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P1YG37 - PAUL LUCA

A Practical Course in Advanced Structural Design is written from the perspective of a practicing engineer, one with over 35 years of experience, now working in the academic world, who wishes to pass on lessons learned over the course of a structural engineering career. The book covers essential topics that will enable beginning structural engineers to gain an advanced understanding prior to entering the workforce, as well as topics which may receive little or no attention in a typical undergraduate curriculum. For example, many new structural engineers are faced with issues regarding estimating collapse loadings during earthquakes and establishing fatigue requirements for cyclic loading - but are typically not taught the underlying methodologies for a full understanding. Features: Advanced practice-oriented guidance on structural building and bridge design in a single volume. Detailed treatment of earthquake ground motion from multiple specifications (ASCE 7-16, ASCE 4-16, ASCE 43-05, AASHTO). Details of calculations for the advanced student as well as the practicing structural engineer. Practical example problems and numerous photographs from the author's projects throughout. A Practical Course in Advanced Structural Design will serve as a useful text for graduate and upper-level undergraduate civil engineering students as well as practicing structural engineers.

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 Now in its 6th edition, this trusted reference for nursing students supports the development of safe, effective and person-centred practice. The text has been comprehensively revised by nursing leaders and experts from across the spectrum of clinical practice, education, research and health policy settings; and a highly experienced editorial team, which includes Jackie Crisp, Clint Douglas, Geraldine Rebeiro and Donna Waters. Chapters of Potter & Perry's Fundamentals of Nursing, 6e engage students with contemporary concepts and clinical examples, designed to build clinical reasoning skills. Early chapters introduce frameworks such as Fundamentals of Care and cultural safety, as ways of being and practising as a nurse. These frameworks are then applied in clinical and practice context chapters throughout. Reflection points in each chapter encourage curiosity and creativity in learning, including the importance of self-care and self-assessment. 79 clinical skills over 41 chapters updated to reflect latest evidence and practice standards, including 4 new skills Fully aligned to local learning and curriculum outcomes for first-year nursing programs Aligned to 2016 NMBA Registered Nurse Standards for Practice and National Safety and Quality Health Service Standards Easy-to-understand for beginning students Focus on person-centred practice and language throughout 44 clinical skills videos (including 5 NEW) available on Evolve, along with additional student and instructor resources Accompanied by Fundamentals of nursing clinical skills workbook 4e An eBook included in all print purchases Additional resources on Evolve: • eBook on VitalSource Instructor resources: Testbank Critical Reflection Points and answers Image collection Tables and boxes collection PowerPoint slides Students and Instructor resources: 44 Clinical Skills videos Clinical Cases: Fundamentals of nursing case studies Restructured to reflect current curriculum structure New chapters on end-of-life care and primary care New online chapter on nursing informatics aligned to the new National Nursing and Midwifery Digital Health Capabilities Framework, including a new skill and competency assessment tool

The quality and testing of materials used in construction are covered by reference to the appropriate ASTM standard specifications. Welding of reinforcement is covered by reference to the ap-

propriate AWS standard. Uses of the Code include adoption by reference in general building codes, and earlier editions have been widely used in this manner. The Code is written in a format that allows such reference without change to its language. Therefore, background details or suggestions for carrying out the requirements or intent of the Code portion cannot be included. The Commentary is provided for this purpose. Some of the considerations of the committee in developing the Code portion are discussed within the Commentary, with emphasis given to the explanation of new or revised provisions. Much of the research data referenced in preparing the Code is cited for the user desiring to study individual questions in greater detail. Other documents that provide suggestions for carrying out the requirements of the Code are also cited.

This third edition of a popular textbook is a concise single-volume introduction to the design of structural elements in concrete, steel, timber, masonry, and composites. It provides design principles and guidance in line with both British Standards and Eurocodes, current as of late 2007. Topics discussed include the philosophy of design, basic structural concepts, and material properties. After an introduction and overview of structural design, the book is conveniently divided into sections based on British Standards and Eurocodes.

In December 1996, CEB established a Task Group with the main objective to elaborate design guidelines for the use of FRP reinforcement in accordance with the design format of the CEB-FIP Model Code and Eurocode2. With the merger of CEB and FIP into fib in June 1998, this Task Group became fib TG 9.3 FRP Reinforcement for concrete structures in Commission 9 Reinforcing and Prestressing Materials and Systems. Finally, as a result of the restructuring of fib's Commissions and Task Groups at the end of 2014, the Task Group became fib T5.1 FRP Reinforcement for concrete structures, chaired by Stijn Matthys at Ghent University, in Commission 5 Reinforcements. The work of former TG 9.3 and current T5.1 was performed by two working parties (WP), one of which is "Externally Applied Reinforcement" (EAR), which produced fib bulletin 14 "Externally bonded FRP reinforcement for RC structures" in July 2001. Following a number of years of relatively slow activity, the WP on externally applied reinforcement was reactivated and started working on an update of bulletin 14. The result of this work is summarised in the present technical report, which aims to give design guidelines on the use of externally applied FRP reinforcement (both externally bonded and near-surface mounted) for concrete structures. An attempt has been made to present some of the topics in a Eurocode-compatible format, so that the material covered may form the basis for the introduction of composites in the next version of Eurocode 2 and for the updating of the text on seismic retrofitting with composites in the next version of Eurocode 8. All persons who participated in the preparation of this Bulletin are mentioned in the copyright page. Further acknowledgements are due to Josée Bastien (Canada), Hans Rudolf Ganz (Switzerland) and Luc Taerwe (Belgium) for revision of the document. To all members of the working party on externally applied reinforcement our sincere thanks are expressed for the high quality and extensive work brought in on a voluntary basis.

Understanding and recognising failure mechanisms in concrete is a fundamental pre-requisite to determining the type of repair, or whether a repair is feasible. This title provides a review of concrete deterioration and damage, as well as looking at the problem of defects in concrete. It also discusses condition assessment and repair techniques. Part one discusses failure mechanisms in concrete and covers topics such as causes and mechanisms of deterioration in reinforced concrete, types of damage in concrete structures, types and causes of cracking and condition assessment of concrete structures. Part two reviews the repair of concrete structures with coverage of themes such as standards and guidelines for repairing concrete structures, methods of crack repair, repair materials, bonded concrete overlays, repairing and retrofitting concrete structures with fiber-reinforced polymers, patching deteriorated concrete structures and durability of repaired concrete. With its distinguished editor and international team of contributors, Failure and repair of concrete structures is a standard reference for civil engineers, architects and anyone working in the construction sector, as well as those concerned with ensuring the safety of concrete structures. Provides a review of concrete deterioration and damage Discusses condition assessment and repair techniques, standards and guidelines

As the costs and resources of delivering health services have increased over the years, the importance of evaluating health services and interventions has become essential. An evaluation provides a systematic process of assessing the efficacy and efficien-

cy of health services, including an assessment of their impact on beneficiaries, whether it be individuals or communities. Evaluation in the health sector includes the evaluation of burden disease where human and economic costs resulting from poor health are measured. In this book, various evaluation studies are detailed, providing an excellent resource for both evaluation practitioners and academics alike. The geographical range and variety of case studies showcase how evaluation has become integral for health service planning and assessment and to assist public health policy makers decide how to use limited resources to minimize burden and inequity. This book will act as a ready resource for both workers experienced in health service evaluation and those intending to learn about burden of disease of evaluation.

Structural Design for Fire Safety, 2nd edition Andrew H. Buchanan, University of Canterbury, New Zealand Anthony K. Abu, University of Canterbury, New Zealand A practical and informative guide to structural fire engineering This book presents a comprehensive overview of structural fire engineering. An update on the first edition, the book describes new developments in the past ten years, including advanced calculation methods and computer programs. Further additions include: calculation methods for membrane action in floor slabs exposed to fires; a chapter on composite steel-concrete construction; and case studies of structural collapses. The book begins with an introduction to fire safety in buildings, from fire growth and development to the devastating effects of severe fires on large building structures. Methods of calculating fire severity and fire resistance are then described in detail, together with both simple and advanced methods for assessing and designing for structural fire safety in buildings constructed from structural steel, reinforced concrete, or structural timber. Structural Design for Fire Safety, 2nd edition bridges the information gap between fire safety engineers, structural engineers and building officials, and it will be useful for many others including architects, code writers, building designers, and firefighters. Key features: • Updated references to current research, as well as new end-of-chapter questions and worked examples. • Authors experienced in teaching, researching, and applying structural fire engineering in real buildings. • A focus on basic principles rather than specific building code requirements, for an international audience. An essential guide for structural engineers who wish to improve their understanding of buildings exposed to severe fires and an ideal textbook for introductory or advanced courses in structural fire engineering.

Proceedings of the symposium cosponsored by the American Concrete Institute, the Comité Euro International du Béton, the Prestressed Concrete Institute, and the Fédération Internationale de la Précontrainte.

In Foundation Design: Theory and Practice, Professor N. S. V. Kameswara Rao covers the key aspects of the subject, including principles of testing, interpretation, analysis, soil-structure interaction modeling, construction guidelines, and applications to rational design. Rao presents a wide array of numerical methods used in analyses so that readers can employ and adapt them on their own. Throughout the book the emphasis is on practical application, training readers in actual design procedures using the latest codes and standards in use throughout the world. Presents updated design procedures in light of revised codes and standards, covering: American Concrete Institute (ACI) codes Eurocode 7 Other British Standard-based codes including Indian codes Provides background materials for easy understanding of the topics, such as: Code provisions for reinforced concrete Pile design and construction Machine foundations and construction practices Tests for obtaining the design parameters Features subjects not covered in other foundation design texts: Soil-structure interaction approaches using analytical, numerical, and finite element methods Analysis and design of circular and annular foundations Analysis and design of piles and groups subjected to general loads and movements Contains worked out examples to illustrate the analysis and design Provides several problems for practice at the end of each chapter Lecture materials for instructors available on the book's companion website Foundation Design is designed for graduate students in civil engineering and geotechnical engineering. The book is also ideal for advanced undergraduate students, contractors, builders, developers, heavy machine manufacturers, and power plant engineers. Students in mechanical engineering will find the chapter on machine foundations helpful for structural engineering applications. Companion website for instructor resources: www.wiley.com/go/rao

Concrete is by far the most common building material—accounting for twice the volume of all other such materials combined. With such a huge global economic impact, the industry has a cor-

responsibly considerable responsibility to use it sustainably. Written by experts who pioneered research into environmental issues and concrete, *Concrete and Sustainability* examines the sustainability issues of the world's main construction material and proposes attainable solutions. It provides a complete overview of the topic and tackles the complexity of the challenges from different angles. This book offers new data regarding the social and economic importance of concrete and proposes a discussion centered on a holistic approach in terms of resource availability, technical viability, economic feasibility, and environmental compatibility. The authors attribute a growing worldwide concern and understanding of sustainability issues, and an increased focus on climate change as the catalyst in this process. Instead of offering detailed technical advice or recommendations on sustainable issues, they provide examples showcasing sustainability efforts taking place in the concrete environment worldwide. The book includes examples and ideas for solutions from a large number of countries from across the globe. It presents a holistic and more complete overview of the emission and absorption topic, takes a look at the challenges from a combined old and new world viewing platform and offers an exploration of issues from a social and economic perspective. *Concrete and Sustainability* details the various rules and regulations that the industry is facing, discusses the various environmental challenges, and explores its impact. As emission, absorptions, and recycling have been the most central elements of discussion in the cement and concrete environment so far, these topics each receive their own chapters. This book also discusses other issues of concern within the various platforms in the industry, as well as future developments, and provides a comprehensive reference list.

These Proceedings are the work of researchers contributing to the 10th International Conference on Cyber Warfare and Security IC-CWS 2015, co hosted this year by the University of Venda and The Council for Scientific and Industrial Research. The conference is being held at the Kruger National Park, South Africa on the 24-25 March 2015. The Conference Chair is Dr Jannie Zaaiman from the University of Venda, South Africa, and the Programme Chair is Dr Louise Leenen from the Council for Scientific and Industrial Research, South Africa.

Criticism. Doubts. Second thoughts. Although investor-state arbitration (ISA) has been included in investment agreements between developed and developing countries since the 1960s, and provided foreign investors with a kind of private justice against developing world host states, it became increasingly controversial in developed countries when it was included in NAFTA in 1993, creating the possibility of ISA claims between and against two developed countries (the United States or Canada), as well as claims against and by a developing state (Mexico). A few years later, the OECD's attempt to finalize the Multilateral Agreement on Investment was stymied by concerted civil society protest and opposition to ISA, and in recent years each new proposed agreement has sparked fresh rounds of protest. What engenders the controversy about ISA? While ISA's advantage is that it prevents escalation of international conflict by relieving states from feeling obliged to espouse claims of injured investors against foreign governments, it is criticized for creating regulatory chill whereby states are reluctant to make necessary public policy reforms for fear that changes to the investment environment will lead to expensive investor claims. Are fears of litigation and expensive payouts well founded? Can key modifications to the ISA system, such as those added to the Comprehensive Economic and Trade Agreement satisfy critics and redeem this system of private justice? Is ISA really necessary between developed democracies where an independent and professional judiciary can generally be trusted to decide without fear or favour? In *Second Thoughts: Investor-State Arbitration between Developed Democracies*, 16 international investment legal experts have undertaken in-depth analyses of ISA's economic, political, and social impacts when included in agreements between developed democracies. This timely volume appears at a critical moment, seeking answers to the crucial questions that will determine the next generation of international investment agreements.

Structural engineers must focus on a structure's continued safety throughout its service life. *Reinforced Concrete Structural Reliability* covers the methods that enable engineers to keep structures reliable during all project phases, and presents a practical exploration of up-to-date techniques for predicting the lifetime of a structure. The book a

The contents of this book have been chosen with the following main aims: to review the present coverage of the major design codes and the CIRIA guide, and to explain the fundamental behaviour of deep beams; to provide information on design topics which are inadequately covered by the current codes and design manuals; and to give authoritative review

Timber, steel, and concrete are common engineering materials used in structural design. Material choice depends upon the type of structure, availability of material, and the preference of the designer. The design practices the code requirements of each material are very different. In this updated edition, the elemental designs of individual components of each material are presented, together with theory of structures essential for the design. Numer-

ous examples of complete structural designs have been included. A comprehensive database comprising materials properties, section properties, specifications, and design aids, has been included to make this essential reading.

This book is intended for classroom teaching in architectural and civil engineering at the graduate and undergraduate levels. Although it has been developed from lecture notes given in structural steel design, it can be useful to practicing engineers. Many of the examples presented in this book are drawn from the field of design of structures. *Design of Steel Structures* can be used for one or two semesters of three hours each on the undergraduate level. For a two-semester curriculum, Chapters 1 through 8 can be used during the first semester. Heavy emphasis should be placed on Chapters 1 through 5, giving the student a brief exposure to the consideration of wind and earthquakes in the design of buildings. With the new federal requirements vis a vis wind and earthquake hazards, it is beneficial to the student to have some understanding of the underlying concepts in this field. In addition to the class lectures, the instructor should require the student to submit a term project that includes the complete structural design of a multi-story building using standard design procedures as specified by AISC Specifications. Thus, the use of the AISC Steel Construction Manual is a must in teaching this course. In the second semester, Chapters 9 through 13 should be covered. At the undergraduate level, Chapters 11 through 13 should be used on a limited basis, leaving the student more time to concentrate on composite construction and built-up girders.

This edited work presents the most current evidence on osteosarcopenia from bench to bedside, which is expected to facilitate the understanding of this syndrome and to develop preventive and therapeutic strategies. With our aging population, chronic diseases such as osteoporosis and sarcopenia are becoming highly prevalent. Fortunately, our understanding of the bone and muscle interactions has increased in recent years. This has allowed to the coining of the term osteosarcopenia to describe a syndrome in which these two diseases overlap. This overlap between osteoporosis and sarcopenia has major negative effects not only on our older adults but also on health systems worldwide. Readers will find a highly translational approach that starts with a summary of recent discoveries on stem cells biology, muscle and bone interactions – including the role of local bone and muscle fat – followed by comprehensive reviews on myokines (i.e. myostatin), osteokines (i.e. osteocalcin) and adipokines (i.e. interleukins) as major players and determinants of bone and muscle loss with aging. In addition, the role of sex steroids (i.e. estrogens, androgens), and calciotropic hormones (i.e. parathyroid hormone, vitamin D) in the pathogenesis of this syndrome is also reviewed. Moreover, using practical diagnostic and therapeutic tips, this book summarizes the clinical characteristics of osteosarcopenic patients thus facilitating the diagnosis and treatment of this syndrome in clinical practice. Finally, the book presents the case for the Falls and Fractures Clinic as the optimal model of care for this syndrome, aimed to avoid fragmentation and optimize osteosarcopenia care, and simultaneously prevent falls and fractures in older persons. This book offers relevant information on the mechanisms of osteosarcopenia, and a practical guide on how to identify and treat this geriatric syndrome and its adverse outcomes, which are dramatically affecting our aging population. The work is written by leaders in the field and is especially suited not only to any researcher in the musculoskeletal arena but also to medical specialists and allied health professionals involved in the care of older persons.

Worldwide, the use of natural gas as a primary energy source will remain indispensable for decades to come. This applies to industrialized and emerging countries as well as developing countries. Due to the low level of impurities, natural gas is considered to be a climate-friendly fossil fuel because of low CO₂ emissions, and to be at the same time an affordable source of energy. In order to enable transport over long distances as well as over oceans the gas is liquefied along with a considerable volume reduction and then transported by ship. Thus, at international ports many LNG tanks are required for temporary storage and further use. The trend towards smaller liquefaction and evaporation plants with associated storage tanks for use as marine fuel has created new entrants who often do not yet have the necessary experience and technical expertise. It is not sufficient to refer all existing technical standards when defining consistent state of the art specifications and requirements. The switch to European standardization made the revision and adaptation of existing national standards to a European standard unavoidable. Technical committees at national and international level have begun their work to update and complete the EN 14620 series. Also, the US regulations are updated. The revision of the American Concrete Institute standard ACI 376 "Requirements for Design and Construction of Concrete Structures for the Containment of Refrigerated Liquefied Gases", which was first published in 2011, will be completed in the spring of 2019 and the final version will be published in autumn 2019. This book provides an overview of the state of the art in design and construction of liquefied natural gas (LNG) tanks. Since the topic is very extensive and complex, here an introduction to all areas is given, e. g. requirements and design for operating conditions, thermal design, liquid and gas pressure test, soil analysis and permitted settle-

ment, modeling and calculation of the concrete structure, and the special effects from fire, explosion and impact. Furthermore, the dynamic analysis and the theory of the sloshing liquid is presented.

Based on the latest version of designing codes both for buildings and bridges (GB50010-2010 and JTG D62-2004), this book starts from steel and concrete materials, whose properties are very important to the mechanical behavior of concrete structural members. Step by step, analysis of reinforced and prestressed concrete members under basic loading types (tension, compression, flexure, shearing and torsion) and environmental actions are introduced. The characteristic of the book that distinguishes it from other textbooks on concrete structures is that more emphasis has been laid on the basic theories of reinforced concrete and the application of the basic theories in design of new structures and analysis of existing structures. Examples and problems in each chapter are carefully designed to cover every important knowledge point. As a basic course for undergraduates majoring in civil engineering, this course is different from either the previously learnt mechanics courses or the design courses to be learnt. Compared with mechanics courses, the basic theories of reinforced concrete structures cannot be solely derived by theoretical analysis. And compared with design courses, this course emphasizes the introduction of basic theories rather than simply being a translation of design specifications. The book will focus on both the theoretical derivations and the engineering practices.

FRACTURE MECHANICS OF CONCRETE AND ROCK This book offers engineers a unique opportunity to learn, from internationally recognized leaders in their field, about the latest theoretical advances in fracture mechanics in concrete, reinforced concrete structures, and rock. At the same time, it functions as a superb, graduate-level introduction to fracture mechanics concepts and analytical techniques. Reviews, in depth, the basic theory behind fracture mechanics * Covers the application of fracture mechanics to compression failure, creep, fatigue, torsion, and other advanced topics * Extremely well researched, applies experimental evidence of damage to a wide range of design cases * Supplies all relevant formulas for stress intensity * Covers state-of-the-art linear elastic fracture mechanics (LEFM) techniques for analyzing deformations and cracking * Describes nonlinear fracture mechanics (NLFM) and the latest RILEM modeling techniques for testing nonlinear quasi-brittle materials * And much more Over the past few years, researchers employing techniques borrowed from fracture mechanics have made many groundbreaking discoveries concerning the causes and effects of cracking, damage, and fractures of plain and reinforced concrete structures and rock. This, in turn, has resulted in the further development and refinement of fracture mechanics concepts and tools. Yet, despite the field's growth and the growing conviction that fracture mechanics is indispensable to an understanding of material and structural failure, there continues to be a surprising shortage of textbooks and professional references on the subject. Written by two of the foremost names in the field, *Fracture Mechanics of Concrete* fills that gap. The most comprehensive book ever written on the subject, it consolidates the latest theoretical research from around the world in a single reference that can be used by students and professionals alike. *Fracture Mechanics of Concrete* is divided into two sections. In the first, the authors lay the necessary groundwork with an in-depth review of fundamental principles. In the second section, the authors vividly demonstrate how fracture mechanics has been successfully applied to failures occurring in a wide array of design cases. Key topics covered in these sections include: * State-of-the-art linear elastic fracture mechanics (LEFM) techniques for analyzing deformations and cracking * Nonlinear fracture mechanics (NLFM) and the latest RILEM modeling techniques for testing nonlinear quasi-brittle materials * The use of R-Curves to describe cracking and fracture in quasi-brittle materials * The application of fracture mechanics to compression failure, creep, fatigue, torsion, and other advanced topics The most timely, comprehensive, and authoritative book on this subject currently available, *Fracture Mechanics of Concrete* is both a complete instructional tool for academics and students in structural and geotechnical engineering courses, and an indispensable working resource for practicing engineers.

New and classical results in computational complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.

Based on the 1995 edition of the American Concrete Institute Building Code, this text explains the theory and practice of reinforced concrete design in a systematic and clear fashion, with an abundance of step-by-step worked examples, illustrations, and photographs. The focus is on preparing students to make the many judgment decisions required in reinforced concrete design, and reflects the author's experience as both a teacher of reinforced concrete design and as a member of various code committees. This edition provides new, revised and expanded coverage of the following topics: core testing and durability; shrinkage and creep; bases the maximum steel ratio and the value of the factor on Appendix B of ACI 318-95; composite concrete beams; strut-and-tie models; dapped ends and T-beam flanges. It also expands the discussion of STMs and adds new examples in SI units.

Detailing is an essential part of the design process. This thorough

reference guide for the design of reinforced concrete structures is largely based on Eurocode 2 (EC2), plus other European design standards such as Eurocode 8 (EC8), where appropriate. With its large format, double-page spread layout, this book systematically details 213 structural

For undergraduate/graduate-level foundation engineering courses. Covers the subject matter thoroughly and systematically, while being easy to read. Emphasizes a thorough understanding of concepts and terms before proceeding with analysis and design, and carefully integrates the principles of foundation engineering with their application to practical design problems.

This new open access edition supported by the Fragility Fracture Network aims at giving the widest possible dissemination on fragility fracture (especially hip fracture) management and notably in countries where this expertise is sorely needed. It has been extensively revised and updated by the experts of this network to provide a unique and reliable content in one single volume. Throughout the book, attention is given to the difficult question of how to provide best practice in countries where the discipline of geriatric medicine is not well established and resources for secondary prevention are scarce. The revised and updated chapters on the epidemiology of hip fractures, osteoporosis, sarcopenia, surgery, anaesthesia, medical management of frailty, peri-operative complications, rehabilitation and nursing are supplemented by six new chapters. These include an overview of the multidisciplinary approach to fragility fractures and new contributions on pre-hospital care, treatment in the emergency room, falls prevention, nutrition and systems for audit. The reader will have an exhaustive overview and will gain essential, practical knowledge on how best to manage fractures in elderly patients and how to develop clinical systems that do so reliably.

Over the past twenty years there has been considerable improvement and new information in the design of port and berth structures. This handbook reflects the latest progress and developments in navigation safety, port planning and site selection, layout of container, oil and gas terminals, cargo handling, berth design and construction, fender and mooring principles. It presents guidelines and recommendations for the main items and assumptions in the layout, design and construction of modern port structures, and the forces and loadings acting on them. The book provides an evaluation of different designs and construction methods for port and berth structures, and recommendations given by the different international harbour standards and recommendations. Practising harbour and port engineers and students will find the handbook an invaluable source of information.

Designing structures to withstand the effects of fire is challenging, and requires a series of complex design decisions. This third edition of Fire Safety Engineering Design of Structures provides practising fire safety engineers with the tools to design structures to withstand fires. This text details standard industry design decisions, and offers expert design advice, with relevant historical data. It includes extensive data on materials' behaviour and modeling -- concrete, steel, composite steel-concrete, timber, masonry, and aluminium. While weighted to the fire sections of the Eurocodes, this book also includes historical data to allow older structures to be assessed. It extensively covers fire damage investigation, and includes as far back as possible, the background to code methods to enable the engineer to better understand why certain procedures are adopted. What's new in the Third Edition? An overview in the first chapter explains the types of design decisions required for optimum fire performance of a structure, and demonstrates the effect of temperature rise on structural performance of structural elements. It extends the sections on less common engineering materials. The section on computer modelling now includes material on coupled heat and mass transfer, enabling a better understanding of the phenomenon of spalling in concrete. It includes a series of worked examples, and provides an extensive reference section. Readers require a working knowledge of structural mechanics and methods of structural design at ambient conditions, and are helped by some understanding of thermodynamics of heat transfer. This book serves as a resource for engineers working in the field of fire safety, consultants who regularly carry out full fire safety design for structure, and researchers seeking background information. Dr John Purkiss is a chartered civil and structural engineer/consultant and former lecturer in structural engineering at Aston University, UK. Dr Long-Yuan Li is Professor of Structural Engineering at Plymouth University, UK, and a Fellow of the Institution of Structural Engineers.

Over the past two decades concrete has enjoyed a renewed level of research and testing, resulting in the development of many new types of concrete. Through the use of various additives, production techniques and chemical processes, there is now a great degree of control over the properties of specific concretes for a wide range of applications. New theories, models and testing techniques have also been developed to push the envelope of concrete as a building material. There is no current textbook which brings all of these advancements together in a single volume. This book aims to bridge the gap between the traditional concrete technologies and the emerging state-of-the-art technologies which are gaining wider use.

This book describes how, given the global challenge of a shortage of natural resources in the 21st century, the recycling of waste

concrete is one of the most important means of implementing sustainable construction development strategies. Firstly, the book presents key findings on the micro- and meso-structure of recycled aggregate concrete (RAC), while the second part focuses on the mechanical properties of RAC: the strength, elastic modulus, Poisson's ratio, stress-strain curve, etc. The third part of the book explores research on the durability of RAC: carbonization, chloride penetration, shrinkage and creep. It then presents key information on the mechanical behavior and seismic performance of RAC elements and structures: beams, columns, slabs, beam-column joints, and frames. Lastly, the book puts forward design guidelines for recycled aggregate concrete structures. Taken as a whole, the research results - based on a series of investigations the author has conducted on the mechanical properties, durability and structural performance of recycled aggregate concrete (RAC) over the past 10 years - demonstrate that, with proper design and construction, it is safe and feasible to utilize RAC structures in civil engineering applications. The book will greatly benefit researchers, postgraduates, and engineers in civil engineering with an interest in this field.

Shows how to use the leading technical drawing software - AutoCAD and its less-expensive sister product, AutoCAD LT, in the friendly, easy-to-understand For Dummies style Shows first-time AutoCAD users how to create precise and efficient 2-D technical drawings and get started with 3-D technical drawings Topics covered include creating a basic layout; drawing and editing; writing text in drawings; plotting, creating, and editing external reference files; CAD standards; and drawing on the Internet Explores new features in the latest version of AutoCAD, including text improvements, streamlined Plot and Page Setup dialog boxes, increased emphasis on tool palettes, better tools for transmitting sets of electronic files, and much more Includes a new chapter on sheet sets and a new collection of features for creating, managing, and publishing all of the drawings that make up a project

A comprehensive guide to temporary structures in construction projects Temporary Structure Design is the first book of its kind, presenting students and professionals with authoritative coverage of the major concepts in designing temporary construction structures. Beginning with a review of statistics, it presents the core topics needed to fully comprehend the design of temporary structures: strength of materials; types of loads on temporary structures; scaffolding design; soil properties and soil loading; soldier beam, lagging, and tiebacks; sheet piling and strutting; pressure and forces on formwork and falsework; concrete formwork design; falsework; bracing and guying; trestles and equipment bridges; and the support of existing structures. Temporary structures during construction include scaffolding, formwork, shoring, ramps, platforms, earth-retaining structures, and other construction structures that are not part of the permanent installation. These structures are less regulated and monitored than most other parts of the construction process, even though they are often supporting tons of steel or concrete—and the safety of all workers on the site depends on these structures to perform as designed. Unfortunately, most tragic failures occur during construction and are usually the result of improperly designed, constructed, and/or maintained temporary structures. Temporary Structure Design fills an important need in the literature by providing a trusted, comprehensive guide to designing temporary construction structures. Serves as the first book to provide a design-oriented approach to the design of temporary structures Includes coverage of the various safety considerations inherent in temporary structure design and construction Provides information on estimating cost and schedules for these specialized structures Covers formwork and falsework, as well as personnel protection, production support, environmental protection, and foundational structures If you're a student or a professional working in the field of construction or structural engineering, Temporary Structure Design is a must-have resource you'll turn to again and again.

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This book develops the idea that since decolonisation, regional patterns of security have become more prominent in international politics. The authors combine an operational theory of regional security with an empirical application across the whole of the international system. Individual chapters cover Africa, the Balkans, CIS Europe, East Asia, EU Europe, the Middle East, North America, South America, and South Asia. The main focus is on the post-Cold War period, but the history of each regional security complex is traced back to its beginnings. By relating the regional dynamics of security to current debates about the global power structure, the authors unfold a distinctive interpretation of post-Cold War international security, avoiding both the extreme oversimplifications of the unipolar view, and the extreme deterritorialisations of many globalist visions of a new world disorder. Their framework brings out the radical diversity of security dynamics in different parts of the world.

Worldwide, the use of natural gas as a primary energy source will remain vital for decades to come. This applies to industrialized, emerging countries and developing countries. Owing to the low level of impurities, natural gas is considered to be a climate-friendly fossil fuel because of the low CO₂ emissions, but is at the same time an affordable source of energy. In order to enable transport over long distances and oceans (and hence create an economic and political alternative to pipelines), the gas is liquefied, which is accompanied by a considerable reduction in volume, and then transported by ship. Thus, at international ports, many LNG tanks are required for temporary storage and further use. The trend towards smaller liquefaction and regasification plants with associated storage tanks for marine fuel applications has attracted new players in this market who often do not yet have the necessary experience and technical expertise. It is not sufficient to refer to all existing technical standards when defining consistent state-of-the-art specifications and requirements. The switch to European standardisation has made it necessary to revise and adapt existing national codes to match European standards. Technical committees at national and international level have begun their work of updating and completing the EN 14620 series. In the USA, too, the corresponding regulations are also being updated. The revision of American Concrete Institute standard ACI 376 Requirements for Design and Construction of Concrete Structures for the Containment of Refrigerated Liquefied Gases, first published in 2011, will be completed in the spring of 2019, and the final version, published in autumn 2019. This book provides an overview of the state of the art in the design and construction of liquefied natural gas (LNG) tanks. Since the topic is very extensive and complex, an introduction to all aspects is provided, e.g. require-

ments and design for operating conditions, thermal design, hydrostatic and pneumatic tests, soil surveys and permissible settlement, modelling of and calculations for the concrete structure, and the actions due to fire, explosion and impact. Dynamic analysis and the theory of sloshing liquid are also presented.