



2025 NATIONAL BUILDING COST MANUAL

Edited by Ben Moselle

49th Edition



National
Building Cost
Estimator

The Building

Cost Estimator program will write valuation reports for any building type covered in this manual. Printed valuation reports show replacement costs by building component, depreciation and actual cash value. Using this program could reduce computation errors and simplify development of valuations.



National
Appraisal
Estimator

If most of your valuations are residential (either site-built, manufactured, or multi-family homes), consider Craftsman's on-line valuation tool, National Appraisal Estimator. Visit

<https://craftsman-book.com/national-appraisal-estimator-online-software> for more information.



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

Looking for Other Construction Reference Manuals?

Craftsman has the books to fill your needs. Call 1-800-829-8123 or
visit our Web site: <http://www.craftsman-book.com>



Now you can generate professional estimates from your internet browser with
National Estimator Cloud.

<https://craftsman-book.com/national-estimator-cloud>

Online Preview

Cover design by: Jennifer Johnson
Photos: iStock by Getty Images™
Illustrations by Laura Knight, Devona Quindoy
©2024 Craftsman Book Company
Portions © 2011 Saylor Publications, Inc.
ISBN 978-1-57218-399-5
Published October 2024 for the year 2025

Contents of This Manual

| | | | |
|---|-----------|---|------------|
| Explanation of the Cost Tables | 4 | Theaters, Masonry or Concrete..... | 185 |
| Area Modification Factors | 7 | Mobile Home Parks..... | 195 |
| Construction Cost Index..... | 9 | Service Stations, Wood, Masonry or Steel..... | 198 |
| | | Service Stations, Porcelain Finished Steel..... | 200 |
| Residential Structures Section..... | 10 | Service Stations, Ranch or Rustic | 202 |
| Single Family Residences | 10 | Additional Costs for Service Stations..... | 204 |
| Manufactured Housing..... | 16 | Service Garages, Masonry or Concrete..... | 208 |
| Multi-Family Residences | 19 | Service Garages, Wood Frame..... | 213 |
| Motels..... | 23 | Auto Service Centers, Masonry or Concrete..... | 218 |
| Additional Costs for Residences..... | 27 | | |
| Multi-Family and Motel Garages..... | 31 | Industrial Structures Section..... | 222 |
| Cabins and Recreational Dwellings | 32 | Warehouses | 224 |
| Conventional Recreational Dwellings..... | 33 | Light Industrial Buildings..... | 225 |
| "A-Frame" Cabins | 38 | Factory Buildings | 226 |
| Additional Costs for Recreational Dwellings | 42 | Internal Offices | 227 |
| Life in Years and Depreciation for Residences..... | 43 | External Offices | 227 |
| | | Steel Buildings..... | 228 |
| Public Buildings Section | 44 | Alternate Costs for Steel Buildings..... | 230 |
| Elementary Schools | 44 | Commercial and Industrial Building Lives..... | 235 |
| Secondary Schools..... | 53 | Additional Commercial and Industrial Costs..... | 236 |
| Government Buildings..... | 56 | Material Handling System | 242 |
| Public Libraries..... | 62 | Display Fronts | 242 |
| Fire Stations | 68 | Satellite Receiver Systems | 245 |
| | | Signs | 246 |
| Commercial Structures Section | 74 | Yard Improvements..... | 247 |
| Urban Stores, Masonry or Concrete | 76 | | |
| Urban Stores, Wood or Wood and Steel..... | 82 | Agricultural Structures Section..... | 249 |
| Suburban Stores, Masonry or Concrete | 89 | General Purpose Barns..... | 250 |
| Suburban Stores, Wood or Wood and Steel..... | 94 | Hay Storage Barns | 251 |
| Supermarkets, Masonry or Concrete..... | 103 | Feed Barns..... | 252 |
| Supermarkets, Wood or Wood and Steel | 105 | Shop Buildings..... | 253 |
| Small Food Stores, Masonry or Concrete..... | 107 | Machinery and Equipment Sheds..... | 254 |
| Small Food Stores, Wood Frame..... | 109 | Small Sheds | 255 |
| Discount Houses, Masonry or Concrete..... | 111 | Pole Barns | 256 |
| Discount Houses, Wood or Wood and Steel..... | 113 | Low Cost Dairy Barns..... | 257 |
| Banks and Savings Offices, Masonry or Concrete..... | 115 | Stanchion Dairy Barns..... | 258 |
| Banks and Savings Office, Wood Frame..... | 120 | Walk-Through Dairy Barns | 259 |
| Department Stores, Reinforced Concrete..... | 126 | Modern Herringbone Barns | 260 |
| Department Stores, Masonry or Concrete | 129 | Miscellaneous Dairy Costs..... | 261 |
| Department Stores, Wood Frame | 132 | Poultry Houses, Conventional..... | 262 |
| General Office Buildings, Masonry or Concrete | 135 | Poultry Houses, Modern Type..... | 263 |
| General Office Buildings, Wood Frame | 143 | Poultry Houses, High Rise Type | 264 |
| Medical-Dental Buildings, Masonry or Concrete | 151 | Poultry Houses, Deep Pit Type | 265 |
| Medical-Dental Buildings, Wood Frame | 159 | Poultry House Equipment | 266 |
| Convalescent Hospitals, Masonry or Concrete | 167 | Green Houses | 267 |
| Convalescent Hospitals, Wood Frame | 169 | Migrant Worker Housing | 268 |
| Funeral Homes..... | 171 | Miscellaneous Agricultural Structures..... | 269 |
| Ecclesiastic Buildings | 173 | Typical Lives for Agricultural Buildings | 269 |
| Self Service Restaurants | 175 | | |
| Coffee Shop Restaurants..... | 178 | Military Construction Section..... | 270 |
| Conventional Restaurants..... | 181 | Facility Costs | 271 |
| "A-Frame" Restaurants | 183 | Index..... | 273 |

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-2025.

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

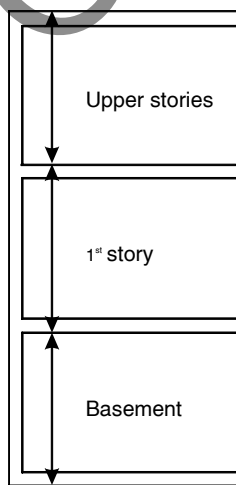
The basic building cost tables reflect the fact that larger buildings generally cost less per square foot than smaller buildings. The cost tables are based on square foot areas which include the following:

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 midway 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:

Explanation of the Cost Tables

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 -3% | Salinas 939 2% | Atlanta 303 21% | Muncie 473 -9% | Camden 48 -10% |
| Anniston 362 -5% | San Bernardino 923-924 2% | Augusta 308-309 -7% | South Bend 466 -3% | Outler 46 -9% |
| Auburn 368 -5% | San Diego 919-921 8% | Buford 305 1% | Terre Haute 478 2% | Dexter 49 -3% |
| Bellamy 369 1% | San Francisco 941 28% | Calhoun 307 -2% | | Northern Area 47 -9% |
| Birmingham 350-352 3% | San Jose 950-951 24% | Columbus 318-319 -6% | Iowa Average -5% | Portland 41 4% |
| Dothan 363 -6% | San Mateo 943-944 20% | Dublin/Fort Valley 310 -7% | Burlington 526 -5% | |
| Evergreen 364 -9% | Santa Barbara 931 3% | Hinesville 313 -2% | Carroll 514 -8% | Maryland Average 2% |
| Gadsden 359 -8% | Santa Rosa 954 5% | Kings Bay 315 -8% | Cedar Falls 506 -4% | Annapolis 214 9% |
| Huntsville 358 2% | Stockton 952 4% | Macon 312 2% | Cedar Rapids 522-524 0% | Baltimore 210-212 5% |
| Jasper 355 -7% | Sunnyvale 940 24% | Marietta 300-302 8% | Cherokee 510 -3% | Bethesda 208-209 11% |
| Mobile 365-366 -2% | Van Nuys 913-916 8% | Savannah 314 -1% | Council Bluffs 515 -5% | Church Hill 216 -4% |
| Montgomery 360-361 -1% | Whittier 906 9% | Statesboro 304 -8% | Creston 508 -8% | Cumberland 215 -10% |
| Scottsboro 357 -1% | | Valdosta 316 -6% | Davenport 527-528 0% | Elkton 219 3% |
| Selma 367 -6% | Colorado Average 1% | | Decorah 521 -7% | Frederick 217 4% |
| Sheffield 356 -1% | Aurora 800-801 10% | Hawaii Average 19% | Des Moines 500-503 3% | Laurel 206-207 8% |
| Tuscaloosa 354 -5% | Boulder 803-804 6% | Aliamanu 968 21% | Dubuque 520 -3% | Salisbury 218 -8% |
| | Colorado Springs 808-809 0% | Ewa 967 18% | Fort Dodge 505 -5% | |
| Alaska Average 14% | Denver 802 11% | Halawa Heights 967 18% | Mason City 504 -3% | Massachusetts Average 13% |
| Anchorage 995 17% | Durango 813 -6% | Hilo 967 18% | Ottumwa 525 -9% | Ayer 015-016 9% |
| Fairbanks 997 20% | Fort Morgan 807 -4% | Honolulu 968 21% | Sheldon 512 -5% | Bedford 17 16% |
| Juneau 998 13% | Glenwood Springs 816 3% | Kailua 968 21% | Shenandoah 516 -16% | Boston 021-022 42% |
| Ketchikan 999 7% | Grand Junction 814-815 -1% | Lualualei 967 18% | Sioux City 511 -2% | Brockton 023-024 21% |
| King Salmon 996 13% | Greeley 806 6% | Mililani Town 967 18% | Spencer 513 -8% | Cape Cod 26 5% |
| | Longmont 805 3% | Pearl City 967 18% | Waterloo 507 -5% | Chicopee 10 7% |
| Arizona Average -5% | Pagosa Springs 811 -4% | Waianae 967 18% | | Dedham 19 16% |
| Chambers 865 -17% | Pueblo 810 -3% | Wailuku (Maui) 967 18% | Kansas Average -8% | Fitchburg 14 13% |
| Douglas 855 -10% | Salida 812 -3% | | Colby 677 -10% | Hingham 20 20% |
| Flagstaff 860 -9% | | Idaho Average -7% | Concordia 669 -15% | Lawrence 18 13% |
| Kingman 864 -10% | Connecticut Average 11% | Boise 837 0% | Dodge City 678 -9% | Nantucket 25 9% |
| Mesa 852 6% | Bridgeport 66 12% | Coeur d'Alene 838 -8% | Emporia 668 -12% | New Bedford 27 8% |
| Phoenix 850 6% | Bristol 60 13% | Idaho Falls 834 -8% | Fort Scott 667 -7% | Northfield 13 8% |
| Prescott 863 -6% | Fairfield 64 13% | Lewisston 835 -9% | Hays 676 -12% | Pittsfield 12 2% |
| Show Low 859 -10% | Hartford 61 12% | Meridian 836 -6% | Hutchinson 675 -9% | Springfield 11 5% |
| Tucson 856-857 -6% | New Haven 65 11% | Pocatello 832 -10% | Independence 673 -6% | |
| Yuma 853 5% | Norwich 63 6% | Sun Valley 833 -8% | Kansas City 660-662 6% | |
| | Stamford 068-069 17% | | Liberal 679 -10% | Michigan Average 1% |
| | Waterbury 67 11% | Illinois Average 3% | Salina 674 -9% | Battle Creek 490-491 0% |
| | West Hartford 62 6% | Arlington Heights 600 12% | Topeka 664-666 -3% | Detroit 481-482 7% |
| | | Aurora 605 14% | Wichita 670-672 -4% | Flint 484-485 0% |
| | Delaware Average 3% | Belleville 622 -1% | | Grand Rapids 493-495 1% |
| | Dover 199 -3% | Bloomington 617 -1% | Kentucky Average -5% | Grayling 497 -5% |
| | Newark 197 7% | Carbondale 629 -7% | Ashland 411-412 -8% | Jackson 492 0% |
| | Wilmington 198 5% | Carol Stream 601 13% | Bowling Green 421 -2% | Lansing 488-489 0% |
| | | Centralia 628 -8% | Campton 413-414 -10% | Marquette 498-499 -4% |
| | District of Columbia Average | Champaign 618 -2% | Covington 410 1% | Pontiac 483 11% |
| | Washington 200-205 12% | Chicago 606-608 14% | Elizabethtown 427 5% | Royal Oak 480 7% |
| | | Decatur 623 -10% | Frankfort 406 -4% | Saginaw 486-487 -4% |
| | Florida Average -2% | Galesburg 614 -4% | Hazard 417-418 -13% | Traverse City 496 -4% |
| | Altamonte Springs 327 -1% | Granite City 620 0% | Hopkinsville 422 -4% | |
| | Bradenton 342 -3% | Green River 612 0% | Lexington 403-405 2% | Minnesota Average 2% |
| | Brooksville 346 -6% | Joliet 604 12% | London 407-409 -9% | Bemidji 566 0% |
| | Daytona Beach 321 -8% | Kankakee 609 -1% | Louisville 400-402 6% | Brainerd 564 -2% |
| | Fort Lauderdale 333 5% | Lawrenceville 624 -6% | Owensboro 423 -6% | Duluth 556-558 2% |
| | Fort Myers 339 -3% | Oak Park 603 16% | Paducah 420 -1% | Fergus Falls 565 -6% |
| | Fort Pierce 349 -8% | Peoria 615-616 4% | Pikeville 415-416 -12% | Magnolia 561 -9% |
| | Gainesville 326 -7% | Peru 613 1% | Somersset 425-426 -12% | Mankato 560 -1% |
| | Jacksonville 322 2% | Quincy 602 14% | White Plains 424 -8% | Minneapolis 553-555 17% |
| | Lakeland 338 -6% | Rockford 610-611 3% | | Rochester 559 1% |
| | Melbourne 329 -3% | Springfield 625-627 -2% | Louisiana Average 2% | St Cloud 563 11% |
| | Miami 330-332 3% | Urbana 619 -5% | Alexandria 713-714 -7% | St Paul 550-551 16% |
| | Naples 341 0% | | Baton Rouge 707-708 18% | Thief River Falls 567 -3% |
| | Ocala 344 -8% | Indiana Average -2% | Houma 703 10% | Wilmar 562 -4% |
| | Orlando 328 3% | Aurora 470 0% | Lafayette 705 5% | |
| | Panama City 324 -8% | Bloomington 474 -3% | Lake Charles 706 -1% | Mississippi Average 0% |
| | Pensacola 325 -6% | Columbus 472 -6% | Mandeville 704 4% | Clarksdale 386 -2% |
| | Saint Augustine 320 -1% | Elkhart 465 -4% | Minden 710 -6% | Columbus 397 5% |
| | Saint Cloud 347 0% | Evansville 476-477 -2% | Monroe 712 -9% | Greenville 387 -6% |
| | St Petersburg 337 -4% | Fort Wayne 467-468 3% | New Orleans 700-701 13% | Greenwood 389 -3% |
| | Tallahassee 323 -6% | Gary 463-464 2% | Shreveport 711 -6% | Gulfport 395 2% |
| | Tampa 335-336 2% | Indianapolis 460-462 7% | | Jackson 390-392 3% |
| | West Palm Beach 334 3% | Jasper 475 -7% | Maine Average -4% | Laurel 394 2% |
| | | Jeffersonville 471 -7% | Auburn 42 -3% | McComb 396 -1% |
| | Georgia Average -1% | Kokomo 469 -2% | Augusta 43 -2% | Meridian 393 4% |
| | Albany 317 -5% | Lafayette 479 -2% | Bangor 44 -5% | Tupelo 388 -1% |
| | Athens 306 0% | | Bath 45 -3% | |
| | | | Brunswick 039-040 1% | |

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 1958. Multiply the figure listed below for the building type and year of construction by the known cost. The result is the estimated 2025 construction cost.

| Year | Masonry Buildings | Concrete Buildings | Steel Buildings | Wood-Frame Buildings | Agricultural Buildings | Year of Construction |
|------|-------------------|--------------------|-----------------|----------------------|------------------------|----------------------|
| 1958 | 17.19 | 17.57 | 13.74 | 13.63 | 16.53 | 1958 |
| 1959 | 16.65 | 17.02 | 13.41 | 13.05 | 13.26 | 1959 |
| 1960 | 16.27 | 16.70 | 13.20 | 12.86 | 12.99 | 1960 |
| 1961 | 15.93 | 16.64 | 12.98 | 12.62 | 12.95 | 1961 |
| 1962 | 15.57 | 16.15 | 12.66 | 12.47 | 12.76 | 1962 |
| 1963 | 15.34 | 15.73 | 12.51 | 12.24 | 11.57 | 1963 |
| 1964 | 14.90 | 15.55 | 12.34 | 11.82 | 12.15 | 1964 |
| 1965 | 14.42 | 15.14 | 11.91 | 11.56 | 11.83 | 1965 |
| 1966 | 13.77 | 14.70 | 11.45 | 11.06 | 11.50 | 1966 |
| 1967 | 13.45 | 14.00 | 10.71 | 10.52 | 11.03 | 1967 |
| 1968 | 12.90 | 13.23 | 10.22 | 9.95 | 10.55 | 1968 |
| 1969 | 12.18 | 12.64 | 9.88 | 9.57 | 9.95 | 1969 |
| 1970 | 11.69 | 12.09 | 9.38 | 9.11 | 9.45 | 1970 |
| 1971 | 10.96 | 11.07 | 8.71 | 7.84 | 8.81 | 1971 |
| 1972 | 10.20 | 10.25 | 8.14 | 7.86 | 8.20 | 1972 |
| 1973 | 9.31 | 9.71 | 7.23 | 7.26 | 7.70 | 1973 |
| 1974 | 8.29 | 8.90 | 6.79 | 6.78 | 7.14 | 1974 |
| 1975 | 7.53 | 7.86 | 6.10 | 6.38 | 6.37 | 1975 |
| 1976 | 7.06 | 7.49 | 5.79 | 6.14 | 6.03 | 1976 |
| 1977 | 6.57 | 7.03 | 5.50 | 5.71 | 5.68 | 1977 |
| 1978 | 6.12 | 6.57 | 5.07 | 5.24 | 5.13 | 1978 |
| 1979 | 5.62 | 5.85 | 4.54 | 4.80 | 4.86 | 1979 |
| 1980 | 5.10 | 5.32 | 4.04 | 4.30 | 4.39 | 1980 |
| 1981 | 4.79 | 5.01 | 3.71 | 4.11 | 4.11 | 1981 |
| 1982 | 4.65 | 4.79 | 3.59 | 3.97 | 3.97 | 1982 |
| 1983 | 4.43 | 4.65 | 3.52 | 3.79 | 3.74 | 1983 |
| 1984 | 4.14 | 4.35 | 3.36 | 3.51 | 3.63 | 1984 |
| 1985 | 4.02 | 4.14 | 3.27 | 3.40 | 3.58 | 1985 |
| 1986 | 3.92 | 4.11 | 3.21 | 3.35 | 3.49 | 1986 |
| 1987 | 3.91 | 4.02 | 3.18 | 3.28 | 3.47 | 1987 |
| 1988 | 3.83 | 3.87 | 3.12 | 3.25 | 3.41 | 1988 |
| 1989 | 3.74 | 3.80 | 2.96 | 3.19 | 3.30 | 1989 |
| 1990 | 3.52 | 3.65 | 2.81 | 2.96 | 3.15 | 1990 |
| 1991 | 3.80 | 3.60 | 2.68 | 2.81 | 2.98 | 1991 |
| 1992 | 3.41 | 3.56 | 2.64 | 2.79 | 2.96 | 1992 |
| 1993 | 3.32 | 3.52 | 2.55 | 2.75 | 2.91 | 1993 |
| 1994 | 3.24 | 3.29 | 2.46 | 2.65 | 2.70 | 1994 |
| 1995 | 3.07 | 3.00 | 2.27 | 2.49 | 2.55 | 1995 |
| 1996 | 2.97 | 2.95 | 2.21 | 2.43 | 2.51 | 1996 |
| 1997 | 2.87 | 2.87 | 2.12 | 2.38 | 2.45 | 1997 |
| 1998 | 2.73 | 2.73 | 2.04 | 2.27 | 2.41 | 1998 |
| 1999 | 2.64 | 2.64 | 1.99 | 2.25 | 2.38 | 1999 |
| 2000 | 2.56 | 2.56 | 1.91 | 2.18 | 2.29 | 2000 |
| 2001 | 2.48 | 2.48 | 1.88 | 2.09 | 2.23 | 2001 |
| 2002 | 2.42 | 2.42 | 1.83 | 2.07 | 2.19 | 2002 |
| 2003 | 2.38 | 2.38 | 1.79 | 2.05 | 2.15 | 2003 |
| 2004 | 2.28 | 2.28 | 1.74 | 2.00 | 2.09 | 2004 |
| 2005 | 2.11 | 2.11 | 1.55 | 1.80 | 2.04 | 2005 |
| 2006 | 2.00 | 2.00 | 1.43 | 1.60 | 1.83 | 2006 |
| 2007 | 1.93 | 1.93 | 1.37 | 1.49 | 1.70 | 2007 |
| 2008 | 1.81 | 1.81 | 1.30 | 1.42 | 1.60 | 2008 |
| 2009 | 1.79 | 1.79 | 1.25 | 1.42 | 1.60 | 2009 |
| 2010 | 1.75 | 1.75 | 1.18 | 1.41 | 1.59 | 2010 |
| 2011 | 1.78 | 1.78 | 1.22 | 1.43 | 1.64 | 2011 |
| 2012 | 1.75 | 1.75 | 1.09 | 1.38 | 1.60 | 2012 |
| 2013 | 1.68 | 1.68 | 1.16 | 1.32 | 1.50 | 2013 |
| 2014 | 1.67 | 1.67 | 1.15 | 1.30 | 1.48 | 2014 |
| 2015 | 1.64 | 1.64 | 1.14 | 1.29 | 1.47 | 2015 |
| 2016 | 1.63 | 1.63 | 1.25 | 1.30 | 1.44 | 2016 |
| 2017 | 1.58 | 1.58 | 1.27 | 1.31 | 1.44 | 2017 |
| 2018 | 1.50 | 1.50 | 1.10 | 1.19 | 1.34 | 2018 |
| 2019 | 1.41 | 1.41 | 1.15 | 1.14 | 1.28 | 2019 |
| 2020 | 1.38 | 1.38 | 1.10 | 1.16 | 1.27 | 2020 |
| 2021 | 1.34 | 1.34 | 1.16 | 1.15 | 1.27 | 2021 |
| 2022 | 1.28 | 1.28 | 1.02 | 1.06 | 1.19 | 2022 |
| 2023 | 1.12 | 1.12 | 0.82 | 0.97 | 1.06 | 2023 |
| 2024 | 1.05 | 1.05 | 0.92 | 1.05 | 1.05 | 2024 |
| 2025 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2025 |

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.

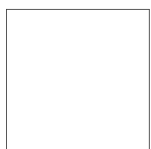
Class 1 and 2 (*Luxury* and *Semi-Luxury*) residences have more than ten corners and are best evaluated by counting the "building masses." A building mass is a group of contiguous rooms on one or more levels with access at varying angles from a common point or

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.

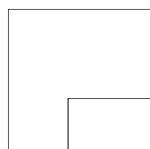
Residences on larger lots often include a separate housekeeping unit, either remote from the main structure (as illustrated below at the right) or joined to the main structure by a hallway (no common wall). Evaluate any separate housekeeping unit as a separate residence. The quality class of separate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

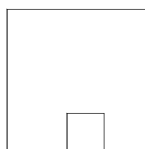
These figures can be applied to nearly all single-family residences built using conventional methods and readily available materials, including the relatively small number of highly decorative, starkly original or exceptionally well-appointed residences.



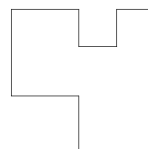
4 corners



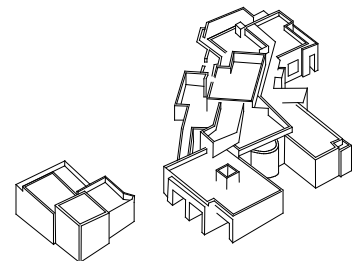
6 corners



8 corners



10 corners



2 building masses and one separate unit

Single Family Residences

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 windows, 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.

Manufactured Housing

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 1/2" 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 1/2" 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 1/2" 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 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 area in your calculations. Do not use area modification factors for manufactured housing.

Estimating Procedure

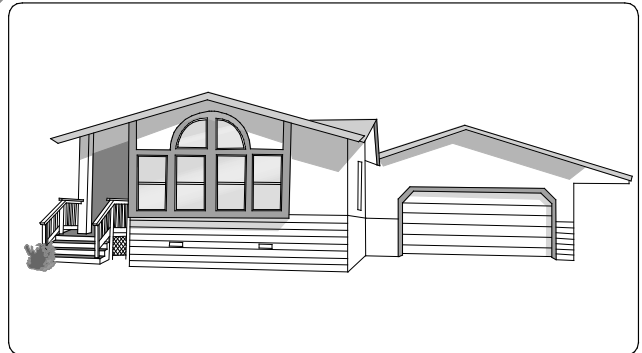
1. Establish the structure quality class by applying the information on page 16.
2. Multiply the structure floor area (excluding any garage or storage area) by the appropriate square foot cost below.
3. Add, when appropriate, the cost of a permanent foundation, air conditioning, built-ins, porch, skirting,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

Square Foot Area

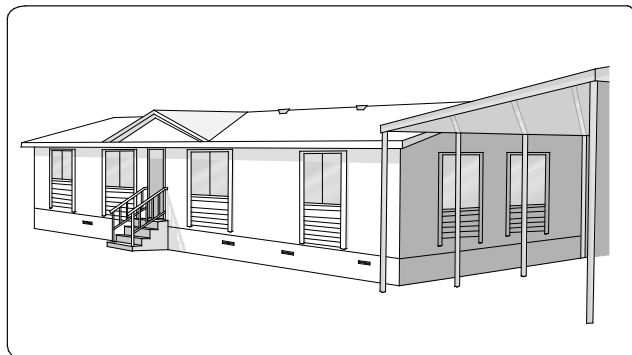
| Quality Class | 500 | 700 | 900 | 1100 | 1300 | 1500 | 1700 | 1900 | 2100 | 2300 | 2500 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1, Best | 164.11 | 162.04 | 160.07 | 157.97 | 155.96 | 153.94 | 151.95 | 149.84 | 147.89 | 145.87 | 143.82 |
| 1, & 2 | 154.47 | 152.45 | 150.44 | 148.50 | 146.38 | 144.30 | 142.22 | 140.32 | 138.23 | 136.26 | 134.18 |
| 2, Good | 144.79 | 142.78 | 140.81 | 134.88 | 133.01 | 131.09 | 128.99 | 127.08 | 125.02 | 123.12 | 121.19 |
| 2 & 3 | 135.26 | 133.14 | 131.21 | 123.24 | 121.28 | 119.38 | 117.43 | 115.55 | 113.58 | 111.61 | 109.75 |
| 3, Average | 126.09 | 124.15 | 121.95 | 114.56 | 109.43 | 107.47 | 105.69 | 103.81 | 101.91 | 100.07 | 98.19 |
| 3 & 4 | 117.99 | 115.93 | 114.01 | 106.89 | 101.91 | 100.07 | 98.19 | 96.28 | 94.39 | 92.51 | 90.60 |
| 4, Low Average | 109.86 | 107.92 | 105.83 | 99.11 | 94.39 | 92.51 | 90.60 | 88.70 | 86.90 | 85.00 | 83.12 |
| 4 & 5 | 103.30 | 101.17 | 99.25 | 92.76 | 88.28 | 86.41 | 84.55 | 82.66 | 80.82 | 78.94 | 76.97 |
| 5 Lowest | 97.19 | 95.21 | 93.18 | 84.55 | 82.66 | 80.82 | 78.94 | 76.97 | 75.09 | 73.29 | 71.40 |



Manufactured Housing, Class 1



Manufactured Housing, Class 3



Manufactured Housing, Class 4



Manufactured Housing, Class 5

Manufactured Housing

Additional Costs

Permanent Foundation, in place of setting on piers

Single Story

| | |
|---|----------------------|
| Less than 1,000 square feet of floor area | \$9,400 to \$16,500 |
| Over 1,000 square feet to 1,800 square feet of floor area | \$16,500 to \$30,000 |
| Over 1,800 square feet to 2,500 square feet of floor area | \$30,000 to \$49,400 |

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 | \$20.20 to \$28.30 |
|---|--------------------|

Skirting, cost per linear foot of skirt

| | |
|--------------------------------|-------------------|
| Lightweight aluminum panels | \$7.05 |
| Lap aluminum siding | \$12.55 |
| Painted hardboard panels | \$16.30 |
| Flagstone-type aluminum panels | \$12.60 |
| Concrete composite panels | \$21.05 - \$26.30 |
| Vinyl panels | \$14.00 |
| Brick or stone | \$22.10 |

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

| | |
|---|---------|
| Aluminum exterior | \$21.42 |
| Enameled steel exterior | \$16.89 |
| Hardboard panel exterior | \$37.54 |
| Figure the garage cost per SF at 2/3 of the home cost per SF. | |

Tie Downs

| | |
|--|---------------|
| Cork screw anchor and straps, per each | \$108 - \$161 |
|--|---------------|

Steps and Rails, per flight to 36" high

| | |
|------------------|---------------|
| Fiberglass steps | \$273 - \$427 |
| Handrail | \$62 - \$93 |

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

| | |
|---|-------------------|
| Aluminum supports and roof cover, free standing | |
| | \$15.35 - \$20.60 |
| Aluminum supports and roof cover, attached to house | |
| | \$9.90 - \$14.45 |
| Wood supports and enameled steel cover, free standing | |
| | \$18.15 - \$22.60 |

Screen Wall Enclosure, per linear foot of 8' wall

| | |
|---|----------|
| Wood frame with screen walls and door | \$71.00 |
| Wood or aluminum frame with screen and glass walls, with door | \$124.00 |

Roof Snowload Capability

| | |
|------------------------------|-----------------|
| Cost per square foot of roof | |
| 30 pound design load | \$.78 - \$1.25 |
| 40 pound design load | \$1.24 - \$2.25 |
| 50 pound design load | \$2.25 - \$2.98 |
| 60 pound design load | \$2.97 - \$3.97 |
| 80 pound design load | \$3.76 - \$5.97 |
| 100 pound design load | \$4.95 - \$6.85 |
| 175 pound design load | \$6.28 - \$7.57 |

Multi-Family Residences – Apartments

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. | | | | | |

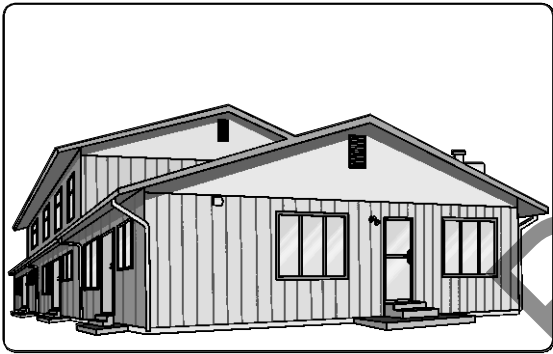
Note: Use the percent of total cost to help identify the correct quality classification. Exceptional class multi-family residences have architectural details and features uncommon in conventional apartment buildings. Many exceptional class multi-family structures are designed for sale or conversion to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

Multi-Family Residences – Apartments

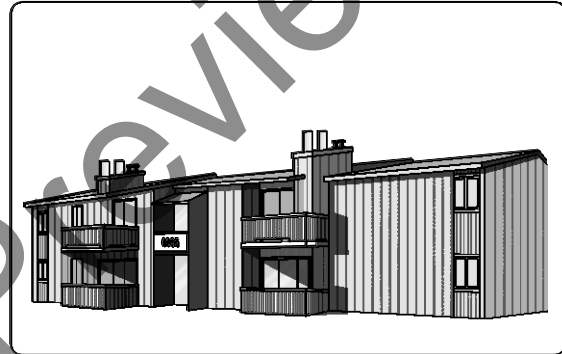
4 to 9 Units

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 | 264.63 | 252.93 | 246.49 | 241.29 | 236.67 | 232.94 | 230.18 | 226.97 | 224.87 | 220.54 | 217.01 |
| 1, Best | 232.59 | 222.23 | 216.54 | 211.94 | 208.05 | 204.67 | 202.16 | 199.38 | 197.57 | 193.86 | 190.76 |
| 1, & 2 | 203.84 | 194.86 | 189.82 | 185.90 | 182.32 | 179.47 | 177.33 | 174.77 | 173.25 | 170.01 | 167.22 |
| 2, Good | 178.41 | 170.55 | 166.20 | 162.59 | 159.61 | 157.07 | 155.13 | 152.88 | 151.47 | 148.70 | 146.29 |
| 2 & 3 | 163.23 | 155.96 | 152.07 | 148.76 | 145.97 | 143.64 | 141.95 | 139.89 | 138.69 | 135.96 | 133.95 |
| 3, Hi Average | 149.31 | 142.79 | 139.02 | 136.03 | 133.37 | 131.38 | 129.86 | 127.86 | 126.90 | 124.34 | 122.57 |
| 3 & 4 | 137.95 | 131.78 | 128.30 | 125.58 | 123.33 | 121.40 | 119.82 | 118.05 | 117.18 | 114.93 | 113.00 |
| 4, Lo Average | 127.30 | 121.60 | 118.68 | 116.01 | 113.85 | 112.01 | 110.57 | 109.14 | 108.19 | 106.09 | 104.35 |
| 4 & 5 | 117.53 | 112.35 | 109.58 | 107.12 | 105.07 | 103.45 | 102.26 | 100.77 | 99.86 | 97.97 | 96.45 |
| 5 Minimum | 108.54 | 103.70 | 101.03 | 98.94 | 97.06 | 95.53 | 94.45 | 93.07 | 92.13 | 90.42 | 88.94 |

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 | 214.86 | 212.56 | 210.64 | 208.94 | 207.63 | 206.22 | 205.20 | 204.38 | 203.35 | 202.66 | 202.16 |
| 1, Best | 188.65 | 186.75 | 185.01 | 183.53 | 182.45 | 181.19 | 180.30 | 179.50 | 178.59 | 178.06 | 177.63 |
| 1, & 2 | 165.49 | 163.70 | 162.30 | 160.94 | 159.88 | 158.85 | 158.12 | 157.42 | 156.65 | 156.18 | 155.72 |
| 2, Good | 144.83 | 143.31 | 142.03 | 140.81 | 139.91 | 139.05 | 138.40 | 137.73 | 137.11 | 136.62 | 136.26 |
| 2 & 3 | 132.50 | 131.07 | 129.86 | 128.76 | 128.12 | 127.30 | 126.59 | 126.04 | 125.35 | 124.93 | 124.64 |
| 3, Hi Average | 121.24 | 119.82 | 118.78 | 117.96 | 117.18 | 116.35 | 115.79 | 115.23 | 114.69 | 114.39 | 113.99 |
| 3 & 4 | 111.95 | 110.57 | 109.67 | 108.77 | 108.12 | 107.44 | 106.92 | 106.47 | 106.01 | 105.48 | 105.32 |
| 4, Lo Average | 103.30 | 102.26 | 101.28 | 100.50 | 99.86 | 99.21 | 98.86 | 98.35 | 97.89 | 97.46 | 97.21 |
| 4 & 5 | 95.40 | 94.45 | 93.57 | 92.74 | 92.13 | 91.63 | 91.12 | 90.77 | 90.28 | 89.99 | 89.72 |
| 5 Minimum | 88.10 | 87.23 | 86.38 | 85.62 | 85.13 | 84.64 | 84.19 | 83.87 | 83.43 | 83.02 | 82.92 |

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%) Foundation costs will vary greatly with substrate, type, and location. | Concrete slab | Concrete slab | Concrete slab | Concrete slab |
| 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 gypsum 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 hardboard 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 - \$4,300 | Average sink and 6' to 8' average cabinet and drainboard - \$3,940 | Low cost sink, and 5' of cabinets and drainboard - \$2,840 | Minimum sink, cabinets and drainboard - \$2,410 |
| 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.

Motels

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 | 224.18 | 216.14 | 209.85 | 204.52 | 200.13 | 195.79 | 190.56 | 185.94 | 180.78 | 175.84 | 171.79 |
| 1 & 2 | 205.94 | 198.53 | 192.77 | 187.90 | 183.89 | 179.81 | 174.94 | 170.75 | 166.02 | 161.58 | 157.75 |
| 2, Good | 191.09 | 184.31 | 178.87 | 174.41 | 170.65 | 166.95 | 162.42 | 158.56 | 154.10 | 149.91 | 146.45 |
| 2 & 3 | 175.59 | 169.39 | 164.36 | 160.23 | 156.82 | 153.38 | 149.18 | 145.66 | 141.59 | 137.81 | 134.64 |
| 3, Average | 162.96 | 157.14 | 152.57 | 148.70 | 145.49 | 142.29 | 138.48 | 135.09 | 131.38 | 127.83 | 124.92 |
| 3 & 4 | 149.57 | 144.24 | 140.02 | 136.47 | 133.57 | 130.61 | 127.05 | 124.08 | 120.55 | 117.35 | 114.59 |
| 4, Low | 136.73 | 131.79 | 127.90 | 124.76 | 122.02 | 119.41 | 116.15 | 113.40 | 110.18 | 107.19 | 104.70 |

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.

Additional Costs for Residential Structures

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 | \$11.71 | \$16.37 | \$26.34 | \$37.01 | \$53.82 |
| 100 to 200 square feet | 10.77 | 14.77 | 21.35 | 30.04 | 40.01 |
| 200 to 400 square feet | 9.05 | 11.71 | 18.32 | 26.62 | 34.45 |
| Over 400 square feet | 8.78 | 10.77 | 16.09 | 21.37 | 27.76 |

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

| | |
|-----------------------------|--------------------|
| 1' to 4' above ground. | \$26.57 to \$28.51 |
| Over 4' to 6' above ground | 31.24 to 40.32 |
| Over 6' to 9' above ground | 32.55 to 42.11 |
| Over 9' to 12' above ground | 33.87 to 44.75 |
| Over 12' above ground | 35.49 to 46.40 |

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

| Type | Cost per Square Foot | Alternate Roof Covers | Cost Difference per S.F. |
|---|----------------------|-----------------------|--------------------------|
| Uncelled 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 |
| Uncelled 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 | \$33 to \$54 | \$50 to \$75 |
| 400 - 1,000 square feet | 25 to 36 | 41 to 46 |
| Over 1,000 square feet | 22 to 26 | 38 to 44 |

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 light 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. | \$23.30 to \$25.10 |
| Supported by 4" x 4" posts, 2" wood floor, sealed on underside, solid stucco or wood siding on railing. | 27.60 to 29.70 |
| Supported by steel columns, lightweight concrete floor, sealed on underside, solid stucco or open grillwork railing. | 41.90 to 46.20 |

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 | \$5.93 to \$6.60 | \$4.65 to \$5.33 |
| Forced air heating and cooling | 6.72 to 8.00 | 6.29 to 6.77 |
| Gravity heat | 4.31 to 5.80 | — |
| Central Ducted Air Systems, Multi-Family | | |
| Forced air heating | 5.24 to 5.66 | 4.92 to 5.65 |
| Forced air heating and cooling | 7.12 to 7.83 | 6.23 to 6.70 |
| Motel Units | | |
| Forced air heating | 6.04 to 6.51 | 5.88 to 6.42 |
| Forced air heating and cooling | 7.25 to 7.83 | 7.01 to 7.26 |
| Circulating hot and cold water system | 13.86 to 16.78 | 14.07 to 16.78 |

Floor and Wall Furnaces, cost each

| | |
|-------------------------|--------------------|
| Single floor unit | \$1,140 to \$1,320 |
| Dual floor unit | 1,980 to 2,160 |
| Single wall unit | 765 to 900 |
| Dual wall unit | 1,395 to 1,650 |
| Thermostat control, add | 126 to 151 |

Electric Baseboard Units, cost each

| | |
|------------------|----------------|
| 500 watts, 3' | \$215 to \$252 |
| 1,000 watts, 4' | 331 to 380 |
| 1,500 watts, 6' | 363 to 410 |
| 2,000 watts, 8' | 460 to 530 |
| 2,500 watts, 10' | 540 to 606 |
| 3,000 watts, 12' | 660 to 720 |

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. | \$19.19 to \$21.12 |
| Standard wood frame, solid wood risers, sealed on underside, solid stucco or wood siding on railing. | 23.11 to 27.30 |
| Precast concrete steps with open risers, steel frame, pipe rail with ornamental grillwork. | 50.38 to 56.18 |

Electric vehicle (EV) charging station hookup. 220 volt Level 2 wall mounted NEMA 14-50 receptacle, 60amp breaker and 10' of 6-gauge 3 conductor cable.

| | |
|--|-------|
| 32 amp | \$260 |
| 40 amp | 290 |
| 50 amp | 350 |
| Add for Level 2 charging station, hard wired | 830 |

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) | \$1,130 |
| 18,000 BTU (1-1/2 ton, 230 volt) | 1,420 |
| 24,000 BTU (2 ton, 230 volt) | 1,780 |
| 42,000 BTU (3-1/2 ton, 230 volt, 5-zone) | 5,730 |

Window Type or Thru-the-Wall

Refrigerated Room Coolers, cost each

| | |
|---------|----------------|
| 1/3 ton | \$165 to \$205 |
| 1/2 | 590 to 720 |
| 3/4 | 297 to 357 |
| 1 | 363 to 430 |
| 1-1/2 | 515 to 610 |
| 2 | 880 to 1,050 |

Electric Wall Heaters, cost each

| | |
|-------------------------|----------------|
| 500 watts | \$154 to \$186 |
| 1,000 | 156 to 190 |
| 2,000 | 180 to 216 |
| 3,000 | 203 to 244 |
| Add for circulating fan | 86 to 126 |
| Add for thermostat | 57 to 126 |

Ton = 12,000 Btu

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 | \$655 to \$790 | Range hood and fan | \$196 to \$464 |
| Built-in double wall oven with microwave | 1,185 to 2,240 | Franklin or Buck stove | |
| Drop-in range with single oven, economy | 524 to 790 | Steel, cast iron front | 1,566 to 2,370 |
| Drop-in range with single oven, excellent | 1,309 to 2,460 | Steel, cast iron front, glass door | 2,370 to 3,280 |
| Range top, four elements | | All cast iron, glass panel door | 4,070 to 5,870 |
| Residential grade, without grill | 589 to 1,110 | Under counter 5 CF refrigerator | 726 to 1,050 |
| Residential grade, with grill | 974 to 1,650 | Central vacuum, 3 to 5 outlets | 2,235 to 4,470 |
| Commercial grade | 4,470 to 7,480 | Dishwasher | 357 to 1,320 |
| Hot water circulator | 726 to 786 | Garbage disposal | 238 to 555 |
| Instant hot water dispenser | 595 to 840 | Trash compactor | 449 to 753 |

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 | \$2,245 | \$2,750 |
| 36" wide zero-clearance enclosed metal firebox, brick face, wood mantel | 2,600 | 2,990 |
| 48" wide zero-clearance enclosed metal firebox, raised hearth, brick face and mantel | 3,590 | 4,040 |
| Masonry, 5' base, common brick or block on interior face, wood or brick mantle | 5,730 | 6,480 |
| Masonry, 6' base, used brick or natural stone on interior face, raised hearth | 11,300 | 13,500 |
| Masonry, 8' base, used brick or natural stone on interior face, raised hearth | 13,600 | 19,900 |

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 | 193.29 | 184.17 | 180.29 | 174.64 | 168.06 | 163.89 | 158.98 | 155.07 | 151.23 | 147.46 | 143.80 |
| 1, & 2 | 167.69 | 159.92 | 156.71 | 151.53 | 146.35 | 142.70 | 138.46 | 135.02 | 131.65 | 128.39 | 125.19 |
| 2, Semi-Luxury | 126.04 | 120.37 | 118.08 | 114.23 | 110.32 | 107.58 | 104.38 | 101.79 | 99.27 | 96.79 | 94.37 |
| 2 & 3 | 101.97 | 95.51 | 94.04 | 92.80 | 89.60 | 87.39 | 84.77 | 82.70 | 80.63 | 78.62 | 76.68 |
| 3, Best Std. | 84.76 | 81.06 | 79.58 | 77.05 | 74.67 | 72.80 | 70.64 | 68.85 | 67.17 | 65.49 | 63.85 |
| 3 & 4 | 71.77 | 68.86 | 67.70 | 65.64 | 63.25 | 61.70 | 59.85 | 58.36 | 56.90 | 55.50 | 54.13 |
| 4, Good Std. | 63.55 | 60.62 | 59.54 | 57.94 | 56.00 | 54.59 | 52.97 | 51.65 | 50.37 | 49.12 | 47.91 |
| 4 & 5 | 59.96 | 56.74 | 55.44 | 53.61 | 51.71 | 50.42 | 48.89 | 47.69 | 46.49 | 45.36 | 44.22 |
| 5 Avg. Std. | 56.15 | 52.71 | 51.46 | 49.50 | 47.39 | 46.19 | 44.81 | 43.71 | 42.64 | 41.55 | 40.54 |
| 5 & 6 | 49.82 | 47.04 | 45.99 | 44.21 | 42.59 | 41.50 | 40.26 | 39.26 | 38.31 | 37.35 | 36.41 |
| 6, Min. Std. | 43.65 | 41.39 | 40.73 | 39.39 | 37.88 | 36.93 | 35.85 | 34.94 | 34.05 | 33.24 | 32.39 |

Square Foot Area for Detached Garages for Single Family Dwellings

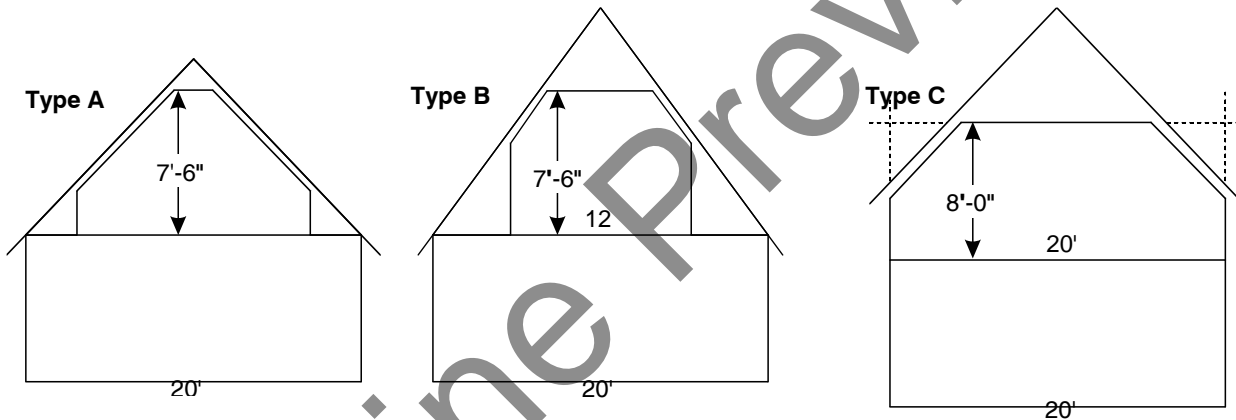
| Quality Class | 220 | 260 | 280 | 320 | 360 | 400 | 440 | 480 | 540 | 600 | 720 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1, Luxury | 219.86 | 203.20 | 197.15 | 186.62 | 182.92 | 177.14 | 169.42 | 165.22 | 161.11 | 157.11 | 153.21 |
| 1, & 2 | 189.43 | 175.64 | 170.03 | 161.33 | 158.41 | 153.37 | 146.72 | 143.06 | 139.50 | 136.02 | 132.65 |
| 2, Semi-Luxury | 141.19 | 131.28 | 127.41 | 120.91 | 118.83 | 115.06 | 110.02 | 107.31 | 104.64 | 102.05 | 99.49 |
| 2 & 3 | 114.15 | 106.04 | 102.81 | 97.64 | 96.06 | 92.98 | 88.95 | 86.74 | 84.56 | 82.48 | 80.43 |
| 3, Best Std. | 94.50 | 87.76 | 85.18 | 81.01 | 79.70 | 77.18 | 73.78 | 71.97 | 70.16 | 68.45 | 66.74 |
| 3 & 4 | 83.71 | 77.91 | 75.58 | 71.95 | 70.89 | 68.58 | 65.63 | 64.01 | 62.39 | 60.86 | 59.34 |
| 4, Good Std. | 73.83 | 68.75 | 66.72 | 63.42 | 62.48 | 60.49 | 57.86 | 56.40 | 55.03 | 53.66 | 52.32 |
| 4 & 5 | 68.21 | 63.49 | 61.64 | 58.08 | 57.83 | 56.00 | 53.55 | 52.22 | 50.93 | 49.64 | 48.42 |
| 5 Avg. Std. | 64.45 | 59.01 | 56.90 | 53.66 | 52.50 | 50.83 | 48.60 | 47.39 | 46.22 | 45.07 | 43.96 |
| 5 & 6 | 54.23 | 50.10 | 48.36 | 45.87 | 45.10 | 43.67 | 41.76 | 40.71 | 39.70 | 38.73 | 37.75 |
| 6, Min. Std. | 47.24 | 43.64 | 42.40 | 40.23 | 39.68 | 38.43 | 36.75 | 35.85 | 34.93 | 34.04 | 33.24 |

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 | \$9,846 | \$7,924 | \$6,702 | \$5,584 | \$4,726 |
| 3 fixture bath | 14,293 | 12,185 | 10,109 | 8,701 | 6,966 |
| 4 fixture bath | 18,187 | 15,720 | 14,034 | 11,498 | 9,844 |
| 4 to 9 units | | | | | |
| 2 fixture bath | 9,088 | 7,534 | 6,297 | 5,262 | 4,338 |
| 3 fixture bath | 12,860 | 11,170 | 9,614 | 7,993 | 6,431 |
| 4 fixture bath | 17,796 | 15,068 | 12,457 | 10,380 | 8,575 |
| 10 or more units | | | | | |
| 2 fixture bath | 8,183 | 6,966 | 5,912 | 4,598 | 3,793 |
| 3 fixture bath | 12,602 | 10,523 | 8,836 | 6,963 | 5,717 |
| 4 fixture bath | 16,627 | 14,293 | 11,431 | 9,354 | 7,145 |

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. | \$50,800 | \$83,800 |
| 2,500 lbs. | 54,100 | 86,400 |
| 3,000 lbs. | 56,800 | 93,800 |
| 3,500 lbs. | — | 98,800 |
| 4,000 lbs. | — | 102,700 |

Add for deluxe car, \$10,500. Add for each additional stop over 2: \$3,940, baked enamel doors \$10,790, stainless steel doors \$11,300.

Electric based on six stops

| Capacity | 200 F.P.M. | 250 F.P.M. | 300 F.P.M. |
|------------|------------|------------|------------|
| 2,000 lbs. | \$127,400 | \$134,600 | \$139,800 |
| 2,500 lbs. | 134,800 | 142,300 | 151,100 |
| 3,000 lbs. | 144,500 | 158,100 | 163,500 |
| 3,500 lbs. | 158,200 | 168,300 | 176,700 |
| 4,000 lbs. | 168,100 | 182,200 | 190,800 |

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 | \$27.40 plus \$1.13 per foot over 5' high |
| Concrete columns on grade beams | \$12.20 plus \$0.84 per foot over 5' high |
| Braced timber piles or poured concrete columns | \$3.90 plus \$1.13 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 $\frac{2}{3}$ 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 | 48.14 | 48.08 | 38.48 | 33.81 | 31.65 | 30.36 | 29.52 | 28.13 |

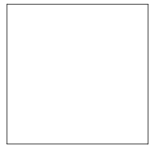
Separate Structure Garages

| Area | 400 | 800 | 1,200 | 2,000 | 3,000 | 5,000 | 10,000 | 20,000 |
|------|-------|-------|-------|-------|-------|-------|--------|--------|
| Cost | 55.22 | 49.16 | 45.12 | 42.82 | 40.98 | 39.33 | 37.65 | 36.83 |

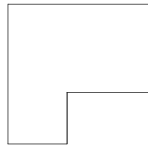
Basement Garages

| 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. | 73.52 | 67.24 | 64.35 | 63.43 | 61.56 | 60.83 | 59.97 | 59.31 |
| Concrete block exterior walls, reinforced concrete columns. Flat concrete roof slab. | 73.08 | 68.48 | 64.01 | 62.25 | 60.94 | 60.12 | 59.25 | 57.29 |
| Concrete block exterior walls, steel posts and beams, light concrete/metal roof fireproofed with spray plaster. | 68.55 | 62.69 | 59.69 | 51.71 | 49.46 | 55.47 | 53.73 | 52.90 |
| Concrete block exterior walls, wood posts and beams, light concrete/metal roof fireproofed with spray plaster. | 61.17 | 58.11 | 54.50 | 50.76 | 49.16 | 48.49 | 47.71 | 46.84 |
| Add for each security gate | 4.46 | 3.25 | 2.74 | 2.03 | 1.71 | 1.39 | 1.20 | 1.06 |

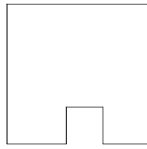
Cabins and Recreational Dwellings



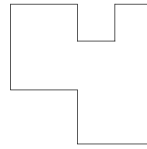
4 corners



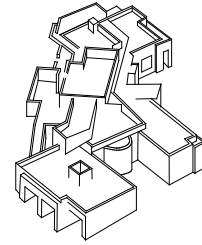
6 corners



8 corners



10 corners



2 building masses

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.

Conventional Recreational Dwellings

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. |

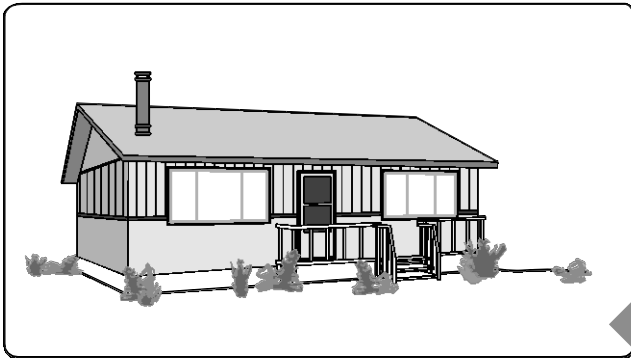
Note: Use the percent of total cost to help identify the correct quality classification.

Conventional Recreational Dwellings

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 | — | — | — | — | 500.90 | 479.16 | 460.99 | 446.52 | 434.14 | 423.43 | 413.73 |
| 1, & 2 | — | — | — | 464.14 | 440.24 | 421.21 | 405.18 | 392.67 | 381.49 | 372.39 | 363.79 |
| 2, Semi-Luxury | — | — | 435.56 | 407.38 | 386.31 | 369.64 | 355.59 | 344.79 | 334.87 | 326.82 | 319.16 |
| 2 & 3 | — | 409.03 | 378.02 | 353.50 | 335.07 | 320.75 | 308.41 | 299.37 | 290.38 | 283.42 | 277.01 |
| 3, Best Std. | 341.66 | 306.46 | 283.26 | 264.89 | 251.17 | 240.30 | 231.11 | 224.25 | 217.69 | 212.39 | 207.57 |
| 3 & 4 | 312.25 | 280.11 | 258.75 | 241.98 | 229.53 | 219.64 | 211.38 | 204.93 | 199.03 | 194.17 | 189.71 |
| 4, Good Std. | 285.36 | 255.93 | 236.61 | 221.12 | 209.85 | 200.71 | 192.99 | 187.29 | 181.79 | 177.56 | 173.41 |
| 4 & 5 | 263.34 | 236.08 | 218.23 | 204.15 | 193.56 | 185.24 | 178.06 | 172.82 | 167.60 | 163.70 | 160.03 |
| 5 Avg. Std. | 242.84 | 217.78 | 201.42 | 188.23 | 178.56 | 170.81 | 164.28 | 159.32 | 154.79 | 151.10 | 147.54 |
| 5 & 6 | 224.03 | 201.00 | 185.70 | 173.66 | 164.67 | 157.58 | 151.58 | 146.94 | 142.84 | 139.21 | 136.13 |
| 6, Min. Std. | 206.58 | 185.37 | 171.41 | 160.14 | 151.89 | 145.47 | 139.82 | 135.69 | 131.58 | 128.57 | 125.60 |

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 | 407.63 | 399.37 | 393.53 | 387.83 | 377.76 | 368.73 | 362.58 | 355.79 | 351.69 | 345.87 | 342.54 |
| 1, & 2 | 356.59 | 351.20 | 345.89 | 340.95 | 332.17 | 323.95 | 318.81 | 312.71 | 309.29 | 304.20 | 301.05 |
| 2, Semi-Luxury | 314.22 | 308.34 | 303.58 | 299.27 | 291.64 | 284.18 | 279.87 | 274.50 | 271.39 | 267.02 | 264.22 |
| 2 & 3 | 272.41 | 267.54 | 263.41 | 259.59 | 252.90 | 246.60 | 242.72 | 238.17 | 235.48 | 231.59 | 229.19 |
| 3, Best Std. | 204.29 | 200.39 | 197.35 | 194.58 | 189.60 | 184.84 | 182.05 | 178.36 | 176.44 | 173.61 | 171.66 |
| 3 & 4 | 186.53 | 183.17 | 180.40 | 177.81 | 173.11 | 168.87 | 166.22 | 163.16 | 161.24 | 158.56 | 157.01 |
| 4, Good Std. | 170.50 | 167.46 | 164.77 | 162.53 | 158.28 | 154.20 | 151.92 | 149.12 | 147.49 | 144.94 | 143.44 |
| 4 & 5 | 157.27 | 154.37 | 152.23 | 149.80 | 145.90 | 142.33 | 140.24 | 137.48 | 136.05 | 133.70 | — |
| 5 Avg. Std. | 145.13 | 142.50 | 140.26 | 138.32 | 134.61 | 131.40 | 129.42 | 126.85 | 125.48 | — | — |
| 5 & 6 | 133.90 | 131.45 | 129.43 | 127.67 | 124.32 | 121.20 | 119.34 | 116.96 | — | — | — |
| 6, Min. Std. | 123.59 | 121.25 | 119.41 | 117.66 | 114.61 | 111.80 | 109.99 | — | — | — | — |

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

Conventional Recreational Dwellings

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 | — | — | — | — | 525.41 | 500.57 | 482.31 | 468.64 | 455.35 | 445.46 | 435.15 |
| 1, & 2 | — | — | — | 483.67 | 461.77 | 440.24 | 423.93 | 412.01 | 400.30 | 391.66 | 382.57 |
| 2, Semi-Luxury | — | — | 453.06 | 424.41 | 405.18 | 386.43 | 372.15 | 361.55 | 351.51 | 343.58 | 335.77 |
| 2 & 3 | — | 425.02 | 393.03 | 368.21 | 351.53 | 335.29 | 322.90 | 313.52 | 305.01 | 298.11 | 291.29 |
| 3, Best Std. | 353.26 | 318.45 | 294.58 | 275.82 | 263.43 | 251.28 | 241.98 | 234.95 | 228.60 | 223.47 | 218.28 |
| 3 & 4 | 323.00 | 291.22 | 269.17 | 252.27 | 240.85 | 229.62 | 221.25 | 214.80 | 208.86 | 204.15 | 199.54 |
| 4, Good Std. | 295.12 | 266.09 | 246.10 | 230.44 | 220.10 | 209.91 | 202.14 | 196.25 | 190.87 | 186.48 | 182.36 |
| 4 & 5 | 272.32 | 245.40 | 227.01 | 212.56 | 203.02 | 193.62 | 186.44 | 181.13 | 176.23 | 172.10 | 168.37 |
| 5 Avg. Std. | 251.22 | 226.39 | 209.37 | 196.17 | 187.26 | 178.58 | 172.02 | 167.11 | 162.53 | 158.71 | 155.13 |
| 5 & 6 | 231.70 | 208.86 | 193.08 | 180.90 | 172.82 | 164.77 | 158.61 | 154.16 | 149.80 | 146.38 | 143.25 |
| 6, Min. Std. | 213.70 | 192.68 | 178.13 | 166.90 | 159.32 | 151.92 | 146.37 | 142.26 | 138.32 | 135.16 | 132.17 |

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 | 428.58 | 420.37 | 414.11 | 409.96 | 398.69 | 390.13 | 383.50 | 377.42 | 373.02 | 366.86 | 363.41 |
| 1, & 2 | 376.68 | 369.64 | 364.18 | 360.38 | 350.47 | 342.65 | 337.20 | 331.75 | 330.31 | 322.48 | 319.55 |
| 2, Semi-Luxury | 330.69 | 324.54 | 319.79 | 316.16 | 307.74 | 300.63 | 295.96 | 290.98 | 287.60 | 283.05 | 280.47 |
| 2 & 3 | 286.74 | 281.47 | 277.39 | 274.25 | 266.94 | 260.65 | 256.81 | 252.48 | 249.47 | 245.57 | 243.35 |
| 3, Best Std. | 214.89 | 210.86 | 207.84 | 205.53 | 200.13 | 195.34 | 192.47 | 189.23 | 187.04 | 184.12 | 182.32 |
| 3 & 4 | 196.51 | 192.79 | 189.83 | 187.83 | 183.05 | 178.58 | 175.86 | 173.01 | 170.86 | 168.36 | 166.72 |
| 4, Good Std. | 179.55 | 176.23 | 173.65 | 171.66 | 167.23 | 163.23 | 160.72 | 158.11 | 156.22 | 153.60 | 152.36 |
| 4 & 5 | 165.51 | 162.53 | 160.10 | 158.61 | 154.19 | 150.65 | 148.33 | 145.82 | 144.12 | 141.81 | — |
| 5 Avg. Std. | 152.72 | 149.84 | 147.72 | 146.08 | 142.29 | 138.90 | 136.92 | 134.51 | 132.93 | — | — |
| 5 & 6 | 140.84 | 138.35 | 136.43 | 134.61 | 131.26 | 128.06 | 126.22 | 124.05 | — | — | — |
| 6, Min. Std. | 129.92 | 127.67 | 125.70 | 124.32 | 121.20 | 118.26 | 116.45 | — | — | — | — |

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

"A-Frame" Cabins

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. |

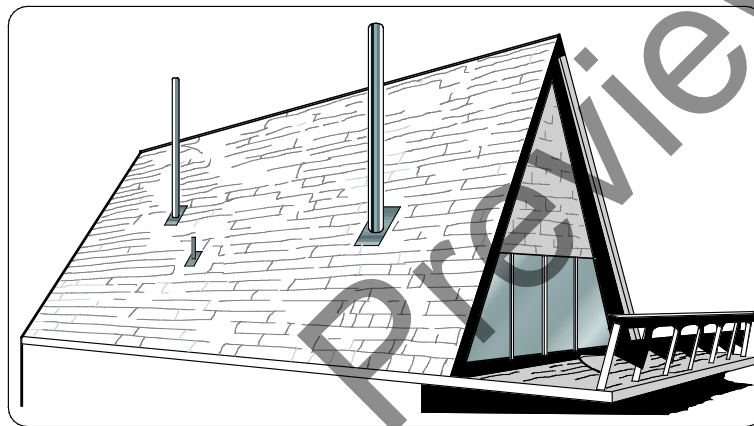
Note: Use the percent of total cost to help identify the correct quality classification.

"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 | 279.33 | 252.04 | 233.08 | 219.16 | 208.27 | 199.66 | 192.55 | 186.61 | 181.58 | 177.14 | 173.34 |
| 1 & 2 | 256.66 | 231.59 | 214.17 | 201.33 | 191.43 | 183.29 | 176.93 | 171.45 | 166.78 | 162.80 | 159.27 |
| 2, Good | 235.48 | 212.46 | 196.61 | 184.73 | 175.68 | 168.32 | 162.39 | 157.30 | 153.12 | 149.40 | 146.16 |
| 2 & 3 | 222.32 | 200.60 | 185.54 | 174.42 | 165.80 | 158.92 | 153.22 | 148.56 | 144.51 | 141.02 | 137.96 |
| 3, Average | 210.60 | 190.04 | 175.77 | 165.20 | 157.01 | 150.51 | 145.13 | 140.66 | 136.92 | 133.57 | 130.71 |
| 3 & 4 | 191.14 | 172.49 | 159.45 | 149.94 | 142.55 | 136.65 | 131.80 | 127.70 | 124.24 | 121.21 | 118.68 |
| 4, Low | 171.45 | 154.74 | 143.14 | 134.57 | 127.93 | 122.58 | 118.24 | 114.62 | 111.42 | 108.78 | 106.42 |

Square Foot Area

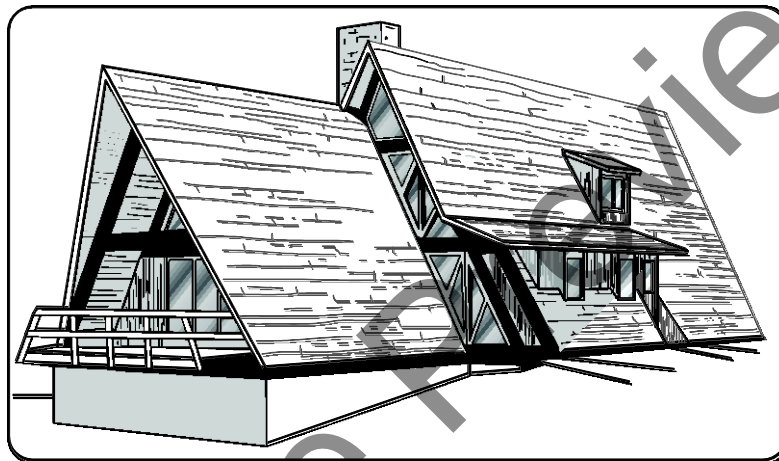
| Quality Class | 1,500 | 1,600 | 1,700 | 1,800 | 2,000 | 2,200 | 2,400 | 2,600 | 2,800 | 3,000 | 3,200 |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1, Best | 167.18 | 164.48 | 162.05 | 159.80 | 155.94 | 152.71 | 150.01 | 147.63 | 145.56 | 143.68 | 142.12 |
| 1 & 2 | 154.28 | 151.80 | 149.46 | 147.44 | 143.92 | 140.91 | 138.43 | 136.23 | 134.37 | 132.67 | 131.19 |
| 2, Good | 142.35 | 139.98 | 137.91 | 136.00 | 132.77 | 130.05 | 127.71 | 125.71 | 123.89 | 122.37 | 121.04 |
| 2 & 3 | 135.12 | 132.89 | 130.92 | 129.16 | 126.01 | 123.47 | 121.21 | 119.32 | 117.63 | 116.19 | 114.85 |
| 3, Average | 128.35 | 126.25 | 124.33 | 122.73 | 119.76 | 117.27 | 115.14 | 113.35 | 111.80 | 110.37 | 109.14 |
| 3 & 4 | 118.09 | 116.17 | 114.39 | 112.91 | 110.19 | 107.91 | 105.99 | 104.30 | 102.85 | 101.58 | 100.40 |
| 4, Low | 105.66 | 103.57 | 102.50 | 101.05 | 99.76 | 97.73 | 95.95 | 94.41 | 93.12 | 91.94 | 90.92 |

"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 | 283.83 | 256.14 | 237.11 | 223.02 | 212.23 | 203.67 | 196.61 | 190.73 | 185.82 | 181.43 | 177.69 |
| 1 & 2 | 260.27 | 234.94 | 217.46 | 204.58 | 194.71 | 186.82 | 180.31 | 174.93 | 170.37 | 166.40 | 162.80 |
| 2, Good | 239.10 | 215.78 | 199.77 | 187.89 | 178.77 | 171.55 | 165.66 | 160.67 | 156.50 | 152.88 | 149.74 |
| 2 & 3 | 225.81 | 203.72 | 188.55 | 177.38 | 168.87 | 162.05 | 156.41 | 151.70 | 147.68 | 144.36 | 141.36 |
| 3, Average | 212.85 | 192.06 | 177.73 | 167.23 | 159.08 | 152.66 | 147.40 | 143.01 | 139.30 | 135.99 | 133.23 |
| 3 & 4 | 194.18 | 175.26 | 162.25 | 152.62 | 145.23 | 139.34 | 134.52 | 130.58 | 127.06 | 124.17 | 121.60 |
| 4, Low | 173.82 | 156.86 | 145.17 | 136.65 | 130.05 | 124.78 | 120.42 | 116.84 | 113.75 | 111.10 | 108.80 |

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 | 171.85 | 169.02 | 166.49 | 164.27 | 160.37 | 157.11 | 154.28 | 151.89 | 149.78 | 147.87 | 146.28 |
| 1 & 2 | 158.27 | 155.63 | 153.38 | 151.26 | 147.67 | 144.68 | 142.13 | 139.88 | 137.92 | 136.23 | 134.72 |
| 2, Good | 146.01 | 143.60 | 141.52 | 139.61 | 136.29 | 133.51 | 131.16 | 129.11 | 127.31 | 125.73 | 124.31 |
| 2 & 3 | 138.56 | 136.29 | 134.26 | 132.44 | 129.35 | 126.69 | 124.39 | 122.52 | 120.84 | 119.28 | 118.01 |
| 3, Average | 132.00 | 129.87 | 128.00 | 126.22 | 123.22 | 120.73 | 118.68 | 116.75 | 115.11 | 113.72 | 112.40 |
| 3 & 4 | 121.21 | 119.28 | 117.47 | 115.89 | 113.15 | 110.85 | 108.93 | 107.22 | 105.69 | 104.35 | 103.24 |
| 4, Low | 107.89 | 106.27 | 104.84 | 102.30 | 100.24 | 98.51 | 96.89 | 95.62 | 94.37 | 93.33 | 91.92 |

"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 | 288.48 | 260.86 | 241.86 | 227.79 | 216.97 | 208.25 | 201.18 | 195.18 | 190.13 | 185.82 | 181.91 |
| 1 & 2 | 264.51 | 239.31 | 221.84 | 208.93 | 198.93 | 190.97 | 184.50 | 179.04 | 174.35 | 170.37 | 166.87 |
| 2, Good | 242.54 | 219.35 | 203.40 | 191.51 | 182.43 | 175.12 | 169.09 | 164.09 | 159.90 | 156.22 | 152.92 |
| 2 & 3 | 228.90 | 207.03 | 191.94 | 180.75 | 172.16 | 165.22 | 159.61 | 154.88 | 150.89 | 147.40 | 144.38 |
| 3, Average | 216.50 | 195.85 | 181.47 | 170.94 | 162.84 | 156.32 | 150.95 | 146.58 | 142.70 | 139.38 | 136.61 |
| 3 & 4 | 196.70 | 178.00 | 164.93 | 155.31 | 147.93 | 142.00 | 137.18 | 133.16 | 129.68 | 126.75 | 124.09 |
| 4, Low | 176.36 | 159.47 | 147.83 | 139.24 | 132.64 | 127.30 | 123.00 | 119.32 | 116.22 | 113.56 | 111.25 |

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 | 176.21 | 173.40 | 170.84 | 168.62 | 164.68 | 161.39 | 158.56 | 156.23 | 154.11 | 152.31 | 150.74 |
| 1 & 2 | 159.33 | 156.73 | 154.43 | 152.37 | 148.84 | 145.89 | 143.36 | 141.23 | 139.30 | 137.71 | 136.15 |
| 2, Good | 149.72 | 147.23 | 145.09 | 143.23 | 139.85 | 137.07 | 134.72 | 132.67 | 130.87 | 129.35 | 127.97 |
| 2 & 3 | 141.75 | 139.38 | 137.39 | 135.58 | 132.43 | 129.75 | 127.61 | 125.62 | 123.89 | 122.50 | 121.17 |
| 3, Average | 135.02 | 132.79 | 130.84 | 129.11 | 126.11 | 123.64 | 121.54 | 119.71 | 118.09 | 116.62 | 115.38 |
| 3 & 4 | 123.85 | 121.82 | 119.99 | 118.45 | 115.68 | 113.40 | 111.47 | 109.79 | 108.34 | 107.04 | 105.87 |
| 4, Low | 110.37 | 108.78 | 107.34 | 104.81 | 102.75 | 100.95 | 99.41 | 98.07 | 96.89 | 95.94 | 94.45 |

Cabins and Recreational Dwellings

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 \$69 to \$101 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 \$101 to \$112 per square foot. A good quality half story area with good carpet, decorative rustic partitions, ceiling beams and good lighting costs \$133 to \$155 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 | \$26.85 to \$31.51 |
| Over 4' to 6' above ground | 31.20 to 40.43 |
| Over 6' to 9' above ground | 32.66 to 42.81 |
| Over 9' to 12' above ground | 33.85 to 44.82 |
| Over 12' above ground | 35.68 to 46.36 |

Fireplaces, 2-story, including foundation

| | |
|----------------------------------|--------------------|
| Metal hood with concrete slab | \$3,010 to \$3,756 |
| Prefabricated, zero clearance | 4,320 to 6,300 |
| Simple concrete block | 5,190 to 8,670 |
| Concrete block with stone facing | 6,920 to 10,500 |
| Simple natural stone | 11,900 to 17,200 |

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 |

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 \$960 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" | \$2.59 to \$4.20 |
| 4" x 6" | 4.20 to 7.10 |
| 6" x 6" | 5.40 to 10.10 |
| 8" x 8" | 12.10 to 19.90 |
| 10" x 10" | 22.50 to 32.20 |
| 12" x 12" | 33.80 to 46.80 |

Brick, per square foot of wall

| | |
|-------------------------------------|--------------------|
| 8" common brick | \$43.50 to \$53.10 |
| 12" common brick | 65.70 to 82.60 |
| 8" common brick, 1 side face brick | 55.00 to 67.90 |
| 12" common brick, 1 side face brick | 85.05 to 107.00 |

Heating, cost each

| | |
|---|---------|
| Wall furnace, 35,000 Btu | \$1,438 |
| Wall furnace, 65,000 Btu | 1,764 |
| Baseboard hot water, per SF* | 5.6 |
| Central heating, perimeter ducts, per S.F.* | 7.90 |

*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 | \$5.70 to \$8.53 |
| 4" concrete | 5.84 to 8.90 |
| 6" concrete | 6.16 to 9.00 |

Reinforced concrete walls, per C.F.

| | |
|----------------------|--------------------|
| Formed one side only | \$24.30 to \$28.12 |
| Formed both sides | 30.80 to 34.60 |

Reinforced concrete block, per square foot of wall

| | |
|-----------------------------|--------------------|
| 8" natural | \$11.60 to \$14.10 |
| 8" colored | 15.90 to 19.00 |
| 8" detailed blocks, natural | 13.10 to 17.30 |
| 8" detailed blocks, colored | 18.10 to 20.50 |
| 8" sandblasted | 13.90 to 16.54 |
| 8" splitface, natural | 12.00 to 14.20 |
| 8" splitface, colored | 17.70 to 21.30 |
| 8" slump block, natural | 12.90 to 16.10 |
| 8" slump block, colored | 17.80 to 20.80 |
| 12" natural | 22.80 to 25.20 |

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.

| Age | 20 Years | | 25 Years | | 30 Years | | 40 Years | | 45 Years | | 50 Years | | 55 Years | | 60 Years | | 70 Years | | |
|-----|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|-----|
| | Life | % Good | Life | % Good | Life | % Good | Life | % Good | 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 |
| 64 | - | - | - | - | - | - | 1 | 10 | 100 | - | - | - | - | - | - | - | - | 1 | 11 |

Index

A

Adjustment factors, live load 229
 Adjustments, wall heights..... 5
 Adjustments for area 7
 Administrative office (military) ... 272
 A-frame 32
 A-frame cabins 38-41
 4 corners 39
 6 corners 40
 8 corners 41
 A-frame restaurants 183-184
 Age factors 9
 Agricultural structures 249-269
 Air and water service..... 205
 Air compressors 206
 Air conditioning 18, 28, 266
 Aircraft avionics shop (military) ... 272
 Aircraft machine shop (military) ... 272
 Aircraft operations (military) 272
 Ambulatory clinic (military) 272
 Appliances 29
 Applied instruction building
 (military) 272
 Area modification factors 6, 7-8
 Area of buildings 4
 Auto service centers..... 218-221
 Automatic teller 125
 Average Life..... 43

B

Balconies 28
 Banks and savings offices... 115-125
 Barns 250-252, 256-260
 dairy 257-260
 feed 252
 general purpose 250
 hay storage..... 251
 herringbone..... 260
 low cost..... 257
 pole 256
 stanchion 258
 walk-through..... 259
 Barracks, dormitory (military) ... 272
 Baseboard units 28
 Basement garages 31
 Basements 237
 Basements, residential 27
 Bathrooms, multi-family
 residential 30
 Block, concrete 42
 Bowling alley (on military base) ... 272
 Boxes, walk-in 242
 Brick 42
 Buffet hutch 18
 Building classes 4
 Building quality 4
 Building shapes 4
 Built-ins 18
 Bulkheads 242, 244, 245
 Bumpers 247

C

Cabins 32, 38-42
 Cages, poultry..... 262, 263, 264,
 265, 266
 Canopies 204, 232, 237
 Canopy lights 237
 Carports 18, 29, 42
 Cash boxes 205
 Catch basin 248
 Ceilings 245

Central air 18, 28
 Chain link fence 248
 Chapel center (on military base) ... 272
 Child development center
 (on military base) 272
 Churches 172-173
 City hall 56, 59
 Classes, quality 11, 16, 19, 23,
 33, 38, 44, 47, 50, 53, 56, 59, 76, 82,
 89, 94, 103, 105, 107, 109, 111, 113,
 115, 120, 126, 129, 132, 135, 143, 151,
 159, 167, 169, 171, 173, 175, 178,
 181, 183, 185, 191, 195-196, 198,
 200, 202, 208, 213, 218, 223, 227,
 244, 250-255, 257-260, 262-265, 267,
 268
 Classrooms, temporary 55
 Coffee shop restaurants 178-180
 Commercial structures 74-248
 Commissary (military) 272
 Compressors, refrigeration 261
 Concrete block 42
 Concrete decks, uncovered 27
 Concrete paving 247
 Concrete walls 42
 Contents 3
 Convalescent hospitals..... 167-169
 Conventional recreational dwellings
 4 corners 34
 6 corners 35
 8 corners 36
 10 corners 37
 Conventional restaurants 181-182
 Coolers 28
 Coolers, evaporative 266
 Cooling 18
 Cooling pads..... 266
 Corral, holding 261
 Cost tables, explanation 4
 Counters 125
 Covered porches 27
 Curbing 206
 Curbs 247
 Current dollar costs 9

D

Dairy barns 257-260
 Dampers 234
 Deck roofs 18
 Decks 42
 concrete 27
 Decks and porches 18, 27, 42
 Dental clinic (on military base) ... 272
 Department stores..... 126-134
 Depreciation 6, 43
 Dining facility (on military base) ... 272
 Discount houses 111-114
 Dishwasher 18
 Dispensers 204
 Display fronts 242- 245
 Display platforms 245
 Display signs 246
 Dock levelers 237
 Docks 237
 Domes, skylights 240
 Door hoods 233
 Doors
 exterior 238
 fire 238
 hollow metal 232
 interior 238
 roll-up 238
 sidewall, sliding 232

walk-thru 232
 warehouse 238
 Downspouts 233
 Drainage 248
 Draperies 238
 Dumbwaiters..... 238

E

Ecclesiastic buildings 173-174
 Economic obsolescence 6
 Education center (on
 military base) 272
 Effective age 6
 Electric heating 239
 Electric vehicle charging
 station hookup 28
 Elementary school (military
 dependents) 272
 Elementary schools 44-49
 Elevators 30, 238
 Entrances 136-141, 144-149,
 152-157, 160-165, 245
 Equipment room 258, 259
 Equipment shed 254, 260
 Escalators 238
 Evaporative cooler 18
 Explanation of tables 4
 External access 125
 External offices 227
 Extinguishers, fire 239

F

Factory buildings 226
 Family housing (on military
 base) 272
 Family service center (military) ... 272
 Fans 266
 Feed barns 252
 Feed tanks, bulk 269
 Feeders, automatic..... 266
 Fence
 cable 261
 chain link 248
 metal rail 261
 wood 248
 Fencing 206
 Fill 239
 Finishes, wall 245
 Fire and rescue station
 (on military base) 272
 Fire escapes 239
 Fire extinguishers 239
 Fire sprinklers 239
 Fire stations 68
 on military base 272
 Fireplaces 18, 29, 42, 239
 Fixtures 125
 Flatwork 42, 261
 Floor furnaces 28
 Foggers 266
 Foundations, permanent, for
 manufactured housing 18
 Framed openings 233
 Functional obsolescence 6
 Funeral homes 171-172
 Furnaces 28

G

Garages 29, 31, 42
 basement 31
 ground level 31
 separate structure 31
 Garbage disposal 18

Gasoline storage tanks 205
 Gates 247-261
 General office buildings 135-150
 General purpose barns 250
 Glass 245
 Government offices 56-61
 Greenhouses 267
 Gutters 233

H

Half classes 4
 Half-baths 18
 Half-story costs 30, 42
 Hangars (military) 272
 Hay shelters 261
 Hay storage barns 251
 Heat and smoke vents 241
 Heaters
 baseboard 239
 electric 28, 239
 suspended 239
 Heating 42, 266
 Heating and cooling 28, 239
 Herringbone barns 260
 High school (military
 dependents) 272
 Historical index 9
 Holding corral 261
 Holding tanks 261
 Hospitals, convalescent..... 167-170
 How to use this book 4-6

I

Index, historical 9
 Industrial buildings 223
 light 225
 Industrial structures 222-248
 Installation maintenance shop
 (military) 272
 Instructions 4
 Insulation 233
 Intercom 237
 Internal offices 227
 Island lighters 205
 Island office 204

J

Jr. high/middle school (military
 dependents) 272

K

Kitchen equipment 240

L

Laundry sinks 18
 Libraries, public 62
 Library (on military base) 272
 Lifts 237
 Light industrial buildings 225
 Lighting 245, 248
 Limitations 6
 Livestock scales 269
 Loading ramps 237
 Loafing sheds 261
 Local modifiers 7-8
 Location adjustments 6
 Lube room equipment 205

Index

M

Machinery and equipment sheds... 254
 Main Exchange (military)..... 272
 Manholes..... 248
 Manufactured housing..... 16-18
 additional costs..... 18
 Material handling..... 242
 Medical clinic (on military base) ... 272
 Medical facility (on military base)..... 272
 Medical-dental buildings..... 151-159
 Mezzanines..... 125, 240
 Microwave..... 18
 Migrant worker housing..... 268
 Military construction costs..... 270
 Milk house..... 257
 Milk line..... 261
 Milking barn..... 258-260
 Mobile home parks..... 195-197
 Mobile homes..... 16-18
 Mortuaries..... 171-172
 Motels..... 23-26
 Multi-family residences..... 20-22
 Multi-unit buildings..... 92-93

N

Night deposit vault..... 125
 Normal Percent Good..... 235

O

Obsolescence
 economic..... 6
 functional..... 6
 physical..... 6
 Offices, external and internal..... 227
 Offices, government..... 56-61
 Openings, framed..... 233
 Operations building (military)..... 272
 Overhangs..... 233
 Overhead heaters..... 239

P

PA systems..... 237
 Parachute and dinghy shop (military)..... 272
 Partitions..... 240
 interior..... 234
 Paving..... 206
 asphaltic..... 247
 concrete..... 247
 Percent Good..... 43
 Percent Good table..... 235
 Physical fitness training center (military)..... 272
 Physical lives..... 43, 235, 269
 Physical obsolescence..... 6
 Platforms..... 245
 Plumbing..... 42
 Pneumatic tube systems..... 240
 Pole barns..... 256
 Porch roofs..... 18, 27
 Porches, covered..... 27
 Porches and decks..... 18, 42
 Post mounting..... 207, 246
 Posts..... 42
 Poultry houses..... 262-266
 controlled environment..... 263
 conventional..... 262

 deep pit..... 265
 equipment costs..... 266
 high rise..... 264
 Prefabricated classrooms..... 55
 Present Value..... 43
 Pressure tanks..... 269
 Public address systems..... 237
 Public buildings
 elementary schools..... 44-47
 libraries..... 62
 secondary schools..... 50-55
 Pullmans..... 18
 Pumps..... 204

Q

Quality classes, explanation..... 4
 Quality classifications
 A-frame cabins..... 38
 A-frame restaurants..... 183
 auto service centers..... 218
 banks and savings offices..... 115, 120
 coffee shop restaurants..... 178
 convalescent hospitals..... 167, 169
 conventional recreational dwellings..... 33
 conventional restaurants..... 181
 department stores..... 126, 129, 132
 discount houses..... 111, 113
 display fronts..... 244
 ecclesiastic buildings..... 173
 feed barns..... 252
 funeral homes..... 171
 general office buildings..... 135, 143
 general purpose barns..... 250
 government offices..... 56, 59
 greenhouses..... 267
 hay storage barns..... 251
 industrial buildings..... 223
 internal offices..... 227
 machinery and equipment sheds..... 254
 manufactured housing..... 16
 medical-dental buildings..... 151, 159
 migrant worker housing..... 268
 mobile home parks..... 195
 modern herringbone barns..... 260
 motels..... 23
 multi-family..... 19
 poultry houses..... 262
 schools, elementary..... 44-45, 47
 schools, secondary..... 50-53
 self service restaurants..... 175
 service garages..... 208, 213
 service stations..... 198, 200, 202
 shop buildings..... 253
 single family..... 11
 small food stores..... 107, 109
 small sheds..... 255
 suburban stores..... 89, 94
 supermarkets..... 103, 105
 theaters..... 185, 191
 urban stores..... 76, 82
 Quality specifications..... 4

R

Rails and steps..... 18
 Ramp..... 261
 Receiver systems, satellite..... 245
 Record storage..... 125
 Recreation center (military)..... 272
 Recreational dwellings..... 32-42
 Regional medical center (military)..... 272

Remaining Life..... 43
 Reserve Center (military)..... 272
 Residences
 multi-family..... 19-22
 single family..... 10-15
 Residential structures section... 10-43
 Restaurants
 A-frame..... 183-184
 coffee shop..... 178-180
 conventional..... 181-182
 self service..... 175-177
 Room coolers..... 28
 Rotators..... 206, 247

S

Safe deposit boxes..... 125
 Satellite communications center (military)..... 272
 Satellite receiver..... 245
 Scales
 livestock..... 269
 truck..... 269
 Schools, elementary..... 44-47
 Schools, secondary..... 50-55
 Screen walls..... 18
 Seating..... 240
 Secondary schools..... 50-55
 Security systems..... 237
 Self service restaurants..... 175-178
 Septic tanks..... 269
 Service club (military)..... 272
 Service garages..... 208-213
 Service station signs..... 206
 Service stations..... 198-207
 additional costs..... 204-207
 Sheds..... 254-255
 Shop buildings..... 253
 Shopping centers..... 88
 Showers..... 18
 Sidewall doors..... 232
 Signs, lighted..... 246
 Single family residences..... 10-15
 4 corners..... 12
 6 corners..... 13
 8 corners..... 14
 10 corners..... 15
 Sinks..... 18
 Site improvement..... 206
 Skirting..... 18
 Skylights..... 234, 240, 241
 Sliding windows..... 234
 Small food stores..... 107-110
 Small sheds..... 255
 Snowload capability..... 18
 Sound systems..... 237
 Sprinklers..... 261
 fire..... 239
 roof..... 266
 Stairways..... 28
 Stanchion barns..... 258
 Stanchions, steel..... 261
 Station hospital (military)..... 272
 Steel buildings..... 228-234
 Steel stanchions..... 261
 Steps and rails..... 18
 Storage buildings..... 18, 204
 Storage facility (military)..... 272
 Storage tanks, gasoline..... 205
 Stores
 suburban..... 88-102
 urban..... 75-87
 Striping..... 247

Suburban stores..... 88-102
 Suite entrances
 exterior..... 136-138, 144-146,
 152-154, 160-162
 interior..... 139-141, 147-149,
 155-157, 163-165
 Sump pumps..... 261
 Supermarkets..... 103-106

T

Table of Contents..... 3
 Tanks, pressure..... 269
 Temporary classrooms..... 55
 Temporary lodging facility (military)..... 272
 Theaters..... 185-191
 Tie downs..... 18
 Toilets..... 18
 Trailer parks..... 195-197
 Trash compactor..... 18
 Truck scales..... 269
 Turbines..... 204

U

Unaccompanied officers quarters (military)..... 272
 Urban stores..... 75-87

V

Vault doors..... 125
 Vehicle hoist..... 206
 Vehicle maint. shop (military)..... 272
 Ventilators..... 234, 241
 Vents..... 234, 241

W

Walk-in boxes..... 242
 Walk-through barns..... 259
 Walk-thru doors..... 232
 Wall finishes..... 245
 Wall furnaces..... 28
 Wall heaters..... 28
 Wall heights..... 5
 Walls, bulkhead..... 245
 Warehouses..... 224
 Wash area..... 261
 Water systems..... 269
 Water tanks..... 261
 Wet bar..... 18
 Whirlpool..... 18
 Window frames..... 245
 Windows
 aluminum industrial..... 234
 aluminum sliding..... 234
 steel sliding..... 234
 Wood decks, uncovered..... 27
 Wood fence..... 248
 Wood posts..... 42

X-Y-Z

Yard improvements..... 247-248
 Yard lights..... 205
 Youth center (military dependents)..... 272

Practical References for Builders

National Estimator Cloud

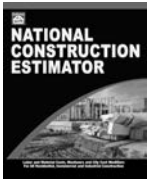


Generate professional construction estimates for all residential and commercial construction from your internet browser. Includes 10 Craftsman construction cost databases, over 40,000 labor and material costs for construction, in an easy-to-use format.

Cost estimates are well-organized and thoroughly indexed to speed and simplify writing estimates for nearly any residential or light commercial construction project – new construction, improvement or repair. Convert the bid to an invoice – in either QuickBooks Desktop or QuickBooks Online. Access your estimates anywhere with a Web browser. Monthly and one-time billing options available. Visit

<http://craftsman-book.com/national-estimator-cloud> for more details.

National Construction Estimator



Current building costs for residential, commercial, and industrial construction. Estimated prices for every common building material. Provides man-hours, recommended crew, and gives the labor cost for installation.

672 pages, 8½ x 11, \$117.50

Revised annually

eBook (PDF) also available; \$58.75 at www.craftsman-book.com

Getting Financing & Developing Land



Developing land is a major leap for most builders — yet that's where the big money is made. This book gives you the practical knowledge you need to make that leap. Learn how to prepare a market study, select a building site, obtain financing, guide your plans through approval, and then control your building costs so you can ensure yourself a good profit. Includes a

CD-ROM with forms, checklists, and a sample business plan you can customize and use to help you sell your idea to lenders and investors. **232 pages, 8½ x 11, \$39.00**

eBook (PDF) also available; \$19.50 at www.craftsman-book.com

Construction Forms for Contractors



This practical guide contains 78 useful forms, letters and checklists, guaranteed to help you streamline your office, organize your jobsites, gather and manage records and documents, keep a handle on your subs, reduce estimating errors, administer change orders and lien issues, monitor crew productivity, track your equipment use, and more. Includes accounting forms,

change order forms, forms for customers, estimating forms, field work forms, HR forms, lien forms, office forms, bids and proposals, subcontracts, and more. All are also on the CD-ROM included, in *Excel* spreadsheets, as formatted Rich Text that you can fill out on your computer, and as PDFs.

360 pages, 8½ x 11, \$48.50

eBook (PDF) also available; \$24.25 at www.craftsman-book.com

Contractor's Guide to Change Orders

This book gives you the ammunition you need to keep contract disputes from robbing you of your profit. You'll learn how to identify trouble spots in your contract, plans, specifications and site; negotiate and resolve change order disputes, and collect facts for evidence to support your claims. You'll also find detailed checklists to organize your procedures, field-tested sample forms and worksheets ready for duplication, and various professional letters for almost any situation. **382 pages, 8½ x 11, \$87.95**

Paper Contracting: The How-To of Construction Management Contracting



Risk, and the headaches that go with it, have always been a major part of any construction project — risk of loss, negative cash flow, construction claims, regulations, excessive changes, disputes, slow pay — sometimes you'll make money, and often you won't. But many contractors today are avoiding almost all of that risk by working under a construction management contract, where they are simply a paid consultant to the owner, running the job, but leaving him the risk. This manual is the how-to of construction management contracting. You'll learn how the process works, how to get started as a CM contractor, what the job entails, how to deal with the issues that come up, when to step back, and how to get the job completed on time and on budget. Includes a link to free downloads of CM contracts legal in each state.

272 pages, 8½ x 11, \$55.50

eBook (PDF) also available; \$27.75 at www.craftsman-book.com

Construction Contract Writer

Relying on a "one-size-fits-all" boilerplate construction contract to fit your jobs can be dangerous — almost as dangerous as a handshake agreement. *Construction Contract Writer* lets you draft a contract in minutes that precisely fits your needs and the particular job, and meets both state and federal requirements. You just answer a series of questions — like an interview — to construct a legal contract for each project you take on. Anticipate where disputes could arise and settle them in the contract before they happen. Include the warranty protection you intend, the payment schedule, and create subcontracts from the prime contract by just clicking a box. Includes a feedback button to an attorney on the Craftsman staff to help should you get stumped — *No extra charge. \$199.95.* Download *Construction Contract Writer* at <http://www.constructioncontractwriter.com>



Insurance Restoration Contracting: Startup to Success

Insurance restoration — the repair of buildings damaged by water, fire, smoke, storms, vandalism and other disasters — is an exciting field of construction that provides lucrative work immune to economic downturns. And, with insurance companies funding the repairs, your payment is virtually guaranteed. But this type of work requires special knowledge and equipment, and that's what you'll learn about in this book. It covers fire repairs and smoke damage, water losses and specialized drying methods, mold remediation, content restoration, even damage to mobile and manufactured homes. You'll also find information on equipment needs, training classes, estimating books and software, and how restoration leads to lucrative remodeling jobs. It covers all you need to know to start and succeed as the restoration contractor that both homeowners and insurance companies call on first for the best jobs. **640 pages, 8½ x 11, \$69.00**

eBook (PDF) also available; \$34.50 at www.craftsman-book.com

National Appraisal Estimator

An Online Appraisal Estimating Service. Produce credible single-family residence appraisals — in as little as five minutes. A smart resource for appraisers using the cost approach. Reports consider all significant cost variables and both physical and functional depreciation.

For more information, visit

www.craftsman-book.com/national-appraisal-estimator-online-software.



Markup & Profit: A Contractor's Guide, Revised



In order to succeed in a construction business, you have to be able to price your jobs to cover all labor, material and overhead expenses, and make a decent profit. But calculating markup is only part of the picture. If you're going to beat the odds and stay in business — profitably, you also need to know how to write good contracts, manage your crews, work with subcontractors and collect on your work. This book covers the business basics of running a construction company, whether you're a general or specialty contractor working in remodeling, new construction or commercial work. The principles outlined here apply to all construction-related businesses. You'll find tried and tested formulas to guarantee profits, with instructions and easy-to-follow examples to help you learn how to operate your business successfully. Includes a link to free downloads of blank forms and checklists used in this book.

336 pages, 8½ x 11, \$59.50

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

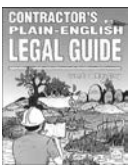
Estimating Home Building Costs, Revised



Estimate every phase of residential construction from site costs to the profit margin you include in your bid. Shows how to keep track of manhours and make accurate labor cost estimates for site clearing and excavation, footings, foundations, framing and sheathing finishes, electrical, plumbing, and more. Provides and explains sample cost estimate worksheets with complete instructions for each job phase. This practical guide to estimating home construction costs has been updated with digital *Excel* estimating forms and worksheets that ensure accurate and complete estimates for your residential projects. Enter your project information on the worksheets and *Excel* automatically totals each material and labor cost from every stage of construction to a final cost estimate worksheet. Load the enclosed CD-ROM into your computer and create your own estimate as you follow along with the step-by-step techniques in this book.

336 pages, 8½ x 11, \$38.00
eBook (PDF) also available; \$19.00 at www.craftsman-book.com

Contractor's Plain-English Legal Guide



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**

Construction Estimating Reference Data eBook

Provides the 300 most useful manhour tables for practically every item of construction. Labor requirements are listed for sitework, concrete work, masonry, steel, carpentry, thermal and moisture protection, doors and windows, finishes, mechanical and electrical. Each section details the work being estimated and gives appropriate crew size and equipment needed.

384 pages

Available only as an eBook (PDF); \$29.50 at www.craftsman-book.com

Craftsman's Construction Installation Encyclopedia

Step-by-step installation instructions for just about any residential construction, remodeling or repair task, arranged alphabetically, from *Acoustic tile* to *Wood flooring*. Includes hundreds of illustrations that show how to build, install, or remodel each part of the job, as well as manhour tables for each work item so you can estimate and bid with confidence. Also includes a CD-ROM with all the material in the book, handy look-up features, and the ability to capture and print out for your crew the instructions and diagrams for any job. **792 pages, 8½ x 11, \$65.00**
eBook (PDF) also available; \$32.50 at www.craftsman-book.com

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



Fences & Retaining Walls Revised

Everything you need to know to run a profitable business in fence and retaining wall contracting. Takes you through layout and design, construction techniques for wood, masonry, and chain link fences, gates and entries, including finishing and electrical details. How to build retaining and rock walls. How to get your business off to the right start, keep the books, and estimate accurately. The book even includes a chapter on contractor's math.

416 pages, 8 x 11, \$98.75

Also available as an eBook (PDF, EPUB & MOBI/Kindle); \$49.38 at www.craftsman-book.com

Construction Surveying & Layout

A practical guide to simplified construction surveying. How to divide land, use a transit and tape to find a known point, draw an accurate survey map from your field notes, use topographic surveys, and the right way to level and set grade. You'll learn how to make a survey for any residential or commercial lot, driveway, road, or bridge — including how to figure cuts and fills and calculate excavation quantities. Use this guide to make your own surveys, or just read and verify the accuracy of surveys made by others.

244 pages, 8½ x 11, \$57.95

National Repair & Remodeling Estimator

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

528 pages, 8½ x 11, \$118.50. Revised annually

Also available as an eBook (PDF), \$59.25 at www.craftsman-book.com



Craftsman eLibrary



Craftsman's eLibrary license gives you immediate access to 60+ PDF eBooks in our bookstore for 12 full months! **You pay only one low price. \$129.99**
Visit www.craftsman-book.com for more details.

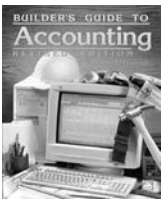
National Home Improvement Estimator



Current labor and material prices for home improvement projects. Provides manhours for each job, recommended crew size, and the labor cost for removal and installation work. Material prices are current, with location adjustment factors and free monthly updates on the Web. Gives step-by-step instructions for the work, with helpful diagrams, and home improvement shortcuts and tips from experts. **548 pages, 8½ x 11, \$118.75. Revised annually**

Also available as an eBook (PDF), \$59.38 at www.craftsman-book.com

Builder's Guide to Accounting Revised



Step-by-step, easy-to-follow guidelines for setting up and maintaining records for your building business. This practical guide to all accounting methods shows how to meet state and federal accounting requirements, explains the new depreciation rules, and describes how the Tax Reform Act can affect the way you keep records.

Full of charts, diagrams, simple directions and examples to help you keep track of where your money is going. Recommended reading for many state contractor's exams. Each chapter ends with a set of test questions, and a CD-ROM included FREE has all the questions in interactive self-test software. Use the Study Mode to make studying for the exam much easier, and Exam Mode to practice your skills. **360 pages, 8½ x 11, \$61.50**
eBook (PDF) also available; \$30.75 at www.craftsman-book.com

Pipe & Excavation Contracting Revised



This popular manual has been updated and improved to bring it more current with modern earthmoving and trenching equipment, refined excavation techniques, stricter safety rules, and improved materials. Shows how to read plans and compute quantities for both trench and surface excavation, figure crew and equipment productivity rates, estimate unit costs, bid the work, and

get the bonds you need. Learn how to choose the right equipment for each job, use GPS, how to lay all types of water and sewer pipe, work on steep slopes or in high groundwater, efficiently remove asphalt and rock, and the various pipe, joints and fittings now available. Explains how to switch your business to excavation work when you don't have pipe contracts, and how to avoid the pitfalls that can wipe out your profits on any job.

328 pages, 8½ x 11, \$55.00
eBook (PDF) also available; \$27.50 at www.craftsman-book.com

Steel-Frame House Construction eBook

Framing with steel has obvious advantages over wood, yet building with steel requires new skills that can present challenges to the wood builder. This book explains the secrets of steel framing techniques for building homes, whether pre-engineered or built stick by stick. It shows you the techniques, the tools, the materials, and how you can make it happen. Includes hundreds of photos and illustrations. **320 pages**

Available only as an eBook (PDF) and software download; \$19.88 at www.craftsman-book.com

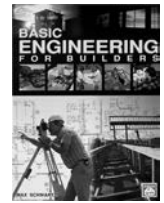
Moving to Commercial Construction

In commercial work, a single job can keep you and your crews busy for a year or more. The profit percentages are higher, but so is the risk involved. This book takes you step-by-step through the process of setting up a successful commercial business: finding work, estimating and bidding, value engineering, getting through the submittal and shop drawing process, keeping a stable work force, controlling costs, and promoting your business. Explains the design/build and partnering business concepts and their advantage over the competitive bid process. Includes sample letters, contracts, checklists and forms that you can use in your business, plus a CD-ROM with blank copies in several word-processing formats for both Mac™ and PC computers. **256 pages, 8½ x 11, \$42.00**
eBook (PDF) also available; \$21.00, at www.craftsman-book.com

Basic Engineering for Builders

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**

eBook (PDF) also available; \$19.75 at www.craftsman-book.com



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, \$66.95

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.

488 pages, 8½ x 11, \$119.50. Revised annually
eBook (PDF) also available; \$59.75 at www.craftsman-book.com



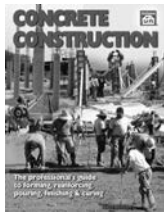
Home Building Mistakes & Fixes



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**

eBook (PDF) also available; \$26.25 at www.craftsman-book.com

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**

eBook (PDF) also available; \$14.38 at www.craftsman-book.com

Electrician's Exam Preparation Guide to the 2017 NEC

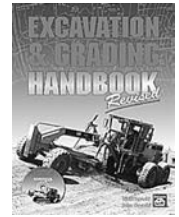
Need help in passing the apprentice, journeyman, or master electrician's exam? This is a book of questions and answers based on actual electrician's exams over the last few years. Almost a thousand multiple-choice questions - exactly the type you'll find on the exam - cover every area of electrical installation: electrical drawings, services and systems, transformers, capacitors, distribution equipment, branch circuits, feeders, calculations, measuring and testing, and more. It gives you the correct answer, an explanation, and where to find it in the latest NEC. Also tells how to apply for the test, how best to study, and what to expect on examination day. Includes a certificate for a FREE download of an Interactive Study Center, with all the questions in the book in test-yourself software that makes studying for the exam almost fun! Based on the 2017 NEC. **352 pages, 8½ x 11, \$67.99**

Also available as an eBook (PDF), \$33.99 at www.craftsman-book.com

Also available: **Electrician's Exam Preparation Guide 2014, \$59.50**
eBook (PDF) also available; \$29.75 at www.craftsman-book.com

Excavation & Grading Handbook Revised

The foreman's, superintendent's and operator's guide to highway, subdivision and pipeline jobs: how to read plans and survey stake markings, set grade, excavate, compact, pave and lay pipe on nearly any job. Includes hundreds of informative, on-the-job photos and diagrams that even experienced pros will find invaluable. This new edition has been completely revised to be current with state-of-the-art equipment usage and the most efficient excavating and grading techniques. You'll learn how to read topo maps, use a laser level, set crows feet, cut drainage channels, lay or remove asphaltic concrete, and use GPS and sonar for absolute precision. For those in training, each chapter has a set of self-test questions, and a Study Center CD-ROM included has all 250 questions in a simple interactive format to make learning easy and fun. **512 pages, 8½ x 11, \$65.00**
eBook (PDF) also available; \$32.50 at www.craftsman-book.com



Builders Guide to Swimming Pool Construction

Break into the lucrative swimming pool construction business with this practical how-to guide. Here you'll learn how to get the permits and do the surveying, planning and layout for a typical pool, including how to read a soils report. You'll read about the excavation, backfill, soil compaction, sand and gravel bedding and drainage requirements, and mechanical systems such as pumps, heaters, filters, skimmers, and solar systems. Covers underground piping, including drain, supply, and gas; and electrical work, including grounding and supply to breaker, pump, underwater lighting, and heater. Shows wood and pre-fabricated metal forms for walls, steps, spas, equipment base and diving board base, and how to install bar and mesh steel reinforcement. Covers cast-in-place and sprayed concrete and modern pool finishes. Includes scheduling, and a section on estimating labor, material and equipment costs.

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

Planning Drain, Waste & Vent Systems

How to design plumbing systems in residential, commercial, and industrial buildings. Covers designing systems that meet code requirements for homes, commercial buildings, private sewage disposal systems, and even mobile home parks. Includes relevant code sections and many illustrations to guide you through what the code requires in designing drainage, waste, and vent systems. **192 pages, 8½ x 11, \$39.95**

Estimating Excavation Revised eBook

How to calculate the amount of dirt you'll have to move and the cost of owning and operating the machines you'll do it with. Detailed, step-by-step instructions on how to assign bid prices to each part of the job, including labor and equipment costs. Also, the best ways to set up an organized and logical estimating system, take off from contour maps, estimate quantities in irregular areas, and figure your overhead.

This revised edition includes a chapter on earthwork estimating software. As with any tool, you have to pick the right one. Written by an experienced dirt contractor and instructor of computer estimating software, this chapter covers the program types, explains how they work, gives the basics of how to use them, and discusses what will work best for the type of work you handle. This e-Book is the download version of the book in text searchable, PDF format. Craftsman eBooks are for use in the freely distributed Adobe Reader and are compatible with Reader 6.0 or above. **550 pages. Available only as an eBook (PDF); \$21.75, at www.craftsman-book.com**



Building Code Compliance for Contractors & Inspectors



An answer book for both contractors and building inspectors, this manual explains what it takes to pass inspections under the 2009 *International Residential Code*. It includes a checklist for every trade, covering some of the most common reasons why inspectors reject residential work: footings, foundations, slabs, framing, sheathing, plumbing, electrical, HVAC, energy conservation

and final inspection. The requirement for each item is explained, and the code section cited. Knowing in advance what the inspector wants to see gives you an (almost unfair) advantage. To pass inspection, do your own pre-inspection before the inspector arrives. If you're considering a career in code enforcement, this can be your guidebook.

232 pages, 8½ x 11, \$32.50

eBook (PDF) also available; \$16.25 at www.craftsman-book.com

Plumber's Handbook Revised, 6th Edition



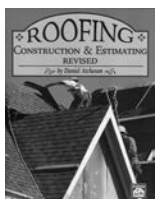
This new edition explains simply and clearly, in non-technical, everyday language, how to install all components of a plumbing system to comply not only with recent changes in the *International Plumbing Code* and the *Uniform Plumbing Code*, but with the requirements of the Americans with Disabilities Act. Originally written for working plumbers to assure safe, reliable, code-compliant plumbing installations

that pass inspection the first time, *Plumber's Handbook*, because of its readability, accuracy and clear, simple diagrams, has become the textbook of choice for numerous schools preparing plumbing students for the plumber's exams. Now, with a set of questions for each chapter, full explanations for the answers, and with a 200-question sample exam in the back, this handbook is one of the best tools available for preparing for almost any plumbing journeyman, master or state-required plumbing contracting exam.

384 pages, 8½ x 11, \$67.00

eBook (PDF) also available; \$33.50 at www.craftsman-book.com

Roofing Construction & Estimating, Revised



Detailed, step-by-step instructions, with photographs and diagrams, for installing, repairing and estimating nearly every type of roof covering available today for residential and commercial structures: asphalt shingles, roll roofing, wood shingles and shakes, clay tile, slate, metal, built-up, elastomeric, TPO and more. Provides guidance on sheathing, synthetic and felt underlayment,

as well as tips and tricks from an experienced pro for dealing with those difficult points on a roof that are prone to leaks, such as valleys and roof penetrations. For each roofing type, instructions are provided for estimating material quantities and labor costs, with formulas, easy-to-follow examples and sample estimates for you to test your skill. Use these methods to create reliable estimates that will help insure a profit on every job you take.

448 pages, 8½ x 11, \$62.50

eBook (PDF) also available, \$31.25 at www.craftsman-book.com

Blueprint Reading for the Building Trades eBook

How to read and understand construction documents, blueprints, and schedules. Includes layouts of structural, mechanical, HVAC and electrical drawings. Shows how to interpret sectional views, follow diagrams and schematics, and covers common problems with construction specifications. **192 pages**

Available only as an eBook (PDF); \$8.38, at www.craftsman-book.com

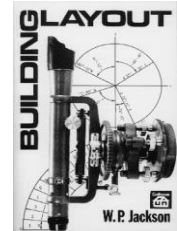
Public Works Inspectors' Manual, 7th Edition

A complete operational and technical guidebook for all professionals involved in public works construction. The most complete and authoritative reference of its kind ever written. 75 charts, tables and drawings. Written by a former public works inspector.

574 pages, 8½ x 11, \$82.95

Building Layout

Shows how to use a transit to locate a building correctly on the lot, plan proper grades with minimum excavation, find utility lines and easements, establish correct elevations, lay out accurate foundations, and set correct floor heights. Explains how to plan sewer connections, level an out-of-level foundation, use a story pole and batterboards, work on steep sites, and minimize excavation costs. **240 pages, 5½ x 8½, \$22.00**



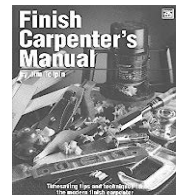
Contractor's Guide to QuickBooks by Online Accounting

This book is designed to help a contractor, bookkeeper and their accountant set up and use *QuickBooks* Desktop specifically for the construction industry. No use re-inventing the wheel, we have used this system with contractors for over 30 years. It works and is now the national standard. By following the steps we outlined in the book you, too, can set up a good system for job costing as well as financial reporting. **156 pages, 8½ x 11, \$68.50**

Finish Carpenter's Manual

Everything you need to know to be a finish carpenter: assessing a job before you begin, and tricks of the trade from a master finish carpenter. Easy-to-follow instructions for installing doors and windows, ceiling treatments (including fancy beams, corbels, cornices and moldings), wall treatments (including wainscoting and sheet paneling), and the finishing touches of chair, picture, and plate rails. Specialized interior work includes cabinetry and built-ins, stair finish work, and closets. Also covers exterior trims and porches. Includes manhour tables for finish work, and hundreds of illustrations and photos.

208 pages, 8½ x 11, \$32.50



Paint Contractor's Manual

How to start and run a profitable paint contracting company: getting set up and organized to handle volume work, avoiding mistakes, getting maximum production from your crews and the most value from your advertising dollar. Shows how to estimate all prep and painting. Loaded with manhour estimates, sample forms, contracts, charts, tables and examples you can use.

224 pages, 8½ x 11, \$46.50

eBook (PDF) also available; \$23.25 at www.craftsman-book.com



Commercial Metal Stud Framing

Master the transition from wood to metal stud framing with this comprehensive guide. Written by industry expert Ray Clark, this book offers step-by-step instructions, essential tools, and proven techniques to excel in commercial metal stud framing. Ideal for experienced wood framers, it includes hundreds of job site photos and valuable tips to help you work quickly, accurately, and safely on commercial projects.

208 pages, 8½ x 11, \$65.50

eBook (PDF) also available; \$32.75, at www.craftsman-book.com

Handbook of Construction Contracting, Vol. 1

Volume 1: Everything you need to know to start and run your construction business; the pros and cons of each type of contracting, the records you'll need to keep, and how to read and understand house plans and specs so you find any problems before the actual work begins. All aspects of construction are covered in detail, including all-weather wood foundations, practical math for the job site, and elementary surveying. **416 pages, 8½ x 11, \$32.75**

Handbook of Construction Contracting, Vol. 2

Volume 2: Everything you need to know to keep your construction business profitable; different methods of estimating, keeping and controlling costs, estimating excavation, concrete, masonry, rough carpentry, roof covering, insulation, doors and windows, exterior finishes, specialty finishes, scheduling work flow, managing workers, advertising and sales, spec building and land development, and selecting the best legal structure for your business. **320 pages, 8½ x 11, \$33.75**

Writing contracts that comply with law in your state isn't easy. A contract that doesn't comply could leave you with no way to collect.

Construction Contract Writer has you covered. Download a trial today:

www.constructioncontractwriter.com



Craftsman Book Company
6058 Corte del Cedro
Carlsbad, CA 92011

Call me.
1-800-829-8123
Fax (760) 438-0398

In A Hurry?

We accept phone orders charged to your

Visa, MasterCard, Discover or American Express

Card# _____

Exp. date _____ CVV# _____ Initials _____

Tax Deductible: Treasury regulations make these references tax deductible when used in your work. Save the canceled check or charge card statement as your receipt.

Name _____

e-mail address (for order tracking and special offers) _____

Company _____

Address _____

City/State/Zip _____ This is a residence

Total enclosed _____ (In California add 7.5% tax)

*Free Media Mail shipping, within the US,
when your check covers your order in full.*

Order online www.craftsman-book.com

Now you can generate professional estimates from your internet browser with National Estimator Cloud.

<https://craftsman-book.com/national-estimator-cloud>

- 39.50 Basic Engineering for Builders
- 61.50 Builder's Guide to Accounting Revised
- 49.95 Builder's Guide to Swimming Pool Construction
- 32.50 Building Code Compliance for Contractors & Inspectors
- 22.00 Building Layout
- 65.50 Commercial Metal Stud Framing
- 28.75 Concrete Construction
- 48.50 Construction Forms for Contractors
- 57.95 Construction Surveying & Layout
- 87.95 Contractor's Guide to Change Orders
- 68.50 Contractor's Guide to Quickbooks by Online Accounting
- 49.50 Contractor's Plain-English Legal Guide
- 38.00 Contractor's Survival Manual Revised
- 65.00 Craftsman's Construction Installation Encyclopedia
- 66.95 Easy Scheduling
- 67.99 Electrician's Exam Prep Guide to the 2017 NEC
- 59.50 Electrician's Exam Prep Guide to the 2014 NEC
- 38.00 Estimating Home Building Costs, Revised
- 65.00 Excavation & Grading Handbook Revised
- 32.50 Finish Carpenter's Manual
- 39.00 Getting Financing & Developing Land
- 32.75 Handbook of Construction Contracting Volume 1
- 33.75 Handbook of Construction Contracting Volume 2
- 52.50 Home Building Mistakes & Fixes
- 69.00 Insurance Restoration Contracting: Startup to Success
- 59.50 Markup & Profit: A Contractor's Guide, Revised
- 42.00 Moving to Commercial Construction
- 117.50 National Construction Estimator
- 118.75 National Home Improvement Estimator
- 119.50 National Renovation & Insurance Repair Estimator
- 118.50 National Repair & Remodeling Estimator
- 46.50 Paint Contractor's Manual
- 55.50 Paper Contracting: The How-To of Construction Management Contracting
- 55.00 Pipe & Excavation Contracting Revised
- 39.95 Planning Drain, Waste & Vent Systems
- 67.00 Plumber's Handbook Revised, 6th Edition
- 82.95 Public Works Inspector's Manual, 7th Edition
- 62.50 Roofing Construction & Estimating, Revised
- 98.00 National Building Cost Manual

10-Day Money Back Guarantee

Prices subject to change without notice