Book review

IN-SITU CONCRETE INDUSTRIAL HARDSTANDINGS.

J. Knapton. Thomas Telford, London, 1999, ISBN 0 727 728 27X

This book appears limited to external concrete hardstandings and their sub-bases and does not consider the other associated requirements normally undertaken by designers and contractors. It is claimed to be the first single source of detailed guidance for designers, specifiers and constructors of *in situ* concrete industrial hardstandings. This claim ignores the long history of Concrete Society publications on the design and construction of ground-floor concrete slabs for most applications. The book makes reference to the Society's 1988 Report 34 although this was updated in 1994. The book draws from a variety of BS Standards and other references but the reader in many instances will need to consult them to determine how the extracts should be used. This need, plus the absence of advice on a number of practical issues such as tolerable deviations, protection against climatic damage at early age, the relative merits of the alternative reinforcements and thicknesses, commercial options and workability tests other than slump tests, shows it not to be a single source of guidance.

The sequence of chapters dealing with materials, construction, loading, design, and then case studies and data makes it a difficult read, particularly as some topics are not dealt with where one is expecting to find them.

The Introduction makes some general criticisms about past practices all of which I would not accept as applicable. After stating the need for joints, it states: 'If a concrete hardstanding were unrestrained, it would be able to contract or expand in an unimpeded fashion so no stresses would be generated'. Were this to be the case then there would be few problems with concrete hardstandings. Later in the book there are descriptions of thermal- and moisture-induced stresses and the need to control them by the provision of joints.

Materials has only six pages of text about concrete and gives no advice on the economics and reliabilities of the different means of specifying concrete and obtaining quality assurance. There are inconsistencies in the suggestions for w/c ratio between Chapters 1 and 5 and no warning that any addition of water on site must be strictly controlled. For steel reinforcing

bars and mesh there is no mention of the assurance provided by the use of CARES certified sources. The data on steel and polypropylene fibres and the properties obtained by their use is stated as provided by their manufacturers and test programmes are described. There is an Agreement Certificate giving an authoritative assessment of the use of Fibremesh polypropylene fibres and it would be more assuring for that to be quoted. It is odd to have surface finishes under Materials.

Construction is more concerned with factors that designers should take into account such as the locations of joints, rather than the practicalities of construction, although there are three pages on levelling. There are no warnings about controlling the level of the top reinforcement when operatives are allowed to work on it as shown in illustrations. Why no mention of the difficulties of construction and how these should be overcome or of tolerable deviations?

Loading illustrates the variety of handling equipment in common use on hardstandings and the loadings these impose. Manufacturers usually provide the necessary data as they develop new plant.

Design only refers to the design of the slab and base using the formulae from the work of Westergaard in 1947 whereas there has been more recent work to which the Concrete Society refers in Report 34. Adequate drainage provisions are needed but no design solutions are offered.

Case studies and data could have been more conveniently provided had they been in the main chapters.

A specification of industrial hardstandings follows for the removal and replacement of some concrete hardstanding.

The book has not provided any new knowledge nor does it offer any new approaches for the design and construction of concrete hardstandings. It has restricted application as it is not comprehensive in the information it provides and thus the reader is unlikely to dispense with the supporting documents.

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