Book review

Damage Assessments for Residential and Commercial Structures

Stephen E. Petty (ed.). CRC Press, Boca Raton, FL, USA, 2013, ISBN 978-1-4398-9972-4, £99.00, 790 pp.

This book is an invaluable resource to forensic engineers in North America and Europe. Nevertheless, forensic engineers elsewhere should also find this an important addition to their library. As the editor has rightly pointed out in the preface, this book was not intended to encompass every area of forensic engineering. The focus is on hail and wind damage, water intrusion cause and origin, and structural failures, with emphasis on cause and origin determinations associated with insurance claims.

There are 23 chapters written either solely or jointly by seven practising experts in forensic engineering. The editor has heavily contributed in writing nine of the chapters and co-authoring a further ten chapters. The book has been structured to cover the following broad areas

- introduction to forensic engineering
- hail and wind damage assessments
- water infiltration: cause and origin assessments
- indoor environmental quality
- forensic inspection assessment of residential structural systems
- structural damage property assessments
- insurance appraisal process
- serving as an expert witness.

Each chapter has been structured meticulously with an introduction and a list of references at the end. Furthermore, the highlighted box sections 'Purpose/Objectives' at the beginning and 'Important points to remember' at the end make all of the chapters an easy read, such that even an undergraduate could assimilate the content with ease. The authors have drawn on their field experience and presented material well with the aid of illustration by clear colour photographs, well-marked schematic sketches, test samples, as-recorded field snaps with measurement tapes and so on. Moreover, an excellent attempt has been made in showcasing the contributors' vast experience by illustrating causation and origin decisions aided by real case studies. This reviewer has read the entire book and can vouch for its first-rate content; the journey did not feel cumbersome at all.

The authors have made use of data available from past events, using various weather data sources to connect the text on hail/wind damage assessment with the reader. In Chapter 5, the editor has described quite vividly how to distinguish real from fake hail or wind damage. Additionally, the editor adds weight to the discussion with metrics for defect dimensions from simulated damage due to various objects. Such innovation in devising experiments is called for in a rapidly evolving civil engineering ecosystem, and should motivate readers to devise problem-specific methodologies.

Case studies have been provided in Chapter 8 (three examples) and Chapter 9 (ten); such case studies are rarely encountered. When it comes to 'Indoor environmental quality', Table 11.6 gives the gist of valuable lessons learnt from the field. Examples of mould litigation cases across the USA and their status presented in Table 13.4 are quite informative.

The use of on-site measurements to develop typical porch or deck schematic plan view sketches in Figure 16.15 is beautifully illustrated. This figure, when read in conjunction with the best practices design requirements in 16.4.1 and the follow-up section 16.4.2.3 on inspection, makes for a well-rounded treatment of the subject.

With risk management practices becoming the norm, Chapter 22 on 'Insurance appraisal process' is a valuable addition indeed. The chapter contains the basics of appraisal, the role of appraiser and umpire, format of written communication and the appraisal process. This should appeal to readers in developing countries where awareness of forensic engineering as a discipline is not widespread.

The following Chapter 23 'Serving as an expert witness' on the civil litigation process is a 'must read' for every civil engineer. The tips at the end for preparing written reports and oral depositions are well articulated.

By focusing on selected themes, the editor has succeeded in presenting the book as a ready reference for existing practitioners and new entrants alike. The hallmark of the book is the clarity of thought and simple presentation, which every aspiring forensic engineer should attain to excel in their profession. This book deserves inclusion as a lead reference for graduate course work in the civil engineering curriculum across universities worldwide.

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