



2017 NATIONAL RENOVATION & INSURANCE REPAIR ESTIMATOR

edited by Jonathan Russell

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about this book

WHAT'S NEW IN 2017

The overall construction market has improved substantially over the past several years, with many regions experiencing strong growth. As regional markets pick up, there is increasing pressure to raise wages, which grew slowly or not at all for several years following the 2008 financial crisis. Suppliers also held back on cost increases in past years and many feel current and coming cost increases are overdue. Lower fuel costs help offset some of the potential cost increases and have been a boon to both suppliers and contractors. Canada, which never suffered a downturn like the one experienced in the U.S., continues to experience strong growth and increasing costs, especially in metropolitan areas.

A TOOL

This book is a tool, and like all tools it can be misused. It is an excellent tool for the renovation and repair professional. It is not a substitute for experience, skill, and knowledge.

Prices in this book are based on research of actual jobs and successful estimates. They represent an average of the typical conditions. Estimators should compare the conditions described in this book with actual conditions on site and adjust the price accordingly.

UNIQUE TO RENOVATION AND REPAIR WORK

This book is compiled specifically for the unique problems and conditions found in renovation and repair work. It is not a new construction cost book.

Renovation and repair work involve completely different circumstances than those found in new construction.

For example, the renovation or repair professional must work around existing conditions including home contents, access problems, out-of-plumb or out-of-square buildings, outdated materials, existing conditions that violate current building codes.

New-construction professionals have the luxury of placing items in a logical order, but renovation, remodel, or repair professionals must deal with conditions as they find them.

This means that joists have to be replaced in an existing floor system, paint has to be applied in a room where stain-grade base and carpeting are already installed, structures may have to be braced, contents have to be moved or worked around and materials and installation techniques must be matched.

DETERMINING COSTS

All costs in this book are based on typical conditions and typical problems found when remodeling or repairing a structure.

This means a door takes 10 to 15 minutes longer to install than it would in the ideal circumstances found in new construction.

Stairs are more difficult to install around pre-existing walls, wall framing takes longer when walls are typically splicing into existing work, and so on.

Some prices in this book will very closely match prices used in new construction. Other prices will reflect the complex conditions found in renovation and repair and will be dramatically different.

For example, using this book's stair building prices to estimate stair work in a series of 150 tract homes will result in an estimate that is far too high.

THE ART OF ESTIMATING

Estimating is part art, part science. Estimators must consider many factors, including access, crew productivity, special techniques, special abilities, temperament of the owner, and how busy the company is.

A contractor who is desperate for work will estimate much lower than a contractor who is swamped with work.

All of these factors — and many other similar ones — cannot be included in this or any other price book. They are part of the art of estimating.

The science of estimating, which includes prices, typical techniques, and materials, is included in this book.

This book is designed to make the science of estimating easier, which allows you to spend much more time focusing on the art of estimating, where your skill is crucial to the success of your company.

GENERAL VS. SPECIFIC

It is important to note that the more specific the estimator is, the more accurate the final estimate will be.

For example, when an estimator calculates all electrical costs for a typical home using a square foot cost, it may not be as accurate as if the estimator priced each fixture, outlet, and appliance hook-up.

Since the square foot price is based on a typical installation, it will not be exact for a home that is atypical in any way — for example, one with special outdoor lighting or with an expensive crystal fixture in the entry.

The more specific the item, the more exact the prices. The more general an item, the more assumptions must be made.

To help ensure the accuracy of your estimates, we describe any assumptions made when determining general items.

For example, the Rough Carpentry chapter contains a square foot price for estimating 2" by 4" wall framing. To help you make sure that this price will work for you, we describe our assumptions: the stud centers, the number of openings, headers, corners, plates and so forth, that would typically be found in a wall.

rounding

This book rounds hourly wage rates and the material, labor, and equipment components of a unit price.

These prices are rounded to "three significant digits." This means that prices under three digits (including two to the right of the decimal) are not rounded. Prices four digits and larger are rounded to the third digit from the left.

For example:

.23 is not rounded
2.33 is not rounded
23.33 is rounded to 23.30
233.33 is rounded to 233.00
2,333.33 is rounded to 2,330.00
23,333.33 is rounded to 23,300.00

In most cases, the square foot price will apply, but you will always want to carefully consider items that are more general, and if needed, adjust them to fit the conditions.

In the case above, the estimator may want to use the square foot price for average fixtures, then add an allowance for the crystal fixture and the outdoor lighting.

TIME AND MATERIAL CHARTS

Almost all chapters include time and material charts at the end. These time and material charts are designed to show you the materials used, waste, labor rates, labor burden costs, and labor productivity.

When materials with a range of sizes appear, only the small and large size are usually listed.

When materials with a range of qualities appear, only the low and high prices are usually listed.

These charts are designed to give you accurate detail on the exact prices used. When prices change, this book does not become obsolete. Compare current prices with those used and factor accordingly.

MATERIAL COSTS

National average material costs are compiled from surveys of suppliers throughout the country.

Costs for some materials, such as clay tile, building stone and hardwood, will vary a great deal from region to region.

For example, clay tile plants are located near naturally occurring clay sources. Because clay tiles are heavy, the further the tiles have to be shipped, the more expensive the tiles will be. The user of this book must be aware of local price variations.

Materials commonly found in every city are priced based on local delivery. In most cases this will be delivery no greater than 20 miles away from a local source. However, many rural areas have lumber yards that will deliver to a wider area at no additional charge.

Materials that are not commonly available locally, like hand-carved moldings or historical wallpaper, include shipping costs anywhere in North America. Estimators in Hawaii, Alaska and remote areas of Canada should add for additional shipping costs when applicable.

Material waste is often indicated with the items, but it's always a good idea to check the time and material charts for the exact waste calculated for all the components of an item.

Waste indicates material that is discarded during installation. It does not include waste that occurs when materials are taken to storage and ruined, run over at the job site, spilled, improperly cut, or damaged due to mishandling.

These types of occurrences are kept to a minimum by every good contractor, but will still occur on any job site.

Another common waste issue in renovation and repair is when a contractor must buy a minimum quantity for a small repair. For example, to replace a six-inch section of base, it is necessary to buy a piece of base that is eight-feet long or longer. In these cases, use the minimum price.

Material prices may not be listed with the time and material charts in some chapters. In these chapters, little new information would be provided by the materials chart so the space is saved for other information.

For example, a materials chart in the Appliance chapter will not provide an estimator with any new information.

The materials component of the unit price for an oven as listed in the main body of the chapter will tell the estimator how much the oven and connections cost.

Relisting these appliances in a materials chart wastes valuable space.

LABOR COSTS

Labor costs are national average rates that usually are consistent with union labor wages.

See the time and material charts for specific benefit costs and labor rates.

Crew labor rates are an average hourly rate for each member of the crew. For example, a masonry crew might consist of a mason, a mason's helper, and a hod carrier.

The hourly rate for this crew is the average cost of all three. In other words, the hourly rate is for 20 minutes work by the mason, 20 minutes work by the mason's helper, and 20 minutes work by the hod carrier.

Separation of labor in renovation and insurance repair work is much more difficult than is separation of labor on large commercial construction projects.

On a typical repair or renovation job a carpenter may participate in demolition, frame walls, set doors, set toilets, install electrical outlets and fixtures, and do a little painting.

In the jobs analyzed for this cost book, well over 40 percent of the demolition work was done by skilled workers. This is because demolition is often selective, requiring a skilled worker to ensure that additional damage does not occur.

Many renovation and repair companies are relatively small, so skilled workers participate in all phases of construction.

These realities are reflected in the labor costs used in this book. This means that a demolition laborer's hourly rate may seem higher than is normal for an unskilled worker.

The time and material charts show all items that are built into each labor rate.

Some contractors may not provide health insurance or retirement plans to some or all of their workers. Estimators can "back-out" these expenses from the labor costs.

It is critical that estimators examine the Workers' Compensation costs calculated in the wage rates. Some states have Workers' Compensation rates that are double, triple, or even quadruple the national average rates used in this book.

Workers' Compensation rates should be adjusted to match local conditions.

Labor productivity is based on observation of work performed in renovation and repair conditions.

These conditions differ from new construction in many ways, but a few of the most common are:

❶ difficulty matching existing work, ❷ access problems, ❸ materials that must be more carefully shaped and attached than is typical in new construction, ❹ out-of-plumb or out-of-square structures, ❺ reinforcing, ❻ more trips and effort are required to find materials, ❼ much more travel time is required because most jobs will have a relatively small amount of work in some trades, ❽ more vehicles are required by the renovation or repair contractor because many tradespeople are often traveling between jobs, compared to new construction where crews may spend weeks or months on one job, and because crews tend to be smaller and each crew may need a vehicle, ❾ more unexpected problems, ❿ more restrictions in established neighborhoods.

Labor productivity is based on a clean job site where tools are put away and secured at the end of each day.

Depending on the trade, 20 to 30 minutes per eight hours is allowed for clean-up and putting away tools. Normally, skilled workers spend half as much time cleaning up as do unskilled workers.

As is typical in new construction, labor includes unpacking materials, in some cases unloading materials from a truck on site, some travel to pick up minor materials (e.g. a forgotten tube of caulk, or a forgotten tool), typical breaks, lay-out, planning, discussion, coordination, mobilization (many companies meet at a central location each morning to receive instructions), recording hours (including specific information needed for job costing), occasional correction of mistakes in installation, and so forth.

Supervision is not included in these costs but should not generally be required. This is because each crew includes a skilled tradesperson who

normally would not require supervision beyond the normal dispatch and mobilization discussed previously.

EQUIPMENT COSTS

Equipment costs are included only when equipment will be used that is not typically a part of the tools used by the majority of renovation or repair contractors.

For example, each carpenter should have a worm-drive saw, miter box, compressor, nail guns, and so forth. These types of tools are not included in the equipment costs.

However, equipment like cranes, backhoes, concrete saws, and jack hammers are not assumed to be part of the equipment and tools owned by a typical renovation or repair contractor. When these are needed, equipment rates are included in the unit price.

Equipment costs include the typical cost to rent the equipment from a local equipment rental shop. When applicable, they also include fuel or blade costs.

Check each item to determine if it includes delivery to the job site or operator labor. Also be careful to note minimum costs for work where rented equipment is needed.

MARKUP

Prices in this book do not include markup. Insurance repair markup is almost always 20 percent: 10 percent for overhead and 10 percent for profit.

In renovation work on historical structures, markup may be as high as 30 percent, although markup over 20 percent may be "hidden" inside the unit cost. Typical remodeling work markup varies from 15 percent to 25 percent. The most common markup for all types of work is 20 percent.

THE COST LINES

The cost tables in each section of this manual consist of individual tasks or items followed by a description.

Beneath the description is a list of the items to be replaced or removed. For instance, under Appliances on page 17, you'll see Electric range, followed by a list of different ranges. Looking across, you'll see five columns of numbers and symbols. Let me explain how to read the numbers and symbols in those columns.

First let's look at the column headed Craft@Hrs. The Craft@Hrs column shows the recommended crew and manhours per unit for installation. For example, 2A in the Craft@Hrs column means that we recommend a crew of one appliance installer. The crew composition, with the cost per hour, is listed on page 12.

The manhours (following the @ symbol) is our estimate of the crew time required for installation (or demolition) of each unit. Manhours are listed in hundredths of an hour rather than minutes because it's easier to add, subtract, multiply and divide hundredths of a unit. For example, if the Craft@Hrs column shows 2A@.250, the Labor Cost column will show \$13.83. That's the labor cost per unit for a crew of one appliance installer at \$55.30 per hour multiplied by .250 manhours, rounded to the nearest penny. The unit is listed right after the Craft@Hrs, and may be the cost per square foot (sf), linear foot (lf), each (ea), or another unit of measurement.

The crew costs include the basic wage, taxable fringe benefits (vacation pay), Workers' Compensation insurance, liability insurance, taxes (state and federal unemployment, Social Security and Medicare), and typical nontaxable fringe benefits such as medical insurance and retirement. A breakdown of these expenses is included as a percentage in the footnote beneath the Labor table at the end of each section.

If your hourly crew cost is much lower or much higher, you can adjust your totals. For example, if your hourly labor cost is 25 percent less, reduce the labor figures in the cost tables by 25 percent to find your local cost.

The Material column shows your material cost for the item described under the heading.

The Total column is the sum of the Material and Labor cost columns.

CHARTS

Material charts show the material description, the material cost priced per typical unit purchased, the gross coverage, the typical waste, the net coverage after waste has been subtracted, and the resulting materials price including waste and often converted to a different unit of measure.

Equipment charts show the cost to rent equipment, the amount of work that can be done with the equipment per a period of time, and the resulting unit price.

Labor charts show the base wage, then add all additional costs that are based on wage. More information is always listed below this chart. It's important to note the "True" wage before adding labor related expenses. The true wage is the wage rate plus an allowance for vacation time. Since all the other costs must be paid even when an employee is on vacation, it is important that they become a component in the cost calculations when estimating work.

Labor productivity charts show the description of the work, the laborer or crew who will do the work, the average cost per man hour, the productivity and the resulting cost per unit.

REGIONAL DIFFERENCES

Construction techniques vary from region to region. Different cli-

mates and different local customs provide a variety of unique regional methods.

For example, in southern Florida it is common to build the first floor of a home from concrete block capped with a grade beam. This method won't be found in Colorado.

Similarly, coral stone walls won't be commonly found in Denver, although they are widely used in Miami.

Slate roofs are common on historical homes and newer custom homes in Philadelphia but are virtually nonexistent in Rapid City.

Homes in the south often include screened porches which aren't nearly so common in the west.

A Georgia home is much more likely to include a series of architecturally-correct columns with Corinthian capitals than is a home in Minnesota.

A Hawaii home may be built entirely from treated wood, when an Arizona home only uses treated lumber when it contacts dirt or concrete.

Many regional materials and techniques are priced in this book. Keep in mind that you should not use these prices if the item is not common to your area.

NATIONAL ESTIMATOR '17

The National Estimator program makes it easy to copy and paste these costs into an estimate, or bid, and then add whatever markup you select.

When you've installed the National Estimator program, click Help on the menu bar to see a list of topics that will get you up and running. Or, go online to www.craftsman-book.com, click on "Support," then "Tutorials" to view an interactive video for National Estimator.

If you have any problems using National Estimator, we'll be glad to help. Free telephone assistance is available from 8 a.m. until 5 p.m. Pacific time, Monday through Friday (except holidays). Call 760-438-7828.

WE WANT TO HEAR FROM YOU

If you have questions or concerns about this cost book, let us hear from you. Send letters to:

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abbreviations

ABSAcrylonitrile butadiene styrene	lflineal foot	SBSstyrene butyl styrene
acalternating current	lilineal inch	sfsquare foot
bfboard foot	mone thousand	shsheet
BtuBritish thermal units	mbf1,000 board feet	sisquare inch
CECCalifornia Earthquake Code	mBtu1,000 British thermal units	sq100 square feet
.....(also see page 56)	mhman hour	ststep
cfcubic foot	mimile	sysquare yard
cfmcubic foot per minute	mlf1,000 linear feet	t&gtongue-&-groove edge
cicubic inch	mmmillimeter(s)	TVtelevision
cycubic yard	momonth	UBCUniform Building Code
eaeach	mphmiles per hour	ULUnderwriters' Laboratory
FUTAFederal Unemployment	msf1,000 square feet	vlfvertical linear foot
.....Compensation Act tax	no.number	wkweek
galgallon	ocon center	w/with
GFCIground fault circuit interrupter	ozounce	xby or times
gphgallon(s) per hour	prpair	
gpmgallon(s) per minute	psipounds per square inch	SYMBOLS
hphorsepower	PVCpolyvinyl chloride	/ per
hr(s)hour(s)	qtquart	- through or to
IMCintermediate metal conduit	R/Lrandom length(s)	@ at
kdkiln dried	R/W/Lrandom widths and lengths	% percent
<b(kv)< b="">.....kilovolt(s)</b(kv)<>	RSCrigid steel conduit	\$ U.S. dollars
kva1,000 volt amps	S1S2Esurfaced 1 side, 2 edges	' feet
kwkilowatt(s)	S2Ssurfaced 2 sides	" inches
lb(s)pound(s)	S4Ssurfaced 4 sides	# pound or number

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area modification factors

Construction costs are higher in some cities than in other cities. Use the factors on this and the following page to adapt the costs listed in this book to your job site. Increase or decrease your estimated total project cost by the percentage listed for the appropriate city in this table to find your estimated building cost.

These factors were compiled by comparing the actual construction cost of residential, institutional and commercial buildings in communities throughout the United States. Because these factors are based on completed project costs, they consider all construction cost variables, including labor, equipment and material cost, labor productivity, climate, job conditions and markup.

Use the factor for the nearest or most comparable city. If the city you need is not listed in the table, use the factor for the appropriate state. Note that these location factors 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 all estimated costs on a job, they should improve the accuracy of your estimates.

ALABAMA.....-4%	Pine Bluff.....-11%	Durango.....-1%	Saint Augustine.....-2%	ILLINOIS..... 4%
Aniston.....-8%	Russellville.....-4%	Fort Morgan.....-2%	Saint Cloud.....-2%	Arlington Heights.....14%
Auburn.....-4%	West Memphis.....-2%	Glenwood Springs.....4%	St Petersburg.....-6%	Aurora.....14%
Bellamy.....-5%		Grand Junction.....0%	Tallahassee.....-6%	Belleville.....0%
Birmingham.....2%	CALIFORNIA..... 7%	Greeley.....5%	Tampa.....-1%	Bloomington.....-1%
Dothan.....-7%	Alhambra.....8%	Longmont.....2%	West Palm Beach.....-2%	Carbondale.....-4%
Evergreen.....-10%	Bakersfield.....2%	Pagosa Springs.....-4%		Carol Stream.....14%
Gadsden.....-9%	El Centro.....0%	Pueblo.....0%	GEORGIA..... -4%	Centralia.....-3%
Huntsville.....-1%	Eureka.....-5%	Salida.....-6%	Albany.....-6%	Champaign.....-2%
Jasper.....-8%	Fresno.....-2%		Athens.....-5%	Chicago.....15%
Mobile.....-2%	Herlong.....-3%	CONNECTICUT..... 8%	Atlanta.....12%	Decatur.....-7%
Montgomery.....-2%	Inglewood.....9%	Bridgeport.....6%	Augusta.....-2%	Galesburg.....-4%
Scottsboro.....-4%	Irvine.....13%	Bristol.....12%	Buford.....-2%	Granite City.....3%
Selma.....-5%	Lompoc.....3%	Fairfield.....9%	Calhoun.....-9%	Green River.....5%
Sheffield.....0%	Long Beach.....9%	Hartford.....11%	Columbus.....-3%	Joliet.....13%
Tuscaloosa.....-4%	Los Angeles.....8%	New Haven.....7%	Dublin/Fort Valley.....-8%	Kankakee.....-3%
	Marysville.....3%	Norwich.....3%	Hinesville.....-6%	Lawrenceville.....-6%
ALASKA..... 23%	Modesto.....1%	Stamford.....12%	Kings Bay.....-10%	Oak Park.....18%
Anchorage.....27%	Mojave.....5%	Waterbury.....6%	Macon.....-4%	Peoria.....6%
Fairbanks.....27%	Novato.....11%	West Hartford.....5%	Marietta.....4%	Peru.....2%
Juneau.....19%	Oakland.....17%		Savannah.....-4%	Quincy.....16%
Ketchikan.....18%	Orange.....12%	DELAWARE..... 2%	Statesboro.....-11%	Rockford.....3%
King Salmon.....23%	Oxnard.....2%	Dover.....-4%	Valdosta.....-1%	Springfield.....0%
	Pasadena.....9%	Newark.....6%		Urbana.....-4%
	Rancho Cordova.....4%	Wilmington.....4%		
ARIZONA.....-4%	Redding.....-3%	DISTRICT OF COLUMBIA	HAWAII..... 20%	INDIANA.....-2%
Chambers.....-8%	Richmond.....17%	Washington.....12%	Aliamanu.....22%	Aurora.....-5%
Douglas.....-8%	Riverside.....4%		Ewa.....20%	Bloomington.....-2%
Flagstaff.....-7%	Sacramento.....3%	FLORIDA.....-5%	Halawa Heights.....20%	Columbus.....-4%
Kingman.....-5%	Salinas.....1%	Altamonte Springs.....-3%	Hilo.....20%	Elkhart.....-4%
Mesa.....3%	San Bernardino.....2%	Bradenton.....-6%	Honolulu.....22%	Evansville.....4%
Phoenix.....3%	San Diego.....8%	Brooksville.....-7%	Kailua.....22%	Fort Wayne.....-1%
Prescott.....-6%	San Francisco.....27%	Daytona Beach.....-9%	Lualualei.....20%	Gary.....11%
Show Low.....-8%	San Jose.....17%	Fort Lauderdale.....2%	Mililani Town.....20%	Indianapolis.....4%
Tucson.....-5%	San Mateo.....21%	Fort Myers.....-6%	Pearl City.....20%	Jasper.....-7%
Yuma.....2%	Santa Barbara.....7%	Fort Pierce.....-10%	Wahiawa.....20%	Jeffersonville.....-5%
	Santa Rosa.....5%	Gainesville.....-9%	Waianae.....20%	Kokomo.....-8%
ARKANSAS.....-7%	Stockton.....4%	Jacksonville.....-2%	Wailuku (Maui).....20%	Lafayette.....-5%
Batesville.....-9%	Sunnyvale.....20%	Lakeland.....-8%		Muncie.....-8%
Camden.....-2%	Van Nuys.....8%	Melbourne.....-8%	IDAHO.....-9%	South Bend.....-2%
Fayetteville.....-4%	Whittier.....8%	Miami.....1%	Boise.....-5%	Terre Haute.....-3%
Fort Smith.....-7%		Naples.....-2%	Coeur d'Alene.....-10%	
Harrison.....-12%	COLORADO..... 1%	Ocala.....-12%	Idaho Falls.....-9%	
Hope.....-8%	Aurora.....7%	Orlando.....1%	Lewiston.....-11%	IOWA.....-3%
Hot Springs.....-13%	Boulder.....4%	Panama City.....-11%	Meridian.....-9%	Burlington.....1%
Jonesboro.....-9%	Colorado Springs.....0%	Pensacola.....-8%	Pocatello.....-10%	Carroll.....-11%
Little Rock.....-3%	Denver.....8%		Sun Valley.....-8%	Cedar Falls.....-4%

Cedar Rapids.....2%	MAINE.....-5%	Mankato.....-4%	North Platte.....-6%	Ithaca.....-5%
Cherokee.....1%	Auburn.....-4%	Minneapolis.....13%	Omaha.....0%	Jamaica.....15%
Council Bluffs.....-1%	Augusta.....-5%	Rochester.....-1%	Valentine.....-15%	Jamestown.....-7%
Creston.....-1%	Bangor.....-6%	St Cloud.....2%	NEVADA.....1%	Kingston.....-4%
Davenport.....1%	Bath.....-6%	St Paul.....12%	Carson City.....-4%	Long Island.....30%
Decorah.....-8%	Brunswick.....-1%	Thief River Falls.....-2%	Elko.....12%	Montauk.....-7%
Des Moines.....5%	Camden.....-10%	Willmar.....-6%	Ely.....-3%	New York (Manhattan)31%
Dubuque.....-4%	Cutler.....-7%	MISSISSIPPI.....-6%	Fallon.....0%	New York City.....31%
Fort Dodge.....-3%	Dexter.....-4%	Clarksdale.....-9%	Las Vegas.....3%	Newcomb.....0%
Mason City.....-3%	Northern Area.....-8%	Columbus.....0%	Reno.....-1%	Niagara Falls.....-6%
Ottumwa.....-6%	Portland.....2%	Greenville.....-14%	NEW HAMPSHIRE.....-1%	Plattsburgh.....-1%
Sheldon.....-7%	MARYLAND.....2%	Greenwood.....-10%	Charlestown.....-5%	Poughkeepsie.....1%
Shenandoah.....-14%	Annapolis.....8%	Gulfport.....-6%	Concord.....-3%	Queens.....18%
Sioux City.....5%	Baltimore.....7%	Jackson.....-3%	Dover.....1%	Rochester.....2%
Spencer.....-7%	Bethesda.....13%	Laurel.....-7%	Lebanon.....-3%	Rockaway.....11%
Waterloo.....-3%	Church Hill.....-4%	McComb.....-11%	Littleton.....-6%	Rome.....-4%
KANSAS.....-3%	Cumberland.....-8%	Meridian.....3%	Manchester.....2%	Staten Island.....8%
Colby.....-9%	Elkton.....-5%	Tupelo.....-7%	New Boston.....3%	Stewart.....-5%
Concordia.....-12%	Frederick.....7%	MISSOURI.....-3%	NEW JERSEY.....9%	Syracuse.....2%
Dodge City.....-4%	Laurel.....8%	Cape Girardeau.....-5%	Atlantic City.....4%	Tonawanda.....-1%
Emporia.....3%	Salisbury.....-6%	Caruthersville.....-7%	Brick.....2%	Utica.....-6%
Fort Scott.....-6%	MASSACHUSETTS.....12%	Chillicothe.....4%	Dover.....9%	Watertown.....-1%
Hays.....-13%	Ayer.....6%	Columbia.....4%	Edison.....13%	West Point.....6%
Hutchinson.....-6%	Bedford.....15%	East Lynne.....3%	Hackensack.....10%	White Plains.....14%
Independence.....9%	Boston.....37%	Farmington.....-8%	Monmouth.....12%	NORTH CAROLINA.....-4%
Kansas City.....5%	Brockton.....20%	Hannibal.....-2%	Newark.....11%	Asheville.....-7%
Liberal.....2%	Cape Cod.....4%	Independence.....5%	Passaic.....12%	Charlotte.....7%
Salina.....-7%	Chicopee.....7%	Jefferson City.....-5%	Paterson.....7%	Durham.....0%
Topeka.....-1%	Dedham.....18%	Joplin.....-6%	Princeton.....10%	Elizabeth City.....-8%
Wichita.....-4%	Fitchburg.....11%	Kansas City.....6%	Summit.....16%	Fayetteville.....-6%
KENTUCKY.....-4%	Hingham.....19%	Kirksville.....-15%	Trenton.....7%	Goldsboro.....0%
Ashland.....-4%	Lawrence.....14%	Knob Noster.....2%	NEW MEXICO.....-8%	Greensboro.....-3%
Bowling Green.....-5%	Nantucket.....9%	Lebanon.....-12%	Alamogordo.....-11%	Hickory.....-8%
Campton.....-11%	New Bedford.....7%	Poplar Bluff.....-10%	Albuquerque.....-3%	Kinston.....-9%
Covington.....2%	Northfield.....2%	Saint Charles.....1%	Clovis.....-11%	Raleigh.....3%
Elizabethtown.....-10%	Pittsfield.....1%	Saint Joseph.....-1%	Farmington.....-1%	Rocky Mount.....-7%
Frankfort.....7%	Springfield.....8%	Springfield.....-8%	Fort Sumner.....-2%	Wilmington.....-6%
Hazard.....-9%	MICHIGAN.....1%	St Louis.....8%	Gallup.....-7%	Winston-Salem.....-5%
Hopkinsville.....-5%	Battle Creek.....-1%	MONTANA.....-3%	Halman.....-10%	NORTH DAKOTA.....4%
Lexington.....1%	Detroit.....7%	Billings.....-2%	Las Cruces.....-8%	Bismarck.....3%
London.....-7%	Flint.....-4%	Butte.....-3%	Santa Fe.....-8%	Dickinson.....15%
Louisville.....2%	Grand Rapids.....1%	Fairview.....11%	Socorro.....-14%	Fargo.....0%
Owensboro.....-4%	Grayling.....-7%	Great Falls.....-6%	Truth or Consequences.....-8%	Grand Forks.....-1%
Paducah.....0%	Jackson.....-1%	Havre.....-9%	Tucumcari.....-8%	Jamestown.....-4%
Pikeville.....-8%	Lansing.....0%	Helena.....-2%	NEW YORK.....6%	Minot.....9%
Somerset.....-11%	Marquette.....3%	Kalispell.....-6%	Albany.....7%	Nekoma.....-10%
White Plains.....-4%	Pontiac.....12%	Miles City.....-7%	Amityville.....9%	Williston.....21%
LOUISIANA.....0%	Royal Oak.....7%	Missoula.....-6%	Batavia.....1%	OHIO.....0%
Alexandria.....-3%	Saginaw.....-5%	NEBRASKA.....-8%	Binghamton.....-2%	Akron.....1%
Baton Rouge.....10%	Traverse City.....-2%	Alliance.....-10%	Bronx.....10%	Canton.....-2%
Houma.....4%	MINNESOTA.....-1%	Columbus.....-7%	Brooklyn.....7%	Chillicothe.....-2%
Lafayette.....1%	Bemidji.....-6%	Grand Island.....-8%	Buffalo.....1%	Cincinnati.....3%
Lake Charles.....6%	Brainerd.....-3%	Hastings.....-9%	Elmira.....-3%	Cleveland.....3%
Mandeville.....-2%	Duluth.....2%	Lincoln.....-4%	Flushing.....16%	Columbus.....5%
Minden.....-5%	Fergus Falls.....-10%	McCook.....-9%	Garden City.....15%	Dayton.....1%
Monroe.....-8%	Magnolia.....-8%	Norfolk.....-10%	Hicksville.....14%	Lima.....-5%
New Orleans.....2%				Marietta.....-5%
Shreveport.....-4%				Marion.....-6%

Newark.....3%	Punxsutawney.....-3%	Austin.....5%	Lynchburg.....-9%	Powell.....-3%
Sandusky.....-3%	Reading.....2%	Bay City.....28%	Norfolk.....-2%	Rawlins.....8%
Steubenville.....1%	Scranton.....1%	Beaumont.....7%	Petersburg.....-3%	Riverton.....-6%
Toledo.....7%	Somerset.....-9%	Brownwood.....-8%	Radford.....-9%	Rock Springs.....1%
Warren.....-5%	Southeastern.....9%	Bryan.....-3%	Reston.....7%	Sheridan.....-3%
Youngstown.....-3%	Uniontown.....-6%	Childress.....-14%	Richmond.....2%	Wheatland.....-3%
Zanesville.....-1%	Valley Forge.....11%	Corpus Christi.....6%	Roanoke.....-9%	
	Warminster.....11%	Dallas.....6%	Staunton.....-7%	CANADIAN AREA MODIFIERS
OKLAHOMA.....-5%	Warrendale.....5%	Del Rio.....-1%	Tazewell.....-6%	These figures assume an
Adams.....-10%	Washington.....8%	El Paso.....-7%	Virginia Beach.....-3%	exchange rate of \$1.00 Canadian
Ardmore.....-1%	Wilkes Barre.....-1%	Fort Worth.....1%	Williamsburg.....-3%	to \$0.76 U.S.
Clinton.....-3%	Williamsport.....-2%	Galveston.....12%	Winchester.....2%	
Durant.....-11%	York.....-1%	Giddings.....-1%		ALBERTA AVERAGE... 13%
Enid.....-4%		Greenville.....3%	WASHINGTON.....0%	Calgary.....14%
Lawton.....-8%	RHODE ISLAND.....5%	Houston.....15%	Clarkston.....-8%	Edmonton.....14%
McAlester.....-7%	Bristol.....5%	Huntsville.....15%	Everett.....2%	Fort McMurray.....12%
Muskogee.....-8%	Coventry.....5%	Longview.....0%	Olympia.....-2%	
Norman.....-4%	Cranston.....6%	Lubbock.....-7%	Pasco.....1%	BRITISH COLUMBIA
Oklahoma City.....-3%	Davisville.....5%	Lufkin.....-4%	Seattle.....11%	AVERAGE.....7%
Ponca City.....-1%	Narragansett.....5%	McAllen.....-13%	Spokane.....-3%	Fraser Valley.....6%
Poteau.....-7%	Newport.....5%	Midland.....10%	Tacoma.....2%	Okanagan.....6%
Pryor.....-6%	Providence.....6%	Palestine.....1%	Vancouver.....3%	Vancouver.....9%
Shawnee.....-8%	Warwick.....5%	Plano.....7%	Wenatchee.....-6%	
Tulsa.....-1%		San Angelo.....-6%	Yakima.....-5%	MANITOBA AVERAGE... 0%
Woodward.....5%	SOUTH CAROLINA.....-2%	San Antonio.....0%		North Manitoba.....0%
	Aiken.....4%	Texarkana.....-8%	WEST VIRGINIA.....-5%	Selkirk.....0%
OREGON.....-3%	Beaufort.....-2%	Tyler.....-7%	Beckley.....-5%	South Manitoba.....0%
Adrian.....-12%	Charleston.....-1%	Victoria.....0%	Bluefield.....0%	Winnipeg.....0%
Bend.....-5%	Columbia.....-2%	Waco.....-3%	Charleston.....4%	
Eugene.....-3%	Greenville.....4%	Wichita Falls.....-9%	Clarksburg.....-7%	NEW BRUNSWICK
Grants Pass.....-5%	Myrtle Beach.....-8%	Woodson.....-3%	Fairmont.....-11%	AVERAGE.....-13%
Klamath Falls.....-8%	Rock Hill.....-6%		Huntington.....-4%	Moncton.....-13%
Pendleton.....-3%	Spartanburg.....3%	UTAH.....-3%	Lewisburg.....-14%	
Portland.....10%		Clearfield.....0%	Martinsburg.....-5%	NEWFOUNDLAND/
Salem.....-2%	SOUTH DAKOTA.....-6%	Green River.....-3%	Morgantown.....-4%	LABRADOR AVERAGE-3%
	Aberdeen.....-7%	Ogden.....-9%	New Martinsville.....-9%	
PENNSYLVANIA.....-1%	Mitchell.....-6%	Provo.....-6%	Parkersburg.....1%	NOVA SCOTIA
Allentown.....3%	Mobridge.....-9%	Salt Lake City.....1%	Romney.....-7%	AVERAGE.....-8%
Altoona.....-8%	Pierre.....-10%		Sugar Grove.....-8%	Amherst.....-8%
Beaver Springs.....-5%	Rapid City.....-8%	VERMONT.....-5%	Wheeling.....5%	Nova Scotia.....-7%
Bethlehem.....4%	Sioux Falls.....-1%	Albany.....-7%		Sydney.....-8%
Bradford.....-8%	Watertown.....-4%	Battleboro.....-4%	WISCONSIN.....0%	
Butler.....-2%		Beecher Falls.....-8%	Amery.....-1%	ONTARIO AVERAGE.... 7%
Chambersburg.....-7%	TENNESSEE.....-2%	Bennington.....-6%	Beloit.....5%	London.....7%
Clearfield.....-3%	Chattanooga.....2%	Burlington.....3%	Clam Lake.....-8%	Thunder Bay.....6%
DuBois.....-10%	Clarksville.....1%	Montpelier.....-4%	Eau Claire.....-2%	Toronto.....7%
East Stroudsburg.....-5%	Cleveland.....-1%	Rutland.....-7%	Green Bay.....3%	
Erie.....-6%	Columbia.....-7%	Springfield.....-6%	La Crosse.....0%	QUEBEC AVERAGE.....-1%
Genesee.....-4%	Cookeville.....-8%	White River Junction.....-5%	Ladysmith.....-2%	Montreal.....-1%
Greensburg.....-4%	Jackson.....-2%		Madison.....8%	Quebec City.....-1%
Harrisburg.....3%	Kingsport.....-5%	VIRGINIA.....-4%	Milwaukee.....6%	
Hazleton.....-3%	Knoxville.....-2%	Abingdon.....-9%	Oshkosh.....4%	SASKATCHEWAN
Johnstown.....-9%	McKenzie.....-8%	Alexandria.....10%	Portage.....0%	AVERAGE.....4%
Kittanning.....-6%	Memphis.....1%	Charlottesville.....-6%	Prairie du Chien.....-7%	La Ronge.....3%
Lancaster.....-1%	Nashville.....2%	Chesapeake.....-4%	Wausau.....-3%	Prince Albert.....2%
Meadville.....-9%		Culpeper.....-4%		Saskatoon.....5%
Montrose.....-4%	TEXAS.....1%	Farmville.....-12%	WYOMING.....-1%	
New Castle.....-3%	Abilene.....-2%	Fredericksburg.....-5%	Casper.....1%	
Philadelphia.....11%	Amarillo.....-2%	Galax.....-10%	Cheyenne/Laramie.....-2%	
Pittsburgh.....6%	Arlington.....1%	Harrisonburg.....-6%	Gillette.....3%	
Pottsville.....-8%				

crews

CRAFT CODE	AVG. COST /HR	CREW COMPOSITION	CRAFT CODE	AVG. COST /HR	CREW COMPOSITION
1A	\$48.70.....	acoustic ceiling installer	1I	\$44.60.....	insulation installer
2A	\$55.30.....	appliance installer	2I	\$51.30.....	cabinet installer
3A	\$66.10.....	appliance refinisher			laborer
4A	\$57.50.....	awning installer	3I	\$58.90.....	flooring installer
5A	\$43.50.....	awning installer's helper	4I	\$44.10.....	flooring installer's helper
6A	\$50.50.....	awning installer awning installer's helper	5I	\$51.50.....	flooring installer flooring installer's helper
1B	\$35.40.....	cleaning laborer	6I	\$61.50.....	paneling installer
2B	\$77.70.....	post & beam carpenter	7I	\$46.00.....	paneling installer's helper
3B	\$55.30.....	post & beam carpenter's helper	2L	\$41.00.....	cabinet installer's helper
4B	\$66.50.....	post & beam carpenter post & beam carpenter's helper	3L	\$38.00.....	masking & moving laborer
1C	\$61.50.....	carpenter	1M	\$63.80.....	mason
5C	\$46.00.....	carpenter's helper	2M	\$58.60.....	mason's helper
6C	\$53.80.....	carpenter carpenter's helper	3M	\$45.20.....	hod carrier
1D	\$42.00.....	demolition laborer	4M	\$55.90.....	mason mason's helper hod carrier / laborer
2D	\$48.80.....	drywall hanger drywall hanger's helper	5M	\$61.20.....	mason's helper
3D	\$55.50.....	drywall hanger	6M	\$103.00.....	stone carver
4D	\$42.00.....	drywall hanger's helper	7M	\$44.60.....	mobile home repair specialist
5D	\$56.00.....	drywall taper	10	\$80.60.....	equipment operator
6D	\$51.20.....	drywall hanger drywall hanger's helper drywall taper	20	\$57.70.....	concrete saw operator
5E	\$40.10.....	excavation laborer	4P	\$57.50.....	plasterer
6E	\$60.40.....	excavation laborer equipment operator	5P	\$51.60.....	plasterer's helper
7E	\$66.10.....	electrician	6P	\$54.60.....	plasterer plasterer's helper
8E	\$49.30.....	electrician's helper	7P	\$71.20.....	plumber
9E	\$57.70.....	electrician electrician's helper	8P	\$53.80.....	paneling installer paneling installer's helper
1F	\$58.40.....	concrete form installer	9P	\$54.40.....	plumber's helper
2F	\$42.50.....	concrete laborer	3R	\$60.40.....	retaining wall installer
3F	\$50.50.....	concrete form installer concrete laborer	4R	\$72.40.....	roofer
4F	\$53.80.....	carpenter (fence installer) carpenter's helper	5R	\$61.30.....	roofer's helper
5F	\$59.40.....	painter	6R	\$66.90.....	roofer roofer's helper
6F	\$58.30.....	concrete finisher	1S	\$49.60.....	susp. ceiling installer susp. ceiling installer's helper
7F	\$48.20.....	concrete finisher's helper	2S	\$56.60.....	susp. ceiling installer
8F	\$53.30.....	concrete finisher concrete finisher's helper	3S	\$42.50.....	susp. ceiling installer's helper
9F	\$51.90.....	concrete form installer concrete laborer concrete finisher concrete finisher's helper	4S	\$60.60.....	siding installer
1G	\$81.60.....	compaction grouting specialist	5S	\$45.30.....	siding installer's helper
2G	\$62.10.....	compaction grouting specialist concrete laborer	6S	\$53.00.....	siding installer siding installer's helper
1H	\$52.30.....	hazardous materials laborer	7S	\$54.50.....	security system installer
2H	\$65.40.....	HVAC installer	8S	\$69.20.....	swimming pool installer
3H	\$48.00.....	wallpaper hanger	9S	\$52.30.....	water extractor
			1T	\$57.10.....	tile layer
			7Z	\$42.10.....	mildew remediation specialist
			8Z	\$26.10.....	mildew remediation assistant
			9Z	\$34.10.....	mildew remediation specialist mildew remediation assistant

Craft@Hrs Unit Material Labor Total

Acoustic Ceilings

Minimum charge.

	Craft@Hrs	Unit	Material	Labor	Total
for acoustic ceiling tile work	1A@1.25	ea	22.30	60.90	83.20

1/2" on strips. 12" x 12" tiles stapled in place. Includes 12" x 12" ceiling tiles, staples, and installation labor. Does not include furring strips. Includes 3% waste.

1/2" ceiling tiles on furring strips					
replace, smooth face	1A@.025	sf	1.36	1.22	2.58
replace, fissured face	1A@.025	sf	1.74	1.22	2.96
replace, textured face	1A@.025	sf	2.02	1.22	3.24
replace, patterned face	1A@.025	sf	2.13	1.22	3.35
remove only	1D@.012	sf	—	.50	.50

1/2" on flat ceiling. 12" x 12" tiles glued in place. Includes 12" x 12" ceiling tiles, glue, and installation labor. Includes 3% waste.

1/2" ceiling tiles on flat ceiling					
replace, smooth face	1A@.029	sf	1.36	1.41	2.77
replace, fissured face	1A@.029	sf	1.74	1.41	3.15
replace, textured face	1A@.029	sf	2.02	1.41	3.43
replace, patterned face	1A@.029	sf	2.13	1.41	3.54
remove only	1D@.016	sf	—	.67	.67

5/8" on strips. 12" x 12" tiles stapled in place. Includes 12" x 12" ceiling tiles, staples, and installation labor. Does not include furring strips. Includes 3% waste.

5/8" ceiling tiles on furring strips					
replace, smooth face	1A@.025	sf	1.74	1.22	2.96
replace, fissured face	1A@.025	sf	2.02	1.22	3.24
replace, textured face	1A@.025	sf	2.24	1.22	3.46
replace, patterned face	1A@.025	sf	2.39	1.22	3.61
remove only	1D@.012	sf	—	.50	.50

5/8" on flat ceiling. 12" x 12" tiles glued in place. Includes 12" x 12" ceiling tiles, glue, and installation labor. Includes 3% waste.

5/8" ceiling tiles on flat ceiling					
replace, smooth face	1A@.029	sf	1.74	1.41	3.15
replace, fissured face	1A@.029	sf	2.02	1.41	3.43
replace, textured face	1A@.029	sf	2.24	1.41	3.65
replace, patterned face	1A@.029	sf	2.39	1.41	3.80
remove only	1D@.016	sf	—	.67	.67

3/4" on strips. 12" x 12" tiles stapled in place. Includes 12" x 12" ceiling tiles, staples, and installation labor. Does not include furring strips. Includes 3% waste.

3/4" ceiling tiles on furring strips					
replace, smooth face	1A@.025	sf	2.02	1.22	3.24
replace, fissured face	1A@.025	sf	2.24	1.22	3.46
replace, textured face	1A@.025	sf	2.33	1.22	3.55
replace, patterned face	1A@.025	sf	2.59	1.22	3.81
remove	1D@.012	sf	—	.50	.50

	Craft@Hrs	Unit	Material	Labor	Total
3/4" on flat ceiling. 12" x 12" tiles glued in place. Includes 12" x 12" ceiling tiles, glue, and installation labor. Includes 3% waste.					
3/4" ceiling tiles on flat ceiling					
replace, smooth face	1A@.029	sf	2.02	1.41	3.43
replace, fissured face	1A@.029	sf	2.24	1.41	3.65
replace, textured face	1A@.029	sf	2.33	1.41	3.74
replace, patterned face	1A@.029	sf	2.59	1.41	4.00
remove	1D@.016	sf	—	.67	.67

Additional costs for acoustical ceiling tile.

add for 3/4" tiles with fire rating	—	sf	.38	—	.38
add for aluminum-coated tiles	—	sf	.56	—	.56

Furring strips. Includes 1" x 2" furring strips, nails, construction adhesive as needed, and installation labor. Furring strips placed as fireblocking is included. Includes 4% waste.

replace 1" x 2" furring strips 12" on center	1A@.007	sf	.33	.34	.67
remove	1D@.009	sf	—	.38	.38

Repair loose ceiling tile.

repair loose acoustic tile	1A@.253	ea	.15	12.30	12.45
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Angled install for ceiling tile.

add 24% for diagonal install
 add 31% for chevron install
 add 40% for herringbone install

Time & Material Charts (selected items)**Acoustic Ceiling Materials**

1/2" thick acoustic tile (per 12" x 12" tile)					
smooth face, (\$1.13 each, 1 sf, 3% waste)	—	sf	1.16	—	1.16
fissured face, (\$1.53 each, 1 sf, 3% waste)	—	sf	1.58	—	1.58
textured face, (\$1.76 each, 1 sf, 3% waste)	—	sf	1.81	—	1.81
patterned face, (\$1.89 each, 1 sf, 3% waste)	—	sf	1.95	—	1.95
5/8" thick acoustic tile (per 12" x 12" tile)					
smooth face, (\$1.53 each, 1 sf, 3% waste)	—	sf	1.58	—	1.58
fissured face, (\$1.76 each, 1 sf, 3% waste)	—	sf	1.81	—	1.81
textured face, (\$2.03 each, 1 sf, 3% waste)	—	sf	2.09	—	2.09
patterned face, (\$2.13 each, 1 sf, 3% waste)	—	sf	2.19	—	2.19
3/4" thick acoustic tile (per 12" x 12" tile)					
smooth face, (\$1.76 each, 1 sf, 3% waste)	—	sf	1.81	—	1.81
fissured face, (\$2.03 each, 1 sf, 3% waste)	—	sf	2.09	—	2.09
textured face, (\$2.10 each, 1 sf, 3% waste)	—	sf	2.16	—	2.16
patterned face, (\$2.30 each, 1 sf, 3% waste)	—	sf	2.37	—	2.37

Acoustic Ceiling Labor

	base wage	paid leave	true wage	taxes & ins.	total
Laborer					
Acoustic ceiling installer	\$26.40	2.06	\$28.46	20.24	\$48.70
Demolition laborer	\$22.00	1.72	\$23.72	18.28	\$42.00

Paid Leave is calculated based on two weeks paid vacation, one week sick leave, and seven paid holidays. Employer's matching portion of **FICA** is 7.65 percent. **FUTA** (Federal Unemployment) is .8 percent. **Worker's compensation** for the acoustic ceiling trade was calculated using a national average of 12.30 percent. **Unemployment insurance** was calculated using a national average of 8 percent. **Health insurance** was calculated based on a projected national average for 2017 of \$1,188 per employee (and family when applicable) per month. Employer pays 80 percent for a per month cost of \$950 per employee. **Retirement** is based on a 401(k) retirement program with employer matching of 50 percent. Employee contributions to the 401(k) plan are an average of 6 percent of the true wage. **Liability insurance** is based on a national average of 10.0 percent.

	Craft@Hrs	Unit	Material	Labor	Total
Acoustic Ceiling Labor Productivity					
Repair of ceiling tile					
repair loose tile	1A@.253	ea	—	12.30	12.30
Installation of ceiling tile					
tiles on furring strips	1A@.025	sf	—	1.22	1.22
tiles on flat ceiling	1A@.029	sf	—	1.41	1.41
furring strips	1A@.007	sf	—	.34	.34

Appliances**Minimum charge for appliances.**

for appliance work	2A@1.05	ea	17.20	58.10	75.30
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Gas cook top.

replace, standard grade		7P@1.99	ea	627.00	142.00	769.00
replace, high grade		7P@1.99	ea	826.00	142.00	968.00
replace, with grill / griddle		7P@1.99	ea	1,110.00	142.00	1,252.00
remove		1D@.615	ea	—	25.80	25.80
remove for work, then reinstall		7P@2.20	ea	4.96	157.00	161.96

Gas range, free standing.

replace, economy grade		7P@2.05	ea	658.00	146.00	804.00
replace, standard grade		7P@2.05	ea	882.00	146.00	1,028.00
replace, high grade		7P@2.05	ea	1,200.00	146.00	1,346.00
replace, with grill / griddle		7P@2.10	ea	1,620.00	150.00	1,770.00
remove		1D@.618	ea	—	26.00	26.00
remove for work, then reinstall		7P@2.80	ea	5.27	199.00	204.27

Space-saver gas range, free-standing.

replace, standard grade		7P@1.99	ea	857.00	142.00	999.00
replace, high grade		7P@1.99	ea	1,110.00	142.00	1,252.00
remove		1D@.618	ea	—	26.00	26.00
remove for work, then reinstall		7P@2.80	ea	5.27	199.00	204.27

	Craft@Hrs	Unit	Material	Labor	Total
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Gas range, free-standing with double oven.

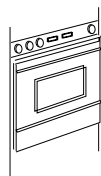
replace, standard grade	7P@2.05	ea	1,400.00	146.00	1,546.00
replace, high grade	7P@2.05	ea	1,660.00	146.00	1,806.00
replace, deluxe grade	7P@2.05	ea	1,980.00	146.00	2,126.00
remove	1D@.618	ea	—	26.00	26.00
remove for work, then reinstall	7P@2.80	ea	5.27	199.00	204.27

Restaurant-style gas range. Some common manufacturers are Viking, Thermador and Garland. Also, be aware of "mimicked" restaurant styles from prominent manufacturers of home kitchen ranges that sell from \$1,000 to \$2,500.

replace, standard grade	7P@2.88	ea	3,580.00	205.00	3,785.00
replace, high grade	7P@2.88	ea	7,840.00	205.00	8,045.00
replace, deluxe grade	7P@2.88	ea	12,400.00	205.00	12,605.00
remove	1D@1.58	ea	—	66.40	66.40
remove for work, then reinstall	7P@3.55	ea	7.46	253.00	260.46

**Gas wall oven.**

replace, economy grade	7P@1.79	ea	644.00	127.00	771.00
replace, standard grade	7P@1.79	ea	841.00	127.00	968.00
replace, high grade	7P@1.79	ea	1,070.00	127.00	1,197.00
replace, deluxe grade	7P@1.79	ea	1,320.00	127.00	1,447.00
remove	1D@.630	ea	—	26.50	26.50
remove for work, then reinstall	7P@2.48	ea	6.22	177.00	183.22

**Gas double wall oven.**

replace, economy grade	7P@2.22	ea	1,410.00	158.00	1,568.00
replace, standard grade	7P@2.22	ea	1,650.00	158.00	1,808.00
replace, high grade	7P@2.22	ea	2,090.00	158.00	2,248.00
replace, deluxe grade	7P@2.22	ea	2,590.00	158.00	2,748.00
remove	1D@.782	ea	—	32.80	32.80
remove for work, then reinstall	7P@2.70	ea	7.46	192.00	199.46

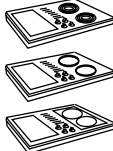
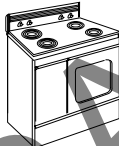
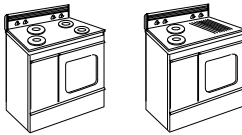
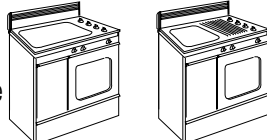
**Electric cook top.**

replace, economy grade	7E@1.32	ea	339.00	87.30	426.30
replace, standard grade	7E@1.32	ea	496.00	87.30	583.30
replace, high grade	7E@1.32	ea	622.00	87.30	709.30
replace, cook top with grill / griddle	7E@1.32	ea	746.00	87.30	833.30
remove	1D@.612	ea	—	25.70	25.70
remove for work, then reinstall	7E@2.21	ea	2.47	146.00	148.47

**Solid-disk electric cook top.**

replace, standard grade	7E@1.32	ea	782.00	87.30	869.30
replace, high grade	7E@1.32	ea	882.00	87.30	969.30
replace, with grill / griddle	7E@1.32	ea	955.00	87.30	1,042.30
remove	1D@.612	ea	—	25.70	25.70
remove for work, then reinstall	7E@2.21	ea	2.47	146.00	148.47



		Craft@Hrs	Unit	Material	Labor	Total
Flat-surface radiant electric cook top.						
replace, standard grade		7E@1.32	ea	944.00	87.30	1,031.30
replace, high grade		7E@1.32	ea	1,070.00	87.30	1,157.30
replace, cook top with grill / griddle		7E@1.32	ea	1,140.00	87.30	1,227.30
remove		1D@.612	ea	—	25.70	25.70
remove for work, then reinstall		7E@2.21	ea	2.47	146.00	148.47
Modular electric cook top.						
replace, two coil (Calrod) burners		7E@.287	ea	385.00	19.00	404.00
replace, two solid disk burners		7E@.287	ea	460.00	19.00	479.00
replace, two flat-surface radiant burners		7E@.287	ea	521.00	19.00	540.00
replace, griddle		7E@.287	ea	548.00	19.00	567.00
replace, grill		7E@.287	ea	584.00	19.00	603.00
replace, downdraft unit		7E@.287	ea	286.00	19.00	305.00
add for telescopic downdraft unit		—	ea	184.00	—	184.00
remove	1D@.215	ea	—	9.03	9.03	
Remove for work and reinstall.						
Modular cooking unit		7E@.344	ea	—	22.70	22.70
Modular downdraft unit		7E@.394	ea	2.52	26.00	28.52
Electric range, free-standing.						
replace, economy grade		2A@1.05	ea	473.00	58.10	531.10
replace, standard grade		2A@1.05	ea	680.00	58.10	738.10
replace, high grade		2A@1.05	ea	964.00	58.10	1,022.10
replace, deluxe grade		2A@1.05	ea	1,250.00	58.10	1,308.10
replace, cook top with grill / griddle		2A@1.05	ea	1,420.00	58.10	1,478.10
remove		1D@.505	ea	—	21.20	21.20
remove for work, then reinstall		2A@1.72	ea	4.96	95.10	100.06
Solid-disk electric range, free-standing.						
replace, standard grade		2A@1.05	ea	906.00	58.10	964.10
replace, high grade		2A@1.05	ea	1,010.00	58.10	1,068.10
replace, deluxe grade		2A@1.05	ea	1,190.00	58.10	1,248.10
replace, cook top with grill / griddle		2A@1.05	ea	1,480.00	58.10	1,538.10
remove		1D@.505	ea	—	21.20	21.20
remove for work, then reinstall		2A@1.72	ea	4.96	95.10	100.06
Flat-surface radiant electric range, free-standing.						
replace, standard grade		2A@1.05	ea	1,080.00	58.10	1,138.10
replace, high grade		2A@1.05	ea	1,190.00	58.10	1,248.10
replace, deluxe grade		2A@1.05	ea	1,480.00	58.10	1,538.10
replace, cook top with grill / griddle		2A@1.05	ea	2,240.00	58.10	2,298.10
remove		1D@.505	ea	—	21.20	21.20
remove for work, then reinstall		2A@1.72	ea	4.96	95.10	100.06

		Craft@Hrs	Unit	Material	Labor	Total
Drop-in or slide-in electric range.						
replace, standard grade		2A@1.05	ea	944.00	58.10	1,002.10
replace, high grade		2A@1.05	ea	1,250.00	58.10	1,308.10
replace, deluxe grade		2A@1.05	ea	1,450.00	58.10	1,508.10
replace, cook top with grill / griddle		2A@1.05	ea	1,810.00	58.10	1,868.10
remove		1D@.505	ea	—	21.20	21.20
remove for work, then reinstall		2A@1.72	ea	6.22	95.10	101.32

Space-saver electric range, free-standing.

replace, standard grade	2A@.980	ea	1,260.00	54.20	1,314.20
replace, high grade	2A@.980	ea	1,320.00	54.20	1,374.20
remove	1D@.505	ea	—	21.20	21.20
remove for work, then reinstall	2A@1.72	ea	4.96	95.10	100.06

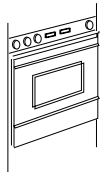
High-low electric range with microwave high.

replace, standard grade		2A@1.90	ea	403.00	105.00	508.00
replace, high grade		2A@1.90	ea	540.00	105.00	645.00
replace, deluxe grade		2A@1.90	ea	835.00	105.00	940.00
remove		1D@.883	ea	—	37.10	37.10
remove for work, then reinstall		2A@2.11	ea	6.22	117.00	123.22

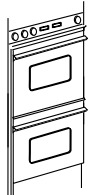
Electric range, free-standing with double oven.

replace, standard grade	2A@.980	ea	1,180.00	54.20	1,234.20
replace, high grade	2A@.980	ea	1,450.00	54.20	1,504.20
replace, deluxe grade	2A@.980	ea	1,930.00	54.20	1,984.20
remove	1D@.505	ea	—	21.20	21.20
remove for work, then reinstall	2A@1.72	ea	2.47	95.10	97.57

Electric wall oven.

replace, economy grade		7E@1.55	ea	695.00	102.00	797.00
replace, standard grade		7E@1.55	ea	804.00	102.00	906.00
replace, high grade		7E@1.55	ea	1,020.00	102.00	1,122.00
replace, deluxe grade		7E@1.55	ea	1,270.00	102.00	1,372.00
remove		1D@.652	ea	—	27.40	27.40
remove for work, then reinstall		7E@2.50	ea	2.47	165.00	167.47

Electric double wall oven.

replace, economy grade		7E@2.72	ea	1,020.00	180.00	1,200.00
replace, standard grade		7E@2.72	ea	1,280.00	180.00	1,460.00
replace, high grade		7E@2.72	ea	1,840.00	180.00	2,020.00
replace, deluxe grade		7E@2.72	ea	2,450.00	180.00	2,630.00
remove		1D@.774	ea	—	32.50	32.50
remove for work, then reinstall		7E@2.78	ea	3.75	184.00	187.75

	Craft@Hrs	Unit	Material	Labor	Total
Warming drawer.					
replace, standard grade	7E@.977	ea	830.00	64.60	894.60
replace, high grade	7E@.977	ea	996.00	64.60	1,060.60
replace, deluxe grade	7E@.977	ea	1,410.00	64.60	1,474.60
remove	1D@.444	ea	—	18.60	18.60
remove for work, then reinstall	7E@1.66	ea	9.96	110.00	119.96

Range hood. Under-cabinet range hoods. Economy and standard grades may be non-vented. Stainless steel hoods usually range from high to custom grade. Designer hoods are usually deluxe or custom grade.

replace, economy grade	2A@1.33	ea	80.90	73.50	154.40
replace, standard grade	2A@1.33	ea	134.00	73.50	207.50
replace, high grade	2A@1.33	ea	164.00	73.50	237.50
replace, deluxe grade	2A@1.33	ea	199.00	73.50	272.50
replace, custom grade	2A@1.33	ea	262.00	73.50	335.50
remove	1D@.422	ea	—	17.70	17.70
remove for work, then reinstall	2A@1.58	ea	2.47	87.40	89.87



Range hood, oversized. Under-cabinet range hoods. Economy and standard grades may be non-vented. Stainless steel hoods usually range from high to custom grade. Designer hoods are usually deluxe or custom grade.

replace, standard grade	2A@1.46	ea	435.00	80.70	515.70
replace, high grade	2A@1.46	ea	522.00	80.70	602.70
replace, deluxe grade	2A@1.46	ea	639.00	80.70	719.70
replace, custom grade	2A@1.46	ea	840.00	80.70	920.70
remove	1D@.422	ea	—	17.70	17.70
remove for work, then reinstall	2A@2.04	ea	2.47	113.00	115.47



Range hood, slide-out. Under-cabinet slide-out range hoods.

replace, standard grade	2A@1.58	ea	591.00	87.40	678.40
replace, high grade	2A@1.58	ea	713.00	87.40	800.40
replace, deluxe grade	2A@1.58	ea	819.00	87.40	906.40
remove	1D@.492	ea	—	20.70	20.70
remove for work, then reinstall	2A@2.84	ea	2.47	157.00	159.47

Chimney range hood. Island-mount or wall-mount vented chimney hood. The most common finish (and the most popular) is stainless steel, but a wide range of finishes are available. Copper chimney hoods usually fall in the deluxe to custom deluxe grades.

replace, economy grade	2A@2.62	ea	1,040.00	145.00	1,185.00
replace, standard grade	2A@2.62	ea	1,410.00	145.00	1,555.00
replace, high grade	2A@2.62	ea	1,820.00	145.00	1,965.00
replace, deluxe grade	2A@2.88	ea	2,310.00	159.00	2,469.00
replace, custom grade	2A@2.88	ea	3,160.00	159.00	3,319.00
replace, custom deluxe grade	2A@3.04	ea	4,440.00	168.00	4,608.00
remove	1D@.787	ea	—	33.10	33.10
remove for work, then reinstall	2A@4.00	ea	2.47	221.00	223.47

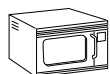
Downdraft ventilation system. Stand-alone downdraft ventilation systems used with cook tops and ranges. These units are often telescopic and retract when not in use. Do not use these prices for cook tops and ranges that have integrated downdraft systems.

replace, standard grade	2A@1.87	ea	614.00	103.00	717.00
replace, high grade	2A@1.87	ea	738.00	103.00	841.00
replace, deluxe grade	2A@1.87	ea	1,040.00	103.00	1,143.00
remove	1D@.576	ea	—	24.20	24.20
remove for work, then reinstall	2A@3.04	ea	2.47	168.00	170.47

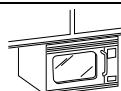
Craft@Hrs Unit Material Labor Total

Microwave oven. Countertop microwave.

replace, economy grade	2A@.290	ea	123.00	16.00	139.00
replace, standard grade	2A@.290	ea	333.00	16.00	349.00
replace, high grade	2A@.290	ea	481.00	16.00	497.00
replace, deluxe grade	2A@.290	ea	684.00	16.00	700.00
replace, custom grade	2A@.290	ea	825.00	16.00	841.00
remove	1D@.182	ea	—	7.64	7.64
remove for work, then reinstall	2A@.345	ea	—	19.10	19.10

**Microwave, under cabinet.** Microwave oven mounted to wall and/or cabinets. Also called an "over-the-range" microwave.

replace, standard grade	2A@.950	ea	444.00	52.50	496.50
replace, high grade	2A@.950	ea	689.00	52.50	741.50
replace, deluxe grade	2A@.950	ea	818.00	52.50	870.50
remove	1D@.346	ea	—	14.50	14.50
remove for work, then reinstall	2A@.677	ea	—	37.40	37.40

**Dishwasher.**

replace, economy grade	2A@1.85	ea	279.00	102.00	381.00
replace, standard grade	2A@1.85	ea	427.00	102.00	529.00
replace, high grade	2A@1.85	ea	689.00	102.00	791.00
replace, deluxe grade	2A@1.85	ea	1,010.00	102.00	1,112.00
replace, custom deluxe grade	2A@1.85	ea	1,630.00	102.00	1,732.00
remove	1D@.649	ea	—	27.30	27.30
remove for work, then reinstall	2A@2.32	ea	—	128.00	128.00

Dishwasher, convertible (portable).

replace, standard grade	2A@1.18	ea	502.00	65.30	567.30
replace, high grade	2A@1.18	ea	635.00	65.30	700.30
replace, deluxe grade	2A@1.18	ea	807.00	65.30	872.30
remove	1D@.388	ea	—	16.30	16.30
remove for work, then reinstall	2A@1.56	ea	—	86.30	86.30

**Dishwasher, space-saver under-sink .**

replace, standard grade	2A@2.63	ea	743.00	145.00	888.00
replace, high grade	2A@2.63	ea	873.00	145.00	1,018.00
remove	1D@.732	ea	—	30.70	30.70
remove for work, then reinstall	2A@3.22	ea	6.22	178.00	184.22

**Garbage disposal.**

replace, 1/3 hp	7P@1.51	ea	128.00	108.00	236.00
replace, 1/2 hp, standard grade	7P@1.51	ea	158.00	108.00	266.00
replace, 1/2 hp, high grade	7P@1.51	ea	246.00	108.00	354.00
replace, 3/4 hp, standard grade	7P@1.51	ea	251.00	108.00	359.00
replace, 3/4 hp, high grade	7P@1.51	ea	374.00	108.00	482.00
replace, 1 hp, standard grade	7P@1.51	ea	343.00	108.00	451.00
replace, 1 hp, high grade	7P@1.51	ea	378.00	108.00	486.00
remove	1D@.628	ea	—	26.40	26.40
remove for work, then reinstall	7P@2.51	ea	6.22	179.00	185.22



	Craft@Hrs	Unit	Material	Labor	Total
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Refrigerator / freezer, side-by-side.

24 to 29 cf capacity refrigerator / freezer					
replace, economy grade	2A@.813	ea	1,160.00	45.00	1,205.00
replace, standard grade	2A@.813	ea	1,480.00	45.00	1,525.00
replace, high grade	2A@.813	ea	2,170.00	45.00	2,215.00
replace, deluxe grade	2A@.813	ea	2,510.00	45.00	2,555.00
replace, custom deluxe grade	2A@.813	ea	3,890.00	45.00	3,935.00
remove	1D@.794	ea	—	33.30	33.30
remove for work, then reinstall	2A@1.77	ea	6.22	97.90	104.12
19 to 23 cf capacity refrigerator / freezer					
replace, economy grade	2A@.813	ea	1,360.00	45.00	1,405.00
replace, standard grade	2A@.813	ea	1,510.00	45.00	1,555.00
replace, high grade	2A@.813	ea	2,200.00	45.00	2,245.00
replace, deluxe grade	2A@.813	ea	2,590.00	45.00	2,635.00
replace, custom deluxe grade	2A@.813	ea	4,520.00	45.00	4,565.00
remove	1D@.976	ea	—	41.00	41.00
remove for work, then reinstall	2A@1.77	ea	6.22	97.90	104.12

Refrigerator with top freezer.

21 to 25 cf capacity					
replace, economy grade	2A@.700	ea	809.00	38.70	847.70
replace, standard grade	2A@.700	ea	1,170.00	38.70	1,208.70
replace, high grade	2A@.700	ea	1,420.00	38.70	1,458.70
replace, deluxe grade	2A@.700	ea	2,770.00	38.70	2,808.70
replace, custom deluxe grade	2A@.700	ea	4,640.00	38.70	4,678.70
remove	1D@.365	ea	—	15.30	15.30
remove for work, then reinstall	2A@1.42	ea	6.22	78.50	84.72
17 to 20 cf capacity					
replace, economy grade	2A@.700	ea	583.00	38.70	621.70
replace, standard grade	2A@.700	ea	1,040.00	38.70	1,078.70
replace, high grade	2A@.700	ea	1,270.00	38.70	1,308.70
replace, deluxe grade	2A@.700	ea	1,740.00	38.70	1,778.70
replace, custom deluxe grade	2A@.700	ea	4,360.00	38.70	4,398.70
remove	1D@.365	ea	—	15.30	15.30
remove for work, then reinstall	2A@1.42	ea	6.33	78.50	84.83



Refrigerator with bottom freezer. Higher grades sometimes have French-style refrigerator doors. Deluxe and custom deluxe grades may have French-style refrigerator doors and/or armoire-style freezer drawers.

21 to 25 cf capacity					
replace, economy grade	2A@.700	ea	852.00	38.70	890.70
replace, standard grade	2A@.700	ea	1,240.00	38.70	1,278.70
replace, high grade	2A@.700	ea	1,510.00	38.70	1,548.70
replace, deluxe grade	2A@.700	ea	2,950.00	38.70	2,988.70
replace, custom deluxe grade	2A@.700	ea	4,910.00	38.70	4,948.70
remove	1D@.365	ea	—	15.30	15.30
remove for work, then reinstall	2A@1.42	ea	6.22	78.50	84.72
17 to 20 cf capacity					
replace, economy grade	2A@.700	ea	616.00	38.70	654.70
replace, standard grade	2A@.700	ea	1,100.00	38.70	1,138.70
replace, high grade	2A@.700	ea	1,330.00	38.70	1,368.70
replace, deluxe grade	2A@.700	ea	1,830.00	38.70	1,868.70
replace, custom deluxe grade	2A@.700	ea	4,600.00	38.70	4,638.70
remove	1D@.365	ea	—	15.30	15.30
remove for work, then reinstall	2A@1.42	ea	6.22	78.50	84.72

	Craft@Hrs	Unit	Material	Labor	Total
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Refrigerator / freezer, counter-depth. Also called cabinet-depth refrigerators.

23 to 26 cf capacity					
replace, standard grade	2A@.733	ea	2,710.00	40.50	2,750.50
replace, high grade	2A@.733	ea	3,430.00	40.50	3,470.50
replace, deluxe grade	2A@.733	ea	4,170.00	40.50	4,210.50
replace, custom deluxe grade	2A@.733	ea	4,820.00	40.50	4,860.50
remove	1D@.548	ea	—	23.00	23.00
remove for work, then reinstall	2A@1.67	ea	—	92.40	92.40
19 to 22 cf capacity					
replace, standard grade	2A@.733	ea	2,450.00	40.50	2,490.50
replace, high grade	2A@.733	ea	3,340.00	40.50	3,380.50
replace, deluxe grade	2A@.733	ea	3,800.00	40.50	3,840.50
replace, custom deluxe grade	2A@.733	ea	4,520.00	40.50	4,560.50
remove	1D@.548	ea	—	23.00	23.00
remove for work, then reinstall	2A@1.67	ea	—	92.40	92.40

Refrigerator / freezer, cabinet-match. Refrigerator and freezer doors made to match kitchen cabinetry.

Add for refrigerator / freezer doors made to match cabinets					
replace	—	ea	548.00	—	548.00

Refrigerator drawer. Cabinet-match or stainless steel drawer face. Per unit installed in lower cabinets, with two to three drawers per unit.

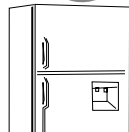
replace, standard grade	2A@1.49	ea	2,710.00	82.40	2,792.40
replace, high grade	2A@1.49	ea	3,360.00	82.40	3,442.40
remove	1D@.599	ea	—	25.20	25.20
remove for work, then reinstall	2A@2.11	ea	—	117.00	117.00

Refrigerator / freezer refreshment center.

Add for refreshment center in refrigerator / freezer					
replace	2A@1.88	ea	279.00	104.00	383.00

Refreshment center plumbing. With supply lines and hook-up to appliances. For installation of supply lines only, see Plumbing on page 320.

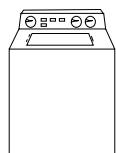
Disconnect water supply line for work, then reinstall					
replace	7P@.283	ea	.87	20.10	20.97
Refreshment center plumbing hook-up					
replace, in existing building	7P@2.22	ea	34.60	158.00	192.60
replace, in new construction	7P@1.37	ea	32.30	97.50	129.80

**Refinish refrigerator.**

replace, typical	3A@2.21	ea	39.60	146.00	185.60
replace, refinish and recondition (replace gaskets)	3A@2.69	ea	91.50	178.00	269.50

Washing machine, top loading.

replace, economy grade	2A@1.49	ea	431.00	82.40	513.40
replace, standard grade	2A@1.49	ea	571.00	82.40	653.40
replace, high grade	2A@1.49	ea	804.00	82.40	886.40
replace, deluxe grade	2A@1.49	ea	1,150.00	82.40	1,232.40
replace, custom deluxe grade	2A@1.49	ea	1,580.00	82.40	1,662.40
remove	1D@.421	ea	—	17.70	17.70
remove for work, then reinstall	2A@2.04	ea	—	113.00	113.00



	Craft@Hrs	Unit	Material	Labor	Total
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Washing machine, front loading.

replace, economy grade	2A@1.49	ea	715.00	82.40	797.40
replace, standard grade	2A@1.49	ea	1,060.00	82.40	1,142.40
replace, high grade	2A@1.49	ea	1,330.00	82.40	1,412.40
replace, deluxe grade	2A@1.49	ea	1,920.00	82.40	2,002.40
replace, custom deluxe grade	2A@1.49	ea	2,510.00	82.40	2,592.40
remove	1D@.421	ea	—	17.70	17.70
remove for work, then reinstall	2A@2.04	ea	—	113.00	113.00

Washing machine, steam.

replace, standard grade	2A@1.49	ea	1,580.00	82.40	1,662.40
replace, high grade	2A@1.49	ea	1,740.00	82.40	1,822.40
replace, deluxe grade	2A@1.49	ea	2,150.00	82.40	2,232.40
remove	1D@.421	ea	—	17.70	17.70
remove for work, then reinstall	2A@2.04	ea	—	113.00	113.00

Washing machine and dryer, stacked. Also called unitized, Spacemaker by GE, and sometimes referred to as combo units, but most manufacturers refer to these space-saver styles as stacked or stackable units.

with electric dryer

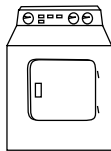
replace, standard grade	2A@2.04	ea	1,040.00	113.00	1,153.00
replace, high grade	2A@2.04	ea	1,450.00	113.00	1,563.00
replace, deluxe grade	2A@2.04	ea	1,630.00	113.00	1,743.00
remove	1D@.542	ea	—	22.80	22.80
remove for work, then reinstall	2A@2.88	ea	—	159.00	159.00

with gas dryer

replace, standard grade	2A@2.54	ea	1,110.00	140.00	1,250.00
replace, high grade	2A@2.54	ea	1,580.00	140.00	1,720.00
replace, deluxe grade	2A@2.54	ea	1,720.00	140.00	1,860.00
remove	1D@.533	ea	—	22.40	22.40
remove for work, then reinstall	2A@3.22	ea	—	178.00	178.00

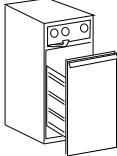
Clothes dryer, electric. Electric dryer with up to 20' of vent pipe. Deluxe and custom deluxe grades include steam dryers.

replace, economy grade	2A@.932	ea	450.00	51.50	501.50
replace, standard grade	2A@.932	ea	642.00	51.50	693.50
replace, high grade	2A@.932	ea	996.00	51.50	1,047.50
replace, deluxe grade	2A@.932	ea	1,200.00	51.50	1,251.50
replace, custom deluxe grade	2A@.932	ea	1,580.00	51.50	1,631.50
remove	1D@.400	ea	—	16.80	16.80
remove for work, then reinstall	2A@1.46	ea	—	80.70	80.70



Clothes dryer, gas. Gas dryer with up to 20' of vent pipe. Deluxe and custom deluxe grades include steam dryers.

replace, economy grade	2A@1.94	ea	520.00	107.00	627.00
replace, standard grade	2A@1.94	ea	712.00	107.00	819.00
replace, high grade	2A@1.94	ea	1,070.00	107.00	1,177.00
replace, deluxe grade	2A@1.94	ea	1,280.00	107.00	1,387.00
replace, custom deluxe grade	2A@1.94	ea	1,670.00	107.00	1,777.00
remove	1D@.488	ea	—	20.50	20.50
remove for work, then reinstall	2A@2.59	ea	—	143.00	143.00

		Craft@Hrs	Unit	Material	Labor	Total
Trash compactor. Use high grade for compactor with cabinet-match door.						
replace, economy grade		2A@1.09	ea	577.00	60.30	637.30
replace, standard grade		2A@1.09	ea	685.00	60.30	745.30
replace, high grade		2A@1.09	ea	996.00	60.30	1,056.30
remove		1D@.288	ea	—	12.10	12.10
remove for work, then reinstall		2A@1.39	ea	.87	76.90	77.77

Time & Material Charts (selected items)**Appliance Materials**

See Appliance material prices above.

Appliance Labor

Laborer	base wage	paid leave	true wage	taxes & ins.	total
Appliance installer	\$31.60	2.46	\$34.06	21.24	\$55.30
Appliance refinisher	\$36.60	2.85	\$39.45	26.65	\$66.10
Electrician	\$38.60	3.01	\$41.61	24.49	\$66.10
Plumber	\$40.70	3.17	\$43.87	27.33	\$71.20
Demolition laborer	\$22.00	1.72	\$23.72	18.28	\$42.00

Paid leave is calculated based on two weeks paid vacation, one week sick leave, and seven paid holidays. Employer's matching portion of **FICA** is 7.65 percent. **FUTA** (Federal Unemployment) is .8 percent. **Worker's compensation** was calculated using a national average of 7.20 percent for the appliance installer; 14.70 percent for the appliance refinisher; 6.93 percent for the electrician; 11.00 percent for the plumber; and 13.96 percent for the demolition laborer. **Unemployment insurance** was calculated using a national average of 8 percent. **Health insurance** was calculated based on a projected national average for 2017 of \$1,188 per employee (and family when applicable) per month. Employer pays 80 percent for a per month cost of \$950 per employee. **Retirement** is based on a 401(k) retirement program with employer matching of 50 percent. Employee contributions to the 401(k) plan are an average of 6 percent of the true wage. **Liability insurance** is based on a national average of 10.0 percent.

Appliances Labor Productivity

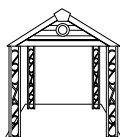
Install appliances					
gas cook top	7P@1.99	ea	—	142.00	142.00
gas range	7P@2.05	ea	—	146.00	146.00
space-saver gas range	7P@1.99	ea	—	142.00	142.00
gas range with double oven	7P@2.05	ea	—	146.00	146.00
restaurant-style gas range	7P@2.88	ea	—	205.00	205.00
gas wall oven	7P@1.79	ea	—	127.00	127.00
gas double wall oven	7P@2.22	ea	—	158.00	158.00
electric cook top	7E@1.32	ea	—	87.30	87.30
modular cooking unit	7E@.287	ea	—	19.00	19.00
modular electric cook top downdraft unit	7E@.287	ea	—	19.00	19.00
electric range	2A@1.05	ea	—	58.10	58.10
drop-in or slide-in electric range	2A@1.05	ea	—	58.10	58.10
space-saver electric range	2A@.980	ea	—	54.20	54.20
electric wall oven	7E@1.55	ea	—	102.00	102.00
electric double wall-oven	7E@2.72	ea	—	180.00	180.00
range hood	2A@1.33	ea	—	73.50	73.50
oversized range hood	2A@1.46	ea	—	80.70	80.70
dishwasher	2A@1.85	ea	—	102.00	102.00
convertible (portable) dishwasher	2A@1.18	ea	—	65.30	65.30
space-saver under-sink dishwasher	2A@2.63	ea	—	145.00	145.00

	Craft@Hrs	Unit	Material	Labor	Total
garbage disposal	7P@1.51	ea	—	108.00	108.00
microwave oven	2A@.290	ea	—	16.00	16.00
microwave oven under cabinet	2A@.950	ea	—	52.50	52.50
side-by-side refrigerator / freezer	2A@.813	ea	—	45.00	45.00
refrigerator with freezer top or bottom	2A@.700	ea	—	38.70	38.70
disconnect refrig. water lines for work, reinstall	2A@.283	ea	—	15.60	15.60
refreshment center plumbing hook-up in existing building	7P@2.22	ea	—	158.00	158.00
refreshment center plumbing hook-up in new construction	7P@1.37	ea	—	97.50	97.50
trash compactor	2A@1.09	ea	—	60.30	60.30
clothes washing machine	2A@1.49	ea	—	82.40	82.40
clothes dryer, electric	2A@.932	ea	—	51.50	51.50

Awnings

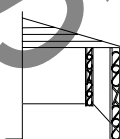
Free-standing carport. 40 psf. Aluminum with baked enamel finish. Includes 4 posts for carports under 200 sf, 6 to 8 posts for carports over 200 sf.

Free-standing aluminum carport					
replace, 150 sf or less	6A@.077	sf	18.80	3.89	22.69
replace, 151 to 250 sf	6A@.077	sf	17.60	3.89	21.49
replace, 251 to 480 sf	6A@.077	sf	16.00	3.89	19.89
add for heavy gauge aluminum	—	sf	2.18	—	2.18
remove	1D@.050	sf	—	2.10	2.10
remove for work, then reinstall	6A@.161	sf	.62	8.13	8.75



Attached carport. 40 psf. Aluminum with baked enamel finish. Includes 3 posts for carports and patio covers under 200 sf, 4 to 5 posts for carports and patio covers over 200 sf.

Attached aluminum carport or patio cover					
replace, 150 sf or less	6A@.071	sf	18.20	3.59	21.79
replace, 151 to 250 sf	6A@.071	sf	17.30	3.59	20.89
replace, 251 to 480 sf	6A@.071	sf	15.60	3.59	19.19
add for heavy gauge aluminum	—	sf	2.29	—	2.29
remove	1D@.054	sf	—	2.27	2.27
remove for work, then reinstall	6A@.150	sf	.62	7.58	8.20



Minimum charge.

for carport or patio cover work	6A@1.85	ea	61.90	93.40	155.30
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Carport or patio cover parts.

Post					
replace	6A@.687	ea	29.40	34.70	64.10
remove	1D@.280	ea	—	11.80	11.80
remove, for work, then reinstall	6A@.925	ea	2.66	46.70	49.36
Scroll post					
replace, cover post scroll	6A@.722	ea	54.00	36.50	90.50
remove	1D@.280	ea	—	11.80	11.80
remove, for work, then reinstall	6A@.994	ea	1.21	50.20	51.41

	Craft@Hrs	Unit	Material	Labor	Total
Fascia, aluminum					
replace	6A@.080	lf	8.77	4.04	12.81
remove	1D@.028	lf	—	1.18	1.18
remove, for work, then reinstall	6A@.110	lf	—	5.56	5.56
Roof panel					
replace	6A@.622	ea	60.40	31.40	91.80
remove	1D@.488	ea	—	20.50	20.50
remove, for work, then reinstall	6A@1.14	ea	4.84	57.60	62.44
Downspout					
replace	6A@.082	ea	25.40	4.14	29.54
remove	1D@.075	ea	—	3.15	3.15
remove for work, then reinstall	6A@.145	ea	—	7.32	7.32

Door awning. 25 to 40 psf. Aluminum with baked enamel finish. Includes all hardware and adjustable supports.

42" projection door awning					
replace, 2 to 4 lf	6A@.464	lf	76.30	23.40	99.70
replace, 5 to 8 lf	6A@.464	lf	81.60	23.40	105.00
replace, 9 to 12 lf	6A@.464	lf	88.70	23.40	112.10
remove	1D@.248	lf	—	10.40	10.40
remove for work, then reinstall	6A@.873	lf	7.87	44.10	51.97
54" projection door awning					
replace, 2 to 4 lf	6A@.484	lf	85.90	24.40	110.30
replace, 5 to 8 lf	6A@.484	lf	91.90	24.40	116.30
replace, 9 to 12 lf	6A@.484	lf	101.00	24.40	125.40
remove	1D@.250	lf	—	10.50	10.50
remove for work, then reinstall	6A@.878	lf	7.87	44.30	52.17
Minimum charge for door awning work	6A@1.85	ea	61.90	93.40	155.30

Window awning. 25 to 40 psf. Aluminum with baked enamel finish. Includes all hardware and adjustable supports.

3' high window awning					
replace, 2 to 4 lf	6A@.424	lf	70.00	21.40	91.40
replace, 5 to 8 lf	6A@.424	lf	54.80	21.40	76.20
replace, 9 to 12 lf	6A@.424	lf	51.50	21.40	72.90
remove	1D@.024	lf	—	1.01	1.01
remove for work, then reinstall	6A@.550	lf	7.87	27.80	35.67
4' high window awning					
replace, 2 to 4 lf	6A@.454	lf	81.90	22.90	104.80
replace, 5 to 8 lf	6A@.454	lf	67.60	22.90	90.50
replace, 9 to 12 lf	6A@.454	lf	63.30	22.90	86.20
remove	1D@.028	lf	—	1.18	1.18
remove for work, then reinstall	6A@.589	lf	7.87	29.70	37.57
5' high window awning					
replace, 2 to 4 lf	6A@.470	lf	109.00	23.70	132.70
replace, 5 to 8 lf	6A@.470	lf	98.80	23.70	122.50
replace, 9 to 12 lf	6A@.470	lf	78.30	23.70	102.00
remove	1D@.030	lf	—	1.26	1.26
remove for work, then reinstall	6A@.595	lf	7.87	30.00	37.87
6' high window awning					
replace, 2 to 4 lf	6A@.479	lf	125.00	24.20	149.20
replace, 5 to 8 lf	6A@.479	lf	120.00	24.20	144.20

	Craft@Hrs	Unit	Material	Labor	Total
replace, 9 to 12 lf	6A@.479	lf	92.00	24.20	116.20
remove	1D@.038	lf	—	1.60	1.60
remove for work, then reinstall	6A@.631	lf	7.87	31.90	39.77
Minimum charge for window awning work	6A@1.85	ea	61.90	93.40	155.30

Door or window awning slat. Includes prefinished standard length single slat up to 8' long in slat-style aluminum awning. Can be horizontal- or vertical-slat style. Includes replacement slat and hardware. Does not include painting or finishing slat to match.

replace	6A@.381	ea	21.30	19.20	40.50
remove	1D@.232	ea	—	9.74	9.74

Roll-up awning. Security awning that covers window. Aluminum with baked enamel finish. Includes all hardware and adjustable supports.

replace, 2 to 5 lf	6A@.274	lf	78.60	13.80	92.40
replace, 6 to 12 lf	6A@.274	lf	60.00	13.80	73.80
remove	1D@.409	lf	—	17.20	17.20
remove for work, then reinstall	6A@.599	lf	6.05	30.20	36.25

Canvas awning. Waterproof acrylic duck colorfast fabric with retractable metal frame and hardware.

24" drop canvas awning					
replace, 2 to 3 lf	6A@.484	lf	107.00	24.40	131.40
replace, 4 to 5 lf	6A@.493	lf	101.00	24.90	125.90
30" drop canvas awning					
replace, 2 to 3 lf	6A@.526	lf	125.00	26.60	151.60
replace, 4 to 5 lf	6A@.526	lf	110.00	26.60	136.60
replace, 5 to 6 lf	6A@.526	lf	99.80	26.60	126.40
replace, 7 to 8 lf	6A@.526	lf	88.80	26.60	115.40
replace, 9 to 10 lf	6A@.526	lf	73.00	26.60	99.60
replace, 11 to 12 lf	6A@.526	lf	67.40	26.60	94.00
remove	1D@.324	lf	—	13.60	13.60
remove canvas awning for work, then reinstall	6A@1.15	lf	6.19	58.10	64.29
Minimum charge for canvas awning work	6A@1.65	ea	52.20	83.30	135.50

Vinyl awning. Vinyl awning with acrylic coating. Includes metal frame and all hardware.

24" drop vinyl awning					
replace, 2 to 3 lf	6A@.491	lf	64.00	24.80	88.80
replace, 4 to 5 lf	6A@.491	lf	58.40	24.80	83.20
30" drop vinyl awning					
replace, 2 to 3 lf	6A@.520	lf	74.90	26.30	101.20
replace, 4 to 5 lf	6A@.520	lf	65.50	26.30	91.80
replace, 5 to 6 lf	6A@.520	lf	59.70	26.30	86.00
replace, 7 to 8 lf	6A@.520	lf	47.70	26.30	74.00
replace, 9 to 10 lf	6A@.520	lf	43.70	26.30	70.00
replace, 11 to 12 lf	6A@.520	lf	42.50	26.30	68.80
remove	1D@.324	lf	—	13.60	13.60
remove awning for work then reinstall	6A@1.13	lf	6.19	57.10	63.29
Minimum charge for vinyl awning work	6A@1.47	ea	35.20	74.20	109.40

	Craft@Hrs	Unit	Material	Labor	Total
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Time & Material Charts (selected items)**Awning Materials**

Aluminum carport					
free-standing, 151 to 250 sf	—	sf	17.80	—	17.80
attached, 151 to 250 sf	—	sf	17.50	—	17.50
Aluminum door awning					
with 42" projection, 5 to 8 lf	—	lf	82.70	—	82.70
with 54" projection, 5 to 8 lf	—	lf	93.10	—	93.10
Aluminum window awning					
3' high, 5 to 8 lf	—	lf	55.50	—	55.50
6' high, 5 to 8 lf	—	lf	121.00	—	121.00
Roll-up aluminum awning					
2 to 5 lf	—	lf	79.80	—	79.80
6 to 12 lf	—	lf	60.80	—	60.80
Canvas awning					
24" drop, 2 to 3 lf	—	lf	108.00	—	108.00
24" drop, 4 to 5 lf	—	lf	102.00	—	102.00
30" drop, 2 to 3 lf	—	lf	126.00	—	126.00
30" drop, 7 to 8 lf	—	lf	90.20	—	90.20
30" drop, 11 to 12 lf	—	lf	68.30	—	68.30
Vinyl awning					
24" drop, 2 to 3 lf	—	lf	64.80	—	64.80
24" drop, 4 to 5 lf	—	lf	59.50	—	59.50
30" drop, 2 to 3 lf	—	lf	75.80	—	75.80
30" drop, 7 to 8 lf	—	lf	48.30	—	48.30
30" drop, 11 to 12 lf	—	lf	43.20	—	43.20

Awning Labor

Laborer	base wage	paid leave	true wage	taxes & ins.	total
Awning installer	\$30.90	2.41	\$33.31	24.19	\$57.50
Awning installer's helper	\$22.50	1.76	\$24.26	19.24	\$43.50
Demolition laborer	\$22.00	1.72	\$23.72	18.28	\$42.00

Paid leave is calculated based on two weeks paid vacation, one week sick leave, and seven paid holidays. Employer's matching portion of **FICA** is 7.65 percent. **FUTA** (Federal Unemployment) is .8 percent. **Worker's compensation** for the awning trade was calculated using a national average of 16.80 percent. **Unemployment insurance** was calculated using a national average of 8 percent. **Health insurance** was calculated based on a projected national average for 2017 of \$1,188 per employee (and family when applicable) per month. Employer pays 80 percent for a per month cost of \$950 per employee. **Retirement** is based on a 401(k) retirement program with employer matching of 50 percent. Employee contributions to the 401(k) plan are an average of 6 percent of the true wage. **Liability insurance** is based on a national average of 10.0 percent.

Awning Installation Crew

install, awnings and patio covers	awning installer	\$57.50
install, awnings and patio covers	awning installer's helper	\$43.50
awning installation crew	awning installation crew	\$50.50

	Craft@Hrs	Unit	Material	Labor	Total
Awning Labor Productivity					
Install aluminum carport or patio cover					
free-standing carport	6A@.077	sf	—	3.89	3.89
attached carport or patio	6A@.071	sf	—	3.59	3.59
Install aluminum door awning					
42" projection	6A@.464	lf	—	23.40	23.40
54" projection	6A@.484	lf	—	24.40	24.40
Install aluminum window awning					
3' high	6A@.424	lf	—	21.40	21.40
4' high	6A@.454	lf	—	22.90	22.90
5' high	6A@.470	lf	—	23.70	23.70
6' high	6A@.479	lf	—	24.20	24.20
Install roll-up aluminum awning					
per lf	6A@.274	lf	—	13.80	13.80
Install canvas awning					
24" drop	6A@.493	lf	—	24.90	24.90
30" drop	6A@.526	lf	—	26.60	26.60
Install vinyl awning					
24" drop	6A@.491	lf	—	24.80	24.80
30" drop	6A@.520	lf	—	26.30	26.30

Bathroom Hardware

Hardware Quality. Here are some "rules of thumb" for determining bathroom hardware quality. Economy: Light-gauge metal, chrome plated. May have some plastic components. Little or no pattern. Standard: Heavier gauge metal, chrome or brass plated with little or no pattern, or wood hardware made of ash or oak. High: Brass, chrome over brass, or nickel over brass with minimal detail, or plated hardware with ornate detail, or European-style curved plastic, or hardware with porcelain components, or wood hardware made of walnut, cherry or similar wood. Deluxe: Brass, chrome over brass, or nickel over brass with ornate detail. Antique Reproduction / Custom: Brass, chrome over brass, or nickel over brass with ornate antique-style detail.

Minimum charge.

for bathroom hardware work	1C@.563	ea	29.00	34.60	63.60
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Complete bath hardware. Bathroom with toilet, sink, and bathtub / shower. Includes towel bar, wash cloth bar, door-mount robe hook, toilet paper dispenser, and cup / toothbrush holder.

replace, economy grade	1C@4.02	ea	146.00	247.00	393.00
replace, standard grade	1C@4.02	ea	273.00	247.00	520.00
replace, high grade	1C@4.02	ea	400.00	247.00	647.00
replace, deluxe grade	1C@4.02	ea	540.00	247.00	787.00
replace, custom grade	1C@4.02	ea	615.00	247.00	862.00
replace, antique reproduction	1C@4.02	ea	1,010.00	247.00	1,257.00
remove	1D@2.22	ea	—	93.20	93.20

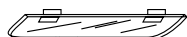
	Craft@Hrs	Unit	Material	Labor	Total
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1/2 bath hardware. Bathroom with toilet and sink. Includes wash cloth bar, towel ring, and toilet paper dispenser.

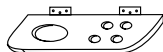
replace, economy grade	1C@2.17	ea	47.80	133.00	180.80
replace, standard grade	1C@2.17	ea	93.10	133.00	226.10
replace, high grade	1C@2.17	ea	135.00	133.00	268.00
replace, deluxe grade	1C@2.17	ea	184.00	133.00	317.00
replace, custom grade	1C@2.17	ea	209.00	133.00	342.00
replace, antique reproduction	1C@2.17	ea	354.00	133.00	487.00
remove	1D@1.60	ea	—	67.20	67.20

Glass bathroom shelf. 21" x 5-1/2".

replace, glass	1C@.283	ea	50.80	17.40	68.20
replace, glass & brass	1C@.283	ea	71.70	17.40	89.10
remove	1D@.205	ea	—	8.61	8.61
remove for work, then reinstall	1C@.300	ea	—	18.50	18.50

**Cup & toothbrush holder.**

replace, standard grade	1C@.169	ea	14.00	10.40	24.40
replace, high grade	1C@.169	ea	22.90	10.40	33.30
remove	1D@.163	ea	—	6.85	6.85
remove for work, then reinstall	1C@.217	ea	—	13.30	13.30

**Door-mounted clothes hanger.**

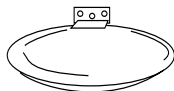
replace, standard grade	1C@.141	ea	12.40	8.67	21.07
replace, high grade	1C@.141	ea	20.70	8.67	29.37
remove	1D@.139	ea	—	5.84	5.84
remove for work, then reinstall	1C@.175	ea	—	10.80	10.80

**Robe hook.**

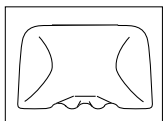
replace, standard grade	1C@.141	ea	14.00	8.67	22.67
replace, high grade	1C@.141	ea	23.80	8.67	32.47
remove	1D@.139	ea	—	5.84	5.84
remove for work, then reinstall	1C@.175	ea	—	10.80	10.80

**Soap holder.**

replace, standard grade	1C@.169	ea	26.50	10.40	36.90
replace, high grade	1C@.169	ea	45.00	10.40	55.40
remove	1D@.163	ea	—	6.85	6.85
remove for work, then reinstall	1C@.217	ea	—	13.30	13.30

**Recessed soap holder.**

replace, standard grade	1C@.201	ea	27.60	12.40	40.00
replace, high grade	1C@.201	ea	57.20	12.40	69.60
remove	1D@.163	ea	—	6.85	6.85
remove for work, then reinstall	1C@.267	ea	—	16.40	16.40



	Craft@Hrs	Unit	Material	Labor	Equip.	Total
3' to 4' deep, sandy loam soil	6E@.005	lf	—	.30	.24	.54
3' to 4' deep, typical soil	6E@.005	lf	—	.30	.28	.58
3' to 4' deep, rocky or clay soil	6E@.007	lf	—	.42	.31	.73
3' to 4' deep, rocky or hardpan soil	6E@.007	lf	—	.42	.39	.81
3' to 4' deep, backfill	6E@.005	lf	—	.30	.28	.58
5' to 6' deep, sandy loam soil	6E@.007	lf	—	.42	.32	.74
5' to 6' deep, typical soil	6E@.006	lf	—	.36	.42	.78
5' to 6' deep, medium rocky or clay soil	6E@.008	lf	—	.48	.45	.93
5' to 6' deep, rocky or hardpan soil	6E@.009	lf	—	.54	.52	1.06
5' to 6' deep, backfill	6E@.008	lf	—	.48	.42	.90

Excavate water-line trench, per lf of trench. Trench slopes to 2' width at bottom for 2' to 3' depth, 3' width at bottom for all other depths. Does not include mobilization.

2' to 3' deep, sandy loam soil	6E@.009	lf	—	.54	.32	.86
2' to 3' deep, typical soil	6E@.009	lf	—	.54	.39	.93
2' to 3' deep, medium rocky or clay soil	6E@.010	lf	—	.60	.46	1.06
2' to 3' deep, rocky or hardpan soil	6E@.011	lf	—	.66	.53	1.19
2' to 3' deep, backfill	6E@.007	lf	—	.42	.30	.72
4' to 5' deep, sandy loam soil	6E@.011	lf	—	.66	.56	1.22
4' to 5' deep, typical soil	6E@.013	lf	—	.79	.67	1.46
4' to 5' deep, medium rocky or clay soil	6E@.014	lf	—	.85	.77	1.62
4' to 5' deep, rocky or hardpan soil	6E@.015	lf	—	.91	.90	1.81
4' to 5' deep, backfill	6E@.011	lf	—	.66	.52	1.18
6' to 7' deep, sandy loam soil	6E@.015	lf	—	.91	.80	1.71
6' to 7' deep, typical soil	6E@.016	lf	—	.97	.94	1.91
6' to 7' deep, medium rocky or clay soil	6E@.018	lf	—	1.09	1.08	2.17
6' to 7' deep, rocky or hardpan soil	6E@.020	lf	—	1.21	1.21	2.42
6' to 7' deep, backfill	6E@.013	lf	—	.79	.76	1.55
8' to 9' deep, sandy loam soil	6E@.018	lf	—	1.09	1.01	2.10
8' to 9' deep, typical soil	6E@.020	lf	—	1.21	1.18	2.39
8' to 9' deep, medium rocky or clay soil	6E@.023	lf	—	1.39	1.40	2.79
8' to 9' deep, rocky or hardpan soil	6E@.025	lf	—	1.51	1.63	3.14
8' to 9' deep, backfill	6E@.016	lf	—	.97	.96	1.93

Excavate sewer-line trench, per lf of trench. Trench slopes to 3-1/2' width at bottom. Does not include mobilization.

3' to 4' deep, sandy loam soil	6E@.011	lf	—	.66	.53	1.19
3' to 4' deep, typical soil	6E@.013	lf	—	.79	.64	1.43
3' to 4' deep, medium rocky soil	6E@.014	lf	—	.85	.72	1.57
3' to 4' deep, rocky or hardpan soil	6E@.015	lf	—	.91	.86	1.77
3' to 4' deep, backfill	6E@.010	lf	—	.60	.49	1.09
5' to 6' deep, sandy loam soil	6E@.015	lf	—	.91	.80	1.71
5' to 6' deep, typical soil	6E@.016	lf	—	.97	.94	1.91
5' to 6' deep, medium rocky soil	6E@.018	lf	—	1.09	1.08	2.17
5' to 6' deep, rocky or hardpan soil	6E@.020	lf	—	1.21	1.23	2.44
5' to 6' deep, backfill	6E@.013	lf	—	.79	.76	1.55
7' to 8' deep, sandy loam soil	6E@.018	lf	—	1.09	1.06	2.15
7' to 8' deep, typical soil	6E@.020	lf	—	1.21	1.21	2.42
7' to 8' deep, medium rocky soil	6E@.023	lf	—	1.39	1.42	2.81
7' to 8' deep, rocky or hardpan soil	6E@.025	lf	—	1.51	1.63	3.14
7' to 8' deep, backfill	6E@.011	lf	—	.66	1.00	1.66

	Craft@Hrs	Unit	Material	Labor	Equip.	Total
Additional excavation costs.						
Excavate hole for repairs to water, sewer, or utility lines, per lf of depth	6E@.044	lf	—	2.66	2.21	4.87
General foundation, slab, & footing excavation, per cubic yard	6E@.046	cy	—	2.78	2.33	5.11
Minimum charge for excavation work	6E@5.00	ea	—	302.00	480.00	782.00

Time & Material Charts (selected items)**Excavation Rental Equipment**

Backhoe / loader

Excavate slab-on-grade structure

typical soil

(\$743.00 per day, 5,740 sf per day)

— sf — — .13 .13

rocky or hardpan soil

(\$743.00 per day, 4,250 sf per day)

— sf — — .17 .17

backfill

(\$743.00 per day, 9,420 sf per day)

— sf — — .08 .08

Excavate for structure with crawl space

typical soil

(\$743.00 per day, 3,530 sf per day)

— sf — — .21 .21

rocky or hardpan soil

(\$743.00 per day, 2,610 sf per day)

— sf — — .29 .29

backfill

(\$743.00 per day, 6,123 sf per day)

— sf — — .12 .12

Excavate for structure with basement

typical soil

(\$743.00 per day, 1,400 sf per day)

— sf — — .53 .53

rocky or hardpan soil

(\$743.00 per day, 1,030 sf per day)

— sf — — .72 .72

backfill

(\$743.00 per day, 3,140 sf per day)

— sf — — .24 .24

Excavate for 3' to 4' deep footing

typical soil

(\$743.00 per day, 1,420 lf per day)

— lf — — .52 .52

rocky or hardpan soil

(\$743.00 per day, 1,050 lf per day)

— lf — — .71 .71

Excavate for 5' to 6' deep footing

typical soil

(\$743.00 per day, 1,108 lf per day)

— lf — — .67 .67

rocky or hardpan soil

(\$743.00 per day, 830 lf per day)

— lf — — .89 .89

Excavate for 7' to 8' deep footing

typical soil

(\$743.00 per day, 880 lf per day)

— lf — — .84 .84

rocky or hardpan soil

(\$743.00 per day, 660 lf per day)

— lf — — 1.13 1.13

	Craft@Hrs	Unit	Material	Labor	Equip.	Total
Excavate for 9' to 10' deep footing						
typical soil (\$743.00 per day, 738 lf per day)	—	lf	—	—	1.01	1.01
rocky or hardpan soil (\$743.00 per day, 560 lf per day)	—	lf	—	—	1.33	1.33
Backfill foundation wall						
backfill (\$743.00 per day, 2,230 lf per day)	—	lf	—	—	.33	.33
Excavate for 1' to 2' deep utility trench						
sandy loam soil (\$743.00 per day, 4,930 lf per day)	—	lf	—	—	.15	.15
rocky or hardpan soil (\$743.00 per day, 3,150 lf per day)	—	lf	—	—	.24	.24
backfill (\$743.00 per day, 5,300 lf per day)	—	lf	—	—	.14	.14
Excavate for 3' to 4' deep utility trench						
sandy loam soil (\$743.00 per day, 3,057 lf per day)	—	lf	—	—	.25	.25
rocky or hardpan soil (\$743.00 per day, 1,960 lf per day)	—	lf	—	—	.38	.38
backfill (\$743.00 per day, 2,650 lf per day)	—	lf	—	—	.28	.28
Excavate for 5' to 6' deep utility trench						
sandy loam soil (\$743.00 per day, 2,219 lf per day)	—	lf	—	—	.34	.34
rocky or hardpan soil (\$743.00 per day, 1,410 lf per day)	—	lf	—	—	.52	.52
backfill (\$743.00 per day, 1,760 lf per day)	—	lf	—	—	.42	.42
Excavate for 2' to 3' deep water-line trench						
sandy loam soil (\$743.00 per day, 2,200 lf per day)	—	lf	—	—	.34	.34
rocky or hardpan soil (\$743.00 per day, 1,400 lf per day)	—	lf	—	—	.53	.53
backfill (\$743.00 per day, 2,350 lf per day)	—	lf	—	—	.32	.32
Excavate for 4' to 5' deep water-line trench						
sandy loam soil (\$743.00 per day, 1,330 lf per day)	—	lf	—	—	.53	.53
typical soil (\$743.00 per day, 1,140 lf per day)	—	lf	—	—	.65	.65
medium rocky or clay soil (\$743.00 per day, 980 lf per day)	—	lf	—	—	.76	.76
rocky or hardpan soil (\$743.00 per day, 850 lf per day)	—	lf	—	—	.87	.87
backfill (\$743.00 per day, 1,410 lf per day)	—	lf	—	—	.52	.52

	Craft@Hrs	Unit	Material	Labor	Equip.	Total
Excavate for 6' to 7' deep water-line trench						
sandy loam soil (\$743.00 per day, 940 lf per day)	—	lf	—	—	.79	.79
typical soil (\$743.00 per day, 810 lf per day)	—	lf	—	—	.91	.91
medium rocky or clay soil (\$743.00 per day, 700 lf per day)	—	lf	—	—	1.06	1.06
rocky or hardpan soil (\$743.00 per day, 610 lf per day)	—	lf	—	—	1.22	1.22
backfill (\$743.00 per day, 1,010 lf per day)	—	lf	—	—	.74	.74
Excavate for 8' to 9' deep water-line trench						
sandy loam soil (\$743.00 per day, 730 lf per day)	—	lf	—	—	1.02	1.02
typical soil (\$743.00 per day, 630 lf per day)	—	lf	—	—	1.18	1.18
medium rocky or clay soil (\$743.00 per day, 540 lf per day)	—	lf	—	—	1.38	1.38
rocky or hardpan soil (\$743.00 per day, 460 lf per day)	—	lf	—	—	1.61	1.61
backfill (\$743.00 per day, 780 lf per day)	—	lf	—	—	.96	.96
Excavate for 3' to 4' deep sewer-line trench						
sandy loam soil (\$743.00 per day, 1,420 lf per day)	—	lf	—	—	.52	.52
typical soil (\$743.00 per day, 1,220 lf per day)	—	lf	—	—	.61	.61
medium rocky or clay soil (\$743.00 per day, 1,050 lf per day)	—	lf	—	—	.71	.71
rocky or hardpan soil (\$743.00 per day, 900 lf per day)	—	lf	—	—	.82	.82
backfill (\$743.00 per day, 1,520 lf per day)	—	lf	—	—	.49	.49
Excavate for 5' to 6' deep sewer-line trench						
sandy loam soil (\$743.00 per day, 940 lf per day)	—	lf	—	—	.79	.79
typical soil (\$743.00 per day, 810 lf per day)	—	lf	—	—	.91	.91
medium rocky or clay soil (\$743.00 per day, 700 lf per day)	—	lf	—	—	1.06	1.06
backfill (\$743.00 per day, 1,010 lf per day)	—	lf	—	—	.74	.74

	Craft@Hrs	Unit	Material	Labor	Equip.	Total
Excavate for 7' to 8' deep sewer-line trench						
sandy loam soil (\$743.00 per day, 710 lf per day)	—	lf	—	—	1.05	1.05
typical soil (\$743.00 per day, 610 lf per day)	—	lf	—	—	1.22	1.22
medium rocky or clay soil (\$743.00 per day, 530 lf per day)	—	lf	—	—	1.40	1.40
rocky or hardpan soil (\$743.00 per day, 460 lf per day)	—	lf	—	—	1.61	1.61
backfill (\$743.00 per day, 750 lf per day)	—	lf	—	—	.99	.99
Excavate for repairs						
excavate hole (\$743.00 per day, 340 lf per day)	—	lf	—	—	2.19	2.19
General excavation						
excavation (\$743.00 per day, 322 cy per day)	—	cy	—	—	2.31	2.31
minimum charge (\$476.00 per day, 1 per day)	—	ea	—	—	476.00	476.00
Trenching						
Trenching machine (\$537.00 per day, 1 per day)	—	day	—	—	537.00	537.00
minimum charge for trenching machine (\$329.00 per day, 1 per day)	—	ea	—	—	329.00	329.00
Compacting						
"Jumping jack" compactor (\$169.00 per day, 1 per day)	—	day	—	—	169.00	169.00
minimum charge for compactor (\$135.00 per day, 1 per day)	—	ea	—	—	135.00	135.00

Excavation Labor

	wage	base leave	paid wage	true & ins.	taxes total
Laborer					
Equipment operator	\$45.30	3.53	\$48.83	31.77	\$80.60
Excavation laborer	\$20.70	1.61	\$22.31	17.79	\$40.10

Paid leave is calculated based on two weeks paid vacation, one week sick leave, and seven paid holidays. Employer's matching portion of **FICA** is 7.65 percent. **FUTA** (Federal Unemployment) is .8 percent. **Worker's compensation** for the excavation trade was calculated using a national average of 15.00 percent for the equipment operator and 15.05 percent for the excavation laborer. **Unemployment insurance** was calculated using a national average of 8 percent. **Health insurance** was calculated based on a projected national average for 2017 of \$1,188 per employee (and family when applicable) per month. Employer pays 80 percent for a per month cost of \$950 per employee. **Retirement** is based on a 401(k) retirement program with employer matching of 50 percent. Employee contributions to the 401(k) plan are an average of 6 percent of the true wage. **Liability insurance** is based on a national average of 10.0 percent.

	Craft@Hrs	Unit	Material	Labor	Total
Excavation Labor Productivity					
Excavation equipment delivery and return labor charges					
backhoe mobilization	10@4.00	ea	—	322.00	322.00
Excavate slab-on-grade structure (per sf of floor)					
typical soil, machine	10@.001	sf	—	.08	.08
typical soil, hand finish	5E@.001	sf	—	.04	.04
rocky or hardpan soil, machine	10@.002	sf	—	.16	.16
rocky or hardpan soil, hand finish	5E@.002	sf	—	.08	.08
Backfill slab-on-grade structure (per sf of floor)					
all soil types, machine	10@.001	sf	—	.08	.08
all soil types, hand labor	5E@.001	sf	—	.04	.04
Excavate for structure with crawl space (per sf of floor)					
typical soil, machine	10@.002	sf	—	.16	.16
typical soil, hand finish	5E@.002	sf	—	.08	.08
rocky or hardpan soil, machine	10@.003	sf	—	.24	.24
rocky or hardpan soil, hand finish	5E@.002	sf	—	.08	.08
Backfill structure with crawl space (per sf of floor)					
all soil types, machine	10@.001	sf	—	.08	.08
all soil types, hand labor	5E@.001	sf	—	.04	.04
Excavate for structure with basement (per sf of floor)					
typical soil, machine	10@.006	sf	—	.48	.48
typical soil, hand finish	5E@.005	sf	—	.20	.20
rocky or hardpan soil, machine	10@.008	sf	—	.64	.64
rocky or hardpan soil, hand finish	5E@.006	sf	—	.24	.24
Backfill structure with basement (per sf of floor)					
all soil types, machine	10@.003	sf	—	.24	.24
all soil types, hand labor	5E@.003	sf	—	.12	.12
Excavate for 3' to 4' deep footings					
typical soil, machine	10@.006	lf	—	.48	.48
typical soil, hand finish	5E@.005	lf	—	.20	.20
rocky or hardpan soil, machine	10@.008	lf	—	.64	.64
rocky or hardpan soil, hand finish	5E@.006	lf	—	.24	.24
Excavate for 5' to 6' deep footings					
typical soil, machine	10@.007	lf	—	.56	.56
typical soil, hand finish	5E@.006	lf	—	.24	.24
rocky or hardpan soil, machine	10@.010	lf	—	.81	.81
rocky or hardpan soil, hand finish	5E@.008	lf	—	.32	.32
Excavate for 7' to 8' deep footing					
typical soil, machine	10@.009	lf	—	.73	.73
typical soil, hand finish	5E@.007	lf	—	.28	.28
hardpan or rocky soil, machine	10@.012	lf	—	.97	.97
hardpan or rocky soil, hand finish	5E@.010	lf	—	.40	.40
Excavate for 9' to 10' deep footing					
typical soil, machine	10@.011	lf	—	.89	.89
typical soil, hand finish	5E@.009	lf	—	.36	.36
hardpan or rocky soil, machine	10@.014	lf	—	1.13	1.13
hardpan or rocky soil, hand finish	5E@.011	lf	—	.44	.44
Backfill foundation wall (per sf of wall)					
machine	10@.004	sf	—	.32	.32
hand labor	5E@.003	sf	—	.12	.12

	Craft@Hrs	Unit	Material	Labor	Total
Machine excavate for 1' to 2' deep utility trench					
sandy loam soil	10@.002	lf	—	.16	.16
rocky or hardpan soil	10@.003	lf	—	.24	.24
backfill	10@.002	lf	—	.16	.16
Machine excavate for 3' to 4' deep utility trench					
sandy loam soil	10@.003	lf	—	.24	.24
rocky or hardpan soil	10@.004	lf	—	.32	.32
backfill	10@.003	lf	—	.24	.24
Machine excavate for 5' to 6' deep utility trench					
sandy loam soil	10@.004	lf	—	.32	.32
rocky or hardpan soil	10@.006	lf	—	.48	.48
backfill	10@.005	lf	—	.40	.40
Hand finish excavation for utility trench					
all soil types	5E@.002	lf	—	.08	.08
Excavate for 2' to 3' deep water-line trench					
sandy loam soil	10@.004	lf	—	.32	.32
rocky or hardpan soil	10@.006	lf	—	.48	.48
backfill	10@.003	lf	—	.24	.24
Excavate for 4' to 5' deep water-line trench					
sandy loam soil	10@.006	lf	—	.48	.48
rocky or hardpan soil	10@.009	lf	—	.73	.73
backfill	10@.006	lf	—	.48	.48
Excavate for 6' to 7' deep water-line trench					
sandy loam soil	10@.009	lf	—	.73	.73
rocky or hardpan soil	10@.013	lf	—	1.05	1.05
backfill	10@.008	lf	—	.64	.64
Excavate for 8' to 9' deep water-line trench					
sandy loam soil	10@.011	lf	—	.89	.89
rocky or hardpan soil	10@.017	lf	—	1.37	1.37
backfill	10@.010	lf	—	.81	.81
Hand finish excavation for water-line trench					
all soil types	5E@.005	lf	—	.20	.20
Excavate for 3' to 4' deep sewer-line trench					
sandy loam soil	10@.006	lf	—	.48	.48
rocky or hardpan soil	10@.009	lf	—	.73	.73
backfill	10@.005	lf	—	.40	.40
Excavate for 5' to 6' deep sewer-line trench					
sandy loam soil	10@.009	lf	—	.73	.73
rocky or hardpan soil	10@.013	lf	—	1.05	1.05
backfill	10@.008	lf	—	.64	.64
Excavate for 7' to 8' deep sewer-line trench					
sandy loam soil	10@.011	lf	—	.89	.89
rocky or hardpan soil	10@.017	lf	—	1.37	1.37
backfill	10@.006	lf	—	.48	.48
Hand finish excavation for sewer-line trench					
all soil types	5E@.005	lf	—	.20	.20
Machine excavate hole for repairs to water, sewer, or utility lines					
machine excavate per lf of depth	10@.024	lf	—	1.93	1.93
hand finish per lf of depth	5E@.019	lf	—	.76	.76
General foundation, slab, & footing machine excavation					
machine excavate per cy	10@.025	cy	—	2.02	2.02
hand finish per cy	5E@.020	cy	—	.80	.80

	Craft@Hrs	Unit	Material	Labor	Total
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Fees

Building permit. Permit fees vary widely. These fees are rules of thumb for most areas of the country. Rural areas will be less and high-density areas will be more. Includes plan-check fees.

Minimum	—	ea	—	—	134.00
For job \$2,001 to \$5,000	—	ea	—	—	144.00
For job \$5,001 to \$10,000	—	ea	—	—	429.00
For job \$10,001 to \$20,000	—	ea	—	—	786.00
For job \$20,001 to \$30,000	—	ea	—	—	999.00
For job \$30,001 to \$40,000	—	ea	—	—	1,130.00
For job \$40,001 to \$50,000	—	ea	—	—	1,290.00
For job \$50,001 to \$60,000	—	ea	—	—	1,640.00
For job \$60,001 to \$70,000	—	ea	—	—	1,850.00
For job \$70,001 to \$80,000	—	ea	—	—	2,000.00
For job \$80,001 to \$90,000	—	ea	—	—	2,220.00
For job \$90,001 to \$100,000	—	ea	—	—	2,370.00
For job \$100,001 to \$150,000	—	ea	—	—	3,000.00
For job \$150,001 to \$200,000	—	ea	—	—	3,570.00
For job \$200,001 to \$250,000	—	ea	—	—	4,290.00
For job \$250,001 to \$300,000	—	ea	—	—	4,840.00
For job \$300,001 to \$400,000	—	ea	—	—	6,130.00
For job \$400,001 to \$500,000	—	ea	—	—	7,440.00

Sewer connection fee. Typical charges for labor and materials installed by government entity. Does not include any development upcharges added to the fee. Includes connect to a city sewer line up to 50 lf from the structure, mobilization, excavation, pipe and fittings, backfill, repair to street, curb and gutter, and temporary signs.

Typical charge	—	ea	—	—	3,280.00
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Water connection fee. Typical charges for labor and materials installed by government entity. Does not include any development upcharges added to the fee. Includes connect to a city water line up to 50 lf from the structure, mobilization, excavation, pipe and fittings, water meter, backfill, repair to street, curb and gutter, and temporary signs.

Typical charge	—	ea	—	—	3,140.00
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Estimating fees. Typical rates charged to estimate insurance repair damages. Rule of thumb for estimating insurance repair damages on losses under \$200,000. Percentage rate drops to as low as .75% on large losses or multiple unit losses. This percentage is used across the country. Do not adjust with Area Modification Factor.

Per hour	—	hr	—	—	67.80
Per day	—	dy	—	—	641.00
As percentage of estimate	—	%	—	—	1.5
Minimum	—	ea	—	—	270.00

Soils engineer fee.

Per hour	—	hr	—	—	144.00
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Structural engineer fee.

Per hour	—	hr	—	—	157.00
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Plan drawing fee, per sf of floor.

Simple structure	—	sf	—	—	.30
Typical structure	—	sf	—	—	.36
Complex structure	—	sf	—	—	.51
Ornate structure	—	sf	—	—	.72
Minimum	—	ea	—	—	293.00

Craft@Hrs Unit Material Labor Total

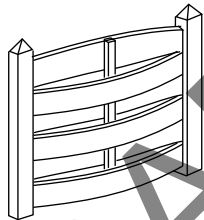
Fences

Wood fence post. All wood fence posts include digging of 2' deep hole and setting in concrete. Post height is above ground. For example, a 4' high post is made from a 6' length with 2' underground and 4' above ground.

Cedar fence post					
4' high cedar	4F@.907	ea	28.80	48.80	77.60
6' high cedar	4F@.907	ea	33.30	48.80	82.10
8' high cedar	4F@.907	ea	37.60	48.80	86.40
Redwood fence post					
4' high	4F@.907	ea	32.40	48.80	81.20
6' high	4F@.907	ea	37.00	48.80	85.80
8' high	4F@.907	ea	41.80	48.80	90.60
Treated pine fence post					
4' high	4F@.907	ea	30.10	48.80	78.90
6' high	4F@.907	ea	34.70	48.80	83.50
8' high	4F@.907	ea	39.10	48.80	87.90
Remove wood fence post	1D@.367	ea	—	15.40	15.40

Basketweave fence. Posts are set in concrete and spaced up to 8' on center with an average spacing of 7.2' apart. Fence boards are 1" x 6" to 1" x 10". Gates are 3' wide with a frame made from 2" x 4" lumber, cross braced with turn buckle and cable. Includes heavy-duty hinges, latch, and spring closer.

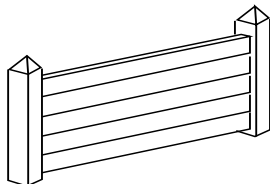
Cedar basketweave fence					
4' high	4F@.317	lf	17.00	17.10	34.10
6' high	4F@.336	lf	23.00	18.10	41.10
8' high	4F@.360	lf	30.00	19.40	49.40
Redwood basketweave fence					
4' high	4F@.317	lf	18.70	17.10	35.80
6' high	4F@.336	lf	25.30	18.10	43.40
8' high	4F@.360	lf	33.30	19.40	52.70
Treated pine basketweave fence					
4' high	4F@.317	lf	17.60	17.10	34.70
6' high	4F@.336	lf	23.70	18.10	41.80
8' high	4F@.360	lf	31.30	19.40	50.70
Cedar gate with hardware					
4' high	4F@2.70	ea	97.10	145.00	242.10
6' high	4F@2.86	ea	119.00	154.00	273.00
8' high	4F@3.04	ea	140.00	164.00	304.00
Redwood gate with hardware					
4' high	4F@2.70	ea	107.00	145.00	252.00
6' high	4F@2.86	ea	132.00	154.00	286.00
8' high	4F@3.04	ea	154.00	164.00	318.00
Treated pine gate with hardware					
4' high	4F@2.70	ea	101.00	145.00	246.00
6' high	4F@2.86	ea	124.00	154.00	278.00
8' high	4F@3.04	ea	145.00	164.00	309.00
Remove wood fence					
4' high wood fence	1D@.161	lf	—	6.76	6.76
6' high wood fence	1D@.165	lf	—	6.93	6.93
8' high wood fence	1D@.170	lf	—	7.14	7.14
4' high fence gate	1D@.324	ea	—	13.60	13.60
6' high fence gate	1D@.336	ea	—	14.10	14.10
8' high fence gate	1D@.346	ea	—	14.50	14.50



Craft@Hrs Unit Material Labor Total

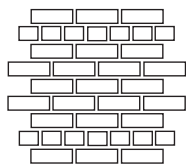
Board fence. Fence with boards installed vertically or horizontally. Posts are set in concrete and spaced up to 8' on center with an average spacing of 7.2' apart. Fence boards are 1" x 4" to 1" x 8". 8' tall fence contains three supporting rails. All other heights contain two. Gates are 3' wide with horizontal and diagonal rails, heavy-duty hinges, latch, and spring closer.

Cedar, replace fence					
4' high	4F@.267	lf	17.00	14.40	31.40
6' high	4F@.286	lf	23.00	15.40	38.40
8' high	4F@.307	lf	30.00	16.50	46.50
Redwood, replace fence					
4' high	4F@.267	lf	18.70	14.40	33.10
6' high	4F@.286	lf	25.30	15.40	40.70
8' high	4F@.307	lf	33.30	16.50	49.80
Treated pine, replace fence					
4' high	4F@.267	lf	17.60	14.40	32.00
6' high	4F@.286	lf	23.70	15.40	39.10
8' high	4F@.307	lf	31.30	16.50	47.80
Cedar gate with hardware					
4' high	4F@2.17	ea	97.10	117.00	214.10
6' high	4F@2.33	ea	119.00	125.00	244.00
8' high	4F@2.44	ea	140.00	131.00	271.00
Redwood gate with hardware					
4' high	4F@2.17	ea	107.00	117.00	224.00
6' high	4F@2.33	ea	132.00	125.00	257.00
8' high	4F@2.44	ea	154.00	131.00	285.00
Treated pine gate with hardware					
4' high	4F@2.17	ea	101.00	117.00	218.00
6' high	4F@2.33	ea	124.00	125.00	249.00
8' high	4F@2.44	ea	145.00	131.00	276.00
Remove wood fence					
4' high wood fence	1D@.161	lf	—	6.76	6.76
6' high wood fence	1D@.165	lf	—	6.93	6.93
8' high wood fence	1D@.170	lf	—	7.14	7.14
4' high wood gate	1D@.324	ea	—	13.60	13.60
6' high wood gate	1D@.336	ea	—	14.10	14.10
8' high wood gate	1D@.346	ea	—	14.50	14.50

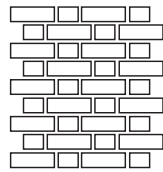


Board fence with lattice cap. Fence with boards installed vertically or horizontally capped with 12" of lattice on top. Lattice is trimmed with 2" x 4" lattice rail on top, bottom and sides. Posts are set in concrete and spaced up to 8' on center with an average spacing of 7.2' apart. Fence boards are 1" x 4" to 1" x 8". Gates are 3' wide with a frame made from 2" x 4" lumber, cross braced with turn buckle and cable. Includes heavy-duty hinges, latch, and spring closer.

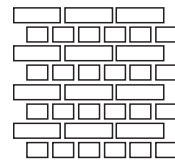
Cedar board fence with lattice cap					
6' high	4F@.331	lf	30.20	17.80	48.00
8' high	4F@.360	lf	37.40	19.40	56.80
Redwood board fence with lattice cap					
6' high	4F@.331	lf	33.60	17.80	51.40
8' high	4F@.360	lf	41.50	19.40	60.90
Treated pine board fence with lattice cap					
6' high	4F@.331	lf	31.60	17.80	49.40
8' high	4F@.360	lf	39.00	19.40	58.40



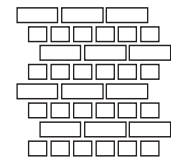
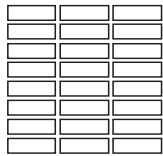
common bond



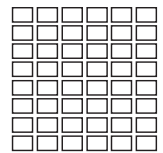
Flemish bond



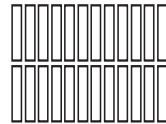
English bond

English
cross bond

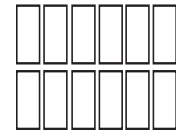
stack bond



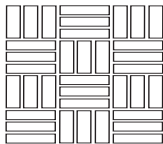
header bond



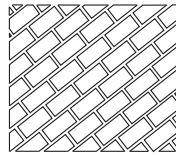
soldier course



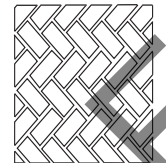
sailor course



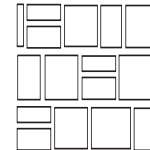
basketweave



diagonal



herringbone

coursed
ashlar style

Craft@Hrs Unit Material Labor Total

Add for other brick bonds. All brick prices above are for running bond. For other bonds add the percentage listed below.

add for common bond (also called American bond)	—	%	—	16.0	—
add for Flemish bond	—	%	—	54.0	—
add for English bond	—	%	—	65.0	—
add for English cross bond (also called Dutch bond)	—	%	—	65.0	—
add for stack bond	—	%	—	8.0	—
add for false all header bond	—	%	—	116.0	—
add for all header bond	—	%	—	115.0	—
add for soldier course	—	%	—	15.0	—
add for sailor course	—	%	—	5.0	—
add for basketweave	—	%	—	122.0	—
add for herringbone weave	—	%	—	125.0	—
add for diagonal bond	—	%	—	90.0	—
add for coursed ashlar style brick bond with two sizes of bricks	—	%	—	70.0	—
add for curved brick walls	—	%	—	27.0	—

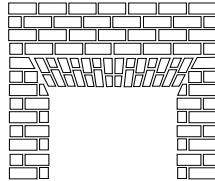
Add for openings in brick wall. Use only if sf of opening has been deducted from sf price. Includes angle iron lintel. Replace only.

4" wide wall	4M@.260	If	6.44	14.50	20.94
6" wide wall	4M@.263	If	11.20	14.70	25.90
8" wide wall	4M@.265	If	11.20	14.80	26.00
10" wide wall	4M@.270	If	12.90	15.10	28.00
12" wide wall	4M@.272	If	12.90	15.20	28.10

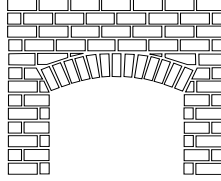
	Craft@Hrs	Unit	Material	Labor	Total
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Add for raked joints.

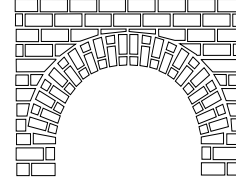
raked joints	4M@.006	sf	—	.34	.34
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flat (jack arch)



elliptical



semi-circular

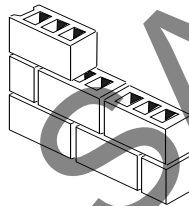
Brick arch. Per lf of opening. Replace only.

flat (jack arch)	4M@1.49	lf	20.30	83.30	103.60
elliptical	4M@1.85	lf	24.00	103.00	127.00
semi-circular	4M@1.96	lf	24.00	110.00	134.00
add to brace from below for repairs	4M@.556	lf	18.20	31.10	49.30
minimum	4M@10.0	ea	122.00	559.00	681.00

Concrete block walls. Unless otherwise noted all concrete block walls are made from 8" x 16" face block with 3/8" wide mortar joints. Cells are 36" on center and at each corner and include one length of #4 rebar in field cells and 2 lengths in corner cells for an average of 1.4 in each grouted cell. A horizontal bond beam is also calculated for every 8' of wall height and includes two lengths of #4 rebar. Ladder type horizontal wire reinforcing appears in every other course. Also includes 4% waste for block and 25% waste for mortar.

Concrete block wall.

replace, 4" wide	4M@.089	sf	2.91	4.98	7.89
replace, 6" wide	4M@.092	sf	3.40	5.14	8.54
replace, 8" wide	4M@.097	sf	4.28	5.42	9.70
replace, 10" wide	4M@.103	sf	5.29	5.76	11.05
replace, 12" wide	4M@.122	sf	6.72	6.82	13.54
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

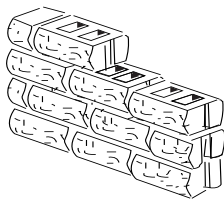
**Lightweight concrete block wall.**

replace, 4" wide	4M@.083	sf	2.99	4.64	7.63
replace, 6" wide	4M@.086	sf	3.47	4.81	8.28
replace, 8" wide	4M@.091	sf	4.35	5.09	9.44
replace, 10" wide	4M@.097	sf	5.32	5.42	10.74
replace, 12" wide	4M@.114	sf	6.88	6.37	13.25
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

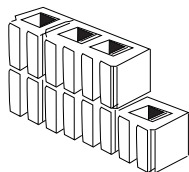
Craft@Hrs Unit Material Labor Total

Slump block wall. 4" x 16" face.

replace, 4" wide	4M@.089	sf	4.89	4.98	9.87
replace, 6" wide	4M@.092	sf	5.99	5.14	11.13
replace, 8" wide	4M@.097	sf	7.42	5.42	12.84
replace, 10" wide	4M@.103	sf	8.81	5.76	14.57
replace, 12" wide	4M@.122	sf	11.10	6.82	17.92
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

**Fluted block wall (fluted one side).**

replace, 4" wide	4M@.089	sf	4.20	4.98	9.18
replace, 6" wide	4M@.092	sf	4.80	5.14	9.94
replace, 8" wide	4M@.097	sf	6.07	5.42	11.49
replace, 10" wide	4M@.103	sf	7.48	5.76	13.24
replace, 12" wide	4M@.122	sf	9.73	6.82	16.55
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

**Fluted block wall (fluted two sides).**

replace, 4" wide	4M@.089	sf	4.76	4.98	9.74
replace, 6" wide	4M@.092	sf	5.46	5.14	10.60
replace, 8" wide	4M@.097	sf	6.87	5.42	12.29
replace, 10" wide	4M@.103	sf	8.48	5.76	14.24
replace, 12" wide	4M@.122	sf	11.10	6.82	17.92
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

Glazed block wall (glazed one side).

replace, 4" wide	4M@.089	sf	16.50	4.98	21.48
replace, 6" wide	4M@.092	sf	17.10	5.14	22.24
replace, 8" wide	4M@.097	sf	18.00	5.42	23.42
replace, 10" wide	4M@.103	sf	19.10	5.76	24.86
replace, 12" wide	4M@.122	sf	19.90	6.82	26.72
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

	Craft@Hrs	Unit	Material	Labor	Total
Glazed block wall (glazed two sides).					
replace, 4" wide	4M@.089	sf	24.00	4.98	28.98
replace, 6" wide	4M@.092	sf	25.70	5.14	30.84
replace, 8" wide	4M@.097	sf	26.90	5.42	32.32
replace, 10" wide	4M@.103	sf	27.90	5.76	33.66
replace, 12" wide	4M@.122	sf	28.80	6.82	35.62
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

Split-face block wall.

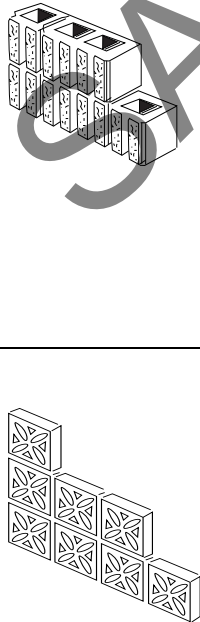
replace, 4" wide	4M@.089	sf	4.52	4.98	9.50
replace, 6" wide	4M@.092	sf	5.39	5.14	10.53
replace, 8" wide	4M@.097	sf	7.11	5.42	12.53
replace, 10" wide	4M@.103	sf	7.94	5.76	13.70
replace, 12" wide	4M@.122	sf	10.30	6.82	17.12
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

Split-rib block wall.

replace, 4" wide	4M@.089	sf	4.27	4.98	9.25
replace, 6" wide	4M@.092	sf	4.67	5.14	9.81
replace, 8" wide	4M@.097	sf	7.03	5.42	12.45
replace, 10" wide	4M@.103	sf	8.03	5.76	13.79
replace, 12" wide	4M@.122	sf	9.09	6.82	15.91
remove, 4"	1D@.087	sf	—	3.65	3.65
remove, 6"	1D@.104	sf	—	4.37	4.37
remove, 8"	1D@.132	sf	—	5.54	5.54
remove, 10"	1D@.149	sf	—	6.26	6.26
remove, 12"	1D@.177	sf	—	7.43	7.43

Screen block. 12" x 12" face.

4" wide screen block					
replace, pattern two sides	4M@.089	sf	8.33	4.98	13.31
replace, pattern four sides	4M@.089	sf	15.30	4.98	20.28
remove	1D@.087	sf	—	3.65	3.65



Craft@Hrs Unit Material Labor Total

Other block colors.

add for light ochre colored concrete block	—	%	11.0	—	—
add darker ochre colored concrete block	—	%	17.0	—	—
add for dark or bright colored concrete block	—	%	28.0	—	—

Interlocking block.

add for interlocking concrete block	—	%	15.0	—	—
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**Block polystyrene insulation inserts.** Additional cost to purchase block with polystyrene inserts already installed. Replace only.

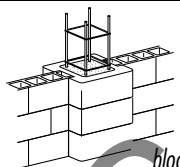
6" block	—	sf	1.31	—	1.31
8" block	—	sf	1.41	—	1.41
10" block	—	sf	1.59	—	1.59
12" block	—	sf	1.70	—	1.70

Block silicone treated perlite or vermiculite loose insulation. Includes 3% waste. Replace only.

6" block	4M@.004	sf	.52	.22	.74
8" block	4M@.005	sf	.77	.28	1.05
10" block	4M@.005	sf	.93	.28	1.21
12" block	4M@.005	sf	1.36	.28	1.64

Add for pilaster in block wall. 16" x 16" pilaster, single piece. For double piece 16" x 20" pilaster add 15%. Replace only.

per vertical lf	4M@.294	lf	18.80	16.40	35.20
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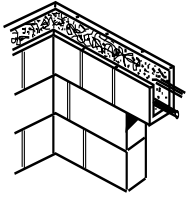
block pilaster

Other block wall additions and deductions. Replace only.

deduct for block walls used as backing	4M@.005	sf	—	.28	.28
deduct for wall with no horizontal wire reinforcement	4M@.001	sf	-.24	.06	.06
deduct for wall with no vertical reinforcement	4M@.006	sf	-.84	.34	.34
deduct for wall with vertical reinforcement every 48"	4M@.005	sf	-.24	.28	.28
add for wall with vertical reinforcement every 24"	4M@.005	sf	.30	.28	.58
deduct for wall with no bond beam reinforcement	4M@.004	sf	-.65	.22	.22
add for wall with bond beam reinforcement every 4'	4M@.006	sf	.42	.34	.76
add for high strength concrete block, 3,000 psi (add to materials cost only)	—	%	19.0	—	—
add for high strength concrete block, 5,000 psi (add to materials cost only)	—	%	21.0	—	—

Craft@Hrs Unit Material Labor Total

Bond beam. Includes two lengths of #4 rebar. Replace only.

6" wide		4M@.026	lf	1.96	1.45	3.41
8" wide		4M@.029	lf	2.29	1.62	3.91
10" wide		4M@.031	lf	2.68	1.73	4.41
12" wide		4M@.034	lf	3.11	1.90	5.01

Parging block walls.

Parge block foundation wall	4P@.019	sf	.51	1.09	1.60
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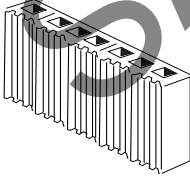
Grade beam cap on block wall. In some states, concrete block walls are capped with a grade beam. This not only adds strength but also levels the wall top. Because the mason does not take care to maintain a level wall, deduct **25%** from the labor cost for block walls capped with a grade beam. Up to 16" tall with four lengths of #4 rebar. Rebar from grouted cells is also bent into the grade beam.

replace, 6" wide	4M@.106	lf	11.20	5.93	17.13
replace, 8" wide	4M@.110	lf	14.50	6.15	20.65
replace, 10" wide	4M@.115	lf	17.50	6.43	23.93
replace, 12" wide	4M@.120	lf	20.80	6.71	27.51
remove	1D@.363	lf	—	15.20	15.20

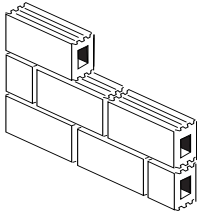
Masonry fence.

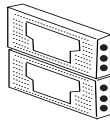
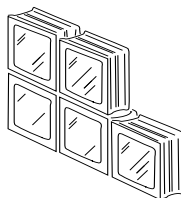
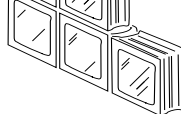
Deduct for concrete block or brick wall installed as fence	—	%	-8.0	—	—
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Clay backing tile wall. 12" x 12" face tile with 3/8" wide mortar joints. Includes 4% waste for tile and 25% waste for mortar.

replace, 4" thick		4M@.112	sf	6.92	6.26	13.18
replace, 6" thick		4M@.127	sf	6.93	7.10	14.03
replace, 8" thick		4M@.145	sf	6.93	8.11	15.04
remove, 4"		1D@.087	sf	—	3.65	3.65
remove, 6"		1D@.104	sf	—	4.37	4.37
remove, 8"		1D@.132	sf	—	5.54	5.54

Structural tile wall. 8" x 16" face tile with 3/8" wide mortar joints. Includes 4% waste for tile and 25% waste for mortar.

replace, 4" thick, glazed one side		4M@.204	sf	9.30	11.40	20.70
replace, 4" thick, glazed two sides		4M@.214	sf	14.10	12.00	26.10
replace, 6" thick, glazed one side		4M@.243	sf	12.20	13.60	25.80
replace, 6" thick, glazed two sides		4M@.253	sf	18.90	14.10	33.00
replace, 8" thick, glazed one side		4M@.263	sf	16.50	14.70	31.20
remove, 4"		1D@.087	sf	—	3.65	3.65
remove, 6"		1D@.104	sf	—	4.37	4.37
remove, 8"		1D@.132	sf	—	5.54	5.54

		Craft@Hrs	Unit	Material	Labor	Total
Gypsum partition tile wall. 12" x 30" face tile with 3/8" wide mortar joints. Includes 4% waste for tile and 25% waste for mortar.						
replace, 4" thick	 gypsum partition tile	4M@.057	sf	2.60	3.19	5.79
replace, 6" thick		4M@.083	sf	3.75	4.64	8.39
remove, 4"		1D@.087	sf	—	3.65	3.65
remove, 6"		1D@.132	sf	—	5.54	5.54
Glass block wall. White mortar with 3/8" wide joints and ladder type wire reinforcing every other course. Includes 4% waste for glass blocks and 25% waste for mortar.						
Thinline smooth-face glass block wall						
replace, 4" x 8"		4M@.333	sf	31.10	18.60	49.70
replace, 6" x 6"		4M@.310	sf	28.50	17.30	45.80
replace, 6" x 8"		4M@.267	sf	21.60	14.90	36.50
Smooth-face glass block wall						
replace, 4" x 8"		4M@.333	sf	38.80	18.60	57.40
replace, 6" x 6"		4M@.310	sf	34.30	17.30	51.60
replace, 6" x 8"		4M@.267	sf	31.10	14.90	46.00
replace, 8" x 8"		4M@.208	sf	24.20	11.60	35.80
replace, 12" x 12"		4M@.175	sf	28.20	9.78	37.98
remove		1D@.084	sf	—	3.53	3.53
Add for solar UV reflective glass block		—	%	80.0	—	—
Add for patterned face on glass block		—	%	4.0	—	—
Add for tinted glass block		—	%	12.0	—	—
Deduct for natural gray mortar in glass block wall		—	%	-2.0	—	—
Deduct for colored mortar in glass block wall		—	%	-1.0	—	—
Pavers. Pavers on sand base have sand embedded in joints with vibrating compactor. Mortar base pavers have grouted joints. Includes 4% waste for pavers and 25% waste for mortar when used.						
Natural concrete pavers						
replace, sand base	 basketweave	4M@.147	sf	5.78	8.22	14.00
replace, mortar base		4M@.180	sf	5.78	10.10	15.88
Adobe pavers						
replace, sand base		4M@.147	sf	2.42	8.22	10.64
replace, mortar base		4M@.180	sf	2.42	10.10	12.52
Brick, standard grade paving						
replace, sand base		4M@.147	sf	3.19	8.22	11.41
replace, mortar base		4M@.180	sf	3.29	10.10	13.39
Brick, high grade paving						
replace, sand base		4M@.147	sf	4.23	8.22	12.45
replace, mortar base		4M@.180	sf	4.23	10.10	14.33
Brick, deluxe grade paving						
replace, sand base		4M@.147	sf	5.12	8.22	13.34
replace, mortar base		4M@.180	sf	5.23	10.10	15.33
remove, sand base		1D@.084	sf	—	3.53	3.53
remove, mortar base		1D@.120	sf	—	5.04	5.04
Paving made from full-size bricks						
replace, laid face up		4M@.185	sf	5.63	10.30	15.93
replace, laid edge up		4M@.208	sf	8.65	11.60	20.25
remove		1D@.090	sf	—	3.78	3.78

	Craft@Hrs	Unit	Material	Labor	Total
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Additional paver costs.

add for curved edges	4M@.078	lf	1.93	4.36	6.29
add for steps installed over concrete	4M@.270	lf	.92	15.10	16.02
add for steps installed over sand base	4M@.294	lf	.86	16.40	17.26
add for separate pattern at edges	4M@.076	lf	1.88	4.25	6.13
add for non-square with interlocking patterns	—	%	17.0	—	—
add for diagonal pattern	—	%	8.0	—	—
add for basketweave pattern	—	%	17.0	—	—
add for herringbone pattern	—	%	14.0	—	—

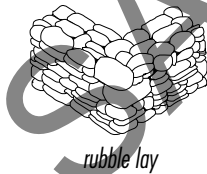
Stone walls. Stone walls are made from average to high quality stone. Prices are for stone quarried within 150 miles of the job site. Cast stone is made from a composite of crushed limestone and quartz sand. Granite is a good quality gray stone. Add **28%** for light red (pink), light purple, and light brown. Add **88%** for deep green, red, purple, blue, black, charcoal, and brown. Limestone is standard stock. Add **15%** for select stock and deduct **10%** for rustic stock. Marble is Grade A, average to high priced. Marble varies widely in price with little relationship to color and often even the quality of the stone. The more expensive grades are Italian. Sandstone is standard grade and varies from very hard rock to fairly soft. Use for brownstone work. Slate is standard grade, all colors.

Stone finishes are generally organized in this price book as natural, rough, and smooth. In practice there are many variations of each type of finish. Stone with natural finishes show the cleaving or sawing marks made in the quarry. Rough finishes are applied after the stone is quarried to achieve a specific rough look. Smooth finishes are achieved by polishing the stone. All molded work is finished smooth.

To estimate by the perch, multiply the cf price by 24.75. (A perch is 16-1/2' long, 1' high and 1-1/2' wide or 24-3/4 cubic feet.)

Rubble stone wall. Stone walls laid in a variety of rubble patterns, per cubic foot of stone. Includes an average of 1/3 cubic foot of mortar per cubic foot of wall.

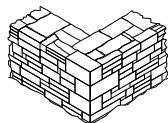
replace, coral stone	4M@.518	cf	54.20	29.00	83.20
replace, fieldstone with no mortar	4M@.481	cf	39.70	26.90	66.60
replace, fieldstone	4M@.518	cf	64.80	29.00	93.80
replace, lava stone	4M@.518	cf	62.30	29.00	91.30
replace, river stone	4M@.518	cf	66.00	29.00	95.00
remove, no mortar	1D@.259	cf	—	10.90	10.90
remove, mortar	1D@.439	cf	—	18.40	18.40



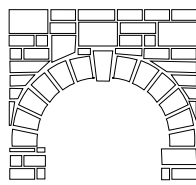
rubble lay

Ashlar stone wall. Stone walls laid in a variety of ashlar patterns, per cubic foot of stone. Stone is 3-1/2" to 6" wide and various lengths and thickness. Includes mortar.

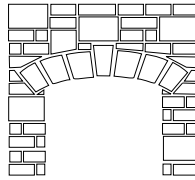
Limestone stone wall					
replace, natural finish	4M@.472	cf	52.20	26.40	78.60
replace, rough finish	4M@.472	cf	58.10	26.40	84.50
replace, smooth finish	4M@.472	cf	83.10	26.40	109.50
Marble stone wall					
replace, natural finish	4M@.472	cf	119.00	26.40	145.40
replace, rough finish	4M@.472	cf	129.00	26.40	155.40
replace, smooth finish	4M@.472	cf	161.00	26.40	187.40
Sandstone wall					
replace, natural finish	4M@.472	cf	50.30	26.40	76.70
replace, rough finish	4M@.472	cf	56.00	26.40	82.40
replace, smooth finish	4M@.472	cf	80.10	26.40	106.50
remove	1D@.439	cf	—	18.40	18.40



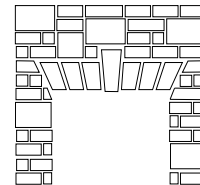
ashlar lay



semi-circular



elliptical arch



flat arch

Craft@Hrs Unit Material Labor Total

Arch in stone wall. Replace only.

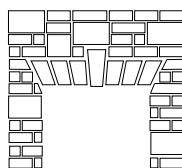
flat arch in stone wall	4M@2.86	lf	122.00	160.00	282.00
elliptical arch in stone wall	4M@3.58	lf	145.00	200.00	345.00
semi-circular arch in stone wall	4M@3.70	lf	145.00	207.00	352.00
Add for curved stone wall	—	%	27.0	—	—

Stone rubble veneer.

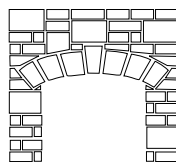
replace, coral stone	4M@.243	sf	18.00	13.60	31.60
replace, field stone	4M@.243	sf	14.70	13.60	28.30
replace, flagstone	4M@.243	sf	9.22	13.60	22.82
replace, lava stone	4M@.243	sf	14.10	13.60	27.70
replace, river stone	4M@.243	sf	15.00	13.60	28.60
replace, sandstone	4M@.243	sf	20.80	13.60	34.40
remove	1D@.106	sf	—	4.45	4.45

Stone ashlar veneer.

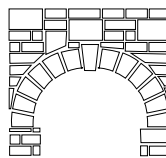
Flagstone veneer					
replace	4M@.236	sf	10.70	13.20	23.90
Limestone veneer					
replace, natural finish	4M@.236	sf	11.80	13.20	25.00
replace, rough finish	4M@.236	sf	13.00	13.20	26.20
replace, smooth finish	4M@.236	sf	18.40	13.20	31.60
Marble veneer					
replace, natural finish	4M@.236	sf	26.30	13.20	39.50
replace, rough finish	4M@.236	sf	28.70	13.20	41.90
replace, smooth finish	4M@.236	sf	35.30	13.20	48.50
Sandstone veneer					
replace, natural finish	4M@.236	sf	11.30	13.20	24.50
replace, rough finish	4M@.236	sf	12.40	13.20	25.60
replace, smooth finish	4M@.236	sf	17.60	13.20	30.80
Remove	1D@.106	sf	—	4.45	4.45



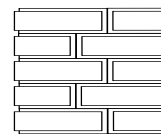
flat arch



elliptical arch



semi-circular arch



rustication

Arch in stone veneer. Replace only.

Craft@Hrs	Unit	Material	Labor	Total
flat arch	4M@1.75	lf	26.80	97.80
elliptical arch	4M@2.17	lf	32.00	121.00
semi-circular arch	4M@2.30	lf	32.00	129.00
add to support arch from below	4M@.556	lf	18.20	31.10
add for curved stone veneer	—	%	27.0	—
add for rusticated stone	—	%	55.0	—

Keystone. For use in stone or brick arches.

replace, concrete	4M@.606	ea	72.30	33.90	106.20
replace, cast stone	4M@.606	ea	99.00	33.90	132.90
replace, natural finish	4M@.606	ea	158.00	33.90	191.90
replace, with straight patterns	4M@.606	ea	203.00	33.90	236.90
replace, with complex straight patterns (Gothic)	4M@.606	ea	257.00	33.90	290.90
replace, with light hand carvings	4M@.606	ea	391.00	33.90	424.90
replace, with medium hand carvings	4M@.606	ea	502.00	33.90	535.90
replace, with heavy hand carvings	4M@.606	ea	703.00	33.90	736.90
remove	1D@.198	ea	—	8.32	8.32
remove for work, then reinstall	4M@1.02	ea	—	57.00	57.00

Quoin. In brick, stone, or stucco walls. Made from alternate courses of headers and stretchers. Price each includes one header and one stretcher (two stones). Cast stone quoins also include both sides. Quoins are plain, beveled, chamfered, rusticated, or rough tooled.

replace, cast stone	4M@.164	ea	159.00	9.17	168.17
replace, limestone	4M@.164	ea	180.00	9.17	189.17
replace, sandstone	4M@.164	ea	170.00	9.17	179.17
remove	1D@.196	ea	—	8.23	8.23
remove for work, then reinstall (per stone)	4M@.434	ea	—	24.30	24.30



stone quoin

Cultured stone veneer panels. 3/4" to 1-1/2" thick.

replace, smooth finish	4M@.263	sf	8.14	14.70	22.84
replace, rough finish	4M@.263	sf	11.00	14.70	25.70
replace, terrazzo style finish	4M@.263	sf	24.80	14.70	39.50
remove	1D@.074	sf	—	3.11	3.11

Ceramic veneer panels.

replace, precast	4M@.263	sf	19.90	14.70	34.60
remove	1D@.074	sf	—	3.11	3.11

	Craft@Hrs	Unit	Material	Labor	Total
remove vertically laid furring strips	1D@.478	sq	—	20.10	20.10
remove vertical & horizontal laid furring strips	1D@.840	sq	—	35.30	35.30
remove concrete shingles	1D@3.85	sq	—	162.00	162.00
remove preformed metal roofing	1D@.010	sf	—	.42	.42
remove preformed fiberglass roofing	1D@.009	sf	—	.38	.38
remove seamed metal roofing	1D@1.03	sq	—	43.30	43.30
remove built-up 3 ply roofing	1D@2.44	sq	—	102.00	102.00
remove built-up 4 ply roofing	1D@3.03	sq	—	127.00	127.00
remove built-up 5 ply roofing	1D@3.85	sq	—	162.00	162.00
add to remove built-up roof with ballast	1D@.847	sq	—	35.60	35.60
remove single ply roof partially adhered	1D@.980	sq	—	41.20	41.20
remove single ply roof fully adhered	1D@1.56	sq	—	65.50	65.50
remove single ply roof with ballast	1D@2.04	sq	—	85.70	85.70

Roofing Crew

install roofing	roofer	\$72.40
install roofing	roofer's helper	\$61.30
install roofing	roofing crew	\$66.90

Install shingles

aluminum shingles	6R@1.06	sq	—	70.90	70.90
galvanized steel shingles	6R@1.11	sq	—	74.30	74.30
20 year to 25 year asphalt	6R@1.24	sq	—	83.00	83.00
30 year to 40 year asphalt	6R@1.27	sq	—	85.00	85.00
standard grade laminated asphalt	6R@2.06	sq	—	138.00	138.00
high grade laminated asphalt	6R@2.45	sq	—	164.00	164.00
T-lock asphalt	6R@1.27	sq	—	85.00	85.00
hexagonal asphalt	6R@1.27	sq	—	85.00	85.00
diamond asphalt	6R@1.27	sq	—	85.00	85.00
Install roll roofing					
all weights	6R@.645	sq	—	43.20	43.20
Install slate					
typical	6R@4.00	sq	—	268.00	268.00
replace single slate shingle	6R@.385	ea	—	25.80	25.80
Install wood shingles					
16"	6R@2.86	sq	—	191.00	191.00
18"	6R@2.55	sq	—	171.00	171.00
replace single wood shingle	6R@.208	ea	—	13.90	13.90
Install wood shakes					
18"	6R@3.34	sq	—	223.00	223.00
24"	6R@2.86	sq	—	191.00	191.00
replace single shake	6R@.208	ea	—	13.90	13.90
Install fiber and cement shingles					
weathering shake style	6R@2.38	sq	—	159.00	159.00
Spanish tile style	6R@2.50	sq	—	167.00	167.00

	Craft@Hrs	Unit	Material	Labor	Total
Install clay tile					
flat	6R@3.23	sq	—	216.00	216.00
mission tile	6R@5.56	sq	—	372.00	372.00
Spanish tile	6R@3.34	sq	—	223.00	223.00
Install tile furring strips					
vertically laid only	6R@.606	sq	—	40.50	40.50
vertically and horizontally laid	6R@.877	sq	—	58.70	58.70
Install concrete tile					
corrugated	6R@3.13	sq	—	209.00	209.00
flat	6R@3.03	sq	—	203.00	203.00
Install pre-formed roofing					
corrugated aluminum or fiberglass	6R@.024	sf	—	1.61	1.61
corrugated galvanized steel	6R@.025	sf	—	1.67	1.67
ribbed (all types)	6R@.026	sf	—	1.74	1.74
Install standing seam metal roofing					
16 ounce copper	6R@6.67	sq	—	446.00	446.00
20 ounce copper	6R@7.69	sq	—	514.00	514.00
28 gauge stainless steel	6R@7.14	sq	—	478.00	478.00
40 lb terne	6R@8.33	sq	—	557.00	557.00
Install batten seam metal roofing					
16 ounce copper	6R@7.69	sq	—	514.00	514.00
20 ounce copper	6R@9.09	sq	—	608.00	608.00
28 gauge stainless steel	6R@7.69	sq	—	514.00	514.00
26 gauge stainless steel	6R@7.14	sq	—	478.00	478.00
3 lb lead	6R@7.14	sq	—	478.00	478.00
40 lb terne	6R@7.69	sq	—	514.00	514.00
Install flat seam metal roofing					
16 ounce copper	6R@7.14	sq	—	478.00	478.00
20 ounce copper	6R@8.33	sq	—	557.00	557.00
28 gauge stainless steel	6R@7.14	sq	—	478.00	478.00
26 gauge stainless steel	6R@6.67	sq	—	446.00	446.00
3 lb lead	6R@7.69	sq	—	514.00	514.00
40 lb terne	6R@9.09	sq	—	608.00	608.00
Seamed metal roofing repair					
solder patch (less than 1' square)	4R@1.00	ea	—	72.40	72.40
Install built-up roof					
3 ply	6R@3.34	sq	—	223.00	223.00
4 ply	6R@4.00	sq	—	268.00	268.00
5 ply	6R@4.76	sq	—	318.00	318.00

Craft@Hrs Unit Material Labor Total

Rough Carpentry

Minimum charge.

minimum for rough carpentry work	6C@3.00	ea	61.20	161.00	222.20
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Lumber prices. Some lumber prices, such as oak timbers, vary by as much as 60% depending on the region. These prices will be 15% to 30% lower in the Northeast, South, and most Great Lake states and provinces. In many areas of the Western, Midwest and Mountain states and provinces, oak timbers are not available unless specially shipped for a particular job. For the most accurate results, compare your local prices with the prices found in the material charts for this section starting on page 379 and create a customized materials factor.

Interior partition wall, per linear foot. Includes 5% waste. Based on an average wall with 4 openings and 5 corners per 56 lf of wall. A net of 2.2 studs is added for each corner and opening. All walls have two top plates and a single bottom plate.

2" x 4" interior partition wall, per lf					
replace, 8' tall 16" on center	6C@.241	lf	10.20	13.00	23.20
replace, 8' tall 24" on center	6C@.205	lf	8.51	11.00	19.51
remove, 8' tall 16" or 24" on center	1D@.045	lf	—	1.89	1.89
replace, 10' tall 16" on center	6C@.244	lf	12.10	13.10	25.20
replace, 10' tall 24" on center	6C@.207	lf	10.10	11.10	21.20
remove, 10' tall 16" or 24" on center	1D@.057	lf	—	2.39	2.39
2" x 6" interior partition wall, per lf					
replace, 8' tall 16" on center	6C@.244	lf	14.50	13.10	27.60
replace, 8' tall 24" on center	6C@.207	lf	12.40	11.10	23.50
remove, 8' tall 16" or 24" on center	1D@.048	lf	—	2.02	2.02
replace, 10' tall 16" on center	6C@.247	lf	17.50	13.30	30.80
replace, 10' tall 24" on center	6C@.209	lf	14.30	11.20	25.50
remove, 10' tall 16" or 24" on center	1D@.060	lf	—	2.52	2.52
2" x 8" interior partition wall, per lf					
replace, 8' tall 16" on center	6C@.247	lf	19.40	13.30	32.70
replace, 8' tall 24" on center	6C@.209	lf	16.10	11.20	27.30
remove, 8' tall 16" or 24" on center	1D@.049	lf	—	2.06	2.06
replace, 10' tall 16" on center	6C@.250	lf	22.90	13.50	36.40
replace, 10' tall 24" on center	6C@.211	lf	19.00	11.40	30.40
remove, 10' tall 16" or 24" on center	1D@.061	lf	—	2.56	2.56

Interior bearing walls, per linear foot. Includes studs, top plates, bottom plate, headers, and installation labor. Based on an average wall with 4 openings and 5 corners per 56 LF of wall. A net of 2.2 studs is added for each corner and opening. (Four openings are two 3' wide, one 4' wide, and one 5' wide for a total of 15 LF.) Headers in openings are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners between. All walls have two top plates and a single bottom plate.

2" x 4" interior bearing wall, per lf					
replace, 8' tall 12" on center	6C@.307	lf	14.70	16.50	31.20
replace, 8' tall 16" on center	6C@.261	lf	13.20	14.00	27.20
remove, 8' tall 12" or 16" on center	1D@.045	lf	—	1.89	1.89
replace, 10' tall 12" on center	6C@.312	lf	17.00	16.80	33.80
replace, 10' tall 16" on center	6C@.265	lf	14.90	14.30	29.20
remove, 10' tall 12" or 16" on center	1D@.057	lf	—	2.39	2.39

	Craft@Hrs	Unit	Material	Labor	Total
2" x 6" interior bearing wall, per lf					
replace, 8' tall 12" on center	6C@.310	lf	25.10	16.70	41.80
replace, 8' tall 16" on center	6C@.263	lf	22.90	14.10	37.00
remove, 8' tall 12" or 16" on center	1D@.048	lf	—	2.02	2.02
replace, 10' tall 12" on center	6C@.315	lf	28.30	16.90	45.20
replace, 10' tall 16" on center	6C@.267	lf	25.40	14.40	39.80
remove, 10' tall 12" or 16" on center	1D@.060	lf	—	2.52	2.52
2" x 8" interior bearing wall, per lf					
replace, 8' tall 12" on center	6C@.312	lf	32.90	16.80	49.70
replace, 8' tall 16" on center	6C@.266	lf	29.90	14.30	44.20
remove, 8' tall 12" or 16" on center	1D@.049	lf	—	2.06	2.06
replace, 10' tall 12" on center	6C@.317	lf	37.00	17.10	54.10
replace, 10' tall 16" on center	6C@.270	lf	33.20	14.50	47.70
remove, 10' tall 12" or 16" on center	1D@.061	lf	—	2.56	2.56

Exterior walls, per linear foot. Includes 5% waste. Includes studs, top plates, bottom plate, headers, metal let-in bracing, and installation labor. Based on an average wall with 4 openings and 5 corners per 56 LF of wall. A net of 2.2 studs is added for each corner and opening. (Four openings are two 3' wide, one 4' wide, and one 5' wide for a total of 15 LF.) Headers in openings are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners between boards. Includes 4 metal let-in braces for every 56 LF of wall. All walls have two top plates and a single bottom plate. Does not include exterior sheathing.

2" x 4" exterior wall, per lf					
replace, 8' tall 12" on center	6C@.312	lf	15.00	16.80	31.80
replace, 8' tall 16" on center	6C@.267	lf	13.50	14.40	27.90
replace, 8' tall 24" on center	6C@.216	lf	11.70	11.60	23.30
remove, 8' tall 12", 16" or 24" on center	1D@.045	lf	—	1.89	1.89
replace, 10' tall 12" on center	6C@.317	lf	17.50	17.10	34.60
replace, 10' tall 16" on center	6C@.270	lf	15.20	14.50	29.70
replace, 10' tall 24" on center	6C@.217	lf	13.30	11.70	25.00
remove, 10' tall 12", 16" or 24" on center	1D@.057	lf	—	2.39	2.39
2" x 6" exterior wall, per lf					
replace, 8' tall 12" on center	6C@.315	lf	25.40	16.90	42.30
replace, 8' tall 16" on center	6C@.270	lf	23.10	14.50	37.60
replace, 8' tall 24" on center	6C@.218	lf	20.70	11.70	32.40
remove, 8' tall 12", 16" or 24" on center	1D@.045	lf	—	1.89	1.89
replace, 10' tall 12" on center	6C@.320	lf	28.70	17.20	45.90
replace, 10' tall 16" on center	6C@.272	lf	25.80	14.60	40.40
replace, 10' tall 24" on center	6C@.221	lf	22.90	11.90	34.80
remove, 10' tall 12", 16" or 24" on center	1D@.057	lf	—	2.39	2.39
2" x 8" exterior wall, per lf					
replace, 8' tall 12" on center	6C@.320	lf	33.20	17.20	50.40
replace, 8' tall 16" on center	6C@.272	lf	30.20	14.60	44.80
replace, 8' tall 24" on center	6C@.220	lf	26.90	11.80	38.70
remove, 8' tall 12", 16" or 24" on center	1D@.045	lf	—	1.89	1.89
replace, 10' tall 12" on center	6C@.323	lf	37.40	17.40	54.80
replace, 10' tall 16" on center	6C@.275	lf	33.60	14.80	48.40
replace, 10' tall 24" on center	6C@.223	lf	29.90	12.00	41.90
remove, 10' tall 12", 16" or 24" on center	1D@.057	lf	—	2.39	2.39

	Craft@Hrs	Unit	Material	Labor	Total
Interior partition walls, per square foot. Includes 5% waste. Includes studs, top plates, bottom plate, and installation labor. Based on an average wall with 4 openings and 5 corners per 56 LF of wall. A net of 2.2 studs is added for each corner and opening. All walls have two top plates and a single bottom plate.					
2" x 4" interior partition walls, per sf					
replace, 16" on center	6C@.030	sf	1.27	1.61	2.88
replace, 24" on center	6C@.026	sf	1.07	1.40	2.47
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 6" interior partition walls, per sf					
replace, 16" on center	6C@.030	sf	1.84	1.61	3.45
replace, 24" on center	6C@.026	sf	1.52	1.40	2.92
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 8" interior partition walls, per sf					
replace, 16" on center	6C@.031	sf	4.63	1.67	6.30
replace, 24" on center	6C@.026	sf	4.17	1.40	5.57
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
Sloping interior partition wall, per square foot. Includes 5% waste. Based on an average wall with one 3' wide opening, two 4' 6" wide openings, and 2 corners per 24 lf of wall. A net of 2.4 studs is added per corner or opening. All walls have two top plates and a single bottom plate.					
2" x 4" sloping interior partition wall, per sf					
replace, 16" on center	6C@.041	sf	1.01	2.21	3.22
replace, 24" on center	6C@.035	sf	.87	1.88	2.75
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 6" sloping interior partition wall, per sf					
replace, 16" on center	6C@.042	sf	1.43	2.26	3.69
replace, 24" on center	6C@.036	sf	1.22	1.94	3.16
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 8" sloping interior partition wall, per sf					
replace, 16" on center	6C@.042	sf	1.89	2.26	4.15
replace, 24" on center	6C@.036	sf	1.57	1.94	3.51
remove, 16" or 24" on center	1D@.006	sf	—	.25	.25
Sloping interior bearing wall, per square foot. Includes 5% waste. Based on an average wall with one 3' wide opening, two 4' 6" wide openings, and 2 corners per 24 lf of wall. A net of 2.4 studs is added per corner or opening. Headers in openings are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners between boards. All walls have two top plates and a single bottom plate.					
2" x 4" sloping interior bearing wall, per sf					
replace, 12" on center	6C@.059	sf	1.45	3.17	4.62
replace, 16" on center	6C@.050	sf	1.31	2.69	4.00
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25
2" x 6" sloping interior bearing wall, per sf					
replace, 12" on center	6C@.059	sf	2.00	3.17	5.17
replace, 16" on center	6C@.050	sf	1.77	2.69	4.46
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25
2" x 8" sloping interior bearing wall, per sf					
replace, 12" on center	6C@.060	sf	2.45	3.23	5.68
replace, 16" on center	6C@.051	sf	2.18	2.74	4.92
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25

	Craft@Hrs	Unit	Material	Labor	Total
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Interior bearing wall, per square foot. Includes 5% waste. Based on an average wall with 4 openings and 5 corners per 56 lf. A net of 2.2 studs is added for each corner and opening. Openings are two 3' wide, one 4' wide, and one 5' wide for a total of 15 lf. Headers are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners. All walls have two top plates and a single bottom plate.

2" x 4" interior bearing walls, per sf					
replace, 12" on center	6C@.038	sf	1.86	2.04	3.90
replace, 16" on center	6C@.033	sf	1.63	1.78	3.41
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25
2" x 6" interior bearing walls, per sf					
replace, 12" on center	6C@.039	sf	3.15	2.10	5.25
replace, 16" on center	6C@.033	sf	2.82	1.78	4.60
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25
2" x 8" interior bearing walls, per sf					
replace, 12" on center	6C@.039	sf	4.12	2.10	6.22
replace, 16" on center	6C@.033	sf	3.72	1.78	5.50
remove, 12" or 16" on center	1D@.006	sf	—	.25	.25

Exterior wall, per square foot. Includes 5% waste. Based on an average wall with 4 openings and 5 corners per 56 lf of wall. A net of 2.2 studs is added for each corner and opening. Openings are two 3' wide, one 4' wide, and one 5' wide for a total of 15 lf. Headers in openings are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners between boards. Includes 4 metal let-in braces for every 56 lf of wall. All walls have two top plates and a single bottom plate. Does not include exterior sheathing.

2" x 4" exterior walls, per sf					
replace, 12" on center	6C@.040	sf	1.91	2.15	4.06
replace, 16" on center	6C@.034	sf	1.68	1.83	3.51
replace, 24" on center	6C@.027	sf	1.45	1.45	2.90
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 6" exterior walls, per sf					
replace, 12" on center	6C@.040	sf	3.21	2.15	5.36
replace, 16" on center	6C@.034	sf	2.87	1.83	4.70
replace, 24" on center	6C@.027	sf	2.58	1.45	4.03
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 8" exterior walls, per sf					
replace, 12" on center	6C@.040	sf	4.17	2.15	6.32
replace, 16" on center	6C@.034	sf	3.78	1.83	5.61
replace, 24" on center	6C@.028	sf	3.38	1.51	4.89
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25

Sloping exterior wall, per square foot. Includes 5% waste. Based on an average wall with one 3' wide opening, two 4' 6" wide openings, and 2 corners per 24 lf. A net of 2.4 studs is added per corner or opening. Headers in openings are made from sandwiched 2" x 10" boards with 1/2" CDX plywood stiffeners between boards. Includes 3 metal let-in braces for every 24 lf of wall. All walls have two top plates and a single bottom plate.

2" x 4" sloping exterior walls, per sf					
replace, 12" on center	6C@.054	sf	1.70	2.91	4.61
replace, 16" on center	6C@.046	sf	1.52	2.47	3.99
replace, 24" on center	6C@.038	sf	1.36	2.04	3.40
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25
2" x 6" sloping exterior walls, per sf					
replace, 12" on center	6C@.054	sf	2.29	2.91	5.20
replace, 16" on center	6C@.046	sf	2.04	2.47	4.51
replace, 24" on center	6C@.038	sf	1.79	2.04	3.83
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25

	Craft@Hrs	Unit	Material	Labor	Total
2" x 8" sloping exterior walls, per sf					
replace, 12" on center	6C@.055	sf	2.79	2.96	5.75
replace, 16" on center	6C@.047	sf	2.47	2.53	5.00
replace, 24" on center	6C@.038	sf	2.17	2.04	4.21
remove, 12", 16" or 24" on center	1D@.006	sf	—	.25	.25

Additional wall framing costs.

Replace only					
add for beam pocket in exterior or bearing wall	6C@1.11	ea	50.60	59.70	110.30
add to frame round- or elliptical-top door or window, per lf of opening	6C@.587	lf	4.12	31.60	35.72
add to frame round window, per lf window diameter	6C@.638	lf	4.75	34.30	39.05
add to frame bay window, per lf of wall	6C@.582	lf	4.75	31.30	36.05
add to frame bow window, per lf of wall	6C@.648	lf	4.75	34.90	39.65

California Earthquake Code. Items that include "CEC" in the description are priced according to California earthquake code requirements. Although these Universal Building Code standards are also required in other areas, they are most commonly associated with efforts initiated in California to improve the construction and engineering of structures in quake zones.

Additional costs for CEC bracing. Additional cost to nail, brace, and shear panel to California Earthquake Code standards. Per sf of wall.

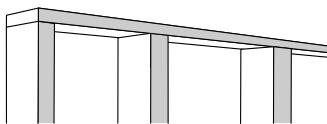
Replace only					
brace & shear panel interior bearing wall	6C@.011	sf	.33	.59	.92
brace & shear panel sloping interior wall	6C@.014	sf	.37	.75	1.12
brace & shear panel exterior wall	6C@.011	sf	.40	.59	.99
brace & shear panel sloping exterior wall	6C@.015	sf	.45	.81	1.26

Wall framing, per board foot. Includes 7% waste.

replace, interior wall	6C@.034	bf	1.36	1.83	3.19
remove, interior wall	1D@.007	bf	—	.29	.29
replace, sloping interior wall	6C@.047	bf	1.43	2.53	3.96
remove, sloping interior wall	1D@.007	bf	—	.29	.29
replace, exterior wall	6C@.037	bf	1.67	1.99	3.66
remove, exterior wall	1D@.007	bf	—	.29	.29
replace, sloping exterior wall	6C@.051	bf	1.79	2.74	4.53
remove, sloping exterior wall	1D@.007	bf	—	.29	.29

Top plate. Includes 5% waste. Includes top plate and installation labor. Does not include labor to remove existing top plate or bracing.

Replace top plate					
2" x 4"	6C@.017	lf	.91	.91	1.82
2" x 6"	6C@.018	lf	1.27	.97	2.24
2" x 8"	6C@.018	lf	1.86	.97	2.83
Remove, all sizes	1D@.013	lf	—	.55	.55



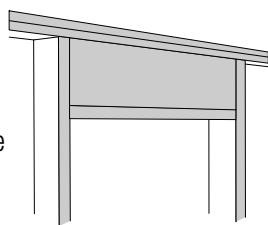
Foundation sill plate. Includes foam sealer strip, hole drilling for anchor bolt, and fastening.

Replace 2" x 4" foundation sill plate					
treated wood	6C@.067	lf	1.45	3.60	5.05
con common redwood	6C@.065	lf	1.71	3.50	5.21
Replace 2" x 6" foundation sill plate					
treated wood	6C@.067	lf	2.18	3.60	5.78
con common redwood	6C@.065	lf	2.19	3.50	5.69

	Craft@Hrs	Unit	Material	Labor	Total
Replace 2" x 8" foundation sill plate					
treated-wood	6C@.068	If	2.90	3.66	6.56
con common redwood	6C@.066	If	3.04	3.55	6.59
Remove, all sizes and wood species	1D@.045	If	—	1.89	1.89

Wall header beam. Includes 5% waste. 2 x and 4 x sizes made from doubled 2 x dimensional lumber with 1/2" CDX plywood stiffeners. 6 x sizes made from tripled 2 x dimensional lumber with two 1/2" CDX plywood stiffeners. 8 x sizes made from quadrupled 2 x dimensional lumber with three 1/2" CDX plywood stiffeners.

Header beam for 2" x 4" wall, replace					
4" x 6"	6C@.040	If	6.24	2.15	8.39
4" x 8"	6C@.042	If	7.07	2.26	9.33
4" x 10"	6C@.043	If	9.91	2.31	12.22
4" x 12"	6C@.045	If	12.00	2.42	14.42
Header beam for 2" x 6" wall, replace					
6" x 6"	6C@.061	If	11.10	3.28	14.38
6" x 8"	6C@.065	If	12.50	3.50	16.00
6" x 10"	6C@.069	If	17.10	3.71	20.81
6" x 12"	6C@.074	If	21.20	3.98	25.18
Header beam for 2" x 8" wall, replace					
8" x 6"	6C@.073	If	16.10	3.93	20.03
8" x 8"	6C@.078	If	18.10	4.20	22.30
8" x 10"	6C@.085	If	20.00	4.57	24.57
8" x 12"	6C@.093	If	30.20	5.00	35.20
Remove, all sizes	1D@.040	If	—	1.68	1.68



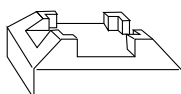
Posts. Includes post and installation labor. Also includes 4% waste.

4" x 4" posts, replace					
pine	6C@.042	If	3.54	2.26	5.80
con common redwood	6C@.042	If	4.34	2.26	6.60
treated pine	6C@.042	If	4.63	2.26	6.89
4" x 6" posts, replace					
pine	6C@.043	If	4.13	2.31	6.44
con common redwood	6C@.043	If	4.65	2.31	6.96
treated pine	6C@.043	If	5.36	2.31	7.67
4" x 8" posts, replace					
pine	6C@.043	If	6.59	2.31	8.90
con common redwood	6C@.043	If	6.67	2.31	8.98
treated pine	6C@.043	If	8.56	2.31	10.87
6" x 6" posts, replace					
pine	6C@.044	If	8.68	2.37	11.05
con common redwood	6C@.044	If	7.49	2.37	9.86
treated pine	6C@.044	If	11.20	2.37	13.57
6" x 8" posts, replace					
pine	6C@.045	If	11.50	2.42	13.92
con common redwood	6C@.045	If	10.00	2.42	12.42
treated pine	6C@.045	If	14.80	2.42	17.22
6" x 10" posts, replace					
pine	6C@.047	If	14.30	2.53	16.83
con common redwood	6C@.047	If	12.50	2.53	15.03
treated pine	6C@.047	If	19.00	2.53	21.53

	Craft@Hrs	Unit	Material	Labor	Total
8" x 8" posts, replace					
pine	6C@.048	lf	15.50	2.58	18.08
con common redwood	6C@.048	lf	13.30	2.58	15.88
treated pine	6C@.048	lf	20.30	2.58	22.88
Remove, all sizes and wood species	1D@.059	lf	—	2.48	2.48

Precast concrete pier. Includes precast concrete pier and installation labor. Installation includes hand excavation as needed.

replace	6C@.261	ea	24.60	14.00	38.60
remove	1D@.313	ea	—	13.10	13.10

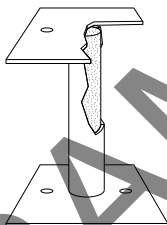


Adjustable steel jackpost. Includes adjustable jack post, fasteners, and installation labor.

Replace					
51" to 90", 13,000 pound load maximum	6C@.357	ea	68.20	19.20	87.40
20" to 36", 16,000 pound load maximum	6C@.243	ea	44.70	13.10	57.80
48" to 100", 16,000 pound load maximum	6C@.386	ea	77.20	20.80	98.00
37" to 60", 17,500 pound load maximum	6C@.272	ea	56.30	14.60	70.90
56" to 96" to 25,000 pound load maximum	6C@.352	ea	87.70	18.90	106.60
Remove, all sizes	1D@.313	ea	—	13.10	13.10

Lally column. Includes 3-1/2" diameter concrete-filled lally column, fasteners, and installation labor.

Replace					
6' to 8' high	6C@.526	ea	107.00	28.30	135.30
8' to 10' high	6C@.556	ea	120.00	29.90	149.90
10' to 12' high	6C@.587	ea	147.00	31.60	178.60
Remove, all sizes	1D@.356	ea	—	15.00	15.00



Craft@Hrs Unit Material Labor Equip. Total

Glue-laminated beam, per board foot. Includes glue-laminated beam, brackets and fasteners, and installation labor. Also includes costs for equipment — usually a fork lift — to place the beam. Includes 3% waste.

replace	6C@.060	bf	5.84	3.23	.52	9.59
remove	1D@.025	bf	—	1.05	—	1.05

Glue-laminated beam, per linear foot. Includes 3% waste.

3-1/8" wide glue-laminated beam, replace						
3-1/8" x 7-1/2"	6C@.145	lf	11.30	7.80	.96	20.06
3-1/8" x 9"	6C@.146	lf	13.60	7.85	.96	22.41
3-1/8" x 10-1/2"	6C@.172	lf	15.90	9.25	.96	26.11
3-1/8" x 12"	6C@.189	lf	18.20	10.20	.96	29.36
3-1/8" x 13-1/2"	6C@.211	lf	20.60	11.40	.96	32.96
3-1/8" x 15"	6C@.212	lf	23.00	11.40	.96	35.36
3-1/8" x 16-1/2"	6C@.214	lf	25.00	11.50	.96	37.46
3-1/8" x 18"	6C@.216	lf	27.10	11.60	.96	39.66

QuickCalculators



QUICKCALCULATORS

Quantity **450-463**
 Bearing Wall (board feet) 450-451
 Concrete Wall & Footing (cubic yards) 452-453
 Gable Roof Rafters (board feet) 454-455

Gable Roof Trusses (lineal feet) 456-457
 Gable Roofing (squares) 458-459
 Joist System (board feet) 460-461
 Non-bearing Wall (board feet) 462-463

Surface Area **464-469**
 Prismatic Room 464-465
 Rectangular Room 466-467
 Round Room 468-469

QuickCalculators are designed to help you quickly calculate quantities and the surface areas of some basic room shapes. Pages 450-463 contain QuickCalculators that are designed to calculate quantities, and pages 464-469 contain QuickCalculators that are designed to calculate the surface area of rooms.

Instruction for each QuickCalculator sheet are contained above the page.

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QuickCalculator mathematics

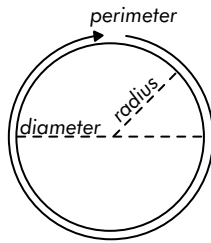
CIRCLE

Area

- ① = $\text{Pi} \times \text{radius}^2$
- ② = $.7854 \times \text{diameter}^2$
- ③ = $.0796 \times \text{perimeter}^2$

Perimeter

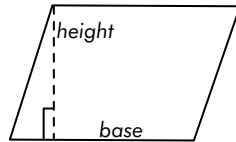
- ① = $\text{Pi} \times \text{diameter}$



PARALLELOGRAM

Area

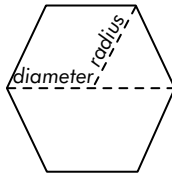
- ① = $\text{base} \times \text{height}$



PRISM

Area

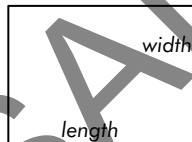
- ① = $\text{sum of sides} \div 2 \times \text{radius}$



RECTANGLE

Area

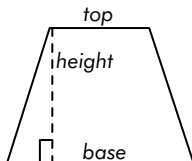
- ① = $\text{length} \times \text{width}$



TRAPEZOID

Area

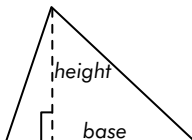
- ① = $\text{base} + \text{top} \div 2 \times \text{height}$



TRIANGLE

Area

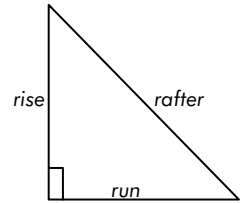
- ① = $\text{base} \times \text{height} \div 2$



PYTHAGOREAN THEOREM

Rafter length

- ① $\text{rafter length}^2 = \text{rise}^2 + \text{run}^2$



CONVERSION FACTORS

DIVIDE	BY	TO CONVERT TO
square inches	144	square feet
square inches	144	board feet
cubic inches	1,728	cubic feet
cubic inches	46,656	cubic yards
square feet	9	square yards
square feet	100	squares
cubic feet	27	cubic yards
feet	16.5	rods
rods	40	furlongs
feet	5,280	miles
meters	1,609	miles
yards	1,760	miles

MULTIPLY	BY	TO CONVERT TO
inches	2.54	centimeters
square inches	6.4516	square centimeters
square inches	.0069	square feet
square feet	9.29	square centimeters
square feet	.0929	square meters
square yards	.8361	square meters
square meters	1.1959	square yards
centimeters	.3937	inches
feet	.3048	meters
meters	3.281	feet
yards	91.44	centimeters
yards	.9144	meters
cubic feet	.0283	cubic meters
cubic meters	35.3145	cubic feet
cubic meters	1.3079	cubic yards
cubic yards	.7646	cubic meters
cubic inches	16.3872	cubic centimeters
cubic centimeters	.0610	cubic inches
cubic meters	1,000	cubic liters

USING THE BEARING WALL QUICKCALCULATOR

A Calculates the lineal feet of studs in a wall *before* adding for openings and corners. The length of the wall (Answer 1) is converted into inches by multiplying it by 12. The number of studs is calculated by dividing the wall length in inches by the stud centers (Answer 8), then adding 1 for the first stud. The calculation should now be rounded *up*, then multiplied by the wall height (Answer 4).

B Calculates the lineal feet of studs typically added for openings and corners. The number of openings (Answer 6) is multiplied by 2.4 (the *average* additional studs typically needed for an opening). The number of corners (Answer 7) is multiplied by 2.6 (the *average* additional studs typically needed at corners). The studs for openings and corners are added together, then should be rounded *up*. The total additional studs is then multiplied by the wall height (Answer 4).

C Calculates the total lineal feet of lumber in the wall. The length of the wall (Answer 1) is multiplied by the number of plates (Answer 3). The lineal feet of plates is added to the lineal feet of studs (Sum A) and additional studs (Sum B).

D Calculates the board feet in the headers. The lineal feet of headers (Answer 10) is multiplied by the header width (Answer 9), then multiplied by the wall thickness (Answer 5). This total is divided by 12 to convert to board feet.

E Calculates the total board feet in the wall. The lineal feet of board in the wall (Sum C) is multiplied by the wall width (Answer 5) then by the stud thickness (Answer 2). The total is divided by 12 to convert to board feet then added to the board feet in the headers (Sum D).

QUICK FACTS

See page 449 for more information about the geometric formulas used in this *QuickCalculator*. See page 357 for wall framing priced per board foot.

QUICKCALCULATOR
Bearing Wall

Use this sheet and a calculator to determine the board feet in a bearing wall. Calculate each line from left to right. Do math in parentheses first.

1 The wall(s) are 33.5 lineal feet long.
2 The studs are 2 inches thick.
3 There are 3 plates.
4 The wall(s) are 8 feet tall.
5 The studs are 6 inches wide.
6 There are 5 door and window openings.
7 The studs are 16 inches on center.
8 There are 17.5 lineal feet of header.
9 There are 4 corners.
10 The headers are 10 inches wide.
11 of studs (before openings) $\rightarrow 33.5 \times 12 \div 16 + 1 = 26$ (ANSWER 1)
12 of studs in openings $\rightarrow 5 \times 2.4 = 12$ (ANSWER 2)
13 of studs at corners $\rightarrow 4 \times 2.6 = 10.4$ (ANSWER 3)
14 Lineal feet of board in wall $\rightarrow 33.5 \times 3 = 100.5$ (ANSWER 4)
15 Board feet in headers $\rightarrow 17.5 \times 10 \times 2 \div 12 = 29.17$ (ANSWER 5)
16 Total board feet $\rightarrow 100.5 \times 2 \div 12 + 29.17 = 35.92$ (ANSWER 6)

Sum A: $26 \times 8 = 208$
Sum B: $12 \times 8 = 96$
Sum C: $208 + 96 = 304$
Sum D: $29.17 + 304 = 333.17$

Round up answer to next whole number here before continuing with calculation:
1" = 304 * 2" = 367 * 3" = 458 * 4" = 567 * 5" = 684 * 6" = 801 * 7" = 918 * 8" = 1035 * 9" = 1152 * 10" = 1269 * 11" = 1386 * 12" = 1503

Converting inches to decimal feet

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