

## BOOK REVIEWS

### Expansive Cement

*Reviewed by John E. Kelly III, Sales and Marketing Manager, Netzsch Inc., 119 Pickering Way, Lionville, Pa. 19353. Member of ASTM.*

**REFERENCE:** *Expansive Cement, SP-64*, American Concrete Institute, Detroit, 1980, 324 pages, \$23.55 to ACI members, \$30.60 to nonmembers.

I would like to point out that I have no prior knowledge in the area of concrete usages; however, I found this collection of papers easily understandable with all the work very clearly presented. Anyone with knowledge of a few technical terminologies will have no difficulty understanding the material presented.

The book is directed at pointing out the advantages of expansive concretes and succeeds in this. It is prejudiced in that no work is presented that might be contradictory. This could be because no such work exists; however, this is not stated by the author.

I believe that by presenting the work of several people with a variety of applications, the credibility of the information is enhanced. Since the book is a collection of papers presented on expansive concretes, the diagrams and pictures are sufficient to depict what the author desires to be shown.

I found the overall mechanical aspects of the book to be very satisfactory.

### High Strength Concrete

*Reviewed by Sandor Popovics, Professor, Department of Civil Engineering, Drexel University, Philadelphia, Pa. 19104. Member of ASTM.*

**REFERENCE:** Shah, S. P., Ed., *High Strength Concrete*, University of Illinois at Chicago Circle, Chicago, 1980, 226 pages, no listed price.

The term "high-strength concrete" is used in this publication as a concrete with compressive strength higher than 41.369 MPa (6000 psi) for normal-weight aggregates and 34.474 MPa (4000 psi) for lightweight aggregates. According to the Preface, "high-strength concretes represent a rather recent development" but this statement is not quite accurate. After all Bryant Mather quoted more than 15 years ago several sources having obtained compressive

strengths of concrete over 103.421 MPa (15000 psi), including one from 1910. The new development in this area is rather the commercial availability of high-strength concrete produced economically with traditional methods of concrete technology, which is what the editor meant anyway.

High-strength concrete is finding increasing use, especially in the construction of tall buildings, despite the fact that the knowledge of the distinct features of the mechanical behavior of such concretes is lagging behind. To remedy the situation, a workshop was held with the financial help of the National Science Foundation. More specifically, the stated purposes of the workshop were: (1) to develop a statement on research needs and aspects related to concrete and high strength concrete; (2) to establish a dialogue among materials scientists, materials engineers, researchers with an interest in mechanics, and structural engineers; and (3) to identify and synthesize various research approaches and different levels at which concrete and concrete structures are examined. Even a quick thumbing through the book reveals that the authors and the editor achieved these goals very well indeed.

The book covers in detail the contents of four sessions including summaries of the oral discussions. Session I deals with the micro-mechanics of achieving high-strength concrete in writings by F. Wittmann, C. Brown, and S. Diamond (pp. 8-42). Session II on material behavior under various types of loading contains writings by K. Gerstle, Z. Bazant, and W. Chen (pp. 43-95). V. Bertero, W. Schnobrich, and J. Jirsa contributed to Session III on inelastic behavior of structural elements (pp. 96-178). Session IV deals with special design features appropriate for high-strength concrete through writings by P. Zia, A. Naaman, and A. Nilson (pp. 179-219).

As a rule, the writings are well conceived. Not only do they present the state of the art on the subjects but they also analyze and synthesize the findings by others, often draw conclusions not intended by the original authors, and present new results. If one forces himself to find weaknesses in the book, as reviewers are required to do so by tradition, perhaps the lack of an extra session on the nature and role of the composition of concrete for high strength could be mentioned.

In brief, the book reflects the activities of a successful workshop for which credit should be given both to the contributors and the editor. It contains plenty of useful information concerning the science of concrete, and, therefore, is a meaningful contribution to the literature on concrete.