

Review

 **Dr Um Leong Tay** find this to be an excellent introductory textbook for those new to the design of tall buildings, albeit one which could have been improved by closer attention to detail and a greater focus on conceptual aspects of design and simplified rules of thumb.

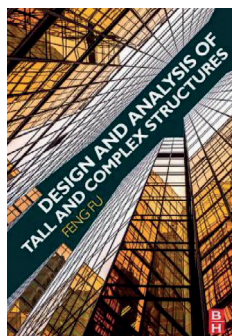
Design and analysis of tall and complex structures

Author: Feng Fu

Publisher: Butterworth-Heinemann

Price: £119.00 (paperback); £142.80 (e-book)

ISBN: 978-0-08101-018-1



This book covers the design and analysis of complex structures, dealing primarily with tall buildings. Chapter 1 is the introduction to the book and explains its structure; Chapter 2 covers the fundamental principles of designing tall buildings; Chapters 3–5 provide a detailed introduction to lateral stability requirements, i.e. shear and core systems (Chapter 3) and tube systems (Chapter 4); worked examples of complex (building) structures are given in Chapter 6; Chapter 7 covers design and analysis of tensile and tensegrity structures; Chapter 8 deals with design and analysis of offshore structures.

The sections on effect of wind loads, structural framing systems and progressive collapse are thorough and useful to practising engineers.

The title of this book appears to be chosen to fit the research material. It would probably be more appropriately renamed as 'Design and analysis of tall building structures'. This would likely provide better focus and direction to the book content. Some of the photographs are poor – it is suggested that better photographs should be added in a future edition to provide greater clarity on what text they are trying to illustrate.

Chapter 8, on the design and analysis of offshore structures, though a well-written chapter, appears to be out of place in this book, which focuses primarily on

"THE BOOK WILL PROVIDE A GOOD APPRECIATION OF THE FUNDAMENTALS BEHIND THE DESIGN AND ANALYSIS OF TALL BUILDING STRUCTURES"

tall building structures. There are better, specialist books in the marketplace that provide more comprehensive coverage of the subject for specialist offshore structural engineers, e.g. the *Handbook of offshore engineering* by S.K. Chakrabarti. Most offshore structures are also modelled/ designed using commercially available specialist software, such as STAAD Pro, SACS by Bentley Systems or SESAM by DNV GL, which are widely accepted and validated by third-party classification/ verification societies.

Unfortunately, there are several typographical errors within the book that should have received closer editorial attention prior to publication, e.g. 'vertex' instead of 'vortex', 'mediate-rise' instead of 'medium-rise', '20-story' instead of '20-storey'. It would be prudent to correct these spelling errors in a revised edition. Many diagrams/figures are not annotated and lack structural details which would have

provided greater clarity to the main text.

The section on building information modelling (BIM) is quite brief and should be expanded given the current market interest.

This book demonstrates the author's recent experience and extensive research into the analysis and design of tall buildings in good depth. It will serve as an excellent introductory textbook for graduate and experienced structural engineers new to the design of tall buildings, as well as for postgraduate researchers who are keen on the nuances of application of the SAP2000 and ETAPS commercial programs. The book will provide a good appreciation of the fundamentals behind the design and analysis of tall building structures.

However, to prove more useful to practising engineers, a summary chapter could be added on the conceptual aspects of tall building design, and some simplified 'rule-of-thumb' methods could be proposed for the design of complex tall building structures. A section could also be added with annotated sketches illustrating how these complex structures behave and how they can be simplified alongside the complex modelling in order to provide an insight into load paths/ transfer and structural stability. This would be welcomed by time-pressured practising structural engineers, especially before launching into a time-consuming, complex structural analysis.

Um Leong Tay

BEng(Hons), MEng, PhD, DIC, CEng, MStructE, MICE, CMarEng, MIMarEST

Dr Um Leong Tay is an independent consultant who is a chartered structural, civil and marine engineer. For the past 32 years, he has run his own engineering consultancy practice, Tay Design Consultancy Ltd. His practical experience ranges over several industrial sectors, encompassing buildings, bridges, nuclear, offshore oil/gas and offshore renewables.