Construction Materials
Volume 169 Issue CM6

Book review
Ian Sims

Proceedings of the Institution of Civil Engineers
Construction Materials 169 December 2016 Issue CM6
Page 312 http://dx.doi.org/10.1680/jcoma.15.00028
Paper 1500028

Published online 01/07/2016

ICE Publishing: All rights reserved

ice | **proceedings**

ice Institution of Civil Engineers publishing

Book review

Principles of Pavement Engineering

Nick Thom, 2nd edn, ICE Publishing, London, UK, 2014, ISBN 978-0-7277-5853-8, £95·00, 423 pp.

Of all the types of civil engineering construction and consumers of construction materials, roads, car parks and other hardstandings are those most frequently used by the general population, albeit largely unconsciously. Most are unaware of the complexity and design endeavour that are involved in producing effective and enduring concrete and asphalt pavements. This point is eloquently made by practising engineer, Robert Armitage, Director of URS Infrastructure and Environment Ltd, in his Foreword to this second edition of an established textbook: *"The general public takes our roads, ports, airports, hardstandings, cycleways, bridge surfacings, etc. for granted, and often feel inconvenienced when maintenance or renewal is required; they may not even be aware of the 'structure below their feet' that is performing such an essential function"*.

Dr Thom's textbook is not alone in addressing this widespread and most vital of civil engineering applications, but it is arguably one of the most effective and best written options. Textbooks vary widely in style and usefulness, including those that provide a dense array of isolated facts and others that bamboozle the reader with complicated, even impenetrable, explanations. However, this book is a model of concise, elegantly compiled text that, combined with a systematically logical structure, enables potentially complicated concepts and principles to be easily understood. This reviewer found the textbook to be an example of that rare achievement: a technical book that could be read by a non-specialist, purely out of interest or curiosity about its subject.

Moreover, the text is well supported by a copious and carefully selected provision of diagrams, tables and information boxes (shaded grey), which genuinely aid comprehension rather than interrupt the flow. There are no photographs whatsoever, which may disappoint some, but at no point did this reviewer feel a need for an absent image and the line drawings are specially drawn to a high standard, achieving admirable clarity. The shaded information boxes are skilfully used to great effect, mainly to present calculations that might otherwise deter the less numerate reader, or otherwise to provide handy checklists, such as those provided for some 'rules of thumb' and also for practical use in pavement maintenance.

All this educational material is presented within a simple, yet comprehensive, structure. Twenty eight chapters are grouped into four parts: *Principles and Practicalities* (chapters 1 to 5, 50 pages), *Materials* (chapters 6 to 10, 118 pages), *Design* (chapters 11 to 21, 128 pages) and *Maintenance* (chapters 22 to 28, 92 pages). The opening chapter (*Introduction*) is a concise, scene-setting and appetite-whetting overview, admirably providing a breadth of knowledge on the topic in just a few digestible pages. Commencing a chapter structure that is maintained throughout the book, this first chapter ends with a short summary section and a chapter-specific list of references. The summary mainly introduces the remainder of the book, Part 1 continuing with more detail on the key issues; indeed, Part 1 essentially amounts to a book within the book, effectively presenting a most readable foundation course on the whole topic of pavement engineering.

The concluding summary of Chapter 1 also explains the logic that a knowledge of *Materials* (Part 2) must be acquired before *Design* (Part 3) is attempted, whilst in turn *Design* must be understood for successful *Maintenance* (Part 4) or rehabilitation to be undertaken. Readers of this journal might be particularly interested in the extensive coverage of construction materials in Part 2, which includes whole chapters on each of unbound materials (soils and aggregates), hydraulically-bound materials (various concretes), asphalt and reinforcing products (such as membranes). These chapters are each fine summaries of their respective materials and, whilst more comprehensive information and guidance might be available in separate dedicated publications, the chapters in this book are written with the particular pavement applications in mind. Also, in keeping with the rest of the book, these summaries are complete with highly explanatory diagrams and other supporting elements.

Materials engineers will find additional satisfaction with the *Design* and *Maintenance* parts of the book, where there is extensive explanatory reference to the roles of materials properties and performance. It will be apparent from this review of materials that the book does not really cover stone pavements, such as those which continue in service in many cities in the northern parts of the UK, where granite setts are familiar pavement surfaces in cities like Edinburgh, and many other parts of the world. There is just a short mention (2 pages) of 'block paving', including stone setts, curiously in Chapter 18, which is entitled 'Non-standard pavements'. Given the resurgence in stone pavements, especially for prestige developments, this section could probably have been helpfully more extensive or have made reference to authoritative specialist guidance.

Overall, this is an exceptional textbook that will be invaluable for students and practising engineers, as well as being a readable and interesting account for those merely interested in broadening their knowledge about an underestimated yet extremely commonplace aspect of civil engineering construction. Dr Nick Thom is to be congratulated on producing this impressive work, alongside his duties lecturing on Highway, Railway and Airfield Engineering to the fortunate students at Nottingham University, not to mention his contrasting interests in unrelated subjects including languages, history and archaeology. I have no hesitation in commending this book to readers.

Dr Ian Sims

Downloaded from ftp.nowpublishers.com/jcoma/article-pdf/169/6/312/2479813/jcoma_15_00028.pdf by guest on 28 September 2026