

Buy this complete title here: <https://goo.gl/2ReTws>

\$87.50



2017 65th Edition

NATIONAL CONSTRUCTION ESTIMATOR

Edited by Richard Pray

SAMPLE

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



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



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

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

Contents

A complete index begins on page 638

How to Use This Book	3-5
Abbreviations and Symbols	6
Craft Codes and Crews	7-9
Residential Division Labor Cost	10
Adjusting Labor Costs	11
Area Modification Factors	12-15
Credits and Acknowledgments	16
Residential Division	17-304
Adhesives	17
Basement doors	23
Building permit fees	28
Cabinets, kitchen	29
Carpentry, rule of thumb	32
Carpentry, assemblies	33
Carpentry, piecework rates	37
Carpentry, detailed breakdown	38
Carpentry, finish work	51
Carpentry, steel	56
Ceilings, suspended	79
Concrete work	84
Decking	98
Demolition	100
Doors, jambs, frames, and trim	105
Electrical work, subcontract	127
Elevators and lifts, subcontract	132
Excavation and backfill	134
Fences	141
Fire sprinkler systems	149
Flooring	152
Framing connectors	158
Garage doors	163
Glass, glazing	165
Gutters and downspouts	166
Gypsum drywall and accessories	167
Hardware	168
Heating and cooling	171
Insulation	179
Insurance and bonding	183
Landscaping	185
Lighting fixtures	188
Log home construction	191
Lumber and plywood	193
Markup (overhead and profit)	207
Masonry	208
Moldings	221
Paint removal	232
Paints, coatings, and supplies	233
Paneling	241
Paving	242
Plastering	243
Plumbing fixtures and equipment	244
Plumbing and heating piping	250
Roofing	254
Sheet metal	266
Siding	273
Skylights	276
Stairs	279
Taxes, Payroll	283
Tile	285
Wallcoverings	291
Windows	295
Construction Economics Division	305
Industrial & Commercial Division Labor Cost	307
Industrial and Commercial Division	308-337
01 General Requirements	308-330
02 Existing Conditions	330-336
03 Concrete	336-369
Concrete formwork	337
Reinforcing steel	344
Foundations	359
04 Masonry	369-380
Reinforcing and flashing	370
Brick and block walls	371
05 Metals	381-387
Structural steel	381
Steel floor and roof decking	382
06 Wood and Composites	387-395
Framing carpentry	387
07 Thermal & Moisture Protection	395-410
Thermal insulation	396
Roof insulation	397
Membrane roofing	399
08 Openings	410-421
Metal doors	410
Hardware	418
09 Finishes	421-438
Gypsum wallboard	421
Ceilings and flooring	427
10 Specialties	438-447
Partitions	441
11 Equipment	447-468
12 Furnishings	468-473
13 Special Construction	473-486
14 Conveying Equipment	486-489
21 Fire Suppression	489-491
22 Plumbing	492-533
Pipe and fittings	492
Hangers and supports	514
Valves, pumps, gauges	517
23 HVAC	533-539
Gas fired heaters	533
Hydronic & steam heating	535
26 Electrical	539-586
Rigid steel conduit	541
EMT conduit and wire	544
PVC conduit and wire	549
Conduit supports & hangers	552
Wire and cable	555
Lighting	580
27 Communications	587-592
31 Earthwork	592-607
Excavation and backfill	595
Shoring, bulkheads, piles	603
32 Exterior Improvements	607-624
Paving and curbs	607
Fencing and gates	615
33 Utilities	624-637
Pressure water pipe	626
Drain pipe	628
Index	638

This Book Is an Encyclopedia of 2017 Building Costs

The 2017 National Construction Estimator lists estimated construction costs to general contractors performing the work with their own crews, as of mid-2017. 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 306 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 638.

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-2017. Discounts may be available for purchases in larger volume.

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.

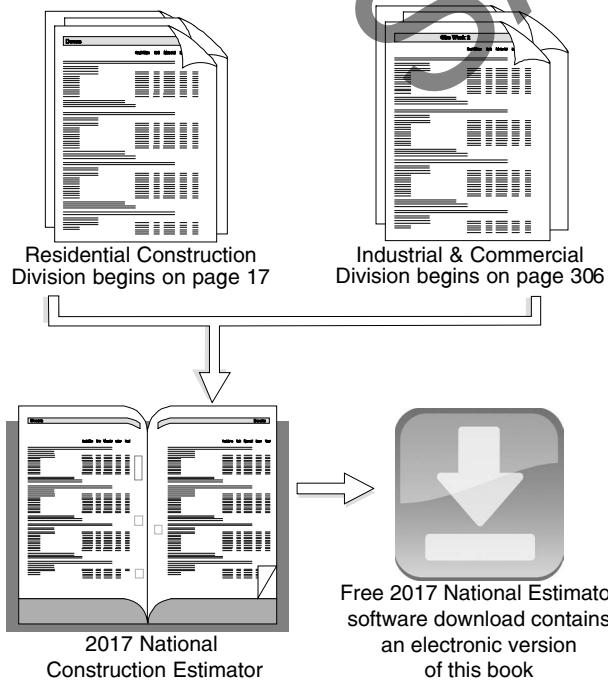
Waste and Coverage loss is included in the installed material cost. The cost of many materials per unit after installation is greater than the purchase price for the same unit because of waste, shrinkage or coverage loss during installation. For example, about 120 square feet of nominal 1" x 4" square 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 307 (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 183 and 283.

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 307 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 307 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 318 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 207 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 207 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 2016 and projected to mid-2017 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

AASHTO	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
CSPE	chloro sulfinated polyethylene	LP	liquefied propane	STC	quality glass
CSF	100 square feet	LS	lump sum	Std	sound transmission class
CSY	100 square yards	M	one thousand	SY	standard
CY	cubic yard	Mb	million bytes (characters)	T	square yard
d	penny	MBF	1,000 board feet	T&G	thick
D	depth	MBtu	1,000 British thermal units	TV	tongue & groove edge
DC	direct current	MCM	1,000 circular mils	UBC	television
dia	diameter	MDO	medium density overlaid	UL	Uniform Building Code
DSB	double strength B quality glass	MH	manhour	USDA	Underwriter's Laboratory
DWV	drain, waste, vent piping	Mi	mile	VLF	United States Dept.
Ea	each	MLF	1,000 linear feet	W	of Agriculture
EMT	electric metallic tube	MPH	miles per hour	Wk	vertical linear foot
EPDM	ethylene propylene diene monomer	mm	millimeter(s)	W/	width
equip.	equipment	Mo	month	x	week
exp.	exposure	MSF	1,000 square feet		with
F	Fahrenheit	NEMA	National Electrical Manufacturer's Association		by or times
		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 $\frac{1}{2}$ " 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 $\frac{1}{2}$ " 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 \$33.31. That's the average for a residential laborer (listed at \$29.82 per hour on page 10) and a residential carpenter (listed at \$36.79 per hour): \$29.82 plus \$36.79 is \$66.61. Divide by 2 to get \$33.305, (rounded up to \$33.31), 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 $\frac{1}{2}$ " BC wall sheathing is \$0.53 per square foot. That's the installation time (.016 manhours per square foot) multiplied by \$33.31, 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	\$33.31	1 laborer and 1 carpenter	BR	\$35.28	1 lather
B2	\$34.47	1 laborer, 2 carpenters	BS	\$32.63	1 marble setter
B3	\$32.14	2 laborers, 1 carpenter	CF	\$34.87	1 cement mason
B4	\$36.80	1 laborer 1 operating engineer 1 reinforcing iron worker	CT	\$34.67	1 mosaic & terrazzo worker
B5	\$36.41	1 laborer, 1 carpenter 1 cement mason 1 operating engineer 1 reinforcing iron worker	D1	\$35.76	1 drywall installer 1 drywall taper
B6	\$32.35	1 laborer, 1 cement mason	DI	\$35.78	1 drywall installer
B7	\$30.20	1 laborer, 1 truck driver	DT	\$35.73	1 drywall taper
B8	\$35.88	1 laborer 1 operating engineer	HC	\$28.87	1 plasterer helper
B9	\$32.47	1 bricklayer 1 bricklayer's helper	OE	\$41.93	1 operating engineer
BB	\$37.29	1 bricklayer	P1	\$36.24	1 laborer, 1 plumber
BC	\$36.79	1 carpenter	PM	\$42.65	1 plumber
BE	\$39.84	1 electrician	PP	\$33.67	1 painter, 1 laborer
BF	\$33.63	1 floor layer	PR	\$36.83	1 plasterer
BG	\$35.51	1 glazier	PT	\$37.51	1 painter
BH	\$27.64	1 bricklayer's helper	R1	\$35.48	1 roofer, 1 laborer
BL	\$29.82	1 laborer	RI	\$38.66	1 reinforcing iron worker
			RR	\$41.13	1 roofer
			SW	\$41.40	1 sheet metal worker
			T1	\$32.40	1 tile layer, 1 laborer
			TL	\$34.98	1 tile layer
			TR	\$30.57	1 truck driver

Commercial and Industrial Division

Craft Code	Cost Per Manhour	Crew Composition	Craft Code	Cost Per Manhour	Crew Composition
P5	\$44.53	3 laborers 1 tractor operator 1 truck driver	S8	\$50.07	2 pile drivers, 2 laborers 1 truck driver 1 crane operator 1 tractor operator
P6	\$51.35	1 laborer, 1 plumber	S9	\$47.62	1 pile driver, 2 laborers 1 tractor operator 1 truck driver
P8	\$45.42	1 laborer, 1 cement mason	SM	\$59.46	1 sheet metal worker
P9	\$47.61	1 carpenter, 1 laborer 1 cement mason	SP	\$63.46	1 sprinkler fitter
PA	\$52.21	1 painter	SS	\$50.98	1 laborer 2 tractor operators
PD	\$55.89	1 pile driver	T2	\$52.23	3 laborers, 3 carpenters 3 iron workers (structural) 1 crane operator 1 truck driver
PF	\$61.20	1 pipefitter	T3	\$52.26	1 laborer 1 reinforcing iron worker
PH	\$44.47	1 plasterer's helper	T4	\$45.29	1 laborer, 1 mosaic worker
PL	\$62.24	1 plumber	T5	\$49.96	1 sheet metal worker 1 laborer
PS	\$53.92	1 plasterer	T6	\$53.12	2 sheet metal workers 1 laborer
R3	\$45.92	2 roofers, 1 laborer	TD	\$45.08	1 truck driver
RB	\$64.07	1 reinforcing iron worker	TO	\$56.24	1 tractor operator
RF	\$48.65	1 roofer	U1	\$49.85	1 plumber, 2 laborers 1 tractor operator
S1	\$48.35	1 laborer 1 tractor operator	U2	\$47.71	1 plumber, 2 laborers
S3	\$50.66	1 truck driver 1 tractor operator			
S4	\$40.45	3 laborers			
S5	\$43.40	5 laborers 1 crane operator 1 truck driver			
S6	\$45.71	2 laborers 1 tractor operator			
S7	\$48.35	3 laborers 3 tractor operators			

Residential Division

Craft	1 Base wage per hour	2 Taxable fringe benefits (@5.48% of base wage)	3 Insurance and employer taxes (%)	4 Insurance and employer taxes (\$)	5 Non-taxable fringe benefits (@4.84% of base wage)	6 Total hourly cost used in this book
Bricklayer	\$27.20	\$1.49	25.39%	\$7.28	\$1.32	\$37.29
Bricklayer's Helper	20.16	1.10	25.39	5.40	0.98	27.64
Building Laborer	20.57	1.13	32.81	7.12	1.00	29.82
Carpenter	25.59	1.40	31.71	8.56	1.24	36.79
Cement Mason	25.87	1.42	23.18	6.33	1.25	34.87
Drywall installer	26.46	1.45	23.61	6.59	1.28	35.78
Drywall Taper	26.42	1.45	23.61	6.58	1.28	35.73
Electrician	30.35	1.66	19.86	6.36	1.47	39.84
Floor Layer	24.82	1.36	23.86	6.25	1.20	33.63
Glazier	25.82	1.41	25.83	7.03	1.25	35.51
Lather	26.56	1.46	21.31	5.97	1.29	35.28
Marble Setter	24.55	1.35	21.39	5.54	1.19	32.63
Millwright	26.03	1.43	21.27	5.84	1.26	34.56
Mosaic & Terrazzo Worker	26.09	1.43	21.39	5.89	1.26	34.67
Operating Engineer	30.61	1.68	25.27	8.16	1.48	41.93
Painter	27.46	1.50	24.92	7.22	1.33	37.51
Plasterer	26.20	1.44	28.65	7.92	1.27	36.83
Plasterer Helper	20.54	1.13	28.65	6.21	0.99	28.87
Plumber	31.37	1.72	24.30	8.04	1.52	42.65
Reinforcing Ironworker	27.50	1.51	28.67	8.32	1.33	38.66
Roofer	26.19	1.44	44.28	12.23	1.27	41.13
Sheet Metal Worker	30.04	1.65	26.06	8.26	1.45	41.40
Sprinkler Fitter	30.82	1.69	25.12	8.17	1.49	42.17
Tile Layer	26.33	1.44	21.39	5.94	1.27	34.98
Truck Driver	22.15	1.21	26.27	6.14	1.07	30.57

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 307. 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 2017.

Column 2, taxable fringe benefits, includes vacation pay, sick leave and other taxable benefits. These fringe benefits average 5.48% 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 183. Taxes are itemized in the section on page 283. 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 4.84% 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 307.

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:

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

Then add the regular work hours for the year:

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

Multiply these hours by the base wage per hour. If you pay carpenters \$10.00 per hour, the calculation would be:

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

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

10. Continuing with our example, we'll use 31.63%, the rate for carpenters in column 3 on page 10. To increase the annual taxable wage by 31.71%, we'll multiply by 1.3171:

$$\begin{array}{r} \$20,800 \text{ per year} \\ \times 1.3171 \text{ tax & insurance rate} \\ \hline \$27,396 \text{ annual cost} \end{array}$$

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.

$$\begin{array}{r} \$4,124 \text{ medical plan} \\ + 27,396 \text{ annual cost} \\ \hline \$31,520 \text{ total annual cost} \end{array}$$

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:

$$\frac{\$31,520}{2,000} = \$15.76 \text{ per hour}$$

Finally, find your modification factor for the labor costs in this book. Divide your total hourly labor cost by the total hourly labor cost shown on page 10. For the carpenter in our example, the figure in column 6 is \$36.79.

$$\frac{\$15.76}{\$36.79} = .428$$

Your modification factor is 42.8%. Multiply any building carpenter (Craft Code BC) labor costs in the Residential Division of this book by .428 to find your estimated cost. For example, on page 24 the labor cost for installing an 18" long towel bar is \$10.30 per each bar. If installed by your carpenter working at \$10.00 per hour, your estimated cost would be 42.8% of \$10.30 or \$4.41. The manhours would remain the same @.280, assuming normal productivity.

If the Labor Rate Is Unknown

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

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

Area Modification Factors

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

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

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

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

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

Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.	Location	Zip	Mat.	Lab.	Equip.	Total Wtd. Avg.						
Alabama Average																							
Anniston	362	-3	-13	-1	-8%	Long Beach	907-908	3	17	1	9%	Washington	200-205	2	23	1	12%						
Auburn	368	-1	-8	0	-4%	Los Angeles	900-901	3	13	1	8%	Altamonte Springs	327	-1	-6	0	-3%						
Bellamy	369	-2	13	-1	5%	Marysville	959	1	-7	0	-3%	Bradenton	342	0	-12	0	-6%						
Birmingham	350-352	-3	8	-1	2%	Modesto	953	1	2	0	1%	Brooksville	346	0	-16	0	-7%						
Dothan	363	-1	-13	0	-7%	Mojave	935	0	11	0	5%	Daytona Beach	321	-2	-18	-1	-9%						
Evergreen	364	-1	-20	0	-10%	Novato	949	3	21	1	11%	Fort Lauderdale	333	3	1	1	2%						
Gadsden	359	-4	-15	-1	-9%	Oakland	945-947	3	33	1	17%	Fort Myers	339	0	-12	0	-6%						
Huntsville	358	1	-3	0	-1%	Orange	928	3	22	1	12%	Fort Pierce	349	-2	-20	-1	-10%						
Jasper	355	-1	-16	-1	-8%	Oxnard	930	3	1	1	2%	Gainesville	326	-1	-18	0	-9%						
Mobile	365-366	-1	-3	0	-2%	Pasadena	910-912	4	16	1	9%	Jacksonville	322	-1	-3	0	-2%						
Montgomery	360-361	-1	-3	0	-2%	Rancho Cordova	956-957	2	6	1	4%	Lakeland	338	-3	-13	-1	-8%						
Scottsboro	357	0	-8	0	-4%	Redding	960	1	-8	0	-3%	Melbourne	329	-2	-15	-1	-8%						
Selma	367	-1	-10	0	-5%	Richmond	948	2	35	1	17%	Miami	330-332	2	-1	1	1%						
Sheffield	356	-1	1	0	0%	Riverside	925	1	7	0	4%	Naples	341	3	-8	1	-2%						
Tuscaloosa	354	1	-9	0	-4%	Sacramento	958	1	6	0	3%	Ocala	344	-3	-23	-1	-12%						
Alaska Average																							
Anchorage	995	17	38	6	27%	San Bernadino	923-924	0	4	0	2%	Orlando	328	0	2	0	1%						
Fairbanks	997	16	40	5	27%	San Diego	919-921	3	13	1	8%	Panama City	324	-2	-21	-1	-11%						
Juneau	998	18	20	6	19%	San Francisco	941	3	55	1	27%	Pensacola	325	0	-17	0	-8%						
Ketchikan	999	3	36	1	18%	San Jose	950-951	3	33	1	17%	Saint Augustine	320	-1	-4	0	-2%						
King Salmon	996	16	32	5	23%	San Mateo	943-944	4	40	1	21%	Saint Cloud	347	0	-5	0	-2%						
Arizona Average																							
Chambers	865	1	-19	0	-8%	Santa Barbara	931	3	11	1	7%	St Petersburg	337	-1	-12	0	-6%						
Douglas	855	0	-18	0	-8%	Santa Rosa	954	3	7	1	5%	Tallahassee	323	0	-13	0	-6%						
Flagstaff	860	2	-17	1	-7%	Stockton	952	1	7	0	4%	Tampa	335-336	-1	-1	0	-1%						
Kingman	864	1	-11	0	-5%	Sunnyvale	940	3	39	1	20%	West Palm Beach	334	1	-5	0	-2%						
Mesa	852	1	5	0	3%	Van Nuys	913-916	3	14	1	8%	District of Columbia Average											
Phoenix	850	1	6	0	3%	Whittier	906	3	14	1	8%	Washington	200-205	2	23	1	12%						
Prescott	863	3	-16	1	-6%	Colorado Average																	
Show Low	859	1	-18	0	-8%	Aurora	800-801	3	11	1	7%	Albany	317	-2	-10	-1	-6%						
Tucson	856-857	0	-10	0	-5%	Boulder	803-804	3	5	1	4%	Athens	306	0	-11	0	-5%						
Yuma	853	0	5	0	2%	Colorado Springs	808-809	2	-3	1	0%	Atlanta	303	3	23	1	12%						
Arkansas Average																							
Batesville	725	0	-20	0	-9%	Denver	802	3	13	1	8%	Augusta	308-309	-2	-2	-1	-2%						
Camden	717	-4	1	-1	-2%	Durango	813	1	-3	0	-1%	Buford	305	0	-5	0	-2%						
Fayetteville	727	0	-8	0	-4%	Fort Morgan	807	1	-6	0	-2%	Calhoun	307	-1	-19	0	-9%						
Fort Smith	729	-1	-14	0	-7%	Glenwood Springs	816	2	6	1	4%	Columbus	318-319	-1	-6	0	-3%						
Harrison	726	-1	-25	0	-12%	Grand Junction	814-815	1	-1	0	0%	Dublin/Fort Valley	310	-3	-13	-1	-8%						
Hope	718	-3	-15	-1	-8%	Greeley	806	3	8	1	5%	Hinesville	313	-2	-11	-1	-6%						
Hot Springs	719	-2	-25	-1	-13%	Longmont	805	3	1	1	2%	Kings Bay	315	-2	-19	-1	-10%						
Jonesboro	724	-1	-18	0	-9%	Pagosa Springs	811	0	-9	0	-4%	Macon	312	-2	-7	-1	-4%						
Little Rock	720-722	-1	-6	0	-3%	Pueblo	810	-1	2	0	0%	Marietta	300-302	1	8	0	4%						
Pine Bluff	716	-4	-19	-1	-11%	Salida	812	2	-15	1	-6%	Savannah	314	-1	-7	0	-4%						
Russellville	728	0	-9	0	-4%	Connecticut Average												Statesboro	304	-2	-21	-1	-11%
West Memphis	723	-3	-1	-1	-2%	Bridgeport	066	0	13	0	6%	Valdosta	316	-1	-1	0	-1%						
California Average																							
Alhambra	917-918	3	15	1	8%	Bristol	060	1	24	0	12%	Hawaii Average											
Bakersfield	932-933	0	4	0	2%	Fairfield	064	2	17	1	9%	Aliamanu	968	17	29	6	22%						
El Centro	922	1	-1	0	0%	Hartford	061	0	23	0	11%	Ewa	967	17	23	6	20%						
Eureka	955	1	-12	0	-5%	New Haven	065	1	15	0	7%	Halawa Heights	967	17	23	6	20%						
Fresno	936-938	0	-5	0	-2%	Norwich	063	0	7	0	3%	Hilo	967	17	23	6	20%						
Herlong	961	2	-8	1	-3%	Stamford	068-069	4	21	1	12%	Honolulu	968	17	29	6	22%						
Inglewood	902-905	3	16	1	9%	Waterbury	067	1	12	0	6%	Kailua	968	17	29	6	22%						
Irvine	926-927	3	24	1	13%	West Hartford	062	1	9	0	5%	Lualualei	967	17	23	6	20%						
Lompoc	934	3	2	1	3%	Delaware Average												Millanil Town	967	17	23	6	20%
Dover	199	1	-9	0	-4%	Newark	197	2	10	1	6%	Pearl City	967	17	23	6	20%						
Wilmington	198	0	9	0	4%	Waianae	967	17	23	6	20%	Waiuku (Maui)	967	17	23	6	20%						

Credits and Acknowledgments

This book has over 30,000 cost estimates for 2017. To develop these estimates, the editors relied on information supplied by hundreds of construction cost authorities. We offer our sincere thanks to the contractors, engineers, design professionals, construction estimators, material suppliers and manufacturers who, in the spirit of cooperation, have assisted in the preparation of this Sixty-fifth Edition of the National Construction Estimator. Many of the cost authorities who supplied information for this volume are listed below.

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

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

Cover design: Jennifer Johnson

Photos: iStock by Getty Images™

Adhesives

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

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

	Unit	1/8"	1/4"	3/8"	1/2"
Subfloor adhesive, on floors					
12" OC members	CSF	2.25	9.01	20.30	36.00
16" OC members	CSF	1.69	6.75	15.20	27.00
20" OC members	CSF	1.35	5.40	12.20	21.60
24" OC members	CSF	1.13	4.50	10.10	18.00
Wall sheathing or shear panel adhesive, on walls					
16" OC members	CSF	2.79	11.10	25.10	44.60
20" OC members	CSF	2.23	8.91	20.10	35.70
24" OC members	CSF	1.86	7.43	16.70	29.70
Polystyrene or polyurethane foam panel adhesive, on walls					
12" OC members	CSF	3.45	13.80	31.10	55.30
16" OC members	CSF	2.59	10.40	23.30	41.50
20" OC members	CSF	2.08	8.29	18.70	33.20
24" OC members	CSF	1.73	6.91	15.50	27.60
Gypsum drywall adhesive					
12" OC members	CSF	1.22	4.86	10.90	19.50
16" OC members	CSF	.91	3.65	8.21	14.60
20" OC members	CSF	.73	2.92	6.57	11.70
24" OC members	CSF	.61	2.43	5.47	9.73
Hardboard or plastic panel adhesive, on walls					
12" OC members	CSF	3.31	13.20	29.80	52.90
16" OC members	CSF	2.48	9.92	22.30	39.70
20" OC members	CSF	1.98	7.94	17.90	31.80
24" OC members	CSF	1.65	6.62	14.90	26.50

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	—	2.76
16" OC members	BC@.056	CSF	—	2.06
20" OC members	BC@.052	CSF	—	1.91
24" OC members	BC@.042	CSF	—	1.55
Interior and exterior wall members				
12" OC members	BC@.100	CSF	—	3.68
16" OC members	BC@.090	CSF	—	3.31
20" OC members	BC@.084	CSF	—	3.09
24" OC members	BC@.084	CSF	—	3.09

Special purpose adhesives

Construction adhesive, for counters, cabinets, paneling,

brick veneer, ceramic fixtures, shelving,
sets in 10 minutes, 10.5 oz. cartridge

— Ea 1.62 — 1.62

Epoxy-tie adhesive, bonds concrete, fills cracks to 3/4",
seals doors and windows, anchor grouting,

— Ea 22.40 — 22.40

non-shrink, 22 oz. cartridge

Gypsum drywall adhesive, waterproof, bonds to wood,
metal, masonry, concrete, 29 oz. cartridge

— Ea 4.29 — 4.29

Aggregate

	Craft@Hrs	Unit	Material	Labor	Total
Latex FRP adhesive, indoor, bonds wood, concrete, drywall, foamboard, trowel grade, gallon	—	Ea	22.00	—	22.00
Panel insulation adhesive, waterproof, for polyurethane & polystyrene panels, bonds to wood, metal, masonry, concrete, 4.5 lbs.	—	Ea	33.00	—	33.00
Marine adhesive/sealant, 10 oz.	—	Ea	16.00	—	16.00
Project adhesive, rubber-based, bonds plywood, hardboard fiberglass, drywall, foam board, shelving, ceramic fixtures, 10 minute work time, 10.5 oz. cartridge	—	Ea	3.60	—	3.60
		Unit	1 quart can	1 gallon can	
General purpose adhesives					
Acoustic tile adhesive, solvent base, waterproof, sound deadening type		Ea	—	16.50	
Aliphatic resin woodworking glue		Ea	11.50	26.00	
Carpet cement, outdoor		Ea	12.00	—	
Professional carpenter's glue, multi-purpose		Ea	10.00	30.00	
Contact cement, rubber based, waterproof, bonds veneers to plywood, particleboard, wallboard		Ea	16.00	32.00	
Gel contact cement		Ea	14.50	—	
Resilient flooring adhesive, latex base, adheres to concrete, plywood, felt, sheet flooring		Ea	7.00	17.50	
Tile cement, solvent base, ceramic/stone, interior		Ea	11.00	24.00	

	Craft@Hrs	Unit	Material	Labor	Total
Aggregate Typical prices, 5 mile haul, 24 ton minimum. See also Roofing, Built-up					
Crushed stone (1.4 tons per CY)					
3/8" stone	—	Ton	26.50	—	26.50
3/4" (Number 3)	—	Ton	25.20	—	25.20
1-1/2" (Number 2)	—	Ton	26.50	—	26.50
Crushed slag, typical prices where available					
3/4" slag	—	Ton	17.00	—	17.00
1-1/2"	—	Ton	17.40	—	17.40
Washed gravel (1.4 tons per CY)					
3/4" gravel	—	Ton	26.50	—	26.50
1-1/2"	—	Ton	26.60	—	26.60
Fill sand (1.35 tons per CY)	—	Ton	12.30	—	12.30
Add per ton less than 24 tons	—	Ton	7.77	—	7.77
Add for delivery over 5 miles, one way	—	Mile	10.00	—	10.00

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

Appraisal and Arbitration Fees

	Craft@Hrs	Unit	Material	Labor	Total
Single family residences, condominiums, planned unit developments (PUDs). Fees for complex, expensive (over \$1 million) or atypical properties or those that require higher licensure than a state license are usually negotiated. Based on square feet of gross living area (excluding the garage).					
To 2,500 square feet	—	LS	—	—	375.00
Over 2,500 SF to 3,500 SF	—	LS	—	—	425.00
Over 3,500 SF to 5,000 SF	—	LS	—	—	525.00
Over 5,000 SF	—	LS	—	—	775.00
Small residential income properties (duplex, triplex, quadplex)					
2 to 4 units	—	LS	—	—	675.00
Apartment houses, commercial and industrial buildings					
To \$300,000 valuation	—	LS	—	—	3,250.00
Over \$300,000 to \$1,000,000 valuation	—	LS	—	—	4,250.00
Over \$1,000,000 to \$3,000,000 valuation	—	LS	—	—	4,750.00
Over \$3,000,000 to \$5,000,000 valuation	—	LS	—	—	6,000.00
Other services					
Additional photograph (each)	—	LS	—	—	27.50
Outlying area fee	—	LS	—	—	55.00
Satisfactory Completion (old Form 442 / new Form 1004d)	—	LS	—	—	150.00
Appraisal Update same comps (Form 1004d)	—	LS	—	—	300.00
Operating Income Statement (FNMA 216)	—	LS	—	—	80.00
SFR Rental Survey (FNMA 1007)	—	LS	—	—	80.00
Appraisal review (desk)	—	LS	—	—	175.00
Appraisal review (field)	—	LS	—	—	375.00
Drive-by appraisal (Form 2055) starting at	—	LS	—	—	275.00
Drive-by appraisal (Form 2070/2075)	—	LS	—	—	225.00
Machinery (Fee is based on total value of equipment appraised) Additional charges for travel and lodging may be required					
To \$30,000 valuation	—	LS	—	—	620.00
Over \$30,000 to \$100,000 valuation	—	LS	—	—	830.00
Over \$100,000 to \$500,000 valuation	—	LS	—	—	1,400.00
Over \$500,000 to \$1,000,000 valuation	—	LS	—	—	1,900.00
Over \$1,000,000 to \$5,000,000 valuation	—	LS	—	—	3,250.00
Court testimony (excluding preparation)	—	Day	—	—	1,500.00
Consulting fees are billed at an hourly rate	—	Hour	—	—	190.00
Outside of office meetings or court appearance are billed including travel time and expenses round trip, minimum 4 hours.					

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

Arbitration and Mediation Fees

	Unit	Initial Filing Fee	Case Service Fee
Claims to \$10,000	LS	775.00	200.00
Claims over \$10,000 to \$75,000	LS	975.00	300.00
Claims over \$75,000 to \$150,000	LS	1,850.00	750.00
Claims over \$150,000 to \$300,000	LS	2,800.00	1,250.00
Claims over \$300,000 to \$500,000	LS	4,350.00	1,750.00
Claims over \$500,000 to \$1,000,000	LS	6,200.00	2,500.00
Claims over \$1,000,000 to \$5,000,000	LS	8,200.00	3,250.00
Claims over \$5,000,000 to \$10,000,000	LS	10,200.00	4,000.00
Claims over \$10,000,000 *	LS	*	6,000.00
No Amount Stated **	LS	3,350.00	1,250.00

* \$10 million and above – Base fee is \$12,800 plus .01% of the amount of claim above \$10 million. Filing fees are capped at \$65,000.

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

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

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

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

Nonrefundable retainer (half from each party)	—	Ea	—	—	330.00
Weekday sessions after the initial consultation	—	Hr	—	—	166.00
Nonrefundable retainer for weekend mediation	—	Ea	—	—	400.00
Weekend mediation sessions	—	Hr	—	—	250.00

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



Custom home, eye level view

Simple rendering	—	LS	—	—	992.00
Complex rendering	—	LS	—	—	1,450.00

Custom home, bird's eye view

Simple rendering	—	LS	—	—	1,200.00
Complex rendering	—	LS	—	—	1,710.00

Tract homes in groups of five or more (single floor plans, multiple elevations), eye level view

Simple rendering	—	LS	—	—	586.00
Complex rendering	—	LS	—	—	807.00

Tract homes in groups of five or more (single floor plans, multiple elevations), bird's eye view

Simple rendering	—	LS	—	—	754.00
Complex rendering	—	LS	—	—	1,220.00

Tract homes or condominium project, overall bird's eye view

10-25 homes or living units	—	LS	—	—	3,730.00
-----------------------------	---	----	---	---	----------

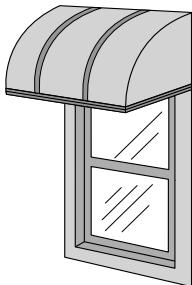
Typical commercial structure

Eye level view	—	LS	—	—	1,640.00
Bird's eye view	—	LS	—	—	1,840.00

Complex commercial structure

Eye level view	—	LS	—	—	2,420.00
Bird's eye view	—	LS	—	—	3,120.00

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	—	—	628.00
Large condo or apartment projects	—	LS	—	—	1,580.00
Tract homes	—	LS	—	—	394.00
Commercial structure, line drawing	—	LS	—	—	1,190.00
Awnings and Canopies for Doors and Windows					
Costs for awnings include all hardware. All have adjustable support arms to control angle height and preferred amount of window coverage. For larger size aluminum awnings, price two awnings and add for splice kit below. For commercial grade awnings, see the Industrial and Commercial Division section 12, Furnishings.					
Natural aluminum ribbed awning with clear, weather-resistant finish and 26" arms					
36" wide x 30" long	SW@1.45	Ea	60.80	60.00	120.80
48" wide x 30" long	SW@1.86	Ea	78.70	77.00	155.70
60" wide x 30" long	SW@2.07	Ea	97.90	85.70	183.60
72" wide x 30" long	SW@2.27	Ea	110.00	94.00	204.00
Add for door canopy with 17" drop sides	—	%	50.0	—	—
Custom colored window awnings in stripes or solids, with baked enamel finish and ventilation panels					
30" wide x 24" high	SW@1.45	Ea	98.80	60.00	158.80
36" wide x 36" high	SW@1.45	Ea	148.00	60.00	208.00
48" wide x 48" high	SW@1.87	Ea	251.00	77.40	328.40
48" wide x 60" high	SW@1.87	Ea	355.00	77.40	432.40
60" wide x 72" high	SW@2.07	Ea	389.00	85.70	474.70
72" wide x 72" high	SW@2.26	Ea	532.00	93.60	625.60
Add for splice kit with overlap slats	SW@.218	Ea	20.50	9.03	29.53
Security roll-up awning with pull cord assembly and folding arms, clear weather-resistant finish. Awning rolls down to cover whole window. 48" long, 24" arms					
36" wide	SW@1.52	Ea	188.00	62.90	250.90
48" wide	SW@1.94	Ea	225.00	80.30	305.30
Plastic awning with baked-on acrylic finish, ventilated side panels, and reinforced metal frame, hardware included. 24" drop, 24" projection					
36" wide	BC@1.58	Ea	165.00	58.10	223.10
42" wide	BC@1.75	Ea	183.00	64.40	247.40
48" wide	BC@2.02	Ea	210.00	74.30	284.30
60" wide	BC@2.26	Ea	236.00	83.10	319.10
72" wide	BC@2.47	Ea	253.00	90.90	343.90
96" wide	BC@2.79	Ea	321.00	103.00	424.00
Plastic door canopy with 36" projection					
42" wide	BC@1.80	Ea	345.00	66.20	411.20
Traditional fabric awning, with waterproof, acrylic duck, colorfast fabric, double stitched seams, and tubular metal framing and pull cord assembly. 24" drop, 24" projection					
30" wide	BC@1.35	Ea	58.20	49.70	107.90
36" wide	BC@1.58	Ea	76.50	58.10	134.60
42" wide	BC@1.80	Ea	71.30	66.20	137.50
48" wide	BC@2.02	Ea	83.60	74.30	157.90
Add for 30" drop, 30" projection	—	%	10.0	20.0	—
Cloth canopy patio cover, with front bar and tension support rafters, 9" valance and 8' projection					
8' x 10'	BC@2.03	Ea	353.00	74.70	427.70
8' x 15'	BC@2.03	Ea	486.00	74.70	560.70

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	42.20	—	42.20
Pallet quantities, multiples of 32 units	—	Ea	39.50	—	39.50

Reflectorized plastic, injected barricade, NCHRP-350 certified meets MUTCD specifications 8" to 12" wide rail, 4" to 6" wide stripes, 40" legs, no light

Type I, 2' wide, 3' high, Top panel 12" height, 1 reflectorized rail each side



Quantities from 1 - 15 units	—	Ea	53.60	—	53.60
Quantities from 16 - 31 units	—	Ea	50.00	—	50.00
Pallet quantities, multiples of 32 units	—	Ea	46.40	—	46.40

Type II, 2' wide, 3' high, Top panel 8" height, 1 reflectorized rail each side

Quantities from 1 - 15 units	—	Ea	59.90	—	59.90
Quantities from 16 - 31 units	—	Ea	57.40	—	57.40
Pallet quantities, multiples of 32 units	—	Ea	55.40	—	55.40

Type III, 4' wide, 5' high, 3 reflectorized rails each side, wood & steel legs

Quantities from 1 - 15 units	—	Ea	132.00	—	132.00
Quantities from 16 - 31 units	—	Ea	127.00	—	127.00
Pallet quantities, multiples of 32 units	—	Ea	122.00	—	122.00

Add for lighted units without batteries (batteries last 2 months)

Amber lens	—	Ea	19.20	—	19.20
Red lens	—	Ea	20.10	—	20.10
Batteries, 6 volt (2 needed)	—	Ea	4.75	—	4.75

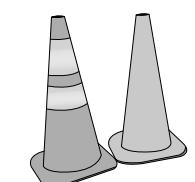
Utility barricade lights, solar powered Utility barricade solar powered lights, compliant with M.U.T.C.D. Specification 6E-5 and ITE Specifications for Flashing / Steady Burn warning light, 180 degree swivel base axis.



Utility barricade solar powered lights	—	Ea	45.00	—	45.00
--	---	----	-------	---	-------

Miscellaneous signage/traffic control

"Road Closed", reflectorized, 30" x 48", Engineer Grade



—	Ea	87.70	—	87.70
---	----	-------	---	-------

"Construction Zone", 4' x 4' high intensity grade

—	Ea	240.00	—	240.00
---	----	--------	---	--------

High-rise tripod with 3 orange flags

—	Ea	196.00	—	196.00
---	----	--------	---	--------

Flags

—	Ea	3.72	—	3.72
---	----	------	---	------

Traffic cones, PVC

Non-reflectorized type

18" high	—	Ea	6.10	—	6.10
28" high	—	Ea	9.50	—	9.50

Reflectorized type

18" high	—	Ea	9.50	—	9.50
28" high	—	Ea	15.70	—	15.70
36" high	—	Ea	20.70	—	20.70

Lane delineator, 42" orange plastic cylinder with 2 reflectors on a 12 pound

rubber base	—	Ea	20.70	—	20.70
-------------	---	----	-------	---	-------

Mesh signs, orange, 48" x 48", includes brace and clamp

—	Ea	68.20	—	68.20
---	----	-------	---	-------

Hand-held traffic paddles, "Stop" and "Slow"

—	Ea	26.90	—	26.90
---	----	-------	---	-------

Basement Doors

	Craft@Hrs	Unit	Material	Labor	Total
Utility Highway Barricade Rental					
Lighted units, rental, per day	—	Ea	.35	—	.35
Unlighted units, rental per day	—	Ea	.25	—	.25
Add for pickup and delivery, per trip	—	Ea	35.00	—	35.00
Typical labor cost, place and remove any barricade					
Per use	BL@.160	Ea	—	4.77	4.77
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	9.00	—	9.00
Various colors, 3" x 200', "Danger"	—	Ea	5.50	—	5.50

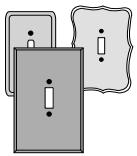
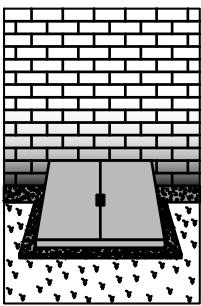
Basement Doors Good quality 12 gauge primed steel, center opening basement doors. Costs include assembly and installation hardware. No concrete, masonry, anchor placement or finish painting included.

Doors (overall dimensions)

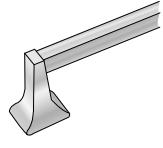
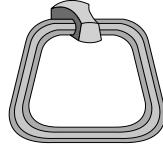
Classic Series standard, all sizes	BC@3.41	Ea	857.00	125.00	982.00
SLW Series standard, all sizes	BC@3.41	Ea	888.00	125.00	1,013.00
Ultra Series,	BC@3.41	Ea	1,180.00	125.00	1,305.00
Add for keyed lock	BC@.160	Ea	105.00	5.89	110.89
Door extensions (available for 19-1/2"H, 55"W, 72"L door only)					
6" deep	BC@1.71	Ea	212.00	62.90	274.90
12" deep	BC@1.71	Ea	277.00	62.90	339.90
18" deep	BC@1.71	Ea	346.00	62.90	408.90
Stair stringers, steel, pre-cut for 2" x 10" wood treads (without treads)					
32" to 39" stair height	BC@1.71	Ea	100.00	62.90	162.90
48" to 55" stair height	BC@1.71	Ea	127.00	62.90	189.90
56" to 64" stair height	BC@1.71	Ea	140.00	62.90	202.90
65" to 72" stair height	BC@1.71	Ea	157.00	62.90	219.90
73" to 79" stair height	BC@1.71	Ea	218.00	62.90	280.90
81" to 88" stair height	BC@1.71	Ea	236.00	62.90	298.90
89" to 97" stair height	BC@1.71	Ea	252.00	62.90	314.90

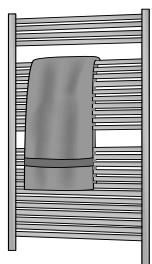
Bathroom Accessories Average quality. Better quality brass accessories cost 75% to 100% more. See also Medicine Cabinets and Vanities

Cup and toothbrush holder, chrome	BC@.258	Ea	12.20	9.49	21.69
Cup holder, porcelain, surface mounted	BC@.258	Ea	8.58	9.49	18.07
Cup, toothbrush & soap holder, recessed	BC@.258	Ea	32.50	9.49	41.99
Cup, toothbrush holder, polished brass	BC@.258	Ea	17.40	9.49	26.89
Electrical plates, chrome plated					
Switch plate, single	BE@.154	Ea	4.55	6.14	10.69
Switch plate, double	BE@.154	Ea	6.01	6.14	12.15
Duplex receptacle plate	BE@.154	Ea	4.55	6.14	10.69
Duplex receptacle and switch	BE@.154	Ea	5.99	6.14	12.13



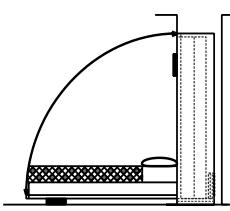
Bathroom Accessories

	Craft@Hrs	Unit	Material	Labor	Total
Grab bars					
Tubular chrome plated, with anchor plates					
Straight bar, 16"	BC@.414	Ea	26.70	15.20	41.90
Straight bar, 24"	BC@.414	Ea	32.50	15.20	47.70
Straight bar, 32"	BC@.414	Ea	35.30	15.20	50.50
"L"- shaped bar, 16" x 32"	BC@.620	Ea	81.80	22.80	104.60
					
Stainless steel, with anchor plates					
Straight bar, 16"	BC@.414	Ea	40.40	15.20	55.60
Straight bar, 24"	BC@.414	Ea	48.60	15.20	63.80
Straight bar, 32"	BC@.414	Ea	52.80	15.20	68.00
"L"- shaped bar, 16" x 32"	BC@.620	Ea	114.00	22.80	136.80
Mirrors, stainless steel framed, surface mount, no light or cabinet					
16" high x 20" wide	BG@.420	Ea	64.50	14.90	79.40
18" high x 24" wide	BG@.420	Ea	74.90	14.90	89.80
18" high x 36" wide	BG@.420	Ea	115.00	14.90	129.90
24" high x 36" wide	BG@.420	Ea	134.00	14.90	148.90
48" high x 24" wide	BG@.420	Ea	166.00	14.90	180.90
Mirrors, wood framed, surface mount, better quality					
18" x 29" rectangular	BG@.420	Ea	80.00	14.90	94.90
20" x 27" oval, oak	BG@.420	Ea	114.00	14.90	128.90
Robe hook					
Chrome	BC@.258	Ea	24.00	9.49	33.49
Double, solid brass	BC@.258	Ea	23.10	9.49	32.59
					
Shower curtain rods, chrome plated					
60", recessed	BC@.730	Ea	28.10	26.90	55.00
66", recessed	BC@.730	Ea	30.80	26.90	57.70
Soap holder, surface mounted, with drain holes					
Williamsburg, satin chrome	BC@.258	Ea	57.20	9.49	66.69
Polished brass	BC@.258	Ea	18.70	9.49	28.19
					
Facial tissue holder, stainless steel, recessed					
Toilet tissue roll holder, chrome, recessed					
Toothbrush holder, chrome, surface mount					
Towel bars, 3/4" round bar					
18" long, chrome	BC@.280	Ea	14.70	10.30	25.00
24" long, chrome	BC@.280	Ea	17.50	10.30	27.80
30" long, chrome	BC@.280	Ea	20.60	10.30	30.90
36" long, chrome	BC@.280	Ea	23.50	10.30	33.80
18" long, solid brass	BC@.280	Ea	47.80	10.30	58.10
24" long, solid brass	BC@.280	Ea	50.30	10.30	60.60
					
Towel rack, swing-arm, chrome, 3 bars, 12" L					
Towel rings					
Williamsburg chrome and brass	BC@.280	Ea	45.30	10.30	55.60
Williamsburg chrome and porcelain	BC@.280	Ea	43.30	10.30	53.60
					
Towel shelf, chrome, 24" L with bar below					
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	739.00	33.90	772.90
26" high, 24" wide, standard colors	BE@.850	Ea	788.00	33.90	821.90
26" high, 24" wide, chrome finish	BE@.850	Ea	2,440.00	33.90	2,473.90



	Craft@Hrs	Unit	Material	Labor	Total
35" high, 16" wide, standard colors	BE@1.00	Ea	923.00	39.80	962.80
35" high, 24" wide, standard colors	BE@1.00	Ea	876.00	39.80	915.80
35" high, 24" wide, chrome finish	BE@1.00	Ea	2,930.00	39.80	2,969.80
44" high, 16" wide, standard colors	BE@1.10	Ea	923.00	43.80	966.80
44" high, 24" wide, standard colors	BE@1.10	Ea	974.00	43.80	1,017.80
44" high, 24" wide, chrome finish	BE@1.10	Ea	3,220.00	43.80	3,263.80
Add for direct wire w/ control panel	BE@.100	Ea	203.00	3.98	206.98
Add for wall plug in	BE@.100	Ea	272.00	3.98	275.98
Heated towel rack accessories					
Programmable control panel	BE@.250	Ea	264.00	9.96	273.96
Pull out drying racks	BE@.250	Ea	74.20	9.96	84.16
Robe knobs	BE@.150	Ea	47.60	5.98	53.58
Towel bar accents with standard colors	BE@.150	Ea	95.20	5.98	101.18
Towel bar accents with chrome finish	BE@.150	Ea	128.00	5.98	133.98
Robe knob accents (all styles)	BE@.150	Ea	221.00	5.98	226.98
Tub or shower chairs					
Wall-hung elevated fixed seat	BE@.750	Ea	34.70	29.90	64.60
White adjustable seat	BE@.750	Ea	64.60	29.90	94.50

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



Twin, frames and mechanisms	B1@5.41	Ea	795.00	180.00	975.00
Double, frames and mechanisms	B1@5.41	Ea	832.00	180.00	1,012.00
Queen, frames and mechanisms	B1@5.41	Ea	869.00	180.00	1,049.00
King, frames and mechanisms	B1@5.41	Ea	954.00	180.00	1,134.00
Add for wood-tone melamine cabinet	—	LS	1,410.00	—	1,410.00
Add for white melamine cabinet	—	LS	1,250.00	—	1,250.00

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

Blueline or blackline prints

1-100 SF	—	SF	—	—	.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	—	—	.54
Sepia	—	SF	—	—	.80
Mylar	—	SF	—	—	2.68
Xerographic prints					
Vellum	—	SF	—	—	1.07
Erasable vellum	—	SF	—	—	1.34
Mylar	—	SF	—	—	2.68
Enlargements (bond)	—	SF	—	—	.64
Reductions (bond, per sheet)	—	Ea	—	—	2.67

Building Inspection Service

	Craft@Hrs	Unit	Material	Labor	Total
Plotting prints					
Translucent bond	—	SF	—	—	1.61
Vellum	—	SF	—	—	1.87
Erasable vellum	—	SF	—	—	2.66
Mylar	—	SF	—	—	2.68
Photo prints					
Mylar	—	SF	—	—	6.00
Add for local pickup and delivery, round trip	—	LS	—	—	15.80
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	—	—	343.00
Add for additional 1,000 SF or fraction	—	LS	—	—	105.00
Add for out buildings (each)	—	LS	—	—	52.70
Add for houses over 50 years old	—	LS	—	—	79.00
Add per room for houses with over 10 rooms	—	Ea	—	—	63.20
Add per room for houses with over 15 rooms	—	Ea	—	—	68.50
Add for swimming pool, spa or sauna	—	LS	—	—	209.00
Add for soil testing (expansive soil only)	—	LS	—	—	211.00
Add for water testing (coliform only)	—	LS	—	—	73.80
Add for warranty protection					
Houses to 10 rooms & 50 years old	—	LS	—	—	263.00
Houses over 50 years old	—	LS	—	—	283.00
Houses over 10 rooms	—	LS	—	—	285.00
Multi-family structures					
Two family residence base fee	—	LS	—	—	475.00
Apartment or condominium base fee	—	LS	—	—	263.00
Warranty protection (base cost)	—	LS	—	—	263.00
Add for each additional unit	—	LS	—	—	52.80
Add for each family living unit					
Standard inspection	—	LS	—	—	52.70
Detailed inspection	—	LS	—	—	78.40
Add for swimming pool, spa, sauna	—	LS	—	—	79.00
Add for potable water quality testing	—	LS	—	—	237.00
Add for water quantity test, per well	—	LS	—	—	158.00
Add for soil testing (EPA toxic)	—	LS	—	—	1,580.00
Add for soil testing (lead)	—	LS	—	—	47.50
Add for lead paint testing, full analysis, per room	—	LS	—	—	42.10
Hazards testing for single and multi-family dwellings					
Urea-formaldehyde insulation testing	—	LS	—	—	184.00
Asbestos testing	—	LS	—	—	186.00
Radon gas testing	—	LS	—	—	132.00
Geotechnical site examination, typical price	—	LS	—	—	423.00

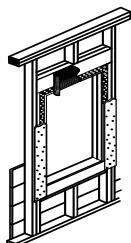
Building Paper See also Roofing for roof applications and Polyethylene Film. Costs include 7% coverage allowance for 2" lap and 5% waste allowance. See installation costs at the end of this section.

Asphalt felt, 36" wide

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

Building Paper

	Craft@Hrs	Unit	Material	Labor	Total
Asphalt shake felt, 18" x 72" 30 lb. (108 SF roll)	—	SF	.18	—	.18
Building paper, 40" wide Single ply, black (1,078 SF roll)	—	SF	.05	—	.05
Two ply (539 SF roll)	—	SF	.06	—	.06
Aquabar™, two layer, laminated with asphalt, Fortifiber™ products Class A, 36" wide, 30-50-30 (1,000 SF roll)	—	SF	.04	—	.04
Class B, 36" wide, 30-30-30 (500 SF roll)	—	SF	.05	—	.05
Ice and water shield, self-adhesive rubberized asphalt and poly 225 SF roll	—	SF	1.01	—	1.01
High temperature, 225 SF roll	—	SF	1.11	—	1.11
"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	.02	—	.02
"Super Jumbo Tex" two-ply, 60 minute, asphalt saturated Kraft (162 SF roll)	—	SF	.25	—	.25
Red rosin sized sheathing (duplex sheathing) 36" wide (501 SF roll)	—	SF	.02	—	.02
Bruce rosin paper, floor underlay (500 SF roll)	—	SF	.03	—	.03
Moistop flashing paper, Fortifiber™, 12" wide x 300' long (300 SF roll)	—	SF	.14	—	.14
Vycor window and door flashing, self adhesive, Grace 6" x 75' roll, 25 mil thickness	—	SF	.90	—	.90
Vycor deck protector, self adhesive joist flashing, Grace 4" x 75' roll, Roll covers 66 LF of joist	—	LF	.32	—	.32
Plasterkraft grade D weather-resistant 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	.51	—	.51
Roof underlay, for use under shingles, granular surface Weatherlock® 200 SF roll	—	SF	.37	—	.37
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	.18	—	.18
Concrete curing papers, Fortifiber™ Orange Label Sisalkraft (fiberglass and adhesive between 2 layers of Kraft), 4.8 lbs. per CSF 48" x 125' roll, (500 SF roll)	—	SF	.23	—	.23
Sisalkraft SK-10, economy papers, fiberglass and adhesive between 2 layers of Kraft, 4.2 lbs. per CSF 48" x 300' roll (1,200 SF roll)	—	SF	.07	—	.07



Building Permit Fees

	Craft@Hrs	Unit	Material	Labor	Total
Protective paper, Fortifiber™ Seekure (fiberglass reinforcing strands and nonstaining adhesive between 2 layers of Kraft) 8" x 300' roll, (2,400 SF)	—	SF	.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	.16	—	.16
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 can vary widely. Building departments publish current fee schedules. The permit fee will usually be doubled when work is started without securing a permit. When the valuation of the proposed construction exceeds \$1,000, plans are usually required. Estimate the plan check fee at 65% of the permit fee for residences and 100% of the permit fee for non-residential buildings. Estimate the fee for reinspection at \$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. Plumbing, electrical and mechanical work will usually require a separate permit based on a similar fee schedule. Valuations are based on a table published by the I.C.C. at: <http://www.iccsafe.org/cs/Pages/BVD.aspx>. Most wood-frame residences are Group R3 and Type VB.

The minimum fee for construction values to \$500 is \$79.00

\$500 to \$2,000, for the first \$500	—	LS	—	—	79.00
each extra \$100 or fraction, to \$2,000	—	LS	—	—	4.24
\$2,000 to \$25,000, for the first \$2,000	—	LS	—	—	142.68
each extra \$1,000 or fraction, to \$25,000	—	LS	—	—	28.00
\$25,000 to \$50,000, for the first \$25,000	—	LS	—	—	786.85
each extra \$1,000 or fraction to \$50,000	—	LS	—	—	20.19
\$50,000 to \$100,000, for the first \$50,000	—	LS	—	—	1,291.77
each extra \$1,000 or fraction, to \$100,000	—	LS	—	—	13.98
\$100,000 to \$500,000, for the first \$100,000	—	LS	—	—	1,991.17
each extra \$1,000 or fraction, to \$500,000	—	LS	—	—	11.20
\$500,000 to \$1,000,000, for the first \$500,000	—	LS	—	—	6,471.49
each extra \$1,000 or fraction, to \$1,000,000	—	LS	—	—	9.49
For \$1,000,000	—	LS	—	—	10,787.59
each extra \$1,000 or fraction thereof	—	LS	—	—	6.03

Cabinets, Kitchen

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

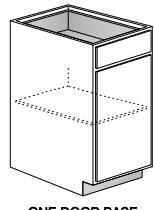
Cabinets, Kitchen See also Vanities. Good quality mill-made modular units with solid hardwood face frames, hardwood door frames and drawer fronts, hardwood veneer on raised door panels (front and back), glued mortise, dowel, and dado joint construction, full backs (1/8" vinyl laminated plywood), vinyl 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.

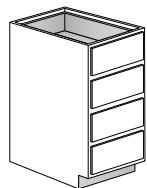
Cabinets, Rule of Thumb Cabinet cost per running foot of cabinet installed. These figures are based on a set of mill-fabricated and assembled kitchen cabinets including a sink base cabinet, one 3-drawer base cabinet and six door base cabinets. Per linear foot of front or back edge, whichever is longer.

Base cabinets, 34-1/2" high, 24" deep
Wall cabinets, 30" high, 12" deep

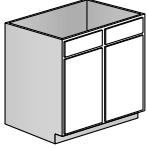
BC@.521	LF	166.00	19.20	185.20
BC@.340	LF	87.00	12.50	99.50



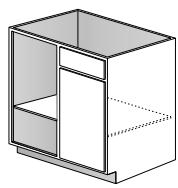
ONE DOOR BASE



DRAWER BASE



SINK BASE



BLIND CORNER BASE

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

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

9" wide, tray divider
12" wide, 1 door, 1 drawer
15" wide, 1 door, 1 drawer
18" wide, 1 door, 1 drawer
21" wide, 1 door, 1 drawer
24" wide, 1 door, 1 drawer

BC@.461	Ea	156.00	17.00	173.00
BC@.461	Ea	210.00	17.00	227.00
BC@.638	Ea	224.00	23.50	247.50
BC@.766	Ea	236.00	28.20	264.20
BC@.766	Ea	257.00	28.20	285.20
BC@.911	Ea	263.00	33.50	296.50

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

15" wide, 4 drawers
18" wide, 4 drawers
24" wide, 4 drawers

BC@.638	Ea	230.00	23.50	253.50
BC@.766	Ea	245.00	28.20	273.20
BC@.911	Ea	284.00	33.50	317.50

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

24" wide, 1 door, 1 drawer front
30" wide, 2 doors, 2 drawer fronts
33" wide, 2 doors, 2 drawer fronts
36" wide, 2 doors, 2 drawer fronts
42" wide, 2 doors, 2 drawer fronts
48" wide, 2 doors, 2 drawer fronts

BC@.740	Ea	224.00	27.20	251.20
BC@.766	Ea	270.00	28.20	298.20
BC@.766	Ea	284.00	28.20	312.20
BC@.766	Ea	290.00	28.20	318.20
BC@.911	Ea	320.00	33.50	353.50
BC@.911	Ea	353.00	33.50	386.50

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

27" wide, 2 door, 2 drawer front
30" wide, 2 doors, 2 drawer fronts
33" wide, 2 doors, 2 drawer fronts
36" wide, 2 doors, 2 drawer fronts
42" wide, 2 doors, 2 drawer fronts
48" wide, 2 doors, 2 drawer fronts

BC@1.25	Ea	347.00	46.00	393.00
BC@1.25	Ea	366.00	46.00	412.00
BC@1.25	Ea	383.00	46.00	429.00
BC@1.35	Ea	403.00	49.70	452.70
BC@1.50	Ea	420.00	55.20	475.20
BC@1.71	Ea	466.00	62.90	528.90

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

Minimum 36", maximum 39" at wall

BC@1.39	Ea	257.00	51.10	308.10
---------	----	--------	-------	--------

Minimum 39", maximum 42" at wall

BC@1.50	Ea	277.00	55.20	332.20
---------	----	--------	-------	--------

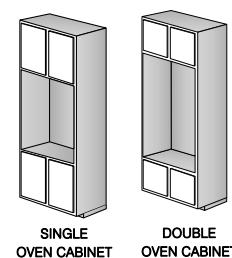
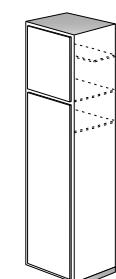
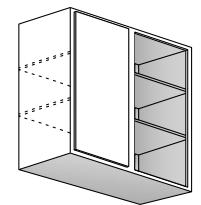
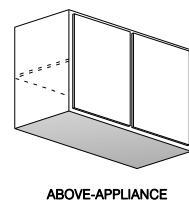
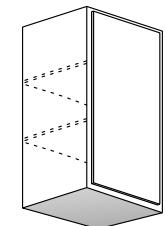
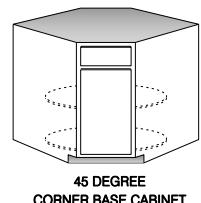
45-degree corner base, revolving, 34-1/2" high

36" wide at each wall

BC@2.12	Ea	398.00	78.00	476.00
---------	----	--------	-------	--------

Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Corner sink front, 34-1/2" high 40" wide at walls	BC@2.63	Ea	224.00	96.80	320.80
Wall cabinets, adjustable shelves, 30" high, 12" deep 9" wide, 1 door	BC@.461	Ea	141.00	17.00	158.00
12" wide or 15" wide, 1 door	BC@.461	Ea	153.00	17.00	170.00
18" wide, 1 door	BC@.638	Ea	182.00	23.50	205.50
21" wide, 1 door	BC@.638	Ea	188.00	23.50	211.50
24" wide, 1 door	BC@.766	Ea	202.00	28.20	230.20
27" wide, 2 doors	BC@.766	Ea	236.00	28.20	264.20
30" wide, 2 doors	BC@.911	Ea	236.00	33.50	269.50
33" wide, 2 doors	BC@.911	Ea	257.00	33.50	290.50
36" wide, 2 doors	BC@1.03	Ea	271.00	37.90	308.90
42" wide, 2 doors	BC@1.03	Ea	290.00	37.90	327.90
48" wide, 2 doors	BC@1.16	Ea	313.00	42.70	355.70
Above-appliance wall cabinets, 12" deep 12" high, 30" wide, 2 doors	BC@.461	Ea	149.00	17.00	166.00
15" high, 30" wide, 2 doors	BC@.461	Ea	170.00	17.00	187.00
15" high, 33" wide, 2 doors	BC@.537	Ea	183.00	19.80	202.80
15" high, 36" wide, 2 doors	BC@.638	Ea	188.00	23.50	211.50
18" high, 18" wide, 2 doors	BC@.537	Ea	141.00	19.80	160.80
18" high, 30" wide, 2 doors	BC@.766	Ea	188.00	28.20	216.20
18" high, 36" wide, 2 doors	BC@.911	Ea	207.00	33.50	240.50
Corner wall cabinets, 30" high, 12" deep 24" at each wall, fixed shelves	BC@1.03	Ea	257.00	37.90	294.90
24" at each wall, revolving shelves	BC@1.03	Ea	345.00	37.90	382.90
Blind corner wall cabinets, 30" high 24" minimum, 1 door	BC@1.03	Ea	195.00	37.90	232.90
36" minimum, 1 door	BC@1.32	Ea	236.00	48.60	284.60
42" minimum, 2 doors	BC@1.20	Ea	296.00	44.10	340.10
Utility cabinets, 66" high, 12" deep, no shelves 18" wide	BC@1.32	Ea	296.00	48.60	344.60
24" wide	BC@1.71	Ea	339.00	62.90	401.90
Utility cabinets, 66" high, 24" deep, add shelf cost below 18" wide	BC@1.24	Ea	313.00	45.60	358.60
24" wide	BC@1.71	Ea	372.00	62.90	434.90
Add for utility cabinet revolving shelves, includes mounting hardware 18" wide x 24" deep	BC@.360	Ea	270.00	13.20	283.20
24" wide x 24" deep	BC@.360	Ea	315.00	13.20	328.20
Add for utility cabinet plain shelves 18" wide x 24" deep	BC@.541	Ea	91.20	19.90	111.10
24" wide x 24" deep	BC@.541	Ea	95.50	19.90	115.40
Oven cabinets, 66" high, 24" deep 27" wide, single oven	BC@2.19	Ea	376.00	80.60	456.60
27" wide, double oven	BC@2.19	Ea	285.00	80.60	365.60



Cabinets, Kitchen

	Craft@Hrs	Unit	Material	Labor	Total
Microwave cabinet, with trim, 21" high, 20" deep, 30" wide	BC@.986	Ea	226.00	36.30	262.30
Additional labor costs for cabinets					
Tall utility, pantry, or oven cabinets	BC@2.00	Ea	—	73.60	73.60
Tall wall cabinet to counter level	BC@1.50	Ea	—	55.20	55.20
Hood cabinet over a range with vent cutout	BC@1.50	Ea	—	55.20	55.20
3/4" raised end panels applied to cabinet ends	BC@.250	Ea	—	9.20	9.20
Refrigerator end panels, cut, fit, install	BC@.500	Ea	—	18.40	18.40
Cabinet end panels, most sizes, per panel					
Refrigerator end panels	BC@.557	Ea	—	20.50	20.50
Refrigerator end panels with return	BC@1.00	Ea	—	36.80	36.80
Applied decorative end panels	BC@.334	Ea	—	12.30	12.30
Mitered island end or back panels	BC@.667	Ea	—	24.50	24.50
Dishwasher return panels	BC@.667	Ea	—	24.50	24.50
Precut filler panels installed between cabinets, per panel					
Most base or wall fillers	BC@.200	Ea	—	7.36	7.36
Most base or wall fillers with overlays	BC@.400	Ea	—	14.70	14.70
Tall filler panels over 36"	BC@.268	Ea	—	9.86	9.86
Tall filler panels over 36" with overlays	BC@.535	Ea	—	19.70	19.70
Corner filler panels	BC@.224	Ea	—	8.24	8.24
Corner fillers panels with overlays	BC@.448	Ea	—	16.50	16.50
Angled corner filler panels	BC@.268	Ea	—	9.86	9.86
Angled corner filler panels with overlays	BC@.536	Ea	—	19.70	19.70
Moldings and trim for cabinet work					
Scribe molding, per 8' length	BC@.224	Ea	—	8.24	8.24
Scribe molding, per linear foot	BC@.028	LF	—	1.03	1.03
Crown molding, per 8' length, miter cut	BC@.448	Ea	—	16.50	16.50
Crown molding, per 8' length, butt joint	BC@.180	Ea	—	6.62	6.62
Crown plate and riser, per miter cut	BC@.180	Ea	—	6.62	6.62
Crown plate and riser, per straight cut	BC@.112	Ea	—	4.12	4.12
Applied molding, per miter cut	BC@.112	Ea	—	4.12	4.12
Applied molding, per straight cut	BC@.067	Ea	—	2.46	2.46
Light rail molding, per miter cut	BC@.224	Ea	—	8.24	8.24
Light rail molding, per straight cut	BC@.067	Ea	—	2.46	2.46
Furniture toe kick, per 8' length	BC@.334	Ea	—	12.30	12.30
Furniture toe kick, per linear foot	BC@.042	LF	—	1.55	1.55
Valance, straight, per 8' length	BC@.334	Ea	—	12.30	12.30
Valance, with side returns or cap, 8' length	BC@.667	Ea	—	24.50	24.50
Mantle or hood molding, length to 8'	BC@.800	Ea	—	29.40	29.40
Corbels, plain	BC@.224	Ea	—	8.24	8.24
Corbels, on uprights	BC@.334	Ea	—	12.30	12.30
Enkeboll molding, miter cut, 8' length	BC@.667	Ea	—	24.50	24.50
Enkeboll molding, straight cut, 8' length	BC@.180	Ea	—	6.62	6.62
Posts, to 8' length	BC@.500	Ea	—	18.40	18.40
Pilasters	BC@.334	Ea	—	12.30	12.30
Cabinet feet, per cabinet	BC@.334	Ea	—	12.30	12.30
Cabinet extras					
Scribing in wood tops	BC@.133	LF	—	4.89	4.89
Job built 2 x 4 support wall to 42" high	BC@.334	LF	—	12.30	12.30
Framing for range support or sink cutout	BC@.667	Ea	—	24.50	24.50

Carpentry

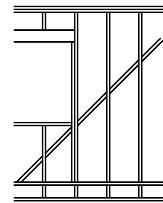
Craft@Hrs	Unit	Material	Labor	Total
-----------	------	----------	-------	-------

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	635.00	—	635.00
Using 1/2" OSB sheathing at	—	MSF	470.00	—	470.00
Using 7/16" OSB sheathing at	—	MSF	345.00	—	345.00
Using 5/8" OSB sheathing at	—	MSF	487.00	—	487.00
Using 1/2" CDX sheathing at	—	MSF	631.00	—	631.00
Using 5/8" CDX sheathing at	—	MSF	768.00	—	768.00
Single story, conventional foundation	B1@.237	SF	4.94	7.90	12.84
Single story, concrete slab foundation	B1@.180	SF	3.35	6.00	9.35
First of two floors, conventional foundation	B1@.203	SF	3.86	6.77	10.63
First of two floors, concrete slab foundation	B1@.146	SF	2.27	4.87	7.14
Second floor of a two-story residence	B1@.191	SF	3.91	6.37	10.28
Add for plywood sheathing	—	%	9.6	—	—



Framing a single story residence, conventional crawl-space foundation

Sills, pier blocks, floor beams (145 BF per 1,000 SF)	B1@.018	SF	.09	.60	.69
Floor joists, doublers, blocking, bridging (1,480 BF per 1,000 SF)	B1@.028	SF	.94	.93	1.87
Subflooring, 5/8" OSB (1,150 SF per 1,000 SF)	B1@.011	SF	.56	.37	.93
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	1.43	3.10	4.53
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.67	1.50	2.17
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	.85	1.07	1.92
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.40	.33	.73
Total framing, single story, conventional foundation	B1@.237	SF	4.94	7.90	12.84
Add for plywood sheathing	—	%	13.2	—	—

Framing a single story residence, concrete slab foundation

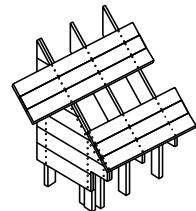
Layout, sole plates, anchors, studs, top plates, header and end joists, backing, blocking, bracing and framing for openings (2,250 BF per 1,000 SF)	B1@.093	SF	1.43	3.10	4.53
Ceiling joists, header and end joists, backing, blocking and bracing (1,060 BF per 1,000 SF)	B1@.045	SF	.67	1.50	2.17
Rafters, braces, collar beams, ridge boards, 2" x 8" rafters 16" OC, (1,340 BF per 1,000 SF)	B1@.032	SF	.85	1.07	1.92
Roof sheathing, 7/16" OSB (1,150 SF per 1,000 SF)	B1@.010	SF	.40	.33	.73
Total framing, single story, concrete slab foundation	B1@.180	SF	3.35	6.00	9.35
Add for plywood sheathing	—	%	9.8	—	—

Carpentry, Detailed Breakdown

	Craft@Hrs	Unit	Material	Labor	Total
7/8"	B1@.014	SF	1.23	.47	1.70
1-1/8"	B1@.015	SF	1.79	.50	2.29
Add for hip roof	B1@.007	SF	—	.23	.23
Add for steep pitch or cut-up roof	B1@.015	SF	—	.50	.50
Board sheathing, 1" x 6" or 1" x 8" utility T&G laid diagonal					
1" utility T&G lumber, per MBF	—	MBF	2,060.00	—	2,060.00
(1.13 BF per SF)	B1@.026	SF	2.56	.87	3.43
Add for hip roof	B1@.007	SF	—	.23	.23
Add for steep pitch or cut-up roof	B1@.015	SF	—	.50	.50

Roof decking Std & Btr grade. See also Sheathing in this section. Flat, shed, or gable roofs to 5 in 12 slope (5/24 pitch). Figures in parentheses indicate board feet per SF of actual roof area (not roof plan area), including 5% waste.

2" x 6", per MBF	—	MBF	617.00	—	617.00
2" x 8", per MBF	—	MBF	598.00	—	598.00
3" x 6", per MBF	—	MBF	657.00	—	657.00
2" x 6" (2.28 BF per SF)	B1@.043	SF	1.41	1.43	2.84
2" x 8" (2.25 BF per SF)	B1@.043	SF	1.36	1.43	2.79
3" x 6" (3.43 BF per SF)	B1@.047	SF	2.24	1.57	3.81
Add for steep pitch or cut-up roof	B1@.019	SF	—	.63	.63



Cant strips Std & Btr grade lumber

2" x 4" beveled	B1@.020	LF	.67	.67	1.34
For short or cut-up runs	B1@.030	LF	.67	1.00	1.67

Furring Per SF of surface area to be covered. Figures in parentheses show coverage including 7% waste, typical job.

1" furring, per MBF	—	MBF	1,750.00	—	1,750.00
Over masonry, Utility grade					
12" OC, 1" x 2" (.24 BF per SF)	B1@.025	SF	.42	.83	1.25
16" OC, 1" x 2" (.20 BF per SF)	B1@.020	SF	.35	.67	1.02
20" OC, 1" x 2" (.17 BF per SF)	B1@.018	SF	.30	.60	.90
24" OC, 1" x 2" (.15 BF per SF)	B1@.016	SF	.26	.53	.79
12" OC, 1" x 3" (.36 BF per SF)	B1@.025	SF	.63	.83	1.46
16" OC, 1" x 3" (.29 BF per SF)	B1@.020	SF	.51	.67	1.18
20" OC, 1" x 3" (.25 BF per SF)	B1@.018	SF	.44	.60	1.04
24" OC, 1" x 3" (.22 BF per SF)	B1@.016	SF	.38	.53	.91
Over wood frame, Utility grade					
12" OC, 1" x 2" (.24 BF per SF)	B1@.016	SF	.42	.53	.95
16" OC, 1" x 2" (.20 BF per SF)	B1@.013	SF	.35	.43	.78
20" OC, 1" x 2" (.17 BF per SF)	B1@.011	SF	.30	.37	.67
24" OC, 1" x 2" (.15 BF per SF)	B1@.010	SF	.26	.33	.59
12" OC, 1" x 3" (.36 BF per SF)	B1@.016	SF	.63	.53	1.16
16" OC, 1" x 3" (.29 BF per SF)	B1@.013	SF	.51	.43	.94
20" OC, 1" x 3" (.25 BF per SF)	B1@.011	SF	.44	.37	.81
24" OC, 1" x 3" (.22 BF per SF)	B1@.010	SF	.38	.33	.71
Over wood subfloor, Utility grade					
12" OC, 1" x 2" (.24 BF per SF)	B1@.033	SF	.42	1.10	1.52
16" OC, 1" x 2" (.20 BF per SF)	B1@.028	SF	.35	.93	1.28
20" OC, 1" x 2" (.17 BF per SF)	B1@.024	SF	.30	.80	1.10
24" OC, 1" x 2" (.15 BF per SF)	B1@.021	SF	.26	.70	.96

Siding

	Craft@Hrs	Unit	Material	Labor	Total
Galvanized steel siding					
28 gauge, 27-1/2" wide (includes 20% coverage loss)					
6' to 12' standard lengths	B1@.034	SF	1.51	1.13	2.64
Shingle siding					
Cedar sidewall shingles, bundle covers 25 square feet, 16" long, 7-1/2" exposure, 5 shingles are 2" thick (5/2)					
#2 Western red cedar	B1@3.86	Sq	269.00	129.00	398.00
Bleached cedar, rebutted and re-jointed	B1@3.86	Sq	413.00	129.00	542.00
Sanded cedar	B1@3.86	Sq	494.00	129.00	623.00
Grooved cedar	B1@3.86	Sq	493.00	129.00	622.00
Primed smooth cedar	B1@3.86	Sq	523.00	129.00	652.00
Panelized shingle siding Shakertown, KD, regraded shingle on plywood backing, no waste included.					
8' long x 7" wide single course					
Colonial 1	B1@.033	SF	4.45	1.10	5.55
Cascade	B1@.033	SF	4.29	1.10	5.39
8' long x 14" wide, single course					
Colonial 1	B1@.033	SF	4.45	1.10	5.55
8' long x 14" wide, double course					
Colonial 2	B1@.033	SF	4.88	1.10	5.98
Cascade Classic	B1@.033	SF	4.29	1.10	5.39
Decorative shingles, 5" wide x 18" long, Shakertown, fancy cuts, 9 hand-shaped patterns					
7-1/2" exposure	B1@.035	SF	5.21	1.17	6.38
Deduct for 10" exposure	—	SF	-.56	—	-.56
Vinyl siding Solid vinyl. Embossed wood grain texture.					
Double 4" traditional lap profile, 12' 6" long panels, 8" exposure. Each panel covers 8.33 SF before cutting waste. Case of 24 panels covers 200 square feet. Cost per square (100 square feet).					
.040" thick, lighter colors	B1@3.34	Sq	64.70	111.00	175.70
.040" thick, darker colors and textures	B1@3.34	Sq	88.70	111.00	199.70
.042" thick, lighter colors	B1@3.34	Sq	90.50	111.00	201.50
.042" thick, darker colors and textures	B1@3.34	Sq	98.40	111.00	209.40
.044" thick, most colors and textures	B1@3.34	Sq	91.40	111.00	202.40
Double 4.5" traditional lap profile, 12' 1" long panels, 9" exposure. Each panel covers 9.09 SF. Case of 22 panels covers 200 square feet. Cost per square (100 square feet).					
.040" thick, most colors	B1@3.34	Sq	86.60	111.00	197.60
.040" thick, darker colors and textures	B1@3.34	Sq	95.70	111.00	206.70
Double 5" traditional lap profile, 12' long panels, 10" exposure. Each panel covers 10 SF. Case of 20 panels covers 200 square feet. Cost per square (100 square feet).					
.042" thick, lighter colors	B1@3.34	Sq	83.00	111.00	194.00
.042" thick, darker colors and textures	B1@3.34	Sq	92.40	111.00	203.40
Trim for vinyl siding					
Starter strip, 2-1/4" x 12.6'	B1@.030	LF	.47	1.00	1.47
"J"-channel trim at wall openings, 12.5' long	B1@.033	LF	.50	1.10	1.60
Outside or inside corner, 10' long	B1@.033	LF	2.09	1.10	3.19
Casing and trim, 12.5' long	B1@.033	LF	.55	1.10	1.65
Mini mounting block, 4" x 6"	B1@.350	Ea	12.40	11.70	24.10
Vinyl "J"-block, 7" x 9"	B1@.350	Ea	13.20	11.70	24.90
Add for R-3 insulated vinyl siding	B1@.350	Sq	48.90	11.70	60.60

Siding

	Craft@Hrs	Unit	Material	Labor	Total
Thermoplastic resin siding Nailite™ 9/10" thick panels installed over sheathing. Add for trim board, corners, starter strips, "J"-channels and mortar fill. Based on five nails per piece. Includes 10% waste.					
Hand-split shake, 41-3/8" x 18-3/4"	B1@.043	SF	2.82	1.43	4.25
Hand-laid brick, 44-1/4" x 18-5/8"	B1@.043	SF	3.01	1.43	4.44
Hand-cut stone, 44-1/4" x 18-5/8"	B1@.043	SF	3.02	1.43	4.45
Rough sawn cedar, 59-1/4" x 15"	B1@.043	SF	3.12	1.43	4.55
Perfection plus cedar, 36-1/8" x 15"	B1@.043	SF	3.13	1.43	4.56
Ledge trim					
Brick ledge trim	B1@.033	LF	6.49	1.10	7.59
Stone ledge trim	B1@.033	LF	6.50	1.10	7.60
Corners					
Hand-split shake, 4" x 18"	B1@.030	LF	12.40	1.00	13.40
Rough sawn cedar 3" x 26"	B1@.030	LF	13.10	1.00	14.10
Hand-laid brick 4" x 18"	B1@.030	LF	13.10	1.00	14.10
Hand-cut stone 4" x 18"	B1@.030	LF	13.10	1.00	14.10
Perfection plus cedar 3" x 13"	B1@.030	LF	10.90	1.00	11.90
Starter strips					
12' universal	B1@.025	LF	.67	.83	1.50
"J"-channels					
Hand-split shake 3/4" opening	B1@.025	LF	.98	.83	1.81
Hand-split shake 1-1/4" flexible opening	B1@.027	LF	1.97	.90	2.87
Rough sawn cedar 3/4" opening	B1@.025	LF	.74	.83	1.57
Rough sawn cedar 1-1/4" flexible opening	B1@.027	LF	1.97	.90	2.87
Hand-laid brick 3/4" opening	B1@.025	LF	.74	.83	1.57
Hand-cut stone 3/4" opening	B1@.025	LF	.74	.83	1.57
Perfection plus cedar 3/4" opening	B1@.025	LF	.74	.83	1.57
Thermoplastic siding accessories					
Mortar fill, 12 tubes and 200 LF per carton	—	Ea	39.60	—	39.60
Touch up paint, 6 oz. aerosol can	—	Ea	5.45	—	5.45

Skylights Polycarbonate dome, clear transparent or tinted, roof opening sizes, price each, Crestline

Skylights, curb or flush mount, self-flashing, Comfort™

Single dome, 2' x 2'	B1@2.58	Ea	79.60	85.90	165.50
Single dome, 2' x 4'	B1@2.58	Ea	123.00	85.90	208.90
Double dome, 4' x 4	B1@2.84	Ea	230.00	94.60	324.60

Tempered over laminated low-E argon gas filled doubled insulated fixed glass skylights. Includes costs for flashing. For installation on roofs with 15- to 85-degree slope. Labor costs are for installation of skylight and flashing. Roll shade costs are for factory attached shades. No carpentry or roofing included.

Operable skylight, Velux®, VS® Comfort™ models. Prices include EDL® flashing.

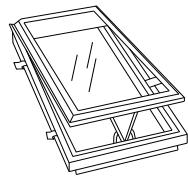
21-1/2" x 38-1/2", #104	B1@3.42	Ea	939.00	114.00	1,053.00
21-1/2" x 46-3/8", #106	B1@3.42	Ea	1,000.00	114.00	1,114.00
21-1/2" x 55", #108	B1@3.42	Ea	1,080.00	114.00	1,194.00
30-5/8" x 38-1/2", #304	B1@3.42	Ea	1,030.00	114.00	1,144.00
30-5/8" x 46-3/8", #306	B1@3.42	Ea	1,080.00	114.00	1,194.00
30-5/8" x 55", #308	B1@3.52	Ea	1,130.00	117.00	1,247.00
44-3/4" x 46-1/2", #606	B1@3.52	Ea	1,210.00	117.00	1,327.00
Add for electric operation	—	%	—	—	200.0
Add for ComfortPlus™ Laminated Low E	—	%	10.0	—	—
Add for roll shade, natural					
21-1/2" x 27-1/2" to 55" width	—	Ea	68.10	—	68.10
30-5/8" x 38-1/2" to 55" width	—	Ea	78.40	—	78.40



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

Fixed skylight, low-E laminated and tempered insulating glass. Wood frame. Aluminum exterior.

5-5/16" x 46-3/8"	B1@3.42	Ea	232.00	114.00	346.00
21-1/2" x 27-1/2"	B1@3.42	Ea	187.00	114.00	301.00
21-1/2" x 38-1/2"	B1@3.42	Ea	239.00	114.00	353.00
21-1/2" x 46-3/8"	B1@3.42	Ea	266.00	114.00	380.00
30-5/8" x 38-1/2"	B1@3.42	Ea	282.00	114.00	396.00
30-5/8" x 46-3/8"	B1@3.42	Ea	320.00	114.00	434.00
30-5/8" x 55"	B1@3.52	Ea	361.00	117.00	478.00
Add for roll shade, natural					
21-1/2" x 27-1/2" to 70-7/8" width	—	Ea	73.00	—	73.00
30-5/8" x 38-1/2" to 55" width	—	Ea	76.80	—	76.80



Fixed ventilation skylight with removable filter on ventilation flap, Velux® model FSF® ComfortPlus™.

Prices include EDL® flashing.

21-1/2" x 27-1/2", #101	B1@3.14	Ea	260.00	105.00	365.00
21-1/2" x 38-1/2", #104	B1@3.14	Ea	303.00	105.00	408.00
21-1/2" x 46-1/2", #106	B1@3.14	Ea	345.00	105.00	450.00
21-1/2" x 70-7/8", #108	B1@3.42	Ea	375.00	114.00	489.00
30-5/8" x 38-1/2", #304	B1@3.14	Ea	370.00	105.00	475.00
30-5/8" x 46-3/8", #306	B1@3.14	Ea	422.00	105.00	527.00
30-5/8" x 55", #308	B1@3.39	Ea	458.00	113.00	571.00
44-3/4" x 27-1/2", #601	B1@3.36	Ea	403.00	112.00	515.00
44-3/4" x 46-1/2", #606	B1@3.39	Ea	532.00	113.00	645.00
Add for roll shade, natural					
21-1/2" x 27-1/2" to 70-7/8" width	—	Ea	81.90	—	81.90
30-5/8" x 38-1/2" to 55" width	—	Ea	92.70	—	92.70



Curb mounted fixed skylight, Velux model FCM™

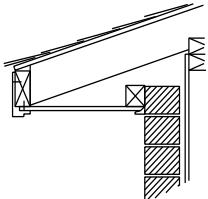
22-1/2" x 22-1/2", #2222	B1@3.14	Ea	143.00	105.00	248.00
22-1/2" x 34-1/2", #2234	B1@3.14	Ea	188.00	105.00	293.00
22-1/2" x 46-1/2", #2246	B1@3.14	Ea	205.00	105.00	310.00
30-1/2" x 30-1/2", #3030	B1@3.14	Ea	227.00	105.00	332.00
46-1/2" x 46-1/2", #4646	B1@3.14	Ea	348.00	105.00	453.00

Top hinged roof windows Aluminum-clad wood frame, double insulated tempered over laminated low-E gas filled double insulated glass, including prefabricated flashing, exterior awning, interior roller blind and insect screen. Sash rotates 180 degrees. For installation on roofs with 20- to 55-degree slope. Labor costs are for installation of roof window, flashing and sun screening accessories. No carpentry or roofing work other than curb included. Add for interior trim. Listed by actual unit dimensions, top hung, Velux® model GPL™ Comfort™ Roof Window.

30-5/8" wide x 55" high, #308	B1@3.42	Ea	826.00	114.00	940.00
44-3/4" wide x 46-3/8" high, #606	B1@3.52	Ea	922.00	117.00	1,039.00

Soffit Systems

Baked enamel finish, 6" fascia, "J"-channel, 8" perforated or solid soffit, .019 gauge aluminum.



12" soffit	B1@.047	LF	4.14	1.57	5.71
18" soffit	B1@.055	LF	4.80	1.83	6.63
24" soffit	B1@.060	LF	5.44	2.00	7.44

Vinyl soffit systems

12" soffit	B1@.030	LF	3.59	1.00	4.59
18" soffit	B1@.030	LF	4.13	1.00	5.13
24" soffit	B1@.030	LF	4.66	1.00	5.66

Aluminum fascia alone

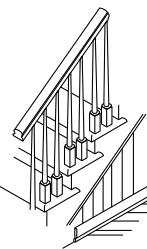
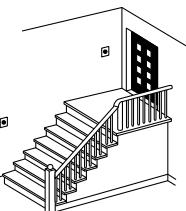
4" fascia	B1@.030	LF	1.03	1.00	2.03
6" fascia	B1@.030	LF	1.25	1.00	2.25
8" fascia	B1@.030	LF	1.46	1.00	2.46

Soil Testing

	Craft@Hrs	Unit	Material	Labor	Total
Soil Testing					
Field observation and testing					
Soil technician (average)	—	Hr	—	—	66.30
Soil testing, per test					
Moisture retention	—	Ea	—	—	30.60
Bulk density (loose or core)	—	Ea	—	—	28.60
Porosity	—	Ea	—	—	44.90
Organic matter	—	Ea	—	—	38.80
Plasticity (Liquid and Plastic Limit)	—	Ea	—	—	61.20
Water holding capacity	—	Ea	—	—	35.70
Herbicide detection	—	Ea	—	—	56.10
Complete mineral analysis	—	Ea	—	—	67.30
Foundation investigation (bearing capacity, lateral loads, piles, seismic, stability, settlement for design purposes) and preliminary soils investigation (depth of fill, classification and profile of soil, expansion, shrinkage, grading, drainage recommendations). Including drilling and sampling costs.					
Drill rig (driller and helper)	—	Hr	—	—	153.00
Staff engineer	—	Hr	—	—	76.50
Project engineer, RCE	—	Hr	—	—	86.70
Principal engineer	—	Hr	—	—	148.00
Transportation	—	Mile	—	—	1.28
Transportation	—	Hr	—	—	10.20
Laboratory testing (general)	—	Hr	—	—	76.50
Laboratory testing (varies on individual test basis)	—	Ea	—	—	51.00
Report preparation					
Analysis, conclusions, recommendations	—	Ea	—	—	2,240.00
Court preparation (Principal Engineer)	—	Hr	—	—	179.00
Expert witness court appearance	—	Hr	—	—	306.00
Add for hazardous studies	—	%	—	—	20.0
Soil Treatments, Subcontract Costs based on total square footage inside of, and including, foundation. Includes inside and outside perimeter of foundation, interior foundation walls, and underneath all slabs. Three-plus year re-application guarantee against existence of termites. Use \$300 as a minimum job charge.					
Dursban T.C, Primus, or Equity. Mix applied per manufacturers' and state and federal specifications.					
Complete application	—	SF	—	—	.44
Solar Photovoltaic Electrical Systems, Subcontract Costs are for solar electric generating systems. These estimates include engineering, installation, application for permits and application for financial incentives, where available. Production capacity figures assume 8 hours of sun time daily. Cost will be higher where less sun time is available.					
Small remote vacation home system (12 volt DC). 64 watt solar electric module (98 amp hours), digital voltage regulator, mounting rack and wiring.					
384 watt-hours per day	—	LS	—	—	1,190.00
Larger remote primary home system (120 volt AC). Includes eight storage batteries (1,050 amp hours), voltage regulator, mounting rack, 2,400 watt DC to AC inverter.					
2,880 watt-hours per day	—	LS	—	—	7,090.00
Basic two room solar power package. Includes three 48 watt PV panels, one 12 amp voltage regulator, one 220 Amp hour battery with hydrocaps, one 600 watt inverter, mounting frame, hardware and two receptacles					
12 amp regulator, with 600 watt inverter	—	LS	—	—	2,870.00
Small home solar power package. 90% solar powered system for 1,500 SF home. Includes six 60 watt PV panels, one 750 Amp hour battery, 20 amp voltage regulator and DC distribution box and one 2.2 kW inverter. Costs also include one solar hot water system, one water source heat pump, one 19 cubic foot refrigerator freezer, one ringer type washing machine, six 12 volt lights and three 12 volt ceiling fans					
20 amp regulator, 12 volt system	—	LS	—	—	14,900.00

Solar Systems

	Craft@Hrs	Unit	Material	Labor	Total
Medium sized home solar power package. 80% solar powered system for 2,500 SF home. Includes ten 45 watt PV panels, one 750 Amp hour battery, one 30 amp voltage regulator and one 2 kW inverter with charger. Costs also include one solar domestic hot water system and 22 assorted 12 volt light fixtures					
30 amp regulator, 12 volt system	—	LS	—	—	8,970.00
Grid-connected solar power package. For use when the electric utility company buys excess power (meter spins backward). 102 poly panels (1,768 SF) with 51 inverters and mounting rack. Peak power is 23.5 kW DC and 21.5 kW AC. Annual production is 35,350 kWh. Includes a 5-year warranty and one year of maintenance.					
Net-metered 21 kW system	—	LS	—	—	84,000.00
Photovoltaic roofing systems Photovoltaic panels and shingles. Converts sunlight into electric energy and distributes it directly to the building. The solar electric roofing products are configured in series or parallel on the roof deck to form an array. The array is then integrated into the roof following standard roofing specifications. Installation time does not include electrical connections.					
Architectural or structural standing photovoltaic seam panels					
70 watt panel, 58" x 14"	RR@.035	SF	178.00	1.44	179.44
100 watt panel, 45" x 27"	RR@.035	SF	245.00	1.44	246.44
205 watt panel, 60" x 40"	RR@.033	SF	308.00	1.36	309.36
285 watt panel, 65" x 39"	RR@.033	SF	350.00	1.36	351.36
Photovoltaic shingles, 12" x 86" panel					
62 watt shingle panel	RR@.230	Ea	336.00	9.46	345.46
144 watt shingle panel	RR@.260	Ea	400.00	10.70	410.70
Photovoltaic roofing system accessories					
Add for combiner box	—	Ea	585.00	—	585.00
Add for 2.8 kW inverter	—	Ea	1,770.00	—	1,770.00
Add for 3.6 kW inverter	—	Ea	1,770.00	—	1,770.00
Add for 6 volt DC 350 Ah storage batteries	—	Ea	175.00	—	175.00
Add for utility ground fault protection device	—	Ea	336.00	—	336.00
Solar pool heating system					
Pool system, eight panels, valves, and piping	—	LS	—	—	5,260.00
Spa system, one panel, valves and piping	—	LS	—	—	1,570.00
Spas, fiberglass, outdoor Includes pump and standard heater. Add the cost of a concrete slab base.					
63" x 79", 31 jets	P1@3.50	Ea	2,800.00	127.00	2,927.00
72" x 72", 14 jets	P1@4.00	Ea	2,600.00	145.00	2,745.00
76" x 76", 51 jets	P1@4.00	Ea	2,800.00	145.00	2,945.00
92" x 92", 104 jets	P1@4.00	Ea	4,800.00	145.00	4,945.00
Add for electrical connection	—	Ea	—	—	230.00
Stairs					
Factory-cut and assembled straight closed box stairs, unfinished, 36" width					
Oak treads with 7-1/2" risers, price per riser					
3'0" wide	B1@.324	Ea	123.00	10.80	133.80
3'6" wide	B1@.324	Ea	160.00	10.80	170.80
4'0" wide	B1@.357	Ea	172.00	11.90	183.90
Deduct for pine treads and plywood risers	—	%	-22.0	—	—
Add for prefinished assembled stair rail with balusters and newel, per riser	B1@.257	Ea	63.40	8.56	71.96
Add for prefinished handrail, with brackets and balusters	B1@.135	LF	22.10	4.50	26.60
Basement stairs, open riser, delivered to job site assembled, 12 treads, 2' 11-3/4" wide					
13 risers at 7-13/16" riser height	B1@4.00	Ea	275.00	133.00	408.00
13 risers at 8" riser height	B1@4.00	Ea	282.00	133.00	415.00
13 risers at 8-3/16" riser height	B1@4.00	Ea	289.00	133.00	422.00
Add for handrail	B1@.161	LF	11.50	5.36	16.86



Stairs

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

Curved stair, clear oak, self-supporting, 8'6" radii, factory cut, unfinished, unassembled

Open one side (1 side against wall)

8'9" to 9'4" rise	B1@24.6	Ea	6,400.00	819.00	7,219.00
9'5" to 10'0" rise	B1@24.6	Ea	6,890.00	819.00	7,709.00
10'1" to 10'8" rise	B1@26.5	Ea	7,390.00	883.00	8,273.00
10'9" to 11'4" rise	B1@26.5	Ea	7,920.00	883.00	8,803.00

Open two sides

8'9" to 9'4" rise	B1@30.0	Ea	11,500.00	999.00	12,499.00
9'5" to 10'0" rise	B1@30.0	Ea	12,300.00	999.00	13,299.00
10'1" to 10'8" rise	B1@31.9	Ea	13,010.00	1,060.00	14,070.00
10'9" to 11'4" rise	B1@31.9	Ea	13,910.00	1,060.00	14,970.00
Add for newel posts	B1@.334	Ea	79.80	11.10	90.90

Straight stairs, red oak, factory cut, unassembled , 36" tread, includes two 1-1/2" x 3-1/2" handrails and 7/8" round balusters.

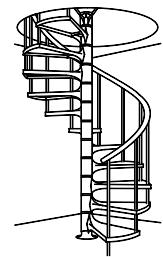
70" to 77" with 10 risers	B1@12.0	Ea	1,720.00	400.00	2,120.00
77" to 85" with 11 risers	B1@12.0	Ea	1,940.00	400.00	2,340.00
85" to 93" with 12 risers	B1@12.0	Ea	2,280.00	400.00	2,680.00
93" to 100" with 13 risers	B1@14.0	Ea	2,290.00	466.00	2,756.00
100" to 108" with 14 risers	B1@14.0	Ea	2,480.00	466.00	2,946.00
108" to 116" with 15 risers	B1@14.0	Ea	2,610.00	466.00	3,076.00
116" to 124" with 16 risers	B1@16.0	Ea	2,840.00	533.00	3,373.00
124" to 131" with 17 risers	B1@16.0	Ea	2,940.00	533.00	3,473.00
131" to 139" with 18 risers	B1@16.0	Ea	3,280.00	533.00	3,813.00
Add for 44" tread, any of above	—	Ea	108.00	—	108.00
Add for straight rail, unbored	B1@.060	LF	12.80	2.00	14.80
Add for straight nosing	B1@.060	LF	7.98	2.00	9.98
Add for round balusters, 7/8" x 42"	B1@.334	Ea	5.01	11.10	16.11
Add for square balusters, 1-1/8" x 1-1/8" x 44"	B1@.334	Ea	10.30	11.10	21.40
Add for newel posts, 3" x 3" x 44"	B1@.334	Ea	45.30	11.10	56.40

Spiral stairs, red oak, FOB factory, double handrails, 5' diameter

74" to 82" with 9 risers	B1@16.0	Ea	3,750.00	533.00	4,283.00
82" to 90" with 10 risers	B1@16.0	Ea	4,010.00	533.00	4,543.00
90" to 98" with 11 risers	B1@16.0	Ea	4,080.00	533.00	4,613.00
98" to 106" with 12 risers	B1@16.0	Ea	4,170.00	533.00	4,703.00
106" to 114" with 13 risers	B1@20.0	Ea	4,230.00	666.00	4,896.00
114" to 122" with 14 risers	B1@20.0	Ea	4,400.00	666.00	5,066.00
122" to 130" with 15 risers	B1@20.0	Ea	4,620.00	666.00	5,286.00
Add for 6' diameter	—	%	20.0	—	—
Add for 8'6" diameter	—	%	25.0	—	—
Add for mahogany, any of above	—	%	10.0	—	—
Add for straight rail, unbored	B1@.060	LF	12.90	2.00	14.90
Add for straight nosing, unbored	B1@.060	LF	8.15	2.00	10.15
Add for balusters, 7/8" x 42"	B1@.334	Ea	5.24	11.10	16.34
Add for newel posts 1-7/8" x 44"	B1@.334	Ea	31.50	11.10	42.60

Spiral stairs, aluminum, delivered to job site unassembled, 7-3/4" or 8-3/4" riser heights, 5' diameter

85-1/4" to 96-1/4" with 10 treads	B1@9.98	Ea	2,210.00	332.00	2,542.00
93" to 105" with 11 treads	B1@10.7	Ea	2,400.00	356.00	2,756.00
100-3/4" to 113-3/4" with 12 treads	B1@11.3	Ea	2,620.00	376.00	2,996.00
108-1/2" to 122-1/2" with 13 treads	B1@12.0	Ea	2,810.00	400.00	3,210.00
116-1/4" to 131-1/4" with 14 risers	B1@12.6	Ea	2,980.00	420.00	3,400.00
124" to 140" with 15 risers	B1@12.8	Ea	3,230.00	426.00	3,656.00
131-3/4" to 148-3/4" with 16 risers	B1@13.5	Ea	3,390.00	450.00	3,840.00



Stairs

	Craft@Hrs	Unit	Material	Labor	Total
138-1/2" to 157-1/2" with 17 risers	B1@14.2	Ea	3,560.00	473.00	4,033.00
147-1/4" to 166-1/4" with 18 risers	B1@14.8	Ea	3,800.00	493.00	4,293.00
Deduct for 4' diameter	—	%	-20.0	—	—
Deduct for 4'6" diameter	—	%	-10.0	—	—
Add for additional aluminum treads	—	Ea	203.00	—	203.00
Add for oak tread inserts	—	Ea	96.30	—	96.30
Spiral stairs, steel, tubular steel handrail, composition board treads, delivered unassembled, 5' diameter					
86" to 95" with 10 risers	B1@9.98	Ea	1,360.00	332.00	1,692.00
95" to 105" with 11 risers	B1@10.7	Ea	1,510.00	356.00	1,866.00
105" to 114" with 12 risers	B1@11.3	Ea	1,600.00	376.00	1,976.00
114" to 124" with 13 risers	B1@12.0	Ea	1,790.00	400.00	2,190.00
124" to 133" with 14 risers	B1@12.7	Ea	2,030.00	423.00	2,453.00
Deduct for 4' diameter	—	%	-20.0	—	—
Add for 6' diameter	—	%	24.0	—	—
Add for oak treads	—	%	25.0	—	—
Add for oak handrail	—	%	45.0	—	—
Job-built stairways 3 stringers cut from 2" x 12" Douglas fir material, treads and risers from 3/4" CDX plywood or OSB sheathing. Cost per 7-1/2" rise, 36" wide					
Using 2" Douglas fir, per MBF	—	MBF	734.00	—	734.00
Using 3/4" CDX plywood, per MSF	—	MSF	656.00	—	656.00
Using 3/4" OSB sheathing, per MSF	—	MSF	558.00	—	558.00
Using 1" x 6" white pine, per MBF	—	MBF	1,880.00	—	1,880.00
Straight run, 8'0" to 10'0" rise, plywood, per riser	B1@.530	Ea	12.30	17.70	30.00
Straight run, 8'0" to 10'0" rise, OSB, per riser	B1@.530	Ea	11.50	17.70	29.20
"L"- or "U"-shape, plywood, add for landings	B1@.625	Ea	13.90	20.80	34.70
"L"- or "U"-shape, per riser, OSB, add for landings	B1@.625	Ea	13.00	20.80	33.80
Semi-circular, repetitive work, plywood, per riser	B1@.795	Ea	13.90	26.50	40.40
Semi-circular, repetitive work, OSB, per riser	B1@.795	Ea	13.00	26.50	39.50
Landings, from 2" x 6" Douglas fir and 3/4" CDX plywood or 3/4" OSB, surfaced,					
per SF of landing surface, plywood	B1@.270	SF	2.72	8.99	11.71
per SF of landing surface, OSB	B1@.270	SF	2.55	8.99	11.54
Stair treads and risers Unfinished. Including layout, cutting, fitting, and installation of treads, risers and typical tread nosing. Includes a miter return on one side of each tread. 9' rise is usually 14 treads and 15 risers					
Yellow pine treads, 11-1/2" x 48"	—	Ea	12.60	—	12.60
Oak treads, 11-1/2" x 48"	—	Ea	40.40	—	40.40
Oak curved first (return) tread, 11-1/2" x 48"	—	Ea	30.40	—	30.40
Oak risers, 8" x 48"	—	Ea	24.40	—	24.40
Oak nosing	—	LF	5.32	—	5.32
Oak treads, risers and nosing for 9' rise stairway	BC@2.50	Ea	885.00	92.00	977.00
Skirt board with dadoes for treads and risers	BC@3.75	Ea	37.00	138.00	175.00
Skirt board on open side, mitered risers	BC@5.50	Ea	37.00	202.00	239.00
Oak shoe rail with fillet, 1-1/4" plowed, 2-1/2" x 3/4"	BC@.030	LF	3.24	1.10	4.34
Oak landing tread, 1" x 5-1/2"	BC@.180	LF	6.26	6.62	12.88
False treads, 4-3/4" x 16-1/4" x 6"					
Right end	BC@.180	Ea	13.90	6.62	20.52
Left end	BC@.180	Ea	13.90	6.62	20.52
Wall tread, 4-3/4" x 13-1/4"	BC@.180	Ea	16.90	6.62	23.52
False stair tread cap and riser - Repair	BC@.250	Ea	39.10	9.20	48.30
Anti-skid adhesive strips. Peel and stick on wood, concrete or metal.					
2-3/4" x 14"	BC@.050	Ea	3.77	1.84	5.61
4" x 16"	BC@.050	Ea	5.92	1.84	7.76

Stair Rails, Posts and Balusters

	Craft@Hrs	Unit	Material	Labor	Total
Stair rails, posts and balusters Unfinished. Including layout, cutting, fitting and installation					
Newel posts, 3" x 3" x 48" high					
Half newel, ball top, hemlock	BC@2.50	Ea	25.60	92.00	117.60
Half newel, ball top, oak	BC@2.50	Ea	32.00	92.00	124.00
Starting newel, ball top, hemlock	BC@2.50	Ea	35.10	92.00	127.10
Starting newel, ball top, oak	BC@2.50	Ea	49.20	92.00	141.20
Starting newel, peg top, oak	BC@2.50	Ea	49.40	92.00	141.40
Landing newel, ball top, hemlock	BC@2.50	Ea	42.80	92.00	134.80
Landing newel, ball top, oak	BC@2.50	Ea	65.90	92.00	157.90
Starting newel, peg top, oak	BC@2.50	Ea	69.60	92.00	161.60
Starting newel, ball top, poplar	BC@2.50	Ea	41.70	92.00	133.70
Handrail, 2-3/8" D x 2-1/4" W, set between posts					
Oak, set over newel posts	BC@.150	LF	6.24	5.52	11.76
Oak, set between newel posts	BC@.250	LF	6.24	9.20	15.44
Oak with fillet, set over newel posts	BC@.250	LF	7.38	9.20	16.58
Hemlock, set between newel posts	BC@.150	LF	4.92	5.52	10.44
Poplar, set between newel posts	BC@.150	LF	4.88	5.52	10.40
Hemlock, set over newel posts	BC@.250	LF	4.88	9.20	14.08
Poplar, set over newel posts	BC@.250	LF	4.88	9.20	14.08
Flat bottom, set over newel posts	BC@.250	LF	3.05	9.20	12.25
Balusters, 1-1/4" D x 2-1/4" W, round top					
Oak, 34" high	BC@.330	Ea	7.20	12.10	19.30
Oak, 36" high	BC@.330	Ea	7.74	12.10	19.84
Poplar, 34" high	BC@.330	Ea	4.88	12.10	16.98
Poplar, 36" high	BC@.330	Ea	5.14	12.10	17.24
Hemlock, 31" high, square top	BC@.330	Ea	4.66	12.10	16.76
Hemlock, 34" high, tapered top	BC@.330	Ea	5.18	12.10	17.28
Hemlock, 36" high, tapered top	BC@.330	Ea	5.82	12.10	17.92
Hemlock, 36" high, square top	BC@.330	Ea	5.52	12.10	17.62
Hemlock, 41" high, tapered top	BC@.330	Ea	6.45	12.10	18.55
Hemlock, 41" high, square top	BC@.330	Ea	6.72	12.10	18.82
Handrail easings and transition fittings, oak					
Gooseneck riser	BC@1.75	LF	66.80	64.40	131.20
Up easing	BC@1.75	Ea	21.30	64.40	85.70
Opening cap	BC@1.75	Ea	17.30	64.40	81.70
Quarter return	BC@1.75	Ea	16.50	64.40	80.90
Volute	BC@1.75	Ea	73.90	64.40	138.30
Turnout	BC@1.75	Ea	41.30	64.40	105.70
Starting easing	BC@1.75	Ea	29.30	64.40	93.70
Over easing	BC@1.75	Ea	20.90	64.40	85.30

Stairs, attic

Economy folding stairway, tri-fold design, sanded plywood door, full width main hinge, fir door panel, 3/16" handrail, preassembled, 1" x 4" x 13" treads, 1" x 5" stringer, 22" x 54" opening size

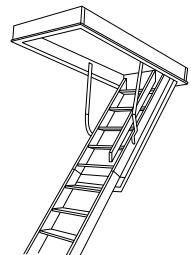
7' to 8'9" ceiling height, 64" landing	B1@5.00	Ea	101.00	167.00	268.00
8' 9" to 10' ceiling height, 67" landing	B1@5.00	Ea	126.00	167.00	293.00

Economy all-aluminum tri-fold stairway, sanded plywood door, full width main hinge, double-riveted treads, 3/16" handrail, preassembled, 25" x 54" opening size

8'9" ceiling height, 64" landing	B1@5.00	Ea	174.00	167.00	341.00
10' ceiling height, 67" landing	B1@5.00	Ea	179.00	167.00	346.00

Good quality folding stairway, Bessler Stairways, full width main hinge, fir door panel, molded handrail, preassembled, 1" x 6" treads, 1" x 5" stringer and frame of select yellow pine, "space saver" for narrow openings, 22", 25-1/2", or 30" wide by 54" long

8'9" or 10' height	B1@5.00	Ea	399.00	167.00	566.00
--------------------	---------	----	--------	--------	--------



Steam Bath Generators

	Craft@Hrs	Unit	Material	Labor	Total
Superior quality, Bessler Stairways, solid one-piece stringer sliding stairway, stringer and treads of clear yellow pine, unassembled, full-width piano hinge at head of stairs, with springs.					
Compact model 26/26T, for a 22-1/2" x 54" to 22-1/2" x 74" opening, 7'7" to 9'3" height					
1" x 4" stringers and treads	B1@6.00	Ea	802.00	200.00	1,002.00
Standard unit, for openings from 25-1/2" x 5'6" to 2'6" x 6'0", 7'7" to 10'10" heights					
1" x 6" stringers and treads	B1@6.00	Ea	802.00	200.00	1,002.00
Heavy-duty unit, for openings from 2'6" x 5'10" to 2'6" x 80", 7'7" to 12'10" heights					
1" x 8" stringers and treads	B1@9.00	Ea	1,530.00	300.00	1,830.00

Steam Bath Generators Steam bath equipment, 240 volts AC, single phase, UL approved. Costs include steam generator and controls. Labor costs include installation of steam unit and connections to existing supply, steam and drain piping, no rough plumbing or electrical included. Installed in existing, adequately sealed, tub enclosure. Maximum enclosure size as shown. www.amerec.com

4.5kW, 160 cubic feet max	P1@2.50	Ea	2,020.00	90.60	2,110.60
6kW, 180 cubic feet max	P1@2.50	Ea	2,130.00	90.60	2,220.60
7.5kW, 220 cubic feet max	P1@2.50	Ea	2,230.00	90.60	2,320.60
9kW, 260 cubic feet max	P1@2.50	Ea	2,280.00	90.60	2,370.60
10.5kW, 300 cubic feet max	P1@2.50	Ea	2,310.00	90.60	2,400.60
12kW, 360 cubic feet max	P1@2.50	Ea	2,500.00	90.60	2,590.60
20kW, 875 cubic feet max	P1@2.50	Ea	5,640.00	90.60	5,730.60
30kW, 1,275 cubic feet max	P1@2.50	Ea	6,240.00	90.60	6,330.60

Tarpaulins

Polyethylene, heavy duty. Water repellent, with rustproof grommets, cut sizes

6' x 8'	—	Ea	6.76	—	6.76
9' x 9'	—	Ea	12.10	—	12.10
9' x 12'	—	Ea	14.00	—	14.00
12' x 16'	—	Ea	25.90	—	25.90
16' x 20'	—	Ea	44.60	—	44.60
20' x 30'	—	Ea	72.00	—	72.00
40' x 60'	—	Ea	201.00	—	201.00
Canvas, 8 oz.					
8' x 10'	—	Ea	52.20	—	52.20
10' x 12'	—	Ea	78.30	—	78.30
10' x 16'	—	Ea	104.00	—	104.00
14' x 20'	—	Ea	183.00	—	183.00
20' x 20'	—	Ea	261.00	—	261.00

Taxes, Payroll

Employer's cost for payroll taxes and insurance, expressed as a percent of total payroll. See also, Insurance for more detailed information.

Rule of thumb: When actual payroll taxes and insurance are not known, estimate that for each \$1 paid in wages the employer must pay an additional \$.30

Payroll taxes and insurance	—	%	—	—	30.0
Specific taxes, percent of total payroll					
Typical SUI, State unemployment insurance	—	%	—	—	3.40
Typical Disability Insurance (CA, HI, NJ, NY, RI)	—	%	—	—	.90
FICA Social Security 6.20%, Medicare 1.45%	—	%	—	—	7.65
FUTA, Federal Unemployment Insurance	—	%	—	—	.60

Thresholds

	Craft@Hrs	Unit	Material	Labor	Total
Thresholds					
Aluminum threshold with vinyl feet					
3-3/8" x 5/8" x 36", economy	BC@.515	Ea	6.20	18.90	25.10
3-3/4" x 1" x 36", bronze	BC@.515	Ea	8.79	18.90	27.69
3-3/4" x 1" x 36", silver	BC@.515	Ea	13.50	18.90	32.40
3-1/2" x 5/8" x 72", brown	BC@.730	Ea	22.20	26.90	49.10
3-1/2" x 5/8" x 72", silver	BC@.730	Ea	19.30	26.90	46.20
3-1/2" x 5/8" x 72", gold	BC@.730	Ea	23.60	26.90	50.50
Aluminum bumper threshold with replaceable vinyl insert and vinyl feet					
3-3/16" x 5/8" x 36", silver	BC@.515	Ea	12.40	18.90	31.30
3-3/8" x 1" x 36" silver	BC@.515	Ea	10.40	18.90	29.30
3-3/8" x 1" x 36", gold	BC@.515	Ea	16.60	18.90	35.50
3-1/2" x 3/4" x 36", silver	BC@.515	Ea	8.29	18.90	27.19
3-1/2" x 3/4" x 36", gold	BC@.515	Ea	14.40	18.90	33.30
3-3/8" x 1" x 72", silver	BC@.730	Ea	34.50	26.90	61.40
Aluminum saddle interior threshold, smooth flat top, covers floor seams					
1-3/4" x 1/8" x 36", silver	BC@.515	Ea	8.28	18.90	27.18
1-3/4" x 1/8" x 36", gold	BC@.515	Ea	10.30	18.90	29.20
2-1/2" x 1/4" x 36", gold	BC@.515	Ea	8.19	18.90	27.09
Aluminum commercial fluted saddle threshold, UL fire labeled					
5" x 1/2" x 36", mill finish	BC@.515	Ea	17.80	18.90	36.70
5" x 1/2" x 72", mill finish	BC@.730	Ea	45.10	26.90	72.00
Aluminum adjustable threshold, height adjusts from 7/8" to 1-5/16", vinyl top insert and vinyl feet					
3-1/2" x 36", silver	BC@.515	Ea	19.30	18.90	38.20
Aluminum saddle exterior threshold, 1" minimum door clearance, for under-door and drip cap door bottoms.					
3-1/2" x 1" x 36", silver	BC@.515	Ea	9.87	18.90	28.77
4" x 1" x 36", silver	BC@.515	Ea	13.70	18.90	32.60
Aluminum saddle exterior threshold, with vinyl bottom insert					
5" x 36", chrome	BC@.515	Ea	18.10	18.90	37.00
5" x 36", gold	BC@.515	Ea	17.90	18.90	36.80
Oak and aluminum adjustable threshold, height adjusts from 1-1/8" to 1-3/8"					
5-5/8" x 36", silver	BC@.515	Ea	23.70	18.90	42.60
Oak bumper threshold, clear vinyl insert					
3-1/2" x 1" x 36"	BC@.515	Ea	19.80	18.90	38.70
Oak low boy threshold					
3-1/2" x 3/4" x 36"	BC@.515	Ea	11.40	18.90	30.30
3-1/2" x 3/4" x 72"	BC@.730	Ea	34.40	26.90	61.30
Aluminum under-door threshold kit, with vinyl insert.					
1-1/4" x 36", silver	BC@.515	Ea	6.20	18.90	25.10
3-3/4" x 36", gold	BC@.515	Ea	19.50	18.90	38.40
Vinyl replacement threshold insert					
1-7/8" x 36", gray	BC@.100	Ea	2.54	3.68	6.22
1-1/2" x 36", brown	BC@.100	Ea	2.74	3.68	6.42
Oak sill, adjustable, commercial grade, adjusts to accommodate gaps					
1-1/8" x 4-9/16" x 36", in-swing	BC@.750	Ea	22.40	27.60	50.00
1-1/8" x 4-9/16" x 36", out-swing	BC@.750	Ea	47.70	27.60	75.30
Aluminum sill nosing					
1-1/2" x 2-3/4" x 36", silver	BC@.381	Ea	5.41	14.00	19.41
2-3/4" x 4-1/2" x 36", bronze	BC@.381	Ea	14.50	14.00	28.50
2-3/4" x 1-1/2" x 72", mill	BC@.540	Ea	13.00	19.90	32.90



Tile

	Craft@Hrs	Unit	Material	Labor	Total
Aluminum sill cover, for use over rough concrete sills					
2-3/4" x 1-1/2" x 36"	BC@.381	Ea	10.50	14.00	24.50
2-3/4" x 1-1/2" x 72"	BC@.540	Ea	12.00	19.90	31.90
Aluminum sill edging					
2-3/4" x 1-1/2" x 36"	BC@.381	Ea	9.86	14.00	23.86
Aluminum door shoe, with vinyl insert					
1-3/8" x 36", brown	BC@.381	Ea	9.36	14.00	23.36
1-3/4" x 36" brown, with drip cap	BC@.381	Ea	11.80	14.00	25.80
Aluminum "L"-shape door bottom, with drip cap and vinyl weather seal					
1-3/4" x 36", gold	BC@.381	Ea	9.88	14.00	23.88
Aluminum "U"-shape door bottom, for exterior doors, with vinyl insert					
1-3/4" x 36"	BC@.381	Ea	12.30	14.00	26.30
1-3/4" x 36", with drip cap	BC@.381	Ea	14.80	14.00	28.80
Aluminum commercial door bottom, UL fire labeled					
36", mill finish	BC@.381	Ea	11.40	14.00	25.40
36", bronze anodized	BC@.381	Ea	9.83	14.00	23.83
Brush door bottom, with brush sweep					
1-3/4" x 36", vinyl	BC@.381	Ea	7.24	14.00	21.24
2-1/8" x 36", rubber	BC@.381	Ea	8.87	14.00	22.87
2" x 36", wood	BC@.381	Ea	11.90	14.00	25.90
Aluminum drip cap door bottom					
1-3/4" x 36", silver	BC@.381	Ea	7.81	14.00	21.81
1-1/2" x 36", heavy duty	BC@.381	Ea	11.90	14.00	25.90
Vinyl slide-on door bottom					
1-3/4" x 36"	BC@.381	Ea	9.36	14.00	23.36
Aluminum and vinyl door bottom					
36", aluminum	BC@.381	Ea	11.00	14.00	25.00
Aluminum door bottom and sweep, interior or exterior doors					
2" x 36", heavy duty	BC@.381	Ea	10.80	14.00	24.80
Oak door sweep, unfinished					
36" wide	BC@.381	Ea	10.90	14.00	24.90

Tile Typical materials costs for common sizes from 4" x 4" to 20" x 20". Subtract 20% for minimum or builder quality tile. Add 25% for better quality tile. Add the cost of mortar or adhesive, grout and labor to install tile from the section below. Costs assume a standard 'checkerboard' layout and 10% breakage and cutting waste. Allow an additional 5% to 10% for any other layout pattern. Tiles can vary greatly in cost. Decorative and imported tile will cost more.

Ceramic tile					
4-1/4" x 4-1/4", 8 tile cover 1 SF	—	SF	4.16	—	4.16
12" x 12", 1 tile covers 1 SF	—	SF	1.46	—	1.46
16" x 16", 1 tile covers 1.8 SF	—	SF	1.40	—	1.40
18" x 18", 1 tile covers 2.25 SF	—	SF	1.59	—	1.59
Porcelain tile					
6" x 6", 4 tile cover 1 SF	—	SF	3.96	—	3.96
12" x 12", 1 tile covers 1 SF	—	SF	1.50	—	1.50
18" x 18", 1 tile covers 2.25 SF	—	SF	2.50	—	2.50
20" x 20", 1 tile covers 2.8 SF	—	SF	1.89	—	1.89
Travertine tile					
4" x 4", 9 tile cover 1 SF	—	SF	5.24	—	5.24
6" x 6", 4 tile cover 1 SF	—	SF	10.50	—	10.50
12" x 12", 1 tile covers 1 SF	—	SF	3.31	—	3.31
16" x 16", 1 tile covers 1.8 SF	—	SF	2.19	—	2.19
18" x 18", 1 tile covers 2.25 SF	—	SF	3.41	—	3.41

Tile

	Craft@Hrs	Unit	Material	Labor	Total
Slate tile					
4" x 4", 9 tile cover 1 SF	—	SF	6.57	—	6.57
12" x 12", 1 tile covers 1 SF	—	SF	1.65	—	1.65
12" x 24", 1 tile covers 2 SF	—	SF	3.95	—	3.95
Marble tile					
6" x 6", 4 tile cover 1 SF	—	SF	9.35	—	9.35
12" x 12", 1 tile covers 1 SF	—	SF	4.30	—	4.30
18" x 18", 1 tile covers 2.25 SF	—	SF	6.59	—	6.59
Granite tile					
12" x 12", 1 tile covers 1 SF	—	SF	7.87	—	7.87
Glass tile					
2" x 2", 36 tile cover 1 SF	—	SF	35.20	—	35.20
3" x 6", 8 tile cover 1 SF	—	SF	14.00	—	14.00
4" x 4", 9 tile cover 1 SF	—	SF	36.00	—	36.00
Unglazed ceramic tile (pavers), costs do not include sealing					
Minimum quality 'Saltillo'	—	SF	1.09	—	1.09
Good quality 'Paver'	—	SF	1.31	—	1.31
Better quality 'kiln-dried'	—	SF	3.10	—	3.10
Handmade	—	SF	8.25	—	8.25
Handmade, medallion	—	SF	28.60	—	28.60
Mosaic tile, face-mounted or mesh-backed sheets, typically 12" x 12". Costs will vary widely					
Ceramic mosaic tile					
Good quality	—	SF	5.47	—	5.47
Glass mosaic tile					
Good quality	—	SF	14.90	—	14.90
Combination media (glass and stone) mosaic tile					
Good quality	—	SF	16.80	—	16.80
Natural stone mosaic tile					
Good quality	—	SF	17.80	—	17.80
Decorative tile, listellos, pencil liners, mosaic trim, bullnose and accent tiles, etc. Costs will vary widely.					
Bullnose or wall cap tiles					
Good quality, per SF	—	SF	13.40	—	13.40
Good quality, per LF	—	LF	3.05	—	3.05
Listellos, pencil liners					
Good quality	—	LF	4.39	—	4.39
Decorative trim and accent tile					
Typical cost	—	SF	26.00	—	26.00
Ceramic fixtures, glazed.					
Toothbrush/tumbler holder	TL@.250	Ea	7.65	8.75	16.40
Soap dish	TL@.250	Ea	9.48	8.75	18.23
Towel bar assembly, 24" long	TL@.550	Ea	18.30	19.20	37.50
Bath corner shelf, 8" x 8"	TL@.500	Ea	18.50	17.50	36.00
Toilet tissue holder, 4-1/4" x 6"	TL@.250	Ea	30.90	8.75	39.65
Towel ring	TL@.550	Ea	10.90	19.20	30.10
Robe hook	TL@.550	Ea	6.08	19.20	25.28
Tile installation	The costs below are for setting and grouting tile only. Smaller and more complex jobs will cost more. Add the cost of preparing the surface for installation (tile backer) and the tile. See Ditra Slab Membrane for detachable membrane costs.				
Ceramic tile adhesive. Premixed Type 1, Acryl-4000. 1 gallon covers 70 SF applied with #1 trowel (3/16" x 5/32" "V"-notch), 50 SF applied with #2 trowel (3-/16" x 1/4" "V"-notch) or 40 SF applied with #3 trowel (1/4" x 1/4" square-notch).					
1 quart	—	Ea	7.34	—	7.34
1 gallon	—	Ea	14.70	—	14.70
3-1/2 gallons	—	Ea	41.00	—	41.00
Tile adhesive applied with #2 trowel	—	SF	.26	—	.26

Tile, Installation

	Craft@Hrs	Unit	Material	Labor	Total
Thin-set tile mortar. 50 pound bag covers 100 SF applied with #1 trowel (1/4" x 1/4" square-notch), 80 SF applied with #2 trowel (1/4" x 3/8" square-notch), 45 SF applied with #3 trowel (1/2" x 1/2" square notch). Cost per 50 pound bag.					
Standard, gray	—	Ea	7.34	—	7.34
Standard, white	—	Ea	9.44	—	9.44
VersaBond, gray	—	Ea	15.20	—	15.20
VersaBond, white	—	Ea	17.30	—	17.30
FlexiBond, gray	—	Ea	31.60	—	31.60
Marble and granite mix	—	Ea	25.20	—	25.20
VersaBond, gray applied with #3 trowel	—	SF	.34	—	.34
Tile grout. Polymer-modified dry grout for joints 1/16" to 1/2". Coverage varies with tile and joint size. Typically, a 25 lb. bag of sanded grout will cover 100 SF of 12"x12" tile with a 1/8" spacing. CustomBuildingProducts.com offers a grout material calculator.					
Unsanded, 10 lb. bag	—	Ea	14.60	—	14.60
Sanded, all colors, 25 lb. bag	—	Ea	15.20	—	15.20
Saltillo grout, gray, 50 lb. bag	—	Ea	13.70	—	13.70
Installation of tile in adhesive Includes adhesive and grout. Adhesive installation not recommended for 'wet' areas. Add the cost of preparing the surface for installation (tile backer) and the cost of tile.					
Countertops and backsplashes					
Mosaic tile	TL @.203	SF	.33	7.10	7.43
4-1/4" x 4-1/4" to 6" x 6" glazed field tile	TL@.180	SF	.41	6.30	6.71
Countertop trim pieces and edge tile	TL@.180	LF	.09	6.30	6.39
Floors					
Mosaic tile	TL@.121	SF	.39	4.23	4.62
6" x 6" to 20" x 20" glazed field tile	TL@.110	SF	.42	3.85	4.27
Floor trim pieces and edge tile	TL@.110	LF	.07	3.85	3.92
Walls					
Mosaic tile	TL@.143	SF	.39	5.00	5.39
6" x 6" glazed field tile	TL@.131	SF	.42	4.58	5.00
Wall trim pieces and edge tile	TL@.131	LF	.07	4.58	4.65
Installation of tile in thin-set mortar Includes grout. Costs are for mortar and grout. Add the cost of surface preparation (backerboard) and tile.					
Countertops and backsplashes					
Mosaic tile	TL@.407	SF	.30	14.20	14.50
4-1/4" x 4-1/4" to 6" x 6" glazed field tile	TL@.352	SF	.30	12.30	12.60
Stone; granite, marble, travertine, 3/8" thick	TL@.455	SF	.46	15.90	16.36
Countertop trim pieces and edge tile	TL@.352	LF	.05	12.30	12.35
Floors					
Mosaic tile	TL@.238	SF	.34	8.33	8.67
4-1/4" x 4-1/4" to 6" x 6" glazed field tile	TL@.210	SF	.34	7.35	7.69
8" x 8" to 12" x 12" glazed field tile	TL@.200	SF	.34	7.00	7.34
16" x 16" to 20" x 20" glazed field tile	TL@.200	SF	.37	7.00	7.37
Floor trim pieces and edge tile	TL@.210	LF	.06	7.35	7.41
Quarry or paver tile	TL@.167	SF	.48	5.84	6.32
Stone; granite, marble, travertine, 3/8" thick	TL@.354	SF	.46	12.40	12.86
Walls					
Mosaic tile	TL@.315	SF	.47	11.00	11.47
4-1/4" x 4-1/4" to 6" x 6" glazed field tile	TL@.270	SF	.34	9.44	9.78
Stone; granite, marble, travertine, 3/8" thick	TL@.455	SF	.46	15.90	16.36
Wall trim pieces and edge tile	TL@.270	LF	.06	9.44	9.50

Tile Backerboard

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

Tile backerboard (Durock™ or Wonderboard™). Water-resistant underlayment for ceramic tile on floors, walls, countertops and other interior wet areas. Material cost for 100 square feet (CSF) of board includes waterproofing membrane, the backerboard (and 10% waste), 50 pounds of job mixed latex-fortified mortar for the joints and surface skim coat, 75 linear feet of fiberglass joint tape, 200 1-1/4" backerboard screws. For scheduling purposes, estimate that a crew of 2 can install, tape and apply the skim coat on the following quantity of backerboard in an 8-hour day: countertops 180 SF, floors 525 SF, and walls 350 SF. Use \$250 as a minimum charge for this type work.

Using 15 Lb. felt waterproofing, per 400 SF roll	—	Roll	22.20	—	22.20
Using 1/4" backerboard, per 100 SF	—	CSF	78.80	—	78.80
Using 1/2" backerboard, per 100 SF	—	CSF	87.10	—	87.10
Using 50 Lb. of latex-fortified mortar each 100 SF, per 50 Lb. sack	—	Sack	15.20	—	15.20
Using 75 LF of backerboard tape each 100 SF, per 50 LF roll	—	Roll	4.09	—	4.09
Using 200 backerboard screws for each 100 SF, per pack of 200 screws	—	Pack	8.76	—	8.76
1/2" Backerboard with waterproofing, mortar, tape and screws					
Floors	T1@.030	SF	1.23	.97	2.20
Walls	T1@.045	SF	1.23	1.46	2.69
Countertops	T1@.090	SF	1.23	2.92	4.15
Subtract for 1/4" backerboard	—	SF	-0.08	—	-0.08

Vacuum Cleaning Systems, Central Subcontract. Costs listed are for better quality central vacuum power unit, piping to 4 remote outlets, hose and attachments (adequate for typical 2,000 SF home).

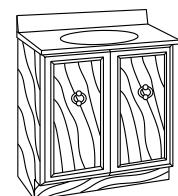
Assumes that all vacuum tubes are installed before any interior finishes are applied.

Basic package with 23' hose	—	LS	—	—	1,600.00
Additional remote outlets	—	Ea	—	—	150.00
Add for electric or turbo power head	—	Ea	—	—	155.00

Vanity cabinets Sink base with no countertop, no lavatory bowl and no plumbing included. Prefinished. See also Countertops and Plumbing. 3/4" furniture-grade sides with veneer interior, overlay doors and drawers, and concealed hinges, 31-1/2" high.

Door only sink base vanity cabinets, white exterior finish. Maple interior finish, concealed hinges.

18" x 16", 1 door	BC@.400	Ea	77.10	14.70	91.80
24" x 18", 2 doors	BC@.400	Ea	102.00	14.70	116.70
30" x 18", 2 doors	BC@.400	Ea	114.00	14.70	128.70



Standard quality vanity cabinets, veneer doors, drawer front(s) and face frame

24" x 18", 1 door, 2 drawers	BC@.400	Ea	173.00	14.70	187.70
30" x 18", 1 door, 2 drawers	BC@.400	Ea	193.00	14.70	207.70
36" x 18", 2 doors, 2 drawers	BC@.400	Ea	219.00	14.70	233.70

Good quality vanity cabinets, white or hardwood exterior finish, ball bearing drawer glides

24" x 21", 1 door, 1-drawer	BC@.400	Ea	299.00	14.70	313.70
30" x 21", 1 door, 4-drawers	BC@.400	Ea	308.00	14.70	322.70
36" x 21", 2 doors, 4 drawers	BC@.400	Ea	345.00	14.70	359.70
48" x 21", 2 doors, 7 drawers	BC@.500	Ea	408.00	18.40	426.40

Premium quality vanity cabinets, cinnamon oak doors and drawer fronts, adjustable hinges

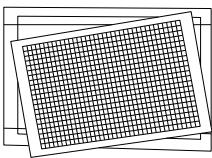
24" x 21", 1 door, 2 drawer	BC@.400	Ea	267.00	14.70	281.70
30" x 21", 1 door, 2 drawer	BC@.400	Ea	356.00	14.70	370.70
36" x 21", 1 door, 2 drawers	BC@.400	Ea	422.00	14.70	436.70
48" x 21", 1 door, 4 drawers	BC@.500	Ea	559.00	18.40	577.40
60" x 21", 2 doors, 4 drawers	BC@.500	Ea	612.00	18.40	630.40

Over the toilet vanity cabinet, 8" deep x 24" high

24" wide, 2 doors, 1 shelf	B1@1.37	Ea	123.00	45.60	168.60
30" wide, 2 doors, 1 shelf	B1@1.37	Ea	165.00	45.60	210.60

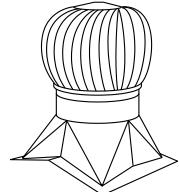
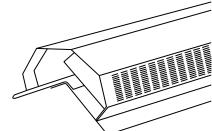
Vents and Louvers

	Craft@Hrs	Unit	Material	Labor	Total
Vents and Louvers					
Attic and gable louver vents, UV stabilized copolymer, screened, rough opening sizes					
12" x 12", 38 sq. inch vent area	SW@.448	Ea	33.20	18.50	51.70
12" x 18", 86 sq. inch vent area	SW@.448	Ea	35.50	18.50	54.00
18" x 24", 140 sq. inch vent area	SW@.871	Ea	44.90	36.10	81.00
21" x 27" oval	SW@.871	Ea	86.20	36.10	122.30
22" x 34", half round, 100 sq. inch vent area	SW@.871	Ea	62.50	36.10	98.60
16" round, 50 sq. inch vent area	SW@.448	Ea	61.70	18.50	80.20
12" x 18", round top 50 sq. inch vent area	SW@.448	Ea	49.50	18.50	68.00
22" octagon, 54 sq. inch vent area	SW@.871	Ea	57.70	36.10	93.80
Chimney caps					
9" x 9" rectangular	SW@.324	Ea	29.50	13.40	42.90
9" x 13" rectangular	SW@.324	Ea	31.80	13.40	45.20
13" x 13" rectangular	SW@.324	Ea	32.90	13.40	46.30
13" x 13" rectangular, stainless	SW@.324	Ea	48.70	13.40	62.10
8" x 8" to 13" x 13" adjustable	SW@.324	Ea	31.50	13.40	44.90
13" x 18" fixed, black	SW@.324	Ea	36.20	13.40	49.60
Clothes dryer vent set, aluminum, with hood, inside plate, 8' of flexible duct pipe, clamps and collar					
4" diameter vent kit	SW@.440	Ea	13.50	18.20	31.70
Flex hose, 4" diameter, 8' length	—	Ea	10.00	—	10.00
Flex hose clamps, 4" diameter	—	Ea	1.75	—	1.75
Code caps					
4" diameter, top only	SW@.324	Ea	23.40	13.40	36.80
6" diameter, top only	SW@.324	Ea	29.80	13.40	43.20
8" diameter, top only	SW@.324	Ea	36.30	13.40	49.70
6" diameter shake base	SW@.324	Ea	27.90	13.40	41.30
8" diameter shake base	SW@.324	Ea	29.10	13.40	42.50
Dormer louver vents, galvanized, 1/4" mesh screen					
19" x 3", low profile, rectangular	BC@.871	Ea	41.50	32.00	73.50
24" x 12", half round	BC@.871	Ea	42.80	32.00	74.80
Add for 1/8" mesh	—	%	3.0	—	—
Under-eave louver vents, rectangular, with 1/4" mesh screen, 16" wide					
16" x 4", mill finish	SW@.255	Ea	1.68	10.60	12.28
16" x 8", mill finish	SW@.255	Ea	2.10	10.60	12.70
16" x 8", brown finish	SW@.255	Ea	2.16	10.60	12.76
16" x 4", white finish	SW@.255	Ea	1.93	10.60	12.53
16" x 8", white finish	SW@.255	Ea	2.04	10.60	12.64
Foundation screen vents, galvanized, with screen, no louvers					
14" x 6"	SW@.255	Ea	3.40	10.60	14.00
16" x 4"	SW@.255	Ea	2.89	10.60	13.49
16" x 6"	SW@.255	Ea	3.13	10.60	13.73
16" x 8"	SW@.255	Ea	3.54	10.60	14.14
Automatic foundation vent, fits 8" x 16" concrete block opening, aluminum mesh on front and molded plastic screen on back. Opens at 72 degrees, closes at 38 degrees. 1" frame each side					
Automatic open and close	SW@.255	Ea	16.60	10.60	27.20
Foundation vent with manual damper, sheet metal					
4" x 16"	SW@.255	Ea	6.95	10.60	17.55
6" x 16"	SW@.255	Ea	7.60	10.60	18.20
8" x 16"	SW@.255	Ea	8.05	10.60	18.65
Foundation access door					
24" x 24"	BC@.363	Ea	30.30	13.40	43.70
32" x 24"	BC@.363	Ea	35.90	13.40	49.30



Vents and Louvers

	Craft@Hrs	Unit	Material	Labor	Total
Heater closet door vents, louver					
70 square inches, louvers only	SW@.220	Ea	6.17	9.11	15.28
70 square inches, louvers and screen	SW@.255	Ea	11.40	10.60	22.00
38 square inches, louvers only	SW@.190	Ea	5.99	7.87	13.86
38 square inches, louvers and screen	SW@.210	Ea	9.07	8.69	17.76
Circular louver vents, for moisture control in sidewalls, aluminum mill finish					
2" circular vent	SW@.255	Ea	1.50	10.60	12.10
3" circular vent	SW@.255	Ea	3.05	10.60	13.65
4" circular vent	SW@.255	Ea	2.75	10.60	13.35
Rafter eve vents, galvanized steel with nailing flange, 1/8" mesh, galvanized, louver					
14" x 5"	SW@.220	Ea	4.22	9.11	13.33
14" x 6"	SW@.220	Ea	5.21	9.11	14.32
22" x 3"	SW@.220	Ea	4.11	9.11	13.22
22" x 6"	SW@.220	Ea	5.41	9.11	14.52
22" x 7"	SW@.220	Ea	5.42	9.11	14.53
Rafter bay vent channel, keeps attic insulation away from vents, promotes circulation.					
Rafters 16" on center,					
14" wide, 15" net-free vent area	BC@.220	Ea	1.95	8.09	10.04
Rafters 24" on center,					
22" wide, 26" net-free vent area	BC@.220	Ea	2.60	8.09	10.69
Ridge ventilators, 1/8" louver opening, double baffle, aluminum					
10' long, black	BC@.650	Ea	18.60	23.90	42.50
10' long, brown	BC@.650	Ea	17.60	23.90	41.50
10' long, white	BC@.650	Ea	17.60	23.90	41.50
4' long, hinged for steep roof	BC@.255	Ea	11.30	9.38	20.68
Joint strap	BC@.010	LF	1.86	.37	2.23
End connector plug	BC@.010	Ea	2.27	.37	2.64
Roof vents, with mesh screen, for roof venting of kitchen and bath exhaust fans					
Square cap type, 26" L x 23" D x 5" H	SW@.448	Ea	54.30	18.50	72.80
Dormer type, 20" L x 10" D x 6" H	SW@.448	Ea	35.80	18.50	54.30
Rotary roof ventilators, with base, by turbine diameter					
12", galvanized	SW@.694	Ea	29.10	28.70	57.80
12", brown	SW@.694	Ea	37.50	28.70	66.20
14", galvanized	SW@.694	Ea	45.50	28.70	74.20
14", brown	SW@.694	Ea	39.20	28.70	67.90
16", galvanized	SW@.930	Ea	112.00	38.50	150.50
18", galvanized	SW@1.21	Ea	130.00	50.10	180.10
Round louver vents, 1/8" mesh, galvanized					
12" or 14" diameter	SW@.440	Ea	47.00	18.20	65.20
16" diameter	SW@.440	Ea	54.00	18.20	72.20
18" diameter	SW@.440	Ea	59.60	18.20	77.80
24" diameter	SW@.661	Ea	107.00	27.40	134.40
Soffit vents, aluminum louvers, 8' long, reversible					
2-5/8" wide, white finish	SW@.440	Ea	4.96	18.20	23.16
2-5/8" wide, mill finish	SW@.440	Ea	3.31	18.20	21.51
Under eave soffit vents, screen type					
4" or 8" x 16"	B1@.500	Ea	9.59	16.70	26.29
Continuous aluminum soffit vents					
2" x 8'	B1@.050	LF	.71	1.67	2.38



Wallcoverings

	Craft@Hrs	Unit	Material	Labor	Total
Wall louvers, reversible for flush or recessed mounting. White finish. Screened					
12" x 12", aluminum	SW@.440	Ea	10.30	18.20	28.50
12" x 18", aluminum	SW@.440	Ea	12.60	18.20	30.80
14" x 24", aluminum	SW@.440	Ea	19.40	18.20	37.60
18" x 24", aluminum	SW@.440	Ea	22.30	18.20	40.50
12" x 18", plastic	SW@.440	Ea	8.23	18.20	26.43
18" x 24", plastic	SW@.440	Ea	14.00	18.20	32.20

Wallboard Partitions, Subcontract

Costs for interior partitions in one- and two-story buildings.

1/4" gypsum wallboard on 2 sides with "V"-grooved edges and plastic molding at corners fastened to 25 gauge metal framing at 24" OC, including framing, per LF of wall.



Vinyl covered 8' high	—	LF	—	—	126.00
Vinyl covered 10' high	—	LF	—	—	169.00
Paintable paper-covered 8' high	—	LF	—	—	91.70
Paintable paper-covered 10' high	—	LF	—	—	137.00
Add for glued vinyl base on two sides	—	LF	—	—	4.95

Wallcoverings Costs listed are for good to better quality materials installed on a clean, smooth surface and include adhesive, edge trimming, pattern matching, and normal cutting and fitting waste. Surface preparation such as patching and priming are extra. Typical roll is 8 yards long and 18" wide (approximately 36 square feet).

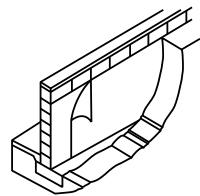
Scrape off old wallpaper, up to 2 layers	PP@.015	SF	—	.51	.51
Paper stripper (1,000 SF per gallon)	—	Gal	33.80	—	33.80
Patch holes, scrape marks	PP@.010	SF	.04	.34	.38
Blank stock (underliner)					
Bath, kitchen, and laundry room	PP@.668	Roll	9.41	22.50	31.91
Other rooms	PP@.558	Roll	9.41	18.80	28.21
Textured basket weave					
Bath, kitchen, and laundry rooms	PP@.995	Roll	22.90	33.50	56.40
Other rooms	PP@.830	Roll	22.90	27.90	50.80
Papers, vinyl-coated papers, trimmed, and pre-pasted					
Bath, kitchen, and laundry rooms	PP@.884	Roll	23.50	29.80	53.30
Other rooms	PP@.780	Roll	23.50	26.30	49.80
Misc. patterns					
Bath, kitchen, and laundry rooms	PP@1.12	Roll	12.80	37.70	50.50
Other rooms	PP@.844	Roll	12.80	28.40	41.20
Designer paper and hand-painted prints					
Bath, kitchen, and laundry rooms	PP@1.68	Roll	64.70	56.60	121.30
Other rooms	PP@1.41	Roll	64.70	47.50	112.20
Murals, no pattern					
Solid vinyl	PP@.844	Yd	22.50	28.40	50.90
Coordinating borders, vinyl coated					
roll is 4" to 6" x 12' to 15'	PP@.017	LF	.88	.57	1.45
Wallpaper adhesive					
Clear, strippable (300 SF per gallon)	—	Gal	11.90	—	11.90
Clear, strippable, per SF	—	SF	.04	—	.04
Mildew-resistant (250 SF per gallon)	—	Gal	21.40	—	21.40
Adhesive, per SF	—	SF	.08	—	.08

Waterproofing

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

Waterproofing

Below grade waterproofing, applied to concrete or masonry walls, no surface preparation, excavation, or backfill included, typical job



Bentonite waterproofing

One layer, nailed in place

BL@.079 SF .86 2.36 3.22

Cementitious waterproofing with protection board

Spray or brush applied, 2 coats

BL@.077 SF 2.62 2.30 4.92

Crystalline waterproofing

Spray or brush applied, 3 coats

BL@.110 SF 1.79 3.28 5.07

Elastomeric waterproofing 30 mm per coat

Sprayed, troweled, or rolled, 2 coats

BL@.065 SF 1.48 1.94 3.42

Above grade waterproofing, applied to smooth concrete or plywood deck, no surface preparation included, typical job

Between slabs membrane

Sprayed, troweled or rolled, 2 coats

PT@.047 SF 1.27 1.76 3.03

Pedestrian walking surface, elastomeric membrane,

Applied 4 coats thick with aggregate

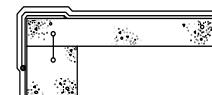
PT@.086 SF 2.05 3.23 5.28

Chloroprene/Neoprene latex deck

Surfacing

PT@.144 SF 3.49 5.40 8.89

Waterproofing system for foundations Wrapped over concrete foundation footing. System should be tied into a perimeter drain system at or around the footing. Cover top of system with at least 6 inches of soil and backfill immediately after installation. No surface preparation, excavation, or backfill included.



MiraDRI™ 860

rubberized asphalt membrane

B1@.075 SF .74 2.50 3.24

Latex-based primer (400 SF per gal)

B1@.075 SF .21 2.50 2.71

LM-800 liquid membrane

B1@.034 SF .17 1.13 1.30

Carlisle 704 mastic,

1/8" x 3/4", 130 LF per gallon

B1@.034 LF .27 1.13 1.40

Mira Drain™ 6200 (200 SF Roll)

B1@.075 SF 1.04 2.50 3.54

Quick Drain™ (16" x 50' Roll)

B1@.075 SF 3.74 2.50 6.24

Weatherstripping Materials

Door bottom seals, brass

Brass "U"-shaped door bottom with adjustment for gaps

36" x 1-3/8" BC@.250 Ea 17.30 9.20 26.50

36" x 1-3/4" BC@.250 Ea 19.10 9.20 28.30

Door frame seal sets

Spring bronze, nailed every 1-3/8 inch

BC@.500 Ea 19.40 18.40 37.80

36" x 6'8" door BC@.500 Ea 20.60 18.40 39.00

Rigid PVC frame, with silicon bulb / screws BC@.008 Ea 13.70 .29 13.99

Header and jamb side stripping, adhesive (Peel N Stick®)

36" x 6'8" door, brass stripping BC@.500 Ea 27.00 18.40 45.40

Window seal sets, spring brass, adhesive (Peel N Stick®), linear feet per side

Double hung window, head and sill BC@.008 LF 1.59 .29 1.88

Add to remove & replace window sash BC@.250 Ea — 9.20 9.20

Casement window, head and sill BC@.008 LF .70 .29 .99

Gray or black pile gasket BC@.008 LF .35 .29 .64

Gray or black pile gasket with adhesive BC@.006 LF .75 .22 .97

Garage door top and side seal

Kry-O-Gem™ fiber gasket in aluminum or vinyl frame (KEL-EEZ®)

9' x 7' door / screws BC@.500 Ea 42.60 18.40 61.00

16' x 7' door / screws BC@.600 Ea 55.50 22.10 77.60

Flexible EPDM in aluminum frame BC@.050 LF 1.65 1.84 3.49

Well Drilling, Subcontract

	Craft@Hrs	Unit	Material	Labor	Total
Garage door bottom seal. Set with adhesive 9', neoprene or EPDM	BC@.383	Ea	9.45	14.10	23.55
16', neoprene or EPDM	BC@.500	Ea	29.60	18.40	48.00
Soft cushion foam	BC@.025	LF	1.05	.92	1.97
EPDM Rubber	BC@.025	LF	1.95	.92	2.87
Well Drilling, Subcontract Typical costs shown, based on well depth including welded steel casing (or continuous PVC casing). Actual costs will depend on specific conditions, i.e. hard-rock, alluvial riverbed or a combination of conditions. The amount of casing needed depends on soil conditions. Some types of rock require casings at the well surface only. Your local health department can probably provide information on the average well depth and subsurface conditions in the community. Note that unforeseen subsurface conditions can increase drilling costs substantially. Most subcontractors will estimate costs on an hourly basis.					
Well hole with 4" ID F480 PVC casing	—	LF	—	—	35.10
Well hole with 6" ID steel casing	—	LF	—	—	60.60
Well hole with 8" ID steel casing	—	LF	—	—	83.20
6" well hole in sturdy rock (no casing)	—	LF	—	—	22.00
Add per well for 6" diameter bottom filter screen, if needed due to site conditions					
Stainless steel	—	LF	—	—	196.00
Low carbon steel	—	LF	—	—	103.00
Add per well for drive shoe	—	LS	—	—	186.00
Add for 6" surface seal, if needed due to local code or site conditions					
20' sanitary seal – for individual well	—	LS	—	—	20.00
50' sanitary seal – for community well	—	LS	—	—	3,100.00
Add per well for well drilling permit. Costs varies per local area.					
Individual water well	—	LS	—	—	558.00
Community water well with Source Assessment	—	LS	—	—	1,490.00
Add for automatic electric pumping system with pressure tank(s) domestic use, no electrical work included.					
Individual (18 GPM @ 400 TDH), typical	—	LS	—	—	20,100.00
Community (60 GPM @ 400 TDH), typical	—	LS	—	—	20,100.00
Add for electrical service drop pole					
Typical cost 100 amp 230 volt 1 phase service	—	LS	—	—	1,490.00

Window and Door Mantels, Aluminum Includes hardware, aluminum crown mold and roof. Modern design, bright copper or primed aluminum finish.



Up to 24" width	SW@.500	Ea	133.00	20.70	153.70
25" to 36" width	SW@.500	Ea	178.00	20.70	198.70
37" to 48" width	SW@.500	Ea	222.00	20.70	242.70
49" to 60" width	SW@.600	Ea	265.00	24.80	289.80
61" to 72" width	SW@.600	Ea	311.00	24.80	335.80
73" to 84" width	SW@.600	Ea	356.00	24.80	380.80
85" to 96" width	SW@.700	Ea	403.00	29.00	432.00
97" to 108" width	SW@.700	Ea	447.00	29.00	476.00
109" to 120" width	SW@.700	Ea	492.00	29.00	521.00
Add for aged copper or brass aluminum finish	—	%	10.0	—	—
Add for units over 120"	—	LF	59.90	—	59.90

Window Sills

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

Window Sills, Cultured Stone

Marble sill 40" or less	B1@.687	Ea	60.00	22.90	82.90
Marble sill 41" to 60"	B1@.730	Ea	80.00	24.30	104.30
Onyx sill 40" or less	B1@.687	Ea	80.00	22.90	102.90
Onyx sill 41" to 60"	B1@.730	Ea	115.00	24.30	139.30
Granite sill 40" or less	B1@.687	Ea	98.00	22.90	120.90
Granite sill 41" to 60"	B1@.730	Ea	145.00	24.30	169.30

Window Sills, Vinyl

Solid vinyl. Set with latex or solvent base adhesive. Hard, scratch resistant surface.

Ultraviolet protection to prevent yellowing. Gloss finish

3-1/2" x 3'	BC@.129	Ea	18.10	4.75	22.85
3-1/2" x 4'	BC@.172	Ea	22.80	6.33	29.13
3-1/2" x 5'	BC@.215	Ea	30.10	7.91	38.01
3-1/2" x 6'	BC@.258	Ea	33.70	9.49	43.19
4-1/4" x 3'	BC@.129	Ea	22.80	4.75	27.55
4-1/4" x 4'	BC@.172	Ea	28.90	6.33	35.23
4-1/4" x 5'	BC@.215	Ea	36.10	7.91	44.01
4-1/4" x 6'	BC@.258	Ea	42.20	9.49	51.69
5-1/2" x 3'	BC@.129	Ea	25.40	4.75	30.15
5-1/2" x 4'	BC@.172	Ea	33.70	6.33	40.03
5-1/2" x 5'	BC@.215	Ea	39.70	7.91	47.61
5-1/2" x 6'	BC@.258	Ea	48.20	9.49	57.69
6-1/4" x 3'	BC@.129	Ea	28.20	4.75	32.95
6-1/4" x 4'	BC@.172	Ea	38.20	6.33	44.53
6-1/4" x 5'	BC@.215	Ea	45.60	7.91	53.51
6-1/4" x 6'	BC@.258	Ea	56.80	9.49	66.29

Window Treatments

Blinds and shades. See also Draperies.

Horizontal blinds. Per square foot of blind, width × height. Includes head rail and wand tilter. Standard colors and custom sizes.

1" wide PVC	BC@.083	SF	1.48	3.05	4.53
1" wide aluminum	BC@.083	SF	1.56	3.05	4.61
1" wide basswood	BC@.083	SF	6.54	3.05	9.59
2" wide faux wood	BC@.083	SF	2.34	3.05	5.39
2" wide basswood	BC@.083	SF	5.51	3.05	8.56
2" wide American hardwood	BC@.083	SF	8.75	3.05	11.80
2-1/2" wide faux wood	BC@.083	SF	2.99	3.05	6.04
2-1/2" wide beveled basswood	BC@.083	SF	6.67	3.05	9.72

Roll-up blinds. Per square foot of blind, width × height. Includes aluminum head rail, valance and roller chain lift. Standard colors and custom sizes.

Woven wood (rattan and jute)	BC@.083	SF	6.45	3.05	9.50
Bamboo	BC@.083	SF	6.42	3.05	9.47
Vinyl-fiberglass, translucent	BC@.083	SF	2.14	3.05	5.19
Room darkening fabric	BC@.083	SF	6.81	3.05	9.86
Denim fabric	BC@.083	SF	1.85	3.05	4.90
Decorative woven cotton fabric	BC@.083	SF	3.60	3.05	6.65
Sun control vinyl fiberglass sheer weave	BC@.083	SF	3.58	3.05	6.63

Vertical blinds. 3-1/2" vanes. Per square foot of blind, width × height. Includes aluminum head rail, tension pulley and dust cover valance. Standard colors and custom sizes. Left or right pull.

Smooth surface PVC	BC@.083	SF	2.66	3.05	5.71
Textured surface PVC	BC@.083	SF	3.35	3.05	6.40
Premium textured surface PVC	BC@.083	SF	5.26	3.05	8.31
Faux wood	BC@.083	SF	3.31	3.05	6.36

Buy this complete title here: <https://goo.gl/2ReTws>

Industrial and Commercial Division Contents

A complete index begins on page 638

01 General Requirements	308-330	Ecclesiastical equipment.....	458
Markup & overhead.....	308	Theater & stage equipment.....	460
Equipment rental rates.....	318	Athletic equipment.....	462
02 Existing Conditions	330-336	12 Furnishings.....	468-473
Site clearing and demolition.....	330	Window treatment.....	469
Building demolition.....	332	Cabinets.....	470
03 Concrete	336-369	Seating and benches	472
Excavation for concrete.....	336	13 Special Construction	473-486
Concrete formwork.....	337	Access for the disabled.....	474
Reinforcing steel.....	344	Pre-fab steel buildings.....	478
Ready-mix concrete.....	348	14 Conveying Equipment.....	486-489
Concrete assemblies.....	350	Elevators	487
Concrete finishing.....	354	Hoists and cranes	488
Precast and tilt-up concrete	355	21 Fire Suppression	489-491
Foundations.....	359	Sprinkler systems	489
04 Masonry	369-380	Hoses and extinguishers.....	491
Reinforcing and flashing.....	370	22 Plumbing.....	492-533
Brick and block walls.....	371	Black steel pipe and fittings	492
Glass block.....	378	Copper pipe & fittings	501
Pavers	380	PVC pipe and fittings.....	504
05 Metals	381-387	Copper DWV pipe & fittings	510
Structural steel.....	381	ABS DWV pipe & fittings	510
Steel floor and roof decking	382	Hangers and supports	514
Stairways.....	383	Valves, pumps, gauges.....	517
06 Wood and Composites	387-395	Cleanouts and drains	523
Framing carpentry	387	Plumbing equipment	524
Panelized roof & wall systems	390	Sump pumps	526
Laminated glued beams	394	Rough-in assemblies.....	528
07 Thermal & Moisture Protection	395-410	23 HVAC.....	533-539
Dampproofing.....	395	Gas fired heaters	533
Thermal insulation	396	Hydronic & steam heating.....	535
Roof insulation.....	397	26 Electrical	539-586
Membrane roofing	399	Light and power circuits	540
Flashing & sheet metal.....	401	Rigid steel conduit.....	541
Gutters & downspouts.....	402	EMT conduit.....	542
Fireproofing	405	PVC conduit.....	545
Sealants & caulking	408	Conduit hangers & supports	552
08 Openings	410-421	Wire and cable	555
Metal doors.....	410	Boxes, receptacles, switches	559
Windows	417	Switchboards	567
Hardware	418	Circuit breakers	572
09 Finishes	421-438	Lighting	580
Gypsum wallboard	421	27 Communications	587-592
Plastering	424	Security & alarm systems.....	587
Metal framed shaft walls	425	Computer network cable	590
Ceramic tile.....	425	31 Earthwork	592-607
Ceilings and flooring.....	427	Site grading	594
Wall coverings	432	Trench excavation and backfill.....	595
Surface prep and painting.....	433	Slope protection	602
10 Specialties	438-447	Shoring, bulkheads, piles.....	603
Identifying devices	439	32 Exterior Improvements	607-624
Compartments and cubicles	440	Paving and curbs	607
Partitions	441	Fencing and gates	615
Toilet and bath accessories	443	Irrigation systems	616
Postal specialties	445	Planting & landscaping	620
Flagpoles	446	33 Utilities	624-637
11 Equipment	447-468	Pressure water pipe.....	626
Service station equipment	447	Drain pipe	628
Bank equipment	450	Catch basins & manholes	633
Food service equipment.....	451		
Educational equipment	456		

01 General Requirements

General Contractor's Markup Costs in this manual do not include the general contractor's markup. Costs in sections identified as *subcontract* are representative of prices quoted by subcontractors and include the subcontractor's markup. See pages 3 through 5 for more on subcontracted work and markup. Typical markup for general contractors handling commercial and industrial projects is shown at the bottom of this page. The two sections that follow, Indirect Overhead and Direct Overhead, give a more detailed breakdown.

Indirect Overhead (home office overhead)

This cost, usually estimated as a percentage, is calculated by dividing average annual indirect overhead costs by average annual receipts. Temporary increases or decreases in revenue usually won't affect indirect overhead expense as much as direct overhead expense.

The figures below show typical indirect overhead costs per \$1,000 of estimated project costs for a general contractor handling \$600,000 to \$1,000,000 commercial and industrial projects. Indirect overhead costs vary widely but will be about 8% of gross for most profitable firms. Total indirect overhead cost (\$20.00 per \$1,000 for materials and \$60.00 per \$1,000 for labor) appears as 2.0% and 6.0% under Total General Contractor's Markup at the bottom of this page.

	Craft@Hrs	Unit	Material	Labor	Total
Rent, office supplies, utilities, equipment, advertising, etc.	—	M\$	20.00	—	20.00
Office salaries and professional fees	—	M\$	—	60.00	60.00
General Contractor's indirect overhead	—	M\$	20.00	60.00	80.00

Direct Overhead (job site overhead)

The figures below show typical direct overhead costs per \$1,000 of a project's total estimated costs for a general contractor handling a \$600,000 to \$1,000,000 job that requires 6 to 9 months for completion. Use these figures for preliminary estimates and to check final bids. Add the cost of mobilization, watchmen, fencing, hoisting, permits, bonds, scaffolding and testing. Total direct overhead cost (\$14.30 per \$1,000 for materials and \$58.70 per \$1,000 for labor) appears as 1.4% and 5.9% under Total General Contractor's Markup at the bottom of this page. These costs can be expected to vary and will usually be lower on larger projects.

Job supervision	—	M\$	—	44.00	44.00
Truck and fuel for superintendent (\$450 per month)	—	M\$	4.50	—	4.50
Temporary power, light and heat (\$250 per month)	—	M\$	2.50	—	2.50
Temporary water (\$100 per month)	—	M\$	1.00	—	1.00
Cellphone (\$50 per month)	—	M\$	.50	—	.50
Job site toilets (\$100 per month)	—	M\$	1.00	—	1.00
Job site office trailer 8' x 30' (\$150 per month)	—	M\$	1.50	—	1.50
Storage bin and tool shed 8' x 24' (\$80 per month)	—	M\$	.80	—	.80
Job site cleanup & debris removal (\$300 per month)	—	M\$	—	3.00	3.00
Job signs & first aid equipment (\$50 per month)	—	M\$	.50	—	.50
Small tools, supplies (\$200 per month)	—	M\$	2.00	—	2.00
Taxes and insurance on wages (at 24.9%)	—	M\$	—	11.70	11.70
Total General Contractor's direct overhead	—	M\$	14.30	58.70	73.00

Total General Contractor's Markup

Typical costs for commercial and industrial projects.

Indirect overhead (home office overhead)	—	%	2.0	6.0	8.0
Direct overhead (job site overhead)	—	%	1.4	5.9	7.3
Contingency (allowance for unknown conditions)	—	%	—	—	2.0
Profit (varies widely, mid-range shown)	—	%	—	—	7.5
Total General Contractor's markup	—	%	—	—	24.8

01 General Requirements

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

Project Financing Construction loans are usually made for a term of up to 18 months. The maximum loan will be based on the value of the land and building when completed. Typically, this maximum is 75% for commercial, industrial and apartment buildings and 77.5% for tract housing.

The initial loan disbursement will be about 50% of the land cost. Periodic disbursements are based on the percentage of completion as verified by voucher or inspection. The last 20% of loan proceeds is disbursed when an occupancy permit is issued. Fund control fees cover the cost of monitoring disbursements. Typical loan fees, loan rates and fund control fees are listed below.

Loan origination fee, based on amount of loan

Tracts	—	%	—	—	2.5
Apartments	—	%	—	—	2.0
Commercial, industrial buildings	—	%	—	—	3.0
Loan interest rate, prime rate plus					
Tracts, commercial, industrial	—	%	—	—	2.0
Apartments	—	%	—	—	1.5
Fund control fees (costs per \$1,000 disbursed)					
To \$100,000	—	LS	—	—	800.00
Over \$100,000 to \$300,000, \$800 plus	—	M\$	—	—	3.00
Over \$300,000 to \$500,000, \$1,340 plus	—	M\$	—	—	2.25
Over \$500,000 to \$1,000,000, \$1,790 plus	—	M\$	—	—	2.00
Over \$1,000,000 to \$7,000,000, \$2,795 plus	—	M\$	—	—	.90
Over \$7,000,000, \$8,195 plus	—	M\$	—	—	.75

Project Scheduling by CPM (Critical Path Method). Includes consultation, review of construction documents, development of construction logic, and graphic schedule. Project scheduling software can be purchased for home use. Costs typically will be between \$1,000.00 and \$2,500.00

Wood frame buildings, one or two stories

Simple schedule	—	LS	—	—	890.00
Complex schedule	—	LS	—	—	2,130.00

Tilt-up concrete buildings, 10,000 to 50,000 SF

Simple schedule	—	LS	—	—	1,210.00
Complex schedule	—	LS	—	—	1,810.00

Two to five story buildings (mid rise)

Simple schedule	—	LS	—	—	2,190.00
Complex schedule	—	LS	—	—	3,110.00

Five to ten story buildings (high rise)

Simple schedule	—	LS	—	—	3,550.00
Complex schedule	—	LS	—	—	8,900.00

Manufacturing plants and specialized use low rise buildings

Simple schedule	—	LS	—	—	1,580.00
Complex schedule	—	LS	—	—	2,180.00

Comprehensive schedules to meet government or owner specifications may cost 20% to 40% more. Daily schedule updates can increase costs by 40% to 50%.

Sewer Connection Fees Check with the local sanitation district for actual charges. These costs are typical for work done by city or county crews and include excavation, re-compaction and repairs to the street. Note that these costs are set by local government and will vary widely. These costs do not include capacity fees or other charges which are often levied on connection to new construction. The capacity fee per living unit may be \$3,000 or more. For commercial buildings, figure 20 fixture units equal one living unit. A 6" sewer connection will be required for buildings that include more than 216 fixture units. (Bathtubs, showers and sinks are 2 fixture units, water closets are 4, clothes washers are 3 and lavatories are 1.) The costs shown assume that work will be done by sanitation district crews. Similar work done by a private contractor under a public improvement permit may cost 50% less.

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Typical charges based on main up to 11' deep and lateral up to 5' deep.					
4" connection and 40' run to main in street	—	LS	—	—	1,780.00
4" pipe runs over 40' to street	—	LF	—	—	40.10
6" connection and 40' run to main in street	—	LS	—	—	2,900.00
6" pipe runs over 40' to street	—	LF	—	—	68.60
4" connection and 15' run to main in alley	—	LS	—	—	1,290.00
6" connection and 15' run to main in alley	—	LS	—	—	2,080.00
Manhole cut-in	—	Ea	—	—	352.00
Add for main depths over 5'					
Over 5' to 8'	—	%	—	—	30.0
Over 8' to 11'	—	%	—	—	60.0
Over 11'	—	%	—	—	100.0

Water Meters Check with the local water district for actual charges. These costs are typical for work done by city or county crews and include excavation and pipe to 40' from the main, meter, vault, re-compaction and repairs to the street. These costs do not include capacity fees or other charges which are often levied on connection to new construction. The capacity fee per living unit is typically \$5,000. For commercial buildings, figure 20 fixture units equal one living unit. (Bathtubs, showers and sinks are 2 fixture units, water closets are 4, clothes washers are 3 and lavatories are 1.) The cost for discontinuing service will usually be about the same as the cost for starting new service, but no capacity fee will be charged. Add the backflow device and capacity fee, if required.

1" service, 3/4" meter	—	LS	—	—	3,050.00
1" service, 1" meter	—	LS	—	—	3,140.00
Add for 1" service per LF over 40'	—	LF	—	—	72.60
2" service, 1-1/2" meter	—	LS	—	—	3,510.00
2" service, 2" meter	—	LS	—	—	3,660.00
Add for 2" service per LF over 40'	—	LF	—	—	78.20
Two 2" service lines and meter manifold	—	LS	—	—	5,780.00
Add for two 2" lines per LF over 40'	—	LF	—	—	106.00
Hydrant meter, typical deposit is \$1,000 to \$2,000, typical water cost is \$5 per 1,000 gallons					
Rental per day	—	Day	—	—	12.80

Installation of meter only. Connected to existing water service if correct size line exists from the water main to the meter box location

3/4" meter	—	LS	—	—	134.00
1" x 3/4" meter	—	LS	—	—	127.00
1" meter	—	LS	—	—	152.00
1-1/2" meter	—	LS	—	—	492.00
2" meter	—	LS	—	—	716.00
2" meter (double line)	—	LS	—	—	1,260.00

Backflow preventer with single check valve. Includes pressure vacuum breaker (PVB), two ball valves, one air inlet and one check valve

1" pipe	—	LS	—	—	303.00
2" pipe	—	LS	—	—	595.00

Backflow preventer with double check valves. Includes pressure vacuum breaker (PVB), two ball or gate valves, one air inlet and two check valves

3/4" pipe	—	LS	—	—	396.00
1" pipe	—	LS	—	—	415.00
1-1/2" pipe	—	LS	—	—	485.00
2" pipe	—	LS	—	—	649.00

Reduced pressure backflow preventer. Includes pressure reducing vacuum breaker (PRVB), two ball or gate valves, one air inlet and two check valves and a relief valve

1" pipe	—	LS	—	—	1,050.00
2" pipe	—	LS	—	—	1,270.00
Two 2" pipes (double installation)	—	LS	—	—	2,520.00

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Surveying					
Surveying party, 2 or 3 technicians					
Typical cost	—	Day	—	—	1,310.00
Higher cost	—	Day	—	—	1,680.00
Data reduction and drafting	—	Hr	—	—	79.30
Surveys Including wood hubs or pipe markers as needed. These figures assume that recorded monuments are available adjacent to the site. See also Building Layout in the Earthwork section.					
Residential lot, tract work, 4 corners	—	LS	—	—	789.00
Residential lot, individual, 4 corners	—	LS	—	—	1,350.00
Commercial lot, based on 30,000 SF lot	—	LS	—	—	1,450.00
Over 30,000 SF, add per acre	—	Acre	—	—	230.00
Lots without recorded markers cost more, depending on distance to the nearest recorded monument.					
Add up to	—	%	—	—	100.0
Some states require that a corner record be prepared and filed with the county surveyor's office when new monuments are set. The cost of preparing and filing a corner record will be about \$400.00.					
Aerial Mapping Typical costs based on a scale of 1" to 40'.					
Back up ground survey including flagging model	—	Ea	—	—	3,880.00
(Typical "model" is approximately 750' by 1,260' or 25 acres)					
Aerial photo flight, plane and crew, per local flight. One flight can cover several adjacent models					
Per local flight	—	Ea	—	—	476.00
Vertical photos (2 required per model)	—	Ea	—	—	51.80
Data reduction and drafting, per hour	—	Hr	—	—	72.40
Complete survey with finished drawing, per model, including both field work and flying					
Typical cost per model	—	Ea	—	—	3,980.00
Deduct if ground control is marked on the ground by others					
Per model	—	LS	—	—	-1,030.00
Typical mapping cost per acre including aerial control, flight and compilation					
Based on 25 acre coverage	—	Acre	—	—	186.00
Aerial photos, oblique (minimum 4 per job), one 8" x 10" print					
Black and white	—	Ea	—	—	51.80
Color	—	—	Ea	—	—
104.00					
Quantitative studies for earthmoving operations to evaluate soil quantities moved					
Ground control and one flight	—	Ea	—	—	3,260.00
Each additional flight	—	Ea	—	—	2,220.00
Engineering Fees Typical billing rates.					
Registered engineers (calculations, design and drafting)					
Assistant engineer	—	Hr	—	—	92.00
Senior engineer	—	Hr	—	—	156.00
Principal engineers (cost control, project management, client contact)					
Assistant principal engineer	—	Hr	—	—	165.00
Senior principal engineer	—	Hr	—	—	221.00
Job site engineer (specification compliance)	—	Hr	—	—	92.10
Estimating Cost Compiling detailed labor and material cost estimate for commercial and industrial construction, in percent of job cost. Actual fees are based on time spent plus cost of support services.					
Most types of buildings, typical fees					
Under \$100,000 (range of .75 to 1.5%)	—	%	—	—	1.1
Over \$100,000 to \$500,000 (range of .5 to 1.25%)	—	%	—	—	0.9
Over \$500,000 to \$1,000,000 (range of .5 to 1.0%)	—	%	—	—	0.8
Over \$1,000,000 (range of .25 to .75%)	—	%	—	—	0.5

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Complex, high-tech, research or manufacturing facilities or other buildings with many unique design features, typical fees					
Under \$100,000 (range of 2.3 to 3%)	—	%	—	—	2.7
Over \$100,000 to \$500,000 (range of 1.5 to 2.5%)	—	%	—	—	2.0
Over \$500,000 to \$1,000,000 (range of 1.0 to 2.0%)	—	%	—	—	1.5
Over \$1,000,000 (range of .5 to 1.0%)	—	%	—	—	0.8
Typical estimator's fee per hour	—	Hr	—	—	45.00

Specifications Fee Preparing detailed construction specifications to meet design requirements for commercial and industrial buildings, in percent of job cost. Actual fees are based on time spent plus cost of support services, if any.

Typical fees for most jobs	—	%	—	—	0.5
Small or complex jobs					
Typical cost	—	%	—	—	1.0
High cost	—	%	—	—	1.5
Large jobs or repetitive work					
Typical cost	—	%	—	—	0.2
High cost	—	%	—	—	0.5

Job Layout Setting layout stakes for the foundation from monuments identified on the plans and existing on site.

Per square foot of building first floor area. Typical costs. Actual costs will be based on the time required.

Smaller or more complex jobs	—	SF	—	—	.93
Large job, easy work	—	SF	—	—	.59

General Non-Distributable Supervision and Expense

Project manager, typical	—	Mo	—	—	6,920.00
Job superintendent	—	Mo	—	—	5,360.00
Factory representative	—	Day	—	—	826.00
Timekeeper	—	Mo	—	—	2,220.00
Job site engineer for layout	—	Mo	—	—	4,130.00
Office manager	—	Mo	—	—	2,490.00
Office clerk	—	Mo	—	—	1,840.00

Mobilization Typical costs for mobilization and demobilization within a 50 mile radius as a percent of total contract price. Includes cost of moving general contractor-owned equipment and job office to the site, setting up a fenced material yard, and removing equipment, office and fencing at job completion.

Allow, as a percentage of total contract price	—	%	—	—	0.5
--	---	---	---	---	-----

Aggregate Testing

Add for sample prep	—	Hr	—	—	51.80
Abrasion, L.A. Rattler, 100/500 cycles, ASTM C 131	—	Ea	—	—	127.00
Absorption, ASTM C 127, 128	—	Ea	—	—	62.70
Acid solubility	—	Ea	—	—	36.70
Aggregate test for mix design, including sieve analysis, specific gravity, number 200 wash, organic impurities	—	Ea	—	—	51.80
Clay lumps and friable particles, ASTM C 142	—	Ea	—	—	69.00
Coal and lignite, ASTM C 123	—	Ea	—	—	110.00
Material finer than #200 sieve, ASTM C 117	—	Ea	—	—	42.70
Organic impurities, ASTM C 40	—	Ea	—	—	54.30
Percent crushed particles, CAL 205	—	Ea	—	—	72.00
Percent flat or elongated particles, CRD C 119	—	Ea	—	—	115.00
Potential reactivity, chemical method, 3 determinations per series, ASTM C 289	—	Ea	—	—	363.00
Potential reactivity, mortar bar method, ASTM C 227	—	Ea	—	—	344.00

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Sieve analysis, pit run aggregate	—	Ea	—	—	72.00
Lightweight aggregate ASTM C 123	—	Ea	—	—	80.50
Sand equivalent	—	Ea	—	—	91.90
Sieve analysis, processed (each size), ASTM C 136	—	Ea	—	—	83.60
Soft particles, ASTM C 235	—	Ea	—	—	72.00
Soundness, sodium or magnesium, 5 cycle, per series, ASTM C 88	—	Ea	—	—	156.00
Specific gravity, coarse, ASTM C 127	—	Ea	—	—	62.70
Specific gravity, fine, ASTM C 127	—	Ea	—	—	86.60
Unit weight per cubic foot, ASTM C 29	—	Ea	—	—	36.70

Asphaltic Concrete Testing Minimum fee is usually \$40.00.

Asphaltic concrete core drilling, field or laboratory

Per linear inch	—	Ea	—	—	5.53
Add for equipment and technician for core drilling	—	Hr	—	—	73.10
Asphaltic core density	—	Ea	—	—	26.10
Extraction, percent asphalt (Method B), excluding ash correction, ASTM D 2172	—	Ea	—	—	62.60
Gradation on extracted sample (including wash), ASTM C 136	—	Ea	—	—	78.40
Maximum density, lab mixed, Marshall, 1559	—	Ea	—	—	183.00
Maximum density, premixed, Marshall, 1559	—	Ea	—	—	131.00
Maximum theoretical unit weight (Rice Gravity), ASTM 2041	—	Ea	—	—	78.40
Penetration, ASTM D 5	—	Ea	—	—	62.70
Stability, lab mixed, Marshall, ASTM D 1559	—	Ea	—	—	261.00
Stability, premixed, Marshall, ASTM D 1559	—	Ea	—	—	158.00

Concrete Testing Minimum fee is usually \$40.00.

Aggregate tests for concrete mix designs only, including sieve analysis, specific gravity, number 200 wash, organic impurities, weight per cubic foot

Per aggregate size	—	Ea	—	—	75.10
Amend or re-type existing mix designs	—	Ea	—	—	43.80
Not involving calculations	—	Ea	—	—	43.80
Compression test, 2", 4", or 6" cores (excludes sample preparation) ASTM C 42	—	Ea	—	—	38.60
Compression test, 6" x 12" cylinders, including mold ASTM C 39	—	Ea	—	—	13.60
Core cutting in laboratory	—	Ea	—	—	43.80
Cylinder pickup within 40 miles of laboratory	—	Ea	—	—	9.40
Cost per cylinder (minimum of 3)	—	Ea	—	—	9.40
Flexure test, 6" x 6" beams, ASTM C 78	—	Ea	—	—	55.30
Laboratory trial, concrete batch, ASTM C 192	—	Ea	—	—	361.00
Length change (3 bars, 4 readings, up to 90 days) ASTM C 157 modified	—	LS	—	—	249.00
Additional readings, per set of 3 bars	—	LS	—	—	38.60
Storage over 90 days, per set of 3 bars, per month	—	Mo	—	—	38.70
Modulus of elasticity test, static, ASTM C 469	—	Ea	—	—	76.10
Mix design, determination of proportions	—	Ea	—	—	82.50
Pick up aggregate sample	—	Ea	—	—	49.10
Within 40 mile radius of laboratory, per trip	—	Ea	—	—	33.40
Pickup or delivery of shrinkage molds, per trip	—	Ea	—	—	92.90
Prepare special strength documentation for mix design	—	Ea	—	—	92.90

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Proportional analysis, cement factor and percent of aggregate					
Per analysis	—	Ea	—	—	239.00
Review mix design prepared by others	—	Ea	—	—	71.00
Splitting tensile, 6" x 12" cylinder, ASTM C 496	—	Ea	—	—	33.40
Weight per cubic foot determination of lightweight concrete cylinders	—	Ea	—	—	6.27
Masonry and Tile Testing					
Brick, ASTM C 67					
Modulus of rupture (flexure) or compressive strength	—	Ea	—	—	28.30
Absorption initial rate, 5 hour or 24 hour	—	Ea	—	—	22.90
Boil, 1, 2, or 5 hours	—	Ea	—	—	22.80
Efflorescence	—	Ea	—	—	28.20
Dimensions, overall, coring, shell and web	—	Ea	—	—	22.90
Compression of core	—	Ea	—	—	38.60
Cores, shear, 6" and 8" diameter, 2 faces, per core	—	Ea	—	—	49.10
Coefficient of friction (slip test)	—	Ea	—	—	87.70
Concrete block, ASTM C 140					
Moisture content as received	—	Ea	—	—	22.90
Absorption	—	Ea	—	—	28.20
Compression	—	Ea	—	—	33.40
Shrinkage, modified British, ASTM C 426	—	Ea	—	—	71.00
Compression, 4", 6", 8" cores	—	Ea	—	—	38.60
Fireproofing, oven dry density					
Gunite					
Compression, 2", 4", 6" cores, ASTM C 42	—	Ea	—	—	38.70
Pickup gunite field sample (40 mile trip maximum)	—	Ea	—	—	55.30
Building stone					
Compression	—	Ea	—	—	33.40
Flex strength	—	Ea	—	—	33.40
Modules/rupture	—	Ea	—	—	33.40
Specific gravity	—	Ea	—	—	33.40
Water absorption	—	Ea	—	—	33.40
Masonry prisms, ASTM E 447					
Compression test, grouted prisms	—	Ea	—	—	142.00
Pickup prisms, within 40 miles of lab	—	Ea	—	—	38.60
Mortar and grout, UBC Standard 24-22 & 24-28					
Compression test, 2" x 4" mortar cylinder	—	Ea	—	—	18.80
Compression test, 3" x 6" grout prisms	—	Ea	—	—	24.90
Compression test, 2" cubes, ASTM C 109	—	Ea	—	—	49.10
Roof fill, lightweight ASTM C 495					
Compression test	—	Ea	—	—	22.90
Density	—	Ea	—	—	16.80
Roofing tile					
Roofing tile breaking strength, UBC	—	Ea	—	—	22.80
Roofing tile absorption	—	Ea	—	—	22.80
Reinforcement Testing					
Sampling at fabricator's plant (within 40 miles of lab), \$50.00 minimum					
During normal business hours, per sample	—	Ea	—	—	18.80
Other than normal business hours, per sample	—	Ea	—	—	28.30
Tensile test, mechanically spliced bar					
Tensile test, number 11 bar or smaller, ASTM 615	—	Ea	—	—	27.20

01 General Requirements

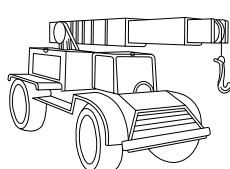
	Craft@Hrs	Unit	Material	Labor	Total
Tensile test, number 14 bar or smaller, ASTM 615	—	Ea	—	—	60.60
Tensile test, number 18 bar, ASTM 615	—	Ea	—	—	71.00
Tensile test, welded number 11 bar or smaller	—	Ea	—	—	38.70
Tensile test, welded number 14 bar	—	Ea	—	—	70.90
Tensile test, welded number 18 bar	—	Ea	—	—	87.70
Tensile and elongation test for pre-stress strands 24" test, ASTM A 416	—	Ea	—	—	87.60
10" test, ASTM A 421	—	Ea	—	—	49.10
Soils and Aggregate Base Testing Minimum fee is usually \$400.					
Bearing ratio (excluding moisture-density curve)	—	Ea	—	—	115.00
Consolidation test (single point)	—	Ea	—	—	78.40
Consolidation test (without rate data)	—	Ea	—	—	99.30
Direct shear test					
Unconsolidated, undrained	—	Ea	—	—	67.90
Consolidated, undrained	—	Ea	—	—	105.00
Consolidated, drained	—	Ea	—	—	131.00
Durability index – coarse and fine	—	Ea	—	—	146.00
Expansion index test, UBC 29-2	—	Ea	—	—	115.00
Liquid limit or plastic limit, Atterberg limits	—	Ea	—	—	105.00
Mechanical analysis – ASTM D1140 (wash 200 sieve)	—	Ea	—	—	42.70
Mechanical analysis – sand and gravel (wash sieve)	—	Ea	—	—	121.00
Moisture content	—	Ea	—	—	15.80
Moisture-density curve for compacted fill, ASTM 1557					
4-inch mold	—	Ea	—	—	136.00
6-inch mold	—	Ea	—	—	146.00
Permeability (falling head)	—	Ea	—	—	233.00
Permeability (constant head)	—	Ea	—	—	183.00
Resistance value	—	Ea	—	—	228.00
Sand equivalent	—	Ea	—	—	68.00
Specific gravity – fine-grained soils	—	Ea	—	—	62.70
Unconfined compression test (undisturbed sample)	—	Ea	—	—	73.10
Unit dry weight and moisture content (undisturbed sample)	—	Ea	—	—	21.90
Steel Testing \$100.00 minimum for machine time.					
Charpy impact test, reduced temperature	—	Ea	—	—	27.20
Charpy impact test, room temperature	—	Ea	—	—	13.60
Electric extensometer	—	Ea	—	—	65.70
Hardness tests, Brinell or Rockwell	—	Ea	—	—	22.90
Photo micrographs					
20× to 2,000×	—	Ea	—	—	22.90
With negative	—	Ea	—	—	27.20
Tensile test, under 100,000 lbs	—	Ea	—	—	38.60
Welder Qualification Testing. Add \$36 minimum per report					
Tensile test	—	Ea	—	—	38.60
Bend test	—	Ea	—	—	27.20
Macro etch	—	Ea	—	—	55.30
Fracture test	—	Ea	—	—	33.40
Machining for weld tests, 1/2" and less	—	Ea	—	—	38.70
Machining for weld tests, over 1/2"	—	Ea	—	—	55.30

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Construction Photography Digital, professional quality work, hand printed, labeled, numbered and dated. High resolution photographs on a memory card or lower resolution delivered as an email attachment.					
Job progress photos, includes shots of all building corners, two 8" x 10" color prints of each shot, per visit					
Typical cost	—	LS	—	—	575.00
High cost	—	LS	—	—	656.00
Periodic survey visits to job site to figure angles (for shots of all building corners)					
Minimum two photos, per visit	—	Ea	—	—	373.00
Exterior completion photographs, two 8" x 10" prints (two angles)					
Black and white	—	Ea	—	—	569.00
Color	—	Ea	—	—	571.00
Interior completion photographs, with lighting setup, two 8" x 10" prints of each shot (minimum three shots)					
Black and white	—	Ea	—	—	651.00
Color	—	Ea	—	—	669.00
Reprints or enlargements from existing digital file. Hand (custom) prints					
8" x 10", black and white	—	Ea	—	—	25.70
11" x 14", black and white	—	Ea	—	—	36.10
8" x 10", color	—	Ea	—	—	28.40
11" x 14", color	—	Ea	—	—	38.90
Retouching services (taking out phone lines, power poles, autos, signs, etc.) will run about \$100.00 per hour of computer time.					
Signs and Markers Pipe markers, self-stick vinyl, by overall outside diameter of pipe or covering, meets OSHA and ANSI requirements. Costs are based on standard wording and colors.					
3/4" to 1-3/8" diameter, 1/2" letters, 8" long	PA@.077	Ea	1.63	4.02	5.65
1-1/2" to 2 3/8" diameter, 3/4" letters, 8" long	PA@.077	Ea	1.96	4.02	5.98
2 1/2" to 7 7/8" diameter, 1-1/4" letters, 12" long	PA@.077	Ea	2.29	4.02	6.31
8" to 10" diameter, 2-1/2" letters, 24" long	PA@.095	Ea	3.30	4.96	8.26
Flow arrows, 2" wide tape x 108' roll, perforated every 8" (use \$50.00 as minimum material cost)	PA@.095	LF	.83	4.96	5.79
Barrier tapes, 3" wide x 1,000' long. "Caution", "Danger", "Open Trench", and other stock wording (Use \$35.00 as minimum material cost.) Labor shown is based on one man installing 500 LF in 1 hour.					
3 mil thick, short-term or indoor use	PA@.002	LF	.06	.10	.16
4 mil thick, long-term or outdoor use	PA@.002	LF	.09	.10	.19
Traffic control signage, "No Parking Between Signs", "Customer Parking", and other stock traffic control signs and graphics, reflective aluminum signs except as noted.					
12" x 18"	PA@.455	Ea	60.30	23.80	84.10
18" x 24"	PA@.455	Ea	105.00	23.80	128.80
24" x 8", Diamond grade (highly reflective)	PA@.455	Ea	112.00	23.80	135.80
24" x 12", Diamond grade (highly reflective)	PA@.455	Ea	127.00	23.80	150.80
24" x 18"	PA@.455	Ea	105.00	23.80	128.80
24" x 24"	PA@.455	Ea	118.00	23.80	141.80
30" x 30"	PA@.455	Ea	188.00	23.80	211.80
Add for 8' breakaway pole and mounting	CL@1.00	Ea	75.00	40.50	115.50
Add for aluminum signs	—	Ea	10.00	—	10.00
Temporary Utilities No permit fees included.					
Drop pole for electric service					
Power pole installation, wiring, 6 months rent and pickup					
100 amp meter pole	—	Ea	—	—	496.00
200 amp meter pole	—	Ea	—	—	653.00

01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
Electric drop line and run to contractor's panel (assuming proper phase, voltage and service are available within 100' of site)					
Overhead run to contractor's "T" pole (including removal)					
Single phase, 100 amps	—	LS	—	—	398.00
Single phase, over 100 to 200 amps	—	LS	—	—	539.00
Three phase, to 200 amps	—	LS	—	—	620.00
Underground run in contractor's trench and conduit (including removal)					
Single phase, 100 amps, "USA" wire	—	LS	—	—	574.00
Single phase, 101-200 amps, "USA" wire	—	LS	—	—	743.00
Three phase, to 200 amps, "USA" wire	—	LS	—	—	823.00
Typical power cost					
Per kilowatt hour (\$5.00 minimum)	—	Ea	—	—	.15
Per 1,000 SF of building per month of construction	—	MSF	—	—	2.32
Temporary water service, meter installed on fire hydrant. Add the cost of distribution hose or piping.					
Meter fee, 2" meter (excluding \$400 deposit)	—	LS	—	—	83.00
Water cost, per 1,000 gallons	—	M	—	—	2.03
Job phone, typical costs including message unit charges					
Cellular phone and one year service	—	LS	—	—	599.00
Portable job site toilets, including delivery, weekly service, and pickup, per 28 day month, six month contract					
Good quality (polyethylene)	—	Mo	—	—	74.80
Deluxe quality, with sink, soap dispenser, towel dispenser, mirror	—	Mo	—	—	120.00
Trailer-mounted male and female compartment double, 2 stalls in each, sink, soap dispenser, mirror and towel dispenser in each compartment					
Rental per week	—	Wk	—	—	332.00
Construction Elevators and Hoists					
Hoisting towers to 200', monthly rent					
Material hoist	C0@176.	Mo	4,680.00	9,940.00	14,620.00
Personnel hoist	C0@176.	Mo	10,300.00	9,940.00	20,240.00
Tower cranes, self-climbing (electric), monthly rent					
5 ton lift at 180' radius, one operator	C0@176.	Mo	27,100.00	9,940.00	37,040.00
With two operators	C0@352.	Mo	27,100.00	19,900.00	47,000.00
7 ton lift at 170' radius, one operator	C0@176.	Mo	38,200.00	9,940.00	48,140.00
With two operators	C0@352.	Mo	38,200.00	19,900.00	58,100.00
Mobilize, erect and dismantle self-climbing tower cranes					
Good access	—	LS	—	—	68,300.00
Average access	—	LS	—	—	82,300.00
Poor access	—	LS	—	—	128,000.00
Hydraulic Truck Cranes Includes equipment rental and operator. Four hour minimum. Time charge begins at the rental yard. By rated crane capacity.					
12-1/2 ton	—	Hr	—	—	225.00
15 ton	—	Hr	—	—	257.00
25 ton	—	Hr	—	—	238.00
50 ton	—	Hr	—	—	315.00
70 ton	—	Hr	—	—	348.00
80 ton	—	Hr	—	—	389.00
100 ton	—	Hr	—	—	401.00

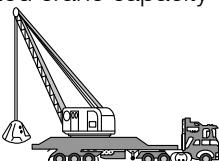


01 General Requirements

	Craft@Hrs	Unit	Material	Labor	Total
125 ton	—	Hr	—	—	450.00
150 ton	—	Hr	—	—	475.00
Add for clamshell or breaker ball work	—	Hr	—	—	51.00

Conventional Cable Cranes Including equipment rental and operator. Four hour minimum. Time charge begins at the rental yard. By rated crane capacity with 80' boom.

50 tons	—	Hr	—	—	358.00
70 tons	—	Hr	—	—	406.00
90 tons	—	Hr	—	—	455.00
125 tons	—	Hr	—	—	630.00
140 tons	—	Hr	—	—	493.00



Equipment Rental Rates Costs are for equipment in good condition but exclude accessories. Includes the costs of damage waiver (about 10% of the rental cost), insurance, fuel, and oil. Add the cost of an equipment operator, pickup, return to yard and repairs, if necessary. Delivery and pickup within 30 miles of the rental yard are usually offered at an additional cost of one day's rent. A rental "day" is assumed to be one 8-hour shift and begins when the equipment leaves the rental yard. A "week" is 40 hours in five consecutive days. A "month" is 176 hours in 30 consecutive days.

	Day	Week	Month
Air equipment rental			
Air compressors, wheel-mounted			
16 CFM, shop type, electric	69.00	166.00	496.00
30 CFM, shop type, electric	76.00	227.00	683.00
80 CFM, shop type, electric	89.00	270.00	806.00
100 CFM, gasoline unit	110.00	331.00	931.00
125 CFM, gasoline unit	137.00	413.00	1,240.00
Air compressors wheel-mounted diesel units			
to 159 CFM	104.00	310.00	931.00
160 - 249 CFM	137.00	413.00	1,240.00
250 - 449 CFM	208.00	621.00	1,860.00
450 - 749 CFM	276.00	827.00	2,480.00
750 - 1,200 CFM	551.00	1,650.00	4,960.00
1,400 CFM and over	690.00	2,070.00	7,030.00
Paving breakers (no bits included) hand-held, pneumatic			
to 40 lb	25.00	75.00	210.00
41 - 55 lb	25.00	80.00	215.00
56 - 70 lb	31.00	95.00	260.00
71 - 90 lb	34.00	100.00	265.00
Paving breakers jackhammer bits			
Moil points, 15" to 18"	6.00	18.00	36.00
Chisels, 3"	6.00	16.00	34.00
Clay spades, 5-1/2"	15.00	46.00	88.00
Asphalt cutters, 5"	9.00	21.00	52.00
Rock drills, jackhammers, hand-held, pneumatic			
to 29 lb	25.00	80.00	215.00
30 - 39 lb	41.00	131.00	346.00
40 - 49 lb	33.00	130.00	340.00
50 lb and over	52.00	143.00	288.00
Rock drill bits, hexagonal			
7/8", 2' long	10.00	28.00	55.00
1", 6' long	8.00	28.00	60.00

01 General Requirements

	Day	Week	Month
Pneumatic chippers, medium weight, 10 lb	30.00	90.00	240.00
Pneumatic tampers, medium weight, 30 lb	33.00	110.00	312.00
Pneumatic grinders, hand-held, 7 lb (no stone)	25.00	65.00	170.00
Air hose, 50 LF section			
5/8" air hose	6.00	15.00	40.00
3/4" air hose	7.00	20.00	50.00
1" air hose	10.00	28.00	61.00
1-1/2" air hose	18.00	58.00	149.00
Compaction equipment rental			
Vibro plate, 300 lb, 24" plate width, gas	92.00	305.00	891.00
Vibro plate, 600 lb, 32" plate width, gas	225.00	600.00	1,500.00
Rammer, 60 CPM, 200 lb, gas powered	85.00	220.00	570.00
Rollers, two axle steel drum, road type			
1 ton, gasoline	330.00	1,170.00	3,410.00
6 - 8 ton, gasoline	485.00	1,450.00	3,760.00
8 - 10 ton	570.00	1,870.00	4,950.00
Rollers, rubber tired, self propelled			
12 ton, 9 wheel, diesel	409.00	1,240.00	3,640.00
15 ton, 9 wheel, diesel	565.00	2,410.00	5,110.00
30 ton, 11 wheel, diesel	571.00	1,940.00	4,470.00
Rollers, towed, sheepsfoot type			
40" diameter, double drum, 28" wide	152.00	463.00	1,390.00
60" diameter, double drum, 54" wide	283.00	842.00	2,520.00
Rollers, self-propelled vibratory dual sheepsfoot drum, gas			
25 HP, 26" wide roll	449.00	1,510.00	4,580.00
100 HP, 36" wide roll	810.00	2,870.00	8,600.00
Rollers, vibrating steel drum, gas powered, walk behind			
7 HP, 1,000 lb, one drum, 2' wide	170.00	530.00	1,260.00
10 HP, 2,000 lb, two drum, 2'-6" wide	120.00	444.00	1,160.00
Rollers, self-propelled riding type, vibrating steel drum			
9,000 lb, gasoline, two drum	290.00	815.00	2,300.00
15,000 lb, diesel, two drum	425.00	1,350.00	3,980.00
25,000 lb, diesel, two drum	625.00	1,780.00	4,740.00
Concrete equipment rental			
Buggies, push type, 7 CF	76.00	450.00	780.00
Buggies, walking type, 12 CF	73.00	255.00	740.00
Buggies, riding type, 14 CF	73.00	300.00	810.00
Buggies, riding type, 18 CF	112.00	350.00	725.00
Vibrator, electric, 3 HP, flexible shaft	64.00	155.00	390.00
Vibrator, gasoline, 6 HP, flexible shaft	81.00	239.00	714.00
Troweling machine, 36", 4 paddle	78.00	205.00	570.00
Cement mixer, 6 CF	75.00	170.00	455.00
Towable mixer (10+ CF)	70.00	160.00	580.00
Power trowel 36", gas, with standard handle	78.00	205.00	570.00
Bull float	13.00	42.00	100.00
Concrete saws, gas powered, excluding blade cost			
10 HP, push type	48.00	160.00	470.00
20 HP, self propelled	160.00	375.00	980.00
37 HP, self propelled	240.00	550.00	1,530.00

01 General Requirements

	Day	Week	Month
Concrete bucket, bottom dump 1 CY	66.00	200.00	590.00
Plaster mixer, gas, portable, 5 CF	75.00	170.00	455.00
Concrete conveyor, belt type, portable, gas powered All sizes	135.00	495.00	1,330.00
Vibrating screed, 16', single beam	100.00	225.00	585.00
Column clamps, to 48", per set	—	—	6.76

Crane rental Add for clamshell, dragline, or pile driver attachments from below.

Cable controlled crawler-mounted lifting cranes, diesel

45 ton	—	3,200	9,100.00
60 ton	—	4,840.00	11,500.00
100 ton (125 ton)	1,330.00	5,000.00	15,000.00
150 ton	2,650.00	7,830.00	23,900.00

Cable controlled, truck-mounted lifting cranes, diesel

50 ton	675.00	1,990.00	6,470.00
75 ton	860.00	2,570.00	7,760.00
100 ton	1,250.00	3,740.00	10,100.00

Hydraulic – rough terrain

10 ton, gasoline	563.00	1,490.00	3,980.00
17 ton, diesel	490.00	1,850.00	4,260.00
35 ton, diesel	1,030.00	2,860.00	8,010.00
50 ton, diesel	1,570.00	4,550.00	13,200.00

Clamshell, dragline, and pile driver attachments Add to crane rental costs shown above.

Clamshell buckets			
Rehandling type, 1 CY	—	335.00	990.00
General purpose, 2 CY	85.00	540.00	1,420.00
Dragline buckets			
1 CY bucket	47.00	118.00	332.00
2 CY bucket	89.00	225.00	675.00
Pile drivers, hammers			
25,000 - 49,999 ft-lb	515.00	2,010.00	4,130.00
75 - 99 tons vibratory	1,210.00	2,960.00	7,920.00
1,000 - 1,999 ft-lb extractor	—	735.00	1,920.00

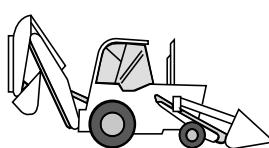
Excavation equipment rental

Backhoe/loaders, crawler mounted, diesel

3/8 CY backhoe	350.00	1,250.00	3,600.00
3/4 CY backhoe	375.00	1,060.00	3,080.00
1-1/2 CY backhoe	483.00	1,470.00	4,300.00
2 CY backhoe	731.00	2,340.00	6,950.00
2-1/2 CY backhoe	825.00	2,520.00	7,540.00
3 CY backhoe	1,440.00	4,310.00	12,900.00

Backhoe/loaders, wheel mounted, diesel or gasoline

1/2 CY bucket capacity, 55 HP	220.00	630.00	1,750.00
1 CY bucket capacity, 65 HP	255.00	940.00	2,800.00
1-1/4 CY bucket capacity, 75 HP	225.00	630.00	1,720.00
1-1/2 CY bucket capacity, 100 HP	320.00	1,000.00	2,870.00
Mounted with 750-lb. breaker	490.00	1,700.00	5,100.00
Mounted with 2,000-lb. breaker	728.00	2,550.00	7,660.00



01 General Requirements

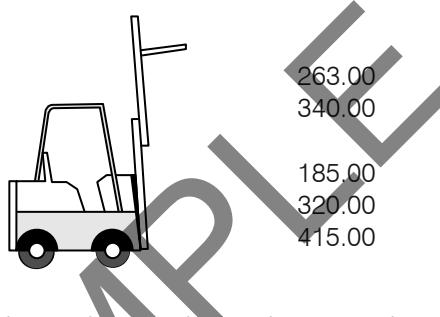
	Day	Week	Month
Crawler dozers, with angle dozer or bulldozer blade, diesel			
65 HP, D-3	424.00	1,270.00	3,580.00
90-105 HP, D-4 or D-5	594.00	1,610.00	4,450.00
140 HP, D-6	810.00	2,310.00	6,820.00
200 HP, D-7	1,200.00	3,400.00	10,000.00
335 HP, D-8	1,610.00	4,970.00	15,100.00
460 HP, D-9	3,160.00	7,950.00	23,800.00
Crawler loaders, diesel			
3/4 CY loader	375.00	1,060.00	3,080.00
1-1/2 CY loader	483.00	1,470.00	4,300.00
2 CY loader	731.00	2,340.00	6,950.00
Hydraulic excavators, crawler mounted with backhoe type arm, diesel			
.2 - .4 CY bucket	411.00	1,210.00	3,480.00
.4 - .6 CY bucket	430.00	1,300.00	3,720.00
.6 - .8 CY bucket	500.00	1,300.00	3,700.00
Gradall, truck mounted, diesel			
3/4 CY bucket	950.00	2,850.00	8,200.00
1 CY bucket	900.00	2,700.00	8,260.00
Front-end loader, diesel or gas (Skiploader)			
40-hp	130.00	500.00	1,340.00
60-hp	310.00	1,090.00	2,450.00
80-hp	285.00	800.00	2,000.00
Skid steer loaders			
Bobcat 643, 1,000-lb capacity	250.00	850.00	1,840.00
Bobcat 753, 1,350-lb capacity	250.00	830.00	1,850.00
Bobcat 763, 1,750-lb capacity	250.00	770.00	1,800.00
Bobcat 863, 1,900-lb capacity	330.00	1,050.00	2,450.00
Skid steer attachments			
Auger	75.00	235.00	660.00
Hydraulic breaker	170.00	540.00	1,570.00
Backhoe	100.00	330.00	1,060.00
Sweeper	155.00	295.00	1,020.00
Grapple bucket	55.00	160.00	470.00
Wheel loaders, front-end load and dump, diesel			
3/4 CY bucket, 4WD, articulated	255.00	1,000.00	3,000.00
1 CY bucket, 4WD, articulated	235.00	820.00	2,250.00
2 CY bucket, 4WD, articulated	280.00	1,050.00	3,160.00
3-1/4 CY bucket, 4WD, articulated	720.00	2,140.00	6,470.00
5 CY bucket, 4WD, articulated	1,030.00	3,130.00	9,180.00
Motor scraper-hauler, 2 wheel tractor			
Under 18 CY capacity, single engine	1,390.00	4,170.00	12,500.00
18 CY and over, single engine	1,580.00	4,750.00	14,250.00
Under 18 CY capacity, Two engine	2,480.00	5,750.00	18,000.00
18 CY and over, Two engine	2,420.00	7,490.00	23,700.00
Graders, diesel, pneumatic tired, articulated			
100 HP	634.00	1,750.00	4,750.00
150 HP	740.00	2,300.00	7,030.00
200 HP	1,130.00	3,350.00	10,000.00
Trenchers, inclined chain boom type, pneumatic tired			
15 HP, 12" wide, 48" max. depth, walking	193.00	560.00	1,520.00
20 HP, 12" wide, 60" max. depth, riding	312.00	1,010.00	2,700.00
55 HP, 18" wide, 96" max. depth, riding	580.00	1,730.00	5,200.00
100 HP, 24" x 96" deep, crawler mount	710.00	2,650.00	7,850.00

01 General Requirements

	Day	Week	Month
Trenching shields, steel, 8' high x 12' long			
Single wall	130.00	335.00	990.00
Hydraulic trench braces, 8' long, to 42" wide	22.00	65.00	200.00
Truck-mounted wagon drills, self propelled, crawler mounted			
4" drifter, straight boom	536.00	1,490.00	4,070.00
4-1/2" drifter, hydraulic swing boom	839.00	2,600.00	7,380.00
Truck rental			
1-1/2 ton truck	95.00	284.00	854.00
Flatbed with boom	514.00	1,570.00	4,540.00
Dump trucks, rental rate plus mileage			
3 CY	329.00	900.00	1,820.00
5 CY	365.00	1,020.00	2,860.00
10 CY	758.00	2,420.00	3,220.00
25 CY off highway	—	3,960.00	11,900.00

Forklift rental

Rough terrain, towable, gas powered			
4,000 lb capacity	263.00	735.00	1,890.00
8,000 lb capacity	340.00	980.00	2,520.00
Extension boom, 2 wheel steering			
4,000 lb, 30' lift	185.00	720.00	2,100.00
6,000 lb, 35' lift	320.00	875.00	2,280.00
8,000 lb, 40' lift, 4 wheel steering	415.00	1,160.00	3,150.00



Aerial platform rental

Rolling scissor lifts, 2' x 3' platform, 650 lb capacity, push around, electric powered			
30' high	65.00	185.00	550.00
40' high	147.00	390.00	1,030.00
50' high	215.00	583.00	1,590.00
Rolling scissor lifts, self-propelled, hydraulic, electric powered			
To 20'	140.00	330.00	700.00
21' - 30'	270.00	690.00	1,300.00
31' - 40'	175.00	400.00	900.00
Rolling scissor lifts, self-propelled, hydraulic, diesel powered			
To 20'	115.00	230.00	575.00
21' - 30'	200.00	530.00	1,280.00
31' - 40'	260.00	650.00	1,630.00
Boomlifts, telescoping and articulating booms, self-propelled, gas or diesel powered, 2-wheel drive			
21' - 30'	220.00	660.00	1,850.00
31' - 40'	310.00	860.00	2,160.00
41' - 50'	285.00	900.00	2,440.00
51' - 60'	500.00	1,340.00	3,390.00



Pump rental

Hoses not included.

Submersible pump rental			
1-1/2" to 2", electric	45.00	130.00	340.00
3" to 4", electric	100.00	266.00	780.00
All diameters, hydraulic	240.00	735.00	2,280.00
Trash pumps, self-priming, gas			
1-1/2" connection	45.00	125.00	345.00
4" connection	85.00	280.00	800.00
6" connection	240.00	630.00	1,760.00

01 General Requirements

	Day	Week	Month
Diaphragm pumps			
2", gas, single action	95.00	260.00	610.00
4", gas, double action	155.00	375.00	1,030.00
Hose, coupled, 25 LF sections			
2" suction line	12.00	33.00	90.00
1-1/2" discharge line	8.00	19.00	50.00
3" discharge line	11.00	30.00	95.00
Sandblasting equipment rental			
Compressor and hopper			
To 250 PSI	65.00	220.00	610.00
Over 250 to 300 PSI	90.00	290.00	835.00
Over 600 PSI to 1,000 PSI	130.00	420.00	1,180.00
Sandblasting accessories			
Hoses, 50', coupled			
3/4" sandblast hose or air hose	12.00	40.00	105.00
1" air hose	20.00	65.00	180.00
1-1/4" air hose or sandblast hose	10.00	30.00	80.00
Nozzles, all types	29.00	89.00	268.00
Valve, remote control (deadman), all sizes	42.00	52.00	154.00
Air-fed hood	24.00	70.00	212.00
Roadway equipment rental			
Boom mounted pavement breaker, hydraulic 1,500 lb	365.00	990.00	2,670.00
Paving breaker, backhoe mount, pneumatic, 1,000 lb	220.00	745.00	1,890.00
Asphalt curbing machine	112.00	342.00	1,030.00
Paving machine diesel, 10' width, self propelled	—	5,400.00	14,400.00
Distribution truck for asphalt prime coat, 3,000 gallon	1,210.00	3,640.00	11,800.00
Pavement stiper, 1 line, walk behind,	80.00	165.00	415.00
Water blast truck for 1,000 PSI pavement cleaning	1,550.00	4,180.00	13,700.00
Router-groover for joint or crack sealing in pavement	242.00	820.00	2,470.00
Sealant pot for joint or crack sealing	286.00	861.00	2,780.00
Self-propelled street sweeper, vacuum (7 CY max.)	1,060.00	3,270.00	9,800.00
Water trucks/tanks			
1,800-gallon water truck	236.00	814.00	2,440.00
3,500-gallon water truck	410.00	1,640.00	4,680.00
Water tower	180.00	535.00	1,590.00
Tow behind trailer, 500 gal.	86.00	225.00	643.00
Off-road water tanker, 10,000 gal.	354.00	1,220.00	3,660.00
Steel road plate, 1" thick A-36 grade steel, with lifting eyes. Add the cost of delivery and pickup.			
4' x 4'	10.00	25.00	70.00
5' x 10'	25.00	65.00	180.00
7' x 10'	37.00	92.00	275.00
8' x 8'	75.00	225.00	675.00
8' x 20'	97.00	265.00	665.00

01 General Requirements

	Day	Week	Month
Traffic control equipment rental			
Arrow board – 25 lights	94.00	270.00	669.00
Barricades	9.00	24.00	65.00
Barricades with flashers	8.00	22.00	70.00
Delineators	8.00	13.00	21.00
Drill rental			
1/2" cordless drill, 18 volt	15.00	60.00	175.00
3/8" or 1/2", electric drill	24.00	96.00	150.00
3/4" electric drill	27.00	109.00	328.00
1/2" right angle electric drill	25.00	96.00	300.00
1/2" electric hammer drill	38.00	152.00	400.00
Electric generator rental			
2.5 kw, gasoline	62.00	248.00	647.00
5 kw, gasoline	83.00	335.00	1,200.00
15 kw, diesel	110.00	360.00	1,040.00
60 kw, diesel	270.00	660.00	1,530.00
Floor equipment rental			
Carpet blower	20.00	80.00	228.00
Carpet cleaner	29.00	116.00	342.00
Carpet kicker	15.00	60.00	175.00
Carpet power stretcher	28.00	115.00	325.00
Carpet stapler, electric	19.00	72.00	200.00
Carpet seamer, electric	17.00	65.00	184.00
Floor edger, 7", electric	40.00	156.00	396.00
Floor maintainer	50.00	197.00	570.00
Grinder 9"	28.00	115.00	321.00
Mini grinder, 4-1/2"	28.00	70.00	205.00
Pergo installation kit	38.00	118.00	320.00
Tile roller	23.00	85.00	229.00
Tile stripper, electric	59.00	236.00	660.00
Tile stripper, manual	11.00	38.00	115.00
Vacuum, 10 gallons, wet/dry	48.00	193.00	589.00
Hammer rental			
Electric brute breaker	61.00	250.00	750.00
Gas breaker	80.00	320.00	925.00
Demolition hammer, electric	55.00	216.00	635.00
Roto hammer, 7/8", electric	58.00	232.00	657.00
Roto hammer, 1-1/2", electric	60.00	206.00	589.00
Heater rental , fan forced			
Kerosene heater, to 200 MBtu	77.00	216.00	592.00
Kerosene heater, over 200 to 300 MBtu	46.00	170.00	453.00
Kerosene heater, over 500 to 1,000 MBtu	525.00	1,600.00	5,050.00
Salamanders, LP gas (no powered fan)	46.00	168.00	400.00
Ladder rental			
Step ladder, 6' or 8'	15.00	62.00	175.00
Step ladder, 10' or 14'	20.00	75.00	220.00
Extension ladder, 24'	40.00	160.00	429.00
Extension ladder, 28' or 32'	44.00	176.00	428.00
Extension ladder, 40'	53.00	195.00	482.00
Stairway step ladder	19.00	74.00	222.00

04 Masonry

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

Chemical-Resistant Brick or Tile, Subcontract (also known as acid-proof brick). Typical prices for chemical-resistant brick or tile meeting ASTM C-279, types I, II, and III requirements. Installed with 1/8" thick bed and mortar joints over a membrane of either elastomeric bonded to the floors or walls, sheet membrane with a special seam treatment, squeegee hot-applied asphalt, cold-applied adhesive troweled on, or special spray-applied material. The setting bed and joint materials can be either 100% carbon-filled furan or phenolic, sodium or potassium silicates, silica-filled epoxy, polyester, vinyl ester or other special mortars. Expansion joints are required in floor construction, particularly where construction joints exist in the concrete. Additional expansion joints may be required, depending on the service conditions to which the floor will be subjected. Brick or tile will be either 3-3/4" x 8" face, 1-1/8" thick (splits); 3-3/4" x 8" face, 2-1/4" thick (singles); or 4" x 8" face, 1-3/8" thick (pavers). Costs are based on a 2,000 SF job. For smaller projects, increase the cost 5% for each 500 SF or portion of 500 SF less than 2,000 SF. For scheduling purposes estimate that a crew of 4 can install 75 to 100 SF of membrane and brick in an 8-hour day. These costs assume that the membrane is laid on a suitable surface prepared by others and include the subcontractor's overhead and profit.

Typical installed costs for chemical-resistant brick or tile (acid-proof brick), installed

Less complex jobs	—	SF	—	—	34.10
More complex jobs	—	SF	—	—	41.40
Minimum job cost	—	LS	—	—	22,400.00

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

Concrete Block Retaining Walls Includes mortar, regular block, U-block, inspection block (for walls six courses high or higher) grout, cavity caps and No. 5 reinforcing steel. Equipment is a trailer-mounted 15 CY per hour grout pump, locally rented. Add the cost of wall foundations from the section that follows. For more detailed coverage of concrete block retaining walls, see *National Concrete & Masonry Estimator*, <http://CraftsmanSiteLicense.com>

Retaining wall with one lintel block course and grouted and reinforced vertical cells at 16" O.C.

3' - 4" high wall	M1@.504	LF	15.40	23.60	3.02	42.02
4' - 0" high wall	M1@.576	LF	18.50	27.00	3.45	48.95
4' - 8" high wall	M1@.648	LF	21.10	30.40	3.89	55.39
5' - 4" high wall	M1@.720	LF	23.80	33.70	4.32	61.82
6' - 0" high wall	M1@.793	LF	26.40	37.10	4.76	68.26
6' - 8" high wall	M1@.864	LF	29.00	40.50	5.18	74.68
7' - 4" high wall	M1@.936	LF	31.70	43.80	5.61	81.11
8' - 0" high wall	M1@1.01	LF	34.30	47.30	6.06	87.66

Retaining wall with one lintel block course and grouted and reinforced vertical cells at 32" O.C.

3' - 4" high wall	M1@.454	LF	13.10	21.30	2.72	37.12
4' - 0" high wall	M1@.526	LF	15.50	24.60	3.15	43.25
4' - 8" high wall	M1@.598	LF	17.60	28.00	3.59	49.19
5' - 4" high wall	M1@.670	LF	19.70	31.40	4.02	55.12
6' - 0" high wall	M1@.743	LF	21.90	34.80	4.46	61.16
6' - 8" high wall	M1@.814	LF	24.10	38.10	4.88	67.08
7' - 4" high wall	M1@.886	LF	26.20	41.50	5.31	73.01
8' - 0" high wall	M1@.958	LF	28.40	44.90	5.75	79.05

Retaining wall with one lintel block course and grouted and reinforced vertical cells at 48" O.C.

3' - 4" high wall	M1@.436	LF	12.30	20.40	2.61	35.31
4' - 0" high wall	M1@.508	LF	14.40	23.80	3.05	41.25
4' - 8" high wall	M1@.580	LF	16.40	27.20	3.48	47.08
5' - 4" high wall	M1@.652	LF	18.40	30.50	3.91	52.81
6' - 0" high wall	M1@.725	LF	20.40	34.00	4.35	58.75
6' - 8" high wall	M1@.797	LF	22.40	37.30	4.78	64.48
7' - 4" high wall	M1@.869	LF	24.40	40.70	5.21	70.31
8' - 0" high wall	M1@.941	LF	26.40	44.10	5.64	76.14

04 Masonry

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Retaining wall with two lintel block courses and grouted and reinforced vertical cells at 16" O.C.						
3' - 4" high wall	M1@.546	LF	17.10	25.60	3.27	45.97
4' - 0" high wall	M1@.617	LF	20.20	28.90	3.70	52.80
4' - 8" high wall	M1@.689	LF	22.80	32.30	4.13	59.23
5' - 4" high wall	M1@.761	LF	25.40	35.60	4.56	65.56
6' - 0" high wall	M1@.833	LF	28.00	39.00	5.00	72.00
6' - 8" high wall	M1@.906	LF	30.70	42.40	5.43	78.53
7' - 4" high wall	M1@.978	LF	33.30	45.80	5.87	84.97
8' - 0" high wall	M1@1.05	LF	35.90	49.20	6.30	91.40
Retaining wall with two lintel block courses and grouted and reinforced vertical cells at 32" O.C.						
3' - 4" high wall	M1@.495	LF	15.10	23.20	2.97	41.27
4' - 0" high wall	M1@.567	LF	17.50	26.60	3.40	47.50
4' - 8" high wall	M1@.639	LF	19.60	29.90	3.83	53.33
5' - 4" high wall	M1@.711	LF	21.70	33.30	4.26	59.26
6' - 0" high wall	M1@.783	LF	23.90	36.70	4.70	65.30
6' - 8" high wall	M1@.856	LF	26.00	40.10	5.13	71.23
7' - 4" high wall	M1@.928	LF	28.20	43.50	5.57	77.27
8' - 0" high wall	M1@1.00	LF	30.40	46.80	6.00	83.20
Retaining wall with two lintel block courses and grouted and reinforced vertical cells at 48" O.C.						
3' - 4" high wall	M1@.478	LF	14.40	22.40	2.87	39.67
4' - 0" high wall	M1@.550	LF	16.60	25.80	3.30	45.70
4' - 8" high wall	M1@.621	LF	18.60	29.10	3.72	51.32
5' - 4" high wall	M1@.693	LF	20.50	32.50	4.16	57.16
6' - 0" high wall	M1@.766	LF	22.50	35.90	4.59	62.99
6' - 8" high wall	M1@.839	LF	24.50	39.30	5.03	68.83
7' - 4" high wall	M1@.910	LF	26.50	42.60	5.46	74.56
8' - 0" high wall	M1@.982	LF	28.50	46.00	5.89	80.39
Retaining wall with three lintel block courses and grouted and reinforced vertical cells at 16" O.C.						
3' - 4" high wall	M1@.587	LF	18.70	27.50	3.52	49.72
4' - 0" high wall	M1@.660	LF	21.80	30.90	3.96	56.66
4' - 8" high wall	M1@.732	LF	24.40	34.30	4.39	63.09
5' - 4" high wall	M1@.804	LF	27.00	37.70	4.82	69.52
6' - 0" high wall	M1@.876	LF	29.70	41.00	5.25	75.95
6' - 8" high wall	M1@.948	LF	32.30	44.40	5.69	82.39
7' - 4" high wall	M1@1.02	LF	34.90	47.80	6.12	88.82
8' - 0" high wall	M1@1.09	LF	37.60	51.10	6.54	95.24
Retaining wall with three lintel block courses and grouted and reinforced vertical cells at 32" O.C.						
3' - 4" high wall	M1@.537	LF	17.10	25.20	3.22	45.52
4' - 0" high wall	M1@.610	LF	19.50	28.60	3.66	51.76
4' - 8" high wall	M1@.682	LF	21.60	31.90	4.09	57.59
5' - 4" high wall	M1@.754	LF	23.70	35.30	4.52	63.52
6' - 0" high wall	M1@.826	LF	25.90	38.70	4.95	69.55
6' - 8" high wall	M1@.898	LF	28.00	42.10	5.39	75.49
7' - 4" high wall	M1@.971	LF	30.20	45.50	5.82	81.52
8' - 0" high wall	M1@1.04	LF	32.40	48.70	6.24	87.34
Retaining wall with three lintel block course and grouted and reinforced vertical cells at 48" O.C.						
3' - 4" high wall	M1@.520	LF	16.50	24.40	3.12	44.02
4' - 0" high wall	M1@.593	LF	18.70	27.80	3.56	50.06
4' - 8" high wall	M1@.664	LF	20.70	31.10	3.98	55.78
5' - 4" high wall	M1@.736	LF	22.60	34.50	4.41	61.51
6' - 0" high wall	M1@.808	LF	24.70	37.80	4.85	67.35
6' - 8" high wall	M1@.880	LF	26.60	41.20	5.28	73.08
7' - 4" high wall	M1@.953	LF	28.60	44.60	5.72	78.92
8' - 0" high wall	M1@1.03	LF	30.60	48.20	5.18	83.98

04 Masonry

	Craft@Hrs	Unit	Material	Labor	Total
Concrete Foundations for Retaining Walls Includes hand excavation in normal soil, backfilling, board or plywood forming as noted, grade 60 reinforcing steel and 3,000 P.S.I. concrete poured from the chute. Concrete waste when poured against earth is assumed to be 1" of concrete at the bottom of the footing and 2" along the walls. Concrete waste when poured against forms is assumed to be 1" at the bottom of the pad. When forms are used, estimate that excavation will be required 18" beyond the forms.					
36" wide x 12" deep foundation with 4 No. 5 bars, 2' deep					
Hand excavated, poured against earth					
Excavation	CL@.412	LF	—	16.70	16.70
Reinforcing steel	RB@.072	LF	3.48	4.61	8.09
Concrete	CL@.075	LF	14.70	3.03	17.73
Hand excavated, poured against forms					
Excavation	CL@.894	LF	—	36.20	36.20
Formwork	M2@.251	LF	1.66	11.10	12.76
Reinforcing steel	RB@.072	LF	3.48	4.61	8.09
Concrete	CL@.068	LF	13.90	2.75	16.65
36" wide x 12" deep with 4 No. 5 bars, 3' deep					
Hand excavated, poured against earth					
Excavation	CL@.635	LF	—	25.70	25.70
Reinforcing steel	RB@.072	LF	2.48	4.61	7.09
Concrete	CL@.075	LF	14.70	3.03	17.73
Hand excavated, poured against forms					
Excavation	CL@1.36	LF	—	55.00	55.00
Formwork	M2@.251	LF	1.66	11.10	12.76
Reinforcing steel	RB@.072	LF	3.48	4.61	8.09
Concrete	CL@.068	LF	13.90	2.75	16.65
36" wide x 12" deep with 6 No. 5 bars, 2' deep					
Hand excavated, poured against earth					
Excavation	CL@.412	LF	—	16.70	16.70
Reinforcing steel	RB@.108	LF	5.22	6.92	12.14
Concrete	CL@.075	LF	14.70	3.03	17.73
Hand excavated, poured against forms					
Excavation	CL@.894	LF	—	36.20	36.20
Formwork	M2@.251	LF	1.66	11.10	12.76
Reinforcing steel	RB@.108	LF	5.22	6.92	12.14
Concrete	CL@.068	LF	13.90	2.75	16.65
36" wide x 12" deep with 6 No. 5 bars, 3' deep					
Hand excavated, poured against earth					
Excavation	CL@.635	LF	—	25.70	25.70
Reinforcing steel	RB@.108	LF	5.22	6.92	12.14
Concrete	CL@.075	LF	14.70	3.03	17.73
Hand excavated, poured against forms					
Excavation	CL@1.36	LF	—	55.00	55.00
Formwork	M2@.251	LF	1.66	11.10	12.76
Reinforcing steel	RB@.108	LF	5.22	6.92	12.14
Concrete	CL@.068	LF	13.90	2.75	16.65
36" wide x 16" deep with 6 No. 5 bars, 2' deep, No. 4 transverse bars at 2' O.C.					
Hand excavated, poured against earth					
Excavation	CL@.400	LF	—	16.20	16.20
Reinforcing steel	RB@.108	LF	6.02	6.92	12.94
Concrete	CL@.096	LF	19.20	3.88	23.08

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Total
Electronic display, three product, four hose, high cabinet, PCI-compliant card payment terminal	PF@9.94	Ea	9,820.00	608.00	10,428.00
Remote control station, connects up to 16 dispensers to a point of sale terminal, add the cost of wire and conduit	PF@4.00	Ea	1,900.00	245.00	2,145.00
Vapor recovery fill nozzle, 8' hose with breakaway fitting, per hose and nozzle	PF@1.00	LS	39.00	61.20	100.20
Air and water service, post type with auto-inflator and retracting hoses, hoses included	PF@9.58	Ea	2,090.00	586.00	2,676.00
Add for electric thermal unit, factory installed	—	Ea	123.00	—	123.00
Auto hoist. Prices vary with the rating and capacity					
Hoist, single post frame contact 8,000 lb semi hydraulic	D4@71.3	Ea	4,410.00	3,330.00	7,740.00
Hoist, single post frame contact 8,000 lb fully hydraulic	D4@71.3	Ea	4,720.00	3,330.00	8,050.00
Hoist, two post, pneumatic, 11,000 lb	D4@114.	Ea	8,570.00	5,320.00	13,890.00
Hoist, two post, pneumatic, 24,000 lb	D4@188.	Ea	12,200.00	8,770.00	20,970.00
Two-post fully hydraulic hoists. Prices vary with the rating and capacity					
11,000 lb capacity	D4@188.	Ea	7,580.00	8,770.00	16,350.00
13,000 lb capacity	D4@188.	Ea	7,710.00	8,770.00	16,480.00
18,500 lb capacity	D4@188.	Ea	10,400.00	8,770.00	19,170.00
24,000 lb capacity	D4@188.	Ea	13,900.00	8,770.00	22,670.00
26,000 lb capacity	D4@188.	Ea	15,100.00	8,770.00	23,870.00
Cash box and pedestal stand	D4@2.55	Ea	350.00	119.00	469.00
Tire changer, 120 PSI pneumatic, auto tire	D4@10.6	Ea	3,420.00	494.00	3,914.00
Tire changer, hydraulic, truck tire	D4@21.4	Ea	10,600.00	998.00	11,598.00
Exhaust fume system, underground, complete					
Per station	D5@9.52	Ea	726.00	481.00	1,207.00
Parking Control Equipment Costs are for parking equipment only, no concrete work, paving, or electrical work included. Labor costs include installation and testing.					
Parking gates, controllable by attendant, vehicle detector, ticket dispenser, card reader, or coin/token machine					
Barrier gate operator with 10' arm	D4@9.13	Ea	2,200.00	426.00	2,626.00
Barrier gate operator with 14' arm	D4@9.13	Ea	2,260.00	426.00	2,686.00
Barrier gate operator with counter-balanced arm	D4@9.13	Ea	4,010.00	426.00	4,436.00
Heavy-duty swing gate opener	D4@9.13	Ea	1,790.00	426.00	2,216.00
1/2 HP commercial slide gate opener	D4@9.13	Ea	3,530.00	426.00	3,956.00
Add for battery backup	—	Ea	533.00	—	533.00
Vehicle detector, for installation in approach lane, including cutting and grouting	D4@4.96	Ea	428.00	231.00	659.00
Ticket dispenser (spitter), with date/time imprinter actuated by vehicle detector or hand button	D4@9.13	Ea	6,430.00	426.00	6,856.00
Card readers					
Non-programmable, parking areas with long-term parking privileges					
Per station	D4@3.39	Ea	668.00	158.00	826.00
Programmable, parking areas for users paying a fee to renew parking privileges					
Per reader	D4@3.39	Ea	5,190.00	158.00	5,348.00
Access controls, keypad type					
Wall, post or gooseneck mounting, weatherproof	D4@1.00	Ea	170.00	46.60	216.60
Lane spikes, dragon teeth, installation includes cutting and grouting as needed					
6' wide, surface-mounted	D4@6.69	Ea	1,440.00	312.00	1,752.00
6' wide, flush-mounted	D4@9.69	Ea	1,350.00	452.00	1,802.00
Lighted warning sign for lane spikes	D4@5.71	Ea	672.00	266.00	938.00

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Loading Dock Equipment Costs shown assume that equipment is set in prepared locations. No excavation, concrete work or electrical work included. Equipment cost is for a 4,000 lb. forklift.						
Move equipment on or off job						
Allow, per move	—	LS	—	—	100.00	100.00
Dock levelers, Systems, Inc.						
Edge-of-dock leveler, manual	D6@2.25	Ea	3,120.00	121.00	26.60	3,267.60
Mechanical platform dock leveler, recessed, 25,000 lb. capacity						
6' wide x 6' long	D6@3.00	Ea	3,810.00	162.00	34.60	4,006.60
6' wide x 8' long	D6@3.00	Ea	4,120.00	162.00	34.60	4,316.60
6' wide x 10' long	D6@3.00	Ea	5,610.00	162.00	34.60	5,806.60
7' wide x 8' long	D6@3.00	Ea	4,820.00	162.00	34.60	5,016.60
Hydraulic, pit type						
6' wide x 6' long	D6@4.50	Ea	5,140.00	243.00	51.90	5,434.90
6' wide x 8' long	D6@4.50	Ea	5,440.00	243.00	51.90	5,734.90
Dock seals, foam pad type, 12" projection, with anchor brackets (bolts not included), door opening size as shown, Systems, Inc.						
8' wide x 8' high, standard duty	D6@3.75	Ea	710.00	202.00	43.30	955.30
8' wide x 10' high, heavy duty	D6@3.75	Ea	793.00	202.00	43.30	1,038.30
Dock lifts, portable, electro-hydraulic scissor lifts, Systems, Inc.						
4,000 lb. capacity, 6' x 6' dock	D6@2.25	Ea	10,900.00	121.00	26.00	11,047.00
Dock lifts, pit recessed, electro-hydraulic scissor lifts, Advance Lifts						
5,000 lb. capacity, 6' x 8' platform	D6@12.0	Ea	8,450.00	648.00	139.00	9,237.00
6,000 lb. capacity, 6' x 8' platform	D6@12.0	Ea	9,860.00	648.00	139.00	10,647.00
8,000 lb. capacity						
6' x 8' platform	D6@12.0	Ea	16,400.00	648.00	139.00	17,187.00
8' x 10' platform	D6@12.0	Ea	18,400.00	648.00	139.00	19,187.00
10,000 lb. capacity						
6' x 10' platform	D6@12.0	Ea	21,500.00	648.00	139.00	22,287.00
8' x 10' platform	D6@12.0	Ea	22,900.00	648.00	139.00	23,687.00
12,000 lb. capacity						
6' x 10' platform	D6@15.0	Ea	24,300.00	810.00	173.00	25,283.00
8' x 12' platform	D6@15.0	Ea	27,900.00	810.00	173.00	28,883.00
16,000 lb. capacity						
6' x 10' platform	D6@15.0	Ea	27,000.00	810.00	173.00	27,983.00
8' x 12' platform	D6@15.0	Ea	30,600.00	810.00	173.00	31,583.00
20,000 lb. capacity						
6' x 12' platform	D6@15.0	Ea	29,900.00	810.00	173.00	30,883.00
8' x 12' platform	D6@15.0	Ea	33,100.00	810.00	173.00	34,083.00
Combination dock lift and dock leveler, electro-hydraulic scissor lifts, pit recessed, 5,000 lb. capacity, Advance Lifts						
6' x 7'2" platform	D6@12.0	Ea	11,400.00	648.00	139.00	12,187.00
6' x 8' platform	D6@12.0	Ea	9,240.00	648.00	139.00	10,027.00
Dock bumpers, laminated rubber, not including masonry anchors						
10" high x 18" wide x 4-1/2" thick	D4@.248	Ea	74.30	11.60	—	85.90
10" high x 24" wide x 4-1/2" thick	D4@.299	Ea	95.20	13.90	—	109.10
10" high x 36" wide x 4-1/2" thick	D4@.269	Ea	143.00	12.50	—	155.50
10" high x 24" wide x 6" thick	D4@.358	Ea	125.00	16.70	—	141.70
10" high x 36" wide x 6" thick	D4@.416	Ea	184.00	19.40	—	203.40

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
20" high x 11" wide x 4-1/2" thick	D4@.499	Ea	89.10	23.30	—	112.40
20" high x 11" wide x 6" thick	D4@.259	Ea	125.00	12.10	—	137.10
12" high x 24" wide x 4-1/2" thick	D4@.328	Ea	117.00	15.30	—	132.30
12" high x 36" wide x 4-1/2" thick	D4@.432	Ea	175.00	20.10	—	195.10
Add for 4 masonry anchors	D4@1.19	LS	2.90	55.50	—	58.40
Barrier posts, 8' long concrete-filled steel posts set 4' underground in concrete						
3" diameter	P8@.498	Ea	101.00	22.60	—	123.60
4" diameter	P8@.498	Ea	142.00	22.60	—	164.60
6" diameter	P8@.752	Ea	180.00	34.20	—	214.20
8" diameter	P8@1.00	Ea	217.00	45.40	—	262.40
Loading dock shelter, fabric covered, steel frame,						
24" extension for 10' x 10' door	D4@9.91	Ea	1140.00	462.00	—	1,602.00
Perimeter door seal,						
12" x 12", vinyl cover	D4@.400	LF	40.00	18.70	—	58.70

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

Truck Scales Fully electronic pit-type steel-deck scales. Add the cost of the concrete pit box, electrical service and excavation.

35 ton, 8' x 10' axle scale	D4@112.	Ea	7,740.00	5,220.00	12,960.00
50 ton, 10' x 90' truck scale	D4@167.	Ea	42,800.00	7,790.00	50,590.00

Turnstiles

Access control turnstiles, 3' high

Non-register type, manual	D4@2.78	Ea	832.00	130.00	962.00
Register type, manual	D4@2.78	Ea	1,200.00	130.00	1,330.00
Add for coin, token, card or electronic control	—	Ea	300.00	—	300.00
Register type, portable	—	Ea	1,820.00	—	1,820.00

Security-type rotary turnstiles, 7'0" high, indoor or outdoor

Free access, Type B (vertical bar outer cage)	D4@15.6	Ea	6,170.00	728.00	6,898.00
One way, Type B (vertical bar outer cage)	D4@15.6	Ea	6,680.00	728.00	7,408.00
Free access, Type AA (horizontal bar outer cage)	D4@18.4	Ea	7,970.00	858.00	8,828.00
One way, Type AA (horizontal bar outer cage)	D4@18.4	Ea	8,740.00	858.00	9,598.00
Add for electric control	—	Ea	687.00	—	687.00

Recessed Wall and Floor Safes Safes with 1" thick steel door, 1/4" hardplate protecting locking mechanism, welded deadbolts, key or combination lock and internal relock device.

In-floor safes

15" L x 16" W x 11" D, floor safe	D4@2.33	Ea	652.00	109.00	761.00
15" L x 16" W x 22" D, floor safe	D4@2.33	Ea	868.00	109.00	977.00
25" L x 25" W x 17" D, floor safe	D4@2.33	Ea	1,190.00	109.00	1,299.00
14" L x 14" W x 4" D, wall safe	D4@2.00	Ea	590.00	93.30	683.30
14" L x 14" W x 11" D, wall safe	D4@2.00	Ea	863.00	93.30	956.30
Add for installation in existing building	D4@2.00	Ea	—	93.30	93.30

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

Bank Equipment

Fire-rated vault doors, 80" high, 18 bolt, 2300 degree. Installed with a 20-ton hydraulic crane. Add the cost of delivery.

30" wide, 2 hour rating	D4@11.9	Ea	2,900.00	555.00	548.00	4,003.00
35" wide, 2 hour rating	D4@16.4	Ea	3,400.00	765.00	755.00	4,920.00
40" wide, 2 hour rating	D4@20.8	Ea	3,800.00	970.00	958.00	5,728.00
35" wide, 4 hour rating	D4@16.4	Ea	4,700.00	765.00	755.00	6,220.00
40" wide, 4 hour rating	D4@20.8	Ea	5,500.00	970.00	958.00	7,428.00

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Teller, transaction windows						
Drive-up, motorized drawer, projected	D4@26.8	Ea	7,270.00	1,250.00	—	8,520.00
Transaction window, 24" x 36"	D4@17.6	Ea	1,980.00	821.00	—	2,801.00
Transaction window, 36" x 36"	D4@17.6	Ea	2,260.00	821.00	—	3,081.00
Add for amplified speak-thru	—	Ea	900.00	—	—	900.00
After-hours depository doors						
Envelope and bag, whole chest, complete	D4@37.1	Ea	11,100.00	1,730.00	—	12,830.00
Envelope only	D4@4.72	Ea	1,290.00	220.00	—	1,510.00
Flush-mounted, bag only	D4@5.44	Ea	1,980.00	254.00	—	2,234.00
Teller counter, modular components	C8@.532	LF	129.00	24.60	—	153.60
Square check desks, 48" x 48", 4 person	C8@2.00	Ea	1,540.00	92.40	—	1,632.40
Round check desks, 48" diameter, 4 person	C8@2.00	Ea	1,690.00	92.40	—	1,782.40
Rectangular check desks, 72" x 24", 4 person	C8@2.00	Ea	1,450.00	92.40	—	1,542.40
Rectangular check desks, 36" x 72", 8 person	C8@2.00	Ea	2,820.00	92.40	—	2,912.40
Bank partition, bullet resistant, 2.5" thick	C8@.093	SF	62.50	4.30	—	66.80
Safe deposit boxes, modular units						
18 openings, 2" x 5"	D4@3.42	Ea	1,550.00	160.00	—	1,710.00
30 openings, 2" x 5"	D4@3.42	Ea	1,950.00	160.00	—	2,110.00
42 openings, 2" x 5"	D4@3.42	Ea	2,510.00	160.00	—	2,670.00
Base, 32" x 24" x 3"	D4@1.11	Ea	149.00	51.80	—	200.80
Canopy top	D4@.857	Ea	84.60	40.00	—	124.60
Cash dispensing automatic teller	CE@84.3	Ea	49,100.00	4,990.00	—	54,090.00
Video camera surveillance system, 3 cameras	CE@15.6	Ea	3,300.00	924.00	—	4,224.00
Perimeter alarm system, typical cost	CE@57.7	Ea	8,260.00	3,420.00	—	11,680.00

Checkroom Equipment

Automatic electric checkroom conveyor, 350 coat capacity

	Craft@Hrs	Unit	Material	Labor	Total
Conveyor and controls	D4@15.2	Ea	6,070.00	709.00	6,779.00
Add for 1 shelf	—	Ea	1,580.00	—	1,580.00
Add for electrical connection for checkroom conveyor, typical subcontract price					
40' wire run with conduit, circuit breaker, and junction box	—	LS	—	—	475.00

Coat and Hat Racks Assembly and installation of prefabricated coat and hat racks. Wall-mounted coat and hat rack with pilfer-resistant hangers, aluminum

24" length, 8 hangers	CC@.665	Ea	156.00	34.60	190.60
36" length, 12 hangers	CC@.748	Ea	183.00	38.90	221.90
48" length, 16 hangers	CC@.833	Ea	233.00	43.30	276.30
60" length, 20 hangers	CC@.916	Ea	272.00	47.60	319.60
72" length, 24 hangers	CC@.997	Ea	294.00	51.80	345.80

Food Service Equipment These costs do not include electrical work or plumbing. Add the cost of hookup when needed. Based on Superior Products Company. (Figure in parentheses is equipment weight.)

Food stations, vinyl clad steel, with stainless steel work area and clear acrylic breath/sneeze guard,

24" D x 35" H, mounted on 4" casters

Hot food station, 60" long (182 lbs)	D4@1.00	Ea	2,690.00	46.60	2,736.60
Hot food station, 46" long (156 lbs)	D4@1.00	Ea	2,550.00	46.60	2,596.60
Cold food station, 60" long (166 lbs)	D4@1.00	Ea	2,400.00	46.60	2,446.60
Cold food station, 46" long (147 lbs)	D4@1.00	Ea	2,080.00	46.60	2,126.60
Plate rest with mounting kit (10 lbs)	D4@.250	Ea	449.00	11.70	460.70
Incandescent light assembly (20 lbs)	D4@.250	Ea	762.00	11.70	773.70

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Total
Food warmers, stainless steel top, hardwood cutting board, 12" x 20" openings, waterless					
58-1/2", gas, 4 openings (135 lbs)	P6@1.00	Ea	1,390.00	51.40	1,441.40
58-1/2", electric, 3,000 watt, 4 openings, (135 lbs)	E4@1.00	Ea	1,520.00	49.80	1,569.80
Countertop one-compartment steamer, stainless steel. Holds multiple pan inserts. Thermostatically controlled					
208 volt electric heater element. Holds 12" x 20" x 2-1/2" deep pans. Underwriters Laboratories and NSF listed.					
Add the cost of 3/4" water valve connection and 2" drain valve connection.					
3-pan inserts, 8.1 KW	P1@16.0	Ea	9,920.00	580.00	10,500.00
5-pan inserts, 11 KW	P1@20.0	Ea	14,000.00	725.00	14,725.00
Meat and deli case, self-contained with gravity cooling, stainless steel top, 54" high x 34" deep					
48-1/2" long (425 lbs)	D4@3.00	Ea	4,140.00	140.00	4,280.00
72-1/2" long (595 lbs)	D4@4.00	Ea	5,180.00	187.00	5,367.00
Freestanding bench type meat saw, 5/8" saw blade, belt-drive, toggle switch, 9.56" x 10.3" throat size. Includes a wheel and blade scraper, stainless steel carriage table with easy-slide moving height and a hose down cleanable					
epoxy enamel cabinet. 1.5 HP motor. Grade 304 stainless steel throughout. Underwriters Laboratories and NSF rated.					
14" x 14" table	D4@2.00	Ea	2,340.00	93.30	2,433.30
24" x 24" table	D4@2.00	Ea	4,110.00	93.30	4,203.30
Sandwich preparation units, free standing, stainless steel top, sides and back, 115 V AC, refrigerated 30" D x 43" H, full length 12" deep cutting board					
6.5 cubic feet, 27-1/2" long	D4@2.00	Ea	1,740.00	93.30	1,833.30
12 cubic feet, 48" long	D4@2.00	Ea	2,580.00	93.30	2,673.30
Pizza preparation units, free standing, stainless steel top, sides and back, 115 V AC, refrigerated 35-1/2" D x 41-1/2" H, full length 19-1/2" deep cutting board					
11.4 cubic feet, 44-1/2" long, one door	D4@2.00	Ea	3,100.00	93.30	3,193.30
20.6 cubic feet, 67" long, two doors	D4@2.00	Ea	4,410.00	93.30	4,503.30
30.9 cubic feet, 93-1/4" long, three doors	D4@2.00	Ea	5,970.00	93.30	6,063.30
Pan kit for prep tables	—	Ea	90.20	—	90.20
Sushi serving table, custom made with multiple sealed wells for wet or dry operation. Grade 304 stainless steel with understorage, 14 gauge base supports, individual drains and valves and adjustable legs. White polyethylene top, glass customer product screen and cutting board. Thermostatically controlled electric heater elements. Add for customer seating. Underwriters Laboratories and NSF rated.					
5-customer seating	T5@40.0	Ea	13,400.00	2,000.00	15,400.00
10-customer seating	T5@75.0	Ea	29,100.00	3,750.00	32,850.00
Four-station ice cream and shake serving and dispenser, heat-treatment freezer system type, multiple quart per station capacity, with syrup dispensers, product pumps, water valve connections, cleaning drain connections, thermostatic controls, product digital temperature and serve rate metering. Grade 304 stainless steel throughout. Underwriters Laboratories and NSF rated. Not included, one day of forklift equipment rental, add as necessary.					
14 quart total capacity	D4@30.0	Ea	26,800.00	1,400.00	28,200.00
28 quart total capacity	D4@30.0	Ea	40,700.00	1,400.00	42,100.00
Shelving, aluminum, free-standing, 2,000 lb. capacity lower shelf, 400 lb capacity uppers					
18" x 36" x 68" high, 3 tier	C8@2.00	Ea	295.00	92.40	387.40
18" x 48" x 68" high, 3 tier	C8@2.00	Ea	325.00	92.40	417.40
18" x 36" x 76" high, 4 tier	C8@2.00	Ea	369.00	92.40	461.40
18" x 48" x 76" high, 4 tier	C8@2.00	Ea	399.00	92.40	491.40
Work tables, 16 gauge type 430 stainless steel, 30" high. Includes two 12" deep over-shelves, full depth under-shelf and pot and ladle rack.					
48" long (118 lbs.)	D4@1.00	Ea	1,050.00	46.60	1,096.60
60" long (135 lbs.)	D4@1.00	Ea	1,150.00	46.60	1,196.60
72" long (154 lbs.)	D4@1.00	Ea	1,210.00	46.60	1,256.60
Add to any work table above					
20" x 20" x 5" pull flange drawer (13 lbs.)	D4@.250	Ea	108.00	11.70	119.70
Stainless steel pot hooks	—	Ea	11.40	—	11.40

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Total
Exhaust hoods, 16 gauge grade 304 stainless steel with #3 polished finish. Conforms to NFPA code #96 and the National Sanitation Foundation requirements. Add for exhaust fans from the next section.					
48" deep angled front hood, 24" high with length as listed below					
6' long (205 lbs.)	T5@2.00	Ea	1,290.00	99.90	1,389.90
8' long (250 lbs.)	T5@3.00	Ea	1,680.00	150.00	1,830.00
10' long (285 lbs.)	T5@4.00	Ea	2,070.00	200.00	2,270.00
Additives to any hood above					
Installation kit	—	Ea	215.00	—	215.00
Grease filters, aluminum, cleanable, 2' deep	T5@.125	LF	46.70	6.25	52.95
Exhaust fans, 2,800 CFM, 1,265 RPM. Wall- or roof-mounted, for use with the exhaust hoods above. Heavy duty aluminum with 115 volt AC motor in a weathertight enclosure.					
These costs are based on installing the fan in an existing opening, electrical hookup not included					
Fan for 6' long hood, 18-1/2" square curb size					
1/2 HP (75 lbs.)	T5@2.00	Ea	1,220.00	99.90	1,319.90
Fan for 8' or 10' long hood, 23-1/2" square curb size					
1/2 HP (100 lbs.)	T5@2.00	Ea	1,290.00	99.90	1,389.90
Additives to either fan above					
Roof curb	T5@1.00	Ea	337.00	50.00	387.00
Variable speed motor controller, 115 volt AC	—	Ea	159.00	—	159.00
Lights, incandescent, pre-wired, 115 volt AC	—	Ea	90.60	—	90.60
Ductwork, aluminized steel	T5@.100	LF	40.50	5.00	45.50
90-degree elbow for ductwork, aluminized steel	T5@.500	Ea	269.00	25.00	294.00
Electrostatic precipitators for restaurant exhaust air purification. Removes kitchen exhaust grease, smoke and odors. Meets EPA, state and most local air quality standards. Multi-stage, self-contained filtration unit with electrostatic precipitator ionizer module, 95% DOP (dioctyl phthalate) Mil-Std 282 media filter, and carbon modules for odor control. For applications in commercial and institutional kitchens such as restaurants, food courts, hospitals, and schools.					
1,200 CFM, 1.5 Amperes	P1@16.0	Ea	9,910.00	580.00	10,490.00
2,400 CFM, 5.0 Amperes	P1@20.0	Ea	14,000.00	725.00	14,725.00
Removable oven and stove exhaust hood filters with mounting flue enclosure. Seamless welded design, finished in marine-grade 316 stainless steel, 27" deep hood, with internal blower meeting Home Ventilating Institute certified performance standards. Fully enclosed with baffle filters, halogen lamps, marine grade controls to resist high moisture and heat in flue gases. With backsplash panel and soffit flue venting. Commercial and institutional grade. NSF and NFPA and Underwriters Laboratories approved.					
1,100 CFM	P6@20.0	Ea	4,960.00	1,030.00	5,990.00
1,200 CFM	P6@20.0	Ea	7,160.00	1,030.00	8,190.00
1,500 CFM	P6@20.0	Ea	7,720.00	1,030.00	8,750.00
Restaurant cooking area fire protection wet chemical system. Exceeds the standards of Underwriters Laboratories (UL-300, Fire Extinguishing Systems for Protection of Restaurant Cooking Areas) and complies with NFPA 17A (Wet Chemical Extinguishing Systems), NFPA 96 (Commercial Cooking Operations, Ventilation Control and Fire) and major insurance company guidelines.					
5' wide range hood	P6@16.0	Ea	1,750.00	822.00	2,572.00
14' wide range hood	P6@24.0	Ea	3,100.00	1,230.00	4,330.00
Charbroiler, radiant, countertop model, burner and control every 12", natural or LP gas					
80,000 Btu, 24" W (155 lbs.)	P6@2.00	Ea	2,170.00	103.00	2,273.00
120,000 Btu, 36" W (211 lbs.)	P6@2.00	Ea	2,940.00	103.00	3,043.00
160,000 Btu, 48" W (211 lbs.)	P6@2.00	Ea	3,780.00	103.00	3,883.00
Deep fat fryer, free standing floor model, electric, 45" height, stainless steel front and top					
40 lbs. capacity (200 lbs.)	P6@2.00	Ea	2,010.00	103.00	2,113.00
60 lbs. capacity (225 lbs.)	P6@2.00	Ea	2,600.00	103.00	2,703.00
Add for filter ready	—	Ea	358.00	—	358.00

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Total
Gas ranges, free standing, floor-mounted, 29-3/4" D x 59" H x 62-3/4" W, with twin ovens and 24" raised griddle/broiler					
6 burners, 35,000 Btu each (835 lbs.)	P6@4.00	Ea	5,180.00	205.00	5,385.00
Add for stainless steel shelf above range	—	Ea	129.00	—	129.00
Restaurant range, gas, 6 burners, 2 ovens, raised griddle/broiler, open burners with black porcelain top grates, stainless steel front, sides, back riser, high shelf and 6" legs. 3/4" rear gas connection with gas pressure regulator. NSF listed.					
50 MBtu/Hr	P6@8.00	Ea	8,180.00	411.00	8,591.00
75 MBtu/Hr	P6@8.00	Ea	9,550.00	411.00	9,961.00
100 MBtu/Hr	P6@8.00	Ea	14,300.00	411.00	14,711.00
Griddles, gas, 27,500 Btu, 1" thick x 24" deep griddle plate, countertop-mounted					
24" wide (295 lbs.)	P6@2.00	Ea	1,230.00	103.00	1,333.00
36" wide (385 lbs.)	P6@2.00	Ea	1,580.00	103.00	1,683.00
48" wide (520 lbs.)	P6@3.00	Ea	2,050.00	154.00	2,204.00
Ovens, free standing, floor-mounted					
Convection oven, natural gas, stainless steel, porcelain interior, 38" W x 36" D x 54-1/4" H 60,000 Btu (550 lbs.)	D4@4.00	Ea	2,850.00	187.00	3,037.00
Conveyer oven, electric, stainless steel body, 18" H x 50" W x 31-3/8" D, 208 or 240 Volt AC 16" W conveyor, 6 KW, UL listed (190 lbs.)	D4@4.00	Ea	5,070.00	187.00	5,257.00
Entry & exit shelves	—	Ea	237.00	—	237.00
Professional microwave oven, single shelf, permanent-mount, stainless steel throughout, with 6 minute dial timer, bottom energy feed, see-thru side hinged door, digital controls, cavity- or wall-mount, 120 Volt, 60 Hertz, single phase, Underwriters Laboratories and NSF listed.					
850 watt	E4@4.00	Ea	295.00	199.00	494.00
1,000 watt	E4@4.00	Ea	325.00	199.00	524.00
1,800 watt	E4@4.00	Ea	920.00	199.00	1,119.00
2,100 watt	E4@4.00	Ea	1,210.00	199.00	1,409.00
Pastry oven, gas, 6 burners, 2 ovens, raised griddle/broiler, open burners with black porcelain top grates. Stainless steel front, sides, back riser, high shelf and 6" legs. 3/4" rear gas connection with gas pressure regulator. NSF listed.					
50 MBtu/Hr	P6@8.00	Ea	7,810.00	411.00	8,221.00
75 MBtu/Hr	P6@8.00	Ea	9,770.00	411.00	10,181.00
100 MBtu/Hr	P6@8.00	Ea	14,400.00	411.00	14,811.00
Dough roller, production type, for bread, pastry, donut and bagel manufacture. Two-stage machine with stainless steel construction. Quick change handles, front infeed and front discharge. Rolls up to 18" diameter doughs. NSF 8 listed. 120 Volt, 60 Hertz, single phase, UL listed.					
450 pastry blanks per hour	E4@4.00	Ea	5,240.00	199.00	5,439.00
1,000 pastry blanks per hour	E4@4.00	Ea	7,920.00	199.00	8,119.00
2,000 pastry blanks per hour	E4@4.00	Ea	18,300.00	199.00	18,499.00
Bread slicer, hard or soft crusted breads. With stainless steel bagging trough. 3/8" (10 mm), 7/16" (11 mm), 1/2" (13 mm), or 3/4" (19 mm) pre-set slice thickness. Independently mounted heat-treated alloy carbon steel blades.					
Single phase 115 volt, 60 Hz AC power. ETL listed for safety.					
6.2 Amp/hr, 420 loaves per hour	E4@4.00	Ea	5,240.00	199.00	5,439.00
10 Amp/hr, 700 loaves per hour	E4@4.00	Ea	9,130.00	199.00	9,329.00
18 Amp/hr, 1,000 loaves per hour	E4@4.00	Ea	13,400.00	199.00	13,599.00
Toaster, conveyor type, stainless steel, fused quartz sheathing, countertop model					
350 slices per hour, 115 volt AC, 1,400 watts	D4@3.00	Ea	765.00	140.00	905.00
Pot and pan racks, galvanized steel, pot hooks placed 4 per linear foot					
Ceiling-mounted, 5'	C8@2.00	Ea	429.00	92.40	521.40
Wall-mounted, 5'	C8@2.00	Ea	285.00	92.40	377.40

11 Equipment

	Craft@Hrs	Unit	Material	Labor	Total
Ice-maker, free standing, floor-mounted model					
147 lbs. per day capacity (165 lbs.)	P6@2.00	Ea	1,680.00	103.00	1,783.00
220 lbs. per day capacity (165 lbs.)	P6@2.00	Ea	1,970.00	103.00	2,073.00
290 lbs. per day capacity (215 lbs.)	P6@2.00	Ea	2,320.00	103.00	2,423.00
395 lbs. per day capacity (185 lbs.)	P6@2.00	Ea	3,360.00	103.00	3,463.00
Ice storage unit, self service for bagged ice, 40 cubic foot capacity, floor-mounted. Includes refrigeration unit.					
Indoor type	E4@3.00	Ea	2,390.00	149.00	2,539.00
Outdoor type, automatic defrost	E4@3.00	Ea	1,860.00	149.00	2,009.00
Refrigerators, CFC-free refrigeration system 115 volt AC					
Under counter, stainless steel front and top					
6.2 cubic foot (157 lbs.)	P6@3.00	Ea	1,510.00	154.00	1,664.00
11.8 cubic foot (230 lbs.)	P6@4.00	Ea	2,320.00	205.00	2,525.00
Beverage backbar refrigerator, 2 section glass doors, 34" high, condensing unit on right, galvanized top, stainless steel floors, galvanized interior walls, epoxy coated steel shelves. 208 volt, 1- or 3-phase, 60 Hz AC, Underwriters Laboratories and NSF rated.					
5 MBtu/Hr	E4@4.00	Ea	4,130.00	199.00	4,329.00
10 MBtu/Hr	E4@4.00	Ea	6,480.00	199.00	6,679.00
20 MBtu/Hr	E4@4.00	Ea	8,840.00	199.00	9,039.00
Freezers, under counter type, stainless steel front and top, CFC-free refrigeration system					
6.5 cubic foot (162 lbs.)	P6@.500	Ea	1,630.00	25.70	1,655.70
12.0 cubic foot (234 lb.)	P6@1.00	Ea	2,370.00	51.40	2,421.40
Reach-in refrigerator, bottom-mounted, stainless steel doors, anodized aluminum sides					
Single door, 23 cubic foot (276 lbs.)	P6@4.00	Ea	2,650.00	205.00	2,855.00
Double door, 49 cubic foot (410 lbs.)	P6@4.00	Ea	3,520.00	205.00	3,725.00
Triple door, 72 cubic foot (600 lbs.)	P6@4.00	Ea	4,750.00	205.00	4,955.00
Custom walk-in coolers and freezers, in an existing building. Including thermostatically controlled external remote condenser and temperature recorder. UL and NSF rated compound thermoplastic internal insulation, food-grade grouted tile floor. Fluorescent illumination. High-traffic stainless steel vault door with safety panic bar-style exit latch override. Shelving not included. Per square foot of floor.					
Cooler (to +35 degrees Fahrenheit)	—	SF	—	—	58.30
Freezer (to -35 degrees Fahrenheit)	—	SF	—	—	86.40
Sinks, stainless steel, free standing, floor-mounted, with 7" high backsplash and faucet holes drilled on 8" centers, no trim included					
Scullery sink, 16" x 20" tubs, 12" deep					
40" long, 1 tub, 1 drainboard (65 lbs.)	P6@2.00	Ea	375.00	103.00	478.00
58" long, 2 tubs, 1 drainboard (80 lbs.)	P6@2.00	Ea	609.00	103.00	712.00
103" long, 3 tubs, 2 drainboards (155 lbs.)	P6@2.00	Ea	1,210.00	103.00	1,313.00
126" long, 4 tubs, 2 drainboards (175 lbs.)	P6@2.00	Ea	1,300.00	103.00	1,403.00
Mop sink, faucet not included					
21" x 21" x 41", single compartment	P6@2.00	Ea	369.00	103.00	472.00
Dining facility maintenance and cleaning station, stainless steel throughout. Includes floor-mounted mop sink, hose and cleaning fluid dispenser and connections for mop and bucket fill, shelving and mop racks, shielded lighting fixture, grounded high-mount electrical outlet and floor drain. UL and NSF rated. Built into an existing structure. Add the cost of plumbing and electric rough-in. Per square foot of floor.					
Installed cost	—	SF	—	—	30.10
Planetary food mixing machines, floor-mounted					
20 quart, bench-mount (260 lbs.)	D4@2.00	Ea	1,950.00	93.30	2,043.30
30 quart (360 lbs.)	D4@3.00	Ea	13,000.00	140.00	13,140.00

22 Plumbing

	Craft@Hrs	Unit	Material	Labor	Total
Floor sink, floor drain Rough-in includes 15' of drain and 15' of vent pipe, P-trap, typical fittings and hangers. Does not include the actual floor drain unit.					
2" plastic DWV rough-in	P6@1.50	Ea	37.60	77.00	114.60
3" plastic DWV rough-in	P6@1.75	Ea	81.70	89.90	171.60
2" cast iron DWV rough-in	P6@2.00	Ea	191.00	103.00	294.00
3" cast iron DWV rough-in	P6@2.50	Ea	252.00	128.00	380.00
4" cast iron DWV rough-in	P6@2.50	Ea	326.00	128.00	454.00

Fixtures and final connection assemblies

Fixture costs are based on good to better quality white fixtures of standard dimensions and include all trim and valves required by code. Add 30% for colored fixtures.

Water closets

Floor-mounted, tank type, elongated vitreous china bowl

Water closet, trim and valves (add rough-in)	P6@2.10	Ea	253.00	108.00	361.00
Deduct for round bowl	—	Ea	-43.40	—	-43.40

Floor-mounted flush valve type, elongated vitreous china bowl

Water closet, trim and valves (add rough-in)	P6@2.60	Ea	327.00	134.00	461.00
--	---------	----	--------	--------	--------

Floor-mounted flush valve type, elongated vitreous china bowl, meets ADA requirements (18" high)

Water closet, trim and valves (add rough-in)	P6@2.60	Ea	388.00	134.00	522.00
--	---------	----	--------	--------	--------

Wall-hung, tank type, elongated vitreous china bowl, cast iron carrier

Water closet, trim and valves (add rough-in)	P6@3.00	Ea	739.00	154.00	893.00
Deduct for round bowl	—	Ea	-85.40	—	-85.40

Wall-hung flush valve type elongated vitreous china bowl, cast iron carrier

Water closet, trim and valves (add rough-in)	P6@3.55	Ea	523.00	182.00	705.00
Add for bed pan cleanser (flush valve and rim lugs)	P6@1.50	Ea	226.00	77.00	303.00

Urinals

Wall-hung urinal, vitreous china, washout flush action, 3/4" top spud with hand operated flush valve/vacuum breaker

Urinal, trim and valves (add rough-in)	P6@2.35	Ea	424.00	121.00	545.00
Add for fixture carrier	P6@1.25	Ea	122.00	64.20	186.20

Floor-mounted urinal, 18" wide, sloping front vitreous china, washout flush action, 3/4" top spud with hand operated flush valve/vacuum breaker

Urinal, trim and valves (add rough-in)	P6@5.25	Ea	1,020.00	270.00	1,290.00
--	---------	----	----------	--------	----------

Water-conserving urinals, faucets and flush valves

Wall-mounted urinal, ABS-structural plastic. Fit between studs framed at 16" on center.

Add the cost of wall finishing and rough-in plumbing					
10 oz water per flush	P6@1.50	Ea	324.00	77.00	401.00

Battery-powered sensor faucet, 6 volt DC. Continuous discharge up to 10 seconds. Less than one quart per cycle. www.totusa.com

Standard spout	P6@1.50	Ea	417.00	77.00	494.00
Gooseneck spout	P6@1.50	Ea	457.00	77.00	534.00

AC-powered sensor faucet, 12 volt. Continuous discharge up to 10 seconds. Less than one quart per cycle

Standard spout	P6@1.50	Ea	417.00	77.00	494.00
Gooseneck spout	P6@1.50	Ea	457.00	77.00	534.00

Battery-powered sensor flush valves, 6 volt DC, exposed. Light flushing after brief use and full flushing after extended use. Includes rough fittings

Urinal flush valve	P6@2.00	Ea	375.00	103.00	478.00
Toilet flush valve, 1.6 or 3.5 gallons	P6@2.00	Ea	411.00	103.00	514.00

22 Plumbing

	Craft@Hrs	Unit	Material	Labor	Total
AC-powered sensor flush valves, 24 volt. Light flushing after brief use and full flushing after extended use. Includes rough fittings					
Urinal flush valve, exposed	P6@2.00	Ea	466.00	103.00	569.00
Urinal flush valve, concealed	P6@2.00	Ea	476.00	103.00	579.00
Toilet flush valve	P6@2.00	Ea	505.00	103.00	608.00
Lavatories					
Wall-hung vitreous china lavatory with single handle faucet and pop-up waste					
Lavatory, trim and valves (add rough-in)	P6@2.50	Ea	432.00	128.00	560.00
Add for wheelchair type (ADA standards)	—	Ea	199.00	—	199.00
Countertop-mounted vitreous china lavatory with single handle water and pop-up waste					
Lavatory, trim and valves (add rough-in)	P6@2.00	Ea	322.00	103.00	425.00
Countertop-mounted enameled steel lavatory with single handle water faucet and pop-up waste					
Lavatory, trim and valves (add rough-in)	P6@2.00	Ea	272.00	103.00	375.00
Bathtubs and Showers					
Recessed enameled steel tub with shower					
Tub, trim and valves (add rough-in)	P6@2.50	Ea	451.00	128.00	579.00
Recessed enameled cast iron tub with shower					
Tub, trim and valves (add rough-in)	P6@4.50	Ea	882.00	231.00	1,113.00
Acrylic one-piece tub and shower enclosure					
Enclosure, trim and valves (add rough-in)	P6@4.75	Ea	829.00	244.00	1,073.00
Acrylic three-piece tub and shower enclosure (renovation)					
Enclosure, trim and valves (add rough-in)	P6@5.75	Ea	1,110.00	295.00	1,405.00
Fiberglass one-piece tub and shower enclosure					
Enclosure, trim and valves (add rough-in)	P6@4.75	Ea	611.00	244.00	855.00
Fiberglass three-piece tub and shower enclosure					
Enclosure, trim and valves (add rough-in)	P6@5.75	Ea	924.00	295.00	1,219.00
Acrylic one-piece shower stall					
Shower stall, trim and valves (add rough-in)	P6@3.50	Ea	788.00	180.00	968.00
Add for larger stall	—	Ea	138.00	—	138.00
Acrylic three-piece shower stall (renovation)					
Shower stall, trim and valves (add rough-in)	P6@4.25	Ea	1,030.00	218.00	1,248.00
Add for larger stall	—	Ea	162.00	—	162.00
Fiberglass one-piece shower stall					
Shower stall, trim and valves (add rough-in)	P6@3.50	Ea	531.00	180.00	711.00
Add for larger stall	—	Ea	108.00	—	108.00
Add for corner entry	—	Ea	88.30	—	88.30
Fiberglass three-piece shower stall (renovation)					
Shower stall, trim and valves (add rough-in)	P6@4.25	Ea	680.00	218.00	898.00
Add for larger stall	—	Ea	151.00	—	151.00
Add for corner entry	—	Ea	121.00	—	121.00
Acrylic shower base					
Base, trim and valves (add rough-in)	P6@2.50	Ea	333.00	128.00	461.00
Add for larger base	—	Ea	13.80	—	13.80
Add for corner entry	—	Ea	13.80	—	13.80
Fiberglass shower base					
Base, trim and valves (add rough-in)	P6@2.50	Ea	375.00	128.00	503.00
Add for larger base	—	Ea	13.80	—	13.80
Add for corner entry	—	Ea	13.80	—	13.80

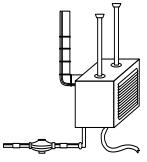
22 Plumbing

	Craft@Hrs	Unit	Material	Labor	Total
Tub and shower doors					
Three panel sliding tub doors	P6@.500	Ea	341.00	25.70	366.70
Three panel sliding shower doors	P6@.500	Ea	298.00	25.70	323.70
Two panel sliding shower doors	P6@.500	Ea	251.00	25.70	276.70
One panel swinging shower door	P6@.500	Ea	121.00	25.70	146.70
Kitchen sinks					
Single compartment kitchen sink, 20" long, 21" wide, 8" deep, self rimming, countertop mounted, stainless steel with single handle faucet and deck spray					
Sink, trim and valves (add rough-in)	P6@2.00	Ea	268.00	103.00	371.00
Double compartment kitchen sink, 32" long, 21" wide, 8" deep, self rimming, countertop mounted, stainless steel with single handle faucet and deck spray					
Sink, trim and valves (add rough-in)	P6@2.15	Ea	320.00	110.00	430.00
Drinking fountain and water cooler					
Wall hung drinking fountains, 10" wide, 10" high, non-electric, white vitreous china					
Wall hung fountain, and trim (add rough-in)	P6@2.00	Ea	439.00	103.00	542.00
Recessed drinking fountains, 14" wide, 26" high, non-electric, white vitreous china					
Recessed fountain, and trim (add rough-in)	P6@2.50	Ea	779.00	128.00	907.00
Semi-recessed water cooler, vitreous china, refrigerated (no electrical work included)					
Semi-recessed cooler, and trim (add rough-in)	P6@2.50	Ea	137.00	128.00	265.00
Add for fully recessed	P6@.750	Ea	101.00	38.50	139.50
Free-standing water cooler, refrigerated (no electrical work included)					
Wall hung water cooler, and trim (add rough-in)	P6@2.50	Ea	891.00	128.00	1,019.00
Wash fountains					
54" circular wash fountain, precast stone (terrazzo), with foot operated water spray control					
Wash fountain, trim and valves (add rough-in)	P6@3.65	Ea	2,910.00	187.00	3,097.00
Add for stainless steel in lieu of precast stone	—	Ea	673.00	—	673.00
54" semi-circular wash fountain, precast stone (terrazzo), with foot operated water spray control					
Wash fountain, trim and valves (add rough-in)	P6@3.65	Ea	2,630.00	187.00	2,817.00
Add for stainless steel in lieu of precast stone	—	Ea	473.00	—	473.00
36" circular wash fountain, precast stone (terrazzo), with foot operated water spray control					
Wash fountain, trim and valves (add rough-in)	P6@3.50	Ea	2,340.00	180.00	2,520.00
Add for stainless steel in lieu of precast stone	—	Ea	404.00	—	404.00
36" semi-circular wash fountain, precast stone, (terrazzo), with foot operated water spray control					
Wash fountain, trim and valves (add rough-in)	P6@3.50	Ea	2,140.00	180.00	2,320.00
Add for stainless steel in lieu of precast stone	—	Ea	267.00	—	267.00
Service sinks					
Wall hung enameled cast iron slop sink, with wall-mounted faucet, hose and P-trap standard					
Slop sink, trim and valves (add rough-in)	P6@3.30	Ea	827.00	169.00	996.00
Floor mounted mop sink, precast molded stone (terrazzo), with wall mounted faucet and hose					
Mop sink, 24" x 24", 6" curbs (add rough-in)	P6@2.60	Ea	460.00	134.00	594.00
Mop sink, 32" x 32", 6" curbs (add rough-in)	P6@2.60	Ea	495.00	134.00	629.00
Mop sink, 36" x 36", 6" curbs (add rough-in)	P6@2.60	Ea	540.00	134.00	674.00
Add for 12" curbs, 6" drop front & stainless steel caps	—	Ea	262.00	—	262.00
Drench shower and emergency eye wash stations					
Drench shower, plastic pipe and head, wall mounted	P6@2.00	Ea	186.00	103.00	289.00
Drench shower galvanized pipe, free standing	P6@2.50	Ea	403.00	128.00	531.00
Drench shower, emergency eyewash combination	P6@2.75	Ea	1,090.00	141.00	1,231.00
Emergency eyewash station	P6@2.00	Ea	436.00	103.00	539.00
Walk-thru station, 18 heads	P6@12.5	Ea	2,810.00	642.00	3,452.00

22 Plumbing

	Craft@Hrs	Unit	Material	Labor	Total
Surgeons' scrub sink					
Wall-hung wash sink, white enameled cast iron, 48" long, 18" deep, trough-type with 2 twin-handled faucets and two soap dishes					
Wash sink, trim and valves (add rough-in)	P6@2.50	Ea	1,170.00	128.00	1,298.00
Add for foot or knee pedal operation	P6@.500	Ea	138.00	25.70	163.70
Add for electronic infrared hands free operation	P6@.500	Ea	170.00	25.70	195.70
Add for stainless steel in lieu of enameled cast iron	—	Ea	205.00	—	205.00
Floor sinks EMCO Supply					
12" square sink, cast iron top and body (add rough-in)	P6@1.00	Ea	208.00	51.40	259.40
Add for an acid-resistant finish to the sink	—	Ea	34.80	—	34.80
Sauna Room Commercial dry type, with insulated prefabricated 6' wide by 12' long by 8' high enclosure, with premounted cedar inner walls and ceiling and three-tier benches, roof vent, electric stone floor-mounted heater module with thermostat regulator, grouted stone floor, sanitary floor drain with cleanout, adjoining three-stall fiberglass shower stall with fixtures and drain.					
Commercial sauna enclosure module	—	Ea	7,060.00	—	7,060.00
Prep & sealing of floor	B9@8.00	Ea	434.00	260.00	694.00
Pouring of floor	B9@8.00	Ea	—	260.00	260.00
Tiling of floor	B1@8.00	Ea	868.00	266.00	1,134.00
Ceiling fabrication	B1@8.00	Ea	—	266.00	266.00
Running of vents	SW@8.00	Ea	217.00	331.00	548.00
Running of drain	P6@4.00	Ea	109.00	205.00	314.00
Electrical for heat and lighting	CE@4.00	Ea	163.00	237.00	400.00
Mounting of benches	B1@4.00	Ea	—	133.00	133.00
Installation of sealed portal	B1@4.00	Ea	271.00	133.00	404.00
Running of CW/HW piping and valves	P6@8.00	Ea	353.00	411.00	764.00
3-stall shower module installation and piping	P6@16.0	Ea	814.00	822.00	1,636.00
Subtotal	—	Ea	3,229.00	3,324.00	6,553.00
Grand Total (with Sauna Module)	—	Ea	10,289.00	3,324.00	13,613.00

23 HVAC

Gas-fired heating equipment No gas pipe or electric runs included					
Unit heaters, gas fired, ceiling suspended, with flue and gas valve, propeller fan with aluminized heat exchanger, Modine PAE series					
					
50 MBtu input	M5@4.75	Ea	953.00	241.00	1,194.00
75 MBtu input	M5@4.75	Ea	1,040.00	241.00	1,281.00
125 MBtu input	M5@5.25	Ea	1,310.00	267.00	1,577.00
175 MBtu input	M5@5.50	Ea	1,460.00	280.00	1,740.00
225 MBtu input	MI@6.75	Ea	1,670.00	366.00	2,036.00
300 MBtu input	MI@7.50	Ea	2,060.00	407.00	2,467.00
400 MBtu input	MI@8.75	Ea	2,730.00	475.00	3,205.00
Add for single stage intermittent ignition pilot	—	LS	215.00	—	215.00
Add for high efficiency units (PV series)	—	%	35.0	—	—
Add for stainless steel burner	—	%	20.0	—	—
Add for air blower style fan	—	%	10.0	—	—
Add for switch and thermostat	CE@1.00	Ea	58.60	59.20	117.80
Add for gas supply pipe connection	M5@1.75	Ea	95.30	89.00	184.30
Add for typical electric run, BX	E4@2.50	Ea	118.00	125.00	243.00

23 HVAC

	Craft@Hrs	Unit	Material	Labor	Total	
Furnaces, wall type, upflow, gas fired with gas valve, flue vent and electronic ignition						
35 MBtu input	M5@4.25	Ea	998.00	216.00	1,214.00	
50 MBtu input	M5@4.25	Ea	1,130.00	216.00	1,346.00	
65 MBtu input	M5@4.25	Ea	1,140.00	216.00	1,356.00	
Add for gas supply pipe connection	M5@1.75	Ea	94.80	89.00	183.80	
Add for power vent kit (direct sidewall vent)	M5@2.50	Ea	129.00	127.00	256.00	
Add for thermostat	CE@1.00	Ea	51.90	59.20	111.10	
Furnaces, non-condensing gas fired, multi-positional, mid-efficiency with gas valve, flue vent and electronic ignition						
40 MBtu input, 80% AFUE	M5@4.25	Ea	1,140.00	216.00	1,356.00	
60 MBtu input, 80% AFUE	M5@4.25	Ea	1,260.00	216.00	1,476.00	
80 MBtu input, 80% AFUE	M5@4.25	Ea	1,360.00	216.00	1,576.00	
100 MBtu input, 80% AFUE	M5@4.50	Ea	1,330.00	229.00	1,559.00	
120 MBtu input, 80% AFUE	M5@4.50	Ea	1,420.00	229.00	1,649.00	
140 MBtu input, 80% AFUE	M5@4.50	Ea	1,580.00	229.00	1,809.00	
Add for gas supply pipe connection	M5@1.75	Ea	94.80	89.00	183.80	
Add for power vent kit (direct sidewall vent)	M5@2.50	Ea	124.00	127.00	251.00	
Add for thermostat	CE@1.00	Ea	51.90	59.20	111.10	
Furnaces, condensing gas fired, upflow, high-efficiency with gas valve, flue vent and electronic ignition						
50 MBtu input, 90% AFUE	M5@4.25	Ea	2,030.00	216.00	2,246.00	
70 MBtu input, 90% AFUE	M5@4.25	Ea	2,280.00	216.00	2,496.00	
90 MBtu input, 90% AFUE	M5@4.25	Ea	2,290.00	216.00	2,506.00	
110 MBtu input, 90% AFUE	M5@4.50	Ea	2,470.00	229.00	2,699.00	
130 MBtu input, 90% AFUE	M5@4.50	Ea	2,480.00	229.00	2,709.00	
Add for gas supply pipe connection	M5@1.75	Ea	94.80	89.00	183.80	
Add for power vent kit (direct sidewall vent)	M5@2.50	Ea	129.00	127.00	256.00	
Air curtain, gas fired, ceiling suspended, includes flue, vent, and electrical ignition						
256 MBtu, 2,840 CFM	MI@7.50	Ea	2,270.00	407.00	2,677.00	
290 MBtu, 4,740 CFM	MI@8.25	Ea	2,470.00	448.00	2,918.00	
400 MBtu, 5,660 CFM	MI@9.75	Ea	2,730.00	529.00	3,259.00	
525 MBtu, 7,580 CFM	MI@11.0	Ea	2,870.00	597.00	3,467.00	
630 MBtu, 9,480 CFM	MI@12.5	Ea	3,190.00	679.00	3,869.00	
850 MBtu, 11,400 CFM	MI@16.0	Ea	4,550.00	868.00	5,418.00	
Add for gas supply pipe connection	M5@1.75	Ea	94.80	89.00	183.80	
Electric Heat						
Air curtain electric heaters, wall mounted, includes electrical connection only						
37" long, 9.5 kW	H9@6.33	Ea	932.00	376.00	1,308.00	
49" long, 12.5 kW	H9@8.05	Ea	1,330.00	478.00	1,808.00	
61" long, 16.0 kW	H9@11.2	Ea	1,580.00	664.00	2,244.00	
Baseboard electric heaters, with remote thermostat						
185 watts per LF	CE@.175	LF	31.40	10.40	41.80	
	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Hydronic hot water generators. U.S. Green Council and ASME "H" stamp certified to a rating of 95% AFUE (annual fuel usage efficiency) with EPA Tier II Nox emissions compliant burner, Kunkel safety valve, low-water cutoff, digital panel controls and automatic level controls, Parker Boiler 210-L series or equal. For commercial and light industrial applications. Equipment cost is for a 2-ton capacity forklift.						
4 BHP, 133 MBtu/Hr	M5@4.00	Ea	3,070.00	203.00	69.20	3,342.20
8 BHP, 263 MBtu/Hr	M5@4.00	Ea	4,090.00	203.00	69.20	4,362.20
12 BHP, 404 MBtu/Hr	M5@4.00	Ea	5,290.00	203.00	69.20	5,562.20
15 BHP, 514 MBtu/Hr	M5@5.00	Ea	8,000.00	254.00	86.50	8,340.50
19 BHP, 624 MBtu/Hr	M5@5.00	Ea	10,600.00	254.00	86.50	10,940.50
22 BHP, 724 MBtu/Hr	M5@6.00	Ea	11,000.00	305.00	104.00	11,409.00
29 BHP, 962 MBtu/Hr	M5@6.00	Ea	13,200.00	305.00	104.00	13,609.00
34 BHP, 1,125 MBtu/Hr	MI@8.00	Ea	14,800.00	434.00	92.30	15,326.30

23 HVAC

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
40 BHP, 1,336 MBtu/Hr	MI@8.00	Ea	17,000.00	434.00	92.30	17,526.30
47 BHP, 1,571 MBtu/Hr	MI@9.00	Ea	17,600.00	489.00	104.00	18,193.00
53 BHP, 1,758 MBtu/Hr	MI@10.0	Ea	19,000.00	543.00	115.00	19,658.00
63 BHP, 2,100 MBtu/Hr	MI@12.0	Ea	19,700.00	651.00	139.00	20,490.00
89 BHP, 3,001 MBtu/Hr	MI@18.0	Ea	25,300.00	977.00	208.00	26,485.00
118 BHP, 4,001 MBtu/Hr	MI@22.0	Ea	26,200.00	1,190.00	254.00	27,644.00

LEED certification (Leadership in Energy and Environmental Design) requires 88% boiler efficiency, recording controls, compliance with SCAQMD (S. Calif. Air Quality Management District) 1146.2 emission standards and zone thermostats.

Add for LEED-certified boiler with USGBC rating	—	Ea	%	10.0	—	—
Add for LEED registration and inspection	—	Ea	—	—	—	2,000.00
Add for LEED central performance monitor/recorder	—	Ea	2,540.00	—	—	2,540.00
Add for LEED-certified zone recording thermostats	—	Ea	379.00	—	—	379.00

Installation of packaged hydronic boilers. Add the cost of control wiring, supply lines (electric, feedwater and gas), drain line, circulating pump, expansion tank, vent stack, permits, final inspection and rental of an appliance dolly (\$14 per day), come-a-long (\$16 per day) and a 1/2-ton chain hoist (\$21 per day) if required.

Place 4' x 4' vibration pads	CF@.750	Ea	41.00	26.20	—	67.20
Connect gas and feedwater lines	P1@2.50	Ea	—	90.60	—	90.60
Mount interior boiler drain	P1@.500	Ea	8.20	18.10	—	26.30
Bore pipe hole through basement wall	P1@.250	Ea	—	9.06	—	9.06
Bore stack vent through exterior wall	P1@.250	Ea	—	9.06	—	9.06
Mount and edge-seal stack	P1@.500	Ea	42.20	18.10	—	60.30
Mount piping for circulating pump	P1@.450	Ea	—	16.30	—	16.30
Install expansion tank						
2.1 gallon	P1@.300	Ea	34.90	10.90	—	45.80
4.5 gallon	P1@.300	Ea	58.20	10.90	—	69.10

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

Hydronic Heating

Hot water baseboard fin tube radiation, copper tube and aluminum fin element, commercial quality, 18 gauge enclosure. Add for control wiring.

9-7/8" enclosure and 1-1/4" element	P6@.280	LF	33.10	14.40	47.50
13-7/8" enclosure and 1-1/4" element, 2 rows	P6@.320	LF	57.30	16.40	73.70
9-7/8" enclosure only	P6@.130	LF	10.40	6.68	17.08
13-7/8" enclosure only	P6@.150	LF	15.90	7.70	23.60
1-1/4" element only	P6@.150	LF	23.50	7.70	31.20
1" element only	P6@.150	LF	11.70	7.70	19.40
3/4" element only	P6@.140	LF	9.48	7.19	16.67
Add for pipe connection and control valve	P6@2.25	Ea	218.00	116.00	334.00
Add for corners, fillers and caps, average per foot	—	%	10.0	—	—
End cap, 4"	P6@.090	Ea	7.15	4.62	11.77
End cap, 2"	P6@.090	Ea	3.60	4.62	8.22
Valve access door	P6@.250	Ea	17.90	12.80	30.70
Inside corner	P6@.120	Ea	7.11	6.16	13.27
Outside corner	P6@.120	Ea	10.10	6.16	16.26
Filler sleeve	P6@.090	Ea	4.53	4.62	9.15

Hot water baseboard fin tube radiation, steel element, commercial quality, 16 gauge, sloping top cover. Make additional allowances for control wiring.

9-7/8" enclosure and 1-1/4" steel element	P6@.330	LF	38.80	16.90	55.70
1-1/4" steel element only	P6@.160	LF	27.00	8.22	35.22
Add for pipe connection and control valve	P6@2.25	Ea	220.00	116.00	336.00

23 HVAC

	Craft@Hrs	Unit	Material	Labor	Total
Add for corners, fillers and caps, average per foot	—	%	10.0	—	—
End cap, 4"	P6@.090	Ea	13.80	4.62	18.42
End cap, 2"	P6@.090	Ea	6.65	4.62	11.27
Valve access door	P6@.250	Ea	18.30	12.80	31.10
Inside corner	P6@.120	Ea	12.40	6.16	18.56
Outside corner	P6@.120	Ea	16.40	6.16	22.56
Filler sleeve	P6@.090	Ea	8.87	4.62	13.49
Unit heaters, hot water, horizontal, fan driven					
12.5 MBtu, 200 CFM	M5@2.00	Ea	476.00	102.00	578.00
17 MBtu, 300 CFM	M5@2.00	Ea	526.00	102.00	628.00
25 MBtu, 500 CFM	M5@2.50	Ea	602.00	127.00	729.00
30 MBtu, 700 CFM	M5@3.00	Ea	633.00	152.00	785.00
50 MBtu, 1,000 CFM	M5@3.50	Ea	735.00	178.00	913.00
60 MBtu, 1,300 CFM	M5@4.00	Ea	874.00	203.00	1,077.00
Unit heaters, hot water, vertical, fan driven					
12.5 MBtu, 200 CFM	M5@2.00	Ea	536.00	102.00	638.00
17 MBtu, 300 CFM	M5@2.00	Ea	544.00	102.00	646.00
25 MBtu, 500 CFM	M5@2.50	Ea	707.00	127.00	834.00
30 MBtu, 700 CFM	M5@3.00	Ea	736.00	152.00	888.00
50 MBtu, 1,000 CFM	M5@3.50	Ea	890.00	178.00	1,068.00
60 MBtu, 1,300 CFM	M5@4.00	Ea	976.00	203.00	1,179.00
Steam Heating					
Steam baseboard radiation, per linear foot, wall mounted					
1/2" tube and cover	P6@.456	LF	12.30	23.40	35.70
3/4" tube and cover	P6@.493	LF	13.10	25.30	38.40
3/4" tube and cover, high capacity	P6@.493	LF	15.30	25.30	40.60
1/2" tube alone	P6@.350	LF	6.60	18.00	24.60
3/4" tube alone	P6@.377	LF	7.53	19.40	26.93
Unit heater, steam, horizontal, fan driven					
18 MBtu, 300 CFM	M5@2.00	Ea	444.00	102.00	546.00
45 MBtu, 500 CFM	M5@2.50	Ea	736.00	127.00	863.00
60 MBtu, 700 CFM	M5@3.00	Ea	831.00	152.00	983.00
85 MBtu, 1,000 CFM	M5@3.50	Ea	876.00	178.00	1,054.00
Unit heater, steam, vertical, fan driven					
12.5 MBtu, 200 CFM	M5@2.00	Ea	403.00	102.00	505.00
17 MBtu, 300 CFM	M5@2.00	Ea	411.00	102.00	513.00
40 MBtu, 500 CFM	M5@2.50	Ea	797.00	127.00	924.00
60 MBtu, 700 CFM	M5@3.00	Ea	924.00	152.00	1,076.00
70 MBtu, 1,000 CFM	M5@3.50	Ea	1,180.00	178.00	1,358.00
Hydronic Heating Specialties					
Air eliminator-purger, screwed connections					
3/4", cast iron, steam & water, 150 PSI	PF@.250	Ea	564.00	15.30	579.30
3/4", cast iron, 150 PSI water	PF@.250	Ea	181.00	15.30	196.30
1", cast iron, 150 PSI water	PF@.250	Ea	205.00	15.30	220.30
3/8", brass, 125 PSI steam	PF@.250	Ea	147.00	15.30	162.30
1/2", cast iron, 250 PSI steam	PF@.250	Ea	306.00	15.30	321.30
3/4", cast iron, 250 PSI steam	PF@.250	Ea	384.00	15.30	399.30
Airtrol fitting, 3/4"	PF@.300	Ea	65.20	18.40	83.60
Air eliminator vents, 1/4"	P1@.150	Ea	21.90	5.44	27.34
Atmospheric vacuum breakers, screwed					
1/2" vacuum breaker	PF@.210	Ea	31.70	12.90	44.60
3/4" vacuum breaker	PF@.250	Ea	33.60	15.30	48.90

23 HVAC

	Craft@Hrs	Unit	Material	Labor	Total
1" vacuum breaker	PF@.300	Ea	53.40	18.40	71.80
1-1/4" vacuum breaker	PF@.400	Ea	89.20	24.50	113.70
1-1/2" vacuum breaker	PF@.450	Ea	105.00	27.50	132.50
2" vacuum breaker	PF@.500	Ea	156.00	30.60	186.60
Circuit balancing valves, for hot water applications, certified low-lead compliance.					
1/2" circuit balancing valve	PF@.210	Ea	57.90	12.90	70.80
3/4" circuit balancing valve	PF@.250	Ea	58.00	15.30	73.30
1" circuit balancing valve	PF@.300	Ea	87.00	18.40	105.40
1-1/2" circuit balancing valve	PF@.450	Ea	164.00	27.50	191.50
Flow check valves, brass, threaded, horizontal type					
3/4" check valve	PF@.250	Ea	33.00	15.30	48.30
1" check valve	PF@.300	Ea	47.40	18.40	65.80
1-1/2" valve	PF@.350	Ea	104.00	21.40	125.40
2" valve	PF@.400	Ea	129.00	24.50	153.50
Pressure-reducing valves, bronze body, for water, gas and steam applications, lead free, threaded.					
1/2", 25-75 PSI	PF@.210	Ea	137.00	12.90	149.90
1/2", 10-35 PSI	PF@.210	Ea	157.00	12.90	169.90
3/4", 25-75 PSI	PF@.250	Ea	161.00	15.30	176.30
3/4", 10-35 PSI	PF@.250	Ea	182.00	15.30	197.30
1", 25-75 PSI	PF@.300	Ea	256.00	18.40	274.40
1", 10-35 PSI	PF@.300	Ea	278.00	18.40	296.40
1-1/4", 25-75 PSI	PF@.350	Ea	512.00	21.40	533.40
1-1/4", 10-35 PSI	PF@.350	Ea	558.00	21.40	579.40
1-1/2", 25-75 PSI	PF@.250	Ea	550.00	15.30	565.30
1-1/2", 10-35 PSI	PF@.250	Ea	629.00	15.30	644.30
2", 25-75 PSI	PF@.250	Ea	821.00	15.30	836.30
2", 10-35 PSI	PF@.250	Ea	867.00	15.30	882.30
Pressure regulators, feed water 25-75 PSI, cast iron, screwed connections					
3/4" regulator	PF@.250	Ea	97.70	15.30	113.00
1" regulator	PF@.300	Ea	150.00	18.40	168.40
1-1/4" regulator	PF@.400	Ea	204.00	24.50	228.50
1-1/2" regulator	PF@.450	Ea	294.00	27.50	321.50
2" regulator	PF@.600	Ea	472.00	36.70	508.70
2-1/2" regulator	PF@.700	Ea	708.00	42.80	750.80
Combination pressure relief and reducing valves					
1/2", brass body	PF@.210	Ea	122.00	12.90	134.90
3/4", cast iron body	PF@.250	Ea	189.00	15.30	204.30
Wye pattern bronze strainers, for water, gas and steam applications, complies with American Society of Mechanical Engineers Standard B16, Manufacturers Standardization Society, Instrumentation Society of America standards.					
Wye pattern strainers, screwed connections, 250 PSI, cast iron body					
3/4" strainer	PF@.260	Ea	13.90	15.90	29.80
1" strainer	PF@.330	Ea	17.60	20.20	37.80
1-1/4" strainer	PF@.440	Ea	25.40	26.90	52.30
1-1/2" strainer	PF@.495	Ea	29.40	30.30	59.70
2" strainer	PF@.550	Ea	46.30	33.70	80.00
Wye pattern strainers, screwed connections, 250 PSI, cast bronze body					
1/2" strainer	PF@.210	Ea	31.20	12.90	44.10
3/4" strainer	PF@.250	Ea	42.20	15.30	57.50
1" strainer	PF@.300	Ea	53.80	18.40	72.20
1-1/4" strainer	PF@.400	Ea	76.10	24.50	100.60
1-1/2" strainer	PF@.450	Ea	98.60	27.50	126.10
2" strainer	PF@.500	Ea	170.00	30.60	200.60

32 Exterior Improvements

	Craft@Hrs	Unit	Material	Labor	Total
1/2" x 12"	P1@.030	Ea	.38	1.09	1.47
1/2" threaded ell	P1@.030	Ea	1.11	1.09	2.20
1/2" and 3/4" x 6" cut off	P1@.030	Ea	.71	1.09	1.80
1/2" and 3/4" x 6" flexible cut-off	P1@.030	Ea	.71	1.09	1.80
3/4" x close	P1@.030	Ea	.21	1.09	1.30
3/4" x 2"	P1@.030	Ea	.21	1.09	1.30
3/4" x 6" cut off	P1@.030	Ea	.71	1.09	1.80
3/4" x 6" flexible cut-off	P1@.030	Ea	.71	1.09	1.80
3/4" threaded ell	P1@.030	Ea	.66	1.09	1.75
Quick coupling valves, add swing joint costs below					
3/4" regular	CL@.089	Ea	33.40	3.60	37.00
3/4" 2-piece	CL@.089	Ea	39.20	3.60	42.80
1" regular	CL@.094	Ea	47.40	3.80	51.20
1" 2-piece	CL@.094	Ea	56.80	3.80	60.60
1-1/4" regular	CL@.108	Ea	59.60	4.37	63.97
1-1/2" regular	CL@.124	Ea	71.80	5.02	76.82
Add for locking vinyl cover	—	Ea	14.50	—	14.50
Double swing sprinkler riser. Two close nipples, two PVC ells, one cut-off riser.					
1/2" pipe	P1@.150	Ea	2.73	5.44	8.17
3/4" pipe	P1@.150	Ea	2.43	5.44	7.87
Triple swing sprinkler riser. Three close nipples, three PVC ells, one cut-off riser.					
1/2" pipe	P1@.150	Ea	3.97	5.44	9.41
3/4" pipe	P1@.150	Ea	3.30	5.44	8.74
Hose bibb					
1/2" with 12" galvanized riser	CL@.041	Ea	11.40	1.66	13.06
3/4" with 12" galvanized riser	CL@.041	Ea	13.10	1.66	14.76
1/2" x 8" frost-proof with vacuum breaker	CL@.041	Ea	25.10	1.66	26.76
3/4" x 8" frost-proof with vacuum breaker	CL@.041	Ea	29.10	1.66	30.76

Planting Bed Preparation

Spreading topsoil from piles on site, based on topsoil delivered to the site. Topsoil prices can be expected to vary widely.

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Hand work, 10 CY job, level site, 10' throw	CL@.500	CY	40.90	20.20	—	61.10
Move 25' in wheelbarrow	CL@1.00	CY	40.90	40.50	—	81.40
With 3/4 CY loader						
100 CY job, level site	T0@.080	CY	40.90	4.50	2.76	48.16
Spreading granular or powdered soil conditioners, based on fertilizer at \$.26 per pound. Spread 20 pounds per 1,000 square feet (MSF). Add cost for mixing soil and fertilizer from below.						
By hand, 2,250 SF per hour	CL@.445	MSF	8.67	18.00	—	26.67
Hand broadcast spreader, 9,000 SF per hour	CL@.111	MSF	8.67	4.49	.33	13.49
Push gravity spreader, 3,000 SF per hour	CL@.333	MSF	8.67	13.50	1.54	23.71
Push broadcast spreader, 20,000 SF per hour	CL@.050	MSF	8.67	2.02	.23	10.92
Tractor drawn broadcast spreader, 87 MSF per hour	CL@.011	MSF	8.67	.44	.42	9.53
Spreading organic soil conditioners, based on peat humus at \$.19 per pound. Spread 200 pounds per 1,000 square feet (MSF). Add mixing cost from below						
By hand, 1,000 SF per hour	CL@1.00	MSF	32.40	40.50	—	72.90

32 Exterior Improvements

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Push gravity spreader, 2,750 SF per hour	CL@.363	MSF	65.00	14.70	1.68	81.38
Manure spreader, 34,000 SF per hour	CL@.029	MSF	65.00	1.17	.13	66.30
Fertilizer and soil conditioners						
Most nitrate fertilizers, ammonium sulfate	—	Lb	.27	—	—	.27
Lawn and garden fertilizer, calcium nitrate	—	Lb	.29	—	—	.29
Hydrated lime sodium nitrate	—	Lb	.23	—	—	.23
Ground limestone	—	Ton	223.00	—	—	223.00
Ground dolomitic limestone	—	Ton	230.00	—	—	230.00
Composted manure	—	Lb	.04	—	—	.04
Peat humus	—	Lb	.04	—	—	.04
Vermiculite, perlite	—	CF	4.05	—	—	4.05
Spreading lime at 70 pounds per 1,000 SF. Based on an 8 acre job using a tractor-drawn spreader at \$25.00 per hour and 1 acre per hour. Add mixing cost from below. Note: 1 acre equals 43,560 square feet.						
Lime	T0@1.00	Acre	424.00	55.90	36.70	508.00
Lime	T0@.656	Ton	242.00	36.90	24.10	303.00
Mixing soil and fertilizer in place. Medium soil. Light soil (sand or soft loam) will decrease costs shown by 20% to 30%. Heavy soil (clay, wet or rocky soil) will increase costs shown by 20% to 40%. Add soil conditioner cost from sections preceding this section.						
Mixing by hand						
2" deep, 9 SY per hour	CL@.111	SY	—	4.49	—	4.49
4" deep, 7.5 SY per hour	CL@.133	SY	—	5.38	—	5.38
6" deep, 5.5 SY per hour	CL@.181	SY	—	7.32	—	7.32
Mixing with a 11 HP rear-tined hydraulic tiller						
2" deep, 110 SY per hour	CL@.009	SY	—	.36	.18	.54
4" deep, 90 SY per hour	CL@.011	SY	—	.44	.22	.66
6" deep, 65 SY per hour	CL@.015	SY	—	.61	.29	.90
8" deep, 45 SY per hour	CL@.022	SY	—	.89	.43	1.32
Mixing with a 3' wide tractor-driven tiller 20 HP tractor						
2" deep, 50,000 SF per hour	T0@.020	MSF	—	1.12	.63	1.75
4" deep, 40,000 SF per hour	T0@.025	MSF	—	1.41	.79	2.20
6" deep, 30,000 SF per hour	T0@.033	MSF	—	1.86	1.04	2.90
8" deep, 20,000 SF per hour	T0@.050	MSF	—	2.81	1.57	4.38
Mixing with a 6' wide tractor-driven tiller and 40 HP tractor						
2" deep, 90,000 SF per hour	T0@.011	MSF	—	.62	.38	1.00
4" deep, 70,000 SF per hour	T0@.014	MSF	—	.79	.49	1.28
6" deep, 53,000 SF per hour	T0@.019	MSF	—	1.07	.66	1.73
8" deep, 35,000 SF per hour	T0@.028	MSF	—	1.57	.98	2.55
Leveling the surface for lawn or planting bed						
By hand, 110 SY per hour	CL@.009	SY	—	.36	—	.36
With 6' drag harrow, at 60,000 SF per hour	T0@.017	MSF	—	.96	.55	1.51
With 12' drag harrow, at 115,000 SF per hour	T0@.009	MSF	—	.51	.51	1.02
Plant bed preparation						
With a 3/4 CY wheel loader, at 12.5 CY per hour	T0@.080	CY	—	4.50	3.40	7.90
By hand to 18" deep, 8.35 SY/hr	CL@.118	SY	—	4.77	—	4.77

32 Exterior Improvements

	Craft@Hrs	Unit	Material	Labor	Equipment	Total
Mixing planting soil						
By hand, .9 CY per hour	CL@1.11	CY	—	44.90	—	44.90
With 3/4 CY wheel loader, 7 CY per hour	T0@.143	CY	—	8.04	6.07	14.11
With a soil shredder, 11 CY per hour	T0@.090	CY	—	5.06	3.82	8.88
Seeding and Planting						
Seeding with a hand broadcast spreader, 10 pounds per 1,000 SF. The cost of grass seed will vary greatly depending on variety — see below.						
4,000 SF per hour, hand seeding	CL@.250	MSF	26.00	10.10	.75	36.85
Seeding with push broadcast spreader, 5 pounds per 1,000 SF						
10,000 SF per hour,						
Push spreader seeding	CL@.100	MSF	13.40	4.05	.46	17.91
Seeding with a mechanical seeder at \$28 per hour and 175 pounds per acre, 5 acre job						
Mechanical seeding	T0@13.1	Acre	465.00	737.00	506.00	1,708.00
Mechanical seeding	T0@.300	MSF	10.50	16.90	11.60	39.00
Hydroseeding subcontract (spray application of seed, binder and fertilizer slurry). Costs will vary with access restrictions and site requirements.						
1,000 to 2,000 SF job	—	MSF	—	—	—	183.00
2,001 to 4,000 SF job	—	MSF	—	—	—	152.00
4,001 to 6,000 SF job	—	MSF	—	—	—	122.00
6,001 to 10,000 SF job	—	MSF	—	—	—	112.00
10,001 to 20,000 SF job	—	MSF	—	—	—	102.00
20,001 to 50,000 SF job	—	MSF	—	—	—	91.40
50,001 to 100,000 SF job	—	MSF	—	—	—	81.20
Over 100,000 SF job	—	MSF	—	—	—	71.10
Sealing soil, application by a hydroseeding unit. Use \$750 as a minimum job charge.						
Copolymer based liquid for erosion control	C4@.020	SY	1.80	.84	.21	2.85
Grass seed						
Annual ryegrass	—	Lb	1.16	—	—	1.16
Most fescue	—	Lb	2.36	—	—	2.36
Kentucky bluegrass	—	Lb	5.65	—	—	5.65
Bermuda	—	Lb	4.15	—	—	4.15
Heat-and drought-resistant premium blend	—	Lb	6.60	—	—	6.60
Dichondra	—	Lb	16.50	—	—	16.50
Centipede	—	Lb	38.40	—	—	38.40
Sodding, placed on level ground at 25 SY per hour. Add delivery cost below. Use 50 SY as a minimum job charge.						
Northeast, Midwest, bluegrass blend	CL@.040	SY	3.71	1.62	—	5.33
Great Plains, South, bluegrass	CL@.040	SY	3.94	1.62	—	5.56
West, bluegrass, tall fescue	CL@.040	SY	3.60	1.62	—	5.22
South, Bermuda grass, Centipede grass	CL@.040	SY	2.57	1.62	—	4.19
South, Zoysia grass, St. Augustine	CL@.040	SY	7.68	1.62	—	9.30
Typical delivery cost, to 90 miles	—	SY	.64	—	—	.64
Add for staking sod on slopes	CL@.010	SY	.11	.40	—	.51
Work grass seed into soil, no seed included. Use \$1,500 as a minimum job charge.						
By hand, 220 SY per hour	CL@.005	SY	—	.20	—	.20
6' harrow and 40 HP tractor 60 MSF per hour	T0@.017	MSF	—	.96	.77	1.73
12' harrow and 60 HP tractor 100 MSF per hour	T0@.010	MSF	—	.56	.49	1.05

Index

A

Abbreviations	6
Abrasion testing	312
Abrasive	
anti-skid strip.....	281
concrete finish.....	354
stair treads	219, 430
terrazzo	431
ABS	
bungalow fitting	512
bushing	514
cap	514
cleanout adapter	514
cleanout tee	513
closet flange.....	513
coupling	511
double sanitary tee	512
double wye	512
elbow	511
female adapter	513
floor drains	514
male adapter	513
P-trap	514
return bend	514
sanitary tee	512
soil pipe adapter	514
test cap	513
test tee	513
trap adapter	514
wye	512
ABS-DWV pipe	510
cleanout plug	514
Absorption testing	312
Access	
control units	588
disabled persons	474
fitting, PVC	548
flooring	432
handicapped	474
hatches, sheet metal	265
stairs, folding	282
Access doors	
attic	265
foundation	289
louver	252, 523
plumbing	252, 523
sheet metal	265
steel	416
tub	265
wall	265
Access points, wireless....	129, 458
Access ramps	474
Accessories	
glass block	216
water heater	524
Accordion folding doors	441
Accordion folding partitions	441
Acetone	237
Acid cleaning	
concrete	354
etching	464
masonry	369
wash	369
Acid etching	435
Acid-proof brick	373
Acid-resistant countertops	471
Acoustical	
adhesive	18
block	378
ceiling panels	81
design fees	133
engineering	133
partitions	441
privacy testing	133
tile, demolition	100, 334

ACQ-compatible flashing	267, 269
ACQ-treated lumber	200
Acrovyn wall cover	442
Acrylic	
diffusers	581
latex caulk	77
tub and shower	531
waterproofing	182
Acrylic-urethane foam roof	400
Actuating devices,	
garage doors	163
ACZA treatment, lumber	205
ADA	
handicapped access	474
signage	440
Adapters	
ABS cleanout	514
ABS female	513
ABS male	513
ABS soil pipe	514
ABS trap	514
copper	502
CPVC	506
drain pipe	125
DWV trap	510
Polyethylene pipe	619
Additives	
coloring	85, 217, 348, 354
concrete	85, 348, 354
Add-on boiler modules	576
Address systems, public	590
Adhesives	17
acoustical ceiling tile	427
ceramic tile	18, 426
flooring	18, 153, 158
modified bitumen	257
permanent bond	257
roofing	255, 257
tile	286, 287
wallpaper	291
wood flooring	158
Administrative overhead	207
Admixtures	
coloring	85, 217, 354
concrete	85, 348, 354
Adobe block	215
Aerators, rental	325
Aerial	
equipment rental	322
mapping	311
photographs	311
platform rental	322
Aggregate	18, 94
base	84
exposed, concrete	613
finish	354
paving	607
roofing	255
seeded	243
testing	312
Air brooms, rental	325
Air compressor	
rental	138, 318
service station	447
Air conditioning	178
heat pump	177
residential	178
window	176
wiring	127
Air curtain heaters	534
Air curtains	415
Air eliminator vent	536
Air eliminator-purger	172

Air exhaustors	
exhaust hood	453
fans	141, 405
Air filter system, central	175
Air hammer	594
Air handler, residential	178
Air hose	
reel	447
rental	318
Air tool operator wage	307
Air tools	
earthwork	137
pneumatic	103
rental	318
Airless paint sprayer	238
Alarm	
access	432
circuit	540
systems	587, 589
systems, electrical work	127
valves	490
wiring	127, 263
Alarms	
bank	450
fire	263
security	263
smoke	263
Alcohol paint thinner	237
Aliphatic resin glue	18
All-season storm doors	114
Altars	460
Aluminum	
breaks, rental	327
cladding	398
coating	256
concrete-imbedded	480
conduit	550
cupola roof	97
curtain wall	417
downspouts	402
fence	148
flagpoles	446
flashing	266, 401
foil insulation	182
gutters	402
letters	439
louvers	80
metal work	386
ornamental	386
oxide	354
patio doors	121
pet doors	122
railing	384
roofing	399
sheet	401
siding	274, 399
stairs	280
tile	427
vents	404
Americans with Disabilities (ADA access)	474
Ammeter	569
Ammonium sulfate	621
Anchor bolts	58
foundation	158, 359
templates	338
tilt-up	359, 361
Anchors	
chimney	150
concrete	158
conduit hanger	552
embedded steel	371
foundation	58
masonry	370, 554
timber connectors	158

Andersen windows	120
Angle	
bracket	514
clips	158
flashing	267
iron	218
iron, fireplace	150
sill, steel	385
stops	520
supports, pipe	515
valves	520
Annunciator panel	589
Anodizing	385
Antenna	
cable	130
remote high gain	129
Anti-siphon vacuum breakers	172
Anti-skid strips	281
Appliance dolly, rental	327
Appliances	
cabinets	31
connections	251
dishwashers	247
garbage disposers	247
ranges	254
rough-in	251
solar water heaters	248
water heaters	248
water softeners	249
wiring	127
Appraisal fees	18
Apprentice costs included	3
Apron	
concrete driveway	613
window	53
Arbitration	
fees	19
mobile	20
Archaid	186
Archbead	186, 424
Architectural	
drawings	20, 125
form lining	339
screens	386, 404
shingles	257
signage	439
Area lighting	586
Area modification factors	12-15
how to use	4
Area walls, sheet metal	266
Arks, church	458
Armed guard	264
Armstrong	
ceiling tile	427
flooring	152, 153, 429
Arquati Roma awnings	469
Arrow board, rental	323
Art glass, ecclesiastical	468
Asbestos	
containment	336
pipe insulation removal	336
removal	336
testing	26
Asbestos worker, wage	307
As-built drawings	125
Ash	
drop	150
dumps	150
flooring	153
urns	471
Ash wood flooring	154, 157
Ashtray	471

Asphalt	
access road	608
built-up roofing	255
coatings	255
cold milling	609
curb	608
dampproofing	395
emulsion	379
felt	26, 399
milling	609
mix	82
paper	257
parking lot	608
paving	242, 607
paving, demolition	102
primer	464
recycling	330
repair	609
roll sheathing	27
roof coating	236
roofing	256
sawing	369
sheathing	181
slurry seal	609
speed bumps	608
tack coat	608
walks	613
waterproofing	395
Asphalt cutters, rental	318
Asphalt-fiberglass shingles	257
Asphaltic concrete testing	313
Assemblies	
brick wall	208, 371
ceiling	36
floor	33
floor slab	350
framing, door opening	43
framing, window openings	44, 66
interior walls	34
plumbing	528, 530
ramps, landings, for handicapped	474
roof	36
roofing	37
steel framing, door opening	65
steel framing, window opening	66
wall	34
wall, brick	208, 371
Astragal molding	
	108, 222, 411, 419
Astro dial time switch	562
Athletic	
benches	464
court, striping	465
court, surface prep	464
equipment	463
equipment, swimming pools	473
field marker	217
fields	463
gym equipment	462
ATM machine	451
Attachments, crane, rental	320
Attic	
access doors	265
fans	127
fans, belt drive	140
gable vents	141
stairs, folding	282
vents	289
Audio	
detectors	263
sensors	587
Audio-visual equipment,	
school	456
Auditorium	
acoustic design fees	133
seating	472
Auger holes	
caissons	606
post holes	615
Augers	
rental	325
toilet, rental	326
Auto hoist	448
Automatic gates	164
Awning windows	
aluminum	300
vinyl-clad wood	298
Awnings	
canopy-type	470
commercial	469
fabric	21
lean-to type	469
motorized	469
security	21
B	
Baby changing stations	445
Backbar	455
Backboard, plywood	458
Backer board	
gypsum drywall	167
tile	288
Backer rod	610
Backer strip, steel framing	69
Backfill	
concrete excavation	337
earthwork	135
tilt-up	359
trench	596, 617
Backflow	
preventers	520, 617, 625
valves	310
Backhoes	
excavation	136, 597
rental	137, 320
trenching	595
Backing	
carpentry	47
clay tile	372
finish carpentry	51
rods	409
steel framing	69
Backsplash	96
Backstops	
basketball	462
Backstops, baseball	616
Balance beams	465
Balancing valves	172, 537
Ball cleaning sewer mains	628
Ball valves	520
Ballista range hood	253
Balusters	
painting	239, 436
stair	56
Bamboo	
baseboard	156
flooring	156
stair nose	157
threshold	157
Band molding	221
Band saws, rental	326
Bank equipment	450
Bar	
doors	118
sinks	246
Barbed wire fence	143
Barracks, manufactured	478
Barricade	
highway	613
lights	22
rental	22
roadway	22
temporary enclosures	329
Barrier posts	450
Barrier tapes	316
Barrier, egress	485
Bars	
bath accessories	24
masonry	344, 370
reinforcing steel	89, 344
welding	346
Base	
asphalt	242
ceramic tile	288, 372, 426
column	385
course, paving	242
floor	153
hardwood	221
marble	379
MDF	225
post	161
resilient flooring	153
scree	186, 424
sheet, fiberglass	256, 257
slab	94
Base wages	
industrial & commercial	307
residential	10
Baseball backstops	616
Baseboard	
55	
bamboo	156
MDF	225
Baseboard heating	
electric	534
radiation	535
radiators	174
Basement	
doors	23
stairs	279
storm window	302
window	299
Basic wage cost	3
Basketweave fence	146
Bath accessories	443
ceramic	286
ceramic tile	287
compartments	440, 531
enclosures	288
fans	141
shower cabinets	531
shower doors	270
vanities	288
Bath exhaust fan	138, 139
accessories	140
ceiling, blower	138
Exhaust Air	139
Heat-A-Lamp	140
heater, ceiling	140
QuieTTest	139
switch	140
timer switch	140
ValueTest	139
vent kit	140
with heater	140
with heater, infrared	139
with light	139
Bath fixtures	529, 531
Bathroom	
accessories	23
cabinets	288
fan wiring	127
fans	138, 139, 140
sinks	246, 531
vanities	288
wallboard	167
Baths, steam	283
Bathtubs	244, 529, 531
ADA compliant	245
caulk	78
doors	270
enameled cast iron	244
enameled steel	244
fiberglass	244
recessed	244
rough-in	529
seat	25
walk-in	245
whirlpool tub	244
Battens, lumber	221
Batterboards	188
Batts, insulation	179, 396
Bay vent channel	290
Bay window	297
roof cover	302
Bead	
lath	424
lath & plaster	186
molding	222, 225
Beadex	168
Beam clamps, piping	515
Beams	
applied	54
carpentry	388
ceiling	45
clamps, conduit	552
collar	48
concrete	337, 343
formwork	337, 343
grade	93
laminated timbers	394
log	192
lumber	200
LVL	394
precast	357
ridge	192
shoring	343
steel	381
steel collar	72
Bearing capacity test	278
Bearing ratio, soil testing	315
Bed bumpers	442
Bed molding	223, 225
Beds, concealed	25
Beehive climber	465
Beehive grate	634
Bell footings	607
Bell wire	104
Bell wiring, electrical work	127
Bells	
door	104
fire alarm	589
Belt conveyors	489
Benches	
athletic	464
bus stop	477
church	458
locker room	472
park	472
stadium	472
Benderboard	186
Benefits, fringe	307
Bentonite	
granules	353
waterproofing	292
Berber carpet	76
Bevel siding	197
Beveled glass doors	107
Beverage dispenser	456
Bicycle racks	473
Bidets	246
Bi-fold doors	123, 124
hardware	124
mirrored	125
Bike post bollard	473
Bin, trash	330
Birch	
doors	106, 115, 116, 118
paneling	241
plywood	202
Bird screen	404
Birdstop	261
Bitumen adhesive, modified	257
Bituminous	
paving	242, 609
paving, removal	330
roofing	255, 399
Black steel pipe	492
Blanket insulation	182
Blasting	
excavation	593
sand	369
water	238, 262, 331, 369, 435
Bleachers	462, 472

Buy this complete title here: <https://goo.gl/2ReTws>

Blinds		
roll-up	294	
Venetian	294	
vertical	294	
Block		
adobe	215	
concrete	212, 376	
core fill	212, 376	
demolition	333	
detailed concrete	212, 376	
filler, acrylic	236	
flooring	157	
glass building	216	
masonry	212, 376	
painting	239, 436	
pier	39	
sawing	368	
walls, concrete	212	
Block filler, painting	436	
Blocking		
carpentry	387	
finish carpentry	51	
fireblocks	45	
sheathing	390	
steel floor joists	61	
Blockout forms		
cast-in-place slabs	339	
tilt-up	359	
Blockouts, concrete	340	
Blood storage refrigerators	467	
Blowers		
exhaust hood	453	
fans	141	
fireplace	151	
heating	533	
Blown-in insulation	182, 396	
Blue Board insulation	180	
Bluegrass seeding	622	
Blueprinting	25	
Board		
insulation	179	
sheathing	50, 51	
Boards		
forming	88	
lumber	193, 195, 196, 197	
sheathing	61	
treatment	205	
Board-up		
window	272	
Bobcats, rental	321	
Boilermaker, wage	307	
Boilers	576	
expansion tank	172	
foundations	364	
modules	576	
Bollards		
bicycle	473	
cast iron	614	
granite	614	
Bolt cutters, rental	326	
Bolts		
anchor	58	
carriage	231	
foundation	158	
lag	231	
machine	231	
tilt-up	359	
Bond breaker	353	
tilt-up	361	
Bonding agents		
adhesives	17, 18	
flooring	153	
roofing	255, 400	
Bonds, insurance	183	
Bookcases, painting	240	
Boomlifts, rental	322	
Boring		
caissons	606	
soil testing	278	
under walkways	617	
Bottom plates, carpentry	37	
Bottom track, steel framing	73	
Bow windows	302	
Box nails	226	
Boxes		
electrical	559	
junction	561	
outlet	127, 559	
pull	560	
switch	127	
valve	617	
Braces		
tilt-up	361	
trench, rental	321	
wall	163	
Bracing		
bulkheads	603	
carpentry	44, 388	
steel framing	67	
temporary	44, 67	
trenches	603	
trenches, rental	321	
Brads, nails	228	
Braille signage	440	
elevator	477	
Branch circuits	571	
Brass		
fabrikations	386	
railing	384	
storm	114	
Bread slicer	454	
Breaker		
bond	353	
circuit	127	
form	353	
panels	569, 570	
paving, rental	318	
vacuum	310, 616	
Breaking, demolition	104, 332	
Brewer, coffee	456	
Brick		
acid-proof	373	
artificial	242	
chemical-resistant	373	
cleaning	369	
Colonial	208	
commercial	209	
common	372	
cutting	368	
demolition	100	
face brick	372	
firebrick	211	
flooring	219	
jumbo	209	
manhole	635	
masonry	208, 372	
mini	210	
mission	211	
modular	208, 209	
mold flashing	267	
molding	108, 221	
mortar	208	
Norman	208, 209	
Padre	209	
painting	239	
paving	214, 242, 380, 610	
plate	380	
pointing	369	
sandblasting	262	
sawing	368	
standard	208, 209	
steps	380	
testing	314	
veneer	210	
walls	208, 371	
Bricklayer, wage		
industrial & commercial	307	
residential	10	
Bricklayer's helper, wage,		
residential	10	
Bridge, pedestrian	485	
Bridging		
carpentry	41	
I-Joist	159	
joist	158, 388	
steel floor joists	61	
tension	158	
Broan Manufacturing	139, 140, 254	
Broiler, food	453	
Bronze fabrications	386	
Broom finish, concrete	95, 354	
Brown coat plaster	243, 425	
Brush		
chippers, rental	325	
cutters, rental	325	
hogs, rental	325	
removal	136, 592	
Brush finish, concrete	95	
Brush painting	434	
Bucket, clamshell, rental	320	
Buckets, rental	319	
Buggies, rental	319	
Builder's adhesive	17	
Builder's hardware	419	
rough carpentry	158	
Building		
appraisal	18	
blocks, concrete filled	87	
board	291, 396	
columns	185	
demolition	103, 332	
hardware	419	
moving	336	
paper	26, 28	
permit fees	28	
posts, steel	185	
sewer	265	
stone, testing	314	
wiring	127	
Building laborer, wage		
industrial & commercial	307	
residential	10	
Building layout	593	
Buildings		
steel engineered	481	
temporary, rental	328	
Built-in ovens	254	
Built-up girders		
carpentry	40	
steel	381	
steel framing	60	
Built-up roofing	255, 399	
cement, Cold-Ap.	257	
demolition	102	
Bulb, light	190	
Bulkhead forms	338, 340	
Bulkheads, shoring	603	
Bulldozers		
excavation	136	
rental	137	
Bullet resistant glass	420	
Bulletin boards	439	
Bullnose		
paver	211	
drywall	168	
Bumper guards	442	
Bumper threshold	284	
Bumpers		
dock	363	
highway	613	
Bumps, speed	608, 615	
Bungalow fittings, ABS	512	
Burlap soil stabilization	601	
Bus duct connection	569	
Bus schedule, display panel	478	
Bus stop		
enclosures	477	
shelters	477	
Bushings		
ABS	514	
conduit	541	
Business overhead	207	
Butacite	480	
Butt hinges	418	
Button board	186	
Button switches	563	
Buttweld joints, welding	387	
Butyl roofing	400	
BX cable	558	
Bypass doors	123	
accessories	123	
beveled mirror	123	
mirrored	123	

C

Cabinets		
bath	219, 288, 444	
classroom	471	
cleaning	83	
custom	470	
end panels	31	
extinguisher	491	
finish carpentry	471	
fire hose	491	
hardware	418, 470	
hospital	471	
installation	55	
kitchen	29	
labor cost	31	
laboratory	471	
lavatory	288	
lighting fixtures	189, 220	
linen, shelving	269	
medicine	219, 288, 444	
metal	470	
painting	240	
shelving	269	
shop	470	
shower	531	
storage	471	
utility	30, 31	
vanity	288	
wardrobe	456, 470, 471	
wood	471	
Cable		
antenna	130	
armored	558	
BX	558	
Cat 5	591	
Cat 5e	591	
Cat 6	591	
coaxial	590	
communication	589	
computer network	591	
electrical	559	
Ethernet	591	
fiber optic	590	
flexible armored	558	
ice-melting	559	
metal-clad	558	
network	129, 457, 458	
phone	589	
power	558	
punch down	458	
RG Series	590	
RJ Series	590	
Romex	127, 540, 557	
signal	590	
snow-melting	474, 559	
tap	589	
testing, computer	592	
tray	555	
twinaxial	591	
twisted pair	591	
Cable testing	129, 458	
Cabs, elevator	132, 488	
Café doors	118	
Caissons	606	
Calcimine removal	437	
Calcium chloride	85, 348	
Calcium nitrate	621	
California B.A.C.T.	577	
California Code 2010	577, 579	

Buy this complete title here: <https://goo.gl/2ReTws>

California pavers	211	extruded polymer	225	coloring	85, 217, 354
Cambria countertop	96	finish carpentry	52	concrete	349
Campus network wiring	457	hardwood	221	cutting	368
Cane fiber joint	353	MDF	225	duct, envelopes	539
Canopy		molding	222	lap roof	257
commercial	469	nails	228	painting	239
door	21	window	54	parging	380
food service hoods	453	Cast iron		plaster	243
range hoods	252	column bases	385	roofing	255
steel framing	385	fittings	624	testing	313
Cant strips		flanged pipe	624	tile	260
carpentry	50	ornamental iron	149	white	82, 425, 431
roofing	181, 401	pipe	624	Cement and EPS forms	87
Canvas tarpaulins	283	sections	385	Cement mason, wage	
Cap		valve box	625	industrial & commercial	307
conduit	542	valves, AWWA	625	residential	10
door bottom	285	Cast-in-place, concrete	92	Cementitious	
sheet, roofing	256	Catch basins	633	coating	367
test	513	demolition	331	decks	367
tile	372	entrance	472	roofing system	400
Capillary fill	337	gratings	385	Central	
Capital forms	341	Catwalks, carpentry	46	air filter	175, 179
Caps		Caulk		heating and cooling	173
ABS	514	acrylic latex	77	Central vacuum systems	288
black steel	492	fireproof	78	Ceramic tile	285, 425
copper	502	guns	79	backer board	288
CPVC	505	sealants	77, 408	demolition	101, 102, 334
drain pipe	125	strip	79	facing tile	372
flashing	401	Caution lights	22	fixtures	286
masonry	212, 215	Caution tape	23	installation	287
molding	221	Cavity wall		mosaic	286
post	162	insulation	182	veneer	379
Capuccino dispenser	456	reinforcing	370	CFL light bulb	190
Carbon steel pipe	492	C-clamps, pipe	515	Chain hoists, rental	327
Carborundum rub	95, 354	Cedar		Chain link fence	141, 615
Card reader		boards	79	demolition	331
parking	448	closet lining	79	painting	435
security access	588	fence	146, 147	Chain railing	384
Carpenter, wage		lumber	196, 197	Chain saws	138
industrial & commercial	307	paneling	241	rental	326
residential	10	plywood	202	Chair rail	55, 222
Carpentry		roofing	258	MDF	225
assemblies	37	Chairs		Chains	
cabinets	29, 471	auditorium	472	column forms	353
finish	51, 52, 419	cathedral	459	concrete, rental	320
furring	52	reinforcing steel	90	conduit	553
industrial and commercial	387	school	456	ground rod	564
molding	225	Chamfer		pipe	515, 516
piecework	37	corner forms	353	PVC conduit	548
piecework rates	39, 74	strip	353	riser	515
plates	388	Changes in costs	5	top beam	515
rough	46	Changing stations	445	Clamshell excavators, rental	320
square foot costs	32	Channel		Clamshovels, rental	325
wall sheathing	392	hanger	553	Classrooms, manufactured	478
Carpet adhesive	18	resilient	168, 423	Clay	
Carpet tile	432	siding	198	backing tile	372
Carpets	431	steel	214	brick	371
access flooring	432	strap	553	pipe	633
Berber	76	vent, rafter bay	290	tile, load bearing	372
mats	219, 472	Channelizing, earthwork	601	Clean metal primer	235
subcontract	76	Charbroiler, commercial	453	Cleaning	
Carports	77	Charging, electric fence	143	brick	369
Carriage bolts	231	Check desks	450	cabinets	83
Carriers, conveyors	489	Check valves	490, 517, 519	concrete	354
Cars, elevator	132, 488	Checkroom equipment	451	doors	83
Cartridge fuses	573	Chemical fire protection	453	final	83
Casement windows		Chemical-resistant brick	373	floors	83
vinyl	297	Cherry		glass	83, 329
vinyl-clad wood	298, 299	paneling	241	glass block	379
Cases		parquet	157	masonry	369, 370
cabinets	29, 471	Chestnut flooring	154, 155	new construction	83, 329
laboratory	471	Child protection seat	445	paint preparation	238
painting	240	Chilled water pipe	492	painting	434
Cash box, service station	448	Chimes, door	104	pavement joints	610
Cash dispenser	451	wiring	127	plumbing fixtures	83
Cashier booth, bulletproof	483	Cellar doors, steel	109	sewer main	628
Casing		Cellulose insulation	182	shower stalls	83
aluminum siding	274	Cement	82	stone	369
beads	186	adhesive	17	storm sewer	629
door	53	cold process	257	terra cotta	369
				vacuum systems	288
				walls	83
				windows	83

Cleaning station	455	Columns	159	depression forms	339	sidewalk	94, 613
Cleanout		base ties	159	driveways	84	slab demolition	334
adapter, ABS	514	bases	84	edge forms	338	slab forms	338
doors, fireplace	150	capitals, formwork	342	embossed finish	96	slab sawing	368
drainage piping	523	caps	159	equipment foundations	364	slabs	94, 350, 352, 357, 367
plug, ABS-DWV	514	carpentry	39	equipment rental	319	slip-formed	351
tees, ABS	513	carpentry, steel	57	etching	355	snap ties	86
Cleanup, overhead	308	clamps, rental	320	excavation	336	specialty finishes	95
Clear cedar siding	197	concrete	338	expansion joints	85, 353	spread footings	375
Clearing		fireproofing	407	exposed aggregate	95	stain	234
brush	592	footings	94	fiber mesh reinforcing	85	stairways	352
excavation	135	lally	39	fill	363	stamped finish	96
Clerical help cost	308	lally, steel	57	fill, columns	381	steps	95, 349, 352
Clevis hangers	515	marble	379	finishes	95	steps-on-grade	95
Climber, tower	467	painting	239	finishing	96	structural	349, 351
Clips		porch	84	fireproofing	405	support poles	358
angle	158	precast	357	flared apron	474, 613	surface prep	435
framing	158	reinforcing	347	flatwork	350, 609	surfacing	367
plywood	161	structural steel	381	floor finishes	354, 367	suspended slabs	351
Clock		tilt-up	363	floor slab	350	testing	313
receptacles	561	tube	352	footings	94	ties	86
wiring	127	wood	84	footings, demolition	100	tile	260
Closers, door	105, 418	Come-a-longs, rental	327	form stakes	86	tile roofing	260
Closet doors	119	Commercial brick	209	form stripping	88	tilt-up	360
bi-fold	123, 124	Commercial wage rates	307	form tie	353	topping	95
bypass	123	Common brick	372	forms	86, 87, 88, 93, 337	underpinning	603
mirrored bypass	123	Communications	587	forms, cast-in-place	338	unit masonry	212
Closet flange, ABS	513	Communications cable	589	forms, paving	609	vapor barrier	428
Closets		Communion rail	459	foundations	93	vibrators, rental	319
cabinets	29, 471	Compacting soil		grade beams	93	walks	94, 613
lighting, wiring	127	embankment	595	granite aggregate	85	wall form	88
lining, cedar	79	equipment rental	138, 319	grout	353, 376	wall sawing	368
poles	55	excavation	135, 595	grout mix	85	walls	86, 87, 92, 349, 355
racks	451	roadway	601	grouting	96	waterproofing	292, 353, 395
shelves	269	trenches	597	gunite	355	waterstop	91, 347
storage unit	55	Compaction testing	278	hardeners	354	wedge tie	353
water	246, 528, 530	Compactors, rental	138, 319	headwalls	636	work	336
Clothes chutes	489	Compartments, cubicles	440	high early strength	85	Concrete block	
Clothes dryers		Composite lumber	98	ICF	86	demolition	100
vent sets	289	Composition		inserts	353	glazed	377
wiring	127	roof, coating for	236	insulated forms	86, 87	natural	212
Clothes washers, wiring	127	roofing	257	insulating deck	367	painting	239, 240, 436
Clothesline units	84	Compresors		joints	85	pavers	214
Coat hooks and racks	451	foundations	364	keyway	93	retaining walls	373
Coatings		paint	238	labor placing	349	screen	214, 378
cementious	367	rental	318	landings	474	slump	215
concrete finishes	354	service station	447	lightweight	85	split-face	214, 377
deck	435	Computer		line markings	614	testing	314
industrial	434	access flooring	432	lintels	380	walls	212, 376
roofing	255	network cable	590, 591	manholes	634		
steel	385	network setup	129, 130	masonry units	212, 376		
Coaxial cable	590	wiring	129	meter boxes	220		
Code caps	289	wiring for educational network	457	mix	84		
Coffee brewer/percolator	456	Concrete	336	mixer, rental	319		
Coil		access ramps	474	nails	229		
framing nails	228	additives	85, 348, 353, 354	paint preparation	238		
roofing nails	229	aggregate	348	paint removal	233		
Cold box, insulation	397	apron	474, 613	painting	239, 435		
Cold milling, asphalt	609	architectural	85	patching	95		
Cold process cement	257	beams	337, 343	pavers	214, 623		
Cold-formed steel framing	57	block core fill	212, 376	paving	243, 609		
Collar beams		buggies, rental	319	paving, removal	330		
carpentry	48	building walls	349	piles	604		
steel framing	72	bush hammered	354	pipe	631		
Collar ties	48	caisson	606	placing	95, 349		
Collated brads	228	cast-in-place	352	plank	356		
Collated nails	228, 229	coatings	353, 354, 367	plasticized	85		
Colonial		coloring	85, 96, 217, 354, 355	plyform	201		
brick	208	column forms	338	pouring	95		
columns	84	columns, reinforcing	347	precast	220, 355		
interior doors	119	conduit envelopes	539	pull & junction box	540		
storm doors	114	core drilling	368	pump mix	85		
Color coat, tennis court	464	culvert, precast	631	pumping	348		
Coloring agents	217	curb	88, 95, 612	ready-mix	84, 349		
concrete	85, 95, 348, 355	curing	354	recycling	330		
mortar	217, 611	curing compounds	349	reinforcement	89, 344		
Column forms	340	curing papers	27	retaining walls	92, 339		
capitals	342	cutting	368	roof decks	367		
round	342	decking	367	sandblasting	262		
tilt-up	363	delivery charges	85	sawing	360, 368		
		demolition	101	saws, rental	319		
				screeeds, rental	320		
				sealant	77		
				sealer	354		
				shingles	260		

framing.....	158, 160	Craft hours defined.....	3
Sealtite	551	Craft@Hrs column.....	10
straps	564	Cranes	
Conservatories	479	concrete placing.....	349
Construction		hoists.....	488
barricades.....	22	hydraulic, truck, rental	317
camps, manufactured.....	478	jib	489
economics	305	pile driving, rental.....	320
elevators and hoists.....	317	rental	320
keying.....	169	tower, rental	317
loans.....	309	truck-mounted, rental.....	317
photographs	316	Crawl hole vents.....	289
signs.....	316	Crawler dozers, rental	321
tools, rental	318	Crawler tractors.....	136, 594, 599
Consultants' fees	133, 311	Credits and acknowledgments... 16	
Contact cement.....	18	Creosote.....	205
Containers, storage, rental.....	329	Crew codes	10
Containment, asbestos	336	Crew composition	10
Contingency	207, 308	Crew rates	7, 8, 9
Continuous spread footings	375	Cribbing and shoring	603
Contractor insurance.....	183	Critical path scheduling	309
Contractor's labor burden		Croll-Reynolds.....	577, 579
industrial & commercial.....	307	Cross arms pole.....	575
residential.....	10	Cross bridging	41, 158
Control		steel floor joists.....	61
erosion	622	Crossbuck doors.....	106
fund fee	309	Crossing signal	484
joints.....	371	Cross-linked poly pipe	507
pests (soil treatment)	278	Crown molding	
valves	521, 616	cabinets	31
Control panels		hardwood	221
alarm	589	labor	54
motor	564	MDF	225
Control switch, fan	140	pine	223
Controls		special cutting.....	223
hydronic	171	vinyl	225
irrigation	616	Crushed rock.....	18, 126
motor	564	CSI	
sprinkling.....	618	Division 01	308
Convertible range hood	253	Division 02	330
Conveying equipment.....	486	Division 03	336
Conveyors		Division 04	369
belt	489	Division 05	381
checkroom	451	Division 06	387
concrete, rental	320	Division 07	395
oven	454	Division 08	410
Cooking equipment.....	451	Division 09	421
Cooktops		Division 11	447
residential.....	254	Division 12	468
Cooktops, residential	254	Division 13	473
Coolers	455	Division 14	486
drinking water	532	Division 21	489
HVAC.....	178	Division 22	492
walk-in	455	Division 23	533
Cooling		Division 26	539
air conditioning	178	Division 27	587
heat pump.....	177, 178	Division 31	592
Coping		Division 32	607
masonry	215, 380	Division 33	624
metal	401	Cubicles	440
Co-polymer shutters	271	Culvert pipe	629, 631
Copper		Cup holder	23
flashing.....	266	Cupboards, painting	240
grounding devices	563	Cupolas	
gutter.....	403	aluminum roof.....	97
nails.....	266	cedar	97
pipe	501	copper roof	97
pipe, DWV.....	510	weather vanes.....	97
pressure fittings	502	Curb inlet protection	602
roof, cupola.....	97	Curbinging machine rental.....	323
roofing.....	402	Curbs	
tubing	503, 510	asphalt	608
wall ties	370	concrete	88, 95, 612
window roofs	302	demolition	101, 330
wire, THHN.....	556	elevated slabs	343
wire, XHHW.....	557	for handicapped	476
wood preservative.....	236	granite	612
Corbels, cabinet.....	31	inlets	635
Cord sets.....	561	Curing concrete.....	354, 360
		Curing papers	27, 28

D

Dampers, air regulating,	
fireplace	150
Damproofing	395
Danger signs	316
Danish oil stain	236
Deadbolt locks	
commercial	418, 419
residential.....	169
Debris removal	308, 329, 335
Deck	
painting	436
Decking	
redwood	98
Decks	98
cementitious.....	367
composite lumber	98
concrete	367
covers	99
diagonal pattern	98
fiber plank	367
finish room	99
flashing	267, 269
flashing, Vycor	27
footings	100
handrail	99
metal	382
metal, demolition	334
nails	227
painting	435
pine	98
posts	99
pressure treated	98
railing	99
redwood	98
roof	50, 99, 382, 383
stain	235
stairs	99
waterproofing	292
yard and patio	100
Decontamination	
lead-based paint.....	232, 433
PCBs	433
radioactivity	433
toxic chemicals	433
Decora glass block	216
Decorative glass,	
ecclesiastical.....	468
Dehumidifiers, rental	327
Deli case, food service	452
Delivery expense defined.....	3
Delivery, office trailers	328
Delphi glass block	216
Deluge valves	490
Demobilization	312
Demolition	100, 332
asbestos	336
asphalt	102
building	104, 332

ceiling	100
concrete	100
concrete block	100
curb	101, 475
doors	101
fence	331
flooring	101
guardrail	331
joists	103
manholes	331
masonry	100
plumbing fixtures	476
roof	334
roofing	102
sheathing and siding	102
stairs	103
subcontract	104
toilet partitions	476
walls	103, 333
windows	103
wood framing	103
Demountable partitions	441
Dens Glass sheathing	181
Deposit boxes	450
Depository doors, after hours	450
Desalination, water	249
Desks	
bank	450
study	457
Detailed block	212
Detection systems	589
Detectors	
audio	263
fire	263
infrared	263
security	589
smoke	263
vehicle	448
Detour signs, barricade	22
Dewatering	600
Diamond lath	186
Diaphragm meter	636
Diffusers, light	581
Digging	
concrete work	336
excavation	135
post holes	143
Digital	
networking systems	130
photography	316
Digital recorder	590
Dimension lumber	193, 199
Dimmer switches	129, 562
Dimmer switches, fluorescent	562
Direct overhead	308
Directory boards	439
Dirt, recycling	330
Disability Insurance	283
Disabled, access for	474
Disappearing stairs	282
Disconnect switches	575
Dishwashers	
commercial	456
electrical	247
plumbing	247
residential	247
return panels	31
wiring	127
Dispensers	
beverage	456
capuccino	456
cash	451
gasoline	447
paper towel	443
ticket	448
toilet paper	443
Disperser, rain gutters	404
Display case, food	452
Display panel for map, schedule	478
Disposal	
asbestos	336
fields	264
waste	330
Disposers, garbage	
commercial	456
residential	127, 247
Dispute resolution	20
Distillation, water	249
Distribution, electric	
overhead	575
panels	568, 570
switchboards	568
Ditch Witch	596
Ditching	135, 595
Ditra membrane	95
Divider strips, terrazzo	431
Dividers	
partition	441
redwood	613
Docks, loading	
bumpers	363
equipment	449
levelers	363, 449
lifts	449
seals	449
shelters	450
Documentation, photographs	316
Dolly, rental	327
Domes	
lighted ceilings	79
playground	465
skylights	276
Door	
accessories, bypass	123
aluminum	417
bells, wiring	127
bottom	285
casing	53, 108
casing, ranch	108
chimes	104
cleaning	83
closets	105
closets, hinge pin	105
coverings	272
demolition	101
finish carpentry	52
frame protectors	442
frames	109
frames, fire-rated	109
frames, metal	385, 412
frames, painting	239
frames, pocket	170
frames, steel	109
framing	43
framing, steel	65
handle sets	169
hangers	170
hangers, pocket	170
hardware	53, 124, 419
hardware kit	170
hardware, exit	170
hardware, garage	164
hardware, threshold	284
hinges	418
jambs, exterior	108
jambs, interior	118
kick plates	169
knockers	169
lever latchset	169
lever, privacy	169
locks	122
locksets	169
louvers	415
mantels	293
mirrors	220
openers	163
openings, framing	43
openings, steel framing	65
paint removal	232
painting, exterior	239
painting, interior	240
peep sights	170
protectors	442
pulls	169
push plates	169
rehang	52
removal	101, 335
repair	52
sealant	78
seals, loading dock	450
seals, weatherstrip	292
security switch	587
shim	52
shoe	285
sidelites	110
sill, oak	284
stop	170, 418
stop molding	53
thresholds	221, 284, 419
trim	221
twin door portal	483
weatherstripping	292, 419
Doorbell, wiring	104
Doors	
4-panel	106
6-panel	106
access	252, 265, 416, 523
accordion	441
air curtain	415
aluminum, patio	120, 121
automatic	477
bar	118
basement	23
beveled glass	107
bi-fold	123, 124, 125
birch	106, 118
birch, prehung	110
bypass	123
café	118
camber top	112
cellar	109
cleanout, fireplace	150
closet	119, 123
closet, installation	52
convenience store	483
crossbuck	106
depository	450
Dutch	442
entrance	107
entry	106, 107, 111, 112
entry, steel	112
exterior	105, 106, 110
exterior, fire-rated	109
exterior, steel	109, 110, 111
fiberglass	112, 113, 413
fir	107
fire	413
fire-rated	109
flexible strip	416
flush closet	123, 124
flush exterior	106
flush interior	116
folding	122
folding, installation	52
foundation access	289
frames, wood	413
French	107
French, interior	117
garage	163, 164
handicapped	477
handicapped, automatic	477
hangar	414
hanging	52
hardboard	118
hardboard exterior	105
hemlock	110
hollow metal	410
interior fire-rated	109
interior, café	118
interior, French	117, 120
interior, hollow core	116
interior, louver	117, 120
interior, panel	116, 117, 119, 120
interior, prehung	118, 119
interior, slab	115
interior, solid core	116
lauan	118
metal, reversible	109
mirrored	125
molded face	116, 117
oak	106, 119
overhead	163, 413, 481
overhead roll-up	414
partition	441
patio, sliding	120, 121
patio, swinging	120, 121, 122
pet	122
pocket	170
pocket, installation	52
prehung, exterior	110
prehung, interior	118, 119
prehung, steel	412
prehung, wood	413
radiation shielding	482
refrigerator	414
revolving	414
screen, patio	121
screen, security	113
screen, vinyl	113
screen, wood	113
screen,metal	113
security	115
security grills	414
service	414
shower	270
slab	105, 106, 107
sliding glass	415
sliding, fire	413
sliding, metal	442
solid core	105, 106, 110
steel	413
steel, building	481
steel, exterior	109, 110, 111
steel, fire-rated	109
steel, patio	121
steel, prehung	412
stile & rail	116, 117
stock room	416
storm	114, 115
strip	416
telescoping	415
units, packaged	412
vault	416
vinyl, patio	121
with sidelites	107, 111
wood	413
X-ray protective	482
Dormer	
266, 267	
flashing	267
louvers	289
studs	48
studs, steel	71, 72
Dosch clay	211
Double doors	119
Double sanitary tee, ABS	512
Double TY/cross	512
Double wye, ABS	512
Double-cylinder door handle	169
Double-hung window	301
screen	298
vinyl	296
Double-track storm window	302
Dough roller	454
Douglas fir	193
clear	193, 195
flooring	155, 193, 195
Dowel supports	338
Downspouts	
industrial & commercial	402
painting	239
residential	166
steel buildings	481
Dozer	
clearing	592
excavation	137, 599
rental	137, 321
Drafting	
architectural	125
plans	20
survey	311

Buy this complete title here: <https://goo.gl/2ReTws>

Draftshield	292	Dry packing, concrete	359	Educational equipment	456	water heaters	129
Dragline		Dry pipe sprinklers	490	networks	457	wireway	554
excavation	597	Dryers, clothes		Efflorescence, testing	314	Electrician, wage	
rental	320	circuits	541	Egg knob locksets	169	industrial & commercial	307
Dragon teeth	448	receptacles	561	Eggcrate louvers	80	residential	10
Drain		vent sets	289	Egress		Electrostatic precipitators	453
fields	264	wiring	127	barrier	485	Elevated water tanks	628
fittings	510	Dryvit finish, exterior	398	portal	485	Elevator signs, braille	477
lines, demolition	331	Drywall		window	303	Elevators	
rock	602	adhesive	17	EIFS exterior wall system	398	commercial	488
Drain pipe		demolition	102, 333	Ejectors, sewage	526	construction-type	317
ABS	510	expansion joints	410	Elastomeric		geared	487
copper	510	gypsum	167, 291, 421	flashing	371	hydraulic	132, 488
fittings	125	insulation board	396	latex sealant	78	passenger	487
fittings, corrugated	629	nails	228	membrane	292	residential	132
Hi-Q	629	painting	237, 240	painting	435, 436	sidewalk	487
plastic	125, 510	primer	233	pipe insulation	521	subcontract	132
Drain protection	602	screws	228	roof coating	256	Embankment grading	595
Drainage		specialties	422	waterproofing	292	Embeco grout	353
fabric	601	texture	168	Embedded steel	385		
pipe	125, 629	vinyl clad	422	Embossed concrete	96		
slope protection	602	wallboard	291	Emergency lighting	585		
Drainage systems		wallboard assemblies	34	Emergency shower	532		
rock and sand fill	126	Drywall installer, wage		rough-in	529		
Dropboards, countertops	288	industrial & commercial	307	Emissions reduction	577, 579		
laminated plastic	471	residential	10	Employer labor taxes	10		
stainless steel	455	Drywall taper, wage, residential	10	industrial & commercial	307		
tile	431	Duct		residential	10		
Drains		cable tray	555	EMT	542		
area	523	electrical	554	conduit circuits	544		
fiberglass	632	fiberglass	176	fittings	542		
floor	514, 523	flex	176	Enamel gloss, floor and porch	234		
foundation footing	125	painting	435	Encapsulated insulation	180		
gratings	385	sheet metal	176	Enclosures	245, 271, 440		
piping	125	underfloor	555	bus stop	477		
precast	126, 632	underground	539	cubicles	440, 441		
rain	126	Ductile iron pipe	626	panel	561		
roof	523	Ducting	252	sauna	262		
rough-in	530	Ductwork, painting	435	temporary	329		
systems	126	Dumbwaiters	132, 486	End cap	259		
trench	632	Dummy knobs	419	Endwall flashing	267		
Draperys	126, 469	Dump fees	380	Engineer, overhead	308		
Drawers	29	Dump trucks		Engineering fees	133, 311		
kitchen work table	452	debris hauling	335, 598	tilt-up construction	360		
stainless steel	452	general hauling	136	Enkebolt molding, cabinets	31		
Drawings		rental	138, 322	Entrance			
architectural	20	Dumpsters, trash	330	cap, threaded	542		
as-built	125	Duplex nails	230	hoods	269		
reproduction of	25	Duplex receptacles	128, 561	mats	219, 472		
Drench showers	529, 532	Dupont wood flooring	156	thresholds	284		
Dressing cubicles	440	Durock backer board	288	Entry doors	106, 107, 111, 112		
Drill rental	318, 323	Dur-O-Wal	218	deco fan lite	107		
Drilled caissons	606	Dursban T-C	278	fiberglass	112, 113		
Drilling		Dust control	335	oak	107		
concrete	368	DWV pipe		Envelex ceiling domes	79		
post holes	615	ABS	510, 511	Environmental noise survey	133		
rock	593	copper	510	EPA			
soil testing	278	E		standards	579		
steel	386	Earthwork	592	Tier IV pollution control rating	577		
well	293	compacting	601	EPDM	400		
Drinking fountain	532	Easings		Epoxy			
handicapped	475	stair	56, 282	bed	380		
rough-in	529	stair rail	282	painting	435, 436		
Drip cap	266, 267	Eave closure	261	Epoxy-coated rebar	344		
door	285	Eave louver vents	289	Epoxy-coated wire mesh	347		
molding, wood	223, 274	Eaves, painting	239	Epoxy-tie adhesive	17		
Drip edge	266, 267	Ecclesiastical		EPS forms	87		
Drive shoe	293	equipment	458	Equipment	447		
Driveway gates	142, 164, 616	glass	468	checkroom	451		
Driveways		Eco-Block	86	educational	456		
apron	613	Economics division	305	food service	451		
asphalt	242	Edge forms, concrete	88, 338	foundations	364		
coating	236	Edge pulls	170	loading docks	449		
concrete	84, 94, 243, 613	Edgers, rental	325	mobilization	312		
demolition	101, 330	Edging		overhead	308		
forms	88, 94	redwood	186, 613, 623	pads	350		
paint removal	233	roof	266	paint sprayer	238		
Drop		sill	285	painting	434		
ceiling	79	strip	153	parking control	448		
poles, electrical	316	D		service station	447		
Drop cloths	283						
Drop painting	437						

Equipment rental.....	318	Exhaust stack.....	579	gutter.....	402, 404	Fiber mesh concrete reinforcing.....	85
Erickson couplings.....	541	Existing conditions.....	330	gutter adapter.....	404	Fiber optic cable.....	590
Erosion control		Exit door hardware.....	419	metal.....	401	Fiberboard wallboard.....	291
fabric.....	602	touch bar.....	170	OSB.....	274	Fiberglass	
fence.....	602	Exit signs.....	584	piecework rates.....	39, 76	base sheet.....	256, 257
landscaping.....	622	Expanded polystyrene board.....	397	soffit system.....	277	bathtubs.....	244, 531
silt fence.....	149	Expansion		vinyl.....	399	ceilings.....	82
soil covers, stabilization.....	601	shields.....	371, 553	wood.....	49	doors, entry.....	112, 113
Escalators.....	488	strips.....	216	Fasteners, painting.....	435	drains.....	632
Escape window.....	303	Expansion joints.....	424	Faucets.....	246, 530	duct.....	176
Estimating, accuracy.....	5	composition.....	218	Feather wedges.....	204	insulation.....	179, 396, 397
Etch, acid.....	464	concrete.....	85, 353	Featherrock.....	602	panels.....	149
Etching concrete.....	355	covers.....	410	Feed water regulators.....	537	pipe insulation.....	522
Eternit.....	260	glass block.....	379	Fees		septic tanks.....	264
Ethylene Propylene Diene Monomer.....	400	lath.....	186	acoustical design.....	133	shower receptors.....	271
Euro pavers.....	214	masonry.....	218	appraisal.....	18	showers.....	245
European ISO standards.....	577, 579	preformed.....	410	arbitration.....	19	tub and shower combination.....	531
Evaporative coolers.....	176	sealants.....	410	building permit.....	28	whirlpool bath.....	244
Evaporator coil.....	178	Expansion tank.....	248	engineer.....	133, 311	Fiberglass-reinforced plastic	
Excavation		boiler.....	172	estimating.....	311	adhesive.....	18
air hammer.....	137	Explosion-proof lights.....	584	overhead.....	308	paneling.....	242
backfilling.....	135	Explosives, loading.....	593	recycling.....	330	Fibermesh screen.....	263
backhoes.....	137	Exposed aggregate finish.....	95, 354	scheduling.....	133, 309	FICA.....	283
blasting.....	593	Extension cords, rental.....	325	sewer connection.....	309	Field offices,	
brushing.....	137, 592	Exterior door jambs.....	108	specification.....	312	temporary, rental.....	328
bulldozer.....	137	Exterior doors.....	105	testing.....	315	Fields, playing.....	463
caissons.....	606	fir.....	106	valuation.....	18	Fill	
clearing.....	137	flush.....	106	water meter.....	310	caulking.....	79
compaction.....	135, 595	hollow metal.....	410	Felt		excavation.....	134, 337, 595
concrete.....	86	jams.....	108	asphalt.....	26, 399	rock.....	337, 602
dozer.....	599	prehung.....	109, 110	roofing.....	256, 257, 399	sand.....	337
dragline.....	597	solid core.....	413	Felton sand.....	355	slab base.....	337
drilling.....	593, 606, 607	steel.....	412	Female adapter		Fill investigation	
embankment.....	595	Exterior house paint.....	233, 234	ABS.....	513	compacted.....	315
equipment rental.....	137, 320	Exterior Improvements.....	607	copper.....	510	soil testing.....	278
erosion control.....	601, 602	Exterior wall assemblies.....	35	Fence		Filler	
fine grading.....	134	Exterior wall system (EIFS).....	398	aluminum.....	148	block.....	236
footings.....	134	Extinguishers, fire.....	432, 491	athletic fields.....	463	panels, cabinet.....	31
foundation.....	336	cabinets.....	491	barbed wire topper.....	616	wood filler.....	237
grading.....	134, 337, 594	Extruded polymer molding.....	225	basketweave.....	146	Filler strip	
hand.....	600	Eye wash shower.....	529	board.....	146, 147	cabinet.....	55
hand work.....	134, 337	F		chain link.....	141, 615	chain link fence.....	141
hauling.....	598	Fabric		demolition.....	331	Film, polyethylene.....	252
loaders.....	135, 595	draperies.....	126	electric.....	143	Filter sock.....	126, 629
loading trucks.....	137, 598	erosion control.....	602	erosion control.....	602	Filter, air, central.....	175
manual.....	600	lead mesh.....	469	face board.....	144	Filters	
pneumatic.....	137	stage curtain.....	460	gate.....	148	exhaust hood.....	453
post holes.....	143	wallcover.....	433	hillside labor.....	145	screen.....	293
ripping.....	594	Fabricated metals.....	385	ornamental.....	148	water.....	527
riprap.....	602	Facade screen.....	404	painting.....	239	Financing, project.....	309
rock.....	134	Face board.....	144	painting metal.....	435	Fine grading	
scraper-hauler.....	599	Face brick.....	209, 372	pet enclosures.....	142	embankment.....	595
shovels.....	134	Faceted glass.....	468	picket.....	147	hand.....	134
slope protection.....	602	Facing tile.....	372	picket, vinyl.....	148	landscaping.....	621
spreading.....	595	Facing, marble fireplace.....	207	plastic.....	22	pavement.....	242, 607
spreading material by hand.....	135	Factory rep, cost.....	312	plastic safety.....	23	slabs.....	337, 594
sprinkling.....	137	Fan lite doors.....	110, 113	post & rail.....	148	Finish carpentry.....	51
tamping.....	337, 595, 597	Fan units, heaters.....	533	posts.....	143	backing.....	51
tamping, by hand.....	135	Fans		privacy.....	148	blocking.....	51
topsoil, by hand.....	135	garage.....	141	rail.....	144	cabINET installation.....	55
tractors.....	137	rental.....	327	rental.....	329	carpeting.....	76
tree removal.....	592	turbine.....	405	sediment.....	602	cased openings.....	52
trenching.....	135, 595	wiring.....	127	shadowbox.....	148	closet poles.....	55
trucks.....	137	Fans, ceiling.....	141	silt.....	149	closet shelves.....	55
wheel loaders.....	596	light kit.....	141	split-rail.....	147	countertops.....	96
Exhaust		Fans, exhaust		swimming pool.....	149	door accessories.....	105, 418
fume system.....	448	attic.....	140, 141	temporary.....	22, 329	door casing.....	52
hoods, food service.....	453	bath.....	138, 139	tennis court.....	464	door trim.....	52
range hoods.....	252	bath switch.....	140	vinyl.....	148	doors.....	52
vents, dryer.....	289	bath timer.....	140	wire mesh.....	142	fireplace mantels.....	55
Exhaust fan		bath vent kit.....	140	wood.....	147	fireplace surrounds.....	55
bath.....	138, 139	bath with heat.....	139, 140	wood gate.....	146	flooring, wood.....	55
bath, with heater.....	140	bath with light.....	139	Fertilizer.....	185, 621	folding stairs.....	282
food service.....	453	commercial.....	453	Fescue seeding.....	622	furring.....	52
QuieTTTest.....	139	roof vents.....	405	Fiber		hardware.....	418
roof vent.....	405	utility.....	138, 139	cant strips.....	401	job-built stairways.....	281
switch.....	140	Forms		forms.....	342	locksets.....	53
timer switch.....	140	forms.....	351	roof coating.....	256	lumber.....	225
utility.....	138			Fiber cement		mantels.....	207
ValueTest	139			lap siding.....	273	medicine cabinets.....	219
wiring.....	127			roofing.....	260	molding.....	54, 225
with infrared heater.....	139			Fiber floor, Tarkett.....	152		

paneling	54	black steel	492	piecework rates.....	38	Flush exterior doors																																																																																																											
railings, stair	56	copper	501	plank, precast	356	lauan	106																																																																																																										
running molding	55	CPVC	505	plate, steel	383	Flush interior doors																																																																																																											
sauna rooms	262	CPVC and brass	506	polishing	237	lauan	116																																																																																																										
shutters	271	drain pipe	125	radiant heat	173	Foam insulation	180																																																																																																										
siding	275	electrical	561	safes	261, 450	Foam panel adhesive	18																																																																																																										
skylights	276	PEX	507	sheathing	34, 390	Foamglass insulation	398																																																																																																										
soffits	277	PEX-AL	509	shellacking	237	Foil-backed gypsum	422																																																																																																										
stair balusters	56	Polyethylene pipe	627	sinks, plumbing	533	Foil-faced insulation	396																																																																																																										
stairs	56, 280	PVC	504	slab	350	Folding beds	25																																																																																																										
thresholds	284	PVC water pipe	626	slab, concrete	94	Folding doors	122, 441																																																																																																										
wall paneling	54	Fixtures		slab, precast	356	locks	122																																																																																																										
wallboard	291	electrical	128, 188	staining	237	Folding fire partitions	442																																																																																																										
weatherstripping	292	lamps	586	steel, piecework	73	Folding stairs	282																																																																																																										
window sills	294	lighting	188, 586	varnishing	237	Food																																																																																																											
window trim	53	plumbing	533	waxing	237	beverage dispenser	456																																																																																																										
Finish grading	134, 185, 242	rough-in	250, 251	Floor layer, wage																																																																																																													
Finish hardware	419	Flagpoles	446	industrial & commercial	307	deep fat fryers	453																																																																																																										
Finishes	421	aluminum	446	residential	10	freezers	455																																																																																																										
decks	98	foundations	447	Flooring																																																																																																													
flooring	429	Flagstone		access	432	meat and deli cases	452																																																																																																										
gypsum wallboard	421	floors	215, 219	anti-fatigue	430	mixers	455																																																																																																										
plaster	243	pavers	611	artificial turf	463	pizza preparation units	452																																																																																																										
wallpaper	291, 433	Flameproofed draperies	469	bamboo	156	pot and pan racks	454																																																																																																										
Finishing		Flanged pipe, cast iron	624	brick	219	sandwich preparation units	452																																																																																																										
concrete	94, 95, 354	Flanges		carpet	76, 431	service equipment	451																																																																																																										
flooring	155	ABS closet	513	carpet tile	432	stations	451																																																																																																										
nails	229	black steel	492	ceramic tile	287	toasters	454																																																																																																										
Fink truss	49, 72, 393	Flash cone	267, 268	crossband parquet	157	warmers	452																																																																																																										
Finned tube radiation	535	Flashing		demolition	101, 334	work tables	452																																																																																																										
Fir		aluminum	266	Douglas fir	155, 193, 195	Foot grille	472																																																																																																										
doors	106, 107	aluminum siding	274	finishing	56	Football goal posts	463																																																																																																										
flooring	155, 193, 195	building paper	27	fir	155, 193, 195	Footings																																																																																																											
Fire		compound	256	flagstone	215, 219	bell	607																																																																																																										
alarm breaker	568	copper	266	floating hardwood	156	bollard	614																																																																																																										
alarm systems	432, 589	demolition	334	gymnasium	428, 462	caissons	606																																																																																																										
alarms	127	galvanized	267	installation	429	column	94																																																																																																										
boxes	150	lead	268, 402	marble	207, 379	concrete	84, 86, 93, 94, 349																																																																																																										
brick	211	masonry	371	masonry	219, 380	continuous	93																																																																																																										
dampers	150	paper	27	non-slip tile	430	demolition	100, 333																																																																																																										
detectors	589	ridge	259	parquet	428	drains	125																																																																																																										
doors	109, 413	roof jack	524	pedestal	432	estimating	93																																																																																																										
escapes	385	roofing	259, 401	Pergo	156	excavation	134																																																																																																										
extinguishers	432, 491	sealant	78	pine	154, 155	forms	86, 337																																																																																																										
hose cabinets	491	sheet metal	266	plank	154	keyway	93																																																																																																										
hydrants	625	skylight	277	quarry tile	379, 427	spread	375																																																																																																										
hydrants, demolition	332	vinyl	269	raised, installation	432	ties	86																																																																																																										
pole tower, playground	467	Flexible conduit	551	resilient	429	tilt-up	359																																																																																																										
protection	453	Flexible strip doors	416	rubber	430	Forced air furnaces	176																																																																																																										
protection equipment	489, 490	Flexure test	313	safety tiles	430	Forged steel valves	517																																																																																																										
pumper connection	491	Flexwood	432	sheet vinyl	152, 429	Forklift, rental	322																																																																																																										
sprinkler systems	149, 489	Flight, photography	311	softwood	155, 428	Form stakes	204																																																																																																										
suppression	489	Float finish		Tarkett	152	Formboard, fiber deck	367																																																																																																										
wall hydrants	491	concrete	95, 354	terrazzo	380, 431	Formica countertops	96																																																																																																										
Fire retardant treatment	206	Float glass	165, 420	tile	429, 432	Forming																																																																																																											
Fireblocks	45	Float traps	538	tile, vinyl	153	architectural	339																																																																																																										
Firebrick	211	Floating backing, steel	69	tongue and groove	156	landing	344																																																																																																										
Fireclay	211	Floating hardwood flooring	156	vinyl plank	430	soffits	344																																																																																																										
Fireplaces	150	Floodlights	585	vinyl sheet	429	Forms																																																																																																											
brick	211	rental	325	vinyl tile	152, 429	beam	343																																																																																																										
electric	151	Floor		wood	155, 428																																																																																																												
finish carpentry	55	adhesive	18, 153, 158	wood laminate	156	board	88																																																																																																										
gas-burning	151	assemblies, wood framed	33	wood strip	55, 153, 156	breaker	353																																																																																																										
mantels	207	cleaning	329	FlowGuard Gold pipe	505	clamps	353																																																																																																										
masonry	219, 372	decking, steel	382	Flue																																																																																																													
prefabricated	372	decking, subflooring	42, 61, 390	fireplace	151	surrounds	55	drains	514, 523	lining	215, 372	wood-burning	151	drains, ABS	514	Fluorescent (CFL)	190	Fireproof caulking	78	drains, plumbing	523, 530, 533	Fluorescent dimmer switches	562	Fireproofing		enamel	234	Fluorescent lighting	188, 580	columns	407	equipment rental	324	Flush bushing, ABS	514	concrete	405	flange	513	Flush doors	123, 124, 413	spray-on	407	framing	34	bi-fold closet	123, 124	testing	314	furring	50	birch exterior	106, 110	wood	206	grating	385	birch interior	115, 116, 118	Fire-rated		joists	34, 40, 41, 388	fire-rated	109	door frames	109	joists, piecework	38	hardboard exterior	105, 110	Fire-rated doors	413, 414	joists, steel	58, 73	hardboard interior	115, 116, 118	First aid, overhead	308	joists, steel blocking	61	hardwood exterior	105, 110	Fishtape, rental	327	leveling compound	153	lauan interior	116, 118	Fittings		mats	219, 471	oak entry	107	ABS bungalow	512	painting	237, 435, 436	oak interior	116, 119					steel exterior	110, 111					steel utility	110
surrounds	55	drains	514, 523	lining	215, 372																																																																																																												
wood-burning	151	drains, ABS	514	Fluorescent (CFL)	190																																																																																																												
Fireproof caulking	78	drains, plumbing	523, 530, 533	Fluorescent dimmer switches	562																																																																																																												
Fireproofing		enamel	234	Fluorescent lighting	188, 580																																																																																																												
columns	407	equipment rental	324	Flush bushing, ABS	514																																																																																																												
concrete	405	flange	513	Flush doors	123, 124, 413																																																																																																												
spray-on	407	framing	34	bi-fold closet	123, 124																																																																																																												
testing	314	furring	50	birch exterior	106, 110																																																																																																												
wood	206	grating	385	birch interior	115, 116, 118																																																																																																												
Fire-rated		joists	34, 40, 41, 388	fire-rated	109																																																																																																												
door frames	109	joists, piecework	38	hardboard exterior	105, 110																																																																																																												
Fire-rated doors	413, 414	joists, steel	58, 73	hardboard interior	115, 116, 118																																																																																																												
First aid, overhead	308	joists, steel blocking	61	hardwood exterior	105, 110																																																																																																												
Fishtape, rental	327	leveling compound	153	lauan interior	116, 118																																																																																																												
Fittings		mats	219, 471	oak entry	107																																																																																																												
ABS bungalow	512	painting	237, 435, 436	oak interior	116, 119																																																																																																												
				steel exterior	110, 111																																																																																																												
				steel utility	110																																																																																																												

Formwork	340, 342	hardware	164	Geotextiles	601, 602
column	340, 342	locks	164	Ginnies	204
concrete	337	openers, wiring	127	Girders	
steel-framed plywood	340	operators	163	carpentry	40, 388
steps	344	seals	292	concrete	349
stripping	89	steel	163, 164	forms	343
Fortifiber products	27	weather seal	164	precast	357
Foundation		wood	164	shield flashing	267
forms	88, 337	Garage, carport	77	steel	381
forms, reinforcing	88, 344	Garage, epoxy floor	436	steel framing	60
formwork	337	Garbage disposers		Girts	
insulation	181	commercial	456	fireproofing	408
investigation, soil testing	278	electric work	127	steel	381
layout	188	fixtures	247	Glass	
placing	349	residential	247	artwork	468
poisoning	278	Garden window	297	bead molding	223
soil calculations	278	Garment rack	451	cleaning	83, 329
stakes	204	Gas		float	420
trenching	595	appliance rough-in	251	mirrors	24
vents	289	chlorination	627	shelving	269
waterproofing	292	connections	251	sliding doors	415
Foundations		distribution lines	636	spandrell	417
access door	289	furnaces	175, 534	storefront	417
anchor bolts	361	griddle	454	tile	285
anchors	58	heating	533	window	165, 420
bell	607	log lighter	151	wire	416
bolts	158	meters	636	Glass block	216, 378
caissons	606	piping	251, 636	accessories	216
coating, asphalt	236	range, commercial	454	Glazed	
concrete	84, 92, 337, 349, 351	regulators	636	block	377
demolition	100, 333	stops	520	floor tile	426
drains	125	storage tanks	539	tile	372
equipment	364	valves	151	Glazier, wage	
excavation	336	wall furnace	176	industrial & commercial	307
flagpoles	447	water heaters	524	residential	10
footings	93	Gas station		Glazing	
injected	606	air and water	448	curtain walls	417
masonry walls	375	cash box	448	polycarbonate	421, 480
pile	604	equipment	447	sash	420
pole	586	hydraulic hoist	448	tempered glass	480
tilt-up construction	359	pumps	447	Globe valves	518
Fountains		Gas turbines	577	Glove bags, asbestos	336
decorative	484	additional costs	578	Glove painting	434, 435
drinking	532	generator sets	577	Glue, adhesives	17, 18
drinking, handicapped	475	heat recovery systems	578	Glu-lam beams	394
ornamental	484	Gaskets		Goal posts, football	463
rough-in	529	neoprene	401, 402, 410	Goals, soccer	463
wash	532	sill plate	181	Golden Virola paneling	241
Frame seal sets	292	Gasoline dispenser	447	Gooseneck	
Frames		Gate valves	490, 517	stair	56
door	109	Gates		stair rail	282
door, painting	239, 240	automatic	164	Grab bars	
manhole	634	barrier	448	bath	24, 443
see-thru	416	chain link fence	142	handicapped	476
window, painting	238	hardware	142, 147, 616	Gradall	
Framing		ornamental	164	rental	321
adhesive	17	parking control	448	trenching	595
anchors	160	security	115	Grade beams	
backing and nailers	47	temporary	329	concrete	86, 93
beams	45	trash enclosure	364	formwork	88
blocking	41	wood	146	Graders, rental	321
bracing	44	Fuses	573	Grading	
canopy	385	FUTA	283	embankment	595
carpentry	32	G		excavation	134
ceiling joists	46	Gabions	602	fine	135, 242
clips	158	Gable		finish	242, 595
connectors	158, 160	roof	36	hand	134
demolition	103	truss	49, 73, 393	landscaping	185, 621
door openings	43	vents	289	lumber	204
dormer studs	48	vents, power	141	scraper-hauler	599
fascia	49	Gallery mirrors	220	site	594
fireblocks	45	Galvanized		slab	337
floor trusses	41	fabricated metals	385	tilt-up	359
furring	50	flashing	267	Grandstands	462, 472
grounds	51	roofing	259	Granite	
ledgers and ribbons	47	steel	481	aggregate	348
lumber	193, 200	steel pipe	492	aggregate concrete	85
nails	228	Galvanizing	385	bollards	614
piecework	37	Game equipment	463	countertop	96
piecework rates	39, 74	Garage doors	163	curb	612
posts	45	Geodesic dome, playground	465	decomposed edging	623
roof	47	Geographic cost adjustments	12-15		
roof sheathing	49, 50				
roof trusses	48				

masonry.....	379	gravel.....	267	paneling.....	241, 433	Hem-fir.....	193
paving.....	380, 612	security.....	264	wallcoverings.....	433	fascia.....	49
terrazzo.....	380	Guardrail		Hardener, concrete.....	354	Hemlock	
tile.....	285	access flooring.....	432	Hardi Siding Products.....	273	boards.....	196
Grass		construction.....	329	Hardware		doors.....	119
artificial turf.....	463	demolition.....	331	bath accessories.....	24	lumber.....	193
Hydroseeding.....	186, 622	highway.....	613	bi-fold door.....	124	molding.....	108
landscaping.....	185, 622	Gunite.....	355	cabinets.....	470	HERS rating.....	183
paving.....	243, 613	testing.....	314	commercial and industrial.....	418	Hex bolts.....	231
seed.....	622	Gutters		door.....	419	High boy threshold, oak.....	108
sod.....	186	apron.....	267	finish.....	419	High early strength cement.....	82
Grasscloth.....	433	concrete.....	95, 613	garage door.....	164	concrete.....	85
Grates		copper.....	403	gate.....	147, 616	High-bay lighting.....	583
fireplace.....	151	demolition.....	101	partition.....	441	High-intensity lighting.....	583
tree.....	624	ice-melting cable.....	559	pocket door.....	170	High-pressure sodium lighting.....	583
Gratings, steel.....	385	inlets.....	635	rule of thumb.....	418		
Gravel		rain.....	166, 402	threshold.....	284		
aggregate.....	18	rain disperser.....	404	Hardwood			
landscaping.....	623	sealant.....	78	doors.....	105		
paving.....	243, 613	stainless steel.....	404	doors, fire-rated.....	109		
riprap.....	602	wire, duct.....	554	doors, prehung.....	110		
slab base.....	94	Gutting, demolition.....	333	flooring.....	153, 428		
Gravel guard.....	267	Gym		flooring demolition.....	101		
Gravel stop.....	267, 401	equipment.....	462	paneling.....	241		
demolition.....	334	floors.....	428, 462	plywood.....	241		
Gray Board insulation.....	180	Gymnasium base.....	410	Hat channel.....	423		
Grease		Gypboard demolition.....	333	Hat racks.....	451		
filters, exhaust hoods.....	453	Gypsum		Hat shelf.....	55		
interceptors.....	526	adhesive.....	17	Hatches, roof.....	405		
Greenboard.....	167	ceiling panels.....	82	Hauling			
Greenhouse.....	166	decking, poured.....	367	debris.....	335		
panels.....	149	demolition.....	102, 333	excavation.....	598		
Greenwaste recycling.....	330	drywall.....	167, 291, 421	truck.....	137		
Grey iron.....	385	lath.....	186	Haunch forms.....	340		
Griddles, gas.....	454	paint preparation.....	238	Hazard surveys.....	336		
Grid-WALL.....	87	plaster.....	243, 424	Hazards testing.....	26		
Grilles		roofing.....	367	HDPE drain pipe.....	629		
foot.....	472	roofing, demolition.....	334	Header hangers.....	160		
security.....	414, 483	H		Header pipe.....	600		
Grills.....	467	Hair interceptors.....	526	Headers			
kitchen, commercial.....	454	Hammering, concrete.....	354	carpentry.....	45, 388		
Grinders		Hammers		yard.....	613		
pneumatic, rental.....	318	for pile drivers, rental.....	320	Heads			
rental.....	324	rental.....	320, 324	sprinkler.....	619		
stump, rental.....	325	Hand excavation.....	134	Headwalls			
Grinding concrete.....	354	Handholes, electric.....	540	hearts, marble.....	207		
Grits, concrete.....	354	Handicapped		Heat			
Ground cover.....	623	access.....	474	detectors.....	589		
Ground fault interrupter.....	127	door opener.....	477	generation.....	533		
Ground rod clamps.....	564	parking.....	475	recovery systems.....	578		
Ground wire.....	556	symbols, parking lot.....	614	Heat exchanger foundations.....	364		
Grounding		Handle sets, door.....	169	Heat pumps.....	177		
devices.....	127, 564	Handrails		accessories.....	177		
electric.....	564	access flooring.....	432	Heat-A-Lamp heater and fan.....	140		
locknuts.....	564	iron.....	149	Heaters			
Grounds, wood.....	51	painting.....	237, 239, 436	baseboard.....	173, 174, 534		
Grout		patio deck.....	99	electric.....	174		
brick pavers.....	611	stair.....	56, 279, 282	floor units.....	173, 174		
concrete.....	376	steel.....	384	food.....	452		
door frames.....	376	wall protection.....	442	gas.....	533		
forms, tilt-up.....	362	Handy box, electric.....	560	gas wall furnace.....	175		
foundation.....	353	Hanger rod.....	516	radiant.....	173, 174		
machine base.....	353	Hangers		rental.....	324		
manhole.....	635	angle bracket.....	514	solar.....	248, 526		
masonry.....	208, 212, 376	channel.....	553	suspended units.....	175		
mix, concrete.....	85	clevis.....	515	water.....	249, 524		
pressure injected.....	355, 635	conduit.....	552	wiring.....	128		
testing.....	314	header and joist.....	160	Heating			
tile.....	286, 287	painting.....	435	ceiling panels, radiant.....	174		
Grouting		pocket door.....	170	central.....	173		
concrete.....	96	roof.....	390	coil, heat pump.....	177		
concrete block cores.....	212, 376	swivel ring.....	515	electric.....	174		
pipe joints.....	635	timber.....	160	floor units.....	173		
pressure.....	355, 635	Hanging doors.....	52	hot water assembly.....	252		
tilt-up.....	359	Hardboard.....	202	hybrid.....	173		
GRS conduit.....	541	doors.....	105, 116, 118	radiant ceiling panels.....	174		
Grubbing.....	137, 592	doors, fire-rated.....	109	radiation.....	535		
Guard		lap siding.....	273	solar.....	526		
corner.....	168, 385, 442	panel siding.....	273	Heating and venting.....	536		
dog.....	264	Help, software.....	3	Hedge trimmers, rental.....	325		
				Hot water generators, hydronic.....	534		
				Hot water heaters			
				commercial.....	524		
				connections.....	251, 525		
				gas, rough-in.....	251		
				residential.....	249		

Buy this complete title here: <https://goo.gl/2ReTws>

Hot water heating.....	252, 535	Inertia sensors.....	587	half louver.....	117
pipe.....	492	Infiltration barrier		hardboard.....	115, 116
Hot water storage tanks.....	527	house wrap.....	28	heater closet.....	119
Hot water supply.....	251	Infrared		hemlock, prehung.....	119
Hotmopping		elevator door.....	132	knotty alder.....	120
roofing.....	255	heater and fan.....	139	lauan.....	117
waterproofing.....	395	thermography.....	174	lauan, flush.....	116
Hourly wages		Inlet protection.....	602	oak.....	117, 119
industrial & commercial.....	307	Inlets, curb.....	635	oak, flush.....	116
residential.....	10	Insect screens.....	263	pine.....	117, 120
House paint.....	234	Inserts, concrete.....	353	prehung.....	119
House street numbers.....	171	Inspection		Interior paint.....	234
Housewrap.....	182	building.....	26	Interior wall assemblies.....	34
Tyvek.....	28	pipe.....	627, 628, 629, 635	Interior walls, framing.....	62
Housing, manufactured.....	478	Instructions for this book.....	3	Interlocking paving stones.....	380
How to use this book.....	3	Instrumentation, switchboard.....	568	Intermediate bracing,	
Hubs, lumber.....	204	steel framing.....	67	steel framing.....	67
Humidifiers, wiring.....	127	Insulated service doors.....	414	Intermediate metal conduit.....	545
Humus, peat.....	621	Insulated siding.....	399	Internet connection.....	129
Hurricane		Insulating		Inverter system, solar.....	278
protection.....	272	board.....	179	Investigation, soil.....	278
shutters.....	272	glass.....	165, 420	Iron	
ties.....	160	roof deck.....	367	cast.....	385
HVAC.....	533	skylights.....	276	embedded.....	353
ducting.....	480	Insulation.....	179, 396	wrought.....	386
electric heaters.....	174	analysis.....	183	Iron worker, wage.....	307
furnaces.....	175	asbestos, removal.....	336	Ironing boards.....	185
heat pump.....	177	board.....	396, 397, 398	Ironwork	
hybrid central heating.....	173	board, demolition.....	102	ornamental.....	149, 386
hydronic heating.....	171	cellular Foamglass.....	398	railings.....	252, 384
mobile.....	462	cellulose.....	182	stairs, steel.....	385
radiant floor heating.....	173	cold box.....	397	wrought iron.....	386
residential.....	178	Corbond.....	182	Irrigation systems	
stage.....	462	deck.....	367	commercial.....	616
Hydrants.....	491	demolition.....	336	residential.....	187, 188
demolition.....	332	encapsulated.....	180	sprinklers.....	619
meter.....	310	expanded polystyrene.....	396, 397	Island cabinets.....	31
Hydrated lime		FBX.....	181	Ivy.....	623
builders'.....	217	fiberglass.....	179, 396	J	
soil conditioner.....	621	foil.....	182	Jackhammer.....	594
Hydraulic		housewrap.....	182	rental.....	138, 318
door closers.....	105	masonry.....	182	Jackposts.....	185
elevators.....	132	painting.....	435	Jalousie window.....	297
excavators, rental.....	321	panel adhesive.....	18	Jamb	
jacks, rental.....	327	perlite.....	397	exterior door.....	108
truck cranes, rental.....	317	perlite board.....	398	side stripping.....	292
Hydroblasting.....	238, 262	pipe.....	521	window.....	53
Hydronic		polyisocyanurate.....	397	Jamb saws, rental.....	326
controls.....	171	polystyrene.....	180, 396, 397, 398	Jamb sets	
heating.....	171, 535	pouring.....	182	finger joint.....	118
heating, floor.....	173	R-Gard.....	181	interior.....	118
hot water generators.....	534	rockwool.....	181, 182	solid clear pine.....	118
radiators.....	535	roof.....	397	with hinges.....	118
Hydroseeding, subcontract	186, 622	SAFB.....	182	James Hardie.....	273
I		sill gasket.....	181	Jetting wellpoints.....	600
Ice and water shield.....	27	sound control.....	181	Jib cranes.....	489
Ice cream dispenser.....	452	sound control board.....	396, 421	Jig saws, rental.....	326
Ice plant.....	623	subcontract.....	182	Job site	
Ice storage unit.....	455	Super Tuff-R.....	397	costs.....	312, 316
Ice maker.....	455	testing.....	26	engineer.....	311
Ice melting cable.....	559	thermal.....	396	office.....	308
ICF.....	86	urethane sheathing.....	181	office, temporary, rental.....	328
Identifying devices		vermiculite.....	397	overhead.....	308
for handicapped.....	476	weatherstrip.....	419	phone.....	317
signs.....	439	Insurance		security service.....	264
I-Joist.....	41	bonding.....	183	Job superintendent.....	312
Illumination, street.....	484	contractor's.....	183	Joint cleaning, pavement.....	610
Illustrations, architectural.....	20	included in costs.....	3	Joint compound.....	167
Impact windows.....	299	liability.....	183	Joints	
Incandescent lighting.....	190	overhead.....	308	brick.....	208
Incline lifts.....	132	Insurance, labor cost		expansion.....	85, 353
Indicator posts.....	625	industrial & commercial.....	307	form.....	343
valves.....	521	residential.....	10	masonry.....	371
gauges.....	522	Interceptors, plumbing.....	526	mortar.....	208, 611
Indirect overhead.....	308	Interest rate.....	309	paving.....	611
Induction cooktops.....	254	Interior doors.....	120	sandblasting.....	610
Industrial wage rates.....	307	birch, flush.....	115, 116	Joists	
		café.....	118	bridges.....	158
		fir.....	117		
		fire-rated.....	109		
		flush.....	116, 118, 119		
		full louver.....	117		

Laminate shingles, architectural grade.....	257	Lawn lighting.....	190	ornamental.....	485	labor.....	191
Laminate wood flooring	156	rollers, rental	325	panelboards.....	570	rafter systems	192
Laminated plastic cabinets	471	seeding	185	poles	586	siding	199
countertops.....	96, 471	sprinkler system.....	187, 188	recessed	190	Log lap siding	199
wallcoverings	433	sprinklers.....	617, 619	stage	461	Loudspeaker systems.....	590
Laminated sandwich panels ...	399	Lay-in ceiling	81	street	585	Louvered doors	120
Laminated wood, glued beams and timbers.....	394	Layout.....	37	temporary.....	308	Louvers	
Lamp post wiring	128	engineer	308, 311	tennis court	464	access doors	252, 523
Lamps		foundation	188	vandal-resistant.....	584	door	415
CFL.....	190	stakes.....	204	yard	585	egg crate.....	80
fixture.....	586	survey.....	311, 593	Lighting fixtures	188, 586	parabolic	81
fluorescent	188, 580	typical costs.....	312	explosion-proof	584	shutters	271
LED	190	Leach fields.....	264	exterior	586	vents	289, 290, 291, 404
Landings		Lead.....		fluorescent	188, 580	windows	297
concrete	474	flashing.....	268, 402	high-intensity (HID)	582, 583	Low-bay lighting	583
forming	344	X-ray barriers.....	482	indoor	586	Low-boy, trash disposal	330
stair	281, 395	Lead mesh fabrics	469	obstruction	584	Low-pressure poly pipe	627
steel	383	Lead-based paint		outdoor	188, 586	Low-Sound bath fan	139
Landscape		removal	232, 433	Lightning		L-straps	162
irrigation wiring	188	testing	26	arrestor	143	Lube rack	447
lighting	190	Lease rate	579	protection	128	Lumber	
site curbs	95	Lecterns.....	458	rods	128	alternative building	
Landscaping	622	LED light bulb	190	Lights		materials	98, 99, 203
Lane delineator	22	Ledger flashing	267	barricade	22	boards	193, 195, 196, 197
Lane spikes	448	Ledgers	47, 389	solar powered, barricade	22	building poles	203
Lap cement	256, 257	LEED		Lightweight concrete	85, 348, 367	cedar	196, 197
Lap siding	273	air conditioning	178	Lime.....	621	common	200
fiber cement	273	certification	534	builders'	217	eastern pine	195
spruce	199	hydronic boilers	171	field marker	217	finish	193, 195
Laser level, rental	326	Legal assistance, mobile	20	landscaping	185	finish trim	225
Latchsets		Let-in bracing	44	mason's	217	framing	200
commercial	419	Let-in ribbons	47	soil conditioner	185, 621	grading	204
passage	169	Letter boxes	445, 446	Limestone		hemlock	193
privacy	169	Letter drop plate	418	masonry	379	inspection	204
Latex		Lettering, hand-painted	439	paving	612	molding	225
block filler	236	Letters, illuminated	439	soil conditioner	621	oak	196, 221
deck, waterproofing	292	Letters, signs	439	Linen chutes	489	plywood	201
house paint	234	Levee excavation	601	Liner, form	339, 342	Ponderosa pine	196
masonry paint	234	Levelers, dock	449	Link mats	219, 471	posts	203
painting, labor	237	Leveling flooring	153	Lintels		recycled composite	98, 99
primer	233, 292	Levels, rental	325	masonry	380	recycled plastic	98, 203
stain	235	Lever locksets	169	steel	385	red cedar	196, 197
stucco paint	234	Lexan	480	Liquid level gauge	172, 538	southern pine	194, 195
Lath.....	423	L-flashing	267	Liquid-tight conduit	551	specialty	203
demolition	333	Liability insurance	183	Listello	286	stakes	204
gypsum	186	Library		Loadcenters	571	timbers	199
redwood	197	ladders	457	Loaders		treated	200
stakes	204	shelving	457, 470	crawler rental	321	treatment	206
steel	186	Lift slabs	351	excavation	595	trim	225
wood	204	Lifting		grading	137, 138	wall sheathing	390
Lather, wage		cranes, rental	320	rental	322	West coast	194, 197, 200
industrial & commercial	307	panels	362	wheel, rental	321	white pine	195
residential	10	Lifts		Loading docks		Luminaire	580
Lathing.....	423	dock	449	concrete	352	LVL Beams	394
Lattice		elevators	132	equipment	449	M	
molding	223	incline	132	Loading trucks	598		
painting	239	rental	322	Loading trucks by hand	134		
Luan doors		rolling platform, rental	322	Loan fees	309		
bi-fold closet	123	wheelchair	132	Local area network (LAN)	130		
flush exterior	106	Light bulb		Lockers	445		
flush interior	118	CFL.....	190	demolition	335		
flush prehung interior	118	LED	190	Locknuts, grounding	564		
molded face interior	117	Light emitting diode	190	Locks			
prehung heater closet	119	Light standards, demolition	332	deadbolt	169		
solid core flush interior	116	Light towers, rental	325	door, folding	122		
Laundry		Light, traffic	484	garage door	164		
clothes chutes	489	Light-gauge steel framing	57	Locksets	419		
clothesline units	84	Lighting	188, 586	colonial knob	169		
sinks	247	area	586	commercial	419		
tub rough-in	251	bus stop shelters	477	deadbolt	169		
Lava rock	379	can	190	door	53		
Lavatories	531	court	464	egg knob	169		
bases	288	decorative	485	keyed entry	169		
cabinets	288	demolition	332	lever	169		
china	246	emergency	585	mortise	169		
marble	207	HID (high-intensity)	582, 583	partition	441		
rough-in	529	landscape	190	Lockwashers	231		
vanities	288	metal halide	583	Log homes	191		

Buy this complete title here: <https://goo.gl/2ReTws>

Manhours defined	4	Material costs defined	3	Millwright, wage	473
Mannington flooring	152	Material demolition	335	industrial & commercial	307
Mansards, sheet metal	401	Material handling systems	489	residential	10
Mantels		Material hoist	317	Mineral insulation	397
door and window	293	Material lifts, rental	322	Mineral spirits	237
fireplace	206, 207	Mats		Mineral surface roll roofing	256
labor	55	entry	219, 471, 472	Mini-brick	210
marble	207	erosion control	601	pavers	211
Manual excavation	600	MC cable	558	Mini-mat reinforcing	347
Manufactured housing	478	MDF molding	225	Mining camp barracks	478
Manure	621	MDO plywood	202	Miradrain	601
Map display panel	478	Meat and deli case	452	Mirafab fabrics	602
Maple paneling	241	Meat saw	452	Miraflex	180
Mapping, aerial	311	Mechanical drawing, architectural	125	Mirrored doors	
Marble		bi-fold	125	bypass	123
bases	379	Mediation		Mirrors	
columns	379	fees	19	arches	220
flooring	207, 379	mobile	20	bath accessories	24
masonry	379	Medical refrigerators	467	beveled edge	166
setting	207	Medicare payroll taxes	283	door	220
sills	294	Medicine cabinets	219, 444	framed	220
specialties	379	Medium-density plywood	202	frosted	220
thresholds	379	Medley sheet vinyl flooring	429	medicine cabinet	219
tile	285	Membrane		unframed	421
vanity tops	97	detaching	95	vanity	220
Marble setter, wage		Ditra	95	Mission	
industrial & commercial	307	poly film	252	brick	211
residential	10	roofing	399	paver	211
Margin, profit	208	slab	94, 337	tile roofing	260
Marine		underlayment	95	Miter saws, rental	326
adhesive	78	waterproofing	292	Mitt, painting	434
plywood	202	Mercury vapor lights	582	Mix design, concrete	313
varnish	235	Mesh		Mixers, cement, rental	319
Markerboard, chalkboard	438	reinforcing	91, 347	Mixers, food	455
Markers, road	614	steel	91	Mixing valves, thermostatic	538
Marking		Mesh, steel	344	Mobile home port	77
parking lot spaces	614	Metal		Mobile mediation	20
pavement	614	aluminum screens	386	Mobilization	312
Markup	308	buildings	481	piles, earthwork	604
contingency	207, 208	door frames	412	Mobilization cost defined	3
general contractor	5	doors	109	Modification factors, cost, by area	12–15
project	308	fabricated	385	Modified bitumen	
subcontractor	5	facing panels	399	adhesive	257
Masking, surface prep	437	halide lights	583	SBS roll roofing	256
Masonry	219, 369	lath	423	Modular	
acid-proof	373	ornamental	386	brick	208, 209
anchors	554	painting	434, 435	cabinets	29
block	212, 376	painting, preparation	238	carpet tile	432
brick	371	pans, ceiling	82	Modulating valves	521
cleaning	370	primer	233, 235	Moisture protection	252, 395
demolition	100	roofing	259	Moisture test, soil	278
fireplace	150	screen doors	113	Moisture-resistant drywall	167
furring	50	siding, painting	435	Molding (molding)	
glass block	216	studs, demolition	333	brick	108
insulation	182	trim, painting	434, 435	cabinet	31
joints	369	Metal detector	485	carpentry	55
materials	219, 371	Metal roofing	259	cornice or crown	54
mortar	218	Metal-clad cable	558	door	53
nails	229	Metal-framed shaft walls	425	fireplace	55
paint	234	Meter boxes	220, 571	hardwood	221
painting	238, 436	Meters		MDF	225
parging	380	electric	569	redwood	221
pointing	369	fees	310	softwood	222
preparation	238	gas	636	stop	108
recycling	330	steam	522	stucco	108
reinforcing	370	water	310	T-astragal	108
sandblasting	262	Met-tile	259	vinyl	225
sawing	368	Microphone		window apron	53
steam cleaning	369	public address	590	Monitor panels	589
surface prep	435	stage	461	Monitors, alarms	263
testing	314	Microwave	454	Mono rock, concrete	355
waterproofer	234	cabinets	31	Monolithic topping, concrete	355
waterproofing	292	Midget louvers	290	Monorail for electric hoists	488
Mass excavation	599	Milano awnings	469	Monuments, survey	311
Mastercure	95	Milgard	297	Mop resilient floor	329
Mastic		Milling, cold, asphalt	609	Mop sink	455, 532
adhesives	18	Millwork, treatment	205	rough-in	529
painting	435				
roofing	256				
tile	286, 287				
Mat reinforcing steel	347				

Buy this complete title here: <https://goo.gl/2ReTws>

Neoprene	rule of thumb, subcontract	238
gaskets.....	sandblasting	262
joints.....	shingles	436
weatherstrip	siding	435, 436
Nets	speed bumps	608
safety, scaffolding.....	spheres	435
tennis.....	spray	238
Netting, stucco	sprayers, rental	326
186	stain.....	236
Network cable	steel.....	434
129, 457, 458	stucco	234, 435
Networking systems.....	subcontract	238
130	surface prep.....	434, 435
Networks	swimming pool.....	436
educational.....	tanks.....	435
residential.....	urethane finish	235
129	varathane finish.....	235
Newel posts	waterproofer	236
56, 252, 280, 282	waterproofing	235, 236
NFPA fire sprinklers	wood deck	436
149	wood finish	235
NM-B cable (Romex)	wood preservative	236
557	Paling, rail.....	99
Noise analysis	Pan forms	343
133	Pan racks	454
Non-metallic	Panel	
cable (Romex).....	adhesive	18
557	box, wiring	128
conduit, flexible.....	circuit breaker	573
551	enclosures	561
Non-slip strips	molding	223
219, 430	Panel roofing	
Norman	steel	259
brick	Panelboards, electrical	570
208, 209	Paneling	
pavers	beaded	241
211	birch	241
Nosing	cedar	79, 241
flooring	FRP	242
153	Golden Virola	241
sill	hardboard	241, 433
284	hickory	241
steel	maple	241
385	oak	241
Nozzle, sandblast, rental	pine	241
323	red oak	241
Numbers	sound reduction	462
house	vinyl-clad	242
171	wainscot	241
sign	wall	54
171	Z-brick	242
NuTone.....	Panelized	
139, 140, 253	roof system	390
Nuts, hex head	shingle siding	275
231	Panels	
Nylon carpet	breaker	570
76, 431	fiberglass	149
O	greenhouse	149
Oak	radiant heating, ceiling	174
boards.....	roofing, solar	279
196	sun	149
doors.....	wood walls	392
106, 116, 119	Panic button	263
doors, entry	Panic door hardware	170, 419
107	Pans, water heater safety	524
flooring	Pantry cabinets	30
153, 428	Paper	
molding	building	26, 28
221	dispensers	443
paneling	roofing	257
241	wallcover	432
parquet.....	Paperhanging	291, 432
157	Parapet	
plywood	coping	267
202	forms	351
threshold.....	reglet	363
108, 221, 284	Paretting, masonry	380
Obstruction lighting	Parging	
584	masonry	380
Octagonal window	Park	
301	benches	472
Office	grills	467
clerk.....	surveillance	484
308		
expenses.....		
308		
job site, temporary, rental		
328		
manager cost.....		
308, 312		
overhead		
207		
partitions		
441		
Offices		
manufactured.....		
478		
temporary.....		
308		
temporary, rental		
328		
Oil		
concrete form.....		
353		
storage tanks		
538		
Oil and latex stain		
235		
Oil-based		
enamel		
235		
exterior primer-sealer		
233		
stain.....		
235, 236		
Openers, garage door		
163		
Openings		
410		
Operating engineer, wage,		
residential.....		
10		
Orchard clearing		
592		
Organic impurities		
312		
Ornamental		
fence		
148		
gates		
164		
metals		
252, 386		
railings.....		
384		
rock		
602		
screens		
386		

Buy this complete title here: <https://goo.gl/2ReTws>

Paving	384	Playground equipment.....	465
asphalt.....	242, 607, 608	Playing fields, synthetic.....	463
brick.....	242, 610	Plenum cable.....	591
cold milling.....	609	Plexiglas.....	166, 420, 478
concrete.....	84, 94, 243, 609	Plinth block, MDF.....	225
demolition.....	102, 330	Plugmould.....	555
equipment rental.....	323	Plugs	
grass.....	243, 613	cleanout.....	514
joint treatment.....	611	electrical.....	562
machine, rental.....	323	test.....	513
parking lots.....	608	Plumber, wage	
repair.....	609	industrial & commercial.....	307
stones.....	380	residential.....	10
subcontract.....	242	Plumber's flash cone.....	402
systems.....	243, 613	Plumber's tape.....	516
Turfstone paving.....	613	Plumbing.....	492
Payment bonds.....	184	access doors.....	252, 523
Payroll taxes.....	283	area drains.....	523
PCBs, removal.....	433	assemblies.....	250, 528, 530
Pea gravel		cleanouts.....	523
concrete.....	85	copper DWV.....	510
landscaping.....	623	equipment rental.....	326
riprap.....	602	fixtures.....	533
Peat humus.....	621	fixtures, cleaning.....	83
Pedestal flooring.....	432	floor drains.....	523
Pedestrian bridge.....	485	for handicapped.....	476
Peep sights.....	170	piping.....	530
Pegboard, hardboard.....	433	roof drains.....	523
Penetrating stain.....	235	rough-in.....	250, 530
Penny nail sizes, defined.....	226	systems.....	250
Pension costs defined.....	3	water softener.....	249
Penta treated post.....	203	Plyclips.....	161
Percolation testing.....	264	Plyform.....	201, 337
Percolator, coffee.....	456	Plywood.....	201, 389
Perforated pipe.....	630	backboard.....	458
Performance bonds.....	184	birch.....	202
Pergo wood flooring.....	156	'board-up'.....	272
installation kit, rental.....	324	cap molding.....	225
Pergola.....	99	cedar.....	202
Perimeter door seal.....	450	ceiling.....	54
Perimeter wall insulation.....	181	deck, waterproofing.....	292
Perling, steel.....	72	demolition.....	102
Pelite soil conditioner.....	621	exterior.....	201
Permanent bond adhesive.....	257	fence.....	329
Permits		forms.....	88, 337
building.....	28	framing clips.....	161
well drilling.....	293	lumber.....	201
Pest control		marine-grade.....	202
soil treatment.....	278	MDO.....	202
wood treatment.....	206	oak.....	202
Pet		paneling.....	241, 390
doors.....	122	piecework rates.....	39, 74
enclosures.....	142	root panels.....	390
Petroleum storage tanks.....	538	sheathing.....	42, 51, 61, 389
Pews.....	458	sheathing, piecework.....	39, 76
PEX pipe.....	507	siding.....	201, 274
PEX-AL pipe.....	509	softwood.....	201
Pharmacy refrigerators.....	467	structural.....	201
Phone support.....	5	subfloor.....	42, 61
Phones		subfloor, piecework.....	39, 76
temporary.....	308	treatment.....	206
wiring.....	589	underlayment.....	430
Photo mapping, aerial.....	311	window covering.....	272
Photo micrographs.....	315	Pneumatic	
Photoelectric		demolition.....	103
sensors.....	587	door closers.....	105
switches.....	563	excavation.....	137
Photographs		hammer.....	594
aerial.....	311	pipe systems.....	489
construction.....	316	tampers.....	597
retouching.....	316	tools, rental.....	318
Photovoltaic systems.....	580	tube systems.....	489
Picket fence.....	147, 148	Pocket doors.....	170
painting.....	239	hardware.....	53, 170
Pickling stain.....	236	kit, converging.....	170
Picture frame molding.....	223	Pointing, masonry.....	369
Picture rail.....	55	Poisoning soil.....	278
Picture window.....	297	Poles	
Pictures, job site.....	316	building.....	203
		closets.....	55
		concrete.....	358
		cross arms.....	575
		demolition.....	332
		flag	446

foundations	586	mats	263
job sign	316	regulators, gas	636
lighting	586	regulators, hydronic heating	537
lumber	203	treatment, lumber	206
playground	465, 467	vacuum breaker	310
power distribution	575	Pressure washer, rental	326
pressure-treated	203	Pressure washing	238, 434
removal	332	Pressure-reducing valves	520, 537
temporary utility power	316	Pressure-treated lumber	200
treatment	205	Prestressed concrete	358
Polishing		Prime coat, pavement	609
floors	237	Primer	
woodwork	240	asphalt	464
Pollution control	577, 579, 602	clean metal	235
Poly E Pipe	619	linseed	233
Polybutene tape	410	metal	235
Polycarbonate		painting	238
glazing	480	sealer, oil-based	233
sheets	165, 421	Prints, plans	25
skylights	276	Privacy latchset	169
Polyester fabric	256	Processed lime	217
Polyethylene		Profit, markup	208, 308
corrugated pipe	632	Project	
film	252	cost adjustments	12-15
gas pipe	636	financing	309
membrane, slab ...	94, 337, 350, 351	manager cost	308
pipe	125, 616	scheduling	309
tarps	283	Propane	
tilt-up	360	furnaces	175
Poly-faced insulation	180	tanks	539
Polyisobutylene	410	water heaters	248
Polyisocyanurate		Property boundaries	311
insulation	180, 397	Provista range hood	253
Polypropylene mesh reinforcing	85	P-traps, ABS	514
Polystyrene		Public address systems	462, 590
board	396	Pull box, electrical	540, 560
insulation	180, 181, 396, 398	Pull plates	169, 419
insulation board	396	Pulls, edge, pocket door	170
roof deck	398	Pulpits	458
Polyurethane		Pump mix concrete	85
floor finish	56	Pumper firehouse connection	491
paint	235	Pumping	
painting	436	concrete	348, 349
sealant	408	dewatering	600
Ponderosa pine		well	293
boards	196	Pumps	
lumber	196	electrical connections	128
mantels	207	foundation	364
Pool, swimming		gasoline	447
coating	236	rental	322
complete installation	473	sewer	264
cover	474	sump	526
deck	367	sump, wiring	128
fences	149	wiring	129
gunite	355	Punch down, network cable	458
heaters	249	Punch-down blocks	591
painting	236, 436	Purlins	
resurfacing	367	anchors	160
Popcorn, ceiling	168	carpentry	48, 388
Poplar flooring	154	fireproofing	408
Pop-up sprinklers	187	hangers	160
Porcelain tile	285	steel	381
Porch		steel framing	72
columns	84	Purse shelf	440
enamel	234	Push plates	169, 419
enclosed	166	Putty, glass	238
lifts	132	PVC	
painting	239, 436	clamp	548
posts	84	conduit	545, 546
rail	252	conduit body	548
Porous paving	243	conduit box adapter	547
Portable structures	478	conduit with wire	549
Portable toilet (Port-a-Potty)	308	end bell	547
Portland cement	82	flashing	269
Post		jacketed copper tubing	503
anchors	162	pipe	264, 504
bases	162	pipe, Schedule 40	618
caps	162	reducer bushing	547
column forms	338	sewer pipe	265, 628
indicators	625	water pipe	626
painting	436		

Q

Quality control engineer	311
Quantities defined	3
Quarry tile	
flooring	379, 427
masonry	219, 379
wall tile	379
Quarry work	594
Quarter round mold	224
Quarter round molding	221
Quartz heaters	174
Quick coupling valves	620
QuiETTest exhaust fan	139
Quietzone	181
Quonset huts	481
R	
Raceway, electric	554
Racks	
coat and hat	451
garment	451
kitchen	454
ladle	452
pots and pans	454
towel	24
Racks, security	
bicycle	473
motorcycle	473
Radial wall forms	340
Radiant heat, floor	173
Radiant heating	174, 477
Radiation protection	482
Radiators, heating	535
Radio studio	486
Radioactivity, removal	433
Radon gas, testing	26
Rafters	36, 388
bay vent channel	290
demolition	103
log	192
piecework rates	39
rough carpentry	47
spacing	290
steel framing	70
steel, piecework rates	74
timber	192
vents	290
Rail	
communion	459
fence	144, 147
guard	329
hand	149
molding, cabinets	31
painting	436
stair	282
Railing	
access flooring	432
aluminum	384
brass	384
for handicapped	474
highway	613
painting	237, 239
patio deck	99
porch, steel	252
stair	56
stair, wood	280, 395
steel	252, 384
temporary	329
tubular	384
wrought iron	384
Railroad demolition	332
Rain diverter	267
Rain gutter	
stainless	404
steel	404
Rain gutters	166
Raingear, copper	403
Raised floors	432

Buy this complete title here: <https://goo.gl/2ReTws>

Rammers	525
compacting	597
rental	319
Ramp forms, riser	344
Ramps	
access flooring	432
handicapped	474
rental	327
Ranch casing	108
Range circuit	541
Range hood	252, 253
convertible	253
custom	253
food service	453
vented	252
Range support, cabinets	31
Ranges	
electrical work	128
gas, commercial	454
residential	254
Rastra Block	87
Rates, labor	7, 8, 9
Rattan black paper	27
Reactivity testing	312
Ready-mix concrete	84
Rebar	
chairs	346
concrete	89, 344
epoxy-coated	344
footings	344
masonry	370
rings	346
slabs	344
splicing	346
stirrup	345
Receptacles, electric	128, 561
cover plate	563
outlet circuit	540
wiring	128
Receptors, shower	271
Recessed lighting	190
Recording meters	569
Recycling fees	330
Red cedar	
beams and timbers	200
boards	197
fence	147
lumber	193, 194
shakes	258
shingles	258
siding	197
Red oak	
boards	196
closet doors	124
doors	106, 117
Red oxide primer	233
Red rosin sheathing	27
Reducer strip, flooring	153
Reducer, drain pipe	125
Redwood	
benderboard	186, 623
deck stairs	99
decking	98
fascia	49
fence	146, 147
headers	613, 623
lumber	194, 197, 200
molding	221
saunas	263
siding	198
strips, chain link	141
stucco mold	108
treads	99
Reflective signs	615
Refrigeration, insulation	397
Refrigerators	
backbar	455
electrical work, subcontract	128
food service	455
medical	467
morgue	468
wiring, subcontract	128
Reglet	
copper	267
parapet	363
Regulator valves	521
Regulators, pressure, hydronic	
heating	537
Reinforcing	
bar supports	338
bars	89, 344, 363
caissons	347
chairs	346
columns	347
demolition	330
fiber mesh	85
foundation	344
gunite	355
masonry	214
masonry ties	158
mesh	91, 347
mesh mini-mat	347
pavement	243
rings	346
slabs	92, 344, 347
splicing	346
steel	89, 344
steel, epoxy-coated	344
stirrup	345
tilt-up	360
walkways	613
welding	344
Reinforcing ironworker, wage	
industrial & commercial	307
residential	10
Relief valves	520, 537
Relocatable structures,	
manufactured type	478
Remote high gain antenna	129
Removal	
asbestos	336
clearing	592
debris	335
demolition	332
lead-based paint	232, 433
paving and curb	475
PCBs	433
radioactivity	433
toxic chemicals	433
tree	137, 592
wallpaper	291
Renderings, architectural	20, 125
Rent, overhead	308
Rental	
backhoe	320
bulldozer	321
compactor	319
compressor	318
forklift	322
landscape equipment	325
miscellaneous equip.	327
plumbing equipment	326
road equipment	323
scaffolding	327
scaffolding, mobile	327
Rental, equipment	318
Report	
home inspection	26
soil test	278
Reproduction, plans	25
Residential	
rules of thumb	305
Residential wage rates	10
Resilient flooring	152
demolition	334
installation	429
Resilient hat channel, drywall	168
Resorcinal glue	18
Restaurant	
equipment	451
range	454
Restraints, water heater	525
Retaining wall forms	92, 339
Retaining walls	373
Return bends	514
Reveal strips	
formwork	340, 361
tilt-up	361
Reverse osmosis filters	527
Reversible doors	109
Revolving doors	414
R-Gard insulation	181
Ribbons (ribbands), carpentry	47
Ridge	
clay tile	260
fiber cement	260
flashing	259
sheet metal roofing	259
shingles	257, 258
steel framing	72
vents	290
Ridgeboard, steel	72
Rigid conduit	541
Rigid insulation	180
Ring steel reinforcing	346
Ripping, excavation	594, 599
Riprap	602
Risers	
concrete stair	95, 349, 358
concrete stair, forming	344
flagstone	215
masonry	215
rubber	219
sprinkler heads	187
stair	56, 281
steel stairs	281
wood stairs	280, 395
RO filters, water	527
Road	
compaction	601
equipment rental	323
grading	594
paving	608
repairing	609
rollers, rental	319
striping	614
trim and finish	601
Road closed sign	22
Road plate, steel	323
Robe hooks	24
Rock	
aggregate	18
cinder	602
drill rock fill	602
drilling	593
drills, rental	318
excavation	134
fill	602
ornamental	602
recycling	330
ripping	594, 599
Rock fill drainage systems	126
Rockwool insulation	182
Rod clamps	552
Rod hanger	552
Rod, threaded	160
Rods	
lightning	128
shower curtain	24
Roll flashing	
copper	266
galvanized	267
lead	268
paper-backed copper	267
ridge roll	259
valley	267
vinyl	269
Roll roofing	400
adhesive	257
felt	256
fiberglass	256
mineral surface	256, 258
papers	257
Roller, dough	454
Rollers, rental	319
Rolling	
ladders	457
Rolling platform lifts, rental	322
Rolling towers, rental	322
Roll-up	
doors	413
window blinds	294
Romex cable	127, 540, 557
Roof	
apron	267
bay window	302
built-up	255
cant strips	50, 181, 401
coating	236, 255, 256, 399
cold, for log home	192
deck cover	99
deck, cementitious	400
deck, concrete	367
deck, steel	382
deck, wood	390, 401
demolition	102
drains	523
edge	266, 267, 269
edging	266
EPDM	400
flashing	27, 267, 268
framing	36, 39, 47, 74
framing, panelized	390
framing, steel	70, 74
ice-melting cable	559
insulation	397
insulation board	397
jacks	524
joints	390
loading	261
membrane	255
paint removal	232
painting	239, 436
pan	267
panels	390
paper	27
patio	99
safes	402
sheathing	49, 390, 401
testing	314
tile, concrete	260
trusses	48, 72, 393
trusses, piecework rates	38, 74
underlay	27
vent kit, bath	140
vent, turbine	140
vents	290
windows	277
Roofer, wage	
industrial & commercial	307
residential	10
Roofing	
algae-resistant shingles	257
asphalt	256, 257
assemblies	37
base sheet	255, 256, 257
built-up	255, 399
cant strips	50, 181, 401
cement	255, 257
clay tile	260
concrete tile	260
copper	402
corrugated	259, 399
demolition	102
EPDM	400
felt	256, 257, 399
fiber cement slate	260
fiberglass panels	149
galvanized	259, 399
gravel	255
membrane	255
metal	259
nails, coil	229
nails, galvanized	229
nails, plastic cap	230
paper	257
photovoltaic	279

red cedar.....	258	RSC conduit.....	541	Sandbox, playground.....	465
roll	256	Rub		Sanders, rental	326
rule of thumb costs.....	254	carborundum	95, 354	Sanding, floor.....	154, 155, 237, 429
shake.....	258	concrete finish.....	95, 354	Sanding, painting	434, 437
sheet	259	Rubber		Sandstone, masonry	379
sheet metal.....	259, 401	flooring	430	Sandwich preparation unit	452
shingles.....	258	mats	219	Sanitary napkin dispenser	443
slate.....	259	studded tile	153	Sanitary piping, demolition	331
solar	279	tile.....	430	Sanitary sewer	
Spanish tile.....	260	Rubberized asphalt	609	cleaning.....	629
staples.....	230	Rubble, masonry	379	Sanitary tees, ABS	512
steel panel.....	259	Rugs, carpet.....	76, 431	Sash bar molding	224
system.....	400	Rule of thumb costs		Sash, painting	240
tar	255	carpentry.....	32	Sauna	
tile.....	260	electrical work	127	heaters, wiring	127, 262
Roof-mount power ventilator.....	141	hardware	418	modular rooms	262
Roof-to-wall flashing	267	residential construction	305	room	533
Room dividers		roofing	254	Saw, meat	452
doors, folding.....	442	steel framing	57	Saw, rental	
partitions	442	Runners	219, 471	chain saw	138
Rope climb, playground	465	mats	219	concrete	319
Rosette set	108	rubber.....	219	Sawing	
Rosin sheathing	27	Running track	463	asphalt	369
Rotary roof ventilators	290, 405	Runoff protection	602	concrete	360, 368
Roto hammer, rental	324	Rust-converting metal primer	235	masonry wall	368
Rototilling.....	186	Rustic siding		Sawn posts, redwood	203
Rough carpentry		cedar	198	Saws, rental	
adhesive.....	18	pine	199	wood	326
anchors	58	Rust-inhibiting primer	233	SBS	
backing and nailers	47	Rust-Oleum	235	roll roofing	256
beams	45	Ryegrass seeding	622	starter strip	257
blocking	41	S			
bracing	44	S4S molding	224	Scaffolding	
cant strips	50	Sack concrete	363	caster-mounted, purchase	328
ceiling joists	46	Sack finish	95	erection	327
collar beams	48	Saddle stock	267	jacks	353
collar ties	48	Saddle threshold	284	nails	230
columns	39	Safe deposit boxes	450	planks, purchase	328
columns, steel	57	Safes		rental	327
curbs	48	floor	450	safety equipment, purchase	328
demolition	103, 332	recessed wall and floor	450	swinging, purchase	328
door openings	43	Safety		Scaffolding, mobile	
dormer studs	48	child seat	445	rental	327
fascia	49	floor tiles	430	Scales, truck	450
fireblocks	45	glass	165, 420	ScapeWel window	303
floor joists	40	ground, electrical receptacle	561	Schedule 40 PVC pipe	504
floor trusses	41	nets for scaffolding	327	Schedule 80 PVC pipe	504
furring	50	overhead	308	Scheduling	
girders	40	pan, water heater	524	costs	309
grounds (stucco stop)	51	signs	440	CPM	133, 309
joists	46	switch	566, 567	fees	133, 309
ledgers and ribbons	47	switch conduit hub	567	overhead	308
plates	42, 67	Safety film, window	417	School equipment	456, 465
posts	39, 45	Sag rods, steel	381	School network	457
purlins	48	Salamanders, rental	324	Scissor lifts	449
rafters	47	Salaries, overhead	308	Scissor lifts, rental	322
ribbons	47	Sales tax	3	Scoreboards, gym	462
roof decking	50	Saltillo	286	Scoring concrete	354
roof sheathing	49	Salvage, demolition	335	Scrapers	
roof trusses	48, 49	Sampling concrete	313	excavation	599
sill plates	40, 57	Sand	94	rental	321
stucco stop (grounds)	51	base	612	Scraping metal to prepare for	
subflooring	42	base for concrete	94	painting	434
trimmers	48	bed, paving	242	Scraping, paint	238
wall sheathing	51	fill	94, 134, 337	Scratch coat, plaster	243, 425
window openings	44	drainage systems	126	Screed	
Rough hardware, plywood clips.....	161	paving	612	concrete	360
Rough-in		testing	315	concrete, rental	320
bathtub	529	Sandbags	602	lath	186
drinking fountain	529	Sandblasting		plaster or stucco	51
floor drain	530	concrete	262, 354	rental	320
lavatories	529	equipment rental	323	tilt-up	360
service sink	529	joints	610	Screen	
shower	529	masonry	262, 369	bead molding	224
sink	529	steel	262	block, masonry	214, 378
toilet	528	tilt-up	363	masonry	378
urinal	528, 529	Sandblastng equipment		ornamental	386
water closet	528	rental	323	patio door	121
Rough-sawn siding	274			projection	456
Round molding	224			sight	613
Router-groover, rental	323			solar	263
Routers, rental	326				

Buy this complete title here: <https://goo.gl/2ReTws>

Seekure paper.....	28	siding.....	275
Seesaws.....	466	slate.....	259
See-thru frames.....	416	solar.....	279
Seismic ties.....	160	starter strip.....	257
Self-leveling compound.....	153	wood.....	258
Self-storing storm doors.....	114	wood, demolition.....	334
Self-tapping screws.....	149	Shoe molding.....	221, 222
SensAire wall control switch.....	140	Shoe, door.....	285
Sensor cable, electric.....	587	Shoring.....	
Sensors		beams.....	343
photoelectric.....	587	concrete.....	603
security.....	587	equipment rental.....	328
vibration.....	587	forms.....	343
Septic		heavy duty, rental.....	328
sewer systems.....	264	trench.....	603
tanks.....	527	Shot fasteners.....	230, 388
Service doors.....	414	Shovels, earthwork.....	134
Service entrance.....	571	Shower.....	
cable.....	555	caulk.....	78
cap.....	542	compartments.....	440, 531
connection.....	128	doors.....	270, 440
switchboard.....	567	emergency.....	529, 532
temporary connection.....	316	enclosures.....	271
weatherproof.....	568	grab bars.....	245
wire.....	555	handicapped access.....	245
Service sinks.....	247, 532	plumbing.....	531
rough-in.....	529	receptors.....	271, 441, 531
Service station		rod.....	24
air and water.....	448	rough-in.....	529
cash box.....	448	seat.....	25
equipment.....	447	stalls.....	245, 271, 441, 531
hydraulic hoist.....	448	stalls, cleaning.....	83
submerged turbine.....	447	Shrinkage defined.....	3
turbine.....	447	Shrubs.....	623
Serving fixtures.....	451	Shunt trip.....	569
Serving table, sushi.....	452	Shutters.....	
Settlement testing.....	278	accordion-type.....	272
Sewage		Bahama-type.....	272
ejectors.....	264, 526	colonial-type.....	272
Leaks.....	265	co-polymer.....	271
pumps.....	264	exterior.....	272
Sewer		hurricane.....	272
connection.....	265	louvered.....	271
demolition.....	331	panel-type.....	272
pipe, PVC.....	628	plywood.....	272
pump systems, residential.....	264	roll-up.....	272
snakes, rental.....	326	Siamese connection.....	491
systems.....	264	Sidelites.....	107
Sewer lines.....	265	Sidewalks	
cleaning.....	628	asphalt.....	613
demolition.....	331	concrete.....	84, 94, 243, 609
demolition.....	331	cover.....	329
Shacks, storage, rental.....	328	demolition.....	100, 101, 330
Shades, window.....	294	moving.....	488
Shaft drilling, caisson		Siding	
foundations.....	606	aluminum.....	274, 399
Shaft walls.....	425	cedar.....	197, 198
Shake felt.....	258	corrugated.....	274, 399
Shakertown siding.....	275	demolition.....	102
Shakes, roofing.....	258	exterior trim.....	274
Shale, excavation.....	594, 599	fascia.....	274
Shaping slopes by hand.....	135	fiber cement.....	273
She bolts.....	353	galvanized steel.....	275
Shear gate.....	625	hardboard lap.....	273
Shear panels		hardboard panel.....	273
piecework rates.....	38	insulated.....	399
steel framing.....	74	lap.....	199, 273
Sheathing		log cabin.....	199
adhesive.....	18	Nailite.....	276
board.....	42, 51	nails.....	230
carpentry.....	62	OSB.....	274
carpentry piecework rates.....	76	paint preparation.....	238
clips.....	161	paint removal.....	232
cork.....	433	painting.....	239, 435, 436
demolition.....	102, 333	pine.....	197, 199
Dens Glass.....	181	plywood.....	201, 274
floor.....	34, 38	redwood.....	198
framing, steel.....	74	resin.....	276
gypsum board.....	167	sealant.....	78
insulated.....	180	shingle.....	275
insulation board.....	181, 397	soffit vents.....	290
		southern yellow pine.....	198

Buy this complete title here: <https://goo.gl/2ReTwS>

operable.....	276	plaster.....	243	Spark arrestor.....	151	paint.....	236
polycarbonate.....	276	steel.....	67	Special Construction, disabled access.....	474	tinting.....	236
roof windows.....	277	systems.....	277	Specialty lumber.....	203	wood finish.....	235
trimmers.....	48, 71	vents.....	290	Specific gravity.....	312	Stained glass.....	468
Velux.....	276	vinyl.....	277	Specifications fee.....	312	Staining.....	239, 240
Slab doors ... 105-107, 109, 115, 116		wood.....	46	Speed bumps.....		floor.....	155
Slab-on-grade, concrete ... 94, 350		Softball, backstops	616	asphalt.....	608	Stairlifts.....	132
Slabs		Softener, plumbing fixtures	249	plastic.....	615	Stairs	
base	94	Software, project scheduling	309	Speed limit signs.....	615	aluminum.....	280
capillary fill	337	Softwood		Spheres, painting	435	attic	282
cast-in-place	367	flooring	155	Spikes.....	230	baluster	56
concrete	84, 350	plywood	201	Spiral		basement	23, 279
demolition	334	Soil		stairs, steel	383	box	280
edge forms	89	amendments	620	Spiral staircases	280	curved	280
finishes	95	cement treatment	601	Spirals, reinforcing	347	disappearing	282, 283
floor	350	compaction	595, 597	Splash plate	254	factory-cut	279
form, concrete	88	covers	601	Splices, piles	606	framing, piecework rates	38
forms	338	hauling	598	Splicing bars	346	handrails	56
forms, elevated	343	loading	598	Split-face block	214, 377	hardwood	280
grading	337	moving by hand	600	Split-rail fence	147	log	192
membrane	94, 337	poisoning	278	Split-rib block	377	L-shaped	281
rebar	90	sealant	601	Split-ring connectors	162	moving	488
sand fill	337	spreading	595	Splitting rock	594	nosing, bamboo	157
tennis court	464	stabilization	601	Split-wired outlets	128	rail	282
Slag		testing	26, 278	Spotlight, fresnel	461	railing	280
crushed	126	treatments	278	Spray heads		risers	56, 281
stone	18, 126	Soil pipe adapter	514	sprinkler	619	skirboard	56
Slate		Solar		Spray painting	237	spiral	280
pavers	380	barricade light	22	deck	435	spiral, steel	383
paving	612	collector system pump	526	metals	435	steel	281
roofing	259, 260	paneling	279	steel	434	straight	280
tile	285	power	580	Sprayed		strips, anti-skid	281
Sleepers, carpentry	51	protection	469	fireproofing	407	treads	56, 281
Sleeves, concrete	353	screen	263	urethane insulation	182	wood	280
Slicer, bread	454	shingles	279	Sprayers, paint		Stakes	
Slide bolt lock	164	water heating system	526	rental	238	form	204
Slides, playground	466	water storage tank	526	surve	204		
Sliding doors		Solar Tek	289	Stalls, shower	245, 271		
aluminum	121	Solar window film	417	Stamped concrete	96		
closers	105	Solariums	479	Standard brick	208		
fire	413, 414	Solenoid sprinkler valve	188	Standpipe connection	491		
glass	415	Solid core doors		Stands, water heater	524		
glass, insulated	415	birch exterior	106, 110	Staplers, rental	325		
patio	120, 121	entry	106	Staples, roofing	230		
pet door	122	fir entry	106	Starter strip			
screen	121	hardboard exterior	105, 110	aluminum siding	274		
vinyl	121	hardboard interior	116	galvanized flashing	267		
wood	120	hardwood exterior	105	shingles	257		
Sliding windows	296, 300	lauan exterior	106	thermoplastic siding	276		
Slip-formed walls	351	oak	106	vinyl siding	275		
Slop sink rough-in	529	prehung exterior	110	Starter switches	565		
Slope protection	602	red oak exterior	106	Starters, motor	565		
Slopes, shaping, by hand	135	Sonotube forms	342, 363	State cost adjustments	12-15		
Slump block	215	Sound board	397	Steam			
Slurry seal	609	Sound control	181	baseboard radiation	536		
Small tool cost	308	Sound insulation board	181	bath generator wiring	127		
Smart Panel siding	274	Sound reduction paneling	462	bath, generators	283		
Smoke detectors	127, 263	Sound system, stage	461	cleaning	434		
Smoke vents	405	Soundness testing	312	cleaning, masonry	369		
Snakes (sewer), rental	326	Soundproofing fabric	469	condensate pipe	492		
Snap ties	86, 353	Southern pine		generators	283		
Snow block	192	fence	146, 147	heating	536		
Snow-melting cable	474, 559	lumber	194, 195	Steamers, food service	452		
Soap dishes	24	pressure-treated	200	Steamers, wallpaper, rental	326		
ceramic	286	siding	201	Steel			
commercial	443	timber	200	blocking	61		
Soap dispensers	443	Southern yellow pine		buildings	481		
demolition	335	decking	196	conduit, flexible	550		
Soccer goals	463	flooring	195	conduit, rigid	541		
Social Security payroll taxes	283	lumber	194	cutting and drilling	386		
Sod	186, 622, 623	posts	203	exterior walls	63		
Sod cutters, rental	325	pressure-treated	200	floor joists	58		
Sodium flood, high-pressure	585	siding	198	flooring	432		
Sodium lamp,		timbers	200	framing	57		
high-pressure	582, 583, 584, 585	Spa enclosure	166	framing, rule of thumb	57		
Soffit		Space frame steel	382	interior walls	62		
demolition	102	Spackle	237	landings	383		
forms	344	Spades, clay, rental	318	lath	186		
Hardie cement fiber	273	Spandrel glass	417, 420	lintels	385		
OSB.....	274	Spanish tile roofing	260	masonry	214		
		Spar varnish	235				

mesh	91, 347	Stepping stones	185, 623	connectors	564	Subcontract costs defined	5	
mesh reinforcing	347	Steps	brick	380	CPVC snap-on tubing	506	Subcontractor markup	5
mini-mat reinforcing	347		concrete	95, 349, 352, 358	hardware	162	Subflooring	
ornamental	386		flagstone	215	pipe	516	2-4-1	201
painted	386		manhole	634	post anchor	218	adhesive	18
painting	434		masonry	215	tie	163	board	61
panel roofing	259		painting	240	Straw bales	185, 602	engineered	42
piles	606	Steps-on-grade, concrete	95, 352	Strawberry, ground cover	623	floating	42	
pipe, black	492	Sterilization, pipe	627	Street		installation	42, 61	
pipe, carbon	492	Sterilizers, water	527	illumination	484	log homes	191	
plate cutting	332	Stick nails	228	lights	585	OSB	42, 62	
railing	252, 384	Stile & rail doors	117	marking	614	piecework rates	42	
reinforcing	89, 344	Stirrup steel reinforcing	345	numbers, houses	171	plywood	42, 61	
reinforcing, epoxy	344	Stock room door	416	paving	608	Sturdi-Floor	201	
reinforcing, foundation	344	Stolons, grass	623	paving, equipment rental	323	underlayment	202	
reinforcing, masonry	370	Stone		sweeper	610	Sub-panel connections	128	
rod	160	aggregate	18	sweeper, rental	323	Subsurface exploration	278	
roof deck	382	aggregate base	607	Strip		Subway platform	485	
roof framing	74	artificial	379	doors	416	Sump pumps	128, 526	
sag rods	381	base	94	flooring	55, 156	Sumps, roof	404	
sandblasting	262	cleaning	369	lighting	580	Sun control blinds	294	
security gratings	386	countertop	96	shingle starter	257	Sun porch	166	
shoring	603	crushed	94, 126	Striper, rental	323	Sun screens	386	
stairs	281	cut	379	Striping		Sunlamps, wiring	127	
stairs, spiral	383	masonry	215	athletic courts	465	Sunrooms	479	
stringers	383	paving	380	pavement	614	Super Jumbo Tex	27	
structural, fabrication	381	riprap	602	Striplights	580	Super Tuff-R	397	
testing	315	roofing	259	Stripping		Superintendent	308, 312	
threaded rod	160	slag	126	forms	89	Supervision costs	4, 312	
tilt-up	362	slate	259	soil, by hand	135	Supply valve	520	
wall framing	62	stepping	185, 623	Structural engineering	133	Supports		
welded wire	344	vanity tops	97	glazed tile	372	conduit	552	
welding	387	veneer	379	steel	381	fabricated metal	385	
Steel doors		veneer, manufactured	379	Structural plywood	201	PVC	548	
entry	112	work	379	Structural steel		Surface duct, electric	554	
exterior	110, 111	Stone tracking pad	602	fabrication	381, 386	Surface preparation		
fire-rated	109	Stool		painting	434	..... 232, 233, 238, 433, 435, 437	
frames	109	carpentry	225	Structure moving	336	Surgeons' scrub sink	533	
garage	163	marble	379	Structures, temporary, rental	328	rough-in	529	
patio	121	window	53	Stucco		Surveillance		
prehung	412	Stop signs	615	demolition	102, 335	park	484	
screen	113	Stops		mesh	423	camera	450	
ventilating	111	door	170, 224, 418	mix	82	Survey		
Steel framing		gas	520	mold, redwood	108	building layout	593	
anchors	58	gravel	401	netting	186	Survey stakes	204	
backing for drywall	69	molding	108, 224	paint	234	Surveying	311	
beams	60	Stops Rust	235	painting	237, 240, 435	aerial	311	
blocking	61	Storage		plastering	243, 425	periodic	316	
bracing	67	bins	308	wall assembly	35	Sushi serving table	452	
ceilings	67	cabinets	471	Stud grade lumber	193	Suspended ceiling	79, 422	
collar beams	72	ice	455	Studios, radio and television	486	demolition	100, 334	
door opening	65	overhead	308	Studs		grid systems	79, 427	
dormer studs	71	safes	261, 262	carpentry	387	light fixtures	80	
fascia, piecework	76	sheds	308	demolition	103	panels	81, 428	
floor joists	58	sheds, rental	329	dormer	48	T-bar grid	427	
girders	60	shelving	446	exterior walls	35	tile	428	
joists, ceiling	67	Storefront windows	417	gable	37	Suspension grid, ceiling	79	
joists, piecework	73	Store-in-Door	114	interior walls	34	Sweep pavement	610	
lally columns	57	Storm, plywood cover	272	rule of thumb, steel framing	57	Sweep, door bottom	285	
layout, piecework	73	Storm doors	114, 115	steel	62, 73	Sweeper, rental	323	
piecework	73	full-view	114	steel exterior	63	Swimming pool		
purlins	72	security	115	straightening	52	complete installation	473	
rafters	70	self-storing	114	straps	162	cover	474	
rafters, piecework	74	Storm drain demolition	331	wall assemblies	34	fences	149	
ridgeboard	72	Storm sewer		wall framing	37	gunite	355	
rule of thumb	57	cleaning	629	walls, commercial	387	heaters, solar	249	
sheathing, piecework	74, 76	Storm water control	602	Study carrels	457	paint	236, 436	
sill plates	57	Storm window	302	Stump grinders, rental	325	resurfacing	367	
square foot costs	57	StormGuard	27	Stump removal	137, 592	Swing check valves	519	
studs	62	Stoves, ovens, ranges		Sturdi-Floor	201	Swing gates, aluminum	164	
subflooring	61	electrical work	128	Subbase, pavement	607	Swinging stage scaffold,		
trimmers	71	residential	254	Subcontract		purchase	328	
trusses	72, 73	Strainers		driveway paving	242	Swings, playground	466	
trusses, piecework	74	bronze	537	electrical work	127	Switch box, electric	560	
wall plates	67	hydronic	172, 537	elevators	132	circuits	573	
walls, piecework	73	wye-pattern	537	fire sprinkler systems	489	plates	23	
window opening	66	Strand board	202	hydroseeding	186, 622	Switch cover plate	563	
Steel road plate, rental	323	Straps		insulation	182	Switchboards	568	
Steeple	483	channel	553	painting	238	accessories	569	
Stem wall	93	conduit hanger	553	sprinkler systems	489	instrumentation	569	
forms	338			surface preparation	238			
Stenographer	308			well drilling	293			
Step flashing	266, 267							
Step lights	583							

meters	569	black steel.....	492	Textured wallboard.....	422
transformers.....	569	copper.....	502	Theater	
weatherproof.....	568	copper DWV.....	510	curtains .....	.460
Switches		CPVC.....	505	seating .....	.472
dimmer.....	562	PVC.....	504	Thermal	
dimmer, fluorescent.....	562	test	513	analysis .....	.183
disconnect.....	575	Wisconsin.....	512	expansion tank.....	.248
electric.....	129	Telephone		insulation .....	.396
electrical.....	562	outlets	589	mitigation .....	.469
exhaust fan.....	140	wiring.....	589	Thermal and Moisture	
fan control.....	140	Telephone assistance	5	Protection.....	.395
motor.....	565	Telescoping doors	415	Thermotflow indicator.....	.522
power distribution.....	568	Television		Thermography .....	.183
safety.....	566, 567	closed circuit.....	590	Thermometer, steam.....	.522
security.....	587	educational	456	Thermoplastic	
starter.....	566	equipment	456	siding .....	.276
timer, exhaust fan.....	140	outlets	590	tape .....	.465
wiring.....	129	pipe inspection	635	Thermostat .....	.175
Swivel ring hangers, pipe.....	515	studio	486	Thermostatic	
Symbols		systems.....	590	mixing valves .....	.538
lettering	465	wiring.....	129	traps .....	.538
Synthetic surface playing fields... <td>463</td> <td>Teller</td> <td></td> <td>water heaters</td> <td>.525</td>	463	Teller		water heaters525
		automatic	450	THHN wire .....	.556
T		counter	450	Thinline glass block .....	.217
T-1-11	201, 389	windows	450	Thinner.....	.237
Table saws, rental	326	Temperature gauge	522	Thompson's WaterSeal.....	.236
Tables		Tempering valves	538	Threaded	
fixed pedestal.....	456	Temporary		black steel pipe.....	.492
food service	452	enclosures.....	329	carbon steel pipe .....	.492
food station.....	451	fence	329	Threaded rod .....	.160
pizza prep	452	jackposts.....	185	Thresholds	
school	456	services	308	aluminum .....	.284
Tack coat, pavement	609	structures	478	bamboo .....	.157
Tampers, rental	318	structures, rental	328	bronze .....	.419
Tamping, excavation... <td>337, 595, 597</td> <td>utilities</td> <td>316</td> <td>high boy</td> <td>.108</td>	337, 595, 597	utilities	316	high boy108
Tamping, excavation, by hand... <td>135</td> <td>wall bracing</td> <td>44, 67</td> <td>inserts</td> <td>.284</td>	135	wall bracing	44, 67	inserts284
Tankless water heater	248	Tennis courts		marble .....	.379
Tanks		installation	464	wood .....	.221
demolition	331	stripping	464	Thrust blocks, concrete .....	.625
expansion.....	248	windbreak panels.....	464	Thru-the-wall utility fan .....	.139
foundations	364	Tension		THWN wire .....	.556
fuel	538	bridging	158	Ticket boxes .....	.450
oil.....	538	Termite shield	267	Ticket dispenser .....	.448
painting	435	Termite treatment	206, 278	Tie straps .....	.163
propane.....	539	Terra cotta, demolition	333	Tie wire .....	.218
septic.....	264, 527	Terrazzo		Tier IV EPA pollution	
water	527, 628	demolition	334	control rating .....	.579
Tape		pavers	380	Ties	
caution barricade	23	tile	380, 431	brick wall .....	.218
plumber's	516	Test caps, plugs,		collar .....	.48
thermoplastic	465	and tees, ABS	513	concrete .....	.353
Taping wallboard	167, 421	Testing		concrete form .....	.86, 353
Tapping		acoustical	133	form .....	.86, 337
pipe	625	aggregate	312	hurricane .....	.160
saddles	625	asbestos	26	seismic .....	.160
valves	625	asphalt	313	wall, brick .....	.158
Tar, roofing	256	brick	314	wall, masonry .....	.210, 370
Tarkett flooring	152	building stone	314	Tile	
Tarp, painting	437	cable	129	acoustical facing .....	.372
Tarpaulins.....	283	concrete	313	backer board .....	.288
T-astragal	108	fees	315	ceiling .....	.82, 428
Taxable fringe benefits		gunite	314	ceramic .....	.372, 425
industrial & commercial	307	hazards	26	clay .....	.372
residential.....	10	home	26	concrete roof .....	.260
Taxes and insurance.....	283, 308	masonry	314	decorative .....	.286
Taxes	4	network cable	458	demolition .....	.101, 102, 334
Taxes, labor cost		noise	133	epoxy bed .....	.380
industrial & commercial	307	percolation	264	floor .....	.285
residential.....	10	piles	604	glazed .....	.372
T-bar ceiling	82	soil.....	26, 264, 278, 312	installation .....	.286, 287
Teak parquet	157	sound transmission	133	marble .....	.207
Tear-off roofing, demolition....	400	steel.....	315	masonry .....	.219
Tech support	5	thermal	183	porcelain .....	.285
Technical services.....	315	water	26	quarry .....	.379, 427
Techwall wall cladding	398	Tetherball post	466	resilient .....	.430
Tectum	400	Textolite countertops	96	roller, rental .....	.324
Tees		Texture		roofing .....	.260
ABS cleanout	513	popcorn ceiling	168	rubber .....	.430
ABS sanitary.....	512	Texture 1-11	201	rubber studded .....	.153
		Texture, drywall	168	saws, rental .....	.326

Buy this complete title here: <https://goo.gl/2ReTws>

Track	shoring.....	603	Tuck pointing.....	369	V	
railroad, demolition	sprinkler pipe.....	617	Tuff-R insulation.....	180	Vacation costs.....	3
rolling ladder.....	Trench plate, steel.....	323	Tung oil wood finish.....	235	Vac-jet pipe cleaning	629
stage curtain.....	Trenchers, rental	138, 321	Turbines.....	577	Vac-jetter cleaning.....	629
Tracking pad, stone	Trenching.....	595	additional costs.....	578	Vacuum breaker	
Tractor	backhoe.....	595	fans.....	405	anti-siphon.....	172
demolition	concrete.....	336	atmospheric.....	536	atmospheric.....	536
excavation.....	excavation.....	135, 595	controllers	616	controllers	616
finish shaping.....	hand.....	135, 600	valves	616	valves	616
ripping rock.....	hand work.....	337	Turf.....		Vacuum systems.....	288
rock fill.....	rock.....	595	artificial grass.....	463	wiring.....	129
site clearing.....	sprinkler systems.....	187	playing fields, grass and synthetic	463	Vacuum, wet/dry, rental	324
site grading.....	Tri-Flex 30.....	27	replacing	617, 622		
Tractor operator, wage, industrial & commercial	Trim.....		Turfstone	613		
Traffic	carpentry.....	225	Turfstone grass paving	613		
cones	door.....	53, 221	Turnstiles	450, 485		
control equipment rental	fireplace	55	Turpentine	237		
control signage	hardwood	221	Twinaxial cable	591		
light	molding	225	Twist straps	163		
paint	OSB siding	274	Type K copper pipe	501, 502		
pavement marking	painting	237, 239	Type L copper pipe	501		
signs.....	pine	225	Tyvek	28, 182		
stripes	redwood	221				
symbols.....	softwood	222	U			
Transaction	stair	56	U bolts	516		
window	steel panel roofing	259	Ultra Touch	182		
Transformers	wallboard	168	Ultrasonic sensors and transceivers	588		
indoor	window	53	Ultraviolet sterilizers, water	527		
pole mount	Trim coil	266	Underfloor duct	555		
potential, switchboard	Trimless door frame	109	Underground communication	539		
switchboard	Trimmers		duct	539		
Transit levels, rental	carpentry.....	48	power	539		
Transit mix concrete	steel (framing)	71	Underlayment	202, 261, 430		
Transom lite	Trimming, trench bottom	135	floor	34		
Transoms	Triple-track storm doors	114	particleboard	393		
Trap adapter	Troffer lighting fixtures...80, 188, 581		piecework rates	38, 74		
ABS	Trowel finishing, concrete ..95, 354		roof	27		
copper	Troweling machine, rental	319	tile backer board	288		
Traps	Trowel-ready mortar	218	Underphnning, shoring	603		
float	Trowels, rental	319	Unions			
thermostatic	Truck		black steel	492		
Trash	bumpers	363	CPVC	505		
bins	concrete	348	Unistrut inserts	353		
chutes	cranes, rental	317	Unit heaters	533, 536		
enclosure, tilt-up	excavation	137	Uniturf	463		
removal	hauling	598	Unusual labor productivity	4		
Trash compactor wiring	loading by hand	134	URD wire	556		
Trash pumps, rental	rental	138, 322	Urethane			
Travertine, tile	scales	450	exterior finish	235		
Treads	superintendent's	308	floor finish	56		
Treated	water, rental	323	insulation	182		
lumber	Truck driver, wage		sealer	154		
Treating	industrial & commercial	307	sheathing	181		
lumber	residential	10	Urinal			
poles	Trusses		floor-mounted	529		
soil	fink	49, 72	rough-in	528, 529, 530		
wood	gable	49, 73	screens	440		
Treatment	joists	393	screens, removal	335		
fire retardant	log	192	wall-hung	528		
soil poisoning	roof	48, 72, 393	water-conserving	530		
Tree clearing	roof, piecwork	38	Urns	471		
Tree grates	roof, piecwork rates	74	USE wire	556		
Trees	steel	381	Using this book	3		
costs	Truss-type reinforcing	370	Utilities	624		
planting	Tub		overhead	308		
Trench	sealant	79	sewer connections	265		
braces, rental	whirlpool bath	244	sitework piping	626		
covers	Tube		temporary	316		
frame	columns, steel	381	water	310		
inlets	nosing	385	Utility			
shaping	pneumatic	489	cabinets	30		
sheeting	Tubing		fan	138, 139		
shields, rental	copper	503	piping, sitework	626		
	electric metallic	542	shelving, wood	269		
	strap, CPVC	506	sinks, food service	455		
	Tubs					
	access doors	265				
	caulk strips	79				
	caulking	78				
	enclosures	271				
	plumbing	244, 529, 531				

Vent	
channel, rafter bay	290
fans	141, 405, 453
hoods	252, 453
Vent pipe	510
copper	510
flash cone	267, 268, 269
Vented range hood	252
Ventilating skylights	277
Ventlite doors	
fiberglass exterior	113
steel exterior	111
Vents	
attic	289, 404
bath	140
clothes dryer	289
foundation	289, 404
hood	259
intake, roof	290
louver	290
plumbing	402
power	141
ridge	290
roof	140, 141, 290
roof turbine	140
screen	289
soffit	290
turbine	290
Vermiculite	
insulation	182, 397
Vertical blinds	294
Vertical discharge exhaust fan	138
Vertical panels, precast tilt-up	362
Vibration sensors	587
Vibrator compaction	595
Vibrators, rental	319
Vibro plate, rental	138
Vibroflotation treatment	601
Video recorder, digital	590
Videotape recorder	456
Vinyl	
acrylic	236
casement window	297
caulk	78
covered wallboard	291
fence	148
flashing	269
flooring	152, 153, 429
flooring, sheet	429
molding	225
runner	219
screen doors	113
siding	275, 399
soffit systems	277
tile flooring	152
wallcovering	432, 433
Vinyl plank flooring	430
Vinyl windows	
bay	297
casement	297
double-hung	296
garden	297
half circle	297
hopper	298
jalousie	297
picture	297
single-hung	295
sliding	296
Vinyl-clad wood windows	298, 299
Visqueen polyethylene film	252
Vitrified clay pipe	265
Volatile materials emissions	
reduction, pollution control	577, 579
Volcanic cinder track	463
Volcanic rock	602
Volleyball posts	463
Voltmeter	569
Vycor flashing	27

W

Waffle pan forms	343
Wage costs defined	3
Wage rates	10
adjusting	11
industrial & commercial	307
residential	10
Wagon drills	593
rental	322
Wainscot	54
cap	224
ceramic tile	431
tile	285, 287
Wainscott paneling	241
Waler	
brackets	353
jacks	353
Walk-in coolers	455
Walkways	
asphalt	242, 613
concrete	94, 243, 613
demolition	100, 330
edge forms	88
forms	94
lighting	190
snow-melting cable	559
waterproofing	292
Wall	
access doors	265
anchors, glass block	379
anchors, masonry	370
assemblies, brick	208
assemblies, concrete block	212
assemblies, exterior	35
assemblies, interior	34
beds	25
braces	44, 67, 163
cladding	398
cleaning	83
courses	191
cover plate	563
coverings	291
demolition	100, 103, 333
filler panels	31
fireblocks	45
footing	337
forms, concrete	88, 92, 339
framing	37
framing, piecework	37
framing, steel	62, 63, 73
jointing	355
painting	237, 435
panel systems	392
piecework rates, framing	73
plates	42, 67
protection systems	442
reinforcing	370
safes	261, 450
sawing, concrete	368
sheathing, board	51
sheathing, exterior	389
sheathing, interior	389
sheathing, lumber	390
sheathing, OSB	51
sheathing, piecework	37, 73
sheathing, plywood	51
stiffener	192
studding	387
ties, masonry	158, 210, 218, 370
Wall jacks, computers	592
Wallboard	
adhesive	18
demolition	102, 333
gypsum	167
hardboard	241, 433
paint preparation	238
painting	237, 240
prefinished	291
textured	291, 422
Wallcap	286
Wallpaper	291, 432
adhesive	291
removal	291
surface preparation	291
Walls	
brick	208
concrete	86, 87, 92
concrete block	212, 376
glass block	216, 378
masonry	208
paint removal	232
panelized wood	392
patching	291
precast panels	355
retaining	373
sheet metal, area	266
tile	287
tilt-up	360
Walnut	
parquet	157
plank flooring	154
Wardrobe cabinets	456, 470, 471
Warning signs	440, 615
Wash	
concrete finishing	354
masonry	369
painting	437
surface prep	437
Wash fountains	532
rough-in	529
Wash sinks, surgeons	529, 533
Wash stations	532
Washer, clothes	
rough-in	251
wiring	127
Washers	
galvanized	231
stainless steel	231
Waste	
disposal	330
handling equipment	489
receptacle	443
Waste defined	3
Waste pipe	
ABS	510
copper	510
fittings	510
Water	
blast before painting	435
blasting	238, 262, 369, 434
capacity fee	310
control valves	521
coolers	532
coolers, for handicapped	475
coolers, rough-in	529
distillation	249
filters	527
fountains	532
heaters	249, 524
heating	247, 248
heating, solar	526
heating, whole house	252
hose, service station	447
meter boxes	220
meter fee	310
meters	310
overhead	308
pipe, PVC	626
pool heating, solar	249
pumps, wiring	129
service	310
softeners	249, 527
softeners, rough-in	251
solar heating	248
storage tanks, solar	248
tanks	527, 628
tanks, rental	323
temporary	317
testing	26
treatment	527
trucks, rental	323
wells	293
Water closets	
commercial	530
demolition	476
installation	476
residential	246
rough-in	528
Water heater	
accessories	524
tankless	248
Water heaters	
assemblies	525
commercial	524
connections	525
earthquake restraints	525
electric	248, 525
gas	247
instantaneous	525
overflow pans	524
propane	248
residential	248
safety pans	524
solar	248, 526
stands	524
wiring	129
Water table	
flashing	267
molding	221, 223
Water-based stain	235
Waterblasting	238, 369
Watering	
embankment grading	595
landscaping	619
sprinkler systems	619
trenching	617
Waterproof adhesive	18
Waterproofing	292
acrylic	182
asphalt	395
building	380
concrete	292, 337
insulation	182
masonry	217, 234, 292
membrane	395
multi-surface	236
paper	27
slab	337
walkways	292
wood finish	235
WaterSeal wood sealer	236
Waterstop, concrete	91
Wattmeter	569
Waxing	
concrete	354
floors	237, 429
woodwork	240
Weather vanes	97
Weatherproof	
service entrance	568
switchboards	568
Weatherproofing	27
wood finish	235
Weatherstripping	292, 419
Wedge tie, concrete form	353
Wedges	204
Weed eaters, rental	325
Welded	
black steel pipe	492
carbon steel pipe	492
mesh	91
wire mesh	347
Welding	
grounding	563
machines, rental	327
rebar	346
steel	387
tilt-up	362
Weld-o-lets	497
Welfare costs	3
Well drilling, subcontract	293
Wellpoint dewatering	600
Wenge cabinets	470
West coast fir lumber	193, 195
Western red cedar siding	197
Wet paint barricade	23

Buy this complete title here: <https://goo.gl/2ReTws>

Wet patch roof cement	255, 256	screen	263	Wood chip mulch	185																																																																																														
Wet sandblasting	262	service entrance.....	128, 555	Wood doors																																																																																															
Wheel corner guards.....	385	shelving.....	269	entry	107																																																																																														
Wheel loaders	596	sprinkler.....	618	patio	120																																																																																														
rental	138	THHN, copper.....	556	screen	113																																																																																														
Wheelbarrow		URD	556	Woodcore storm doors	115																																																																																														
hauling debris	335	USE	556	Woodwork																																																																																															
hauling soil	600	XHHW, copper.....	557	paint preparation.....	238																																																																																														
rental	325	Wire brush		painting	240																																																																																														
Wheelchair		finish.....	95	staining	240																																																																																														
lifts	132	painting	437	waxing	240																																																																																														
ramp	474	Wire glass	416	Woodworking glue	18																																																																																														
swing platform	466	Wire mesh	91	Work tables																																																																																															
Whirlpool bathtubs	244	fence	142	food service	452																																																																																														
wiring	127	gunite	355	kitchen	452																																																																																														
White cement	82, 425, 431	reinforcing	91	Workers' comp insurance	184																																																																																														
White roof coating	256	Wireless access points	129	Working conditions	4																																																																																														
Whiteboard (chalkboard)	438	Wiremold raceway	554	Woven wire partitions	442																																																																																														
Whitewash stain	236	Wireway, electrical.....	554	Wrecking, demolition	104																																																																																														
Whole house fans	140	Wiring		Wrenches, rental	326																																																																																														
Wilsonart countertops	96	alarms	263	Wrought iron	149																																																																																														
Wind clips	261	campus network	457	railing	384																																																																																														
Wind turbines	131	computer	129, 457	W-valley flashing	266, 267																																																																																														
Windbreak, tennis	464	control wiring	188	Wye pattern strainers	172, 537																																																																																														
Window		controllers	188	Wyes																																																																																															
plywood cover	272	doorbell	104	ABS	512																																																																																														
removal	103	educational network	457	drain pipe	125																																																																																														
teller	451	electric	127	X																																																																																															
transaction	451	fence, electric	143	Xerographic prints	25																																																																																														
Window air conditioners	176	irrigation controls	188	XHHW wire	557																																																																																														
Window wells	303	landscape sprinklers	188	X-ray																																																																																															
Window, safety film	417	phones	589	barriers	482																																																																																														
Window, tint film	417	systems	589	lead mesh fabric	469																																																																																														
Windows		telephone	589	mobile barriers	482																																																																																														
aluminum single-hung	299	twisted pair	589	protection	482																																																																																														
aluminum sliding	300	Wisconsin tee	512	viewing panels	482																																																																																														
apron	53	Wolmanized lumber	206	Y																																																																																															
architectural	417	Wonderboard tile backer	288	Yard																																																																																															
awning	21, 298	Wood		deck	100																																																																																														
awning, aluminum	300	fences	147	bank	450	filler	237	lighting	585	basement	299	finishes	235	Yardarm, nautical	447	bay	297	floor finishing	56, 428	Yellow pine lumber	194	blinds	271	flooring	55, 153, 428	Yield signs	615	bow, wood	302	flooring adhesive	158	Z		casement	297, 298, 299	lumber	206	Z-bar flashing	266, 267	casing	54	paint preparation	238	Z-brick	242	caulking	78	piles	604	Zinc primers	233	circular, vinyl	297	preservative	206, 236	Zone valves	490	cleaning	83, 329	roofing	258			coverings	272	sealer	236			double-hung	301	shingles	258			fixed	297	stain	235			frames, paint removal	232	treatment, lumber	206					waterproofing	235					Wood and composites	387		
bank	450	filler	237	lighting	585																																																																																														
basement	299	finishes	235	Yardarm, nautical	447																																																																																														
bay	297	floor finishing	56, 428	Yellow pine lumber	194																																																																																														
blinds	271	flooring	55, 153, 428	Yield signs	615																																																																																														
bow, wood	302	flooring adhesive	158	Z																																																																																															
casement	297, 298, 299	lumber	206	Z-bar flashing	266, 267																																																																																														
casing	54	paint preparation	238	Z-brick	242																																																																																														
caulking	78	piles	604	Zinc primers	233																																																																																														
circular, vinyl	297	preservative	206, 236	Zone valves	490																																																																																														
cleaning	83, 329	roofing	258																																																																																																
coverings	272	sealer	236																																																																																																
double-hung	301	shingles	258																																																																																																
fixed	297	stain	235																																																																																																
frames, paint removal	232	treatment, lumber	206																																																																																																
		waterproofing	235																																																																																																
		Wood and composites	387																																																																																																