Mechanical Estimating Manual

Industrial Piping and Equipment Estimation Manual delivers an invaluable resource for day-to-day operations. Packed full of worksheets covering combined and simple cycle power plants, refineries, compressor stations, ethanol, hydrogen and biomass plants, this reference helps the construction engineer and estimator learn how to create bids where scope and quantity differences can be identified and project impacts estimated. Beginning with an introduction devoted to labor, productivity measurement, estimating methods, and factors affecting construction labor productivity and impacts of overtime, the author then explores equipment through hands-on estimation tables, including sample estimates and statistical applications. The book rounds out with a glossary, abbreviations list, formulas, and metric/standard conversions, and is an ideal reference for estimators, engineers and managers with the level of detail and equipment breakdown necessary for today ' s industrial operations. Includes day-to-day worksheets to help users estimate equipment and piping for any plant or refinery project Presents the comparison method to estimate similarities and differences between proposed and previously installed equipment Helps users understand and produce more accurate direct costs with sample estimates

This comprehensive reference covers the full spectrum of technical data required to estimate costs for major construction projects. Widely used in the industry for tasks ranging from routine estimates to special cost analysis projects, the book has been completely updated and reorganized with new and expanded technical information. RSMeans Estimating Handbook will help construction

professionals: Evaluate architectural plans and specifications Prepare accurate quantity takeoffs Compare design alternatives and costs Perform value engineering Double-check estimates and quotes Estimate change orders FEATURES: This new edition includes expanded coverage of: Construction specialties—green building, metal decking, plastic pipe, demolition items, and more Preliminary or square foot estimating tools Updated city cost indexes to adjust costs—by trade—for 30 major cities Historic indexes to factor costs for economic effects over time Complete reorganization to the newest CSI MasterFormat classification system

This new edition is expanded to include 26 new man-hour tables on compressors, dryers, dampers, filters, coolers, and heaters. This manual eliminates guesswork and enables you to produce fast, accurate equipment installation labor estimates.

Estimator's Man-Hour Manual on Heating, Air Conditioning, Ventilating, and Plumbing

Industrial Construction Estimating Manual

2021 National Painting Cost Estimator

Fundamentals

Walker's Manual for Construction Cost Estimating

Offers coverage of each important step in engineering cost control process, from project justification to life-cycle costs. The book describes cost control systems and shows how to apply the principles of value engineering. It explains estimating methodology and the estimation of engineering, engineering equipment, and construction and labour costs

Mechanical Design Engineering Handbook is a straight-talking and forward-thinking reference covering the design, specification, selection, use and integration of machine elements fundamental to a wide range of engineering applications. Develop or refresh your mechanical design skills in the areas of bearings, shafts, gears, seals, belts and chains, clutches and brakes, springs, fasteners, pneumatics and hydraulics, amongst other core mechanical elements, and dip in for principles, data and calculations as needed to inform and evaluate your on-the-job decisions. Covering the full spectrum of common mechanical and machine components that act as building blocks in the design of mechanical devices, Mechanical Design Engineering Handbook also includes worked design scenarios and essential background on design methodology to help you get started with a problem and repeat selection processes with successful results time and time again. This practical handbook will make an ideal shelf reference for those working in mechanical design across a variety of industries and a valuable learning resource for advanced students undertaking engineering design modules and projects as part of broader mechanical, aerospace, automotive and manufacturing programs. Clear, concise text explains key component technology, with step-by-step procedures, fully worked design scenarios, component images and cross-sectional line drawings all incorporated for ease of understanding Provides essential data, equations and interactive ancillaries, including calculation spreadsheets, to inform decision making, design evaluation and incorporation of components into overall designs Design

procedures and methods covered include references to national and international standards where appropriate

Provides the 300 most useful manhour tables for practically every item of construction. Labor requirements are listed for sitework, concrete work, masonry, steel, carpentry, thermal and moisture protection, doors and windows, finishes, mechanical, and electrical. Each section details the work being estimated and gives appropriate crew size and equipment needed. This new revised edition contains National Estimator, a computer estimating program. This fast, powerful program and complete instructions are yours free on high-density 3 1/2" disk when you buy the book.

Sheet Metal, Piping and Plumbing

Construction Estimating Reference Data

Manhours, Labor and Material Costs for Residential, Commercial, and Industrial Plumbing Heating, Ventilating & Air Conditioning

Rule-of-thumb Cost Estimating for Building Mechanical Systems

Means Mechanical Estimating Methods: Takeoff & Pricing for HVAC & Plumbing, Updated 4th Edition

This practical reference/text provides a thorough overview of cost estimating as applied to various manufacturing industries, with special emphasis on metal manufacturing concerns. It presents examples and study problems illustrating potential applications and

the techniques involved in estimating costs.;Containing both US and metric units for easy conversion of world-wide manufacturing data, Estimating and Costing for the Metal Manufacturing Industries: outlines professional societies and publications dealing with cost estimating and cost analysis; details the four basic metalworking processes - machining, casting, forming, and joining; reveals five techniques for capital cost estimating, including the new AACE International's Recommended Practice 16R-90 and the new knowledge and experience method; discusses the effect of scrap rates and operation costs upon unit costs; offers four formula methods for conceptual cost estimating and examines material-design-cost relationships; describes cost indexes, cost capacity factors, multiple-improvement curves, and facility cost estimation techniques; offers a generalized metal cutting economics model for comparison with traditional economic models; and more.;Estimating and Costing for the Metal Manufacturing Industries serves as an on-the-job, single-source reference for cost, manufacturing, and industrial engineers and as a text for upper-level undergraduate, graduate, and postgraduate students in cost estimating, engineering economics, and

production operations courses.;A Solutions manual to the end-of-chapter problems is available free of charge to instructors only. Requests for the manual must be made on official school stationery.
An Introduction to Mechanical Engineering is an essential text for all first-year undergraduate students as well as those studying for foundation degrees and HNDs. The text gives a thorough grounding in the following core engineering topics: thermodynamics, fluid mechanics, solid mechanics, dynamics, electricals and electronics, and materials scien
Construction Calculations is a manual that provides end users with a comprehensive guide for many of the formulas, mathematical vectors and conversion factors that are commonly encountered during the design and construction stages of a construction project. It offers readers detailed calculations, applications and examples needed in site work, cost estimation, piping and pipefitting, and project management. The book also serves as a refresher course for some of the formulas and concepts of geometry and trigonometry. The book is divided into sections that present the common components of construction. The first section of the books starts with a refresher

discussion of unit and systems measurement; its origin and evolution; the standards of length, mass and capacity; terminology and tables; and notes of metric, U.S, and British units of measurements. The following concepts are presented and discussed throughout the book: Conversion tables and formulas, including the Metric Conversion Law and conversion factors for builders and design professionals Calculations and formulas of geometry, trigonometry and physics in construction Rudiments of excavation, classification, use of material, measurement and payment Soil classification and morphology, including its physicochemical properties Formulas and calculations needed for soil tests and evaluations and for the design of retaining structures Calculations relating to concrete and masonry Calculations of the size/weight of structural steel and other metals Mechanical properties of wood and processing of wood products Calculations relating to sound and thermal transmission Interior finishes, plumbing and HVAC calculations Electrical formulas and calculations Construction managers and engineers, architects, contractors, and beginners in engineering, architecture, and construction will find this practical guide useful for managing all aspects of construction. Work

in and convert between building dimensions, including metric Built-in right-angle solutions Areas, volumes, square-ups Complete stair layouts Roof, rafter and framing solutions Circle: arcs, circumference, segments

National Mechanical Estimator

Mechanical Estimating Manual

2021 Uniform Mechanical Code

Industrial Piping and Equipment Estimating Manual

Mechanical and Electrical Systems

If you need to estimate the cost of plumbing or HVAC systems, this book will be your most reliable guide to figuring the time required for installation and the labor and material cost. You get the in-place cost for all common plumbing and HVAC work in residential, commercial and industrial buildings. Plumbing and HVAC estimators will also appreciate the sample forms, contracts and practical procedures included in this manual. Book jacket.

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 emmission 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-effecient exhauster arrays, air balance software, LEED certified boilers, residential heat pumps, LEED ce

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 introduction 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.

2022 National Plumbing & HVAC Estimator

Rules of Thumb for Mechanical Engineers

Estimator's Electrical Man-Hour Manual

Cost Estimating Manual for Water Treatment Facilities

2022 Total In-Place Costs for Residential, Commercial, Agricultural, and Military Structures

In today's hypercompetitive global marketplace, accurate costestimating is crucial to bottom-line results. Nowhere is this moreevident than in the design and development of new products andservices. Among managing engineers responsible for developingrealistic cost estimates for new product designs, the number-onesource of information and guidance has been the Cost Estimator'sReference Manual. Comprehensive, authoritative, and

practical, the Manual instructsreaders in the full range of cost estimating techniques andprocedures currently used in the fields of development, testing,manufacturing, production, construction, software, generalservices, government contracting, engineering services, scientificprojects, and proposal preparation. The authors clearly explain howto go about gathering the data essential to preparing a realisticestimate of costs and guide the reader step by step through eachprocedure. This new Second Edition incorporates a decade of progress in themethods, procedures, and strategies of cost estimating. All thematerial has been updated and five new chapters have been added toreflect the most recent information on such increasingly importanttopics as activity-based costing, software estimating,design-to-cost techniques, and cost implications of new concurrentengineering and systems engineering approaches to projects. Indispensable to virtually anyone whose work requires accurate costestimates, the Cost Estimator's Reference Manual will be especiallyvaluable to engineers, estimators, accountants, and contractors ofproducts, projects, processes, and services to both government andindustry. The essential ready-reference for the techniques, methods, andprocedures of cost estimating COST ESTIMATOR'S REFERENCE MANUAL Second Edition Indispensable for anyone who depends on accurate cost estimates forengineering projects, the Cost

*Estimator's Reference Manual guidesthe user through both the basic and more sophisticated aspects ofthe estimating process. Authoritative and comprehensive, the Manualseamlessly integrates the many functions--accounting, financial,statistical, and management--of modern cost estimating practice.Its broad coverage includes estimating procedures applied to suchareas as: * Production * Software * Development * General services * Testing * Government contracting * Manufacturing * Engineering * Proposal preparation * Scientific projects * Construction This updated and expanded Second Edition incorporates all the mostimportant recent developments in cost estimating, such asactivity-based costing, software estimating, design-to-costtechniques, computer-aided estimating tools, concurrentengineering, and life cycle costing. For engineers, estimators, accountants, planners, and others whoare involved in the cost aspects of projects, the Cost Estimator'sReference Manual is an invaluable information source that will payfor itself many times over. 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 aspect 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.

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.

The Engineer's Cost Handbook

Perspective Drawing Handbook

Estimating and Costing for the Metal Manufacturing Industries

Estimator's Piping Man-Hour Manual

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.

NOTE TO THE READER: All forms and material that were previously on a CD-ROM that accompanied this book have been moved to the following web site: http://booksupport.wiley.com Tested-and-proven techniques for quick, accurate estimates Here is the first manual that guides engineers, planners, and contractors through the process of estimating the cost of building water treatment facilities. Based on more than eighty years of the two authors' collective experience, the Cost Estimating Manual for Water Treatment Facilities not only enables you to arrive at a dependable estimate, it shows you how to do it quickly with a minimum of information and supporting data. In order to ensure reliability, the authors have compiled and analyzed the results from their own construction cost estimates for more than 500 projects as well as the results from many other engineers and contractors. The manual identifies forty-

three treatment processes, nine types of water treatment plants, plus five additional types of advanced water treatment plants. The authors then demonstrate how to calculate costs for each element, accounting for needed mark-ups and allowances in order to arrive at the total plant construction cost. To help you make your own estimates, the manual provides: Examples of cost estimates for different water treatment processes Historical data from several public agencies Sample tables for 10 mgd and 100 mgd product water flow rates for each type of treatment plant Website access with Excel spreadsheets that enable you to perform estimates using your own data Now that the Cost Estimating Manual for Water Treatment Facilities is available, you no longer have to rely on hunches and anecdotal information; you have a proven, scientific method that leads to reliable estimates.

Man-hours, labor and material costs for all common plumbing and HVAC work in residential, commercial, and industrial buildings. Anyone can quickly work up a reliable estimate based on the pipe, fittings and equipment required for the job. 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. Includes an electronic version of the book with a stand-alone Windows estimating program Free on a CD-ROM.

RSMeans Cost Data, + Website

Estimator's Equipment Installation Man-Hour Manual

An Introduction to Mechanical Engineering: Part 1

Sheet Metal Forming

2017 National Plumbing & HVAC Estimator

A complete guide to estimating painting costs for just about any type of residential,

commercial, or industrial painting, whether by brush, spray, or roller.

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.

Mechanical Estimating ManualSheet Metal, Piping and PlumbingFairmont Press

Cost Manual for Piping and Mechanical Construction

Tools for Managing Project Costs

Occupational Outlook Handbook

Conceptual Cost Estimating Manual

Mechanical Design Engineering Handbook

The author has had wide experience in cost and labour estimating, having worked for some of the largest construction firms in the world. He has made and assembled numerous types of estimates including lump-sum, hard-priced, and scope, and has conducted many time and method studies in the field and in fabricating shops. John S. Page has received the Award of Merit from the American Association

of Cost Engineers in recognition of outstanding service and cost engineering

This manual provides the reader with an accurate and convenient method for estimatig direct labor for general contrsuction work for any given system, plant, or location. Though this book, the reader has a reliable process of obtaining and streamlining an efficent model of operation.

DIVConcisely written text accompanied by more than 150 simply drawn illustrations together demonstrate vanishing points and eye level and explain such concepts as appearance versus reality and perspective distortion. /div

Estimator's General Construction Manhour Manual

Accurate Estimating and Budgeting Using Unit Assembly Costs

RSMeans Estimating Handbook

2022 National Building Cost Manual

Labor Estimating Manual

This reference is designed to bring you up to speed with the latest, most advanced estimating techniques in the industry. You'll find numerous quick-reference tables that eliminate many calculations that you previously did yourself.

Thisbrand–new book provides a thorough introduction to cost

estimatingin a self–contained print and online package. With clearexplanations and a hands–on, example–driven approach, it is theideal reference for students and new professionals who need tolearn how to perform cost estimating for building construction.With more than 930 Location Factors in the United States andCanada, the data includes up–to–date system prices for more than100 standard assemblies and in–place costs for thousands ofalternates making it easy to customize budget estimates andcompare system costs. The book includes a free access code to thesupplemental website with plans, specifications, problem sets, anda full sample estimate.

This manual's latest edition continues to be the best source available for making accurate, reliable man-hour estimates for electrical installation. This new edition is revised and expanded to include installation of electrical instrumentation, which is used in monitoring various process systems.

Building Technology

Construction Calculations Manual

Cost Estimator's Reference Manual

2021 Uniform Mechanical Code (Loose-leaf)

2020 National Plumbing and HVAC Estimator

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 haracteristics 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

This reference provides reliable piping estimating data including installation of pneumatic mechanical instrumentation used in monitoring various process systems. This new edition has been expanded and updated to include installation of pneumatic mechanical instrumentation, which is used in monitoring various process systems.

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

National Plumbing & HVAC Estimator

Pipeline Planning and Construction Field Manual

Estimating Excavation

Manhours, Labor and Material Costs for Residential, Commercial, and Industrial Plumbing, Heating, Ventilating and Air Conditioning