

P R E F A C E

This book presents the basic principles of estimating the time and cost of construction projects. To prepare an accurate estimate the estimator must perform a careful and thorough analysis of the work to be performed. The analysis includes the type and quantity of work, type and size of equipment to be used during construction, production rates of labor and equipment to install the work, and other job-site conditions that are unique to the project that can impact the time and cost of construction.

This book emphasizes the thought process that is required of the estimator to analyze job conditions and assess the required labor, equipment, and method of construction that will be necessary to perform the work. To assemble a complete estimate for bid purposes, the estimator must combine his or her knowledge of construction methods and techniques into an orderly process of calculating and summarizing the cost of a project.

Estimating is not an exact science. Knowledge of construction, common sense, and judgment are required. Experienced estimators agree that the procedures used for estimating vary from company to company, and even among individuals within a company. Although there are variations, fundamental concepts that are universally applicable do exist. The information contained in this book presents the fundamental concepts to assist the reader in understanding the estimating process.

In preparing this fifth edition, the author has retained the fundamental concepts of estimating that have made this book successful. Numerous example problems have been added to illustrate new construction methods and the various techniques of preparing cost estimates. Throughout the book, the example problems are presented in a consistent format, beginning with quantities of materials and production rates through pricing of labor, material, and equipment.

Many of the chapters have extensive revisions. The Conceptual Cost Estimating chapter has been expanded with additional emphasis on preparing early estimates. The Highways and Pavements chapter has been completely rewritten to include modern equipment and illustrative examples of preparing cost estimates for asphalt and concrete pavements.

This revised edition of the book has three new chapters: Bid Documents, Estimating Process, and Computer Estimating. The reader is introduced to those aspects of the contract document that specifically apply to preparing estimates. The new chapter on Estimating Process presents the total estimating process, including development of cost databases, establishment of estimating procedures, and retrieving costs from completed projects for use in preparing future estimates. A discussion of assessing and assigning contingency is also covered in this chapter.

A new chapter on computer estimating is presented and a CD-ROM of HeavyBid/Express is included with this book. This chapter begins with a discussion of the advantages and disadvantages of spreadsheets and progresses to commercial estimating software. Throughout this chapter helpful insights are presented in the use of computers for preparing cost estimates. The tutorial on the CD-ROM assists the reader in the process of computer estimating.

The author would like to thank Heavy Construction Systems Specialists (HCSS) for permission to include their HeavyBid/Express software with this book. In particular, a special thanks to Mike Rydin of HCSS for his assistance in developing the new chapter on computer estimating.

The author would also like to thank Dr. Dennis Luckinbill and Dr. Mohammad Najafi for their assistance in providing information and editing the new material on trenchless technology: microtunneling and horizontal directional drilling.

McGraw-Hill and the author would like to thank the following reviewers for their many comments and suggestions: Stuart Anderson, Texas A&M University; Daniel Farhey, University of Dayton; Jesus de la Garza, Virginia Tech; William Maloney, University of Kentucky; Cliff Schexnayder, Arizona State University; Raymond Werkmeister, University of Kentucky; and Janet Yates, San Jose State University.

Finally, the author greatly appreciates the patience and tolerance of his wife, Jana, for her support and encouragement during the writing and editing phases in producing this fifth edition.

Garold D. Oberlender, Ph.D, P.E.