ASSESSORS' HANDBOOK
SECTION 531

RESIDENTIAL BUILDING COSTS

JANUARY 2013

CALIFORNIA STATE BOARD OF EQUALIZATION

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FOREWORD

The 2013 revision of Assessors' Handbook Section 531 (AH 531), *Residential Building Costs,* updates costs contained in previous editions. These costs become effective as of January 1, 2013. The 2013 revision of AH 531 is available only on the Board's website. The entire text, photographs, and drawings of AH 531 are posted to the Board's website at www.boe.ca.gov/proptaxes/ah531.htm.

Statutory and regulatory considerations, general instructions, and pertinent information concerning the use of this handbook are contained in the *Costing Information* chapter. Specific instructions and comments appropriate to each building type or topic are found in the introductory pages of the respective chapter of the handbook devoted to a particular structure type or topic.

Diligent efforts have been made to supply accurate and reliable information. AH 531 should serve as a guide, but it is important for the appraiser to research local costs as well as analyze permit costs and fees of jurisdictions in the region and to make appropriate adjustments where necessary, due primarily to the wide variance in these costs, both within and among the counties. It may be necessary to supplement the data provided in AH 531 with local cost data. Extraordinary costs may include, for example, building permit fees, water and sewer connections, environmental studies, handicap access requirements, expanded engineering and architectural costs, etc.

Median home prices were increasing slightly in the latter part of 2012 in some areas of California, and 2013 should continue to be an improving year for the single-family residential market in California. While high unemployment levels continue, foreclosure rates have moderated. Resale home inventories across the state are abnormally low and in some areas amount to a month or so causing multiple offers and slightly increasing sale prices. A few of the new home builders are returning to construct single-family homes in various areas of California.

Some of the costs in this 2013 revision of AH 531 have increased, partly due to the ability of developers to increase their entrepreneurial profit as well as an increase in contractor's profit as contractors find work for themselves and their crews.

Other parts of the cost structure have remained the same. Therefore, appraisal judgment continues to be important for 2013 to adjust for any market change that could affect costs after the publication date of AH 531.

/s/ David J. Gau

David J. Gau
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January 2013

RESIDENTIAL BUILDING COSTS

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AH 531.10: COSTING INFORMATION

STATUTORY AND REGULATORY BASIS

Assessors' Handbook Section 531 (AH 531) was designed and developed for use by the 58 California counties as an aid to assessors in fulfilling their statutory and regulatory requirements in the assessment of all taxable property in the county.[1] AH 531 relies on the Standard Classification System in categorizing design and construction type, quality, shape, and area class to implement the cost approach portion of the three appraisal approaches. Unlike other published cost services that are not specifically used for tax assessment purposes (nor governed by California statutory law), AH 531 includes entrepreneurial profit.

The work in AH 531 is guided by Property Tax Rule 6[2] and Revenue and Taxation Code section 401.5. Rule 6 provides in part:

> (a) The reproduction or replacement cost approach to value is used in conjunction with other value approaches and is preferred when neither reliable sales data (including sales of fractional interests) nor reliable income data are available and when the income from the property is not so regulated as to make such cost irrelevant. It is particularly appropriate for construction work in progress and for other property that has experienced relatively little physical deterioration, is not misplaced, is neither over- nor underimproved, and is not affected by other forms of depreciation or obsolescence.
>
> (b) The reproduction cost of a reproducible property may be estimated either by (1) adjusting the property's original cost for price level changes and for abnormalities, if any, or (2) applying current prices to the property's labor and material components, ***with appropriate additions for entrepreneurial services***, interest on borrowed or owner-supplied funds, and other costs typically incurred in bringing the property to a finished state (or to a lesser state if unfinished on the lien date). Estimates made under (2) above may be made by using square-foot, cubic foot, or other unit costs; a summation of the in-place costs of all components; a quantity survey of all material, labor, and other cost elements; or a combination of these methods. [Emphasis added.]

Section 401.5 reads as follows:

> The board shall issue to assessors data relating to costs of property, or, with respect to commercial and industrial property, shall, after a public hearing, review and approve commercially available data, and shall issue to assessors other information as in the judgment of the board will promote uniformity in appraisal practices and in assessed values throughout the state***. An assessor shall adapt data received pursuant to this section to local conditions and may consider that data together with other factors as required by law in the assessment of property for tax purposes.*** [Emphasis added.]

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[1] Revenue and Taxation Code section 405.
[2] Title 18, Public Revenues, California Code of Regulations, section 6.

BASIS OF COST

Costs in this handbook are based on the cost to build on a level site in the four-county Sacramento area[3] as of the date in the lower right-hand corner of each page. They include, except for unusually high fees and permits required by governmental agencies, all necessary costs that must be incurred in placing the building or component in the hands of the ultimate consumer, including the following:

1. Excavation for foundations, piers, and other structural foundation components, considering a level site
2. Materials
3. Labor
4. Architectural fees
5. Engineering fees
6. Supervision
7. Normal permits, etc.
8. Normal utility hook-ups
9. Contractor's overhead and profit
10. Contingencies
11. Carrying charges during construction
    - Taxes
    - Interest
    - Insurance
12. Legal expenses
13. Typical sales commissions or costs and transfer fees
14. Entrepreneurial profit

Costs are in the form of square foot cost tables for basic buildings and ***additive or in-place costs for optional or extra components that might differ from building to building***. Building components included in basic square foot costs are:

1. Foundations as required for normal soil conditions
2. Floor, wall, and roof structures

[3] Sacramento, Yolo, and the western portions of El Dorado and Placer counties.

3. Interior floor, wall, and ceiling finishes
4. Exterior wall finish and roof cover
5. Interior partitions
6. Cabinet work, doors, windows, trim, etc.
7. Electrical wiring and fixtures
8. Rough and finish plumbing as described in applicable building specifications
9. Built-in appliances as described in applicable specifications

The cost of the following items may need to be added to the basic building cost, depending on variations in the class specifications and location, to arrive at total improvement costs:

1. Heating and cooling systems
2. Fireplaces
3. Plumbing fixtures and built-in appliances not included in basic building costs
4. Basements
5. Porches and patios
6. Garages or carports
7. Yard improvements, i.e., fences, curbs, paving, etc.
8. Site-specific extraordinary permit fees
9. Extra utility hook-ups (e.g., wells, septic, etc. Note that an adjustment of an appropriate amount may be necessary to account for the situation where the normal utility hook-ups, which are included in the basic building costs, are not present in the property being appraised)
10. Driveways, walkways
11. Landscaping

STANDARD CLASSIFICATION SYSTEM

The Standard Classification System is a method of estimating basic building costs by referring to square foot cost tables. Basic building costs are then augmented by in-place or square foot costs of optional or extra components. Components included in the basic square foot costs vary with different building types.

In applying the square foot method of cost estimating, a square foot cost is assigned to the building being appraised on the basis of comparison with new buildings with known costs. The premise is that the subject building would have the same square foot cost as a similar new building.

A difficulty in applying this method arises in finding new buildings, with known costs for comparison, that are similar to the building to be appraised. Few buildings are exactly alike, and therefore few have the same square foot cost. A further complication is the matter of deciding which known costs are representative of typical replacement costs.

The Standard Classification System is a means of estimating square foot costs by systematically comparing the subject structure with structures whose costs are known. Buildings are classified according to variations in physical characteristics that cause square foot cost differences. The classification of a building then serves as a reference in finding a proper square foot cost from tables catalogued according to this system.

COST VARIABLES

The physical characteristics used as variables in the standard classification system are:

- Design type
- Construction type
- Quality class
- Shape class
- Area class

Descriptive words, letters, and numbers are used to designate a particular type or class for each of the five cost characteristics. They are assigned on the basis of standards or specifications set up in the Standard Classification System. This means that any one building is assigned an overall classification and is identified by designations for each of these cost variables. Here is an example.

> A building is classified as a single-family residence, D6A, with 1,450 square feet. "Single-family residence" refers to its design type; "D" to its construction type; "6" to its relative level of quality or quality class; "A" to its shape; and "1,450" is its square foot size or area class. All buildings that have this classification in the base area will have approximately the same cost.

DESIGN TYPES

Buildings are first classified on the basis of the use for which they were designed. Square foot costs of buildings may vary considerably for different design types. Two buildings may be alike in area, shape, quality, and type of construction but have different square foot costs because one has the design-type features of a multiple-family residence and the other those of a single-family residence.

This handbook contains square foot costs for these design types:

- Conventional single-family residences
- Modern single-family residences
- Mountain residences
- Multiple-family residences
- Manufactured housing

CONSTRUCTION TYPE

Construction type refers to the structural characteristics of a building. The letters A, B, C, D, and S are used to designate five different structural types recognized by the building trades. These types may be identified by the use of the following descriptions.

Class A Construction Type

Class A buildings have structural steel frames which are fireproofed by encasing them in concrete or by spraying them with fireproofing material. Floor and roof structures are built of reinforced concrete. Walls are filler or curtain type and may be built of brick, concrete, aluminum, glass, or any other noncombustible material. Multiple-story office or hotel buildings are typical Class A buildings.

Class B Construction Type

Class B buildings have a framework built of reinforced concrete columns and beams. As in Class A buildings, the floor and roof structures are built of reinforced concrete and the walls are built of noncombustible materials. Typical Class B buildings are multiple-story office buildings, hotels, and stores.

Class C Construction Type

Class C buildings have masonry-type exterior walls. Floor structures may be built of wood frame or poured concrete. Roof structures are wood frame. The walls may be either a continuous bearing wall system or a pilaster and bond beam frame with a masonry filler or curtain wall. The masonry may be brick, tile, stone, or concrete, either poured in place or tilt-up. Interior partitions are usually wood frame. Class C buildings are usually restricted in height. They are used generally as stores, supermarkets, garages, and warehouses, and sometimes as offices or residences. Structural members may be wood or steel trusses, steel girders, or laminated wood beams.

Class D Construction Type

Class D buildings have wood-frame construction such as that generally encountered in residences. The frame is usually made of two-by-four or two-by-six vertical studs, spaced about sixteen inches apart, with horizontal top and bottom plates. The exterior finish or skin may be wood siding, shingle, stucco, masonry veneer, or sheet metal. Class D construction seldom exceeds three stories.

Class S Construction Type

Class S buildings are specialized ones that do not fit any of the above categories. Service station buildings are an example of Class S construction.

QUALITY CLASSIFICATION

Quality class ranks buildings according to their amounts of materials, grades of materials, and workmanship. If two buildings are of the same design type, construction type, shape, and size, but one has more materials or better materials, it will have a higher square foot cost. Also, if two buildings are exactly alike, except that one was built with greater care and skill, it will be of better *quality* and will have a higher cost.

Of the five choices that lead to the overall classification of a building, the choice of a quality class is the most difficult. The relative quality of a building is not as obvious as its design type, construction type, shape, or size. Many points of reference must be observed. Many parts of a building cannot be seen, and their presence and nature must be inferred.

The quality class designations are usually numbered from 1 to 10. A class 1 building is the least costly to build per square foot, and a class 10 is the most costly. They are assigned on the basis of a comparison to numbered descriptions (specifications) of typical buildings of various quality levels.

The specifications for each quality class make a distinction between classes. This distinction often shows in the *quality* of a feature and not whether the feature is present. The same feature may exist in different classes, but the quality of the feature will help to determine the classification. Conversely, some features may be included in a particular classification, while in another class, the same feature must be treated as an additive.

Each chapter of this handbook dealing with different design and construction types contains a set of applicable specifications.

The building specification charts found in the various chapters are a compilation of attributes *typically* found in the building class listed on the individual charts. Not all structures will include all of the typical attributes listed in a particular classification. That does not automatically mean that it is an improper classification. ***The appraiser must use judgment to determine if the majority of attributes listed pertain to the structure being classified***.

Many times buildings have quality features that fall between those of two classes rather than being most like one or the other. For this reason, half-class gradations are used. For example, buildings can fall in the 5.5 class, 6.5 class, etc. The unit cost of a class 5.5 is halfway between the cost of a class 5 and the cost of a class 6. The square foot cost tables array costs for half-classes as well as for full classes.

The typical attributes listed in the specifications are the basis for the cost factors established in the square foot area cost tables. These factors recognize and include an element of cost for the typical attributes. **The factors do not, however, include costs for additives.**

Generally, more additives are found in the higher building classifications, particularly D8 and above. The appraiser must use judgment to determine if an additive is significant enough to add value to the structure being appraised. If so, an appropriate adjustment should be made utilizing the *Building Additives* chapter of this handbook.

MEASURING AND DIAGRAMMING

A diagram of the building should be made showing the house, porches, garages, and any other significant plot plan features. This enables the appraiser to compute the area of the house, to select its shape, and to compute the area of any other components to which a square foot cost should be applied.

Usually measurements are begun at the left front corner of the building and proceed counterclockwise around the house. Measurements should be recorded as dots or angles properly located on the grid. When the house is completely measured, the dots or angles are tied together with ruled lines to form an outline of the house.

Measurements are made and plotted to the nearest foot rather than fractions of a foot. The scale of the diagram should be one inch to ten feet except when the house is too large to fit on the grid at this scale. The front of the house usually faces the bottom of the page. However, the diagram for some houses must be turned to face the side in order to fit the grid. Fireplaces are shown in their approximate location by a rectangle crossed in the middle.

Upper Floors and Basements

The following color code is used to show the various floor levels:

- Main floor – black line
- Second floor – red line
- Third floor – blue line
- Basement – green line

If a first and a second, third, or basement wall fall on the same line, the second-floor line is drawn inside the first-floor line, the third-floor line is drawn inside the second-floor line, and the basement line is drawn inside any upper-floor line.

Porches and Inferior Areas

Porches and patios are drawn with broken lines. If there is a balcony on the second floor, it is drawn with a broken red line.

Areas such as porches, patios, inferior additions, and restricted upper floors whose costs per square foot are a fraction or percentage of the cost per square foot of the main residence should have that fraction noted and circled in the proper color on the diagram.

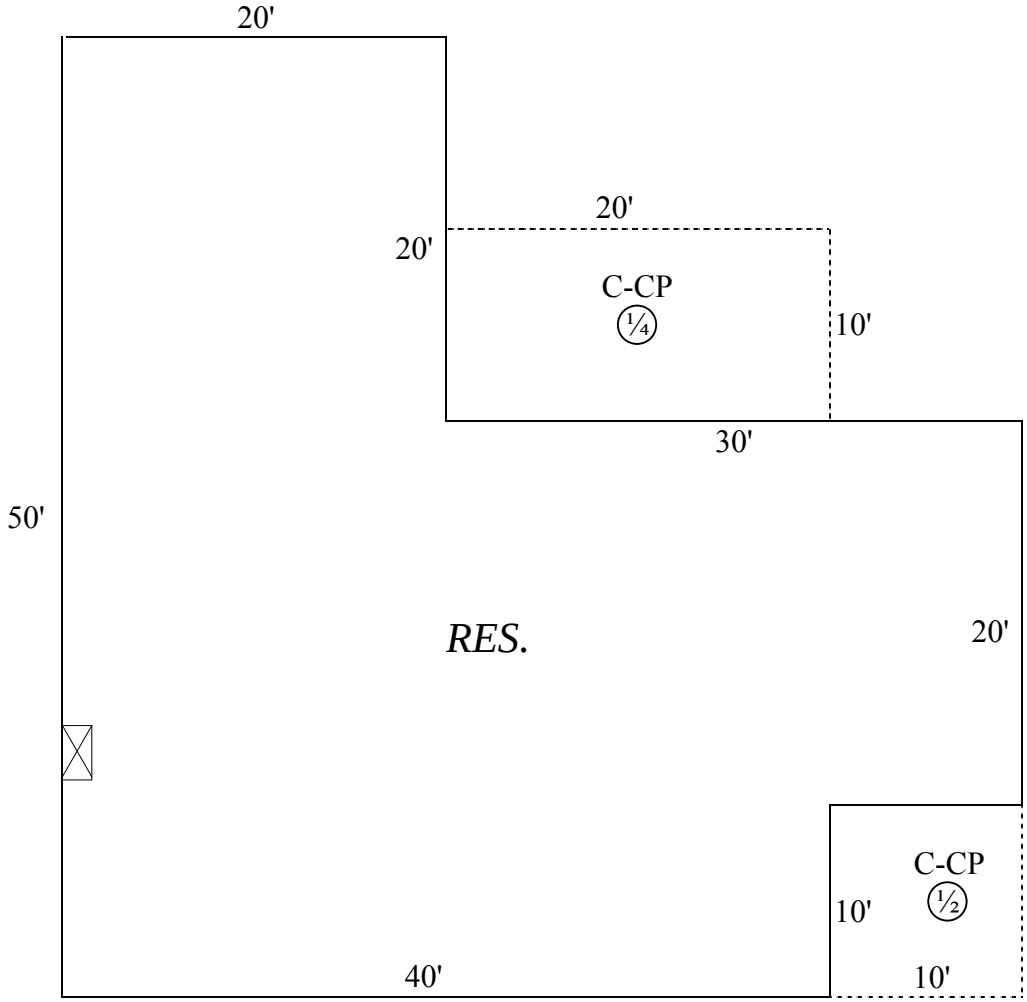
A description of the type of porch or patio involved should be indicated on the sketch of the building plan. It can be noted by the use of the following symbols:

C	Concrete Floor	U.P.	Uncovered Porch/Patio
W	Wood Floor	C.P.	Covered Porch/Patio
B	Brick Floor	S.P.	Screened-in Porch/Patio
F	Flagstone Floor	G.P.	Glassed-in Porch/Patio

***Example*:** C – CP = Concrete Floor, Covered Porch/Patio

Dimensioning

The dimensions for the residence should be placed on the outside of the diagram except where a line is broken by an intersecting line as is the case in the 20,' 30,' and 40' lines in the following example. Dimensions for upper floors and basements are shown on the inside of the diagram. Dimensions are shown in the same color as the wall lines for the respective floor levels.



Area Computation

Uniform procedures for computing building areas are desirable when possible. It is important that an appraisal reviewer is able to check the building area computations quickly and accurately.

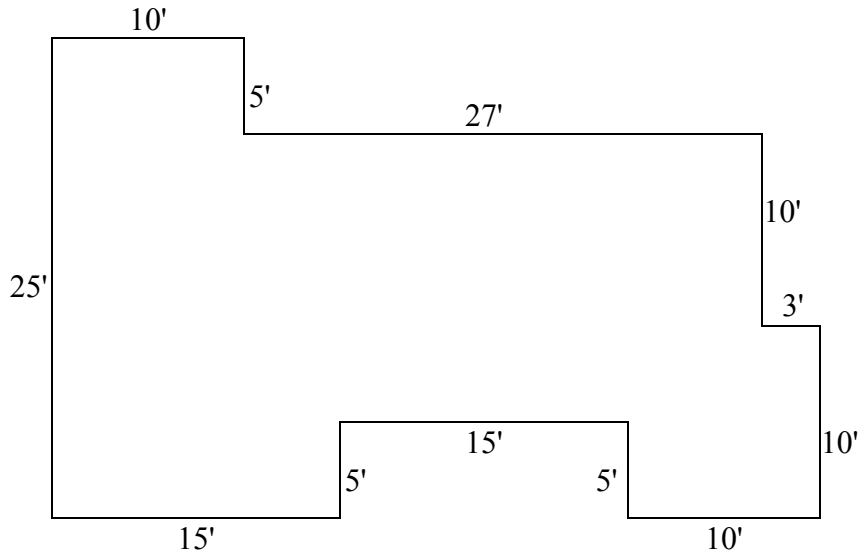
Rectangular Buildings

Rectangular building areas are computed by dividing the building diagram into a series of rectangles, computing the area of each rectangle, and finding the sum of all the areas.

Rectangles are formed by starting at a point which is the extreme left of the lowest horizontal line on the drawing. The base of the first rectangle is a horizontal line between the point of beginning and the intersection of the first vertical line to the right. The altitude of this first rectangle is the distance between the base line and the next intersecting horizontal line above.

After eliminating areas previously formed into rectangles, this process is repeated until all areas have been formed into rectangles.

In listing dimensions, the horizontal distance is always listed first.

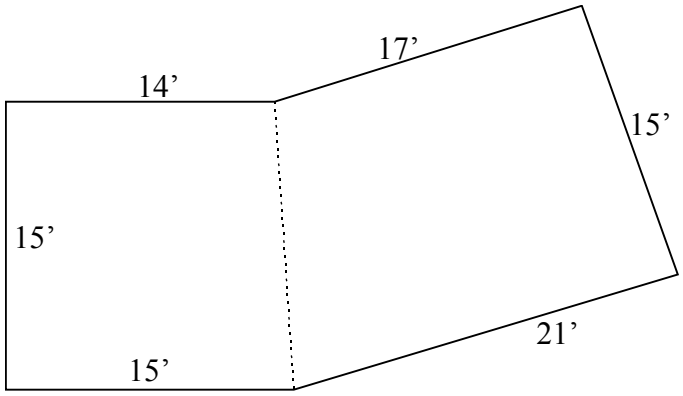


COMPUTATIONS	
15 x 5 = 75	
10 x 5 = 50	
40 x 5 = 200	
37 x 10 = 370	
10 x 5 = 50	
745	

Angular Buildings

Angular buildings are so variable that a uniform method of area computation is not feasible. Areas of these buildings are computed by dividing the diagram into a series of geometric shapes. The area of each of these segments is computed, and the areas of all parts are summed.

The best procedure for computing angular building areas is one that produces the simplest and most clear-cut division of the building area. Care should be taken to insure that a reviewer is able to follow each step of the calculation and that all areas are included.



COMPUTATIONS	
$\frac{15 + 14}{2} \times 15 = 218$	
$\frac{21 + 17}{2} \times 15 = 285$	
503	

AREA CLASSIFICATION

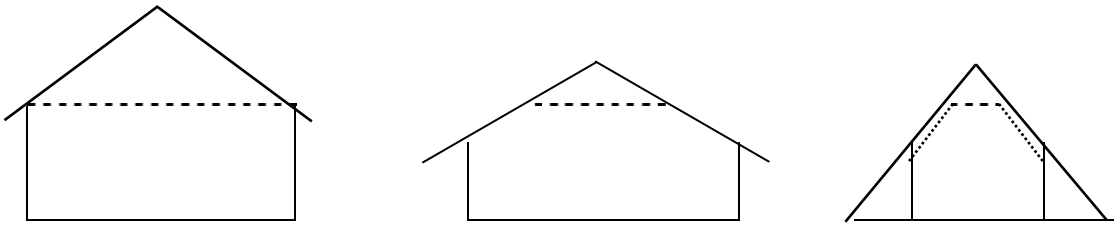
Area classification may take two forms: *total area classification* for single-family residences and *unit area classification* for multiple-family residences.

Total Area Classification

Total area classification is made simply by selecting a square foot cost from the table that is applicable to the total building area. Total building area for this purpose includes the following areas:

- All full-story areas within and including the exterior walls of all floor levels of the building.
- Small inset areas such as entrances outside of the exterior wall but under the main roof.
- Any enclosed additions, annexes, and lean-tos with a square foot cost greater than two-thirds of the square foot cost of the main building.

A full-story area has eight or more feet of ceiling height at all exterior walls, as opposed to half-story areas which utilize the sloping roof as all or part of the exterior wall.



Full-Story Area Half-Story Areas

Total building area for single-family structures includes all full-story areas at all floor levels.

Example:

The square foot cost of a single-family residence with 1,200 square feet of full-story area on the first floor and 1,200 square feet of full-story area on the second floor is based upon the square foot cost for 2,400 square feet.

When portions of a building differ as to construction type, design type, or quality class, a square foot cost based upon the respective construction, design, and quality of each area is used for area classification in selecting each square foot cost; however, it is always the sum of all full-story areas on all floors of the building.

Example:

The first floor of a single-family residence is "C" construction type, "6" quality, and has 1,200 square feet of full-story area.

The second floor of this building is "D" construction type, "5.5" quality, and has 1,000 square feet of full-story area.

The square foot cost applied to the 1,200 square feet of full-story area on the first floor is based upon the cost of "C" construction type, "6" quality, and 2,200 square feet of full-story area.

The square foot cost applied to the 1,000 square feet of full-story area on the second floor is based upon the cost of "D" construction type, "5.5" quality, and 2,200 square feet of full-story area.

Unit Area Classification

Multiple-family residences square foot costs require modification for varying unit sizes.

Average unit area is found by dividing the total building area devoted to apartment use on *all* floors by the total number of units in the building. Area devoted to apartment use includes the following:

- Apartment units
- Manager's unit
- Normal office area
- A typical amount of utility room area
- Interior hallways and interior stairways

AREA CLASSIFICATION VARIABLES

Other things equal, the smallest building is the most expensive to construct per square foot of floor area, while the largest is the cheapest. There are three major reasons for this—ratio of perimeter wall area to floor area, fixed costs, and quantity buying.

Ratio of Perimeter Wall Area to Floor Area

The ratio of the area of the outside wall to the enclosed floor area tends to decrease with increased building size. Larger buildings have a greater floor area over which to spread the costs of the wall. Here is an example, which assumes that the two square buildings are similar in all respects except size.

Building	Floor Area	Perimeter (Feet)	Perimeter Wall Cost at $140 Per Linear Foot	Wall Cost Per Square Foot of Floor Area
A	400	80	$11,200	$28
B	1,600	160	$22,400	$14

Though the larger building has a higher wall cost, there is proportionately more floor area over which to spread that cost.

Fixed Costs

There are many items that cost the same regardless of building size. The cost of these items will therefore be greater per square foot in a small building than in a larger one of the same class.

Examples of fixed cost items are plumbing fixtures and kitchen cabinets in residences of the same class. These costs will be the same regardless of the area of the building; thus, the larger the building the lower the cost per square foot.

Quantity Buying

Builders typically receive quantity discounts on large orders of materials for large buildings and competition may force them to pass the saving on to the consumer. This discount should not be confused with the quantity discounts that large-volume builders receive but may not pass on to the consumer in the finished product.

While costs per square foot do decrease with increasing building size, the decrease is most rapid at the lower end of the size scale and tapers off with increasing building size, eventually reaching a plateau. This can be demonstrated graphically and is noticeable in the square foot cost tables.

Area classification is made simply by computing the area of the building. A square foot cost is then selected from the proper table for this area. Building areas to be included for area classification will vary with different design types.

SHAPE CLASSIFICATION

Shape is a consideration in the classification of single-family residences and mountain residences. Shape classification considers any cost differences that may arise from variations in the building outline. Buildings of the same design type, construction type, quality, and size will cost different amounts per square foot if they are of differing shapes. These cost differentials may be due to one or more of the following causes:

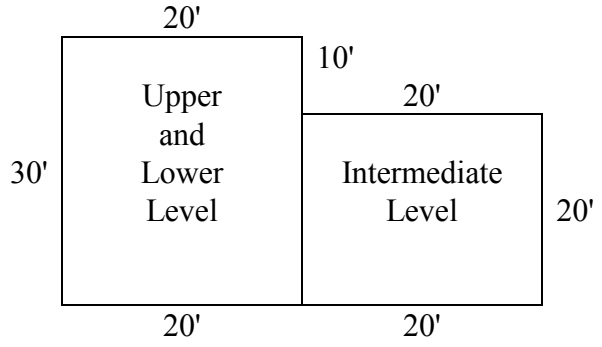
1. Differences in the number of corners for a given area.
2. Differences in the number of roof valleys and ridges for a given area (*cut-upness*).
3. Differences in the ratio of exterior wall area to floor area.

There are four shape designations: A, B, C, and D, with D the most irregular. Which designation is selected depends upon the interaction of the above three shape factors. The ratio of perimeter to floor area is the most important influence, but its importance in the selection of the shape class can be modified by the other two factors.

Shape classification of all multiple-story or split-level residential type buildings is based upon the outline formed by a composite of the extreme outside exterior walls of all full-story areas regardless of varying levels.

Example:

A split-level, single-family residence has a 20' x 30' lower level, a 20' x 30' upper level directly over the lower level, and a 20' x 20' intermediate level contiguous to the 30' side of the first rectangle. In this case, shape classification is determined from the outline formed by a composite of the 20' x 30' rectangle and the contiguous 20' x 20' square.



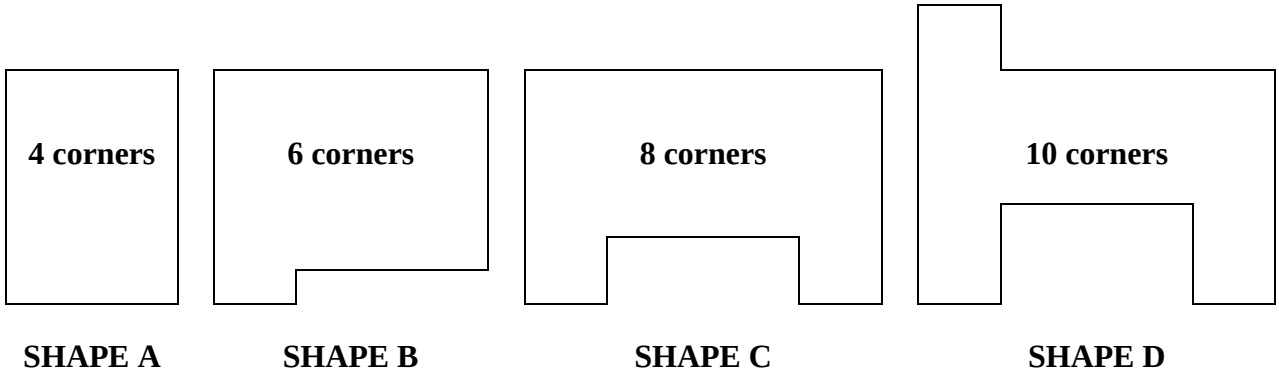
In selecting a shape classification, it is important to follow the roof and foundation line of the building. Porches, balconies, and garages are items that should not be included in the shape of the home. The shape outline should only follow the foundation outline of the main structure.

NOTE: There is no shape classification for apartments.

If the shape classification guide is used, the area used for area perimeter comparison is the area within the outline used for shape classification. In the example above, use the area of the lower level plus the area of the intermediate level or 1,000 square feet.

Single-Family Residential Shape Classification Guides

TYPICAL SHAPE ILLUSTRATIONS



The majority of single-family residences can be classified for shape by a visual comparison of a diagram of the subject structure with the typical shape illustrations above. If there is a question as to a proper shape classification, the Single-Family Residential Shape Classification Table (following in this chapter) may be helpful.

Buildings of the same design type, character of construction, quality of construction, and size will vary in costs because of their shape. The more irregular the shape, the greater the cost per square foot. There are three major factors that cause the costs to increase: (1) the number of corners, (2) the cut-upness of the roof, and (3) the ratio of perimeter to floor area.

Number of Corners

There are additional costs of materials when corners are added. With the cost of materials there are also more labor costs to build corners. With more materials and labor costs, the cost per square foot increases significantly.

Cut-Upness of the Roof

Cut-upness refers to the number of roof ridges, valleys, and hips and the manner in which the roof is broken up. As the shapes of houses become more complex, their roof systems are more cut-up. The more the roof is cut-up, the more the cost that must be absorbed by each square foot of floor area.

The cut-upness of the roof also adds to the costs in labor and materials. The increase in labor and material costs are absorbed in the total costs per square foot.

Ratio of Perimeter to Floor Area

The greatest effect of shape upon cost is caused by the differing ratios of perimeter to floor area in buildings of different shapes. Given two buildings of equal size but different shape, the building with the more irregular shape will require more wall area to enclose it, and the wall cost per square foot of floor area will therefore be greater.

Following is an example of two buildings, each with an area of 400 square feet and a wall cost of $140 per linear foot.

Buildings	Dimensions (Feet)	Perimeter (Feet)	Wall Cost	Wall Cost Per Square Foot of Floor Area
A	20 x 20	80	$11,200	$28
B	40 x 10	100	$14,000	$35

Shape Classification Table

Shape classification may be determined by comparing the length of the outline formed by the outermost exterior walls of a single-family residence **(excluding the porches, balconies, and garages)** and the area enclosed by this outline. Shape classification is indicated by a range of perimeter lengths for each shape class at various areas.

Notice in the following Single-Family Residential Shape Classification Table that the suggested ranges of perimeter lengths overlap between shape classes. This is because consideration has been given to variations in costs that might arise from building corners and framing irregular roof structures. If a perimeter length falls into an overlapping area, final determination of shape classification will consider the number of corners and roof design.

Example:

> A residence of 800 square feet has a perimeter of 120 feet and will be classified as an "A" shape if it is a simple rectangle, and a "B" shape if it is of an irregular shape or if it has a cut-up roof.

SINGLE-FAMILY RESIDENTIAL
SHAPE CLASSIFICATION TABLE

Area	Shape	Perimeter Length	Area	Shape	Perimeter Length	Area	Shape	Perimeter Length
600	A	98-106	1,600	A	160-181	3,400	A	233-277
	B	100-108		B	175-196		B	271-315
	C	102-110		C	190-211		C	309-353
	D	104-Up		D	205-Up		D	347-Up
700	A	106-115	1,700	A	165-188	3,600	A	240-286
	B	109-118		B	182-205		B	280-326
	C	112-121		C	199-222		C	320-366
	D	115-Up		D	216-Up		D	360-Up
800	A	113-124	1,800	A	170-194	3,800	A	247-296
	B	118-129		B	188-212		B	290-339
	C	123-134		C	206-230		C	333-382
	D	128-Up		D	224-Up		D	376-Up
900	A	120-132	2,000	A	178-205	4,000	A	253-304
	B	126-138		B	199-226		B	298-351
	C	132-144		C	220-247		C	345-396
	D	138-Up		D	241-Up		D	390-Up
1,000	A	126-139	2,200	A	187-216	4,200	A	259-313
	B	133-146		B	210-239		B	307-361
	C	140-153		C	233-262		C	355-409
	D	144-Up		D	256-Up		D	403-Up
1,100	A	133-148	2,400	A	196-228	4,400	A	265-322
	B	142-157		B	222-254		B	316-374
	C	151-166		C	248-280		C	368-425
	D	160-Up		D	274-Up		D	419-Up
1,200	A	138-154	2,600	A	204-237	4,600	A	271-330
	B	148-164		B	231-264		B	324-383
	C	158-174		C	258-291		C	377-436
	D	168-Up		D	285-Up		D	430-Up
1,300	A	144-161	2,800	A	212-248	4,800	A	277-339
	B	155-172		B	242-278		B	333-395
	C	166-183		C	272-308		C	389-451
	D	177-Up		D	302-Up		D	445-Up
1,400	A	149-168	3,000	A	219-258	5,000	A	283-347
	B	162-181		B	252-291		B	341-405
	C	175-194		C	285-324		C	399-463
	D	188-Up		D	318-Up		D	447-Up
1,500	A	155-175	3,200	A	226-267			
	B	169-189		B	261-302			
	C	183-203		C	296-337			
	D	197-Up		D	331-Up			

SQUARE FOOT COST ADJUSTMENTS

In some cases, basic square foot costs for all or a portion of a building may require adjustment. Situations where this is necessary are:

- Half-story areas
- Third and upper floors
- Superior or inferior areas
- Additions

HALF-STORY AREAS

Half-story areas are upper floors of buildings that have less than eight feet of ceiling height at the exterior wall line. The sloping roof makes up all or a portion of the exterior wall. Square foot costs for half-story areas are based upon fractions of the main floor square foot costs as suggested in the *Building Additives* chapter. Half-story areas are *never* included in the area used for area modification.

THIRD- AND UPPER-STORY ADJUSTMENTS

Basic square foot costs in this cost manual are applicable to first-floor level or second-floor level. Building costs tend to rise for floor levels above the second because of the increased cost of lifting materials. Square foot costs for floor levels above the second level are estimated by using the appropriate second-floor cost and increasing it by 2 percent for each floor above the second. For example:

Third Story	= Second story square foot cost + 2 percent
Fourth Story	= Second story square foot cost + 4 percent
Fifth Story	= Second story square foot cost + 6 percent

SUPERIOR AND INFERIOR AREA ADJUSTMENTS

There are several methods of estimating proper square foot costs for buildings with areas of different quality. The best method to use depends on the particular situation.

Composite Quality Class

If the difference in quality is slight or there is no distinct dividing line between areas of varying quality, use a square foot cost based on the building's average quality. For example, if a residence has D5 cost characteristics in certain areas and is more similar to a D6 in other areas, a D5.5 classification may be applicable. The total of all areas is used as the area for selecting a square foot cost from a cost table.

Separate Quality Classes

If two or more distinct areas are of a significantly different quality level, separate quality classes may be assigned to each area. In other words, the first-floor area may be classified as D6 quality, and the second floor may be classified as D5.5 quality. As in the case above, the total of all areas is used for selecting a square foot cost from a cost table.

Fractions

If a small but distinct area of the building, such as an addition or a residential porch, is of significantly different quality than the main area, its cost may be estimated by applying a square foot cost that is based on a fraction of the square foot cost of the main area.

ADDITIONS

The methodology of using the Cost Approach to estimate the value of an addition by calculation of its square foot cost using the square foot cost tables is as follows:

Example:
A single family residence originally contained 2,000 square feet and was classed as a D-8.0B. The owner has completed a 400 square foot addition with the same characteristics as the original home. The appraiser will estimate the value of the addition using the Cost Approach. Take the original square feet (2,000) plus the square feet of the addition (400) which totals 2,400 square feet. Next, find the cost chart appropriate for the design type, construction type, quality class, and shape class. Select the column for 2,400 square feet. Take the number from the appropriate quality class row and multiply it by the square footage of the addition. The result is the indicated replacement cost new of the addition using the Cost Approach. A location adjustment may be needed depending on the location of home.

LOCATION ADJUSTMENTS

The building costs shown in this handbook, with the exception of the *Mountain Residences* chapter (see AH 531.22), have been developed using the four-county area of Sacramento, Yolo, and the western portions of El Dorado and Placer counties as a base area (with a factor of 1.00). The building costs in the *Mountain Residences* chapter have been developed using the Lake Tahoe Basin area of California as the base area.

The maps shown at the end of this chapter provide suggested factors that are intended to provide an appropriate adjustment for the variance in costs due to differences in location compared to the base. ***These factors, however, are not intended to adjust for the significant variation in permit costs and other fees charged by different jurisdictions within a region. Due to the wide variance in these costs, both within and among the counties, it is necessary for the appraiser to research and analyze permit costs and fees of jurisdictions in the region and to make appropriate adjustments where necessary. In other words, AH 531 should serve as a guide, but an appraiser must also research the market to determine which costs are most applicable for the appraisal assignment. It may be necessary to supplement the data provided in AH 531 with local cost data.***

Note that an additional adjustment for time should also be considered if costs in the county have changed since the January publication date of the current AH 531.

Except for the Manufactured Housing chapter, an appropriate location adjustment should be applied to all improvement costs in this handbook, including all square foot building costs and the costs found in the *Building Additives*, *Yard Improvements*, *In-Place Costs*, and *Compact Costs* chapters. In addition, all costs in this handbook, including manufactured housing, should be adjusted to account for any extraordinary permit or other cost differences that exist in the county.

Various counties have two or more location zones. The zone boundaries are as follows. The shaded areas [ ] represent those zones that are also shown in the *Mountain Residences* chapter (see AH 531.22).

Alpine County

Western Zone	All areas west of the summit of the Sierra Nevada Mountains.
Eastern Zone	All areas east of the summit of the Sierra Nevada Mountains.

Amador County

Western Zone	All areas west of the western border of the El Dorado National Forest.
Middle Zone	From the western boundary of the El Dorado National Forest to the 5,000-foot elevation line.
Eastern Zone	All areas east of the 5,000-foot elevation line.

Butte County

Western Zone	All areas west of the western boundary of the Plumas National Forest.
Eastern Zone	All areas east of the western boundary of the Plumas National Forest.

Calaveras County

Western Zone	All areas west of the western boundary of the Stanislaus National Forest.
Middle Zone	From the western boundary of the Stanislaus National Forest to the 5,000-foot elevation line.
Eastern Zone	All areas east of the 5,000-foot elevation line.

El Dorado County

Western Zone	All areas west of the western boundary of the El Dorado National Forest.
Western Middle Zone	From the western boundary of the El Dorado National Forest east to the 5,000-foot elevation line.
Eastern Middle Zone	From the 5,000-foot elevation line to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Fresno County

Western Zone	All areas west of the western border of the Sierra National Forest.
Middle Zone	From the western boundary of the Sierra National Forest to the 5,000-foot elevation line.
Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Inyo County

National Forest Zone	All areas within the Inyo National Forest.
Bishop/ Independence Zone	All areas outside the Inyo National Forest.

Kern County

Western Zone	All areas west of a line following the western boundary of the Sequoia National Park in the northern portion of the county to the intersection of the Kern River, then continuing in a southerly direction east of the towns of Edison, Di Georgio, and Arvin to a point on the Ventura County border west of the town of Lebec.
Sequoia National Forest Zone	All areas within and surrounded by the Sequoia National Forest, including the towns of Lake Isabella, Bodfish, Wooford Heights, Kernville, Onyx, Weldon, and Havilah.
Middle Zone	All areas between the eastern boundary of the western zone and the Los Angeles Aqueduct, excluding the Sequoia zone.
Eastern Zone	All areas east of the Los Angeles Aqueduct.

Los Angeles County

Western Zone	All areas west of the San Bernardino National Forest boundary line.
Mountain Desert Zone	All areas east of the San Bernardino National Forest boundary line.

Madera County

Western Zone	All areas west of the western boundary of the Sierra National Forest.
Middle Zone	From the western boundary of the Sierra National Forest to the 5,000-foot elevation line.
Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Mariposa County

Western Zone	All areas west of the western border of the Stanislaus National Forest.
Middle Zone	From the western boundary of the Stanislaus National Forest to the 5,000-foot elevation line.
Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Mono County

National Forest Zone	All areas within the Toiyabe and Inyo National Forests.
Bridgeport Zone	All areas outside the national forest areas.
Mammoth Lakes Zone	To include Mammoth Lakes, June Lake Loop, and Lake Crowley areas.

Nevada County

Western Zone	All areas west of the western boundary of the Tahoe National Forest.
Western Middle Zone	From the western boundary of the Tahoe National Forest to the 5,000-foot elevation level.
Eastern Middle Zone	From the 5,000-foot elevation level to the summit of the Sierra Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Placer County

Western Zone	All areas west of Highway 49 and excluding all towns on Highway 49.
Western Middle Zone	From Highway 49 east to the Tahoe National Forest boundary and including the town of Auburn.
Eastern Middle Zone	From the western boundary of the Tahoe National Forest to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Plumas County

Mountain Zone	All areas of Plumas County.

Riverside County

Western Zone	All areas west of San Gorgonio Pass and the western border of the San Bernardino National Forest, excluding the towns of Calimesa, Beaumont, and Banning.

Eastern Zone	All areas east of San Gorgonio Pass and the western boundary of the San Bernardino National Forest, including the towns of Calimesa, Beaumont, Banning, Anza, and Aguanga.

San Bernardino County

San Bernardino Zone	All areas west of the San Bernardino National Forest boundary line.
Mountain Desert Zone	All areas east of the San Bernardino National Forest boundary line.
Big Bear/Lake Arrowhead Zone	All areas around Lake Arrowhead and Big Bear Valley.

San Diego County

Western Zone	All areas west of the western boundary of the Cleveland National Forest.
Eastern Zone	All areas east of the western boundary of the Cleveland National Forest.

Santa Barbara County

Northern Zone	All areas north of the Santa Ynez River.
Southern Zone	All areas south of the Santa Ynez River.

Sierra County

Western Zone	All areas west of the 5,000-foot elevation line.
Middle Zone	From the 5,000-foot elevation line to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Tulare County

Western Zone	All areas west of western boundary of the Sequoia National Forest.
Middle Zone	From the western boundary of the Sequoia National Forest to the 5,000-foot elevation line.
Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Tuolumne County

Western Zone	All areas west of the western boundary of the Stanislaus National Forest.

Middle Zone	From the western boundary of the Stanislaus National Forest to the 5,000-foot elevation line.
Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

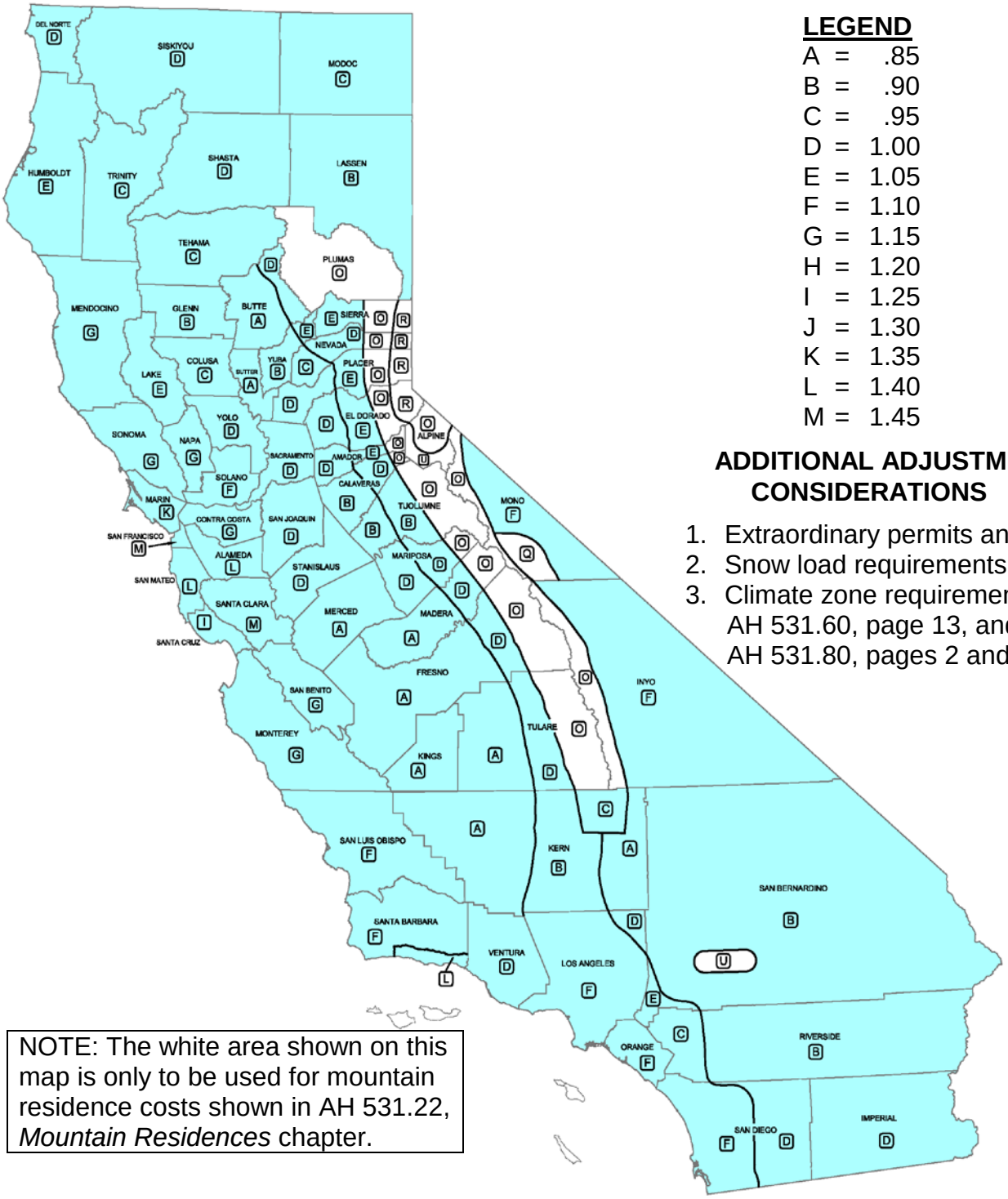
Yuba County

Western Zone	All areas west of the western boundary of the Plumas National Forest.
Eastern Zone	All areas east of the eastern boundary of the Plumas National Forest.

SINGLE FAMILY RESIDENTIAL

(Blue Area Shown on this Map)

Factors to adjust 1-1-2013 to all locations in the State of California.



LEGEND

A = .85
B = .90
C = .95
D = 1.00
E = 1.05
F = 1.10
G = 1.15
H = 1.20
I = 1.25
J = 1.30
K = 1.35
L = 1.40
M = 1.45

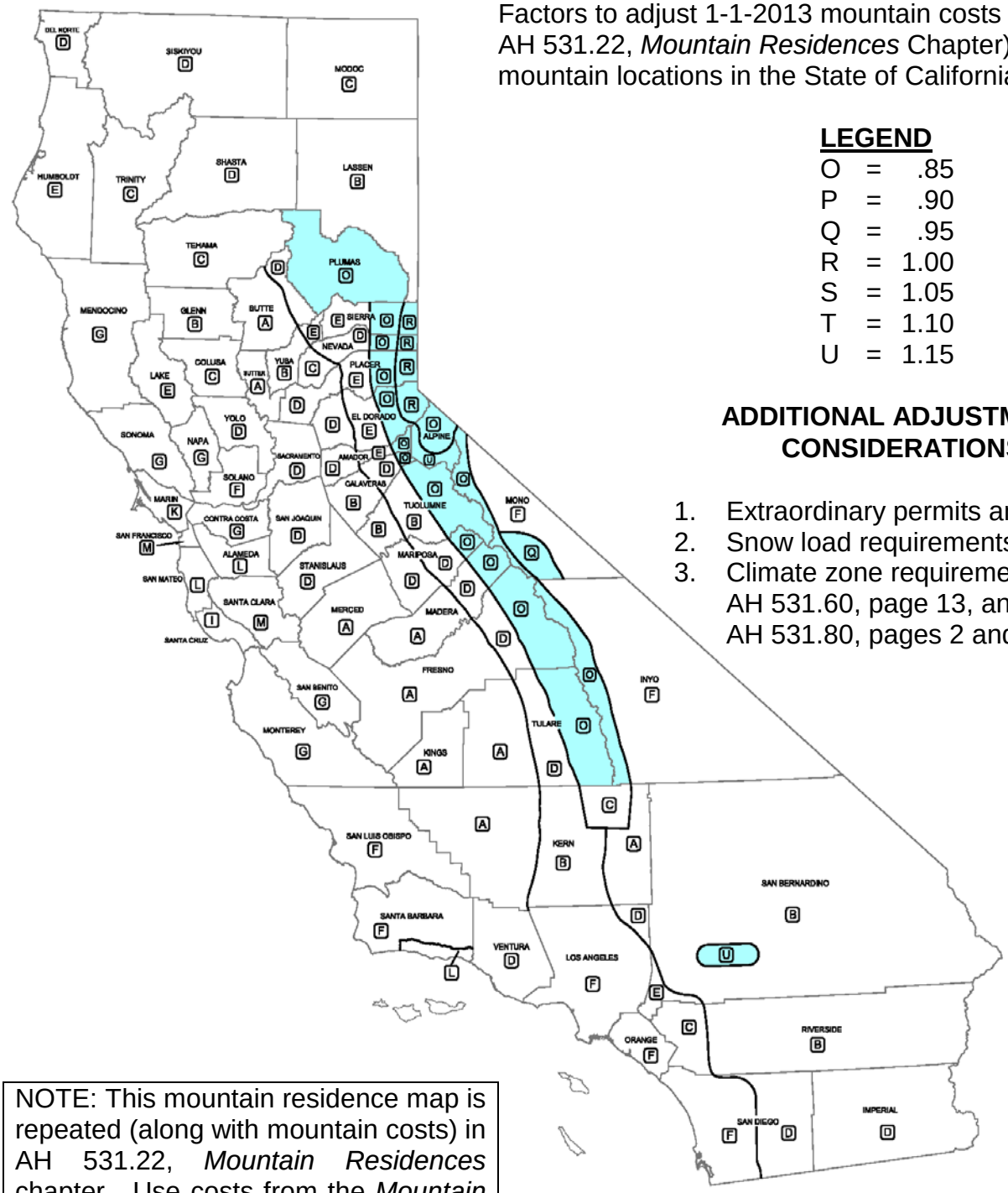
ADDITIONAL ADJUSTMENT CONSIDERATIONS

1. Extraordinary permits and fees
2. Snow load requirements
3. Climate zone requirements (see AH 531.60, page 13, and AH 531.80, pages 2 and 3).

NOTE: The white area shown on this map is only to be used for mountain residence costs shown in AH 531.22, *Mountain Residences* chapter.

MOUNTAIN RESIDENCES

(Blue Area Shown on this Map)



Factors to adjust 1-1-2013 mountain costs (see AH 531.22, *Mountain Residences* Chapter) to other mountain locations in the State of California

LEGEND

O	=	.85
P	=	.90
Q	=	.95
R	=	1.00
S	=	1.05
T	=	1.10
U	=	1.15

ADDITIONAL ADJUSTMENT CONSIDERATIONS

1. Extraordinary permits and fees
2. Snow load requirements
3. Climate zone requirements (see AH 531.60, page 13, and AH 531.80, pages 2 and 3).

NOTE: This mountain residence map is repeated (along with mountain costs) in AH 531.22, *Mountain Residences* chapter. Use costs from the *Mountain Residences* chapter with the location adjustment from this map for mountain residences.

AH 531.20: SINGLE-FAMILY RESIDENTIAL CONVENTIONAL TYPE

Conventional single-family residences are residential buildings designed for permanent single-family occupancy and usually built before 1950. They differ from modern single-family residences in that they have fewer bathrooms and fewer built-in features such as ovens, ranges, and dishwashers. These differences are reflected in the respective building specifications.

Square foot costs include all costs and components as described on page 2 of AH 531.10, the *Costing Information* chapter of this handbook, including all plumbing fixtures and built-ins as described in the applicable building specifications.

Shape classification may be determined by using the guides in the *Costing Information* chapter of this handbook.

NOTE: The specifications for each quality class provide a distinction between classes. This distinction often shows in the *quality* of a feature and not whether the feature is present. The same feature may exist in different classes, but the quality of the feature will help to determine the classification. Conversely, some features may be included in a particular classification, while in another class, the same feature must be treated as an additive.

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-4 QUALITY	CONVENTIONAL
Foundation Light concrete	
Floor Structure Joists: 2" x 6", 24" o.c., or 4" concrete	
Walls and Exterior 6" reinforced concrete block, or clay tile Painted exterior Windows: Low-cost steel sash	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: 3 ply built-up 15# felt, mopped Overhang: 16", unceiled Gutters: None	
Floor Finishes Painted concrete or low-cost asphalt tile	
Interior Finish Painted concrete block; wallboard or plywood and paint on partition walls	
Interior Detail Trim: One member Douglas Fir painted or rubber base Closets: One small closet per bedroom; minimum shelving	
Bath Detail Number: One Floors: Painted concrete or low-cost asphalt tile Walls: Painted concrete block; wallboard or plywood and paint on partition walls Shower: None or metal shower in place of tub	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: Small area Douglas Fir, painted Drain Board: 6' wood or vinyl	
Plumbing Four fair quality fixtures Laundry tray and small water heater	
Special Features None	
Electrical Knob and tube or Romex® wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-5 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Standard wood frame or reinforced concrete	
Walls and Exterior 8" reinforced concrete block, painted exterior Windows: Low-cost steel sash	
Roof Framing: Standard wood frame Cover: Asphalt shingles or composition tar and pea gravel Overhang: 12" to 16", unceiled Gutters: Over entrances	
Floor Finishes Asphalt tile or low-cost carpet	
Interior Finish Painted concrete block; drywall, taped, textured, and painted on partitions	
Interior Detail Trim: Douglas Fir, painted, or rubber base Closets: Moderate amount; low-cost doors	
Bath Detail Number: One Floors: Asphalt tile Walls: Plaster painted or drywall and enamel Shower: None or over tub; no tile	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: 20 sq. ft. Douglas Fir, painted Drain Board: 6' low-cost ceramic tile	
Plumbing Four average quality fixtures Single laundry tray and small water heater	
Special Features None	
Electrical Romex® wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-6 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Standard wood frame or reinforced concrete	
Walls and Exterior 8" reinforced colored concrete block, or 8" common brick Windows: Average quality steel sash	
Roof Framing: Standard wood frame Cover: Wood shingle, light shake, good composition shingles, or composition with tar and rock Overhang: 16", unceiled Gutters: 4" galvanized and painted at all eaves	
Floor Finishes Good quality vinyl tile or low-cost carpet	
Interior Finish Drywall, taped, textured, and painted; colored interior plaster; some wallpaper	
Interior Detail Trim: Douglas Fir, painted Closets: Average amount; low-cost wood or metal doors	
Bath Detail Number: One Floors: Ceramic tile or good vinyl tile Walls: Hard plaster enameled or drywall taped and enameled Shower: Over tub with ceramic tile wainscot	
Kitchen Base Cabinet: 8' white pine, painted Wall Cases: 36 sq. ft. white pine, painted Drain Board: 8' ceramic tile	
Plumbing Five medium-priced fixtures Single laundry tray; water heater	
Special Features None	
Electrical Romex® or knob and tube; medium-priced fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-7 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Standard wood frame or reinforced concrete	
Walls and Exterior 8" reinforced colored detailed concrete block, or 8" common brick Windows: Good quality aluminum, or average quality steel sash	
Roof Framing: Standard wood frame Cover: Medium shake, or composition with large rock Overhang: 30", unceiled Gutters: 6" galvanized and painted at all eaves	
Floor Finishes Average quality carpet; average quality sheet vinyl or good quality inlaid vinyl in kitchen and breakfast room	
Interior Finish Drywall, taped, textured, and painted; plaster with putty coat finish; some wallpaper	
Interior Detail Trim: Douglas Fir, painted; some hardwood members Closets: Average amount with average quality wood doors	
Bath Detail Number: One and one-half Floors: Ceramic tile in main; good vinyl tile in half bath Walls: Hard plaster and enamel Shower: 6' ceramic tile with glass door	
Kitchen Base Cabinet: 10' good pine or hardwood veneer Wall Cases: 36 sq. ft. good pine or hardwood veneer Drain Board: 10' ceramic tile with 14" splash	
Plumbing Six standard fixtures ; one double laundry tray; water heater	
Special Features 6' sliding glass or French doors; garbage disposer; kitchen exhaust vent; 4' ceramic tile top vanity in main bath	
Electrical Romex® wiring; average fixtures with a special fixture in dining room	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-8 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Standard wood frame or reinforced concrete	
Walls and Exterior 8" reinforced split face or slump stone block Windows: Good quality steel sash	
Roof Framing: Standard wood frame Cover: Heavy shake or adobe tile Overhang: 36", unceiled, or 24", ceiled Gutters: 8" galvanized and painted at all eaves	
Floor Finishes Terrazzo or mission tile in entry hall; good tongue and groove hardwood or good carpet in living, dining, and bedrooms; good sheet vinyl in kitchen and breakfast rooms	
Interior Finish Drywall with heavy texture and paint; plaster with putty coat finish; some good wallpaper or vinyl wall covering; some good hardwood veneer paneling	
Interior Detail Trim: Two members pine base and shoe; some good hardwood Closets: Ample closet space and shelving	
Bath Detail Number: One bath for two bedrooms Floors: Good ceramic tile Walls: Hard plaster and enamel Shower: 6' good ceramic tile with glass door	
Kitchen Base Cabinet: 10' good hardwood veneer Wall Cases: Ample good hardwood veneer and utility cabinets Drain Board: Good ceramic tile	
Plumbing Eight or more good fixtures; double laundry tray; two water heaters	
Special Features 8' sliding glass or French doors; 4' ceramic tile top vanity in each bath; deluxe range hood and fan; built-in oven and range; garbage disposer; plastic laminate breakfast bar	
Electrical Romex® wiring; good fixtures	

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"C" CONSTRUCTION - SHAPE A

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
C-4	65.53	62.68	60.43	58.47	56.68	55.33	54.04	52.91	51.97	51.14	50.29
C-4.5	71.38	68.29	65.83	63.73	61.80	60.28	58.89	57.70	56.65	55.71	54.80
C-5	77.79	74.52	71.79	69.41	67.36	65.67	64.16	62.89	61.79	60.74	59.80
C-5.5	84.86	81.16	78.20	75.69	73.37	71.60	69.90	68.56	67.33	66.17	65.20
C-6	96.90	92.77	89.32	86.40	83.84	81.83	79.83	78.24	76.85	75.70	74.42
C-6.5	106.60	102.04	98.28	95.09	92.25	89.97	87.87	86.15	84.56	83.22	81.84
C-7	117.25	112.18	108.12	104.65	101.46	99.03	96.70	94.81	93.08	91.54	90.12
C-7.5	134.85	129.03	124.36	120.29	116.75	113.88	111.28	108.99	107.01	105.21	103.56
C-8	154.79	148.11	142.69	138.06	133.91	130.69	127.70	125.14	122.86	120.82	118.88

"C" CONSTRUCTION - SHAPE A

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
C-4	49.71	48.42	47.47	46.62	45.90	45.28	44.78	44.27	43.81	43.40	42.81
C-4.5	54.15	52.86	51.79	50.82	49.96	49.38	48.81	48.28	47.82	47.31	46.67
C-5	59.00	57.56	56.40	55.36	54.49	53.80	53.18	52.59	52.07	51.52	50.82
C-5.5	64.29	62.78	61.45	60.38	59.42	58.66	58.02	57.29	56.73	56.18	55.41
C-6	73.46	71.71	70.15	68.84	67.84	66.97	66.25	65.46	64.82	64.17	63.28
C-6.5	80.83	78.83	77.21	75.86	74.69	73.65	72.78	72.00	71.33	70.61	69.60
C-7	88.92	86.75	84.95	83.44	82.13	81.13	80.10	79.18	78.44	77.67	76.63
C-7.5	102.25	99.72	97.73	95.94	94.41	93.23	92.16	91.09	90.21	89.34	88.08
C-8	117.32	114.52	112.18	110.13	108.40	107.01	105.71	104.51	103.56	102.57	101.04

"C" CONSTRUCTION - SHAPE B

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
C-4	67.40	64.65	62.28	60.28	58.66	57.22	55.92	54.80	53.88	52.91	52.27
C-4.5	73.40	70.42	67.87	65.67	63.96	62.35	60.99	59.80	58.71	57.70	56.96
C-5	80.05	76.84	73.92	71.60	69.73	67.94	66.41	65.20	64.01	62.89	62.05
C-5.5	87.34	83.64	80.61	78.12	76.00	74.15	72.40	71.03	69.79	68.56	67.67
C-6	99.64	95.59	91.99	89.12	86.75	84.56	82.72	81.05	79.70	78.24	77.25
C-6.5	109.67	105.16	101.34	98.11	95.47	93.08	90.95	89.18	87.64	86.15	84.99
C-7	120.69	115.67	111.43	107.90	105.05	102.37	100.08	98.14	96.41	94.81	93.47
C-7.5	138.72	133.00	128.22	124.10	120.78	117.74	115.15	112.88	110.95	108.99	107.58
C-8	159.23	152.69	147.13	142.42	138.65	135.13	132.14	129.57	127.32	125.14	123.51

"C" CONSTRUCTION - SHAPE B

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
C-4	51.51	50.32	49.38	48.40	47.82	47.12	46.55	46.08	45.69	45.32	44.61
C-4.5	56.16	54.83	53.80	52.83	52.07	51.37	50.72	50.24	49.79	49.40	48.62
C-5	61.20	59.81	58.61	57.53	56.70	55.98	55.34	54.73	54.25	53.88	52.95
C-5.5	66.70	65.21	63.92	62.75	61.86	61.01	60.33	59.66	59.16	58.71	57.73
C-6	76.19	74.46	72.97	71.62	70.68	69.72	68.90	68.13	67.51	67.07	65.92
C-6.5	83.79	81.98	80.37	78.78	77.73	76.73	75.77	74.96	74.38	73.80	72.60
C-7	92.25	90.16	88.29	86.68	85.52	84.31	83.38	82.48	81.74	81.16	79.83
C-7.5	106.09	103.70	101.59	99.68	98.29	96.98	95.86	94.81	94.02	93.28	91.85
C-8	121.75	118.97	116.59	114.41	112.87	111.28	110.01	108.91	107.95	107.07	105.39

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"C" CONSTRUCTION - SHAPE C

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
C-4	69.41	66.59	64.28	62.35	60.54	59.08	57.89	56.87	55.81	54.86	54.17
C-4.5	75.69	72.56	70.03	67.94	66.03	64.43	63.13	61.91	60.93	59.83	59.05
C-5	82.47	79.14	76.36	74.05	71.92	70.29	68.77	67.48	66.34	65.27	64.40
C-5.5	89.89	86.22	83.25	80.71	78.44	76.57	74.95	73.57	72.29	71.09	70.18
C-6	102.65	98.51	94.98	92.16	89.51	87.46	85.63	84.01	82.58	81.26	80.12
C-6.5	112.94	108.28	104.58	101.41	98.55	96.17	94.23	92.44	90.89	89.36	88.16
C-7	124.20	119.19	115.06	111.59	108.39	105.84	103.62	101.69	99.95	98.28	96.95
C-7.5	142.84	137.11	132.31	128.33	124.75	121.75	119.18	116.99	114.92	113.05	111.53
C-8	164.03	157.36	151.88	147.31	143.09	139.76	136.86	134.22	131.96	129.73	128.05

"C" CONSTRUCTION - SHAPE C

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
C-4	53.42	52.29	51.25	50.49	49.75	49.12	48.56	48.08	47.59	47.31	46.31
C-4.5	58.31	56.99	55.92	55.02	54.21	53.52	52.90	52.41	51.89	51.52	50.51
C-5	63.50	62.07	60.99	59.88	59.07	58.34	57.66	57.10	56.57	56.18	55.03
C-5.5	69.22	67.68	66.39	65.31	64.42	63.66	62.86	62.28	61.69	61.26	59.90
C-6	79.06	77.35	75.84	74.52	73.54	72.65	71.79	71.11	70.44	70.02	68.42
C-6.5	86.99	85.11	83.44	82.07	80.93	79.96	78.97	78.19	77.51	76.90	75.30
C-7	95.71	93.62	91.81	90.30	89.07	87.96	86.86	86.07	85.22	84.64	82.88
C-7.5	110.09	107.63	105.58	103.84	102.39	101.08	99.92	98.94	98.01	97.30	95.33
C-8	126.37	123.56	121.13	119.16	117.49	116.04	114.73	113.65	112.60	111.79	109.39

"C" CONSTRUCTION - SHAPE D

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
C-4	71.42	68.58	66.30	64.21	62.54	61.11	59.88	58.71	57.77	56.92	56.10
C-4.5	77.86	74.83	72.27	70.02	68.25	66.59	65.31	64.01	62.96	61.98	61.16
C-5	84.91	81.48	78.78	76.32	74.30	72.56	71.12	69.79	68.67	67.60	66.67
C-5.5	92.55	88.87	85.83	83.20	81.09	79.14	77.57	76.07	74.85	73.68	72.65
C-6	105.62	101.46	98.01	94.96	92.54	90.35	88.60	86.76	85.42	84.13	82.99
C-6.5	116.26	111.59	107.82	104.49	101.81	99.41	97.45	95.48	93.99	92.57	91.25
C-7	127.91	122.77	118.65	114.96	112.01	109.34	107.21	105.10	103.41	101.82	100.44
C-7.5	147.13	141.24	136.44	132.26	128.82	125.79	123.28	120.93	118.92	117.08	115.50
C-8	168.85	162.12	156.60	151.82	147.81	144.35	141.57	138.72	136.55	134.43	132.50

"C" CONSTRUCTION - SHAPE D

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
C-4	55.36	54.21	53.20	52.37	51.60	51.01	50.36	49.94	49.58	49.13	48.55
C-4.5	60.38	59.07	58.04	57.08	56.30	55.65	54.86	54.48	54.04	53.56	52.87
C-5	65.80	64.42	63.25	62.24	61.27	60.61	59.83	59.36	58.89	58.36	57.62
C-5.5	71.77	70.19	68.87	67.84	66.84	66.06	65.29	64.69	64.21	63.69	62.82
C-6	81.90	80.20	78.73	77.45	76.24	75.42	74.50	73.93	73.34	72.73	71.74
C-6.5	90.15	88.21	86.59	85.22	83.90	82.99	82.02	81.27	80.65	79.99	78.93
C-7	99.15	97.07	95.23	93.70	92.38	91.30	90.24	89.47	88.77	87.99	86.84
C-7.5	114.02	111.62	109.55	107.79	106.17	105.05	103.74	102.87	102.07	101.21	99.84
C-8	130.88	128.19	125.79	123.72	121.94	120.49	119.05	118.07	117.19	116.25	114.60

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-1 QUALITY	CONVENTIONAL
Foundation Redwood mudsills on grade	
Floor Structure Joists: 2" x 4" or 6", 24" o.c. Sub-Floor: None	
Walls and Exterior Framing: 1" x 12" vertical boards; 2" x 4" top and bottom plates Cover: 1" x 12" vertical boards with 1" x 2" battens Windows: Sliding barn sash Front Door: 1-3/8" single panel	
Roof Framing: 2" x 4" rafters, 32" o.c. Cover: Rolled roofing Overhang: 12", unceiled Gutters: None	
Floor Finishes 1" x 4" or 6" Douglas Fir tongue and groove	
Interior Finish 1" x 12" boards; open ceiling	
Interior Detail Interior Doors: 1-3/8" single panel Trim: None Closets: None	
Bath Detail None	
Kitchen Small amount of painted Douglas Fir Drain Board: Douglas Fir	
Plumbing Two low-cost fixtures	
Special Features None	
Electrical Knob and tube wiring; one drop cord per room	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-2 QUALITY	CONVENTIONAL
Foundation Light nonreinforced concrete	
Floor Structure Joists: 2" x 6", 24" o.c. Sub-Floor: None	
Walls and Exterior Framing: 1" x 12" boards; 2" x 4" top and bottom plate; 2" x 4" on either side of openings; 4" x 4" in corners; 2" x 4" center nail tie Cover: 1" x 12" vertical boards with 1" x 2" battens Windows: Wood casements, painted Front Door: 1-3/8", 2 to 4 panels	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: Rolled roofing Overhang: 12", unceiled Gutters: None	
Floor Finishes 1" x 4" tongue and groove Douglas Fir; print vinyl in kitchen	
Interior Finish 1" x 12" boards with 2 coats lead and oil paint on walls Wallboard or plywood on ceilings	
Interior Detail Interior Doors: 1-3/8" single panel Trim: None Closets: None	
Bath Detail Number: One Floors: Vinyl tile Walls: Painted 1" x 12" boards Shower: None	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: Small area Douglas Fir, painted Drain Board: 6" vinyl squares	
Plumbing Four fair quality fixtures; water heater	
Special Features None	
Electrical Knob and tube wiring; simple fixtures in living and dining rooms; drop cords in other rooms	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-3 QUALITY	CONVENTIONAL
Foundation Concrete piers	
Floor Structure Joists: 2" x 6", 24" o.c. Sub-Floor: None	
Walls and Exterior Framing: 2" x 4" studs, 24" o.c. Sheathing: None Cover: 1/2" redwood siding, painted Windows: Wood casements, painted Front Door: 1-3/8" stock, two panels	
Roof Framing: 2" x 4" rafters, 24" to 32" o.c. Cover: Rolled roofing Overhang: 12", unceiled Gutters: None	
Floor Finishes 1" x 4" Douglas Fir tongue and groove; print vinyl in kitchen	
Interior Finish Wallboard, plaster board, or plywood, painted	
Interior Detail Interior Doors: 1-3/8" stock, single panel Trim: One member baseboard, painted Closets: One closet per bedroom with minimum shelving	
Bath Detail Number: One Floors: Print vinyl tile Walls: Wallboard, painted Shower: None or metal shower in place of tub	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: Small area Douglas Fir, painted Drain Board: 6" wood squares	
Plumbing Four fair quality fixtures; water heater	
Special Features None	
Electrical Knob and tube wiring; simple fixtures in living and dining rooms; drop cords in other rooms	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-4 QUALITY	CONVENTIONAL
Foundation Light concrete	
Floor Structure Joists: 2" x 4", 24" o.c. Sub-Floor: None	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: None Cover: 1/2" redwood siding painted; light stucco Windows: Wood casements or double hung, painted Front Door: 1-3/8" stock, two or four panels	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: 3 ply built-up 15# felt, mopped Overhang: 16", unceiled Gutters: None	
Floor Finishes 1" x 4" Douglas Fir tongue and groove; print vinyl in kitchen	
Interior Finish Two coats of sand plaster on wood or gypsum lath glue size and calcimine	
Interior Detail Interior Doors: 1-3/8" stock, single panel Trim: One member Douglas Fir, painted Closets: One closet per bedroom with minimum shelving	
Bath Detail Number: One Floors: Print vinyl tile Walls: Wallboard, painted Shower: None or metal shower in place of tub	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: Small area Douglas Fir, painted Drain Board: 6" wood or vinyl squares	
Plumbing Four fair quality fixtures; laundry tray; water heater	
Special Features None	
Electrical Knob and tube or Romex® wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-5 QUALITY	CONVENTIONAL
Foundation Standard concrete	
Floor Structure Joists: 2" x 6", 16" o.c. Sub-Floor: 1" x 6" or 8" in living room	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: Line wire and paper Cover: 1" stucco or 1" x 6" wood siding painted Windows: Painted wood, double hung Front Door: 1-3/8" stock, four rectangular panels	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: Wood shingles or average composition shingles Overhang: 16", unceiled Gutters: Painted galvanized iron over entrances	
Floor Finishes Oak hardwood in living room; print vinyl in kitchen; 1" x 4" tongue and groove Douglas Fir in balance	
Interior Finish Colored interior stucco in living room, sand plaster calcimine on balance	
Interior Detail Interior Doors: 1 3/8" stock, one panel Trim: One member base, painted Closets: One closet for each bedroom with painted shelving and hook strip	
Bath Detail Number: One Floors: Print vinyl tile Walls: Wall plaster, painted Shower: None	
Kitchen Base Cabinet: 6' Douglas Fir, painted Wall Cases: 20" sq. ft. Douglas Fir, painted Drain Board: 6" low-cost ceramic tile	
Plumbing Four average quality fixtures; a single laundry tray; water heater	
Special Features None	
Electrical Romex® wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-6 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Joists: 2" x 6", 16" o.c. Sub-Floor: 1" x 6" or 8"	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: Line wire and paper Cover: 1" stucco or 1" clear heart redwood Windows: Wood double hung, painted; steel or aluminum casements Front Door: 1-3/4" hardwood veneer slab	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: Wood or good composition shingles Overhang: 16" unceiled Gutters: Painted galvanized iron over entrances	
Floor Finishes 1/2" x 2" oak; inlaid vinyl in kitchen	
Interior Finish Two coats plaster with putty finish; colored stucco or 1/2" drywall and texture; small amount of soft wood wainscot	
Interior Detail Interior Doors: Stock one panel or slab Trim: One member base, painted Closets: 15 linear ft. closet shelving with hook strip and pole; 15 linear ft. linen closet shelving	
Bath Detail Number: One Floors: Average ceramic tile or vinyl tile Walls: Wall plaster, painted Shower: Over tub with average ceramic tile wainscot	
Kitchen Base Cabinet: 8' white pine, painted Wall Cases: 36" sq. ft. white pine, painted Drain Board: 8" average ceramic tile	
Plumbing Five medium-priced fixtures; single laundry tray; water heater	
Special Features None	
Electrical Romex® or knob and tube; medium priced fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-7 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Joists: 2" x 8", 16" o.c. Sub-Floor: 1" x 6" or 8"	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: 1/2" gypsum or insulated board ; 1" x 8" clear heart redwood rustic painted or stained; good cedar shakes or shingles painted or stained Windows: Wood, double hung; steel sash Front Doors: 1-3/4" good pine or wood veneer	
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: Good wood or composition shingles Overhang: Boxed or finished eaves Gutters: Over entrances	
Floor Finishes 1/2" x 2" tongue and groove select plain oak; inlaid vinyl in kitchen	
Interior Finish Good plaster, white putty coat finish; some hardwood veneer paneling; some average wallpaper and enamel in kitchen	
Interior Detail Interior Doors: Stock slab or six flat panel Trim: One member pine base and shoe, painted Closets: 20 linear feet of closet shelving with hook strip and pole; 15 linear feet of linen closet shelving	
Bath Detail Number: One and one-half Floors: Average ceramic tile in main; good vinyl tile in half bath Walls: Hard plaster with enamel Shower: 6" average ceramic tile with glass door	
Kitchen Base Cabinet: 10' good pine or hardwood veneer Wall Cases: 36 sq. ft. good pine or hardwood veneer Drain Board: 10' average ceramic tile; 14" splash	
Plumbing Six standard fixtures; double laundry tray; water heater	
Special Features Picture window; French doors; garbage disposer; kitchen exhaust vent; 4' ceramic tile top vanity in main bath	
Electrical Romex® wiring; average fixtures with a special fixture in dining room	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-8 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Joists: 2" x 8", 16" o.c. Sub-Floor: 1" x 4" tongue and groove	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: 2" x 6" or 8" boards Cover: Good 1" stucco, 1" x 10" clear heart redwood, or good cedar shingles Windows: Good wood double hung; good steel sash, painted Front Doors: 1-3/4" Philippine Mahogany	
Roof Framing: 2" x 6" rafters, 24" o.c. Cover: 3/4" shakes, tile, or composition shingles Overhang: Boxed eaves Gutters: Painted galvanized iron at all eaves	
Floor Finishes 13/16" select plain oak; heavy inlaid vinyl in kitchen	
Interior Finish Two coats plaster, smooth white putty coat finish; coved ceilings; small amount of good hardwood veneer paneling; some good quality wallpaper	
Interior Detail Interior Doors: Philippine Mahogany or pine slab doors or 6 panel flat doors Trim: Two member pine base and shoe; some good hardwood Closets: Ample closet space and linen shelving	
Bath Detail Number: One bath for two bedrooms Floors: Good ceramic tile Walls: Hard plaster and enamel Shower: 6" good ceramic tile with glass door	
Kitchen Base Cabinet: 10' good hardwood veneer Wall Cases: Ample good hardwood Drain Board: Good ceramic tile	
Plumbing Eight or more good fixtures; double laundry tray; two water heaters	
Special Features Custom picture window; 4' ceramic tile top vanity in each bath; deluxe range hood and fan, built-in oven and range, garbage disposer; plastic laminate breakfast bar	
Electrical Romex® wiring; good fixtures	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-9 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Joists: 2" x 10", 16" o.c. Sub-Floor: 1" x 4" tongue and groove	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: 1" x 6" or 8" boards Cover: Good 1" stucco, 1" x 10" good redwood, some brick or stone veneer on front wall Windows: Good wood or steel sash, painted Front Doors: Good 2" hardwood	
Roof Framing: 2" x 6" rafters, 16" o.c. Cover: 3/4" to 1-1/2" shake; adobe tile Overhang: Boxed eaves Gutters: Good quality at all eaves	
Floor Finishes Clear matched oak or good carpet in living, dining and bedrooms; terrazzo in entry; good sheet vinyl, or solid vinyl tile in family room, kitchen, utility room	
Interior Finish Good plaster, putty coat finish; ornamental acoustic plaster ceilings; good hardwood veneer paneling in den, family room and entry; some good wallpaper	
Interior Detail Interior Doors: Matched hardwood or six panel raised Trim: Hardwood to match paneling Closets: Extensive closets with cupboards and storage drawers	
Bath Detail Number: 1-1/2 for each two bedrooms Floors: Good ceramic tile Walls: Good ceramic tile wainscot, hard plaster and enamel Shower: Good ceramic tile with good glass door	
Kitchen Base Cabinet: 12' or more matched hardwood veneer Wall Cases: Many; matched hardwood veneer Drain Board: Ceramic tile or good plastic laminate	
Plumbing Copper tubing; 10 or more good fixtures; double laundry tray; two or more water heaters	
Special Features Several custom picture windows; 6' ceramic tile vanity in each bath; built-in range, oven, range hood and fan, dishwasher, garbage disposer, breakfast bar and pantry	
Electrical Romex® wiring; good fixtures with good chandelier in dining room	

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-10 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Joists: 2" x 10", 16" o.c. Sub-Floor: 1" x 4" tongue and groove	
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: 1" x 4" boards Cover: Good wood siding or masonry veneer Windows: Best quality wood or steel sash Front Doors: Best hardwood, double	
Roof Framing: 2" x 6" rafters, 16" o.c. Cover: Adobe tile or slate Overhang: Boxed eaves Gutters: Good quality at all eaves	
Floor Finishes Special matched oak or very good carpet in living, dining, and bedrooms; good terrazzo in entry; rubber, cork, or solid vinyl tile in kitchen, family room, and utility room	
Interior Finish Best plaster, putty coat finish; ornamental acoustic plaster ceilings; matched hardwood paneling in entry, dining room, den, family room, and living room; extensive use of best paint, vinyl, and cloth wall covers	
Interior Detail Interior Doors: Good hardwood or six panel raised panel Trim: Good detailed pine; hardwood to match paneling Closets: Extensive with cupboards above and drawers below	
Bath Detail Number: One for each bedroom Floors: Good ceramic tile Walls: Good ceramic tile Shower: Good ceramic tile with good glass door	
Kitchen Base Cabinet: Good matched hardwood Wall Cases: Good matched hardwood Drain Board: Good ceramic tile	
Plumbing Copper tubing; 12 or more very good fixtures; double laundry tray; three or more water heaters	
Special Features Several ornate picture windows; best quality built-in oven, range, dishwasher, range hood and fan, garbage disposer, breakfast bar, pantry, and special baths	
Electrical Romex® or conduit wiring; very good fixtures; expensive chandelier in dining room	

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE A

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-1	44.19	41.06	38.68	36.91	35.36	34.15	33.15	32.28	31.52	30.97	30.37
D-1.5	48.54	45.05	42.41	40.47	38.85	37.53	36.41	35.45	34.59	34.05	33.37
D-2	53.27	49.48	46.66	44.47	42.72	41.20	39.97	38.89	38.07	37.33	36.65
D-3	58.46	54.33	51.19	48.83	46.86	45.27	43.85	42.73	41.80	41.02	40.28
D-3.5	64.21	59.62	56.24	53.63	51.46	49.68	48.18	46.94	45.89	45.02	44.19
D-4	70.49	65.51	61.71	58.83	56.47	54.48	52.87	51.51	50.39	49.48	48.54
D-4.5	77.38	71.85	67.76	64.65	62.06	59.83	58.09	56.59	55.34	54.28	53.27

"D" CONSTRUCTION - SHAPE A

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	70.93	68.14	65.70	63.74	62.12	60.70	59.58	58.46	57.54	56.71	55.96
D-5.5	77.90	74.84	72.19	70.04	68.22	66.64	65.33	64.21	63.13	62.23	61.43
D-6	89.53	86.11	82.99	80.57	78.46	76.69	75.15	73.86	72.69	71.54	70.61
D-6.5	99.28	95.29	91.99	89.30	86.95	85.00	83.31	81.83	80.49	79.35	78.39
D-7	110.05	105.72	101.98	98.97	96.36	94.19	92.38	90.71	89.23	87.92	86.88
D-7.5	127.51	122.43	118.10	114.61	111.60	109.10	107.02	105.01	103.45	101.87	100.57

"D" CONSTRUCTION - SHAPE A

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	55.35	54.20	53.27	52.49	51.74	51.19	50.58	50.16	49.84	49.48	48.83
D-5.5	60.77	59.54	58.46	57.69	56.87	56.18	55.58	55.08	54.73	54.33	53.63
D-6	69.87	68.44	67.26	66.26	65.35	64.60	63.92	63.38	62.96	62.47	61.69
D-6.5	77.54	75.85	74.53	73.45	72.52	71.65	70.85	70.27	69.77	69.23	68.37
D-7	85.90	84.08	82.58	81.45	80.30	79.41	78.54	77.87	77.36	76.69	75.75
D-7.5	99.47	97.41	95.75	94.40	93.04	91.96	90.94	90.20	89.58	88.88	87.78

"D" CONSTRUCTION - SHAPE A

Class	1300	1400	1500	1600	1700	1800	2000	2200	2400	2600	2800
D-8	129.63	127.30	125.18	123.28	121.82	120.50	117.93	115.92	114.65	112.76	111.34
D-8.5	155.28	152.45	149.88	147.65	145.90	144.17	141.21	138.83	137.23	134.93	133.35
D-9	220.96	216.92	213.37	210.19	207.65	205.28	200.94	197.42	195.39	192.11	189.82
D-9.5	328.02	322.09	316.80	311.99	308.26	304.80	298.39	293.33	290.06	285.23	281.72
D-10	390.83	383.72	377.40	371.84	367.38	363.21	355.60	349.67	345.59	339.87	335.77

"D" CONSTRUCTION - SHAPE A

Class	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
D-8	110.19	109.27	108.48	107.62	106.89	106.46	105.97	105.51	105.28	104.74	104.58
D-8.5	131.96	130.87	129.88	128.94	127.92	127.32	126.89	126.28	125.97	125.41	125.28
D-9	187.87	186.28	184.93	183.49	182.04	181.16	180.64	179.69	179.36	178.53	178.21
D-9.5	278.93	276.56	274.55	272.38	270.35	269.03	268.15	266.83	266.27	265.07	264.70
D-10	332.36	329.56	327.14	324.69	322.17	320.61	319.48	318.07	316.22	315.87	315.46

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE B

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-1	45.11	41.92	39.53	37.59	36.08	34.86	33.79	33.07	32.26	31.64	31.01
D-1.5	49.58	46.04	43.38	41.24	39.60	38.34	37.21	36.22	35.36	34.80	34.08
D-2	54.41	50.51	47.65	45.34	43.50	42.06	40.80	39.88	38.88	38.14	37.38
D-3	59.77	55.54	52.37	49.70	47.79	46.20	44.79	43.76	42.72	41.91	41.11
D-3.5	65.58	60.92	57.45	54.60	52.49	50.75	49.18	48.04	46.92	46.02	45.11
D-4	72.08	66.89	63.09	60.00	57.60	55.71	54.03	52.70	51.46	50.49	49.58
D-4.5	79.10	73.41	69.25	65.88	63.24	61.19	59.31	57.88	56.49	55.38	54.41

"D" CONSTRUCTION - SHAPE B

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	72.23	69.40	67.12	65.05	63.53	62.06	60.80	59.71	58.88	57.96	57.20
D-5.5	79.29	76.17	73.64	71.41	69.73	68.14	66.85	65.58	64.69	63.60	62.80
D-6	91.28	87.64	84.70	82.19	80.15	78.39	76.80	75.50	74.34	73.18	72.28
D-6.5	101.13	97.18	93.86	91.06	88.93	86.81	85.10	83.63	82.44	81.09	80.09
D-7	112.09	107.69	104.08	100.97	98.51	96.24	94.40	92.67	91.35	89.89	88.68
D-7.5	129.87	124.75	120.54	116.97	114.12	111.46	109.35	107.38	105.59	104.03	102.79

"D" CONSTRUCTION - SHAPE B

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	56.59	55.38	54.45	53.66	53.10	52.49	51.89	51.46	51.07	50.75	50.12
D-5.5	62.13	60.88	59.77	58.98	58.33	57.69	56.98	56.49	56.06	55.71	55.03
D-6	71.50	70.04	68.73	67.85	67.05	66.26	65.58	65.03	64.57	64.16	63.36
D-6.5	79.20	77.58	76.27	75.15	74.33	73.45	72.69	72.07	71.50	71.02	70.17
D-7	87.79	86.04	84.47	83.31	82.38	81.45	80.61	79.84	79.20	78.71	77.82
D-7.5	101.77	99.63	97.88	96.55	95.46	94.40	93.34	92.55	91.76	91.21	90.12

"D" CONSTRUCTION - SHAPE B

Class	1300	1400	1500	1600	1700	1800	2000	2200	2400	2600	2800
D-8	132.47	130.01	127.85	125.93	124.42	123.16	120.67	118.49	116.96	115.56	114.21
D-8.5	158.53	155.69	153.04	150.86	148.99	147.40	144.52	141.89	139.97	138.35	136.68
D-9	225.76	221.55	217.89	214.72	212.06	209.84	205.68	202.00	199.21	196.94	194.49
D-9.5	335.17	329.04	323.62	318.71	314.97	311.48	305.45	299.95	295.83	292.37	288.81
D-10	399.41	392.01	385.55	379.89	375.26	371.20	363.91	357.45	352.58	348.45	344.24

"D" CONSTRUCTION - SHAPE B

Class	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
D-8	113.06	112.02	111.17	110.50	109.58	109.11	108.72	108.27	107.97	107.57	107.32
D-8.5	135.28	134.06	133.01	132.24	131.29	130.64	130.15	129.63	129.32	128.82	128.45
D-9	192.59	190.88	189.40	188.18	186.77	185.96	185.25	184.52	184.01	183.33	182.94
D-9.5	285.97	283.33	281.30	279.53	277.30	276.04	275.08	273.92	273.29	272.19	271.66
D-10	340.72	338.10	335.06	333.03	330.58	329.02	327.94	326.43	325.65	324.45	323.77

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT COST TABLES

"D" CONSTRUCTION - SHAPE C

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-1	46.17	42.83	40.40	38.15	36.72	35.57	34.51	33.69	32.89	32.28	31.78
D-1.5	50.74	47.06	44.32	41.92	40.40	39.07	37.92	36.95	36.14	35.45	34.85
D-2	55.60	51.71	48.65	46.04	44.32	42.83	41.59	40.52	39.70	38.89	38.31
D-3	61.05	56.73	53.44	50.54	48.65	46.99	45.73	44.57	43.63	42.73	42.02
D-3.5	67.12	62.31	58.73	55.54	53.42	51.66	50.12	48.93	47.87	46.94	46.17
D-4	73.65	68.37	64.42	60.92	58.61	56.71	55.03	53.66	52.61	51.51	50.71
D-4.5	80.83	75.16	70.73	66.89	64.41	62.23	60.49	58.96	57.76	56.59	55.60

"D" CONSTRUCTION - SHAPE C

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	73.53	70.73	68.33	66.38	64.72	63.43	62.18	61.05	60.10	59.34	58.59
D-5.5	80.78	77.66	75.02	72.88	71.02	69.65	68.28	67.12	65.97	65.19	64.38
D-6	92.83	89.36	86.30	83.84	81.77	80.12	78.53	77.16	75.87	74.90	74.02
D-6.5	102.92	99.03	95.66	92.95	90.66	88.73	87.06	85.52	84.14	83.07	82.05
D-7	114.10	109.71	106.05	102.98	100.40	98.38	96.47	94.80	93.26	92.05	90.97
D-7.5	132.10	127.08	125.78	119.32	116.36	114.03	111.81	109.83	109.56	106.64	105.34

"D" CONSTRUCTION - SHAPE C

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	57.91	56.82	55.89	55.01	54.37	53.79	53.30	52.83	52.44	52.10	51.44
D-5.5	63.59	62.35	61.30	60.45	59.71	59.11	58.55	57.96	57.55	57.20	56.47
D-6	73.16	71.81	70.56	69.54	68.71	67.94	67.31	66.69	66.22	65.80	64.94
D-6.5	81.07	79.53	78.18	77.08	76.17	75.36	74.68	73.86	73.40	72.92	72.00
D-7	89.89	88.19	86.70	85.37	84.39	83.49	82.73	81.91	81.34	80.86	79.80
D-7.5	104.11	102.11	100.40	98.96	97.72	96.66	95.77	94.83	94.27	93.64	92.45

"D" CONSTRUCTION - SHAPE C

Class	1300	1400	1500	1600	1700	1800	2000	2200	2400	2600	2800
D-8	135.41	132.98	131.12	129.09	127.36	125.97	123.69	121.59	119.87	118.34	117.12
D-8.5	162.18	159.23	156.91	154.49	152.53	150.88	148.07	145.64	143.54	141.73	140.26
D-9	230.81	226.61	223.34	219.87	217.18	214.76	210.79	207.24	204.32	201.68	199.67
D-9.5	342.77	336.57	331.76	326.46	322.42	318.93	313.01	307.80	303.29	299.64	296.43
D-10	408.35	400.98	395.26	389.05	384.20	380.03	372.93	366.65	361.62	357.08	353.24

"D" CONSTRUCTION - SHAPE C

Class	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
D-8	116.05	114.95	114.21	113.47	112.55	112.06	111.60	111.17	110.85	110.46	110.19
D-8.5	138.93	137.62	136.68	135.82	134.78	134.21	133.68	133.01	132.73	132.19	131.96
D-9	197.77	195.99	194.49	193.30	191.76	191.02	190.18	189.40	188.85	188.11	187.87
D-9.5	294.56	290.91	288.81	286.97	284.80	283.49	282.36	281.30	280.52	279.37	278.93
D-10	350.02	346.55	344.24	342.03	339.35	337.95	336.55	335.06	334.18	332.89	332.36

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE D

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-1	47.24	43.85	41.16	39.07	37.59	36.36	35.32	34.50	33.73	33.13	32.53
D-1.5	51.85	48.18	45.14	42.83	41.24	39.92	38.80	37.87	36.99	36.40	35.71
D-2	56.90	52.85	49.62	47.06	45.34	43.77	42.57	41.56	40.71	39.92	39.17
D-3	62.54	58.09	54.45	51.66	49.70	48.09	46.75	45.65	44.61	43.82	43.06
D-3.5	68.67	63.71	59.81	56.73	54.60	52.83	51.36	50.09	49.03	48.14	47.30
D-4	75.32	69.97	65.62	62.25	60.00	57.98	56.35	55.00	53.90	52.84	51.86
D-4.5	82.80	76.88	71.98	68.33	65.88	63.66	61.96	60.40	59.14	58.02	56.95

"D" CONSTRUCTION - SHAPE D

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	74.98	72.23	69.84	67.93	66.33	64.86	63.66	62.59	61.67	60.88	60.08
D-5.5	82.35	79.29	76.70	74.56	72.83	71.30	69.87	68.74	67.76	66.86	65.96
D-6	94.73	91.28	88.24	85.80	83.78	81.91	80.41	78.94	77.92	76.83	75.87
D-6.5	104.95	101.13	97.76	95.10	92.83	90.79	89.08	87.62	86.31	85.26	84.13
D-7	116.31	112.09	108.38	105.34	102.84	100.58	98.72	97.03	95.72	94.42	93.24
D-7.5	134.78	129.87	125.52	122.07	119.15	116.57	114.42	112.48	110.90	109.39	107.99

"D" CONSTRUCTION - SHAPE D

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	59.41	58.33	57.33	56.59	55.92	55.34	54.77	54.36	53.97	53.60	52.87
D-5.5	65.23	64.02	62.96	62.13	61.38	60.77	60.10	59.68	59.23	58.81	58.10
D-6	75.10	73.65	72.40	71.50	70.58	69.86	69.13	68.67	68.14	67.65	66.77
D-6.5	83.24	81.61	80.28	79.20	78.24	77.42	76.69	76.06	75.51	75.03	74.09
D-7	92.22	90.42	88.99	87.79	86.71	85.78	84.92	84.35	83.66	83.15	82.05
D-7.5	107.45	104.86	103.06	101.77	100.50	99.37	98.45	97.64	96.94	96.20	95.10

"D" CONSTRUCTION - SHAPE D

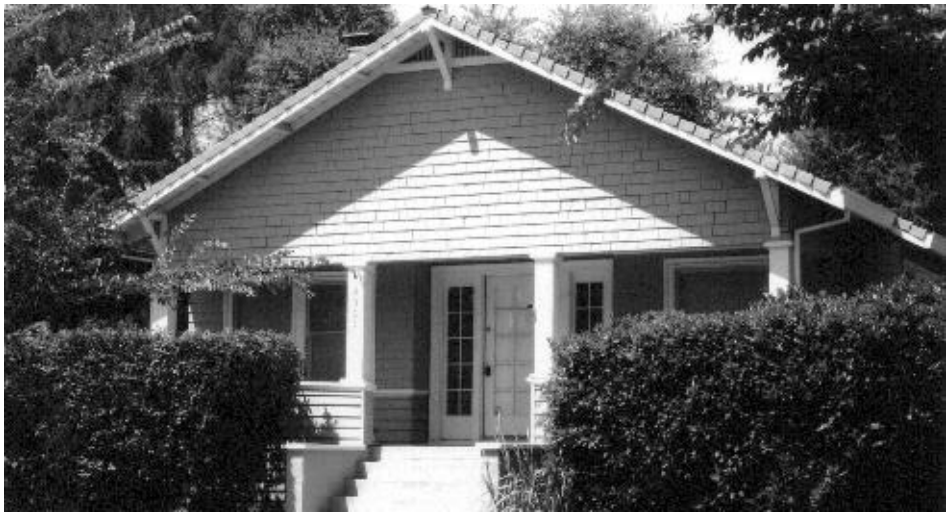
Class	1300	1400	1500	1600	1700	1800	2000	2200	2400	2600	2800
D-8	138.43	136.06	133.87	132.14	130.55	129.46	126.93	124.82	123.17	121.72	120.50
D-8.5	165.73	162.83	160.30	158.24	156.24	154.96	151.99	149.48	147.49	145.67	144.17
D-9	235.85	231.89	228.14	225.18	222.48	220.57	216.35	212.64	209.92	207.42	205.28
D-9.5	350.29	344.29	338.79	334.34	330.30	327.42	321.35	315.87	311.86	307.91	304.80
D-10	417.35	410.33	403.63	398.59	393.67	390.23	382.75	376.38	371.48	366.95	363.21

"D" CONSTRUCTION - SHAPE D

Class	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
D-8	119.28	118.33	117.39	116.58	115.73	115.25	114.80	114.30	113.97	113.53	113.37
D-8.5	142.78	141.65	140.61	139.63	138.62	138.00	137.43	136.87	136.52	135.95	135.72
D-9	203.35	201.65	200.13	198.80	197.28	196.37	195.60	194.79	194.29	193.51	193.14
D-9.5	301.85	299.43	297.15	295.10	292.84	291.54	290.53	289.33	288.65	287.33	286.91
D-10	359.74	356.94	354.03	351.69	349.01	347.39	346.27	344.72	343.88	342.51	341.93

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-5 QUALITY

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-6 QUALITY



SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-7 QUALITY

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-8 QUALITY

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-9 QUALITY

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-10 QUALITY

AH 531.21: SINGLE-FAMILY RESIDENTIAL MODERN TYPE

Modern single-family residences are residences designed for permanent single-family occupancy and usually built after 1950. They differ from conventional single-family residences in that they have more bathrooms and more built-in features. These differences are reflected in the respective building specifications.

Modern type specifications are divided into two categories per quality classification:

- Pre 1990: Generally for residences built between 1950 and 1990
- Post 1990: Generally for residences built after 1990

The development of divided specifications for modern residences is due to the distinct changes that have occurred in the construction industry in California in recent years. Items such as plumbing, roofing, and flooring which used to be found in a D7.5 or above, are commonly found in a D6 after 1990. The additional specifications recognize and accommodate the changes in the industry.

Square foot costs include all costs and components as described on page 2 of AH 531.10, the *Costing Information* chapter of this handbook, and include all plumbing fixtures and built-ins as described in the applicable building specifications.

Shape classification may be determined by using the guides in the *Costing Information* chapter of this handbook.

NOTE: The specifications for each quality class provide a distinction between classes. This distinction often shows in the *quality* of a feature and not whether the feature is present. The same feature may exist in different classes, but the quality of the feature will help to determine the classification. Conversely, some features may be included in a particular classification, while in another class, the same feature must be treated as an additive.

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990	D-5 QUALITY	MODERN

Foundation
Reinforced concrete

Floor Structure
Standard wood frame or reinforced concrete

Walls and Exterior
Framing: Standard wood frame
Sheathing: Line wire and paper
Cover: Light stucco
Windows: Low-cost, aluminum, sliding
Front Door: Low-cost slab

Roof
Framing: Standard wood frame
Cover: Asphalt shingles or composition tar and pea gravel
Overhang: 12" to 16", unceiled
Gutters: Over entrances

Floor Finishes
Vinyl tile

Interior Finish
Drywall, taped, textured, and painted

Interior Detail
Interior Doors: Low-cost hardboard or wood slab
Trim: Douglas Fir, painted
Closets: Moderate amount; low-cost doors

Bath Detail
Number: Two, back to back
Floors: Vinyl tile
Walls: Drywall and enamel
Shower: Plastic faced hardboard

Kitchen
Base Cabinet: 8' low-cost hardwood veneer
Wall Cases: Low-cost hardwood veneer
Drain Board: 8' plastic laminate

Plumbing
Galvanized pipe; 7 low-cost fixtures; washer outlet; water heater

Special Features
None

Electrical
Romex® wiring; low-cost fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-5 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame Sheathing: Line wire and paper, plywood, or particle board Cover: Light stucco; lap or wood siding Windows: Low-cost aluminum, sliding, double glaze Front Door: Low-cost wood or metal
Roof Framing: Standard wood or steel frame Cover: Composition shingle Overhang: 0" to 12", unceiled Gutters: Over entrances
Floor Finishes Low-cost vinyl tile or carpeting throughout
Interior Finish Drywall, taped, textured, and painted Ceiling: Standard 8' or vaulted
Interior Detail Interior Doors: Low-cost wood Trim: Wood or plastic Closets: Moderate amount; low-cost doors
Bath Detail Number: 1 1/2 to 2 Floors: Low-cost vinyl tile Walls: Drywall and enamel Shower & Tub: Fiberglass
Kitchen Base Cabinet: Low-cost wood veneer Wall Cases: Low-cost wood veneer Drain Board: Low-cost plastic laminate or vinyl tile
Plumbing Galvanized, plastic, or copper pipe; 7 low-cost fixtures; washer outlet; water heater
Special Features Low-cost sliding glass doors; low-cost drop- or slide-in range and oven; garbage disposer
Electrical Cable wiring; low-cost fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990 **D-6 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame
Walls and Exterior Framing: Standard wood frame Sheathing: Line wire and paper Cover: Hardwood siding, wood shingles, or low-cost wood siding on front wall; average stucco on sides and rear Front Doors: Average quality slab
Roof Framing: Standard wood frame Cover: Wood shingle, light shake, good composition shingles, or composition with tar and colored rock Overhang: 18", unceiled Gutters: 4" galvanized and painted at all eaves
Floor Finishes Average quality 3/8" square edge hardwood; low-cost carpet in living room, dining room, hall, and bedrooms; average quality vinyl in kitchen, family room, breakfast room, and utility room
Interior Finish Drywall, taped, textured and painted; some wallpaper
Interior Detail Interior Doors: Average quality, hollow core slab Trim: Douglas Fir, painted; low-cost hardwood Closets: Average amount; low-cost wood or metal doors
Bath Detail Number: Two, back to back Floors: Vinyl tile Walls: Drywall and enamel Shower: Average ceramic tile or plastic coated hardwood with a glass door
Kitchen Base Cabinet: 12' low-cost hardwood veneer Wall Cases: Low-cost hardwood veneer Drain Board: 12' average ceramic tile
Plumbing Galvanized pipe; 7 average fixtures; washer outlet; water heater
Special Features 6' sliding glass door; average quality built-in oven, range, dishwasher, garbage disposer, and range hood; 2' to 4' ceramic tile or plastic laminate vanity in each bath
Electrical Romex® wiring; average fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-6 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame Sheathing: Line wire and paper, plywood, or particle board Cover: Wood shingles or low-cost wood siding or masonry trim on front wall; average stucco sides and rear Windows: Average quality aluminum or wood; slide or double hung, double glaze Front Door: Average quality metal or wood
Roof Framing: Standard wood or steel frame Cover: Wood shingle, light wood shake, good composition shingle, or concrete shake or tile Overhang: 0" to 18", unceiled Gutters: Average quality at all eaves
Floor Finishes Average quality hardwood, carpet, vinyl, or ceramic tile throughout
Interior Finish Drywall, taped, textured, painted; some wallpaper; average quality paneling Decorative plant shelves Ceilings: Standard 8' or vaulted; low-cost fans
Interior Detail Interior Doors: Average quality wood Trim: Wood or plastic Closets: Average amount; low-cost doors
Bath Detail Number: Two Floors: Average quality vinyl Walls: Drywall and enamel Shower & Tub: Fiberglass or average quality ceramic tile, with glass doors; twin basin vanities
Kitchen Base Cabinet: Average cost wood veneer Wall Cases: Average cost wood veneer Drain Board: Average cost plastic laminate or vinyl tile Some island cabinets without fixtures
Plumbing Galvanized, plastic, or copper pipe; 7 average-cost fixtures; washer outlet; water heater
Special Features Average quality sliding glass or French doors; average quality built-in oven, range, microwave, dishwasher, garbage disposer, range hood and fan; utility room/closet
Electrical Cable wiring; average quality fixtures; some bedroom ceiling fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990	D-7 QUALITY	MODERN

Foundation
Reinforced concrete

Floor Structure
Standard wood frame

Walls and Exterior
Framing: Standard wood frame
Sheathing: Drywall
Cover: Good hardboard or average wood siding with masonry veneer on front wall; good stucco on sides and rear
Windows: Average aluminum
Front Doors: 1-3/4" fir

Roof
Framing: Standard wood frame
Cover: Medium shake or composition and large rock
Overhang: 24", unceiled
Gutters: 6" good quality at all eaves

Floor Finishes
Average ceramic or terrazzo in entry; average quality tongue and groove hardwood; average quality carpet in living, dining, hall, and bedrooms; average quality sheet vinyl in kitchen, family room, breakfast room, and utility room

Interior Finish
Drywall, taped, textured, and painted; some wallpaper; average quality hardwood veneer in family room

Interior Detail
Interior Doors: Average quality hollow core slab
Trim: Douglas Fir; painted; some hardwood
Closets: Average amount, with average quality wood doors

Bath Detail
Number: Two
Floors: Sheet vinyl
Walls: Drywall and enamel; average ceramic tile over tub
Shower: Average ceramic tile, with glass door

Kitchen
Base Cabinet: 16' average quality hardwood veneer
Wall Cases: Average quality hardwood veneer
Drain Board: 16' average ceramic tile or good plastic laminate

Plumbing
Galvanized pipe; 7 good fixtures; single laundry tray; water heater

Special Features
8' sliding glass door; average quality built-in oven, range, dishwasher, garbage disposer, and range hood and fan; 4' to 6' ceramic tile vanity in each bath, fireplace

Electrical
Romex® wiring; average quality fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-7 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame Sheathing: Line wire and paper, plywood, or particle board Cover: Average stucco or wood siding, with brick or stone trim Windows: Vinyl framed wood or aluminum; slide or double hung, double glaze Front Doors: Single or double, good quality wood or metal; some glass trim
Roof Framing: Standard wood or steel frame Cover: Medium wood shake, concrete shake or tile; good quality composition shingles Overhang: 0" to 24", ceiled or unceiled Gutters: Good quality at all eaves
Floor Finishes Good quality ceramic or terrazzo tile in entry; good quality hardwood, carpet, vinyl tile, or ceramic tile throughout
Interior Finish Drywall, taped, textured, and painted; rounded corners; wallpaper; average quality paneling Decorative plant shelves and art niches Ceilings: Standard 8' to 10'; vaulted; average cost fans
Interior Detail Interior Doors: Average quality wood Trim: Wood or plastic Closets: Average amount with average quality doors; some walk-in
Bath Detail Number: 2 or 2 1/2 Floors: Good quality vinyl tile Walls: Drywall and enamel; wallpaper; good quality ceramic tile trim Shower & Tub: Fiberglass, acrylic, or good quality ceramic tile with glass doors Twin basin vanities and compartmentalized bath
Kitchen Base Cabinet: Good quality veneer Wall Cases: Good quality veneer Drain Board: Good quality ceramic tile; some island cabinets with fixtures
Plumbing Galvanized, plastic, or copper pipe; 8 good fixtures; washer outlet; water heater
Special Features Multiple good quality sliding glass or French doors; good quality built-in oven, range, dishwasher, microwave, garbage disposer, range hood and fan; utility room with sink, fireplace
Electrical Cable wiring; good quality fixtures; some bedroom ceiling fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990 **D-8 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame
Walls and Exterior Framing: Standard wood frame Sheathing: Drywall or plywood Cover: Good wood siding with masonry veneer trim on front wall; good stucco on sides and rear Windows: Good aluminum Front Doors: 1-3/4" hardwood or good pine, double
Roof Framing: Standard wood frame Cover: Heavy shake or adobe tile Overhang: 36", unsealed; 24", ceiled Gutters: 8" good quality at all eaves
Floor Finishes Terrazzo or mission tile in entry; good tongue and groove hardwood; good carpet in living, dining, and bedrooms; good sheet vinyl in kitchen, family room, breakfast room, and utility room
Interior Finish Drywall with heavy texture and paint; some good wallpaper or vinyl wall cover; good hardwood veneer paneling in family room
Interior Detail Interior Doors: Good hardwood veneer slab Trim: Douglas Fir, painted, with some hardwood Closets: Ample space; good solid wood doors; many linen closets
Bath Detail Number: 2 1/2 Floors: Good ceramic tile Walls: Drywall with vinyl or foil wall cover; good ceramic tile over tub Shower: Good ceramic tile with glass doors
Kitchen Base Cabinet: 20' good hardwood veneer Wall Cases: Ample good hardwood veneer Drain Board: 20' good ceramic tile or plastic laminate
Plumbing Copper tubing; 10 good fixtures; double laundry tray; two water heaters
Special Features Two 8' sliding glass doors; good quality built-in oven, range, dishwasher, garbage disposer, range hood and fan, microwave oven, compactor, and wet bar; 4' to 6' ceramic tile vanity in each bath; fireplace
Electrical Romex® wiring; good quality fixtures

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-8 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame Sheathing: Line wire and paper, plywood, or particle board Cover: Good wood siding, masonry, or stucco Windows: Vinyl framed wood or aluminum; divided light; slide or double hung, double glaze Front Doors: Single or double, good quality decorative wood or metal; glass trim; side glass panels
Roof Framing: Standard wood or steel frame Cover: Heavy wood shake, concrete shake, tile, or high definition composition roof Overhang: 0" to 24", ceiled or unceiled Gutters: Good quality at all eaves
Floor Finishes Terrazzo, mission, or quarry tile in entry; good hardwood, carpet, vinyl, slate, or quarry tile throughout
Interior Finish Drywall with good texture and paint; custom decorative woodwork and molding; rounded corners; some good wallpaper, vinyl wall cover, or veneer paneling Ceilings: Standard 9' to 11', vaulted, crown molding, coffered, or arched; good quality fans
Interior Detail Interior Doors: Good quality wood Trim: Good quality wood Decorative plant shelves and art niches Closets: Good wood and mirrored doors; some walk-ins
Bath Detail Number: 2 1/2 to 3 Floors: Good quality ceramic tile or vinyl tile Walls: Drywall and enamel; good wallpaper and ceramic tile Shower & Tub: Good acrylic or porcelain; good ceramic tile trim, with glass doors; glass block Twin basin vanities and compartmentalized bath
Kitchen Base Cabinet: Good hardwood veneer Wall Cases: Good hardwood veneer; under cabinet lighting Drain Board: Good ceramic tile, cultured marble, granite, or Corian Island cabinets with fixtures
Plumbing Galvanized, plastic, or copper pipe; 10 good fixtures; washer outlet; two water heaters
Special Features Multiple sliding glass or French doors; good quality built-in double oven, range, dishwasher, garbage disposer, range hood and fan, microwave, compactor, and wet bar; utility room with laundry sink; pre-wired for security; walk-in pantry; hot water recirculator; fireplace
Electrical Cable wiring; good quality fixtures; bedroom ceiling fixtures; recessed lighting

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990 **D-9 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Joists: 2" x 8", 16" o.c. Sub-Floor: Plywood or 1" x 4" tongue and groove
Walls and Exterior Framing: Standard wood frame Sheathing: Drywall or plywood, fully insulated to R-11 standards Cover: Good stucco or wood siding with extensive masonry veneer trim, or masonry veneer throughout Windows: Good steel sash with thermopane glass Front Doors: Single or double, good quality wood
Roof Framing: 2" x 6" x 24" rafters Cover: Heavy shake or adobe tile Overhang: 36", unceiled, ceiled, or boxed Gutters: Good quality 8" at all eaves
Floor Finishes Terrazzo, hardwood, or mission tile in entry; highest quality carpet in living, dining, and bedrooms; good sheet vinyl in kitchen, family room, and utility room
Interior Finish Drywall with heavy texture and paint; some wallpaper or grass cloth; good hardwood paneling in family room
Interior Detail Interior Doors: Good hardwood veneer Trim: Good detailed pine and hardwood Closets: Ample space; good solid wood doors; many linen closets
Bath Detail Number: One bath for every bedroom Floors: Good ceramic tile Walls: Drywall with vinyl wallpaper; good ceramic tile over tub Shower: Good ceramic tile with good glass doors
Kitchen Base Cabinets: Good 20' hardwood Wall Cases: Good hardwood Drain Board: 20' good ceramic tile or good plastic laminate Cooking island with fixtures
Plumbing Copper tubing; 10 or more good fixtures; two or more water heaters
Special Features Picture windows, leaded and frosted glass; best quality built-in double oven, microwave, range, dishwasher, and garbage disposer; ceramic tile vanity in each bath; breakfast and wet bar; walk-in pantry; multiple fireplaces
Electrical Romex® wiring; good fixtures, with expensive chandelier in dining room

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-9 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame, above code Sheathing: Drywall or plywood fully insulated Cover: Good stucco or wood siding with extensive masonry Windows: Good quality vinyl framed wood or aluminum; divided light; slide/double hung, double glaze Front Doors: Double, high quality wood or metal; leaded glass trim; side glass panels
Roof Framing: Standard wood or steel frame Cover: Heavy wood shake; concrete shake or tile; slate; adobe tile Overhang: 0" to 36", unceiled, ceiled, or boxed Gutters: Good quality at all eaves
Floor Finishes Terrazzo, mission, marble, granite, or quarry tile in entry; high quality hardwood, carpet, vinyl tile, quarry tile, or inlaid wood throughout
Interior Finish Drywall with good texture and paint; custom decorative woodwork and molding; quality wallpaper and wood paneling; masonry Ceilings: Standard 9' to 12', vaulted, coffered, or boxed beam; rounded corners; crown molding; arched doorways; high quality fans
Interior Detail Interior Doors: Good quality solid wood Trim: Good detailed wood Closets: High quality wood and mirrored doors; walk-ins
Bath Detail Number: 3 to 4 Floors: High quality ceramic tile or vinyl tile Walls: Drywall and enamel; quality wallpaper; high quality quarry, terrazzo, or ceramic tile Shower & Tub: High quality acrylic or porcelain; extensive ceramic tile or marble trim, with glass doors; glass block; jetted tubs; multiple head showers with bench Twin basin vanities and compartmentalized bath
Kitchen Base Cabinets: Quality hardwood Wall Cases: Quality hardwood; under cabinet lighting Drain Board: High quality ceramic tile, marble, granite, or Corian ; island cabinets with fixtures
Plumbing Galvanized, plastic, copper pipe; 10 or more good quality fixtures; washer outlet; 2 or more water heaters
Special Features Architecturally designed windows, leaded/frosted glass; multiple sliding glass/French doors; best quality built-in double oven, microwave, range, dishwasher, garbage disposer, hot water recirculator, compactor, wet bar; walk-in pantry; utility room & laundry sink; alarm & intercom systems; built-in vacuum; multiple fireplaces
Electrical Cable wiring; good fixtures, with expensive chandeliers; good quality bedroom ceiling fixtures; extensive recessed lighting; special switches

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990 **D-10 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Joists: 2" x 10", 16" o.c. Sub-Floor: Plywood or 1" x 4" tongue and groove
Walls and Exterior Framing: Heavy wood frame Sheathing: Drywall or plywood, fully insulated to R-19 standards Cover: Decorative stucco or heavy wood siding with extensive or full brick veneer Windows: Heavy steel sash with thermopane glass
Roof Framing: 2" x 8" x 24" rafters, extensively cut-up with many dormers Cover: Heavy shake or adobe tile Overhang: 36", ceiled or boxed Gutters: Excellent quality 8" at all eaves
Floor Finishes Terrazzo, hardwood, or mission tile in entry; highest quality carpet in living, dining, and bedrooms; parquet hardwood in kitchen and family rooms; good sheet vinyl in utility room
Interior Finish Drywall with heavy texture and paint; extensive wallpaper, grass cloth, and excellent wood paneling throughout
Interior Detail Interior Doors: Excellent hardwood Trim: Excellent scrolled hardwood Storage: Cedar lined closets and extensive storage cabinets Extras: Spiral staircases; chandeliers in entry hall, dining, and family rooms
Bath Detail Number: One bath for every bedroom Floors: Good ceramic tile Walls: Good ceramic tile wainscoting Shower: Fully ceramic tiled walls and ceiling
Kitchen Extensive hardwood wall cabinets; fixtures on cooking island; butcher block; extensive good ceramic tile drain board
Plumbing Copper tubing; 15 or more quality fixtures; two or more water heaters
Special Features Picture windows, leaded and frosted glass; highest quality built-in double oven, microwave, range, dishwasher, and garbage disposer; ceramic tile vanity in each bath; jetted tub in master bath; walk-in pantry; built-in cases; multiple fireplaces
Electrical Romex® wiring; excellent fixtures in each room

SINGLE-FAMILY RESIDENTIAL
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 **D-10 QUALITY** **MODERN**

Foundation Reinforced concrete
Floor Structure Standard wood frame or slab on grade reinforced concrete, vapor barrier, base 4" thick
Walls and Exterior Framing: Standard wood or steel frame, above code Sheathing: Drywall or plywood fully insulated Cover: Decorative stucco or heavy wood siding with extensive or full brick veneer Windows: Excellent quality vinyl framed wood/aluminum; divided light; slide/double hung, double glaze Front Doors: Double, highest quality wood or metal; leaded glass trim; side glass panels
Roof Framing: Standard wood or steel frame; multiple roof pitch Cover: Heavy wood shake, adobe tile, copper, or slate Overhang: 0" to 36", unceiled, ceiled, or boxed Gutters: Excellent quality at all eaves
Floor Finishes Terrazzo, mission, quarry, marble, granite, or slate tile in entry; highest quality hardwood, parquet, plank, or inlaid wood or fine carpeting throughout
Interior Finish Drywall with good texture and paint; custom decorative woodwork and molding; excellent quality wallpaper, wood paneling; cloth covering; extensive masonry Ceilings: Standard 9' to 12' coffered, boxed beamed, or vaulted; rounded corners; crown molding; arched doorways; highest quality fans
Interior Detail Interior Doors: Excellent quality solid wood; decorative Trim: Good detailed wood; 4' wainscot Closets: Highest quality wood and mirrored doors; walk-ins; extensive shelving
Bath Detail Number: One per bedroom Floors: Highest quality quarry tile, concrete tile, or slate Walls: Drywall , enamel; highest quality wallpaper; highest quality quarry, terrazzo, ceramic tile Shower & Tub: Highest quality acrylic or porcelain; extensive ceramic tile or marble trim, with glass doors; glass block; jetted tubs; multiple head showers with bench Multiple basin vanities and separate dressing rooms
Kitchen Custom cabinetry; under cabinet lighting Drain Board: Excellent quality ceramic tile, marble, granite, or Corian; island cabinets with fixtures
Plumbing Galvanized, plastic, copper pipe; 15 plus excellent quality fixtures; washer outlet; 2 or more water heaters
Special Features Architecturally designed windows, leaded and frosted glass; multiple sliding glass or French doors; best quality built-in double oven, microwave, range, dishwasher, garbage disposer, hot water recirculator, compactor, built-in refrigerator, and wet bar; walk-in pantry; utility room with laundry sink; alarm and intercom systems; built-in vacuum; multiple fireplaces; extensive fenestration; built-in steam bath and/or sauna; multiple fireplaces
Electrical Cable wiring; excellent fixtures; extensive stylized and recessed lighting; expensive chandeliers; special switches

SINGLE-FAMILY RESIDENTIAL
MODERN TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE A

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	72.13	69.09	66.60	64.46	62.77	61.25	59.96	58.74	57.84	56.93	56.21
D-5.5	79.34	76.01	73.27	70.92	69.04	67.40	65.94	64.59	63.64	62.63	61.87
D-6	91.37	87.60	84.41	81.71	79.60	77.67	75.98	74.43	73.31	72.18	71.18
D-6.5	101.52	97.25	93.78	90.74	88.36	86.21	84.32	82.73	81.42	80.18	79.09
D-7	112.71	107.90	104.08	100.72	98.10	95.77	93.66	91.78	90.37	89.02	87.79
D-7.5	130.82	125.28	120.78	116.93	113.81	111.12	108.73	106.54	104.95	103.26	101.91
D-8	152.96	146.60	141.27	136.74	133.13	129.98	127.16	124.67	122.75	120.88	119.20
D-8.5	175.29	168.00	161.89	156.69	152.62	148.96	145.73	142.84	140.64	138.49	136.54
D-9	238.81	228.81	220.55	213.43	207.87	202.92	198.54	194.60	191.63	188.64	186.06
D-9.5	341.74	327.43	315.59	305.44	297.42	290.28	284.07	278.38	274.18	270.04	266.20
D-10	393.00	376.57	362.85	351.21	342.04	333.87	326.65	320.15	315.29	310.53	306.19

"D" CONSTRUCTION - SHAPE A

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	55.48	54.20	53.25	52.40	51.70	51.09	50.60	50.14	49.71	49.35	48.68
D-5.5	61.05	59.66	58.65	57.68	56.86	56.15	55.69	55.14	54.64	54.25	53.56
D-6	70.34	68.74	67.57	66.46	65.54	64.66	64.12	63.56	63.00	62.56	61.71
D-6.5	78.14	76.31	75.04	73.80	72.68	71.86	71.17	70.61	69.91	69.49	68.55
D-7	86.64	84.77	83.33	81.88	80.80	79.77	79.09	78.37	77.69	77.10	76.05
D-7.5	100.64	98.42	96.70	95.06	93.77	92.63	91.75	90.93	90.18	89.56	88.32
D-8	117.73	115.06	113.09	111.16	109.62	108.31	107.32	106.42	105.43	104.71	103.25
D-8.5	134.96	131.85	129.58	127.43	125.66	124.11	122.95	121.89	120.84	120.02	118.33
D-9	183.86	179.61	176.61	173.57	171.20	169.04	167.50	166.09	164.58	163.50	161.20
D-9.5	262.98	257.05	252.63	248.34	244.92	241.88	239.70	237.71	235.53	233.92	230.65
D-10	302.48	295.60	290.45	285.59	281.66	278.15	275.67	273.35	270.85	269.03	265.25

"D" CONSTRUCTION - SHAPE A

Class	4200	4400	4600	5000
D-6	60.80	60.68	60.25	59.66
D-6.5	67.93	67.39	66.91	66.25
D-7	75.36	74.75	74.25	73.50
D-7.5	87.52	86.82	86.21	85.34
D-8	103.26	102.44	101.72	100.70
D-8.5	117.26	116.32	115.51	114.35
D-9	159.74	158.46	157.35	155.78
D-9.5	228.57	226.74	225.15	222.90
D-10	262.85	260.75	258.93	256.33

SINGLE-FAMILY RESIDENTIAL
MODERN TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE B

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	73.55	70.48	67.83	65.77	63.98	62.48	61.25	60.08	59.08	58.20	57.43
D-5.5	80.88	77.47	74.64	72.38	70.34	68.67	67.40	66.07	65.02	64.07	63.21
D-6	93.18	89.33	85.94	83.39	81.10	79.15	77.67	76.20	75.00	73.84	72.82
D-6.5	103.52	99.18	95.40	92.57	90.03	87.90	86.21	84.51	83.23	81.94	80.89
D-7	114.89	110.07	105.97	102.76	99.98	97.63	95.77	93.86	92.31	91.00	89.84
D-7.5	133.31	127.78	122.98	119.31	116.09	113.28	111.17	108.93	107.27	105.58	104.21
D-8	155.92	149.40	143.90	139.52	135.72	132.54	129.98	127.43	125.41	123.53	121.86
D-8.5	178.68	171.22	164.89	159.91	155.48	151.87	148.96	146.01	143.66	141.56	139.66
D-9	243.46	233.27	224.63	217.86	211.85	206.94	202.92	198.90	195.72	192.84	190.26
D-9.5	348.40	333.73	321.48	311.69	303.14	296.07	290.28	284.62	280.09	275.95	272.24
D-10	400.64	383.79	369.68	358.46	348.62	340.54	333.87	327.29	322.10	317.35	313.02

"D" CONSTRUCTION - SHAPE B

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	56.70	55.51	54.60	53.78	53.04	52.40	51.90	51.39	50.97	50.60	50.05
D-5.5	62.36	61.08	60.08	59.08	58.29	57.68	57.06	56.56	56.09	55.69	55.04
D-6	71.92	70.35	69.22	68.16	67.28	66.46	65.75	65.13	64.60	64.12	63.45
D-6.5	79.84	78.18	76.89	75.66	74.64	73.80	72.99	72.33	71.74	71.17	70.45
D-7	88.65	86.71	85.36	83.99	82.84	81.88	81.08	80.26	79.68	79.09	78.24
D-7.5	102.86	100.66	99.06	97.55	96.17	95.06	94.11	93.17	92.42	91.75	90.74
D-8	120.37	117.79	115.87	114.10	112.48	111.16	110.11	109.02	108.12	107.32	106.18
D-8.5	137.86	134.98	132.80	130.75	128.94	127.43	126.16	124.92	123.91	122.95	121.67
D-9	187.85	183.91	180.99	178.11	175.64	173.57	171.85	170.19	168.81	167.50	165.77
D-9.5	268.83	263.09	258.83	254.92	251.38	248.34	245.95	243.51	241.56	239.70	237.25
D-10	309.14	302.56	297.69	293.12	289.03	285.59	282.80	280.08	277.78	275.67	272.78

"D" CONSTRUCTION - SHAPE B

Class	4200	4400	4600	5000
D-6	62.89	62.37	61.95	61.32
D-6.5	69.82	69.26	68.78	68.09
D-7	77.54	76.92	76.38	75.61
D-7.5	89.92	89.20	88.57	87.70
D-8	105.24	104.39	103.67	102.62
D-8.5	120.76	119.25	118.34	117.52
D-9	164.29	162.97	161.84	160.21
D-9.5	235.09	234.28	232.64	230.31
D-10	270.34	268.16	267.32	264.66

SINGLE-FAMILY RESIDENTIAL
MODERN TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE C

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	74.71	71.68	69.10	67.01	65.21	63.80	62.48	61.37	60.24	59.44	58.68
D-5.5	82.20	78.83	76.02	73.70	71.77	70.22	68.67	67.48	66.29	65.41	64.53
D-6	94.71	90.84	87.62	84.96	82.68	80.89	79.15	77.75	76.32	75.37	74.35
D-6.5	105.19	100.89	97.26	94.35	91.78	89.77	87.90	86.35	84.80	83.70	82.58
D-7	116.74	111.97	107.99	104.73	101.91	99.69	97.63	95.85	94.15	92.95	91.68
D-7.5	135.48	129.96	125.33	121.47	118.34	115.75	113.28	111.22	109.25	107.84	106.42
D-8	158.51	152.03	146.66	142.16	138.45	135.36	132.54	130.03	127.84	126.15	124.48
D-8.5	181.64	174.22	168.03	162.85	158.67	155.09	151.87	149.05	146.50	144.55	142.62
D-9	247.43	237.35	228.93	221.90	216.15	211.29	206.90	203.05	199.56	196.89	194.36
D-9.5	354.04	339.59	327.58	317.54	309.26	302.34	296.07	290.59	285.56	281.72	278.07
D-10	407.11	390.52	376.73	365.18	355.71	347.69	340.54	334.11	328.39	323.98	319.78

"D" CONSTRUCTION - SHAPE C

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	56.61	55.55	54.61	53.49	53.11	52.62	52.13	51.68	51.21	50.88	50.33
D-5.5	63.80	62.48	61.46	60.08	59.66	59.03	58.54	58.01	57.42	57.08	56.45
D-6	73.57	71.97	70.77	69.22	68.74	68.07	67.39	66.84	66.20	65.83	65.00
D-6.5	81.63	79.90	78.61	76.89	76.31	75.55	74.91	74.26	73.42	73.08	72.18
D-7	90.64	88.74	87.25	85.36	84.77	83.90	83.12	82.50	81.63	81.09	80.13
D-7.5	105.21	103.01	101.17	99.06	98.42	97.33	96.46	95.67	94.72	94.15	93.02
D-8	123.08	120.50	118.43	115.87	115.06	113.87	112.81	111.87	110.76	110.13	109.70
D-8.5	141.02	138.09	135.73	132.80	131.85	130.50	129.28	128.22	126.91	126.20	124.66
D-9	192.07	188.10	184.89	180.99	179.61	177.78	176.19	174.66	172.85	171.87	169.81
D-9.5	274.86	269.18	264.61	258.83	257.05	254.38	252.02	249.91	247.38	246.03	242.99
D-10	316.08	309.51	304.30	303.64	295.60	292.55	289.82	287.38	284.49	282.89	279.36

"D" CONSTRUCTION - SHAPE C

Class	4200	4400	4600	5000
D-6	64.42	63.89	63.45	62.83
D-6.5	71.13	70.54	70.04	69.34
D-7	79.40	78.77	78.22	77.44
D-7.5	92.17	91.44	90.81	89.89
D-8	108.73	107.89	107.13	106.07
D-8.5	123.54	122.56	121.71	120.48
D-9	168.29	166.94	165.77	164.10
D-9.5	240.78	238.86	237.19	234.83
D-10	276.85	274.62	272.71	269.98

SINGLE-FAMILY RESIDENTIAL
MODERN TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE D

Class	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
D-5	75.94	72.85	70.50	68.32	66.64	65.09	63.82	62.75	61.66	60.78	60.08
D-5.5	83.47	80.16	77.48	75.13	73.31	71.62	70.24	69.01	67.85	66.89	66.07
D-6	96.25	92.32	89.35	86.58	84.48	82.57	80.93	79.53	78.24	77.07	76.20
D-6.5	106.84	102.58	99.20	96.14	93.82	91.66	89.84	88.33	86.86	85.66	84.51
D-7	118.64	113.90	110.15	106.72	104.09	101.74	99.70	98.08	96.39	95.06	93.86
D-7.5	137.68	132.11	127.79	123.85	120.88	118.03	115.77	113.75	111.85	110.30	108.93
D-8	161.01	154.62	149.43	144.86	141.34	138.12	135.39	133.08	130.89	129.02	127.43
D-8.5	184.52	177.21	171.24	166.03	161.99	158.25	155.13	152.47	149.96	147.79	146.01
D-9	251.35	241.37	233.27	226.13	220.70	215.59	211.36	207.78	204.31	201.43	198.90
D-9.5	359.69	345.50	333.85	323.57	315.78	308.49	302.41	297.33	292.32	288.16	284.64
D-10	413.63	397.30	383.89	372.15	363.15	354.73	347.79	341.89	336.17	331.45	327.29

"D" CONSTRUCTION - SHAPE D

Class	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	4000
D-5	59.32	58.14	57.21	56.29	55.60	54.91	54.43	54.00	53.56	53.23	52.52
D-5.5	65.23	63.98	62.89	61.96	61.13	60.38	59.82	59.40	58.92	58.55	57.78
D-6	75.26	73.70	72.42	71.39	70.48	69.62	68.96	68.46	67.88	67.51	66.53
D-6.5	83.52	81.83	80.54	79.26	78.25	77.31	76.62	75.98	75.37	74.92	73.91
D-7	92.72	90.83	89.35	88.03	86.96	85.79	85.06	84.33	83.70	83.23	82.09
D-7.5	107.68	105.43	103.67	102.16	100.83	99.63	98.75	97.90	97.16	96.48	95.20
D-8	125.94	123.27	121.29	119.50	117.94	116.49	115.47	114.51	113.60	112.87	111.44
D-8.5	144.27	141.28	138.98	136.88	135.12	133.52	132.33	131.26	130.17	129.32	127.69
D-9	196.54	192.46	189.33	186.52	184.07	181.90	180.31	178.79	177.37	176.23	173.95
D-9.5	281.31	275.40	270.97	266.87	263.44	260.22	258.04	255.85	253.79	252.10	248.94
D-10	323.47	316.70	311.60	310.23	302.92	299.28	296.66	294.21	291.83	289.92	286.20

"D" CONSTRUCTION - SHAPE D

Class	4200	4400	4600	5000
D-6	65.94	65.41	64.94	64.30
D-6.5	73.23	72.64	72.15	71.41
D-7	81.36	80.41	79.59	78.79
D-7.5	94.36	93.59	92.95	92.01
D-8	110.44	109.56	108.79	107.71
D-8.5	122.70	121.72	120.86	119.66
D-9	172.39	170.99	169.81	168.10
D-9.5	245.99	244.04	242.35	239.96
D-10	283.62	281.35	279.38	276.55

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-5 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-5 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-6 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-6 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-7 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-7 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-8 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-8 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-9 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-9 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - PRE 1990
D-10 QUALITY

SINGLE-FAMILY RESIDENTIAL
MODERN - POST 1990
D-10 QUALITY

AH 531.22: MOUNTAIN RESIDENCES

Mountain residences are buildings designed for single-family occupancy, usually on an intermittent basis. These buildings are structurally designed to withstand snow load requirements which are typical in the higher mountain areas of the State of California. These mountain residences usually have a more rustic finish than comparable single-family residences found in non-mountainous areas of California

CONVENTIONAL AND A-FRAME TYPES

Two types of residences are considered here: *Conventional* and *A-Frame*.

Conventional mountain residences have an exterior wall at least eight feet high on all sides with architectural designs that may have a lot in common with traditional single-family residences.

A-Frame residences are buildings in which the sloping gable-shaped roof can intersect the vertical plane of the exterior walls of the home anywhere between a point at or near the floor of the first level all the way up to two-thirds of the height of the exterior walls on the first floor. This design gives the home its unique "A"-shaped appearance. The architectural design of these homes makes them dramatically different from homes in non-mountainous areas.

AREA ADJUSTMENTS

Area classification adjustments are applied using the same guidelines that are applicable to traditional single-family residences. The *Costing Information* chapter, AH 531.10, explains these considerations.

SHAPE CLASSIFICATION

Shape classification is based on the same criteria that are applicable to traditional single-family residences. The guidelines shown in AH 531.10 should be used for shape class determination.

ADJUSTMENTS FOR LOCATION

The building costs in the *Mountain Residences* chapter have been developed using the Lake Tahoe Basin area of California as the base area (with a factor of 1.00) as of the date in the lower right-hand corner of each page. For other mountain areas, all square foot costs should be adjusted by the appropriate location factor as found on the map in this chapter, page 24.

ADDITIVE COSTS

Costs of additive items such as fireplaces, porches, etc., will be quite different in the mountain areas of the state than they are in the Sacramento base area. Therefore, a set of additive costs that are ***specific*** to mountain residences are included in this chapter following the cost tables, beginning on page 19. However, if costs are needed for additives not found in this chapter, use the costs in the *Building Additives* chapter (AH 531.40) and make appropriate adjustments. Since the additive costs in AH 531.40 were developed for the Sacramento area base, up to three location adjustments may be necessary for mountain residences:

1. The Sacramento base additive costs (AH 531.40) must be multiplied by a factor of 1.30 to adjust those costs to the Lake Tahoe Basin area.

2. If necessary, an adjustment for location within the mountain areas should be made using the instructions from the *Location Adjustments* section of this chapter, page 21.

If necessary, an adjustment may also be needed for any local cost differences present in the county (e.g., high permit fees).

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-4 QUALITY	CONVENTIONAL
Foundation Wood piers, light concrete, light concrete block, or light native stone	
Floor Structure 2" x 6", 24" o.c.; 1" sub-floor	
Walls and Exterior Framing: 2" x 4", 16" o.c. Siding: Low-cost wood siding or wood shingles Windows: Low-cost wood	
Roof Framing: 2" x 4", 16" o.c.; or 2" x 6", 24" o.c.; with 1" sheathing Cover: Composition shingles or corrugated metal Pitch: Medium	
Interior Finish Home-built with knotty pine or plywood	
Bath Detail One three-fixture bath	
Kitchen Base Cabinet: 6' home-built plywood Wall Cabinet: Home-built plywood	
Plumbing Four low-cost fixtures; water heater	
Electrical Knob and tube or Romex®; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-5 QUALITY	CONVENTIONAL
Foundation Concrete block or standard concrete	
Floor Structure 4" x 6" girders, 48" o.c.; with 5/4" plywood sub-floor; or 2" tongue and groove sub-floor Alternate: 2" x 6" joists, 16" o.c.; with 1" sub-floor	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Low-cost plywood, lap, or board and batten Alternate: Low-cost wood shingle Fully Insulated: Medium standards Windows: Low-cost wood or metal	
Roof Framing: 2" x 6", 24" o.c.; or 2" x 8", 24" o.c.; with 1" sheathing Alternate: 4" x 8", 48" o.c.; 5/4" plywood; or 2" tongue and groove sheathing Cover: Composition shingles or steel Pitch: Medium to steep	
Floor Finish Vinyl tile	
Interior Finish Low-cost wood paneling or drywall, taped, and textured	
Bath Detail One three-fixture bath	
Kitchen Base Cabinet: 6' to 8' low-cost plywood veneer, or paint-grade cabinets Wall Cabinet: Low-cost plywood veneer, or paint-grade cabinets	
Plumbing Four low-cost fixtures; water heater	
Electrical Romex® wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-6 QUALITY	CONVENTIONAL
Foundation Reinforced concrete or concrete block	
Floor Structure 4" x 6" girders, 48" o.c.; with 5/4" plywood; or 2" tongue and groove sub-floor; or 2" x 6", 16" o.c.; with 1" sub-floor; insulation to R-11 standards	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Average quality plywood; average quality lap or board and batten siding; or average quality wood shingles Fully Insulated: R-11 standards Windows: Average quality metal or wood; double paned glass	
Roof Framing: 2" x 6", 16" o.c.; 2" x 8", 24" o.c.; with 1" sheathing; or 4" x 8", 48" o.c.; with 2" sheathing Insulation: Minimum of R-19 standards Cover: Wood, composition shingles, or steel Pitch: Medium to steep	
Floor Finish Average quality carpet or vinyl in kitchen and baths	
Interior Finish Drywall, taped, textured, or average quality plywood veneer	
Bath Detail Two three-fixture baths; average quality fixtures	
Kitchen Base Cabinet: 8' to 12' average quality plywood veneer or painted Wall Cabinet: Plywood veneer or painted Drain Board: 8' to 12' plastic laminate	
Plumbing Seven average fixtures; water heater	
Electrical Romex® wiring; average fixtures	
Special Features Drop-in range with hood; one sliding glass door	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-7 QUALITY	CONVENTIONAL
Foundation Reinforced concrete or concrete block	
Floor Structure 4" x 8" girders, 48" o.c.; with a 5/4" plywood; or 2" tongue and groove sub-floor Alternate: 2" x 6" or 2" x 8", 16" o.c.; with 1" sub-floor Fully Insulated: Minimum of R-11 standards	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Average to good plywood, lap, or board and batten Alternate: Good wood shingles Fully Insulated: Minimum of R-11 standards Windows: Average quality wood or metal; double paned glass	
Roof Framing: 4" x 8", 48" o.c.; with 2" or 3" tongue and groove sheathing Alternate: 2" x 6", 12" o.c.; or 2" x 8", 16" o.c.; with 1" sheathing Insulation: To R-30 standards Cover: Medium shake, steel, or composition shingles Pitch: Medium steep	
Floor Finish Average to good quality carpet; sheet vinyl or good vinyl in kitchen and baths	
Interior Finish Drywall, taped, textured; plywood veneer; or good quality knotty pine	
Bath Detail Two three-fixture baths; average ceramic tile or plastic laminate vanities; average ceramic tile or plastic laminate showers	
Kitchen Base Cabinet: 12' to 16' hardwood veneer Wall Cabinet: Hardwood veneer Drain Board: 12' to 16' average ceramic tile	
Plumbing Seven average quality fixtures; water heater	
Electrical Romex® wiring; average fixtures	
Special Features One 8' sliding glass door; built-in range and oven, dishwasher, and garbage disposal	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-8 QUALITY	CONVENTIONAL
Foundation Reinforced concrete or concrete block	
Floor Structure 4" x 8" girders, 48" o.c.; with 2" tongue and groove sub-floor Alternate: 2" x 6" or 2" x 8", 16" o.c.; with 1" sub-floor Fully Insulated: Minimum of R-11 standards	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Good plywood, lap, or board and batten Fully Insulated: Minimum of R-11 standards Windows: Good wood or metal; double paned glass	
Roof Framing: 4" x 8", 48" o.c.; with 2" or 3" tongue and groove sheathing Alternate: 2" x 6", 12" o.c.; or 2" x 8", 16" o.c.; with 1" sheathing Cover: Heavy shake. composition shingles, or steel Pitch: Medium to steep Alternate Roof: Heavy glu-lam beams, 2" x 8", or 2" x 10" purlins, 3" tongue and groove deck, composition cover, flat, or low pitch	
Floor Finish Good carpet or hardwood sheet vinyl in kitchen and baths	
Interior Finish Good quality hardwood veneer paneling	
Bath Detail Two three-fixture baths; one two-fixture bath; good ceramic tile vanities	
Kitchen Base Cabinet: 15' to 18' good hardwood veneer Wall Cabinet: Good hardwood veneer Drain Board: 15' to 18' good quality ceramic tile	
Plumbing Nine good fixtures; one or two water heaters	
Electrical Romex® wiring; good fixtures	
Special Features Built-in double oven, range, garbage disposer; dishwasher, hood; large glass area; ornate entry doors, wet bar, microwave oven, pantry	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-9 QUALITY	CONVENTIONAL
Foundation Reinforced concrete or concrete block	
Floor Structure 2" x 8" joists, 16" o.c.; with 2" tongue and groove sub-floor Alternate: 2" x 10" joists, 16" o.c.; with 2" tongue and groove sub-floor	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Good plywood, lap, board and batten, or wood shingle Fully Insulated: Minimum of R-11 standards Windows: Good quality wood or steel sash; double paned glass	
Roof Framing: 4" x 8", 48" o.c.; with 2" or 3" tongue and groove sheathing Alternate: 2" x 6", 12" o.c.; or 2" x 8", 16" o.c.; with 1" sheathing Insulation: To a minimum of R-30 standards Cover: Heavy shake, composition shingles, or steel Pitch: Medium steep to steep Alternate Roof: Heavy glu-lam beams 2" x 8", or 2" x 10" purlins, 3" tongue and groove deck, medium pitch with heavy shake cover	
Floor Finish Good quality carpet or hardwood; parquet hardwood, slate, ceramic, or garden tile in entry; good vinyl tile in kitchen and utility room	
Interior Finish Good quality hardwood, cherry, or redwood paneling; some wallpaper or grass cloth covering; extensive cabinetry in corners	
Bath Detail Number: 1-1/2 baths for each two bedrooms Floors: Vinyl or good quality vinyl; two lavatories in full baths; full ceramic tile showers; good ceramic tile vanities	
Kitchen Good 20' hardwood veneer base and wall cabinets; fixtures on cooking islands Drain Board: Good quality ceramic tile. granite, Corian, or marble	
Plumbing Ten good fixtures; two water heaters	
Electrical Romex® or conduit wiring; very good fixtures; indirect florescent lighting in kitchen and baths; expensive chandelier in dining room	
Special Features Picture and leaded glass windows; best quality built-in double oven, microwave, range, dishwasher, range hood and fan, garbage disposer, compactor; breakfast bar; pantry; wet bar; frosted glass	

MOUNTAIN RESIDENCES
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE A

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	121.13	108.70	100.50	93.91	89.07	85.30	81.99	79.56	77.16	75.39	73.66
D-4.5	131.36	117.87	108.89	101.81	96.56	92.41	88.89	86.16	83.76	81.63	79.83
D-5	142.40	127.70	118.11	110.38	104.71	100.16	96.32	93.41	90.75	88.58	86.51
D-5.5	154.40	138.43	127.98	119.71	113.51	108.64	104.42	101.33	98.28	96.00	93.85
D-6	167.33	150.07	138.75	129.66	123.05	117.69	113.17	109.84	106.60	104.12	101.68
D-6.5	183.10	164.25	151.72	141.91	134.59	128.81	123.95	120.18	116.70	113.86	111.25
D-7	200.35	179.69	166.10	155.34	147.30	140.91	135.53	131.50	127.64	124.55	121.72
D-7.5	224.51	201.40	186.12	174.08	164.98	157.93	151.86	147.41	142.98	139.56	136.38
D-8	258.75	232.06	214.47	200.61	190.23	182.02	175.10	169.77	164.88	160.92	157.15
D-8.5	294.80	264.32	244.41	228.55	216.78	207.40	199.51	193.35	187.85	183.37	179.13
D-9	335.28	300.67	278.04	259.92	246.65	235.93	227.00	219.87	213.77	208.51	203.72

"D" CONSTRUCTION - SHAPE A

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	72.45	71.10	70.03	69.00	67.20	65.55	64.48	63.24	62.61	61.57	60.89
D-4.5	78.50	77.09	75.91	74.87	72.90	71.06	69.98	68.57	67.86	66.73	65.85
D-5	85.10	83.57	82.26	81.10	78.95	77.06	75.89	74.39	73.58	72.33	71.60
D-5.5	92.22	90.53	89.27	87.86	85.54	83.45	82.22	80.62	79.79	78.40	77.64
D-6	99.98	98.19	96.60	95.32	92.81	90.43	89.09	87.43	86.49	85.00	84.12
D-6.5	109.38	107.41	105.77	104.27	101.51	99.02	97.47	95.68	94.56	92.97	92.08
D-7	119.78	117.50	115.72	114.09	111.17	108.37	106.75	104.60	103.46	101.80	100.66
D-7.5	134.15	131.74	129.70	127.83	124.52	121.42	119.52	117.27	115.96	114.04	112.86
D-8	154.72	151.83	149.49	147.35	143.59	139.93	137.82	135.18	133.63	131.47	130.08
D-8.5	175.58	172.93	170.32	167.87	163.56	159.52	156.97	153.98	152.29	149.79	148.24
D-9	200.71	196.66	193.76	190.96	186.03	181.55	178.53	175.19	173.17	170.30	168.67

"D" CONSTRUCTION - SHAPE B

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	123.36	110.91	102.40	95.95	91.15	87.24	83.91	81.45	79.15	77.25	75.57
D-4.5	133.67	120.25	110.99	104.01	98.80	94.51	90.93	88.33	85.82	83.77	81.97
D-5	144.87	130.33	120.31	112.72	107.04	102.45	98.55	95.72	92.99	90.82	88.79
D-5.5	157.07	141.28	130.43	122.25	116.15	111.06	106.84	103.77	100.83	98.43	96.27
D-6	170.23	153.18	141.48	132.51	125.79	120.39	115.80	112.35	109.30	106.71	104.36
D-6.5	186.33	167.59	154.78	144.96	137.67	131.81	126.77	122.98	119.54	116.71	114.22
D-7	203.89	183.42	169.29	158.65	150.62	144.15	138.65	134.63	130.90	127.69	124.95
D-7.5	228.46	205.47	189.69	177.71	168.79	161.53	155.41	150.89	146.59	143.08	139.93
D-8	263.21	236.83	218.59	204.76	194.56	186.18	179.09	173.93	169.01	164.95	161.37
D-8.5	299.95	269.83	249.04	233.28	221.66	212.12	204.03	198.17	192.57	188.00	183.87
D-9	341.13	305.84	283.12	265.34	252.07	241.21	232.07	225.36	219.10	213.93	209.28

MOUNTAIN RESIDENCES
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE B

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	74.36	72.99	71.99	70.96	69.09	67.42	66.45	65.22	64.48	63.54	62.75
D-4.5	80.61	79.15	78.05	76.94	74.92	73.06	71.99	70.75	69.98	68.86	67.92
D-5	87.32	85.82	84.60	83.43	81.15	79.25	78.05	76.64	75.89	74.60	73.71
D-5.5	94.72	92.99	91.73	90.39	88.06	85.85	84.60	83.13	82.22	80.91	79.99
D-6	102.64	100.87	99.43	98.00	95.44	93.06	91.73	90.07	89.09	87.72	86.63
D-6.5	112.29	110.31	108.74	107.19	104.42	101.81	100.38	98.55	97.47	95.95	94.79
D-7	122.88	120.77	119.02	117.34	114.23	111.45	109.79	107.77	106.75	104.95	103.69
D-7.5	137.63	135.35	133.31	131.38	127.99	124.91	123.03	120.83	119.52	117.58	116.20
D-8	158.72	155.90	153.63	151.47	147.62	143.98	141.85	139.28	137.82	135.57	134.01
D-8.5	180.88	177.54	175.05	172.54	168.13	164.03	161.68	158.67	156.95	154.42	152.73
D-9	205.77	201.89	199.15	196.31	191.35	186.58	183.97	180.39	178.44	175.71	173.90

"D" CONSTRUCTION - SHAPE C

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	125.31	112.97	104.46	97.87	93.41	89.09	85.85	83.43	81.10	79.25	77.52
D-4.5	135.87	122.48	113.21	106.08	101.33	96.60	93.00	90.38	87.86	85.86	84.01
D-5	147.32	132.75	122.76	115.04	109.81	104.72	100.87	98.00	95.32	93.06	90.97
D-5.5	159.68	143.91	133.11	124.63	119.05	113.55	109.31	106.20	103.34	100.93	98.74
D-6	173.06	156.03	144.31	135.13	129.08	123.08	118.54	115.08	111.93	109.34	106.93
D-6.5	189.41	170.77	157.85	147.93	141.23	134.66	129.73	125.95	122.48	119.71	117.01
D-7	207.17	186.74	172.74	161.76	154.48	147.35	141.91	137.77	134.04	131.04	128.01
D-7.5	232.22	209.29	193.53	181.32	173.09	165.10	158.99	154.36	150.19	146.78	143.43
D-8	267.65	241.18	223.10	208.98	199.51	190.29	183.24	178.03	173.08	169.18	165.34
D-8.5	304.96	274.83	254.24	238.17	227.37	216.78	208.76	202.89	197.10	192.86	188.37
D-9	346.82	312.65	289.28	270.87	258.72	246.48	237.49	230.75	224.21	219.35	214.26

"D" CONSTRUCTION - SHAPE C

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	76.18	74.87	73.71	72.90	71.05	69.35	68.29	67.13	66.36	65.25	64.70
D-4.5	82.59	81.12	79.99	78.95	76.97	75.09	74.01	72.75	71.92	70.75	70.11
D-5	89.56	87.87	86.63	85.67	83.44	81.45	80.29	78.87	77.95	76.68	75.99
D-5.5	97.05	95.32	93.89	93.00	90.42	88.33	86.97	85.49	84.50	83.16	82.41
D-6	105.28	103.34	101.81	100.66	98.06	95.72	94.25	92.71	91.60	90.08	89.35
D-6.5	115.22	113.05	111.32	110.14	107.32	104.72	103.12	101.45	100.20	98.73	97.77
D-7	125.99	123.64	121.89	120.51	117.38	114.56	112.87	110.97	109.67	107.96	106.91
D-7.5	141.21	138.59	136.58	135.05	131.45	128.35	126.45	124.32	122.84	120.91	119.84
D-8	162.82	159.81	157.46	155.67	151.53	148.03	145.72	143.29	141.61	139.38	138.10
D-8.5	185.48	182.02	179.32	177.46	172.57	168.74	166.05	163.37	162.64	158.78	157.36
D-9	211.04	206.98	203.91	201.86	196.31	192.10	188.83	185.84	183.67	180.64	178.96

MOUNTAIN RESIDENCES
CONVENTIONAL TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE D

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	127.57	115.04	106.54	99.92	95.04	91.15	87.81	85.40	83.13	81.15	79.47
D-4.5	138.25	124.63	115.45	108.31	103.03	98.80	95.28	92.48	90.06	88.05	86.08
D-5	149.91	135.13	125.17	117.40	111.72	107.04	103.21	100.34	97.61	95.35	93.34
D-5.5	162.46	146.54	135.70	127.29	121.06	116.15	111.86	108.70	105.79	103.41	101.18
D-6	176.01	158.80	147.07	138.02	131.22	125.79	121.37	117.87	114.72	112.09	109.70
D-6.5	192.68	173.84	160.96	151.00	143.56	137.67	132.75	128.89	125.50	122.73	119.97
D-7	210.83	190.14	176.09	165.18	157.13	150.62	145.16	141.09	137.33	134.13	131.28
D-7.5	236.21	213.00	197.33	185.09	176.03	168.79	162.68	158.05	153.83	150.31	147.17
D-8	272.28	245.53	227.37	213.34	202.94	194.56	187.59	182.22	177.41	173.35	169.63
D-8.5	310.15	279.73	259.06	243.04	231.28	221.66	213.76	207.63	202.18	197.52	193.28
D-9	352.74	318.15	294.61	276.43	263.18	252.07	243.18	236.17	230.06	224.86	219.87

"D" CONSTRUCTION - SHAPE D

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	78.32	76.94	75.64	74.78	72.94	71.12	70.23	69.04	68.36	66.80	66.53
D-4.5	84.90	83.43	82.06	81.10	79.10	77.15	76.17	74.90	74.03	72.45	72.03
D-5	91.98	90.38	88.96	87.81	85.80	83.67	82.54	81.12	80.30	78.50	78.16
D-5.5	99.75	98.00	96.44	95.28	92.97	90.69	89.43	88.05	86.99	85.10	84.78
D-6	108.10	106.20	104.51	103.24	100.74	98.28	97.00	95.32	94.32	92.22	91.90
D-6.5	118.30	116.23	114.32	113.02	110.30	107.63	106.11	104.28	103.21	100.98	100.52
D-7	129.49	127.14	125.17	123.60	120.61	117.78	116.13	114.15	112.97	110.39	109.94
D-7.5	145.02	142.40	140.25	138.50	135.14	131.88	130.13	127.98	126.51	123.76	123.26
D-8	167.20	164.22	161.68	159.56	155.85	151.98	150.00	147.38	145.78	142.65	142.02
D-8.5	190.65	187.11	184.19	181.72	177.62	173.19	170.98	167.89	166.14	162.53	161.74
D-9	216.82	212.86	209.49	206.66	202.03	197.08	194.47	190.87	188.87	184.82	183.81

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-4 QUALITY	A-FRAME
Foundation Wood piers; light concrete; light concrete block; light native stone	
Floor Structure 2" x 6", 24" o.c.; with 1" sub-floor	
Gable Ends Framing: 2" x 4", 16" o.c. Siding: Low-cost wood siding or wood shingles Windows: Low-cost wood	
Roof Framing: 2" x 4", 16" o.c.; or 2" x 6", 24" o.c.; with 1" sheathing Cover: Composition shingles or corrugated metal Pitch: Steep	
Interior Finish Home-built with knotty pine or plywood	
Bath Detail One three-fixture bath	
Kitchen Base Cabinet: 6' home-built plywood Wall Cabinet: Home-built plywood	
Plumbing Four low-cost fixtures; water heater	
Electrical Knob and tube or Romex®; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-5 QUALITY	A-FRAME
Foundation Concrete block or standard concrete	
Floor Structure 4" x 6" girders, 48" o.c.; with 5/4" plywood sub-floor; or 2" tongue and groove sub-floor Alternate: 2" x 6" joists, 16" o.c.; with 1" sub-floor	
Gable Ends Framing: 2" x 4", 16" o.c. Siding: Low-cost plywood, lap, or board and batten Windows: Low-cost wood or metal	
Roof Framing: 4" x 8", 48" o.c.; with 5/4" plywood; or 2" tongue and groove sheathing Cover: Composition shingles or corrugated iron Pitch: Steep	
Floor Finish Vinyl tile	
Interior Finish Low-cost wood paneling; drywall, taped, and textured	
Bath Detail One three-fixture bath	
Kitchen Base Cabinet: 6' to 8' low-cost plywood veneer or paint-grade cabinets Wall Cabinet: Low-cost plywood veneer or paint-grade cabinets	
Plumbing Four low-cost fixtures; water heater	
Electrical Romex® wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-6 QUALITY **A-FRAME**

Foundation Concrete block or standard concrete
Floor Structure 4" x 6" girders, 48" o.c.; with 5/4" plywood; or 2" tongue and groove sub-floor; or 2" x 6," 16" o.c.; with 1" sub-floor
Gable Ends Framing: 2" x 4", 16" o.c. Siding: Average quality plywood; average quality lap, board and batten siding; average quality wood shingles Windows: Average quality metal or wood
Roof Framing: 4" x 8", 48" o.c.; with 2" sheathing Cover: Wood or composition shingles Pitch: Steep
Floor Finish Average quality carpet or vinyl tile in kitchen and baths
Interior Finish Drywall, taped, textured; average quality plywood veneer
Bath Detail Two three-fixture baths; average quality fixtures
Kitchen Base Cabinet: 8' to 12' average quality plywood veneer or painted cabinets Wall Cabinet: Plywood veneer or painted Drain Board: 8' to 12' plastic laminate
Plumbing Seven average fixtures; water heater
Electrical Romex® wiring; average fixtures
Special Features Drop-in range with hood; one sliding glass door

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-7 QUALITY	A-FRAME
Foundation Concrete block or standard concrete	
Floor Structure 4" x 8" girders, 48" o.c.; with a 5/4" plywood; or 2" tongue and groove sub-floor Alternate: 2" x 6" or 2" x 8" 16" o.c.; with 1" sub-floor	
Gable Ends Framing: 2" x 4", 16" o.c. Siding: Average to good plywood, lap, or board and batten Alternate: Good wood shingles fully insulated Windows: Average quality wood or metal; double paned glass	
Roof Framing: 4" x 8", 48" o.c.; with 2" or 3" tongue and groove sheathing Cover: Medium wood or aluminum shakes Pitch: Steep	
Floor Finish Average to good quality carpet with sheet vinyl or good vinyl in kitchen and baths	
Interior Finish Drywall, taped, textured, plywood, or good quality knotty pine	
Bath Detail Two three-fixture baths	
Kitchen Base Cabinet: 12' to 16' hardwood veneer Wall Cabinet: Hardwood veneer Drain Board: 12' to 16' plastic laminate or average ceramic tile	
Plumbing Seven average fixtures; water heater	
Electrical Romex® wiring; average fixtures	
Special Features One 8' sliding glass door; built-in range and oven	

MOUNTAIN RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-8 QUALITY — A-FRAME

Foundation Concrete block or standard concrete
Floor Structure 4" x 8" girders, 48" o.c.; with 2" tongue and groove sub-floor Alternate: 2" x 6" or 2" x 8", 16" o.c.; with 1" sub-floor
Gable Ends Framing: 2" x 4", 16" o.c. Siding: Good plywood, lap, or board and batten; fully insulated Windows: Good wood or metal; double paned glass
Roof Framing: 4" x 8", 48" o.c.; with 2" or 3" tongue and groove sheathing Cover: Heavy shakes Pitch: Steep
Floor Finish Good carpet or hardwood sheet vinyl in kitchen and baths
Interior Finish Good quality hardwood veneer paneling
Bath Detail Two three-fixture baths, and one two-fixture bath
Kitchen Base Cabinet: 15' to 18' good hardwood veneer Wall Cabinet: Good hardwood veneer Drain Board: 15' to 18' good plastic laminate or ceramic tile
Plumbing Nine good fixtures; one or two water heaters
Electrical Romex® wiring; good fixtures
Special Features Built-in oven, range, garbage disposer, dishwasher, hood; large glass area; ornate entry doors

MOUNTAIN RESIDENCES
A-FRAME TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE A

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	107.37	96.96	89.82	84.21	80.16	76.95	74.10	72.04	70.09	68.45	67.09
D-4.5	117.74	106.21	98.41	92.35	87.91	84.33	81.24	78.88	76.74	75.07	73.49
D-5	128.93	116.42	107.83	101.27	96.28	92.38	89.06	86.46	84.17	82.23	80.50
D-5.5	141.38	127.61	118.24	110.91	105.54	101.30	97.57	94.77	92.28	90.12	88.26
D-6	155.02	139.87	129.57	121.52	115.73	111.05	106.83	103.86	101.08	98.78	96.68
D-6.5	171.48	154.74	143.36	134.50	127.99	122.82	118.25	114.89	111.84	109.28	107.04
D-7	189.71	171.14	158.56	148.77	141.60	135.89	130.84	127.14	123.70	120.84	118.37
D-7.5	204.70	184.74	171.16	160.56	152.81	146.69	141.24	137.21	133.51	130.45	127.79
D-8	236.32	213.24	197.56	185.34	176.42	169.26	163.00	158.32	154.15	150.53	147.50

"D" CONSTRUCTION - SHAPE A

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	65.84	64.76	63.88	63.01	61.39	60.09	59.07	58.19	57.29	56.63	56.02
D-4.5	72.19	70.93	70.02	69.11	67.26	65.84	64.79	63.84	62.85	62.05	61.47
D-5	79.14	77.74	76.72	75.73	73.75	72.19	70.94	69.93	68.81	68.07	67.28
D-5.5	86.73	85.21	84.15	82.99	80.86	79.14	77.83	76.65	75.44	74.55	73.77
D-6	95.02	93.35	92.17	90.89	88.63	86.73	85.24	84.00	82.68	81.73	80.89
D-6.5	105.13	103.33	102.02	100.59	97.96	95.94	94.34	92.89	91.53	90.38	89.49
D-7	116.29	114.36	112.83	111.34	108.45	106.15	104.36	102.73	101.26	100.03	98.98
D-7.5	125.60	123.33	121.75	120.03	117.00	114.55	112.65	110.93	109.22	107.96	106.85
D-8	144.89	142.32	140.54	138.60	135.03	132.23	129.96	128.02	126.02	124.58	123.33

"D" CONSTRUCTION - SHAPE B

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	109.04	98.61	91.48	85.93	81.82	78.61	75.80	73.63	71.82	70.10	68.64
D-4.5	119.56	108.10	100.27	94.18	89.64	86.11	83.02	80.78	78.67	76.84	75.27
D-5	130.99	118.52	109.85	103.19	98.27	94.41	91.07	88.41	86.28	84.20	82.46
D-5.5	143.60	129.82	120.41	113.09	107.72	103.48	99.82	96.96	94.49	92.31	90.38
D-6	157.37	142.29	131.95	123.94	118.06	113.32	109.37	106.25	103.59	101.15	99.05
D-6.5	174.16	157.41	146.04	137.15	130.59	125.44	120.98	117.58	114.62	111.87	109.63
D-7	192.65	174.12	161.47	151.68	144.44	138.77	133.89	130.10	126.84	123.79	121.23
D-7.5	207.95	187.99	174.31	163.78	155.90	149.75	144.47	140.35	136.85	133.64	130.89
D-8	239.96	216.93	201.17	188.94	179.95	172.82	166.73	162.00	157.98	154.21	151.00

"D" CONSTRUCTION - SHAPE B

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	67.53	66.36	65.51	64.57	63.08	61.76	60.71	59.84	59.04	58.19	57.64
D-4.5	74.04	72.66	71.82	70.83	69.14	67.69	66.58	65.57	64.76	63.84	63.29
D-5	81.12	79.68	78.67	77.59	75.80	74.17	72.96	71.84	70.93	69.93	69.31
D-5.5	88.93	87.34	86.24	85.02	83.10	81.24	79.93	78.78	77.74	76.65	75.89
D-6	97.44	95.71	94.49	93.22	91.07	89.14	87.57	86.34	85.21	84.00	83.22
D-6.5	107.80	105.86	104.57	103.09	100.75	98.60	96.91	95.50	94.26	92.89	92.04
D-7	119.25	117.13	115.68	114.06	111.41	109.03	107.18	105.69	104.25	102.73	101.80
D-7.5	128.76	126.39	124.82	123.11	120.26	117.67	115.69	113.98	112.52	110.93	109.92
D-8	148.58	145.94	144.12	142.08	138.81	135.80	133.54	131.60	129.85	128.02	126.86

MOUNTAIN RESIDENCES
A-FRAME TYPE
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION - SHAPE C

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	110.64	100.25	93.10	87.57	83.44	80.16	77.41	75.15	72.60	71.63	70.23
D-4.5	121.29	109.79	102.03	96.00	91.48	87.91	84.83	82.41	79.56	78.49	76.97
D-5	132.94	120.38	111.81	105.11	100.27	96.28	92.95	90.30	87.27	86.08	84.36
D-5.5	145.66	131.90	122.52	115.29	109.85	105.54	101.96	98.94	95.66	94.33	92.49
D-6	159.61	144.64	134.26	126.35	120.46	115.73	111.66	108.45	104.82	103.33	101.31
D-6.5	176.67	159.93	148.54	139.74	133.21	127.99	123.58	119.97	115.96	114.39	112.10
D-7	195.37	176.98	164.35	154.64	147.40	141.60	136.68	132.69	128.26	126.54	124.08
D-7.5	210.93	190.95	177.44	166.88	159.04	152.81	147.51	143.25	138.40	136.58	133.84
D-8	243.43	220.45	204.69	192.63	183.59	176.42	170.27	165.36	159.78	157.63	154.51

"D" CONSTRUCTION - SHAPE C

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	69.12	67.67	67.09	66.13	64.71	63.32	62.29	61.47	60.55	59.84	59.21
D-4.5	75.77	74.10	73.49	72.49	70.91	69.37	68.23	67.28	66.38	65.57	64.87
D-5	82.99	81.24	80.50	79.49	77.65	75.95	74.84	73.77	72.81	71.84	71.08
D-5.5	91.05	89.09	88.21	87.08	85.17	83.35	82.01	80.89	79.69	78.78	77.90
D-6	99.71	97.57	96.68	95.39	93.30	91.24	89.90	88.65	87.38	86.34	85.43
D-6.5	110.32	107.99	107.04	105.51	103.26	100.95	99.48	98.07	96.65	95.50	94.49
D-7	122.06	119.43	118.37	116.80	114.17	111.79	110.04	108.52	106.89	105.69	104.57
D-7.5	131.79	128.86	127.79	126.02	123.26	120.60	118.77	117.15	115.43	113.98	112.82
D-8	152.08	148.80	147.50	145.48	142.30	139.16	137.05	135.16	133.21	131.60	130.21

"D" CONSTRUCTION - SHAPE D

Class	400	500	600	700	800	900	1000	1100	1200	1300	1400
D-4	112.31	101.80	94.68	89.14	84.97	81.73	78.90	76.74	74.92	73.21	72.07
D-4.5	123.04	111.60	103.74	97.65	93.18	89.55	86.51	84.17	82.07	80.32	78.88
D-5	134.88	122.30	113.63	107.00	102.07	98.16	94.80	92.28	90.04	87.92	86.59
D-5.5	147.77	134.01	124.65	117.23	111.87	107.60	103.94	101.03	98.61	96.44	94.87
D-6	162.01	146.87	136.53	128.56	122.64	117.87	113.90	110.77	108.10	105.67	103.94
D-6.5	179.25	162.51	151.10	142.24	135.70	130.49	126.00	122.59	119.64	116.88	115.05
D-7	198.22	179.78	167.16	157.37	150.05	144.34	139.39	135.62	132.29	129.29	127.22
D-7.5	214.00	194.08	180.43	169.85	161.93	155.72	150.46	146.37	142.77	139.57	137.32
D-8	246.97	223.97	208.14	195.92	186.98	179.72	173.66	168.89	164.79	161.07	158.50

"D" CONSTRUCTION - SHAPE D

Class	1500	1600	1700	1800	2000	2200	2400	2600	2800	3000	3200
D-4	70.55	69.58	68.62	67.69	66.28	64.87	63.86	62.99	62.12	61.47	60.82
D-4.5	77.27	76.19	75.17	74.17	72.57	71.08	70.01	69.06	68.09	67.28	66.64
D-5	84.67	83.45	82.45	81.24	79.52	77.90	76.69	75.67	74.61	73.77	73.03
D-5.5	92.80	91.54	90.37	89.14	87.18	85.43	84.05	82.92	81.82	80.89	80.01
D-6	101.70	100.29	99.04	97.65	95.52	93.65	92.08	90.87	89.66	88.65	87.69
D-6.5	112.59	111.01	109.51	108.06	105.78	103.59	101.99	100.50	99.24	98.07	97.03
D-7	124.47	122.80	121.15	119.54	116.93	114.59	112.72	111.19	109.74	108.52	107.34
D-7.5	134.38	132.51	130.77	128.97	126.22	123.62	121.69	120.01	118.45	117.15	115.88
D-8	155.08	152.97	150.95	148.89	145.70	142.74	140.45	138.55	136.68	135.16	133.66

MOUNTAIN RESIDENCES

WOOD DECKS AND PORCHES

2" wood deck with steps and railings	Cost Per Square Foot		
1 to 3 feet above ground	23.34	-	27.10
4 to 6 feet above ground	27.10	-	35.01
6 to 9 feet above ground	27.86	-	36.88
9 to 12 feet above ground	29.36	-	38.40
12 to 15 feet above ground	30.86	-	39.90
15 to 18 feet above ground	31.61	-	42.15

FIREPLACES

Type	Unit Cost		
Metal hood with concrete slab	2,559	-	3,161
Simple concrete block	4,516	-	7,527
Simple block with stone facing	6,022	-	9,033
Simple natural stone	10,538	-	15,055
Brick	7,527	-	up
Wood stove	2,790	-	6,513
Zero clearance	3,721	-	5,582

FLATWORK

Type	Cost Per Square Foot		
Asphalt paving	4.71	-	6.31
4" concrete	4.20	-	5.27
6" concrete	5.27	-	8.41

GARAGES AND CARPORTS

Type	Cost Per Square Foot		
Average carport, no slab	27.38	-	33.47
Average single garage with slab	57.81	-	68.46
Average double garage with slab	51.72	-	62.37

HEATING

Type	Unit Cost		
Wall heaters			
35,000 BTU	1,179		
65,000 BTU	1,493		
Central heating, perimeter ducts (per square foot)	6.60		
Baseboard hot water (per square foot)	4.72		
Geothermal heat pumps	8,931	-	10,532

MOUNTAIN RESIDENCES

HALF-STORY FRACTIONS

Conventional Mountain Residences	Cost Per Square Foot
Use suggested fractions as discussed in *Building Additives* chapter, AH 531.40, page 2	
A-Frame Mountain Residences	
Type I: Simple platform construction; low-cost floor cover; minimum partitions; and minimum lighting	$72.45 to $79.02
Type II: Average quality construction; average quality carpet; average amount of partitions finished with drywall or plywood veneer; average lighting	$76.37 to $84.29
Type III: Good quality construction; good carpet; decorative rustic partitions and ceiling beams; good lighting	$98.38 to $110.21

EXTRA PLUMBING

Type	Cost
Lavatory	$1,516 to $2,242
Water Closet	$1,853 to $2,717
Tub	$1,957 to $2,573
Stall Shower	$1,439 to $2,057
Sink	$1,546 to $2,264

SLOPE ADJUSTMENTS

Mountain cabins built on sloping lots will cost more than if they are built on level lots. If the land is a sloping lot, this extra cost should be included in the cost estimate of the building.

The cost of the walls of a building that are not a part of the area that square-foot costs are applied to are estimated using in-place costs. This estimate includes the in-place cost of all materials above a normal foundation (12" to 18" above ground) and the bottom of the next floor structure where square-foot costs have been applied.

The excessive cost of hillside construction called crippling should be included by adding an additional cost for the extra walls, structural members, and high foundation. This extra cost can be estimated by adding the following cost to the highest wall on the steepest side of the house.

Wall Height	Cost Per Linear Foot
4'	$ 60.71
6'	111.51
8'	172.23
10'	222.82

LOCATION ADJUSTMENTS

The building costs in the *Mountain Residences* chapter have been developed using the Lake Tahoe Basin area of California as the base area (with a factor of 1.00).

The map on page 24 of this chapter shows mountain residence locations in California and shows suggested factors that are intended to provide an appropriate adjustment for the variance in costs due to differences in location compared to the base. ***These factors, however, are not intended to adjust for the significant variation in permit costs and other fees charged by different jurisdictions within a region. Due to the wide variance in these costs, both within and among the counties, it is necessary for the appraiser to research and analyze permit costs and fees of jurisdictions in the region and to make appropriate adjustments where necessary. AH 531 should serve as a guide, but an appraiser must also research the market to determine which costs are most applicable for the appraisal assignment. It may be necessary to supplement the data provided in AH 531 with local cost data.***

An additional adjustment for time should be considered if costs in the county have changed since the January publication date of this AH 531.

The appropriate mountain residence location adjustment should be applied to the *Square Foot Area Cost Tables* and *Costs of Additives* sections found in this chapter.

NOTE: When developing costs for mountain residences by using data from other AH 531 chapters that have the Sacramento area base (B*uilding Additives, Residential Garages, Yard Improvements, In-Place Costs,* and *Compact Costs*), ***it is necessary to first make an upward adjustment using a 1.30 factor*** to bring the costs up to the mountain residences base. Then, the appropriate mountain residence location adjustment factor (from the map on page 24 this chapter) should be applied.

Finally, all costs in this handbook, except for manufactured housing, should be adjusted to account for any extraordinary permit or other cost differences that exist in the county.

Various mountain counties have two or more location zones. The zone boundaries are as follows:

Alpine County

Western Zone	All areas west of the summit of the Sierra Nevada Mountains.
Eastern Zone	All areas east of the summit of the Sierra Nevada Mountains.

Amador County

Eastern Zone	All areas east of the 5,000-foot elevation line.

Calaveras County

Eastern Zone	All areas east of the 5,000-foot elevation line.

El Dorado County

Eastern Middle Zone	From the 5,000-foot elevation line to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Fresno County

Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Inyo County

National Forest Zone	All areas within the Inyo National Forest.

Madera County

Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Mariposa County

Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

Mono County

Mammoth Lakes Zone	To include Mammoth Lakes, June Lake Loop, and Lake Crowley areas.

Nevada County

Eastern Middle Zone	From the 5,000-foot elevation level to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Placer County

Eastern Middle Zone	From the western boundary of the Tahoe National Forest to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Plumas County

Mountain Zone	All areas of Plumas County.

San Bernardino County

Big Bear/Lake Arrowhead Zone	All areas around Lake Arrowhead and Big Bear Valley.

Sierra County

Middle Zone	From the 5,000-foot elevation line to the summit of the Sierra Nevada Mountains.
Eastern Zone	From the summit of the Sierra Nevada Mountains to the Nevada border.

Tulare County

Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

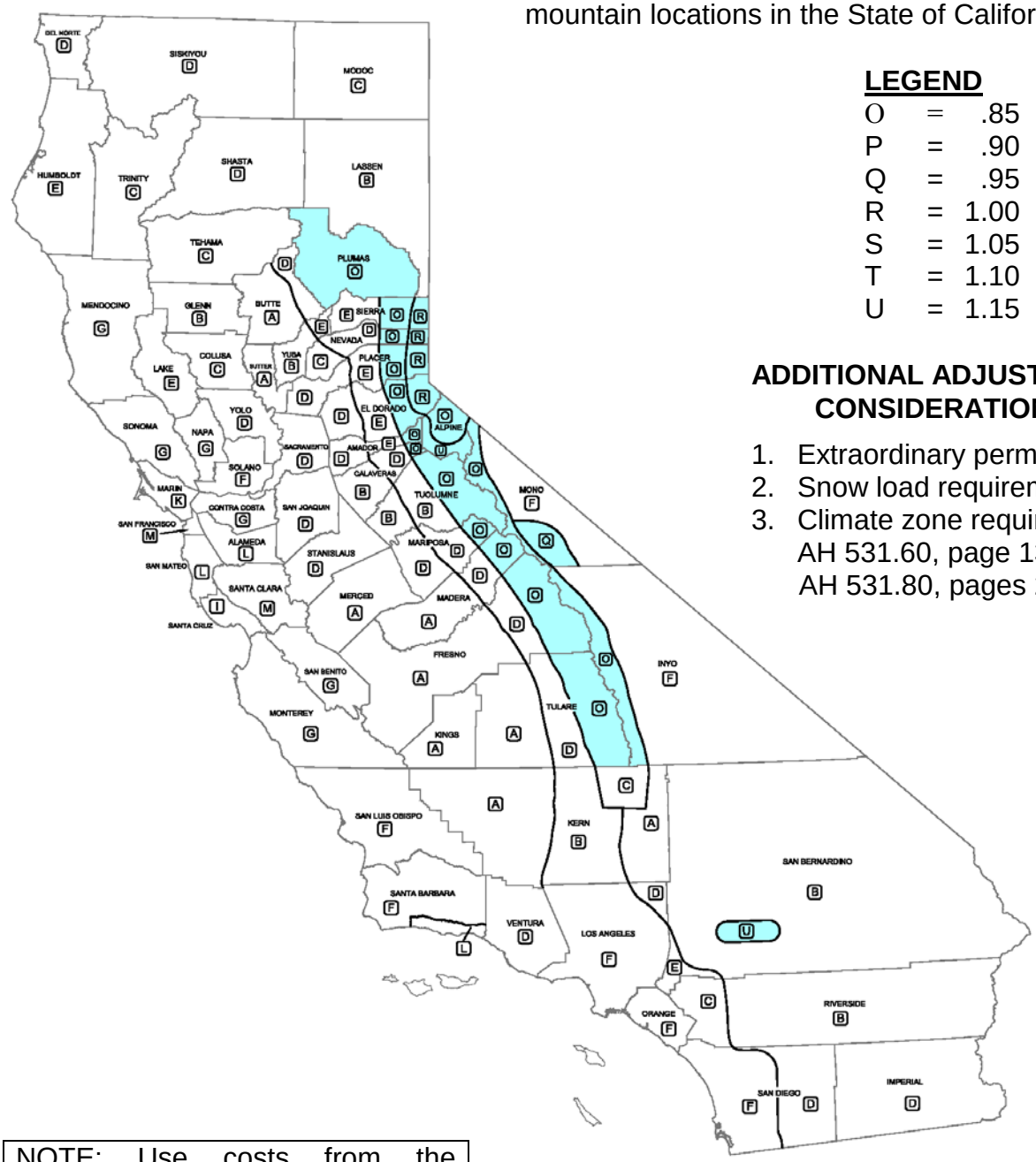
Tuolumne County

Eastern Zone	From the 5,000-foot elevation line to the eastern boundary of the county.

MOUNTAIN RESIDENCES

(Blue Area Shown on this Map)

Factors to adjust 1-1-2013 mountain costs (see AH 531.22, *Mountain Residences* Chapter) to other mountain locations in the State of California



LEGEND

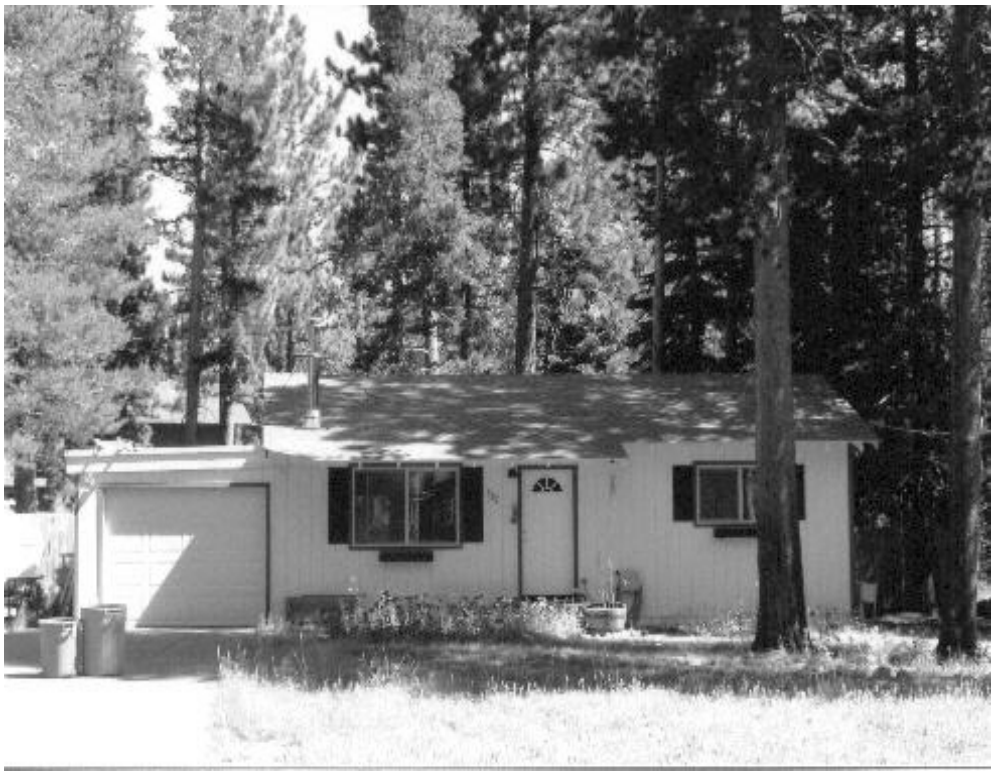
O	=	.85
P	=	.90
Q	=	.95
R	=	1.00
S	=	1.05
T	=	1.10
U	=	1.15

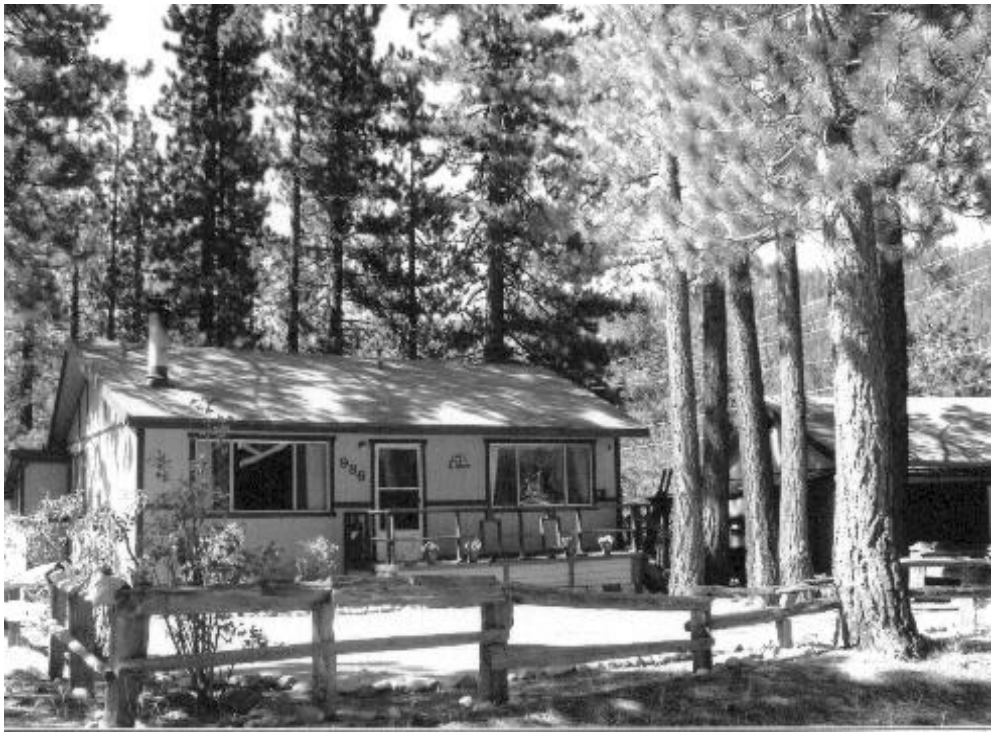
ADDITIONAL ADJUSTMENT CONSIDERATIONS

1. Extraordinary permits and fees
2. Snow load requirements
3. Climate zone requirements (see AH 531.60, page 13, and AH 531.80, pages 2 and 3).

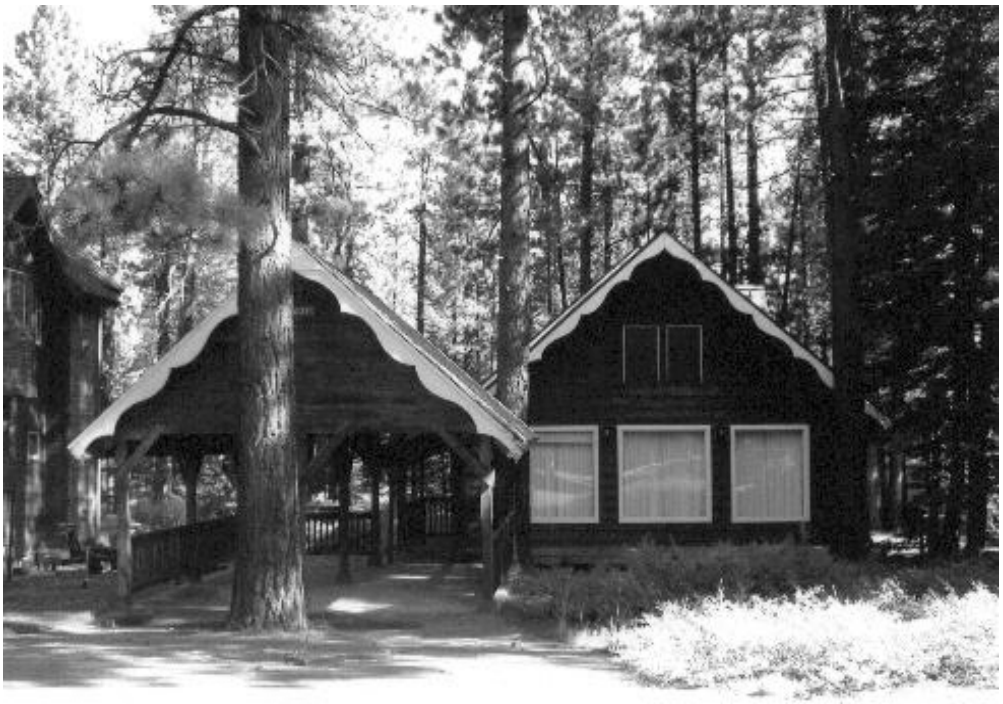
NOTE: Use costs from the *Mountain Residences* chapter with the location adjustment from this map for mountain residences.

MOUNTAIN RESIDENCES
D-5 QUALITY





MOUNTAIN RESIDENCES
D-5 QUALITY



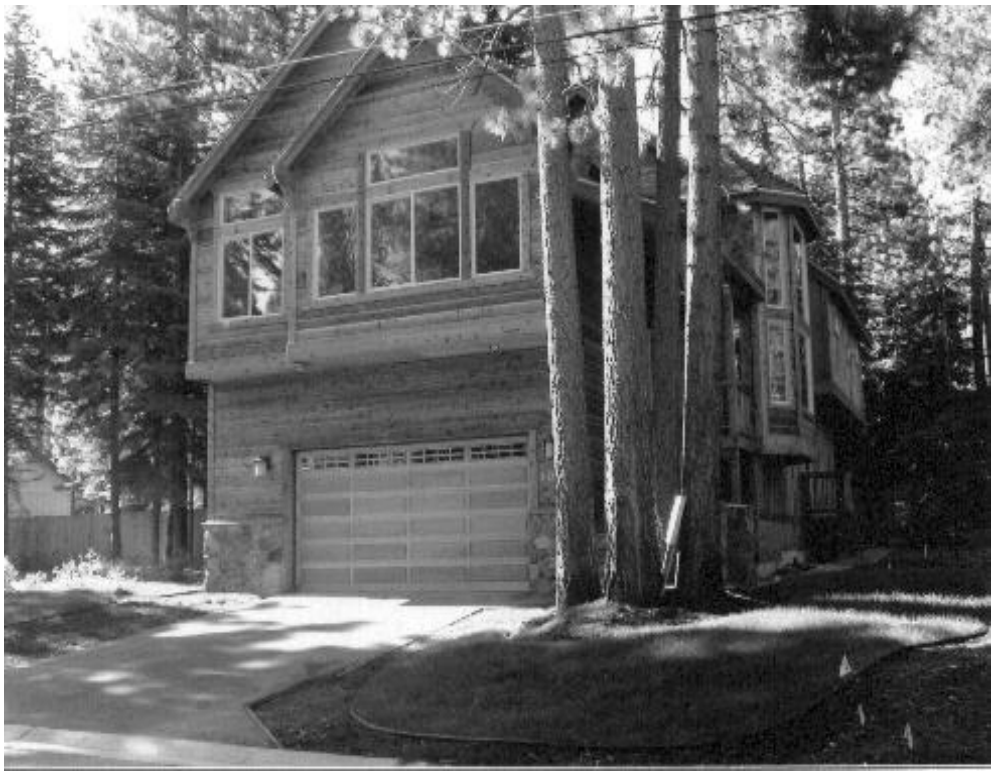
MOUNTAIN RESIDENCES
D-6 QUALITY

MOUNTAIN RESIDENCES
D-6 QUALITY

MOUNTAIN RESIDENCES
D-7 QUALITY

MOUNTAIN RESIDENCES
D-7 QUALITY

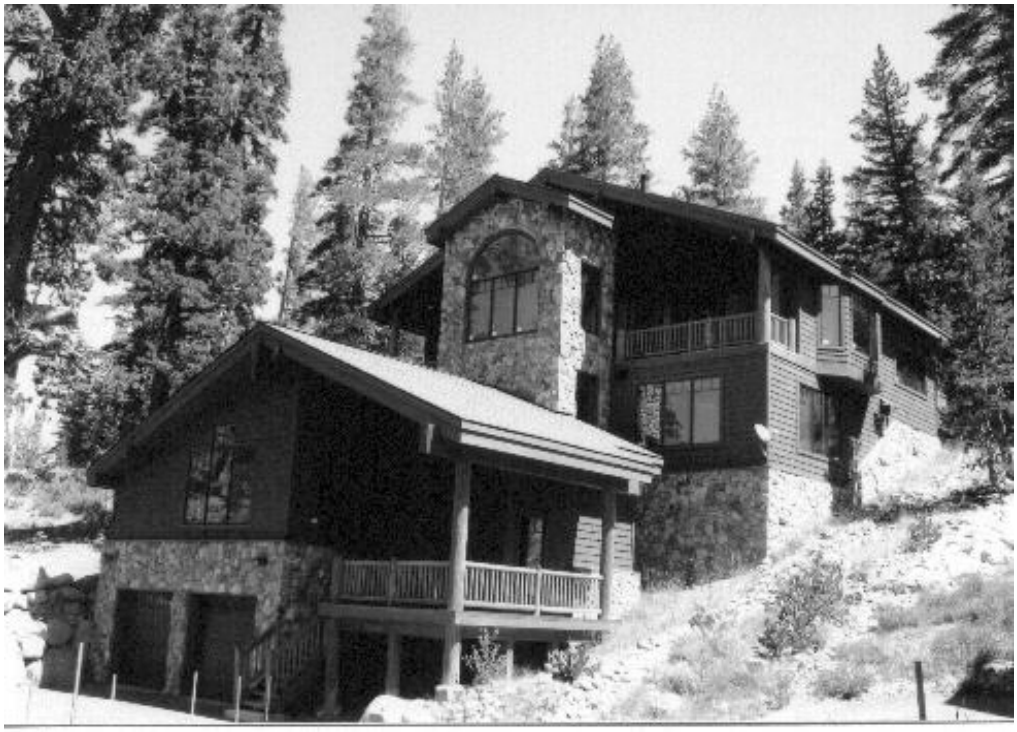
MOUNTAIN RESIDENCES
D-8 QUALITY



MOUNTAIN RESIDENCES
D-8 QUALITY

MOUNTAIN RESIDENCES
D-9 QUALITY

MOUNTAIN RESIDENCES
D-9 QUALITY



AH 531.30: MULTIPLE-FAMILY RESIDENCES

Multiple-family residences are residential buildings designed and built for permanent and separate occupancy of two or more family units.

Square foot costs include all costs and components described on page 2 of AH 531.10, the *Costing Information* chapter of this handbook. They include only those built-ins described in the building specifications.

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-4 QUALITY

Foundation Light concrete
Floor Structure Joists: 2" x 6", 24" o.c.; or 4" concrete
Walls and Exterior 6" reinforced or 8" nonreinforced concrete block; painted exterior Windows: Low-cost steel sash
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: 3 ply built-up 15# felt, mopped Overhang: 16", unceiled Gutters: None
Floor Finish Painted concrete or low-cost vinyl tile
Interior Finish Painted concrete block, wall board, or plywood and paint on partition walls
Interior Detail Trim: One member Douglas Fir, painted; or rubber base Closets: One closet per bedroom; minimum shelving
Bath Detail Floors: Painted concrete or low-cost vinyl tile Walls: Painted concrete block, wall board, or plywood and paint on partition walls Shower: None or metal shower in place of tub
Kitchen Base Cabinet: 4' Douglas Fir, painted Wall Cases: Small area Douglas Fir, painted Drain Board: 4' wood or sheet vinyl
Plumbing Fair quality fixtures
Special Features None
Electrical Knob and tube or Romex® wiring; simple fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-5 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior 8" reinforced concrete block; painted exterior Windows: Low-cost steel sash
Roof Framing: Standard wood frame Cover: Composition shingles or composition tar and pea gravel Overhang: 12" to 16", unceiled Gutters: Over entrances
Floor Finish Vinyl tile or low-cost carpet
Interior Finish Painted concrete block; Drywall, taped, textured, and painted on partitions
Interior Detail Trim: Douglas Fir, painted, or rubber base Closets: Moderate amount; low-cost doors
Bath Detail Floors: Asphalt tile Walls: Drywall, taped, textured, and enamel Shower: Plastic faced hardboard
Kitchen Base Cabinets: 5' low-cost hardwood veneer Wall Cases: Low-cost hardwood veneer Drain Board: 5' plastic laminate
Plumbing Galvanized pipe; low-cost fixtures
Special Features None
Electrical Romex® wiring; low-cost fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-6 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior 8" reinforced concrete block or 8" common brick Windows: Average quality steel sash
Roof Framing: Standard wood frame Cover: Wood shingle, light shake, good composition shingles, or composition with tar and rock Overhang: 16", unceiled Gutters: 4" galvanized and painted at all eaves
Floor Finish Good quality vinyl tile or low-cost carpet; average quality vinyl tile in kitchen and breakfast room
Interior Finish Drywall, taped, textured, and painted; colored interior stucco; some wallpaper
Interior Detail Trim: Douglas Fir, painted Closets: Average amount; low-cost wood or metal doors
Bath Detail Floors: Vinyl tile Walls: Drywall, taped and enameled Shower: Average ceramic tile or plastic coated hardboard with a glass door
Kitchen Base Cabinet: 6' low-cost hardwood veneer or average pine Wall Cases: Low-cost hardwood veneer or average pine Drain Board: 6' average ceramic tile
Plumbing Galvanized pipe; average quality fixtures
Special Features 3' ceramic tile or plastic laminate vanity in bath
Electrical Romex® wiring; average fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-7 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior 8" reinforced colored detailed concrete block Windows: Good quality aluminum or average quality steel sash
Roof Framing: Standard wood frame Cover: Medium shake or composition and large rock Overhang: 30", unceiled Gutters: 6" galvanized and painted at all eaves
Floor Finish Average quality carpet; average quality sheet vinyl or good quality inlaid vinyl in kitchen and breakfast room
Interior Finish Drywall, taped, textured, and painted; plaster with putty coat finish; some wallpaper; average quality hardwood veneer in family room
Interior Detail Trim: Douglas Fir, painted; some hardwood members Closets: Average amount with average quality wood doors
Bath Detail Floors: Sheet vinyl Walls: Drywall or smooth plaster and enamel; average ceramic tile over tub Shower: Average ceramic tile with glass door
Kitchen Base Cabinet: 8' average quality hardwood veneer Wall Cases: Average quality hardwood veneer Drain Board: 8' ceramic tile or good plastic laminate
Plumbing Galvanized pipe; good fixtures
Special Features Average quality garbage disposer, range hood and fan; 4' ceramic tile vanity in bath
Electrical Romex® wiring; average quality fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

C-8 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior 8" reinforced split face or slump stone block Windows: Good quality steel sash
Roof Framing: Standard wood frame Cover: Heavy shake Overhang: 36", unceiled, or 24", ceiled Gutters: 8" galvanized and painted at all eaves
Floor Finish Terrazzo or mission tile in entry; good tongue and groove hardwood or carpet in living, dining, and bedrooms; good sheet vinyl in kitchen and breakfast rooms
Interior Finish Drywall with heavy texture and paint; plaster with putty coat finish; some good wallpaper or vinyl wall covering; some good hardwood veneer paneling
Interior Detail Trim: Douglas Fir, painted; some hardwood members Closets: Ample space; good wood doors
Bath Detail Floors: Good ceramic tile Walls: Drywall or plaster with vinyl or foil wall cover; good ceramic tile over tub Shower: Good ceramic tile with glass door
Kitchen Base Cabinet: 10' good hardwood veneer Wall Cases: Ample good hardwood veneer Drain Board: 10' good ceramic tile
Plumbing Copper tubing; good fixtures
Special Features 8' sliding glass door; good quality built-in oven, range, dishwasher, garbage disposer, and range hood and fan; 4' to 6' ceramic tile vanity in bath
Electrical Romex® type wiring; good quality fixtures

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"C" CONSTRUCTION - 2 or 3 UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
C-4	70.28	67.09	65.33	64.01	62.84	61.82	60.98	60.15	59.53	58.50	57.61
C-4.5	76.03	72.65	70.77	69.32	68.09	66.99	66.09	65.14	64.48	63.33	62.42
C-5	82.39	78.70	76.64	75.08	73.72	72.59	71.54	70.59	69.87	68.63	67.59
C-5.5	89.23	85.26	83.03	81.27	79.79	78.59	77.49	76.40	75.65	74.28	73.17
C-6	96.63	92.32	89.96	88.00	86.45	85.07	83.97	82.76	81.95	80.47	79.23
C-6.5	105.69	100.90	98.31	96.25	94.54	92.99	91.72	90.43	89.61	87.98	86.65
C-7	114.85	110.32	107.47	105.22	103.32	101.72	100.32	98.89	97.89	96.13	94.64
C-7.5	131.96	126.02	122.80	120.23	118.01	116.21	114.60	113.05	111.88	109.84	108.27
C-8	150.46	143.76	140.03	137.15	134.63	132.46	130.67	128.92	127.57	125.26	123.40
C-8.5	171.37	163.64	159.42	156.11	153.22	150.86	148.86	146.66	145.19	142.69	140.54

"C" CONSTRUCTION - 2 or 3 UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
C-4	56.94	56.38	55.80	55.45	55.05	54.63	54.40	54.19	53.94	53.80	53.54
C-4.5	61.66	61.07	60.49	60.05	59.64	59.15	58.90	58.68	58.50	58.25	58.03
C-5	66.78	66.12	65.47	65.02	64.61	64.11	63.77	63.51	63.31	63.08	62.84
C-5.5	72.30	71.59	70.96	70.43	69.97	69.38	69.06	68.85	68.57	68.26	68.13
C-6	78.29	77.50	76.82	76.26	75.76	75.13	74.82	74.57	74.27	74.00	73.77
C-6.5	85.64	84.77	83.97	83.40	82.78	82.20	81.83	81.47	81.19	80.80	80.61
C-7	93.59	92.64	91.75	91.10	90.59	89.77	89.37	89.10	88.73	88.41	88.02
C-7.5	106.91	105.85	104.91	104.16	103.45	102.59	102.17	101.77	101.38	101.04	100.66
C-8	121.91	120.76	119.64	118.74	117.95	117.01	116.48	116.08	115.64	115.30	114.78
C-8.5	138.81	137.50	136.17	135.25	134.33	133.26	132.63	132.10	131.63	131.15	130.67

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

2 or 3 UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
C-4	3,285	4,837	6,843
C-5	4,013	6,296	7,756
C-6	4,654	7,025	9,763
C-7	5,111	8,466	10,950
C-8	6,843	9,946	12,591

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"C" CONSTRUCTION - 4 to 9 UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
C-4	66.20	63.33	61.69	60.42	59.20	58.27	57.49	56.78	56.22	55.24	54.30
C-4.5	71.73	68.58	66.83	65.41	64.14	63.15	62.22	61.53	60.91	59.85	58.86
C-5	77.62	74.27	72.31	70.87	69.53	68.40	67.36	66.60	65.98	64.80	63.76
C-5.5	84.08	80.47	78.30	76.67	75.20	74.04	72.98	72.17	71.43	70.11	69.05
C-6	91.08	87.15	84.83	83.12	81.47	80.23	79.05	78.20	77.38	75.98	74.75
C-6.5	99.58	95.31	92.71	90.85	89.11	87.63	86.37	85.46	84.57	83.08	81.76
C-7	108.83	104.13	101.42	99.27	97.38	95.86	94.45	93.38	92.53	90.84	89.29
C-7.5	124.41	118.97	115.85	113.44	111.23	109.48	107.95	106.70	105.65	103.75	102.06
C-8	141.85	135.69	132.10	129.37	126.89	124.90	123.09	121.72	120.49	118.31	116.35
C-8.5	161.49	154.51	150.45	147.31	144.49	142.15	140.18	138.54	137.21	134.65	132.59

"C" CONSTRUCTION - 4 to 9 UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
C-4	53.66	53.11	52.74	52.30	51.97	51.59	51.29	51.20	50.91	50.70	50.56
C-4.5	58.12	57.53	57.03	56.59	56.27	55.81	55.54	55.44	55.18	54.91	54.78
C-5	62.92	62.33	61.80	61.32	60.94	60.49	60.20	60.04	59.70	59.46	59.41
C-5.5	68.18	67.55	66.94	66.48	66.06	65.57	65.13	65.03	64.69	64.30	64.25
C-6	73.79	73.02	72.51	71.89	71.47	70.95	70.57	70.41	70.06	69.66	69.57
C-6.5	80.70	79.89	79.21	78.61	78.15	77.55	77.13	76.98	76.57	76.21	76.13
C-7	88.14	87.29	86.62	85.93	85.45	84.82	84.31	84.18	83.74	83.33	83.17
C-7.5	100.76	99.82	98.95	98.25	97.61	96.89	96.34	96.20	95.58	95.18	95.03
C-8	114.96	113.79	112.87	111.99	111.32	110.50	109.90	109.69	109.01	108.59	108.32
C-8.5	130.83	129.54	128.53	127.47	126.76	125.82	125.17	124.83	124.15	123.57	123.36

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

4 to 9 UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
C-4	3,012	4,464	5,954
C-5	3,651	5,674	7,163
C-6	4,378	6,977	8,653
C-7	4,837	7,908	10,418
C-8	6,296	8,929	12,372

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"C" CONSTRUCTION - 10 or MORE UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
C-4	62.53	59.85	58.26	57.03	56.04	55.11	54.30	53.66	53.06	52.17	51.32
C-4.5	67.80	64.79	63.14	61.73	60.65	59.64	58.86	58.12	57.51	56.53	55.63
C-5	73.43	70.10	68.39	66.92	65.66	64.63	63.76	62.92	62.23	61.23	60.24
C-5.5	79.51	75.97	74.03	72.51	71.11	69.98	69.04	68.18	67.44	66.27	65.27
C-6	86.06	82.33	80.22	78.52	77.04	75.80	74.74	73.79	73.01	71.80	70.64
C-6.5	94.07	90.01	87.62	85.79	84.19	82.86	81.75	80.70	79.84	78.53	77.25
C-7	102.87	98.34	95.85	93.76	92.07	90.63	89.28	88.14	87.28	85.81	84.39
C-7.5	117.55	112.37	109.47	107.10	105.20	103.50	102.05	100.76	99.77	98.01	96.52
C-8	134.06	128.24	124.89	122.18	119.99	118.06	116.34	114.96	113.76	111.87	109.97
C-8.5	152.66	145.90	142.14	139.14	136.55	134.42	132.57	130.83	129.52	127.29	125.22

"C" CONSTRUCTION - 10 or MORE UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
C-4	50.73	50.23	49.73	49.37	49.03	48.75	48.53	48.27	48.13	47.94	47.76
C-4.5	54.94	54.40	53.90	53.49	53.06	52.79	52.50	52.31	52.11	51.95	51.68
C-5	59.47	58.89	58.42	57.87	57.51	57.18	56.91	56.66	56.45	56.20	56.07
C-5.5	64.44	63.76	63.20	62.66	62.23	61.91	61.62	61.33	61.11	60.90	60.66
C-6	69.80	69.05	68.51	67.91	67.44	67.00	66.68	66.53	66.19	65.94	65.66
C-6.5	76.23	75.50	74.86	74.22	73.71	73.28	72.87	72.62	72.38	72.03	71.79
C-7	83.40	82.57	81.82	81.16	80.53	80.07	79.71	79.44	81.13	78.81	78.54
C-7.5	95.28	94.37	93.54	92.77	92.01	91.52	91.09	90.79	90.40	90.00	89.76
C-8	108.64	107.58	106.61	105.76	104.97	104.37	103.86	103.53	103.12	102.67	102.31
C-8.5	123.60	122.47	121.40	120.43	119.56	118.83	118.23	117.81	117.32	116.89	116.50

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

10 or MORE UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
C-4	2,648	4,105	4,931
C-5	3,195	4,837	6,977
C-6	4,105	6,296	7,908
C-7	4,837	7,299	9,952
C-8	5,566	8,760	11,347

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-4 QUALITY

Foundation Light concrete
Floor Structure Joints: 2" x 4", 24" o.c.; or 4" concrete
Walls and Exterior Framing: 2" x 4" studs, 16" o.c. Sheathing: None Cover: 1/2" redwood siding painted, or light stucco Windows: Wood casements or double hung, painted
Roof Framing: 2" x 4" rafter, 24" o.c. Cover: 3 ply built-up 15# felt, mopped Overhang: 16", unceiled Gutters: None
Floor Finish 1" x 4" Douglas Fir tongue and groove; print vinyl tile in kitchen
Interior Finish Two coats of sand plaster on wood or gypsum lath glue size and calcimine
Interior Detail Trim: One member Douglas Fir, painted Closets: One closet per bedroom; minimum shelving
Bath Detail Floors: Print vinyl tile Walls: Plaster, painted Shower: None or metal shower in place of tub
Kitchen Base Cabinet: 4' Douglas Fir, painted Wall Cases: Small area; Douglas Fir, painted Drain Board: 4' wood or vinyl tile squares
Plumbing Fair quality fixtures
Special Features None
Electrical Knob and tube or Romex® wiring; simple fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-5 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior Framing: Standard wood frame Sheathing: Line wire and paper Cover: Light stucco Windows: Low-cost aluminum, steel, or wood
Roof Framing: Standard wood frame Cover: Composition shingles or composition with tar and pea gravel Overhang: 12" to 16", unceiled Gutters: Over entrances
Floor Finish Vinyl tile
Interior Finish Drywall, taped, textured, and painted
Interior Detail Trim: Douglas Fir, painted Closets: Moderate amount; low-cost doors
Bath Detail Floors: Vinyl tile Walls: Drywall and enamel Shower: Plastic faced hardboard
Kitchen Base Cabinet: 5' low-cost hardwood veneer Wall Cases: Low-cost hardwood veneer Drain Board: 5' plastic laminate
Plumbing Galvanized pipe; low-cost fixtures
Special Features None
Electrical Romex® wiring; low-cost fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-6 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior Framing: Standard wood frame Sheathing: Line wire and paper Cover: Hardboard siding, wood shingles, low-cost wood siding, or average stucco Windows: Average quality aluminum, steel, or wood sash
Roof Framing: Standard wood frame Cover: Wood shingle, light shake, good composition shingles, or composition with tar and rock Overhang: 16", unceiled Gutters: 4" galvanized and painted at all eaves
Floor Finish Average quality 3/8" square edge hardwood or low-cost carpet; average quality vinyl tile in kitchen and breakfast room
Interior Finish Drywall, taped, textured, and painted; colored interior stucco; some wallpaper
Interior Detail Trim: Douglas Fir, painted; some low-cost hardwood Closets: Average amount; low-cost wood or metal doors
Bath Detail Floors: Vinyl tile Walls: Drywall, taped, and enameled Shower: Average ceramic tile or plastic coated hardboard with a glass door
Kitchen Base Cabinet: 6' low-cost hardwood veneer or average pine Wall Cases: Low-cost hardwood veneer or average pine Drain Board: 6' average ceramic tile
Plumbing Galvanized pipe; average quality fixtures
Special Features 3' average ceramic tile or plastic laminate vanity in bath
Electrical Romex® wiring; average fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-7 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior Framing: Standard wood frame Sheathing: Drywall Cover: Good hardboard or average siding and masonry veneer on front wall; good stucco on sides and rear Windows: Average aluminum; steel or wood
Roof Framing: Standard wood frame Cover: Medium shake or composition and large rock Overhang: 30", unceiled Gutters: 6" galvanized and painted at all eaves
Floor Finish Average quality tongue and groove hardwood or carpet; average quality sheet vinyl or good quality inlaid vinyl tile in kitchen and breakfast room
Interior Finish Drywall, taped, textured, and painted; plaster with putty finish; some wallpaper, average quality hardwood veneer in family room
Interior Detail Trim: Douglas Fir, painted; some hardwood members Closets: Average amount with average quality wood doors
Bath Detail Floors: Sheet vinyl or vinyl tile Walls: Drywall or smooth plaster and enamel; average ceramic tile over the tub Shower: Average ceramic tile with glass door
Kitchen Base Cabinet: 12' average quality hardwood veneer Wall Cases: Average quality hardwood veneer Drain Board: 12' average ceramic tile or good plastic laminate
Plumbing Galvanized pipe; good fixtures
Special Features Average quality garbage disposer, range hood and fan; 4' ceramic tile vanity in bath
Electrical Romex® wiring; average quality fixtures

MULTIPLE-FAMILY RESIDENCES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

D-8 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior Framing: Standard wood frame Sheathing: Drywall or 3/8" plywood Cover: Good wood siding with masonry veneer trim on front wall; good stucco on sides and rear Windows: Good aluminum, steel, or wood
Roof Framing: Standard wood frame Cover: Heavy shake Overhang: 30", unceiled, or 24", ceiled Gutters: 8" galvanized and painted at all eaves
Floor Finish Good ceramic tile or terrazzo in entry; good quality tongue and groove hardwood or carpet in living, dining, hall, and bedrooms; good quality sheet vinyl or good quality vinyl tile in kitchen, breakfast, and utility rooms
Interior Finish Drywall with heavy texture and paint; plaster with putty coat finish; some wallpaper or vinyl wall covering; some good hardwood veneer paneling
Interior Detail Trim: Douglas Fir, painted; some hardwood members Closets: Ample space; good wood doors; linen closets
Bath Detail Floors: Good ceramic tile Walls: Drywall or plaster with vinyl or foil wall cover; good ceramic tile over tub Shower: Good ceramic tile with glass door
Kitchen Base Cabinet: 16' good hardwood veneer Wall Cases: Ample good hardwood veneer Drain Board: 16' good ceramic tile
Plumbing Copper tubing; good fixtures
Special Features 8' sliding glass door; good quality built-in oven, range, dishwasher, garbage disposer, and range hood and fan; 4' to 6' ceramic tile vanity in bath
Electrical Romex® wiring; good quality fixtures

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"D" CONSTRUCTION - 2 or 3 UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
D-4	67.45	64.53	62.90	61.48	60.40	59.39	58.57	57.84	57.29	56.18	55.34
D-4.5	73.09	69.83	68.09	66.56	65.32	64.29	63.49	62.57	62.04	60.89	59.91
D-5	79.14	75.63	73.74	72.06	70.79	69.64	68.68	67.76	67.19	66.00	64.90
D-5.5	85.69	81.89	79.89	78.04	76.64	75.46	74.49	73.41	72.76	71.44	70.31
D-6	92.81	88.67	86.47	84.56	83.04	81.70	80.56	79.56	78.77	77.36	76.14
D-6.5	101.41	96.93	94.57	92.36	90.72	89.31	88.13	86.94	86.10	84.61	83.24
D-7	110.88	106.05	103.36	101.05	99.23	97.58	96.37	95.01	94.13	92.45	90.98
D-7.5	126.71	121.14	118.10	115.39	113.38	111.53	110.10	108.59	107.55	105.62	103.96
D-8	144.50	138.12	134.69	131.63	129.23	127.19	125.59	123.74	122.68	120.48	118.59
D-8.5	164.46	157.28	153.34	149.85	147.19	144.77	142.95	140.85	139.63	137.22	134.97

"D" CONSTRUCTION - 2 or 3 UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
D-4	54.65	54.15	53.65	53.26	52.89	52.55	52.31	52.05	51.89	51.66	51.54
D-4.5	59.25	58.63	58.15	57.63	57.31	56.94	56.65	56.45	56.15	55.99	55.81
D-5	64.18	63.49	62.90	62.43	62.05	61.68	61.34	61.07	60.83	60.64	60.45
D-5.5	69.50	68.71	68.13	67.59	67.21	66.78	66.50	66.14	65.86	65.70	65.48
D-6	75.24	74.49	73.81	73.20	72.76	72.32	71.96	71.74	71.33	71.12	70.88
D-6.5	82.29	81.32	80.74	80.07	79.57	79.07	78.68	78.40	77.99	77.76	77.50
D-7	89.89	88.99	88.19	87.54	86.99	86.45	86.02	85.62	85.27	84.95	84.74
D-7.5	102.74	101.69	100.76	99.99	99.42	98.78	98.26	97.87	97.43	97.17	96.85
D-8	117.13	116.05	114.88	114.06	113.30	112.64	112.06	111.65	111.12	110.71	110.41
D-8.5	133.45	132.01	130.82	129.86	129.02	128.26	127.61	127.03	126.47	126.06	125.65

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

2 or 3 UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
D-4	3,234	4,632	6,551
D-5	3,931	6,029	7,426
D-6	4,632	6,727	9,347
D-7	5,156	8,125	10,484
D-8	6,551	9,784	12,056

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"D" CONSTRUCTION - 4 to 9 UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
D-4	63.53	60.70	59.14	57.92	56.82	55.91	55.29	54.47	53.92	52.91	52.05
D-4.5	68.78	65.76	64.13	62.71	61.52	60.54	59.84	58.98	58.44	57.33	56.45
D-5	74.51	71.17	69.45	67.91	66.64	65.57	64.72	63.88	63.32	62.10	61.07
D-5.5	80.74	77.11	75.11	73.51	72.20	71.05	70.13	69.09	68.58	67.26	66.14
D-6	87.40	83.56	81.36	79.63	78.08	76.90	76.00	74.84	74.26	72.77	71.74
D-6.5	95.53	91.30	88.99	87.07	85.44	84.08	83.07	81.87	81.18	79.58	78.40
D-7	104.42	99.84	97.26	95.19	93.42	91.93	90.79	89.47	88.67	87.02	85.62
D-7.5	119.29	114.05	111.11	108.81	106.71	105.04	103.79	102.30	101.41	99.49	97.87
D-8	136.12	130.07	126.73	124.05	121.76	119.80	118.34	116.70	115.63	113.47	111.65
D-8.5	154.88	148.03	144.27	141.21	138.53	136.36	134.71	132.84	131.61	129.08	127.03

"D" CONSTRUCTION - 4 to 9 UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
D-4	51.58	51.05	50.56	50.11	49.83	49.52	49.27	49.08	48.85	48.60	48.53
D-4.5	55.83	55.29	54.76	54.27	53.92	53.63	53.33	53.13	52.85	52.66	52.52
D-5	60.46	59.84	59.29	58.82	58.44	58.06	57.84	57.56	57.29	57.04	56.90
D-5.5	65.53	64.72	64.20	63.65	63.27	62.90	62.57	62.33	62.04	61.75	61.64
D-6	70.96	70.13	69.52	69.02	68.58	68.10	67.75	67.45	67.12	66.97	66.72
D-6.5	77.55	76.71	76.00	75.37	74.98	74.51	74.09	73.77	73.37	73.12	72.96
D-7	84.78	83.88	83.12	82.42	81.89	81.39	81.01	80.60	80.24	79.96	79.76
D-7.5	96.86	95.81	95.01	94.20	93.57	92.97	92.55	92.13	91.69	91.40	91.14
D-8	110.43	109.32	108.30	107.41	106.79	106.06	105.54	105.06	104.55	104.22	103.96
D-8.5	125.76	124.40	123.28	122.30	121.54	120.70	120.11	119.63	119.02	118.60	118.34

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

4 to 9 UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
D-4	2,796	4,192	5,590
D-5	3,494	4,632	6,727
D-6	4,192	6,551	8,125
D-7	4,894	7,426	9,784
D-8	5,854	8,387	11,621

MULTIPLE-FAMILY RESIDENCES
SQUARE FOOT AVERAGE UNIT AREA COST TABLES

"D" CONSTRUCTION - 10 or MORE UNITS

Class	400	450	500	550	600	650	700	750	800	900	1000
D-4	60.03	57.12	55.91	54.76	53.65	52.84	52.05	51.46	50.90	50.03	49.28
D-4.5	65.03	61.89	60.54	59.29	58.15	57.21	56.45	55.69	55.15	54.16	53.38
D-5	70.38	67.00	65.57	64.20	62.90	62.01	61.07	60.40	59.80	58.64	57.88
D-5.5	76.25	72.59	71.05	69.52	68.13	67.05	66.14	65.32	64.68	63.56	62.62
D-6	82.57	78.50	76.90	75.30	73.81	72.65	71.74	70.79	70.03	68.78	67.80
D-6.5	90.26	85.86	84.08	82.37	80.74	79.48	78.40	77.38	76.63	75.24	74.12
D-7	98.65	93.85	91.93	89.95	88.19	86.87	85.62	84.57	83.73	82.25	81.02
D-7.5	112.73	107.28	105.04	102.84	100.76	99.26	97.87	96.60	95.67	93.94	92.62
D-8	128.58	122.33	119.80	117.25	114.88	113.16	111.65	110.21	109.04	107.23	105.60
D-8.5	146.43	139.23	136.36	133.50	130.82	128.80	127.03	125.44	124.18	122.01	120.21

"D" CONSTRUCTION - 10 or MORE UNITS

Class	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200
D-4	48.70	48.20	47.78	47.41	46.98	46.70	46.57	46.33	46.15	45.93	45.83
D-4.5	52.76	52.28	51.75	51.32	50.88	50.59	50.40	50.20	49.94	49.77	49.61
D-5	57.12	56.54	55.99	55.54	55.13	54.84	54.56	54.29	54.14	53.85	53.76
D-5.5	61.89	61.21	60.69	60.16	59.62	59.39	59.07	58.87	58.57	58.33	58.20
D-6	67.00	66.33	65.70	65.14	64.62	64.29	64.06	63.72	61.78	63.19	62.95
D-6.5	73.28	72.50	71.82	71.24	70.58	70.27	70.01	69.64	69.37	69.05	68.88
D-7	80.04	79.24	78.50	77.83	77.18	76.85	76.48	76.15	75.77	75.46	75.30
D-7.5	91.44	90.51	89.68	88.99	88.26	87.85	87.45	87.03	86.63	86.33	86.01
D-8	104.28	103.23	102.29	101.41	100.66	100.10	99.74	99.24	98.87	98.37	98.12
D-8.5	118.73	117.55	116.40	115.51	114.60	113.98	113.53	112.96	112.48	111.98	111.73

All multiple-family residence costs assume one bath per unit. Use the following table for adding the cost of extra baths.

10 or MORE UNITS

	Cost Per Extra Bath		
Class	2-Fixture Bath	3-Fixture Bath	4-Fixture Bath
D-4	2,796	3,931	4,632
D-5	3,234	4,632	4,856
D-6	3,931	5,854	7,426
D-7	4,894	6,988	9,347
D-8	5,590	7,950	10,484

AH 531.35: MANUFACTURED HOUSING

INTRODUCTION

A manufactured home is a structure transportable in one or more sections, designed and equipped to be used with or without a permanent foundation. A manufactured home does not include a recreational vehicle or commercial coach.

A manufactured home can range from 8 to 36 feet wide and up to 80 feet long. Manufactured homes assembled from two or three attached sections are known as *double wide* or *triple wide*. Telescoping and/or attached rooms to the side of a manufactured home are known as *tip-out*, *expando*, or *tag-a-long* units. Include all sections in the total square footage computations.

SITE INFLUENCE WITHIN MOBILEHOME PARKS

It is important to recognize that the full cash value of a manufactured home on rented or leased land does not include any value attributable to that rented or leased land. Section 5803(b) states:

> The Legislature finds and declares that, because owners of manufactured homes subject to property taxation on rented or leased land do not own the land on which the manufactured home is located and are subject to having the manufactured home removed upon termination of tenancy, "full cash value" for purposes of subdivision (a) does not include any value attributable to the particular site where the manufactured home is located on rented or leased land which would make the sale price of the manufactured home at that location different from its price at some other location on rented or leased land. In determining the "full cash value" of a manufactured home on rented or leased land, the assessor shall take into consideration, among other relevant factors, cost data issued pursuant to Section 401.5 or sales prices listed in recognized value guides for manufactured homes, including, but not limited to, the National Automobile Dealers Association's Manufactured Housing Appraisal Guide.

Site value for manufactured homes located in parks may be attributable to factors such as:

- Vacancy levels in parks in the surrounding area
- Vacancy levels in the park in which the subject manufactured home is located
- Desirability of the park—as demonstrated by density, health and recreational amenities, quality of management, and quality of maintenance
- Location of the space within the park
- Space size
- Rent control

Site value for manufactured homes located on rented or leased land outside parks is attributable mainly to location.

TYPES OF SITE INFLUENCE

The effect of the site on the sale price of a manufactured home can be either positive or negative. In the assessment of a manufactured home, a county assessor must not include any add-on value for positive site influence nor subtract any value where a negative site value exists. It is the site, not the manufactured home, that is entitled to a reduction in value. Such negatively impacted sites cannot command the same rental level as comparable sites that do not face the same adverse consequences. As a result, the manufactured home owners pay reduced rents for the negative sites; however, they should pay proportional taxes on the manufactured homes because the homes perform as constructed without any decrease in value.

APPROACHES TO VALUE

The three approaches to value, including the method using a recognized value guide, are discussed below. The value indicator derived from a recognized value guide should be compared with the indicated values derived from the other two valuation approaches, where appropriate, to ensure that the value indicated by the value guide is within the market range.

Of the approaches to value described below, the replacement cost approach, using an indicator from a recognized value guide plus the value of all manufactured home accessories, buildings, and structures (items such as skirting, awnings, cabanas, storage cabinets, porches, flatwork, carports, garages, and landscaping, etc.) provides a county assessor with the best indication of value excluding site influence. Using this approach assures compliance with Revenue and Taxation Code section 5803(b) which requires that a county assessor must take into consideration values indicated by recognized value guides.

COST APPROACH

In the cost approach, costs are not derived from actual building costs for new manufactured homes; instead, costs are estimated from retail sales. There are two cost approaches for manufactured homes: the *replacement cost approach* and the *replacement cost new less depreciation approach*.

Replacement Cost Approach

The *replacement cost approach* is an estimate of the value of a manufactured home that can be determined by locating the indicated value for the identical manufactured home in a recognized value guide such as the National Automobile Dealers Association's Manufactured Housing Appraisal Guide (N.A.D.A.) which contains an estimated value for most manufactured homes. The values are developed from analyzing the sales of manufactured homes in the United States and adjusting the sale prices for any site value. Since sales data exists for most makes, models, sizes, and ages of manufactured homes, an approximate replacement cost for a manufactured home of a specific make, model, size, and age can be determined using a recognized value guide.

Replacement Cost New Less Depreciation Approach

The *replacement cost new less depreciation* (RCNLD) approach estimates the cost of a new manufactured home and then reduces this cost by an estimate of depreciation. A cost estimate

may be developed using square foot costs found in this handbook or other commercial cost services such as *Marshall Swift Residential Cost Handbook*. Costs in this handbook and Marshall Swift costs are derived from retail sales of new manufactured homes. In using this approach, the estimate of depreciation is critical.

COMPARATIVE SALES APPROACH

In the *comparative sales approach*, the appraiser derives a value indicator by comparing the manufactured home being appraised to similar manufactured homes which have recently sold, with appropriate adjustments to the selling prices for any differences. Frequently, the selling prices of comparable manufactured homes located on rented or leased land will include an increment attributable to site value. In order to comply with Revenue and Taxation Code section 5803(b), the effect of site value upon the sales price must be extracted from each sale before the sale can be used as a comparable. Since site value is inherent in most sales prices, it is more difficult to apply the comparative sales approach to manufactured homes located on rented or leased land.

INCOME APPROACH

In the *income approach*, an anticipated income stream is converted into an estimate of value. The income approach is most appropriate for income-producing property. A gross rent multiplier can be developed if there is an active rental market for manufactured homes. However, a reliable multiplier may be difficult to develop since many mobilehome parks either prohibit or discourage rentals. In addition, most rents will reflect an increment attributable to location which must be extracted.

BASIS OF COSTS

Costs in this handbook are based upon a variety of indicators, including dealers' sales and manufacturers' list prices.

The base cost factors are listed as retail square foot costs applicable to single- and multi-unit manufactured housing. The accessory and component costs are based upon retail in-place cost to the consumer.

Oftentimes, the length expressed in the manufactured housing industry is the overall length which would include the tow bar. The tow bars are normally about three feet long. The costs in this handbook are *net* lengths and **do not include the tow bar**. We suggest the appraiser measure the manufactured home to be certain that actual dimensions are calculated.

The cost factors in this handbook are to be used only in the valuation of manufactured homes that are in excess of 8 feet wide or in excess of 40 feet long, and/or in excess of 320 square feet.

MANUFACTURED HOME ACCESSORY AND COMPONENT COSTS

The accessory and component cost listing represents retail in-place costs. A price range is indicated to account for variations in quality. Additional accessory and components are included in the basic cost as described in the applicable specifications. Some costs not included in this chapter may be found in other chapters of this manual, for example, concrete work or yard improvements. Concrete perimeter foundation costs are included in this handbook. ***Foundations vary in type and cost. They are generally not included in the purchase price of a new manufactured home and must be added.***

STANDARD CLASSIFICATION SYSTEMS

The square foot cost tables are constructed and arranged to be used with the Assessors' Standard Classification System. This is a system of tabulating and arranging known costs according to physical variations that cause cost differentials. The manufactured housing classification system is designed to coincide with the single-family residential quality class system. For example, the lowest class of manufactured home is a 4. This class is not currently in production and will not meet current building codes. However, older manufactured homes may be found which appear to be inferior to Class 5. No specifications are given for this class because of the great variation possible. Appraisal judgment must be used to estimate this class based on a comparison with Class 5. The Class 5 is given to the lowest priced manufactured home in current production. The quality of all the features is minimal, similar to those found in a minimum quality tract home. The Class 6 manufactured home is of average quality in a price range usually found in the older type mobilehome parks. The Class 7 manufactured home is above average in quality and is the most common and represents the average price manufactured home usually found in the majority of mobilehome parks. It is the equivalent of the average tract home.

Classes 8 and 9 reflect increasing quality, with Class 9 being the highest quality made. Very few Class 9 manufactured homes exist and care must be used before assigning this quality class.

The specifications for each quality class make a distinction between classes. This distinction often shows in the *quality* of a feature and not whether the feature is present. The same feature may exist in different classes, but the quality of the feature will help to determine the classification. Conversely, some features may be included in a particular classification, while in another class the same feature must be treated as an additive.

LOCATION ADJUSTMENTS

Costs in this handbook are developed from sources in the Sacramento and San Joaquin Valleys, Southern California, and the San Francisco Bay area. Generally, **no adjustment for location is needed in these areas**. Adjustments for freight may be necessary. Transportation and set-up rates for each unit are negotiable between the dealer and purchaser. Local dealers or purchasers must be contacted for the amount charged which is applicable to a particular location. These charges include transportation fees, mileage charges, set-up, tie down, pilot cars, any normal or extraordinary permit costs not included in the sales contract, etc. **For manufactured homes, do not use the location maps in Chapter 531.10, pages 24 and 25.**

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 5

This is the lowest quality manufactured home in current production. The features are of minimal quality and are similar to those found in a minimum quality tract home. These homes are typically found in older mobilehome parks.

Roof Painted lightweight galvanized steel with minimum pitch; or asphalt shingles
Exterior Walls Covering is pre-finished aluminum panels with exposed hex-head holding screw fasteners; panels of modified corrugated pattern; panels are not imitation siding or flush type; exterior wall thickness 3" to 4"; lightweight skirting
Trim and Sash No ornamental trim; minimum window area and sash
Interior Walls are pre-finished 3/16" fire rated paneling; hardboard or fibreboard ceiling cover with exposed fasteners and/or stapled holding strips; 7' 6" ceiling heights
Floors Vinyl; lightweight carpet in living room and master bedroom only
Heating Forced air furnace; minimum ducting and outlets
Kitchen 10± linear foot plastic laminate counter; minimum quality plywood cabinets; built-in or drop-in range and oven
Baths and Plumbing One bath; fiberglass tub or shower with curtain; small 4' plastic marble vanity; minimum quality cabinets
Bedrooms Five to six linear feet of wardrobe; plain plywood sliding doors
Insulation Fully insulated floors, side walls, and ceilings
Exterior Components Set on concrete and/or metal piers; axle and wheel assembly for each towable section

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 6

This is the average quality manufactured home in a price range usually found in the older type mobilehome parks.

Roof	One piece fabricated steel; minimum pitch; small overhang in front; or asphalt shingles
Exterior Walls	Covering is pre-finished aluminum siding or flush-type masonite panels with some concealed fasteners; exterior wall thickness is 3" to 4"; skirting is lightweight or masonite hardboard panels
Trim and Sash	No trim; exterior decoration two types of color; coordinated exterior covering; tract house size and quality windows; optional 6' sliding glass door
Interior	Pre-finished fire rated plywood paneling or partial drywall; acoustical tile ceiling; 8' ceiling height; drapes in living room, dining room, and bedrooms
Floors	Carpet with 1/2" thick pad in living, dining, and bedrooms; vinyl in other areas
Heating	Forced air furnace; ducting in all rooms; perimeter floor return system; optional air conditioning
Kitchen	12± linear foot plastic laminate counter; average quality plywood cabinets with raised panel doors; built-in range and oven, hood and fan; optional dishwasher
Baths and Plumbing	1 and 3/4 baths; fiberglass shower with glass or plastic door; fiberglass or enameled steel tub; 4 to 5 linear foot cultured marble vanity single basin; average quality cabinets; 30-gallon hot water heater
Bedrooms	8± linear feet wardrobe; pre-finished and grooved plywood doors; mirrored wardrobe door in master bedroom
Insulation	Fully insulated floors, side walls, and ceilings
Exterior Components	Set on concrete and/or metal piers; axle and wheel assembly for each towable section

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 7

This manufactured home is above average in quality. This class of home is usually found in the newer modern mobilehome parks.

Roof	One piece white baked enamel metal; asphalt shingles on gable accented roof
Exterior Walls	Pre-finished aluminum (shiplap) siding and/or flush-type masonite panels with concealed fasteners; designer coordinated exterior colors; 4" exterior wall thickness; aluminum skirting
Trim and Sash	Little or no trim; two-tone exterior coverings; large, good, house-type sash; some picture windows; optional 6' sliding glass door
Interior	Pre-finished and grooved hardwood, plywood paneling, or drywall; 8' acoustical plank-type ceilings; decorator coordinated drapes in all rooms except kitchen and baths; optional vaulted ceilings with decorative beams
Floors	Carpet with 1/2" thick pad in all rooms except baths and kitchen; vinyl in kitchen and baths
Heating	80,000 BTU upflow or downflow forced air furnace; ducting to all rooms; optional air conditioning and fireplace
Kitchen	14± linear foot plastic laminate counter; good quality cabinets; built-in range and oven with a hood and fan; optional dishwasher and pantry
Baths and Plumbing	2 baths; vent fans; fiberglass shower with glass or plastic door; fiberglass or enameled steel tub; 6 to 8 linear foot cultured marble vanity, twin basin master bath; good cabinets; 30 to 40 gallon water heater
Bedrooms	10± linear foot wardrobe; floor to ceiling mirrored sliding doors in master bedroom
Insulation	Fully insulated floors, walls, and ceilings
Exterior Components	Set on concrete and/or metal piers; axle and wheel assembly for each towable section

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 8

This is the highest price manufactured home in a price range usually found in the majority of modern mobilehome parks. This is a luxury type manufactured home. It not only has extensive features, but of more importance, they are of a good quality.

Roof	One piece white baked enamel metal; asphalt shingles on gable accented roof; residential-type front and rear overhangs
Exterior Walls	Pre-finished shiplap aluminum siding and/or flush-type masonite panels with concealed fasteners; designer coordinated exterior colors; exterior walls 4" thick; aluminum skirting
Trim and Sash	Painted aluminum and/or imitation stone (fiberglass) trim; large amount of good house-type sash; picture windows; sliding glass door; recessed entry
Interior	Pre-finished and grooved hardwood paneling or drywall; careful workmanship throughout; vaulted, decorative beam, and/or acoustical plank-type ceilings; 8' to 8' 6" ceiling height; floor to ceiling drapes over sheer underlays in living room and dining room; raised panel doors; window sills
Floors	Carpet with 1/2" thick pad in all rooms except guest bath and utility room; vinyl tile in kitchen, utility, and guest bath
Heating	80,000 to 110,000 BTU upflow or downflow air condition ready furnace with exterior access door; ducting to all rooms; optional air conditioning and fireplace
Kitchen	Circular or elaborate kitchen; walk-in pantry; 16± linear feet of plastic laminate counter; good quality pre-finished wood cabinets with special hardware; lazy susan corner shelves; built-in range and oven, hood and fan, and dishwasher; dropped luminous ceiling with fluorescent lighting; island work space; microwave oven
Baths and Plumbing	2 baths; vent fans; master bath will have two basins, sunken tub, and stall shower; good quality medicine cabinets and fixtures; 6± linear foot cultured marble vanities; good cabinets; one piece fiberglass shower in guest bath; 30 to 40 gallon water heater; separate commode closet
Bedrooms	9 to 14 linear foot floor to ceiling mirrored sliding wardrobe doors in master bedroom, or walk-in closets
Utility Room	220 volt wiring or gas for dryer and plumbing for washer; built-in utility table; laundry sink
Insulation	Fully insulated floors, walls, and ceilings
Exterior Components	Set on concrete and/or metal piers; axle and wheel assembly for each towable section

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 9

This quality class is the most luxurious manufactured home listed. Care should be used before assigning this class because only a few manufacturers make a manufactured home of this overall quality level.

Roof	Gable accented roof; asphalt shingles; roof pitch of 3" in 12" or more; residential-type front and rear overhangs
Exterior Walls	Pre-finished shiplap aluminum (house type) horizontal siding or 1/2" masonite hardwood siding; decorative stone accent; skirting matches exterior wall material; designer coordinated exterior colors; 6" exterior wall construction
Trim and Sash	Painted aluminum and/or imitation stone (fiberglass) trim; large amount of good house-type sash; picture/ bay windows; sliding glass doors; recessed entry; porch lights at exterior doors; dual glazed vinyl windows
Interior	Expensive hardwood paneling or drywall; careful workmanship throughout; coffered or vaulted ceiling with beams in living, dining, and family rooms; plank-type acoustical tile ceilings in bedrooms and utility room; 8' to 10' ceiling; wet bar; mirrored walls; built-in buffet cabinet in family and/or living rooms; custom drapes with sheer under-curtains in living room, dining room, and master bedroom; raised panel doors; skylights; window sills
Floors	Hardwood or ceramic tile entry, deluxe carpet with foam padding in bedrooms, dining, living, and family rooms; vinyl tile in utility and guest bath. Good quality vinyl tile or hardwood flooring in kitchen.
Heating	110,000 BTU upflow air condition ready forced air furnace with exterior access door; ducting to all rooms; optional air conditioning and fireplace; dual zone heating in larger units
Kitchen	18± linear feet of plastic laminate or ceramic tile counter top; good quality pre-finished wood cabinets; special hardware; lazy susan corner shelves; dropped luminous ceiling; built-in range and oven, hood and fan, microwave oven, and dishwasher; broom and storage cabinets; island work space; walk-in pantry; may have good quality vinyl tile flooring
Baths and Plumbing	2 to 2 ¾ baths; 8 fixtures; master bath has two basins, garden or sunken tub, one-piece fiberglass shower with glass door; good quality medicine cabinets; 4± linear feet of mirror over 8± linear feet of cultured marble or ceramic tile lavatory top; decorative faucets; 40 gallon water heater; separate commode closet
Bedrooms	9 to 14 linear feet of floor to ceiling sliding mirrored wardrobe doors, or spacious walk-in closets
Utility Room	220 volt wiring or gas for dryer and plumbing for washer; built-in utility table; laundry sink
Insulation	Fiberglass insulation; R-22 to R-33 in ceilings; R-15 to R-22 in floors and walls
Exterior Components	Set on concrete and/or metal piers; axle and wheel assembly for each towable section

MANUFACTURED HOUSING
SQUARE FOOT AREA COST TABLE

Class	321-500	501-700	701-900	901-1100	1101-1300	1301-1500	1501-1700	1701-1900	1901-2100	2101-2300	2301-2500
4	35.49	34.67	33.86	30.64	29.90	29.09	28.32	27.59	26.82	26.13	25.30
4.5	37.30	36.50	35.68	32.33	31.58	30.81	30.05	29.29	28.52	27.77	26.97
5	39.36	38.57	37.75	34.26	33.47	32.72	31.97	31.18	30.44	29.68	28.93
5.5	41.83	41.00	40.20	37.59	35.76	35.01	34.26	33.47	32.72	31.97	31.18
6	44.51	43.71	42.88	40.16	38.24	37.49	36.72	35.94	35.20	34.42	33.67
6.5	47.80	46.96	46.17	43.30	41.28	40.53	39.75	39.00	38.24	37.49	36.72
7	51.08	50.29	49.40	46.40	44.33	43.54	42.82	42.04	41.28	40.53	39.75
7.5	54.81	53.93	53.15	49.93	49.14	48.35	47.58	46.80	46.02	45.21	44.47
8	58.65	57.84	57.04	54.66	53.86	53.09	52.26	51.48	50.64	49.89	49.10
8.5	62.59	61.74	60.94	60.14	59.28	58.47	57.61	56.83	55.99	55.19	54.36
9	66.48	65.65	64.84	64.00	63.18	62.36	61.55	60.71	59.91	59.09	58.26

NOTE: The above cost factors are to be used only in the valuation of manufactured homes that are in excess of 8 feet in width or in excess of 40 feet in length, and/or in excess of 320 square feet. To compute square footage, measure the exterior perimeter of the unit(s) at the floor level. DO NOT INCLUDE THE TOW BAR.

Cost factors for all manufactured home quality classes include a cost for forced-air heating. Air conditioning is an additive. These cost factors do not include an allowance for park location value.

FOUNDATION

Single Story

For units on permanent foundations	1,000 sq. ft. to 1,800 sq. ft.	$3,400 to $5,200
	1,801 sq. ft. to 3,000 sq. ft.	$5,201 to $7,100

Two Story

Use the footprint of the first story for square foot calculation of foundation.

MANUFACTURED HOUSING

AIR CONDITIONING

Type		Cost		
Central Air for Ready Furnace Using Existing Ducts				
2 Ton	Approximately 800 - 1100 sq. ft.		2,867	
2 1/2 - 3 Ton	Approximately 1101 - 1600 sq. ft.		3,294	
4 - 5 Ton	Approximately 1601 - 2500 sq. ft.	3,615	-	4,253
		Cost Per Unit		
Thru-wall Small Unit (1/2 H.P. 6,000 BTU)				1,102
Thru-wall Large Unit (1 H.P. 12,000 BTU)				1,399
Evaporative Cooler--Roof Mounted		1,250	-	1,567
Wired Only for Air Conditioning		201	-	417

BUILT-INS

Type	Cost Each		
Dishwasher (included in Class 7, 8, or 9)	809	-	1,002
Garbage Disposal (included in all base cost, deduct if missing)	168	-	327
Built-in Microwave Oven	665	-	1,328
Trash Compactor	734	-	925
Wet Bar (walk-up--if not included in class)	673	-	801
Wet Bar (walk behind--if not included in class)	2,194	-	2,432
Separate Shower Master Bath	763	-	962
One-half Bath: Toilet, Sink, and Pullman	1,456	-	1,542
Bathroom Sink or Laundry Sink			321
Fireplace (permanent--includes flue)	2,835	-	3,851
Fireplace (free standing--includes flue)	1,294	-	2,309
Built-in Buffet-Hutch (1 hutch included in Class 8)	1,018	-	1,281
Whirlpool Tub in Master Bath	1,186	-	1,449

SKIRTING

Type	Cost Per Linear Foot		
Lightweight Aluminum Panels		7.08	
Lap Aluminum Siding		13.41	
Painted Masonite Panels		14.16	
Flagstone-type Aluminum Panels		13.41	
Concrete Composite Panels	17.32	-	21.41
Vinyl Panels		11.33	
Brick or Stone - Cost per Surface Foot		18.71	

STORAGE BUILDINGS (Floor Included)

Type	Cost Per Square Foot
Aluminum Exterior	14.44
Enameled Steel Exterior	11.35
Masonite	22.68

TIE DOWNS

Type	Cost			
Cork Screw Anchors and Straps	83	-	124	Each

MANUFACTURED HOUSING

STEPS AND RAILS

	Cost		
Fiberglass Steps	205	-	313
Rail	44	-	69

UPGRADED COMPONENTS

Type	Cost		
Upgraded Carpets	1,212	-	3,030
Upgraded Drapes	1,212	-	2,578

PORCHES AND DECKS (No Roofs Included)

Type	Cost Per Square Foot		
Wooden Deck with Outdoor Carpet, Handrails, Skirting, and Steps (manufactured home floor level)	17.01	-	22.66

CARPORT, PORCH, AND DECK ROOFS

Type	Cost Per Square Foot		
Aluminum Supports and Roof Cover - Free Standing	10.31	-	13.26
Aluminum Supports and Roof Cover - Attached to House	6.56	-	9.33
Wooden Supports and Enameled Steel Cover	11.78	-	14.73

SCREEN WALLS FOR PORCHES AND DECKS

Type	Cost Per Square Foot
Wood Frame with Screen Walls and Door	23.97
Wood or Aluminum Frame with Screen and Glass Walls and Door	83.84

EXTRA INSULATION PACKAGE

Type	Cost Per Square Foot		
Minimum Fiberglass	0.81	-	1.19
R-11 Floor, R-11 Sidewall, R-22 Ceiling	1.13	-	1.22
R-22 Floor, R-19 Sidewall, R-33 Ceiling	1.30	-	1.77

ROOF SNOWLOAD CAPABILITY

Pounds Per Square Foot	Cost Per Square Foot		
30 lbs.	0.59	-	0.95
40 lbs.	0.95	-	1.72
50 lbs.	1.72	-	2.27
60 lbs.	2.27	-	3.03
80 lbs.	2.87	-	4.56
100 lbs.	3.80	-	5.24
175 lbs.	4.73	-	5.69

MISCELLANEOUS

	Cost		
Hot Water Recirculating System (per unit)	609	-	641
Solar Tube Skylight	321	-	385
Foundation Ready	577	-	769

DEPRECIATION

The depreciation table in this handbook is ***suggested as a guide to appraisers***. The percentage rates are applicable to the replacement cost estimates and ***no minimum percent good is intended***. They are ***averages*** based upon ***an analysis of actual market purchase price information***, and revisions to the table may be necessary as more market data become available.

The percentages only apply to manufactured housing in average condition. A separate adjustment should be considered for deferred maintenance (cost to cure). It is strongly suggested that the appraiser carefully evaluate the *effective age* of the manufactured home. This is a critical adjustment that will dramatically affect the cost approach. ***Investigation has shown that the condition of the manufactured home may have a greater influence on value than age***.

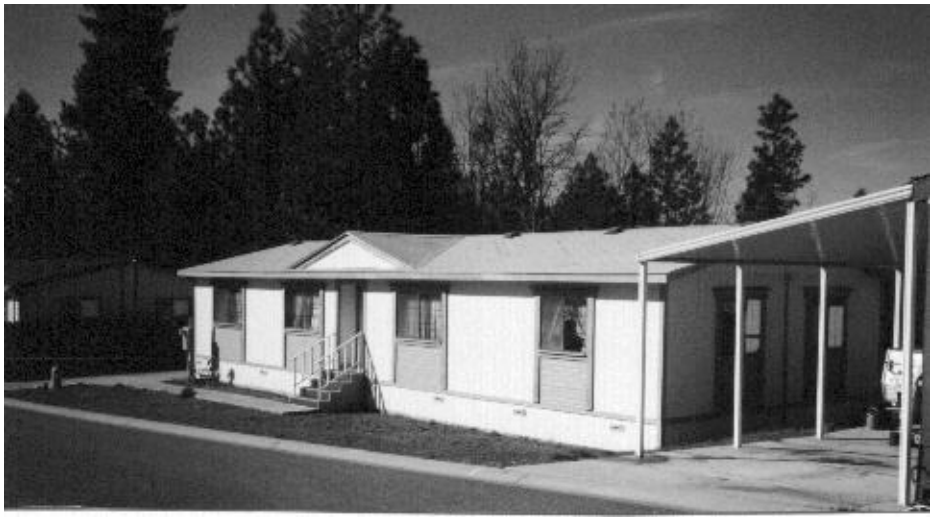
PERCENT GOOD TABLE

Effective Age (Years)	***Percent Good***
0	100%
1	99%
2	98%
3	95%
4	91%
5	87%
6	84%
7	80%
8	76%
9	71%
10	66%
11	63%
12	61%
13	59%
14	56%
15	54%
16	52%
17	51%
18	50%
19	50%
20	49%
21	48%
22	47%
23	46%
24	45%
25	44%

No minimum percent good is intended.

MANUFACTURED HOUSING
QUALITY CLASS 5

MANUFACTURED HOUSING
QUALITY CLASS 6



MANUFACTURED HOUSING
QUALITY CLASS 7

MANUFACTURED HOUSING
QUALITY CLASS 8

MANUFACTURED HOUSING
QUALITY CLASS 9

AH 531.40: BUILDING ADDITIVES

DESCRIPTION

Building additives are optional items or extra components that can differ from building to building. The question of whether there should be an addition to the basic building cost depends on variations in the class specifications and location. If certain items are not included in the class specification, then an appropriate dollar amount must be added to the basic building cost to adjust for the disparity. The desired result is an accurate total improvement cost which reflects inclusion of all appropriate costs. Examples of items that may be considered in this category are fireplaces, porches, passenger elevators, residential basements, etc.

BASE FOR ADDITIVE COSTS

The costs of additives shown in the *Building Additives* chapter (AH 531.40) are derived from the four-county Sacramento base area as of the date in the lower right-hand corner of each page.

Note that an adjustment for time should be considered if costs in the county have changed since the January publication date of this AH 531.

ADDITIVE COSTS FOR MOUNTAIN RESIDENCES

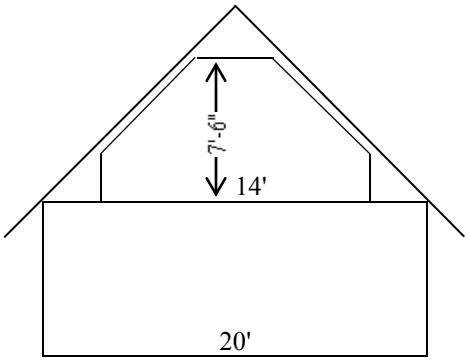
The cost of additive items will be quite different in the mountain areas of the state than they are in the Sacramento base area. Therefore, a set of additive costs that are ***specific*** to mountain residences can be found in the *Costs of Additives* section of the *Mountain Residences* chapter (AH 531.22). However, there is a limited selection of additives included. If costs are needed for additives not found in the *Mountain Residences* chapter, then use this *Building Additives* chapter and make appropriate adjustments. Up to three location adjustments may be necessary when using costs from this *Building Additives* chapter for mountain residences:

1. The Sacramento base additive costs (AH 531.40) must be multiplied by a factor of 1.30 to adjust those costs to the Lake Tahoe Basin area.

2. If necessary, an adjustment for location within the mountain areas should be made using the instructions from the *Location Adjustments* section of the *Mountain Residences* chapter, AH 531.22 page 21.

3. If necessary, an adjustment may also be needed for any local cost differences present in the mountain county (e.g., high permit fees).

HALF-STORY AREAS



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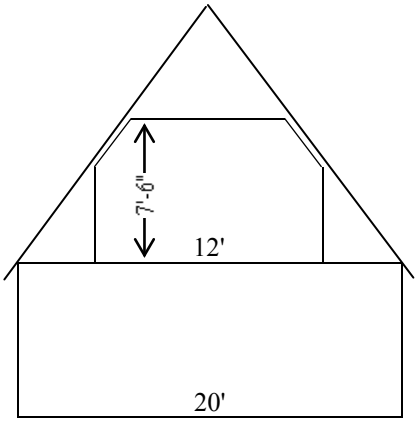

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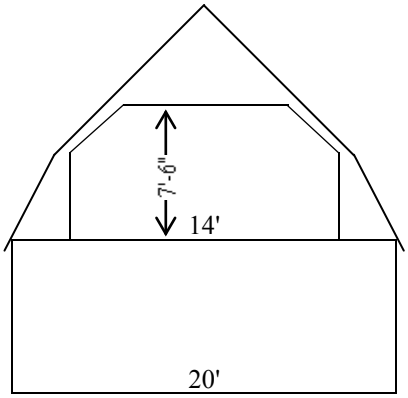
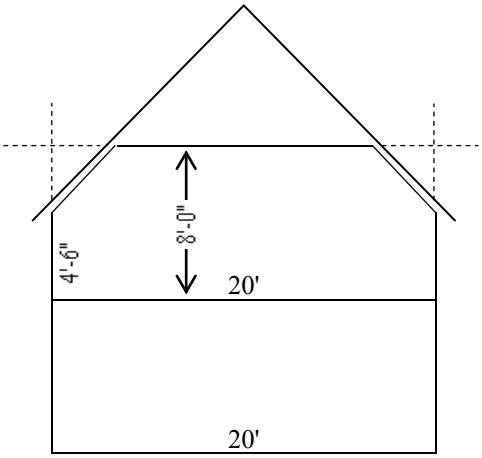


TYPE C



TYPE D

Information that will help analyze and cost half-story areas is included here because the cost data used to update the Sacramento base area does not typically include these areas. This is due to the rarity of half-story areas in new single-family home construction. The need for analysis of these costs tends to occur when attics are improved after initial construction.

SUGGESTED FRACTIONS FOR HALF-STORY AREAS

TYPE	SAME FINISH AS MAIN AREA	INFERIOR TO MAIN AREA
A	1/3	1/4
B	1/2	1/3
C	1/2	1/3
D	2/3	1/2

Type "D" Includes Cost of Dormers

BUILDING ADDITIVES

COVERED PORCHES AND LEAN-TOS

Costs of covered porches may be estimated by application of a fraction of the main building square-foot cost.

Suggestions for Fractions	Suggested Fraction		
Low (ground level) floor (usually concrete) without banister, with unceiled shed-type roof	1/4	-	1/3
High (house floor level) floor (concrete or wood) with light banister. Unceiled shed-type roof	1/3	-	1/2
Same ceiled and with roof-like residence (most typical)			1/2
Same partially enclosed with screen or glass	1/2	-	2/3
Enclosed lean-to (sleeping porch, etc.) with lighter foundation, wall structure, interior finish or roof than that of house to which attached	1/2	-	3/4
Roofed-unenclosed-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	-	1/3

UNCOVERED PORCHES

Concrete Decks	Cost Per Square Foot				
	8" High	1' High	2' High	3' High	4' High
Less than 100 square feet	8.96	11.99	19.50	26.16	36.96
100 to 200 square feet	7.81	10.85	15.67	20.91	27.89
201 to 400 square feet	6.66	8.56	13.33	18.55	24.03
Over 401 square feet	6.47	7.81	11.89	15.67	20.45

WOOD DECKS AND PORCHES

2" wood deck with steps and railings	Cost Per Square Foot		
1 to 3 feet above ground	17.43	-	20.97
4 to 6 feet above ground	20.97	-	27.99
6 to 9 feet above ground	21.97	-	29.42
9 to 12 feet above ground	23.15	-	30.85
12 to 15 feet above ground	24.32	-	32.37
15 to 18 feet above ground	25.49	-	33.85
Plastic decking or fiberglass	20.36	-	32.10

PORCH ROOFS

Type	Cost Per Square Foot			
Unceiled shed roof with wood shingle cover		8.68	-	10.27
Ceiled shed roof with wood shingle cover		14.59	-	16.59
Unceiled gable roof with wood shingle cover		10.27	-	12.62
Ceiled gable roof with wood shingle cover		16.59	-	18.16
Alternate Covers	Cost Difference Per Square Foot			
Rolled roofing	deduct	0.71	-	0.86
Corrugated aluminum	deduct	0.79	-	0.94
Corrugated iron	deduct	0.79	-	0.94
Asphalt shingles	deduct	0.94	-	1.09
Wood shakes	add	1.09	-	1.65
Clay tile	add	6.23	-	7.51
Slate	add	6.72	-	9.08

Covered porch costs may be estimated by adding a porch cover cost to an uncovered porch cost.

BUILDING ADDITIVES

RESIDENTIAL BASEMENTS

Size	Cost Per Square Foot					
	Unfinished Basements			Finished Basements		
Less than 400 square feet	35.24	-	47.68	62.43	-	84.47
401 - 1,000 square feet	28.17	-	38.11	49.91	-	67.52
Over 1,001 square feet	24.86	-	33.64	44.05	-	59.59

All basement costs assume normal soil conditions, 8' ceiling height, no plumbing, partitions, or windows.

Unfinished basements are based upon reinforced concrete floors and walls, open ceilings and minimum lighting.

Finished basement costs are based upon reinforced concrete floors with vinyl tile cover, reinforced concrete walls with plywood paneled finish, acoustical tile ceiling and lighting similar to average residences.

Stair access is not included in the basement cost and should always be added.

BALCONIES

Type	Cost Per Square Foot		
Standard wood frame supported by 4" x 4" posts, 1" wood floor, open on underside, open 2" x 4" railing.	22.04	-	24.14
Standard wood frame supported by 4" x 4" posts, 1" wood floor, ceiled on underside, solid stucco or wood siding on railing.	26.25	-	28.33
Standard wood frame supported by steel columns, lightweight concrete floors, ceiled on underside, solid stucco or open grillwork railing.	39.89	-	44.07
Add for balcony roofs from porch roof cost on AH 531.40, page 3.			

OUTSIDE STAIRWAYS

Type	Cost Per Square Foot		
Standard wood frame, wood steps with open risers, open on underside, open 2" x 4" railing.	19.08	-	21.09
Standard wood frame with solid wood risers, ceiled on underside, solid stucco or wood siding on railing.	23.10	-	27.12
Precast concrete steps with open risers, steel frame, pipe rail with ornamental grillwork	50.22	-	56.25

BUILDING ADDITIVES

HEATING AND COOLING SYSTEMS

Type	Cost Per Square Foot of Floor					
Central Ducted Air Systems	Perimeter			Overhead		
Single-Family Residences	Outlets			Outlets		
Forced air heating	6.08	-	6.75	4.72	-	5.41
Forced air heating and cooling	6.82	-	8.10	5.41	-	6.89
Gravity heat	3.81	-	4.53			
Multiple-Family Residences						
Forced air heating	3.81	-	4.18	3.48	-	3.81
Forced air heating and cooling	4.88	-	5.91	4.88	-	5.22
Hot and Chilled Water System (Water is heated or cooled in a central installation and circulated to various parts of a building. Building is heated or cooled by blowing air over coils containing hot or cold water.)				9.20	-	10.63

Type	Cost Each		
Gas Floor and Wall Furnaces			
Single floor unit	1,063	-	1,132
Dual floor unit	1,840	-	1,982
Single wall unit	563	-	846
Dual wall unit	1,546	-	1,651
Thermostat control - add	145	-	226

Electric Baseboard Units

Wattage	Length	Cost Each		
500	3'	311	-	346
1,000	4'	425	-	459
1,500	6'	459	-	510
2,000	8'	553	-	630
2,500	10'	650	-	708
3,000	12'	779	-	849
Electric Coils Under Bathroom Tile		1,618	-	2,022

Includes all electrical and wiring costs.

Geothermal	Cost Per Sq. Ft.		
Ground Source Heat Pump System	10.79	-	14.83

HEATING AND COOLING SYSTEMS (Contd.)

Electric Wall Heaters

Wattage	Cost Each		
1,000	395	-	460
2,000	460	-	494
3,000	473	-	625
3,500	559	-	690
4,000	657	-	723
4,500	723	-	920
Add for circulating fan	168	-	230
Add for thermostatic control	206	-	195

Cost includes wiring.

Evaporative Coolers

Capacity	Cost Each					
	Window Installation			Roof Installation		
2,200 CFM	657	-	722	1,050	-	1,184
4,000 CFM	788	-	854	1,184	-	1,249
4,500 CFM	919	-	1,050	1,313	-	1,576
5,500 CFM	986	-	1,117	1,447	-	1,708

Refrigerated Room Coolers

Capacity	Cost Each		
1/3 Ton	750	-	850
1/2 Ton	913	-	975
3/4 Ton	1,050	-	1,113
1 Ton	1,175	-	1,238
1 1/2 Ton	1,475	-	1,563
2 Ton	1,625	-	2,013

Cost includes wiring and minimum duct work.

SPRINKLER SYSTEMS

	Per Square Foot		
Single Family Residential	3.39	-	5.31

INSULATION

	Per Square Foot		
Minimum Code	0.90	-	1.67

BUILDING ADDITIVES

ELEVATORS, PASSENGER

Hydraulic

Capacity	Car and Machinery Cost Per Shaft Base-Two Floors — Speed: 100 F.P.M.	200 F.P.M.
2,000 lbs.	55,351	63,264
2,500 lbs.	60,102	71,170
3,000 lbs.	63,264	77,494
3,500 lbs.		82,237
4,000 lbs.		86,982

Add for deluxe car $8,878 per car.
Add for doors and door openers, $7,613 per floor
Baked enamel doors and frame $2,535 per stop.
Stainless steel doors and frame $2,783 per stop.

FIRE ESCAPES

	Unit	Cost		
Second story	Each	4,718	-	6,248
Additional floors	Per story	2,777	-	4,165

BURGLAR ALARMS

	Cost		
Total cost in place	2,118	-	5,648

BUILDING ADDITIVES

FIREPLACES/INSTALLED

Type	Cost Each One Story			Cost Each Two Story		
Zero Clearance Metal Firebox, natural gas						
Low Quality - Typically enclosed by painted or stuccoed wall board 36" width with 12.5' chimney pipe	1,745	-	2,177			
Medium Quality - Typically enclosed in attractive wood paneling, simulated materials, or moderate brickwork, has average wood mantel. 36" width with 15' chimney pipe	2,177	-	2,519	2,397	-	2,615
High Quality - Firebox unit has fire-brick back and floor and glass door. Unit typically enclosed by brick or stone, also has raised brick hearth. 48" width with 15' chimney pipe	2,995	-	4,697	3,594	-	6,458
Add: Insulation, gas line, mantel	999	-	1,174			
Pellet fed fireplace	2,625	-	3,571			
Free Standing Prefabricated Fireplace	1,563	-	2,467			
Masonry:						
5' base, common brick or concrete block, low cost Douglas fir or common brick mantle	4,162	-	4,642	4,642	-	5,156
6' base, common brick, used brick, or natural stone on interior face or with average wood mantle	4,642	-	5,156	5,156	-	8,250
6' base, common brick, face brick with good wood mantle	5,156	-	8,250	8,250	-	9,796
6' base, common brick, used brick, or natural stone on interior face, raised hearth	8,250	-	9,796	9,796	-	12,376
8' base, common brick, used brick, or natural stone on interior face, raised hearth	9,796	-	12,376	12,376	-	14,954
Add 25 to 40 percent to above costs for additional openings using a common chimney.						

BUILDING ADDITIVES

STOVES (Franklin or Buck)

Type			
Low Quality			
Steel body with cast iron legs and front	1,366	-	2,016
Medium Quality			
Steel body with cast iron front, doors, and legs, small glass panel in door	2,016	-	2,730
High Quality			
All cast iron with large glass panel in door with slate or rock borders	3,381	-	4,811

BUILT-IN APPLIANCES

Type	Cost Each		
Combination oven-range with single oven			
Economy	392	-	636
Good	636	-	1,112
Excellent	1,030	-	1,922
Surface Cooking Units--Ceramic Cook Top Over Oven			
Economy	545	-	834
Good	834	-	1,177
Excellent	1,091	-	1,502
Built-ins			
Single oven with broiler	545	-	612
Single convection oven	1,152	-	1,865
Double oven	1,789	-	2,203
Range Top			
Economy	466	-	612
Good	612	-	900
Excellent	3,604	-	6,006
Range Top With Grill	674	-	1,310
Range Hoods and Fans	166	-	350
Dishwashers			
Economy	233	-	371
Good	344	-	687
Excellent	636	-	1,093
Garbage Disposer	195	-	554
Wine Cooler	420	-	601
Instant Hot Water Dispenser	481	-	709
Trash Compactor	360	-	601
Hot Water Recirculator	571	-	601
Microwave Oven Stove Top	552	-	660
Miscellaneous Additives			
Intercom Systems			
Central control-per station	645	-	779
Vacuum Systems			
Power unit and three outlets	1,802	-	3,604
Additional outlets	227	-	291
Crown Molding (per linear foot)	8	-	15
Two-speaker surround sound	720	-	841
Four-speaker surround sound	1,201	-	1,442
Six-speaker surround sound	2,162	-	2,522

SOLAR HEATING AND COOLING

Solar heating is classified into two types—active and passive. An active solar system is an assembly of collectors, thermal storage devices, and transfer fluids or air to convert solar energy to heat. In an active system, mechanical components such as pumps, fans, and automatic valves are used to supply and distribute heat. The value of newly constructed *active* solar energy systems may be exempt from taxation (see Revenue and Taxation Code section 73).

A passive system is an assembly of natural and architectural components which may include collectors, thermal storage devices, and transfer fluid which converts solar energy into thermal energy in a controlled manner and in which no pumps are used to transfer heat or cold.

Solar systems need auxiliary energy subsystems that function with equipment utilizing energy other than solar, both to supplement the output provided by the solar energy system, and to provide full energy backup during periods when the solar system is not operating.

The cost of a solar system depends on the geographic location, collector efficiency, and other factors. Installation costs vary greatly on a case-by-case basis depending on the design of the home and any structural modification required.

Commencing with the 1981-82 fiscal year, the law was amended defining active solar energy as a system that uses solar devices thermally isolated from living space or other area where energy is used to provide for collection, storage, or distribution of solar energy. Following are the common descriptions used by industry along with the installed cost.

DOMESTIC HOT WATER SYSTEMS

Thermosyphon System This is a passive hot water system that operates without any moving parts or control. The solar collector panels are located below the hot water storage tank. The heated water naturally rises from the collector panel to the hot water storage tank and cold water in the tank circulates back to the collector to be heated. A thermosyphon system ordinarily requires a backup unit to furnish hot water on cloudy days. Cost does not include back-up unit.	5,169 - 6,614
Breadbox Hot Water Heaters This system consists of one or more tanks in a series painted black to absorb heat from the sun. These units are usually enclosed in a built-in addition on the roof in insulated tanks with exterior glass panels. Most breadbox solar water heaters are low cost, simple, home built systems which are constructed from recycled hot water tanks.	2,732 - 3,024

DOMESTIC HOT WATER SYSTEMS (Contd.)

Active Systems Active hot water heating systems come in two types—open and closed. In an open system, water is pumped through the collectors, heated, and returned to the storage tank. In a closed system, water does not circulate through the unit. An antifreeze or glycol solution is heated in collector panels and then circulated through coils either inside or outside the water storage tank. The water or glycol solution is circulated through the system by electric pumps which are controlled by thermostats.	5,653 - 7,817
Space Heating and Cooling Active solar heating, often called indirect space heating, is a solar heating system in which the solar heat is collected outside the building and transferred inside through ducts or piping using fans or pumps. One system uses blowers to circulate solar heated air through rock beds located underneath the building. The heat is then released into the building as needed. The collecting panels are located on the roof and should have one square foot of collecting area for every four square feet in the building. Liquid may also be used as a solar collector. In this system, water or antifreeze is circulated with a pump through collectors into an insulated storage tank. When heat is needed in the building, air is pumped through heated coils and circulated through the building.	15,786 - 21,852
Passive or Indirect Passive or indirect solar systems do not have any mechanical devices requiring auxiliary power. Instead, parts of the building such as glass-covered concrete walls, double-paned windows, skylights, and water-filled tanks are used to collect and store solar heat. Since these items are all part of the building, they may be considered as part of the quality class of the house. Cost per square foot of living area:	8.50 - 9.72

SOLAR HEATED SWIMMING POOLS

In a solar pool heating system, water is heated in solar heating panels and circulated by either the pool filter motor or an auxiliary electric motor from the collectors into the pool. The square footage of the solar panel collectors should be approximately one-half the size of the surface area of the pool. Cost per square foot of pool surface area:	9.53 - 13.33

DOMESTIC WATER SYSTEMS

Homes that are not served by a public water system usually obtain necessary water from a well. However, wells (including the hole, casing, grouting, and gravel pack) are considered real property and appraised as part of the land value. The pump, motor, tank, and distribution piping are considered improvements and are appraised as part of the improvement value.

Many types of pumps are available for domestic wells, but two types are the most common. They are jet pumps and submersible pumps.

SUBMERSIBLE PUMPS

A submersible pressure system consists of a multi-stage centrifugal pump coupled to an electric motor. The entire unit is submersed below the water level. Water enters a screened section of pipe and is pumped to the surface. This system is by far the most common as it is used in about 60 to 80 percent of all new pump installations.

SUBMERSIBLE PUMP COST TABLE

EXCLUDES WELL AND CASING COSTS

Depth of Setting

H.P.	40'	60'	80'	100'	120'	140'	160'	180'	200'	220'	260'	300'
1/2	2862	2958	3053	3148	3244	3342	3435					
3/4	3244	3435	3627	3816	4008	4197	4387	4581				
1	3816	4008	4197	4387	4581	4771	4962	5151	5342			
1 1/2	4581	4771	4962	5151	5342	5535	5724	5916	6107	6295		
2	5724	5916	6107	6295	6488	6678	6870	7059	7251	7443		
3	6678	7059	7443	7823	8205	8586	8778	8967	9159	9350	9541	
5	7632	8013	8397	8778	9159	9350	9541	9732	9923	10113	10304	10494

Submersible Pump, Installed at 100'
Depth Excluding Well and Casing
Typical Installation

	1/2 H.P.	3/4 H.P.	1 H.P.	1 1/2 H.P.	2 H.P.	3 H.P.	5 H.P.
Total Cost	3,148	3,816	4,387	5,151	6,295	7,823	8,778
Tank Size (Gal)	84	84	122	224	224	321	321

BUILDING ADDITIVES

JET PUMPS

Jet pumps involve a centrifugal pump connected to an ejector consisting of a nozzle and venturi tube. Both the pump and motor are installed at ground level, and the only parts submerged are the pipes and ejector. Maximum pumping depth is 200 feet. Jet pump systems cost between 15 and 20 percent less than submersible systems.

PRESSURE TANKS

				Cost Installed
Galvanized Tanks				
42 Gal.	16" Diameter x	48" Depth	50" Cir.	355
82 Gal.	20" Diameter x	60" Depth	63" Cir.	472
120 Gal.	24" Diameter x	60" Depth	75" Cir.	590
220 Gal.	30" Diameter x	72" Depth	94" Cir.	1299
315 Gal.	36" Diameter x	72" Depth	113" Cir.	1773
525 Gal.	36" Diameter x	120" Depth	113" Cir.	2362

WELL COSTS

Drilling Cost Per Linear Foot Including Casing and Gravel Pack

Casing Diameter	Plastic Casing			Steel Casing		
6"	38.27	-	41.91	41.91	-	45.55
8"				45.55	-	49.17

Price ranges are due largely to the area in which wells are drilled. The harder the soil, the more costly to drill. Domestic wells rarely have casing greater than 8" in diameter.

SEPTIC TANK COST

House Description	Tank Size			Cost		
2 bedroom house	1,000	-	1,250 gallon tank	4,823	-	6,342
3 bedroom house	1,250	-	1,500 gallon tank	5,869	-	7,310
4 bedroom house	1,500	-	2,000 gallon tank	9,238	-	10,868
5 bedroom house	2,000	-	2,400 gallon tank	10,325	-	11,411

The installed cost of septic tanks will vary greatly depending upon soil conditions and type of system. Heavy clay or rocky soil will increase the cost of the system.

AH 531.50: RESIDENTIAL GARAGES

Residential garages, which include duplexes, townhouses, and condominiums, will usually be classified the same as the main residence. If there is a significant difference between the construction characteristics of the residence and the garage, the garage building specifications may be helpful as a guide to a proper quality class.

Residential garage costs are based upon the cost to build a garage in conjunction with the main residence. They include the costs of all components listed in the garage building specifications.

The cost of the wall of an attached garage that is common with the main residence is included in the construction cost of the main residence and therefore the common wall is not included in the construction cost of the attached garage. Drywall or any other interior finish on the garage side of the common wall is also included in the cost of the main residence.

RESIDENTIAL GARAGES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990

Foundation	
D-1	Mudsills
D-2	Light concrete
D-3	Light concrete
D-4	Light concrete
D-5	Standard concrete
D-6	Reinforced concrete
D-7	Reinforced concrete
D-8	Reinforced concrete
D-9	Reinforced concrete
D-10	Reinforced concrete
Floor	
D-1	Dirt
D-2	Asphalt
D-3	Asphalt
D-4	Light concrete
D-5	Concrete
D-6	Concrete
D-7	Concrete
D-8	Concrete
D-9	Concrete
D-10	Concrete
Walls	
D-1	1" x 12" vertical board; no sheathing; board and batten exterior
D-2	1" x 12" vertical boards, no sheathing; board and batten exterior
D-3	2" x 4" studs, 24" o.c.; no sheathing; 1/2" wood siding
D-4	2" x 4" studs, 16" o.c.; no sheathing; 1/2" wood siding or light stucco
D-5	2" x 4" studs, 16" o.c.; no sheathing; stucco or low-cost wood siding
D-6	2" x 4" studs, 16" o.c., no sheathing; stucco or 1" wood siding
D-7	2" x 4" studs, 16" o.c.; 1/2" drywall sheathing; good stucco or wood siding
D-8	2" x 4" studs, 16" o.c.; 1" board sheathing; good stucco or wood siding
D-9	2" x 4" studs, 16" o.c.; 1" board sheathing; very good wood siding or masonry veneer
D-10	2" x 4" studs, 16" o.c.; 1" board sheathing; very good wood siding; or masonry veneer
Roof Cover	
D-1	Rolled roofing
D-2	Rolled roofing
D-3	Wood shingles
D-4	Wood shingles
D-5	Wood or composition shingles
D-6	Good wood or composition shingles or light shakes
D-7	Good wood shingles or medium shakes
D-8	Heavy shakes
D-9	Heavy shakes or mission tile
D-10	Mission tile

RESIDENTIAL GARAGES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

PRE 1990 (Contd.)

Doors	
D-1	Light hinged
D-2	Averaged hinged
D-3	Good hinged or light sliding
D-4	Good hinged or light sliding
D-5	Good hinged or light overhead
D-6	Plywood overhead
D-7	Plywood or metal overhead
D-8	Good wood or metal
D-9	Good wood with automatic opener
D-10	Good wood with automatic opener
Lighting	
D-1	None
D-2	None
D-3	None
D-4	One drop cord
D-5	One light with switch
D-6	One light with switch
D-7	One light with switch
D-8	Ample lighting
D-9	Ample lighting
D-10	Ample lighting
Interior Finish	
D-1	Unfinished
D-2	Unfinished
D-3	Unfinished
D-4	Unfinished
D-5	Unfinished
D-6	Unfinished
D-7	Drywall on walls
D-8	Drywall on all walls
D-9	Drywall and paint
D-10	Drywall and paint

RESIDENTIAL GARAGES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990

Foundation	
D-5	Reinforced concrete
D-6	Reinforced concrete
D-7	Reinforced concrete
D-8	Reinforced concrete
D-9	Reinforced concrete
D-10	Reinforced concrete
Floor	
D-5	Reinforced concrete
D-6	Reinforced concrete
D-7	Reinforced concrete
D-8	Reinforced concrete
D-9	Reinforced concrete
D-10	Reinforced concrete
Walls and Sheathing	
D-5	Standard wood or steel frame; line wire and paper; plywood or particle board
D-6	Standard wood or steel frame; line wire and paper; plywood or particle board
D-7	Standard wood or steel frame; line wire and paper; plywood or particle board
D-8	Standard wood or steel frame; line wire and paper, plywood or particle board
D-9	Standard wood or steel frame; drywall or plywood; fully insulated
D-10	Standard wood or steel frame; drywall or plywood; fully insulated
Exterior Cover	
D-5	Light stucco; lap or wood siding
D-6	Wood shingles or low-cost wood siding; masonry trim on wall; average stucco
D-7	Average stucco or wood siding; brick or stone trim
D-8	Good wood siding; masonry or stucco
D-9	Good stucco or wood siding; extensive masonry
D-10	Decorative stucco or heavy wood siding; extensive of full brick veneer
Windows	
D-5	Low-cost wood or metal
D-6	Average quality aluminum or wood
D-7	Vinyl framed wood or aluminum
D-8	Vinyl framed wood or aluminum
D-9	Good quality vinyl framed wood or aluminum
D-10	Excellent quality vinyl framed wood or aluminum
Doors	
D-5	Plywood or metal overhead
D-6	Plywood or metal overhead
D-7	Metal overhead with windows and design
D-8	Metal overhead with windows and design
D-9	High quality metal overhead with glass trim and design embossed
D-10	Excellent quality metal overhead with glass trim and design embossed

RESIDENTIAL GARAGES
BUILDING SPECIFICATIONS
"D" CONSTRUCTION

POST 1990 (Contd.)

Roof Cover	
D-5	Standard wood or steel frame; composition shingle; concrete shake; 0" to 12" overhang, unceiled
D-6	Standard wood or steel frame; wood shingle; light wood shake; good composition shingle; concrete shake or tile; 0" to 18" overhang, unceiled
D-7	Standard wood or steel frame; medium wood shake; concrete shake or tile; 0" to 24" overhang, unceiled
D-8	Standard wood or steel frame; heavy wood shake; concrete shake or tile; 0" to 24" overhang, ceiled or unceiled
D-9	Standard wood or steel frame; heavy wood shake; concrete shake or tile; adobe tile; 0" to 36" overhang, unceiled, ceiled, or boxed
D-10	Standard wood or steel frame; heavy wood shake; adobe tile; copper; slate; 0" to 36" overhang, unceiled, ceiled, or boxed
Lighting	
D-5	One light with switch
D-6	One light with switch
D-7	One light with switch
D-8	One light with switch
D-9	Ample lighting
D-10	Ample lighting
Interior Finish	
D-5	Unfinished
D-6	Drywall
D-7	Drywall, painted
D-8	Drywall, painted
D-9	Fully finished with some cabinets and shelving
D-10	Fully finished with some cabinets and shelving

RESIDENTIAL GARAGES

ATTACHED
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION

Class	220	260	280	320	360	400	440	480	540	600	800	1000
D-1	8.28	7.98	7.87	7.64	7.42	7.30	7.20	7.08	6.98	6.87	6.71	6.68
D-1.5	11.92	11.42	11.29	10.89	10.72	10.45	10.14	9.89	9.64	9.40	9.10	9.05
D-2	15.44	14.90	14.67	14.21	13.79	13.45	13.05	12.72	12.42	12.10	11.72	11.66
D-3	17.19	16.54	16.21	15.82	15.25	14.87	14.42	14.07	13.72	13.37	12.96	12.89
D-3.5	18.98	18.22	17.80	17.30	16.81	16.40	15.90	15.51	15.13	14.75	14.27	14.20
D-4	20.65	19.73	19.41	18.85	18.21	17.76	17.23	16.81	16.39	15.98	15.47	15.40
D-4.5	22.18	21.09	20.75	20.12	19.41	18.93	18.36	17.91	17.45	17.02	16.47	16.39
D-5	23.68	22.45	22.10	21.38	20.55	20.04	19.44	18.96	18.49	18.02	17.45	17.37
D-5.5	27.03	25.52	24.95	23.99	23.09	22.52	21.85	21.31	20.77	20.26	19.61	19.51
D-6	30.45	28.60	27.92	26.86	25.70	25.06	24.32	23.72	23.13	22.55	21.83	21.72
D-6.5	32.53	30.76	30.08	29.09	28.04	27.35	26.54	25.88	25.23	24.61	23.82	23.70
D-7	34.48	32.89	32.31	31.41	30.37	29.62	28.74	28.02	27.33	26.65	25.80	25.67
D-7.5	38.94	37.37	36.72	35.61	34.32	33.46	32.46	31.66	30.88	30.11	29.15	29.00
D-8	40.11	38.48	37.81	36.67	35.34	34.45	33.43	32.60	31.79	30.99	30.02	29.87
D-8.5	41.30	39.64	38.95	37.77	36.40	35.49	34.43	33.58	32.75	31.92	30.93	30.76
D-9	42.54	40.83	40.12	38.90	37.50	36.56	35.47	34.59	33.73	32.88	31.85	31.69
D-9.5	43.82	42.05	41.32	40.07	38.62	37.65	36.53	35.63	34.74	33.86	32.81	32.64
D-10	45.14	43.31	42.56	41.26	39.78	38.78	37.62	36.69	35.78	34.88	33.79	33.63

DETACHED
SQUARE FOOT AREA COST TABLES

"D" CONSTRUCTION

Class	220	260	280	320	360	400	440	480	540	600	800	1000
D-1	9.95	9.30	9.03	8.69	8.50	8.32	8.13	8.01	7.90	7.77	7.61	7.56
D-1.5	13.99	13.09	12.73	12.25	12.07	11.69	11.18	10.90	10.64	10.37	10.04	9.98
D-2	17.92	16.92	16.51	15.80	15.61	15.11	14.45	14.09	13.75	13.40	12.97	12.91
D-3	20.75	19.39	18.87	17.91	17.61	17.05	16.31	15.91	15.50	15.12	14.64	14.56
D-3.5	22.65	21.15	20.62	19.56	19.34	18.72	17.91	17.47	17.04	16.61	16.08	16.00
D-4	24.67	23.09	22.44	21.37	20.99	20.33	19.45	18.97	18.49	18.03	17.45	17.36
D-4.5	26.13	24.37	23.76	22.57	22.44	21.73	20.79	20.27	19.77	19.28	18.67	18.57
D-5	27.96	25.82	25.09	23.81	23.47	22.74	21.75	21.20	20.68	20.16	19.52	19.43
D-5.5	32.10	29.63	28.62	27.14	26.68	25.83	24.71	24.09	23.49	22.91	22.18	22.06
D-6	38.14	34.91	33.68	31.75	31.05	30.07	28.76	28.04	27.35	26.67	25.81	25.68
D-6.5	40.37	37.57	36.48	34.36	34.21	33.13	31.69	30.90	30.13	29.39	28.44	28.30
D-7	43.69	40.68	39.46	37.53	36.97	35.79	34.23	33.38	32.56	31.75	30.73	30.58
D-7.5	49.54	46.11	44.72	42.57	41.94	40.60	38.83	37.87	36.94	36.01	34.86	34.68
D-8	51.01	47.47	46.05	43.84	43.17	41.81	39.99	38.99	38.04	37.08	35.90	35.73
D-8.5	52.54	48.90	47.43	45.14	44.48	43.05	41.19	40.16	39.16	38.19	36.98	36.81
D-9	54.12	50.37	48.85	46.51	45.80	44.35	42.42	41.37	40.35	39.34	38.09	37.90
D-9.5	55.74	51.88	50.31	47.89	47.19	45.68	43.70	42.61	41.56	40.51	39.24	39.04
D-10	57.42	53.43	51.83	49.33	48.60	47.05	45.00	43.89	42.80	41.73	40.41	40.20

RESIDENTIAL GARAGES
BUILDING SPECIFICATIONS
"C" CONSTRUCTION

Foundation	
C-4	Light concrete
C-5	Standard concrete
C-6	Reinforced concrete
C-7	Reinforced concrete
C-8	Reinforced concrete
Floor	
C-4	Light concrete
C-5	Concrete
C-6	Concrete
C-7	Concrete
C-8	Concrete
Walls	
C-4	6" reinforced or 8" nonreinforced concrete block; painted exterior
C-5	8" reinforced concrete block; painted exterior
C-6	8" reinforced colored concrete block
C-7	8" reinforced colored detailed block
C-8	8" reinforced colored detailed block
Roof Cover	
C-4	Wood shingles
C-5	Wood or composition shingle
C-6	Good wood or composition shingles; light shakes
C-7	Good wood shingles; medium shakes
C-8	Heavy shakes
Doors	
C-4	Good hinged or light sliding
C-5	Good hinged or light overhead
C-6	Plywood overhead
C-7	Plywood or metal overhead
C-8	Good wood or metal
Lighting	
C-4	One drop cord
C-5	One light with switch
C-6	One light with switch
C-7	One light with switch
C-8	Ample lighting
Interior Finish	
C-4	Unfinished
C-5	Unfinished
C-6	Unfinished
C-7	Drywall on walls
C-8	Drywall on all walls

RESIDENTIAL GARAGES

ATTACHED
SQUARE FOOT COST TABLES

"C" CONSTRUCTION

Class	220	260	280	320	360	400	440	480	540	600	720
C-4	30.65	28.96	28.26	27.18	26.44	25.70	25.12	24.74	24.13	23.67	23.06
C-4.5	31.98	30.21	29.61	28.48	27.64	26.95	26.44	25.96	25.40	24.92	24.04
C-5	33.36	31.62	30.86	29.75	28.92	28.22	27.64	27.18	26.56	26.07	24.75
C-5.5	35.14	33.30	32.53	31.39	30.47	29.71	29.10	28.60	28.01	27.49	26.31
C-6	36.98	35.09	34.33	33.08	32.12	31.39	30.77	30.19	29.61	29.09	28.26
C-6.5	39.55	37.46	36.67	35.43	34.33	33.61	32.89	32.35	31.70	31.11	30.29
C-7	41.70	39.45	38.67	37.28	36.22	35.43	34.64	34.03	33.36	32.76	31.98
C-7.5	46.22	43.95	42.99	41.51	40.28	39.39	38.53	37.86	37.11	36.49	35.55
C-8	53.78	51.02	49.91	48.06	46.81	45.61	44.74	44.03	43.08	42.35	41.26

DETACHED
SQUARE FOOT COST TABLES

"C" CONSTRUCTION

Class	220	260	280	320	360	400	440	480	540	600	720
C-4	36.02	33.12	32.07	30.14	28.68	27.54	26.57	25.84	24.87	24.08	23.10
C-4.5	37.46	34.52	33.31	32.29	29.89	28.76	27.81	27.04	26.07	25.28	24.20
C-5	39.02	35.92	34.68	32.73	31.18	29.93	29.00	28.11	27.26	26.36	25.17
C-5.5	40.95	37.76	36.51	34.37	32.83	31.54	30.50	29.68	28.60	27.73	27.16
C-6	45.13	41.57	40.24	38.01	36.26	34.84	33.70	32.71	31.56	30.38	29.30
C-6.5	48.06	44.37	42.91	40.48	38.68	37.20	36.02	34.93	33.78	32.83	31.27
C-7	50.70	46.78	45.23	42.70	40.74	39.21	37.91	36.87	35.59	34.51	33.10
C-7.5	56.47	52.04	50.31	47.54	45.39	43.58	42.14	41.03	39.60	38.47	36.78
C-8	62.40	57.49	55.68	52.63	50.19	48.27	46.74	45.40	43.91	42.58	41.71

RESIDENTIAL GARAGES

MULTIPLE-FAMILY RESIDENTIAL GARAGES

Built at ground level and under a multiple-family unit.

SQUARE-FOOT COST TABLE

Area	400	800	1,200	2,000	3,000	5,000	10,000	20,000
Cost	29.66	26.44	23.75	20.95	19.58	18.73	18.27	17.32

These costs 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 standard wood frame with stucco on both sides.
3. Steel support columns for the floor above.
4. A stucco ceiling in all areas.
5. The difference between the cost of a standard wood frame floor structure at the second floor level and one at the ground level.
6. An average quality light fixture per each 600 square feet.

For multiple-family residential garages built at ground level under a multi-family residence and including all components listed above except exterior walls, use $15.28 per square foot.

MULTIPLE-FAMILY RESIDENTIAL GARAGES BUILT AS SEPARATE BUILDINGS

SQUARE-FOOT COST TABLE

Area	400	800	1,200	2,000	3,000	5,000	10,000	20,000
Cost	34.18	30.54	27.85	27.40	26.44	24.19	23.23	22.81

These costs 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 standard wood frame with stucco on both sides.
4. Steel support columns supporting the roof.
5. An unceiled standard wood frame roof structure with composition tar and gravel, wood shingle, or light shake cover.
6. An average quality light fixture per each 600 square feet.

Common wall: deduct $3.96 per square foot of wall area

CARPORTS

Wood or steel posts, asphalt floors, built-up wood frame, or corrugated metal roof $13.28 to $15.33 per square foot.

RESIDENTIAL GARAGES

BASEMENT GARAGES

One level, five feet below grade, directly beneath 2- to 4-story apartments with perimeter walls in vertical alignment.

SQUARE-FOOT AREA COST TABLE

Type	5,000	7,500	10,000	15,000	20,000	30,000	40,000	60,000
Reinforced concrete exterior walls, reinforced concrete columns and flat concrete roof slab	38.95	36.99	34.52	33.52	32.55	32.15	31.68	31.32
Concrete block exterior walls, reinforced concrete columns and flat concrete roof slab	38.59	36.14	33.76	32.94	32.15	31.78	31.32	30.55
Concrete block exterior walls, steel posts and beams, light concrete/metal roof fireproofed with spray plaster	36.29	33.13	31.56	30.72	29.98	29.15	28.41	27.95
Concrete block walls, wood posts and beams, light concrete/ metal roof fireproofed with spray plaster	32.31	30.72	28.78	26.81	26.00	25.61	25.24	24.80

Basement garage costs include the following:

1. 5' excavation
2. Full wall enclosure
3. Storage facilities
4. Minimum lighting
5. Concrete floors
6. Two-car bays

Access stairways and driveway ramps outside the perimeter walls are considered to be part of the garage area.

Add $650 for each security door with mechanical operation.

AH 531.51: YARD IMPROVEMENTS

SWIMMING POOLS

Swimming pool costs are based on the total surface square footage of the basic pool area. To this total, additives should be added that differ for each pool. The basic square-foot costs include permits, excavation, rough plumbing, rough electrical, steel reinforcing, Gunite®, plaster, filter, tile work, decking, finish work, profit, and overhead.

Extra costs to be added to the basic pool include costs for the heater, whirlpool spa, pool sweep, ladders, lights, steps, diving board, slide, and swim outs. Additionally, extra decking, long runs for electrical, water, and gas lines are costly. Soil conditions, right-of-way access, fence, and other obstacle removal and replacement increase total pool costs.

Various finish decorations such as rock, brick, flagstone trim, cantilevered decking, fancy or special tile, waterfalls, etc., add costs to the total pool costs. Care must be used to separate landscaping costs that are sometimes included in the total pool contract.

The typical pool includes filter, light, one set of steps, and three feet of perimeter decking. It is usually three feet to eight and one-half feet deep and will average 440 square feet of surface in size.

Pools can be classified into three categories: concrete, fiberglass, or in-ground liner. Concrete pools are usually built of Gunite®, wet pack, or poured and are the most common of the typical residential pools in use today.

Because of savings in cost, and rapid installation time, fiberglass pools are less expensive than concrete. A key cost in fiberglass pools is the distance between the manufacturer and consumer. Delivery charges can add between **$18.00** and **$22.00** per mile to the cost of the pool. In-ground liner pools are usually of concrete block or redwood base covered with a plastic liner, which in turn is sealed to the base.

SWIMMING POOLS

	Cost Per Square Foot
Concrete Pools	$48 - $88
Fiberglass Pools	36 - 48
In-ground Liner	23 - 36

A typical 440 square foot concrete pool will cost between **$58.00 and $83.00** per square foot.

Swim spas are narrow lap pools with powerful jets that create a current. The swimmer swims in place against the current—**$31,000 to $52,000.**

SWIMMING POOL ADDITIVES

Heaters		Other Additives	
Average MBH[4]	Average Price	Slides	1,568 – 3,430
125	2,058	Diving Boards	686 – 1,372
250	3,528	Concrete decking per square foot	6.86
400	3,920	Redwood decking per square foot	31.36

NOTE: Solar heating costs around three to four times more than standard gas heating, average **$5,880 to $7,840**. See AH 531.40, page 11, for additional data on solar heated pools.

Two typical types of filters are the cartridge and the diatomaceous earth. Typically, these costs are in the basic pool. Deduct for cartridge filter **$588 - $980**.

NOTE: Permit costs vary throughout the state ranging from **$392 to $1,764**.

NOTE: Pool sweeps average **$1,470** but may be personal property.

DETACHED SPAS (BELOW GROUND)

	With Pool	Without Pool
Gunite®	7,448 - 13,818	14,504 - 18,620
Fiberglass	5,880 - 9,898	10,388 - 13,320

SPA ADDITIVES

Remote Control	980
Solar Control	1,470

RESIDENTIAL HOT TUBS AND SPAS

Hot tubs are of wood construction, usually redwood, mahogany, or cedar. They sometimes have plastic liners.

Spas are usually constructed of formed fiberglass or acrylic. More expensive, but less often used, are units of ceramic tile on fiberglass backing.

Both spas and hot tubs commonly have pumps, filters, jets, blowers, and heaters that may be used in any class or size installation. Most units are gas and average about 8 percent more in cost than electric.

[4] One MBH = One thousand BTU's per hour.

There is little difference in spa and hot tub installed costs. Below- and aboveground have offsetting costs that are about equal. Replacement costs consider typical installations with normal access. Additions to existing residences may result in an excessive installation cost due to restricted access.

Standard sizes of spas are six, seven, and eight feet with 220 to 400 gallons capacity; wood tubs range from 500 to 800 gallons. Larger sizes are usually contracted under bid and are found primarily in health clubs, motor hotels, and apartment complexes. A large number of residential units are sold with the buyer doing the installation. Labor costs should be added to the historical cost of owner-installed units.

The following tables provide replacement costs for the most common installations, in place, and include materials, sales tax, and installation labor. Component deductions include materials, sales tax, and labor. Higher capacity components are interchangeably used in all classes. The components used will indicate where the replacement cost should fall in the table range of each class.

YARD IMPROVEMENTS

HOT TUBS-SPAS-ROUND-OCTAGONAL-SQUARE (Above Ground)
INSTALLED COST WITH FULL EQUIPMENT
GAS (Factor .92 for Electric Units)

Installed Unit	Class I 6'			Class II 7'			Class III 8'		
Diameter		6'			7'			8'	
Hot Tub or Spa	5,496	-	6,215	5,757	-	6,542	6,018	-	6,870
Typical Contractors Installation, Labor (Included in Unit Cost)	2,093	-	2,747	2,747	-	3,403	3,074	-	3,403
Deduct for Lack of:									
Heaters (Gas)			1,113			1,244			1,439
Heaters (Electric)			556			622			720
Filters			426			492			589
Blowers			308			346			426
Pumps			556			622			655
Jets (Spas)			426			459			492
Jets (Hot Tubs)			426			492			523

Additional Costs				
Decks 30" Around Spa up to 8' Octagon				
6" High	Brick	851	Concrete	720
12" High 2 Steps	Brick	1,112	Concrete	1,046
12' x 12' Square Pattern				
Flush	Brick	1,046	Concrete	915
6" High	Brick	1,439	Concrete	1,112
12" High 2 Steps	Brick	1,570	Concrete	1,389

Mahogany wood hot tub - $622 more than redwood.			
Tile work - concrete base - see tile-in place costs.			
Tile spa - glass base installed $2,595 more than installed acrylic spa.			
Excavation and dirt removal - sunken installation	515	-	785
Extra material above ground installation	459	-	523
Extra installation on spas 1" thick	130		
Wood decks (common in Northern California)	21	per sq. ft.	
Remote Controls	130	-	197

YARD IMPROVEMENTS

CURBS

Type	Cost Per Linear Foot		
Asphalt 6" high	7.19	-	9.70
Concrete Bumper Strip 6" x 6"	9.14	-	9.81
Concrete 6" wide 12" high	9.81	-	10.46
Concrete 6" wide 18" high	11.11	-	13.06
Wood bumper rail 6" x 6"	10.46	-	12.42
Vertical curb and gutter	15.68	-	17.64

FENCES

	Cost Per Linear Foot Six Feet High		
Redwood			
1" x 4"	21.59	-	23.20
1" x 6"	22.39	-	25.13
1" x 8"	23.20	-	27.07
1" x 10"	23.20	-	30.93
1" x 6" Picket	21.59	-	27.07
Cedar			
1" x 4"	20.08	-	20.57
1" x 6"	21.59	-	23.20
Douglas Fir	18.41	-	26.82
Tri Stake	27.60	-	32.87
Grape Stake	24.98	-	28.92
Good Neighbor	18.41	-	21.03
Basket Weave	22.34	-	26.30
Split Rail	12.05	-	17.41
Corral Fence			
Two Rail	12.05	-	17.41
Three Rail	14.46	-	22.34
Picket	12.92	-	18.44
Vinyl - 6' Solid (Add 10-15% for color)	18.34	-	29.65

WOOD GATES

Size	Range		
3' x 6'	265.00	-	313.00
4' x 4'	259.00	-	307.80
5' x 6'	325.00	-	383.50

CHAIN LINK GATES

Width	Height			
	3'	4'	5'	6'
3'	227	261	295	348
5'	263	315	430	486
15'	494	641	864	939

FENCES (Contd.)

Chain Link Fences: 11 Gauge, 2" Mesh, Top Rail				Per Linear Foot	
	Height				
	4'	6'	8'	10'	12'
	12.15	16.57	21.10	25.52	29.84

PAVING

	Cost Per Square Foot		
Type	0 to 1,000	1,001 to 10,000	10,001 Up
2" asphalt on 4" rock base	2.96	2.82	1.90
2" pea gravel	0.57	0.50	0.45
2" concrete on 4" rock base	4.93	3.87	3.45
4" concrete aggregate on 4" rock base (reinforced)	5.62	4.77	4.17
2" concrete salt finish with color	7.70	6.76	-
Broom finish	6.08	5.48	4.39
Decorator concrete, stamped and stenciled		12.38	10.26

UNCOVERED PATIOS

Type	Cost Per Square Foot
Brick in mortar	17.97
Brick in sand	16.60
Flagstone	19.57
Quarry tile	14.23

GARDEN STEPS AND STAIRS

Type	Cost Per Square Foot
Concrete steps	27.60
Brick surface steps	34.79
Flagstone surface steps	15.44

MOWING STRIP

Type	Cost Per Linear Foot		
6" wide concrete	8.80	-	9.49
12" wide concrete	10.98	-	13.04
12" wide/3" rise	14.53	-	16.01
1 row brick on top	14.65	-	16.91

CONCRETE BLOCK WALLS - INCLUDING FOUNDATION AND CAPPING COSTS

	Cost Per Linear Foot		
Height	4" Thick	6" Thick	8" Thick
40"	29.10	33.26	38.81
48"	34.65	40.20	44.36
56"	38.81	47.13	51.28
64"	45.73	52.67	58.22
72"	51.28	65.15	63.76

YARD IMPROVEMENTS

LAWN SPRINKLERS

Type			Cost	
Lawn - shrubbery and bubbler heads			0.89	per. sq. ft.
Rotary pop-up sprinkler heads			0.95	per. sq. ft.
Sprinkler heads			0.95	per. sq. ft.
Skinner lines			5.21	l. f.
Automatic Valve -	Add		0.85	per sq. ft.

PATIOS

Minimum Quality Wood

Concrete slab with footings under posts, 4" x 4" posts, 4" x 6" beam, 2" x 4" rafters, 1" x 6" sheathing, and 12" overhang all around. Composition with gravel or aluminum roof cover. Wood painted or stained.

			Cost	
	16.41	to	18.23	sq. ft.

Good Quality Wood

Concrete slab with continuous footing. 6" x 6" posts, 6" x 8" beam, 2" x 6" or 4" x 6" rafters with 2" x 6" facia. 1" x 8" vee groove shiplap sheathing, and 18" overhang all around. Composition with rock roof cover. Wood painted or stained.

			Cost	
	21.47	to	29.28	square foot

Additions			Cost	
Shingle roof			3.30	per square foot
Shake roof			3.78	per square foot
Screen walls (includes door)	40.88	-	58.19	per linear foot
Lights	83.35	-	99.07	each
Deduct for Lack of			**Cost**	
Concrete slab			5.90	per square foot
Continuous footing			7.38	per linear foot

Aluminum Patios			Cost	
Concrete slab, aluminum framework and enameled aluminum roof cover	11.95	-	15.12	per square foot
Additions - Screen walls (includes door)			37.54	per linear foot
Screen walls - removable plastic panels	77.25	-	98.90	per linear foot
Styrofoam insulated ceilings			3.33	per square foot
Lights			93.45 - 116.80	each
Deduct - for lack of slab	4.03	-	6.56	per square foot
Sun rooms	77.08	-	100.80	per square foot
Lattice sun screen, fiberglass or aluminum	13.35	-	14.83	per square foot
Barbeque islands	1,397	-	11,858	each

AH 531.60: IN-PLACE COSTS (SEGREGATED COSTS)

In-place costs are the total cost per unit, such as a square foot or cubic foot, of individual components or parts of a building. These *individual* costs can be used to build up square-foot costs or provide total costs of items or surfaces ***not included in the basic square-foot costs***.

Costs in this chapter may be used for additions and construction-in-progress appraisals, as well as the unit-in-place cost estimating method. *Unit-in-place* is a cost estimating method in which the total building cost is estimated by adding together the unit costs for the various building components as installed. This method is also called the *segregated cost method.*

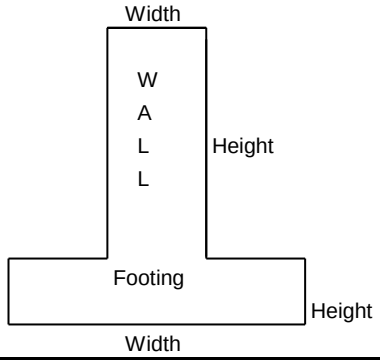
A replacement cost estimate is made by the unit-in-place method by first estimating the in-place costs per square foot of all flat surfaces such as floors, walls, ceilings, or roofs and multiplying them by the areas of the respective surfaces. The next step consists of computing the volume of other components such as foundations or footings and multiplying it by an in-place cost per unit of volume. The total cost is the sum of these costs plus the in-place cost of components such as plumbing systems, electrical systems, cabinets, doors, among others. The in-place costs used should include all elements of cost, for example, a pro rata share of general costs such as overhead, profit, and financing fees as well as labor and material costs.

IN-PLACE COSTS

FOUNDATIONS - REINFORCED CONCRETE

Type	Cost Per Cubic Foot		
Footings	17.45	-	20.30
Walls	17.76	-	22.20

Foundation cost per linear foot - including footing.



Footing Width	Footing Height	Wall Width	Wall Height	Cost per Linear Foot		
12"	6"	6"	6"	15.81	-	20.52
12	6	6	12	20.52	-	23.63
12	6	6	18	23.63	-	27.01
12	6	6	24	27.01	-	31.83
16	8	8	12	30.80	-	36.36
16	8	8	24	42.70	-	47.02
16	8	8	36	47.02	-	51.23

HILLSIDE FOUNDATIONS

	Cost			
Retaining walls	27.22	-	38.58	per cubic foot
Reinforced concrete columns 16" circular	54.46	-	75.63	per linear foot
Steel columns: 6" diameter	70.69	-	106.03	per linear foot
8" diameter	88.36	-	141.37	per linear foot
10" diameter	114.86	-	176.72	per linear foot
Pipe columns: 4" diameter	41.24	-	42.84	per linear foot
6" diameter	43.38	-	44.98	per linear foot
8" diameter	45.52	-	47.12	per linear foot
Wood poles: 10" diameter	25.70	-	29.99	per linear foot
12" diameter	29.99	-	34.27	per linear foot
14" diameter	34.27	-	36.41	per linear foot
Caissons: 24" diameter (depending on depth to bedrock)	5,655	-	16,965	each

For Class 8 and above on 35% to 40% slope, add 30% to 40% to total building costs.

FLOORS - REINFORCED CONCRETE

Size and Type	Cost Per Square Foot		
4" slab only	4.24	-	4.83
6" slab only	5.04	-	5.47
8" slab only	5.47	-	6.56
4" with 4" rockfill and waterproof membrane	4.67	-	5.47
6" with 6" rockfill and waterproof membrane	6.11	-	6.50
8" with 8" rockfill and waterproof membrane	6.50	-	7.64

MUDSILLS

Size and Type	Cost Per Linear Foot		
2" x 4" redwood	3.17	-	3.54
2" x 6" redwood	3.54	-	4.28

Cost includes treating, boring, and bedding.

IN-PLACE COSTS

GIRDERS

Size and Type		Cost Per Linear Foot		
4" x 6"	Douglas Fir	4.15	-	5.42
4" x 8"	Douglas Fir	4.81	-	5.62
4" x 10"	Douglas Fir	5.62	-	6.10
4" x 12"	Douglas Fir	6.90	-	8.87
6" x 6"	Douglas Fir	5.62	-	6.90
6" x 8"	Douglas Fir	6.10	-	7.37
6" x 10"	Douglas Fir	6.77	-	8.04
6" x 12"	Douglas Fir	7.65	-	8.84
8" x 8"	Douglas Fir	8.84	-	9.42

FLOOR JOISTS

Size and Type	Cost Per Square Foot of Floor Area		
2" x 4" - 16" on center	1.86	-	2.38
2" x 4" - 24" on center	1.68	-	2.23
2" x 6" - 16" on center	2.38	-	2.81
2" x 6" - 24" on center	1.96	-	2.44
2" x 8" - 16" on center	2.99	-	3.28
2" x 8" - 24" on center	2.77	-	3.07
2" x 10" - 16" on center	3.07	-	3.54
2" x 10" - 24" on center	2.87	-	3.28
2" x 12" - 16" on center	3.53	-	3.90
2" x 12" - 24" on center	3.31	-	3.63

WALLS - CONCRETE OR MASONRY

Size and Type	Cost Per Square Foot of Wall Area		
Brick			
8" common brick	26.20	-	30.51
12" common brick	32.64	-	36.85
8" common brick, 1 side face brick	30.51	-	32.64
12" common brick, 1 side face brick	34.64	-	39.43
Concrete block reinforced			
8" gray	14.96	-	16.04
8" colored	16.04	-	17.10
8" detailed blocks, gray	16.04	-	17.10
8" detailed blocks, colored	16.04	-	17.10
8" sandblasted	14.96	-	16.04
8" splitface, gray	27.72	-	29.87
8" splitface, colored	26.48	-	28.78
8" slumpstone, gray	26.48	-	28.78
8" slumpstone, colored	27.72	-	29.87
12" gray	16.04	-	17.10
4" screen block	14.96	-	17.10

IN-PLACE COSTS

SUBFLOORING

Size and Type	Cost Per Square Foot of Floor Area		
1" x 6" or 8"	2.62	-	2.69
2" T & G	3.63	-	4.28
5/8" plywood	2.74	-	3.13
3/4" plywood	3.00	-	3.45
1 1/8" plywood	3.21	-	3.53
1/2" particle board	1.86	-	2.36
3/8" particle board	1.60	-	2.15

WOOD FRAME WALL FRAMING

Size and Type	Cost Per Square Foot of Wall Area		
2" x 3" - 16" on center	2.41	-	2.96
2" x 3" - 24" on center	2.17	-	2.59
2" x 4" - 16" on center	2.59	-	3.13
2" x 4" - 24" on center	2.41	-	2.96
2" x 6" - 16" on center	3.13	-	3.57
2" x 6" - 24" on center	2.96	-	3.31

WOOD POSTS

Size and Type		Cost Per Linear Foot of Height		
4" x 4"	Douglas Fir	5.17	-	5.84
4" x 6"	Douglas Fir	5.44	-	6.13
6" x 6"	Douglas Fir	5.84	-	6.29
8" x 8"	Douglas Fir	6.95	-	7.90
10" x 10"	Douglas Fir	9.43	-	10.35
12" x 12"	Douglas Fir	14.10	-	16.92

WALL SHEATHING

Size and Type	Cost Per Square Foot of Wall Area		
#15 felt	0.56	-	0.67
Line wire	0.48	-	0.55
1/2" asphalt impregnated drywall	1.64	-	1.72
1/2" fibre board	1.68	-	1.77
3/8" plywood	2.19	-	2.74
1" boards solid	2.43	-	3.14
1" x 4" or 6" spaced	1.68		1.94

CEILING JOISTS

Size and Type	Cost Per Square Foot of Floor Area		
2" x 4" - 16" on center	2.58	-	2.72
2" x 4" - 24" on center	2.36	-	2.49
2" x 6" - 16" on center	2.74	-	2.91
2" x 6" - 24" on center	2.49	-	2.58
2" x 8" - 16" on center	2.84	-	3.00
2" x 8" - 24" on center	2.58	-	2.74
2" x 10" - 16" on center	2.91	-	3.09
2" x 10" - 24" on center	2.67	-	2.84
2" x 12" - 16" on center	3.00	-	3.18
2" x 12" - 24" on center	2.74	-	2.91

IN-PLACE COSTS

ROOF RAFTERS

Size and Type	Cost Per Square Foot of Floor Area Flat-roof	5 in 12 Rise	12 in 12 Rise
2" x 4" - 16" on center	2.86	3.33	3.86
2" x 4" - 24" on center	2.48	3.14	3.71
2" x 4" - 30" on center	2.38	3.05	3.50
2" x 6" - 16" on center	3.14	3.61	4.14
2" x 6" - 24" on center	2.76	3.41	3.98
2" x 8" - 16" on center	3.41	3.86	4.44
2" x 8" - 24" on center	3.05	3.71	4.23

Includes ridge boards, collar ties, purlins, bracing, and typical overhang.

ROOF SHEATHING AND DECKING

Size and Type	Cost Per Square Foot of Floor Area Flat-roof	5 in 12 Rise	12 in 12 Rise
3/4" cellular concrete	1.71		
2" gypsum poured	2.08		
1 1/2" insulation board	4.53	4.72	6.18
2" insulation board	5.16	5.54	7.21
1" solid wood boards	1.94	2.13	2.97
1" x 4" or 6" spaced wood board	1.12	1.23	1.57
3/8" plywood	1.69	1.79	2.69
1/2" plywood	2.17	2.28	3.04
5/8" plywood	2.28	2.36	3.23
2" T & G	4.42	4.80	6.65

ROOFING

Size and Type	Cost Per Square Foot of Floor Area Flat-roof to 3 in 12 Rise	6 in 12 Rise
Built-up roofing		
3 layers 15 lb. felt hot mopped with pea gravel	1.99	2.76
4 layers 15 lb. felt hot mopped with pea gravel	2.45	2.36
1 layer 30 lb. felt with a 90 lb. cap sheet	1.77	2.15
1 layer 30 lb. felt, 2 layers 15 lb. felt hot mopped with pea gravel	1.99	2.57
1 layer 30 lb. felt, 3 layers 15 lb. felt hot mopped with pea gravel	2.45	2.77

ROOFING (Contd.)

Size and Type	Cost Per Square Foot of Floor Area 3 in 12 Rise	5 in 12 Rise	12 in 12 Rise
Composition shingles			
168 lb. hex. strip with 15 lb. felt		2.00	2.61
235 lb. square strip with 15 lb. felt		2.61	4.02
Wood shingles			
16" #1 red cedar 4 1/2" exposure		3.71	4.55
24" royals 7 1/2" exposure		3.90	5.00
Natural shakes			
1/2" to 3/4" red cedar		3.73	4.55
3/4" to 1 1/4" red cedar		4.96	5.62
Composition shingles with 38 lb. felt		4.60	5.89
Clay tile			
Red mission tile with 2 layers			
40 lb. felt and 1 layer of			
30 lb. felt hot mopped		5.80	7.26
Red shingle tile with 2 layers			
40 lb. felt with 1 layer			
30 lb. felt hot mopped		4.88	5.68
Concrete tile/shake	2.91	3.31	4.59
Slate			
Pennsylvania black 30 lb. felt	11.30	12.69	18.41
Metal			
Aluminum interlock shingles		5.91	7.36
Aluminum corrugated 24 gauge	3.03	3.49	3.36
Galvanized iron corrugated 26 gauge	3.90	3.97	4.55
Copper standing seam 10 oz.	13.96	14.37	17.92
Copper flat lock 10 oz.	14.54	15.28	18.98

Cost includes typical overhangs.

SKYLIGHTS, ETC.

	Cost			
Skylights	1,463	-	1,777	each
Light tube	376	-	418	each
Extra tubing			26.13	per linear foot

GUTTERS

Size and Type	Cost Per Linear Foot		
O.G. galvanized gutters - painted	7.66	-	8.40
6" deep galvanized gutters - painted	10.16	-	11.04
8" deep galvanized gutters - painted	11.04	-	11.85
Downspouts, galvanized - painted	5.98	-	6.81

WALL COVER - EXTERIOR

Size and Type	Cost Per Square Foot of Wall Area		
Aluminum siding			
Horizontal, colored	4.85	-	5.26
Horizontal, colored, insulated	5.06	-	5.47
Vertical, colored	5.26	-	5.56
Vertical, colored, insulated	5.47	-	5.66
Masonry veneer - Brick			
Select common	14.13	-	16.95
Red jumbo	13.55	-	15.51
Roman	21.92	-	23.79
Norman	18.06	-	19.98
Glazed	29.42	-	31.40
Rock facia	17.17		19.63
Concrete block			
4" gray	12.86	-	13.94
4" colored	13.42	-	14.48
4" splitface, gray	21.24	-	23.37
4" splitface, colored	23.37	-	25.78
4" slumpstone, gray	23.37	-	24.68
4" slumpstone, colored	21.24	-	23.37
Imitation stone	23.69	-	28.71
Natural stone	27.67	-	30.77
Shingles and shakes			
Aluminum	6.58	-	7.15
Composition	4.14	-	4.59
Asphalt	2.19	-	2.36
Natural shakes	6.28	-	6.72
Wood shingles	5.41	-	5.86
Shake panels	5.86	-	6.28
Stucco			
1" on masonry	3.85	-	4.94
1" on wire	4.47	-	5.61
Wood siding			
1/4" hardboard prime painted	2.91	-	3.24
7/16" hardboard prime painted	3.63	-	4.06
3/8" plywood prime painted	3.32	-	3.59
3/8" plywood plastic coated	4.49	-	4.76
3/8" plywood rough cedar	2.98	-	3.18
5/8" plywood texture III	3.18	-	3.59
5/8" plywood redwood textured	4.04	-	4.22
1/2" bevel siding	2.90	-	3.24
3/4" bevel siding	3.59	-	3.79
3/4" bevel siding, mitered corners	3.79	-	4.15
1" rustic or lap siding (cedar)	3.59	-	3.79
1" rustic or lap siding (redwood)	4.42	-	4.66

IN-PLACE COSTS

FLOOR COVERING

Size and Type	Cost Per Square Foot		
Asphalt tile	1.47	-	1.80
Carpet			
Low cost cotton, nylon, or acrylic	2.72	-	3.14
Medium price wool, nylon, or acrylic	3.68	-	4.17
High price wool, nylon, or acrylic	5.23	-	Up
Ceramic tile (mosaic including base)	11.59	-	15.70
Cork tile	4.13	-	4.94
Cork tile, vinyl coated	4.76	-	6.75
Leather	32.77	-	54.00
Linoleum	3.39	-	7.05
Epoxy-type floor only (decorative flakes)	5.79	-	7.75
Quarry tile			
Regular grout	14.84	-	16.82
Epoxy grout	17.76	-	18.73
Rubber tile	9.04	-	13.69
Terrazzo	15.15	-	18.95
Vinyl composition tile	2.28	-	4.83
Vinyl sheeting	4.07	-	4.75
Vinyl tile - solid	4.16	-	5.68
Wood flooring			
Douglas fir			
1" x 4" flat grain T & G	7.50	-	7.96
1" x 4" vertical grain T & G	7.96	-	8.84
Oak			
5/16" x 1 1/2" square edge #. 2 common	9.95	-	10.53
5/16" x 1 1/2" square edge #. 1 common	10.68	-	11.44
1/2" x 2" T & G #. 2 common	10.87	-	11.71
1/2" x 2" T & G #. 1 common	12.33	-	12.90
1/2" x 2" T & G select	12.35	-	12.92
1/2" x 2" T & G clear	12.59	-	13.19
13/16" x 2 1/4" T & G #. 2 common	12.76	-	13.09
13/16" x 2 1/4" T & G #. 1 common	12.96	-	13.24
13/16" x 2 1/4" T & G select	12.90	-	13.45
13/16" x 2 1/4" T & G clear	13.45	-	14.30
13/16" x 2 1/4" T & G select quartered	13.73	-	14.87
Oak parquetry			
5/16" #. 1 common set in mastic	11.36	-	12.01
3/16" clear plain	11.85	-	12.62
Oak random plank			
5/16" beveled edge	10.76	-	11.38
3/16" T & G	12.66	-	13.29
Maple			
13/16" x 2 1/4" T & G	13.51	-	17.17

IN-PLACE COSTS

FLOOR BASE

Size and Type	Cost Per Linear Foot		
Epoxy cover base (2 1/2" to 6")	13.03	-	15.09
Rubber (4" to 6")	5.01	-	6.06
Wood (pine) (2 1/2" to 6")	5.59	-	6.98
Wood (hardwood) (2" to 6")	8.82	-	9.25
Terrazzo	15.49	-	19.11
Vinyl (2 1/2" to 4")	2.83	-	3.74

INTERIOR WALL LINING

Size and Type	Cost Per Square Foot of Wall Area		
Drywall			
1/2" taped and sanded	1.53	-	1.75
5/8" taped and sanded	1.62	-	1.82
1/2" taped, textured and painted	2.12	-	2.55
5/8" taped, textured and painted	2.32	-	2.72
1/2" taped, stippled and enameled	2.72	-	3.14
5/8" taped, stippled and enameled	2.94	-	3.34
Hardboard			
1/8"	2.46	-	2.87
1/4"	2.87	-	3.07
1/8" plastic coated with metal trim	6.65	-	8.68
1/4" plastic coated with metal trim	7.64	-	9.76
1/4" wood grain finish	3.39	-	5.15
Lath			
Gypsum lath	1.29	-	1.65
Metal lath	1.75	-	2.01
Plaster			
2 coats, no lath	4.13	-	5.17
3 coats, no lath	5.17	-	6.19
Plywood paneling (hardwood)			
1/4" prefinished	4.90	-	7.61
1/4" unfinished	4.20	-	7.13
7/16" prefinished	7.13	-	11.47
3/4" unfinished	7.61	-	9.72
Tile			
Ceramic	11.41	-	14.85
Plastic	8.46	-	10.58
Tile board or marlite, metal trim	8.02	-	9.97
Terrazzo	20.13	-	25.28
Wallpaper - Standard	1.31	-	2.84
Wood Paneling			
Knotty Pine	4.57	-	5.06
Red Cedar	5.26	-	6.42
Redwood	5.26	-	6.42

IN-PLACE COSTS

CEILING FINISH

Size and Type	Cost Per Square Foot		
Drywall			
1/2" taped and sanded	1.64	-	1.86
5/8" taped and sanded	1.74	-	2.06
1/2" taped, textured and painted	2.28	-	2.54
5/8" taped, textured and painted	2.51	-	3.20
1/2" taped, stippled and enameled	2.93	-	3.26
5/8" taped, stippled and enameled	3.13	-	3.37
1/2" taped with acoustical texture	2.15	-	2.65
5/8" taped with acoustical texture	2.30	-	2.82
Lath			
Gypsum lath	1.25	-	1.40
Metal lath	1.52	-	1.72
Plaster			
2 coats, no lath	4.13	-	4.86
3 coats, no lath	4.33	-	5.31
3 coats, suspended on metal lath	7.29	-	7.75
1/2" acoustical plaster, no lath	6.43	-	6.84
Acoustical tile			
Stapled to furring strips (not including strips)			
3/4" x 12" x 12"	3.27	-	4.29
Suspended in "T" bar grid (including cost of grid)			
1/2" x 24" x 48"	3.34	-	4.39
1/2" x 24" x 24"	3.50	-	4.82
1/2" x 24" x 24" vinyl coated	4.67	-	5.70
Suspended in concealed "Z" bar-type grid (including cost of grid)			
3/4" x 12" x 12"	4.75	-	5.95
3/4" x 12" x 12" vinyl coated	5.25	-	6.31
Suspended on 1/2" drywall (including grid and drywall)			
3/4" x 12" x 12"	5.95	-	6.84

EXTERIOR PAINTING

Type	Cost Per Square Foot of Residence		
Latex, 1 coat	1.14	-	1.34
Oil base, 2 coats	1.92	-	2.15
Oil base, 3 coats	2.38	-	2.55
Spray painting, 2 coats	2.15	-	2.38
Stain, 1 coat and sealer	1.41	-	1.62
Stucco wash, 1 coat	1.11	-	1.32
Stucco wash, 2 coats	1.32	-	1.53
Vinyl on stucco, 2 coats	1.81	-	2.08

IN-PLACE COSTS

INTERIOR DECORATING

Type	Cost Per Square Foot of Residence		
Painting			
On drywall or plaster			
Primer and 1 coat flat	3.36	-	3.76
Primer and 2 coats flat	4.79	-	5.63
Primer and 1 coat enamel	3.36	-	3.76
Primer and 2 coats enamel	4.79	-	5.63
Wood work			
Primer and 1 coat enamel	4.79	-	5.63
Primer and 2 coats enamel	5.63	-	6.71
Masonry			
Primer and 1 coat latex	4.32	-	4.79
Primer and 2 coats latex	5.14	-	5.63
Wall covering			
Aluminum foil	15.97	-	18.17
Paper	12.07	-	13.64
Vinyl wall cover	9.26	-	12.27

TRIM PAINTING

Type	Cost Per Linear Foot		
Exterior trim to 6", 2 coats	1.13	-	1.28
Interior trim			
Primer and 1 coat enamel	0.69	-	0.86
Primer and 2 coats enamel	1.03	-	1.22

DOORS

Size and Type	Cost Per Door		
Exterior doors			
Colonial 1 3/4" fir	356	-	414
Dutch door 1 3/4" fir	519	-	609
French doors	464	-	519
Solid core slab single door	395	-	414
Solid core slab double door	356	-	395
Hardwood door	609	-	Up
Includes frame, trim, threshold, and hardware			
Garage doors - Overhead type			
8' x 7' all aluminum	1049	-	1230
16' x 7' all aluminum	1304	-	1,737
8' x 7' aluminum - wood frame	486	-	601
16' x 7' aluminum - wood frame	924	-	1041
8' x 7' plywood	601	-	647
16' x 7' plywood	1103	-	1290
18' x 7' plywood	996	-	1086

DOORS (Contd.)

Size and Type	Cost Per Door		
Sectional roll up			
8' x 7' aluminum	2,368	-	2,523
16' x 7' aluminum	2,677	-	2,780
8' x 7' fiberglass on aluminum frame	2,368	-	2,481
16' x 7' fiberglass on aluminum frame	2,512	-	2,657
8' x 7' steel	2,162	-	2,368
16' x 7' steel	2,780	-	2,883
Interior doors			
Hollow core slab doors	285	-	322
Solid core slab doors	322	-	362
Panel doors - flat panel	285	-	322
Panel doors - raised panel	322	-	362
Includes frame, trim, and hardware			
Sliding glass doors			
6' x 6'8" aluminum	463	-	525
8' x 6'8" aluminum	518	-	671
12' x 6'8" aluminum	957	-	1,021
Mirrored wardrobe closet doors	219	-	257
French pantry door	457	-	518

WINDOWS

Type	Cost Per Window		
Aluminum	594	-	883
Steel	649	-	929
Wood	511	-	743
Decorative glass block (Per square foot)	63	-	82

CABINETS

Type	Cost Per Linear Foot								
	Painted Fir			Low Cost Veneer			Good Hard-wood Veneer		
Base cabinet	111.88	-	120.18	101.51	-	116.04	116.04	-	145.03
Upper cabinet	80.81	-	101.51	74.58	-	87.03	101.51	-	116.04
Full height	174.04	-	207.19	155.40	-	194.76	186.47	-	225.85
Bath pullman	84.93	-	120.18						
Open shelving	5.38	-	7.25						
Melamine Interiors							84.39	-	112.52
							Cost Each		
Wood entertainment center							1,754	-	3,988

Counter Tops Including Splash	Cost Per Linear Foot		
Ceramic tile	71.00	-	79.76
Plastic laminate	49.73	-	43.00
Imitation marble	65.27	-	79.36
Granite	203.43	-	271.23
Concrete	78.75	-	189.87
Kitchen Corian	155.96	-	189.87
Butcher block	81.38	-	135.62

IN-PLACE COSTS

ELECTRICAL

Type	Cost Per Outlet		
110 volt average romex	85	-	106
110 volt average conduit	125	-	161
220 volt wiring for range and oven	533	-	631
220 volt wiring for dryer	533	-	631

PLUMBING

Type	Cost Per Fixture		
Bathtubs	911	-	2,107
Laundry trays	859	-	1,519
Lavatories	479	-	1,038
Service sinks	864	-	1,150
Shower (Stall)	957	-	1,341
Tile shower stall	1,056	-	2,008
Urinals	718	-	864
Water closets	670	-	1,531

All fixture costs include the cost of rough plumbing.

LIGHTING

	Cost Per Fixture		
Track lights, 4 foot	380	-	484
Track lights, 8 foot	518	-	656
Recessed can	139	-	172
Recessed mini can	172	-	208
Eyeball spot light	172	-	208

FAN

	Cost Per Fixture		
Ceiling fans	356	-	1,184

ENERGY REQUIREMENTS MANDATED BY TITLE 24 (AB 970, 2001)

	Cost			Climate Zones *
Radiant barrier		448		2, 4, 7-15
Spectrally selective glass		596		2, 4, 8-15
Duct sealing with testing	261	-	448	All
Thermostatic expansion valves (TXV)		76		2, 8-15

Adds approximately **$1,700** for a typical 2,000 square foot residence for Climate Zones 2 and 8-15. Climate zones 1,3, 5, and 6 only require duct sealing.

* See section AH 531.80, Page 3, *Useful Information* , following in this handbook for the California Climate Zones map.

AH 531.70: DEPRECIATION

DEFINITIONS

An essential part of the cost approach is the estimation of depreciation, and the usefulness of this approach depends greatly upon the appraiser's ability to make this estimate. This discussion is confined to the application of normal percent good factors to replacement cost new to arrive at replacement cost less normal depreciation. A more detailed discussion of depreciation may be found in Assessors' Handbook Section 501, *Basic Appraisal*.

PERCENT GOOD TABLES

Accrued depreciation is considered to be the difference between replacement cost new and current value.

Percent good is the complement of accrued depreciation. If accrued depreciation is 20 percent, percent good is 80 percent. The percent good concept is used because it saves one arithmetic operation in calculating replacement cost new less normal depreciation.

In a mass appraisal program, speed and uniformity in depreciation estimates are accomplished by the use of normal percent good tables. Percent good factors reflect the average loss in value that improvements suffer over time from normal or usual causes. They include normal physical deterioration and normal functional obsolescence, but they do not include value losses caused by unusual physical deterioration, unusual functional obsolescence, or economic obsolescence.

There are two types of normal percent good tables for structures. They are designated as "R" and "OR" tables. "R" tables are generally applicable to residential-type buildings, and "OR" tables are applicable to "other-than-residential" buildings. For each of the two types there are a number of different tables for buildings with various life expectancies

Individual tables are designated as type "R" or "OR," with a total life expectancy in years. For example, the proper table for a residential building with a 60-year total life expectancy is designated as "R-60."

AVERAGE LIFE TABLES

Average life tables direct the appraiser to the proper normal percent good table. This selection is based upon the following three factors:

- Use type
- Construction type
- Quality classification

Use type refers to the use that is currently being made of the improvement. It may or may not be the same as the original design type that the building cost is based upon.

Construction type and quality classification are based upon the same standards as those set forth in the standard classification system for these two building characteristics.

REMAINING LIFE EXPECTANCY TABLES

Remaining life expectancy tables are also included with the normal depreciation tables. These tables show a remaining life expectancy for an item at each age of its life. These tables are intended as general information for the appraiser and may or may not be applicable in a specific instance.

EXTENDED LIFE CONCEPT

The percent good tables incorporate an extended life concept. In this concept, percent good and remaining life expectancy are based upon the expectancy at any age of a surviving item of a larger original group. Thus, a given item that has a probable life expectancy of 60 years when new may have some remaining life, and therefore value, when it is 60 years old. This stems from the fact that the 60-year average life for the group is attained by the early retirement of some items and the later retirement of others.

EFFECTIVE YEAR

Two items must be known in order to select the proper normal percent good of a structure from the table—the average life and the age of the structure. The average life is obtained from the "average-life table," and the age is calculated by subtracting the *effective year* (see next paragraph) from the appraisal year. Normal percent good and remaining life can be found from the table by selecting the age in years from the age column and reading horizontally to the proper average life column.

In most buildings the effective year is the same as the year of construction. Changes in effective year should not be made unless a significant change has been made in the improvement. However, when a building has been remodeled or added to, or is not architecturally representative of its date of original construction, the effective year may differ from the actual year of construction.

The assignment of an effective year is an appraisal estimate rather than a mechanical calculation. Knowledge of architectural and functional characteristics of structures and the changes in these characteristics over time is the key to estimating the effective year of structures. These characteristics cause structures to fall into eras or age groups. Age groups may be identified by the appraiser, and a year that most nearly reflects the effective age of a structure is assigned.

REMODELING

Remodeling is the major reason for adjusting the effective year. Remodeling may be such that a building *appears* to be new. If this is the case, the effective year should be selected as if it were a new building. Usually, however, remodeling only partially cures functional obsolescence and remodeling certain portions of a building has a greater influence on the effective year than

remodeling other portions would have. Remodeling the bathrooms and the kitchen of a house will have greater effect than remodeling of less-used or less-seen portions of a house.

Some remodeling may be classified as normal maintenance. The individual replacement of water heaters, a worn-out roof, new paint inside and out, etc., are not usually reasons for adjusting the effective year. A combination of these things could, if extensive enough, change the effective year. As a general rule, the effective year should not be changed unless the remodeling has cured some functional obsolescence or has significantly cured some physical deterioration.

ADDITIONS

Additions may cause a change in effective year if the addition increases the overall utility of the improvement. If an addition modernizes the improvement, the effective year may be shifted forward. The addition of a family room, an extra bath, extra bedrooms, or a formal dining room to a residence could, individually or jointly, cause a change in effective year. On the other hand, the addition of a bedroom to a five-bedroom house would probably not change the effective year.

PHYSICAL CONDITION

While the value of a building may vary considerably with its condition, effective year changes are not generally made as a result of condition. Normal percent good computations are based on the assumption that the building is in average condition for its age.

While the condition of a building does have a significant influence on its value, the effective year is not generally changed for this reason because it is a temporary situation relative to total building life. Building conditions may vary considerably in a short period of time; for example, a building may be in poor condition one year, completely renovated the next year, and then allowed to deteriorate again. Effective year changes should be reserved for permanent situations.

Value differences due to physical condition should be considered in a step in the appraisal process that is subsequent to the computation of RCNLD.

MECHANICAL AIDS FOR ESTIMATING AGE

The average age of construction of a single-family home can be calculated by weighting the estimated current replacement cost of the original improvement and the estimated current cost of any subsequent new construction. An alternative method of calculation is performed by applying comparative cost multipliers to historical costs of different periods.

Example A:
Assume that an estimate of the current replacement cost new (RCN) of an original portion of a home built in January 2003 is $225,000 and that the RCN of an addition built in January 2009 is $50,000. The mathematical process that results in a weighted age as of January 2012 is as follows:

$225,000	x	9 (Age of Original Construction)	=	$2,025,000
$50,000	x	3 (Age of Addition)	=	150,000
$275,000				$2,175,000

Average age of construction: $2,175,000 ÷ $275,000 = 7.91 years, rounded to 8 years.

Example B:
Historical costs may be used in a similar manner, but they must first be converted to current costs by applying comparative cost multipliers.

Year of Construction	Historical Cost	*Jan 2012 Comparative Cost Multiplier	Cost Trended to 2011	Age (Years)	Weighted Dollar Years
2003	$100,000	1.434	$143,400	9	$1,290,600
2009	$30,000	1.079	$32,370	3	$97,110
			$175,770		$1,387,710

Average age of construction: $1,387,710 ÷ $175,770 = 7.9 years, rounded to 8 years.

* The Board recommends that county assessors use the *Marshall Valuation Service* (MVS) to provide comparative cost multipliers for trending analysis. The MVS develops comparative cost multipliers for eight locations in California. Select a multiplier for a location that is most similar to your location and make appropriate adjustments to achieve fair market value assessments. Variances from the indicated multiplier should be based on reasonable evidence and be documented.

The multipliers in the example above are found in MVS, Section 98, pages 33 and 34, dated January 2012 using the wood-frame construction category and the Sacramento location.

These methods are, at best, only guides. Additional capital outlays on a building may not change its architectural or functional characteristics in proportion to the amount of the outlay, or they may not change these characteristics at all. In the final analysis, the estimation of an effective year is dependent upon the appraiser's knowledge and judgment. At best, an average age of construction tends to set the latest year that should be assigned for effective age.

AVERAGE LIFE TABLES FOR BUILDINGS

Type of Schedule and Average Life		Classification					
Construction Type	Use Type	5	6	7	8	9	10
C	Multiple Residence[1]	50	55	55	60	60	60
C	Single-Family Residence[2]	55	60	60	60	60	60
D	Multiple Residence[1]	50	55	55	60	60	60
D	Single-Family Residence[2]	55	60	60	60	60	60

Average life assumes normal maintenance but no functional obsolescence due to poor design.

When a decimal classification is used, apply the average life for the nearest whole classification. When a half-classification (e.g., 7.5) is used, raise to the next higher classification (e.g., 8) for selection of the average life.

[1] This table is applicable to residential buildings of more than two living units each.
[2] This table is applicable to residential buildings of one or two living units each.

DEPRECIATION

NORMAL PERCENT GOOD TABLES - RESIDENTIAL BUILDINGS

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

DEPRECIATION

NORMAL PERCENT GOOD TABLES - RESIDENTIAL BUILDINGS

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

AH 531.80: USEFUL INFORMATION

ABBREVIATIONS

For use on building records

Acoustic	Acou	Improvements	Imp	Rustic, V.	V Rus
Addition	Add	Knotty Pine	KP	Sand Plaster	S Pl
Air Conditioning	AC	Laundry	Ldry	Sandstone	S Stn
Aluminum	Al	Lavatory	Lav	Second Story	2nd Sty
Asbestos	Asb	Linear Feet	Lin Ft	Shake	Shk
Asphalt	Asp	Linoleum	Lino	Sheathing	Shtg
Basement	Bsmt	Masonite	Mas	Sheetrock	SR
Barbecue	Bbq	Medium	Med	Shingle	Shg
Beam	Bm	Metal	Met	Sliding Door	Sld Dr
Bidet	Bid	Mud Sills	MS	Sprinkler	Spr
Block	Blk	On Center	o.c.	Steel	Stl
Board & Batten	B&B	Oregon Pine	OP	Stucco	Stc
Brick	Br	Overhead Balanced Door	OB Dr	Terrazzo	Trzo
Ceiled	Cld	Paint	Pt	Thermostat	Thermo
Ceramic Tile	C Ti	Paper	Pa	Thousand	M
Composition	Comp	Parquet	Parq	Tile	Ti
Concrete	Conc	Partially Complete	PC	Tongue & Groove	T&G
Construction	Constr	Philippine Mahogany	P Mng	Unfinished	Unf
Corrugated Aluminum	Cor Al	Plaster Board	Pl Bd	Urinal	Ur
Corrugated Iron	Cor I	Plaster & Paint	Pl&Pt	Veneer	Ven
Diagonal	Diag	Plaster & Paper	Pl&Pa	Vinyl	Vin
Douglas Fir	DF	Plastic	Plas	Wainscot	Wsct
Electric	Elec	Plate	Plt	Wallboard	W Bd
Enameled	En	Plumbing	Plmg	Wallpaper	W Pa
Fireplace	Fp	Plywood	Pw	Walnut	Wal
First Story	1st Sty	Porcelain	Porc	Water Closet	WC
Flagstone	Flag	Porch	P	Weather-strip	Ws
Floor	Fl	Printed	Pr	White Pine	Wh P
Formica	Mica	Radiator	Rad	Wire & Paper	Wi&Pa
Frame	Fr	Redwood	Rdw	Wood	Wd
Gable	Gab	Reinforced Concrete	Re Conc		
Garage	Gar	Residence	Res		
Glass	Gl	Rock	Rk		
Gravel	Gr	Room	Rm		
Hard Plaster	H Pl	Round Edge Beveled	REB		
Hardwood	H Wd	Rubble	Rbl		
Heavy	Hvy	Rustic, Channel	Ch Rus		
Horsepower	HP	Rustic, Cove	Cv Rus		

Porches

Concrete	C	Flagstone floor	F	Screened-in porch	SP
Wood floor	W	Uncovered porch	UP	Glassed-in porch	GP
Brick floor	B	Covered porch	CP	Enclosed porch	EP

Example
W SP = wood floor, screened-in porch

COST BREAKDOWN

Cost breakdown of a *residence* of average quality, shape, and size—D7C, 2,000 sq. ft.—exclusive of basement, air conditioning, and fireplace (to be considered as additives), but inclusive of general overhead and contractor's and subcontractor's profits, expressed in percent per item and percent of total cost, and in the approximate order of installation or completion.

	Item	Percent of Total	Cumulative Percent of Total
1	Excavation, foundation and piers	7	7
2	Girders, floor joist, and subfloor (or slab)	5	12
3	Wall framing and ceiling joist	10	22
4	Rafters, sheathing and flashing	5	27
5	Roof covering	4	31
6	Plumbing—sewer connections and rough-in	4	35
7	Wiring, HVAC	3	38
8	Exterior stucco or siding	9	47
9	Interior drywall	10	57
10	Finish floors (including kitchen and bath)	8	65
11	Sash and doors	7	72
12	Built-ins and interior trim	6	78
13	Plumbing fixtures (including water heater)	9	87
14	Light fixtures	3	90
15	Finish hardware	2	92
16	Painting and decorating	8	100

This table may be used as a guide in estimating the percentage of construction in progress involved in buildings under construction on the lien date.

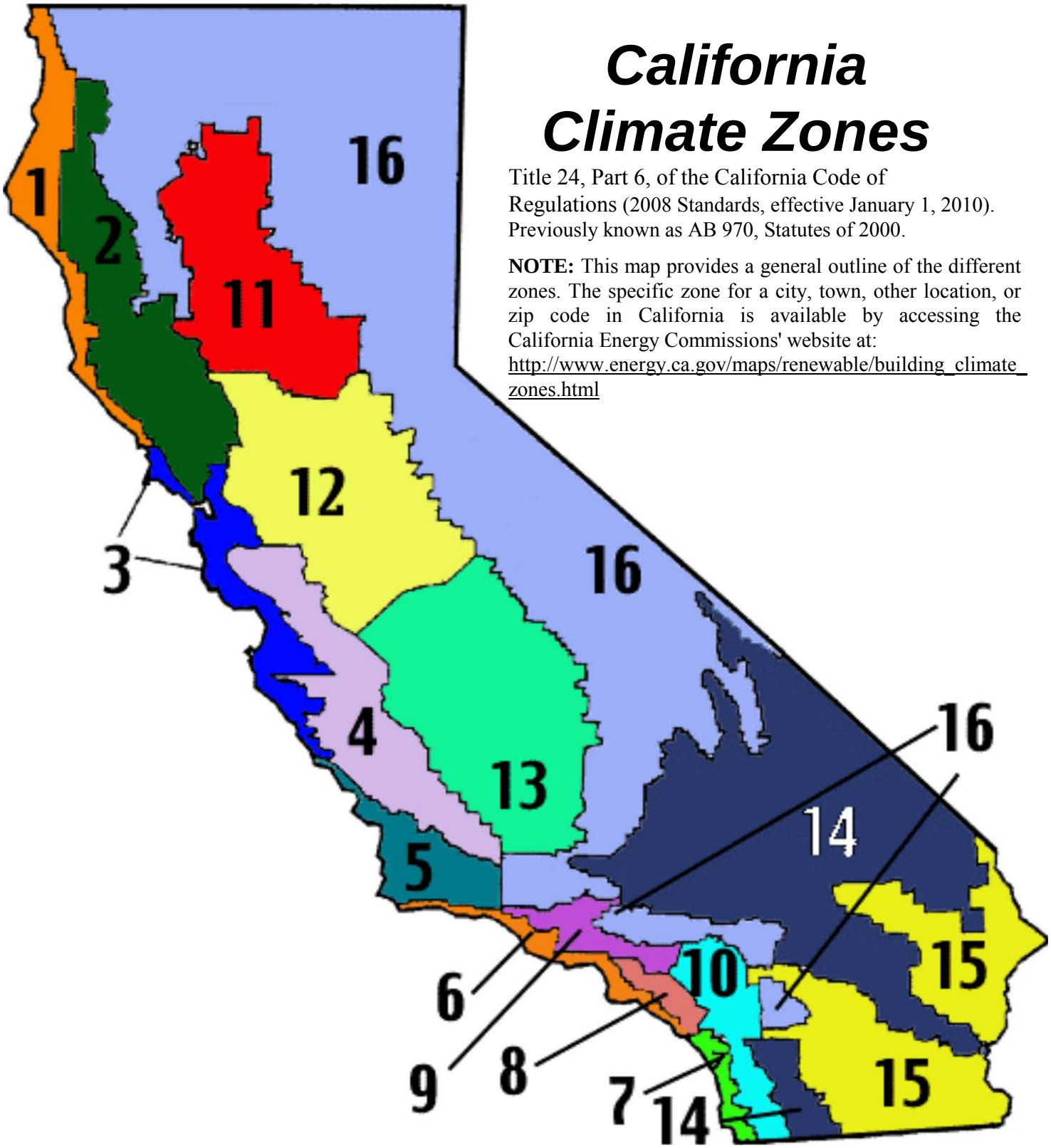
CALIFORNIA CLIMATE ZONES

The numbers shown on the map on the following page represent the 16 different climate zones that have been established by the California Energy Commission under Title 24, part 6, of the California Code of Regulations. A zone represents certain energy use, temperature, weather and other factors. Each zone is basically a geographic area that has similar climatic characteristics. An energy budget has been created which establishes the zone's building standards and indicates the maximum amount of energy that a building, or portion of a building can be designed to consume per year. For further information on the zones and building requirements, see www.energy.ca.gov/maps/building_climate_zones.html (California Energy Commissions' website)

California Climate Zones

Title 24, Part 6, of the California Code of Regulations (2008 Standards, effective January 1, 2010). Previously known as AB 970, Statutes of 2000.

NOTE: This map provides a general outline of the different zones. The specific zone for a city, town, other location, or zip code in California is available by accessing the California Energy Commissions' website at: http://www.energy.ca.gov/maps/renewable/building_climate_zones.html



GLOSSARY OF TERMS

Term	Definition
Bent	A framework that is perpendicular to the length of a building.
Coffer	A recessed portion of a ceiling used for decorative purposes.
Gunite®	A registered trademark name for material composed of cement, sand or crushed slag, and water mixed together and forced through a cement gun by pneumatic pressure commonly used to spray the lining of in-ground swimming pools.
Knob and Tube Wiring	An early type of residence wiring system where the electrical wires are run through porcelain tubes to isolate the wire from wood members. When the wiring parallels a wood member, it is held away from the wood by the knob portion.
Mudsills	The lowest sill of a structure, as a foundation timber placed directly on the ground or foundation.
Purlin	Horizontal structural members that support the common rafters in roofs.
Romex®	A registered trademark name for sheathed electrical wiring commonly used in residential electrical wiring systems.
Terrazzo	A type of material in which cement is used as a matrix. It is generally for producing modern floor finishes, but is also used for bases, borders, and wainscoting.

AH 531.90: COMPACT COSTS

GENERAL

This chapter describes a method of costing intended to speed up the residential cost estimating process without reducing accuracy. Square-foot costs include the cost of typical additive items such as porches, yard improvements, fireplaces, and heating systems. Time is saved by eliminating the need for measuring and computing the cost of a number of items that comprise only a small part of the total cost.

NOTE: These compact costs do not apply to the *Mountain Residences* chapter of AH 531, due to the nature of building in mountainous areas which requires more individual analysis of construction site slope, construction materials, etc.

COMPOSITION OF COMPACT COSTS

Compact costs include the following items as a part of the basic square-foot cost:

- Basic building costs
- Typical heating costs when applicable
- Typical fireplace costs when applicable
- Typical porch costs
- Typical yard improvement costs

Shape classification is not a consideration in this method. It is assumed that in a proper replacement cost the shape class will be relative to the quality class and size of the building. Small buildings of lower-quality class will tend to be "A" or "B" shape; larger, higher-quality class houses will tend to be of "C" or "D" shape. Basic square-foot costs will reflect what is a typical shape class for the quality and size of the building.

PROCEDURE

Cost estimates are made by selecting a proper square-foot cost from a table and multiplying it by the living area of the building. If the building has air conditioning, a square-foot cost is added to the basic square-foot cost. If a garage is present, a lump sum amount for a single, double, triple, etc., garage is added.

Following is an example of a cost estimate made using the standard cost tables and a cost estimate using compact costs.

STANDARD COST TABLES

Residence D7C (Modern Type)	2,200 sq. ft.	x	87.25	=	191,950
Concrete Covered Porch (1/3)	56 sq. ft.	x	29.08	=	1,628
HVAC	2,200 sq. ft.	x	5.41	=	11,902
Garage (Attached)	440 sq. ft.	x	28.74	=	12,646
Wood Covered Concrete Patio	300 sq. ft.	x	21.47	=	6,441
Fence (1" x 4" Redwood)	130 lin. ft.	x	21.59	=	2,807
Concrete Flatwork	1,000 sq. ft.	x	4.93	=	4,930
RCN					232,304

COMPACT COST METHOD

Residence D7			94.64		
A-C (cool only)			4.16		
Residence	2,200 sq. ft.	x	98.80	=	217,360
Garage, Double					16,300
RCN					233,660

Extra items such as swimming pools, septic systems, or pressure systems should be added to the cost estimate.

LOCATION ADJUSTMENTS

Compact costs are based on the cost to build in the four-county Sacramento area as are all other residential building costs. The Single-Family Residential Map in the *Costing Information* chapter, AH 531.10, page 24, gives location adjustments for all locations in the State of California, *except mountainous areas*. These factors adjust for location only and reflect the typical adjustments necessary for the 2012 period.

ADDITIONS

Additions can be cost estimated using a compact square foot cost based upon the quality class of the addition and the total area of the original house plus the addition. The square foot cost is applied to the addition area only.

If the addition has built-ins, plumbing fixtures, cabinets, or other additives that were not included in the original structure, the cost of the additives should be added by appropriately increasing the quality class of the addition.

The cost of the addition is then adjusted for location by using the Single-Family Residential Map in the *Costing Information* chapter, AH 531.10, page 24.

Example:
Assume an original 1,200 square foot, D7.0, air conditioned residence with a two-car garage in Mendocino County that was built and first sold in 1996.

On January 1, 2013, a 400 square foot addition with a quality class of D7.0 is built. The RCN of the addition is computed as follows:

Total Area for Modification		
Original Residence	=	1,200 sq. ft.
Addition	=	400 sq. ft.
Total Square Feet	=	1,600 sq. ft.

COMPACT COSTS

Addition	400 sq. ft.	X	99.95	=	39,980
Air Conditioning	400 sq. ft.	x	4.16	=	1,664
Total RCN January 1, 2013					41,644
Location Adjustment					1.15
RCN Addition					47,891

COMPACT COSTS

All square-foot costs include typical porches, yard improvements, and heating systems. Air conditioning systems and garages are to be added. Built-ins, plumbing fixtures, and fireplaces are included as per building quality class specifications.

SINGLE-FAMILY RESIDENCES

	Residence	Garage
D1	33.02 S.F.	10.26 S.F.
D1.5	36.12 S.F.	14.17 S.F.
D2	42.87 S.F.	18.39 S.F.
D3	46.24 S.F.	21.27 S.F.
D3.5	49.75 S.F.	22.71 S.F.

	Square-Foot Area									
Class	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
D4	68.75	64.84	63.04	59.16	57.18	55.55	54.18	53.15	51.93	50.73
D4.5	75.81	71.30	68.15	65.15	62.90	61.55	59.16	58.55	56.75	55.68

Add: $3.50 per square foot for central air conditioning, $21.77 per square foot for garage area, or $4,800 single, $9,600 double, or $13,000 triple garage. Fireplace not included.

	Square-Foot Area									
Class	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700
D5	76.27	73.40	71.45	69.51	67.25	66.36	65.16	63.66	63.05	62.31
D5.5	83.62	80.92	78.38	76.11	74.32	72.82	71.60	70.42	69.07	68.16

Add: $3.50 per square foot for central air conditioning, $25.42 per square foot for garage area, or $5,600 single, $11,100 double, or $15,100 triple garage. Fireplace not included.

	Square-Foot Area									
Class	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800
D6	94.13	91.28	88.73	86.63	85.28	83.19	82.28	80.77	79.88	78.54
D6.5	103.90	101.35	98.65	96.10	93.99	92.35	91.13	89.77	88.59	86.48
Class	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,800	4,200
D6	75.13	73.50	72.27	71.03	69.81	—	—	—	—	—
D6.5	82.58	81.02	79.59	78.06	76.71	75.21	72.77	72.29	70.20	67.35

Add: $3.96 per square foot for central air conditioning, $30.90 per square foot for garage area, or $6,800 single, $13,600 double, or $18,500 triple garage. Fireplace not included.

SINGLE-FAMILY RESIDENCES (Contd.)

	Square-Foot Area									
Class	1,500	1,600	1,700	1,800	2,000	2,200	2,400	2,600	2,800	3,000
D7	101.43	99.95	98.62	97.45	95.83	94.64	92.96	91.62	90.31	89.43
D7.5	120.82	118.56	116.17	114.22	112.40	110.74	109.39	108.35	107.59	106.99
Class	3,400	3,800	4,200	4,600	5,000					
D7	87.52	84.73	81.29	77.89	74.43					
D7.5	104.20	100.86	96.79	92.73	88.61					

Add: $4.16 per square foot for central air conditioning, $37.08 per square foot for garage area, or $8,200 single, $16,300 double, or $22,200 triple garage.

	Square-Foot Area									
Class	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,600	4,000
D8	138.16	135.74	133.48	131.97	129.86	128.51	127.01	125.79	124.59	123.40
D8.5	181.21	174.68	168.97	166.10	163.88	161.82	160.08	158.16	156.88	155.78
Class	4,400	4,800	5,200	5,600	6,000					
D8	122.95	120.45	117.13	112.96	108.08					
D8.5	153.70	150.56	146.39	141.19	135.10					

Add: $4.77 per square foot for central air conditioning, $42.23 per square foot for garage area, or $9,100 single, $18,100 double, or $24,700 triple garage.