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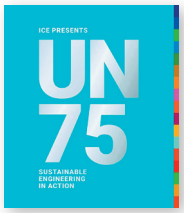
# Books

## REVIEWS

### UN75: sustainable engineering in action




by the Institution of Civil Engineers, published by St James, 2020, £49.95, reviewed by **Paula McMahon**, Sir Robert McAlpine, UK

This well-presented and easy-to-read book is a wonderful and informative collection of stories from around the world. It showcases the engineering highlights of interesting and varied global projects, and illustrates how civil engineers can be more sustainable.

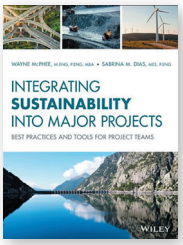
Marking the 75th anniversary of the United Nations, a short and interesting history overviews what has been achieved so far. The background of how and why the sustainability development goals were chosen puts into perspective world issues and the climate crisis. The Institution of Civil Engineers highlights the challenges faced and provides a map of how civil engineers can make meaningful contributions.

Each section contains a wealth of exciting schemes and initiatives which link to the goals through real-life examples. This international series of remarkable work clearly demonstrates not only the breadth of civil engineers globally but their potential to have a positive impact on the planet's future. The topics covered include economic development, innovation, health, water, food, education, rights, equality, environment, energy and urban growth.

There is something for everyone in this book, whether you are a civil engineer or not. The book and its stories are beautifully presented. It was initially described to me as a coffee-table book which you can pick up when you feel like it, but I could not put it down.

It can act as the catalyst for ideas and inspiration for readers' own personal journeys through the successes, lessons and insights of others. It should be a must buy for all civil engineers and anyone interested in understanding how everyone can work towards a more sustainable world.

### Integrating sustainability into major projects: best practices and tools for project teams



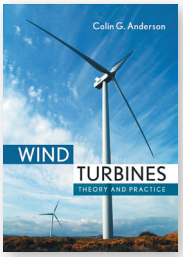

by Wayne McPhee and Sabrina Dias, published by Wiley, 2020, £67.99, reviewed by **Veronica Flint Williams**, Environment Agency, UK

What I particularly liked in this book was the approach of incorporating sustainability into projects by using existing project processes rather than doing additional offline processes. This approach is far more likely to be successful than leaving sustainability to specialists – it should be everyone's business. This is similar to the way safety has now been successfully embedded into project management.

The approaches to the projects cited are entirely suitable to the UK, and the context of international standards is a useful reminder that this is a global issue. Case studies throughout the book added a practical perspective to ground assertions. Overall, there was a useful balance of academic techniques, legal and regulatory requirements, practical application and case studies.

This book is for all construction professionals. It will broaden their understanding and help them consider how better to ensure their projects successfully achieve sustainable outcomes.

### Wind turbines theory and practice




by Colin Anderson, published by Cambridge University Press, 2020, £64.99, reviewed by **Sam Adshead**, Holmes Solutions, UK

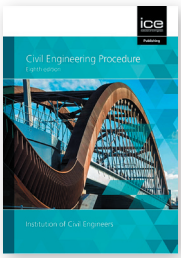
The author takes the reader through the fundamentals of wind turbine engineering in a clear, concise and engaging way. The subject of harnessing wind energy for human progress is relevant to modern public discourse on climate change and, as the author discusses, has its roots in human civilisation as early as 5000 BCE.

He starts by building the context for modern wind turbine technology development by outlining the economic and social drivers for the industry, such as the energy crisis of the 1970s. He then introduces some of the fundamental engineering challenges, such as fatigue and noise, that hampered early designs, as well as key insights that enabled greater energy production efficiency, such as advances in aerodynamic theory, control theory and materials science.

Clear and easy-to-understand explanations are given for the complex drivers of wind, as well as common models used for its characterisation. This enables the reader to understand the context for high-level decision making, such as where to site wind turbines and how to estimate available wind energy. Detailed explanation is given for the various dimensionless factors used to inform those decisions.

For the technically minded, there are regular deep dives into the theories used by each of the collaborating disciplines on successful wind turbine design: aerodynamics, structures, electrical, materials and control. Overall, this book provides an excellent handbook for anyone who seeks to build their understanding of wind turbine design, both engineers and non-engineers alike.

### Civil engineering procedure (8th ed.)




by the Institution of Civil Engineers, published by ICE Publishing, 2020, £30, reviewed by **Sarah Melville-Crowe**, Royal Air Force - Ministry of Defence, UK

First published in 1963 this book has been through several updates since that time, culminating with this 8th

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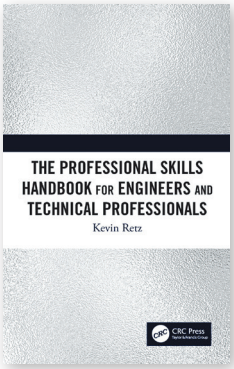
edition. It was with some nostalgia that I opened this book to read, having had my own 5th edition copy at university some years ago. I was pleasantly surprised at the number of topics covered, from project feasibility to completion, in brief concise elements, touching on all aspects.

The book has been brought up to date with references to building information modelling, NEC4 contracts and the Construction (Design and Management) Regulations 2015. There are brief case studies of recent projects, illustrated with very useful photographs and diagrams.

Primarily aimed at undergraduates entering the civil engineering industry, this remains a useful reference and source of information for students and more experienced alumni as they progress their careers.

## The professional skills handbook for engineers and technical professionals



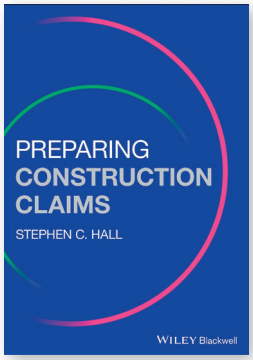

by Kevin Retz, published by CRC Press, 2020, £68.99, reviewed by **Liz King**, Mott MacDonald, UK

The author has done a great job in this book of capturing a lifetime of experience of working as a professional engineer. The book has 'handbook' in the title, and it lives up to this in content. This is not an academic text, just plain good advice based on experience. It is an accessible book that all engineers would benefit from dipping into from time to time.

The book starts with some general advice on how to conduct oneself and interact with others, with lessons such as 'don't be afraid to ask for help' and how to behave to gain respect. The chapter on how to get the best out of a team is excellent, but the following chapter on virtual teams unfortunately feels a little outdated after the events of 2020.

The author continues with guidance on developing and delivering presentations and then how to navigate creativity and innovation. The author's background in manufacturing comes through strongly in the final two chapters on Lean and cost estimation, which engineers in other sectors may find less relevant.

## Preparing construction claims




by Stephen Hall, published by Wiley, 2020, £59.95, reviewed by **Veronica Flint Williams**, Environment Agency, UK

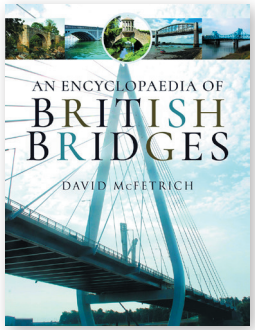
This book is a good basis from which to understand the causes of construction claims. It is a practical book with a sound foundation in theory and experience, and I found the arguments well expressed.

While there is a trend towards more partnering contracts in construction, disputes and claims are still likely due to the stresses placed on the parties by the conditions or circumstances. Ideally, these issues should be resolved immediately but many parties decide to defer them to a later date. This procrastination can be a deliberate policy, and this is certainly not helpful to the successful outcome of a contract.

The author's breakdown of claims into six fundamental questions is helpful. This applies no matter which conditions of contract are used. He then describes the highly effective techniques that can be used to make convincing arguments before a matter comes to dispute. Clear, evidenced-based and logical arguments are important to resolving commercial tensions quickly, enabling the parties to focus on the more positive aspects of delivery.

I would recommend this book to anyone in the construction industry who has a commercial responsibility, whether they prepare or defend claims. For experienced practitioners, it provides a helpful reminder of good practice, while for those less experienced and needing to acquire good habits, this book will be of assistance.

## An encyclopaedia of British bridges




by David McFetrich, published by Pen & Sword, 2019, £60, reviewed by **Andrew Martin**, Cowi, Denmark

Bridges are and have been central to the development of transport infrastructure in the UK since historic times: from packhorse bridges, through the turnpike, canal, railway and motorway eras, and into the future with high-speed rail. Bridges are of interest to civil engineers but have also caught the imagination of the public at large, who use them and live with them in their local settings.

The main body of this book contains over 1600 entries, comprising descriptions of over 2200 separate structures, dating from the twelfth century to the present day. The bridges are arranged alphabetically by name and many are illustrated with colour photographs.

The second section, entitled 'Bridge miscellany', presents a wide range of technical, architectural, historical and social topics related to bridges, with extensive cross-referencing to the main listing. There is also a geographical index of all the bridges described, which includes an Ordnance Survey grid reference for each. Finally, there are lists of record-breaking bridges, a bibliography of books on bridges and a comprehensive general index.

The book will be enjoyed by bridge enthusiasts of all types. It is much more than just a catalogue of structures: it will give inspiration and information for all those interested in the study of bridges to find out more and to visit them, to see these great works – both large and small – at first hand.

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