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Book Review

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Wind Loading of Structures, 4th edn J. Holmes and S. Bekele. CRC Press, Boca Raton, FL, USA, 2021, ISBN: 978-0-367-27326-2, £150, 618 pp.

Wind Loading of Structures by John Holmes and Seifu Bekele, now in its fourth edition, is a great book for undergraduates and young engineers needing to understand wind effects for the first time. I wish it had been around 40 years ago! There is also a lot of useful information in there for the more experienced engineer used to normal winds on typical structures who is suddenly faced with the problem of looking at wind effects on a more unusual structure or a structure in a different location. For example, the differences in wind issues for a structure in the UK subject to Atlantic gales and those for a structure in South East Asia subject to tropical cyclones is considered. This book is also very useful for the once-knowledgeable wanting a refresher on key issues!

There are 16 chapters, starting with The nature of windstorms and wind-induced damage (Chapter 1), Prediction of design wind speeds and structural safety (Chapter 2) and Strong wind characteristics and turbulence (Chapter 3). Chapters 4–7 are on Basic bluff-body aerodynamics, Resonant dynamic response and effective static load distributions, Internal pressures and Laboratory simulation of strong winds and wind loads. There are various facts outlining the issues covered. Did you know that in a 40-year period up to 2007 there were 319 recorded failures of guyed masts worldwide, of which 44 were caused by wind? Chapters 8–14 focus on specific structure types: Low-rise buildings, Tall buildings, Large roofs and sports stadiums, Towers, chimneys and masts, Bridges, Transmission lines and Other structures. The penultimate chapter is on Wind-loading codes

and standards. The final chapter, Application of computational fluid dynamics to wind loading, is new and not in previous editions. There are seven appendices, including Terminology, List of symbols and Extreme wind climates – a world survey. In all, we have 618 pages packed with information, data, formulas and figures.

For bridge engineers there is a lot in here, even though the book is primarily a general guide on all sorts of structures. It is a book for those interested in understanding – it is not a book for code crunchers. It carries some details on US, European, Japanese and Australian standards, but not a clause-by-clause exposition. There are a few areas I would have liked to have seen more on, the buffeting of bridges for example; the theory is there but not quite enough to allow an example to be carried out. There is little on environmental criteria, often needed these days to demonstrate comfort for pedestrians in an urban setting. The empirical Lawson criteria type analysis is perhaps relatively crude and subjective compared with the modelling outlined in the various chapters of this book.

If I had been given the printed book to review, I would have been happy to leave it there and have it on my bookshelves on show in Zoom calls. However, I was given an electronic version of the book. Looking at it on a computer, the black and white nature of the figures and photographs seemed to make it appear visually dated. I also tried a few of the links in the text and was generally disappointed by where I ended up. These are issues for the editors of the next edition. That said, overall, this a great book that I would wholeheartedly recommend.

David Collings