

REVIEWS OF CURRENT PUBLICATIONS

Bridge Analysis Simplified

Baidar Bakht and Leslie G. Jaeger

Presents a simplified theoretical approach to the analysis and design of many bridge types and includes sample calculations for both longitudinal and transverse moments and shear. Additional calculations are included for span continuity, deck slab overhangs, edge stiffening, vehicle edge distance and truss floor systems for various patterns of load distribution. Charts and other design aids are included to complement the numerical design examples.

McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, New York 10020, July 1985, 294 pp., \$49.95.

Corrosion of Metals in Concrete

ACI Committee 222

In January 1985 ACI Committee 222 published a report describing the most up-to-date knowledge on the corrosion of metals, especially steel, in concrete. Separate chapters are devoted to the mechanisms of corrosion, protective measures, identification of corrosive environments and active corrosion, and remedial measures. Salient points of that report are described in this article.

Concrete International: Design & Construction, V. 7, No. 9, September 1985, pp. 56-59.

Prestressed Tanks

Troels Brondum-Nielsen

Due to bending moments at the base, problems arise in circular, cylindrical, prestressed concrete tanks whose walls are fixed at the base. Literature has repeatedly

reported that these problems may be solved by placing the vertical tendons eccentrically. However, this does not make the vertical tendons more efficient than concentric tendons. This paper suggests another design method, which results in insignificant concrete tensile stresses and a considerable savings in materials.

ACI Journal, Proceedings V. 82, No. 4, July-August 1985, pp. 500-509.

Corrosion Prevention by Protective Coatings

C. G. Munger

Written specifically for nontechnical persons, this guide presents examples of good and bad design; correct and incorrect surface preparation; types and characteristics of failures, their causes, and ways to avoid them. Over 570 figures and color photographs of typical coating problems are also included.

National Association of Corrosion Engineers, P.O. Box 218340, Houston, Texas 77218, 1985, 531 pp., \$60 NACE members, \$75 non-members.

Test of Post-Tensioned Flat Plate With Banded Tendons

Ned H. Burns and Roongroj Hemakom

This investigation was undertaken to observe the strength and behavior of a one-half scale, nine panel, flat plate with a banded arrangement of unbonded tendons. The test slab had three 10 ft spans in each direction and 2.5 ft overhangs on two edges with the nominal thickness measured at 2.75 in. The slab was designed with a low P/A stress level of 135 psi. The overall performance of the test

slab at service load level (50 psf) was quite satisfactory. The minimum bonded reinforcement of 0.15 percent of the column strip area provided very good crack control up to the failure load.

Journal of Structural Engineering, ASCE, V. 111, No. 9, September 1985, pp. 1899-1915.

Static and Fatigue Tests on Partially Prestressed Beams

M. H. Harajli and A. E. Naaman

The fatigue behavior of 12 different sets of partially prestressed concrete beams was experimentally investigated. All beams were rectangular, 9 x 4.5 in. (229 x 114 mm) in cross section, simply supported on a 9 ft (2.74 m) span and loaded in four-point bending.

Each set consisted of two identical specimens designed with the same input parameters. One control beam was tested under static load up to ultimate. The second beam was tested in cyclic fatigue at a constant load range varying between 40 and 60 percent of the ultimate load capacity of the static specimen.

The six partially prestressed and the three fully reinforced beams survived 5,000,000 cycles without suffering fatigue failure. The three fully prestressed beams which were loaded beyond cracking failed, respectively, at 1.21×10^6 , 2.17×10^6 , and 1.94×10^6 cycles.

Journal of Structural Engineering, ASCE, V. 111, No. 7, July 1985, pp. 1602-1618.

Calcium Chloride: A New Look at an Old Friend

Arthur R. Anderson and Roger W. Black

Current limits do not allow prestressed concrete to have water soluble chloride ion content exceeding 0.06 percent by weight of cement at 28 days. This low allowable limit makes the use of calcium chloride as

an accelerated curing admixture unattractive since the small quantities permitted render no useful effect. These requirements appear to be based on meager research and not on field experience. This paper presents results of field experience and laboratory tests supporting a proposal that chloride limits for precast, prestressed concrete be set at the same level as those for conventionally reinforced concrete.

Concrete International: Design & Construction, V. 7, No. 9, September 1985, pp. 35-41.

Lessons from an Exciting Decade of Concrete Sea Structures

Ben C. Gerwick, Jr.

A decade of offshore concrete structure development has passed. What have been the accomplishments? The implications of development? What lessons are there for application to future projects? These and other questions relating to marine concrete structures are posed and answered by the author who has been extensively involved in design/construction of such projects.

Concrete International: Design & Construction, V. 7, No. 8, August 1985, pp. 34-37.

Chloride-Induced Corrosion

Bernard Erlin and William Hime

Based on a study of many structures that have suffered from damage due to chloride-induced corrosion of reinforcing steel, it appears that even the more stringent limits on chlorides now being proposed may be too lenient. Further, only determinations of total chloride may provide a basis for reasonable assurance against future corrosion.

Concrete International: Design & Construction, V. 7, No. 9, September 1985, pp. 23-25.