

Book review

DURABILITY OF CONCRETE AND CEMENT COMPOSITES.

C. L. Page and M. M. Page (eds), Woodhead, Cambridge, 2007.
ISBN 978-1-8557-3940-6, £135, 404 pp.

Concrete remains the dominant construction material around the world and there is a wide variety of other important building elements and products based on cement. The need for durability of these materials is self-evident, yet the reputation of concrete is blemished by the disfiguring deterioration to be seen all around us, much decidedly avoidable and caused by poor practice, but some resulting from mistakes borne of weaknesses in our knowledge. Chris Page and Mary Page have put together a timely and serious updating review of this topic, which will be of great value to practitioners, as well as students and researchers.

I am always wary of edited books with enticing titles, because the contents do not always do justice to the front cover. However, such initial concern was quickly dispelled on opening this particular book, which is clearly the successful result of a measured endeavour to provide a thorough, integrated and fully up-to-date treatment of concrete durability. The editors set the scene in an entertaining introductory chapter, ranging from the durability potential that is demonstrated by the historic use of concrete to the new pressures and demands of the twenty-first century, the latter succinctly encapsulated by 'the need to create sustainable construction products that are expected to fulfil their intended functions, remaining in serviceable condition for very long periods with only minimal maintenance before being recycled efficiently'.

There is an impressive team of chapter authors, most of whom are well known to me and all of whom are rightly respected research specialists in their various fields. As a result, the chapters are each written with authority and readers can be confident of receiving the very latest information and thinking on each topic. The authors and editors have together produced

readable text, which explains complex subjects in an easy manner and is well supported by abundant excellent diagrams and appropriate (although only black and white) photographs. Each chapter also provides the reader with a large number of references, enabling the text to be presented as a digestible summary, but also be the starting-point in an exhaustive study for those needing to explore a particular issue in depth.

In their introduction, the editors explain that, 'continuing uncertainty over key microstructural features of cement-based materials that affect the development and continuity of the pores of different size ranges within them' has been one of the major difficulties in making progress with an understanding of concrete durability over the past half century. For this reason, the first substantive chapter is devoted to 'a state-of-the-art review of the pore structure and pore solution chemistry of cement-based materials', and is a masterful start prepared by Professor Sidney Diamond, an internationally acknowledged expert in the subject.

Subsequent chapters deal either with the major issues associated with concrete degradation—including dimensional stability and cracking, chemical attack, corrosion and protection of steel reinforcement, the influence of aggregates, and cold weather performance—or with particular materials: prestressed concrete, fibre-reinforced cement composites and polymer-cement composites. Each chapter is a self-contained treatise, but an admirably detailed index also allows the book to be used for quick reference purposes.

I enjoyed reviewing this splendid book and am very happy to recommend its purchase and use by everyone involved in, or even just interested in, the production and/or investigation of all types of cementitious material.

IAN SIMS