Book review

Properties of Concrete, 5th edn

A. M. Neville. Pearson Education, Harlow, UK, 2011, ISBN 9780273755807, £84.99, 872 pp.

This book is the standard reference for the study of concrete. This is not a book that would normally be read right through; however, the reviewer can recall doing exactly that with a previous edition in the early 1980s, while still working on site prior to returning to academia to study for a PhD. Since that time, the reviewer has made regular reference to the successive editions to find out about a vast number of different topics related to concrete. It appears that many others are similarly using this book because Neville states in the preface that during the course of almost half a century it has sold over half a million copies, including versions translated into 12 languages.

This reviewer's copy of the fourth edition states that it was intended to be the last, and the preface of the new edition acknowledges this, but then states that the rapid changes in standards have made a new one necessary. The new edition also includes new topics such as delayed ettringite formation, self-compacting concrete and thaumasite sulfate attack. Neville explains that he has not included a section on 'sustainability', giving the reason that 'if sustainability of concrete as a material (distinct from a structure made of concrete) is to ensure durability, then of course, this is of great importance'. The book includes two chapters on durability. The reviewer agrees that filling a few pages with yet more graphs showing the carbon footprint of cement would not have added to the book. There is ample coverage of cement replacement materials.

Neville has retained many of the references from previous editions despite their age. On the subject of references he states

I find that our pool of knowledge of value to designers, contractors and suppliers is not greatly increased by a paper co-authored by six people without much coordination or generalization. Nor are papers describing the behaviour of concrete incorporating fly ash from a single source of value to the concrete community at large, the main benefit being commercial or personal.

The structure of the book is the same as previous editions, starting with chapters on cement, other cementitious materials and aggregates, and then moving to fresh concrete, admixtures, strength and curing. The effect of temperature and elasticity shrinkage and creep are then considered, followed by two chapters on durability. Finally, the discussion moves to tests on hardened concrete, concrete with particular properties (i.e. special concretes) and mix design. In other words, as the title suggests, it covers all the properties of concrete.

Looking in detail at the new section on self-compacting concrete, it is found to consist of just one page and states that the appropriate viscosity is achieved by a 'controlling agent'. Viscosity modifying admixtures are not listed in the index or discussed in the chapter on admixtures. Possibly it is not possible to keep a volume of 872 pages fully up-to-date in all respects.

The book refers equally to American, British and European standards with most graphs showing both MKS and Imperial units.

Peter Claisse