Folded Plates Structural Behaviour

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Basic Structural Behaviour Via Models - Barry Hilson 1972

Architectural Science Review - 1964

The Structural Basis of Architecture - Bjørn N. Sandaker 2013-01-11
This is a book about structures that shows students how to "see" structures as integral to architecture, and how knowledge of structures is the basis for understanding both the mechanical and conceptual aspects inherent to the art of building. Analyzing the structural principles behind many of the best known works of architecture from past and present alike, this book places the subject within a contemporary context. The subject matter is approached in a qualitative and discursive manner, and is illustrated by many photographs of architectural projects and structural behaviour diagrams. This new edition is revised and updated throughout, includes worked-out examples, and is perfect as either an introductory structures course text or as a designer’s sourcebook for inspiration.
Multi-purpose High-rise Towers and Tall Buildings - H.R. Viswanath 2003-09-02
Interest continues to develop in the design and construction of high-rise towers and tall buildings, structures with heights ranging from 75m to 500m and even more. This volume presents the papers from the third in a series of international conferences on the subject, organised by the International Federation of High-rise Structures. The papers hav
Thin-Walled Structures - J. Loughlan 2018-02-06
This volume contains the papers presented at the Fourth International Conference of Thin-Walled Structures (ICTWS4), and contains 110 papers which, collectively, provide a comprehensive state-of-the-art review of the progress made in research, development and manufacture in recent years in thin-walled structures.The presentations at the conference had representation form 35 different countries and their topical areas of interest included aeroelastic response, structural-acoustic coupling, aerospace structures, analysis, design, manufacture, cold-formed structures, cyclic loading, dynamic loading, crushing, energy absorption, fatigue, fracture, damage tolerance, plates, stiffened panels, plated structures, polymer matrix composite members, sandwich structures, shell structures, thin-walled beams, columns and vibrational response. The range of applications of thin-walled structures has become increasingly diverse with a considerable deployment of thin-walled structural elements and systems being found in a wide range of areas within Aeronautical, Automotive, Civil, Mechanical, Chemical and Offshore Engineering fields. This volume is an extremely useful reference volume for researchers and designers working within a wide range of engineering disciplines towards the design, development and manufacture of efficient thin-walled structural systems.
European Building Construction Illustrated - Francis D. K. Ching 2014-02-10
The first European edition of Francis DK Ching’s classic visual guide to the basics of building construction. For nearly four decades, the US publication Building Construction Illustrated has offered an outstanding introduction to the principles of building construction. This new European edition focuses on the construction methods most commonly used in Europe, referring largely to UK Building Regulations overlaid with British and European, while applying Francis DK Ching’s clear graphic signature style. It provides a coherent and essential primer, presenting all of the basic concepts underlying building construction and equipping readers with useful guidelines for approaching any new materials or techniques they may encounter. European Building Construction Illustrated provides a comprehensive and lucid presentation of everything from foundations and floor systems to finish work. Laying out the material and structural choices available, it provides a full understanding of how these choices affect a building’s form and dimensions. Complete with more than 1000 illustrations, the book moves through each of the key stages of the design process, from site selection to building components, mechanical systems and finishes. Illustrated throughout with clear and accurate drawings that effectively communicate construction processes and materials Provides an overview of the mainstream construction methods used in Europe Based around the UK regulatory framework, the book refers to European level regulations where appropriate. References leading environmental assessment methods of BREEAM and LEED, while outlining the Passive House Standard Includes emerging construction methods driven by the sustainability agenda, such as structural insulated panels and insulating concrete formwork Features a chapter dedicated to construction in the Middle East, focusing on the Gulf States
Steel Plated Structures - M. Ivanyi 2014-05-04
This volume strives to give comprehensive information about the main aspects of the behaviour and limit states of steel plated structures. In following this objective, the volume presents a complete scientific background (profiting from the fact that the authors of the individual parts of the publication have personally been very active in the corresponding fields of research for an extended period of time), but also establishes design recommendations, procedures and formulae. The significance of the volume may be seen in its challenging current concepts of the analysis of steel plated structures, encouraging progress in the field, and thereby establishing an advanced basis for a more reliable and economical design.
Applied Mechanics Reviews - 1974

The Tectonics of Structural Systems - Yonca Hurol 2015-09-16
The Tectonics of Structural Systems provides an architectural approach to the theory of structural systems. The book combines: structural recommendations to follow during the architectural design of various structural systems and the tectonic treatment of structural recommendations in architecture. Written expressly for students, the book makes structures understandable and useful, providing: practical and useful knowledge about structures a design based approach to the subject of structures and a bridge in the gap between structures and the theory of design. Good architectural examples for each structural system are given in order to demonstrate that tectonics can be achieved by applying technical knowledge about structures. Over 300 illustrations visually unpack the topics being explained, making the book ideal for the visual learner.
Basic Structural Behaviour - Barry Hilson 1993
This title uses model structures to demonstrate the way different types of structural elements behave under a given set of circumstances and the way in which the form of the structure influences that behaviour. It enables students to develop intuitive feeling for structural behaviour by observing different forms of structure under load.

Plastics in Building Structures - D. S. Mahon 2013-09-11
Plastics in Building Structures covers the proceedings of a conference, held in London on June 14-16, 1965. This conference focuses on the applications of plastics materials in structures. This book emerged from 39 papers presented at the conference. The introductory papers describe the properties of plastics in relation to building structures, and the economic aspects, fire regulations, and flammability of these materials. Considerable papers are devoted to various areas of application of plastics, including adhesives, polymer cements, cored chipboard units, and glued timber. These topics are followed by discussions on the characterization, design, and structural and physical properties of plastics. The final chapters review the commercial development and applications of plastic materials. This book will prove useful to engineers, designer, manufacturers, and researchers in the allied fields.
Advanced Analysis and Design of Plated Structures - Vladimír Křístek 1991
The need to economise on steel and other structural support materials has led to the development of new kinds of structures, amongst which thin-walled plated structures, i.e. structural systems made of thin plate elements, play a very important role. Their successful practical application requires adequate scientific data for reliable design, which has been the goal of numerous research teams worldwide, reporting on numerous aspects in the behaviour of plated structures. Containing the results of over ten years of research work, this volume provides a current overview for researchers in their study on the behaviour of plated structures, assisting them in the design of modern economical structures for buildings and bridges. The volume will be of particular interest to analysts and designers of civil engineering structures.
The Finite Strip Method - Y. K. Cheung 2020-07-01
The increase in the popularity and the number of potential applications of the finite strip method has created a demand for a definitive text/reference on the subject. Fulfilling this demand, The Finite Strip Method provides practicing engineers, researchers, and students with a comprehensive introduction and theoretical development, and a complete treatment of current practical applications of the method. Written by experts who are arguably the world's leading authorities in the field, The Finite Strip Method covers both the classical strip and the newly developed spline strip and computed shape function strip. Applications in structural engineering, with particular focus on practical structures such as slab-beam bridges, box girder bridges, and tall buildings are discussed extensively. Applications in geotechnology are also covered, as are recently formulated applications in nonlinear analysis. The Finite Strip Method is a unique book, supplying much-needed information by well-known and highly regarded authors.
Finite Strip Method in Structural Analysis - Y. K. Cheung 2013-10-22
Finite Strip Method in Structural Analysis is a concise introduction to the theory of the finite strip method and its application to structural engineering, with special reference to practical structures such as slab bridges and box girder bridges. Topics covered include the bending of plates and plate-beam systems, with application to slab-beam bridges; plane stress analysis; vibration and stability of plates and shells; and finite layer and finite prism methods. Comprised of eight chapters, this book begins with an overview of the theory of the finite strip method, highlighting the importance of the choice of suitable displacement functions for a strip as well as the formulation of strip characteristics. Subsequent chapters consider many different types of finite strips for plate and shell problems and present numerical examples. The extension of the finite strip method to three-dimensional problems is then described, with emphasis on the finite layer method and the finite prism method. The final chapter discusses some computer methods that are commonly used in structural analysis. A folded plate computer program is included for completeness, and a detailed description for a worked problem is also presented for the sake of clarity. This monograph will be of interest to civil and structural engineers.
Advanced Structural Mechanics - David Johnson 2000
This text is adressed to professional engineers, offering a broad introduction to the principal themes of continuum mechanics and structural dynamics. This edition includes a greater focus on worked examples, problems and solutions to engage the reader.
Advanced Timber Structures - Yves Weinand 2017-01-01
Wood is usually perceived as a "traditional" material. However, the properties of this material have now for some time made it possible to design free shapes and highly complex structures. Today, the wood laboratory of the EPF Lausanne, which was originally founded by Julius Natterer, is testing the production of origami structures, ribbed shells, fabric structures and curved panels under the guidance of Professor Weinand using digital calculation and computer-aided processing methods. The research results are tested in prototypes, which demonstrate the potential applications in large-scale timber buildings. By exploring the hitherto unused potential of wood as a construction material, this book provides an exciting and inspiring outlook on a new generation of timber buildings.
Computational Structural Concrete - Ulrich Haussler-Combe 2022-09-22
Beton ist aufgrund seiner Vorteile der mit Abstand meistverwendete Baustoff: er ist formbar, preiswert und überall verfügbar. Kombiniert mit Bewehrung bietet dies eine immense Bandbreite an Eigenschaften und kann für eine Vielzahl von Zwecken angepasst werden. Damit ist Beton der Baustoff des 20. Jahrhunderts. Um der Baustoff des 21. Jahrhunderts zu sein, muss seine Nachhaltigkeit in den Fokus rücken. Bewehrte Betonkonstruktionen müssen mit geringerem Materialaufwand konstruiert werden, wobei ihr Tragfähigkeitspotential optimal ausgeschöpft werden muss. Computergestützte Methoden wie die Finite-Elemente-Methode (FEM) bieten wesentliche Werkzeuge, um das Ziel zu erreichen. In Kombination mit experimenteller Validierung ermöglichen sie ein tieferes Verständnis der Tragmechanismen. Im Vergleich zu herkömmlichen Ansätzen kann eine realistischere Abschätzung der Grenzzustände der Tragfähigkeit und der Gebrauchstauglichkeit erreicht werden. Dies ermöglicht eine deutlich verbesserte Ausnutzung der Baustoffe. Damit eröffnet sich auch ein weiterer Horizont für innovative Tragwerksentwürfe. Anspruchsvolle numerische Rechenverfahren werden aber in der Regel als "Black Boxes" bereitgestellt. Daten werden eingegeben, die Ausgaben ungeprüft übernommen, aber das Verständnis für die dazwischenliegenden Schritte ist oft rudimentär. Dies birgt die Gefahr von Fehlinterpretationen, um nicht zu sagen ungültigen Ergebnissen im Vergleich zu den getroffenen Problemdefinitionen. Das Risiko ist insbesondere bei nichtlinearen Problemen hoch. Bewehrter Beton weist als Verbundmaterial in seinen Grenzzuständen ein nichtlineares Verhalten auf, verursacht durch Verbund und nichtlineare Eigenschaften seiner Bestandteile. Seine Rissbildung ist ein reguläres Verhalten. In diesem Buch werden die Mechanismen des bewehrten Betons unter dem Blickwinkel numerischer Methoden aufgezeigt. So sollen auch "Black Boxes" transparent werden. Das Buch beschreibt entsprechende Methoden für Balken, Scheiben, Platten und Schalen im Rahmen von Quasi-Statik und Dynamik. Betonkriechen, Temperatureinwirkungen, Vorspannung, große Verformungen werden beispielhaft behandelt. Weiterhin werden aktuelle Materialmodelle für Beton dargestellt. Dabei werden sowohl die Möglichkeiten als auch die Fallstricke numerischer Methoden aufgezeigt. Die Theorie wird durch eine Vielzahl von Beispielen veranschaulicht. Die meisten von ihnen werden mit dem in Python implementierten und unter Open-Source-Bedingungen verfügbaren Softwarepaket ConFem durchgeführt.
Concrete Construction Manual - Friedbert Kind-Barkauskas 2013-01-07
The Construction Manuals from Edition Detail are among the most important reference works in the specialist literature. The latest volume shows the potential of the material concrete and documents comprehensively the technical principles of using concrete in construction. Chapters cover the history of the material, the properties of concrete, reinforced concrete, and prestressed concrete, the treatment of its surface. Also covered are the basic principles of statics for large and small structures, and the building requirements with respect to heat, damp, sound-proofing and fire protection according to the most recent norms and standards. Finally a large number of built examples are presented from illustrations of the complete structure down to detailed plans, showing the broad spectrum of applications for concrete in contemporary building. All plans have been specially produced by the editorial department Detail for this book and for ease of comparison, they have been drawn to the same scale.
IASS Symposium on Folded Plates and Prismatic Structures - 1973

Steel-Concrete Composite Structures - R. Narayanan 1988-12-31
This is a collection of ten extensive review chapters by different authors.
Basic Structures - Philip Garrison 2016-02-03
Basic Structures provides the student with a clear explanation of structural concepts, using many analogies and examples. Real examples and case studies show the concepts in use, and the book is well illustrated

with full colour photographs and many line illustrations, giving the student a thorough grounding in the fundamentals and a 'feel' for the way buildings behave structurally. With many worked examples and tutorial questions, the book serves as an ideal introduction to the subject.

Torsion in Structures - Curt F. Kollbrunner 2013-11-11

[1] SAINT-VENANT, B. DE: Memoires des savants etrangers, Vol. 14, 1855. [2] BREDT, R.: Kritische Bemerkungen zur Drehungselastizitat. Z. VDl40 (1968) 785. [3] PRANDTL, L.: Zur Torsion von prismatischen Staben. Phys. Z. 4 (1903) 758. [4] FOPPL, A.: Der Drillingswiderstand von Walzeisentragern. Z. VDl61 (1917) 694. [5] FOPPL, A., and L. FOPPL: Drang und Zwang, Miinchen/Berlin: R. Oldenbourg 1928. [6] WEBER, C., and W. GUNTHER: Torsionstheorie, Braunschweig: Vieweg 1958. [7] TIMOSHENKO, S.: Einige Stabilitatsprobleme der Elastizitatstheorie. Z. Math. Phys. 58 (1910). [8] BACH, C. VON: Versuche iiber die tatsachliche Widerstandsfahigkeit von Balken mit [-fOrmigem Querschnitt. Z. VDI 1909, 1910. [9] MAILLART, R.: Zur Frage der Biegung. Schweiz. Bauztg. 77 (1921) 195. [10] EGGENSCHWYLER, A.: tiber die Festigkeitsberechnung von Schiebetoren und ahnlichen Bauwerken. Diss. E.T.H., 1921, Borna bei Leipzig: Robert Noske [11] WAGNER, H.: Verdrehung und Knickung von offenen Profilen. Festschrift 25 Jahre T.H. Danzig, 1929, or Luftf.-Forschg. 11 (1934) 329. [12] KAPPUS, R.: Drillknicken zentrisch gedriickter Stabe mit offenem Profil im elastischen Bereich. Luftf.-Forschg. 13 (1937) 444. [13] BORNSCHEUER, F.W.: Systematische Darstellung des Biege- und Verdrehvorganges unter besonderer Beriicksichtigung der W6lbkrafttorsion. Stahlbau 21 (1952) 1. (14) WANSLEBEN, F.: Die Theorie der Drillfestigkeit von Stahlbauteilen, K6ln: Stahlbau Verlag 1956. [15] HEILIG, R.: Der SchubverformungseinfluB auf die W6lbkrafttorsion von Staben mit offenem Profil. Stahlbau 30 (1961) 67. [16] GOODIER, J.N.: The Buckling of Compressed Bars by Torsion and Flexure. Cornell University, Engineering Experiment Station, Bulletin 27, 1941.

Guide to Graduate Studies in Great Britain - Jenny Knight 1974

CONCRETE Innovations in Materials, Design and Structures - FIB – International Federation for Structural Concrete 2019-05-27

This Proceedings contains the papers of the fib Symposium “CONCRETE Innovations in Materials, Design and Structures”, which was held in May 2019 in Kraków, Poland. This annual symposium was co-organised by the Cracow University of Technology. The topics covered include Analysis and Design, Sustainability, Durability, Structures, Materials, and Prefabrication. The fib, Fédération internationale du béton, is a not-for-profit association formed by 45 national member groups and approximately 1000 corporate and individual members. The fib’s mission is to develop at an international level the study of scientific and practical matters capable of advancing the technical, economic, aesthetic and environmental performance of concrete construction. The fib, was formed in 1998 by the merger of the Euro-International Committee for Concrete (the CEB) and the International Federation for Prestressing (the FIP). These predecessor organizations existed independently since 1953 and 1952, respectively.

Graduate Studies - 1983

Neue Holztragwerke - Yves Weinand 2017-01-01

Holz wird meist als "traditioneller" Werkstoff wahrgenommen. Seine Materialeigenschaften ermöglichen längst jedoch die Gestaltung von Freiformen und hochkomplexen Strukturen. Das ursprünglich von Julius Natterer gegründete Holzlabor der ETH Lausanne erprobt heute unter der Leitung von Professor Wienand mit digitalen Berechnungs- und computergestützten Bearbeitungsmethoden die Herstellung von Origami-Strukturen, Rippenschalen, Gewebestrukturen und gekrümmten Paneelen. Diese Forschungsergebnisse werden in Prototypen erprobt, die so die Anwendungsmöglichkeiten für großmaßstäbliche Holzbauten anschaulich machen. Durch dieses Ausloten bislang ungenutzter Potenziale des Baustoffs Holz bietet dieses Buch einen spannenden und inspirierenden Ausblick auf eine neue Generation von Holzbauten.

Prestressed Concrete - N. Rajagopalan 2002

Simple design, low life cycle costs, and fast, easy construction are just a few of the reasons that make prestressed concrete attractive for use in bridges, water and wastewater storage tanks, ocean dock construction, flooring, and more. Prestressed Concrete covers the fundamentals of prestressing, systems of prestressing, losses, the ultimate strength of sections in flexure, shear and torsion, anchorage zone stresses, limit state concepts and holistic design of prestressed concrete elements. The book also provides information on design of determinate structures and indeterminate structures (beams and frames) inclusive of cable profiling. It discusses special structures like pipes, water tanks, etc. and the behavior of composite structures such as precast prestressed concrete beams cast- in-situ R.C. slab, along with its design provisions. Prestressed Concrete is a valuable guide for practicing engineers, students, and researchers.

Design and Analysis of Shell Structures - M. Farshad 2013-03-09

Shell structures are widely used in the fields of civil, mechanical, architectural, aeronautical, and marine engineering. Shell technology has been enhanced by the development of new materials and prefabrication schemes. Despite the mechanical advantages and aesthetic value offered by shell structures, many engineers and architects are relatively unacquinted with shell behaviour and design. This book familiarizes the engineering and architectural student, as well as the practicing engineer and architect, with the behaviour and design aspects of shell structures. Three aspects are presented: the Physical behaviour, the structural analysis, and the design of shells in a simple, integrated, and yet concise fashion. Thus, the book contains three major aspects of shell engineering: (1) physical understanding of shell behaviour; (2) use of applied shell theories; and (3) development of design methodologies together with shell design examples. The theoretical tools required for rational analysis of shells are kept at a modest level to give a sound grasp of the fundamentals of shell behaviour and, at the same time, an understanding of the related theory, allowing it to be applied to actual design problems. To achieve a physical understanding of complex shell behaviour, quantitative presentations are supplemented by qualitative discussions so that the reader can grasp the `physical feeling' of shell behaviour. A number of analysis and detailed design examples are also worked out in various chapters, making the book a useful reference manual. This book can be used as a textbook and/or a reference book in undergraduate as well as graduate university courses in the fields of civil, mechanical, architectural, aeronautical, and materials engineering. It can also be used as a reference and design-analysis manual for the practicing engineers and architects. The text is supplemented by a number of appendices containing tables of shell analysis and design charts and tables.

Journal of Technology - 1963

Design of Integrally-Attached Timber Plate Structures - Yves Weinand 2021-09-27

Design of Integrally-Attached Timber Plate Structures outlines a new design methodology for digitally fabricated spatial timber plate structures, presented with examples from recent construction projects. It proposes an innovative and sustainable design methodology, algorithmic geometry processing, structural optimization, and digital fabrication; technology transfer and construction are formulated and widely discussed. The methodology relies on integral mechanical attachment whereby the connection between timber plates is established solely through geometric manipulation, without additional connectors, such as nails, screws, dowels, adhesives, or welding. The transdisciplinary design framework for spatial timber plate structures brings together digital architecture, computer science, and structural engineering, covering parametric modeling and architectural computational design, geometry exploration, the digital fabrication assembly of engineered timber panels, numerical simulations, mechanical characterization, design optimization, and performance improvement. The method is demonstrated through different prototypes, physical models, and three build examples, focusing specifically on the design of the timber-plate roof structure of 23 large span arches called the Annen Headquarters in Luxembourg. This is useful for the architecture, engineering, and construction (AEC) sector and shows how new structural optimization processes can be reinvented through geometrical adaptions to control global and local geometries of complex structures. This text is ideal for structural engineering professionals and architects in both industry and academia, and construction companies.

Dünnwandige Stäbe - Curt F. Kollbrunner 2019-06-12

Structures and Architecture - Bridging the Gap and Crossing Borders - Paulo J.S. Cruz 2019-07-08

Structures and Architecture – Bridging the Gap and Crossing Borders contains the lectures and papers presented at the Fourth International Conference on Structures and Architecture (ICSA2019) that was held

in Lisbon, Portugal, in July 2019. It also contains a multimedia device with the full texts of the lectures presented at the conference, including the 5 keynote lectures, and almost 150 selected contributions. The contributions on creative and scientific aspects in the conception and construction of structures, on advanced technologies and on complex architectural and structural applications represent a fine blend of scientific, technical and practical novelties in both fields. ICSA2019 covered all major aspects of structures and architecture, including: building envelopes/façades; comprehension of complex forms; computer and experimental methods; futuristic structures; concrete and masonry structures; educating architects and structural engineers; emerging technologies; glass structures; innovative architectural and structural design; lightweight and membrane structures; special structures; steel and composite structures; structural design challenges; tall buildings; the borderline between architecture and structural engineering; the history of the relationship between architects and structural engineers; the tectonic of architectural solutions; the use of new materials; timber structures, among others. This set of book and multimedia device is intended for a global readership of researchers and practitioners, including architects, structural and construction engineers, builders and building consultants, constructors, material suppliers and product manufacturers, and other professionals involved in the design and realization of architectural, structural and infrastructural projects.

Bulletin - International Association for Bridge and Structural Engineering 1967

Aerospace and Associated Technology - Anup Ghosh 2022-09-24

The International Conference on Theoretical Applied Computational and Experimental Mechanics is organized every three years by the Department of Aerospace Engineering IIT Kharagpur. The conference is devoted to providing a platform for scientists and engineers to exchange their views on the latest developments in Mechanics since 1998. ICTACEM Conference is aimed at bringing together academics and researchers working in various disciplines of mechanics to exchange views as well as to share knowledge between people from different parts of the globe. The 8th ICTACEM was held from December 20-22, 2021, at the Indian Institute of Technology, Kharagpur.

Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary - ACI Committee 318 2008

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 appropriate 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.

Advances in Architectural Geometry 2014 - Philippe Block 2014-12-26

This book contains 24 technical papers presented at the fourth edition of the Advances in Architectural Geometry conference, AAG 2014, held in London, England, September 2014. It offers engineers, mathematicians, designers, and contractors insight into the efficient design, analysis, and manufacture of complex shapes, which will help open up new horizons for architecture. The book examines geometric aspects involved in architectural design, ranging from initial conception to final fabrication. It focuses on four key topics: applied geometry, architecture, computational design, and also practice in the form of case studies. In addition, the book also features algorithms, proposed implementation, experimental results, and illustrations. Overall, the book presents both theoretical and practical work linked to new geometrical developments in architecture. It gathers the diverse components of the contemporary architectural tendencies that push the building envelope towards free form in order to respond to multiple current design challenges. With its introduction of novel computational algorithms and tools, this book will prove an ideal resource to both newcomers to the field as well as advanced practitioners.

Theory of Structures - Peter Marti 2013-03-20

This book provides the reader with a consistent approach to theory of structures on the basis of applied mechanics. It covers framed structures as well as plates and shells using elastic and plastic theory, and emphasizes the historical background and the relationship to practical engineering activities. This is the first comprehensive treatment of the school of structures that has evolved at the Swiss Federal Institute of Technology in Zurich over the last 50 years. The many worked examples and exercises make this a textbook ideal for in-depth studies. Each chapter concludes with a summary that highlights the most important aspects in concise form. Specialist terms are defined in the appendix. There is an extensive index befitting such a work of reference. The structure of the content and highlighting in the text make the book easy to use. The notation, properties of materials and geometrical properties of sections plus brief outlines of matrix algebra, tensor calculus and calculus of variations can be found in the appendices. This publication should be regarded as a key work of reference for students, teaching staff and practising engineers. Its purpose is to show readers how to model and handle structures appropriately, to support them in designing and checking the structures within their sphere of responsibility.

Geometrically Nonlinear Analysis of Plan trusses and Frames - Vera Galishnikova 2009-06-01

This book is an outcome of academic cooperation between the Volgograd State University of Architecture and Civil Engineering in Russia, Stellenbosch University in South Africa and the Technische Universit„t Berlin in Germany. The authors performed coordinated and cooperative research on nonlinear structural analysis and on computer-supported civil engineering over a period of several years. Many of the innovative aspects of this book were invented and developed in the course of the research effort.

Plated Structures - R. Narayanan 1983-12-01

This book discusses various aspects of the design of a plate girder and focuses on the associated stability problems in shear. It deals with stability problems in compression, such as those met in box girder flanges and ship hulls, and is helpful for structural designers and post-graduate students.

Modelling Behaviour - Mette Ramsgaard Thomsen 2015-11-12

This book reflects and expands on the current trend in the building industry to understand, simulate and ultimately design buildings by taking into consideration the interlinked elements and forces that act on them. This approach overcomes the traditional, exclusive focus on building tasks, while posing new challenges in all areas of the industry from material and structural to the urban scale. Contributions from invited experts, papers and case studies provide the reader with a comprehensive overview of the field, as well as perspectives from related disciplines, such as computer science. The chapter authors were invited speakers at the 5th Symposium "Modelling Behaviour", which took place at the CITA in Copenhagen in September 2015.