



# **INNOVATIVE APPROACHES TO HANDLE ISSUES IN PERFORMANCE-BASED SEISMIC BEHAVIOUR OF MULTISTORY RC BUILDINGS**

By

**AMER ABDULWAHHAB HAMMADI AL-NUAIMI**

A thesis Submitted to the  
Faculty of Engineering at Cairo University  
In Partial Fulfillment of the  
Requirements for the Degree of

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In  
**STRUCTURAL ENGINEERING**

FACULTY OF ENGINEERING, CAIRO UNIVERSITY  
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY  
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**Title of Thesis:**

**Innovative Approaches to Handle Issues in Performance-Based Seismic Behaviour of Multistory RC Buildings**

**Key Words:** Pushover, PBSD, Capacity Spectrum Method, Multistory buildings, Iraq.

**Summary:**

The first aim of this study is to assess the performance objectives engaged in the Iraqi Seismic Code (ISC 1997) in order to make a realistic evaluation related to performance-based seismic design (PBSD) of multi-story reinforced concrete buildings and also to evaluate and compare the structural response demands obtained from nonlinear static analysis (NSA) procedures according to two versions of the capacity spectrum method (CSM) which are recommended in ATC 40 and ATC 55. The second aim is to present a simplified approach to handle the performance issues easily, by deriving the required factors to condensate the frame into an equivalent frame with a single bay model. This modeling will be called “The Condensed Frame Approach (CFA)”.

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## **Dedication**

Dedicated to Humanity, to those adoring Tolerance, Impartiality, and Perseverance.

# Table of Contents

Acknowledgment .....	i
Dedication .....	ii
Table of Contents .....	iii
List of Tables .....	vi
List of Figures .....	viii
Nomenclature .....	xvi
Abstract .....	xxii
1 Chapter One: Introduction .....	1
1.1 Performance-Based Seismic Design .....	1
1.2 Pushover Analysis Method .....	3
1.3 Problem Definition .....	5
1.4 Research Objectives .....	6
1.5 The Methodology and Work Plan .....	6
1.6 Thesis Organization .....	7
2 Chapter Two: Literature Review .....	9
2.1 Introduction .....	9
2.2 Review of Nonlinear Static Procedure .....	9
2.2.1 Capacity Curve .....	10
2.2.2 Demand Curve .....	11
2.2.3 Performance Point .....	12
2.2.4 Capacity Spectrum Method CSM-ATC 40 .....	14
2.2.5 Estimation of Damping .....	14
2.2.6 Reduction of the Response Spectrum .....	17
2.2.7 The Capacity Spectrum Method, CSM-ATC 55 .....	18
2.2.8 Effective Damping .....	19
2.2.9 Modified Acceleration-Displacement Response Spectrum .....	21
2.3 Literature .....	22
2.3.1 Essentials and History .....	22
2.3.2 Simplified Techniques .....	24
2.3.3 Codes versus PBSD .....	25
3 Chapter Three: Preparatory Buildings for Assessment .....	27

3.1	Introduction .....	27
3.2	Performance of RC Buildings in ISC.....	28
3.3	Distribution of Seismic Forces.....	30
3.4	Properties of the Buildings.....	30
3.5	Assumptions of the Structural Model .....	33
4	Chapter Four: Elements for Performance Assessment .....	35
4.1	Determination of Capacity Curves.....	35
4.2	Prediction of Seismic Response Demands.....	44
4.3	Performance Assessment Requirements in PBSB .....	53
4.4	Plasticization: .....	60
5	Chapter Five: Assessment of the Iraqi Seismic Code due to the Two Versions of the Capacity Spectrum Method .....	67
5.1	Performance Levels of the RC Buildings .....	67
5.2	Assessment of Performances of RC Buildings .....	67
5.3	Performance Levels of the Buildings According to Plastic Rotation versus Inter- Story Drift Ratio Demands .....	68
5.4	Comparison of Seismic Demands Obtained from the Nonlinear Static Analysis of CSM Versions .....	68
5.4.1	Roof Drift and Shear Strength Demands .....	68
5.4.2	Number and Type of Plastic Hinges .....	75
5.4.3	Inter-Story Drift Ratio Demands.....	76
6	Chapter Six: Performance Prediction using RDR .....	77
6.1	Roof Drift Ratio .....	77
6.2	Linear Relationship between the IDR and RDR.....	77
6.3	Nonlinear Regression.....	80
7	Chapter Seven: Efficiency of Two-Dimensional Modeling in Representing Three- Dimensional Frames .....	83
7.1	Introduction.....	83
7.2	Properties of the Considered Buildings .....	83
7.3	From Three-Dimensional to Two-Dimensional Frames.....	85
7.4	Performance Objectives .....	87
7.4.1	Determination of Capacity Curves.....	87
7.4.2	Prediction of Seismic Response Demands.....	90
7.4.3	Inter-Story Drift Ratio Demands.....	91



7.4.4	Comparison of the Results .....	93
7.5	Recommendations Concluded.....	96
8	Chapter Eight: The Condensed Frame Approach.....	98
8.1	Introduction.....	98
8.2	From Two-Dimensional Normal Frame (2DNF) to Two-Dimensional Condensed Frame (2DCF) .....	98
8.3	Story with Odd Columns' Number .....	99
8.4	Story with Even Columns' Number .....	101
8.5	Normalized Capacity Curves. of 2DNF versus 2DCF.....	103
8.6	Prediction of Seismic Response Demands.....	105
8.7	Comparison of Dynamic Properties and Seismic Demands .....	109
9	Chapter Nine: Effect of Number of Bays on the Performance Point .....	112
9.1	Introduction.....	112
9.2	Description of Structural Model .....	112
9.3	Pushover Analysis Results .....	113
9.4	Investigation of the Results.....	114
10	Chapter Ten: Discussion and Conclusions .....	116
10.1	Introduction .....	116
10.2	Conclusions for the First Three Objectives.....	116
10.3	Conclusions for the Last Three Objectives .....	118
10.3.1	Simplification from 3DF to 2DNF.....	118
10.3.2	Simplification from 2DNF to 2DCF .....	119
10.3.3	Complexity versus Simplicity of Modeling .....	120
10.4	Effect of Number of Bays in Multistory Buildings.....	120
	References .....	121

## List of Tables

Table 2.1: Values for Damping Modification Factor, $k$ .....	16
Table 2.2: Minimum Allowable $SR_A$ and $SR_V$ Values.....	17
Table 3.1: Section Details of Reinforced Concrete Frames Type T1S and T1N .....	32
Table 3.2: Building Type, Weight, Modal Mass, Fundamental Period, and Legend.....	34
Table 4.1: Analysis Results for T1S-P1, in Baghdad and Dehok due to ATC 40 .....	44
Table 4.2: Analysis Results for T1S-P1, in Baghdad and Dehok due to ATC 55 .....	44
Table 4.3: Analysis Results for T1S-P2, in Baghdad and Dehok due to ATC 40 .....	45
Table 4.4: Analysis Results for T1S-P2, in Baghdad and Dehok due to ATC 55 .....	45
Table 4.5: Analysis Results for T1N-P1, in Baghdad and Dehok due to ATC 40.....	45
Table 4.6: Analysis Results for T1N-P1, in Baghdad and Dehok due to ATC 55.....	46
Table 4.7: Analysis Results for T1N-P2, in Baghdad and Dehok due to ATC 40.....	46
Table 4.8: Analysis Results for T1N-P2, in Baghdad and Dehok due to ATC 55.....	46
Table 4.9: Deformation limits ATC 40 [1] .....	53
Table 4.10: The Maximum Inter-Story Drift Ratio for Seismic Hazard E3 (the bold numbers mean the state exceeds the IO but less than LS) .....	53
Table 4.11 : Number of Plasticizing Sections Created in the Buildings due to E3 Hazard Level.( the asterisked bold numbers mean some hinges reach the LS) .....	60
Table 6.1: The Roof Drift Ratio .....	79
Table 6.2: The Maximum Inter-Story Drift Ratio .....	79
Table 6.3: Coefficient Values after Nonlinear Regression Formulation.....	81
Table 6.4: Calculated versus Predicted Interstory Drift Ratio .....	81
Table 7.1: Section Details of the Reinforced Concrete Frames .....	85

Table 7.2: Building Type, Weight, Modal Mass, Fundamental Period, and Legend.....	85
Table 7.3: Displacement and Strength Demands (Performance Points), for the Buildings	90
Table 7.4: Numbers of Degrees of Freedom, and Plastic Hinges due to Modeling.....	96
Table 8.1: Transformation Factor ( $\alpha$ ) and ( $\beta$ ) for the CFA .....	102
Table 8.2: Section Details of Reinforced Concrete Condensed Frames .....	103
Table 8.3: Displacement and Strength Demands (Performance Points). .....	105
Table 9.1: Beam and Column Dimensions for Different Frame Topologies .....	112
Table 9.2: Frame Topologies, Beam and Column Reinforcement Ratios, Concrete Strength and Steel Yield Strength used in Numerical Simulations.....	112
Table 9.3: The Fundamental Time Period, the Mass Participation Ratio, the Drift Demands and the Shear Strength Demands .....	113
Table 10.1: Numbers of Degrees of Freedom and Plastic Hinges due to Modeling .....	120

## List of Figures

Figure 1.1: The Inelastic Analysis Procedures for Estimating Seismic Demands [3] .....	2
Figure 1.2: Performance-Based Seismic Design Flow Diagram [4] .....	3
Figure 1.3: Performance Levels Described by the Capacity Curve [4].....	4
Figure 1.4: Graphical Representation of the Capacity Spectrum Method of Equivalent Linearization [1].....	5
Figure 2.1: Depicting the Development of an Equivalent SDOF System from a Capacity Curve [3]. .....	10
Figure 2.2: Generation of the Elastic Spectrum from the Ground Motion Records [3] .....	12
Figure 2.3: Performance Point, from SDOF to MDOF .....	13
Figure 2.4: Graphical Representation of the Capacity-Spectrum Method of Equivalent Linearization, as Presented in ATC 40 [1].....	16
Figure 2.5: Spectral Reduction Operation .....	17
Figure 2.6: The Method of CSM-ATC 40 with Effective Period and Damping Parameters of Equivalent Linear System, along with a Capacity Curve .....	18
Figure 2.7: Types of Inelastic Behavior Considered. BLH=Bilinear Hysteretic STDG=Stiffness Degrading, and STRDG=Strength Degrading [3]. .....	19
Figure 2.8: Damping coefficients, B, as a function of damping, $\beta_{eff}$ , from various resource documents [3]. .....	20
Figure 2.9: Damping Coefficients, B, as a Function of Damping, $\beta_{eff}$ , from Various Resource Documents [3]. .....	22
Figure 3.1: Seismic Zoning Map of Iraq [5] .....	29
Figure 3.2 : Three Hazard Levels Response Spectra, for Baghdad and Dehok Zone .....	30

Figure 3.3: Perspective, 3D View of the Investigated Buildings .....	31
Figure 3.4: Buildings Group T1S, with Soft First Story .....	31
Figure 3.5: Buildings Group T1N, with Normal First Story .....	32
Figure 3.6: Equivalent Horizontal Static Design Seismic Loading (kN) ,Applied on a Typical Interior Frame According to the ISC in Baghdad Zone for the Investigated Buildings.....	33
Figure 4.1: Capacity Curves for the 3S-T1S, Buildings .....	36
Figure 4.2: Capacity Curves for the 3S-T1N, Buildings.....	37
Figure 4.3: Capacity Curves for the 6S-T1S, Buildings .....	38
Figure 4.4: Capacity Curves for the 6S-T1N, Buildings.....	39
Figure 4.5: Capacity Curves for the 9S-T1S, Buildings. ....	40
Figure 4.6: Capacity Curves for the 9S-T1N, Buildings.....	41
Figure 4.7: Normalized Capacity Curves for the 3S, Buildings.....	42
Figure 4.8: Normalized Capacity Curves for the 6S, Buildings.....	42
Figure 4.9: Normalized Capacity Curves for the 9S, Buildings.....	43
Figure 4.10: Normalized Capacity Curves for all Investigated Buildings .....	43
Figure 4.11: Drift Profile at the Performance Point for the Three Story Buildings due to ATC 40.....	47
Figure 4.12: Drift Profile at the Performance Point for the Three Story Buildings due to ATC 55.....	48
Figure 4.13: Drift Profile at the Performance Point for the Six Story Buildings due to ATC 40.....	49

Figure 4.14: Drift Profile at the Performance Point for the Six Story Buildings due to	
ATC 55.....	50
Figure 4.15: Drift Profile at the Performance Point for the Nine Story Buildings due to	
ATC 40.....	51
Figure 4.16: Drift Profile at the Performance Point for the Nine Story Buildings due to	
ATC 55.....	52
Figure 4.17 : The Inter-Story Drift Ratio for the Three Story Building According to	
ATC 40.....	54
Figure 4.18: The Inter-Story Drift Ratio for the Three Story Building According to	
ATC 55.....	55
Figure 4.19: The Inter-story Drift Ratio for the Six Story Building According to ATC	
40.....	56
Figure 4.20: The Inter-story Drift Ratio for the Six Story Building According to ATC	
55.....	57
Figure 4.21: The Inter-story Drift Ratio for the Nine Story Building According to ATC	
40.....	58
Figure 4.22: The Inter-story Drift Ratio for the Nine Story Building According to ATC	
55.....	59
Figure 4.23: Plasticizing Sequence of the Three Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Baghdad Zone, for Seismic Hazard	
E3 .....	61
Figure 4.24: Plasticizing Sequence of the Three Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Dehok Zone, for Seismic Hazard E3...	62

Figure 4.25: Plasticizing Sequence of the Six Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Baghdad Zone, for Seismic Hazard	
E3 .....	63
Figure 4.26: Plasticizing Sequence of the Six Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Dehok Zone, for Seismic Hazard E3...	64
Figure 4.27: Plasticizing Sequence of the Nine Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Baghdad Zone, for Seismic Hazard	
E3 .....	65
Figure 4.28: Plasticizing Sequence of the Nine Story Buildings due to P1 and P2	
According to ATC 40 and ATC 55 in Dehok Zone, for Seismic Hazard E3...	66
Figure 5.1: Roof Drift Demands (cm) Obtained due to (E1) .....	70
Figure 5.2: Shear Strength Demands (kN) Obtained due to (E1) .....	70
Figure 5.3: Roof Drift Demands (cm) Obtained due to (E2) .....	71
Figure 5.4: Shear Strength Demands (kN) Obtained due to (E2) .....	71
Figure 5.5: Roof Drift Demands (cm) Obtained due to (E3) .....	72
Figure 5.6: Shear Strength Demands (kN) Obtained due to (E3) .....	72
Figure 5.7: Differences Ratio of the Displacement Demands Obtained from CSM-	
ATC 55 with respect to CSM-ATC 40, (E2) .....	73
Figure 5.8: Differences Ratio of the Shear Strength Demands Obtained from CSM-	
ATC 55 with respect to CSM-ATC 40, (E2) .....	73
Figure 5.9: Differences Ratio of the Displacement Demands obtained from CSM-	
ATC55 with respect to CSM-ATC40, (E3) .....	74