

# Estimating & Bidding for Builders & Remodelers

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By Richard J. Langedyk, Senior Instructor  
Construction Estimating Institute of America



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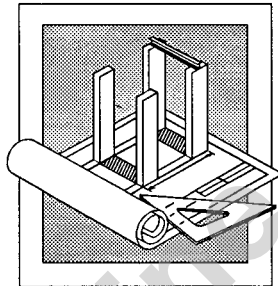
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# Chapter 1

## Get Started Right

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It's been said that construction estimating is more an art than a science. Truly, it's both. Like scientists, estimators collect what they hope is accurate information: precise take-off quantities, exact price quotes and carefully documented costs of completed jobs. But like artists, estimators rely on experience, intuition, judgment, and sometimes, guesses.

Why can't construction estimating be more science and less guesswork? If you've done much estimating, the answer is probably clear. Estimating will never be a science. Every construction project is unique. No single cost can be accurate for all jobs and all bidders. Estimates have to be custom-made for the job, the time, the place and the crew that's going to do the work.

And that's what this book is about: The fine art of accurate construction cost estimating.

---

### **The fine art of cost estimating**

This guide is written for the owners, estimators and project managers in small and medium-sized construction companies. I'll take a scientific approach to estimating when that's possible. I'll show you how to eliminate a lot of the uncertainty in bidding and tip the scales in your favor when that's an option. When it's not, I'll suggest easy ways to limit your risk and reduce your exposure to a major loss.

My goal throughout this book is to help you make a good living as a construction estimator. It's possible. In the U.S., hundreds of thousands of construction cost estimators do just that. If you aren't making a good living now, I expect this book will help you.

---

## Construction Is the Largest Industry

The Small Business Administration has estimated that there are over 500,000 "visible" construction businesses with one or more employees. In addition, there are about 250,000 independent operators in construction. Contract construction is the largest industry in the United States by number of people employed and accounts for between 10 and 11 percent of the gross national product. Most of this work and most of the profits go to the larger firms with 25 or more



employees. Yet there are a large number of smaller firms eager to expand and take on additional business. Since competition in construction is largely price competition, the level of profit for everyone tends to be low. Since many construction companies are thinly capitalized, a low profit margin can result in a disastrous loss if the job doesn't go as estimated. In spite of the low overall profit margins, the growth potential is great because along with high risk goes the potential of high gain.

---

First, I'll explain the basics, how to use the construction documents (the contract and specifications) and create a good material take-off from the plans. That's the subject of the first seven chapters. Beginning in Chapter 8, I'll tell you about more advanced construction cost estimating and bidding techniques.

I'm going to assume that you already know how to read plans. If you haven't developed good plan-reading skills, several books listed at the end of this manual can provide all the practical information and details you need.

The information I present here isn't restricted to any particular construction trade. This book will be as useful to remodeling estimators as it is to general construction estimators. No matter what size your jobs (from \$5,000 to \$5,000,000), no matter what type of work (from foundations to roofing and everything in between), this manual will help you prepare more accurate construction cost estimates.

---

## Sink or Swim in Construction Contracting

I believe there are five key areas that make or break most construction companies. None involve construction skills like driving nails or reading plans. Every construction company has (or can hire) skilled workers and supervisors to do the actual building.

My five key skill areas are almost always the responsibility of the owner (or senior estimator) in a construction company. All five are either a part of the estimating process or influence cost estimates. All affect both profitability and survival of the company.

---

**Five basic skills everyone should master**

Here's my list:

- ▼ Finding and bidding the type of work that's appropriate for your company
- ▼ Making accurate cost estimates
- ▼ Using pricing strategies that reduce your risk of loss
- ▼ Anticipating the bids of your competition
- ▼ Tracking overhead so you know the actual cost of doing business

As you've probably guessed already, the focus of this book is to explain what you should be doing in each of these areas. Your company can probably survive (for a while) without doing anything I recommend here. But follow my advice and you're almost guaranteed to do better than you're doing now. That's my promise. And I hope it's your reason for reading this book.

---

## The Detailed Cost Estimate

Let me begin by making one very important point. Throughout this book I'll be talking about estimates. By that I mean a detailed labor and material cost estimate. That's a list of every work item in the job, with prices for all labor, material and equipment needed to complete that unit of work. There are many other ways to estimate costs. We'll discuss some. But the most accurate estimate is always the detailed labor and material unit cost estimate.

---

**Examples of detailed cost estimates**

What's a unit? Here are some examples:

- ▼ Cubic yards of concrete, purchased and placed
- ▼ Tons of reinforcing steel, purchased and placed
- ▼ Square feet of drywall, hung, taped and textured
- ▼ Square yards of floor covering, including installation

Every general condition (project overhead) item can be estimated by the unit cost. For example, the porta-john you'll need on site costs \$50 a month (including delivery, weekly service and pickup) and you need it for three months. The cost of that work unit is \$150 (3 months times \$50 per month).

If you're bidding a 100,000 square foot building, there may be 1,000 unit cost items in the estimate. The only way to compile an accurate estimate is to find each of those 1,000 cost items. How do you do it?



There's only one answer to that question: by studying the plans, specs and construction documents. Every time you find a cost item, write it down on your take-off sheet. If there are 1,000 items, you'll fill about 1,000 lines on your estimating pad. When your take-off is complete, write in an estimated labor, material and equipment cost on each line. That's detailed cost estimating. It takes time. It's not easy. And it's expensive. But it's the only way I know of to prepare *accurate* construction cost estimates.

There's no such thing as a quick, simple, easy way to estimate construction costs. It takes time, effort and attention to detail. But there are easier, quicker, more consistent ways to estimate costs. I'll cover them, including estimating with a computer. As you may have already discovered, there's a disk in an envelope bound inside the back cover of this book. After we've covered manual (pencil and paper) estimating procedures, I'll give you some practice in writing estimates with a computer.

---

***"Only the best estimators can scope  
out the last 10 percent . . . "***

---

There's a big difference between an acceptable estimate and a truly first class estimate. Most estimators can get within 90 percent of the actual construction cost most of the time. All that takes is attention to detail and hard work. Only the best estimators can scope out the last 10 percent — and maybe spot a problem or major omission that could turn a potential money-maker into a big loss.

Later, in Chapter 4, I'll ask you to examine your own estimating system and compare it to the detailed system I recommend. I'll also suggest some shortcuts that can increase productivity and streamline your estimating procedure, no matter what method you use.

---

## Estimating as a Career



I'm not going to get into the meat of construction estimating without providing a little pep talk about estimating as a career. Like any good teacher, I want to be sure you have the motivation to absorb what I'm going to explain.

In my opinion, cost estimating is one of the most neglected career opportunities in the U.S. today. I've never seen any published figures, but my guess is that there are about one million estimating jobs in the United States. Why so many? Because costs for every home, apartment, office, store and factory building are estimated and re-estimated many times before that building is finally demolished.



Even then, the cost of demolition has to be estimated. Nothing gets designed or built or remodeled or insured or taxed or torn down without some estimate of the cost.

## You've Got Job Security

Of course, most construction cost estimating happens before a building goes up. You can be sure there's at least one estimate prepared by every bidder. And even a modest remodeling project may have dozens of bidding contractors and subcontractors — carpentry bids, plumbing bids, electrical bids, concrete bids, and so on. Every construction project begins with a blizzard of estimating paperwork. If you're in construction and not into estimating, maybe you should keep reading. There's an opportunity here.

I feel that estimating is good work. It pays well, and it's a job that carries responsibility and earns respect. Maybe that's why estimators have more job security than most people in construction. The chief estimator is going to be the last person fired in any construction office. After all, a construction company that's stopped estimating is out of business. It's the estimator who brings in new work. It's the estimator who understands the company finances, sets profit margins and controls volume. It's the estimator who makes the difference between financial success and failure in most construction companies.

So, what does it take to be a construction estimator?

---

## General and Special Qualifications

First of all, understand this. Estimating is an accidental profession. Our public schools don't teach it. I've never had a little kid tell me that he (or she) wanted to grow up to be a construction estimator. Yet many will. And even more should. Why? Because there are no barriers to entry into this profession. States don't license construction cost estimators. You don't need a graduate degree. You don't have to pay a fee to some government agency to call yourself a construction estimator. Anyone can be an estimator.

---

### Working your way up the career ladder

Many estimators started out as construction tradesmen and worked their way up to a desk job. Others wanted to be architects and never finished school. So rather than drawing plans, they settled into reading plans and doing take-offs. No matter how you get there, you have to qualify yourself to estimate construction costs and make a good living at it.

So, what does it take to be a good construction cost estimator? It's obvious that estimators have to read and understand construction drawings. Blueprints are the language construction professionals use to communicate.

Plan reading is essential. Basic math skills are important, too. If you can't read plans and add a column of figures, you're already a step behind as an apprentice estimator.

---

***" . . . Good estimators have two seemingly contradictory skills. They're both generalists and specialists."***

---

Of course, nearly anyone can learn to read plans and use a calculator. But it takes more to become a skilled professional estimator. I've found that most good estimators have two seemingly contradictory skills. They're both generalists and specialists. They see every one of the trees without losing sight of the forest.

As generalists, they have a good grasp of the big picture. The best estimators seem to understand intuitively how all the parts, all the trades, will come together to create the whole.

Second, they're specialists, focusing intently on the details. It's common to work for hours on a single complex drawing, identifying every work item and the labor required to complete what the plans show. The best estimators are very good at that kind of detail work.

But details alone don't make a project. Without a broad view of how the parts come together to create the whole, something will be left out. Some cost is going to be omitted. When that happens, the estimated cost isn't going to match the actual cost. That's expensive, at best, and may be a financial disaster. Either way, it's bad estimating.

---

## **Typical Estimator Profile**

I've taught and talked with hundreds of construction estimators from construction companies in all parts of the country. My guess is that about two-thirds of these estimators are owners of small to medium-size construction companies. They manage the company, run the crews, bring in the work and prepare the estimates. Most of these estimators began as apprentice tradespeople. They progressed quickly to journeyman status, then supervisor, usually because they learned faster, worked harder and had more ambition than others in their position.

Sooner or later, these bright, ambitious, energetic tradespeople got tired of working on someone else's payroll. They were anxious to venture out on their own, bidding for their own jobs. Unfortunately, most do this with little or no formal training in construction cost estimating. Instead, they

rely on trial and error, getting experience the hard (and expensive) way. Eventually they either learn the skills they need to survive, or go back to working for wages.



Most estimators started as apprentice carpenters. That's because most entry-level jobs in the construction industry in this country are in erecting wood-frame buildings. I believe that carpentry is good basic training for estimators. It's where I started. And I don't regret the years I spent on a carpentry crew. It exposed me very quickly to the entire construction process, from setting foundation forms to framing the roof.

Twenty years ago, probably less than 25 percent of all estimators had more than a high school diploma. I sense that's changing. We're a better-educated nation today than we were in the 1980s. More and more estimators have college degrees or college-level training in construction technology, engineering or architecture. That's good. In my opinion, better-educated, better-trained estimators make better estimators.

---

## Position in Company

Most construction estimators don't estimate full time. As I said, most estimators also own and operate a construction contracting or subcontracting business. They don't trust anyone but themselves to make important decisions about costs and bid prices. Even if they could trust someone else to estimate costs, they can't afford to hire a professional construction estimator. So they put on an estimator's hat when it's estimating that has to be done.

---

### Classifications of estimators

Larger construction contracting companies (more than \$2,000,000 in annual revenue) usually have a staff estimator. These employee-estimators usually fall into one of three classifications. The first is beginners, or *junior estimators*. They do the measurements and take-offs. They study the plans, determine quantities, and apply material prices.

As they become more experienced, junior estimators are promoted to *journeyman estimator* rank, where they may assume job management responsibilities. In many companies, when an estimator prepares a winning bid, the estimator becomes the project manager, overseeing the work until it's completed.

The third class of estimator usually answers to the title of *chief estimator*. He (or she) is the senior person in the estimating department and probably the number two person in the company, reporting directly to the company owner.

---

## Shortcomings of an Estimating Career

Most professions have disadvantages. In estimating, it's the constant disappointments and intense competition. I'll explain.

The estimator's job is to make an accurate estimate with prices low enough to win the job, but high enough to earn a reasonable profit. Most of the time, that doesn't happen. In fact, an estimator who is successful one time in four is the happy exception, not the rule. This is one career where there are more defeats than victories. No lawyer, doctor, teacher or professional baseball player could get by with a construction estimator's batting average. If you make good money on as few as 10 percent of the jobs you bid, you belong in the Estimating Hall of Fame.

---

### Learn to defend your actions

Even on the jobs you win, you may have to defend yourself. Someone is going to ask, "Why was our bid so much lower than the next lowest bidder? You left too much money on the table. We could have made thousands more." When your bid is the lowest by far, your first thought is probably, "What did I miss?" That's going to be a major issue if you have to apply to a bonding company for a performance bond. Try to justify a price that's low by \$100,000 on a \$1,000,000 job!

---

## Rewards

For me, the benefits of this profession far outweigh the burdens. First, I like building. Everything I bid and build will be around long after I'm gone. That gives me a sense of accomplishment, a feeling of pride. My children and grandchildren will remember me for the monuments I've left behind. Of course, I'm not the only one who can claim responsibility for these buildings. But my role was important, probably as important as anyone who worked on the job.

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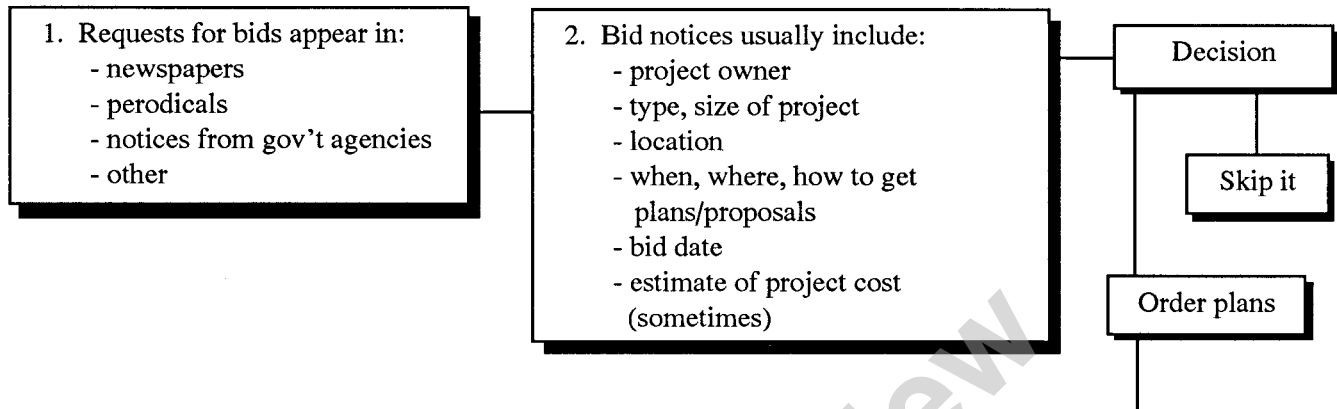
***" . . .The benefits of this profession far outweigh the burdens."***

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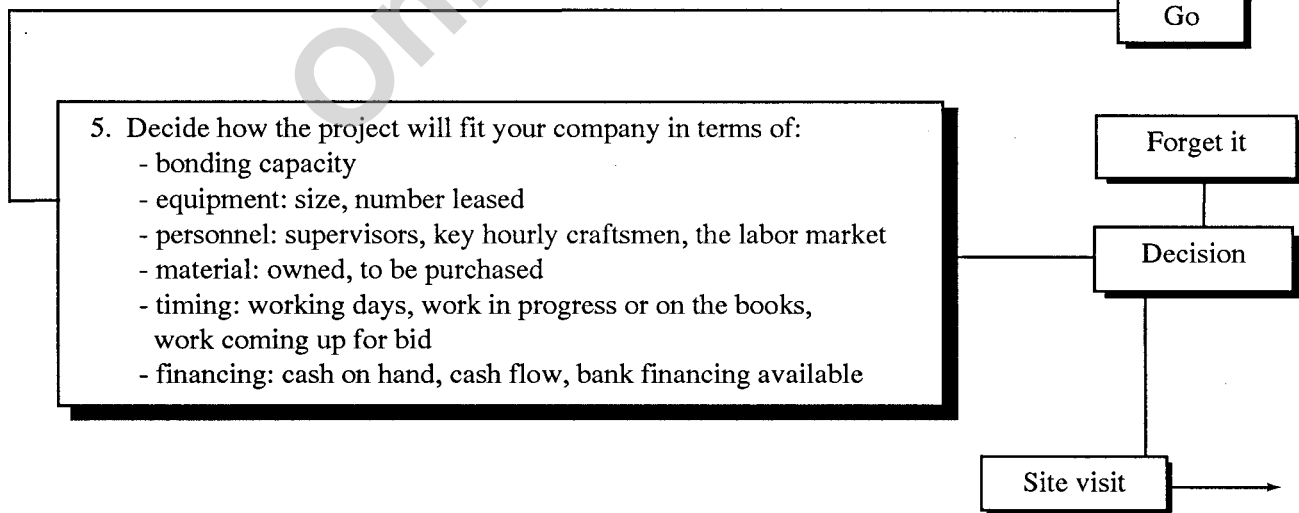
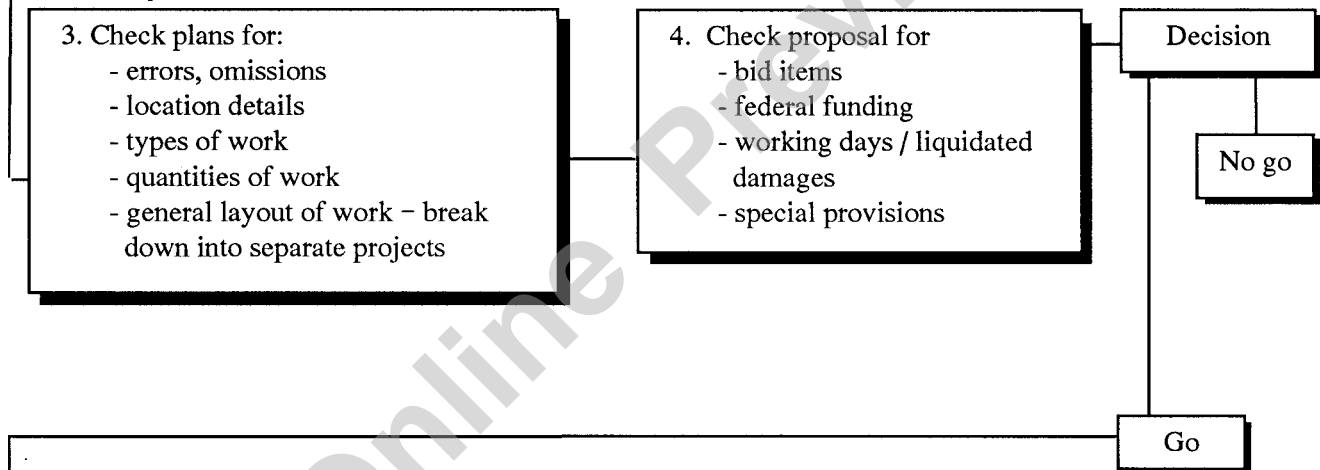
And I like being paid well for what I do. I'm a decision-maker. I evaluate risks and rewards. I try to make good choices. If I choose wisely, I'm entitled to a premium for making and saving money. If I don't get that premium, I can take my resumé to the competitor down the street, along with everything I've learned about making money for a former employer. That gives me leverage that a tradesman or even a supervisor doesn't have. In good times or bad, in boom or bust, I like that advantage. I'm not going to abuse the privilege. But I have it. And I'm going to use it to get what I feel is fair treatment.

## The Bidding Procedure

### Learn about the proposed project

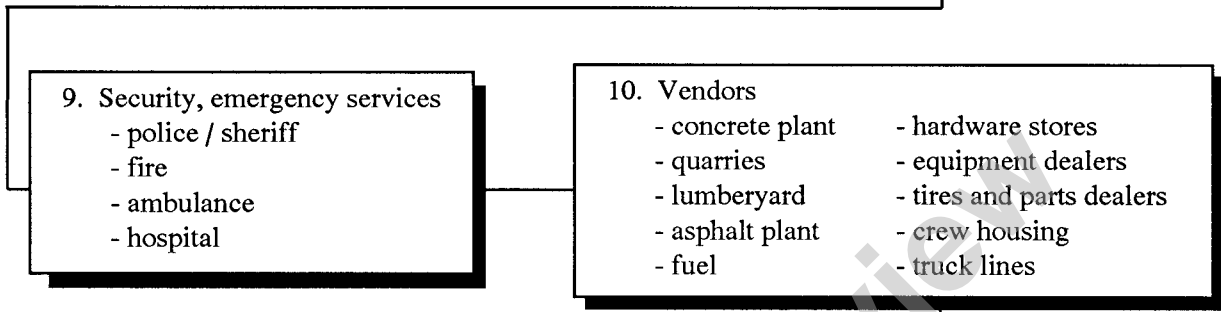
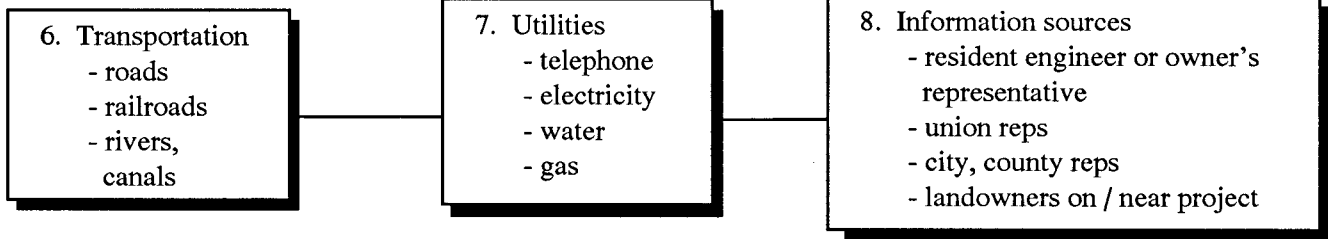


### Order the plans

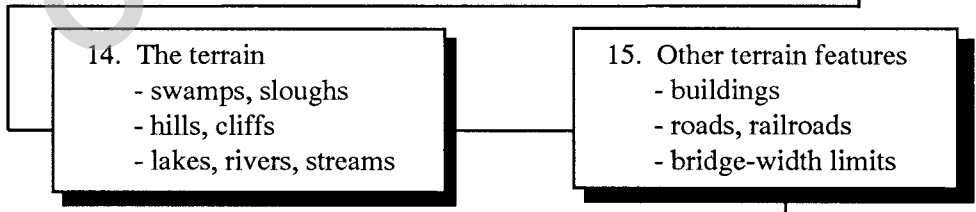
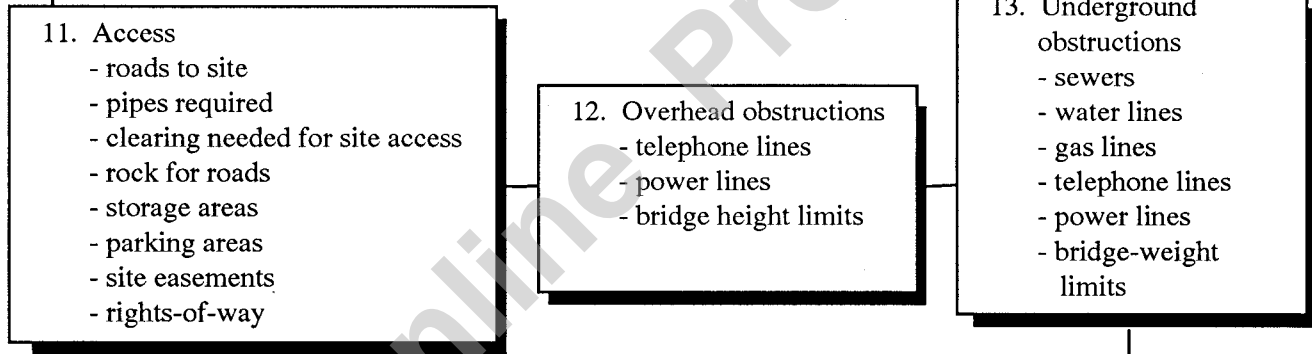


**Figure 1-1** The bidding procedure

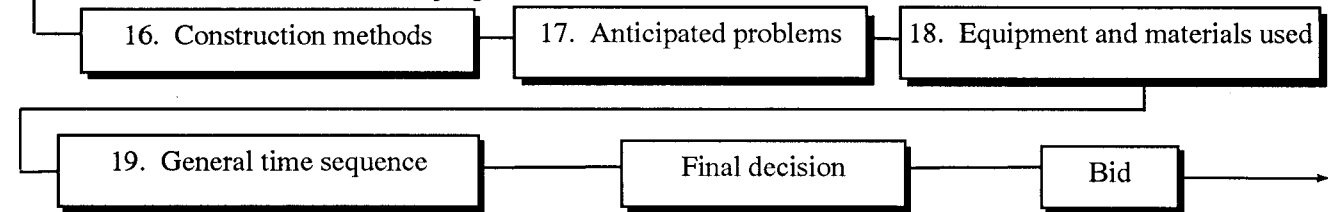
**Visit the area to check on:**



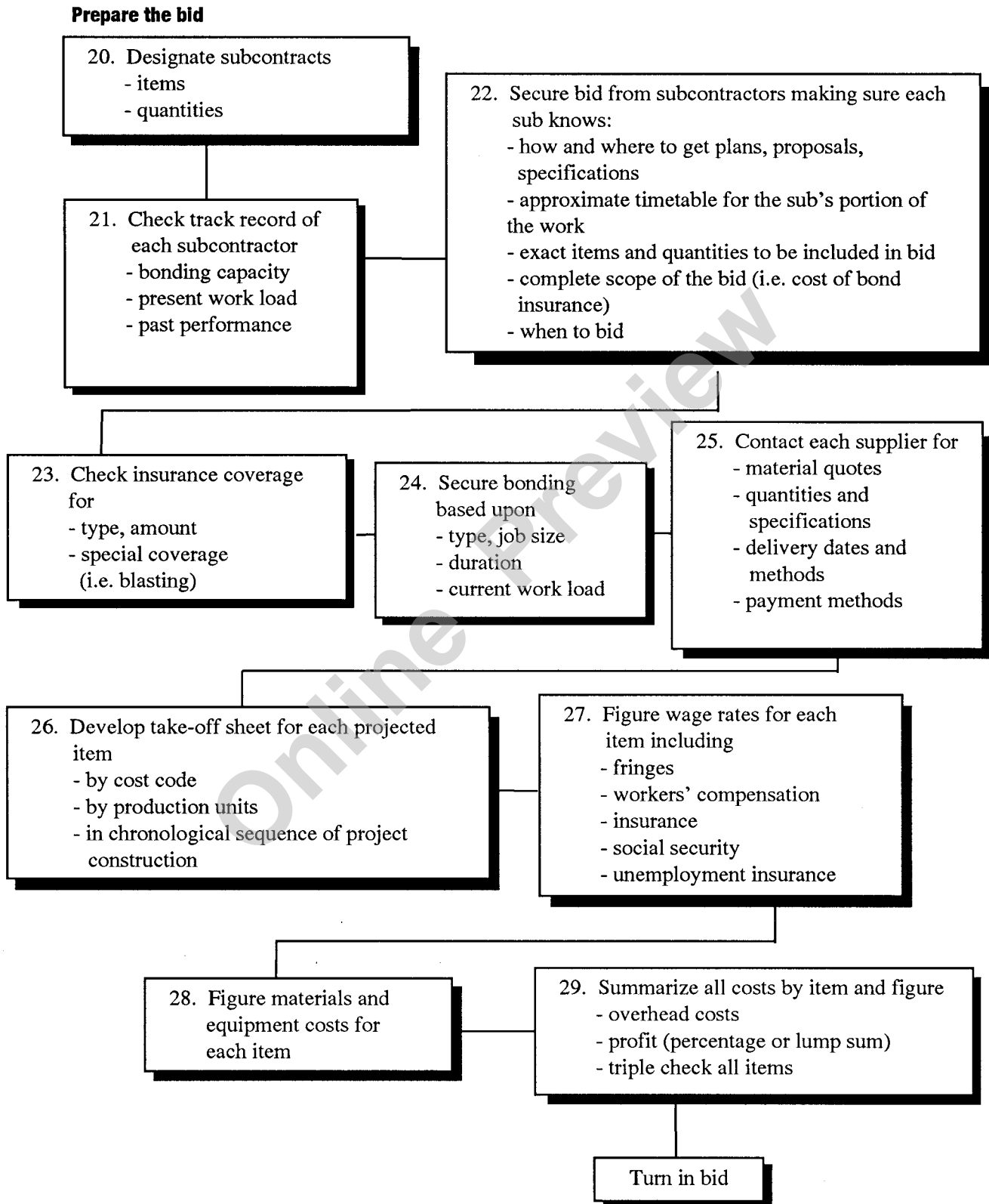
**Visit the project site itself to check for:**



**Use this information to make judgments about:**



**Figure 1-1 (cont.)** The bidding procedure



**Figure 1-1 (cont.)** The bidding procedure



---

## Decision Making

As I said, estimators are decision makers. If you haven't thought about that before, think about it now. Every estimate, every project, presents a complex series of options. Make good decisions and you make good money. Make too many bad decisions and you look for a different job.

Think of every project as a decision chain. Every decision on that chain is linked to a decision made previously and to a decision yet to be made. Figure 1-1 shows the decision chain I'm talking about.

Our starting point is always the most basic decision of all. What jobs are we going to bid? Of all the work available, what jobs do we want? Pick the wrong jobs and you squander company assets (like your time, company working capital, and management talent). What you want is a good match between what you can handle well and what the project requires. Of course, there are other considerations. What's the competition? Do we need more work? Do we have the bonding capacity? What's the risk associated with this project? Decisions further down the chain in Figure 1-1 follow logically after we've made a tentative decision to bid a job.



Review the remainder of Figure 1-1 and you'll begin to get an appreciation of the size of our task. I'm going to cover all these decisions in the chapters that follow. Don't get discouraged by the size and complexity of the job. I'm going to explain it all one step at a time in simple language anyone can understand.

Chapter 2 begins with the most basic decision of all, "What work am I going to estimate?" Chapter 2 will also help you set goals for profit margin and volume for your company. These standards will be very important when we get into bidding strategy in Chapter 11.

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If your computer has *Windows*™ and a CD-ROM drive, CD Estimator puts at your fingertips over 150,000 construction costs for new construction, remodeling, renovation & insurance repair, home improvement, framing & finish carpentry, electrical, concrete & masonry, painting, earthwork & heavy equipment and plumbing & HVAC. Monthly cost updates are available at no charge on the Internet. You'll also have the *National Estimator* program — a stand-alone estimating program for *Windows*™ that *Remodeling* magazine called a "computer wiz," and *Job Cost Wizard*, a program that lets you export your estimates to *QuickBooks Pro* for actual job costing. A 60-minute interactive video teaches you how to use this CD-ROM to estimate construction costs. And to top it off, to help you create professional-looking estimates, the disk includes over 40 construction estimating and bidding forms in a format that's perfect for nearly any *Windows*™ word processing or spreadsheet program. **CD Estimator is \$78.50**

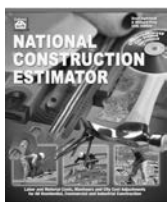


## Contractor's Guide to the Building Code

Explains in plain, simple English just what the 2006 *International Building Code* and *International Residential Code* require. Building codes are elaborate laws, designed for enforcement; they're not written to be helpful how-to instructions for builders. Here you'll find down-to-earth, easy-to-understand descriptions, helpful illustrations, and code tables that you can use to design and build residential and light commercial buildings that pass inspection the first time. Written by a former building inspector, it tells what works with the inspector to allow cost-saving methods, and warns what common building shortcuts are likely to get cited. Filled with the tables and illustrations from the *IBC* and *IRC* you're most likely to need, fully explained, with examples to guide you. Includes a CD-ROM with the entire book in PDF format, with an easy search feature.

**408 pages, 8½ x 11, \$66.75**

## National Construction Estimator

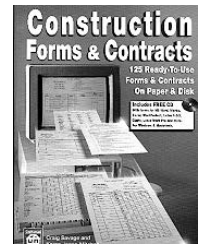


Current building costs for residential, commercial, and industrial construction. Estimated prices for every common building material. Provides man-hours, recommended crew, and gives the labor cost for installation. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone *Windows*™ estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost

estimates. **656 pages, 8½ x 11, \$57.50. Revised annually**

## Construction Forms & Contracts

125 forms you can copy and use — or load into your computer (from the FREE disk enclosed). You can customize the forms to fit your company, fill them out, and print. Loads into *Word for Windows*™, *Lotus 1-2-3*, *WordPerfect*, *Works*, or *Excel* programs. You'll find forms covering accounting, estimating, fieldwork, contracts, and general office. Each form comes with complete instructions on when to use it and how to fill it out. These forms were designed, tested and used by contractors, and will help keep your business organized, profitable and out of legal, accounting and collection troubles. Includes a CD-ROM for *Windows*™ and *Mac*™. **432 pages, 8½ x 11, \$41.75**



## Contractor's Guide to QuickBooks Pro 2008

This user-friendly manual walks you through *QuickBooks Pro*'s detailed setup procedure and explains step-by-step how to create a first-rate accounting system. You'll learn in days, rather than weeks, how to use *QuickBooks Pro* to get your contracting business organized, with simple, fast accounting procedures. On the CD included with the book you'll find a *QuickBooks Pro* file for a construction company (open it, enter your own company's data, and add info on your suppliers and subs). You also get a complete estimating program, including a database, and a job costing program that lets you export your estimates to *QuickBooks Pro*. It even includes many useful construction forms to use in your business.

**344 pages, 8½ x 11, \$54.75**

Also available: **Contractor's Guide to QuickBooks Pro 2007, \$53.00**  
**Contractor's Guide to QuickBooks Pro 2006, \$51.50**  
**Contractor's Guide to QuickBooks Pro 2005, \$49.75**  
**Contractor's Guide to QuickBooks Pro 2004, \$48.50**  
**Contractor's Guide to QuickBooks Pro 2003, \$47.75**  
**Contractor's Guide to QuickBooks Pro 2001, \$45.25**

## National Renovation & Insurance Repair Estimator

Current prices in dollars and cents for hard-to-find items needed on most insurance, repair, remodeling, and renovation jobs. All price items include labor, material, and equipment breakouts, plus special charts that tell you exactly how these costs are calculated. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone *Windows*™ estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost estimates.

**576 pages, 8½ x 11, \$59.50. Revised annually**

## Contractor's Plain-English Legal Guide

For today's contractors, legal problems are like snakes in the swamp — you might not see them, but you know they're there. This book tells you where the snakes are hiding and directs you to the safe path. With the directions in this easy-to-read handbook you're less likely to need a \$200-an-hour lawyer. Includes simple directions for starting your business, writing contracts that cover just about any eventuality, collecting what's owed you, filing liens, protecting yourself from unethical subcontractors, and more. For about the price of 15 minutes in a lawyer's office, you'll have a guide that will make many of those visits unnecessary. Includes a CD-ROM with blank copies of all the forms and contracts in the book.

**272 pages, 8½ x 11, \$49.50**

## National Repair & Remodeling Estimator

The complete pricing guide for dwelling reconstruction costs. Reliable, specific data you can apply on every repair and remodeling job. Up-to-date material costs and labor figures based on thousands of jobs across the country. Provides recommended crew sizes; average production rates; exact material, equipment, and labor costs; a total unit cost and a total price including overhead and profit. Separate listings for high- and low-volume builders, so prices shown are specific for any size business. Estimating tips specific to repair and remodeling work to make your bids complete, realistic, and profitable. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone *Windows*™ estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost estimates.

**496 pages, 8½ x 11, \$58.50. Revised annually**

### Construction Estimating Reference Data



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

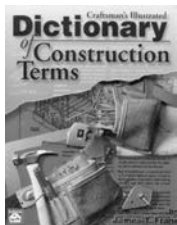
appropriate crew size and equipment needed. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone *Windows™* estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost estimates.

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### Steel-Frame House Construction

Framing with steel has obvious advantages over wood, yet building with steel requires new skills that can present challenges to the wood builder. This new book explains the secrets of steel framing techniques for building homes, whether pre-engineered or built stick by stick. It shows you the techniques, the tools, the materials, and how you can make it happen. Includes hundreds of photos and illustrations, plus a CD-ROM with steel framing details, a database of steel materials and manhours, with an estimating program. **320 pages, 8½ x 11, \$39.75**

### Craftsman's Illustrated Dictionary of Construction Terms



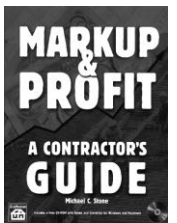
Almost everything you could possibly want to know about any word or technique in construction. Hundreds of up-to-date construction terms, materials, drawings and pictures with detailed, illustrated articles describing equipment and methods. Terms and techniques are explained or illustrated in vivid detail. Use this valuable reference to check spelling, find clear, concise definitions of construction terms used on plans and construction documents, or learn about little-known tools, equipment, tests and methods used in the building industry. It's all here.

**416 pages, 8½ x 11, \$36.00**

### Profits in Buying & Renovating Homes

Step-by-step instructions for selecting, repairing, improving, and selling highly profitable "fixer-uppers." Shows which price ranges offer the highest profit-to-investment ratios, which neighborhoods offer the best return, practical directions for repairs, and tips on dealing with buyers, sellers, and real estate agents. Shows you how to determine your profit before you buy, what "bargains" to avoid, and how to make simple, profitable, inexpensive upgrades. **304 pages, 8½ x 11, \$24.75**

### Markup & Profit: A Contractor's Guide



In order to succeed in a construction business, you have to be able to price your jobs to cover all labor, material and overhead expenses, and make a decent profit. The problem is knowing what markup to use. You don't want to lose jobs because you charge too much, and you don't want to work for free because you've charged too little. If you know how to calculate markup, you can apply it to your job costs to find the right sales price for your work. This book gives you tried and tested formulas, with step-by-step

instructions and easy-to-follow examples, so you can easily figure the markup that's right for your business. Includes a CD-ROM with forms and checklists for your use. **320 pages, 8½ x 11, \$32.50**

### Defensive Estimating

More than a few residential builders and remodelers have walked away from closings with less profit than they deserve. You may get the job, but find out later you needed to make a lot more money on it. Performed correctly, estimating is a small builder's or remodeler's key to profit. Here you'll find how to estimate based on fiscal goals while protecting your company's bottom line. This unique approach to estimating gives readers user-friendly tips and methods for improving the process and providing hundreds of ideas and simple suggestions. Explains how to defend each line of an estimate so that your system of planned profit is consistent and bankable. **142 pages, 8½ x 11, \$29.95**

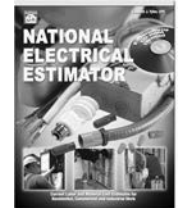
### Estimating With Microsoft Excel

Most builders estimate with *Excel* because it's easy to learn, quick to use, and can be customized to your style of estimating. Here you'll find step-by-step instructions on how to create your own customized automated spreadsheet estimating program for use with *Excel*. You'll learn how to use the magic of *Excel* to create detail sheets, cost breakdown summaries, and links. You'll put this all to use in estimating concrete, rebar, permit fees, and roofing. You can even create your own macros. Includes a CD-ROM that illustrates examples in the book and provides you with templates you can use to set up your own estimating system. **148 pages, 7 x 9, \$39.95**

### National Electrical Estimator

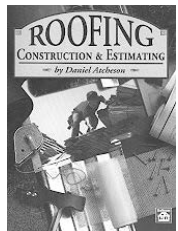
This year's prices for installation of all common electrical work: conduit, wire, boxes, fixtures, switches, outlets, loadcenters, panelboards, raceway, duct, signal systems, and more. Provides material costs, manhours per unit, and total installed cost. Explains what you should know to estimate each part of an electrical system. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone *Windows™* estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost estimates.

**552 pages, 8½ x 11, \$57.75. Revised annually**



### Roofing Construction & Estimating

Installation, repair and estimating for nearly every type of roof covering available today in residential and commercial structures: asphalt shingles, roll roofing, wood shingles and shakes, clay tile, slate, metal, built-up, and elastomeric. Covers sheathing and underlayment techniques, as well as secrets for installing leakproof valleys. Many estimating tips help you minimize waste, as well as insure a profit on every job. Troubleshooting techniques help you identify the true source of most leaks. Over 300 large, clear illustrations help you find the answer to just about all your roofing questions. **432 pages, 8½ x 11, \$38.00**



### National Building Cost Manual

Square foot costs for residential, commercial, industrial, and farm buildings. Quickly work up a reliable budget estimate based on actual materials and design features, area, shape, wall height, number of floors, and support requirements. Includes all the important variables that can make any building unique from a cost standpoint.

**240 pages, 8½ x 11, \$33.00. Revised annually**

### National Home Improvement Estimator

Current labor and material prices for home improvement projects. Provides manhours for each job, recommended crew size, and the labor cost for the removal and installation work. Material prices are current, with location adjustment factors and free monthly updates on the Web. Gives step-by-step instructions for the work, with helpful diagrams, and home improvement shortcuts and tips from an expert. Includes a CD-ROM with an electronic version of the book, and *National Estimator*, a stand-alone *Windows™* estimating program, plus an interactive multimedia tutorial that shows how to use the disk to compile home improvement cost estimates. **520 pages, 8½ x 11, \$58.75**



### Construction Estimating

This unusually well-organized book shows the best and easiest way to estimate materials for room additions or residential structures. It gives estimating tables and procedures needed to make a fast, accurate, and complete material list of the structural members found in wood and steel-framed buildings. This book is divided into 72 units, each of them covering a separate element in the estimating procedure. Covers estimating foundations, floor framing, wall framing, ceiling framing, roof framing, roofing materials, exterior and interior finish materials, hardware, steel joist floor framing, steel stud framing, and steel ceiling joist and rafter framing. **496 pages, 8½ x 11, \$49.50**



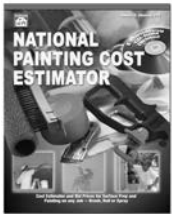
### Standard Estimating Practice

Estimating isn't always an easy job. Sometimes snap decisions can produce negative long-term effects. This book was designed by the American Society of Professional Estimators as a set of standards to guide professional estimators. It's intended to help every estimator develop estimates that are uniform and verifiable. Every step that should be included in the estimate is listed, as well as aspects in the plans to consider when you're estimating a job, and what you should look for that may not be included. The result should help you produce more consistently accurate estimates. **506 pages, 8½ x 11, \$89.00**

### A Roof Cutter's Secrets to Custom Homes

A master framer spills his secrets to framing irregular roofs, jobsite solutions for rake walls, and curved and two-story walls. You'll also find step-by-step techniques for cutting bay roofs, gambrels, and shed, gable, and eyebrow dormers. You'll even find instructions on custom work like coffered ceilings, arches and barrel vaults; even round towers, hexagons, and other polygons. Includes instructions for figuring most of the equations in this book with the keypad of the Construction Master Pro calculator. **342 pages, 8½ x 5½, \$32.50**

### National Painting Cost 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. Shows typical costs and bid prices for fast, medium, and slow work, including material costs per gallon; square feet covered per gallon; square feet covered per manhour; labor, material, overhead, and taxes per 100 square feet; and how much to add for profit. Includes a CD-ROM with an electronic version of the book with *National Estimator*, a stand-alone

*Windows™* estimating program, plus an interactive multimedia video that shows how to use the disk to compile construction cost estimates. **448 pages, 8½ x 11, \$58.00. Revised annually**

### 2008 National Electrical Code



This new electrical code incorporates sweeping improvements to make the code more functional and user-friendly. Here you'll find the essential foundation for electrical code requirements for the 21st century. With hundreds of significant and widespread changes, this 2008 *NEC* contains all the latest electrical technologies, recently developed techniques, and enhanced safety standards for electrical work. This is the standard all electricians are required to know, even if it hasn't yet been adopted by their

local or state jurisdictions. **784 pages, 8½ x 11, \$75.00**

### Wood-Frame House Construction

Step-by-step construction details, from the layout of the outer walls, excavation and formwork, to finish carpentry and painting. Packed with clear illustrations and explanations updated for modern construction methods. Everything you need to know about framing, roofing, siding, interior finishings, floor covering and stairs — your complete book of wood-frame homebuilding. **320 pages, 8½ x 11, \$25.50. Revised edition**

### Basic Lumber Engineering for Builders

Beam and lumber requirements for many jobs aren't always clear, especially with changing building codes and lumber products. Most of the time you rely on your own "rules of thumb" when figuring spans or lumber engineering. This book can help you fill the gap between what you can find in the building code span tables and what you need to pay a certified engineer to do. With its large, clear illustrations and examples, this book shows you how to figure stresses for pre-engineered wood or wood structural members, how to calculate loads, and how to design your own girders, joists and beams. Included FREE with the book — an easy-to-use limited version of NorthBridge Software's *Wood Beam Sizing* program. **272 pages, 8½ x 11, \$38.00**

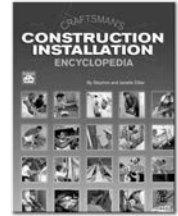


### Roof Framing

Shows how to frame any type of roof in common use today, even if you've never framed a roof before. Includes using a pocket calculator to figure any common, hip, valley, or jack rafter length in seconds. Over 400 illustrations cover every measurement and every cut on each type of roof: gable, hip, Dutch, Tudor, gambrel, shed, gazebo, and more. **480 pages, 5½ x 8½, \$24.50**

### Craftsman's Construction Installation Encyclopedia

Step-by-step installation instructions for just about any residential construction, remodeling or repair task, arranged alphabetically, from Acoustic tile to Wood flooring. Includes hundreds of illustrations that show how to build, install, or remodel each part of the job, as well as manhour tables for each work item so you can estimate and bid with confidence. Also includes a CD-ROM with all the material in the book, a handy look-up feature, and the ability to capture and print out for your crew the instructions and diagrams for almost any situation. **382 pages, 8½ x 11, \$65.00**



### Estimating Home Construction Costs 2nd edition

This book walks you step-by-step through the process of estimating costs for new home construction. It discusses the different types of estimates and when to use each, how to integrate estimating into other functions, and describes the benefits of computer estimating. Includes forms, checklists and conversion tables to help your estimating go more easily and be more accurate. **116 pages, 8½ x 11, \$29.95**

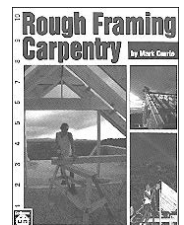
### Drafting House Plans

Here you'll find step-by-step instructions for drawing a complete set of home plans for a one-story house, an addition to an existing house, or a remodeling project. This book shows how to visualize spatial relationships, use architectural scales and symbols, sketch preliminary drawings, develop detailed floor plans and exterior elevations, and prepare a final plot plan. It even includes code-approved joist and rafter spans and how to make sure that drawings meet code requirements. **192 pages, 8½ x 11, \$34.95**



### Rough Framing Carpentry

If you'd like to make good money working outdoors as a framer, this is the book for you. Here you'll find shortcuts to laying out studs; speed cutting blocks, trimmers and plates by eye; quickly building and blocking rake walls; installing ceiling backing, ceiling joists, and truss joists; cutting and assembling hip trusses and California fills; arches and drop ceilings — all with production line procedures that save you time and help you make more money. Over 100 on-the-job photos of how to do it right and what can go wrong. **304 pages, 8½ x 11, \$26.50**



### 2006 International Residential Code

Replacing the *CABO One- and Two-Family Dwelling Code*, this book has the latest technological advances in building design and construction. Among the changes are provisions for steel framing and energy savings. Also contains mechanical, fuel gas and plumbing provisions that coordinate with the *International Mechanical Code* and *International Plumbing Code*. **604 pages, 8½ x 11, \$76.50**

Also available: **2003 International Residential Code, \$72.50**  
**On interactive CD-ROM, \$48.00**

### Cost Records for Construction Estimating

How to organize and use cost information from jobs just completed to make more accurate estimates in the future. Explains how to keep the records you need to track costs for sitework, footings, foundations, framing, interior finish, siding and trim, masonry, and subcontract expense. Provides sample forms. **208 pages, 8½ x 11, \$15.75**

### How to Succeed With Your Own Construction Business

Everything you need to start your own construction business: setting up the paperwork, finding the work, advertising, using contracts, dealing with lenders, estimating, scheduling, finding and keeping good employees, keeping the books, and coping with success. If you're considering starting your own construction business, all the knowledge, tips, and blank forms you need are here. **336 pages, 8½ x 11, \$28.50**

### Estimating Home Building Costs

Estimate every phase of residential construction from site costs to the profit margin you include in your bid. Shows how to keep track of man-hours and make accurate labor cost estimates for footings, foundations, framing and sheathing finishes, electrical, plumbing, and more. Provides and explains sample cost estimate worksheets with complete instructions for each job phase. **320 pages, 5½ x 8½, \$17.00**

### Estimating Electrical Construction

Like taking a class in how to estimate materials and labor for residential and commercial electrical construction. Written by an A.S.P.E. National Estimator of the Year, it teaches you how to use labor units, the plan take-off, and the bid summary to make an accurate estimate, how to deal with suppliers, use pricing sheets, and modify labor units. Provides extensive labor unit tables and blank forms for your next electrical job. **272 pages, 8½ x 11, \$35.00**

### Blueprint Reading for the Building Trades

How to read and understand construction documents, blueprints, and schedules. Includes layouts of structural, mechanical, HVAC and electrical drawings. Shows how to interpret sectional views, follow diagrams and schematics, and covers common problems with construction specifications. **192 pages, 5½ x 8½, \$16.75**



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