

REVIEWS OF CURRENT PUBLICATIONS

Handbook of Structural Concrete

F. K. Kong, R. H. Evans,
E. Cohen, F. Roll (Editors)

This book provides an authoritative reference work on the current state of the art and science of structural concrete. Some 52 international authors have contributed information and guidance on the material properties, analysis, design, production, construction, maintenance and demolition of concrete structures.

The following chapters are included: (1) Looking into the future, by T. Y. Lin and Philip Y. Chow; (2) Lessons from the past — Achievements and failures, by S. C. C. Bate; (3) Design philosophy and structural decisions, by Sir Alan Harris; (4) Selection of materials to improve performance of concrete in service, by D. Campbell-Allen and H. Roper; (5) High strength concrete, by Edward G. Nawy and P. N. Balaguru; (6) Fiber reinforced concrete, by Surendra P. Shah; (7) Structural lightweight concrete, by Thomas A. Holm; (8) Polymers in concrete, by David W. Fowler; (9) Admixtures for concrete, by Raymond J. Schutz; (10) Failure criteria for concrete, by D. W. Hobbs; (11) Elasticity, shrinkage, creep and thermal movement of concrete, by Bernard L. Meyers and Eugene W. Thomas; (12) Structural elements — Strength serviceability and ductility, by Edward G. Nawy; (13) Structural performance as influenced by detailing, by H. P. J. Taylor; (14) Fire resistance — Design and detailing, by B. K. Bardhan-Roy; (15) Earthquake-resistant structures, by Mark Fintel and S. K. Ghosh; (16) Design for fatigue, by John M. Hanson; (17) Composite construction in steel and concrete, by Gajanan M. Sabnis; (18) Precast concrete: Its production, transport and erection, by J. G. Richardson; (19) Prestressed concrete and partially prestressed concrete, R. F. Warner; (20) Plastic design methods of analysis and design, by M. W. Braestrup and M. P. Nielsen; (21) Computer applications 1: Use of large computers, by R. J. Allwood and P. J. Robins; (22) Computer applications 2: Use of small computers, by J. W. Bull; (23) Models for structural concrete design, by Richard N. White; (24) Environmental design, by Henry J. Cowan and T. Jumikis; (25) Maintenance, repair and demolition of concrete

structures, by Jack R. Janney; (26) Concrete construction in hot climates with particular reference to the Middle East, by D. J. Pollock and E. A. Kay; (27) Concrete production, quality control, and evaluation in service, by Robert E. Philleo; (28) Caisson foundations, by A. J. Mitchell; (29) Bins and silos, by John E. Sadler, Mostafa H. Mahmoud, F. Thomas Johnston and Abdul Q. Ghowrwal; (30) Reinforced concrete chimneys, by A. B. Cassidy and M. Hartstein; (31) Piles and piled foundations, by M. J. Tomlinson; (32) Shell roofs, by C. B. Wilby; (33) Nuclear reactors, by M. F. Kaplan; (34) Offshore concrete structures, by S. J. Fjeld and C. T. Morley; (35) Water-retaining structures, by B. P. Hughes; (36) Bridges, by A. C. Liebenberg; (37) Tall buildings 1, by A. Coull and B. Stafford Smith; (38) Tall buildings 2, by Y. K. Cheung; (39) Structural design: Safety, economy, and performance, by G. M. J. Williams; (40) Structural design: National code specifications for concrete and reinforcement, by J. Rygol; (41) Structural design: practical guidance and information sources, by J. C. Steedman.

McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, New York 10020, 1983, 1968 pp., \$85.00.

Engineering of Pile Installations

Frank M. Fuller

With the aid of examples and step-by-step procedures, the author discusses the design, engineering, installation, and inspection of piles. The following chapters are included in the book: (1) Introduction; (2) Types of piles; (3) Pile material; (4) Pile installation equipment; (5) Pile installation; (6) Special types of piles; and (7) Pile load testing. In addition, several appendices provide selected references, hammer data, pile data, inspection forms, examples of principal-sum payment methods, and other miscellaneous information.

McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, New York 10020, July 1983, 286 pp., \$39.50.

Load and Resistance Factors for Concrete Design

James G. MacGregor

An overview of the methodology used and the assumptions made in deriving load factors and resistance factors ϕ proposed for future editions of the ACI Building Code are presented. The load factors are based on those incorporated in ANSI A58.1-82. (Refer also to article by MacGregor et al, reviewed in May-June 1983 PCI JOURNAL, p. 179.)

ACI Journal, Proceedings, V. 80, No. 4, July-August 1983, pp. 279-287.

Review of ACI Code for Design With High Strength Concrete

Paul Zia

The current code provisions of ACI 318-77 are reviewed relative to structural design with high strength concrete. Those provisions, being affected by the properties of high strength concrete, are identified and examined in light of currently available information. Where appropriate, possible modifications to design provisions are suggested. Also identified are those provisions for which revisions are needed when additional research data are obtained.

Concrete International: Design & Construction, V. 5, No. 8, August 1983, pp. 16-20.

14,000 Psi in 24 Hours

Theodor A. Bürge

High strength concrete is considered to be concrete with a compressive strength higher than 6000 psi (42.8 MPa). An extremely strong and dense concrete can be produced with a 24-hour compressive strength higher than 14,000 psi (100 MPa) with conventional methods of production, curing at room temperature, and cement-based binders and admixtures. The binder is made of portland cement, silica fume, superplasticizer, and an alkali-free accelerator. Variations of the mix proportioning and corresponding test results are presented.

Concrete International: Design & Construction, V. 5, No. 9, September 1983, pp. 36-41.

Time-Dependent Analysis of PC Cable-Stayed Bridges

M. S. Khalil, W. H. Dilger, and A. Ghali

A computer method is presented for the analysis of cable-stayed prestressed concrete bridges for time-dependent effects of creep and shrinkage of concrete and relaxation of prestressing steel. Nonlinear behavior due to change of geometry and change of stiffness arising from bending by axial forces is included.

Journal of Structural Engineering, V. 109, No. 8, August 1983, pp. 1980-1996.

Partial Prestressing

Report of a Concrete Society Working Party

The history of partial prestressing, its relation to limit state design, and its advantages and disadvantages are presented. The behavior and mechanics of partially prestressed concrete elements are discussed in detail. Recommendations on overall design requirements safety factors, serviceability and detailing are made. Two worked examples of the design of partially prestressed concrete members are given. A series of design charts for rectangular and flanged sections and an extensive reference list are also given.

Concrete Society Technical Report No. 23, Concrete Society, Terminal House, Grosvenor Gardens, London SW1W0AJ, England, May 1983, 28 pp.

Radial Joints for Precast Segmental Tunnel Linings

A. Williams

This report gives details of tests carried out on two types of radial joint for use with precast concrete tunnel-lining segments: (1) concave-convex or knuckle joints; (2) flat-ended joints with deformable inserts. Failure modes and ultimate loads are discussed, and design recommendations made.

Technical Report 552, Cement and Concrete Association, Wexham Springs, Slough SL3 6PL, England, August 1982, 33 pp.