Reviews of Current Publications

BOOKS

MAN THE BUILDER—Gosta E. Lindstrom.

This thoroughly documented volume, first published in Sweden, provides insights into the techniques of building that have evolved from prehistoric days to the present. Mr. Lindstrom discusses both the simple and bold design in building: reed houses and giant cathedrals, simple tombs and the pyramids, fences and huge dams. The interrelationship of buildings from different cultures, caused by diverse economic, social and political forces is viewed in context with its contemporary society. (McGraw-Hill Book Co., 330 West 42nd St., New York, N.Y. 10036, 275 pp., $16.00.)

MANAGEMENT OF TECHNICAL FIELD OPERATIONS—L. L. Farkas.

This is the first work to treat the management of such operations as a separate area of management, explaining the specific practices, problems and solutions involved. Various types of field organizations are examined and guides provided for the field supervisor or manager to use for different field functions. The aim of this volume is threefold: to instruct the newcomer to technical field operations, to provide a guide for the supervisor transferred to the field from an in-plant situation, and to broaden the management capabilities of the existing field supervisor. (McGraw-Hill Book Co., 330 West 42nd St., New York, N.Y. 10036, 257 pp., $12.50.)

SEA-DREDGED AGGREGATES FOR CONCRETES—Editor E. F. G. Lewis.

This is the proceedings of a symposium held at Fulmer Grange, Slough, Buckinghamshire, England, and sponsored by the Sand and Gravel Association of Great Britain. Papers were presented describing the scope of the industry, introducing the technical aspects of the use of sea-dredged aggregates, outlining the principles of specifications and presenting the latest available research data. Care should be excercised in the use of sea-dredged aggregates in prestressed concrete, as salts are definitely injurious to the prestressing reinforcement. (Cement and Concrete Association, 52 Grosvenor Gardens, London SW1, England, 80 pp., $8.00.)

FINANCIAL MANAGEMENT FOR ARCHITECTURAL FIRMS.

In order to serve clients and the public, an architectural firm must be managed as a profitable, going concern able to attract top professional talent and resources. This book includes a guide to profit planning and yearly profit goals, project budgeting and billing rates, payroll and cost accounting, compensation to principals and staff, and other subjects. Accounting procedures in this book can be done manually and later adapted to computerized data processing. (American Institute of Architects, AIA Documents Division, 1735 New York Ave., N.W., Washington, D.C. 20006, 163 pp., $12.00 or $9.60 to AIA members.)

NATIONAL CONFERENCE ON CONCRETE AGGREGATES.

This book is a proceedings volume of a meeting held in Hamilton, New Zealand, June 1969. Some of the papers presented were: aggregate quality control, structural lightweight concrete, expanded lightweight aggregate for structural concrete, aggregates for precast and prestressed concrete, and decorative aggregates for textured finishes to precast and in-situ concrete. (New Zealand Portland Cement Association, 126 The Terrace, Wellington 1, New Zealand, 258 pp., $6.00 NZ.)

BUILDING CODE OF THE CITY OF NEW YORK—Frederick S. Merritt, Consultant.

This volume now includes all major legislation passed through May 1, 1970, and has been called the most up-to-date version of city building codes by the New York Society of Architects. Referenced as a standard is ACI 318-63, with some changes. (Van Nostrand Reinhold, 450 West 33rd St., New York, N.Y. 10001, 860 pp., $14.95.)

PLANNING AND ESTIMATING UNDERGROUND CONSTRUCTION—Albert D. Parker.

Emphasizing the contractor's approach to underground construction, this book describes the construction methods and equipment used to excavate and line tunnels, shafts and underground chambers. Also discussed is the preparation of cost estimates and includes a sample contractor's estimate. Extensive treatment of the various types of equipment needed is included along with discussion of concreting plants, lining materials and geology investigations. (McGraw-Hill Book Co., 330 West 42nd St., New York, N.Y. 10036, 228 pp., $15.00.)

SYMPOSIUM—DESIGN OF CONCRETE STRUCTURES FOR CREEP, SHRINKAGE AND TEMPERATURE CHANGES.

Shrinkage and creep must be considered in the calculation of stresses and deformations, and above all from the structural standpoint as early in the design concept as possible. This symposium, held in Madrid, Spain, September 17–18, 1970, has the aim of assembling currently applicable rules of design bearing on these problems. Several of the papers of particular applicability to prestressed concrete are: measurements of creep and shrinkage in actual prestressed concrete bridges; long term deflections of cantilevered prestressed concrete bridges; constructive measures for reducing detrimental effects due to creep, shrinkage and temperature; calculation of creep and relaxation effects in prestressed concrete structures; effect of creep and shrinkage in prestressed concrete bridges composed of continuous prestressed girders; a practical method for calculating losses in prestressed concrete structures. (International Association for Bridge and Structural Engineering, Zurich, Switzerland, 332 pp.)

USE OF SMALL MODELS IN DESIGN AND ANALYSIS OF PRESTRESSED CONCRETE REACTOR VESSELS—J. M. Corum and J. E. Smith.

A series of small prestressed concrete reactor vessel models were designed, analyzed, constructed and tested to investigate the suitability of small scale mortar models for determining elastic stress distributions and cracking and failure modes. The close agreement shown between model and prototype behavior points up the potential of small scale models. This study was carried out at Oak Ridge National Laboratory by Union Carbide Corp. for the U.S. Atomic Energy Commission. (Clear-

inghouse, U.S. Department of Commerce, Springfield, Virginia 22151, 259 pp., $3.00.)

CONCRETE PIPE DESIGN MANUAL.

This comprehensive design manual contains all technical and design aids required to select the type, shape, size and strength of concrete pipe. Design criteria covering hydraulics of sewers and culverts, live loads, earth loads and supporting strengths were compiled and presented in figures and tables to eliminate detailed computations. Tables and figures on hydraulic capacities and loads were developed by computer analysis from existing equations and are not to be found in other references. (American Concrete Pipe Association, 1501 Wilson Blvd., Arlington, Virginia 22209, 381 pp., $12.50.)

EARTHQUAKE ENGINEERING—Robert L. Wiegel.

This volume presents methods that may be utilized in the design and analysis of earthquake-resistant structures. Soil mechanics, wave forces, ground motion measurements, concrete structures, bridge construction and tsunamis are among the many valuable topics. Professor T. Y. Lin has authored a chapter on prestressed and precast concrete structures that may well be one of the most definitive ever written. Charts, graphs and actual case histories all add to the value of this chapter for anyone designing in prestressed concrete in a seismic region. (Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632, 528 pp., $25.00.)

CONCRETE CONSTRUCTION HANDBOOK—Edited by Joseph Waddell.

Fully realistic, work-oriented solutions to practically any concrete construction problem are contained in this compilation of material by noted authorities. The chapter on prestressed concrete is a complete overview of the processes of production. Casting beds and forming, tensioning and detensioning, and handling are all described in detail. The same chapter contains a description of the post-tensioning process as well as circumferential and chemical prestressing. The chapter on precast concrete is also quite useful and informative. (McGraw-Hill Book Co., 330 West 42nd St., New York, N.Y. 10036, 918 pp., $27.50.)

INTRODUCTORY SOIL MECHANICS AND FOUNDATIONS—George B. Sowers and George F. Sowers.

This book could serve as a valuable review of accepted and well-used engineering practices or as a primer for the novice. All aspects of the topic from the nature and engineering properties of soil and rock to earth pressures, deep foundations and earth mass stability are extremely well handled. (The Macmillan Co., 866 Third Ave., New York, N.Y. 10022, 556 pp.)

BUILDING CONSTRUCTION COST DATA 1970.

The 28th annual edition of Means estimating guide is again available for estimators, engineers and architects. Each major item is broken down into its component parts and analyzed. Some of the new items this year include form liners, salamanders, tarpaulins and wall guards. Detailed and accurate building costs of over 8000 items are included. (R. S. Means Co., Inc., Duxbury, Massachusetts 02332, 210 pp., $4.50.)

DODGE ESTIMATING GUIDE FOR PUBLIC WORKS CONSTRUCTION.

This book has been prepared as a guide for contractors, estimators, engineers and public works officials

who have at their disposal less than the required resources, information and technical assistance to evaluate specifications, construction methods, equipment productivity, economics of construction and comparative material prices. All necessary items are present for preparation of a complete bid. (McGraw-Hill Information Systems Co., 330 West 42nd St., New York, N.Y. 10036, 229 pp., $14.95.)

INDUSTRIAL SAFETY HANDBOOK—Editor William Handley.

This volume is based on the chief causes of accidents in all industries but its findings are applicable to any given industry. The decisive role of education and training in accident prevention is stressed. This means training everybody, from the managing director to the newest employee, to identify occupational hazards, to be aware of them throughout the working day, and to observe every necessary precaution. (McGraw-Hill Book Co., 330 West 42nd St., New York, N.Y. 10036, 475 pp., $22.50.)

U.S. PUBLICATIONS

TEMPORARY BYPASS BRIDGE DESIGNED FOR SALVAGE—Alfred R. Pagan.

Two of the three main structural components of this bridge—precast prestressed box girders and pile caps—will be salvaged and reused when the permanent structure is finished. The beams are 3 ft. wide by 17 in. deep and 30 ft. long. They have two 10½-in. circular voids and are prestressed using 19 ½-in. dia. strands. The temporary bridge is 300 ft. long and will release enough prestressed beams to construct three or four short-span county bridges. (*Civil Engineering*, Vol. 40, No. 3, March 1970, pp. 51–53.)

LONG PRESTRESSED PILES—E. W. Alley.

This article is a description of prestressed concrete piles, 175 ft. long, which were driven for the new Lone Star Cement plant in Seattle, Washington. The piles were fabricated and installed in two sections by use of a special splice. Initial predrilling and internal jetting were required, after which the piles were hammered to obtain specified penetration. (*Civil Engineering*, Vol. 40, No. 4, April 1970, pp. 50–52.)

FABRICATION, HANDLING AND ERECTION OF PRECAST CONCRETE WALL PANELS—ACI Committee 533.

The report covers plant facilities, molds, proportioning, reinforcement, surface finishes, curing, handling techniques, loading, storage, connections and erection. Special discussion is presented covering esthetic results. Recommended tolerances are presented. (*Journal of the American Concrete Institute*, Vol. 67, No. 4, April 1970, pp. 310–340.)

PRESTRESSED ROCK ANCHORS AND SHOTCRETE FOR LARGE UNDERGROUND POWERHOUSE—Michael Buro.

The Hongrin underground pumped storage station in Switzerland employs prestressed rock anchors and shotcrete lining in its underground powerhouse, 450 x 100 ft. in plan and with an arched ceiling 90 ft. high. This is among the first excavations of such a large cross section to use this technique. Excavation began in small longitudinal galleries following the contours of the arched ceiling; the galleries were made large enough to permit drilling and installing rock anchors, but small enough to minimize scaffolding and bracing. Other advantages of this excavation technique include less rock overbreak, lower labor costs

and improved crew safety. (*Civil Engineering*, Vol. 40, No. 5, May 1970, pp. 60–64.)

FOREIGN PUBLICATIONS

ANCHORAGE AND PRESTRESS TRANSMISSION—Ake Holmberg and Stan Lindgren.

The three main subjects dealt with in this report are the anchorage length required by cold-drawn reinforcing bars, the transmission of prestressing force, and the anchorage length for prestressed tendons. The report is based on tests. The hypothesis is put forward that the permissible stress in the tendons at bending failure is equal to the prestress after losses plus a stress characteristic for the type of tendon used multiplied by the ratio of the total bond length to the diameter of the prestressing steel. (The National Swedish Institute for Building Research, Box 27, S-102 52 Stockholm 27, Sweden, 32 pp.)

STRENGTH AND STRUCTURE OF CONCRETE CAST IN DEEP FORMS—Jitendra Bhargava.

The aim of the investigations summarized in this report was to study the influence of curing conditions, thickness of the element, strength of concrete used and presence of reinforcement on the experimental specimen. A significant improvement in the strength of concrete in a wall or wall unit, particularly in its top part, was obtained by delayed vibration combined with a static loading on top of the wall. (The National Swedish Institute for Building Research, Box 27, S-102 52 Stockholm 27, Sweden, 28 pp.)

BEARING WALLS AND THEIR BEHAVIOUR.

A summary of an international symposium devoted to the problems of bearing walls made from large panels is the subject of this article. General problems such as safety and testing as well as specific problems such as the behavior of walls subjected to different loads are discussed in the article. (*Build International*, Vol. 3, No. 4, April 1970, pp. 107-110.)

THE PROPERTIES OF CEMENT PASTE COMPACTED UNDER HIGH PRESSURE—C. D. Lawrence.

Cement, compacted under high pressure and hydrated, is produced as a material with properties that are normally associated with certain plastics and metal alloys. Given a mass production run, the basic material costs are within reason. This report presents the manufacturing techniques used and sets forth the essential characteristics of the material. (Cement and Concrete Association, 52 Grosvenor Gardens, London SW1, England, 21 pp., £1.)

FULL SCALE TESTS ON THE MANCUNIAN WAY ELEVATED ROAD—R. G. Tyler.

An investigation of the long-term strains that have occured in the precast concrete units of the Mancunian Way have showed that the limestone concrete has a favorable coefficient of expansion. This report details the results of this investigation and the effects that it might have on future operations. (Institution of Civil Engineers, Great George St., Westminster, London SW1, England, Proceedings, Supp. Vol., Paper 7196 S, 1969, 27 pp.)

DESIGN OF BUILDINGS MADE FROM BOX UNITS—P. J. Bronnikov.

The author, an architect and chief of a research institute charged with the design of buildings from modular blocks, describes the great progress made in Russia with this concept. Apartments, hotels, health resorts, and tall buildings are all being

constructed by a fully mechanized factory production system. An impressive overview of the solution to one of Russia's most immediate problems—housing—is contained in this article. (*Build International,* Vol. 3, No. 5, May 1970, pp. 142–147.)

SKELETON STRUCTURES IN CZECHOSLOVAKIA.

This article contains a description of the activities of the National Corporation Konstruktiva of Prague which over the past ten years has been concentrating on the development, design and construction of precast skeleton structures. These have main beams running transversely or longitudinally. This system is described along with practical examples of its application. (*Industrialised Building Systems and Components,* Vol. 6, No. 9, September 1969, pp. 49–50.)

PROPOSED SPECIFICATION AND PROPOSED CODE OF PRACTICE FOR PRESTRESSING ANCHORAGES—Australian Prestressed Concrete Group, report by Anchorages Committee.

This report has been produced to provide control and understanding of the design and use of prestressing anchorages. Design requirements, manufacture and testing, gripping efficiency and anchorage efficiency tests, use, jacking, and production control tests comprise the main body of the report. A specification, code of practice and safety precautions are also included. A comprehensive and long needed report. (Australian Prestressed Concrete Group, printed by Cement and Concrete Association of Australia, 147-151 Walker St., North Sydney, Australia, 33 pp.)

FATIGUE OF CONCRETE AND ITS EFFECT UPON PRESTRESSED CONCRETE BEAMS—F. Sawko and G. P. Saha.

The paper reviews the extensive literature on fatigue of concrete and summarizes the most important conclusions. Fatigue hardening of the compressive zone and fatigue softening of the tension zone are examined in detail, and the authors' tests to verify these effects are described. It is concluded that, with a load factor of two specified in the Code of Practice for Prestressed Concrete, fatigue is never likely to be a design criterion for strength. (*Magazine of Concrete Research,* Vol. 20, Number 62, March 1968, pp. 21-30.)