Superstructure Bridge Design (Volume 1)

The primary objective of this book is to provide a number of practical design examples and basic concepts for the design of precast, prestressed concrete bridge superstructures. The theory section concentrates on design aspects specific to precast/prestressed concrete bridge beam and girder design. Separate sections for the AASHTO LRFD Bridge Design Specifications and the AASHTO Standard (LFD) Specifications are provided. The hand calculations section contains an in-depth set of computations for the critical design issues related to ultimate moment, service load criteria, and vertical shear. The AASHTO Code referencing of equations is also included. Three design examples are illustrated using the AASHTO Standard (LFD) Bridge Specifications along with two design examples using the AASHTO LRFD Specifications.

Leap Software, Inc., P.O. Box 16827, Tampa, Florida, 33687-6827, 2000, 246 pp., $89.95.

Substructure Bridge Design (Volume 2)

Similar to Volume 1, the primary objective of this book is to provide practical design examples and basic concepts for the analysis and design of bridge substructures. The theory section concentrates on analysis and design aspects specific to bridge substructures including both piers and abutments. Separate sections for the AASHTO LRFD Bridge Design Specifications and the AASHTO Standard (LFD) Specifications are provided. The book contains three complete examples of typical design calculations for different types of bridge piers. The design examples cover both multicolumn and hammerhead pier designs. Two examples are in accordance with the AASHTO LRFD Specifications, and one example is in accordance with the AASHTO Standard (LFD) Specifications.

Leap Software, Inc., P.O. Box 16827, Tampa, Florida, 33687-6827, 2000, 178 pp., $69.95.

Fiber Reinforced Cements and Concretes (Volume 3)

Colin D. Johnston

The concept of reinforcing brittle materials like cement paste, mortar or concrete with fibers has been known since ancient times. For example, baked clay reinforced with straw was used to build mud huts, and mortars for masonry were reinforced with animal hair. The wide variety of fiber types available in the 20th century has led to the development of a specialization in modern concrete technology based upon creating composites and incorporating one or more types of fiber into the matrix of cement paste, mortar or concrete. This book summarizes and simplifies the results of a considerable body of research and practical experience with a wide range of fiber reinforced cementitious composites.

Gordon and Breach Science Publishers, PTT, P.O. Box 566, Williston, VT 05495-0080, 2000, 238 pp., $90.00.

Water and Concrete: A Love-Hate Relationship

Adam Neville

Water is not just a liquid used to make concrete; it is involved in the whole life of concrete, for good or evil. Concrete in the environment is usually in contact, permanent or intermittent, with water, liquid, or in vapor form. Most actions on concrete in service, other than loading, involve water and concrete and even multifaceted interactions between these two materials. I do not recall ever seeing a discussion, or even enumeration, of all of these relations in a single paper. And yet, this would be appropriate because water and concrete are two materials most used by mankind, i.e., water in the first place and concrete in the second. I shall give the relevant quantities at the end to this article that will briefly explore the connection, or indeed the numerous connections, between concrete and water. This should dispel the notion that concrete is a dry subject!

Concrete International, V. 22, No. 12, December 2000, pp. 34-38.

Use Less Cement

Bryant Mather

With increasing interest in high performance concrete, some investigators are examining why concrete is not always providing the service expected of it. Among other conclusions being drawn, there is a belief that the principal reason for this problem is the practice of adding too much cement to concrete. Emphasis is being placed on the bad effects of too great a cement content, including increased cracking due to shrinkage and thermal gradients. A recommendation to improve the performance of concrete in transportation is to modify those aspects of the specifications that permit and encourage the use of high volumes of cement to get high-early strengths, and which are not actually required.

Concrete International, V. 22, No. 11, November 2000, pp. 55-56.

Long-Term Mechanical Properties and Durability Characteristics of High Strength/High Performance Concrete Incorporating Supplementary Cementing Materials under Outdoor Exposure Conditions

V. Mohan Malhotra, Min-Hong Zhang, Paul H. Read, and John Ryell

This paper presents the results of tests performed on the compressive strength of high strength/high performance concrete at ages up to 10 years, the modulus of elasticity after 2, 4, and 10 years, and the carbonation depth and the resistance of concrete to chloride-ion penetration after 10 years. The tests were performed on drilled cores taken from the structural test elements simulating concrete columns. In addition, the compressive strength of cylinders cured in a moist room and in the field, as well as the compressive strength of drilled cores taken from the structural elements (walls) at ages up to 4 years was determined.

ACI Materials Journal, V. 97, No. 5, September-October 2000, pp. 518-525.