Asset management — whole-life management of physical assets

The Institute of Asset Management’s president Robert Davis says in his foreword, ‘This book is timely and important. Timely because the number of organisations around the world which are embracing the whole-life, whole-cost approach to managing physical assets is rising fast. Important because successful asset management demands new ways of thinking at all levels and this book will prepare people for this.’

The book includes a number of charts and diagrams to help illustrate many of the points made and help the reader to visualise particular concepts. These include the evolution of an asset reference plan during life-cycle stages, and the asset management processes and their primary linkages – a type of mind-map.

In conclusion, this book provides invaluable information for those wishing to expand their knowledge on the topic. In particular it would enable designers to be more aware of what their clients may want from facilities, and thus engage with them more effectively in discussing use strategies, proposed maintenance regimes and longer-term aims.

New Monte Rosa Hut SAC
by ETH Zürich (ed.), published by ETH Zürich, 2010, £43, reviewed by Sue Housley, Highways Agency.

The book explains a bold project to specify, design and build a £4 million, 120-person climbing hut in the Swiss Alps at an altitude of 2883 m. The design was a collaborative effort between ETH Zürich University and the Swiss Alpine Club (SAC).

With solar panels, thermal collectors, melt-water caverns and waste-water recycling, the building is 90% self-sufficient in energy and water. An advanced, remote-controlled energy management system takes weather forecasts and the hut’s expected occupancy into account to determine heating and water provision.

With temperatures falling to ~30°C, winds gusting up to 250 km/h and a 3 h trek from the nearest cable car, construction was limited to between May and September, during which 3000 helicopter flights were needed to lift 420 pre-fabricated wooden elements in to place.

The knowledge acquired in the construction and operation of this project can be beneficially transferred to more mundane buildings. It is a fascinating project, the book is beautifully illustrated and there are some highly relevant learning points to be gleaned — though some of the sections are heavy going.

Designers’ guide to Eurocode 1: Actions on bridges
By Jean-Armand Calgaro, Marcel Tschumi and Haig Gulvanessian, published by Thomas Telford, 2010, £75, reviewed by Brian Neale, independent consultant.

This hard-covered A4-size guide is part of the series of designers’ guides to the Eurocodes by Thomas Telford (now ICE Publishing). The Eurocodes were officially launched in the UK by BSI on 31 March 2010.

The 250+ page volume covers the Eurocodes in the ‘actions’ family that are relevant to bridges as well as part of Eurocode 1990, Basis of design. Specifically, it covers BS EN 1990 annex 2, BS EN 1991-2, BS EN 1991-1-1 and BS EN 1991-1-3 to BS EN 1991-1-7. Many examples are given to demonstrate particular applications of code clauses. Illustrations and diagrams are also included to help understand particular points and visualise certain criteria. Two of the chapters cover topics that may be less familiar to readers, each of which is the subject of a dedicated actions code. They are ‘actions during execution’ (BS EN 1991-1-6) and ‘accidental actions’ (BS EN 1991-1-7), where the scope and application of each code is wider than bridges.

In conclusion, this new guide can be seen as an advantageous companion to complement the relevant Eurocodes where a greater understanding is required — and not necessarily for bridges alone.

Excavation systems planning, design and safety

This guide provides an excellent overview of all aspects of excavation and safety issues related to below-surface work. The primary focus of the book is excavation safety and productivity.

Joe Turner, who has nearly 30 years of diverse design and construction experience, presents the fundamental information and background necessary to execute any excavation work with the lowest possible risk of injury in a cost-effective manner.

The author also includes detailed explanations and guidelines of shoring design standards, soil loading on shoring systems, best practices in safety planning, information on equipment and tools, techniques for protecting subsurface utilities, and a glossary of terms.

The book is an authoritative source on the subject. The hallmark of the book is the style of presentation — it is written in a clear and concise format, including numerous illustrations and sample plans. Any person with a secondary school education and basic algebra skills could read and understand the material.

Work: the building of the Channel Tunnel rail link

This book provides a detailed account of the building of the Channel Tunnel rail link (or High Speed 1 as it is now called) combined with some great pictures. It is a good coffee-table book that your partners or parents can enjoy, with sufficient technical content to maintain the interest of the civil engineer.

The book starts with a preface by Stephen Bayley, author and well-known architecture...
and design commentator, observing that air travel has deteriorated from being ‘a privileged romantic indulgence to a humiliating ordeal’ and that car travel’s ‘viability as rational transport has been undermined by its own popularity’. High-speed rail travel’s moment has now come. It is one of civilization’s pleasures, and this book glories in its re-birth.

The main part of the book is divided into four chapters covering the track, the tunnels, the terminus and, recognising that to run a railway you need more than a track, there’s a chapter on the trains as well.

The chapter on the track covers the building of the Medway viaduct, which incidentally is the longest high-speed rail bridge in the world, the North Downs tunnel, Ashford station tunnel and viaduct and the signalling. There is also a good description of the whole sorry saga of route planning – the growth of nimbyism in the 1980s, the initial belief that the existing tracks from London to Folkestone would do, and that once high speed was finally decided the first choice of King’s Cross as the terminal station. This chapter also covers the archaeological finds unearthed during construction and the lesser-known environmental gains such as the cut-and-cover tunnel at Mersham which has re-united two halves of a village previously separated by the original London to Folkestone railway.

The section on trains explains how the Eurostar evolved from the TGV to be able to cope with the vagaries of four railway systems (British, Eurotunnel, French, Belgian). There is also a brief history of the development of high-speed trains from Nigel Gresley’s Mallard, to the Japanese Shinkansen and the German InterCityExpress.

Overall, this is a great book that describes in words and pictures what in the future will be seen as the project of the decade.

How to get a PhD (4th ed)
by Estelle Phillips and Derek Pugh, published by The Open University Press, 2005, price £18.99, reviewed by Terry Price

Now published as a fourth edition, this essential handbook for students and supervisors has been updated, and contains additional information to take account of new doctoral degrees such as EdD, DBA and D.Eng. New material for overseas, part-time and mature students is added, as is a diagnostic questionnaire for use by students to enable them to self-monitor their progress.

The 220-page volume succeeds in covering the whole subject of achieving a successful PhD, including the administrative and emotional issues connected with such a task, both from a research student and supervisor’s viewpoint. As the authors describe in the first chapter, this book is both a handbook and a survival manual for PhD students.

Although unable to direct students to a particular model for a thesis (something which many students hope they can find) the book does give some useful pointers which could be common to all theses, provided this is taken as general rather than specific advice. The two chapters on how to do research and on the form of a thesis are extremely useful to those students who may have entered their PhD directly from an undergraduate course where they may not have had the necessary previous research experience.

The self-diagnostic questionnaire used to monitor student progress is rather weak and would need to be expanded by the student before it could be of any real use. Likewise, the sections describing the new degrees and part-time students need further work as the book fails to address the issues faced, in particular, by mature students wishing to make the choice between researching for a PhD, DBA or a D.Eng. For example, the dilemma of a self-funded part-time mature student in trying to identify a suitable university without giving away his or her idea for a doctorate for others already embedded in the university system to use.

Otherwise it is a valuable aid for research students.

Full versions of these reviews can be read in the supplementary data to the online version of these pages at www.civilengineering-ice.com.

> MONITOR

The ICE’s bookshop in London carries one of the most comprehensive ranges of civil engineering books in the world. New books received in the past three months are as follows.

Construction contract law (3rd edition)
John Adrianeesee £31.99
Construction contracts: questions and answers (2nd edition)
David Chappell £34.99
Earthquake engineering for structural design
Victor Giancui and Federico Mazzolani £85.00
Hydrology in practice (4th edition)
Elizabeth Shaw, Keith Beven, Nick Chappell and Rob Lamb £35.00
Managing construction logistics
Stephen Barthorpe, Gary Sullivan and Stephen Robbins £49.99
Managing performance in construction
Leonhard Bernold, Siaman AbouRizk £85.00
Managing the brief for better design (2nd edition)
John Blyth and John Worthington £34.99
Planning and design of airports (3rd edition)
Robert Horonjeff, Francis McKelvey, William Sproule and Seth Young £89.99
Practical design of steel structures: based on Eurocode 3 (with case studies)
Karuna Moy Ghosh £40.00
Structural mechanics: loads, analysis, materials and design of structural elements, updated to current British standards and Eurocodes (7th edition)
Hassan Al Nageim, Frank Durka, W. Morgan and David Williams £34.99
Urban drainage (3rd edition)
David Butler and John Davies £35.00
Water and the city: risk, resilience and planning for a sustainable future
Ian White £29.99
Water technology: an introduction for environmental scientists and engineers
Nick Gray £39.99
Rock engineering
Arild Palmstrom and Hakan Stille £65.00
Steel–concrete composite buildings
David Collings £50.00
Polymers and polymer fibre composites
Len Holloway £30.00
Port designer’s handbook (2nd edition)
Carl Thoresen £99.00

The bookshop is in the ICE foyer, 1 Great George Street, London SW1P 3AA and is open from 9.30 am to 5.00 pm, Monday to Friday. Books can also be ordered by calling +44 20 7665 2019, emailing bookshop@ice.org.uk or by visiting www.ice.org.uk/bookshop.