

BOOK REVIEWS

Building Design and Construction Handbook

Reviewed by Thomas F. O'Connor, AIA, FASTM, Smith, Hinchman & Grylls Associates, Inc., Detroit, MI 48226.

REFERENCE: Merritt, F. S., Ricketts, J. T., *Building Design and Construction Handbook* (Fifth Edition), McGraw-Hill, Inc., New York, 1994, ISBN: 0-07-041596-X, 1420 pp., \$96.50.

It is always nice to see an old friend in new clothes. Unfortunately, only part of the new set of clothes is of modern design. The fifth edition appears to have been updated in part from previous editions with some sections appearing to have been left relatively unchanged in terms of technology and references.

In general, this book is still a good one-volume overview of basic information on many topics associated with the building industry. The book is divided into 19 segments, with sections devoted to topics such as "Building Systems," "The Building Team," "Building Materials," and "Structural Theory." Additional sections describe structural steel, cold-formed steel, concrete, and wood construction, followed by various system description sections for walls, floors, ceilings, and roofs. Mechanical, plumbing, electrical, and vertical circulation systems are described followed by sections on project management, surveying, and cost estimating.

The authors have updated the book further by including information, unfortunately not consistently, on the latest recommended practices in areas such as global competition, environmental impact, energy efficiency, and the health, welfare, and safety of building occupants.

Examples of current sections are: "The Building Team—Managing the Building Process," a very good overview, and "Protection Against Hazards," which describes topics that include risk management and protection against water and fire hazards. Good overviews are provided for the sections on: "Structural Theory," "Soil Mechanics" and Foundations," and for "Structural Steel,"

"Cold-Formed Steel," "Concrete," and "Wood Construction." The last sections of the book on "Construction Project Management," "Surveying," and "Estimating" provide comprehensive and current general information.

An example of a section that lacks, in part, current technology or references is the section on "Building Materials." The "Window Glass" portion references obsolete Federal Government standards in lieu of the current ASTM standards and makes no mention of insulating glass, heat-strengthened glass, low-emissivity, or reflective coatings for glass. The authors reference "polished plate glass," a process of glass manufacturing that was replaced by the more efficient and less costly float glass process a number of years ago.

The related section on "Wall, Floor and Ceiling Systems," in particular the part on "Glazing," briefly describes insulating glass as factory-sealed double glazing. This section also lists obsolete standards for determining the thickness of glass rather than the current ASTM standards used by the glazing industry. The parts on "Curtain Walls" and "Window Types" are deficient in adequately representing the general content, current technology, and degree of sophistication of curtain walls and windows available today.

In general, the bibliographies of various sections are neither as consistent nor as comprehensive and current as they should be for the overview format of this book. For example, the "Joint Seals" bibliography lists only two references, one of which is over 20 years old and no longer current, having been replaced in the last five years by at least six books or other industry technical publications. Also, not all sections have a bibliography, which is necessary to assist the reader interested in further research. The "Roof Systems" section, however, has a good current bibliography as well as a helpful listing of industry organizations. That format would have been beneficial for all sections of the book.

While in college, I referred to the first edition of this book often as I learned about building design and construction. For those who currently need an overview of building construction in the form of a desktop reference, this book is, in part, useful. Unfortunately, those parts of the book that are not current or could have been more comprehensive will not be recognized by a student or inexperienced reader.

BOOK REVIEWS

The Physics Quick Reference Guide

Reviewed by Donald R. Petersen, PhD, Greenleaf Associates, Midland, MI 48641-1785. Dr. Petersen is also Editor-in-chief for the Journal of Testing and Evaluation.

REFERENCE: Cohen, E. R., *The Physics Quick Reference Guide*, American Institute of Physics, Woodbury, NY, 1996, ISBN: 1-56396-143-1, 200 pp., \$30.00.

This book is an outgrowth of *A Physicist's Desk Reference* (1986), published as the second edition of the handbook *Physics Vade Mecum* (1981). It is the expanded first chapter of the earlier volumes.

Cohen is the acknowledged authority on physical constants, and in this 200-page book provides a masterful discussion of measured quantities, symbols, units, conversion factors, and standards. He gives a remarkably clear description of the basis for systems of units, and the linking of various systems to each other. For example, you may finally understand, as the reviewer did, the infamous "electromagnetic" and "electrostatic" systems and the merged "symmetrical" Gaussian system, in their several rationalized and nonrationalized forms.

A useful chapter is devoted to the recommended symbols for physical (and engineering) quantities, with a table of about 300

entries, including units. Advice on the use of type styles with these symbols (upper and lower case, italics, bold face, sans serif, sub- and superscripts) is provided. Another chapter is given over to the precise physical constants, including the fundamental constants (based on the 1986 CODATA recommendation. A revised recommendation is expected in 1996.)

There is an authoritative chapter that talks about the International System of Units (Système International d'Unités), usually abbreviated SI, with a discussion of its physical bases. There are lists of SI base units, derived units, and derived units with special names. The prefixes used in SI are given, along with their pronunciations. (Did you know that the factor 10^{24} has the prefix yotta [yôt' a]?)

Two chapters are spent on the formulas of physics and of engineering physics, and two on mathematical formulas and probability and statistics. There is also a chapter on properties of matter (density, viscosity, surface tension, vapor pressure, compressibility, and the like.)

There are relatively few typographical errors, notable ones being a compositor's blunder on page 2, section 1.2; page 69, section 5.1.4, where some subscripts appear to be missing; page 115, section 6.4, where point 2 should read, "From 3.0 K to 24.5561 K . . ." and point 3, "From 13.8033 K (TPH) to 1234.93 K . . .," and page 131, where in Table 7.5 the densities of the organic liquids seem to be in units of g/cm^3 (unstated, and incompatible with the other entities.)

Altogether, this is a most useful and interesting book, and one to which I refer almost every day.