Publications

Publications

Recent Studies on Structural Safety and Reliability

Safety and reliability play a crucial role in a variety of engineering fields. This book is the fifth volume in the Current Japanese Materials Research (CJMR) series published by the Society of Materials Science, Japan (JSMS), in collaboration with Elsevier Applied Science, and contains papers on a number of important topics. The following topics are covered:

- Reliability-Based Design
- Structural Reliability Analysis
- Inspection and Maintenance
- Software Developments for Reliability Assessment

Recent Studies on Structural Safety and Reliability presents selected papers on the above topics and will be of interest to those involved with structural safety and reliability in such areas as: materials science, mechanical engineering, civil and architectural engineering, naval architecture, aeronautical, space and nuclear engineering.

Edited by Takao Nakagawa, Hiroshi Ishikawa and Akira Tsurui. 234 pages with 32 tables and 116 illustrations. Published 1989. Price: US $ 75.50. ISBN 1-85166-281-2. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Analysis of Dimensional Accuracy of Building Structures

The dimensional accuracy of building structures significantly affects the quality of buildings and their functional and economical service life.

This book introduces a sufficiently general yet simple and realistic method of accuracy analysis, which has already been internationally recognized. This so-called simplified statistical method of accuracy analysis is consistently based on statistical principles, while presupposing a common probability of exceeding tolerance intervals, and this employs only common accuracy characteristics. Two different types of relation governing resultant dimensions, which may occur in practice, are considered: linear and extremization relations. Induced and time-dependent inherent deviations are generally taken into account; this enables analysis of the dimensional accuracy of a structure at any time during its service life.

Analysis of a large number of assemblies including numerical values has shown that resultant dimensional accuracy in building depends significantly not only on well known deviations of manufacturing, setting out and erection, but also on construction techniques and procedures.

Edited by M. Vorlicek and M. Holicky, Prague. 260 pages. Published 1989. Price: US $ 109.75. ISBN 0-44-98875-0. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Cracking and Damage: Strain Localization and Size Effect

This book contains the papers presented at the France-US Research Workshop on «Strain Localization and Size Effect due to Cracking and Damage», which was held at the ENS Cachan, France, 6–9 September 1988. It covers basically the problem of modelling, measuring and predicting structural failures which are at the transition between plasticity and fracture mechanics. These developments are important for many problems of modern materials and structures, such as special concrete structures, their resistance to earthquake, blast and impact, high performance concretes (high strength, fibre-reinforced, etc.), failure of soil or rock masses and foundations, underground installations, tunnels, mine openings and ice sheets. They also have various implications for modern structural ceramics and composites.

The book presents an in-depth analysis of current research on structural failure that will be of interest to civil, structural and mechanical engineers involved with theoretical mechanics (crack and fracture), experimental measurement techniques and the safety and design of a variety of structures.

Edited by J. Mazars, France and Z.P. Bazant, USA. 550 pages, numerous illustrations. Published 1988. Price: £ 60.–. ISBN 1-85166-347-9. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Quality Assurance of Welded Construction

The continuous pressure from worldwide clients seeking better reliability from welded structures has focused much attention on to quality.

The quality characteristic has a significant effect on safety and economy, and the never ending attention to cost effectiveness requires continuous attention to quality control and quality assurance.

New materials, faster welded methods and the needs of economic design mean that such objectives must be carefully studied during the planning and execution of welded work.

Quality Assurance in Welded Construction covers the essential aspects of the area, and is suitable for civil and structural engineering designers, welding engineers, manufacturing managers, inspectors and QA personnel. Included in the book are features and illustrations relating to defects in welded construction, a summary of essential data, and a substantial amount of information to assist in the task of getting welded structures right first time.

Edited by N.T. Burgess, United Kingdom. 215 pages with 28 tables and 61 illustrations. Second edition, published 1989. Price: £ 35.–. ISBN 1-85166-274-X. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Structural Analysis

The third edition of this well established textbook combines and develops concurrently classical and matrix based methods of structural analysis. New sections in this third edition review basic mechanics and statically determinate structures. There is greater coverage of structural symmetry and the analysis of effects of temperature and of prestressing. There are new chapters on the finite element method and use of computers. Numerous solved examples and problems and answers are given. The text and most of the problems do not involve any specific system of units. The previous edition has been translated into four languages.

Edited by A. Ghali and A.M. Neville. Third edition 1989. The title is available in hardback (ISBN 0-412-29030-8) and paperback edition (ISBN 0-412-29040-5). Publisher: Routledge, Chapman & Hall Ltd., North Way, Andover, GB-Hampshire SP10 5BE.

Concrete and Concrete Structures: Numerical Modelling and Applications

The aim of this book is to present a unified approach for the available mathematical models of concrete. These are then linked to finite element analysis and to a computer program in which special provision is made for concrete plasticity, cracking and crushing with and without concrete aggregate interlocking. Creep, temperature and shrinkage formulations are included and also geared to various concrete constitutive models. Their influence is taken into consideration in the operational and overloading behaviour of concrete structures.

The book will be of use to engineers, technologists, mathematicians and specialists in computer-aided techniques who are involved in numerical modelling of materials such as concrete and finite element modelling of concrete structures.

Edited by M.YH. Bangash, London. 660 pages with 40 tables and 319 illustrations. Published 1989. Price: £ 95.–. ISBN 1-85166-294-4. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Structural Connections

Structural Connections deals with the behaviour of connections in steel structures. The coverage includes several chapters on the current state of knowledge on connection behaviour in steel and composite structures; studies currently in progress are also included where they are likely to affect future standardization procedures. Bolted and welded joints, semi-rigid joints, endplate behaviour, frame behaviour with flexible joints, and inelastic behaviour are all areas where current developments of significance are taking place, and these have been discussed in depth.

Edited by R. Narayan, The Steel Construction Institute, United Kingdom. 452 pages with 24 tables and 269 illustrations. Published 1989. Price: £ 65.–. ISBN 1-85166-288-X. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Forensic Engineering

Forensic Engineering is the first comprehensive overview of forensic activity and failure investigation in engineering. Contributors to the book are the foremost authorities in each area of the field and illustrate a wide variety of important forensic experience. The book leads the reader through the nuts-and-bolts aspects of forensic engineering and examines specific details that will help improve investigative procedures and analytical techniques. It demonstrates the growing importance of forensic engineering in both litigation and alternative dispute resolution, and its critical role in arbitration, mediation, multi-trials, and more.

The book is richly illustrated with case studies representing a variety of specialized fields. The contributors discuss forensic activities from actual investigative reports on fires, industrial accidents, traffic accidents, civil engineering and transportation disasters, and environmental systems failures.

Forensic Engineering is written for forensic experts practising in all engineering fields, as well as design and construction professionals, attorneys, product manufacturers, and insurance professionals. In addition, it is an excellent supplemental text for engineering and law students.

Edited by Kenneth L. Carper, Associate Professor, Washington State University. 378 pages. Published 1989. Price: US $ 46.95. ISBN 0-444-01330-X. Publisher: Elsevier Science Publishers, PO Box 211, NL-1000 AE Amsterdam.

Trends in Building Construction Techniques Worldwide

The International Council for Building Research Studies and Documentation (CIB) has assembled a significant collection of data on the techniques as they are applied today in building and on the trends to which these techniques are likely to be subjected during the coming years as a result of sociological change and equally of the outcome of research now underway.

This survey paints a broad panorama of the techniques and their probable evolution over the medium term.

The contents are divided into tow parts:

- The first part is aimed at identifying the main technical trends in the building industry today.
  These trends concern not only basic materials but also the processes used to manufacture building materials, the main technological transfers and significant environmental developments.
- The second part is based on a geographical breakdown into five areas, each of which is then given more detailed treatment.

For each of these areas, emphasis is placed on the specific features of the major markets, materials, techniques and developments as they occur in the building sector today.

96 pages, 145 drawings and coulour pictures. Published 1989. Price not available. Publisher: CIB, Postbox 20704, NL-3001 JA Rotterdam.