



2021 NATIONAL CONSTRUCTION ESTIMATOR

69th Edition

Edited by Richard Pray

Includes inside the back cover:



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Contents

A complete index begins on page 640

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

This Book Is an Encyclopedia of 2021 Building Costs

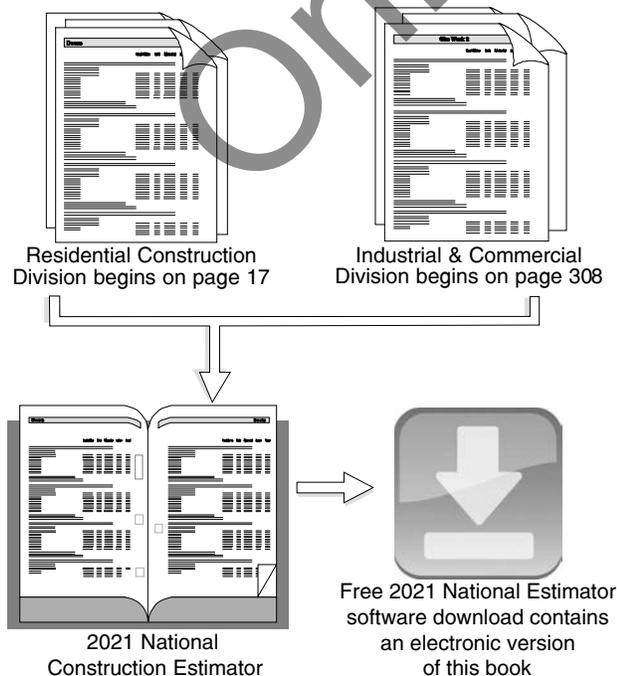
The **2021 National Construction Estimator** lists estimated construction costs to general contractors performing the work with their own crews, as of mid-2021. Overhead & profit are not included.

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 308 and can be used to estimate costs for nearly all construction not covered by the Residential Division.

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

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 10 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.craftsman-book.com, click on "Support", then click on "Tutorials" to view an interactive video 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-2021. Discounts may be available for purchases in larger volume.

Quarterly prices updates on the Web are free and automatic all during 2021. 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 309 (for the Industrial and Commercial Division).

Hourly labor costs used in the Industrial and Commercial Division are higher than those used in the

Residential Division, reflecting the fact that craftsmen on industrial and commercial jobs are often paid more than craftsmen on residential jobs.

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

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

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

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

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

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

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

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

Subcontracted Work

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

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

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

Markup

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

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

Keep In Mind

Labor and Material Costs Change. Costs were compiled in the fall of 2020 and projected to mid-2021 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 \$33.85. That's the average for a residential laborer (listed at \$30.31 per hour on page 10) and a residential carpenter (listed at \$37.38 per hour): \$30.31 plus \$37.38 is \$67.69. Divide by 2 to get \$33.845 (rounded up to \$33.85), 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 \$0.54 per square foot. That's the installation time (.016 manhours per square foot) multiplied by \$33.85, 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	\$33.85	1 laborer and 1 carpenter	BR	\$35.97	1 lather
B2	\$35.02	1 laborer, 2 carpenters	BS	\$33.27	1 marble setter
B3	\$32.67	2 laborers, 1 carpenter	CF	\$35.55	1 cement mason
B4	\$37.45	1 laborer 1 operating engineer 1 reinforcing iron worker	CT	\$35.35	1 mosaic & terrazzo worker
B5	\$37.06	1 laborer, 1 carpenter 1 cement mason 1 operating engineer 1 reinforcing iron worker	D1	\$36.54	1 drywall installer 1 drywall taper
B6	\$32.93	1 laborer, 1 cement mason	DI	\$36.47	1 drywall installer
B7	\$30.72	1 laborer, 1 truck driver	DT	\$36.60	1 drywall taper
B8	\$36.51	1 laborer 1 operating engineer	HC	\$29.39	1 plasterer helper
B9	\$33.06	1 bricklayer 1 bricklayer's helper	OE	\$42.71	1 operating engineer
BB	\$37.97	1 bricklayer	P1	\$36.89	1 laborer, 1 plumber
BC	\$37.38	1 carpenter	PM	\$43.47	1 plumber
BE	\$40.63	1 electrician	PP	\$34.27	1 painter, 1 laborer
BF	\$34.28	1 floor layer	PR	\$37.46	1 plasterer
BG	\$36.13	1 glazier	PT	\$38.22	1 painter
BH	\$28.15	1 bricklayer's helper	R1	\$35.99	1 roofer, 1 laborer
BL	\$30.31	1 laborer	RI	\$39.33	1 reinforcing iron worker
			RR	\$41.66	1 roofer
			SW	\$42.16	1 sheet metal worker
			T1	\$32.99	1 tile layer, 1 laborer
			TL	\$35.66	1 tile layer
			TR	\$31.13	1 truck driver

Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
A1	\$51.10	1 asbestos worker 1 laborer	F6	\$49.16	2 carpenters, 2 laborers 1 tractor operator
AT	\$44.09	1 air tool operator	F7	\$51.14	2 carpenters, 1 laborer 1 tractor operator
AW	\$60.94	1 asbestos worker	F8	\$51.73	2 plasterers 1 plasterer's helper
BM	\$61.69	1 boilermaker	F9	\$46.32	1 laborer, 1 floor layer
BT	\$41.41	1 bricklayer tender	FL	\$51.39	1 floor layer
C1	\$42.18	4 laborers, 1 truck driver	G1	\$48.39	1 glazier, 1 laborer
C2	\$49.53	1 laborer, 2 truck drivers 2 tractor operators	H1	\$54.44	1 carpenter, 1 laborer 1 iron worker (structural) 1 tractor operator
C3	\$48.15	1 laborer, 1 truck driver 1 tractor operator	H2	\$51.71	1 crane operator 1 truck driver
C4	\$42.81	2 laborers, 1 truck driver	H3	\$46.70	1 carpenter, 3 laborers 1 crane operator 1 truck driver
C5	\$46.43	2 laborers, 1 truck driver 1 tractor operator	H4	\$62.57	1 crane operator 6 iron workers (structural) 1 truck driver
C6	\$45.39	6 laborers, 2 truck drivers 2 tractor operators	H5	\$54.48	1 crane operator 2 iron workers (structural) 2 laborers
C7	\$47.86	2 laborers , 3 truck drivers 1 crane operator 1 tractor operator	H6	\$53.72	1 iron worker (structural) 1 laborer
C8	\$47.14	1 laborer, 1 carpenter	H7	\$62.29	1 crane operator 2 iron workers (structural)
C9	\$49.38	1 laborer, 1 crane operator	H8	\$61.36	1 crane operator 4 iron workers (structural) 1 truck driver
CB	\$54.06	1 bricklayer	H9	\$60.54	1 electrician 1 sheet metal worker
CC	\$53.02	1 carpenter	IW	\$66.19	1 iron worker (structural)
CD	\$52.29	1 drywall Installer	LA	\$47.97	1 lather
CE	\$60.41	1 electrician	M1	\$47.74	1 bricklayer 1 bricklayer's tender
CG	\$55.53	1 glazier	M2	\$45.17	1 carpenter, 2 laborers
CL	\$41.25	1 laborer	M3	\$50.13	1 plasterer 1 plasterer's helper
CM	\$51.35	1 cement mason	M4	\$47.72	1 laborer, 1 marble setter
CO	\$57.50	1 crane operator	M5	\$51.86	1 pipefitter, 1 laborer,
CV	\$57.20	1 elevator constructor	M6	\$54.89	1 asbestos worker 1 laborer, 1 pipefitter
D2	\$46.77	1 drywall installer 1 laborer	M8	\$57.17	3 pipefitters, 1 laborer
D3	\$53.77	1 laborer, 1 iron worker (structural), 1 millwright	M9	\$61.44	1 electrician, 1 pipefitter
D4	\$47.56	1 laborer, 1 millwright	MI	\$55.40	2 pipefitters, 1 laborer
D5	\$51.47	1 boilermaker, 1 laborer	MS	\$54.18	marble setter
D6	\$55.01	2 millwrights 1 tractor operator	MT	\$51.11	mosaic & terrazzo worker
D7	\$47.25	1 painter, 1 laborer	MW	\$53.87	millwright
D9	\$49.66	2 millwrights, 1 laborer			
E1	\$52.12	2 electricians, 2 laborers 1 tractor operator			
E2	\$50.83	2 electricians, 2 laborers			
E3	\$51.56	2 electricians, 2 laborers 2 carpenters			
E4	\$50.83	1 electrician, 1 laborer			
F5	\$48.31	3 carpenters, 2 laborers			

Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
P5	\$45.39	3 laborers 1 tractor operator 1 truck driver	S8	\$51.02	2 pile drivers, 2 laborers 1 truck driver 1 crane operator 1 tractor operator
P6	\$52.39	1 laborer, 1 plumber	S9	\$48.53	1 pile driver, 2 laborers 1 tractor operator 1 truck driver
P8	\$46.30	1 laborer, 1 cement mason	SM	\$60.67	1 sheet metal worker
P9	\$48.54	1 carpenter, 1 laborer 1 cement mason	SP	\$64.82	1 sprinkler fitter
PA	\$53.25	1 painter	SS	\$51.94	1 laborer
PD	\$56.97	1 pile driver	T2	\$53.16	2 tractor operators 3 laborers, 3 carpenters 3 iron workers (structural) 1 crane operator 1 truck driver
PF	\$62.47	1 pipefitter	T3	\$53.23	1 laborer 1 reinforcing iron worker
PH	\$45.32	1 plasterer's helper	T4	\$46.18	1 laborer, 1 mosaic worker
PL	\$63.52	1 plumber	T5	\$50.96	1 sheet metal worker 1 laborer
PS	\$54.94	1 plasterer	T6	\$54.20	2 sheet metal workers 1 laborer
R3	\$46.76	2 roofers, 1 laborer	TD	\$45.92	1 truck driver
RB	\$65.21	1 reinforcing iron worker	TO	\$57.28	1 tractor operator
RF	\$49.52	1 roofer	U1	\$50.83	1 plumber, 2 laborers 1 tractor operator
S1	\$49.27	1 laborer 1 tractor operator	U2	\$48.67	1 plumber, 2 laborers
S3	\$51.60	1 truck driver 1 tractor operator			
S4	\$41.25	3 laborers			
S5	\$44.24	5 laborers 1 crane operator 1 truck driver			
S6	\$46.59	2 laborers 1 tractor operator			
S7	\$49.27	3 laborers 3 tractor operators			

Residential Division

	1	2	3	4	5	6
Craft	Base wage per hour	Taxable fringe benefits (@5.56% of base wage)	Insurance and employer taxes (%)	Insurance and employer taxes (\$)	Non-taxable fringe benefits (@4.91% of base wage)	Total hourly cost used in this book
Bricklayer	\$27.76	\$1.54	24.94%	\$7.31	\$1.36	\$37.97
Bricklayer's Helper	20.58	1.14	24.94	5.42	1.01	28.15
Building Laborer	21.00	1.17	32.07	7.11	1.03	30.31
Carpenter	26.11	1.45	30.97	8.54	1.28	37.38
Cement Mason	26.40	1.47	22.89	6.38	1.30	35.55
Drywall installer	27.02	1.50	23.22	6.62	1.33	36.47
Drywall Taper	27.11	1.51	23.22	6.65	1.33	36.60
Electrician	30.97	1.72	19.65	6.42	1.52	40.63
Floor Layer	25.34	1.41	23.52	6.29	1.24	34.28
Glazier	26.34	1.46	25.34	7.04	1.29	36.13
Lather	27.11	1.51	21.05	6.02	1.33	35.97
Marble Setter	25.06	1.39	21.13	5.59	1.23	33.27
Millwright	26.56	1.48	21.02	5.89	1.30	35.23
Mosaic & Terrazzo Worker	26.62	1.48	21.13	5.94	1.31	35.35
Operating Engineer	31.25	1.74	24.83	8.19	1.53	42.71
Painter	28.02	1.56	24.55	7.26	1.38	38.22
Plasterer	26.74	1.49	28.05	7.92	1.31	37.46
Plasterer Helper	20.98	1.17	28.05	6.21	1.03	29.39
Plumber	32.01	1.78	24.00	8.11	1.57	43.47
Reinforcing Ironworker	28.06	1.56	28.12	8.33	1.38	39.33
Roofer	26.73	1.49	43.00	12.13	1.31	41.66
Sheet Metal Worker	30.66	1.70	25.62	8.29	1.51	42.16
Sprinkler Fitter	31.46	1.75	24.76	8.22	1.55	42.98
Tile Layer	26.86	1.49	21.13	5.99	1.32	35.66
Truck Driver	22.60	1.26	25.83	6.16	1.11	31.13

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 309. 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 2021.

Column 2, taxable fringe benefits, includes vacation pay, sick leave and other taxable benefits. These fringe benefits average 5.56% 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 section

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

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

Column 5, non-taxable fringe benefits, includes employer paid non-taxable benefits such as medical coverage and tax-deferred pension and profit sharing plans. These fringe benefits average 4.91% of the base wage for many construction contractors. The employer pays no taxes or insurance on these benefits.

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

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

Adjusting Labor Costs

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

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

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

Then add the regular work hours for the year:

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

Multiply these hours by the base wage per hour. If you pay carpenters \$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 30.97%, the rate for carpenters in column 3 on page 10. To increase the annual taxable wage by 30.97%, we'll multiply by 1.3097:

$$\begin{array}{r} \$20,800 \text{ per year} \\ \times 1.3097 \text{ tax \& insurance rate} \\ \hline \$27,242 \text{ annual cost} \end{array}$$

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.

$$\begin{array}{r} \$4,124 \text{ medical plan} \\ + 27,242 \text{ annual cost} \\ \hline \$31,366 \text{ total annual cost} \end{array}$$

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:

$$\frac{\$31,366}{2,000} = \$15.68 \text{ per hour}$$

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 \$37.38.

$$\frac{\$15.68}{\$37.38} = .419$$

Your modification factor is 41.9%. Multiply any building carpenter (Craft Code BC) labor costs in the Residential Division of this book by .419 to find your estimated cost. For example, on page 24 the labor cost for installing an 18" long towel bar is \$10.50 per each bar. If installed by your carpenter working at \$10.00 per hour, your estimated cost would be 41.9% of \$10.50 or \$4.40. 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

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		0	-19	0	-9%	Hutchinson	675	-3	-9	-1	-6%	Michigan Average		-2	3	-1	1%	
Boise	837	1	-12	0	-5%	Independence	673	-3	67	-1	29%	Battle Creek	490-491	-3	1	-1	-1%	
Coeur d'Alene	838	0	-21	0	-10%	Kansas City	660-662	0	10	0	5%	Detroit	481-482	0	15	0	7%	
Idaho Falls	834	-1	-19	0	-9%	Liberal	679	-2	33	-1	14%	Flint	484-485	-3	-5	-1	-4%	
Lewiston	835	0	-24	0	-11%	Salina	674	-3	-11	-1	-7%	Grand Rapids	493-495	-2	4	-1	1%	
Meridian	836	0	-19	0	-9%	Topeka	664-666	-3	2	-1	-1%	Grayling	497	1	-17	0	-7%	
Pocatello	832	-1	-20	0	-10%	Wichita	670-672	-2	-6	-1	-4%	Jackson	492	-3	1	-1	-1%	
Sun Valley	833	0	-18	0	-8%							Lansing	488-489	-1	1	0	0%	
						Kentucky Average		-1	-8	0	-4%	Marquette	498-499	-1	7	0	3%	
Illinois Average		-1	9	0	4%	Ashland	411-412	-4	-5	-1	-4%	Pontiac	483	-3	29	-1	12%	
Arlington Heights	600	1	29	0	14%	Bowling Green	421	0	-11	0	-5%	Royal Oak	480	-2	18	-1	7%	
Aurora	605	2	28	1	14%	Campton	413-414	-1	-23	0	-11%	Saginaw	486-487	-2	-9	-1	-5%	
Belleville	622	-2	2	-1	0%	Covington	410	-1	5	0	2%	Traverse City	496	-1	-4	0	-2%	
Bloomington	617	1	4	0	-1%	Elizabethtown	427	-1	-20	0	-10%							
Carbondale	629	-3	-6	-1	-4%	Frankfort	406	1	13	0	7%	Minnesota Average		0	-1	0	-1%	
Carol Stream	601	2	28	1	14%	Hazard	417-418	-2	-19	-1	-10%	Bemidji	566	-1	-11	0	-6%	
Centralia	628	-3	-3	-1	-3%	Hopkinsville	422	-2	-9	-1	-5%	Brainerd	564	0	-6	0	-3%	
Champaign	618	-1	-3	0	-2%	Lexington	403-405	1	1	0	1%	Duluth	566-568	-2	7	-1	2%	
Chicago	606-608	2	31	1	15%	London	407-409	-1	-13	0	-7%	Fergus Falls	565	-1	-20	0	-10%	
Decatur	623	-2	13	-1	-7%	Louisville	400-402	-1	5	0	2%	Magnolia	561	0	-18	0	-8%	
Galesburg	614	-2	-6	-1	-4%	Owensboro	423	-2	-6	-1	-4%	Mankato	560	0	-8	0	-4%	
Granite City	620	-3	11	-1	3%	Paducah	420	-2	-2	-1	0%	Minneapolis	553-555	1	28	0	13%	
Green River	612	-1	12	0	5%	Pikeville	415-416	-3	-14	-1	-8%	Rochester	559	0	-3	0	-1%	
Joliet	604	0	29	0	13%	Somerset	425-426	0	-23	0	-11%	St Cloud	563	-1	6	0	2%	
Kankakee	609	-2	-4	-1	-3%	White Plains	424	-3	-6	-1	-4%	St Paul	550-551	1	26	0	12%	
Lawrenceville	624	-4	-9	-1	-6%							Thief River Falls	567	0	-5	0	-2%	
Oak Park	603	3	35	1	18%	Louisiana Average		-1	7	-1	2%	Willmar	562	-1	-11	0	-6%	
Peoria	615-616	-1	15	0	6%	Alexandria	713-714	-3	13	-1	4%							
Peru	613	0	4	0	2%	Baton Rouge	707-708	0	21	0	10%	Mississippi Average		-2	-11	-1	-6%	
Quincy	602	3	31	1	16%	Houma	703	-2	11	-1	4%	Clarksdale	386	-3	-16	-1	-9%	
Rockford	610-611	-2	8	-1	3%	Lafayette	705	0	18	0	8%	Columbus	397	-1	1	0	0%	
Springfield	625-627	-2	2	-1	0%	Lake Charles	706	-2	30	-1	13%	Greenville	387	-4	-26	-1	-14%	
Urbana	619	-3	-6	-1	-4%	Mandeville	704	-1	-5	0	-3%	Greenwood	389	-3	-18	-1	-10%	
						Minden	710	-2	-8	-1	-5%	Gulfport	395	-2	-11	-1	-6%	
Indiana Average		-2	-3	-1	-3%	Monroe	712	-2	-14	-1	-8%	Jackson	390-392	-3	-2	-1	-3%	
Aurora	470	-1	-9	0	-5%	New Orleans	700-701	0	5	0	2%	Laurel	394	-3	-11	-1	-7%	
Bloomington	474	1	-6	0	-2%	Shreveport	711	-2	-6	-1	-4%	McComb	396	-2	-22	-1	-11%	
Columbus	472	0	-9	0	-4%						Meridian	393	-2	8	-1	3%		
Elkhart	465	-2	-7	-1	-4%	Maine Average		0	-10	0	-5%	Tupelo	388	-1	-13	0	-7%	
Evansville	476-477	-2	12	-1	4%	Auburn	042	-1	-7	0	-4%							
Fort Wayne	467-468	-3	1	-1	-1%	Augusta	043	-1	-9	0	-5%	Missouri Average		-1	-5	0	-3%	
Gary	463-464	-4	23	-1	8%	Bangor	044	-1	-11	0	-6%	Cape Girardeau	637	-2	-8	-1	-5%	
Indianapolis	460-462	-1	10	0	4%	Bath	045	-1	-15	0	-6%	Caruthersville	638	-1	-15	0	-7%	
Jasper	475	-2	-14	-1	-8%	Brunswick	039-040	1	-3	0	-1%	Chillicothe	646	-2	-7	-1	-4%	
Jeffersonville	471	0	-11	0	-5%	Camden	048	-1	-21	0	-10%	Columbia	652	1	-9	0	-4%	
Kokomo	469	-2	-15	-1	-8%	Cutler	046	-1	-15	0	-7%	East Lynne	647	-1	10	0	4%	
Lafayette	479	-2	-9	-1	-5%	Dexter	049	-1	-8	0	-4%	Farmington	636	-3	-15	-1	-8%	
Muncie	473	-4	-13	-1	-8%	Northern Area	047	-2	-16	-1	-8%	Hannibal	634	0	-4	0	-2%	
South Bend	466	-4	0	-1	-2%	Portland	041	2	2	1	2%	Independence	640	-1	13	0	5%	
Terre Haute	478	-4	-2	-1	-3%						Jefferson City	650-651	1	-11	0	-5%		
						Maryland Average		1	3	0	2%	Joplin	648	-2	-10	-1	-6%	
Iowa Average		-2	-4	-1	-3%	Annapolis	214	4	13	1	8%	Kansas City	641	-2	15	-1	6%	
Burlington	526	0	2	0	1%	Baltimore	210-212	-1	16	0	7%	Kirksville	635	0	-33	0	-15%	
Carroll	514	-3	-20	-1	-11%	Bethesda	208-209	3	24	1	13%	Knob Noster	653	0	7	0	3%	
Cedar Falls	506	-1	-7	0	-4%	Church Hill	216	2	-10	1	-4%	Lebanon	654-655	-2	-23	-1	-12%	
Cedar Rapids	522-524	0	5	0	2%	Cumberland	215	-4	-12	-1	-8%	Poplar Bluff	639	-1	-21	0	-10%	
Cherokee	510	-2	4	-1	1%	Elkton	219	2	-14	1	-5%	Saint Charles	633	1	2	0	1%	
Council Bluffs	515	-2	1	-1	-1%	Frederick	217	1	13	0	7%	Saint Joseph	644-645	-3	2	-1	-1%	
Creston	508	-3	6	-1	1%	Laurel	206-207	2	15	1	8%	Springfield	656-658	-2	-15	-1	-8%	
Davenport	527-528	-1	3	0	1%	Salisbury	218	1	-14	0	-6%	St Louis	630-631	-2	20	-1	8%	
Decorah	521	-2	-14	-1	-8%													
Des Moines	500-503	-2	13	-1	5%	Massachusetts Average		2	23	1	12%	Montana Average		0	-7	0	-3%	
Dubuque	520	-2	-7	-1	-4%	Ayer	015-016	1	11	0	6%	Billings	590-591	0	-4	0	-2%	
Fort Dodge	505	-2	-5	-1	-3%	Bedford	017	3	30	1	15%	Butte	597	1	-7	0	-3%	
Mason City	504	0	-6	0	-3%	Boston	021-022	3	77	1	37%	Fairview	592	-1	27	0	12%	
Ottumwa	525	0	-13	0	-6%	Brockton	023-024	3	41	1	20%	Great Falls	594	-1	-11	0	-6%	
Sheldon	512	0	-15	0	-7%	Cape Cod	026	2	6	1	4%	Havre	595	-1	-19	0	-9%	
Shenandoah	516	-3	-26	-1	-14%	Chicopee	010	1	14	0	7%	Helena	596	0	-4	0	-2%	
Sioux City	511	-2	14	-1	5%	Dedham	019	2	36	1	18%	Kalispell	599	1	-15	0	-6%	
Spencer	513	-1	-14	0	-7%	Fitchburg	014	2	21	1	11%	Miles City	593	-1	-15	0	-7%	
Waterloo	507	-4	-1	-1	-3%	Hingham	020	3	37	1	19%	Missoula	598	1	-14	0	-6%	
						Lawrence	018	2	28	1	14%							
Kansas Average		-2	2	-1	0%	Nantucket	025	3	16	1	9%	Nebraska Average		-1	-17	0	-8%	
Colby	677	-1	-17	0	-8%	New Bedford	027	1	12	0	6%	Alliance	693	-1	-21	0	-10%	
Concordia	669	-1	-25	0	-12%	Northfield	013	2	3	1	2%	Columbus	686	-1	-15	0	-7%	
Dodge City	678	-2	-7	-1	-4%	Pittsfield	012	1	0	0	1%	Grand Island	688	0	-18	0	-8%	
Emporia	668	-3	20	-1	8%	Springfield	011	-1	18	0	8%	Hastings	689	0	-20	0	-9%	
Fort Scott	667	-2	-11	-1	-6%							Lincoln	683-685	0	-9	0	-4%	
Hays	676	-2	-26	-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	1	-21	0	-9%	Rochester	144-146	-3	8	-1	2%	Grants Pass	975	2	-13	1	-5%
Norfolk	687	-3	-19	-1	-10%	Rockaway	116	3	18	1	10%	Klamath Falls	976	2	-19	1	-8%
North Platte	691	0	-14	0	-6%	Rome	133-134	-3	-6	-1	-4%	Pendleton	978	0	-7	0	-3%
Omaha	680-681	-1	1	0	0%	Staten Island	103	3	15	1	8%	Portland	970-972	2	19	1	10%
Valentine	692	-2	-31	-1	-15%	Stewart	127	-1	-9	0	-5%	Salem	973	2	-7	1	-2%
Nevada Average	2	0	1	1	1%	Syracuse	130-132	-3	7	-1	2%	Pennsylvania Average	-3	0	-1	-1%	
Carson City	897	2	-12	1	-4%	Tonawanda	141	-4	2	-1	-1%	Allentown	181	-2	8	-1	3%
Elko	898	1	19	0	9%	Utica	135	-4	-8	-1	-6%	Altoona	166	-3	-14	-1	-8%
Ely	893	2	-8	1	-3%	Watertown	136	-2	0	-1	-1%	Beaver Springs	178	-3	-8	-1	-5%
Fallon	894	2	-2	1	0%	West Point	109	1	11	0	6%	Bethlehem	180	-1	10	0	4%
Las Vegas	889-891	2	5	1	3%	White Plains	105-108	3	27	1	14%	Bradford	167	-4	-13	-1	-8%
Reno	895	2	-4	1	-1%	North Carolina Average	1	-9	0	-4%	Butler	160	-4	1	-1	-2%	
New Hampshire Average	1	-4	0	-1%	Asheville	287-289	1	-16	0	-7%	Chambersburg	172	-1	-13	0	-7%	
Charlestown	036	1	-11	0	-5%	Charlotte	280-282	1	15	0	7%	Clearfield	168	2	-8	1	-3%
Concord	034	1	-7	0	-3%	Durham	277	2	-3	1	0%	DuBois	158	-2	-19	-1	-10%
Dover	038	1	1	0	1%	Elizabeth City	279	1	-18	0	-8%	East Stroudsburg	183	0	-11	0	-5%
Lebanon	037	2	-8	1	-3%	Fayetteville	283	-1	-12	0	-6%	Erie	164-165	-3	-10	-1	-6%
Littleton	035	-1	-12	0	-6%	Goldsboro	275	1	-2	0	0%	Genesee	169	-4	-5	-1	-4%
Manchester	032-033	0	4	0	2%	Greensboro	274	1	-7	0	-3%	Greensburg	156	-4	-5	-1	-4%
New Boston	030-031	1	5	0	3%	Hickory	286	-1	-17	0	-8%	Harrisburg	170-171	-2	8	-1	3%
New Jersey Average	1	20	0	9%	Kinston	285	-1	-19	0	-9%	Hazleton	182	-3	-3	-1	-3%	
Atlantic City	080-084	-2	12	-1	4%	Raleigh	276	3	2	1	3%	Johnstown	159	-4	-16	-1	-9%
Brick	087	2	2	1	2%	Rocky Mount	278	-1	-14	0	-7%	Kittanning	162	-4	-9	-1	-6%
Dover	078	1	19	0	9%	Wilmington	284	1	-14	0	-6%	Lancaster	175-176	-2	1	-1	-1%
Edison	088-089	1	28	0	13%	Winston-Salem	270-273	0	-10	0	-5%	Meadville	163	-4	-16	-1	-9%
Hackensack	076	3	18	1	10%	North Dakota Average	-1	10	0	4%	Montrose	188	-3	-6	-1	-4%	
Monmouth	077	3	22	1	12%	Bismarck	585	0	6	0	3%	New Castle	161	-4	-1	-1	-3%
Newark	071-073	1	23	0	11%	Dickinson	586	-1	34	0	15%	Philadelphia	190-191	-3	27	-1	11%
Passaic	070	2	23	1	12%	Fargo	580-581	0	1	0	0%	Pittsburgh	152	-4	17	-1	6%
Paterson	074-075	2	13	1	7%	Grand Forks	582	0	-3	0	-1%	Pottsville	179	-4	-12	-1	-8%
Princeton	085	-2	23	-1	10%	Jamestown	584	-1	-7	0	-4%	Punxsutawney	157	-4	-1	-1	-3%
Summit	079	3	32	1	16%	Minot	587	-1	21	0	9%	Reading	195-196	-4	9	-1	2%
Trenton	086	-3	19	-1	7%	Nekoma	583	-1	-20	0	-10%	Scranton	184-185	-2	4	-1	1%
New Mexico Average	0	-17	0	-8%	Williston	588	-1	47	0	21%	Somerset	155	-4	-16	-1	-9%	
Alamogordo	883	-1	-22	0	-11%	Ohio Average	-2	2	-1	0%	Southeastern	193	0	18	0	8%	
Albuquerque	870-871	2	-8	1	-3%	Akron	442-443	-2	4	-1	1%	Uniontown	154	-4	-9	-1	-6%
Clovis	881	-2	-22	-1	-11%	Canton	446-447	-2	-3	-1	-2%	Valley Forge	194	-3	27	-1	11%
Farmington	874	2	-4	1	-1%	Chillicothe	456	-2	-3	-1	-2%	Warminster	189	-1	24	0	11%
Fort Sumner	882	-3	0	-1	-2%	Cincinnati	450-452	-1	7	0	3%	Warrendale	150-151	-4	16	-1	5%
Gallup	873	1	-17	0	-7%	Cleveland	440-441	-3	11	-1	3%	Washington	153	-4	23	-1	8%
Holman	877	2	-24	1	-10%	Columbus	432	0	11	0	5%	Wilkes Barre	186-187	-3	2	-1	-1%
Las Cruces	880	-1	-17	0	-8%	Dayton	453-455	-3	6	-1	1%	Williamsport	177	-3	-1	-1	-2%
Santa Fe	875	3	-20	1	-8%	Lima	458	-3	-8	-1	-5%	York	173-174	-3	2	-1	-1%
Socorro	878	1	-32	0	-14%	Marietta	457	-2	-8	-1	-5%	Rhode Island Average	1	10	0	5%	
Truth or Consequences	879	-2	-15	-1	-8%	Marion	433	-3	-9	-1	-6%	Bristol	028	1	9	0	5%
Tucumcari	884	-1	-17	0	-8%	Newark	430-431	-1	8	0	3%	Coventry	028	1	9	0	5%
New York Average	0	13	0	6%	Sandusky	448-449	-1	-5	0	-3%	Cranston	029	1	12	0	6%	
Albany	120-123	-1	16	0	7%	Steubenville	439	-3	6	-1	1%	Davisville	028	1	9	0	5%
Amityville	117	2	18	1	9%	Toledo	434-436	-1	16	0	7%	Narragansett	028	1	9	0	5%
Batavia	140	-3	5	-1	1%	Warren	444	-4	-6	-1	-5%	Newport	028	1	9	0	5%
Binghamton	137-139	-3	0	-1	-2%	Youngstown	445	-5	-1	-2	-3%	Providence	029	1	12	0	6%
Bronx	104	2	19	1	10%	Zanesville	437-438	-2	0	-1	-1%	Warwick	028	1	9	0	5%
Brooklyn	112	3	12	1	7%	Oklahoma Average	-3	-7	-1	-5%	South Carolina Average	-1	-2	0	-1%		
Buffalo	142	-4	7	-1	1%	Adams	739	-2	-20	-1	-10%	Aiken	298	0	9	0	4%
Elmira	149	-4	-1	-1	-3%	Ardmore	734	-3	1	-1	-1%	Beaufort	299	-1	-4	0	-2%
Flushing	113	3	30	1	15%	Clinton	736	-3	-2	-1	-3%	Charleston	294	-1	0	0	-1%
Garden City	115	3	29	1	15%	Durant	747	-4	-20	-1	-11%	Columbia	290-292	0	-4	0	-2%
Hicksville	118	3	27	1	14%	Enid	737	-4	-4	-1	-4%	Greenville	296	0	17	0	8%
Ithaca	148	-4	-6	-1	-5%	Lawton	735	-3	-15	-1	-8%	Myrtle Beach	295	0	-17	0	-8%
Jamaica	114	3	27	1	14%	McAlester	745	-4	-10	-1	-7%	Rock Hill	297	-1	-11	0	-6%
Jamestown	147	-4	-11	-1	-7%	Muskogee	744	-2	-16	-1	-8%	Spartanburg	293	-2	-6	-1	-4%
Kingston	124	0	-8	0	-4%	Norman	730	-2	-6	-1	-4%	South Dakota Average	-1	-12	0	-6%	
Long Island	111	3	62	1	30%	Oklahoma City	731	-2	-4	-1	-3%	Aberdeen	574	-1	-15	0	-7%
Montauk	119	1	15	0	7%	Ponca City	746	-3	1	-1	-1%	Mitchell	573	-1	-11	0	-6%
New York (Manhattan)	100-102	3	64	1	31%	Poteau	749	-2	-13	-1	-7%	Mobridge	576	-2	-18	-1	-9%
New York City	100-102	3	64	1	31%	Pryor	743	-2	-11	-1	-6%	Pierre	575	-2	-20	-1	-10%
Newcomb	128	-1	2	0	0%	Shawnee	748	-4	-13	-1	-8%	Rapid City	577	-2	-14	-1	-8%
Niagara Falls	143	-4	-8	-1	-6%	Tulsa	740-741	-1	1	0	0%	Sioux Falls	570-571	0	-2	0	-1%
Plattsburgh	129	1	-3	0	-1%	Woodward	738	-4	15	-1	5%	Watertown	572	-1	-7	0	-4%
Poughkeepsie	125-126	1	2	0	1%	Oregon Average	1	-9	1	-3%	Tennessee Average	0	-5	0	-2%		
Queens	110	4	33	1	17%	Adrian	979	-1	-24	0	-12%	Chattanooga	374	-1	5	0	2%
						Bend	977	1	-11	0	-5%	Clarksville	370	1	2	0	1%
						Eugene	974	2	-9	1	-3%	Cleveland	373	-1	-1	0	-1%

Area Modification Factors

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	
Columbia	384	-1	-14	0	-7%	Charlottesville	229	1	-15	0	-6%	Gillette	827	-1	7	0	3%	
Cookeville	385	0	-18	0	-8%	Chesapeake	233	0	-8	0	-4%	Powell	824	0	-7	0	-3%	
Jackson	383	-1	-3	0	-2%	Culpeper	227	1	-12	0	-5%	Rawlins	823	0	17	0	8%	
Kingsport	376	0	-11	0	-5%	Farmville	239	-2	-24	-1	-12%	Riverton	825	-1	-12	0	-6%	
Knoxville	377-379	-1	-3	0	-2%	Fredericksburg	224-225	1	-11	0	-5%	Rock Springs	829-831	0	2	0	1%	
McKenzie	382	-1	-16	0	-8%	Galax	243	-2	-20	-1	-10%	Sheridan	828	1	-8	0	-3%	
Memphis	380-381	-1	3	0	1%	Harrisonburg	228	1	-14	0	-6%	Wheatland	822	0	-7	0	-3%	
Nashville	371-372	1	4	0	2%	Lynchburg	245	-2	-17	-1	-9%							
						Norfolk	235-237	0	-4	0	-2%							
Texas Average	-2	12	-1	5%		Petersburg	238	-2	-5	-1	-3%	UNITED STATES TERRITORIES						
Abilene	795-796	-4	0	-1	-2%	Radford	241	-1	-18	0	-9%	Guam	53	-21	-5	18%		
Amarillo	790-791	-2	-2	-1	-2%	Reston	201	3	12	1	7%	Puerto Rico	2	-47	-5	-21%		
Arlington	760	-1	4	0	1%	Richmond	232	-1	5	0	2%							
Austin	786-787	1	24	0	12%	Roanoke	240	-1	-18	0	-9%	VIRGIN ISLANDS						
Bay City	774	-1	86	0	39%	Staunton	244	0	-15	0	-7%	St. Croix	18	-15	-4	2%		
Beaumont	776-777	-3	43	-1	18%	Tazewell	246	-3	-10	-1	-6%	St. John	52	-15	-4	20%		
Brownwood	768	-3	-14	-1	-8%	Virginia Beach	234	0	-6	0	-3%	St. Thomas	23	-15	-4	5%		
Bryan	778	0	18	0	8%	Williamsburg	230-231	0	-6	0	-3%							
Childress	792	-3	-28	-1	-14%	Winchester	226	0	9	0	4%	CANADIAN AREA MODIFIERS						
Corpus Christi	783-784	-2	41	-1	18%													
Dallas	751-753	-1	15	0	6%	Washington Average	1	-2	1	0%								
Del Rio	788	-3	4	-1	0%	Clarkston	994	0	-18	0	-8%							
El Paso	798-799	-3	-12	-1	-7%	Everett	982	2	2	1	2%							
Fort Worth	761-762	-1	5	0	2%	Olympia	985	2	-6	1	-2%	Alberta Average	26	-1	7	13%		
Galveston	775	-3	55	-1	24%	Pasco	993	0	2	0	1%	Calgary	26	1	7	14%		
Giddings	789	0	13	0	6%	Seattle	980-981	3	21	1	11%	Edmonton	25	2	7	14%		
Greenville	754	-3	9	-1	3%	Spokane	990-992	0	-7	0	-3%	Fort McMurray	28	-7	7	12%		
Houston	770-772	-1	58	0	26%	Tacoma	983-984	2	3	1	2%							
Huntsville	773	-2	59	-1	26%	Vancouver	986	2	4	1	3%	British Columbia						
Longview	756	-2	4	-1	1%	Wenatchee	988	1	-14	0	-6%	Average	26	-15	7	7%		
Lubbock	793-794	-3	-11	-1	-7%	Yakima	989	0	-10	0	-5%	Fraser Valley	26	-16	7	6%		
Lufkin	759	-3	20	-1	8%													
McAllen	785	-3	-9	-1	-6%	West Virginia Average	-2	-8	-1	-5%	Okanagan	27	-18	7	6%			
Midland	797	-3	25	-1	10%	Beckley	258-259	1	-11	0	-5%	Vancouver	26	-11	7	9%		
Palestine	758	-2	7	-1	2%	Bluefield	247-248	-1	2	0	0%							
Plano	750	0	15	0	7%	Charleston	250-253	1	8	0	4%	Manitoba Average	20	-22	5	0%		
San Angelo	769	-3	-9	-1	-6%	Clarksburg	263-264	-3	-11	-1	-7%	North Manitoba	20	-22	5	0%		
San Antonio	780-782	-2	19	-1	8%	Fairmont	266	0	-24	0	-11%	Selkirk	20	-22	5	0%		
Texarkana	755	-3	-15	-1	-8%	Huntington	255-257	-1	-7	0	-4%	South Manitoba	20	-22	5	0%		
Tyler	757	-1	-15	0	-7%	Lewisburg	249	-2	-29	-1	-14%	Winnipeg	20	-22	5	0%		
Victoria	779	-2	29	-1	12%	Martinsburg	254	-1	-10	0	-5%							
Waco	765-767	-3	-2	-1	-3%	Morgantown	265	-3	-6	-1	-4%	New Brunswick	16	-47	3	-13%		
Wichita Falls	763	-3	-16	-1	-9%	New Martinsville	262	-2	-18	-1	-9%	Moncton	16	-47	3	-13%		
Woodson	764	-3	-3	-1	-3%	Parkersburg	261	-3	5	-1	1%							
						Romney	267	-4	-10	-1	-7%	Newfoundland/						
Utah Average	1	-9	1	-3%	Sugar Grove	268	-3	-14	-1	-8%	Labrador	19	-29	4	-3%			
Clearfield	840	2	-3	1	0%	Wheeling	260	-3	14	-1	5%							
Green River	845	1	-7	0	-3%													
Ogden	843-844	0	-19	0	-9%	Wisconsin Average	-1	1	0	0%	Nova Scotia Average	17	-36	4	-8%			
Provo	846-847	-2	-16	1	-6%	Amery	540	0	-3	0	-1%	Amherst	16	-36	3	-8%		
Salt Lake City	841	2	-1	1	1%	Beloit	535	0	10	0	5%	Nova Scotia	17	-35	4	-7%		
						Clam Lake	545	-1	-17	0	-8%	Sydney	17	-37	4	-8%		
Vermont Average	1	-11	0	-5%	Eau Claire	547	-1	-4	0	-2%	Ontario Average	22	-11	5	7%			
Albany	058	1	-16	0	-7%	Green Bay	541-543	0	6	0	3%	London	22	-10	5	7%		
Battleboro	053	1	-9	0	-4%	La Crosse	546	-2	3	-1	0%	Thunder Bay	24	-14	6	6%		
Beecher Falls	059	1	-19	0	-8%	Ladysmith	548	-2	-1	-1	-2%	Toronto	21	-9	5	7%		
Bennington	052	-1	-12	0	-6%	Madison	537	2	14	1	8%							
Burlington	054	3	5	1	4%	Milwaukee	530-534	0	12	0	6%	Quebec Average	19	-24	4	-1%		
Montpelier	056	2	-10	1	-4%	Oshkosh	549	-1	9	0	4%	Montreal	19	-24	4	-1%		
Rutland	057	-1	-13	0	-7%	Portage	539	0	0	0	0%	Quebec City	19	-24	4	-1%		
Springfield	051	-1	-11	0	-6%	Prairie du Chien	538	-2	-12	-1	-7%							
White River Junction	050	1	-12	0	-5%	Wausau	544	-1	-6	0	-3%	Saskatchewan Average	23	-18	5	4%		
Virginia Average	0	-8	0	-4%	Wyoming Average	0	-1	0	-1%	La Ronge	24	-21	6	3%				
Abingdon	242	-2	-18	-1	-9%	Casper	826	-1	4	0	1%	Prince Albert	22	-20	5	2%		
Alexandria	220-223	3	18	1	10%	Cheyenne/						Saskatoon	22	-14	5	5%		
						Laramie	820	1	-6	0	-2%							

These figures assume an exchange rate of \$1.00 Canadian to \$0.76 U.S.

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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	2.70	10.80	24.20	43.10
16" OC members	CSF	2.02	8.08	18.20	32.30
20" OC members	CSF	1.62	6.46	14.50	25.90
24" OC members	CSF	1.35	5.39	12.10	21.60
Wall sheathing or shear panel adhesive, on walls					
16" OC members	CSF	2.63	10.90	24.60	43.70
20" OC members	CSF	2.11	8.74	19.70	35.00
24" OC members	CSF	1.76	7.28	16.40	29.10
Polystyrene or polyurethane foam panel adhesive, on walls					
12" OC members	CSF	3.43	14.30	32.20	57.20
16" OC members	CSF	2.57	10.70	24.10	42.90
20" OC members	CSF	2.06	8.58	19.30	34.30
24" OC members	CSF	1.72	7.15	16.10	28.60
Gypsum drywall adhesive					
12" OC members	CSF	1.39	5.65	12.70	22.60
16" OC members	CSF	1.04	4.24	9.54	17.00
20" OC members	CSF	.83	3.39	7.63	13.60
24" OC members	CSF	.69	2.83	6.36	11.30
Hardboard or plastic panel adhesive, on walls					
12" OC members	CSF	4.00	14.30	32.20	57.20
16" OC members	CSF	3.00	10.70	24.10	42.90
20" OC members	CSF	2.40	8.58	19.30	34.30
24" OC members	CSF	2.00	7.15	16.10	28.60
	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	—	2.80	2.80
16" OC members	BC@.056	CSF	—	2.09	2.09
20" OC members	BC@.052	CSF	—	1.94	1.94
24" OC members	BC@.042	CSF	—	1.57	1.57
Interior and exterior wall members					
12" OC members	BC@.100	CSF	—	3.74	3.74
16" OC members	BC@.090	CSF	—	3.36	3.36
20" OC members	BC@.084	CSF	—	3.14	3.14
24" OC members	BC@.084	CSF	—	3.14	3.14

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	28.90	—	28.90
Gypsum drywall adhesive, waterproof, bonds to wood, metal, masonry, concrete, 29 oz. cartridge	—	Ea	4.70	—	4.70

Aggregate

	Craft@Hrs	Unit	Material	Labor	Total
Latex FRP adhesive, indoor, bonds wood, concrete, drywall, foamboard, trowel grade, gallon	—	Ea	20.70	—	20.70
Panel insulation adhesive, waterproof, for polyurethane & polystyrene panels, bonds to wood, metal, masonry, concrete, 4.5 lbs.	—	Ea	37.20	—	37.20
Marine adhesive/sealant, 10 oz.	—	Ea	25.00	—	25.00
Project adhesive, rubber-based, bonds plywood, hardboard fiberglass, drywall, foam board, shelving, ceramic fixtures, 10 minute work time, 10.5 oz. cartridge	—	Ea	3.85	—	3.85

	Unit	1 quart can	1 gallon can
General purpose adhesives			
Acoustic tile adhesive, solvent base, waterproof, sound deadening type	Ea	—	14.30
Aliphatic resin woodworking glue	Ea	14.00	35.00
Carpet cement, outdoor	Ea	25.30	—
Professional carpenter's glue, multi-purpose	Ea	11.00	33.00
Contact cement, rubber based, waterproof, bonds veneers to plywood, particleboard, wallboard	Ea	16.80	40.00
Gel contact cement	Ea	16.50	—
Resilient flooring adhesive, latex base, adheres to concrete, plywood, felt, sheet flooring	Ea	6.15	26.20
Tile cement, solvent base, ceramic/stone, interior	Ea	18.60	23.50

	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	30.80	—	30.80
3/4" (Number 3)	—	Ton	29.40	—	29.40
1-1/2" (Number 2)	—	Ton	30.80	—	30.80
Crushed slag, typical prices where available					
3/4" slag	—	Ton	19.80	—	19.80
1-1/2"	—	Ton	20.20	—	20.20
Washed gravel (1.4 tons per CY)					
3/4" gravel	—	Ton	30.80	—	30.80
1-1/2"	—	Ton	31.00	—	31.00
Fill sand (1.35 tons per CY)	—	Ton	14.30	—	14.30
Add per ton less than 24 tons	—	Ton	8.00	—	8.00
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	—	—	389.00
Over 2,500 SF to 3,500 SF	—	LS	—	—	441.00
Over 3,500 SF to 5,000 SF	—	LS	—	—	544.00
Over 5,000 SF	—	LS	—	—	803.00
Small residential income properties (duplex, triplex, quadriplex)					
2 to 4 units	—	LS	—	—	700.00
Apartment houses, commercial and industrial buildings					
To \$300,000 valuation	—	LS	—	—	3,370.00
Over \$300,000 to \$1,000,000 valuation	—	LS	—	—	4,410.00
Over \$1,000,000 to \$3,000,000 valuation	—	LS	—	—	4,920.00
Over \$3,000,000 to \$5,000,000 valuation	—	LS	—	—	6,220.00
Other services					
Additional photograph (each)	—	LS	—	—	28.50
Outlying area fee	—	LS	—	—	57.00
Satisfactory Completion (old Form 442 / new Form 1004d)	—	LS	—	—	156.00
Appraisal Update same comps (Form 1004d)	—	LS	—	—	311.00
Operating Income Statement (FNMA 216)	—	LS	—	—	82.90
SFR Rental Survey (FNMA 1007)	—	LS	—	—	82.90
Appraisal review (desk)	—	LS	—	—	181.00
Appraisal review (field)	—	LS	—	—	389.00
Drive-by appraisal (Form 2055) starting at	—	LS	—	—	285.00
Drive-by appraisal (Form 2070/2075)	—	LS	—	—	233.00
Machinery (Fee is based on total value of equipment appraised) Additional charges for travel and lodging may be required					
To \$30,000 valuation	—	LS	—	—	643.00
Over \$30,000 to \$100,000 valuation	—	LS	—	—	860.00
Over \$100,000 to \$500,000 valuation	—	LS	—	—	1,450.00
Over \$500,000 to \$1,000,000 valuation	—	LS	—	—	1,970.00
Over \$1,000,000 to \$5,000,000 valuation	—	LS	—	—	3,370.00
Court testimony (excluding preparation)	—	Day	—	—	1,560.00
Consulting fees are billed at an hourly rate	—	Hour	—	—	197.00
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 \$75,000	LS	750.00	800.00
Claims over \$75,000 to \$150,000	LS	1,750.00	1,250.00
Claims over \$150,000 to \$300,000	LS	2,650.00	2,000.00
Claims over \$300,000 to \$500,000	LS	4,000.00	3,500.00
Claims over \$500,000 to \$1,000,000	LS	5,000.00	6,200.00
Claims over \$1,000,000 to \$10,000,000	LS	7,000.00	7,700.00
Claims over \$10,000,000 *	LS	*	12,500.00
No Amount Stated **	LS	7,000.00	7,700.00

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

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

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

	Craft@Hrs	Unit	Material	Labor	Total
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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	—	—	369.00
Weekday sessions after the initial consultation	—	Hr	—	—	185.00
Nonrefundable retainer for weekend mediation	—	Ea	—	—	446.00
Weekend mediation sessions	—	Hr	—	—	279.00

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



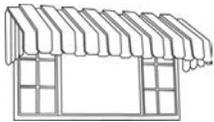
Custom home, eye level view					
Simple rendering	—	LS	—	—	1,00.00
Complex rendering	—	LS	—	—	1,480.00
Custom home, bird's eye view					
Simple rendering	—	LS	—	—	1,210.00
Complex rendering	—	LS	—	—	1,740.00
Tract homes in groups of five or more (single floor plans, multiple elevations), eye level view					
Simple rendering	—	LS	—	—	595.00
Complex rendering	—	LS	—	—	819.00
Tract homes in groups of five or more (single floor plans, multiple elevations), bird's eye view					
Simple rendering	—	LS	—	—	766.00
Complex rendering	—	LS	—	—	1,240.00
Tract homes or condominium project, overall bird's eye view					
10-25 homes or living units	—	LS	—	—	3,790.00
Typical commercial structure					
Eye level view	—	LS	—	—	1,700.00
Bird's eye view	—	LS	—	—	1,910.00
Complex commercial structure					
Eye level view	—	LS	—	—	2,510.00
Bird's eye view	—	LS	—	—	3,240.00

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	—	—	643.00
Large condo or apartment projects	—	LS	—	—	1,620.00
Tract homes	—	LS	—	—	404.00
Commercial structure, line drawing	—	LS	—	—	1,210.00

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

Aluminum pan-type window or door awnings, .025 gauge roof and pans, .040 gauge supports



42" wide x 24" projection, 18" drop	SW@2.17	Ea	390.00	91.50	481.50
60" wide x 30" projection, 20" drop	SW@2.79	Ea	565.00	118.00	683.00
78" wide x 36" projection, 24" drop	SW@3.11	Ea	780.00	131.00	911.00
88" wide x 42" projection, 26" drop	SW@3.41	Ea	930.00	144.00	1,074.00

Polycarbonate door awnings, clear or tinted curved poly sheet in aluminum frame, 39" projection, 12" drop



46" wide	SW@2.18	Ea	200.00	91.90	291.90
90" wide	SW@4.36	Ea	280.00	184.00	464.00
134" wide	SW@6.54	Ea	359.00	276.00	635.00
178" wide	SW@8.72	Ea	510.00	368.00	878.00
222" wide	SW@10.9	Ea	600.00	460.00	1,060.00

Roll-up aluminum awnings with hinged support arms and pull cord assembly

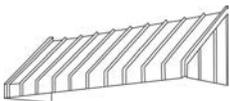
36" wide x 18" projection, 27" drop	SW@2.28	Ea	290.00	96.10	386.10
48" wide x 24" projection, 34" drop	SW@2.91	Ea	330.00	123.00	453.00
54" wide x 30" projection, 39" drop	SW@3.29	Ea	340.00	139.00	479.00
60" wide x 35" projection, 44" drop	SW@3.50	Ea	355.00	148.00	503.00
72" wide x 42" projection, 51" drop	SW@4.20	Ea	420.00	177.00	597.00



Curved top door or window canopy, rigid aluminum frame with tinted or clear polycarbonate inserts.

59" wide x 46" projection, 16" drop	BC@3.40	Ea	530.00	127.00	657.00
84" wide x 46" projection, 16" drop	BC@5.10	Ea	740.00	191.00	931.00
120" wide x 57" projection, 16" drop	BC@6.80	Ea	1,310.00	254.00	1,564.00

Mansard window or door awnings, 24 gauge 18"-wide standing seam steel panels, aluminum frame



54" wide x 36" projection, 36" drop	BC@3.40	Ea	1,410.00	127.00	1,537.00
72" wide x 36" projection, 36" drop	BC@4.50	Ea	1,640.00	168.00	1,808.00
90" wide x 36" projection, 36" drop	BC@5.60	Ea	1,900.00	209.00	2,109.00
108" wide x 48" projection, 48" drop	BC@6.70	Ea	2,700.00	250.00	2,950.00

Fabric door awning, with waterproof, acrylic duck, colorfast fabric, double stitched seams, tubular aluminum frame

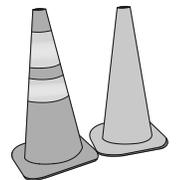
36" wide x 26" projection	SW@1.45	Ea	260.00	61.10	321.10
40" wide x 36" projection	SW@1.86	Ea	290.00	78.40	368.40
48" wide x 40" projection	SW@2.07	Ea	365.00	87.30	452.30
72" wide x 46" projection	SW@2.27	Ea	410.00	95.70	505.70

Cloth retractable patio awning, folding spring loaded aluminum arm, dual cable manual operation.

16' wide x 12' projection	BC@3.05	Ea	3,700.00	114.00	3,814.00
20' wide x 12' projection	BC@3.40	Ea	4,300.00	127.00	4,427.00

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	45.00	—	45.00
Quantities from 16 - 31 units	—	Ea	42.50	—	42.50
Pallet quantities, multiples of 32 units	—	Ea	40.30	—	40.30
Reflectorized injected plastic barricade, NCHRP-350 certified meets M.U.T.C.D. specifications 8" to 12" wide rail, 4" to 6" wide stripes, 40" legs, no light					
Type I, 2' wide, 3' high, Top panel 12" height, 1 reflectorized rail each side					
Quantities from 1 - 15 units	—	Ea	53.90	—	53.90
Quantities from 16 - 31 units	—	Ea	50.90	—	50.90
Pallet quantities, multiples of 32 units	—	Ea	48.30	—	48.30
Type II, 2' wide, 3' high, Top panel 8" height, 1 reflectorized rail each side					
Quantities from 1 - 15 units	—	Ea	59.70	—	59.70
Quantities from 16 - 31 units	—	Ea	56.40	—	56.40
Pallet quantities, multiples of 32 units	—	Ea	53.50	—	53.50
Type III, 4' wide, 5' high, 3 reflectorized rails each side, wood & steel legs					
Quantities from 1 - 15 units	—	Ea	149.00	—	149.00
Quantities from 16 - 31 units	—	Ea	146.00	—	146.00
Pallet quantities, multiples of 32 units	—	Ea	143.00	—	143.00
Add for lighted units without batteries (batteries last 2 months)					
Amber lens	—	Ea	19.40	—	19.40
Red lens	—	Ea	19.40	—	19.40
Batteries, 6 volt (2 needed)	—	Ea	10.50	—	10.50
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	44.60	—	44.60
Miscellaneous signage/traffic control					
"Road Closed", reflectorized, 30" x 48", Engineer Grade					
	—	Ea	92.50	—	92.50
"Construction Zone", 4' x 4' high intensity grade					
	—	Ea	253.00	—	253.00
High-rise tripod with 3 orange flags					
	—	Ea	207.00	—	207.00
Flags					
	—	Ea	3.92	—	3.92
Traffic cones, PVC					
Non-reflectorized type					
18" high	—	Ea	6.40	—	6.40
28" high	—	Ea	10.00	—	10.00
Reflectorized type					
18" high	—	Ea	10.00	—	10.00
28" high	—	Ea	16.80	—	16.80
36" high	—	Ea	21.80	—	21.80
Lane delineator, 42" orange plastic cylinder with 2 reflectors on a 12 pound rubber base					
	—	Ea	21.80	—	21.80
Mesh signs, orange, 48" x 48", includes brace and clamp					
	—	Ea	70.00	—	70.00
Hand-held traffic paddles, "Stop" and "Slow"					
	—	Ea	25.50	—	25.50



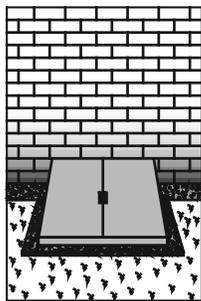
Basement Doors

	Craft@Hrs	Unit	Material	Labor	Total
Orange plastic safety fencing					
Budget, 4' x 50' roll, mesh opening 3" x 1.25"	—	Ea	26.70	—	26.70
Square mesh, 4' x 50' roll, opening 1.5" x 1.25"	—	Ea	27.00	—	27.00
Heavy Duty, 4' x 50' roll, opening 1.25" x 1.25"	—	Ea	51.90	—	51.90
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	10.00	—	10.00
Various colors, 3" x 200', "Danger"	—	Ea	6.00	—	6.00

Utility Highway Barricade Rental

Lighted units, rental, per day	—	Ea	11.00	—	11.00
Unlighted units, rental per day	—	Ea	8.00	—	8.00
Add for pickup and delivery, per trip	—	Ea	50.00	—	50.00
Typical labor cost, place and remove any barricade					
Per use	BL@.160	Ea	—	4.85	4.85

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	729.00	127.00	856.00
SLW Series standard, all sizes	BC@3.41	Ea	736.00	127.00	863.00
Add for powder coating	—	%	28.2	—	—
Ultra Series, polyethylene, all sizes	BC@3.41	Ea	1,110.00	127.00	1,237.00
Add for keyed lock	BC@.160	Ea	77.80	5.98	83.78
Door extensions (available for 19-1/2"H, 55"W, 72"L door only)					
6" deep	BC@1.71	Ea	196.00	63.90	259.90
12" deep	BC@1.71	Ea	246.00	63.90	309.90
18" deep	BC@1.71	Ea	309.00	63.90	372.90

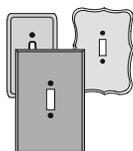
Stair stringers steel, pre-cut for 2" x 10" wood treads (without treads). Price is for a pair, or set of two stringers with hardware.

32" to 39" stair height	BC@1.71	Pr	150.00	63.90	213.90
48" to 55" stair height	BC@1.71	Pr	190.00	63.90	253.90
56" to 64" stair height	BC@1.71	Pr	256.00	63.90	319.90
65" to 72" stair height	BC@1.71	Pr	249.00	63.90	312.90
73" to 78" stair height	BC@1.71	Pr	349.00	63.90	412.90
81" to 88" stair height	BC@1.71	Pr	377.00	63.90	440.90
89" to 97" stair height	BC@1.71	Pr	404.00	63.90	467.90

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

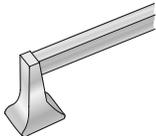
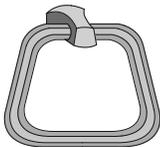


Cup and toothbrush holder, chrome	BC@.258	Ea	13.30	9.64	22.94
Cup holder, porcelain, surface mounted	BC@.258	Ea	9.31	9.64	18.95
Cup, toothbrush & soap holder, recessed	BC@.258	Ea	35.30	9.64	44.94
Cup, toothbrush holder, polished brass	BC@.258	Ea	18.80	9.64	28.44

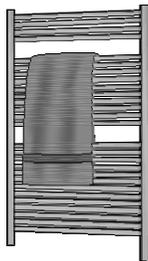


Electrical plates, chrome plated					
Switch plate, single	BE@.154	Ea	4.94	6.26	11.20
Switch plate, double	BE@.154	Ea	6.51	6.26	12.77
Duplex receptacle plate	BE@.154	Ea	4.94	6.26	11.20
Duplex receptacle and switch	BE@.154	Ea	6.49	6.26	12.75

Bathroom Accessories

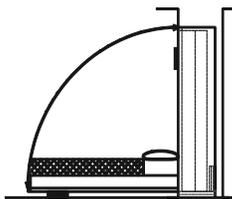
	Craft@Hrs	Unit	Material	Labor	Total		
Grab bars							
Tubular chrome plated, with anchor plates							
Straight bar, 16"	BC@.414	Ea	28.90	15.50	44.40		
Straight bar, 24"	BC@.414	Ea	35.30	15.50	50.80		
Straight bar, 32"	BC@.414	Ea	38.10	15.50	53.60		
"L"- shaped bar, 16" x 32"	BC@.620	Ea	88.60	23.20	111.80		
Stainless steel, with anchor plates							
Straight bar, 16"	BC@.414	Ea	43.70	15.50	59.20		
Straight bar, 24"	BC@.414	Ea	52.60	15.50	68.10		
Straight bar, 32"	BC@.414	Ea	57.30	15.50	72.80		
"L"- shaped bar, 16" x 32"	BC@.620	Ea	123.00	23.20	146.20		
Mirrors, stainless steel framed, surface mount, no light or cabinet							
16" high x 20" wide	BG@.420	Ea	69.00	15.20	84.20		
18" high x 24" wide	BG@.420	Ea	80.10	15.20	95.30		
18" high x 36" wide	BG@.420	Ea	122.00	15.20	137.20		
24" high x 36" wide	BG@.420	Ea	143.00	15.20	158.20		
48" high x 24" wide	BG@.420	Ea	177.00	15.20	192.20		
Mirrors, wood framed, surface mount, better quality							
18" x 29" rectangular	BG@.420	Ea	85.60	15.20	100.80		
20" x 27" oval, oak	BG@.420	Ea	121.00	15.20	136.20		
Robe hook							
Chrome	BC@.258	Ea	26.00	9.64	35.64		
Double, solid brass	BC@.258	Ea	25.00	9.64	34.64		
Shower curtain rods, chrome plated							
60", recessed	BC@.730	Ea	30.40	27.30	57.70		
66", recessed	BC@.730	Ea	33.40	27.30	60.70		
Soap holder, surface mounted, with drain holes							
Williamsburg, satin chrome	BC@.258	Ea	61.90	9.64	71.54		
Polished brass	BC@.258	Ea	20.20	9.64	29.84		
Facial tissue holder, stainless steel, recessed	BC@.258	Ea	41.70	9.64	51.34		
Toilet tissue roll holder, chrome, recessed	BC@.258	Ea	19.40	9.64	29.04		
Toothbrush holder, chrome, surface mount	BC@.258	Ea	7.18	9.64	16.82		
Towel bars, 3/4" bar							
18" long, chrome	BC@.280	Ea	15.90	10.50	26.40		
24" long, chrome	BC@.280	Ea	18.90	10.50	29.40		
30" long, chrome	BC@.280	Ea	22.40	10.50	32.90		
36" long, chrome	BC@.280	Ea	25.50	10.50	36.00		
18" long, solid brass	BC@.280	Ea	51.80	10.50	62.30		
24" long, solid brass	BC@.280	Ea	54.50	10.50	65.00		
Towel rack, swing-arm, chrome, 3 bars, 12" L	BC@.280	Ea	18.10	10.50	28.60		
Towel rings							
Williamsburg chrome and brass	BC@.280	Ea	49.10	10.50	59.60		
Williamsburg chrome and porcelain	BC@.280	Ea	46.90	10.50	57.40		
Towel shelf, chrome, 24" L with bar below	BC@.280	Ea	45.90	10.50	56.40		
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	792.00	34.50	826.50		
26" high, 24" wide, standard colors	BE@.850	Ea	846.00	34.50	880.50		
26" high, 24" wide, chrome finish	BE@.850	Ea	2,610.00	34.50	2,644.50		

Blueprinting



	Craft@Hrs	Unit	Material	Labor	Total
35" high, 16" wide, standard colors	BE@1.00	Ea	990.00	40.60	1,030.60
35" high, 24" wide, standard colors	BE@1.00	Ea	940.00	40.60	980.60
35" high, 24" wide, chrome finish	BE@1.00	Ea	3,150.00	40.60	3,190.60
44" high, 16" wide, standard colors	BE@1.10	Ea	990.00	44.70	1,034.70
44" high, 24" wide, standard colors	BE@1.10	Ea	1,040.00	44.70	1,084.70
44" high, 24" wide, chrome finish	BE@1.10	Ea	3,450.00	44.70	3,494.70
Add for direct wire w/ control panel	BE@.100	Ea	218.00	4.06	222.06
Add for wall plug in	BE@.100	Ea	292.00	4.06	296.06
Heated towel rack accessories					
Programmable control panel	BE@.250	Ea	284.00	10.20	294.20
Pull out drying racks	BE@.250	Ea	79.60	10.20	89.80
Robe knobs	BE@.150	Ea	51.20	6.09	57.29
Towel bar accents with standard colors	BE@.150	Ea	102.00	6.09	108.09
Towel bar accents with chrome finish	BE@.150	Ea	137.00	6.09	143.09
Robe knob accents (all styles)	BE@.150	Ea	238.00	6.09	244.09
Tub or shower chairs					
Wall-hung elevated fixed seat	BE@.750	Ea	37.60	30.50	68.10
White adjustable seat	BE@.750	Ea	70.10	30.50	100.60

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	835.00	183.00	1,018.00
Double, frames and mechanisms	B1@5.41	Ea	875.00	183.00	1,058.00
Queen, frames and mechanisms	B1@5.41	Ea	914.00	183.00	1,097.00
King, frames and mechanisms	B1@5.41	Ea	1,000.00	183.00	1,183.00
Add for wood-tone melamine cabinet	—	LS	1,480.00	—	1,480.00
Add for white melamine cabinet	—	LS	1,320.00	—	1,320.00

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.

Blue-line or blackline prints

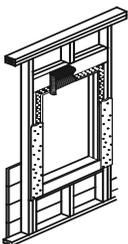
1-100 SF	—	SF	—	—	.21
101-1,000 SF	—	SF	—	—	.19
1,001-2,000 SF	—	SF	—	—	.18
2,001-to 3,000 SF	—	SF	—	—	.16
3,001-4,000 SF	—	SF	—	—	.09
4,001 SF and higher	—	SF	—	—	.08
Presentation blackline (heavy paper)	—	SF	—	—	.56
Sepia	—	SF	—	—	.83
Mylar	—	SF	—	—	2.77
Xerographic prints					
Vellum	—	SF	—	—	1.10
Erasable vellum	—	SF	—	—	1.39
Mylar	—	SF	—	—	2.77
Enlargements (bond)	—	SF	—	—	.66
Reductions (bond, per sheet)	—	Ea	—	—	2.76

Building Inspection Service

	Craft@Hrs	Unit	Material	Labor	Total
Plotting prints					
Translucent bond	—	SF	—	—	1.67
Vellum	—	SF	—	—	1.93
Erasable vellum	—	SF	—	—	2.75
Mylar	—	SF	—	—	2.77
Photo prints					
Mylar	—	SF	—	—	6.21
Add for local pickup and delivery, round trip	—	LS	—	—	20.00
Building Inspection Service (Home inspection service) Inspection of all parts of building by qualified engineer or certified building inspection technician. Includes written report covering all doors and windows, electrical system, foundation, heating and cooling system, insulation, interior and exterior surface conditions, landscaping, plumbing system, roofing, and structural integrity.					
Single-family residence					
Base fee (up to 2,500 SF)	—	LS	—	—	348.00
Add for additional 1,000 SF or fraction	—	LS	—	—	106.00
Add for out buildings (each)	—	LS	—	—	53.50
Add for houses over 50 years old	—	LS	—	—	80.20
Add per room for houses with over 10 rooms	—	Ea	—	—	64.20
Add per room for houses with over 15 rooms	—	Ea	—	—	69.60
Add for swimming pool, spa or sauna	—	LS	—	—	212.00
Add for soil testing (expansive soil only)	—	LS	—	—	214.00
Add for water testing (coliform only)	—	LS	—	—	75.00
Add for warranty protection					
Houses to 10 rooms & 50 years old	—	LS	—	—	267.00
Houses over 50 years old	—	LS	—	—	287.00
Houses over 10 rooms	—	LS	—	—	289.00
Multi-family structures					
Two family residence base fee	—	LS	—	—	483.00
Apartment or condominium base fee	—	LS	—	—	267.00
Warranty protection (base cost)	—	LS	—	—	267.00
Add for each additional unit	—	LS	—	—	53.60
Add for each family living unit					
Standard inspection	—	LS	—	—	53.50
Detailed inspection	—	LS	—	—	79.60
Add for swimming pool, spa, sauna	—	LS	—	—	80.20
Add for potable water quality testing	—	LS	—	—	241.00
Add for water quantity test, per well	—	LS	—	—	161.00
Add for soil testing (EPA toxic)	—	LS	—	—	1,610.00
Add for soil testing (lead)	—	LS	—	—	48.30
Add for lead paint testing, full analysis, per room	—	LS	—	—	42.80
Hazards testing for single and multi-family dwellings					
Urea-formaldehyde insulation testing	—	LS	—	—	187.00
Asbestos testing	—	LS	—	—	189.00
Radon gas testing	—	LS	—	—	135.00
Geotechnical site examination, typical price	—	LS	—	—	430.00

Building Paper

	Craft@Hrs	Unit	Material	Labor	Total
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
Asphalt shake felt, 18" x 72"					
30 lb. (108 SF roll)	—	SF	.18	—	.18
Building paper, 40" wide					
Single ply, black (1,078 SF roll)	—	SF	.05	—	.05
Two ply (539 SF roll)	—	SF	.07	—	.07
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	.07	—	.07
Ice and water shield, self-adhesive rubberized asphalt and poly					
225 SF roll	—	SF	.95	—	.95
High temperature, 225 SF roll	—	SF	1.04	—	1.04
"Jumbo Tex" gun grade sheathing paper, 40" wide, asphalt saturated					
(324 SF roll)	—	SF	.07	—	.07
"Jumbo Tex" black building paper, 36", 40" wide, asphalt saturated					
(500 SF roll)	—	SF	.10	—	.10
"Super Jumbo Tex" two-ply, 60 minute, asphalt saturated Kraft					
(162 SF roll)	—	SF	.11	—	.11
Red rosin sized sheathing (duplex sheathing) 36" wide					
(501 SF roll)	—	SF	.03	—	.03
Bruce rosin paper, floor underlay					
(500 SF roll)	—	SF	.04	—	.04
Moistop flashing paper, Fortifiber™, 12" wide x 300' long					
(300 SF roll)	—	SF	.15	—	.15
Vycor window and door flashing, self adhesive, Grace					
6" x 75' roll, 25 mil thickness	—	SF	1.78	—	1.78
Vycor deck protector, self adhesive joist flashing, Grace					
4" x 75' roll, Roll covers 66 LF of joist	—	LF	1.79	—	1.79
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	.54	—	.54
Roof underlay, for use under shingles, granular surface					
Weatherlock® 200 SF roll	—	SF	.53	—	.53
Tri-Flex roof underlay, for use under shingles, tile, slate or metal roofing					
48" x 250', 1,000 SF roll	—	SF	.13	—	.13
Below grade vapor barrier, Fortifiber™ Moistop (fiberglass reinforced Kraft between 2 layers of polyethylene)					
8' x 250' roll (2,000 SF roll)	—	SF	.19	—	.19



Building Permit Fees

	Craft@Hrs	Unit	Material	Labor	Total
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	.25	—	.25
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	.08	—	.08
Protective paper, Fortifiber™ Seekure (fiberglass reinforcing strands and nonstaining adhesive between 2 layers of Kraft) 8" x 300' roll, (2,400 SF)	—	SF	.09	—	.09
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	.09	—	.09
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	—	.15	.15
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	—	.37	.37

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

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

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

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

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

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

Cabinets, Kitchen

Craft@Hrs Unit Material Labor Total

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

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

Cabinets, Rule of Thumb Cabinet cost per running foot of cabinet installed. These figures are based on a set of 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	173.00	19.50	192.50
Wall cabinets, 30" high, 12" deep	BC@.340	LF	90.50	12.70	103.20

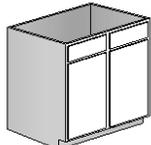
Cabinets, Kitchen (See the note above on cabinet costs.)

One door base cabinets, 34-1/2" high, 24" deep					
9" wide, tray divider	BC@.461	Ea	163.00	17.20	180.20
12" wide, 1 door, 1 drawer	BC@.461	Ea	218.00	17.20	235.20
15" wide, 1 door, 1 drawer	BC@.638	Ea	233.00	23.80	256.80
18" wide, 1 door, 1 drawer	BC@.766	Ea	245.00	28.60	273.60
21" wide, 1 door, 1 drawer	BC@.766	Ea	267.00	28.60	295.60
24" wide, 1 door, 1 drawer	BC@.911	Ea	273.00	34.10	307.10



DRAWER BASE

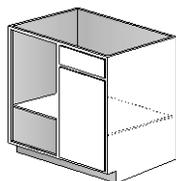
Drawer base cabinets, 34-1/2" high, 24" deep					
15" wide, 4 drawers	BC@.638	Ea	239.00	23.80	262.80
18" wide, 4 drawers	BC@.766	Ea	254.00	28.60	282.60
24" wide, 4 drawers	BC@.911	Ea	295.00	34.10	329.10



SINK BASE

Sink base cabinets, 34-1/2" high, 24" deep					
24" wide, 1 door, 1 drawer front	BC@.740	Ea	233.00	27.70	260.70
30" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	280.00	28.60	308.60
33" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	295.00	28.60	323.60
36" wide, 2 doors, 2 drawer fronts	BC@.766	Ea	302.00	28.60	330.60
42" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	333.00	34.10	367.10
48" wide, 2 doors, 2 drawer fronts	BC@.911	Ea	366.00	34.10	400.10

Two door base cabinets, 34-1/2" high, 24" deep					
27" wide, 2 door, 2 drawer front	BC@1.25	Ea	360.00	46.70	406.70
30" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	380.00	46.70	426.70
33" wide, 2 doors, 2 drawer fronts	BC@1.25	Ea	398.00	46.70	444.70
36" wide, 2 doors, 2 drawer fronts	BC@1.35	Ea	419.00	50.50	469.50
42" wide, 2 doors, 2 drawer fronts	BC@1.50	Ea	436.00	56.10	492.10
48" wide, 2 doors, 2 drawer fronts	BC@1.71	Ea	485.00	63.90	548.90

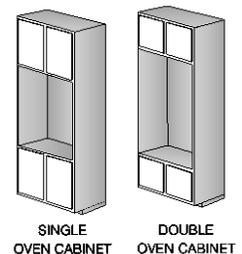
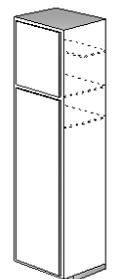
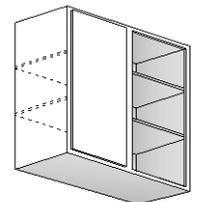
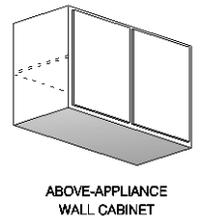
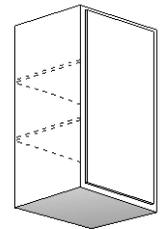
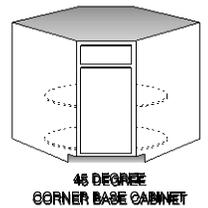


BLIND CORNER BASE

Blind corner base cabinets, 34-1/2" high					
Minimum 36", maximum 39" at wall	BC@1.39	Ea	267.00	52.00	319.00
Minimum 39", maximum 42" at wall	BC@1.50	Ea	287.00	56.10	343.10
Corner base cabinet, revolving shelves					
34-1/2" high x 36" wide at walls	BC@2.12	Ea	413.00	79.20	492.20

Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Corner sink front, 34-1/2" high 40" wide at walls	BC@2.63	Ea	233.00	98.30	331.30
Wall cabinets, adjustable shelves, 30" high, 12" deep					
9" wide, 1 door	BC@.461	Ea	147.00	17.20	164.20
12" wide or 15" wide, 1 door	BC@.461	Ea	160.00	17.20	177.20
18" wide, 1 door	BC@.638	Ea	189.00	23.80	212.80
21" wide, 1 door	BC@.638	Ea	195.00	23.80	218.80
24" wide, 1 door	BC@.766	Ea	209.00	28.60	237.60
27" wide, 2 doors	BC@.766	Ea	245.00	28.60	273.60
30" wide, 2 doors	BC@.911	Ea	245.00	34.10	279.10
33" wide, 2 doors	BC@.911	Ea	267.00	34.10	301.10
36" wide, 2 doors	BC@1.03	Ea	281.00	38.50	319.50
42" wide, 2 doors	BC@1.03	Ea	302.00	38.50	340.50
48" wide, 2 doors	BC@1.16	Ea	326.00	43.40	369.40
Above-appliance wall cabinets, 12" deep					
12" high, 30" wide, 2 doors	BC@.461	Ea	155.00	17.20	172.20
15" high, 30" wide, 2 doors	BC@.461	Ea	177.00	17.20	194.20
15" high, 33" wide, 2 doors	BC@.537	Ea	190.00	20.10	210.10
15" high, 36" wide, 2 doors	BC@.638	Ea	195.00	23.80	218.80
18" high, 18" wide, 2 doors	BC@.537	Ea	147.00	20.10	167.10
18" high, 30" wide, 2 doors	BC@.766	Ea	195.00	28.60	223.60
18" high, 36" wide, 2 doors	BC@.911	Ea	215.00	34.10	249.10
Corner wall cabinets, 30" high, 12" deep					
24" at each wall, fixed shelves	BC@1.03	Ea	267.00	38.50	305.50
24" at each wall, revolving shelves	BC@1.03	Ea	358.00	38.50	396.50
Blind corner wall cabinets, 30" high					
24" minimum, 1 door	BC@1.03	Ea	202.00	38.50	240.50
36" minimum, 1 door	BC@1.32	Ea	245.00	49.30	294.30
42" minimum, 2 doors	BC@1.20	Ea	308.00	44.90	352.90
Utility cabinets, 66" high, 12" deep, no shelves					
18" wide	BC@1.32	Ea	308.00	49.30	357.30
24" wide	BC@1.71	Ea	352.00	63.90	415.90
Utility cabinets, 66" high, 24" deep, add shelf cost below					
18" wide	BC@1.24	Ea	326.00	46.40	372.40
24" wide	BC@1.71	Ea	387.00	63.90	450.90
Add for utility cabinet revolving shelves, includes mounting hardware					
18" wide x 24" deep	BC@.360	Ea	280.00	13.50	293.50
24" wide x 24" deep	BC@.360	Ea	328.00	13.50	341.50
Add for utility cabinet plain shelves					
18" wide x 24" deep	BC@.541	Ea	94.70	20.20	114.90
24" wide x 24" deep	BC@.541	Ea	99.20	20.20	119.40
Oven cabinets, 66" high, 24" deep					
27" wide, single oven	BC@2.19	Ea	391.00	81.90	472.90
27" wide, double oven	BC@2.19	Ea	296.00	81.90	377.90



Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Microwave cabinet, with trim, 21" high, 20" deep, 30" wide	BC@.986	Ea	235.00	36.90	271.90
Additional labor costs for cabinets					
Tall utility, pantry, or oven cabinets	BC@2.00	Ea	—	74.80	74.80
Tall wall cabinet to counter level	BC@1.50	Ea	—	56.10	56.10
Hood cabinet over a range with vent cutout	BC@1.50	Ea	—	56.10	56.10
3/4" raised end panels applied to cabinet ends	BC@.250	Ea	—	9.35	9.35
Refrigerator end panels, cut, fit, install	BC@.500	Ea	—	18.70	18.70
Cabinet end panels, most sizes, per panel					
Refrigerator end panels	BC@.557	Ea	—	20.80	20.80
Refrigerator end panels with return	BC@1.00	Ea	—	37.40	37.40
Applied decorative end panels	BC@.334	Ea	—	12.50	12.50
Mitered island end or back panels	BC@.667	Ea	—	24.90	24.90
Dishwasher return panels	BC@.667	Ea	—	24.90	24.90
Precut filler panels installed between cabinets, per panel					
Most base or wall fillers	BC@.200	Ea	—	7.48	7.48
Most base or wall fillers with overlays	BC@.400	Ea	—	15.00	15.00
Tall filler panels over 36"	BC@.268	Ea	—	10.00	10.00
Tall filler panels over 36" with overlays	BC@.535	Ea	—	20.00	20.00
Corner filler panels	BC@.224	Ea	—	8.37	8.37
Corner fillers panels with overlays	BC@.448	Ea	—	16.70	16.70
Angled corner filler panels	BC@.268	Ea	—	10.00	10.00
Angled corner filler panels with overlays	BC@.536	Ea	—	20.00	20.00
Moldings and trim for cabinet work					
Scribe molding, per 8' length	BC@.224	Ea	—	8.37	8.37
Scribe molding, per linear foot	BC@.028	LF	—	1.05	1.05
Crown molding, per 8' length, miter cut	BC@.448	Ea	—	16.70	16.70
Crown molding, per 8' length, butt joint	BC@.180	Ea	—	6.73	6.73
Crown plate and riser, per miter cut	BC@.180	Ea	—	6.73	6.73
Crown plate and riser, per straight cut	BC@.112	Ea	—	4.19	4.19
Applied molding, per miter cut	BC@.112	Ea	—	4.19	4.19
Applied molding, per straight cut	BC@.067	Ea	—	2.50	2.50
Light rail molding, per miter cut	BC@.224	Ea	—	8.37	8.37
Light rail molding, per straight cut	BC@.067	Ea	—	2.50	2.50
Furniture toe kick, per 8' length	BC@.334	Ea	—	12.50	12.50
Furniture toe kick, per linear foot	BC@.042	LF	—	1.57	1.57
Valance, straight, per 8' length	BC@.334	Ea	—	12.50	12.50
Valance, with side returns or cap, 8' length	BC@.667	Ea	—	24.90	24.90
Mantle or hood molding, length to 8'	BC@.800	Ea	—	29.90	29.90
Corbels, plain	BC@.224	Ea	—	8.37	8.37
Corbels, on uprights	BC@.334	Ea	—	12.50	12.50
Enkeboll molding, miter cut, 8' length	BC@.667	Ea	—	24.90	24.90
Enkeboll molding, straight cut, 8' length	BC@.180	Ea	—	6.73	6.73
Posts, to 8' length	BC@.500	Ea	—	18.70	18.70
Pilasters	BC@.334	Ea	—	12.50	12.50
Cabinet feet, per cabinet	BC@.334	Ea	—	12.50	12.50
Cabinet extras					
Scribing in wood tops	BC@.133	LF	—	4.97	4.97
Job built 2 x 4 support wall to 42" high	BC@.334	LF	—	12.50	12.50
Framing for range support or sink cutout	BC@.667	Ea	—	24.90	24.90

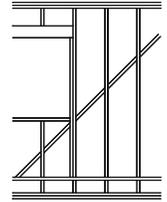
Carpentry

Craft@Hrs Unit Material Labor Total

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

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

Using framing lumber at	—	MBF	816.00	—	816.00
Using 1/2" OSB sheathing at	—	MSF	530.00	—	530.00
Using 7/16" OSB sheathing at	—	MSF	384.00	—	384.00
Using 5/8" OSB sheathing at	—	MSF	549.00	—	549.00
Using 1/2" CDX sheathing at	—	MSF	726.00	—	726.00
Using 5/8" CDX sheathing at	—	MSF	1,130.00	—	1,130.00
Single story, conventional foundation	B1@.237	SF	6.20	8.02	14.22
Single story, concrete slab foundation	B1@.180	SF	4.24	6.09	10.33
First of two floors, conventional foundation	B1@.203	SF	4.90	6.87	11.77
First of two floors, concrete slab foundation	B1@.146	SF	2.94	4.94	7.88
Second floor of a two-story residence	B1@.191	SF	4.87	6.46	11.33
Add for plywood sheathing	—	%	13.7	—	—



Framing a single story residence, conventional crawl-space foundation

Sills, pier blocks, floor beams (145 BF per 1,000 SF)	B1@.018	SF	.12	.61	.73
Floor joists, doublers, blocking, bridging (1,480 BF per 1,000 SF)	B1@.028	SF	1.21	.95	2.16
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.63	.37	1.00
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.84	3.15	4.99
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.87	1.52	2.39
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	1.09	1.08	2.17
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.44	.34	.78
Total framing, single story, conventional foundation	B1@.237	SF	6.20	8.02	14.22
Add for plywood sheathing	—	%	17.1	—	—

Framing a single story residence, concrete slab foundation

Layout, sole plates, anchors, studs, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.84	3.15	4.99
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.87	1.52	2.39
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	1.09	1.08	2.17
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.44	.34	.78
Total framing, single story, concrete slab foundation	B1@.180	SF	4.24	6.09	10.33
Add for plywood sheathing	—	%	9.3	—	—

Carpentry, Assemblies

	Craft@Hrs	Unit	Material	Labor	Total
Framing the first of two floors, conventional crawl-space foundation					
Sills, pier blocks, floor beams (145 BF per 1,000 SF)	B1@.018	SF	.12	.61	.73
Floor joists, doublers, blocking, bridging (1,480 BF per 1,000 SF)	B1@.028	SF	1.21	.95	2.16
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.63	.37	1.00
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.84	3.15	4.99
Rough stairway, 15 risers and landing (96 BF of dimension lumber and 128 SF of plywood per 1,000 SF)	B1@.008	SF	.23	.27	.50
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.87	1.52	2.39
Total framing, 1st of 2 floors, crawl-space foundation	B1@.203	SF	4.90	6.87	11.77
Add for plywood sheathing	—	%	13.6	—	—
Framing the first of two floors, concrete slab foundation					
Layout, sole plates, anchors, studs, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.84	3.15	4.99
Rough stairway, 15 risers and landing (96 BF of dimension lumber and 128 SF of plywood per 1,000 SF)	B1@.008	SF	.87	.27	1.14
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.23	1.52	1.75
Total framing, first of two floors, concrete foundation	B1@.146	SF	2.94	4.94	7.88
Framing the second story of a residence					
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.63	.37	1.00
Layout, studs, sole plates, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.84	3.15	4.99
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.87	1.52	2.39
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC (1,340 BF per 1,000 SF)	B1@.032	SF	1.09	1.08	2.17
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.44	.34	.78
Total framing, second floor of a two-story residence	B1@.191	SF	4.87	6.46	11.33
Add for plywood sheathing	—	%	21.2	—	—
Floor Assemblies Costs for wood framed floor joists with subflooring and R-19 insulation. These costs include the floor joists, subflooring as described, blocking, nails and 6-1/4" thick R-1.9 fiberglass insulation between the floor joists. Figures include box or band joists and typical double joists. No beams included. Planked subflooring is based on 1.24 BF per square foot of floor. Costs shown are per square foot of area covered and include normal waste. Deduct for openings over 25 SF.					
Using framing lumber at	—	MBF	816.00	—	816.00
Using 5/8" CDX plywood subfloor at	—	MSF	1,130.00	—	1,130.00
Using 3/4" CDX plywood subfloor at	—	MSF	847.00	—	847.00
Using 7/16" OSB subfloor at	—	MSF	384.00	—	384.00
Using 5/8" OSB subfloor at	—	MSF	549.00	—	549.00
Using 3/4" OSB T&G subfloor at	—	MSF	677.00	—	677.00

Carpentry, Assemblies

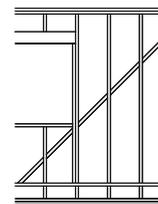
	Craft@Hrs	Unit	Material	Labor	Total
Floor joists 16" OC, R-19 insulation and OSB subflooring					
7/16" OSB subfloor					
2" x 6" joists	B1@.040	SF	2.26	1.35	3.61
2" x 8" joists	B1@.041	SF	2.68	1.39	4.07
2" x 10" joists	B1@.043	SF	3.12	1.46	4.58
2" x 12" joists	B1@.044	SF	3.79	1.49	5.28
Floor joists 16" OC, R-19 insulation and OSB subflooring					
5/8" OSB subfloor					
2" x 6" joists	B1@.040	SF	2.43	1.35	3.78
2" x 8" joists	B1@.041	SF	2.85	1.39	4.24
2" x 10" joists	B1@.043	SF	3.29	1.46	4.75
2" x 12" joists	B1@.044	SF	3.95	1.49	5.44
3/4" OSB subfloor					
2" x 6" joists	B1@.042	SF	2.56	1.42	3.98
2" x 8" joists	B1@.043	SF	2.97	1.46	4.43
2" x 10" joists	B1@.045	SF	3.42	1.52	4.94
2" x 12" joists	B1@.046	SF	4.08	1.56	5.64
Floor joists 16" OC, R-19 insulation and plywood subflooring					
5/8" plywood subfloor					
2" x 6" joists	B1@.040	SF	2.62	1.35	3.97
2" x 8" joists	B1@.041	SF	3.03	1.39	4.42
2" x 10" joists	B1@.043	SF	3.47	1.46	4.93
2" x 12" joists	B1@.044	SF	4.14	1.49	5.63
3/4" plywood subfloor					
2" x 6" joists	B1@.042	SF	2.73	1.42	4.15
2" x 8" joists	B1@.043	SF	3.14	1.46	4.60
2" x 10" joists	B1@.045	SF	3.59	1.52	5.11
2" x 12" joists	B1@.046	SF	4.25	1.56	5.81
For different type insulation					
Fiberglass batts					
10" thick R-30, add	—	SF	.40	—	.40
12" thick R-38, add	—	SF	1.01	—	1.01

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

Using 2 x 4 lumber at	—	MBF	777.00	—	777.00
Using 2 x 6 lumber at	—	MBF	756.00	—	756.00
Using 1/2" gypsum wallboard at	—	SF	.42	—	.42
Using 5/8" gypsum wallboard at	—	SF	.41	—	.41

Interior wall assemblies

2" x 4" stud walls with 1/2" gypsum drywall both sides, ready for painting					
Cost per square foot of wall	B1@.064	SF	1.48	2.17	3.65
Cost per running foot, for 8' high walls	B1@.512	LF	11.90	17.30	29.20
2" x 4" stud walls with 1/2" gypsum drywall one side, ready for painting					
Cost per square foot of wall	B1@.046	SF	1.07	1.56	2.63
Cost per running foot, for 8' high walls	B1@.368	LF	8.55	12.50	21.05
2" x 4" stud walls with 5/8" gypsum fire rated drywall both sides, ready for painting					
Cost per square foot of wall	B1@.068	SF	1.48	2.30	3.78
Cost per running foot, for 8' high walls	B1@.544	LF	11.80	18.40	30.20



Carpentry, Assemblies

	Craft@Hrs	Unit	Material	Labor	Total
2" x 4" stud walls with 5/8" gypsum fire rated drywall one side, ready for painting					
Cost per square foot of wall	B1@.048	SF	1.06	1.62	2.68
Cost per running foot, for 8' high walls	B1@.384	LF	8.52	13.00	21.52
2" x 6" stud walls with 1/2" gypsum drywall both sides, ready for painting					
Cost per square foot of wall	B1@.072	SF	1.81	2.44	4.25
Cost per running foot, for 8' high walls	B1@.576	LF	14.40	19.50	33.90
2" x 6" stud walls with 1/2" gypsum drywall one side, ready for painting					
Cost per square foot of wall	B1@.054	SF	1.39	1.83	3.22
Cost per running foot, for 8' high walls	B1@.432	LF	11.10	14.60	25.70
2" x 6" stud walls with 5/8" gypsum fire rated drywall both sides, ready for painting					
Cost per square foot of wall	B1@.076	SF	1.80	2.57	4.37
Cost per running foot, for 8' high walls	B1@.608	LF	14.40	20.60	35.00
2" x 6" stud walls with 5/8" gypsum fire rated drywall one side, ready for painting					
Cost per square foot of wall	B1@.056	SF	1.39	1.90	3.29
Cost per running foot, for 8' high walls	B1@.448	LF	11.10	15.20	26.30
Exterior wall assemblies					
2" x 4" stud walls with drywall interior, wood siding exterior, 1/2" gypsum drywall inside face ready for painting, over 3-1/2" R-13 insulation with 5/8" thick rough sawn T-1-11 exterior grade plywood siding on the outside face.					
Using 5/8" rough sawn T-1-11 siding at	—	MSF	1,130.00	—	1,130.00
Cost per square foot of wall	B1@.068	SF	2.72	2.30	5.02
Cost per running foot, for 8' high walls	B1@.544	LF	21.80	18.40	40.20
2" x 6" stud walls with drywall interior, wood siding exterior, same construction as above, except with 6-1/4" R-19 insulation					
Cost per square foot of wall	B1@.077	SF	3.26	2.61	5.87
Cost per running foot, for 8' high walls	B1@.616	LF	26.10	20.90	47.00
2" x 4" stud walls with drywall interior, 1/2" gypsum drywall on inside face ready for painting, over 3-1/2" R-11 insulation with 1" x 6" southern yellow pine drop siding, D grade, 1.19 BF per SF at 5-1/4" exposure on the outside face.					
Using D grade yellow pine drop siding at	—	MSF	2,910.00	—	2,910.00
Cost per square foot of wall	B1@.074	SF	4.50	2.50	7.00
Cost per running foot, for 8' high wall	B1@.592	LF	36.00	20.00	56.00
2" x 6" stud walls with drywall interior, 1" x 6" drop siding exterior, same construction as above, except with 6-1/4" R-19 insulation					
Cost per square foot of wall	B1@.083	SF	5.04	2.81	7.85
Cost per running foot, for 8' high wall	B1@.664	LF	40.30	22.50	62.80
2" x 4" stud walls with drywall interior, stucco exterior, 1/2" gypsum drywall on inside face ready for painting, over 3-1/2" R-11 insulation and a three-coat exterior plaster (stucco) finish with integral color on the outside face					
Cost per square foot of wall	B1@.050	SF	4.74	1.69	6.43
Cost per running foot, for 8' high wall	B1@.400	LF	37.90	13.50	51.40
2" x 6" stud walls with drywall interior, stucco exterior, same construction as above, except with 6-1/4" R-19 insulation					
Cost per square foot of wall	B1@.059	SF	5.28	2.00	7.28
Cost per running foot, for 8' high wall	B1@.472	LF	42.20	16.00	58.20
Add for different type gypsum board					
1/2" or 5/8" moisture resistant greenboard					
Cost per SF, greenboard per side, add	—	SF	.13	—	.13
1/2" or 5/8" moisture resistant greenboard					
Cost per running foot per side 8' high	—	LF	1.01	—	1.01
5/8" thick fire rated type X gypsum drywall					
Cost per SF, per side, add	—	SF	.08	—	.08
5/8" thick fire rated type X gypsum drywall					
Cost per running foot per side 8' high	—	LF	.60	—	.60

Carpentry, Assemblies

Craft@Hrs Unit Material Labor Total

Ceiling Assemblies Costs for wood framed ceiling joists with ceiling finish and fiberglass insulation, based on performing the work at the construction site. These costs include the ceiling joists, ceiling finish as described, blocking, nails and 3-1/2" thick R-11 fiberglass insulation batts between the ceiling joists. Figures in parentheses indicate board feet per square foot of ceiling framing including end joists and typical header joists. No beams included. Ceiling joists and blocking are based on standard and better grade lumber. Costs shown are per square foot of area covered and include normal waste. Deduct for openings over 25 SF.

Ceiling joists with 5/8" regular gypsum drywall taped and sanded smooth finish, ready for paint					
Using 2" x 4" at	—	MBF	777.00	—	777.00
Using 2" x 6" at	—	MBF	759.00	—	759.00
Using 2" x 8" at	—	MBF	776.00	—	776.00
2" x 4" ceiling joists at 16" on center (.59 BF per SF), with insulation and 1/2" gypsum drywall	B1@.053	SF	1.64	1.79	3.43
2" x 6" ceiling joists at 16" on center (.88 BF per SF), with insulation and 1/2" gypsum drywall	B1@.055	SF	1.97	1.86	3.83
2" x 8" ceiling joists at 16" on center (1.17 BF per SF), with insulation and 1/2" gypsum drywall	B1@.057	SF	2.34	1.93	4.27
For spray applied plaster finish (sometimes called "popcorn" or "cottage cheese" texture)					
Add for ceiling texture	DT@.011	SF	.02	.40	.42
For different type gypsum drywall with taped and sanded smooth finish, ready for paint					
5/8" moisture resistant greenboard, add	—	SF	.10	—	.10
5/8" ultralight, add	—	SF	.02	—	.02
5/8" fire rated "C", add	—	SF	.08	—	.08
For different ceiling joist center to center dimensions					
2" x 4" ceiling joists					
12" on center, add	B1@.004	SF	.15	.14	.29
20" on center, deduct	—	SF	-.09	-.07	-.16
24" on center, deduct	—	SF	-.13	-.10	-.23
2" x 6" ceiling joists					
12" on center, add	B1@.006	SF	.20	.20	.40
20" on center, deduct	—	SF	-.12	-.07	-.19
24" on center, deduct	—	SF	-.19	-.10	-.29
2" x 8" ceiling joists					
12" on center, add	B1@.006	SF	.28	.20	.48
20" on center, deduct	—	SF	-.16	-.07	-.23
24" on center, deduct	—	SF	-.26	-.10	-.36
For different type insulation					
Fiberglass batts					
6-1/4" thick R-19, add	—	SF	.29	—	.29
10" thick R-30, add	—	SF	.31	—	.31
Blown-in fiberglass					
8" thick R-19, add	—	SF	.38	—	.38

Roofing Assemblies Costs for wood framed roof assemblies with roof finish material as shown based on performing the work at the construction site. Costs shown include all material and labor required above the top plate or ledger on the supporting walls. These costs assume the supporting wall structure is in-place and suitable for the assembly described.

Carpentry, Assemblies

	Craft@Hrs	Unit	Material	Labor	Total
Flat roof assembly Based on using 2" x 12" joists Std & Btr grade at 16" on center including blocking, ripped strips and normal waste. The roof surface is built-up 3 ply asphalt consisting of 2 plies of 15 lb. felt hot mopped with a 90 lb. mineral-coated cap sheet.					
Using 2" x 12" joists at	—	MBF	881.00	—	881.00
Using 2" x 8" joists at	—	MBF	776.00	—	776.00
Using 1/2" CDX plywood at	—	MSF	726.00	—	726.00
Using 7/16" OSB at	—	MSF	384.00	—	384.00
Flat roof assembly as described above					
Framing, with plywood sheathing	B1@5.00	Sq	295.00	169.00	464.00
Framing, with OSB sheathing	B1@5.00	Sq	260.00	169.00	429.00
Built-up roofing, 3-ply and gravel	R1@2.15	Sq	107.00	77.40	184.40

Conventionally framed roof assemblies Based on straight gable type roof (no hips, valleys, or dormers) with 6" in 12" rise or less. Cost per 100 square feet of plan area under the roof, not actual roof surface area. Framing includes 2" x 8" common rafters Std & Btr grade at 24" on center. Cost includes blocking, ridge and normal bracing. Roof sheathing is either 7/16" OSB (oriented strand board) or 1/2" CDX plywood.

Conventionally framed roof assembly. Select roof finish from below

Framing, with plywood sheathing	B1@4.10	Sq	166.00	139.00	305.00
Framing, with OSB sheathing	B1@4.10	Sq	130.00	139.00	269.00
Add for built-up 3-ply finish roofing	R1@1.25	Sq	99.00	45.00	144.00
Add for composition shingle (Class C) roofing	R1@1.83	Sq	392.00	65.90	457.90
Add for asphalt shingle (Class A) roofing	R1@1.83	Sq	147.00	65.90	212.90
Framing, with no sheathing	B1@2.80	Sq	89.50	94.80	184.30
Add for 26 gauge steel roofing	R1@2.70	Sq	159.00	97.20	256.20
Add for gable studs					
2" x 4" spaced 16" OC (.54 BF per SF)	B1@.023	SF	.42	.78	1.20
Add for purlins (purling), Std & Btr, installed below roof rafters. Figures in parentheses indicate board feet per LF including 5% waste					
Using 2" x 8" joists at	—	MBF	776.00	—	776.00
2" x 8" (1.40 BF per LF)	B1@.023	LF	1.09	.78	1.87

Piecework, Rough Carpentry Rough carpentry on residential tracts is usually done by framing subcontractors who bid at piecework rates (such as per square foot of floor). The figures below list typical piecework rates for repetitive framing work and assume all materials are supplied to the framing subcontractor. No figures appear in the Craft@Hrs column because the work is done for a fixed price per square foot and the labor productivity can be expected to vary widely.

Layout and plating Piecework rates

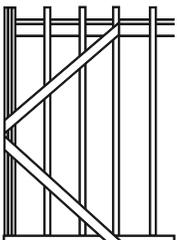
Lay out wall plates according to the plans (snap chalk lines for wall plates, mark location for studs, windows, doors and framing details), cut top and bottom plates and install bottom plates. Costs per square foot of floor (excluding garage).

Custom or more complex jobs	—	SF	—	.27	.27
Larger job, longer runs	—	SF	—	.18	.18

Wall framing Piecework rates

Measure, cut, fit, assemble, and tip up walls, including studs, plates, cripples, let-in braces, trimmers and blocking. Costs per square foot of floor.

Complex job, radius walls, rake walls	—	SF	—	.75	.75
Larger job, 8' high walls, fewer partitions	—	SF	—	.27	.27



Carpentry, Piecework

Craft@Hrs Unit Material Labor Total

Plumb and align framed walls Piecework rates

Force walls into alignment. Adjust walls to vertical and install temporary wood braces as needed. Bracing plates includes shooting powder driven fasteners through wall plates. Based on accuracy to 3/16". Includes re-checking plumb and alignment when framing is done. Costs per square foot of floor.

Small or complex job, brace walls and plates	—	SF	—	.24	.24
Larger job, fewer braces, walls only	—	SF	—	.14	.14
Sheathed walls, squared before lifting	—	SF	—	.08	.08

Floor joists or ceiling joists Piecework rates

Lay out, cut and install floor or ceiling joists, including rim joists, doubled joists, straps, joist hangers, blocking at 8' OC and ceiling backing for drywall. Based on larger jobs with simple joist layouts set 16" OC and pre-cut blocking supplied by the general contractor. Add the cost of floor beams, if required. Costs per square foot of horizontal joist area. More complex jobs with shorter runs may cost 50% more.

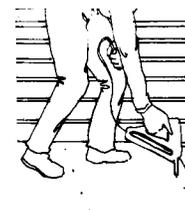
2" x 8" ceiling or floor joists	—	SF	—	.21	.21
2" x 10" ceiling or floor joists	—	SF	—	.24	.24
2" x 12" ceiling or floor joists	—	SF	—	.26	.26
2" x 14" ceiling or floor joists	—	SF	—	.30	.30
Add for 12" OC spacing	—	SF	—	.09	.09
Deduct for 20" OC spacing	—	SF	—	-.03	-.03
Deduct for 24" OC spacing	—	SF	—	-.06	-.06



Floor sheathing Piecework rates

Lay out, cut, fit and install 5/8" or 3/4" tongue and groove plywood floor sheathing, including blocking as required. Based on nailing done with a pneumatic nailer and nails supplied by the general contractor. Costs per square foot of sheathing installed

Smaller, cut-up job	—	SF	—	.24	.24
Larger job, longer runs	—	SF	—	.18	.18
Add for 1-1/8" sheathing	—	SF	—	.08	.08



Stair framing Piecework rates

Lay out, cut, fit and install straight, "U"- or "L"-shaped 30" to 36" wide stairs made from plywood and 2" x 12" stringers set 16" OC. These costs include blocking in the adjacent stud wall and a 1" skirt board. Costs per 7-1/2" riser. Framing more complex stairs may cost up to \$500 per flight.

Small job, short runs	—	Ea	—	17.50	17.50
Larger job, longer runs	—	Ea	—	13.20	13.20
Add per 3' x 3' landing, including supports	—	Ea	—	45.10	45.10
Add for larger landings, including supports	—	Ea	—	112.00	112.00

Shear panels Piecework rates

Lay out, cut, fit and install structural 3/8" or 1/2" OSB or plywood wall panels. These figures assume shear studs were set correctly by others and that panel nails are driven at 4" OC with a pneumatic nailer. Not including hold-down straps, posts, shear blocking or extra studs. Costs per 4' x 9' panel installed.

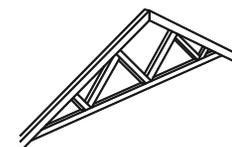
Small job, many openings, 2nd floor	—	Ea	—	12.10	12.10
Larger job, few openings, 1st floor	—	Ea	—	7.46	7.46

Roof trusses Piecework rates

Setting and nailing engineered gable and hip roof trusses 24" OC on prepared wall plates. These figures assume that lifting equipment is provided by the general contractor and that the truss supplier provides a fill package, spreader blocks for each plate and the ridge and jack rafters (if required). Includes installation of ceiling backing where required and catwalks at the bottom chord. Costs per square foot of plan area under the truss.

Small job assumes multiple California fill between roof surfaces and understacking

Small job, rake fill above a partition wall	—	SF	—	.65	.65
Larger job, little or no fill or understacking	—	SF	—	.36	.36

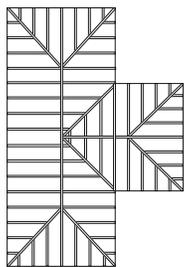


Carpentry, Detailed Breakdown

Craft@Hrs Unit Material Labor Total

Conventional roof framing Piecework rates

Calculate lengths, lay out, cut and install 2" x 10" or 2" x 12" common, hip, valley and jack rafters on parallel and horizontal plates. Costs per square foot of plan area under the roof.



Small job, cut-up roof, few common rafters

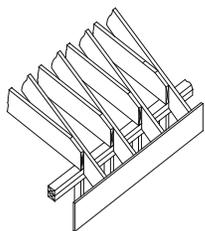
Rafters 12" OC	—	SF	—	1.35	1.35
Rafters 16" OC	—	SF	—	1.14	1.14
Rafters 20" OC	—	SF	—	.90	.90
Rafters 24" OC	—	SF	—	.65	.65

Larger job, longer runs, nearly all common rafters

Rafters 12" OC	—	SF	—	.65	.65
Rafters 16" OC	—	SF	—	.58	.58
Rafters 20" OC	—	SF	—	.45	.45
Rafters 24" OC	—	SF	—	.37	.37
Add for slope over 6 in 12	—	SF	—	.22	.22
Deduct for 2" x 6" or 2" x 8" rafters	—	SF	—	-.08	-.08

Fascia Piecework rates

Applied to rafter tails and as a barge rafter on gable ends. Includes trimming the rafter tails to the correct length and installing outlookers at gable ends. Costs per linear foot of 2" x 8" fascia installed.



Small job, short runs, with molding	—	LF	—	2.91	2.91
Larger job, longer runs	—	LF	—	1.67	1.67

Roof sheathing Piecework rates

Lay out, cut, fit and install 1/2" or 5/8" OSB or plywood roof sheathing, including blocking and 1" x 8" starter board on overhangs as required. Based on nailing done with a pneumatic nailer and nails supplied by the general contractor. Costs per square foot of sheathing installed.

Smaller, cut-up hip and valley job	—	SF	—	.25	.25
Larger job, longer runs	—	SF	—	.19	.19
Add for slope over 6 in 12	—	SF	—	.12	.12

Carpentry Cost, Detailed Breakdown This section is arranged in the order of construction. Material costs shown here can be adjusted to reflect your actual lumber cost: divide your actual lumber cost (per MBF) by the cost listed (per MBF). Then multiply the cost in the material column by this adjustment factor. No waste included.

Lally columns (Residential adjustable basement column) 7' 9" to 8' 1", steel tube

Column installation, to 12' high	B1@.458	Ea	185.00	15.50	200.50
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Precast pier blocks Posts set on precast concrete pier block, including pier block with anchor placed on existing grade, temporary reusable 1" x 6" bracing (8 LF) and stakes (2). Cost is for each post set. Add for excavation if required

Heights to 8', cost of post not included	BL@.166	Ea	7.93	5.03	12.96
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Pier pads 2" x 6", treated, #2 & Btr

Using #2 & Btr treated lumber at 1.10 BF per LF	—	MBF	1,160.00	—	1,160.00
	B1@.034	LF	1.28	1.15	1.15

Posts 4" x 4", material costs include 10% waste (1.47 BF per LF). See also Lally columns above and Posts in the Lumber section

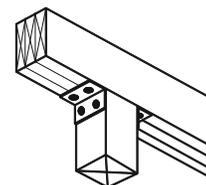
Fir, rough Std & Btr, K.D.	—	MBF	950.00	—	950.00
Fir, rough Std & Btr, K.D. 4" x 4"	—	LF	1.40	—	1.40
Red cedar, rough green constr.	—	MBF	2,810.00	—	2,810.00
Red cedar, rough green constr.	—	LF	4.13	—	4.13
Redwood, S4S construction heart	—	MBF	2,520.00	—	2,520.00

Carpentry, Detailed Breakdown

	Craft@Hrs	Unit	Material	Labor	Total
Redwood, S4S construction heart	—	LF	3.71	—	3.71
Southern yellow pine #2, pressure treated	—	MBF	1,250.00	—	1,250.00
Southern yellow pine #2, pressure treated	—	LF	1.84	—	1.84

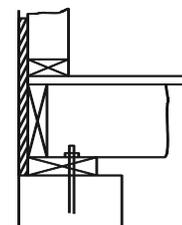
Girders Standard and better lumber, first floor work. Figures in parentheses show board feet per linear foot of girder, including 7% waste

4" x 6", per MBF	—	MBF	918.00	—	918.00
4" x 8", 10", 12", per MBF	—	MBF	965.00	—	965.00
6" x 6", per MBF	—	MBF	1,680.00	—	1,680.00
6" x 8", 10", 12", 8" x 8", per MBF	—	MBF	1,680.00	—	1,680.00
4" x 6" (2.15 BF per LF)	B1@.034	LF	1.97	1.15	3.12
4" x 8" (2.85 BF per LF)	B1@.045	LF	2.75	1.52	4.27
4" x 10" (3.58 BF per LF)	B1@.057	LF	3.45	1.93	5.38
4" x 12" (4.28 BF per LF)	B1@.067	LF	4.13	2.27	6.40
6" x 6" (3.21 BF per LF)	B1@.051	LF	5.39	1.73	7.12
6" x 8" (4.28 BF per LF)	B1@.067	LF	7.18	2.27	9.45
6" x 10" (5.35 BF per LF)	B1@.083	LF	8.98	2.81	11.79
6" x 12" (6.42 BF per LF)	B1@.098	LF	10.80	3.32	14.12
8" x 8" (5.71 BF per LF)	B1@.088	LF	9.60	2.98	12.58



Sill plates (At foundation) SYP #2 pressure treated lumber, drilled and installed with foundation bolts at 48" OC, no bolts, nuts or washers included. See also plates in this section. Figures in parentheses indicate board feet per LF of foundation, including 5% waste and wolmanized treatment.

Sill plates, per MBF	—	MBF	1,050.00	—	1,050.00
2" x 3" (.53 BF per LF)	B1@.020	LF	.48	.68	1.16
2" x 4" (.70 BF per LF)	B1@.023	LF	.81	.78	1.59
2" x 6" (1.05 BF per LF)	B1@.024	LF	1.07	.81	1.88
2" x 8" (1.40 BF per LF)	B1@.031	LF	1.36	1.05	2.41



Floor joists Per SF of area covered. Figures in parentheses indicate board feet per square foot of floor including box or band joist, typical double joists, and 6% waste. No beams, blocking or bridging included. Deduct for openings over 25 SF. Costs shown are based on a job with 1,000 SF of area covered. For scheduling purposes, estimate that a two-man crew can complete 750 SF of area per 8-hour day for 12" center to center framing; 925 SF for 16" OC; 1,100 SF for 20" OC; or 1,250 SF for 24" OC.

2" x 6" Std & Btr

2" x 6" floor joists, per MBF	—	MBF	759.00	—	759.00
12" centers (1.28 BF per SF)	B1@.021	SF	.97	.71	1.68
16" centers (1.02 BF per SF)	B1@.017	SF	.77	.58	1.35
20" centers (.88 BF per SF)	B1@.014	SF	.67	.47	1.14
24" centers (.73 BF per SF)	B1@.012	SF	.55	.41	.96

2" x 8" Std & Btr

2" x 8" floor joists, per MBF	—	MBF	776.00	—	776.00
12" centers (1.71 BF per SF)	B1@.023	SF	1.33	.78	2.11
16" centers (1.36 BF per SF)	B1@.018	SF	1.06	.61	1.67
20" centers (1.17 BF per SF)	B1@.015	SF	.91	.51	1.42
24" centers (1.03 BF per SF)	B1@.013	SF	.80	.44	1.24

2" x 10" Std & Btr

2" x 10" floor joists, per MBF	—	MBF	794.00	—	794.00
12" centers (2.14 BF per SF)	B1@.025	SF	1.70	.85	2.55
16" centers (1.71 BF per SF)	B1@.020	SF	1.36	.68	2.04
20" centers (1.48 BF per SF)	B1@.016	SF	1.17	.54	1.71
24" centers (1.30 BF per SF)	B1@.014	SF	1.03	.47	1.50

Carpentry, Detailed Breakdown

	Craft@Hrs	Unit	Material	Labor	Total
2" x 12" Std & Btr					
2" x 12" floor joists, per MBF	—	MBF	881.00	—	881.00
12" centers (2.56 BF per SF)	B1@.026	SF	2.25	.88	3.13
16" centers (2.05 BF per SF)	B1@.021	SF	1.81	.71	2.52
20" centers (1.77 BF per SF)	B1@.017	SF	1.56	.58	2.14
24" centers (1.56 BF per SF)	B1@.015	SF	1.37	.51	1.88

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

9-1/2" TJI/15	B1@.017	SF	2.74	.58	3.32
11-7/8" TJI/15	B1@.017	SF	3.01	.58	3.59
14" TJI/35	B1@.018	SF	4.39	.61	5.00
16" TJI/35	B1@.018	SF	4.78	.61	5.39

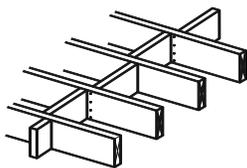
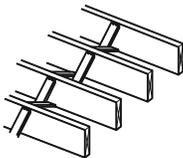
Bridging or blocking Installed between 2" x 6" thru 2" x 12" joists. Costs shown are per each set of cross bridges or per each block for solid bridging, and include normal waste. The spacing between the bridging or blocking, sometimes called a "bay," depends on job requirements. Labor costs assume bridging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

1" x 4" cross					
Joist bridging, per MBF	—	MBF	2,020.00	—	2,020.00
Joists on 12" centers	B1@.034	Ea	1.01	1.15	2.16
Joists on 16" centers	B1@.034	Ea	1.38	1.15	2.53
Joists on 20" centers	B1@.034	Ea	1.75	1.15	2.90
Joists on 24" centers	B1@.034	Ea	2.13	1.15	3.28

2" x 6" solid, Std & Btr					
2" x 6" blocking, per MBF	—	MBF	759.00	—	759.00
Joists on 12" centers	B1@.042	Ea	.83	1.42	2.25
Joists on 16" centers	B1@.042	Ea	1.11	1.42	2.53
Joists on 20" centers	B1@.042	Ea	1.39	1.42	2.81
Joists on 24" centers	B1@.042	Ea	1.67	1.42	3.09

2" x 8" solid, Std & Btr					
2" x 8" blocking, per MBF	—	MBF	776.00	—	776.00
Joists on 12" centers	B1@.042	Ea	1.14	1.42	2.56
Joists on 16" centers	B1@.042	Ea	1.52	1.42	2.94
Joists on 20" centers	B1@.042	Ea	1.90	1.42	3.32
Joists on 24" centers	B1@.042	Ea	2.28	1.42	3.70

2" x 10" solid, Std & Btr					
2" x 10" blocking, per MBF	—	MBF	794.00	—	794.00
Joists on 12" centers	B1@.057	Ea	1.45	1.93	3.38
Joists on 16" centers	B1@.057	Ea	1.94	1.93	3.87
Joists on 20" centers	B1@.057	Ea	2.42	1.93	4.35
Joists on 24" centers	B1@.057	Ea	2.91	1.93	4.84



Asbestos worker, wage.....	309	Auditorium		Barrier tapes.....	318	rough-in.....	531
As-built drawings.....	126	acoustic design fees.....	134	Barrier, egress.....	487	seat.....	25
Ash		seating.....	474	Bars		walk-in.....	246
drop.....	151	Auger holes		bath accessories.....	24	whirlpool tub.....	245
dumps.....	151	caissons.....	608	masonry.....	346, 372	Battens, lumber.....	222
flooring.....	155	Augers		reinforcing steel.....	89, 346	Batterboards.....	189
urns.....	473	rental.....	327	welding.....	348	Batts, insulation.....	181, 398
Ash wood flooring.....	155, 158	toilet, rental.....	328	Base		Bay vent channel.....	292
Ashtray.....	473	Auto hoist.....	450	asphalt.....	243	Bay window.....	299
Asphalt		Automatic gates.....	165	ceramic tile.....	290, 374, 428	roof cover.....	304
access road.....	610	Awning		column.....	387	Bead	
built-up roofing.....	256	roll-up.....	21	course, paving.....	243	lath.....	426
coatings.....	256	Awning windows		floor.....	154	lath & plaster.....	188
cold milling.....	611	aluminum.....	302	hardwood.....	222	molding.....	223, 226
curb.....	610	vinyl-clad wood.....	300	marble.....	381	Beadex.....	169
dampproofing.....	397	Awnings.....	21	MDF.....	226	Beam clamps, piping.....	517
emulsion.....	381	canopy-type.....	472	post.....	162	Beams	
felt.....	27, 401	commercial.....	471	resilient flooring.....	154	applied.....	54
milling.....	611	fabric.....	21	screed.....	188, 426	carpentry.....	390
mix.....	82	lean-to type.....	471	sheet, fiberglass.....	257, 258	ceiling.....	45
paper.....	258	motorized.....	471	slab.....	94	clamps, conduit.....	554
parking lot.....	610			Base wages		collar.....	48
paving.....	243, 609			industrial & commercial.....	309	concrete.....	339, 345
paving, demolition.....	102			residential.....	10	formwork.....	339, 345
primer.....	466			Baseboard.....	55	grade.....	93
recycling.....	332			bamboo.....	157	laminated timbers.....	396
repair.....	611			MDF.....	226	log.....	193
roll sheathing.....	27			Baseboard heating		lumber.....	201
roof coating.....	237			electric.....	536	LVL.....	396
roofing.....	257			radiation.....	537	precast.....	359
sawing.....	371			radiators.....	175	ridge.....	193
sheathing.....	182			Basement		shoring.....	345
slurry seal.....	611			doors.....	23	steel.....	383
speed bumps.....	610			stairs.....	281	steel collar.....	72
tack coat.....	610			storm window.....	304	Bearing capacity test.....	279
waterproofing.....	397			window.....	301	Bearing ratio, soil testing.....	317
Asphalt cutters, rental.....	320			Basic wage cost.....	3	Bed bumpers.....	444
Asphalt-fiberglass shingles.....	258			Basketweave fence.....	147	Bed molding.....	224, 226
Asphaltic concrete testing.....	315			Basswood blinds.....	296	Beds, concealed.....	25
Assemblies				Bath accessories.....	445	Beehive climber.....	467
brick wall.....	209, 373			ceramic.....	288	Bell footings.....	609
ceiling.....	36			ceramic tile.....	289	Bell wire.....	105
floor.....	33			compartments.....	442, 533	Bell wiring, electrical work.....	128
floor slab.....	352			enclosures.....	272	Bells	
framing, door opening.....	43			fans.....	142	door.....	105
framing, window openings.....	44, 66			shower cabinets.....	533	fire alarm.....	591
interior walls.....	34			shower doors.....	271	Belt conveyors.....	491
plumbing.....	530, 532			vanities.....	290	Benches	
ramps, landings, for handicapped.....	476			Bath exhaust fan.....	139, 140	athletic.....	466
roof.....	36			accessories.....	141	bus stop.....	479
roofing.....	37			ceiling blower.....	139	church.....	460
steel framing, door opening.....	65			Exhaust Air.....	140	locker room.....	474
steel framing, window opening.....	66			Heat-A-Lamp.....	141	park.....	474
wall.....	34			heater, ceiling.....	141	stadium.....	474
wall, brick.....	209, 373			QuieTTTest.....	140	Benderboard.....	187
Astragal molding.....				switch.....	141	Benefits, fringe.....	309
108, 223, 413, 421				timer switch.....	141	Bentonite	
Astro dial time switch.....	564			ValueTest.....	140	granules.....	355
Athletic				vent kit.....	141	waterproofing.....	294
benches.....	466			with heater.....	141	Bevel siding.....	199
court, striping.....	467			with heater, infrared.....	140	Beveled glass doors.....	107
court, surface prep.....	466			with light.....	140	Beverage dispenser.....	458
equipment.....	465			Bath fixtures.....	531, 533	Bicycle racks.....	475
equipment, swimming pools.....	475			Bathroom		Bidets.....	247
field marker.....	218			accessories.....	23	Bi-fold doors.....	124, 125
fields.....	465			cabinets.....	290	hardware.....	125
gym equipment.....	464			fan wiring.....	128	mirrored.....	125
ATM machine.....	453			fans.....	139, 140, 141	Bike post bollard.....	475
Attachments, crane, rental.....	322			sinks.....	247, 533	Bin, trash.....	332
Attic				vanities.....	290	Birch	
access doors.....	266			wallboard.....	168	doors.....	115, 116
fans.....	128			Baths, steam.....	285	paneling.....	242
fans, belt drive.....	141			Bathtubs.....	245, 531, 533	plywood.....	203
gable vents.....	142			ADA compliant.....	246	Bird screen.....	406
stairs, folding.....	284			caulk.....	78	Birdstop.....	262
vents.....	291			doors.....	271	Bitumen adhesive, modified.....	258
Audio				enameled cast iron.....	245	Bituminous	
detectors.....	264			enameled steel.....	245	paving.....	243, 611
sensors.....	589			fiberglass.....	245	paving, removal.....	332
Audio-visual equipment, school.....	458			recessed.....	245	roofing.....	256, 401

B

Black steel pipe.....	494	Bonds, insurance.....	185	Bricklayer, wage		Bus schedule, display panel....	480
Blanket insulation.....	183	Bookcases, painting.....	241	industrial & commercial.....	309	Bus stop	
Blasting		Boomlifts, rental.....	324	residential.....	10	enclosures.....	479
excavation.....	595	Boring		Bricklayer's helper, wage		shelters.....	479
sand.....	371	caissons.....	608	residential.....	10	Bushings	
water.....	239, 263, 333, 371, 437	soil testing.....	279	Bridge, pedestrian.....	487	ABS.....	516
Bleachers.....	464, 474	Bottom plates, carpentry.....	37	Bridging		conduit.....	543
Blinds		Bottom track, steel framing.....	73	carpentry.....	41	Business overhead.....	208
aluminum.....	296	Bow windows.....	304	I-Joist.....	160	Butacite.....	482
cellular.....	297	Box nails.....	227	joist.....	159, 390	Butt hinges.....	420
PVC.....	296	Boxes		steel floor joists.....	61	Button board.....	187
roll-up.....	296	electrical.....	561	tension.....	159	Button switches.....	565
Venetian.....	296	junction.....	563	Broan Manufacturing... 140, 141, 255		Buttweld joints, welding.....	389
vertical.....	296	outlet.....	128, 561	Broiler, food.....	455	Butyl roofing.....	402
Block		pull.....	562	Bronze fabrications.....	388	BX cable.....	560
adobe.....	216	switch.....	128	Broom finish, concrete.....	95, 356	Bypass doors.....	123
concrete.....	213, 378	Braces		Brown coat plaster.....	244, 427	accessories.....	124
core fill.....	213, 378	tilt-up.....	363	Brush		beveled mirror.....	123
demolition.....	335	trench, rental.....	323	chippers, rental.....	327	mirrored.....	123, 124
detailed concrete.....	213, 378	wall.....	164	cutters, rental.....	327		
filler, acrylic.....	237	Bracing		hogs, rental.....	327		
flooring.....	158	bulkheads.....	605	removal.....	137, 594		
glass building.....	217	carpentry.....	44, 390	Brush finish, concrete.....	95		
masonry.....	213, 378	steel framing.....	67	Brush painting.....	436		
painting.....	240, 438	temporary.....	44, 67	Bucket truck			
pier.....	39	trenches.....	605	rental.....	324		
sawing.....	370	trenches, rental.....	323	Bucket, clamshell, rental.....	322		
walls, concrete.....	213	Brads, nails.....	229	Buckets, rental.....	321		
Block filler, painting.....	438	Braille signage.....	442	Buggies, rental.....	321		
Blocking		elevator.....	479	Builder's adhesive.....	17		
carpentry.....	389	Branch circuits.....	573	Builder's hardware.....	421		
finish carpentry.....	51	Brass		rough carpentry.....	159		
fireblocks.....	45	fabrications.....	388	Building			
sheathing.....	392	railing.....	386	appraisal.....	18		
steel floor joists.....	61	storm.....	114	blocks, concrete filled.....	87		
Blockout forms		Bread slicer.....	456	board.....	293, 398		
cast-in-place slabs.....	341	Breaker		columns.....	186		
tilt-up.....	361	bond.....	355	demolition.....	103, 334		
Blockouts, concrete.....	342	circuit.....	128	hardware.....	421		
Blood storage refrigerators.....	469	form.....	355	moving.....	338		
Blowers		panels.....	571, 572	paper.....	27, 28		
exhaust hood.....	455	paving, rental.....	320	permit fees.....	28		
fans.....	142	vacuum.....	312	posts, steel.....	186		
fireplace.....	152	Breaking, demolition.....	104, 334	sewer.....	266		
heating.....	535	Brewer, coffee.....	458	stone, testing.....	316		
Blown-in insulation.....	183, 398	Brick		wiring.....	127		
Blue Board insulation.....	181	acid-proof.....	375	Building laborer, wage			
Blueprinting.....	25	artificial.....	243	industrial & commercial.....	309		
Board		chemical-resistant.....	375	residential.....	10		
insulation.....	181	cleaning.....	371	Building layout.....	595		
sheathing.....	50, 51	Colonial.....	209	Buildings			
Boards		commercial.....	210	steel engineered.....	483		
forming.....	88	common.....	374	temporary, rental.....	330		
lumber.....	194, 196-198	cutting.....	370	Built-in ovens.....	255		
sheathing.....	61	demolition.....	100	Built-up girders			
treatment.....	206	face brick.....	374	carpentry.....	40		
Board-up		firebrick.....	212	steel.....	383		
window.....	274	flooring.....	220	steel framing.....	60		
Bobcats, rental.....	323	jumbo.....	210	Built-up roofing.....	256, 401		
Boilermaker, wage.....	309	masonry.....	209, 374	cement, Cold-App.....	258		
Boilers.....	578	mini.....	211	demolition.....	102		
expansion tank.....	173	mission.....	212	Bulb, light.....	192		
foundations.....	366	modular.....	209, 210	Bulkhead forms.....	340, 342		
modules.....	578	mold flashing.....	268	Bulkheads, shoring.....	605		
Bollards		molding.....	108, 222	Bulldozers			
bicycle.....	475	mortar.....	209	excavation.....	137		
Bolt cutters, rental.....	328	Norman.....	209, 210	rental.....	138		
Bolts		Padre.....	210	Bullet resistant glass.....	422		
anchor.....	58	painting.....	240	Bulletin boards.....	441		
carriage.....	232	paving.....	215, 243, 382	Bullnose			
foundation.....	159	plate.....	382	drywall.....	169		
lag.....	232	pointing.....	371	paver.....	212		
machine.....	232	sandblasting.....	263	Bumper guards.....	444		
tilt-up.....	361	sawing.....	370	Bumper threshold.....	285		
Bond breaker.....	355	standard.....	209, 210	Bumpers			
tilt-up.....	363	steps.....	382	dock.....	365		
Bonding agents		testing.....	316	Bumps, speed.....	610		
adhesives.....	17, 18	vener.....	211	Bungalow fittings, ABS.....	514		
flooring.....	154	walls.....	209, 373	Burlap soil stabilization.....	603		
roofing.....	256, 402			Bus duct connection.....	571		

C

Cabinets	
bath.....	220, 290, 446
classroom.....	473
cleaning.....	83
custom.....	472
end panels.....	31
extinguisher.....	493
finish carpentry.....	473
fire hose.....	493
hardware.....	420, 472
hospital.....	473
installation.....	55
kitchen.....	29
labor cost.....	31
laboratory.....	473
lavatory.....	290
lighting fixtures.....	191, 221
linen, shelving.....	270
medicine.....	220, 290, 446
metal.....	472
painting.....	241
shelving.....	270
shop.....	472
shower.....	533
storage.....	473
utility.....	30, 31
vanity.....	290
wardrobe.....	458, 472, 473
wood.....	473
Cable	
antenna.....	130
armored.....	560
BX.....	560
Cat 5.....	593
Cat 5e.....	593
Cat 6.....	593
coaxial.....	592
communication.....	591
computer network.....	593
electrical.....	561
Ethernet.....	593
fiber optic.....	592
flexible armored.....	560
ice melting.....	561
metal-clad.....	560
network.....	130, 459, 460
phone.....	591
power.....	560
punch down.....	460
RG Series.....	592
RJ Series.....	592
Romex.....	127, 542, 559
signal.....	592
snow-melting.....	476, 561
tap.....	591
testing, computer.....	594
tray.....	557
twinaxial.....	593
twisted pair.....	593

Cable testing	130, 460	Cases	Ceilings	Check valves	492, 519, 521
Cabs, elevator	133, 490	cabinets	acoustical	Checkroom equipment	453
Café doors	118	laboratory	plywood	Chemical fire protection	455
Caissons	608	painting	stained glass look	Chemical-resistant brick	375
Calcimine removal	439	Cash box, service station	suspended	Cherry	
Calcium chloride	85, 350	Cash dispenser	tin	paneling	242
California B.A.C.T.	579	Cashier booth, bulletproof	wood strip	parquet	158
California Code 2010	579, 581	Casing	Cellar doors	Chestnut flooring	155, 156
California pavers	212	aluminum siding	steel	Child protection seat	447
Cambria countertop	96	beads	Cellular blinds	Chilled water pipe	494
Campus network wiring	459	door	Cellulose insulation	Chimes, door	105
Cane fiber joint	355	extruded polymer	Cement	wiring	128
Canopy		finish carpentry	adhesive	Chimneys	
commercial	471	hardwood	cold process	anchors	151
door	21	MDF	coloring	caps	291
door or window	21	molding	concrete	firebrick	212
food service hoods	455	nails	cutting	fireplace	152
range hoods	253	window	duct, envelopes	flashing	404
steel framing	387	Cast iron	lap roof	flues	152, 216, 374
Canopy lights	587	column bases	painting	masonry	220, 374
Can't strips		ornamental iron	paring	prefabricated	374
carpentry	50	sections	plaster	Chippers	
roofing	182, 403	Cast-in-place, concrete	roofing	pneumatic, rental	320
Canvas tarpaulins	285	Catch basins	testing	rental	327
Cap		demolition	tile	Chisels, rental	320
conduit	544	entrance	white	Chop saws, rental	328
door bottom	286	gratings	Cement and EPS forms	Church	
sheet, roofing	257	Catwalks, carpentry	Cement mason, wage	acoustical design fees	134
test	515	Caulk	industrial & commercial	chairs	461
tile	374	acrylic latex	residential	equipment	460
Capillary fill	339	fireproof	Cementitious	glass	470
Capital forms	343	guns	coating	pews	461
Caps		sealants	decks	Chutes	
ABS	516	strip	roofing system	demolition	337
black steel	494	Caution lights	Central	garbage	491
copper	504	Caution tape	air filter	linen	491
CPVC	507	Cavity wall	heating and cooling	mail	447
drain pipe	126	insulation	Central vacuum systems	trash	337
flashing	403	reinforcing	Ceramic tile	Cigarette disposal	473
masonry	213, 216	C-clamps, pipe	backer board	Cinder rock	604
molding	222	Cedar	demolition	Circleline lighting	191
post	163	boards	facing tile	Circuit balancing valves ...	173, 539
Capuccino dispenser	458	closet lining	fixtures	Circuit breakers	
Carbon steel pipe	494	ceiling	installation	panels	575
Carborundum rub	95, 356	fence	installations	wiring for	128
Card reader		lumber	mosaic	Circuits	
parking	450	paneling	veneer	dryer	543
security access	590	plywood	CFL light bulb	exit light	542
Carpenter, wage		roofing	Chain hoists, rental	light and power	542
industrial & commercial	309	saunas	Chain link fence	motor	566
residential	10	shakes	demolition	range	543
Carpentry		shingles	painting	receptacle	542
assemblies	37	siding	Chain railing	switch	542
cabinets	29, 473	Cedarmill	Chain saws	under slab	542
finish	51, 52, 421	Ceiling	rental	Circular louver	292
furring	52	access hatches	Chair rail	Circular windows	299
industrial and commercial	389	adhesive	MDF	City cost adjustments	12-15
molding	226	assemblies, wood framed	Chairs	Civil engineering fees	134
piecework	37	beams	auditorium	Cladding, preformed	401
piecework rates	39, 74	beams, carpentry	cathedral	Clamps	
plates	390	demolition	reinforcing steel	column forms	355
rough	46	domes	school	concrete, rental	322
square foot costs	32	fans	Chamfer	conduit	555
wall sheathing	394	fans, bath	corner forms	ground rod	566
Carpet adhesive	18	grid	strip	pipe	517, 518
Carpet tile	434	joists	Changes in costs	PVC conduit	551
Carpets	433	joists, steel	Changing stations	riser	517
access flooring	434	lighting fixtures	Channel	top beam	517
mats	220, 474	metal pans	hanger	Clamshell excavators, rental	322
subcontract	76	paint removal	hat	Clamshovels, rental	327
Carpports	77	painting	resilient	Classrooms, manufactured	480
Carriage bolts	232	panels	siding	Clay	
Carriers, conveyors	491	radiant heating systems	steel	backing tile	374
Cars, elevator	133, 490	skylights	strap	brick	373
Cartridge fuses	575	tile	vent, rafter bay	tile, load bearing	374
Carved doors	107	tile adhesive	Channelizing, earthwork	Clay tile roofing	
Casement windows		tile, wood fiber	Charbroiler, commercial	demolition	102
vinyl	299	treatments	Charging, electric fence	Clean metal primer	236
vinyl-clad wood	300, 301		Check desks		

Cleaning		Collar beams		aggregate	350	placing	95, 351
brick	371	carpentry	48	apron	476	plank	358
cabinets	83	steel framing	72	architectural	85	plasticized	85
concrete	356	Collar ties	48	beams	339, 345	plyform	203
doors	83	Collated brads	229	block core fill	213, 378	pouring	95
final	83	Collated nails	229, 230	buggies, rental	321	precast	221, 357
floors	83	Colonial		building walls	351	pull & junction box	542
glass	83, 331	brick	209	bush hammered	356	pump mix	85
glass block	381	columns	84	caisson	608	pumping	350
masonry	371, 372	interior doors	119	cast-in-place	354	ready-mix	84, 350, 351
new construction	83, 331	storm doors	114	coatings	355, 356, 369	recycling	332
paint preparation	239	Color coat, tennis court	466	coloring	85, 96, 218, 356, 357	reinforcement	89, 346
painting	436	Coloring agents	218	column forms	340	retaining walls	92, 341
plumbing fixtures	83	concrete	85, 95, 350, 357	columns, reinforcing	349	roof decks	369
shower stalls	83	mortar	218	conduit envelopes	541	sandblasting	263
stone	371	Column forms	342	core drilling	370	sawing	362, 370
terra cotta	371	capitals	344	curb	88, 95	saws, rental	321
vacuum systems	290	round	344	curing	356	screeds, rental	322
walls	83	tilt-up	365	curing compounds	351	sealant	77
windows	83	Columns		curing papers	28	sealer	356
Cleaning station	457	base ties	160	cutting	370	shingles	261
Cleanout		bases	84	decking	369	sidewalk	94
adapter, ABS	516	capitals, formwork	344	delivery charges	85	slab demolition	336
doors, fireplace	151	caps	160	demolition	101	slab forms	340
drainage piping	525	carpentry	39	depression forms	341	slab sawing	370
plug, ABS-DWV	516	carpentry, steel	57	driveways	84	slabs	94, 352, 354, 359, 369
tees, ABS	515	clamps, rental	322	edge forms	340	slip-formed	353
Cleanup, overhead	310	concrete	340	embossed finish	96	snap ties	86
Clear cedar siding	199	fireproofing	409	equipment foundations	366	specialty finishes	95
Clearing		footings	94	equipment rental	321	spread footings	377
brush	594	lally	39	etching	357	stain	235
excavation	136	lally, steel	57	excavation	338	stairways	354
Clerical help cost	310	marble	381	expansion joints	85, 355	stamped finish	96
Clevis hangers	517	painting	240	exposed aggregate	95	stamped, subcontract	369
Climber, tower	469	porch	84	fiber mesh reinforcing	85	steps	95, 351, 354
Clips		precast	359	fill	365	steps-on-grade	95
angle	159	reinforcing	349	fill, columns	384	structural	351, 353
framing	159	structural steel	384	finishes	95	support poles	360
plywood	162	tilt-up	365	finishing	96	surface prep	437
Clock		tube	354	fireproofing	407	surfacing	369
receptacles	563	wood	84	flared apron	476	suspended slabs	353
wiring	128	Come-a-longs, rental	329	flatwork	352, 611	testing	315
Closers, door	105, 420	Commercial brick	210	floor finishes	356, 369	ties	86
Closet doors	119	Commercial wage rates	309	floor slab	352	tile	261
bi-fold	124	Common brick	374	footings	94	tile roofing	261
bypass	123	Communications	589	footings, demolition	100	tilt-up	362
mirrored bypass	123, 124	Communications cable	591	form stakes	86	topping	95
Closet flange, ABS	515	Communion rail	461	form stripping	88	underpinning	605
Closets		Compacting soil		form tie	355	unit masonry	213
cabinets	29, 473	embankment	597	forms	86, 87, 88, 93, 339	vapor barrier	430
lighting, wiring	128	equipment rental	139, 321	forms, cast-in-place	340	vibrators, rental	321
lining, cedar	79	excavation	136, 597	forms, paving	611	walks	94
poles	55	roadway	603	foundations	93	wall form	88
racks	453	trenches	599	grade beams	93	wall sawing	370
shelves	270	Compaction testing	279	granite aggregate	85	walls	86, 87, 92, 351, 357
storage unit	55	Compactors, rental	139, 321	grout	355, 378	waterproofing	294, 355, 397
water	247, 530, 532	Compartments, cubicles	442	grout mix	85	waterstop	91, 349
Clothes chutes	491	Composite		grouting	96	wedge tie	355
Clothes dryers		doors	119	gunite	357	work	338
vent sets	291	doors	119	hardeners	356	Concrete block	
wiring	128	Composite lumber	98	high early strength	85	demolition	100
Clothesline units	84	Composition		ICF	86	glazed	379
Coat hooks and racks	453	roof, coating for	237	inserts	355	natural	213
Coatings		roofing	258	insulated forms	86, 87	painting	240, 241, 438
cementitious	369	Compressors		insulating deck	369	pavers	215
concrete finishes	356	foundations	366	joints	85	retaining walls	375
deck	437	paint	239	keyway	93	screen	215, 380
industrial	436	rental	320	labor placing	351	slump	216
roofing	256	service station	449	landings	476	split-face	215, 379
steel	387	Computer		lightweight	85	testing	316
Coaxial cable	592	access flooring	434	lintels	382	walls	213, 378
Code caps	291	network cable	592, 593	masonry units	213, 378	Concrete reinforcing	
Coffee brewer/percolator	458	network setup	130, 131	meter boxes	221	polypropylene fiber	85
Coil		wiring	130	mix	84	Concrete tile roofing	
framing nails	229	wiring for educational network	459	mixer, rental	321	demolition	102
roofing nails	230	Concrete	84, 338, 350	nails	230	Conduit	
Cold box, insulation	399	access ramps	476	paint preparation	239	adapter, PVC	550
Cold milling, asphalt	611	additives	85, 350, 355, 356	paint removal	234	bodies, PVC	550
Cold process cement	258	adhesive	18	painting	240, 437	bodies, steel	543
Cold-formed steel framing	56			patching	95	clamps	555
				pavers	215	EMT	544
				paving	244, 611	EMT circuits	547
				paving, removal	332	end bell	549
				piles	606		

flexible aluminum.....	552	Coping		Cover plate, electric.....	565	Cupolas.....	97
flexible non-metallic.....	553	masonry.....	216, 382	Cover, swimming pool.....	476	Curb inlet protection.....	604
flexible steel.....	552	metal.....	403	Coverage loss defined.....	3	Curbing machine rental.....	325
hangers.....	554	Co-polymer shutters.....	272	Coverings		Curbs	
hangers, PVC.....	551	Copper		door.....	273	asphalt.....	610
hubs.....	569	flashing.....	267, 403	window.....	273	concrete.....	88, 95
IMC.....	548	grounding devices.....	565	Covers		demolition.....	101, 332
intermediate metal.....	548	gutter.....	405	canvas.....	285	elevated slabs.....	345
lightweight.....	553	nails.....	267	joint.....	412	for handicapped.....	478
liquid-tight flexible metal.....	553	pipe.....	503	plastic.....	253, 285	Curing concrete.....	356, 362
painting.....	437	pipe, DWV.....	512	CPM scheduling.....	134, 311	Curing papers.....	28
PVC.....	548	pressure fittings.....	504	CPVC		Curtain rods	
rigid steel.....	543	roof, cupola.....	97	adapter fittings.....	508	drapery hardware.....	127
RSC.....	543	roofing.....	404	brass fittings.....	508	shower.....	24
steel.....	543	tubing.....	505, 512	pipe.....	507, 508	Curtain wall.....	419
Cones, traffic control.....	22	wall ties.....	372	snap-on tubing strap.....	508	Curtains	
Confessionals.....	461	window roofs.....	304	transition fittings.....	508	industrial and commercial.....	471
Conflict resolution.....	20	wire, THHN.....	558	Craft codes.....	7, 10	lift equipment.....	463
Connection, Internet.....	130	wire, XHHW.....	559	Craft hours defined.....	3	residential.....	127
Connections		wood preservative.....	237	Craft@Hrs column.....	10	stage.....	462
sewer.....	266	Corbels, cabinet.....	31	Cranes		Cut and fill excavation.....	603
water heater.....	527	Cord sets.....	563	concrete placing.....	351	Cutting	
Connectors		Core		hoists.....	490	asphalt.....	371
computer cable.....	594	brick testing.....	316	hydraulic, truck, rental.....	319	boards.....	454
construction.....	161	cutting, concrete.....	370	jib.....	491	brick.....	370
framing.....	159, 161	grouting.....	213, 378	pile driving, rental.....	322	concrete.....	370
Sealtite.....	553	sampling (soil testing).....	279	rental.....	322	masonry.....	370
straps.....	566	Cork		tower, rental.....	319	slabs.....	370
Conservatories.....	481	insulation.....	399	truck-mounted, rental.....	319	steel.....	388
Construction		running track.....	465	Crawl hole vents.....	291	walls.....	370
barricades.....	22	sheathing.....	435	Crawler dozers, rental.....	323	Cypress flooring.....	156
camps, manufactured.....	480	Corner		Crawler tractors.....	137, 596, 601		
economics.....	307	bead.....	188, 223, 426	Credits and acknowledgments.....	16		
elevators and hoists.....	319	cabinets.....	31	Creosote.....	206		
keying.....	170	guards, metal.....	387, 404	Crew codes.....	10		
loans.....	311	mold.....	223	Crew composition.....	10		
photographs.....	318	molding.....	222	Crew rates.....	7, 8, 9		
signs.....	318	record (surveying).....	313	Cribbing and shoring.....	605		
tools, rental.....	320	Cornice molding.....	54	Critical path scheduling.....	311		
Consultants' fees.....	134, 313	Cornices, painting.....	240	Croll-Reynolds.....	579, 581		
Contact cement.....	18	Corrugated		Cross arms pole.....	577		
Containers, storage, rental.....	331	fiberglass.....	150	Cross bridging.....	41, 159		
Containment, asbestos.....	338	glass.....	422	steel floor joists.....	61		
Contingency.....	208, 310	mats.....	220	Crossing signal.....	486		
Continuous spread footings.....	377	metal roofing.....	260, 401	Cross-linked poly pipe.....	509		
Contractor insurance.....	185	metal siding.....	276, 401	Crown molding			
Contractor's labor burden		polycarbonate.....	150	cabinets.....	31		
industrial & commercial.....	309	Cost adjusting, labor.....	4	hardwood.....	222		
residential.....	10	Cost adjustments, city.....	12-15	labor.....	54		
Control		Cost engineering.....	313	MDF.....	226		
fund fee.....	311	Costs listed in this book.....	4	pine.....	224		
joints.....	373	Cotton insulation.....	183	special cutting.....	224		
pests (soil treatment).....	280	Cotton mat reinforcing.....	257	vinyl.....	226		
valves.....	523	Counter-flashing.....	268, 403	Crushed rock.....	18, 126		
Control panels		Counters, bank.....	452	CSI			
alarm.....	591	Countertop		Division 01.....	310		
motor.....	566	crystalite.....	96	Division 02.....	332		
Control switch, fan.....	141	Countertop steamers.....	454	Division 03.....	338		
Controls		Countertops		Division 04.....	371		
hydronic.....	172	cleaning.....	83	Division 05.....	383		
motor.....	566	Corian.....	97	Division 06.....	389		
Convertible range hood.....	254	engineered stone.....	96	Division 07.....	397		
Conveying equipment.....	488	granite.....	96	Division 08.....	412		
Conveyors		labor costs.....	96	Division 09.....	423		
belt.....	491	laminated plastic.....	96	Division 10.....	449		
checkroom.....	453	plastic.....	473	Division 11.....	449		
concrete, rental.....	322	tile.....	290, 433	Division 12.....	470		
oven.....	456	Couplings		Division 13.....	475		
Cooking equipment.....	453	ABS.....	513	Division 14.....	488		
Cooktops		black steel.....	494	Division 21.....	491		
residential.....	255	copper.....	504	Division 22.....	494		
Cooktops, residential.....	255	CPVC.....	507	Division 23.....	535		
Coolers		drain pipe.....	126	Division 26.....	541		
drinking water.....	534	threaded.....	543	Division 27.....	589		
HVAC.....	180	Court, athletic, surface primer.....	466	Division 31.....	594		
walk-in.....	457	Cove base.....	154	Division 32.....	609		
Cooling		Cove molding.....	222, 224	Cubicles.....	442		
air conditioning.....	180	MDF.....	226	Cup holder.....	23		
heat pump.....	178, 179	Cover		Cupboards, painting.....	241		
		plywood.....	274	Cupolas			
				weather vanes.....	97		

D

Dampers, air regulating,		fireplace.....	151
Dampproofing.....	397	Danger signs.....	318
Danish oil stain.....	237	Deadbolt locks	
Debris removal.....	310, 331, 337	commercial.....	420, 421
Deck		residential.....	170
painting.....	438	Decking	
Decking		redwood.....	98
Decks		Decks	
cementitious.....	369	cementitious.....	369
composite lumber.....	98	composite lumber.....	98
concrete.....	369	concrete.....	369
covers.....	99	covers.....	99
diagonal pattern.....	98	diagonal pattern.....	98
fiber plank.....	369	fiber plank.....	369
finish room.....	99	finish room.....	99
flashing.....	268, 270	flashing.....	268, 270
flashing, Vycor.....	27	flashing, Vycor.....	27
footings.....	100	footings.....	100
handrail.....	99	handrail.....	99
metal.....	384	metal.....	384
metal, demolition.....	336	metal, demolition.....	336
nails.....	228	nails.....	228
painting.....	437	painting.....	437
pine.....	98	pine.....	98
posts.....	99	posts.....	99
pressure treated.....	98	pressure treated.....	98
railing.....	99	railing.....	99
redwood.....	98	redwood.....	98
roof.....	50, 99, 384, 385	roof.....	50, 99, 384, 385
stain.....	236	stain.....	236
stairs.....	99	stairs.....	99
waterproofing.....	294	waterproofing.....	294
yard and patio.....	100	yard and patio.....	100
Decontamination		lead-based paint.....	233, 435
lead-based paint.....	233, 435	PCBs.....	435
PCBs.....	435	radioactivity.....	435
radioactivity.....	435	toxic chemicals.....	435
toxic chemicals.....	435	Decora glass block.....	217
Decorative glass, ecclesiastical.....	470	Decorative glass, ecclesiastical.....	470

Dehumidifiers, rental	329	gasoline	449	openings, framing	43	lauan	118
Deli case, food service	454	paper towel	445	openings, steel framing	65	Lauan exterior	106
Delivery expense defined	3	ticket	450	paint removal	233	mirrored	125
Delivery, office trailers	330	toilet paper	445	painting, exterior	240	molded face	116, 117
Deluge valves	492	Dispenser, rain gutters	406	painting, interior	241	overhead	164, 415, 483
Demobilization	314	Display case, food	454	peep sights	171	overhead roll-up	416
Demolition	100, 334	Display panel for map, schedule	480	protectors	444	partition	443
asbestos	338	Disposal		pulls	170	patio, sliding	121
asphalt	102	asbestos	338	push plates	170	patio, swinging	120, 121, 122
building	104, 334	fields	265	rehang	52	pet	122
ceiling	100	waste	332	removal	101, 337	pocket, installation	52
concrete	100	Disposers, garbage		repair	52	prehung, exterior	110
concrete block	100	commercial	458	sealant	78	prehung, interior	119, 120
curb	101, 477	residential	128, 248	seals, loading dock	452	prehung, steel	414
doors	101	Dispute resolution	20	seals, weatherstrip	294	prehung, wood	415
fence	333	Distillation, water	250	security switch	589	radiation shielding	484
flooring	101	Distribution, electric	577	shim	52	refrigerator	416
guardrail	333	overhead	577	shoe	286	revolving	416
joists	103	panels	570, 572	sidelites	110	screen, patio	121
manholes	333	switchboards	570	sill, oak	286	screen, security	113
masonry	100	Ditch Witch	598	stop	171, 420	screen, vinyl	113
plumbing fixtures	478	Ditching	136, 597	stop molding	53	screen, wood	113
roof	336	Ditra membrane	94	thresholds	222, 285, 421	screen, metal	113
roofing	102	Divider strips, terrazzo	433	trim	222	security	115
sheathing and siding	102	Dividers		twin door portal	485	security grills	416
stairs	103	partition	443	weatherstripping	294, 421	service	416
subcontract	104	Docks, loading	354	Door stops molding	108	shower	271
toilet partitions	478	bumpers	365	Door trim	108	sliding glass	417
walls	103, 335	equipment	451	Doorbell, wiring	105	sliding, fire	415
windows	103	levelers	365, 451	Doors		sliding, metal	444
wood framing	103, 104	lifts	451	access	253, 266, 418, 525	solid core	106
Demountable partitions	443	seals	451	accordion	417, 443	steel	415
Dens Glass sheathing	182	shelters	452	air curtain	417	steel exterior	106
Deposit boxes	453	Documentation, photographs	318	aluminum, patio	120, 121	steel, building	483
Depository doors, after hours	453	Dolly, rental	329	automatic	479	steel, exterior	109-111
Desalinization, water	250	Domes		bar	118	steel, fire-rated	109
Desks		lighted ceilings	79	basement	23	steel, patio	121, 122
bank	452	playground	467	bi-fold	124, 125	steel, prehung	414
study	459	skylights	277	bypass	123, 124	stile & rail	116, 117
Detailed block	213	Door		café	118	stock room	418
Detection systems	591	accessories, bypass	124	camber top	112	storm	114, 115
Detectors		aluminum	419	carved	107	strip	418
audio	264	bank vault	452	cellar	23	telescoping	417
fire	264	bells, wiring	128	cleanout, fireplace	151	units, packaged	414
infrared	264	bottom	286	closet	119, 123, 124	vault	418
security	591	canopy	21	closet, installation	52	vinyl, patio	121
smoke	264	casing	53, 108	composite	119	with sidelites	111
vehicle	450	chimes	105	convenience store	485	wood	110, 415
Detour signs, barricade	22	cleaning	83	depository	453	X-ray protective	484
Dewatering	602	closers	105	Dutch	444	Dormer	267, 268
Diamond lath	188	closers, hinge pin	105	entry	107, 111, 112	flashing	268
Diffusers, light	583	coverings	273	entry, steel	112	louvers	291
Digging		demolition	101	exterior	106, 110	studs	48
concrete work	338	finish carpentry	52	exterior, steel	109, 110, 111	studs, steel	71, 72
excavation	136	frame protectors	444	fiberglass	112, 113, 415	Dosch clay	212
post holes	144	frames, metal	387, 414	fire	415	Double doors	107, 119
Digital		frames, painting	240	fire-rated	109	Double sanitary tee, ABS	514
networking systems	131	frames, pocket	171	flexible strip	418	Double TY/cross	514
photography	318	framing	43	flush closet	124	Double wye, ABS	514
Digital recorder	592	framing, steel	65	flush exterior	106	Double-cylinder door handle	170
Dimension lumber	194, 201	handle sets	170	flush interior	116	Double-hung window	303
Dimmer switches	129, 564	hangers	171	folding	122	screen	300
Dimmer switches, fluorescent	564	hangers, pocket	171	folding, installation	52	vinyl	297, 298
Direct overhead	310	hardware	53, 125, 421	foundation access	291	Double-track storm window	304
Directory boards	441	hardware kit	171	frames, wood	415	Dough roller	456
Dirt, recycling	332	hardware, exit	171	French, interior	117	Douglas fir	194
Disability Insurance	285	hardware, garage	165	garage	164	clear	194, 196
Disabled, access for	476	hardware, threshold	285, 286	handicapped	479	flooring	156, 194, 196
Disappearing stairs	284	hinges	420	handicapped, automatic	479	Dowel supports	340
Disconnect switches	577	jambes, exterior	108	hangar	416	Down light, LED	584
Dishwashers		jambes, interior	118	hanging	52	Downlights, LED	584
commercial	458	kick plates	170	hardboard	106, 118	Downspouts	
electrical	248	knockers	170	hollow metal	412	industrial & commercial	404
plumbing	248	lever latchset	170	interior, café	118	painting	240
residential	248	lever, privacy	170	interior, fire-rated	109	residential	167
return panels	31	locks	122	interior, French	117, 120	steel buildings	483
wiring	128	locksets	170	interior, hollow core	116	Dozer	
Dispensers		louvers	417	interior, louver	117, 120	clearing	594
beverage	458	mantels	295	interior, panel	116, 117, 119, 120	excavation	138, 601
capuccino	458	mirrors	221	interior, prehung	118, 119	rental	138, 323
cash	453	openers	164	interior, slab	115		
				interior, solid core	116		

EPS forms	87	Exhaust		Fans, ceiling	142	split-rail	148
Equipment	449	fume system	450	light kit	142	swimming pool	150
checkroom	453	hoods, food service	455	Fans, exhaust		temporary	22, 331
educational	458	range hoods	253	attic	141, 142	tennis court	466
food service	453	vents, dryer	291	bath	139, 140	vinyl	149
foundations	366	Exhaust fan		bath switch	141	wire mesh	143
loading docks	451	bath	139, 140	bath timer	141	wood	148
mobilization	314	bath, with heater	141	bath vent kit	141	wood gate	147
overhead	310	food service	455	bath with heat	140, 141	Fertilizer	187
pads	352	QuietTest	140	bath with light	140	Fiber	
paint sprayer	239	roof vent	407	commercial	455	cant strips	403
painting	436	switch	141	roof vents	407	forms	344
parking control	450	timer switch	141	utility	139, 140	roof coating	257
service station	449	utility	139	Fascia		Fiber cement	
Equipment rental	320	ValueTest	140	forms	353	lap siding	274
Erickson couplings	543	wiring	128	gutter	404, 406	roofing	261
Erosion control		with infrared heater	140	gutter adapter	406	Fiber floor, Tarkett	153
fabric	604	Exhaust stack	581	metal	403	Fiber mesh concrete	
fence	604	Existing conditions	332	OSB	275	reinforcing	85
silt fence	150	Exit door hardware	421	piecework rates	39, 76	Fiber optic cable	592
soil covers, stabilization	603	touch bar	171	soffit system	279	Fiberboard wallboard	293
Escalators	490	Exit signs	586	vinyl	401	Fiberglass	
Escape window	305	Expanded polystyrene board	399	wood	49	base sheet	257, 258
Estimating, accuracy	5	Expansion		Fasteners, painting	437	bathtubs	245, 533
Etch, acid	466	shields	373, 555	Faucets	247, 532	ceilings	82
Etching concrete	357	strips	217	Feather wedges	205	doors, entry	112, 113
Eternit	261	Expansion joints	426	Featherrock	604	duct	177
Ethylene Propylene Diene		composition	219	Feed water regulators	539	insulation	181, 398, 399
Monomer	402	concrete	85, 355	Fees		panels	150
Euro pavers	215	covers	412	acoustical design	134	pipe insulation	524
European ISO standards	579, 581	glass block	381	appraisal	18	septic tanks	265
Evaporative coolers	177	lath	188	arbitration	19	shower receptors	272
Evaporator coil	179	masonry	219	building permit	28	showers	246
Excavation		preformed	412	engineer	134, 313	tub and shower combination	533
air hammer	138	sealants	412	estimating	313	whirlpool bath	245
backfilling	136	Expansion tank	249	overhead	310	Fiberglass-reinforced plastic	
backhoes	138	boiler	173	recycling	332	adhesive	18
blasting	595	Explosives, loading	595	scheduling	134, 311	paneling	243
brushing	138, 594	Exposed aggregate finish	95, 356	sewer connection	311	Fibermesh screen	264
bulldozer	138	Extension cords, rental	327	specification	314	FICA	285
caissons	608	Exterior doors	106	testing	317	Field offices, temporary, rental	330
clearing	138	flush	106	valuation	18	Fields, playing	465
compaction	136, 597	hollow metal	412	water meter	312	Fill	
dozer	601	jams	108	Felt		caulking	79
dragline	599	prehung	110	asphalt	27, 401	excavation	135, 339, 597
drilling	595, 608, 609	steel	414	roofing	257, 258, 401	rock	339, 604
embankment	597	Exterior house paint	234, 235	Felton sand	357	sand	339
equipment rental	138, 322	Exterior Improvements	609	Female adapter		slab base	339
erosion control	603, 604	Exterior wall assemblies	35	ABS	515	Fill investigation	
fine grading	135	Exterior wall system (EIFS)	400	copper	512	compacted	317
footings	135	Extinguishers, fire	434, 493	Fence		soil testing	279
foundations	338	cabinets	493	aluminum	149	Filler	
grading	135, 339, 596	Extruded polymer molding	226	athletic fields	465	block	237
hand	602	Eye wash shower	531	barrier control	23	panels, cabinet	31
hand work	135, 339	F				basketweave	147
hauling	600	Fabric		board	147, 148	wood filler	238
loaders	136, 597	draperies	127	chain link	142	Filler strip	
loading trucks	138, 600	erosion control	604	demolition	333	cabinet	55
manual	602	lead mesh	471	electric	144	chain link fence	142
pneumatic	138	stage curtain	462	erosion control	604	Film, polyethylene	253
post holes	144	wallcover	435	face board	145	Filter sock	126
ripping	596	Fabricated metals	387	gate	149	Filter, air, central	176
riprap	604	Facade screen	406	hillside labor	146	Filters	
rock	135	Face board	145	ornamental	149	exhaust hood	455
scraper-hauler	601	Face brick	210, 374	painting	240	screen	295
shovels	135	Faceted glass	470	painting metal	437	water	529
slope protection	604	Facing tile	374	pet enclosures	143	Financing, project	311
spreading	597	Facing, marble fireplace	208	picket	148	Fine grading	
spreading material by hand	136	Factory rep, cost	314	picket, vinyl	149	embankment	597
sprinkling	138	Fan lite doors	113	plastic	22	hand	135
tamping	339, 597, 599	Fan units, heaters	535	plastic safety	23	pavement	243, 609
tamping, by hand	136	Fans		post & rail	149	slabs	339, 596
topsoil, by hand	136	garage	142	posts	144	Finish carpentry	51
tractors	138	rental	329	privacy	149	backing	51
tree removal	594	turbine	407	rail	145	blocking	51
trenching	136, 597	wiring	128	rental	331	cabinet installation	55
trucks	138			sediment	604	cased openings	52
wheel loaders	598			shadowbox	149	closet poles	55
				silt	150	closet shelves	55

countertops.....	96	mantels.....	208	Floor	vinyl sheet.....	431	
door accessories.....	105, 420	masonry.....	220, 374	adhesive.....	18, 154, 159	vinyl tile.....	153, 431
door casing.....	52	prefabricated.....	374	assemblies, wood framed.....	33	wood.....	156, 430
door trim.....	52	surrounds.....	55	cleaning.....	331	wood laminate.....	157
doors.....	52	wood-burning.....	152	decking, steel.....	384	wood strip.....	55, 155, 157
fireplace mantels.....	55	Fireproof caulking.....	78	decking, subflooring.....	42, 61, 392	FlowGuard Gold pipe.....	507
fireplace surrounds.....	55	Fireproofing		drains.....	516, 525	Flue	
flooring, wood.....	55	columns.....	409	drains, ABS.....	516	fireplace.....	152
folding stairs.....	284	concrete.....	407	drains, plumbing.....	525, 532, 535	lining.....	216, 374
furring.....	52	spray-on.....	409	enamel.....	235	Fluorescent (CFL).....	192
hardware.....	420	testing.....	316	equipment rental.....	326	Fluorescent dimmer switches.....	564
job-built stairways.....	283	wood.....	207	flange.....	515	Fluorescent lighting.....	190, 582
locksets.....	53	Fire-rated		framing.....	34	Flush bushing, ABS.....	516
lumber.....	226	doors.....	109	furring.....	50	Flush doors.....	124, 415
mantels.....	208	Fire-rated doors.....	415, 416	grating.....	387	bi-fold closet.....	124
medicine cabinets.....	220	First aid, overhead.....	310	joists.....	34, 40, 41, 390	birch interior.....	115, 116
molding.....	54, 226	Fishtape, rental.....	329	joists, piecework.....	38	fire-rated.....	109
paneling.....	54	Fittings		joists, steel.....	58, 73	hardboard.....	106
railings, stair.....	56	ABS bungalow.....	514	joists, steel blocking.....	61	hardboard interior.....	115, 116, 118
running molding.....	55	black steel.....	494	leveling compound.....	154	hardwood exterior.....	110
sauna rooms.....	263	copper.....	503	mats.....	220, 473	luan exterior.....	106
shutters.....	272	CPVC.....	507	painting.....	238, 437, 438	luan interior.....	116, 118
siding.....	276	CPVC and brass.....	508	piecwork rates.....	38	oak interior.....	116
skylights.....	277	drain pipe.....	126	plank, precast.....	358	steel exterior.....	110
soffits.....	279	electrical.....	563	plate, steel.....	385	steel utility.....	110
stair balusters.....	56	PEX.....	509	polishing.....	238	Flush interior doors	
stairs.....	56, 281	PEX-AL.....	511	radiant heat.....	174	luan.....	116
thresholds.....	285	PVC.....	506	safes.....	262, 452	Foam insulation.....	182
wall paneling.....	54	Fixtures		sheathing.....	34, 392	Foam panel adhesive.....	18
wallboard.....	293	electrical.....	129, 190	shellacking.....	238	Foamglass insulation.....	400
weatherstripping.....	294	lamps.....	588	sinks, plumbing.....	535	Foil-backed gypsum.....	424
window sills.....	296	lighting.....	190, 588	slab.....	352	Foil-faced insulation.....	398
window trim.....	53	plumbing.....	535	slab, concrete.....	94	Folding	
Finish grading.....	135, 187, 243	rough-in.....	251, 252	slab, precast.....	358	doors.....	417
Finish hardware.....	421	Flagpoles		staining.....	238	Folding beds.....	25
Finish, drywall.....	168	aluminum.....	448	steel, piecework.....	73	Folding doors.....	122, 443
Finishes.....	423	aluminum.....	448	varnishing.....	238	locks.....	122
decks.....	98	foundations.....	449	waxing.....	238	Folding fire partitions.....	444
flooring.....	431	Flagstone		Floor layer, wage		Folding stairs.....	284
gypsum wallboard.....	423	floors.....	216, 220	industrial & commercial.....	309	Food	
plaster.....	244	Flameproofed draperies.....	471	residential.....	10	beverage dispenser.....	458
wallpaper.....	293, 435	Flanges		Flooring		deep fat fryers.....	455
Finishing		ABS closet.....	515	access.....	434	freezers.....	457
concrete.....	94, 95, 356	black steel.....	494	anti-fatigue.....	432	meat and deli cases.....	454
flooring.....	156	Flash cone.....	268, 269	artificial turf.....	465	mixers.....	457
nails.....	230	Flashing		bamboo.....	157	pizza preparation units.....	454
Fink truss.....	49, 72, 395	aluminum.....	267	brick.....	220	pot and pan racks.....	456
Finned tube radiation.....	537	aluminum siding.....	276	carpet.....	76, 433	sandwich preparation units.....	454
Fir		building paper.....	27	carpet tile.....	434	service equipment.....	453
flooring.....	156, 194, 196, 197	compound.....	257	ceramic tile.....	289	stations.....	453
Fire		copper.....	267	crossband parquet.....	158	toasters.....	456
alarm breaker.....	570	demolition.....	336	Douglas fir.....	156, 194, 196	warmers.....	454
alarm systems.....	434, 591	galvanized.....	268	finishing.....	56	work tables.....	454
alarms.....	128	lead.....	269, 404	fir.....	156, 194, 196, 197	Foot grille.....	474
boxes.....	151	masonry.....	373	flagstone.....	216, 220	Football goal posts.....	465
brick.....	212	paper.....	27	floating hardwood.....	157	Footings	
dampers.....	151	ridge.....	260	gymnasium.....	430, 464	bell.....	609
detectors.....	591	roof jack.....	526	installation.....	431	caissons.....	608
doors.....	109, 415	roofing.....	260, 403	marble.....	208, 381	column.....	94
escapes.....	387	sealant.....	78	masonry.....	220, 382	concrete.....	84, 86, 93, 94, 351
extinguishers.....	434, 493	sheet metal.....	267	non-slip tile.....	432	continuous.....	93
hose cabinets.....	493	skylight.....	279	parquet.....	430	demolition.....	100, 335
hydrants, demolition.....	334	vinyl.....	270	pedestal.....	434	drains.....	126
pole tower, playground.....	469	Flexible conduit.....	553	Pergo.....	157	estimating.....	93
protection.....	455	Flexible strip doors.....	418	pine.....	155, 156	excavation.....	135
protection equipment.....	491, 492	Flexure test.....	315	plank.....	155	forms.....	339
pumper connection.....	493	Flexwood.....	434	quarry tile.....	381, 429	keyway.....	93
sprinkler systems.....	150, 491	Flight, photography.....	313	raised, installation.....	434	spread.....	377
suppression.....	491	Float finish		resilient.....	431	ties.....	86
wall hydrants.....	493	concrete.....	95, 356	rubber.....	432	tilt-up.....	361
Fire retardant treatment.....	207	Float finished		safety tiles.....	432	Forced air furnaces.....	177
Fireblocks.....	45	glass.....	422	sheet vinyl.....	153, 431	Forged steel valves.....	519
Firebrick.....	212	Float glass.....	166, 422	softwood.....	156, 430	Forklift, rental.....	324
Fireclay.....	212	Float traps.....	540	Tarkett.....	153	Form stakes.....	205
Fireplaces.....	151	Floating backing, steel.....	69	terrazzo.....	382, 433	Formboard, fiber deck.....	369
brick.....	212	Floating hardwood flooring.....	157	tile.....	431, 434	Formica countertops.....	96
electric.....	152	Flood lights, LED.....	585	tile, vinyl.....	154	Forming	
finish carpentry.....	55	Floodlights.....	587	tongue and groove.....	157	architectural.....	341
gas-burning.....	152	rental.....	327	vinyl plank.....	432	landing.....	346
						soffits.....	346

Hooks					
coat and hat.....	453				
robe.....	24				
Hopper windows.....	300				
Hopper, rental.....	325				
Horizontal ladder, playground.....	467				
Horns, paging.....	592				
Hose					
air, rental.....	320				
bibbs.....	522				
clamps.....	291				
fire, cabinet.....	493				
gate valves.....	523				
reel.....	449				
rental.....	325				
Hospital					
cubicles.....	442				
freezers, refrigerators.....	469				
Hot tub.....	245				
Hot water generators,					
hydronic.....	536				
Hot water heaters					
commercial.....	526				
connections.....	252, 527				
gas, rough-in.....	252				
residential.....	248				
Hot water heating.....	253, 537				
pipe.....	494				
Hot water storage tanks.....	529				
Hot water supply.....	252				
Hotmopping					
roofing.....	256				
waterproofing.....	397				
Hourly wages					
industrial & commercial.....	309				
hourly wages, residential.....	10				
House paint.....	235				
House street numbers.....	172				
Housewrap.....	183				
Tyvek.....	28				
Housing, manufactured.....	480				
How to use this book.....	3				
Hubs, lumber.....	205				
Humidifiers, wiring.....	128				
Hurricane					
protection.....	273				
shutters.....	273				
ties.....	161				
HVAC.....	535				
ducting.....	482				
electric heaters.....	175				
furnaces.....	476				
heat pump.....	178				
hybrid central heating.....	174				
hydronic heating.....	172				
mobile.....	464				
radiant floor heating.....	174				
residential.....	180				
stage.....	464				
Hydrants.....	493				
demolition.....	334				
meter.....	312				
Hydrated lime					
builders'.....	218				
Hydraulic					
door closers.....	105				
elevators.....	133				
excavators, rental.....	323				
jacks, rental.....	329				
truck cranes, rental.....	319				
Hydroblasting.....	239, 263				
Hydronic					
controls.....	172				
heating.....	172, 537				
heating, floor.....	174				
hot water generators.....	536				
radiators.....	537				
Hydroseeding, subcontract.....	187				
		I			
		Ice and water shield.....	27		
		Ice cream dispenser.....	454		
		Ice maker.....	457		
		Ice melting cable.....	561		
		Ice storage unit.....	457		
		ICF.....	86		
		Identifying devices			
		for handicapped.....	478		
		signs.....	441		
		I-Joist.....	41		
		Illumination, street.....	486		
		Illustrations, architectural.....	20		
		Impact windows.....	301		
		Incandescent lighting.....	191		
		Incline lifts.....	133		
		Indicator			
		gauges.....	524		
		valves.....	523		
		Indirect overhead.....	310		
		Induction cooktops.....	255		
		Industrial wage rates.....	309		
		Inertia sensors.....	589		
		Infiltration barrier			
		house wrap.....	28		
		Infrared			
		elevator door.....	133		
		heater and fan.....	140		
		heaters.....	175		
		thermography.....	184		
		Inlet protection.....	604		
		Insect screens.....	264		
		Inserts, concrete.....	355		
		Inspection			
		building.....	26		
		Instructions for this book.....	3		
		Instrumentation, switchboard.....	570		
		Insulated service doors.....	416		
		Insulated siding.....	401		
		Insulating			
		board.....	181		
		glass.....	166, 422		
		roof deck.....	369		
		skylights.....	277		
		Insulation.....	181, 398		
		analysis.....	184		
		asbestos, removal.....	338		
		board.....	398, 399, 400		
		board, demolition.....	102		
		cellular Foamglass.....	400		
		cellulose.....	183		
		cold box.....	399		
		Corbond.....	184		
		deck.....	369		
		demolition.....	338		
		encapsulated.....	181		
		expanded polystyrene.....	398, 399		
		FBX.....	183		
		fiberglass.....	181, 398		
		foil.....	183		
		housewrap.....	183		
		masonry.....	183		
		painting.....	437		
		panel adhesive.....	18		
		perlite.....	399		
		perlite board.....	400		
		pipe.....	523		
		polyisocyanurate.....	399		
		polystyrene.....	181, 398, 399, 400		
		pouring.....	183		
		R-Gard.....	182		
		rockwool.....	183		
		roof.....	399		
		SAFB.....	183		
		sill gasket.....	182		
		sound control.....	183		
		sound control board.....	398, 423		
		subcontract.....	183		
		Super Tuff-R.....	399		
		testing.....	26		
		thermal.....	398		
		urethane sheathing.....	182		
		vermiculite.....	399		
		weatherstrip.....	421		
		Insurance			
		bonding.....	185		
		contractor's.....	185		
		included in costs.....	3		
		liability.....	185		
		overhead.....	310		
		Insurance, labor cost			
		industrial & commercial.....	309		
		residential.....	10		
		Interceptors, plumbing.....	528		
		Interest rate.....	311		
		Interior doors.....	120		
		birch, flush.....	115, 116		
		café.....	118		
		fir.....	117		
		flush.....	116, 118, 119		
		full louver.....	117		
		half louver.....	117		
		hardboard.....	115, 116		
		heater closet.....	119		
		hemlock, prehung.....	120		
		knotty alder.....	120		
		lauan.....	117		
		lauan, flush.....	116		
		oak.....	117, 119		
		oak, flush.....	116		
		pine.....	117, 120		
		prehung.....	109, 119		
		Interior paint.....	235		
		Interior wall			
		assemblies.....	34		
		framing.....	62		
		Interlocking paving stones.....	382		
		Intermediate bracing,			
		steel framing.....	67		
		Intermediate metal conduit.....	548		
		Internet connection.....	130		
		Inverter system, solar.....	280		
		Investigation, soil.....	279		
		Iron			
		cast.....	387		
		embedded.....	355		
		wrought.....	388		
		Iron worker, wage.....	309		
		Ironing boards.....	186		
		Ironwork			
		ornamental.....	150, 388		
		railings.....	253, 386		
		stairs, steel.....	387		
		wrought iron.....	388		
		Irrigation systems			
		residential.....	188, 189		
		Island cabinets.....	31		
				J	
		Jackhammer.....	596		
		rental.....	139, 320		
		Jackposts.....	186		
		Jalousie window.....	299		
		Jamb			
		exterior door.....	108		
		side stripping.....	294		
		window.....	53		
		Jamb saws, rental.....	328		
		Jamb sets			
		finger joint.....	118		
		interior.....	118		
		solid clear pine.....	118		
		with hinges.....	118		
		James Hardie.....	274		
		Jelly jar light.....	585		
		Jetting wellpoints.....	602		
		Jib cranes.....	491		
		Jig saws, rental.....	328		
		Job site			
		costs.....	314, 318		
		engineer.....	313		
		office.....	310		
		office, temporary, rental.....	330		
		overhead.....	310		
		phone.....	319		
		security service.....	265		
		Job superintendent.....	314		
		Joint compound.....	168		
		Joints			
		brick.....	209		
		expansion.....	85, 355		
		form.....	345		
		masonry.....	373		
		mortar.....	209		
		Joists			
		bridges.....	159		
		bridging.....	41		
		carpentry.....	38, 390		
		ceiling.....	46, 67		
		ceiling, steel.....	67		
		concrete.....	353		
		demolition.....	103		
		floor.....	34, 41		
		floor or ceiling.....	38, 73		
		forms.....	353		
		hanger nails.....	230		</

Labor costs defined.....	3	Lathing.....	425	Lever locksets.....	170	Liquid level gauge.....	173, 540
Labor productivity.....	4	Lattice.....		Lexan.....	482	Liquid-tight conduit.....	553
Labor rates.....	10	molding.....	224	L-flashing.....	268	Listello.....	288
adjusting.....	11	painting.....	240	Liability insurance.....	185	Loadcenters.....	573
industrial & commercial.....	309	Lauan.....		Library.....		Loader.....	
Labor rates, residential.....	10	doors.....	106	ladders.....	459	rental.....	138
Labor, painting.....	238	Lauan doors.....		shelving.....	459, 472	Loaders.....	
Lacquer thinner.....	238	bi-fold closet.....	124	Lift slabs.....	353	crawler rental.....	323
Ladders.....		flush interior.....	116	Lifting.....		excavation.....	597
attic.....	284	flush prehung interior.....	118	cranes, rental.....	322	grading.....	138, 139
horizontal.....	467	molded face interior.....	117	panels.....	364	rental.....	324
reinforcing.....	372	prehung heater closet.....	119	Lifts.....		wheel, rental.....	323
rental.....	326	solid core flush interior.....	116	dock.....	451	Loading docks.....	
rolling.....	459	Laundry.....		elevators.....	133	concrete.....	354
sliding.....	284	clothes chutes.....	491	incline.....	133	equipment.....	451
steel.....	385	clothesline units.....	84	rental.....	324	Loading trucks.....	600
Ladder-type wall reinforcement.....	372	sinks.....	248	rolling platform, rental.....	324	Loading trucks by hand.....	135
Ladle rack.....	454	tub rough-in.....	252	wheelchair.....	133	Loan fees.....	311
Lag bolts.....	232	Lava rock.....	381	Light bulb.....		Local area network (LAN).....	131
Lag shields.....	555	Lavatories.....	533	CFL.....	192	Lockers.....	447
Lally columns.....	39, 57	bases.....	290	LED.....	192	demolition.....	337
Lamb's tongue.....	253	cabinets.....	290	Light emitting diode.....	192	Locknuts, grounding.....	566
Laminate shingles, architectural.....		china.....	247	Light fixture.....		Locks.....	
grade.....	258	marble.....	208	LED.....	585	deadbolt.....	170
Laminate wood flooring.....	157	rough-in.....	531	Light standards, demolition.....	334	door, folding.....	122
Laminated plastic.....		vanities.....	290	Light towers, rental.....	327	garage door.....	165
cabinets.....	473	Lawn.....		Light, traffic.....	486	Locksets.....	421
countertops.....	96, 473	lighting.....	191	Light-gauge steel framing.....	56	colonial knob.....	170
wallcoverings.....	435	rollers, rental.....	327	Lighting.....	190, 588	commercial.....	421
Laminated sandwich panels.....	401	seeding.....	187	area.....	588	deadbolt.....	170
Laminated wood, glued beams.....		sprinkler system.....	188, 189	bus stop shelters.....	479	door.....	53
and timbers.....	396	Lay-in ceiling.....	81	can.....	191	egg knob.....	170
Lamp post wiring.....	129	Layout.....	37	court.....	466	keyed entry.....	170
Lamps.....		engineer.....	310, 313	decorative.....	487	lever.....	170
CFL.....	192	foundation.....	189	demolition.....	334	mortise.....	170
fixture.....	588	stakes.....	205	emergency.....	587	partition.....	443
fluorescent.....	190, 582	survey.....	313, 595	landscape.....	191	Lockwashers.....	232
LED.....	192	typical costs.....	314	LED wall pack.....	585	Log homes.....	
Landings.....		Leach fields.....	265	ornamental.....	487	finish.....	236
concrete.....	476	Lead.....		panelboards.....	572	labor system.....	193
forming.....	346	flashing.....	269, 404	poles.....	587	labor.....	192
stair.....	283, 397	X-ray barriers.....	484	recessed.....	191	rafter systems.....	193
steel.....	385	Lead mesh fabrics.....	471	stage.....	463	siding.....	200
Landscape.....		Lead-based paint.....		street.....	587	Log lap siding.....	201
irrigation wiring.....	189	removal.....	233, 435	temporary.....	310	Loudspeaker systems.....	592
lighting.....	191	testing.....	26	tennis court.....	466	Louvered doors.....	120
site curbs.....	95	Leaf blower, rental.....	327	vandal-resistant.....	586	Louvers.....	
Lane delineator.....	22	Lease rate.....	581	yard.....	587	access doors.....	253, 525
Lane spikes.....	450	Lecterns.....	460	Lighting fixtures.....	190, 588	door.....	417
Lap cement.....	257, 258	LED accent lights.....	584	exterior.....	588	egg crate.....	80
Lap siding.....	275	LED down light.....	584	fluorescent.....	190, 582	parabolic.....	81
fiber cement.....	274	LED downlights.....	584	indoor.....	588	shutters.....	272
spruce.....	201	LED light bulb.....	192	obstruction.....	586	vents.....	291-293, 406
Laser level, rental.....	328	LED lighting.....		outdoor.....	190, 588	windows.....	299
Latchsets.....		flood.....	585	outlets.....	129	Low-boy, trash disposal.....	332
commercial.....	421	LED linear light fixture.....	585	Lightning.....		Low-Sound bath fan.....	140
passage.....	170	LED panel lights.....	584	arrestor.....	144	L-straps.....	163
privacy.....	170	LED vapor tight lights.....	585	protection.....	129	Lube rack.....	449
Latex.....		LED wall pack light.....	585	rods.....	129	Lumber.....	
block filler.....	237	Ledger flashing.....	268	Lights.....		alternative building.....	
deck, waterproofing.....	294	Ledgers.....	47, 391	barricade.....	22	materials.....	98, 99, 204
house paint.....	235	LEED.....		canopy.....	587	boards.....	194, 196, 197, 198
masonry paint.....	235	air conditioning.....	180	solar powered, barricade.....	22	building poles.....	204
painting, labor.....	238	certification.....	536	Lightweight concrete.....	85, 350, 369	cedar.....	198
primer.....	234, 294	hydronic boilers.....	172	Lime.....		common.....	201
stain.....	236	Legal assistance, mobile.....	20	builders.....	218	eastern pine.....	197
stucco paint.....	235	Let-in bracing.....	44	field marker.....	218	finish.....	194, 196
Lath.....	425	Let-in ribbons.....	47	landscaping.....	187	finish trim.....	226
demolition.....	335	Letter boxes.....	447, 448	mason's.....	218	framing.....	201
gypsum.....	187	Letter drop plate.....	420	soil conditioner.....	187	grading.....	205
redwood.....	198	Lettering, hand-painted.....	441	Limestone.....		hemlock.....	195
stakes.....	205	Letters, illuminated.....	441	masonry.....	381	inspection.....	205
steel.....	188	Letters, signs.....	441	linen chutes.....	491	molding.....	226
wood.....	205	Levee excavation.....	603	Liner, form.....	341, 344	oak.....	198, 222
Lather, wage.....		Levelers, dock.....	451	Link mats.....	220, 473	plywood.....	202
industrial & commercial.....	309	Leveling flooring.....	154	Lintels.....		Ponderosa pine.....	197
residential.....	10	Levels, rental.....	327	masonry.....	382	posts.....	204
				steel.....	387	recycled composite.....	98, 99

recycled plastic.....	98, 204	Markup.....	310	Mesh, steel.....	346	Mixers, cement, rental.....	321
red cedar.....	198	contingency.....	208	Message board, traffic control.....	326	Mixers, food.....	457
southern pine.....	195, 196	general contractor.....	5	Metal.....		Mixing valves, thermostatic.....	540
specialty.....	205	project.....	310	aluminum screens.....	388	Mobile home port.....	77
stakes.....	205	subcontractor.....	5	buildings.....	483	Mobile mediation.....	20
timbers.....	201	Masking, surface prep.....	439	door frames.....	414	Mobilization.....	314
treated.....	201	Masonry.....	220, 371	fabricated.....	387	piles, earthwork.....	606
treatment.....	207	acid-proof.....	375	facing panels.....	401	Mobilization cost defined.....	3
trim.....	226	anchors.....	556	lath.....	425	Modification factors,	
wall sheathing.....	392	block.....	213, 378	ornamental.....	388	cost, by area.....	12-15
West coast.....	195, 198, 201	brick.....	373	painting.....	436, 437	Modified bitumen	
white pine.....	196	cleaning.....	372	painting, preparation.....	239	adhesive.....	258
Luminaire.....	582	demolition.....	100	pans, ceiling.....	82	SBS roll roofing.....	257
Luxury vinyl plank.....	154, 432	fireplace.....	151	primer.....	234, 236	Modular	
LVL Beams.....	396	furring.....	50	roofing.....	260	brick.....	209, 210
LVP flooring.....	432	glass block.....	217	screen doors.....	113	cabinets.....	29
		insulation.....	183	siding, painting.....	437	carpet tile.....	434
		joints.....	371	studs, demolition.....	335	Modulating valves.....	523
		materials.....	220, 373	trim, painting.....	436, 437	Moisture protection.....	253, 397
		mortar.....	219	Metal detector.....	487	Moisture test, soil.....	279
		nails.....	230	rental.....	329	Moisture-resistant drywall.....	168
		paint.....	235	Metal roofing.....	260	Molding	
		painting.....	239, 438	Metal-clad cable.....	560	door.....	108
		parging.....	382	Metal-framed shaft walls.....	427	MDF.....	226
		pointing.....	371	Meter boxes.....	221, 573	redwood.....	222
		preparation.....	239	Meters		softwood.....	223
		recycling.....	332	electric.....	571	window apron.....	53
		reinforcing.....	372	fees.....	312	Molding	
		sandblasting.....	263	steam.....	524	brick.....	108
		sawing.....	370	water.....	312, 524	cabinet.....	31
		steam cleaning.....	371	Met-tile.....	260	carpentry.....	55
		surface prep.....	437	Microphone		cornice or crown.....	54
		testing.....	316	public address.....	592	door.....	53
		waterproof.....	235	stage.....	463	fireplace.....	55
		waterproofing.....	294	Microwave.....	456	hardwood.....	222
		Mass excavation.....	601	cabinets.....	31	stop.....	108
		Mastercure.....	95	Midget louvers.....	292	stucco.....	108
		Mastic		Milano awnings.....	471	T-astragal.....	108
		adhesives.....	18	Milgard.....	299	vinyl.....	226
		painting.....	437	Milling, cold, asphalt.....	611	Monitor panels.....	591
		roofing.....	257	Millwork, treatment.....	207	Monitors, alarms.....	264
		tile.....	288, 289	Millwright, wage		Mono rock, concrete.....	357
		Mat reinforcing steel.....	349	industrial & commercial.....	309	Monolithic topping, concrete.....	357
		Material costs defined.....	3	residential.....	10	Monorail for electric hoists.....	490
		Material demolition.....	337	Mineral insulation.....	399	Monuments, survey.....	313
		Material handling systems.....	491	Mineral spirits.....	238	Mop resilient floor.....	331
		Material hoist.....	319	Mineral surface roll roofing.....	257	Mop sink.....	457, 534
		Material lifts, rental.....	324	Mini split.....	178	rough-in.....	531
		Mats		Mini-blind door.....	112	Moped racks.....	475
		entry.....	220, 473, 474	Mini-blinds.....	296	Morgue equipment.....	470
		erosion control.....	603	Mini-brick.....	211	Mortar.....	209
		MC cable.....	560	pavers.....	212	block.....	213
		MDF molding.....	226	Mini-mat reinforcing.....	349	cement.....	82
		MDO plywood.....	203	Mining camp barracks.....	480	color.....	218
		Meat and deli case.....	454	Miradrain.....	603	glass block.....	217
		Meat saw.....	454	Mirafi fabrics.....	604	masonry.....	209, 218, 219
		Mechanical drawing,		Miraflex.....	181	mix.....	82
		architectural.....	126	Mirrored doors		shower bed.....	272
		Mediation		bi-fold.....	125	testing.....	316
		fees.....	19	bypass.....	123	tile.....	289
		mobile.....	20	Mirrors		trowel-ready.....	219
		Medical refrigerators.....	469	arches.....	221	Mortise	
		Medicare payroll taxes.....	285	bath accessories.....	24	hinges.....	172
		Medicine cabinets.....	220, 446	beveled edge.....	167	lockset.....	170
		Medium-density plywood.....	203	door.....	221	Mosaic and terrazzo worker, wage	
		Medley sheet vinyl flooring.....	431	framed.....	221	industrial & commercial.....	309
		Membrane		frosted.....	221	residential.....	10
		detaching.....	94	medicine cabinet.....	220	Mosaic tile.....	288, 428
		Ditra.....	94	unframed.....	423	Moss preventer.....	268
		poly film.....	253	vanity.....	221	Motor	
		roofing.....	401	Mission		connection.....	567
		slab.....	94, 339	brick.....	212	generator sets.....	578
		underlayment.....	94	paver.....	212	starters.....	567
		waterproofing.....	294	tile roofing.....	261	Motor graders, rental.....	323
		Mesh		Miter saws, rental.....	328	Motorcycle racks.....	475
		reinforcing.....	91, 349	Mitt, painting.....	436	Motors, electric.....	566
		steel.....	91	Mix design, concrete.....	315	Movable partitions.....	443

M

Machine bolts.....	232
Machinery	
appraisal.....	19
painting.....	436
Mahogany doors.....	107
Mail	
chutes.....	447
conveyors.....	491
drop plate.....	420
Mailboxes	
brass.....	447
commercial.....	447, 448
residential.....	207
Male adapter	
ABS.....	515
copper.....	512
Man safes.....	263
Manager, office.....	310
Manholes	
cut-in.....	312
demolition.....	333
electric pull boxes.....	542
rings.....	387
Manhours defined.....	4
Mannington flooring.....	153
Mansards, sheet metal.....	403
Mantels	
door and window.....	295
fireplace.....	207, 208
labor.....	55
marble.....	208
Manual excavation.....	602
Manufactured housing.....	480
Map display panel.....	480
Maple paneling.....	242
Mapping, aerial.....	313
Marble	
bases.....	381
columns.....	381
flooring.....	208, 381
masonry.....	381
setting.....	208
sills.....	296
specialties.....	381
thresholds.....	381
tile.....	287
vanity tops.....	97
Marble setter, wage	
industrial & commercial.....	309
residential.....	10
Margin, profit.....	208
Marine	
adhesive.....	78
plywood.....	203
varnish.....	236
Markerboard, chalkboard.....	440

Moving	Nozzle, sandblast, rental	325	Overhead	310	wood deck	438
excavated material	Numbers, house	172	costs	310	wood finish	236
stairs	NuTone	140, 141, 254	markup	208	wood preservative	237
structures	Nuts, hex head	232	Overhead doors	415	Paling, rail	99
Mud sills	Nylon carpet	76, 433	Overhead electrical distribution	577	Pan forms	345
anchors					Pan racks	456
Mulch					Panel	
Mullion casing					adhesive	18
Murphy wall beds					box, wiring	129
					circuit breaker	575
					enclosures	563
					molding	224
					Panel ights, LED	584
					Panel roofing	
					steel	260
					Panelboards, electrical	572
					Paneling	
					beaded	242
					birch	242
					cedar	79, 242
					FRP	243
					Golden Virola	242
					hardboard	242, 435
					hickory	242
					maple	242
					oak	242
					pine	242
					red oak	242
					sound reduction	464
					vinyl-clad	243
					wainscot	242
					wall	54
					Z-brick	243
					Panelized	
					roof system	392
					shingle siding	276
					Panels	
					breaker	572
					fiberglass	150
					greenhouse	150
					polycarbonate	150
					radiant heating, ceiling	175
					roofing, solar	280
					sun	150
					wood walls	394
					Panic button	264
					Panic door hardware	171, 421
					Pans, water heater safety	526
					Pantry cabinets	30
					Paper	
					building	27, 28
					dispensers	445
					roofing	258
					wallcover	434
					Paperhanging	293, 434
					Parabolic louvers	81
					Parapet	
					coping	268
					forms	353
					reglet	365
					Pargeting, masonry	382
					Parging	
					masonry	382
					Park	
					benches	474
					grills	469
					surveillance	486
					Parking	
					access control	450
					control equipment	450
					lot, paving	610
					stalls, for handicapped	477
					Parquet flooring	158, 430
					Particle emissions reduction,	
					pollution control	581
					Particleboard	204
					carpentry	395
					underlayment	395

Parting bead.....	224	Pedestal flooring.....	434	Piles	mixer, rental.....	321
Partitions		Pedestrian bridge.....	487	treatment.....	painting.....	241
cubicles.....	442, 443	Peep sights.....	171	Piling, sheet steel.....	ring.....	561
demolition.....	335	Pegboard, hardboard.....	435	Pine	soffits.....	244
dust control.....	337	Penetrating stain.....	236	building poles.....	stucco.....	427
fire rated.....	444	Penny nail sizes, defined.....	227	decks.....	Plasterboard	
folding doors.....	443	Pension costs defined.....	3	eastern.....	drywall.....	423
framing, piecework.....	37, 73	Penta treated post.....	204	flooring.....	nails.....	230
framing, steel.....	73	Percolation testing.....	265	jamb sets.....	Plasterer, wage	
marble, toilet.....	381	Percolator, coffee.....	458	lumber.....	industrial & commercial.....	309
metal.....	442, 443	Performance bonds.....	186	paneling.....	residential.....	10
non-bearing.....	443	Pergo wood flooring.....	157	Ponderosa.....	Plasterer's helper, wage	
office.....	443	installation kit, rental.....	326	siding.....	residential.....	10
toilet.....	442	Pergola.....	99	southern.....	industrial & commercial.....	309
wire.....	444	Perimeter door seal.....	452	stakes.....	Plastering.....	244, 426
Passage latch.....	170, 421	Perimeter wall insulation.....	182	timber.....	fireproofing.....	409
Passenger elevators.....	489	Perling, steel.....	72	white.....	stucco.....	427
Passive solar heat.....	249	Permanent bond adhesive.....	258	Pipe	Plasterkraft.....	27
Paste wood filler.....	238	Permits		ABS.....	Plastic	
Pastry oven.....	456	building.....	28	asbestos removal.....	countertops, laminated.....	473
Patch panel.....	460	well drilling.....	295	black steel.....	drain pipe.....	126
Patching		Pest control		clamps.....	forms.....	86, 87
concrete.....	95, 365	soil treatment.....	280	columns.....	laminates.....	435
Path lighting.....	191	wood treatment.....	207	conveyors.....	lumber.....	99, 204
Patio		Pet		copper.....	resin glue.....	18
carports.....	77	doors.....	122	CPVC.....	sewer pipe.....	266
cover.....	21	enclosures.....	143	cutters, rental.....	shutters.....	272
roof.....	99	screen.....	123	demolition.....	siding.....	276
tile.....	220	Pet door.....	111	drainage.....	skylights.....	277
Patio doors.....	121, 122	Petroleum storage tanks.....	540	DWV.....	tarps.....	285
aluminum.....	120	Pews.....	460	equipment rental.....	tile.....	429
fiberglass, swinging.....	122	PEX pipe.....	509	fire protection.....	vapor barrier.....	253, 352, 353
gliding, vinyl.....	121	PEX-AL pipe.....	511	foundation drains.....	Plasticized concrete.....	85
hinged, vinyl-clad.....	120	Pharmacy refrigerators.....	469	gas.....	Plate straps.....	163
pet.....	122	Phone support.....	5	guard.....	Plates	
sliding wood.....	121	Phones		guides.....	carpantry.....	40, 57, 390
steel, double.....	122	temporary.....	310	insulation.....	carpantry piecework.....	42, 67
swinging, double.....	120	wiring.....	591	insulation, asbestos removal.....	door hardware.....	170, 421
vinyl.....	121	Photo mapping, aerial.....	313	insulation, painting.....	electrical.....	565
Pavement		Photo micrographs.....	317	levels, rental.....	splash.....	255
asphaltic.....	243	Photoelectric		locating.....	switch.....	23
breakers, rental.....	320, 325	sensors.....	589	markers.....	Platform lifts	
concrete.....	84, 94, 244, 611	switches.....	565	painting.....	dock.....	451
demolition.....	102, 332	Photographs		PEX.....	rental.....	324
line marker, rental.....	325	aerial.....	313	PEX-AL.....	Platform, scaffold, purchase.....	330
marking, removal.....	333	construction.....	318	piles.....	Playground equipment.....	467
sawing.....	371	retouching.....	318	plastic.....	Playing fields, synthetic.....	465
stripers, rental.....	325	Photovoltaic systems.....	582	polyethylene.....	Plenum cable.....	593
Pavers		Picket fence.....	148, 149	PVC.....	Plexiglas.....	167, 422, 480
brick.....	212, 382	painting.....	240	PVC Schedule 80.....	Plinth block, MDF.....	226
bullnose.....	212	pickling stain.....	237	PVC sewer pipe.....	Plugmould.....	557
concrete.....	215, 382	Picture frame molding.....	224	railing.....	Plugs	
interlocking.....	382	Picture rail.....	55	rolls.....	cleanout.....	516
masonry grid.....	382	Picture window.....	299	sewer.....	electrical.....	564
mexican.....	288	Pictures, job site.....	318	straps.....	test.....	515
rubber.....	467	Piecework		troubleshooting service.....	Plumber, wage	
slate.....	382	metal carpentry, floor sheathing.....	74	valves.....	industrial & commercial.....	309
split.....	212	metal carpentry, rafters.....	75	vitrified clay.....	residential.....	10
terrazzo.....	382	metal carpentry, roof framing.....	74	Pipefitter, wage.....	Plumber's flash cone.....	404
Paving		metal carpentry, roof sheathing.....	76	Piping, gas.....	Plumber's tape.....	518
asphalt.....	243, 609, 610	rough carpentry.....	37	Pitch pockets.....	Plumbing.....	494
brick.....	243	rough carpentry, floor sheathing.....	38	Pits, excavation, dug by hand.....	access doors.....	253, 525
cold milling.....	611	rough carpentry, roof sheathing.....	39	Pizza preparation unit.....	area drains.....	525
concrete.....	84, 94, 244, 611	steel framing.....	73	Placing concrete.....	assemblies.....	251, 530, 532
demolition.....	102, 332	Pier		Plan check fee.....	cleanouts.....	525
equipment rental.....	325	blocks.....	39	Plank	copper DWV.....	512
grass.....	244	caps.....	389	flooring.....	equipment rental.....	328
machine, rental.....	325	pads.....	39	precast concrete.....	fixtures.....	535
parking lots.....	610	Pilasters.....	134	scaffold, aluminum extension, purchase.....	fixtures, cleaning.....	83
repair.....	611	cabinets.....	31	Plank flooring	floor drains.....	525
stones.....	382	molding.....	55	vinyl.....	for handicapped.....	478
subcontract.....	243	painting.....	240	Plans.....	piping.....	532
systems.....	244	Pile caps, concrete.....	340	Plaques.....	roof drains.....	525
payment bonds.....	186	Pile driver, wage.....	309	Plaster	rough-in.....	251, 532
payroll taxes.....	285	Pile driving.....	606	accessories.....	systems.....	251
PCBs, removal.....	435	Pile driving, rental.....	322	demolition.....	water softener.....	250
Pea gravel		Pile foundations.....	606	ground.....	Plyclips.....	162
concrete.....	85			joints.....	Plyform.....	203, 339
riprap.....	604			labor.....		

Plywood.....	203, 391	Polyisobutylene.....	412	Pour-stop forms.....	340, 342	tanks.....	541
backboard.....	460	Polyisocyanurate		Powder-driven fasteners.....	231	water heaters.....	249
birch.....	203	insulation.....	182, 399	Power		Property boundaries.....	313
'board-up'.....	274	Polypropylene mesh reinforcing.....	85	cable.....	560	Provisa range hood.....	254
cap molding.....	226	Polystyrene		conduit.....	543	P-traps, ABS.....	516
cedar.....	203	board.....	398	distribution.....	577	Public address systems... 464, 592	
ceiling.....	54	insulation.....	181, 182, 398, 400	EMT.....	547	Pull box, electrical.....	542, 562
deck, waterproofing.....	294	insulation board.....	398	generation.....	131, 582	Pull plates.....	170, 421
demolition.....	102	roof deck.....	400	panels.....	572	Pulls, edge, pocket door.....	171
exterior.....	202	Polyurethane		solar.....	582	Pulpits.....	460
fence.....	331	floor finish.....	56	temporary, pole rental.....	310, 318	Pump mix concrete.....	85
forms.....	88, 339	insulation.....	184	underground.....	541	Pumper firehose connection... 493	
framing clips.....	162	paint.....	236	Power factor meter.....	571	Pumping	
lumber.....	202	painting.....	438	Power generator exhaust stack... 581		concrete.....	350, 351
marine-grade.....	203	sealant.....	410	Power ventilators		dewatering.....	602
MDO.....	203	Ponderosa pine		attic gable.....	142	well.....	295
oak.....	203	boards.....	197	roof-mount.....	142	Pumps	
paneling.....	242, 392	lumber.....	197	Precast		electrical connections.....	129
piecework rates.....	39, 74	mantels.....	208	beams.....	359	foundation.....	366
roof panels.....	392	Pool, swimming		columns.....	359	gasoline.....	449
sheathing.....	42, 51, 61, 391	coating.....	237	concrete.....	357	rental.....	324
sheathing, piecework.....	39, 76	complete installation.....	475	double tees.....	360	sewer.....	265
siding.....	203, 275	cover.....	476	floor plank.....	358	sump.....	528
softwood.....	202	deck.....	369	floor slab.....	358	sump, wiring.....	129
structural.....	203	fences.....	150	girders.....	359	wiring.....	130
subfloor.....	42, 61	gunite.....	357	joists.....	359	Punch down, network cable ... 460	
subfloor, piecework.....	39, 76	heaters.....	250	panels.....	357	Punch-down blocks.....	593
treatment.....	207	painting.....	237, 438	stairs.....	360	Purlins	
underlayment.....	432	resurfacing.....	369	Precipitators.....	455	anchors.....	161
window covering.....	274	Popcorn		Pre-engineered buildings.....	483	carpentry.....	48, 390
Pneumatic		ceiling, removal.....	169	Preformed siding.....	401	fireproofing.....	410
demolition.....	103	Popcorn ceiling.....	169	Prehung doors... 52, 118-120, 415		hangers.....	161
door closers.....	105	Poplar flooring.....	155	double.....	119	steel.....	383
excavation.....	138	Pop-up sprinklers.....	189	exterior.....	109, 110, 111	steel framing.....	72
hammer.....	596	Porcelain tile.....	287	fire-rated.....	109	Purse shelf.....	442
pipe systems.....	491	Porch		French.....	120	Push plates.....	170, 421
tampers.....	599	columns.....	84	heater closet.....	119	Putty, glass.....	239
tools, rental.....	320	enamel.....	235	oak.....	119	PVC	
tube systems.....	491	enclosed.....	167	patio, steel.....	121	clamp.....	551
Pocket doors.....	171	lifts.....	133	steel.....	111, 112, 414	conduit.....	548
hangers.....	171	painting.....	240, 438	Preliminary soil investigation... 279		conduit body.....	550
hardware.....	53, 171	posts.....	84	Prepare surface,		conduit box adapter.....	549
kit, converging.....	171	rail.....	253	painting.....	239, 437, 439	conduit with wire.....	551
Pointing, masonry.....	371	Porous paving.....	244	Preservation, lumber.....	207	end bell.....	549
Poisoning soil.....	280	Portable structures.....	480	Preservative, wood.....	237	flashing.....	270
Poles		Portable toilet (Port-a-Potty).... 310		Pressure		jacketed copper tubing.....	505
building.....	204	Portland cement.....	82	controls.....	524	pipe.....	265, 506
closets.....	55	Post		gauge.....	524	reducer bushing.....	549
concrete.....	360	anchors.....	163	grouting.....	357	sewer pipe.....	266
cross arms.....	577	bases.....	162	mats.....	264		
demolition.....	334	caps.....	163	regulators, hydronic heating... 539			
flag.....	448	column forms.....	340	treatment, lumber.....	207		
foundations.....	587	painting.....	438	vacuum breaker.....	312		
job sign.....	318	porch.....	144	Pressure washer, rental.....	328		
lighting.....	587	pressure-treated.....	205	Pressure washing.....	239, 436		
lumber.....	204	redwood.....	204	Pressure-reducing valves ... 522, 539			
playground.....	467, 469	sawn.....	204	Pressure-treated lumber.....	201		
power distribution.....	577	treatment, lumber preservation... 206		Prestressed concrete.....	360		
pressure-treated.....	205	yellow pine.....	204	Prime coat, pavement.....	611		
removal.....	334	Post holes.....	144	Primer			
temporary utility power.....	318	Postal specialties.....	447	asphalt.....	466		
treatment.....	206	Posts		clean metal.....	236		
Polishing		athletic equipment.....	465	linseed.....	234		
floors.....	238	barrier.....	452	metal.....	236		
woodwork.....	241	building.....	204	painting.....	239		
Pollution control.....	579, 581, 604	cabinet.....	31	sealer, oil-based.....	234		
Polybutene tape.....	412	carpentry.....	39, 45	Prints, plans.....	25		
Polycarbonate		deck.....	99	Privacy latchset.....	170		
glazing.....	482	fence.....	144	Processed lime.....	218		
sheets.....	166, 423	jackposts.....	186	Profit, markup.....	208, 310		
skylights.....	277	newel.....	56	Project			
Polyester fabric.....	257	porch.....	84	cost adjustments.....	12-15		
Polyethylene		pressure-treated.....	205	financing.....	311		
film.....	253	redwood.....	204	manager cost.....	310		
membrane, slab... 94, 339, 352, 353		sawn.....	204	scheduling.....	311		
pipe.....	126	treatment, lumber preservation... 206		Propane			
tarps.....	285	yellow pine.....	204	furnaces.....	176		
tilt-up.....	362	Pot hooks.....	454, 456				
Poly-faced insulation.....	181	Pot racks.....	456				
		Pot wash sink.....	457				
		Pour strip, tilt-up.....	362				
		Pouring					
		concrete.....	95, 351				
		insulation.....	183, 399				

Q

Quality control engineer.....	313
Quantities defined.....	3
Quarry tile	
flooring.....	381, 429
masonry.....	220, 381
wall tile.....	381
Quarry work.....	596
Quarter round mold.....	225
Quarter round molding.....	222
Quartz heaters.....	175
QuietTest exhaust fan.....	140
Quietzone.....	183
Quonset huts.....	483

R

Raceway, electric.....	556
Racks	
coat and hat.....	453
garment.....	453
kitchen.....	456
ladle.....	454
pots and pans.....	456
towel.....	24

Racks, security	footings	346	Reinforcing ironworker, wage	flagstone	216
bicycle	masonry	372	industrial & commercial	masonry	216
motorcycle	rings	348	residential	rubber	220
Radial wall forms	slabs	346	Relief valves	sprinkler heads	189
Radiant heat, floor	splicing	348	Relocatable structures,	stair	56, 283
Radiant heating	stirrup	347	manufactured type	steel stairs	282
Radiation protection	Receptacles, electric	129, 563	remote high gain antenna	wood stairs	281, 397
Radiators, heating	cover plate	565	Removal	RO filters, water	529
Radio studio	outlet circuit	542	asbestos	Road	
Radioactivity, removal	wiring	129	clearing	compaction	603
Radon gas, testing	Receptors, shower	272	debris	equipment rental	325
Rafters	Recessed lighting	191	demolition	grading	596
bay vent channel	Recording meters	571	lead-based paint	paving	610
demolition	Recycling fees	332	paving and curb	repairing	611
log	Red cedar		PCBs	rollers, rental	321
piecework rates	beams and timbers	201	radioactivity	trim and finish	603
rough carpentry	boards	198	toxic chemicals	Road closed sign	22
spacing	fence	148	tree	Road plate, steel	325
steel framing	lumber	195	wallpaper	Robe hooks	24
steel, piecework rates	shakes	259	Renderings, architectural	Rock	
timber	shingles	259	Rent, overhead	aggregate	18
vents	siding	199	Rental	cinder	604
Rail	Red oak		backhoe	drain rock fill	604
communion	boards	198	bulldozer	drilling	595
fence	closet doors	124	compactor	drills, rental	320
guard	doors	117	compressor	excavation	135
hand	Red oxide primer	234	forklift	fill	604
molding, cabinets	Red rosin sheathing	27	landscape equipment	ornamental	604
painting	Reducer strip, flooring	155	miscellaneous equip	recycling	332
stair	Reducer, drain pipe	126	plumbing equipment	ripping	596, 601
Railing	Redwood		road equipment	Rock fill drainage systems	126
access flooring	benderboard	187	scaffolding	Rockwool insulation	183
aluminum	deck stairs	99	scaffolding, mobile	Rod clamps	554
brass	decking	98	Rental, equipment	Rod hanger	554
for handicapped	fascia	49	Report	Rod, threaded	161
painting	fence	147, 148	home inspection	Rods	
patio deck	lumber	195, 198, 201	soil test	lightning	129
porch, steel	molding	222	Reproduction, plans	shower curtain	24
stair	saunas	264	Residential	Roll flashing	
stair, wood	siding	199	rules of thumb	copper	267
steel	strips, chain link	142	Resilient flooring	galvanized	268
temporary	treads	99	demolition	lead	269
tubular	Refrigeration, insulation	399	installation	paper-backed copper	268
wrought iron	Refrigerators		resilient hat channel, drywall	ridge roll	260
Railroad demolition	backbar	457	Resorcinol glue	valley	268
Rain diverter	electrical work, subcontract	129	Restaurant	vinyl	270
Rain gutter	food service	457	equipment	Roll roofing	402
stainless	medical	469	range	adhesive	258
steel	morgue	470	restraints, water heater	felt	257
Rain gutters	wiring, subcontract	129	Retaining wall forms	fiberglass	257
Raingear, copper	Reglet		retaining walls	mineral surface	257, 259
Raised floors	copper	268	Return bends	papers	258
Rammers	parapet	365	Reveal strips	Roller, dough	456
compacting	Regulator valves	523	formwork	Rollers, rental	321
rental	Regulators, pressure, hydronic		tilt-up	Rolling	
Ramp forms, riser	heating	539	Reverse osmosis filters	ladders	459
Ramps	Reinforcing		Revolving doors	Rolling platform lifts, rental	324
access flooring	bar supports	340	R-Gard insulation	Rolling towers, rental	324
handicapped	bars	89, 346, 365	Ribbons (ribbands), carpentry	Roll-up	
rental	caissons	349	Ridge	doors	415
Range circuit	chairs	348	clay tile	window blinds	296
Range hood	columns	349	fiber cement	Roll-up awning	21
convertible	demolition	332	flashing	Romex cable	127, 542, 559
custom	fiber mesh	85	sheet metal roofing	Roof	
food service	foundation	346	shingles	apron	268
vented	gunite	357	steel framing	bay window	304
Range support, cabinets	masonry	215	vents	built-up	256
Ranges	masonry ties	159	Ridgeboard, steel	cant strips	50, 182, 403
electrical work	mesh	91, 349	Rigid conduit	coating	237, 256, 257, 401
gas, commercial	mesh mini-mat	349	Rigid insulation	cold, for log home	194
residential	pavement	244	Ring steel reinforcing	deck cover	99
Rastra Block	rings	348	Ripping, excavation	deck, cementitious	402
Rates, labor	slabs	92, 346, 349	Riprap	deck, concrete	369
Rattan black paper	splicing	348	Risers	deck, steel	384
Reactivity testing	steel	89, 346	concrete stair	deck, wood	392, 403
Ready-mix concrete	steel, epoxy-coated	346	concrete stair, forming	demolition	102
Rebar	stirrup	347	Roof	drains	525
chairs	tilt-up	362	edge	edge	267, 268, 270
concrete	welding	346	edging	edging	267
epoxy-coated			EPDM	EPDM	402

Scully sink	457	connection	129	ducts	177	Shot fasteners	231, 390
Sculpture screens	215	switchboard	569	flashing	260, 267	Shovels, earthwork	135
Scuppers, sheet metal	406	temporary connection	318	gutters, downspouts	167	Shower	
Scuttle, roof	407	weatherproof	570	hoods	270	caulk	78
SDR 11 CPVC pipe	507	wire	557	roofing	260, 403	compartments	442, 533
Seal coat		Service sinks	248, 534	siding	276, 401	doors	271, 442
asphalt	243, 611	rough-in	531	vents	406	emergency	531, 534
roadway	611	Service station		Sheet metal worker, wage		enclosures	272
Sealant pot, rental	325	air and water	450	industrial & commercial	309	grab bars	247
Sealants		cash box	450	residential	10	handicapped access	247
caulking	77, 410	equipment	449	Sheet piling	605	mortar bed	272
caulking gun	79	hydraulic hoist	450	Sheet vinyl flooring	153, 431	plumbing	533
concrete	77	submerged turbine	449	adhesive	154	receptors	272, 443, 533
deck	98	turbine	449	leveling compound	154	rod	24
door	78	Serving fixtures	453	Sheetrock		rough-in	531
driveway	237	Serving table, sushi	454	gypsum drywall	168, 293, 423	seat	25
elastomeric	78	Settlement testing	279	painting	238, 241	stalls	246, 272, 443, 533
gutter and flashing	78	Sewage		wallboard	168, 293, 423	stalls, cleaning	83
marine	78	ejectors	265, 528	Sheets		Shower stalls	246
paint	236	leaks	266	cork	435	Shrinkage defined	3
primer	234	pumps	265	polycarbonate	423	Shunt trip	571
siding	78	Sewer		polyethylene	253	Shutters	
silicon rubber	78	connection	266	roofing	260	accordion-type	273
sill	182	demolition	333	Shelf lighting	191	Bahama-type	273
tub	79	pump systems, residential	265	Shelf, glass	270	colonial-type	273
wall	79	snakes, rental	328	Shellac		co-polymer	272
window	78	systems	265	floor finish	56	exterior	273
Seals, weatherstrip	294	demolition	266	thinner	238	hurricane	273
Sealtite conduit	553	Sewer lines	266	Shelters		louvered	272
Seasonite wood preservative	237	demolition	333	bus stop	479	panel-type	273
Seat cover dispensers	445	Shacks, storage, rental	330	Shelters, prefabricated metal	480	plywood	274
Seating		Shades		Shelves		roll-up	273
athletic	466	blinds	296	carpentry	55	Siamese connection	493
gym	464	cellular	297	closets	270	Sidelites	
school	458	Shades, window	296	industrial	448	steel door	111
shower	25	Shaft drilling, caisson		library	448, 472	Sidewalks	
stadium	474	foundations	608	linen cabinet	270	concrete	84, 94, 244, 611
theater	474	Shaft walls	427	storage	270	cover	331
Security		Shake felt	259	toilet	442	demolition	100, 101, 332
access, keypad	590	Shakertown siding	276	utility	270	moving	490
alarm systems	589	Shakes, roofing	259	wire	270	Siding	
alarms	264	Shale, excavation	596, 601	wood	270	aluminum	276, 401
controls	591	Shaping slopes by hand	136	Shelving		cedar	199
gates, folding	115	She bolts	355	convenience store	485	corrugated	276, 401
gratings	388	Shear panels		display	485	demolition	102
grilles, doors	416	piecework rates	38	glass	270	exterior trim	275
guards	265	steel framing	74	library	459	fascia	275
locks	171	Sheathing		wire	270	fiber cement	274
monitor panels	589	adhesive	18	Shims		galvanized steel	276
systems	589, 591	board	42, 51	door	52	hardboard lap	275
television system	592	carpentry	62	shingles	259	hardboard panel	274
Security doors	113, 115	carpentry piecework rates	76	stool	53	Hardi products	274
Sediment control	604	clips	162	stud	52	insulated	401
Sediment fence	604	cork	435	Shingles		lap	201, 274
Seeded aggregate finish	244	demolition	102, 335	algae-resistant	258	log cabin	200, 201
Seeding		Dens Glass	182	asphalt	255, 258	Nailite	277
landscaping	187	floor	34, 38	cedar	259	nails	231
Seekure paper	28	framing, steel	74	demolition	102, 336	OSB	275
Seesaws	468	gypsum board	168	flashing	267, 268	paint preparation	239
See-thru frames	418	insulated	182	hip and ridge	258	paint removal	233
Seismic ties	161	insulation board	182, 399	laminated	258	painting	240, 437, 438
Self-leveling compound	154	lumber	392	painting	438	pine	199, 200
Self-storing storm doors	114	OSB	42, 51, 391	removal	336	plywood	203, 275
Self-tapping screws	150	paper	27	roofing	258, 259	redwood	199
SensAire wall control switch	141	piecework rates	39	siding	276	resin	277
Sensor cable, electric	589	plywood	42, 49, 51, 391	slate	260	sealant	78
Sensors		roof	49, 392, 403	solar	280	shingle	276
photoelectric	589	skip	395	starter strip	258	soffit vents	292
security	589	steel framing	61	wood	259	southern yellow pine	199
vibration	589	wall	51	wood, demolition	336	thermoplastic	277
Septic		wall, exterior	391	Shoe molding	222, 223	vinyl	276, 401
sewer systems	265	wall, interior	391	Shoe, door	286	western red cedar	199
tanks	529	wallboard	168, 293	Shoring		Sieve analysis, aggregate	314
Service doors	416	Sheds, storage, rental	331	beams	345	Sieve, filter sock	126
Service entrance	573	Sheepsfoot roller	138	concrete	605	Sign lighting	586
cable	557	rental	139, 321	equipment rental	330	Sign numbers	172
cap	544	Sheet glass	166, 422	forms	345	Signage, freestanding	485
		Sheet metal	403	heavy duty, rental	330	Signal cable	592
		access doors	266	trench	605	Signal crossing	486

Signs	cast-in-place	369	Softwood	Spiral staircases	282
architectural signage	concrete	84, 352	flooring	Spirals, reinforcing	349
Braille	demolition	336	plywood	Splash plate	255
directory	edge forms	89	Soil	Splices, piles	608
display	finishes	95	cement treatment	Splicing bars	348
elevator plates	floor	352	compaction	Split-face block	215, 379
handicapped	form, concrete	88	covers	Split-rail fence	148
job-type	forms	340	hauling	Split-rib block	379
road closed	forms, elevated	345	loading	Split-ring connectors	163
safety	grading	339	moving by hand	Splitting rock	596
street numbers	membrane	94, 339	poisoning	Split-wired outlets	129
temporary	rebar	90	sealant	Spotlight, fresnel	463
Silestone countertop	sand fill	339	spreading	Spray painting	238
Silicon carbide, sidewalk grits	tennis court	466	stabilization	deck	437
Silicon roofing	Slag	crushed	testing	metals	437
Silicone caulk	stone	18, 126	treatments	steel	436
Sill	Slate	anchors	Soil pipe adapter	Sprayed	fireproofing
anchors	pavers	161	Solar	fireproofing	409
blocks	roofing	378	barricade light	polyurethane insulation	184
bolted	tile	390	collector system pump	urethane insulation	184
carpentry	Slate roofing	389	paneling	Sprayers, paint	239
cover, aluminum	demolition	286	power	rental	328
log	Sleepers, carpentry	193	protection	Spread footings	377
mud	Sleeves, concrete	161	screen	Spreading soil	597
oak	Slicer, bread	286	shingles	Spreading soil by hand	136
plate gasket	Slide bolt lock	182	water heating system	Spring bronze	294
plates	Slides, playground	40, 57, 192	water storage tank	Sprinkler fitter, wage	309
sealer	Sliding doors	182	Solar Tek	Sprinkler system	188
steel	aluminum	387	Solar window film	control	189
window	closers	296	Solariums	Sprinklers	automatic
Sill Seal™	fire	182	Solenoid sprinkler valve	components	189
Silt fence	glass	150	Solid core doors	connection	492, 493
Simco walk top	glass, insulated	243	entry	control wiring	493
Single-family home costs	patio	306	hardboard interior	control wiring	189
Single-hung windows	pet door	306	luan exterior	fire	150
aluminum	screen	297	prehung exterior	heads	492
vinyl	vinyl	297	steel	pop-up heads	189
Sinkers, nails	wood	228	Sonotube forms	subcontract	491
Sinks	Sliding windows	247	Sound board	trenching by hand	188
bar	Slip-formed walls	290	Sound control	valves	189
bases	Slop sink rough-in	290	Sound insulation board	wall hydrants	493
bathroom	Slope protection	531	Sound reduction paneling	Sprinkling, water for excavation	138
cabinets	Slopes, shaping, by hand	29, 290, 473	Sound system, stage	Spruce	lap siding
cabinets, cutout	Slump block	31	Soundness testing	logs	201
caulk	Slurry seal	78	Soundproofing fabric	logs	192
demolition	Small tool cost	337	Southern pine	pine fir	195
floor	Smart Panel siding	535	fence	siding	201
food service	Smoke detectors	457	lumber	Square foot costs, homes	306-7
kitchen	Smoke vents	248, 457, 531, 534	pressure-treated	Square molding	225
laundry	Snakes (sewer), rental	248	siding	Stabilization fabric	603, 604
marble	Snap ties	208	timber	Stack, exhaust	581
mop	Snow block	457, 534	Southern yellow pine	Stadium seating	474
scullery	Snow-melting cable	457	decking	Stage	HVAC
service	Soap dishes	248, 534	flooring	HVAC	464
wash	ceramic	531, 535	lumber	lighting	463
Siphon breaker, irrigation	commercial	189	posts	sound system	463
Site work	Soap dispensers	clearing	pressure-treated	Stage curtains	462
clearing	demolition	594	siding	drawing equipment	463
grading	Soccer goals	596	timbers	lift equipment	463
water meters	Social Security payroll taxes	312	Spa enclosure	Stain	concrete
Sizing	Sod	293	Space frame steel	concrete	235
Skid steer loaders, rental	Sod cutters, rental	323	Spackle	deck	98
Skid strips, stair	Sodium lamp, high-pressure	283	Spades, clay, rental	paint	237
Skip sheathing	Soffit	395	Spandrel glass	tinting	237
Skiploader, rental	demolition	323	Spanish tile roofing	wood finish	236
Skirtboard, carpentry	forms	56	Spar varnish	Stained glass	470
Skylights	Hardie cement fiber	fixed	Spark arrestor	Staining	240, 241
fixed	OSB	278	Special Construction,	floor	156
operable	plaster	278	disabled access	Stairlifts	133
polycarbonate	steel	277	Specialty lumber	Stairs	aluminum
roof windows	systems	279	Specific gravity	attic	282
trimmers	vents	48, 71	Specifications fee	baluster	284
Velux	vinyl	277	Speed bumps	basement	23, 281
Slab doors	wood	107, 115, 116	asphalt	box	281
Slab-on-grade, concrete	Softener, plumbing fixtures	94, 352	Spheres, painting	curved	281
Slabs	Software, project scheduling	base	Spikes	disappearing	284
base		94	Spiral		
capillary fill		339	stairs, steel		

factory-cut.....	281	plate cutting.....	334	Steps-on-grade, concrete.....	95, 354	lights.....	587
framing, piecework rates.....	38	railing.....	253, 386	Sterilizers, water.....	529	numbers, houses.....	172
handrails.....	56	reinforcing.....	89, 346	Stick nails.....	229	paving.....	610
hardwood.....	281	reinforcing, epoxy.....	346	Stile & rail doors.....	117	paving, equipment rental.....	325
log.....	193	reinforcing, foundation.....	346	Stirrup steel reinforcing.....	347	sweeper, rental.....	325
L-shaped.....	283	reinforcing, masonry.....	372	Stock room door.....	418	Strip	
moving.....	490	rod.....	161	Stone		doors.....	418
nosing, bamboo.....	158	roof deck.....	384	aggregate.....	18	flooring.....	55, 157
rail.....	283	roof framing.....	74	aggregate base.....	609	lighting.....	582
railing.....	281	sag rods.....	383	artificial.....	381	shingle starter.....	258
risers.....	56, 283	sandblasting.....	263	base.....	94	Striper, rental.....	325
skirtboard.....	56	security gratings.....	388	cleaning.....	371	Striping	
spiral.....	282	shoring.....	605	countertop.....	96	athletic courts.....	467
spiral, steel.....	385	stairs.....	282	crushed.....	94, 126	Striplights.....	582
steel.....	282	stairs, spiral.....	385	cut.....	381	Stripping	
straight.....	281	stringers.....	385	masonry.....	216	forms.....	89
strips, anti-skid.....	283	structural, fabrication.....	383	paving.....	382	soil, by hand.....	136
treads.....	56, 283	testing.....	317	ripap.....	604	Structural engineering.....	134
wood.....	281	threaded rod.....	161	roofing.....	260	glazed tile.....	374
Stakes		tilt-up.....	364	slag.....	126	steel.....	383
form.....	205	wall framing.....	62	slate.....	260	Structural plywood.....	203
foundation.....	205	welded wire.....	346	stepping.....	187	Structural steel	
steel.....	86	welding.....	389	vanity tops.....	97	fabrication.....	383, 388
survey.....	205	Steel doors		veneer.....	381	painting.....	436
Stalls, shower.....	246, 272	entry.....	112	veneer, manufactured.....	381	Structure moving.....	338
Stamped concrete.....	96	exterior.....	110, 111	work.....	381	Structures, temporary, rental.....	330
Standard brick.....	209	fire-rated.....	109	Stone tracking pad.....	604	Stucco	
Standpipe connection.....	493	garage.....	164	Stool		demolition.....	102, 337
Stands, water heater.....	526	patio.....	121	carpentry.....	226	mesh.....	425
Staplers, rental.....	327	prehung.....	414	marble.....	381	mix.....	82
Staples, roofing.....	231	screen.....	113	window.....	53	mold.....	108
Starter strip		Steel doors, fire-rated.....	109	Stops		netting.....	188
aluminum siding.....	276	Steel framing		door.....	171, 225, 420	paint.....	235
galvanized flashing.....	268	anchors.....	58	gas.....	522	painting.....	238, 241, 437
shingles.....	258	backing for drywall.....	69	gravel.....	403	plastering.....	244, 427
thermoplastic siding.....	277	beams.....	60	molding.....	108, 225	wall assembly.....	35
vinyl siding.....	276	blocking.....	61	Storage		Stud grade lumber.....	194
Starter switches.....	567	bracing.....	67	bins.....	310	Studios, radio and television.....	488
Starters, motor.....	567	ceilings.....	67	cabinets.....	473	Studs	
State cost adjustments.....	12-15	collar beams.....	72	ice.....	457	carpentry.....	389
Steam		door opening.....	65	overhead.....	310	demolition.....	104
baseboard radiation.....	538	dormer studs.....	71	safes.....	262, 263	dormer.....	48
bath generator wiring.....	128	fascia, piecework.....	76	sheds.....	310	exterior walls.....	35
bath, generators.....	285	floor joists.....	58	sheds, rental.....	331	gable.....	37
cleaning.....	436	girders.....	60	shelving.....	448	interior walls.....	34
cleaning, masonry.....	371	joists, ceiling.....	67	Storefront windows.....	419	rule of thumb, steel framing.....	57
condensate pipe.....	494	joists, piecework.....	73	Store-in-Door.....	114	steel.....	62, 73
generators.....	285	lally columns.....	57	Storm doors.....	114, 115	steel exterior.....	63
heating.....	538	layout, piecework.....	73	full-view.....	114	straightening.....	52
Steam meter.....	524	piecework.....	73	security.....	115	straps.....	163
Steamers, food service.....	454	purlins.....	72	self-storing.....	114	wall assemblies.....	34
Steamers, wallpaper, rental.....	328	rafters.....	70	Storm drain demolition.....	333	wall framing.....	37
Steel		rafters, piecework.....	74	Storm water control.....	604	walls, commercial.....	389
blocking.....	61	ridgeboard.....	72	Storm window.....	304	Study carrels.....	459
buildings.....	483	rule of thumb.....	56, 57	Storm, plywood cover.....	274	Stump grinders, rental.....	327
conduit, flexible.....	552	sheathing, piecework.....	74, 76	StormGuard.....	27	Stump removal.....	138, 594
conduit, rigid.....	543	sill plates.....	57	Stoves, ovens, ranges		Sturdi-Floor.....	203
cutting and drilling.....	388	square foot costs.....	57	electrical work.....	129	Subbase, pavement.....	609
doors.....	106	studs.....	62	residential.....	255	Subcontract	
exterior walls.....	63	subflooring.....	61	Strainers		driveway paving.....	243
floor joists.....	58	trimmers.....	71	bronze.....	539	electrical work.....	127
flooring.....	434	trusses.....	72, 73	hydronic.....	173, 539	elevators.....	133
framing.....	56	trusses, piecework.....	74	wye-pattern.....	539	fire sprinkler systems.....	491
framing, rule of thumb.....	57	wall plates.....	67	Strand board.....	203	hydroseeding.....	187
interior walls.....	62	walls, piecework.....	73	Straps		insulation.....	183
landings.....	385	window opening.....	66	channel.....	555	painting.....	239
lath.....	188	Steel road plate, rental.....	325	conduit hanger.....	555	sprinkler systems.....	491
lintels.....	387	Steeple.....	485	connectors.....	566	stamped concrete.....	369
masonry.....	215	Stem wall.....	93	CPVC snap-on tubing.....	508	store front windows.....	419
mesh.....	91, 349	forms.....	340	hardware.....	163	surface preparation.....	239
mesh reinforcing.....	349	Stenographer.....	310	pipe.....	518	tile shower.....	246
mini-mat reinforcing.....	349	Step flashing.....	267, 268	post anchor.....	219	well drilling.....	295
ornamental.....	388	Step lights.....	585	tie.....	163	Subcontract costs defined.....	5
painted.....	388	Stepping stones.....	187	Straw bales.....	187, 604	Subcontractor markup.....	5
painting.....	436	Steps		Straw wattle.....	603	Subflooring	
panel roofing.....	260	brick.....	382	Street		2-4-1.....	203
piles.....	608	concrete.....	95, 351, 354, 360	illumination.....	486	adhesive.....	18
pipe, black.....	494	flagstone.....	216	lighting.....	486	board.....	61
pipe, carbon.....	494	masonry.....	216			engineered.....	42
		painting.....	241				

quarry.....	381, 429	Torch cutting.....	334	shaping.....	597, 602	Tubs	
resilient.....	432	Total column defined.....	5	sheeting.....	605	access doors.....	266
roller, rental.....	326	Total expense, overhead.....	310	shields, rental.....	323	caulk strips.....	79
roofing.....	261	Towel		shoring.....	605	caulking.....	78
rubber.....	432	bars.....	445	Trench plate, steel.....	325	enclosures.....	272
rubber studded.....	154	dispensers.....	445	Trenchers, rental.....	139, 323	plumbing.....	245, 531, 533
saws, rental.....	328	racks.....	24	Trenching.....	597	Tuck pointing.....	371
security, glazed.....	374	Towers		backhoe.....	597	Tuff-R insulation.....	182
shock-absorbing.....	432	fire pole, playground.....	469	concrete.....	338	Tung oil wood finish.....	236
simulated roofing.....	260	lifting.....	319	excavation.....	136, 597	Turbines.....	579
structural facing.....	374	Toxic chemicals, removal.....	435	hand.....	136, 602	additional costs.....	580
vinyl floor.....	153, 154	Track		hand work.....	339	fans.....	407
wall.....	287	railroad, demolition.....	334	rock.....	597	service station.....	449
Tile layer, wage		rolling ladder.....	459	sprinkler systems.....	188	vents.....	292
industrial & commercial.....	309	stage curtain.....	462	Tri-Flex 30.....	27	vents, roof.....	141
residential.....	10	Tracking pad, stone.....	604	Trim		Turf	
Tile shower.....	246	Tractor		carpentry.....	226	artificial grass.....	465
Tillers, rental.....	327	demolition.....	335	door.....	53, 222	playing fields, grass	
Tilt double-hung window.....	303	excavation.....	596, 601	fireplace.....	55	and synthetic.....	465
Tilt-up concrete.....	360	finish shaping.....	597	hardwood.....	222	Turnstiles.....	452, 487
Tilt-up construction.....	362	ripping rock.....	596	molding.....	226	Turpentine.....	238
panels, sandblasting.....	263	rock fill.....	604	OSB siding.....	275	Twinaxial cable.....	593
pilasters.....	362	site clearing.....	594	painting.....	238, 240	Twist straps.....	164
Tilt-up painting.....	437	site grading.....	596	pine.....	226	Type K copper pipe.....	503, 504
Timbers		Tractor operator, wage,		redwood.....	222	Type L copper pipe.....	503
Douglas fir.....	201	industrial & commercial.....	309	softwood.....	223	Tyvek.....	28, 183
hardwood.....	396	Traffic		stair.....	56		
laminated.....	396	cones.....	22	steel panel roofing.....	260		
lumber.....	197, 201	control equipment rental.....	326	wallboard.....	169		
pine.....	202	control signage.....	318	window.....	53		
rafter.....	193	light.....	486	Trim coil.....	267		
red cedar.....	201	paint.....	237	Trimmers			
redwood.....	201	Transaction		carpentry.....	48		
treatments.....	206	window.....	453	steel (framing).....	71		
wood.....	396	Transformers		Trimming, trench bottom.....	136		
Timekeeper costs.....	314	indoor.....	572	Triple-track storm doors.....	114		
Timer switches.....	141, 564	pole mount.....	577	Troffer lighting fixtures 80, 190, 583			
15 minute.....	564	potential, switchboard.....	571	Trowel finishing, concrete.....	95, 356		
Tin		switchboard.....	571	Troweling machine, rental.....	321		
ceilings.....	82	Transit levels, rental.....	327	Trowel-ready mortar.....	219		
shingles.....	268	Transit mix concrete.....	84	Trowels, rental.....	321		
Tint		Transom lite.....	414	Truck			
paint.....	237	Trap adapter		bucket.....	324		
wood finish.....	236	ABS.....	516	bumpers.....	365		
Tint, window.....	419	copper.....	512	concrete.....	350		
Tire changer.....	450	Traps		cranes, rental.....	319		
Tissue holder.....	24, 445	float.....	540	excavation.....	138		
TJ truss joists.....	41, 395	thermostatic.....	540	hauling.....	600		
Toaster, conveyor type.....	456	Trash		loading by hand.....	135		
Toggle switch.....	565, 568	bins.....	332	rental.....	139, 324		
Toilets.....	247, 532	chutes.....	337, 491	scales.....	452		
accessories.....	24, 445	enclosure, tilt-up.....	366	superintendent's.....	310		
augers, rental.....	328	removal.....	310	water, rental.....	325		
compartments.....	442	Trash compactor wiring.....	130	Truck driver, wage			
flush valves.....	532	Trash pumps, rental.....	324	industrial & commercial.....	309		
jobsite.....	310	Travertine tile.....	287	residential.....	10		
partition, handicapped.....	478	Treads.....	220	Trusses			
partitions, demolition.....	337	carpentry.....	56	fink.....	49, 72		
rough-in.....	530	concrete, finishing.....	356	gable.....	49, 73		
temporary.....	310, 319	flagstone.....	216	joists.....	395		
trailer-mounted.....	319	marble.....	381	log.....	193		
Tongue and groove		rubber.....	220	roof.....	48, 72, 395		
flooring.....	155	stair.....	283	roof, piecework.....	38		
insulation board.....	181	wood.....	281, 397	roof, piecework rates.....	74		
sheathing.....	51	Treated lumber.....	201	steel.....	383		
siding.....	199	Treating		Truss-type reinforcing.....	372		
Tool sheds, rental.....	331	lumber.....	207	Tub			
Tools available.....	4	poles.....	204	sealant.....	79		
Tools, rental.....	320	soil.....	280	whirlpool bath.....	245		
Toothbrush holders		wood.....	207	Tube			
ceramic tile.....	288	Treatment		columns, steel.....	384		
residential.....	23	fire retardant.....	207	nosing.....	387		
Topping, concrete.....	95, 356	soil poisoning.....	280	pneumatic.....	491		
Topsoil		Tree clearing.....	138, 594	Tubing			
excavation, by hand.....	136	Trench		copper.....	505		
placement.....	187	braces, rental.....	323	electric metallic.....	544		
strip.....	595	covers.....	385	strap, CPVC.....	508		

U

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

Utility	Vent	W	prefinished	293
cabinets	channel, rafter bay	Waffle pan forms	textured	293, 424
fan	fans	Wage costs defined	Wallcap	288
shelving, wood	hoods	Wage rates	Wallpaper	293, 434
sinks, food service	Vent pipe	adjusting	adhesive	293
	copper	industrial & commercial	removal	293
	flash cone	residential	surface preparation	293
V	Vented range hood	Wagon drills	Walls	
Vacation costs	Ventilating skylights	rental	brick	209
Vacuum breaker	Ventlite doors	Wainscot	concrete	86, 87, 92
anti-siphon	fiberglass exterior	cap	concrete block	213, 378
atmospheric	Vents	ceramic tile	glass block	217, 380
Vacuum systems	attic	tile	masonry	209
wiring	bath	Wainscott paneling	paint removal	233
Vacuum, wet/dry, rental	clothes dryer	Water	paneled wood	394
Valance	foundation	brackets	patching	293
cabinet	hood	jacks	precast panels	357
lighting	intake, roof	Walk-in coolers	retaining	375
Valley flashing	louver	Walkways	sheet metal, area	267
Valuation fees	plumbing	asphalt	tile	289
Valuation, buildings	power	concrete	tilt-up	362
ValueTest bath fan	ridge	demolition	Walnut	
Valve box	roof	edge forms	parquet	158
Valves	roof turbine	forms	plank flooring	155
angle	screen	lighting	Wardrobe cabinets	458, 472, 473
backflow	soffit	snow-melting cable	Warning signs	442
ball	turbine	waterproofing	Wash	
check	Vermiculite	Wall	concrete finishing	356
circuit balancing	insulation	access doors	masonry	371
flow check	roof deck	anchors, glass block	painting	439
gate	Vertical blinds	anchors, masonry	surface prep	439
globe	Vertical discharge exhaust fan	assemblies, brick	Wash fountains	534
hose gate	Vertical panels, precast tilt-up	assemblies, concrete block	rough-in	531
mixing	Vibration sensors	assemblies, exterior	Wash sinks, surgeons	531, 535
OD tube	Vibrator compaction	assemblies, interior	Wash stations	534
pressure-reducing	Vibrators, rental	beds	Washer, clothes	
regulator	Vibro plate, rental	braces	rough-in	252
relief	Vibroflotation treatment	cladding	wiring	128
sprinkler	Video recorder, digital	cleaning	Washers	
stop	Videotape recorder	courses	galvanized	232
supply	Vinyl	cover plate	stainless steel	232
tempering	acrylic	coverings	Waste	
thermostatic mixing	casement window	demolition	disposal	332
water control	caulk	filler panels	handling equipment	491
Vanity	covered wallboard	fireblocks	receptacle	445
bases	fence	footing	Waste defined	3
mirrors	flashing	forms, concrete	Waste pipe	
Vanity tops	flooring	framing	ABS	512
Corian	flooring, sheet	framing, piecework	copper	512
cultured stone	molding	framing, steel	fittings	512
marble	runner	jointing	Water	
Vapor barriers	screen doors	painting	blast before painting	437
building paper	siding	panel systems	blasting	239, 263, 371, 436
concrete	soffit systems	piecework rates, framing	capacity fee	312
polyethylene film	tile flooring	plates	control valves	523
slab	wallcovering	protection systems	coolers	534
Vapor tight lights, LED	Vinyl plank flooring	reinforcing	coolers, for handicapped	477
Varathane finish	Vinyl windows	safes	coolers, rough-in	531
Varmeter	bay	sawing, concrete	distillation	250
Varnish wood finish	casement	sheathing, board	filters	529
Varnishing	double-hung	sheathing, exterior	fountains	534
Vault	garden	sheathing, interior	heaters	248, 526
door	half circle	sheathing, lumber	heating	248, 249
Vault doors	hopper	sheathing, OSB	heating, solar	528
VCR	jalousie	sheathing, piecework	heating, whole house	253
Vehicle	picture	sheathing, plywood	hose, service station	449
access control	single-hung	stiffener	meter boxes	221
detectors	sliding	studding	meter fee	312
Velour	Vinyl-clad wood windows	ties, masonry	meters	312
draperies	Visqueen polyethylene film	Wall jacks, computers	overhead	310
stage curtains	Vitrified clay pipe	Wall pack light fixture	pool heating, solar	250
Velux	Volatile materials emissions	Wallboard	pumps, wiring	130
roof windows	reduction, pollution	adhesive	service	312
skylights	control	demolition	softeners	250, 529
Veneer	Volcanic cinder track	gypsum	softeners, rough-in	252
brick	Volcanic rock	hardboard	solar heating	249
masonry	Volleyball posts	paint preparation	storage tanks, solar	249
Venetian blinds	Voltmeter	painting	tanks	529
	Vycor flashing		tanks, rental	325

temporary.....	319	steel.....	389	partition.....	443	twisted pair.....	591
testing.....	26	tilt-up.....	364	picture.....	299	Wisconsin tee.....	514
treatment.....	529	Weld-o-lets.....	499	reglazing.....	239	Wolmanized lumber.....	207
trucks, rental.....	325	Welfare costs.....	3	removal.....	337	Wonderboard tile backer.....	290
wells.....	295	Well drilling, subcontract.....	295	roof.....	279, 304	Wood	
Water closets		Wellpoint dewatering.....	602	screen.....	300	fences.....	148
commercial.....	532	Wenge cabinets.....	472	seals.....	294	filler.....	238
demolition.....	478	West coast fir lumber.....	194, 196	security grill.....	485	finishes.....	236
installation.....	478	Western red cedar siding.....	199	shades.....	296	floor finishing.....	56, 430
residential.....	247	Wet paint barricade.....	23	sills.....	296	flooring.....	55, 155, 430
rough-in.....	530	Wet patch roof cement.....	256, 257	skylights.....	277	flooring adhesive.....	159
Water heater		Wet sandblasting.....	263	steel.....	419	lumber.....	207
accessories.....	526	Wheel corner guards.....	387	stool, marble.....	381	paint preparation.....	239
tankless.....	249	Wheel loader		stool, MDF.....	226	piles.....	606
Water heaters		rental.....	138	stool, wood.....	226	preservative.....	207, 237
assemblies.....	527	Wheel loaders.....	598	storm.....	304	roofing.....	259
commercial.....	526	rental.....	139	teller.....	452	sealer.....	236
connections.....	527	Wheelbarrow		treatment.....	296	shingles.....	259
earthquake restraints.....	527	hauling debris.....	337	trim.....	53, 226	stain.....	236
electric.....	249, 527	hauling soil.....	602	vinyl.....	297, 298, 299, 300	treatment, lumber.....	207
gas.....	248	Wheelbarrows, rental.....	327	vinyl bay.....	299	waterproofing.....	236
instantaneous.....	527	Wheelchair		vinyl casement.....	299	Wood and composites.....	389
overflow pans.....	526	lifts.....	133	vinyl double-hung.....	297, 298	Wood chip mulch.....	187
propane.....	249	ramp.....	476	vinyl garden.....	299	Wood doors	
residential.....	249	swing platform.....	468	vinyl hopper.....	300	patio.....	121
safety pans.....	526	Whirlpool bathtubs.....	245	vinyl jalousie.....	299	screen.....	113
solar.....	249, 528	wiring.....	128	vinyl picture.....	299	Woodcore storm doors.....	115
stands.....	526	White cement.....	82, 427, 433	vinyl single-hung.....	297	Woodwork	
wiring.....	130	White roof coating.....	257	vinyl sliding.....	298	paint preparation.....	239
Water meter.....	524	Whiteboard (chalkboard).....	440	vinyl-clad awning.....	300	painting.....	241
Water table		Whitewash stain.....	237	vinyl-clad basement.....	301	staining.....	241
flashing.....	268	Whole house fans.....	141	vinyl-clad casement.....	300, 301	waxing.....	241
molding.....	222, 224	Wilsonart countertops.....	96	vinyl-clad wood.....	300, 301	Woodworking glue.....	18
Water-based stain.....	236	Wind clips.....	262	wall.....	422	Work tables	
Waterblasting.....	239, 371	Wind turbines.....	132	weatherstripping.....	294	food service.....	454
Watering		Windbreak, tennis.....	466	wood.....	419	kitchen.....	454
embankment grading.....	597	Window		Wiping stain.....	237	Workers' comp insurance.....	185
Waterproof adhesive.....	18	plywood cover.....	274	Wire		Working conditions.....	4
Waterproofing.....	294	removal.....	103	building.....	127	Woven wire partitions.....	444
acrylic.....	184	teller.....	453	copper.....	558	Wrecking, demolition.....	104
asphalt.....	397	transaction.....	453	electric.....	127	Wrenches, rental.....	328
building.....	382	Window air conditioners.....	177	ground.....	558	Wrought iron.....	150
concrete.....	294, 339	Window wells.....	305	lath.....	188	railing.....	386
insulation.....	184	Window, safety film.....	419	partitions.....	444	W-valley flashing.....	267, 268
masonry.....	218, 235, 294	Window, tint film.....	419	Romex.....	559	Wye pattern strainers.....	173, 539
membrane.....	397	Windows		screen.....	264	Wyes	
multi-surface.....	237	aluminum single-hung.....	301	service entrance.....	129, 557	ABS.....	514
paper.....	27	aluminum sliding.....	302	shelving.....	270	drain pipe.....	126
slab.....	339	apron.....	53	THHN, copper.....	558		
walkways.....	294	architectural.....	419	URD.....	558		
wood finish.....	236	awning.....	21, 300	USE.....	558		
WaterSeal wood sealer.....	236	awning, aluminum.....	302	XHHW, copper.....	559		
Waterstop, concrete.....	91, 349	bank.....	452	Wire brush			
Wattmeter.....	571	basement.....	301	finish.....	95	Xerographic prints.....	25
Waxing		bay.....	299	painting.....	439	XHHW wire.....	559
concrete.....	356	blinds.....	272	Wire glass.....	418	X-ray	
floors.....	238, 431	bow, wood.....	304	finish.....	91	barriers.....	484
woodwork.....	241	casement.....	299, 300, 301	fence.....	143	lead mesh fabric.....	471
Weather vanes.....	97	casing.....	54	gunite.....	357	mobile barriers.....	484
Weatherproof		caulking.....	78	reinforcing.....	91	protection.....	484
service entrance.....	570	circular, vinyl.....	299	Wireless access points.....	130	viewing panels.....	484
switchboards.....	570	cleaning.....	83, 331	Wiremold raceway.....	556		
Weatherproofing.....	27	coverings.....	273	Wireway, electrical.....	556		
wood finish.....	236	double-hung.....	303	Wiring			
Weatherstripping.....	294, 421	fixed.....	299	alarms.....	264	Yard	
Wedge tie, concrete form.....	355	frames, paint removal.....	233	campus network.....	459	deck.....	100
Wedges.....	205	framing.....	44	computer.....	130, 459	lighting.....	587
Weed eaters, rental.....	327	framing, steel.....	66	control wiring.....	189	Yardarm, nautical.....	449
Welded		garden.....	299	controllers.....	189	Yellow pine lumber.....	195
black steel pipe.....	494	glass.....	166	doorbell.....	105		
carbon steel pipe.....	494	grating.....	388	educational network.....	459		
mesh.....	91	impact.....	301	electric.....	127		
wire mesh.....	349	jalousie.....	299	fence, electric.....	144		
Welding		mantels.....	295	irrigation controls.....	189		
grounding.....	565	octagonal.....	303	landscape sprinklers.....	189		
machines, rental.....	329	paint preparation.....	239	phones.....	591		
rebar.....	348	painting.....	238, 239, 241	systems.....	591		
				telephone.....	591		

X

Xerographic prints.....	25
XHHW wire.....	559
X-ray	
barriers.....	484
lead mesh fabric.....	471
mobile barriers.....	484
protection.....	484
viewing panels.....	484

Y

Yard	
deck.....	100
lighting.....	587
Yardarm, nautical.....	449
Yellow pine lumber.....	195

Z

Z-bar flashing.....	267, 268
Z-brick.....	243
Zinc primers.....	234
Zone	
heating and cooling.....	178
Zone valves.....	492

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

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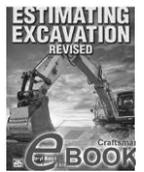


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How to calculate the amount of dirt you'll have to move and the cost of owning and operating the machines you'll do it with. Detailed, step-by-step instructions on how to assign bid prices to each part of the job, including labor and equipment costs. 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 eBook 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**

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8½ x 11, 232 pages, \$32.50

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6 pages, 8½ x 11, \$9.95. Published by Builder's Book, Inc.

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User-friendly International Building Code (IBC) Tabs are a great way to organize the IBC 2018. 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.

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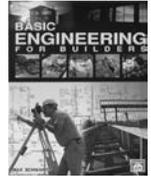
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