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Advances in Structural Engineering John Wiley & Sons

This book presents the selected peer-reviewed proceedings of the International Conference on Recent Trends and Innovations in Civil Engineering (ICRTICE 2019). The volume focuses on latest research and advances in the field of civil engineering and materials science such as design and development of new environmental materials, performance testing and verification of smart materials, performance analysis and simulation of steel structures, design and performance optimization of concrete structures, and building materials analysis. The book also covers studies in geotechnical engineering, hydraulic engineering, road and bridge engineering, building services design, engineering management, water resource engineering and renewable energy. The contents of this book will be useful for students, researchers and professionals working in civil engineering.

RSMears Illustrated Construction Dictionary John Wiley & Sons

"TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 440, Performance-Based Seismic Bridge Design (PBSD) summarizes the current state of knowledge and practice for PBSD. PBSD is the process that links decision making for facility design with seismic input, facility response, and potential facility damage. The goal of PBSD is to provide decision makers and stakeholders with data that will enable them to allocate resources for construction based on levels of desired seismic performance"--Publisher's description.

Earthquake Engineering Springer Nature

This work is an elementary but comprehensive textbook which provides the latest updates in the fields of Earthquake Engineering, Dynamics of Structures, Seismology and Seismic Design, introducing relevant new topics to the fields such as the Neodeterministic method. Its main purpose is to illustrate the application of energy methods and the analysis in the frequency domain with the corresponding visualization in the Gauss-Argant plan. However, emphasis is also given to the applications of numerical methods for the solution of the equation of motion and to the ground motion selection to be used in time history analysis of structures. As supplementary materials, this book provides "OPENSIGNAL", a rare and unique software for ground motion selection and processing that can be used by professionals to select the correct earthquake records that would run in the nonlinear analysis. The book contains clear illustrations and figures to describe the subject in an intuitive way. It uses simple language and terminology and the math is limited only to cases where it is essential to understand the physical meaning of the system. Therefore, it is suitable also for those readers who approach these subjects for the first time and who only have a basic understanding of mathematics (linear algebra) and static analysis of structures.

Seismic Behaviour and Design of Irregular and Complex Civil Structures III IGI Global

This edition is based on the work of NCHRP project 20-7, task 262 and updates the 2nd (1999) edition -- P. ix.

Structural Engineering Handbook World Scientific

This comprehensive and well-organized book presents the concepts and principles of earthquake resistant design of structures in an easy-to-read style. The use of these principles helps in the implementation of seismic design practice. The book adopts a step-by-step approach, starting from the fundamentals of structural dynamics to application of seismic codes in analysis and design of structures. The text also focusses on seismic evaluation and retrofitting of reinforced concrete and masonry buildings. The text has been enriched with a large number of diagrams and solved problems to reinforce the understanding of the concepts. Intended mainly as a text for undergraduate and postgraduate students of civil engineering, this text would also be of considerable benefit to practising engineers, architects, field engineers and teachers in the field of earthquake resistant design of structures.

Structural Dynamics John Wiley & Sons

This book describes methods used to estimate forces and deformations in structures during future earthquakes. It synthesizes the topics related to ground motions with those related to structural response and, therefore, closes the gap between geosciences and engineering. Requiring no prior knowledge, the book elucidates confusing concepts related to ground motions and structural response and enables the reader to select a suitable analysis method and implement a cost-effective seismic design. Presents lucid, accessible descriptions of key concepts in ground motions and structural response and easy to follow descriptions of methods used in seismic analysis; Explains the roles of strength, deformability, and damping in seismic design; Reinforces concepts with real-world examples; Stands as a ready reference for performance-based/risk-based seismic design, providing guidance for achieving a cost-effective seismic design.

Performance-Based Seismic Design of Concrete Structures and Infrastructures Springer Nature

This book presents state-of-the-art knowledge on problems of the effects of structural irregularities on their seismic response. It also covers specific spatial and rotational seismic loads on these structures. Rapid progress in respective research on irregular structures and unconventional seismic loads requires prompt updates of the state of the art in this area. These problems are of particular interest to both researchers and practitioners because these are non-conservative effects compared with the approach of the traditional seismic design (e.g. Eurocode 8, Uniform Building Code etc.). This book will be of particular interest to researchers, PhD students and engineers dealing with design of structures under seismic excitations.

Performance-based Seismic Bridge Design Springer

Seismic Design of Industrial Facilities demands a deep knowledge on the seismic

behaviour of the individual structural and non-structural components of the facility, possible interactions and last but not least the individual hazard potential of primary and secondary damages. From 26.-27. September 2013 the International Conference on Seismic Design of Industrial Facilities firstly addresses this broad field of work and research in one specialized conference. It brings together academics, researchers and professional engineers in order to discuss the challenges of seismic design for new and existing industrial facilities and to compile innovative current research. This volume contains 50 contributions to the SeDIF-Conference covering the following topics with respect to the specific conditions of plant design: · International building codes and guidelines on the seismic design of industrial facilities · Seismic design of non-structural components · Seismic design of silos and liquid-filled tanks · Soil-structure-interaction effects · Seismic safety evaluation, uncertainties and reliability analysis · Innovative seismic protection systems · Retrofitting The SeDIF-Conference is hosted by the Chair of Structural Statics and Dynamics of RWTH Aachen University, Germany, in cooperation with the Institute for Earthquake Engineering of the Dalian University of Technology, China.

Advanced Structural Analysis CRC Press

This book presents the proceedings of the 4th International Symposium on Materials and Sustainable Development ISMSD2019 (CIMDD2019), will include a 3-day Conference (12 - 14 November).

Organized by the Research Unit: Materials, Processes and Environment and M'hamed Bougara University of Boumerdes (Algeria) in partnership with University of Reims - Champagne-Ardenne (France), this symposium follows the success of CIMDD 2013-2015-2017 and continues the traditions of the highly successful series of International Conferences on the materials, processes and Environment. The Symposium will provide a unique topical forum to share the latest results of the materials and sustainable development research in Algeria and worldwide.

Earthquake-resistant Design Of Masonry Buildings AASHTO

The book presents research papers presented by academicians, researchers, and practicing structural engineers from India and abroad in the recently held Structural Engineering Convention (SEC) 2014 at Indian Institute of Technology Delhi during 22 – 24 December 2014. The book is divided into three volumes and encompasses multidisciplinary areas within structural engineering, such as earthquake engineering and structural dynamics, structural mechanics, finite element methods, structural vibration control, advanced cementitious and composite materials, bridge engineering, and soil-structure interaction. Advances in Structural Engineering is a useful reference material for structural engineering fraternity including undergraduate and postgraduate students, academicians, researchers and practicing engineers.

Project Management for Construction Springer Nature

Advanced Structural Analysis is a textbook that essentially covers matrix analysis of structures, presented in a fresh and insightful way. This book is an extension of the author's basic book on Structural Analysis. The initial three chapters review the basic concepts in structural analysis and matrix algebra, and show how the latter provides an excellent mathematical framework for the former. The next three chapters discuss in detail and demonstrate through many examples how matrix methods can be applied to linear static analysis of skeletal structures (plane and space trusses; beams and grids; plane and space frames) by the stiffness method. Also, it is shown how simple structures can be conveniently solved using a reduced stiffness formulation, involving far less computational effort. The flexibility method is also discussed. Finally, in the seventh chapter, analysis of elastic instability and second-order response is discussed in detail. The main objective is to enable the student to have a good grasp of all the fundamental issues in these advanced topics in Structural Analysis, besides enjoying the learning process, and developing analytical and intuitive skills. With these strong fundamentals, the student will be well prepared to explore and understand further topics like Finite Elements Analysis.

Guide Specifications for Seismic Isolation Design Springer

The FreeCAD 0.18 Basics Tutorial book is an essential guide for engineers and designers without any experience in computer-aided design. This book teaches you the basics you need to know to start using FreeCAD with easy to understand, step-by-step tutorials. The author begins by getting you familiar with the FreeCAD interface and its essential tools. You will learn to model parts and create assemblies. Next, you will learn some additional part modeling tools, create drawings, create sheet metal, perform finite element analysis, generate toolpaths for manufacturing.

Structural Analysis of Historical Constructions: Anamnesis, Diagnosis, Therapy, Controls McGraw-Hill Companies

While numerous books have been written on earthquakes, earthquake resistance design, and seismic analysis and design of structures, none have been tailored for advanced students and practitioners, and those who would like to have most of the important aspects of seismic analysis in one place. With this book, readers will gain proficiencies in the following: fundamentals of seismology that all structural engineers must know; various forms of seismic inputs; different types of seismic analysis like, time and frequency domain analyses, spectral analysis of structures for random ground motion, response spectrum method of analysis; equivalent lateral load analysis as given in earthquake codes; inelastic response analysis and the concept of ductility; ground response analysis and seismic soil structure interaction; seismic reliability analysis of structures; and control of seismic response of structures. Provides comprehensive coverage, from seismology to seismic control Contains useful empirical equations often required in the seismic analysis of structures Outlines explicit steps for seismic analysis of MDOF systems with multi support excitations Works through solved problems to illustrate different concepts Makes use of MATLAB, SAP2000 and ABAQUS in solving example problems of the book Provides numerous exercise problems to aid understanding of the subject As one of the first books to present such a comprehensive treatment of the topic, Seismic Analysis of Structures is ideal for postgraduates and researchers in Earthquake Engineering, Structural Dynamics, and Geotechnical Earthquake Engineering. Developed for classroom use, the book can also be used for advanced undergraduate students planning for a career or further study in the subject area. The book will also better equip structural engineering consultants and practicing engineers in the use of standard software for seismic analysis of buildings, bridges, dams, and towers. Lecture materials for instructors available at www.wiley.com/go/dattaseismic

Protection of Built Environment Against Earthquakes Chris Hendrickson

This book contains selected articles from the Second International Conference on Geotechnical Engineering-Iraq (ICGE-Iraq) held in Akre/Duhok/Iraq from June 22 to 23, 2021, to discuss the challenges, opportunities, and problems of geotechnical engineering in projects. Also, the conference includes modern applications in structural engineering, materials of construction, construction management, planning and design of structures, and remote sensing and surveying engineering. The ICGE-Iraq organized by the Iraqi Scientific Society of Soil Mechanics and Foundation Engineering

(ISSSMFE) in cooperation with Akre Technical Institute / Duhok Polytechnic University, College of Engineering /University of Baghdad, and Civil Engineering Department/University of Technology. The book covers a wide spectrum of themes in civil engineering, including but not limited to sustainability and environmental-friendly applications. The contributing authors are academic and researchers in their respective fields from several countries. This book will provide a valuable resource for practicing engineers and researchers in the field of geotechnical engineering, structural engineering, and construction and management of projects.

Advanced Modelling Techniques in Structural Design Springer

Rehabilitation of heritage monuments provides sustainable development and cultural significance to a region. The most sensitive aspect of the refurbishment of existing buildings lies in the renovation and recovery of structural integrity and public safety. The Handbook of Research on Seismic Assessment and Rehabilitation of Historic Structures evaluates developing contributions in the field of earthquake engineering with regards to the analysis and treatment of structural damage inflicted by seismic activity. This book is a vital reference source for professionals, researchers, students, and engineers active in the field of earthquake engineering who are interested in the emergent developments and research available in the preservation and rehabilitation of heritage buildings following seismic activity.

Recent Advances in Earthquake Engineering Springer Nature

The book presents the select proceedings of National Conference on Recent Advances in Structural Engineering (NCRASE 2020). Various topics covered in this book include advanced structural materials, computational methods of structures, earthquake resistant analysis and design, analysis and design of structures against wind loads, pre-stressed concrete structures, bridge engineering, experimental methods and techniques of structures, offshore structures, composite structures, smart materials and structures, port and harbor structures, structural dynamics, high rise structures, sustainable materials in the construction technology, advanced structural analysis, extreme loads on structures, innovative structures, and special structures. The book will be useful for researchers and professional working in the field of structural engineering.

Seismic Analysis of Structures CRC Press

Structural irregularities are one of the most frequent causes of severe damages in buildings, as evidenced by the numerous earthquakes in recent years. This issue is of particular importance, since real structures are almost all irregular. Furthermore, structural irregularities depend on several factors often very difficult to predict. This book is an essential tool for understanding the problem of structural irregularities and provides the most up-to-date review on this topic, covering the aspects of ground rotations, analysis, design, control and monitoring of irregular structures. It includes 24 contributions from authors of 13 countries, giving a complete and international view of the problem.

Recent Trends in Civil Engineering AASHTO

An innovative concept, smart structural systems have proven to be extremely effective in absorbing damaging energy and/or counteracting potentially devastating force, thus limiting structural collapse and subsequent injury. As this technology rapidly evolves, there is an ever-increasing need for an authoritative reference that will allow those in t

Structural Engineer's Pocket Book British Standards Edition PHI Learning Pvt. Ltd.

The use of COSMOS for the analysis and solution of structural dynamics problems is introduced in this new edition. The COSMOS program was selected from among the various professional programs available because it has the capability of solving complex problems in structures, as well as in other engineering fields such as Heat Transfer, Fluid Flow, and Electromagnetic Phenomena. COSMOS includes routines for Structural Analysis, Static, or Dynamics with linear or nonlinear behavior (material nonlinearity or large displacements), and can be used most efficiently in the microcomputer. The larger version of COSMOS has the capacity for the analysis of structures modeled up to 64,000 nodes. This fourth edition uses an introductory version that has a capability limited to 50 nodes or 50 elements. This version is included in the supplement, STRUCTURAL DYNAMICS USING COSMOS 1. The sets of educational programs in Structural Dynamics and Earthquake Engineering that accompanied the third edition have now been extended and updated. These sets include programs to determine the response in the time or frequency domain using the FFT (Fast Fourier Transform) of structures modeled as a single oscillator. Also included is a program to determine the response of an inelastic system with elastoplastic behavior and a program for the development of seismic response spectral charts. A set of seven computer programs is included for modeling structures as two-dimensional and three dimensional frames and trusses.

Reinforced Concrete Design Transportation Research Board

Current knowledge and state-of-the-art developments in topics related to the seismic performance and risk assessment of different types of structures and building stock are addressed in the book, with emphasis on probabilistic methods. The first part addresses the global risk components, as well as seismic hazard and ground motions, whereas the second, more extensive part presents recent advances in methods and tools for the seismic performance and risk assessment of structures. The book contains examples of steel, masonry and reinforced concrete buildings, as well as some examples related to various types of infrastructure, such as bridges and concrete gravity dams. The book's aim is to make a contribution towards the mitigation of seismic risk by presenting advanced methods and tools which can be used to achieve well-informed decision-making, this being the key element for the future protection of the built environment against earthquakes. Audience: This book will be of interest to researchers, postgraduate students and practicing engineers working in the fields of natural hazards, earthquake, structural and geotechnical engineering, and computational mechanics, but it may also be attractive to other experts working in the fields related to social and economic impact of earthquakes.