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19A - HERRERA JACOBY

The book focuses on the use of inelastic analysis methods for the seismic assessment and design of bridges, for which the work carried out so far, albeit interesting and useful, is nevertheless clearly less than that for buildings. Although some valuable literature on the subject is currently available, the most advanced inelastic analysis methods that emerged during the last decade are currently found only in the specialised research-oriented literature, such as technical journals and conference proceedings. Hence the key objective of this book is two-fold, first to present all important methods belonging to the aforementioned category in a uniform and sufficient for their understanding and implementation length, and to provide also a critical perspective on them by including selected case-studies wherein more than one methods are applied to a specific bridge and by offering some critical comments on the limitations of the individual methods and on their relative efficiency. The book should be a valuable tool for both researchers and practicing engineers dealing with seismic design and assessment of bridges, by both making the methods and the analytical tools available for their implementation, and by assisting them to select the method that best suits the individual bridge projects that each engineer and/or researcher faces.

This book collects 4 keynote and 15 theme lectures presented at the 2nd European Conference on Earthquake Engineering and Seismology (2ECEES), held in Istanbul, Turkey, from August 24 to 29, 2014. The conference was organized by the Turkish Earthquake Foundation - Earthquake Engineering Committee and Prime Ministry, Disaster and Emergency Management Presidency under the auspices of the European Association for Earthquake Engineering (EAEE) and European Seismological Commission (ESC). The book’s nineteen state-of-the-art chapters were written by the most prominent researchers in Europe and address a comprehensive collection of topics on earthquake engineering, as well as interdisciplinary subjects such as engineering seismology and seismic risk assessment and management. Further topics include engineering seismology, geotechnical earthquake engineering, seismic performance of buildings, earthquake-resistant engineering structures, new techniques and technologies, and managing risk in seismic regions. The book also presents the First Professor Inge Lehmann Distinguished Award Lecture given by Prof. Shamita Das in honor of Prof. Dr. Inge Lehmann. The aim of this work is to present the state-of-the art and latest practices in the fields of earthquake engineering and seismology, with Europe’s most respected researchers addressing recent and ongoing developments while also proposing innovative avenues for future research and development. Given its cutting-edge conten t and broad spectrum of topics, the book offers a unique reference guide for researchers in these fields. Audience: This book is of interest to civil engineers in the fields of geotechnical and structural earthquake engineering; scientists and researchers in the fields of seismology, geology and geophysics. Not only scientists, engineers and students, but also those interested in earthquake hazard assessment and mitigation will find in this book the most recent advances.

A Complete Guide to Solving Lateral Load Path Problems The Analysis of Irregular Shaped Structures: Diaphragms and Shear Walls explains how to calculate the forces to be transferred across multiple discontinuities and reflect the design requirements on construction documents. Step-by-step examples offer progressive coverage, from basic to very advanced illustrations of load paths in complicated structures. The book is based on the 2009 International Building Code, ASCE/SEI 7-05, the 2005 Edition of the National Design Specification for Wood Construction, and the 2008 Edition of the Special Design Provisions for Wind and Seismic (SDPWS-08). COVERAGE INCLUDES: Code sections and analysis Diaphragm basics Diaphragms with end horizontal offsets Diaphragms with intermediate offsets Diaphragms with openings Open front and cantilever diaphragms Diaphragms with vertical offsets Complex diaphragms with combined openings and offsets Standard shear walls Shear walls with openings Discontinous shear walls Horizontally offset shear walls The portal frame Rigid moment-resisting frame walls--the frame method of analysis

This handbook contains up-to-date existing structures, computer applications, and infonnation on planning, analysis, and design seismic design of wood structures. A new and very useful feature of this edition of earthquake-resistant building structures. Its intention is to provide engineers, architects, is the inclusion of a companion CD-ROM disc developers, and students of structural containing the complete digital version of the handbook itself and the following very engineering and architecture with authoritative, yet practical, design infonnation. It represents important publications: an attempt to bridge the persisting gap between l. UBC-IBC (1997-2000) Structural advances in the theories and concepts of Comparisons and Cross References, ICBO, earthquake-resistant design and their 2000. implementation in seismic design practice. 2. NEHRP Guidelines for the Seismic The distinguished panel of contributors is Rehabilitation of Buildings, FEMA-273, Federal Emergency Management Agency, composed of 22 experts from industry and universities, recognized for their knowledge and 1997. extensive practical experience in their fields. 3. NEHRP Commentary on the Guidelinesfor They have aimed to present clearly and the Seismic Rehabilitation of Buildings, FEMA-274, Federal Emergency concisely the basic principles and procedures pertinent to each subject and to illustrate with Management Agency, 1997. practical examples the application of these 4. NEHRP Rec-

ommended Provisions for principles and procedures in seismic design Seismic Regulations for New Buildings and practice. Where applicable, the provisions of Older Structures, Part 1 - Provisions, various seismic design standards such as mc FEMA-302, Federal Emergency 2000, UBC-97, FEMA-273/274 and ATC-40 Management Agency, 1997.

Solid design and craftsmanship are a necessity for structures and infrastructures that must stand up to natural disasters on a regular basis. Continuous research developments in the engineering field are imperative for sustaining buildings against the threat of earthquakes and other natural disasters. Performance-Based Seismic Design of Concrete Structures and Infrastructures is an informative reference source on all the latest trends and emerging data associated with structural design. Highlighting key topics such as seismic assessments, shear wall structures, and infrastructure resilience, this is an ideal resource for all academicians, students, professionals, and researchers that are seeking new knowledge on the best methods and techniques for designing solid structural designs.

This SEAOC Blue Book: Seismic Design Recommendations is the premier publication of the SEAOC Seismology Committee. The name Blue Book is renowned worldwide among engineers, researchers, and building officials. Since 1959, the SEAOC Blue Book, previously titled Recommended Lateral Force Requirements and Commentary, has been a prescient publication of earthquake engineering. The Blue Book has been at the vanguard of earthquake engineering in California and around the world. This edition of the Blue Books offers a series of articles, that cover specific topics, some related to a particular code provision and some more general relating to an area of practice. While different than the previous editions of the Blue Books, it builds upon the tremendous effort of those who have forged earthquake engineering practice via the previous half-century of Blue Book editions. The Blue Book provides: insight and discussion of earthquake engineering concepts; interpretations of sometimes ambiguous or conflicting provisions of various codes, standards, and guidelines; and practical guidance on design implementation.

"This series provides a step-by-step approach to applying the structural provisions of the 2018 International Building Code and referenced standards ... an invaluable resource for civil and structural engineers, architects, academics, and students."--Back cover.

This volume elucidates the design criteria and principles for steel structures under seismic loads according to Eurocode 8-1. Worked Examples illustrate the application of the design rules. Two case studies serve as best-practice samples.

The Uniform Building Code is one of the most widely adopted model building codes in the world and is a proven document meeting the needs of government units charged with enforcement of building regulation. The most recent edition, published in 1997, provides complete regulations covering all major aspects of building design and construction relating to fire and life safety and structural safety. The provisions of the 1997 Uniform Building Code were published in three volumes to help building inspectors, plans examiners, architects and structural designers locate provisions applicable to their respective fields without the need to search through all provisions. The two most popular volumes, 1 and 2, are now available from Delmar Learning. Volume 1 contains the administrative, fire- and life-safety, and field inspection provisions, including all nonstructural provisions and those structural provisions necessary for field inspections.

This full color manual is intended to explain the principles of seismic design for those without a technical background in engineering and seismology. The primary intended audience is that of architects, and includes practicing architects, architectural students and faculty in architectural schools who teach structures and seismic design. For this reason the text and graphics are focused on those aspects of seismic design that are important for the architect to know.

This international handbook is essential for geotechnical engineers and engineering geologists responsible for designing and constructing piled foundations. It explains general principles and practice and details current types of pile, piling equipment and methods. It includes calculations of the resistance of piles to compressive loads, pile group

Addresses the Question Frequently Proposed to the Designer by Architects: "Can We Do This? Offering guidance on how to use code-based procedures while at the same time providing an understanding of why provisions are necessary, Tall Building Design: Steel, Concrete, and Composite Systems methodically explores the structural behavior of steel, concrete, and composite members and systems. This text establishes the notion that design is a creative process, and not just an execution of framing proposals. It cultivates imaginative approaches by presenting examples specifically related to essential building codes and standards. Tying together precision and accuracy—it also bridges the gap between two design approaches—one based on initiative skill and the other based on computer skill. The book explains loads and load combinations typically used in building design, explores methods for determining design wind loads using the provisions of ASCE 7-10, and examines wind tunnel procedures. It defines conceptual seismic design, as the avoidance or minimization of problems created by the effects of seismic excitation. It introduces the concept of performance-based design (PBD). It also addresses serviceability considerations, prediction of tall building motions, damping devices, seismic isolation, blast-resistant design, and progressive collapse. The final chapters explain gravity and lateral systems for steel, concrete, and composite buildings. The Book Also Considers: Preliminary analysis and design techniques The structural rehabilitation of seismically vulnerable steel and concrete buildings Design differences between code-sponsored approaches The concept of ductility trade-off for strength Tall Building Design: Steel, Concrete, and Composite Systems is a structural design guide and reference for practicing engineers and educators, as well as recent graduates entering the structural engineering profession. This text examines all major concrete, steel, and composite building systems, and uses the most up-to-date building codes.

Volume 3 provides examples that illustrate the seismic design of structures using concrete and steel.

This is arguably the most comprehensive book on the subject of architectural-structural design decisions that influence the seismic performance of buildings. It explores the intersection between the architecture and the structural design through the lens of earthquake engineering. The main aim of this unique book, written by renowned engineer M.Llunji, is to explain in the simplest terms, the architecture and structure of earthquake-resistant buildings, using many practical examples and case studies to demonstrate the fact that structures and buildings react to earthquake forces mainly according to their form, configuration and material. The purpose of this book is to introduce a new perspective on seismic design,a more visual, conceptual and architectural one, to both architects and engineers. In a word, it is to introduce architectural opportunities for earthquake resistant- buildings,

treating seismic design as a central architectural issue. A non-mathematical and practical approach emphasizing graphical presentation of problems and solutions makes it equally accessible to architectural and engineering professionals.The book will be invaluable for practicing engineers, architects, students and researches. .More than 500 illustrations/photographs and numerous case studies. Seismic Architecture covers: • Earthquake effects on structures • Seismic force resisting systems • Advanced systems for seismic protection • Architectural/structural configuration and its influence on seismic response • Contemporary architecture in seismic regions • Seismic response of nonstructural elements • Seismic retrofit and rehabilitation of existing buildings • Seismic architecture.

- Solid review of seismic design exam topics- More than 100 practice problems- Includes step-by-step solutions

* The best-selling text and reference on wood structure design * Incorporates the latest National Design Specifications, the 2003 International Building Code and the latest information on wind and seismic loads

The Business and Problem-Solving Skills Needed for Success in Your Engineering Career! The Structural Engineer's Professional Training Manual offers a solid foundation in the real-world business and problem-solving skills needed in the engineering workplace. Filled with illustrations and practical “punch-list” summaries, this career-building guide provides an introduction to the practice and business of structural and civil engineering, including lots of detailed advice on developing competence and communicating ideas. Comprehensive and easy-to-understand, The Structural Engineer's Professional Training Manual features: Recommendations for successfully training engineers who are new to the field Methods for bringing together ideas from a variety of sources to find workable solutions to difficult problems Information on the real-world behaviors of building materials Guidance on licensing, liability, regulations, and employment Techniques for responsibly estimating design time and cost Tips on communicating design ideas effectively Strategies for working successfully as part of a team Inside This Skills-Building Engineering Resource • The Dynamics of Training • The World of Professional Engineering • The Business of Structural Engineering • Building Projects • Bridge Projects • Building Your Own Competence • Communicating Your Designs • Engineering Mechanics • Soil Mechanics • Understanding the Behavior of Concrete • Understanding the Behavior of Masonry Construction • Understanding the Behavior of Structural Steel • Understanding the Behavior of Wood Framing

Third Printing, incorporating errata, Supplement 1, and expanded commentary, 2013.

This book is a collection of invited lectures including the 5th Nicholas Ambraseys distinguished lecture, four keynote lectures and twenty-two thematic lectures presented at the 16th European Conference on Earthquake Engineering, held in Thessaloniki, Greece, in June 2018. The lectures are put into chapters written by the most prominent internationally recognized academics, scientists, engineers and researchers in Europe. They address a comprehensive collection of state-of-the-art and cutting-edge topics in earthquake engineering, engineering seismology and seismic risk assessment and management. The book is of interest to civil engineers, engineering seismologists, seismic risk managers, policymakers and consulting companies covering a wide spectrum of fields from geotechnical and structural earthquake engineering, to engineering seismology and seismic risk assessment and management. Scientists, professional engineers, researchers, civil protection policymakers and students interested in the seismic design of civil engineering structures and infrastructures, hazard and risk assessment, seismic mitigation policies and strategies, will find in this book not only the most recent advances in the state-of-the-art, but also new ideas on future earthquake engineering and resilient design of structures. Chapter 1 of this book is available open access under a CC BY 4.0 license.

Developments in Earthquake Engineering have focussed on the capacity and response of structures. They often overlook the importance of seismological knowledge to earthquake-proofing of design. It is not enough only to understand the anatomy of the structure, you must also appreciate the nature of the likely earthquake. Seismic design, as detailed in this book, is the bringing together of Earthquake Engineering and Engineering Seismology. It focuses on the seismological aspects of design – analyzing various types of earthquake and how they affect structures differently. Understanding the distinction between these earthquake types and their different impacts on buildings can make the difference between whether a building stands or falls, or at least to how much it costs to repair. Covering the basis and basics of the major international codes, this is the essential guide for professionals working on structures in earthquake zones around the world.

Standard ASCE/SEI 41-06 presents the latest generation of performance-based seismic rehabilitation methodology.

Author Donald Eagling writes: "Often the process of studying the seismology of an area, selecting design earthquakes, and developing priorities and analysis techniques becomes so complex and bound up with sophistication that the (seismic) program's practical objectives are lost in the cracks between experts." How true! As a person who has been part of the earthquake engineering profession for over 40 years I have observed the rapid growth of sophisticated earthquake engineering analysis and design practices. As a former educator I applaud the great progress brought about by this thrust. Sophisticated "state of the art" analyses accomplished with understanding have brought about better earthquake resistive construction and have the potential to continue to do so. However, it is my personal opinion that the complexities of today's most advanced analytical techniques have outstripped the capabilities of the majority of structural engineering's practitioners. While many can manipulate the mathematics, most do not understand the results in physical terms. Over the last few decades public debate about the safety of nuclear facilities has intensified this problem. In the eyes of many, the potential intervenor is "demon god," and to appease this "god" an even increasing complexity of investigations, analyses and design practices have been served to it in the name of increased safety. Various proposals for appeasement have been to no avail. Opposing arguments have always favored more sophisticated and costly engineering practices and usually more studies have been required. Too often the result has been to put off relatively simple solutions to seismic problems. Where new construction is involved, costs increase with time but the hazard does not. Where existing poor construction is involved, hazards as well as costs grow with time. When the mitigation of serious seismic hazards is delayed by overly sophisticated reviews or studies, the practical objectives of seismic safety are simply not realized in timely way. During these times when socio-political issues often dominate public discussion of seismic safety, it is more important than ever to

move ahead with practical and corrective action where the consequences of damaging earthquakes can be serious. The authors of this Seismic Safety Guide represent a cross section of the earthquake engineering profession, from state of the art to practitioner. I recommend their counsel in the chapters that follow for a practical course to seismic safety. Karl V. Steinbrugge

The 2012 IBC Structural/Seismic Design Manual provides a step-by-step approach to applying the structural provisions of the 2012 International Building Code and referenced standards. Volume 1 contains code application examples based on the IBC and ASCE 7-10 including determination of seismic irregularities, combinations of structural systems, determination of drift, support of discontinuous systems, and analysis of seismic forces applied to equipment, non-structural elements and non-building structures. Volume 2 contains code application examples of light-frame, tilt-up and masonry construction. Diaphragm flexibility, center of mass, collectors and chords, deflection and anchorage are discussed through examples. In and out-of-plane seismic loads are analyzed. Volume 3 contains code application examples of concrete construction. Moment frames, braced frames and shear wall construction are analyzed. Volume 4 contains code application examples of steel construction. Moment frames and braced frames are analyzed. Volume 5 contains examples of seismically isolated buildings and buildings with supplemental damping.

Complete coverage of earthquake-resistant concrete building design Written by a renowned seismic engineering expert, this authoritative resource discusses the theory and practice for the design and evaluation of earthquakeresisting reinforced concrete buildings. The book addresses the behavior of reinforced concrete materials, components, and systems subjected to routine and extreme loads, with an emphasis on response to earthquake loading. Design methods, both at a basic level as required by current building codes and at an advanced level needed for special problems such as seismic performance assessment, are described. Data and models useful for analyzing reinforced concrete structures as well as numerous illustrations, tables, and equations are included in this detailed reference. Seismic Design of Reinforced Concrete Buildings covers: Seismic design and performance verification Steel reinforcement Concrete Confined concrete Axially loaded members Moment and axial force Shear in beams, columns, and walls Development and anchorage Beam-column connections Slab-column and slab-wall connections Seismic design overview Special moment frames Special structural walls Gravity framing Diaphragms and collectors Foundations