3.	Acceptable Probability of Collapse	73
3.9.	Seismic Hazard Analysis	75
3.9.1.	Probabilistic Seismic Hazard Analysis (PHSA)	75
3.9.2.	Seismic Hazard in Egypt	76
3.9.3.	Seismic Hazard in the Egyptian Code of Practice 201-2011.....	77
3.9.4.	The 2014 Earthquake Model of the Middle East (EMME14)	78
3.9.5.	Seismic Hazard Disaggregation.....	81
CHAPTER 4 : RESULTS AND DISCUSSION		83
4.1.	Introduction.....	83
4.2.	PSHA Using OpenQuake.....	83
4.2.1.	Very High Seismicity of the EMME14	86
4.2.2.	Elastic Response Spectrum Type I vs. Type II.....	87

4.2.3.	Seismic Hazard Disaggregation.....	89
4.3.	Typical Collapse Performance Assessment Procedure.....	92
4.3.1.	Archetype SL-8-o Non-Linear Static Pushover Analysis Results	92
4.3.2.	Archetype SL-8-o Incremental Dynamic Analysis Results.....	92
4.3.3.	Archetype SL-8-o Collapse Performance Assessment	94
4.4.	Collapse Performance Assessment for All Archetypes	94
4.4.1.	Eigenvalue and Static Non-Linear Analysis Results	95
4.4.2.	Performance Groups Collapse Performance Assessment	98
4.5.	Collapse Performance Re-assessment Using Proposed Seismic Action....	111
4.5.1.	Re-design of PG-2 Using Type I and II Response Spectrum	111
4.5.2.	Eigenvalue and Static Non-Linear Analysis Results	113
4.5.3.	Collapse Performance Assessment for PG-5 and PG-6.....	113
CHAPTER 5 : SUMMARY AND CONCLUSION		118
5.1.	Summary	118
5.2.	Observations and Conclusions	118
5.2.1.	Probabilistic Seismic Hazard Analysis Results	118
5.2.2.	Collapse Performance Assessment	120
5.3.	Recommendations for Future Work.....	121
REFERENCES		123

List of Tables

Table 2.1 Generic Performance Group Matrix (adopted from [6])	28
Table 2.2 The acceptable Pf and corresponding reliability index β defined for buildings G8 and R15 different models of acceptable risk. [4]	33
Table 3.1 Performance Groups Design Properties.....	46
Table 3.2 Far-Field record set [6]	61
Table 3.3 Likelihood of sidesway collapse [6]	65
Table 3.4 Likelihood of vertical collapse [6].....	65
Table 3.5 Acceptable Values of Adjusted Collapse Margin Ratio (ACMR _{10%} and ACMR _{20%}) [6].....	74
Table 3.6 Proposed benchmark sites for PSHA.....	79
Table 4.1 Eigenvalue and pushover analysis results.....	97
Table 4.2 Category A collapse performance - conditional probability of collapse	99
Table 4.3 Category B collapse performance - conditional probability of collapse	101
Table 4.4 Category B collapse performance - collapse risk	102
Table 4.5 Effect of SCWB ratios on the collapse performance	103
Table 4.6 Effect of boundary conditions on collapse performance	105
Table 4.7 Effect of design flexibility on collapse performance.....	107
Table 4.8 Site B ACMR with and without spectral shape adjustment.....	109
Table 4.9 PG-5 and PG-6 design properties	112
Table 4.10 Eigenvalue and pushover analysis results for PG-5 and PG-6	113
Table 4.11 Category A collapse performance of PG-5 and PG-6 – conditional probability of collapse	114
Table 4.12 Category B collapse performance of PG-5 and PG-6 - conditional probability of collapse	114
Table 4.13 Category B collapse performance of PG-5 and PG-6 – collapse risk.....	115
Table 4.14 Collapse performance difference between archetypes designed with RS Type I and with both types of RS.....	116

List of Figures

Figure 2.1 Relationship between force reduction factors (R), overstrength (Ω_d) ductility reduction (R_μ) and displacement ductility factor (μ) [18].....	6
Figure 2.2 (a) Equal displacement rule (b) Equal energy rule.....	9
Figure 2.3 Ductility-dependent behavior factors for alluvium sites; Greece records vs. EC8 [34].....	13
Figure 2.4 Behavior factor and its components vs. EC-8 [34].....	13
Figure 2.5 Acceleration spectra for design and collapse earthquake [25]	14
Figure 2.6 Dynamic capacity curve of the DCH irregular 8-storey frame structure designed for 0.3g [27]	16
Figure 2.7 Alternative definitions for yield displacement [37].....	17
Figure 2.8 Alternative definitions for ultimate displacement [37]	17
Figure 2.9 Elastic and inelastic demand spectra versus capacity diagram [42].....	20
Figure 2.10 IDA curves plotted against (a) PGA and (b) $S_a(T1; 5\%)$. [44].....	21
Figure 2.11 (a) The DM-based rule uses $C_{dm} = 0.08$ (b) The IM-based rule uses the 20% slope criterion. [44]	22
Figure 2.12 (a) Incremental dynamic analysis response plot of spectral acceleration versus maximum story drift ratio (b) Collapse fragility curve for Archetype SL-8-o	29
Figure 2.13 Collapse fragility curves considering (a) ground motion record to-to- record uncertainty (b) modifications for total uncertainty. [6]	30
Figure 2.14 Hazard curves for S_a at $T = 0.5$ s in terms of annual exceedance rate (left panel), return period (middle panel) and exceedance probability assuming the service life of the building is 50 years [56]	31
Figure 2.15 Generalized force-deformation curve used in FEMA 356 [63].....	34
Figure 2.16 FEMA 356 backbone under-predicts the response of a conforming RC column [64].....	34
Figure 2.17 Pinching behavior.....	35
Figure 2.18 two types of deterioration: (a) Cyclic strength deterioration (b) In-cycle strength deterioration. FEMA P440a [66]	36
Figure 2.19 Examples of cyclic strength deterioration: (a) due to increasing inelastic displacement; and (b) due to repeated cyclic displacement [66]	37
Figure 2.20 Displacement time histories for models subjected to the 1992 Landers Earthquake with: (a) cyclic strength deterioration; and (b) in-cycle strength deterioration. FEMA P440a	37
Figure 2.21 Idealized models of beam-column elements. [67].....	38
Figure 2.22 Hysteretic behavior for (a) bilinear (b) peak-oriented (c) pinching [70].....	40
Figure 2.23 IMK Backbone curve for hysteretic models.....	40
Figure 3.1 Representation of the 2D analysis model for four-storey archetype using the joint formulation.....	49
Figure 3.2 Joint2D Element [75]	49
Figure 3.3 The IMK model backbone curve used to calibrate beam-column elements [57]...	51
Figure 3.4 Calibration of an RC beam-colum element to experimental data [57].....	52
Figure 3.5 Pushover curves produced in OpenSees, ETABS and SeismoStruct using IMK model, ASCE-41 model and fiber model, respectively.	57
Figure 3.6 Roof displacement time-history response: (a) 0.25g, (b) 1.0g, (c) 2.1g.....	58
Figure 3.7 Pushover idealization as per the FEMA P695 Methodology [6].....	59

Figure 3.8 Comparison of observed spectrum with spectra predicted by Boore et al. [87] [28]	62
Figure 3.9 Side-sway plastic mechanisms in concrete buildings: (a) soft-storey mechanism; (b) beam-sway mechanisms; adapted from Fardis et al. [122]	64
Figure 3.10 λc deaggregation process: (a) collapse fragility curve, (b) numerical derivative of seismic hazard curve, and (c) λc deaggregation. [90]	69
Figure 3.11 Hypothetical collapse fragility curves for two structures located at the same site	70
Figure 3.12 Importance factor and reliability differentiation	72
Figure 3.13 Reliability differentiation for Site A (Sharm El Sheikh)	72
Figure 3.14 Tectonic sketch for Egypt [97]	77
Figure 3.15 Effect of Magnitude on spectral shape (for constant distance) Ambraseys [101] [102]	78
Figure 3.16 EMME earthquake catalogue as a function of hypocentral depth [103]	79
Figure 3.17 Hazard curves for Site A- Soil A	80
Figure 3.18 Uniform hazard spectra (UHS) for Site A- Soil Class A	81
Figure 4.1 Site A (Sharm El-Sheikh) mean UHS vs. ECP response spectrum PGA of 0.25g	84
Figure 4.2 Site B (Nuweibaa) mean UHS vs. ECP response spectrum with PGA of 0.25g	85
Figure 4.3 Site C (Dahab) mean UHS vs. ECP response spectrum with PGA of 0.20g	85
Figure 4.4 EMME14 UHS using Area sources only vs. ECP response spectrum for Site B - rock soil	86
Figure 4.5 Inconsistency of the rate of exceedance determined by seismicity data and geologic data [96]	87
Figure 4.6 Site B (Nuweibaa) mean UHS vs. ECP-201 response spectrum with proposed PGA of 0.30g	88
Figure 4.7 Site C (Dahab) mean UHS vs. ECP-201 response spectrum with proposed PGA of 0.30g	88
Figure 4.8 Eurocode Type 1 and Type 2 and the the effect of Magnitude on the spectral shape [102]	89
Figure 4.9 Seismic hazard disaggregation for $S_a(1s)$ associated with 0.5% probability of exceedance in 50 years for Site A	90
Figure 4.10 Seismic hazard disaggregation - magnitude contribution to PGA associated with 10% probability of exceedance in 50 years for Site A	91
Figure 4.11 Seismic hazard disaggregation - magnitude contribution to $S_a(1s)$ associated with 10% probability of exceedance in 50 years for Site A	91
Figure 4.12 Pushover curve for Archetype SL-8-o	92
Figure 4.13 Incremental dynamic analysis results for Archetype SL-8-o	93
Figure 4.14 Collapse fragility curve of Archetype SL-8-o	94
Figure 4.15 Relationship between the number of storeys and the fundamental period	95
Figure 4.16 Relationship between the number of storeys and the overstrength factor	96
Figure 4.17 Effect of the fundamental period on the overstrength factor and ductility	98
Figure 4.18 Effect of the fundamental period on the R factor as defined $R = R_\mu R_M \Omega$	98
Figure 4.19 Effect of high and low SCWB ratios for LG performance groups on the probability of collapse in 50 years for Site A	104
Figure 4.20 Effect of high and low SCWB ratios for HG performance groups on the probability of collapse in 50 years for Site A	104
Figure 4.21 Effect of bay spacing and gravity load on the collapse probability of collapse in 50 years for Site A	106
Figure 4.22 Effect of fundamental period on the collapse probability of collapse in 50 years for Site B	106