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2021 NATIONAL BUILDING COST MANUAL

45th Edition

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Contents of This Manual

Explanation of the Cost Tables

This manual shows construction or replacement costs for a wide variety of residential, commercial, industrial, public, agricultural and military buildings. For your convenience and to minimize the chance of an error, all the cost and reference information you need for each building type is brought together on two or three pages. After reading pages 4 to 6, you should be able to turn directly to any building type and create an error-free estimate or appraisal of the construction or replacement cost.

The costs are per square foot of floor area for the basic building and additional costs for optional or extra components that differ from building to building. Building shape, floor area, design elements, materials used, and overall quality influence the basic structure cost. These and other cost variables are isolated for the building types. Components included in the basic square foot cost are listed with each building type. Instructions for using the basic building costs are included above the cost tables. These instructions include a list of components that may have to be added to the basic cost to find the total cost for your structure.

The figures in this manual are intended to reflect the amount that would be paid by the first user of a building completed in mid 2021.

Costs in the tables include all construction costs: labor, material, equipment, plans, building permit, supervision, overhead and profit. Cost tables do not include land value, site development costs, government mandated fees (other than the building permit) or the cost of modifying unusual soil conditions or grades. Construction expense may represent as much as 60% or as little as 40% of the cost to the first building owner. Site preparation, utility lines, government fees and mandates, finance cost and marketing are not part of the construction cost and may be as much as 20% of the cost to the first building owner.

Building Quality

Structures vary widely in quality and the quality of construction is the most significant variable in the finished cost. For estimating purposes the structure should be placed in one or more quality classes. These classes are numbered from 1 which is the highest quality generally encountered. Each section of this manual has a page describing typical specifications which define the quality class.

Each number class has been assigned a word description (such as best, good, average or low) for convenience and to help avoid possible errors.

The quality specifications do not reflect some design features and construction details that can make a building both more desirable and more costly. When substantially more than basic design elements are present, and when these elements add significantly to the cost, it is appropriate to classify the quality of the building as higher than would be warranted by the materials used in construction.

Many structures do not fall into a single class and have features of two quality classes. The tables have “half classes” which apply to structures which have some features of one class and some features of a higher or lower class. Classify a building into a “half class” when the quality elements are fairly evenly divided between two classes. Generally, quality elements do not vary widely in a single building. For example, it would be unusual to find a top quality single family residence with minimum quality roof cover. The most weight should be given to quality elements that have the greatest cost. For example, the type of wall and roof framing or the quality of interior finish are more significant than the roof cover or bathroom wall finish. Careful evaluation may determine that certain structures fall into two distinct classes. In this case, the cost of each part of the building should be evaluated separately.

Building Shapes

Shape classification considers any cost differences that arise from variations in building outline. Shape classification considerations vary somewhat with different building types. Where the building shape often varies widely between buildings and shape has a significant effect on the building cost, basic building costs are given for several shapes. Use the table that most closely matches the shape of the building you are evaluating. If the shape falls near the division between two basic building cost tables, it is appropriate to average the square foot cost from those two tables.

Explanation of the Cost Tables

Area of Buildings

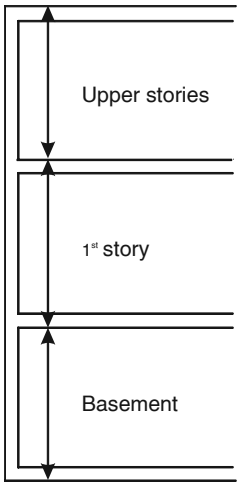
The basic building cost tables reflect the fact that larger buildings generally cost less per square foot than smaller buildings. The cost tables are based on square foot areas which include the following:

1. All floor area within and including the exterior walls of the main building.
2. Inset areas such as vestibules, entrances or porches outside of the exterior wall but under the main roof.
3. Any enclosed additions, annexes or lean-tos with a square foot cost greater than three-fourths of the square foot cost of the main building.

Select the basic building cost listed below the area which falls closest to the actual area of your building. If the area of your building falls nearly mid-way between two listed building areas, it is appropriate to average the square foot costs for the listed areas.

Wall Heights

Building costs are based on the wall heights given in the instructions for each building cost table. Wall height for the various floors of a building are computed as follows: The basement is measured from the bottom of floor slab to the bottom of the first floor slab or joist. The main or first floor extends from the bottom of the first floor slab or joist to the top of the roof slab or ceiling joist. Upper floors are measured from the top of the floor slab or floor joist to the top of the roof slab or ceiling joist. These measurements may be illustrated as follows:



Square foot costs of most building design types must be adjusted if the actual wall height differs from the listed wall height. Wall height adjustment tables are included for buildings requiring this adjustment. Wall height adjustment tables list square foot costs for a foot of difference in perimeter wall height of buildings of various areas. The amount applicable to the actual building area is added or deducted for each foot of difference from the basic wall height.

Buildings such as residences, medical-dental buildings, funeral homes and convalescent hospitals usually have a standard 8-foot ceiling height except in chapels or day room areas. If a significant cost difference exists due to a wall height variation, this factor should be considered in establishing the quality class.

Other Adjustments

A common wall exists when two buildings share one wall. Common wall adjustments are made by deducting the in-place cost of the exterior wall finish plus one-half of the in-place cost of the structural portion of the common wall area.

If an owner has no ownership in a wall, the in-place cost of the exterior wall finish plus the in-place cost of the structural portion of the wall should be deducted from the total building costs. Suggested common wall and no wall ownership costs are included for many of the building types.

Some square foot costs include the cost of expensive veneer finishes on the entire perimeter wall. When these buildings butt against other buildings, adjustments should be made for the lack of this finish. Where applicable, linear foot cost deductions are provided.

The square foot costs in this manual are based on composite costs of total buildings including usual work room or storage areas. They are intended to be applied on a 100% basis to the total building area even though certain areas may or may not have interior finish. Only in rare instances will it be necessary to modify the square foot cost of a portion of a building.

Multiple story buildings usually share a common roof structure and cover, a common foundation and common floor or ceiling structures. The costs of these components are included in the various floor levels as follows:

The first or main floor includes the cost of a floor structure built at ground level, foundation costs for a one-story building, a complete ceiling and roof structure, and a roof cover. The basement includes the basement floor structure and the difference between the cost of the first floor structure built at ground level and its cost built over a basement. The second floor includes the difference between the cost of a foundation for a one-story building and the cost of a foundation for a two-story building and the cost of the second story floor structure.

Location Adjustments

The figures in this manual are intended as national averages for metropolitan areas of the United States. Use the information on page 7 to adapt the basic building costs to any area listed. Frequently building costs outside metropolitan areas are 2% to 6% lower if skilled, productive, lower cost labor is available in the area. The factors on page 7 can be applied to nearly all the square foot costs and some of the "additional" costs in this book.

Temporary working conditions in any community can affect construction and replacement costs. Construction which must be done under deadline pressure or in adverse weather conditions or after a major fire, flood, or hurricane or in a thin labor market can temporarily inflate costs 25% to 50%. Conditions such as these are usually temporary and affect only a limited area. But the higher costs are real and must be considered, no matter how limited the area and how transient the condition.

Depreciation

Depreciation is the loss in value of a structure from all causes and is caused primarily by three forms of obsolescence: (1) physical (2) functional, and (3) economic.

Physical obsolescence is the deterioration of building components such as paint, carpets or roofing. Much of this deterioration is totally curable. The physical life tables on pages 43, 235 and 269 assume normal physical obsolescence. Good judgment is required to evaluate how deferred maintenance or rehabilitation will reduce or extend the anticipated physical life of a building.

Functional obsolescence is due to some deficiency or flaw in the building. For example, too few bathrooms for the number of bedrooms or an exceptionally high ceiling can reduce the life expectancy of a residence. Some functional obsolescence can be cured. The physical life tables do not consider functional obsolescence.

Economic obsolescence is caused by conditions that occur off site and are beyond control of the owner. Examples of economic obsolescence include a store in an area of declining economic activity or obsolescence caused by governmental regulation (such as a change in zoning). Because this kind of obsolescence is particularly difficult to measure, it is not considered in the physical life tables.

"Effective age" considers all forms of depreciation. It may be less than chronological age, if recently remodeled or improved, or more than the actual age, if deterioration is particularly bad. Though effective age is not considered in the physical life tables, it may yield a better picture of a structure's life than the actual physical age. Once the effective age is determined, considering physical, functional and economic deterioration, use the percent good tables on pages 43, 235 or 269 to determine the present value of a depreciated building. Present value is the result of multiplying the replacement cost (found by using the cost tables) by the appropriate percent good.

Limitations

This manual will be a useful reference for anyone who has to develop budget estimates or replacement costs for buildings. Anyone familiar with construction estimating understands that even very competent estimators with complete working drawings, full specifications and precise labor and material costs can disagree on the cost of a building. Frequently exhaustive estimates for even relatively simple structures can vary 10% or more. The range of competitive bids on some building projects is as much as 20%. Estimating costs is not an exact science and there's room for legitimate disagreement on what the "right" cost is. This manual can not help you do in a few minutes what skilled estimators may not be able to do in many hours. This manual will help you determine a reasonable replacement or construction cost for most buildings. It is not intended as a substitute for judgment or as a replacement for sound professional practice, but should prove a valuable aid to developing an informed opinion of value.

Area Modification Factors

Construction costs are higher in some cities than in other cities. Add or deduct the percentage shown on this page or page 8 to adapt the costs in this book to your job site. Adjust your estimated total project cost by the percentage shown for the appropriate city in this table to find your total estimated cost. Where 0% is shown it means no modification is required. Factors for Canada adjust to Canadian dollars.

These percentages were compiled by comparing the construction cost of buildings in nearly 600 communities throughout North America. Because these percentages are based on completed projects, they consider all construction cost variables, including labor, equipment and material cost, labor productivity, climate, job conditions and markup.

Modification factors are listed alphabetically by state and city, followed by the first three digits of the postal zip code.

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

Alabama Average		**-4%**
Anniston	362	-6%
Auburn	368	-4%
Bellamy	369	5%
Birmingham	350-352	2%
Dothan	363	-7%
Evergreen	364	-10%
Gadsden	359	-9%
Huntsville	358	-1%
Jasper	355	-8%
Mobile	365-366	-2%
Montgomery	360-361	-2%
Scottsboro	357	-4%
Selma	367	-5%
Sheffield	356	0%
Tuscaloosa	354	-4%

Alaska Average		**23%**
Anchorage	995	26%
Fairbanks	997	27%
Juneau	998	19%
Ketchikan	999	18%
King Salmon	996	23%

Arizona Average		**-4%**
Chambers	865	-8%
Douglas	855	-8%
Flagstaff	860	-7%
Kingman	864	-5%
Mesa	852	3%
Phoenix	850	3%
Prescott	863	-6%
Show Low	859	-7%
Tucson	856-857	-5%
Yuma	853	2%

Arkansas Average		**-7%**
Batesville	725	-9%
Camden	717	-2%
Fayetteville	727	-4%
Fort Smith	729	-7%
Harrison	726	-12%
Hope	718	-8%
Hot Springs	719	-13%
Jonesboro	724	-9%
Little Rock	720-722	-3%
Pine Bluff	716	-11%
Russellville	728	-4%
West Memphis	723	-2%

California Average		**9%**
Alhambra	917-918	8%
Bakersfield	932-933	2%
El Centro	922	0%
Eureka	955	7%
Fresno	936-938	-2%
Herlong	961	9%
Inglewood	902-905	9%
Irvine	926-927	13%
Lompoc	934	3%
Long Beach	907-908	9%
Los Angeles	900-901	8%
Marysville	959	9%
Modesto	953	1%
Mojave	935	5%
Novato	949	18%
Oakland	945-947	24%
Orange	928	12%
Oxnard	930	2%
Pasadena	910-912	9%
Rancho Cordova	956-957	4%
Redding	960	-3%
Richmond	948	17%
Riverside	925	4%
Sacramento	958	3%
Salinas	939	1%
San Bernardino	923-924	2%
San Diego	919-921	8%
San Francisco	941	27%
San Jose	950-951	17%
San Mateo	943-944	21%
Santa Barbara	931	7%
Santa Rosa	954	16%
Stockton	952	4%
Sunnyvale	940	20%
Van Nuys	913-916	8%
Whittier	906	8%

Colorado Average		**1%**
Aurora	800-801	7%
Boulder	803-804	4%
Colorado Springs	808-809	0%
Denver	802	8%
Durango	813	-1%
Fort Morgan	807	-2%
Glenwood Springs	816	4%
Grand Junction	814-815	0%
Greeley	806	5%
Longmont	805	2%
Pagosa Springs	811	-4%
Pueblo	810	0%
Salida	812	-6%

Connecticut Average		**8%**
Bridgeport	66	6%
Bristol	60	12%
Fairfield	64	9%
Hartford	61	11%
New Haven	65	7%
Norwich	63	3%
Stamford	068-069	12%
Waterbury	67	6%
West Hartford	62	5%

Delaware Average		**2%**
Dover	199	-4%
Newark	197	6%
Wilmington	198	4%

District of Columbia Average		**12%**
Washington	200-205	12%

Florida Average		**-5%**
Altamonte Springs	327	-3%
Bradenton	342	-6%
Brooksville	346	-7%
Daytona Beach	321	-9%
Fort Lauderdale	333	2%
Fort Myers	339	-6%
Fort Pierce	349	-10%
Gainesville	326	-9%
Jacksonville	322	-2%
Lakeland	338	-8%
Melbourne	329	-8%
Miami	330-332	1%
Naples	341	-2%
Ocala	344	-12%
Orlando	328	1%
Panama City	324	-11%
Pensacola	325	-8%
Saint Augustine	320	-2%
Saint Cloud	347	-2%
St Petersburg	337	-6%
Tallahassee	323	-6%
Tampa	335-336	-1%
West Palm Beach	334	-2%

Georgia Average		**-4%**
Albany	317	-6%
Athens	306	-5%
Atlanta	303	12%
Augusta	308-309	-2%
Buford	305	-2%
Calhoun	307	-9%
Columbus	318-319	-3%
Dublin/Fort Valley	310	-8%
Hinesville	313	-6%
Kings Bay	315	-10%
Macon	312	-4%
Marietta	300-302	4%
Savannah	314	-4%
Statesboro	304	-11%
Valdosta	316	-1%

Hawaii Average		**20%**
Aliamanu	968	22%
Ewa	967	20%
Halawa Heights	967	20%
Hilo	967	20%
Honolulu	968	22%
Kailua	968	22%
Lualualei	967	20%
Mililani Town	967	20%
Pearl City	967	20%
Wahiawa	967	20%
Waianae	967	20%
Wailuku (Maui)	967	20%

Idaho Average		**-9%**
Boise	837	-5%
Coeur d'Alene	838	-10%
Idaho Falls	834	-9%
Lewiston	835	-11%
Meridian	836	-9%
Pocatello	832	-10%
Sun Valley	833	-8%

Illinois Average		**4%**
Arlington Heights	600	14%
Aurora	605	14%
Belleville	622	0%
Bloomington	617	-1%
Carbondale	629	-4%
Carol Stream	601	14%
Centralia	628	-3%
Champaign	618	-2%
Chicago	606-608	15%
Decatur	623	-7%
Galesburg	614	-4%
Granite City	620	3%
Green River	612	5%
Joliet	604	13%
Kankakee	609	-3%
Lawrenceville	624	-6%
Oak Park	603	18%
Peoria	615-616	6%
Peru	613	2%
Quincy	602	16%
Rockford	610-611	3%
Springfield	625-627	0%
Urbana	619	-4%

Indiana Average		**-3%**
Aurora	470	-5%
Bloomington	474	-2%
Columbus	472	-4%
Elkhart	465	-4%
Evansville	476-477	4%
Fort Wayne	467-468	-1%
Gary	463-464	8%
Indianapolis	460-462	4%
Jasper	475	-8%
Jeffersonville	471	-5%
Kokomo	469	-8%
Lafayette	479	-5%
Muncie	473	-8%
South Bend	466	-2%
Terre Haute	478	-3%

Iowa Average		**-3%**
Burlington	526	1%
Carroll	514	-11%
Cedar Falls	506	-4%
Cedar Rapids	522-524	2%
Cherokee	510	1%
Council Bluffs	515	-1%
Creston	508	1%
Davenport	527-528	1%
Decorah	521	-8%
Des Moines	500-503	5%
Dubuque	520	-4%
Fort Dodge	505	-3%
Mason City	504	-3%
Ottumwa	525	-6%
Sheldon	512	-7%
Shenandoah	516	-14%
Sioux City	511	5%
Spencer	513	-7%
Waterloo	507	-3%

Kansas Average		**0%**
Colby	677	-8%
Concordia	669	-12%
Dodge City	678	-4%
Emporia	668	8%
Fort Scott	667	-6%
Hays	676	-13%
Hutchinson	675	-6%
Independence	673	29%
Kansas City	660-662	5%
Liberal	679	14%
Salina	674	-7%
Topeka	664-666	-1%
Wichita	670-672	-4%

Kentucky Average		**-4%**
Ashland	411-412	-4%
Bowling Green	421	-5%
Campton	413-414	-11%
Covington	410	2%
Elizabethtown	427	-10%
Frankfort	406	7%
Hazard	417-418	-10%
Hopkinsville	422	-5%
Lexington	403-405	1%
London	407-409	-7%
Louisville	400-402	2%
Owensboro	423	-4%
Paducah	420	0%
Pikeville	415-416	-8%
Somerset	425-426	-11%
White Plains	424	-4%

Louisiana Average		**2%**
Alexandria	713-714	4%
Baton Rouge	707-708	10%
Houma	703	4%
Lafayette	705	8%
Lake Charles	706	13%
Mandeville	704	-3%
Minden	710	-5%
Monroe	712	-8%
New Orleans	700-701	2%
Shreveport	711	-4%

Maine Average		**-5%**
Auburn	42	-4%
Augusta	43	-5%
Bangor	44	-6%
Bath	45	-6%
Brunswick	039-040	-1%
Camden	48	-10%
Cutler	46	-7%
Dexter	49	-4%
Northern Area	47	-8%
Portland	41	2%

Maryland Average		**2%**
Annapolis	214	8%
Baltimore	210-212	7%
Bethesda	208-209	13%
Church Hill	216	-4%
Cumberland	215	-8%
Elkton	219	-5%
Frederick	217	7%
Laurel	206-207	8%
Salisbury	218	-6%

Massachusetts Average		**12%**
Ayer	015-016	6%
Bedford	17	15%
Boston	021-022	37%
Brockton	023-024	20%
Cape Cod	26	4%
Chicopee	10	7%
Dedham	19	18%
Fitchburg	14	11%
Hingham	20	19%
Lawrence	18	14%
Nantucket	25	9%
New Bedford	27	6%
Northfield	13	2%
Pittsfield	12	1%
Springfield	11	8%

Michigan Average		**1%**
Battle Creek	490-491	-1%
Detroit	481-482	7%
Flint	484-485	-4%
Grand Rapids	493-495	1%
Grayling	497	-7%
Jackson	492	-1%
Lansing	488-489	0%
Marquette	498-499	3%
Pontiac	483	12%
Royal Oak	480	7%
Saginaw	486-487	-5%
Traverse City	496	-2%

Minnesota Average		**-1%**
Bemidji	566	-6%
Brainerd	564	-3%
Duluth	556-558	2%
Fergus Falls	565	-10%
Magnolia	561	-8%
Mankato	560	-4%
Minneapolis	553-555	13%
Rochester	559	-1%
St Cloud	563	2%
St Paul	550-551	12%
Thief River Falls	567	-2%
Willmar	562	-6%

Mississippi Average		**-6%**
Clarksdale	386	-9%
Columbus	397	0%
Greenville	387	-14%
Greenwood	389	-10%
Gulfport	395	-6%
Jackson	390-392	-3%
Laurel	394	-7%
McComb	396	-11%
Meridian	393	3%
Tupelo	388	-7%

Area Modification Factors

Missouri Average		-3%
Cape Girardeau	637	-5%
Caruthersville	638	-7%
Chillicothe	646	-4%
Columbia	652	-4%
East Lynne	647	4%
Farmington	636	-8%
Hannibal	634	-2%
Independence	640	5%
Jefferson City	650-651	-5%
Joplin	648	-6%
Kansas City	641	6%
Kirksville	635	-15%
Knob Noster	653	3%
Lebanon	654-655	-12%
Poplar Bluff	639	-10%
Saint Charles	633	1%
Saint Joseph	644-645	-1%
Springfield	656-658	-8%
St Louis	630-631	8%

Montana Average		-3%
Billings	590-591	-2%
Butte	597	-3%
Fairview	592	12%
Great Falls	594	-6%
Havre	595	-9%
Helena	596	-2%
Kalispell	599	-6%
Miles City	593	-7%
Missoula	598	-6%

Nebraska Average		-8%
Alliance	693	-10%
Columbus	686	-7%
Grand Island	688	-8%
Hastings	689	-9%
Lincoln	683-685	-4%
McCook	690	-9%
Norfolk	687	-10%
North Platte	691	-6%
Omaha	680-681	0%
Valentine	692	-15%

Nevada Average		1%
Carson City	897	-4%
Elko	898	9%
Ely	893	-3%
Fallon	894	0%
Las Vegas	889-891	3%
Reno	895	-1%

New Hampshire Average		-1%
Charlestown	36	-5%
Concord	34	-3%
Dover	38	1%
Lebanon	37	-3%
Littleton	35	-6%
Manchester	032-033	2%
New Boston	030-031	3%

New Jersey Average		9%
Atlantic City	080-084	4%
Brick	87	2%
Dover	78	9%
Edison	088-089	13%
Hackensack	76	10%
Monmouth	77	12%
Newark	071-073	11%
Passaic	70	12%
Paterson	074-075	7%
Princeton	85	10%
Summit	79	16%
Trenton	86	7%

New Mexico Average		-8%
Alamogordo	883	-11%
Albuquerque	870-871	-3%
Clovis	881	-11%
Farmington	874	-1%
Fort Sumner	882	-2%
Gallup	873	-7%
Holman	877	-10%
Las Cruces	880	-8%
Santa Fe	875	-8%
Socorro	878	-14%
Truth or Consequences		879 -8%
Tucumcari	884	-8%

New York Average		6%
Albany	120-123	7%
Amityville	117	9%
Batavia	140	1%
Binghamton	137-139	-2%
Bronx	104	10%
Brooklyn	112	7%
Buffalo	142	1%
Elmira	149	-3%
Flushing	113	15%
Garden City	115	15%
Hicksville	118	14%
Ithaca	148	-5%
Jamaica	114	14%
Jamestown	147	-7%
Kingston	124	-4%
Long Island	111	30%
Montauk	119	7%
New York (Manhattan)	100-102	31%
New York City	100-102	31%
Newcomb	128	0%
Niagara Falls	143	-6%
Plattsburgh	129	-1%
Poughkeepsie	125-126	1%
Queens	110	17%
Rochester	144-146	2%
Rockaway	116	10%
Rome	133-134	-4%
Staten Island	103	8%
Stewart	127	-5%
Syracuse	130-132	2%
Tonawanda	141	-1%
Utica	135	-6%
Watertown	136	-1%
West Point	109	6%
White Plains	105-108	14%

North Carolina Average		-4%
Asheville	287-289	-7%
Charlotte	280-282	7%
Durham	277	0%
Elizabeth City	279	-8%
Fayetteville	283	-6%
Goldsboro	275	0%
Greensboro	274	-3%
Hickory	286	-8%
Kinston	285	-9%
Raleigh	276	3%
Rocky Mount	278	-7%
Wilmington	284	-6%
Winston-Salem	270-273	-5%

North Dakota Average		4%
Bismarck	585	3%
Dickinson	586	15%
Fargo	580-581	0%
Grand Forks	582	-1%
Jamestown	584	-4%
Minot	587	9%
Nekoma	583	-10%
Williston	588	21%

Ohio Average		0%
Akron	442-443	1%
Canton	446-447	-2%
Chillicothe	456	-2%
Cincinnati	450-452	3%
Cleveland	440-441	3%
Columbus	432	5%
Dayton	453-455	1%
Lima	458	-5%
Marietta	457	-5%
Marion	433	-6%
Newark	430-431	3%
Sandusky	448-449	-3%
Steubenville	439	1%
Toledo	434-436	7%
Warren	444	-5%
Youngstown	445	-3%
Zanesville	437-438	-1%

Oklahoma Average		-5%
Adams	739	-10%
Ardmore	734	-1%
Clinton	736	-3%
Durant	747	-11%
Enid	737	-4%
Lawton	735	-8%
McAlester	745	-7%
Muskogee	744	-8%
Norman	730	-4%
Oklahoma City	731	-3%
Ponca City	746	-1%
Poteau	749	-7%
Pryor	743	-6%
Shawnee	748	-8%
Tulsa	740-741	0%
Woodward	738	5%

Oregon Average		-3%
Adrian	979	-12%
Bend	977	-5%
Eugene	974	-3%
Grants Pass	975	-5%
Klamath Falls	976	-8%
Pendleton	978	-3%
Portland	970-972	10%
Salem	973	-2%

Pennsylvania Average		-1%
Allentown	181	3%
Altoona	166	-8%
Beaver Springs	178	-5%
Bethlehem	180	4%
Bradford	167	-8%
Butler	160	-2%
Chambersburg	172	-7%
Clearfield	168	-3%
DuBois	158	-10%
East Stroudsburg	183	-5%
Erie	164-165	-6%
Genesee	169	-4%
Greensburg	156	-4%
Harrisburg	170-171	3%
Hazleton	182	-3%
Johnstown	159	-9%
Kittanning	162	-6%
Lancaster	175-176	-1%
Meadville	163	-9%
Montrose	188	-4%
New Castle	161	-3%
Philadelphia	190-191	11%
Pittsburgh	152	6%
Pottsville	179	-8%
Punxsutawney	157	-3%
Reading	195-196	2%
Scranton	184-185	1%
Somerset	155	-9%
Southeastern	193	8%
Uniontown	154	-6%
Valley Forge	194	11%
Warminster	189	11%
Warrendale	150-151	5%
Washington	153	8%
Wilkes Barre	186-187	-1%
Williamsport	177	-2%
York	173-174	-1%

Rhode Island Average		5%
Bristol	28	5%
Coventry	28	5%
Cranston	29	6%
Davisville	28	5%
Narragansett	28	5%
Newport	28	5%
Providence	29	6%
Warwick	28	5%

South Carolina Average		-1%
Aiken	298	4%
Beaufort	299	-2%
Charleston	294	-1%
Columbia	290-292	-2%
Greenville	296	8%
Myrtle Beach	295	-8%
Rock Hill	297	-6%
Spartanburg	293	-4%

South Dakota Average		-6%
Aberdeen	574	-7%
Mitchell	573	-6%
Mobridge	576	-9%
Pierre	575	-10%
Rapid City	577	-8%
Sioux Falls	570-571	-1%
Watertown	572	-4%

Tennessee Average		-2%
Chattanooga	374	2%
Clarksville	370	1%
Cleveland	373	-1%
Columbia	384	-7%
Cookeville	385	-8%
Jackson	383	-2%
Kingsport	376	-5%
Knoxville	377-379	-2%
McKenzie	382	-8%
Memphis	380-381	1%
Nashville	371-372	2%

Texas Average		5%
Abilene	795-796	-2%
Amarillo	790-791	-2%
Arlington	760	1%
Austin	786-787	12%
Bay City	774	39%
Beaumont	776-777	18%
Brownwood	768	-8%
Bryan	778	8%
Childress	792	-14%
Corpus Christi	783-784	18%
Dallas	751-753	6%
Del Rio	788	0%
El Paso	798-799	-7%
Fort Worth	761-762	2%
Galveston	775	24%
Giddings	789	6%
Greenville	754	3%
Houston	770-772	26%
Huntsville	773	26%
Longview	756	1%
Lubbock	793-794	-7%
Lufkin	759	8%
McAllen	785	-6%
Midland	797	10%
Palestine	758	2%
Plano	750	7%
San Angelo	769	-6%
San Antonio	780-782	8%
Texarkana	755	-8%
Tyler	757	-7%
Victoria	779	12%
Waco	765-767	-3%
Wichita Falls	763	-9%
Woodson	764	-3%

Utah Average		-3%
Clearfield	840	0%
Green River	845	-3%
Ogden	843-844	-9%
Provo	846-847	-6%
Salt Lake City	841	1%

Vermont Average		-5%
Albany	58	-7%
Battleboro	53	-4%
Beecher Falls	59	-8%
Bennington	52	-6%
Burlington	54	4%
Montpelier	56	-4%
Rutland	57	-7%
Springfield	51	-6%
White River Junction	50	-5%

Virginia Average		-4%
Abingdon	242	-9%
Alexandria	220-223	10%
Charlottesville	229	-6%
Chesapeake	233	-4%
Culpeper	227	-5%
Farmville	239	-12%
Fredericksburg	224-225	-5%
Galax	243	-10%
Harrisonburg	228	-6%
Lynchburg	245	-9%
Norfolk	235-237	-2%
Petersburg	238	-3%
Radford	241	-9%
Reston	201	7%
Richmond	232	2%
Roanoke	240	-9%
Staunton	244	-7%
Tazewell	246	-6%
Virginia Beach	234	-3%
Williamsburg	230-231	-3%
Winchester	226	4%

Washington Average		0%
Clarkston	994	-8%
Everett	982	2%
Olympia	985	-2%
Pasco	993	1%
Seattle	980-981	11%
Spokane	990-992	-3%
Tacoma	983-984	2%
Vancouver	986	3%
Wenatchee	988	-6%
Yakima	989	-5%

West Virginia Average		-5%
Beckley	258-259	-5%
Bluefield	247-248	0%
Charleston	250-253	4%
Clarksburg	263-264	-7%
Fairmont	266	-11%
Huntington	255-257	-4%
Lewisburg	249	-14%
Martinsburg	254	-5%
Morgantown	265	-4%
New Martinsville	262	-9%
Parkersburg	261	1%
Romney	267	-7%
Sugar Grove	268	-8%
Wheeling	260	5%

Wisconsin Average		0%
Amery	540	-1%
Beloit	535	5%
Clam Lake	545	-8%
Eau Claire	547	-2%
Green Bay	541-543	3%
La Crosse	546	0%
Ladysmith	548	-2%
Madison	537	8%
Milwaukee	530-534	6%
Oshkosh	549	4%
Portage	539	0%
Prairie du Chien	538	-7%
Wausau	544	-3%

Wyoming Average		-1%
Casper	826	1%
Cheyenne/ Laramie	820	-2%
Gillette	827	3%
Powell	824	-3%
Rawlins	823	8%
Riverton	825	-6%
Rock Springs	829-831	1%
Sheridan	828	-3%
Wheatland	822	-3%

UNITED STATES TERRITORIES	
Guam	18%
Puerto Rico	-21%

VIRGIN ISLANDS (U.S.)	
St. Croix	2%
St. John	20%
St. Thomas	5%

CANADIAN AREA MODIFIERS

These figures assume an exchange rate of $1.00 Canadian to $.76 U.S.

Alberta Average	13%
Calgary	14%
Edmonton	14%
Fort McMurray	12%

British Columbia Average	7%
Fraser Valley	6%
Okanagan	6%
Vancouver	9%

Manitoba Average	0%
North Manitoba	0%
Selkirk	0%
South Manitoba	0%
Winnipeg	0%

New Brunswick Average	-13%
Moncton	-13%
Newfoundland/Labrador	-3%

Nova Scotia Average	-8%
Amherst	-8%
Nova Scotia	-7%
Sydney	-8%

Ontario Average	7%
London	7%
Thunder Bay	6%
Toronto	7%

Quebec Average	-1%
Montreal	-1%
Quebec City	-1%

Saskatchewan Average	4%
La Ronge	3%
Prince Albert	2%
Saskatoon	5%

Building Cost Historical Index

Use this table to find the approximate current dollar building cost when the actual cost is known for any year since 1954. Multiply the figure listed below for the building type and year of construction by the known cost. The result is the estimated 2021 construction cost.

Year	Masonry Buildings	Concrete Buildings	Steel Buildings	Wood-Frame Buildings	Agricultural Buildings	Year of Construction
1954	14.89	15.47	14.89	13.22	12.20	1954
1955	14.28	14.76	14.11	12.52	11.67	1955
1956	13.54	14.12	12.99	11.99	11.18	1956
1957	13.15	13.58	12.47	11.91	10.91	1957
1958	12.78	13.07	11.87	11.88	13.01	1958
1959	12.38	12.66	11.59	11.37	10.43	1959
1960	12.10	12.42	11.40	11.20	10.22	1960
1961	11.85	12.37	11.21	11.00	10.19	1961
1962	11.58	12.01	10.94	10.87	10.04	1962
1963	11.41	11.70	10.81	10.66	9.10	1963
1964	11.07	11.56	10.66	10.30	9.56	1964
1965	10.72	11.26	10.29	10.08	9.30	1965
1966	10.24	10.94	9.90	9.64	9.04	1966
1967	10.00	10.41	9.26	9.17	8.68	1967
1968	9.59	9.84	8.84	8.67	8.30	1968
1969	9.05	9.40	8.54	8.34	7.83	1969
1970	8.69	8.99	8.11	7.93	7.44	1970
1971	8.15	8.23	7.53	6.83	6.93	1971
1972	7.58	7.62	7.04	6.85	6.45	1972
1973	6.92	7.22	6.25	6.32	6.06	1973
1974	6.16	6.62	5.86	5.91	5.62	1974
1975	5.60	5.85	5.27	5.56	5.01	1975
1976	5.25	5.57	5.00	5.35	4.75	1976
1977	4.89	5.22	4.75	4.97	4.46	1977
1978	4.55	4.89	4.37	4.57	4.04	1978
1979	4.18	4.35	3.92	4.19	3.83	1979
1980	3.79	3.95	3.49	3.75	3.46	1980
1981	3.57	3.73	3.20	3.58	3.24	1981
1982	3.45	3.57	3.10	3.47	3.12	1982
1983	3.29	3.45	3.04	3.31	2.94	1983
1984	3.08	3.24	2.90	3.05	2.86	1984
1985	2.99	3.08	2.82	2.96	2.81	1985
1986	2.92	3.05	2.77	2.92	2.75	1986
1987	2.91	2.99	2.74	2.86	2.73	1987
1988	2.84	2.88	2.69	2.83	2.68	1988
1989	2.78	2.83	2.56	2.78	2.60	1989
1990	2.62	2.72	2.43	2.58	2.48	1990
1991	2.83	2.68	2.31	2.44	2.35	1991
1992	2.53	2.64	2.28	2.43	2.33	1992
1993	2.47	2.62	2.20	2.40	2.29	1993
1994	2.41	2.44	2.12	2.31	2.13	1994
1995	2.28	2.23	1.96	2.17	2.01	1995
1996	2.21	2.19	1.91	2.12	1.97	1996
1997	2.13	2.13	1.83	2.08	1.92	1997
1998	2.03	2.03	1.76	1.99	1.90	1998
1999	1.96	1.96	1.72	1.96	1.87	1999
2000	1.91	1.91	1.65	1.89	1.81	2000
2001	1.85	1.85	1.62	1.82	1.76	2001
2002	1.80	1.80	1.58	1.80	1.72	2002
2003	1.77	1.77	1.54	1.79	1.69	2003
2004	1.70	1.70	1.50	1.74	1.64	2004
2005	1.57	1.57	1.34	1.56	1.61	2005
2006	1.48	1.48	1.24	1.40	1.44	2006
2007	1.43	1.43	1.18	1.30	1.33	2007
2008	1.35	1.35	1.12	1.24	1.26	2008
2009	1.33	1.33	1.08	1.24	1.26	2009
2010	1.31	1.31	1.02	1.23	1.25	2010
2011	1.32	1.32	1.05	1.25	1.29	2011
2012	1.31	1.31	0.94	1.21	1.26	2012
2013	1.25	1.25	1.00	1.15	1.18	2013
2014	1.23	1.23	0.99	1.13	1.17	2014
2015	1.22	1.22	0.98	1.12	1.16	2015
2016	1.21	1.21	1.08	1.13	1.13	2016
2017	1.17	1.17	1.09	1.14	1.13	2017
2018	1.11	1.11	0.95	1.04	1.06	2018
2019	1.05	1.05	0.99	0.99	1.01	2019
2020	1.03	1.03	0.95	1.01	1.00	2020
2021	1.00	1.00	1.00	1.00	1.00	2021

Residential Structures Section

The figures in this section include all costs associated with normal construction:

Foundations as required for normal soil conditions. Excavation for foundations, piers, and other foundation components given a fairly level construction site. Floor, wall, and roof structures. Interior floor, wall, and ceiling finishes. Exterior wall finish and roof cover. Interior partitions as described in the quality class. Finish carpentry, doors, windows, trim, etc. Electric wiring and fixtures. Rough and finish plumbing as described in applicable building specifications. Built-in appliances as described in applicable building specifications. All labor and materials including supervision. All design and engineering fees, if necessary. Permits and fees. Utility hook-ups. Contractors' contingency, overhead and profit.

The square foot costs do not include heating and cooling equipment or the items listed in the section "Additional Costs for Residential Structures" which appear on pages 27 to 31. The costs of the following should be figured separately and added to the basic structure cost: porches, basements, balconies, exterior stairways, built-in equipment beyond that listed in the quality classifications, garages and carports.

Single Family Residences

Single family residences vary widely in quality and the quality of construction is the most significant factor influencing cost. Residences are listed in six quality classes. Class 1 is the most expensive commonly encountered and Class 6 is the minimum required under most building codes. Nearly all homes built from stock plans or offered to the public by residential tract developers will fall into Class 3, 4, 5, or 6. For convenience, these classes are labeled *Best Standard, Good Standard, Average Standard* or *Minimum Standard*. Class 1 residences are labeled *Luxury.* Class 2 residences are labeled *Semi-Luxury.* Class 1 and 2 residences are designed by professional architects, usually to meet preferences of the first owner.

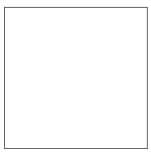
The shape of the outside perimeter also has a significant influence on cost. The more complex the shape, the more expensive the structure per square foot of floor. The shape classification of multiple story or split-level homes should be based on the outline formed by the outer-most exterior walls, including the garage area, regardless of the story level. Most residences that fall into Classes 3, 4, 5 or 6 have 4, 6, 8 or 10 corners, as illustrated below. Small insets that do not require a change in the roof line can be ignored when evaluating the outside perimeter.

Class 1 and 2 (*Luxury* and *Semi-Luxury*) residences have more than ten corners and are best evaluated by counting the "building masses." A building mass is a group of contiguous rooms on one or more levels with access at varying angles from a common point or hallway. The illustration at the right below represents a residence with two building masses. Most Class 1 and Class 2 residences have from one to four building masses, ignoring any attached garage. For convenience, cost tables for Class 1 and 2 single family residences with one, two, three or four building masses have been appended to cost tables for Class 3, 4, 5 and 6 residences with 4, 6, 8 and 10 building corners.

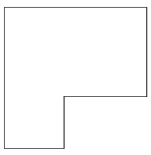
Residences on larger lots often include a separate housekeeping unit, either remote from the main structure (as illustrated below at the right) or joined to the main structure by a hallway (no common wall). Evaluate any separate housekeeping unit as a separate residence. The quality class of separate housekeeping units will usually be the same as the main residence if designed and built at the same time as the main residence.

Residences which have features of two or more quality classes can be placed between two of the six labeled classes. The tables have five half-classes (1 & 2, 2 & 3, etc.) which can be applied to residences with some characteristics of two or more quality classes. If a portion of a residence differs significantly in quality from other portions, evaluate the square footage of each portion separately.

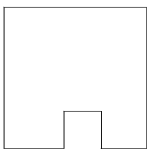
These figures can be applied to nearly all single-family residences built using conventional methods and readily available materials, including the relatively small number of highly decorative, starkly original or exceptionally well-appointed residences.



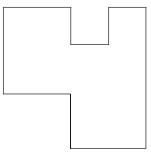
4 corners



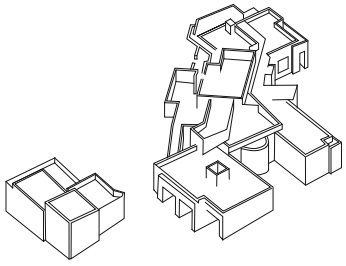
6 corners



8 corners



10 corners



2 building masses and one separate unit

Quality Classification

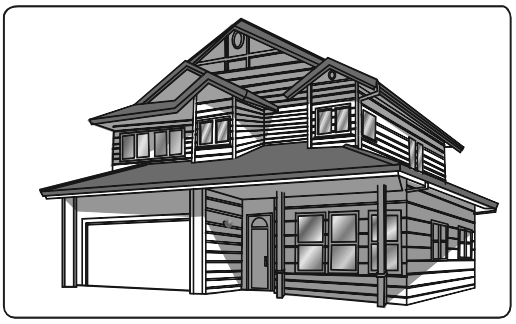
	Class 1 Luxury	Class 2 Semi-Luxury	Class 3 Best Std.	Class 4 Good Std.	Class 5 Average Std.	Class 6 Minimum Std.
Foundation (9% of total cost)	Reinforced concrete.	Reinforced concrete.	Reinforced concrete.	Reinforced concrete or concrete block.	Reinforced concrete or concrete block.	Reinforced concrete.
Floor Structure (12% of total cost)	Engineered wood or steel exceeding code minimums.	Engineered wood or steel or reinforced concrete slab.	Engineered wood or steel or reinforced concrete slab.	Wood frame or slab on grade, changes in shape and elevation.	Standard wood frame or slab on grade with elevation changes.	Slab on grade. No changes in elevation.
Wall Framing and Exterior Finish (14% of total cost)	Wood or steel, very irregular walls, stone veneer, many architectural doors and windows.	Wood or steel, irregular shape, masonry veneer, better grade doors and windows.	Wood or steel, several wall offsets, wood or masonry accents, good grade doors and windows.	Wood or steel, stucco or wood siding, some trim or veneer, average doors and windows.	Wood or steel, stucco or wood siding, few offsets, commodity grade doors and windows.	Wood or steel, stucco or hardboard siding, minimum grade doors and windows.
Roof (10% of total cost)	Complex plan, tile, slate or metal, highly detailed.	Multi-level, slate, tile or flat surface, decorative details.	Multi-pitch, shake, tile or flat surface, large closed soffit.	Wood trusses, tile or good shingles, closed soffit.	Wood frame, shingle or built-up cover, open 24" soffit.	Wood frame, composition shingle cover, open soffit.
Floor Finish (5% of total cost)	Terrazzo, marble, granite, or inlaid hardwood or best carpet throughout.	Marble or granite entry, hardwood, good carpet or sheet vinyl elsewhere.	Simulated marble tile entry, good carpet, hardwood or vinyl elsewhere.	Better sheet vinyl and average carpet, some areas with masonry or tile.	Good sheet vinyl and standard carpet, small area with tile or hardwood.	Composition tile or minimum grade sheet vinyl.
Interior Wall and Ceiling Finish (8% of total cost)	Plaster or gypsum wallboard with artistic finish, many offsets and wall openings, decorative details in nearly all rooms.	Plaster on gypsum or metal lath or 2 layers of 5/8" gypsum wallboard, decorative details, many irregular wall openings.	Gypsum wallboard with putty or texture coat finish, some irregular walls, decorative details in living room, entry and kitchen.	1/2" gypsum wallboard with textured finish, several irregular walls and wall openings, some. decorative details.	1/2" gypsum wallboard with textured finish, most walls are rectangular, doors and windows are the only openings.	1/2" gypsum wallboard, smooth or orange peel finish. Nearly all walls are regular, no decorative details.
Interior Detail (5% of total cost)	Exposed beams or decorative ceiling, 12' to 16' ceiling in great room, many sky widows, built-in shelving and alcoves for art.	Great room has 12' to 16' ceiling, most rooms have windows on two sides, formal dining area, several framed openings.	Cathedral ceiling at entry, one or more floor level changes, several wall openings or pass-throughs, formal dining area.	8' or 9' ceiling throughout, walk-in closet in master bedroom, separate dining area, some decorative wood trim.	8' or 9' ceiling throughout, sliding mirrored closet doors, standard grade molding and trim, breakfast bar or nook.	Drop ceiling in kitchen, other rooms have 7'6" to 8' ceiling, minimum grade molding and trim.
Bath Detail (4% of total cost)	Custom large tile showers, separate elevated spa in master bathroom.	Large tile showers, at least one bathtub, glass block or large window by each bath.	Tile or fiberglass shower, at least one built-in bathtub, window in bathroom.	Good plastic tub and shower in at least one bathroom, one small window in each bath.	Average plastic tub and shower in at least one bathroom.	Minimum plastic tub and shower in one bathroom.
Kitchen Detail (8% of total cost)	Over 30 LF of deluxe wall and base cabinets, stone counter top, island work area, breakfast bar.	Over 25 LF of good custom base and wall cabinets, synthetic stone counter top, desk and breakfast bar.	Over 20 LF of good stock wall and base cabinets, tile or acrylic counter top, desk and breakfast bar or nook.	Over 15 LF of stock standard grade wall and base cabinets, low-cost tile or acrylic counter top, breakfast nook.	Over 10 LF of stock standard grade wall and base cabinets, low-cost acrylic or laminated plastic counter top.	Less than 10 LF of low-cost wall and base cabinets, laminated plastic counter top, space for table.
Plumbing (12% of total cost)	4 deluxe fixtures per bathroom, more bathrooms than bedrooms.	4 good fixtures per bathroom, more bathrooms than bedrooms.	3 good fixtures per bathroom, as many bathrooms as bedrooms.	3 standard fixtures per bathroom, less bathrooms than bedrooms.	3 standard fixtures per bathroom, less bathrooms than bedrooms.	3 minimum fixtures per bathroom, 2 bathrooms.
Special Features (3% of total cost)	10 luxury built-in appliances, wet bar, home theater, pantry, wine cellar.	8 good built-in appliances, wet bar, walk-in pantry, central vacuum.	6 good built-in appliances, walk-in pantry, wet bar, central vacuum.	5 standard built-in appliances, sliding glass or French doors, laundry room.	4 standard grade kitchen appliances.	4 minimum grade kitchen. appliances.
Electrical System (10% of total cost)	Over 100 recessed or track lights, security system, computer network.	80 to 100 recessed lighting fixtures. security system, computer network.	Ample recessed lighting on dimmers, computer network, multiple TV outlets.	Limited recessed lighting on dimmers, multiple TV outlets.	12 lighting fixtures, switch-operated duplex plug outlets in bedrooms.	10 or less lighting fixtures, switch-operated plug outlets in most rooms.
If Exterior Walls are Masonry	Reinforced split face concrete block or brick with face brick veneer.	Reinforced block or brick with masonry veneer or stucco coat.	Textured or coated concrete block or good quality detailed brick.	Colored or coated concrete block or good quality brick.	Colored concrete block or painted common brick.	Painted concrete block or common-brick.

Note: Use the percent of total cost to help identify the correct quality classification.

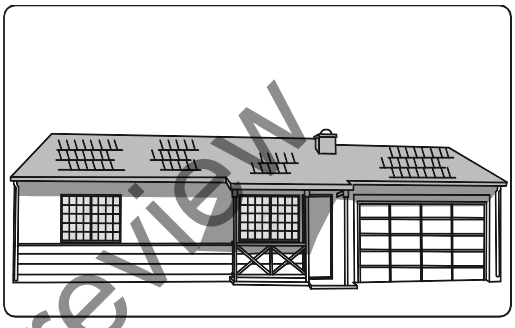
4 Corners (Classes 3, 4, 5 and 6) or One Building Mass (Classes 1 and 2 Only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 11.
2. Multiply the structure floor area (excluding the garage) by the appropriate square foot cost below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a porch, garage, heating and cooling equipment, basement, fireplace, carport, appliances and plumbing fixtures beyond that listed in the quality classification. See the cost of these items on pages 27 to 31.



Single Family Residence, Class 4



Single Family Residence, Class 6

Square Foot Area

Quality Class	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	2,000
1, Luxury	533.93	511.60	493.13	477.18	464.76	453.69	443.87	435.03	428.44	421.96	416.04	411.04	401.69
1, & 2	464.30	444.87	428.82	414.95	404.17	394.45	385.98	378.29	372.54	366.95	361.71	357.36	349.27
2, Semi-Luxury	324.49	310.93	299.69	289.99	282.46	275.74	269.79	264.43	260.39	256.33	252.85	249.83	244.05
2 & 3	238.18	228.25	219.99	212.92	207.38	202.39	198.02	194.08	191.10	188.21	185.54	183.41	179.19
3, Best Std.	207.85	199.21	191.97	185.81	180.88	176.61	172.82	169.39	166.78	164.26	161.97	159.99	156.36
3 & 4	177.76	170.21	164.11	158.88	154.64	150.98	147.76	144.77	142.60	140.31	138.49	136.78	133.72
4, Good Std.	153.15	146.63	141.42	136.87	133.31	130.14	127.27	124.73	122.78	120.96	119.29	117.73	115.19
4 & 5	137.95	132.15	127.43	123.29	120.05	117.13	114.58	112.42	110.65	108.95	107.46	106.17	103.67
5 Avg. Std.	124.15	119.02	114.71	111.04	108.19	105.56	103.25	101.13	99.60	98.09	96.72	95.58	93.39
5 & 6	107.80	103.30	99.58	96.38	93.83	91.59	89.59	87.75	86.47	85.12	84.09	82.95	81.07
6, Min. Std.	98.00	93.87	90.50	87.59	85.31	83.24	81.46	79.83	78.61	77.37	76.38	75.38	73.65

Square Foot Area

Quality Class	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	4,000	4,200	4,400	4,600	5,000+
1, Luxury	394.68	388.06	382.73	377.96	374.59	371.45	368.05	365.58	360.43	357.15	354.31	351.84	348.31
1, & 2	343.30	337.45	332.80	328.66	325.71	323.01	320.04	317.88	313.44	310.57	308.10	305.94	302.88
2, Semi-Luxury	240.01	235.84	232.63	229.71	227.62	225.69	223.63	222.16	219.04	217.05	215.30	213.83	211.69
2 & 3	176.09	173.14	170.77	168.65	167.06	165.62	164.21	163.07	160.81	159.36	158.06	156.96	155.40
3, Best Std.	153.68	151.06	148.95	147.17	145.84	144.61	143.27	142.27	140.29	140.31	139.19	138.21	136.84
3 & 4	131.41	129.18	127.42	125.86	124.67	123.57	122.57	121.71	120.00	118.93	117.96	117.14	115.96
4, Good Std.	113.22	111.26	109.80	108.37	107.46	106.49	105.59	104.76	103.36	102.43	101.57	100.88	99.87
4 & 5	101.94	100.30	98.76	97.64	96.71	95.96	94.99	94.43	93.13	92.28	91.58	90.92	90.02
5 Avg. Std.	91.81	90.29	89.06	87.84	87.14	86.38	85.58	85.00	83.84	82.63	82.43	81.87	81.07
5 & 6	79.70	78.38	77.27	76.29	75.67	74.91	74.24	73.70	72.79	72.04	71.57	71.02	70.37
6, Min. Std.	72.35	71.20	70.25	69.42	68.77	68.14	67.54	67.04	66.14	65.47	65.03	64.55	63.94

Note: Tract work and highly repetitive jobs may reduce the cost 8 to 12%. Add 4% to the square foot cost of floors above the second floor level. Work outside metropolitan areas may cost 2 to 6% less. When the exterior walls are masonry, add 9 to 10% for class 2 and 1 structures and 5 to 8% for class 3, 4, 5 and 6 structures. The building area includes all full story (7'6" to 9' high) areas within and including the exterior walls of all floor areas of the building, including small inset areas such as entrances outside the exterior wall but under the main roof. For areas with a ceiling height of less than 80", see the section on half-story areas on page 30.

10 Corners (Classes 3, 4, 5 and 6) or Four Building Masses (Classes 1 and 2 only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 11.
2. Multiply the structure floor area (excluding the garage) by the appropriate square foot cost below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a porch, garage, heating and cooling equipment, basement, fireplace, carport, appliances and plumbing fixtures beyond that listed in the quality classification. See the cost of these items on pages 27 to 31.

Single Family Residence, Class 2 & 3

Single Family Residence, Class 1

Square Foot Area

Quality Class	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	2,000
1, Luxury	566.87	543.17	523.53	506.08	493.46	482.03	472.59	464.59	456.81	450.37	444.72	439.56	430.34
1, & 2	492.96	472.43	455.28	441.83	429.09	419.19	410.92	404.01	397.21	392.11	386.78	382.25	374.23
2, Semi-Luxury	341.54	328.00	316.97	307.28	299.89	292.96	287.22	282.35	277.62	273.70	270.28	267.09	261.50
2 & 3	250.73	240.81	232.68	225.62	220.11	215.02	210.78	207.20	203.79	200.83	198.39	196.05	191.98
3, Best Std.	218.79	210.09	203.04	196.83	192.06	187.69	183.96	180.84	177.86	175.32	173.14	171.13	167.51
3 & 4	187.08	179.51	173.62	168.30	164.26	160.40	157.31	154.59	151.99	149.88	148.00	146.32	143.27
4, Good Std.	161.21	154.78	149.68	145.02	141.43	138.23	135.48	133.28	130.96	129.18	127.54	126.01	123.42
4 & 5	145.20	139.40	134.78	130.64	127.46	124.54	122.07	120.02	118.02	116.39	114.83	113.49	111.20
5 Avg. Std.	130.78	125.45	121.42	117.66	114.78	112.21	109.97	108.08	106.30	104.72	103.57	102.26	100.15
5 & 6	113.43	108.92	105.28	102.11	99.60	97.32	95.46	93.80	92.20	90.89	89.79	88.64	86.94
6, Min. Std.	103.18	99.00	95.80	92.84	90.54	88.46	86.71	85.29	83.79	82.59	81.62	80.63	78.98

Square Foot Area

Quality Class	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	4,000	4,200	4,400	4,600	5,000+
1, Luxury	423.40	421.54	411.62	406.67	403.12	399.80	396.54	393.95	388.90	385.40	382.31	379.62	375.80
1, & 2	368.21	362.63	357.97	353.60	350.65	347.65	344.88	342.55	338.27	334.26	331.62	329.33	326.07
2, Semi-Luxury	257.29	253.44	250.14	247.19	245.03	242.96	241.00	239.48	236.37	234.26	232.34	230.72	228.41
2 & 3	188.86	185.99	183.60	181.42	179.81	178.38	176.87	175.73	173.54	166.72	165.42	164.24	162.62
3, Best Std.	164.82	162.38	160.26	158.29	156.92	155.58	154.36	153.36	151.45	150.08	148.87	147.84	146.35
3 & 4	140.85	138.81	137.00	135.38	134.18	133.01	132.02	131.11	129.37	128.22	127.20	126.30	125.04
4, Good Std.	121.42	119.61	118.15	116.56	115.56	114.60	113.72	113.12	111.53	110.54	109.27	108.15	107.07
4 & 5	109.42	107.70	106.33	105.03	104.11	103.25	102.44	101.82	100.41	99.52	98.72	98.05	97.05
5 Avg. Std.	98.40	97.00	95.78	94.60	93.72	93.04	92.25	91.73	90.43	89.59	88.88	88.25	87.39
5 & 6	85.46	84.19	83.06	82.05	81.29	80.71	80.06	79.55	78.51	77.82	77.17	76.64	75.89
6, Min. Std.	77.72	76.50	75.55	74.61	73.96	73.37	72.79	72.31	71.38	70.73	70.16	69.66	69.00

Note: Tract work and highly repetitive jobs may reduce the cost 8 to 12%. Add 4% to the square foot cost of floors above the second floor level. Work outside metropolitan areas may cost 2 to 6% less. When the exterior walls are masonry, add 9 to 10% for class 2 and 1 structures and 5 to 8% for class 3, 4, 5 and 6 structures. The building area includes all full story (7'6" to 9' high) areas within and including the exterior walls of all floor areas of the building, including small inset areas such as entrances outside the exterior wall but under the main roof. For areas with a ceiling height of less than 80", see the section on half-story areas on page 30.

Quality Classification

	Class 1 Best Quality	Class 2 Good Quality	Class 3 Average Quality	Class 4 Low Quality	Class 5 Lowest Quality
Design	Indistinguishable from site-built construction, good floor plan and sight lines, superior fit and finish	Comparable to site-built construction, good floor plan, shelves and alcoves, good fit and finish	Clearly manufactured housing but with good design and materials, adequate fit and finish	Mobile home design, utilitarian floor plan, commodity-grade materials	Poor design, often sold unfinished, common only in Sun Belt states
Roof (12% of total cost)	Complex roof line, 30-year architectural shingles, roof pitch at least 4" in 12", good overhang on all sides, R-38 insulation	Decorative roof line, gable accents, 25-year shingles, 4" in 12" pitch, 12" overhang on all sides, R-33 insulation	Gable accents, 25-year shingles, 4" in 12" pitch, 8" to 12" overhang front and back, R-21 insulation	Simple roof line, less than 4" in 12" pitch, small overhang front and back, R-19 insulation	Straight roof line, minimum pitch, little or no overhang, minimum roof cover, R-7 insulation
Exterior Walls (18% of total cost)	Good fiber-cement siding, 9' to 10' high, decorative trim, 6" exterior walls, R-19 insulation, 7/16" plywood sheathing	Painted fiber cement siding, 9' high, some trim, 6" exterior walls, R-15 insulation, 7/16" OSB sheathing	Good foam-backed vinyl siding, 8' to 9' high, 4" exterior walls, R-13 insulation, 7/16" OSB sheathing	Vinyl siding, 8' high, 4" exterior walls, R-11 insulation, 3/8" plywood sheathing	Hardboard or economy siding, 7' high, 4" exterior walls, R-7 insulation
Doors and Windows (9% of total cost)	Two 36" wide insulated steel panel exterior doors, solid core wood panel interior doors, good hardware, large insulated low-E vinyl sash windows, recessed entry	Two 36" wide insulated steel exterior doors, hollow core wood interior doors, good hardware, good insulated low-E vinyl sash windows, recessed entry	36" wide steel front door with deadbolt, hollow core wood interior doors, average hardware, insulated vinyl windows, recessed entry	36" wide steel front door, hollow core wood interior doors, economy hardware, smaller dual glazed vinyl windows, 6' sliding bedroom door	34" or 32" wide aluminum exterior doors, hollow core wood interior doors, economy hardware, aluminum windows with storm sash
Interior (5% of total cost)	Hardwood paneling or ½" gypsum board with good workmanship and trim throughout, coffered/ vaulted/beamed ceilings, plank-type acoustical tile, mirrored walls, built-in buffet cabinets, custom drapes, skylights, window sills, good drapes with sheers throughout	Pre-finished hardwood paneling and trim or ½" gypsum board in all rooms, vaulted/beamed, ceiling in main rooms, good floor to ceiling drapes over sheer underlays in living room and dining room, several wall mirrors, some acoustic treatments	Pre-finished and grooved hardwood, plywood paneling or ½" gypsum board, no exposed fasteners, coordinated drapes in all rooms except kitchen and baths, one vaulted ceiling, acoustic tile, pre-finished wood trim	Pre-finished fire rated plywood paneling or 3/8" gypsum board, some exposed fasteners, acoustical tile ceiling, economy drapes in living room, dining room, and bedrooms, vinyl on composition molding.	Stapled 3/8" vinyl-covered wallboard with battens at seams and corners, exposed fasteners or holding strips, unit may have been sold with interior finishing incomplete.
Floors (8% of total cost)	Hardwood or ceramic tile entry, 30-50 oz. carpet, good vinyl in utility and guest bath. Good vinyl or hardwood in kitchen.	26-30 oz. carpet with 1/2" pad in all rooms except guest bath and utility, vinyl in kitchen, utility, and guest bath	22-26 oz. carpet with 1/2" rebond pad in all rooms except baths and kitchen, vinyl in kitchen and baths	16- 22 oz. carpet with 5 lb. pad in living, dining and bedrooms, economy vinyl sheet or tile in other areas	Glued or stapled foam-backed carpet in living room and bedroom, economy vinyl elsewhere
Heating (7% of total cost)	110,000 BTU upflow air-condition-ready forced air furnace with exterior access door, metal ducting to all rooms, fireplace, dual-zone heating	80,000 to 110,000 BTU upflow or downflow air-condition-ready furnace with exterior access door, metal ducting to all rooms, fireplace	80,000 BTU upflow or downflow forced air condition-ready furnace, ducting to all rooms, simulated fireplace	Forced air furnace, fiberglass attic ducting to all rooms, under-door return vents, ready for air conditioning unit.	Forced air furnace, minimum taped fiberglass duct, registers at the room center, return vents under doors
Kitchen (23% of total cost)	18± LF of 25" wide stone or ceramic counter, 4" splash, luxury cabinets, roller drawers, dropped luminous ceiling, island work space, walk-in pantry, name-brand fixtures, cast iron sink, wet bar	16± LF of tile or Corian counter, 4" splash, quality wood cabinets, dropped luminous ceiling, island work space, walk-in pantry, good quality fixtures, stainless or integrated 8" deep sink	14± LF of Corian counter, 2" splash, average quality wood-face cabinets and hardware, built-in range and oven with hood and fan, pantry cabinet, 7" deep stainless or porcelain sink	12± LF laminate counter, smaller commodity-grade cabinets with wood raised panel doors, no lining, built-in range and oven, hood and fan, add for dishwasher if present	10± LF of 24" wide laminate counter, plastic-faced MDF cabinets, stapled and glued, economy range and oven, minimum grade sink and fixtures, add for dishwasher if present
Baths and Plumbing (14% of total cost)	2 to 2¾ baths, 8 fixtures, master bath with two basins, sunken 60" tub, fiberglass shower with glass door, quality medicine cabinets, 6± feet of mirror over 8± feet of cultured marble or ceramic tile lavatory top, decorative faucets, 40-gal. water heater, separate commode closet	2 baths, vent fans, master bath will have two basins, sunken 60" tub and stall shower, quality medicine cabinets and fixtures, cultured marble vanities, good cabinets, 60" one-piece shower in guest bath, 30- to 40-gallon water heater, separate commode closet	2 baths, vent fans, fiberglass shower with glass or plastic door, fiberglass 60" tub, acrylic round toilets, 6 to 8 LF cultured marble vanity in each bath, twin basin master bath with 4± foot mirror, good cabinets, 30- to 40-gallon water heater	1¾ baths, fiberglass shower with plastic door, fiberglass one-piece 54" tub, acrylic round toilets, 4 to 5 linear foot cultured marble vanity with single basin, average quality cabinets and hardware, 30-gallon water heater	1¾ baths, fiberglass 54" one-piece tub and shower with curtain, acrylic round toilets, small 4' plastic marble vanity, minimum quality cabinets and hardware, 20-gallon electric water heater, plastic supply and drain pipe
Bedrooms (4% of total cost)	9 to 14 linear foot floor-to-ceiling sliding mirrored wardrobe doors, or large walk-in closets, phone and cable TV jacks	9 to 14 linear foot floor-to-ceiling mirrored sliding wardrobe doors in master bedroom or walk-in closets, phone and cable TV jacks	10± linear foot wardrobe, floor-to-ceiling mirrored sliding doors in master bedroom, cable TV jacks	8± linear foot wardrobe, pre-finished and grooved plywood doors, mirrored wardrobe door in master bedroom	Five to six linear foot wardrobe, plain plywood sliding doors

Manufactured Housing

A manufactured home is a structure in one or more sections intended to be delivered for erection as a unit on a construction site. No wheels, axles or towbars are included in these costs. Units can be from 8 to 36 feet wide and up to 80 feet long. Manufactured homes assembled from two or three sections are referred to as double wide or triple wide units. The cost FOB the manufacturer is usually be about 2/3 of the installed cost. These figures include all costs: typical delivery to the site, setting on piers, finishing ("button up"), connection to utility lines, permits and inspections. Tip-out, expando, or tag-a-long units have one or more telescoping or attached rooms to the side. Include this floor areas in your calculations. Do not use area modification factors for manufactured housing.

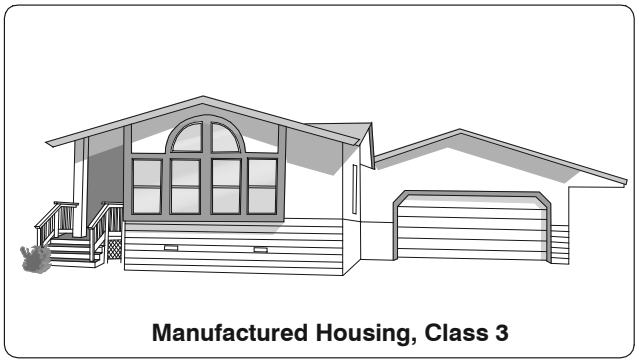
Estimating Procedure

1. Establish the structure quality class by applying the information on page 16.
2. Multiply the structure floor area (excluding any garage or storage area) by the appropriate square foot cost below.
3. Add, when appropriate, the cost of a permanent foundation, air conditioning, built-ins, porch, skirting, tie-downs, carport, garage or storage building,
   screen walls and roof snow load rating. See the following page.

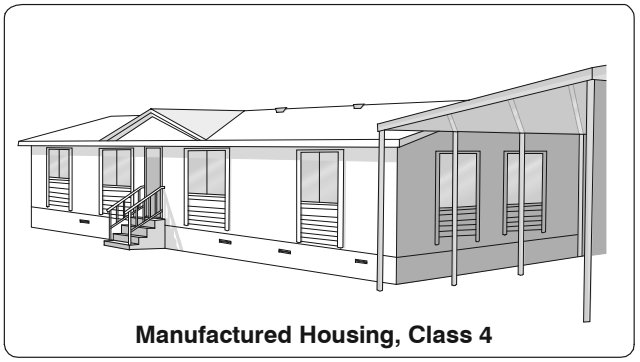
Square Foot Area

Quality Class	500	700	900	1100	1300	1500	1700	1900	2100	2300	2500
1, Best	130.85	129.20	127.63	125.96	124.35	122.74	121.16	119.48	117.92	116.31	114.67
1, & 2	123.17	121.56	119.96	118.41	116.72	115.06	113.40	111.89	110.22	108.65	106.99
2, Good	115.44	113.85	112.27	107.55	106.05	104.52	102.85	101.33	99.69	98.18	96.63
2 & 3	107.85	106.16	104.62	98.26	96.70	95.19	93.64	92.13	90.56	88.99	87.51
3, Average	100.54	98.99	97.24	91.34	87.25	85.69	84.27	82.77	81.26	79.79	78.28
3 & 4	94.09	92.43	90.90	85.23	81.26	79.79	78.28	76.76	75.26	73.77	72.23
4, Low Average	87.60	86.04	84.38	79.03	75.26	73.77	72.23	70.73	69.29	67.77	66.27
4 & 5	82.36	80.67	79.13	73.96	70.39	68.90	67.42	65.91	64.44	62.95	61.37
5 Lowest	77.49	75.92	74.30	67.42	65.91	64.44	62.95	61.37	59.88	58.43	56.93

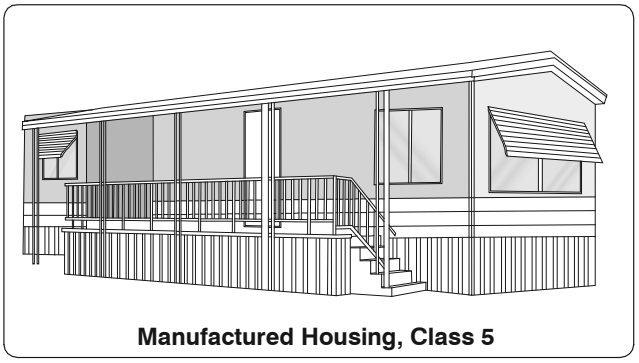
Manufactured Housing, Class 1



Manufactured Housing, Class 3



Manufactured Housing, Class 4



Manufactured Housing, Class 5

Additional Costs

Permanent Foundation, in place of setting on piers

Single Story	
Less than 1,000 square feet of floor area	$8,750 to $15,450
Over 1,000 square feet to 1,800 square feet of floor area	$15,450 to $28,300
Over 1,800 square feet to 2,500 square feet of floor area	$28,300 to $46,200

For two-story units, use the footprint of the first floor and select a figure higher in the range of costs. For difficult site conditions, such as a high water table, heavy clay soil, rock, over 3' foundation depth or a sloping site, use a figure in the higher range of costs.

Air Conditioning

Central air for use by existing furnace and ducts	
2 ton, up to 1,100 S.F.	$3,600
2-1/2 to 3 ton, over 1,100 to 1,600 S.F.	$4,130
4 to 5 ton, over 1,600 to 2,500 S.F.	$4,535 to $5,340
Cost per unit	
Thru-wall small unit 1/2 H.P., 6,000 Btu	$1,250
Thru-wall large unit 1 H.P., 12,000 Btu	$1,660
Evaporative cooler, roof mounted	$1,180 to $1,870
Wiring for air conditioning	$227 to $478

Built-Ins

Dishwasher (included in classes 1, 2 & 3)	$970 - $1,290
Garbage disposal (included in all base cost, deduct if missing)	$200 - $1,200
Built-in microwave oven	$540 - $750
Trash compactor	$880 - $1,110
Wet bar (walk-up – if not included in class)	$770 - $930
Wet bar (walk behind – if not included in class)	$2,540 - $2,770
Separate shower in master bath	$880 - $1,110
One-half bath: toilet, sink, and pullman	$1,740 - $1,850
Bathroom sink or laundry sink	$370
Fireplace (permanent – includes flue)	$3,400 - $4,600
Fireplace (free standing – includes flue)	$1,550 - $2,770
Built-in buffet-hutch (included in classes 1 and 2)	$1,170 - $1,475
Whirlpool tub in master bath	$1,420 - $1,740

Porches and Decks (no roofs included)

Wood deck at home floor level with handrail, skirting, steps and outdoor carpet, per square foot of porch or deck	$19.30 to $27.00

Skirting, cost per linear foot of skirt

Lightweight aluminum panels	$6.70
Lap aluminum siding	$11.95
Painted hardboard panels	$15.50
Flagstone-type aluminum panels	$12.00
Concrete composite panels	$20.05 - $25.00
Vinyl panels	$13.33
Brick or stone	$21.01

Storage Buildings, Garages, per S.F. of floor

Aluminum exterior	$20.80
Enameled steel exterior	$16.40
Hardboard panel exterior	$36.45

Figure the garage cost per SF at 2/3 of the home cost per SF.

Tie Downs

Cork screw anchor and straps, per each	$105 - $155

Steps and Rails, per flight to 36" high

Fiberglass steps	$265 - $415
Handrail	$60 - $90

Carport, Porch, or Deck Roof, per S.F. covered

Aluminum supports and roof cover, free standing	$15.05 - $20.00
Aluminum supports and roof cover, attached to house	$9.70 - $14.05
Wood supports and enameled steel cover, free standing	$17.65 - $22.00

Screen Wall Enclosure, per linear foot of 8' wall

Wood frame with screen walls and door	$69.00
Wood or aluminum frame with screen and glass walls, with door	$120.00

Roof Snowload Capability

Cost per square foot of roof	
30 pound design load	$.76 - $1.21
40 pound design load	$1.20 - $2.18
50 pound design load	$2.18 - $2.89
60 pound design load	$2.88 - $3.85
80 pound design load	$3.65 - $5.80
100 pound design load	$4.81 - $6.65
175 pound design load	$6.10 - $7.35

Quality Classification

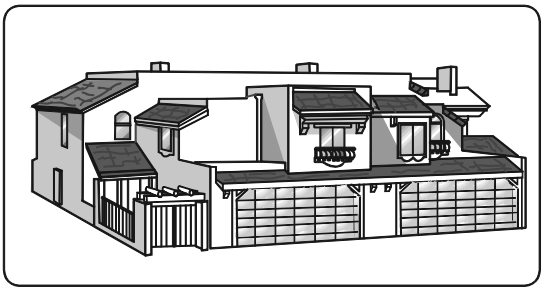
	Class 1 Best Quality	Class 2 Good Quality	Class 3 High Average Quality	Class 4 Low Average Quality	Class 5 Minimum Quality
Foundation (9% of total cost)	Conventional crawl space built on a sloping site.	Conventional crawl space built on a sloping site.	Conventional crawl space, footing over 40" deep.	Concrete slab or crawl space with 30" footing.	Concrete slab.
Floor Structure (12% of total cost)	Engineered wood, steel or concrete exceeding code requirements, complex plan, changes in elevation.	Engineered wood or steel built to meet code requirements, changes in shape and elevation.	Standard wood frame with irregular shape and changes in elevation.	Standard wood frame or concrete slab, simple floor plan.	Simple slab on grade with no changes in elevation.
Walls and Exterior Finish (12% of total cost)	Complex wood or light steel frame, stone or masonry veneer, 10' average wall height.	Wood or light steel frame, masonry veneer at entrance, good wood or stucco siding.	Wood or light steel frame, decorative trim at entrance, plywood or stucco siding, simple framing plan.	Wood frame, some ornamental details at entrance, plywood or hardboard siding.	Wood frame, little or no ornamentation, inexpensive stucco or hardboard siding.
Roof & Cover (10% of total cost)	Complex roof plan, good insulation, tile or good shake cover.	Good insulation, good shake, tile or 5-ply built-up roof.	4-ply built-up roof, some portions heavy shake or tile.	4-ply built-up roof, some portions shake or composition shingles.	4-ply built-up roof or minimum grade composition single.
Windows and Doors (5% of total cost)	Many large, good quality vinyl or metal windows, architectural grade doors.	Large, good-quality vinyl or metal windows, commercial grade doors.	Good quality vinyl or metal windows, residential grade doors.	Standard residential-grade doors and windows.	Minimum grade doors and windows.
Interior Finish (8% of total cost)	Gypsum board with heavy texture or plaster, some paneled walls, cathedral ceiling at entry, built-in cases, several wall offsets and level changes.	Textured gypsum board, some paneled walls, decorative or stain grade trim at entrance or living room, several irregular walls and wall openings.	Textured 1/2" gypsum board, several irregular walls or wall openings, few ornamental details, standard grade trim and wall molding.	Textured 1/2" gypsum board, some wall-cover or hardboard paneling, most walls are rectangular, standard grade trim and wall molding.	1/2" gypsum board with smooth finish, no ornamental details, doors and windows are the only wall openings.
Floor Finish (5% of total cost)	Masonry or stone tile entry, good hardwood or deluxe carpet in most rooms, good sheet vinyl in other rooms.	Masonry or tile at entry, hardwood or good carpet in most rooms, sheet vinyl in other rooms.	Hardwood or tile at entry, standard carpet in most rooms, sheet vinyl in kitchen and bath.	Average quality carpet or hardwood in most rooms, sheet vinyl or resilient tile in kitchen.	Minimum carpet or resilient tile throughout.
Interior Features (5% of total cost)	Breakfast bar or nook, formal dining room, one walk-in closet, linen closet utility room or pantry.	Formal dining room ample closet space linen closet and utility closet, extra shelving.	Separate dining area, good closet space, linen closet and small utility closet.	Dining area is in the kitchen, small closet in each bedroom, linen closet.	Dining area is part of kitchen, minimum closet space, minimum shelving.
Bath Detail (4% of total cost)	Good tile shower, 8' simulated marble top.	Tile shower, 6' vanity cabinet and top.	Better vanity cabinet and good wall cabinet.	Good vanity cabinet, good medicine cabinet.	Vanity and one small medicine cabinet.
Kitchen (8% of total cost)	16 LF of better hardwood wall and base cabinets, synthetic stone top, 6 very good built-in appliances.	12 LF of good hardwood wall and base cabinets, tile or acrylic top, 5 good built-in appliances.	8 LF of standard hardwood wall and base cabinets, acrylic top, 4 standard grade built-in appliances.	6 LF of low-cost wall and base cabinets, laminate counter top, 4 standard grade appliances.	5 LF of low-cost. wall & base cabinets, laminate counter top, low cost appliances.
Electrical (10% of total cost)	Ample recessed lighting, task lighting in kitchen and bath, security & computer, networks, good chandelier.	Recessed lighting in most rooms, good task lighting in kitchen & bath, security & computer networks.	Recessed lighting in kitchen and living room, switched receptacles in bedrooms, wired for cable TV.	Low-cost recessed lighting in kitchen and living room, switched receptacles in other rooms, cable TV.	Fluorescent ceiling fixture in kitchen, switched receptacles in other rooms.
Plumbing (12% of total cost)	Four excellent fixtures per bathroom, copper supply and drain lines.	Three good fixtures per bathroom, copper supply and drain lines.	Three standard fixtures per bathroom, copper supply and plastic drain lines.	Three low cost fixtures per bathroom, plastic supply and drain lines.	Three minimum-grade fixtures per bathroom, plastic supply & drains.
Plumbing costs assume 1 bathroom per unit. See page 30 for the costs of additional bathrooms.					
For Masonry Walls	Good textured block, tile or decorative brick.	Colored or detailed block tile or decorative brick.	Colored concrete block, tile or decorative brick.	Colored concrete block or brick.	Concrete block or common brick.
When masonry walls are used in lieu of wood or light steel frame walls, add 9% to the appropriate S.F. cost.					

Note: Use the percent of total cost to help identify the correct quality classification. Exceptional class multi-family residences have architectural details and features uncommon in conventional apartment buildings. Many exceptional class multi-family structures are designed for sale or conversion to condominium ownership.

2 or 3 Units

Estimating Procedure

1. Establish the structure quality class by applying the information on page 19.
2. Multiply the average unit area by the appropriate square foot cost below. The average unit area is found by dividing the building area on all floors by the number of units in the building. The building area should include office and utility rooms, interior hallways and interior stairways.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of balconies, porches, garages, heating and cooling equipment, basements, fireplaces, carports, appliances and plumbing fixtures beyond that listed in the quality classification. See the cost of these items on pages 27 to 31.
5. Costs assume one bathroom per unit. Add the cost of additional bathrooms from page 30.



Multi-Family, Class 2

Multi-Family, Class 4

Average Unit Area in Square Feet

Quality Class	400	450	500	550	600	650	700	750	800	900	1,000
Exceptional	234.99	224.69	219.08	214.10	210.29	206.82	204.22	201.24	199.49	196.06	192.85
1, Best	206.46	197.34	192.45	188.08	184.64	181.73	179.42	176.79	175.28	172.15	169.47
1, & 2	181.06	173.08	168.74	164.87	161.99	159.38	157.31	155.14	153.69	150.90	148.54
2, Good	158.43	151.51	147.68	144.37	141.76	139.41	137.69	135.73	134.49	132.08	130.02
2 & 3	144.88	138.49	135.12	131.95	129.62	127.62	125.90	124.19	123.02	120.91	118.93
3, Hi Average	132.59	126.67	123.56	120.84	118.64	116.74	115.13	113.67	112.54	110.51	108.80
3 & 4	122.41	117.00	114.14	111.47	109.48	107.83	106.42	104.89	103.96	102.08	100.47
4, Lo Average	113.09	108.06	105.36	102.94	101.13	99.51	98.16	96.83	96.00	94.30	92.73
4 & 5	104.43	99.78	97.30	95.09	93.32	91.85	90.72	89.42	88.65	86.99	85.58
5 Minimum	96.36	92.20	89.85	87.80	86.30	84.86	83.70	82.68	81.86	80.27	79.08

Average Unit Area in Square Feet

Quality Class	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,200
Exceptional	190.65	188.59	186.93	185.53	184.33	183.24	182.31	181.48	180.70	180.11	179.56
1, Best	167.33	165.78	164.13	162.97	161.86	160.92	160.11	159.53	158.74	158.18	157.74
1, & 2	146.80	145.30	143.97	142.85	142.05	141.14	140.39	139.84	139.22	138.84	138.37
2, Good	128.41	127.17	126.03	125.07	124.29	123.50	122.92	122.33	121.83	121.37	121.06
2 & 3	117.57	116.21	115.36	114.37	113.68	112.97	112.42	112.01	111.45	111.11	110.74
3, Hi Average	107.52	106.42	105.46	104.59	103.97	103.35	102.81	102.49	101.90	101.60	101.31
3 & 4	99.30	98.18	97.33	96.57	96.04	95.40	95.05	94.49	94.10	93.86	93.54
4, Lo Average	91.69	90.72	89.86	89.19	88.67	88.13	87.65	87.26	86.91	86.63	86.37
4 & 5	84.64	83.79	83.09	82.34	81.90	81.36	80.93	80.66	80.23	80.00	79.76
5 Minimum	78.09	77.37	76.65	76.10	75.57	75.09	74.76	74.37	74.14	73.81	73.65

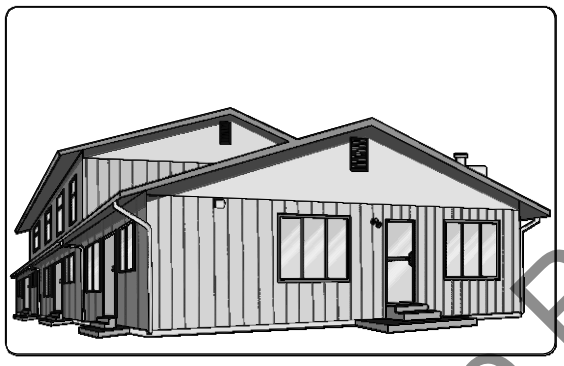
Note: Work outside metropolitan areas may cost 2 to 6% less. Add 2% to the costs for second floor areas and 4% for third floor areas. Add 9% when the exterior walls are masonry.

Multi-Family Residences – Apartments

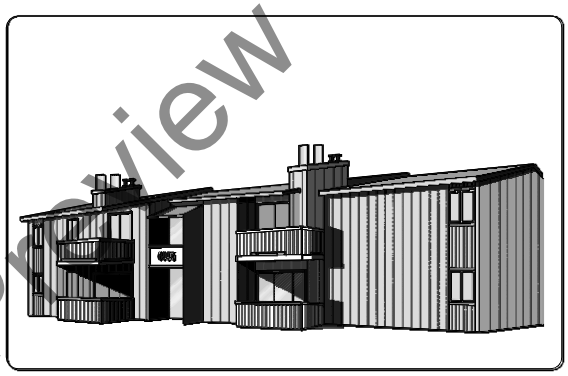
4 to 9 Units

Estimating Procedure

1. Establish the structure quality class by applying the information on page 19.
2. Multiply the average unit area by the appropriate square foot cost below. The average unit area is found by dividing the building area on all floors by the number of units in the building. The building area should include office and utility rooms, interior hallways and interior stairways.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of balconies, porches, garages, heating and cooling equipment, basements, fireplaces, carports, appliances and plumbing fixtures beyond that listed in the quality classification. See the cost of these items on pages 27 to 31.
5. Costs assume one bathroom per unit. Add the cost of additional bathrooms from page 30.



Multi-Family, Class 3 & 4



Multi-Family, Class 3

Average Unit Area in Square Feet

Quality Class	400	450	500	550	600	650	700	750	800	900	1,000
Exceptional	221.30	211.52	206.13	201.78	197.92	194.81	192.49	189.81	188.05	184.43	181.48
1, Best	194.50	185.84	181.08	177.23	173.98	171.16	169.06	166.73	165.21	162.12	159.53
1, & 2	170.46	162.95	158.73	155.46	152.47	150.08	148.30	146.16	144.88	142.17	139.84
2, Good	149.19	142.63	138.99	135.97	133.47	131.35	129.73	127.84	126.67	124.35	122.33
2 & 3	136.50	130.43	127.17	124.41	122.07	120.12	118.70	116.98	115.98	113.70	112.01
3, Hi Average	124.86	119.41	116.26	113.76	111.54	109.87	108.60	106.93	106.12	103.98	102.49
3 & 4	115.36	110.20	107.29	105.01	103.14	101.52	100.20	98.72	97.99	96.11	94.49
4, Lo Average	106.45	101.69	99.25	97.02	95.21	93.67	92.46	91.27	90.47	88.72	87.26
4 & 5	98.28	93.95	91.63	89.58	87.87	86.50	85.52	84.27	83.50	81.93	80.66
5 Minimum	90.77	86.72	84.48	82.74	81.18	79.89	78.98	77.83	77.05	75.61	74.37

Average Unit Area in Square Feet

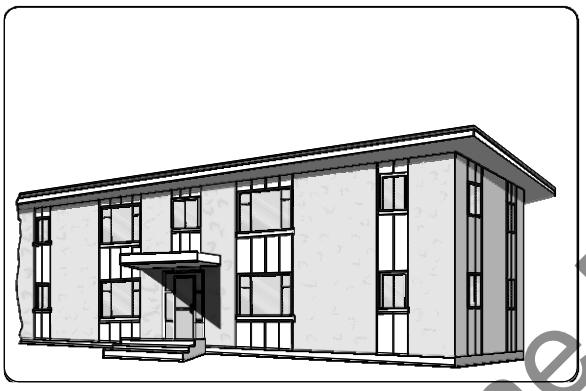
Quality Class	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,200
Exceptional	179.68	177.75	176.15	174.72	173.63	172.45	171.60	170.92	170.06	169.48	169.06
1, Best	157.77	156.18	154.71	153.48	152.57	151.52	150.78	150.11	149.35	148.90	148.54
1, & 2	138.39	136.89	135.73	134.59	133.70	132.84	132.23	131.64	131.00	130.60	130.21
2, Good	121.11	119.84	118.78	117.75	117.00	116.29	115.74	115.18	114.66	114.25	113.94
2 & 3	110.81	109.61	108.60	107.68	107.14	106.45	105.86	105.41	104.82	104.47	104.23
3, Hi Average	101.39	100.20	99.32	98.64	97.99	97.30	96.83	96.36	95.92	95.66	95.32
3 & 4	93.62	92.46	91.71	90.95	90.42	89.85	89.42	89.04	88.65	88.21	88.07
4, Lo Average	86.39	85.52	84.70	84.05	83.50	82.96	82.68	82.25	81.86	81.50	81.29
4 & 5	79.78	78.98	78.24	77.56	77.05	76.63	76.20	75.91	75.50	75.25	75.04
5 Minimum	73.68	72.94	72.24	71.59	71.19	70.78	70.41	70.14	69.77	69.43	69.34

Note: Work outside metropolitan areas may cost 2 to 6% less. Add 2% to the costs for second floor areas and 4% for third floor areas. Add 9% when the exterior walls are masonry.

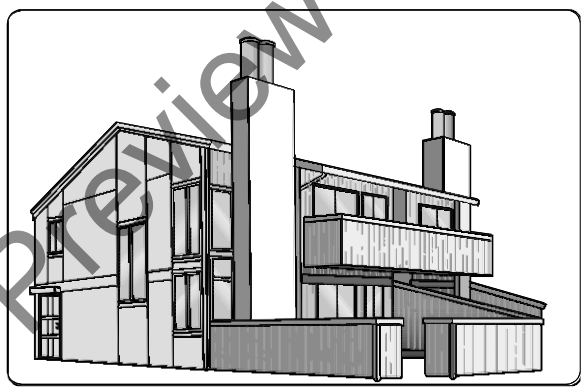
10 or More Units

Estimating Procedure

1. Establish the structure quality class by applying the information on page 19.
2. Multiply the average unit area by the appropriate square foot cost below. The average unit area is found by dividing the building area on all floors by the number of units in the building. The building area should include office and utility rooms, interior hallways and interior stairways.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of balconies, porches, garages, heating and cooling equipment, basements, fireplaces, carports, appliances and plumbing fixtures beyond that listed in the quality classification. See the cost of these items on pages 27 to 31.
5. Costs assume one bathroom per unit. Add the cost of additional bathrooms from page 30.



Multi-Family, Class 4



Multi-Family, Class 3 & 4

Average Unit in Square Feet

Quality Class	400	450	500	550	600	650	700	750	800	900	1,000
Exceptional	209.22	198.91	194.81	190.75	186.93	184.01	181.48	179.24	177.42	174.32	171.79
1, Best	183.69	174.77	171.16	167.52	164.13	161.69	159.53	157.47	155.81	153.21	150.88
1, & 2	161.07	153.28	150.08	146.92	143.97	141.82	139.84	138.00	136.72	134.20	132.35
2, Good	140.98	134.09	131.35	128.51	126.03	124.11	122.33	120.85	119.63	117.52	115.76
2 & 3	128.94	122.68	120.12	117.68	115.36	113.55	112.01	110.55	109.47	107.52	105.89
3, Hi Average	117.96	112.15	109.87	107.60	105.46	103.80	102.49	101.13	100.08	98.28	96.88
3 & 4	108.96	103.70	101.52	99.32	97.33	95.81	94.49	93.32	92.40	90.82	89.50
4, Lo Average	100.55	95.72	93.67	91.71	89.86	88.62	87.26	86.30	85.46	83.80	82.69
4 & 5	92.93	88.44	86.50	84.70	83.09	81.75	80.66	79.56	78.79	77.39	76.27
5 Minimum	85.76	81.60	79.89	78.24	76.65	75.48	74.37	73.53	72.72	71.47	70.42

Average Unit in Square Feet

Quality Class	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,200
Exceptional	169.62	167.94	166.29	165.05	163.74	162.87	162.22	161.40	160.70	159.99	159.66
1, Best	148.99	147.50	146.15	144.88	143.81	143.03	142.51	141.77	141.26	140.54	140.19
1, & 2	130.64	129.32	128.13	127.17	126.13	125.52	124.96	124.36	123.79	123.32	122.88
2, Good	114.35	113.23	112.15	111.20	110.28	109.82	109.29	108.81	108.24	107.83	107.60
2 & 3	104.68	103.59	102.61	101.79	100.83	100.41	100.05	99.51	99.10	98.67	98.41
3, Hi Average	95.72	94.79	93.86	93.07	92.31	91.85	91.53	91.04	90.67	90.27	89.94
3 & 4	88.44	87.47	86.71	85.96	85.19	84.86	84.41	84.12	83.70	83.34	83.16
4, Lo Average	81.60	80.79	80.00	79.35	78.77	78.36	77.95	77.59	77.36	76.94	76.81
4 & 5	75.37	74.70	73.93	73.32	72.70	72.27	72.01	71.73	71.37	71.10	70.86
5 Minimum	69.58	68.86	68.26	67.72	67.12	66.76	66.53	66.19	65.93	65.62	65.48

Note: Work outside metropolitan areas may cost 2 to 6% less. Add 2% to the costs for second floor areas and 4% for third floor areas. Add 9% when the exterior walls are masonry.

Motels

Quality Classification

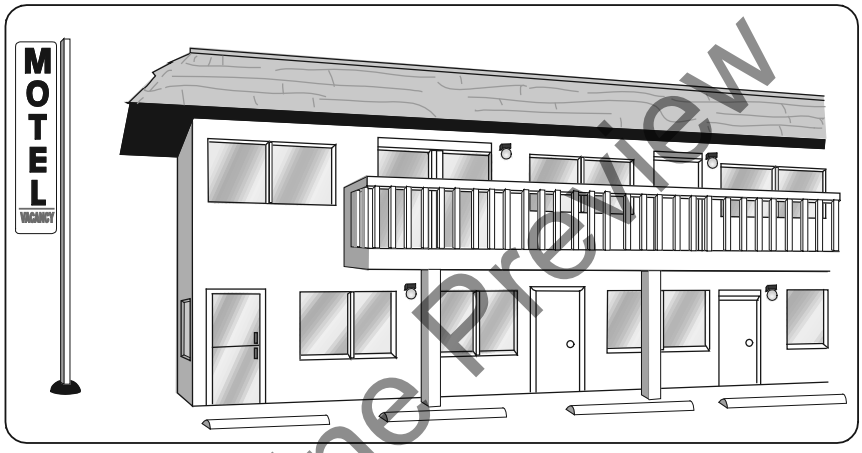
	Class 1 Best Quality	Class 2 Good Quality	Class 3 Average Quality	Class 4 Low Quality
Foundation (4%)	Concrete slab	Concrete slab	Concrete slab	Concrete slab
Foundation costs will vary greatly with substrate, type, and location.				
Framing* (20% of total Cost)	Wood frame.	Wood frame.	Wood frame.	Wood frame.
Windows (2% of total Cost)	Large, good quality.	Average number and quality.	Average number and quality.	Small, few, low cost.
Roofing (8% of total Cost)	Heavy, shake, tile or slate.	Medium shake or good built-up with large rock, inexpensive tile.	Wood or good composition shingle, light shake, or good built-up with rock.	Inexpensive shingles or built-up with rock.
Overhang (2% of total Cost)	36" open or 24" closed.	30" open or small closed.	16" open.	12" to 16" open.
Exterior Walls (10% of total Cost)	Good wood or stucco, masonry veneer on front.	Good wood siding or stucco with some veneer.	Hardboard, wood shingle, plywood or stucco.	Low cost stucco, hardboard or plywood.
Flooring (5% of total Cost)	Good carpet, good sheet vinyl.	Good carpet, sheet vinyl or inlaid resilient.	Average carpet, average resilient tile in bath.	Minimum tile or low cost carpet.
Interior Finish (23% of total cost including finish carpentry, wiring, lighting, etc.)	Gypsum board with heavy texture or plaster with putty coat. Some good sheet wall cover or paneling.	Gypsum board, taped, textured and painted or plaster. Some wall-paper.	Gypsum board taped and textured or colored interior stucco.	Minimum gyp-sum board.
Baths (15% of total Cost)	Vinyl or foil wall cover, ceramic tile over tub with glass shower door, ample mirrors.	Ceramic tile over tub with glass shower door.	Plastic coated hard-board with low cost glass shower door.	Plastic coated hardboard with one small mirror.
Plumbing** (9% of total Cost)	Copper tube, good quality fixtures.	Galvanized pipe, good fixtures.	Average cost fixtures.	Plastic pipe, low cost fixtures.
Special Features (2% of total Cost)	8' sliding glass door, 8' to 10' tile pullman in bath.	8' sliding glass door, good tile or plastic top pullman in bath.	Small tile or plastic pullman in bath.	None.
***For Masonry Walls**	8" textured face reinforced masonry.	8" colored or detailed reinforced masonry.	8" colored block or common brick, reinforced.	8" painted concrete block.
Note: When masonry walls are used in lieu of wood frame walls add 8% to the appropriate cost				
****Add the Following Amounts per Kitchen Unit**				
Kitchens	Good sink, 8' to 10' of good cabinets and drainboard - $3,920	Average sink and 6' to 8' average cabinet and drainboard - $3,640	Low cost sink, and 5' of cabinets and drainboard - $2,610	Minimum sink, cabinets and drainboard - $2,210
Add the cost of built-in kitchen fixtures from the table of costs for built-in appliances on page 29.				

Note: Use the percent of total cost to help identify the correct quality classification.

9 Units or Less

Estimating Procedure

1. Establish the structure quality class by applying the information on page 23.
2. Multiply the average unit area by the appropriate cost below. The average unit area is found by dividing the total building area on all floors (including office and manager's area, utility rooms, interior hallways and stairway area) by the number of units in the building.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of heating and cooling equipment, porches, balconies, exterior stairs, garages, kitchens, built-in kitchen appliances and fireplaces. See pages 23 and 27 to 31.



Motel, Class 3 & 4

Average Unit Area in Square Feet

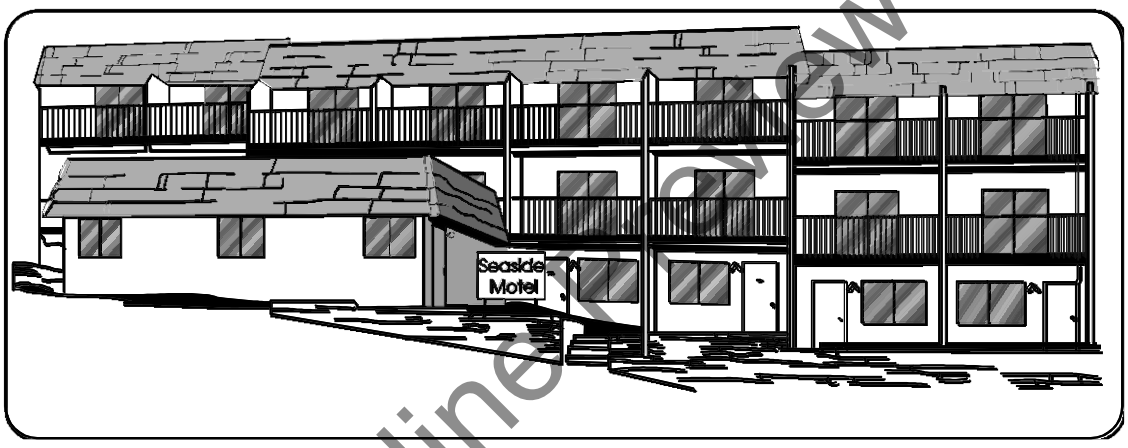
Quality Class	200	225	250	275	300	330	375	425	500	600	720
1, Best	187.47	180.75	175.49	171.03	167.36	163.73	159.36	155.50	151.18	147.05	143.66
1 & 2	172.21	166.03	161.20	157.13	153.78	150.37	146.30	142.80	138.83	135.13	131.93
2, Good	159.81	154.13	149.58	145.84	142.70	139.61	135.82	132.60	128.86	125.36	122.47
2 & 3	146.84	141.65	137.44	133.99	131.14	128.27	124.76	121.81	118.41	115.25	112.59
3, Average	136.28	131.42	127.58	124.35	121.67	118.98	115.81	112.97	109.86	106.90	104.46
3 & 4	125.08	120.62	117.09	114.12	111.69	109.22	106.25	103.76	100.81	98.13	95.82
4, Low	114.34	110.21	106.95	104.33	102.05	99.86	97.13	94.82	92.13	89.64	87.56

Note: Add 2% for work above the first floor. Work outside metropolitan areas may cost 2 to 6% less. Add 8% when the exterior walls are masonry. Deduct 2% for area built on a concrete slab.

Over 24 Units

Estimating Procedure

1. Establish the structure quality class by applying the information on page 23.
2. Multiply the average unit area by the appropriate cost below. The average unit area is found by dividing the total building area on all floors (including office and manager's area, utility rooms, interior hallways and stairway area) by the number of units in the building.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of heating and cooling equipment, porches, balconies, exterior stairs, garages, kitchens, built-in kitchen appliances and fireplaces. See pages 23 and 27 to 31.



Motel, Class 2 & 3

Average Unit Area in Square Feet

Quality Class	200	225	250	275	300	330	375	425	500	600	720
1, Best	175.66	169.39	164.36	160.29	156.79	153.38	149.25	145.71	141.68	137.82	134.68
1 & 2	161.45	155.65	151.01	147.28	144.08	140.92	137.10	133.87	130.14	126.62	123.70
2, Good	149.85	144.57	140.24	136.74	133.84	130.87	127.41	124.27	120.89	117.57	114.90
2 & 3	137.65	132.69	128.79	125.60	122.83	120.17	116.95	114.07	110.96	108.00	105.52
3, Average	127.66	123.08	119.49	116.49	113.95	111.51	108.50	105.92	102.96	100.16	97.89
3 & 4	117.18	112.95	109.59	106.82	104.58	102.34	99.50	97.14	94.48	91.93	89.80
4, Low	107.13	103.27	100.18	97.67	95.57	93.52	90.97	88.80	86.36	84.07	82.07

Note: Add 2% for work above the first floor. Work outside metropolitan areas may cost 2 to 6% less. Add 8% when the exterior walls are masonry. Deduct 2% for area built on a concrete slab.

Covered Porches

Estimate covered porches by applying a fraction of the main building square foot cost.

Porch Description	Suggested Fraction
Ground level floor (usually concrete) without banister, with no ceiling and shed-type roof.	1/4 to 1/3
High (house floor level) floor (concrete or wood) with light banister, no ceiling and shed-type roof.	1/3 to 1/2
Same as above with a finished ceiling and roof like the residence (most typical).	1/2
Same as above but partially enclosed with screen or glass.	1/2 to 2/3
Enclosed lean-to (sleeping porch, etc.) with lighter foundation, wall structure, interior finish or roof than that of house to which it is attached.	1/2 to 3/4
Roofed, enclosed, recessed porch, under the same roof as the main building and with the same type and quality foundation (includes shape costs).	3/4
Roofed, enclosed, recessed porch with the same type roof and foundation as the main building (includes shape costs).	4/4
Good arbor or pergola with floor.	1/4 to 1/3

Uncovered Concrete Decks, cost per square foot, 4" thick concrete

	On Grade	1' High	2' High	3' High	4' High
Less than 100 square feet	$8.89	$12.43	$20.00	$28.11	$40.87
100 to 200 square feet	8.18	11.22	16.22	22.82	30.39
200 to 400 square feet	6.87	8.89	13.91	20.22	26.16
Over 400 square feet	6.67	8.18	12.22	16.23	21.08

Uncovered Wood Decks, cost per square foot, 2" thick deck with typical steps and railing

1' to 4' above ground.	$23.30 to $27.15
Over 4' to 6' above ground	27.05 to 34.90
Over 6' to 9' above ground	28.20 to 36.90
Over 9' to 12' above ground	29.26 to 38.62
Over 12' above ground	30.80 to 40.20

Porch Roofs, cost per square foot based on wood shingle cover

Type	Cost per Square Foot	Alternate Roof Covers	Cost Difference per S.F.
Unceiled shed roof	$9.70 to $11.50	Corrugated aluminum	Deduct $.84 to $1.05
Ceiled shed roof	16.33 to 18.41	Roll asphalt	Deduct .83 to .92
Unceiled gable roof	10.89 to 14.15	Fiberglass shingles	Deduct 1.03 to 1.14
Ceiled gable roof	18.40 to 20.49	Wood shakes	Add 1.13 to 1.75
(See the figures at the right for other roof cover)		Clay or concrete tile	Add 6.53 to 7.96
		Slate	Add 7.24 to 10.01

Residential Basements, cost per square foot, including stairs

Size	Unfinished Basements	Finished Basements
Less than 400 square feet	$26 to $43	$39 to $59
400 - 1,000 square feet	20 to 29	33 to 39
Over 1,000 square feet	17 to 20	30 to 35

These basement costs assume normal soil conditions, 7' headroom, no plumbing, partitions or windows. Unfinished basements have reinforced concrete floors and concrete or concrete block walls, a floor drain, stairway with a landing and handrail, open ceilings and one switched fluorescent fixture. Finished residential basements have a tile ceiling, resilient flooring, wood panel walls and lighting similar to Class 5 residences. Residential basements are common in climates where footing depths must be 4' or more to prevent frost heaving. These figures assume the residence is in an area where minimum footing depth is 4 feet. Where climate doesn't influence footing depth, unfinished basement costs will be 20% to 50% higher.

Additional Costs for Residential Structures

Balconies, Standard Wood Frame, cost per square foot, including foundations

Supported by 4" x 4" posts, 2" wood floor, open on underside, open 2" x 4" railing.	$21.30 to $23.10
Supported by 4" x 4" posts, 2" wood floor, sealed on underside, solid stucco or wood siding on railing.	25.10 to 27.03
Supported by steel columns, lightweight concrete floor, sealed on underside, solid stucco or open grillwork railing	37.90 to 42.20

Heating and Cooling Equipment

Prices include wiring and minimum duct work.
Use the higher figures for smaller residences and in more extreme climates where greater heating and cooling density is required. Cost per square foot of heated or cooled area.

Type	Perimeter Outlets	Overhead Outlets
Central Ducted Air Systems, Single Family		
Forced air heating	$5.65 to $6.29	$4.43 to $5.08
Forced air heating and cooling	6.40 to 7.62	5.99 to 6.45
Gravity heat	4.10 to 5.52	—
Central Ducted Air Systems, Multi-Family		
Forced air heating	4.99 to 5.39	4.69 to 5.38
Forced air heating and cooling	6.78 to 7.46	5.93 to 6.38
Motel Units		
Forced air heating	5.75 to 6.20	5.60 to 6.11
Forced air heating and cooling	6.90 to 7.46	6.68 to 6.91
Circulating hot and cold water system	13.20 to 15.98	13.40 to 15.98

Floor and Wall Furnaces, cost each

Single floor unit	$1,040 to $1,215
Dual floor unit	1,805 to 1,970
Single wall unit	695 to 820
Dual wall unit	1,275 to 1,505
Thermostat control, add	115 to 138

Electric Baseboard Units, cost each

500 watts, 3'	$196 to $232
1,000 watts, 4'	301 to 346
1,500 watts, 6'	332 to 379
2,000 watts, 8'	416 to 484
2,500 watts, 10'	494 to 551
3,000 watts, 12'	600 to 665

Outside Stairways, cost per square foot of horizontal step area

Standard wood frame, wood steps with open risers, open on underside, open 2" x 4" railing, unpainted.	$18.28 to $20.11
Standard wood frame, solid wood risers, sealed on underside, solid stucco or wood siding on railing.	22.01 to 26.00
Precast concrete steps with open risers, steel frame, pipe rail with ornamental grillwork.	47.98 to 53.50

Ductless mini-split heating and cooling unit. Includes pad-mounted compressor-condenser, 8' of insulated copper refrigerant lines, PVC condensate drain, control wiring, PVC wall chase, clamps, brackets, interior wall-mounted evaporator and wireless control.

9,500 BTU (3/4 ton, 110 volt)	$1,050
18,000 BTU (1-1/2 ton, 230 volt)	1,320
24,000 BTU (2 ton, 230 volt)	1,650
42,000 BTU (3-1/2 ton, 230 volt, 5-zone)	5,300

Window Type or Thru-the-Wall Refrigerated Room Coolers, cost each

1/3 ton	$150 to $185
1/2	535 to 665
3/4	270 to 325
1	330 to 390
1-1/2	470 to 560
2	800 to 960

Ton = 12,000 Btu

Electric Wall Heaters, cost each

500 watts	$140 to $169
1,000	142 to 172
2,000	164 to 197
3,000	185 to 222
Add for circulating fan	79 to 115
Add for thermostat	52 to 115

Additional Costs for Residential Structures

Appliances. Add these costs only when the appliance is not included in the quality class. Includes installation.

Built-in single wall oven with broiler	$578	to	$697	Range hood and fan	$173	to	$409
Built-in double wall oven with microwave	1,045	to	1,967	Franklin or Buck stove			
Drop-in range with single oven, economy	462	to	697	Steel, cast iron front	1,385	to	2,090
Drop-in range with single oven, excellent	1,156	to	2,163	Steel, cast iron front, glass door	2,091	to	2,890
Range top, four elements				All cast iron, glass panel door	3,595	to	5,212
Residential grade, without grill	520	to	979	Under counter 5 CF refrigerator	641	to	929
Residential grade, with grill	860	to	1,452	Central vacuum, 3 to 5 outlets	1,970	to	3,940
Commercial grade	3,945	to	6,600	Dishwasher	315	to	1,160
Hot water circulator	641	to	693	Garbage disposal	210	to	490
Instant hot water dispenser	525	to	742	Trash compactor	397	to	664

Fireplaces, cost each, including reinforced foundation, flue, cap, gas line and valve.

	1 Story	2 Story
Freestanding wood burning heat circulating prefab metal fireplace with interior flue, base and cap	$2,045	$2,500
36" wide zero-clearance enclosed metal firebox, brick face, wood mantel	2,390	2,730
48" wide zero-clearance enclosed metal firebox, raised hearth, brick face and mantel	3,290	3,740
Masonry, 5' base, common brick or block on interior face, wood or brick mantle	5,230	5,890
Masonry, 6' base, used brick or natural stone on interior face, raised hearth	10,400	12,350
Masonry, 8' base, used brick or natural stone on interior face, raised hearth	12,500	18,120

Residential Garages and Carports

Attached and detached garages for single family dwellings usually fall in the same quality class as the main structure. Costs are per SF of floor based on wood or light steel construction. Add 8% if exterior walls are masonry. Attached garages assume a common roof and a 20 foot wall in common with the main structure. Multiply the square foot cost below by the correct location factor on page 7 or 8 to find the square foot cost for any garage. Costs include interior finish and one light fixture per 300 SF of floor. Deduct 10% to 18% if interior walls are unfinished. Where dwelling and exterior garage walls are in vertical alignment with second floor walls, the garage cost per SF will be about 2/3 of the main dwelling cost per SF if finished and 1/2 of the main dwelling cost if unfinished. Carports with wood or steel posts, an asphalt floor, and built-up or metal roof will cost $15.80 to $18.30 per SF.

Square Foot Area for Attached Garages for Single Family Dwellings

Quality Class	220	260	280	320	360	400	440	480	540	600	720
1, Luxury	158.71	151.21	148.03	143.38	137.98	134.56	130.54	127.32	124.17	121.07	118.06
1, & 2	137.67	131.30	128.67	124.42	120.16	117.15	113.68	110.86	108.09	105.42	102.78
2, Semi-Luxury	103.49	98.83	96.95	93.79	90.58	88.33	85.70	83.57	81.51	79.46	77.48
2 & 3	83.72	78.42	77.21	76.19	73.56	71.75	69.60	67.90	66.20	64.55	62.95
3, Best Std.	69.59	66.55	65.34	63.26	61.30	59.77	58.00	56.53	55.15	53.76	52.43
3 & 4	58.93	56.54	55.58	53.89	51.94	50.65	49.14	47.92	46.72	45.57	44.44
4, Good Std.	52.17	49.77	48.88	47.56	45.98	44.83	43.49	42.41	41.35	40.33	39.34
4 & 5	49.22	46.58	45.52	44.02	42.45	41.40	40.14	39.15	38.17	37.24	36.31
5 Avg. Std.	46.10	43.27	42.25	40.64	38.90	37.93	36.80	35.89	35.01	34.11	33.28
5 & 6	40.91	38.63	37.76	36.30	34.96	34.07	33.05	32.24	31.45	30.66	29.89
6, Min. Std.	35.84	33.98	33.44	32.34	31.11	30.32	29.44	28.69	27.96	27.30	26.59

Square Foot Area for Detached Garages for Single Family Dwellings

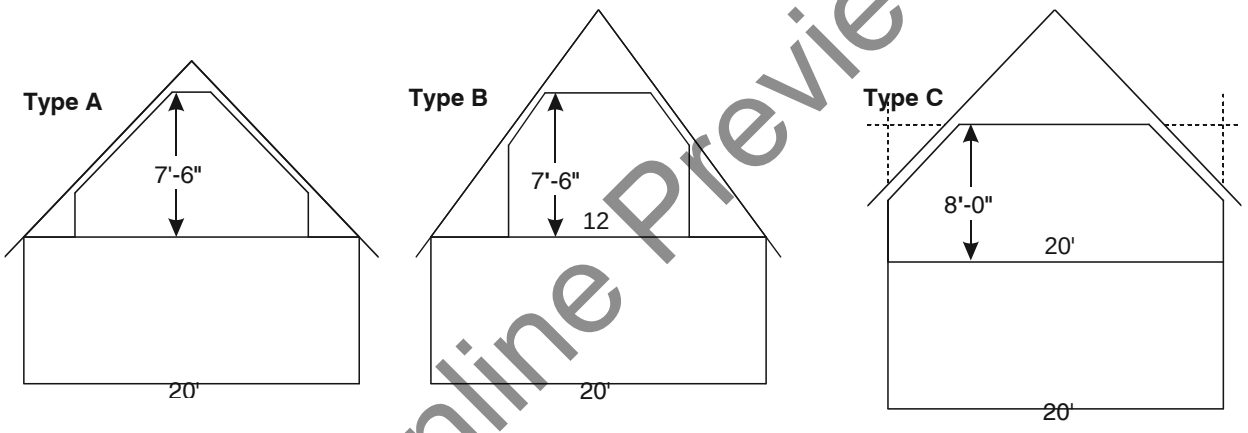
Quality Class	220	260	280	320	360	400	440	480	540	600	720
1, Luxury	180.52	166.83	161.86	153.22	150.19	145.44	139.10	135.65	132.28	129.00	125.79
1, & 2	155.53	144.21	139.60	132.46	130.06	125.93	120.45	117.46	114.54	111.68	108.91
2, Semi-Luxury	115.93	107.79	104.61	99.27	97.56	94.47	90.33	88.11	85.92	83.78	81.69
2 & 3	93.72	87.06	84.41	80.16	78.87	76.34	73.03	71.22	69.43	67.72	66.04
3, Best Std.	77.59	72.05	69.94	66.51	65.43	63.36	60.58	59.09	57.61	56.20	54.80
3 & 4	68.73	63.97	62.05	59.07	58.20	56.31	53.88	52.55	51.23	49.96	48.72
4, Good Std.	60.62	56.45	54.77	52.07	51.29	49.66	47.50	46.31	45.18	44.05	42.95
4 & 5	56.00	52.13	50.61	47.68	47.48	45.98	43.96	42.87	41.81	40.76	39.75
5 Avg. Std.	52.92	48.45	46.72	44.05	43.10	41.74	39.91	38.91	37.95	37.00	36.09
5 & 6	44.53	41.13	39.71	37.66	37.03	35.85	34.28	33.43	32.60	31.80	30.99
6, Min. Std.	38.79	35.83	34.81	33.03	32.58	31.55	30.17	29.44	28.68	27.95	27.30

Additional Costs for Residential Structures

Costs for Multi-Family Residential Bathrooms beyond 1 per unit

	Class 1 Best Quality	Class 2 Good Quality	Class 3 High Average	Class 4 Low Average	Class 5 Minimum Quality
2 or 3 units					
2 fixture bath	$8,525	$6,861	$5,803	$4,835	$4,092
3 fixture bath	12,375	10,550	8,752	7,533	6,031
4 fixture bath	15,746	13,610	12,151	9,955	8,523
4 to 9 units					
2 fixture bath	7,868	6,523	5,452	4,556	3,756
3 fixture bath	11,134	9,671	8,324	6,920	5,568
4 fixture bath	15,408	13,046	10,785	8,987	7,424
10 or more units					
2 fixture bath	7,085	6,031	5,119	3,981	3,284
3 fixture bath	10,911	9,111	7,650	6,029	4,950
4 fixture bath	14,396	12,375	9,897	8,099	6,186

Half Story Areas



Use a fraction of the basic square foot cost for figuring the reduced headroom floor area. Type "C" includes typical dormers.

Type	Same Finish As Main Area	Lesser Quality Finish
A	1/3	1/4
B	1/2	1/3
C	2/3	1/2

Elevators, per shaft cost for car and machinery

Hydraulic based on two stops

Capacity	100 F.P.M.	200 F.P.M.
2,000 lbs.	$46,200	$76,200
2,500 lbs.	49,200	78,500
3,000 lbs.	51,600	85,300
3,500 lbs.	—	89,800
4,000 lbs.	—	93,400

Add for deluxe car, $9,500. Add for each additional stop over 2: $3,640, baked enamel doors $9,790, stainless steel doors $10,300.

Electric based on six stops

Capacity	200 F.P.M.	250 F.P.M.	300 F.P.M.
2,000 lbs.	$115,800	$122,400	$127,100
2,500 lbs.	122,500	129,400	137,400
3,000 lbs.	131,400	143,800	148,700
3,500 lbs.	143,900	153,000	160,700
4,000 lbs.	152,800	165,700	173,500

Add $8,990 for a deluxe car. Add $9,800 for each additional stop over 6.

Homes Raised on Piles or Columns

	Add per SF of floor
Concrete columns on driven piles	$24.70 plus $1.03 per foot over 5' high
Concrete columns on grade beams	$11.30 plus $0.77 per foot over 5' high
Braced timber piles or poured concrete columns	$3.60 plus $1.03 per foot over 5' high

Multi-Family and Motel Garages Cost Per Square Foot

Garages built at ground level under a multi-family or motel unit. The costs below include the following components:

1. A reinforced concrete floor in all areas.
2. Exterior walls, on one long side and two short sides, made up of a wood frame and good quality stucco, wood siding or masonry veneer.
3. A finished ceiling in all areas.
4. The difference between the cost of a standard wood frame floor structure at second floor level and one at ground level.
5. An inexpensive light fixture for each 600 square feet.

Where no exterior walls enclose the two short sides, use $^{2}/_{3}$ of the square foot cost.

Garages built as separate structures for multi-family or motel units. The costs below include the following components:

1. Foundations.
2. A reinforced concrete floor in all areas.
3. Exterior walls on one long side and two short sides, made up of a wood frame and good quality stucco, wood siding or masonry veneer.
4. Steel support columns supporting the roof.
5. A wood frame roof structure with composition tar and gravel, wood shingle or light shake cover. No interior ceiling finish.
6. An inexpensive light fixture for each 600 square feet.

Use the location modifiers on page 7 or 8 to adjust garage costs to any area.

Basement Garages

Costs listed below are per square foot of floor, including the horizontal area of stairs and the approach ramp. These costs assume a single-level garage is built on one level, approximately 5 feet below grade, directly below 2 to 4 story multi-family structure with perimeter walls in vertical alignment. These costs include:

1. Excavation to 5' below ground line.
2. Full wall enclosure.
3. Typical storage facilities.
4. Minimum lighting.
5. Concrete floors.

Use the location modifiers on page 7 or 8 to adjust garage costs to the site.

Ground Level Garages

Area	400	800	1,200	2,000	3,000	5,000	10,000	20,000
Cost	37.90	33.91	30.29	26.61	24.91	23.89	23.22	22.13

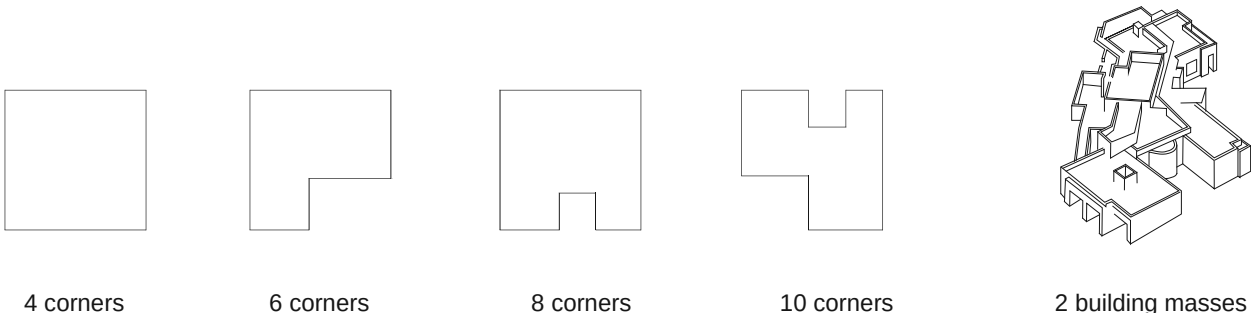
Separate Structure Garages

Area	400	800	1,200	2,000	3,000	5,000	10,000	20,000
Cost	43.46	38.69	35.51	33.70	32.26	30.95	29.64	28.99

Basement Garages

Type	5,000	7,500	10,000	15,000	20,000	30,000	40,000	60,000
Reinforced concrete exterior walls and columns. Flat concrete roof slab.	57.87	52.93	50.65	49.93	48.45	47.88	47.20	46.68
Concrete block exterior walls, reinforced concrete columns. Flat concrete roof slab.	57.52	53.90	50.38	49.00	47.97	47.32	46.64	45.09
Concrete block exterior walls, steel posts and beams, light concrete/metal roof fireproofed with spray plaster.	53.95	49.34	46.98	40.70	38.92	43.66	42.29	41.64
Concrete block exterior walls, wood posts and beams, light concrete/metal roof fireproofed with spray plaster.	48.15	45.74	42.90	39.95	38.69	38.16	37.56	36.87
Add for each security gate	3.51	2.55	2.15	1.60	1.35	1.09	0.95	0.83

Cabins and Recreational Dwellings



Example of Dwelling Shapes

Cabins and recreational dwellings are designed for single family occupancy, usually on an intermittent basis. These structures are characterized by a more rustic interior and exterior finish and often have construction details which would not meet building requirements in metropolitan areas. Classify these structures into either "conventional type" or "A-frame" construction. Conventional dwellings have an exterior wall which is approximately 8 feet high on all sides. A-frame cabins have a sloping roof which reduces the horizontal area 8 feet above the first floor to between 50% and 75% of the first floor area.

Conventional recreational dwellings vary widely in quality and the quality of construction is the most significant factor influencing cost. Conventional recreational dwellings are listed in six quality classes. Class 1 is the most expensive commonly encountered and Class 6 is the minimum commonly encountered. Nearly all conventional recreational dwellings built from stock plans will fall into Class 3, 4, 5, or 6. For convenience, these classes are labeled *Best Standard, Good Standard, Average Standard* or *Minimum Standard*. Class 1 residences are labeled *Luxury*. Class 2 residences are labeled *Semi-Luxury*. Class 1 and 2 residences are designed by professional architects, usually to meet preferences of the first owner.

The shape of the outside perimeter also has a significant influence on cost: The more complex the shape, the more expensive the structure per square foot of floor. The shape classification of multiple story or split-level conventional recreational dwellings should be based on the outline formed by the outermost exterior walls, including the garage area, regardless of the story level. Most conventional recreational dwellings fall into Classes 3, 4, 5 or 6 and have 4, 6, 8 or 10 corners, as illustrated above. Small insets that do not require a change in the roof line can be ignored when evaluating the outside perimeter.

Class 1 and 2 *(Luxury and Semi-Luxury)* conventional recreational dwellings have more than ten corners and are best evaluated by counting the "building masses." A building mass is a group of contiguous rooms on one or more levels with access at varying angles from a common point or hallway. The illustration at the right above represents a conventional recreational dwelling with two building masses. Most Class 1 and Class 2 conventional recreational dwellings have from one to four building masses, ignoring any attached garage. For convenience, cost tables for Class 1 and 2 conventional recreational dwellings with one, two, three or four building masses have been appended to cost tables for Class 3, 4, 5 and 6 conventional recreational dwellings with 4, 6, 8 and 10 building corners.

Conventional recreational dwellings which have features of two or more quality classes can be placed between two of the six labeled classes. The tables have five half-classes (1 & 2, 2 & 3, etc.) which can be applied to conventional recreational dwellings with some characteristics of two or more quality classes. If a portion of a conventional recreational dwelling differs significantly in quality from other portions, evaluate the square footage of each portion separately.

Cabins and recreational dwellings are often built under difficult working conditions and in remote sites. Individual judgments may be necessary in evaluating the cost impact of the dwelling location. The costs assume construction by skilled professional craftsmen. Where non-professional labor or second quality materials are used, use the next lower quality classification that might otherwise apply. If the structure is assembled from prefabricated components, use costs for the next lower half class.

Quality Classification

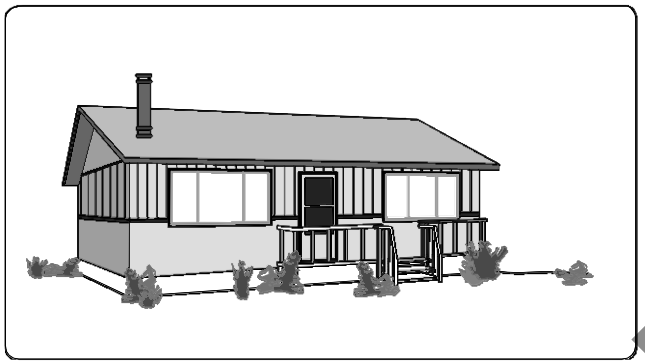
	Class 1 Luxury	Class 2 Semi-Luxury	Class 3 Best Std.	Class 4 Good Std.	Class 5 Average Std.	Class 6 Minimum Std.
Foundation (8% of total cost)	Reinforced concrete on a sloping site.	Reinforced concrete.	Reinforced concrete.	Reinforced concrete or concrete block.	Reinforced concrete or concrete block.	Wood piers, light concrete or block
Floor Structure (11% of total cost)	Engineered wood or steel, complex plan, elevation changes.	Engineered wood or steel trusses, good floor insulation.	Engineered wood or steel trusses, T&G sub-floor, good floor insulation.	Good wood frame with OSB sub-floor, some floor insulation.	Standard wood frame with OSB sub-floor, some floor insulation.	2" floor joists 16" on center with OSB sub-floor.
Wall Framing and Exterior Finish (14% of total cost)	Wood or steel, irregular walls, wood siding, stone, veneer, top-grade doors and windows.	Wood or steel, irregular walls, wood siding, stone veneer, better doors and windows.	Wood or steel, several wall offsets, plywood or lap siding, good grade doors and windows.	Wood or steel, shingle or plywood siding, some trim or veneer, average doors and windows.	Wood or steel, wood panel siding few or no offsets, commodity grade doors and windows.	Wood or steel, panel hardboard siding, minimum grade doors and windows.
Roof (13% of total cost)	Complex, heavy tile or metal cover, highly detailed.	Multi-pitch, shake, metal or good tile surface.	Dual-pitch, wood single or tile surface, gable over entrances.	Wood trusses, wood or good fiberglass shingle surface.	Simple wood frame, fiberglass shingle surface.	Wood frame, fiberglass shingle or roll roofing cover.
Floor Finish (5% of total cost)	Stone or masonry tile entry, inlaid hardwood or best carpet throughout.	Masonry entry, good hardwood or carpet in most rooms, good sheet vinyl elsewhere.	Hardwood or tile entry, carpet in most rooms sheet vinyl in kitchen and bathrooms.	Good sheet vinyl or average carpet in most areas, some hardwood or tile.	Sheet vinyl or tile on most areas, carpet in living room.	Composition tile or minimum grade sheet vinyl.
Interior Wall and Ceiling Finish (8% of total cost)	Top-grade paneling or wallboard with artistic finish, many offsets and wall openings, decorative details in most rooms.	Good wood paneling or textured wallboard with decorative details in most rooms, many wall openings, several racks and shelves.	Good hardwood veneer paneling or gypsum wallboard, some irregular walls, decorative details in living room, entry and kitchen.	1/2" gypsum wallboard with smooth finish, plywood paneling. at entry and living room, some decorative details.	1/2" gypsum wallboard with smooth finish, most walls are rectangular, doors and windows are the only openings.	Taped 1/2" gypsum wallboard, smooth or orange peel finish. Nearly all walls are regular, few decorative details.
Interior Features (5% of total cost)	Exposed beams or decorative details, 10' to 14' ceiling in great room, many sky widows, built-in shelving.	Great room has exposed beams, most rooms have windows on two sides, several framed openings.	Cathedral ceiling at entry or in master bedroom, floor level changes, several wall openings or pass-throughs.	Cathedral ceiling in master bedroom, sliding glass door, decorative wood molding and trim.	Rustic exposed ceiling beams, sliding closet doors, standard grade wood molding and trim.	Minimum grade molding and trim.
Bath Detail (4% of total cost)	At least 1 large tile shower, good tile counter in master bath.	Tile in 1 bathroom, glass block or good window in each bath, good vanity cabinet.	Tile or fiberglass shower, at least one built-in bathtub, good window in each bath.	Good plastic tub and shower in at least one bathroom, one small window in each bath.	Average plastic tub and shower in at least one bathroom, small vanity cabinet.	Minimum plastic tub and shower in one bathroom, minimum vanity.
Kitchen Detail (8% of total cost)	Over 20 LF of good custom wall & base cabinets, synthetic stone counter top, island work area.	15 to 18 LF of good custom base and wall cabinets, acrylic or tile counter top, desk with book shelf above.	12 to 15 LF of good stock wall and base cabinets, tile or acrylic counter top, desk and shelf or breakfast nook.	10 to 12 LF of stock standard grade wall and base cabinets, low-cost tile or laminated plastic counter top.	8 to 10 LF of stock standard grade wall and base cabinets, laminated plastic or resin coated hardboard top.	Less than 8 LF of low-cost wall and base cabinets, resin-coated hardboard counter top.
Plumbing (11% of total cost)	12 good fixtures, 2 water heaters, laundry room, copper piping.	10 good fixtures large water heater, laundry area, copper piping.	9 average grade fixtures, copper supply and plastic drain piping.	8 standard grade, fixtures, plastic supply and plastic drain lines.	7 low-cost fixtures, plastic supply and plastic drain lines.	6 or less minimum grade fixtures, plastic supply and drain lines.
Special Features (4% of total cost)	10 deluxe built-in appliances, good weather-protection throughout.	7 good built-in appliances, good wall and ceiling insulation.	6 good built-in appliances, good wall and ceiling, insulation.	5 average built-in appliances, adequate wall and ceiling insulation.	4 standard grade kitchen appliances, adequate ceiling insulation.	3 minimum grade built-in kitchen appliances, limited insulation.
Electrical System (9% of total cost)	Ample area and track lighting in most rooms, task light in bathrooms.	Good area and track lighting, simple light fixture in each bathroom.	Good light fixtures in kitchen and baths, limited fixtures in other rooms.	Good light fixture in most rooms, switch-operated outlet in bedrooms.	Simple light fixture in most rooms, switch-operated plugs in bedrooms.	5 or less lighting fixtures, switch-operated plug outlet in most rooms.

Note: Use the percent of total cost to help identify the correct quality classification.

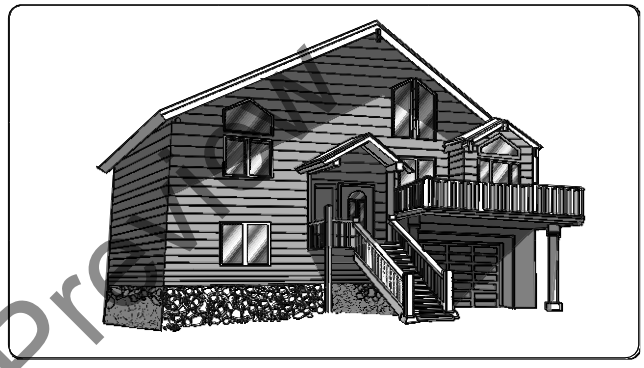
4 Corners (Classes 3, 4, 5, and 6) or One Building Mass (Classes 1 and 2 Only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 33.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.



Conventional Recreational Dwelling, Class 5



Conventional Recreational Dwelling, Class 3

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Luxury	—	—	—	—	418.89	400.70	385.51	373.41	363.06	354.09	345.99
1, & 2	—	—	—	388.15	368.16	352.23	338.84	328.37	319.02	311.42	304.22
2, Semi-Luxury	—	—	364.24	340.68	323.05	309.12	297.36	288.33	280.03	273.31	266.90
2 & 3	—	342.05	316.12	295.62	280.20	268.23	257.91	250.35	242.82	237.01	231.65
3, Best Std.	285.72	256.28	236.88	221.52	210.05	200.95	193.26	187.53	182.04	177.62	173.58
3 & 4	261.12	234.24	216.38	202.36	191.95	183.68	176.76	171.37	166.44	162.37	158.65
4, Good Std.	238.63	214.02	197.86	184.91	175.49	167.84	161.39	156.62	152.02	148.48	145.01
4 & 5	220.22	197.43	182.50	170.72	161.86	154.92	148.91	144.52	140.16	136.89	133.82
5 Avg. Std.	203.07	182.12	168.44	157.41	149.32	142.84	137.38	133.23	129.44	126.35	123.37
5 & 6	187.34	168.09	155.30	145.22	137.70	131.78	126.76	122.88	119.45	116.42	113.84
6, Min. Std.	172.75	155.01	143.34	133.92	127.02	121.65	116.93	113.47	110.04	107.52	105.04

Square Foot Area

Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Luxury	340.88	333.97	329.09	324.32	315.91	308.35	303.20	297.53	294.10	289.24	286.45
1, & 2	298.19	293.69	289.26	285.12	277.78	270.91	266.61	261.50	258.64	254.39	251.75
2, Semi-Luxury	262.77	257.86	253.87	250.27	243.89	237.65	234.05	229.56	226.95	223.29	220.95
2 & 3	227.81	223.73	220.28	217.08	211.49	206.22	202.98	199.18	196.93	193.67	191.67
3, Best Std.	170.83	167.57	165.03	162.71	158.55	154.57	152.23	149.16	147.55	145.18	143.56
3 & 4	155.99	153.18	150.86	148.69	144.77	141.21	139.00	136.44	134.83	132.60	131.30
4, Good Std.	142.58	140.04	137.79	135.92	132.36	128.95	127.06	124.70	123.34	121.21	119.95
4 & 5	131.52	129.09	127.31	125.28	122.01	119.02	117.28	114.96	113.77	111.81	—
5 Avg. Std.	121.36	119.16	117.30	115.67	112.57	109.89	108.23	106.08	104.93	—	—
5 & 6	111.97	109.93	108.24	106.77	103.96	101.36	99.80	97.81	—	—	—
6, Min. Std.	103.34	101.40	99.86	98.40	95.83	93.49	91.97	—	—	—	—

Note: Add 4% to the square foot cost for floors above the second floor level.

6 Corners (Classes 3, 4, 5, and 6) or Two Building Masses (Classes 1 and 2 Only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 33.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.

Conventional Recreational Dwelling, Class 4 & 5

Conventional Recreational Dwelling, Class 3

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Luxury	—	—	—	—	428.09	409.65	394.13	382.73	372.09	363.32	355.42
1, & 2	—	—	—	396.17	376.46	360.25	346.53	336.57	327.05	319.29	312.25
2, Semi-Luxury	—	—	371.24	347.76	330.43	316.20	304.15	295.39	287.02	280.13	274.06
2 & 3	—	348.97	322.18	301.81	286.67	274.33	263.95	256.28	248.95	243.00	237.65
3, Best Std.	290.79	261.57	241.44	226.25	214.79	205.56	197.72	191.99	186.68	182.10	178.18
3 & 4	265.72	238.99	220.73	206.73	196.31	187.98	180.80	175.38	170.48	166.45	162.89
4, Good Std.	242.78	218.45	201.78	188.98	179.39	171.70	165.15	160.22	155.90	152.20	148.84
4 & 5	224.00	201.49	186.00	174.37	165.62	158.40	152.37	147.98	143.79	140.38	137.29
5 Avg. Std.	206.58	185.88	171.58	160.72	152.65	146.10	140.53	136.50	132.60	129.50	126.63
5 & 6	190.60	171.50	158.29	148.32	140.90	134.77	129.67	125.98	122.37	119.47	116.90
6, Min. Std.	175.93	158.16	146.05	136.83	130.00	124.42	119.67	116.16	112.88	110.17	107.78

Square Foot Area

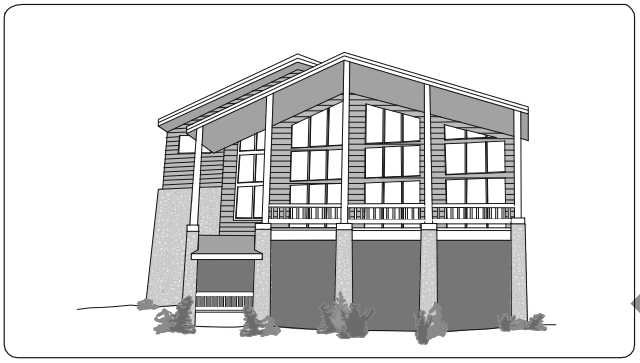
Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Luxury	349.47	342.87	338.23	333.40	324.98	316.85	312.43	306.37	303.07	298.40	295.32
1, & 2	307.21	301.52	297.30	293.03	285.54	278.57	274.57	269.45	266.57	262.25	259.39
2, Semi-Luxury	269.55	264.78	260.93	257.26	250.70	244.53	240.90	236.54	234.05	230.25	227.61
2 & 3	233.75	229.88	226.41	223.15	217.39	212.13	208.95	205.19	202.98	199.71	197.34
3, Best Std.	175.26	172.23	169.75	167.32	162.90	158.94	156.58	153.70	152.23	149.68	147.87
3 & 4	160.15	157.32	155.08	152.86	148.91	145.22	143.17	140.54	139.00	136.83	135.16
4, Good Std.	146.36	143.85	141.80	139.75	136.11	132.72	130.81	128.43	127.06	125.12	123.53
4 & 5	135.08	132.60	130.81	128.92	125.58	122.41	120.63	118.55	117.28	115.40	—
5 Avg. Std.	124.53	122.37	120.63	118.97	115.73	113.02	111.32	109.32	108.23	—	—
5 & 6	114.95	112.88	111.32	109.73	106.84	104.18	102.66	100.88	—	—	—
6, Min. Std.	106.04	104.08	102.66	101.23	98.52	96.16	94.76	—	—	—	—

Note: Add 4% to the square foot cost for floors above the second floor level.

8 Corners (Classes 3, 4, 5, and 6) or Three Building Masses (Classes 1 and 2 only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 33.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.



Conventional Recreational Dwelling, Class 3

Conventional Recreational Dwelling, Class 1 & 2

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Luxury	—	—	—	—	439.38	418.60	403.33	391.90	380.79	372.52	363.90
1, & 2	—	—	—	404.47	386.16	368.16	354.51	344.55	334.76	327.53	319.93
2, Semi-Luxury	—	—	378.88	354.92	338.84	323.16	311.21	302.34	293.95	287.32	280.79
2 & 3	—	355.43	328.67	307.93	293.97	280.39	270.02	262.18	255.07	249.29	243.59
3, Best Std.	295.42	266.31	246.34	230.67	220.30	210.14	202.36	196.48	191.17	186.88	182.54
3 & 4	270.11	243.54	225.09	210.96	201.41	192.03	185.02	179.63	174.66	170.72	166.87
4, Good Std.	246.80	222.52	205.81	192.71	184.06	175.54	169.04	164.11	159.62	155.94	152.50
4 & 5	227.73	205.21	189.84	177.75	169.78	161.92	155.91	151.47	147.37	143.92	140.80
5 Avg. Std.	210.08	189.32	175.08	164.05	156.60	149.34	143.85	139.75	135.92	132.72	129.73
5 & 6	193.76	174.66	161.47	151.29	144.52	137.79	132.64	128.92	125.28	122.42	119.80
6, Min. Std.	178.70	161.13	148.96	139.57	133.23	127.06	122.41	118.97	115.67	113.02	110.54

Square Foot Area

Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Luxury	358.40	351.54	346.31	342.83	333.40	326.25	320.70	315.62	311.94	306.79	303.91
1, & 2	315.00	309.12	304.55	301.37	293.08	286.55	281.98	277.43	276.22	269.67	267.22
2, Semi-Luxury	276.55	271.41	267.43	264.39	257.36	251.40	247.50	243.33	240.51	236.70	234.55
2 & 3	239.79	235.39	231.96	229.34	223.23	217.97	214.76	211.15	208.62	205.36	203.50
3, Best Std.	179.70	176.33	173.81	171.87	167.36	163.35	160.95	158.24	156.41	153.97	152.47
3 & 4	164.33	161.22	158.74	157.08	153.07	149.34	147.07	144.68	142.88	140.79	139.43
4, Good Std.	150.15	147.37	145.21	143.56	139.85	136.50	134.41	132.22	130.64	128.45	127.41
4 & 5	138.42	135.92	133.89	132.64	128.94	125.98	124.05	121.94	120.52	118.59	—
5 Avg. Std.	127.71	125.30	123.53	122.16	118.98	116.16	114.50	112.48	111.16	—	—
5 & 6	117.78	115.69	114.09	112.57	109.77	107.09	105.56	103.74	—	—	—
6, Min. Std.	108.64	106.77	105.11	103.96	101.35	98.90	97.38	—	—	—	—

Note: Add 4% to the square foot cost for floors above the second floor level.

10 Corners (Classes 3, 4, 5, and 6) or Four Building Masses (Classes 1 and 2 only)

Estimating Procedure

1. Establish the structure quality class by applying the information on page 33.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.

Conventional Recreational Dwelling, Class 2 & 3

Conventional Recreational Dwelling, Class 1

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Luxury	—	—	—	—	446.96	428.09	412.99	401.10	390.72	381.88	373.41
1, & 2	—	—	—	412.76	392.81	376.46	363.01	352.61	343.39	336.26	328.25
2, Semi-Luxury	—	—	386.16	362.30	344.64	330.43	318.59	309.47	301.29	294.40	288.09
2 & 3	—	361.74	335.13	314.35	298.96	286.67	276.28	268.42	261.25	255.29	249.93
3, Best Std.	300.65	271.15	251.10	235.56	224.10	214.79	207.01	201.22	195.82	191.29	187.19
3 & 4	274.77	247.91	229.55	215.31	204.74	196.31	189.32	183.79	178.97	175.04	171.09
4, Good Std.	251.02	226.46	209.75	196.82	187.13	179.39	173.08	168.09	163.60	159.84	156.44
4 & 5	231.67	208.99	193.53	181.51	172.63	165.62	159.53	155.01	150.87	147.48	144.29
5 Avg. Std.	213.80	192.71	178.51	167.43	159.31	152.65	147.17	143.09	139.20	135.97	133.10
5 & 6	197.19	177.75	164.65	154.44	146.95	140.90	135.88	131.89	128.41	125.55	122.75
6, Min. Std.	181.92	164.05	151.94	142.51	135.53	130.00	125.23	121.80	118.55	115.73	113.33

Square Foot Area

Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Luxury	368.24	361.49	355.79	350.97	343.12	334.71	330.29	324.15	320.78	313.90	312.17
1, & 2	323.81	317.78	312.81	308.64	301.66	294.14	290.39	285.14	282.16	276.03	274.68
2, Semi-Luxury	283.96	278.92	274.57	271.00	264.66	258.12	254.75	250.30	247.57	242.27	241.22
2 & 3	246.27	241.84	238.18	235.22	229.51	223.96	221.01	217.36	214.87	210.19	209.36
3, Best Std.	184.67	181.33	178.51	176.26	171.99	167.95	165.62	162.80	161.13	157.43	156.79
3 & 4	168.72	165.75	163.03	161.19	157.28	153.52	151.33	148.69	147.17	144.00	143.35
4, Good Std.	154.14	151.47	149.05	147.22	143.67	140.16	138.35	135.94	134.52	131.52	131.06
4 & 5	142.25	139.75	137.53	135.88	132.60	129.33	127.54	125.55	124.07	121.36	—
5 Avg. Std.	131.18	128.92	126.85	125.23	122.34	119.33	117.72	115.69	114.52	—	—
5 & 6	121.06	118.97	117.01	115.66	112.80	110.03	108.63	106.82	—	—	—
6, Min. Std.	111.68	109.73	107.88	106.67	104.02	101.41	100.16	—	—	—	—

Note: Add 4% to the square foot cost for floors above the second floor level.

Quality Classification

	Class 1 Best Quality	Class 2 Good Quality	Class 3 Average Quality	Class 4 Low Quality
Framing (10% of total cost)	Wood frame.	Wood frame.	Wood frame.	Wood frame.
Floor Framing (5% of total cost)	4" x 8" girders 48" o.c. with 2" T&G subfloor, or 2" x 6" to 2" x 8" joists 16" o.c. with 1" subfloor.	4" x 8" girders 48" o.c. with 1-1/4" plywood or 2" T&G subfloor, or 2" x 6" to 2" x 8" joists 16" o.c. with 1" subfloor.	4" x 6" girders 48" o.c. with 1-1/4" plywood or 2" T&G subfloor, or 2" x 6" joists 16" o.c. with 1" subfloor.	4" x 6" girders 48" o.c. with 1-1/4" plywood or 2" T&G subfloor, or 2" x 6" joists 16" o.c. with 1" subfloor.
Roof Framing (8% of total cost)	4" x 8" at 48" o.c. with 2" or 3" T&G sheathing.	4" x 8" at 48" o.c. with 2" or 3" T&G sheathing.	4" x 8" at 48" o.c. with 2" T&G sheathing.	4" x 8" at 48" o.c. with 1-1/4" plywood or 2" T&G sheathing.
Gable End Finish (5% of total cost)	Good plywood, lap board or board and batt.	Average to good plywood, or boards.	Average plywood, board or wood shingle.	Low cost plywood, shingle or composition siding.
Windows (2% of total cost)	Good quality large insulated wood or metal windows.	Average quality insulated wood or metal windows.	Average quality wood or metal windows.	Small glass area of low cost windows.
Roofing (10% of total cost)	Heavy wood shakes.	Medium wood or aluminum shakes.	Wood or composition shingles.	Low cost composition shingles.
Flooring (5% of total cost)	Good carpet or hardwood with sheet vinyl in kitchen and baths.	Average to good quality carpet with good tile or sheet vinyl in kitchen and baths.	Average quality carpet with resilient tile in kitchen and baths.	Composition tile.
Interior Finish (25% of total cost including finish carpentry, wiring, lighting, fireplace, etc.)	Good quality hardwood veneer paneling.	Good textured gypsum wallboard, good plywood or knotty pine paneling.	Textured gypsum wallboard or plywood paneling.	Low cost paneling or wallboard.
Bathrooms (5% of total cost)	Two 3-fixture baths and one 2-fixture bath, good fixtures.	Two 3-fixture baths, good fixtures.	Two 3-fixture baths, average fixtures.	One 3-fixture bath.
Kitchen (5% of total cost)	15' to 18' good quality hardwood veneer base cabinet with matching wall cabinets. 15' to 18' of good quality plastic or ceramic tile drain board.	12' to 16' of hardwood veneer base cabinet with matching wall cabinets. 12' to 16' of plastic or ceramic tile drainboard.	8' to 12' of average quality veneer or painted base cabinets with matching wall cabinets. 8' to 12' of plastic drainboard.	6' to 8' of minimum base cabinets with matching wall cabinets. 6' to 8' of minimum plastic drainboard.
Plumbing (15% of total cost)	Nine good quality fixtures and one larger or two 30 gallon water heaters. Copper supply piping.	Seven good quality fixtures and one water heater.	Seven average quality fixtures and one water heater.	Four low cost fixtures and one water heater. Plastic supply pipe.
Special Features (5% of total cost)	Built-in oven, range, dishwasher, disposer, range hood with good insulation, good lighting fixtures, insulated sliding glass door and ornate entry door.	Built-in range, oven and range hood, some insulation, 8' sliding glass door, average electric fixtures.	Drop-in range and hood, some insulation, low cost electric fixtures.	Minimum electric fixtures.

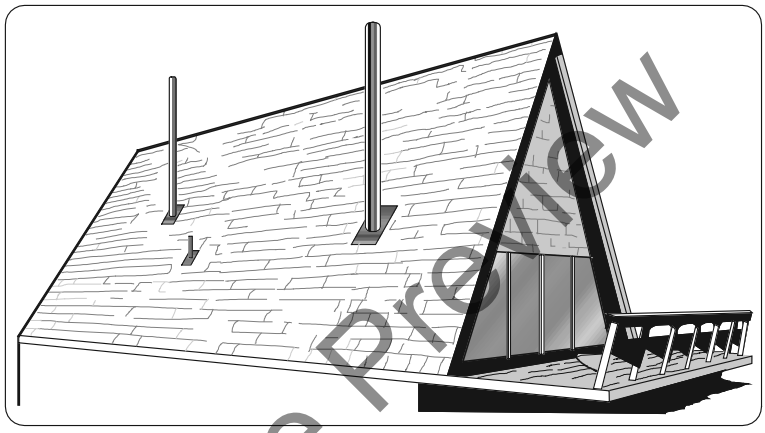
Note: Use the percent of total cost to help identify the correct quality classification.

"A-Frame" Cabins

4 Corners

Estimating Procedure

1. Establish the structure quality class by applying the information on page 38.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.



"A-Frame" Cabin, Class 3 & 4

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Best	233.59	210.77	194.91	183.28	174.17	166.96	161.02	156.05	151.84	148.13	144.96
1 & 2	214.64	193.67	179.10	168.36	160.07	153.28	147.95	143.38	139.47	136.15	133.19
2, Good	196.93	177.67	164.42	154.48	146.92	140.76	135.81	131.54	128.05	124.94	122.23
2 & 3	185.91	167.75	155.16	145.85	138.65	132.90	128.13	124.24	120.84	117.93	115.37
3, Average	176.12	158.93	146.99	138.15	131.30	125.86	121.36	117.63	114.50	111.70	109.31
3 & 4	159.84	144.25	133.34	125.39	119.20	114.27	110.22	106.79	103.90	101.37	99.25
4, Low	143.38	129.41	119.69	112.54	106.98	102.50	98.88	95.84	93.17	90.96	88.99

Square Foot Area

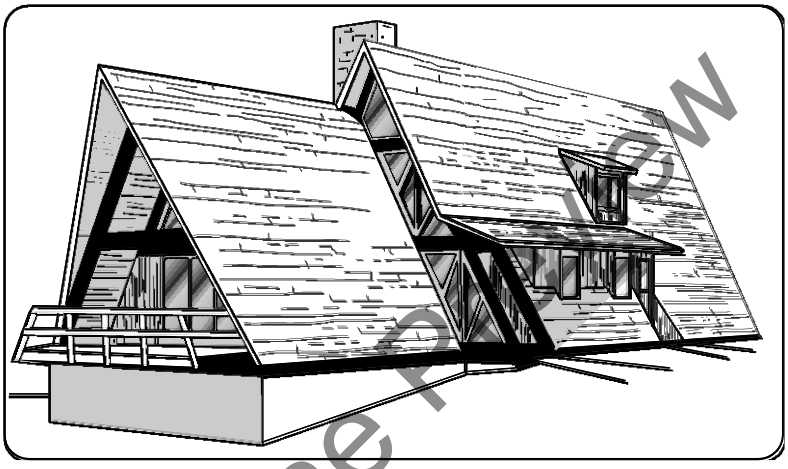
Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Best	139.81	137.55	135.51	133.63	130.41	127.70	125.45	123.45	121.73	120.16	118.84
1 & 2	129.01	126.94	124.98	123.30	120.35	117.83	115.77	113.93	112.37	110.94	109.71
2, Good	119.04	117.06	115.32	113.73	111.04	108.76	106.80	105.12	103.60	102.32	101.22
2 & 3	113.00	111.13	109.48	108.01	105.38	103.25	101.37	99.79	98.37	97.17	96.05
3, Average	107.33	105.58	103.97	102.64	100.15	98.07	96.29	94.79	93.49	92.30	91.27
3 & 4	98.76	97.15	95.66	94.42	92.14	90.24	88.63	87.22	86.01	84.94	83.96
4, Low	88.36	86.61	85.72	84.51	83.43	81.73	80.24	78.94	77.88	76.89	76.04

"A-Frame" Cabins

6 Corners

Estimating Procedure

1. Establish the structure quality class by applying the information on page 38.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.



"A-Frame" Cabin, Class 2 & 3

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Best	237.35	214.19	198.28	186.50	177.48	170.32	164.43	159.50	155.39	151.72	148.60
1 & 2	217.66	196.47	181.85	171.08	162.83	156.22	150.79	146.29	142.47	139.16	136.15
2, Good	199.94	180.44	167.06	157.12	149.50	143.46	138.53	134.36	130.87	127.84	125.22
2 & 3	188.84	170.36	157.68	148.33	141.21	135.51	130.80	126.86	123.50	120.73	118.22
3, Average	177.99	160.61	148.63	139.85	133.03	127.66	123.27	119.59	116.49	113.72	111.42
3 & 4	162.38	146.56	135.68	127.63	121.44	116.52	112.49	109.20	106.26	103.83	101.69
4, Low	145.35	131.18	121.41	114.27	108.76	104.34	100.71	97.71	95.12	92.91	90.98

Square Foot Area

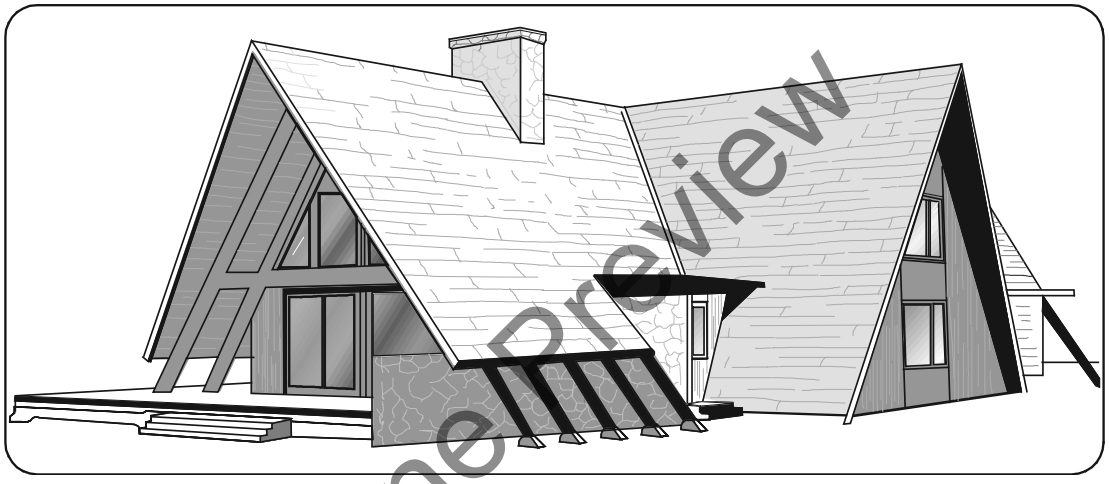
Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Best	143.71	141.34	139.23	137.37	134.11	131.38	129.01	127.02	125.26	123.66	122.32
1 & 2	132.35	130.15	128.27	126.49	123.49	120.99	118.85	116.97	115.33	113.93	112.66
2, Good	122.10	120.08	118.34	116.75	113.97	111.65	109.68	107.96	106.46	105.14	103.95
2 & 3	115.87	113.97	112.28	110.75	108.17	105.94	104.02	102.46	101.06	99.75	98.69
3, Average	110.39	108.61	107.04	105.56	103.05	100.96	99.25	97.63	96.26	95.09	93.99
3 & 4	101.37	99.75	98.24	96.92	94.62	92.70	91.09	89.66	88.39	87.26	86.32
4, Low	90.22	88.87	87.68	85.56	83.82	82.38	81.03	79.96	78.92	78.06	76.87

"A-Frame" Cabins

8 Corners

Estimating Procedure

1. Establish the structure quality class by applying the information on page 38.
2. Multiply the structure floor area by the appropriate cost listed below.
3. Multiply the total from step 2 by the correct location factor listed on page 7 or 8.
4. Add, when appropriate, the cost of a deck or porch, paving, fireplace, garage or carport, heating, extra plumbing fixtures, supporting walls, half story areas, construction on hillside lots, and construction in remote areas. See page 42.



"A-Frame" Cabin, Class 2

Square Foot Area

Quality Class	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
1, Best	241.24	218.15	202.25	190.49	181.44	174.15	168.23	163.22	159.00	155.39	152.13
1 & 2	221.19	200.12	185.52	174.71	166.36	159.70	154.29	149.71	145.81	142.47	139.54
2, Good	202.82	183.43	170.09	160.15	152.56	146.44	141.41	137.23	133.71	130.64	127.89
2 & 3	191.42	173.13	160.51	151.15	143.97	138.17	133.47	129.51	126.18	123.27	120.74
3, Average	181.05	163.78	151.76	142.95	136.18	130.73	126.23	122.58	119.32	116.56	114.24
3 & 4	164.49	148.85	137.93	129.87	123.70	118.75	114.72	111.35	108.44	105.99	103.77
4, Low	147.48	133.36	123.62	116.44	110.92	106.45	102.85	99.79	97.19	94.96	93.04

Square Foot Area

Quality Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
1, Best	147.35	145.00	142.86	141.01	137.71	134.96	132.60	130.65	128.87	127.37	126.06
1 & 2	133.24	131.07	129.15	127.42	124.46	122.00	119.89	118.10	116.49	115.16	113.85
2, Good	125.20	123.12	121.33	119.78	116.95	114.62	112.66	110.94	109.44	108.17	107.02
2 & 3	118.54	116.56	114.90	113.38	110.74	108.50	106.71	105.06	103.60	102.44	101.32
3, Average	112.92	111.06	109.42	107.96	105.45	103.40	101.64	100.11	98.76	97.53	96.49
3 & 4	103.57	101.88	100.34	99.06	96.74	94.82	93.22	91.81	90.60	89.51	88.54
4, Low	92.30	90.96	89.77	87.65	85.93	84.42	83.13	82.02	81.03	80.23	78.98

Additional Costs

Half-Story Costs

For conventional recreational dwellings, use the suggested fractions found on page 30 in the section "Additional Costs for Residential Structures." For "A-Frame" cabins, use one of the following costs: A simple platform with low cost floor cover, minimum partitions, and minimum lighting costs $67 to $98 per square foot. Average quality half story area with average quality carpet, average number of partitions finished with gypsum wallboard or plywood veneer and average lighting costs $98 to $108 per square foot. A good quality half story area with good carpet, decorative rustic partitions, ceiling beams and good lighting costs $129 to $150 per square foot.

Decks and Porches, per square foot

2" wood deck with steps and railing (300 S.F. base)	
1' to 4' above ground	$23.37 to $27.28
Over 4' to 6' above ground	27.07 to 35.00
Over 6' to 9' above ground	28.31 to 37.06
Over 9' to 12' above ground	29.34 to 38.81
Over 12' above ground	30.88 to 40.14

Fireplaces, 2-story, including foundation

Metal hood with concrete slab	$2,734 to $3,386
Prefabricated, zero clearance	3,920 to 5,884
Simple concrete block	4,790 to 7,973
Concrete block with stone facing	6,320 to 9,610
Simple natural stone	10,905 to 15,820

Extra Plumbing, cost each

Lavatory	$1,680 to $2,465
Water closet or bidet	2,050 to 2,516
Tub and shower	2,160 to 2,880
Stall shower	1,612 to 2,350
Laundry or utility sink	1,175 to 1,390

Heating, cost each

Wall furnace, 35,000 Btu	$1,370
Wall furnace, 65,000 Btu	1,680
Baseboard hot water, per SF*	5.36
Central heating, perimeter ducts, per S.F.*	7.50

*Cost is per SF of floor area heated.

Garages, Carports and Basements

For garage, carport and basement costs for conventional recreational dwellings, see pages 27 and 29.

Flatwork, per square foot

Asphalt paving	$4.80 to $7.21
4" concrete	4.93 to 7.42
6" concrete	5.24 to 7.63

Reinforced concrete walls, per C.F.

Formed one side only	$20.46 to $23.74
Formed both sides	26.18 to 29.57

Supporting Wall Costs

Cabins and recreational dwellings built on sloping lots cost more than if they are built on level lots. The cost of supporting walls of a building that do not enclose any living area should be estimated by using the figures below. These costs include everything above a normal foundation (12" to 18" above ground) up to the bottom of the next floor structure where square foot costs can be applied. In addition to the cost of supporting walls, add the cost of any extra structural members and the higher cost of building on a slope. A good rule of thumb for this is to add $870 for each foot of vertical distance between the highest and the lowest points of intersection of foundation and ground level.

Wood posts, per foot of height

4" x 4"	$2.39 to $3.80
4" x 6"	3.80 to 6.50
6" x 6"	4.90 to 9.25
8" x 8"	11.07 to 17.20
10" x 10"	20.49 to 29.36
12" x 12"	30.80 to 42.85

Brick, per square foot of wall

8" common brick	$39.54 to $48.44
12" common brick	60.74 to 75.58
8" common brick, 1 side face brick	50.24 to 61.90
12" common brick, 1 side face brick	78.55 to 97.84

Reinforced concrete block, per square foot of wall

8" natural	$9.67 to $11.66
8" colored	13.30 to 15.62
8" detailed blocks, natural	11.00 to 14.42
8" detailed blocks, colored	14.99 to 16.94
8" sandblasted	11.66 to 13.67
8" splitface, natural	9.95 to 11.72
8" splitface, colored	15.62 to 17.64
8" slump block, natural	10.70 to 13.29
8" slump block, colored	14.82 to 17.17
12" natural	18.87 to 21.09

Life in Years and Depreciation for Residences

Quality Class	1	2	3	4	5	6
Single family residences	70	70	70	60	60	55
Manufactured housing	55	50	45	40	30	
Multi-family residences	60	60	55	55	50	
Motels	60	55	55	50		
Conventional recreational dwellings	70	60	60	55	55	50
A-frame cabins	60	55	55	50		

This table shows typical physical lives in years in the absence of unusual physical, functional or economic obsolescence. Raise half classes to the next higher whole class.

To Find the Present Value of an Existing Residence

Present value is the replacement cost less depreciation (inverse of the "% Good" column below). Multiply the appropriate figure in the "% good" column by the current replacement cost developed using this manual to find the present value. For newer residences, the chronological age ("Age" column) is usually the best indicator of percent good. The present value of older residences may be influenced more by physical, functional or economic obsolescence than by age. When physical, functional or economic conditions limit or extend the remaining useful life of a residence, estimate that life in years and use the "Rem. Life" column (rather than the "Age" column) to find the percent good.

	20 Years		25 Years		30 Years		40 Years			45 Years		50 Years		55 Years		60 Years		70 Years	
	Rem.	%	Rem.	%	Rem.	%	Rem.	%		Rem.	%	Rem.	%	Rem.	%	Rem.	%	Rem.	%
Age	Life	Good	Life	Good	Life	Good	Life	Good	Age	Life	Good	Life	Good	Life	Good	Life	Good	Life	Good
0	20	100	25	100	30	100	40	100	0	45	100	50	100	55	100	60	100	70	100
1	19	94	24	95	29	96	39	98	2	43	97	48	97	53	98	58	98	68	99
2	18	88	23	90	28	93	38	96	4	41	93	46	94	51	96	56	96	66	98
3	17	81	22	86	27	89	37	94	6	39	89	44	91	49	94	54	95	64	98
4	16	75	21	81	26	86	36	92	8	37	85	42	88	47	91	52	92	62	96
5	15	69	20	77	25	82	35	90	10	35	81	39	85	45	88	50	90	60	94
6	14	63	19	72	24	79	34	87	12	33	77	38	82	43	85	48	87	58	92
7	13	59	18	68	23	75	33	84	14	32	73	36	78	41	82	46	85	56	91
8	12	57	17	63	22	71	32	82	16	30	69	35	74	40	79	45	83	54	89
9	11	55	16	60	21	67	31	80	18	28	65	33	70	38	76	43	80	52	87
10	11	53	16	58	20	64	30	77	20	26	60	31	67	36	73	41	77	50	84
11	10	50	15	56	19	60	29	74	22	24	58	29	63	34	70	39	74	48	82
12	9	48	14	54	19	59	28	72	24	23	56	28	60	32	67	37	71	46	80
13	8	46	13	53	18	57	27	70	26	22	54	26	58	31	64	35	68	44	77
14	7	44	12	51	17	56	27	67	28	20	52	24	56	29	61	34	65	42	74
15	7	42	11	49	16	54	26	65	30	18	50	23	54	27	58	32	63	40	73
16	6	40	11	48	15	53	25	62	32	17	48	21	53	26	56	30	61	38	71
17	5	38	10	46	14	52	24	60	34	15	47	20	51	24	55	29	60	36	70
18	5	36	9	44	13	50	23	59	36	14	45	18	49	23	53	27	58	34	68
19	4	33	8	43	13	49	22	58	38	12	43	17	47	21	51	26	56	32	66
20	4	31	7	41	12	47	21	58	40	11	41	16	45	20	50	24	55	30	65
21	3	29	7	39	11	46	21	55	42	10	39	14	44	19	48	23	53	28	63
22	3	27	6	37	11	44	20	54	44	9	37	13	42	17	46	21	51	26	61
23	3	25	6	35	10	43	19	53	46	8	35	12	40	16	45	20	50	25	60
24	3	23	5	34	9	42	18	52	48	7	33	11	38	15	43	19	48	23	58
25	2	21	5	32	9	40	17	51	50	6	31	10	37	14	41	18	46	21	56
26	2	19	4	30	8	39	17	50	52	5	29	9	35	12	40	16	45	19	55
27	2	16	4	29	7	37	16	49	54	5	28	8	33	11	38	15	43	18	53
28	2	14	4	27	7	36	15	48	56	4	26	7	31	10	36	14	41	16	51
29	2	12	3	25	6	34	14	47	58	4	24	6	30	9	35	13	40	15	50
30	1	10	3	24	6	33	14	46	60	3	22	5	28	8	33	12	38	14	47
31	–	–	3	22	5	31	13	45	62	3	20	4	26	7	31	11	36	12	45
32	–	–	3	20	5	30	12	44	64	3	17	4	24	6	30	10	35	11	44
33	–	–	2	18	5	29	12	43	66	2	16	3	22	5	28	9	33	10	42
34	–	–	2	17	4	27	11	42	68	2	14	3	21	5	27	8	32	9	41
35	–	–	2	15	4	26	11	41	70	2	12	3	19	4	25	7	30	9	38
36	–	–	2	13	4	24	10	40	72	1	10	2	17	4	23	6	28	8	36
38	–	–	1	10	3	21	9	38	74	–	–	2	15	4	21	5	26	7	34
40	–	–	–	–	2	19	7	35	76	–	–	2	14	3	19	5	24	7	32
42	–	–	–	–	2	16	6	33	80	–	–	1	10	2	17	4	22	7	28
46	–	–	–	–	1	10	5	29	82	–	–	–	–	2	15	3	18	6	25
50	–	–	–	–	–	–	4	25	84	–	–	–	–	1	13	2	16	5	22
55	–	–	–	–	–	–	3	20	96	–	–	–	–	–	11	1	10	3	14
60	–	–	–	–	–	–	2	14	98	–	–	–	–	–	10	–	–	2	13
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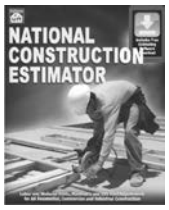
Practical References for Builders

National Construction Estimator



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For today's contractors, legal problems are like snakes in the swamp — you might not see them, but you know they're there. This book tells you where the snakes are hiding and directs you to the safe path. With the directions in this easy-to-read handbook you're less likely to need a $250-an-hour lawyer. Includes simple directions for starting your business, writing contracts that cover just about any eventuality, collecting what's owed you, filing liens, protecting yourself from unethical subcontractors, and more. For about the price of 15 minutes in a lawyer's office, you'll have a guide that will make many of those visits unnecessary. Includes a CD-ROM with blank copies of all the forms and contracts in the book. **272 pages, 8½ x 11, $49.50**

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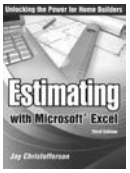
Estimating With Microsoft *Excel*, 3rd Ed.



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Contractor's Survival Manual Revised

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

336 pages, 8½ x 11, $38.00

***Also available as an eBook (PDF),* $19.00 at www.craftsman-book.com**

CD Estimator

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

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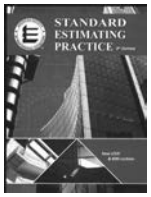
Standard Estimating Practice, 10th Edition



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

820 pages, 8½ x 11, $99.95

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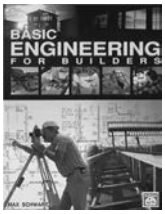

This book is for you if you've ever been stumped by an engineering problem on the job, yet wanted to avoid the expense of hiring a qualified engineer. Here you'll find engineering principles explained in non-technical language and practical methods for applying them on the job. With the help of this book you'll be able to understand engineering functions in the plans and how to meet the requirements, how to get permits issued without the help of an engineer, and anticipate requirements for concrete, steel, wood and masonry. See why you sometimes have to hire an engineer and what you can undertake yourself: surveying, concrete, lumber loads and stresses, steel, masonry, plumbing, and HVAC systems. This book is designed to help you, the builder, save money by understanding engineering principles that you can incorporate into the jobs you bid. **400 pages, 8½ x 11, $39.50**
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National Renovation & Insurance Repair Estimator

Current prices in dollars and cents for hard-to-find items needed on most insurance, repair, remodeling, and renovation jobs. All price items include labor, material, and equipment breakouts, plus special charts that tell you exactly how these costs are calculated.. Includes a free download of an electronic version of the book with National Estimator, a stand-alone *Windows*™ estimating program. Additional information and *National Estimator* ShowMe tutorial video is available on our website under the "Support" dropdown tab.
488 pages, 8½ x 11, $99.50. Revised annually
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Easy Scheduling

Easy Scheduling presents you with a complete set of "real world" scheduling tools that are specifically tailored to meet the needs of small- to medium-sized construction businesses. Step by step, it shows you how to use *Microsoft Project* to build a schedule that will synchronize everyone's efforts into an organized system that becomes the foundation of all planning and communication for all your jobs. You'll see how to establish realistic project goals, set checkpoints, activities, relationships and time estimates for each task, as well as establish priorities. You'll learn how to create a project flowchart to keep everyone focused and on track, and see how to use CSI (Construction Specification Institute) coding to organize and sort tasks, methods, and materials across multiple projects. If you want an easy way to schedule your jobs, *Microsoft Project* and *Easy Scheduling* is the answer for you. (Does not include *Microsoft Project*.) Published by BNI.
316 pages, 8½ x 11, $59.95

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Home Building Mistakes & Fixes

This is an encyclopedia of practical fixes for real-world home building and repair problems. There's never an end to "surprises" when you're in the business of building and fixing homes, yet there's little published on how to deal with construction that went wrong - where out-of-square or non-standard or jerry-rigged turns what should be a simple job into a nightmare. This manual describes jaw-dropping building mistakes that actually occurred, from disastrous misunderstandings over property lines, through basement floors leveled with an out-of-level instrument, to a house collapse when a siding crew removed the old siding. You'll learn the pitfalls the painless way, and real-world working solutions for the problems every contractor finds in a home building or repair jobsite. Includes dozens of those "surprises" and the author's step-by-step, clearly illustrated tips, tricks and work-arounds for dealing with them. **384 pages, 8½ x 11, $52.50**
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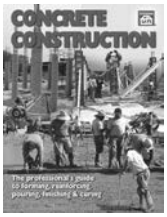
Concrete Construction



Just when you think you know all there is about concrete, many new innovations create faster, more efficient ways to do the work. This comprehensive concrete manual has both the tried-and-tested methods and materials, and more recent innovations. It covers everything you need to know about concrete, along with Styrofoam forming systems, fiber reinforcing adjuncts, and some architectural innovations, like architectural foam elements, that can help you offer more in the jobs you bid on. Every chapter provides detailed, step-by-step instructions for each task, with hundreds of photographs and drawings that show exactly how the work is done. To keep your jobs organized, there are checklists for each stage of the concrete work, from planning, to finishing and protecting your pours. Whether you're doing residential or commercial work, this manual has the instructions, illustrations, charts, estimating data, rules of thumb and examples every contractor can apply on their concrete jobs.
288 pages, 8½ x 11, $28.75
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4 pages, 8½ x 11, $7.95

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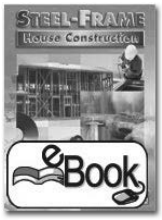

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240 pages, 8½ x 11, $49.95. Published by Builder's Book, Inc.

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