Book reviews

Manual of ready-mixed concrete

J. D. Dewar and R. Anderson

Glasgow, Blackie and Son Ltd, 1988. 228 × 152 mm. pp. xiv, 241. Typeset, illustrated, paperback. ISBN 0 216 92007 8. Price £19.95.

Almost all structural concrete in the UK comes ready-mixed. Therefore the purchaser ought to be just as knowledgeable about ready-mixed concrete as he is with his familiar site-mixed material. Yet suppliers of ready-mix have refined the techniques of concrete production to levels which rarely apply to site mixing and have developed sophisticated control systems unknown to most site personnel. Perhaps through a fear of the unknown, some users harbour suspicions of what the producer, out of sight, may sometimes get up to.

With the *Manual of ready-mixed concrete* we are presented for the first time with the opportunity of going behind the scenes and learning the mysteries of the trade. In many respects the joint authors—distinguished specialists in both the technology and the dissemination of information relating to ready-mixed concrete—succeed in stripping away the mystique. The chapter on mix design, for example, constitutes a detailed exposé of specialized expertise which would not be available to the layman through other routes. Later sections covering the practical use and supervision of ready-mixed concrete on site are similarly well-structured, comprehensive and revealing.

It could be, however, that the target readership should reasonably be expected already to have a grasp of the general principles of concrete technology and therefore a manual on ready-mixed concrete should perhaps start from that premise. In this sense the first three chapters get the book off to a slow start. What we find here is a sort of condensed version of Professor

Neville's *Properties of concrete*—that is, *all* concrete, not specifically the ready-mixed variety.

There exist so many facets to concrete technology that this opening section on basic principles may appear inordinately long, comprising more than one third of the whole text whilst, paradoxically, some of the topics within it are despatched with extreme conciseness. Of course it is useful to have a materials review element in such a work, particularly as it provides an update on composite cements, alkali-silica reaction and many more issues of current concern. What the first three chapters generally lack however, is an explanation of the relevant connection between the accepted technological statement and its application to the production, technical or commercial functions of the ready-mixed concrete industry.

Thereafter the book becomes more interesting in that it is purposeful, progressing logically from mix design, quality control and compliance testing through to the practical aspects of ordering ready-mixed concrete in accordance with a specification, and the ways in which it is used on site.

A helpful explanation of the tortuous evolution of the UK industry's trade and technical organisations leads us into the current state of quality assurance and the end of the book.

Written in an easy style, the text is on the whole very accessible and is liberally complemented with clear graphic work. One or two little skeletons are kept securely in their cupboards during our guided tour

behind the scenes, but for the most part it is presented with openness.

The authors are free from any arrogance or false prejudice and it comes as a special relief not to find a patronizing attitude being taken towards the Specifier and the Contractor. Indeed the book plays a positive and supportive part in developing a greater awareness of a fascinating industry.

Even if that industry is depicted as flawless then by

reading how things ought to be done (rather than how some things occasionally are done) the conscientious producer of ready-mixed concrete may benefit from this manual just as much as the user.

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Supplementary cementing materials for concrete

Editor: V. M. Malhotra

Ottawa, CANMET, 1987, 223 × 152 mm. pp. viii, 428, Typeset, illustrated, paperback, ISBN 0 660 12550 1. Price \$18.50 Cdn in Canada, \$22.50 Cdn outside Canada. (A French version is due for publication in Autumn 1988.) Publication reference SP86-8E.

To the best of our knowledge, this is the first book to include basic data on all of the commercially viable cement replacement materials. Not content with this, the book goes further and deals with the performance of non-ferrous slags. Authors of the individual chapters have been carefully chosen for their subject knowledge and this shows through in the text.

It is usual for technical books to be badly out of date by the time they are published but the criticism does not seem appropriate here.

No book on supplementary cementing materials would be complete without a chapter on natural pozzolans, although they have been largely supplanted by other materials in many countries. Mehta covers the topic from the pozzolana of Mt Vesuvius used by the Romans to the blended cements of China and of Mexico where one third of the total cement produced contains natural pozzolan. The various types of pozzolans are described and the roles of thermal activation, both positive and negative, are explained. Performance of natural pozzolans is discussed in terms of ASTM tests and in terms of porosity, a special interest of Professor Mehta. The use of natural pozzolans to control durability problems is also discussed.

Chapter 2, Fly ash in concrete, by Berry and Malhotra has been drawn from a previous CANMET publication (SP 85-3). For those who have not invested in the earlier book, this should not be taken as a criticism, since the chapter deals very well with the topic and at a more practical level than Dr Helmuth's recent book on fly ash in cement and concrete. However, all assertions are backed by appropriate references, 224 in all. The chapter is in effect a book within a book.

The Norwegian authors, Sellevold and Nilsen, review the use of condensed silica fume (CSF) in Chapter 3. The review deals with the properties of CSF concrete in the fresh and hardened state, with

emphasis on durability. We are fortunate that this chapter is in English since most of the 400 reports from which it is drawn are in Norwegian. About three quarters of the 161 references listed seem to be in English.

Hooton describes the production and processing of blastfurnace slag, the importance of vitrification, composition and fineness of grinding. The influence of activators and autoclave curing are discussed. This short chapter is supported by 109 references, 15 figures and two tables of typical analyses.

The editor of the book, Dr V. M. Malhotra, deals with the properties of concrete containing ground granulated blastfurnace slag (ggbfs). He compares the properties of fresh and hardened concretes produced using ggbfs from pelletized and granulated sources at various replacement levels. The influence of admixtures, basic properties of ggbfs concrete and standard requirements are discussed.

Douglas deals specifically with durability aspects of ggbfs concrete. Sulphate attack, salt diffusion, sea water resistance and resistance to freezing and thawing are addressed along with reduction of expansion due to alkali-silica reaction. The influence of carbonation is examined over a wide range of water/cement ratios and years of exposure. Douglas emphasizes the importance of permeability and the need for further research.

In the final chapter Douglas and Malhotra combine to review the properties of non-ferrous slags used in cementitious binders. Most of the work reported seems to be of an exploratory nature directed towards use as cement replacement in mine backfill.

For those interested in supplementary cementing materials this book is very good value.

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