Progress in Concrete Technology

Reviewed by Bryant Mather, Chief, Structures Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.


This review by another past secretary of ASTM Committee C-9 is of a volume put together by another prominent member of Committee C-9. The volume deals with concrete materials, but goes quite a ways beyond the materials themselves. It, as is stated in its preface, “brings together 19 comprehensive state-of-the-art papers on recent developments in concrete technology. Internationally recognized experts were invited by CANMET to contribute papers on selected topics considered of special interest to the aggregate, cement and concrete industry. The first paper gives a preview of the technical challenges that will be facing the concrete industry by the year 2000. Subsequent papers are loosely grouped under the subject headings of aggregates, special cements, admixtures, new types of concretes and testing methodology. Together they provide a current state-of-the-art picture of the material and methods that will be used by the industry to meet those challenges.”


Readers of this journal do not need words from this reviewer to appreciate that the appropriate persons to summarize the state-of-the-art in most of the areas covered were chosen to do so; many of the authors represented have published books or other extended treatments of the subjects dealt with here. Seldom has there been an opportunity to have so many facets of concrete technology updated concurrently by such a group of authoritative writers.

Readers in the United States may find Berry's review of “Concrete Made with Supplementary Cementing Materials”—meaning slags and pozzolans—especially worthy of study now that the EPA has published its “Guideline for Federal Procurement of Cement and Concrete Containing Fly Ash” (Federal Register 45 [226], 76906-76921, 20 Nov. 1980).

When I got my copy of this book I wrote to the editor and expressed the view that it was an excellent companion volume to ASTM STP 169B and that those who had and used one should have and use the other with it. He suggested that the useful place to say this was in a review in Cement, Concrete, and Aggregates.

The book is printed from manuscripts submitted by the authors and is not provided with hard covers. This is one reason why its list price is less than one-third that of STP 169B even though it has only 86 fewer pages. It is well bound, the quality of the paper and printing is good, and the illustrations, while relatively few, are quite legible. For obvious reasons, I found few typographical errors attributable to the publisher, one of which is the error in spelling Jim Dikeou's name in the table of contents on page vi.

Performance of Concrete in Marine Environment

Reviewed by Philip D. Cady, Professor of civil engineering, The Pennsylvania State University, University Park, Pa.

REFERENCE: Malhotra, V. M., Ed., Performance of Concrete in Marine Environment, American Concrete Institute, Detroit, 1980, 627 pp., Publication SP-65, $25.95 to ACI members, $32.95 to nonmembers.

The performance of concrete in marine environments, historically a longtime matter of concern, has assumed added importance in recent years because of construction associated with dramatically increased offshore oil and gas production. In August 1980, a five-day international conference was held in Canada under the auspices of several Canadian and U.S. organizations on
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the performance of concrete in marine applications. The volume that is the subject of this review is a compendium of 33 papers presented at that conference.

One discovers here a wide range in the character of the individual papers in terms of quality—a common feature of symposia volumes. However, the number of papers that provide innovative insights regarding performance, evaluation, and amelioration certainly renders this volume worthwhile. Particularly impressive is the thoroughness and number of papers that deal with long-term testing and the long-term performance of existing marine structures. By way of example, one especially excellent paper (Wiebenga) covers carbonation, rebar corrosion, chloride penetration, cracking, and surface weathering based on examinations of maritime structures ranging in age from 3 to 64 years. While there is not exactly a dearth of information on long-term performance elsewhere in the technical literature, it is most certainly a subject that requires continuous attention. Our ability, after all, to incorporate future durability into our present construction is strongly influenced by past experience.

Excellent papers highlight three other well-covered aspects of the problem area: (1) reinforcement corrosion (Browne), (2) mechanisms of seawater of attack (Conjeaud), and (3) accelerated durability testing and evaluation (Nishibayashi et al). Other areas that are adequately to well-covered include the effects of concrete mixture variables (especially cement type), overview of the current status of the problems involved in the area, and the needs for further research. Major weaknesses, in terms of breadth of coverage, occur with the subjects of repair of deteriorated structures and protective systems. However, there may be some justification for this in that each of the latter subjects could justify a symposium in its own right.

In summary, Performance of Concrete in Marine Environment is a worthwhile addition to the reference shelf of anyone engaged in activities involving maritime concrete structures. Useful applications relative to other problem areas, such as deicing chemical attack of concrete and reinforcement in roadway structures, is also indicated.

New Concrete Technologies and Building Design

Reviewed by John H. Faber, President, Faber Associates, Shepherdstown, W.V.


This book is based on the conference of the same title, organized in November 1978 by the Concrete Industry Conference Centre Limited in conjunction with the Concrete Society, the Institute of Building, and the Faculty of Building. It is a review of all the papers presented at the conference by eleven experts on the various phases of concrete usage ranging from architectural design in concrete to concrete development in the future. The review of the papers and the discussions presenting the pros and cons of the major areas of the concrete industry are excellent.

The book and the conference were an attempt to survey and summarize the whole range of recent developments in the concrete industry and to present some of the techniques that will become an increasing part of the construction of buildings, particularly in England and Europe, over the next few years. There is also an assessment of some of the mistakes made in the last two or three decades and some of the areas that can be improved.

The eleven topics covered with a good number of references are: (1) architectural design in concrete, (2) thoughts on design in concrete, (3) use of fluid concrete, (4) sprayed concrete, (5) pumping concrete, (6) developments of foundation techniques for high-rise structures, (7) continuous casting of concrete, (8) developments in Europe, (9) G.R.C. and other laminar concrete, (10) facing materials and techniques, and (11) concrete development in the future.

This book is easy to read and informative to anyone in the architectural concrete industry.