



# 2025 NATIONAL CONSTRUCTION ESTIMATOR

Richard Pray  
73rd Edition



**Labor and Material Costs, Manhours and City Cost Modifiers  
For All Residential, Commercial and Industrial Construction**



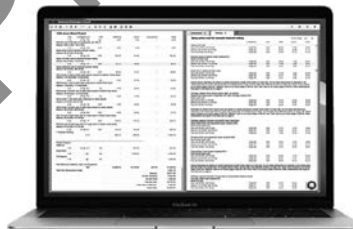
# 2025 NATIONAL CONSTRUCTION ESTIMATOR

**Edited by Richard Pray**

73rd Edition



**The National  
Estimator Cloud**



This manual is also available as a Web app, *National Estimator Cloud*, that makes it easy to compile and print estimates, bids and invoices for nearly any type of construction project.

Generate professional estimates from your internet browser. Includes 10 Craftsman cost databases. It's never been easier. No disk and no download needed!



- Turn your estimate into a bid.
- Turn your bid into a contract.
- [ConstructionContractWriter.com](http://ConstructionContractWriter.com)



Craftsman Book Company  
6058 Corte del Cedro, Carlsbad, CA 92011

# Contents

A complete index begins on page 640

<b>How to Use This Book</b> .....	<b>3-5</b>	<b>Construction Economics Division</b> .....	<b>307</b>
<b>Abbreviations and Symbols</b> .....	<b>6</b>	<b>Industrial &amp; Commercial Division Labor Cost</b> .....	<b>309</b>
<b>Craft Codes and Crews</b> .....	<b>7-9</b>	<b>Industrial and Commercial Division</b> .....	<b>310-639</b>
<b>Residential Division Labor Cost</b> .....	<b>10</b>	<b>01 General Requirements</b> .....	<b>310-332</b>
<b>Adjusting Labor Costs</b> .....	<b>11</b>	<b>02 Existing Conditions</b> .....	<b>332-338</b>
<b>Area Modification Factors</b> .....	<b>12-15</b>	<b>03 Concrete</b> .....	<b>338-371</b>
<b>Credits and Acknowledgments</b> .....	<b>16</b>	Concrete formwork .....	339
<b>Residential Division</b> .....	<b>17-305</b>	Reinforcing steel.....	346
Adhesives.....	17	Foundations .....	361
Basement doors .....	23	<b>04 Masonry</b> .....	<b>371-382</b>
Building permit fees.....	28	Reinforcing and flashing.....	372
Cabinets, kitchen.....	29	Brick and block walls.....	373
Carpentry, rule of thumb .....	32	<b>05 Metals</b> .....	<b>383-389</b>
Carpentry, assemblies.....	33	Structural steel.....	383
Carpentry, piecework rates .....	37	Steel floor and roof decking .....	384
Carpentry, detailed breakdown .....	39	<b>06 Wood and Composites</b> .....	<b>389-397</b>
Carpentry, finish work .....	52	Framing carpentry .....	389
Carpentry, steel.....	57	<b>07 Thermal &amp; Moisture Protection</b> .....	<b>397-412</b>
Ceilings, suspended.....	79	Thermal insulation .....	398
Concrete work .....	84	Roof insulation.....	399
Decking .....	98	Membrane roofing .....	401
Demolition .....	100	<b>08 Openings</b> .....	<b>412-423</b>
Doors, jambs, frames, and trim.....	105	Metal doors.....	412
Electrical work, subcontract .....	127	Hardware .....	420
Elevators and lifts, subcontract .....	133	<b>09 Finishes</b> .....	<b>423-440</b>
Excavation and backfill.....	135	Gypsum wallboard.....	423
Fences.....	142	Ceilings and flooring.....	429
Fire sprinkler systems .....	150	<b>10 Specialties</b> .....	<b>440-449</b>
Flooring .....	153	Partitions.....	443
Framing connectors.....	159	<b>11 Equipment</b> .....	<b>449-470</b>
Garage doors .....	164	<b>12 Furnishings</b> .....	<b>470-475</b>
Glass, glazing.....	166	<b>13 Special Construction</b> .....	<b>475-488</b>
Gutters and downspouts .....	167	<b>14 Conveying Equipment</b> .....	<b>488-491</b>
Gypsum drywall and accessories .....	168	<b>21 Fire Suppression</b> .....	<b>491-493</b>
Hardware.....	169	<b>22 Plumbing</b> .....	<b>494-535</b>
Heating and cooling .....	172	Pipe and fittings.....	494
Insulation .....	181	Hangers and supports .....	516
Insurance and bonding.....	185	Valves, pumps, gauges .....	519
Landscaping .....	187	<b>23 HVAC</b> .....	<b>535-541</b>
Lighting fixtures .....	190	Gas fired heaters.....	535
Log home construction.....	192	Hydronic & steam heating .....	537
Lumber and plywood.....	194	<b>26 Electrical</b> .....	<b>541-588</b>
Markup (overhead and profit).....	208	Rigid steel conduit.....	543
Masonry.....	209	EMT conduit and wire .....	546
Moldings .....	222	PVC conduit and wire.....	551
Paint removal .....	233	Conduit supports & hangers.....	554
Paints, coatings, and supplies .....	234	Wire and cable .....	557
Paneling .....	242	Lighting.....	582
Paving .....	243	<b>27 Communications</b> .....	<b>589-594</b>
Plastering .....	244	<b>31 Earthwork</b> .....	<b>594-609</b>
Plumbing fixtures and equipment.....	245	Excavation and backfill.....	597
Plumbing and heating piping.....	251	Shoring, bulkheads, piles .....	605
Roofing .....	255	<b>32 Exterior Improvements</b> .....	<b>609-626</b>
Sheet metal .....	267	Paving and curbs.....	609
Siding .....	274	Fencing and gates.....	617
Skylights .....	277	<b>33 Utilities</b> .....	<b>626-639</b>
Stairs .....	281	Pressure water pipe .....	628
Taxes, Payroll.....	285	Drain pipe .....	631
Tile .....	287	<b>Index</b> .....	<b>640</b>
Wallcoverings.....	293		
Windows.....	297		

# This Book Is an Encyclopedia of 2025 Building Costs

The **2025 National Construction Estimator** lists estimated construction costs to general contractors performing work with their own crews. Overhead and profit are not included.

## National Estimator Cloud

This manual is also available by subscription on the Web. *National Estimator Cloud* includes all ten of Craftsman's 2025 construction cost estimating references. Each of these manuals has about 400 pages of current labor and material costs for construction – all neatly organized and indexed. Use these costs to build estimates and bids for nearly any type of project. Your work is kept secure on the Web. *National Estimator Cloud*:

- Prints estimates, bids and invoices as Word, Excel or PDF documents.
- Supports progress invoices. *National Estimator Cloud* remembers what has been billed so far and what's yet to be billed.
- Runs as a secure app on the Web so you can write estimates anywhere you have a Web connection.
- Exports invoices to QuickBooks, either desktop or the online.
- Bids and invoices can show as much or as little detail as you want.
- Material costs are updated regularly as prices change.
- Costs only a few dollars a month. Cancel any time you want.

**This Manual Has Two Parts;** the Residential Construction Division begins on page 17. Use the figures in this division when estimating the cost of homes and apartments with a wood, steel or masonry frame. The Industrial and Commercial Division begins on page 308 and can be used to estimate costs for nearly all construction not covered by the Residential Division.

The Residential Construction Division is arranged in alphabetical order by construction trade and type of material. The Industrial and Commercial Division follows MasterFormat™ 2004. A complete index begins on page 640.

## Material Costs

**Material Costs** for each item are listed in the column headed "Material." These are neither retail nor wholesale prices. They are estimates of what most

contractors who buy in moderate volume will pay suppliers as of early-2025. Discounts may be available for purchases in larger volume.

Material costs can change rapidly. Material prices in *National Estimator Cloud* are revised as material prices change. See the inside the back cover of this manual for more on *National Estimator Cloud*.

**Add Delivery Expense** to the material cost for other than local delivery of reasonably large quantities. Cost of delivery varies with the distance from source of supply, method of transportation, and quantity to be delivered. But most material dealers absorb the delivery cost on local delivery (5 to 15 miles) of larger quantities to good customers. Add the expense of job site delivery when it is a significant part of the material cost.

**Add Sales Tax** when sales tax will be charged to the contractor buying the materials. *National Estimator Cloud* makes it easy to add sales tax to your estimates, bids and invoices.

**Waste and Coverage** loss is included in the installed material cost. The cost of many materials per unit after installation is greater than the purchase price for the same unit because of waste, shrinkage or coverage loss during installation. For example, about 120 square feet of nominal 1" x 4" square edge boards will be needed to cover 100 square feet of floor or wall. There is no coverage loss with plywood sheathing, but waste due to cutting and fitting will average about 6%.

Costs in the "Material" column of this book assume normal waste and coverage loss. Small and irregular jobs may require a greater waste allowance. Materials priced without installation (with no labor cost) do not include an allowance for waste and coverage except as noted.

## Labor Costs

**Labor Costs** for installing the material or doing the work described are listed in the column headed "Labor." The labor cost per unit is the labor cost per hour multiplied by the manhours per unit shown after the @ sign in the "Craft@Hours" column. Labor cost includes the basic wage, the employer's contribution to welfare, pension, vacation and apprentice funds and all tax and insurance charges based on wages. Hourly labor costs for the various crafts are listed on page 10 (for the Residential Division) and page 309 (for the Industrial and Commercial Division).

Hourly labor costs used in the Industrial and Commercial Division are higher than those used in the Residential Division, reflecting the fact that craftsmen on industrial and commercial jobs are often paid more than craftsmen on residential jobs.

**Supervision Expense** to the general contractor is not included in the labor cost. The cost of supervision and non-productive labor varies widely from job to job. Calculate the cost of supervision and non-productive labor and add this to the estimate.

**Payroll Taxes and Insurance** included in the labor cost are itemized in the sections beginning on pages 185 and 285.

**Manhours per Unit** and the Craft performing the work are listed in the "Craft@Hrs" column. Pages 7 through 9 explain the "Craft@Hrs" column. To find the units of work done per man in an 8-hour day, divide 8 by the manhours per unit. To find the units done by a crew in an 8-hour day, multiply the units per man per 8-hour day by the number of crew members.

**Manhours Include** all productive labor normally associated with installing the materials described. This will usually include tasks such as:

- Unloading and storing construction materials, tools and equipment on site.
- Moving tools and equipment from a storage area or truck on site at the beginning of the day.
- Returning tools and equipment to a storage area or truck on site at the end of the day.
- Normal time lost for work breaks.
- Planning and discussing the work to be performed.
- Normal handling, measuring, cutting and fitting.
- Keeping a record of the time spent and work done.
- Regular cleanup of construction debris.
- Infrequent correction or repairs required because of faulty installation.

**Adjust the Labor Cost** to the job you are figuring when your actual hourly labor cost is known or can be estimated. The labor costs listed on pages 10 and 309 will apply within a few percent on many jobs. But labor costs may be much higher or much lower on the job you are estimating.

If the hourly wage rates listed on page 10 or page 309 are not accurate, divide your known or estimated cost per hour by the listed cost per hour. The result is your adjustment for any figure in the "Labor" column for that craft. See page 11 for more information on adjusting labor costs.

*National Estimator Cloud* makes it easy to compile estimates using your own labor rates.

**Adjust for Unusual Labor Productivity.** Costs in the labor column are for normal conditions: experienced craftsmen working on reasonably well planned and managed new construction with fair to good productivity. Labor estimates assume that materials are standard grade, appropriate tools are on hand, work done by other crafts is adequate, layout and installation are relatively uncomplicated, and working conditions don't slow progress.

Working conditions at the job site have a major effect on labor cost. Estimating experience and careful analysis can help you predict the effect of most changes in working conditions. Obviously, no single adjustment will apply on all jobs. But the adjustments that follow should help you produce more accurate labor estimates. More than one condition may apply on a job.

- Add 10% to 15% when working temperatures are below 40 degrees or above 95 degrees.
- Add 15% to 25% for work on a ladder or a scaffold, in a crawl space, in a congested area or remote from the material storage point.
- Deduct 10% when the work is in a large open area with excellent access and good light.
- Add 1% for each 10 feet that materials must be lifted above ground level.
- Add 5% to 50% for tradesmen with below average skills. Deduct 5% to 25% for highly motivated, highly skilled tradesmen.
- Deduct 10% to 20% when an identical task is repeated many times for several days at the same site.
- Add 30% to 50% on small jobs where fitting and matching of materials is required, adjacent surfaces have to be protected and the job site is occupied during construction.
- Add 25% to 50% for work done following a major flood, fire, earthquake, hurricane or tornado while skilled tradesmen are not readily available. Material costs may also be higher after a major disaster.
- Add 10% to 35% for demanding specs, rigid inspections, unreliable suppliers, a difficult owner or an inexperienced architect.

*National Estimator Cloud* makes it easy to adjust estimates for unusual labor productivity.

**Use an Area Modification Factor** from pages 12 through 15 if your material, hourly labor or equipment costs are unknown and can't be estimated.

Here's how: Use the labor and material costs in this manual without modification. Then add or deduct the percentage shown on pages 12 through 15 to estimated costs to find your local estimated cost.

Area cost modifications in *National Estimator Cloud* will adjust all costs in this manual to any US zip or Canadian postal code you select.

## Equipment Costs

**Equipment Costs** for major equipment (such as cranes and tractors) are listed in the column headed "Equipment." Costs for small tools and expendable supplies (such as saws and tape) are usually considered overhead expense and do not appear in the Equipment cost column.

Equipment costs are based on rental rates listed in the section beginning on page 320 and assume that the equipment can be used productively for an entire 8-hour day. Add the cost of moving equipment on and off the site. Allow for unproductive time when equipment can't be used for the full rental period. For example, the equipment costs per unit of work completed will be higher when a tractor is used for 4 hours during a day and sits idle for the remaining 4 hours. Generally, an 8-hour day is the minimum rental period for most heavy equipment. Many sections describe the equipment being used, the cost per hour and a suggested minimum job charge.

## Subcontracted Work

**Subcontractors** do most of the work on construction projects. That's because specialty contractors can often get the work done at competitive cost, even after adding overhead and profit.

Many sections of this book cover work usually done by subcontractors. If you see the word "subcontract" in a section description, assume that costs are based on quotes by subcontractors and include typical subcontractor markup (about 30% on labor and 15% on material). Usually no material or labor costs will appear in these sections. The only costs shown will be in the "Total" column and will include all material, labor and equipment expense.

If you don't see the word "subcontract" in a section description, assume that costs are based on work done by a general contractor's crew. No markup is included in these costs. If the work is done by a subcontractor, the specialty contractor may be able to perform the work for the cost shown, even after adding overhead and profit.

## Markup

**The General Contractor's Markup** is not included in any costs in this book. On page 208 we suggest a 20% markup on the contract price for general contractors handling residential construction. Apply this markup or some figure you select to all costs, including both subcontract items and work done by your own crews.

To realize a gross profit of 20% on the contract price, you'll have to mark up costs by 25%. See page 208 for an example of how markup is calculated. Markup includes overhead and profit and may be the most difficult item to estimate.

*National Estimator Cloud* will add to the estimate any percentage you select for overhead, contingency and profit.

## Keep In Mind

**Labor and Material Costs Change.** Costs in this manual were compiled in the fall of 2024 and projected to early 2025 based on recent price trends. These projections will be accurate for some materials but inaccurate for others. No one can predict material price changes accurately. Costs in *National Estimator Cloud*

are revised as prices change and are likely to be different from the cost in this manual.

**How Accurate Are These Figures?** As accurate as possible considering that the estimators who compiled this manual don't know your subcontractors or material suppliers, haven't seen the plans or specifications, don't know what building code applies or where the job is, tried to project material costs several months into the future, and had no record of how much work your crews can handle.

You wouldn't bid a job under those conditions. And we don't claim that all construction is done at these prices.

**Estimating Is an Art,** not a science. On many jobs, the range between high and low bid will be 20% or more. There's room for legitimate disagreement on cost estimates for any project, even when complete plans and specifications are available, the date and site are established, and labor and material costs are identical for all bidders.

No cost fits all jobs. Good estimates are custom-made for a particular project and a single contractor through judgment, analysis and experience.

This book is not a substitute for judgment, analysis and sound estimating practice. It's an aid in developing an informed opinion of cost. If you're using this book as a sole cost authority for contract bids, you're reading more into these pages than the editors intend.

**Use These Figures** to compile preliminary estimates, to check your costs and subcontract bids and when no actual costs are available. This book will reduce the chance of error or omission on bid estimates, speed "ball park" estimates, and be a good guide when there's no time to get a quote.

**Where Do We Get These Figures?** From the same sources all professional estimators use: contractors and subcontractors, architectural and engineering firms, material suppliers, material price services, analysis of plans, specifications, estimates and completed project costs, and both published and unpublished cost studies. In addition, we conduct nationwide mail and phone surveys and have the use of several major national estimating databases.

For more on using *National Estimator Cloud*, go to: <https://craftsman-book.com/support/tutorials/>



**We'll Answer Your Questions** about any part of this book and explain how to apply these costs.

Free telephone assistance is available from 8 a.m. until 5 p.m. California time Monday through Friday except holidays. Phone 760-438-7828 x 2.

We don't accept collect calls and won't estimate the job for you. But if you need clarification on something in this manual, we can help.

# Abbreviations

<b>AASHO</b>	American Assn. of State Highway Officials	<b>FAA</b>	Federal Aviation Administration	<b>OC</b>	spacing from center to center
<b>ABS</b>	acrylonitrile butadiene styrene	<b>FICA</b>	Federal Insurance Contributions Act (Social Security, Medicare tax)	<b>OD</b>	outside diameter
<b>AC</b>	alternating current	<b>FOB</b>	freight on board	<b>OS &amp; Y</b>	outside screw & yoke
<b>AISC</b>	American Institute of Steel Construction Inc.	<b>FPM</b>	feet per minute	<b>oz</b>	ounce
<b>APP</b>	attactic polypropylene	<b>FRP</b>	fiberglass reinforced plastic	<b>perf</b>	perforated
<b>ASHRAE</b>	American Society of Heating, Refrigerating and Air Conditioning Engineers	<b>FS</b>	Federal Specification	<b>Pr</b>	pair
<b>ASME</b>	American Society of Mechanical Engineers	<b>ft-lbs</b>	foot pounds	<b>PSF</b>	pounds per square foot
<b>ASTM</b>	American Society for Testing Materials	<b>FUTA</b>	Federal Unemployment Compensation Act Tax	<b>PSI</b>	pounds per square inch
<b>AWPA</b>	American Wood Products Association	<b>Gal</b>	gallon	<b>PV</b>	photovoltaic
<b>AWWA</b>	American Water Works Association	<b>GFCI</b>	ground fault circuit interruptor	<b>PVC</b>	polyvinyl chloride
<b>Ba</b>	bay	<b>GPH</b>	gallon(s) per hour	<b>Qt</b>	quart
<b>Bdle</b>	bundle	<b>GPM</b>	gallon(s) per minute	<b>R</b>	thermal resistance
<b>BF</b>	board foot	<b>H</b>	height	<b>R/L</b>	random length(s)
<b>BHP</b>	boiler horsepower	<b>HP</b>	horsepower	<b>R/W/L</b>	random widths and lengths
<b>Btr</b>	better	<b>Hr(s)</b>	hour(s)	<b>RPM</b>	revolutions per minute
<b>Btu</b>	British thermal unit	<b>IMC</b>	intermediate metal conduit	<b>RSC</b>	rigid steel conduit
<b>B &amp; W</b>	black & white	<b>ID</b>	Inside diameter	<b>S1S2E</b>	surfaced 1 side, 2 edges
<b>C</b>	thermal conductance	<b>KD</b>	kiln dried or knocked down	<b>S2S</b>	surfaced 2 sides
<b>C</b>	one hundred	<b>KSI</b>	kips per square inch	<b>S4S</b>	surfaced 4 sides
<b>CF</b>	cubic foot	<b>KV</b>	kilovolt(s)	<b>Sa</b>	sack
<b>CFM</b>	cubic feet per minute	<b>KVA</b>	1,000 volt amps	<b>SBS</b>	styrene butyl styrene
<b>CLF</b>	100 linear feet	<b>kw</b>	kilowatt(s)	<b>SDR</b>	size to diameter ratio
<b>cm</b>	centimeter	<b>kwh</b>	kilowatt hour	<b>SF</b>	square foot
<b>CPE</b>	chlorinated polyethylene	<b>L</b>	length	<b>SFCA</b>	square feet of form in contact with concrete
<b>CPM</b>	cycles per minute	<b>Lb(s)</b>	pound(s)	<b>Sq</b>	100 square feet
<b>CPVC</b>	chlorinated polyvinyl chloride	<b>LF</b>	linear foot	<b>SSB</b>	single strength B quality glass
<b>CSPE</b>	chloro sulphinated polyethylene	<b>LP</b>	liquified propane	<b>STC</b>	sound transmission class
<b>CSF</b>	100 square feet	<b>LS</b>	lump sum	<b>Std</b>	standard
<b>CSY</b>	100 square yards	<b>M</b>	one thousand	<b>SY</b>	square yard
<b>CY</b>	cubic yard	<b>Mb</b>	million bytes (characters)	<b>T</b>	thick
<b>d</b>	penny	<b>MBF</b>	1,000 board feet	<b>T&amp;G</b>	tongue & groove edge
<b>D</b>	depth	<b>MBtu</b>	1,000 British thermal units	<b>TV</b>	television
<b>DC</b>	direct current	<b>MCM</b>	1,000 circular mils	<b>UBC</b>	Uniform Building Code
<b>dia</b>	diameter	<b>MDO</b>	medium density overlaid	<b>UL</b>	Underwriter's Laboratory
<b>DSB</b>	double strength B quality glass	<b>MH</b>	manhour	<b>USDA</b>	United States Dept. of Agriculture
<b>DWV</b>	drain, waste, vent piping	<b>Mi</b>	mile	<b>VLF</b>	vertical linear foot
<b>Ea</b>	each	<b>MLF</b>	1,000 linear feet	<b>W</b>	width
<b>EMT</b>	electric metallic tube	<b>MPH</b>	miles per hour	<b>Wk</b>	week
<b>EPDM</b>	ethylene propylene diene monomer	<b>mm</b>	millimeter(s)	<b>W/</b>	with
<b>equip.</b>	equipment	<b>Mo</b>	month	<b>x</b>	by or times
<b>exp.</b>	exposure	<b>MSF</b>	1,000 square feet		
<b>F</b>	Fahrenheit	<b>NEMA</b>	National Electrical Manufacturer's Association		
		<b>NFPA</b>	National Fire Protection Association		
		<b>No.</b>	number		
		<b>NRC</b>	noise reduction coefficient		

## Symbols

/	per
—	through or to
@	at
%	per 100 or percent
\$	U.S. dollars
'	feet
"	inches
#	pound or number

# Craft Codes, Hourly Costs and Crew Compositions

Both the Residential Division and Commercial and Industrial Division of this book include a column titled Craft@Hrs. Letters and numbers in this column show our estimates of:

- Who will do the work (the craft code)
- An @ symbol which means “at”
- How long the work will take (manhours).

For example, on page 51 you'll find estimates for installing BC plywood wall sheathing by the square foot. The Craft@Hrs column opposite ½" plywood wall sheathing shows:

B1@.016

That means we estimate the installation rate for crew B1 at .016 manhours per square foot. That's the same as 16 manhours per 1,000 square feet.

The table that follows defines each of the craft codes used in this book. Notice that crew B1 is composed of two craftsmen: one laborer and one carpenter.

Notice also in the table below that the cost per manhour for crew B1 is listed as \$35.64. That's the average for a residential laborer (listed at \$35.64 per hour on page 10) and a residential carpenter (listed at \$43.29 per hour): \$35.64 plus \$43.29 is \$78.93. Divide by 2 to get \$39.465 (rounded up to \$39.47), the average cost per manhour for crew B1.

In the table below, the cost per manhour is the sum of hourly costs of all crew members divided by the number of crew members. That's the average cost per manhour.

Costs in the Labor column in this book are the product of the installation time (in manhours) multiplied by the average cost per manhour for the designated crew.

## Residential Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
B1	\$39.47	1 laborer and 1 carpenter	BR	\$42.15	1 lather
B2	\$40.74	1 laborer, 2 carpenters	BS	\$36.21	1 marble setter
B3	\$38.19	2 laborers, 1 carpenter	CF	\$41.80	1 cement mason
B4	\$42.99	1 laborer 1 operating engineer 1 reinforcing iron worker	CT	\$34.31	1 mosaic & terrazzo worker
B5	\$42.81	1 laborer, 1 carpenter 1 cement mason 1 operating engineer 1 reinforcing iron worker	D1	\$43.18	1 drywall installer 1 drywall taper
B6	\$38.72	1 laborer, 1 cement mason	DI	\$42.75	1 drywall installer
B7	\$36.27	1 laborer, 1 truck driver	DT	\$43.60	1 drywall taper
B8	\$41.95	1 laborer 1 operating engineer	HC	\$32.31	1 plasterer helper
B9	\$37.23	1 bricklayer 1 bricklayer's helper	OE	\$48.25	1 operating engineer
BB	\$42.48	1 bricklayer	P1	\$42.54	1 laborer, 1 plumber
BC	\$43.29	1 carpenter	PM	\$49.43	1 plumber
BE	\$46.59	1 electrician	PP	\$39.62	1 painter, 1 laborer
BF	\$39.11	1 floor layer	PR	\$43.62	1 plasterer
BG	\$42.04	1 glazier	PT	\$43.59	1 painter
BH	\$31.97	1 bricklayer's helper	R1	\$41.78	1 roofer, 1 laborer
BL	\$35.64	1 laborer	RI	\$45.09	1 reinforcing iron worker
			RR	\$47.91	1 roofer
			SW	\$47.79	1 sheet metal worker
			T1	\$37.22	1 tile layer, 1 laborer
			TL	\$38.80	1 tile layer
			TR	\$36.90	1 truck driver



## Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
A1	\$59.07	1 asbestos worker 1 laborer	F6	\$57.23	2 carpenters, 2 laborers 1 tractor operator
AT	\$49.83	1 air tool operator	F7	\$59.32	2 carpenters, 1 laborer 1 tractor operator
AW	\$69.26	1 asbestos worker	F8	\$59.49	2 plasterers 1 plasterer's helper
BM	\$71.75	1 boilermaker	F9	\$53.74	1 laborer, 1 floor layer
BT	\$47.16	1 bricklayer tender	FL	\$58.61	1 floor layer
C1	\$50.10	4 laborers, 1 truck driver	G1	\$56.84	1 glazier, 1 laborer
C2	\$57.66	1 laborer, 2 truck drivers 2 tractor operators	H1	\$62.91	1 carpenter, 1 laborer 1 iron worker (structural) 1 tractor operator
C3	\$56.20	1 laborer, 1 truck driver 1 tractor operator	H2	\$59.96	1 crane operator 1 truck driver
C4	\$50.92	2 laborers, 1 truck driver	H3	\$54.73	1 carpenter, 3 laborers 1 crane operator 1 truck driver
C5	\$54.37	2 laborers, 1 truck driver 1 tractor operator	H4	\$72.16	1 crane operator 6 iron workers (structural) 1 truck driver
C6	\$53.27	6 laborers, 2 truck drivers 2 tractor operators	H5	\$63.02	1 crane operator 2 iron workers (structural) 2 laborers
C7	\$56.06	2 laborers, 3 truck drivers 1 crane operator 1 tractor operator	H6	\$62.55	1 iron worker (structural) 1 laborer
C8	\$55.36	1 laborer, 1 carpenter	H7	\$72.45	1 crane operator 2 iron workers (structural)
C9	\$56.89	1 laborer, 1 crane operator	H8	\$70.80	1 crane operator 4 iron workers (structural) 1 truck driver
CB	\$60.62	1 bricklayer	H9	\$69.20	1 electrician 1 sheet metal worker
CC	\$61.85	1 carpenter	IW	\$76.22	1 iron worker (structural)
CD	\$61.48	1 drywall installer	LA	\$56.18	1 lather
CE	\$69.33	1 electrician	M1	\$53.89	1 bricklayer 1 bricklayer's tender
CG	\$64.80	1 glazier	M2	\$53.20	1 carpenter, 2 laborers
CL	\$48.87	1 laborer	M3	\$57.12	1 plasterer 1 plasterer's helper
CM	\$60.31	1 cement mason	M4	\$53.93	1 laborer, 1 marble setter
CO	\$64.90	1 crane operator	M5	\$60.02	1 pipefitter, 1 laborer,
CV	\$67.48	1 elevator constructor	M6	\$63.10	1 asbestos worker 1 laborer, 1 pipefitter
D2	\$55.18	1 drywall installer 1 laborer	M8	\$65.60	3 pipefitters, 1 laborer
D3	\$62.65	1 laborer, 1 iron worker (structural), 1 millwright	M9	\$70.25	1 electrician, 1 pipefitter
D4	\$55.87	1 laborer, 1 millwright	MI	\$63.74	2 pipefitters, 1 laborer
D5	\$60.31	1 boilermaker, 1 laborer	MS	\$58.99	marble setter
D6	\$63.48	2 millwrights 1 tractor operator	MT	\$49.62	mosaic & terrazzo worker
D7	\$54.89	1 painter, 1 laborer	MW	\$62.87	millwright
D9	\$58.20	2 millwrights, 1 laborer			
E1	\$60.22	2 electricians, 2 laborers 1 tractor operator			
E2	\$59.10	2 electricians, 2 laborers			
E3	\$60.02	2 electricians, 2 laborers 2 carpenters			
E4	\$59.10	1 electrician, 1 laborer			
F5	\$56.66	3 carpenters, 2 laborers			

## Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
P5	\$53.27	3 laborers 1 tractor operator 1 truck driver	S8	\$58.22	2 pile drivers, 2 laborers 1 truck driver 1 crane operator 1 tractor operator
P6	\$60.63	1 laborer, 1 plumber	S9	\$56.01	1 pile driver, 2 laborers 1 tractor operator 1 truck driver
P8	\$54.63	1 laborer, 1 cement mason			
P9	\$57.03	1 carpenter, 1 laborer 1 cement mason			
PA	\$60.90	1 painter	SM	\$69.06	1 sheet metal worker
PD	\$62.60	1 pile driver	SP	\$73.93	1 sprinkler fitter
PF	\$71.17	1 pipefitter	SS	\$59.42	1 laborer
PH	\$49.99	1 plasterer's helper			2 tractor operators
PL	\$72.38	1 plumber	T2	\$61.89	3 laborers, 3 carpenters 3 iron workers (structural) 1 crane operator 1 truck driver
PS	\$64.24	1 plasterer			
R3	\$54.66	2 roofers, 1 laborer			
RB	\$74.75	1 reinforcing iron worker	T3	\$61.81	1 laborer 1 reinforcing iron worker
RF	\$57.55	1 roofer			
S1	\$56.79	1 laborer 1 tractor operator	T4	\$49.25	1 laborer, 1 mosaic worker
S3	\$59.86	1 truck driver 1 tractor operator	T5	\$58.97	1 sheet metal worker 1 laborer
S4	\$48.87	3 laborers	T6	\$62.33	2 sheet metal workers 1 laborer
S5	\$52.04	5 laborers 1 crane operator 1 truck driver	TD	\$55.02	1 truck driver
S6	\$54.15	2 laborers 1 tractor operator	TO	\$64.70	1 tractor operator
S7	\$56.79	3 laborers 3 tractor operators	U1	\$58.71	1 plumber, 2 laborers 1 tractor operator
			U2	\$56.71	1 plumber, 2 laborers

of this manual beginning on page 185. Taxes are itemized in the section on page 285. Note that taxes and insurance increase the hourly labor cost by 30 to 35% for most trades. There is no legal way to avoid these costs.

**Column 4**, insurance and employer taxes in dollars, shows the hourly cost of taxes and insurance for each construction trade. Insurance and taxes are paid on the costs in both columns 1 and 2.

**Column 5**, non-taxable fringe benefits, includes employer paid non-taxable benefits such as medical coverage and tax-deferred pension and profit sharing plans. These fringe benefits average 5.02% of the base wage for many construction contractors. The employer pays no taxes or insurance on these benefits.

**Column 6**, the total hourly cost in dollars, is the sum of columns 1, 2, 4, and 5.

These hourly labor costs will apply within a few percent on many jobs. But wage rates may be much higher or lower in some areas. If the hourly costs shown in column 6 are not accurate for your work, develop modification factors that you can apply to the labor costs in this book. The following paragraphs explain the procedure.

### Adjusting Labor Costs

Here's how to customize the labor costs in this book if your wage rates are different from the wage rates shown on page 10 or 309.

Start with the taxable benefits you offer. Assume craftsmen on your payroll get one week of vacation each year and one week of sick leave each year. Convert these benefits into hours. Your computation might look like this:

$$\begin{array}{r} 40 \text{ vacation hours} \\ + 40 \text{ sick leave hours} \\ \hline 80 \text{ taxable leave hours} \end{array}$$

Then add the regular work hours for the year:

$$\begin{array}{r} 2,000 \text{ regular hours} \\ + 80 \text{ taxable benefit hours} \\ \hline 2,080 \text{ total hours} \end{array}$$

Multiply these hours by the base wage per hour. If you pay carpenters \$20.00 per hour, the calculation would be:

$$\begin{array}{r} 2,080 \text{ hours} \\ \times \$22.50 \text{ per hour} \\ \hline \$46,800 \text{ per year} \end{array}$$

Next, determine the tax and insurance rate for each trade. If you know the rates that apply to your jobs, use those rates. If not, use the rates in column 3 on page 10.

Continuing with our example, we'll use 29.36%, the rate for carpenters in column 3 on page 10. To increase the annual taxable wage by 29.36%, we'll multiply by 1.2936:

$$\begin{array}{r} \$46,800 \text{ per year} \\ \times 1.2936 \text{ tax \& insurance rate} \\ \hline \$60,540.50 \text{ annual cost} \end{array}$$

Then add the cost of non-taxable benefits. Suppose your company has no pension or profit sharing plan but does provide medical insurance for employees. Assume that the cost for your carpenter is \$966.67 per month or \$11,600 per year.

$$\begin{array}{r} \$11,600 \text{ medical plan} \\ + 60,540.50 \text{ annual cost} \\ \hline \$72,140.50 \text{ total annual cost} \end{array}$$

Divide this total annual cost by the actual hours worked in a year. This gives the contractor's total hourly labor cost including all benefits, taxes and insurance. Assume your carpenter will work 2,000 hours a year:

$$\frac{\$72,140.50}{2,000} = \$36.07 \text{ per hour}$$

Finally, find your modification factor for the labor costs in this book. Divide your total hourly labor cost by the total hourly labor cost shown on page 10. For the carpenter in our example, the figure in column 6 is \$43.29.

$$\frac{\$36.07}{\$43.29} = .833$$

Your modification factor is 83.3%. Multiply any building carpenter (Craft Code BC) labor costs in the Residential Division of this book by .833 to find your estimated cost. For example, on page 24 the labor cost for installing an 18" long towel bar is \$12.10 per each bar. If installed by your carpenter working at \$22.50 per hour, your estimated cost would be 83.3% of \$12.10 or \$10.08. The manhours would remain the same @.280, assuming normal productivity.

### If the Labor Rate Is Unknown

On some estimates you may not know what labor rates will apply. In that case, use both labor and material figures in this book without making any adjustment. When all labor, equipment and material costs have been compiled, add or deduct the percentage shown in the area modification table on pages 12 through 15.

Adjusting the labor costs in this book will make your estimates much more accurate.

# Area Modification Factors

Construction costs are higher in some areas than in other areas. Add or deduct the percentage shown on the following pages to adapt the costs in this book to your job site. Adjust your cost estimate up or down by the percentages in this table to find the estimated cost for the site selected. Where 0% is shown, it means no modification is required.

Modification factors are listed alphabetically by state and province. Areas within each state are listed alphabetically. For convenience, one representative city is identified in each three-digit zip or range of zips. Percentages are based on the average of all data points in the table. Factors listed for each state and province are the average of all data points in that

state or province. Figures for three-digit zips are the average of all five-digit zips in that area. Figures in the Total column are the weighted average of factors for Labor, Material and Equipment.

National Estimator Cloud will apply an area modification factor for any five-digit zip or Canadian postal code you select.

These percentages are composites of many costs and will not necessarily be accurate when estimating the cost of any particular part of a building. But when used to modify costs for an entire structure, these area cost modifiers should improve the accuracy of your estimates.

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
<b>Alabama Average</b>		<b>-1</b>	<b>-6</b>	<b>0</b>	<b>-3%</b>	Long Beach	907-908	3	21	1	11%	<b>District of Columbia Average</b>					
Anniston	362	-3	-8	-1	-5%	Los Angeles	900-901	3	15	1	8%	Washington	200-205	2	23	1	12%
Auburn	368	-1	-9	0	-5%	Marysville	959	1	1	0	1%	<b>Florida Average</b>		<b>-1</b>	<b>-5</b>	<b>0</b>	<b>-2%</b>
Bellamy	369	-2	5	-1	1%	Modesto	953	1	-1	0	0%	Altamonte Springs	327	-1	0	0	-1%
Birmingham	350-352	-3	10	-1	3%	Mojave	935	0	12	0	6%	Bradenton	342	0	-6	0	-3%
Dothan	363	-1	-11	0	-6%	Novato	949	3	21	1	11%	Brooksville	346	0	-12	0	-6%
Evergreen	364	-2	-17	-1	-9%	Oakland	945-947	3	37	1	19%	Daytona Beach	321	-2	-15	-1	-8%
Gadsden	359	-4	-13	-1	-8%	Orange	928	3	26	1	14%	Fort Lauderdale	333	3	7	1	5%
Huntsville	358	1	4	0	2%	Oxnard	930	3	0	1	2%	Fort Myers	339	0	-6	0	-3%
Jasper	355	-2	-13	-1	-7%	Pasadena	910-912	4	18	1	10%	Fort Pierce	349	-2	-16	-1	-8%
Mobile	365-366	-1	-3	0	-2%	Rancho Cordova	956-957	2	11	1	6%	Gainesville	326	-1	-13	0	-7%
Montgomery	360-361	-1	-1	0	-1%	Redding	960	1	-9	0	-4%	Jacksonville	322	-1	6	0	2%
Scottsboro	357	0	-3	0	-1%	Richmond	948	2	39	1	19%	Lakeland	338	-3	-9	-1	-6%
Selma	367	-1	-12	0	-6%	Riverside	925	1	7	0	4%	Melbourne	329	-2	-4	-1	-3%
Sheffield	356	-1	-2	0	-1%	Sacramento	958	1	11	0	6%	Miami	330-332	2	5	1	3%
Tuscaloosa	354	0	-10	0	-5%	Salinas	939	3	0	1	2%	Naples	341	3	-4	1	0%
<b>Alaska Average</b>		<b>14</b>	<b>14</b>	<b>4</b>	<b>14%</b>	San Bernardino	923-924	0	4	0	2%	Ocala	344	-3	-15	-1	-8%
Anchorage	995	16	18	5	17%	San Diego	919-921	3	14	1	8%	Orlando	328	0	7	0	3%
Fairbanks	997	16	25	5	20%	San Francisco	941	3	58	1	28%	Panama City	324	-2	-14	-1	-8%
Juneau	998	18	7	6	13%	San Jose	950-951	3	48	1	24%	Pensacola	325	-1	-12	0	-6%
Ketchikan	999	3	12	1	7%	San Mateo	943-944	4	39	1	20%	Saint Augustine	320	-1	0	0	-1%
King Salmon	996	16	10	5	13%	Santa Barbara	931	3	3	1	3%	Saint Cloud	347	-1	1	0	0%
<b>Arizona Average</b>		<b>1</b>	<b>-12</b>	<b>0</b>	<b>-5%</b>	Santa Rosa	954	3	8	1	5%	St Petersburg	337	0	-9	0	-4%
Chambers	865	1	-39	0	-17%	Stockton	952	2	6	1	4%	Tallahassee	323	0	-13	0	-6%
Douglas	855	0	-22	0	-10%	Sunnyvale	940	3	48	1	24%	Tampa	335-336	-1	6	0	2%
Flagstaff	860	2	-22	1	-9%	Van Nuys	913-916	3	15	1	8%	West Palm Beach	334	1	6	0	3%
Kingman	864	1	-22	0	-10%	Whittier	906	3	17	1	9%	<b>Georgia Average</b>		<b>-1</b>	<b>-2</b>	<b>0</b>	<b>-1%</b>
Mesa	852	1	12	0	6%	<b>Colorado Average</b>		<b>2</b>	<b>1</b>	<b>1</b>	<b>1%</b>	Albany	317	-2	-9	-1	-5%
Phoenix	850	1	12	0	6%	Aurora	800-801	3	19	1	10%	Athens	306	0	0	0	0%
Prescott	863	3	-17	1	-6%	Boulder	803-804	3	10	1	6%	Atlanta	303	3	43	1	21%
Show Low	859	2	-23	1	-10%	Colorado Springs	808-809	2	-3	1	0%	Augusta	308-309	-2	-12	-1	-7%
Tucson	856-857	0	-14	0	-6%	Denver	802	3	20	1	11%	Buford	305	0	2	0	1%
Yuma	853	0	11	0	5%	Durango	813	1	-15	0	-6%	Calhoun	307	-1	-4	0	-2%
<b>Arkansas Average</b>		<b>-2</b>	<b>-15</b>	<b>0</b>	<b>-8%</b>	Fort Morgan	807	2	-10	1	-4%	Columbus	318-319	-1	-12	0	-6%
Batesville	725	0	-24	0	-11%	Glenwood Springs	816	2	4	1	3%	Dublin/Fort Valley	310	-3	-11	-1	-7%
Camden	717	-4	-5	-1	-4%	Grand Junction	814-815	1	-4	0	-1%	Hinesville	313	-2	-2	-1	-2%
Fayetteville	727	0	-4	0	-2%	Greeley	806	3	10	1	6%	Kings Bay	315	-2	-15	-1	-8%
Fort Smith	729	-1	-16	0	-8%	Longmont	805	3	2	1	3%	Macon	312	-2	6	-1	2%
Harrison	726	-1	-29	0	-14%	Pagosa Springs	811	0	-9	0	-4%	Marietta	300-302	1	16	0	8%
Hope	718	-3	-19	-1	-10%	Pueblo	810	-1	-5	0	-3%	Savannah	314	-1	0	0	-1%
Hot Springs	719	-2	-26	-1	-13%	Salida	812	2	-8	1	-3%	Statesboro	304	-2	-16	-1	-8%
Jonesboro	724	-1	-12	0	-6%	<b>Connecticut Average</b>		<b>1</b>	<b>23</b>	<b>0</b>	<b>11%</b>	Valdosta	316	-1	-11	0	-6%
Little Rock	720-722	-1	-7	0	-4%	Bridgeport	66	0	26	0	12%	<b>Hawaii Average</b>		<b>17</b>	<b>21</b>	<b>6</b>	<b>19%</b>
Pine Bluff	716	-4	-20	-1	-11%	Bristol	60	1	27	0	13%	Aliamanu	968	17	25	6	21%
Russellville	728	0	-15	0	-7%	Fairfield	64	2	26	1	13%	Ewa	967	17	20	6	18%
West Memphis	723	-3	1	-1	-1%	Hartford	61	0	25	0	12%	Halawa Heights	967	17	20	6	18%
<b>California Average</b>		<b>2</b>	<b>15</b>	<b>1</b>	<b>8%</b>	New Haven	65	1	22	0	11%	Hilo	967	17	20	6	18%
Alhambra	917-918	3	18	1	10%	Norwich	63	0	13	0	6%	Honolulu	968	17	25	6	21%
Bakersfield	932-933	0	-1	0	0%	Stamford	068-069	4	32	1	17%	Kailua	968	17	25	6	21%
El Centro	922	1	-2	0	0%	Waterbury	67	1	22	0	11%	Lualualei	967	17	20	6	18%
Eureka	955	1	-5	0	-2%	West Hartford	62	1	11	0	6%	Mililani Town	967	17	20	6	18%
Fresno	936-938	0	1	0	0%	<b>Delaware Average</b>		<b>1</b>	<b>5</b>	<b>0</b>	<b>3%</b>	Pearl City	967	17	20	6	18%
Herlong	961	2	0	1	1%	Dover	199	1	-7	0	-3%	Wahiawa	967	17	20	6	18%
Inglewood	902-905	3	18	1	10%	Newark	197	2	12	1	7%	Waianae	967	17	20	6	18%
Irvine	926-927	3	28	1	14%	Wilmington	198	0	11	0	5%	Wailuku (Maui)	967	17	20	6	18%
Lompoc	934	3	-1	1	1%												

# Area Modification Factors

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
Columbia	384	-1	-12	0	-6%	Charlottesville	229	1	-6	0	-2%	Gillette	827	-1	-7	0	-4%
Cookeville	385	0	-17	0	-8%	Chesapeake	233	-1	0	0	-1%	Powell	824	0	-24	0	-11%
Jackson	383	-1	4	0	1%	Culpeper	227	1	-13	0	-5%	Rawlins	823	0	-9	0	-4%
Kingsport	376	0	-8	0	-4%	Farmville	239	-2	-16	-1	-8%	Riverton	825	-1	-17	0	-8%
Knoxville	377-379	-1	-2	0	-1%	Fredericksburg	224-225	1	-15	0	-6%	Rock Springs	829-831	0	-2	0	-1%
McKenzie	382	-1	-23	0	-11%	Galax	243	-2	-21	-1	-11%	Sheridan	828	1	-13	0	-5%
Memphis	380-381	-1	9	0	4%	Harrisonburg	228	1	-10	0	-4%	Wheatland	822	0	-7	0	-3%
Nashville	371-372	1	12	0	6%	Lynchburg	245	-2	-9	-1	-5%	<b>UNITED STATES TERRITORIES</b>					
<b>Texas Average</b>					<b>-2 2 -1 0%</b>	Norfolk	235-237	0	1	0	0%	Guam	53	-21	-5	18%	
Abilene	795-796	-4	-8	-1	-6%	Petersburg	238	-2	3	-1	0%	Puerto Rico	2	-47	-5	-21%	
Amarillo	790-791	-2	-10	-1	-6%	Radford	241	-2	6	-1	2%	<b>VIRGIN ISLANDS</b>					
Arlington	760	-1	13	0	5%	Reston	201	3	23	1	12%	St. Croix	18	-15	-4	2%	
Austin	786-787	1	19	0	9%	Richmond	232	-1	11	0	5%	St. John	52	-15	-4	20%	
Bay City	774	-1	37	0	17%	Roanoke	240	-1	1	0	0%	St. Thomas	23	-15	-4	5%	
Beaumont	776-777	-3	16	-1	6%	Staunton	244	0	-12	0	-6%	<b>CANADIAN AREA MODIFIERS</b>					
Brownwood	768	-3	-8	-1	-5%	Tazewell	246	-3	-20	-1	-11%	These figures assume an exchange rate of \$1.00 Canadian to \$0.76 U.S.					
Bryan	778	0	-7	0	-3%	Virginia Beach	234	0	-2	0	-1%	<b>Alberta Average</b>	<b>26 -1 7 13%</b>				
Childress	792	-3	-7	-1	-5%	Williamsburg	230-231	0	-2	0	-1%	Calgary	26	1	7	14%	
Corpus Christi	783-784	-2	16	-1	6%	Winchester	226	0	-11	0	-5%	Edmonton	25	2	7	14%	
Dallas	751-753	-1	21	0	9%	<b>Washington Average</b>					1 4 1 2%	Fort McMurray	28	-7	7	12%	
Del Rio	788	-3	-18	-1	-10%	Clarkston	994	0	0	0	0%	<b>British Columbia Average</b>					
El Paso	798-799	-3	-18	-1	-10%	Everett	982	2	6	-1	4%	26 -15 7 7%					
Fort Worth	761-762	-2	13	-1	5%	Olympia	985	2	3	1	2%	Fraser Valley	26	-16	7	6%	
Galveston	775	-3	24	-1	9%	Pasco	993	0	9	0	4%	Okanagan	27	-18	7	6%	
Giddings	789	0	7	0	3%	Seattle	980-981	3	28	1	14%	Vancouver	26	-11	7	9%	
Greenville	754	-3	10	-1	3%	Spokane	990-992	0	-7	0	-3%	<b>Manitoba Average</b>					
Houston	770-772	-1	26	0	11%	Tacoma	983-984	2	6	1	4%	20 -22 5 0%					
Huntsville	773	-2	21	-1	9%	Vancouver	986	2	7	1	4%	North Manitoba	20	-22	5	0%	
Longview	756	-3	12	-1	-7%	Wenatchee	988	1	1	0	1%	Selkirk	20	-22	5	0%	
Lubbock	793-794	-3	-8	-1	-5%	Yakima	989	0	-15	0	-7%	South Manitoba	20	-22	5	0%	
Lufkin	759	-3	-13	-1	-8%	<b>West Virginia Average</b>					-2 -11 -1 -6%	Winnipeg	20	-22	5	0%	
McAllen	785	-3	-22	-1	-12%	Beckley	258-259	0	-20	0	-9%	<b>New Brunswick Average</b>					
Midland	797	-3	19	-1	7%	Bluefield	247-248	-1	-23	0	-11%	16 -47 3 -13%					
Palestine	758	-2	-10	-1	-6%	Charleston	250-253	1	2	0	1%	<b>Newfoundland/Labrador Average</b>					
Plano	750	0	20	0	9%	Clarksburg	263-264	-3	8	-1	2%	19 -29 4 -3%					
San Angelo	769	-3	-12	-1	-7%	Fairmont	266	0	-6	0	-3%	<b>Nova Scotia Average</b>					
San Antonio	780-782	-2	5	-1	1%	Huntington	255-257	-1	-10	0	-5%	17 -36 4 -8%					
Texarkana	755	-3	-17	-1	-9%	Lewisburg	249	-2	-17	-1	-9%	Amherst	16	-36	3	-8%	
Tyler	757	-1	-13	0	-7%	Martinsburg	254	-1	-12	0	-6%	Nova Scotia	17	-35	4	-7%	
Victoria	779	-3	1	-1	-1%	Morgantown	265	-3	-10	-1	-6%	Sydney	17	-37	4	-8%	
Waco	765-767	-3	-3	-1	-3%	New Martinsville	262	-2	-19	-1	-10%	<b>Ontario Average</b>					
Wichita Falls	763	-3	-17	-1	-9%	Parkersburg	261	-3	-14	-1	-8%	22 -11 5 7%					
Woodson	764	-3	-7	-1	-5%	Romney	267	-4	-15	-1	-9%	London	22	-10	5	7%	
<b>Utah Average</b>					<b>1 -6 1 -2%</b>	Sugar Grove	268	-3	-23	-1	-12%	Thunder Bay	24	-14	6	6%	
Clearfield	840	2	2	1	2%	Wheeling	260	-3	4	-1	0%	Toronto	21	-9	5	7%	
Green River	845	1	-15	0	-6%	<b>Wisconsin Average</b>					-1 0 0 0%	<b>Quebec Average</b>					
Ogden	843-844	0	-13	0	-6%	Amery	540	0	-1	0	0%	19 -24 4 -1%					
Provo	846-847	-2	-10	1	-4%	Beloit	535	0	8	0	4%	Montreal	19	-24	4	-1%	
Salt Lake City	841	2	4	1	3%	Clam Lake	545	-1	-13	0	-7%	Quebec City	19	-24	4	-1%	
<b>Vermont Average</b>					<b>1 -9 0 -4%</b>	Eau Claire	547	-1	-5	0	-3%	<b>Saskatchewan Average</b>					
Albany	58	1	-16	0	-7%	Green Bay	541-543	0	7	0	3%	23 -18 5 4%					
Battleboro	53	1	-8	0	-3%	La Crosse	546	-2	-3	-1	-2%	La Ronge	24	-21	6	3%	
Beecher Falls	59	1	-16	0	-7%	Ladysmith	548	-2	-7	-1	-4%	Prince Albert	22	-20	5	2%	
Bennington	52	-1	-16	0	-8%	Madison	537	2	10	1	6%	Saskatoon	22	-14	5	5%	
Burlington	54	2	2	1	2%	Milwaukee	530-534	0	11	0	5%						
Montpelier	56	2	-2	1	0%	Oshkosh	549	-1	12	0	5%						
Rutland	57	-1	-10	0	-5%	Portage	539	0	0	0	0%						
Springfield	51	-1	-9	0	-5%	Prairie du Chien	538	-2	-13	-1	-7%						
White River Junction	50	1	-8	0	-3%	Wausau	544	-1	-9	0	-5%						
<b>Virginia Average</b>					<b>0 -4 0 -2%</b>	<b>Wyoming Average</b>					<b>0 -9 0 -4%</b>						
Abingdon	242	-2	-15	-1	-8%	Casper	826	-2	2	-1	0%						
Alexandria	220-223	3	29	1	15%	Cheyenne/ Laramie	820	1	-6	0	-2%						

## Credits and Acknowledgments

---

This book has over 30,000 cost estimates for 2025. To develop these estimates, the editors relied on information supplied by hundreds of construction cost authorities. We offer our sincere thanks to the contractors, engineers, design professionals, construction estimators, material suppliers and manufacturers who, in the spirit of cooperation, have assisted in the preparation of this Seventy-Second Edition of the National Construction Estimator. Many of the cost authorities who supplied information for this volume are listed below.

**AFCO Roofing Supply**, John Ording  
**Amerec Products**, Jim Haas  
**American Arbitration Assoc.**, Kerstin Norlin  
**Anthem Contracting**, Joe Caronna  
**Bell Blueprint**, Paul Moore  
**Cement Cutting, Inc.**, Matt Becker  
**Dial One**, Charlie Gindele  
**Fiorentine Company**, Tom Forsyth  
**Groundwater Data, Inc.**, John Kratz  
**H&H Specialties**, Reid Neslage  
**Iron-A-Way Company**, Reg Smidt  
**J.H. Baxter, Inc.**, Dean Rogers  
**KEL-EEZ Weatherstripping**, James Adams  
**Marbleworks of San Diego**, Charlene Butler  
**Mel-Northey Co.**, Mel Northey  
**On Time Appraisal**, Ralph Kinney  
**Prof. Photographic Service**, Larry Hoagland  
**RCP Block & Brick Co.**, Gina Adams  
**San Diego Gas & Electric**, Don Altevors  
**Superior Rock Products**, John Knieff  
**U. S. Gypsum Company**, Roger Merchet  
**West Coast Lumber Inspect. Bur.**, Jim Kneaper  
**Weyerhaeuser Company**, Doug Barkee  
**York Spiral Stair**, Jim A. Guerette  
Daniel Atcheson

A special thanks to the following people. Special assistants to the editors: Bilandra Chase, James Thomson.  
Layout & Images: Christine Pray.

Software production: Roxosoft

Cover design: Jennifer Johnson

Photos: iStock by Getty Images™

## Adhesives

**Adhesives** See also, Caulking, Flooring, Roofing and Tile in the Residential Division

**Panel adhesives** Better quality, gun applied in continuous bead to wood or metal framing or furring members, material only, add labor below. Per 100 SF of wall, floor, or ceiling including 6% waste.

	Unit	Bead diameter			
		1/8"	1/4"	3/8"	1/2"
<b>Subfloor adhesive, on floors</b>					
12" OC members	CSF	3.38	13.50	30.40	54.10
16" OC members	CSF	2.53	10.10	22.80	40.50
20" OC members	CSF	2.03	8.11	18.20	32.40
24" OC members	CSF	1.69	6.76	15.20	27.00
<b>Wall sheathing or shear panel adhesive, on walls</b>					
12" OC members	CSF	4.98	19.90	44.90	79.70
16" OC members	CSF	3.74	15.00	33.60	59.80
20" OC members	CSF	2.99	12.00	26.90	47.80
24" OC members	CSF	2.49	9.97	22.40	39.90
<b>Polystyrene or polyurethane foam panel adhesive, on walls</b>					
12" OC members	CSF	3.26	13.00	29.30	52.20
16" OC members	CSF	2.45	9.78	22.00	39.10
20" OC members	CSF	1.96	7.83	17.60	31.30
24" OC members	CSF	1.63	6.52	14.70	26.10
<b>Gypsum drywall adhesive</b>					
12" OC members	CSF	1.62	6.47	14.60	25.90
16" OC members	CSF	1.21	4.85	10.90	19.40
20" OC members	CSF	.97	3.88	8.73	15.50
24" OC members	CSF	.81	3.23	7.28	12.90
<b>Hardboard or plastic panel adhesive, on walls</b>					
12" OC members	CSF	4.39	17.60	39.50	70.30
16" OC members	CSF	3.29	13.20	29.60	52.70
20" OC members	CSF	2.63	10.50	23.70	42.20
24" OC members	CSF	2.20	8.78	19.80	35.10
	<b>Craft@Hrs</b>	<b>Unit</b>	<b>Material</b>	<b>Labor</b>	<b>Total</b>
<b>Labor to apply adhesive to framing members, 1/8" to 1/2" bead diameter, no material included</b>					
<b>Floor or ceiling joists</b>					
12" OC members	BC@.075	CSF	—	3.25	3.25
16" OC members	BC@.056	CSF	—	2.42	2.42
20" OC members	BC@.052	CSF	—	2.25	2.25
24" OC members	BC@.042	CSF	—	1.82	1.82
<b>Interior and exterior wall members</b>					
12" OC members	BC@.100	CSF	—	4.33	4.33
16" OC members	BC@.090	CSF	—	3.90	3.90
20" OC members	BC@.084	CSF	—	3.64	3.64
24" OC members	BC@.068	CSF	—	2.94	2.94

**Special purpose adhesives**

Construction adhesive, for counters, cabinets, paneling, brick veneer, ceramic fixtures, shelving, sets in 10 minutes, 10.5 oz. cartridge	—	Ea	2.79	—	2.79
Epoxy-tie adhesive, bonds concrete, fills cracks to 3/4", seals doors and windows, anchor grouting, non-shrink, 22 oz. cartridge	—	Ea	35.40	—	35.40
Gypsum drywall adhesive, waterproof, bonds to wood, metal, masonry, concrete, 29 oz. cartridge	—	Ea	5.16	—	5.16

## Aggregate

	Craft@Hrs	Unit	Material	Labor	Total
Latex FRP adhesive, indoor, bonds wood, concrete, drywall, foamboard, trowel grade, gallon	—	Ea	22.80	—	22.80
Panel insulation adhesive, waterproof, for polyurethane & polystyrene panels, bonds to wood, metal, masonry, concrete, 4.5 lbs.	—	Ea	44.60	—	44.60
Marine adhesive/sealant, 10 oz.	—	Ea	30.00	—	30.00
Project adhesive, rubber-based, bonds plywood, hardboard fiberglass, drywall, foam board, shelving, ceramic fixtures, 10 minute work time, 10.5 oz. cartridge	—	Ea	5.00	—	5.00
		Unit	1 quart can	1 gallon can	
<b>General purpose adhesives</b>					
Acoustic tile adhesive, solvent base, waterproof, sound deadening type		Ea	—	16.00	
Aliphatic resin woodworking glue		Ea	9.13	27.90	
Carpet cement, outdoor		Ea	32.10	—	
Professional carpenter's glue, multi-purpose		Ea	13.50	51.20	
Contact cement, rubber based, waterproof, bonds veneers to plywood, particleboard, wallboard		Ea	23.10	56.20	
Gel contact cement		Ea	15.00	—	
Resilient flooring adhesive, latex base, adheres to concrete, plywood, felt, sheet flooring		Ea	12.50	19.60	
Tile cement, solvent base, ceramic/stone, interior		Ea	9.20	29.30	

	Craft@Hrs	Unit	Material	Labor	Total
<b>Aggregate</b> Typical prices, 5 mile haul, 24 ton minimum. See also Roofing, Built-up					
Crushed stone (1.4 tons per CY)					
3/8" stone	—	Ton	30.80	—	30.80
3/4" (Number 3)	—	Ton	28.30	—	28.30
1-1/2" (Number 2)	—	Ton	26.60	—	26.60
Crushed slag, typical prices where available					
3/4" slag	—	Ton	29.40	—	29.40
1-1/2"	—	Ton	30.10	—	30.10
Washed gravel (1.4 tons per CY)					
3/4" gravel	—	Ton	53.20	—	53.20
1-1/2"	—	Ton	57.50	—	57.50
Pea gravel, (1.4 tons per CY), typical prices where available					
3/8" or 1/2"	—	Ton	62.70	—	62.70
Sand, (1.35 tons per CY), typical prices where available					
Fill sand	—	Ton	36.10	—	36.10
Mason sand	—	Ton	47.90	—	47.90
Concrete sand	—	Ton	40.00	—	40.00
Add per ton less than 24 tons	—	Ton	10.60	—	10.60
Add for delivery over 5 miles, one way	—	Mile	13.20	—	13.20

**Appraisal Fees** Costs for determining the value of existing buildings, land, and equipment. Actual fee charged is based on the level of difficulty and the time spent on appraisal plus travel to location and cost of support services, if any. Costs include research and report by a professional state licensed appraiser. Client may request an appraisal on a "fee not to exceed" basis. Fees shown are averages and are not quoted as a percentage of value or contingent on value. The fee for cancelling an appraisal after the inspection is equal to the original appraisal fee.



## Appraisal and Arbitration Fees

	Craft@Hrs	Unit	Material	Labor	Total
Single family residences, condominiums, planned unit developments (PUDs). Fees for complex, expensive (over \$1 million) or atypical properties or those that require higher licensure than a state license are usually negotiated. Based on square feet of gross living area (excluding the garage).					
To 2,500 square feet	—	LS	—	—	366.00
Over 2,500 SF to 3,500 SF	—	LS	—	—	415.00
Over 3,500 SF to 5,000 SF	—	LS	—	—	512.00
Over 5,000 SF	—	LS	—	—	756.00
Small residential income properties (duplex, triplex, quadriplex)					
2 to 4 units	—	LS	—	—	659.00
Apartment houses, commercial and industrial buildings					
To \$300,000 valuation	—	LS	—	—	3,170.00
Over \$300,000 to \$1,000,000 valuation	—	LS	—	—	4,150.00
Over \$1,000,000 to \$3,000,000 valuation	—	LS	—	—	4,640.00
Over \$3,000,000 to \$5,000,000 valuation	—	LS	—	—	5,860.00
Other services					
Additional photograph (each)	—	LS	—	—	26.80
Outlying area fee	—	LS	—	—	53.70
Satisfactory Completion (old Form 442 / new Form 1004d)	—	LS	—	—	146.00
Appraisal update, same comps (Form 1004d)	—	LS	—	—	293.00
Operating Income Statement (FNMA 216)	—	LS	—	—	78.10
SFR Rental Survey (FNMA 1007)	—	LS	—	—	78.10
Appraisal review (desk)	—	LS	—	—	171.00
Appraisal review (field)	—	LS	—	—	366.00
Drive-by appraisal (Form 2055) starting at	—	LS	—	—	268.00
Drive-by appraisal (Form 2070/2075)	—	LS	—	—	220.00
Machinery (Fee is based on total value of equipment appraised) Additional charges for travel and lodging may be required					
To \$30,000 valuation	—	LS	—	—	605.00
Over \$30,000 to \$100,000 valuation	—	LS	—	—	810.00
Over \$100,000 to \$500,000 valuation	—	LS	—	—	1,370.00
Over \$500,000 to \$1,000,000 valuation	—	LS	—	—	1,850.00
Over \$1,000,000 to \$5,000,000 valuation	—	LS	—	—	3,170.00
Court testimony (excluding preparation)	—	Day	—	—	1,460.00
Consulting fees billed at an hourly rate	—	Hour	—	—	185.00
Outside of office meetings or court appearance are billed including travel time and expenses round trip, minimum 4 hours.					

**Arbitration and Mediation Fees** These are administrative fees paid to the American Arbitration Association (AAA). Rules and fees are subject to change. The AAA's web site at [www.adr.org](http://www.adr.org) has current rules and fee information. Fees charged by Construction Dispute Resolution Services (<http://www.constructiondisputes-cdrs.com>) will usually be less. Arbitrators are chosen from the National Roster of Construction Arbitrators and are paid a fee by the parties. Legal representation, if desired (although not necessary), is at the expense of each party. These fees do not include rental of a hearing room. An initial filing fee is payable in full by a filing party when a claim, counterclaim or additional claim is filed. A case service fee is payable at the time the first hearing is scheduled. This fee will be refunded at the conclusion of the case if no hearings have occurred so long as the Association was notified of cancellation at least 24 hours before the first scheduled hearing. The minimum AAA filing fee for any case having three or more arbitrators is \$2,750 plus a \$1,000 case service fee.

## Arbitration and Mediation Fees

	Unit	Initial Filing Fee	Case Service Fee
Claims to \$75,000	LS	925.00	800.00
Claims over \$75,000 to \$150,000	LS	1,930.00	1,380.00
Claims over \$150,000 to \$300,000	LS	2,900.00	2,200.00
Claims over \$300,000 to \$500,000	LS	4,400.00	3,850.00
Claims over \$500,000 to \$1,000,000	LS	5,500.00	6,830.00
Claims over \$1,000,000 to \$10,000,000	LS	7,700.00	8,480.00
Claims over \$10,000,000 *	LS	*	13,800.00
No Amount Stated **	LS	7,700.00	8,480.00

\* \$10 million and above – Base fee is \$10,000 plus .01% of the amount of claim above \$10 million. Filing fees are capped at \$65,000.

\*\*This fee is applicable when a claim or counterclaim is not for a monetary amount. Where a monetary claim is not known, parties will be required to state a range of claims or be subject to the highest possible filing fee.

\*\*\* Fees above based upon a 'Standard Fee Schedule' For 'Flexible Fee Schedule' costs, add 10% to the total of Initial and Case Service Fees.

Craft@Hrs	Unit	Material	Labor	Total
-----------	------	----------	-------	-------

**Mediation, mobile** Generally will meet at the offices of the attorneys involved in the dispute. Does not replace legal counsel but is used to maintain equity between the mediating parties. Typical fees.

Nonrefundable retainer (half from each party)	—	Ea	—	—	410.00
Weekday sessions after the initial consultation	—	Hr	—	—	206.00
Nonrefundable retainer for weekend mediation	—	Ea	—	—	496.00
Weekend mediation sessions	—	Hr	—	—	310.00

**Architectural Illustrations** Full color painting on watercolor board with matted frame with title and credit on matte. Glass and elaborate framing are extra. Costs for pen and ink illustrations with color Mylar overlay are similar to cost for watercolor illustrations. Typical fees.

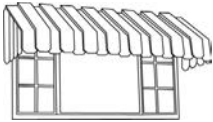


Custom home, eye level view					
Simple rendering	—	LS	—	—	1,040.00
Complex rendering	—	LS	—	—	1,530.00
Custom home, bird's eye view					
Simple rendering	—	LS	—	—	1,260.00
Complex rendering	—	LS	—	—	1,810.00
Tract homes in groups of five or more (single floor plans, multiple elevations), eye level view					
Simple rendering	—	LS	—	—	619.00
Complex rendering	—	LS	—	—	852.00
Tract homes in groups of five or more (single floor plans, multiple elevations), bird's eye view					
Simple rendering	—	LS	—	—	796.00
Complex rendering	—	LS	—	—	1,280.00
Tract homes or condominium project, overall bird's eye view					
10-25 homes or living units	—	LS	—	—	3,930.00
Typical commercial structure					
Eye level view	—	LS	—	—	1,830.00
Bird's eye view	—	LS	—	—	2,050.00
Complex commercial structure					
Eye level view	—	LS	—	—	2,700.00
Bird's eye view	—	LS	—	—	3,480.00

## Awnings and Canopies

	Craft@Hrs	Unit	Material	Labor	Total
Deduct for pen and ink drawings (no color)	—	%	—	—	—33.0
Computer generated perspective drawings using CAD system for design studies					
Custom home	—	LS	—	—	678.00
Large condo or apartment projects	—	LS	—	—	1,710.00
Tract homes	—	LS	—	—	426.00
Commercial structure, line drawing	—	LS	—	—	1,280.00

**Awnings and Canopies for Doors and Windows** All hardware included. For commercial grade awnings, see the Industrial and Commercial Division section 12, Furnishings.



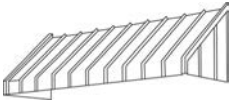
Aluminum pan-type window or door awnings, 025 gauge roof and pans, .040 gauge supports					
42" wide x 24" projection, 18" drop	SW@2.17	Ea	457.00	104.00	561.00
60" wide x 30" projection, 20" drop	SW@2.79	Ea	734.00	133.00	867.00
78" wide x 36" projection, 24" drop	SW@3.11	Ea	1,120.00	149.00	1,269.00
88" wide x 42" projection, 26" drop	SW@3.41	Ea	1,310.00	163.00	1,473.00

Polycarbonate door awnings, clear or tinted curved poly sheet in aluminum frame, 29" projection, 11" drop					
61" wide	SW@2.18	Ea	383.00	104.00	487.00
119" wide	SW@6.21	Ea	675.00	297.00	972.00
178" wide	SW@8.72	Ea	966.00	417.00	1,383.00

Roll-up aluminum awnings with hinged support arms and pull cord assembly					
36" wide x 18" projection, 27" drop	SW@2.28	Ea	359.00	109.00	468.00
48" wide x 24" projection, 34" drop	SW@2.91	Ea	401.00	139.00	540.00
54" wide x 30" projection, 39" drop	SW@3.29	Ea	426.00	157.00	583.00
60" wide x 35" projection, 44" drop	SW@3.50	Ea	452.00	167.00	619.00
72" wide x 42" projection, 51" drop	SW@4.20	Ea	528.00	201.00	729.00



Curved top door or window canopy, rigid aluminum frame with tinted or clear polycarbonate inserts.					
59" wide x 46" projection, 16" drop	BC@3.40	Ea	669.00	147.00	816.00
84" wide x 46" projection, 16" drop	BC@5.10	Ea	1,040.00	221.00	1,261.00
120" wide x 57" projection, 16" drop	BC@6.80	Ea	1,660.00	294.00	1,954.00



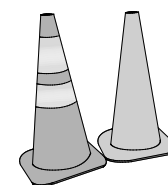
Mansard window or door awnings, 24 gauge 18"-wide standing seam steel panels, aluminum frame					
54" wide x 36" projection, 36" drop	BC@3.40	Ea	2,810.00	147.00	2,957.00
72" wide x 36" projection, 36" drop	BC@4.50	Ea	3,750.00	195.00	3,945.00
90" wide x 36" projection, 36" drop	BC@5.60	Ea	4,210.00	242.00	4,452.00
108" wide x 48" projection, 48" drop	BC@6.70	Ea	5,160.00	290.00	5,450.00

Fabric door awning, with waterproof, acrylic duck, colorfast fabric, double stitched seams, tubular aluminum frame					
36" wide x 26" projection	SW@1.45	Ea	318.00	69.30	387.30
40" wide x 36" projection	SW@1.86	Ea	348.00	88.90	436.90
48" wide x 40" projection	SW@2.07	Ea	375.00	98.90	473.90
72" wide x 46" projection	SW@2.27	Ea	496.00	108.00	604.00

Cloth retractable patio awning, folding spring loaded aluminum arm, dual cable manual operation.					
16' wide x 12' projection	BC@3.05	Ea	5,950.00	132.00	6,082.00
20' wide x 12' projection	BC@3.40	Ea	6,810.00	147.00	6,957.00

## Barricades, Construction Safety

	Craft@Hrs	Unit	Material	Labor	Total
<b>Barricades, Construction Safety</b> Purchase prices except as noted. See also Equipment Rental in the index.					
Heavy Duty Plastic Type I barricade, Engineer Grade Reflectivity, 8" height Top Panel					
Quantities from 1 - 15 units	—	Ea	65.60	—	65.60
Quantities from 16 - 31 units	—	Ea	63.50	—	63.50
Pallet quantities, multiples of 32 units	—	Ea	61.30	—	61.30
Reflectorized injected plastic barricade, NCHRP-350 certified meets M.U.T.C.D. specifications 8" to 12" wide rail, 4" to 6" wide stripes, 40" legs, no light					
Type I, 2' wide, 3' high, Top panel 12" height, 1 reflectorized rail each side					
Quantities from 1 - 15 units	—	Ea	59.70	—	59.70
Quantities from 16 - 31 units	—	Ea	57.70	—	57.70
Pallet quantities, multiples of 32 units	—	Ea	55.70	—	55.70
Type II, 2' wide, 3' high, Top panel 8" height, 1 reflectorized rail each side					
Quantities from 1 - 15 units	—	Ea	66.50	—	66.50
Quantities from 16 - 31 units	—	Ea	64.30	—	64.30
Pallet quantities, multiples of 32 units	—	Ea	62.10	—	62.10
Type III, 4' wide, 5' high, 3 reflectorized rails each side, wood & steel legs					
Quantities from 1 - 15 units	—	Ea	288.00	—	288.00
Quantities from 16 - 31 units	—	Ea	282.00	—	282.00
Pallet quantities, multiples of 32 units	—	Ea	276.00	—	276.00
Add for lighted units without batteries (batteries last 2 months)					
Amber lens	—	Ea	19.30	—	19.30
Red lens	—	Ea	19.30	—	19.30
Batteries, 6 volt (2 needed)	—	Ea	13.90	—	13.90
<b>Utility barricade lights, solar powered</b> Utility barricade solar powered lights, compliant with M.U.T.C.D. Specification 6E-5 and ITE Specifications for Flashing / Steady Burn warning light, 180 degree swivel base axis.					
Utility barricade solar powered lights	—	Ea	46.00	—	46.00
<b>Miscellaneous signage/traffic control</b>					
"Road Closed", reflectorized, 30" x 48", Engineer Grade					
	—	Ea	119.00	—	119.00
"Construction Zone", 4' x 4' high intensity grade					
	—	Ea	325.00	—	325.00
High-rise tripod with 3 orange flags					
	—	Ea	265.00	—	265.00
Flags					
	—	Ea	5.03	—	5.03
Traffic cones, PVC					
Non-reflectorized type					
18" high	—	Ea	9.11	—	9.11
28" high	—	Ea	12.40	—	12.40
Reflectorized type					
18" high	—	Ea	12.70	—	12.70
28" high	—	Ea	17.80	—	17.80
36" high	—	Ea	23.60	—	23.60
Lane delineator, 42" orange plastic cylinder with 2 reflectors on a 12 pound rubber base					
	—	Ea	28.00	—	28.00
Mesh signs, orange, 48" x 48", includes brace and clamp					
	—	Ea	60.40	—	60.40
Hand-held traffic paddles, "Stop" and "Slow"					
	—	Ea	24.70	—	24.70



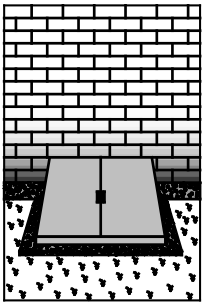
## Basement Doors

	Craft@Hrs	Unit	Material	Labor	Total
Orange plastic safety fencing					
Budget, 4' x 50' roll, mesh opening 3" x 1.25"	—	Ea	26.70	—	26.70
Square mesh, 4' x 50' roll, opening 1.5" x 1.25"	—	Ea	27.00	—	27.00
Heavy Duty, 4' x 50' roll, opening 1.25" x 1.25"	—	Ea	67.00	—	67.00
Medium Weight 4' x 100', opening 2" x 2.5"	—	Ea	48.40	—	48.40
Barricade tape for marking construction sites, landscaping, wet paint					
Yellow plastic 3" x 1,000', "Caution"	—	Ea	9.97	—	9.97
Various colors, 3" x 200', "Danger"	—	Ea	6.97	—	6.97

### Utility Highway Barricade Rental

Lighted units, rental, per day	—	Ea	13.10	—	13.10
Unlighted units, rental per day	—	Ea	8.58	—	8.58
Add for pickup and delivery, per trip	—	Ea	50.50	—	50.50
Typical labor cost, place and remove any barricade					
Per use	BL@.160	Ea	—	5.70	5.70

**Basement Doors** Good quality 12 gauge primed steel, center opening basement doors. Costs include assembly and installation hardware. No concrete, masonry, anchor placement or finish painting included.



Doors (overall dimensions)

Classic Series standard, all sizes	BC@3.41	Ea	905.00	148.00	1,053.00
SLW Series standard, all sizes	BC@3.41	Ea	1,020.00	148.00	1,168.00
Add for powder coating	—	%	49.3	—	—
Ultra Series, polyethylene, all sizes	BC@3.41	Ea	1,570.00	148.00	1,718.00
Add for keyed lock	BC@.160	Ea	82.80	6.93	89.73

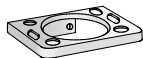
Door extensions (available for 19-1/2"H, 55"W, 72"L door only)

6" deep	BC@1.71	Ea	260.00	74.00	334.00
12" deep	BC@1.71	Ea	331.00	74.00	405.00
18" deep	BC@1.71	Ea	392.00	74.00	466.00

Stair stringers, steel, pre-cut for 2" x 10" wood treads (without treads). Price is for a pair, or set of two stringers with hardware.

32" to 39" stair height	BC@1.71	Pr	210.00	74.00	284.00
48" to 55" stair height	BC@1.71	Pr	267.00	74.00	341.00
56" to 64" stair height	BC@1.71	Pr	321.00	74.00	395.00
65" to 72" stair height	BC@1.71	Pr	351.00	74.00	425.00
73" to 78" stair height	BC@1.71	Pr	485.00	74.00	559.00
81" to 88" stair height	BC@1.71	Pr	524.00	74.00	598.00
89" to 97" stair height	BC@1.71	Pr	561.00	74.00	635.00

**Bathroom Accessories** Average quality. Better quality brass accessories cost 75% to 100% more. See also Medicine Cabinets and Vanities




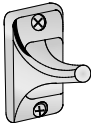

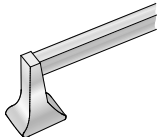
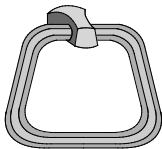
Cup and toothbrush holder, chrome	BC@.258	Ea	13.60	11.20	24.80
Cup holder, porcelain, surface mounted	BC@.258	Ea	9.53	11.20	20.73
Cup, toothbrush & soap holder, recessed	BC@.258	Ea	36.10	11.20	47.30
Cup, toothbrush holder, polished brass	BC@.258	Ea	19.30	11.20	30.50



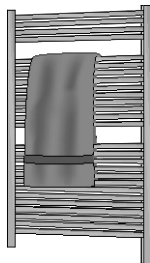
Electrical plates, chrome plated

Switch plate, single	BE@.154	Ea	5.05	7.17	12.22
Switch plate, double	BE@.154	Ea	6.67	7.17	13.84
Duplex receptacle plate	BE@.154	Ea	5.05	7.17	12.22
Duplex receptacle and switch	BE@.154	Ea	6.64	7.17	13.81

## Bathroom Accessories

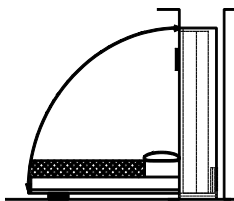
	Craft@Hrs	Unit	Material	Labor	Total		
Grab bars							
Tubular chrome plated, with anchor plates							
Straight bar, 16"	BC@.414	Ea	29.60	17.90	47.50		
Straight bar, 24"	BC@.414	Ea	36.10	17.90	54.00		
Straight bar, 32"	BC@.414	Ea	39.00	17.90	56.90		
"L"- shaped bar, 16" x 32"	BC@.620	Ea	90.70	26.80	117.50		
Stainless steel, with anchor plates							
Straight bar, 16"	BC@.414	Ea	44.80	17.90	62.70		
Straight bar, 24"	BC@.414	Ea	53.90	17.90	71.80		
Straight bar, 32"	BC@.414	Ea	58.70	17.90	76.60		
"L"- shaped bar, 16" x 32"	BC@.620	Ea	126.00	26.80	152.80		
Mirrors, stainless steel framed, surface mount, no light or cabinet							
16" high x 20" wide	BG@.420	Ea	106.00	17.70	123.70		
18" high x 24" wide	BG@.420	Ea	123.00	17.70	140.70		
18" high x 36" wide	BG@.420	Ea	188.00	17.70	205.70		
24" high x 36" wide	BG@.420	Ea	221.00	17.70	238.70		
48" high x 24" wide	BG@.420	Ea	274.00	17.70	291.70		
Mirrors, wood framed, surface mount, better quality							
18" x 29" rectangular	BG@.420	Ea	132.00	17.70	149.70		
20" x 27" oval, oak	BG@.420	Ea	187.00	17.70	204.70		
Robe hook							
Chrome	BC@.258	Ea	26.60	11.20	37.80		
Double, solid brass	BC@.258	Ea	25.60	11.20	36.80		
Shower curtain rods, chrome plated							
60", recessed	BC@.730	Ea	31.10	31.60	62.70		
66", recessed	BC@.730	Ea	34.20	31.60	65.80		
Soap holder, surface mounted, with drain holes							
Williamsburg, satin chrome	BC@.258	Ea	63.40	11.20	74.60		
Polished brass	BC@.258	Ea	20.70	11.20	31.90		
Facial tissue holder, stainless steel, recessed	BC@.258	Ea	42.70	11.20	53.90		
Toilet tissue roll holder, chrome, recessed	BC@.258	Ea	19.90	11.20	31.10		
Toothbrush holder, chrome, surface mount	BC@.258	Ea	7.36	11.20	18.56		
Towel bars, 3/4" bar							
18" long, chrome	BC@.280	Ea	16.30	12.10	28.40		
24" long, chrome	BC@.280	Ea	19.40	12.10	31.50		
30" long, chrome	BC@.280	Ea	22.90	12.10	35.00		
36" long, chrome	BC@.280	Ea	26.10	12.10	38.20		
18" long, solid brass	BC@.280	Ea	53.00	12.10	65.10		
24" long, solid brass	BC@.280	Ea	55.80	12.10	67.90		
Towel rack, swing-arm, chrome, 3 bars, 12" L	BC@.280	Ea	18.50	12.10	30.60		
Towel rings							
Williamsburg chrome and brass	BC@.280	Ea	50.20	12.10	62.30		
Williamsburg chrome and porcelain	BC@.280	Ea	48.00	12.10	60.10		
Towel shelf, chrome, 24" L with bar below	BC@.280	Ea	47.00	12.10	59.10		
Heated towel racks, 16" and 24" width, mounted on wall with brackets. Direct wire connection, 700 watt output. Add for electrical work							
26" high, 16" wide, standard colors	BE@.850	Ea	858.00	39.60	897.60		
26" high, 24" wide, standard colors	BE@.850	Ea	916.00	39.60	955.60		
26" high, 24" wide, chrome finish	BE@.850	Ea	2,830.00	39.60	2,869.60		

**Blueprinting**



	Craft@Hrs	Unit	Material	Labor	Total
35" high, 16" wide, standard colors	BE@1.00	Ea	1,070.00	46.60	1,116.60
35" high, 24" wide, standard colors	BE@1.00	Ea	1,020.00	46.60	1,066.60
35" high, 24" wide, chrome finish	BE@1.00	Ea	3,420.00	46.60	3,466.60
44" high, 16" wide, standard colors	BE@1.10	Ea	1,070.00	51.20	1,121.20
44" high, 24" wide, standard colors	BE@1.10	Ea	1,130.00	51.20	1,181.20
44" high, 24" wide, chrome finish	BE@1.10	Ea	3,740.00	51.20	3,791.20
Add for direct wire w/ control panel	BE@.100	Ea	236.00	4.66	240.66
Add for wall plug in	BE@.100	Ea	316.00	4.66	320.66
<b>Heated towel rack accessories</b>					
Programmable control panel	BE@.250	Ea	307.00	11.60	318.60
Pull out drying racks	BE@.250	Ea	86.20	11.60	97.80
Robe knobs	BE@.150	Ea	55.40	6.99	62.39
Towel bar accents with standard colors	BE@.150	Ea	111.00	6.99	117.99
Towel bar accents with chrome finish	BE@.150	Ea	149.00	6.99	155.99
Robe knob accents (all styles)	BE@.150	Ea	257.00	6.99	263.99
<b>Tub or shower chairs</b>					
Wall-hung elevated fixed seat	BE@.750	Ea	38.50	34.90	73.40
White adjustable seat	BE@.750	Ea	71.80	34.90	106.70

**Beds, Folding** Concealed-in-wall type. Steel framed, folding wall bed system. Bed requires 18-5/8" or 22" deep recess. Includes frame, lift mechanism, all hardware. Installed in framed opening. Padded vinyl headboard. Bed face panel accepts paint, wallpaper, vinyl or laminate up to 1/4" thick. Box spring and mattress not included. Murphy Wall Beds



Twin, frames and mechanisms	B1@5.41	Ea	855.00	214.00	1,069.00
Double, frames and mechanisms	B1@5.41	Ea	896.00	214.00	1,110.00
Queen, frames and mechanisms	B1@5.41	Ea	935.00	214.00	1,149.00
King, frames and mechanisms	B1@5.41	Ea	1,030.00	214.00	1,244.00
Add for wood-tone melamine cabinet	—	LS	1,520.00	—	1,520.00
Add for white melamine cabinet	—	LS	1,350.00	—	1,350.00

**Blueprinting** (Reproduction only) Assumes original is on semi-transparent drafting paper or film. See also Architectural Illustration and Drafting. Cost per square foot reproduced except as noted. Stapled edge and binder included.

<b>Blue line or blackline prints</b>					
1-100 SF	—	SF	—	—	.23
101-1,000 SF	—	SF	—	—	.21
1,001-2,000 SF	—	SF	—	—	.20
2,001-to 3,000 SF	—	SF	—	—	.17
3,001-4,000 SF	—	SF	—	—	.10
4,001 SF and higher	—	SF	—	—	.09
Presentation blackline (heavy paper)	—	SF	—	—	.60
Sepia	—	SF	—	—	.88
Mylar	—	SF	—	—	2.95
<b>Xerographic prints</b>					
Vellum	—	SF	—	—	1.17
Erasable vellum	—	SF	—	—	1.48
Mylar	—	SF	—	—	2.95
Enlargements (bond)	—	SF	—	—	.71
Reductions (bond, per sheet)	—	Ea	—	—	2.94

## Building Inspection Service

	Craft@Hrs	Unit	Material	Labor	Total
Plotting prints					
Translucent bond	—	SF	—	—	1.77
Vellum	—	SF	—	—	2.05
Erasable vellum	—	SF	—	—	2.92
Mylar	—	SF	—	—	2.95
Photo prints					
Mylar	—	SF	—	—	6.60
Add for local pickup and delivery, round trip	—	LS	—	—	25.00

**Building Inspection Service** (Home inspection service) Inspection of all parts of building by qualified engineer or certified building inspection technician. Includes written report covering all doors and windows, electrical system, foundation, heating and cooling system, insulation, interior and exterior surface conditions, landscaping, plumbing system, roofing, and structural integrity.

### Single-family residence

Base fee (up to 2,500 SF)	—	LS	—	—	362.00
Add for additional 1,000 SF or fraction	—	LS	—	—	111.00
Add for out buildings (each)	—	LS	—	—	55.60
Add for houses over 50 years old	—	LS	—	—	83.40
Add per room for houses with over 10 rooms	—	Ea	—	—	66.70
Add per room for houses with over 15 rooms	—	Ea	—	—	72.30
Add for swimming pool, spa or sauna	—	LS	—	—	220.00
Add for soil testing (expansive soil only)	—	LS	—	—	222.00
Add for water testing (coliform only)	—	LS	—	—	78.00
Add for warranty protection					
Houses to 10 rooms & 50 years old	—	LS	—	—	278.00
Houses over 50 years old	—	LS	—	—	298.00
Houses over 10 rooms	—	LS	—	—	301.00

### Multi-family structures

Two family residence base fee	—	LS	—	—	502.00
Apartment or condominium base fee	—	LS	—	—	278.00
Warranty protection (base cost)	—	LS	—	—	278.00
Add for each additional unit	—	LS	—	—	55.70
Add for each family living unit					
Standard inspection	—	LS	—	—	55.60
Detailed inspection	—	LS	—	—	82.80
Add for swimming pool, spa, sauna	—	LS	—	—	83.40
Add for potable water quality testing	—	LS	—	—	250.00
Add for water quantity test, per well	—	LS	—	—	167.00
Add for soil testing (EPA toxic)	—	LS	—	—	1,670.00
Add for soil testing (lead)	—	LS	—	—	50.20
Add for lead paint testing, full analysis, per room	—	LS	—	—	44.50

### Hazards testing for single and multi-family dwellings

Urea-formaldehyde insulation testing	—	LS	—	—	194.00
Asbestos testing	—	LS	—	—	196.00
Radon gas testing	—	LS	—	—	140.00
Geotechnical site examination, typical price	—	LS	—	—	447.00

**Building Paper** See also Roofing for roof applications and Polyethylene Film. Costs include 7% coverage allowance for 2" lap and 5% waste allowance. See installation costs at the end of this section.

### Asphalt felt, 36" wide

15 lb., ASTM F45 (432 SF roll)	—	SF	.09	—	.09
15 lb., F40 (432 SF roll)	—	SF	.09	—	.09
30 lb. (216 SF roll)	—	SF	.20	—	.20

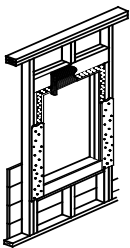
### Asphalt shake felt, 18" x 72"

30 lb. (108 SF roll)	—	SF	.32	—	.32
----------------------	---	----	-----	---	-----



**Building Paper**

	Craft@Hrs	Unit	Material	Labor	Total
Building paper, 40" wide					
Single ply, black (1,078 SF roll)	—	SF	.08	—	.08
Two ply (539 SF roll)	—	SF	.10	—	.10
Aquabar™, two layer, laminated with asphalt, Fortifiber™ products					
Class A, 36" wide, 30-50-30 (1,000 SF roll)	—	SF	.06	—	.06
Class B, 36" wide, 30-30-30 (500 SF roll)	—	SF	.08	—	.08
Ice and water shield, self-adhesive rubberized asphalt and poly					
225 SF roll	—	SF	1.10	—	1.10
High temperature, 225 SF roll	—	SF	1.20	—	1.20
"Jumbo Tex" gun grade sheathing paper, 40" wide, asphalt saturated					
(324 SF roll)	—	SF	.06	—	.06
"Jumbo Tex" black building paper, 36", 40" wide, asphalt saturated					
(500 SF roll)	—	SF	.13	—	.13
"Super Jumbo Tex" two-ply, 60 minute, asphalt saturated Kraft					
(162 SF roll)	—	SF	.16	—	.16
Red rosin sized sheathing (duplex sheathing) 36" wide					
(501 SF roll)	—	SF	.03	—	.03
Bruce rosin paper, floor underlay					
(500 SF roll)	—	SF	.06	—	.06
Moistop flashing paper, Fortifiber™, 12" wide x 300' long					
(300 SF roll)	—	SF	.23	—	.23
Vycor window and door flashing, self adhesive, Grace					
6" x 75' roll, 25 mil thickness	—	SF	2.94	—	2.94
Vycor deck protector, self adhesive joist flashing, Grace					
4" x 75' roll, Roll covers 66 LF of joist	—	LF	3.01	—	3.01
Plasterkraft grade D weather-resistive sheathing paper, 40" wide					
Super 60 minute (500 SF roll)	—	SF	.06	—	.06
Ten minute 2-ply (500 SF roll)	—	SF	.05	—	.05
Roof flashing paper, seals around skylights, dormers, vents, valleys and eaves, rubberized, fiberglass reinforced, self-adhesive					
GAF StormGuard™ Roll covers 200 SF	—	SF	.80	—	.80
Roof underlay, for use under shingles, granular surface					
Weatherlock® 200 SF roll	—	SF	1.04	—	1.04
Tri-Flex roof underlay, for use under shingles, tile, slate or metal roofing					
48" x 250', 1,000 SF roll	—	SF	.22	—	.22
Below grade vapor barrier, Fortifiber™ Moistop (fiberglass reinforced Kraft between 2 layers of polyethylene)					
8' x 250' roll (2,000 SF roll)	—	SF	.29	—	.29
Concrete curing papers, Fortifiber™					
Orange Label Sisalkraft (fiberglass and adhesive between 2 layers of Kraft), 4.8 lbs. per CSF					
48" x 125' roll, (500 SF roll)	—	SF	.37	—	.37
Sisalkraft SK-10, economy papers, fiberglass and adhesive between 2 layers of Kraft, 4.2 lbs. per CSF					
48" x 300' roll (1,200 SF roll)	—	SF	.11	—	.11



## Building Permit Fees

	Craft@Hrs	Unit	Material	Labor	Total
Protective paper, Fortifiber™ Seekure (fiberglass reinforcing strands and nonstaining adhesive between 2 layers of Kraft) 8" x 300' roll, (2,400 SF)	—	SF	.13	—	.13
House wrap membrane, aka Tyvek™ HomeWrap by DuPont Air/moisture infiltration barrier (high-density polyethylene fibers in sheet form) 3' x 100' rolls or 9' x 150' rolls	—	SF	.19	—	.19
House wrap tape, 2" x 165'	—	LF	.11	—	.11
Labor to install building papers					
Felts, vapor barriers, infiltration barriers, building papers on walls					
Tack stapled, typical	BC@.002	SF	—	.09	.09
Heavy stapled, typical	BC@.003	SF	—	.13	.13
Felts, vapor barriers, infiltration barriers, building papers on ceilings and roofs					
Tack stapled, typical	BC@.004	SF	—	.17	.17
Heavy stapled, typical	BC@.006	SF	—	.26	.26
Self-adhesive, typical	BC@.006	SF	—	.26	.26
Curing papers, protective papers and vapor barriers, minimal fasteners	BC@.001	SF	—	.04	.04
Flashing papers, 6" to 8" wide	BC@.010	LF	—	.43	.43
Flooring or surface protection paper, for temporary use to protect finished surfaces. Popularly known as Ram Board™					
12 mil thick, 50' to 100' roll	—	SF	.27	—	.27
20 mil thick, 100' to 150' roll	—	SF	.13	—	.13
40mil thick, 50' to 100' roll	—	SF	.26	—	.26
46 mil thick, 100' roll	—	SF	.26	—	.26
64 mil thick, 4' x 8' sheet	—	SF	.70	—	.70
Seam tape, 3"w x 180' roll	—	LF	.07	—	.07
Labor to place and secure protection paper. Material cost is seam tape only.					
Tape one side, per SF area (500 SF)	BL@.001	SF	.03	.04	.07
Tape one side, per CLF (500 SF)	BL@.400	CLF	6.78	14.30	21.08
Tape one side, per SF area (500 SF)	BL@.500	CLF	13.60	17.80	31.40
Door jamb protector, incl 10' seam tape. Heavy duty, fiberboard, 60"L	BL@.166	SF	14.60	5.92	20.52

**Building Permit Fees** Fees are set by each jurisdiction and are based on the type of construction and the square foot area. Most building departments either publish a fee schedule or offer a Web-based fee calculator. The permit fee will usually be doubled when work is started without a permit. When the valuation of the proposed construction exceeds \$1,000, plans are usually required. For most residential construction, building permit will be about 1% of the construction cost (with a \$200 minimum) based on a table of values published by the International Code Council and available to ICC members at:

<https://www.iccsafe.org/products-and-services/i-codes/code-development-process/building-valuation-data/>

Most wood-frame residences are Group R3 and Type VB. This estimate of 1% includes the plan check fee, building, plumbing, HVAC and electrical permits, GIS mapping and issuance of a certificate of occupancy.

Permits required by planning authorities will be extra. Estimate the fee for reinspection at \$145 per hour.

Inspections outside normal business hours are about \$145 per hour with a two-hour minimum. Estimate the fee for additional plan review required by changes, additions or revisions to approved plans at \$155 per hour with a one-half hour minimum.

Minimum building permit fee	—	LS	—	—	200.00
Typical fee based on estimated total construction cost	—	%	1.0	—	—

## Cabinets, Kitchen

**Craft@Hrs    Unit    Material    Labor    Total**

**Cabinets, Kitchen** See also Vanities. Good quality mill-made modular units with solid hardwood face frames, hardwood door frames and drawer fronts, hardwood veneer on raised door panels (front and back), glued mortise, dowel, and dado joint construction, full backs (1/8" vinyl laminated plywood), vinyl laminated cabinet interiors, vinyl laminated composition drawer bodies with nylon and metal guides. Includes self-closing hinges, door and drawer pulls, mounting hardware and adjustable shelves. See illustrations for unit types. See the price adjustments below for pricing of other units. No countertops included. See Countertops, page 96.

Kitchen cabinet costs vary widely. The prices listed in this section are for standard grade residential cabinets. Add 65% to material costs for premium grade cabinets with solid hardwood fronts and frames, mitered corners and solid wood drawer bodies with steel guides and ball bearings. Deduct 45% from material costs for economy grade cabinets, laminated plastic on particleboard.

**Cabinets, Rule of Thumb** Cabinet cost per running foot of cabinet installed. These figures are based on a set of semi-custom, mill-fabricated and assembled kitchen cabinets including a sink base cabinet, one 3-drawer base cabinet and six door base cabinets. Per linear foot of front or back edge, whichever is longer.

Base cabinets, 34-1/2" high, 24" deep	BC@.521	LF	194.00	22.60	216.60
Wall cabinets, 30" high, 12" deep	BC@.340	LF	102.00	14.70	116.70

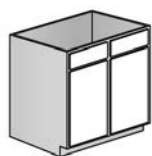
**Cabinets, Kitchen** (See the note above on cabinet costs.)

One door base cabinets, 34-1/2" high, 24" deep					
9" wide, tray divider	BC@.461	Ea	183.00	20.00	203.00
12" wide, 1 door, 1 drawer	BC@.461	Ea	245.00	20.00	265.00
15" wide, 1 door, 1 drawer	BC@.638	Ea	262.00	27.60	289.60
18" wide, 1 door, 1 drawer	BC@.766	Ea	275.00	33.20	308.20
21" wide, 1 door, 1 drawer	BC@.766	Ea	300.00	33.20	333.20
24" wide, 1 door, 1 drawer	BC@.911	Ea	306.00	39.40	345.40



DRAWER BASE

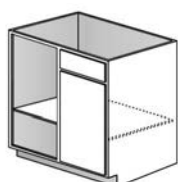
Drawer base cabinets, 34-1/2" high, 24" deep					
15" wide, 4 drawers	BC@.638	Ea	268.00	27.60	295.60
18" wide, 4 drawers	BC@.766	Ea	285.00	33.20	318.20
24" wide, 4 drawers	BC@.911	Ea	331.00	39.40	370.40



SINK BASE

Sink base cabinets, 34-1/2" high, 24" deep					
24" wide, 1 door, 1 drawer front	BC@.740	Ea	262.00	32.00	294.00
30" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	314.00	33.20	347.20
33" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	331.00	33.20	364.20
36" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	339.00	33.20	372.20
42" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	374.00	39.40	413.40
48" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	411.00	39.40	450.40

Two door base cabinets, 34-1/2" high, 24" deep					
27" wide, 2 door, 2 drawer front	BC@1.25	Ea	404.00	54.10	458.10
30" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	427.00	54.10	481.10
33" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	447.00	54.10	501.10
36" wide, 2 doors, 2 drawer fronts	BC@1.35	Ea	470.00	58.40	528.40
42" wide, 2 doors, 2 drawer fronts	BC@1.50	Ea	489.00	64.90	553.90
48" wide, 2 doors, 2 drawer fronts	BC@1.71	Ea	545.00	74.00	619.00

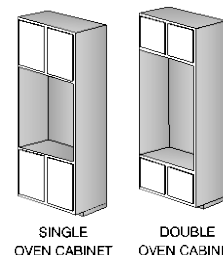
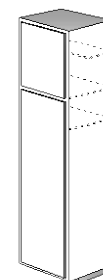
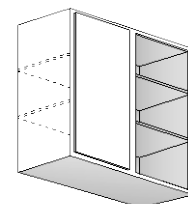
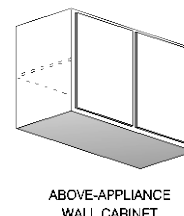
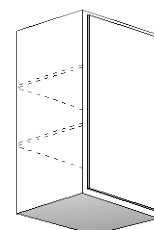
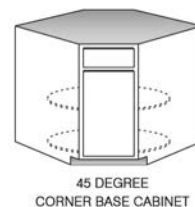


BLIND CORNER BASE

Blind corner base cabinets, 34-1/2" high					
Minimum 36", maximum 39" at wall	BC@1.39	Ea	300.00	60.20	360.20
Minimum 39", maximum 42" at wall	BC@1.50	Ea	322.00	64.90	386.90
Corner base cabinet, revolving shelves					
34-1/2" high x 36" wide at walls	BC@2.12	Ea	464.00	91.80	555.80

## Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Corner sink front, 34-1/2" high 40" wide at walls	BC@2.63	Ea	262.00	114.00	376.00
Wall cabinets, adjustable shelves, 30" high, 12" deep					
9" wide, 1 door	BC@.461	Ea	165.00	20.00	185.00
12" wide or 15" wide, 1 door	BC@.461	Ea	180.00	20.00	200.00
18" wide, 1 door	BC@.638	Ea	212.00	27.60	239.60
21" wide, 1 door	BC@.638	Ea	219.00	27.60	246.60
24" wide, 1 door	BC@.766	Ea	235.00	33.20	268.20
27" wide, 2 doors	BC@.766	Ea	275.00	33.20	308.20
30" wide, 2 doors	BC@.911	Ea	275.00	39.40	314.40
33" wide, 2 doors	BC@.911	Ea	300.00	39.40	339.40
36" wide, 2 doors	BC@1.03	Ea	315.00	44.60	359.60
42" wide, 2 doors	BC@1.03	Ea	339.00	44.60	383.60
48" wide, 2 doors	BC@1.16	Ea	366.00	50.20	416.20
Above-appliance wall cabinets, 12" deep					
12" high, 30" wide, 2 doors	BC@.461	Ea	174.00	20.00	194.00
15" high, 30" wide, 2 doors	BC@.461	Ea	199.00	20.00	219.00
15" high, 33" wide, 2 doors	BC@.537	Ea	213.00	23.20	236.20
15" high, 36" wide, 2 doors	BC@.638	Ea	219.00	27.60	246.60
18" high, 18" wide, 2 doors	BC@.537	Ea	165.00	23.20	188.20
18" high, 30" wide, 2 doors	BC@.766	Ea	219.00	33.20	252.20
18" high, 36" wide, 2 doors	BC@.911	Ea	241.00	39.40	280.40
Corner wall cabinets, 30" high, 12" deep					
24" at each wall, fixed shelves	BC@1.03	Ea	300.00	44.60	344.60
24" at each wall, revolving shelves	BC@1.03	Ea	402.00	44.60	446.60
Blind corner wall cabinets, 30" high					
24" minimum, 1 door	BC@1.03	Ea	227.00	44.60	271.60
36" minimum, 1 door	BC@1.32	Ea	275.00	57.10	332.10
42" minimum, 2 doors	BC@1.20	Ea	346.00	51.90	397.90
Utility cabinets, 66" high, 12" deep, no shelves					
18" wide	BC@1.32	Ea	346.00	57.10	403.10
24" wide	BC@1.71	Ea	395.00	74.00	469.00
Utility cabinets, 66" high, 24" deep, add shelf cost below					
18" wide	BC@1.24	Ea	366.00	53.70	419.70
24" wide	BC@1.71	Ea	434.00	74.00	508.00
Add for utility cabinet revolving shelves, includes mounting hardware					
18" wide x 24" deep	BC@.360	Ea	314.00	15.60	329.60
24" wide x 24" deep	BC@.360	Ea	368.00	15.60	383.60
Add for utility cabinet plain shelves					
18" wide x 24" deep	BC@.541	Ea	106.00	23.40	129.40
24" wide x 24" deep	BC@.541	Ea	111.00	23.40	134.40
Oven cabinets, 66" high, 24" deep					
27" wide, single oven	BC@2.19	Ea	439.00	94.80	533.80
27" wide, double oven	BC@2.19	Ea	332.00	94.80	426.80



## Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Microwave cabinet, with trim, 21" high, 20" deep, 30" wide	BC@.986	Ea	264.00	42.70	306.70
Additional labor costs for cabinets					
Tall utility, pantry, or oven cabinets	BC@2.00	Ea	—	86.60	86.60
Tall wall cabinet to counter level	BC@1.50	Ea	—	64.90	64.90
Hood cabinet over a range with vent cutout	BC@1.50	Ea	—	64.90	64.90
3/4" raised end panels applied to cabinet ends	BC@.250	Ea	—	10.80	10.80
Refrigerator end panels, cut, fit, install	BC@.500	Ea	—	21.60	21.60
Cabinet end panels, most sizes, per panel					
Refrigerator end panels	BC@.557	Ea	—	24.10	24.10
Refrigerator end panels with return	BC@1.00	Ea	—	43.30	43.30
Applied decorative end panels	BC@.334	Ea	—	14.50	14.50
Mitered island end or back panels	BC@.667	Ea	—	28.90	28.90
Dishwasher return panels	BC@.667	Ea	—	28.90	28.90
Precut filler panels installed between cabinets, per panel					
Most base or wall fillers	BC@.200	Ea	—	8.66	8.66
Most base or wall fillers with overlays	BC@.400	Ea	—	17.30	17.30
Tall filler panels over 36"	BC@.268	Ea	—	11.60	11.60
Tall filler panels over 36" with overlays	BC@.535	Ea	—	23.20	23.20
Corner filler panels	BC@.224	Ea	—	9.70	9.70
Corner fillers panels with overlays	BC@.448	Ea	—	19.40	19.40
Angled corner filler panels	BC@.268	Ea	—	11.60	11.60
Angled corner filler panels with overlays	BC@.536	Ea	—	23.20	23.20
Moldings and trim for cabinet work					
Scribe molding, per 8' length	BC@.224	Ea	—	9.70	9.70
Scribe molding, per linear foot	BC@.028	LF	—	1.21	1.21
Crown molding, per 8' length, miter cut	BC@.448	Ea	—	19.40	19.40
Crown molding, per 8' length, butt joint	BC@.180	Ea	—	7.79	7.79
Crown plate and riser, per miter cut	BC@.180	Ea	—	7.79	7.79
Crown plate and riser, per straight cut	BC@.112	Ea	—	4.85	4.85
Applied molding, per miter cut	BC@.112	Ea	—	4.85	4.85
Applied molding, per straight cut	BC@.067	Ea	—	2.90	2.90
Light rail molding, per miter cut	BC@.224	Ea	—	9.70	9.70
Light rail molding, per straight cut	BC@.067	Ea	—	2.90	2.90
Furniture toe kick, per 8' length	BC@.334	Ea	—	14.50	14.50
Furniture toe kick, per linear foot	BC@.042	LF	—	1.82	1.82
Valance, straight, per 8' length	BC@.334	Ea	—	14.50	14.50
Valance, with side returns or cap, 8' length	BC@.667	Ea	—	28.90	28.90
Mantle or hood molding, length to 8'	BC@.800	Ea	—	34.60	34.60
Corbels, plain	BC@.224	Ea	—	9.70	9.70
Corbels, on uprights	BC@.334	Ea	—	14.50	14.50
Enkeboll molding, miter cut, 8' length	BC@.667	Ea	—	28.90	28.90
Enkeboll molding, straight cut, 8' length	BC@.180	Ea	—	7.79	7.79
Posts, to 8' length	BC@.500	Ea	—	21.60	21.60
Pilasters	BC@.334	Ea	—	14.50	14.50
Cabinet feet, per cabinet	BC@.334	Ea	—	14.50	14.50
Cabinet extras					
Scribing in wood tops	BC@.133	LF	—	5.76	5.76
Job built 2 x 4 support wall to 42" high	BC@.334	LF	—	14.50	14.50
Framing for range support or sink cutout	BC@.667	Ea	—	28.90	28.90

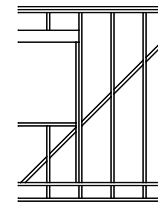
## Carpentry

**Craft@Hrs Unit Material Labor Total**

**Carpentry** See also carpentry items in other sections: Carpentry Steel Framing, Cabinets, Ceilings, Closet Door Systems, Countertops, Cupolas, Doors, Entrances, Flooring, Framing Connectors, Hardboard, Hardware, Lumber, Molding, Paneling, Shutters, Siding, Skylights, Soffits, Stairs, Thresholds, and Weatherstripping.

**Carpentry Rule of Thumb** Typical rough carpentry (framing) cost per square foot of floor in living area. These figures will apply on many residential jobs where joists, studs and rafters are 16" on center. Unconventional designs and complex framing plans will cost more. See detailed cost breakdowns in the next section.

Using framing lumber at	—	MBF	905.00	—	905.00
Using 1/2" OSB sheathing at	—	MSF	749.00	—	749.00
Using 7/16" OSB sheathing at	—	MSF	543.00	—	543.00
Using 5/8" OSB sheathing at	—	MSF	700.00	—	700.00
Using 1/2" RTD sheathing at	—	MSF	846.00	—	846.00
Using 5/8" RTD sheathing at	—	MSF	911.00	—	911.00
Single story, conventional foundation	B1@.237	SF	7.11	9.35	16.46
Single story, concrete slab foundation	B1@.180	SF	4.83	7.1	11.93
First of two floors, conventional foundation	B1@.203	SF	5.49	8.02	13.51
First of two floors, concrete slab foundation	B1@.146	SF	3.21	5.77	8.98
Second floor of a two-story residence	B1@.191	SF	5.64	7.53	13.17
Add for plywood sheathing	—	%	8.3	—	—



### Framing a single story residence, conventional crawl-space foundation

Sills, pier blocks, floor beams (145 BF per 1,000 SF)	B1@.018	SF	.13	.71	.84
Floor joists, doublers, blocking, bridging (1,480 BF per 1,000 SF)	B1@.028	SF	1.34	1.11	2.45
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.81	.43	1.24
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	2.04	3.67	5.71
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.96	1.78	2.74
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	1.21	1.26	2.47
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.62	.39	1.01
<b>Total framing, single story, conventional foundation</b>	<b>B1@.237</b>	<b>SF</b>	<b>7.11</b>	<b>9.35</b>	<b>16.46</b>
Add for plywood sheathing	—	%	8.3	—	—

### Framing a single story residence, concrete slab foundation

Layout, sole plates, anchors, studs, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	2.04	3.67	5.71
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.96	1.78	2.74
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	1.21	1.26	2.47
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.62	.39	1.01
<b>Total framing, single story, concrete slab foundation</b>	<b>B1@.180</b>	<b>SF</b>	<b>4.83</b>	<b>7.10</b>	<b>11.93</b>
Add for plywood sheathing	—	%	7.2	—	—

## Carpentry, Assemblies

	Craft@Hrs	Unit	Material	Labor	Total
<b>Framing the first of two floors, conventional crawl-space foundation</b>					
Sills, pier blocks, floor beams (145 BF per 1,000 SF)	B1@.018	SF	.13	.71	.84
Floor joists, doublers, blocking, bridging (1,480 BF per 1,000 SF)	B1@.028	SF	1.34	1.11	2.45
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.81	.43	1.24
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	2.04	3.67	5.71
Rough stairway, 15 risers and landing (96 BF of dimension lumber and 128 SF of plywood per 1,000 SF)	B1@.008	SF	.21	.32	.53
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.96	1.78	2.74
<b>Total framing, 1st of 2 floors, crawl-space foundation</b>	<b>B1@.203</b>	<b>SF</b>	<b>5.49</b>	<b>8.02</b>	<b>13.51</b>
Add for plywood sheathing	—	%	4.4	—	—
<b>Framing the first of two floors, concrete slab foundation</b>					
Layout, sole plates, anchors, studs, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	2.04	3.67	5.71
Rough stairway, 15 risers and landing (96 BF of dimension lumber and 128 SF of plywood per 1,000 SF)	B1@.008	SF	.21	.32	.53
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.96	1.78	2.74
<b>Total framing, first of two floors, concrete foundation</b>	<b>B1@.146</b>	<b>SF</b>	<b>3.21</b>	<b>5.77</b>	<b>8.98</b>
<b>Framing the second story of a residence</b>					
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.81	.43	1.24
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	2.04	3.67	5.71
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.96	1.78	2.74
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC (1,340 BF per 1,000 SF)	B1@.032	SF	1.21	1.26	2.47
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.62	.39	1.01
<b>Total framing, second floor of a two-story residence</b>	<b>B1@.191</b>	<b>SF</b>	<b>5.64</b>	<b>7.53</b>	<b>13.17</b>
Add for plywood sheathing	—	%	10.5	—	—
<b>Floor Assemblies</b> Costs for wood framed floor joists with subflooring and R-19 insulation. These costs include the floor joists, subflooring as described, blocking, nails and 6-1/4" thick R-1.9 fiberglass insulation between the floor joists. Figures include box or band joists and typical double joists. No beams included. Planked subflooring is based on 1.24 BF per square foot of floor. Costs shown are per square foot of area covered and include normal waste. Deduct for openings over 25 SF.					
Using framing lumber at	—	MBF	905.00	—	905.00
Using 5/8" RTD plywood subfloor at	—	MSF	911.00	—	911.00
Using 3/4" RTD plywood subfloor at	—	MSF	857.00	—	857.00
Using 7/16" OSB subfloor at	—	MSF	543.00	—	543.00
Using 5/8" OSB subfloor at	—	MSF	700.00	—	700.00
Using 3/4" OSB T&G subfloor at	—	MSF	788.00	—	788.00

## Carpentry, Assemblies

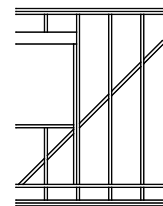
	Craft@Hrs	Unit	Material	Labor	Total
Floor joists 16" OC, R-19 insulation and OSB subflooring					
7/16" OSB subfloor					
2" x 6" joists	B1@.040	SF	3.00	1.58	4.58
2" x 8" joists	B1@.041	SF	3.28	1.62	4.90
2" x 10" joists	B1@.043	SF	3.81	1.70	5.51
2" x 12" joists	B1@.044	SF	4.71	1.74	6.45
Floor joists 16" OC, R-19 insulation and OSB subflooring					
5/8" OSB subfloor					
2" x 6" joists	B1@.040	SF	3.16	1.58	4.74
2" x 8" joists	B1@.041	SF	3.44	1.62	5.06
2" x 10" joists	B1@.043	SF	3.97	1.70	5.67
2" x 12" joists	B1@.044	SF	4.86	1.74	6.60
3/4" OSB subfloor					
2" x 6" joists	B1@.042	SF	3.25	1.66	4.91
2" x 8" joists	B1@.043	SF	3.53	1.70	5.23
2" x 10" joists	B1@.045	SF	4.06	1.78	5.84
2" x 12" joists	B1@.046	SF	4.95	1.82	6.77
Floor joists 16" OC, R-19 insulation and plywood subflooring					
5/8" plywood subfloor					
2" x 6" joists	B1@.040	SF	3.21	1.58	4.79
2" x 8" joists	B1@.041	SF	3.49	1.62	5.11
2" x 10" joists	B1@.043	SF	4.02	1.70	5.72
2" x 12" joists	B1@.044	SF	4.92	1.74	6.66
3/4" plywood subfloor					
2" x 6" joists	B1@.042	SF	3.31	1.66	4.97
2" x 8" joists	B1@.043	SF	3.60	1.70	5.30
2" x 10" joists	B1@.045	SF	4.13	1.78	5.91
2" x 12" joists	B1@.046	SF	5.02	1.82	6.84
For different type insulation					
Fiberglass batts					
10" thick R-30, add	—	SF	.42	—	.42
12" thick R-38, add	—	SF	1.01	—	1.01

**Wall Assemblies** Costs for wood framed stud walls with wall finish treatment on both sides. These costs include wall studs at 16" center to center, double top plates, single bottom plates, fire blocking, nails and wall finish treatment as described. No headers or posts included. All lumber is Std & Btr. 2" x 4" walls have 1.12 BF per SF of wall and 2" x 6" walls have 1.68 BF per SF of wall. Costs shown are per SF or LF of wall measured on one face and include normal waste.

Using 2 x 4 lumber at	—	MBF	890.00	—	890.00
Using 2 x 6 lumber at	—	MBF	887.00	—	887.00
Using 1/2" gypsum wallboard at	—	SF	.55	—	.55
Using 5/8" gypsum wallboard at	—	SF	.57	—	.57

### Interior wall assemblies

2" x 4" stud walls with 1/2" gypsum drywall both sides, ready for painting					
Cost per square foot of wall	B1@.064	SF	1.86	2.53	4.39
Cost per running foot, for 8' high walls	B1@.512	LF	14.90	20.20	35.10
2" x 4" stud walls with 1/2" gypsum drywall one side, ready for painting					
Cost per square foot of wall	B1@.046	SF	1.30	1.82	3.12
Cost per running foot, for 8' high walls	B1@.368	LF	10.40	14.50	24.90
2" x 4" stud walls with 5/8" gypsum fire rated drywall both sides, ready for painting					
Cost per square foot of wall	B1@.068	SF	1.89	2.68	4.57
Cost per running foot, for 8' high walls	B1@.544	LF	15.10	21.50	36.60





## Carpentry, Assemblies

	Craft@Hrs	Unit	Material	Labor	Total
2" x 4" stud walls with 5/8" gypsum fire rated drywall one side, ready for painting					
Cost per square foot of wall	B1@.048	SF	1.32	1.89	3.21
Cost per running foot, for 8' high walls	B1@.384	LF	10.50	15.20	25.70
2" x 6" stud walls with 1/2" gypsum drywall both sides, ready for painting					
Cost per square foot of wall	B1@.072	SF	2.25	2.84	5.09
Cost per running foot, for 8' high walls	B1@.576	LF	18.00	22.70	40.70
2" x 6" stud walls with 1/2" gypsum drywall one side, ready for painting					
Cost per square foot of wall	B1@.054	SF	1.69	2.13	3.82
Cost per running foot, for 8' high walls	B1@.432	LF	13.50	17.10	30.60
2" x 6" stud walls with 5/8" gypsum fire rated drywall both sides, ready for painting					
Cost per square foot of wall	B1@.076	SF	2.28	3.00	5.28
Cost per running foot, for 8' high walls	B1@.608	LF	18.20	24.00	42.20
2" x 6" stud walls with 5/8" gypsum fire rated drywall one side, ready for painting					
Cost per square foot of wall	B1@.056	SF	1.71	2.21	3.92
Cost per running foot, for 8' high walls	B1@.448	LF	13.70	17.70	31.40

### Exterior wall assemblies

2" x 4" stud walls with drywall interior, wood siding exterior, 1/2" gypsum drywall inside face ready for painting, over 3-1/2" R-13 insulation with 5/8" thick rough sawn T-1-11 exterior grade plywood siding on the outside face.

Using 5/8" rough sawn T-1-11 siding at	—	MSF	1,040.00	—	1,040.00
Cost per square foot of wall	B1@.068	SF	2.83	2.68	5.51
Cost per running foot, for 8' high walls	B1@.544	LF	22.70	21.50	44.20

2" x 6" stud walls with drywall interior, wood siding exterior, same construction as above, except with 6-1/4" R-19 insulation

Cost per square foot of wall	B1@.077	SF	3.86	3.04	6.90
Cost per running foot, for 8' high walls	B1@.616	LF	30.80	24.30	55.10

2" x 4" stud walls with drywall interior, 1/2" gypsum drywall on inside face ready for painting, over 3-1/2" R-11 insulation with 1" x 6" southern yellow pine drop siding, D grade, 1.19 BF per SF at 5-1/4" exposure on the outside face.

Using D grade yellow pine drop siding at	—	MSF	3,340.00	—	3,340.00
Cost per square foot of wall	B1@.074	SF	5.13	2.92	8.05
Cost per running foot, for 8' high wall	B1@.592	LF	41.00	23.40	64.40

2" x 6" stud walls with drywall interior, 1" x 6" drop siding exterior, same construction as above, except with 6-1/4" R-19 insulation

Cost per square foot of wall	B1@.083	SF	6.15	3.28	9.43
Cost per running foot, for 8' high wall	B1@.664	LF	49.20	26.20	75.40

2" x 4" stud walls with drywall interior, stucco exterior, 1/2" gypsum drywall on inside face ready for painting, over 3-1/2" R-11 insulation and a three-coat exterior plaster (stucco) finish with integral color on the outside face

Cost per square foot of wall	B1@.050	SF	5.65	1.97	7.62
Cost per running foot, for 8' high wall	B1@.400	LF	45.20	15.80	61.00

2" x 6" stud walls with drywall interior, stucco exterior, same construction as above, except with 6-1/4" R-19 insulation

Cost per square foot of wall	B1@.059	SF	6.67	2.33	9.00
Cost per running foot, for 8' high wall	B1@.472	LF	53.40	18.60	72.00

Add for different type gypsum board

1/2" or 5/8" moisture resistant greenboard					
Cost per SF, greenboard per side, add	—	SF	.15	—	.15

1/2" or 5/8" moisture resistant greenboard					
Cost per running foot per side 8' high	—	LF	1.18	—	1.18

5/8" thick fire rated type X gypsum drywall					
Cost per SF, per side, add	—	SF	.13	—	.13

5/8" thick fire rated type X gypsum drywall					
Cost per running foot per side 8' high	—	LF	1.07	—	1.07

## Carpentry, Detailed Breakdown

	Craft@Hrs	Unit	Material	Labor	Total
<b>2" x 12" Std &amp; Btr</b>					
2" x 12" floor joists, per MBF	—	MBF	1,010.00	—	1,010.00
12" centers (2.56 BF per SF)	B1@.026	SF	2.58	1.03	3.61
16" centers (2.05 BF per SF)	B1@.021	SF	2.06	.83	2.89
20" centers (1.77 BF per SF)	B1@.017	SF	1.78	.67	2.45
24" centers (1.56 BF per SF)	B1@.015	SF	1.57	.59	2.16

**Floor joist wood, TJI truss type** Suitable for residential use, 50 PSF floor load design. Costs shown are per square foot (SF) of floor area, based on joists at 16" OC, for a job with 1,000 SF of floor area. Figure 1.22 SF of floor area for each LF of joist. Add the cost of beams, supports and blocking. For scheduling purposes, estimate that a two-man crew can install 900 to 950 SF of joists in an 8-hour day.

9-1/2" TJI/15	B1@.017	SF	4.00	.67	4.67
11-7/8" TJI/15	B1@.017	SF	4.39	.67	5.06
14" TJI/35	B1@.018	SF	6.40	.71	7.11
16" TJI/35	B1@.018	SF	6.97	.71	7.68

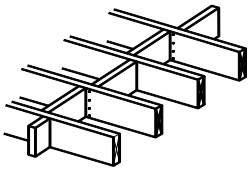
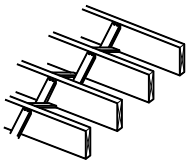
**Bridging or blocking** Installed between 2" x 6" thru 2" x 12" joists. Costs shown are per each set of cross bridges or per each block for solid bridging, and include normal waste. The spacing between the bridging or blocking, sometimes called a "bay," depends on job requirements. Labor costs assume bridging is cut to size on site.

<b>1" x 4" cross</b>					
Joist bridging, per MBF	—	MBF	2,510.00	—	2,510.00
Joists on 12" centers	B1@.034	Ea	1.25	1.34	2.59
Joists on 16" centers	B1@.034	Ea	1.72	1.34	3.06
Joists on 20" centers	B1@.034	Ea	2.18	1.34	3.52
Joists on 24" centers	B1@.034	Ea	2.64	1.34	3.98

<b>2" x 6" solid, Std &amp; Btr</b>					
2" x 6" blocking, per MBF	—	MBF	887.00	—	887.00
Joists on 12" centers	B1@.042	Ea	.98	1.66	2.64
Joists on 16" centers	B1@.042	Ea	1.30	1.66	2.96
Joists on 20" centers	B1@.042	Ea	1.62	1.66	3.28
Joists on 24" centers	B1@.042	Ea	1.95	1.66	3.61

<b>2" x 8" solid, Std &amp; Btr</b>					
2" x 8" blocking, per MBF	—	MBF	806.00	—	806.00
Joists on 12" centers	B1@.042	Ea	1.18	1.66	2.84
Joists on 16" centers	B1@.042	Ea	1.58	1.66	3.24
Joists on 20" centers	B1@.042	Ea	1.97	1.66	3.63
Joists on 24" centers	B1@.042	Ea	2.36	1.66	4.02

<b>2" x 10" solid, Std &amp; Btr</b>					
2" x 10" blocking, per MBF	—	MBF	853.00	—	853.00
Joists on 12" centers	B1@.057	Ea	1.56	2.25	3.81
Joists on 16" centers	B1@.057	Ea	2.08	2.25	4.33
Joists on 20" centers	B1@.057	Ea	2.60	2.25	4.85
Joists on 24" centers	B1@.057	Ea	3.12	2.25	5.37



# Index

<b>A</b>	
Abbreviations .....	6
Abrasion testing .....	314
Abrasive	
anti-skid strip .....	283
concrete finish .....	356
stair treads .....	220, 432
terrazzo .....	433
ABS	
bungalow fitting .....	514
bushing .....	516
cap .....	516
cleanout adapter .....	516
cleanout tee .....	515
closet flange .....	515
coupling .....	513
double sanitary tee .....	514
double wye .....	514
elbow .....	513
female adapter .....	515
floor drains .....	516
male adapter .....	515
P-trap .....	516
return bend .....	516
sanitary tee .....	514
soil pipe adapter .....	516
test cap .....	515
test tee .....	515
trap adapter .....	516
wye .....	514
ABS-DWV pipe .....	512
cleanout plug .....	516
Absorption testing .....	314
Accent lights, LED .....	584
Access	
control units .....	590
disabled persons .....	476
fitting, PVC .....	550
flooring .....	434
handicapped .....	476
hatches, sheet metal .....	266
stairs, folding .....	284
Access doors	
attic .....	266
foundation .....	291
louver .....	253, 525
plumbing .....	253, 525
sheet metal .....	266
steel .....	418
tub .....	266
wall .....	266
Access points, wireless .....	130, 460
Access ramps .....	476
Accessories	
glass block .....	217
water heater .....	526
Accordion	
doors .....	417
Accordion	
doors .....	443
folding partitions .....	443
Acetone .....	238
Acid cleaning	
concrete .....	356
etching .....	437, 466
masonry .....	371
wash .....	371
Acid-proof brick .....	375
Acid-resistant countertops .....	473
Acoustical	
adhesive .....	18
block .....	380
ceiling panels .....	81
design fees .....	134
engineering .....	134
partitions .....	443
privacy testing .....	134
tile, demolition .....	100, 336
ACQ-compatible flashing .....	268, 270
ACQ-treated lumber .....	201
Acrovyn wall cover .....	444
Acrylic	
clear panels .....	80
diffusers .....	80, 583
latex caulk .....	77
tub and shower .....	533
waterproofing .....	184
Acrylic-urethane foam roof .....	401
Actuating devices,	
garage doors .....	164
ACZA treatment, lumber .....	206
ADA	
handicapped access .....	476
signage .....	442
Adapters	
ABS cleanout .....	516
ABS female .....	515
ABS male .....	515
ABS soil pipe .....	516
ABS trap .....	516
copper .....	504
CPVC .....	508
drain pipe .....	126
DWV trap .....	512
polyethylene pipe .....	621
Additives	
coloring .....	85, 218, 350, 356
concrete .....	85, 350, 356
Add-on boiler modules .....	578
Address systems, public .....	592
Adhesives .....	17
acoustical ceiling tile .....	429
ceramic tile .....	18, 428
flooring .....	18, 154, 159
modified bitumen .....	258
permanent bond .....	258
roofing .....	256, 258
tile .....	288, 289
wallpaper .....	293
wood flooring .....	159
Administrative overhead .....	208
Admixtures	
coloring .....	85, 218, 356
concrete .....	85, 350, 356
Adobe block .....	216
Aerators, rental .....	327
Aerial	
equipment rental .....	324
mapping .....	313
photographs .....	313
platform rental .....	324
Aggregate .....	18, 94
base .....	84
exposed, concrete .....	615
finish .....	356
paving .....	609
pea gravel .....	18
roofing .....	256
sand .....	18
seeded .....	244
testing .....	314
Air compressor	
rental .....	139, 320
service station .....	449
Air conditioning .....	180
heat pump .....	178
residential .....	180
window .....	177
wiring .....	127
Air curtains .....	417
heaters .....	536
Air eliminator	
purger .....	173
vent .....	538
Air exhausters	
exhaust hood .....	455
fans .....	142, 407
Air filter system, central .....	176
Air hammer .....	596
Air handler, residential .....	179
Air hose	
reel .....	449
rental .....	320
Air tool operator wage .....	309
Air tools	
earthwork .....	138
pneumatic .....	103
rental .....	320
Airless paint sprayer .....	239
Alarm	
access .....	434
circuit .....	542
systems .....	589, 591
systems, electrical work .....	128
valves .....	492
wiring .....	128, 264
Alarms	
fire .....	264
security .....	264
smoke .....	264
Alcohol paint thinner .....	238
Aliphatic resin glue .....	18
All-season storm doors .....	114
Altars .....	462
Aluminum	
blinds .....	296
breaks, rental .....	329
cladding .....	400
coating .....	257
concrete-embedded .....	482
conduit .....	552
cupola roof .....	97
curtain wall .....	419
downspouts .....	404
fence .....	149
flagpoles .....	448
flashing .....	267, 403
foil insulation .....	183
gutters .....	404
letters .....	441
louvers .....	80
metal work .....	388
ornamental .....	388
oxide .....	356
patio doors .....	121
pet doors .....	122
railing .....	386
roofing .....	400
sheet .....	403
siding .....	276, 400
stairs .....	282
tile .....	429
vents .....	406
Americans with	
Disabilities (ADA access) .....	476
Ammeter .....	571
Ammonium sulfate .....	623
Anchor bolts .....	59
foundation .....	159, 361
templates .....	340
tilt-up .....	361, 363
Anchors	
chimney .....	151
concrete .....	159
conduit hanger .....	554
embedded steel .....	373
foundation .....	59
masonry .....	372, 556
timber connectors .....	159
Angle	
bracket .....	516
clips .....	159
flashing .....	268
iron .....	219
iron fireplace .....	151
sill, steel .....	387
stops .....	522
supports, pipe .....	517
valves .....	522
Annunciator panel .....	591
Anodizing .....	387
Antenna	
cable .....	130
remote high gain .....	130
Anti-siphon vacuum breakers .....	173
Anti-skid strips .....	283
Appliance	
cabinets .....	31
connections .....	252
dishwashers .....	248
dolly, rental .....	329
garbage disposers .....	248
ranges .....	255
rough-in .....	252
solar water heaters .....	249
water heaters .....	249
water softeners .....	250
wiring .....	128
Appraisal fees .....	18
Apprentice costs .....	3
Apron	
concrete driveway .....	615
window .....	53
Arbitration	
fees .....	19
mobile .....	20
Archaid .....	188
Archbead .....	188, 426
Architectural	
drawings .....	20, 126
form lining .....	341
screens .....	388, 406
shingles .....	258
signage .....	441
Area lighting .....	588
Area modification factors .....	12-15
how to use .....	4
Area walls, sheet metal .....	267
Arks, church .....	460
Armed guard .....	265
Armstrong	
ceiling tile .....	429
flooring .....	153, 154
Arquati Roma awnings .....	471
Arrow board, rental .....	326
Art glass, ecclesiastical .....	470
Asbestos	
containment .....	338
pipe insulation removal .....	338
removal .....	338
testing .....	26
Asbestos worker, wage .....	309
As-built drawings .....	126
Ash	
drop .....	151

dumps.....	151	Auger holes	608	Barrier, egress.....	487	seat.....	25
flooring.....	155	caissons.....	608	Bars		walk-in.....	246
urns.....	473	post holes.....	617	bath accessories.....	24	whirlpool tub.....	245
wood flooring.....	155, 158	Augers		masonry.....	346, 372	Battens, lumber.....	222
Ashtray.....	473	rental.....	327	reinforcing steel.....	89, 346	Batterboards.....	189
Asphalt		toilet, rental.....	328	welding.....	348	Batts, insulation.....	181, 397
access road.....	610	Auto hoist.....	450	Base		Bay vent channel.....	292
built-up roofing.....	256	Automatic gates.....	165	asphalt.....	243	Bay window.....	299
coatings.....	256	roll-up.....	21	ceramic tile.....	290, 374, 428	roof cover.....	304
cold milling.....	611	Awning windows		column.....	387	Bead	
curb.....	610	aluminum.....	302	course, paving.....	243	lath.....	426
dampproofing.....	397	vinyl-clad wood.....	300	floor.....	154	lath & plaster.....	188
emulsion.....	381	Awnings.....	21	hardwood.....	222	molding.....	223, 226
felt.....	26, 401	canopy-type.....	472	marble.....	381	Beadex.....	169
milling.....	611	commercial.....	471	MDF.....	226	Beam clamps, piping.....	517
mix.....	82	fabric.....	21	post.....	162	Beams	
paper.....	258	lean-to type.....	471	resilient flooring.....	154	applied.....	54
parking lot.....	610	motorized.....	471	screed.....	188, 426	carpentry.....	390
paving.....	243, 609	roll-up.....	21	sheet, fiberglass.....	257, 258	ceiling.....	45
paving, demolition.....	102			slab.....	94	clamps, conduit.....	554
primer.....	466			Base wages		collar.....	48
recycling.....	332			industrial & commercial.....	309	concrete.....	339, 345
repair.....	611			residential.....	10	formwork.....	339, 345
roll sheathing.....	26			Baseball backstops.....	618	grade.....	93
roof coating.....	237			Baseboard.....	55	laminated timbers.....	396
roofing.....	257			bamboo.....	157	log.....	193
sawing.....	371			MDF.....	226	lumber.....	201
sheathing.....	182			Baseboard heating		LVL.....	396
slurry seal.....	611			electric.....	536	precast.....	359
speed bumps.....	610			radiation.....	537	ridge.....	193
tack coat.....	610			radiators.....	175	shoring.....	345
walks.....	615			Basement		steel.....	383
waterproofing.....	397			doors.....	23	steel collar.....	72
Asphalt cutters, rental.....	320			stairs.....	281	Bearing capacity test.....	279
Asphalt-fiberglass shingles.....	258			storm window.....	304	Bearing ratio, soil testing.....	317
Asphaltic concrete testing.....	315			window.....	301	Bed bumpers.....	444
Assemblies				Basic wage cost.....	3	Bed molding.....	224, 226
brick wall.....	209, 373			Basketball backstops.....	464	Beds, concealed.....	25
ceiling.....	36			Basketweave fence.....	147	Beehive climber.....	467
floor.....	33			Basswood blinds.....	296	Beehive grate.....	636
floor slab.....	352			Bath accessories.....	445	Bell footings.....	609
framing, door opening.....	43			ceramic.....	288	Bell wire.....	105
framing, window openings.....	44, 67			ceramic tile.....	289	Bell wiring, electrical work.....	128
interior walls.....	34, 57			compartments.....	442, 533	Bells	
plumbing.....	530, 532			enclosures.....	272	door.....	105
ramps, landings,				fans.....	142	fire alarm.....	591
for handicapped.....	476			shower cabinets.....	533	Belt conveyors.....	491
roof.....	36			shower doors.....	271	Benches	
roofing.....	37			vanities.....	290	athletic.....	466
steel framing, door opening.....	66			Bath exhaust fan.....	139, 140	bus stop.....	479
steel framing, window opening.....	66			accessories.....	141	church.....	460
wall.....	34, 57			ceiling blower.....	139	locker room.....	474
wall, brick.....	209, 373			Exhaust Air.....	140	park.....	474
Astragal molding.....				Heat-A-Lamp.....	141	stadium.....	474
	108, 223, 413, 421			heater, ceiling.....	141	Benderboard.....	187
Astro dial time switch.....	564			QuietTest.....	140	Benefits, fringe.....	309
Athletic				switch.....	141	Bentonite	
benches.....	466			timer switch.....	141	granules.....	355
court, striping.....	467			ValueTest.....	140	waterproofing.....	294
court, surface prep.....	466			vent kit.....	141	Bevel siding.....	199
equipment.....	465			with heater.....	141	Beveled glass doors.....	107
equipment, swimming pools.....	475			with heater, infrared.....	140	Beverage dispenser.....	458
field marker.....	218			with light.....	140	Bicycle	
fields.....	465			Bath fixtures.....	531, 533	post bollard.....	475
gym equipment.....	464			Bathroom		racks.....	475
ATM machine.....	453			accessories.....	23	Bidets.....	247
Attachments, crane, rental.....	322			cabinets.....	290	Bi-fold doors.....	124, 125
Attic				fan wiring.....	128	hardware.....	125
access doors.....	266			fans.....	139, 140, 141	mirrored.....	125
fans.....	128			sinks.....	247, 533	Bin, trash.....	332
fans, belt drive.....	141			vanities.....	290	Birch	
gable vents.....	142			wallboard.....	168	doors.....	115, 116
stairs, folding.....	284			Baths, steam.....	285	paneling.....	242
vents.....	291			Bathtubs.....	245, 531, 533	plywood.....	203
Audio				ADA compliant.....	246	Bird screen.....	406
detectors.....	264			caulk.....	78	Birdstop.....	262
sensors.....	589			doors.....	271	Bitumen adhesive, modified.....	258
Audio-visual equipment,				enameled cast iron.....	245	Bituminous	
school.....	458			enameled steel.....	245	paving.....	243, 611
Auditorium				fiberglass.....	245	paving, removal.....	332
acoustic design fees.....	134			recessed.....	245	roofing.....	256, 401
seating.....	474			rough-in.....	531		

**B**

Black steel pipe.....	494	Bonds, insurance.....	185	Bricklayer, wage		Bus schedule, display panel....	480
Blanket insulation.....	183	Bookcases, painting.....	241	industrial & commercial.....	309	Bus stop	
Blasting		Boomlifts, rental.....	324	residential.....	10	enclosures.....	479
excavation.....	595	Boring		Bricklayer's helper,		shelters.....	479
sand.....	371	caissons.....	608	wage residential.....	10	Bushings	
water.....	239, 263, 333, 371, 437	soil testing.....	279	Bridge, pedestrian.....	487	ABS.....	516
Bleachers.....	464, 474	under walkways.....	619	Bridging		conduit.....	543
Blinds		Bottom plates, carpentry.....	37	carpentry.....	41	Business overhead.....	208
aluminum.....	296	Bottom track, steel framing.....	73	I-Joist.....	160	Butacite.....	482
cellular.....	297	Bow windows.....	304	joist.....	159, 390	Butt hinges.....	420
PVC.....	296	Box nails.....	227	steel floor joists.....	62	Button board.....	187
roll-up.....	296	Boxes		tension.....	159	Button switches.....	565
Venetian.....	296	electrical.....	561	Broan Manufacturing... 140, 141, 255		Buttweld joints, welding.....	389
vertical.....	296	junction.....	563	Broiler, food.....	455	Butyl roof coating.....	402
Block		outlet.....	128, 561	Bronze fabrications.....	388	Butyl roofing.....	401
adobe.....	216	pull.....	562	Broom finish, concrete.....	95, 356	BX cable.....	560
concrete.....	213, 378	switch.....	128	Brown coat plaster.....	244, 427	Bypass doors.....	123
core fill.....	213, 378	valve.....	619	Brush		accessories.....	124
demolition.....	335	Braces		chippers, rental.....	327	beveled mirror.....	123
detailed concrete.....	213, 378	tilt-up.....	363	cutters, rental.....	327	mirrored.....	123, 124
filler, acrylic.....	237	trench, rental.....	323	hogs, rental.....	327		
flooring.....	158	wall.....	164	removal.....	137, 594		
glass building.....	217	Bracing		Brush finish, concrete.....	95		
masonry.....	213, 378	bulkheads.....	605	Brush painting.....	436		
painting.....	240, 438	carpentry.....	44, 390	Bucket truck			
pier.....	39	steel framing.....	67	rental.....	324	Cabinets	
sawing.....	370	temporary.....	44, 67	Bucket, clamshell, rental.....	322	bath.....	220, 290, 446
walls, concrete.....	213	trenches.....	605	Buckets, rental.....	321	classroom.....	473
Block filler, painting.....	438	trenches, rental.....	323	Buggies, rental.....	321	cleaning.....	83
Blocking		Brads, nails.....	229	Builder's adhesive.....	17	custom.....	472
carpentry.....	389	Braille signage.....	442	Builder's hardware.....	421	end panels.....	31
finish carpentry.....	51	Elevator.....	479	rough carpentry.....	159	extinguisher.....	493
fireblocks.....	45	Branch circuits.....	573	Building		finish carpentry.....	473
sheathing.....	392	Brass		appraisal.....	18	fire hose.....	493
steel floor joists.....	62	fabrications.....	388	blocks, concrete filled.....	87	hardware.....	420, 472
Blockout forms		railing.....	386	board.....	293, 398	hospital.....	473
cast-in-place slabs.....	341	storm.....	114	columns.....	186	installation.....	55
tilt-up.....	361	Bread slicer.....	456	demolition.....	103, 334	kitchen.....	29
Blockouts, concrete.....	342	Breaker		hardware.....	421	labor cost.....	31
Blood storage refrigerators.....	469	bond.....	355	moving.....	338	laboratory.....	473
Blowers		circuit.....	128	paper.....	26, 28	lavatory.....	290
exhaust hood.....	455	form.....	355	permit fees.....	28	lighting fixtures.....	191, 221
fans.....	142	panels.....	571, 572	posts, steel.....	186	linen, shelving.....	270
fireplace.....	152	paving, rental.....	320	sewer.....	266	medicine.....	220, 290, 446
heating.....	535	vacuum.....	312, 618	stone, testing.....	316	metal.....	472
Blown-in insulation.....	183, 398	Breaking, demolition.....	104, 334	wiring.....	127	painting.....	241
Blue Board insulation.....	181	Brewer, coffee.....	458	Building laborer, wage		shelving.....	270
Bluegrass seeding.....	624	Brick		industrial & commercial.....	309	shop.....	472
Blueprinting.....	25	acid-proof.....	375	residential.....	10	shower.....	533
Board		artificial.....	243	Building layout.....	595	storage.....	473
insulation.....	181	chemical-resistant.....	375	Buildings		utility.....	30, 31
sheathing.....	50, 51	cleaning.....	371	steel engineered.....	483	vanity.....	290
Boards		Colonial.....	209	temporary, rental.....	330	wardrobe.....	458, 472, 473
forming.....	88	commercial.....	210	Buildings		wood.....	473
lumber.....	194, 196, 197, 198	common.....	374	steel engineered.....	483	Cable	
sheathing.....	62	cutting.....	370	temporary, rental.....	330	antenna.....	130
treatment.....	206	demolition.....	100	Built-in ovens.....	255	armored.....	560
Board-up		face brick.....	374	Built-up girders		BX.....	560
window.....	274	firebrick.....	212	carpentry.....	40	Cat 5.....	593
Bobcats, rental.....	323	flooring.....	220	steel.....	383	Cat 5e.....	593
Boilermaker, wage.....	309	jumbo.....	210	steel framing.....	61	Cat 6.....	593
Boilers.....	578	manhole.....	637	Built-up roofing.....	256, 401	coaxial.....	592
expansion tank.....	173	masonry.....	209, 374	cement, Cold-App.....	258	communication.....	591
foundations.....	366	mini.....	211	demolition.....	102	computer network.....	593
modules.....	578	mission.....	212	Bulb, light.....	192	electrical.....	561
Bollards		modular.....	209, 210	Bulkhead forms.....	340, 342	Ethernet.....	593
bicycle.....	475	mold flashing.....	268	Bulkheads, shoring.....	605	fiber optic.....	592
cast iron.....	616	molding.....	108, 222	Bulldozers		flexible armored.....	560
granite.....	616	mortar.....	209	excavation.....	137	ice melting.....	561
Bolt cutters, rental.....	328	Norman.....	209, 210	rental.....	138	metal-clad.....	560
Bolts		Padre.....	210	Bullet resistant glass.....	422	network.....	130, 459, 460
anchor.....	59	painting.....	240	Bulletin boards.....	441	phone.....	591
carriage.....	232	paving.....	215, 243, 382, 612	Bullnose		power.....	560
foundation.....	159	plate.....	382	drywall.....	169	punch down.....	460
lag.....	232	pointing.....	371	paver.....	212	RG Series.....	592
machine.....	232	sandblasting.....	263	Bumper guards.....	444	RJ Series.....	592
tilt-up.....	361	sawing.....	370	Bumper threshold.....	285	Romex.....	127, 542, 559
Bond breaker.....	355	standard.....	209, 210	Bumpers		signal.....	592
tilt-up.....	363	steps.....	382	dock.....	365, 451	snow-melting.....	476, 561
Bonding agents		testing.....	316	highway.....	615	tap.....	591
adhesives.....	17, 18	vener.....	211	Bumps, speed.....	610, 617	testing, computer.....	594
flooring.....	154	walls.....	209, 373	Bungalow fittings, ABS.....	514	tray.....	557
roofing.....	256, 402			Burlap soil stabilization.....	603	twinaxial.....	593
				Bus duct connection.....	571	twisted pair.....	593

**C**

Cable testing .....	130, 460	Cases	82, 430	Charging Station	
Cabs, elevator .....	133, 490	cabinets .....	29, 473	electric vehicle .....	128
Café doors .....	118	laboratory .....	473	Check	
Caissons .....	608	painting .....	241	desks .....	452
Calcimine removal .....	439	Cash box, service station .....	450	valves .....	492, 519, 521
Calcium chloride .....	85, 350	Cash dispenser .....	453	Checkroom equipment .....	453
Calcium nitrate .....	623	Cashier booth, bulletproof .....	485	Chemical fire protection .....	455
California B.A.C.T. ....	579	Casing		Chemical-resistant brick .....	375
California Code 2010 .....	579, 581	aluminum siding .....	276	Cherry	
California pavers .....	212	beads .....	188	paneling .....	242
Cambria countertop .....	96	door .....	53, 108	parquet .....	158
Campus network wiring .....	459	extruded polymer .....	226	Chestnut flooring .....	155, 156
Cane fiber joint .....	355	finish carpentry .....	52	Child protection seat .....	447
Canopy		hardwood .....	222	Chilled water pipe .....	494
commercial .....	471	MDF .....	226	Chimes, door .....	105
door .....	21	molding .....	223	wiring .....	128
door or window .....	21	nails .....	229	Chimneys	
food service hoods .....	455	window .....	54	anchors .....	151
range hoods .....	253	Cast iron		caps .....	291
steel framing .....	387	column bases .....	387	firebrick .....	212
Canopy lights .....	587	fittings .....	626	fireplace .....	152
Cant strips		flanged pipe .....	626	flashing .....	404
carpentry .....	50	ornamental iron .....	150	flues .....	152, 216, 374
roofing .....	182, 403	pipe .....	626	masonry .....	220, 374
Canvas tarpaulins .....	285	sections .....	387	prefabricated .....	374
Cap		valve box .....	627	Chippers	
conduit .....	544	valves, AWWA .....	627	pneumatic, rental .....	320
door bottom .....	286	Cast-in-place, concrete .....	92	rental .....	327
sheet, roofing .....	257	Catch basins .....	635	Chisels, rental .....	320
test .....	515	demolition .....	333	Chop saws, rental .....	328
tile .....	374	entrance .....	474	Church	
Capillary fill .....	339	gratings .....	387	acoustical design fees .....	134
Capital forms .....	343	Catwalks, carpentry .....	46	chairs .....	461
Cappuccino dispenser .....	458	Caulk .....	77	equipment .....	460
Caps		acrylic latex .....	77	glass .....	470
ABS .....	516	fireproof .....	78	pews .....	461
black steel .....	494	guns .....	79	Chutes	
copper .....	504	sealants .....	77, 410	demolition .....	337
CPVC .....	507	strip .....	79	garbage .....	491
drain pipe .....	126	Caution		linen .....	491
flashing .....	403	lights .....	22	mail .....	447
masonry .....	213, 216	tape .....	23	trash .....	337
molding .....	222	Cavity wall		Cigarette disposal .....	473
post .....	163	insulation .....	184	Cinder rock .....	604
reinforcing .....	872	insulation .....	184	Circline lighting .....	191
Car charging station .....	128	insulation .....	872	Circuit balancing	
Carbon steel pipe .....	494	post .....	163	valves .....	173, 539
Carborundum rub .....	95, 356	Car-clamps, pipe .....	517	Circuit breakers	
Card reader		Cedar		panels .....	575
parking .....	450	boards .....	79	wiring for .....	128
security access .....	590	closet lining .....	79	Circuits, electrical	
Carpenter, wage		fascia .....	49	dryer .....	543
industrial & commercial .....	309	fence .....	147, 148	exit light .....	542
residential .....	10	lumber .....	198	light and power .....	542
Carpentry		paneling .....	242	motor .....	566
assemblies .....	37	plywood .....	203	range .....	543
cabinets .....	29, 473	roofing .....	259	receptacle .....	542
finish .....	51, 52, 421	saunas .....	263	switch .....	542
furring .....	52	shakes .....	259	under slab .....	542
industrial and commercial .....	389	shingles .....	255	Circular	
molding .....	226	siding .....	199	louver .....	292
piecework .....	37	trim .....	49	windows .....	299
piecework rates .....	39, 74	Cedarmill .....	274	City cost adjustments .....	12–15
plates .....	390	Ceiling		Civil engineering fees .....	134
rough .....	46	access hatches .....	407	Cladding, preformed .....	400
square foot costs .....	32	adhesive .....	17	Clamps	
wall sheathing .....	394	assemblies, wood framed .....	36	column forms .....	355
Carpet adhesive .....	18	beams .....	45	concrete, rental .....	322
Carpet tile .....	434	beams, carpentry .....	390	conduit .....	555
Carpets .....	433	demolition .....	100	ground rod .....	566
access flooring .....	434	domes .....	79	pipe .....	517, 518
mats .....	220, 474	fans .....	142	PVC conduit .....	551
subcontract .....	76	fans, bath .....	139	riser .....	517
Carports .....	77	grid .....	429	top beam .....	517
Carriage bolts .....	232	joists .....	46, 68	Clamshell excavators, rental .....	322
Carriers, conveyors .....	491	joists, steel .....	68, 73	Clamshovels, rental .....	327
Cars, elevator .....	133, 490	lighting fixtures .....	79, 190	Classrooms, manufactured .....	480
Cartridge fuses .....	575	materials .....	80	Clay	
Carved doors .....	107	metal pans .....	82	backing tile .....	374
Casement windows		paint removal .....	233	brick .....	373
vinyl .....	299	painting .....	238, 241, 437	pipe .....	635
vinyl-clad wood .....	300, 301	panels .....	81	tile, load bearing .....	374
		radiant heating systems .....	175		
		skylights .....	277		

Clay tile roofing	Cold box, insulation	399	additives	85, 350, 355, 356	paint removal	234
demolition	Cold milling, asphalt	611	adhesive	18	painting	240, 437
Clean metal primer	Cold process cement	258	aggregate	350	patching	95
Cleaning	Cold-formed steel framing	56	apron	476, 615	pavers	215, 613
brick	Collar beams		architectural	85	paving	244, 611
cabinets	carpentry	48	beams	339, 345	paving, removal	332
concrete	steel framing	72	block core fill	213, 378	piles	606
doors	Collar ties	48	buggies, rental	321	pipe	633
final	Collated		building walls	351	placing	95, 351
floors	brads	229	bush hammered	356	plank	358
glass	nails	229, 230	caisson	608	plasticized	85
glass block	Colonial		cast-in-place	354	plyform	203
masonry	brick	209	coatings	355, 356, 369	pouring	95
new construction	columns	84	coloring	85, 96, 218, 356, 357	precast	221, 357
paint preparation	interior doors	119	column forms	340	pull & junction box	542
painting	storm doors	114	columns, reinforcing	349	pump mix	85
pavement joints	Color coat, tennis court	466	conduit envelopes	541	pumping	350
plumbing fixtures	Coloring agents	218	core drilling	370	ready-mix	84, 350, 351
sewer main	concrete	85, 95, 350, 357	culvert, precast	633	recycling	332
shower stalls	mortar	218, 613	curb	88, 95, 614	reinforcement	89, 346
stone	Column forms	342	curing	356	retaining walls	92, 341
storm sewer	capitals	344	curing compounds	351	roof decks	369
terra cotta	round	344	curing papers	27	sandblasting	263
vacuum systems	tilt-up	365	cutting	370	sawing	362, 370
walls	Columns		decking	369	saws, rental	321
windows	base ties	160	delivery charges	85	screeds, rental	322
Cleaning station	bases	84	demolition	101	sealant	77
Cleanout	capitals, formwork	344	depression forms	341	sealer	356
adapter, ABS	caps	160	driveways	84	shingles	261
doors, fireplace	carpentry	39	edge forms	340	sidewalk	94, 615
drainage piping	carpentry, steel	58	embossed finish	96	slab demolition	336
plug, ABS-DWV	clamps, rental	322	equipment foundations	366	slab forms	340
tees, ABS	concrete	340	equipment rental	321	slab sawing	370
Cleanup, overhead	fireproofing	409	etching	357	slabs	94, 352, 354, 359, 369
Clear cedar siding	footings	94	excavation	338	slip-formed	353
Clearing	lally	39	expansion joints	85, 355	snap ties	86
brush	lally, steel	58	exposed aggregate	95	specialty finishes	95
excavation	marble	381	fiber mesh reinforcing	85	spread footings	377
Clerical help cost	painting	240	fill	365	stain	235
Clevis hangers	porch	84	fill, columns	384	stairways	354
Climber, tower	precast	359	finishes	95	stamped finish	96
Clips	reinforcing	349	finishing	96	stamped, subcontract	369
angle	structural steel	384	fireproofing	407	steps	95, 351, 354
framing	tilt-up	365	flared apron	476, 615	steps-on-grade	95
plywood	tube	854	flatwork	352, 611	structural	351, 353
Clock	wood	84	floor finishes	356, 369	support poles	360
receptacles	Come-a-longs, rental	329	floor slab	352	surface prep	437
wiring	Commercial brick	210	footings	94	surfacing	369
Closers, door	Commercial wage rates	309	footings, demolition	100	suspended slabs	353
105, 420	Common brick	374	form stakes	86	testing	315
Closet doors	Communications	589	form stripping	88	ties	86
bi-fold	cable	591	form tie	355	tile	261
bypass	Communion rail	461	forms	86, 87, 88, 93, 339	tile roofing	261
mirrored bypass	Compacting soil		forms, cast-in-place	340	tilt-up	362
123, 124	embankment	597	forms, paving	611	topping	95
Closet flange, ABS	equipment rental	139, 321	foundations	93	underpinning	605
515	excavation	136, 597	grade beams	93	unit masonry	213
Closets	roadway	603	granite aggregate	85	vapor barrier	430
cabinets	trenches	599	grout	355, 378	vibrators, rental	321
lighting, wiring	Compaction testing	279	grout mix	85	walks	94, 615
lining, cedar	Compactors, rental	139, 321	grouting	96	wall form	88
poles	Compartments, cubicles	442	gunite	357	wall sawing	370
racks	Composite		hardeners	356	walls	86, 87, 92, 351, 357
shelves	doors	119	headwalls	638	waterproofing	294, 355, 397
storage unit	lumber	98	high early strength	85	waterstop	91, 349
water	Composition		ICF	86	wedge tie	355
247, 530, 532	roof, coating for	237	inserts	355	work	338
Clothes chutes	roofing	258	insulated forms	86, 87	Concrete block	
491	Compressors		insulating deck	369	demolition	100
Clothes dryers	foundations	366	joints	85	glazed	379
vent sets	paint	239	keyway	93	natural	213
wiring	rental	320	labor placing	351	painting	240, 241, 438
128	service station	449	landings	476	pavers	215
Clothes washers, wiring	Computer		lightweight	85	retaining walls	375
128	access flooring	434	line markings	616	screen	215, 380
Clothesline units	network cable	592, 593	lintels	382	slump	216
84	network setup	130, 131	manholes	636	split-face	215, 379
Coat hooks and racks	wiring	130	masonry units	213, 378	testing	316
453	wiring for educational network	459	meter boxes	221	walls	213, 378
Coatings	Concrete	84, 338, 350	mix	84	Concrete reinforcing	
cementitious	access ramps	476	mixer, rental	321	polypropylene fiber	85
concrete finishes			nails	230	Concrete tile roofing	
deck			paint preparation	239	demolition	102
industrial						
roofing						
steel						
387						
Coaxial cable						
592						
Code caps						
291						
Coffee brewer/percolator						
458						
Coil						
framing nails						
229						
roofing nails						
230						

Conduit		Coolers	457	black steel	494	Division 21	491
adapter, PVC	550	drinking water	534	copper	504	Division 22	494
bodies, PVC	550	HVAC	180	CPVC	507	Division 23	535
bodies, steel	543	walk-in	457	drain pipe	126	Division 26	541
clamps	555	Cooling		threaded	543	Division 27	589
EMT	544	air conditioning	180	Court, athletic, surface primer	466	Division 31	594
EMT circuits	547	heat pump	178, 179	Cove		Division 32	609
end bell	549	Coping		base	154	Division 33	626
flexible aluminum	552	masonry	216, 382	molding	222, 224	Cubicles	442
flexible non-metallic	553	metal	403	molding, MDF	226	Culvert pipe	631, 633
flexible steel	552	Co-polymer shutters	272	Cover		Cup holder	23
hangers	554	Copper		plywood	274	Cupboards, painting	241
hangers, PVC	551	flashing	267, 403	Cover plate, electric	565	Cupolas	
hubs	569	grounding devices	565	Cover, swimming pool	476	weather vanes	97
IMC	548	gutter	405	Coverage loss defined	3	Cupolas	97
intermediate metal	548	nails	267	Coverings		Curbing machine rental	325
lightweight	553	pipe	503	door	273	Curb	
liquid-tight flexible metal	553	pipe, DWV	512	window	273	asphalt	610
painting	437	pressure fittings	504	Covers		concrete	88, 95, 614
PVC	548	roof, cupola	97	canvas	285	demolition	101, 332
rigid steel	543	roofing	404	joint	412	elevated slabs	345
RSC	543	tubing	505, 512	manhole	637	handicapped	478
steel	543	wall ties	372	plastic	253, 285	granite	614
Cones, traffic control	22	window roofs	304	CPM scheduling	134, 311	inlet	637
Confessionals	461	wire, THHN	558	CPVC		inlet protection	604
Conflict resolution	20	wire, XHHW	559	adapter fittings	508	Curing	
Connections		wood preservative	237	brass fittings	508	concrete	356, 362
internet	130	Corbels, cabinet	31	pipe	507, 508	papers	27, 28
sewer	266	Cord sets	563	snap-on tubing strap	508	Curtain rods	
water heater	527	Core		transition fittings	508	drapery hardware	127
Connectors		brick testing	316	Craft codes	7, 10	shower	24
computer cable	594	cutting, concrete	370	Craft hours defined	3	Curtain wall	419
construction	161	grouting	213, 378	Craft@Hrs column	10	Curtains	
framing	159, 161	sampling (soil testing)	279	Cranes		industrial and commercial	471
Sealtite	553	Cork		concrete placing	351	lift equipment	463
straps	566	insulation	399	hoists	490	residential	127
Conservatories	481	running track	465	hydraulic truck, rental	319	stage	462
Construction		sheathing	435	job	491	Cut and fill excavation	603
barricades	22	Corner		pile driving, rental	322	Cutting	
camps, manufactured	480	bead	188, 223, 426	rental	322	asphalt	371
economics	307	cabinets	31	tower, rental	319	boards	454
elevators and hoists	319	guards, metal	387, 404	truck-mounted, rental	319	brick	370
keying	170	mold	223	Crawl hole vents	291	concrete	370
loans	311	molding	222	Crawler dozers, rental	323	masonry	370
photographs	318	record (surveying)	313	Crawler tractors	137, 596, 601	slabs	370
signs	318	Cornice		Credits and acknowledgments	16	steel	388
tools, rental	320	molding	54	Creosote	206	walls	370
Consultants' fees	134, 313	painting	240	Crew		Cypress flooring	156
Contact cement	18	Corrugated		codes	10		
Containers, storage, rental	331	fiberglass	150	composition	10		
Containment, asbestos	338	glass	422	rates	7, 8, 9		
Contingency	208, 310	mats	220	Cribbing and shoring	605		
Continuous spread footings	377	metal pipe	634	Critical path scheduling	311		
Contractor insurance	185	metal roofing	260, 400	Croll-Reynolds	579, 581		
Contractor's labor burden		metal siding	276, 400	Cross arms pole	577		
industrial & commercial	309	pipe	634	Cross bridging	41, 159		
residential	10	polycarbonate	150	steel floor joists	62		
Control		polyethylene pipe	634	Crossing signal	486		
erosion	624	polyethylene tubing	631	Cross-linked poly pipe	509		
fund fee	311	Cost adjusting, labor	4	Crown molding			
joints	373	Cost adjustments, city	12-15	cabinets	31		
pests (soil treatment)	280	Cost engineering	313	hardwood	222		
valves	523, 618	Costs listed in this book	4	labor	54		
Control panels		Cotton		MDF	226		
alarm	591	insulation	183	pine	224		
motor	566	mat reinforcing	257	special cutting	224		
Control switch, fan	141	Counter-flashing	268, 403	vinyl	226		
Controls		Counters, bank	452	Crushed rock	18, 126		
hydronic	172	Countertop		CSI			
irrigation	618	crystalite	96	Division 01	310		
motor	566	Countertop steamers	454	Division 02	332		
sprinkling	620	Countertops		Division 03	338		
Convertible range hood	254	cleaning	83	Division 04	371		
Conveying equipment	488	Corian	97	Division 05	383		
Conveyors		engineered stone	96	Division 06	389		
belt	491	granite	96	Division 07	397		
checkroom	453	labor costs	96	Division 08	412		
concrete, rental	322	laminated plastic	96	Division 09	423		
oven	456	plastic	473	Division 11	449		
Cooking equipment	453	tile	290, 433	Division 12	470		
Cooktops		Couplings		Division 13	475		
residential	255	ABS	513	Division 14	488		

**D**

Dampers, air regulating, fireplace	151
Dampproofing	397
Danger signs	318
Danish oil stain	237
Deadbolt locks	170, 420, 421
Debris removal	310, 331, 337
Decking	
redwood	98
Deck	98
cementitious	369
composite lumber	98
concrete	369
covers	99
diagonal pattern	98
fiber plank	369
finish room	99
flashing, Vycor	268, 270
flashing, Vycor	27
footings	100
handrail	99
metal	384
metal, demolition	336
nails	228
painting	437, 438
pine	98
posts	99
pressure treated	98
railing	99
redwood	98



roof.....	50, 99, 384, 385	Disappearing stairs.....	284	hardware, threshold.....	285, 286	handicapped, automatic.....	479
stain.....	236	Disconnect switches.....	577	hinges.....	420	hangar.....	416
stairs.....	99	Dishwashers		jamb protector.....	28	hanging.....	52
waterproofing.....	294	commercial.....	458	jamb, interior.....	118	hardboard.....	106, 118
yard and patio.....	100	electrical.....	248	kick plates.....	170	hollow metal.....	412
Decontamination		plumbing.....	248	knockers.....	170	interior, café.....	118
lead-based paint.....	233, 435	residential.....	248	lever latchset.....	170	interior, fire-rated.....	109
PCBs.....	435	return panels.....	31	lever, privacy.....	170	interior, French.....	117, 120
radioactivity.....	435	wiring.....	128	locks.....	122	interior, hollow core.....	116
toxic chemicals.....	435	Dispensers		locksets.....	170	interior, louver.....	117, 120
Decora glass block.....	217	beverage.....	458	louvers.....	417	interior, panel.....	116, 117, 119, 120
Decorative glass,		cappuccino.....	458	mantels.....	295	interior, prehung.....	118, 119
ecclesiastical.....	470	cash.....	453	mirrors.....	221	interior, slab.....	115
Dehumidifiers, rental.....	329	gasoline.....	449	openers.....	164	interior, solid core.....	116
Deli case, food service.....	454	paper towel.....	445	openings, framing.....	43	lauan exterior.....	106
Delivery expense defined.....	3	ticket.....	450	openings, steel framing.....	66	mirrored.....	125
Delivery, office trailers.....	330	toilet paper.....	445	paint removal.....	233	molded face.....	116, 117
Deluge valves.....	492	Dispenser, rain gutters.....	406	painting, exterior.....	240	overhead.....	164, 415, 483
Demobilization.....	314	Display case, food.....	454	painting, interior.....	241	overhead roll-up.....	416
Demolition.....	100, 334	Display panel for map,		peep sights.....	171	partition.....	443
asbestos.....	338	schedule.....	480	protectors.....	444	patio, sliding.....	121
asphalt.....	102	Disposal		pulls.....	170	patio, swinging.....	120, 121, 122
building.....	104, 334	asbestos.....	338	push plates.....	170	pet.....	122
ceiling.....	100	fields.....	265	rehang.....	52	pocket, installation.....	52
concrete.....	100	waste.....	332	removal.....	101, 337	prehung, exterior.....	110
concrete block.....	100	Disposers, garbage		repair.....	52	prehung, interior.....	119, 120
curb.....	101, 477	commercial.....	458	sealant.....	78	prehung, steel.....	414
doors.....	101	residential.....	128, 248	seals, loading dock.....	452	prehung, wood.....	415
fence.....	333	Dispute resolution.....	20	seals, weatherstrip.....	294	radiation shielding.....	484
flooring.....	101	Distillation, water.....	250	security switch.....	589	refrigerator.....	416
guardrail.....	333	Distribution, electric.....	577	shim.....	52	revolving.....	416
joists.....	103	overhead.....	577	shoe.....	286	screen, metal.....	113
manholes.....	333	panels.....	570, 572	sidelites.....	110	screen, patio.....	121
masonry.....	100	switchboards.....	570	sill, oak.....	286	screen, security.....	113
plumbing fixtures.....	478	Ditch Witch.....	598	stop.....	171, 420	screen, vinyl.....	113
roof.....	336	Ditching.....	136, 597	stop molding.....	53	screen, wood.....	113
roofing.....	102	Ditra membrane.....	94	thresholds.....	222, 285, 421	security.....	115
sheathing and siding.....	102	Divider strips, terrazzo.....	433	trim.....	222	security grills.....	416
stairs.....	103	Dividers		twin door portal.....	485	service.....	416
subcontract.....	104	partition.....	443	weatherstripping.....	294, 421	shower.....	271
toilet partitions.....	478	redwood.....	615	Door stops molding.....	108	sliding glass.....	417
walls.....	103, 335	Docks, loading.....	354	Door trim.....	108	sliding, fire.....	415
windows.....	103	bumpers.....	365, 451	Doorbell, wiring.....	105	sliding, metal.....	444
wood framing.....	103, 104	equipment.....	451	Doors		solid core.....	106
Demountable partitions.....	443	levelers.....	365, 451	access.....	253, 266, 418, 525	steel.....	415
Dens Glass sheathing.....	182	lifts.....	451	accordion.....	417, 443	steel exterior.....	106
Deposit boxes.....	453	seals.....	451	air curtain.....	417	steel, building.....	483
Depository doors, after hours.....	453	shelters.....	452	aluminum, patio.....	120, 121	steel, exterior.....	109, 110, 111
Desalination, water.....	250	Documentation, photographs.....	318	automatic.....	479	steel, fire-rated.....	109
Desks		Dolly, rental.....	329	bar.....	118	steel, patio.....	121, 122
bank.....	452	Domes		basement.....	23	steel, prehung.....	414
study.....	459	lighted ceilings.....	79	bi-fold.....	124, 125	stile & rail.....	116, 117
Detailed block.....	213	playground.....	467	bypass.....	123, 124	stock room.....	418
Detection systems.....	591	skylights.....	277	café.....	118	storm.....	114, 115
Detectors		Door		camber top.....	112	strip.....	418
audio.....	264	accessories, bypass.....	124	carved.....	107	telescoping.....	417
fire.....	264	aluminum.....	419	cellar.....	23	units, packaged.....	414
infrared.....	264	bank vault.....	452	cleanout, fireplace.....	151	vault.....	418
security.....	591	bells, wiring.....	128	closet.....	119, 123, 124	vinyl, patio.....	121
smoke.....	264	bottom.....	286	closet, installation.....	52	with sidelites.....	111
vehicle.....	450	canopy.....	21	composite.....	119	wood.....	110, 415
Detour signs, barricade.....	22	casing.....	53, 108	convenience store.....	485	X-ray protective.....	484
Dewatering.....	602	chimes.....	105	depository.....	453	Dormer	
Diamond lath.....	188	cleaning.....	83	Dutch.....	444	267, 268	
Diaphragm meter.....	638	closers.....	105	entry.....	107, 111, 112	flashing.....	268
Diffusers, light.....	583	closers, hinge pin.....	105	entry, steel.....	112	louvers.....	291
Digging		coverings.....	273	exterior.....	106, 110	studs.....	48
concrete work.....	338	demolition.....	101	exterior, steel.....	109, 110, 111	studs, steel.....	71, 72
excavation.....	136	finish carpentry.....	52	fiberglass.....	112, 113, 415	Dosch clay.....	212
post holes.....	144	frame protectors.....	444	fire.....	415	Double doors.....	107, 119
Digital		frames, metal.....	387, 414	fire-rated.....	109	Double sanitary tee, ABS.....	514
networking systems.....	131	frames, painting.....	240	flexible strip.....	418	Double TY/cross.....	514
photography.....	318	frames, pocket.....	171	flush closet.....	124	Double wye, ABS.....	514
Digital recorder.....	592	framing.....	43	flush exterior.....	106	Double-cylinder door handle.....	170
Dimension lumber.....	194, 201	framing, steel.....	66	flush interior.....	116	Double-hung window.....	303
Dimmer switches.....	129, 564	handle sets.....	170	folding.....	122	screen.....	300
fluorescent.....	564	hangers.....	171	folding, installation.....	52	vinyl.....	297, 298
Direct overhead.....	310	hangers, pocket.....	171	foundation access.....	291	Double-track storm window.....	304
Directory boards.....	441	hardware.....	53, 125, 421	frames, wood.....	415	Dough roller.....	456
Dirt, recycling.....	332	hardware kit.....	171	French, interior.....	117	Douglas fir.....	194
Disability Insurance.....	285	hardware, exit.....	171	garage.....	164	clear.....	195, 196
Disabled, access for.....	476	hardware, garage.....	165	handicapped.....	479	flooring.....	156, 195, 196

Dowel supports	340	Drive shoe	295	Easings		outlets	129, 563
Down light, LED	584	Driveway		stair	56, 284	overhead	577
Downspouts		apron	615	stair rail	284	panels	572
industrial & commercial	404	asphalt	243	Eave		poles	577
painting	240	coating	237	closure	262	power, temporary	319
residential	167	concrete	84, 94, 244, 615	louver vents	291	raceway	556
steel buildings	483	demolition	101, 332	painting	240	raceway fittings	556
Dozer		forms	88, 94	Ecclesiastical		receptacle boxes	556
clearing	594	gates	143, 165, 618	equipment	460	receptacles	129, 563
excavation	138, 601	paint removal	234	glass	470	sensor cable	589
rental	138, 323	Drop		Eco-Block	86	service	127
Drafting		ceiling	79, 80	Economics division	307	service entrance cable	557
architectural	126	poles, electrical	318	Edge forms, concrete	88, 340	sprinkler controls	189
plans	20	Drop cloths	285	Edge pulls	171	subcontract	127
survey	313	painting	439	Edgers, rental	327	switches	564
Draftshield	294	Dry pack grout	361	Edging		switchgear	571
Dragline		Dry pipe sprinklers	492	redwood	187, 615, 625	systems, solar	582
excavation	599	Dryers, clothes		roof	267	temporary power	319
rental	322	circuits	543	sill	286	transformers	572
Dragon teeth	450	receptacles	563	strip	154	tubing	543
Drain		vent sets	291	Educational		underfloor duct	557
fields	265	wiring	128	equipment	458	unit heater	535
fittings	512	Dryvit finish, exterior	400	networks	459	valves	189
lines, demolition	333	Drywall		Efflorescence, testing	316	water heaters	130
protection	604	adhesive	17	Egg knob locksets	170	wireway	556
rock	604	demolition	102, 335	Eggcrate louvers	80	Electrician, wage	
Drain pipe		expansion joints	412	Egress		industrial & commercial	309
ABS	512	finish	168	barrier	487	residential	10
copper	512	gypsum	168, 293, 423	portal	487	Electricity, solar	280
fittings	126	insulation board	398	window	305	Electrostatic precipitators	455
fittings, corrugated	631	nails	229	EIFS exterior wall system	400	Elevated water tanks	630
Hi-Q	631	painting	238, 241	Ejectors, sewage	528	Elevator signs, braille	479
plastic	126, 512	primer	234	Elastomeric		Elevator constructor, wage	
Drainage		screws	229	flashing	373	industrial & commercial	309
fabric	603	specialties	424	latex sealant	78	Elevators	
pipe	126, 631	texture	169	membrane	294	commercial	490
slope protection	604	vinyl clad	424	painting	437, 438	construction-type	319
systems, rock/sand fill	126	wallboard	293	pipe insulation	523	geared	489
Drainboards, countertops	290	wallboard assemblies	34	roof coating	257	hydraulic	133, 490
laminated plastic	473	Drywall installer, wage		waterproofing	294	passenger	489
stainless steel	457	industrial & commercial	309	Elbows		residential	133
tile	433	residential	10	ABS	513	sidewalk	489
Drains		Drywall taper, wage		black steel	494	subcontract	133
area	525	residential	10	copper	504	Embankment grading	597
fiberglass	634	Duct		CPVC	507	Embecco grout	355
floor	516, 525	cable tray	557	CPVC and brass	508	Embedded steel	387
foundation footing	126	electrical	556	PVC	506	Embossed concrete	96
gratings	387	fiberglass	177	Electric service		Emergency LED power	585
piping	126	flex	177	industrial & commercial	570	Emergency lighting	587
precast	127, 634	painting	437	residential	127	Emergency shower	534
rain	127	sheet metal	177	temporary	310, 318	rough-in	531
roof	525	underfloor	557	Electric vehicle charger	128	Emissions reduction	579, 581
rough-in	532	underground	541	Electrical	541	Employer labor taxes	
systems	127	Ductile iron pipe	628	alarm systems	128, 264	industrial & commercial	309
trench	634	Ducting	253	boxes	542	residential	10
Draperies	127, 471	Ductwork, painting	437	boxes, outlet	561	EMT	544
Drawers	29	Dumbwaiters	133, 488	building wire	558	conduit	544
kitchen work table	454	Dummy knobs	421	cable tray	557	conduit circuits	547
stainless steel	454	Dump fees	332	circuit breakers	567	fittings	545
Drawings		Dump trucks		conduit	543	Enamel gloss, floor and porch	235
architectural	20	debris hauling	337, 600	cover plate	565	Encapsulated insulation	181
as-built	126	general hauling	137	cutouts	577	Enclosures	246, 272, 442
reproduction of	25	rental	139, 324	device boxes	556	bus stop	479
Drench showers	531, 534	Dumpsters, trash	332	distribution	577	cubicles	442, 443
Dressing cubicles	442	Duplex		duct, concrete	541	panel	563
Drill rental	320, 326	nails	231	duct, surface	556	sauna	263
Drilled caissons	608	receptacles	129, 563	fence, charging unit	144	swimming pool	481
Drilling		Dupont wood flooring	157	fuses	575	temporary	331
concrete	370	Durock backer board	290	generators	131, 578	tennis court	481
post holes	617	Dur-O-Wal	219	generators, rental	326	End cap	260
rock	595	Dursban T-C	280	ground wire	558	Endwall flashing	268
soil testing	279	Dust control	337	grounding	566	Engineer, overhead	310
steel	388	DWV pipe		handy box	562	Engineering fees	134, 313
well	295	ABS	512, 513	heater	175	tilt-up construction	362
Drinking fountain	534	copper	512	heating	536	Enkebolt molding, cabinets	31
handicapped	477	Earthwork	594	junction boxes	563	Entrance	
rough-in	531	compacting	603	lighting	128	cap, threaded	544
Drip cap	267, 268			loadcenters	573	hoods	270
door	286			metallic tubing	543, 544	mats	220, 474
molding, wood	224, 276			motors	566	thresholds	285
Drip edge	267, 268			multi-outlet raceway	557	Entrances	
				outlet boxes	556	colonial	134
						wood	134

**E**

Entry doors.....	107, 111, 112	slope protection.....	604	Faceted glass.....	470	plastic.....	22
fiberglass.....	112, 113	spreading.....	597	Facing tile.....	374	plastic safety.....	23
Envelex ceiling domes.....	79	spreading material by hand.....	136	Facing, marble fireplace.....	208	post & rail.....	149
Environmental noise survey.....	134	sprinkling.....	138	Factory rep, cost.....	314	posts.....	144
EPA		tamping.....	339, 597, 599	Fan lite doors.....	113	privacy.....	149
standards.....	581	tamping, by hand.....	136	Fan units, heaters.....	535	rail.....	145
Tier IV pollution control rating.....	579	topsoil, by hand.....	136	Fans		rental.....	331
EPDM roof coating.....	402	tractors.....	138	garage.....	142	sediment.....	604
Epoxy		tree removal.....	594	rental.....	329	shadowbox.....	149
coated rebar.....	346	trenching.....	136, 597	turbine.....	407	silt.....	150
coated wire mesh.....	349	trucks.....	138	wiring.....	128	split-rail.....	148
bed.....	382	wheel loaders.....	598	Fans, ceiling.....	142	swimming pool.....	150
painting.....	437, 438	Exhaust		light kit.....	142	temporary.....	22, 331
tie adhesive.....	17	fume system.....	450	Fans, exhaust		tennis court.....	466
EPS forms.....	87	hoods, food service.....	455	attic.....	141, 142	vinyl.....	149
Equipment.....	449	range hoods.....	253	bath.....	139, 140	wire mesh.....	143
checkroom.....	453	stack.....	581	bath switch.....	141	wood.....	148
educational.....	458	vents, dryer.....	291	bath timer.....	141	wood gate.....	147
food service.....	453	Exhaust fan		bath vent kit.....	141	Fertilizer.....	187, 623
foundations.....	366	bath.....	139, 140	bath with heat.....	140, 141	Fescue seeding.....	624
loading docks.....	451	bath, with heater.....	141	bath with light.....	140	Fiber	
mobilization.....	314	food service.....	455	commercial.....	455	cant strips.....	403
overhead.....	310	QuietTest.....	140	roof vents.....	407	forms.....	344
pads.....	352	roof vent.....	407	utility.....	139, 140	roof coating.....	257
paint sprayer.....	239	switch.....	141	Fascia		Fiber cement	
painting.....	436	timer switch.....	141	forms.....	353	lap siding.....	274
parking control.....	450	utility.....	139	gutter.....	404, 406	roofing.....	261
rental.....	320	ValueTest.....	140	gutter adapter.....	406	Fiber floor, Tarkett.....	153
service station.....	449	wiring.....	128	metal.....	403	Fiber mesh concrete	
Erickson couplings.....	543	with infrared heater.....	140	OSB.....	275	reinforcing.....	85
Erosion control		Existing conditions.....	332	piecework rates.....	39, 76	Fiber optic cable.....	592
fabric.....	604	Exit door hardware.....	421	soffit system.....	279	Fiberboard wallboard.....	293
fence.....	604	touch bar.....	171	vinyl.....	401	Fiberglass	
landscaping.....	624	Exit signs.....	586	wood.....	49	base sheet.....	257, 258
silt fence.....	150	Expanded polystyrene board.....	399	Fasteners, painting.....	437	bathtubs.....	245, 533
soil covers, stabilization.....	603	Expansion		Faucets.....	247, 532	ceilings.....	82
Escalators.....	490	shields.....	373, 555	Feather wedges.....	205	doors, entry.....	112, 113
Escape window.....	305	strips.....	217	Featherrock.....	604	drains.....	634
Estimating, accuracy.....	5	Expansion joints.....	426	Feed water regulators.....	539	duct.....	177
Etch, acid.....	466	composition.....	219	Fees		insulation.....	181, 398, 399
Etching concrete.....	357	concrete.....	85, 355	acoustical design.....	134	panels.....	150
Eternit.....	261	covers.....	412	appraisal.....	18	pipe insulation.....	524
Ethylene Propylene Diene		glass block.....	381	arbitration.....	19	septic tanks.....	265
Monomer.....	402	lath.....	188	building permit.....	28	shower receptors.....	272
Euro pavers.....	215	masonry.....	219	engineer.....	134, 313	showers.....	246
European ISO standards.....	579, 581	preformed.....	412	estimating.....	313	tub and shower combination.....	533
EV charging station.....	128	sealants.....	412	overhead.....	310	whirlpool bath.....	245
Evaporative coolers.....	177	Expansion tank.....	249	recycling.....	332	Fiberglass-reinforced plastic	
Evaporator coil.....	179	boiler.....	173	scheduling.....	134, 311	adhesive.....	18
Excavation		Explosives, loading.....	595	sewer connection.....	311	paneling.....	243
air hammer.....	138	Exposed aggregate finish.....	95, 356	specification.....	314	Fibermesh screen.....	264
backfilling.....	136	Extension cords, rental.....	327	testing.....	317	FICA.....	285
backhoes.....	138	Exterior		valuation.....	18	Field offices, temporary,	
blasting.....	595	trim.....	49	water meter.....	312	rental.....	330
brushing.....	138, 594	Exterior doors.....	106	Felt		Fields, playing.....	465
bulldozer.....	138	flush.....	106	asphalt.....	26, 401	caulking.....	79
caissons.....	608	hollow metal.....	412	roofing.....	257, 258, 401	excavation.....	135, 339, 597
clearing.....	138	prehung.....	110	Felton sand.....	357	rock.....	339, 604
compaction.....	136, 597	steel.....	414	Female adapter		sand.....	18, 339
dozer.....	601	Exterior house paint.....	234, 235	ABS.....	515	slab base.....	339
dragline.....	599	Exterior Improvements.....	609	copper.....	512	Fill investigation	
drilling.....	595, 608, 609	Exterior wall assemblies.....	35, 58	Fence		compacted.....	317
embankment.....	597	Exterior wall system (EIFS).....	400	aluminum.....	149	soil testing.....	279
equipment rental.....	138, 322	Extinguishers, fire.....	434, 493	athletic fields.....	465	Filler	
erosion control.....	603, 604	cabinets.....	493	barbed wire topper.....	618	block.....	237
fine grading.....	135	Extruded polymer molding.....	226	barrier control.....	23	panels, cabinet.....	31
footings.....	135	Eye wash shower.....	531	basketweave.....	147	wood filler.....	238
foundation.....	338			board.....	147, 148	Filler strip	
grading.....	135, 339, 596			chain link.....	142, 617	cabinet.....	55
hand.....	602			demolition.....	333	chain link fence.....	142
hand work.....	135, 339			electric.....	144	Film, polyethylene.....	253
hauling.....	600			erosion control.....	604	Filter sock.....	126, 631
loaders.....	136, 597			face board.....	145	Filter, air, central.....	176
loading trucks.....	138, 600			gate.....	149	Filters	
manual.....	602			hillside labor.....	146	exhaust hood.....	455
pneumatic.....	138			ornamental.....	149	screen.....	295
post holes.....	144			painting.....	240	water.....	529
ripping.....	596			painting metal.....	437	Financing, project.....	311
riprap.....	604			pet enclosures.....	143	Fine grading	
rock.....	135			picket.....	148	embankment.....	597
scraper-hauler.....	601			picket, vinyl.....	149		
shovels.....	135						

**F**

Fabric	
draperies.....	127
erosion control.....	604
lead mesh.....	471
stage curtain.....	462
wallcover.....	435
Fabricated metals.....	387
Facade screen.....	406
Face board.....	145
Face brick.....	210, 374

hand.....	135	Fire retardant treatment.....	207	Floating backing, steel.....	70	vinyl plank.....	432
landscaping.....	623	Fireblocks.....	45	Floating hardwood flooring.....	157	vinyl sheet.....	431
pavement.....	243, 609	Firebrick.....	212	Floodlights.....	587	vinyl tile.....	153, 431
slabs.....	339, 596	Fireclay.....	212	LED.....	585	wood.....	156, 430
Finish carpentry.....	51	Fireplaces.....	151	rental.....	327	wood laminate.....	157
backing.....	51	brick.....	212	Floor.....		wood strip.....	55, 155, 157
blocking.....	51	electric.....	152	adhesive.....	18, 154, 159	FlowGuard Gold pipe.....	507
cabinet installation.....	55	finish carpentry.....	55	assemblies, wood framed.....	33	Flue.....	
cased openings.....	52	gas-burning.....	152	cleaning.....	331	fireplace.....	152
closet poles.....	55	mantels.....	208	decking, steel.....	384	lining.....	216, 374
closet shelves.....	55	masonry.....	220, 374	decking, subflooring.....	42, 62, 392	Fluorescent.....	
countertops.....	96	prefabricated.....	374	drains.....	516, 525	CFL.....	192
door accessories.....	105, 420	surrounds.....	55	drains, ABS.....	516	dimmer switches.....	564
door casing.....	52	wood-burning.....	152	drains, plumbing.....	525, 532, 535	lighting.....	190, 582
door trim.....	52	Fireproof caulking.....	78	enamels.....	235	Flush bushing, ABS.....	516
doors.....	52	Fireproofing.....		equipment rental.....	326	Flush doors.....	124, 415
fireplace mantels.....	55	columns.....	409	flange.....	515	bi-fold closet.....	124
fireplace surrounds.....	55	concrete.....	407	framing.....	34	birch interior.....	115, 116
flooring, wood.....	55	spray-on.....	409	furring.....	50	fire-rated.....	109
folding stairs.....	284	testing.....	316	grating.....	387	hardboard.....	106
furring.....	52	wood.....	207	joists.....	34, 40, 41, 390	hardboard interior.....	115, 116, 118
hardware.....	420	Fire-rated doors.....	109, 415, 416	joists, piecework.....	38	hardwood exterior.....	110
job-built stairways.....	283	First aid, overhead.....	310	joists, steel.....	59, 76	luan exterior.....	106
locksets.....	53	Fishtape, rental.....	329	joists, steel blocking.....	62	luan interior.....	116, 118
lumber.....	226	Fittings.....		leveling compound.....	154	oak interior.....	116
mantels.....	208	ABS bungalow.....	514	mats.....	220, 473	steel exterior.....	110
medicine cabinets.....	220	black steel.....	494	painting.....	238, 487, 438	steel utility.....	110
molding.....	54, 226	copper.....	503	piecework rates.....	38	Foam.....	
paneling.....	54	CPVC.....	507	plank, precast.....	358	insulation.....	182
railings, stair.....	56	CPVC and brass.....	508	plate, steel.....	385	panel adhesive.....	18
running molding.....	55	drain pipe.....	126	polishing.....	238	Foamglass insulation.....	399
sauna rooms.....	263	electrical.....	563	protection.....	28	Foil-backed gypsum.....	424
shutters.....	272	PEX.....	509	radiant heat.....	174	Foil-faced insulation.....	397
siding.....	276	PEX-AL.....	511	safes.....	262, 452	Folding beds.....	25
skylights.....	277	polyethylene pipe.....	629	sheathing.....	34, 392	Folding doors.....	122, 417, 443
soffits.....	279	PVC.....	506	shellacking.....	238	locks.....	122
stair balusters.....	56	PVC water pipe.....	628	sinks, plumbing.....	535	Folding fire partitions.....	444
stairs.....	56, 281	Fixtures.....		slab.....	352	Folding stairs.....	284
thresholds.....	285	electrical.....	129, 190	slab, concrete.....	94	Food.....	
wall paneling.....	54	lamps.....	588	slab, precast.....	358	beverage dispenser.....	458
wallboard.....	293	lighting.....	190, 588	staining.....	238	deep fat fryers.....	455
weatherstripping.....	294	plumbing.....	535	steel, piecework.....	73	freezers.....	457
window sills.....	296	rough-in.....	251, 252	varnishing.....	238	meat and deli cases.....	454
window trim.....	53	Flagpoles.....	448	waxing.....	238	mixers.....	457
Finish.....		aluminum.....	448	Floor layer, wage.....		pizza preparation units.....	454
drywall.....	168	foundations.....	449	industrial & commercial.....	309	pot and pan racks.....	456
grading.....	135, 187, 243	Flagstone.....		residential.....	10	sandwich preparation units.....	454
hardware.....	421	floors.....	216, 220	Flooring.....		service equipment.....	453
Finishes.....	423	pavers.....	613	access.....	434	stations.....	453
decks.....	98	Flameproofed draperies.....	471	anti-fatigue.....	432	toasters.....	456
flooring.....	431	Flanged pipe, cast iron.....	626	artificial turf.....	465	warmers.....	454
gypsum wallboard.....	423	Flanges.....		bamboo.....	157	work tables.....	454
plaster.....	244	ABS closet.....	515	brick.....	220	Foot grille.....	474
wallpaper.....	293, 435	black steel.....	494	carpet.....	76, 433	Football goal posts.....	465
Finishing.....		Flash cone.....	268, 269	carpet tile.....	434	Footings.....	
concrete.....	94, 95, 356	Flashing.....		ceramic tile.....	289	bell.....	609
flooring.....	156	aluminum.....	267	crossband parquet.....	158	bollard.....	616
nails.....	230	aluminum siding.....	276	demolition.....	101, 336	caissons.....	608
Fink truss.....	48, 73, 395	building paper.....	27	Douglas fir.....	156, 195, 196	column.....	94
Finned tube radiation.....	537	compound.....	257	finishing.....	56	concrete.....	84, 86, 93, 94, 351
Fir.....		copper.....	267	fir.....	156, 195, 196, 197	continuous.....	93
flooring.....	156, 195, 196, 197	demolition.....	267	flagstone.....	216, 220	demolition.....	100, 335
Fire.....		galvanized.....	268	floating hardwood.....	157	drains.....	126
alarm breaker.....	570	lead.....	269, 404	gymnasium.....	430, 464	estimating.....	93
alarm systems.....	434, 591	masonry.....	373	installation.....	431	excavation.....	135
alarms.....	128	paper.....	27	marble.....	208, 381	forms.....	339
boxes.....	151	ridge.....	260	masonry.....	220, 382	keyway.....	93
brick.....	212	roof jack.....	526	non-slip tile.....	432	spread.....	377
dampers.....	151	roofing.....	260, 403	parquet.....	430	ties.....	86
detectors.....	591	sealant.....	78	pedestal.....	434	tilt-up.....	361
doors.....	109, 415	sheet metal.....	267	Pergo.....	157	Forged air furnaces.....	177
escapes.....	387	skylight.....	279	pine.....	155, 156	Forged steel valves.....	519
extinguishers.....	434, 493	vinyl.....	270	plank.....	155	Forklift, rental.....	324
hose cabinets.....	493	Flexible conduit.....	553	protection.....	28	Form stakes.....	205
hydrants.....	627	Flexible strip doors.....	418	quarry tile.....	381, 429	Formboard, fiber deck.....	369
hydrants, demolition.....	334	Flexure test.....	315	raised, installation.....	434	Formica countertops.....	96
pole tower, playground.....	469	Flexwood.....	434	resilient.....	431	Forming.....	
protection.....	455	Flight, photography.....	313	rubber.....	432	architectural.....	341
protection equipment.....	491, 492	Float finish.....		safety tiles.....	432	landing.....	346
pumper connection.....	493	concrete.....	95, 356	sheet vinyl.....	153, 431	soffits.....	346
sprinkler systems.....	150, 491	Float finished.....		softwood.....	156, 430	Forms.....	
suppression.....	491	glass.....	422	Tarkett.....	153	beam.....	345
wall hydrants.....	493	Float glass.....	166, 422	terrazzo.....	382, 433	board.....	88
		Float traps.....	540	tile.....	431, 434	breaker.....	355
				tile, vinyl.....	154	clamps.....	355
				tongue and groove.....	157		

column.....	340	carpentry.....	32	<b>G</b>	Gauges.....	524
concrete.....	86, 87, 93, 339	ceiling joists.....	46	Gabions.....	liquid level.....	540
concrete insulated.....	86, 87	clips.....	159	Gable	Gel stain.....	237
curb.....	88	connectors.....	159, 161	roof.....	General contractor	
footing.....	88	demolition.....	103	truss.....	crews.....	5
foundation.....	88	door openings.....	43	vents.....	markup.....	5, 209
keyway.....	88	dormer studs.....	48	vents, power.....	General requirements.....	310
liner, architectural.....	365	fascia.....	49	Gallery mirrors.....	Generators.....	131, 578
liners.....	341	fireblocks.....	45	Galvanized	exhaust stack.....	581
oil, concrete.....	355	floor trusses.....	41	fabricated metals.....	gas turbine,	
plastic.....	86, 87	furring.....	50	flashing.....	pollution control modules.....	581
plywood.....	88, 339, 342, 369	grounds.....	51	roofing.....	motor-driven, pollution control	
release.....	355	ledgers and ribbons.....	47	steel.....	modules.....	579
shoring.....	605	lumber.....	194, 201	steel pipe.....	power.....	582
slab.....	340	nails.....	229	Galvanizing.....	rental.....	326
snap ties.....	86	piecwork.....	37	Game equipment.....	steam.....	285
spreader.....	355	piecwork rates.....	39, 74	Garage doors.....	wind turbine.....	132
stakes.....	86	posts.....	45	hardware.....	Geodesic dome, playground...	467
stripping.....	89	roof.....	47	locks.....	Geographic cost	
ties.....	86, 355	roof sheathing.....	49, 50	openers, wiring.....	adjustments.....	12-15
tilt-up.....	362	roof trusses.....	48	operators.....	Geotextiles.....	603, 604
wall.....	88, 341	steel.....	57, 68, 383	seals.....	Girders	
Formwork		steel collar beams.....	72	steel.....	carpentry.....	40, 390
column.....	342, 344	steel exterior wall studs.....	64, 65	weather seal.....	concrete.....	351
concrete.....	339	steel interior wall studs.....	63, 64	wood.....	forms.....	345
steel-framed plywood.....	342	steel stud.....	63	Garage, carport.....	precast.....	359
steps.....	346	subflooring.....	42	Garage, epoxy floor.....	shield flashing.....	268
stripping.....	89	trimmers and curbs.....	48	Garbage disposers	steel.....	383
Fortifier products.....	27	wall plates.....	42	commercial.....	steel framing.....	61
Foundation		wall sheathing.....	51	electric work.....	Girts	
forms.....	88, 339	wall stud wood.....	389	fixtures.....	fireproofing.....	410
forms, reinforcing.....	88, 346	walls, exterior.....	42	residential.....	steel.....	383
formwork.....	339	window opening.....	44	Garden window.....	Glass	
insulation.....	182	Framing nails, screw shank.....	229	Garment rack.....	artwork.....	470
investigation, soil testing.....	280	Free access flooring.....	434	Gas	bead molding.....	224
layout.....	189	Freezers		appliance rough-in.....	cleaning.....	83, 331
placing.....	351	food service.....	457	chlorination.....	float.....	422
poisoning.....	280	medical.....	469	connections.....	mirrors.....	24
soil calculations.....	279	wiring (subcontract).....	129	distribution lines.....	shelving.....	270
stakes.....	205	Freight elevators.....	490	furnaces.....	sliding doors.....	417
trenching.....	597	French doors.....	117	griddle.....	spandrel.....	419
vents.....	291	interior, double.....	120	heating.....	storefront.....	419
waterproofing.....	294	Frenchwood.....	120	log lighter.....	tile.....	287
Foundations		Frequency meter.....	571	meters.....	window.....	166, 422
access door.....	291	Fresnel globes.....	586	pipng.....	wire.....	418
anchor bolts.....	363	Fresnel-type spotlight.....	463	range, commercial.....	Glass block.....	217, 380
anchors.....	59	Frieze		regulators.....	accessories.....	217
bell.....	609	molding.....	55	stops.....	Glazed	
bolts.....	159	vents.....	406	storage tanks.....	block.....	379
caissons.....	608	Fringe benefits		valves.....	floor tile.....	428
coating, asphalt.....	237	industrial & commercial.....	309	wall furnace.....	tile.....	374
concrete.....	84, 92, 339, 351, 353	residential.....	10	water heaters.....	Glazier, wage	
demolition.....	100, 335	FRP		Gas station	industrial & commercial.....	309
drains.....	126	adhesive.....	18	air and water.....	residential.....	10
equipment.....	366	paneling.....	243	cash box.....	Glazing	
excavation.....	338	Fryers, commercial.....	455	equipment.....	curtain walls.....	419
flagpoles.....	449	Fuel grates, fireplace.....	152	hydraulic hoist.....	polycarbonate.....	423, 482
footings.....	93	Fuel storage tanks.....	540	pumps.....	sash.....	422
injected.....	608	Full-view storm doors.....	114	Gas turbines.....	tempered glass.....	482
masonry walls.....	377	Fume hoods.....	473	additional costs.....	Globe valves.....	520
pile.....	606	kitchen.....	455	generator sets.....	Glove bags, asbestos.....	338
pole.....	587	laboratory.....	473	heat recovery systems.....	Glove painting.....	436, 437
tilt-up construction.....	361	Fund control fees.....	311	Gaskets	Glue, adhesives.....	17, 18
Fountains		Fungus		neoprene.....	Glu-lam beams.....	396
decorative.....	486	preventer.....	268	sill plate.....	Goal posts, football.....	465
drinking.....	534	treatment.....	207	Gasoline dispenser.....	Goals, soccer.....	465
drinking, handicapped.....	477	Furnaces		Gate valves.....	Golden Virola paneling.....	242
ornamental.....	486	direct vent gas.....	177	Gates	Gooseneck	
rough-in.....	531	electric work.....	128	automatic.....	stair.....	56
wash.....	534	floor.....	177	barrier.....	stair rail.....	284
Frame seal sets.....	294	forced air.....	177	chain link fence.....	Grab bars	
Frames		gas.....	176, 536	hardware.....	bath.....	24, 445
door, painting.....	240, 241	gravity gas.....	176	ornamental.....	handicapped.....	478
manhole.....	636	wall.....	536	parking control.....	Gradall	
see-thru.....	418	Furnishings		security.....	rental.....	323
window, painting.....	239	church glass.....	470	temporary.....	trenching.....	597
Framing		window treatment.....	471	trash enclosure.....	Grade beams	
adhesive.....	17	Furring.....	395, 425	wood.....	concrete.....	93
anchors.....	161	floor.....	50	wrought iron.....	formwork.....	88
backing and nailers.....	47	studs.....	52	Gateway, electronic.....	Graders, rental.....	323
beams.....	45	wood.....	50			
blocking.....	41	Fuses.....	575			
bracing.....	44	FUTA.....	285			
canopy.....	387					

Grading		dry pack .....	361	stair .....	56, 281, 284	Heaters	
embankment .....	597	forms, tilt-up .....	364	steel .....	386	baseboard .....	174, 175, 536
excavation .....	135	foundation .....	355	wall protection .....	444	electric .....	175
fine .....	136, 243	machine base .....	355	wood .....	224	floor units .....	174, 175
finish .....	243, 597	manhole .....	637	Handy box, electric .....	562	food .....	454
hand .....	135	masonry .....	209, 213, 378	Hanger rod .....	518	gas .....	535
landscaping .....	187, 623	mix, concrete .....	85	Hangers		gas wall furnace .....	176
lumber .....	205	pressure injected .....	357, 637	angle bracket .....	516	radiant .....	174, 175
scraper-hauler .....	601	testing .....	316	channel .....	555	rental .....	326
site .....	596	tile .....	288, 289	clevis .....	517	solar .....	249, 528
slab .....	339	Grouting		conduit .....	554	suspended units .....	176
tilt-up .....	361	concrete .....	96	header and joist .....	161	water .....	248, 526
Grandstands .....	464, 474	concrete block cores .....	213, 378	painting .....	437	wiring .....	128
Granite		pipe joints .....	637	pocket door .....	171	Heating	
aggregate .....	350	pressure .....	357, 637	roof .....	392	ceiling panels, radiant .....	175
aggregate concrete .....	85	tilt-up .....	361	swivel ring .....	517	central .....	174
bollards .....	616	GRS conduit .....	543	timber .....	161	coil, heat pump .....	179
countertop .....	96	Grubbing .....	138, 594	Hanging doors .....	52	ductless .....	178
curb .....	614	Guard		Hardboard .....	204	electric .....	175
decomposed edging .....	625	corner .....	169, 387, 444	doors .....	106, 116, 118	floor units .....	174
masonry .....	381	dog .....	265	doors, fire-rated .....	109	hot water assembly .....	253
paving .....	382, 614	gravel .....	268	lap siding .....	276	hybrid .....	174
terrazzo .....	382	security .....	265	panel siding .....	274	radiant ceiling panels .....	175
tile .....	287	Guardrail		paneling .....	242, 435	radiation .....	537
Grass		access flooring .....	434	wallcoverings .....	435	solar .....	528
artificial turf .....	465	construction .....	331	Hardener, concrete .....	356	Heating and venting .....	538
hydroseeding .....	187, 624	demolition .....	333	Hardi		Hedge trimmers, rental .....	327
landscaping .....	187, 624	highway .....	615	panel .....	274	Help, software .....	3
paving .....	244, 615	Gunite .....	357	plank .....	274	Hem-fir .....	195
seed .....	624	testing .....	316	trim .....	274	fascia .....	49
sod .....	187	Gutters		Hardware		Hemlock	
Grasscloth .....	435	apron .....	268	bath accessories .....	24	boards .....	197
Grates		concrete .....	95, 615	bi-fold door .....	125	doors .....	120
fireplace .....	152	copper .....	405	cabinets .....	472	lumber .....	195
tree .....	626	demolition .....	101	commercial and industrial .....	420	molding .....	108
Gratings, steel .....	387	ice melting cable .....	561	door .....	421	HERS rating .....	184
Gravel		inlets .....	637	finish .....	421	Hex bolts .....	232
aggregate .....	18	rain .....	167, 404	garage door .....	165	High boy threshold, oak .....	108
landscaping .....	625	rain disperser .....	406	gate .....	148, 618	High early strength	
paving .....	244, 615	sealant .....	78	partition .....	443	cement .....	82
pea .....	18	stainless steel .....	406	pocket door .....	171	concrete .....	85
riprap .....	604	wire, duct .....	556	rule of thumb .....	420	High-bay lighting .....	585
slab base .....	94	Gutting, demolition .....	335	threshold .....	285	Highway	
Gravel guard .....	268	Gymnasium		Hardwood		equipment rental .....	325
Gravel stop .....	268, 403	base .....	412	doors, fire-rated .....	109	stakes .....	205
demolition .....	336	equipment .....	464	doors, prehung .....	110	Hinges .....	172
Gray Board insulation .....	181	floors .....	430, 464	flooring .....	155, 430	door .....	53, 420
Grease		Gypboard demolition .....	335	flooring demolition .....	101	gate .....	148
filters, exhaust hoods .....	455	Gypsum		paneling .....	242	Hip roof .....	36
interceptors .....	528	adhesive .....	17	plywood .....	242	clay tile .....	261
Greenboard .....	168	ceiling panels .....	82	Hat		fiber cement slate .....	261
Greenhouse .....	167	decking, poured .....	369	channel .....	219, 425	rafters .....	48
panels .....	150	demolition .....	102, 335	racks .....	453	sheathing .....	50
Greenwaste recycling .....	332	drywall .....	168, 293, 423	shelf .....	55	shingles .....	258, 259
Grey iron .....	387	lath .....	187	Hatches, roof .....	407	steel rafters .....	70, 74
Griddles, gas .....	456	paint preparation .....	239	Hauling		trusses .....	74
Grid-WALL .....	87	plaster .....	244, 426	debris .....	337	Hoists	
Grilles		roofing .....	369	excavation .....	600	auto .....	450
foot .....	474	roofing, demolition .....	336	truck .....	138	construction .....	319
security .....	416, 485	H		Haunch forms .....	342	freight .....	490
Grills .....	469			Hazard surveys .....	338	rental .....	329
kitchen, commercial .....	456			Hazards testing .....	26	service station .....	450
Grinders				HDPE drain pipe .....	631	Hold down brackets .....	59
pneumatic, rental .....	320	Hair interceptors .....	528	Header		Hold downs .....	161
rental .....	326	Hammering, concrete .....	356	hangers .....	161	Hollow core doors .....	116, 117
stump, rental .....	327	Hammers		pipe .....	602	Hollow metal doors .....	412
Grinding concrete .....	356	for pile drivers, rental .....	322	Headers		frames .....	414
Grits, concrete .....	356	rental .....	322, 326	carpentry .....	45, 390	Hollow metal, painting .....	437
Ground cover .....	625	Hand excavation .....	135	yard .....	615	Home energy rating .....	184
Ground fault interrupter .....	128	Handholes, electric .....	542	Heads		Home inspection service .....	26
Ground rod clamps .....	566	Handicapped		sprinkler .....	621	Home networks .....	130
Ground wire .....	558	access .....	476	Headwalls .....	638	Home office cost .....	310
Grounding		door opener .....	479	Hearths, marble .....	208	Hoods	
devices .....	128, 566	parking .....	477	Heat		entrance .....	270
electric .....	566	symbols, parking lot .....	616	detectors .....	591	exhaust, food service .....	455
locknuts .....	566	Handle sets, door .....	170	generation .....	535	filters .....	455
Grounds, wood .....	51	Handrails		recovery systems .....	580	laboratory .....	473
Grout		access flooring .....	434	Heat exchanger foundations .....	366	range .....	253, 254
brick pavers .....	613	iron .....	150	Heat pumps .....	178	range, quiet .....	254
concrete .....	378	painting .....	238, 240, 438	accessories .....	179	range, vented .....	253
door frames .....	378	patio deck .....	99	Heat-A-Lamp heater and fan .....	141	vents .....	260

**H**



Labor costs	Lathing.....	425	Lever locksets .....	170	Liquid level gauge.....	173, 540
adjusting .....	Lattice		Lexan .....	482	Liquid-tight conduit .....	553
crews .....	molding .....	224	L-flashing.....	268	Listello .....	288
Labor costs defined .....	painting .....	240	Liability insurance.....	185	Loadcenters .....	573
Labor productivity .....	Lauan doors .....	106	Library		Loader	
Labor rates .....	bi-fold closet .....	124	ladders .....	459	rental .....	138
adjusting .....	flush interior .....	116	shelving .....	459, 472	Loaders	
industrial & commercial .....	flush prehung interior.....	118	Lift slabs .....	353	crawler rental.....	323
Labor rates, residential .....	molded face interior.....	117	Lifting		excavation .....	597
Labor, painting .....	prehung heater closet.....	119	cranes, rental .....	322	grading.....	138, 139
Lacquer thinner .....	solid core flush interior .....	116	panels .....	364	rental .....	324
Ladders	Laundry		wheelchair .....	133	wheel, rental .....	323
attic .....	clothes chutes.....	491	Lifts		Loading docks	
horizontal.....	clothesline units .....	84	dock .....	451	concrete .....	354
reinforcing .....	sinks .....	248	elevators.....	133	equipment.....	451
rental .....	tub rough-in .....	252	incline .....	133	Loading trucks .....	600
rolling .....	Lava rock.....	381	rental .....	324	by hand .....	135
sliding .....	Lavatories .....	533	rolling platform, rental .....	324	Loan fees .....	311
steel.....	bases .....	290	wheelchair .....	133	Local area network (LAN) .....	131
Ladder-type wall reinforcement.....	cabinets .....	290	Light bulb		Lockers .....	447
Ladle rack.....	china .....	247	CFL .....	192	demolition .....	337
Lag bolts .....	marble .....	208	LED .....	192	Locknuts, grounding .....	566
Lag shields .....	rough-in.....	531	Light emitting diode .....	192	Locks	
Lally columns .....	vanities .....	290	Light fixture		deadbolt.....	170
Lamb's tongue.....	Lawn		LED .....	585	door, folding.....	122
Laminate shingles,	lighting.....	192	Light standards, demolition .....	334	garage door .....	165
architectural grade.....	rollers, rental .....	327	Light towers, rental .....	327	Locksets .....	421
Laminate wood flooring .....	seeding .....	187	Light, traffic.....	486	colonial knob.....	170
Laminated plastic	sprinkler system.....	188, 189	Light-diffusing panels.....	80	commercial .....	421
cabinets .....	sprinklers.....	619, 621	Light-gauge steel framing .....	56	deadbolt.....	170
countertops .....	Lay-in ceiling .....	81	Lighting.....	190, 588	door .....	53
wallcoverings .....	Layout .....	37	area .....	588	egg knob.....	170
Laminated sandwich panels .....	engineer .....	310, 313	bus stop shelters .....	479	keyed entry .....	170
Laminated wood,	foundation .....	189	can .....	192	lever .....	170
glued beams and timbers .....	stakes.....	205	court .....	466	mortise.....	170
Lamp post wiring .....	survey.....	313, 595	decorative .....	487	partition .....	443
Lamps	typical costs .....	314	demolition .....	334	Lockwashers .....	232
CFL.....	Leach fields .....	265	emergency .....	587	Log homes	
fixture.....	Lead		landscape .....	192	finish .....	236
fluorescent .....	flashing.....	269, 404	LED wall pack.....	585	floor system .....	193
LED .....	X-ray barriers.....	484	ornamental.....	487	labor .....	193
Landings	Lead mesh fabrics .....	471	panelboards .....	572	rafter systems .....	193
concrete .....	Lead-based paint		poles .....	587	siding .....	200
forming .....	removal .....	283, 435	recessed .....	192	Log lap siding .....	201
stair .....	testing .....	26	stage .....	463	Loudspeaker systems.....	592
steel.....	Leaf blower, rental.....	327	street .....	587	Louvered doors .....	120
Landscape	Lease rate .....	581	suspended .....	80	Louvers	
irrigation wiring.....	Lecterns .....	460	temporary .....	310	access doors .....	253, 525
lighting.....	LED accent lights.....	584	tennis court .....	466	door .....	417
site curbs .....	LED down light.....	584	vandal-resistant.....	586	egg crate.....	80
Landscaping .....	LED light bulb.....	192	yard .....	587	parabolic .....	81
Lane delineator .....	LED light fixtures .....	190	Lighting fixtures .....	190, 588	parabolic .....	81
Lane spikes .....	panels .....	80	exterior .....	588	shutters .....	272
Lap cement .....	suspended ceiling .....	80	fluorescent .....	190, 582	vents.....	291, 292, 293, 406
Lap siding.....	LED lighting.....	192	indoor .....	588	windows .....	299
fiber cement.....	flood .....	585	LED .....	190	Low-boy, trash disposal.....	332
spruce .....	flood .....	585	obstruction .....	586	Low-pressure polyethylene	
Laser level, rental .....	LED linear light fixture .....	585	outdoor .....	190, 588	pipe .....	629
Latchsets	LED panel lights .....	584	outlets .....	129	Low-Sound bath fan.....	140
commercial .....	LED vapor tight lights.....	585	Lightning		L-straps .....	163
passage .....	LED wall pack light.....	585	arrestor .....	144	Lube rack .....	449
privacy.....	Ledger flashing .....	268	protection .....	129	Lumber	
Latex	Ledgers .....	47, 391	rods .....	129	alternative building	
block filler.....	LEED		Lights		materials .....	98, 99, 204
deck, waterproofing .....	air conditioning .....	180	barricade.....	22	boards.....	194, 196, 197, 198
house paint .....	certification .....	536	canopy .....	587	building poles .....	204
masonry paint .....	hydronic boilers .....	172	solar powered, barricade.....	22	cedar .....	198
painting, labor.....	Legal assistance, mobile .....	20	Lightweight concrete .....	85, 350, 369	common .....	201
primer.....	Let-in		Lime.....	623	eastern pine .....	197
stain.....	bracing .....	44	builders .....	218	finish .....	195, 196
stucco paint .....	ribbons .....	47	field marker .....	218	finish trim.....	226
Lath.....	Letter		landscaping .....	187	framing.....	201
demolition .....	boxes .....	447, 448	mason's .....	218	grading.....	205
gypsum .....	drop plate.....	420	soil conditioner.....	187, 623	hemlock .....	195
redwood .....	Lettering, hand-painted.....	441	Limestone		inspection .....	205
stakes.....	Letters		masonry .....	381	molding .....	226
steel.....	illuminated.....	441	paving .....	614	oak .....	198, 222
wood .....	signs.....	441	soil conditioner.....	623	plywood.....	202
Lather, wage	Levee excavation .....	603	Linen chutes .....	491	Ponderosa pine.....	197
industrial & commercial .....	Levelers, dock .....	451	Liner, form .....	341, 344	posts .....	204
residential.....	Leveling flooring.....	154	Link mats .....	220, 473	recycled composite .....	98, 99
	Levels, rental .....	327	Lintels		recycled plastic.....	98, 204
			masonry .....	382	red cedar.....	198
			steel.....	387		



southern pine.....	195, 196, 197	Marking		Metal		Mobilization.....	314
specialty.....	205	parking lot spaces.....	616	aluminum screens.....	388	piles, earthwork.....	606
stakes.....	205	pavement.....	616	buildings.....	483	Mobilization cost defined.....	3
timbers.....	201	Markup.....	310	door frames.....	414	Modification factors,	
treated.....	201	contingency.....	208	fabricated.....	387	cost, by area.....	12-15
treatment.....	207	general contractor.....	5	facing panels.....	401	Modified bitumen	
trim.....	226	project.....	310	lath.....	425	adhesive.....	258
wall sheathing.....	392	subcontractor.....	5	ornamental.....	388	SBS roll roofing.....	257
West coast.....	196, 198, 201	Masking, surface prep.....	439	painting.....	436, 437	Modular	
white pine.....	197	Masonry.....	220, 371	painting, preparation.....	239	brick.....	209, 210
Luminaire.....	582	acid-proof.....	375	pans, ceiling.....	82	cabinets.....	29
Luxury vinyl plank.....	154, 432	anchors.....	556	primer.....	234, 236	carpet tile.....	434
LVL Beams.....	396	block.....	213, 378	roofing.....	260	Modulating valves.....	523
LVP flooring.....	154, 432	brick.....	373	screen doors.....	113	Moisture protection.....	253, 397
		cleaning.....	372	siding, painting.....	437	Moisture test, soil.....	279
		demolition.....	100	studs, demolition.....	335	Moisture-resistant drywall.....	168
		fireplace.....	151	trim, painting.....	436, 437	Molding	
		furring.....	50	Metal detector.....	487	brick.....	108
		glass block.....	217	rental.....	329	cabinet.....	31
		insulation.....	183	Metal roofing.....	260	carpentry.....	55
		joints.....	371	Metal-clad cable.....	560	cornice or crown	
		materials.....	220, 373	Metal-framed shaft walls.....	427	door.....	53, 108
		mortar.....	219	Meter boxes.....	221, 573	fireplace.....	55
		nails.....	230	Meters		hardwood.....	222
		paint.....	235	electric.....	571	MDF.....	226
		painting.....	239, 438	fees.....	312	redwood.....	222
		parging.....	382	gas.....	638	softwood.....	223
		pointing.....	371	steam.....	524	stop.....	108
		preparation.....	239	water.....	312, 524	stucco.....	108
		recycling.....	332	Met-tile.....	260	T-astragal.....	108
		reinforcing.....	372	Microphone		vinyl.....	226
		sandblasting.....	263	public address.....	592	window apron.....	53
		sawing.....	370	stage.....	463	Monitor panels.....	591
		steam cleaning.....	371	Microwave.....	456	Monitors, alarms.....	264
		surface prep.....	437	cabinets.....	31	Mono rock, concrete.....	357
		testing.....	316	Midget louvers.....	292	Monolithic topping, concrete.....	357
		waterproof.....	235	Milano awnings.....	471	Monorail for electric hoists.....	490
		waterproofing.....	294	Milgard.....	299	Monuments, survey.....	313
		Mass excavation.....	601	Milling, cold, asphalt.....	611	Mop resilient floor.....	331
		Mastercure.....	95	Millwork, treatment.....	207	Mop sink.....	457, 534
		Mastic		Millwright, wage		rough-in.....	531
		adhesives.....	18	industrial & commercial.....	309	Moped racks.....	475
		painting.....	437	residential.....	10	Morgue equipment.....	470
		roofing.....	257	Mineral insulation.....	399	Mortar	
		tile.....	288, 289	Mineral spirits.....	238	block.....	213
		Mat reinforcing steel.....	349	Mineral surface roll roofing.....	257	cement.....	82
		Material		Mini split.....	178	color.....	218, 613
		costs defined.....	3	Mini-blind door.....	112	glass block.....	217
		demolition.....	337	Mini-blinds.....	296	masonry.....	209, 218, 219
		handling systems.....	491	Mini-brick.....	211	mix.....	82
		hoist.....	319	pavers.....	212	paving.....	614
		lifts, rental.....	324	Mini-mat reinforcing.....	349	shower bed.....	272
		Mats		Mining camp barracks.....	480	testing.....	316
		entry.....	220, 473, 474	Miradrain.....	603	tile.....	289
		erosion control.....	603	Miraflex.....	604	trowel-ready.....	219
		MC cable.....	560	Mirrored doors		Mortise	
		MDF molding.....	226	bi-fold.....	125	hinges.....	172
		MDO plywood.....	203	bypass.....	123	lockset.....	170
		Meat and deli case.....	454	Mirrors		Mosaic and terrazzo worker, wage	
		Meat saw.....	454	arches.....	221	industrial & commercial.....	309
		Mechanical drawing,		bath accessories.....	24	residential.....	10
		architectural.....	126	beveled edge.....	167	Mosaic tile.....	288, 428
		Mediation		door.....	221	Moss preventer.....	268
		fees.....	19	framed.....	221	Motor	
		mobile.....	20	frosted.....	221	connection.....	567
		Medical refrigerators.....	469	medicine cabinet.....	220	generator sets.....	578
		Medicare payroll taxes.....	285	unframed.....	423	starters.....	567
		Medicine cabinets.....	220, 446	vanity.....	221	Motor graders, rental.....	323
		Medium-density plywood.....	203	Mission		Motorcycle racks.....	475
		Membrane		brick.....	212	Motors, electric.....	566
		detaching.....	94	paver.....	212	Movable partitions.....	443
		Ditra.....	94	tile roofing.....	261	Moving	
		poly film.....	253	Miter saws, rental.....	328	excavated material.....	600
		roofing.....	401	Mitt, painting.....	436	stairs.....	490
		slab.....	94, 339	Mix design, concrete.....	315	structures.....	338
		underlayment.....	94	Mixers, cement, rental.....	321	Mud sills.....	389
		waterproofing.....	294	Mixers, food.....	457	anchors.....	59, 161
		Mesh		Mixing valves, thermostatic.....	540	Mulch.....	187
		reinforcing.....	91, 349	Mobile home port.....	77	Mullion casing.....	224
		steel.....	91	Mobile mediation.....	20	Murphy wall beds.....	25
		Mesh, steel.....	346				
		Message board,					
		traffic control.....	326				

<b>N</b>			
Nailer strip, carpentry.....	47, 390	paneling.....	242
Nailers, rental.....	327	parquet.....	158
Nailing sheathing.....	392	plywood.....	203
Nailite.....	277	threshold.....	108, 222, 286
Nails		Obstruction lighting.....	586
aluminum.....	231	Octagonal window.....	303
box.....	227	Office	
brads.....	229	clerk.....	310
casing.....	229	expenses.....	310
coil.....	229	job site, temporary, rental.....	330
coil roofing.....	230	manager cost.....	310, 314
collated.....	229, 230	overhead.....	208
common.....	227	partitions.....	443
deck.....	228	Offices	
drywall.....	229	manufactured.....	480
duplex.....	231	temporary.....	310
finishing.....	230	temporary, rental.....	330
framing.....	229	Oil	
joist hanger.....	230	concrete form.....	355
masonry.....	230	storage tanks.....	540
plasterboard.....	230	Oil and latex stain.....	236
scaffold.....	231	Oil-based	
screw shank.....	229	enamel.....	236
siding.....	231	exterior primer-sealer.....	234
sinters.....	228	stain.....	236, 237
stainless steel.....	230	Olefin carpet.....	76
stick.....	229	Openers, garage door.....	164
vinyl-coated.....	228	Openings.....	412
Napkin dispenser.....	445	Operating engineer, wage	
Narrowline patio doors.....	121	residential.....	10
Natural gas		Orchard clearing.....	594
meter.....	638	Organic impurities.....	314
rough-in.....	252	Ornamental	
NCX treatment.....	207	fence.....	149
Needle gun finish.....	356	gates.....	165
Needle scaling paint removal.....	233	metals.....	253, 388
Neo-angle shower.....	272	railings.....	386
Neoprene		rock.....	604
gaskets.....	403	screens.....	388
joints.....	412	OS&Y valves.....	492, 519
weatherstrip.....	421	OSB (Oriented Strand Board).....	275
Nets		paneling.....	392
safety, scaffolding.....	329	panels.....	203
tennis.....	466	roof panels.....	392, 393
Netting, stucco.....	188	roof sheathing.....	194
Network cable.....	130, 459, 460	sheathing.....	42, 51, 63, 391, 392
Networking systems.....	131	siding.....	275
Networks		subfloor.....	42, 63
educational.....	459	Osmosis filters, water.....	529
residential.....	130	Outdoor lighting.....	192, 588
Newel posts.....	56, 253, 281, 282, 283	Outlet boxes, electrical.....	561
NFPA fire sprinklers.....	150	Outlet circuit receptacle.....	542
NM-B cable (Romex).....	559	Outlets, electric.....	129, 563
Noise analysis.....	134	Outside corner molding.....	226
Non-metallic		Ovens	
cable (Romex).....	559	built-in.....	255
conduit, flexible.....	553	cabinets.....	30
Non-slip strips.....	220, 432	commercial.....	456
Norman		convection.....	456
brick.....	209, 210	electrical work.....	129
pavers.....	212	microwave.....	456
Nosing		pastry.....	456
flooring.....	155	residential.....	255
sill.....	286	Overhang, painting.....	240
steel.....	387	Overhead.....	310
Nozzle, sandblast, rental.....	325	costs.....	310
Numbers, house.....	172	markup.....	208
NuTone.....	140, 141, 254	Overhead doors.....	415
Nuts, hex head.....	232	Overhead electrical	
Nylon carpet.....	76, 433	distribution.....	577

<b>P</b>			
PA (Public Address) system.....	464	padding.....	233, 435
Padre brick.....	210	remover.....	237
Pads		testing.....	26
carpet.....	76	textured.....	235
equipment.....	352	thinner.....	238
Paging systems.....	592	traffic.....	237
Paint		Painter, wage	
pool coating.....	237	industrial & commercial.....	309
removal.....	233, 435	residential.....	10
residential.....	310	Painting.....	241
job site, temporary, rental.....	330	athletic courts.....	467
manager cost.....	310, 314	cleaning, prep with	
overhead.....	208	power tools.....	436
partitions.....	443	cleanup.....	331
Offices		clear finish.....	236
manufactured.....	480	compressors for	
temporary.....	310	spray painting.....	239
temporary, rental.....	330	concrete.....	437
Oil		conduit.....	437
concrete form.....	355	cost breakdown, subcontract.....	239
storage tanks.....	540	curbs, red.....	616
Oil and latex stain.....	236	deck.....	437
Oil-based		decks.....	437
enamel.....	236	door frames.....	240, 241
exterior primer-sealer.....	234	epoxy.....	487, 438
stain.....	236, 237	exterior.....	238, 241
Olefin carpet.....	76	exterior latex.....	235
Openers, garage door.....	164	fence.....	240
Openings.....	412	floor.....	438
Operating engineer, wage		handrails.....	438
residential.....	10	industrial.....	436
Orchard clearing.....	594	interior.....	235, 238, 241
Organic impurities.....	314	interior prep.....	439
Ornamental		joists.....	437
fence.....	149	latex.....	235
gates.....	165	latex exterior.....	235
metals.....	253, 388	masonry.....	235, 438
railings.....	386	mastic.....	437
rock.....	604	oil stain.....	237
screens.....	388	pipe.....	437
OS&Y valves.....	492, 519	pool.....	438
OSB (Oriented Strand Board).....	275	porch.....	438
paneling.....	392	porch and floor.....	235
panels.....	203	roof.....	257
roof panels.....	392, 393	rule of thumb, subcontract.....	239
roof sheathing.....	194	sandblasting.....	263
sheathing.....	42, 51, 63, 391, 392	shingles.....	438
siding.....	275	siding.....	437, 438
subfloor.....	42, 63	speed bumps.....	610
Osmosis filters, water.....	529	spheres.....	437
Outdoor lighting.....	192, 588	spray.....	239
Outlet boxes, electrical.....	561	sprayers, rental.....	328
Outlet circuit receptacle.....	542	stain.....	237
Outlets, electric.....	129, 563	steel.....	436
Outside corner molding.....	226	stucco.....	235, 437
Ovens		subcontract.....	239
built-in.....	255	surface prep.....	436, 437
cabinets.....	30	swimming pool.....	438
commercial.....	456	tanks.....	437
convection.....	456	urethane finish.....	236
electrical work.....	129	varathane finish.....	236
microwave.....	456	waterproofer.....	237
pastry.....	456	waterproofing.....	236
residential.....	255	wood deck.....	438
Overhang, painting.....	240	wood finish.....	236
Overhead.....	310	wood preservative.....	237
costs.....	310	Paling, rail.....	99
markup.....	208	Pan	
Overhead doors.....	415	forms.....	345
Overhead electrical		racks.....	456
distribution.....	577	Panel	

<b>O</b>			
Oak		Panel adhesive.....	18
boards.....	198	box, wiring.....	129
doors.....	116	circuit breaker.....	575
flooring.....	155, 430	enclosures.....	563
molding.....	222	molding.....	224
paneling.....	242	Panel lights, LED.....	584
pool coating.....	237	Panel roofing	
removal.....	233, 435	steel.....	260
residential.....	310	Panelboards, electrical.....	572
job site, temporary, rental.....	330	Paneling	
manager cost.....	310, 314	beaded.....	242
overhead.....	208	birch.....	242
partitions.....	443	Partitions	
Offices		cubicles.....	442, 443
manufactured.....	480	demolition.....	335
temporary.....	310	dust control.....	337
temporary, rental.....	330	fire rated.....	444
Oil		folding doors.....	443
concrete form.....	355	framing, piecework.....	37, 73
storage tanks.....	540	framing, steel.....	73
Oil and latex stain.....	236	marble, toilet.....	381
Oil-based		metal.....	442, 443
enamel.....	236	non-bearing.....	443
exterior primer-sealer.....	234	office.....	443
stain.....	236, 237	toilet.....	442
Olefin carpet.....	76	wire.....	444
Openers, garage door.....	164	Passage latch.....	170, 421
Openings.....	412	Passenger elevators.....	489
Operating engineer, wage			
residential.....	10		
Orchard clearing.....	594		
Organic impurities.....	314		
Ornamental			
fence.....	149		
gates.....	165		
metals.....	253, 388		
railings.....	386		
rock.....	604		
screens.....	388		
OS&Y valves.....	492, 519		
OSB (Oriented Strand Board).....	275		
paneling.....	392		
panels.....	203		
roof panels.....	392, 393		
roof sheathing.....	194		
sheathing.....	42, 51, 63, 391, 392		
siding.....	275		
subfloor.....	42, 63		
Osmosis filters, water.....	529		
Outdoor lighting.....	192, 588		
Outlet boxes, electrical.....	561		
Outlet circuit receptacle.....	542		
Outlets, electric.....	129, 563		
Outside corner molding.....	226		
Ovens			
built-in.....	255		
cabinets.....	30		
commercial.....	456		
convection.....	456		
electrical work.....	129		
microwave.....	456		
pastry.....	456		
residential.....	255		
Overhang, painting.....	240		
Overhead.....	310		
costs.....	310		
markup.....	208		
Overhead doors.....	415		
Overhead electrical			
distribution.....	577		

Passive solar heat.....	249	Percolator, coffee.....	458	Ponderosa.....	197	Plant-on	
Paste wood filler.....	238	Perforated pipe.....	632	siding.....	199	trim.....	49
Pastry oven.....	456	Performance bonds.....	186	southern.....	195, 196, 197	Plants, landscape.....	624
Patch panel.....	460	Pergo wood flooring.....	157	stakes.....	205	Plaques.....	442
Patching, concrete.....	95, 365	installation kit, rental.....	326	timber.....	202	Plaster	
Path lighting.....	192	Pergola.....	99	white.....	197	accessories.....	426
Patio		Perimeter door seal.....	452	Pipe		demolition.....	102, 335
blocks.....	613	Perimeter wall insulation.....	182	ABS.....	126, 512	ground.....	224
carports.....	77	Perling, steel.....	72	asbestos removal.....	338	joints.....	412
cover.....	21	Perlite soil conditioner.....	623	black steel.....	494	labor.....	244, 426
roof.....	99	Permanent bond adhesive.....	258	bollards.....	616	mixer, rental.....	321
tile.....	220	Permits		cast iron.....	626	painting.....	241
Patio doors.....	121, 122	building.....	28	clamps.....	518	ring.....	561
aluminum.....	120	well drilling.....	295	clay.....	635	soffits.....	244
fiberglass, swinging.....	122	Pest control		cleaning.....	630, 631	stucco.....	427
gliding, vinyl.....	121	soil treatment.....	280	columns.....	384	Plasterboard	
hinged, vinyl-clad.....	120	wood treatment.....	207	concrete.....	631, 632	drywall.....	423
pet.....	122	Pet		conveyors.....	491	nails.....	230
sliding wood.....	121	doors.....	122	copper.....	503, 512	Plasterer, wage	
steel, double.....	122	enclosures.....	143	corrugated metal.....	633, 634	industrial & commercial.....	309
swinging, double.....	120	screen.....	123	corrugated polyethylene.....	631	residential.....	10
vinyl.....	121	Petroleum storage tanks.....	540	CPVC.....	507, 508	Plasterer's helper, wage	
Pavement		Pews.....	460	culvert.....	633	industrial & commercial.....	309
asphaltic.....	243	PEX pipe.....	509	cutters, rental.....	328	residential.....	10
breakers, rental.....	320, 325	PEX-AL pipe.....	511	demolition.....	333	Plastering.....	244, 426
concrete.....	84, 94, 244, 611	Pharmacy refrigerators.....	469	drainage.....	126, 512	fireproofing.....	409
demolition.....	102, 332	Phone support.....	5	ductile iron.....	628	stucco.....	427
line marker, rental.....	325	Phones		DWV.....	512	Plasterkraft.....	27
line markings.....	616	temporary.....	310	elliptical.....	632	Plastic	
marking, removal.....	333	wiring.....	591	equipment rental.....	328	countertops, laminated.....	473
sawing.....	371	Photo mapping, aerial.....	313	fire protection.....	508	drain pipe.....	126
stripers, rental.....	325	Photo micrographs.....	317	foundation drains.....	126	forms.....	86, 87
striping.....	616	Photoelectric		gas.....	252, 638	laminates.....	435
sweeping.....	612	sensors.....	589	grouting.....	637	lumber.....	99, 204
symbols.....	616	switches.....	565	guard.....	365	resin glue.....	18
Pavers		Photographs		guides.....	518	sewer pipe.....	266
brick.....	212, 382	aerial.....	313	inspection.....	629, 630, 631	shutters.....	272
bullnose.....	212	construction.....	318	insulation.....	523	siding.....	276
concrete.....	215, 382	retouching.....	318	insulation, asbestos removal.....	338	skylights.....	277
interlocking.....	382	Photovoltaic systems.....	582	insulation, painting.....	437	speed bumps.....	617
landscaping.....	613	Picket fence.....	148, 149	jacking.....	638	tarps.....	285
masonry.....	613	painting.....	240	levels, rental.....	328	tile.....	429
masonry grid.....	382	Pickling stain.....	237	locating.....	266	vapor barrier.....	253, 352, 353
mexican.....	288	Picture frame molding.....	224	markers.....	318	Plasticized concrete.....	85
rubber.....	467	Picture rail.....	55	painting.....	437	Plate straps.....	163
slate.....	382	Picture window.....	299	perforated.....	631, 632	Plates	
split.....	212	Pictures, job site.....	318	PEX.....	509	carpentry.....	40, 59, 390
terrazzo.....	382	Piecework		PEX-AL.....	511	carpentry piecework.....	42, 68
Turfstone.....	615	metal carpentry, floor sheathing.....	74	plastic.....	126	door hardware.....	170, 421
Paving		metal carpentry, rafters.....	75	polyethylene.....	126, 618, 621, 638	electrical.....	565
asphalt.....	243, 609, 610	metal carpentry, roof framing.....	74	polyethylene corrugated.....	634	splash.....	255
brick.....	243, 612	metal carpentry, roof sheathing.....	76	PVC.....	512	switch.....	23
cold milling.....	611	rough carpentry.....	37	PVC Schedule 40.....	620	Platform lifts	
concrete.....	84, 94, 244, 611	rough carpentry, floor sheathing.....	38	PVC Schedule 80.....	506	dock.....	451
demolition.....	102, 332	rough carpentry, roof sheathing.....	39	PVC sewer pipe.....	266	rental.....	324
equipment rental.....	325	steel framing.....	73	railing.....	386	Platform, scaffold, purchase.....	330
grass.....	244, 615	Pier		rolls.....	518	Playground equipment.....	467
joint treatment.....	613	blocks.....	39	sewer.....	265	Playing fields, synthetic.....	465
machine, rental.....	325	caps.....	389	sewer, PVC.....	630	Plenum cable.....	593
parking lots.....	610	pads.....	39	sterilization.....	629	Plexiglas.....	167, 422, 480
repair.....	611	Pilasters.....	134	storm.....	632	Plinth block, MDF.....	226
stones.....	382	cabinets.....	31	straps.....	518	Plugmould.....	557
subcontract.....	243	molding.....	55	troubleshooting service.....	266	Plugs	
systems.....	244, 615	painting.....	240	TV inspection.....	637	cleanout.....	516
Turfstone paving.....	615	Pile caps, concrete.....	340	valves.....	523	electrical.....	564
Payment bonds.....	186	Pile driver, wage.....	309	vitrified clay.....	266	test.....	515
Payroll taxes.....	285	Pile driving.....	606	water, PVC.....	628	Plumber, wage	
PCBs, removal.....	435	Pile driving, rental.....	322	Pipefitter, wage.....	309	industrial & commercial.....	309
Pea gravel.....	18	Pile foundations.....	606	Piping, gas.....	252	residential.....	10
concrete.....	85	Piles		Pitch pockets.....	404	Plumber's flash cone.....	404
landscaping.....	625	landscaping.....	625	Pits, excavation, dug by hand.....	136	Plumber's tape.....	518
riprap.....	604	treatment.....	206	Pizza preparation unit.....	454	Plumbing.....	494
Peat humus.....	623	Piling, sheet steel.....	605	Placing concrete.....	95, 349	access doors.....	253, 525
Pedestal flooring.....	434	Pine		Plan check fee.....	28	area drains.....	525
Pedestrian bridge.....	487	building poles.....	204	Plank		assemblies.....	251, 530, 532
Peep sights.....	171	decks.....	98	flooring.....	56, 155	cleanouts.....	525
Pegboard, hardboard.....	435	eastern.....	197	precast concrete.....	358	copper DWV.....	512
Penetrating stain.....	236	flooring.....	155, 156	scaffold, aluminum extension, purchase.....	330	equipment rental.....	328
Penny nail sizes, defined.....	227	jamb sets.....	118	Plank flooring		fixtures.....	535
Pension costs defined.....	3	lumber.....	197	vinyl.....	432	fixtures, cleaning.....	83
Penta treated post.....	204	paneling.....	242	Plans.....	25	floor drains.....	525
Percolation testing.....	265					for handicapped.....	478

<p>                     piping .....532                      roof drains .....525                      rough-in .....251, 532                      systems .....251                      water softener .....250                      Plyclips .....162                      Plyform .....203, 339                      Plywood .....203, 391                      backboard .....460                      birch .....203                      'board-up' .....274                      cap molding .....226                      cedar .....203                      ceiling .....54                      deck, waterproofing .....294                      demolition .....102                      exterior .....202                      fence .....331                      forms .....88, 339                      framing clips .....162                      lumber .....202                      marine-grade .....203                      MDO .....203                      oak .....203                      paneling .....242, 392                      piecework rates .....39, 74                      roof panels .....392                      sheathing .....42, 51, 62, 391                      sheathing, piecework .....39, 76                      siding .....203, 275                      softwood .....202                      structural .....203                      subfloor .....42, 62                      subfloor, piecework .....39, 76                      treatment .....207                      underlayment .....432                      window covering .....274                      Pneumatic                      demolition .....103                      door closers .....105                      excavation .....138                      hammer .....596                      pipe systems .....491                      tampers .....599                      tools, rental .....320                      tube systems .....491                      Pocket doors .....171                      hangers .....171                      hardware .....53, 171                      kit, converging .....171                      Pointing, masonry .....371                      Poisoning soil .....280                      Poles                      building .....204                      closets .....55                      concrete .....360                      cross arms .....577                      demolition .....334                      flag .....448                      foundations .....587                      job sign .....318                      lighting .....587                      lumber .....204                      playground .....467, 469                      power distribution .....577                      pressure-treated .....205                      removal .....334                      temporary utility power .....318                      treatment .....206                      Polishing                      floors .....238                      woodwork .....241                      Pollution control .....579, 581, 604                      Poly E Pipe .....621                      Polybutylene tape .....412                      Polycarbonate                      glazing .....482                      sheets .....166, 423                      skylights .....277                      Polyester fabric .....257                      Polyethylene                      corrugated pipe .....634                      film .....253                      gas pipe .....638                      membrane, slab .....94, 339, 352, 353                 </p>	<p>                     pipe .....126, 618                      tarps .....285                      tilt-up .....362                      Poly-faced insulation .....181                      Polyisobutylene .....412                      Polyisocyanurate                      insulation .....182, 398                      Polypropylene mesh                      reinforcing .....85                      Polystyrene                      board .....398                      insulation .....181, 182, 398, 399                      insulation board .....398                      roof deck .....399                      Polyurethane                      floor finish .....56                      insulation .....184                      paint .....236                      painting .....438                      sealant .....410                      Ponderosa pine                      boards .....197                      lumber .....197                      mantels .....208                      Pool, swimming                      coating .....237                      complete installation .....475                      cover .....476                      deck .....369                      fences .....150                      gunite .....357                      heaters .....250                      painting .....237, 438                      resurfacing .....369                      Popcorn                      ceiling, removal .....169                      Popcorn ceiling .....169                      Poplar flooring .....155                      Pop-up sprinklers .....189                      Porcelain tile .....287                      Porch                      columns .....84                      enamel .....235                      enclosed .....167                      lifts .....133                      painting .....240, 438                      posts .....84                      rail .....253                      Porous paving .....244                      Portable structures .....480                      Portable toilet (Port-a-Potty) .....310                      Portland cement .....82                      Post                      anchors .....163                      bases .....162                      caps .....163                      column forms .....340                      indicators .....627                      painting .....438                      Post holes .....144                      fences .....617                      footings .....617                      Postal specialties .....447                      Posts                      athletic equipment .....465                      barrier .....452                      bollards .....616                      building .....204                      cabinet .....31                      carpentry .....39, 45                      deck .....99                      fence .....144                      guardrail .....615                      jackposts .....186                      newel .....56                      porch .....84                      pressure-treated .....205                      redwood .....204                      sawn .....204                      treatment, lumber preservation .....206                      yellow pine .....204                      Pot hooks .....454, 456                      Pot racks .....456                      Pot wash sink .....457                 </p>	<p>                     Pour strip, tilt-up .....362                      Pouring                      concrete .....95, 351                      insulation .....183, 398                      Pour-stop forms .....340, 342                      Powder-driven fasteners .....231                      Power                      cable .....560                      conduit .....543                      distribution .....577                      EMT .....547                      generation .....131, 582                      panels .....572                      solar .....582                      temporary, pole rental .....310, 318                      underground .....541                      Power factor meter .....571                      Power generator exhaust stack .....581                      Power ventilators                      attic gable .....142                      roof-mount .....142                      Precast                      beams .....359                      columns .....359                      concrete .....357, 633                      culvert .....633                      double tees .....360                      drains .....634                      floor plank .....358                      floor slab .....358                      girders .....359                      joists .....359                      manholes .....636                      panels .....357                      stairs .....360                      Precipitators .....455                      Pre-engineered buildings .....483                      Preformed siding .....400                      Prehung doors .....52, 118-120, 415                      double .....119                      exterior .....109, 110, 111                      fire-rated .....109                      French .....120                      heater closet .....119                      oak .....119                      patio, steel .....121                      steel .....111, 112, 414                      Preliminary soil investigation .....279                      Prepare surface,                      painting .....239, 437, 439                      Presentation board .....440                      Preservation, lumber .....207                      Preservative, wood .....237                      Pressure                      controls .....524                      gauge .....524                      grouting .....357                      mats .....264                      regulators, gas .....638                      regulators, hydronic heating .....539                      treatment, lumber .....207                      vacuum breaker .....312                      Pressure washer, rental .....328                      Pressure washing .....239, 436                      Pressure-reducing valves .....522, 539                      Pressure-treated lumber .....201                      Prestressed concrete .....360                      Prime coat, pavement .....611                      Primer                      asphalt .....466                      clean metal .....236                      linseed .....234                      metal .....236                      painting .....239                      sealer, oil-based .....234                      Prints, plans .....25                      Privacy latchset .....170                      Processed lime .....218                      Profit, markup .....208, 310                      Project                      cost adjustments .....12-15                      financing .....311                 </p>	<p>                     manager cost .....310                      scheduling .....311                      Propane                      furnaces .....176                      tanks .....541                      water heaters .....249                      Property boundaries .....313                      Provisa range hood .....254                      P-traps, ABS .....516                      Public address systems .....464, 592                      Pull box, electrical .....542, 562                      Pull plates .....170, 421                      Pulls, edge, pocket door .....171                      Pulpits .....460                      Pump mix concrete .....85                      Pumper firehose connection .....493                      Pumping                      concrete .....350, 351                      dewatering .....602                      well .....295                      Pumps                      electrical connections .....129                      foundation .....366                      gasoline .....449                      rental .....324                      sewer .....265                      sump .....528                      sump, wiring .....129                      wiring .....130                      Punch down, network cable .....460                      Punch-down blocks .....593                      Purlins                      anchors .....161                      carpentry .....48, 390                      fireproofing .....410                      hangers .....161                      steel .....383                      steel framing .....72                      Purse shelf .....442                      Push plates .....170, 421                      Putty, glass .....239                      PVC                      clamp .....551                      conduit .....548                      conduit body .....550                      conduit box adapter .....549                      conduit with wire .....551                      end bell .....549                      flashing .....270                      jacketed copper tubing .....505                      pipe .....265, 506                      pipe, Schedule 40 .....620                      reducer bushing .....549                      sewer pipe .....266, 630                      water pipe .....628                 </p>
<b>Q</b>			
<p>                     Quality control engineer .....313                      Quantities defined .....3                      Quarry tile                      flooring .....381, 429                      masonry .....220, 381                      wall tile .....381                      Quarry work .....596                      Quarter round molding .....222, 225                      Quartz heaters .....175                      Quick coupling valves .....622                      QuietTest exhaust fan .....140                      Quietzone .....183                      Quonset huts .....483                 </p>			
<b>R</b>			
<p>                     Raceway, electric .....556                      Racks                      coat and hat .....453                      garment .....453                      kitchen .....456                      ladle .....454                      pots and pans .....456                      towel .....24                 </p>			

Racks, security	epoxy-coated	346	tilt-up	362	flagstone	216
bicycle	footings	346	walkways	615	masonry	216
motorcycle	masonry	372	welding	346	rubber	220
Radial wall forms	rings	348	Reinforcing ironworker, wage		sprinkler heads	189
Radiant heat, floor	slabs	346	industrial & commercial	309	stair	56, 283
Radiant heating	splicing	348	residential	10	steel stairs	282
Radiation protection	stirrup	347	Relief valves	522, 539	wood stairs	281, 396
Radiators, heating	Receptacles, electric	129, 563	Relocatable structures,		RO filters, water	529
Radio studio	cover plate	565	manufactured type	480	Road	
Radioactivity, removal	outlet circuit	542	Remote high gain antenna	130	compaction	603
Radon gas, testing	wiring	129	Removal		equipment rental	325
Rafters	Receptors, shower	272	asbestos	338	grading	596
bay vent channel	Recessed lighting	192	clearing	594	paving	610
demolition	Re-coat roofing	402	debris	337	repairing	611
log	Recording meters	571	demolition	334	rollers, rental	321
piecework rates	Recycling fees	332	lead-based paint	233, 435	stripping	616
rough carpentry	Red cedar		paving and curb	477	trim and finish	603
spacing	beams and timbers	201	PCBs	435	Road closed sign	22
steel framing	boards	198	radioactivity	435	Road plate, steel	325
steel, piecework rates	fence	148	toxic chemicals	435	Robe hooks	24
timber	lumber	195	tree	138, 594	Rock	
vents	shakes	259	wallpaper	293	aggregate	18
Rail	shingles	259	Renderings, architectural	20, 126	cinder	604
communion	siding	199	Rent, overhead	310	drain rock fill	604
fence	Red oak		Rental		drilling	595
guard	boards	198	backhoe	322	drills, rental	320
hand	closet doors	124	bulldozer	323	excavation	135
molding, cabinets	doors	117	compactor	321	fill	604
painting	Red oxide primer	234	compressor	320	ornamental	604
stair	Red rosin sheathing	27	forklift	324	recycling	332
Railing	Reducer strip, flooring	155	landscape equipment	327	ripping	596, 601
access flooring	Reducer, drain pipe	126	miscellaneous equip.	329	Rock fill drainage systems	126
aluminum	Redwood		plumbing equipment	328	Rockwool insulation	183
brass	benderboard	187, 625	road equipment	325	Rod clamps	554
for handicapped	deck stairs	99	scaffolding	329	Rod hanger	554
highway	decking	98	scaffolding, mobile	329	Rod, threaded	161
painting	fascia	49	Rental, equipment	320	Rods	
patio deck	fence	147, 148	Report		lightning	129
porch, steel	headers	615, 625	home inspection	26	shower curtain	24
stair	lumber	196, 198, 201	soil test	279	Roll flashing	
stair, wood	molding	222	Reproduction, plans	25	copper	267
steel	saunas	264	Residential		galvanized	268
temporary	siding	199	rules of thumb	307	lead	269
tubular	strips, chain link	142	Residential wage rates	10	paper-backed copper	268
wrought iron	treads	99	Resilient flooring	153	ridge roll	260
Railroad demolition	Reflective signs	617	demolition	336	valley	268
Rain diverter	Refrigeration, insulation	399	installation	431	vinyl	270
Rain gutter	Refrigerators		Resilient hat channel, drywall	169	Roll roofing	401
stainless	backbar	457	Resorcinol glue	18	adhesive	258
steel	electrical work, subcontract	129	Restaurant		felt	257
Rain gutters	food service	457	equipment	453	fiberglass	257
Raingear, copper	medical	469	range	456	mineral surface	257, 259
Raised floors	morgue	470	restraints, water heater	527	papers	258
Ram Board	wiring, subcontract	129	Retaining wall forms	92, 341	Roller, dough	456
Rammers	Reglet		Retaining walls	375	Rollers, rental	321
compacting	copper	268	Return bends	516	Rolling	
rental	parapet	365	Reveal strips		ladders	459
Ramp forms, riser	Regulator valves	523	formwork	342, 363	Rolling platform lifts, rental	324
Ramps	Regulators, pressure,		tilt-up	363	Rolling towers, rental	324
access flooring	hydronic heating	539	Reverse osmosis filters	529	Roll-up	
handicapped	Reinforcing		Revolving doors	416	doors	415
rental	bar supports	340	R-Gard insulation	182	window blinds	296
Range circuit	bars	89, 346, 365	Ribbons (ribbands), carpentry	47	Roll-up awning	21
Range hood	caissons	349	Ridge		Romex cable	127, 542, 559
convertible	chairs	348	clay tile	261	Roof	
custom	columns	349	fiber cement	261	apron	268
food service	demolition	332	flashing	260	bay window	304
vented	foundation	346	sheet metal roofing	260	built-up	256
Range support, cabinets	fiber mesh	85	shingles	258, 259	cant strips	50, 182, 403
Ranges	foundation	346	steel framing	72	coating	237, 256, 257, 401, 402
electrical work	gunite	357	vents	292	cold, for log home	194
gas, commercial	masonry	215	Ridgeboard, steel	72	deck cover	99
residential	masonry ties	159	Rigid conduit	543	deck, cementitious	403
Rastra Block	mesh	91, 349	Rigid insulation	182	deck, concrete	369
Rates, labor	mesh mini-mat	349	Ring steel reinforcing	348	deck, steel	384
Rattan black paper	pavement	244	Ripping, excavation	596, 601	deck, wood	392, 403
Reactivity testing	rings	348	Riprap	604	demolition	102
Ready-mix concrete	slabs	92, 346, 349	Risers		drains	525
Rebar	splicing	348	concrete stair	95, 351, 360	edge	267, 268, 270
chairs	steel	89, 346	concrete stair, forming	346	edging	267
concrete	steel, epoxy-coated	346	stirrup	347	EPDM	402

flashing.....27, 268, 269	Rough carpentry	Rust-converting metal primer... 236	concrete .....362, 370
framing ..... 36, 39, 47, 74	adhesive.....18	Rustic siding	masonry wall .....370
framing, panelized.....392	anchors.....59	cedar.....199	Sawn posts, redwood.....204
framing, steel.....70, 74	backing and nailers.....47	pine.....200	SBS
ice melting cable.....561	beams.....45	Rust-inhibiting primer.....234	roll roofing.....257
insulation.....399	blocking.....41	Ryegrass seeding.....624	starter strip.....258
insulation board.....399	bracing.....44		Scaffolding
jacks.....526	cant strips.....50	<b>S</b>	caster-mounted, purchase.....330
joints.....392	ceiling joists.....46	S4S molding.....225	erection.....329
loading.....262	collar beams.....48	Sack concrete.....365	jacks.....356
membrane.....256	collar ties.....48	Sack finish.....95	nails.....231
paint removal.....233	columns.....39	Saddle stock.....268	planks, purchase.....330
painting.....240, 438	columns, steel.....58	Saddle threshold.....286	rental.....329
pan.....268	curbs.....48	Safe deposit boxes.....453	rental, mobile.....329
panels.....392	demolition.....103, 334	Safes	safety equipment, purchase.....330
paper.....27	door openings.....43	floor.....452	swinging, purchase.....330
patio.....99	dormer studs.....48	recessed wall and floor.....452	Scales, truck.....452
safes.....404	fascia.....49	residential.....262, 263	ScopeWel window.....305
sheathing.....49, 392, 403	fireblocks.....45	roof.....404	Schedule 40 PVC pipe.....506
testing.....316	floor joists.....40	Safety	Schedule 80 PVC pipe.....506
tile, concrete.....261	floor trusses.....41	child seat.....447	Scheduling
trusses.....48, 72, 395	furring.....50	floor tiles.....432	costs.....311
trusses, piecework rates.....38, 74	girders.....40	ground, electrical receptacle.....563	CPM.....134, 311
underlay.....27	grounds (stucco stop).....51	nets for scaffolding.....329	fees.....134, 311
vent kit, bath.....141	joists.....46	overhead.....310	overhead.....310
vent, turbine.....141	ledgers and ribbons.....47	pan, water heater.....526	School equipment.....458, 467
vents.....292	plates.....42, 68	signs.....442	School network.....459
windows.....279	posts.....39, 45	switch.....568, 569	Scissor lifts.....451
Roofer, wage	purlins.....48	switch conduit hub.....569	Scissor lifts, rental.....324
industrial & commercial.....309	rafters.....47	Safety film, window.....419	Scoreboards, gym.....464
residential.....10	ribbons.....47	Sag rods, steel.....383	Scoring concrete.....356
Roofing	roof decking.....50	Salamanders, rental.....326	Scrapers
algae-resistant shingles.....258	roof sheathing.....49	Salaries, overhead.....310	excavation.....601
asphalt.....257, 258	roof trusses.....48, 49	Sales tax.....3	rental.....323
assemblies.....37	sill plates.....40, 59	Salttillo.....288	Scrapping metal to prepare for
base sheet.....256, 257, 258	stucco stop (grounds).....51	Salvage, demolition.....337	painting.....436
built-up.....256, 401	subflooring.....42	Sampling concrete.....315	Scraping, paint.....239
cant strips.....50, 182, 403	trimmers.....48	Sand.....18, 94	Scratch coat, plaster.....244, 427
cement.....256, 258	wall sheathing.....51	base.....614	Screed
clay tile.....261	window openings.....44	base for concrete.....94	concrete.....362
concrete tile.....261	Rough hardware,	bed, paving.....243	concrete, rental.....322
copper.....404	plywood clips.....162	fill.....94, 135, 339	lath.....188
corrugated.....260, 400	Rough-in	fill, drainage systems.....126	plaster or stucco.....51
demolition.....102	appliances, gas.....252	paving.....614	rental.....322
EPDM.....402	bath tub.....531	testing.....317	tilt-up.....362
felt.....257, 258, 401	drinking fountain.....531	Sandbags.....604	Screen
fiber cement slate.....261	floor drain.....532	Sandblasting	bead molding.....225
fiberglass panels.....150	lavatories.....531	concrete.....263, 356	block, masonry.....215, 380
galvanized.....260, 400	service sink.....531	equipment rental.....325	masonry.....380
gravel.....256	shower.....531	joints.....612	ornamental.....388
membrane.....256	sink.....531	masonry.....263, 371	patio door.....121
metal.....260	toilet.....530	steel.....263	projection.....458
nails, coil.....230	urinal.....530, 531	tilt-up.....365	right.....615
nails, galvanized.....230	water closet.....530	Sandblasting equipment	solar.....264
nails, plastic cap.....231	Rough-sawn siding.....275	rental.....325	sun.....388
paper.....258	Round molding.....225	Sandbox, playground.....467	tear-resistant (pet).....123
photovoltaic.....280	Router-groover, rental.....325	Sanders, rental.....328	urinal.....442
red cedar.....259	Routers, rental.....328	Sanding	vent.....291, 292, 406
roll.....257	RSC conduit.....543	floor.....155, 156, 238, 431	window.....300
rule of thumb costs.....255	Rub	painting.....436, 439	wire.....264
shake.....259	carborundum.....95, 356	Sandstone, masonry.....381	Screen doors.....113
sheet.....260	concrete finish.....95, 356	Sandwich preparation unit.....454	closers.....105
sheet metal.....260, 403	Rubber	Sanitary	hinges.....172
shingles.....259	flooring.....432	napkin dispenser.....445	metal.....113
slate.....260	mats.....220	pipng, demolition.....333	security.....113
solar.....280	studded tile.....154	sewer cleaning.....631	vinyl.....113
Spanish tile.....261	tile.....432	tees, ABS.....514	wood.....113
staples.....231	Rubber roof coating.....402	Sash bar molding.....225	Screw guns, rental.....327
steel panel.....260	Rubberized asphalt.....611	Sash, painting.....241	Screw shank nails.....229
system.....403	Rubble, masonry.....381	Sauna	Screw-base lights.....192
tar.....256	Rugs, carpet.....76, 433	heaters, wiring.....128, 263	Screwdrivers, rental.....327
tile.....261	Rule of thumb costs	modular rooms.....263	Screwjacks, rental.....329
Roof-mount power ventilator.....142	carpentry.....32	room.....535	Screws
Roof-to-wall flashing.....268	electrical work.....127	Saw, meat.....454	drywall.....229
Room dividers	hardware.....420	Saw, rental.....328	self-tapping.....150
doors, folding.....444	residential construction.....307	chain saw.....139	Scribe molding, cabinets.....31
partitions.....444	roofing.....255	concrete.....321	Scrub sink.....535
Rope climb, playground.....467	roofing, steel framing.....56	Sawing	rough-in.....531
Rosin sheathing.....27	Runners.....220, 473	asphalt.....371	Scullery sink.....457
Rotary roof ventilators.....292, 407	mats.....220		Sculpture screens.....215
Roto hammer, rental.....326	rubber.....220		Scuppers, sheet metal.....406
Rototilling.....187, 623	Running track.....465		
	Runoff protection.....604		

Scuttle, roof.....	407	Service sinks.....	248, 534	siding.....	276, 400	grab bars.....	247
SDR 11 CPVC pipe.....	507	rough-in.....	531	vents.....	406	handicapped access.....	247
Seal coat		Service station		Sheet metal worker, wage		mortar bed.....	272
asphalt.....	243, 611	air and water.....	450	industrial & commercial.....	309	plumbing.....	533
roadway.....	611	cash box.....	450	residential.....	10	receptors.....	272, 443, 533
Sealant pot, rental.....	325	equipment.....	449	Sheet piling.....	605	rod.....	24
Sealants		hydraulic hoist.....	450	Sheet vinyl flooring.....	153, 431	rough-in.....	531
caulking.....	77, 410	submerged turbine.....	449	adhesive.....	154	seat.....	25
caulking gun.....	79	turbine.....	449	leveling compound.....	154	stalls.....	246, 272, 443, 533
concrete.....	77	Serving fixtures.....	453	Sheetrock		stalls, cleaning.....	83
deck.....	98	Serving table, sushi.....	454	gypsum drywall.....	168, 293, 423	Shower stalls.....	246
door.....	78	Settlement testing.....	279	painting.....	238, 241	Shrinkage defined.....	3
driveway.....	237	Sewage		wallboard.....	168, 293, 423	Shrubs.....	625
elastomeric.....	78	ejectors.....	265, 528	Sheets		Shunt trip.....	571
gutter and flashing.....	78	leaks.....	266	cork.....	435	Shutters	
marine.....	78	pumps.....	265	polycarbonate.....	423	accordion-type.....	273
paint.....	236	Sewer		polyethylene.....	253	Bahama-type.....	273
primer.....	234	connection.....	266	roofing.....	260	colonial-type.....	273
siding.....	78	demolition.....	333	Shelf lighting.....	191	co-polymer.....	272
silicon rubber.....	78	pipe, PVC.....	630	Shelf, glass.....	270	exterior.....	273
sill.....	182	pump systems, residential.....	265	Shellac		hurricane.....	273
tub.....	79	snakes, rental.....	328	floor finish.....	56	louvered.....	272
wall.....	79	systems.....	265	thinner.....	238	panel-type.....	273
window.....	78	Sewer lines.....	266	Shelters		plywood.....	274
Seals, weatherstrip.....	294	cleaning.....	630	bus stop.....	479	roll-up.....	273
Sealtite conduit.....	553	demolition.....	333	prefabricated metal.....	480	Siamese connection.....	493
Seasonite wood preservative.....	237	Shacks, storage, rental.....	330	Shelves		Sidelites	
Seat cover dispensers.....	445	Shades		carpentry.....	55	steel door.....	111
Seating		blinds.....	296	closets.....	270	Sidewalks	
athletic.....	466	cellular.....	297	industrial.....	448	asphalt.....	615
gym.....	464	Shades, window.....	296	library.....	448, 472	concrete.....	84, 94, 244, 611
school.....	458	Shaft drilling,		linen cabinet.....	270	cover.....	331
shower.....	25	caisson foundations.....	608	storage.....	270	demolition.....	100, 101, 332
stadium.....	474	Shaft walls.....	427	toilet.....	442	moving.....	490
theater.....	474	Shake felt.....	259	utility.....	270	Siding	
Security		Shakertown siding.....	276	wire.....	270	aluminum.....	276, 400
access, keypad.....	590	Shakes, roofing.....	259	wood.....	270	cedar.....	199
alarm systems.....	589	Shale, excavation.....	596, 601	Shelving		corrugated.....	276, 400
alarms.....	264	Shaping slopes by hand.....	136	convenience store.....	485	demolition.....	102
controls.....	591	She bolts.....	355	display.....	485	exterior trim.....	275
gates, folding.....	115	Shear gate.....	627	glass.....	270	fascia.....	275
gratings.....	388	Shear panels		library.....	459	fiber cement.....	274
grilles, doors.....	416	piecework rates.....	38	wire.....	270	galvanized steel.....	276
guards.....	265	steel framing.....	74	Shims		hardboard lap.....	275
locks.....	171	Sheathing		door.....	52	hardboard panel.....	274
monitor panels.....	589	adhesive.....	18	shingles.....	259	Hardi products.....	274
systems.....	589, 591	board.....	42, 51	stool.....	53	insulated.....	400
television system.....	592	carpentry.....	63	stud.....	52	lap.....	201, 274
Security doors.....	113, 115	carpentry piecework rates.....	76	Shingles		log cabin.....	200, 201
Sediment		clips.....	162	algae-resistant.....	258	Naillite.....	277
control.....	604	cork.....	435	asphalt.....	255, 258	nails.....	231
fence.....	604	demolition.....	102, 335	cedar.....	259	OSB.....	275
Seeded aggregate finish.....	244, 615	Dens Glass.....	182	demolition.....	102, 336	paint preparation.....	239
Seeding		floor.....	34, 38	flashing.....	267, 268	paint removal.....	233
grass.....	624	framing, steel.....	74	hip and ridge.....	258	painting.....	240, 437, 438
landscaping.....	187, 624	gypsum board.....	168	laminated.....	258	pine.....	199, 200
Seekure paper.....	28	insulated.....	182	painting.....	438	plywood.....	203, 275
Seesaws.....	468	insulation board.....	182, 399	removal.....	336	redwood.....	199
See-thru frames.....	418	lumber.....	392	roofing.....	258, 259	resin.....	277
Seismic ties.....	161	OSB.....	42, 51, 391	siding.....	276	sealant.....	78
Self-leveling compound.....	154	paper.....	27	slate.....	260	shingle.....	276
Self-storing storm doors.....	114	piecework rates.....	39	solar.....	280	soffit vents.....	292
Self-tapping screws.....	150	plywood.....	42, 49, 51, 391	starter strip.....	258	southern yellow pine.....	199
SensAire wall control switch.....	141	roof.....	49, 392, 403	wood.....	259	thermoplastic.....	277
Sensor cable, electric.....	589	skip.....	395	wood, demolition.....	336	vinyl.....	276, 401
Sensors		steel framing.....	62	Shoe molding.....	222, 223	western red cedar.....	199
photoelectric.....	589	wall.....	51	Shoe, door.....	286	Sieve analysis, aggregate.....	314
security.....	589	wall, exterior.....	391	Shoring		Sieve, filter sock.....	126, 631
vibration.....	589	wall, interior.....	391	beams.....	345	Sight screen.....	615
Septic		wallboard.....	168, 293	concrete.....	605	Sign lighting.....	586
sewer systems.....	265	Sheds, storage, rental.....	331	equipment rental.....	330	Sign numbers.....	172
tanks.....	529	Sheepsfoot roller.....	138	forms.....	345	Signage, freestanding.....	485
Service doors.....	416	Sheet glass.....	166, 422	heavy duty, rental.....	330	Signal cable.....	592
Service entrance.....	573	Sheet metal.....	403	trench.....	605	Signal crossing.....	486
cable.....	557	access doors.....	266	Shot fasteners.....	231, 390	Signs	
cap.....	544	ducts.....	177	Shovels, earthwork.....	135	architectural signage.....	441
connection.....	129	flashing.....	260, 267	Shower		Braille.....	478
switchboard.....	569	gutters, downspouts.....	167	caulk.....	78	directory.....	441
temporary connection.....	318	hoods.....	270	compartments.....	442, 533	display.....	441
weatherproof.....	570	roofing.....	260, 403	doors.....	271, 442	elevator plates.....	479
wire.....	557			emergency.....	531, 534	handicapped.....	478
				enclosures.....	272	job-type.....	318

reflector.....	617	forms.....	340	loading.....	600	Split-ring connectors.....	163
road closed.....	22	forms, elevated.....	345	moving by hand.....	602	Split-wired outlets.....	129
safety.....	318	grading.....	339	poisoning.....	280	Splitting rock.....	596
street numbers.....	172	membrane.....	94, 339	sealant.....	603	Spotlight, fresnel.....	463
temporary.....	310	rebar.....	90	spreading.....	597	Spray heads, sprinkler.....	621
traffic.....	617	sand fill.....	339	stabilization.....	603	Spray painting.....	238
Silestone countertop.....	96	tennis court.....	466	testing.....	26, 279	deck.....	437
Silicon carbide, sidewalk grits.....	356	Slag.....		treatments.....	280	metals.....	437
Silicon roofing.....	257	crushed.....	126	Soil pipe adapter.....	516	steel.....	436
Silicone caulk.....	78, 410, 411	stone.....	18, 126	Solar.....			
Silicone roof.....		Slat wall paneling.....	243	barricade light.....	22	Sprayed.....	
coating.....	402	Slate.....		collector system pump.....	528	fireproofing.....	409
Sill.....		pavers.....	382	paneling.....	280	polyurethane insulation.....	184
anchors.....	161	paving.....	614	power.....	582	urethane insulation.....	184
blocks.....	378	roofing.....	260, 261	protection.....	471	Sprayers, paint.....	239
bolted.....	390	roofing, demolition.....	102	screen.....	264	rental.....	328
carpentry.....	389	tile.....	287	shingles.....	280	Spread footings.....	377
cover, aluminum.....	286	Sleepers, carpentry.....	51	water heating system.....	528	Spreading soil.....	597
log.....	193	Sleeves, concrete.....	355	water storage tank.....	528	by hand.....	136
mud.....	161	Slicer, bread.....	456	Solar Tek.....	291	Springing.....	625
oak.....	286	Slide bolt lock.....	165	Solar window film.....	419	Spring bronze.....	294
plate gasket.....	182	Slides, playground.....	468	Solariums.....	481	Sprinkler fitter, wage.....	
plates.....	40, 59, 193	Sliding doors.....		Solenoid sprinkler valve.....	189	industrial & commercial.....	309
sealer.....	182	aluminum.....	121	Solid core doors.....		residential.....	10
steel.....	387	closers.....	105	entry.....	107	Sprinkler system.....	188
window.....	296	fire.....	415, 416	hardboard interior.....	116	control.....	189
Sill Seal™.....	182	glass.....	417	luan exterior.....	106	Sprinklers.....	
Silt fence.....	150	glass, insulated.....	417	prehung exterior.....	110	automatic.....	189
Simco walk top.....	243	patio.....	121	steel.....	106	components.....	492, 493
Single-family home costs.....	306	pet door.....	123	Sonotube forms.....	344, 365	connection.....	493
Single-hung windows.....		screen.....	121	Sound board.....	398	control wiring.....	189
aluminum.....	301	vinyl.....	121	Sound control.....	183	fire.....	150
vinyl.....	297	wood.....	121	Sound insulation board.....	182	heads.....	492, 621
Sinkers, nails.....	228	Sliding windows.....	298, 302	Sound reduction paneling.....	464	lawn.....	619
Sinks.....		Slip-formed walls.....	353	Sound system, stage.....	463	pop-up heads.....	189
bar.....	247	Slop sink rough-in.....	531	Soundness testing.....	314	subcontract.....	491
bases.....	290	Slope protection.....	604	Soundproofing fabric.....	471	trencing by hand.....	188
bathroom.....	247, 533	Slopes, shaping, by hand.....	136	Southern pine.....		valves.....	189
cabinets.....	29, 290, 473	Slump block.....	216	fence.....	147, 148	wall hydrants.....	493
cabinets, cutout.....	31	Slurry seal.....	611	lumber.....	195, 197	Sprinkling,.....	
caulk.....	78	Small tool cost.....	310	pressure-treated.....	202	water for excavation.....	138
demolition.....	337	Smart Panel siding.....	275	siding.....	203	Spruce.....	
floor.....	535	Smoke detectors.....	128, 264	timber.....	202	lap siding.....	201
food service.....	457	Smoke vents.....	407	Southern yellow pine.....		logs.....	193
kitchen.....	248, 457, 531, 534	Snakes (sewer), rental.....	328	decking.....	198	pine fir.....	195
laundry.....	248	Snap ties.....	86, 355	flooring.....	197	siding.....	201
marble.....	208	Snow block.....	193	lumber.....	195, 196	Square foot costs,.....	
mop.....	457, 534	Snow-melting cable.....	476, 561	posts.....	205	homes.....	306-307
scullery.....	457	Soap dishes.....	24	pressure-treated.....	202	Square molding.....	225
service.....	248, 534	ceramic.....	288	siding.....	199	Stabilization fabric.....	603, 604
wash.....	531, 535	commercial.....	445	timbers.....	202	Stack, exhaust.....	581
Siphon breaker, irrigation.....	189	Soap dispensers.....	445	Spa enclosure.....	167	Stadium seating.....	474
Site work.....		demolition.....	337	Space frame steel.....	384	Stage.....	
clearing.....	594	Soccer goals.....	465	Spackle.....	238	HVAC.....	464
grading.....	596	Social Security payroll taxes.....	285	Spades, clay, rental.....	320	lighting.....	463
utilities, accessories.....	638	Sod.....	187, 624, 625	Spandrel glass.....	419, 422	sound system.....	463
water meters.....	312	Sod cutters, rental.....	327	Spanish tile roofing.....	261	Stage curtains.....	462
Sizing.....	293	Sodium lamp, high-pressure.....	586	Spar varnish.....	236	drawing equipment.....	463
Skid steer loaders, rental.....	323	Soffit.....		Spark arrestor.....	152	lift equipment.....	463
Skid strips, stair.....	283	demolition.....	102	Special Construction,.....		Stain.....	
Skip sheathing.....	395	forms.....	346	disabled access.....	476	concrete.....	235
Skiploader, rental.....	323	Hardie cement fiber.....	274	Specialty lumber.....	205	deck.....	98
Skirtboard, carpentry.....	56	OSB.....	275	Specific gravity.....	314	paint.....	237
Skylights.....		plaster.....	244	Specifications fee.....	314	tinting.....	237
fixed.....	278	steel.....	68	Speed bumps.....		wood finish.....	236
operable.....	278	systems.....	279	asphalt.....	610	Stained glass.....	470
polycarbonate.....	277	vents.....	292	plastic.....	617	Staining.....	240, 241
roof windows.....	279	vinyl.....	279	Speed limit signs.....	617	floor.....	156
trimmers.....	48, 71	wood.....	46	Spheres, painting.....	437	Stairlifts.....	133
Velux.....	277	Softball, backstops.....	618	Spikes.....	231	Stairs.....	
Slab doors.....	107, 115, 116	Softener, plumbing fixtures.....	250	Spiral.....		aluminum.....	282
Slab-on-grade, concrete.....	94, 352	Software, project scheduling.....	311	stairs, steel.....	385	attic.....	284
Slabs.....		Softwood.....		Spiral staircases.....	282	baluster.....	56
base.....	94	flooring.....	156	Spirals, reinforcing.....	349	basement.....	23, 281
capillary fill.....	339	plywood.....	202	Splash plate.....	255	box.....	281
cast-in-place.....	369	Soil.....		Splices, piles.....	608	curved.....	281
concrete.....	84, 352	amendments.....	622	Split-face block.....	215, 379	disappearing.....	284
demolition.....	336	cement treatment.....	603	Splicing bars.....	348	factory-cut.....	281
edge forms.....	89	compaction.....	597, 599	Split-face block.....	215, 379	framing, piecework rates.....	38
finishes.....	95	covers.....	603	Split-rail fence.....	148	handrails.....	56
floor.....	352	hauling.....	600	Split-rib block.....	379	hardwood.....	281
form, concrete.....	88					log.....	193



L-shaped.....	283	sag rods.....	383	artificial.....	381	lighting.....	582
moving.....	490	sandblasting.....	263	base.....	94	shingle starter.....	258
nosing, bamboo.....	158	security gratings.....	388	cleaning.....	371	Striper, rental.....	325
rail.....	283	shoring.....	605	countertop.....	96	Striping.....	
railing.....	281	stairs.....	282	crushed.....	94, 126	athletic courts.....	467
risers.....	56, 283	stairs, spiral.....	385	cut.....	381	pavement.....	616
skirtboard.....	56	stringers.....	385	masonry.....	216	Striplights.....	582
spiral.....	282	structural, fabrication.....	383	paving.....	382	Stripping.....	
spiral, steel.....	385	testing.....	317	riprap.....	604	forms.....	89
steel.....	282	threaded rod.....	161	roofing.....	260	soil, by hand.....	136
straight.....	281	tilt-up.....	364	slag.....	126	Structural engineering.....	134
strips, anti-skid.....	283	wall framing.....	63	slate.....	260	glazed tile.....	374
treads.....	56, 283	welded wire.....	346	stepping.....	187, 625	steel.....	383
wood.....	281	welding.....	389	vanity tops.....	97	Structural plywood.....	203
Stakes.....		Steel doors.....		veneer.....	381	Structural steel.....	
form.....	205	entry.....	112	veneer, manufactured.....	381	fabrication.....	383, 388
foundation.....	205	exterior.....	110, 111	work.....	381	painting.....	436
steel.....	86	fire-rated.....	109	Stone tracking pad.....	604	Structure moving.....	338
survey.....	205	garage.....	164	Stool.....		Structures, temporary, rental.....	330
Stalls, shower.....	246, 272	patio.....	121	carpentry.....	226	Stucco.....	
Stamped concrete.....	96	prehung.....	414	marble.....	381	demolition.....	102, 337
Standard brick.....	209	screen.....	113	window.....	53	mesh.....	425
Standpipe connection.....	493	Steel doors, fire-rated.....	109	Stop signs.....	617	mix.....	82
Stands, water heater.....	526	Steel framing.....		Stops.....		mold.....	108
Staplers, rental.....	327	anchors.....	59	door.....	171, 225, 420	netting.....	188
Staples, roofing.....	231	backing for drywall.....	70	gas.....	522	paint.....	235
Starter strip.....		beams.....	61	gravel.....	403	painting.....	238, 241, 437
aluminum siding.....	276	blocking.....	62	molding.....	108, 225	plastering.....	244, 427
galvanized flashing.....	268	bracing.....	67	Storage.....		wall assembly.....	35, 58
shingles.....	258	ceilings.....	68	bins.....	310	Stud grade lumber.....	194
thermoplastic siding.....	277	collar beams.....	72	cabinets.....	473	Studios, radio and television.....	488
vinyl siding.....	276	door opening.....	66	ice.....	457	Studs.....	
Starter switches.....	567	dormer studs.....	71	overhead.....	310	carpentry.....	389
Starters, motor.....	567	fascia, piecework.....	76	safes.....	262, 263	demolition.....	104
State cost adjustments.....	12-15	floor joists.....	59	sheds.....	310	dormer.....	48
Steam.....		girders.....	61	sheds, rental.....	331	exterior walls.....	35, 58
baseboard radiation.....	538	joists, ceiling.....	68	shelving.....	448	gable.....	37
bath generator wiring.....	128	joists, piecework.....	73	Storefront windows.....	419	interior walls.....	34, 57
bath, generators.....	285	lally columns.....	58	Store-in-Door.....	114	rule of thumb, steel framing.....	57
cleaning.....	436	layout, piecework.....	73	Storm doors.....	114, 115	steel.....	63, 73
cleaning, masonry.....	371	piecework.....	73	full-view.....	114	steel exterior.....	64
condensate pipe.....	494	purlins.....	72	security.....	115	straightening.....	52
generators.....	285	rafters.....	70	self-storing.....	114	straps.....	163
heating.....	538	rafters, piecework.....	74	Storm drain demolition.....	333	wall assemblies.....	34, 57
Steam meter.....	524	ridgeboard.....	72	Storm sewer.....		wall framing.....	37
Steamers, food service.....	454	rule of thumb.....	56, 57	cleaning.....	631	walls, commercial.....	389
Steamers, wallpaper, rental.....	328	sheathing, piecework.....	74, 76	Storm water control.....	604	Study carrels.....	459
Steel.....		sill plates.....	59	Storm window.....	304	Stump grinders, rental.....	327
blocking.....	62	square foot costs.....	57	Storm, plywood cover.....	274	Stump removal.....	138, 594
buildings.....	483	studs.....	63	StormGuard.....	27	Sturdi-Floor.....	203
conduit, flexible.....	552	subflooring.....	62	Stoves, ovens, ranges.....		Subbase, pavement.....	609
conduit, rigid.....	543	trimmers.....	71	electrical work.....	129	Subcontract.....	
cutting and drilling.....	388	trusses.....	72, 73	residential.....	255	costs defined.....	5
doors.....	106	trusses, piecework.....	74	Strainers.....		driveway paving.....	243
exterior walls.....	64	wall plates.....	68	bronze.....	539	electrical work.....	127
floor joists.....	59	walls, piecework.....	73	hydronic.....	173, 539	elevators.....	133
flooring.....	434	window opening.....	66	wye-pattern.....	539	fire sprinkler systems.....	491
framing.....	56	Steel road plate, rental.....	325	Strand board.....	203	hydroseeding.....	187, 624
framing, rule of thumb.....	57	Steeple.....	485	Straps.....		insulation.....	183
interior walls.....	63	Stem wall.....	93	channel.....	555	painting.....	239
landings.....	385	forms.....	340	conduit hanger.....	555	sprinkler systems.....	491
lath.....	188	Step flashing.....	267, 268	connectors.....	566	stamped concrete.....	369
lintels.....	387	Step lights.....	585	CPVC snap-on tubing.....	508	store front windows.....	419
masonry.....	215	Stepping stones.....	187, 625	hardware.....	163	surface preparation.....	239
mesh.....	91, 349	Steps.....		pipe.....	518	tile shower.....	246
mesh reinforcing.....	349	brick.....	382	post anchor.....	219	well drilling.....	295
mini-mat reinforcing.....	349	concrete.....	95, 351, 354, 360	tie.....	163	costs defined.....	5
ornamental.....	388	flagstone.....	216	Straw bales.....	187, 604	Subcontractor markup.....	5
painted.....	388	manhole.....	636	Straw wattle.....	603	Subflooring.....	
painting.....	436	masonry.....	216	Strawberry, ground cover.....	625	2-4-1.....	203
panel roofing.....	260	painting.....	241	Street.....		adhesive.....	18
piles.....	608	Steps-on-grade, concrete.....	95, 354	illumination.....	486	board.....	62
pipe, black.....	494	Sterilization, pipe.....	629	lighting.....	486	engineered.....	42
pipe, carbon.....	494	Sterilizers, water.....	529	lights.....	587	floating.....	42
plate cutting.....	334	Stick nails.....	229	marking.....	616	installation.....	42, 62
railing.....	253, 386	Stile & rail doors.....	117	numbers, houses.....	172	log homes.....	193
reinforcing.....	89, 346	Stirrup steel reinforcing.....	347	paving.....	610	OSB.....	42, 63
reinforcing, epoxy.....	346	Stock room door.....	418	paving, equipment rental.....	325	piecework rates.....	42
reinforcing, foundation.....	346	Stolons, grass.....	625	sweeper.....	612	plywood.....	42, 62
reinforcing, masonry.....	372	Stone.....		sweeper, rental.....	325	Sturdi-Floor.....	203
rod.....	161	aggregate.....	18	Strip.....		underlayment.....	203
roof deck.....	384	aggregate base.....	609	doors.....	418	Sub-panel connections.....	129
roof framing.....	74			flooring.....	55, 157		

Subsurface exploration .....	279	starter .....	568	educational .....	458	Thermography .....	184
Subway platform .....	487	timer, exhaust fan .....	141	equipment .....	458	Thermometer, steam .....	524
Sump pumps .....	129, 528	wiring .....	129	outlets .....	592	Thermoplastic	
Sumps, roof .....	406	Swivel ring hangers, pipe .....	517	pipe inspection .....	637	siding .....	277
Sun control blinds .....	296	Symbols		studio .....	488	tape .....	467
Sun porch .....	167	lettering .....	467	systems .....	592	Thermostat .....	176
Sun screens .....	388	Synthetic surface		wiring .....	129	Thermostatic	
Sunlamps, wiring .....	128	playing fields .....	465	Teller		mixing valves .....	540
Sunrooms .....	481			automatic .....	452	traps .....	540
Super Jumbo Tex .....	27			counter .....	452	water heaters .....	527
Super Tuff-R .....	398			window .....	453	THHN wire .....	558
Superintendent .....	310, 314			windows .....	452	Thinners .....	238
Supervision costs .....	4, 314			Temperature gauge .....	524	Thompson's WaterSeal .....	236
Supply valve .....	522			Tempering valves .....	540	Threaded	
Supports				Temporary		black steel pipe .....	494
conduit .....	554			enclosures .....	331	carbon steel pipe .....	494
fabricated metal .....	387			fence .....	331	Threaded rod .....	161
PVC .....	551			jackposts .....	186	Thresholds	
Surface				services .....	310	aluminum .....	285
protection paper .....	28			structures .....	480	bamboo .....	158
Surface duct, electric .....	556			structures, rental .....	330	bronze .....	421
Surface preparation				utilities .....	318	high boy .....	108
.....233, 234, 239, 435, 437, 439				wall bracing .....	44, 67	inserts .....	286
Surgeons' scrub sink .....	535			Tennis courts		marble .....	381
rough-in .....	531			installation .....	466	wood .....	222
Surveillance				stripping .....	466	Thrust blocks, concrete .....	627
camera .....	453			windbreak panels .....	466	Thru-the-wall utility fan .....	140
park .....	486			Tension		THWN wire .....	558
Survey				bridging .....	159	Ticket boxes .....	452
building layout .....	595			Termite shield .....	268	Ticket dispenser .....	450
Survey stakes .....	205			Termite treatment .....	207, 280	Tie straps .....	163
Surveying .....	313			Terra cotta, demolition .....	335	Tie wire .....	219
aerial .....	313			Terrazzo		Tier IV EPA pollution	
periodic .....	318			demolition .....	336	control rating .....	581
Sushi serving table .....	454			pavers .....	382	Ties	
Suspended ceiling .....	79, 429			tile .....	382, 433	brick wall .....	219
demolition .....	100, 336			Test caps, plugs, and tees,		collar .....	48
grid systems .....	79, 429			ABS .....	515	concrete .....	355
light fixtures .....	80			Testimony, appraisal .....	18	concrete form .....	86, 355
panels .....	80, 81, 430			Testing		form .....	86, 339
T-bar grid .....	429			acoustical .....	134	hurricane .....	161
tile .....	430			aggregate .....	314	seismic .....	161
Suspension grid, ceiling .....	79			asbestos .....	26	wall, brick .....	159
Sweep pavement .....	612			asphalt .....	315	wall, masonry .....	210, 372
Sweep, door bottom .....	286			brick .....	316	Tile	
Sweeper, rental .....	325			building stone .....	316	acoustical facing .....	374
Swimming pool				cable .....	130	backer board .....	290
complete installation .....	475			concrete .....	315	ceiling .....	82, 430
cover .....	476			fees .....	317	ceramic .....	374, 427
fences .....	150			gunitite .....	316	clay .....	374
gunitite .....	357			hazards .....	26	concrete roof .....	261
heaters, solar .....	250			home .....	26	decorative .....	288
paint .....	237, 438			masonry .....	316	demolition .....	101, 102, 336
resurfacing .....	369			network cable .....	460	epoxy bed .....	382
Swing check valves .....	521			noise .....	134	floor .....	287
Swing gates, aluminum .....	165			percolation .....	265	glazed .....	374
Swinging stage scaffold,				piles .....	606	installation .....	288, 289
purchase .....	330			soil .....	26, 265, 279, 314	marble .....	208
Swings, playground .....	468			sound transmission .....	134	masonry .....	220
Switch box, electric .....	562			steel .....	317	porcelain .....	287
circuits .....	575			thermal .....	184	quarry .....	381, 429
plates .....	23			water .....	26	resilient .....	432
Switch cover plate .....	565			Tetherball post .....	468	roller, rental .....	326
Switchboards .....	570			Textolite countertops .....	96	roofing .....	261
accessories .....	571			Texture		rubber .....	432
instrumentation .....	571			popcorn ceiling .....	169	rubber studded .....	154
meters .....	571			Texture 1-11 .....	203	saws, rental .....	328
transformers .....	571			Texture, drywall .....	169	security, glazed .....	374
weatherproof .....	570			Textured wallboard .....	424	shock-absorbing .....	432
Switches				Theater		simulated roofing .....	260
dimmer .....	564			curtains .....	462	structural facing .....	374
dimmer, fluorescent .....	564			seating .....	474	vinyl floor .....	153, 154
disconnect .....	577			Thermal		wall .....	287
electric .....	129			analysis .....	184	Tile layer, wage	
electrical .....	564			expansion tank .....	249	industrial & commercial .....	309
exhaust fan .....	141			insulation .....	397	residential .....	10
fan control .....	141			mitigation .....	471	Tile shower .....	246
motor .....	567			Thermal and Moisture		Tillers, rental .....	327
power distribution .....	570			Protection .....	397	Tilt double-hung window .....	303
safety .....	568, 569			Thermoflow indicator .....	524	Tilt-up concrete .....	360
security .....	589						

Tilt-up construction	362	Traffic		hardwood	222	Twinaxial cable	593
panels, sandblasting	263	cones	22	molding	226	Twist straps	164
pilasters	362	control equipment rental	326	OSB siding	275	Type K copper pipe	503
Tilt-up painting	437	control signage	318	painting	238, 240	Type L copper pipe	503
Timbers		light	486	pine	226	Tyvek	28, 183
Douglas fir	201	paint	237	redwood	222		
hardwood	396	pavement marking	616	softwood	223		
laminated	396	signs	617	stair	56		
lumber	197, 201	stripes	616	steel panel roofing	260		
pine	202	symbols	616	wallboard	169		
rafter	193	Transaction		window	53		
red cedar	201	window	453	Trim coil	267		
redwood	201	Transformers	572	Trimmers			
treatments	206	indoor	572	carpentry	48		
wood	396	pole mount	577	steel (framing)	71		
Timekeeper costs	314	potential, switchboard	571	Trimming, trench bottom	136		
Timer switches	141, 564	switchboard	571	Triple-track storm doors	114		
Tin		Transit levels, rental	327	Troffer lighting fixtures	80, 190, 583		
ceilings	82	Transit mix concrete	84	Trowel finishing, concrete	95, 356		
shingles	268	Transom lite	414	Troweling machine, rental	321		
Tint		Trap adapter		Trowel-ready mortar	219		
paint	237	ABS	516	Trowels, rental	321		
window	419	copper	512	Truck			
wood finish	236	Traps		bucket	324		
Tire changer	450	float	540	bumpers	365		
Tissue holder	24, 445	thermostatic	540	concrete	350		
TJ truss joists	41, 395	Trash		cranes, rental	319		
Toaster, conveyor type	456	bins	332	excavation	138		
Toggle switch	565, 568	chutes	337, 491	hauling	600		
Toilets	247, 532	enclosure, tilt-up	366	loading by hand	135		
accessories	24, 445	removal	310	rental	139, 324		
augers, rental	328	Trash compactor wiring	130	scales	452		
compartments	442	Trash pumps, rental	324	superintendent's	310		
flush valves	532	Travertine tile	287	water, rental	325		
jobsite	310	Treads	220	Truck driver, wage			
partition, handicapped	478	carpentry	56	industrial & commercial	309		
partitions, demolition	337	concrete, finishing	356	residential	10		
rough-in	530	flagstone	216	Trusses			
temporary	310, 319	marble	381	fink	48, 73		
trailer-mounted	319	rubber	220	gable	49, 73		
Tongue and groove		stair	283	joists	395		
flooring	155	wood	281, 396	log	194		
insulation board	181	Treated lumber	201	roof	48, 72, 395		
sheathing	51	Treating		roof, piecework	38		
siding	199	lumber	207	roof, piecework rates	74		
Tool sheds, rental	331	poles	204	steel	383		
Tools available	4	soil	280	Truss-type reinforcing	372		
Tools, rental	320	wood	207	Tub			
Toothbrush holders		Treatment		sealant	79		
ceramic tile	288	fire retardant	207	whirlpool bath	245		
residential	23	soil poisoning	280	Tube			
Topping, concrete	95, 356	Tree clearing	138, 594	columns, steel	384		
Topsoil		Tree grates	626	nosing	387		
excavation, by hand	136	Trees		pneumatic	491		
placement	187	costs	625	Tubing			
strip	595	planting	624	copper	505		
Torch cutting	334	Trench		electric metallic	544		
Total column defined	5	braces, rental	323	strap, CPVC	508		
Total expense, overhead	310	covers	385	Tubs			
Towel		frame	637	access doors	266		
bars	445	inlets	637	caulk strips	79		
dispensers	445	shaping	597, 602	caulking	78		
racks	24	sheeting	605	enclosures	272		
Towers		shields, rental	323	plumbing	245, 531, 533		
fire pole, playground	469	shoring	605	Tuck pointing	371		
lifting	319	sprinkler pipe	619	Tuff-R insulation	182		
Toxic chemicals, removal	435	Trench plate, steel	325	Tung oil wood finish	236		
Track		Trenchers, rental	139, 323	Turbines	579		
railroad, demolition	334	Trenching	597	additional costs	580		
rolling ladder	459	backhoe	597	fans	407		
stage curtain	462	concrete	338	service station	449		
Tracking pad, stone	604	excavation	136, 597	vents	292		
Tractor		hand	136, 602	vents, roof	141		
demolition	335	hand work	339	Turf			
excavation	596, 601	rock	597	artificial grass	465		
finish shaping	597	sprinkler systems	188	playing fields, grass and			
ripping rock	596	Tri-Flex 30	27	synthetic	465		
rock fill	604	Trim		replacing	619, 624		
site clearing	594	carpentry	226	Turfstone	615		
site grading	596	door	53, 222	Turfstone grass paving	615		
Tractor operator, wage,		exterior	49	Turnstiles	452, 487		
industrial & commercial	309	fireplace	55	Turpentine	238		

**U**

U bolts	518
Ultra Touch	183
Ultrasonic sensors and transceivers	590
Ultraviolet sterilizers, water	529
Underfloor duct	557
Underground communication	541
duct	541
power	541
Underlayment	203, 262, 432
floor	34
particleboard	395
piecework rates	38, 74
roof	27
tile backer board	290
Underpinning, shoring	605
Unions	
black steel	494
CPVC	507
Unistrut inserts	355
Unit heaters	535, 538
Unifurf	465
Unusual labor productivity	4
URD wire	558
Urethane	
exterior finish	236
floor finish	56
insulation	184
sealer	155
sheathing	182
Urinal	
floor-mounted	531
rough-in	530, 531, 532
screens	442
screens, removal	337
wall-hung	530
water-conserving	532
Urns	473
USE wire	558
Using this book	3
Utilities	626
overhead	310
sewer connections	266
sitework piping	628
temporary	318
water	312
Utility	
cabinets	30
fan	139, 140
piping, sitework	628
shelving, wood	270
sinks, food service	457

**V**

Vacation costs	3
Vac-jet pipe cleaning	631
Vac-jetter	
cleaning	631
Vacuum breaker	
anti-siphon	173
atmospheric	538
controllers	618
valves	618
Vacuum systems	290
wiring	130
Vacuum, wet/dry, rental	326
Valance	
cabinet	31
lighting	191
Valley flashing	403

Valuation fees.....	18	intake, roof.....	292	Walk-in coolers.....	457	Walnut	
Valuation, buildings.....	18	louver.....	292	Walkways			
ValueTest bath fan.....	140	plumbing.....	404	asphalt.....	243, 615	parquet.....	158
Valve box.....	221, 619	power.....	142	concrete.....	94, 244, 615	plank flooring.....	155
Valves							
angle.....	522	ridge.....	292	demolition.....	100, 332	Wardrobe cabinets... 458, 472, 473	
backflow.....	312, 522	roof.....	141, 142, 292	edge forms.....	88	Warning signs.....	442, 617
ball.....	522	roof turbine.....	141	forms.....	94	Wash	
cast iron.....	627	screen.....	291	lighting.....	192	concrete finishing.....	356
check.....	519, 521	soffit.....	292	snow-melting cable.....	561	masonry.....	371
circuit balancing.....	539	turbine.....	292	waterproofing.....	294	painting.....	439
control.....	618	Vermiculite					
flow check.....	173, 539	insulation.....	183, 398	Wall			
gate.....	519, 627	roof deck.....	369	access doors.....	266	anchors, glass block.....	381
globe.....	520	soil conditioner.....	623	anchors, masonry.....	372	assemblies, brick.....	209
hose gate.....	523	Vertical blinds.....	296	assemblies, concrete block.....	213	assemblies, exterior.....	35, 58
irrigation.....	618, 622	Vertical discharge exhaust fan... 139					
mixing.....	173, 540	Vertical panels, precast tilt-up... 364					
OD tube.....	522	Vibration sensors.....	589	assemblies, interior.....	34, 57	beds.....	25
pressure-reducing.....	539	Vibrator compaction.....	597	braces.....	44, 67, 164	cladding.....	400
regulator.....	523	Vibrators, rental.....	321	cladding.....	83	cleaning.....	83
relief.....	522, 539	Vibro plate, rental.....	139	courses.....	193	cover plate.....	565
sprinkler.....	189, 620	Vibroflotation treatment.....	603	coverings.....	298	coverings.....	298
sprinkler, lawn.....	620	Video recorder, digital.....	592	demolition.....	100, 103, 335	demolition.....	100, 103, 335
stop.....	522	Videotape recorder.....	458	filler panels.....	31	filler panels.....	31
supply.....	522	Vinyl					
tapping.....	627	acrylic.....	237	casement window.....	299	fireblocks.....	45
tempering.....	540	caulk.....	78	covered wallboard.....	293	footing.....	339
thermostatic mixing.....	173	covered wallboard.....	293	fence.....	149	forms, concrete.....	88, 92, 341
water control.....	523	fence.....	149	flashing.....	270	framing.....	37
Vanity							
bases.....	290	flashing.....	270	framing, piecwork.....	37	framing, steel.....	63, 64, 73
mirrors.....	221	flooring.....	153, 154, 431	framing, steel.....	63, 64, 73	jointing.....	357
Vanity tops							
Corian.....	97	flooring, sheet.....	431	jointing.....	357	painting.....	238, 437
cultured stone.....	97	molding.....	226	panel systems.....	394	piecwork rates, framing.....	73
marble.....	97	runner.....	220	piecwork rates, framing.....	73	plates.....	42, 68
Vapor barriers							
building paper.....	27	screen doors.....	113	protection systems.....	444	reinforcing.....	372
concrete.....	430	siding.....	276, 401	safes.....	262	sawing, concrete.....	370
polyethylene film.....	253	soffit systems.....	279	sheathing, board.....	51	sheathing, exterior.....	391
slab.....	94, 339, 352, 353, 362	tile flooring.....	153	sheathing, interior.....	391	sheathing, lumber.....	392
Vapor tight lights, LED.....	585	wallcovering.....	434, 435	sheathing, OSB.....	51	sheathing, plywood.....	51
Varathane finish.....	236	Vinyl plank flooring.....	154, 432	sheathing, piecwork.....	37, 73	sheathing, plywood.....	51
Varmeter.....	571	Vinyl windows					
Varnish wood finish.....	236	bay.....	299	stiffener.....	193	studs.....	389
Varnishing.....	241	casement.....	299	ties, masonry... 159, 210, 219, 372			
Vault							
door.....	452	double-hung.....	297, 298	Wall jacks, computers.....	594	Wall pack light fixture.....	585
Vault doors.....	418	garden.....	299	Wallboard			
VCR.....	458	half circle.....	299	adhesive.....	18	adhesive.....	18
Vehicle							
access control.....	450	hopper.....	300	demolition.....	102, 335	demolition.....	102, 335
detectors.....	450	jalousie.....	299	gypsum.....	168	hardboard.....	242, 435
vehicle charging station.....	128	picture.....	299	hardboard.....	242, 435	paint preparation.....	239
Velour							
draperies.....	471	single-hung.....	297	paint preparation.....	239	painting.....	238, 241
stage curtains.....	462	sliding.....	298	painting.....	238, 241	prefinished.....	293
Velux							
roof windows.....	279	Vinyl-clad wood windows... 300, 301					
skylights.....	277	Visqueen polyethylene film.....	253	prefinished.....	293	textured.....	293, 424
Veneer							
brick.....	211	Vitrified clay pipe.....	266	textured.....	293, 424	Wallcap.....	288
masonry.....	216	Volatile materials emissions					
reduction, pollution							
control.....	579, 581	adhesive.....	293	removal.....	293	Wallpaper.....	293, 434
Volcanic cinder track.....	465	control.....	579, 581	surface preparation.....	293	adhesive.....	293
Volcanic rock.....	604	Volcanic cinder track.....	465	removal.....	293	removal.....	293
Volleyball posts.....	465	Volcanic rock.....	604	surface preparation.....	293	surface preparation.....	293
Voltmeter.....	571	Volleyball posts.....	465	Walls			
Vycor flashing.....	27	Voltmeter.....	571	brick.....	209	brick.....	209
<b>W</b>				concrete.....	86, 87, 92	concrete.....	86, 87, 92
Waffle pan forms.....	345	Waffle pan forms.....	345	concrete block.....	213, 378	concrete block.....	213, 378
Wage costs defined.....	3	Wage rates.....	10	glass block.....	217, 380	glass block.....	217, 380
Wage rates.....	10	adjusting.....	11	masonry.....	209	masonry.....	209
adjusting.....	11	industrial & commercial.....	309	paint removal.....	233	paint removal.....	233
industrial & commercial.....	309	residential.....	10	paneled wood.....	394	paneled wood.....	394
residential.....	10	Wagon drills.....	595	patching.....	293	patching.....	293
Wagon drills.....	595	rental.....	324	precast panels.....	357	precast panels.....	357
rental.....	324	Wainscot.....	54	retaining.....	375	retaining.....	375
Wainscot.....	54	cap.....	225	sheet metal, area.....	267	sheet metal, area.....	267
cap.....	225	ceramic tile.....	433	tile.....	289	tile.....	289
ceramic tile.....	433	paneling.....	242	tilt-up.....	362	tilt-up.....	362
paneling.....	242	tile.....	287, 289	Water			
tile.....	287, 289	Water					
brackets.....	356	brackets.....	356	jacks.....	356	jacks.....	356
jacks.....	356	jacks.....	356				

safety pans .....	526	Wheelbarrow	226	finishes .....	236
solar .....	249, 528	hauling debris .....	337	floor finishing .....	56, 430
stands .....	526	hauling soil .....	602	flooring .....	55, 155, 430
tankless .....	249	rental .....	327	flooring adhesive .....	159
wiring .....	130	Wheelchair		lumber .....	207
Water meter .....	524	lifts .....	133	paint preparation .....	239
Water table		ramp .....	476	piles .....	606
flashing .....	268	swing platform .....	468	preservative .....	207, 237
molding .....	222, 224	Whirlpool bathtubs .....	245	roofing .....	259
Water-based stain .....	236	wiring .....	128	sealer .....	236
Waterblasting .....	239, 371	White cement .....	82, 427, 433	shingles .....	259
Watering		White roof coating .....	257	stain .....	236
embankment grading .....	597	Whiteboard (chalkboard) .....	440	treatment, lumber .....	207
landscaping .....	621	Whitewash stain .....	237	waterproofing .....	236
sprinkler systems .....	621	Whole house fans .....	141	Wood and composites .....	389
trenching .....	619	Wilsonart countertops .....	96	Wood chip mulch .....	187
Waterproof adhesive .....	18	Wind clips .....	262	Wood doors	
Waterproofing .....	294	Wind turbines .....	132	patio .....	121
acrylic .....	184	Windbreak, tennis .....	466	screen .....	113
asphalt .....	397	Window		Woodcore storm doors .....	115
building .....	382	plywood cover .....	274	Woodwork	
concrete .....	294, 339	removal .....	103	paint preparation .....	239
insulation .....	184	teller .....	453	painting .....	241
masonry .....	218, 235, 294	transaction .....	453	staining .....	241
membrane .....	397	Window air conditioners .....	177	waxing .....	241
multi-surface .....	237	Window wells .....	305	Woodworking glue .....	18
paper .....	27	Window, safety film .....	419	Work tables	
slab .....	339	Window, tint film .....	419	food service .....	454
walkways .....	294	Windows		kitchen .....	454
wood finish .....	236	aluminum single-hung .....	301	Workers' comp insurance .....	185
WaterSeal wood sealer .....	236	aluminum sliding .....	302	Working conditions .....	4
Waterstop, concrete .....	91, 349	apron .....	53	Woven wire partitions .....	444
Wattmeter .....	571	architectural .....	419	Wrecking, demolition .....	104
Waxing		awning .....	21, 300	Wrenches, rental .....	328
concrete .....	356	awning, aluminum .....	302	Wrought iron .....	150
floors .....	238, 431	bank .....	452	railing .....	386
woodwork .....	241	basement .....	301	W-valley flashing .....	267, 268
Weather vanes .....	97	bay .....	299	Wye pattern strainers .....	173, 539
Weatherproof		blinds .....	272	Wyes	
service entrance .....	570	bow, wood .....	304	ABS .....	514
switchboards .....	570	casement .....	299, 300, 301	drain pipe .....	126
Weatherproofing .....	27	casing .....	54		
wood finish .....	236	caulking .....	78	<b>X</b>	
Weatherstripping .....	294, 421	circular, vinyl .....	299	Xerographic prints .....	25
Wedge tie, concrete form .....	355	cleaning .....	83, 331	XHHW wire .....	559
Wedges .....	205	coverings .....	273	X-ray	
Weed eaters, rental .....	327	double-hung .....	303	barriers .....	484
Welded		fixed .....	299	lead mesh fabric .....	471
black steel pipe .....	494	frames, paint removal .....	233	mobile barriers .....	484
carbon steel pipe .....	494	framing .....	44	protection .....	484
mesh .....	91	framing, steel .....	66	viewing panels .....	484
wire mesh .....	349	garden .....	299		
Welding		glass .....	166	<b>Y</b>	
grounding .....	565	grating .....	388	Yard	
machines, rental .....	329	impact .....	301	deck .....	100
rebar .....	348	jalousie .....	299	lighting .....	587
steel .....	389	mantels .....	295	Yardarm, nautical .....	449
tilt-up .....	364	octagonal .....	303	Yellow pine lumber .....	195, 196
Weld-o-lets .....	499	paint preparation .....	239	Yield signs .....	617
Welfare costs .....	3	painting .....	238, 239, 241		
Well drilling, subcontract .....	295	partition .....	443	<b>Z</b>	
Wellpoint dewatering .....	602	picture .....	299	Z-bar flashing .....	267, 268
Wenge cabinets .....	472	reglazing .....	239	Z-brick .....	243
West coast fir lumber .....	195, 196	removal .....	337	Zinc primers .....	234
Western red cedar siding .....	199	roof .....	279, 304	Zone	
Wet paint barricade .....	23	screen .....	300	heating and cooling .....	178
Wet patch roof cement .....	256, 257	seals .....	294	Zone valves .....	492
Wet sandblasting .....	263	security grill .....	485		
Wheel corner guards .....	387	shades .....	296		
Wheel loaders		sills .....	296		
rental .....	138, 139	skylights .....	277		
		steel .....	419		
		stool, marble .....	381		
		stool, MDF .....	226		
		stool, wood .....	226		
		storm .....	304		
		teller .....	452		
		treatment .....	296		
		trim .....	53, 226		
		vinyl .....	297, 298, 299, 300		
		vinyl bay .....	299		
		vinyl casement .....	299		
		vinyl double-hung .....	297, 298		
		vinyl garden .....	299		
		vinyl hopper .....	300		
		vinyl jalousie .....	299		
		vinyl picture .....	299		
		vinyl single-hung .....	297		
		vinyl sliding .....	298		
		vinyl-clad awning .....	300		
		vinyl-clad basement .....	301		
		vinyl-clad casement .....	300, 301		
		vinyl-clad wood .....	300, 301		
		wall .....	422		
		weatherstripping .....	294		
		wood .....	419		
		Wingwall .....	638		
		Wiping stain .....	237		
		Wire			
		building .....	127		
		copper .....	558		
		electric .....	127		
		ground .....	558		
		lath .....	188		
		partitions .....	444		
		Romex .....	559		
		screen .....	264		
		service entrance .....	129, 557		
		shelving .....	270		
		sprinkler .....	620		
		THHN, copper .....	558		
		URD .....	558		
		USE .....	558		
		XHHW, copper .....	559		
		Wire brush			
		finish .....	95		
		painting .....	439		
		Wire glass .....	418		
		Wire mesh .....	91		
		fence .....	143		
		gunite .....	357		
		reinforcing .....	91		
		Wireless access points .....	130		
		Wiremold raceway .....	556		
		Wireway, electrical .....	556		
		Wiring			
		alarms .....	264		
		campus network .....	459		
		computer .....	130, 459		
		control wiring .....	189		
		controllers .....	189		
		doorbell .....	105		
		educational network .....	459		
		electric .....	127		
		fence, electric .....	144		
		irrigation controls .....	189		
		landscape sprinklers .....	189		
		phones .....	591		
		systems .....	591		
		telephone .....	591		
		twisted pair .....	591		
		Wisconsin tee .....	514		
		Wolmanized lumber .....	207		
		Wonderboard tile backer .....	290		
		Wood			
		fences .....	148		
		filler .....	238		

# Practical References for Builders

## National Estimator Cloud



Generate professional construction estimates for all residential and commercial construction from your internet browser. Includes 10 Craftsman construction cost databases, over 40,000 labor and material costs for construction, in an easy-to-use format. Cost estimates are well-organized and thoroughly indexed to speed and simplify writing estimates for nearly any residential or light commercial construction project – new construction, improvement or repair. Convert the bid to an invoice – in either QuickBooks Desktop or QuickBooks Online. Access your estimates from anywhere and on any device with a Web browser. Monthly and one-time billing options available. Visit <https://craftsman-book.com/national-estimator-cloud> for more details.

## 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.

**448 pages, 8½ x 11, \$118.00. Revised annually**  
**Also available as an eBook (PDF), \$59.00 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Paper Contracting: The How-To of Construction Management Contracting



Risk, and the headaches that go with it, have always been a major part of any construction project — risk of loss, negative cash flow, construction claims, regulations, excessive changes, disputes, slow pay — sometimes you'll make money, and often you won't. But many contractors today are avoiding almost all of that risk by working under a construction management contract, where they are simply a paid consultant to the owner, running the job, but leaving him the risk. This manual is the how-to of construction management contracting. You'll learn how the process works, how to get started as a CM contractor, what the job entails, how to deal with the issues that come up, when to step back, and how to get the job completed on time and on budget. Includes a link to free downloads of CM contracts legal in each state. **272 pages, 8½ x 11, \$55.50**

**Also available as an eBook (PDF), \$27.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Electrician's Exam Preparation Guide to the 2017 NEC

Need help in passing the apprentice, journeyman, or master electrician's exam? This is a book of questions and answers based on actual electrician's exams administered over the last few years in states and counties across the U.S. Almost a thousand multiple-choice questions — exactly the type you'll find on the exam — cover every area of electrical installation: electrical drawings, services and systems, transformers, capacitors, distribution equipment, branch circuits, feeders, calculations, measuring and testing, and more. It gives you the correct answer, an explanation, and where to find it in the latest NEC. Also tells how to apply for the test, where to get your application form, how best to study, and what to expect on examination day. **352 pages, 8½ x 11, \$67.99**

**Also available as an eBook (PDF), \$33.99 at [www.craftsman-book.com](http://www.craftsman-book.com)**  
**eBooks also available for 2011 and 2014**

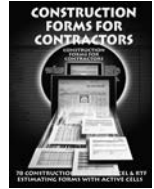
## Fences & Retaining Walls Revised



Everything you need to know to run a profitable business in fence and retaining wall contracting. Takes you through layout and design, construction techniques for wood, masonry, and chain link fences, gates and entries, including finishing and electrical details. How to build retaining and rock walls. How to get your business off to the right start, keep the books, and estimate accurately. The book even includes a chapter on contractor's math.

**416 pages, 8½ x 11, \$98.75**  
**Also available as an eBook (PDF); \$49.38 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Construction Forms for Contractors



This practical guide contains 78 practical forms, letters and checklists, guaranteed to help you streamline your office, organize your jobsites, gather and organize records and documents, keep a handle on your subs, reduce estimating errors, administer change orders and lien issues, monitor crew productivity, track your equipment use, and more. Includes accounting forms, change order forms, forms for customers, estimating forms, field work forms, HR forms, lien forms, office forms, bids and proposals, subcontracts, and more. All are also on the CD-ROM included, in Excel spreadsheets, as formatted Rich Text that you can fill out on your computer, and as PDFs. **360 pages, 8½ x 11, \$48.50**

**Also available as an eBook (PDF), \$24.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Plumber's Handbook Revised, 6th Edition



This new edition explains simply and clearly, in non-technical, everyday language, how to install all components of a plumbing system to comply not only with recent changes in the *International Plumbing Code* and the *Uniform Plumbing Code*, but with the requirements of the *Americans with Disabilities Act*. Originally written for working plumbers to assure safe, reliable, code-compliant plumbing installations that pass inspection the first time, *Plumber's Handbook*, because of its readability, accuracy and clear, simple diagrams, has become the textbook of choice for numerous schools preparing plumbing students for the plumber's exams. Now, with a set of questions for each chapter, full explanations for the answers, and with a 200-question sample exam in the back, this handbook is one of the best tools available for preparing for almost any plumbing journeyman, master or state-required plumbing contracting exam.

**384 pages, 8½ x 11, \$67.00**  
**eBook (PDF) also available; \$33.50 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Steel-Frame House Construction eBook

Framing with steel has obvious advantages over wood, yet building with steel requires new skills that can present challenges to the wood builder. This 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 FREE download with steel framing details and a database of steel materials and manhours, with an estimating program. **320 pages.**

**Only available as an eBook (PDF), \$19.88 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## 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.

**488 pages, 8½ x 11, \$119.50. Revised annually**  
**Also available as an eBook (PDF), \$59.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Excavation & Grading Handbook Revised

The foreman's, superintendent's and operator's guide to highway, subdivision and pipeline jobs: how to read plans and survey stake markings, set grade, excavate, compact, pave and lay pipe on nearly any job. Includes hundreds of informative, on-the-job photos and diagrams that even experienced pros will find invaluable. This new edition has been completely revised to be current with state-of-the-art equipment usage and the most efficient excavating and grading techniques. You'll learn how to read topo maps, use a laser level, set crows feet, cut drainage channels, lay or remove asphaltic concrete, and use GPS and sonar for absolute precision. For those in training, each chapter has a set of self-test questions, and a Study Center CD-ROM included has all 250 questions in a simple interactive format to make learning easy and fun. **512 pages, 8½ x 11, \$65.00**

**Also available as an eBook (PDF), \$32.50 at [www.craftsman-book.com](http://www.craftsman-book.com)**

### Construction Contract Writer



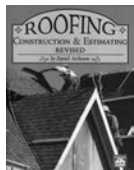
Relying on a "one-size-fits-all" boilerplate construction contract to fit your jobs can be dangerous — almost as dangerous as a handshake agreement. *Construction Contract Writer* lets you draft a contract in minutes that precisely fits your needs and the particular job, and meets both state and federal requirements. You just answer a series of questions — like an interview — to construct a legal contract for each project you take on. Anticipate where disputes could arise and settle them in the contract before they happen. Include the warranty protection you intend, the payment schedule, and create subcontracts from the prime contract by just clicking a box. Includes a feedback button to an attorney on the Craftsman staff to help should you get stumped — *No extra charge. \$199.95*  
Download the *Construction Contract Writer* at:  
<http://www.constructioncontractwriter.com>

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



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. But calculating markup is only part of the picture. If you're going to beat the odds and stay in business — profitably, you also need to know how to write good contracts, manage your crews, work with subcontractors and collect on your work. This book covers the business basics of running a construction company, whether you're a general or specialty contractor working in remodeling, new construction or commercial work. The principles outlined here apply to all construction-related businesses. You'll find tried and tested formulas to guarantee profits, with step-by-step instructions and easy-to-follow examples to help you learn how to operate your business successfully. Includes a link to free downloads of blank forms and checklists used in this book.  
**336 pages, 8½ x 11, \$59.50**  
*Also available as an eBook (ePub, mobi for Kindle), \$39.95 at [www.craftsman-book.com](http://www.craftsman-book.com)*

### Roofing Construction & Estimating, Revised



Detailed, step-by-step instructions, with photographs and diagrams, for installing, repairing and estimating nearly every type of roof covering available today for residential and commercial structures: asphalt shingles, roll roofing, wood shingles and shakes, clay tile, slate, metal, built-up, elastomeric, TPO and more. Provides guidance on sheathing, synthetic and felt underlayment, as well as tips and tricks from an experienced pro for dealing with those difficult points on a roof that are prone to leaks, such as valleys and roof penetrations. For each roofing type, instructions are provided for estimating material quantities and labor costs, with formulas, easy-to-follow examples and sample estimates for you to test your skill. Use these methods to create reliable estimates that will help insure a profit on every job you take. **448 pages, 8½ x 11, \$62.50**  
*eBook (PDF) also available, \$31.25 at [www.craftsman-book.com](http://www.craftsman-book.com)*

### Concrete Construction

Just when you think you know all there is about concrete, many new innovations create faster, more efficient ways to do the work. This comprehensive concrete manual has both the tried-and-tested methods and materials, and more recent innovations. It covers everything you need to know about concrete, along with Styrofoam forming systems, fiber reinforcing adjuncts, and some architectural innovations, like architectural foam elements, that can help you offer more in the jobs you bid on. Every chapter provides detailed, step-by-step instructions for each task, with hundreds of photographs and drawings that show exactly how the work is done. To keep your jobs organized, there are checklists for each stage of the concrete work, from planning, to finishing and protecting your pours. Whether you're doing residential or commercial work, this manual has the instructions, illustrations, charts, estimating data, rules of thumb and examples every contractor can apply on their concrete jobs.  
**288 pages, 8½ x 11, \$28.75**  
*Also available as an eBook (PDF), \$14.38 at [www.craftsman-book.com](http://www.craftsman-book.com)*

### Craftsman eLibrary



Craftsman's eLibrary license gives you immediate access to 60+ PDF eBooks in our bookstore for 12 full months!  
**You pay only one low price. \$149.99**  
Visit [www.craftsman-book.com](http://www.craftsman-book.com) for more details.

### 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, handy look-up features, and the ability to capture and print out for your crew the instructions and diagrams for any job. **792 pages, 8½ x 11, \$65.00**  
*Also available as an eBook (PDF), \$32.50 at [www.craftsman-book.com](http://www.craftsman-book.com)*

### National Building Cost Manual

Square-foot costs for residential, commercial, industrial, military, schools, greenhouses, churches and farm buildings. Includes important variables that can make any building unique from a cost standpoint. Quickly work up a reliable budget estimate based on actual materials and design features, area, shape, wall height, number of floors, and support requirements. Now includes free download of Craftsman's easy-to-use software that calculates total in-place cost estimates or appraisals. Use the regional cost adjustment factors provided to tailor the estimate to any jobsite in the U.S. Then view, print, email or save the detailed PDF report as needed.  
**280 pages, 8½ x 11, \$98.00. Revised annually**  
*Also available as an eBook (PDF), \$49.00 at [www.craftsman-book.com](http://www.craftsman-book.com)*



### 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.  
**552 pages, 8½ x 11, \$117.75. Revised annually**  
*Also available as an eBook (PDF), \$58.88 at [www.craftsman-book.com](http://www.craftsman-book.com)*



### Estimating Home Building Costs, Revised

Estimate every phase of residential construction from site costs to the profit margin you include in your bid. Shows how to keep track of manhours and make accurate labor cost estimates for site clearing and excavation, footings, foundations, framing and sheathing finishes, electrical, plumbing, and more. Provides and explains sample cost estimate worksheets with complete instructions for each job phase. This practical guide to estimating home construction costs has been updated with digital *Excel* estimating forms and worksheets that ensure accurate and complete estimates for your residential projects. Enter your project information on the worksheets and *Excel* automatically totals each material and labor cost from every stage of construction to a final cost estimate worksheet. Load the enclosed CD-ROM into your computer and create your own estimate as you follow along with the step-by-step techniques in this book.  
**336 pages, 8½ x 11, \$38.00**  
*Also available as an eBook (PDF), \$19.00 at [www.craftsman-book.com](http://www.craftsman-book.com)*



### National Appraisal Estimator

An Online Appraisal Estimating Service. Produce credible single-family residence appraisals — in as little as five minutes. A smart resource for appraisers using the cost approach. Reports consider all significant cost variables and both physical and functional depreciation. For more information, visit  
**[www.craftsman-book.com/national-appraisal-estimator-online-software](http://www.craftsman-book.com/national-appraisal-estimator-online-software)**



### Estimating Electrical Construction Revised

Estimating the cost of electrical work can be a very detailed and exacting discipline. It takes specialized skills and knowledge to create reliable estimates for electrical work. See how an expert estimates materials and labor for residential and commercial electrical construction. Learn 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. This book provides extensive labor unit tables and blank forms on a CD for estimating your next electrical job.  
**272 pages, 8½ x 11, \$59.00**  
*Also available as an eBook (PDF), \$29.50 at [www.craftsman-book.com](http://www.craftsman-book.com)*

### Builders Guide to Swimming Pool Construction

Break into the lucrative swimming pool construction business with this practical how-to guide. Here you'll learn how to get the permits and do the surveying, planning and layout for a typical pool, including how to read a soils report. You'll read about the excavation, backfill, soil compaction, sand and gravel bedding and drainage requirements, and mechanical systems such as pumps, heaters, filters, skimmers, and solar systems. Covers underground piping, including drain, supply, and gas; and electrical work, including grounding and supply to breaker, pump, underwater lighting, and heater. Shows wood and pre-fabricated metal forms for walls, steps, spas, equipment base and diving board base, and how to install bar and mesh steel reinforcement. Covers cast-in-place and sprayed concrete and modern pool finishes. Includes scheduling, and a section on estimating labor, material and equipment costs.

**240 pages, 8½ x 11, \$49.95. Published by Builder's Book, Inc.**

### 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 removal and installation work. Gives step-by-step instructions for the work, with helpful diagrams, and home improvement shortcuts and tips from experts.

**548 pages, 8½ x 11, \$118.75. Revised annually**

**Also available as an eBook (PDF), \$59.38 at [www.craftsman-book.com](http://www.craftsman-book.com)**

### Estimating Excavation Revised eBook



How to calculate the amount of dirt you'll have to move and the cost of owning and operating the machines you'll do it with. Detailed, step-by-step instructions on how to assign bid prices to each part of the job, including labor and equipment costs. Also, the best ways to set up an organized and logical estimating system, take off from contour maps, estimate quantities in irregular areas, and figure your overhead.

This revised edition includes a chapter on earthwork estimating software. As with any tool, you have to pick the right one. Written by an experienced dirt contractor and instructor of computer estimating software, this chapter covers the program types, explains how they work, gives the basics of how to use them, and discusses what will work best for the type of work you handle. This e-Book is the download version of the book in text searchable, PDF format. Craftsman eBooks are for use in the freely distributed Adobe Reader and are compatible with Reader 6.0 or above.

**550 pages**

**Only available as eBook (PDF) \$21.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

### Builder's Guide to Accounting Revised

Step-by-step, easy-to-follow guidelines for setting up and maintaining records for your building business. This practical guide to all accounting methods shows how to meet state and federal accounting requirements, explains the new depreciation rules, and describes how the Tax Reform Act can affect the way you keep records. Full of charts, diagrams, simple directions and examples to help you keep track of where your money is going. Recommended reading for many state contractor's exams. Each chapter ends with a set of test questions, and a CD-ROM included FREE has all the questions in interactive self-test software. Use the Study Mode to make studying for the exam much easier, and Exam Mode to practice your skills. **360 pages, 8½ x 11, \$61.50**

**Also available as an eBook (PDF), \$30.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

### 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**

### Insurance Restoration Contracting: Startup to Success

Insurance restoration — the repair of buildings damaged by water, fire, smoke, storms, vandalism and other disasters — is an exciting field of construction that provides lucrative work that's immune to economic downturns. And, with insurance companies funding the repairs, your payment is virtually guaranteed. But this type of work requires special knowledge and equipment, and that's what you'll learn about in this book. It covers fire repairs and smoke damage, water losses and specialized drying methods, mold remediation, content restoration, even damage to mobile and manufactured homes. You'll also find information on equipment needs, training classes, estimating books and software, and how restoration leads to lucrative remodeling jobs. It covers all you need to know to start and succeed as the restoration contractor that both homeowners and insurance companies call on first for the best jobs.

**640 pages, 8½ x 11, \$69.00**

**Also available as an eBook (PDF), \$34.50 at [www.craftsman-book.com](http://www.craftsman-book.com)**



### Building Code Compliance for Contractors & Inspectors

An answer book for both contractors and building inspectors, this manual explains what it takes to pass inspections under the 2009 *International Residential Code*. It includes a code checklist for every trade, covering some of the most common reasons why inspectors reject residential work — footings, foundations, slabs, framing, sheathing, plumbing, electrical, HVAC, energy conservation and final inspection. The requirement for each item on the checklist is explained, and the code section cited so you can look it up or show it to the inspector. Knowing in advance what the inspector wants to see gives you an (almost unfair) advantage. To pass inspection, do your own pre-inspection before the inspector arrives. If your work requires getting permits and passing inspections, put this manual to work on your next job. If you're considering a career in code enforcement, this can be your guidebook. **8½ x 11, 232 pages, \$32.50**

**Also available as an eBook (PDF), \$16.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**

### 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.

**468 pages, 8½ x 11, \$118.50. Revised annually**

**Also available as an eBook (PDF), \$59.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**



### Pipe & Excavation Contracting Revised

This popular manual has been updated and improved to bring it more current with modern earthmoving and trenching equipment, refined excavation techniques, stricter safety rules, and improved materials. Shows how to read plans and compute quantities for both trench and surface excavation, figure crew and equipment productivity rates, estimate unit costs, bid the work, and get the bonds you need. Learn how to choose the right equipment for each job, use GPS, how to lay all types of water and sewer pipe, work on steep slopes or in high groundwater, efficiently remove asphalt and rock, and the various pipe, joints and fittings now available. Explains how to switch your business to excavation work when you don't have pipe contracts, and how to avoid the pitfalls that can wipe out your profits on any job. **328 pages, 8½ x 11, \$55.00**

**Also available as an eBook (PDF), \$27.50 at [www.craftsman-book.com](http://www.craftsman-book.com)**

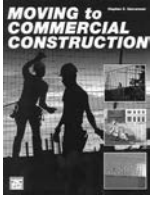
### Construction Estimating Reference Data eBook

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.

**Available only as an eBook (PDF), \$29.50 at [www.craftsman-book.com](http://www.craftsman-book.com)**



## Moving to Commercial Construction



In commercial work, a single job can keep you and your crews busy for a year or more. The profit percentages are higher, but so is the risk involved. This book takes you step-by-step through the process of setting up a successful commercial business: finding work, estimating and bidding, value engineering, getting through the submittal and shop drawing process, keeping a stable work force, controlling costs, and promoting your business. Explains the design/build and partnering business concepts and their advantage over the competitive bid process. Includes sample letters, contracts, checklists and forms that you can use in your business, plus a CD-ROM with blank copies in several word-processing formats for both Mac™ and PC computers. **256 pages, 8½ x 11, \$42.00**  
**Also available as an eBook (PDF), \$21.00 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Commercial Metal Stud Framing



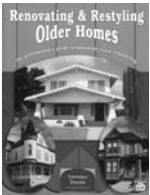
Master the transition from wood to metal stud framing with this comprehensive guide. Written by industry expert Ray Clark, this book offers step-by-step instructions, essential tools, and proven techniques to excel in commercial metal stud framing. Ideal for experienced wood framers, it includes hundreds of job site photos and valuable tips to help you work quickly, accurately, and safely on commercial projects.

**208 pages, 8½ x 11, \$65.50**  
**Also available as eBook PDF, \$32.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Planning Drain, Waste & Vent Systems

How to design plumbing systems in residential, commercial, and industrial buildings. Covers designing systems that meet code requirements for homes, commercial buildings, private sewage disposal systems, and even mobile home parks. Includes relevant code sections and many illustrations to guide you through what the code requires in designing drainage, waste, and vent systems. **192 pages, 8½ x 11, \$39.95**

## Renovating & Restyling Older Homes



Any builder can turn a run-down old house into a showcase of perfection — if the customer has unlimited funds to spend. Unfortunately, most customers are on a tight budget. They usually want more improvements than they can afford — and they expect you to deliver. This book shows how to add economical improvements that can increase the property value by two, five or even ten times the cost of the remodel. Sound impossible? Here you'll find the secrets of a builder who has been putting these techniques to work on Victorian and Craftsman-style houses for twenty years. You'll see what to repair, what to replace and what to leave, so you can remodel or restyle older homes for the least amount of money and the greatest increase in value.

**416 pages, 8½ x 11, \$33.50**

## National Plumbing & HVAC Estimator



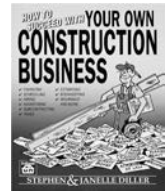
Manhours, labor and material costs for all common plumbing and HVAC work in residential, commercial, and industrial buildings. You can quickly work up a reliable estimate based on the pipe, fittings and equipment required. Every plumbing and HVAC estimator can use the cost estimates in this practical 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.

**480 pages, 8½ x 11, \$118.25. Revised annually**  
**eBook (PDF) also available, \$59.13 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## 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**

## How to Succeed With Your Own Construction Business



Everything you need to start your own construction business: setting up the paperwork, finding the jobs, 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**  
**eBook (PDF) also available, \$14.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Contractor's Guide to QuickBooks by Online Accounting

This book is designed to help a contractor, bookkeeper and their accountant set up and use QuickBooks Desktop specifically for the construction industry. No use re-inventing the wheel, we have used this system with contractors for over 30 years. It works and is now the national standard. By following the steps we outlined in the book you, too, can set up a good system for job costing as well as financial reporting.

**156 pages, 8½ x 11, \$68.50**

## Basic Engineering for Builders

This book is for you if you've ever been stumped by an engineering problem on the job, yet wanted to avoid the expense of hiring a qualified engineer. Here you'll find engineering principles explained in non-technical language and practical methods for applying them on the job. With the help of this book you'll be able to understand engineering functions in the plans and how to meet the requirements, how to get permits issued without the help of an engineer, and anticipate requirements for concrete, steel, wood and masonry. See why you sometimes have to hire an engineer and what you can undertake yourself: surveying, concrete, lumber loads and stresses, steel, masonry, plumbing, and HVAC systems. This book is designed to help you, the builder, save money by understanding engineering principles that you can incorporate into the jobs you bid.

**400 pages, 8½ x 11, \$39.50**

**eBook (PDF) also available; \$19.75 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Home Building Mistakes & Fixes

This is an encyclopedia of practical fixes for real-world home building and repair problems. There's never an end to "surprises" when you're in the business of building and fixing homes, yet there's little published on how to deal with construction that went wrong - where out-of-square or non-standard or jerry-rigged turns what should be a simple job into a nightmare. This manual describes jaw-dropping building mistakes that actually occurred, from disastrous misunderstandings over property lines, through basement floors leveled with an out-of-level instrument, to a house collapse when a siding crew removed the old siding. You'll learn the pitfalls the painless way, and real-world working solutions for the problems every contractor finds in a home building or repair jobsite. Includes dozens of those "surprises" and the author's step-by-step, clearly illustrated tips, tricks and workarounds for dealing with them.

**384 pages, 8½ x 11, \$52.50**

**eBook (PDF) also available, \$26.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Contractor's Survival Manual Revised

The "real skinny" on the down-and-dirty survival skills that no one likes to talk about - unique, unconventional ways to get through a debt crisis: what to do when the bills can't be paid, finding money and buying time, conserving income, transferring debt, setting payment priorities, cash float techniques, dealing with judgments and liens, and laying the foundation for recovery. Here you'll find out how to survive a downturn and the key things you can do to pave the road to success. Have this book as your insurance policy; when hard times come to your business it will be your guide. **336 pages, 8½ x 11, \$38.00**

**Also available as an eBook (PDF), \$19.00 at [www.craftsman-book.com](http://www.craftsman-book.com)**

## Construction Surveying & Layout



A practical guide to simplified construction surveying. How to divide land, use a transit and tape to find a known point, draw an accurate survey map from your field notes, use topographic surveys, and the right way to level and set grade. You'll learn how to make a survey for any residential or commercial lot, driveway, road, or bridge – including how to figure cuts and fills

and calculate excavation quantities. Use this guide to make your own surveys, or just read and verify the accuracy of surveys made by others. **244 pages, 8½ x 11, \$57.95**

## Builder's Guide to Drainage & Retaining Walls



Creating an adequate drainage system is the critical first step in most construction projects. Retaining walls are integral to the design plan when used to achieve level grade. Here you'll find details for determining slope drainage, doing the grading, complying with street drainage requirements, and dealing with lots with septic systems. Many types of retaining walls are

covered, including modular unit walls, bin and crib walls, and more. Also provides tables for estimating concrete quantities for both poured-in-place and masonry and concrete walls. Includes detailed recommendations for retaining walls in most of the situations you're likely to encounter. Includes a CD-ROM that brings you the entire book in an Adobe PDF file, for jobsite reference and quick word search. (This file has no print capability.) A second PDF file includes 100 sample details you can print and carry along on jobs. **294 pages, 8½ x 11, \$59.95**

## Builder's Guide to Stucco, Lath & Plaster

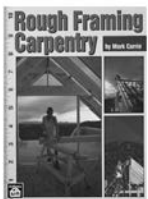


Stucco is a durable, low-maintenance exterior surface widely used on homes throughout the world. This practical manual covers every aspect of stucco design, construction and repair. You'll find techniques for attaching stucco to wood frames, steel frames, sheathed material, and masonry. Includes step-by-step instructions on how to install flashing, corner beads, casing beads, control joints, weather-resistant barriers,

exterior insulation systems, and one-coat stucco systems. Shows the recommended method for mixing and applying stucco, both manually and by machine, and illustrates techniques for producing different textures and for creating decorative plaster work such as implants and molds. Explains how to estimate labor and material costs for stucco, as well as equipment rental fees. Also includes practical instructions for stucco maintenance and repair. COMPANION CD-ROM – The book includes a CD-ROM with the complete text in Adobe PDF format, for jobsite reference and quick word search. (There is no print feature on the CD-ROM.)

**Published by Builder's Book Inc. 284 pages, 8½ x 11, \$49.95**

## 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**

## Building Layout

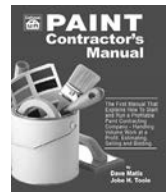
Shows how to use a transit to locate a building correctly on the lot, plan proper grades with minimum excavation, find utility lines and easements, establish correct elevations, lay out accurate foundations, and set correct floor heights. Explains how to plan sewer connections, level an out-of-level foundation, use a story pole and batterboards, work on steep sites, and minimize excavation costs. **240 pages, 5½ x 8½, \$22.00**

## Paint Contractor's Manual

How to start and run a profitable paint contracting company: getting set up and organized to handle volume work, avoiding mistakes, getting maximum production from your crews and the most value from your advertising dollar. Shows how to estimate all prep and painting. Loaded with manhour estimates, sample forms, contracts, charts, tables and examples you can use.

**224 pages, 8½ x 11, \$46.50**

**eBook (PDF) also available; \$23.25 at [www.craftsman-book.com](http://www.craftsman-book.com)**



## Build Smarter with Alternative Materials

New building products are coming out almost every week. Some of them may become new standards, as sheetrock replaced lath and plaster some years ago. Others are little more than a gimmick. To write this manual, the author researched hundreds of products that have come on the market in recent years. The ones he describes in this book will do the job better, creating a superior, longer-lasting finished product, and in many cases also save you time and money. Some are made with recycled products — a good selling point with many customers. But most of all, they give you choices, so you can give your customers choices. In this book, you'll find materials for almost all areas of constructing a house, from the ground up. For each product described, you'll learn where you can get it, where to use it, what benefits it provides, any disadvantages, and how to install it — including tips from the author. And to help you price your jobs, each description ends with manhours — for both the first time you install it, and after you've done it a few times. **336 pages, 8½ x 11, \$34.75**

## Concrete & Formwork

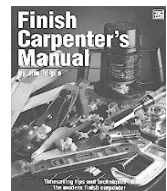
This practical manual has all the information you need to select and pour the right mix for the job, lay out the structure, choose the right form materials, design and build the forms, and finish and cure the concrete. Nearly 100 pages of step-by-step instructions show how to construct and erect most types of site-fabricated wood forms used in residential construction.

**176 pages, 8½ x 11, \$17.75**



## Finish Carpenter's Manual

Everything you need to know to be a finish carpenter: assessing a job before you begin, and tricks of the trade from a master finish carpenter. Easy-to-follow instructions for installing doors and windows, ceiling treatments (including fancy beams, corbels, cornices and moldings), wall treatments (including wainscoting and sheet paneling), and the finishing touches of chair, picture, and plate rails. Specialized interior work includes cabinetry and built-ins, stair finish work, and closets. Also covers exterior trims and porches. Includes manhour tables for finish work, and hundreds of illustrations and photos. **208 pages, 8½ x 11, \$32.50**



## 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 \$250-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**

## Construction Inspection Manual, 9th Edition

This extensively revised and updated ninth edition is updated with detailed testing procedures, and inspection checklists covering everything from sitework and earthwork to finishes and electrical installations.

**376 pages, 8½ x 11, \$94.95**

**Handbook of Construction Contracting, Vol. 1**

Volume 1: Everything you need to know to start and run your construction business; the pros and cons of each type of contracting, the records you'll need to keep, and how to read and understand house plans and specs so you find any problems before the actual work begins. All aspects of construction are covered in detail, including all-weather wood foundations, practical math for the job site, and elementary surveying.  
**416 pages, 8½ x 11, \$32.75**

**Handbook of Construction Contracting, Vol. 2**

Volume 2: Everything you need to know to keep your construction business profitable, including estimating methods, controlling costs, concrete, masonry, rough carpentry, roof covering, insulation, doors and windows, exterior finishes, specialty finishes, scheduling, managing workers, marketing, spec building and land development.  
**320 pages, 8½ x 11, \$33.75**

Now you can generate professional estimates from your internet browser with *National Estimator Cloud*.  
<https://craftsman-book.com/national-estimator-cloud>



**Craftsman Book Company**  
 6058 Corte del Cedro  
 Carlsbad, CA 92011

**Call me.**  
**1-800-829-8123**  
 Fax (760) 438-0398

**In A Hurry?**

We accept phone orders charged to your

Visa,  MasterCard,  Discover or  American Express

Card# \_\_\_\_\_

Exp. date \_\_\_\_\_ CVV# \_\_\_\_\_ Initials \_\_\_\_\_

**Tax Deductible:** Treasury regulations make these references tax deductible when used in your work. Save the canceled check or charge card statement as your receipt.

Name \_\_\_\_\_

e-mail address (for order tracking and special offers) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_  This is a residence

Total enclosed \_\_\_\_\_ (In California add 7.5% tax)

*Free Media Mail shipping, within the US,  
 when your check covers your order in full.*

**10-Day Money Back Guarantee**

**Order online [www.craftsman-book.com](http://www.craftsman-book.com)**

**Prices subject to change without notice**

- 39.50 Basic Engineering for Builders
- 34.75 Build Smarter with Alternative Materials
- 61.50 Builder's Guide to Accounting Revised
- 59.95 Builder's Guide to Drainage & Retaining Walls
- 49.95 Builder's Guide to Stucco, Lath & Plaster
- 49.95 Builder's Guide to Swimming Pool Construction
- 32.50 Building Code Compliance for Contractors & Inspectors
- 22.00 Building Layout
- 65.50 Commercial Metal Stud Framing
- 28.75 Concrete Construction
- 17.75 Concrete and Formwork
- 48.50 Construction Forms for Contractors
- 94.95 Construction Inspection Manual Revised
- 57.95 Construction Surveying & Layout
- 68.50 Contractor's Guide to *QuickBooks* by Online Accounting
- 49.50 Contractor's Plain English Legal Guide
- 38.00 Contractor's Survival Manual Revised
- 65.00 Craftsman's Construction Installation Encyclopedia
- 67.99 Electrician's Exam Prep Guide to the 2017 *NEC*
- 59.00 Estimating Electrical Construction Revised
- 38.00 Estimating Home Building Costs, Revised
- 65.00 Excavation & Grading Handbook Revised
- 98.75 Fences & Retaining Walls, Revised
- 32.50 Finish Carpenter's Manual
- 32.75 Handbook of Construction Contracting Volume 1
- 33.75 Handbook of Construction Contracting Volume 2

- 52.50 Home Building Mistakes & Fixes
- 28.50 How to Succeed With Your Own Const. Business
- 69.00 Insurance Restoration Contracting: Startup to Success
- 59.50 Markup & Profit: A Contractor's Guide, Revisited
- 42.00 Moving to Commercial Construction
- 98.00 National Building Cost Manual w/FREE download of Craftsman's easy-to-use software
- 117.75 National Electrical Estimator
- 118.75 National Home Improvement Estimator
- 118.00 National Painting Cost Estimator
- 118.25 National Plumbing & HVAC Estimator
- 119.50 National Renovation & Insurance Repair Estimator
- 118.50 National Repair & Remodeling Estimator
- 46.50 Paint Contractor's Manual
- 55.50 Paper Contracting:  
 The How-To of Construction Management Contracting
- 55.00 Pipe & Excavation Contracting Revised
- 39.95 Planning Drain, Waste & Vent Systems
- 67.00 Plumber's Handbook Revised, 6th Edition
- 24.75 Profits in Buying & Renovating Homes
- 33.50 Renovating & Restyling Older Homes
- 62.50 Roofing Construction & Estimating, Revised
- 26.50 Rough Framing Carpentry
- 25.50 Wood Frame House Construction
- 117.50 National Construction Estimator