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Book review
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Forensic Structural Engineering Handbook 2nd Edition

Robert T. Ratay, Editor in Chief. McGraw-Hill, 2010, ISBN 978-0-07-149884-2, **£89·99, 688 pp.**

My advice to readers wishing to consider buying this book is to pick up a copy in a bookshop and read a few pages. If you have as much difficulty as I did in putting the book down then it will make a good addition to your bookshelf, and is well worth the read from cover to cover.

The book is divided into five sections:

(*a*) design and construction practices
(*b*) engineering response to failures
(*c*) causes of failures
(*d*) material-specific forensic analyses
(*e*) professional practice and legal aspects.

Each section is sub-divided into chapters, with each chapter written by a well-versed and experienced member of the engineering profession.

The language of the book is surprisingly readable, although necessarily technical in places. The text is generally well-written, in English with an American accent, and there are numerous photographs and sketches to illustrate the text. The clarity of both photographs and drawings illustrates the expertise of the various authors in making a point clear to a non-technical audience – a key part of a forensic investigation process for those who end up trying to explain their findings in a court of law.

Although the book's title includes the word 'structural', the various messages presented by the authors are applicable to just about any form of engineering failure. Importantly, the book doesn't just deal with engineering calculations and design, but looks at the whole process of construction. Issues such as poor communication, site changes to designs, extreme weather conditions and failure to allow for temporary conditions occurring during construction crop up in a number of the case studies.

As with any book authored in the USA, some elements are geared towards North American practice, particularly in the first (design and construction practices) and last (professional practice and legal aspects) sections. However, any competent engineer will recognise the differences, and this does not detract significantly from the value of this book.

I found the chapters dealing with the process of a forensic investigation to be particularly valuable and relevant wherever a failure has occurred, structural or otherwise. A key issue in any forensic investigation is recording the site so that evidence is not lost, while at the same time being aware that other parties have their own priorities in clearing the site and restoring damaged elements at the earliest opportunity. The forensic engineer is often called upon to advise and support those other activities, and high standards of professionalism and care are called upon.

This book is a good source of advice for those who intend or expect to be involved in forensic investigations, whether as the investigating engineer or one of the parties with a vested interest. My only regret is that I didn't have a copy of the first edition when I first became involved in investigating engineering failures.

As Robert Ratay says in the foreword, this is not a 'what happened' or 'lessons learned' or 'collection of failures' book – this is a 'what I need to know', 'what I need to do' and 'how I need to do it' book. It provides a good introduction to the various skills and techniques that a forensic engineer must employ in getting to the bottom of an engineering failure and is an excellent supplement to a good engineering education.

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