

\$87.50



2015 NATIONAL CONSTRUCTION ESTIMATOR

63rd Edition

Edited by Richard Pray



Includes inside the back cover:

Inside the back cover of this book you'll find a software download certificate. To access the download, follow the instructions printed there. The download includes the National Estimator, an easy to-use estimating program with all the cost estimates in this book. The software will run on PCs using Windows XP, Vista, 7 or 8 operating systems.

Quarterly price updates on the Web are free and automatic all during 2015. You'll be prompted when it's time to collect the next update. A connection to the Web is required.

Download all of Craftsman's most popular costbooks for one low price with the Craftsman Site License. <http://CraftsmanSiteLicense.com>



- Turn your estimate into a bid.
- Turn your bid into a contract.
- ConstructionContractWriter.com



Craftsman Book Company

6058 Corte del Cedro, Carlsbad, CA 92011

Buy similar Craftsman Book Co. titles here: <https://www.Craftsman-Book.com>

Contents

A complete index begins on page 643

How to Use This Book	3-5	Construction Economics Division	311
Abbreviations and Symbols	6	Industrial & Commercial Division Labor Cost	312
Craft Codes and Crews	7-9	Industrial and Commercial Division	313-642
Residential Division Labor Cost	10	01 General Requirements	313-335
Adjusting Labor Costs	11	02 Existing Conditions	335-341
Area Modification Factors	12-15	03 Concrete	342-374
Credits and Acknowledgments	16	Concrete formwork	343
Residential Division	17-308	Reinforcing steel	349
Adhesives	17	Foundations	364
Basement doors	23	04 Masonry	374-386
Building permit fees	28	Reinforcing and flashing	375
Cabinets, kitchen	29	Brick and block walls	377
Carpentry, rule of thumb	32	05 Metals	386-392
Carpentry, assemblies	33	Structural steel	386
Carpentry, piecework rates	37	Steel floor and roof decking	388
Carpentry, detailed breakdown	39	06 Wood and Composites	393-401
Carpentry, finish work	51	Framing carpentry	393
Carpentry, steel	56	07 Thermal & Moisture Protection	401-416
Ceilings, suspended	79	Thermal insulation	401
Concrete work	84	Roof insulation	403
Decking	98	Membrane roofing	405
Demolition	100	08 Openings	416-427
Doors, jambs, frames, and trim	105	Metal doors	416
Electrical work, subcontract	127	Hardware	424
Elevators and lifts, subcontract	133	09 Finishes	427-444
Excavation and backfill	135	Gypsum wallboard	427
Fences	142	Ceilings and flooring	434
Fire sprinkler systems	150	10 Specialties	444-453
Flooring	153	Partitions	446
Framing connectors	159	11 Equipment	453-474
Garage doors	165	12 Furnishings	474-479
Glass, glazing	166	13 Special Construction	479-492
Gutters and downspouts	168	14 Conveying Equipment	492-495
Gypsum drywall and accessories	168	21 Fire Suppression	495-497
Hardware	170	22 Plumbing	498-539
Heating and cooling	173	Pipe and fittings	498
Insulation	181	Hangers and supports	520
Insurance and bonding	185	Valves, pumps, gauges	523
Landscaping	187	23 HVAC	539-545
Lighting fixtures	190	Gas fired heaters	539
Log home construction	193	Hydronic & steam heating	541
Lumber and plywood	195	26 Electrical	545-591
Markup (overhead and profit)	210	Rigid steel conduit	547
Masonry	211	EMT conduit and wire	550
Mouldings	224	PVC conduit and wire	555
Paint removal	235	Conduit supports & hangers	558
Paints, coatings, and supplies	236	Wire and cable	561
Paneling	244	Lighting	585
Paving	245	27 Communications	592-597
Plastering	246	31 Earthwork	597-612
Plumbing fixtures and equipment	247	Excavation and backfill	600
Plumbing and heating piping	253	Shoring, bulkheads, piles	608
Roofing	258	32 Exterior Improvements	612-629
Sheet metal	269	Paving and curbs	612
Siding	277	Fencing and gates	620
Skylights	280	33 Utilities	629-642
Stairs	284	Pressure water pipe	631
Taxes, Payroll	288	Drain pipe	633
Tile	290	Index	643
Wallcoverings	296		
Windows	300		

This Book Is an Encyclopedia of 2015 Building Costs

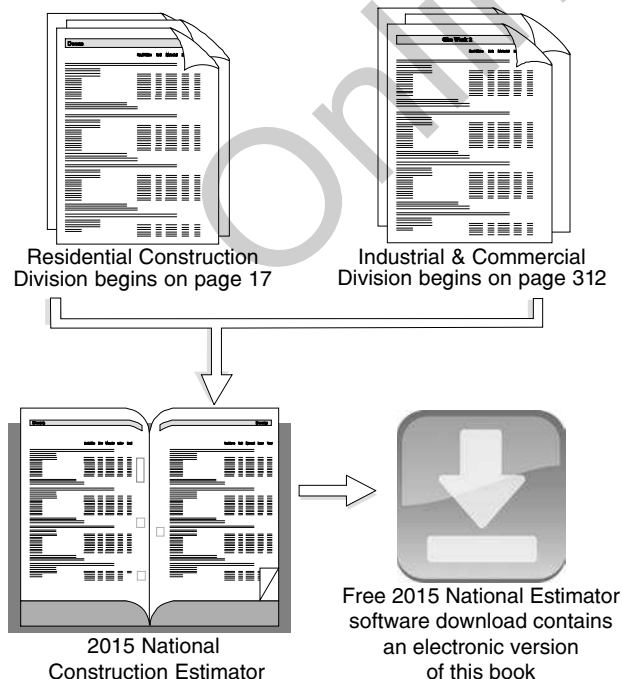
The 2015 National Construction Estimator lists estimated construction costs to general contractors performing the work with their own crews, as of mid-2015. Overhead & profit are not included.

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 311 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 643.

National Estimator Inside the back cover of this book you'll find a software download certificate. To access the download, follow the instructions printed there. The download includes an easy to-use estimating program with all the cost estimates in this book. The software will run on PCs using Windows XP, Vista, 7, 8 or 8.1 operating systems.

When the National Estimator program has been installed, click Help on the menu bar to see a list of topics that will get you up and running. Or go online to www.costbook.com and click the ShowMe tutorial link to view an interactive tutorial for National Estimator.



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 mid-2015. Discounts may be available for purchases in larger volume.

Quarterly prices updates on the Web are free and automatic all during 2015. You'll be prompted when it's time to collect the next update. A connection to the Web is required.

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.

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 312 (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 186 and 288.

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 312 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 312 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.

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.

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.

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 323 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 210 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 210 for an example of how markup is calculated. Markup includes overhead and profit and may be the most difficult item to estimate.

Keep In Mind

Labor and Material Costs Change. Costs were compiled in the fall of 2014 and projected to mid-2015 based on recent price trends. These estimates will be accurate for some materials and inaccurate for others. No one can predict every change in material prices.

How Accurate Are These Figures? As accurate as possible considering that the estimators who wrote this book 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, had to project material costs at least 6 months into the future, and had no record of how much work the crew that will be assigned to the job 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 what the correct costs are, 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 your 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.



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

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

To install 1,000 square feet of ½" BC wall sheathing at .016 manhours per square foot, that crew would need 16 manhours (one 8-hour day for a crew of two).

Notice also in the table below that the cost per manhour for crew B1 is listed as \$32.78. That's the average for a residential laborer (listed at \$29.36 per hour on page 10) and a residential carpenter (listed at \$36.20 per hour): \$29.36 plus \$36.20 is \$65.56. Divide by 2 to get \$32.78, 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 installation time (in manhours) multiplied by the cost per manhour. For example, on page 51 the labor cost listed for ½" BC wall sheathing is \$0.52 per square foot. That's the installation time (.016 manhours per square foot) multiplied by \$32.78, the average cost per manhour for crew B1.

Residential Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
B1	\$32.78	1 laborer and 1 carpenter	BR	\$34.73	1 lather
B2	\$33.92	1 laborer, 2 carpenters	BS	\$32.13	1 marble setter
B3	\$31.64	2 laborers, 1 carpenter	CF	\$34.33	1 cement mason
B4	\$36.23	1 laborer 1 operating engineer 1 reinforcing iron worker	CT	\$34.14	1 mosaic & terrazzo worker
B5	\$35.84	1 laborer, 1 carpenter 1 cement mason 1 operating engineer 1 reinforcing iron worker	D1	\$35.21	1 drywall installer 1 drywall taper
B6	\$31.85	1 laborer, 1 cement mason	DI	\$35.23	1 drywall installer
B7	\$29.74	1 laborer, 1 truck driver	DT	\$35.18	1 drywall taper
B8	\$35.32	1 laborer 1 operating engineer	HC	\$28.43	1 plasterer helper
B9	\$31.96	1 bricklayer 1 bricklayer's helper	OE	\$41.28	1 operating engineer
BB	\$36.70	1 bricklayer	P1	\$35.67	1 laborer, 1 plumber
BC	\$36.20	1 carpenter	PM	\$41.98	1 plumber
BE	\$39.24	1 electrician	PP	\$33.15	1 painter, 1 laborer
BF	\$33.12	1 floor layer	PR	\$36.26	1 plasterer
BG	\$34.96	1 glazier	PT	\$36.93	1 painter
BH	\$27.22	1 bricklayer's helper	R1	\$34.93	1 roofer, 1 laborer
BL	\$29.36	1 laborer	RI	\$38.05	1 reinforcing iron worker
			RR	\$40.49	1 roofer
			SW	\$40.75	1 sheet metal worker
			T1	\$31.91	1 tile layer, 1 laborer
			TL	\$34.45	1 tile layer
			TR	\$30.11	1 truck driver

Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
A1	\$49.39	1 asbestos worker 1 laborer	F6	\$47.48	2 carpenters, 2 laborers 1 tractor operator
AT	\$42.62	1 air tool operator	F7	\$49.39	2 carpenters, 1 laborer 1 tractor operator
AW	\$58.94	1 asbestos worker	F8	\$49.98	2 plasterers 1 plasterer's helper
BM	\$59.64	1 boilermaker	F9	\$44.74	1 laborer, 1 floor layer
BT	\$40.01	1 bricklayer tender	FL	\$49.64	1 floor layer
C1	\$40.75	4 laborers, 1 truck driver	G1	\$46.72	1 glazier, 1 laborer
C2	\$47.88	1 laborer, 2 truck drivers 2 tractor operators	H1	\$52.64	1 carpenter, 1 laborer 1 iron worker (structural) 1 tractor operator
C3	\$46.54	1 laborer, 1 truck driver 1 tractor operator	H2	\$50.00	1 crane operator 1 truck driver
C4	\$41.36	2 laborers, 1 truck driver	H3	\$45.12	1 carpenter, 3 laborers 1 crane operator 1 truck driver
C5	\$44.86	2 laborers, 1 truck driver 1 tractor operator	H4	\$60.63	1 crane operator 6 iron workers (structural) 1 truck driver
C6	\$43.86	6 laborers, 2 truck drivers 2 tractor operators	H5	\$52.73	1 crane operator 2 iron workers (structural) 2 laborers
C7	\$46.26	2 laborers , 3 truck drivers 1 crane operator 1 tractor operator	H6	\$52.01	1 iron worker (structural) 1 laborer
C8	\$45.51	1 laborer, 1 carpenter	H7	\$61.32	1 crane operator 2 iron workers (structural)
C9	\$47.72	1 laborer, 1 crane operator	H8	\$59.45	1 crane operator 4 iron workers (structural) 1 truck driver
CB	\$52.23	1 bricklayer	H9	\$58.41	1 electrician 1 sheet metal worker
CC	\$51.18	1 carpenter	IW	\$64.18	1 iron worker (structural)
CD	\$50.48	1 drywall Installer	LA	\$46.31	1 lather
CE	\$58.28	1 electrician	M1	\$46.12	1 bricklayer 1 bricklayer's tender
CG	\$53.60	1 glazier	M2	\$43.62	1 carpenter, 2 laborers
CL	\$39.84	1 laborer	M3	\$48.43	1 plasterer 1 plasterer's helper
CM	\$49.61	1 cement mason	M4	\$46.09	1 laborer, 1 marble setter
CO	\$55.59	1 crane operator	M5	\$50.05	1 pipefitter, 1 laborer,
CV	\$55.19	1 elevator constructor	M6	\$53.01	1 asbestos worker 1 laborer, 1 pipefitter
D2	\$45.16	1 drywall installer 1 laborer	M8	\$55.16	3 pipefitters, 1 laborer
D3	\$52.01	1 laborer, 1 iron worker (structural), 1 millwright	M9	\$59.27	1 electrician, 1 pipefitter
D4	\$45.93	1 laborer, 1 millwright	MI	\$53.45	2 pipefitters, 1 laborer
D5	\$49.74	1 boilermaker, 1 laborer	MS	\$52.33	marble setter
D6	\$53.13	2 millwrights 1 tractor operator	MT	\$49.35	mosaic & terrazzo worker
D7	\$45.62	1 painter, 1 laborer	MW	\$52.01	millwright
D9	\$47.95	2 millwrights, 1 laborer			
E1	\$50.32	2 electricians, 2 laborers 1 tractor operator			
E2	\$49.06	2 electricians, 2 laborers			
E3	\$49.77	2 electricians, 2 laborers 2 carpenters			
E4	\$49.06	1 electrician, 1 laborer			
F5	\$46.64	3 carpenters, 2 laborers			

Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
P5	\$43.86	3 laborers 1 tractor operator 1 truck driver	S8	\$49.30	2 pile drivers, 2 laborers 1 truck driver 1 crane operator 1 tractor operator
P6	\$50.56	1 laborer, 1 plumber			
P8	\$44.73	1 laborer, 1 cement mason	S9	\$46.89	1 pile driver, 2 laborers 1 tractor operator 1 truck driver
P9	\$46.88	1 carpenter, 1 laborer 1 cement mason			
PA	\$51.40	1 painter	SM	\$58.53	1 sheet metal worker
PD	\$55.02	1 pile driver	SP	\$62.50	1 sprinkler fitter
PF	\$60.26	1 pipefitter	SS	\$50.19	1 laborer 2 tractor operators
PH	\$43.77	1 plasterer's helper			
PL	\$61.28	1 plumber	T2	\$51.42	3 laborers, 3 carpenters 3 iron workers (structural) 1 crane operator 1 truck driver
PS	\$53.08	1 plasterer			
R3	\$45.21	2 roofers, 1 laborer	T3	\$51.44	1 laborer 1 reinforcing iron worker
RB	\$63.04	1 reinforcing iron worker			
RF	\$47.89	1 roofer	T4	\$44.60	1 laborer, 1 mosaic worker
S1	\$47.61	1 laborer 1 tractor operator	T5	\$49.19	1 sheet metal worker 1 laborer
S3	\$49.89	1 truck driver 1 tractor operator	T6	\$52.30	2 sheet metal workers 1 laborer
S4	\$39.84	3 laborers	TD	\$44.40	1 truck driver
S5	\$42.74	5 laborers 1 crane operator 1 truck driver	TO	\$55.37	1 tractor operator
S6	\$45.02	2 laborers 1 tractor operator	U1	\$49.08	1 plumber, 2 laborers 1 tractor operator
S7	\$47.61	3 laborers 3 tractor operators	U2	\$46.99	1 plumber, 2 laborers

Residential Division

	1	2	3	4	5	6
Craft	Base wage per hour	Taxable fringe benefits (@5.15% of base wage)	Insurance and employer taxes (%)	Insurance and employer taxes (\$)	Non-taxable fringe benefits (@4.55% of base wage)	Total hourly cost used in this book
Bricklayer	\$26.92	\$1.39	25.34%	\$7.17	\$1.22	\$36.70
Bricklayer's Helper	19.96	1.03	25.34	5.32	0.91	27.22
Building Laborer	20.37	1.05	32.73	7.01	0.93	29.36
Carpenter	25.33	1.30	31.63	8.42	1.15	36.20
Cement Mason	25.61	1.32	23.15	6.23	1.17	34.33
Drywall installer	26.20	1.35	23.57	6.49	1.19	35.23
Drywall Taper	26.16	1.35	23.57	6.48	1.19	35.18
Electrician	30.05	1.55	19.84	6.27	1.37	39.24
Floor Layer	24.57	1.27	23.82	6.16	1.12	33.12
Glazier	25.55	1.32	25.78	6.93	1.16	34.96
Lather	26.30	1.35	21.28	5.88	1.20	34.73
Marble Setter	24.31	1.25	21.36	5.46	1.11	32.13
Millwright	25.77	1.33	21.24	5.76	1.17	34.03
Mosiatic & Terrazzo Worker	25.83	1.33	21.36	5.80	1.18	34.14
Operating Engineer	30.30	1.56	25.22	8.04	1.38	41.28
Painter	27.18	1.40	24.88	7.11	1.24	36.93
Plasterer	25.94	1.34	28.58	7.80	1.18	36.26
Plasterer Helper	20.34	1.05	28.58	6.11	0.93	28.43
Plumber	31.05	1.60	24.27	7.92	1.41	41.98
Reinforcing Ironworker	27.22	1.40	28.61	8.19	1.24	38.05
Roofer	25.93	1.34	44.14	12.04	1.18	40.49
Sheet Metal Worker	29.74	1.53	26.01	8.13	1.35	40.75
Sprinkler Fitter	30.50	1.57	25.08	8.04	1.39	41.50
Tile Layer	26.07	1.34	21.36	5.85	1.19	34.45
Truck Driver	21.93	1.13	26.22	6.05	1.00	30.11

Hourly Labor Cost

The labor costs shown in Column 6 were used to compute the manhour costs for crews on page 7 and the figures in the "Labor" column of the Residential Division of this manual. Figures in the "Labor" column of the Industrial and Commercial Division of this book were computed using the hourly costs shown on page 312. All labor costs are in U.S. dollars per manhour.

It's important that you understand what's included in the figures in each of the six columns above. Here's an explanation:

Column 1, the base wage per hour, is the craftsman's hourly wage. These figures are representative of

what many contractors will be paying craftsmen working on residential construction in 2015.

Column 2, taxable fringe benefits, includes vacation pay, sick leave and other taxable benefits. These fringe benefits average 5.15% of the base wage for many construction contractors. This benefit is in addition to the base wage.

Column 3, insurance and employer taxes in percent, shows the insurance and tax rate for construction trades. The cost of insurance in this column includes workers' compensation and contractor's casualty and liability coverage. Insurance rates vary widely from state to state and depend on a contractor's loss experience. Typical rates are shown in the Insurance sec-

tion of this manual beginning on page 186. Taxes are itemized in the section on page 288. 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 4.55% 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 312.

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 \$10.00 per hour, the calculation would be:

$$\begin{array}{r} 2,080 \text{ hours} \\ \times \$10.00 \text{ per hour} \\ \hline \$20,800 \text{ per year} \end{array}$$

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 31.63%, the rate for carpenters in column 3 on page 10. To increase the annual taxable wage by 31.63%, we'll multiply by 1.3163:

$$\begin{array}{r} \$20,800 \text{ per year} \\ \times 1.3163 \text{ tax \& insurance rate} \\ \hline \$27,379 \text{ annual cost} \end{array}$$

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 \$343.67 per month or \$4,124 per year.

$$\begin{array}{r} \$4,124 \text{ medical plan} \\ + 27,379 \text{ annual cost} \\ \hline \$31,503 \text{ total annual cost} \end{array}$$

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:

$$\frac{\$31,503}{2,000} = \$15.75 \text{ per hour}$$

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 \$36.20.

$$\frac{\$15.75}{\$36.20} = .435$$

Your modification factor is 43.5%. Multiply any building carpenter (Craft Code BC) labor costs in the Residential Division of this book by .435 to find your estimated cost. For example, on page 24 the labor cost for installing an 18" long towel bar is \$10.10 per each bar. If installed by your carpenter working at \$10.00 per hour, your estimated cost would be 43.5% of \$10.10 or \$4.39. 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 percentages shown on the following pages to adapt the costs in this book to your job site. Adjust your cost estimate by the appropriate 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.

The National Estimator program will apply an area modification factor for any five-digit zip you select. Click Utilities. Click Options. Then select the Area Modification Factors tab.

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, they should improve the accuracy of your estimates.

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
Alabama Average		-1	-11	0	-6%
Anniston	362	-3	-17	-1	-9%
Auburn	368	0	-14	0	-6%
Bellamy	369	-2	-4	-1	-3%
Birmingham	350-352	-3	10	-1	3%
Dothan	363	-1	-12	0	-6%
Evergreen	364	-1	-26	0	-12%
Gadsden	359	-4	-23	-1	-13%
Huntsville	358	1	-8	0	-3%
Jasper	355	-1	-22	0	-11%
Mobile	365-366	-1	-6	0	-3%
Montgomery	360-361	0	-5	0	-2%
Scottsboro	357	0	-13	0	-6%
Selma	367	-1	-11	0	-6%
Sheffield	356	-1	0	0	-1%
Tuscaloosa	354	1	-12	0	-5%
Alaska Average		14	31	5	21%
Anchorage	995	17	40	6	27%
Fairbanks	997	16	33	5	24%
Juneau	998	18	26	6	22%
Ketchikan	999	3	21	1	11%
King Salmon	996	16	33	5	24%
Arizona Average		1	-10	0	-4%
Chambers	865	1	-10	0	-4%
Douglas	855	0	-7	0	-3%
Flagstaff	860	2	-22	1	-9%
Kingman	864	1	-13	0	-5%
Mesa	852	1	1	0	1%
Phoenix	850	1	1	0	1%
Prescott	863	3	-18	1	-7%
Show Low	859	1	-20	0	-9%
Tucson	856-857	0	-13	0	-6%
Yuma	853	0	0	0	0%
Arkansas Average		-2	-13	0	-7%
Batesville	725	0	-22	0	-10%
Camden	717	-4	-7	-1	-5%
Fayetteville	727	1	-11	0	-5%
Fort Smith	729	-1	-14	0	-7%
Harrison	726	-1	-29	0	-14%
Hope	718	-3	2	-1	-1%
Hot Springs	719	-2	-27	-1	-13%
Jonesboro	724	-1	-16	0	-8%
Little Rock	720-722	-1	-6	0	-3%
Pine Bluff	716	-4	0	-1	-2%
Russellville	728	0	-13	0	-6%
West Memphis	723	-3	-10	-1	-6%
California Average		2	14	1	8%
Alhambra	917-918	3	16	1	9%
Bakersfield	932-933	0	7	0	3%
El Centro	922	1	-3	0	-1%
Eureka	955	1	-9	0	-4%
Fresno	936-938	0	-3	0	-1%
Herlong	961	2	-5	1	-1%
Inglewood	902-905	3	17	1	9%
Irvine	926-927	3	25	1	13%
Lompoc	934	3	9	1	6%
Long Beach	907-908	3	18	1	10%
Los Angeles	900-901	3	15	1	8%
Marysville	959	1	-3	0	-1%
Modesto	953	1	-4	0	-1%
Mojave	935	0	13	0	6%
Novato	949	3	25	1	13%
Oakland	945-947	3	38	1	19%
Orange	928	3	23	1	12%
Oxnard	930	3	5	1	4%
Pasadena	910-912	3	17	1	9%
Rancho Cordova	956-957	2	11	1	6%
Redding	960	1	-8	0	-3%
Richmond	948	2	39	1	19%
Riverside	925	1	6	0	3%
Sacramento	958	1	11	0	6%
Salinas	939	3	3	1	3%
San Bernardino	923-924	0	9	0	4%
San Diego	919-921	3	12	1	7%
San Francisco	941	3	58	1	28%
San Jose	950-951	3	36	1	18%
San Mateo	943-944	4	38	1	20%
Santa Barbara	931	3	10	1	6%
Santa Rosa	954	3	10	1	6%
Stockton	952	1	0	0	1%
Sunnyvale	940	3	41	1	20%
Van Nuys	913-916	3	15	1	8%
Whittier	906	3	15	1	8%
Colorado Average		2	0	1	1%
Aurora	800-801	2	10	1	6%
Boulder	803-804	3	4	1	3%
Colorado Springs	808-809	2	-4	1	-1%
Denver	802	2	11	1	6%
Durango	813	1	-2	0	0%
Fort Morgan	807	1	-8	0	-3%
Glenwood Springs	816	2	6	1	4%
Grand Junction	814-815	1	-3	0	-1%
Greeley	806	3	6	1	4%
Longmont	805	3	0	1	2%
Pagosa Springs	811	0	-12	0	-6%
Pueblo	810	-1	5	0	2%
Salida	812	1	-13	0	-5%
Connecticut Average		1	25	0	12%
Bridgeport	066	1	24	0	12%
Bristol	060	1	25	0	12%
Fairfield	064	2	28	1	14%
Hartford	061	0	30	0	14%
New Haven	065	1	26	0	12%
Norwich	063	0	18	0	8%
Stamford	068-069	4	31	1	16%
Waterbury	067	1	24	0	12%
West Hartford	062	1	18	0	9%
Delaware Average		1	4	0	2%
Dover	199	1	-11	0	-5%
Newark	197	2	12	1	7%
Wilmington	198	0	11	0	5%
District of Columbia Average		3	22	1	12%
Washington	200-205	3	22	1	12%
Florida Average		-1	-15	0	-7%
Altamonte Springs	327	-1	-11	0	-6%
Bradenton	342	0	-17	0	-8%
Brooksville	346	-1	-19	0	-9%
Daytona Beach	321	-2	-23	-1	-12%
Fort Lauderdale	333	2	-4	1	-1%
Fort Myers	339	0	-19	0	-9%
Fort Pierce	349	-2	-25	-1	-13%
Gainesville	326	-1	-18	0	-9%
Jacksonville	322	-1	-8	0	-4%
Lakeland	338	-3	-15	-1	-8%
Melbourne	329	-2	-20	-1	-10%
Miami	330-332	2	-6	1	-2%
Naples	341	3	-14	1	-5%
Ocala	344	-2	-26	-1	-13%
Orlando	328	0	-5	0	-2%
Panama City	324	-2	-23	-1	-12%
Pensacola	325	0	-19	0	-9%
Saint Augustine	320	-1	-13	0	-7%
Saint Cloud	347	0	-11	0	-5%
St Petersburg	337	-1	-14	0	-7%
Tallahassee	323	0	-19	0	-9%
Tampa	335-336	-1	-6	0	-3%
West Palm Beach	334	1	-8	0	-3%
Georgia Average		-1	-8	0	-4%
Albany	317	-2	-18	-1	-9%
Athens	306	0	-13	0	-6%
Atlanta	303	3	25	1	13%
Augusta	308-309	-2	-6	-1	-4%
Buford	305	0	-9	0	-4%
Calhoun	307	-1	-23	0	-11%
Columbus	318-319	-1	-12	0	-6%
Dublin/Fort Valley	310	-3	-16	-1	-9%
Hinesville	313	-2	-10	-1	-6%
Kings Bay	315	-2	-7	-1	-4%
Macon	312	-2	-5	-1	-3%
Marietta	300-302	1	8	0	4%
Savannah	314	-1	-10	0	-5%
Statesboro	304	-2	-22	-1	-11%
Valdosta	316	-1	-5	0	-3%
Hawaii Average		17	32	6	24%
Aliamanu	968	17	34	6	25%
Ewa	967	17	31	6	23%
Halawa Heights	967	17	31	6	23%
Hilo	967	17	31	6	23%
Honolulu	968	17	34	6	25%
Kailua	968	17	34	6	25%
Lualualei	967	17	31	6	23%
Milliani Town	967	17	31	6	23%
Pearl City	967	17	31	6	23%
Wahiawa	967	17	31	6	23%
Waianae	967	17	31	6	23%
Wailuku (Maui)	967	17	31	6	23%

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.
Idaho Average						Kentucky Average						Michigan Average					
Boise	837	1	-6	0	-2%	Hutchinson	675	-3	-11	-1	-7%	Battle Creek	490-491	-3	2	-1	-1%
Coeur d'Alene	838	0	-23	0	-11%	Independence	673	-3	3	-1	0%	Detroit	481-482	0	18	0	8%
Idaho Falls	834	-1	-17	0	-8%	Liberal	679	-2	-12	-1	-7%	Flint	484-485	-3	-7	-1	-5%
Lewiston	835	0	-26	0	-12%	Salina	674	-3	-14	-1	-8%	Grand Rapids	493-495	-1	4	0	1%
Meridian	836	0	-19	0	-9%	Wichita	670	-2	-9	-1	-5%	Grayling	497	1	-19	0	-8%
Pocatello	832	-1	-21	0	-10%	Louisiana Average						Jackson	492	-3	0	-1	-2%
Sun Valley	833	-1	-20	0	-10%	Ashland	411-412	-3	-9	-1	-6%	Lansing	488-489	0	4	0	2%
Illinois Average						Bowling Green	421	0	-11	0	-5%	Marquette	498-499	-1	4	0	1%
Arlington Heights	600	2	32	1	16%	Campton	413-414	-1	-21	0	-10%	Pontiac	483	-3	26	-1	10%
Aurora	605	2	31	1	15%	Covington	410	0	3	0	1%	Royal Oak	480	-2	20	-1	8%
Belleville	622	-2	3	-1	0%	Elizabethtown	427	-1	-18	0	-9%	Saginaw	486-487	-2	-10	-1	-6%
Bloomington	617	1	1	0	1%	Frankfort	406	1	-3	0	-1%	Traverse City	496	-1	-1	0	-1%
Carbondale	629	-3	-8	-1	-5%	Hazard	417-418	-1	-12	0	-6%	Minnesota Average					
Carol Stream	601	2	31	1	15%	Hopkinsville	422	-2	-13	-1	-7%	Bemidji	566	-1	-9	0	-5%
Centralia	628	-3	-4	-1	-3%	Lexington	403-405	1	4	0	2%	Brainerd	564	0	-2	0	-1%
Champaign	618	-1	1	0	0%	London	407-409	-1	-13	0	-7%	Duluth	556-558	-2	5	-1	1%
Chicago	606-608	2	34	1	17%	Louisville	400-402	-1	4	0	1%	Fergus Falls	565	-1	-17	0	-8%
Decatur	623	-2	-16	-1	-8%	Owensboro	423	-2	-5	-1	-3%	Magnolia	561	0	-19	0	-9%
Galesburg	614	-2	-10	-1	-6%	Paducah	420	-2	-2	-1	-2%	Mankato	560	0	-6	0	-3%
Granite City	620	-3	9	-1	3%	Pikeville	415-416	-3	-6	-1	-4%	Minneapolis	553-555	1	25	0	12%
Green River	612	-2	12	-1	4%	Somerset	425-426	0	-21	0	-10%	Rochester	559	0	-4	0	-2%
Joliet	604	0	35	0	16%	White Plains	424	-3	-7	-1	-5%	St Cloud	563	-1	11	0	5%
Kankakee	609	-2	4	-1	1%	Maine Average						St Paul	550-551	1	23	0	11%
Lawrenceville	624	-4	-8	-1	-6%	Alexandria	713-714	-3	-5	-1	-4%	Thief River Falls	567	0	-2	0	-1%
Oak Park	603	3	38	1	19%	Baton Rouge	707-708	0	21	0	10%	Willmar	562	-1	-5	0	-3%
Peoria	615-606	-1	17	0	7%	Houma	703	-2	16	-1	6%	Mississippi Average					
Peru	613	0	7	0	3%	Lafayette	705	0	4	0	2%	Clarksdale	386	-3	-17	-1	-9%
Quincy	602	3	34	1	17%	Lake Charles	706	-2	3	-1	0%	Columbus	397	-1	-2	0	-1%
Rockford	610-611	-2	10	-1	4%	Mandeville	704	0	-2	0	-1%	Greenville	387	-4	-28	-1	-15%
Springfield	625-527	-2	3	-1	0%	Minden	710	-2	-11	-1	-6%	Greenwood	389	-3	-21	-1	-11%
Urbana	619	-3	-4	-1	-3%	Monroe	712	-2	-17	-1	-9%	Gulfport	395	-2	-3	-1	-2%
Indiana Average						New Orleans	700-701	0	5	0	2%	Jackson	390-392	-3	-8	-1	-5%
Aurora	470	-1	-8	0	-4%	Shreveport	711	-2	-6	-1	-4%	Laurel	394	-3	-14	-1	-8%
Bloomington	474	1	-4	0	-1%	Maryland Average						McComb	396	-2	-22	-1	-11%
Columbus	472	0	-9	0	-4%	Auburn	042	-1	-10	0	-5%	Meridian	393	-2	-7	-1	-4%
Elkhart	465	-2	-6	-1	-4%	Augusta	043	-1	-17	0	-8%	Tupelo	388	-1	-19	0	-9%
Evansville	476-477	-2	12	-1	4%	Bangor	044	-2	-15	-1	-8%	Missouri Average					
Fort Wayne	467-468	-3	-4	-1	-3%	Bath	045	0	-16	0	-7%	Cape Girardeau	637	-2	-7	-1	-4%
Gary	463-464	-4	47	-1	20%	Brunswick	046	1	-6	0	-2%	Caruthersville	638	-1	-18	0	-9%
Indianapolis	460-462	-1	16	0	7%	Camden	047	-1	-22	0	-11%	Chillicothe	646	-2	-15	-1	-8%
Jasper	475	-1	-16	0	-8%	Cutler	048	-1	-20	0	-10%	Columbia	652	1	-12	0	-5%
Jeffersonville	471	-1	-8	0	-4%	Dexter	049	-2	-16	-1	-8%	East Lynne	647	-1	-11	0	-6%
Kokomo	469	-2	-14	-1	-8%	Northern Area	050	-2	-20	-1	-10%	Farmington	636	-3	-17	-1	-9%
Lafayette	479	-1	-11	0	-6%	Portland	051	2	-2	1	0%	Hannibal	634	1	-6	0	-2%
Muncie	473	-4	-16	-1	-9%	Massachusetts Average						Independence	640	-2	14	-1	5%
South Bend	466	-4	-1	-1	-3%	Ayer	015-016	1	16	0	8%	Jefferson City	650-651	1	-12	0	-5%
Terre Haute	478	-4	-1	-1	-3%	Bedford	017	3	35	1	18%	Joplin	648	-2	-16	-1	-8%
Iowa Average						Boston	021-022	3	71	1	34%	Kansas City	641	-2	17	-1	7%
Burlington	526	0	-7	0	-3%	Brockton	023-024	3	42	1	21%	Kirksville	635	0	-28	0	-13%
Carroll	514	-3	-21	-1	-11%	Cape Cod	026	2	6	1	4%	Knob Noster	653	0	-15	0	-7%
Cedar Falls	506	-1	-8	0	-4%	Chicopee	010	1	16	0	8%	Lebanon	654-655	-2	-25	-1	-13%
Cedar Rapids	522-524	0	7	0	3%	Dedham	019	3	34	1	17%	Poplar Bluff	639	-1	-15	0	-7%
Cherokee	510	-2	1	-1	-1%	Fitchburg	014	2	26	1	13%	Saint Charles	633	1	3	0	2%
Council Bluffs	515	-2	0	-1	-1%	Hingham	020	3	41	1	20%	Saint Joseph	644-645	-3	8	-1	2%
Creston	508	-3	-14	-1	-8%	Lawrence	018	2	32	1	16%	Springfield	656-658	-2	-18	-1	-9%
Davenport	527-528	-1	7	0	3%	Nantucket	025	3	20	1	11%	St Louis	630-631	-2	18	-1	7%
Decorah	521	-2	-13	-1	-7%	New Bedford	027	2	19	1	10%	Montana Average					
Des Moines	500-503	-2	11	-1	4%	Northfield	013	1	0	0	1%	Billings	590-591	0	1	0	0%
Dubuque	520	-1	-5	0	-3%	Pittsfield	012	1	2	0	1%	Butte	597	1	-11	0	-5%
Fort Dodge	505	-2	-4	-1	-3%	Springfield	011	-1	20	0	9%	Fairview	592	-1	7	0	3%
Mason City	504	0	-6	0	-3%	Nebraska Average						Great Falls	594	-1	-8	0	-4%
Ottumwa	525	0	-14	0	-6%	Alliance	693	-1	-21	0	-10%	Havre	595	-1	-20	0	-10%
Sheldon	512	0	-17	0	-8%	Columbus	686	0	-14	0	-6%	Helena	596	0	-6	0	-3%
Shenandoah	516	-3	-25	-1	-13%	Grand Island	688	0	-16	0	-7%	Kalispell	599	1	-16	0	-7%
Sioux City	511	-2	9	-1	3%	Hastings	689	0	-20	0	-9%	Miles City	593	-1	-15	0	-7%
Spencer	513	-1	-17	0	-8%	Lincoln	683-685	0	-10	0	-5%	Missoula	598	1	-17	0	-7%
Waterloo	507	-4	-6	-1	-5%	Nebraska Average						Nebraska Average					
Kansas Average						Colby	677	-1	-15	0	-7%	Alliance	693	-1	-21	0	-10%
Colby	677	-1	-15	0	-7%	Concordia	669	-1	-28	0	-13%	Columbus	686	0	-14	0	-6%
Dodge City	678	-2	-10	-1	-6%	Emporia	668	-3	-8	-1	-5%	Grand Island	688	0	-16	0	-7%
Emporia	668	-3	-8	-1	-5%	Fort Scott	667	-2	-14	-1	-8%	Hastings	689	0	-20	0	-9%
Fort Scott	667	-2	-14	-1	-8%	Hays	676	-2	-25	-1	-13%	Lincoln	683-685	0	-10	0	-5%
Hays	676	-2	-25	-1	-13%												

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.				
McCook	690	0	-24	0	-11%	Rochester	144-146	-3	7	-1	2%	Grants Pass	975	2	-16	1	-6%				
Norfolk	687	-3	-17	-1	-9%	Rockaway	116	3	35	1	18%	Klamath Falls	976	2	-23	1	-10%				
North Platte	691	0	-22	0	-10%	Rome	133-134	-3	-6	-1	-4%	Pendleton	978	0	-9	0	-4%				
Omaha	680-681	-1	-2	0	-1%	Staten Island	103	3	29	1	15%	Portland	970-972	2	20	1	10%				
Valentine	692	-2	-31	-1	-15%	Stewart	127	-1	-6	0	-3%	Salem	973	2	-8	1	-3%				
Syracuse	130-132	-3	7	-1	2%	Tonawanda	141	-3	2	-1	-1%	Pennsylvania Average						-3	1	-1	-1%
Utica	135	-4	-9	-1	-6%	White Plains	105-108	3	37	1	19%	Allentown	181	-2	12	-1	4%				
North Carolina Average						1	-11	0	-5%	Asheville	287	1	-19	0	-8%	Altoona	166	-3	-14	-1	-8%
Charlotte	280-282	1	11	0	6%	Charlotte	280-282	1	11	0	6%	Clearfield	168	2	-7	1	-2%				
Durham	277	2	-1	1	1%	Elizabeth City	279	1	-18	0	-8%	DuBois	158	-2	-20	-1	-10%				
Fayetteville	283	-1	-13	0	-7%	Fayetteville	283	-1	-13	0	-7%	East Stroudsburg	183	0	-9	0	-4%				
Goldsboro	275	1	-4	0	-1%	Greensboro	274	1	-9	0	-4%	Erie	164-165	-3	-11	-1	-7%				
Hickory	286	-1	-20	0	-10%	Hickory	286	-1	-20	0	-10%	Genesee	169	-4	-10	-1	-7%				
Kinston	285	-1	-20	0	-10%	Kinston	285	-1	-20	0	-10%	Greensburg	156	-4	0	-1	-2%				
Raleigh	276	3	1	1	2%	Raleigh	276	3	1	1	2%	Harrisburg	170-171	-2	8	-1	3%				
Rocky Mount	278	0	-15	0	-7%	Rocky Mount	278	0	-15	0	-7%	Hazleton	182	-3	-8	-1	-5%				
Wilmington	284	1	-18	0	-8%	Wilmington	284	1	-18	0	-8%	Johnstown	159	-4	-16	-1	-9%				
Winston-Salem	270-273	0	-12	0	-6%	Winston-Salem	270-273	0	-12	0	-6%	Kittanning	162	-4	-8	-1	-6%				
North Dakota Average						-1	11	0	5%	Lancaster	175	-2	4	-1	1%						
Bismarck	585	0	8	0	4%	Bismarck	585	0	8	0	4%	Meadville	163	-4	-19	-1	-11%				
Dickinson	586	-1	22	0	10%	Dickinson	586	-1	22	0	10%	Montrose	188	-3	7	-1	2%				
Fargo	580-581	0	7	0	3%	Fargo	580-581	0	7	0	3%	New Castle	161	-4	-1	-1	-3%				
Grand Forks	582	0	2	0	1%	Grand Forks	582	0	2	0	1%	Philadelphia	190-191	-3	32	-1	13%				
Jamestown	584	-1	-6	0	-3%	Jamestown	584	-1	-6	0	-3%	Pittsburgh	152	-4	16	-1	5%				
Minot	587	-1	25	0	11%	Minot	587	-1	25	0	11%	Pottsville	179	-4	-12	-1	-8%				
Nekoma	583	-1	-17	0	-8%	Nekoma	583	-1	-17	0	-8%	Punxsutawney	157	-4	1	-1	-2%				
Williston	588	-1	46	0	21%	Williston	588	-1	46	0	21%	Reading	195196	-4	10	-1	2%				
Ohio Average						-2	3	-1	0%	Scranton	184-185	-1	-2	0	-1%						
Akron	442-443	-2	5	-1	1%	Akron	442-443	-2	5	-1	1%	Somerset	155	-4	-15	-1	-9%				
Canton	446-447	-3	2	-1	-1%	Canton	446-447	-3	2	-1	-1%	Southeastern	193	0	21	0	10%				
Chillicothe	456	-2	-6	-1	-4%	Chillicothe	456	-2	-6	-1	-4%	Uniontown	154	-4	-6	-1	-5%				
Cincinnati	450-452	-1	10	0	4%	Cincinnati	450-452	-1	10	0	4%	Valley Forge	194	-3	32	-1	13%				
Cleveland	440-441	-3	11	-1	3%	Cleveland	440-441	-3	11	-1	3%	Warminster	189	-1	25	0	11%				
Columbus	432	0	12	0	6%	Columbus	432	0	12	0	6%	Warrendale	150-151	-4	17	-1	6%				
Dayton	453-455	-3	1	-1	-1%	Dayton	453-455	-3	1	-1	-1%	Washington	153	-4	23	-1	8%				
Lima	458	-3	-9	-1	-6%	Lima	458	-3	-9	-1	-6%	Wilkes Barre	186-187	-3	-4	-1	-3%				
Marietta	457	-3	-5	-1	-4%	Marietta	457	-3	-5	-1	-4%	Williamsport	177	-3	0	-1	-2%				
Marion	433	-3	-4	-1	-3%	Marion	433	-3	-4	-1	-3%	York	173-174	-3	7	-1	2%				
Newark	430-431	-1	10	0	4%	Newark	430-431	-1	10	0	4%	Rhode Island Average						1	13	0	6%
Sandusky	448-449	-2	0	-1	-1%	Sandusky	448-449	-2	0	-1	-1%	Bristol	028	1	13	0	7%				
Steubenville	439	-3	5	-1	1%	Steubenville	439	-3	5	-1	1%	Coventry	028	1	13	0	7%				
Toledo	434-436	-1	14	0	6%	Toledo	434-436	-1	14	0	6%	Cranston	029	1	12	0	6%				
Warren	444	-4	-3	-1	-3%	Warren	444	-4	-3	-1	-3%	Davisville	028	1	13	0	7%				
Youngstown	445	-5	6	-2	0%	Youngstown	445	-5	6	-2	0%	Narragansett	028	1	13	0	7%				
Zanesville	437-438	-2	1	-1	-1%	Zanesville	437-438	-2	1	-1	-1%	Newport	028	1	13	0	7%				
Oklahoma Average						-3	-10	-1	-6%	Providence	029	1	12	0	6%						
Adams	739	-2	-17	-1	-9%	Adams	739	-2	-17	-1	-9%	Warwick	028	1	13	0	7%				
Ardmore	734	-3	-9	-1	-6%	Ardmore	734	-3	-9	-1	-6%	South Carolina Average						-1	-9	0	-4%
Clinton	736	-3	-3	-1	-3%	Clinton	736	-3	-3	-1	-3%	Aiken	298	0	5	0	2%				
Durant	747	-4	-24	-1	-13%	Durant	747	-4	-24	-1	-13%	Beaufort	299	-1	-12	0	-6%				
Enid	737	-4	-4	-1	-4%	Enid	737	-4	-4	-1	-4%	Charleston	294	-1	-1	0	-1%				
Lawton	735	-3	-22	-1	-12%	Lawton	735	-3	-22	-1	-12%	Columbia	290-292	0	-10	0	-5%				
McAlester	745	-4	-15	-1	-9%	McAlester	745	-4	-15	-1	-9%	Greenville	296	0	-9	0	-4%				
Muskogee	744	-2	-15	-1	-8%	Muskogee	744	-2	-15	-1	-8%	Myrtle Beach	295	0	-20	0	-9%				
Norman	730	-2	-6	-1	-4%	Norman	730	-2	-6	-1	-4%	Rock Hill	297	-1	-16	0	-8%				
Oklahoma City	731	-2	-4	-1	-3%	Oklahoma City	731	-2	-4	-1	-3%	Spartanburg	293	-1	-7	0	-4%				
Ponca City	746	-3	1	-1	-1%	Ponca City	746	-3	1	-1	-1%	South Dakota Average						-1	-16	0	-8%
Poteau	749	-2	-18	-1	-9%	Poteau	749	-2	-18	-1	-9%	Aberdeen	574	-1	-15	0	-7%				
Pryor	743	-2	-14	-1	-8%	Pryor	743	-2	-14	-1	-8%	Mitchell	573	-1	-16	0	-8%				
Shawnee	748	-4	-18	-1	-10%	Shawnee	748	-4	-18	-1	-10%	Mobridge	576	-2	-21	-1	-11%				
Tulsa	740-741	-1	-1	0	-1%	Tulsa	740-741	-1	-1	0	-1%	Pierre	575	-2	-25	-1	-13%				
Woodward	738	-4	10	-1	2%	Woodward	738	-4	10	-1	2%	Rapid City	577	-2	-15	-1	-8%				
Oregon Average						1	-12	1	-5%	Sioux Falls	570-571	0	-4	0	-2%						
Adrian	979	-1	-29	0	-14%	Adrian	979	-1	-29	0	-14%	Watertown	572	-1	-16	0	-8%				
Bend	977	1	-18	0	-8%	Bend	977	1	-18	0	-8%	Tennessee Average						0	-5	0	-3%
Eugene	974	2	-9	1	-3%	Eugene	974	2	-9	1	-3%	Chattanooga	374	-1	2	0	0%				
Pennsylvania Average						-3	1	-1	-1%	Clarksville	370	1	2	0	1%						
Allentown	181	-2	12	-1	4%	Allentown	181	-2	12	-1	4%	Cleveland	373	-1	-3	0	-2%				
Altoona	166	-3	-14	-1	-8%	Altoona	166	-3	-14	-1	-8%										

Area Modification Factors

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
Columbia	384	-1	-15	0	-7%
Cookeville	385	0	-21	0	-10%
Jackson	383	-1	-7	0	-4%
Kingsport	376	0	-11	0	-5%
Knoxville	377-379	-1	-2	0	-1%
McKenzie	382	-1	-16	0	-8%
Memphis	380-381	-1	5	0	2%
Nashville	371-372	1	9	0	5%
Texas Average		-2	1	-1	-1%
Abilene	795-796	-4	-2	-1	-3%
Amarillo	790-791	-2	-3	-1	-2%
Arlington	760	-1	4	0	1%
Austin	786-787	1	8	0	4%
Bay City	774	-1	51	0	23%
Beaumont	776-777	-3	21	-1	8%
Brownwood	768	-3	-16	-1	-9%
Bryan	778	0	-10	0	-5%
Childress	792	-3	-27	-1	-14%
Corpus Christi	783-784	-2	14	-1	5%
Dallas	751-753	-1	13	0	5%
Del Rio	788	-3	13	-1	-8%
El Paso	798-799	-3	-22	-1	-12%
Fort Worth	761-762	-2	5	-1	1%
Galveston	775	-3	26	-1	10%
Giddings	789	0	-2	0	-1%
Greenville	754	-3	12	-1	4%
Houston	770-772	-1	28	0	12%
Huntsville	773	-2	26	-1	11%
Longview	756	-2	0	-1	-1%
Lubbock	793-794	-3	-12	-1	-7%
Lufkin	759	-3	-10	-1	-6%
McAllen	785	-3	-24	-1	-13%
Midland	797	-3	24	-1	9%
Palestine	758	-2	-11	-1	-6%
Plano	750	-1	14	0	6%
San Angelo	769	-3	-14	-1	-8%
San Antonio	780-782	-3	2	-1	-1%
Texarkana	755	-3	-17	-1	-9%
Tyler	757	-1	-14	0	-7%
Victoria	779	-3	4	-1	0%
Waco	765-767	-3	-9	-1	-6%
Wichita Falls	763	-3	-19	-1	-10%
Woodson	764	-3	-10	-1	-6%
Utah Average		1	-11	1	-4%
Clearfield	840	2	-5	1	-1%
Green River	845	1	-6	0	-2%
Ogden	843-844	0	-21	0	-10%
Provo	846-847	2	-21	1	-9%
Salt Lake City	841	2	0	1	1%
Vermont Average		1	-12	0	-5%
Albany	058	1	-16	0	-7%
Battleboro	053	1	-9	0	-4%
Beecher Falls	059	1	-19	0	-8%
Bennington	052	-1	-17	0	-8%
Burlington	054	2	5	1	3%
Montpelier	056	2	-12	1	-4%
Rutland	057	-1	-16	0	-8%
Springfield	051	-1	-13	0	-7%
White River Junction	050	1	-15	0	-6%
Virginia Average		0	-11	0	-5%
Abingdon	242	-2	-18	-1	-9%
Alexandria	220-223	3	20	1	11%

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
Charlottesville	229	1	-15	0	-6%
Chesapeake	233	0	-7	0	-3%
Culpeper	227	2	-13	1	-5%
Farmville	239	-2	-27	-1	-13%
Fredericksburg	224-225	1	-13	0	-5%
Galax	243	-2	-23	-1	-12%
Harrisonburg	228	1	-18	0	-8%
Lynchburg	245	-2	-17	-1	-9%
Norfolk	235-237	0	-5	0	-2%
Petersburg	238	-2	-6	-1	-4%
Radford	241	-1	-20	0	-10%
Reston	201	3	14	1	8%
Richmond	232	-1	5	0	2%
Roanoke	240	-1	-20	0	-10%
Staunton	244	0	-20	0	-9%
Tazewell	246	-3	-10	-1	-6%
Virginia Beach	234	0	-10	0	-5%
Williamsburg	230-231	0	-8	0	-4%
Winchester	226	0	-10	0	-5%
Washington Average		1	-1	0	0%
Clarkston	994	0	-13	0	-6%
Everett	982	2	4	1	3%
Olympia	985	2	-5	1	-1%
Pasco	993	0	4	0	2%
Seattle	980-981	3	23	1	12%
Spokane	990-992	0	-6	0	-3%
Tacoma	983-984	1	5	0	3%
Vancouver	986	2	3	1	2%
Wenatchee	988	1	-13	0	-5%
Yakima	989	0	-9	0	-4%
West Virginia Average		-2	-8	-1	-5%
Beckley	258-259	1	-14	0	-6%
Bluefield	247-248	-1	1	0	0%
Charleston	250-253	1	11	0	6%
Clarksburg	263-264	-3	-5	-1	-4%
Fairmont	266	0	-23	0	-11%
Huntington	255-257	-1	-1	0	-1%
Lewisburg	249	-2	-30	-1	-15%
Martinsburg	254	-1	-11	0	-6%
Morgantown	265	-3	-8	-1	-5%
New Martinsville	262	-2	-20	-1	-10%
Parkersburg	261	-3	7	-1	2%
Romney	267	-4	-12	-1	-8%
Sugar Grove	268	-3	-13	-1	-8%
Wheeling	260	-3	2	-1	-1%
Wisconsin Average		-1	3	0	1%
Amery	540	0	-1	0	0%
Beloit	535	0	12	0	6%
Clam Lake	545	-1	-12	0	-6%
Eau Claire	547	-1	-5	0	-3%
Green Bay	541-543	0	5	0	2%
La Crosse	546	-2	1	-1	-1%
Ladysmith	548	-2	4	-1	1%
Madison	537	2	16	1	8%
Milwaukee	530-534	0	16	0	7%
Oshkosh	549	-1	8	0	3%
Portage	539	0	9	0	4%
Prairie du Chien	538	-2	-11	-1	-6%
Wausau	544	-1	-3	0	-2%
Wyoming Average		0	-5	0	-2%
Casper	826	-2	7	-1	2%
Cheyenne/Laramie	820	1	-8	0	-3%

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.
Gillette	827	-1	5	0	2%
Powell	824	0	-17	0	-8%
Rawlins	823	0	5	0	2%
Riverton	825	-2	-13	-1	-7%
Rock Springs	829-831	0	5	0	2%
Sheridan	828	1	-12	0	-5%
Wheatland	822	0	-16	0	-7%
UNITED STATES TERRITORIES					
Guam	53	-21	-5	18%	
Puerto Rico	2	-47	-5	-21%	
VIRGIN ISLANDS (U.S.)					
St. Croix	18	-15	-4	2%	
St. John	52	-15	-4	20%	
St. Thomas	23	-15	-4	5%	
CANADIAN AREA MODIFIERS					
These figures assume an exchange rate of \$1.00 Canadian to \$0.93 U.S.					
Alberta Average	23	2	10	13%	
Calgary	23	4	10	14%	
Edmonton	22	5	10	14%	
Fort McMurray	25	-4	10	11%	
British Columbia					
Average	23	-12	10	7%	
Fraser Valley	23	-13	10	6%	
Okanagan	24	-15	10	6%	
Vancouver	23	-8	10	9%	
Manitoba Average					
North Manitoba	17	-19	8	0%	
South Manitoba	17	-19	8	0%	
Selkirk	17	-19	8	0%	
Winnipeg	17	-19	8	0%	
New Brunswick Average					
Moncton	13	-44	6	-13%	
Nova Scotia Average					
Amherst	13	-33	6	-8%	
Nova Scotia	14	-32	7	-7%	
Sydney	14	-34	7	-8%	
Newfoundland/Labrador Average					
	16	-26	7	-3%	
Ontario Average					
London	19	-7	8	7%	
Thunder Bay	21	-11	9	6%	
Toronto	18	-6	8	7%	
Quebec Average					
Montreal	16	-21	7	-1%	
Quebec City	16	-21	7	-1%	
Saskatchewan Average					
La Ronge	21	-18	9	3%	
Prince Albert	19	-17	8	2%	
Saskatoon	19	-11	8	5%	

Credits and Acknowledgments

This book has over 30,000 cost estimates for 2015. 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 Sixty-third 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 Altevers
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: Ray Hicks, James Thomson. Layout & Images: Christine Bruneau. Software production: Christine Bruneau & Christine Pray.

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"
Subfloor adhesive, on floors					
12" OC members	CSF	2.22	8.88	20.00	35.50
16" OC members	CSF	1.67	6.66	15.00	26.60
20" OC members	CSF	1.33	5.33	12.00	21.30
24" OC members	CSF	1.11	4.44	9.99	17.80
Wall sheathing or shear panel adhesive, on walls					
16" OC members	CSF	3.70	14.80	33.30	59.10
20" OC members	CSF	2.96	11.80	26.60	47.30
24" OC members	CSF	2.46	9.85	22.20	39.40
Polystyrene or polyurethane foam panel adhesive, on walls					
12" OC members	CSF	3.20	12.80	28.80	51.10
16" OC members	CSF	2.40	9.59	21.60	38.30
20" OC members	CSF	1.92	7.67	17.30	30.70
24" OC members	CSF	1.60	6.39	14.40	25.60
Gypsum drywall adhesive					
12" OC members	CSF	1.52	6.08	13.70	24.30
16" OC members	CSF	1.14	4.56	10.30	18.20
20" OC members	CSF	.91	3.65	8.21	14.60
24" OC members	CSF	.76	3.04	6.84	12.20
Hardboard or plastic panel adhesive, on walls					
12" OC members	CSF	3.14	12.60	28.20	50.20
16" OC members	CSF	2.35	9.41	21.20	37.60
20" OC members	CSF	1.88	7.53	16.90	30.10
24" OC members	CSF	1.57	6.27	14.10	25.10

	Craft@Hrs	Unit	Material	Labor	Total
Labor to apply adhesive to framing members, 1/8" to 1/2" bead diameter, no material included					
Floor or ceiling joists					
12" OC members	BC@.075	CSF	—	2.72	2.72
16" OC members	BC@.056	CSF	—	2.03	2.03
20" OC members	BC@.052	CSF	—	1.88	1.88
24" OC members	BC@.042	CSF	—	1.52	1.52
Interior and exterior wall members					
12" OC members	BC@.100	CSF	—	3.62	3.62
16" OC members	BC@.090	CSF	—	3.26	3.26
20" OC members	BC@.084	CSF	—	3.04	3.04
24" OC members	BC@.084	CSF	—	3.04	3.04

Special purpose adhesives

Construction adhesive, for counters, cabinets, paneling, brick veneer, ceramic fixtures, shelving, sets in 10 minutes, 10.5 oz cartridge	—	Ea	1.65	—	1.65
Epoxy-tie adhesive, bonds concrete, fills cracks to 3/4", seals doors and windows, anchor grouting, non-shrink, 22 oz. cartridge	—	Ea	22.40	—	22.40
Gypsum drywall adhesive, waterproof, bonds to wood, metal, masonry, concrete, 29 oz. cartridge	—	Ea	5.69	—	5.69

Aggregate

	Craft@Hrs	Unit	Material	Labor	Total
Latex FRP adhesive, indoor, bonds wood, concrete, drywall, foamboard, trowel grade, gallon	—	Ea	21.60	—	21.60
Panel insulation adhesive, waterproof, for polyurethane & polystyrene panels, bonds to wood, metal, masonry, concrete, 16 oz	—	Ea	38.50	—	38.50
Marine adhesive/sealant, 10 oz.	—	Ea	12.00	—	12.00
Project adhesive, rubber-based, bonds plywood, hardboard fiberglass, drywall, foam board, shelving, ceramic fixtures, 10 minute work time, 10.5 oz cartridge	—	Ea	3.60	—	3.60

	Unit	1 quart can	1 gallon can
General purpose adhesives			
Acoustic tile adhesive, solvent base, waterproof, sound deadening type	Ea	—	28.00
Aliphatic resin woodworking glue	Ea	12.30	—
Carpet cement, outdoor	Ea	15.40	—
Professional carpenter's glue, multi-purpose	Ea	—	21.20
Contact cement, rubber based, waterproof, bonds veneers to plywood, particleboard, wallboard	Ea	20.50	40.00
Gel contact cement	Ea	16.70	—
Resilient flooring adhesive, latex base, adheres to concrete, plywood, felt, sheet flooring	Ea	9.49	23.50
Tile cement, solvent base, ceramic/stone, interior	Ea	14.30	28.00

	Craft@Hrs	Unit	Material	Labor	Total
Aggregate Typical prices, 5 mile haul, 24 ton minimum. See also Roofing, Built-up					
Crushed stone (1.4 tons per CY)					
3/8" stone	—	Ton	24.80	—	24.80
3/4" (Number 3)	—	Ton	23.60	—	23.60
1-1/2" (Number 2)	—	Ton	24.80	—	24.80
Crushed slag, typical prices where available					
3/4" slag	—	Ton	15.90	—	15.90
1-1/2"	—	Ton	16.30	—	16.30
Washed gravel (1.4 tons per CY)					
3/4" gravel	—	Ton	24.80	—	24.80
1-1/2"	—	Ton	24.90	—	24.90
Fill sand (1.35 tons per CY)	—	Ton	11.50	—	11.50
Add per ton less than 24 tons	—	Ton	7.54	—	7.54
Add for delivery over 5 miles, one way	—	Mile	10.00	—	10.00

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	—	—	375.00
Over 2,500 SF to 3,500 SF	—	LS	—	—	425.00
Over 3,500 SF to 5,000 SF	—	LS	—	—	525.00
Over 5,000 SF	—	LS	—	—	775.00
Small residential income properties (duplex, triplex, quadriplex)					
2 to 4 units	—	LS	—	—	675.00
Apartment houses, commercial and industrial buildings					
To \$300,000 valuation	—	LS	—	—	3,250.00
Over \$300,000 to \$1,000,000 valuation	—	LS	—	—	4,250.00
Over \$1,000,000 to \$3,000,000 valuation	—	LS	—	—	4,750.00
Over \$3,000,000 to \$5,000,000 valuation	—	LS	—	—	6,000.00
Other services					
Additional photograph (each)	—	LS	—	—	27.50
Outlying area fee	—	LS	—	—	55.00
Satisfactory Completion (old Form 442 / new Form 1004d)	—	LS	—	—	150.00
Appraisal Update same comps (Form 1004d)	—	LS	—	—	300.00
Operating Income Statement (FNMA 216)	—	LS	—	—	80.00
SFR Rental Survey (FNMA 1007)	—	LS	—	—	80.00
Appraisal review (desk)	—	LS	—	—	175.00
Appraisal review (field)	—	LS	—	—	375.00
Drive-by appraisal (Form 2055) starting at	—	LS	—	—	275.00
Drive-by appraisal (Form 2070/2075)	—	LS	—	—	225.00
Machinery (Fee is based on total value of equipment appraised) Additional charges for travel and lodging may be required					
To \$30,000 valuation	—	LS	—	—	620.00
Over \$30,000 to \$100,000 valuation	—	LS	—	—	830.00
Over \$100,000 to \$500,000 valuation	—	LS	—	—	1,400.00
Over \$500,000 to \$1,000,000 valuation	—	LS	—	—	1,900.00
Over \$1,000,000 to \$5,000,000 valuation	—	LS	—	—	3,250.00
Court testimony (excluding preparation)	—	Day	—	—	1,500.00
Consulting fees are billed at an hourly rate	—	Hour	—	—	190.00
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 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 \$10,000	LS	775.00	200.00
Claims over \$10,000 to \$75,000	LS	975.00	300.00
Claims over \$75,000 to \$150,000	LS	1,850.00	750.00
Claims over \$150,000 to \$300,000	LS	2,800.00	1,250.00
Claims over \$300,000 to \$500,000	LS	4,350.00	1,750.00
Claims over \$500,000 to \$1,000,000	LS	6,200.00	2,500.00
Claims over \$1,000,000 to \$5,000,000	LS	8,200.00	3,250.00
Claims over \$5,000,000 to \$10,000,000	LS	10,200.00	4,000.00
Claims over \$10,000,000 *	LS	*	6,000.00
No Amount Stated **	LS	3,350.00	1,250.00

* \$10 million and above – Base fee is \$12,800 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.

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	—	—	330.00
Weekday sessions after the initial consultation	—	Hr	—	—	166.00
Nonrefundable retainer for weekend mediation	—	Ea	—	—	400.00
Weekend mediation sessions	—	Hr	—	—	250.00

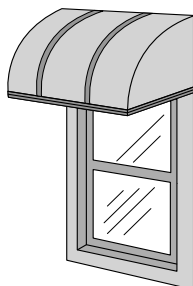
Architectural Illustrations Full color painting on watercolor board with matted frame with title and credit on matte. Glass and elaborate framing are extra. Costs for pen and ink illustrations with color Mylar overlay are similar to cost for watercolor illustrations. Typical fees.



Custom home, eye level view					
Simple rendering	—	LS	—	—	915.00
Complex rendering	—	LS	—	—	1,340.00
Custom home, bird's eye view					
Simple rendering	—	LS	—	—	1,100.00
Complex rendering	—	LS	—	—	1,580.00
Tract homes in groups of five or more (single floor plans, multiple elevations), eye level view					
Simple rendering	—	LS	—	—	540.00
Complex rendering	—	LS	—	—	745.00
Tract homes in groups of five or more (single floor plans, multiple elevations), bird's eye view					
Simple rendering	—	LS	—	—	695.00
Complex rendering	—	LS	—	—	1,120.00
Tract homes or condominium project, overall bird's eye view					
10-25 homes or living units	—	LS	—	—	3,440.00
Typical commercial structure					
Eye level view	—	LS	—	—	1,510.00
Bird's eye view	—	LS	—	—	1,700.00
Complex commercial structure					
Eye level view	—	LS	—	—	2,230.00
Bird's eye view	—	LS	—	—	2,880.00

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	—	—	580.00
Large condo or apartment projects	—	LS	—	—	1,460.00
Tract homes	—	LS	—	—	364.00
Commercial structure, line drawing	—	LS	—	—	1,090.00



Awnings and Canopies for Doors and Windows Costs for awnings include all hardware. All have adjustable support arms to control angle height and preferred amount of window coverage. For larger size aluminum awnings, price two awnings and add for splice kit below. For commercial grade awnings, see the Industrial and Commercial Division section 12, Furnishings.

Natural aluminum ribbed awning with clear, weather-resistant finish and 26" arms

36" wide x 30" long	SW@1.45	Ea	62.30	59.10	121.40
48" wide x 30" long	SW@1.86	Ea	80.50	75.80	156.30
60" wide x 30" long	SW@2.07	Ea	99.80	84.40	184.20
72" wide x 30" long	SW@2.27	Ea	113.00	92.50	205.50
Add for door canopy with 17" drop sides	—	%	50.0	—	—

Custom colored window awnings in stripes or solids, with baked enamel finish and ventilation panels

30" wide x 24" high	SW@1.45	Ea	101.00	59.10	160.10
36" wide x 36" high	SW@1.45	Ea	152.00	59.10	211.10
48" wide x 48" high	SW@1.87	Ea	257.00	76.20	333.20
48" wide x 60" high	SW@1.87	Ea	364.00	76.20	440.20
60" wide x 72" high	SW@2.07	Ea	398.00	84.40	482.40
72" wide x 72" high	SW@2.26	Ea	545.00	92.10	637.10
Add for splice kit with overlap slats	SW@.218	Ea	21.00	8.88	29.88

Security roll-up awning with pull cord assembly and folding arms, clear weather-resistant finish. Awning rolls down to cover whole window. 48" long, 24" arms

36" wide	SW@1.52	Ea	193.00	61.90	254.90
48" wide	SW@1.94	Ea	231.00	79.10	310.10

Plastic awning with baked-on acrylic finish, ventilated side panels, and reinforced metal frame, hardware included. 24" drop, 24" projection

36" wide	BC@1.58	Ea	160.00	57.20	217.20
42" wide	BC@1.75	Ea	178.00	63.40	241.40
48" wide	BC@2.02	Ea	204.00	73.10	277.10
60" wide	BC@2.26	Ea	229.00	81.80	310.80
72" wide	BC@2.47	Ea	246.00	89.40	335.40
96" wide	BC@2.79	Ea	312.00	101.00	413.00

Plastic door canopy with 36" projection

42" wide	BC@1.80	Ea	336.00	65.20	401.20
----------	---------	----	--------	-------	--------

Traditional fabric awning, with waterproof, acrylic duck, colorfast fabric, double stitched seams, and tubular metal framing and pull cord assembly. 24" drop, 24" projection

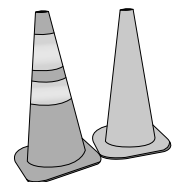
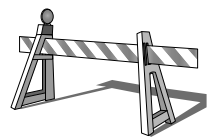
30" wide	BC@1.35	Ea	55.90	48.90	104.80
36" wide	BC@1.58	Ea	73.50	57.20	130.70
42" wide	BC@1.80	Ea	68.50	65.20	133.70
48" wide	BC@2.02	Ea	80.40	73.10	153.50
Add for 30" drop, 30" projection	—	%	10.0	20.0	—

Cloth canopy patio cover, with front bar and tension support rafters, 9" valance and 8' projection

8' x 10'	BC@2.03	Ea	339.00	73.50	412.50
8' x 15'	BC@2.03	Ea	467.00	73.50	540.50

Barricades, Construction Safety

	Craft@Hrs	Unit	Material	Labor	Total
Barricades, Construction Safety 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	50.00	—	50.00
Quantities from 16 - 31 units	—	Ea	47.00	—	47.00
Pallet quantities, multiples of 32 units	—	Ea	44.00	—	44.00
Reflectorized plastic, injected barricade, NCHRP-350 certified meets MUTCD 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	53.00	—	53.00
Quantities from 16 - 31 units	—	Ea	49.00	—	49.00
Pallet quantities, multiples of 32 units	—	Ea	46.00	—	46.00
Type II, 2' wide, 3' high, Top panel 8" height, 1 reflectorized rail each side					
Quantities from 1 - 15 units	—	Ea	60.00	—	60.00
Quantities from 16 - 31 units	—	Ea	56.00	—	56.00
Pallet quantities, multiples of 32 units	—	Ea	52.00	—	52.00
Type III, 4' wide, 5' high, 3 reflectorized rails each side, wood & steel legs					
Quantities from 1 - 15 units	—	Ea	115.00	—	115.00
Quantities from 16 - 31 units	—	Ea	108.00	—	108.00
Pallet quantities, multiples of 32 units	—	Ea	101.00	—	101.00
Add for lighted units without batteries (batteries last 2 months)					
Amber lens	—	Ea	19.20	—	19.20
Red lens	—	Ea	20.10	—	20.10
Batteries, 6 volt (2 needed)	—	Ea	4.75	—	4.75
Utility barricade lights, solar powered 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	45.00	—	45.00
Miscellaneous signage/traffic control					
"Road Closed", reflectorized, 30" x 48", Engineer Grade					
	—	Ea	85.70	—	85.70
"Construction Zone", 4' x 4' high intensity grade					
	—	Ea	236.00	—	236.00
High-rise tripod with 3 orange flags					
	—	Ea	192.00	—	192.00
Flags					
	—	Ea	3.74	—	3.74
Traffic cones, PVC					
Non-reflectorized type					
18" high	—	Ea	11.10	—	11.10
28" high	—	Ea	15.10	—	15.10
Reflectorized type					
18" high	—	Ea	11.80	—	11.80
28" high	—	Ea	20.40	—	20.40
Lane delineator, 42" orange plastic cylinder with 2 reflectors on a 12 pound rubber base					
	—	Ea	20.70	—	20.70
Mesh signs, orange, 48" x 48", includes brace and clamp					
	—	Ea	68.20	—	68.20
Hand-held traffic paddles, "Stop" and "Slow"					
	—	Ea	26.90	—	26.90



Basement Doors

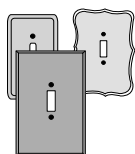
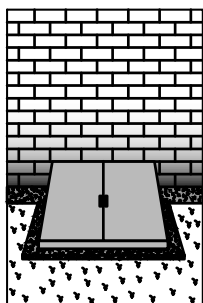
	Craft@Hrs	Unit	Material	Labor	Total
Utility Highway Barricade Rental					
Lighted units, rental, per day	—	Ea	.35	—	.35
Unlighted units, rental per day	—	Ea	.25	—	.25
Add for pickup and delivery, per trip	—	Ea	35.00	—	35.00
Typical labor cost, place and remove any barricade					
Per use	BL@.160	Ea	—	4.70	4.70
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	61.20	—	61.20
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	8.00	—	8.00
Various colors, 3" x 200', "Danger"	—	Ea	5.50	—	5.50

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	838.00	123.00	961.00
SLW Series standard, all sizes	BC@3.41	Ea	868.00	123.00	991.00
Ultra Series,	BC@3.41	Ea	1,150.00	123.00	1,273.00
Add for keyed lock	BC@.160	Ea	102.00	5.79	107.79
Door extensions (available for 19-1/2"H, 55"W, 72"L door only)					
6" deep	BC@1.71	Ea	207.00	61.90	268.90
12" deep	BC@1.71	Ea	271.00	61.90	332.90
18" deep	BC@1.71	Ea	338.00	61.90	399.90
Stair stringers, steel, pre-cut for 2" x 10" wood treads (without treads)					
32" to 39" stair height	BC@1.71	Ea	97.90	61.90	159.80
48" to 55" stair height	BC@1.71	Ea	124.00	61.90	185.90
56" to 64" stair height	BC@1.71	Ea	137.00	61.90	198.90
65" to 72" stair height	BC@1.71	Ea	154.00	61.90	215.90
73" to 78" stair height	BC@1.71	Ea	213.00	61.90	274.90
81" to 88" stair height	BC@1.71	Ea	230.00	61.90	291.90
89" to 97" stair height	BC@1.71	Ea	246.00	61.90	307.90

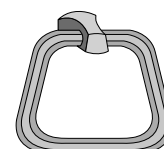
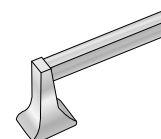
Bathroom Accessories Average quality. Better quality brass accessories cost 75% to 100% more. See also Medicine Cabinets and Vanities

Cup and toothbrush holder, chrome	BC@.258	Ea	11.90	9.34	21.24
Cup holder, porcelain, surface mounted	BC@.258	Ea	8.33	9.34	17.67
Cup, toothbrush & soap holder, recessed	BC@.258	Ea	31.50	9.34	40.84
Cup, toothbrush holder, polished brass	BC@.258	Ea	16.80	9.34	26.14
Electrical plates, chrome plated					
Switch plate, single	BE@.154	Ea	4.42	6.04	10.46
Switch plate, double	BE@.154	Ea	5.84	6.04	11.88
Duplex receptacle plate	BE@.154	Ea	4.42	6.04	10.46
Duplex receptacle and switch	BE@.154	Ea	5.84	6.04	11.88

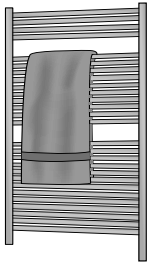


Bathroom Accessories

	Craft@Hrs	Unit	Material	Labor	Total
Grab bars					
Tubular chrome plated, with anchor plates					
Straight bar, 16"	BC@.414	Ea	26.00	15.00	41.00
Straight bar, 24"	BC@.414	Ea	31.50	15.00	46.50
Straight bar, 32"	BC@.414	Ea	34.30	15.00	49.30
"L"- shaped bar, 16" x 32"	BC@.620	Ea	79.40	22.40	101.80
Stainless steel, with anchor plates					
Straight bar, 16"	BC@.414	Ea	39.20	15.00	54.20
Straight bar, 24"	BC@.414	Ea	47.20	15.00	62.20
Straight bar, 32"	BC@.414	Ea	51.20	15.00	66.20
"L"- shaped bar, 16" x 32"	BC@.620	Ea	111.00	22.40	133.40
Mirrors, stainless steel framed, surface mount, no light or cabinet					
16" high x 20" wide	BG@.420	Ea	62.60	14.70	77.30
18" high x 24" wide	BG@.420	Ea	72.70	14.70	87.40
18" high x 36" wide	BG@.420	Ea	112.00	14.70	126.70
24" high x 36" wide	BG@.420	Ea	130.00	14.70	144.70
48" high x 24" wide	BG@.420	Ea	161.00	14.70	175.70
Mirrors, wood framed, surface mount, better quality					
18" x 29" rectangular	BG@.420	Ea	77.70	14.70	92.40
20" x 27" oval, oak	BG@.420	Ea	111.00	14.70	125.70
Robe hook					
Chrome	BC@.258	Ea	23.30	9.34	32.64
Double, solid brass	BC@.258	Ea	22.40	9.34	31.74
Shower curtain rods, chrome plated					
60", recessed	BC@.730	Ea	27.20	26.40	53.60
66", recessed	BC@.730	Ea	29.90	26.40	56.30
Soap holder, surface mounted, with drain holes					
Williamsburg, satin chrome	BC@.258	Ea	55.50	9.34	64.84
Polished brass	BC@.258	Ea	18.10	9.34	27.44
Facial tissue holder, stainless steel, recessed	BC@.258	Ea	37.30	9.34	46.64
Toilet tissue roll holder, chrome, recessed	BC@.258	Ea	17.40	9.34	26.74
Toothbrush holder, chrome, surface mount	BC@.258	Ea	6.44	9.34	15.78
Towel bars, 3/4" round bar					
18" long, chrome	BC@.280	Ea	14.30	10.10	24.40
24" long, chrome	BC@.280	Ea	16.90	10.10	27.00
30" long, chrome	BC@.280	Ea	20.00	10.10	30.10
36" long, chrome	BC@.280	Ea	22.80	10.10	32.90
18" long, solid brass	BC@.280	Ea	46.40	10.10	56.50
24" long, solid brass	BC@.280	Ea	48.80	10.10	58.90
Towel rack, swing-arm, chrome, 3 bars, 12" L	BC@.280	Ea	16.20	10.10	26.30
Towel rings					
Williamsburg chrome and brass	BC@.280	Ea	44.00	10.10	54.10
Williamsburg chrome and porcelain	BC@.280	Ea	42.00	10.10	52.10
Towel shelf, chrome, 24" L with bar below	BC@.280	Ea	41.00	10.10	51.10
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	705.00	33.40	738.40
26" high, 24" wide, standard colors	BE@.850	Ea	750.00	33.40	783.40
26" high, 24" wide, chrome finish	BE@.850	Ea	2,330.00	33.40	2,363.40

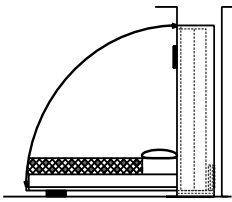


Blueprinting



	Craft@Hrs	Unit	Material	Labor	Total
35" high, 16" wide, standard colors	BE@1.00	Ea	790.00	39.20	829.20
35" high, 24" wide, standard colors	BE@1.00	Ea	835.00	39.20	874.20
35" high, 24" wide, chrome finish	BE@1.00	Ea	2,790.00	39.20	2,829.20
44" high, 16" wide, standard colors	BE@1.10	Ea	880.00	43.20	923.20
44" high, 24" wide, standard colors	BE@1.10	Ea	930.00	43.20	973.20
44" high, 24" wide, chrome finish	BE@1.10	Ea	3,060.00	43.20	3,103.20
Add for direct wire w/ control panel	BE@.100	Ea	195.00	3.92	198.92
Add for wall plug in	BE@.100	Ea	260.00	3.92	263.92
Heated towel rack accessories					
Programmable control panel	BE@.250	Ea	250.00	9.81	259.81
Pull out drying racks	BE@.250	Ea	70.00	9.81	79.81
Robe knobs	BE@.150	Ea	45.00	5.89	50.89
Towel bar accents with standard colors	BE@.150	Ea	90.00	5.89	95.89
Towel bar accents with chrome finish	BE@.150	Ea	121.00	5.89	126.89
Robe knob accents (all styles)	BE@.150	Ea	209.00	5.89	214.89
Tub or shower chairs					
Wall-hung elevated fixed seat	BE@.750	Ea	33.70	29.40	63.10
White adjustable seat	BE@.750	Ea	62.70	29.40	92.10

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	795.00	177.00	972.00
Double, frames and mechanisms	B1@5.41	Ea	832.00	177.00	1,009.00
Queen, frames and mechanisms	B1@5.41	Ea	869.00	177.00	1,046.00
King, frames and mechanisms	B1@5.41	Ea	954.00	177.00	1,131.00
Add for wood-tone melamine cabinet	—	LS	1,410.00	—	1,410.00
Add for white melamine cabinet	—	LS	1,250.00	—	1,250.00

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.

Blueline or blackline prints

1-100 SF	—	SF	—	—	.20
101-1,000 SF	—	SF	—	—	.18
1,001-2,000 SF	—	SF	—	—	.17
2,001-to 3,000 SF	—	SF	—	—	.16
3,001-4,000 SF	—	SF	—	—	.09
4,001 SF and higher	—	SF	—	—	.08
Presentation blackline (heavy paper)	—	SF	—	—	.51
Sepia	—	SF	—	—	.77
Mylar	—	SF	—	—	2.56
Xerographic prints					
Vellum	—	SF	—	—	1.02
Erasable vellum	—	SF	—	—	1.28
Mylar	—	SF	—	—	2.56
Enlargements (bond)	—	SF	—	—	.61
Reductions (bond, per sheet)	—	Ea	—	—	2.56

Building Inspection Service

	Craft@Hrs	Unit	Material	Labor	Total
Plotting prints					
Translucent bond	—	SF	—	—	1.53
Vellum	—	SF	—	—	1.79
Erasable vellum	—	SF	—	—	2.56
Mylar	—	SF	—	—	2.56
Photo prints					
Mylar	—	SF	—	—	5.77
Add for local pickup and delivery, round trip	—	LS	—	—	15.30

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	—	—	333.00
Add for additional 1,000 SF or fraction	—	LS	—	—	102.00
Add for out buildings (each)	—	LS	—	—	51.10
Add for houses over 50 years old	—	LS	—	—	76.70
Add per room for houses with over 10 rooms	—	Ea	—	—	61.40
Add per room for houses with over 15 rooms	—	Ea	—	—	66.50
Add for swimming pool, spa or sauna	—	LS	—	—	203.00
Add for soil testing (expansive soil only)	—	LS	—	—	205.00
Add for water testing (coliform only)	—	LS	—	—	71.60
Add for warranty protection					
Houses to 10 rooms & 50 years old	—	LS	—	—	256.00
Houses over 50 years old	—	LS	—	—	274.00
Houses over 10 rooms	—	LS	—	—	276.00

Multi-family structures

Two family residence base fee	—	LS	—	—	461.00
Apartment or condominium base fee	—	LS	—	—	256.00
Warranty protection (base cost)	—	LS	—	—	256.00
Add for each additional unit	—	LS	—	—	51.20
Add for each family living unit					
Standard inspection	—	LS	—	—	51.10
Detailed inspection	—	LS	—	—	76.10
Add for swimming pool, spa, sauna	—	LS	—	—	76.70
Add for potable water quality testing	—	LS	—	—	230.00
Add for water quantity test, per well	—	LS	—	—	153.00
Add for soil testing (EPA toxic)	—	LS	—	—	1,530.00
Add for soil testing (lead)	—	LS	—	—	46.10
Add for lead paint testing, full analysis, per room	—	LS	—	—	40.90

Hazards testing for single and multi-family dwellings

Urea-formaldehyde insulation testing	—	LS	—	—	179.00
Asbestos testing	—	LS	—	—	181.00
Radon gas testing	—	LS	—	—	128.00
Geotechnical site examination, typical price	—	LS	—	—	411.00

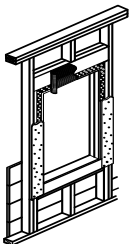
Building Paper See also Roofing for roof applications and Polyethylene Film. Costs include 7% coverage allowance for 2" lap and 5% waste allowance. See installation costs at the end of this section.

Asphalt felt, 36" wide

15 lb., ASTM F45 (432 SF roll)	—	SF	.06	—	.06
15 lb., F40 (432 SF roll)	—	SF	.05	—	.05
30 lb. (216 SF roll)	—	SF	.12	—	.12

Building Paper

	Craft@Hrs	Unit	Material	Labor	Total
Asphalt shake felt, 18" x 72" 30 lb. (108 SF roll)	—	SF	.21	—	.21
Building paper, 40" wide Single ply, black (1,078 SF roll)	—	SF	.03	—	.03
Two ply (539 SF roll)	—	SF	.05	—	.05
Aquabar™, two layer, laminated with asphalt, Fortifiber™ products					
Class A, 36" wide, 30-50-30 (1,000 SF roll)	—	SF	.05	—	.05
Class B, 36" wide, 30-30-30 (500 SF roll)	—	SF	.04	—	.04
Ice and water shield, self-adhesive rubberized asphalt and poly					
225 SF roll	—	SF	.78	—	.78
225 SF roll, high temperature	—	SF	.86	—	.86
"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	.02	—	.02
"Super Jumbo Tex" two-ply, 60 minute, asphalt saturated Kraft (162 SF roll)	—	SF	.21	—	.21
Red rosin sized sheathing (duplex sheathing) 36" wide (501 SF roll)	—	SF	.06	—	.06
Bruce rosin paper, floor underlay (500 SF roll)	—	SF	.10	—	.10
Moistop flashing paper, Fortifiber™, 12" wide x 300' long (300 SF roll)	—	SF	.12	—	.12
Vycor window and door flashing, self adhesive, Grace, 6" x 75' roll 25 mil thickness	—	SF	.88	—	.88
Vycor deck protector, self adhesive joist flashing, Grace, 4" x 75' roll Roll covers 66 LF of joist	—	LF	.31	—	.31
Plasterkraft grade D weather-resistive sheathing paper, 40" wide					
Super 60 minute (500 SF roll)	—	SF	.04	—	.04
Ten minute 2-ply (500 SF roll)	—	SF	.03	—	.03
Roof flashing paper, seals around skylights, dormers, vents, valleys and eaves, rubberized, fiberglass reinforced, self-adhesive, GAF StormGuard™					
Roll covers 200 SF	—	SF	.50	—	.50
Roof underlay, for use under shingles, granular surface, Weatherlock® 200 SF roll	—	SF	.40	—	.40
Tri-Flex roof underlay, for use under shingles, tile, slate or metal roofing, 48" x 250' 1,000 SF roll	—	SF	.12	—	.12
Below grade vapor barrier, Fortifiber™ Moistop (fiberglass reinforced Kraft between 2 layers of polyethylene) 8' x 250' roll (2,000 SF roll)	—	SF	.18	—	.18
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	.23	—	.23
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	.07	—	.07



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	.08	—	.08
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	.13	—	.13
House wrap tape, 2" x 165'	—	LF	.08	—	.08
Labor to install building papers					
Felts, vapor barriers, infiltration barriers, building papers on walls					
Tack stapled, typical	BC@.002	SF	—	.07	.07
Heavy stapled, typical	BC@.003	SF	—	.11	.11
Felts, vapor barriers, infiltration barriers, building papers on ceilings and roofs					
Tack stapled, typical	BC@.004	SF	—	.14	.14
Heavy stapled, typical	BC@.006	SF	—	.22	.22
Self-adhesive, typical	BC@.006	SF	—	.22	.22
Curing papers, protective papers and vapor barriers, minimal fasteners	BC@.001	SF	—	.04	.04
Flashing papers, 6" to 8" wide	BC@.010	LF	—	.36	.36

Building Permit Fees Fees are set by each jurisdiction and can vary widely. Building departments publish current fee schedules. The permit fee will usually be doubled when work is started without securing a permit. When the valuation of the proposed construction exceeds \$1,000, plans are usually required. Estimate the plan check fee at 65% of the permit fee for residences and 100% of the permit fee for non-residential buildings. Estimate the fee for reinspection at \$139 per hour. Inspections outside normal business hours are about \$139 per hour with a two hour minimum. Estimate the fee for additional plan review required by changes, additions or revisions to approved plans at \$143 per hour with a one-half hour minimum. Plumbing, electrical and mechanical work will usually require a separate permit based on a similar fee schedule. Valuations are based on a table published by the I.C.C. at: <http://www.iccsafe.org/cs/Pages/BVD.aspx>

The minimum fee for construction values to \$500 is \$74.00

\$500 to \$2,000, for the first \$500	—	LS	—	—	74.00
each extra \$100 or fraction, to \$2,000	—	LS	—	—	3.93
\$2,000 to \$25,000, for the first \$2,000	—	LS	—	—	132.95
each extra \$1,000 or fraction, to \$25,000	—	LS	—	—	25.94
\$25,000 to \$50,000, for the first \$25,000	—	LS	—	—	729.57
each extra \$1,000 or fraction to \$50,000	—	LS	—	—	18.71
\$50,000 to \$100,000, for the first \$50,000	—	LS	—	—	1,197.32
each extra \$1,000 or fraction, to \$100,000	—	LS	—	—	12.96
\$100,000 to \$500,000, for the first \$100,000	—	LS	—	—	1,845.32
each extra \$1,000 or fraction, to \$500,000	—	LS	—	—	10.38
\$500,000 to \$1,000,000, for the first \$500,000	—	LS	—	—	5,997.32
each extra \$1,000 or fraction, to \$1,000,000	—	LS	—	—	8.80
For \$1,000,000	—	LS	—	—	10,397.32
each extra \$1,000 or fraction thereof	—	LS	—	—	5.81

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, melamine laminated to particleboard.

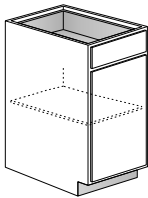
Cabinets, Rule of Thumb Cabinet cost per running foot of cabinet installed. These figures are based on a set of mill-fabricated and assembled kitchen cabinets including a sink base cabinet, one 3-drawer base cabinet and six door base cabinets. Per linear foot of front or back edge, whichever is longer.

Base cabinets, 34-1/2" high, 24" deep	BC@.521	LF	160.00	18.90	178.90
Wall cabinets, 30" high, 12" deep	BC@.340	LF	83.90	12.30	96.20

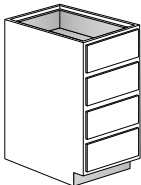
Cabinets, Kitchen (See the note above concerning cabinet costs.)

One door base cabinets, 34-1/2" high, 24" deep

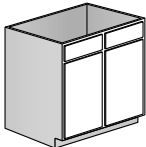
9" wide, tray divider	BC@.461	Ea	150.00	16.70	166.70
12" wide, 1 door, 1 drawer	BC@.461	Ea	203.00	16.70	219.70
15" wide, 1 door, 1 drawer	BC@.638	Ea	216.00	23.10	239.10
18" wide, 1 door, 1 drawer	BC@.766	Ea	227.00	27.70	254.70
21" wide, 1 door, 1 drawer	BC@.766	Ea	248.00	27.70	275.70
24" wide, 1 door, 1 drawer	BC@.911	Ea	254.00	33.00	287.00



ONE DOOR BASE



DRAWER BASE



SINK BASE

Drawer base cabinets, 34-1/2" high, 24" deep

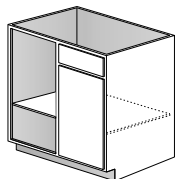
15" wide, 4 drawers	BC@.638	Ea	221.00	23.10	244.10
18" wide, 4 drawers	BC@.766	Ea	236.00	27.70	263.70
24" wide, 4 drawers	BC@.911	Ea	273.00	33.00	306.00

Sink base cabinets, 34-1/2" high, 24" deep

24" wide, 1 door, 1 drawer front	BC@.740	Ea	216.00	26.80	242.80
30" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	261.00	27.70	288.70
33" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	273.00	27.70	300.70
36" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	279.00	27.70	306.70
42" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	309.00	33.00	342.00
48" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	340.00	33.00	373.00

Two door base cabinets, 34-1/2" high, 24" deep.

27" wide, 2 door, 2 drawer front	BC@1.25	Ea	334.00	45.30	379.30
30" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	353.00	45.30	398.30
33" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	369.00	45.30	414.30
36" wide, 2 doors, 2 drawer fronts	BC@1.35	Ea	388.00	48.90	436.90
42" wide, 2 doors, 2 drawer fronts	BC@1.50	Ea	405.00	54.30	459.30
48" wide, 2 doors, 2 drawer fronts	BC@1.71	Ea	449.00	61.90	510.90



BLIND CORNER BASE

Blind corner base cabinets, 34-1/2" high

Minimum 36", maximum 39" at wall	BC@1.39	Ea	248.00	50.30	298.30
Minimum 39", maximum 42" at wall	BC@1.50	Ea	267.00	54.30	321.30

45-degree corner base, revolving, 34-1/2" high

36" wide at each wall	BC@2.12	Ea	383.00	76.70	459.70
-----------------------	---------	----	--------	-------	--------

Index

A		
Abbreviations	6	
Abrasion testing	317	
Abrasive		
anti-skid strip	286	
concrete finish	359	
stair treads	222, 436	
terrazzo	437	
ABS		
bungalow fitting	518	
bushing	520	
cap	520	
cleanout adapter	520	
cleanout plug	520	
cleanout tee	519	
closet flange	519	
coupling	517	
double sanitary tee	518	
double wye	518	
elbow	517	
female adapter	519	
floor drains	520	
male adapter	519	
P-trap	520	
pipe	516	
return bend	520	
sanitary tee	518	
soil pipe adapter	520	
test cap	519	
test tee	519	
trap adapter	520	
wye	518	
Absorption testing	317	
Access		
control units	593	
disabled persons	480	
fitting, PVC	554	
flooring	438	
handicapped	480	
hatches, sheet metal	269	
stairs, folding	287	
Access doors		
attic	269	
foundation	294	
louver	255, 529	
plumbing	255, 529	
sheet metal	269-422	
tub	270	
wall	270	
Access points, wireless	130, 464	
Access ramps	480	
Accessories		
glass block	219	
water heater	530	
Accordion folding doors	447	
Accordion folding partitions	447	
Acetone	240	
Acid cleaning		
concrete	360	
etching	470	
masonry	374	
wash	374	
Acid etching	441	
Acid-proof brick	378	
Acid-resistant countertops	477	
Acoustical		
adhesive	18	
block	383	
ceiling panels	81	
design fees	134	
engineering	134	
partitions	447	
privacy testing	134	
tile, demolition	100, 339	
ACQ-compatible flashing	271, 273	
ACQ-treated lumber	203	
Acrovyn wall cover	448	
Acrylic		
diffusers	586	
latex caulk	77	
tub and shower	537	
waterproofing	185	
Acrylic-urethane foam roof	406	
Actuating devices, garage doors	164	
ACZA treatment, lumber	208	
ADA		
handicapped access	480	
signage	446	
Adapters		
ABS cleanout	520	
ABS female	519	
ABS male	519	
ABS soil pipe	520	
ABS trap	520	
copper	508	
CPVC	512	
drain pipe	126	
DWV trap	516	
polyethylene pipe	624	
Additives		
coloring	85, 220, 353, 359	
concrete	85, 353, 359	
Add-on boiler modules	581	
Address systems, public	595	
Adhesives		
acoustical ceiling tile	433	
ceramic tile	18, 432	
flooring	18, 154, 159	
modified bitumen	260	
permanent bond	260	
roofing	259, 260	
tile	291, 292	
wallpaper	296	
wood flooring	159	
Administrative overhead	210	
Admixtures		
coloring	85, 220, 359	
concrete	85, 353, 359	
Adobe block	218	
Aerators, rental	330	
Aerial		
mapping	316	
photographs	316	
platform rental	327	
Aggregate	18, 94	
base	84	
exposed, concrete	618	
finish	359	
paving	612	
roofing	258	
testing	317	
Air brooms, rental	330	
Air compressor		
rental	139, 323	
service station	453	
Air conditioning	180	
heat pump	179	
residential	180	
window	178	
wiring	128	
Air curtain heaters	540	
Air curtain	421	
Air eliminator vent	542	
Air eliminator-purger	173	
Air exhausters		
exhaust hood	459	
fans	142, 411	
Air filter system, central	177	
Air hammer	599	
Air handler, residential	180	
Air hose		
reel	453	
rental	323	
Air tool operator wage	312	
Air tools		
earthwork	138	
rental	323	
Airless paint sprayer	241	
Alarm		
access	438	
circuit	546	
systems	592, 594	
systems, electrical work	128	
valves	496	
wiring	128, 267	
Alarms		
bank	456	
fire	267	
security	267	
smoke	267	
Alcohol paint thinner	240	
Aliphatic resin glue	18	
All-season storm doors	114	
Altars	466	
Aluminum		
brakes, rental	332	
cladding	404	
coating	259	
concrete-embedded	486	
conduit	556	
cupola roof	97	
curtain wall	423	
downspouts	408	
fence	149	
flagpoles	452	
flashing	270, 407	
foil insulation	184	
gutters	408	
letters	445	
louvers	80	
metal work	391	
ornamental	391	
oxide	359	
patio doors	121	
pet doors	122	
railing	389	
roofing	404	
sheet	407	
siding	279, 405	
stairs	285	
tile	433	
vents	410	
Americans with Disabilities		
(ADA access)	480	
Ammeter	575	
Ammonium sulfate	626	
Anchor bolts	58	
foundation	159, 364	
templates	344	
tilt-up	364, 367	
Anchors		
chimney	151	
concrete	159	
embedded steel	376	
foundation	58	
masonry	376, 560	
timber connectors	159	
Angle		
bracket	520	
clips	159	
flashing	271	
iron	221	
iron, fireplace	151	
sill, steel	391	
stops	526	
supports, pipe	521	
valves	526	
Annunciator panel	594	
Anodizing	391	
Antenna		
cable	130	
remote high gain	130	
Anti-siphon vacuum breakers	174	
Anti-skid strips	286	
Appliance dolly, rental	332	
Appliances		
cabinets	31	
connections	255	
dishwashers	251	
garbage disposers	250	
ranges	257, 258	
rough-in	255	
solar water heaters	252	
water heaters	251	
water softeners	252	
wiring	128	
Appraisal fees	18	
Apron		
concrete driveway	618	
window	53	
Arbitration		
fees	19	
mobile	20	
Archbead	189, 430	
Architectural		
drawings	20, 126	
form lining	345	
screens	391, 410	
shingles	260, 261	
signage	445	
Area lighting	591	
Area modification factors	12-15	
how to use	4	
Area walls, sheet metal	270	
Arks, church	464	
Armed guard	268	
Armstrong		
ceiling tile	433	
flooring	153, 154, 435	
Arquati Roma awnings	475	
Arrow board, rental	328	
Art glass, ecclesiastical	474	
Asbestos		
containment	341	
pipe insulation removal	341	
removal	341	
testing	26	
Asbestos worker, wage	312	
As-built drawings	126	
Ash		
drop	151	
dumps	151	
urns	477	
Ash wood flooring	155, 158	
Ashtray	477	
Asphalt		
access road	613	
built-up roofing	258	
coatings	259	
cold milling	614	
curb	613	
dampproofing	401	
emulsion	384	
felt	26, 405	
milling	614	
mix	82	
paper	262	
parking lot	613	
paving	245, 612	
paving, demolition	102	
primer	470	
recycling	335	
repair	614	
roll sheathing	27	
roof coating	239	
roofing	260	
sawing	374	
sheathing	183	
shingles	261	
slurry seal	613	
speed bumps	613	
tack coat	613	
walks	618	
waterproofing	401	
Asphalt cutters, rental	323	
Asphalt-fiberglass shingles	261	
Asphaltic concrete testing	318	

Assemblies		Backsplash	96	Heat-A-Lamp	141	Benefits, fringe	312
brick wall	211, 377	Backstops		heater, ceiling	141	Bentonite	
ceiling	36	basketball	468	QuietTest	140	granules	358
floor	33	baseball	621	switch	141	waterproofing	297
floor slab	356	Balance beams	471	timer switch	141	Berber carpet	76
framing, door opening	43	Balancing valves	174, 543	ValueTest	140	Bevel siding	200
framing, window openings	44, 66	Ball cleaning sewer mains	633	vent kit	141	Beveled glass doors	107
interior walls	34	Ball valves	526	with heater	141	Beverage dispenser	462
plumbing	534, 536	Balusters	284	with heater, infrared	140	Bicycle racks	479
ramps, landings,		painting	242, 442	with light	140	Bidets	249
for handicapped	480	stair	56	Bath fixtures	535, 537	Bi-fold doors	124, 125
roof	36	Bamboo	158	Bathroom		hardware	125
roofing	37	baseboard	158	accessories	23-25	mirrored	125
steel framing, door opening	65	flooring	158	cabinets	293	Bike post bollard	479
steel framing, window opening	66	stairnose	158	fan wiring	128	Bin, trash	335
wall	34	threshold	158	fans	139, 140, 141	Birch	
wall, brick	211, 377	Band molding	224	sinks	249, 537	doors	106, 115, 116, 119
Astragal moulding	109, 417, 425	Band saws, rental	331	vanities	293	paneling	244
Astro dial time switch	568	Bank equipment	456	wallboard	168	plywood	205
Athletic		alarm system	456	Baths, steam	288	Bird screen	410
benches	470	camera surveillance	456	Bathtubs		Birdstop	265
court, striping	471	Bar		ADA compliant	248	Bitumen adhesive, modified	260
court, surface prep	470	doors, swinging	118	caulk	78	Bituminous	
equipment	469	sinks	249	doors	275	paving	245, 614
field marker	220	Barbed wire fence	144	enameled cast iron	247	paving, removal	335
fields	469	Barracks		enameled steel	247	prime coat	613
gym equipment	468	manufactured	484	fiberglass	247	roofing	258, 405
ATM machine	457	mining camp	484	recessed	247	Black steel pipe	498
Attachments, crane, rental	325	Barricade		rough-in	535	Blanket insulation	184
Attic		highway	618	seat	25	Blasting	
access doors	269	lights	21	walk-in	248	excavation	598
fans	128	rental	21	whirlpool tub	247	sand	375
fans, belt drive	141	roadway	21	Battens, lumber	224	water	241, 266, 336, 375, 441
gable vents	142	temporary enclosures	334	Batterboards	190	Bleachers	468, 478
stairs, folding	287	Barrier posts	456	Batts, insulation	181, 401	Blinds	
vents	294	Barrier tapes	321	Bay vent channel	295	roll-up	299
Audio		Barrier, egress	491	Bay window	302	Venetian	299
detectors	267	Bars		roof cover	307	vertical	299
sensors	592	bath accessories	24	Bead		Block	
Audio-visual equipment, school	462	masonry	349, 375	lath	430	adobe	218
Auditorium		reinforcing steel	89, 349	lath & plaster	189	concrete	215, 381
acoustic design fees	134	welding	352	molding	225, 228	core fill	215, 382
seating	478	Base		Beadex	169	demolition	339
Auger holes		asphalt	245	Beam clamps, piping	521	detailed concrete	215, 381
caissons	611	ceramic tile	293, 378, 432	Beams		filler, acrylic	239
post holes	620	column	391	applied	54	flooring	158
Augers		course, paving	245	carpentry	393	glass	219
rental	330	floor	154	ceiling	45	masonry	215, 381
toilet, rental	331	hardwood	224	clamps, conduit	558	painting	242, 442
Auto hoist	454	marble	385	collar	48	pier	39
Automatic gates	166	MDF	228	concrete	343, 348	sawing	373
Awning windows		post	163	formwork	343, 348	walls, concrete	215
aluminum	305	resilient flooring	154	grade	93	Block filler, painting	442
vinyl-clad wood	303	screed	189, 430	laminated timbers	399	Blocking	
Awnings	21	sheet, fiberglass	260	log	194	carpentry	393
canopy-type	476	slab	94	lumber	202	finish carpentry	51
commercial	475	Base wages		LVL	400	fireblocks	45
fabric	21	industrial & commercial	312	precast	362	sheathing	395
lean-to type	475	residential	10	ridge	194	steel floor joists	61
motorized	475	Baseball backstops	621	shoring	348	Blockout forms	
security	21	Baseboard	55	steel	387	cast-in-place slabs	344
		bamboo	158	steel collar	72	tilt-up	364
		MDF	228	Bearing capacity test	282	Blockouts, concrete	345
		Baseboard heating		Bearing ratio, soil testing	320	Blood storage refrigerators	473
		electric	540	Bed bumpers	448	Blowers	
		radiation	541	Bed molding	226, 228	exhaust hood	459
		radiators	176	Beds		fans	142
		Basement		concealed	25	fireplace	152
		doors	23	folding	25	heating	539
		stairs	284	Beehive climber	471	Blown-in insulation	184, 402
		storm window	307	Beehive grate	639	Blue Board insulation	182
		window	304	Bell footings	612	Bluegrass seeding	627
		Basic wage cost	3	Bell wire	104	Blueprinting	25
		Basketweave fence	147	Bell wiring, electrical work	128	Board	
		Bath accessories	449	Bells		insulation	181
		ceramic	291	door	104	sheathing	50, 51
		ceramic tile	292	fire alarm	594	Boards	
		compartments	446, 537	Belt conveyors	495	forming	88
		enclosures	275	Benches		lumber	195, 197, 198, 199
		fans	142	athletic	470	sheathing	61
		shower cabinets	537	bus stop	483	treatment	208
		shower doors	274	church	464	Bobcats, rental	326
		vanities	293	locker room	478	Boilermaker, wage	312
		Bath exhaust fan	139, 140	park	478	Boilers	581
		accessories	141	stadium	478	expansion tank	174
		ceiling blower	139	Benderboard	188	foundations	370
		exhaust air	140			modules	581

B

Baby changing stations	451
Backer board	
gypsum drywall	168
tile	293
Backer rod	615
Backer strip, steel framing	69
Backfill	
concrete excavation	342
earthwork	136
tilt-up	365
trench	601, 622
Backflow	
preventers	526, 622, 630
valves	315
Backhoes	
excavation	137, 602
rental	138, 325
trenching	600
Backing	
carpentry	47
clay tile	377
finish carpentry	51
rods	415
steel framing	69

Bollards		Norman	211, 212	Bumps, speed	613, 620	Caissons	611
bicycle	479	Padre	212	Bungalow fittings, ABS	518	Calimine removal	443
cast iron	619	painting	242	Burlap soil stabilization	606	Calcium chloride	85, 353
granite	619	paving	217, 245, 385, 615	Bus duct connection	574	Calcium nitrate	626
Bolt cutters, rental	331	plate	385	Bus schedule, display panel	484	California pavers	214
Bolts		pointing	375	Bus stop		Cambria countertop	96
anchor	58	sandblasting	266	enclosures	483	Campus network wiring	463
carriage	234	sawing	373	shelters	483	Cane fiber joint	358
foundation	159	standard	211, 212	Bushings		Canopy	
lag	234	steps	386	ABS	520	commercial	475
machine	234	testing	319	conduit	547	door	21
tilt-up	364	veneer	213	Business overhead	210	food service hoods	459
Bond breaker	358	walls	211, 377	Butacite	486	range hoods	256
tilt-up	367	Bricklayer, wage		Butt hinges	424	steel framing	391
Bonding agents		industrial & commercial	312	Button switches	568	Cant strips	
adhesives	17, 18	residential	10	Buttweld joints, welding	392	carpentry	50
flooring	154	Bricklayer's helper, wage,		Butyl roofing	405	roofing	183, 406
roofing	259, 406	residential	10	BX cable	563, 564	Canvas tarpaulins	288
Bonds, insurance	185	Bridge, pedestrian	491	Bypass doors	123	Cap	
Bookcases, painting	243	Bridging		accessories	124	conduit	548
Boomlifts, rental	327	carpentry	41	beveled mirror	123	door bottom	289
Boring		I-Joist	160	mirrored	123, 124	sheet, roofing	260
caissons	611	joist	160, 393			test	519
soil testing	282	steel floor joists	61			tile	378
under walkways	622	tension	160			Capillary fill	342
Bottom plates, carpentry	37	Broan Manufacturing	140, 141, 257			Capital forms	346
Bottom track, steel framing	73	Broiler, food	459			Caps	
Bow windows	307	Bronze fabrications	391	Cabinets		ABS	520
Box nails	229	Broom finish, concrete	95, 359	bath	222, 293, 450	black steel	498
Boxes		Brown coat plaster	246, 431	classroom	477	copper	508
electrical	565	Brush		cleaning	83	CPVC	511
junction	566	chippers, rental	330	custom	476	drain pipe	126
outlet	128, 565	cutters, rental	330	end panels	31	flashing	407
pull	566	hogs, rental	330	extinguisher	497	masonry	215, 218
switch	128	removal	137, 597	finish carpentry	477	molding	224
valve	622	Brush finish, concrete	95	fire hose	497	post	163
Braces		Brush painting	440	hardware	424, 476	Capuccino dispenser	462
tilt-up	366	Bucket, clamshell, rental	325	hospital	477	Carbon steel pipe	498
trench, rental	326	Buckets, rental	324	installation	55	Carborundum rub	95, 360
wall	164	Buggies, rental	324	kitchen	29	Card reader	
Bracing		Bugles, rental	324	labor cost	31	parking	454
bulkheads	608	Builder's adhesive	17	laboratory	477	security access	593
carpentry	44, 393	Builder's hardware	425	lavatory	293	Carpenter, wage	
steel framing	67	rough carpentry	159	lighting fixtures	191, 223	industrial & commercial	312
temporary	44, 67	Building		linen, shelving	273	residential	10
trenches	608	appraisal	18	medicine	222, 293, 450	Carpentry	
trenches, rental	326	blocks, concrete filled	87	metal	476	assemblies	37
Brads	231	board	296, 402	painting	243	cabinets	29, 477
Braille signage	446	columns	187	shelving	273	finish	51, 52, 425
elevator	483	demolition	103, 338	shop	476	furring	52
Branch circuits	577	hardware	425	shower	537	industrial and commercial	393
Brass		moving	341	storage	477	molding	228
fabrications	391	paper	26, 28	utility	30, 31	piecework	37
railing	389	permit fees	28	vanity	293	piecework rates	39, 74
storm	114	posts, steel	187	wardrobe	462, 476, 477	plates	393
Bread slicer	460	sewer	269	wood	477	rough	46
Breaker		stone, testing	319	Cable		square foot costs	32
bond	358	wiring	127	antenna	130	wall sheathing	397
circuit	128	Building laborer, wage		armored	563	Carpet adhesive	18
form	358	industrial & commercial	312	BX	563, 564	Carpet tile	438
panels	575	residential	10	Cat 5	596	Carpets	437
paving, rental	323	Building layout	598	Cat 5e	596	access flooring	438
vacuum	315, 621	Buildings		Cat 6	596	Berber	76
Breaking, demolition	104, 338	steel engineered	487	coaxial	595	mats	222, 478
Brewer, coffee	462	temporary, rental	333	communication	594	subcontract, carpet	76
Brick		Built-in ovens	258	computer network	596	Carports	77
acid-proof	378	Built-up girders		electrical	565	Carriage bolts	234
artificial	245	carpentry	40	Ethernet	596	Carriers, conveyors	495
chemical-resistant	378	steel	387	fiber optic	595	Cars, elevator	133, 494
cleaning	374	steel framing	60	flexible armored	564	Cartridge fuses	579
colonial	211	Built-up roofing	258, 405	ice-melting	565	Casement windows	
commercial	212	cement, Cold-App	260	metal-clad	563	vinyl	302
common	377	demolition	102	network	130, 463, 464	vinyl-clad wood	303, 304
cutting	373	Bulb, light	193	phone	594	Cases	
demolition	100	Bulkhead forms	343, 345	power	564	cabinets	29, 477
face brick	377	Bulkheads, shoring	608	punch down	464	laboratory	477
firebrick	214	Bulldozers		RG Series	595	painting	243
flooring	222	excavation	137	RJ Series	595	Cash box, service station	454
jumbo	212	rental	138	Romex	127, 546, 563	Cash dispenser	457
manhole	640	Bullet resistant glass	426	signal	595	Cashier booth	489
masonry	211, 377	Bulletin boards	445	snow-melting	480, 564	Casing	
mini	213	Bullnose paver	214	tap	594	aluminum siding	279
mission	214	Bullnose, drywall	169	testing, computer	597	beads	189
modular	211, 212	Bumper guards	448	tray	561	door	53
mold flashing	271	Bumper threshold	288	twinaxial	596	extruded polymer	228
molding	108, 224	Bumpers		twisted pair	596	finish carpentry	52
mortar	211	dock	368	Cable testing	130, 464	hardwood	224
		highway	618	Cabs, elevator	133, 494		
				Café doors	118		

MDF	228	roofing	259	equipment	464	Clips	
molding	225	testing	318	glass	474	angle	160
nails	231	tile	264	pews	465	framing	159
window	54	white	82, 431, 437	Chutes		plywood	163
Cast iron		Cement and EPS forms	87	demolition	340	Clock	
column bases	391	Cement mason, wage		garbage	495	receptacles	567
fittings	629	industrial & commercial	312	linen	495	wiring	128
flanged pipe	629	residential	10	mail	451	Closers, door	105, 424
ornamental iron	150	Cementitious		trash	340	Closet doors	119
pipe	629	coating	373	Cigarette disposal	477	bi-fold	124
sections	391	decks	372	Cinder rock	607	bypass	123
valve box	630	roofing system	406	Circline lighting	192	mirrored bypass	123, 124
valves, AWWA	630	Central		Circuit balancing valves	174, 543	Closet flange, ABS	519
Cast-in-place, concrete	93	air filter	177, 181	Circuit breakers		Closets	
Catch basins	638	heating and cooling	175	panels	578	cabinets	29, 477
demolition	337	Central vacuum systems	293	wiring for	128	lighting, wiring	128
entrance	478	Ceramic		Circuits		lining, cedar	79
gratings	390	tile	290	dryer	547	poles	55
Catwalks, carpentry	46	Ceramic tile	431	exit light	546	racks	457
Caulk		backer board	293	light and power	546	shelves	273
acrylic latex	77	demolition	101, 102, 340	motor	570	storage unit	55
fireproof	78	facing tile	378	range	547	water	249, 534, 536
strip	79	fixtures	291	receptacle	546	Clothes chutes	495
Caulking	77	installation	292	switch	546	Clothes dryers	
guns	79	mosaic	291	under slab	546	vent sets	294
sealants	414	veneer	384	Circular louver	295	wiring	128
Caution lights	22	CertainTeed	261	Circular windows	302	Clothes washers, wiring	128
Caution tape	23	CFL light bulb	193	City cost adjustments	12-15	Clothesline units	84
Cavity wall		Chain hoists, rental	332	Civil engineering fees	134	Coat hooks and racks	457
insulation	185	Chain link fence	142, 620	Cladding, preformed	404	Coatings	
reinforcing	376	demolition	336	Clamps		cementitious	373
C-clamps, pipe	521	painting	441	column forms	358	concrete finishes	359
Cedar		Chain railing	390	concrete, rental	325	deck	441
boards	79	Chain saws	139	conduit	559	industrial	440
closet lining	79	rental	331	ground rod	569	roofing	259
fence	147, 148	Chair rail	55, 225	pipe	521, 522	steel	391
lumber	199	MDF	228	PVC conduit	554	Coaxial cable	595
paneling	244	Chairs		riser	521	Code caps	294
plywood	205	auditorium	478	top beam	521	Coffee brewer/percolator	462
roofing	262	cathedral	465	Clamshell excavators, rental	325	Coil	
saunas	266	reinforcing steel	90	Clamshovels, rental	330	framing nails	231
shakes	262	school	462	Classrooms, manufactured	484	roofing nails	232
shingles	258	Chamfer		Clay		Cold box, insulation	403
siding	200	corner forms	358	backing tile	377	Cold milling, asphalt	614
Cedarmill	277	strip	358	brick	377	Cold process cement	260
Ceiling		Changes in costs	5	pipe	638	Cold-formed steel framing	56
access hatches	410	Changing stations	451	tile, load bearing	377	Collar beams	
acoustical	433	Channel		Clean metal primer	238	carpentry	48
adhesive	17	hanger	559	Cleaning		steel framing	72
assemblies, wood framed	36	resilient	169, 429	brick	374	Collar ties	48
beams	45	siding	200	cabinets	83	Collated brads	231
beams, carpentry	393	steel	217	concrete	359	Collated nails	231, 232
demolition	100	strap	559	doors	83	Colonial	
domes	79	vent, rafter bay	295	final	83	brick	211
fans	142	Channelizing, earthwork	606	floors	83	columns	84
fans, bath	139	Charbroiler, commercial	459	glass	83, 335	interior doors	119
grid	433	Charging, electric fence	144	glass block	384	storm doors	114
joists	46, 67	Check desks	456	masonry	374, 375	Color coat, tennis court	470
joists, steel	67, 73	Check valves	496, 523, 525	new construction	83, 335	Coloring agents	220
lighting fixtures	79, 190	Checkroom equipment	457	paint preparation	241	concrete	85, 95, 353, 360
metal pans	82	Chemical fire protection	459	painting	440	mortar	220, 616
paint removal	235	Chemical-resistant brick	378	pavement joints	615	Column forms	346
painting	240, 243, 441	Cherry		plumbing fixtures	83	capitals	348
panels	81	paneling	244	sewer main	633	round	347
plywood	54	parquet	158	shower stalls	83	tilt-up	369
radiant heating systems	176	Chestnut flooring	155, 156	stone	374	Columns	
skylights	280	Child protection seat	451	storm sewer	634	base ties	160
stained glass look	81	Chilled water pipe	498	terra cotta	374	bases	84
suspended	79, 433	Chimes, door	104	vacuum systems	293	capitals, formwork	348
tile	82, 434	wiring	128	walls	83	caps	161
tile adhesive	433	Chimneys		windows	83	carpentry	39
tile, wood fiber	433	anchors	151	Cleaning station	461	carpentry, steel	57
tin	82	caps	294	Cleanout		clamps, rental	325
treatments	54	firebrick	214	adapter, ABS	520	concrete	343
wood strip	54	fireplace	152	doors, fireplace	151	fireproofing	413
Cellar doors, steel	109	flashing	407	drainage piping	529	footings	92
Cellulose insulation	184, 185	flues	152, 218, 377	plug, ABS-DWV	520	lally	39
Cement	82	masonry	222, 377	tees, ABS	519	lally, steel	57
adhesive	17	prefabricated	377	Cleanup, overhead	313	marble	385
cold process	260	Chippers		Clear cedar siding	200	painting	242
coloring	85, 220, 359	pneumatic, rental	323	Clearing brush	597	porch	84
concrete	354	rental	330	excavation	136	precast	363
cutting	373	Chisels, rental	323	Clerical help cost	313	reinforcing	353
duct, envelopes	545	Chop saws, rental	331	Clevis hangers	521	structural steel	387
lap roof	260	Church		Climber, tower	473	tilt-up	369
painting	242	acoustical design fees	134			tube	357
parging	386	chairs	465			wood	84
plaster	246						

Come-a-longs, rental	332	forms, cast-in-place	344	walls	86, 87, 92, 354, 360	irrigation	621
Commercial brick	212	forms, paving	614	waterproofing	297, 358, 401	motor	570
Commercial wage rates	312	foundations	94	waterstop	91, 352	sprinkling	623
Common brick	377	grade beams	93	wedge tie	358	Convertible range hood	256
Communications	592	granite aggregate	85	work	342	Conveying equipment	492
Communications cable	594	grout	359, 382	Concrete block		Conveyors	
Communion rail	465	grout mix	85	demolition	100	belt	495
Compacting soil		grouting	96	glazed	383	checkroom	457
embankment	600	gunite	360	natural	215	concrete, rental	325
equipment rental	139, 324	hardeners	359	painting	242, 243, 442	oven	460
excavation	136, 600	high early strength	85	pavers	217	Cooking equipment	457
roadway	606	ICF	86	retaining walls	378	Cooktops, residential	257
trenches	602	inserts	359	screen	217, 383	Coolers	461
Compaction testing	282	insulated forms	86, 87	slump	218	drinking water	250, 538
Compactors, rental	139, 324	insulating deck	372	split-face	217, 383	HVAC	180
Compartments, cubicles	446	joints	85	testing	319	walk-in	461
Composite lumber	98	keyway	94	walls	215, 381	Cooling	
Composition		landings	480	Concrete reinforcing		air conditioning	180
roof, coating for	239	lightweight	85	polypropylene fiber	85	heat pump	179, 180
roofing	260	line markings	619	Conduit		Coping	
Compressors		lintels	386	adapter, PVC	553	masonry	218, 386
foundations	370	manholes	639	bodies, PVC	554	metal	406
paint	241	masonry units	215, 381	bodies, steel	547	Copper	
rental	323	meter boxes	223	clamps	559	flashing	271
service station	453	mix	84	EMT	548	grounding devices	569
Computer		mixer, rental	324	EMT circuits	550	gutter	408
access flooring	438	nails	232	end bell	553	nails	271
network cable	595, 596	paint preparation	241	flexible aluminum	556	pipe	507
network setup	130, 131	paint removal	236	flexible non-metallic	557	pipe, DWV	516
wiring	130	painting	242, 441	flexible steel	556	pressure fittings	508
wiring for educational network	463	patching	95	hangers	558	roof, cupola	97
Concrete headwalls	641	pavers	217, 628	hangers, PVC	554	roofing	408
Concrete		paving	246, 614	hubs	573	tubing	509, 516
access ramps	480	paving, removal	335	IMC	551	wall ties	376
additives	85, 353, 358, 359	piles	609	intermediate metal	551	window roofs	307
adhesive	18	pipe	636	lightweight	557	wire, THHN	562
aggregate	353	placing	95, 354	liquid-tight flexible metal	557	wire, XHHW	562
apron	480, 618	placing, labor	354	painting	441	wood preservative	239
architectural	85	plank	362	PVC	551, 552	Corbels, cabinet	31
beams	343, 348	plasticized	85	rigid steel	547	Cord sets	567
block core fill	215, 382	plyform	204	RSC	547	Core	
buggies, rental	324	pouring	95	steel	547	brick testing	319
building walls	355	precast	223, 360	Cones, traffic control	22	cutting, concrete	373
bush hammered	360	pull & junction box	546	Confessionals	465	grouting	215, 382
caisson	611	pump mix	85	Conflict resolution	20	sampling (soil testing)	282
cast-in-place	357	pumping	354	Connection, Internet	130	Corian	97
coatings	358, 359, 373	ready-mix	84, 354	Connections		Cork	
coloring	85, 96, 220, 359, 360	recycling	335	sewer	269	insulation	403
column forms	343	reinforcement	89, 349	water heater	531	running track	469
columns, reinforcing	352	retaining walls	92, 344	Connectors		sheathing	439
conduit envelopes	545	roof decks	372	computer cable	597	Corner	
core drilling	373	sandblasting	266	construction	161	bead	189, 225, 430
culvert, precast	636	sawing	366, 373	framing	159, 161	cabinets	31
curb	88, 95, 617	saws, rental	324	Sealtite	557	guards, metal	391, 408
curing	359	screeds, rental	325	straps	570	mold	225
curing compounds	354	sealant	77	Conservatories	485	molding	224
curing papers	27	sealer	359	Construction		record (surveying)	316
cutting	373	shingles	264	barricades	21	Cornice moulding	54
decking	372	sidewalk	94, 618	camps, manufactured	484	Cornices, painting	242
delivery charges	85	slab demolition	340	economics	310	Corrugated	
demolition	101	slab forms	344	elevators and hoists	322	fiberglass	150
depression forms	344	slab sawing	374	keying	170	glass	426
driveways	84	slabs	94, 355, 357, 362, 373	loans	314	mats	222
edge forms	344	slip-formed	356	photographs	321	metal pipe	637
embossed finish	96	snap ties	86	signs	321	metal roofing	263, 404
equipment foundations	369	specialty finishes	95	tools, rental	323	metal siding	279, 405
equipment rental	324	spread footings	380	Consultants' fees	134, 316	pipe	637
etching	360	stain	237	Contact cement	18	polyethylene pipe	637
excavation	342	stairways	357	Containers, storage, rental	334	polyethylene tubing	634
expansion joints	85, 358	stamped finish	96	Containment, asbestos	341	Cost adjusting, labor	4
exposed aggregate	95	steps	95, 354, 357	Contingency	210, 313	Cost adjustments, city	12-15
fiber mesh reinforcing	85	structural	354, 356	Continuous spread footings	380	Cost engineering	316
fill	368	support poles	364	Contractor insurance	186	Cotton insulation	184
fill, columns	388	surface prep	441	Contractor's labor burden		Cotton mat reinforcing	260
finishes	95	surfacing	373	industrial & commercial	312	Counter flashing	271, 407
finishing	96	suspended slabs	356	residential	10	Counters, bank	456
fireproofing	411	testing	318	Control		Countertop steamers	458
flared apron	480, 618	ties	86	erosion	627	Countertops	
flatwork	355, 614	tile roofing	264	fund fee	314	cleaning	83
floor finishes	359, 372	tilt-up	366	joints	376	Corian	97
floor slab	356	topping	95	pests (soil treatment)	283	engineered stone	96
footings	92	underpinning	608	valves	527, 621	granite	96
footings, demolition	100	unit masonry	215	Control panels		labor costs	96
form stakes	86	vapor barrier	434	alarm	594	laminated plastic	96
form stripping	88	vibrators, rental	324	motor	570	plastic	477
form tie	358	walks	94, 618	Control switch, fan	141	tile	293, 437
forms	86, 87, 88, 94, 343	wall form	88	Controls			
		wall sawing	373	hydronic	173		

Couplings	Division 31	597	radioactivity	439	ticket	454
ABS	Division 32	612	toxic chemicals	439	toilet paper	449
black steel	Division 33	629	Decora glass block	219	Disperser, rain gutters	410
copper	Cubicles	446	Decorative glass, ecclesiastical	474	Display case, food	458
CPVC	Culvert pipe	634, 636	Dehumidifiers, rental	332	Display panel for map, schedule	484
drain pipe	Cup holder	23	Deli case, food service	458	Disposal	
threaded	Cupboards, painting	243	Delivery, office trailers	334	asbestos	341
Court, athletic, surface primer	Cupolas		Delphi glass block	219	fields	268
Cove base	aluminum roof	97	Deluge valves	496	waste	335
Cove molding	cedar	97	Demobilization	317	Disposers, garbage	
MDF	copper roof	97	Demolition	100, 338	commercial	462
Cover plate, electric	weather vanes	97	asbestos	341	residential	128, 250
Cover, swimming pool	Curb inlet protection	607	asphalt	102	Dispute resolution	20
Coverage loss defined	Curbing machine rental	328	building	104, 338	Distillation, water	252
Coverings	Curbs		ceiling	100	Distribution, electric	580
door	asphalt	613	concrete	100	overhead	580
window	concrete	88, 95, 617	concrete block	100	panels	574, 576
Covers	demolition	101, 335	curb	101, 481	switchboards	574
canvas	elevated slabs	349	doors	101	Ditch Witch	601
joint	for handicapped	482	fence	336	Ditching	136, 600
manhole	granite	617	flooring	101	Ditra membrane	95
plastic	inlets	640	guardrail	336	Divider strips, terrazzo	437
CPM scheduling	Curing concrete	359, 365	joists	103	Dividers	
CPVC	Curing papers	27, 28	manholes	337	partition	447
adapter fittings	Curtain rods		masonry	100	redwood	618
brass fittings	drapery hardware	127	plumbing fixtures	482	Docks, loading	357
pipe	shower	24	roof	339	bumpers	368
snap-on tubing strap	Curtain wall	423	roofing	102	equipment	455
transition fittings	Curtains		sheathing and siding	102	levelers	368, 455
Craft codes	industrial and commercial	475	stairs	103	lifts	455
Craft hours defined	lift equipment	467	subcontract	104	seals	455
Craft@Hrs column	residential	127	toilet partitions	482	shelters	456
Cranes	stage	466	walls	103, 338	Documentation, photographs	321
concrete placing	Cut and fill excavation	606	windows	102	Dolly, rental	332
hoists	Cutting		wood framing	103	Domes	
hydraulic, truck, rental	asphalt	374	Demountable partitions	447	lighted ceilings	79
jib	boards	458	Dens Glass sheathing	183	playground	471
pile driving, rental	brick	373	Deposit boxes	456	skylights	280
rental	concrete	373	Depository doors, after hours	456	Door	
tower, rental	masonry	373	Desalinization, water	252	accessories, bypass	124
truck-mounted, rental	slabs	374	Desks		aluminum	423
Crawl hole vents	steel	392	bank	456	bells, wiring	128
Crawler dozers, rental	walls	373	study	463	bottom	289
Crawler tractors	Cypress flooring	156	Detailed block	215	casing	53, 108
Credits and acknowledgments			Detection systems	594	casing, ranch	108
Creosote			Detectors		chimes	104
Crew codes			audio	267	cleaning	83
Crew composition			fire	267	closers	105
Crew rates			infrared	267	closers, hinge pin	105
Cribbing and shoring			security	594	coverings	277
Critical path scheduling			smoke	267	demolition	101
Cross arms pole			vehicle	454	finish carpentry	52
Cross bridging			Detour signs, barricade	21	frame protectors	448
steel floor joists			Dewatering	605	frames	109
Crossbuck doors			Diamond lath	188	frames, fire-rated	109
Crossing signal			Diaphragm meter	641	frames, metal	391, 417
Cross-linked poly pipe			Diffusers, light	586	frames, painting	242
Crown molding			Digging		frames, pocket	171
hardwood			concrete work	342	frames, steel	109
MDF			excavation	136	framing	43
pine			post holes	144	framing, steel	65
special cutting			Digital		handle sets	170
vinyl			networking systems	131	hangers	172
Crown molding (moulding)			photography	321	hangers, pocket	172
cabinets			Digital recorder	595	hardware	53, 125, 425
labor			Dimension lumber	195, 202	hardware kit	172
Crushed rock			Dimmer switches	129, 568	hardware, exit	172
Crystalite countertop			Dimmer switches, fluorescent	568	hardware, garage	166, 173
CSI			Direct overhead	313	hardware, threshold	288, 289
Division 01			Directory boards	445	hinges	424
Division 02			Dirt, recycling	335	jamb, exterior	108
Division 03			Disabled, access for	480	jamb, interior	118
Division 04			Disappearing stairs	287	kick plates	171
Division 05			Disconnect switches	580	knockers	171
Division 06			Dishwashers		lever latchset	171
Division 07			commercial	462	lever, privacy	171
Division 08			electrical	251	locks	122
Division 09			plumbing	251	locksets	170
Division 11			residential	251	louvers	421
Division 12			return panels	31	mantels	298
Division 13			wiring	128	mirrors	223
Division 14			Dispensers		openers	164
Division 21			beverage	462	openings, framing	43
Division 22			capuccino	462	openings, steel framing	65
Division 23			cash	457	paint removal	235
Division 26			gasoline	453	painting, exterior	242
Division 27			paper towel	449	painting, interior	243
					peep sights	171

protectors	448	oak	106, 119	lines, demolition	337	gypsum	168, 296, 427
pulls	171	overhead	165, 419, 487	rock	607	insulation board	402
push plates	171	overhead roll-up	420	Drain pipe		nails	231
rehang	52	partition	447	ABS	516	painting	240, 243
removal	101, 340	patio, sliding	121	copper	516	primer	236
repair	52	patio, swinging	120, 121, 122	fittings	126	screws	231
sealant	78	pet	122	fittings, corrugated	634	specialties	428
seals, loading dock	456	pocket	171	Hi-Q	634	texture	170
seals, weatherstrip	297	pocket, installation	52	plastic	126, 516	vinyl clad	428
security switch	592	prehung, exterior	110	Drain protection	607	wallboard	296
shim	52	prehung, interior	118, 119, 120	Drainage		wallboard assemblies	34
shoe	289	prehung, steel	418	fabric	606	Drywall installer, wage	
sidelites	110	prehung, wood	419	pipe	126, 634	industrial & commercial	312
sill, oak	289	radiation shielding	488	slope protection	607	residential	10
stop	171, 424	refrigerator	420	Drainage systems		Drywall taper, wage, residential	10
stop moulding	53	revolving	420	rock and sand fill	126	Duct	
thresholds	224, 288, 425	screen, patio	121	Drainboards, countertops	293	cable tray	561
trim	224	screen, security	113	laminated plastic	477	electrical	560
twin door portal	489	screen, vinyl	113	stainless steel	461	fiberglass	178
weatherstripping	297, 425	screen, wood	113	tile	437	flex	178
Doorbell, wiring	104	screen, metal	113	Drains		painting	441
Doors		security	115	area	529	sheet metal	178
4-panel	106	security grills	420	fiberglass	637	underfloor	561
6-panel	106	service	420	floor	520, 529	underground	545
access	255, 269, 422, 529	shower	274	foundation footing	126	Ductile iron pipe	631
accordion	447	slab	105, 106, 107	gratings	390	Ducting	256
air curtain	421	sliding glass	421	pipng	126	Ductwork, painting	441
aluminum, patio	120, 121	sliding, fire	419	precast	127, 637	Dumbwaiters	133, 492
automatic	483	sliding, metal	448	rain	127	Dummy knobs	425
bar	118	solid core	105, 106, 110	roof	529	Dump fees	335
basement	23	steel	419	rough-in	536	Dump trucks	
beveled glass	107	steel, building	487	systems	127	debris hauling	340, 603
bi-fold	124, 125	steel, exterior	109, 110, 111	trench	637	general hauling	137
birch	106, 119	steel, fire-rated	109	Draperies	127, 475	rental	139, 327
birch, prehung	110	steel, patio	121, 122	Drawers		Dumpsters, trash	335
bypass	123, 124	steel, prehung	418	kitchen work table	458	Duplex nails	233
café	118	stile & rail	116, 117	stainless steel	458	Duplex receptacles	129, 567
camber top	112	stock room	422	Drawings		Dupont wood flooring	158
cellar	109	storm	114, 115	architectural	20	Durock backer board	293
cleanout, fireplace	151	strip	422	as-built	126	Dur-O-Wal	221
closet	119, 123, 124	telescoping	421	reproduction of	25	Dursban T-C	283
closet, installation	52	units, packaged	418	Drench showers	535, 538	Dust control	340
convenience store	489	vault	422	Dressing cubicles	446	DWV pipe	
crossbuck	106	vinyl, patio	121	Drill rental	323, 329	ABS	516, 517
depository	456	with sidelites	107, 111	Drilled caissons	611	copper	516
dutch	448	wood	419	Drilling			
entrance	107	X-ray protective	488	concrete	373	E	
entry	106, 107, 111, 112	Dormer	271	post holes	620	Earthwork	597
entry, steel	112	flashing	271	rock	598	compacting	606
exterior	105, 106, 110	louvers	294	soil testing	282	Easings	
exterior, fire-rated	109	studs	48	steel	392	stair	56, 287
exterior, steel	109, 110, 111	studs, steel	71, 72	well	298	stair rail	287
fiberglass	112, 113, 419	Dosch clay	214	Drinking fountain	250, 538	Eave closure	265
fir	107	Double doors	119	handicapped	481	Eave louver vents	294
fire	419	Double sanitary tee, ABS	518	rough-in	535	Eaves, painting	242
fire-rated	109	Double TY/cross, ABS	518	Drip cap	270, 271	Ecclesiastical	
flexible strip	422	Double wye, ABS	518	door	290	equipment	464
flush closet	124	Double-cylinder door handle	170	moulding, wood	226, 279	glass	474
flush exterior	106	Double-hung window	306	Drip edge	270, 271	Eco-Block	86
flush interior	116	screen	303	Drive shoe	298	Economics division	310
folding	122	vinyl	301	Driveway gates	143, 166, 621	Edge forms, concrete	88, 344
folding, installation	52	Double-track storm window	307	Driveways		Edge pulls	172
foundation access	294	Dough roller	460	apron	618	Edgers, rental	330
frames, wood	419	Douglas fir	195	asphalt	245	Edging	
french	107	clear	195, 197	coating	239	redwood	188, 618, 628
french, interior	117	flooring	156, 195, 197	concrete	84, 94, 246, 618	roof	271
garage	165	Dowel supports	344	demolition	101, 335	sill	289
handicapped	483	Downspouts		forms	88, 94	strip	155
handicapped, automatic	483	industrial & commercial	408	paint removal	236	Educational	
hangar	420	painting	242	Drop		equipment	462
hanging	52	residential	168	ceiling	79	networks	463
hardboard	118	steel buildings	487	poles, electrical	321	Efflorescence, testing	319
hardboard exterior	105	Dozer		Drop cloths	288	Egg knob locksets	170
hemlock	110	clearing	597	painting	443	Eggcrate louvers	80
hollow metal	416	excavation	138, 604	Dry pack grout	365	Egress	
interior fire-rated	109	rental	138, 326	Dry packing, concrete	365	barrier	491
interior, café	118	Drafting		Dry pipe sprinklers	496	portal	491
interior, French	117, 120	architectural	126	Dryers, clothes		window	308
interior, hollow core	116	plans	20	circuits	547	EIFS exterior wall system	404
interior, louver	117, 120	survey	316	receptacles	567	Ejectors, sewage	532
interior, panel	116, 117, 119, 120	Draftshield	297	vent sets	294	Elastomeric	
interior, prehung	118, 119	Dragline		wiring	128	flashing	376
interior, slab	115	excavation	602	Dryvit finish, exterior	404	latex sealant	78
interior, solid core	116	rental	325	Drywall		membrane	297
luan	118	Dragon teeth	454	adhesive	17	painting	441, 442
metal, reversible	109	Drain		demolition	102, 338	pipe insulation	527
mirrored	125	fields	268	expansion joints	415		
molded face	116, 117	fittings	516				

roof coating	259	Emergency shower	538	embankment	600	Extruded polymer molding	228
waterproofing	297	rough-in	535	equipment rental	138, 325	Eye wash shower	535
Elbows		Emissions reduction	582, 584	erosion control	606, 607		
ABS	517	Employer labor taxes	10	fine grading	135		
black steel	498	industrial & commercial	312	footings	135		
copper	508	EMT	548	foundation	342		
CPVC	511	conduit circuits	550	grading	135, 342, 599		
CPVC and brass	512	Enamel gloss, floor and porch	237	hand	605		
PVC	510	Encapsulated insulation	182	hand work	135, 342		
Electric service		Enclosures	248, 275, 446	hauling	603		
industrial & commercial	574	bus stop	483	loaders	136, 600		
residential	127	cubicles	446, 447	loading trucks	138, 603		
temporary	313, 321	panel	567	manual	605		
Electrical	545	sauna	266	pneumatic	138		
alarm systems	128, 267	temporary	334	post holes	144		
boxes	546	End cap	263	ripping	599		
boxes, outlet	565	Endwall flashing	271	riprap	607		
building wire	562	Engineer, overhead	313	rock	135		
cable tray	561	Engineering fees	134, 316	scraper-hauler	604		
circuit breakers	571	tilt-up construction	366	shovels	135		
conduit	547	Enkebolt molding, cabinets	31	slope protection	607		
cover plate	569	Entrance		spreading	600		
cutouts	580	cap, threaded	548	spreading material by hand	136		
device boxes	560	hoods	273	sprinkling	138		
distribution	580	mats	222, 478	tamping	342, 600, 602		
duct, concrete	545	thresholds	288	tamping, by hand	136		
duct, surface	560	Entry doors	106, 107, 111, 112	topsoil, by hand	136		
fence, charging unit	144	deco fan lite	107	tractors	138		
fuses	579	fiberglass	112, 113	tree removal	597		
generators	131, 581	oak	107	trenching	136, 600		
generators, rental	329	Envelex ceiling domes	79	trucks	138		
ground wire	562	Environmental noise survey	134	wheel loaders	601		
grounding	570	EPA		Exhaust			
handy box	565	standards	584	fume system	454		
heater	176	Tier IV pollution control rating	582	hoods, food service	459		
heating	540	EPDM	406	range hoods	256		
junction boxes	566	Epoxy		vents, dryer	294		
lighting	128	bed	385	Exhaust fan			
loadcenters	576, 577	painting	441, 442	bath	139, 140		
metallic tubing	547, 548	Epoxy-coated rebar	349	bath, with heater	141		
motors	570	Epoxy-coated wire mesh	353	food service	459		
multi-outlet raceway	561	Epoxy-tie adhesive	17	QuietTest	140		
outlet boxes	560	EPS forms	87	roof vent	411		
outlets	129, 567	Equipment	453	switch	141		
overhead	580	checkroom	457	timer switch	141		
panels	575	educational	462	utility	139		
poles	580	food service	457	ValueTest	140		
power, temporary	322	foundations	369	wiring	128		
raceway	560	loading docks	455	with infrared heater	140		
raceway fittings	560	mobilization	317	Exhaust stack	584		
receptacle boxes	560	overhead	313	Existing conditions	335		
receptacles	129, 567	pads	355	Exit door hardware	425		
sensor cable	592	paint sprayer	241	touch bar	172		
service	127	painting	440	Exit signs	589		
service entrance cable	561	parking control	454	Expanded polystyrene board	403		
sprinkler controls	190	service station	453	Expansion			
subcontract	127	Erickson couplings	547	shields	376, 559		
switches	568	Erosion control		strips	219		
switchgear	575	fabric	607	Expansion joints	430		
systems, solar	585	fence	150, 607	composition	221		
temporary power	322	landscaping	627	concrete	85, 358		
transformers	575	soil covers, stabilization	606	covers	415		
tubing	547	Escalators	494	glass block	384		
underfloor duct	561	Escape window	308	lath	189		
unit heater	539	Estimating, accuracy	5	masonry	221		
valves	190	Etch, acid	470	preformed	415		
water heaters	130	Etching concrete	360	sealants	415		
wireway	560	Eternit	264	Expansion tank	252		
Electrician, wage		Ethylene Propylene Diene		boiler	174		
industrial & commercial	312	Monomer	406	Explosion-proof lights	589		
residential	10	Euro pavers	217	Explosives, loading	598		
Electrostatic precipitators	459	European ISO standards	582, 584	Exposed aggregate finish	95, 359		
Elevated water tanks	633	Evaporative coolers	178	Extension cords, rental	330		
Elevator signs, braille	483	Evaporator coil	180	Exterior door jambs	108		
Elevators		Excavation		Exterior doors	107		
commercial	494	air hammer	138	fir	106		
construction-type	322	backfilling	136	flush	106		
geared	493	backhoes	138	hollow metal	416		
hydraulic	133, 494	blasting	598	jambs	108		
passenger	493	brushing	138, 597	prehung	109, 110		
residential	133	bulldozer	138	solid core	419		
sidewalk	493	caissons	611	steel	418		
subcontract	133	clearing	138	Exterior house paint	236, 237		
Embankment grading	600	compaction	136, 600	Exterior Improvements	612		
Embeco grout	359	concrete	86	Exterior wall assemblies	35		
Embedded steel	391	dozer	604	Exterior wall system (EIFS)	404		
Embossed concrete	96	dragline	602	Extinguishers, fire	438, 497		
Emergency lighting	590	drilling	598, 611, 612	cabinets	497		

F

Fabric		Fabricated metals	390	Facade screen	410	Face board	145
draperies	127	Face brick	212, 377	Faceted glass	474	Facing tile	378
erosion control	607	Facing, marble fireplace	210	Factory rep, cost	317	Fan lite doors	110, 113
lead mesh	475	Fan units, heaters	539	Fans			
stage curtain	466	garage	142	rental	332	turbine	411
wallcover	439	lighting	142	Fans, exhaust			
Fabricated metals	390	attic	141, 142	bath	139, 140	bath switch	141
Facade screen	410	bath timer	141	bath vent kit	141	bath with heat	140, 141
Face board	145	bath with light	140	commercial	459	roof vents	411
Face brick	212, 377	utility	139, 140	Fascia (facia)			
Faceted glass	474	forms	357	gutter	408, 409	gutter adapter	410
Facing tile	378	metal	406	OSB	278	piecework rates	39, 76
Facing, marble fireplace	210	soffit system	282	vinyl	405	wood	49
Factory rep, cost	317	Fasteners, painting	441	Faucets	249, 536	Feather wedges	207
Fan lite doors	110, 113	Feather wedges	207	Featherrock	607	Feed water regulators	543
Fan units, heaters	539	Feed water regulators	543	Fees			
Fans		acoustical design	134	appraisal	18	arbitration	19
garage	142	building permit	28	engineer	134, 316	estimating	316
rental	332	estimating	316	overhead	313	recycling	335
turbine	411	overhead	313	scheduling	134, 314	sewer connection	314
wiring	128	recycling	335	specification	317	testing	320
Fans, ceiling	142	scheduling	134, 314	valuation	18	water meter	315
light kit	142	sewer connection	314	Felt			
Fans, exhaust		specification	317	asphalt	26, 405	roofing	260, 262, 405
attic	141, 142	testing	320	Felton sand	360	Female adapter	
bath	139, 140	valuation	18	ABS	519	copper	516
bath switch	141	water meter	315	Fence			
bath timer	141			aluminum	149	athletic fields	469
bath vent kit	141			barbed wire toppler	621	basketweave	147
bath with heat	140, 141			board	147, 148	chain link	142, 620
bath with light	140			demolition	336	electric	144
commercial	459			erosion control	607	face board	145
roof vents	411						
utility	139, 140						

gate	149	landscaping	626	brick	214	decking, steel	388
hillside labor	146	pavement	245, 612	electric	152	decking, subflooring	42, 61, 396
ornamental	149	slabs	342, 599	finish carpentry	55	drains	520, 529
painting	242	Finish carpentry	51	gas-burning	152	drains, ABS	520
painting metal	441	backing	51	mantels	210	drains, plumbing	529, 536, 539
pet enclosures	143	blocking	51	masonry	222, 377	enamel	237
picket	148	cabinet installation	55	prefabricated	377	equipment rental	329
picket, vinyl	149	carpeting	76	surrounds	55	flange	519
plastic	21	cased openings	52	wood-burning	152	framing	34
post & rail	149	closet poles	55	Fireproof caulking	78	furring	50
posts	144	closet shelves	55	Fireproofing		grating	390
privacy	149	countertops	96	columns	413	joists	33, 34, 40, 41, 394
rail	145	door accessories	105, 424	concrete	411	joists, piecework	38
rental	334	door casing	52	spray-on	413	joists, steel	58, 73
sediment	607	door trim	52	testing	319	joists, steel blocking	61
shadowbox	149	doors	52	wood	209	leveling compound	154
silt	150	fireplace mantels	55	Fire-rated		mats	222
split-rail	148	fireplace surrounds	55	door frames	109	painting	240, 441, 442
swimming pool	150	flooring, wood	55	doors	109	piecework rates	38
temporary	21, 334	folding stairs	287	Fire-rated doors	419, 420	plank, precast	362
tennis court	470	furring	52	First aid, overhead	313	plate, steel	389
vinyl	149	hardware	424	Fishtape, rental	332	polishing	240
wire mesh	143	job-built stairways	286	Fittings		radiant heat	175
wood	148	locksets	53	ABS bungalow	518	safes	265, 456
wood gate	147	lumber	228	black steel	498	sheathing	33, 34, 396
Fertilizer	187, 626	mantels	210	copper	507	shellacking	240
Fescue seeding	627	medicine cabinets	222	CPVC	511	sinks, plumbing	539
Fiber		molding	228	CPVC and brass	512	slab	356
cant strips	406	moulding	54	drain pipe	126	slab, concrete	94
forms	347	paneling	54	electrical	567	slab, precast	362
roof coating	259	railings, stair	56	PEX	513	staining	240
Fiber cement		running moulding	55	PEX-AL	515	steel, piecework	73
lap siding	277	sauna rooms	266	polyethylene pipe	632	varnishing	240
roofing	264	shutters	275	PVC	510	waxing	240
Fiber floor, Tarkett	153	siding	279	PVC water pipe	631	Floor layer, wage	
Fiber mesh concrete reinforcing	85	skylights	280	Fixtures		industrial & commercial	312
Fiber optic cable	595	soffits	282	electrical	129, 190	residential	10
Fiberboard wallboard	296	stair balusters	56	lamps	591	Flooring	
Fiberglass		stairs	56, 284	lighting	190, 591	access	438
asphalt shingles	261	thresholds	288	plumbing	539	anti-fatigue	436
base sheet	260	wall paneling	54	rough-in	254	artificial turf	469
bathtubs	247, 537	wallboard	296	Flagpoles	452	bamboo	158
ceilings	82	weatherstripping	297	aluminum	452	brick	222
doors, entry	112, 113	window sills	299	foundations	453	carpet	76, 437
drains	637	window trim	53	Flagstone		carpet tile	438
duct	178	Finish grading	135, 187, 245	floors	218, 222	ceramic tile	292
insulation	181, 402, 403	Finish hardware	425	pavers	616	crossband parquet	158
panels	150	Finishes	427	Flameproofed draperies	475	demolition	101, 340
pipe insulation	528	decks	98	Flanged pipe, cast iron	629	Douglas fir	156, 195, 197
septic tanks	268	flooring	435	Flanges		finishing	56
shower receptors	275	gypsum wallboard	427	ABS closet	519	fir	156, 195, 197, 198
showers	248	plaster	246	black steel	498	flagstone	218, 222
tub and shower combination	537	wallpaper	296, 439	Flash cone	271, 273	floating hardwood	157
whirlpool bath	247	Finishing		Flashing		gymnasium	434, 468
Fiberglass-reinforced plastic		concrete	94, 95, 359	aluminum	270	installation	435
adhesive	18	flooring	157	aluminum siding	279	marble	210, 385
paneling	245	nails	232	building paper	27	masonry	222, 385
Fibermesh screen	267	Fink truss	49, 72, 399	compound	259	non-slip tile	436
FICA	10, 288	Finned tube radiation	541	copper	271	parquet	434
Field offices, temporary, rental	333	Fir		demolition	339	pedestal	438
Fields, playing	469	doors	106, 107	galvanized	271	Pergo	157, 158
Fill		flooring	156, 195, 197, 198	lead	273, 407	pine	155, 156
caulking	79	Fire		masonry	376	plank	155
excavation	135, 342, 600	alarm breaker	574	paper	27	quarry tile	385, 433
rock	342, 607	alarm systems	438, 594	ridge	263	raised, installation	438
sand	342	alarms	128	roof jack	530	resilient	435
slab base	342	boxes	151	roofing	263, 406	rubber	436
Fill investigation		brick	214	sealant	78	safety tiles	436
compacted	320	dampers	151	sheet metal	270	sheet vinyl	153, 435
soil testing	282	detectors	594	skylight	282	softwood	156, 434
Filler		doors	109, 419	vinyl	273	Tarkett	153
block	239	escapes	391	Flexible conduit	557	terrazzo	386, 437
panels, cabinet	31	extinguishers	438, 497	Flexible strip doors	422	tile	435, 438
wood filler	240	hose cabinets	497	Flexure test	318	tile, vinyl	154
Filler strip		hydrants	630	Flexwood	438	tongue and groove	157
cabinet	55	hydrants, demolition	337	Flight, photography	316	vinyl plank	436
chain link fence	142	pole tower, playground	473	Float finish concrete	95, 359	vinyl sheet	153, 435
Film, polyethylene	256	protection	459	Float glass	167, 426	vinyl tile	154, 435
Filter sock	126, 634	protection equipment	495, 496	Float traps	544	wood	156, 434
Filter, air, central	177	pumper connection	497	Float backing, steel	69	wood laminate	157, 158
Filters		sprinkler systems	150, 495	Floating hardwood flooring	157	wood strip	55, 155, 157
exhaust hood	459	suppression	495	Floodlights	590	FlowGuard Gold pipe	511
screen	298	wall hydrants	497	rental	330	Flue	
water	533	Fire retardant treatment	209	Floor		fireplace	152
Financing, project	314	Fireblocks	45	adhesive	18, 154, 159	lining	218, 377
Fine grading		Firebrick	214	assemblies, wood framed	33	Fluorescent (CFL)	193
embankment	600	Fireclay	214	cleaning	335	Fluorescent dimmer switches	568
hand	135	Fireplaces	151			Fluorescent lighting	190, 585

Flush bushing, ABS	520	release	358	piecework	37	hardware	165, 166, 173
Flush doors	124, 419	shoring	608	piecework rates	39, 74	locks	165
bi-fold closet	124	slab	344	posts	45	openers, wiring	128
birch exterior	106, 110	snap ties	86	roof	47	operators	164
birch interior	115, 116, 119	spreader	358	roof sheathing	49, 50	seals	297
fire-rated	109	stakes	86	roof trusses	48	steel	165
hardboard exterior	105, 110	stripping	89	steel	57, 67, 387	weather seal	165
hardboard interior	115, 116, 118	ties	86, 358	steel collar beams	72	wood	165
hardwood exterior	105, 110	tilt-up	366	steel exterior wall studs	63, 64	Garage, carport	77
lauan interior	116, 118	wall	88, 344	steel interior wall studs	62	Garage, epoxy floor	442
oak entry	107	Formwork		steel stud	62	Garbage disposers	
oak interior	116, 119	column	346, 347	subflooring	42	commercial	462
steel exterior	110, 111	concrete	343	trimmers and curbs	48	electric work	128
steel utility	110	steel-framed plywood	345	wall plates	42	fixtures	250
Flush exterior doors		steps	349	wall sheathing	51	residential	250
lauan	106	stripping	89	wall stud wood	393	Garden window	302
Flush interior doors		Fortifier products	27	walls, exterior	42	Garment rack	457
lauan	116	Foundation		window opening	44	Gas	
Foam insulation	183	forms	88, 343	Framing nails, screw shank	231	appliance rough-in	255
Foam panel adhesive	18	forms, reinforcing	88, 349	Free access flooring	438	chlorination	632
Foamglass insulation	403	formwork	343	Freezers		connections	255
Foil-backed gypsum	428	insulation	183	food service	461	distribution lines	641
Foil-faced insulation	401	investigation, soil testing	283	medical	473	furnaces	177, 540
Folding beds	25	layout	190	wiring (subcontract)	129	griddle	460
Folding doors	122, 447	placing	354	Freight elevators	494	heating	539
locks	122	poisoning	283	French doors	107, 117	log lighter	152
Folding fire partitions	448	soil calculations	282	interior, double	120	meters	641
Folding stairs	287	stakes	207	Frenchwood	120	pipng	255, 641
Food		trenching	600	Frequency meter	575	range, commercial	460
beverage dispenser	462	vents	294	Fresnel globes	589	regulators	641
deep fat fryers	459	waterproofing	297	Fresnel-type spotlight	467	stops	526
freezers	461	Foundations		Frieze moulding	55	storage tanks	545
meat and deli cases	458	access door	294	Frieze vents	410	valves	152
mixers	461	anchor bolts	367	Fringe benefits		wall furnace	178
pizza preparation units	458	anchors	58	industrial & commercial	312	water heaters	530
pot and pan racks	460	bell	612	residential	10	Gas station	
sandwich preparation units	458	bolts	159	FRP		air and water	454
service equipment	457	caissons	611	adhesive	18	cash box	454
stations	457	coating, asphalt	239	paneling	245	equipment	453
toasters	460	concrete	84, 92, 343, 354, 356	Fryers, commercial	459	hydraulic hoist	454
warmers	458	demolition	100, 338	Fuel grates, fireplace	152	pumps	453
work tables	458	drains	126	Fuel storage tanks	544	Gas turbines	582
Foot grille	478	equipment	369	Full-view storm doors	114	additional costs	583
Football goal posts	469	excavation	342	Fume hoods	477	generator sets	582
Footings		flagpoles	453	laboratory	459	heat recovery systems	583
bell	612	footings	93, 94	laboratory	477	Gaskets	
bollard	619	injected	611	Fund control fees	314	neoprene	407, 416
caissons	611	masonry walls	380	Fungus		sill plate	183
column	92	pile	609	preventor	271	Gasoline dispenser	453
concrete	84, 86, 92, 93, 354	pole	591	treatment	209	Gate valves	496, 523
continuous	94	tilt-up construction	365	Furnaces		Gates	
demolition	100, 338	Fountains		direct vent gas	178	automatic	166
drains	126	decorative	490	electric work	128	barrier	454
estimating	93	drinking	250, 538	floor	178	chain link fence	143
excavation	135	drinking, handicapped	481	forced air	178	hardware	143, 148, 621
forms	86, 343	ornamental	490	gas	177, 540	ornamental	166
keyway	94	rough-in	535	gravity gas	177	parking control	454
spread	380	wash	538	wall	540	security	115
ties	86	Frame seal sets	297	Furnishings		temporary	334
tilt-up	365	Frames		church glass	474	trash enclosure	369
Forced air furnaces	178	door	109	window treatment	475	wood	147
Forged steel valves	523	door, painting	242, 243	Furring	398, 429	wrought iron	391
Forklift, rental	327	manhole	639	floor	50	Gateway, electronic	131
Form stakes	207	see-thru	422	studs	52	Gauges	528
Formboard, fiber deck	373	window, painting	241	wood	50	liquid level	544
Formica countertops	96	Framing		Fuses	579	Gel stain	239
Forming		adhesive	17	FUTA	10, 288	General contractor	
architectural	345	anchors	161	Gabions	607	crews	5
landing	349	backing and nailers	47	Gable		markup	5, 211
soffits	349	beams	45	roof	36	General requirements	313
Forms		blocking	41	truss	49, 73, 399	Generators	131, 581
beam	348	bracing	44	vents	294	exhaust stack	584
board	88	canopy	391	vents, power	142	gas turbine, pollution control	
breaker	358	carpentry	32	GAF shingles	261	modules	584
clamps	358	ceiling joists	46	Gallery mirrors	223	motor-driven, pollution control	
column	343	clips	159	Galvanized		modules	582
concrete	86, 87, 94, 343	connectors	159, 161	flashing	271	power	585
concrete insulated	86, 87	demolition	103	roofing	263	rental	329
curb	88	door openings	43	steel	487	steam	288
footing	88	dormer studs	48	steel pipe	498	wind turbine	132
foundation	88	fascia	49	Galvanizing	391	Geodesic dome, playground	471
keyway	88	fireblocks	45	Game equipment	469	Geographic cost adjustments	12-15
liner, architectural	368	floor trusses	41	Garage doors	165	Geotextiles	606, 607
liners	345	furring	50			Ginnies	207
oil, concrete	358	grounds	51			Girders	
plastic	86, 87	ledgers and ribbons	47			carpentry	40, 393
plywood	88, 343, 345, 373	lumber	195, 202			concrete	354
		nails	231			forms	348

G

Buy this complete title here: <https://goo.gl/0PAkvn>

precast	362	Gratings, steel	390	Gym		Hat channel	429
shield flashing	271	Gravel		equipment	468	Hat racks	457
steel	387	aggregate	18	floors	434, 468	Hat shelf	55
steel framing	60	landscaping	628	Gymnasium base	416	Hatches, roof	410
Girts		paving	246, 618	Gypboard demolition	338	Hauling	
fireproofing	414	riprap	607	Gypsum		debris	340
steel	387	slab base	94	adhesive	17	excavation	603
Glaslock interlocking shingles	261	Gravel guard	271	ceiling panels	82	truck	138
Glass		Gravel stop	271, 407	decking, poured	372	Haunch forms	345
artwork	474	demolition	339	demolition	102, 338	Hazard surveys	341
bead molding	226	Gray board insulation	182	drywall	168, 296, 427	Hazards testing	26
cleaning	83, 335	Grease		lath	188	HDPE drain pipe	634
mirrors	24	filters, exhaust hoods	459	paint preparation	241	Header hangers	161
sliding doors	421	interceptors	532	plaster	246, 430	Header pipe	605
spandrell	423	Greenboard	169	roofing	372	Headers	
storefront	423	Greenhouse	167	roofing, demolition	339	carpentry	45, 393
tile	290	panels	150			yard	618
window	166, 426	Greenwaste recycling	335			Heads, sprinkler	624
wire	422	Grey iron	391			Headwalls	641
Glass block	219, 384	Griddles, gas	460			Hearths, marble	210
accessories	219	Grid-WALL	87			Heat	
Glazed		Grilles		Hair interceptors	532	detectors	594
block	383	foot	478	Hammering, concrete	360	generation	539
floor tile	432	security	420, 489	Hammers		recovery systems	583
tile	378	Grills	473	for pile drivers, rental	325	Heat exchanger foundations	370
Glazier, wage		kitchen, commercial	460	rental	325, 329	Heat pumps	179
industrial & commercial	312	Grinders		Hand excavation	135	accessories	179
residential	10	pneumatic, rental	323	Handholes, electric	546	Heat-A-Lamp heater and fan	141
Glazing		rental	329	Handicapped		Heaters	
curtain walls	423	stump, rental	330	access	480	baseboard	175, 176, 540
polycarbonate	427, 486	Grinding concrete	360	door opener	483	electric	176
sash	426	Grits, concrete	359	parking	481	floor units	175, 176
tempered glass	486	Ground cover	628	symbols, parking lot	619	food	458
Globe valves	524	Ground fault interrupter	128	Handle sets, door	170	gas	539
Glove bags, asbestos	341	Ground rod clamps	569	Handrails		gas wall furnace	177
Glove painting	440, 441	Ground wire	562	access flooring	438	radiant	175, 176
Glue, adhesives	17, 18	Grounding		iron	150	rental	329
Glu-lam beams	399	devices	128, 570	painting	240, 242, 442	solar	252, 532
Goal posts, football	469	electric	570	patio deck	99	suspended units	177
Goals, soccer	469	locknuts	569	stair	56, 284, 287	water	252, 530
Golden Virola paneling	244	Grouts	51	steel	390	wiring	128
Gooseneck		brick pavers	616	wall protection	448	Heating	
stair	56	concrete	382	wood	226	ceiling panels, radiant	176
stair rail	287	Grouting		Handy box, electric	565	central	175
Grab bars		concrete block cores	215, 382	Hanger rod	522	coil, heat pump	180
bath	24, 449	door frames	382	Hangers		electric	176
handicapped	482	forms, tilt-up	368	angle bracket	520	floor units	175
Gradall		foundation	359	channel	559	hot water assembly	255
rental	326	machine base	359	clevis	521	hybrid	175
trenching	600	manhole	640	conduit	558	radiant ceiling panels	176
Grade beams		masonry	211, 215, 382	header and joist	161	radiation	541
concrete	86, 93	mix, concrete	85	painting	441	solar	532
formwork	88	pressure injected	360, 640	pocket door	172	Heating and venting	542
Graders, rental	326	testing	319	roof	396	Hedge trimmers, rental	330
Grading		tile	291, 292	swivel ring	521	Help, software	3
embankment	600	GROUTING		timber	161	Hem-fir	196
excavation	135	concrete	96	Hanging doors	52	fascia	49
fine	136, 245	concrete block cores	215, 382	Hardboard	205	Hemlock	
finish	245, 600	pipe joints	640	doors	105, 116, 118	boards	198
hand	135	pressure	360, 640	doors, fire-rated	109	doors	120
landscaping	187, 626	tilt-up	365	lap siding	278	lumber	196
lumber	207	GRS conduit	547	panel siding	277	molding	108
scraper-hauler	604	Grubbing	138, 597	paneling	244, 439	Henry	260
site	599	Guard		wallcoverings	439	HERS rating	185
slab	342	corner	169, 391, 448	Hardener, concrete	359	Hex bolts	234
tilt-up	365	dog	268	HardiPanel	277	High boy threshold, oak	108
Grand Sequoia shingles	261	gravel	271	HardiPlank	277	High early strength	
Grandstands	468, 478	security	268	HardiTrim	277	cement	82
Granite		Guardrail		Hardware		concrete	85
aggregate	353	access flooring	438	bath accessories	24	High-bay lighting	588
aggregate concrete	85	construction	334	bi-fold door	125	High-intensity lighting	588
bollards	619	demolition	336	cabinets	476	High-pressure sodium lighting	588
countertop	96	highway	618	commercial and industrial	424	Highway	
curb	617	Gunite	360	door	425	equipment rental	328
decomposed edging	628	testing	319	finish	425	stakes	207
masonry	385	Gutters		garage door	165, 166, 173	hinges	172
paving	386, 617	apron	271	gate	148, 621	door	53, 424
terrazzo	386	concrete	95, 618	partition	447	gate	148
tile	290	copper	408	pocket door	172	hip roof	36
Grass		demolition	101	rule of thumb	424	clay tile	264
artificial turf	469	ice-melting cable	565	threshold	288	fiber cement slate	264
landscaping	187, 627	inlets	640	Hardwood		rafters	48
paving	246, 618	rain	168, 408	doors	105	sheathing	50
seed	627	rain disperser	410	doors, fire-rated	109	shingles	261, 262
sod	188	sealant	78	doors, prehung	110	steel rafters	70, 74
Grasscloth	439	stainless steel	410	flooring	155, 434	trusses	7
Grates		wire, duct	560	flooring demolition	101		
fireplace	152	Gutting, demolition	338	paneling	244		
tree	629			plywood	244		

Hoists		hydrated lime		panel adhesive	18	Jamb saws, rental	331
auto	454	builders'	220	perlite	402	Jamb sets	
construction	322	soil conditioner	626	perlite board	403	finger joint	118
freight	494	Hydraulic		pipe	527	interior	118
rental	332	door closers	105	polyisocyanurate	402	solid clear pine	118
service station	454	elevators	133	polystyrene	182, 402, 403	with hinges	118
Hold down brackets	58	excavators, rental	326	pouring	184	James Hardie	277
Hold downs	161	jacks, rental	332	R-Gard	183	Jetting wellpoints	605
Hollow core doors	116, 117	truck cranes, rental	322	rockwool	184	Jib cranes	495
Hollow metal doors	109, 416	Hydroblasting	241, 266	roof	403	Jig saws, rental	331
frames	417	Hydronic		SAFB	184	Job site	
Hollow metal, painting	441	controls	173	sill gasket	183	costs	317, 321
Home energy rating	185	heating	173, 541	sound control	184	engineer	316
Home inspection service	26	heating, floor	175	sound control board	402, 427	office	313
Home networks	130	hot water generators	540	subcontract	185	office, temporary, rental	333
Home office cost	313	radiators	541	Super Tuff-R	402	overhead	313
hood filters	459	Hydroseeding, subcontract	188, 627	testing	26	phone	322
Hoods				thermal	401	security service	268
entrance	273			urethane sheathing	183	Job superintendent	317
exhaust, food service	459			vermiculite	402	Joint cleaning, pavement	615
laboratory	477			weatherstrip	425	Joint compound	168
range	256, 257			Insurance		Joints	
range, quiet	257			bonding	185	brick	211
range, vented	256			contractor's	186	expansion	85, 358
vents	263			included in costs	3	form	349
Hooks				liability	186	masonry	376, 377
coat and hat	457			overhead	313	mortar	211, 616
robe	24			Insurance, labor cost		paving	616
Hopper windows	303			industrial & commercial	312	sandblasting	615
Hopper, rental	328			residential	10	Joists	
Horizontal ladder, playground	471			Interceptors, plumbing	532	bridges	160
Horns, paging	595			Interest rate	314	bridging	41
Hose				Interior doors	120	carpentry	38, 393
air, rental	323			birch, flush	115, 116	ceiling	46, 67
bibbs	526			café	118	ceiling, steel	67
clamps	294			fir	117	concrete	357
fire, cabinet	497			fire-rated	109	demolition	103
gate valves	527			flush	116, 118, 119	floor	33, 34, 41
reel	453			full louver	117	floor or ceiling	38, 73
rental	328			half louver	117	forms	357
Hospital				hardboard	115, 116	hanger nails	232
cubicles	446			heater closet	119	I-joist	41
freezers, refrigerators	473			hemlock, prehung	120	painting	441
Hot tub	248			knotty alder	120	piecework rates	38
Hot water generators, hydronic	540			lauan	117	precast concrete	362
Hot water heaters				lauan, flush	116	steel	388
commercial	530			oak	117, 119	steel floor	58
connections	255, 531			oak, flush	116	steel framing	73
gas, rough-in	255			pine	117, 120	steel, piecework	73
residential	252			prehung	119	TJI	41
Hot water heating	255, 541			Interior paint	237	Jumbo brick	212
pipe	498			Interior wall assemblies	34	Jumbo Tex	27
Hot water storage tanks	533			Interlocking paving stones	386	Junction box, electric	546
Hot water supply	254			Interlocking shingles	261	Junior mesh	188
Hotmopping				Intermediate bracing,			
roofing	258			steel framing	67		
waterproofing	401			Intermediate metal conduit	551		
Hourly wages				Internet connection	130		
industrial & commercial	312			Inverter system, solar	283		
Hourly wages, residential	10			Investigation, soil	282		
House paint	237			Iron			
House street numbers	173			cast	391		
Housewrap	184			embedded	358		
Tyvek	28			wrought	391		
Housing, manufactured	484			Iron worker, wage	312		
How to use this book	3			Ironing boards	187		
Hubs, lumber	207			Ironwork			
Humidifiers, wiring	128			ornamental	150, 391		
Humus, peat	626			railings	256, 390		
Hurricane				stairs, steel	391		
protection	276			wrought iron	391		
shutters	276			Irrigation systems			
ties	161			commercial	621		
HVAC	539			residential	189, 190		
ducting	486			sprinklers	624		
electric heaters	176			Island cabinets	31		
furnaces	177			Ivy	628		
heat pump	179						
hybrid central heating	175						
hydronic heating	173						
mobile	468						
radiant floor heating	175						
residential	180						
stage	468						
Hydrants	497						
demolition	337						
meter	315						

Labor costs defined	3	flush interior	116	Light-gauge steel framing	56	mortise	171
Labor productivity	4	flush prehung interior	118	Lighting	190, 591	partition	447
Labor rates	10	molded face interior	117	area	591	Lockwashers	234
adjusting	11	prehung heater closet	119	bus stop shelters	483	Log homes	193
industrial & commercial	312	solid core flush interior	116	can	192	finish	238
Labor rates, residential	10	Laundry		court	470	floor system	194
Labor, painting	240	clothes chutes	495	decorative	491	labor	193
Lacquer thinner	240	clothesline units	84	demolition	337	rafter systems	194
Ladders		sinks	250	emergency	590	siding	202
attic	287	tub rough-in	254	HID (high-intensity)	587, 588	Log lap siding	202
horizontal	471	Lava rock	384	landscape	192	Loudspeaker systems	595
reinforcing	376	Lavatories	537	metal halide	588	Louvered doors	120
rental	329	bases	293	ornamental	491	Louvers	
rolling	463	cabinets	293	panelboards	575	access doors	255, 529
sliding	287	china	249	poles	591	door	421
steel	389	marble	210	recessed	192	egg crate	80
Ladder-type wall reinforcement	376	rough-in	535	stage	467	parabolic	81
Ladle rack	458	vanities	293	street	590	shutters	275
Lag bolts	234	Lawn		temporary	313	vents	294, 295, 296, 410
Lag shields	559	lighting	192	tennis court	470	windows	302
Lally columns	39, 57	rollers, rental	330	vandal-resistant	589	Low-bay lighting	588
Lamb's tongue	256	seeding	187	yard	590	Low-boy, trash disposal	335
Laminate shingles, architectural		sprinkler system	189, 190	Lighting fixtures	190, 591	Low-pressure polyethylene pipe	632
grade	260	sprinklers	622, 624	explosion-proof	589	Low-Sound bath fan	140
Laminate wood flooring	157, 158	Lay-in ceiling	81	exterior	591	L-straps	164
Laminated plastic		Layout	37	fluorescent	190, 585	Lube rack	453
cabinets	477	engineer	313, 316	high-intensity (HID)	587, 588	Lumber	
countertops	96, 477	foundation	190	indoor	591	alternative building	
wallcoverings	439	stakes	207	obstruction	589	materials	98, 99, 206
Laminated sandwich panels	405	survey	316	outdoor	190, 591	boards	195, 197, 198, 199
Laminated wood, glued beams and	399	typical costs	317	outlets	129	building poles	206
timbers	129	Layout, survey	598	Lightning		cedar	199
Lamp post wiring	129	Leach fields	268	arrestor	144	common	202
Lamps		Lead		protection	129	eastern pine	198
CFL	193	flashing	273, 407	rods	129	finish	195, 197
fixture	591	X-ray barriers	488	Lights		finish trim	228
fluorescent	190, 585	Lead mesh fabrics	475	barricade	21	framing	202
LED	193	Lead-based paint		solar powered, barricade	22	grading	207
Landings		removal	235, 439	Lightweight concrete	85, 353, 372	hemlock	196
concrete	480	testing	26	Lime	626	inspection	207
forming	349	Lease rate	584	builders'	220	molding	228
stair	286, 400	Lecterns	464	field marker	220	oak	199, 224
steel	389	LED light bulb	193	landscaping	187	plywood	204
Landscape		Ledger flashing	271	mason's	220	Ponderosa pine	198
irrigation wiring	190	Ledgers	47, 394	soil conditioner	187, 626	posts	206
lighting	192	LEED		Limestone		recycled composite	98, 99
site curbs	95	air conditioning	180	masonry	385	recycled plastic	98, 206
Landscaping	627	certification	540	paving	617	red cedar	199
Lane delineator	22	hydronic boilers	173	soil conditioner	626	southern pine	196, 197
Lane spikes	454	Legal assistance, mobile	20	Linen chutes	495	specialty	206
Lap cement	259, 260	Let-in bracing	44	Liner, form	345, 347	stakes	207
Lap siding	278	Let-in ribbons	47	Link mats	222	timbers	202
fiber cement	277	Letter boxes	451, 452	Lintels		treated	203
spruce	202	Letter drop plate	424	masonry	386	treatment	209
Laser level, rental	331	Lettering, hand-painted	445	steel	391	trim	228
Latchsets		Letters, illuminated	445	Liquid level gauge	174, 544	wall sheathing	396
commercial	425	Letters, signs	445	Liquid-tight conduit	557	West coast	196, 200, 203
passage	171	Levee excavation	606	Listello	291	white pine	198
privacy	171	Levelers, dock	455	Loadcenters	577	Luminaire	585
Latex		Leveling flooring	154	Loaders		LVL Beams	400
block filler	239	Levels, rental	330	crawler rental	326		
deck, waterproofing	297	Lever locksets	170	excavation	600		
house paint	237	Lexan	486	grading	138, 139		
masonry paint	237	L-flashing	271	rental	327		
painting, labor	240	Liability insurance	186	wheel, rental	326		
primer	236, 297	Library		Loading docks			
stain	238	ladders	463	concrete	357		
stucco paint	237	shelving	463, 476	equipment	455		
Lath	429	Lift slabs	356	Loading trucks	603		
demolition	338	Lifting		Loading trucks by hand	135		
gypsum	188	cranes, rental	325	Loan fees	314		
redwood	200	panels	368	Local area network (LAN)	131		
stakes	207	Lifts		Lockers	451		
steel	188	dock	455	demolition	341		
wood	207	elevators	133	Locknuts, grounding	569		
Lather, wage		incline	133	Locks			
industrial & commercial	312	rental	327	deadbolt	171		
residential	10	rolling platform, rental	327	door, folding	122		
Lathing	429	wheelchair	133	garage door	165, 166		
Lattice		Light bulb		Locksets	425		
molding	226	CFL	193	colonial knob	170		
painting	242	LED	193	commercial	425		
Lauan		Light emitting diode	193	deadbolt	171		
doors, bi-fold	124	Light standards, demolition	337	door	53		
Lauan doors		Light towers, rental	330	egg knob	170		
bi-fold closet	124	Light, traffic	490	keyed entry	170		
flush exterior	106			lever	170		

M

Machine bolts	234
Machinery	
appraisal	19
painting	440
Mahogany doors	106
Mail	
chutes	451
conveyors	495
drop plate	424
Mailboxes	
brass	451
commercial	451, 452
residential	209
Male adapter	
ABS	519
copper	516
Man safes	266
Manager, office	313
Manholes	
covers	640
cut-in	315
demolition	337
electric pull boxes	546
frames	639

precast	639	Material hoist	322	Mirafi fabrics	607	Mosaic tile	291, 432
repair	640	Material lifts, rental	327	Miraflex	182	Moss preventor	271
rings	390	Mats		Mirrored doors		Motor	
Manhours defined	4	entry	222, 478	bi-fold	125	connection	571
Mannington flooring	153	erosion control	606	bypass	123	generator sets	581
Mansards, sheet metal	406	MC cable	563	Mirrors		starters	571
Mantels		MDF molding	228	arches	223	Motor graders, rental	326
door and window	298	MDO plywood	204	bath accessories	24	Motorcycle racks	479
fireplace	209, 210	Meat and deli case	458	beveled edge	167	Motors, electric	570
labor	55	Meat saw	458	door	223	Movable partitions	447
marble	210	Mechanical drawing,		framed	223	Moving	
Manual excavation	605	architectural	126	frosted	223	excavated material	603
Manufactured housing	484	Mediation		medicine cabinet	222	stairs	494
Manure	626	fees	19	unframed	427	structures	341
Map display panel	484	mobile	20	vanity	223	Mud sills	393
Maple paneling	244	Medical refrigerators	473	Mission		anchors	58, 162
Mapping, aerial	316	Medicare payroll taxes	288	brick	214	Mulch	188
Marble		Medicine cabinets	222, 450	paver	214	Mullion casing	226
bases	385	Medium-density plywood	204	tile roofing	264		
columns	385	Medley sheet vinyl flooring	435	Miter saws, rental	331		
flooring	210, 385	Membrane		Mitt, painting	440		
masonry	385	detaching	95	Mix design, concrete	318		
setting	210	Ditra	95	Mixers, cement, rental	324		
sills	299	poly film	256	Mixers, food	461		
specialties	385	roofing	405	Mixing valves, thermostatic	544		
thresholds	385	slab	94, 342	Mobile home port	77		
tile	290	underlayment	95	Mobile mediation	20		
vanity tops	97	waterproofing	297	Mobilization	317		
Marble setter, wage		Mercury vapor lights	587	piles, earthwork	609		
industrial & commercial	312	Mesh		Mobilization cost defined	3		
residential	10	reinforcing	91, 352	Modification factors, cost,			
Margin, profit	211	steel	91	by area	12-15		
Marine		Mesh, steel	349	Modified bitumen			
adhesive	78	Metal		adhesive	260		
plywood	205	buildings	487	SBS roll roofing	260		
varnish	238	door frames	417	Modular			
Markerboard, chalkboard	444	doors	109	brick	211, 212		
Markers, road	619	facing panels	405	cabinets	29		
Marking		halide lights	588	carpet tile	438		
parking lot spaces	619	lath	429	Modulating valves	527		
pavement	619	painting	440, 441	Moisture protection	256, 401		
Markup	313	painting, preparation	241	Moisture test, soil	282		
contingency	210, 211	pans, ceiling	82	Moisture-resistant drywall	169		
general contractor	5	primer	236, 238	Molding (moulding)			
project	313	roofing	263	brick	108		
subcontractor	5	screen doors	113	cabinet	31		
Masking, surface prep	443	siding, painting	441	carpentry	55		
Masonry	222, 374	studs, demolition	338	cornice or crown	54		
acid-proof	378	trim, painting	440, 441	door	53		
anchors	560	Metal detector	491	fireplace	55		
block	215, 381	rental	332	hardwood	224		
brick	377	Metal roofing	263	MDF	228		
cleaning	375	Metal-clad cable	563	redwood	224		
demolition	100	Metal-framed shaft walls	431	softwood	225		
fireplace	151	Metals		stop	108		
furring	50	aluminum screens	391	stucco	108		
glass block	219	fabricated	390	T-astragal	109		
insulation	184	ornamental	391	vinyl	228		
joints	374	Meter boxes	223, 576	window apron	53		
materials	222, 377	Meters		Monitor panels	594		
mortar	221	electric	575	Monitors, alarms	267		
nails	232	fees	315	Mono rock, concrete	360		
paint	237	gas	641	Monolithic topping, concrete	360		
painting	241, 442	steam	528	Monorail for electric hoists	494		
parging	386	water	315	Monuments, survey	316		
pointing	375	Met-tile	263	Mop resilient floor	335		
preparation	241	Microphone		Mop sink	461, 538		
recycling	335	public address	595	rough-in	535		
reinforcing	375	stage	467	Moped racks	479		
sandblasting	266	Microwave	460	Morgue equipment	474		
sawing	373	cabinets	31	Mortar	211		
steam cleaning	375	Midget louvers	295	bed	291		
surface prep	441	Milano awnings	475	block	215		
testing	319	Milgard	302	cement	82		
waterproofer	237	Milling, cold, asphalt	614	color	220, 616		
waterproofing	297	Millwork, treatment	208	glass block	219		
Mass excavation	604	Millwright, wage		masonry	211, 220, 221		
Mastercure	95, 359	industrial & commercial	312	mix	82		
Mastic		residential	10	paving	617		
adhesives	18	Mineral insulation	403	testing	319		
painting	441	Mineral spirits	240	tile	292		
roofing	259	Mineral surface roll roofing	260	trowel-ready	221		
tile	291, 292	Mini-brick	213	Mortise			
Mat reinforcing steel	353	pavers	214	hinges	172		
Material costs defined	3	Mini-mat reinforcing	353	lockset	171		
Material demolition	341	Mining camp barracks	484	Mosaic and terrazzo worker, wage			
Material handling systems	495	Miradrain	606	industrial & commercial	312		
				residential	10		

N

Nailer strip, carpentry	47, 393
Nailers, rental	330
Nailing sheathing	395
Nailite	280
Nails	
aluminum	233
box	229
brads	231
casing	231
coil	231
coil roofing	232
collated	231, 232
common	229
deck	230
drywall	231
duplex	233
finishing	232
framing	231
joist hanger	232
masonry	232
plasterboard	232
scaffold	233
screw shank	231
siding	233
sinkers	230
stainless steel	232
stick	231
vinyl-coated	230
Napkin dispenser	449
Narroline patio doors	121
Natural Creations flooring	436
Natural gas	
meter	641
rough-in	255
NCX treatment	209
Needle gun finish	360
Needle scaling paint removal	235
Neo-angle shower	275
Neoprene	
gaskets	407
joints	415
weatherstrip	425
Nets	
safety, scaffolding	332
tennis	470
Netting, stucco	189
Network cable	130, 463, 464
Networking systems	131
Networks	
educational	463
residential	130
Newel posts	56, 256, 284, 285, 286
NFPA fire sprinklers	150
NM-B cable (Romex)	563
Noise analysis	134
Non-metallic	
cable (Romex)	563
conduit, flexible	557
Non-slip strips	222, 436
Norman	
brick	211, 212
pavers	214
Nosing	
flooring	155
sill	289
steel	391
Nozzle, sandblast, rental	328

Numbers, sign	173
NuTone	140, 141, 256, 257
Nuts, hex head	234
Nylon carpet	76, 437

O

Oak	
boards	199
doors	106, 116, 119
doors, entry	107
flooring	155, 434
molding	224
paneling	244
parquet	158
plywood	205
threshold	108, 224, 289
Obstruction lighting	589
Octagonal window	306
Office	
clerk	313
expenses	313
job site, temporary, rental	333
manager cost	313, 317
overhead	210
partitions	447
Offices	
manufactured	484
temporary	313
temporary, rental	333
Oil	
concrete form	358
storage tanks	544
Oil and latex stain	238
Oil-based	
enamel	238
exterior primer-sealer	236
stain	238, 239
Openers, garage door	164
Openings	416
Operating engineer, wage, residential	10
Orchard clearing	597
Organic impurities	317
Ornamental	
fence	149
gates	166
metals	256, 391
railings	389
rock	607
screens	391
OS&Y valves	496, 523
OSB (Oriented Strand Board)	278
paneling	396
panels	205
roof panels	396
roof sheathing	195
sheathing	42, 51, 62, 394, 395
siding	278
subfloor	42, 62
Osmosis filters, water	533
Outdoor lighting	192, 591
Outlet boxes, electrical	565
Outlet circuit receptacle	546
Outlets, electric	129, 567
Outside corner molding	228
Ovens	
built-in	258
cabinets	30
commercial	460
convection	460
electrical work	129
microwave	460
pastry	460
residential	257, 258
Overhang, painting	242
Overhead	313
costs	313
markup	211
Overhead doors	419
Overhead electrical distribution	580
Owens Corning	261

P

PA (Public Address) system	468
Padre	
brick	212

Pads	
carpet	76
equipment	355
Paging systems	595
Paint	
pool coating	239
removal	235, 439
remover	239
testing	26
textured	237
thinner	240
traffic	239
Painter, wage	
industrial & commercial	312
residential	10
Painting	243
athletic courts	471
cleaning, prep with power tools	440
cleanup	335
clear finish	238
compressors for spray painting	241
concrete	441
conduit	441
cost breakdown, subcontract	241
curbs, red	619
deck	441
decks	441
door frames	242, 243
epoxy	441, 442
exterior	240, 243
exterior latex	237
fence	242
floor	442
handrails	442
industrial	440
interior	237, 240, 243
interior prep	443
joists	441
latex	237
latex exterior	237
masonry	237, 442
mastic	441
oil stain	239
pipe	441
pool	442
porch	442
porch and floor	237
roof	259
rule of thumb, subcontract	241
sandblasting	266
shingles	442
siding	441, 442
speed bumps	613
spheres	441
spray	241
sprayers, rental	331
stain	239
steel	440
stucco	237, 441
subcontract	241
surface prep	440, 441
swimming pool	442
tanks	441
urethane finish	238
varathane finish	238
waterproof	239
waterproofing	238, 239
wood deck	442
wood finish	238
wood preservative	239
Paling, rail	99
Pan forms	348
Pan racks	460
Panel	
adhesive	18
box, wiring	129
circuit breaker	578
enclosures	567
molding	226
Panel roofing	
steel	263
Panelboards, electrical	576
Paneling	
beaded	244
birch	244
cedar	79, 244
FRP	245
Golden Virola	244
hardboard	244, 439
hickory	244
maple	244
oak	244
pine	244
red oak	244
sound reduction	468
vinyl-clad	245
wainscot	244
wall	54
Z-brick	245
Panelized	
roof system	396
shingle siding	279
Panels	
breaker	575
fiberglass	150
greenhouse	150
radiant heating, ceiling	176
roofing, solar	283
sun	150
wood walls	397
Panic button	267
Panic door hardware	172, 425
Pans, water heater safety	530
Pantry cabinets	30
Paper	
building	26, 28
dispensers	449
roofing	262
wallcover	438
Paperhanging	296, 438
Parabolic louvers	81
Parapet	
coping	271
forms	357
reglet	368
Targeting, masonry	386
Parging	
masonry	386
Park	
benches	478
grills	473
surveillance	490
Parking	
access control	454
blocks	620
bumper	618
control equipment	454
handicapped symbol	619
lot, paving	613
reflective lines	619
stalls, for handicapped	481
traffic symbols	619
Parquet flooring	158, 434
Particle emissions reduction, pollution control	584
Particleboard	205
carpentry	399
underlayment	399
Parting bead	226
Partitions	
cubicles	446, 447
demolition	338
dust control	340
fire rated	448
folding doors	447
framing, piecework	37, 73
framing, steel	73
marble, toilet	385
metal	446, 447
non-bearing	447
office	447
toilet	446
wire	448
Passage latch	171, 425
Passenger elevators	493
Passive solar heat	252
Paste wood filler	240
Pastry oven	460
Patch panel	464
Patching	
concrete	95, 368
plastic	239
Path lighting	192
Patio	
blocks	616
carports	77
cover	21
roof	99
tile	222
Patio doors	121, 122
aluminum	120
fiberglass, swinging	122
gliding, vinyl	121
hinged, vinyl-clad	120
pet	122
sliding wood	121
steel, double	122
swinging, double	120
vinyl	121
Pavement	
asphaltic	245
breakers, rental	323, 328
concrete	84, 94, 246, 614
demolition	102, 335
line marker, rental	328
line markings	619
marking, removal	336
sawing	374
stripers, rental	328
stripping	619
sweeping	615
symbols	619
Paver, Turfstone	618
Pavers	
brick	214, 385
bullnose	214
concrete	217, 385
interlocking	386
landscaping	628
masonry	616
masonry grid	386
mexican	291
rubber	471
slate	385
split	214
terrazzo	386
Paving	
asphalt	245, 612, 613
brick	245, 615
cold milling	614
concrete	84, 94, 246, 614
demolition	102, 335
equipment rental	328
grass	246, 618
joint treatment	616
machine, rental	328
parking lots	613
repair	614
stones	386
subcontract	245
systems	246, 618
Turfstone paving	618
Payment bonds	187
Payroll taxes	10, 288
PCBs, removal	439
Pea gravel	
concrete	85
landscaping	628
riprap	607
Peat humus	626
Pedestal flooring	438
Pedestrian bridge	491
Peep sights	171
Pegboard, hardboard	439
Penetrating stain	238
Penny nail sizes, defined, employee	229
Pension costs defined	3
Percolation testing	268
Percolator, coffee	462
Perforated pipe	635
Performance bonds	187
Pergo wood flooring	157
installation kit, rental	329
Pergola	98
Perimeter door seal	456
Perimeter wall insulation	183
Perling, steel	72
Perlite soil conditioner	626
Permanent bond adhesive	260
Permits	
building	28
well drilling	298

Pest control		fire protection	512	skylights	280	tampers	602
soil treatment	283	foundation drains	126	speed bumps	620	tools, rental	323
wood treatment	209	gas	255, 641	tarps	288	tube systems	495
Pet		grouting	640	tile	433	Pocket doors	
doors	122	guard	368	vapor barrier	256, 355, 356	edge pull	172
enclosures	143	guides	522	Plasticized concrete	85	hangers	172
Petroleum storage tanks	544	inspection	632, 633, 634	Plate straps	164	hardware	53, 171, 172
Pews	464	insulation	527	Plates		kit, converging	172
PEX pipe	513	insulation, asbestos removal	341	carpentry	40, 57, 393	Pointing, masonry	374, 375
PEX-AL pipe	515	insulation, painting	441	carpentry piecework	42, 67	Poisoning soil	283
Pharmacy refrigerators	473	jacking	641	door hardware	171, 425	Poles	
Phone support	5	levels, rental	331	electrical	569	building	206
Phones		locating	269	splash	257	closets	55
temporary	313	markers	321	switch	23	concrete	364
wiring	594	painting	441	Platform lifts		cross arms	580
Photo mapping, aerial	316	perforated	634, 635	dock	455	demolition	337
Photo micrographs	320	PEX	513	rental	327	flag	452
Photoelectric		PEX-AL	515	Platform, aerial, rental	327	foundations	591
sensors	592	piles	611	Platform, scaffold, purchase	333	job sign	321
switches	568	plastic	126	Playground equipment	471	lighting	591
Photographs		polyethylene	126, 621, 624, 641	Playing fields, synthetic	469	lumber	206
aerial	316	polyethylene corrugated	637	Plenum cable	596	playground	471, 473
construction	321	PVC	516	Plexiglas	167, 426, 484	power distribution	580
retouching	321	PVC Schedule 40	623	Plinth block, MDF	228	pressure-treated	206
Photovoltaic systems	585	PVC Schedule 80	510	Plugmould	561	removal	337
Picket fence	148, 149	PVC sewer pipe	269	Plugs		temporary utility power	321
painting	242	railing	390	cleanout	520	treatment	208
Pickling stain	239	rolls	522	electrical	567	Polishing	
Picture frame molding	226	sewer	268	test	519	floors	240
Picture rail	55	sewer, PVC	633	Plumber, wage		woodwork	243
Picture window	302	sterilization	632	industrial & commercial	312	Pollution control	582, 584, 607
Pictures, job site	321	storm	635	residential	10	Poly E Pipe	624
Piecework, carpentry	37-39, 74-76	straps	522	Plumber's flash cone	407	Polybutene tape	416
Pier		troubleshooting service	269	Plumber's tape	522	Polycarbonate	
blocks	39	TV inspection	640	Plumbing	498	glazing	486
caps	393	valves	527	access doors	255, 529	sheets	167, 427
pads	39	vitrified clay	269	area drains	529	skylights	280
Pilasters	134	water, PVC	631	assemblies	253, 534, 536	Polyester fabric	260
cabinets	31	Pipefitter, wage	312	cleanouts	529	Polyethylene	
moulding	55	Piping, gas	255	copper DWV	516	corrugated pipe	637
painting	242	Pitch pockets	407	drinking fountains	250	film	256
Pile caps, concrete	343	Pits, excavation, dug by hand	136	equipment rental	331	gas pipe	641
Pile driver, wage	312	Pizza preparation unit	458	fixtures	539	membrane, slab	94, 342, 355, 356
Pile driving	609	Placing concrete	95, 352	fixtures, cleaning	83	pipe	126, 621
Pile driving, rental	325	Plan check fee	28	floor drains	529	tarps	288
Pile foundations	609	Plank		for handicapped	482	tilt-up	365
Piles		flooring	56, 155	piping	536	Poly-faced insulation	182
landscaping	628	precast concrete	362	roof drains	529	Polyisobutylene	416
treatment	208	scaffold, aluminum extension, pur-	333	rough-in	254, 536	Polyisocyanurate insulation	183, 402
Piling, sheet steel	608	chase	333	systems	253	Polypropylene mesh reinforcing	85
Pine		scaffold, rental	333	water softener	252	Polystyrene	
building poles	206	Plank flooring, vinyl	436	Plyclips	163	board	402
decks	98	Plans	25	Plyform	204, 343	insulation	182, 183, 402, 403
door casing, fluted	108	Plants, landscape	627	Plywood	204, 394	insulation board	402
eastern	198	Plaques	446	backboard	464	roof deck	403
flooring	155, 156	Plaster		birch	205	Polyurethane	
jamb sets	118	accessories	430	'board-up'	277	floor finish	56
lumber	198	demolition	102, 338	cap molding	228	paint	238
paneling	244	ground	226	cedar	205	painting	442
Ponderosa	198	joints	415	ceiling	54	sealant	414
siding	200, 201	labor	246, 430	deck, waterproofing	297	Ponderosa pine	
southern	196, 197	mixer, rental	324	demolition	102	boards	198
stakes	207	painting	243	exterior	204	lumber	198
timber	203	ring	565	fence	334	mantels	210
white	198	soffits	246	forms	88, 343	Pool, swimming	
Pipe		stucco	431	framing clips	163	coating	239
ABS	126, 516	Plasterboard		lumber	204	complete installation	479
asbestos removal	341	drywall	427	marine-grade	205	cover	480
black steel	498	nails	232	MDO	204	deck	372
bollards	619	Plasterer, wage		oak	205	fences	150
cast iron	629	industrial & commercial	312	paneling	244, 396	gunite	360
clamps	522	residential	10	piecework rates	39, 74	heaters	252
clay	638	Plasterer's helper, wage		roof panels	396	painting	239, 442
cleaning	633, 634	industrial & commercial	312	sheathing	42, 51, 61, 394	resurfacing	373
columns	387	residential	10	sheathing, piecework	39, 76	Popcorn ceiling	170
concrete	634, 635	Plastering	246, 430	siding	204, 278	Poplar flooring	155
conveyors	495	fireproofing	413	softwood	204	Pop-up sprinklers	190
copper	507, 516	stucco	431	structural	204	Porcelain tile	290
corrugated metal	636, 637	Plasterkraft	27	subfloor	42, 61	Porch	
corrugated polyethylene	634	Plastic		subfloor, piecework	39, 76	columns	84
CPVC	511, 512	countertops, laminated	477	treatment	209	enamel	237
culvert	636	drain pipe	126	underlayment	436	enclosed	167
cutters, rental	331	forms	86, 87	window covering	277	lifts	133
demolition	337	laminates	439	Pneumatic		painting	242, 442
drainage	126, 516	lumber	99, 206	demolition	103	posts	84
ductile iron	631	resin glue	18	door closers	105	rail	256
DWV	516	sewer pipe	269	excavation	138	Porous paving	246
elliptical	635	shutters	275	hammer	599	Portable structures	484
equipment rental	331	siding	279	pipe systems	495	Portable toilet (Port-a-Potty)	313

Portland cement	82	regulators, gas	641	Quarry work	599	Provisa	257
Post		regulators, hydronic heating	543	Quarter round molding	224	vented	256
anchors	163	treatment, lumber	209	Quarter round mould	227	Range support, cabinets	31
bases	163	vacuum breaker	315	Quartz heaters	176	Ranges	
caps	163	Pressure washer, rental	331	Quick coupling valves	625	electrical work	129
column forms	343	Pressure washing	241, 440	QuietTest exhaust fan	140	gas, commercial	460
indicators	630	Pressure-reducing valves	526, 543	Quietzone	184	residential	257
painting	442	Pressure-treated lumber	203	Quonset huts	487	Rastra Block	87
Post holes	144	Prestique shingles	261			Rates, labor	7, 8, 9
fences & footings	620	Prestressed concrete	364			Rattan black paper	27
Postal specialties	451	Prime coat, pavement	614			Reactivity testing	317
Posts		Primer				Ready-mix concrete	84
athletic equipment	469	asphalt	470			Rebar	
barrier	456	clean metal	238	Raceway, electric	560	chairs	351
bollards	619	linseed	236	Racks		concrete	89, 349
building	206	metal	238	coat and hat	457	epoxy-coated	349
cabinet	31	painting	241	garment	457	footings	349
carpentry	39, 45	sealer, oil-based	236	kitchen	460	masonry	375
deck	98, 99	Prints, plans	25	ladle	458	rings	351
fence	144	Privacy latchset	171	pots and pans	458, 460	slabs	350
guardrail	618	Processed lime	220	towel	24	splicing	352
jackposts	187	Profit, markup	211, 313	Racks, security		stirrups	351
newel	56	Project		bicycle	479	Receptacles, electric	129, 567
porch	84	cost adjustments	12-15	motorcycle	479	cover plate	569
pressure-treated	206	financing	314	Radial wall forms	345	outlet circuit	546
redwood	206	manager cost	313	Radiant heat, floor	175	wiring	129
sawn	206	scheduling	314	Radiant heating	176, 483	Receptors, shower	275
treatment, lumber preservation	208	Propane		Radiation protection	488	Recessed lighting	192
Pot hooks	458, 460	furnaces	177	Radiators, heating	541	Recording meters	575
Pot racks	460	tanks	545	Radio studio	492	Recycling fees	335
Pot wash sink	461	water heaters	251	Radioactivity, removal	439	Red cedar	
Pour strip, tilt-up	366	Property boundaries	316	Radon gas, testing	26	beams and timbers	202
Pouring		P-traps, ABS	520	Rafters	36, 394	boards	
concrete	95, 354	Public address systems	468, 595	bay vent channel	295	fence	148
insulation	184, 402	Pull box, electrical	546, 566	demolition	103	lumber	196
Pour-stop forms	343, 345	Pull plates	171, 425	log	194	shakes	262
Powder-driven fasteners	233	Pulls, edge, pocket door	172	piecework rates	39	shingles	262
Power		Pulpits	464	rough carpentry	47	siding	200
cable	564	Pump mix concrete	85	spacing	295	Red oak	
conduit	547	Pumper firehose connection	497	steel framing	70	boards	199
distribution	580	Pumping		steel, piecework rates	74	closet doors	124
EMT	550	concrete	354	timber	194	doors	106, 117
generation	131, 585	dewatering	605	vents	295	Red oxide primer	236
panels	575	well	298	Rail		Red rosin sheathing	27
solar	585	Pumps		communion	465	Reducer strip, flooring	155
temporary, pole rental	313, 321	electrical connections	129	fence	145, 148	Reducer, drain pipe	126
underground	545	foundation	370	guard	334	Redwood	
Power factor meter	575	gasoline	453	hand	150	benderboard	188, 628
Power generator exhaust stack	584	rental	327	molding, cabinets	31	deck stairs	99
Power ventilators		sewer	269	painting	442	decking	98
attic gable	142	sump	532	stair	286	fascia	49
roof-mount	142	sump, wiring	129	Railing		fence	147, 148
Precast		wiring	130	access flooring	438	headers	618, 628
beams	362	Punch down, network cable	464	aluminum	389	lumber	196, 200, 203
columns	363	Punch-down blocks	596	brass	389	molding	224
concrete	360, 636	Purlins		for handicapped	480	saunas	267
culvert	636	anchors	162	highway	618	siding	201
double tees	363	carpentry	48, 394	painting	240, 242	strips, chain link	142
drains	637	fireproofing	414	patio deck	99	stucco mold	108
floor plank	362	hangers	162	porch, steel	256	treads	99
floor slab	362	steel	387	stair	56	Reflective signs	620
girders	362	steel framing	72	stair, wood	284, 401	Refrigeration, insulation	403
joists	362	Purse shelf	446	steel	256, 390	Refrigerators	
manholes	639	Push plates	171, 425	temporary	334	backbar	461
panels	360	Putty, glass	241	tubular	389	electrical work, subcontract	129
stairs	363	PVC		wrought iron	390	food service	461
Precipitators	459	clamp	554	Railroad demolition	337	medical	473
Pre-engineered buildings	487	conduit	551, 552	Rain diverter	271	morgue	474
Preformed siding	404	conduit body	554	Rain gutter		solar	283
Prehung doors	52, 118-120, 419	conduit box adapter	553	stainless	410	wiring, subcontract	129
double	119	conduit with wire	555	steel	409	Reglet	
exterior	109, 110, 111	end bell	553	Rain gutters	168	copper	271
fire-rated	109	flashing	273	Raingear		parapet	368
French	120	jacketed copper tubing	509	copper	408	Regulator valves	527
hardboard	110	pipe	268, 510	Raised floors	438	Regulators, pressure,	
heater closet	119	pipe, Schedule 40	623	Rammers		hydronic heating	543
oak	119	reducer bushing	553	compacting	602	Reinforcing	
patio, steel	121	sewer pipe	269, 633	rental	324	bar supports	343
steel	111, 112, 418	water pipe	631	Ramp forms, riser	349	bars	89, 349, 369
Preliminary soil investigation	282			Ramps		caissons	352
Prepare surface, painting				access flooring	438	chairs	351
Preservation, lumber	209			handicapped	480	columns	353
Preservative, wood	239			rental	332	demolition	335
Pressure				Ranch casing	108	fiber mesh	85
controls	528			Range circuit	547	foundation	349
gauge	528			Range hood	256	gunite	360
grouting	360			Ballista	257	masonry	217
mats	267			convertible	256	masonry ties	160
				custom	257	mesh	91, 352, 353
				food service	459		

Q

Quality control engineer	316
Quantities defined	3
Quarry tile	
flooring	385, 433
masonry	222, 385
wall tile	385

mesh mini-mat	353	grading	599	tile, concrete	264	ledgers and ribbons	47
pavement	246	paving	613	trusses	48, 72, 399	plates	42, 67
rings	351	repairing	614	trusses, piecework rates	38, 74	posts	39, 45
slabs	92, 350, 352	rollers, rental	324	underlay	27	purlins	48
splicing	352	striping	619	vent kit, bath	141	rafters	47
steel	89, 349	trim and finish	606	vent, turbine	141	ribbons	47
steel, epoxy-coated	349	Road closed sign	21	vents	295	roof decking	50
stirrup	351	Robe hooks	24	windows	282	roof sheathing	49
tilt-up	366	Rock		Roofer, wage		roof trusses	48, 49
walkways	618	aggregate	18	industrial & commercial	312	sill plates	40, 57
welding	349	cinder	607	residential	10	stucco stop (grounds)	51
Reinforcing ironworker, wage		drain rock fill	607	Roofing		subflooring	42
industrial & commercial	312	drilling	598	algae-resistant shingles	260	trimmers	48
residential	10	drills, rental	323	asphalt	260, 262	wall sheathing	51
Relief valves	526, 543	excavation	135	assemblies	37	window openings	44
Relocatable structures,		fill	607	base sheet	258, 260	Rough hardware, plywood clips	163
manufactured type	484	ornamental	607	built-up	258, 405	Rough-in	
Remote high gain antenna	130	recycling	335	cant strips	50, 183, 406	bathtub	535
Removal		ripping	599, 604	cement	259, 260	drinking fountain	535
asbestos	341	Rock fill drainage systems	126	clay tile	264	floor drain	536
clearing	597	Rockwool insulation	184	concrete tile	264	lavatories	535
debris	340	Rod clamps	558	copper	408	service sink	535
demolition	338	Rod hanger	558	corrugated	263, 404	shower	535
lead-based paint	235, 439	Rod, threaded	161	demolition	102	sink	535
paving and curb	481	Rods		EPDM	406	toilet	534
PCBs	439	lightning	129	felt	260, 262, 405	urinal	534, 535
radioactivity	439	shower curtain	24	fiber cement slate	264	water closet	534
toxic chemicals	439	Roll flashing		fiberglass panels	150	Rough-sawn siding	278
tree	138, 597	copper	271	galvanized	263, 404	Round molding	227
wallpaper	296	galvanized	271	gravel	258	Router-groover, rental	328
Renderings, architectural	20, 126	lead	273	membrane	258	Routers, rental	331
Rent, overhead	313	paper-backed copper	271	metal	263	RSC conduit	547
Report		ridge roll	263	nails, coil	232	Rub	
home inspection	26	valley	271	nails, galvanized	232	carborundum	95, 360
soil test	282	vinyl	273	nails, plastic cap	233	concrete finish	95, 360
Reproduction, plans	25	Roll roofing	405	paper	262	Rubber	
Residential		adhesive	260	photovoltaic	283	flooring	436
rules of thumb	310	felt	260	red cedar	262	mats	222
Residential wage rates	10	fiberglass	260	roll	260	studded tile	154
Resilient flooring	153, 154	mineral surface	260, 262	rule of thumb costs	258	tile	436
demolition	340	papers	262	shake	262	Rubberized asphalt	614
installation	435	Roller, dough	460	sheet	263	Rubble, masonry	384
Resilient hat channel, drywall	169	Rollers, rental	324	sheet metal	263, 406	Rugs, carpet	76, 437
Resorcinol glue	18	Rolling		shingles	262	Rule of thumb costs	
Restaurant		ladders	463	slate	263	carpentry	32
equipment	457	Rolling platform lifts, rental	327	solar	283	electrical work	127
range	460	Rolling towers, rental	327	Spanish tile	264	hardware	424
Restrains, water heater	531	Roll-up		staples	233	residential construction	310
Retaining wall forms	92, 344	doors	419	steel panel	263	roofing	258
Retaining walls	378	window blinds	299	system	406	steel framing	56
Return bends	520	Romex cable	127, 546, 563	tar	259	Runners	222
Reveal strips		Roof		tile	264	mats	222
formwork	345, 367	apron	271	Roof-mount power ventilator	142	rubber	222
tilt-up	367	bay window	307	Roof-to-wall flashing	271	Running track	469
Reverse osmosis filters	533	built-up	258	Room dividers		Runoff protection	607
Reversible doors	109	cant strips	50, 183, 406	doors, folding	448	Rust-converting metal primer	238
Revolving doors	420	coating	239, 259, 405	partitions	448	Rustic siding	
R-Gard insulation	183	cold, for log home	194	Rope climb, playground	471	cedar	200
Ribbons (ribbands), carpentry	47	deck cover	98	Rosette set	108	pine	202
Ridge		deck, cementitious	406	Rosin sheathing	27	Rust-inhibiting primer	236
clay tile	264	deck, concrete	372	Rotary roof ventilators	295, 411	Rust-Oleum	238
fiber cement	264	deck, steel	388	Roto hammer, rental	329	Ryegrass seeding	627
flashing	263	deck, wood	395, 406	Rototilling	188		
sheet metal roofing	263	demolition	102	Rough carpentry			
shingles	261, 262	drains	529	adhesive	18		
steel framing	72	edge	270, 271, 273	anchors	58		
vents	295	edging	271	backing and nailers	47		
Ridgeboard, steel	72	EPDM	406	beams	45		
Rigid conduit	547	flashing	27, 271, 273	blocking	41		
Rigid insulation	183	framing	36, 39, 47, 74	bracing	44		
Ring steel reinforcing	351	framing, panelized	396	cant strips	50		
Ripping, excavation	599, 604	framing, steel	70, 74	ceiling joists	46		
Riprap	607	ice-melting cable	565	collar beams	48		
Risers		insulation	403	collar ties	48		
concrete stair	95, 354, 363	insulation board	403	columns	39		
concrete stair, forming	349	jacks	530	columns, steel	57		
flagstone	218	joints	395	curbs	48		
masonry	218	loading	265	demolition	103, 338		
rubber	222	membrane	258	door openings	43		
sprinkler heads	190	paint removal	235	dormer studs	48		
stair	56, 286	painting	242, 442	fascia	49		
steel stairs	285	pan	271	fireblocks	45		
wood stairs	284, 400	panels	396	floor joists	40		
RO filters, water	533	paper	27	floor trusses	41		
Road		patio	99	furring	50		
compaction	606	safes	408	girders	40		
equipment rental	328	sheathing	49, 395, 406	grounds (stucco stop)	51		
		testing	319	joists	46		

S

S4S molding	227
Sack concrete	368
Sack finish	95
Saddle stock	271
Saddle threshold	289
Safe deposit boxes	456
Safes	
floor	456
recessed wall and floor	456
residential	265, 266, 456
roof	408
Safety	
child seat	451
floor tiles	436
glass	167, 426
ground, electrical receptacle	567
nets for scaffolding	332
overhead	313
pan, water heater	530
signs	446
switch	572, 573
switch conduit hub	573

Safety film, window	423	Scraping, paint	241	grilles, doors	420	floor	33, 34, 38
Sag rods, steel	387	Scratch coat, plaster	246, 431	guards	268	framing, steel	74
Salamanders, rental	329	Screed		locks	172	gypsum board	168
Salaries, overhead	313	concrete	365	monitor panels	592	insulated	183
Sales tax excluded	3	concrete, rental	325	systems	592, 594	insulation board	183, 403
Saltillo	291	lath	189	television system	595	lumber	396
Salvage, demolition	341	plaster or stucco	51	Security doors	113, 115	OSB	42, 51, 394
Sampling concrete	318	rental	325	Sediment control	607	paper	27
Sand	94	tilt-up	365	Sediment fence	607	piecework rates	39
base	617	Screen		Seeded aggregate finish	246, 618	plywood	42, 49, 51, 394
base for concrete	94	bead molding	227	Seeding		roof	49, 395, 406
bed, paving	245	block, masonry	217, 383	grass	627	skip	398
fill	94, 135, 342	masonry	383	landscaping	187, 627	steel framing	61
fill, drainage systems	126	ornamental	391	Seekure paper	28	wall	51
paving	617	patio door	121	Seesaws	472	wall, exterior	395
testing	320	projection	462	See-thru frames	422	wall, interior	395
Sandbags	607	sight	618	Seismic ties	161	wallboard	168, 296
Sandblasting		sun	391	Self-leveling compound	154	Sheds, storage, rental	334
concrete	266, 360	urinal	446	Self-storing storm doors	114	Sheepsfoot roller	138
equipment rental	328	vent	294, 295, 410	Self-tapping screws	150	rental	139, 324
joints	615	window	303	SensAire wall control switch	141	Sheet glass	166, 426
masonry	266, 375	wire	267	Sensor cable, electric	592	Sheet metal	406
steel	266	Screen doors	113	Sensors		access doors	269
tilt-up	368	closers	105	photoelectric	592	ducts	178
Sandblasting equipment rental	328	hinges	172	security	592	flashing	263, 270
Sandbox, playground	471	metal	113	vibration	592	gutters, downspouts	168
Sanders, rental	331	security	113	Septic		hoods	273
Sanding, floor	155, 157, 240, 435	vinyl	113	sewer systems	268	roofing	263, 406
Sanding, painting	440, 443	wood	113	tanks	533	siding	279, 405
Sandstone, masonry	385	Screw guns, rental	330	Service doors	420	vents	410
Sandwich preparation unit	458	Screw shank nails	231	Service entrance	576	Sheet metal worker, wage	
Sanitary napkin dispenser	449	Screw-base lights	192	cable	561	industrial & commercial	312
Sanitary piping, demolition	337	Screwdrivers, rental	330	cap	548	residential	10
Sanitary sewer		Screwjacks, rental	332	connection	129	Sheet piling	608
cleaning	634	Screws		switchboard	573	Sheet vinyl flooring	153, 435
Sanitary tees, ABS	518	drywall	231	temporary connection	321	adhesive	154
Sash bar molding	227	self-tapping	150	weatherproof	573	leveling compound	154
Sash, painting	243	Scribe molding, cabinets	31	wire	561	Sheetrock	
Sauna		Scrub sink	539	Service sinks	250, 538	gypsum drywall	168, 296, 427
heaters, wiring	128, 266	rough-in	535	rough-in	535	painting	240, 243
modular rooms	266	Scullery sink	461	Service station		wallboard	168, 296, 427
room	539	Sculpture screens	217	air and water	454	Sheets	
Saw, meat	458	Scuppers, sheet metal	409	cash box	454	cork	439
Saw, rental		Scuttle, roof	411	equipment	453	polycarbonate	427
chain saw	139	SDR 11 CPVC pipe	511	hydraulic hoist	454	polyethylene	256
concrete	324	Seal coat		submerged turbine	453	roofing	263
Sawing		asphalt	245, 614	turbine	453	Shelf lighting	191
asphalt	374	roadway	613	Serving fixtures	457	Shellac	
concrete	366, 373	Sealant pot, rental	328	Serving table, sushi	458	floor finish	56
masonry wall	373	Sealants		Settlement testing	282	thinner	240
Sawn posts, redwood	206	caulking	77, 414	Sewage		Shelters	484
Saws, rental	331	caulking gun	79	ejectors	268, 532	bus stop	483
wood	331	concrete	77	leaks	269	metal	484
SBS		deck	98	pumps	268	prefabricated	484
roll roofing	260	door	78	Sewer		Shelves	
starter strip	261	driveway	239	connection	269	carpentry	55
Scaffolding		elastomeric	78	demolition	337	closets	273
caster-mounted, purchase	333	gutter and flashing	78	pipe, PVC	633	industrial	452
caster-mounted, rental	333	marine	78	pump systems, residential	268	library	452, 476
erection	332	paint	239	snakes, rental	331	linen cabinet	273
jacks	359	primer	236	systems	268	storage	273
nails	233	siding	78	Sewer lines	269	toilet	446
planks, purchase	333	silicon rubber	78	cleaning	633	utility	273
planks, rental	333	sill	183	demolition	337	wire	273
rental	332	tub	79	Shacks, storage, rental	333	wood	273
safety equipment, purchase	333	wall	79	Shades, window	299	Shelving	
swinging, purchase	333	window	78	Shaft drilling, caisson foundations	611	convenience store	489
Scales, truck	456	Sealdon 25 shingles	261	Shaft walls	431	display	489
ScapeWel window	308	Seals, weatherstrip	297	Shake felt	262	library	463
Schedule 40 PVC pipe	510	Sealtite conduit	557	Shakertown siding	279	wire	273
Schedule 80 PVC pipe	510	Seasonite wood preservative	239	Shakes, roofing	262	Shims	
Scheduling		Seat cover dispensers	449	Shale, excavation	599, 604	door	52
costs	314	Seating		Shaping slopes by hand	136	shingles	262
CPM	134, 314	athletic	470	She bolts	359	stool	53
fees	134, 314	gym	468	Shear gate	630	stud	52
overhead	313	school	462	Shear panels		Shingles	
School equipment	462, 471	shower	25	piecework rates	38	algae-resistant	260, 261
School network	463	stadium	478	steel framing	74	architectural	261
Scissor lifts	455	theater	478	Sheathing		asphalt	258, 261
Scissor lifts, rental	327	Security		adhesive	18	cedar	262
Scoreboards, gym	468	access, keypad	593	board	42, 51	demolition	102, 339
Scoring concrete	359	alarm systems	592	carpentry	62	fiberglass asphalt	261
Scrapers		alarms	267	carpentry piecework rates	76	flashing	271
excavation	604	awning	21	clips	163	hip and ridge	261
rental	326	controls	594	cork	439	interlocking	261
Scraping metal to prepare for		gates, folding	115	demolition	102, 338	laminated	260, 261
painting	440	gratings	391	Dens Glass	183	natural shadow	261
						painting	442

removal	339	Sieve analysis, aggregate	317	concrete	84, 355	hauling	603
roofing	261, 262	Sieve, filter sock	126, 634	demolition	340	loading	603
siding	279	Sight screen	618	edge forms	89	moving by hand	605
slate	263	Sign lighting	589	finishes	95	poisoning	283
solar	283	Signage, freestanding	489	floor	356	sealant	606
starter strip	261	Signal cable	595	form, concrete	88	spreading	600
wood	262	Signal crossing	490	forms	344	stabilization	606
wood, demolition	339	Signs		forms, elevated	348	testing	26, 282
Shoe molding	224, 225	architectural signage	445	grading	342	treatments	283
Shoe, door	289	braille	482	membrane	94, 342	Soil pipe adapter	520
Shoring		directory	445	rebar	90	Solar	
beams	348	display	445	sand fill	342	barricade light	22
concrete	608	elevator plates	483	tennis court	470	collector system pump	532
equipment rental	333	handicapped	482	Slag		paneling	283
forms	348	job-type	321	crushed	126	power	585
heavy duty, rental	333	reflector	620	stone	18, 126	protection	475
trench	608	road closed	21	Slate		shingles	283
Shot fasteners	233, 393	safety	321	pavers	385	water heating system	532
Shovels, earthwork	135	street numbers	173	paving	617	water storage tank	532
Shower		temporary	313	roofing	263, 264	Solar Tek	294
caulk	78	traffic	620	tile	290	Solar window film	423
compartments	446, 537	Silestone countertop	96	Sleepers, carpentry	51	Solariums	485
doors	274, 446	Silicon carbide, sidewalk grits	359	Sleeves, concrete	358	Solenoid sprinkler valve	190
emergency	535, 538	Silicone caulk	78, 414, 415	Slicer		Solid core doors	
enclosures	275	Sill		bread	460	birch exterior	106, 110
grab bars	248	anchors	162	Slide bolt lock	166, 173	entry	106
handicapped access	248	blocks	381	Slides, playground	472	fir entry	106
plumbing	537	bolted	394	Sliding doors		hardboard exterior	105, 110
receptors	275, 447, 537	carpentry	393	aluminum	121	hardboard interior	116
rod	24	cover, aluminum	289	closers	105	hardwood exterior	105
rough-in	535	log	194	fire	419, 420	lauan exterior	106
seat	25	mud	162	glass	421	oak	106
stalls	248, 275, 447, 537	oak	289	glass, insulated	421	prehung exterior	110
stalls, cleaning	83	plate gasket	183	patio	121	red oak exterior	106
Shrinkage defined	3	plates	40, 57, 193	pet door	123	Sonotube forms	347, 369
Shrubs	628	sealer	183	screen	121	Sound board	402
Shunt trip	575	steel	391	vinyl	121	Sound control	184
Shutters		window	299	wood	121	Sound insulation board	183
accordion-type	276	Sill Seal™	183	Sliding windows	301, 305	Sound reduction paneling	468
Bahama-type	276	Silt fence	150	Slip-formed walls	356	Sound system, stage	467
colonial-type	276	Single-family home costs	309	Slop sink rough-in	535	Soundness testing	317
co-polymer	275	Single-hung windows		Slope protection	607	Soundproofing fabric	475
exterior	276	aluminum	304	Slopes, shaping, by hand	136	Southern pine	
hurricane	276	vinyl	300	Slump block	218	fence	147, 148
louvered	275	Sinkers, nails	230	Slurry seal	614	lumber	196, 197
panel-type	276	Sinks		Small tool cost	313	pressure-treated	203
plywood	277	bar	249	Smart Panel siding	278	siding	204
roll-up	276	bases	293	Smoke detectors	128, 267	timber	203
Siamese connection	497	bathroom	249, 537	Smoke vents	410	Southern yellow pine	
Sidelites	107	cabinets	29, 293, 477	Snakes (sewer), rental	331	decking	199
steel door	111	cabinets, cutout	31	Snap ties	86, 359	flooring	198
Sidewalks		caulk	78	Snow block	194	lumber	196
asphalt	618	demolition	341	Snow-melting cable	480, 564	posts	206
concrete	84, 94, 246, 614	floor	539	Soap dishes	24	pressure-treated	203
cover	334	food service	461	ceramic	291	siding	201
demolition	100, 101, 335	kitchen	250, 461, 535, 538	commercial	449	timbers	203
moving	494	laundry	250	Soap dispensers	449	Spa enclosure	167
Siding		marble	210	demolition	341	Space frame steel	388
aluminum	279, 405	mop	461, 538	Soccer goals	469	Spackle	240
cedar	200	scullery	461	Social Security payroll taxes	288	Spades, clay, rental	323
corrugated	279, 405	service	250, 538	Sod	188, 627, 628	Spandrel glass	423, 426
demolition	102	wash	535, 539	Sod cutters, rental	330	Spanish tile roofing	264
exterior trim	278	Siphon breaker, irrigation	190	Sodium flood, high-pressure	590	Spar varnish	238
fascia	278	Site work		Sodium lamp, high-pressure	587-589, 590	Spark arrestor	152
fiber cement	277	clearing	597	Soffit		Special Construction, disabled access	480
galvanized steel	279	grading	599	demolition	102	Specialty lumber	206
hardboard lap	278	utilities, accessories	641	forms	349	Specific gravity	317
hardboard panel	277	water meters	315	Hardie cement fiber	277	Specifications fee	317
insulated	404	Sizing	296	OSB	278	Speed bumps	
lap	202, 277	Skid steer loaders, rental	326	plaster	246	asphalt	613
log cabin	202	Skid strips, stair	286	steel	67	plastic	620
Nailite	280	Skip sheathing	398	systems	282	Speed limit signs	620
nails	233	Skiploader, rental	326	vents	295	Spheres, painting	441
OSB	278	Skirtboard, carpentry	56	vinyl	282	Spikes	233
paint preparation	241	Skylights		wood	46	Spiral staircases	285
paint removal	235	fixed	281	Softball, backstops	621	Spirals, reinforcing	352
painting	242, 441, 442	operable	281	Softener, plumbing fixtures	252	Splash plate	257
pine	200, 202	polycarbonate	280	Software, project scheduling	314	Splices, piles	611
plywood	204, 278	roof windows	282	Softwood		Solicing bars	352
redwood	201	trimmers	48, 71	flooring	156	Split-face block	217, 383
resin	280	Velux	280	plywood	204	Split-rail fence	148
sealant	78	Slab doors	105, -107, 109, 115, 116	Soil		Split-rib block	383
shingle	279	Slabs		amendments	625	Split-ring connectors	163
soffit vents	295	base	94	cement treatment	606	Splitting rock	599
southern yellow pine	201	capillary fill	342	compaction	600, 602	Split-wired outlets	129
thermoplastic	280	cast-in-place	373	covers	606	Spotlight, fresnel	467
vinyl	279, 405						
western red cedar	200						

Spray heads, sprinkler	624	foundation	207	beams	60	cabinets	477
Spray painting	240	steel	86	blocking	61	ice	461
deck	441	survey	207	bracing	67	overhead	313
metals	441	Stalls, shower	248, 275	ceilings	67	safes	265, 266
steel	440	Stamped concrete	96	collar beams	72	sheds	313
Sprayed		Standard brick	211	door opening	65	sheds, rental	334
fireproofing	413	Standpipe connection	497	dormer studs	71	shelving	452
urethane insulation	185	Stands, water heater	530	fascia, piecework	76	Storefront windows	423
Sprayers, paint	241	Staplers, rental	330	floor joists	58	Store-in-Door	114
rental	331	Staples, roofing	233	girders	60	Storm	
Spread footings	380	Starter strip		joists, ceiling	67	plywood cover	277
Spreading soil	600	aluminum siding	279	joists, piecework	73	Storm doors	114, 115
Spreading soil by hand	136	galvanized flashing	271	lally columns	57	full-view	114
Sprigging	628	shingles	261	layout, piecework	73	security	115
Spring bronze	297	thermoplastic siding	280	piecework	73	self-storing	114
Sprinkler fitter, wage	312	vinyl siding	279	purlins	72	Storm drain demolition	337
Sprinkler system	189	Starter switches	571	rafters	70	Storm sewer	
control	190	Starters, motor	571	rafters, piecework	74	cleaning	634
Sprinklers		State cost adjustments	12-15	ridgeboard	72	Storm water control	607
automatic	190	Steam		rule of thumb	56, 57	Storm window	307
components	496, 497	baseboard radiation	542	sheathing, piecework	74, 76	StormGuard	27
connection	497	bath generator wiring	128	sill plates	57	Stoves, ovens, ranges	
control wiring	190	bath, generators	288	square foot costs	57	electrical work	129
fire	150	cleaning	440	studs	62	residential	257, 258
heads	496, 624	cleaning, masonry	375	subflooring	61	Strainers	
lawn	622	condensate pipe	498	trimmers	71	bronze	543
pop-up heads	190	generators	288	trusses	72, 73	hydronic	174, 543
subcontract	495	heating	542	trusses, piecework	74	wye-pattern	543
trenching by hand	189	Steamers, food service	458	wall plates	67	Strand board	205
valves	190	Steamers, wallpaper, rental	331	walls, piecework	73	Straps	
wall hydrants	497	Steel		window opening	66	channel	559
Sprinkling, water for excavation	138	blocking	61	Steeple	489	conduit hanger	559
Spruce		buildings	487	Stem wall	93, 94	connectors	
lap siding	202	conduit, flexible	556	forms	343	CPVC snap-on tubing	512
logs	193	conduit, rigid	547	Stenographer	313	hardware	164
pine fir	196	cutting and drilling	392	Step flashing	270, 271	pipe	522
siding	202	floor joists	58	Step lights	588	post anchor	221
Square foot costs, homes	309-10	flooring	438	Stepping stones	188, 628	tie	164
Square molding	227	framing	56	Steps		Straw bales	188, 607
Stabilization fabric	606, 607	landings	389	brick	386	Strawberry, ground cover	628
Stack, exhaust	584	lath	188	concrete	95, 354, 357, 363	Street	
Stadium seating	478	lintels	391	flagstone	218	illumination	490
Stage		masonry	217	manhole	639	lighting	490
HVAC	468	mesh	91, 352	masonry	218	lights	590
lighting	467	mesh reinforcing	353	painting	243	marking	619
sound system	467	mini-mat reinforcing	353	Steps-on-grade, concrete	95, 357	numbers, houses	173
Stage curtains	466	ornamental	391	Sterilization, pipe	632	paving	613
drawing equipment	467	painted	391	Sterilizers, water	533	paving, equipment rental	328
lift equipment	467	painting	440	Stick nails	231	sweeper	615
Stain		panel roofing	263	Stile & rail doors	117	sweeper, rental	328
concrete	237	piles	611	Stirrup steel reinforcing	351	Strip	
deck	98	pipe, black	498	Stock room door	422	doors	422
paint	239	pipe, carbon	498	Stolons, grass	628	flooring	55, 157
tinting	239	plate cutting	337	Stone		lighting	585
wood finish	238	railing	256, 390	aggregate	18	shingle starter	261
Stained glass	474	reinforcing	89, 349	aggregate base	612	Striper, rental	328
Staining	242, 243	reinforcing, epoxy	349	artificial	385	Striping	
floor	157	reinforcing, foundation	349	base	94	athletic courts	471
Stairlifts	133	reinforcing, masonry	376	cleaning	374	pavement	619
Stairs		rod	161	countertop	96	Striplights	585
aluminum	285	roof deck	388	crushed	94, 126	Stripping	
attic	287	roof framing	74	cut	385	forms	89
baluster	56	sag rods	387	masonry	218	soil, by hand	136
basement	23, 284	sandblasting	266	paving	386	Structural engineering	134
box	284	security gratings	391	riprap	607	glazed tile	378
curved	284	shoring	608	roofing	263	steel	387
disappearing	287	stairs	285	slag	126	Structural plywood	204
factory-cut	284	stringers	389	slate	263	Structural steel	
framing, piecework rates	38	structural, fabrication	386	stepping	188, 628	fabrication	386, 392
handrails	56	studs	57	vanity tops	97	painting	440
hardwood	284	testing	320	veneer	384	Structure moving	341
log	194	threaded rod	161	veneer, manufactured	385	Structures, temporary, rental	333
L-shaped	286	tilt-up	367	work	384	Stucco	
moving	494	welded wire	349	Stone tracking pad	607	demolition	102, 340
nosing, bamboo	158	welding	392	Stool		mesh	429
rail	286	Steel doors		carpentry	228	mix	82
railing	284	entry	112	marble	385	mold, redwood	108
risers	56, 286	exterior	110, 111	window	53	netting	189
skirtboard	56	fire-rated	109	Stop signs	620	paint	237
spiral	285	frames	109	Stops		painting	240, 243, 441
steel	285	garage	165	door	171, 227, 424	plastering	246, 431
straight	284	patio	121	gas	526	wall assembly	35
strips, anti-skid	286	prehung	418	gravel	407	Stud grade lumber	195
treads	56, 286	screen	113	molding	227	Studios, radio and television	492
wood	284	ventilating	111	moulding	108	Studs	
Stakes		Steel framing	56	Stops Rust	238	carpentry	393
form	207	anchors	58	Storage			
		backing for drywall	69	bins	313		

demolition	103	Swimming pool		Taxes included	4	thermal	185
dormer	48	complete installation	479	Taxes, labor cost		water	26
exterior walls	35	cover	480	industrial & commercial	312	Tetherball post	472
gable	37	fences	150	residential	10	Textolite countertops	96
interior walls	34	gunite	360	T-bar ceiling	82	Texture	
steel	57, 62, 73	heaters, solar	252	Teak parquet	158	popcorn ceiling	170
steel exterior	63	paint	239, 442	Tear-off roofing, demolition	405	Texture 1-11	204
straightening	52	resurfacing	373	Tech support	5	Texture, drywall	170
straps	164	Swing check valves	525	Technical services	320	Textured wallboard	428
wall assemblies	34	Swing gates, aluminum	166	Techwall wall cladding	404	Theater	
wall framing	37	Swinging stage scaffold,		Tectum	406	curtains	466
walls, commercial	393	purchase	333	Tees		seating	478
Study carrels	463	Swings, playground	472	ABS cleanout	519	Thermal	
Stump grinders, rental	330	Switch box, electric	566	ABS sanitary	518	analysis	185
Stump removal	138, 597	circuits	578	black steel	498	expansion tank	252
Sturdi-Floor	204	plates	23	copper	508	insulation	401
Subbase, pavement	612	Switch cover plate	569	copper DWV	516	mitigation	475
Subcontract		Switchboards	574	CPVC	511	Thermal and Moisture Protection	401
driveway paving	245	accessories	574	PVC	510	Thermoflow indicator	528
electrical work	127	instrumentation	574	test	519	Thermography	185
elevators	133	meters	575	Wisconsin	518	Thermometer, steam	528
fire sprinkler systems	495	transformers	575	Telephone		Thermoplastic	
hydroseeding	188, 627	weatherproof	573	outlets	594	siding	280
insulation	185	Switches		wiring	594	tape	471
painting	241	dimmer	568	Telephone assistance	5	Thermostat	177
sprinkler systems	495	dimmer, fluorescent	568	Telescoping doors	421	Thermostatic	
surface preparation	241	disconnect	580	Television		mixing valves	544
well drilling	298	electric	129	closed circuit	595	traps	544
Subcontract costs defined	5	electrical	568	educational	462	water heaters	531
Subcontractor markup	5	exhaust fan	141	equipment	462	THHN wire	562
Subflooring		fan control	141	outlets	595	Thinline glass block	220
2-4-1	204	motor	571	pipe inspection	640	Thinner	240
adhesive	18	power distribution	574	studio	492	Thompson's WaterSeal	239
board	61	safety	572, 573	systems	595	Threaded	
engineered	42	security	592	wiring	129	black steel pipe	498
floating	42	starter	571	Teller		carbon steel pipe	498
installation	42, 61	timer, exhaust fan	141	automatic	456	Threaded rod	161
log homes	193	wiring	129	counter	456	Thresholds	
OSB	42, 62	Swivel ring hangers, pipe	521	windows	456	aluminum	288
piecework rates	42	Symbols, lettering	471	Temperature gauge	528	bamboo	158
plywood	42, 61	Synthetic surface playing fields	469	Tempering valves	544	bronze	425
Sturdi-Floor	204			Temporary		high boy	108
underlayment	205			enclosures	334	inserts	289
Sub-panel connections	129			fence	334	marble	385
Subsurface exploration	282			jackposts	187	wood	224
Subway platform	491			services	313	Thrust blocks, concrete	630
Sump pumps	129, 532			structures	484	Thru-the-wall utility fan	140
Sumps, roof	409			structures, rental	333	THWN wire	562
Sun control blinds	299			utilities	321	Ticket boxes	456
Sun porch	167			wall bracing	44, 67	Ticket dispenser	454
Sun screens	391			Tennis courts		Tie straps	164
Sunlamps, wiring	128			installation	470	Tie wire	221
Sunrooms	485			stripping	470	Tier IV EPA pollution control	
Super Jumbo Tex	27			windbreak panels	470	rating	584
Super Tuff-R	402			Tension		Ties	
Superintendent	313, 317			bridging	160	brick wall	221
Supervision costs	317			Termite shield	271	collar	48
Supervision costs excluded	4			Termite treatment	209, 283	concrete	358
Supply valve	526			Terra cotta, demolition	338	concrete form	86, 358
Supports				Terrazzo		form	86, 343
conduit	558			demolition	340	hurricane	161
fabricated metal	391			pavers	386	seismic	161
PVC	554			tile	386, 437	wall, brick	160
Surface duct, electric	560			Test caps, plugs, and tees, ABS	519	wall, masonry	213, 376
Surface preparation	235, 236, 241, 439, 441, 443			Testimony, appraisal	18	Tile	
Surgeons' scrub sink	539			acoustical	134	acoustical facing	378
rough-in	535			aggregate	317	backer board	293
Surveillance, park	490			asbestos	26	ceiling	82, 434
Survey				asphalt	318	ceramic	378, 431
building layout	598			brick	319	clay	377
Survey stakes	207			building stone	319	concrete roof	264
Surveying	316			cable	130	decorative	291
aerial	316			concrete	318	demolition	101, 102, 340
periodic	321			fees	320	epoxy bed	385
Sushi serving table	458			gunite	319	floor	290
Suspended ceiling				hazards	26	glazed	378
demolition	100, 339			home	26	installation	291, 292
grid systems	79, 433			masonry	319	marble	210
light fixtures	80			network cable	464	masonry	222
panels	81, 434			noise	134	porcelain	290
T-bar grid	433			percolation	268	quarry	385, 433
tile	434			piles	609	resilient	436
Suspension grid, ceiling	79			soil	26, 268, 282, 317	roller, rental	329
Sweep pavement	615			sound transmission	134	roofing	264
Sweep, door bottom	290			steel	320	rubber	436
Sweeper, rental	328					rubber studded	154
						saws, rental	331

security, glazed	378	excavation	599, 604	door	53, 224	Type L copper pipe	507
shock-absorbing	436	finish shaping	600	fireplace	55	Tyvek	28, 184
simulated roofing	263	ripping rock	599	hardwood	224		
structural facing	378	rock fill	607	molding	228		
vinyl floor	154	site clearing	597	OSB siding	278		
wall	290	site grading	599	painting	240, 242		
Tile layer, wage		Tractor operator, wage,		pine	228		
industrial & commercial	312	industrial & commercial	312	redwood	224		
residential	10	Traffic		softwood	225		
Tillers, rental	330	cones	22	stair	56		
Tilt double-hung window	306	control equipment rental	328	steel panel roofing	263		
Tilt-up construction	366	control signage	321	wallboard	169		
panels, sandblasting	266	light	490	window	53		
pilasters	366	paint	239	Trim coil	270		
Tilt-up painting	441	pavement marking	619	Trimless door frame	109		
Timberline shingles	261	signs	620	Trimmers			
Timbers		stripes	619	carpentry	48		
Douglas fir	202	symbols	619	steel (framing)	71		
hardwood	399	Transaction		Trimming, trench bottom	136		
laminated	399	window	457	Triple-track storm doors	114		
lumber	198, 202	Transformers	575	Troffer lighting fixtures	80, 191, 586		
pine	203	indoor	575	Trowel finishing, concrete	95, 359		
rafter	194	pole mount	580	Troweling machine, rental	324		
red cedar	202	potential, switchboard	575	Trowel-ready mortar	221		
redwood	203	switchboard	575	Trowels, rental	324		
treatments	208	Transit levels, rental	330	Truck			
wood	399	Transit mix concrete	84	bumpers	368		
Timbertex	261	Transom lite	417	concrete	354		
Timekeeper costs	317	Transoms	107	cranes, rental	322		
Timer switches	141, 568	Trap adapter		excavation	138		
15 minute	568	ABS	520	hauling	603		
Tin		copper	516	loading by hand	135		
ceilings	82	Traps		rental	139, 327		
shingles	271	float	544	scales	456		
Tint		thermostatic	544	superintendent's	313		
paint	239	Trash		water, rental	328		
wood finish	238	bins	335	Truck driver, wage			
Tint, window	423	chutes	340, 495	industrial & commercial	312		
Tire changer	454	enclosure, tilt-up	369	residential	10		
Tissue holder	24, 449	removal	313	Trusses			
TJI truss joists	41, 399	Trash compactor wiring	130	fink	49, 72		
Toaster, conveyor type	460	Trash pumps, rental	327	gable	49, 73		
Toggle switch	568, 571	Travertine tile	290	joists	399		
Toilets	249, 536	Treads	222	log	194		
accessories	24, 449	carpentry	56	roof	48, 72, 399		
augers, rental	331	concrete, finishing	360	roof, piecework	38		
compartments	446	flagstone	218	roof, piecework rates	74		
flush valves	536	marble	385	steel	387		
jobsite	313	rubber	222	Truss-type reinforcing	376		
partition, handicapped	482	stair	286	Tub			
partitions, demolition	341	wood	284, 400	sealant	79		
rough-in	534	Treated lumber	203	whirlpool bath	247		
temporary	313, 322	Treating		Tube			
trailer-mounted	322	lumber	209	columns, steel	387		
Tongue and groove		poles	206	nosing	391		
flooring	155	soil	283	pneumatic	495		
insulation board	182	wood	209	Tubing			
sheathing	51	Treatment		copper	509		
siding	200	fire retardant	209	electric metallic	548		
Tool sheds, rental	334	soil poisoning	283	strap, CPVC	512		
Tools available	4	Tree clearing	138, 597	Tubs			
Tools, rental	323	Tree grates	629	access doors	270		
Toothbrush holders		Trees		caulk strips	79		
ceramic tile	291	costs	628	caulking	78		
residential	23	planting	627	enclosures	275		
Topping, concrete	95, 359	Trench		plumbing	247, 535, 537		
Topsoil, excavation	188	braces, rental	326	Tuck pointing	375		
Topsoil, excavation, by hand	136	covers	389	Tuff-R insulation	183		
Topsoil, strip	598	frame	640	Tung oil wood finish	238		
Torch cutting	337	inlets	640	Turbines	582		
Total column defined	5	shaping	600, 605	additional costs	583		
Total expense, overhead	313	sheeting	608	fans	411		
Towel		shields, rental	326	service station	453		
bars	449	shoring	608	vents	295		
dispensers	449	sprinkler pipe	622	vents, roof	141		
racks	24	Trenchers, rental	139, 326	Turf			
Towers		Trenching	600	artificial grass	469		
fire pole, playground	473	backhoe	600	playing fields, grass and	469		
lifting	322	concrete	342	synthetic	469		
Toxic chemicals, removal	439	excavation	136, 600	replacing	622, 627		
Track		hand	136, 605	Turfstone	618		
railroad, demolition	337	hand work	342	Turfstone grass paving	618		
rolling ladder	463	rock	600	Turnstiles	456, 491		
stage curtain	466	sprinkler systems	189	Turpentine	240		
Tracking pad, stone	607	Tri-Flex 30	27	Twinaxial cable	596		
Tractor		Trim		Twist straps	164		
demolition	338	carpentry	228	Type K copper pipe	507, 508		

U

U bolts	522
Ultra Touch	184
Ultrasonic sensors and transceivers	593
Ultraviolet sterilizers, water	533
Underfloor duct	561
Underground	
communication	545
duct	545
power	545
Underlayment	205, 265, 436
floor	33, 34
particleboard	399
piecework rates	38, 74
roof	27
tile backer board	293
Underpinning, shoring	608
Unions	
black steel	498
CPVC	511
Unistrut inserts	359
Unit heaters	539, 542
Uniturf	469
Unusual labor productivity	4
URD wire	562
Urethane	
exterior finish	238
floor finish	56
insulation	185
sealer	155
sheathing	183
Urinal	
floor-mounted	535
rough-in	534, 535, 536
screens	446
screens, removal	341
wall-hung	534
water-conserving	536
Urns	477
USE wire	561
Using this book	3
Utilities	629
overhead	313
sewer connections	269
sitework piping	631
temporary	321
water	315
Utility	
cabinets	30
fan	139, 140
piping, sitework	631
shelving, wood	273
sinks, food service	461

V

Vacation costs included	3
Vac-jet pipe cleaning	634
Vacuum breaker	
anti-siphon	174
atmospheric	542
controllers	621
valves	621
Vacuum systems	293
wiring	130
Vacuum, wet/dry, rental	329
Valance	
cabinet	31
lighting	191
Valley flashing	406
Valuation fees	18
Valuation, buildings	18
ValueTest bath fan	140
Valve box	223
Valves	
angle	526
backflow	315, 526
ball	526
cast iron	630
check	523, 525
circuit balancing	543

control	621	Vibrators, rental	324	demolition	100, 103, 338	blasting	241, 266, 375, 440
flow check	174, 543	Vibro plate, rental	139	filler panels	31	capacity fee	315
gate	523, 630	Vibroflotation treatment	606	fireblocks	45	control valves	527
globe	524	Video recorder, digital	595	footing	343	coolers	250, 538
hose gate	527	Videotape recorder	462	forms, concrete	88, 92, 344	coolers, for handicapped	481
irrigation	621, 625	Vinyl		framing	37	coolers, rough-in	535
mixing	174, 544	acrylic	239	framing, piecework	37	distillation	252
OD tube	526	casement window	302	jointing	360	filters	533
pressure-reducing	543	caulk	78	painting	240, 441	fountains	250, 538
regulator	527	covered wallboard	296	panel systems	397	heaters	252, 530
relief	526, 543	fence	149	piecework rates, framing	73	heating	251
sprinkler	190, 623	flashing	273	plates	42, 67	heating, solar	532
sprinkler, lawn	623	flooring	153, 154, 435	protection systems	448	heating, whole house	255
stop	526	flooring, sheet	435	reinforcing	376	hose, service station	453
supply	526	molding	228	safes	265, 456	meter boxes	223
tapping	630	runner	222	sawing, concrete	373	meter fee	315
tempering	544	screen doors	113	sheathing, board	51	meters	315
thermostatic mixing	174	siding	279, 405	sheathing, exterior	395	overhead	313
water control	527	soffit systems	282	sheathing, interior	395	pipe, PVC	631
Vanity		tile flooring	154	sheathing, lumber	396	pool heating, solar	252
bases	293	wallcovering	438, 439	sheathing, OSB	51	pumps, wiring	130
mirrors	223	Vinyl plank flooring	436	sheathing, piecework	37, 73	service	315
Vanity tops		Vinyl windows		sheathing, plywood	51	softeners	252, 533
Corian	97	bay	302	stiffener	194	softeners, rough-in	254
cultured stone	97	casement	302	studding	393	solar heating	252
marble	97	double-hung	301	ties, masonry	160, 213, 221, 376	storage tanks, solar	252
Vapor barriers		garden	302	Wall jacks, computers	597	tanks	533, 633
building paper	27	half circle	302	Wallboard		tanks, rental	328
concrete	434	hopper	303	adhesive	18	temporary	322
polyethylene film	256	jalousie	302	demolition	102, 338	testing	26
slab	94, 342, 355, 356, 365	picture	302	gypsum	168	treatment	533
Varathane finish	238	single-hung	300	hardboard	244, 439	trucks, rental	328
Varmeter	575	sliding	301	paint preparation	241	wells	298
Varnish wood finish	238	Vinyl-clad wood windows	303, 304	painting	240, 243	Water closets	
Varnishing	243	Visqueen polyethylene film	256	prefinished	296	commercial	536
Vault doors	422	Vitrified clay pipe	269	textured	296, 428	demolition	482
VCR	462	Volatile materials emissions		Wallcap	291	installation	482
Vehicle		reduction, pollution control	582, 584	Wallpaper	296, 438	residential	249
access control	454	Volcanic cinder track	469	adhesive	296	rough-in	534
detectors	454	Volcanic rock	607	removal	296	Water heater	
Velour		Volleyball posts	469	surface preparation	296	accessories	530
draperies	475	Voltmeter	575	Walls		tankless	251
stage curtains	466	Vycor flashing	27	brick	211	Water heaters	
Velux				concrete	86, 87, 92	assemblies	531
roof windows	282			concrete block	215, 381	commercial	530
skylights	280			glass block	219, 384	connections	531
Veneer				masonry	211	earthquake restraints	531
brick	213	Waffle pan forms	348	paint removal	235	electric	251, 531
masonry	218	Wage costs defined	3	paneled wood	397	gas	251
Venetian blinds	299	Wage rates	10	patching	296	instantaneous	531
Vent		adjusting	11	precast panels	360	overflow pans	530
channel, rafter bay	295	industrial & commercial	312	retaining	378	propane	251
fans	142, 411, 459	residential	10	sheet metal, area	270	residential	251
hoods	256, 459	Wagon drills	598	tile	292	safety pans	530
Vent pipe	516	rental	327	tilt-up	366	solar	252, 532
copper	516	Wainscot	54	Walnut		stands	530
flash cone	271, 273	cap	227	parquet	158	wiring	130
Vented range hood	256	ceramic tile	437	plank flooring	155	Water table	
Ventilating skylights	281	tile	290, 292	Wardrobe cabinets	462, 476, 477	flashing	271
Ventlite doors		paneling	244	Warning signs	446, 620	molding	224, 226
fiberglass exterior	113	Water		Wash		Water-based stain	238
steel exterior	111	brackets	359	concrete finishing	359, 360	Waterblasting	241, 375
Vents		jacks	359	masonry	374	Watering	
attic	294, 410	Walk-in coolers	461	painting	443	embankment grading	600
bath	141	Walkways		surface prep	443	landscaping	624
clothes dryer	294	asphalt	245, 618	Wash fountains	538	sprinkler systems	624
foundation	294, 410	concrete	94, 246, 618	rough-in	535	trenching	622
hood	263	demolition	100, 335	Wash sinks, surgeons	535, 539	Waterproof adhesive	18
intake, roof	295	edge forms	88	Washer, clothes	254	Waterproofing	297
louver	295	forms	94	rough-in	128	acrylic	185
plumbing	407	lighting	192	wiring		asphalt	401
power	142	snow-melting cable	564	Washers		building	386
ridge	295	waterproofing	297	galvanized	234	concrete	297, 342
roof	141, 142, 295	Wall		stainless steel	234	insulation	185
roof turbine	141	access doors	270	Waste		masonry	220, 237, 297
screen	294	anchors, glass block	384	disposal	335	membrane	401
soffit	295	anchors, masonry	376	handling equipment	495	multi-surface	239
turbine	295	assemblies, brick	211	receptacle	449	paper	27
Vermiculite		assemblies, concrete block	215	Waste defined	3	slab	342
insulation	184, 402	assemblies, exterior	35	Waste pipe		walkways	297
roof deck	372	assemblies, interior	34	ABS	516	wood finish	238
soil conditioner	626	beds	25	copper	516	WaterSeal wood sealer	239
Vertical blinds	299	braces	44, 67, 164	fittings	516	Waterstop, concrete	91
Vertical discharge exhaust fan	139	cladding	404	Water		Wattmeter	575
Vertical panels, precast tilt-up	367	cleaning	83	blast before painting	441	Waxing	
Vibration sensors	592	courses	193			concrete	359
Vibrator compaction	600	cover plate	569			floors	240, 435
		coverings	296			woodwork	243
						Weather vanes, cupola	97

Weatherproof		architectural	423	weatherstripping	297	sealer	239
service entrance	573	awning	21, 303	wood	423	shingles	262
switchboards	573	awning, aluminum	305	Wingwall	641	stain	238
Weatherproofing	27	bank	456	Wiping stain	239	treatment, lumber	209
wood finish	238	basement	304	Wire		waterproofing	238
Weatherstripping	297, 425	bay	302	building	127	Wood and Composites	393
Wedge tie, concrete form	358	blinds	275	copper	562	Wood chip mulch	188
Wedges	207	bow, wood	307	electric	127	Wood doors	
Weed eaters, rental	330	casement	302, 303, 304	ground	562	entry	107
Welded		casing	54	lath	188	patio	121
black steel pipe	498	caulking	78	partitions	448	screen	113
carbon steel pipe	498	circular, vinyl	302	Romex	563	Woodcore storm doors	115
mesh	91	cleaning	83, 335	screen	267	Woodwork	
wire mesh	352	coverings	277	service entrance	129, 561	paint preparation	241
Welding		double-hung	306	shelving	273	painting	243
grounding	569	fixed	302	sprinkler	623	staining	243
machines, rental	332	frames, paint removal	235	THHN, copper	562	waxing	243
rebar	352	framing	44	URD	562	Woodworking glue	18
steel	392	framing, steel	66	USE	561	Work tables	
tilt-up	368	garden	302	XHHW, copper	562	food service	458
Weld-o-lets	503	glass	166	Wire brush		kitchen	458
Welfare costs included	3	grating	391	finish	95	Workers' comp insurance	186
Well drilling, subcontract	298	impact	304	painting	443	Working conditions	4
Wellpoint dewatering	605	jalousie	302	Wire glass	422	Woven wire partitions	448
Wenge cabinets	476	mantels	298	Wire mesh	91	Wrecking, demolition	104
West coast fir lumber	195, 197	octagonal	306	fence	143	Wrenches, rental	331
Western red cedar siding	200	paint preparation	241	gunite	360	Wrought iron	150
Wet patch roof cement	259, 260	painting	240, 241, 243	reinforcing	91	railing	390
Wet sandblasting	266	partition	447	Wireless access points	130	W-valley flashing	271
Wheel corner guards	391	picture	302	Wiremold raceway	560	Wye pattern strainers	174, 543
Wheel loaders	601	reglazing	241	Wireway, electrical	560	Wyes	
rental	139	removal	341	Wiring		ABS	518
Wheelbarrow		roof	282, 307	alarms	267	drain pipe	126
hauling debris	340	screen	303	campus network	463		
hauling soil	605	seals	297	computer	130, 463		
rental	330	security grill	489	control wiring	190		
Wheelchair		shades	299	controllers	190		
lifts	133	sills	299	doorbell	104		
ramp	480	skylights	280	educational network	463		
swing platform	472	steel	423	electric	127		
Whirlpool bathtubs	247	stool, marble	385	fence, electric	144		
wiring	128	stool, MDF	228	irrigation controls	190		
White cement	82, 431, 437	stool, wood	228	landscape sprinklers	190		
White roof coating	259	storm	307	phones	594		
Whiteboard (chalkboard)	444	teller	456	systems	594		
Whitewash stain	239	treatment	299	telephone	594		
Whole house fans	141	trim	53, 228	twisted pair	594		
Wilsonart countertops	96	vinyl	300, 301, 302, 303	Wisconsin tee	518		
Wind clips	265	vinyl bay	302	Wolmanized lumber	209		
Wind turbines	132	vinyl casement	302	Wonderboard tile backer	293		
Windbreak, tennis	470	vinyl double-hung	301	Wood			
Window		vinyl garden	302	fences	148		
plywood cover	277	vinyl hopper	303	filler	240		
removal	102	vinyl jalousie	302	finishes	238		
transaction	457	vinyl picture	302	floor finishing	56, 434		
Window air conditioners	178	vinyl single-hung	300	flooring	55, 155, 434		
Window wells	308	vinyl sliding	301	flooring adhesive	159		
Window, film, safety, and tint	423	vinyl-clad awning	303	lumber	209		
Windows		vinyl-clad basement	304	paint preparation	241		
aluminum single-hung	304	vinyl-clad casement	303, 304	piles	609		
aluminum sliding	305	vinyl-clad wood	303, 304	preservative	209, 239		
apron	53	wall	426	roofing	262		

X

Xerographic prints	25
XHHW wire	562
X-ray	
barriers	488
lead mesh fabric	475
mobile barriers	488
protection	488
viewing panels	488

Y

Yard	
deck	99
lighting	590
Yardarm, nautical	453
Yellow pine lumber	196
Yield signs	620

Z

Z-bar flashing	270, 271
Z-brick	245
Zinc primers	236
Zone valves	496

Practical References for Builders

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

National Painting Cost Estimator



A complete guide to estimating painting costs for just about any type of residential, commercial, or industrial painting, whether by brush, spray, or roller. Shows typical costs and bid prices for fast, medium, and slow work, including material costs per gallon, square feet covered per gallon, square feet covered per manhour, labor, material, overhead, and taxes per 100 square feet, and how much to add for profit. Includes a free download of an electronic version of the book, with *National Estimator*, a

stand-alone *Windows*™ estimating program. An interactive multimedia video that shows how to use the software to compile painting cost estimates is free at www.costbook.com. **448 pages, 8½ x 11, \$88.00. Revised annually**

Also available as an eBook (PDF), \$44.00 at 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 & ePub), \$27.75 at www.craftsman-book.com

Contractor's Guide to QuickBooks 2014

QuickBooks 2012 has many new features that simplify a building contractor's bookkeeping work. You'll wonder how you managed without them. To help you make the most of these new features, or to make getting set up with *QuickBooks* almost painless, this user-friendly manual walks you through *QuickBooks*' detailed setup procedure and explains step-by-step how to create a first-rate accounting system. You'll learn in days, rather than weeks, how to use *QuickBooks* to get your contracting business organized, with simple, fast accounting procedures. But setting up *QuickBooks* from scratch can be time-consuming. On the free download included with purchase of the book you'll find a *QuickBooks* file preconfigured for a construction company. Open it, enter your company's data, add info on your suppliers, subs and customers, and you're up and running. The setup's done for you. **288 pages, 8½ x 11, \$68.50**

Also available as an eBook (PDF), \$34.25 at www.craftsman-book.com
See checklist for other available editions.

Fences & Retaining Walls Revised eBook

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.

417 pages. Available only as an eBook (PDF, EPUB & MOBI/Kindle); \$23.00 at 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

Plumber's Handbook Revised



This new edition shows what will and won't pass inspection in drainage, vent, and waste piping, septic tanks, water supply, graywater recycling systems, pools and spas, fire protection, and gas piping systems. All tables, standards, and specifications are completely up-to-date with recent plumbing code changes. Covers common layouts for residential work, how to size piping, select and hang fixtures, practical recommendations, and trade tips.

It's the approved reference for the plumbing contractor's exam in many states. Includes an extensive set of multiple-choice questions after each chapter, with answers and explanations in the back of the book, along with a complete sample plumber's exam. **352 pages, 8½ x 11, \$41.50**

Finish Carpentry: Efficient Techniques for Custom Interiors



Professional finish carpentry demands expert skills, precise tools, and a solid understanding of how to do the work. This book explains how to install moldings, paneled walls and ceilings, and just about every aspect of interior trim — including doors and windows. Covers built-in bookshelves, coffered ceilings, and skylight wells and soffits, including paneled ceilings with decorative beams.

276 pages, 8½ x 11, \$34.95

Construction Estimating Reference Data

Provides the 300 most useful manhour tables for practically every item of construction. Labor requirements are listed for sitework, concrete work, masonry, steel, carpentry, thermal and moisture protection, doors and windows, finishes, mechanical and electrical. Each section details the work being estimated and gives appropriate crew size and equipment needed. Includes a certificate for a FREE download of an electronic version of the book with *National Estimator*, a stand-alone *Windows*™ estimating program. **384 pages, 11 x 8½, \$59.00**

Also available as an eBook (PDF), \$29.50 at www.craftsman-book.com



CD Estimator

If your computer has *Windows*™ and a CD-ROM drive, CD Estimator puts at your fingertips over 150,000 construction costs for new construction, remodeling, renovation & insurance repair, home improvement, framing & finish carpentry, electrical, concrete & masonry, painting, earthwork & heavy equipment and plumbing & HVAC. Quarterly cost updates are available at no charge on the Internet. You'll also have the *National Estimator* program — a stand-alone estimating program for *Windows*™ that *Remodeling* magazine called a "computer wiz," and *Job Cost Wizard*, a program that lets you export your estimates to *QuickBooks Pro* for actual job costing. A 60-minute interactive video teaches you how to use this CD-ROM to estimate construction costs. And to top it off, to help you create professional-looking estimates, the disk includes over 40 construction estimating and bidding forms in a format that's perfect for nearly any *Windows*™ word processing or spreadsheet program. **CD Estimator is \$133.50**



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, \$42.00**

Also available as an eBook (PDF), \$21.00 at 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. Includes a free download of an electronic version of the book with *National Estimator*, a stand-alone Windows™ estimating program. An interactive multimedia video that shows how to use the software to compile renovation and repair cost estimates is free at www.costbook.com.

488 pages, 8½ x 11, \$89.50. Revised annually

Also available as an eBook (PDF), \$44.75 at 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. \$149.95*. Download the *Construction Contract Writer* at: <http://www.constructioncontractwriter.com>

Markup & Profit: A Contractor's Guide, Revised

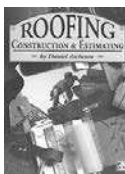


In order to succeed in a construction business, you have to be able to price your jobs to cover all labor, material and overhead expenses, and make a decent profit. But calculating markup is only part of the picture. If you're going to beat the odds and stay in business — profitably, you also need to 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, \$47.50**

Also available as an eBook (ePub, mobi for Kindle), \$39.95 at www.craftsman-book.com

Roofing Construction & Estimating



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

448 pages, 8½ x 11, \$38.00

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

Standard Estimating Practice

Estimating isn't always an easy job. Sometimes snap decisions can produce negative long-term effects. This book was designed by the American Society of Professional Estimators as a set of standards to guide professional estimators. It's intended to help every estimator develop estimates that are uniform and verifiable. Every step that should be included in the estimate is listed, as well as aspects in the plans to consider when you're estimating a job, and what you should look for that may not be included. The result should help you produce more consistently accurate estimates. **526 pages, 8½ x 11, \$95.00**

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

National Building Cost Manual



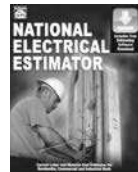
Square-foot costs for residential, commercial, industrial, military, schools, greenhouses, churches and farm buildings. Includes important variables that can make any building unique from a cost standpoint. Quickly work up a reliable budget estimate based on actual materials and design features, area, 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, \$78.00. Revised annually

Also available as an eBook (PDF), \$39.00 at 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. Includes a free download of an electronic version of the book with *National Estimator*, a stand-alone Windows™ estimating program. An interactive multimedia video that shows how to use the software to compile electrical cost estimates is free at www.costbook.com.

552 pages, 8½ x 11, \$87.75. Revised annually

Also available as an eBook (PDF), \$43.88 at www.craftsman-book.com

Estimating & Bidding for Builders & Remodelers

This 5th edition has all the information you need for estimating and bidding new construction and home improvement projects. It shows how to select jobs that will be profitable, do a labor and materials take-off from the plans, calculate overhead and figure your markup, and schedule the work. Includes a CD with an easy-to-use construction estimating program and a database of 50,000 current labor and material cost estimates for new construction and home improvement work, with area modifiers for every zip code. Price updates on the Web are free and automatic.

272 pages, 8½ x 11, \$89.50

Also available as an eBook (PDF), \$44.75 at www.craftsman-book.com

Estimating Home Building Costs, Revised

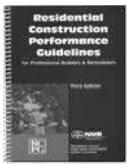
Estimate every phase of residential construction from site costs to the profit margin you include in your bid. Shows how to keep track of manhours and make accurate labor cost estimates for site clearing and excavation, footings, foundations, framing and sheathing finishes, electrical, plumbing, and 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



Green Building Strategies: From Plan to Profit

Gain confidence with Green Construction. Are you overwhelmed trying to comply with new energy code requirements, understand green building standards, sort out product manufacturers' claims, and answer buyers' questions about high-performance homes? This book will turn your consternation into confidence by helping you understand, construct, and communicate better about green homes. Author Jeannie Leggett Sikora (*Profit from Building Green*) explains in plain language what's happening in the rapidly evolving field of building science. You'll learn how to build high-performance energy-efficient green homes to satisfy buyers and stay ahead of your competitors. *Green Building Strategies* takes you step-by-step from design through site development and construction, quality assurance, marketing, and customer service. This book is a must for every builder's bookshelf. **186 pages, 10 x 7, \$44.95. Published by NAHB**

Residential Construction Performance Guidelines, 4th Ed.



Created and reviewed by more than 300 builders and remodelers, this guide gives cut-and-dried construction standards that should apply to new construction and remodeling. It defines corrective action necessary to bring all construction up to standards. Standards are listed for sitework, foundations, interior concrete slabs, basement and crawl spaces for block walls and poured walls, wood-floor framing, beams, columns and posts, plywood and joists, walls, wall insulation, windows, doors, exterior finishes and trim, roofs, roof sheathing, roof installation and leaks, plumbing, sanitary and sewer systems, electrical, interior climate control, HVAC systems, cabinets and countertops, floor finishes and more.

120 pages, 6½ x 8½, \$44.95. Published by NAHB Remodelers Council

Journeyman Electrician's Preparation & Study Guide eBook



This is not only a great study guide filled with sample electrician's exam questions — it teaches you how to quickly turn to the code section that answers the questions. Most electrician's exams give you about 2 minutes per question — not enough time to browse through 800 pages of fine print looking for each answer. This manual, based on the 2008 and 2011 NEC editions, explains how the Code is organized, so you understand where the information you need is located. Then it shows how to rearrange and tab your copy of the Code to streamline your search efforts. Next, you learn a step-by-step search procedure, in which you're shown how to analyze the question to determine its subject, know where to look in the index, find the exact article, then turn right to the Code section that answers your question.

96 pages, eBook (PDF), \$17.00 available at www.craftsman-book.com

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. Material prices are current, with location adjustment factors and free monthly updates on the Web. Gives step-by-step instructions for the work, with helpful diagrams, and home improvement shortcuts and tips from experts. Includes a free download of an electronic version of the book, and *National Estimator*, a stand-alone Windows™ estimating program. An interactive multimedia tutorial that shows how to use the software to compile home improvement cost estimates is free at www.costbook.com.

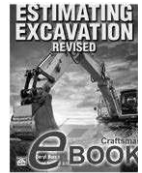
568 pages, 8½ x 11, \$88.75. Revised annually

Also available as an eBook (PDF), \$44.38 at 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, eBook (PDF), \$21.75, available at www.craftsman-book.com**



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**

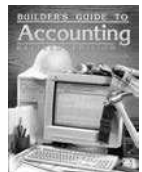
Also available as an eBook (PDF), \$34.50 at www.craftsman-book.com



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, \$35.50**

Also available as an eBook (PDF), \$17.75 at 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

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. \$149.95.

Visit www.craftsman-book.com for more details.

National Repair & Remodeling Estimator



The complete pricing guide for dwelling reconstruction costs. Reliable, specific data you can apply on every repair and remodeling job. Up-to-date material costs and labor figures based on thousands of jobs across the country. Provides recommended crew sizes; average production rates; exact material, equipment, and labor costs; a total unit cost and a total price including overhead and profit. Separate listings for high- and low-volume builders, so prices shown are specific for any size business. Estimating

tips specific to repair and remodeling work to make your bids complete, realistic, and profitable. Includes a free download of an electronic version of the book with National Estimator, a stand-alone Windows™ estimating program. An interactive multimedia video that shows how to use the software to compile repair and remodeling cost estimates is free at www.cost-book.com. **504 pages, 8½ x 11, \$88.50. Revised annually**

Also available as an eBook (PDF), \$44.25 at 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, \$35.00**

Also available as an eBook (PDF), \$17.50 at 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

Visual Handbook of Building and Remodeling

If you've ever had a question about different types of material, or the dimensions required by Code in most installations — you'll find the answers quickly and easily in this 632 page illustrated encyclopedia. This expanded third edition of the classic reference includes the latest Code information, new full-color drawings, and a new section on making homes green. 1,600 full-color drawings provide a clear look at every aspect of home construction and systems, to visualize exactly how to tackle any building project or problem. There are charts, dimensions, and illustrations on design, site and climate, masonry, foundations, wood, framing, sheathing, siding, roofing, windows and doors, plumbing, wiring, the thermal envelope, floors, walls and ceilings, storage, heating, cooling, passive solar, lighting, sound, and more. **632 pages, 8½ x 11, \$29.95**

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**

Code Check Complete, 2nd Edition

Every essential building, electrical and mechanical code requirement you're likely to encounter when building or remodeling residential and light commercial structures. Comes spiral-bound, with over 400 drawings that answer your code questions with up-to-date answers. Includes quick-glance summaries to alert you to important code changes. Compiled by code-certified building/home inspectors, this new book is like having four guides in one, big, easy-to-understand guide. **234 pages, 6½ x 8½, \$45.00**

Construction Estimating

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

International Residential Code (IRC) Quick-Card: Based on 2015 IRC

New! In this unique, 6-page laminated reference guide you get most of the new International Residential Code essentials that you need to know, based on the current 2015 IRC. The code compiles all building, plumbing, mechanical, fuel gas and electrical requirements for non-commercial one- and two-family dwellings in one convenient code. The regulations cover dwellings and townhouses up to three stories. Featured sections: Footings, Concrete, Floor Framing, Wall Framing, Roof Framing, Interior Dimensions, Means of Egress, Smoke Alarms, HVAC, Plumbing, Electrical.

6 pages, 8½ x 11, \$7.95. Published by Builder's Book, Inc.

International Residential Code (IRC) 2015 Fast-Tabs

User-friendly and up-to-date, these International Residential Code (IRC) Tabs are a great way to organize the IRC 2015. These self-adhesive tabs can reduce the time spent searching to find key information. Tabs are durable and allow for positioning adjustments after being placed on the code paper. Affordable and time-saving, these are a must-have for IRC users. Can also be used with loose-leaf version.

\$14.95. Published by Builder's Book, Inc.

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

International Building Code (IBC) Quick-Card: Based on 2015 IBC

In this unique, 6-page laminated quick-reference guide, you get all the International Building Code (IBC) essentials you need to know based on the current 2015 IBC. The scope of the International Building Code (IBC) includes all buildings except detached one- and two-family dwellings and townhouses up to three stories. Featured sections: Foundations & Footings, Concrete, Floor Framing, Wall Framing, Roof Framing, Interior Dimensions, Means of Egress, Fire & Smoke Protection, Safety Glazing, Handrails, Stairways & Guards, Masonry.

6 pages, 8½ x 11, \$7.95. Published by Builder's Book, Inc.

OSHA Construction Safety Essentials Quick-Card

NEW! This extended, 6-page guide covers the OSHA Construction Safety Essentials. Great for contractors, builders, architects and engineers... anyone who needs a quick overview of the basics involved in this key construction issue. Featured sections: Personal Protective Equipment (PPE), Construction Site — Fall Protection — Openings, Scaffolding Safety, Site Safety — Ladders & Stairways, Excavation & Trench Safety, Electrical Safety, Hazard Communication.

6 pages, 8½ x 11, \$7.95. Published by Builder's Book, Inc.

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**

International Building Code (IBC) 2015 Fast-Tabs

User-friendly and up-to-date, these International Building Code (IBC) Tabs are a great way to organize the IBC 2015. These self-adhesive tabs can reduce the time spent searching to find key information. Tabs are durable and allow for positioning adjustments after being placed on the code paper. Affordable and time-saving, these are a must-have for IBC users. Can also be used with Loose-leaf version.

\$14.95. Published by Builder's Book, Inc.

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 job-site. 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



Download all of Craftsman's most popular costbooks for one low price
with the Craftsman Site License:
www.craftsmansitelicense.com



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

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

Card# _____

Exp. date _____

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.

Order online www.craftsman-book.com
Free on the Internet! Download any of Craftsman's estimating
costbooks for a 30-day free trial! www.costbook.com

Prices subject to change without notice

- ☐ 32.50 Building Code Compliance for Contractors & Inspectors
- ☐ 35.50 Builder's Guide to Accounting Revised
- ☐ 133.50 CD Estimator
- ☐ 45.00 Code Check Complete, 2nd Ed.
- ☐ 28.75 Concrete Construction
- ☐ 49.50 Construction Estimating
- ☐ 59.00 Construction Estimating Reference Data w/FREE *Natl Estimator* Download
- ☐ 48.50 Construction Forms for Contractors
- ☐ 68.50 Contractor's Guide to *QuickBooks* 2014
- ☐ 58.50 Contractor's Guide to *QuickBooks* 2012
- ☐ 57.00 Contractor's Guide to *QuickBooks Pro* 2010
- ☐ 56.50 Contractor's Guide to *QuickBooks Pro* 2009
- ☐ 54.75 Contractor's Guide to *QuickBooks Pro* 2008
- ☐ 53.00 Contractor's Guide to *QuickBooks Pro* 2007
- ☐ 49.75 Contractor's Guide to *QuickBooks Pro* 2005
- ☐ 48.50 Contractor's Guide to *QuickBooks Pro* 2004
- ☐ 65.00 Craftsman's Construction Installation Encyclopedia
- ☐ 59.00 Estimating Electrical Construction Revised
- ☐ 89.50 Estimating & Bidding for Builders & Remodelers
- ☐ 38.00 Estimating Home Building Costs, Revised
- ☐ 42.00 Excavation & Grading Handbook Revised
- ☐ 34.95 Finish Carpentry: Efficient Techniques for Custom Interiors
- ☐ 44.95 Green Building Strategies: From Plan to Profit
- ☐ 52.50 Home Building Mistakes & Fixes
- ☐ 69.00 Insurance Restoration Contracting: Startup to Success

- ☐ 14.95 International Building Code (IBC) 2015 Fast-Tabs
- ☐ 14.95 International Residential Code (IRC) 2015 Fast-Tabs
- ☐ 7.95 Internat'l Building Code Quick-Card: Based on 2015 IBC
- ☐ 7.95 Internat'l Residential Code Quick-Card: Based on 2015 IRC
- ☐ 47.50 Markup & Profit: A Contractor's Guide, Revised
- ☐ 42.00 Moving to Commercial Construction
- ☐ 78.00 Natl Building Cost Manual w/FREE download of Craftsman's easy-to-use software
- ☐ 87.75 Natl Electrical Estimator w/FREE *Natl Estimator* Download
- ☐ 88.75 Natl Home Improvement Est w/FREE *Natl Estimator* Download
- ☐ 88.00 Natl Painting Cost Estimator w/FREE *Natl Estimator* Download
- ☐ 89.50 Natl Renovation & Insurance Repair Estimator w/FREE *Natl Estimator* Download
- ☐ 88.50 Natl Repair & Remodeling Est w/FREE *Natl Est* Download
- ☐ 7.95 OSHA Construction Safety Essentials Quick-Card
- ☐ 55.50 Paper Contracting:
The How-To of Construction Management Contracting
- ☐ 35.00 Pipe & Excavation Contracting Revised
- ☐ 24.75 Profits in Buying & Renovating Homes
- ☐ 41.50 Plumber's Handbook Revised
- ☐ 44.95 Residential Construction Performance Guidelines, 4th Ed.
- ☐ 33.50 Renovating & Restyling Older Homes
- ☐ 38.00 Roofing Construction & Estimating
- ☐ 95.00 Standard Estimating Practice
- ☐ 29.95 Visual Handbook of Building and Remodeling
- ☐ 87.50 Natl Construction Est w/FREE *Natl Estimator* Download
- ☐ FREE Full Color Catalog