

# CIVIL ENGINEERING

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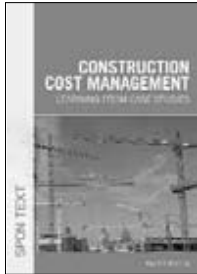
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**NEW**

## Construction Cost Management

Learning from Case Studies

Keith Potts, University of Wolverhampton, UK

In the last decade, following the Latham and Egan Reports, there have been some significant changes in the role of the construction cost manager. Keith Potts examines the key issues and best practice in the cost management of construction projects under traditional contracts and new methodologies. All stages within the life cycle of a project are considered from pre-contract to tendering and post-contract. Worked examples, legal and project case studies are used to illustrate the practical application of the theory where appropriate. Seminar questions are included at the end of each chapter including extensive references in order to further develop understanding of the subject. Reference is made to major projects such as the Millennium Dome, Emirates stadium and BAA's Heathrow Terminal 5. Aimed at students on Surveying and Construction Management programmes, this book will also be useful to practitioners and includes extensive bibliographies identifying key sources of information including the UK government's Constructing Excellence programme and National Audit Office reports.

**Selected Contents:** 1. Introduction and Overview 2. Reports and Recommendations 3. Selecting the Consultants and Contractors 4. Pre-Contract Cost Management 5. Cost Management on PFI Projects 6. Contractor's Estimating and Tendering 7. Value Management 8. Risk Management 9. Whole Life Costing 10. Organisational Methods (Part 1) 11. Organisational Methods (Part 2) 12. Payment Systems and Contract Administration 13. Contractors' Cost Control and Monitoring Procedures 14. Change Management - Valuing Variations 15. Claims Management 16. The NEC Engineering and Construction Contract 17. FIDIC Standard Forms of International Construction Contract 18. Case Study: Heathrow Terminal 5

May 2008: 246x174: 320pp  
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**3RD EDITION**

## Project Management Demystified

Geoff Reiss, The Program Management Group, UK

**'If you are new or relatively new to project management and you plan to have one book ... this is the one you should have'** – Martin Barnes, President of the Association of Project Management

Concise, practical and entertaining to read, this excellent introduction to project management is an indispensable book for professionals and students working in or studying project management in business, engineering or the public sector. Approachable and easy-to-use, it shows readers how, where and when to use the various project management techniques, demonstrating how to achieve efficient management of human, material and financial resources to make major contributions to projects and be an appreciated and successful project manager. This new edition contains expanded sections on programme management, portfolio management, and the public sector. An entirely new chapter covers the evaluation, analysis and management of risks and issues. A much expanded section explores the rise and utilization of methodologies like Prince2.

**Selected Contents:** 1. Setting the Stage 2. Getting the Words in the Right Order 3. Nine Steps to a Successful Project 4. The Scope of the Project and its Objectives 5. Project Planning 6. A Fly on the Wall 7. Resource Management 8. Progress Monitoring and Control 9. Governance and Methodologies 10. Advanced Critical-Path Topics 11. The People Issues 12. Programme Management 13. Issue and Risk Management 14. Terminology Appendix 1: Sources of Additional Information

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## Principles of Project and Infrastructure Finance

Willie Tan, National University of Singapore

Current books on project finance tend to be non-technical and are either procedural or rely heavily on case studies. In contrast, this textbook provides a more analytical perspective, without a loss of pragmatism. *Principles of Project and Infrastructure Finance* is written for senior undergraduates, graduate students and practitioners who wish to know how major projects, such as residential and infrastructural developments, are financed. The approach is intuitive, yet rigorous, making the book highly readable. Case studies are used to illustrate integration as well as to underscore the pragmatic slant.

**Selected Contents:** 1. Introduction 2. Time Value of Money 3. Organizations and Projects 4. Corporate Finance I 5. Corporate Finance II 6. Project Development 7. Social Projects 8. Characteristics of Project Finance 9. Risk Management Framework 10. Risk, Insurance, and Bonds 11. Cash Flow Risks 12. Financial Risks 13. Agreements, Contracts, and Guarantees 14. Case Study 1: Power Projects 15. Case Study 2: Airport Projects 16. Case Study 3: Office Projects 17. Case Study 4: Chemical Storage Projects

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2ND EDITION

## Planning and Design of Engineering Systems

Graeme Dandy, David Walker, Trevor Daniell and Robert Warner, all at University of Adelaide, Australia

Providing students with a commonsense approach to the solution of engineering problems and packed full of practical case studies to illustrate the role of the engineer, the type of work involved and the methodologies employed in engineering practice, this textbook is a comprehensive introduction to the scope and nature of engineering. It outlines a conceptual framework for undertaking engineering projects then provides a range of techniques and tools for solving the sorts of problems that commonly arise. Focusing in particular on civil engineering design and problem solving and the range of techniques and tools it employs, the authors also explore:

- creativity and problem solving, social and environmental issues, management, communications and law and ethics
- the planning, design, modelling and analysis phases and the implementation or construction phase.

Designed specifically for introductory courses on undergraduate engineering programs, this extensively revised and extended new edition is an invaluable resource for all new engineering undergraduates as well as non-specialist readers who are seeking information on the nature of engineering work and how it is carried out.

**Selected Contents:** 1. Engineers in Society 2. Engineering Systems Concepts 3. Engineering Planning and Design 4. Creativity and Creative Thinking 5. Project Planning Techniques 6. Management Processes and Skills 7. Communication 8. Economic Evaluation 9. Sustainability, Environmental and Social Considerations 10. Ethics and Law 11. Risk and Reliability 12. Engineering Decision-Making 13. Optimization 14. Epilogue

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6TH EDITION

## Structural Analysis

A Unified Classical and Matrix Approach

**Amin Ghali**, University of Calgary, Canada,  
**Adam Neville**, Consultant Civil Engineer, UK and  
**Tom G. Brown**, University of Calgary, Canada

This comprehensive textbook combines classical and matrix-based methods of structural analysis and develops them concurrently. New worked examples and problems have been added, giving over 130 worked examples and more than 375 problems with answers. A companion website contains computer programs that can serve as optional aids in studying and in engineering practice.

**Selected Contents:** 1. Structural Analysis Modelling 2. Statically Determinate Structures 3. Introduction to the Analysis of Statically Indeterminate Structures 4. Force Method of Analysis 5. Displacement Method of Analysis 6. Use of Force and Displacement Methods 7. Strain Energy and Virtual Work 8. Determination of Displacements by Virtual Work 9. Important Energy Theorems 10. Displacement of Elastic Structures by Special Methods 11. Application of Force and Displacement Methods 12. Influence Lines for Beams, Frames Grids, Arches, and Trusses 13. Effects of Axial Forces on Flexural Stiffness 14. Analysis of Shear-Wall Structures 15. Method of Finite Differences 16. Finite-Element Method 17. Further Development of Finite-Element Method 18. Plastic Analysis of Continuous Beams and Frames 19. Yield-Line and Strip Methods for Slabs 20. Structural Dynamics and Seismic Analysis 21. Computer Analysis of Framed Structures 22. Implementation of Computer Analysis 23. Nonlinear Analysis 24. Structural Reliability Analysis

October 2008: 234x156: 880pp  
 Hb: 978-0-415-77432-1: **£100.00**  
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**NEW**

## Structural and Stress Analysis

Theories, Tutorials and Examples

**Jianqiao Ye**, University of Leeds, UK

Summarizing major concepts and key points, this book tests students' knowledge of the main theories in structural and stress analysis. One of its main features is that it helps students to understand the subject through asking and answering conceptual questions. Each chapter begins with a summary of key issues and relevant formulas. A 'key points' review identifies important concepts which are essential for students' understanding of the chapter. Numerical examples are used to illustrate these concepts and demonstrate the application of the formulas. A short discussion of the problem is provided before the solution is revealed to ensure that students know not only how but also why, a formula should be used in such a way. *Structural and Stress Analysis* is particularly useful for students preparing for exams. Working through these conceptual questions and reviewing the key points summarized in this book, provides a structured approach to assess whether or not the subject has been understood and to identify areas where further revision is needed. It is also a useful reference for those who are taking an advanced structural and stress analysis course.

**Selected Contents:** 1. Introduction 2. Axial Tension and Compression 3. Torsion 4. Shear and Bending Moment 5. Bending Stresses in Symmetric Beams 6. Deflection of Beams Under Bending 7. Complex Stresses 8. Complex Strains and Strain Gauges 9. Theories of Elastic Failure 10. Buckling of Columns 11. Energy Method

February 2008: 246x174: 272pp  
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## On Span and Space

Exploring Structures in Architecture

Bjørn Normann Sandaker, University of Oslo, Norway

In this richly illustrated book with many practical examples, Bjørn Sandaker provides readers with a better understanding of the relationship between technology and architecture. As an experienced teacher and writer, Sandaker offers a well-founded aesthetic theory to support the understanding and evaluation of a structure's form and design, examining concepts and viewpoints from both the professions of engineering and architecture. Comprehensively covering structure and aesthetics, this book is ideal for students, professionals and academics in the areas of architecture and building.

**Selected Contents:** **Part 1: Philosophy, Fundamental Aspects of Structures** 1.1. Defining Structures 1.2. Aspects of Structural Form 1.3. Culture and Construction 1.4. Explanation vs. Interpretation of Structural Form **Part 2: Pragmatics, Structural Form and Some Mechanical Problems** 2.1. Three Basic Concepts 2.2. Structural Materials and Form 2.3. Mechanical Efficiency and the Economy of Means 2.4. Structural Scale **Part 3: Aesthetics - An Aesthetics of Structures** 3.1. An Aesthetic Qualification: The Freedom to Choose 3.2. Aesthetics and Structures 3.3. The Aesthetic Experience 3.4. Aesthetics of Mechanical Function 3.5. Aesthetics of Spatial Function

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**NEW**

## Seeing and Touching Structural Concepts

Edited by **Tianjian Ji** and **Adrian Bell**, both at  
University of Manchester, UK

Bridging the gap between theory and practice, this user-friendly textbook aids students' understanding of abstract structural concepts through visualizing, identifying and appreciating their applications in practice. Written by authors who have considerable teaching experience, this book features:

- a 'recipe' format that allow chapters to be read independently and out of sequence
- extra learning support from an associated website with regularly updated content
- practical examples to help bridge the gap between theory and practice.

Over twenty structural concepts are illustrated using physical models and engineering examples. Each concept is covered by setting out the basic concept very succinctly, and providing some background or its theoretical basis. Demonstration models are presented using photographs to enable the concept to be visualised; normally with a pair of models. Practical examples are given to show how the concept is used in practice, and in some cases the verification and application of the concept are discussed further.

**Selected Contents:** Preface **Statics** 1. Equilibrium 2. Centre of Mass 3. Effect of Different Cross Sections 4. Bending 5. Shear and Torsion 6. Stress Distribution 7. Span and Deflection 8. Direct Force Paths 9. Smaller Internal Forces 10. Buckling 11. Prestress 12. Horizontal Movements of Frame Structures Induced by Vertical Loads. **Dynamics** 13. Energy Exchange 14. Pendulum 15. Free Vibration 16. Resonance 17. Damping in Structures 18. Vibration Reduction 19. Human Body models in Structural Vibration

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## Design of Structural Elements

Chanakya Arya, University College London, UK

Now in its third edition, this popular textbook provides a concise single volume introduction to the design of structural elements in concrete, steel, timber, masonry, and composites. Up to date design principles and guidance are given in line with both British Standards and Eurocodes, current as of early 2008. An accompanying solutions manual is available online.

**Selected Contents:** **Part 1: Introduction to Structural Design** 1. Philosophy of Design 2. Basic Structural Concepts and Material Properties **Part 2: Structural Design to British Standards** 3. Design in Reinforced Concrete to BS8110/BS8500 4. Design in Structural Steelwork to BS5950 5. Design in Unreinforced Masonry to BS5628, BS EN771, BS EN845 and BS EN998 6. Design in Timber to BS5268 **Part 3: Structural Design to the Eurocodes** 7. The Structural Eurocodes: An Introduction 8. Eurocode 2: Design of Concrete Structures 9. Eurocode 3: Design of Steel Structures 10. Eurocode 6: Masonry Design 11. Eurocode 5: Timber Design.

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**Alan Jennings**

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**Malcolm Millais**

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## Examples in Structural Analysis

**William M.C. McKenzie**, Napier University, Edinburgh, UK

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**Michael Janssen, Jan Zuidema**, both at Delft University of Technology, the Netherlands and **Russell Wanhil**, National Aerospace Laboratory, the Netherlands

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Pb: 978-0-415-34622-1: **£27.99**  
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11TH EDITION

## Reynolds's Reinforced Concrete Designer's Handbook

Charles E. Reynolds, James C. Steedman and Anthony J. Threlfall, Consulting Engineer, UK

This classic and essential work has been thoroughly revised and updated in line with the requirements of new codes and standards which have been introduced in recent years, including the new Eurocode as well as up-to-date British Standards.

**Selected Contents: Part 1: General Information** 1. Introduction 2. Design Criteria, Safety Factors and Loads 3. Material Properties 4. Structural Analysis 5. Design of Structural Members 6. Buildings, Bridges and Containment Structures 7. Foundations, Ground Slabs and Earth-Retaining Structures **Part 2: Loads, Materials and Structures** 8. Loads 9. Pressures Due to Retained Materials 10. Concrete and Reinforcement 11. Cantilevers and Single Span Beams 12. Continuous Beams 13. Slabs 14. Framed Structures 15. Shear Wall Structures 16. Arches 17. Containment Structures 18. Foundations and Retaining Walls 19. Miscellaneous Structures and Details 20. Elastic Analysis of Concrete Sections **Part 3: Design to British Codes** 21. Design Requirements and Safety Factors 22. Properties of Materials 23. Durability and Fire Resistance 24. Bending and Axial Force 25. Shear and Torsion 26. Deflection and Cracking 27. Considerations Affecting Design Details 28. Miscellaneous Members and Details **Part 4: Design to European Codes** 29. Design Requirements and Safety Factors 30. Properties of Materials 31. Durability and Fire Resistance 32. Bending and Axial Force 33. Shear and Torsion 34. Deflection and Cracking 35. Considerations Affecting Design Details. Appendix: Mathematical Formulae and Data. References and Further Reading

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## The Behaviour and Design of Steel Structures to EC3

N.S. Trahair, University of Sydney, Australia,  
M.A. Bradford, University of New South Wales, Australia,  
D.A. Nethercot, Imperial College, UK and  
L. Gardner, Imperial College, UK

The fully revised fourth edition of this successful textbook fills a void which will arise when British designers start using the European steel code EC3 instead of the current steel code BS5950.

Numerous worked examples illustrate the behaviour of steel structures and exemplify details of the design process. This is a key text for senior undergraduate and graduate students and an essential reference tool for practising structural engineers.

**Selected Contents:** 1. Introduction 2. Tension Members 3. Compression Members 4. Local Buckling of Thin Plate Elements 5. In-Plane Bending of Beams 6. Lateral Buckling of Beams 7. Beam-Columns 8. Frames 9. Joints 10. Torsion Members

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3RD EDITION

## Steel Structures

Practical Design Studies

Hassan Al Nageim, Liverpool John Moores University, UK and T.J. MacGinley, Deceased, formerly of Nanyang Technological University, Singapore

2005: 234x156: 352pp  
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## Practical Hydraulics

Melvyn Kay, Consultant, UK

*Practical Hydraulics* approaches the subject from basic principles and demonstrates how these are applied in practice. It is clearly written and includes many illustrations and examples.

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**P. Novak, A.I.B. Moffat** and **C. Nalluri**, all formerly at the University of Newcastle upon Tyne, UK and **R. Narayanan**, formerly at University of Manchester, UK

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**Kees d'Angremond** and **F. van Roode**, both at Delft University of Technology, the Netherlands

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## Coastal Engineering

Processes, Theory and Design Practice

**Dominic Reeve, Andrew Chadwick**, both at University of Plymouth, UK and  
**Christopher Fleming**, Halcrow Group Ltd.

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**Gerrit J. Schiereck**

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**Jacqueline Alder**, Edith Cowan University, Australia

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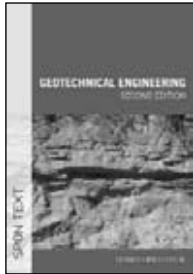
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## Reinforced Concrete

Design Theory and Examples

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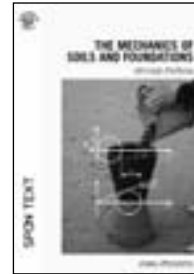
## Geotechnical Engineering

Renato Lancellotta, University of Torino, Italy

This new edition of Renato Lancellotta's textbook provides a solid grounding in the mechanics of soils and of structures interacting with soil. It begins with a clear and detailed description of the nature and composition of soils, with an emphasis on soil mineralogy and the features of natural deposits. It then provides thorough coverage of a number of topics which are often either missed out of other texts or covered more briefly: the principles of continuum mechanics, Critical State Theory, site investigation, and innovative techniques such as seismic methods. Boundary value problems are presented with appropriate mathematical rigour, stationary and transient flow in porous media are covered, and the collapse of soil structures is described by using the concept of plasticity. A final chapter discusses the performance and serviceability of structures. It is suitable for an undergraduate course and also for use by graduate students. It explores not only the basics but also several advanced aspects of soil behaviour, and outlines principles which underpin more advanced professional work. It will also suit practising engineers as a reference work. Readers will gain a good grasp of applied mechanics, testing and experimentation, and methods for observing real structures.

**Selected Contents:** 1. Nature and Composition of Soils 2. Principles of Continuum Mechanics 3. Constitutive Models 4. The Porous Medium 5. Mechanical Behaviour of Soils 6. Flow in Porous Media 7. In Situ Investigations 8. The Collapse of Soil Structures 9. Performance and Serviceability of Structures

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2ND EDITION

## The Mechanics of Soils and Foundations

John Atkinson, City University, London, UK

Ideal for undergraduates of geotechnical engineering for civil engineers, this established textbook sets out the basic theories of soil mechanics in a clear and straightforward way; combining both classical and critical state theories and giving students a good grounding in the subject which will last right through into a career as a geotechnical engineer. The subject is broken down into discrete topics which are presented in a series of short, focused chapters with clear and accessible text that develops from the purely theoretical to discussing practical applications. Soil behaviour is described by relatively simple equations with clear parameters while a number of worked examples and simple experimental demonstrations are included to illustrate the principles involved and aid reader understanding.

**Selected Contents:** Simple Experiments 1. Introduction to Geotechnical Engineering 2. Basic Mechanics 3. Material Behaviour 4. Structure of the Earth 5. Classification 6. Pore Pressure, Effective Stress, Drainage 7. Laboratory Testing 8. Compression and Swelling 9. Critical State Strength 10. Peak States 11. Behaviour before Failure 12. Cam Clay 13. Stiffness 14. Steady State Seepage 15. Consolidation 16. Natural Soils 17. Ground Investigations 18. Soil Parameters for Design 19. Ultimate Stability of Soil Structures Using Bound Methods 20. Limit Equilibrium Method 21. Slope Stability 22. Bearing Capacity and Settlement of Shallow Foundations 23. Piled Foundations 24. Earth Pressure and Stability of Retaining Walls 25. Tunnelling in Soft Ground 26. Behaviour of Unsaturated Soils 27. Centrifuge Modeling 28. Concluding Remarks

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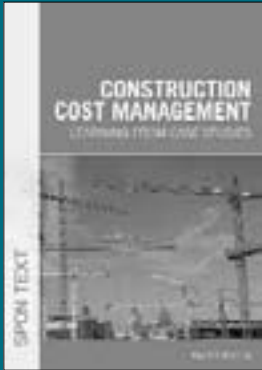
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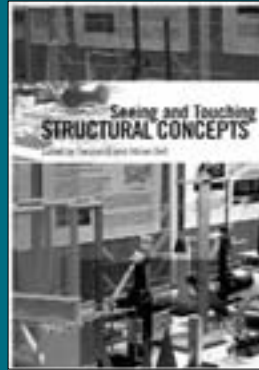
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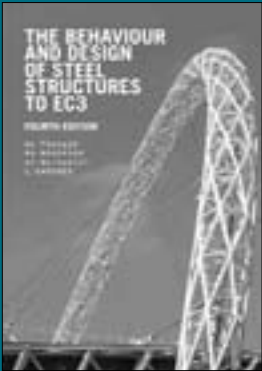
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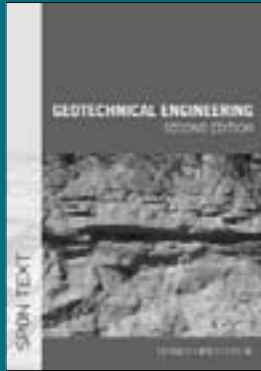
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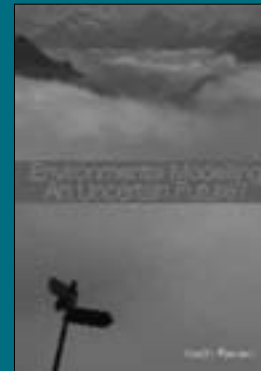
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