ASSESSORS' HANDBOOK
SECTION 531A

RESIDENTIAL BUILDING COST INFORMATION

JANUARY 2025

FOREWORD

Section 401.5 of the Revenue and Taxation Code requires that the State Board of Equalization (BOE) issue to County Assessors data relating to costs of property and other information to promote uniformity in appraisal practices and in assessed values throughout the state. In an effort to comply with section 401.5, the BOE annually published Assessors' Handbook (AH) Section 531, *Residential Building Costs* (AH 531).

Beginning with the 2025 revision of AH 531, the handbook has been divided into two parts. The cost tables will remain in the AH 531. The general instructions and pertinent information regarding the use of these tables will be contained in AH Section 531A, *Residential Building Cost Information* (AH 531A).

AH 531A contains statutory and regulatory considerations, general instructions, informational text, photographs, and drawings to support the cost data provided in the annual AH 531. Both handbook sections are available only on the State Board of Equalization's (BOE) website.

Statutory and regulatory considerations, general instructions, and pertinent information concerning the use of these handbooks are contained in the Costing Information (AH 531.10A) chapter. Specific instructions and comments appropriate to each building type or topic are found in the introductory pages of the respective chapter devoted to a particular structure type or topic. Diligent efforts have been made to supply accurate and reliable information. AH 531 and AH 531A should serve as guides, 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.

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RESIDENTIAL BUILDING COST INFORMATION

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AH 531.10A: COSTING INFORMATION

STATUTORY AND REGULATORY BASIS

Assessors' Handbook Section 531, *Residential Building Costs* (AH 531), and Assessors' Handbook Section 531A, *Residential Building Cost Information* (AH 531A), were 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 and AH 531A rely 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 and AH 531A are 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.]

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

BASIS OF COST

Costs 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, among others
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. Interior floor, wall, and ceiling finishes

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

4. Exterior wall finish and roof cover
5. Interior partitions
6. Cabinet work, doors, windows, trim, and similar items
7. Electrical wiring and fixtures
8. Rough and finish plumbing, including fire sprinklers where applicable, 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, fire sprinklers, and built-in appliances not included in basic building costs
4. Basements
5. Porches and patios
6. Garages or carports
7. Yard improvements, such as fences, curbs, paving, and others
8. Site-specific extraordinary permit fees
9. Extra utility hook-ups (for example, wells or septic systems. 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 has those of a single family residence.

AH 531 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 of AH 531A 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 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 or the 6.5 class. 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 in AH 531 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 in AH 531. 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 AH 531.

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.

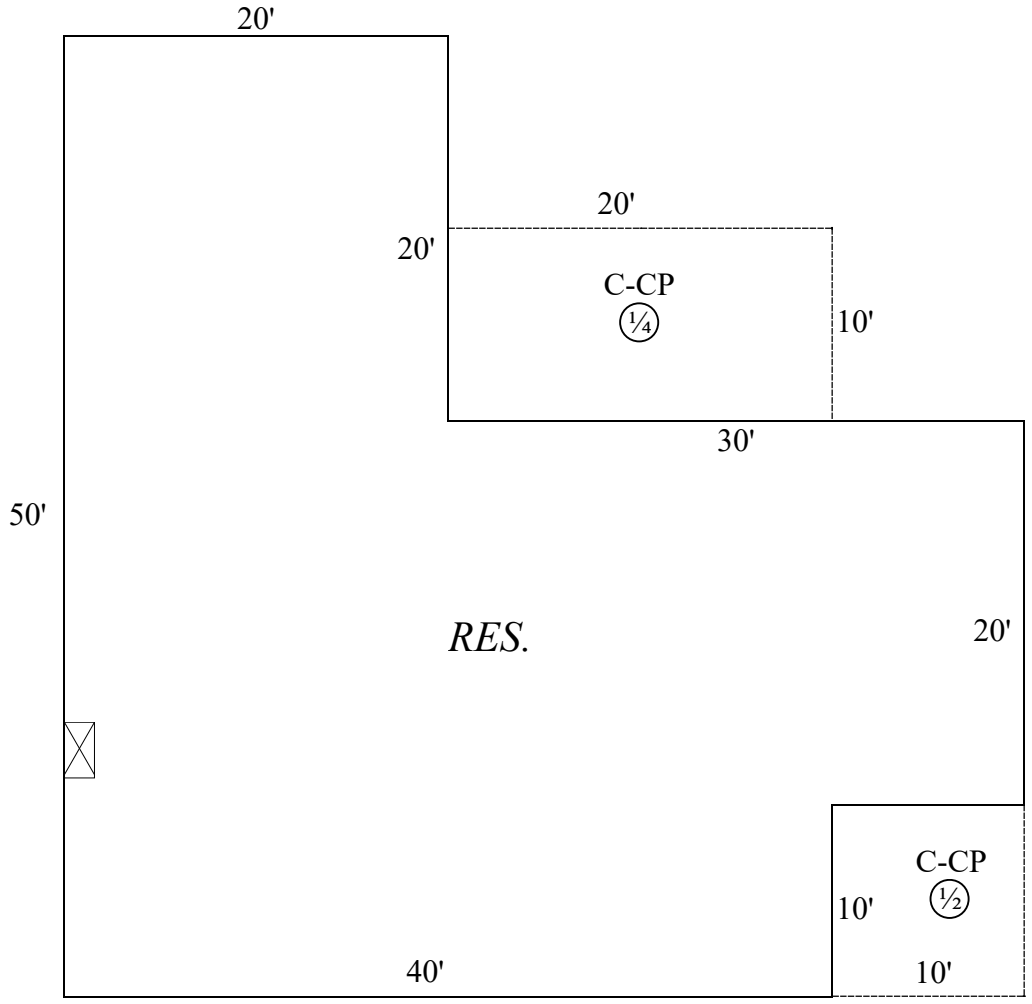
A description of the type of porch or patio involved should be indicated on the sketch of the building plan. It can be noted by the use of the following symbols:

C	Concrete Floor	UP	Uncovered Porch/Patio
W	Wood Floor	CP	Covered Porch/Patio
B	Brick Floor	SP	Screened-in Porch/Patio
F	Flagstone Floor	GP	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.

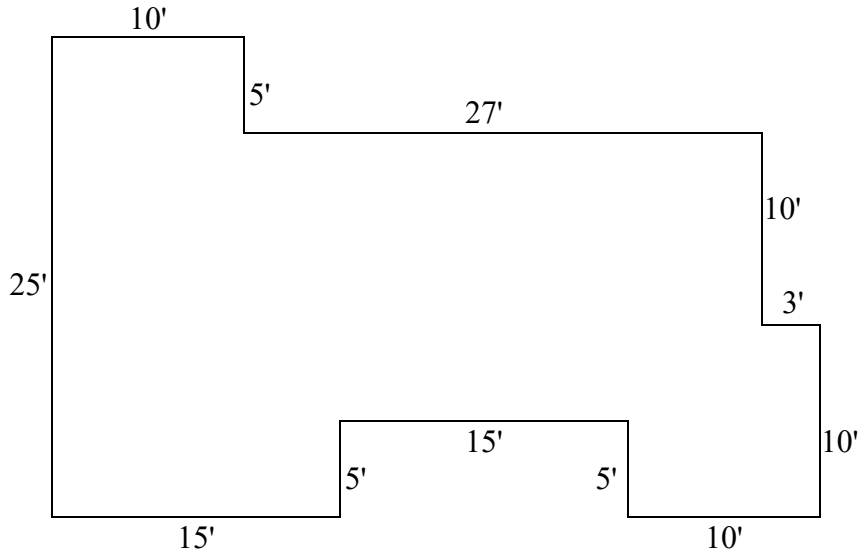
Rectangular Buildings

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.



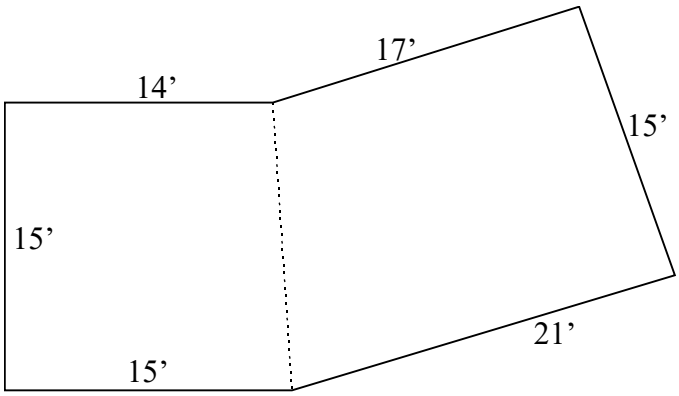
COMPUTATIONS

15 × 5 =	*75*
10 × 5 =	*50*
40 × 5 =	*200*
37 × 10 =	*370*
10 × 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

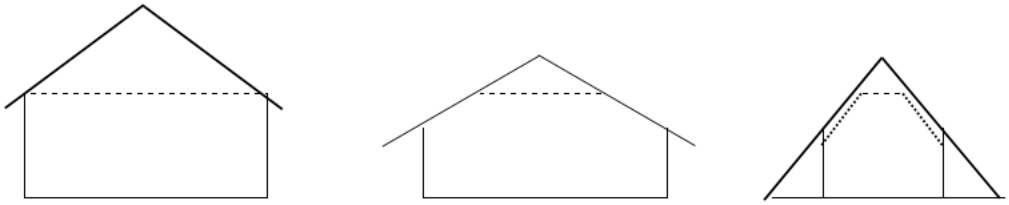
Area classification may take two forms: *total area classification* for single-family residences and *unit area classification* for multiple-family residences.

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	l,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:

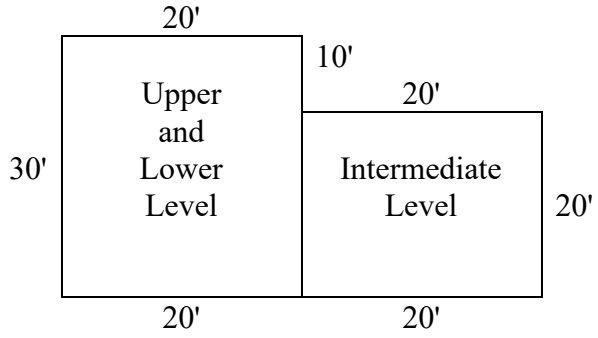
1. Differences in the number of corners for a given area.
2. Differences in the number of roof valleys and ridges for a given area (*cut-upness*).
3. Differences in the ratio of exterior wall area to floor area.

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.



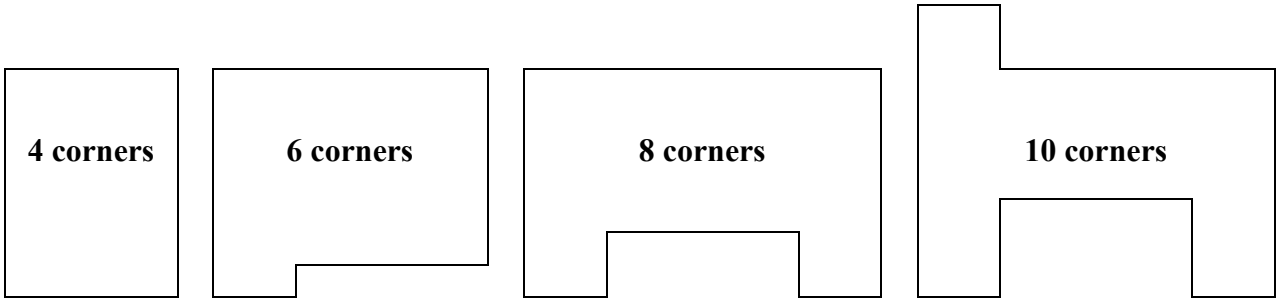
In selecting a shape classification, it is important to follow the roof and foundation line of the building. Porches, balconies, and garages are items that should not be included in the shape of the home. The shape outline should only follow the foundation outline of the main structure.

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



SHAPE A **SHAPE B** **SHAPE C** **SHAPE D**

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 AH 531 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 AH 531, 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.

Maps, available in the AH 531, 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 AH 531, 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 AH 531, including manufactured housing, should be adjusted to account for any extraordinary permit or other cost differences that exist in the county.

AH 531.20A: SINGLE-FAMILY RESIDENTIAL CONVENTIONAL TYPE

All Single-Family Residential Conventional Type cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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 in AH 531.20 include all costs and components as described on page 2 of AH 531.10A, 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
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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 lb. 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/Countertop: 6' wood or vinyl	
Plumbing Four fair quality fixtures Laundry tray and small water heater	
Special Features None	
Electrical Knob and tube, Romex® or sheathed wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 6' low-cost ceramic tile	
Plumbing Four average quality fixtures Single laundry tray and small water heater	
Special Features None	
Electrical Romex® or sheathed wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 8' ceramic tile
Plumbing Five medium-priced fixtures Single laundry tray; water heater
Special Features None
Electrical Romex® or sheathed wiring; medium-priced fixtures

SINGLE-FAMILY RESIDENTIAL
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 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® or sheathed wiring; average fixtures with a special fixture in dining room	

SINGLE-FAMILY RESIDENTIAL
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

C-8 QUALITY	CONVENTIONAL
Foundation Reinforced concrete	
Floor Structure Standard wood frame or reinforced concrete	
Walls and Exterior 8" reinforced split face or concrete 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/Countertop: 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® or sheathed wiring; good fixtures	

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: Douglas Fir	
Plumbing Two low-cost fixtures	
Special Features None	
Electrical Knob and tube wiring; one drop cord per room	

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

D-2 QUALITY **CONVENTIONAL**

Foundation Light non-reinforced 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/Countertop: 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
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 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
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 lb. 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/Countertop: 6" wood or vinyl squares	
Plumbing	
Four fair quality fixtures; laundry tray; water heater	
Special Features	
None	
Electrical	
Knob and tube, Romex® or sheathed wiring; simple fixtures	

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

	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/Countertop: 6" low-cost ceramic tile	
Plumbing		
	Four average quality fixtures; a single laundry tray; water heater	
Special Features		
	None	
Electrical		
	Romex® or sheathed wiring; simple fixtures	

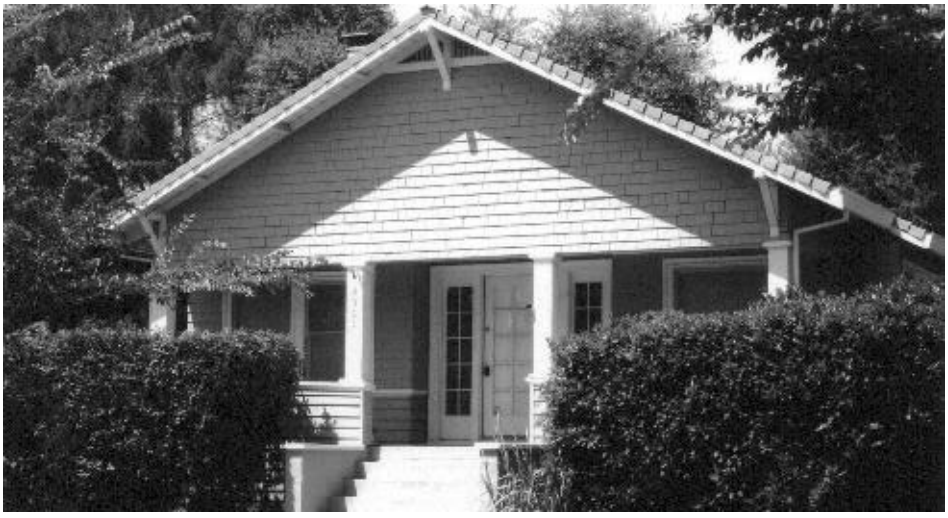
SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-5 QUALITY

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 8" average ceramic tile
Plumbing Five medium-priced fixtures; single laundry tray; water heater
Special Features None
Electrical Romex® or sheathed wiring; medium priced fixtures

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-6 QUALITY



SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

	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: 1-1/2 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/Countertop: 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® or sheathed wiring; average fixtures with a special fixture in dining room

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-7 QUALITY

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

	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/Countertop: 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® or sheathed wiring; good fixtures

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-8 QUALITY

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 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® or sheathed wiring; good fixtures with good chandelier in dining room	

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-9 QUALITY

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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/Countertop: 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 sheathed or conduit wiring; very good fixtures; expensive chandelier in dining room	

SINGLE-FAMILY RESIDENTIAL
CONVENTIONAL
D-10 QUALITY

AH 531.21A: SINGLE-FAMILY RESIDENTIAL MODERN TYPE

All Single-Family Residential Modern Type cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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 in AH 531 include all costs and components, as described on page 2 of AH 531.10A, which is the *Costing Information* chapter of this handbook section, and include all plumbing fixtures and built-ins, as described in the applicable building specifications.

AH 531 has been updated to account for the costs associated with fire sprinklers. Effective January 1, 2011, the State of California adopted building code changes that required all new one- and two-family homes and townhouses built in the state to have fire sprinklers. Fire sprinklers are now a listed component in the residential building specifications, where applicable. In cases where the fire sprinkler component is present and is not included in the applicable building specification, the component should be treated as an additive. In cases where the fire sprinkler is not present and is present in the building specification, the cost associated with the component should be treated as a subtractive.

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

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
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 8' plastic laminate
Plumbing Galvanized pipe; 7 low-cost fixtures; washer outlet; water heater
Special Features None
Electrical Romex® or sheathed wiring; low-cost fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 Countertop/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® or sheathed wiring; average fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 Countertop/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, 1 fireplace (additional, additive)
Electrical Romex® or sheathed wiring; average quality fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 Countertop/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; 1 fireplace (additional, additive)
Electrical Romex® or sheathed wiring; good quality fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 double pane 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 Countertop/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; 2 fireplaces (additional, additive)
Electrical Romex® or sheathed wiring; good fixtures, with expensive chandelier in dining room

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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 double pane 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 countertop/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; 2 fireplaces (additional, additive)		
Electrical Romex® or sheathed wiring; excellent fixtures in each room		

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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 Countertop: Low-cost plastic laminate or vinyl tile
Plumbing Galvanized, plastic, or copper pipe; fire sprinklers; 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 Sheathed wiring; low-cost fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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, and 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 Countertop: Average cost plastic laminate or vinyl tile Some island cabinets without fixtures
Plumbing Galvanized, plastic, or copper pipe; fire sprinklers; 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 Sheathed wiring; average quality fixtures; some bedroom ceiling fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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 Countertop: Good quality ceramic tile; some island cabinets with fixtures
Plumbing Galvanized, plastic, or copper pipe; fire sprinklers; 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, 1 fireplace (additional, additive)
Electrical Sheathed wiring; good quality fixtures; some bedroom ceiling fixtures

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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 Countertop: Good ceramic tile, cultured marble, granite, or Corian® Island cabinets with fixtures
Plumbing Galvanized, plastic, or copper pipe; fire sprinklers; 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; 1 fireplace (additional, additive)
Electrical Sheathed wiring; good quality fixtures; bedroom ceiling fixtures; recessed lighting

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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 Countertop: High quality ceramic tile, marble, granite, or Corian® ; island cabinets with fixtures
Plumbing Galvanized, plastic, copper pipe; fire sprinklers; 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 with laundry sink; alarm & intercom systems; built-in vacuum; 2 fireplaces (additional, additive)
Electrical Sheathed wiring; good fixtures, with expensive chandeliers; good quality bedroom ceiling fixtures; extensive recessed lighting; special switches

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

SINGLE-FAMILY RESIDENTIAL
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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, box 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 Countertop: Excellent quality ceramic tile, marble, granite, or Corian®; island cabinets with fixtures
Plumbing Galvanized, plastic, copper pipe; fire sprinklers; 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; 2 fireplaces (additional, additive)
Electrical Sheathed wiring; excellent fixtures; extensive stylized and recessed lighting; expensive chandeliers; special switches

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

AH 531.22A: MOUNTAIN RESIDENCES

All Mountain Residences cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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 531.10A, 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 531.10A should be used for shape class determination.

ADJUSTMENTS FOR LOCATION

The building costs in the *Mountain Residences* chapter of AH 531 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.

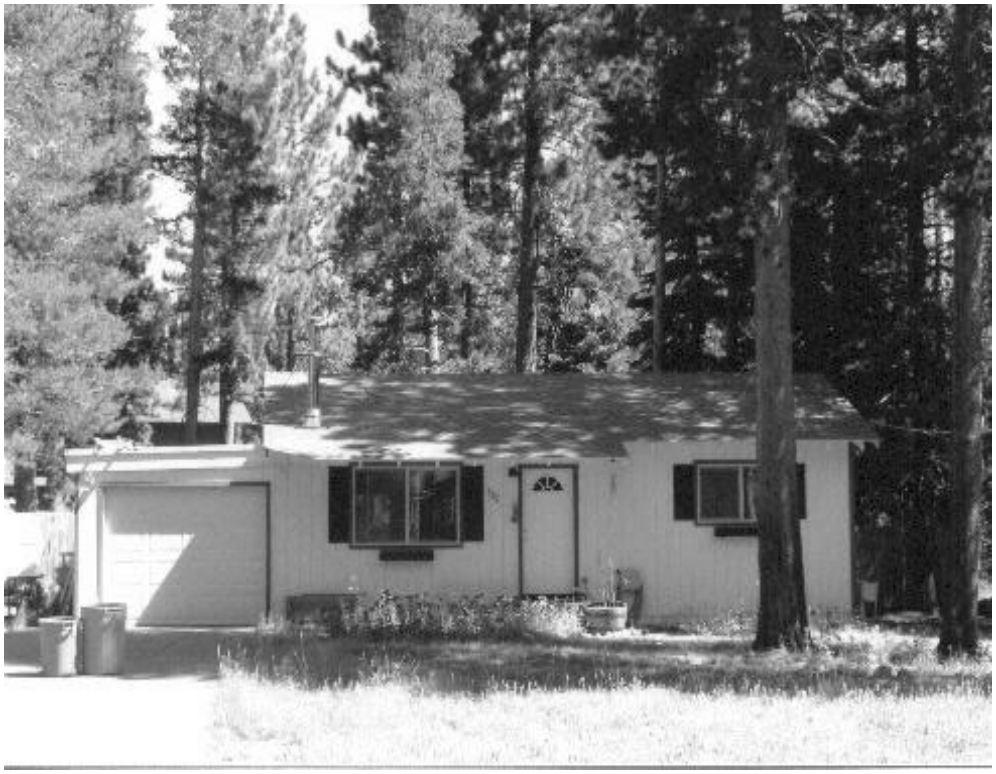
MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

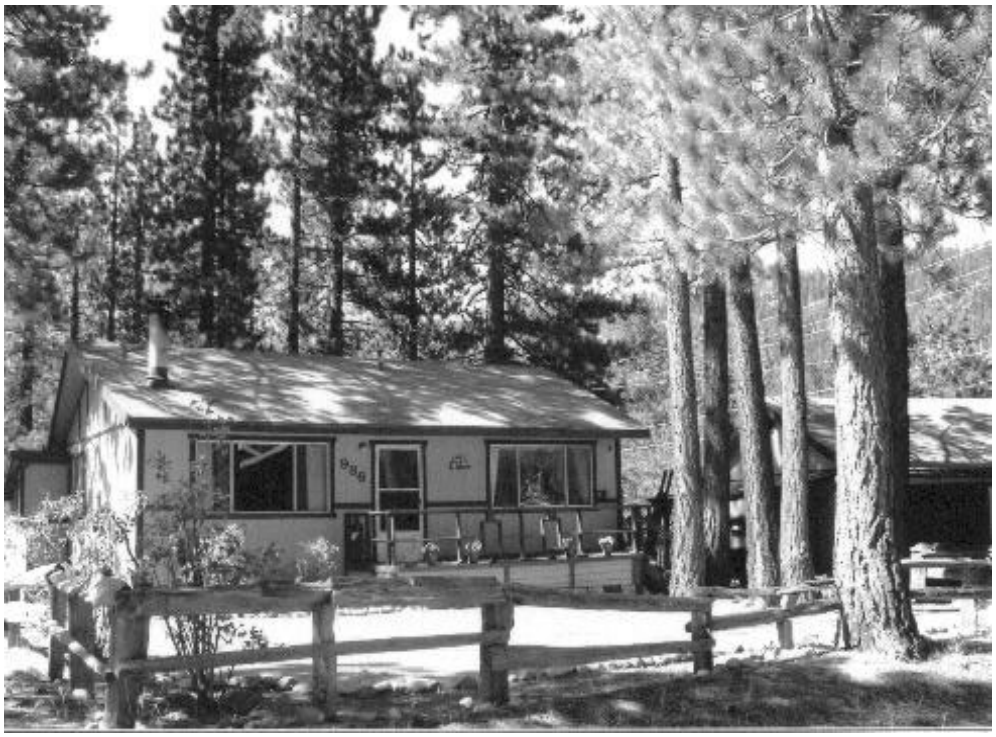
D-4 QUALITY	CONVENTIONAL
Foundation Wood piers, light concrete, light concrete block, or light native stone	
Floor Structure 2” x 6”, 24” o.c.; 1” sub-floor	
Walls and Exterior Framing: 2” x 4”, 16” o.c. Siding: Low-cost wood siding or wood shingles Windows: Low-cost wood	
Roof Framing: 2” x 4”, 16” 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; fire sprinklers; water heater	
Electrical Knob and tube, Romex® or sheathed wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

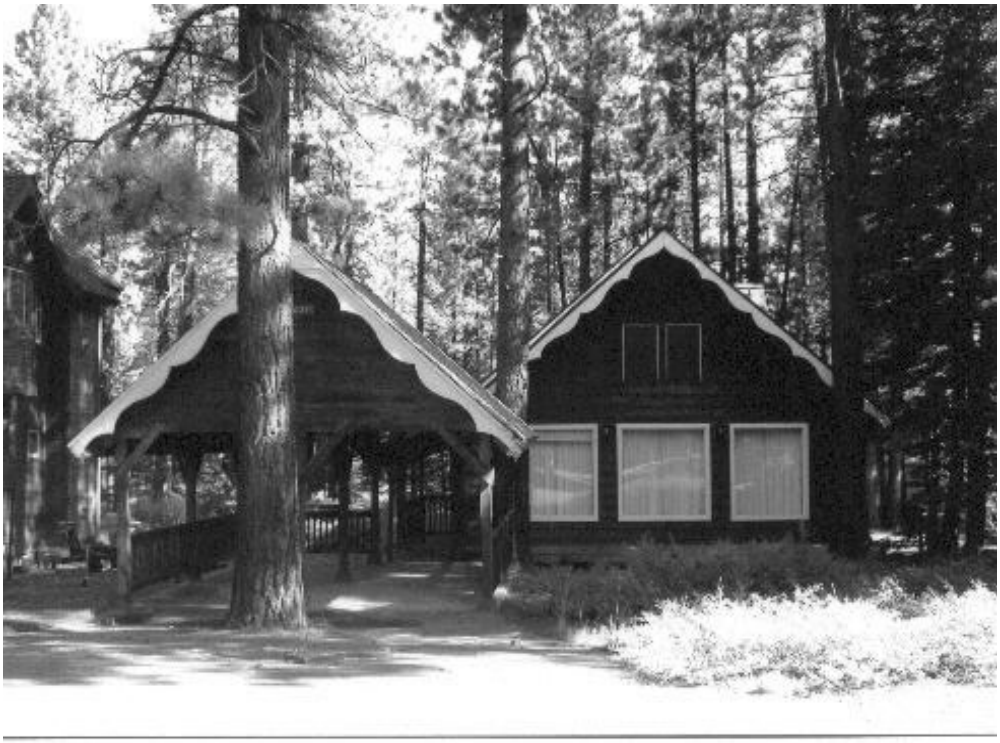
D-5 QUALITY	CONVENTIONAL
Foundation Concrete block or standard concrete	
Floor Structure 4" x 6" girders, 48" o.c.; with 5/4" plywood sub-floor; or 2" tongue and groove sub-floor Alternate: 2" x 6" joists, 16" o.c.; with 1" sub-floor	
Walls and Exterior Framing: 2" x 6", 16" o.c. Siding: Low-cost plywood, 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; fire sprinklers; water heater	
Electrical Romex® or sheathed wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
D-5 QUALITY





MOUNTAIN RESIDENCES
D-5 QUALITY



MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

	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 Countertop/Drain Board: 8' to 12' plastic laminate	
Plumbing	Seven average fixtures; fire sprinklers; water heater	
Electrical	Romex® or sheathed wiring; average fixtures	
Special Features	Drop-in range with hood; one sliding glass door	

MOUNTAIN RESIDENCES
D-6 QUALITY

MOUNTAIN RESIDENCES
D-6 QUALITY

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 12' to 16' average ceramic tile	
Plumbing Seven average quality fixtures; fire sprinklers; water heater	
Electrical Romex® or sheathed wiring; average fixtures	
Special Features One 8' sliding glass door; built-in range and oven, dishwasher, and garbage disposal	

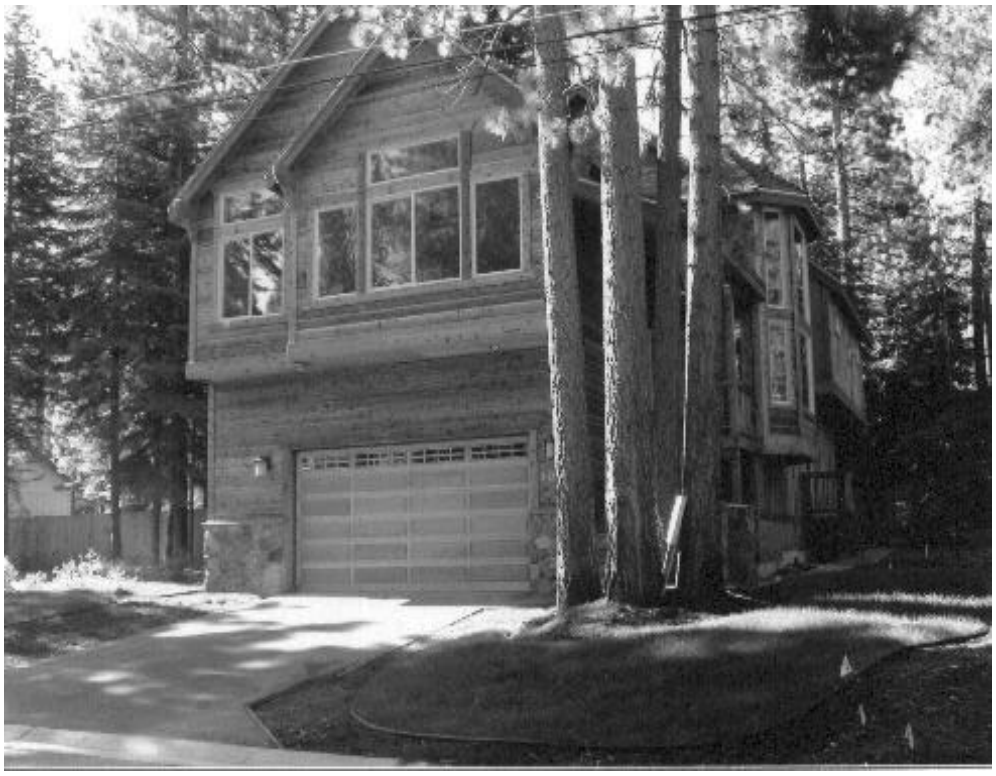
MOUNTAIN RESIDENCES
D-7 QUALITY

MOUNTAIN RESIDENCES
D-7 QUALITY

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

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 glulam 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 Countertop/Drain Board: 15' to 18' good quality ceramic tile	
Plumbing Nine good fixtures; fire sprinklers; one or two water heaters	
Electrical Romex® or sheathed 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
D-8 QUALITY

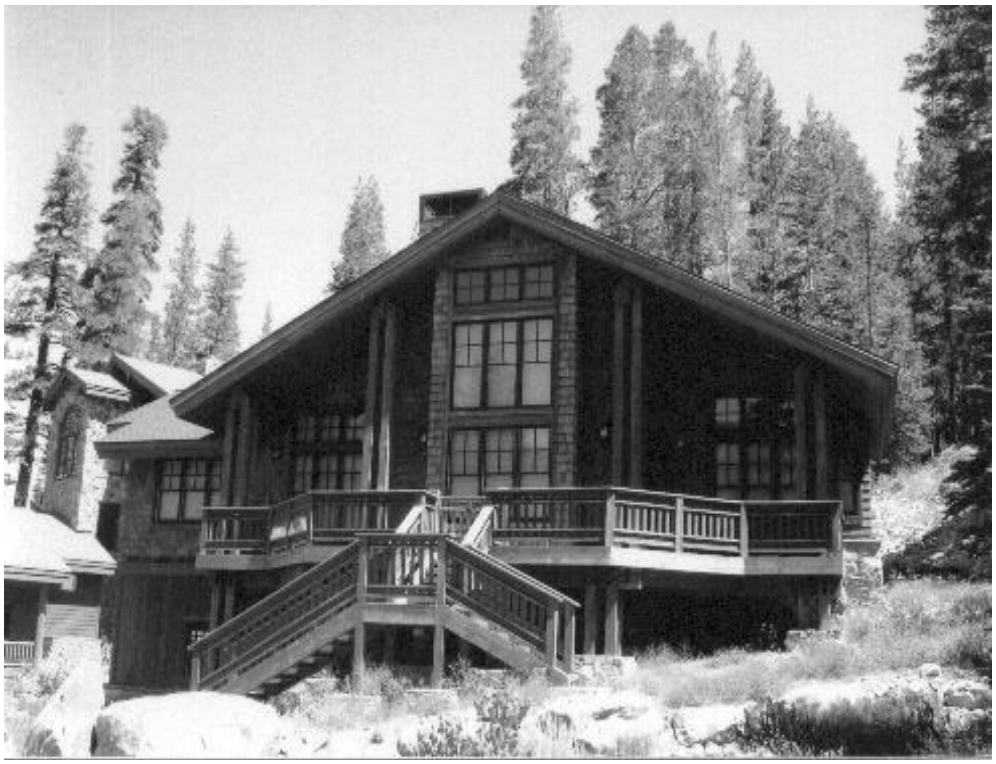


MOUNTAIN RESIDENCES
D-8 QUALITY

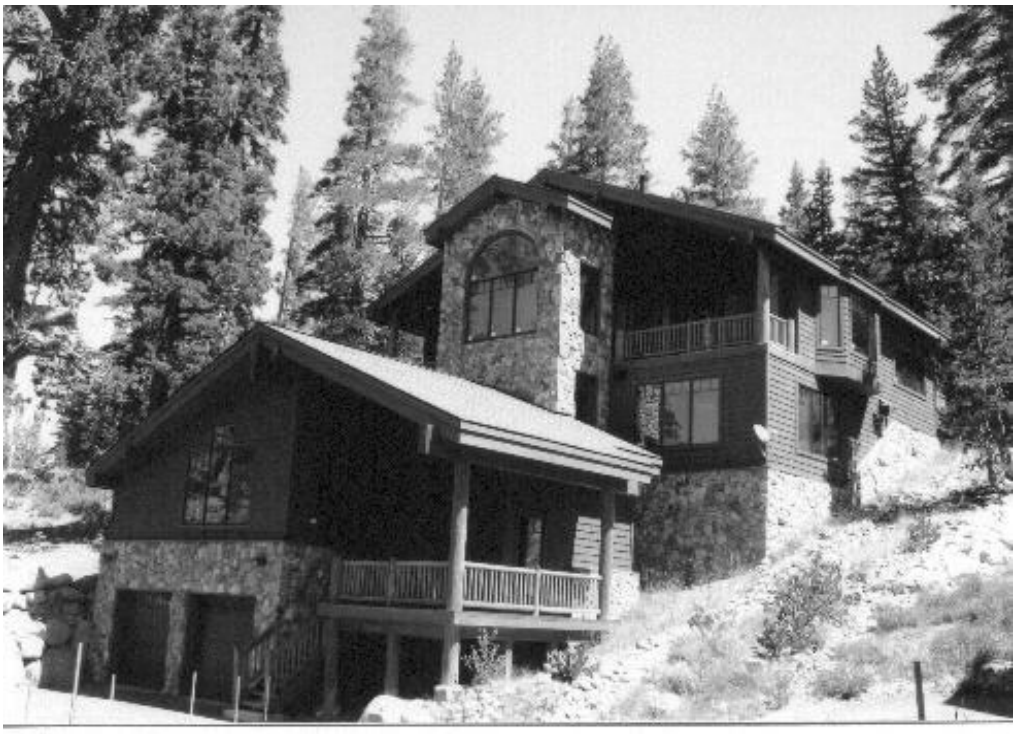
MOUNTAIN RESIDENCES
"D" CONSTRUCTION
CONVENTIONAL BUILDING SPECIFICATIONS

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 glulam 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 sinks in full baths; full ceramic tile showers; good ceramic tile vanities	
Kitchen Good 20' hardwood veneer base and wall cabinets; fixtures on cooking islands Countertop/Drain Board: Good quality ceramic tile, marble, granite, Corian®, or equivalent	
Plumbing Ten good fixtures; fire sprinklers; two water heaters	
Electrical Romex® or sheathed 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
D-9 QUALITY



MOUNTAIN RESIDENCES
D-9 QUALITY



MOUNTAIN RESIDENCES
"D" CONSTRUCTION
A-FRAME BUILDING SPECIFICATIONS

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; fire sprinklers; water heater	
Electrical Knob and tube, Romex® or sheathed wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
A-FRAME BUILDING SPECIFICATIONS

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; fire sprinklers; water heater	
Electrical Romex® or sheathed wiring; low-cost fixtures	
Special Features None	

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
A-FRAME BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 8' to 12' plastic laminate	
Plumbing Seven average fixtures; fire sprinklers; water heater	
Electrical Romex® or sheathed wiring; average fixtures	
Special Features Drop-in range with hood; one sliding glass door	

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
A-FRAME BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 12' to 16' plastic laminate or average ceramic tile	
Plumbing Seven average fixtures; fire sprinklers; water heater	
Electrical Romex® or sheathed wiring; average fixtures	
Special Features One 8' sliding glass door; built-in range and oven	

MOUNTAIN RESIDENCES
"D" CONSTRUCTION
A-FRAME BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 15' to 18' good plastic laminate or ceramic tile	
Plumbing Nine good fixtures; fire sprinklers; one or two water heaters	
Electrical Romex® or sheathed wiring; good fixtures	
Special Features Built-in oven, range, garbage disposer, dishwasher, hood; large glass area; ornate entry doors	

AH 531.30A: MULTIPLE-FAMILY RESIDENCES

All Multiple-Family Residence cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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

Square foot costs in AH 531.30 include all costs and components described on page 2 of AH 531.10A, the *Costing Information* chapter of this handbook section. They include only those built-ins described in the building specifications.

MULTIPLE-FAMILY RESIDENCES
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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" non-reinforced concrete block; painted exterior Windows: Low-cost steel sash
Roof Framing: 2" x 4" rafters, 24" o.c. Cover: 3 ply built-up 15 lb. 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 Countertop/Drain Board: 4' wood or sheet vinyl
Plumbing Fair quality fixtures; fire sprinklers
Special Features None
Electrical Knob and tube, Romex® or sheathed wiring; simple fixtures

MULTIPLE-FAMILY RESIDENCES
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 5' plastic laminate
Plumbing Galvanized pipe; low-cost fixtures; fire sprinklers
Special Features None
Electrical Romex® or sheathed wiring; low-cost fixtures

MULTIPLE-FAMILY RESIDENCES
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 6' average ceramic tile
Plumbing Galvanized pipe; average quality fixtures; fire sprinklers
Special Features 3' ceramic tile or plastic laminate vanity in bath
Electrical Romex® or sheathed wiring; average fixtures

MULTIPLE-FAMILY RESIDENCES
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 8' ceramic tile or good plastic laminate
Plumbing Galvanized pipe; good fixtures; fire sprinklers
Special Features Average quality garbage disposer, range hood and fan; 4' ceramic tile vanity in bath
Electrical Romex® or sheathed wiring; average quality fixtures

MULTIPLE-FAMILY RESIDENCES
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

C-8 QUALITY

Foundation Reinforced concrete
Floor Structure Standard wood frame or reinforced concrete
Walls and Exterior 8" reinforced split face or concrete 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 Countertop/Drain Board: 10' good ceramic tile
Plumbing Copper tubing; good fixtures; fire sprinklers
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® or sheathed wiring; good quality fixtures

MULTIPLE-FAMILY RESIDENCES
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 lb. 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 Countertop/Drain Board: 4' wood or vinyl tile squares
Plumbing Fair quality fixtures; fire sprinklers
Special Features None
Electrical Knob and tube, Romex® or sheathed wiring; simple fixtures

MULTIPLE-FAMILY RESIDENCES
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 5' plastic laminate
Plumbing Galvanized pipe; low-cost fixtures; fire sprinklers
Special Features None
Electrical Romex® or sheathed wiring; low-cost fixtures

MULTIPLE-FAMILY RESIDENCES
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 6' average ceramic tile
Plumbing Galvanized pipe; average quality fixtures; fire sprinklers
Special Features 3' average ceramic tile or plastic laminate vanity in bath
Electrical Romex® or sheathed wiring; average fixtures

MULTIPLE-FAMILY RESIDENCES
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 12' average ceramic tile or good plastic laminate
Plumbing Galvanized pipe; good fixtures; fire sprinklers
Special Features Average quality garbage disposer, range hood and fan; 4' ceramic tile vanity in bath
Electrical Romex® or sheathed wiring; average quality fixtures

MULTIPLE-FAMILY RESIDENCES
"D" CONSTRUCTION
BUILDING SPECIFICATIONS

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 Countertop/Drain Board: 16' good ceramic tile
Plumbing Copper tubing; good fixtures; fire sprinklers
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® or sheathed wiring; good quality fixtures

AH 531.35A: MANUFACTURED HOUSING

All Manufactured Housing cost tables are published in AH 531, located on the BOE website.

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 MOBILE HOME 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) 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 AH 531.35 or other commercial cost services, such as *Marshall & Swift Residential Cost Handbook*. Costs in AH 531.35 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 that have recently sold, with appropriate adjustments made to the sale prices for any differences. Frequently, the sale 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 sale price must be extracted from each sale before the sale can be used as a comparable. Since site value is inherent in most sale 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 AH 531.35 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 section 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 AH 531.35 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 AH 531.35 may be found in other chapters of AH 531; for example, concrete work or yard improvements. Concrete perimeter foundation costs are included in AH 531.35. ***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 in AH 531.35 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 AH 531.35 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 that 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, or other items. **For manufactured homes, do not use the location maps.**

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 fiberboard 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 feet 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

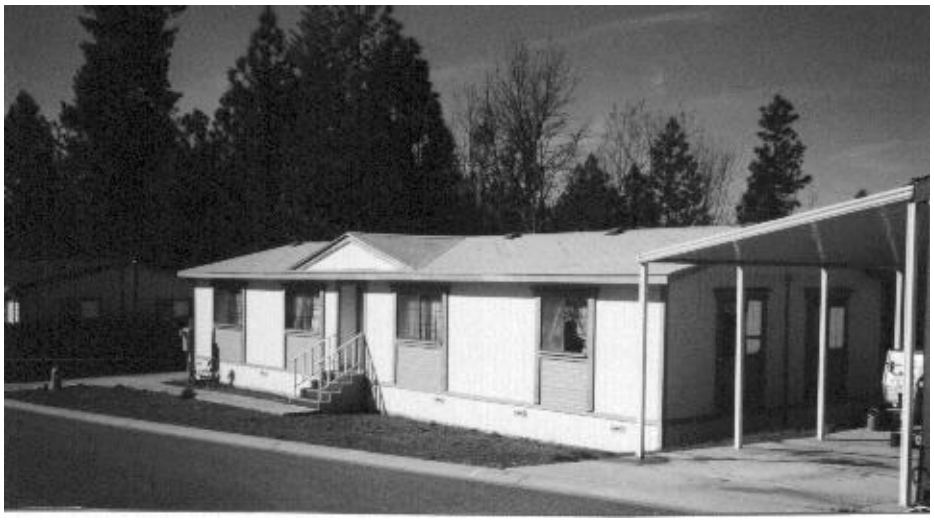
MANUFACTURED HOUSING
QUALITY CLASS 5

MANUFACTURED HOUSING
BUILDING SPECIFICATIONS
QUALITY CLASS 6

This is the average quality manufactured home in a price range usually found in older 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 feet plastic laminate counter; average quality plywood cabinets with raised panel doors; built-in range and oven, hood and fan; optional dishwasher
Baths and Plumbing 1-3/4 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
QUALITY CLASS 6



MANUFACTURED HOUSING
QUALITY CLASS 7
BUILDING SPECIFICATIONS

This manufactured home is above average in quality. This class of home is usually found in the newer, more 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 feet 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 feet cultured marble vanity, twin basin master bath; good cabinets; 30 to 40 gallon water heater
Bedrooms 10± linear feet 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
QUALITY CLASS 7

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, those features 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 feet 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 feet 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
QUALITY CLASS 8

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 2-3/4 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 sink 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
QUALITY CLASS 9

AH 531.40A: BUILDING ADDITIVES

All Building Additive cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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 that reflects inclusion of all appropriate costs. The Building Additive costs included in the *Building Additives* chapter of the AH 531 (AH 531.40) consist of the following components:

- Covered Porches and Lean-Tos
- Uncovered Porches
- Wood Decks and Porches
- Porch Roofs
- Residential Basements
- Balconies
- Stairs
- Heating and Cooling Systems
- Sprinkler Systems
- Insulation
- Passenger Elevators
- Fire Escapes
- Burglar Alarms
- Installed Fireplaces
- Stoves (Franklin or Buck)
- Built-In Appliances
- Solar Heating and Cooling
  - Domestic Hot Water Systems
  - Solar Heated Swimming Pools
- Domestic Water Systems
  - Submersible Pumps
  - Jet Pumps
  - Pressure Tanks
  - Wells
  - Septic Tanks

BASE FOR ADDITIVE COSTS

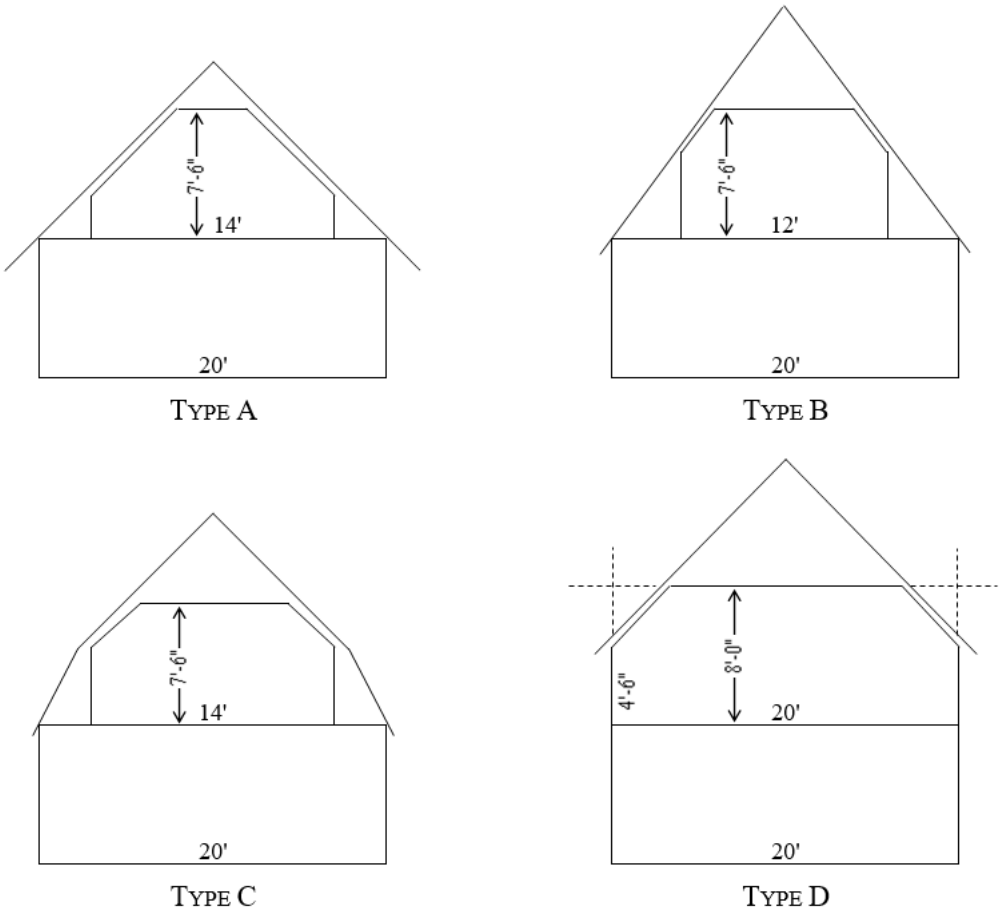
The costs of additives shown in the *Building Additives* chapter (AH 531.40) are derived from the four-county Sacramento base area as of the date in the lower right-hand corner of each page.

Note that an adjustment for time should be considered if costs in the county have changed since the January publication date of 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 *Additive Costs* 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 the *Building Additives* chapter (AH 531.40) and make appropriate adjustments. Up to three location adjustments may be necessary when using costs from this *Building Additives* chapter in AH 531 for mountain residences.

HALF-STORY AREAS



The cost data in AH 531 used to update the Sacramento base area does not typically include half-story 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

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 excluded 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 that 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. The following are the common descriptions used by industry.

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.

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 that are constructed from recycled hot water tanks.

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 that are controlled by thermostats.

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 the 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.

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.

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.

AH 531.50A: RESIDENTIAL GARAGES

All Residential Garage cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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 do not contain costs for fire sprinklers, as the International Residential Code (IRC) does not require such installation. However, local building codes should be considered for requirements concerning garages and, if sprinklers are present in a garage, the cost should be an additive to the square foot costs contained in this section.

RESIDENTIAL GARAGES
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

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
"D" CONSTRUCTION
PRE 1990 BUILDING SPECIFICATIONS

PRE 1990 (CONTINUED)

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
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

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
"D" CONSTRUCTION
POST 1990 BUILDING SPECIFICATIONS

POST 1990 (CONTINUED)

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
"C" CONSTRUCTION
BUILDING SPECIFICATIONS

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" non-reinforced 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

AH 531.51A: YARD IMPROVEMENTS

All Yard Improvement cost tables and location adjustment factors are published in AH 531, located on the BOE website.

INTRODUCTION

The Yard Improvement costs included in the *Yard Improvements* chapter of the AH 531 (AH 531.51) consist of the following components:

- Swimming Pools
- Below Ground Spas
- Above Ground Hot Tubs and Spas
- Curbs
- Fences
- Wood Gates
- Chain Link Gates
- Paving
- Uncovered Patios
- Garden Steps and Stairs
- Mowing Strips
- Concrete Block Walls – including Foundation and Capping
- Lawn Sprinklers
- Patios

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, among others, 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 for shipping the pool from the manufacturer to the local installer. 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.

AH 531.51 includes cost information for concrete pools, fiberglass pools, and in-ground liners. Additionally, cost information related to swimming pools is included for swim spas, heaters, slides, diving boards, concrete decking, redwood decking, solar heating, filters, permits, and pool sweeps.

AH 531.51 also includes cost information for detached Gunite® and fiberglass below-ground spas and spa additives such as remote controls and solar controls.

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.

There is little difference in spa and hot tub installed costs. Below ground 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 tables in AH 531.51 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.

AH 531.60A: IN-PLACE COSTS (SEGREGATED COSTS)

All In-Place (Segregated) cost tables and location adjustment factors are published in AH 531, located on the BOE website.

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. The *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 in AH 531***.

The In-Place (Segregated) costs included in the *In-Place Costs (Segregated Costs)* chapter of the AH 531 (AH 531.60) consist of the following components:

- Reinforced Concrete Foundations
- Hillside Foundations
- Reinforced Concrete Floors
- Mudsills
- Girders
- Floor Joists
- Concrete or Masonry Walls
- Subflooring
- Wood Frame Wall Framing
- Wood Posts
- Wall Sheathing
- Ceiling Joists
- Roof Rafters
- Roof Sheathing and Decking
- Roofing
- Skylights and Options
- Gutters
- Exterior Wall Covers
- Floor Coverings

- Floor Base
- Interior Wall Lining
- Ceiling Finish
- Exterior Painting
- Interior Decorating
- Trim Painting
- Doors
- Windows
- Cabinets
- Electrical
- Plumbing
- Lighting
- Fans
- Energy Requirements Mandated by Title 24 (AB 970, 2001)

Costs in AH 531.60 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.

AH 531.70A: DEPRECIATION

All Depreciation tables are published in AH 531, located on the BOE website.

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 to 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. For example, the individual replacement of water heaters, a worn-out roof or new paint inside and out 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.

EXAMPLES

Example A:
Assume that an estimate of the current replacement cost new (RCN) of an original portion of a home built in January 2015 is $225,000 and that the RCN of an addition built in January 2018 is $50,000. The mathematical process that results in a weighted age as of January 2023 is as follows:

$225,000	× 8 (Age of Original Construction)	=	$1,800,000
$50,000	× 5 (Age of Addition)	=	$250,000
$275,000			$2,050,000

Average age of construction: $2,050,000 ÷ $275,000 = 7.45 years, rounded to 7 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 2023 Comparative Cost Multiplier	Cost Trended to 2023	Age in 2023 (Years)	Weighted Dollar Years
2015	$160,000	1.378	$220,480	8	$1,763,840
2018	$40,000	1.469	$58,760	5	$293,800
			$279,240		$2,057,640

Average age of construction: $2,057,640 ÷ $279,240 = 7.37 years, rounded to 7 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 2023 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.

AH 531.90A: COMPACT COSTS

All Compact Costs and location adjustment factors are published in AH 531, located on the BOE website.

GENERAL

This chapter describes a method of costing intended to speed up the residential cost estimating process without reducing accuracy. Square-foot costs can 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 elements, such as construction site slope and construction materials, among others.

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 and/or fire sprinklers, 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, or other size garage is added.

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 AH 531 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 current 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 AH 531.

APPENDIX A: 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

Under the provisions of Title 24, Part 6 of the California Code of Regulations, the California Energy Commission established 16 different climate zones in the state. Each zone represents certain energy use, temperature, weather, and other factors. A zone is a geographic area that has similar climatic characteristics. An energy budget establishes a 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 the California Energy Commissions' webpage at https://www.energy.ca.gov/.

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.