Earthquake Engineering

Earthquake Engineering

Theory and Implementation with the 2015 International Building Code

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Contents

Foreword xv
Acknowledgment xvii

1 Introduction 1

2 Characteristics of Earthquakes 7
2.1 Causes of Earthquakes 7
2.2 Plate Tectonic Theory 7
2.3 Measures of Earthquakes 9
2.3.1 Magnitude 10
2.3.2 Intensity 10
2.3.3 Instrumental Scale 12
2.3.4 Fourier Amplitude Spectrum 13
2.3.5 Power Spectral Density 14
2.3.6 Response Spectrum 14

3 Linear Elastic Dynamic Analysis 15
3.1 Introduction 15
3.2 Single Degree of Freedom System 15
3.2.1 System Formulation 15
3.2.2 Response Spectrum of Elastic Systems 18
3.2.3 Design Response Spectrum 21
3.3 Generalized Single Degree of Freedom 24
3.4 Multiple Degrees of Freedom System 33
3.4.1 Multiple Degrees of Freedom System in 2D Analysis 33
Modal Analysis 34
Orthogonality of Mode Shapes 35
Caution 38
Importance of Modes 56
3.4.2 Multiple Degrees of Freedom System in 3D Analysis 57
Combination Effect of Different Ground Motions 70
3.4.3 Mass Participation in Buildings 70
3.5 Shear Beam 74
3.6 Cantilever Flexure Beam 83
Comparison between Shear Beam and Cantilever Flexure Beam 88
3.7 Simple Flexure Beam 90

3.8 Axial Beam 93
3.9 Finite Element Method 95
3.9.1 Finite Element Concept in Structural Engineering 96
3.9.2 Stiffness Matrix (Virtual Work Approach) 96
3.9.3 Mass Matrix (Virtual Work Approach) 102
3.9.4 Stiffness and Mass Matrices (Galerkin Approach) 103
3.9.5 Other Matrices 105
3.9.6 Mass Matrix in 2D 106
3.9.7 Application of Consistent Mass Matrix 107
3.10 Incoherence 109
3.11 Problems 115

4 Nonlinear and Inelastic Dynamic Analysis 121
4.1 Introduction 121
4.2 Single Degree of Freedom System 123
4.3 Numerical Methods 123
4.3.1 Central Differences Method 123
4.3.2 Newmark-β Methods 125
4.3.3 Wilson-θ Method 126
4.4 Multiple Degrees of Freedom System 131
4.5 Equivalent Linearization 139
4.6 Problems 145

5 Behavior of Structures under Seismic Excitation 147
5.1 Introduction 147
5.1.1 Force-Reduction Factor, R 147
5.1.2 Ductility 148
5.1.3 Energy Dissipation Capacity 151
5.1.4 Self-Centering Capacity 151
5.1.5 Frequency Shift 152
General Note 152
5.2 Relationship between Force Reduction and Ductility Demand 152
5.2.1 Equal Displacement Criterion 153
5.2.2 Equal Energy Criterion 154
5.2.3 General Relationship between R and μ_d 155
5.3 Relationship between Global Ductility and Local Ductility 161
5.4 Local Ductility Capacity 163
5.5 Evaluation of Monotonic Local Ductility Capacity 163
5.5.1 Monotonic Behavior of Concrete 163
5.5.2 Monotonic Behavior of Steel 165
5.5.3 Idealized Strain Compatibility Analysis 166
Curvature at First Yield 166
Curvature at Ultimate State 167

5.5.4 General Strain Compatibility Analysis 179
5.6 Evaluation of Cyclic Local Ductility Capacity 185
5.6.1 Cyclic Behavior of Concrete 185
5.6.2 Cyclic Behavior of Steel 186
5.6.3 Cyclic Strain Compatibility Analysis 187
5.7 Precast Concrete Structures 188
5.8 Effect of Structure Configuration on Ductility 189
5.9 Second-Order Effect on Ductility 190
5.10 Undesirable Hysteretic Behavior 190
Undesirable Hysteretic Behavior Due to Material Deterioration 191
Undesirable Hysteretic Behavior Due to Unfavorable Structural Configuration 191
5.11 Effect of Axial Load on Hysteretic Behavior 192
5.11.1 Rigid Bar Idealization 193
Case 1: Rigid Bar under Axial Load and without Springs 194
Case 2: Rigid Bar with Springs and without Axial Load 194
Case 3: Rigid Bar with Springs and under Axial Load 196
5.11.2 Energy Dissipation Factor (α_N) 196
5.12 Design Considerations 199
5.13 Capacity Design 200
5.14 Pushover Analysis 203
5.15 Recommended versus Undesirable Structural Systems 204
5.16 Strain Rate 206
5.17 Problems 207

6 Design of Earthquake-Resistant Buildings (IBC) 211
6.1 Introduction 211
6.2 Definition of Structural Components 212
6.2.1 Seismic Base 213
6.3 Seismic Design Category 214
6.4 Zoning Classification 215
6.5 Response Spectra 216
6.6 Design Requirements of Seismic Design Categories 217
Seismic Design Category A 218
Seismic Design Category B and C 218
Seismic Design Category D, E, and F 218
6.7 Earthquake-Induced Forces 218
6.7.1 Regularity of Structures 220
Horizontal Types of Irregularity 220
Vertical Types of Irregularity 221

6.7.2 Simplified Lateral Force Analysis Procedure 221
Vertical Distribution of Base Shear 222
6.7.3 Equivalent Lateral Force Procedure 227
Vertical Distribution of Base Shear 229
6.7.4 Modal Response Spectrum Analysis 233
6.7.5 Two-Stage Analysis Procedures 243
6.7.6 Time-History Analysis 245
6.7.7 Directional Effect 249
Redundancy Factor (ρ) 250
6.8 Load Combinations 251
6.9 Definitions and Requirements of Structural Systems 259
6.10 Special Topics 260
6.10.1 Diaphragm Design Forces 260
6.10.2 Torsional Effect 260
6.10.3 Drift Limitations 261
6.10.4 Structural Separation 262
6.10.5 *P*-Δ Effect 262
6.11 Problems 263
APPENDIX 6-1 264

7 Seismic Provisions of Reinforced Concrete Structures (ACI 318) 269
7.1 Introduction 269
7.2 Ordinary Moment Frames 270
7.2.1 Ordinary Beams 270
Main Reinforcement 270
Development of Reinforcement 275
Shear Reinforcement 277
7.2.2 Ordinary Beam-Columns 278
Main Reinforcement 278
Development of Reinforcement 279
Shear Reinforcement 279
7.3 Intermediate Moment Frames 290
7.3.1 Intermediate Beams 291
Main Reinforcement 292
Lateral Reinforcement 292
7.3.2 Intermediate Beam-Columns 292
Lateral Reinforcement 293
7.4 Special Moment Frames 302
7.4.1 Special Beams 303
Design Shear, V_e 303
Dimension Limitations 304
Main Reinforcement 305
Lateral Reinforcement 306

7.4.2 Special Beam-Columns 306
Design Forces 306
Dimension Limitations 307
Main Reinforcement 308
Lateral Reinforcement Details 308
Minimum Lateral Reinforcement 309
Concrete Cover Protection 310
7.4.3 Special Joints 310
Development of Reinforcement 311
Confined Concrete 312
7.5 Ordinary Shear Walls 322
Force Requirements 322
Reinforcement Requirements 323
7.6 Special Shear Walls 333
7.6.1 Special Shear Walls without Openings 333
Force Requirements 333
Reinforcement Requirements 335
Boundary Element Requirements 336
Detailing of Boundary Elements 338
7.6.2 Special Shear Walls with Openings 344
7.7 Coupling Beams 346
7.7.1 Detailing of Coupling Beams with Diagonals 347
Diagonals 347
Coupling Beams 348
7.8 Diaphragms and Trusses 349
7.8.1 Structural System 349
7.8.2 Shear Strength 350
7.8.3 Diaphragm Chords and Truss Members 351
7.9 Foundations 351
7.9.1 Strength Requirements 351
7.9.2 Detailing Requirements 352
7.10 Precast Concrete 353
7.10.1 Precast Special Moment Frames 353
Precast Special Frames with Ductile Connections 353
Precast Special Frames with Strong Connections 354
7.10.2 Precast Intermediate Shear Walls 354
7.10.3 Precast Special Shear Walls 354
7.11 Nonseismic-Resisting Systems 355
7.11.1 General Requirements (A) 355
Beam Requirements 355
Beam-Column Requirements 355

7.11.2 General Requirements (B) 355
Rectangular Sections 356
Circular and Spiral Sections 356
APPENDIX 7-1 357

8 Introduction to AISC Seismic Provisions for Structural Steel Buildings 365
8.1 Introduction 365
8.2 General Requirements 366
Load Combinations 366
Material 366
Demand Critical Welds 366
Slenderness Requirements 366
Special Bracing at Plastic Hinge Locations 367
Protected Zones 367
Column Splices 367
8.3 Structural Systems 368
8.3.1 Ordinary Moment Frames 369
FR Moment Connections 369
Demand Critical Welds Regions 370
8.3.2 Intermediate Moment Frames 370
Slenderness of Beams 370
Protected Zones 371
Beam-to-Column Connections 371
Demand Critical Welds Regions 371
8.3.3 Special Moment Frames 371
Column-Beam Moment Ratios 371
Slenderness of Beams 372
Protected Zones 372
Beam-to-Column Connections 372
Lateral Support of Column Flanges 373
Demand Critical Welds Regions 373
8.3.4 Special Truss Moment Frames 373
Dimension Limitations 374
Special Segments 374
Slenderness of Special Segments 375
Protected Zones 375
Bracing of Trusses 375
Demand Critical Welds Regions 375
8.3.5 Ordinary Cantilever Column Systems 375
Demand Critical Welds Regions 375
8.3.6 Special Cantilever Column Systems 375
Slenderness of Columns 376
Protected Zones 376
Base Plate 376
Demand Critical Welds Regions 376

8.3.7 Ordinary Concentrically Braced Frames 376
Slenderness of Columns 376
V-braced and Inverted V-braced Frames 376
Diagonal Brace Connections 377
Demand Critical Welds Regions 378
8.3.8 Special Concentrically Braced Frames 378
Slenderness of Columns 378
Protected Zones 378
Strength Requirements 378
Beam-to-Column Connections 379
Brace Connections 379
Diagonal Braces 379
V- and Inverted V-Type Braces 380
Demand Critical Welds Regions 380
8.3.9 Eccentrically Braced Frames 381
Strength Requirements 381
Slenderness Requirements 382
Protected Zones 382
Beam-to-Column Connections 382
General Link Requirements 382
Demand Critical Welds Regions 386
8.3.10 Buckling-Restrained Braced Frames 386
8.3.11 Special Plate Shear Walls (SPSW) 387
Strength Requirements 388
Slenderness Requirements 389
Protected Zones 389
Demand Critical Welds Regions 389
8.4 Allowable Stress Design Approach 390
APPENDIX 8-1 390

9 Design of Earthquake-Resistant Bridges (AASHTO Code) 393
9.1 Introduction 393
9.2 AASHTO Procedures for Bridge Design 394
9.3 Response Spectra 397
9.4 Single Span Bridges 398
9.5 Bridges in Seismic Zone 1 399
9.6 Bridges in Seismic Zone 2 400
9.7 Bridges in Seismic Zones 3 and 4 400
9.8 Methods of Analysis 401
9.8.1 Uniform Load Method 401
Continuous Bridges 401
Discontinuous Bridges 411

9.8.2 Single-Mode Spectral Method 411
Continuous Bridges 412
Sinusoidal Method for Continuous Bridges 419
Discontinuous Bridges 425
Rigid Deck Method for Discontinuous Bridges ... 429
9.8.3 Multiple Mode Spectral Method 438
9.8.4 Time-History Method 438
9.8.5 Directional Effect 439
9.9 Load Combinations 439
9.10 Design Requirements 440
9.11 Design Requirements of Reinforced Concrete Beam-Columns 441
9.11.1 Bridges in Seismic Zone 1 441
9.11.2 Bridges in Seismic Zone 2 442
9.11.3 Bridges in Seismic Zones 3 and 4 442
Detailing of Transverse Reinforcement 444
9.12 Design Requirements of Reinforced Concrete Pier Walls 447
9.13 Special Topics 448
9.13.1 *P*-Δ Requirements 448
9.13.2 Displacement Requirements (Seismic Seats) 451
9.13.3 Longitudinal Restrainers 452
9.13.4 Hold-Down Devices 452
9.13.5 Liquefaction 453
APPENDIX 9-1 453

10 Geotechnical Aspects and Foundations 457
10.1 Introduction 457
10.2 Wave Propagation 457
10.3 Ground Response 459
10.4 Liquefaction 462
Equivalent Uniform Cyclic Shear Stress Method 462
10.5 Slope Stability 465
10.6 Lateral Earth Pressure 466
10.7 Foundations 468
APPENDIX 10-1 474

11 Synthetic Earthquakes 477
11.1 Introduction 477
11.2 Fourier Transform 477
11.3 Power Spectral Density 480
11.4 Stationary Random Processes 481
11.5 Random Ground Motion Model 482
11.6 Implementation of Ground Motion Model 486
11.7 Validity of Synthetic Earthquakes 487

12 Seismic Isolation 491
12.1 Introduction 491
12.2 Concept of Seismic Isolation 491
12.3 Lead-Rubber Bearing Isolators 493
12.4 Analysis of Seismically Isolated Structures 494
12.5 Design of Seismically Isolated Structures 495
Allowable Compressive Stress 496
Allowable Shear Deformation (Shear Strain) 496
Allowable Rotation 497
Stability Requirements 497
Lead Core Dimensions 497
Shear Stiffness 498
APPENDIX 12-1 504

Bibliography 507

Index 513

Foreword

This is the third edition of a one-of-a-kind textbook. This book explains the fundamental concepts of structural dynamics and earthquake engineering with an exceptional clarity and an unprecedented quantity of numerical examples that help the reader fully understand the concepts being discussed.

Professor Armouti has done a phenomenal job of explaining the difficult concepts of linear and nonlinear dynamics and structural response to earthquake excitations. The presentation style, simplicity of language, and the vast number of examples help make the concepts presented easily understandable even to those who face them for the first time.

This is an ideal textbook for teaching a first undergraduate or graduate course in earthquake engineering. It not only explains the structural dynamics theories necessary for understanding linear and nonlinear response to earthquake excitations, but also covers the basic design of earthquake-resistant steel and reinforced concrete buildings, bridges, and isolated systems, in accordance with the latest codes of the United States. The provisions of ASCE 7 standard as well as those in the International Building Code (IBC), ACI-318, and AISC seismic provisions are clearly explained and illustrated through numerical examples.

Students of the subject will find this book easy to follow and will appreciate the wealth of numerical examples presented for every small and large issue discussed. The instructors will find this book useful because of the simplicity of the presentation, the extensive number of solved examples, and the problems contained at the end of the first five chapters. To aid instructors in using the book effectively for teaching the subject, an Instructor's Manual containing solutions to end of chapter problems and a set of Powerpoint presentation slides are made available to qualified instructors. Last, but not the least, engineering practitioners will find this book to be an invaluable source of information regarding response of various systems and components to earthquake excitations.

When I was first presented with the manuscript of the first edition of this book by the International Code Council, which was seeking my opinion regarding potential publication in the United States, the first thought that crossed my mind was: an earthquake engineering book from Jordan for the U.S. market? This initial reaction, however, rapidly faded when I went over the contents and the presentation of the book.

I did strongly recommend publication of the first and second editions of this textbook for the U.S. market and I am very pleased to have done the same for this third edition of the book.

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