
Read Free Mechanical Estimating Methods Takeoff And Pricing For HVAC And Plumbing

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4ENXL7 - GREGORY AHMED

The essential, authoritative guide to providing accurate, systematic, and reliable estimating for construction projects—newly revised Pricing and bidding for construction work is at the heart of every construction business, and in the minds of construction consultants' poor bids lead to poor performance and nobody wins. New Code of Estimating Practice examines the processes of estimating and pricing, providing best practice guidelines for those involved in procuring and pricing construction works, both in the public and private sectors. It embodies principles that are applicable to any project regardless of size or complexity. This authoritative guide has been completely rewritten to include much more contextual and educational material as well as the code of practice. It covers changes in estimating practice; the bidding process; the fundamentals in formulating a bid; the pre-qualification process; procurement options; contractual arrangements and legal issues; preliminaries; temporary works; cost estimating techniques; risk management; logistics; resource and production planning; computer-aided estimating; information and time planning; resource planning and pricing; preparation of an estimator's report; bid assembly and adjudication; pre-production planning and processes; and site production. Established standard for the construction industry, providing the only code of practice on construction estimating Prepared under the auspices of the Chartered Institute of Building and endorsed by a range of other professional bodies Completely rewritten since the 7th edition, to include much more contextual and educational material, as well as the core code of practice New Code of Estimating Practice is an important book for construction contractors, specialist contractors, quantity surveyors/cost consultants, and for students of construction and quantity surveying.

Now in its third edition, this estimating guide offers comprehensive coverage of all aspects of plumbing: Residential, commercial, industrial, and medical systems The most common plumbing materials and methods, subsystems and components Pricing quantities for an estimate and calculating markup Preparing bids Best techniques for using Means Plumbing Cost Data Sample takeoff and estimate forms Includes special sections on change order analysis, estimating for additions, and alterations to existing systems. Also covers budget and assemblies estimating. A complete sample estimate shows you how to perform each step in the estimating process, making it easy to follow the authors' methods.

This comprehensive reference explains everything you need to know about taking off and pricing de-

tailed, unit price construction estimates. The book takes you through every step of the estimating process — from receipt of the plans, to detailed quantity takeoffs and pricing, to bidding strategies, and finally, cost control. Also includes electronic estimating forms you can access to download and customize from the book's own website. Organized for quick reference, the book features: Estimating guidance for every segment of construction by CSI MasterFormat division — the most recognized industry standard for organizing construction projects and costs Checklists and forms to streamline the estimating process What to watch out for — common errors and omissions How to calculate and apply direct and indirect costs, including overhead and profit A complete, fully updated sample cost estimate An appendix with labor hours for common construction operations

Clear, practical and comprehensive, this mechanical estimating manual provides an indispensable resource for anyone involved with estimating mechanical costs on construction projects. Covering time-proven methodologies and procedures, it offers a full range of ready-to-use forms, detailed estimating guidelines, and numerous completed examples. Readers will learn from leading experts how to produce complete and accurate sheet metal, piping and plumbing estimates quickly and easily. Including a wealth of labor and price data, formulas, charts and graphs, it offers clear guidance for use in planning and scheduling work, budgeting, cost control and accounting, and various other aspects of mechanical estimating.

RSMeans Cost Data, Student Edition provides a thorough introduction to cost estimating in a self-contained print and online package. With clear explanations and a hands-on, example-driven approach, it is the ideal reference for students and new professionals who need to learn how to perform cost estimating for building construction. Features include: Commercial and residential construction cost data in print and online formats Complete how-to guidance on the essentials of cost estimating A supplemental website with plans, specifications, problem sets, and a full sample estimate With more than 930 Location Factors in the United States and Canada, the data includes up-to-date system prices for more than 100 standard assemblies and in-place costs for thousands of alternates—making it easy to customize budget estimates and compare system costs. UNIT PRICES (organized in MasterFormat 2010) 1 General Requirements 2 Existing Conditions 3 Concrete 4 Masonry 5 Metals 6 Woods, Plastics & Composites 7 Thermal & Moisture Protection 8 Openings 9 Finishes 10 Specialties 11 Equipment 12 Furnishings 13 Special Construction 14 Conveying Equipment 21 Fire Suppression 22 Plumbing 23 Heating, Ventilating & Air Conditioning 26 Electrical 27 Communications 28 Electronic Safety & Security 31 Earthwork 32 Exterior Improvements 33 Utilities ASSEMBLIES A Substructure

B Shell C Interiors D Services E Equipment & Furnishings F Special Construction G Building Site Work
 REFERENCE INFORMATION Equipment Rental Costs Crews Cost Indexes Reference Tables Square
 Foot Costs

To understand Construction Estimating one must also understand plan reading and construction techniques. This book is designed to teach the construction student these three core skills in equal measure. Using hundreds of plans, sketches, and photos, the book builds case studies of the major construction divisions including concrete, masonry, carpentry, and more. Over forty cases are divided into sections following a specially designed format: Plans: Scale drawings of floor plans, sections, or elevations. Plan Interpretation: The drawings are explained with comments. Scope of the Work: A written description of the boundaries of the work is given for each section. Construction Techniques: The construction processes and their sequence are explained. The Takeoff: A takeoff is shown at the end of each section. This approach helps foster confidence in plan reading, building methods, arithmetic, takeoffs, and estimates. The various products and terms used in the industries of structural steel, doors and hardware, and roofing are defined. The shop drawing process is explained, which is so important in many industries, as well as the role of and difference between manufacturers, fabricators, and suppliers/distributors. The book ends with a study of "front end" documents, including Division 00 General Conditions, AIA 201, and Division 01 General Requirements, and a chapter on Ethics. This textbook can be used to teach a variety of classes including plan reading, construction techniques, and estimating 1 and 2 (takeoffs and pricing).

This manual shows you, in simple, easy -to-understand language, how to calculate the amount of dirt you'll have to move, the cost of owning and operating the machines you'll do it with, and finally, how to assign bid prices to each part of the job. Using clear, detailed illustrations and examples, the author makes it easy to follow and duplicate his system. The book ends with a complete sample estimate, from the take-off to completing the bid sheet. Included in this book: -- How to set up & use an organized & logical estimating system -- How to read plans & specs -- Why a site visit is mandatory - - How to assess accessibility & job difficulty -- How soil characteristics can affect your estimate -- The best ways to evaluate subsurface conditions -- Figuring your overhead -- How to get the information you need from contour maps -- When you have to undercut -- Dealing with irregular regions and odd areas -- Factors for estimating swell and shrinkage -- Balancing the job: spoil & borrow -- Calculating machine owning & operating costs -- The two common methods of estimating earthwork quantities
 How to succeed in the construction business—step-by-step guidelines for estimating To be competitive, contractors and homebuilders need to know how to generate complete, accurate estimates for labor and material costs. This book guides readers through the entire estimating process, explaining in detail how to put together a reliable estimate that can be used not only for budgeting, but also for developing a schedule, managing a project, dealing with contingencies, and ultimately making a profit. Completely revised and updated to reflect the new CSI MasterFormat 2010™ system, the Second Edition of this practical guide describes estimating techniques for each building system and how to apply them according to the latest industry standards. Cost considerations and quantity takeoff and pricing are included for virtually every type of work found in residential and light commercial projects, from demolition, concrete, and masonry to windows and doors, siding, roofing, mechanical and electrical systems, finish work, and site construction. Complete with many new graphics and refer-

ences to professional construction cost databases, the new edition provides experienced contractors and novices alike with essential information on: How to correctly interpret plans and specifications, reflecting updates to contract documents since the first edition Computer estimating techniques and new estimating software for performing quantity takeoff The best methods for conceptual estimating as well as the extremely useful topic of parametric estimating How to allocate the right amounts for profit and contingencies, and other hard-to-find professional guidance How a unit price estimate is built along with labor issues and budgeting for subcontractor work

Construction Engineering Calculations and Rules of Thumb begins with a brief, but rigorous, introduction to the mathematics behind the equations that is followed by self-contained chapters concerning applications for all aspects of construction engineering. Design examples with step-by-step solutions, along with a generous amount of tables, schematics, and calculations are provided to facilitate more accurate solutions through all phases of a project, from planning, through construction and completion. Includes easy-to-read and understand tables, schematics, and calculations Presents examples with step-by-step calculations in both US and SI metric units Provides users with an illustrated, easy-to-understand approach to equations and calculation methods

Pipeline Planning and Construction Field Manual aims to guide engineers and technicians in the processes of planning, designing, and construction of a pipeline system, as well as to provide the necessary tools for cost estimations, specifications, and field maintenance. The text includes understandable pipeline schematics, tables, and DIY checklists. This source is a collaborative work of a team of experts with over 180 years of combined experience throughout the United States and other countries in pipeline planning and construction. Comprised of 21 chapters, the book walks readers through the steps of pipeline construction and management. The comprehensive guide that this source provides enables engineers and technicians to manage routine auditing of technical work output relative to technical input and established expectations and standards, and to assess and estimate the work, including design integrity and product requirements, from its research to completion. Design, piping, civil, mechanical, petroleum, chemical, project production and project reservoir engineers, including novices and students, will find this book invaluable for their engineering practices. Back-of-the-envelope calculations Checklists for maintenance operations Checklists for environmental compliance Simulations, modeling tools and equipment design Guide for pump and pumping station placement

An easy-to-use tool for estimating heating, ventilating, and air conditioning systems, with up-to-date cost data and estimating examples. This all-in-one reference gives you the accepted standards and procedures for takeoff and pricing HVAC systems, as well as piping, plumbing, and fire protection. Includes all of the major mechanical systems in new building construction. The book will show you how to: Evaluate mechanical plans and specs so you can estimate all cost components Measure, quantify, and perform takeoffs for materials, labor, and equipment Identify and correctly apply direct and indirect costs, including overhead and profit Use forms to improve accuracy and efficiency - with electronic forms now available on the book's own website Compare materials and methods and select the most cost-effective way to get the job done Train new estimators with clear instructions for estimating the mechanical trades Make the best use of RSMeans Mechanical Cost Data and RSMeans Plumbing Cost Data Organized for easy reference, the book gives you quick access to whatever as-

pect of mechanical estimating you need. It includes a glossary of mechanical terms and definitions – plus symbols used on mechanical plans, useful formulas, checklists, and conversion tables.

How to succeed in the construction business—step-by-step guidelines for estimating To be competitive, contractors and homebuilders need to know how to generate complete, accurate estimates for labor and material costs. This book guides readers through the entire estimating process, explaining in detail how to put together a reliable estimate that can be used not only for budgeting, but also for developing a schedule, managing a project, dealing with contingencies, and ultimately making a profit. Completely revised and updated to reflect the new CSI MasterFormat 2010™ system, the Second Edition of this practical guide describes estimating techniques for each building system and how to apply them according to the latest industry standards. Cost considerations and quantity takeoff and pricing are included for virtually every type of work found in residential and light commercial projects, from demolition, concrete, and masonry to windows and doors, siding, roofing, mechanical and electrical systems, finish work, and site construction. Complete with many new graphics and references to professional construction cost databases, the new edition provides experienced contractors and novices alike with essential information on: How to correctly interpret plans and specifications, reflecting updates to contract documents since the first edition Computer estimating techniques and new estimating software for performing quantity takeoff The best methods for conceptual estimating as well as the extremely useful topic of parametric estimating How to allocate the right amounts for profit and contingencies, and other hard-to-find professional guidance How a unit price estimate is built along with labor issues and budgeting for subcontractor work

Based on a 15-year successful approach to teaching aircraft flight mechanics at the US Air Force Academy, this text explains the concepts and derivations of equations for aircraft flight mechanics. It covers aircraft performance, static stability, aircraft dynamics stability and feedback control.

Using North America's most recognized construction cost data from RSMeans, this step-by-step guide develops problem-solving skills through over 300 sample problems and exercises. All of the major construction items, including site work, concrete and masonry, wood and metal framing, doors and windows, and more are covered. Access to a password-protected web site is included, which contains the instruction version of RSMeans Cos/Works, the electronic version of RS Means Building Construction Cost Data, and sample building plans and spreadsheets, enabling you to practice creating a complete construction estimate.

A vital resource for pilots, instructors, and students, from the most trusted source of aeronautic information.

Long regarded as the Industry's finest, the Means Illustrated Construction Dictionary is now even better. With the addition of over 1000 new terms and hundreds of new illustrations, it is the clear choice for the most comprehensive and current information. The companion CD-ROM that comes with this new edition adds many extra features: larger graphics, expanded definitions, and links to both CSI MasterFormat numbers and product information.

Simplify the estimating process with the latest data, materials, and practices Electrical Estimating Methods, Fourth Edition is a comprehensive guide to estimating electrical costs, with data provided by leading construction database RS Means. The book covers the materials and processes encoun-

tered by the modern contractor, and provides all the information professionals need to make the most precise estimate. The fourth edition has been updated to reflect the changing materials, techniques, and practices in the field, and provides the most recent Means cost data available. The complexity of electrical systems can make accurate estimation difficult, but this guide contains all the necessary information in one place. An electrical estimate represents the total cost for materials, labor, overhead and profit, but accuracy is virtually impossible without a basic knowledge of the field, and real-world experience in the type of work required. Inaccurate estimates lead to problems with customer satisfaction, which often create payment issues. A thorough, complete, and accurate estimate is in the best interest of all parties involved in the work. Electrical Estimating Methods provides more than just data. Detailed discussions about the work itself help highlight factors that may escape notice, and access to the latest cost data helps tie everything together. Features include: Discussion of current equipment, materials, and processes Means data for both residential and commercial projects Case studies that illustrate best practices Online access to the latest Means data for fast access on the job The book discusses specific situations as well as general practices, and provides comprehensive guidance to the creation of a true, current, estimation of costs. For electrical contractors and estimators, Electrical Estimating Methods contains must-have content that simplifies the estimating process.

Manhours, labor and material costs for all common plumbing and HVAC work in residential, commercial, and industrial buildings. You can quickly work up a reliable estimate based on the pipe, fittings and equipment required. Every plumbing and HVAC estimator can use the cost estimates in this practical manual. Sample estimating and bidding forms and contracts also included. Explains how to handle change orders, letters of intent, and warranties. Describes the right way to process submittals, deal with suppliers and subcontract specialty work. Included in this edition: costs for ASME "H" or "U" stamped, LFUE certified 90% or better green certified boilers, costs for emission sensing and recording equipment for boilers, costs for self-contained roof-top DX air conditioning units, costs for heat recovery ventilators, roof exhaust fans, makeup air units, ventilation exhausters, energy-efficient exhauster arrays, air balance software, LEED certified boilers, residential heat pumps, LEED ce

A Complete Resource for Residential and Light Commercial Contractors -- based on the latest construction materials and methods. Learn how to: read and interpret building plans create an accurate takeoff, using a complete set of working drawings. Each chapter covers a major construction division, such as concrete, masonry and carpentry -- and uses plans, details and tables to illustrate plan reading and takeoff procedures. A checklist for each material division helps ensure that nothing is left out of your takeoff. Includes a complete set of residential plans from Home Planners, Inc., the nation's leading provider of home plans. With a detailed material takeoff, from site work to electrical. With over 160 illustrations, including commercial construction details.

Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The BIM Handbook, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its imple-

mentation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

First published in 2006. Clear, practical and comprehensive, this mechanical estimating manual provides an indispensable resource for contractors, estimators, owners and anyone involved with estimating mechanical costs on construction projects, including a wealth of labor and price data, formulas, charts and graphs. Covering timeproven methodologies and procedures, it offers the user a full range of readytouse forms, detailed estimating guidelines, and numerous completed examples. You'll learn from leading experts how to produce complete and accurate sheet metal, piping and plumbing estimates both quickly and easily. The manual will also be of value to supervisors, mechanics, builders, general contractors, engineers and architects for use in planning and scheduling work, budget estimating, cost control, cost accounting, checking change orders and various other aspects of mechanical estimating.

This pocket-sized book is a concise guide to the basics of estimating construction costs for residential and light commercial building projects. It provides a step-by-step guide to estimating the total cost of a construction project. It takes readers through five phases that lead to a successful estimate: initial assessment, work analysis, programming, costing and cost distribution and summarization. The book's primary targets are small contractors; however, the principles set forth in the book are applicable to all contractors. The book could also serve as a textbook for estimating classes in construction management programs at universities and community colleges. The last section of the book provides useful but not readily available information for estimators on diverse topics, e.g., detailed information about Value Engineering, scheduling, subcontractor selection, bid summarization, and so on. An extensive glossary of construction terms is also included. Readers in all construction capacities will find: * A new, fresh look at the often baffling and deceptive job of estimating construction costs for residential and light commercial construction * How to assess plans, review bonds, and evaluate the site and the project schedule before beginning a cost take-off * How to integrate a cost estimate into a general accounting program for cost management and eventual billing * Incredibly helpful appendix with common construction standards and measurements--from standards for concrete forms, to nail sizes to commercial lumber sizes, and much more!

Industrial Construction Estimating Manual focuses on industrial process plants and enables the contractor, subcontractor, and engineer to use methods, models, procedures, formats, and technical data for developing industrial process plant construction estimates. The manual begins with an intro-

duction devoted to labor, data collection, verification of data, coding, productivity measurement, the unit quantity model, and computer-aided cost estimating. It goes on to provide information on construction materials, database systems, work estimating, computer-aided estimating, detailed labor estimates, bid assurance, and detailed applications to construction. Practical examples based on historical data collected from past installations are also included as well as a detailed glossary, Excel and mathematical formulas, metric/standard conversions, area and volume formulas, and boiler man-hour tables. Industrial Construction Estimating Manual aids contractors, subcontractors, and engineers with a balance-detailed estimating method using the unit quantity model and is an excellent resource for those involved in engineering, technology, and construction estimating. Provides a detailed estimating method using the unit-quantity model to prepare construction estimates Delivers information on construction materials, databases, labor estimates, computer-aided estimating, bid assurance, and applications to construction. Utilizes historical data, from a database of previous similar work, calculates material cost and labor by category, and produces both summary and detailed man-hour and cost estimates.

This easy-to-use reference clearly explains estimating standards and procedures. The book: -- Defines the types and uses of estimates -- Describes components of mechanical systems, with labor and material takeoff -- Provides Sample Estimates using a mechanical building plan as a model

Fluids -- Heat transfer -- Thermodynamics -- Mechanical seals -- Pumps and compressors -- Drivers -- Gears -- Bearings -- Piping and pressure vessels -- Tribology -- Vibration -- Materials -- Stress and strain -- Fatigue -- Instrumentation -- Engineering economics.

Simplify the estimating process with the latest data, materials, and practices Electrical Estimating Methods, Fourth Edition is a comprehensive guide to estimating electrical costs, with data provided by leading construction database RS Means. The book covers the materials and processes encountered by the modern contractor, and provides all the information professionals need to make the most precise estimate. The fourth edition has been updated to reflect the changing materials, techniques, and practices in the field, and provides the most recent Means cost data available. The complexity of electrical systems can make accurate estimation difficult, but this guide contains all the necessary information in one place. An electrical estimate represents the total cost for materials, labor, overhead and profit, but accuracy is virtually impossible without a basic knowledge of the field, and real-world experience in the type of work required. Inaccurate estimates lead to problems with customer satisfaction, which often create payment issues. A thorough, complete, and accurate estimate is in the best interest of all parties involved in the work. Electrical Estimating Methods provides more than just data. Detailed discussions about the work itself help highlight factors that may escape notice, and access to the latest cost data helps tie everything together. Features include: Discussion of current equipment, materials, and processes Means data for both residential and commercial projects Case studies that illustrate best practices Online access to the latest Means data for fast access on the job The book discusses specific situations as well as general practices, and provides comprehensive guidance to the creation of a true, current, estimation of costs. For electrical contractors and estimators, Electrical Estimating Methods contains must-have content that simplifies the estimating process.