MARSHALL VALUATION SERVICE

MARSHALL & SWIFT

THE BUILDING COST PEOPLE

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INTRODUCTION

WHO PUBLISHES IT

The *Marshall Valuation Service* is compiled and published by Marshall & Swift/Boeckh, LLC. The cost data presented is based on years of valuation experience, thousands of appraisals and continual analysis of the costs of new buildings. This publication has been recognized as an authority in the appraisal field since 1932.

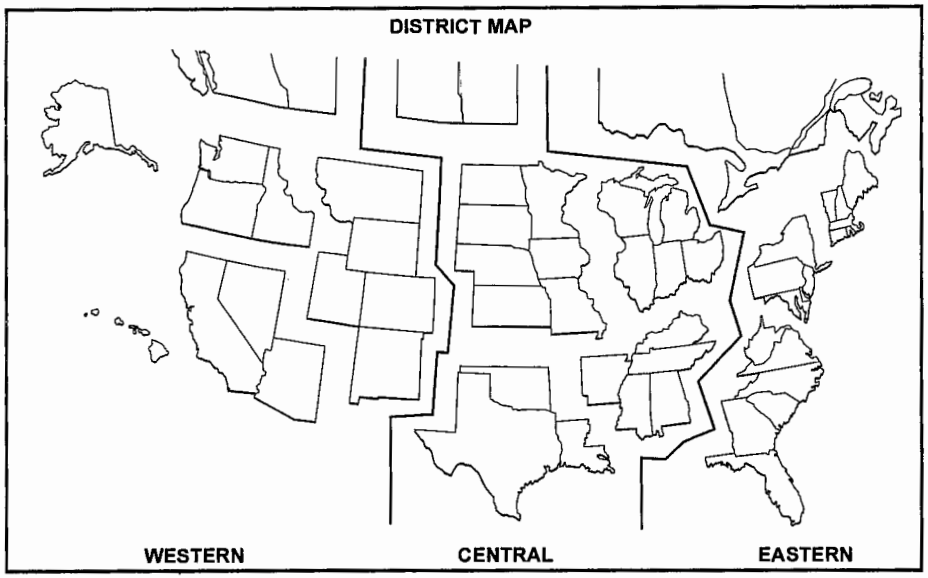
WHERE IT APPLIES

The *Marshall Valuation Service* provides cost data for determining replacement costs of buildings and other improvements in the 50 states, plus the District of Columbia, Puerto Rico, Guam and Canada. Current Cost Multipliers are furnished monthly to keep costs up- to-date in each of three districts (see map), and Local Multipliers convert the costs to specific localities. Local Multipliers for Canada also convert the costs to Canadian currency including GST.

WHAT IT IS

The *Marshall Valuation Service* is a complete, authoritative appraisal guide for developing replacement costs, depreciated values, and insurable values of buildings and other improvements. In addition, it contains indexes of building and equipment costs as well as a great deal of useful miscellaneous information for anyone interested in cost and value. It provides costs for a wide range of construction classes and types of occupancies, from warehouses to medical buildings. This service is an aid in determining values of nearly every kind of improved property where replacement or reproduction cost is desired. Modifiers are included to make the cost applicable to any size building in any locality.

Marshall & Swift has the single most comprehensive database in the marketplace. Our integrated database combines three distinct approaches to information gathering, making Marshall & Swift's method unique. We collect specific costs for labor, materials and installed components, establishing the "Building by Component" and "Building by Example" methods of estimating. We also gather cost information that reflects "Building by Sampling", using breakdowns of the actual, marketplace cost of constructing a building.



"Building by Component" reflects data identified by hundreds of locations throughout the United States and Canada. Marshall & Swift monitors the factors that drive the cost of construction and tracks actual building component costs. Marshall & Swift gathers wage rates from all major labor trades and studies crew sizes and productivity rates for the personnel necessary for the installation of components.

"Building by Example" allocates assembly costs according to various building categories (building structure, building system or building component). This systemized cost analysis approach always accounts for the total cost figure.

"Building by Sampling" is a unique approach to cost development. Most cost services provide information developed from a standard building model developed from material and labor surveys only. Marshall & Swift gears its research toward the use of actual complete building costs. In grouping those costs by building type or occupancy, method or class, and cost range or quality of construction, we develop what the appraisal market perceives as the most accurate building cost information available.

The data gathered as a result of these approaches is delivered in various systematic formats. The costs are continually researched and updated monthly, quarterly or annually, depending on specific end-use or type of product. Methods of data collection used include: current Marshall & Swift subscribers, phone surveys, field surveys, mail programs, product catalogs, building construction trade associations, numerous trade publications, government statistics and reports, contractors, architects, lending institutions, labor halls and materials suppliers.

Our data has become the industry benchmark for preliminary budget feasibility and design alternative/life-cycle costing; energy audits; estimating and bidding for new construction or partial loss and damage repair; evaluations for lending, assessing, insurance and rate-setting purposes; real estate listing and market comparable tools; sinking funds and reserve estimates and for the valuation of special-purpose properties.

WHO USES IT

Anyone who estimates building costs can make good use of this service. Present subscribers are independent appraisers, insurance companies, savings and loan associations, banks, architects, developers, accountants, assessors, engineers, and members of many other vocations who need access to easily computed, reliable cost data and proven building and equipment cost indexes.

SIMPLE TO USE

Pricing buildings is not a simple subject, but by carefully reading Sections 1 through 3, 10 and 40, you will be able to compute accurate costs by applying the listed parameters. This data can be used by professional or occasional appraisers for making rapid estimates of construction costs in varying detail. Specific instructions precede each section of the manual.

MONTHLY SERVICE

The monthly cost service consists of the Current Cost Multipliers, building cost indexes and complete revisions of sections of the manual, so that all sections of the manual are replaced on an approximate twenty-four month cycle. Equipment and City Building Cost Indexes are published each quarter.

COST AND VALUE

REPLACEMENT COST – The replacement cost of a building is the total cost of construction required to replace the subject building with a substitute of like or equal utility using current standards of materials and design. These costs include labor, materials, supervision, contractors' profit and overhead, architects' plans and specifications, sales taxes and insurance. The major portion of the *Marshall Valuation Service* is devoted to the development of Replacement or Reproduction Costs by various methods.

REPRODUCTION COST – The reproduction cost of a building is the total cost of construction required to replace the subject building with an exact replica in all salient characteristics or components. With newer structures, the terms 'reproduction' or 'replacement' will be somewhat synonymous, while with older structures, a reproduction approach endeavors to replace with like kind where possible and is more akin to the Segregated Method. In the case of totally obsolete or unavailable components, a true reproduction in its strictest sense may not always be possible or desirable.

PRINCIPLE OF SUBSTITUTION – An economic principle stating that the price of a commodity tends to be no higher than the price of a substitute having equal utility, available without undue delay. This is the basis of the Replacement Cost approach to value, where the costs found in the *Marshall Valuation Service* are obtained directly from the construction market. No system, whatever its degree of sophistication or detail, can be better than the market-derived information on which it is based.

VALUE – Value has many classifications and meanings for various appraisal purposes. A few of these are Actual, Cash, Amenity, Assessed, Book, Capitalized, Market, Economic, Depreciated, Historical, Intangible, Caprice, Loan, Physical, Salvage, Leasehold, Tangible, and many others. In any kind of appraisal work, it is necessary to know the value which is sought and to be sure that the value concept used is in conformity with sound practice and general understanding. Section 3 has a discussion of some concepts of value which may apply to a given property interest. The *Marshall Valuation Service* deals primarily with the development of Replacement Costs which may be used as an approach to any of several concepts of value.

JUDGMENT

No book or service can be more than a guide to the appraiser. Each cost must be considered in light of actual conditions encountered in a specific appraisal. For example, the demand for a particular occupancy is so strong that a premium is paid for the privilege of immediate occupancy or for the chance of speculation. The fact that some owners are willing, or are forced, to pay extreme prices may not indicate true value. Speculators are building and buying on the premise that someone will pay an even higher price. This does not necessarily mean that building costs have gone up to the extremes indicated by the prices paid, but simply that a larger economic profit is being made. Conversely, a distressed market where temporary losses or foreclosures have forced prices to a depressed level does not necessarily mean that building costs have gone down to the extremes of auction prices, etc. If recent, reliable, actual costs of construction for a particular building are obtained, they may be brought to date with the Comparative Cost Indexes or Multipliers.

Where superior or complex construction is found, costs should be modified upward, remembering that the costs represent group averages. Similarly, where inferior or unusually simple or spartan construction is found, costs should be reduced. Do not hesitate to modify costs in the manual if such procedure seems logical; however, good judgment is backed by experience and tempered by logical reasoning. This service, as with any data source, can only be a guide to the thought processes of the appraiser, who alone is finally responsible for the finished estimate of cost or value. A sound report is predicated on a thorough and systematic inspection, which is discussed further in Section 3.

KEEPING UP TO DATE

The monthly valuation service consists of:

(1) Monthly green supplements, including the Current Cost Multipliers, which are used to bring costs on previously published pages up to date. This supplement will also include the monthly Building Cost Indexes, by district and type of construction.

(2) Green supplements, including the Local Multipliers, published quarterly to convert average national costs to the locality. If the local cost changes follow the district trend, these multipliers do not change.

(3) Replacement pages providing new base costs to keep up with changing construction practices and techniques and to add new building types to previously published pages.

(4) New pages to increase the value of the service to the subscriber with a wider range of structure and miscellaneous improvement costs.

(5) The Comparative Cost Indexes and Multipliers, published quarterly. These include 113 individual City, ten Regional and three District Building Cost Indexes and Equipment Cost Indexes for 47 industries.

(6) The buff supplement, Comparative Cost Multipliers, including multipliers computed from our District Building Cost Indexes to bring Historical Costs up to date. This quick-use supplement page is issued quarterly with the Building and Equipment Cost Indexes. Individual city and region factors must be computed separately.

When you receive a replacement page, remove the old page from your book and discard it or file it in a separate file to prevent the accidental selection of obsolete figures. Additional binders for storing historical pages can be ordered at a nominal cost.

Pages are numbered on the outside top corner with the Section number, Page number and date of publication, where the date is pertinent to the data. Where the date does not affect the data on the page, the date may be omitted.

Newly published material will reflect the results of the most current research on the subject. Each republished page is an effort to improve the service and the fact that it gives added accuracy does not invalidate any prior appraisals you have made. It simply means that your future surveys will be even more accurate.

To use the service to the greatest advantage, it is of value to know the basis of the published data. This is best explained by saying that the base costs and cost ranges given are more or less running averages of actual costs. Each time a page is republished, additional actual costs for the buildings or other improvements listed are weighted and added to the sample, discarding some of the older samples already in the group.

The data is received by us from sources we believe to be reliable, but no warranty, guaranty or representation is made by Marshall & Swift as to the correctness or sufficiency of any information, prices or representations contained in the *Marshall Valuation Service*, and Marshall & Swift assumes no responsibility or liability in connection therewith.

The published base costs, for the most part, represent completely finished buildings in the physical or hard construction sense, but not necessarily completely finished projects, which could include consideration for a variety of developmental and/or site improvement costs. Failure to recognize this distinction could result in a final value estimate that is incomplete, depending on the type of appraisal assignment. Listed under "What the Costs Do Not Contain" are a number of financial and operational soft cost factors that may require consideration.

WHAT THE COSTS CONTAIN

(1) In the Calculator Section, the actual costs used are final costs to the owner and will include average architects' and engineers' fees. These, in turn, include plans, plan check and nominal building permits, and surveying to establish building lines and grades.

(2) In the Segregated Cost and most Unit-in-Place Cost Sections, except as noted, the architects' fees are omitted. For these sections, a schedule of typical fees is printed in Section 99. However, each listed item will have its pro rata share of the other miscellaneous costs included in the construction of the whole building or other improvement.

(3) Normal interest on only the actual building funds during period of construction and processing fee or service charge is included. Typically, this will average half of the going rate over the time period plus the service fee. For average construction times, see Section 85.

(4) All material and labor costs include all appropriate local, state and federal sales or GST taxes, etc.

(5) Normal site preparation including finish, grading and excavation for foundation and backfill for the structure only.

(6) Utilities from structure to lot line figured for typical setback except where noted in some Unit-in-Place Cost sections (e.g., mobile homes).

(7) Contractors' overhead and profit including job supervision, workmen's compensation, fire and liability insurance, unemployment insurance, equipment, temporary facilities, security, etc., are included.

WHAT THEY DO NOT CONTAIN

(1) Costs of buying or assembling land such as escrow fees, legal fees, property taxes, right of way costs, demolition, storm drains, or rough grading, are considered costs of doing business or land improvement costs.

(2) Pilings or hillside foundations are priced separately in the manual and are considered an improvement to the land. This also refers to soil compaction and vibration, terracing, etc.

(3) Costs of land planning or preliminary concept and layout for large developments inclusive of entrepreneurial incentives or developer's overhead and profit are not included, nor is interest or taxes on the land, feasibility studies, certificate of need, environmental impact reports, hazardous material testing, appraisal or consulting fees, etc.

(4) Discounts or bonuses paid for financing are considered a cost of doing business, as are funds for operating startup, negative cashflow during development, project bond issues, permanent financing, developmental overhead or fixture and equipment purchases, etc.

(5) Yard improvements including septic systems, signs, landscaping, paving, walls, yard lighting, pools or other recreation facilities, etc., which can be priced separately from Unit-in-Place Sections.

(6) Off-site costs including roads, utilities, park fees, jurisdictional hookup, tap-in, impact or entitlement fees and assessments, etc.

(7) Furnishings and fixtures, usually not found in the general contract, that are peculiar to a definite tenant, such as seating or kitchen equipment, etc.

(8) Marketing costs to create first occupancy including model or advertising expenses, leasing or brokers' commissions, temporary operation of property owners' associations, fill-up or membership sales costs and fees.

(9) General contingency reserve where a percentage of the total cost is set aside for some unknown future event, such as labor strikes, anticipated labor and material increases, etc.

TYPES OF BUILDINGS

Buildings are classified in the *Marshall Valuation Service* by occupancy and grouped into sections by occupancies having certain similar cost characteristics. A building's present use might not be the same as that for which it was constructed and in some cases must be priced from the original use for which designed. In general, if the designed use and the actual use differ, the design determines the cost to be used in estimating the basic replacement cost, while the depreciation or obsolescence is affected by the present use. Types of buildings are divided into similar groups for the Calculator and Segregated Cost Methods. See Occupancy Section Reference in Section 2.

In addition, many less common buildings are included in the cost pages, as well as some ancillary structures such as basements and mezzanines, etc., which are listed under the various occupancies with which they are usually associated.

DESCRIPTIVE AIDS

In the *Marshall Valuation Service*, you will find descriptions and pictures of buildings provided as a scale of comparison. You, as a user, must provide the discrimination necessary to fit these costs to the specific building which you are valuing.

The Replacement Cost of a building is determined in this system by benchmarking – that is, comparing the building under appraisement with buildings whose costs are known. The *Marshall Valuation Service* provides an organized collection of these known costs, collated and averaged to make them most useful to you.

The material is classified under descriptive headings which, if clearly understood, will lead you directly to the desired costs. Explanation of these headings is contained in this section and the three following introductory sections.

Since base costs are based on a certain size and shape relationship, story height, heating, and number of stories, adjustments and refinements must be made for the subject property. It is recommended that a standard procedure, as outlined by the standard forms, be followed to lessen any chance of error.

To understand the manual, Sections 1 and 3 should be read in detail. Section 10 with its examples of the Calculator Cost Method should be studied as well as Section 40 with its detailed example of the Segregated Cost Method. A discussion and example of applying indexes and the validity of prior costs can be found in Section 98.

QUESTIONS

We invite any inquiries that will give you a more thorough understanding of the use of the manual – though, of course, we cannot work out valuations for you.

Detailed costs on many minor items are not published in the book and we tend to discourage questions regarding them since they often encourage subscribers toward an undue emphasis on minor details which is not contemplated in any of the estimation methods presented in this manual.

The *Marshall Valuation Service*, plus good judgment, will allow you to concentrate on the important cost items and to avoid unimportant detail. The costs contained in the manual have a high validity, but as with any collection of cost data, they are presented as a guide to cost analysis and cannot be used blindly.

Direct all questions regarding the Service directly to:

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As an aid in processing correspondence, please use your Record Number. Your number will appear as the first entry on the label in all mailings of the *Marshall Valuation Service.*

CLASS OF CONSTRUCTION

The Class of Construction is the basic subdivision in the *Marshall Valuation Service*, dividing all buildings into five basic cost groups by type of framing (supporting columns and beams), walls, floors and roof structures, and fireproofing.

Class A buildings have fireproofed structural steel frames with reinforced concrete or masonry floors and roofs.

Class B buildings have reinforced concrete frames and concrete or masonry floors and roofs.

Class C buildings have masonry or concrete exterior walls, and wood or steel roof and floor structures, except for concrete slab on grade.

Class D buildings generally have wood frame, floor, and roof structure. They may have a concrete floor on grade and other substitute materials, but are considered combustible construction. This class includes the pre-engineered pole- or post-frame, hoop and arch-rib-frame buildings.

Class S buildings have frames, roofs, and walls of incombustible metal. This class includes the pre-engineered metal buildings, including slant-wall and quonset structures.

In each class, there will be variations, combinations, and subclasses, but for purposes of pricing, the major elements of the building should be considered in selecting costs from the tables. Thus, if a building, which is otherwise in Class B, has a wood or steel truss roof, the costs for the Class B building may still be representative, or a Class C building may have concrete plank floors. Interpolations may be made if the appraiser feels the building overlaps two classes sufficiently or the Segregated Cost Sections may be used to modify the cost.

In most localities, some buildings are built which are hybrids in construction, such as those with complete Class A framing, including columns and girders, but with wood floor joists and sheathing. In all such hybrids, the appraiser must judge whether to adjust the costs or interpolate between classes and qualities.

Further details and sketches of the various construction types will be found on pages 5 through 9 of this section, as well as in Section 51, which has definitions and sketches of framing types. Building code and ISO Construction Classifications are referenced on pages 5 through 9. Those indicated are the classification before considering any adjustments for construction deficiencies or insurance rating purposes. For example, a building of Class 6 construction that is rated as Class 1 because of extensive insulation, not listed by UL, would still be valued as a Class 6 building.

CLASS OF CONSTRUCTION INDICATORS

CLASS	FRAME	FLOOR	ROOF	WALLS
A	Structural steel columns and beams, fireproofed with masonry, concrete, plaster, or other noncombustible material.	Concrete or concrete on steel deck, fireproofed.	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.	Nonbearing curtain walls, masonry, concrete, metal and glass panels, stone, steel studs and masonry, tile or stucco, etc.
B	Reinforced concrete columns and beams. Fire-resistant construction.	Concrete or concrete on steel deck, fireproofed.	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.	Nonbearing curtain walls, masonry, concrete, metal and glass panels, stone, steel studs and masonry, tile or stucco, etc.
C	Masonry or concrete load-bearing walls with or without pilasters. Masonry, concrete or curtain walls with full or partial open steel, wood, or concrete frame	Wood or concrete plank on wood or steel floor joists, or concrete slab on grade.	Wood or steel joists with wood or steel deck. Concrete plank.	Brick, concrete block, or tile masonry, tilt-up, formed concrete, nonbearing curtain walls.
D	Wood or steel studs in bearing wall, full or partial open wood or steel frame, primarily combustible construction.	Wood or steel floor joists or concrete slab on grade.	Wood or steel joists with wood or steel deck.	Almost any material except bearing or curtain walls of solid masonry or concrete. Generally combustible construction.
S	Metal bents, columns, girders, purlins and girts without fireproofing, incombustible construction.	Wood or steel deck on steel floor joists, or concrete slab on grade.	Steel or wood deck on steel joists.	Metal skin or sandwich panels. Generally incombustible.

OUTLINE OF CALCULATOR METHOD

SQUARE FOOT METHOD INTRODUCTION

The Calculator Method gives average square meter and square and cubic foot costs for typical buildings. These costs are divided into eight sections (11 through 18), each dealing with a major occupancy group. Refinements are given on the last page or pages of each section, so that the base cost can be modified to fit buildings different from the standard descriptions. If further refinements are needed, the Segregated Cost Sections or Unit-in-Place Cost Sections may be used to adjust the cost factor.

Costs are classified by class and quality of construction. Buildings typical of a certain quality have many characteristics in common. For example, a Good Quality building will usually have good quality roofing so modifications for roof differences on a quality classified building are seldom necessary. The following are the most important square meter and square and cubic foot cost modifications. Many other modifications are possible but since they are seldom cost-important, and usually require considerable additional time to count and measure, they have been omitted from the Calculator Method which is designed to be a fairly rapid cost system.

The base cost refinements found at the end of each Calculator Section or on the cost pages, which are applied when the building being appraised varies from the general description, are as follows:

HEATING AND COOLING

Each heating and cooling base cost is an average cost for the entire building described, as installed in a moderate climate. To adjust to the climate and the type of heat used, take the difference between the average cost of the type found in the subject building as listed for the proper cost range or climate, and the cost of the type listed in the "Heat" column of the cost pages as found under "Moderate Climate", and add or subtract from the base cost. A general climate map is shown on the back pages of Section 85. If only a portion of the building is heated or cooled, then a prorated amount is to be used.

The cost ranges – low, "Mild"; average, "Moderate"; and high cost "Extreme" – for the heating and cooling systems found in each section are based on the capacity, complexity and typical occupancy load for each of the major occupancy groups listed. The lowest priced installations would normally be in a mild climate (down to 30°F), while the highest priced systems would be found in the best buildings in an extreme cold (down to -30°F) or hot, humid climate with respect to air conditioning. A further discussion can be found in Section 40, and the definitions in the Glossary, Section 90. In selecting a proper cost for basement heating, it is important to remember that a minimal number of outlets would be incidental to the overall cost of the system. When supplemental perimeter heat is found, the primary system might be priced as "Average" with the perimeter at "Low", or the primary system may be priced only at a "High Cost" range to account for the supplemental costs involved.

ELEVATORS

The standard building description indicates, by an asterisk in the mechanical column, that an allowance was made for elevators. If no elevator is found in a building of a type marked with an asterisk, subtract the elevator factor found on the cost pages from the base square meter or square foot cost. The square foot figures must be divided by the base height given for the section before being applied to a cubic foot cost.

If elevators are found in a building not marked with an asterisk, add the cost as a lump sum from the refinement pages or from the detailed costs found in Section 58. Care must be exercised when using square foot costs where building sizes may fall outside a normal range of area served.

Basement and mezzanine costs do not allow for elevators. Where elevator stops are found, add the cost per stop as a lump sum from the refinement pages, or see Section 58.

SPRINKLERS

Basic building costs do not allow for sprinkler systems. Where sprinkler systems are found, price them from the refinement pages or the corresponding Segregated Cost Section. A further discussion can be found in Section 40 and the Glossary, Section 90.

MULTISTORY BUILDINGS

Base costs are given for buildings of three stories or less. For buildings having more floors (not counting basements), a recommended percentage adjustment is shown on the cost pages. This increased cost is the net of increased frame weight, construction difficulty, high-rise wages, etc., resulting in less savings from shorter heating and plumbing runs, a single roof, etc. The added cost is applied to all floors including basements, regardless of occupancy. In using the standard form, it is applied as a multiplier equal to one plus the percentage increase, which is included in the refinement notes on the bottom of each calculator cost page.

HEIGHT

All base costs are given for a base story height which is chosen to require the least modification for all buildings in the occupancy group. The base height and a story height multiplier table for square foot, square meter and cubic foot costs are given on the refinements pages. For further discussion of height measurement, see Page 8 and Section 3.

SIZE AND SHAPE

The major effect that variation in size and shape of a building has on the square foot or meter cost is due to the variation in the proportion of exterior wall area to floor area. To adjust for this variation in cost, an average "Floor Area/Perimeter" table is provided giving a multiplier for various floor area and wall perimeter ratios. Most buildings being appraised will not have the exact area and perimeter shown on the table, so some interpolation is necessary. Usually the multiplier can be approximated accurately enough without a detailed interpolation. An example of a two-way interpolation is shown on Page 9.

In multistory buildings, use the average floor area and the average perimeter to enter the Floor Area/Perimeter table, and the average story height for the story height multiplier.

OUTLINE OF CALCULATOR METHOD

COMMENTS AND EXPLANATIONS

The costs in the Calculator Sections are averages of detailed estimates, actual cost breakdowns, and total end costs of many actual construction projects. These costs are assembled into groups by typical occupancy and general quality, and each is adjusted to fit the base description, but the only items adjusted are those outlined on the previous page. All other construction components are considered as commensurate with the general quality of the building. A number of construction components affect the total cost of a building and taking them all into consideration would entail a complete, detailed estimate. The refinements discussed on Page 1 are provided to show the most significant effect on the total cost of the building. They are all modifications that can be considered and computed readily, and this system provides an accurate estimate in a reasonably short time. For those who wish to give more detailed consideration to additional construction components, we suggest the use of the Segregated Cost Method, Sections 40 through 48, or further refinement of their approach by using various Unit-in-Place costs found in Sections 51 through 58.

EXAMPLE

A filled-in field form and sample pages from which the prices and refinements in the example are taken are shown in Figures 1 through 13. A more detailed example begins on Page 10.

The subject building used in the example is a three-story, Good Quality, Class C apartment building with brick exterior walls and no elevators or sprinklers. The dimensions are 50' x 100' with a height of 33'. This information, along with the age and condition of the building, is entered on Lines 4 through 12 of the form. The area and perimeter are computed on the back of the form as shown in Figure 2.

The base square foot cost, $117.98, is entered on Line 13 from the Calculator Costs (Figure 3). In the example, the subject building has warm- and cool-air central system (multizoned, large-capacity unit) for an extreme climate, whereas the base cost includes a heat pump system for a moderate climate. The difference ($20.35 less $10.16) or plus $10.19 (from Figure 4) is entered on Line 14. An amount for elevators is included in the base cost, and as there is no elevator in the subject building, a deduction of $3.45 must be made (Figure 3) and entered on Line 15. There were no miscellaneous items to add, so the adjusted square foot cost is $117.98 plus $10.16 minus $3.45, or $124.72. The total is entered on Line 17.

The number of stories (three) is our base figure, so our multiplier on Line 18 is 1.000. The 11-foot average story height is more than the 10 foot base, so the correct multiplier, 1.027, is taken from the table (Figure 5) and entered on Line 19. Entering the Floor Area/Perimeter table (Figure 5) with the average floor area, 5,000 square feet, and the average perimeter, 300 feet, we find a multiplier of .984, which is entered on Line 20. Lines 18, 19 and 20 are multiplied together, and the answer, 1.011, is placed on Line 21. Line 17 is then multiplied by Line 21, and the answer, $124.72, which is the refined square foot cost, is entered on Line 22.

The current cost multiplier entered on Line 23 is found in the Monthly Green Supplement, Section 99, Page 3. For the example, it is assumed to be 1.03 (Figure 6). The local multiplier is found in Section 99, Pages 5 through 10, and is assumed to be 1.07 for the example (Figure 7). The multiplier is entered on Line 24. The current cost multipliers, sent out each month, adjust the costs to current figures, and the local multipliers, sent quarterly, adjust the costs for local differences.

Line 22 is multiplied by Lines 23 and 24 to give the final square foot cost on Line 25, and then is multiplied by the total square footage of the floor area, which is entered on Line 26 from the back of the form. The answer, $2,084,550, is placed on Line 27. In the example, there were no Lump-sum additions, so Line 28 is left blank, and the sum of Lines 27 and 28 is entered on Line 29 as the replacement cost.

Line 30, percentage of depreciation, is a matter of judgment based on the appraiser's inspection of the property and examination of the factors influencing depreciation, including all forms of deterioration and obsolescence, and using Section 97 as a guide. In the example, depreciation for a life expectancy of 55 years and an effective age of 11 years was 5% (Figures 8 and 9), and this was entered on Line 30. The dollar amount was computed and entered on Line 31. Line 32 is the replacement cost less depreciation (Line 29 – Line 31).

CALCULATOR METHOD NOTES

OCCUPANCY VARIATIONS

Care should be taken to use proper costs and modifiers for varying types of occupancy. For example, compute separately a floor or section of a building constructed for a use differing from that of the building generally, i.e., compute the basement as a basement.

When different occupancies constitute one building, such as a church sanctuary/Sunday school classroom or car dealership showroom/service garage building, etc., the cost for each section is modified by its own wall height and area perimeter multipliers, considering half of the common wall to belong to each of the portions.

In the detailed example that follows, the building is a twenty-story office building with the first two floors occupied by a department store and the other eighteen stories by offices. In addition, there are three levels of parking basement below grade.

In this case there are three different divisions of the building to be computed separately: the office portion (18 floors), the store (2 floors) and the parking garages (3 floors). Each of these is subject to refinements based on its individual characteristics except that all, including the basements, are subject to the same multiplier for the number of stories above grade in the entire building.

PORCHES, BALCONIES, MEZZANINES, ATTICS

Construction costs for mezzanines, balconies, attics and porches differ from those of the rest of the building, and are best priced by individually building up their component parts from the Segregated or Unit-in-Place Cost Sections. Some average cost parameters are listed in the Calculator Sections under specific occupancies where commonly encountered.

As an alternative, you can estimate that the cost of the area in question is only a fraction of the cost of the remainder of the building. For instance, the cost per square foot for a mezzanine might be estimated at one-half that of the basic building.

Use the following fractions of the total square foot cost for porches. Small indented entrances should be computed as part of the main residence.

	Small	Large
Porches:		
Low slab, shed roof, no ceiling	1/5 to 1/4	1/6 to 1/5
Raised floor, concrete or wood, banister, shed roof, no ceiling	1/4 to 1/3	1/5 to 1/4
Raised floor, roof like residence, no ceiling	1/3 to 2/5	1/4 to 1/3
Raised floor, ceiling, roof like residence	2/5 to 1/2	1/3 to 2/5
Recessed, under main roof	1/2 to 2/3	2/5 to 1/2
Enclosed sleeping or service	1/2 to 2/3	2/5 to 1/2
Balconies and mezzanines:		
Exterior balcony and overhanging roof	1/3 to 1/2	1/4 to 1/3
Unfinished mezzanines and balconies	1/4 to 1/3	1/5 to 1/4
Finished mezzanines and balconies	1/2 to 2/3	1/3 to 1/2
Attics:		
Unfinished attics, walk around	1/4 to 1/3	1/5 to 1/4
Finished attics	2/3 to 3/4	1/2 to 2/3

PENTHOUSES

It is usually best to compute elevator and equipment penthouses from the Segregated and/or Unit-in-Place Costs and to enter them as a Lump Sum addition. With experience, it is often reasonably accurate to use 1/6 to 1/2 of the building square foot cost in high-rise buildings where the deviation will be negligible in the total cost. Some average cost parameters are listed in Calculator Section 15.

For finished penthouses, such as, those containing roof apartments, restaurants, etc., use the proper cost factors for that occupancy.

BASEMENTS

Basements should be computed separately from the upper floors and are subject to their own modifiers and multipliers except in multistory buildings where they additionally receive the same multistory multiplier as the balance of the building. Some average cost parameters for typical basement types, i.e., utility, parking, display, etc., are listed in the Calculator sections under specific occupancies where commonly encountered. These costs can be used for all occupancies within the occupancy section group, where appropriate.

Finished basements, such as, those containing apartments, retail stores, etc., as a general rule of thumb will cost approximately 75% to 80% of the comparable aboveground portion of the building. Semibasements that are half exposed will cost 85% to 90% of the same figure.

MONUMENTAL ARCHITECTURE

Where costs refer to monumental-type architecture, they refer to the older-type building with low ratios of rentable square footage to gross square footage. While it is a frequent misconception that the replacement costs of these buildings would be much higher than the modern construction, studies do not bear this out on an overall gross square foot cost, mainly due to the large increase in the proportion of electrical and mechanical costs in modern buildings in response to demands for better lighting and electric equipment circuits, more and faster automatic elevators, better heating and cooling, and stricter building codes.

As a matter of historical fact, on an economic basis, it is not the cost per gross square foot which has changed architecture, but the cost per net usable square foot, plus the demand for other amenities such as freedom from columns, increased lighting efficiency, uniform heating and cooling, and high-speed, low-operating-cost vertical transportation.

CUBAGE VERSUS AREA

In the event the estimator prefers to use volume instead of floor area in the cost computations, then certain special considerations are necessary. These considerations supplement those given on Page 1 in reference to the Square Foot or Square Meter Method. On the following pages an example is worked out by both methods to show similarities and differences. If the proper refinements and adjustments are made, both methods will give the same answer, except for such breakage as is caused by the number of decimal places to which the factors are carried. Generally, the Square Foot Method will be easier to use because of easier computations.

HEAT AND ELEVATORS

Heating and cooling and elevator deductions are given as a square foot cost on the refinement pages of each Calculator Section. These figures must be divided by the base height of the section before being applied to the cubic foot cost. For example, if the elevator deduction shown on the cost page was $.90 and the base height for the section is 10 feet, deduct $.09 from the cubic foot cost.

HEIGHT

If the height of the subject building varies from the basic story height, multiply the base cost by the cubic foot multiplier opposite the average story height listed in the tables on the refinements pages.

All other refinements and multipliers are the same as for the square foot method with the exception, of course, that the total volume of the building is used instead of total floor area.

In some buildings, it is better to compute the total cubage and divide by the total square footage of floor area, excluding mezzanines or balconies, to get an effective height to enter in the wall height modifier table. Some of these buildings are A-frame, hi-dome, those with extremely high-pitched roofs and buildings with a wide variation in wall heights. Churches, theaters and auditoriums often require the cubic foot approach, and many appraisers and estimators prefer to use the cubic foot method of estimating for these, while using the square foot method for the more regular shaped structures, but either method will give good results for good work.

CALCULATOR METHOD NOTES

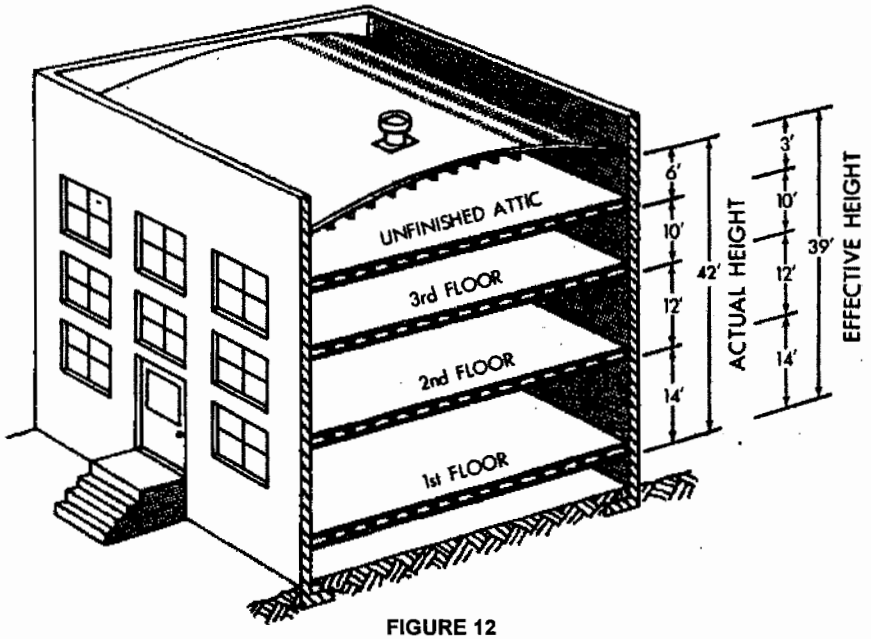


FIGURE 12

STORY HEIGHT MULTIPLIERS

Costs in the Marshall Valuation Service are based on a typical story height for each Calculator Section. The square and cubic foot costs are interchangeable by dividing or multiplying by the standard height. For instance, $30.00 per square foot in Section 13 where the standard height is 12 feet is equivalent to $2.50 per cubic foot.

If the building height were 14 feet, the area would remain the same but the cost per square foot would go up; however since some cost items remain the same or increase little, the cost per cubic foot decreases. For example, a store building of 1,000 square feet, the cost would be:

12' high	1,000 square feet x $30.00 = $30,000
	12,000 cubic feet x $2.50 = $30,000
14' high	1,000 square feet x ($30.00 x 1.042) = $31,260
	14,000 cubic feet x ($2.50 x .893) = $31,255

The modifying factors are from Page 41, Section 13, and indicate the interchangeability of the square and cubic foot costs.

HEIGHT MEASUREMENT

Story height is measured from the bottom of one floor or ceiling to the bottom of the next floor, disregarding mezzanines, which are figured as an added cost.

For unfinished attics, add 1/2 of increased height.

For high parapet walls, price from Section 55. Low parapets are usually negligible.

For buildings with very high-pitched roofs, A-frames, domes, etc., compute the cubage and divide by the square footage, excluding mezzanines, to determine the effective height.

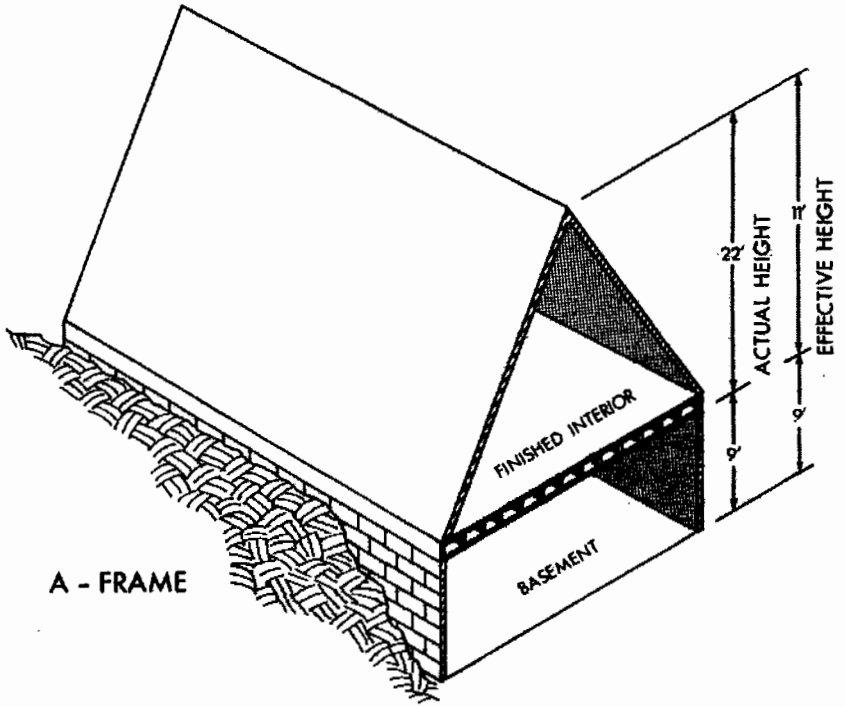


FIGURE 13

RESIDENCES AND MOTELS

GENERAL INFORMATION

Costs are averages of final costs including architects' fees and contractors' overhead and profit. They do not represent any building illustrated except as the building is included in the averages. Refinements to the average costs are given on the cost pages and following pages of this section.

In this section, the Floor Area refinement is handled differently from other sections, and each of the seven groups of structures has its own table of multipliers for size. Current and Local Cost Multipliers are given in Section 99. For buildings with solid stone exterior walls, particularly older brownstone-type buildings where the walls could have a thickness of one foot or more, it is advisable to use Section 42 when determining true reproduction costs, as the costs of these buildings may be as much as 50% higher than the costs contained in the Calculator section.

DESCRIPTIONS

The abbreviated descriptions given in the tables show some of the items generally found in buildings of the class, quality and occupancy listed. They are merely indicative of many buildings in this cost classification, and are not meant to be building specifications.

CONSTRUCTION

Buildings are divided into five construction classes: A, B, C, D and S, as described in Section 1.

In each class there will be variations and subclasses, but for purposes of pricing, the major elements of the building should be considered in entering the tables. Thus, if a building which is otherwise a Class B has a steel truss roof, the costs for the Class B building will still be representative. Interpolations may be made if the appraiser feels the building overlaps two classes, or the Segregated Costs in Section 42 may be used for adjustments.

This section should be used to estimate the cost of single-family residences and multiunit residential buildings of similar construction, such as row houses, duplexes, flats and garden apartments, where most components are similar in character. The factors given are averages for one-, two- and three-story buildings. For most residential buildings over three stories high, Section 11 should be used; however, three-story light residential construction may be priced from this section.

OCCUPANCY VARIATIONS

Care should be taken to use proper costs for varying types of occupancy. For example, compute separately a floor or section of a building constructed for a use differing from that of the building generally, i.e., compute the basement as a basement.

As an example, a building is a multistory commercial building with the first floor occupied by retail stores, and the other floors by multiple residences. In addition, there is a basement below grade. In this case three different divisions of the building must be computed separately: the retail portion (Section 13), the multiple residence and the basement. Each of these is subject to refinements based on its own individual characteristics. A complete Mixed Retail/Residential Center cost can be found in Section 13.

NOTE: In valuing buildings found in this section, which may be of A-frame construction, have high-pitched roofs, or have various wall heights and roof shapes, the recommended procedure is to compute the total cubage and divide by the total floor area, excluding balconies, to estimate the effective wall height with which to determine the wall height modifier to the base factor. A further discussion on height measurement can be found in Section 10.

OCCUPANCY

Motels are multiple sleeping units of three or fewer stories, with or without individual kitchen facilities, and designed for transient occupancy. **Extended-stay facilities** have larger rooms to accommodate kitchen facilities, but will have limited support facilities. For Class A or B structures, use the hotel costs in Section 11. Where large restaurants and lounges are connected with a motel, these should be priced from Section 13. However, an amount of office, lobby, coffee shop, meeting room and managers' living space commensurate with the number of units and quality is included in the costs. Large convention halls should be priced from Section 16. Swimming pools should be added from Section 66, and enclosures from Section 11. **Guest sleeping room buildings** are listed separately as an alternate or individual pricing method.

Office-apartments are to be used in conjunction with the guest rooms or independently as typically encountered in mobile home parks, mini-warehouse developments, etc. Prefabricated office and guard houses are found in Section 64.

Lodges are generally of rustic design with multiple sleeping units and lobby with some additional plumbing and kitchen facilities for the additional unrelated number of guests. The better qualities will include large formal dining and meeting rooms.

Guest cottages, cabins, or casitas are individual sleeping bungalows or villas without kitchen facilities. The lowest quality are camp or marginal motor court facilities without plumbing, while the best resort types will contain luxury bathroom suites.

Bed and breakfast inns are residential-type buildings designed for transient boarding and are more family style in character than lodges. Rooming houses are found in Section 11.

Multiple residences, often referred to as garden apartments, are buildings of three or fewer stories, in which each unit has a kitchen and bath, and which are designed for other than transient occupancy. Priced per building, costs include common areas such as lobbies, hallways, laundry, recreation, etc. **Senior citizen (independent living) buildings** may have limited individual kitchen facilities and/or common kitchenette and recreation areas associated with congregate housing for the elderly. **Elderly assisted living** buildings consist of studios and one- or two-bedroom suites with limited kitchens and common dining areas, lounges, craft and game, beauty parlor and therapy rooms commensurate with the quality. For Class A or B construction, use the appropriate apartment or elderly home costs in Section 11. Where large clubhouses are connected with a multiunit residential development, they should be priced from Section 11. Although multiple residences built as condominiums are sometimes required by building and zoning codes to have certain items not required for rental units, basically "condominium" is a type of ownership and not a type of construction, and the multiple residence costs are valid. There can be extra developers' or soft costs related to a type of ownership which are not considered in this manual. See Section 1. For skilled nursing units, see Convalescent Hospitals, Section 15.

Retirement (continuing care) community complexes include a mix of independent, assisted living, including facilities for Alzheimer's or dementia patients and skilled nursing living units, with fitness and care facilities commensurate with the quality.

Row houses or town houses include all dwellings having a common wall. Costs are for end row houses or two-family dwellings, with adjustments for dwellings having two common walls. Refinements for one-, two-, or three-story units are given on the cost pages. They include the modern town houses, whether built for rental or condominium ownership (see discussion under multiple residences above). **Urban** and **senior citizen** units are listed separately.

Single-family residences come in many architectural styles and mixtures of styles, but basically, within the same quality, costs will vary little. Thus, the modern, the rustic, the ranch and the one-story conventional house are all variations on the same theme, as are the Cape Cod, the split-level, and the almost infinite number of other variations, by whatever name they are called in each part of the country. **High-value** or luxury and **historical residences** are listed separately.

Guest houses, granny flats or servants' quarters are second residential living units, separate from the main residences, and generally of lesser quality.

Bath houses are small changing, rumpus/game room structures, usually supporting recreational improvements in a residential setting. The lowest quality is a simple cabaña without plumbing, while the better quality includes the well-appointed entertainment/guest facility.

Miscellaneous housing includes log, earth-sheltered, rammed-earth, baled-straw and tropical housing. The mountain and resort cottages or cabins are listed separately. Migrant labor cabins and bunk houses are found in Section 17.

Basement costs include finish compatible with the type of basement, as well as stairs and ramps as necessary. Elevator stops can be added from the refinement page.

SINGLE FAMILY RESIDENCES

CLASS D

1. EXCELLENT

2. EXCELLENT

3. EXCELLENT

4. EXCELLENT

5. VERY GOOD

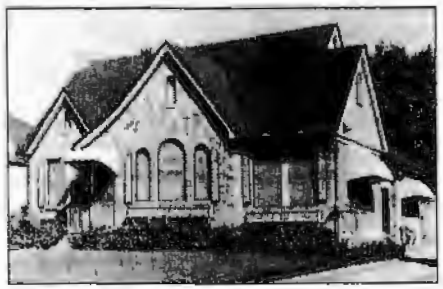
6. VERY GOOD

7. VERY GOOD

8. GOOD

9. GOOD

10. GOOD



11. GOOD

12. GOOD

13. GOOD

MOTELS (343)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Face brick, stone, metal and glass panels, highly decorative	Plaster & vinyl finishes, good carpet, built-in luxury items, good support serv.	Good lighting, many outlets, good plumbing, TV and FM circuits	Hot and chilled water	1862.15	21.63	173.00
	Good	Brick and stone trim, large glass areas, typical better chain motel	Plaster/drywall and paint, good carpet, some built-in extras, support services	Some good suites, lighting and plumbing fixtures, TV circuits	Warm and cool air	1388.54	16.13	129.00
	Average	Common brick or block, little ornamentation, commercial style	Painted block, drywall, few extras, carpet, vinyl comp., hospitality room	Adequate lighting and plumbing, TV circuits, some good fixtures	Indiv. thru-wall heat pumps	1006.42	11.69	93.50
	Fair	Block or brick, standard front, small lobby, vending area	Drywall, carpet, vinyl composition, minimum suites, no food services	Standard fixtures, guest laundry, small lobby restrooms	Indiv. thru-wall heat pumps	877.26	10.19	81.50
	Low cost	Concrete block, small office, outside entries	Painted walls, carpet, vinyl composition tile, budget rooms	Minimum code, low-cost fixtures	Wall furnace	748.09	8.69	69.50
	Cheap	Cheap block, no trim	Minimum finish, very plain	Minimum code throughout	Electric wall heater	624.31	7.25	58.00
D	Excellent	Face brick, stone veneer, metal and glass panels, highly decorative	Plaster & vinyl finishes, good carpet, built-in luxury items, good support serv.	Good lighting, many outlets, good plumbing, TV and FM circuits	Hot and chilled water	1840.63	21.38	171.00
	Good	Brick and stone trim, large glass areas, typical better chain motel	Plaster/drywall and paint, good carpet, some built-in extras, support services	Some good suites, lighting and plumbing fixtures, TV circuits	Warm and cool air	1367.02	15.88	127.00
	Average	Good stucco and siding, little ornamentation, commercial style	Drywall or plaster, few extras, carpet, vinyl comp., bkft. hospitality room	Adequate lighting and plumbing, TV circuits, some good fixtures	Indiv. thru-wall heat pumps	990.28	11.50	92.00
	Fair	Siding or stucco, standard front, small lobby, vending area	Drywall, carpet, vinyl composition, minimum suites, no food services	Standard fixtures, guest laundry, small lobby restrooms	Indiv. thru-wall heat pumps	861.11	10.00	80.00
	Low cost	Siding or stucco, small office, outside entries	Drywall, carpet, vinyl composition tile, budget rooms	Minimum code, low-cost fixtures	Wall furnace	731.95	8.50	68.00
	Cheap	Cheap siding, no trim	Minimum finish, very plain	Minimum code throughout	Electric wall heater	608.16	7.06	56.50
S	Average	Insulated panels, some ornamentation	Drywall, carpet and vinyl composition, breakfast hospitality room	Adequate lighting and plumbing, TV circuits, some good fixtures	Indiv. thru-wall heat pumps	925.70	10.75	86.00

BASEMENTS AND MEZZANINES

CDS	Basement, finished	Plaster or drywall interior	Plaster/drywall, vinyl composition, finished ceiling, service functions	Adequate lighting and plumbing, utility outlets and fixtures	Space heaters	565.10	6.56	52.50
	Basement, utility	Unfinished	Unfinished, no ceiling, few partitions	Minimum lighting and plumbing	None	293.32	3.41	27.25
	Mezzanine, open	Not included	Open, finished floors and soffit	Adequate lighting, no plumbing	In bldg. cost	290.63	-----	27.00

For area adjustmensts, see Page 11. Mezzanines are not adjusted for size or height.

For story heights over 9 feet (2.74 meters), add 3% for each foot (.305 meter).

For basement units use 75% of comparable aboveground units. For semi-basement units, use 85%. For parking basements, see Page 20.

Add for elevators, fireplaces, balconies and canopies from Page 38.

Add for sprinklers and porches from pages 39-40.

Motel pools, including spas, see Section 66 page 7. For greater detail, see Section 66. For pool enclosures, see Section 11.

For average floor area and cost per room, see Page 37.

KITCHENS: For units having kitchens or built-in kitchen units, see Section 52 Page 6.

For equipment costs, cost per room, see Section 65.

For restaurants, see Section 13.

For convention centers, see Section 16.

ALTERNATE CALCULATOR METHOD

MOTELS

This method is presented as an alternative to the normal calculator method, which includes average build-out finish commensurate with the quality level. Listed below are typical interior finish (tenant improvement) costs based on finished living area, which can be added to a basic shell cost for a complete building cost.

SHELL MOTELS (780)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT†	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Face brick, stone, metal and glass panels, highly decorative	Good core lobby, good carpet, good support services	Luminous lobby ceiling, good core lighting, many service fixtures	None	904.17	10.50	84.00
	Good	Brick and stone trim, large glass areas, typical better chain motel	Good core lobby, good carpet, support services	Some good core lighting & plumbing fixtures	None	699.65	8.13	65.00
	Average	Common brick or block, little ornamentation, commercial style	Core lobby, few extras, carpet, vinyl composition, hospitality room	Adequate core lighting & plumbing	None	543.58	6.31	50.50
	Fair	Block or brick, standard front	Small core lobby, carpet, vinyl composition, no food services, small vending area	Rough-ins, standard fixtures, guest laundry, small lobby restrooms	None	478.99	5.56	44.50
	Low cost	Concrete block	Small office, carpet, vinyl composition tile	Rough electrical and plumbing, low-cost fixtures	None	422.48	4.91	39.25
	Cheap	Cheap block, no trim	Minimum finish, very plain, minimal core services	Rough electrical and plumbing	None	357.90	4.16	33.25
D	Excellent	Face brick, stone veneer, metal and glass panels, highly decorative	Good core lobby, good carpet, good support services	Luminous lobby ceiling, good core lighting, many service fixtures	None	871.88	10.13	81.00
	Good	Brick and stone trim, large glass areas, typical better chain motel	Good core lobby, good carpet, support services	Some good core lighting & plumbing fixtures	None	672.74	7.81	62.50
	Average	Good stucco and siding, little ornamentation, commercial style	Core lobby, few extras, carpet, vinyl composition, hospitality room	Adequate core lighting & plumbing	None	519.36	6.03	48.25
	Fair	Siding or stucco, standard front	Small core lobby, carpet, vinyl composition, no food services, small vending area	Rough-ins, standard fixtures, guest laundry, small lobby restrooms	None	457.47	5.31	42.50
	Low cost	Siding or stucco	Small office, carpet, vinyl composition tile	Rough electrical and plumbing, low-cost fixtures	None	400.96	4.66	37.25
	Cheap	Cheap siding, no trim	Minimum finish, very plain, minimal core services	Rough electrical and plumbing	None	339.06	3.94	31.50
S	Average	Sandwich panels, pre-engineered frame, adequate fenestration	Painted block, drywall or plaster, few extras, carpet, vinyl composition	Rough electrical and plumbing	None	484.38	5.63	45.00

†**HEAT** – Heating costs have been included in the total with the finished space. A prorated amount can be allocated back to the shell cost if needed, typically 10% to 20%.

For size adjustment table, see Page 11.
For other refinement notes, see Page 9.

INTERIOR BUILD-OUT (998)

(SQUARE FEET OF BUILD-OUT FINISH)

TYPE	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
Excellent	Plaster & vinyl finishes, good carpet, built-in luxury items	Good lighting, many outlets, good plumbing, TV and FM circuits	Hot and chilled water	957.99	11.13	89.00
Good	Plaster/drywall and paint, good carpet, some built-in extras	Some good suites, lighting & plumbing fixtures, TV circuits	Warm and cool air	678.13	7.88	63.00
Average	Painted block, drywall or plaster, few extras, carpet, vinyl composition	Adequate lighting & plumbing, TV circuits, some good fixtures	Individual thru-wall heat pumps	460.16	5.34	42.75
Fair	Drywall, carpet, vinyl composition, minimum suites	Standard fixtures, guest laundry, small lobby restrooms	Individual thru-wall heat pumps	398.26	4.63	37.00
Low cost	Painted walls, carpet, vinyl composition tile, budget rooms	Minimum code, low-cost fixtures	Wall furnace	322.92	3.75	30.00
Cheap	Minimum finish, very plain	Minimum code throughout	Electric wall heater	263.72	3.06	24.50

EXTENDED-STAY MOTELS (588)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Face brick, stone trim, some decoration, good chain motel	Plastic and vinyl, good lobby and support and recreation services	Good lighting, communication outlets, good plumb., kitchen area	Warm and cool air	1485.42	17.25	138.00
	Good	Brick and stone trim, good glass areas, typical upscale motel	Plaster/drywall and vinyl, good carpet, some built-in extras, all suites	Good lighting and plumbing, wet bar, kitchen, TV circuits	Package A.C.	1194.79	13.88	111.00
	Average	Common brick or block, little ornamentation, good lobby	Painted block, drywall, few extras, carpet, VCT, mixed offsets and suites	Adequate lighting and plumbing, TV circuits, average kitchen	Indiv. thru-wall heat pumps	947.22	11.00	88.00
	Fair	Block or brick, standard to better economy motel	Drywall, carpet, vinyl composition, interior corridor, offset food area	Standard fixtures and kitchenette space	Indiv. thru-wall heat pumps	855.73	9.94	79.50
	Low cost	Block or cheap brick, low-cost roof, small office, budget type	Gypsum board & paint, VCT, carpet, low-cost cabinets, single rooms	Minimum, low-cost fixtures, minimum kitchenette area	Indiv. thru-wall heat pumps	775.00	9.00	72.00
D	Excellent	Face brick veneer, stone trim, some decoration, good chain motel	Plaster and vinyl, good lobby and support and recreation services	Good lighting, communication outlets, good plumb., kitchen area	Warm and cool air	1453.13	16.88	135.00
	Good	Brick veneer, EIFS, good glass areas, typical upscale motel	Plaster/drywall and vinyl, good carpet, some built-in extras, all suites	Good lighting and plumbing, wet bar, kitchen, TV circuits	Package A.C.	1173.27	13.63	109.00
	Average	Good stucco and siding, little ornamentation, good lobby	Drywall or plaster, few extras, carpet, vinyl comp., mixed offsets and suites	Adequate lighting and plumbing, TV circuits, average kitchen	Indiv. thru-wall heat pumps	925.70	10.75	86.00
	Fair	Siding or stucco, standard to better economy motel	Drywall, carpet, vinyl composition, interior corridor, offset food area	Standard fixtures and kitchenette space	Indiv. thru-wall heat pumps	839.58	9.75	78.00
	Low cost	Low-cost siding, roof, small office, budget type	Drywall and paint, VCT, carpet, low-cost cabinets, single rooms	Minimum low-cost fixtures, minimum kitchenette area	Indiv. thru-wall heat pumps	758.86	8.81	70.50

For story heights over 9 feet (2.74 meters), add 3% for each foot (.305 meter).

For basement units use 75% of comparable aboveground units. For semi-basement units, use 85%.

For individual time-share lock-off efficiency suites, add 1200.00 to 2160.00 per unit.

Add for elevators, fireplaces, balconies and canopies from Page 38.
Add for sprinklers, porches and appliances from Pages 39-41.
See Section 65 for equipment costs.
For swimming pools, sports courts, etc., see Sections 66 and 67.

*AREA MULTIPLIERS – MOTELS

TOTAL AREA (Square Feet)	Basement	NUMBER OF UNITS 4	8	12	16	20	24	28	32	36	40	45	50	60	70	80	100	TOTAL AREA (Square Meters)
1,500	1.194	.999	1.088	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	139
2,000	1.158	.963	1.049	1.103	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	186
3,000	1.109	-----	.997	1.048	1.086	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	279
4,000	1.076	-----	.961	1.010	1.047	1.076	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	372
5,000	1.051	-----	.934	.982	1.018	1.046	1.070	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	465
6,000	1.031	-----	-----	.959	.994	1.022	1.045	1.066	1.084	-----	-----	-----	-----	-----	-----	-----	-----	557
8,000	1.000	-----	-----	-----	.957	.984	1.007	1.026	1.044	1.059	1.073	-----	-----	-----	-----	-----	-----	743
10,000	.977	-----	-----	-----	.929	.955	.977	.996	1.013	1.028	1.042	1.057	1.071	-----	-----	-----	-----	929
12,000	.958	-----	-----	-----	-----	.932	.954	.973	.989	1.004	1.017	1.032	1.046	1.070	-----	-----	-----	1,115
14,000	.943	-----	-----	-----	-----	-----	.935	.953	.969	.984	.997	1.011	1.025	1.049	1.069	-----	-----	1,301
16,000	.929	-----	-----	-----	-----	-----	-----	.936	.952	.966	.979	.994	1.007	1.030	1.050	1.068	-----	1,486
20,000	.908	-----	-----	-----	-----	-----	-----	-----	.925	.938	.951	.965	.978	1.001	1.020	1.037	1.067	1,858
24,000	.890	-----	-----	-----	-----	-----	-----	-----	-----	.915	.927	.941	.954	.976	.995	1.012	1.041	2,230
28,000	.876	-----	-----	-----	-----	-----	-----	-----	-----	-----	.906	.920	.932	.954	.973	.990	1.018	2,601
32,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.890	.903	.916	.937	.956	.972	1.000	2,973
36,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.889	.901	.922	.941	.957	.984	3,344
40,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.876	.888	.909	.927	.943	.970	3,716
50,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.862	.882	.899	.915	.941	4,645
60,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.860	.877	.892	.917	5,574
70,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.859	.874	.898	6,503
80,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.858	.882	7,432

*For larger numbers of units, enter table with any number of units, and that number times the average area per unit.

CALCULATOR METHOD

RESIDENCES AND MOTELS

REFINEMENTS

On this page and the next are means of making adjustments to the base costs given in this section in addition to those given on the cost pages. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, either price entirely, or adjust the base costs by the Segregated Cost System, Section 42, or the Unit-in-Place Cost Sections.

HEATING AND COOLING

These costs are averages of the total installed costs of the entire heating or cooling installation including the prorated share of contractors' overhead and profit and architects' fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot cost. If a cubic foot cost is used, use one-eighth the difference shown to adjust the base cubic foot cost (one-ninth for Multiples and Motels, one-tenth for Lodges and High-Value Residences). All of the heating costs included in the base costs are those listed under "Moderate Climate". For specific system costs not found below, see Section 42 or 53.

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, cable or baseboard	25.73	38.21	56.83	2.39	3.55	5.28
Electric panels	24.43	34.12	47.58	2.27	3.17	4.42
Electric wall heaters	13.24	17.98	24.43	1.23	1.67	2.27
Forced air furnace	28.31	43.16	65.88	2.63	4.01	6.12
Hot water	49.73	74.49	111.41	4.62	6.92	10.35
Radiant floor or ceiling	48.22	76.42	121.09	4.48	7.10	11.25
Space heaters, w/fan	10.66	18.41	31.65	0.99	1.71	2.94
Space heaters, radiant	13.78	22.17	35.52	1.28	2.06	3.30
Steam (including boiler)	44.89	64.69	93.11	4.17	6.01	8.65
without boiler	35.52	53.50	80.51	3.30	4.97	7.48
Wall or floor furnace	15.18	20.13	26.59	1.41	1.87	2.47
Add for wood burning furnace	11.19	15.82	22.39	1.04	1.47	2.08

supplemental exterior source, add 55%

HEATING AND COOLING EXCEPT HIGH-VALUE RESIDENCES

Package A.C. (short ductwork)	46.39	73.30	115.71	4.31	6.81	10.75
Warm & cooled air (zoned)	69.32	101.07	147.47	6.44	9.39	13.70
Hot & chilled water (zoned)	114.10	156.61	214.74	10.60	14.55	19.95
Heat pump system	51.45	81.16	128.09	4.78	7.54	11.90
add for ground-loop heat source	15.39	23.25	34.98	1.43	2.16	3.25
Individual Thru-wall heat pumps	24.43	41.12	69.32	2.27	3.82	6.44

Small individual heat pumps cost 1490.00 to 2030.00 per ton of rated capacity.

COOLING ONLY

Cooling costs vary greatly but, in general, the following figures will serve as a guide:

Central refrigeration with ducts and zone control	48.22	70.18	102.26	4.48	6.52	9.50
Package unit, short ducts	34.23	48.11	67.60	3.18	4.47	6.28
Central evaporative(with ducts)	25.08	32.51	42.09	2.33	3.02	3.91
Package refrigeration	1670.00 - 2140.00	per ton of rated capacity				
Evaporative coolers	215.00 - 323.00	per thousand CFM of rated capacity				

VENTILATION ONLY

Ventilation (blowers & ducts)	9.04	12.59	17.44	0.84	1.17	1.62
simple exhaust fan & air inlets only	5.17	7.43	10.66	0.48	0.69	0.99
Air-to-air heat exchange system (utilizing heating ducts)	11.19	15.39	21.20	1.04	1.43	1.97

EXTERIOR BALCONIES

Balcony cost include the supporting structure, decking and rails. Apply costs to the balcony area.

TYPE	LOW	AVG.	GOOD	EXCL
Concrete	23.40	29.75	38.00	48.25
Steel	22.60	30.00	40.00	53.50
Wood	19.45	25.75	34.25	45.25
Add for ornate finishes, balustrades	19.65	24.25	30.00	37.00
Add for roofs or awnings	10.90	14.50	19.30	25.50

CANOPIES

This is the cantilevered portion of a building that extends over an entrance. The distance that the canopy is cantilevered should be considered when selecting rank.

TYPE	LOW	AVG.	GOOD	EXCL
Wood frame	25.00	31.00	38.25	47.50
light false-mansard	12.50	15.50	19.15	23.75
Steel frame	30.50	38.50	48.75	62.00
light false-mansard	15.25	19.25	24.40	31.00

ELEVATORS

Lump sum cost per apartment type elevator, plus the cost per stop or landing including the ground level. Use the cost per stop for basement stops. For small residential elevators, decrease cost by 60%. See Section 58 for more detailed costs and for inclinators and dumbwaiters.

TYPE	LOW	AVG.	GOOD	EXCL
Base cost, passenger, two to three stories	41100.00	48000.00	56250.00	66250.00
add, cost per stop	5700.00	6650.00	7800.00	9150.00
Vertical wheelchair lifts, each	9850.00	12700.00	16400.00	21000.00

FIREPLACES

Cost per fireplace. For each additional opening using the same chimney, add 30% to 50% (custom, 20% to 40%). Buildings with basements, add 40% (custom, 25%) to extend the foundation to the basement level. Steel with flue is the prefabricated hanging or free-standing type fireplace or stove.

TYPE	LOW	AVG.	GOOD	EXCL
One-story	2650.00	3900.00	5750.00	8550.00
add per additional story of chimney flue	705.00	950.00	1270.00	1710.00
Steel, with flue	1400.00	1990.00	2800.00	4000.00
pellet or corn cob stoves	2775.00	3425.00	4275.00	5250.00
add per additional story of chimney stack	313.00	473.00	700.00	1050.00
direct vent	1630.00	2280.00	3200.00	4500.00
Custom or oversized, one-story	9850.00	12800.00	16800.00	22000.00
masonry heaters, soapstone, etc.	9150.00	15000.00	23500.00	36400.00
add per additional story of chimney flue	1850.00	2110.00	2410.00	2775.00
steel, direct vent	4075.00	5200.00	6650.00	8550.00
Add for Heatilator type	396.00	525.00	700.00	940.00
Add for raised hearth	236.00	368.00	565.00	865.00
Add for log lighter	275.00	313.00	352.00	401.00

Mantels, special designs or antique reproductions, add: (See note at bottom of Page 39).

Cast stone (bonded limestone)	4600.00	6550.00	9500.00	13600.00
Custom marble, granite or onyx	8400.00	13300.00	20500.00	31300.00
Ornate wood, carved	4600.00	5150.00	5800.00	6500.00
Precast plaster	2360.00	3175.00	4300.00	5750.00

SPRINKLERS

Sprinkler costs include all costs for the system and supply lines, but not tanks, towers or high-pressure pumps. The square foot costs listed are based on the total area of sprinkler system installation on a single main connection including its prorated share of contractors' overhead and profit and architects' fees. For a more specific cost, see Section 42 or 53. Sprinklers should not be modified for size or shape. Simple residential installations will cost 2.88 to 4.44 per square foot (31.00 to 47.79 per square meter). For square meter cost, mulitply square foot cost by 10.764.

	WET SYSTEMS				DRY SYSTEMS			
COVERAGE (Square Feet)	Low	Avg.	Good	Excl.	Low	Avg.	Good	Excl.
1,500	3.58	4.24	5.01	5.93	4.61	5.46	6.46	7.64
3,000	3.22	3.79	4.47	5.26	4.12	4.85	5.71	6.72
5,000	3.00	3.51	4.12	4.82	3.80	4.45	5.21	6.10
10,000	2.68	3.13	3.65	4.26	3.38	3.95	4.61	5.38
15,000	2.53	2.94	3.42	3.98	3.17	3.69	4.29	4.99
20,000	2.41	2.80	3.25	3.77	3.02	3.50	4.07	4.72
40,000	2.20	2.53	2.92	3.36	2.72	3.13	3.61	4.16
50,000	2.10	2.42	2.80	3.23	2.61	3.01	3.47	4.00
100,000	1.89	2.17	2.49	2.86	2.33	2.67	3.07	3.52
150000	1.81	2.06	2.35	2.67	2.20	2.50	2.85	3.24
200000	1.72	1.96	2.22	2.53	2.08	2.37	2.69	3.06

RESIDENCES AND MOTELS

BUILT-INS

APPLIANCE	LOW	AVG.	GOOD	EXCL.
Appliance allowance (if not itemized), single-family	1490.00	3375.00	6200.00	10400.00
high-value residence (excl. automation, security)	16400.00	22200.00	30400.00	41300.00
row/town houses	1490.00	2750.00	4625.00	7400.00
multiple residences, per unit	1070.00	1800.00	2900.00	4575.00
senior citizen, multiple and town house, per unit	1070.00	1350.00	1730.00	2200.00
Single unit (self-contained) kitchen	3200.00	4100.00	5150.00	6500.00
Garbage disposer	131.00	185.00	264.00	369.00
deluxe, heavy duty	396.00	496.00	615.00	765.00
Range and oven combination	670.00	910.00	1220.00	1660.00
residential, commercial quality	3675.00	4650.00	5900.00	7350.00
custom, double wide	8450.00	11100.00	14500.00	19100.00
microwave or refrigerated combination	1770.00	2100.00	2480.00	2950.00
Range top	359.00	570.00	890.00	1360.00
component top, per component	475.00	665.00	950.00	1340.00
steamer	630.00	990.00	1520.00	2330.00
induction top	950.00	1300.00	1820.00	2500.00
custom tops	2490.00	3550.00	5100.00	7300.00
Ovens	635.00	970.00	1470.00	2210.00
custom double wall ovens	2110.00	3875.00	6550.00	10600.00
microwave combination	1690.00	2120.00	2650.00	3300.00
warming ovens	695.00	825.00	970.00	1150.00
Oven, microwave	158.00	364.00	665.00	1130.00
Exhaust fan and hood	164.00	296.00	496.00	800.00
contertop down draft	845.00	1040.00	1280.00	1580.00
custom, stainless steel or copper	2110.00	3550.00	5750.00	8950.00
Cookware racks	211.00	464.00	840.00	1400.00
Dishwasher	369.00	560.00	845.00	1270.00
deluxe, built-in	1320.00	1670.00	2100.00	2650.00
individual drawers, built-in, each	1060.00	1320.00	1680.00	2110.00
Trash compactor, single family	530.00	635.00	765.00	935.00
Trash compactor, apartment or motel	5150.00	12400.00	23300.00	39700.00
Gas incinerator	975.00	1120.00	1280.00	1470.00
Refrigerator or freezer	555.00	1070.00	1840.00	3000.00
deluxe, built-in, each	2950.00	4175.00	5950.00	8450.00
individual drawers, built-in, each	3200.00	4100.00	5200.00	6550.00
Mixer/blender (food center, processor)	264.00	448.00	720.00	1130.00
deluxe, built-in	1160.00	1630.00	2270.00	3150.00
Can opener, built-in	63.00	85.50	118.00	158.00
Coffee maker, built-in	211.00	322.00	486.00	725.00
Toaster, built-in	131.00	169.00	216.00	280.00
Towel/food wrap dispenser, built-in	200.00	232.00	270.00	312.00
Wok or deep fryer, built-in	630.00	765.00	940.00	1140.00
deluxe	1360.00	1850.00	2480.00	3300.00
Kitchen hot-food heat lamps, each	375.00	427.00	491.00	560.00
Motorized pantries, 1' to 3'	4650.00	5600.00	6600.00	8000.00
Wine captains, undercounter	995.00	1150.00	1330.00	1530.00
standing units	2430.00	2850.00	3300.00	3850.00
Ice machines, residential	605.00	725.00	875.00	1070.00
deluxe, to 50# per day	1060.00	1340.00	1730.00	2210.00
Bathroom heater, electric	122.00	174.00	258.00	375.00
mirror defog heaters	63.00	91.00	128.00	185.00
Hair dryer	79.00	119.00	176.00	264.00
Heated towel rack	422.00	960.00	1760.00	2975.00
Exhaust fan	122.00	164.00	227.00	306.00
Bathroom scale, built-in	206.00	232.00	264.00	296.00
Vacuum cleaner system, three inlets	1690.00	1880.00	2090.00	2320.00
add for extra inlets	190.00	227.00	270.00	317.00
Water softener	1370.00	1830.00	2400.00	3150.00
complete filtration system	3475.00	4650.00	6150.00	8250.00
Ironing center	610.00	730.00	880.00	1070.00

APPLIANCE (Continued)	LOW	AVG.	GOOD	EXCL.
Clothes washer, single-family	595.00	745.00	945.00	1210.0
deluxe	1320.00	1480.00	1660.00	1860.0
add for pedestals	179.00	206.00	242.00	280.00
dryer	525.00	640.00	790.00	975.0
deluxe	885.00	1040.00	1240.00	1470.0
drying center	1320.00	1430.00	1550.00	1690.0
combination unit	1140.00	1480.00	1930.00	2500.0
Closet carousels	3425.00	4175.00	5000.00	6050.00
Safe, built-in, small wall or floor	443.00	670.00	1030.00	1540.00
deluxe	1560.00	2700.00	4375.00	6800.0
Residential security systems (wireless)	875.00	1620.00	2700.00	4325.0
hard wired	2430.00	3400.00	4800.00	6700.0
Home automation systems	2775.00	3500.00	4450.00	5650.00
custom (including security system)	10400.00	14500.00	20300.00	28100.00
House phone, located at entrance	555.00	645.00	755.00	890.0
add per door release	169.00	185.00	206.00	227.0
Radio-intercom, base system	432.00	560.00	725.00	945.0
add per satellite	94.00	114.00	136.00	166.00
Intercom, master station, 20–30 station	1090.00	1410.00	1840.00	2390.00
add per intercom outlet or remote station	126.00	147.00	169.00	195.0
add per door release	179.00	195.00	211.00	227.0
Television security, closed circuit:				
one camera and one monitor, base system	1640.00	3575.00	6450.00	10900.00
each extra camera	630.00	1620.00	3075.00	5300.0
each extra monitor	264.00	411.00	630.00	965.0
video tape recorder	2500.00	3700.00	5550.00	8250.0
Audio/video entry system	2850.00	3950.00	5500.00	7550.00
each extra monitor station	810.00	965.00	1150.00	1360.00
Home entertainment, audio–video systems:				
built-in and/or including cabinets	12300.00	26000.00	46400.00	77250.0
complete home (including security and automation system)	29800.00	52000.00	85250.00	135000.00
Home theater, (screening room) wall and sound treatments, stage, screen, seating, audio and projection equipment:				
prefab. package units, complete	33900.00	46700.00	64500.00	89250.0
custom-built theater and decor	225000.00	270000.00	323000.00	386000.00
Built-in aquarium (excl. fish and plants, etc.)	4875.00	8950.00	15000.00	24100.00
Bowling alley, reconditioned, with automatic pinsetter, (new, add 30%)	23600.00	29500.00	36600.00	45800.0
Golf course simulator, complete station, including projection equipment	5300.00	15200.00	30300.00	52750.00
Racquetball court, prefab., complete	39400.00	44900.00	51250.00	58500.00
add for spectator viewing, window/wall	11300.00	21900.00	37900.00	61750.0
Shooting range, indoor, per station, complete	12600.00	14400.00	16500.00	18800.0
Soda fountain, complete unit, per linear foot	1430.00	1630.00	1850.00	2100.0
Wine vaults, modular room, 15 to 75 sq. ft.	2775.00	4500.00	7100.00	11000.00
Sauna rooms, 15 to 100 sq. ft.	3050.00	4875.00	7550.00	11600.00
*Chandeliers, high-value	8500.00	13500.00	21300.00	32800.00
add for winch, 200- to 300-lb. capacity	1480.00	1680.00	1900.00	2150.0

See Section 65. Satellite dishes can be found in Section 67.

NOTE: Fixtures classified by age or beauty as having antique or historical value, or designed by name artists, must be valued as art objects by fine arts specialists, where the costs can easily run seven to ten times the listed costs for chandeliers, and two to four times mantel costs.

STORES AND COMMERCIAL BUILDINGS

GENERAL INFORMATION

Calculator Costs are averages of final costs including architects' fees and contractors' overhead and profit, sales taxes, permit fees and insurance during construction. Interest on interim construction financing is also included, but not financing costs, real estate taxes or brokers' commissions (see Section 1 for complete list). These costs do not represent any building illustrated, except as the building is included in the averages. Refinements to the average costs for type of heating, sprinklers, basement elevator stops, area/perimeter ratio and story height are given at the end of the section, and adjustments for elevators and number of stories are on the cost pages. Exterior balconies are not included in the basic building costs and must be added separately. For buildings with solid rustic log or solid cut stone walls, it is advisable to use Section 43, as the costs of these buildings may be 5% to 15% (log) or 25% to 35% (stone) higher than the standard Class D or Class C costs contained in the Calculator Section. Current and Local Cost Multipliers are given in Section 99.

DESCRIPTIONS

The abbreviated descriptions given in the tables show some of the items generally found in buildings of the class, quality and occupancy listed. They are merely indicative of many buildings in this cost classification, and are not meant to be building specifications.

CONSTRUCTION

Buildings are divided into five construction classes: A, B, C, D and S, as described in Section 1. In each class there will be variations and subclasses, but for purposes of pricing, the major elements of the building should be considered in entering the tables. Thus, if a building which is otherwise a Class B has a steel truss roof, the costs for the Class B building will still be representative. Interpolations may be made if the appraiser feels the building overlaps two classes, or the segregated costs in Section 43 may be used for adjustments.

OCCUPANCY VARIATIONS

Care should be taken to use proper costs for varying types of occupancy. For example, compute separately a floor or section of a building constructed for a use differing from that of the building generally, i.e., compute the basement as a basement.

As an example, a building is a multistory office building with the first floor occupied by a retail store and the other floors by offices. In addition, there is a basement below grade. In this case three different divisions of the building should be computed separately: the office portion (Section 15), the retail store, and the basement. Each of these is subject to refinements based on its own individual characteristics except that all, including the basement, are subject to the same multiplier for the number of stories above grade in the building when applicable. A further explanation on multistory adjustments can be found in Section 10.

OCCUPANCY

Restaurants are constructed for the purpose of preparation and sale of food and/or beverages, and include cafeterias, bars and taverns where the design is of restaurant type. The costs include all necessary plumbing, built-in refrigerators and electrical connections to provide for these services but do not include the restaurant and bar fixtures or equipment or signs. **Bars** or **taverns** are designed primarily for the service and consumption of beverages, with the better qualities having limited food preparation areas and service. **Cocktail lounges** are typically larger facilities with entertainment floors and stages, with the better qualities containing full kitchens. **Cafeterias** will have large, open dining rooms for self-service of large groups, and include commercial as well as institutional facilities. **Truck stop** restaurants are of multipurpose design to include convenience store, food service, shower and toilet, game and rest facilities for truckers. **Fast food** or small limited-menu outlets will contain limited seating in relation to preparation area, including drive-up windows commensurate with the quality. Site costs outside the building line are not included. **Dining atriums** and **playrooms** are open-shell extensions for enclosed extra seating or game/play areas. **Banquet halls** are clubhouse type facilities that offer food services. **Modular restaurants** are the prefabricated stainless steel diners. **Snack bars** or **concession stands** have no seating area and include the very marginal seasonal camp-type facility to the best municipal structure with completely finished food preparation area. Separate shower and restroom buildings can be priced from Section 18.

Markets are retail food stores which often handle limited lines of other merchandise. The costs include built-in refrigerators, cold rooms and ancillary cooling equipment which are usually classed as real estate, but do not include display freezers and coolers or other equipment generally classed as personal property or trade fixtures. **Supermarkets** are the large chain type food stores. **Convenience markets** are small food stores, typically 2,000 to 8,000 square feet, with limited interior facilities. The better qualities will include the small specialty or gourmet food, meat and liquor shops. **Mini-mart** food stores are small convenience and service station fueling outlets, typically 1,000 to 2,000 square feet, that cater primarily to a transient trade for self-service snack foods and beverages. The better stores will have public restrooms and limited hot or deli food preparation and service areas. **Dairy sales** buildings are drive-up store buildings designed for sale and limited storage of dairy products. **Florist shops** are convenience stores for the sale of cut flowers, with the better stores containing finished display areas for other gift merchandise. **Roadside** or **farmers' markets** are typically rural structures for the sale of fresh produce, from the simple open stand to the enclosed, full retail market barn with refrigerated storage. **Winery shops** are for the display, tasting and sales directly from the vineyard.

Drugstores include both the small neighborhood pharmacy and the large chain discount-type store with a variety of merchandise departments including convenience foods. Costs include built-in refrigerators, but do not include display freezers and coolers or other trade fixtures.

Discount stores are typically large open shells with some partitioning for offices and storage areas. Often called department stores, the best quality approaches the low-quality department store in cost. This category will also include the large off-price center and furniture- and home-improvement-type shell outlets. **Warehouse discount stores** are of warehouse construction with minimal interior partitioning. Membership stores typically fall into this category. **Mega warehouse stores** are the very large discount and food outlets, typically over 200,000 square feet. **Warehouse showroom stores** are typical of the large walk-through furniture outlets with a semifinished showroom and large carry-out warehouse as one complete facility. **Warehouse food stores** are large markets of warehouse construction, offering limited perishable products, excluding any built-in coolers or refrigerated storage. The better qualities will merge into the market occupancy, with a number of finished major product departments, but excluding any storage/display walk-in boxes.

Retail stores are buildings designed for retail sales and display and usually have display and/or decorative fronts. Both one- and two-story stores are included in the averages. They will include stores occupied by so-called secondary or junior department stores with limited merchandise lines, specialty shops and commercial buildings designed for general occupancy. **Luxury boutiques** are small, highly decorative stores catering to a select clientele.

Department stores are buildings of two or more stories, typically found in large cities and regional shopping centers and handling multiple lines of merchandise, for which they are subdivided into departments. **Mall anchor stores** are the modern regional anchors that are a transition between the pure discount/big box store and the old full-line department store.

Basement costs include finish compatible with the type of basement, including stairs and ramps as necessary, and must be refined for size, shape and height. Add elevator stops from the refinement page.

Mezzanine costs include floor structure, soffit, stairs and flooring, as well as typical partitions and lighting for the type of mezzanine, but none of the exterior building walls, which are included in the building cost. Elevator stops can be added from the refinement page.

Barber shop or **beauty salon** costs include sinks, plumbing and electrical fixtures necessary for operation but do not include the mirrors, chairs and barber cabinets, which are usually tenant-owned. The good quality includes more plumbing associated with numerous work stations found in better beauty parlors or shops.

Laundromats are constructed to hold automatic self-service washing machines, dryers, and dry cleaning machines, and the costs include the plumbing and electrical fixtures necessary for operation but not the laundry or cleaning equipment, which is usually tenant-owned.

Laundry and **dry cleaning stores** are designed for full-service laundry cleaning including typical retail storefront and laundry work space commensurate with the quality level.

Shopping centers are buildings designed for a group of commercial enterprises developed as a unit. Complete centers are broken down into specific pricing categories, which are described in detail on Page 31.

TRADE FIXTURES AND EQUIPMENT

Some fixtures and equipment costs for buildings in this section are listed in Section 65.

DEPARTMENT STORES

1. EXCELLENT CLASS A

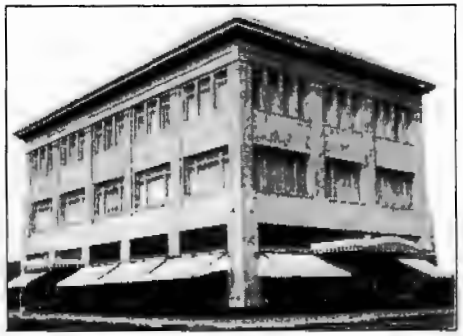
2. GOOD CLASS B

3. AVERAGE CLASS A MALL ANCHOR

6. GOOD CLASS A

4. EXCELLENT CLASS A

5. AVERAGE – GOOD CLASS C



7. AVERAGE CLASS B

RESTAURANTS – CAFETERIAS (530)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	*HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Good	Concrete, metal/glass, or masonry panels, usually part of a building	Plaster with enamel and vinyl, carpet and vinyl flooring, decorated interior	Good lighting and outlets, good plumbing and restrooms	Complete H.V.A.C.	2045.14	15.83	190.00
	Average	Brick or concrete, usually part of a building	Plaster or drywall, acoustic tile, ceramic, rubber or vinyl comp. tile	Adequate lighting and outlets, adequate plumbing	Complete H.V.A.C.	1571.53	12.16	146.00
C	Excellent	Individual design, brick, good metal and glass, ornamentation	Best corporate or chain cafeterias, carpeted dining room, terrazzo	Good lighting/restrooms with good-quality fixtures and tile	Complete H.V.A.C.	2486.46	19.24	231.00
	Good	Brick, concrete or metal and glass panels, some ornamentation	Typical institutional or chain cafeteria, vinyl and ceramic floors	Good lighting and service outlets, tiled preparation and restrooms	Complete H.V.A.C.	1765.28	13.66	164.00
	Average	Brick, block, tilt-up, plain building and front	Typical neighborhood restaurant, vinyl composition, small kitchen	Adequate lighting and outlets, small restrooms	Complete H.V.A.C.	1291.67	10.00	120.00
	Low cost	Cheap brick or block, very plain, small entry	Low-cost food service, minimum dining hall finish, asphalt tile	Minimum lighting and outlets, minimum plumbing	Forced air and ventilation	866.49	6.71	80.50
D	Excellent	Individual design, brick veneer, good metal and glass, ornamentation	Best corporate or chain cafeterias, carpeted dining room, terrazzo	Good fixtures, good restrooms w/good-quality fixtures and tile	Complete H.V.A.C.	2400.35	18.58	223.00
	Good	Stucco or siding, metal and glass, some ornamentation	Typical institutional or chain cafeteria, vinyl and ceramic floors	Good lighting and service outlets, tiled restrooms	Complete H.V.A.C.	1679.17	12.99	156.00
	Average	Stucco or siding, plain building and front	Typical neighborhood restaurant, vinyl composition, small kitchen	Adequate lighting and outlets, small restrooms	Complete H.V.A.C.	1205.56	9.33	112.00
	Low cost	Cheap stucco or siding, very plain construction, small entry	Low-cost food service, minimum dining hall finish, asphalt tile	Minimum lighting and outlets, minimum plumbing	Forced air and ventilation	791.15	6.12	73.50
DPOLE	Low cost	Pole frame, good metal panels, lined and insulated, plain entry	Low-cost food service, minimum dining hall finish, asphalt tile	Minimum lighting and outlets, minimum plumbing	Forced air and ventilation	753.47	5.83	70.00
S	Good	Insulated sandwich panels, metal and glass, some ornamentation	Typical institutional or chain cafeteria, vinyl and ceramic floors	Good lighting and service outlets, tiled restrooms	Complete H.V.A.C.	1636.11	12.66	152.00
	Average	Insulated panels, metal and glass, little ornamentation	Typical neighborhood restaurant, vinyl comp., some ceramic or pavers	Adequate lighting and outlets, small restrooms	Complete H.V.A.C.	1162.50	9.00	108.00
	Low cost	Finished interior, very plain construction, small entry	Low-cost food service, minimum dining hall finish, asphalt tile	Minimum lighting and outlets, minimum plumbing	Forced air and ventilation	758.86	5.87	70.50

*Adjust for heat from tables below. For further refinement notes, see bottom of prior page.

COMPLETE HEATING, VENTILATING AND AIR CONDITIONING

Because of the higher requirements for restaurant and bar buildings, the average heating and air conditioning costs are listed separately below. The moderate climate cost is included in the base cost in the tables. For general space heater or evaporative cooling for snack bar buildings, use the H.V.A.C. costs from Page 39 as appropriate. If a cubic foot cost is used, use one-twelfth (1/12) the difference shown to adjust the base cubic foot cost.

SQUARE METER COSTS

	COMPLETE H.V.A.C.	Mild Climate	Moderate Climate	Extreme Climate
Classes A and B	Excellent	269.10	312.15	355.21
	Good	217.97	254.57	298.70
	Average	181.37	213.13	261.56
	Low cost	144.24	177.07	215.28
Classes C, D and S	Excellent	265.87	309.46	352.52
	Very Good	215.28	251.88	298.70
	Good	179.22	209.90	258.33
	Average	142.62	173.84	213.13
	Low cost	115.17	144.24	180.83
Forced air and ventilation only		51.34	67.70	89.77

SQUARE FOOT COSTS

	COMPLETE H.V.A.C.	Mild Climate	Moderate Climate	Extreme Climate
Classes A and B	Excellent	25.00	29.00	33.00
	Good	20.25	23.65	27.75
	Average	16.85	19.80	24.30
	Low cost	13.40	16.45	20.00
Classes C, D and S	Excellent	24.70	28.75	32.75
	Very Good	20.00	23.40	27.75
	Good	16.65	19.50	24.00
	Average	13.25	16.15	19.80
	Low cost	10.70	13.40	16.80
Forced air and ventilation only		4.77	6.29	8.34

CALCULATOR METHOD

TRUCK STOP RESTAURANTS (580)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	*HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Brick, concrete or metal and glass panels, ornamentation	Good coffee shop, retail, separate rest area, shower room	Good lighting, showers, restrooms and kitchen with good fixtures	Very good comp. H.V.A.C.	2185.07	16.91	203.00
	Good	Decorative block, tilt-up, good storefront, lobby	Full-service food seating, retail, rest and game rooms	Good electrical and plumbing, showers, full kitchen	Complete H.V.A.C.	1797.57	13.91	167.00
	Average	Concrete block, tilt-up, plain storefront entry	Fast food service, small convenience store, rest area	Adequate electrical, plumbing, walk-in box storage	Complete H.V.A.C.	1474.65	11.41	137.00
D	Excellent	Brick veneer, EIFS, metal and glass panels, ornamentation	Good coffee shop, retail, separate rest area, shower room	Good lighting, showers, restrooms and kitchen with good fixtures	Very good comp. H.V.A.C.	2088.20	16.16	194.00
	Good	Brick veneer or good siding, good storefront lobby	Full-service food seating, retail, rest and game rooms	Good electrical and plumbing, showers, full kitchen	Complete H.V.A.C.	1711.46	13.24	159.00
	Average	Stucco or siding, plain storefront entry	Fast food service, small convenience store, rest area	Adequate electrical, plumbing, walk-in box storage	Complete H.V.A.C.	1410.07	10.91	131.00
S	Good	Good metal panels, good storefront, lobby	Full-service food seating, retail, rest and game rooms	Good electrical and plumbing, showers, full kitchen	Complete H.V.A.C.	1668.40	12.91	155.00
	Average	Steel frame, metal siding, plain storefront entry	Fast food service, small convenience store, rest area	Adequate electrical, plumbing, walk-in box storage	Complete H.V.A.C.	1356.25	10.50	126.00

*Adjust for heat from Page 15.

Gasoline pumps, canopies and cashier booths, see Section 64.

DINING ATRIUMS/PLAY ROOMS (575)

C	Good	Decorative block, brick, mostly metal and glass	Drywall, acoustic ceiling, vinyl walls, good playroom	Good lighting and plumbing	None	1506.95	11.66	140.00
	Average	Stucco on block, tilt-up, good glass areas	Drywall, some acoustic tile, ceramic pavers, plain playroom	Adequate lighting, no plumbing	None	925.70	7.16	86.00
	Low cost	Concrete block, tilt-up, very plain, little glass	Drywall, vinyl composition tile, plain play area shell	Minimum lighting, no plumbing	None	570.49	4.41	53.00
D	Good	Brick veneer, EIFS, siding, mostly metal and glass	Drywall, acoustic ceiling, vinyl walls, good playroom	Good lighting and plumbing	None	1388.54	10.75	129.00
	Average	Stucco or siding, good glass areas	Drywall, some acoustic tile, ceramic pavers, plain playroom	Adequate lighting, no plumbing	None	818.06	6.33	76.00
	Low cost	Stucco or siding, very plain, little glass	Drywall, vinyl composition tile, plain play area shell	Minimum lighting, no plumbing	None	484.38	3.75	45.00
S	Excellent	Greenhouse, curved eaves, colored frame, tinted glass	Good carpet, ceramic floors, minimum work stations	Decorative lighting and ceiling fans, adequate plumbing	None	2303.47	17.83	214.00
	Very good	Shed greenhouse, tempered glass, little knee wall	Carpet, vinyl composition tile, seating alcove	Good electrical and lighting, no plumbing	None	1732.99	13.41	161.00
	Good	Steel frame, mostly metal and glass, metal panels	Drywall, acoustic ceiling, vinyl walls, good playroom	Good lighting and plumbing	None	1302.43	10.08	121.00
	Average	Steel frame, metal siding, good glass areas	Drywall, some acoustic tile, ceramic pavers, plain playroom	Adequate lighting, no plumbing	None	737.33	5.71	68.50
	Low cost	Steel frame, metal siding, very plain, little glass	Drywall, vinyl composition tile, plain play area shell	Minimum lighting, no plumbing	None	419.79	3.25	39.00
	Cheap	Screen-netting enclosure, canopy top, light frame	Concrete floor, secure play area	Adequate illumination, no plumbing	None	237.88	1.84	22.10

NOTES: Heating and cooling may be connected to existing systems; for additional connections only, add $3575.00 to $5500.00. For separate systems, add from tables on Page 15 or 39 as appropriate. Use the total length of exterior walled sides as the perimeter in the Floor Area/Perimeter table.

SPRINKLERS

Sprinkler systems are not included. Costs should be added from Page 40.

EQUIPMENT

For soft modular play systems, see Section 66.
For kitchen and dining equipment, see Section 65.

GENERAL INFORMATION

When these add-on rooms are priced separately from the main facility, the original size of seating space and finish in relation to kitchen area must be considered in the choice of the quality level of the restaurant portion for pricing purposes. See discussion on bottom of Page 17.

MARKETS (340)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Average	Brick, concrete, metal and glass, small front	Plaster or drywall, acoustic tile, few partitions, vinyl composition	Adequate market lighting and plumbing	Warm and cool air (zoned)	1151.74	8.91	107.00
C	Excellent	Individual design, heavy frame, ornamental front	Plaster, good acoustic tile, good terrazzo, rubber tile, carpet	Special lighting, good fixtures and plumbing throughout	Warm and cool air (zoned)	1453.13	11.25	135.00
	Good	Brick, good tilt-up, heavy steel or Glulam frame	Plaster, acoustic tile, rubber or vinyl composition, terrazzo	Good lighting, plumbing for butchers, snack bar, etc.	Warm and cool air (zoned)	1184.03	9.16	110.00
	Average	Brick, block, tilt-up, Glulam, medium steel, or pilasters	Plaster or drywall, acoustic tile, few partitions, vinyl composition	Adequate lighting and plumbing, few extra services	Package A.C.	931.08	7.21	86.50
	Low cost	Cheap brick, block, tilt-up, pilasters or light frame	Painted walls, part acoustic tile, exposed rafters, minimum partitions	Minimum food store lighting and plumbing	Forced air	721.18	5.58	67.00
D	Excellent	Best veneer or siding, highly ornamental front	Plaster, good acoustic tile, good terrazzo, rubber tile, carpet	Special lighting, good fixtures and plumbing throughout	Warm and cool air (zoned)	1367.02	10.58	127.00
	Good	Brick veneer or good siding, good frame and front	Plaster, acoustic tile, rubber or vinyl composition, terrazzo	Good lighting, plumbing for butchers, snack bar, etc.	Warm and cool air (zoned)	1108.68	8.58	103.00
	Average	Good stucco or siding, some trim, metal and glass front	Plaster or drywall, acoustic tile, vinyl composition, small office	Adequate market lighting and outlets, small restrooms	Package A.C.	866.49	6.71	80.50
	Low cost	Siding or stucco, small front	Some finish, very few partitions	Minimum lighting and plumbing	Forced air	667.36	5.16	62.00
D POLE	Average	Pole frame, good metal panels, finished inside, little trim	Plaster or drywall, acoustic tile, few partitions, vinyl composition	Adequate lighting and plumbing, few extra services	Package A.C.	818.06	6.33	76.00
	Low cost	Pole frame, metal siding, small front	Painted walls, part acoustic tile, exposed rafters, minimum partitions	Minimum food store lighting and plumbing	Forced air	613.54	4.75	57.00
S	Good	Insulated sandwich panels, pre-engineered frame, good front	Plaster, acoustic tile, rubber or vinyl composition, terrazzo	Good lighting, plumbing for butchers, snack bar, etc.	Warm and cool air (zoned)	1071.01	8.29	99.50
	Average	Sandwich panels, some trim	Few partitions, acoustic, vinyl tile	Adequate lighting and plumbing	Package A.C.	823.44	6.37	76.50
	Low cost	Metal panels, small front	Some finish, very few partitions	Minimum lighting and plumbing	Forced air	618.92	4.79	57.50

FLORIST SHOPS (532)

A-B	Average	Brick or concrete, usually part of a building	Drywall or plaster, good acoustic, some vinyl tile and carpet	Adequate lighting outlets, adequate plumbing	Warm and cool air (zoned)	1130.21	8.75	105.00
C	Excellent	Individual design, highly ornamental storefront	Plaster, acoustic tile, some terrazzo, carpet or vinyl, good trim	Special lighting, good fixtures and plumbing	Package A.C.	1399.31	10.83	130.00
	Good	Brick, best block, stucco, good storefront and ornamentation	Drywall or plaster, good acoustic, some vinyl tile and carpet	Good lighting and outlets, standard fixtures	Package A.C.	1162.50	9.00	108.00
	Average	Brick or block, some mansard, parapet ornamentation	Acoustic tile, some vinyl composition, sundry display area	Adequate lighting and outlets, small employees' restrooms	Forced air	920.31	7.12	85.50
	Low cost	Minimum block or cheap brick, low-cost front	Painted exterior walls, minimum finish, sealed concrete	Minimum code throughout, minimum display wiring	Space heaters	737.33	5.71	68.50
D	Excellent	Individual design, highly ornamental storefront	Plaster, acoustic tile, some terrazzo, carpet or vinyl, good trim	Special lighting, good fixtures and plumbing	Package A.C.	1313.20	10.16	122.00
	Good	Brick veneer or good siding, good frame and front	Drywall or plaster, good acoustic, some vinyl tile and carpet	Good lighting and outlets, standard fixtures	Package A.C.	1087.15	8.41	101.00
	Average	Stucco or siding, some mansard, parapet ornamentation	Acoustic tile, vinyl composition, sundry display area	Adequate lighting and outlets, small employees' restrooms	Forced air	861.11	6.66	80.00
	Low cost	Stucco or siding, small front	Drywall, few partitions, sealed slab	Minimum code throughout	Space heaters	688.89	5.33	64.00
D POLE	Low cost	Pole frame, metal, lined	Minimum finish and partitions, sealed concrete	Minimum code throughout, minimum display wiring	Space heaters	635.07	4.91	59.00
S	Low cost	Steel panels, partly finished interior	Minimum finish and partitions, sealed concrete	Minimum code throughout, minimum display wiring	Space heaters	645.83	5.00	60.00

NOTES: Mezzanine and basement costs are listed on Page 30.

MULTISTORY BUILDINGS – Add 0.5% (1/2%) for each story over three, above ground, to all base costs of the building, including basements but excluding mezzanines.

SPRINKLERS AND ELEVATORS – Elevators are not included. Costs should be added from Page 39. Sprinkler systems are not included. Costs should be added from Page 40.

CALCULATOR METHOD

CONVENIENCE STORES (419)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Average	Brick or concrete, usually part of a building	Typical chain store, acoustic tile, vinyl composition	Adequate lighting outlets, adequate plumbing	Warm and cool air (zoned)	1184.03	9.16	110.00
C	Excellent	Individual design, highly ornamental exterior	Plaster, acoustic tile, terrazzo, carpet or vinyl, good trim	Special lighting, good fixtures and plumbing	Package A.C.	1453.13	11.25	135.00
	Good	Brick, best block, stucco, good store front and ornamentation	Typically better chain stores, good acoustic, vinyl tile and carpet	Good lighting and outlets, restrooms, standard fixtures	Package A.C.	1216.32	9.41	113.00
	Average	Brick or block, some mansard, parapet ornamentation	Typical chain store, acoustic tile, vinyl composition, some snack prep. area	Adequate lighting and outlets, small employees' restroom	Forced air	979.51	7.58	91.00
	Low cost	Minimum block or cheap brick	Painted exterior walls, minimum finish	Minimum code throughout	Space heaters	791.15	6.12	73.50
D	Excellent	Individual design, highly ornamental exterior	Plaster, acoustic tile, terrazzo, carpet or vinyl, good trim	Special lighting, good fixtures and plumbing	Package A.C.	1377.78	10.66	128.00
	Good	Brick veneer or good siding, good frame and front	Typically better chain stores, good acoustic, vinyl tile and carpet	Good lighting and outlets, restrooms, standard fixtures	Package A.C.	1151.74	8.91	107.00
	Average	Stucco or siding, some mansard, parapet ornamentation	Typical chain store, acoustic tile, vinyl composition, some snack prep. area	Adequate lighting and outlets, small employees' restroom	Forced air	920.31	7.12	85.50
	Low cost	Stucco or siding, small front	Drywall, few partitions	Minimum code throughout	Space heaters	737.33	5.71	68.50
DPOLE	Low cost	Pole frame, metal, lined, small low-cost front	Minimum finish and partitions	Minimum code throughout, minimum display wiring	Space heaters	688.89	5.33	64.00
S	Excellent	Best metal panels, trim, good entrance	Drywall or plaster, acoustic tile, good finishes and trim	Special lighting, good fixtures and plumbing	Package A.C.	1345.49	10.41	125.00
	Good	Insulated sandwich panels, good front and ornamentation	Typically better chain stores, good acoustic, vinyl tile and carpet	Good lighting and outlets, restrooms, standard fixtures	Package A.C.	1108.68	8.58	103.00
	Average	Good panels, small front, mansard, some ornamentation	Typical chain store, acoustic tile, vinyl composition, some snack prep. area	Adequate lighting and outlets, small employees' restroom	Forced air	882.64	6.83	82.00
	Low cost	Steel siding, partly finished interior	Minimum finish and partitions	Minimum code throughout	Space heaters	699.65	5.41	65.00

MINI-MART CONVENIENCE STORES (531)

C	Excellent	Decorative block, brick, good glass entrance	Good drywall, acoustic tile, good pavers, limited food prep. area	Good lighting, good fixtures and plumbing, tiled restrooms	Package A.C.	2238.89	17.33	208.00
	Good	Brick, best block, stucco, good front and ornamentation	Good acoustic, ceramic tile, security partitioning, some snack prep. area	Good lighting and outlets, public restrooms, standard fixtures	Package A.C.	1905.21	14.74	177.00
	Average	Brick or block, some mansard, parapet ornamentation	Typical food booth, acoustic tile, vinyl composition, adequate support	Adequate lighting and outlets, small employees' restroom	Package A.C.	1625.35	12.58	151.00
	Low cost	Minimum block, small front	Minimum finish and partitions	Minimum code throughout	Package A.C.	1388.54	10.75	129.00
D	Good	Brick veneer or good siding, good frame and front	Good acoustic, ceramic tile, security partitioning, some snack prep. area	Good lighting and outlets, public restrooms, standard fixtures	Package A.C.	1829.86	14.16	170.00
	Average	Stucco or siding, some mansard, parapet ornamentation	Typical food booth, acoustic tile, vinyl composition, adequate support	Adequate lighting and outlets, small employees' restroom	Package A.C.	1560.77	12.08	145.00
	Low cost	Stucco or siding, small front	Minimum finish and partitions	Minimum code throughout	Package A.C.	1334.72	10.33	124.00
DPOLE	Low cost	Pole frame, metal, lined, low-cost sash and fascia	Minimum finish and partitions, acoustic tile, vinyl composition	Minimum code, display wiring and plumbing	Package A.C.	1291.67	10.00	120.00
S†	Excellent	Best metal panels, trim, good glass entrance	Good drywall, acoustic tile, good pavers, limited food prep. area	Good lighting, good fixtures and plumbing, tiled restrooms	Package A.C.	2142.02	16.58	199.00
	Good	Good enameled prefinished steel, good front, masonry trim	Good acoustic, ceramic tile, security partitioning, some snack prep. area	Good lighting and outlets, public restrooms, standard fixtures	Package A.C.	1851.39	14.33	172.00
	Average	Good panels, small front, some trim or mansard	Typical food booth, acoustic tile, vinyl composition, adequate support	Adequate lighting and outlets, small employees' restroom	Package A.C.	1593.06	12.33	148.00
	Low cost	Metal panels, glass, lined interior	Minimum booth finish and partitions	Minimum code throughout	Package A.C.	1377.78	10.66	128.00

†**NOTES**: Complete prefabricated food booths see Section 64. Gasoline pumps, canopies and cashier booths, see Section 64.

For further refinement notes, see bottom of following page.

STORES AND COMMERCIAL BUILDINGS

REFINEMENTS

On this page and the next are means of making adjustments to the base costs given in this section. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, either price entirely or partially by the Segregated Cost System, Section 43. Special items which should be added to the total cost may be added from the Unit-in-Place cost sections.

HEATING AND COOLING

These costs are averages of the total installed costs of the entire heating or cooling installation including its prorated share of the contractors' overhead and profit and architects' fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot or meter cost. If a cubic foot cost is used, use one-twelfth the difference shown to adjust the base cubic foot cost. All of the heating costs included in the base costs are those listed under "Moderate Climate". For specific systems costs not found below, see Section 43 or 53.

COOLING ONLY

Cooling costs in commercial buildings are dependent on the summer heat load, types of walls and roof, traffic, density of occupancy, etc. In general, the following figures will serve as a guide for picking the proper cost of separate cooling.

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Central refrigeration with ducts and zone control	59.74	83.20	115.71	5.55	7.73	10.75
Package refrig. (short ductwork)	40.69	56.08	77.18	3.78	5.21	7.17
Central evaporative (with ducts)	29.49	37.67	48.01	2.74	3.50	4.46

Package refrigeration ..... 1890.00 to 2420.00 per ton of rated capacity
Evaporative coolers..... 261.00 to 432.00 per thousand CFM of rated capacity

VENTILATION ONLY

Ventilation (blowers and ducts)	10.66	14.42	19.59	0.99	1.34	1.82

ELEVATORS

Lump-sum cost per elevator plus the cost per stop or landing including the ground level. Use the cost per stop for basement and mezzanine stops. See Section 58 for more detailed costs, observation cars and moving-walk or dumbwaiter costs.

TYPE	Low	Average	Good	Excellent
Passenger, base cost, two to three stories	44100.00	52000.00	61250.00	72250.00
four stories and over	76750.00	87750.00	101000.00	115000.00
add, cost per stop	6450.00	7350.00	8450.00	9700.00
Freight, base cost, two to three stories	33900.00	44900.00	59500.00	78500.00
four stories and over	66750.00	84250.00	107000.00	136000.00
add, cost per stop, manual doors	8600.00	9400.00	10300.00	11100.00
power doors	15000.00	16400.00	17700.00	19300.00
Escalators, each stairway	178000.00	191000.00	205000.00	220000.00
Vertical wheelchair lifts, each	11100.00	14700.00	19400.00	25600.00

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, baseboard or cable	32.18	44.99	62.97	2.99	4.18	5.85
radiant panel	29.49	37.03	46.50	2.74	3.44	4.32
Electric wall heaters (inc. FWA)	15.72	20.02	25.62	1.46	1.86	2.38
Forced air furnace	33.37	47.90	68.67	3.10	4.45	6.38
Hot water, baseboard/convector	57.59	85.47	127.01	5.35	7.94	11.80
radiant floor or ceiling	52.53	85.03	137.78	4.88	7.90	12.80
Space heaters, w/fan	12.49	20.45	33.37	1.16	1.90	3.10
radiant	16.36	25.62	40.04	1.52	2.38	3.72
Steam (including boiler)	52.53	73.30	102.15	4.88	6.81	9.49
(without boiler)	41.98	60.71	87.73	3.90	5.64	8.15
Wall or floor furnace	16.90	22.07	28.74	1.57	2.05	2.67

HEATING AND COOLING – EXCEPT RESTAURANTS AND MALLS

Package A.C. (short ductwork)	57.59	89.66	139.39	5.35	8.33	12.95
Warm and cool air (zoned)	81.81	122.17	182.99	7.60	11.35	17.00
Hot and chilled water (zoned)	143.16	199.13	277.17	13.30	18.50	25.75
Heat-pump system	62.97	100.43	159.84	5.85	9.33	14.85
add for ground-loop heat source	16.25	29.39	52.64	1.51	2.73	4.89
Individual thru-wall heat pumps.	27.77	47.15	79.87	2.58	4.38	7.42

Small individual heat pumps cost 1640.00 to 2350.00 per ton of rated capacity.

NOTE: For reclaim heat systems, use mild to moderate climate costs.

NOTE: For fireplaces and built-in appliances, see Section 11.

CALCULATOR METHOD

STORES AND COMMERCIAL BUILDINGS

EXTERIOR BALCONIES

Balcony costs include the supporting structure, decking and rails. Aply costs to the balcony area.

TYPE	Low	Average	Good	Excellent
Concrete	20.90	27.00	35.00	45.75
Steel	18.95	26.00	36.00	49.50
Wood	16.55	22.55	30.75	41.75
Add for ornate finishes, balustrades	17.35	21.80	27.25	34.00
Add for roofs or awnings	10.80	14.30	19.00	25.25

CANOPIES

This is the cantilevered portioned of a building that extends over an entrance. The distance that the canopy is cantilevered should be considered when selecting a rank.

TYPE	Low	Average	Good	Excellent
Wood frame	26.50	33.00	41.25	51.00
Light false-mansard	13.25	16.50	20.65	25.50
Steel frame	31.50	40.25	51.00	65.50
Light false-mansard	15.75	20.15	25.50	32.75

SPRINKLERS

Sprinkler costs include all costs for the system and supply lines, but not tanks, towers, or high-pressure pumps. The square foot costs listed are based on the total area of sprinkler system installation on a single main connection including its prorated share of the contractors' overhead and profit and architects' fees. For a more specific cost, see Section 43 or 53. Sprinklers should not be modified for size or shape.

COVERAGE	WET SYSTEMS				DRY SYSTEMS			
Square feet	Low	Avg.	Good	Excel.	Low	Avg.	Good	Excel.
1,000	4.28	5.08	6.03	7.15	5.53	6.57	7.80	9.26
2,000	3.86	4.55	5.36	6.31	4.94	5.82	6.86	8.08
3,000	3.63	4.26	5.01	5.88	4.61	5.42	6.37	7.49
5,000	3.35	3.93	4.60	5.39	4.25	4.98	5.84	6.84
10,000	3.01	3.50	4.08	4.75	3.78	4.40	5.13	5.97
15,000	2.82	3.28	3.81	4.42	3.54	4.11	4.77	5.53
20,000	2.71	3.14	3.64	4.22	3.38	3.91	4.53	5.25
30,000	2.55	2.94	3.40	3.92	3.17	3.66	4.22	4.87
50,000	2.37	2.72	3.12	3.58	2.92	3.35	3.84	4.40
75,000	2.20	2.52	2.89	3.32	2.71	3.11	3.56	4.08
100,000	2.10	2.41	2.76	3.17	2.58	2.96	3.39	3.88
150,000	1.98	2.26	2.59	2.96	2.42	2.77	3.17	3.63
200,000	1.91	2.17	2.47	2.81	2.32	2.64	2.99	3.40
300,000	1.78	2.02	2.29	2.60	2.16	2.45	2.78	3.15
400,000	1.72	1.94	2.19	2.47	2.05	2.32	2.62	2.96
600,000	1.61	1.82	2.05	2.31	1.92	2.17	2.45	2.76
800,000	1.55	1.74	1.96	2.20	1.85	2.08	2.34	2.63
1,000,000	1.49	1.67	1.88	2.11	1.78	2.00	2.24	2.51

CALCULATOR METHOD

STORES AND COMMERCIAL BUILDINGS

FLOOR AREA/PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER															M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	15	23	30	38	46	53	61	76	91	107	122	137	152	183	213	244	FT.	Sq. Ft.	Sq. M.
			50	75	100	125	150	175	200	250	300	350	400	450	500	600	700	800			
46	500		1.183	1.376	1.566	1.753	—	—	—	—	—	—	—	—	—	—	—	—		500	46
70	750		1.042	1.183	1.322	1.445	1.566	—	—	—	—	—	—	—	—	—	—	—		750	70
93	1,000		.969	1.079	1.183	1.283	1.376	1.470	1.566	1.753	—	—	—	—	—	—	—	—		1,000	93
139	1,500		.892	.969	1.042	1.115	1.183	1.256	1.322	1.445	1.566	—	—	—	—	—	—	—		1,500	139
186	2,000		.854	.912	.969	1.025	1.079	1.130	1.183	1.283	1.376	—	—	—	—	—	—	—		2,000	186
232	2,500		.831	.878	.924	.969	1.011	1.054	1.097	1.183	1.270	1.351	—	—	—	—	—	—		2,500	232
279	3,000		.815	.854	.892	.931	.969	1.005	1.042	1.115	1.183	1.256	1.322	—	—	—	—	—		3,000	279
372	4,000		—	—	.854	.883	.912	.941	.969	1.025	1.079	1.131	1.183	1.232	—	—	—	—		4,000	372
465	5,000		—	—	—	.854	.878	.901	.924	.969	1.011	1.054	1.097	1.140	1.183	—	—	—		5,000	465
557	6,000		—	—	—	—	—	.873	.892	.931	.969	1.005	1.042	1.079	1.115	1.183	—	—		6,000	557
650	7,000		—	—	—	—	—	—	.870	.904	.937	.969	1.000	1.030	1.060	1.121	1.183	—		7,000	650
743	8,000		—	—	—	—	—	—	—	.883	.912	.941	.969	.997	1.025	1.079	1.131	1.183		8,000	743
836	9,000		—	—	—	—	—	—	—	—	.892	.917	.943	.969	.992	1.042	1.087	1.134		9,000	836
929	10,000		—	—	—	—	—	—	—	—	.878	.901	.925	.948	.969	1.011	1.054	1.097		10,000	929
1,115	12,000		—	—	—	—	—	—	—	—	—	.873	.892	.912	.931	.969	1.005	1.042		12,000	1,115
1,301	14,000		—	—	—	—	—	—	—	—	—	—	.870	.886	.904	.937	.969	1.000		14,000	1,301
1,486	16,000		—	—	—	—	—	—	—	—	—	—	.854	.868	.883	.912	.941	.969		16,000	1,486
1,672	18,000		—	—	—	—	—	—	—	—	—	—	—	.854	.866	.892	.917	.943		18,000	1,672
1,858	20,000		—	—	—	—	—	—	—	—	—	—	—	.843	.854	.878	.901	.924		20,000	1,858
2,323	25,000		—	—	—	—	—	—	—	—	—	—	—	—	.831	.850	.868	.887		25,000	2,323
2,787	30,000		—	—	—	—	—	—	—	—	—	—	—	—	—	.831	.847	.862		30,000	2,787
3,252	35,000		—	—	—	—	—	—	—	—	—	—	—	—	—	—	.831	.845		35,000	3,252
3,716	40,000		—	—	—	—	—	—	—	—	—	—	—	—	—	—	.820	.831		40,000	3,716
4,181	45,000		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	.821		45,000	4,181

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER															M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	274	305	335	366	396	427	457	488	518	549	579	610	671	731	792	914	FT.	Sq. Ft.	Sq. M.
			900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	3000			
836	9,000		1.183	1.230	1.276	—	—	—	—	—	—	—	—	—	—	—	—	—		9,000	836
929	10,000		1.140	1.183	1.223	—	—	—	—	—	—	—	—	—	—	—	—	—		10,000	929
1,115	12,000		1.079	1.117	1.153	1.183	—	—	—	—	—	—	—	—	—	—	—	—		12,000	1,115
1,301	14,000		1.030	1.060	1.090	1.121	1.150	—	—	—	—	—	—	—	—	—	—	—		14,000	1,301
1,486	16,000		.997	1.025	1.053	1.080	1.106	—	—	—	—	—	—	—	—	—	—	—		16,000	1,486
1,672	18,000		.969	.992	1.016	1.040	1.064	1.087	—	—	—	—	—	—	—	—	—	—		18,000	1,672
1,858	20,000		.948	.969	.990	1.011	1.032	1.054	—	—	—	—	—	—	—	—	—	—		20,000	1,858
2,323	25,000		.906	.925	.942	.959	.977	.995	1.011	—	—	—	—	—	—	—	—	—		25,000	2,323
2,787	30,000		.878	.894	.909	.925	.939	.954	.969	—	—	—	—	—	—	—	—	—		30,000	2,787
3,252	35,000		.859	.872	.884	.898	.912	.925	.937	.950	—	—	—	—	—	—	—	—		35,000	3,252
3,716	40,000		.843	.854	.866	.878	.890	.901	.913	.925	.936	—	—	—	—	—	—	—		40,000	3,716
4,181	45,000		.831	.842	.852	.862	.871	.881	.892	.903	.914	.925	—	—	—	—	—	—		45,000	4,181
4,645	50,000		—	.831	.841	.850	.859	.868	.877	.887	.897	.906	—	—	—	—	—	—		50,000	4,645
5,574	60,000		—	.815	.823	.831	.839	.847	.854	.862	.869	.876	.884	—	—	—	—	—		60,000	5,574
6,503	70,000		—	.803	.810	.817	.824	.831	.838	.845	.852	.858	.864	.872	—	—	—	—		70,000	6,503
7,432	80,000		—	—	.800	.807	.814	.820	.825	.831	.837	.843	.849	.854	.866	—	—	—		80,000	7,432
8,361	90,000		—	—	—	.799	.804	.810	.815	.821	.826	.831	.836	.842	.852	.861	—	—		90,000	8,361
9,290	100,000		—	—	—	.792	.797	.802	.807	.812	.816	.821	.826	.831	.841	.850	.859	—		100,000	9,290
11,613	125,000		—	—	—	—	—	.788	.792	.796	.800	.804	.808	.812	.820	.828	.836	.850		125,000	11,613
13,935	150,000		—	—	—	—	—	—	.781	.785	.789	.792	.796	.799	.806	.812	.819	.831		150,000	13,935

CALCULATOR METHOD

STORES AND COMMERCIAL BUILDINGS

*FLOOR AREA/PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER															M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	488	549	610	671	792	914	1067	1219	1372	1524	1676	1829	1981	2133	2286	2438	FT.	Sq. Ft.	Sq. M.
			1600	1800	2000	2200	2600	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000			
18,580	200,000		.767	.773	.780	.786	.797	.807	.819	.831	—	—	—	—	—	—	—	—		200,000	18,580
20,903	225,000		.762	.767	.773	.779	.790	.799	.810	.821	—	—	—	—	—	—	—	—		225,000	20,903
23,226	250,000		.759	.762	.767	.772	.783	.792	.802	.812	.821	—	—	—	—	—	—	—		250,000	23,226
25,548	275,000		—	.760	.763	.767	.776	.786	.796	.805	.814	.822	—	—	—	—	—	—		275,000	25,548
27,871	300,000		—	—	.760	.763	.771	.780	.791	.799	.807	.815	.823	—	—	—	—	—		300,000	27,871
30,193	325,000		—	—	—	.760	.767	.775	.785	.794	.801	.809	.816	.824	—	—	—	—		325,000	30,193
32,516	350,000		—	—	—	.758	.764	.770	.780	.789	.796	.803	.811	.817	.824	—	—	—		350,000	32,516
34,838	375,000		—	—	—	—	.761	.767	.776	.785	.792	.799	.806	.812	.819	.825	—	—		375,000	34,838
37,161	400,000		—	—	—	—	.759	.765	.771	.780	.788	.795	.800	.807	.814	.820	.825	—		400,000	37,161
39,483	425,000		—	—	—	—	—	.762	.769	.776	.784	.791	.797	.802	.809	.814	.820	—		425,000	39,483
41,806	450,000		—	—	—	—	—	.760	.766	.773	.780	.787	.793	.799	.804	.810	.815	.821		450,000	41,806
44,129	475,000		—	—	—	—	—	—	.763	.770	.777	.784	.790	.795	.800	.806	.811	.816		475,000	44,129
46,451	500,000		—	—	—	—	—	—	.761	.767	.773	.780	.786	.792	.797	.802	.807	.812		500,000	46,451

*For larger centers, enter table with half the average floor area and half the average perimeter.

STORY HEIGHT MULTIPLIERS

Multiply the base cost by the following multipliers for any variation in average story height from the base of 12 feet (3.66 meters). For extremely high-pitched roofs (see Section 10), use the height of the eaves plus one-half the height from the eaves to the ridge as the effective height. In some buildings it is better to compute the total volume and divide by the total square footage of floor area to obtain an effective height to use.

AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER	CUBIC FOOT
(M.)	(FT.)	MULTIPLIERS	MULT.
2.44	8	.915	1.373
2.74	9	.936	1.248
3.05	10	.957	1.148
3.35	11	.979	1.068
3.66	12	1.000 (base)	1.000
3.96	13	1.021	.942
4.27	14	1.042	.893
4.57	15	1.064	.851
4.88	16	1.085	.814
5.49	18	1.127	.751
6.10	20	1.170	.702
6.71	22	1.213	.662
7.31	24	1.255	.628
7.92	26	1.298	.599
8.53	28	1.340	.574
9.14	30	1.383	.553
9.75	32	1.425	.534
10.36	34	1.468	.518

GARAGES, INDUSTRIALS, LOFTS AND WAREHOUSES

GENERAL INFORMATION

Calculator Costs are averages of final costs including architects' fees and contractors' overhead and profit, sales taxes, permit fees, and insurance during construction. Interest on interim construction financing is also included, but not financing costs, real estate taxes, or broker's commissions (see Section 1 for complete list). They do not represent any building illustrated, except as the building is included in the averages. Refinements to the average costs for type of heating, sprinklers, basement elevator stops, area/perimeter ratio, and story height are given at the end of the section, and adjustments for elevators and number of stories are on the cost pages. Current and Local Cost Multipliers are given in Section 99. Industrial buildings have a wide variation in cost from the open storage shell to the finished engineering and research facility, and the averages represent typical ranges only. Normal office and showroom space necessary for the building operation is included but not administrative or showroom space for other functions of the entire business, even though they may be attached to the structure. In buildings such as low cost warehouses, where the walls may cost as much as the floor costs, it may be advisable to use Section 44 for more detailed results. Sheds, including low-cost, utilitarian buildings which are usually lighter than typical industrial or warehouse buildings, should be priced from Section 17.

CONSTRUCTION

Buildings are divided into five construction classes: A, B, C, D and S, as described in Section 1.

In each class there will be variations and subclasses, but for purposes of pricing, the major elements of the building should be considered in entering the tables. Thus, if a building which is otherwise a Class B has a steel truss roof, the costs for the Class B building will still be representative. Interpolations may be made if the appraiser feels the building overlaps two classes, or the segregated costs in Section 44 may be used for adjustments.

OCCUPANCY

Industrial buildings are designed for manufacturing processes. An average amount of office space commensurate with the quality of the building is included. Typically, this is between 4% – 12% of the total area, either single story or stacked. Single-story offices may have a softwood flooring storage mezzanine overhead as part of the office area costs. **Light industrials** at the better qualities, typical of industrial parks, may have 15% – 25% offices and merge into the engineering buildings. **Heavy industrials** are characterized by their heavy frames, walls and floors typical of specialized manufacturing processes and power or utility service plants. The industrial building costs will include power leads to the building and industrial sewer and drainage lines, but do not include the power panel, power wiring or industrial piping to the fixtures and equipment used in the manufacturing processes. Basic electric service is commensurate with building size, i.e., 200A @ 10,000; 400A @ 40,000; 600A @ 60,000; 800A @ 100,000 to 1,000A @ 200,000 square feet would be considered typical for light industrial-warehouse structures. **Engineering and research and development** industrial buildings, which have a larger amount of divided and finished space, between 20% – 80%, are listed separately from manufacturing buildings even though they may contain some manufacturing or assembly. The so-called best hi-tech, research and development and service center structures will approach good office buildings in cost, with many partitions, high cost mechanical and fine detail.

Laboratories include commercial and research facilities exclusive of lab equipment.

Lofts are industrial buildings usually designed for multiple occupancy by relatively small-space users. Because of display areas and extra partitioning and plumbing in the higher qualities, they are a transition between industrial and office construction. They can also be a single tenancy structure with mixed functions, such as a publishing operation with distinct office, production, storage and distribution facilities all under one roof. **Industrial flex mall buildings** are the modern multi-tenant loft structure, typically of low-rise construction. The lower qualities are purely light industrial with the low cost category having minimal subdivisions and finish per space user. The better qualities have fully finished customer service areas with storefront entries and lobby/display areas.

Computer centers are electronic data processing plants, including ancillary offices.

Passenger terminals include the minimum small bus-stop-type waiting facility up to major airports with separate baggage, ticket lobby, concession, lounge and concourse areas. Costs do not include any ticket, baggage, boarding or concession equipment.

Broadcasting facilities are averages of radio and TV stations and include all wiring and conduit necessary for operation, but not broadcasting equipment.

Armories are buildings designed for military training.

Post Office costs are derived from costs of buildings built under lease agreements with the Post Office Department. **Branch** offices are small facilities, typically under 10,000 square feet. **Processing facilities** are the large sorting and shipping distribution centers.

Warehouses are designed primarily for storage. An amount of office space commensurate with the quality of the building is included in the costs. Typically, this is between 3% – 12% of the total area. **Distribution warehouses** will have larger areas, between 15% – 30% for office/sales and/or other subdivisions designed to accommodate breakdown and transshipment of small lots, as well as increased plumbing, lighting, and compartmentation to accommodate a larger personnel load. **Mega warehouses** are the large storage-distribution facilities, typically over 200,000 sq. ft., where interior build-out is only 1% – 5%.
Cold storage facilities are designed to keep stored commodities at various temperature levels. Some production or process areas are included in the better qualities.

Creameries are designed for milk processing, butter making and other related dairy product production. Costs include necessary plumbing and electric facilities and built-in refrigerator rooms, but not fixtures and equipment. Retail dairy sales buildings are found in Section 13.

Transit warehouses or truck terminals are designed for temporary closed storage, freight segregation and loading. The costs include dock-height floors. They will generally have additional facilities, 10% – 30%, to cater to transient personnel.

Mini-warehouses are warehouses subdivided into a mixture of cubicles of generally small size, designed primarily to be rented for small self storage or noncommercial storage and may include some office-living space.

Shipping docks are roofed structures designed for temporary open storage and segregation and loading of freight.

Loading docks are designed for freight loading and the basic costs do not include roof structures, which are listed separately.

Hangars are buildings designed for aircraft storage and repair maintenance, and normally will have offices and storage space commensurate with the quality and type of services they perform. **Storage hangars** will have limited facilities for light line maintenance and repair servicing only. **Maintenance and repair hangars** are generally heavier structures and have more plumbing, electrical, and interior costs to accommodate larger personnel loads for complete main base maintenance and repair functions. **T-Hangars** are multiple hangars for small planes and include partitioned areas for individual planes.

Complete auto dealerships include showroom-office and parts-service facilities. Because of the wide range in mix of facilities, (15% – 55% showroom) and qualities, it is best to price each area individually, using the appropriate showroom and service garage costs.

Showrooms are vehicular salesrooms. Where a salesroom and service garage or warehouse constitute one building, the cost for each portion should be modified by its area-perimeter multiplier, considering the common wall as belonging to half of each of the portions.

Automotive service centers are designed for repair parts sales and service and will have showroom-sales area, office, storage and repair space commensurate with the quality.

Mini-lube buildings are very small garages designed for quick maintenance lube and oil changes and may have drive-thru bays.

Service garages and sheds are buildings designed primarily for vehicular repair and maintenance. **Municipal service garages** or large fleet complexes include many subdivisions for offices, stores and shops. Those of lightweight construction with minimal service and/or lack of office facilities should be priced from Section 17, equipment sheds.

Storage garages are buildings designed for live and dead storage of automobiles. For municipal apparatus storage garages, use the volunteer fire station garage costs found in Section 15.

Parking structures or parkades are structures with no exterior walls, or with partial walls, designed for above grade live storage of automobiles. The costs are based on the number of stories where there is always one more parking level (rooftop) than stories.

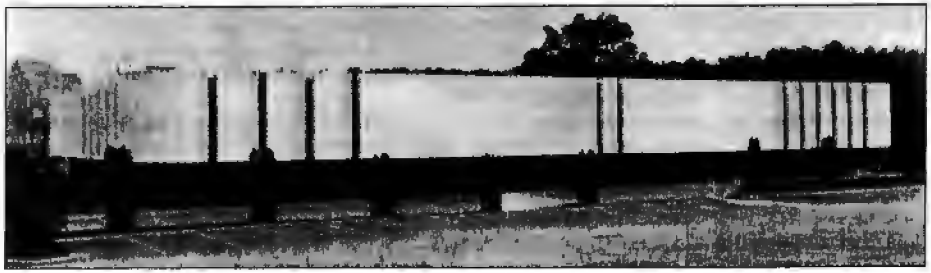
Underground parking garages are independent structures built below grade with a load-bearing roof. Basement parking is situated beneath an above grade structure and receives the same multistory refinement as the balance of the building.

INDUSTRIAL BUILDINGS

1. EXCELLENT CLASS B – LIGHT MANUFACTURING

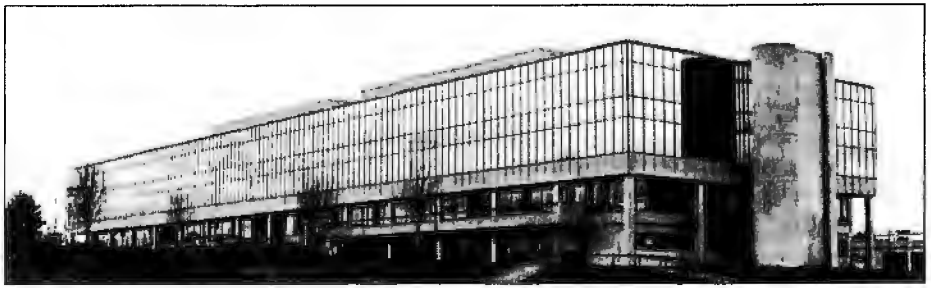
2. GOOD CLASS A – MANUFACTURING

3. GOOD CLASS B – MANUFACTURING



4. EXCELLENT CLASS A – ENGINEERING

7. EXCELLENT CLASS B – MANUFACTURING



5. EXCELLENT CLASS B – ENGINEERING

8. GOOD CLASS C – MANUFACTURING (MILL TYPE)

6. EXCELLENT CLASS S – ENGINEERING

9. GOOD CLASS S – MANUFACTURING

LOFTS (338)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Excellent	Good curtain walls, good brick and glass, with ornamentation	Plaster, acoustic ceilings, finished floor, much office space	*Fluorescent lighting, many outlets, good plumbing	Warm and cool air (zoned)	1689.93	11.21	157.00
	Good	Face brick, metal panels, good glass, ornamentation	Drywall or plaster, finished floors, good display rooms and offices	*Good lighting, many outlets, adequate plumbing	Package A.C.	1291.67	8.57	120.00
	Average	Brick, block, concrete panels, low-cost metal and glass	Painted walls and ceilings, few partitions, office and display rooms	*Fluorescent lighting, many outlets, adequate plumbing	Hot water	1001.04	6.64	93.00
	Low cost	Low-cost brick, structural tile, block, concrete panels	Painted walls, large open areas, office and display rooms	*Incandescent or cheap fluorescent, minimum plumbing	Steam	780.38	5.18	72.50
C	Good	Masonry or concrete, some ornamentation, steel frame	Plaster, finished floors, good display rooms and detail	Fluorescent lighting, adequate restrooms and plumbing	Package A.C.	1097.92	7.28	102.00
	Average	Brick, block, concrete, load-bearing walls or frame	Gypsum board, finished floors, display areas	Adequate lighting and plumbing	Package A.C.	791.15	5.25	73.50
	Low cost	Low-cost brick, concrete block,tilt-up	Minimum finish and detail, small office or display areas	Minimum lighting and plumbing	Forced air	535.50	3.55	49.75
CMILL	Average	Mill-type frame, heavy brick walls, wood trusses	Painted walls and ceilings, few partitions, office and display areas	*Adequate lighting and plumbing	Steam	995.66	6.60	92.50
D	Average	Wood studs, stucco, siding, adequate windows	Drywall or plaster, finished floors, office and display areas	Incandescent or cheap fluorescent, adequate plumbing	Package A.C.	737.33	4.89	68.50
	Low cost	Wood studs and stucco or wood siding, very plain	Minimum finish and detail, small office or display areas	Minimum lighting and plumbing	Forced air	492.45	3.27	45.75
S	Average	Steel frame, transite or steel siding	Drywall or plaster, slab floors, office and display areas	Adequate lighting and plumbing	Package A.C.	721.18	4.78	67.00

INDUSTRIAL FLEX (MALL) BUILDINGS (453)

C	Good	Masonry or concrete, wood or steel frame, good entries and trim	Finished floors, ceilings and display rooms, some extras	Fluorescent lighting, adequate restroom and plumbing	Package A.C.	791.15	5.25	73.50
	Average	Brick, concrete block, tilt-up, small storefronts	Reception finish and detail, small office or display areas	Adequate lighting and plumbing per space	Forced air	559.72	3.71	52.00
	Low cost	Low-cost block, tilt-up, light roof, shop door entries	Unfinished, slab, open shop areas only	Minimum lighting and plumbing per space	Space heaters	398.26	2.64	37.00
D	Average	Metal or wood studs, stucco, siding, small storefronts	Reception finish and detail, small office or display areas	Adequate lighting and plumbing per space	Forced air	516.67	3.43	48.00
	Low cost	Low-cost stucco or siding, shop door entries	Unfinished, slab, open shop areas only	Minimum lighting and plumbing per space	Space heaters	363.28	2.41	33.75
DPOLE	Average	Pole frame, good metal siding, lined, small storefronts	Reception finish and detail, small office or display areas	Adequate lighting and plumbing per space	Forced air	470.92	3.12	43.75
	Low cost	Pole frame, metal siding, shop door entries	Unfinished, slab, open shop areas only	Minimum lighting and plumbing per space	Space heaters	325.61	2.16	30.25
S	Good	Steel frame, sandwich panels, good entries and trim	Finished floors, ceilings and display rooms, some extras	Fluorescent lighting, adequate restroom and plumbing	Package A.C.	726.56	4.82	67.50
	Average	Pre-engineered, steel siding, small storefronts	Reception finish and detail, small office or display areas	Adequate lighting and plumbing per space	Forced air	500.52	3.32	46.50
	Low cost	Light steel frame, siding, shop door entries	Unfinished, slab, open shop areas only	Minimum lighting and plumbing per space	Space heaters	347.14	2.30	32.25

NOTE: Flex building shell costs are comparable to the neighborhood retail strip center shell costs found in Section 13.

BASEMENTS – See Page 18.

MEZZANINES AND DOCK-HEIGHT FLOORS – See Page 27.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story over three, above ground, to all base costs of the building, including basements, but excluding mezzanines.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

***ELEVATORS** – Buildings with base costs which include elevators are marked with an asterisk (*). If the subject building has no elevators, deduct the following from the base costs for the buildings on this page which are so marked. For buildings not marked or for basement stops, add costs from Page 36.

Classes A, B & CMILL	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Excellent	47.79	4.44	Average	34.44	3.20
Good	40.80	3.79	Low	29.28	2.72

The data included on this page becomes obsolete after update delivery, scheduled for February 2020.

CALCULATOR METHOD

INDUSTRIALS, LIGHT MANUFACTURING (494)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Average	Brick on block or tile, concrete or metal panels, storefront entry	Painted walls and ceilings, finished floors and ceilings in offices	*Adequate lighting and plumbing	Hot water	871.88	5.78	81.00
	Low cost	Low-cost brick or block, little fenestration, precast floors	Painted walls, few offices, very plain and open	*Minimum lighting and plumbing	Space heaters	602.78	4.00	56.00
B	Average	Brick, formed concrete, or precast walls, little trim, storefront entry	Painted walls and ceilings, finished floors and ceilings in offices	*Adequate lighting and plumbing	Hot water	823.44	5.46	76.50
	Low cost	Low-cost brick or block, little fenestration, precast floors	Painted walls, few offices, very plain and open	*Minimum lighting and plumbing	Space heaters	570.49	3.78	53.00
C	Good	Bearing walls or frame, brick, concrete panels, good glass storefront	Some finished walls, finished floors and ceilings in offices	Good fluorescent lighting, adequate plumbing	Space heaters	780.38	5.18	72.50
	Average	Light frame or bearing walls, brick, block or tilt-up, some trim	Painted walls and exposed frame, small finished offices	Exposed conduit, fluorescent lighting, adequate plumbing	Space heaters	559.72	3.71	52.00
	Low cost	Very plain, brick, block, or tilt-up, few openings	Small office area, unfinished floors and ceilings	Minimum lighting and plumbing	Space heaters	406.34	2.70	37.75
D	Good	Good frame with stucco or siding, some ornamentation	Some good offices and interior finish	Good lighting, exposed conduit, adequate plumbing	Space heaters	721.18	4.78	67.00
	Average	Wood studs, stucco, wood rafters and sheathing, some trim	Drywall, finished office area, exposed rafters or trusses	Adequate lighting and plumbing	Space heaters	511.29	3.39	47.50
	Low cost	Wood studs or frame, cheap stucco or siding	Unfinished, low-cost slab, small office, minimum code	Minimum lighting and plumbing	Space heaters	365.97	2.43	34.00
DPOLE	Good	Pole frame, metal siding, lined and insulated, some trim, glass entry	Some good offices and interior finish	Good lighting, exposed conduit, adequate plumbing	Space heaters	640.45	4.25	59.50
	Average	Pole frame, metal siding, fully lined and insulated	Finished office area, slab, some floor finish	Adequate lighting and plumbing	Space heaters	457.47	3.03	42.50
	Low cost	Pole frame, metal siding, insulated, few openings	Low-cost slab, few partitions, small office	Minimum code, factory lighting	Space heaters	330.99	2.20	30.75
S	Good	Steel frame, sandwich panels, good glass storefront entry and trim	Some good offices and interior finish	Good lighting, exposed conduit, adequate plumbing	Space heaters	699.65	4.64	65.00
	Average	Steel frame, steel or aluminum siding, some trim	Finished office area, slab, some floor finish	Adequate lighting and plumbing	Space heaters	492.45	3.27	45.75
	Low cost	Light steel frame, steel or aluminum siding, few openings	Low-cost slab, unfinished interior, small office	Minimum code, factory lighting	Space heaters	349.83	2.32	32.50

DOCK-HEIGHT FLOORS – See Page 27.

BASEMENTS – See Page 18.

MEZZANINES – See Page 27.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story over three, above ground, to all base costs of the building, including basements, but excluding mezzanines.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

***ELEVATORS** – Buildings with base costs which include elevators are marked with an asterisk (*). If the subject building has no elevators, deduct the following from the base costs for the buildings on this page which are so marked. For buildings not marked or for basement stops, add costs from Page 36.

Classes A and B	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Average	24.22	2.25	Low	18.41	1.71

CREAMERIES (315)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Average	Brick, concrete, solid construction	Plaster ceilings, tile floors, wainscot in production areas	Good lighting and plumbing, many outlets, lab	Steam	1270.14	8.43	118.00
C	Good	Brick, block, concrete, retail entrance and storefront	Plaster, tile floors and wainscot, freezer and cooler rooms	Good lighting and plumbing, many outlets and drains, lab	Steam	1270.14	8.43	118.00
	Average	Brick, block, little trim, steel or wood trusses or joists	Plaster walls and ceiling, epoxy and tile on concrete floor, freezer room	Adequate lighting, plumbing, power outlets and drains	Steam	936.46	6.21	87.00
	Low cost	Low-cost brick, block, tilt-up, no trim, wood rafters	Painted walls, slab floor, partly finished ceiling, chiller room	Minimum electrical and plumbing	Space heaters	635.07	4.21	59.00
D	Good	Brick veneer, good stucco and trim, EIFS, retail entrance and storefront	Plaster, tile floors and wainscot, freezer and cooler rooms	Good lighting and plumbing, many outlets and drains, lab	Steam	1173.27	7.78	109.00
	Average	Brick veneer, good stucco, insulated, wood truss and rafters	Plaster walls and ceiling, some tile, concrete floor, freezer room	Adequate lighting, plumbing, power outlets and drains	Steam	850.35	5.64	79.00
	Low cost	Stucco or siding, no trim, light roof structure	Plaster or gypsum board, concrete slab, chiller room	Minimum lighting and outlets, minimum plumbing	Space heaters	570.49	3.78	53.00
S	Good	Good steel frame, sandwich panels, retail entrance and storefront	Plaster, tile floors and wainscot, freezer and cooler rooms	Good lighting and plumbing, many outlets and drains, lab	Steam	1151.74	7.64	107.00
	Average	Rigid steel frame, insulated siding or sandwich panels, good roof	Plaster walls and ceiling, some tile, concrete floor, freezer room	Adequate lighting, plumbing, power outlets and drains	Steam	839.58	5.57	78.00
	Low cost	Pre-engineered frame, metal siding, lined	Plaster or gypsum board, concrete slab, chiller room	Minimum lighting and outlets, minimum plumbing	Space heaters	565.10	3.75	52.50

NOTE: For cold storage refrigeration, see Page 24. For retail diary sales buildings, see Section 13. For short term storage, see section 17.

MEGA (STORAGE/DISTRIBUTION) WAREHOUSES (584)

C	Good	Glulam or steel frame, decorative block or tilt-up, elastomeric roof	Plaster or drywall, some masonry partitions, good offices, cafeteria	Good lighting and plumbing, kitchen	Space heaters	618.92	4.11	57.50
	Average	Open steel or wood frame, block or tilt-up, good roof	Painted walls, finished offices and break room, good flat slab	Adequate lighting, good plumbing fixtures, food service	Space heaters	406.34	2.70	37.75
	Low cost	Large tilt-up, light panelized const., built-up roof, exposed insulation	Painted walls or unfinished, small offices, hardened slab	Adequate lighting and plumbing, some extras	Space heaters	269.10	1.79	25.00
	Cheap	Tilt-up, very large shell type	Unfinished, bulk storage, few offices	Minimum lighting and plumbing	Space heaters	221.20	1.47	20.55
S	Good	Heavy steel frame, insulated panels, good facade, some trim	Plaster or drywall, partitioned, good offices, cafeteria	Good lighting and plumbing, kitchen	Space heaters	575.87	3.82	53.50
	Average	Good steel frame, siding and fenestration, bar or web joints	Some good offices, interior finish and floor, break room, good flat slab	Adequate lighting, good plumbing fixtures, food service	Space heaters	395.57	2.62	36.75
	Low cost	Rigid steel frame, good metal siding and roof, exposed insulation	Unfinished, small offices, hardened slab	Adequate lighting and plumbing, some extras	Space heaters	271.79	1.80	25.25
	Cheap	Steel frame, siding, large shell type	Unfinished, bulk storage, few offices	Minimum lighting and plumbing	Space heaters	191.06	1.27	17.75

YARD IMPROVEMENTS

For paving, fencing, landscaping, lighting, rail spurs, storm water management, see Section 66.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three above ground, to all base costs of the building, including basements but excluding mezzanines.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

BASEMENTS – See Page 18.

DOCK-HEIGHT FLOORS AND MEZZANINES – See Page 27.

SHIPPING DOCK EQUIPMENT AND WAREHOUSE SHELVING – See Section 65.

CALCULATOR METHOD

STORAGE WAREHOUSES (406)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Ornamental concrete or brick, small office front	Plaster or drywall with partitions, some finished ceilings	*Good lighting, plumbing, adequate restrooms	Hot water	979.51	6.50	91.00
	Average	Brick on block or tile, concrete panels, very plain	Painted walls, few partitions, small offices	*Adequate lighting and plumbing	Space heaters	721.18	4.78	67.00
	Low cost	Low-cost block, tile or concrete	Unfin., small office, few partitions	*Minimum lighting/plumbing	Space heaters	570.49	3.78	53.00
B	Good	Ornamental concrete or brick, small office front	Plaster or drywall with partitions, finished ceilings in most areas	*Good lighting, plumbing, adequate restrooms	Hot water	931.08	6.18	86.50
	Average	Brick on block or tile, concrete panels, very plain	Painted walls, few partitions, small offices	*Adequate lighting and plumbing	Space heaters	678.13	4.50	63.00
	Low cost	Low-cost block, tile or concrete	Unfin., small office, few partitions	*Minimum lighting/plumbing	Space heaters	530.12	3.52	49.25
C	Excellent	Brick, concrete, good facade	Plaster or drywall, partitioned, finished ceilings in most areas	Good lighting and plumbing	Package A.C.	1044.10	6.93	97.00
	Good	Steel frame, good brick, block, or tilt-up, tapered girders	Plaster or drywall, some masonry partitions, good offices	Good lighting, adequate plumbing	Space heaters	672.74	4.46	62.50
	Average	Steel or wood frame or bearing walls, brick, block, or tilt-up	Painted walls, finished office, hardened slab	Adequate lighting, low-cost plumbing fixtures	Space heaters	473.61	3.14	44.00
	Low cost	Block, cheap brick, tilt-up, light construction	Unfinished, small office, shell type, minimum code	Minimum lighting and plumbing	Space heaters	336.37	2.23	31.25
C MILL	Good	Mill-type construction, brick walls, wood or steel trusses	Plaster walls, masonry partitions, painted trusses	*Good lighting, adequate plumbing	Steam	920.31	6.10	85.50
	Average	Mill-type construction, brick and block, wood trusses	Painted walls, few partitions, small offices	*Adequate lighting and plumbing	Space heaters	640.45	4.25	59.50
D	Good	Heavy wood frame, wood or stucco siding	Heavy slab or mill-type floors	Good lighting, adequate plumbing	Space heaters	608.16	4.03	56.50
	Average	Stucco on wood frame, wood trusses	Small office, average slab	Adequate lighting, low-cost plumbing fixtures	Space heaters	425.17	2.82	39.50
	Low cost	Stucco or siding on wood	Unfinished, slab, utility type, minimum office	Minimum lighting and plumbing	Space heaters	301.39	2.00	28.00
D POLE	Average	Pole frame, good metal siding, insulated	Small office, some finish, slab	Adequate lighting, little plumbing	Space heaters	365.97	2.43	34.00
	Low cost	Pole frame, metal siding	Unfinished utility type, light slab, minimum office	Minimum lighting and plumbing	Space heaters	258.87	1.72	24.05
S	Excellent	Heavy steel frame, insulated panels, good facade	Plaster or drywall, partitioned, finished ceilings in most areas	Good lighting and plumbing	Package A.C.	941.84	6.25	87.50
	Good	Good steel frame, siding and fenestration	Some good office, interior finish and floor	Good lighting, adequate plumbing	Space heaters	597.40	3.96	55.50
	Average	Rigid steel frame, siding	Small office, average slab	Adequate lighting, low-cost plumbing fixtures	Space heaters	414.41	2.75	38.50
	Low cost	Pre-engineered frame, metal siding	Unfinished utility type, light slab, minimum office	Minimum lighting and plumbing	Space heaters	290.63	1.93	27.00

NOTE: For light commodity storage, see Section 17.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three above ground, to all base costs of the building, including basements but excluding mezzanines.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

DOCK-HEIGHT FLOORS – See Page 27.

WAREHOUSE SHELLS – See Page 35.

***ELEVATORS** – Buildings with base costs which include elevators are marked with an asterisk (*). If the subject building has no elevators, deduct the following from the base costs for buildings on this page, which are so marked. For buildings not marked or for basement stops, add costs from Page 36.

	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Good.....	27.23	2.53	Average.....	22.17	2.06	Low Cost...	17.11	1.59

MUNICIPAL SERVICE GARAGES (527)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Good masonry, concrete, glazed tile, ornamentation, heavy frame	Plaster, acoustic tile, finished floors, good offices, shops, supply rooms	Many power outlets, good lighting and plumbing	Package A.C.	1883.68	12.50	175.00
	Good	Steel or concrete frame, brick, or concrete panels	Some good offices and interior finish, supply rooms and shops	Good electrical, lighting and service outlets, good restrooms	Package A.C.	1345.49	8.93	125.00
	Average	Steel, concrete or glulam frame, masonry curtain or bearing walls	Finished office, painted walls, some partitions, supply areas and shops	Adequate lighting and service outlets, adequate restrooms	Forced air	920.31	6.10	85.50
D	Average	Stucco or brick veneer, some frame or bearing, finished interior	Finished office, some partitions, supply areas and shops	Adequate lighting and service outlets, adequate restrooms	Forced air	823.44	5.46	76.50
S	Excellent	Good sandwich panels, some ornamentation, heavy frame	Finished walls & floor, acoustic tile, good offices, shops, supply rooms	Many power outlets, good lighting and plumbing	Package A.C.	1593.06	10.57	148.00
	Good	Good steel frame, siding and fenestration	Some good offices and interior finish, supply rooms and shops	Good electrical, lighting and service outlets, good restrooms	Package A.C.	1151.74	7.64	107.00
	Average	Sandwich panels or metal with interior finish	Partially finished, finished office area, some partitions, supply and shop areas	Adequate lighting and service outlets, adequate restrooms	Forced air	791.15	5.25	73.50

MINI-LUBE GARAGES (423)

C	Excellent	Best block, entry, 20% or more finished sales area	Good store type finish in sales, good lobby, waiting room, restrooms	Good retail illumination, good garage in balance	Package A.C.	1829.86	12.14	170.00
	Good	Good ornamental block and parapet, storefront lobby	Good drywall, acoustic tile, pavers, VCT, carpet, good office/waiting room	Good lighting and plumbing, service outlets	Forced air	1410.07	9.35	131.00
	Average	Masonry bearing walls or frame, roll-up doors	Painted walls, slab, some partitions, floor and ceiling finish, waiting area	Adequate lighting and plumbing, service outlets	Space heaters	1087.15	7.21	101.00
	Low cost	Block, cheap brick, tilt-up, light construction	Painted wall, slab, few partitions, small office area	Minimum lighting and plumbing, service outlets	Space heaters	861.11	5.71	80.00
D	Excellent	Best masonry veneer, entry, 20% or more finished sales area	Good store type finish in sales, good lobby, waiting room, restrooms	Good retail illumination, good garage in balance	Package A.C.	1754.52	11.64	163.00
	Good	Good masonry veneer, EIFS, decorative parapet, storefront lobby	Good drywall, acoustic tile, pavers, VCT, carpet, good office/waiting room	Good lighting and plumbing, service outlets	Forced air	1345.49	8.93	125.00
	Average	Frame and stucco, siding, masonry veneer, some trim, roll-up doors	Some gypsum walls and ceiling, slab, some finished floor, waiting area	Adequate lighting and plumbing, service outlets	Space heaters	1033.33	6.85	96.00
	Low cost	Stucco or siding on wood or steel	Some gypsum walls and ceiling, slab, small office area	Minimum lighting and plumbing, service outlets	Space heaters	812.67	5.39	75.50
S	Average	Pre-engineered, steel studs or frame, good panels, roll-up doors	Some gypsum walls, acoustic tile, slab, some finished floor, waiting area	Adequate lighting and plumbing, service outlets	Space heaters	995.66	6.60	92.50
	Low cost	Pre-engineered frame, metal siding	Some gypsum walls, acoustic tile, slab, small office area	Minimum lighting and plumbing, service outlets	Space heaters	785.76	5.21	73.00
CDS	Average basement	Reinforced concrete or block, unfinished interior	Unfinished, storage areas, some partitions, service walkways	Minimum lighting and plumbing, drains	None	457.47	3.03	42.50

NOTE: Walk-in service pits cost 2450.00 to 5250.00 per bay. For second-floor office-apartments, see Section 12. For storage mezzanines, see Page 27. Small double-walled oil container tanks cost 7.31 to 12.75 per gallon. For lube equipment, see Sections 64 and 65.

PARKING BASEMENTS

A-B	Average	Unfinished concrete, waterproofed walls	Unfinished, concrete floor, striped	Minimum lighting, adequate drains	Ventilation	651.22	4.32	60.50
CDS†	Average	Unfinished concrete, waterproofed	Plaster or drywall ceiling, concrete floor, striped	Minimum lighting, adequate drains	Ventilation	433.25	2.87	40.25
	Low-cost subterranean	Partially exposed, some ornamentation, unfinished interior	Finished ceiling, concrete slab, stripping	Minimum lighting, adequate drains	None	374.05	2.48	34.75

†For fire-resistant Type I basements, with concrete slab separation under C, D or S units, add 6.19 per square foot (66.63 per square meter). Where utilized as courtyard deck on topside, add 12.60 per square foot (135.63 per square meter).

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three aboveground, to all base costs of the building excluding mezzanines.

SPRINKLERS - Systems are not included. Costs should be added from Page 37.

The data included on this page becomes obsolete after update delivery, scheduled for February 2020.

CALCULATOR METHOD

PARKING (PARKADE) STRUCTURES (345)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Partial walls, brick or concrete, ornamentation	Unfinished, except good office and service area	*Reading-level lighting, rest-rooms and service plumbing	None	780.38	5.18	72.50
	Average	Partial walls, brick, block, concrete, little trim	Unfinished, small office and service area	*Low-level lighting, drains, minimum restroom for office	None	597.40	3.96	55.50
B	Good	Partial walls, brick or concrete, ornamentation	Unfinished, except good office and service area	*Reading-level lighting, rest-rooms and service plumbing	None	742.71	4.93	69.00
	Average	Partial walls, brick, block, concrete, plain finish	Unfinished, small office and service area	*Low-level lighting, drains, minimum restroom for office	None	575.87	3.82	53.50
	Low cost	Low parapets, precast frame and floors, minimum finish	Unfinished, minimum extras	*Minimum lighting and plumbing	None	449.39	2.98	41.75
S	Low cost	Demountable type, exposed steel frame	Unfinished, some masonry shear walls, minimum extras	Low-level lighting, drains, minimum personnel plumbing	None	419.79	2.78	39.00
	Cheap	Demountable type, exposed steel frame, cable rails	Unfinished, no extras	Minimum lighting, drains only	None	328.30	2.18	30.50

*ELEVATORS

Parking structure buildings with elevators included in the base costs are marked with an asterisk (*). If none are found, deduct the following from the base costs for buildings on this page which are so marked. For buildings not marked, add costs from Page 36.

	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Good.....	28.52	2.65	Average....	19.16	1.78	Low Cost...	13.89	1.29

NOTE: Cost per space for surface parking, see Section 66. Basement parking, see Section 11.

GENERAL INFORMATION

The following are based on a cost per space and average area per space. The median number of stories is 4, with 5 levels of parking and a range from 1 to 9 stories.

AREA PER SPACE						COST PER SPACE		
Low		Average		High		Low	Average	High
Sq. M.	Sq. Ft.	Sq. M.	Sq. Ft.	Sq. M.	Sq. Ft.			
28.8	310	32.5	350	40.9	440	10600.00	15500.00	23000.00

UNDERGROUND PARKING STRUCTURES (388)

A-B	Parking Underground	Unfinished concrete, waterproofed walls and load-bearing roof	Unfinished, some office and service areas	Good lighting, restrooms and service plumbing	Package A.C.	1011.81	6.71	94.00

STORAGE GARAGES (326)

A-B	Average	Brick, reinforced concrete, little ornamentation	Plaster or drywall, masonry partitions, small office and service area	*Low lighting levels, minimum plumbing	Space heaters	807.29	5.36	75.00
C	Average	Brick, block, tilt-up, plain facade	Unfinished, small partitioned office area, concrete floors	Low-level lighting, minimum plumbing	Space heaters	613.54	4.07	57.00
C MILL	Average	Mill-type frame, brick, plain facade	Painted walls, mill-type floors, masonry partitions	*Minimum electrical and plumbing	Space heaters	726.56	4.82	67.50
D	Average	Wood frame, stucco or siding, plain facade	Unfinished, small partitioned office area, concrete floors	Minimum electrical and plumbing	Space heaters	554.34	3.68	51.50
S	Average	Single-wall construction, enameled steel or aluminum	Unfinished, small partitioned office area, concrete floors	Low-level lighting, minimum plumbing	Space heaters	519.36	3.45	48.25

NOTE: For residential garages, see Section 12. Light maintenance or warm storage, repair shops, see Section 17. Finished municipal garages, see volunteer fire stations, Section 15.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story over three, above ground, to all base costs of the building, including basements, but excluding mezzanines.

SPRINKLERS – Sprinkler systems are not included. Costs should be added from Page 37.

PEDESTRIAN BRIDGES – See Section 66 for open connecting walkways. For enclosed skyways and pedestrian tunnels, see Section 15.

SURFACE PARKING LOTS – See Section 66.

***ELEVATORS** – Storage and repair garage base costs which include elevators are marked with an asterisk (*). If the subject building has no elevators, deduct the following from the base costs for buildings on this page, which are so marked. For buildings not marked or for basement stops, add costs from Page 36.

Average: Square Meter..... 22.17 Average: Square Foot..... 2.06

UNDERBUILDING PARKING – See Section 15 for on- and above-grade-level parking.

PARKING LIFTS – See Section 58.

PARKING KIOSKS – See Section 64.

CALCULATOR METHOD

ALTERNATE METHOD

This method is presented as an alternative to the normal calculator method, which includes average office/shop space commensurate with the occupancy type and quality level. Listed below are typical office-finish costs based on actual office space, which can be added to a basic shell cost for a complete building cost. For two-story offices, add mezzanine structure cost, which includes a weighting for additional fenestration and exterior trim.

LIGHT INDUSTRIAL/WAREHOUSE SHELL BUILDINGS (454)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Good	Good frame and wall panels, elastomeric roof, good fenestration	6" – 7" hardened slab, painted walls	Good fluorescent or high bay factory lighting and utilities	None	554.34	3.68	51.50
	Average	Light frame or bearing walls, block or tilt-up, some trim, storefront, windows	5" – 6" slab, sealer, exposed insulation	Adequate general warehouse lighting and utilities	None	398.26	2.64	37.00
	Low cost	Light block or tilt-up, built-up cover, panelized roof, small storefront entry	Light concrete slab, no interior paint	Minimum single-tube fluorescent or high bay (18 f.c.), sewer and water service	None	287.93	1.91	26.75
	Cheap	Light tilt-up, panelized roof, small entry	Unfinished, adequate slab	Minimum lighting and rough plumbing	None	231.42	1.54	21.50
D	Good	Good frame with stucco or siding, some ornamentation	6" – 7" hardened slab, painted walls	Good fluorescent or high bay factory lighting and utilities	None	508.59	3.37	47.25
	Average	Wood studs, stucco, wood rafters and sheathing, some trim	5" – 6" slab, sealer, exposed insulation	Adequate general warehouse lighting and utilities	None	363.28	2.41	33.75
D_{POLE}	Average	Pole frame, metal siding, lined and insulated, some trim, storefront, windows	5" – 6" slab, sealer, exposed insulation	Adequate general warehouse lighting and utilities	None	293.32	1.95	27.25
	Low cost	Pole frame, metal siding, little fenestration, exposed insulation	Light concrete slab	Minimum single-tube fluorescent or high bay (18 f.c.), sewer and water service	None	210.43	1.40	19.55
	Cheap	Pole frame, light metal utility siding, minimal openings, no storefront	Unfinished, light utility slab, exposed frame	Minimum utility lighting and rough plumbing	None	163.61	1.09	15.20
S	Good	Good steel frame, heavy metal siding, sandwich panels, good fenestration, trim	6" – 7" hardened slab, some finished wainscot or liner	Good fluorescent or high bay factory lighting and utilities	None	484.38	3.21	45.00
	Average	Steel frame, siding or sandwich panels, some trim, storefront entry, windows	5" – 6" slab, sealer, exposed insulation	Adequate general warehouse lighting and utilities	None	344.44	2.28	32.00
	Low cost	Light steel frame, metal siding, little fenestration, exposed insulation	Light concrete slab, no interior liner	Minimum single-tube fluorescent or high bay (18 f.c.), sewer and water service	None	243.80	1.62	22.65
	Cheap	Light pre-eng. frame, light metal utility siding, minimal openings, no storefront	Unfinished, light utility slab, exposed frame	Minimum utility or high bay lighting and rough plumbing	None	185.14	1.23	17.20

NOTE: The base wall height is 14 feet (4.27 meters). Add or deduct 2% per foot. For draft curtains, add 1.56 to 2.04 per square foot (16.79 to 21.96 per square meter) of curtain. Add for heat from Page 36. The cheap industrial utility shell is comparable to the shed structures found in Section 17, except for slightly heavier commercial frame, fenestration and trim. For greater detail, see Section 64. Cold storage insulation can be added from Section 44 or 58. To convert illumination in foot candles (f.c.) to lumens per square meter, multiply by 10.764.

INDUSTRIAL, INTERIOR OFFICE SPACE (994)

(SQUARE FOOT OF OFFICE FINISH)

TYPE	INTERIOR FINISH	LIGHTING AND PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
Excellent	Good executive suites, cafeteria, glazed finishes, hardwoods	Good fixtures, kitchen, some extras	Heat pump	1496.18	9.92	139.00
Good	Good plaster, partitions, paneling, suspended acoustic, carpet, tile or vinyl, good meeting or showroom space	Good fluorescent lighting, good restrooms and fixtures, some tile	Package A.C.	952.61	6.32	88.50
Average	Average drywall or plaster, acoustic tile, vinyl composition or carpet, adequate shelving and counters	Adequate lighting and outlets, average restrooms and fixtures	Forced Air	581.25	3.86	54.00
Low cost	Low-cost partitions, paint, suspended ceiling, vinyl composition, minimal counters and shelving	Minimum lighting and plumbing, few extras, small restroom	Electric wall heaters	347.14	2.30	32.25
Good office mezzanine structure	Metal structure and concrete deck over offices, stairs and railings	Included in office cost	Included in office cost	325.61	-----	30.25
Average office mezzanine structure	Wood structure and deck over offices, stairs and railings	Included in office cost	Included in office cost	256.18	-----	23.80

NOTE: The base office wall height is 8' (2.44 meter). Add or deduct 2% for each foot (.305 meter) of deviation. Partition density can cause the costs to vary as much as plus or minus 30%. For shop plumbing, including enclosure, add 4200.00 plus 3300.00 per fixture. For bay height partition walls, per square foot of wall: frame, one-hour construction at 6.70 to 13.75 for three-hour (72.12 to 148.00 per square meter); masonry costs 9.75 to 11.20 per square foot (104.95 to 120.56 per square meter) of wall area. For prefabricated modular offices and mezzanines, see Section 64.

CALCULATOR METHOD

GARAGES, INDUSTRIALS, LOFTS AND WAREHOUSES
REFINEMENTS

On this page and the next are means of making adjustments to the base costs given in this section. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, either price entirely or adjust the base costs by the Segregated Cost System, Section 44. Special items which should be added to the total cost may be added from the Unit-in-Place cost sections.

HEATING AND COOLING

These costs are averages of the total cost of the entire heating or cooling installation, including its prorated share of the contractor's overhead and profit and the architect's fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot cost. If a cubic foot cost is used, use one-fourteenth (1/14) the difference shown to adjust the base cubic foot cost. All of the heating costs included in the base costs are those listed under "Moderate Climate." For specific system costs not found below, see Section 44 or 53. For laminar flow clean rooms, see Section 44.

COOLING ONLY

Cooling costs in industrial buildings are dependent on the summer heat load, types of walls and roof, type of manufacturing, number of partitions, and traffic in and out. In general, the following figures will serve as a guide for picking the proper cost of separate cooling. For cold-storage refrigeration, see Page 24 or Section 58 for greater detail.

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Central refrigeration with ducts and zone controls	58.99	86.11	126.48	5.48	8.00	11.75
Package refrig. (short ductwork)	41.76	59.20	83.42	3.88	5.50	7.75
Central evaporative (with ducts)	30.46	39.83	52.20	2.83	3.70	4.85
Package refrigeration	1700.00	to 240.00	per ton of rated capacity.			
Evaporative coolers	2240.00	to 395.00	per thousand CFM of rated capacity.			

ELEVATORS

Lump sum cost per elevator plus the cost per stop or landing, including the ground level. Use the cost per stop for basement and mezzanine stops. See Section 58 for more detailed costs, for glass observation elevators and for personnel lift costs.

TYPE	Low	Average	Good	Excellent
Passenger, 2- to 3-story	43700.00	51500.00	60750.00	71500.00
4-story and over	76500.00	87750.00	101000.00	115000.00
add cost per stop	6400.00	7300.00	8400.00	9600.00
Freight, base cost, 2- to 3-story	33900.00	44800.00	59250.00	78250.00
4-story and over	66500.00	83750.00	106000.00	134000.00
add, cost per stop, manual doors	8600.00	9350.00	10100.00	11000.00
power doors	14900.00	16300.00	17700.00	19400.00
Escalators, each stairway	178000.00	191000.00	204000.00	218000.00
Vertical wheelchair lifts, each	11500.00	14700.00	18700.00	23800.00

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, baseboard or cable	31.11	45.75	67.92	2.89	4.25	6.31
radiant panel	29.49	38.21	49.94	2.74	3.55	4.64
Electric wall heaters (incl FWA)	16.25	20.99	27.66	1.51	1.95	2.57
Forced-air furnace	35.52	52.20	76.64	3.30	4.85	7.12
Hot water, baseboard/convector	57.48	88.26	135.63	5.34	8.20	12.60
radiant floor or ceiling	55.65	89.88	145.31	5.17	8.35	13.50
Space heaters, with fan	14.32	23.68	38.64	1.33	2.20	3.59
radiant	17.22	27.45	43.27	1.60	2.55	4.02
Steam (incl. boiler)	54.79	80.73	118.40	5.09	7.50	11.00
(without boiler)	44.13	67.27	103.12	4.10	6.25	9.58
Wall or floor furnaces	17.22	23.14	31.11	1.60	2.15	2.89

HEATING AND COOLING – EXCEPT LABORATORY BUILDINGS

Package A.C. (short ductwork)	65.34	99.03	149.62	6.07	9.20	13.90
Warm and cool air (zoned)	85.79	132.40	204.51	7.97	12.30	19.00
Hot and chilled water (zoned)	149.08	226.58	344.44	13.85	21.05	32.00
Heat-pump system	70.29	114.64	187.29	6.53	10.65	17.40
add for grnd. loop heat source	18.19	31.75	55.65	1.69	2.95	5.17
Individual thru-wall heat pumps	30.46	48.98	78.58	2.83	4.55	7.30

Small individual heat pumps cost 1640.00 to 2220.00 per ton of rated capacity.

VENTILATION ONLY

Ventilation (blowers and ducts) or smoke removal system	10.66	15.61	22.39	0.99	1.45	2.08

GARAGES, INDUSTRIALS, LOFTS AND REFINEMENTS

EXTERIOR BALCONIES

Balcony costs include the supporting structure, decking and rails. Apply costs to the balcony area.

	LOW	AVG.	GOOD	EXCL.
Concrete	20.45	26.75	34.75	45.25
Steel	19.15	26.25	35.50	49.00
Wood	16.25	22.15	30.25	41.25
Add for ornate finishes, balustrades	17.25	21.50	26.75	33.25
Add for roof or awning	10.65	14.15	18.85	25.00

CANOPIES

This is the cantilevered portion of a building that extends over an entrance. The distance that the canopy is cantilevered should be considered when selecting a rank.

	LOW	AVG.	GOOD	EXCL.
Wood Frame	25.00	31.00	38.75	48.25
Light false-mansard	12.55	15.50	19.40	24.10
Steel Frame	30.50	39.00	49.50	62.50
Light false-mansard	15.25	19.50	24.75	31.25

SPRINKLERS

Sprinkler costs include all costs for the system and supply lines, but not tanks, towers, or high-pressure pumps. The square foot costs listed are based on the total area of sprinkler system installation on a single main connection, including its prorated share of the contractor's overhead and profit and the architect's fees. The approximate low-end density is .33/3,000 with the high end of the range at .60/3,000 sprinkler density. For a more specific cost, see Section 44 (wet, ranks 1-3; dry, ranks 2-4) or Section 53. Sprinklers should not be modified for size or shape. For extra-hazard occupancies, add 15% to the costs below. For supplemental in-rack systems, add 30% to 100% per level. For Early Suppression Fast Response system, add $ .52 ($5.60 per Square Meter) plus $1.03 ($11.09 per Square Meter) to $1.53 ($16.47 per Square Meter) for pumps. To convert square foot costs to square meter costs, multiply by 10.764.

	WET SYSTEMS				DRY SYSTEMS			
Coverage	Low	Avg.	Good	Excl.	Low	Avg.	Good	Excl.
2,500 Square feet	3.26	3.95	4.79	5.80	4.34	5.26	6.37	7.71
5,000	2.93	3.53	4.26	5.13	3.88	4.67	5.63	6.78
10,000	2.66	3.18	3.81	4.56	3.48	4.17	4.99	5.97
15,000	2.49	2.97	3.55	4.24	3.25	3.88	4.64	5.55
20,000	2.37	2.82	3.37	4.01	3.08	3.67	4.38	5.23
30,000	2.24	2.66	3.16	3.76	2.90	3.44	4.09	4.85
40,000	2.14	2.54	3.00	3.56	2.77	3.28	3.88	4.60
50,000	2.08	2.46	2.91	3.44	2.67	3.16	3.73	4.41
60,000	2.02	2.38	2.81	3.32	2.58	3.04	3.59	4.24
80,000	1.93	2.27	2.67	3.14	2.46	2.90	3.41	4.02
100,000	1.87	2.20	2.59	3.04	2.39	2.81	3.30	3.88
125,000	1.81	2.12	2.49	2.92	2.29	2.69	3.16	3.72
150,000	1.75	2.05	2.41	2.83	2.23	2.61	3.06	3.59
200,000	1.69	1.98	2.31	2.70	2.14	2.50	2.93	3.42
250,000	1.63	1.90	2.22	2.59	2.05	2.39	2.79	3.26
300,000	1.59	1.85	2.15	2.50	2.00	2.32	2.70	3.13
400,000	1.53	1.78	2.06	2.39	1.92	2.22	2.57	2.98
600,000	1.42	1.65	1.91	2.22	1.77	2.06	2.39	2.78
800,000	1.37	1.59	1.84	2.13	1.71	1.98	2.29	2.65
1,000,000	1.31	1.52	1.75	2.03	1.63	1.88	2.18	2.52

CALCULATOR METHOD

GARAGES, INDUSTRIALS, LOFTS AND WAREHOUSES

FLOOR AREA – PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER															M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	30	38	46	53	61	76	91	107	122	137	152	183	213	244	274	305	FT.	Sq. Ft.	Sq. M.
			100	125	150	175	200	250	300	350	400	450	500	600	700	800	900	1000			
93	1,000		1.252	1.360	1.468	1.576	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		1,000	93
139	1,500		1.112	1.182	1.252	1.323	1.395	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		1,500	139
186	2,000		-----	1.095	1.147	1.199	1.252	1.360	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		2,000	186
232	2,500		-----	-----	1.083	1.125	1.168	1.252	1.340	1.430	-----	-----	-----	-----	-----	-----	-----	-----		2,500	232
279	3,000		-----	-----	-----	1.077	1.112	1.182	1.252	1.323	1.395	-----	-----	-----	-----	-----	-----	-----		3,000	279
372	4,000		-----	-----	-----	1.013	1.040	1.094	1.147	1.199	1.252	1.306	-----	-----	-----	-----	-----	-----		4,000	372
465	5,000		-----	-----	-----	-----	.996	1.040	1.083	1.125	1.168	1.210	1.252	-----	-----	-----	-----	-----		5,000	465
557	6,000		-----	-----	-----	-----	-----	1.004	1.040	1.077	1.112	1.147	1.182	1.252	-----	-----	-----	-----		6,000	557
650	7,000		-----	-----	-----	-----	-----	-----	1.008	1.040	1.071	1.102	1.132	1.192	1.252	-----	-----	-----		7,000	650
743	8,000		-----	-----	-----	-----	-----	-----	.984	1.013	1.040	1.068	1.094	1.147	1.199	1.252	-----	-----		8,000	743
929	10,000		-----	-----	-----	-----	-----	-----	-----	.972	.996	1.019	1.040	1.083	1.125	1.168	1.210	-----		10,000	929
1,115	12,000		-----	-----	-----	-----	-----	-----	-----	-----	.965	.984	1.003	1.040	1.077	1.112	1.147	1.182		12,000	1,115
1,301	14,000		-----	-----	-----	-----	-----	-----	-----	-----	.945	.961	.977	1.008	1.040	1.071	1.102	1.132		14,000	1,301
1,486	16,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	.943	.957	.984	1.013	1.040	1.068	1.094		16,000	1,486
1,672	18,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	.929	.942	.967	.991	1.016	1.040	1.065		18,000	1,672
1,858	20,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.926	.949	.972	.996	1.019	1.040		20,000	1,858
2,323	25,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.907	.924	.942	.959	.977	.996		25,000	2,323
2,787	30,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.907	.921	.935	.949	.965		30,000	2,787
3,252	35,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.896	.907	.919	.932	.945		35,000	3,252
3,716	40,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.899	.907	.916	.926		40,000	3,716
4,181	45,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.898	.907	.916		45,000	4,181
4,645	50,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.891	.898	.907		50,000	4,645

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER															M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	274	305	335	366	396	427	457	488	518	549	579	610	671	731	792	914	FT.	Sq. Ft.	Sq. M.
			900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	3000			
1,858	20,000		1.019	1.040	1.062	1.083	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		20,000	1,858
2,323	25,000		.977	.996	1.015	1.032	1.049	1.066	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		25,000	2,323
2,787	30,000		.949	.965	.980	.995	1.010	1.025	1.040	-----	-----	-----	-----	-----	-----	-----	-----	-----		30,000	2,787
3,252	35,000		.932	.945	.957	.969	.982	.995	1.008	1.021	-----	-----	-----	-----	-----	-----	-----	-----		35,000	3,252
3,716	40,000		.916	.926	.937	.949	.961	.972	.984	.995	1.007	1.019	-----	-----	-----	-----	-----	-----		40,000	3,716
4,181	45,000		.907	.916	.926	.935	.945	.955	.965	.975	.985	.995	1.005	1.015	-----	-----	-----	-----		45,000	4,181
4,645	50,000		.898	.907	.916	.924	.933	.942	.950	.959	.968	.977	.986	.996	1.015	-----	-----	-----		50,000	4,645
5,574	60,000		.889	.895	.901	.907	.914	.921	.928	.935	.942	.949	.957	.965	.980	.995	-----	-----		60,000	5,574
6,503	70,000		.877	.884	.890	.896	.902	.907	.913	.919	.925	.932	.939	.945	.957	.969	.982	-----		70,000	6,503
7,432	80,000		.869	.875	.881	.887	.893	.898	.903	.907	.911	.916	.921	.926	.937	.949	.961	.984		80,000	7,432
9,290	100,000		-----	.863	.868	.872	.877	.882	.887	.891	.895	.899	.903	.907	.916	.924	.933	.950		100,000	9,290
11,148	120,000		-----	.856	.859	.863	.867	.871	.875	.879	.883	.887	.891	.895	.901	.907	.914	.928		120,000	11,148
13,006	140,000		-----	.851	.854	.857	.860	.863	.867	.871	.874	.877	.880	.884	.890	.896	.902	.913		140,000	13,006
14,864	160,000		-----	-----	.850	.853	.855	.858	.860	.863	.866	.869	.872	.875	.881	.887	.893	.903		160,000	14,864
16,722	180,000		-----	-----	.846	.849	.851	.854	.856	.858	.860	.863	.866	.869	.874	.879	.884	.895		180,000	16,722
18,580	200,000		-----	-----	-----	.846	.848	.850	.853	.855	.857	.859	.861	.863	.868	.873	.877	.887		200,000	18,580
20,903	225,000		-----	-----	-----	-----	.845	.847	.849	.851	.853	.855	.856	.858	.862	.867	.871	.879		225,000	20,903
23,226	250,000		-----	-----	-----	-----	.842	.844	.846	.848	.849	.851	.853	.855	.858	.862	.866	.873		250,000	23,226
25,548	275,000		-----	-----	-----	-----	.839	.841	.843	.845	.847	.848	.850	.852	.855	.858	.862	.868		275,000	25,548
27,871	300,000		-----	-----	-----	-----	-----	.839	.841	.842	.844	.846	.847	.849	.852	.855	.857	.863		300,000	27,871
32,516	350,000		-----	-----	-----	-----	-----	.835	.836	.839	.840	.841	.843	.845	.847	.850	.853	.857		350,000	32,516
37,161	400,000		-----	-----	-----	-----	-----	-----	-----	.835	.836	.838	.840	.841	.843	.846	.848	.853		400,000	37,161
46,451	500,000		-----	-----	-----	-----	-----	-----	-----	.831	.832	.833	.834	.835	.838	.840	.842	.846		500,000	46,451

The data included on this page becomes obsolete after update delivery, scheduled for February 2020.

GARAGES, INDUSTRIALS, LOFTS AND WAREHOUSES

FLOOR AREA – PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER														M.	AVERAGE FLOOR AREA	
Sq.M.	Sq. Ft.	FT.	610	671	731	792	914	1067	1219	1372	1524	1676	1829	1981	2133	2286	2438	FT.	Sq. Ft.	Sq. M.
27,871	300,000		.849	.852	.855	.857	.863	.872	.880	-----	-----	-----	-----	-----	-----	-----	-----		300,000	27,871
32,516	350,000		.845	.847	.850	.853	.857	.863	.871	-----	-----	-----	-----	-----	-----	-----	-----		350,000	32,516
37,161	400,000		.841	.843	.846	.848	.853	.858	.863	.870	.875	-----	-----	-----	-----	-----	-----		400,000	37,161
46,451	500,000		.835	.838	.840	.842	.846	.850	.855	.859	.863	.868	.873	-----	-----	-----	-----		500,000	46,451
55,741	600,000		-----	-----	-----	.837	.841	.845	.849	.853	.856	.859	.863	.867	-----	-----	-----		600,000	55,741
65,032	700,000		-----	-----	-----	-----	.836	.841	.845	.848	.851	.854	.857	.860	.863	.867	-----		700,000	65,032
74,322	800,000		-----	-----	-----	-----	.834	.837	.841	.844	.847	.850	.853	.856	.858	.860	.863		800,000	74,322
83,612	900,000		-----	-----	-----	-----	.832	.835	.838	.841	.843	.847	.849	.851	.854	.856	.858		900,000	83,612
92,902	1,000,000		-----	-----	-----	-----	-----	.832	.835	.838	.841	.843	.846	.848	.850	.853	.855		1,000,000	92,902
102,192	1,100,000		-----	-----	-----	-----	-----	.831	.833	.835	.839	.841	.843	.846	.848	.850	.852		1,100,000	102,192
111,483	1,200,000		-----	-----	-----	-----	-----	-----	.832	.834	.836	.839	.841	.843	.845	.847	.849		1,200,000	111,483
120,773	1,300,000		-----	-----	-----	-----	-----	-----	-----	.832	.834	.836	.839	.841	.843	.845	.847		1,300,000	120,773
130,063	1,400,000		-----	-----	-----	-----	-----	-----	-----	.831	.833	.835	.836	.839	.841	.843	.845		1,400,000	130,063
139,353	1,500,000		-----	-----	-----	-----	-----	-----	-----	.830	.832	.833	.835	.837	.839	.841	.843		1,500,000	139,353

NOTE: For larger buildings, enter the table by taking half the area and half the perimeter.

STORY HEIGHT MULTIPLIERS

Multiply the base cost by the following multipliers for any variation in average story height from the base of 14 feet (4.27 meters). For extremely high-pitched roofs (see Section 10), use the height of the eaves plus one-half the height from the eaves to the ridge as the effective height.

In some buildings it is better to compute the total volume and divide by the total square feet of floor area to get an effective height to use.

AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULT.	AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULT.	AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULT.
(M.)	(FT.)			(M.)	(FT.)			(M.)	(FT.)		
2.44	8	.885	1.567	7.31	24	1.231	.718	16.76	55	2.075	.528
3.05	10	.921	1.289	7.92	26	1.281	.690	18.29	60	2.225	.519
3.66	12	.960	1.120	8.53	28	1.331	.666	21.33	70	2.530	.506
4.27	14	1.000 (base)	1.000	9.14	30	1.382	.645	24.38	80	2.845	.498
4.88	16	1.041	.911	10.67	35	1.515	.606	27.43	90	3.161	.492
5.49	18	1.086	.844	12.19	40	1.650	.577	30.48	100	3.461	.485
6.10	20	1.133	.794	13.72	45	1.788	.556	33.52	110	3.738	.476
6.71	22	1.181	.752	15.24	50	1.930	.540	36.57	120	3.977	.464

The data included on this page becomes obsolete after update delivery, scheduled for February 2020.

RESERVED FOR FUTURE EXPANSION

OFFICES, MEDICAL AND PUBLIC BUILDINGS

GENERAL INFORMATION

Calculator Costs are averages of final costs including architects' fees and contractors' overhead and profit, sales taxes, permit fees, and insurance during construction. Interest on interim construction financing is also included, but not financing costs, real estate taxes, or brokers' commissions (see Section 1 for complete list). They do not represent any building illustrated, except as the building is included in the averages. Refinements to the average costs for type of heating, sprinklers, basement elevator stops, area/perimeter ratio, and story height are given at the end of the section, and adjustments for elevators and number of stories are on the cost pages. Current and Local Cost Multipliers are given in Section 99.

DESCRIPTIONS

The abbreviated descriptions given in the tables show some of the items most generally found in buildings of the class, quality and occupancy listed. They are merely indicative of many buildings in this cost classification, and are not meant to be building specifications.

CONSTRUCTION

Buildings are divided into five construction classes: A, B, C, D, and S, as described in Section 1. In each class there will be variations and subclasses, but for purposes of pricing, the major elements of the building should be considered in entering the tables. Thus, if a building which is otherwise a Class B has a steel truss roof, the costs for the Class B building will still be representative. Interpolations may be made if the appraiser feels the building overlaps two classes, or the segregated costs in Section 45 may be used for adjustments. Pole or post frame prefabricated metal skin structures are a subcategory of Class D. All metal buildings (skin and frame) with mixed secondary wood purlins and girts can be interpolated between Classes S and D pole frame structure costs or adjusted from Section 64.

OCCUPANCY

Office buildings are buildings designed for general commercial occupancy, including administrative government and corporate uses, and are normally subdivided into relatively small units. If part of an office building has some other occupancy, such as a bank or store on the first floor, that portion should be priced using its appropriate base cost. For light shed office structures, see Section 17. For office apartments, see Section 12.

Atrium and vestibule entries or lobbies are glassed structures which usually abut or are underneath elevated buildings. For prefabricated greenhouse structures, see Section 17 or 18.

Mechanical penthouses shelter the building's elevator and other mechanical equipment. For finished penthouses, i.e., those containing roof apartments, restaurants, etc., use the proper occupancy cost.

Parking-level floors are intermediate and ground-level parking facilities found underneath elevated buildings and include all framing, ramps and stairs necessary.

Basements include finish compatible with the type of basement, including stairs and ramps as necessary and must be refined for size, shape and height. Add elevator stops from the refinement table at the end of the section.

Mezzanines do not include exterior wall or heating which are included in the building cost refinement for wall height. Elevator stops can be added from the refinement page.

Banks, branch and central offices, include savings and loan and credit union occupancies where the design is of a bank type. Where such uses are made of ordinary store or office buildings, the store or office costs should be used, adding for any extra features. While a branch bank tends to be a single-purpose, low-rise neighborhood facility, the central or main bank facility may be more office building in character, where high-rise administrative office floors should be priced as such. **Minibanks** are small walk- or drive-up facilities, typically between 500 and 2,000 square feet in size. Costs include vaults, but do not include banking fixtures or equipment, vault doors, or safe deposit boxes. Drive-up windows, night depositories, and surveillance systems commensurate with the quality, are included.

Medical office buildings are designed for medical and/or dental services with examination and outpatient treatment, and includes private and public clinics. **Dental clinics** are small, standalone facilities and will generally have a greater amount of plumbing and partitions.

Urgent Care Clinics or infirmaries are designed for emergency, urgent care, first aid and medical treatment, usually having no facilities for surgery or a minimum of such facilities.

General hospital costs include fixed equipment (Group I) but not Groups II and III equipment, whether installed or classed as personal property. See definitions of equipment groups on cost pages of this section.

Outpatient centers are freestanding, specialty treatment centers for ambulatory outpatient or same-day surgery facilities and include all clinical surgery, diagnostic, lab, administrative and public areas commensurate with the quality level. Operating rooms on average represent 2.5% of the total floor area. Cost includes fixed equipment only. This category will also include specialized imaging and radiation treatment, and diagnostic centers for cancer, diabetes, and eye and kidney diseases, etc. Extremely small vault-type imaging equipment buildings only, are not included, where reported costs have been 50% to 100% greater.

Nursing Homes (Convalescent hospitals) lack facilities for surgical care and treatment, and include so-called skilled nursing homes, rest homes, sanitariums and like buildings of hospital-type construction, giving full nursing care. Treatment and therapy rooms commensurate with the quality, are included. Retirement living facilities are found in Section 11 or 12. Group care homes are found in Section 11.

Veterinary hospitals are designed for the medical and surgical care and treatment of small animals. Costs do not include cages and runs or open shelters, which should be priced separately.

Kennels have limited examination and treatment facilities and are predominantly for the boarding of small animals. The better qualities include the large public animal control facilities and the high-cost "pet hotels." Costs include the cages and enclosed runs.

Governmental buildings include major city halls or town centers, courthouses, etc., but do not include typical office or service buildings, which should be priced under the proper category in this or other sections of the manual. **Community service buildings** are mixed-use structures, typically found in rural communities, and are generally smaller and utilitarian in scope. The lower qualities are generally composed of public safety facilities, volunteer fire, limited office and council meeting rooms and/or small libraries, etc. The better qualities will have a large proportion of well-finished, full-service facilities and will merge into the government occupancy.

Fire stations, staffed, are emergency service buildings designed with engine storage, dormitory, and light kitchen facilities. **Volunteer stations** are primarily for vehicular/apparatus storage only, with minimum office and meeting room facilities commensurate with the quality. The good quality may also include restroom and kitchenette facilities. If part of a station has some other occupancy, such as a library or social hall, that portion should be priced using its appropriate base cost, with each portion modified by its area/perimeter multiplier, considering the common wall as belonging to half of each of the portions, or see community service buildings above.

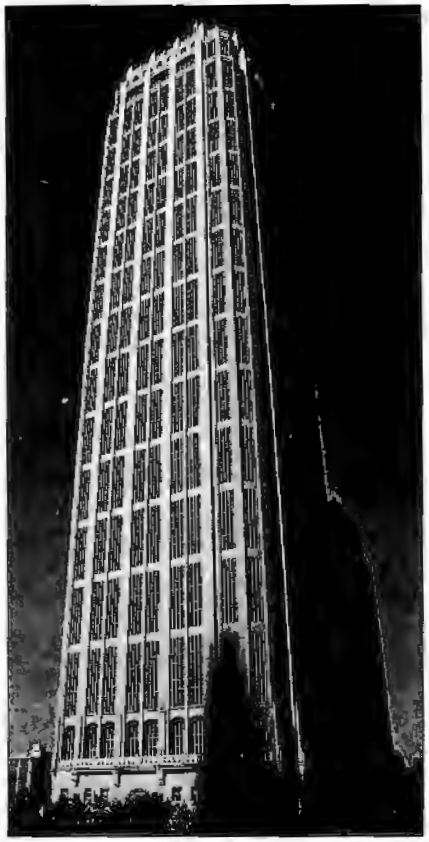
Jails, correctional facilities or detention centers include the jail hardware; i.e., cell blocks and locking equipment, for which average costs are given. The full range of facilities, for minimum to maximum security, is included, commensurate with the quality of the entire prison plant. **Police stations** are basically law enforcement facilities with limited numbers of jail holding cells. Sallyport facilities commensurate with the quality are included. Costs do not include any service equipment for kitchen, laundry or recreation.

Public libraries or media/resource centers include the basic construction of the building, including most items found in the general contract, but not furnishings and fixtures such as counters, kitchenette, seating or book stacks which are not considered built-in and permanently attached under the general building contract. For school and university libraries, see Section 18.

TRADE FIXTURES AND EQUIPMENT

Some fixtures and equipment costs for buildings in this section are listed in Section 65.

OFFICE BUILDINGS



1. EXCELLENT CLASS A

2. GOOD CLASS A

3. GOOD CLASS A

4. AVERAGE CLASS A

5. EXCELLENT CLASS A

6. GOOD CLASS A

7. GOOD CLASS A

OFFICE BUILDINGS (344)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Best metal or stone, brick or block backup, solar glass	Plaster, best veneers, vinyl wall coverings, vinyl, terrazzo, carpet	*Luminous ceilings, many outlets, many private restrooms	Hot and chilled water (zoned)	2906.25	22.49	270.00
	Good	Good metal and solar glass, face brick, precast concrete panels	Drywall or plaster, some wall cover, acoustic tile, vinyl tile, carpet	*Good fluorescent, high intensity lighting, good restrooms	Hot and chilled water (zoned)	2303.47	17.83	214.00
	Average	Brick, concrete or metal and glass panels, little trim	Average partitions, acoustic tile, vinyl composition, some extras	*Average intensity fluorescent lighting, average restrooms	Warm and cool air (zoned)	1732.99	13.41	161.00
	Low cost	Minimum-cost walls and fenestration, little trim	Drywall, acoustic ceilings, asphalt tile, few partitions	*Minimum office lighting and plumbing	Warm and cool air (zoned)	1388.54	10.75	129.00
B	Excellent	Best metal or stone, brick or block backup, tinted glass	Plaster, best veneers, vinyl wall coverings, vinyl tile, terrazzo	*Luminous ceilings, many outlets, many private restrooms	Hot and chilled water (zoned)	2852.43	22.07	265.00
	Good	Good metal and solar glass, face brick, precast concrete panels	Drywall/plaster, some wall cover, acoustic tile, vinyl tile, carpet	*Good fluorescent, high intensity lighting, good restrooms	Hot and chilled water (zoned)	2238.89	17.33	208.00
	Average	Brick, concrete or metal and glass panels, little trim	Average partitions, acoustic tile, vinyl composition, some extras	*Average intensity fluorescent lighting, average restrooms	Warm and cool air (zoned)	1679.17	12.99	156.00
	Low cost	Minimum-cost walls and fenestration, little trim	Drywall, acoustic ceilings, asphalt tile, few partitions	*Minimum office lighting and plumbing	Warm and cool air (zoned)	1323.96	10.25	123.00
C	Excellent	Steel frame, masonry and glass, stone ornamentation, top quality	Plaster, paneling, carpet and terrazzo, suspended ceilings	*Best fluorescent ceiling panels, tiled restrooms, good fixtures	Warm and cool air (zoned)	2443.41	18.91	227.00
	Good	Steel frame or bearing walls, brick/ conc. panels, some ornamentation	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1711.46	13.24	159.00
	Average	Steel or concrete frame, or bearing walls, some trim	Paint, drywall partitions, acoustic tile, vinyl composition	*Fluorescent lighting, adequate outlets and plumbing	Forced air	1216.32	9.41	113.00
	Low cost	Masonry bearing walls, light rafters, very plain	Paint, few low-cost partitions, acoustic tile, asphalt tile	Minimum office lighting and plumbing	Wall furnace	818.06	6.33	76.00
D	Excellent	Studs or steel columns, bar or web joists, brick or stone veneer, EIFS	Best plaster, paneling, carpet and vinyl tile	*Fluorescent panels, many outlets, good tiled restrooms	Warm and cool air (zoned)	2325.00	17.99	216.00
	Good	Best stucco on good frame, brick or stone trim, good front	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1625.35	12.58	151.00
	Average	Stucco or wood siding on wood or steel studs, some trim	Drywall, acoustic tile, low-cost carpet or vinyl composition	*Adequate lighting and plumbing	Forced air	1151.74	8.91	107.00
	Low cost	Light stucco or siding on wood or steel studs, very plain	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	769.62	5.96	71.50
DPOLE	Good	Good metal panels, fenestration, some brick or stone trim	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1485.42	11.50	138.00
	Average	Pole frame, insulated metal panels, some ornamentation	Drywall, acoustic tile, low-cost carpet or vinyl composition	Adequate lighting and plumbing	Forced air	1017.19	7.87	94.50
	Low cost	Pole frame, finished interior, some insulation	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	688.89	5.33	64.00
S	Good	Good sandwich panels and fenestration, some brick or stone	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1517.71	11.75	141.00
	Average	Insulated wall or sandwich panels, adequate fenestration	Drywall, acoustic tile, low-cost carpet or vinyl composition	Adequate lighting and plumbing	Forced air	1044.10	8.08	97.00
	Low cost	Steel or aluminum on light frame, finished interior, some insulation	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	705.04	5.46	65.50

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements but excluding mezzanines, up to 30 stories; over 30 add .4% (4/10%) for each additional story.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

BALCONIES – Exterior balconies see Page 37, or they may be computed from the Segregated Costs.

CANOPIES – For large entrance marquees or carport canopies, see Page 37.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs for buildings on this page. See Notes on Page 19.

		Sq. M.	Sq. Ft.		Sq.M.	Sq.Ft
Classes A & B	Excellent.....	130.78	12.15	Average.....	60.92	5.66
	Good.....	89.13	8.28	Low cost.....	41.66	3.87
Classes C/D/S	Excellent.....	65.98	6.13	Average.....	23.90	2.22
	Good.....	39.61	3.68			

CALCULATOR METHOD

ATRIUMS/VESTIBULES (576)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Excellent	Structural glass, decorative space frame and shed atrium glazing	Granite, marble, high-cost pavers, ornate finishes	Best lighting, adequate electrical and plumbing	Hot and chilled water (zoned)	5306.60	41.07	493.00
	Good	Architectural glazed shed atrium, good space frame	Good stone, masonry pavers, good lobby wall treatment, trim	Good lighting and plumbing	Hot and chilled water (zoned)	3401.39	26.32	316.00
	Average	Glass shed curtain wall, glass and some exposed roof deck	Terrazzo, masonry pavers, few partitions or extras	Adequate electrical and plumbing	Hot and chilled water (zoned)	2228.13	17.24	207.00
	Low cost	Metal and glass, some concrete, brick or stucco panels, no roof	Under elevated building vestibule, low-cost terrazzo, vinyl and acoustic	Minimum electrical and plumbing	Warm and cool air (zoned)	1388.54	10.75	129.00
	Cheap	Brick, block, concrete, very plain, no roof structure	Under elevated building, low-cost elevator/stairway vestibule only	Minimum electrical	None	737.33	5.71	68.50
CDS	Good	Good glazed shed atrium	Stone or masonry pavers, some good lobby wall treatment, trim	Good lighting and plumbing	Hot and chilled water (zoned)	2755.56	21.32	256.00
	Average	Glass shed curtain wall, skylights, some exposed roof deck	Low-cost terrazzo, masonry pavers, few partitions or extras	Adequate electrical and plumbing	Warm and cool air (zoned)	1679.17	12.99	156.00
	Low cost	Glass panels, block, brick veneer or stucco, no roof	Under building vestibule, vinyl composition and acoustic tile	Minimum electrical and plumbing	Warm and cool air (zoned)	1097.92	8.50	102.00
	Cheap	Block, brick veneer or stucco, very plain, no roof structure	Under elevated building, low-cost elevator/stairway vestibule only	Minimum electrical	None	548.96	4.25	51.00

PARKING LEVELS (INTERMEDIATE/UNDER BUILDING) (577)

A-B	Excellent	Best curtain wall panels, matching spandrel and louvers, fully enclosed	Unfinished except good office, service and lobby areas	*Reading-level lighting, restrooms and service plumbing	Ventilation	1119.45	8.66	104.00
	Good	Good curtain panels, masonry, partial louvers, natural ventilation	Concrete with hardener, lines and stops, small office, few extras	*Adequate lighting and drains	None	871.88	6.75	81.00
	Average	Partial walls, brick, concrete, metal panels, some trim or louvers	Unfinished, concrete floor, lines, low-cost elevator lobbies	*Low-level lighting, drains	None	694.27	5.37	64.50
	Low cost	Under building, grade level only, blind wall panels, some trim, gates	Concrete paving, lines and stops, plaster soffit, lobby not included	Low-level lighting, drains	None	532.81	4.12	49.50
	Cheap	Under building, grade level only, no walls, covered columns	Asphalt paving, lines, painted soffit, vestibule/lobby not included	Minimum lighting, drains	None	341.75	-----	31.75
CDS	Good	Good panels, masonry, partial louvers, open ventilation	Concrete with hardener, lines and stops, few extras	*Adequate lighting and drains	None	737.33	5.71	68.50
	Average	Partial walls, brick, masonry or stucco panels, some trim or louvers	Unfinished, concrete floor, lines, low-cost elevator lobbies	*Low-level lighting, drains	None	575.87	4.46	53.50
	Low cost	Under building, grade level only, some blind walls, trim and gates	Concrete or asphalt, lines, plaster soffit, vestibule/lobby not included	Low-level lighting, drains	None	430.56	3.33	40.00
	Cheap	Under building, grade level only, open, no walls, exposed columns	Asphalt paving, lines, finished building soffit, lobby not included	Minimum lighting, drains	None	263.18	-----	24.45

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements but excluding mezzanines, up to 30 stories; over 30 add .4% (4/10%) for each additional story.

NOTE: Do not use floor area/perimeter multipliers with open grade-level parking under elevated buildings. For belowgrade parking basements, see top of next page. Parking structures are priced from Section 14. Surface parking lots, see Section 66. For open plazas, see Mall costs in Section 13; handicap ramps, see Section 66. For extended courtyard deck roof over parking levels, add 13.10 per square foot (141.01 per square meter).

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs. For buildings not marked, or for vestibule and atrium stops, add costs from Page 36.

		Sq.M.	Sq.Ft.		Sq.M.	Sq.Ft.
Classes A & B	Excellent.....	41.23	3.83	Average	26.48	2.46
	Good.....	33.37	3.10			
Classes C/D/S	Good.....	24.54	2.28	Average	20.99	1.95

CANOPIES – For entry canopies, see Page 37.

SPRINKLERS – Systems are not included. Costs should be added from Page 36.

BANKS – BRANCHES (304)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Highly ornamental, marble, granite, mosaics, best glass	Plaster or drywall, paneling, marble, terrazzo, carpet	*Good fluorescent ceiling panels, good outlets, tiled restrooms	Hot and chilled water (zoned)	2981.60	23.07	277.00
	Average	Good brick, ornamental concrete, good glass, limestone trim	Plaster or drywall, good detail, terrazzo, carpet, vinyl tile	*Good lighting and outlets, adequate restrooms	Hot and chilled water (zoned)	2357.29	18.24	219.00
	Low cost	Brick, concrete, little or no trim	Plaster or drywall, vinyl composition, some carpet and pavers	*Adequate lighting, minimum restroom facilities	Hot and chilled water (zoned)	1872.92	14.49	174.00
B	Good	Highly ornamental, marble, granite, mosaics, best glass	Plaster or drywall, marble, terrazzo, carpet	*Good fluorescent ceiling panels, good outlets, tiled restrooms	Hot and chilled water (zoned)	2895.49	22.41	269.00
	Average	Good brick, ornamental concrete, good glass, limestone trim	Plaster or drywall, good detail, terrazzo, carpet, vinyl tile	*Good lighting and outlets, adequate restrooms	Hot and chilled water (zoned)	2260.42	17.49	210.00
	Low cost	Brick, concrete, little or no trim	Plaster or drywall, vinyl composition, some carpet and pavers	*Adequate lighting, minimum restroom facilities	Hot and chilled water (zoned)	1797.57	13.91	167.00
C	Excellent	Marble or granite, bronze and solar glass, highly ornamental	Plaster and paneling, vinyl wall finishes, carpeting, terrazzo	*Best lighting & closed circuit TV, quality restrooms & plumbing	Hot and chilled water (zoned)	3455.21	26.74	321.00
	Good	Face brick or stone, good metal or concrete and glass panels	Plaster or drywall, paneling, vinyl and carpeting	*Good lighting and plumbing, tiled restrooms, TV circuits	Warm and cool air (zoned)	2518.75	19.49	234.00
	Average	Brick, block, good store-type front with some trim	Some plaster, acoustic tile, some terrazzo or tile, vinyl composition	*Adequate lighting and outlets, adequate restrooms, TV circuits	Package A.C.	1829.86	14.16	170.00
	Low cost	Low-cost brick, block, tilt-up, small entrance, little trim	Exposed exterior walls, acoustic ceilings, asphalt tile	Minimum bank lighting and plumbing	Package A.C.	1367.02	10.58	127.00
D	Excellent	Stone or face brick veneer, good metal and glass panels	Plaster and paneling, vinyl wall finishes, carpeting, terrazzo	Best lighting & closed circuit TV, quality restrooms & plumbing	Hot and chilled water	3272.23	25.32	304.00
	Good	Brick veneer, metal and glass panels, EIFS, ornamental finishes	Plaster or drywall, some paneling, vinyl and carpeting	Good lighting and plumbing, tiled restrooms	Warm and cool air (zoned)	2378.82	18.41	221.00
	Average	Brick veneer, good stucco or siding, some ornamentation	Plaster or drywall, good hardwood, low-cost terrazzo, vinyl composition	Adequate lighting and outlets, adequate restrooms	Package A.C.	1722.22	13.33	160.00
	Low cost	Stucco or siding, minimum ornamentation	Drywall, acoustic tile, vinyl composition tile, few partitions	Minimum bank lighting and plumbing	Package A.C.	1302.43	10.08	121.00
S	Good	Sandwich panels, brick trim, good fenestration	Drywall, some trim, carpet, vinyl, acoustic tile	Good lighting and plumbing, tiled restrooms	Package A.C.	2152.78	16.66	200.00
	Average	Sandwich panels, adequate fenestration	Drywall, acoustic, vinyl composition, some pavers or ceramic	Adequate lighting and outlets, adequate restrooms	Package A.C.	1625.35	12.58	151.00
	Low cost	Metal panels, drywall interior, insulated	Drywall, acoustic tile, vinyl composition, few partitions	Minimum bank lighting and plumbing	Package A.C.	1248.61	9.66	116.00

BASEMENTS AND MEZZANINES – BANKS

A-B	Finished basement	Plaster interior	Typical bank finish and detail	Adequate lighting and plumbing	Warm and cool air (zoned)	1550.00	12.00	144.00
	Mezzanine	Not included	Typical bank finish and detail	Adequate lighting and plumbing	In bldg. cost	1044.10	-----	97.00
CDS	Basement	Plaster or drywall interior	Typical bank finish and detail	Adequate lighting and plumbing	Forced air	1049.48	8.12	97.50
	Mezzanine	Not included	Typical bank finish and detail	Adequate lighting and plumbing	In bldg. cost	775.00	-----	72.00

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs including basements, but excluding mezzanines, up to 30 stories; over 30, add .4% (4/10%) for each additional story.

MEZZANINES – Do not use story height or area/perimeter multipliers with mezzanine costs.

CANOPIES – Large drive-thru canopies see Page 37, or they may be computed from the Segregated Costs or Unit-in-Place Costs.

BANK FIXTURES – Typical cost of bank fixtures, including vault doors, safe deposit cabinets, counters, cages, etc., see Page 37 or Section 45. Vault door and safe deposit costs may be computed and added separately from Section 52.

NOTE: For ATM structures, see Section 64.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs. For buildings not marked, or for basement and mezzanine stops, add costs from Page 36. See note on Page 19.

Classes A & B	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Good	91.60	8.51	Average	63.18	5.87	Low cost	43.49	4.04
Class C								
Excellent	74.38	6.91	Good	44.78	4.16	Average	27.23	2.53

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

CALCULATOR METHOD

MEDICAL OFFICE BUILDINGS (341)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Best metal, brick or block backup, solar glass	Acoustic plaster, good veneers, vinyl wall coverings, carpet, vinyl	*Luminous ceilings, power and X-ray outlets, best plumbing	Hot and chilled water (zoned)	3143.06	24.32	292.00
	Good	Good metal and solar glass, face brick, concrete and glass	Good plaster or drywall, acoustic tile, carpeting, vinyl composition	*High-intensity lighting, X-ray outlets, good plumbing, lab	Hot and chilled water (zoned)	2529.52	19.58	235.00
	Average	Metal and glass, brick or concrete panels	Plaster or drywall, acoustic tile, vinyl composition floors	*Adequate lighting, power, and plumbing, X-ray rooms	Warm and cool air (zoned)	1937.50	14.99	180.00
	Low cost	Brick, concrete block, very plain, small lobby	Low-cost finishes and partitions, acoustic tile, asphalt tile	*Minimum lighting and plumbing, few extras	Package A.C.	1485.42	11.50	138.00
B	Excellent	Best metal, brick or block backup, solar glass	Acoustic plaster, good veneers, vinyl wall coverings, carpet, vinyl	*Luminous ceilings, power and X-ray outlets, best plumbing	Hot and chilled water (zoned)	3078.48	23.82	286.00
	Good	Good metal and glass, good brick, concrete panels	Good plaster or drywall, acoustic tile, carpeting and vinyl composition	*High-intensity lighting, X-ray outlets, good plumbing, lab	Hot and chilled water (zoned)	2464.93	19.08	229.00
	Average	Metal and glass, brick or concrete panels	Drywall or plaster, acoustic tile, vinyl composition floors	*Adequate lighting, power, and plumbing, X-ray rooms	Warm and cool air (zoned)	1883.68	14.58	175.00
	Low cost	Brick, concrete block, lift slab, very plain, small lobby	Low-cost finishes and partitions, acoustic tile, asphalt tile	*Minimum lighting and plumbing, few extras	Package A.C.	1431.60	11.08	133.00
C	Excellent	Steel frame, masonry and glass, ornamentation, top quality	Acoustic plaster, paneling, carpet and vinyl tile, many soundproof rooms	*Fluorescent panels, air piping, X-ray rooms, good plumbing	Hot and chilled water (zoned)	2658.68	20.58	247.00
	Good	Steel frame, masonry, best concrete panels, ornamentation	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, X-ray rooms, good plumbing, lab	Warm and cool air (zoned)	2012.85	15.58	187.00
	Average	Steel or concrete frame or bearing walls, some trim	Plaster, drywall partitions, acoustic tile, vinyl composition	*Adequate lighting and outlets, adequate plumbing, lab	Package A.C.	1528.47	11.83	142.00
	Low cost	Masonry bearing walls, light rafters, very plain	Paint, cheap partitions, acoustic tile, asphalt tile	Minimum lighting and outlets, adequate plumbing	Forced air	1162.50	9.00	108.00
D	Excellent	Studs or steel columns, bar or web joists, brick or stone veneer, EIFS	Best plaster, paneling, carpet and vinyl tile, many soundproof rooms	*Fluorescent panels, air piping, X-ray rooms, good plumbing	Warm and cool air (zoned)	2421.88	18.74	225.00
	Good	Best stucco on good frame, good brick or stone trim	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, X-ray rooms, good plumbing, lab	Warm and cool air (zoned)	1926.74	14.91	179.00
	Average	Stucco or wood siding on wood or steel studs, some trim	Drywall, acoustic tile, low-cost carpet or vinyl composition	*Adequate lighting and outlets, adequate plumbing	Package A.C.	1453.13	11.25	135.00
	Low cost	Light stucco or siding on wood or steel studs, very plain	Drywall, cheap partitions, acoustic tile, asphalt tile	Minimum lighting and outlets, adequate plumbing	Forced air	1108.68	8.58	103.00
D_{POLE}	Low cost	Pole frame, good metal panels, finished inside, little trim	Low-cost finishes and partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing, few extras	Forced air	990.28	7.66	92.00
S	Good	Good sandwich panels and fenestration, some brick or stone	Good plaster or drywall, acoustic tile, carpeting and vinyl	*High-intensity lighting, X-ray outlets, good plumbing, lab	Warm and cool air (zoned)	1808.34	13.99	168.00
	Average	Insulated wall or sandwich panels, adequate fenestration	Drywall or plaster, acoustic tile, vinyl composition floors	Adequate lighting, power, and plumbing, X-ray rooms	Package A.C.	1323.96	10.25	123.00
	Low cost	Steel or aluminum on light frame, finished interior, some insulation	Low-cost finishes and partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing, few extras	Forced air	1006.42	7.79	93.50

BASEMENTS – MEDICAL OFFICE BUILDINGS

A-B	Finished	Plaster interior	Average medical office finish, acoustic tile, vinyl composition	Adequate medical office lighting and plumbing	Warm and cool air (zoned)	1463.89	11.33	136.00
CDS	Finished	Plaster or drywall interior	Average medical office finish, acoustic tile, vinyl composition	Adequate medical office lighting and plumbing	Forced air	984.90	7.62	91.50

NOTE – For other refinement notes, see next page.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs for buildings on this page.

		Sq. M.	Sq. Ft.
Classes A and B	Excellent	131.86	12.25
	Good	90.42	8.40
Classes C/D/S	Excellent	67.92	6.31
	Good	41.66	3.87

	Sq. M.	Sq. Ft.
Average	62.00	5.76
Low cost	42.52	3.95
Average	25.40	2.36

DENTAL CLINICS (444)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Face brick, glass panels, stone, top quality	Best plaster, paneling, carpet and vinyl tile, high-cost waiting areas	Luminous ceilings, power and X-ray outlets, best plumbing	Warm and cool air (zoned)	2669.45	20.66	248.00
	Good	Face brick, concrete or metal panels, ornamentation	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	Good fluorescent lighting, X-ray, lab, dark rooms, good plumbing	Heat pump system	2045.14	15.83	190.00
	Average	Brick, block, concrete panels, some trim	Plaster, drywall partitions, acoustic tile, vinyl composition, carpet	Adequate lighting, power and plumbing, X-ray, air piping	Package A.C.	1560.77	12.08	145.00
	Low cost	Brick or block, tilt-up, no trim	Paint, cheap partitions, acoustic tile, asphalt tile, small lobby	Minimum lighting and outlets, adequate plumbing, few extras	Forced air	1194.79	9.25	111.00
D	Excellent	Face brick veneer, best siding, good ornamentation	Best plaster, paneling, carpet and vinyl tile, high-cost waiting areas	Luminous ceilings, power and X-ray outlets, best plumbing	Warm and cool air (zoned)	2572.57	19.91	239.00
	Good	Brick veneer, good stucco or siding with good trim	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	Good fluorescent lighting, X-ray, lab, dark rooms, good plumbing	Heat pump system	1959.03	15.16	182.00
	Average	Brick veneer, stucco or siding, little trim	Plaster, drywall partitions, acoustic tile, vinyl composition, carpet	Adequate lighting, power and plumbing, X-ray, air piping	Package A.C.	1496.18	11.58	139.00
	Low cost	Stucco or siding, very plain	Paint, cheap partitions, acoustic tile, asphalt tile, small lobby	Minimum lighting and outlets, adequate plumbing, few extras	Forced air	1140.97	8.83	106.00
DPOLE	Average	Pole frame, insulated metal panels, some ornamentation	Drywall partitions, acoustic tile, vinyl composition, carpet	Adequate lighting, power and plumbing, X-ray, air piping	Package A.C.	1367.02	10.58	127.00
	Low cost	Pole frame, finished interior, insulation, little trim	Paint, cheap partitions, acoustic tile, asphalt tile, small lobby	Minimum lighting and outlets, adequate plumbing, few extras	Forced air	1017.19	7.87	94.50
S	Good	Pre-engineered, good sandwich panels, some brick or stone trim	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	Good fluorescent lighting, X-ray, lab, dark rooms, good plumbing	Heat pump system	1840.63	14.24	171.00
	Average	Pre-engineered, sandwich panels, some ornamentation	Drywall partitions, acoustic tile, vinyl composition, carpet	Adequate lighting, power and plumbing, X-ray, air piping	Package A.C.	1377.78	10.66	128.00
	Low cost	Pre-engineered, finished interior, insulation, little trim	Paint, cheap partitions, acoustic tile, asphalt tile, small lobby	Minimum lighting and outlets, adequate plumbing, few extras	Forced air	1033.33	8.00	96.00

URGENT CARE CLINICS (320)

A-B	Good	Brick, metal and glass, some ornamentation	Plaster or drywall, good enamel or vinyl walls, ceramic, vinyl, rubber tile	Good lighting and plumbing, first aid and overnight care	Warm and cool air (zoned)	1808.34	13.99	168.00
	Average	Brick, precast panels, metal and glass, little trim	Drywall or plaster, acoustic tile, vinyl composition, some ceramic pavers	Adequate lighting and plumbing for emergency first aid and care	Warm and cool air (zoned)	1485.42	11.50	138.00
C	Excellent	Face brick, stone, good ornamentation	Best plaster, paneling, carpet and vinyl tile, good reception areas	Luminous ceilings, power and X-ray outlets, good plumbing	Warm and cool air (zoned)	1915.97	14.83	178.00
	Good	Brick or block, good fenestration, some trim	Drywall or plaster, acoustic tile, vinyl composition, some ceramic pavers	Good lighting and plumbing, first aid and overnight care	Package A.C.	1474.65	11.41	137.00
	Average	Brick, block, tilt-up, very plain finish	Drywall or plaster, acoustic tile, vinyl composition tile	Adequate lighting and plumbing for emergency first aid	Forced air	1140.97	8.83	106.00
D	Excellent	Face brick or stone veneer, good ornamentation	Best plaster, paneling, carpet and vinyl tile, good reception areas	Luminous ceilings, power and X-ray outlets, good plumbing	Warm and cool air (zoned)	1819.10	14.08	169.00
	Good	Brick veneer, or best stucco or siding	Drywall or plaster, acoustic tile, ceramic tile, vinyl composition	Good lighting and plumbing, first aid and overnight care	Package A.C.	1388.54	10.75	129.00
	Average	Stucco or siding, very plain	Drywall, acoustic tile, vinyl composition	Adequate lighting and plumbing	Forced air	1087.15	8.41	101.00
S	Average	Metal siding, finished interior	Drywall, acoustic tile, vinyl composition tile	Adequate lighting and plumbing for emergency first aid	Forced air	1006.42	7.79	93.50

NOTE – Minimum seasonal first aid stations can run 60% cheaper.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements but excluding mezzanines, up to 30 stories; over 30 add .4% (4/10%) for each additional story.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

BALCONIES – Exterior balconies see Page 37, or they may be computed from the Segregated Costs or from Unit-in-Place Costs.

CANOPIES – Large entrance marquees or carport canopies see Page 37, or they may be computed from the Segregated Costs, Section 45, or from Unit-in-Place Costs.

The data included on this page becomes obsolete after update delivery, scheduled for November 2019.

CALCULATOR METHOD

GENERAL HOSPITALS (331)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT❖	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Marble, granite, best metal and glass, highly decorative	Plaster, vinyl and tile wall surfaces, best ceilings and floors	*Oxygen, pneumatic conveyor, signal, much automation	Complete H.V.A.C.	5274.31	40.82	490.00
	Good	Brick, metal and glass, stone trim, some ornamentation	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl, rubber tile	*Signal system, oxygen piping, pneumatic conveyors	Complete H.V.A.C.	4025.70	31.15	374.00
	Average	Metal and glass, concrete, brick panels, little ornamentation	Drywall, acoustic ceilings, vinyl and ceramic floors, linoleum	*Signal system, oxygen piping, adequate lighting and plumbing	Complete H.V.A.C.	3089.24	23.91	287.00
	Low cost	Concrete panels, brick, very plain, small entrance	Drywall, acoustic ceilings, vinyl composition, minimum detail	*Signal system, adequate lighting and plumbing	Complete H.V.A.C.	2378.82	18.41	221.00
B	Excellent	Marble, granite, face brick, highly decorative	Plaster, vinyl and tile wall surfaces, best ceilings and floors	*Oxygen, pneumatic conveyor, signal, much automation	Complete H.V.A.C.	5188.20	40.15	482.00
	Good	Brick, metal and glass, stone trim, some ornamentation	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl floors	*Signal system, oxygen piping, pneumatic conveyors	Complete H.V.A.C.	3971.88	30.74	369.00
	Average	Metal and glass, concrete, brick, little ornamentation	Drywall, acoustic ceilings, vinyl and ceramic floors, linoleum	*Signal system, oxygen piping, adequate lighting and plumbing	Complete H.V.A.C.	3056.95	23.66	284.00
	Low cost	Concrete panels, brick, very plain, small entrance	Drywall, acoustic ceilings, vinyl composition, minimum detail	*Signal system, adequate lighting and plumbing	Complete H.V.A.C.	2346.53	18.16	218.00
C	Excellent	Stone ashlar, best metal or concrete and glass panels	Plaster, vinyl and tile wall surfaces, best ceilings and floors	*Oxygen, pneumatic conveyor, signal, much automation	Complete H.V.A.C.	4154.87	32.15	386.00
	Good	Brick, metal and glass, stone, good ornamentation	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl floors	*Signal system, oxygen piping, good lighting and plumbing	Complete H.V.A.C.	3110.77	24.07	289.00
	Average	Metal and glass, brick, block, concrete, little ornamentation	Plaster or drywall, acoustic ceilings, vinyl or tile floors, some ceramic	*Signal system, oxygen piping, adequate lighting and plumbing	Complete H.V.A.C.	2335.77	18.08	217.00
	Low cost	Brick, block, tilt-up, small entrance, very plain	Plaster or drywall, acoustic tile, vinyl composition, minimum detail	Adequate lighting and plumbing, signal system, few extras	Complete H.V.A.C.	1743.75	13.49	162.00
D	Good	Brick veneer, EIFS, good entrance and ornamentation	Plaster or drywall, enamel or vinyl, ceramic tile and vinyl floors	Signal system, oxygen piping, good lighting and plumbing	Complete H.V.A.C.	2949.31	22.82	274.00
	Average	Brick veneer, good stucco or siding with brick or stone trim	Plaster or drywall, acoustic ceilings, vinyl or tile floors, some ceramic	Adequate lighting and plumbing, signal system, some extras	Complete H.V.A.C.	2228.13	17.24	207.00
	Low cost	Stucco or siding, little trim or ornamentation	Drywall or plaster, acoustic tile, vinyl composition, minimum extras	Adequate lighting and plumbing, minimum signal system	Complete H.V.A.C.	1679.17	12.99	156.00
S	Low cost	Insulated panels	Metal or drywall, acoustic tile ceilings, vinyl composition	Minimum general hospital facilities	Complete H.V.A.C.	1614.59	12.50	150.00

HOSPITAL BASEMENTS

A-B	Finished general hospital	Reinforced concrete, plaster interior	Hospital finish, administrative and technical facilities and services	Adequate lighting and plumbing for hospital facilities	Complete H.V.A.C.	1743.75	13.49	162.00
	Finished outpatient	Heavy reinforced concrete, plaster interior	Outpatient finish, heavy shielding, imaging and radiation, some offices	Adequate lighting and plumbing for diagnostic facilities	Complete H.V.A.C.	2055.90	15.91	191.00
CDS	Finished general hospital	Reinforced concrete, plaster or drywall interior	Hospital finish, administrative and technical facilities and services	Adequate lighting and plumbing for hospital facilities	Complete H.V.A.C.	1248.61	9.66	116.00
	Finished outpatient	Heavy reinforced concrete, plaster or drywall interior	Outpatient finish, heavy shielding, imaging and radiation, some offices	Adequate lighting and plumbing for diagnostic facilities	Complete H.V.A.C.	1646.88	12.74	153.00

HOSPITAL EQUIPMENT

Group I equipment is permanent equipment, installed in or attached to the building, part of the general contract, and included in calculator costs.

Group II equipment is equipment often installed and becoming part of the real property, but typically not part of the general contract, such as autoclaves, permanent surgical lights, imaging equipment, etc.

Group III equipment is movable personal property such as furniture, fixtures, instruments, etc.

Group II and III equipment is not included in calculator costs. Costs may be added from Page 37 or Section 45.

These definitions are for the purposes of this manual and do not conform entirely to Medicare or other divisions of hospital equipment.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs. For buildings not marked or for basement stops, add costs from Page 36.

		Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Classes A and B:	Excellent	138.32	12.85	Average	63.83	5.93
	Good	93.65	8.70	Low cost	43.49	4.04
Class C:	Excellent	70.40	6.54	Average	28.20	2.62
	Good	44.35	4.12			

❖Adjust for heat from table on following page.

NOTE: For other refinements, see bottom of next page. For costs per bed, see Page 39.

GENERAL HOSPITALS

COMPLETE HEATING, VENTILATING, AND AIR CONDITIONING

Because of the higher requirements for hospitals and surgical centers, the average heating and air conditioning costs are listed separately below. The moderate climate cost is included in the base cost in the tables. The basement costs include low quality H.V.A.C. If a cubic foot cost is used, use one-twelfth the difference shown to adjust the base cubic foot cost.

SQUARE METER COSTS

COMPLETE H.V.A.C.		Mild Climate	Moderate Climate	Extreme Climate
Classes A and B	Excellent	438.63	559.72	710.42
	Good	344.44	435.94	548.96
	Average	269.10	341.75	433.25
	Low cost	210.43	266.94	339.06
Classes C, D and S	Excellent	384.81	487.07	618.92
	Good	304.08	384.81	487.07
	Average	237.34	301.39	382.12
	Fair	210.43	266.94	339.06
	Low cost	186.75	235.73	296.01

SQUARE FOOT COSTS

COMPLETE H.V.A.C.		Mild Climate	Moderate Climate	Extreme Climate
Classes A and B	Excellent	40.75	52.00	66.00
	Good	32.00	40.50	51.00
	Average	25.00	31.75	40.25
	Low cost	19.55	24.80	31.50
Classes C, D and S	Excellent	35.75	45.25	57.50
	Good	28.25	35.75	45.25
	Average	22.05	28.00	35.50
	Fair	19.55	24.80	31.50
	Low cost	17.35	21.90	27.50

OUTPATIENT (SURGICAL) CENTERS (431)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT❖	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Good	Brick, metal and glass, stone trim, some ornamentation	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl, rubber tile	Good lighting and plumbing, best surgical, good imaging center	Complete H.V.A.C.	4079.52	31.57	379.00
	Average	Brick, concrete panels, metal and glass, little ornamentation	Drywall, vinyl & tile wall surfaces, good ceilings and floors, some shielding	Adequate lighting and plumbing for surgical facilities, some extras	Complete H.V.A.C.	2992.36	23.16	278.00
C	Excellent	Stone ashlar, best metal or concrete and glass panels	Plaster, vinyl and tile wall surfaces, best ceilings and floors	Best diagnostic and research, best radiation therapy	Complete H.V.A.C.	4779.17	36.99	444.00
	Good	Brick, metal and glass, stone, good concrete, good entrance	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl, shielding	Good lighting and plumbing, small lab, some extras, good imaging	Complete H.V.A.C.	3315.28	25.66	308.00
	Average	Metal and glass, brick, block, concrete, little ornamentation	Plaster or drywall, acoustic ceilings, vinyl or tile floors, carpet	Adequate lighting and plumbing for surgical or cancer facilities	Complete H.V.A.C.	2303.47	17.83	214.00
	Fair	Brick, ornamental block, some metal and glass and trim	Plaster or drywall, acoustic ceilings, vinyl composition, some carpet	Adequate therapeutic, wellness facility, good dialysis	Complete H.V.A.C.	1926.74	14.91	179.00
	Low cost	Brick, block, tilt-up, small entrance, very plain	Plaster or drywall, acoustic tile, vinyl composition, minimum detail	Minimum treatment facilities, dialysis, some diagnostic	Complete H.V.A.C.	1603.82	12.41	149.00
D	Excellent	Ashlar stone veneer, best metal and glass panels	Plaster, vinyl and tile wall surfaces, best ceilings and floors	Best diagnostic and research, best radiation therapy	Complete H.V.A.C.	4531.60	35.07	421.00
	Good	Face brick or stone veneer, good entrance and trim	Plaster or drywall, best enamels or vinyl walls, ceramic, vinyl, shielding	Good lighting and plumbing, small lab, some extras, good imaging	Complete H.V.A.C.	3164.59	24.49	294.00
	Average	Brick veneer, EIFS, ornamental stucco, metal and glass	Plaster or drywall, acoustic ceilings, vinyl or tile floors, carpet	Adequate lighting and plumbing for surgical or cancer facilities	Complete H.V.A.C.	2206.60	17.08	205.00
	Fair	Siding, brick veneer, some metal and glass and trim	Plaster or drywall, acoustic ceilings, vinyl composition, some carpet	Adequate therapeutic, wellness facility, good dialysis	Complete H.V.A.C.	1851.39	14.33	172.00
	Low cost	Stucco or siding, little trim or ornamentation	Drywall or plaster, acoustic tile, vinyl composition, minimum extras	Adequate lighting and plumbing, minimum diagnostic facilities	Complete H.V.A.C.	1550.00	12.00	144.00
S	Average	Insulated panels, some metal and glass	Plaster or drywall, acoustic ceilings, vinyl or tile floors, carpet	Adequate lighting and plumbing for surgical or cancer facilities	Complete H.V.A.C.	2120.49	16.41	197.00
	Fair	Insulated panels, some trim	Plaster or drywall, acoustic ceilings, vinyl composition, some carpet	Adequate therapeutic, wellness facility, good dialysis	Complete H.V.A.C.	1776.04	13.74	165.00
	Low cost	Insulated panels	Metal or drywall, acoustic tile ceilings, vinyl composition, minimum extras	Minimum treatment facilities, dialysis, some diagnostic	Complete H.V.A.C.	1485.42	11.50	138.00

❖Adjust for heat from tables above. For specific simple systems, see Page 36.

NOTE: Unfinished utility and parking basements, see Page 19; diagnostic basements, Page 24. For parking structures, see Section 14. Pedestrian bridges, see Page 31 or Section 66.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story over three, above ground, to all base costs, including basements, up to 30 stories; over 30 add .4% (4/10%) for each additional story.

ELEVATORS AND SPRINKLERS – Costs are not included and should be added from Page 36 and 37.

CANOPIES – Large entrance marquees or carport canopies see Page 37, or they may be computed from the Segregated Costs, Section 45, or from Unit-in-Place Costs.

BALCONIES – Exterior balconies see Page 37, or they may be computed from the Segregated Costs or from Unit-in-Place Costs.

CALCULATOR METHOD

NURSING HOMES (CONVALESCENT HOSPITALS) (313)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Face brick, stone trim, good metal or concrete with good glazing	Plaster or drywall, vinyl and ceramic walls, carpet and vinyl floors	*Signal system, therapy facilities, good lighting and plumbing	Hot and chilled water (zoned)	2830.91	21.91	263.00
	Average	Brick, concrete, metal and glass, little ornamentation	Hospital without surgical facilities, good lounge areas	*Signal system, therapy facilities, adequate lighting and plumbing	Hot and chilled water (zoned)	2303.47	17.83	214.00
B	Good	Face brick, stone trim, good metal or concrete with good glazing	Plaster or drywall, vinyl and ceramic walls, carpet and vinyl floors	*Signal system, therapy facilities, good lighting and plumbing	Hot and chilled water (zoned)	2766.32	21.41	257.00
	Average	Brick, concrete, metal and glass, little ornamentation	Hospital without surgical facilities, acoustic and vinyl tile	*Signal system, therapy facilities, adequate lighting and plumbing	Hot and chilled water (zoned)	2260.42	17.49	210.00
C	Excellent	Highly ornamental metal or concrete panels and glass	Plaster, vinyl and ceramic wall finishes, carpet and vinyl floors	Signal system, therapy facilities, good lighting and plumbing	Hot and chilled water (zoned)	2712.50	20.99	252.00
	Good	Metal and glass, brick, stone trim, some ornamentation	Plaster or drywall, enamel or vinyl walls, vinyl floor, some carpet	Signal system, therapy facilities, good lighting and plumbing	Warm and cool air (zoned)	2055.90	15.91	191.00
	Average	Brick, block, some metal and glass, some ornamentation	Plaster or drywall, acoustic ceilings, vinyl composition	Signal system, therapy facilities, adequate lighting and plumbing	Package A.C.	1550.00	12.00	144.00
	Low cost	Brick, block, tilt-up, little ornamentation, simple entrance	Painted walls, some plaster or drywall, acoustic and asphalt tile	Minimum lighting and plumbing, minimum hospital facilities	Forced air	1184.03	9.16	110.00
D	Excellent	Face brick, stone, metal and glass, highly ornamental	Plaster, vinyl and ceramic wall finishes, carpet and vinyl floors	Signal system, therapy facilities, good lighting and plumbing	Warm and cool air (zoned)	2497.22	19.33	232.00
	Good	Brick veneer, EIFS, metal and glass, good entrance and trim	Plaster or drywall, good ceilings and floor covering	Signal system, therapy facilities, good lighting and plumbing	Warm and cool air (zoned)	1969.79	15.24	183.00
	Average	Good stucco or wood siding with brick or stone trim	Plaster or drywall, acoustic ceilings, vinyl composition	Adequate lighting and plumbing, signal system, some extras	Package A.C.	1485.42	11.50	138.00
	Low cost	Stucco or siding, little trim or ornamentation	Drywall, acoustic and asphalt tile, minimum detail	Adequate lighting and plumbing, minimum extra facilities	Forced air	1130.21	8.75	105.00
DPOLE	Low cost	Pole frame, good metal panels, finished inside, little trim	Drywall, acoustic and asphalt tile, minimum detail	Adequate lighting and plumbing, minimum extra facilities	Forced air	1071.01	8.29	99.50
S	Average	Sandwich panels with brick or stone trim	Drywall, acoustic ceilings, vinyl composition	Adequate lighting and plumbing, signal system, some extras	Package A.C.	1410.07	10.91	131.00
	Low cost	Insulated metal panels, little or no ornamentation	Drywall, acoustic and asphalt tile, minimum detail	Adequate lighting and plumbing, minimum extra facilities	Forced air	1087.15	8.41	101.00

NURSING HOME (CONVALESCENT HOSPITAL) BASEMENTS

A-B	Finished	Reinforced concrete, plaster interior	Hospital finish, administrative and technical facilities	Adequate lighting and plumbing for skilled nursing facilities	Warm and cool air (zoned)	1420.83	11.00	132.00
CDS	Finished	Reinforced concrete, plaster or drywall interior	Hospital finish, administrative and technical facilities	Adequate lighting and plumbing for skilled nursing facilities	Forced air	931.08	7.21	86.50

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements.

NOTE: For typical cost-per-bed ranges, see Page 39. Single bedroom hospice facilities with individual sitting rooms can run 30% higher in cost.

PARKING ROOFS – For load-bearing parking roofs, add 6.24 per square foot (67.17 per square meter). Access ramps cost 22.20 to 38.25 per square foot (238.96 to 411.72 per square meter).

BALCONIES – Exterior balconies see Page 37, or they may be computed from the Segregated Costs, Section 45, or from the Unit-in-Place Costs.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs for buildings so marked. For buildings not marked, or for basement stops, add costs from Page 36.

Classes A and B	Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Good	61.89	5.75	Average	43.49	4.04

SPRINKLERS – Systems are not included. Costs should be added from Page 36.

CANOPIES – Large entrance marquees or carport canopies see Page 37, or they may be computed from the Segregated Costs, Section 45, or from Unit-in-Place Costs.

CALCULATOR METHOD

ALTERNATE METHOD

This method is presented as an alternative to the normal calculator method, which includes average office build-out finish commensurate with the quality level. Listed below are typical office finish (tenant improvement) costs based on gross office building area, which can be added to a basic shell cost for a complete building cost.

CLASSES C, D AND S: SHELL OFFICE BUILDINGS (492)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT❖	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Steel frame, masonry and glass, stone ornamentation, high quality	Core finish only, veneers, vinyl, marble, carpet, good lobby finishes	*Luminous lobby ceilings, good core restrooms	None	1485.42	11.50	138.00
	Good	Steel frame or bearing walls, brick/ conc. panels, some ornamentation	Core finish only, vinyl, standard terrazzo, carpet, adequate entry lobby	*Good fluorescent core ceilings, average restrooms, service fixtures	None	990.28	7.66	92.00
	Average	Steel or concrete frame, or bearing walls, some trim	Bare office space, unfinished floor, some service areas	*Rough office electrical and plumbing, some service outlets	None	656.60	5.08	61.00
	Low cost	Masonry bearing walls, light rafters, very plain	Bare office space, floor slab, no service areas	Rough electrical and plumbing	None	414.41	3.21	38.50
D	Excellent	Studs or steel columns, bar or web joists, best brick or stone veneer	Core finish only, veneers, vinyl, marble, carpet, good lobby finishes	*Luminous lobby ceilings, good core restrooms	None	1367.02	10.58	127.00
	Good	Best stucco on good frame, brick or stone trim, good front	Core finish only, vinyl, standard terrazzo, carpet, adequate entry lobby	*Good fluorescent core ceilings, average restrooms, service fixtures	None	909.55	7.04	84.50
	Average	Stucco or wood siding on wood studs, some trim	Bare office space, unfinished floor, some service areas	*Rough office electrical and plumbing, some service outlets	None	597.40	4.62	55.50
	Low cost	Light stucco or siding on wood studs, very plain	Bare office space, floor slab, no service areas	Rough electrical and plumbing	None	371.35	2.87	34.50
DPOLE	Average	Pole frame, insulated metal panels, some ornamentation	Bare office space, unfinished floor, some service areas	Rough office electrical and plumbing, some service outlets	None	468.23	3.62	43.50
	Low cost	Pole frame, metal panels, finished inside, little trim	Bare office space, floor slab, no service areas	Rough electrical and plumbing	None	290.63	2.25	27.00
S	Good	Good sandwich panels and fenestration, some brick or stone	Core finish only, vinyl, standard terrazzo, carpet, adequate entry lobby	*Good fluorescent core ceilings, average restrooms, service fixtures	None	812.67	6.29	75.50
	Average	Insulated wall or sandwich panels, adequate fenestration	Bare office space, unfinished floor, some service areas	Rough office electrical and plumbing, some service outlets	None	495.14	3.83	46.00
	Low cost	Steel or aluminum on light frame, finished interior, some insulation	Bare office space, floor slab, no service areas	Rough electrical and plumbing	None	312.15	2.42	29.00

❖**HEAT** – Heating costs have been included in the total with the finished office space. A prorated amount can be allocated back to the shell cost if needed, typically 60% to 80%.

MULTISTORY BUILDINGS – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements but excluding mezzanines.

SPRINKLERS – Systems are not included. Costs should be added from Page 37.

***ELEVATORS** – Base costs of buildings marked with an asterisk (*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs for buildings on this page.

See Notes on Page 19.

		Sq. M.	Sq. Ft.		Sq. M.	Sq. Ft.
Classes C/D/S	Excellent.....	65.98	6.13	Good.....	39.61	3.68
				Average	23.90	2.22

CLASSES C, D AND S: INTERIOR OFFICE (993)

TYPE	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
Excellent	High-cost partitions, conference and reception finishes, standard administrative areas, good workstations, break room, some private suites, high-density build-out	Good fluorescent lighting, wiring, outlets and cabling, good extras	Warm and cool air (zoned)	957.99	7.41	89.00
Good	Plaster or drywall, good partitions, paneling, suspended acoustic, carpet, tile or vinyl, good reception and meeting-room space, some good cabinetry and management offices	Good fluorescent lighting, outlets, average break room and fixtures	Package A.C.	710.42	5.50	66.00
Average	Average drywall, acoustic tile, vinyl composition or carpet, adequate shelving, counters, small reception area, few plain management and meeting rooms, typical clerical	Adequate lighting and outlets, average restrooms and fixtures	Forced air	554.34	4.29	51.50
Low cost	Low-cost partitions, paint, suspended ceiling, vinyl composition, low-cost carpet, minimal counters and shelving, low-density build-out	Minimum lighting and plumbing, few extras, small restrooms	Electric wall heaters	395.57	3.06	36.75

NOTE: See Section 65 for equipment costs.

CALCULATOR METHOD

OFFICES, MEDICAL AND PUBLIC BUILDINGS

REFINEMENTS

On this page and the next are means of making adjustments to the base costs given in this section. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, price either entirely or partially by the Segregated Cost System, Section 45. Special items which should be added to the total cost may be added from the Unit-in-Place cost sections.

HEATING AND COOLING

These costs are averages of the total installed costs of the entire heating or cooling installation including its prorated share of contractors' overhead and profit and architects' fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot or square meter cost. If a cubic foot cost is used, use one-twelfth the difference shown to adjust the base cubic foot cost. All of the heating costs included in the base costs are those listed under "Moderate Climate." For specific systems costs not found below, see Section 45 or 53.

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, baseboard or cable	44.45	75.89	129.71	4.13	7.05	12.05
radiant panels	40.15	59.74	89.23	3.73	5.55	8.29
Electric wall heaters (inc. FWA)	21.31	28.52	38.75	1.98	2.65	3.60
Forced-air furnance	49.08	84.50	145.85	4.56	7.85	13.55
Hot water, baseboard/convector	78.90	132.93	223.89	7.33	12.35	20.80
radiant floor or ceiling	75.89	131.86	229.27	7.05	12.25	21.30
Space heaters, w/fan	13.89	25.83	47.68	1.29	2.40	4.43
radiant	18.41	31.75	54.79	1.71	2.95	5.09
Steam (including boiler)	73.19	124.32	210.97	6.80	11.55	19.60
(without boiler)	60.06	108.18	194.29	5.58	10.05	18.05
Wall or floor furnace	21.96	30.68	42.30	2.04	2.85	3.93

ELEVATORS

Lump sum cost per elevator plus the cost per stop or landing including the ground level. Use the cost per stop for basement and mezzanine stops. See Section 58 for more detailed costs, for observation elevators and for moving-walk costs.

TYPE	Low	Average	Good	Excellent
Passenger, Base Coat, 2 - 3 story	46500.00	55000.00	64750.00	76250.00
4- to 7 story	80250.00	92000.00	106000.00	121000.00
8 story and over	123000.00	156000.00	196000.00	249000.00
add, cost per stop	6400.00	7450.00	8600.00	9850.00
Freight, base cost, 2- to 3 story	34200.00	45300.00	60250.00	79500.00
4-story and over	67000.00	84750.00	108000.00	137000.00
add, cost per stop, manual doors	8700.00	9450.00	10400.00	11300.00
power doors	15100.00	16400.00	18000.00	19500.00
Escalators, each stairway	180000.00	191000.00	204000.00	217000.00
Vertical wheelchair lifts, each	12400.00	16000.00	20900.00	26800.00

HEATING AND COOLING – (Except General Hospitals)

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Package A.C. (short ductwork)	69.32	119.48	206.13	6.44	11.10	19.15
Warm and cool air (zoned)	120.02	200.75	336.37	11.15	18.65	31.25
Hot and chilled water (zoned)	200.75	309.46	473.61	18.65	28.75	44.00
Heat-pump system	90.63	159.31	279.86	8.42	14.80	26.00
add for ground-loop heat source	21.96	41.44	77.72	2.04	3.85	7.22
Individual thru-wall heat pumps	35.20	58.66	97.74	3.27	5.45	9.08

Small individual heat pumps cost 1820.00 to 2430.00 per ton of rated capacity.

COOLING ONLY

Cooling costs in offices and other public-use buildings are dependent on the summer heat load, types of walls and roof, traffic, density of occupancy, etc. In general, the following figures will serve as a guide for picking the proper cost of separate cooling.

Central refrigeration with ducts and zone control	67.38	103.87	159.31	6.26	9.65	14.80
Package refrig. (short ductwork)	47.68	73.19	111.94	4.43	6.80	10.40
Central evaporative (with ducts)	35.20	46.28	61.57	3.27	4.30	5.72
Package refrigeration	2060.00 to 2650.00 per ton of rated capacity					
Evaporative coolers	296.00 to 520.00 per thousand CFM of rated capacity					

VENTILATION ONLY

Ventilation (blowers and ducts)	13.89	23.14	37.89	1.29	2.15	3.52

OFFICES, MEDICAL AND PUBLIC BUILDINGS

REFINEMENTS

EXTERIOR BALCONIES

Balcony costs include the supporting structure, decking and rails. Apply costs to the balcony area.

	LOW	AVG.	GOOD	EXCL.
Concrete	22.20	28.75	37.25	48.00
Steel	20.80	28.50	38.50	52.50
Wood	18.20	24.25	32.50	43.25
Add for ornate finishes, balustrades	19.25	23.75	29.25	36.00
Add for roofs or awnings	10.65	14.10	18.75	24.85

CANOPIES

This is the cantilevered portion of a building that extends over an entrance. The distance that the canopy is cantilevered should be considered when selecting a rank.

	LOW	AVG.	GOOD	EXCL.
Wood Frame	27.25	34.25	42.00	52.50
Light false-mansard	15.05	18.85	23.10	28.75
Steel Frame	33.50	42.00	53.50	67.50
Light false-mansard	18.35	23.10	29.25	37.00

MISCELLANEOUS EQUPMENT

Apply to total square feet of building area, if required. These costs vary greatly, and the following typical cost ranges should be used with caution. Built-in equipment which is normally included under the general contract is included in the base structure cost.

	LOW	AVG.	GOOD	EXCL.
Bank equipment, counters, vault doors, etc	30.00	41.50	57.00	78.50
Jail equipment, cell blocks, locking devices, etc	17.35	28.75	45.50	70.50
polic stations	2.76	4.57	7.27	11.40
Hospital equipment, Groups II and III	27.00	46.75	76.00	119.00
Hospital pneumatic conveyor system	3.52	4.13	4.84	5.65
Library equipment, bookstacks, etc	14.05	25.00	41.50	65.50

SPRINKLERS

Sprinkler costs include all costs for the system and supply lines, but not tanks, towers or high-pressure pumps. The square foot costs listed are based on the total area of sprinkler system installation on a single main connection including its prorated share of contractors' overhead and profit and architects' fees. For a more specific cost, see Section 45 or 53. Sprinklers should not be modified for size or shape. To convert square foot costs to square meter costs, multiply by 10.764.

	WET SYSTEMS				DRY SYSTEMS			
Coverage	Low	Avg.	Good	Excl.	Low	Avg.	Good	Excl.
1500 square foot	4.37	5.19	6.17	7.33	5.67	6.73	8.00	9.50
2,000	4.16	4.93	5.85	6.94	5.38	6.38	7.56	8.97
3,000	3.90	4.61	5.45	6.45	5.01	5.93	7.01	8.29
5,000	3.62	4.26	5.02	5.91	4.62	5.43	6.39	7.52
10,000	3.26	3.82	4.47	5.23	4.13	4.84	5.66	6.63
15,000	3.03	3.55	4.15	4.86	3.83	4.48	5.24	6.13
20,000	2.90	3.39	3.96	4.62	3.67	4.28	4.99	5.82
30,000	2.74	3.18	3.69	4.29	3.42	3.98	4.62	5.37
50,000	2.53	2.93	3.38	3.91	3.14	3.64	4.21	4.88
75,000	2.37	2.73	3.15	3.64	2.94	3.39	3.92	4.52
100,000	2.29	2.63	3.02	3.47	2.81	3.24	3.73	4.29
125,000	2.19	2.51	2.88	3.31	2.69	3.10	3.56	4.10
150,000	2.14	2.46	2.82	3.24	2.63	3.02	3.47	3.98
200,000	2.04	2.34	2.67	3.06	2.51	2.87	3.27	3.74
250,000	1.97	2.25	2.58	2.95	2.41	2.76	3.16	3.61
300,000	1.92	2.19	2.50	2.86	2.34	2.67	3.05	3.48
400,000	1.84	2.10	2.39	2.72	2.24	2.55	2.90	3.30
500,000	1.77	2.01	2.29	2.61	2.14	2.43	2.77	3.15

CALCULATOR METHOD

OFFICES, MEDICAL AND PUBLIC BUILDINGS
FLOOR AREA – PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMITER																M.	AVERAGE FLOOR AREA	
Sq. M.	Sq. Ft.	FT.	38	46	53	61	76	91	122	152	183	213	244	305	366	427	488	549	610	FT.	Sq. Ft.	Sq. M.
			125	150	175	200	250	300	400	500	600	700	800	1000	1200	1400	1600	1800	2000			
93	1,000		1.168	1.235	1.299	1.364	1.494	1.624	1.884	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		1,000	93
139	1,500		1.061	1.105	1.146	1.191	1.277	1.364	1.537	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		1,500	139
186	2,000		1.007	1.040	1.072	1.105	1.168	1.235	1.364	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		2,000	186
232	2,500		-----	1.000	1.027	1.052	1.105	1.155	1.259	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		2,500	232
279	3,000		-----	.975	.997	1.018	1.061	1.105	1.191	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		3,000	279
372	4,000		-----	-----	.958	.975	1.007	1.040	1.105	1.168	-----	-----	-----	-----	-----	-----	-----	-----	-----		4,000	372
465	5,000		-----	-----	.936	.949	.975	1.000	1.052	1.105	1.155	-----	-----	-----	-----	-----	-----	-----	-----		5,000	465
557	6,000		-----	-----	-----	.932	.952	.975	1.018	1.061	1.105	1.146	-----	-----	-----	-----	-----	-----	-----		6,000	557
743	8,000		-----	-----	-----	-----	.926	.942	.975	1.007	1.040	1.072	1.105	-----	-----	-----	-----	-----	-----		8,000	743
929	10,000		-----	-----	-----	-----	.910	.923	.949	.975	1.000	1.027	1.052	1.105	1.155	-----	-----	-----	-----		10,000	929
1,115	12,000		-----	-----	-----	-----	-----	.910	.932	.952	.975	.997	1.018	1.061	1.105	1.146	-----	-----	-----		12,000	1,115
1,301	14,000		-----	-----	-----	-----	-----	.900	.920	.938	.956	.975	.993	1.030	1.067	1.105	1.140	-----	-----		14,000	1,301
1,486	16,000		-----	-----	-----	-----	-----	-----	.910	.926	.942	.958	.975	1.007	1.040	1.075	1.105	-----	-----		16,000	1,486
1,672	18,000		-----	-----	-----	-----	-----	-----	.903	.918	.932	.946	.960	.990	1.018	1.046	1.076	1.105	-----		18,000	1,672
1,858	20,000		-----	-----	-----	-----	-----	-----	-----	.910	.923	.936	.949	.975	1.000	1.027	1.052	1.078	1.105		20,000	1,858
2,323	25,000		-----	-----	-----	-----	-----	-----	-----	.897	.908	.918	.928	.948	.969	.990	1.011	1.032	1.052		25,000	2,323
2,787	30,000		-----	-----	-----	-----	-----	-----	-----	-----	.897	.906	.915	.932	.949	.965	.983	1.000	1.018		30,000	2,787
3,252	35,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	.897	.904	.919	.934	.949	.963	.978	.993		35,000	3,252
3,716	40,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	.890	.897	.910	.923	.936	.949	.962	.975		40,000	3,716
4,645	50,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.887	.897	.908	.918	.928	.938	.948		50,000	4,645
6,968	75,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.873	.879	.885	.892	.900	.908	.915		75,000	6,968
9,290	100,000		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.866	.871	.876	.881	.887	.892	.897		100,000	9,290

NOTE: For small buildings, enter the table by doubling the average floor area and doubling the perimeter. For larger buildings, take half the area and half the perimeter.

STORY HEIGHT MULTIPLIERS

Multiply base cost by following multipliers for any variation in average story height from the base of 12 feet (3.66 meters). For extremely high-pitched roofs (see Section 10), use the height of the eaves plus one-half the height from the eaves to the ridge as the effective height. In some buildings or for a complete facility average, it is better to compute the total cubage and divide by the total square footage of floor area to get an effective height to use.

AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULTIPLIER	AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULTIPLIER	AVERAGE WALL HEIGHT		SQUARE FOOT OR SQUARE METER MULTIPLIER	CUBIC FOOT MULTIPLIER
(M.)	(FT.)			(M.)	(FT.)			(M.)	(FT.)		
2.44	8	.900	1.350	3.96	13	1.023	.944	6.10	20	1.184	.710
2.74	9	.928	1.237	4.27	14	1.046	.897	7.31	24	1.276	.638
3.05	10	.953	1.144	4.57	15	1.069	.855	8.53	28	1.367	.586
3.35	11	.977	1.066	4.88	16	1.092	.819	9.75	32	1.459	.547
3.66	12	1.000 (base)	1.000	5.49	18	1.138	.758	10.97	36	1.552	.517

CHURCHES, THEATERS AND AUDITORIUMS

GENERAL INFORMATION

Calculator Costs are averages of final costs including architects' fees and contractors' overhead and profit, sales taxes, permit fees and insurance during construction. Interest on interim construction financing is also included, but not financing costs, real estate taxes, or brokers' commissions (see Section 1 for complete list). They do not represent any building illustrated, except as the building is included in the averages. Refinements to the average costs for type of heating, sprinklers, elevators, area/perimeter ratio and story height are given at the end of the section. Exterior balconies are not included in the basic building costs and must be added separately. Current and Local Cost Multipliers are given in Section 99. In buildings with solid stone exterior walls, particularly older cathedral-type buildings where the walls could have a thickness of 2' to 3' or more, it is advisable to use Section 46 when determining true reproduction costs, as the costs of these buildings may be as much as 100% higher than the costs contained in the Calculator Section.

DESCRIPTIONS

The abbreviated descriptions given in the tables show some of the items most generally found in buildings of the class, quality and occupancy listed. They are merely indicative of many buildings in this cost classification, and are not meant to be building specifications.

CONSTRUCTION

Buildings are divided into five construction classes: A, B, C, D, and S, as described in Section 1. In each class there will be variations and subclasses, but for purposes of pricing, the major elements of the building should be considered in entering the tables. Thus, if a building which is otherwise a Class B has a steel truss roof, the costs for the Class B building will still be representative. Interpolations may be made if the appraiser feels the building overlaps two classes, or the segregated costs in Section 46 may be used for adjustments.

OCCUPANCY VARIATIONS

Care should be taken to use proper costs for varying types of occupancy. For example, compute separately a floor or section of a building constructed for a use differing from that of the building generally, e.g., compute the basement as a basement.

As an example, a building is a multistory office building with the first floor occupied by a theater and the other floors by offices. In addition, there is a basement below grade. In this case there are three different divisions of the building to be computed separately: the office portion (Section 15), the theater and the basement. Each of these is subject to refinements based on its own individual characteristics except that all, including the basement, are subject to the same multiplier for the number of stories above grade in the building when applicable. A further explanation on multi-story adjustments can be found in Section 10.

NOTE: In valuing buildings found in this section, which may be of A-frame construction, have high-pitched roofs, or have various wall heights and shapes of roof, the recommended procedure is to compute the total cubage and divide by the total floor area, excluding balconies, to estimate the effective wall height with which to determine the wall height modifier to the base factor. A further discussion on height measurement can be found in Section 10.

OCCUPANCY

Churches are buildings designed primarily for worship, but in many churches, costs will include some kind of kitchen, social, meeting and office facilities. The costs include special lighting and stained glass consistent with the overall quality of construction, but do not include seating, altars, pews, organs or bells, which may be priced from Section 65. For convents and rectories, see Section 11. **Fellowship halls** are multipurpose structures for recreation and social gatherings and include gymnasium-type flooring, stages, kitchens and other miscellaneous rooms commensurate with the quality. **Foyer/narthex** structures are greeting rooms that usually abut or lie between the church sanctuary and fellowship facilities. **Education wings** are the accompanying instructional/meeting-room facilities.

Churches with Sunday schools are complete facilities including educational classroom, recreation and social facilities. Because of the wide range in mix of facilities and qualities, it may be best to price each area individually. Complete religious or private schools are priced from Section 18.

Basement costs include finish compatible with the type of basement, including stairs and ramps as necessary, and must be refined for size, shape and height.

Balcony or **mezzanine** costs do not include exterior wall or heating, which are included in the building cost refinement for wall height.

Fraternal buildings are buildings designed primarily for use by fraternal organizations. These multipurpose buildings typically have auditorium, kitchen, dining, game room and office facilities. The lower-cost fraternal buildings merge into the clubhouse occupancy found in Section 11.

Theaters, live stage or **cinema,** are designed primarily for stage or screen presentations and include a stage commensurate with type and quality of construction but not scenery, curtains or seating.

Auditoriums are buildings designed for mass seating and visual and voice presentations. Costs include stage or arena, basic floor and necessary lighting but not the seating, ice-making units, movable floors or other special equipment. The lower-cost auditoriums will merge into the skating rinks.

Casinos are freestanding gaming facilities and include lounges, showrooms, retail and food service facilities commensurate with the quality level; gaming and food equipment is not included.

Museums are designed for long-term display of works of art, crafts, natural history, etc., and include exhibit-gallery, collection storage, vault, workshop, sales, lecture/meeting, theater, food-service areas, etc., commensurate with the quality. Costs include the basic building display structures and necessary permanent lighting, electrical connections and security, but do not include any display cases, food equipment, movable trade fixtures and chattels or works of art.

Convention centers are large open arena/auditorium-type facilities for short-term meetings and/or trade show-display of products. The better facilities will have varied multifunctional space with movable partitions and ancillary eating and entertainment capabilities.

Arcade buildings are designed mainly for coin-operated game entertainment, while the better qualities will include limited food service and lounges typically found at fun centers, miniature golf complexes, etc. Costs exclude all game or food service equipment.

Visitor centers include the low-cost travelers' aid or rest stop structure to the high-cost interpretive center with good orientation, exhibit, meeting, audiovisual theater and limited retail and food service facilities. Costs do not include any display or food service equipment.

Skating rinks are typically lower-quality auditoriums modified for that particular use. Costs are averages for both types of skating rinks and include all necessary plumbing and electrical connections, but do not include any equipment or fixtures such as seating, snack bar equipment or other trade and chattels. The roller rinks will include the basic skating surface. Ice rinks will include the basic floor structure, but not the ice-making equipment, which can be priced from Section 67.

Bowling centers may include restaurant, bar, billiard and miscellaneous rooms with necessary plumbing and electrical connections, but do not include any equipment or fixtures such as the alleys, ball returns, kitchen and bar equipment, or other trade fixtures and chattels. Equipment costs can be found in Section 65.

Fitness centers are complete multisport, commercial, recreational complexes distinguished by large gymnasium/auditorium-type structures, typically 20,000 to 40,000 square feet, with private membership. **Community recreation centers** are large municipal multisport complexes. These multipurpose buildings will include gym-basketball, handball, bowling and other sports courts, rinks, varied swimming/natatorium facilities, running tracks, as well as exercise, craft, game and other social/multipurpose rooms. The number of varied amenities and support facilities (locker room, saunas, snack bars, etc.) will vary with the quality level. Equipment and trade fixtures associated with these amenities are not included. Small health clubs, clubhouses, and city clubs can be found in Section 11. Gymnasiums are priced from Section 18.

Indoor tennis clubs include the basic playing surfaces, including all necessary plumbing and electrical connections, but do not include any fixtures or equipment such as seating, lockers, food preparation, exercise equipment or swim pools, which can be added from Sections 65 through 67.

Handball/racquetball clubs include the basic playing courts and ancillary facilities commensurate with the quality similar to the tennis clubs. The better clubs will include full exercise, dressing, spectator, lounge, snack bar and pro shop facilities but not any of the equipment or fixtures associated with these amenities. Pools and spas are not included and must be added separately.

Pavilions are averages of open and enclosed park shelters, gazebos and bandstands.

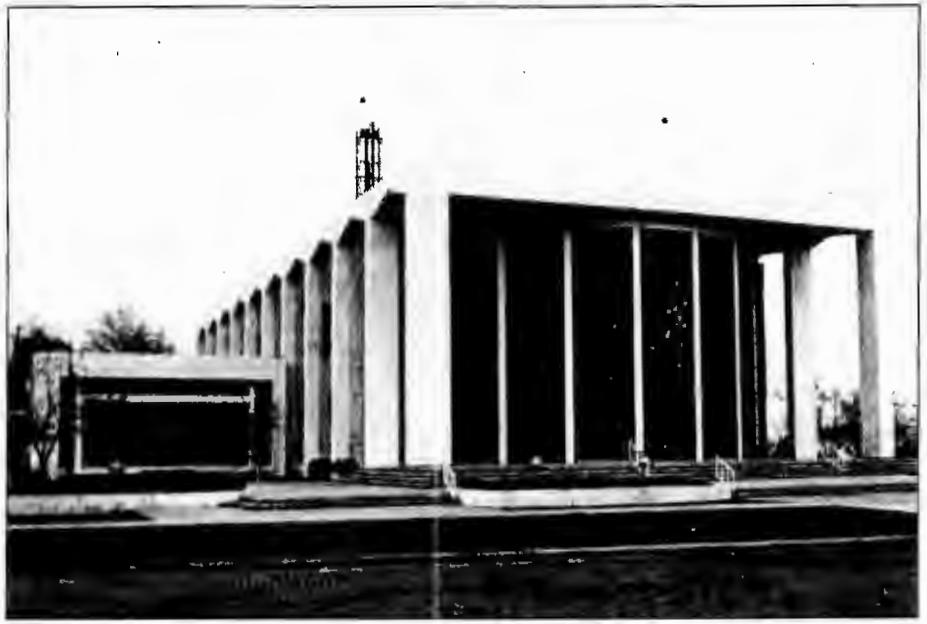
RELIGIOUS BUILDINGS

1. GOOD/EXCELLENT CLASS A

2. GOOD CLASS B

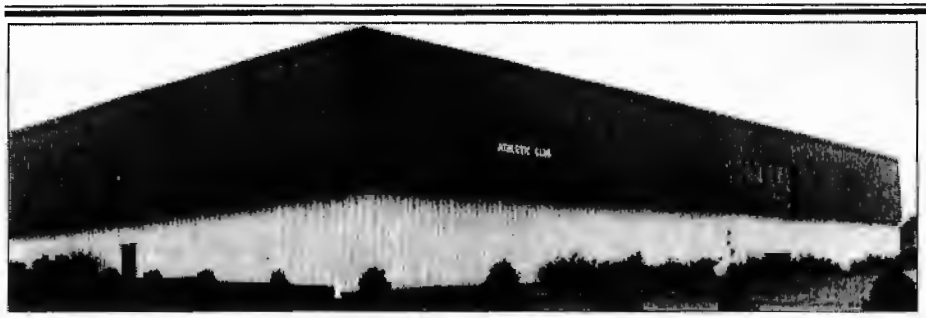
3. EXCELLENT CLASS C

4. EXCELLENT CLASS A



5. EXCELLENT CLASS C

MISCELLANEOUS ILLUSTRATIONS



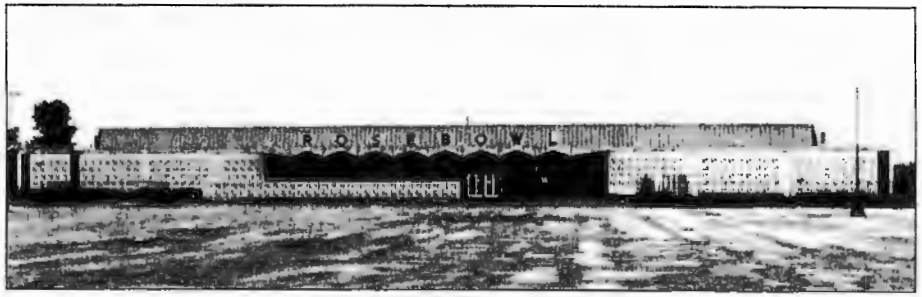
38. AVERAGE CLASS S FITNESS CENTER

39. AVERAGE CLASS D & C RACQUETBALL CENTER

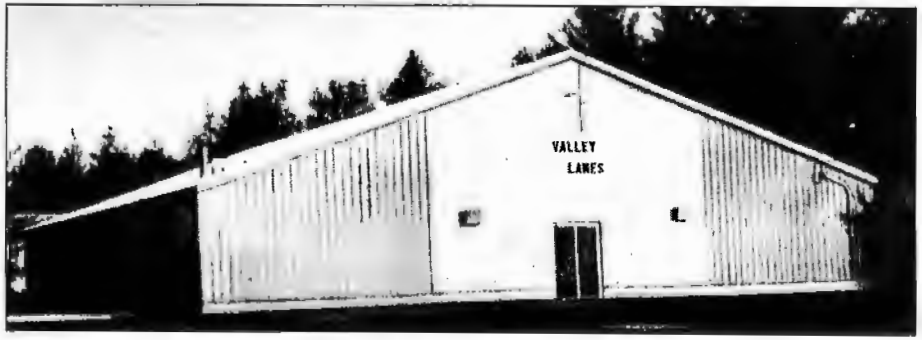
40. AVERAGE CLASS C RACQUETBALL COURT

41. LOW – AVERAGE CLASS S TENNIS CLUB

42. GOOD CLASS C BOWLING CENTER



43. AVERAGE – GOOD CLASS C BOWLING CENTER



44. LOW – AVERAGE CLASS S BOWLING CENTER

SUMMARY OF ILLUSTRATIONS

GENERAL: Recreational shells have a wide variation in costs depending upon their interior appointments, including the extent of lounge, refreshment, exercise and spectator areas, etc.

38. The large fitness center will have better appointments with more and varied sport courts than the typical racquetball or tennis club.

39 – 41. Typical racquetball-tennis clubs in a progression of cost ranges, from the average structure with some extra amenities to the lower-cost structure with minimum ancillary facilities.

42. The Good bowling center has many ancillary facilities such as good restaurant and bar facilities, locker rooms, and good tiled restrooms. It often has extra banquet facilities and good spectator seating.

43. This bowling center lacks some of the amenities of Number 42 but generally appears better than average.

44. Number 44, like Number 41, has low-cost walls and may lack interior finish to pull its costs below average, requiring an adjustment to the base cost.

CALCULATOR METHOD

RELIGIOUS BUILDINGS: CHURCHES WITH SUNDAY SCHOOLS (308)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M	COST Cu Ft.	COST Sq. Ft.
A	Good	Stone, good curtain walls, good stained glass and trim	Ornamental plaster and detail, marble, carpeting, vinyl tile	Special lighting, sound system, good classroom outlets, plumbing	Warm and cool air (zoned)	2572.57	14.94	239.00
	Average	Concrete, metal and glass, leaded windows, stone trim	Drywall, some ornamentation, terrazzo, vinyl tile, carpeting	Adequate lighting and plumbing, classroom fixtures, sound system	Package A.C.	1883.68	10.94	175.00
B	Good	Stone, good curtain walls, good stained glass and trim	Ornamental plaster and detail, marble, carpeting, vinyl tile	Special lighting, sound system, good classroom outlets, plumbing	Warm and cool air (zoned)	2464.93	14.31	229.00
	Average	Concrete, metal and glass, leaded windows, stone trim	Drywall, some ornamentation, terrazzo, vinyl tile, carpeting	Adequate lighting and plumbing, classroom fixtures, sound system	Package A.C.	1808.34	10.50	168.00
C	Excellent	Fine masonry and windows, special architecture and trim	Finest plaster and fine wood detail, carpeting, marble, vinyl tile	Special lighting, sound system, good classroom outlets, plumbing	Warm and cool air (zoned)	2604.86	15.13	242.00
	Good	Face brick or block, stone trim, good windows and architecture	Good plaster or wood, carpet, VCT, good or high density of classrooms	Good lighting and sound system, good classroom fixtures, plumbing	Warm and cool air (zoned)	1937.50	11.25	180.00
	Average	Brick or block, stone trim, few simple stained-glass windows	Drywall, vinyl composition tile, little ornamental detail, std. classrooms	Adequate lighting and plumbing, low-cost sound	Package A.C.	1399.31	8.13	130.00
	Low-cost	Low-cost brick or block, composition roof, very plain	Painted masonry, plywood trim, asphalt tile, very plain classrooms	Minimum lighting and plumbing, classroom features	Forced air	995.66	5.78	92.50
D	Excellent	Face brick or stone veneer, fine windows, special architecture	Ornamental plaster and fine detail, carpet, marble, vinyl	Special lighting, sound system, good classroom outlets, plumbing	Warm and cool air (zoned)	2443.41	14.19	227.00
	Good	Brick veneer, best stucco or siding, good windows and architecture	Good plaster or wood, carpet, VCT, good or high density of meeting rooms	Good lighting and sound system, good classroom fixtures, plumbing	Warm and cool air (zoned)	1829.86	10.63	170.00
	Average	Stucco or siding, few stained-glass windows, some trim	Drywall and veneers, vinyl comp. tile, little trim, standard classrooms	Adequate lighting and plumbing, low-cost sound	Package A.C.	1323.96	7.69	123.00
	Low-cost	Low-cost stucco or siding, composition roof, very plain	Drywall and plywood, asphalt and acoustic tile, minimum classrooms	Minimum lighting and plumbing, classroom features	Forced air	947.22	5.50	88.00
DPOLE	Low-cost	Pole frame, good metal panels, finished inside, little trim	Drywall, acoustic tile, vinyl comp. tile, few extras, minimum classrooms	Minimum lighting and plumbing, classroom features	Forced air	893.40	5.19	83.00
S	Good	Good sandwich panels, good windows and trim	Good drywall or wood, vinyl tile, carpet, good or high density of meeting rooms	Good lighting, sound system, good classroom fixtures, plumbing	Warm and cool air (zoned)	1689.93	9.81	157.00
	Average	Insulated sandwich panels, few stained-glass windows	Drywall partitions, vinyl composition and acoustic tile, standard classrooms	Adequate lighting and plumbing, low-cost sound	Package A.C.	1237.85	7.19	115.00
	Low-cost	Good metal panels and roof, finished interior, some trim	Drywall, acoustic tile, comp. tile, few extras, minimum classrooms	Minimum lighting and plumbing, classroom features	Forced air	898.79	5.22	83.50

BASEMENTS

A-B	Classroom	Reinforced concrete, plaster interior	Classroom finishes, some utility, storage, social/meeting functions	Adequate lighting and plumbing	Hot water	1291.67	7.50	120.00
	Finished	Plaster interior	Finished rooms, asphalt tile	Adequate lighting and plumbing	Hot water	1173.27	6.81	109.00
	Semifinished	Low-cost finishes	Minimum social functions, kitchenette	Minimum lighting, drains	Forced air	823.44	4.78	76.50
	Unfinished	Unfinished interior	Unfinished storage and utility	Minimum lighting, drains	None	635.07	3.69	59.00
CDS	Classroom	Reinforced concrete, plaster or drywall interior	Classroom finishes, some utility, storage, social/meeting functions	Adequate lighting and plumbing	Forced air	974.13	5.66	90.50
	Finished	Plaster or drywall interior	Finished rooms, asphalt tile	Adequate lighting and plumbing	Forced air	871.88	5.06	81.00
	Semifinished	Low-cost finishes	Minimum social functions, kitchenette	Minimum lighting and plumbing	Space heaters	532.81	3.09	49.50
	Unfinished	Unfinished interior	Unfinished storage and utility	Minimum lighting, drains	None	400.96	2.33	37.25

BASEMENT UNITS – Use 80% of comparable aboveground units. For semi-basement living units, use 90%.

NOTES: For fire-resistant Type 1 basements, with concrete slab separation under Class C, D or S units, add 5.90 per square foot (63.51 per square meter). Where utilized as courtyard deck on topside, add 11.80 per square foot (127.01 per square meter).

NOTE: For parking basements, see Page 19. Add for sprinklers from Page 25.

See bottom of Page 9 for other refinement notes.

Add for playground improvements from Sections 66 and 67. For seating, see Section 65.

RELIGIOUS BUILDINGS: CHURCHES – SANCTUARIES (CHAPELS) (309)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Fine masonry and windows, special architecture and trim	Finest plaster and wood detail, carpeting, marble, vinyl tile	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	3713.55	21.56	345.00
	Good	Stone, good curtain walls, good stained glass and trim	Ornamental plaster and detail, marble, carpeting, vinyl tile	Special lighting, sound system, good plumbing	Warm and cool air (zoned)	2744.79	15.94	255.00
	Average	Concrete, metal and glass, leaded windows, stone trim	Drywall, some ornamentation, terrazzo, vinyl tile, carpeting	Adequate lighting and plumbing, sound system	Package A.C.	1969.79	11.44	183.00
B	Excellent	Fine masonry and windows, special architecture and trim	Finest plaster and wood detail, carpeting, marble, vinyl tile	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	3573.61	20.75	332.00
	Good	Stone, good curtain walls, good stained glass and trim	Ornamental plaster and detail, marble, carpeting, vinyl tile	Special lighting, sound system, good plumbing	Warm and cool air (zoned)	2637.16	15.31	245.00
	Average	Concrete, metal and glass, leaded windows, stone trim	Drywall, some ornamentation, terrazzo, vinyl tile, carpeting	Adequate lighting and plumbing, sound system	Package A.C.	1894.45	11.00	176.00
C	Excellent	Fine masonry and windows, special architecture and trim	Finest plaster & fine wood detail, carpeting, marble, vinyl tile	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2744.79	15.94	255.00
	Good	Face brick or block, stone trim, good windows and architecture	Good plaster and detail, vinyl tile, carpeting, terrazzo	Good lighting and plumbing, good sound system	Warm and cool air (zoned)	2023.61	11.75	188.00
	Average	Brick or block, stone trim, few simple stained-glass windows	Drywall, vinyl composition tile, little ornamental detail, carpet	Adequate lighting and plumbing, adequate sound system	Package A.C.	1442.36	8.38	134.00
	Low-cost	Low-cost brick or block, composition roof, very plain	Painted masonry, plywood trim, asphalt tile, very plain, basic	Minimum lighting and plumbing, low-cost sound	Forced air	1022.57	5.94	95.00
D	Excellent	Face brick or stone veneer, fine windows, special architecture	Ornamental plaster and fine detail, carpet, marble, vinyl	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2615.63	15.19	243.00
	Good	Brick veneer, best stucco or siding, good windows and architecture	Good plaster or wood, vinyl tile, carpeting, terrazzo	Good lighting and plumbing, good sound system	Warm and cool air (zoned)	1926.74	11.19	179.00
	Average	Stucco or siding, few stained-glass windows, some trim	Drywall and veneers, vinyl composition tile, little trim, carpet	Adequate lighting and plumbing, adequate sound system	Package A.C.	1377.78	8.00	128.00
	Low-cost	Low-cost stucco or siding, composition roof, very plain	Drywall and plywood, asphalt and acoustic tile, basic worship center	Minimum lighting and plumbing, low-cost sound	Forced air	968.75	5.63	90.00
DPOLE	Average	Pole frame, best metal panels, few stained-glass windows	Drywall partitions, acoustic tile, vinyl composition, some carpet	Adequate lighting and plumbing, adequate sound system	Package A.C.	1248.61	7.25	116.00
	Low-cost	Pole frame, good metal panels, finished inside, little trim	Drywall, acoustic tile, vinyl composition tile, few extras, very basic	Minimum lighting and plumbing, low-cost sound	Forced air	904.17	5.25	84.00
S	Good	Good sandwich panels, good windows and trim	Good drywall or wood, vinyl tile, carpeting, terrazzo	Good lighting and plumbing, good sound system	Warm and cool air (zoned)	1754.52	10.19	163.00
	Average	Insulated sandwich panels, few stained-glass windows	Drywall partitions, vinyl composition and acoustic tile, some carpet	Adequate lighting and plumbing, adequate sound system	Package A.C.	1270.14	7.38	118.00
	Low-cost	Good metal panels and roof, finished interior, some trim	Drywall, acoustic tile, vinyl tile, few extras, basic worship center	Minimum lighting and plumbing, low-cost sound	Forced air	909.55	5.28	84.50

RELIGIOUS BUILDING BALCONIES*

A-B	Good	Not included	Stepped balcony with ornate finishes	Good lighting	In building cost	834.20	-----	77.50
	Average	Not included	Stepped, plaster soffit, finished floor	Adequate lighting	In building cost	608.16	-----	56.50
CDS	Good	Not included	Stepped balcony with ornate finishes	Good lighting	In building cost	705.04	-----	65.50
	Average	Not included	Stepped, drywall soffit, finished floor	Adequate lighting	In building cost	481.68	-----	44.75

*Balconies should not be modified for size or shape.

Fireplaces, porches and balconies and kitchen equipment are not included.

MULTI-STORY BUILDINGS – Add .5% (1/2%) for each story over three, above ground, to all base costs, excluding mezzanines, up to 30 stories; over 30, add .4% (4/10%) for each additional story.

SPRINKLERS – Systems are not included. Costs should be added from Page 25.

ELEVATORS AND HANDICAPPED LIFTS – See Page 24.

CHURCH TOWERS – Unfinished attached structures cost 7.75 to 11.20 per cubic foot of tower structure. When finished as an integral part of the building, include with the floor area of the church and only apply the tower cost to the unfinished portion above the roofline.

Small self-supporting exterior masonry towers cost 10.20to 19.15 per cubic foot of tower structure; large campaniles run 42.00 to 68.50 per cubic foot, or either may be computed from the Segregated costs. For steeples, spires, cupola clocks, see Section 57; bells, Section 65.

CALCULATOR METHOD

RELIGIOUS BUILDINGS: FELLOWSHIP HALLS (516)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A-B	Good	Face brick, stone, concrete or metal panels, good trim	Plaster or drywall, acoustic tile, carpet and vinyl, stage, some extras	Good fluorescent fixtures, good plumbing and kitchen	Warm and cool air (zoned)	2088.20	12.13	194.00
	Average	Brick, concrete or metal panels, formed concrete	Plaster or drywall, acoustic tile, hardwood or vinyl, small stage	Adequate lighting and plumbing, kitchen, some extras	Package A.C.	1528.47	8.88	142.00
C	Excellent	Steel frame, best masonry walls, good trim	Plaster, acoustic tile, good wood athletic floor, stage, good detail	Good lighting and plumbing, kitchen, tiled surfaces	Warm and cool air (zoned)	2109.72	12.25	196.00
	Good	Steel columns, web or bar joists, ornamental block or face brick	Plaster or drywall, acoustic tile, hardwood or vinyl, stage	Good fluorescent fixtures, good plumbing, kitchen	Package A.C.	1517.71	8.81	141.00
	Average	Steel frame, brick, block, concrete, some ornamentation	Plaster or drywall, acoustic tile, vinyl, carpet or hardwood, small stage area	Adequate lighting and plumbing, small kitchen, some extras	Forced air	1087.15	6.31	101.00
	Low-cost	Brick, block, tilt-up panels, bearing walls, wood joists, little trim	Painted walls, acoustic tile or drywall ceilings, asphalt tile	Minimum recreation lighting and plumbing	Space heaters	764.24	4.44	71.00
D	Good	Steel or Glulam frame and joists, brick veneer, glass, best stucco	Plaster or drywall, acoustic tile, hardwood or vinyl, stage	Good fluorescent fixtures, good plumbing, kitchen	Package A.C.	1442.36	8.38	134.00
	Average	Wood frame or pipe columns, good stucco or siding with some trim	Plaster or drywall, acoustic tile, vinyl, carpet or hardwood, small stage area	Adequate lighting and plumbing, small kitchen, some extras	Forced air	1027.95	5.97	95.50
	Low-cost	Wood frame, stucco or siding, little ornamentation	Drywall, acoustic tile, asphalt tile, some carpet	Minimum recreation lighting and plumbing	Space heaters	715.80	4.16	66.50
	Cheap	Light frame, stucco or siding, very plain	Concrete floor, some vinyl composition, minimal finish	Minimum lighting and plumbing	Space heaters	554.34	3.22	51.50
DPOLE	Average	Pole frame, insulated metal panels, some ornamentation	Drywall, acoustic tile, vinyl comp., carpet or hardwood, small stage area	Adequate lighting and plumbing, small kitchen, some extras	Forced air	925.70	5.38	86.00
	Low-cost	Pole frame, metal panels, finished inside, insulated, little trim	Painted walls, acoustic tile or drywall ceilings, asphalt tile, some carpet	Minimum recreation lighting and plumbing	Space heaters	656.60	3.81	61.00
	Cheap	Pole frame, metal siding, partly finished interior, some insulation	Concrete floor, some vinyl composition, minimal finish	Minimum lighting and plumbing	Space heaters	519.36	3.02	48.25
S	Good	Pre-engineered, good sandwich panels, some brick or stone trim	Plaster or drywall, acoustic tile, hardwood or vinyl, stage	Good fluorescent fixtures, good plumbing, kitchen	Package A.C.	1345.49	7.81	125.00
	Average	Pre-engineered, sandwich panels, some ornamentation	Drywall, acoustic tile, vinyl comp., carpet or hardwood, small stage area	Adequate lighting and plumbing, small kitchen, some extras	Forced air	957.99	5.56	89.00
	Low-cost	Pre-engineered, finished interior, insulated, little trim	Painted walls, acoustic tile or drywall ceilings, asphalt tile, some carpet	Minimum recreation lighting and plumbing	Space heaters	667.36	3.88	62.00
	Cheap	Pre-engineered, partly finished interior, some insulation	Concrete floor, some vinyl composition, minimal finish	Minimum lighting and plumbing	Space heaters	516.67	3.00	48.00

RELIGIOUS BUILDINGS: FOYERS / NARTHEXES (517)

A-B	Excellent	Fine masonry and doors, special architecture and trim	Finest plaster and wood detail, carpeting, marble, vinyl tile	Special lighting, good sound system and plumbing	Warm and cool air (zoned)	2927.78	17.00	272.00
	Good	Stone, good curtain walls, good entrance and trim	Ornamental plaster and detail, marble, carpeting, vinyl tile	Good lighting, sound system, good plumbing	Warm and cool air (zoned)	2238.89	13.00	208.00
	Average	Concrete, metal and glass, small entry, stone trim	Drywall, some ornamentation, terrazzo, vinyl tile, carpeting	Adequate lighting and plumbing, sound system	Package A.C.	1668.40	9.69	155.00
CDS	Excellent	Fine masonry and doors, special architecture and trim	Finest plaster and fine wood detail, carpeting, marble, vinyl tile	Special lighting, good sound system and plumbing	Warm and cool air (zoned)	2368.06	13.75	220.00
	Good	Masonry veneer or brick, stone trim, good entrance and architecture	Good plaster and detail, vinyl tile, carpeting, terrazzo	Good lighting and plumbing, sound system	Warm and cool air (zoned)	1776.04	10.31	165.00
	Average	Good siding or block, stone trim, small entry	Drywall, vinyl composition tile, little ornamental detail	Adequate lighting and plumbing, low-cost sound	Package A.C.	1291.67	7.50	120.00
	Low-cost	Low-cost siding or block, very plain	Painted masonry or drywall, plywood trim, asphalt tile, very plain	Minimum lighting and sound	Forced air	925.70	5.38	86.00

NOTE: Fireplaces, porches, balconies, and kitchen equipment are not included.

For other refinement notes, see bottom of Page 11.

SPRINKLERS – Systems are not included. Costs should be added from Page 25.

ELEVATORS AND HANDICAPPED LIFTS – See Page 24.

RELIGIOUS BUILDINGS: CHURCH EDUCATIONAL WINGS (173)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Brick, concrete or metal panels, formed concrete	Plaster or drywall, acoustic tile, hardwood or carpet	Good lighting and plumbing, some extra features, library room	Warm and cool air (zoned)	1711.46	9.94	159.00
	Average	Brick, precast concrete, block, very plain	Low-cost finishes, acoustic tile, hardwood or vinyl composition	Adequate classroom lighting and plumbing, few extras, rehearsal rm.	Package A.C.	1323.96	7.69	123.00
B	Good	Brick, concrete or metal panels, formed concrete	Plaster or drywall, acoustic tile, hardwood or carpet	Good lighting and plumbing, some extra features, library room	Warm and cool air (zoned)	1668.40	9.69	155.00
	Average	Brick, precast concrete, block, very plain	Low-cost finishes, acoustic tile, hardwood or vinyl composition	Adequate classroom lighting and plumbing, few extras, rehearsal rm.	Package A.C.	1291.67	7.50	120.00
C	Excellent	Steel columns, web or bar joists, ornamental block or face brick	Plaster or drywall, acoustic tile, hardwood or carpet	Good fluorescent fixtures, good plumbing, extra features, library	Warm and cool air (zoned)	1711.46	9.94	159.00
	Good	Steel frame or bearing walls, brick, block or concrete, some trim	Plaster or drywall, acoustic tile, vinyl composition or hardwood	Adequate classroom lighting and plumbing, rehearsal room	Package A.C.	1323.96	7.69	123.00
	Average	Brick, block, tilt-up panels, bearing walls, wood joists, little trim	Painted walls, acoustic tile or drywall ceilings, asphalt tile	Adequate meeting room lighting and plumbing	Forced air	1017.19	5.91	94.50
	Low-cost	Cheap block, tilt-up, light roof	Low-cost finishes, no partitions, asphalt tile	Minimum code	Wall furnace	769.62	4.47	71.50
D	Excellent	Steel or Glulam frame and joists, brick veneer, glass, best stucco	Plaster or drywall, acoustic tile, hardwood or carpet	Good fluorescent fixtures and plumbing, extra features, library	Warm and cool air (zoned)	1636.11	9.50	152.00
	Good	Wood frame or pipe columns, good stucco or siding with some trim	Plaster or drywall, acoustic tile, vinyl composition or hardwood	Adequate classroom lighting and plumbing, rehearsal room	Package A.C.	1259.38	7.31	117.00
	Average	Wood frame, stucco or siding, little ornamentation	Drywall, acoustic tile, asphalt tile, linoleum or wood floors	Adequate meeting room lighting and plumbing	Forced air	957.99	5.56	89.00
	Low-cost	Low-cost stucco or siding	Low-cost finishes, no partitions, asphalt tile	Minimum code	Wall furnace	715.80	4.16	66.50
DPOLE	Average	Pole frame, good metal panels, finished inside, little trim	Painted walls, acoustic tile or drywall ceilings, asphalt tile	Adequate meeting room lighting and plumbing	Forced air	898.79	5.22	83.50
	Low-cost	Pole frame, metal siding	Low-cost finishes, no partitions, acoustic tile, asphalt tile	Minimum code	Wall furnace	667.36	3.88	62.00
S	Good	Pre-engineered, sandwich panels, some trim	Drywall, acoustic tile, vinyl composition	Adequate classroom lighting and plumbing, rehearsal room	Package A.C.	1205.56	7.00	112.00
	Average	Pre-engineered, finished interior, insulation	Painted walls, acoustic tile or drywall ceilings, asphalt tile	Adequate meeting room lighting and plumbing	Forced air	909.55	5.28	84.50
	Low-cost	Light steel frame, siding	Low-cost finishes, no partitions, acoustic tile, asphalt tile	Minimum code	Wall furnace	672.74	3.91	62.50

NOTE: For religious or private schools, restrooms, portable classrooms, etc., see Section 18.

MULTI-STORY BUILDINGS

Add .5% (1/2%) for each story over three, above ground, to all base costs including basements, but excluding mezzanines.

CANOPIES

Large shelter or walkway canopies see Page 25, or they may be computed from the Segregated costs, Section 46, or from Unit-in-Place costs.

PARKING ROOFS

For load-bearing parking roofs, add 6.16 per square foot (66.31 per square meter).
Access ramps cost 22.05 to 37.75 per square foot (237.34 to 406.34 per square meter).

ELEVATORS AND HANDICAP LIFTS

Elevator costs based on square footage of building area are not available in this section. Assembly buildings may have only one elevator and/or handicap lift regardless of size, where a normal range or area served is not feasible for low-rise applications. Costs should be added as lump sums from Page 24.

BALCONIES

Exterior balconies see Page 25, or they may be computed from the Segregated or Unit-in-Place costs.

BASEMENTS

Basement costs are found on Page 8.

SPRINKLERS

Sprinkler systems are not included. Costs should be added from Page 25.

CALCULATOR METHOD

THEATERS: LIVE-STAGE (379)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Top design, best materials, highly ornamented	Special finishes, acoustical design, major stage presentations	High-quality specialty lighting, best sound, good plumbing	Hot and chilled water (zoned)	3864.24	22.44	359.00
	Good	Face brick, stone, marble, ornamented entrance and lobby	Large stage, ornamental plaster, marble trim, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2798.61	16.25	260.00
	Average	Face brick, concrete, some ornamentation, good entrance	Live-stage, ornamental plaster and trim, carpeting, vinyl composition	Adequate lighting, sound system and plumbing	Warm and cool air (zoned)	2088.20	12.13	194.00
B	Excellent	Top design, best materials, highly ornamented	Special finishes, acoustical design, major stage presentations	High-quality specialty lighting, best sound, good plumbing	Hot and chilled water (zoned)	3681.25	21.38	342.00
	Good	Face brick, stone, terra cotta, ornamented entrance and lobby	Large stage, ornamental plaster, marble trim, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2690.98	15.63	250.00
	Average	Face brick, concrete, some ornamentation, good entrance	Live-stage, ornamental plaster and trim, carpeting, vinyl composition	Adequate lighting, sound system and plumbing	Warm and cool air (zoned)	2023.61	11.75	188.00
C	Excellent	Top design, best materials, highly ornamented	Special finishes, acoustical design, major stage presentations	High-quality specialty lighting, best sound, good plumbing	Warm and cool air (zoned)	2884.73	16.75	268.00
	Good	Face brick, stone, terra cotta, ornamental entrance and lobby	Large stage, ornamental interior, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	1991.32	11.56	185.00
	Average	Brick, block, concrete, good decorative front and lobby	Live-stage, ornamental plaster, some trim, carpeting, vinyl comp.	Adequate lighting, sound system and plumbing	Package A.C.	1334.72	7.75	124.00
	Low-cost	Brick, block, concrete, plain front and lobby, some trim	Plaster or gypsum, suspended ceiling, carpeted lobby, small stage	Minimum lighting, adequate sound, minimum plumbing	Forced air	888.02	5.16	82.50
D	Good	Face brick or stone veneer, ornamental entrance and lobby	Large stage, ornamental interior, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	1894.45	11.00	176.00
	Average	Stucco, some masonry trim, decorative front and lobby	Live-stage, some ornamentation and trim, carpeting, vinyl composition	Adequate lighting, sound system and plumbing	Package A.C.	1259.38	7.31	117.00
	Low-cost	Siding or stucco, plain entry	Drywall, acoustic tile, small stage	Minimum live-stage facility	Forced air	828.82	4.81	77.00
D_{POLE}	Low-cost	Metal panels on pole frame, finished interior, small entrance	Drywall, acoustic tile, vinyl composition lobby, small stage	Minimum lighting, adequate sound, minimum plumbing	Forced air	769.62	4.47	71.50
S	Average	Insulated sandwich panels, good storefront and trim	Some decoration and extras, carpet and tile, live stage presentations	Adequate lighting, sound system and plumbing	Package A.C.	1194.79	6.94	111.00
	Low-cost	Metal panels, finished interior	Drywall, acoustic tile, small stage	Minimum live-stage facility	Forced air	775.00	4.50	72.00

MEZZANINES AND LIVE-STAGE BALCONIES

A-B	Good live-stage balcony	Not included	Stepped balcony with ornate finishes, hardwood, carpet	Good lighting	In bldg. cost	952.61	-----	88.50
	Average balcony	Not included	Stepped balcony with plaster soffit	Adequate lighting	In bldg. cost	688.89	-----	64.00
	Finished mezzanine	Not included	Plaster, good detail, carpeting, tile, good intermission area, restrooms	Good lighting and plumbing, extra outlets and fixtures	In bldg. cost	1038.72	-----	96.50
	Open mezzanine	Not included	Finished floors, few partitions	Average lighting, no plumbing	In bldg. cost	492.45	-----	45.75
	Storage mezzanine	Not included	Plaster, unfinished floor, VCT, projection, storage rooms	Adequate lighting and outlets, no plumbing	In bldg. cost	839.58	-----	78.00
CDS	Good live-stage balcony	Not included	Stepped balcony with ornate finishes, hardwood, carpet	Good lighting	In bldg. cost	807.29	-----	75.00
	Average balcony	Not included	Stepped balcony with drywall soffit	Adequate lighting	In bldg. cost	554.34	-----	51.50
	Finished mezzanine	Not included	Drywall, vinyl, some tile, carpet or VCT, intermission area, restrooms	Adequate lighting and plumbing, extra outlets and fixtures	In bldg. cost	888.02	-----	82.50
	Open mezzanine	Not included	Finished floors, few partitions	Average lighting, no plumbing	In bldg. cost	363.28	-----	33.75
	Storage mezzanine	Not included	Drywall, concrete or wood floor, VCT, projection, storage rooms	Adequate lighting and outlets, no plumbing	In bldg. cost	710.42	-----	66.00

For refinement notes, see Pages 13 and 14.

THEATERS: CINEMA (380)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Good	Face brick, stone, marble, ornamental entrance and lobby	Cinema stage, ornamental plaster, marble trim, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2443.41	14.19	227.00
	Average	Face brick, concrete, some ornamentation, good entrance	Small stage, ornamental plaster and trim, carpeting, vinyl composition	Adequate lighting, sound system and plumbing	Warm and cool air (zoned)	1829.86	10.63	170.00
B	Good	Face brick, stone, terrra cotta, ornamental entrance and lobby	Cinema stage, ornamental plaster, marble trim, carpeting, good detail	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2335.77	13.56	217.00
	Average	Face brick, concrete, some ornamentation, good entrance	Small stage, ornamental plaster and trim, carpeting, vinyl composition	Adequate lighting, sound system and plumbing	Warm and cool air (zoned)	1776.04	10.31	165.00
C	Excellent	Top design, best materials, very elaborate entrance	Special finishes, acoustic design, high-cost lobby finishes	High-quality specialty lighting, best sound throughout, good plumbing	Warm and cool air (zoned)	2335.77	13.56	217.00
	Very good	Face brick, stone, terra cotta, ornamental entrance and lobby	Cinema stages, ornamental interior, carpeting, good main-feature screen	Special lighting and sound systems, good plumbing	Warm and cool air (zoned)	1959.03	11.38	182.00
	Good	Brick, block, concrete, good decorative front and lobby	Some stage or ornamental plaster, some trim, carpeting, ceramic tile	Good lighting, sound systems and plumbing	Package A.C.	1582.29	9.19	147.00
	Average	Brick, block, concrete, good front and lobby, some trim	Plaster or gypsum, suspended ceiling, stepped floor, carpeted lobby	Adequate lighting, good sound and plumbing	Package A.C.	1119.45	6.50	104.00
	Fair	Brick, block, concrete panels, plain commercial building, small entry	Plain construction, small screens, vinyl composition in lobby	Minimum lighting, adequate sound, minimum plumbing	Package A.C.	941.84	5.47	87.50
	Low-cost	Low-cost block, tilt-up, very plain, acoustic sound walls	Painted masonry, very plain, minimum multiplex cinema facility	Minimum code, sound per screen	Forced air	742.71	4.31	69.00
D	Very good	Face brick or stone veneer, ornamental entrance and lobby	Cinema stages, ornamental interior, carpeting, good main-feature screen	Special lighting, sound systems, good plumbing	Warm and cool air (zoned)	1862.15	10.81	173.00
	Good	Stucco, some brick or stone trim, decorative front and lobby	Some stage or ornamentation and trim, carpeting, ceramic tile	Good lighting, sound systems and plumbing	Package A.C.	1496.18	8.69	139.00
	Average	Stucco or siding, good front and lobby, some trim	Drywall, suspended ceiling, carpeted lobby, stepped floor	Adequate lighting, good sound and plumbing	Package A.C.	1049.48	6.09	97.50
	Fair	Siding or stucco, small entry, good acoustic or masonry sound walls	Drywall, acoustic tile, asphalt tile lobby, concrete slab, small screens	Minimum lighting, adequate sound, minimum plumbing	Package A.C.	888.02	5.16	82.50
	Low-cost	Low-cost wood or stucco, very plain, acoustic sound walls	Few partitions, very plain, minimum multiplex cinema facility	Minimum code, sound per screen	Forced air	694.27	4.03	64.50
DPOLE	Low-cost	Pole frame and truss, metal siding, lined, insulated, acoustic sound walls	Few partitions, very plain, minimum multiplex cinema facility	Minimum code, sound per screen	Forced air	651.22	3.78	60.50
S	Good	Insulated sandwich panels, good storefront and trim	Some decorative and extras, carpet and tile, some small stagefronts	Good lighting, sound system and plumbing	Package A.C.	1442.36	8.38	134.00
	Average	Good metal panels, roof, front and lobby, some trim	Finished interior, suspended ceiling, carpeted lobby, stepped floor	Adequate lighting, good sound and plumbing	Package A.C.	1006.42	5.84	93.50
	Fair	Metal panels, finished interior, small entrance, good sound walls	Drywall, acoustic tile, vinyl-composition lobby, concrete slab	Minimum lighting, adequate sound, minimum plumbing	Package A.C.	844.97	4.91	78.50
	Low-cost	Single wall, low-cost interior finish and insulation, acoustic walls	Few partitions, very plain, minimum multiplex cinema facility	Minimum code, sound per screen	Forced air	661.98	3.84	61.50

NOTES: For basement cinemas, use 85% to 90% of comparable aboveground costs. For acoustical double-elevated floor slabs between auditoriums, add 6.79 per square foot (73.09 per square meter). For cinemas with all stadium auditoriums, add 5% to 10% to the base costs. For mixed theaters, add a proportional cost. For retrofitted stadium theaters, add 83.50 to 104.00 per square foot of actual fixed platform area to each auditorium.

CINEMA BALCONIES*

A-B	Average	Not included	Stepped balcony with plaster soffit	Adequate lighting	In bldg. cost	661.98	-----	61.50
CDS	Average	Not included	Stepped balcony with drywall soffit	Adequate lighting	In bldg. cost	527.43	-----	49.00

*Balconies and mezzanines should not be modified for size or shape. Add for seating, curtains or snack bar equipment from Section 65.

NOTES: For theater basements, see Page 14; mezzanines, Page 12. For rule-of-thumb costs per seat, screen, etc., see Page 27.

Add for elevators or escalators from Page 24. Sprinklers are not included, see Page 25.

CALCULATOR METHOD

AUDITORIUMS (302)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
A	Excellent	Special architecture and trim, best materials, highly ornamented	Best ornamental plaster and detail, carpeting, marble, vinyl	Special lighting and sound system, good plumbing	Hot and chilled water (zoned)	3778.13	21.94	351.00
	Good	Good masonry, metal or concrete panels, good architecture	Plaster, good ornamental detail, carpeting, vinyl, terrazzo lobby	Good lighting and sound system, good plumbing	Warm and cool air (zoned)	2647.92	15.38	246.00
	Average	Face brick, concrete panels with trim, plain architecture	Drywall, vinyl finishes, some ornamentation, carpeting	Adequate lighting and plumbing, sound system	Warm and cool air (zoned)	1915.97	11.13	178.00
B	Excellent	Special architecture and trim, best materials, highly ornamented	Best ornamental plaster and detail, carpeting, marble, vinyl	Special lighting and sound system, good plumbing	Hot and chilled water (zoned)	3595.14	20.88	334.00
	Good	Good masonry, metal or concrete panels, good architecture	Plaster, good ornamental detail, carpeting, vinyl, terrazzo lobby	Good lighting and sound system, good plumbing	Warm and cool air (zoned)	2529.52	14.69	235.00
	Average	Face brick, concrete panels with trim, plain architecture	Drywall, vinyl finishes, some ornamentation, carpeting	Adequate lighting and plumbing, sound system	Warm and cool air (zoned)	1851.39	10.75	172.00
C	Excellent	Special architecture and trim, steel frame, best masonry	Best ornamental plaster and detail, carpeting, marble, vinyl	Special lighting and sound system, good plumbing	Warm and cool air (zoned)	2637.16	15.31	245.00
	Good	Face brick, concrete and glass panels, good architecture	Plaster, good ornamental detail, carpeting, vinyl, terrazzo lobby	Good lighting and sound system, good plumbing	Warm and cool air (zoned)	1905.21	11.06	177.00
	Average	Brick, block, concrete panels, little trim, good high school type	Drywall, some ornamentation, vinyl composition, terrazzo lobby	Adequate lighting and plumbing, sound system	Package A.C.	1323.96	7.69	123.00
	Low-cost	Low-cost brick, block, tilt-up	Painted, acoustic and asphalt tile	Minimum lighting and plumbing	Forced air	920.31	5.34	85.50
D	Good	Brick veneer, best stucco, good trim, ornamental front	Plaster, good ornamental detail, carpeting, vinyl, terrazzo lobby	Good lighting and sound system, good plumbing	Warm and cool air (zoned)	1808.34	10.50	168.00
	Average	Good stucco, some trim, good high school type	Drywall, some ornamentation, vinyl composition, terrazzo lobby	Adequate lighting and plumbing, sound system	Package A.C.	1259.38	7.31	117.00
	Low-cost	Low-cost stucco or siding, very plain, low-cost school type	Drywall, plywood, acoustic tile, wood or asphalt tile floors	Minimum lighting and plumbing	Forced air	866.49	5.03	80.50
DPOLE	Low-cost	Metal panels on wood pole frame	Few partitions, acoustic tile, wood or asphalt tile floors	Minimum lighting and plumbing	Forced air	807.29	4.69	75.00
S	Average	Metal sandwich panels	Drywall partitions, some ornament, acoustic tile, terrazzo lobby	Adequate lighting and plumbing, sound system	Package A.C.	1194.79	6.94	111.00
	Low-cost	Steel or aluminum panels	Few partitions, acoustic tile	Minimum lighting and plumbing	Forced air	812.67	4.72	75.50

AUDITORIUM / THEATER BASEMENTS

A-B	Finished	Concrete masonry, partly finished interior	Masonry partitions, utility, repair, storage and dressing rooms	Adequate lighting and plumbing, some extras	Hot water	1097.92	6.38	102.00
	Semifinished	Low-cost finishes	Finished lounge/restrooms, some utility and storage	Minimum lighting, adequate plumbing	Hot water	974.13	5.66	90.50
CDS	Finished	Painted interior	Utility, workshops, storage and dressing rooms	Adequate lighting and plumbing	Forced air	769.62	4.47	71.50
	Semifinished	Low-cost finishes	Minimum lounge area, restrooms, some utility and storage	Minimum lighting, adequate plumbing	Forced air	651.22	3.78	60.50

NOTES: For fire-resistant Type I basements with concrete slab separation under C, D or S units, add 5.90 per square foot (63.51 per square meter).

For unfinished utility basements, see Page 8. For parking basements, see Page 19.

Large entrance marquees or carport canopies see Page 25, or they may be computed from the Segregated or Unit-in-Place costs.

Add for elevators, orchestra lifts or sprinklers from Page 24 and 25.

PAVILIONS (174)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING & PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Face brick, cast stone, ornate trim and railings, slate, copper cover	Raised colored slab, pavers, plank ceiling, best bandstand	Good electrical, ornamental lighting, some extras	None	2615.63	15.19	243.00
	Very Good	Brick or face block, stone trim, concrete or clay tile cover	Raised slab, decorative balustrading, ornate bandstand pavillion	Good electrical and lighting	None	2034.38	11.81	189.00
	Good	Enclosed, arched openings, brick or block, good trim, heavy shingles	Raised slab on fill, good balustrades, good bandstand	Adequate electrical, outlets and lighting	None	1571.53	9.13	146.00
	Average	Enclosed, concrete block, little trim, composition shingle cover	Unfinished, concrete slab, walled park pavillion	Adequate electrical and lighting	None	952.61	5.53	88.50
	Fair	Open, face block, brick columns, timber roof framing, trellis, tile	Unfinished, concrete slab, exposed roof deck, best picnic shelter	Minimum electrical or water service, service wall	None	737.33	-----	68.50
	Low-cost	Open, no walls, block columns, some trim, wd. trusses, architectural shing.	Unfinished, concrete slab, good park shelter	Minimum lighting	None	575.87	-----	53.50
	Cheap	Open air, no walls, masonry supports, composition shingle cover	Unfinished, concrete slab, minimum park picnic shelter	None	None	446.70	-----	41.50
D	Excellent	Face brick veneer, cast stone trim, heavy trusses, slate, copper cover	Raised colored slab, pavers, plank ceiling	Good electrical, ornamental lighting, some extras	None	2507.99	14.56	233.00
	Very Good	Masonry veneer, custom woods, trim, concrete or clay tile cover	Raised deck or slab, decorative balustrading, ornate bandstand	Good electrical and lighting	None	1926.74	11.19	179.00
	Good	Enclosed, arched openings, best sidings, trim, trellis, heavy shingles	Raised wood deck on piers, good balustrades, good bandstand	Adequate electrical, outlets and lighting	None	1485.42	8.63	138.00
	Average	Enclosed, siding or stucco, some trim	Unfinished, slab or light plank, walled pavillion, average bandstand, gazebo	Adequate electrical and lighting	None	888.02	5.16	82.50
	Fair	Open timber framing, trellis, heavy shingle or tile cover	Unfinished, concrete slab, exposed roof deck, best picnic shelter, plain gazebo	Minimum electrical or water service, service wall	None	683.51	-----	63.50
	Low-cost	Open, no walls, wood columns, some trim, composition shingles	Unfinished, concrete slab, good shelter, minimum gazebo	Minimum lighting	None	527.43	-----	49.00
	Cheap	Open air, no walls, wood posts, composition, roll or shingle cover	Unfinished, concrete slab, prefabricated shelter	None	None	406.34	-----	37.75
DPOLE	Fair	Open, pole frame, wide span, formed metal cover, good trim	Unfinished, concrete slab, brick ribbons, best picnic shelter	Minimum electrical or water service, service wall	None	629.69	-----	58.50
	Low-cost	Open, no walls, pole frame, metal cover, some trim	Unfinished, concrete slab, good picnic shelter	Minimum lighting	None	487.07	-----	45.25
	Cheap	Open air, no walls, light metal cover on pole frame	Unfinished, concrete slab, prefabricated picnic shelter	None	None	376.74	-----	35.00
S	Average	Enclosed, steel frame, metal siding, masonry trim	Unfinished, concrete slab, walled park pavillion	Adequate electrical and lighting	None	834.20	4.84	77.50
	Fair	Open, wide span truss, formed metal cover, good trim	Unfinished, concrete slab, brick ribbons, best picnic shelter	Minimum electrical or water service, service wall	None	645.83	-----	60.00
	Low-cost	Open, partial wall panels, steel frame, metal cover, some trim	Unfinished, concrete slab, good picnic or play shelter	Minimum lighting	None	500.52	-----	46.50
	Cheap	Open air, no walls, light steel, colored panels or heavy canvas	Unfinished, concrete slab, prefabricted picnic shelter	None	None	387.50	-----	36.00

NOTES: Use total length of walled sides as the perimeter in the Floor Area/Perimeter table. Do not use shape table for shelters without walls, but the height table will apply.
For paving, landscaping, benches, picnic units and playground equipment, see Section 66.
For restroom or shower buildings, see Section 18. For snack bars, see Section 13.

CALCULATOR METHOD

CHURCHES, THEATERS AND AUDITORIUMS

REFINEMENTS

On this page and the next are means of making adjustments to the base costs given in this section. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, price either entirely or partially by the Segregated Cost System, Section 46. Special items which should be added to the total cost may be added from the Unit-in-place cost sections.

HEATING AND COOLING

These costs are averages of the total installed costs of the entire heating or cooling installation including its prorated share of contractors' overhead and profit and architects' fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot cost. If a cubic foot cost is used, use one-sixteenth the difference shown to adjust the base cubic foot cost. All of the heating costs included in the base costs are those listed under "Moderate Climate." For specific systems costs not found below, see Section 46 or 53.

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, cable or baseboard	42.84	65.12	99.67	3.98	6.05	9.26
radiant panels	40.47	52.20	66.74	3.76	4.85	6.20
Electric wall heaters (inc.FWA)	20.34	27.45	36.49	1.89	2.55	3.39
Forced air furnace	44.45	77.50	135.63	4.13	7.20	12.60
Hot water, baseboard/convector	80.94	121.63	183.52	7.52	11.30	17.05
radiant floor or ceiling	79.01	125.40	199.13	7.34	11.65	18.50
Space heaters, w/fan	15.93	25.83	41.87	1.48	2.40	3.89
radiant	19.59	30.68	48.01	1.82	2.85	4.46
Steam (including boiler)	75.02	111.94	166.84	6.97	10.40	15.50
(without boiler)	62.00	96.88	150.69	5.76	9.00	14.00
Wall or floor furnace	21.20	29.06	40.47	1.97	2.70	3.76

HEATING AND COOLING

Package A.C. (short ductwork)	79.01	130.24	215.28	7.34	12.10	20.00
Warm and cool air (zoned)	117.86	194.83	322.92	10.95	18.10	30.00
Hot and Chilled water (zoned)	195.36	290.63	433.25	18.15	27.00	40.25
Heat pump system	87.40	153.39	269.10	8.12	14.25	25.00
add for ground-loop heat source	19.48	34.98	63.61	1.81	3.25	5.91
Individual thru-wall heat pumps	36.49	57.05	88.80	3.39	5.30	8.25

Small individual heat pumps cost 1750.00 to 2440.00 per ton of rated capacity.

COOLING ONLY

Cooling costs vary greatly because of mass of heat and moisture generated by large gatherings, and the following costs are designed as a rough guide only:

Central refrigeration with ducts and zone controls	71.26	104.41	152.85	6.62	9.70	14.20
Package refrig. (short ductwork)	52.64	74.81	106.78	4.89	6.95	9.92
Central evaporative (with ducts)	37.03	46.82	59.63	3.44	4.35	5.54
Package refrigeration	1980.00 – 2575.00 per ton of rated capacity.					
Evaporative coolers	295.00 – 485.00 per thousand CFM of rated capacity.					

VENTILATION ONLY

Ventilation (blowers and ducts)	14.85	22.60	34.12	1.38	2.10	3.17

ELEVATORS

TYPE	LOW	AVERAGE	GOOD	EXCELLENT
Passenger, base cost, two to three stories	44100.00	52000.00	61000.00	71750.00
Four stories and over	75500.00	86750.00	99750.00	114000.00
add cost per stop	6100.00	7000.00	8100.00	9300.00
Freight, base cost, two to three story	31900.00	42100.00	55750.00	73250.00
Four stories and over	62500.00	79000.00	99250.00	126000.00
add cost per stop, manual doors	8050.00	8800.00	9550.00	10400.00
Power doors	14000.00	15200.00	16600.00	18100.00
Orchestra lifts	106000.00	133000.00	166000.00	206000.00
Escalators, each stairway	176000.00	188000.00	201000.00	215000.00
Vertical wheelchair lifts, each	11700.00	14800.00	18700.00	23600.00

FIREPLACES

Cost per fireplace. For each additional opening using the same chimney, add 30% to 50% (custom, 20% to 40%). Buildings with basements, add 40% (custom, 25%) to extend the foundations to the basement level. Steel, with flue, is the prefabricated hanging or free-standing type fireplace or stove.

TYPE	LOW	AVG.	GOOD	EXCL.	
One story(residental style)	2625.00	3900.00	5700.00	8500.00	up
add per additional story of chimney flue	680.00	925.00	1270.00	1730.00	
Steel, with flue	1380.00	1960.00	2775.00	3950.00	
add per additional story of chimney stack	311.00	475.00	715.00	1070.00	
Custom or oversized, one story	9950.00	13100.00	17100.00	22500.00	up
masonry heaters, soapstone, etc.	9250.00	15100.00	23900.00	37000.00	up
add per additional story of chimney flue	1780.00	2060.00	2390.00	2750.00	
Add for Heatilator type	396.00	530.00	710.00	960.00	
Add for raised hearth	227.00	359.00	550.00	850.00	
Add for log lighter	279.00	316.00	359.00	407.00	

Mantels, special designs or antique reproductions, see Section 11.

BUILT-INS

Single unit(self-contained) Kitchen	3550.00	4450.00	5550.00	7100.00

For individual built-in appliances, see Section 11; for commercial kitchens, see Section 65.

EXTERIOR BALCONIES

Balcony costs include the supporting structure, decking and rails. Apply costs to the balcony area.

	LOW	AVG.	GOOD	EXCL.
Concrete	22.75	29.25	37.75	48.50
Steel	21.50	29.00	38.75	52.50
Wood	18.50	24.75	33.25	44.50
Add for ornate finishes, balustrades	19.00	23.70	29.25	36.25
Add for roofs or awnings	10.50	13.90	18.45	24.55

CANOPIES

This is the cantilevered portion of a building that extends over an entrance. The distance that the canopy or marquee is catilevered should be considered when selecting a rank.

	LOW	AVG.	GOOD	EXCL.
Wood Frame	27.25	33.50	41.50	51.50
Light false-mansard	15.00	18.45	22.85	28.25
Steel Frame	33.25	42.25	53.00	67.00
Light false-mansard	18.30	23.25	29.25	36.75

SPRINKLERS

Sprinkler costs include all costs for the system and supply lines, but not tanks, towers or high-pressure pumps. The square foot costs listed are based on the total area of sprinkler system installation on a single main connection including its prorated share of contractors' overhead and profit and architects' fees. For a more specifc cost, see Section 46 or 53. For double sprinkler systems with heads both above and below a ceiling, use sprinklered are and 1.6 times the listed cost. Sprinklers should not be modified for size or shape. For square meter cost, mulitiply square foot cost by 10.764.

COVERAGE	WET SYSTEMS				DRY SYSTEMS			
Square Feet	LOW	AVG	GOOD	EXCL.	LOW	AVG	GOOD	EXCL.
3,000	3.86	4.54	5.33	6.27	4.92	5.79	6.80	8.00
5,000	3.58	4.19	4.90	5.73	4.53	5.29	6.19	7.23
10,000	3.23	3.75	4.36	5.06	4.03	4.68	5.43	6.31
15,000	3.01	3.49	4.06	4.71	3.76	4.37	5.07	5.89
20,000	2.89	3.34	3.87	4.48	3.59	4.16	4.81	5.57
30,000	2.70	3.12	3.61	4.17	3.36	3.88	4.49	5.19
40,000	2.59	2.99	3.44	3.97	3.21	3.70	4.26	4.90
60,000	2.45	2.81	3.21	3.68	3.00	3.44	3.95	4.53
80,000	2.34	2.68	3.06	3.50	2.86	3.28	3.75	4.30
100,000	2.25	2.57	2.94	3.36	2.75	3.14	3.59	4.11
125,000	2.19	2.50	2.84	3.24	2.67	3.04	3.46	3.94
150,000	2.10	2.39	2.73	3.11	2.56	2.92	3.33	3.79
200,000	2.03	2.30	2.62	2.97	2.46	2.79	3.17	3.60
250,000	1.95	2.22	2.52	2.86	2.36	2.68	3.05	3.46
300,000	1.91	2.16	2.44	2.76	2.29	2.59	2.94	3.33
400,000	1.82	2.06	2.33	2.63	2.19	2.48	2.80	3.17
500,000	1.77	1.99	2.25	2.53	2.11	2.38	2.68	3.02

CALCULATOR METHOD

CHURCHES, THEATERS AND AUDITORIUMS

FLOOR AREA – PERIMETER MULTIPLIERS

AVERAGE FLOOR AREA		M.	AVERAGE PERIMETER																M.	AVERAGE FLOOR AREA	
Sq. M.	Sq. Ft.	FT.	53 175	61 200	76 250	91 300	107 350	122 400	137 450	152 500	183 600	213 700	244 800	274 900	305 1000	366 1200	427 1400	488 1600	FT.	Sq. Ft.	Sq. M.
186	2,000		1.117	1.147	1.205	1.264	1.322	1.381	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		2,000	186
279	3,000		1.052	1.071	1.109	1.147	1.185	1.223	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		3,000	279
372	4,000		1.020	1.034	1.061	1.089	1.117	1.147	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		4,000	372
465	5,000		.999	1.011	1.034	1.056	1.078	1.100	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		5,000	465
557	6,000		-----	.995	1.015	1.034	1.052	1.071	1.089	-----	-----	-----	-----	-----	-----	-----	-----	-----		6,000	557
650	7,000		-----	-----	1.001	1.018	1.034	1.049	1.063	1.078	-----	-----	-----	-----	-----	-----	-----	-----		7,000	650
743	8,000		-----	-----	-----	1.005	1.020	1.034	1.048	1.061	1.089	-----	-----	-----	-----	-----	-----	-----		8,000	743
836	9,000		-----	-----	-----	-----	1.008	1.021	1.034	1.047	1.071	1.095	-----	-----	-----	-----	-----	-----		9,000	836
929	10,000		-----	-----	-----	-----	.999	1.011	1.023	1.034	1.056	1.078	1.100	-----	-----	-----	-----	-----		10,000	929
1,115	12,000		-----	-----	-----	-----	-----	.995	1.005	1.015	1.034	1.052	1.071	1.089	-----	-----	-----	-----		12,000	1,115
1,301	14,000		-----	-----	-----	-----	-----	.982	.992	1.001	1.018	1.034	1.049	1.063	-----	-----	-----	-----		14,000	1,301
1,486	16,000		-----	-----	-----	-----	-----	-----	.980	.989	1.005	1.020	1.034	1.048	1.061	-----	-----	-----		16,000	1,486
1,672	18,000		-----	-----	-----	-----	-----	-----	.971	.979	.995	1.008	1.021	1.034	1.047	-----	-----	-----		18,000	1,672
1,858	20,000		-----	-----	-----	-----	-----	-----	-----	.971	.986	.999	1.011	1.023	1.034	1.056	-----	-----		20,000	1,858
2,323	25,000		-----	-----	-----	-----	-----	-----	-----	.954	.967	.980	.992	1.003	1.011	1.027	-----	-----		25,000	2,323
2,787	30,000		-----	-----	-----	-----	-----	-----	-----	.943	.954	.965	.976	.986	.995	1.011	1.026	-----		30,000	2,787
3,252	35,000		-----	-----	-----	-----	-----	-----	-----	.936	.945	.954	.964	.973	.982	.997	1.011	-----		35,000	3,252
3,716	40,000		-----	-----	-----	-----	-----	-----	-----	-----	.938	.945	.954	.963	.971	.986	.999	1.011		40,000	3,716
4,181	45,000		-----	-----	-----	-----	-----	-----	-----	-----	.934	.939	.946	.954	.962	.976	.989	1.001		45,000	4,181
4,645	50,000		-----	-----	-----	-----	-----	-----	-----	-----	.930	.935	.941	.947	.954	.967	.980	.992		50,000	4,645
6,968	75,000		-----	-----	-----	-----	-----	-----	-----	-----	.920	.923	.926	.930	.934	.941	.949	.958		75,000	6,968
9,290	100,000		-----	-----	-----	-----	-----	-----	-----	-----	.914	.917	.920	.922	.925	.930	.935	.941		100,000	9,290

NOTE: For small buildings, enter the table by doubling the average floor area and doubling the average perimeter. For larger buildings, take half the area and half the perimeter.

STORY HEIGHT MULTIPLIERS

Multiply base cost by the following multipliers for any variation in average story height from the base of 16 feet (4.88 meters). For extremely high-pitched roofs (see Section 10), use the height of the eaves plus one-half the height from the eaves to the ridge as the effective height. In some buildings it is better to compute the total cubage and divide by the total square feet of floor area to get an effective height to use.

AVERAGE WALL HT. (M.)	AVERAGE WALL HT. (FT.)	SQUARE FOOT OR SQUARE METER MULT.	CUBIC FOOT MULT.	AVERAGE WALL HT. (M.)	AVERAGE WALL HT. (FT.)	SQUARE FOOT OR SQUARE METER MULT.	CUBIC FOOT MULT.	AVERAGE WALL HT. (M.)	AVERAGE WALL HT. (FT.)	SQUARE FOOT OR SQUARE METER MULT.	CUBIC FOOT MULT.
2.44	8	.776	1.552	8.53	28	1.313	.750	20.12	66	2.219	.538
3.05	10	.833	1.333	9.14	30	1.364	.727	21.33	70	2.309	.528
3.66	12	.889	1.185	10.36	34	1.463	.688	22.55	74	2.398	.518
4.27	14	.945	1.080	11.58	38	1.561	.657	23.77	78	2.486	.510
4.88	16	1.000 (base)	1.000	12.80	42	1.658	.632	24.99	82	2.573	.502
5.49	18	1.054	.937	14.02	46	1.754	.610	26.21	86	2.659	.495
6.10	20	1.106	.885	15.24	50	1.849	.592	27.43	90	2.744	.488
6.71	22	1.158	.842	16.46	54	1.943	.576	30.48	100	2.952	.472
7.31	24	1.210	.807	17.68	58	2.036	.562	33.53	110	3.154	.459
7.92	26	1.262	.777	18.90	62	2.128	.549	36.57	120	3.350	.447

The data included on this page becomes obsolete after update delivery, scheduled for August 2019.

PASSENGER ELEVATORS – SELECTIVE/COLLECTIVE

(passenger-operated, geared, electric and hydraulic elevators)

ELECTRIC, VARIABLE VOLTAGE CONTROL

SPEED (Feet per minute)	CAPACITY (Pounds)					
	1500	2000	2500	3000	4000	5000
100	74250.00 – 79750.00	85500.00 – 95000.00	95000.00 – 106000.00	104000.00 – 119000.00	120000.00 – 140000.00	134000.00 – 162000.00
150	85500.00 – 94000.00	97500.00 – 109000.00	107000.00 – 124000.00	118000.00 – 135000.00	134000.00 – 160000.00	149000.00 – 180000.00
200	94250.00 – 105000.00	106000.00 – 123000.00	118000.00 – 136000.00	129000.00 – 150000.00	145000.00 – 173000.00	161000.00 – 193000.00
250	102000.00 – 117000.00	116000.00 – 133000.00	127000.00 – 147000.00	136000.00 – 162000.00	153000.00 – 185000.00	171000.00 – 205000.00
300	108000.00 – 126000.00	123000.00 – 141000.00	133000.00 – 157000.00	145000.00 – 172000.00	163000.00 – 194000.00	178000.00 – 215000.00
350	115000.00 – 133000.00	129000.00 – 151000.00	140000.00 – 166000.00	151000.00 – 180000.00	170000.00 – 201000.00	185000.00 – 224000.00
400	120000.00 – 140000.00	134000.00 – 160000.00	147000.00 – 174000.00	157000.00 – 188000.00	175000.00 – 211000.00	192000.00 – 230000.00
PLUS COST PER STOP	6300.00 – 6550.00	6350.00 – 6700.00	6350.00 – 6700.00	6550.00 – 6750.00	6700.00– 6800.00	6750.00 – 6850.00

HYDRAULIC

SPEED (Feet per minute)	CAPACITY (Pounds)					
	1500	2000	2500	3000	4000	5000
50	27700.00 – 34800.00	33800.00 – 42700.00	39400.00 – 48700.00	44500.00 – 55750.00	54000.00 – 67500.00	63000.00 – 78500.00
75	34800.00 – 42700.00	41400.00 – 51000.00	47900.00 – 58500.00	53250.00 – 65750.00	63750.00 – 79750.00	72750.00 – 91500.00
100	41100.00 – 48400.00	47900.00 – 58000.00	56500.00 – 66500.00	61000.00 – 73500.00	71750.00 – 88750.00	81750.00 – 102000.00
125	46200.00 – 54000.00	54000.00 – 64250.00	61500.00 – 72750.00	67000.00 – 81750.00	78500.00 – 96750.00	88750.00 – 110000.00
150	51000.00 – 58500.00	59000.00 – 69750.00	66500.00 – 79750.00	73250.00 – 88500.00	84750.00 – 104000.00	95000.00 – 119000.00
200	59000.00 – 67500.00	68750.00 – 79750.00	76000.00 – 90000.00	83000.00 – 99500.00	95000.00 – 117000.00	106000.00 – 132000.00
PLUS COST PER STOP	11500.00 – 12100.00	12000.00 – 12800.00	12800.00 – 13500.00	13300.00 – 14100.00	13800.00 – 15100.00	14900.00 – 15800.00

ELECTRIC, AC RHEOSTATIC CONTROL

SPEED (Feet per minute)	CAPACITY (Pounds)		
	1200	1500	2000
50	45700.00 – 54500.00	50500.00 – 60500.00	56750.00 – 69250.00
100	60750.00 – 70000.00	65500.00 – 77000.00	73250.00 – 86250.00
150	71750.00 – 81500.00	76750.00 – 88500.00	84250.00 – 97750.00
PLUS COST PER STOP	6000.00 – 6250.00	6150.00 – 6300.00	6300.00 – 6550.00

SMALL ELEVATORS

Small office and apartment elevators with simple call system and push-button control, four passenger cab, and two or three stops cost 56500.00 to 77500.00.

OBSERVATION ELEVATORS

For glass observation cars, add 9300.00 to 18400.00, plus 1160.00 per stop. Exterior installations will cost an additional 17400.00 to 22100.00. Custom-designed cars can run as much as five to ten times the cost of standardized cabs.

EXPRESS ELEVATORS

Cost per bypassed floor, without an opening, is 2210.00 to 2950.00 per floor. With openings, use cost per stop from tables.

ELEVATORS – ESCALATORS

PASSENGER ELEVATORS – SELECTOMATIC/AUTOMATIC

(completely automatic, gearless machines, group-controlled elevators)

SPEED (Feet per minute)	CAPACITY (Pounds)					
	2000	2500	3000	3500	4000	5000
300	170000.00 – 188000.00	180000.00 – 198000.00	190000.00 – 210000.00	200000.00 – 222000.00	211000.00 – 234000.00	236000.00 – 262000.00
400	187000.00 – 207000.00	197000.00 – 219000.00	210000.00 – 231000.00	221000.00 – 245000.00	232000.00 – 259000.00	261000.00 – 288000.00
500	206000.00 – 228000.00	219000.00 – 242000.00	230000.00 – 255000.00	244000.00 – 269000.00	258000.00 – 286000.00	288000.00 – 318000.00
600	226000.00 – 253000.00	242000.00 – 267000.00	255000.00 – 282000.00	269000.00 – 298000.00	284000.00 – 315000.00	318000.00 – 350000.00
700	252000.00 – 280000.00	266000.00 – 294000.00	282000.00 – 312000.00	297000.00 – 328000.00	314000.00 – 347000.00	351000.00 – 384000.00
800	279000.00 – 309000.00	288000.00 – 326000.00	311000.00 – 343000.00	328000.00 – 361000.00	347000.00 – 382000.00	387000.00 – 425000.00
1,000	337000.00 – 376000.00	357000.00 – 396000.00	377000.00 – 417000.00	401000.00 – 441000.00	422000.00 – 466000.00	473000.00 – 518000.00
1,200	411000.00 – 458000.00	436000.00 – 484000.00	460000.00 – 509000.00	488000.00 – 538000.00	516000.00 – 569000.00	578000.00 – 631000.00
1,400	503000.00 – 559000.00	532000.00 – 589000.00	563000.00 – 623000.00	596000.00 – 655000.00	630000.00 – 691000.00	707000.00 – 768000.00
PLUS COST PER STOP	6350.00 – 6800.00	6700.00 – 6950.00	6800.00 – 7300.00	6950.00 – 7450.00	7300.00 – 7650.00	7550.00 – 7900.00

EXPRESS ELEVATORS: Cost per bypassed floor, without an opening, is $2,550.00 to $3,475.00 per floor. With openings, use cost per stop from table.

OBSERVATION ELEVATORS: Price with cost additives listed on Page 3

ESCALATORS

(Costs are averages per each moving stairway)

32" WIDTH 5,000 persons per hour		48" WIDTH 8,000 persons per hour	
RISE	COST	RISE	COST
10'	156000.00	10'	170000.00
12'	162000.00	12'	174000.00
14'	166000.00	14'	181000.00
18'	174000.00	18'	193000.00
22'	185000.00	22'	206000.00
25'	193000.00	25'	216000.00

For glass balustrade panels or stainless steel sides, add 655.00 to 2060.00 per foot of rise per unit.

RESIDENTIAL ELEVATORS: The small handicapped or two- or three-passenger elevators found in single-family dwellings cost 18700.00 to 37700.00 for two stops, plus 2550.00 to 4025.00 for each additional stop. For larger capacities over 700 lbs., the cost is 39700.00 to 55750.00 for two stops, plus 9600.00 to 12700.00 for each additional stop. For custom cabs (decorative hardwood, brass and glass, etc.), add 50%.

INCLINED RAILWAYS: Inclined elevators (chairlifts) cost 7550.00 to 11400.00 for normal 14' to 17' runs. Add 110.00 per foot for longer runs. Add 1630.00 to 2080.00 for a two-passenger lift. Add 2280.00 to 3275.00 for each turn. Add 50% for wheelchair capability. For exterior (hillside) installation, add 1830.00.

VERTICAL WHEELCHAIR-PORCH LIFT: For 400 lb. capacity with 5' maximum lift, the cost is 9950.00 to 14100.00. For each additional foot of height to a maximum of 12', add 1800.00 to 2725.00 per foot.

MOVING WALKS

(Costs are averages per each section, up to 2% gradient)

LENGTH	COST PER LINEAR FOOT			
Linear Feet	24" WIDE	36" WIDE	48" WIDE	54" WIDE
40	5100.00	5550.00	6200.00	6400.00
60	4275.00	4475.00	4775.00	4875.00
100	2875.00	3125.00	3450.00	3500.00
300	2080.00	2280.00	2525.00	2550.00
500	1880.00	2060.00	2210.00	2370.00
750	1710.00	1940.00	2020.00	2180.00
1,000	1650.00	1800.00	1940.00	2020.00
1,400	1470.00	1690.00	1830.00	1880.00
1,800	1350.00	1600.00	1690.00	1800.00

For gradients up to 20%, add 1% for each percent over two. Costs include handrails.

SIDEWALK ELEVATORS: With sidewalk doors, 2,000 lb. to 3,000 lb. capacity, 25 square foot platform, the cost is 40500.00 to 58500.00.

PERSONNEL LIFTS: Revolving vertical belts with one-man platforms cost 17000.00 to 21300.00, plus 4525.00 per stop over two.

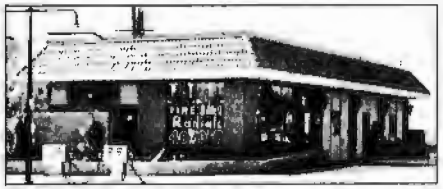
WINDOW-WASHING LIFTS: Exterior building maintenance platforms, self-powered, 24' to 26', cost 56750.00 to 81250.00. Custom engineered platforms can run as much as two times the cost of standard lifts. Supporting davits cost 9300.00 to 12100.00 per pair and sockets, 570.00 to 765.00 each.

DUMBWAITERS: Automatic electric dumbwaiters, 500 lb. capacity, 50-FPM, stainless steel cab, cost 16500.00 (manual doors) to 42300.00 (power doors), plus 3700.00 to 4750.00 per stop over two. For 100-FPM operation, add 30%; 150-FPM, add 50%. For 200 lb. capacity, deduct 25%; 75 lb., deduct 50%. For hand operation, deduct 50%.

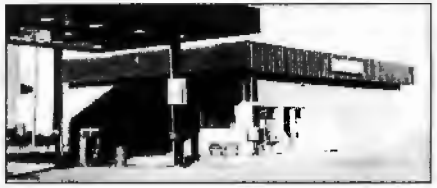
SERVICE STATIONS

The following costs are based on median costs per square foot of complete stations, including design fees, excluding equipment such as hoists and compressors, car washes, food service and display fixtures, and all exterior equipment and improvements. Area includes office, storage, sales, restroom and lube areas for service bay stations. Square foot costs include base electric cost and interior circuits. Exterior circuits must be added. Heating and cooling should be adjusted from this section or Section 53. Add canopies from Page 2.

1. LOW COST



2. AVERAGE



5. LOW-COST FOOD BOOTH

6. AVERAGE FOOD BOOTH

3. GOOD

4. EXCELLENT

7. AVERAGE FOOD BOOTH

8. GOOD FOOD BOOTH

STATIONS WITH SERVICE BAYS (408)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR	LIGHTING & PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
S-C	Excellent	Best steel or brick, masonry trim, good fenestration, garage doors	Good finish, best workmanship, many built-in features, tire racks, etc.	Six to eight good commercial plumbing fixtures, good electrical	Package A.C.	2066.67	15.99	192.00
	Good	Good steel or brick, sectional doors, good sash, large overhangs	Ranch or suburban style, tiled restrooms, good office	Average commercial fixtures, adequate interior circuits	Space heaters	1657.64	12.83	154.00
	Average	Average painted steel or block, little trim, small overhangs	Present-day station, small office, storage, restrooms	Five to six low-cost commercial plumbing fixtures, standard electrical	Space heaters	1377.78	10.66	128.00
	Low cost	Painted steel, inexpensive sash and doors or gates	Older station, minimum finishes, few built-in items	Four residential-type fixtures, minimum interior electrical	Space heaters	1140.97	8.83	106.00
D	Good	Good sidings, sectional doors, good sash, large overhangs	Ranch or suburban style, tiled restroom, good office	Average commercial fixtures, adequate interior circuits	Space heaters	1356.25	10.50	126.00
	Average	Siding or metal on wood frame, little trim, small overhangs	Present-day station, small office, storage, restrooms	Five to six low-cost commercial plumbing fixtures, standard electrical	Space heaters	1130.21	8.75	105.00
	Low cost	Siding or stucco, inexpensive sash and doors or gates	Older station, minimum finishes, few built-in items	Two to three low-cost fixtures, minimum interior circuits	Space heaters	952.61	7.37	88.50
	Cheap	Low-cost siding or stucco, cheap sash and gates	Substandard, older station, minimal finishes	Two cheap plumbing fixtures, minimum incandescent lighting	None	775.00	6.00	72.00

PREFABRICATED FOOD BOOTHS (465)

S	Good	Good enameled prefinished steel, good front, masonry trim	Good acoustic, ceramic tile, security partitioning, walk-in box	Good lighting and outlets, restroom, standard fixtures	Package A.C.	2540.28	19.66	236.00
	Average	Sandwich panels, small front, some trim or mansard	Typical food booth, some extras, adequate support, cooler areas	Adequate electrical, approx. one plumbing fixture each 175 sq. ft.	Package A.C.	2228.13	17.24	207.00
	Low cost	Painted steel panels, low cost sash and fascia	Acoustic tile, vinyl composition, limited partitions, built-in cooler	Minimum diplay and wiring plumbing	Package A.C	1948.27	15.08	181.00

The base wall height is 12 feet (3.66 meters), excluding gables, add or deduct 2% for each foot (.305 meters) of deviation. Adjust for size and shape and heat from tables on Page 2. For small kiosks, see Page 2; car washes, see Pages 4–6; large convenience markets or site-built structures, truck stop restaurants, see Section 13 or 43; mini-lube and service garage buildings or sheds, see Section 14 or 44.

SERVICE STATIONS

FLOOR AREA/SHAPE MULTIPLIERS

AREA PER UNIT		MULTIPLIER		AREA PER UNIT		MULTIPLIER	
Sq. M.	Sq. Ft.	Food Booths, Carwashes	Service Stations	Sq. M.	Sq. Ft.	Food Booths, Carwashes	Service Stations
37	400	1.118	1.525	242	2,600	.891	.812
56	600	1.064	1.330	260	2,800	.883	.792
74	800	1.027	1.207	297	3,200	.869	.757
93	1,000	1.000	1.120	334	3,600	.856	.728
111	1,200	.978	1.053	372	4,000	.846	.702
130	1,400	.960	1.000	409	4,400	.836	.680
149	1,600	.945	.956	446	4,800	.827	.660
167	1,800	.932	.919	483	5,200	.819	.642
186	2,000	.920	.887	520	5,600	.812	.627
204	2,200	.909	.859	557	6,000	.805	----
223	2,400	.900	.834	743	8,000	.775	----

CANOPIES – Costs per square foot of covered area including light fixtures and supports. Wiring costs are included in electrical costs, if all circuits are counted. Add 10% for gable or ranch style, 25% for round. Add for roof covering from Section 57. Individually designed or highly ornamented canopies can cost 100% more.

	Low Cost	Average	Good	Excellent
Concrete tees	25.50	29.00	34.75	40.50
Steel	21.75	28.00	36.00	45.00
Wood frame and sheathing	19.15	24.15	29.25	37.50

SMALL SELF-SERVICE BOOTHS

Average costs per square foot, typical 8' wall height for complete booth, excluding all exterior equipment and improvements. Electrical costs are for booth lighting only; add other circuits from unit costs to the right. Canopies should be added from the table above, heat from this Section on a cost-per-ton basis or from Section 53. For masonry booths, use comparable steel costs.

LOW COST – This is an older, open-style, uninsulated booth with minimum electrical and no plumbing. Cost range can be used to price miscellaneous storage structures. Small tire display cabinet structures will cost 26.00 to 28.00 per square foot.

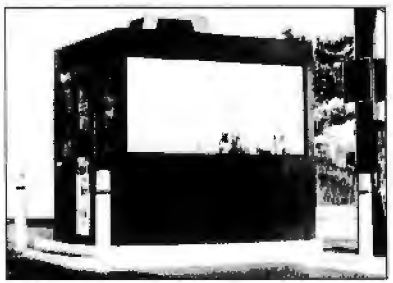
Siding-Stucco-Glass				Construction Steel-Glass or Masonry			
Area	Cost	Area	Cost	Area	Cost	Area	Cost
25	219.00	75	135.00	25	242.00	75	152.00
50	162.00	100	124.00	50	179.00	100	135.00

AVERAGE STEEL – Typical of present-day cashier booths, with good electrical and no plumbing or heat. Add 25% for bullet-proof glass or see Section 55.

50	314.00	75	247.00	100	208.00	125	184.00

GOOD STEEL – Good security structure with bullet-proof glass and two or three commercial plumbing fixtures. For intercom system, add 540.00 plus 140.00 per speaker.

75	448.00	100	376.00	150	291.00	200	242.00



9. AVERAGE

10. GOOD

NOTE: For small kiosk storage buildings, use Average booth costs, less 10%. For small separate restroom buildings, use Good booth costs, less 5%.

BUILDING IMPROVEMENT UNIT COSTS

All costs are for completely installed items. They include costs of design, engineering and contractors' profit and overhead, as well as a prorated share of miscellaneous ancillary costs.

	Low Cost	Average	Good	Excellent
FLOOR AND FOUNDATION – Cost per square foot of floor area.				
Concrete slab	7.93	9.32	11.05	13.15
Wood floor structure	10.85	12.25	13.90	15.60
Add for floor covering from Section 52.				
ROOF – Cost per square foot of roof area.				
Steel prefabricated frame and decking	25.00	27.75	31.50	36.00
Wood frame and sheathing	13.75	14.60	15.55	16.70
Add for roof covering from Section 57. For ceilings under gable roofs, see Section 52.				
WALLS – Cost per square foot of exterior wall area.				
Steel and glass, painted	26.25	29.00	32.25	36.25
Steel and glass, porcelainized	29.00	32.25	37.00	41.00
Steel panels, masonry veneer	32.75	37.50	42.75	49.25
Steel panels, block backup	32.00	36.25	39.75	44.25
Wood frame, stucco or siding	23.25	25.00	26.25	28.25
Wood frame, brick veneer	28.25	30.50	33.50	37.00
Brick masonry	31.00	34.50	39.25	42.75
Concrete block	25.00	27.00	30.25	33.50
Overhead steel or aluminum doors	18.55	21.15	24.45	27.75
sectional, roll–up	19.15	22.70	26.25	30.50
Overhead plastic doors	16.70	18.85	21.15	23.60
Overhead wood doors	15.30	17.30	19.15	21.75
Folding steel gates	20.05	22.70	25.50	28.25
Add for electric door operator	1260.00	1480.00	1610.00	1840.00
Add for ceramic tile from Section 55. See Section 56 for store front entries.				
PARTITIONS – Cost per square foot of partition, including doors.				
Concrete block	17.30	18.85	21.15	23.60
Metal	19.75	21.75	24.45	27.00
Metal and glass, security	29.25	36.75	43.25	52.00
Wood frame, drywall (plaster, add 15% to 20%)	12.60	14.05	15.30	16.70
Add for cabinetry from Section 52.				
ELECTRICAL				
Base cost per station	7400.00	8550.00	9900.00	11400.00
Add per circuit	530.00	585.00	695.00	795.00
PLUMBING				
Cost per fixture	1890.00	2260.00	2775.00	3350.00

Count fountains without cooling as 1/2 fixture. Hot water heaters count as one fixture.

HEATING – Average cost per square foot of heated area. If the heating found in the station being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot cost. If a cubic foot cost is used, use one-twelfth the difference shown to adjust the base cubic foot costs. All of the heating costs included in the base costs are those listed under "Moderate Climate". For specific system costs not found below, see Section 53.

	SQUARE METER COSTS			SQUARE FOOT COSTS		
TYPE	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Forced air furnace	33.91	49.30	73.63	3.15	4.58	6.84
Space heaters, suspended	16.04	26.05	38.53	1.49	2.42	3.58
Wall furnace	17.76	22.50	29.71	1.65	2.09	2.76
Package A.C. (short ductwork)	62.54	94.29	142.62	5.81	8.76	13.25
Heat pump system	66.63	109.25	178.68	6.19	10.15	16.60
Evaporative coolers	28.95	38.32	49.94	2.69	3.56	4.64
Individual thru–wall heat pump	34.55	46.28	64.80	3.21	4.30	6.02

Small individual heat pumps cost 1640.00 to 2210.00 per ton of rated capacity.

YARD IMPROVEMENTS

PAVING

Cost per square foot	LOW COST	AVERAGE	HIGH
Concrete islands	10.75	12.60	14.60
Island pump shelters, including lighting/supports	54.00	71.00	91.50
5" – 6" concrete, approaches and drives	4.54	6.03	7.53
4" concrete, walks, etc.	3.77	4.89	6.03
Apron channel drain and grate, per linear foot	71.00	91.50	117.00
Asphalt	2.33	3.46	4.18
6" curb, per linear foot	10.55	13.20	16.65
Precast concrete bumpers, per linear foot	5.67	7.23	9.44
Wood bumpers, per linear foot	5.25	7.53	10.20
Metal guard rail, pipe or posts, per linear foot	25.00	33.00	44.75

YARD LIGHTING

Cost per pole, 12'	990.00	1220.00	1550.00
Cost per pole, 24'	1500.00	1790.00	2240.00
Add per fixture, incandescent	460.00	560.00	760.00
fluorescent or quartz–iodine	865.00	1040.00	1220.00
mercury vapor	960.00	1260.00	1760.00
high–pressure sodium or metal halide	1080.00	1550.00	2180.00

SIGNS

Cost per square foot of signs includes installation, lighting and wiring, but not cost of poles or structural supports.

	COST RANGE
Illuminated plastic, add 35% for 2 sides	88.50 – 184.00
Metal, painted two sides	58.00 – 87.50
painted one side	47.00 – 68.50
Add for porcelainized metal, per face	10.45 – 13.75
Add for neon tubing, per face	35% – 45%
Plastic interior lighting	72.00 – 103.00
Spheres, per foot of diameter, including post	775.00 – 1160.00

Installation amounts to 18% to 25% of total cost.

SIGN POSTS OR POLES

Cost per linear foot of poles set in concrete and painted. For tapered poles, use the diameter at the base. For cantilevered posts, add 50% to the cost. Decorative pole covers cost $1,420 to $3,175 each.

4"	54.00 –	71.00	10"	107.00 –	169.00
6"	72.00 –	105.00	12"	124.00 –	208.00
8"	90.50 –	140.00	14"	140.00 –	242.00

PIPING

Average cost: 1260.00 to 1670.00 per pump or dispenser per product, plus 820.00 to 1090.00 per tank, plus 431.00 to 560.00 for each air and water well or stand. Add 50% for double wall installations.

EQUIPMENT

Miscellaneous office and garage repair and lube equipment, cash registers, safes, fume exhausters, etc., not listed below, can be found in Section 65. See Section 61 for Tanks.

OFFICE OR BOOTH EQUIPMENT

Electronic remote control totalizer, per hose	1550.00 – 2775.00
Computer cabinet	1580.00 – 2120.00
Tank monitor console	4575.00 – 8350.00
Food booth shelving, gondolas, etc., per booth	4150.00 – 16600.00
merchandise freezer, each	5200.00 – 7500.00
walk-in cooler, per square foot	117.00 – 192.00

AIR COMPRESSORS

H.P.	COST RANGE	H.P.	COST RANGE	H.P.	COST RANGE
1/3	1400.00– 1670.00	1½	3025.00– 3700.00	7½	6300.00– 7450.00
1/2	1790.00– 2160.00	2	3375.00– 4100.00	10	7150.00– 8550.00
3/4	2180.00– 2575.00	3	4000.00– 4750.00	15	8750.00– 10400.00
1	2525.00– 2900.00	5	4900.00– 5800.00	20	10000.00– 11900.00

If the cost without installation is desired, deduct 30% on small size; 25% on medium, 20% on large sizes.

HOISTS

Frame, lift (in-ground)	COST RANGE		COST RANGE
auto, 8,000-lb. single post	8850.00 – 10500.00	8,000-lb. double post	11300.00 – 13800.00
truck, 11,000-lb. double post	12100.00 – 14700.00	16,500-lb. double post	16100.00 – 18600.00
truck, 19,500-lb. double post	17400.00 – 19500.00	24,000-lb. double post	20200.00 – 23000.00
bus or heavy truck		36,000-lb. double post	25100.00 – 28300.00

Drive-on (surface mount)

auto, 7,000-lb. four post	10900.00 – 13400.00	8,000-lb. single post	9750.00 – 11300.00
truck, 12,000-lb. four post	12600.00 – 15000.00		

Large commercial-type grease pits with air and electric outlets cost 12.25 to 17.65 per cubic foot. Installation cost of hoists is approximately 20% to 30% of the total cost.

PUMPS AND DISPENSERS

Mechanical dispenser including vapor recovery, exclusive of submerged pumps	
single	4175.00 – 5400.00
twin	6250.00 – 7900.00
Electronic dispenser including vapor recovery, exclusive of submerged pumps	
single	7100.00 – 9600.00
twin	9600.00 – 12900.00
three hose	13400.00 – 19600.00
Add for double– (two–) sided operation	5050.00 – 5800.00
Add to all multiple types for mixed products, per hose	365.00 – 585.00
Add for point of purchase, per acceptor	3300.00 – 4175.00
Add to all types for integral suction pump, per dispenser	530.00 – 760.00
Submerged pumps, one pump may serve several dispensers	
1/3 horsepower	1530.00 – 1810.00
3/4 horsepower	1790.00 – 2260.00
1½ horsepower	2240.00 – 2775.00
Industrial or Commercial pumps	2925.00 – 3800.00
Add for ticket printer and counter	560.00 – 795.00
Consumer pumps, electric	1160.00 – 2330.00
Utility pumps, electric, farm and ranch type	795.00 – 1190.00
Hand pumps, farm and ranch type	382.00 – 575.00

Costs include 10% installation cost on aboveground items, 20% for submerged pumps. For piping, see table to the left. Monitoring systems, see tanks, Section 61.

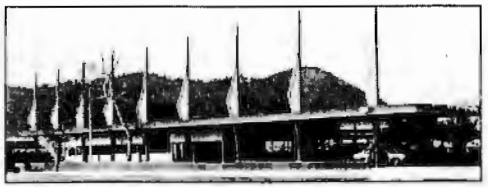
AIR AND WATER SERVICE

Cost per unit	LOW COST	AVERAGE	HIGH
Air and water wells, disappearing hose	630.00	795.00	995.00
Automatic tire inflater	1500.00	1730.00	2060.00
Single swing–arm stand	493.00	585.00	735.00
Water or air hydrant	460.00	530.00	585.00

CAR WASHES

AUTOMATIC CAR WASHES

Full-service or tunnel car wash service buildings include finished office/sales area, locker and restrooms and basic equipment room. Canopies are priced separately.



AUTOMATIC CAR WASHES (436)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR	LIGHTING & PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Best stone or brick, masonry trim, good fenestration, ornamentation	Good finish, best workmanship, many built-in features, waiting area	Good electrical, good commercial plumbing fixtures	Package A.C.	2335.77	18.08	217.00
	Good	Good block or brick, good storefront and trim	Good office and retail space, tiled floors, restrooms, glazed view area	Average commercial fixtures, adequate interior circuits	Package A.C.	1776.04	13.74	165.00
	Average	Average block or brick, little trim, small storefront	Small office, storage, restrooms, locker room, vinyl and carpet	Adequate commercial plumbing fixtures, standard electrical	Forced air	1313.20	10.16	122.00
	Low cost	Concrete block, inexpensive sash and doors	Minimum finishes, vinyl composition tile, few built-in items	Minimum interior electrical and plumbing fixtures	Space heaters	974.13	7.54	90.50
D	Excellent	Best stucco, EIFS or masonry veneer, good fenestration, ornament.	Good finish, best workmanship, many built-in features, waiting area	Good electrical, good commercial plumbing fixtures	Package A.C.	2238.89	17.33	208.00
	Good	Good stucco or brick veneer, good storefront and trim	Good office and retail space, tiled floors, restrooms, glazed view area	Average commercial fixtures, adequate interior circuits	Package A.C.	1689.93	13.08	157.00
	Average	Average stucco or siding, little trim, small storefront	Small office, storage, restrooms, locker room, vinyl and carpet	Adequate commercial plumbing fixtures, standard electrical	Forced air	1248.61	9.66	116.00
	Low cost	Stucco or siding, inexpensive sash and doors	Minimum finishes, vinyl composition tile, few built-in items	Minimum interior electrical and plumbing fixtures	Space heaters	920.31	7.12	85.50
S	Excellent	Best steel, masonry trim, good fenestration and ornamentation	Good finish, best workmanship, many built-in features, waiting area	Good electrical, good commercial plumbing fixtures	Package A.C.	2217.36	17.16	206.00
	Good	Good steel, good storefront and trim	Good office and retail space, tiled floors, restrooms, glazed view area	Average commercial fixtures, adequate interior circuits	Package A.C.	1668.40	12.91	155.00
	Average	Average painted steel, little trim, small storefront	Small office, storage, restrooms, locker room, vinyl and carpet	Adequate commercial plumbing fixtures, standard electrical	Forced air	1216.32	9.41	113.00
	Low cost	Painted steel, inexpensive sash and doors	Minimum finishes, vinyl composition tile, few built-in items	Minimum interior electrical and plumbing fixtures	Space heaters	893.40	6.91	83.00

CARWASH CANOPIES (508)

CLASS	TYPE	DESCRIPTION	Cost Per Sq. M.	Cost Per Sq. Ft.
CDS	Excellent	Good tunnel walls and doors, concrete, built-up or steel roof, concrete floor, lighting, drains, sump, no heat	1011.81	94.00
	Very good	Good tunnel walls and roof structure, open ends, concrete floor, good electrical and drains, sump, no heat	823.44	76.50
	Good	Some tunnel knee walls or column ornamentation, good roof and supports, electrical, concrete floor, drains	672.74	62.50
	Average	No walls, entrance, service canopy, metal or wood frame, finished soffit, lighting, concrete floor	449.39	41.75
	Fair	No walls, average canopy, decorative columns, adequate lighting, concrete floor	298.70	27.75
	Low cost	No walls, shade, patio cover, metal or wood, minimum electrical, concrete paving	198.06	18.40
	Cheap	No walls, light steel, fiberglass or shade netting roof on low-cost pipe, asphalt, minimum electrical, auto detail area	131.32	12.20

The base wall height is 12 feet (3.66 meters), excluding gables; add or deduct 2% for each foot (.305 meters) of deviation. Adjust for size and shape and heat from tables on Page 2. Do not use shape table for canopies without walls, but the height adjustment will apply. For equipment costs, see Page 6. For fire sprinklers, see Section 14 or 44. For second floor office/apartments, see Section 12. Mini-lube garages, see Section 14. For floor heat, add 6.56 to 16.60 per square foot of heated area (70.61 to 178.68 per square meter). For automatic door operators, add 117.00 to 1760.00 each.

The data included on this page becomes obsolete after update delivery, scheduled for March 2020.

CAR WASHES

DRIVE-THRU CAR WASHES

Small single-car drive-thru roll-over-robot type automated car washes cost 109000.00 to 223000.00 including equipment and building shell. Large commercial truck and municipal fleet washes cost 346000.00 to 675000.00 per bay. Add yard improvements from Page 3.

SELF-SERVE CAR WASHES

Small coin-operated washes for self-serve user operation typically cost 50000.00 to 84000.00 per stall, including equipment and building. An open eight-bay facility may go as low as 38800.00 per stall. Costs do not include yard improvements, which may run 15% to 25% of stall costs.

DRIVE-THRU WASHES (435, 185)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR	LIGHTING & PLUMBING	HEAT	COST Sq. M.	COST Cu. Ft.	COST Sq. Ft.
C	Excellent	Best block or concrete, masonry trim, good tunnel doors, roof and trim	Good finish, drains and sump, small storage, office and/or waiting area	Good electrical, good commercial fixtures and outlets	Space heaters	1485.42	11.50	138.00
	Good	Decorative block or tilt-up, tunnel doors, good roof and trim	Unfinished, concrete floor, good drains and sump	Good lighting and outlets, adequate water	Space heaters	1259.38	9.75	117.00
	Average	Open ends, block or low-cost brick, average roof cover, little trim	Unfinished, concrete floor, drains, sump	Adequate electrical and water service and outlets	None	1049.48	8.12	97.50
	Low cost	Side walls only, concrete block, shed or flat roof, very plain	Unfinished, concrete floor, adequate drains	Adequate electrical and water service and outlets	None	893.40	6.91	83.00
D	Good	Good stucco, siding or brick veneer, tunnel doors, good roof	Unfinished, concrete floor, good drains and sump	Good lighting and outlets, adequate water	Space heaters	1194.79	9.25	111.00
	Average	Open ends, stucco or siding, average roof cover	Unfinished, concrete floor, drains, sump	Adequate electrical and water service and outlets	None	990.28	7.66	92.00
	Low cost	Side walls only, low-cost siding	Unfinished, concrete floor, drains	Adequate electrical and water	None	839.58	6.50	78.00
S	Excellent	Best steel, masonry trim, good tunnel doors, roof and trim	Good finish, drains and sump, small storage, office and/or waiting area	Good electrical, good commercial fixtures and outlets	Space heaters	1431.60	11.08	133.00
	Good	Good metal and steel frame, tunnel doors, good roof and trim	Unfinished, concrete floor, good drains and sump	Good lighting and outlets, adequate water	Space heaters	1194.79	9.25	111.00
	Average	Open ends, enameled siding on light frame, little trim	Unfinished, concrete floor, drains, sump	Adequate electrical and water service and outlets	None	979.51	7.58	91.00
	Low cost	Side walls only, low-cost siding on steel frame, shed or flat roof	Unfinished, concrete floor, adequate drains	Adequate electrical and water service and outlets	None	818.06	6.33	76.00
	Cheap	Light pre-engineered metal bldg.	Unfinished, concrete floor, drains	Minimum electrical and water service	None	678.13	5.25	63.00

SELF-SERVE CAR WASHES (434)

C	Excellent	Best block or brick, masonry or EIFS trim, good tiled bays and roof	Unfinished, concrete floor, good drains and sump, equipment room	Good electrical, good commercial fixtures	Space heaters	1302.43	10.08	121.00
	Good	Decorative block or brick, bay doors, good roof	Unfinished, concrete floor, good drains and sump, equipment room	Good lighting and outlets, adequate water	Space heaters	1044.10	8.08	97.00
	Average	End and bay walls only, block or low-cost brick, average roof cover, trim	Unfinished, concrete floor, adequate drains and sump, equipment room	Adequate electrical and water service and outlets	None	807.29	6.25	75.00
	Low cost	End and half-bay walls only, concrete block, shed or flat roof	Unfinished, concrete floor, adequate drains, sump, equipment room	Adequate electrical and water service and outlets	None	640.45	4.96	59.50
D	Good	Good stucco, siding or brick veneer, bay doors, good roof	Unfinished, concrete floor, good drains and sump, equipment room	Good lighting and outlets, adequate water	Space heaters	979.51	7.58	91.00
	Average	End and bay walls only, stucco or siding, average roof and trim	Unfinished, concrete floor, adequate drains and sump, equipment room	Adequate electrical and water service and outlets	None	753.47	5.83	70.00
	Low cost	End and half-bay walls only, low-cost siding or stucco	Unfinished, concrete floor, adequate drains, sump, equipment room	Adequate electrical and water service and outlets	None	597.40	4.62	55.50
S	Good	Good metal and steel frame, bay doors, good roof	Unfinished, concrete floor, good drains and sump, equipment room	Good lighting and outlets, adequate water	Space heaters	979.51	7.58	91.00
	Average	End and bay walls only, enameled siding on light frame	Unfinished, concrete floor, adequate drains and sump, equipment room	Adequate electrical and water service and outlets	None	737.33	5.71	68.50
	Low cost	End and half-bay walls only, low-cost siding on steel frame	Unfinished, concrete floor, adequate drains, sump, equipment room	Adequate electrical and water service and outlets	None	565.10	4.37	52.50

NOTE: For refinement notes, see bottom of Page 4.

CAR WASHES

EQUIPMENT COSTS

Equipment costs cover all equipment for standard tunnel-type car washes, but do not include building improvements, service station equipment, paving, signs, etc. Number of cars washed per hour is a function of the length of the wash line and the quantity and quality of the equipment. Low Cost classification is for the semi-automatic wash, while the Good car wash is fully automated with personnel only for interior cleaning and before and after service commensurate with the capacity (length) of the line. For a detailed breakdown of the equipment costs, see table below. The 30' to 50' cost range includes self-wash tunnels.

LENGTH OF LINE	LOW COST	AVERAGE	GOOD
30' (incl. self–console control)	72000.00	101000.00	144000.00
50'	143000.00	179000.00	226000.00
75'	199000.00	242000.00	295000.00
100'	238000.00	285000.00	341000.00
125'	269000.00	319000.00	378000.00
150'	296000.00	346000.00	408000.00

UNIT COSTS	COST RANGE
Vacuum station, complete	13100.00 – 22600.00
Conveyor 30'	18400.00 – 28900.00
Conveyor 50'	25200.00 – 39100.00
Conveyor 75'	31400.00 – 48600.00
Conveyor 100'	37900.00 – 57750.00
Conveyor 125'	42700.00 – 65250.00
Conveyor 150'	47700.00 – 71250.00
Tire brush washer	10400.00 – 13400.00
Tire solution applicator, inc. pump	4000.00 – 5050.00
Prep. hand gun	5800.00 – 10000.00
Undercarriage flush	2525.00 – 3475.00
Applicator arch (pre–final rinse or wax), each	3725.00 – 5800.00
Rinse and wax deluxe arch combo	10500.00 – 13800.00
Polish and wax arch combo	15800.00 – 24500.00
Mitting curtains	23300.00 – 32300.00
Brushes side panel	11000.00 – 17100.00
side and top combo	37900.00 – 42700.00
Hydraulic power PAC, each	5400.00 – 9100.00
Motor control	13800.00 – 25100.00
computer console	7550.00 – 15000.00
Solution feed, pump	6600.00 – 10400.00
Water reclamation/filtration	40100.00 – 70500.00
Air–dry blower	25200.00 – 47700.00
Washing machine, extractor	6600.00 – 12600.00
Mitting trough, hand wash, each	830.00 – 1670.00

SELF-SERVE WASH AND DRIVE-THRU

Self–wash assembly equipment base, including hot water	10900.00 – 30000.00
add per bay (including basic soap, wax, rinses)	6500.00 – 12600.00
degreaser–foam brush cleaner, extra waxes, base cost each	2825.00 – 3675.00
add per bay	960.00 – 2120.00
Roll–over–robot, self–drive–thru, equipment base	53000.00 – 82750.00
deluxe, including brushless (touch–free) system	91750.00 – 134000.00
add arch applicators from table above	
Pay entry, computerized communication system and signage	6700.00 – 14000.00
Heat freeze protection	1670.00 – 5050.00
Air–dry blower	21600.00 – 38300.00
Water softener	3300.00 – 9950.00
Water reclamation/filtration	8350.00 – 45600.00
Vacuum, per exterior station (interior installations, less 25%)	1980.00 – 4500.00
Change machine/automated pay station	3875.00 – 8350.00
Towel vending machine	640.00 – 945.00

GREENHOUSES

RESIDENTIAL GREENHOUSES

The following are average costs per square foot for stock residential greenhouses with standard glazing of double strength glass with one end wall door. Foundations and vents are included but no floor, heat, electrical, plumbing or watering devices. Costs are based on professional labor. For amateur workmanship, decrease costs by 20%. The low end of the cost range represents wood or cheap aluminum greenhouses with plain stem walls while the high end is a weatherproofed, concealed connection, tubular framed structure. The high-end, good colored frame may be full length or set on a high cost masonry stem wall. Custom designed installations can run 25% higher. Cheap pipe frame structures can run 25% lower. For polyethylene covers, deduct 20%.

AREA SQ. FT.	EVEN SPAN COST RANGE	PLAIN GABLE END WALL DEDUCTION	LEAN-TO COST RANGE
50	65.00 – 100.00	269.00 – 365.00	63.00 – 107.00
100	55.00 – 86.50	570.00 – 760.00	52.50 – 87.50
150	50.50 – 78.50	570.00 – 760.00	47.25 – 78.50
200	47.25 – 74.50	740.00 – 945.00	44.00 – 73.50
250	44.75 – 71.00	740.00 – 945.00	41.25 – 68.50
300	43.25 – 67.50	740.00 – 945.00	39.75 – 65.00
400	41.00 – 63.00	920.00 – 1280.00	37.00 – 59.00
600	37.25 – 58.00	920.00 – 1280.00	32.75 – 54.00
800	35.50 – 54.00	920.00 – 1280.00	30.25 – 50.00
1000	33.00 – 51.50	1150.00 – 1640.00	----- – -----

For gable end doors, add or deduct 660.00 to 1520.00 each. For commercial doors, add 25%.
For tempered or laminated safety glass or structural polycarbonate, add 25%.
For tinted or heat reflective glass, add 15%. For insulated glass, add 60%.
Heaters–735.00 to 1190.00; Humidifiers–575.00 to 1670.00; Coolers–1160.00 to 1840.00; Ventilating fans – 365.00 to 830.00; Planting benches – 4.83 to 13.75 per square foot of bench.
Partitions, glazed, per square foot of partition – 12.25 to 16.70.
For commercial growing greenhouses, see Section 17. For institutional, see section 18.

SOLAR ROOMS

The following are average costs per square foot for three-sided lean-to glass solar rooms with curved eaves attached to a permanent structure used for living space or commercial applications. Costs include one end wall door, foundations and vents or windows. Floor, heat, electrical and plumbing are not included. The low end of the cost range represents tempered glazing in a good metal tubular frame while the high end has insulated, coated and tinted safety glass. Custom designed installations can run up to 50% higher depending on the quality of finish work.

AREA SQ. FT.	COST RANGE	AREA SQ. FT.	COST RANGE
50	117.00 – 314.00	300	74.50 – 202.00
100	98.00 – 264.00	400	69.50 – 184.00
150	88.50 – 236.00	600	63.00 – 169.00
200	82.00 – 224.00	800	58.00 – 157.00
250	78.50 – 208.00	1000	55.00 – 152.00

For gable end adjustment, see table above including glazing additives.
Extra tall bays, add 15%. For laminated wood framing, add 10%. Straight eaves, deduct 7%.
For corner hips and valleys, add 31.50 to 54.00 per square foot to corner area.
For decorative lights incorporated into frame members, add 20.60 to 30.50 per linear foot.
For built-in shades, add 14.05 to 29.25 per square foot of covered area. For motorized operation, add 975.00 to 2210.00 per operator

PREFABRICATED METAL BUILDINGS

SQUARE FOOT COSTS

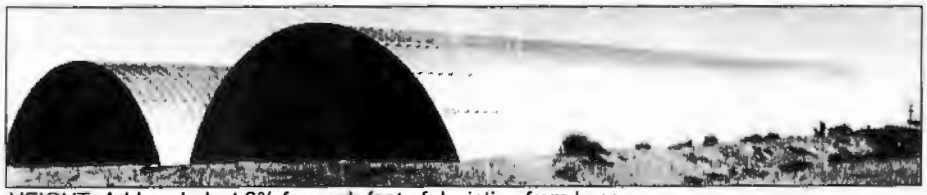
Costs are for standard galvanized steel buildings engineered for a 20-lb. live load with minimum fenestration, erected on concrete footings, without floors, lights or heat. The normal cost range is from 58% (rural) to 150% (commercial) of the listed costs, depending on type of frame, skin and fenestration. For buildings modified for grain storage, add 20%. Refinements are given below. All costs are based on professional labor supervised by a contractor. For amateur workmanship or work done by farm or ranch help, costs should be decreased by 20%.

QUONSET BUILDINGS

(Base Height = 20' Center of Arch)

PRE-ENGINEERED STEEL BUILDINGS

LENGTH	WIDTH				LENGTH	WIDTH			
(feet)	30'	40'	60'	70'	(feet)	30'	40'	60'	70'
30'	23.70	-----	-----	-----	96'	17.70	16.15	15.40	14.80
36'	22.60	-----	-----	-----	108'	17.20	15.75	14.85	14.45
48'	21.05	19.30	-----	-----	120'	16.75	15.35	14.50	13.95
60'	19.95	18.15	17.25	-----	160'	15.70	14.30	13.40	13.00
72'	19.10	17.30	16.60	15.90	200'	-----	13.40	12.70	12.35
84'	18.40	16.75	15.85	15.40	240'	-----	12.80	12.20	11.90



HEIGHT: Add or deduct 2% for each foot of deviation from base.

WIDTH	HEIGHT	LENGTH/WIDTH RATIO					
(feet)	(to eaves)	1.0	1.5	2.0	3.0	4.0	5.0
20'	10'	20.20	19.15	18.40	17.25	16.70	16.15
30'	12'	17.20	16.55	15.90	15.30	14.75	14.35
40'	14'	17.30	16.35	15.70	14.75	14.00	13.60
50'	14'	15.50	14.85	14.60	14.00	13.65	13.40
60'	14'	14.25	13.75	13.45	13.20	12.80	12.65
80'	16'	14.45	13.90	13.65	13.25	12.85	12.70
100'	16'	14.25	13.60	13.25	12.65	12.25	12.00
140'	16'	12.65	12.25	11.95	11.50	11.30	11.00
160'	18'	12.45	12.05	11.90	11.45	11.05	10.95
200'	18'	11.90	11.50	11.30	11.00	10.85	10.55

LIGHT: 12 lb. LIVE LOAD: Deduct 10%. HEAVY LOAD: 30 lb., add 10%; 40 lb., add 25%.
SANDWICH PANELS: Add 60%. ALUMINUM SKIN: Add 15%.
ENAMELED STEEL: Add 5%. SLANT-WALL BUILDINGS: Deduct 10%.
WOOD-POLE FRAMED BUILDINGS: Deduct 20%.
BUILDINGS CONSTRUCTED OF COMPOSITE PLASTICS (FRP): Add 75%.

BUILDING IMPROVEMENT UNIT COSTS

FOUNDATIONS – Concrete column footings – Apply to total number of columns. For perimeter footings and floors or other interior components see Section 43, 44 or 47 or Unit-in-Place cost sections.

	Low	Average	Good	Excellent
Steel columns, light pre–engineered frame	41.00	55.00	72.50	98.00
Wood columns, light pole frame	31.25	44.50	64.00	90.00
Add or deduct 2% for each foot of deviation from 14' base height.				
FRAME – Apply to total floor area.				
Steel, pre–eng. open web tapered truss	3.08	3.36	3.72	3.99
post and open web truss	3.19	3.42	3.82	4.33
post and beam	3.24	3.60	3.99	4.46
tapered plate, post/beam end walls	3.72	4.33	5.13	5.88
tapered plate	4.10	4.79	5.70	6.66
Plastic, fiber reinforced	12.20	13.30	14.60	16.00
Wood, pole frame, untreated	1.89	2.37	3.27	4.43
treated wood	1.94	2.42	3.39	4.55
Add or deduct 4% for each foot of deviation from 14' base height.				
Add 4% for high profile (4:12 roof slope) buildings.				
ELECTRICAL – Apply to total floor area. For rural utility lighting, deduct 50% to 80%.				
Lighting, incandescent	1.14	1.54	2.39	3.36
Lighting, fluorescent	1.38	2.01	2.67	3.77
WALL COVER AND SUPPORTS – Apply to total wall area.				
Wall girts, steel	1.05	1.38	1.88	2.46
wood	0.46	0.65	0.99	1.37
plastic, fiber reinforced	1.49	2.10	2.96	3.82
Aluminum, light (.0175" to .024" thick)	2.45	2.73	3.19	3.42
heavy (.032" to .050" thick)	4.10	4.51	5.32	5.88
Steel, light (30 to 26 gauge)	1.88	2.28	2.56	3.24
heavy (24 to 18 gauge)	3.47	4.10	4.79	5.70
Plastic (FRP 8 oz. to 16 oz.)	3.36	4.68	6.38	8.90
Add for fenestration, per sq. ft. of opening (wood frame, deduct 25% to 50%).				
doors, sliding	11.60	15.25	19.40	26.50
overhead	17.45	21.30	25.50	30.50
pedestrian	34.00	44.25	58.00	75.00
windows or louvers	31.25	39.50	51.00	64.00
Add for canopies, per sq. ft. of canopy area	15.25	19.10	24.30	31.25
Add for enameled paint	0.26	0.38	0.52	0.90
Add for sandwich panel	4.91	6.73	10.45	14.90
Add for insulation	0.65	0.85	1.05	1.30
Add for exterior sheathing	1.14	1.38	1.49	1.77
Add for interior sheathing or liner, finished	1.95	2.28	2.56	3.19
ROOF COVER AND SUPPORTS – Apply to roof area.				
Roof purlins, steel	1.20	1.49	2.05	2.56
wood	0.67	0.91	1.33	1.65
plastic, fiber reinforced	1.95	2.45	3.31	4.27
Aluminum, light (.0175" to .024" thick)	2.33	2.50	2.96	3.24
heavy (.032" to.050" thick)	3.88	4.40	5.02	5.70
Steel, light (30 to 26 gauge)	1.54	2.05	2.45	3.02
heavy (24 to 18 gauge)	3.36	3.88	4.51	5.42
Plastic (FRP 8 oz. to 16 oz.)	3.19	4.27	5.82	7.88
Add for enameled paint	0.26	0.38	0.52	0.90
Add for sandwich panel	3.24	4.74	7.13	10.60
Add for insulation	0.90	1.05	1.30	1.50
Add for interior metal liner	1.82	2.01	2.33	2.67
Add for overhang soffit, per sq. ft. of soffit	4.27	5.13	5.93	7.13
Add 6% for high profile (4:12 roof slope) buildings.				
Add for ventilators, fiberglass light panels or skylights from Section 57.				

PREFABRICATED BUILDINGS

OFFICE STRUCTURES

The following are average costs per square foot for prefabricated office structures. The low quality prices represent "mobile" type offices like those found at construction sites. Minimum fenestration, electrical and very basic finishes (paneling) are included, but plumbing is not. The average costs represent "mobile" type offices also, but of a more permanent nature, like temporary office headquarters or remote branch offices. Average exterior and interior finishes, average fenestration, suspended ceilings and one bathroom (two fixtures) are included. The high quality costs represent good modular offices or commercial structures. Good exterior and interior finishes, better than average fenestration and average restrooms (five fixtures) are included. Foundation costs, heating, ventilating or air conditioning and utility hookups are not included in any of the costs.

ADJUSTMENTS

Foundation, piers, 12.50 to 47.50 each.
Perimeter wall, 16.80 to 53.00 lin. ft.
Concrete slab, 5.25 per sq. ft.
Plumbing, 575.00 per fixture.
Steps, 115.00 per step.
Landing, 30.25 per sq. ft.

AREA (SQ. FT.)	LOW COST	AVERAGE	HIGH COST
100	51.00	-----	-----
200	41.25	57.00	75.00
300	37.00	51.50	66.00
400	34.00	46.75	60.50
500	31.75	44.25	57.00
600	30.00	42.25	54.00
800	27.50	38.75	50.00
1000	-----	36.25	46.50
1500	-----	32.25	41.50
2000	-----	29.50	38.25

For relocatable classrooms, see Section 18. For H.V.A.C, see Section 53.

INTERIOR MODULAR OFFICES

The following are average installed costs per square foot for four-walled prefabricated modular in-plant offices. Included in costs are vinyl wall covering, suspended acoustical ceiling, fluorescent lighting, required doors, windows and electrical switches and outlets. Floor structure, covering, plumbing and heating, ventilating or air conditioning are not included. Add 5% for 50 lbs. per sq. ft. storage capacity on top of offices. For two-story units with structural floor, add 15%. For three-walled units, deduct 17%. For two-walled units, deduct 30%. For fire-sound rated panels, add 10%. For each foot of height over an 8' base, add 8%.

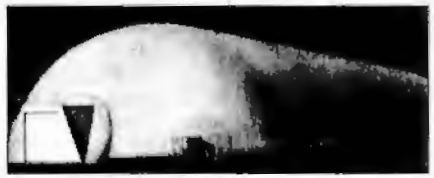
FLOOR AREA (SQ. FT.)	COST	FLOOR AREA (SQ. FT.)	COST
50	83.50	300	41.50
100	64.00	400	37.25
150	54.50	600	31.75
200	48.75	800	28.25
250	44.50	1000	26.00

For environmental machine enclosures, add 125% to 150% to all costs above.

AIR-SUPPORTED STRUCTURES

The following are average installed costs per square foot for standard air-supported storage structures up to 30 feet in height, with minimum doors, including anchoring supports, primary fans and back-up inflation units. Between 30 feet and 60 feet, add 3% for each foot of height. Over 60 feet, add .5% (½%) for each additional foot. Add for perimeter grade beam, flooring, lighting, heat and other interior features from Section 44 or Unit-in-Place costs. For interior thermal liners, add 15%.

Fabric shell lives can range widely depending on the membrane material, the method of installation and appropriate maintenance. The lives listed represent averages under standard applications. A replacement membrane generally may cost 35% to 50% of the initial cost of the structure.



TYPICAL STRUCTURE LIVES

TYPE	YEARS
Good (welded seams)	10 –14
Average	5 – 8
Low cost (sewn seams)	3 – 5

QUALITY AND TYPE	AREA IN SQUARE FEET 3,000	5,000	10,000	15,000	20,000	30,000	50,000	70,000
Good vinyl-polyester or Tedlar fabric	22.30	19.50	16.15	14.60	13.50	12.20	10.65	9.71
Average reinforced vinyl fabric	15.10	13.75	11.90	11.05	10.35	9.64	8.81	8.25
Low cost, woven polyethylene	12.55	11.00	9.21	8.31	7.82	6.97	6.14	5.70

For stressed membrane structures over metal frames, add 100%.
For recreational (golf, tennis) structures, see Section 67. Roof structures, see Section 57.

PREFABRICATED MEZZANINES

The following costs are average per-square-foot costs for prefabricated steel mezzanines for inside use, not to exceed a design load of 150 pounds per square foot. The costs include all structural supports, stairs and flooring for the mezzanine level. The costs do not include any footing or foundations. For mezzanines constructed of wood deduct 7%.

AREA (SQ. FT.)	COST	AREA (SQ. FT.)	COST
100	64.00	500	38.50
200	51.50	600	36.00
300	45.00	800	33.25
400	41.50	1000	31.50

Stair landings cost 88.00 to 110.00 per square foot of platform area.

RESIDENTIAL STREET IMPROVEMENTS

Costs for residential street improvements vary greatly due to local code requirements for different materials, street types and layouts, and utilities. The following costs are averages including ordinary charges for engineering, plans and inspection. Costs include contractors' overhead and profit but not developers', which is realized when each lot or house is sold. They do not include extensive environmental impact reports, special charges (impact or entitlement) or assessments sometimes levied against the subdivider such as annexation charges, or costs of new or existing trunk sewers. They assume that the utilities are at or near the subdivision boundary with no special connection problems or costs. Single-lot unit costs, industrial access streets or individual cul-de-sac developments can run 45% higher. Do not apply the single-lot factors to large parking lot paving.

STREET IMPROVEMENTS	Cost Range	Average Unit Cost	Per Lin. Ft. Typical 40' Street
*Grading and surplus disposal, sq. ft.	0.23 – 0.59	0.31	18.60
*4" rock base, sq. ft.	0.68 – 0.86	0.74	29.50
add or deduct per inch of variation.	0.11 – 0.19	0.13	5.20
6" cement treated base, sq. ft.	0.87 – 1.33	1.00	40.00
add or deduct per inch of variation.	0.13 – 0.19	0.15	6.00
*Paving, 4" asphaltic concrete, sq. ft.	2.05 – 2.46	2.18	87.00
add or deduct per inch of variation.	0.40 – 0.51	0.44	17.60
Paving, 6" concrete, sq. ft.	3.27 – 5.41	3.86	154.00
add or deduct per inch of variation.	0.41 – 0.72	0.50	20.00
Concrete curb 6", no gutter, lin. ft.	8.61 – 15.70	10.50	21.05
*Concrete curb 6", 1' gutter.	12.70 – 19.85	14.75	29.50
Concrete curb 6", 2' gutter.	14.65 – 22.60	16.90	33.75
Concrete curb 8", add to 6" costs.	1.40 – 1.55	1.45	2.90
Asphalt curb 6" no gutter, lin. ft.	3.85 – 4.41	4.03	8.06
berm 4" (speed bumps, add 100%).	3.78 – 4.33	3.96	7.92
Granite curb 5", lin. ft.	26.50 – 38.75	30.25	60.50
Concrete curb, rolled, lin. ft.	7.61 – 12.40	8.96	17.90
* Concrete cross gutter, at intersection, sq. ft.	6.47 – 8.84	7.18	3.59
* Concrete sidewalk, 4" thick, sq. ft.	3.84 – 6.03	4.46	35.75
add or deduct per inch of variation.	0.41 – 0.65	0.48	3.84
* Concrete aprons, 6" thick, sq. ft.	4.37 – 6.86	5.08	11.70
add or deduct per inch of variation.	0.43 – 0.66	0.50	1.15
Sewer main, 9' average depth, lin. ft.			
add or deduct per foot of depth	0.62 – 2.22	0.96	0.96
* 8" vitrified clay	34.00 – 41.00	-----	36.25
8" asbestos cement	22.00 – 30.25	24.45	24.45
8" plastic	17.75 – 26.00	20.15	20.15
add or deduct per inch of diameter	2.80 – 7.49	3.89	3.89
Sewer laterals, 5' average depth, lin. ft.			
* 4" vitrified clay	16.60 – 20.20	17.70	17.70
6" vitrified clay	23.60 – 29.00	25.25	25.25
* Sewer clean outs, 60' o.c., each	650.00 – 1120.00	780.00	26.00
* Sewer manholes, 400' o.c., each	2450.00 – 4050.00	2900.00	7.25
Storm drainage, lin. ft.			
18" reinforced concrete	58.50 – 74.50	63.50	63.50
18" corrugated metal	43.50 – 61.50	48.75	48.75
add or deduct per inch of diameter	1.79 – 5.12	2.54	2.54
Storm manholes, 400' o.c., each	2450.00 – 3400.00	2725.00	6.81

LIGHTING AND PUBLIC UTILITIES

Water, gas and electric costs vary considerably with local requirements and codes. Often all or a portion of the initial cost, maintenance and replacement is included in an assessment or increased utility rate charged to the consumer. Sometimes an additional charge is made in remote or hilly areas for special service or additional equipment. These requirements should be checked locally. The average costs below are approximate maximum costs for a typical subdivision, all or part of which may be borne by the community or secured against the property. Some of these costs may be refundable to the developer. Specific pipe costs can be found in Section 62. For general site clearing, grading, and soil stabilization, see Section 51. For septic tanks, see Sections 53 or 17. For storm water management, see Page 11.

PUBLIC UTILITIES	Cost Range	Average Unit Cost	Per Lin. Ft. Typical 40' Street
* Water main, 6" ductile iron, lin. ft.	36.00 – 41.00	37.50	37.50
6" asbestos cement	39.00 – 47.00	41.50	41.50
6" steel	39.75 – 47.75	42.25	42.25
6" plastic	24.35 – 31.00	26.50	26.50
add or deduct per inch of diameter	2.55 – 7.83	3.71	3.71
* Water lateral, 1", lin. ft.	14.50 – 18.25	15.65	15.65
* Water meters, 60' o.c., each	234.00 – 530.00	307.00	10.25
* Fire hydrants, 300' o.c., each	2825.00 – 4350.00	3250.00	10.85
* Gas main, 2" steel, lin. ft.	14.00 – 15.80	14.60	14.60
3" steel	17.95 – 20.40	18.75	18.75
4" plastic	17.80 – 21.55	18.95	18.95
* Gas lateral, 3/4", lin. ft.	9.13 – 13.10	10.30	10.30
Electricity, overhead, on poles, lin. ft.	16.45 – 29.50	19.95	19.95
Electrical lateral, lin. ft.	4.77 – 6.53	5.29	5.29
Electricity, underground, in conduit, lin. ft.	20.20 – 33.00	23.80	23.80
* Electrical lateral, lin. ft.	12.40 – 21.45	14.90	14.90
* Telephone lateral, underground	8.95 – 14.20	10.45	10.45
Trench only, lin. ft.	5.30 – 10.85	6.73	6.73
Conduit only, lin. ft.	4.77 – 9.52	6.00	6.00
* Street light, underground wiring, 200' o.c., each	1950.00 – 6800.00	2975.00	14.90
Street lights, overhead wiring, 200' o.c., each	1340.00 – 3400.00	1830.00	9.15

Catch basins . . . . . 1550.00 to 1900.00 plus 234.00 to 457.00 per foot of depth.
for curb inlet type, add 30%.

Concrete headwalls. . . . 700.00 plus 77.50 to 128.00 per inch of pipe diameter.
prefabricated fiberglass endwall units, deduct 50%

Gunite, 2" - 3", surfacing for open drains	5.00	to	8.05 per sq. ft.
Soil cement, roads	0.89	to	1.13 per cu. ft.
embankments	1.31	to	2.26 per cu. ft.
slopes	3.75	to	6.76 per cu. ft.
Soil dikes	0.47	to	0.92 per cu. ft.
Slope protection, netting, mats or fabric	0.09	to	1.15 per cu. ft.
Street signs, with post	128.00	to	430.00 each
Survey monuments	207.00	to	545.00 each

*The cost of complete double-loaded street improvements with the components indicated above totals 446.00 to 545.00 per linear foot of street in ordinary level subdivisions, or from 281.00 to 377.00 per front foot of lot, including side street allowance. Costs may run twice as much for extreme hillside conditions. A typical fully improved industrial access street will cost 555.00 to 790.00 per linear foot of street.

The data included on this page becomes obsolete after update delivery, scheduled for December 2019.

YARD IMPROVEMENTS

PAVING – DECKING

Typical costs per square foot, except as otherwise specified. For paved areas of 750 square feet, deduct 10%; 2,000 square feet, deduct 20%. Over 3,000 square feet, use Subdivision costs. Small separate pours of 100 square feet or less may run 25% higher. Hand mixed and spread could cost 75% more.

For complete plaza cost, see Open Malls, Section 13.

	COST RANGE	
2" asphalt on 2" base	2.04 –	3.02
add per additional inch	0.48 –	0.60
2" aggregate base	0.66 –	1.14
add per additional inch	0.16 –	0.23
4" concrete, unreinforced	4.56 –	6.81
add or deduct per inch of variation	0.41 –	0.60
add for mesh reinforcing	0.41 –	1.08
bar reinforcing	0.48 –	2.41
exposed aggregate	0.78 –	3.02
brick ribbons	1.03 –	3.37
detectable warning surface (ADA), stamped	2.41 –	5.28
decorative pattern finish, stamped	5.41 –	10.70
surface formed	4.39 –	8.11
thin–set synthetic overlay	6.64 –	14.80
color or grits	0.66 –	1.44
epoxy with stone or shell	4.75 –	6.74
salt finish (cool deck)	0.41 –	0.72
deck channel drain and grate, per lin. ft.	14.80 –	57.50
catch basins, small, up to 24", each	268.00 –	535.00
4" sand base	1.03 –	1.44
4" gravel base	1.14 –	1.58
add or deduct per inch of variation	0.22 –	0.28
add for 1" stone dust base	0.23 –	0.37
Open grid blocks for grass on sand base	6.64 –	9.06
Asphalt block pavers on concrete base*	8.74 –	14.40
Brick on concrete base, grouted, flat*	11.50 –	18.60
on edge	16.30 –	27.75
Concrete pavers on concrete base*	9.87 –	16.30
Flagstone on concrete base, grouted*	12.90 –	23.25
Tile, quarry on concrete base*	11.50 –	16.70
*For sand bed in place of concrete, deduct	2.88 –	5.28
Snow melting, including controls, electric	12.60 –	15.20
hydronic, large areas (excluding heat source)	6.64 –	17.80
Wood, on grade (posts, beams and joists not included)		
2" x 4" flat	6.08 –	9.87
2" x 4" on edge	9.24 –	14.80
Steps on ground, per lin. ft. of tread, brick on concrete	46.00 –	94.00
concrete	35.00 –	58.50
Approach apron, concrete	5.28 –	8.74
Concrete curb, 4" 6", per lin. foot	12.15 –	18.80
Concrete sidewalk	4.86 –	7.37
Handicap ramps, sidewalks (retrofit, add 400%)	7.08 –	11.10
buildings, concrete (remodel, add 200%)	20.75 –	42.25
add for railing, per lin. ft.	39.50 –	55.50
wood	27.25 –	39.50
add for railing, per lin. ft.	15.60 –	33.25

for portable ramps, see Section 58.

For synthetic surfaces, pathways, see Section 67. Special stone paving, see Section 56.

RAISED PATIO DECKS

Typical cost ranges per square foot of deck area, including supports. For custom installations with complex shapes, built-in planters and seats can run 50% to 100% more.

TYPE	≤ 25 Sq. Ft.	50 Sq. Ft.	100 Sq. Ft.	≥ 300 Sq. Ft.
Decks:				
softwood, fir, pine, etc.	28.00 – 33.75	20.50 – 24.80	15.00 – 18.55	9.12 – 11.65
cedar, redwood or metal	37.50 – 45.00	28.75 – 35.25	21.90 – 27.25	14.40 – 17.95
Railings:				
softwood, fir, pine, etc.	6.30 – 7.90	4.26 – 5.33	2.94 – 3.41	1.49 – 1.93
cedar, redwood or metal	8.87 – 11.00	6.30 – 7.58	4.26 – 5.23	2.46 – 2.94
Steps:				
softwood, fir, pine, etc.	8.28 – 10.15	4.16 – 5.23	2.24 – 2.62	0.68 – 0.93
cedar, redwood or metal	12.20 – 15.15	6.14 – 7.58	3.09 – 3.79	1.07 – 1.29

For each foot of height above 3 feet, increase costs by 5%.
For treated softwoods increase cost by 25%.
For wood polymer composite, add 30% to softwood costs.
For vinyl and tropical hardwoods, add 15% to cedar/redwood costs.

PATIO ROOF

(Typical costs per square foot of covered area, including supports)

TYPE	COST RANGE	
Awning, fabric	11.80 –	26.75
Aluminum or steel, baked enamel	8.00 –	14.80
Fiberglass or screen only	5.74 –	10.70
Wood, including built–up, composition	9.47 –	22.75
Open lattice, metal, vinyl or wood	6.47 –	19.70
Architectural columns, open lattice or trellis	26.75 –	91.00
Picnic shelters	17.70 –	44.75
Add for insulated metal panels	3.84 –	5.28
Add for lighting fixtures, each	87.50 –	241.00

For Carports, see Section 63 or Section 12.
For small Prefabricated Storage Structures, see Section 63 or Section 17.

PATIO ENCLOSURES

Typical cost ranges per linear foot of wall, 84" high, including one exterior door. Use high end of range for insulated panels or knee walls. Add for roof above.

Glassine windows or decorative wood with screen	82.50 –	144.00
Acrylic windows	139.00 –	171.00
Screened only, fiberglass	27.75 –	45.50
steel or aluminum	44.75 –	58.50
bronze	57.50 –	86.50
Add for extra door, each	107.00 –	214.00

GAZEBOS: Typical cost each for 8' to 20' wood units including minimal foundation but excluding floors.

Standard	3525.00 –	18600.00
Deluxe	16500.00 –	44700.00

For Solar rooms and greenhouses, see Section 64. Pool enclosures, see Section 67.

TEMPLES: Typical cost each, 8' to 12' high (to bottom of dome) cast stone units with top ring up to 12' in diameter.

Cost does not include floors or other ornamentation	18300.00 –	49200.00
Add for fiberglass dome	5350.00 –	9500.00
Add for masonry paver floor with no steps	3700.00 –	7350.00
Add for floor with steps	4150.00 –	9500.00

PAVILIONS: Typical cost each for cast stone units 27500.00 – 66500.00

For individual stone columns, see Section 56. For finials, urns, statuaries, see Page 7.

YARD IMPROVEMENTS

SURFACE PARKING LOTS

The following are based on a cost per space and average area per space including asphalt paving, concrete aprons, striping, some lighting, landscaping and drainage. Older lots, sized for large cars, or lots designed for much in and out traffic tend toward the higher areas per space, while newer lots sized for smaller cars, or lots designed for maximum employee parking tend toward the lower end of the range. Costs will vary depending on the extent of grading, paving, lighting and other amenities required.

Open lot costs will vary significantly by size and amenities. Add only those components that apply and which can be mixed by quality. Reduce costs by 5% for every 100 cars over 200 to a maximum of 30%. For example, a small retail lot for 15 cars will be at the high end of the scale, while a 500-car lot will be at the low end minus 15%. Apply proportional costs to additional paved areas beyond the typical area per space.

	LOW	AVG.	GOOD	EXCL.
Engineering - plans, survey, permits, etc.	78.50	103.00	129.00	161.00
Grading - rough and finished	66.50	84.50	107.00	139.00
Drainage	155.00	171.00	193.00	208.00
Paving - spaces and drives	595.00	740.00	975.00	1230.00
Pavement marking - striping and bumpers	13.30	20.45	40.00	59.50
Buildings - ticket booths	20.45	20.45	33.75	40.00
Electrical - lighting and wiring	171.00	187.00	203.00	214.00
Miscellaneous - landscaping, fencing, signs, etc.	139.00	155.00	187.00	203.00
Cost per car space	1230.00	1470.00	1860.00	2270.00

Basement parking, see Section 11. For parking structures, see Section 14.

Average area per parking space	LOW	AVG.	GOOD	HIGH
Square feet	285	315	345	380

PARKING LOT EQUIPMENT

	COST RANGE		
Automatic pay station	97750.00	–	134000.00
Automatic ticket dispenser	9150.00	–	13700.00
with ticket reading machine	16200.00	–	20200.00
Gate operator, key	990.00	–	1220.00
card	1410.00	–	1830.00
coin	2775.00	–	5750.00
Walk-up slot box	1680.00	–	2575.00
Fee indicator, inside	2650.00	–	3225.00
outside	3225.00	–	3675.00
Gate arm, automatic, one way	4400.00	–	6400.00
two way	5500.00	–	6850.00
Traffic detectors, magnetic, each	950.00	–	1410.00
Traffic exit spikes	2120.00	–	2320.00
Warning sign, lighted, on post	990.00	–	1220.00

For entry grills and gates, see Section 55. For toll booths, guard houses, see Sections 64 or 17.

PARKING LOT IMPROVEMENTS

Asphalt coating, 2" min. overlay, per sq. ft.	1.39	–	1.86
reseal	0.21	–	0.47
Parking lot striping, per car	9.13	–	13.05
handicap stall, each	16.70	–	22.15
Parking lot striping, preformed reflective thermoplastics, per car	61.00	–	112.00
handicap stall, each	219.00	–	540.00
Parking bumpers, precast concrete, per lin. foot	5.28	–	9.06
wood	4.99	–	10.25
plastic	7.03	–	14.40
Sign, for handicap stall, on pole, each	214.00	–	357.00
wall mounted	75.50	–	139.00
painted on surface	46.75	–	107.00
Speed bumps, 10" wide, plastic, per lin. foot	21.80	–	33.75
Metal guard rail, pipe or posts, per lin. foot	23.40	–	43.75
Barrier posts or poles, each	112.00	–	341.00

FLAGPOLES

Costs are for tapered aluminum flagpoles, including concrete foundation, base, external halyard, aluminum ball and installation.

	COST RANGE		COST RANGE
20'	920.00 – 2120.00	40'	2180.00 – 4875.00
25'	1180.00 – 2700.00	50'	3325.00 – 7250.00
30'	1510.00 – 3325.00	70'	7450.00 –15900.00

For sectional, lightweight steel poles, deduct 18%.
For fiberglass poles, deduct 20%.
For an ornate base or top, add 570.00 to 3625.00 each.
For internal halyards, add 1440.00 to 3100.00 . For aluminum nautical yardarms, add 1680.00 to 3325.00 each.

BRIDGES

The following square foot costs are national averages derived from numerous bids and contracts. The costs were trended to the present date and converted to the national base by the Local Multipliers. The high and low 5% of the cases in each category were then discarded to arrive at the reasonable high and low figures listed. The medians are derived from the total number of cases in each category.

DESCRIPTION	COST RANGE		
Highway, concrete	65.50	–	214.00
steel	70.50	–	241.00
Pedestrian, concrete	73.50	–	379.00
steel	73.50	–	421.00
Skyway, enclosed walkway	304.00	–	610.00

NOTES: Bridge costs can vary significantly depending on the type of construction, attachment and height, span and size of deck. Skyways have varying requirements for HVAC, lighting, sprinklers, enclosure and roof construction. See Section 15.
For light, prefabricated wood or steel foot-, golf-cart-, etc., type bridges, see Section 67, Page 2.

RAILROAD SPURS

Average costs per linear foot for a 500-foot spur. Costs include rails, ties, ballast, spikes and alignment. Low-end costs represent rail replacement or installing used rails. Costs of turnouts are an additive to the rail cost.

Add 2% for each 100 feet of track under 500 feet.
Deduct 2% for each 100 feet of track over 500 feet (25% maximum deduction).
Add 5100.00 for bumpers. Add 18500.00 for crossing signals.
Add 117.00 per linear foot for 9' concrete roadbed. Add 421.00 for crossing timbers.
Add 1190.00 per pair for wheel stops.

WEIGHT OF RAIL (pounds per yard)	SIZE OF RAIL (base x height)	COST INSTALLED (per foot of track)		ADD FOR SWITCH AND TURNOUT	
40#	3 1/2 X 3 1/2	70.50	– 88.50	24800.00	– 30800.00
60#	4 1/4 X 4 1/4	89.50	– 112.00	30200.00	– 36500.00
80#	5 X 5	106.00	– 129.00	34500.00	– 42900.00
100#	5 3/8 X 6 5/8	117.00	– 149.00	38300.00	– 47900.00
115#	5 1/2 X 6 5/8	129.00	– 161.00	42100.00	– 51500.00
130#	6 X 6 3/4	144.00	– 171.00	45200.00	– 55500.00

The data included on this page becomes obsolete after update delivery, scheduled for December 2019.

YARD IMPROVEMENTS

QUANTITY DEDUCTIONS

For large installations greater than 400 linear feet of fencing or walls, such as industrial or subdivision uses, farms and highways, deduct the following:

600 linear feet	5%	4,500 linear feet	15%
2,000 linear feet	10%	6,000 linear feet	20%

CHAIN LINK FENCES

Average cost per linear foot of galvanized steel fence, including complete installation on 2" round or "H" posts set in concrete, 10' on centers. Rails, barbed wire and gates are given as additives to the base costs. Gates are priced on a per-gate basis.

	HEIGHT				
TYPE OF MATERIAL	4'	6'	8'	10'	12'
2" mesh, #7 wire	13.55	19.70	25.75	31.75	37.25
#9 wire	11.60	16.90	22.25	27.50	32.50
#11 wire	9.98	14.40	18.95	23.40	27.75
Add for rails	2.22	2.22	2.41	2.41	2.41
Add for 3–strand barbed wire	2.88	2.88	3.24	3.24	3.24
Add for barbed coils	11.10	11.10	11.80	11.80	11.80
Add for privacy slats	6.74	10.25	13.85	17.70	21.20

Add 14% for aluminum or add 20% for vinyl-covered wire.
For fabric wind screen, add 0.55 – 1.08 per square foot.
For security micro-mesh, add 0.78 – 1.50 per square foot.

Gates, 3' wide	262.00	336.00	394.00	-----	-----
5' wide	341.00	470.00	575.00	705.00	-----
10' wide	565.00	705.00	815.00	920.00	1030.00
15' wide	710.00	915.00	1070.00	1200.00	1340.00
20' wide	875.00	1100.00	1290.00	1470.00	1630.00
25' wide	-----	-----	1380.00	1600.00	1740.00

Add 25% for sliding gates.

SECURITY GATE TURNSTILES

(Cost each, including installation.)

	COST RANGE
One–way, manual operation, galvanized	6100.00 – 7100.00
aluminum	8150.00 – 10900.00
stainless steel	10600.00 – 12700.00
pedestal–type arm turnstile	1580.00 – 4550.00
Handicap gate	3825.00 – 6100.00

Add 100% for tandem gates, 25% for polycoated gates, 30% for electrically operated gates.

METAL FENCES, RAILING AND GRILLS

(Cost ranges per square foot.)

Hand forged wrought iron or modular, steel or aluminum	7.21 – 21.90
Gates	10.85 – 26.75
Add for bronze anodized or powder coated	5.41 – 10.60

For window grills and ornamental driveway gates, see Section 55.
Custom ornamental work can run two to three times the listed costs.

KENNEL RUNS

(Cost ranges per square foot of fencing.)

Wire mesh on steel posts (wall area)	3.37 – 6.30
Mesh cover (roof area)	4.20 – 7.72
Add for gates, each	176.00 – 336.00

For panelized self-supporting partitions, deduct 20%.

MASONRY WALLS

(Cost ranges per square foot, including normal foundations.)

	COST RANGE
4" concrete block with pilasters, reinforced	8.97 – 11.15
6" concrete block, reinforced	10.30 – 12.70
8" concrete block, reinforced	11.00 – 14.80
6' block piers or pilasters, each	139.00 – 357.00
Ornamental screen block	9.13 – 14.80
Add for each wythe of face block	1.08 – 3.06
Add for stucco finish, each side	2.58 – 4.20
Common brick, 8" thick	19.70 – 25.50
8" block back–up	16.90 – 22.65
add for each additional 4" thickness of common brick	5.23 – 7.72
6' brick piers or pilasters, each	262.00 – 1070.00
Add for each wythe of face brick	2.47 – 3.84
Concrete, precast, posts and solid panels	8.11 – 14.80
Add for wood grain or split face	2.41 – 5.74

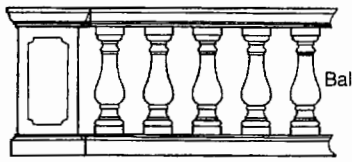
NOTE: For light residential subdivision installations using unskilled laborers, costs may be 25% lower.
For retaining walls, gabions, see Section 51. For stone walls, see Section 56.

CONCRETE RAIL FENCES

(Cost ranges per linear foot of post and split rail prefabricated concrete fences, installed.)

4' high, one rail	8.06 – 11.95
5' high, two rails	11.60 – 17.80
6' high, three rails	16.10 – 24.15
6' high, four rails	19.70 – 30.00

BALUSTRADING



Pier shaft

Precast stone balustrading found in ornamental railings around pools, patios, garden paths, stairs, etc., will cost 193.00 to 640.00 per linear foot installed, excluding urns, statuary, etc. Because of the various styles and lengths of balustrades, costs should be built up individually.

UNIT COSTS

Pier shaft, pedestal, pilaster, etc. (including cap and base), each	187.00 – 2000.00
Gate, fence piers, 8' each	2330.00 – 14200.00
Plinth or bottom rail, per lin. ft.	33.75 – 67.50
Baluster, each	112.00 – 373.00
Ornamental block parapet screening, per lin. ft.	91.00 – 144.00
Top rail, per lin. ft.	65.50 – 93.00
add for lighting under rail, per lin. ft.	64.50 – 92.00

For curved or stepped balustrading, add 135% to the cost.
For finials, urns, vases, statuary, etc., see Page 8. For lanterns, see Page 5.
For high-density foam polymer plastic, deduct 50%.

TRASH ENCLOSURES

Masonry–walled dumpster enclosures, each	2270.00 – 4475.00

CONCRETE EQUIPMENT PADS

Package air conditioning compressor pads, each	187.00 – 530.00
Transformer pads, reinforced, each	720.00 – 2140.00

GLOSSARY

EXPLANATION

The purpose of the following definitions is to provide a better understanding of the terms not previously defined or illustrated in this manual, and to furnish a guide to many other terms used in construction and appraisal practice. It is not the purpose of this section to replace a complete appraisal, architectural or construction dictionary. Occupancy and Segregated component descriptions are available with the Help files for our computerized products.

Many construction terms have local or sectional meanings, and the same terms are sometimes used differently in various regions.

©Green item.

DEFINITIONS

ABUTMENT. A foundation structure designed to withstand thrust, such as the end supports of an arch.

ACCESS FLOOR. See computer floor.

ACOUSTICAL CEILING. In general terms, a ceiling designed to lessen sound reverberation through absorption, blocking or muffling. In construction, the most common materials are acoustical tile and acoustical plaster.

ACOUSTICAL TILE OR PANELS. A sound-absorbing ceiling finish system composed of various materials (listed below). It can be applied (glued, stapled or clipped) directly, furred or hung in a suspended ceiling grid system. Metal panels can be smooth or perforated, generally in a linear pattern. Mineral fiber is porous or covered, faced fiberglass or mineral fiber decorative tiles or panels and may be an integrated and fire-rated assembly. Organic fiber is wood or cane fiber tiles.

AMERICANS WITH DISABILITIES ACT (ADA). Federal legislation requiring employers and business owners to make "reasonable accommodations" to facilitate employment of disabled persons.

©**ADAPTIVE PLANTS.** Non-native plants that reliably grow well in given habitat with minimal winter protection, pest control, fertilization or irrigation once the root systems are established.

©**ADVANCED FRAMING.** A house-framing strategy/technique in which lumber use is optimized to save material and improve the energy performance of the building.

ADOBE. Solid masonry wall made from adobe block, which is unburnt, sundried block molded from adobe soil found in arid regions, generally rough in shape and texture. The wall may be grouted and reinforced or of a post-and-girder type of construction. Modern adobe can have an asphalt or chemical binder.

©**AERATOR.** A device installed on sink faucets to reduce water use and the energy needed to heat water. Faucet aerators, coupled with low-flow shower heads, can reduce a home's water use by 50 percent. The aerator has its rated flow imprinted on the side, which should read 2.75 gpm (gallons per minute) or lower in order to be considered as a Green building material.

A-FRAME. Structural support framework in the shape of the letter A. Also a building system having sloping side members which act as both walls and roof, forming a steep gable that generally extends to the ground.

AGGREGATE. All the materials used in the manufacture of concrete or plaster except water and the bonding agents (cement, lime, plaster). May include sand, gravel, cinders, rock, slag, etc.

AGGREGATE SIDING PANELS. This nonbearing wall is a combination of exposed stone aggregate faced siding and glass panels. The panel system comprises aggregates of various sizes embedded in epoxy, bonded to a wood board backing that is attached to studs and to a supporting frame.

AIR CURTAIN. A device to protect an opening against heat loss or passage of insects by blowing a high-velocity flow of air across the opening.

AIR INFILTRATION WRAP. A high-density polyethylene fibrous exterior air barrier generally applied to residential stud construction.**AIR-SUPPORTED STRUCTURE.** A tent-like curved structure held up by air pressure, with an airtight seal around its base perimeter.

©**AIR-SOURCE HEAT PUMP.** Heat pump that relies on outside air as the heat source and heat sink. Not as effective in cold climates as ground-source heat pumps.

AIR-SUPPORTED STRUCTURE. A tent-like curved structure held up by air pressure, with an airtight seal around its base perimeter.

©**AIRTIGHT DRYWALL.** Use of drywall with carefully sealed edges and joints that serves as an interior air barrier in building assemblies.

AMENITIES. Tangible and intangible features that enhance or add to a property's desirability and perceived value.

ANODIZED ALUMINUM. Aluminum which has had a hard, corrosion-resistant, oxide film applied to it by an electrochemical process. A color anodizing process may be used to produce a number of colored finishes.

APPLIANCE ALLOWANCE. The cost included for residential appliances commonly found at different quality levels. Typically, ranges and ovens, garbage disposers, dishwashers and range hoods are included. The better qualities (higher cost ranks) have additional feature considerations for trash compactors, microwaves, built-in mixer units, etc.

APRON. A term usually applied to a surfaced area adjoining roads, driveways, buildings, airstrips, docks, etc.

ARCHITECTURAL CONCRETE. Concrete which is cast in a form to produce figures, designs, or textures so as to create an ornamental building surface. Often used to replace stone masonry.

AREA. The extent of surface of a building or site, in one plane, measured in square units such as square feet, yards or meters.

ARMORED CABLE. Electrical cable consisting of a flexible metal covering enclosing two or more wires, often referred to as BX cable.

ASBESTOS. A nonflammable natural mineral fiber which was once widely used in insulation materials and fire and flame barriers.

ASBESTOS CEMENT. A mixture of Portland cement and asbestos fibers which was commonly used for roofing shingles, building siding and pipe. Has been replaced with fiber cement products using cellulose fibers in place of asbestos.

ASHLAR STONE VENEER. A type of veneer stone, usually a cut limestone, attached to a concrete block or stud back-up wall using metal wall ties. The stones are irregular in shape. They may be finished with a split face and backed with sawed surfaces for top and bottom bed joints.

ASPHALT TILE. A resilient floor covering laid in mastic, available in several colors. Standard size is 9" x 9", also comes in several other sizes. Asphalt is normally used only in the darker colors, the lighter colors having a resin base.

ASPHALTIC CONCRETE. Asphalt binder and stone or other aggregate, used as a hard surface for streets, air strips and other paved areas.

ATRIUM. An interior courtyard usually with a glass roof to provide a greenhouse-like effect inside.

ATRIUM FRAME AND GLAZING. Metal frame and glazing for major skylight atrium areas, excluding any space frame structure.

ATTIC. A room built within the sloping roof of a dwelling. May be finished or unfinished.

AWNING. A lightweight and often adjustable, exterior, roof-like sun shade over an opening, attached to the building wall.

BACKFILL. Material used in refilling an excavation, such as for a foundation or subterranean pipe.

BACKUP. The lower-cost material in a masonry wall which is covered by a facing of more expensive and ornamental material such as face brick, stone, marble, metal panels, etc.

GLOSSARY

Ⓖ **BAKE OUT.** A process used to remove volatile organic compounds from a building by increasing temperature in a fully furnished and ventilated buildings and single-family homes prior to human occupancy.

BALCONY. A railed platform projecting from the face of a building above the ground level with an entrance from the building interior. In a theater or auditorium, a partial upper stepped floor for seating.

BALLOON FRAME. A framing system in a two-story building in which studs and corner posts extend from foundation sill to roof-top plate, and upper-story floor joists are carried on ledgers or girts let into or nailed directly to the studs. With conventional platform framing, by contrast, the second floor wall framing is laid on top of the finished floor.

BALUSTER. The closely spaced vertical members in a stairway or balcony, balustrade or railing.

BASEBOARD. A finish board around the bottom of interior walls.

BASEBOARD HEATING. Heating in which the heating element, usually an electric resistance unit or forced hot water, is located at the base of the wall.

BASEMENT. Any room or rooms built partially or wholly below ground level.

BASIC BUILDING CODE. A performance-type building code prepared by Building Officials and Code Administrators International (BOCA) and adopted for use by a number of midwestern counties and cities.

Ⓖ **BATCH SOLAR WATER HEATER.** Solar water heater in which potable water is heated where it is stored. Also referred to as integral collector storage (ICS) solar water heater.

BATT INSULATION. A type of blanket insulating material, usually composed of mineral fibers and made in relatively narrow widths for convenience in handling and applying between framing members.

BATTEN. A narrow strip of wood used to cover a joint between boards, or to simulate a covered joint for architectural purposes.

BAY. The area within four columns or between two bents in a building.

BAY WINDOW. A window structure which projects from a wall. Technically, it has its own foundation. If cantilevered, it would be an oriel window; however, in common usage, the terms are often used interchangeably.

BEAM. A horizontal load-bearing structural member, transmitting superimposed vertical loads to walls, columns or heavier horizontal members.

BEAMED CEILING. A ceiling with beams exposed. A false beamed ceiling has ornamental boards or timbers which are not load bearing.

BEARING PLATE. A steel slab placed under the end of a beam, girder, truss or column to distribute the load over a wider surface.

BEARING WALL. A wall which supports upper floor or roof loads.

BENT. A rigid framing unit of a building, consisting of two columns and a horizontal truss, beam or girder.

BEVEL. A surface cut at other than a right angle.

BIDET. A toilet-like bathroom fixture used for hygienic washing of the lower private parts of the body.

BI-LEVEL. A two-story residence with a split-foyer entrance. The lower level, partially above grade, is partially finished. Typically the finish includes plumbing and electrical rough-ins, with some partition wall framing for a recreation room, bedroom, laundry area and bathroom. Other common terms for this type of construction are Raised Ranch, Hi-Ranch or Colonial, and Split-Entry.

Ⓖ **BIO-BASED MATERIAL.** Material made from living matter, such as agricultural crops. Bio-based materials are usually biodegradable.

Ⓖ **BIOGEGRADABLE.** -(Complementing Bio-based materials) Capable of decomposing under natural conditions.

Ⓖ **BIOSWALES.** Gently sloped, vegetated ditches that slow the flow of rainwater runoff into the sewer system. **The names grassy swale, vegetative filter, vegetative infiltration basin represent different types of bioswales. **

BLACK TOP. A general term to describe asphalt or asphaltic concrete paving.

BLANKET INSULATION. A flexible type of lightweight blanket for insulating purposes, supplied in rolls, strips, or panels, sometimes fastened to heavy paper of an asphalt-treated or vapor-barrier type. Blankets may be composed of various processed materials, as mineral wool, wood or glass fibers.

BOND. The adherence of one construction element to another. In masonry construction, the arrangement of bricks or concrete blocks, especially the arrangement of vertical joints.

BOND BEAM. A continuous beam, usually of reinforced concrete, but sometimes of reinforced brick or concrete block placed in masonry walls to tie them together and add lateral stability. It also distributes concentrated vertical loads along the wall.

BOX GIRDER. A girder having a hollow rectangular cross-section.

BRACE. Any minor member designed to steady or stiffen a major member of a structure.

BREEZEWAY. A covered passage, open at each end, which passes between two structures.

BRICK, BLOCK BACKUP. Brick on the exterior surface applied over a concrete block wall. This is a solid masonry wall. The thickness varies depending on the thickness of the block used, with 4", 8" and 12" block being the most commonly applied with this type of wall.

BRICK CAVITY WALL. A wall in which a space is left between inner and outer tiers or wythes of brick. The space may be filled with insulation, grout and/or reinforcing.

BRICK VENEER. A nonloadbearing single tier of brick applied to a wall of other materials.

BRICK VENEER WALL. Usually used to describe a wall made up of brick veneer applied over wood framing.

BRIDGING. Diagonal or cross bracing between joists to resist twisting.

Ⓖ **BROWNFIELD.** (Complementing Infill sites) previously used or developed land which may have been contaminated with hazardous materials and/or pollution and later remediated to be reused.

BROWNSTONE. A term usually referring to houses built, until about 1900, with a brown-colored, quarried, thick-cut solid sandstone which was laid up in mortar.

B.T.U. British thermal unit. A measurement of heat, i.e., the amount of heat required to raise one pound of water one degree Fahrenheit.

BUILDING ENVELOPE. The walls, roof and floors which enclose a heated or cooled space.

BUILDING PAPER. A paper usually applied over the sheathing of exterior frame walls. Also used between flooring and subflooring and over roof decks.

Ⓖ **BUILT ENVIRONMENT.** Refers to anything humanly constructed, such as a structure. A built environment is not naturally occurring.

BUILT-IN APPLIANCES. Those appliances which are permanent fixtures generally found in a residence. They are not included in the base costs and should be added separately.

BULB TEE. A rolled steel shape with a cross section resembling a bulbous T, often used as a purlin.

BUILT-UP COMPOSITION. A roof covering consisting of successive layers of ply, felt and hot asphalt, topped by a mineral surfaced layer (cap sheet) or by embedded rock or gravel.

BULKHEAD. A retaining wall. Also the wall beneath a store display window.

BUTTRESS. An abutting pier or brace which strengthens or supports a wall at a right angle by opposing the horizontal forces.

CAMPANILE. A tall bell tower, usually detached from the building.

CANOPY. A roof, not covering a building, but extending over an exterior area such as a loading area, building entrance or window to protect against sun or rain.

CANTILEVER. A beam or slab supported at one end only, or which projects beyond its support.

CAPITAL. The top portion of a column enlarged to provide a larger bearing surface, or for ornamentation.

Ⓖ**CARBON DIOXIDE CONCENTRATIONS.** An indicator of ventilation effectiveness inside buildings, CO2 concentrations greater than 530 parts per million (ppm) above outdoor conditions generally indicate inadequate ventilation. A concentration of greater than 800-1,000 ppm generally stands for poor air quality for breathing.

Ⓖ**CARBON FOOTPRINT.** A measure of an individual's, family's, community's, company's, industry's, product's or service's overall contribution of carbon dioxide and other Greenhouse gases into the atmosphere. A carbon footprint takes into account energy use, transportation methods and other means of emitting carbon. A number of carbon calculators have been created to estimate carbon footprints, including one from the U.S. Environmental Protection Agency.

Ⓖ**CARBON NEUTRAL.** Achieving an overall neutral (zero) total carbon release, brought about by balancing the amount of carbon released with the amount sequestered. Typically achieved by reducing energy use and obtaining energy from renewable sources combined with offsetting remaining emissions through such means as carbon offsets.

Ⓖ**CARBON-NEUTRAL HOUSE.**House that, on an annual basis, does not result in a net release of carbon dioxide into the atmosphere. Carbon dioxide is a Greenhouse gas that is known to contribute to global warming.

Ⓖ**CARBON OFFSET.** The act of mitigating one's carbon emissions. Carbon offsets are often purchased through a carbon offset provider that uses the money for carbon-sequestering activities including tree planting, renewable energy, energy conservation and methane capture.

CARPORT. An open automobile shelter. May be only a roof and supports or may be enclosed on three sides with one completely open side.

CASEMENT WINDOW. A window hinged vertically, swinging open horizontally like a door.

CASING. A pipe inserted in wells to prevent the sides from collapsing. It may also function to exclude undesirable elements, or prevent the escape of the contents.

CAST STONE. Precast decorative concrete panels and cast symmetrical shapes, giving a massive stone appearance applied on older monumental buildings as a special feature of an entrance or front elevation.

CATCH BASIN. A small underground structure for surface drainage, in which sediment may settle before water reaches the drain lines.

CAULKING. Material used to seal cracks, fill joints and prevent seepage. Includes mastic compounds with silicone, asphalt or rubber bases.

CEILING, DROPPED. A ceiling built below the normal ceiling height such as over a store vestibule or window display.

CEILING JOISTS. The structural members to which the ceiling is fastened.

CEILING, SUSPENDED. A ceiling which is hung from the floor or roof structure above.

CELLULAR STEEL DECK. A structural floor system, consisting of two layers of sheet metal shaped to form cells and welded together. Cells serve as raceways for electrical conduit or other utilities.

CEMENT FIBER SIDING. Siding composed of asbestos-free fiber and Portland cement combined under pressure. Typically, the natural siding or shingle is light gray. Board or shingle siding may be applied over sheathing or a building paper attached to either wood or steel stud framing. Sheet siding can be found with two basic profiles, either ribbed or corrugated or as a sandwich panel attached to a structural frame.

CENTER TO CENTER. The measurement between centers of two adjoining parallel structural members. Also spoken of as "on center".

Ⓖ**CERTIFIED LUMBER.** Lumber that has been certified "sustainable harvest" by an independent certification authority.

CESSPOOL. A pit which serves for storage of liquid sewage which is disposed of through seepage into the surrounding soil.

CHIMNEY STACK. A vertical vent designed to dispose of waste gases and heat and to create a draft for furnaces or boilers.

CINDER BLOCK. A lightweight concrete block using cinders as the coarse aggregate to minimize weight. Sometimes used as a generic term for all lightweight block.

CLAPBOARD. An exterior wood siding having one edge thicker than the other and laid so that the thick butt overlaps the thin edge of the board below.

CLEAN ROOM. A room built to prevent the entrance of dust or lint, usually it will also have closely controlled humidity and temperature.

CLEAR SPAN. A term used to designate a building or an area within a building, free of columns.

CLERESTORY WINDOW. A series or band of vertical windows set above the primary roof line.

Ⓖ**CLOSED-LOOP SOLAR WATER HEATER.** Solar water heater in which an electric pump circulates a freeze-protected heat-transfer fluid through the collector and heat exchanger within a storage tank.

COLONNADE. A series of columns.

COLUMN. A vertical structural member; a pillar. False columns are designed for architectural ornamentation rather than load-bearing qualities.

COMMON BRICK. A solid masonry unit of clay for general building purposes not especially treated for texture or uniformity.

COMMON WALL. A single wall used jointly by two buildings, also called a party wall.

Ⓖ**COMPACT FLUORESCENT LAMP (CFL).** Fluorescent light bulb in which the tube is folded or twisted into a spiral to concentrate the light output. CFLs are typically three to four times as efficient as incandescent light bulbs and last eight to ten times as long. They should be recycled because they contain mercury element.

Ⓖ**COMPOSITE LUMBER.** Lumber made from plastic (often high-density polyethylene) and wood fiber or other agricultural byproducts. Composite lumber often contains recycled content.

GLOSSARY

COMPOSITE STONE PANELS. A stone wall and glass panel system comprising embedded and exposed aggregates or homogeneous crushed stone in a reconstituted stone-like composite panel. Epoxy embedded aggregates, bonded to a cement board backing attached to steel studs is one of the least expensive stone curtain walls.

COMPOSITION SHINGLE. A roofing shingle made of either felt saturated with asphalt and surfaced with mineral granules or inorganic fiberglass saturated with asphalt and surfaced with ceramic granules.

COMPOSITE WOOD. A product consisting of wood or plant particles or fibers bonded together by a synthetic resin or binder. Examples include plywood, particle-board, OSB, MDF, composite door cores.

COMPOSITION WOOD SHINGLES. A roofing shingle panel composed of hardboard.

COMPUTER FLOOR. A prefabricated floor system installed over pedestal grid supports to provide a raised or access floor.

CONCRETE BLOCK. A solid masonry wall typically built with one or two rows of concrete block and mortar. The amount of reinforcing varies due to the structural requirements of the wall. Reinforcing is laid horizontally with various courses and vertically in the hollow core of the concrete block.

CONCRETE BRICK. A concrete masonry unit, sized and often colored and textured to simulate clay brick.

CONCRETE AND GLASS PANELS. A combination of concrete panels (precast or poured-in-place) and glass attached to the concrete panels with the use of a metal frame. Generally these walls carry no load other than their own weight. Some perimeter or shear wall load-bearing units can be found in some low- to mid-rise structures.

CONDUIT. A pipe or channel carrying electric wiring, water or other fluids. May be rigid or flexible.

Ⓖ **CONTROLLABILITY OF SYSTEMS.** Assessment which measures the percentage of occupants who have direct control over the temperature, airflow, and lighting in their space.

CONVECTOR. A radiator for either hot water or steam heat with many radiation surfaces, such as fins, to increase contact with air moved either by natural or forced convection.

COOLING TOWER. A water tower designed to cool water by evaporation.

COPING. The capping of masonry or other material applied to the top of a wall as a watershed and to give a finished appearance.

CORBEL. A beam or bracket projecting from a wall to support some other object or structural part of the building; also may be an embellishment rather than a structural element.

CORNICE. A projecting horizontal moulding at the top of a wall or building.

COST. Purchase price to a buyer.

COURSE. Continuous horizontal layer of materials, i.e., masonry or shingles.

COVED CEILING. A ceiling which curves down at the edges where it meets the wall, providing a smooth transition from ceiling to walls instead of a sharp angle of intersection.

Ⓖ **CRADLE TO GRAVE.** Term used to describe the environmental impact a product has from creation to destruction.

CRAWL SPACE. A space of limited height sufficient to permit access to underfloor piping or wiring.

CUPOLA. A small square or rectangular structure located along the roof ridge used for ventilation and/or ornamentation.

CURTAIN WALL. A nonbearing exterior wall supported by the structural frame of a building. These walls carry no load other than their own weight.

DEAD LOAD. The constant weight of a building or structure including all built-in equipment; does not include variable live loads such as furniture, merchandise, people or business and industrial machines.

DECKING. The surfacing material applied to the rafters, or floor joists to which the material is applied. Also called roof or floor sheathing.

Ⓖ **DEMAND WATER HEATER.** Water heater that heats water only as needed; there is no storage tank and thus no standby heat loss. This is also known as a tankless water heater.

DEMISING WALL. An area separation wall between tenants or space uses.

DIATOMITE. Lightweight concrete made with diatomaceous earth aggregate generally troweled over wood or concrete exterior steps and balconies; has a light marshmallow appearance.

DISTRIBUTION PANEL. A panelboard containing fuses or circuit breakers and which receives and distributes high-capacity electricity to various circuits of lower capacities.

DOCK. An elevated platform at the proper height to facilitate loading or unloading of trucks, ships or boats.

DORMER. A projection from a sloping roof to provide more headroom under the roof and allow the installation of dormer windows.

DOUBLE GLAZING. A double-glass pane in a door or window, with an air space between the two panes, which may be sealed hermetically to provide insulation.

DOUBLE-HUNG WINDOW. A window with an upper and lower sash, each balanced by springs or weights to be capable of moving vertically in its own grooves.

Ⓖ **DOUBLE WALL.** Construction system in which two layers of studs are used to provide a thicker-than-normal wall system to accommodate extra insulation. The two walls are often separated by several inches to reduce thermal bridging through the studs and to provide additional space for insulation.

DOWEL. A pin tying two structural pieces together.

DOWNSPOUT. A vertical drain.

Ⓖ **DRAIN BACK SOLAR WATER HEATER.** Solar water heater in which water or another heat-transfer fluid is pumped through the collector and drains back to a tank in the house when the pump turns off.

DRAIN TILE. Short lengths of clay or concrete pipe laid underground with loose joints to drain away excess water.

DRAINAGE SYSTEM. All piping provided for carrying waste water, sewage or other drainage, from a building to a street sewer or place of disposal.

Ⓖ **DRY POND.** Excavated areas that detain storm water and slow runoffs, but eventually dry between storms. Complementing a water source such as rain water collective systems, this system can reduce storm water runoffs and ultimately reduce water pollution.

DRYWALL. Any finish material applied to an interior wall in a dry state as opposed to plaster. It may be plywood or fiberboard, but is generally referred to as gypsum board or sheet rock.

Ⓖ **DUAL-FLUSH TOLIET.** Toilet that provides two flush levels: a full-volume flush for use with solid wastes and a reduced-volume flush (often half the volume) when only liquid waste and paper need to be flushed.

DUCTS. Enclosures, usually round or rectangular in shape, for distributing warm or cool air from the central unit to the various rooms. Duct costs are included with the appropriate heating or cooling system.

DUMB WAITER. A small utility elevator, used to convey articles, and not people, between floors.

EAVES. The portion of a roof projecting beyond wall line.

ELASTOMERIC ROOFING. Single sheet (ply) of rubber-like, layered membrane consisting of several combinations of plastics and synthetic rubber stretched into place as a roof cover. It may be loosely laid, ballasted, mechanically fastened or fully adhered. Also used to describe a single component liquid or spray applied to the roof surface to yield elastomeric films (Hypalon-Neoprene, Silicone) for high-strength waterproof membranes.

©**ELECTRIC-RESISTANCE HEAT.** Heat provided by electricity in which high-resistance wires convert electric current directly into heat. See heat pump.

ELECTRIC WALL HEATERS. Individual electric unit in the wall capable of heating only small areas. When used as supplemental heating to the main heating plant, such as in a bathroom, it might be considered as a built-in appliance. For electric radiant, see Radiant Heat.

ELEVATED SLAB. A horizontal reinforced concrete structure which is formed and poured in place above ground level, requiring shoring.

ELEVATION. A scale drawing of the front, rear or side of a building.

©**ENERGY OR GREENHOUSE GAS EMISSIONS PER CAPITA.** Community's total greenhouse gas emissions divided by the total number of residents.

©**ENERGY EFFICIENT.** Maximizing, or at least increasing, the ratio between productive output and energy use.

©**ENERGY EFFICIENCY RATING (EER).** Operating efficiency of a room air-conditioner, measured in BTU's of cooling output, divided by the power consumption in watt hours; the higher the number, the greater the efficiency.

©**ENERGY FACTOR.** Efficiency measure for rating the energy performance of dishwashers, clothes washers, water heaters, and certain other appliances. The higher the number, the greater the efficiency. A "modified energy factor" accounts for certain adjustments according to accepted test procedures.

©**ENERGY STAR.** System sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy for labeling the most energy efficient products on the market. The ratings apply to a wide range of products, from computers and office equipment to refrigerators and air-conditioners.

©**ENERGY GUIDE.** Label from the Federal Trade Commission that lists the expected energy consumption of an appliance, heating system, or cooling system and compares consumption with other products in that category.

©**ENERGY-RECOVERY VENTILATOR (ERV).** Type of heat-recovery ventilator (HRV) that captures water vapor as well as heat from the outgoing airstream in a balanced ventilation system. In winter months, this can reduce the drying that occurs when outdoor air is brought indoors and warmed.

©**ENGINEERED LUMBER.** Lumber made by gluing together veneers or strands of wood to create very strong framing members. Stronger and less prone to warping than standard framing lumber, it can be made from smaller-diameter trees, saving old-growth forests.

©**EPEAT.** Electronic Product Environmental Assessment Tool, EPEAT is a tool that allows consumers to evaluate and compare computer components by a number of environmental performance criteria and make a decision on which components to purchase based upon those criteria. To receive the Bronze EPEAT seal, a component must conform to 23 required criteria. To receive the Silver EPEAT seal, a component must conform to all 23 required criteria plus at least 50% of 28 optional criteria. To receive the Gold EPEAT seal, a component must conform to all 23 required criteria plus at least 75% of 28 optional criteria.

EIFS. Exterior insulation and finish system; see synthetic plaster on rigid insulation.

©**EXPANDED POLYSTYRENE (EPS).** Type of rigid foam insulation. Unlike extruded polystyrene (XPS), EPS does not contain ozone-depleting hydrochlorofluorocarbons (HCFCs).

EVAPORATIVE COOLER. An air conditioner which cools the air by the effect of water evaporation. Outdoor air is drawn through a moistened filter pad in a cabinet, and the cooled air is then circulated throughout the building. It is used in regions with low humidity.

FACADE. The exterior face of a building, usually applying to the face with the principal entrance, but often applied to any important face.

FACE BRICK. A clay brick made especially for exterior use with special consideration of color, texture and uniformity.

FASCIA. A horizontal band of material applied at the top of the wall or the end of the eaves as ornamentation and/or to cover the rafter ends.

FENESTRATION. The arrangement of windows in the walls of a building.

FIBER-CEMENT SIDING. Siding material made from wood fiber and Portland cement that is highly durable, moisture resistant, and fire proof. Developed in New Zealand, the material is becoming a common siding material in North America.

FIBERBOARD. A general term applied to sheets of material made from wood or other vegetable fibers, having some insulating qualities and usually used as roof or wall sheathing.

FINISH HARDWARE. All of the exposed hardware in a structure, such as door knobs, door hinges, locks and clothes hooks, etc.

FIRE DOORS AND WALLS. Doors and walls constructed of fire-resistive materials designed to prevent the spread of fires. A true fire wall will extend from the foundation or concrete floor to above the roof, completely separating parts of the building.

FLASHING. Strips of metal sheet or other materials, used to weatherproof construction joints.

FLEXIBLE CONDUIT. A circular spiral-wound raceway through which wires and cables may be pulled after the conduit is in place.

FLOOR AREA. An area on any floor, enclosed by exterior walls and/or partitions. Measurement for total floor area should include the thickness of the exterior walls.

FOAMED CONCRETE. Concrete in which bubbles of air are entrained, either by chemical or mechanical means, producing a concrete of low unit weight used as a subfloor covering.

©**FOOT CANDLE.** Measure of the amount of illumination falling on a surface. A footcandle is equal to one lumen per square foot.

FOOTING. The projecting base of a foundation, which transmits the building load to the ground.

FORCED-AIR HEATING. A warm air heating system in which circulation of air is effected by a motor-driven fan. Such a system includes air-cleaning devices and the ductwork. Costs include simple single-zoned and multi-zoned ducted systems.

©**FOREST STEWARDSHIP COUNCIL (FSC).** Nonprofit organization that promotes forestry practices that are sustainable from environmental, economic and social standpoints. FSC certification on a wood product is an indicator that the wood came from a well-managed forest and is eligible for LEED certification points.

FORMED CONCRETE WALLS. Generally constructed of poured-in-place concrete. The reinforcing is usually a bar set in a grid pattern within the form for the concrete wall. Forms used for the wall are usually some type of a metal or wood panel. Thickness of these walls varies depending on the structural requirements of the building.

FORMICA. A trade name for a hard laminated plastic surfacing, often used as a generic name for all such finishes.

GLOSSARY

FOUNDATION. The part of the structure on which the superstructure rests. It includes all construction which transmits the loads of the superstructure to the earth.

FRENCH DOORS OR WINDOWS. A pair of hinged glazed doors, functioning as both doors and windows.

FRESCO. Watercolor painting on damp plaster.

FURRING. Strips of wood or metal fastened to structural members or surfaces to provide a place on which to nail or fasten another surface, or to separate the finish materials from the structure.

GABLE. The triangular upper portion of an exterior wall extending from the ceiling line to the underside of a gable roof.

GABLE ROOF. A roof forming an inverted V.

GALBESTOS. A trade name for protected metal building panels consisting of textured waterproof outer coatings of a special hot-melt layered application of resin or asphalt giving the appearance of a stucco-like granular finish.

GAUGE. A measurement of thickness in metal sheet or wire. The smaller the gauge, the heavier the material.

Ⓖ **GEOTHERMAL.** "Geothermal" literally means "earth heat." It is often used to describe two types of alternative energy sources. "True" geothermal energy is less commonly used. It draws on energy generated in the earth's core, about 4,000 miles below the surface, via steam and hot water produced inside the earth to heat buildings or generate electricity. More common are geothermal heating and cooling systems that capitalize on the relatively constant temperature of the ground to transfer heat. These systems do not use the geothermal energy generated deep within the earth; instead, they use a heat-transfer liquid to move heat from a few feet below ground into a house during cold months and from the house to the ground during hot months.

GIRDER. A horizontal structural member which supports loads from smaller beams and joists and transmits them to columns or foundations.

GIRT. A horizontal framing member to aid in providing rigidity to columns and act as support for siding or sheathing.

GLASS BLOCK. A hollow structural glass block laid as masonry for translucent effect in wall construction.

GLASS FIBER REINFORCED CONCRETE. A lightweight precast glass-fiber-reinforced concrete (GFRC) and glass panel wall system which is attached to a supporting frame. GFRC is a Portland cement-based composite reinforced with randomly dispersed glass fibers to form a variety of shaped and textured panels, many of which are integrated with a steel stud support system.

GLASS PANEL WALL. An all-glass-paneled curtain wall attached to a structural frame typically found in modern residences.

GLAZED ATRIUM. A structural, frameless area where the glass walls are either self supporting, or supported from behind by glass fin mullions or thin wall trusses.

GLAZED FACING TILE. A hollow clay tile having one or two faces finished with a glazed surface.

Ⓖ **GLOBAL WARMING POTENTIAL.** Measure of how a given mass of Greenhouse gas is estimated to contribute to global warming compared against carbon dioxide, which is given a value of 1.0.

GLULAM. A trade name often used to describe all glued, laminated wood structural members.

GRADE BEAM. A beam placed at or near ground level performing some of the functions of a foundation, and may be resting on piers or pilings.

Ⓖ **GRAVITY-FLUSH TOILET.** Toilet whose flush is powered solely by the force of falling water. See also pressure-assist toilet.

GRAVITY HEATING. A warm air system usually located in a basement, which operates on the principle of warm air rising through ducts to the upper levels. Since it does not contain a fan, as does the conventional forced-air furnace, a large burner surface as well as larger ducts are used.

Ⓖ **GREEN BUILDING.** Design and construction of buildings that minimizes impact on the environment while helping keep occupants healthy.

Ⓖ **GREEN BUILDING COUNCIL INSTITUTE(GBCI).** Established in 2008,providing third party project certification and professional credentials recognizing excellence in green building performance and practice.

Ⓖ **GREEN ELECTRICITY.** Electricity generated from renewable energy sources, such as photovoltaics (solar power), wind power, biomass, and small-scale hydropower. Large, conventional hydropower sources usually are not included in definitions of Green electricity.

Ⓖ **GREENGUARD.** Product certification program for low emitting interior building materials, furnishings, and finish systems. All GREENGUARD Certified Products have been tested for their chemical emissions performance.

Ⓖ **GREENHOUSE GAS.** A gas in the atmosphere that traps some of the sun's heat, preventing it from escaping into space. Greenhouse gases are vital for making the Earth habitable, but increasing Greenhouse gases contribute to climate change. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

Ⓖ **GREY WATER.** (complimenting waste water systems) system which collects all domestic wastewater except toilets and garbage disposals.

Ⓖ **GRID-CONNECTED POWER SYSTEM.** Electricity generation system, usually relying on photovoltaics or wind power, that is hooked up to the utility company's electric grid through a net-metering arrangement so that electricity can be obtained when the locally generated power is not sufficient.

Ⓖ **GROUND-SOURCE HEAT PUMP.** Heat pump that relies on the relatively constant temperatures underground as the heat source and heat sink. The energy performance of ground-source heat pumps is usually better than that of air-source heat pumps.

GROUT. A thin concrete mixture used to fill various voids in masonry work or in other work which requires a very fluid mixture.

GUNITE. Pneumatically placed concrete, sometimes refers to pneumatically placed plaster. Also called shotcrete.

GUTTER. A horizontal or slightly sloping, open collector and drain, i.e., roof gutters, street gutters.

GYPSUM. Usually used generically to designate all products made of plaster of Paris, such as gypsum board, gypsum lath, gypsum tile, etc.

GYPSUM BLOCK. A plaster of Paris building block, not suitable for load-bearing walls because of its friable nature.

HALF-TIMBER CONSTRUCTION. Heavy timber construction of vertical, diagonal and horizontal exposed members, with the open spaces filled with brick and plaster. This is often simulated by nailing boards to a wood frame and stuccoing the spaces between them.

HANGER. A wire, strap or rod attached to an overhead structure to support conduit, pipe, suspended ceilings, etc. Also a U-shaped stirrup to support the end of a joist.

HARDBOARD. A highly compressed wood fiberboard with many uses as exterior siding, interior wall covering and formboard. Exterior panels may be a lap or sheet siding.

HARDENER AND SEALER. Treatments applied to a concrete slab floor structure. Hardeners generally fall into two categories: 1) integral, when the chemical treatment is mixed with the cement and becomes actually part of the topping mix and, 2) surface, when it is applied as the floors are being finished and have become hard enough for traffic. A sealer is also a chemical mixture which is composed of a pigment and a reducer. It is designed to minimize stains, seal in moisture and assist in curing the topping.

HEADER. In brick masonry construction, a course of brick in which the masonry units are laid perpendicular to the face of the wall to tie two wythes of brick together. In carpentry, a beam carrying a load over an opening, a lintel.

Ⓖ**HEAT ISLAND EFFECT.** Absorption of heat by hardscapes such as dark, none reflective pavement and buildings, and its radiation to surrounding areas.

HEATING AND COOLING. A combined heating and cooling system which is broken into three general categories of descending cost ranges as described below.

Hot and chilled water: A zoned heating and cooling system that uses hot or chilled water. The water is generated from a central location and piped to various sections of a building. Each section of the building has fin coils or convectors with fans. These are used to produce warm or cooled air which is then circulated throughout that portion of the building. This system is normally found in Class A and B high-rise buildings where fire barriers must be penetrated from floor to floor.

Warm and cool air: Similar to hot and chilled water except that the warm and cooled air is generated at the main plant and distributed to numerous zoned areas throughout the building by a long, complex duct system.

Package heating and cooling: Basically the same as central air (warm and cool air) except for the capacity and amount of ductwork involved. Typically, a package system contains one short duct and thermostat per unit, and it is not uncommon to find a number of individual units servicing one building. A split system is a type of package which has gas-fired, forced-air heating with either gas or electric refrigerated cooling. These are complete, individual, roof-mounted units or ground units each having its own individual compressor and furnace.

HEAT PUMP. A reverse-cycle refrigeration unit which can be used for heating or cooling.

Ⓖ**HIGH-EFFCIENCY TOILET (HET).** Toilet that provides at least 20% water savings over the federal standard of 1.6 gallons per flush and still meets the most rigorous standards for flush performance.

Ⓖ**HIGH-PERFORMANCE BUILDING.** Another term for Green building.

HIGH-RISE BUILDING. A building which is considerably higher than either plan dimension. Generally over five stories or 75 feet in height. For differentiation in our pricing system, high-rise apartments are three stories and above, while low-rise garden apartments of light residential-type construction are referred to as multiple residences up to three stories.

HIP. The inclined ridge formed by the intersection of two sloping roof surfaces whose eave lines are not parallel.

HIPPED ROOF. A pitched roof having sloping ends rather than gable ends.

HOLLOW CLAY BLOCK. A solid masonry wall typically built with one row of hollow clay textured block and mortar. Reinforcing is laid horizontally with various courses and vertically in the hollow core of the clay block.

HOME PERFORMANCE AUDIT. An energy audit that also includes inspections and testing assessing moisture flow, combustion safety, thermal comfort, indoor air quality, and durability.

HOPPER. An elevated bin whose bottom is in the shape of a V or inverted cone which, due to its sloping sides, will empty its stored material when a gate at the bottom is opened.

HORSEPOWER. A measure of work output equivalent, for practical purposes, to 750 watts of electricity or 33,500 B.T.U.

HOT WATER HEATING. The circulation of hot water from a boiler through a system of pipes and radiators or convectors, by either gravity or a circulating pump, allowing the heat to radiate into the room. For hot water radiant, see Radiant Heat.

HVAC. An abbreviation for heating, ventilating, and air conditioning.

Ⓖ**IMPERVIOUSNESS.** Resistance of a material to penetration by a liquid. Impervious surfaces such as paving prevent rainwater from going into the ground, thereby increasing runoff, reducing groundwater recharge and degrading surface water quality.**Home owner as well as commercial building owners would want to minimize impervious areas **

Ⓖ**INDOOR AIR QUALITY (IAQ).** Healthfulness of an interior environment. IAQ is affected by such factors as moisture and mold, emissions of volatile organic compounds from paints and finishes, formaldehyde emissions from cabinets, and ventilation effectiveness.

Ⓖ**INFILL SITE.** A site that is largely located within an existing community. For the purposes of LEED for Homes credits, an infill site is defined as having at least 75 percent of its perimeter bordering land that has been previously developed.

Ⓖ**INSULATED CONCRETE FORM (ICF).** Hollow insulated forms, usually made from expanded polystyrene (EPS), used for building walls (foundation and above ground), that are stacked and stabilized and then filled with concrete, which provides the wall structure.

INSULATION. Any material used to obstruct the passage of sound, heat, vibration or electricity from one place to another.

Ⓖ**INTEGRAL COLLECTOR STORAGE.** Solar water heater in which potable water is heated in the same place it is stored.

Ⓖ**INTEGRATED DESIGN.** Building design in which different components of design, such as the building envelope, window placement and glazing, and mechanical systems, are considered together. High-performance buildings and renovations can be created cost effectively using integrated design, since higher costs in one place can often be paid for through savings elsewhere. For example, by improving the performance of the building envelope, the heating and cooling systems can be downsized or even eliminated.

INTERIOR WALL LINER. The additional cost for site-installed finished interior sheathing, wood, drywall or metal liner applied to single wall construction.

INTERSTITIAL SPACE. The walk-on platform or subfloor space between the finished structural ceiling and floor above for access to the overhead mechanical and electrical services for a building.

JALOUSIE. An adjustable glass louver. Also refers to doors or windows containing jalousies.

JAMB. The finished members of a door, window or similar opening.

JOIST. One of several parallel beams carrying a floor or ceiling, sometimes acting both as ceiling joist and rafter.

GLOSSARY

JOIST HANGER. A metal stirrup supporting the end of a joist and which is fastened to a supporting structural member.

KEENE'S CEMENT. A hard, water-resistant plaster.

K FACTOR. A measure of heat transmission, used to rate the insulating value of materials.

KIOSK. A small, free-standing structure used for the purpose of sales and display of merchandise, typically found in malls.

KIP. A unit of force equal to 1,000 pounds.

LALLY COLUMN. A concrete-filled steel pipe used as a column.

LAMELLA ROOF STRUCTURE. An arched roof-framing structure identified by the diamond-shaped arrangements of the pieces of plank or steel from which it is formed.

LAMINATED FLOOR. A floor deck made up by spiking 2 x 4's or planks together with the wide side vertical, a mill-type floor.

LATH. Any material used as a base for plaster including wood lath, gypsum lath, wire and metal lath.

LEACH LINE. In sewage disposal, a loose tile or perforated pipe line used to distribute sewage effluent through the soil.

Ⓖ**LEED FOR HOMES.** Rating system for Green homes developed by the U.S. Green Building Council. The acronym stands for Leadership in Energy and Environmental Design.

Ⓖ**LIFE CYCLE.** Entire life of a product or material, from raw material acquisition through disposal.

Ⓖ**LIFE-CYCLE ASSESSMENT (LCA).** Economic cost of a product or building over its expected life including both first cost (purchase cost) and operating costs.

Ⓖ**LIFE-CYCLE COST (LCC).** A building's security and protection services, e.g., the surveillance, communications and fire protection systems.

LIFE-SUPPORT SYSTEM. A building's security and protection services, e.g., the surveillance, communications and fire protection systems.

LIFT SLAB. A construction system in which the floor and roof slabs are cast one on top of the other at ground level and are then jacked into position and fastened to the columns.

LIGHT WELL. A vertical unroofed shaft within a building, designed to bring light and air to inside rooms.

Ⓖ**LIGHTNING POWER DENSITY.** an assessment used to install lightning power per unit area.

LINTEL. A horizontal framing member carrying a load over a wall opening, a header.

LIVE LOAD. The variable load imposed on a structure by people, furnishings, merchandise and equipment not inherent to the structure.

LOCAL STONE WALL. A solid cut-stone masonry block wall of local sandstone or brownstone. The thickness of the wall varies depending on the thickness of the block used.

LOOSE FILL INSULATION. This type of insulation is made from a variety of materials in the form of loose, fluffy pieces of fiber such as cellulose or rockwood or inorganic granular pellets of plastic or expanded mica.

LOUVER. Slats or fins over an opening, pitched so as to keep out rain, snow or sun, but allowing the movement of air. A finned sunshade on a building. A diffusion grill on a fluorescent light fixture.

Ⓖ**LOW-EMISSIVITY (LOW-E) COATING.** Very thin metallic coating on glass or plastic window glazing that reduces heat loss through the window. The coating emits less radiant energy (heat radiation), which makes it, in effect, reflective to that heat. The coating boosts a window's R-value and reduces its U-factor.

MAGNESITE. Flooring material made of calcined magnesium carbonate with asbestos, powdered wood and silica to which magnesium chloride is added to form a seamless floor covering.

MALL. A wide public walkway between rows of shops or store buildings.

MANLIFT. A small elevator designed to lift one man. Often a continuous belt with attached platforms.

MARQUEE. A roof-like structure over the entrance to a building and projecting from it. It is usually cantilevered out from the building.

MASONRY WALLS. Walls that are constructed entirely of masonry units (or concrete) which are bonded together with mortar or some other type of cementitious material.

MASONRY AND GLASS PANEL. An exterior curtain wall system, consisting of thin set or modular brick or tile panels or veneer on steel studs and glass panels, which is hung on a frame.

MASTIC. A heavy-bodied adhesive material used to cement two surfaces together; also an elastic caulking compound.

MAT FOOTING. A heavy concrete slab designed to spread the vertical forces from walls or columns over a wide area, after removing earth equal to the weight of superstructure. Often used to designate large spread footings.

MEMBRANE. A thin sheet or film of waterproof material used to prevent the movement of moisture through a floor, wall or roof.

Ⓖ**MERV (MINIMUM EFFICIENCY REPORTING VALUE) .** Rating system used when installing efficient air filter systems, complementing Indoor Air Quality (IAQ). Rating represent the worst case performance, specifiers can used this system to assure performance in applications where a maximum particle count must be maintained over the filter's life cycle. (Rating 1-16, but MERV rating standards is from 8-16)

MERV values of 8 and higher indicate dust spot efficiencies of more than 30 percent

MERV values of 13 and higher indicate dust spot efficiencies of more than 80 percent

MERV values of 15 and higher indicate dust spot efficiencies of more than 95 percent

MERV values of 16 indicate dust spot efficiencies of 100 percent

MESH. Heavy steel wire welded together in a grid pattern used as a reinforcement for concrete work.

METAL-CLAD BUILDING. A building sheathed in metal.

METHYL DIISOCYANATE (MDI) BINDER. Non-formaldehyde binder used in some medium-density fiberboard and particleboard products, including straw-based particleboard.

MEZZANINE. A partial floor between two floors, occupying a lesser area than the full floors. For stepped seating structures, see Balcony.

Ⓖ**MICRO-IRRIGATION.** Irrigation system with small sprinklers and micro-jets or drippers designed to apply small volumes of water. The sprinklers and micro-jets are installed within a few centimeters of the ground, while drippers are laid on or below grade.

MILL CONSTRUCTION. A type of building with heavy timber frame, masonry bearing walls and laminated floors.

MILLWORK. Wooden portions of a building which have been prebuilt and finished in a shop and brought to the site for installation, such as cabinets, door jambs, mouldings, trim, etc.

MODIFIED BITUMEN. A roof covering composed of composite sheets of a copolymer modified bitumen that self-adheres with a protective coating or is loosely laid and ballasted.

MODULE. A standard measure, of any size, used in construction and design, adopted to allow representation in design and construction.

MONITOR. A narrow gable- or shed-roofed structure built onto the roof of a building, with the function of providing light and ventilation through its sides. The narrow structure on top of grain tanks, housing conveyors and equipment.

MONOLITHIC. One piece. Monolithic concrete is poured in a continuous process so there are no separations.

MORTAR. A pasty mixture of cement, lime, sand and water, used as a bonding agent for brick, stone or other masonry units.

MORTISE. A notch or hole cut in a piece of wood or other material designed to receive a projecting part, called the tenon, of another piece of material for the purpose of joining the two.

MOSAIC. A decoration in which small pieces of glass, stone or other material are laid in mortar or mastic to form a design.

MOTIF. The concept and treatment of the building decor.

MUD SILL. Timber or plank laid directly on the ground to form the building foundation.

MULLION. Vertical dividing member between a series of adjoining doors, windows or wall panels.

Ⓖ **NATIVE PLANTS.** Plants that have evolved within their own ecological habitats and are not invasive within their own native ranges. Native plants provide food and shelter to indigenous wildlife; stabilize shorelines and fields, etc., growing in balance with surrounding plant and animal species.

Ⓖ **NET METERING.** Arrangement through which a homeowner who produces electricity using photovoltaics or wind power can sell excess electricity back to the utility company, running the electricity meter backward. The utility effectively buys the power at the retail price, but the amount of electricity the utility company will "buy" in a given month is limited to the amount that the homeowner buys; any excess electricity is purchased at a much lower, wholesale price. See grid-connected power system.

Ⓖ **NET-ZERO ENERGY.** Producing as much energy on an annual basis as one consumes on site, usually with renewable energy sources, such as photovoltaics or small-scale wind turbines. Calculating net-zero energy can be difficult, particularly in grid-tied renewable energy systems, because of transmission losses in power lines and other considerations.

NEWEL. The post at the bottom of a stair or the end of a flight of stairs, to which the balustrade is anchored. The center pole of a spiral staircase.

Ⓖ **ON-DEMAND HOT WATER CIRCULATION.** System that quickly delivers hot water to a bathroom or kitchen when needed, (rather than wasting the water that sits in the hot-water pipes), which then circulates back to the water heater.

Ⓖ **ONGOING ENERGY PERFORMANCE.** The awareness that energy usage does not end with design and construction of an energy efficient building or neighborhood, meaning that occupancy sustains and improves over time.

ON-SITE WASTEWATER SYSTEM. Treatment and disposal of wastewater (sewage) from a house that is not connected to a municipal sewer system; most on-site systems include a septic tank and leach field.

OPEN OFFICE. An office area partitioning concept using shoulder-height free-standing manufactured partition units. They are interlocked to form cubicles called "work stations".

OPEN SYSTEM FOR CORRUGATED METAL. A roof system consisting of secondary members acting as a purlin support system. Light purlin supports will rest perpendicular to and directly on the pre-engineered steel or wood pole frame members to support a metal roof cover.

OPEN WEB JOISTS. Lightweight, prefabricated metal, parallel chord trusses.

Ⓖ **OPERATING COST.** Cost of operating a device or building; including energy, maintenance, and repairs.

PANEL. Any flat raised or recessed surface in a door, wall, ceiling, etc. Any flat sheet of material used as a construction component.

PANEL, PREFABRICATED. Any assemblage of construction components into relatively thin units which allows placement as a unit, i.e., wall panels, floor and roof panels, etc.

PANELIZED ROOF. A wood roof comprising pre-assembled plywood panels, generally one or a pair of 4' x 8' sheets, having attached longitudinal framing members, usually 2 x 4's, called "subpurlins", such that the panel is placed to span between purlins, attached to Glulam girders.

PARAMETER. Any characteristic of a statistical universe which is measurable. In construction square foot, cubic yard, board feet, etc., are cost parameters.

PARAPET WALL. The portion of a wall which projects above the roof line.

PARGING. A thin coating of mortar applied to masonry walls. Used on the exterior face of belowgrade walls as waterproofing or to smooth a rough masonry wall.

PARQUET FLOORING. Wood blocks or strips laid in decorative patterns.

PENTHOUSE. In construction, a building constructed on the roof of another building and smaller in area than the roof. Sometimes used loosely to designate the top floor of a building.

PERCOLATION. The movement of water into soil. In sewage disposal, speed of effluent absorption.

PERIMETER. The total length of all the exterior walls of a building.

Ⓖ **PERVIOUSNESS.** Percentage of the surface area of a paving material that is open and allows moisture to pass through the materials and soak into the ground below.

Ⓖ **PHOTOVOLTAICS (PV).** Generation of electricity directly from sunlight. A photovoltaic (PV) cell has no moving parts; electrons are energized by sunlight and result in current flow.

PIER. A platform structure supported by pilings, extending from land into water. Also a short column which supports a superstructure.

PILASTER. A column, usually formed of the same material and integral with but projecting from, a wall.

PILINGS. Columns extending below the ground to bear the loads of a structure when the surface soil cannot. They may extend down to bearing soil or support the load by skin friction. Sheet piling is used to form bulkheads or retaining walls.

PLAN. A horizontal cross-section of a structure at any level, showing room arrangement, location of doors, windows, etc. Subdivisions of construction plans are floor plans, foundation plans, etc. A site plan will show boundaries of the site and location of structures.

GLOSSARY

PLATE. In carpentry, horizontal framing members which provide the anchorage and bearing for floor, ceiling and roof framing. Any flat construction component designed to distribute loads over a wider area, such as bearing plate, gusset plate, etc.

PLATE GLASS. A high-quality glass which has been ground and polished on both sides to decrease distortion.

PLYWOOD. A construction material formed by cementing several sheets of wood face to face, the grain running at right angles in alternate layers.

POINTING. The process of removing deteriorated mortar from masonry and replacing it with new mortar; also the final patching, filling or finishing of mortar joints in new masonry work.

POLE BUILDINGS. Buildings whose principal frame and foundation are treated posts or poles, sunk into the ground with prefabricated trusses and metal siding.

PORCELAIN ENAMEL. A highly vitrified glazed surface heat-bonded to a metal surface.

PORCH. A wood or concrete platform, often with a roof, found at a building entrance.

Ⓖ **POST CONSUMER RECYCLED MATERIAL.** Material recovered from a waste product that has been in use by a consumer before being discarded.

Ⓖ **POST INDUSTRIAL (PRE-CONSUMER) RECYCLED MATERIAL.** Material recovered from the waste stream of an industrial process that has not been placed in use.

POST STRESSED CONCRETE. Concrete in which tension is placed on the stressing cables after the concrete has set. Concrete may be precast or poured in place.

PRECAST CONCRETE. Concrete structural components which are not formed and poured in place in the structure, but are cast separately either at a separate location or on site. Panels may be flat, textured or with extended ribs called tees.

PRE-ENGINEERED FRAME. A light, open, steel-skeleton frame consisting of open web, post-and-beam and/or rigid bent configurations.

PRE-ENGINEERED WALLS. These walls are prefabricated panels constructed with two sheets or "skins" (interior and exterior) bonded to a core material. The core material is some type of wood fiber, urethane, polystyrene, perlite, foam insulation or some other type of material which has a low density. The thickness and the panel size vary. The panels can be anchored to brackets or connected to the structural frame of a building.

PRE-FABRICATED WALL PANELS. These walls are preengineered, unitized single-wall sections for small pre-fabricated booths and buildings, such as service stations.

PRESTRESSED CONCRETE. Concrete in which tension is placed on the stressing cables before the concrete has set. The concrete then bonds to the cables.

Ⓖ **PRESSURE-ASSIST TOILET.** Toilet that uses air pressure, generated as the toilet tank refills, to produce a more forceful flush; some high-efficiency toilets (HETs) rely on pressure-assist technology.

Ⓖ **PRESSURE-TREATED WOOD.** Wood that has been chemically treated to extend its life, especially when outdoors or in ground contact.

PRIME COAT. The first coat of paint, an undercoat, to prepare the surface for finish coats.

PUMICE BLOCK. Lightweight concrete block made with crushed pumice aggregate. Similar to cinder block and called by both names.

PURLIN. A horizontal structural member supporting the roof deck and resting on the trusses, girders, beams or rafters.

QUANTITY SURVEY. A method of cost estimation which considers a detailed count of all materials going into a structure, together with the cost of labor to install each unit of material.

QUARRY TILE. A hard-burned, unglazed clay or shale-type ceramic tile generally used as floor pavers.

QUONSET BUILDINGS. A prefabricated metal building having a semicircular (culvert) roof that curves to the ground to form the sides.

RADIANT HEATING. A system in which a space is heated by the use of concealed hot water pipe coils or electric resistance wires, normally placed in the floor or ceiling, allowing the heat to radiate into the room.

RADIANT GAS HEATING. Gas-fired suspended radiant unit heaters which may be connected to a continuous pipe loop system with vacuum pumps and reflectors.

RAFTERS. Structural members supporting the roof deck and covering.

Ⓖ **RAIN GARDEN.** Storm water management which consist of excavated depressions and vegetation that collects and filters runoff and reduce peak discharge rates.** Depending on the size of the project, harvesting rain water can be tied into the plumbing system to provide water to flush toilets and support landscaping**

RATE OF RISE DETECTOR. A fire detector that indicates the presence of fire based on a sudden temperature increase, generally exceeding 15 degrees.

Ⓖ **RECYCLING.** Collection, reprocessing, marketing and use of materials that were diverted or recovered from the solid waste stream.

Ⓖ **REFLECTIVE ROOFING.** Roofing material that reflects most of the sunlight striking it to help reduce cooling loads. The Energy Star Cool Roof program certifies roofing materials that meet specified standards for reflectivity.

REFRACTORY. A material used to withstand high temperatures, such as refractory brick and concrete.

Ⓖ **REGIONAL MATERIALS.** Materials originated within 500 miles of the specified sited area.

Ⓖ **RENEWABLE ENERGY.** Thermal or electrical energy produced using solar, wind, hydropower, or biomass energy sources.

Ⓖ **RENEWABLE MATERIALS.** Amount of building materials that agriculturally grows rapidly within 10 years and can be harvest in an environmentally friendly fashion. (Example: Bamboo)

RIDGE. The peak of a double-pitched roof.

RIGID CONDUIT. A rigid pipe used as a raceway and protective cover for electrical wiring.

REINFORCED GROUTED MASONRY. Reinforced masonry which is laid up in spaced wythes with horizontal reinforcing and with the cavity filled with concrete grouting and vertical reinforcing bars.

REINFORCING. Strengthening. Steel rods or mesh are embedded in concrete to increase the strength in tension. Frequently used reinforcements for plaster are asbestos, wood and glass fibers.

RESILIENT FLOOR COVERING. Floor covering products characterized by having dense, nonabsorbent surfaces, available in sheet or tile form. Among the various types are vinyl composition (asbestos) tile, asphalt tile, vinyl tile and linoleum.

RIGID FRAME. A framing system in which columns and roof girders are joined rigidly at the knee.

RIGID INSULATION. Insulation made of foamed plastic or glass, cork or pulp (wood, cane, etc.) and assembled into lightweight boards.

RISER. The vertical face between two stair treads. Pipe for water, steam, or vent going vertically at least one story and servicing several fixtures.

ROUGH-IN. Drain and water line hookups for laundry facilities or for future plumbing fixture installation.

ROMEX. A wiring trade name for nonmetallic sheathed electrical cable.

RUBBER FABRIC TILE. A fibrous rubber, velvet-like floor covering made from recycled tires with a vulcanized backing, normally found in entryways.

RUBBLE. A local field stone. Masonry constructed from rough, unshaped stone without coursing or regularity laid as a veneer wall facing or as a solid wall.

RUSTIC LOG WALL. A solid wall using logs of various diameters. The logs are usually tongue and groove, spiked or doweled using weather sealant or caulking. Normally, the logs are pretreated with preservative.

R VALUE. The standard measurement of resistance to heat loss related to a given thickness of insulation required by climatic demands.

SANDWICH PANEL. Any wall or roof panel constructed in three layers. Examples include: two sheets of plywood with insulation between, metal one side, gypsum board on the other and insulation between, metal on both sides with insulation between, etc.

SAWTOOTH ROOF. A roof with serrated cross-section whose shorter, steep or vertical sides have fenestration for light and ventilation.

SCR BRICK. A patent brick with standard dimensions of 5-1/2" x 2-5/16" x 11-1/2". Holes through the brick provide a mechanical mortar bond designed for single-tier (course) walls.

SCRATCH COAT. The first coat of plaster, which is scratched or scored to provide a bond for second coat.

SEALANT. Any pliable or mastic material used to seal cracks, joints or other small openings to make them weathertight. Also liquids and tars used to seal the pores in concrete work.

SEAMLESS PLASTIC. A urethane or neoprene coating which is spray (thincoat) applied or troweled, generally with colored chips added, as a finished floor covering.

SEPTIC TANK. A watertight settling tank in which solid sewage is decomposed by natural bacterial action.

SHAKE. A shingle split (not sawed) from a bolt of wood and used for roofing and siding, or it can refer to a manufactured imitation.

SHEAR WALL. A bracing wall, either interior or exterior, designed to resist lateral forces, especially important in seismic and high wind-load design.

SHORING. Temporary structural columns, beams, and bracing, used to support loads during construction.

SHUTTER. A movable cover or screen to cover an opening.

SIAMESE CONNECTION. A Y-type plumbing inlet for fire hoses; usually found outside for a fire department connection.

SILL. The lowest horizontal framing member of a structure, resting on the ground or on a foundation. Also, the lowest horizontal member of a window or door casing.

SINGLE-WALL CONSTRUCTION. Each of the wall types listed under the single-wall construction category refers to a wall enclosure which is typically applied over an open skeleton prefabricated metal or wood pole-framed building. That frame characteristically has the same configuration for each cover. The costs include the costs of the horizontal wall supporting girts and cover but not the framing.

SKYLIGHT. An opening in a roof, covered with plastic or glass, for light and ventilation.

SLEEPERS. A nonstructural timber, board, or metal strip laid on the ground or a basic floor to provide a component to which the finish floor may be fastened. It also may provide spacing for utility runs.

SLIP FORM CONSTRUCTION. In concrete construction, forms that move continuously are jacked upward or forward supported by the concrete which was poured previously, shaping the new pour as it moves.

SLOPE. The ratio of rise to run to express the angle of a roof pitch.

SLUMPED BLOCK. Concrete blocks having a rough surface resembling adobe brick.

Ⓖ **SMART BUILDING.** Inclusion of integrated building services management technologies. A Smart building integrates hi-tech controls with building services so as to anticipate the needs of a building's occupants, providing improved comfort and greater energy efficiency. A Green building may incorporate smart building technologies, but not necessarily. However, most Smart buildings are probably Green as well.

SMOKE DETECTOR. A fire detector that indicates the presence of smoke based on a light-obscuring principle using photoelectric cells.

SOFFIT. The underside or lower horizontal face of any building component such as an overhang, stairs, arch, marquee, etc.

Ⓖ **SOLAR COLLECTOR.** Device for capturing solar energy and transferring heat to water or air that circulates through it.

Ⓖ **SOLAR REFLECTANCE INDEX (SRI).** Measurements on how well a material rejects heat from the sun, the index ranges from 0-100, which 0 is least reflectance and 100 being most reflectance, preventing the "Heat Island Effect" (complementing the Reflective roofing).

SPACE HEAT. A complete individual suspended unit heater which uses a fan or blower system to move warm air. Typically found in large, open, shop areas.

SPACE FRAME. A three-dimensional roof structure. Architectural frames are decorative, usually used in atrium areas and may be chrome plated.

SPAN. The clear horizontal distance between two supports.

SPANDREL BEAM. The beam connecting two exterior columns and supporting the curtain wall.

SPECIFICATION. A written description of the materials, construction details, and quality of workmanship required to construct a building in accordance with a related set of plans.

SPRINKLER SYSTEMS. A fire-protective system of overhead pipes and outlet heads on a single main connection. There are two basic systems: a wet system, in which the pipes are always filled with water so that a head can be immediately discharged, and a dry system, in which the pipes are filled with air under pressure, with water flowing into the pipes with a drop in air pressure when the head is opened. The dry system can have a separate early alarm to counteract the time delay with closed heads, and this open head and independent detection is known as a preaction system. If a maximum of water is discharged from all the open heads, it is called a deluge system. The type of system, the spacing, the number and type of heads, and water pressure pipe sizing will depend on the hazard involved. There are three classifications: Extra Hazard (certain chemical/oil plants, paint shops, etc.); Ordinary Hazard (most industrial/warehouse facilities); and Light Hazard (almost all other occupancies).

STACKED BOND. Masonry units laid so that all joints are in line.

STACKED PLUMBING. In multistory buildings, placement of plumbing units one above the other.

GLOSSARY

STAGGERED STUDS. Wood framing in which the studs do not go completely through the wall. The lath or gypsum board wall finish on each side will be fastened to alternate studs. An insulation blanket may be woven between the studs to improve sound insulation.

STANDPIPE. An interior or exterior pipe to conduct water to upper floors for fighting fires. May be dry, with connection for pumper at street level, or wet, with water always at the upper floors. Also, a tall cylindrical water storage tank.

STAY-IN-PLACE FORMING. A wall constructed of poured-in-place concrete, where the forming material remains in place. The reinforcing is usually a bar set in a grid pattern within the form for the concrete wall. Forms used for the wall are usually some type of a rigid insulation board or metal panel and finish system. Thickness of these walls varies depending on the structural requirements of the building.

STEAM HEAT. A heating system in which steam is generated using a boiler and piped to radiators throughout the building by its own pressure. Steam without a boiler is a radiator system receiving steam from an external source such as a central steam plant or adjoining building.

STEEL FRAME CONSTRUCTION. A framing system in which the weight of the superstructure is carried to the foundations by steel beams and columns.

STORM DOOR. An extra outside or additional door for protection against inclement weather. Such a door also serves the purpose of lessening the chill of the interior of a building, making it easier to heat, and helps to avoid the effects of wind and rain at the entrance doorway.

STORM WINDOW. A window placed outside an ordinary window for additional protection against severe winter weather. Also called a storm sash.

STRESS. The internal distributed force that resists the change in shape and size of a body subjected to external forces.

STRESSED SKIN CONSTRUCTION. A design in which frame and skin, or sheathing, are joined so that the skin may aid in resisting strains.

STRESSKIN SANDWICH PANEL. The additional cost for a stresskin sandwich panel wall is the difference between the cost of a solid insulated panel and stud framing as part of a wall. This unfinished bearing panel is composed of two skins of board sheathing bonded to a rigid insulation core. The core thickness can vary.

STRETCHER COURSE. Any course of masonry in which the units are laid lengthwise.

STRUCTURAL. Describing an element designed to resist stress or wear as opposed to architectural or art elements which are designed for appearance only.

Ⓖ **STRUCTURAL INSULATED PANEL (SIP).** Building panel usually made of oriented-strand board (OSB) skins surrounding a core of expanded polystyrene (EPS) foam insulation. SIPs can be erected very quickly with a crane to create an energy-efficient, sturdy home.

STRUCTURAL POLYCARBONATE. A structural honeycombed plastic sandwich panel used for roofing and siding of greenhouses.

STUCCO. A coating for exterior walls in which cement is put on wet in layers and when dry becomes exceedingly hard and durable.

STUD (POST). A vertical framing member, either wood or steel, to which wall finishes are attached. Usually, only lumber of dimensions of 2" x 4" or less or its steel equivalent is considered as studs. Also, bolt-like components, either threaded or unthreaded, fixed to structural elements to which other elements may be fastened.

STRUT. A brace or other member which resists stresses in the direction of its own length.

SUBFLOOR. Any surface on which finish flooring is laid.

SUMP PUMP. A suction device, usually operated to remove water or waste which collects at the sump pit or tank.

SUPER FLAT SLAB. This component is used to adjust for the cost of additional concrete finishing used to create an extremely level and smooth surface on a concrete slab. This type of finish is generally used in industrial applications with low cost representing normal labor with special care, while the high cost range represents mechanical grinding and finishing.

Ⓖ **SUPER INSULATE.** To insulate extremely well. A house with very efficient windows and tight construction results in very low heating and cooling costs.

SUSPENDED CEILING. This is the grid (track, T-bar, etc.) suspension system that supports an acoustical panel or tile ceiling.

Ⓖ **SUSTAINABILITY.** Sustainable refers to products and techniques that are renewable or recyclable and therefore minimize the natural resources they use.

Ⓖ **SUSTAINABLE BUILDING.** Essentially the same as Green building. Sustainable design is a philosophy centered on ecological sustainability.

Ⓖ **SUSTAINABLE FORESTRY.** The practice of managing forest resources to meet the long-term forest product needs of humans while maintaining the biodiversity of forested landscapes. The primary goal is to restore, enhance and sustain a full range of forest values-economic, social and ecological.

Ⓖ **SUSTAINABLE FORESTRY INITIATIVE (SFI).** Organization that certifies wood is harvested from sustainable forests.

SYNTHETIC MASONRY VENEER. A synthetic thin masonry veneer composed of light plaster cement or fiberglass panels to give the appearance of real brick or stone, attached to stud framing.

SYNTHETIC PLASTER ON RIGID INSULATION. An exterior wall insulation and finish system (EIFS) consisting of rigid insulation board, reinforcing mesh and a synthetic plaster or stucco coating. Some common trade names are: Dryvit, Insul-Crete, R-wall, Powerwall and Sure-wall to name a few.

TENANT IMPROVEMENTS (TIs). Improvements to land or buildings to meet the needs of the tenants; may be paid for by the landlord or the tenant or be shared between them. Generally, TI's include those items or upgrades beyond the standard workletter, or common elements supplied by the landlord.

TENDONS. A term applied in construction to the bars or cables used in prestressing or poststressing concrete.

TERNE. Steel sheet coated with lead/tin alloy, used primarily for roofing.

TERRA COTTA. Hard-burned unglazed or glazed clay, usually molded into shapes for ornamentation of structural surfaces.

TERRAZZO. A flooring surface of marble chips in concrete. After the concrete has hardened, the floor is ground and polished to expose the marble chips. In epoxy terrazzo, the concrete filler material is replaced with plastic.

Ⓖ **THERMOSIPHON SOLAR WATER HEATER.** Solar water heater that operates passively (through natural convection), circulating water through a solar collector and into an insulated storage tank situated above the collector. Pumps and controls are not required.

THRU-WALL HEAT PUMP. A small, self-contained heat pump that is designed to be installed in a window opening or wall. Typically there is no ductwork with this unit. Unlike the larger heat pump, it only services one room.

TEXTURED FACE BLOCK. Solid masonry wall typically built with one or two rows of exposed, textured split, fluted or ground-face hollow-core concrete block and mortar.

TEXTURED PLYWOOD. Plywood siding usually applied in sheets. Exposed surface has been treated or vinyl coated to give the plywood a solid woodboard, stucco or lap siding effect. Panels are found in various grades, thicknesses and species of wood, with redwood and cedar being the most expensive and fir Texture 1-11 the cheapest. Generally, thicker pieces are more expensive. Normal application requires some type of a blocking material to be used for nailing purposes.

TIE. Any structural member that acts in tension to hold separated structural components together.

TILT-UP CONSTRUCTION. A method of construction where concrete wall sections are cast horizontally and tilted or lifted into position. Normally cast on-site using the floor slab as the casting slab. Multiple buildings can offer economies of scales, see Section 99, Page 1.

TONGUE AND GROOVE JOINT. Abbreviated T & G. Any joint made by one member with a projecting tongue fitting into another member with a matching groove.

TORQUE. A force tending to produce rotation.

TRANSITE. A trade name commonly used as a general name for a very dense material made from Portland cement and asbestos fibers and used for roofing and siding. It is also used for pipe and electrical conduit.

TRUSS. A rigid, open-web structural member designed and engineered to carry roof or floor loads.

Ⓖ **TUBULAR SKYLIGHT.** Round skylight that transmits sunlight down through a tube with internally reflective walls, even through an attic space to deliver daylight through a ceiling light diffuser. Most tubular skylights are 12 to 16 inches in diameter and deliver daytime lighting comparable to several 100-watt incandescent light bulbs.

U FACTOR. The heat transmission factor of a wall, roof or floor assembly measured in B.T.U. per square foot per degree Fahrenheit.

UNIFORM BUILDING CODE. A model code published by the International Conference of Building Officials. It is the largest and probably most influential of the building code groups.

Ⓖ **U.S. GREEN BUILDING COUNCIL (USGBC).** Organization devoted to promoting and certifying Green buildings. USGBC created the LEED rating system.

VAPOR BARRIER. Material used to retard the passage of moisture through floors, roofs or exterior walls and thus prevent condensation within them; also called moisture barrier. See waterproofing below. The segregated floor component considers a sand or gravel fill base also.

VENEER. A layer of material applied to another surface for ornamental or protective purposes. Masonry veneer is brick or stone attached to wood or metal studs.

Ⓖ **VENTILATION RATE.** The amount of air circulated through space, measured in air changes per hour, to calculate this you must find the quantity of infiltration air in cubic feet per minute divided by the volume of the room).

VIERENDEEL TRUSS. An open truss composed of upper and lower chords joined by vertical struts. Since there is no diagonal bracing, horizontal forces are resisted by using hollow tubing for all components which are welded together into a rigid structure.

VITROLITE. An opaque structural sheet of glass generally found as a storefront feature.

Ⓖ **VOLATILE ORGANIC COMPOUND (VOC).** Organic compound that evaporates readily into the atmosphere. As defined by the U.S. Environmental Protection Agency, VOCs are organic compounds that volatize and then contribute to photochemical smog production.

WAFFLE SLAB. A two-way concrete slab formed with metal or plastic pans making a waffle pattern.

WAINSCOT. The lower part of an interior wall, which is finished with a different material than the upper part, for protection or appearance.

Ⓖ **WASTE DIVERSION.** The amount of waste disposed other than through incineration or in landfills, expressed in tons. Examples can include reuse and recycling.

Ⓖ **WASTE MANAGEMENT PLAN.** Plan that addresses the collection and disposal of waste generated during construction or renovation, usually including the collection and storage of recyclable materials.

WATERPROOFING. Any material designed to stop the passage of moisture. Plastic sheets or treated papers and asphalt are used for membranes, while various chemical sealants and asphalt applications are used to seal pores and cracks.

Ⓖ **WATERSENSE.** Program developed and administered by the U.S. Environmental Protection Agency to promote and label water-efficient plumbing fixtures.

WEATHERSTRIPPING. Strips of felt, rubber, metal or other suitable material fixed along the edges of a door or window to keep out drafts and reduce heat loss.

WIRE GLASS. Glass which is reinforced with wire mesh.

WOOD AND GLASS PANEL. An exterior curtain wall system, consisting of high-cost wood siding and glass panels, which is hung on a frame.

WOOD STRESSKIN SANDWICH PANEL. The additional cost for a stresskin sandwich panel wall is the difference between the cost of a solid insulated panel and stud framing as part of a wall. This unfinished bearing panel is composed of two skins of board sheathing bonded to a rigid insulation core. The core thickness can vary.

WORKING DRAWING. A scale drawing showing construction details for use by the contractor or fabricator, showing details for the erection or manufacturing of a particular structural element.

Ⓖ **XERISCAPE.** Landscaping method that makes routine irrigation unnecessary by using drought-adaptable and low-water plants, as well as soil additive like compost and mulches to reduce evaporation.

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DEPRECIATION

DEFINITIONS

Depreciation is loss in value due to any cause. It is the difference between the market value of a structural improvement or piece of equipment and its reproduction or replacement cost as of the date of valuation. Depreciation is divided into three general categories, as discussed below.

1. **Physical** depreciation is loss in value due to physical deterioration.
2. **Functional** or technical obsolescence is loss in value due to lack of utility or desirability of part or all of the property, inherent to the improvement or equipment. Thus a new structure or piece of equipment may suffer obsolescence when built.
3. **External,** locational or economic obsolescence is loss in value due to causes outside the property and independent of it, and is not directly included in the tables.

Effective age of a property is its age as compared with other properties performing like functions. It is the actual age less the age which has been taken off by face-lifting, structural reconstruction, removal of functional inadequacies, modernization of equipment, etc. It is an age which reflects a true remaining life for the property, taking into account the typical life expectancy of buildings or equipment of its class and its usage. It is a matter of judgment, taking all factors, current and those anticipated in the immediate future, into consideration. Effective age on older structures may best be calculated by establishing a remaining life which, subtracted from a typical life expectancy, will result in an appropriate effective age with which to work. Effective age can fluctuate year by year or remain somewhat stable in the absence of any major renewals or excessive deterioration.

Extended life expectancy is the increased life expectancy due to seasoning and proven ability to exist. Just as a person will have a total normal life expectancy at birth which increases as he grows older, so it is with structures and equipment.

Remaining life is the normal remaining life expectation. It is the length of time the structure may be expected to continue to perform its function economically at the date of the appraisal. This does not imply a straight-line expiration, particularly for mortgage purposes, since normal recurring maintenance and renewal of replaceable items will continue to contribute toward an extended life expectancy. This extended life process is accomplished by use of effective age as the sliding scale and not by continually lengthening the typical life expectancy as the structure ages chronologically.

Percent good equals 100% less the percentage of cost represented by depreciation. It is the present value of the structure or equipment at the time of appraisal, divided by its replacement cost.

APPROACHES TO DEPRECIATION

The simplest and, in past years, a widely used accounting-type concept of depreciation, particularly with individual short-lived components, is the straight-line (age/life) approach. A life expectancy is estimated and a constant annual percentage (equal wear or serviceability each year) is taken for depreciation so that at the end of that life the depreciation equals 100% of the initial cost. This linear approach is simple and easy to use but does not represent reality in most cases since time is not the only factor affecting depreciation and it fails to recognize any value-in-use. The passage of time may not in itself create additional depreciation if the property or component is well maintained and functionally sound.
While age is a critical factor, the best approach to the physical depreciation estimate is a combination of age and condition. The observed condition of each component subject to wear is estimated relative to new condition. A major replaceable component, such as a HVAC system under heavy loading in a hot, humid climate, can wear out quite rapidly, shortening the life expectancy before replacement, while many other portions of a structure, such as excavations, foundations, and concrete exterior walls, wear out slowly if at all. Such long-lived portions often represent a major portion of the total reproduction cost and if still functional will contribute toward an extended life expectancy. Physical depreciation cannot be considered a straight-line deduction from reproduction cost, since necessary and normal maintenance can offset, retard and, in some cases, even eliminate deterioration.

Another approach to depreciation was called the mid-life theory. This takes into account that most buildings depreciate little during the first few years. When it becomes evident that the buildings are no longer new, even though they are adequately maintained, the maintenance expenses rise, rentals tend to decrease and the building depreciates faster. After a number of years, they reach the period called mid-life, at which time, if the buildings are structurally sound and properly maintained, the depreciation remains constant. The mid-life theory suffers from the fact that maintenance expenses on the average building continue to go up in order to maintain the same appearance and utility, and at any age, certain building features may suffer from obsolescence.

These concepts lead to a third theory, the extended life concept, which starts with the hypothesis that buildings age in much the same manner as people and that the older they get, the greater is their total life expectancy. This concept recognizes that a building is in the prime of life before mid-life and that the road is downhill after that, but that correction of deficiencies may lower the effective age and lengthen the remaining life. This recurring revitalization process periodically reverses a continuous progression down the effective age scale, reducing the indicated depreciation percentage as components are renewed throughout the life-span of the building. This nonlinear approach accounts for a greater present value or slower depreciation rate in the early years as compared to the later years when diminishing serviceability and higher maintenance can accelerate depreciation.

EXPLANATION OF DEPRECIATION TABLES

The general depreciation tables in this section were developed from actual case studies of sales and market value appraisals and formed the basis of the extended life theory which encompasses a remaining life and effective age approach. From confirmed sales prices the land value was deducted to obtain a building residual, and the replacement cost of the building was computed. The difference between the replacement cost new of the building and the residual sales price of the building was divided by the replacement cost new, to give the market depreciation in percentage. A similar procedure was followed with the market value appraisals, always excluding those observed cases having excessive obsolescence.

The data was then collated by type of construction and usage, plotted with similar typical total life expectancies, with curves computed for the groupings, for which sufficient data was available, for statistical reliability. From these curves, a matching family of empirical mathematical curves was found, from which the depreciation for any initial (when new) life expectancy could be computed under normal market conditions.

A check of equipment depreciation by similar procedures showed that portions of the family of curves, which was used for nonresidential properties, were suitable as an indicator of that depreciation.

Churches were found to fit in the depreciation category of residential structures, and those tables should therefore be used. Motels, hotels and larger apartments are included in the nonresidential tables, while small apartments or multiples are residential in nature. The division between residential and nonresidential depreciation appears to lie in the usage, whether operated solely for income or for amenities.

Thus, a hotel operated commercially would be expected to fit into the commercial family of curves, but if the same building were operated as a private club, its normal depreciation would be expected to follow the residential curve. The proper curve to use is therefore a matter of judgment on the part of the appraiser, considering the usage and the type of return normally expected, whether cash, equity or intangible amenities.

USE OF THE DEPRECIATION TABLES (See Example on page 22)

1. Note from your inspection the overall and/or individual condition, severity of use, utility and remaining life of all building or equipment components.
2. Determine the true age of the structure or equipment.
3. Compare with like properties and study the effect of, or the lack or need of, typical maintenance or any modernization or major repair to determine the effective age.
4. Check the tables and discussion on Pages 10 through 21 for the recommended initial typical (normal) useful life of the occupancy, component or piece of equipment and for any further modification before establishing an appropriate life.
5. Check the properties listed in each depreciation table to see which to use. (Page 24, Non-residential; Page 25, Residential; Page 26, Fixtures and Equipment.)
6. Enter the proper table choosing a typical life expectancy and effective age and read off the normal depreciation, or use the remaining life expectancy as an aid as described below.
7. Note any excessive obsolescence that may require special consideration separate from the normal depreciation developed from the tables. (Review Pages 2 and 3.)

REMAINING LIFE TABLES

The remaining life tables are based on mortality tables derived from studies of building and equipment, discarding all cases of mortality due to excessive obsolescence. Their primary mission is to provide an easy way for the appraiser to determine the normal remaining life expectancy of buildings for use in the capitalization process, using the effective age and the typical life expectancy.

Many times, the remaining life expectancy of a building or piece of equipment can be established more readily than the effective age. The Remaining Life Table on the right side of each depreciation page may then be entered with the remaining life in the proper typical life column and the effective age read off at the left, or the appraiser may move straight across to the left side of the page and read the depreciation directly.

OVERVIEW

Depreciation is an opinion of a structure's loss in value in relation to its cost-new estimate. If you properly consider all the pertinent factors, you should be able to reliably estimate depreciation. The overall depreciation tables in this section consider the progression of normal deterioration and obsolescence based on age and condition for the class and usage of the improvement. Any abnormal or excessive functional and any or all external obsolescence are considered separately, and are not included directly in the tables.

Physical deterioration is the wearing out of the improvement through the combination of wear and tear of use, the effects of the aging process and physical decay, action of the elements, structural defects, etc. It is typically divided into two types, curable and incurable, which may be individually estimated by the component breakdown method using some type of age/life approach. Damage caused by accidents, vandalism, etc., may be further categorized as deferred maintenance, generally requiring immediate attention, whether curable or incurable, and treated separately based on the items' cost to repair.

Curable physical deterioration is generally associated with individual short-lived items such as paint, floor and roof covers, hot-water heaters, etc., requiring periodic replacement or renewal, or modification continuously over the normal life span of the improvement.

Incurable physical deterioration is generally associated with the residual group of long-lived items such as floor and roof structures, mechanical supply systems and foundations. Such basic structural items are not normally replaced in a typical maintenance program and are usually incurable except through major reconstruction. The distinction here is whether or not such corrections would be justified, economically and/or practically, in view of the cost, time and value gain involved. Exceptions might be historical or landmark buildings or a component that threatens the structural integrity of the structure itself.

In estimating the loss of value attributable to physical deterioration, you are attempting to set up the cost of restoring the building to new condition. A new improvement, suitable for its site, requires little study to establish a reasonable estimate of accrued depreciation. However, after weathering for a few years, a structure showing signs of age, deterioration and abuse requires a more detailed analysis to determine the extent of value loss. This seasoning can be prolonged with sound, well-maintained components, or rather rapid, as in the case of a building shoddily or improperly constructed of inexpensive, short-lived components that have been inadequately or poorly maintained. A detailed building examination and appraisal itemizes the component parts of a structure or plant, and where total depreciation may be difficult to judge, the depreciation of individual components may be more logically estimated. This detailed component breakdown can then form the foundation from which the overall depreciation tables may be reasonably used once properly benchmarked.

PHYSICAL INDICATORS

When considering the extent of physical deterioration, pay particular attention to the following points as you complete the field inspection of your subject property, as some types of deterioration may be very apparent, while others may require a more thorough examination.

1. Floors and Floor Coverings – Cracks, chips, missing tiles, unevenness, sagging, worn finish, rough or scarred finishes, creaking or springiness underfoot, cracks in slabs at column connections and separation at expansion joints in slabs, damaged insulation or drainage.
2. Interior Construction – Cracks in plaster or drywall, open joints in millwork, sticking doors, peeling paper or paint, scars, missing or loose hardware, smoke stains, mildew stains or the effect of prolonged dampness, mold, rodent, insect or termite infestation, damage or decay.
3. Mechanical Equipment – Defective wiring, broken or tarnished light fixtures, loose switches, worn, broken or stained plumbing fixtures, leaking faucets or piping connections, odors indicative of faulty sewer piping, septic systems, drip pans, escaping steam, noisy radiators, rusting pipes, battered or rusted ductwork, furnaces or boilers in poor repair, mold, mildew from defective filters, air cleaners and venting, excessive soot or dust stains.
4. Roof – Evidence of leakage, oxidized roof metal, shingles or tiles missing or split, punctures, tears, shrinkage, splitting, blistering or embrittlement of coating, missing flashing, stained interior ceilings, sagging or decaying roof structure, cracking laminated trusses, tie rods to strengthen bottom chords of timber trusses, damaged truss bracing, plugged roof drains, evidence of standing water, vibration from mechanical equipment, damaged insulation.
5. Exterior Walls – Peeling paint, water or mildew stains, cracked or loose mortar joints, oxidized sheet metal, frame lines out-of-plumb, loose or decaying wood siding, loose ornamentation, exposed reinforcing bar at joints or in footings, unprotected or deteriorating steel framing, brick that needs painting or pointing, inoperable windows or clerestory sashes, broken or rusted screens, sticking doors, inoperable hardware.

Some of the external factors affecting the extent and rate of physical deterioration that you need to be aware of are listed below:

1. Temperature Extremes – Extreme heat tends to dry out and warp lumber, damage roofing, cause cracks in stucco or plaster due to expansion and contraction, and oxidize paint coatings. Extreme cold with freezing down to frost line, expansion and contraction, etc., can cause similar problems. Mechanical equipment can have shortened life spans due to excessive loads placed on them from constant or heavy use because of extreme temperatures.
2. Humidity Extremes – High humidity tends to promote dry rot and insect infestation.
3. Weather Extremes – Heavy snow, floods, hurricanes and tornadoes obviously cause damage. Torrential rains can undermine foundations and create ponding and leaks in roof structures, which in turn may damage interior finishes. Rainstorms accompanied by high winds can damage walls, doors, flooring and mechanical building equipment.
4. Earthquakes – Earthquakes may cause not only damage which is apparent, but structural damage to substructures and bearing soils, which may not become evident for years after the disturbance.
5. Airborne Corrosives – Structures located near oceans are subjected to corrosive salt air, which attacks nearly every part of the structure. Buildings located in areas where large concentrations of corrosive industrial waste gases are vented into the atmosphere typically have relatively short physical lives also.

These external extremes due to the elements are quite variable depending on your local climatic cycles. A very mild winter or summer may have no effect, while a very harsh storm or season can cause excessive wearing in a relatively short period of time.

Functional obsolescence is the perceived market reaction to under- or overimprovements in the utility or desirability of part or all of the improvement. It is divided into two types, curable or incurable. These are further subdivided into inadequacies or deficiencies and superadequacies or excesses. Again, the test as to when an item is curable or incurable is whether the capitalized gain or value, added by correcting the obsolescence by replacement, remodeling, addition or removal, is equal to or greater than the cost to cure as indicated in the market.

Inadequacies are building characteristics that are deficient in that they do not meet current market expectations. Inadequate fixtures or ceiling insulation may be curable, while a poor floor plan or tandem rooms may be incurable.

Superadequacies are those unwanted items which do not add value at least equal to their cost, notably special- or singular-purpose features for a particular user. Many superadequacies are incurable except where excess operating costs might make it economical to remove or replace the item.

There are areas where a pool has limited market appeal and high maintenance costs that cause them to be a heavily discounted superadequancy, where as, other neighborhoods may penalize a property whose yard is not big enough to entertain the addition of a pool as being inadequate.

FUNCTIONAL INDICATORS

When considering the extent of functional obsolescence, pay particular attention to the following indicators:

1. Design Characteristics – Unappealing or poor or antiquated style or design, climate considerations, traffic and noise levels, maintenance or serviceability, security, antiterrorism, evacuation, market acceptance or resistance, sustainability, environmental responsibility or safety, eye appeal, symmetry, scale, orientation, interaction or appropriate blend of materials, glazing, durability, colors, etc., suitability for the occupancy, highest and best use, quality level, distinctive motif of a singular- or special-purpose use or architectural style.
2. Physical Layout – Suitable room or floor layout and orderly flow, overall or room or bay size, massing, net vs. gross space, volume, column, beam or mechanical run obstructions, appropriate wall heights, lighting levels, natural light and ventilation, shading, automated controls, ingress/egress, traffic patterns and doors, adequate support facilities, smoking area, work, storage, counter, cabinet size and placement, space configuration, room for expansion.
3. Mechanical Equipment – Inadequate or excess number of poorly spaced or antiquated plumbing or electrical and lighting fixtures, adequate loading and controls, HVAC, conveyance, appliances, PA systems and other equipment, service or power requirements, excessive heat gain, energy consumption or efficiency, renewable systems, actual vs. rated capacity or performance, abnormal operating costs, proper leak detection or emission controls, pressure differentials, technological changes, e.g., electric vs. standing pilot ignition, high speed wiring, etc., appropriate air quality and changes.
4. Site Assessment – Land use, size, usable pad area, shape, topography, access, parking, easements or other encroachments, utilities, soil type, stability, drainage and percolation, water table and use, erosion, vegetation, land or waterscape, view or other amenities, flood plain, wetlands, coastal, brush, seismic or fault areas, and presence of hazardous contaminants (see Environmental next page), etc., can all affect the structure and its setting.

FUNCTIONAL INDICATORS (Continued)

Some of the external factors affecting the extent of functional obsolescence are:

1. Code Requirements – Most current building codes or zoning for conforming use, height, stories, area, setback, building separation, size/mansionization, energy equivalency tradeoffs, etc., OSHA, fire and life safety, etc. compliance (see below).
2. Fire Protection Requirements – Proper rating, detection for life safety and security, signaling controls, communications, signage, standpipe, sprinklers, extinguishers, hydrants, vents, draft curtains, fans, pumps, door and smoke controls, standby power, emergency phones, appropriate exits, overhang, balcony and deck exposures, stairways, roofing classification, safety or double glazing, fire doors and shutters, etc.
3. Handicapped Requirements – ADA compliance, barrier-free design, parking, ramps, automatic entry, door, hallway widths, markings, signage, alarms, service, cabinet and railing heights, drinking fountains, grab bars, exposed hot-water piping, handicap fixtures, turnaround space, elevator controls, cab size, lifts, etc.
4. Environmental – EPA, wetlands and air quality compliance, water, soil, radon, asbestos, UREA formaldehyde foam insulation, PCBs, CFCs, high-voltage lines, halon, heavy metal or lead contamination, runoff, emissions or sediment containment, detection and testing, septic tanks, leach fields, demolition constraints, disposal or remediation. Evidence of leakage, absence of plants or animals, sick or stressed plants or animals, discolored soil or water, surface sheens and noxious odors, presence of discarded batteries, abandoned wells, sumps, tanks, barrels or other containers of fertilizer, pesticides and herbicides, paints and thinners, heating oil, petroleum or other hazardous chemical substances.
5. Weather Extremes – Appropriate insulation levels, heat gain or loss, shading, passive or active alternatives, energy equivalency tradeoffs, window treatment, glass strength, proper trusses, size, spacing, pitch and drainage for rain and snow loading, proper flashings and penetrations, proper connections for hurricane wind forces, uplift exposure, operable shutters, impact glazing.
6. Earthquakes – Appropriate bracing, connections to structural shell or foundation, shear walls, storefront facade or parapet, overhang exposure, irregular shape, framing stress, torsion, distance from other structures for pounding, etc.

External Obsolescence is a change in the value of a property, usually negative but can be an enhancement, caused by forces outside the property itself, and is not included directly in the tables that follow. It can be divided into two types, locational and economic. Locational factors are generally incurable and may affect only a small area, while economic factors can cover a wide geographic area and may be only temporary and reversible. Different types of property, residential or commercial, will be affected differently by these external forces. For example, it is desirable or advantageous for a manufacturing plant to be situated close to a railroad spur; conversely, it is a disadvantage for a residential property to be located close to that same spur. Close proximity to a major highway is generally much more beneficial for an apartment complex than a single-family residence, etc. Any abnormal, isolated or temporary cases of external obsolescence, usually computed separately, can be measured by market abstraction and capitalization of the imputed loss or gain, which generally affects land values first, then the improvements, by changing the possible uses and altering remaining life.

EXTERNAL INDICATORS

When considering the extent of external obsolescence, pay particular attention to the following indicators in the immediate vicinity, marketing area or community as a whole:

1. Physical Factors – Proximity of desirable or unattractive natural or artificial features or barriers, general neighborhood maturity, conformity, deterioration, rehabilitation or static character, known cleanup sites, fumes, noise, traffic or flight patterns, nuisances, graffiti, waste dump, swamp, toxic industry, electromagnetic fields, brush area, lack of view or landscaping, floodplain, dam inundation area, drainage, water table, sinkholes, fault or seismic zones, soil types, cut and fill, liquefaction, landslides, etc., local ecosystem, endangered species, habitat areas.
2. Economic – Demand/supply imbalance, saturation or monopoly, competition or alternatives, market share, industry or major plant relocation, employment development and growth patterns, downsizing, utility and insurance rates, availability of funds or terms, labor and materials, interest rates, vacancy, building rates, general inflation or deflation rates, tenant ratings, length of time on market or lease up or absorption, income streams and returns, changing consumer habits, purchasing power, property association or government forces, zoning, land use, air rights, legal nonconformity, permit, taxing and assessment policies and bureaucracy or other limiting conditions or restrictions.
3. Infrastructure – Surrounding highest and best use; availability, quality and source of utilities; public services; fire stations, staffed or volunteer; distance from hydrants; street improvements; traffic patterns; emergency response, evacuation routes; public parking, transportation and shipping facilities; retail; recreation; education facilities, etc.

General condition ratings can be assigned to the improvement to assist in the development of an appropriate effective age based on observed condition, utility and age. The better the overall condition, the younger or lower the effective age, which lowers the percentage and amount of depreciation. Condition is an integral part in measuring the degree at which items subject to depreciation have been maintained. Applying any additional condition modifier once the effective age has been established based on condition would be redundant.

Effective age will change as conditions fluctuate, determined by the amount of observed deterioration and obsolescence at the date of the appraisal. Over the life of a structure, you could expect the condition rating and effective age to move up and back down the effective age scale many times over. During the mid-life cycles, the effective age will drift upward at a relatively slow pace, assuming normal maintenance, for longer periods of time than at any other period over the structure's entire life span. With each evaluation, the effective age choice must be reconsidered based on the actual conditions encountered at the current date, taking into account any changes that may have taken place since the last appraisal. Neglect or weather extremes could have accelerated condition and age, while major repairs will correct deficiencies to a like-new condition, lowering the effective age and starting the cycle all over again. Operating extremes, such as abrupt increases or decreases in plant or equipment activity from normal or designed usage or excessive rental turnover can certainly impact the rate of wear and tear and maintenance performed.

Certain industries such as fast food, hotels, markets, and other retail chains which are highly competitive and responsive to rapidly changing consumer tastes and/or investor holding periods, may require frequent major renovations and fixture change-outs in search of market share. Consequently, excessive functional and separate economic obsolescence rates that move much faster than normal physical deterioration, may require special consideration, depending on the value sought, before establishing an appropriate effective age and/or typical life expectancy with which to work. Due to the unique character of certain outdoor recreational facilities like golf courses, special attention should be paid to the possible shorter lives of individual land improvements which are subject not only to the constant exposure of the elements, but to the wear and tear from selective use or play. The functionality, composition and age or maturity of the various features that make up each improvement or golf hole can also have a great effect on a facility's maintenance, operational and reserve schedules and expenses, which in turn affect condition, usability or playability and ultimately, depreciation.

CONDITION RATING INDICATORS

Excellent Condition – All items that can normally be repaired or refinished have recently been corrected, such as new roofing, paint, furnace overhaul, state-of-the-art components, etc. With no functional inadequacies of any consequence and all major short-lived components in like-new condition, the overall effective age has been substantially reduced upon complete revitalization of the structure regardless of the actual chronological age.

Very Good Condition – All items well maintained, many having been overhauled and repaired as they've shown signs of wear, increasing the life expectancy and lowering the effective age, with little deterioration or obsolescence evident and a high degree of utility.

Good Condition – No obvious maintenance required, but neither is everything new. Appearance and utility are above the standard, and the overall effective age will be lower than the typical property.

Average Condition – Some evidence of deferred maintenance and normal obsolescence with age in that a few minor repairs are needed, along with some refinishing. But with all major components still functional and contributing toward an extended life expectancy, effective age and utility are standard for like properties of its class and usage.

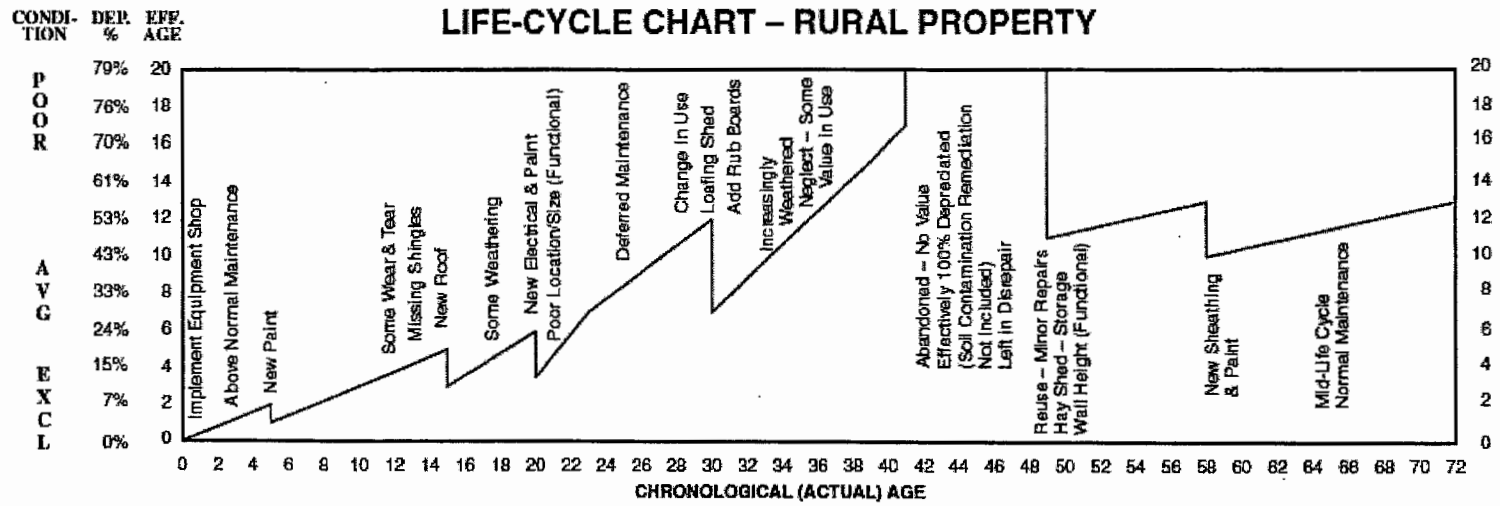
Fair Condition (Badly Worn) – Much repair needed. Many items need refinishing or overhauling, deferred maintenance obvious, inadequate building utility and services all shortening the life expectancy and increasing the effective age.

Poor Condition (Worn Out) – Repair and overhaul needed on painted surfaces, roofing, plumbing, heating, numerous functional inadequacies, substandard utilities, etc. (found only in extraordinary circumstances). Excessive deferred maintenance and abuse, limited value-in-use, approaching abandonment or major reconstruction; reuse or change in occupancy is imminent. Effective age is near the end of the scale regardless of the actual chronological age.

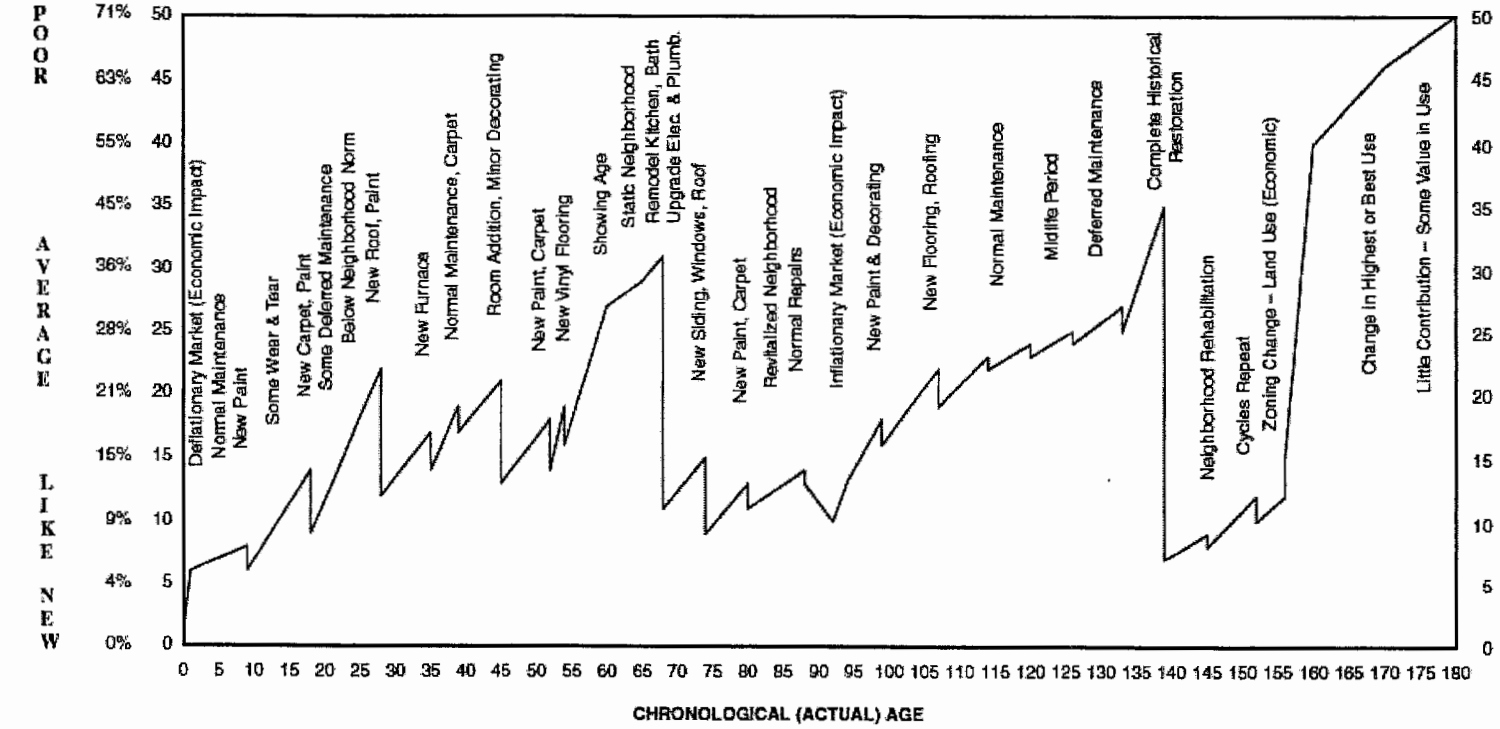
DEPRECIATION

Examples of the life cycles of a rural and a residential property are displayed in chart form to the right. The theoretical depreciation shown is reflective of many scenarios, taking into account all physical, functional and external obsolescence at different times and under different conditions. Actual effective age changes must take into account the effects of current local property use, maintenance, climate, neighborhood vitality, economics, turnover, etc., associated with the property in question at the time of valuation. Life cycles can extend over long periods of time or can be quite short due to excessive functional or economic obsolescence or marketing or investor policies. The appraiser must carefully consider the property type and usage, and the type of appraisal and value sought before establishing a proper life expectancy and effective age. The depreciation curves in this section generally account for normal deterioration and obsolescence only. Any abnormal or excessive functional and external obsolescence that measurably affects the property must be considered separately, and therefore is not inherently included in the actual normal depreciation tables that follow.

LIFE-CYCLE CHART – RURAL PROPERTY



LIFE-CYCLE CHART – RESIDENTIAL PROPERTY



Depreciation (Life – Cycle Method)

Explanation of Life- Cycle Tables

The life cycle depreciation tables are based on the individual building components that are used in the creation of specific buildings. Each building component was provided with an effective age and was weighted for its contribution to the overall cost of a building. As the buildings components depreciated value reached 80% they were replaced and the overall life expectancy to the building was increased. To establish the difference in quality the effective age of the components expected life was adjusted. These component life expectancies can be found on pages 12 -14 in this section.

How the Life-Cycle Tables are used

An estimate of normal physical deterioration and normal obsolescence, expressed as a percent of Replacement Cost, can be determined by:

- Rating the Physical Condition of the building (see the descriptions and Physical Condition Matrix at the end of the Life – Cycle example
- Combining this rating with the building's Effective Age, resulting in Depreciation Percent. Effective Age is the number of years of apparent age, which can be established by deducting estimated remaining life from typical life expectancy.

Physical Condition

In order to determine the Physical Condition of a building, a number of its observable characteristics and attributes need to be evaluated. First, what is the overall appearance of the building and the status of its services? How appealing is the building and are the electrical, mechanical and other services in good standing? Next, gage its usefulness and occupancy rate. Is the building being used as originally intended and as effectively as possible? Last, assess the level of upkeep given the building. Is it in good repair and receiving proper care? Consider those aspects of the building and rate its physical condition using these definitions:

Excellent – The building is extremely attractive and highly desirable; building services are modern, proper and adequate. There is no apparent deterioration, it is in perfect, like-new condition, is being used as originally intended, and fully occupied by desirable, long-term tenants. A full preventive maintenance program is in effect, building items are regularly replaced or renovated well before reaching the end of their useful lives, and a complete housekeeping program has been implemented with the health and safety of the occupants paramount.

Good – The building is quite attractive and desirable; building services are proper and adequate. Some minor deterioration is visible, it is being used as originally intended or close to, and demonstrations high occupancy rates while accommodating a variety of short-, medium- and long-term tenants. A planned or "just-in-time" maintenance program addresses most situations before becoming major issues, replacements and renovations are scheduled to be made near the end of an item's useful life, the property is routinely cleaned and things are kept neat and orderly.

Average – The building is still somewhat attractive and desirable; building services are functional. It is beginning to show signs of normal wear and tear, is being used as originally intended or for which it was renovated, and exhibits a normal rate of turnover; occasionally vacant. Condition- or corrective-based maintenance plan repairs building items when they no longer function, items are replaced or renovated on an as-needed basis only, and cleaning is primarily for appearance-sake.

Poor – The building is rather unattractive; building services are unused, partially removed or have been adapted for present occupancy. Deterioration is very noticeable, the building is being used for purposes other than originally intended, and displays excessive turnover; often vacant between occupants. The building is mostly untended, replacements and renovations are made as a last resort only, and cleaning is light and infrequent.

Very Poor – The building is undesirable, building services are antiquated; unused or unusable. Structural defects are apparent, the building is approaching an unsound condition, safety and/or health hazards may exist. The building is only capable of providing basic shelter for random occupants or non-specific activities. It often is unoccupied for long periods; maintenance, repairs, replacements, renovations and housekeeping are nonexistent.

Most buildings will display consistency among traits/characteristics. For example, a building judged to be attractive and desirable typically is clean and well maintained, has proper and adequate building services, is used as originally intended and has a high rate of occupancy. However, possibly because of market conditions or other extraneous influences, a building may have an abnormal mix or combination of properties (i. e. – a charming, like-new building with an extremely high vacancy rate).

In instances like this, select a rating based on the definition that contains a majority of the elements found in the subject.

DEPRECIATION

EXAMPLE Life Cycle

Finding the depreciated value of a building using the Life-Cycle method can be done in four Steps.

1. Determine the typical building life of the building
2. Determine the effective age of the building
3. Determine the Physical Condition of the building
4. Determine the appropriate depreciation table (table I or II and framing type)

Step 1: DETERMINING TYPICAL BUILDING LIFE (See tables on pages 10-16)

From the Typical Building Lives tables found on pages 10-16 of this section choose the occupancy and class of construction that best fits your building. Quality adjustments are also found in the table to help fine tune your estimate. These qualities correspond to the square foot cost found in sections 11 through 18.

Example: According to the table on page 13 the typical building life for an average –quality, class-D Branch Bank is 45 years

Step 2: DETERMINE THE EFFECTIVE AGE OF THE BUILDING.

The effective age of a property is its age in years as compared with other properties which serve similar purposes. It is the actual age less the age which has been taken off by face-lifting, structural reconstruction, removal of functional inadequacies, modernization of equipment, etc. It is an age which reflects a true remaining life for the property. Effective Age is simply the number of year's apparent age, which can be established by deducting estimated remaining life from typical life expectancy determined.

Example:

Effective age can be determined as follows: (Typical Building Life) – (Remaining useful Life) = Effective Age We have established that the typical building life for our bank is 45 years in step 1. Based on our observable conditions we have estimated the building to have a remaining useful life of 35 years.

(Typical Building Life 45 year) – (Remaining Useful Life 35 years) = Effective Age 10 years

Step 3: DETERMININE THE PHYSICAL CONDITION OF THE BUILDING

Although the physical condition of the building is subjective we have created a matrix to aid in the selection. Simply circle the description that best fits each of the categories. The "Condition" with the most circles should be considered as the appropriate quality. The matrix is found on page 7 of this section.

	Physical Condition				
	Excellent	Good	Average	Poor	Very Poor
General Appearance	Extremely attractive and highly desirable	Quite attractive and desirable	Still somewhat attractive and desirable	Rather unattractive	Undesirable
Building Services	Modern, proper & adequate	Proper & adequate	Functional	Unused, partially removed, or adapted for present occupancy	Antiquated; unused or unusable
Extent of Deterioration	None, perfect, like-new	Some minor deterioration is visible	Showing signs of normal wear and tear	Deterioration is very noticeable	Structural defects apparent, approaching unsound, safety and/or health hazards may exist
Degree of Usefulness	As originally intended	As originally intended	As originally intended, or for which it was renovated	Occupied by a use other than originally intended	Basic shelter for random occupants or non-specific activities
Occupancy	Fully occupied, long-term tenants	High occupancy rate, a variety of short-, medium- and long-term tenants	Normal rate of turnover, occasionally vacant	Excessive turnover, often vacant between occupants	Unoccupied for long periods
Maintenance & Repairs	Full preventive maintenance plan in effect and according to schedule	Planned maintenance addresses most situations before becoming major issues (JIG, or "just-in-time")	Condition-based or corrective maintenance, in essence, when need arises (when an item stops functioning, it is either	Mostly unfunded	None
Replacements/Renovations	Items are regularly replaced or renovated well before reaching the end of their useful lives	Replacements and renovations are scheduled to be made near the end of an item's useful life	Items are replaced or renovated on an as-needed basis only	Replacements and renovations are made as a last resort only	None
Housekeeping	Complete housekeeping program has been implemented, with the health and safety of building occupants foremost	Property is routinely cleaned; things are kept neat and orderly	Cleaning program primarily for appearance-sake	Infrequent, light cleaning	None

Example:

- General appearance: Attractive & Desirable
- Building Services: Proper & Adequate
- Extent of Deterioration: Some minor deterioration on is visible
- Degree of Usefulness: Originally intended as a branch bank.
- Occupancy: Single tenant occupies entire building and has a long-term lease
- Maintenance & Repairs: Property Manager confirms planned ("JIG or " just-in—time ") maintenance plan has been in place since building was opened
- Replacement Renovations: Replacements and renovations are done on an as-needed basis
- Housekeeping: Neat and orderly, building is cleaned regularly

The subject building is deemed to be in Good Physical Condition because 6 of the 8 attributes fit the Good definition.

Framing Type D			
Age	Excel	Good	Avg
1	2	2	3
2	4	4	5
3	5	6	7
4	7	8	10
5	9	10	12
6	10	12	14
7	12	14	17
8	14	16	19
9	17	18	22
10	18	20	23
11	19	21	24
12	20	21	25
13	21	22	26
14	21	23	27
15	22	23	27
16	23	24	28

Step 4: DETERMINE THE APPROPRIATE DEPRECIATION (See tables on pages 8-9)

Calculation:

Cost of Bank	$3,650,000
Depreciation Percent 20%	x .20
Depreciation Amount	$730,000
Depreciated Bank Cost	$2,920,000

Physical Condition Matrix

An estimate of normal deterioration and obsolescence (depreciation) can be determined by rating the physical condition of the building and combining this rating with the building's effective age. Effective age is the number of years of apparent age, often determined by deducting estimated remaining life from normal life.

	Physical Condition				
	Excellent	**Good**	**Average**	**Poor**	**Very Poor**
General Appearance	Extremely attractive and highly desirable	Quite attractive and desirable	Still somewhat attractive and desirable	Rather unattractive	Undesirable
Building Services	Modern, proper & adequate	Proper & adequate	Functional	Unused, partially removed, or adapted for present occupancy	Antiquated; unused or unusable
Extent of Deterioration	None, perfect, like-new	Some minor deterioration is visible	Showing signs of normal wear and tear	Deterioration is very noticeable	Structural defects apparent, approaching unsound, safety and/or health hazards may exist
Degree of Usefulness	As originally intended	As originally intended	As originally intended, or for which it was renovated	Occupied by a use other than originally intended	Basic shelter for random occupants or non-specific activities
Occupancy	Fully occupied, long-term tenants	High occupancy rate, a variety of short-, medium- and long-term tenants	Normal rate of turnover, occasionally vacant	Excessive turnover, often vacant between occupants	Unoccupied for long periods
Maintenance & Repairs	Full preventive maintenance plan in effect and according to schedule	Planned maintenance addresses most situations before becoming major issues (JIG, or "just-in-time")	Condition-based or corrective maintenance, in essence, when need arises (when an item stops functioning, it is either repaired or replaced)	Mostly untended	None
Replacements/Renovations	Items are regularly replaced or renovated well before reaching the end of their useful lives	Replacements and renovations are scheduled to be made near the end of an item's useful life	Items are replaced or renovated on an as-needed basis only	Replacements and renovations are made as a last resort only	None
Housekeeping	Complete housekeeping program has been implemented, with the health and safety of building occupants foremost	Property is routinely cleaned; things are kept neat and orderly.	Cleaning program primarily for appearance-sake	Infrequent, light cleaning	None

Life-Cycle Depreciation Table I (Low finish Type Buildings)

The Life-Cycle depreciation tables are based on framing type and building or occupancy attended usage.
Low finish type buildings would consist of those occupancies with very few interior finishes such as a parking ramps, light and heavy commercial / industrial buildings, airplane hangers, and warehousing.

Framing Type D					
Age	Excel	Good	Avg	Poor	V-Poor
1	1	1	4	4	5
2	5	5	9	8	10
3	7	8	12	13	15
4	9	10	14	16	18
5	11	12	15	18	18
6	12	13	17	20	21
7	13	14	18	22	24
8	14	15	19	24	28
9	15	16	20	25	32
10	15	17	20	26	33
11	16	17	21	27	34
12	16	18	22	28	35
13	17	18	22	29	36
14	17	19	23	30	37
15	18	19	23	31	37
16	18	20	24	31	38
17	19	20	24	32	39
18	19	21	24	33	39
19	19	21	25	33	40
20	20	21	25	34	40
21	20	22	26	35	41
22	20	22	26	35	41
23	21	22	26	36	42
24	21	23	27	36	42
25	21	23	27	36	43
26	21	23	27	37	43
27	22	23	27	37	44
28	22	24	28	38	44
29	22	24	28	38	44
30	22	24	28	39	45
31	23	24	28	39	45
32	23	25	29	39	45
33	23	25	29	40	46
34	23	25	29	40	46
35	23	25	29	40	46
36	24	25	29	41	47
37	24	26	30	41	47
38	24	26	30	41	47
39	24	26	30	41	47
40	24	26	30	42	48
41	24	26	30	42	48
42	25	26	30	42	48
43	25	27	31	43	48
44	25	27	31	43	49
45	25	27	31	43	49
46	25	27	31	43	49
47	25	27	31	44	49
48	25	27	31	44	50
49	26	27	32	44	50
50	26	28	32	44	50

Framing Type C & S					
Age	Excel	Good	Avg	Poor	V-Poor
1	0	1	3	4	5
2	5	5	8	6	9
3	7	8	10	10	14
4	9	10	12	13	16
5	11	12	13	16	22
6	12	13	15	17	24
7	13	14	16	19	25
8	14	15	17	20	26
9	14	15	17	21	27
10	15	16	18	22	28
11	16	17	19	23	29
12	16	17	19	24	30
13	17	18	20	25	30
14	17	18	20	26	31
15	18	19	21	26	32
16	18	19	21	27	32
17	19	20	21	28	33
18	19	20	22	28	33
19	19	20	22	29	34
20	20	21	22	29	34
21	20	21	23	30	35
22	20	21	23	30	35
23	21	22	23	31	35
24	21	22	24	31	36
25	21	22	24	32	36
26	21	23	24	32	36
27	22	23	24	32	37
28	22	23	25	33	37
29	22	23	25	33	37
30	22	24	25	33	38
31	22	24	25	34	38
32	23	24	26	34	38
33	23	24	26	34	38
34	23	24	26	35	39
35	23	25	26	35	39
36	23	25	26	35	39
37	24	25	26	35	39
38	24	25	27	36	40
39	24	25	27	36	40
40	24	25	27	36	40
41	24	26	27	36	40
42	24	26	27	37	41
43	25	26	27	37	41
44	25	26	28	37	41
45	25	26	28	37	41
46	25	26	28	38	41
47	25	27	28	38	42
48	25	27	28	38	42
49	25	27	28	38	42
50	26	27	28	38	42

Framing Type A & B					
Age	Excel	Good	Avg	Poor	V-Poor
1	0	0	1	2	4
2	4	4	6	7	9
3	7	7	9	11	13
4	8	9	11	13	16
5	10	11	12	14	18
6	11	12	13	16	20
7	12	13	14	17	21
8	13	14	15	18	22
9	13	15	16	19	24
10	14	15	17	20	25
11	14	16	17	20	25
12	15	17	18	21	26
13	15	17	18	22	27
14	16	18	19	22	28
15	16	18	19	23	28
16	17	19	20	23	29
17	17	19	20	24	30
18	17	19	20	24	30
19	18	20	21	25	31
20	18	20	21	25	31
21	18	21	22	25	32
22	18	21	22	26	32
23	19	21	22	26	32
24	19	21	22	26	33
25	19	22	23	27	33
26	19	22	23	27	34
27	20	22	23	27	34
28	20	22	23	27	34
29	20	23	24	28	35
30	20	23	24	28	35
31	21	23	24	28	35
32	21	23	24	28	36
33	21	24	24	29	36
34	21	24	25	29	36
35	21	24	25	29	36
36	21	24	25	29	37
37	22	24	25	30	37
38	22	25	25	30	37
39	22	25	26	30	37
40	22	25	26	30	38
41	22	25	26	30	38
42	22	25	26	30	38
43	22	25	26	31	38
44	23	26	26	31	39
45	23	26	27	31	39
46	23	26	27	31	39
47	23	26	27	31	39
48	23	26	27	32	39
49	23	26	27	32	40
50	23	26	27	32	40

Life-Cycle Depreciation Table II (High finish Type Buildings)

The Life-Cycle depreciation tables are based on framing type and building or occupancy attended usage.
High finish type buildings would consist of those occupancies with lots of interior finishes such as floor, wall and ceiling finishes.
Other high impact areas would consist of high partition density do to many rooms. High plumbing density do to full kitchens or bathrooms, and requirements. Typical building occupancies that would be found in the Table II category would be: apartments, offices, hotels, restaurants and medical occupancies.

Framing Type D

Age	Excel	Good	Avg	Poor	V-Poor
1	2	2	3	3	4
2	4	4	5	6	8
3	5	6	7	9	12
4	7	8	10	12	16
5	9	10	12	15	19
6	10	12	14	18	22
7	12	14	17	21	26
8	14	16	19	24	28
9	17	18	22	27	32
10	18	20	23	28	35
11	19	21	24	30	37
12	20	21	25	31	38
13	21	22	26	32	39
14	21	23	27	33	40
15	22	23	27	33	41
16	23	24	28	34	41
17	23	24	29	35	42
18	24	25	29	36	43
19	24	25	30	36	43
20	25	26	30	37	44
21	25	26	31	37	44
22	26	27	31	38	45
23	26	27	32	38	46
24	26	27	32	39	46
25	27	28	33	39	47
26	27	28	33	40	47
27	27	28	33	40	47
28	28	29	34	41	48
29	28	29	34	41	48
30	28	29	34	42	49
31	29	29	35	42	49
32	29	30	35	42	49
33	29	30	35	43	50
34	30	30	36	43	50
35	30	31	36	43	50
36	30	31	36	44	51
37	30	31	37	44	51
38	31	31	37	44	51
39	31	31	37	45	52
40	31	32	37	45	52
41	31	32	38	45	52
42	31	32	38	46	53
43	32	32	38	46	53
44	32	33	38	46	53
45	32	33	39	46	53
46	32	33	39	47	54
47	32	33	39	47	54
48	33	33	39	47	54
49	33	33	39	47	54
50	33	34	40	48	55

Framing Type C & S

Age	Excel	Good	Avg	Poor	V-Poor
1	0	0	1	3	4
2	3	4	5	6	7
3	7	9	10	12	13
4	9	11	13	15	16
5	11	13	15	17	18
6	13	14	16	19	20
7	14	16	18	21	22
8	15	17	19	22	24
9	16	17	20	24	26
10	17	18	21	25	27
11	17	19	21	26	29
12	18	20	22	27	30
13	19	20	23	28	31
14	19	21	24	28	32
15	20	21	24	29	33
16	20	22	25	30	34
17	21	22	25	31	35
18	21	23	26	31	36
19	22	23	26	32	37
20	22	24	27	32	38
21	23	24	27	33	38
22	23	24	27	33	39
23	23	25	28	34	40
24	24	25	28	34	40
25	24	25	28	35	41
26	24	26	29	35	41
27	25	26	29	36	42
28	25	26	29	36	42
29	25	27	30	36	43
30	25	27	30	37	43
31	26	27	30	37	44
32	26	27	31	37	44
33	26	28	31	38	45
34	26	28	31	38	45
35	27	28	31	38	46
36	27	28	32	39	46
37	27	28	32	39	47
38	27	29	32	39	47
39	28	29	32	39	47
40	28	29	33	40	48
41	28	29	33	40	48
42	28	29	33	40	48
43	28	30	33	41	49
44	28	30	33	41	49
45	29	30	34	41	49
46	29	30	34	41	50
47	29	30	34	41	50
48	29	30	34	42	50
49	29	31	34	42	51
50	29	31	34	42	51

Framing Type A & B

Age	Excel	Good	Avg	Poor	V-Poor
1	0	0	1	3	6
2	4	5	6	7	12
3	7	8	9	11	16
4	8	10	12	14	19
5	10	12	14	16	21
6	11	14	15	18	22
7	12	15	16	20	24
8	13	16	17	21	25
9	14	17	18	22	26
10	14	18	19	23	27
11	15	18	20	24	28
12	16	19	21	25	28
13	16	20	21	26	29
14	17	20	22	27	30
15	17	21	22	27	30
16	17	21	23	28	31
17	18	22	23	29	32
18	18	22	24	29	32
19	19	23	24	30	33
20	19	23	25	30	33
21	19	23	25	31	33
22	19	24	26	31	34
23	20	24	26	32	34
24	20	25	26	32	35
25	20	25	27	33	35
26	21	25	27	33	35
27	21	25	27	33	36
28	21	26	27	34	36
29	21	26	28	34	36
30	21	26	28	34	37
31	22	27	28	35	37
32	22	27	29	35	37
33	22	27	29	35	38
34	22	27	29	36	38
35	22	27	29	36	38
36	23	28	30	36	38
37	23	28	30	37	39
38	23	28	30	37	39
39	23	28	30	37	39
40	23	29	30	37	39
41	23	29	31	38	39
42	24	29	31	38	40
43	24	29	31	38	40
44	24	29	31	38	40
45	24	29	31	39	40
46	24	30	31	39	41
47	24	30	32	39	41
48	24	30	32	39	41
49	25	30	32	39	41
50	25	30	32	40	41

LIFE EXPECTANCY GUIDELINES

TYPICAL BUILDING LIVES

Below are recommended life expectancies, in years, of buildings included in the *Marshall Valuation Service* by type of occupancy and class and quality of construction. These are based on appraisers' opinions, condition of survivors, and ages at which major reconstruction or change of occupancy has taken place. These life expectancy studies do not include cases of mortality from excessive economic or environmental changes, shortened specialty product use, poor business management, natural disasters, etc. Some occupancies, such as hotels, fast-food restaurants and other retail chains or service stations, etc., are completely remodeled or rebuilt long before the end of their useful life as a matter of marketing policy. Certain locations may be considered atypical due to harsh weather extremes. In these cases, the appraiser must carefully consider the purpose of the appraisal and the value sought before establishing an appropriate life expectancy and effective age with which to work.

OCCUPANCY — CLASS	A	B	C	D	S
SECTIONS 11 & 41, APARTMENTS, CLUBS AND HOTELS					
Apartments, mid-, high-rise, good, excellent and luxury	60	60	55	50	50
low cost and average	55	55	50	45	45
City clubs, good	60	60	50	-----	-----
average	50	50	45	-----	-----
Clubhouses and senior centers, good and excellent	-----	-----	45	40	40
low cost and average	-----	-----	40	35	35
Country clubs, good and excellent	-----	-----	50	45	-----
low cost and average	-----	-----	45	40	40
Dormitories, good and excellent	60	60	55	50	-----
low cost and average	50	50	45	40	40
Fraternity houses, good and excellent	-----	-----	55	50	-----
average	-----	-----	50	45	-----
Group care homes, good, very good and excellent	-----	-----	55	50	-----
average	-----	-----	50	45	-----
low cost	-----	-----	45	40	-----
Health clubs and spas, good and excellent	-----	-----	45	40	40
low cost and average	-----	-----	40	35	35
Homes for the elderly, good	60	60	50	45	45
low cost and average	50	50	45	40	40
Hotels, full service, good and excellent	60	60	50	45	-----
average	55	55	50	45	-----
low cost	50	50	45	40	-----
limited service, excellent	60	60	50	-----	-----
good	55	55	50	45	-----
low cost and average	50	50	45	40	40
Mortuaries, excellent	-----	-----	50	50	-----
average and good	50	50	45	45	45
low cost	-----	-----	40	35	35
Recreational (pool) enclosures, good	-----	-----	45	40	40
average	-----	-----	40	35	35
low cost	-----	-----	35	25	20
cheap	-----	-----	-----	-----	10
Rectories, good and excellent	-----	-----	55	50	-----
average	-----	-----	50	45	-----
low cost	-----	-----	45	40	-----
Rooming houses, good	-----	-----	55	50	-----
average	-----	-----	50	45	-----
low cost and fair	-----	-----	45	40	-----
Row houses, high-rise, good and excellent	-----	-----	60	55	-----
low cost and average	-----	-----	55	50	-----
SECTIONS 12 & 42, RESIDENCES, MULTIPLES (GARDEN APTS.) AND MOTELS					
Baled-straw homes, good	-----	-----	-----	50	-----
average	-----	-----	-----	45	-----
low cost	-----	-----	-----	40	-----
Bath houses, excellent	-----	-----	65	60	-----
good	-----	-----	60	55	-----
average	-----	-----	55	50	-----
low cost	-----	-----	45	40	-----
cheap	-----	-----	30	20	-----

OCCUPANCY — CLASS	A	B	C	D	S
SECTIONS 12 & 42, RESIDENCES, MULTIPLES (GARDEN APTS.) AND MOTELS (Cont.)					
Assisted living/retirement complexes, excellent	-----	-----	60	55	-----
average and good	-----	-----	55	50	50
low cost and fair	-----	-----	50	45	45
Bed and breakfast inns, excellent	-----	-----	65	60	-----
good	-----	-----	60	55	-----
average	-----	-----	55	50	-----
low cost	-----	-----	50	45	-----
Earth-sheltered homes, good and excellent	-----	-----	60	-----	-----
low cost and average	-----	-----	55	-----	-----
Guest cottages, excellent	-----	-----	50	45	-----
good	-----	-----	45	40	-----
average	-----	-----	40	35	-----
low cost and fair	-----	-----	35	30	-----
cheap	-----	-----	-----	25	-----
Lodges, very good and excellent	-----	-----	50	45	-----
good	-----	-----	45	40	-----
average	-----	-----	40	35	-----
low cost and fair	-----	-----	35	30	-----
cheap	-----	-----	35	30	-----
Log homes, excellent	-----	-----	-----	55	-----
average and good	-----	-----	-----	50	-----
low cost	-----	-----	-----	45	-----
Motels and extended-stay motels, good and excellent	-----	-----	45	40	-----
average	-----	-----	40	35	35
fair, low cost and cheap	-----	-----	35	30	-----
Multiple residences, excellent	-----	-----	60	55	-----
good	-----	-----	55	50	50
average	-----	-----	55	50	50
low cost and fair	-----	-----	50	45	-----
Office apartments, good and excellent	-----	-----	45	40	-----
average	-----	-----	40	35	35
low cost	-----	-----	35	30	-----
cheap	-----	-----	35	30	-----
Single-family and guest houses, excellent and high value	-----	-----	65	60	-----
average, good and very good	-----	-----	60	55	55
fair quality	-----	-----	55	50	-----
low cost	-----	-----	50	45	-----
substandard	-----	-----	35	30	-----

LIFE EXPECTANCY GUIDELINES

TYPICAL BUILDING LIVES

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 12 & 42, RESIDENCES, MULTIPLES (GARDEN APTS.) AND MOTELS (Continued)					
Single-family, historical residences, excellent	—	—	70	65	—
good and very good	—	—	65	60	—
low cost, fair and average	—	—	60	55	—
Town and row houses, excellent	—	—	60	55	—
good	—	—	55	50	50
average	—	—	55	50	50
low cost and fair	—	—	50	45	—
Tropical houses, good	—	—	55	—	—
average	—	—	50	—	—
low cost	—	—	45	—	—
Yurts, good	—	—	—	30	—
average	—	—	—	20	—
low cost	—	—	—	15	—
SECTIONS 13 & 43, STORES AND COMMERCIAL BUILDINGS					
Banquet halls, excellent	—	—	50	45	—
good	—	—	45	40	40
average	—	—	40	35	35
low cost	—	—	35	30	30
Barber and beauty shops, good	45	45	40	35	35
low cost and average	40	40	35	30	30
Bars and taverns, good	—	—	45	40	—
average	45	45	40	40	40
low cost	—	—	40	35	35
Cafeterias, excellent	—	—	45	40	—
good	45	45	35	35	35
low cost and average	40	40	35	30	30
Cocktail lounges, good and excellent	45	45	40	40	40
average	40	40	40	35	35
low cost	—	—	35	35	35
Convenience stores, excellent	—	—	45	40	40
average and good	45	45	40	35	35
low cost	—	—	35	30	30
Mini-marts, good and excellent	—	—	40	35	30
low cost and average	—	—	35	30	25
Dairy sales buildings, average	—	—	35	30	30
Department stores, good and excellent	55	55	50	—	—
low cost and average	50	50	45	—	—
mall anchor stores, average and good	50	50	45	40	—
low cost	45	45	40	35	35
Dining atriums and playrooms, good to excellent	—	—	35	35	35
low cost and average	—	—	30	30	30
cheap	—	—	—	—	10
Discount stores, good	—	—	40	35	35
low cost and average	40	40	35	30	30
Drug stores, excellent	—	—	45	40	—
average and good	45	45	40	35	—
low cost	—	—	35	30	30
Fast-food restaurants, very good and excellent	40	40	35	35	35
low cost, average and good	35	35	30	30	30
Florist shops, excellent	—	—	45	40	40
average and good	50	50	40	35	35
low cost	—	—	35	30	30
Kiosks, miscellaneous stands				5 to 20 years	

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 13 & 43, STORES AND COMMERCIAL BUILDINGS (Continued)					
Laundry/dry cleaning, good	—	—	45	40	40
average	—	—	40	35	35
Laundromats, average	—	—	35	30	30
Luxury boutiques, good	60	60	55	50	—
low cost and average	55	55	50	45	—
Markets and supermarkets, excellent	—	—	45	40	40
average and good	40	40	40	35	35
low cost	—	—	35	30	30
Modular, resturants excellent	—	—	—	—	35
low cost, average and good	—	—	—	—	30
Restaurants, very good and excellent	45	45	40	40	40
average and good	40	40	35	35	35
low cost	—	—	30	30	30
Retail stores, good and excellent	55	55	50	45	45
average	50	50	45	40	40
low cost	45	45	40	40	40
Roadside markets, excellent	—	—	40	35	35
good	—	—	35	30	30
average	—	—	30	25	25
low cost	—	—	—	20	20
cheap	—	—	—	15	—
Shopping centers, neighborhood, good	—	—	45	40	—
average	—	—	40	35	35
low cost	—	—	35	30	30
community, good and excellent	—	—	50	45	45
average	—	—	45	40	40
regional, good and excellent	55	55	55	50	—
average	—	—	50	45	45
regional discount, good	50	50	50	45	—
average	45	45	45	40	40
mixed retail centers with office/residential units, good	—	—	50	45	—
low cost and average	—	—	45	40	—
Snack bars, excellent	—	—	35	35	—
good	—	—	35	30	—
average	—	—	30	25	25
low cost	—	—	25	20	20
cheap	—	—	20	15	15
Truck stop restaurants, good	—	—	35	35	35
average	—	—	30	30	30
Warehouse discount stores, good	—	—	35	30	30
low cost and average	—	—	30	30	30
mega discount, average and good	—	—	35	—	30
low cost	—	—	30	—	30
food, good	—	—	40	35	35
average	—	—	35	30	30
low cost	—	—	30	30	30
showroom, good	—	—	40	35	35
low cost and average	—	—	35	30	30
Winery shops, excellent	—	—	50	45	—
good	—	—	45	40	—
average	—	—	40	35	35
low cost	—	—	35	30	30

LIFE EXPECTANCY GUIDELINES

TYPICAL BUILDING LIVES

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 14 & 44, GARAGES, INDUSTRIALS AND WAREHOUSES					
Armories, good and excellent	-----	-----	55	50	-----
average	-----	-----	50	40	40
Automotive service centers, good	-----	-----	45	40	40
average	-----	-----	40	35	35
low cost	-----	-----	35	30	30
Broadcasting facilities, good and excellent	55	55	50	45	45
average	50	50	45	40	40
low cost	45	45	40	35	35
Cold storage facilities, excellent	-----	-----	50	-----	45
average and good	50	50	45	40	40
low cost and fair	-----	-----	40	35	35
Complete auto dealerships, good and excellent	50	50	45	40	40
average	45	45	40	35	35
low cost	-----	-----	35	30	30
Computer centers, good and excellent	50	50	45	40	40
low cost and average	45	45	40	35	35
Creameries, good	-----	-----	45	45	45
average	45	45	35	30	30
low cost	-----	-----	25	20	20
Garages, municipal service, excellent	-----	-----	45	-----	40
average and good	-----	-----	40	35	35
Service and repair garages, good and excellent	-----	-----	40	35	35
low cost and average	40	40	35	30	30
Service garage sheds, good	-----	-----	35	30	30
low cost and average	-----	-----	30	25	25
Storage, average	45	45	40	35	35
Hangars, maintenance, excellent	-----	-----	45	-----	40
good	-----	-----	40	-----	40
average	-----	-----	40	35	35
low cost	-----	-----	35	30	30
Storage, excellent	-----	-----	40	-----	40
good	-----	-----	40	-----	35
average	-----	-----	35	30	30
low cost	-----	-----	30	30	30
cheap	-----	-----	-----	20	20
T-hangars, average	-----	-----	30	-----	30
low cost	-----	-----	-----	20	20
Industrial flex-mall buildings, average and good	-----	-----	50	40	40
low cost	-----	-----	40	35	35
Industrials, engineering, good and excellent	55	55	50	45	45
average	50	50	45	40	40
low cost	50	50	40	35	35

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 14 & 44, GARAGES, INDUSTRIALS AND WAREHOUSES (Continued)					
Industrials, manufacturing, heavy, good and excellent	60	60	55	-----	50
low cost and average	55	55	50	45	45
light, good	50	50	45	40	40
average	50	50	40	35	35
low cost	45	45	40	35	35
Laboratory buildings, good and excellent	55	55	50	45	45
low cost and average	50	50	45	40	40
Lofts, excellent	60	60	-----	-----	-----
average and good	55	55	50	40	40
low cost	50	50	40	35	-----
Mini-lube garages, good and excellent	-----	-----	40	35	35
low cost and average	-----	-----	35	30	30
Mini-warehouses, low and high rise, good	-----	-----	45	40	40
average	45	45	40	35	35
low cost	-----	-----	35	30	30
Parking structures/parkades, good	45	45	-----	-----	-----
low cost and average	40	40	-----	-----	35
cheap	-----	-----	-----	-----	30
Passenger terminals, very good and excellent	45	45	40	40	-----
average and good	40	40	35	35	35
low cost and fair	35	35	30	30	30
control towers, good	35	35	-----	-----	-----
average	30	30	-----	-----	-----
low cost	25	25	-----	-----	-----
Post offices, main and branch, good and excellent	60	60	55	50	50
low cost and average	55	55	50	45	45
mail processing facilities, good	-----	-----	50	-----	45
average	50	50	45	-----	40
Showrooms, good and excellent	50	50	45	40	40
average	45	45	40	35	35
low cost	-----	-----	35	30	30
Transit warehouses, average and good	-----	-----	45	40	40
Underground parking garages, average	45	45	-----	-----	-----
Warehouses, distribution, good and excellent	55	55	50	45	45
average	50	50	45	40	40
low cost	-----	-----	40	35	35
Storage and mega storage, excellent	-----	-----	50	-----	45
average and good	50	50	45	40	40
cheap and low cost	45	45	40	35	35
Miscellaneous buildings, excellent	60	60	55	45	45
average and good	55	55	50	40	40
low cost	50	50	40	35	35
Misc. structures, shipping docks	-----	-----	-----	40	40
loading docks, excellent	-----	-----	-----	35	35
average and good	-----	-----	-----	30	30
low cost	-----	-----	-----	25	25

LIFE EXPECTANCY GUIDELINES

TYPICAL BUILDING LIVES

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 15 & 45, BANKS, OFFICES AND PUBLIC BUILDINGS					
Atriums, good and excellent	60	60	55	50	50
average	55	55	50	45	45
Banks, branch and central, good and excellent	60	60	55	50	50
average	55	55	50	45	45
low cost	50	50	45	40	40
mini, drive-up, good and excellent	55	55	50	45	45
low cost and average	50	50	45	40	40
Convalescent hospitals, good and excellent	50	50	45	40	-----
low cost and average	45	45	40	35	35
Dispensaries and urgent care, good	50	50	40	35	35
average	45	45	35	30	30
Fire stations, staffed, good, very good and excellent	50	50	45	40	40
low cost and average	45	45	40	35	35
volunteer, good	-----	-----	40	35	35
low cost and average	40	40	35	30	30
General hospitals, good and excellent	50	50	45	40	-----
low cost and average	45	45	40	35	35
Governmental buildings, good and excellent	60	60	55	50	-----
low cost and average	55	55	50	40	40
Community service buildings, excellent	-----	-----	55	50	-----
average and good	55	55	50	40	40
low cost	50	50	45	35	35
Jails, correctional facilities, good and excellent	55	55	45	40	-----
low cost and average	50	50	40	35	35
Police stations, good and excellent	55	55	50	45	-----
average	50	50	45	40	-----
low cost	45	45	40	-----	-----
Kennels, very good and excellent	-----	-----	45	40	-----
average and good	-----	-----	40	35	35
low cost	-----	-----	35	30	30
cheap	-----	-----	25	20	20
Medical offices, good and excellent	50	50	45	40	40
low cost and average	45	45	40	35	35
Dental clinics, good and excellent	-----	-----	45	40	40
low cost and average	-----	-----	40	35	35
Offices, good and excellent	60	60	55	50	50
average	55	55	50	45	45
low cost	50	50	45	40	40
Outpatient (surgical) centers, good and excellent	50	50	45	40	-----
low cost and average	45	45	40	35	35
Parking levels, excellent	60	60	-----	-----	-----
good	55	55	50	50	50
average	50	50	45	45	45
low cost	30	30	25	25	25
cheap	25	25	20	20	20
Public libraries, good, very good and excellent	60	60	55	50	50
average	55	55	50	45	45
low cost	-----	-----	45	40	40
Veterinary hospitals, excellent	-----	-----	45	40	-----
average and good	45	45	40	35	35
low cost	-----	-----	35	30	30
Misc. buildings: firing ranges, good and excellent	-----	-----	45	40	40
low cost and average	-----	-----	40	35	35

OCCUPANCY CLASS	A	B	C	D	S
SECTIONS 16 & 46, CHURCHES, THEATERS AND AUDITORIUMS					
Arcade buildings, good and excellent	-----	-----	45	40	-----
average	-----	-----	40	35	35
low cost	-----	-----	35	30	30
Auditoriums, excellent	55	55	50	45	-----
average and good	50	50	45	40	40
low cost	-----	-----	40	35	35
Bowling centers, good and excellent	-----	-----	40	35	35
low cost and average	-----	-----	35	30	30
Casinos, very good	-----	-----	50	-----	-----
good	-----	-----	45	40	-----
average	-----	-----	40	35	35
low cost	-----	-----	35	30	30
Churches, sanctuaries, narthexes, classrooms, excellent	60	60	60	50	-----
good	60	60	50	45	45
average	50	50	45	40	40
cheap and low cost	-----	-----	40	35	35
Community recreation centers, good and excellent	50	50	45	40	40
low cost and average	45	45	40	35	35
Convention centers, good and excellent	55	55	50	45	-----
average	50	50	45	40	40
low cost	45	45	40	35	35
Fellowship halls, good and excellent	50	50	45	40	40
low cost and average	45	45	40	35	35
cheap	-----	-----	-----	30	30
Fitness centers, good and excellent	50	50	45	40	40
average	45	45	40	35	35
Fraternal buildings, excellent	55	55	50	45	-----
good	50	50	45	40	-----
average	45	45	40	35	35
low cost	-----	-----	35	30	30
Handball/racquetball clubs, good	-----	-----	45	40	40
average	-----	-----	40	35	35
Indoor tennis clubs, good	-----	-----	45	40	40
average	-----	-----	40	35	35
low cost	-----	-----	35	30	30
Museums, good and excellent	60	60	55	50	-----
average	55	55	50	45	-----
low cost	-----	-----	40	35	35
Pavillions, excellent	-----	-----	50	45	-----
very good	-----	-----	45	40	-----
good	-----	-----	40	35	-----
fair and averge	-----	-----	35	30	30
low cost	-----	-----	30	25	25
cheap	-----	-----	25	20	20
Skating rinks, good and excellent	50	50	45	40	40
average	45	45	40	35	35
low cost	-----	-----	35	30	30
Theaters, live-stage presentation, good and excellent	50	50	45	40	-----
fair and average	45	45	45	40	40
low cost	-----	-----	40	35	35
Motion picture/cinema, very good and excellent	50	50	45	40	-----
average and good	45	45	40	35	35
low cost and fair	-----	-----	35	30	30
Visitor centers, good and excellent	55	55	50	45	-----
average	50	50	45	40	40
low cost	-----	-----	40	35	35

LIFE EXPECTANCY GUIDELINES

TYPICAL BUILDING LIVES

OCCUPANCY	CLASS	A	B	C	D	S
SECTIONS 17 & 47, FARM BUILDINGS						
Arenas, excellent		-----	-----	40	35	35
good		-----	-----	35	30	30
average		-----	-----	30	25	25
cheap and low cost		-----	-----	20	15	15
Arena shelters, good		-----	-----	-----	-----	25
average		-----	-----	-----	-----	20
low cost		-----	-----	-----	15	15
Barns, freestall and confinement, good and excellent		-----	-----	-----	30	30
average		-----	-----	-----	25	25
cheap and low cost		-----	-----	-----	15	15
general purpose, good		-----	-----	35	30	30
average		-----	-----	30	25	25
low cost		-----	-----	20	15	15
special purpose, excellent		-----	-----	40	35	-----
good		-----	-----	35	30	-----
low cost and average		-----	-----	30	25	-----
Calving barn shed, good		-----	-----	-----	20	20
low cost and average		-----	-----	-----	15	15
Commodity storage sheds, average		-----	-----	25	20	20
Corncrib bins, good and excellent		-----	-----	-----	15	-----
low cost and average		-----	-----	-----	10	-----
Corncrib buildings, spaced board, average and good		-----	-----	-----	20	-----
wire mesh, good		-----	-----	-----	20	-----
average		-----	-----	-----	15	-----
Dairies/milking parlors, good and excellent		-----	-----	35	30	30
average		-----	-----	30	25	25
low cost		-----	-----	20	15	15
Feed handling and mixing, average		-----	-----	-----	20	20
Feeder barns/loafing sheds, good		-----	-----	-----	20	20
low cost and average		-----	-----	-----	15	15
Fruit-packing barns, average		-----	-----	30	25	25
Hay sheds/shelters, good		-----	-----	-----	20	20
average		-----	-----	-----	15	15
low cost		-----	-----	-----	10	10
Hog barns, breeding, farrowing, good and excellent		-----	-----	35	30	30
average		-----	-----	30	25	25
cheap and low cost		-----	-----	20	15	15
finishing, average		-----	-----	25	20	20
cheap and low cost		-----	-----	20	15	15
nursery, good		-----	-----	35	30	30
average		-----	-----	30	25	25
Hog sheds and modified sheds, average		-----	-----	25	20	20
cheap and low cost		-----	-----	20	15	15
Hunting shelters, good		-----	-----	-----	15	-----
cheap, low cost and average		-----	-----	-----	10	-----

OCCUPANCY	CLASS	A	B	C	D	S
SECTIONS 17 & 47, FARM BUILDINGS (Continued)						
Implement, arch-rib buildings, good		-----	-----	-----	30	30
average		-----	-----	-----	25	25
low cost		-----	-----	-----	20	20
implement/equipment buildings, good		-----	-----	30	25	25
low cost and average		-----	-----	25	20	20
implement/equipment sheds, average		-----	-----	25	20	20
low cost		-----	-----	20	15	15
Individual livestock shelters, good and excel		-----	-----	-----	15	-----
low cost and average		-----	-----	-----	10	-----
Labor dormitories, good		-----	-----	30	25	25
average		-----	-----	25	20	20
low cost		-----	-----	20	15	-----
Lean-tos, equestrian, average		-----	-----	-----	25	25
low cost		-----	-----	-----	15	15
farm utility, good		-----	-----	-----	20	20
low cost and average		-----	-----	-----	15	15
Milkhouses and sheds, good		-----	-----	35	30	-----
average		-----	-----	30	25	-----
Potato storage buildings, good		-----	-----	30	25	25
average		-----	-----	25	20	20
cheap and low cost		-----	-----	20	15	15
Poultry, cage operation, enclosed/screened, good		-----	-----	30	25	25
average		-----	-----	25	20	20
cheap and low cost		-----	-----	20	15	15
floor operation, breeder/broiler, turkey, good		-----	-----	25	20	20
average		-----	-----	20	15	15
cheap, low cost and fair		-----	-----	-----	15	15
Sheep barns, average and good		-----	-----	-----	25	25
sheds, good		-----	-----	-----	25	25
average		-----	-----	-----	20	20
cheap and low cost		-----	-----	-----	15	15
Stables, good		-----	-----	35	30	30
average		-----	-----	30	25	25
low cost		-----	-----	20	15	15
high-value estate stables, excellent		-----	-----	50	45	-----
good		-----	-----	45	40	-----
low-cost and average		-----	-----	40	35	35
Tobacco barns, flue curing, average		-----	-----	25	20	20
air curing, average		-----	-----	-----	25	-----
low cost		-----	-----	-----	20	-----
Toolshed buildings, good		-----	-----	25	20	-----
average		-----	-----	-----	15	-----
low cost		-----	-----	-----	10	-----
Transient labor cabins, average		-----	-----	-----	15	-----
Utility/arch-rib buildings, good		-----	-----	-----	25	25
average		-----	-----	-----	20	20
low cost		-----	-----	-----	15	15
Utility buildings, farm/grain storage, very good		-----	-----	-----	25	-----
good		-----	-----	25	20	20
low cost and average		-----	-----	20	15	15

FURNITURE, FIXTURES AND EQUIPMENT

INDUSTRY GROUP	ASSET RANGE LIFE IN YEARS		
Logging, timber cutting	5	6	7
Machinery manufacturing, except as otherwise listed	8	10	12
Meatpacking	9.5	12	14.5
Medical and dental supply production	-----	9	-----
Metalworking machinery manufacturing	8	10	12
Mining and quarrying	8	10	12
Motion picture and television production	9.5	12	14.5
Motor transport, freight	6.5	8	9.5
general purpose trucks, light	3	4	5
heavy	5	6	7
tractor units (over-the-road)	3	4	5
trailers and trailer-mounted containers	5	6	7
Motor transport, passenger	6.5	8	9.5
automobiles, including taxis	2.5	3	3.5
buses	7	9	11
Motor vehicle and parts manufacturing	9.5	12	14.5
special tools	2.5	3	3.5
Office furniture and equipment	8	10	12
Optical lenses and instrument manufacturing	8	10	12
Paints and varnishes	7.5	9.5	11.5
Paper and pulp manufacturing	10.5	13	15.5
converted paper, paperboard and pulp	8	10	12
Petroleum and natural gas, drilling, onshore	5	6	7
drilling, offshore	6	7.5	9
exploration and production	11	14	17
marketing	7	9	11
petroleum refining	13	16	19
pipeline transportation	17.5	22	26.5
Plastic products manufacturing	9	11	13
special tools	3	3.5	4
Plastics manufacturing	7.5	9.5	11.5
Primary metals production, nonferrous and foundry products	11	14	17
special tools	5	6.5	8
Primary steel mill products	12	15	18
Printing and publishing	9	11	13
Professional and scientific instruments	8	10	12
Radio and television, broadcasting	5	6	7
manufacturing*	-----	10	-----
Railroad cars and locomotives	12	15	18
Railroads, machinery and equipment	11	14	17
structures	24	30	36
tracks	-----	10	-----
wharves and docks	16	20	24
Railroad transportation equipment manufacturing	9.5	12	14.5
locomotive manufacturing	9	11.5	14
Recreation and amusement	8	10	12
Residential furniture*	7	10	12
multi-residential	2	3	5
Restaurant and bar equipment*	-----	10	-----
Restaurant equipment, fast foods*	-----	7	-----
Retail trades, fixtures and equipment	7	9	11
Rubber products manufacturing	11	14	17
special tools	3	4	5
Sawmills, permanent	8	10	12
portable	5	6	7
Service establishments	7	9	11
Ship and boat building machinery and equipment	9.5	12	14.5
dry dock improvements	13	16	19
special tools	5	6.5	8
Soft drink manufacture and bottling	9.5	12	14.5
Steam production and distribution	22.5	28	33.5
Stone products manufacturing	12	15	18
Sugar and sugar products manufacturing	14.5	18	21.5
Telephone, central office equipment	-----	18	-----
distribution	28	35	42
station equipment	8	10	12
Textile products, including finishing and dyeing	7	9	11
manufacture of nonwoven fabrics	8	10	12
manufacture of yarn, thread and woven fabrics	9	11	13
manufacture of textured yarns	6.5	8	9.5
Theater equipment	8	10	12
Tobacco and tobacco products	12	15	18
Vegetable oil products	14.5	18	21.5
Waste reduction and resource recovery	8	10	12
Water transportation	16	20	24
vessels, barges and tugs	14.5	18	21.5
Water utilities	40	50	60
Wharves, docks and piers	-----	20	-----
Wholesale trade fixtures and equipment	7	9	11
Wood products and furniture manufacturing	8	10	12

DEPRECIATION – COMMERCIAL PROPERTIES

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS									
	70	60	55	50	45	40	35	30	25	20
	DEPRECIATION – PERCENTAGE									
1	0	0	0	0	1	1	1	2	2	3
2	0	1	1	1	1	2	2	3	5	7
3	0	1	1	1	2	3	4	5	7	10
4	1	1	1	2	3	4	5	7	10	14
5	1	1	2	3	4	5	6	9	13	18
6	1	2	2	3	4	6	8	11	16	22
7	1	2	3	4	5	7	10	14	19	26
8	1	2	3	5	6	8	11	16	22	30
9	2	3	4	5	7	10	13	18	25	35
10	2	3	4	6	8	11	15	21	29	40
11	2	4	5	7	9	13	17	24	32	45
12	2	4	6	8	10	14	19	26	36	50
13	2	5	6	9	12	16	22	29	40	55
14	3	5	7	10	13	18	24	32	44	60
15	3	6	8	11	14	20	26	35	48	65
16	3	7	9	12	16	22	28	39	52	69
17	4	7	10	13	18	24	31	42	56	73
18	4	8	11	14	19	26	34	46	60	76
19	4	9	12	16	21	28	36	49	64	78
20	5	9	13	17	23	30	39	53	68	79
21	5	10	14	18	25	32	42	57	71	80
22	6	11	15	20	27	35	45	60	73	
23	6	12	16	21	29	37	48	63	75	
24	7	13	17	23	31	40	52	66	77	
25	7	14	19	25	33	43	55	69	79	
26	8	15	20	27	35	46	58	72	80	
27	9	16	21	28	37	49	61	75		
28	9	17	23	30	40	52	64	77		
29	10	18	24	32	42	54	68	78		
30	11	20	26	34	45	57	72	79		
32	13	22	30	38	50	62	75	80		
34	15	25	34	43	55	68	77			
36	17	28	38	48	61	73	79			
38	19	32	42	53	67	77	80			
40	21	35	46	59	72	79				
42	25	39	51	65	75	80				
44	28	43	56	70	77					
46	31	48	60	74	78					
48	34	53	64	77	79					
50	38	58	68	79	80					
55	48	67	75	80						
60	57	74	78							
65	65	78	80							
70	71	80								
75	75									
80	78									

PROPERTIES INCLUDED

Section 11 All apartments, hotels, resorts
Section 12 Motels, lodges, large multiples & resorts
Section 13 All
Section 14 All
Section 15 All except libraries
Section 16 All except churches and fraternal bldgs.
Section 17 All commercial and industrial uses
Section 18 None
Section 64 All commercial and industrial uses

For lives less than 20 years, see Page 26.

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS									
	70	60	55	50	45	40	35	30	25	20
	REMAINING LIFE EXPECTANCY – YEARS									
1	69	59	54	49	44	39	34	29	24	19
2	68	58	53	48	43	38	33	28	23	18
3	67	57	52	47	42	37	32	27	22	17
4	66	56	51	46	41	36	31	26	21	16
5	65	55	50	45	40	35	30	25	20	15
6	64	54	49	44	39	34	29	24	19	14
7	63	53	48	43	38	33	28	23	18	13
8	62	52	47	42	37	32	27	22	17	12
9	61	51	46	41	36	31	26	21	16	11
10	60	50	45	40	35	30	25	20	15	10
11	59	49	44	39	34	29	24	19	14	9
12	58	48	43	38	33	28	23	18	13	8
13	57	47	42	37	32	27	22	17	12	7
14	56	46	41	36	31	26	21	16	11	6
15	55	45	40	35	30	25	20	15	10	5
16	54	44	39	34	29	24	19	14	9	4
17	53	43	38	33	28	23	18	13	8	4
18	52	42	37	32	27	22	17	12	7	3
19	51	41	36	31	26	21	16	11	6	2
20	50	40	35	30	25	20	15	10	5	2
21	49	39	34	29	24	19	14	9	5	2
22	48	38	33	28	23	18	13	8	4	
23	47	37	32	27	22	17	12	7	3	
24	46	36	31	26	21	16	11	6	3	
25	45	35	30	25	20	15	10	6	2	
26	44	34	29	24	19	14	9	5	2	
27	43	33	28	23	18	13	8	4		
28	42	32	27	22	17	12	7	4		
29	41	31	26	21	16	11	7	3		
30	40	30	25	20	15	10	6	3		
32	38	28	23	18	13	8	5	2		
34	36	26	21	16	11	7	4			
36	34	24	19	14	10	6	3			
38	32	22	17	12	8	5	2			
40	30	20	15	10	7	4				
42	28	18	13	9	6	3				
44	26	16	12	8	5					
46	24	14	10	7	4					
48	22	13	9	6	3					
50	20	11	8	5	3					
55	16	8	6	3						
60	12	6	4							
65	9	4	3							
70	7	3								
75	5									
80	4									

DEPRECIATION – RESIDENTIAL PROPERTIES

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS										
	70	65	60	55	50	45	40	35	30	25	20
	DEPRECIATION – PERCENTAGE										
1	0	0	0	1	1	1	1	2	2	3	3
2	1	1	1	2	2	2	3	4	4	6	7
3	1	2	2	2	3	3	4	5	6	9	11
4	2	2	3	3	4	4	5	7	9	12	15
5	2	3	4	4	5	6	7	9	12	15	20
6	3	4	4	5	6	7	9	11	14	18	24
7	4	5	5	6	7	8	10	13	17	22	28
8	4	5	6	7	8	10	12	15	19	25	33
9	5	6	7	8	10	11	14	17	22	29	38
10	5	7	8	9	11	13	16	20	25	32	43
11	6	8	9	10	12	14	18	22	28	36	48
12	7	9	10	11	13	15	20	24	31	40	53
13	8	10	11	12	15	17	22	26	34	44	57
14	8	10	12	13	16	19	24	29	37	48	61
15	9	11	12	15	17	21	26	32	40	52	66
16	10	12	13	16	19	23	28	34	43	55	70
17	10	13	15	17	20	25	30	37	46	59	73
18	11	14	16	19	22	27	32	40	50	63	76
19	12	15	17	20	24	28	34	43	53	67	78
20	13	16	18	21	25	30	37	45	56	71	79
22	14	17	20	23	28	34	42	51	62	76	80
24	16	20	23	26	31	38	47	57	68	79	
26	18	22	25	29	35	43	52	62	74	80	
28	20	24	28	33	39	47	57	68	77		
30	22	27	31	36	44	52	62	71	79		
32	24	29	34	40	47	56	67	74	80		
34	27	32	37	44	51	60	71	77			
36	29	35	40	47	55	65	74	79			
38	32	38	43	51	59	69	77	80			
40	35	41	47	55	63	72	79				
42	38	45	51	59	66	75	80				
44	41	48	54	62	69	77					
46	44	51	57	65	72	79					
48	46	54	61	68	75	80					
50	49	57	64	71	77						
55	57	64	70	77	80						
60	64	69	74	80							
65	71	74	78								
70	76	78	80								
75	80	80									
80											
85											
90											
95											
100											

PROPERTIES INCLUDED

Section 11	All except apartments, hotels and large resorts
Section 12	All except motels, lodges, large multiples and resorts
Section 13	None
Section 14	None
Section 15	Libraries
Section 16	Churches, fraternal bldgs.
Section 17	All farm and residential uses
Section 18	All school buildings
Section 64	All farm and residential uses

For life expectancies less than 20 years, use table on Page 26.

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS										
	70	65	60	55	50	45	40	35	30	25	20
	REMAINING LIFE EXPECTANCY – YEARS										
1	69	64	59	54	49	44	39	34	29	24	19
2	68	63	58	53	48	43	38	33	28	23	18
3	67	62	57	52	47	42	37	32	27	22	17
4	66	61	56	51	46	41	36	31	26	21	16
5	65	60	55	50	45	40	35	30	25	20	15
6	64	59	54	49	44	39	34	29	24	19	14
7	63	58	53	48	43	38	33	28	23	18	13
8	62	57	52	47	42	37	32	27	22	17	12
9	61	56	51	46	41	36	31	26	21	16	11
10	60	55	50	45	40	35	30	25	20	15	10
11	59	54	49	44	39	34	29	24	19	14	9
12	58	53	48	43	38	33	28	23	18	13	8
13	57	52	47	42	37	32	27	22	17	12	7
14	56	51	46	41	36	31	26	21	16	11	6
15	55	50	45	40	35	30	25	20	15	10	5
16	54	49	44	39	34	29	24	19	14	9	5
17	53	48	43	38	33	28	23	18	13	9	4
18	52	47	42	37	32	27	22	17	12	8	3
19	51	46	41	36	31	26	21	16	11	7	3
20	50	45	40	35	30	25	20	15	10	6	2
22	48	43	38	33	28	23	18	13	9	5	2
24	46	41	36	31	26	21	16	12	7	4	
26	44	39	34	29	24	19	15	10	6	4	
28	42	37	32	27	22	17	13	9	5	3	
30	40	35	30	25	20	16	11	8	4	3	
32	38	33	28	23	18	14	9	6	3		
34	36	31	26	21	17	12	8	5	3		
36	34	29	24	20	15	10	7	5			
38	32	27	22	18	13	9	6	4			
40	30	25	21	16	11	8	5	3			
42	28	23	19	14	10	7	5				
44	26	21	17	13	9	6	5				
46	25	20	15	12	8	6	4				
48	23	19	14	11	7	5					
50	21	17	12	10	7	5					
55	17	14	10	8	5	4					
60	14	11	8	7	4						
65	11	9	7	6							
70	9	8	7								
75	8	7									
80	7	7									
85	7										
90											
95											
100											

DEPRECIATION – FIXTURES AND EQUIPMENT

These general tables are furnished primarily for the experienced equipment appraiser who has knowledge of the normal lives and retirement experiences of fixtures and equipment, as a check against his other methods of determination of the total depreciation of equipment. These tables were based on actual cases of sales and mortality to which empirical mathematical curves have been matched. They are averages and as such must be used with care using effective age and modifying for above- or below-normal utilization, wear and tear, obsolescence and buyer preferences. See top of Page 20 and Pages 2 and 3 for further life expectancy discussions.

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS																	
	30	25	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
	NORMAL DEPRECIATION – PERCENTAGE																	
1	2	2	3	3	4	4	4	5	5	6	6	7	8	9	10	11	13	15
2	3	5	7	7	8	9	9	10	11	12	13	14	16	18	21	24	27	31
3	5	7	10	11	12	13	14	15	16	18	20	22	24	28	33	38	43	48
4	7	10	14	15	17	18	19	21	23	25	27	30	33	39	46	52	59	66
5	9	13	18	19	21	23	25	27	29	31	34	38	42	49	57	63	70	77
6	11	16	22	23	25	27	29	32	35	38	42	46	51	59	67	72	77	82
7	14	19	26	28	30	32	35	38	42	46	50	55	61	67	74	77	81	
8	16	22	30	32	35	38	42	45	49	53	57	63	70	74	78	80		
9	18	25	35	37	40	43	47	51	55	59	64	70	76	78	80			
10	21	29	40	43	46	49	53	57	61	66	71	75	79	80				
11	24	32	45	48	51	54	58	63	67	71	76	78	80					
12	26	36	50	53	56	60	64	69	72	75	78	80						
13	29	40	55	58	61	65	69	74	76	78	80							
14	32	44	60	63	66	69	73	77	78	80								
15	35	48	65	67	69	72	76	79	80									
16	39	52	69	71	73	75	78	80										
17	42	56	73	75	77	79	80											
18	46	61	76	77	78	80												
19	49	66	78	79	80													
20	53	70	79	80														
22	60	74	80															
24	66	77																
26	72	79																
28	77																	
30	79																	
32	80																	

EFFECTIVE AGE IN YEARS	TYPICAL LIFE EXPECTANCY IN YEARS																	
	30	25	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
	REMAINING LIFE – YEARS																	
1	29	24	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4
2	28	23	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3
3	27	22	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
4	26	21	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
5	25	20	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1
6	24	19	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1	1
7	23	18	13	12	11	10	9	8	7	6	5	4	3	2	1	1	1	
8	22	17	12	11	10	9	8	7	6	5	4	3	2	1	1	1		
9	21	16	11	10	9	8	7	6	5	4	3	2	1	1	1			
10	20	15	10	9	8	7	6	5	4	3	2	1	1	1				
11	19	14	9	8	7	6	5	4	3	2	2	1	1					
12	18	13	8	7	6	5	4	3	2	1	1	1						
13	17	12	7	6	5	4	3	3	2	1	1							
14	16	11	6	5	4	3	2	2	1	1								
15	15	10	5	4	3	2	1	1	1									
16	14	9	4	3	2	1	1	1										
17	13	8	4	3	2	1												
18	12	7	3	2	1													
19	11	6	2	2														
20	10	5	2															
22	8	4																
24	6	3																
26	5	2																
28	4																	
30	3																	
32	2																	

SALVAGE VALUE

The following table lists average salvage value of all equipment and fixtures by industry. Thus, all the equipment in a bakery, taken as a whole, might be expected to have a 10% remaining salvage value when fully depreciated. If the installation is unmarketable, however, then the value could go to zero.

Airplane mfg.	10%	Clay products	7%	Library	10%	Restaurant	14%
Apartment	10%	Construction equip.	14%	Logging equip.	10%	Rubber	9%
Bakery	10%	Creamery – dairy	11%	Metalworking	12%	School	10%
Bank	10%	Dwelling	12%	Mining, milling	8%	Sewage disposal (city)	7%
Bottling	10%	Elec. equip. mfg.	10%	Motion picture	12%	Shipbuilding	9%
Brewery, distillery	8%	Elec. power equip.	10%	Office equipment	12%	Steam power	10%
Candy, conf.	10%	Flour, cereal, feed	8%	Oil refining	7%	Store	10%
Cannery – fish	8%	Garage	10%	Packing – meat	7%	Textile	8%
Cannery – fruit	8%	Glass mfg.	8%	Paint mfg.	7%	Theater	12%
Cement mfg.	8%	Hospital	12%	Paper mfg.	7%	Warehousing	10%
Chemicals	6%	Hotel	10%	Printing	10%	Waterworks (city)	6%
Church	10%	Laundry – dry cleaning	10%	Refrigerating	8%	Woodworking	10%

COMPARATIVE COST INDEXES

For quick computation of present replacement costs from dependable historical costs.

THE PURPOSE of Section 98 is to present data necessary to bring previously established costs on buildings and equipment up to date or back in time, to compare typical costs established at different times and locations, or to form a basis for forecasting future cost changes.

Good answers can be developed with the figures from this section when they are properly used. Accurate indexes of general cost changes give reasonable present day costs when applied to good prior costs. The tables reflecting the latest quarters (Pages 5 through 36) are published every January, April, July and October.

THE COMPARATIVE COST FACTORS for buildings reflect labor, material and miscellaneous costs for the locations listed. Each cost is analyzed as it is found in a composite building typical of each class of construction. The results are then adjusted for variations such as cost of construction money, contractors' profit and overhead, and other business indicators.

With exception of temporary booms, building costs in a locality tend to retain a similar relationship. The factors that in earlier years made a locality expensive to build in will tend to keep the costs higher in that area today. Conversely, low-cost areas tend to stay low.

Do not apply the Local Multipliers, Section 99, Pages 5 through 10 to the historical costs, as any established prior costs would already be of local origin.

DISTRICT COMPARATIVE COST MULTIPLIERS, Section 98, Pages 5 and 6 give current building replacement costs directly by use of multipliers. Costs are based on computations giving district averages from many cities throughout the district. Tables are kept current monthly by use of the correcting factors from the latest monthly Green Supplement, Section 99, Page 4. For an example see Section 98, Page 5. Multipliers may also be used to trend current costs to an earlier date simply by dividing the current cost by the factor for the earlier date.

The District Map (Page 10) shows the states and provinces included in each district: Eastern, comprising the Atlantic Coast from New England to Florida, Ontario, Quebec, and the Maritimes; Western, comprising the eleven Western states, Alberta and British Columbia; and Central, comprising the remaining states, Saskatchewan and Manitoba.

CITY AND REGION COMPARATIVE COST MULTIPLIERS, Section 98, Pages 11 through 36 reflect building cost changes for major individual cities listed geographically by region within each district. Regional averages from the listed cities are shown on Pages 15 and 16. Canadian city cost multipliers are computed in Canadian dollars and are listed on Pages 11 through 14. For a complete listing of cities, see Page 10.

Multiplier (for Known Date) x Known Cost = Present Cost

Example: To bring an established cost to a current date or a Class A building in Boston (Page 18) with an original cost of $1,000,000 in January 2007, the answer would be: The January 2007 multiplier is assumed to be, 1.259, times $1,000,000 equals $1,259,000, the trended current cost.

$$\frac{\text{Known Multiplier}}{\text{Historical Multiplier}} \times \text{Known Cost} = \text{Historical Cost}$$

Example: To take an established cost to a historical date for the Class A building above with an original cost of $1,000,000 in January 2008, the answer would be: The January 2008 multiplier assumed to be 1.220; for January 2006 assumend to be 1.355. Dividing the 2008 multiplier by the 2006 multiplier gives .900. This figure, multiplied by $1,000,000, equals $900,000, the cost trended back to January 2006 from January 2008.

THE COST INDEXES, Section 98, Pages 7 to 10, are given for making comparisons between two former years, particularly further back than the 1960's. However, if the current replacement cost is desired, the district, region or city multipliers given on Pages 5 and 6 or 11 through 36 of this section are easier to use; since they substitute one multiplication for two arithmetic computations.

Index comparisons are developed by dividing the index for the date for which a cost is desired by the index for the date of the known cost, and multiplying the resulting factor by the known cost.

THE EQUIPMENT COST INDEXES, Section 98, Pages 7 to 10, represent a composite of the equipment costs of an entire industry. The cost of individual plants or pieces of equipment may deviate from the given index, but in a typical industry, the overall costs will follow the index. The indexes are national averages, and are computed quarterly.

Costs representing industrial and manufacturing engineering, machinery, mechanical and electrical installation, office equipment, furniture, fixtures, hand tools, and other items are combined in the proportion to their average occurrence in each of the listed industries. Costs are additionally weighted by a factor representing the general business activity and status of the economy at the time of computation. The following is the formula and an example using the indexes:

$$\frac{\text{Present Index}}{\text{Former Index}} \times \text{Known Cost} = \text{Present Cost}$$

Example: A bakery was equipped in January 2011 at a cost of $100,000. What would be the equivalent equipment costs in January 2015? The bakery-industry index for January 2011 is assumed to be 1435.2; for January 2015, it is assumed to be 1556.7. Dividing the 2015 index by the 2011 index gives 1.085. This figure, multiplied by $100,000, the former cost, gives $108,500, the January 2015 cost.

The purchase price, and details of the purchase, should be inquired when a comparison is being made between former and present costs. If the reliability of the original costs of the plant or equipment is doubtful, multiplying by a cost change factor will not improve the reliability of the data. It is important to remember that changes in design or productive capacity will not have any bearing on indexes giving the reproduction cost of already installed equipment. Any obsolescence (depreciation) is a component of value and not of cost new.

CHECK OF COSTS

CHECK COMPARATIVE COST answers against costs computed by means of the square or cubic foot costs of the Calculator method. A replacement cost obtained by the comparative cost tables often will not coincide with one computed with the Calculator method, Segregated Cost method, or costs computed by other methods. Old records often cover non-existing items will not list items added and expensed on the books, or items now required by current codes.

If you have good fairly recent costs on a complicated building that doesn't fit the averages given in the Calculator or Segregated Cost sections, you may get a better answer from the comparative multipliers.

Accuracy of the method depends primarily on the reliability of the historical, costs which are to be factored to present day costs; always keeping in mind that the longer the elapsed time, the less accurate the answer due to changes in materials, construction methods, and productivity of labor and machines. The use of indexing as a method will only yield a reproduction cost new of the value that the comparative factors have been applied to.

USE OF THE COMPARATIVE COST TABLES

QUESTION OF VALIDITY OF OLD COSTS

Accuracy of the comparative cost method is limited by the accuracy of the prior costs. It is suggested that you review the questions below as a guide in determining the reliability of your prior costs.

BUILDINGS

1. Are costs from a normal market? Was bidding normal?
2. Was the cost typical? Have construction practices or building codes changed?
3. Were all subcontractors, such as heating, lighting, ventilating, appliances and elevators, included in the cost statement or general contract?
4. Were leasehold improvements installed which are now part of the building?
5. Were architects' fees and engineers' fees included?
6. Were there unusual labor or climatic conditions at the time of construction? For instance, an unusual local building boom may distort local costs, or local unionization may have increased more rapidly than in the district as a whole.
7. Were items of furnishings or land, not properly part of the building, included in a statement of building costs?
8. Was the cost accounting of building construction in accord with standard practices?
9. Was the building remodeled after the original costs were established?
10. Were there change orders which may have added costs for duplicate construction?

EQUIPMENT

1. Was the equipment bought on a normal market?
2. Was the going price paid, or were there special considerations?
3. Was the item new or used?
4. Was it purchased from the manufacturer or an authorized dealer?
5. Was an old machine traded in against the new purchase without proper entry in the books?
6. Were costs for freight or sales tax included?
7. Were costs of installation, including inspection and testing, included?
8. Does it still exist?
9. Is it on-line and running?

BRINGING INSURABLE VALUES UP TO DATE

The correct procedure in bringing insurable values up to date is to base computations on replacement cost (original cost new or latest appraised estimate of cost) rather than on depreciated or insurable value.

Assume that a valuation had established the following information as of January 2006.

Replacement Cost	$100,000
Depreciation 20%	- 20,000
Cash Value	$ 80,000
Excluded Value 5%	- 4,000
Insurable Value	$ 76,000

No additions or improvements have been made. Consequently, additional physical depreciation of 5% is assumed to have accrued between the previous valuation and the present. The comparative cost multiplier, either established from an appropriate City or Regional Cost Multiplier or taken directly from the District Current Comparative Cost Table, 98, Page 5, is assumed to be 1.100.

For the present replacement cost, multiply the original $100,000 by the 1.100 multiplier.

$100,000 x 1.100 = $110,000

For the present depreciation, subtract the present 25% from the replacement cost to arrive at the sound value.

25% x $110,000	=	- 27,500
Cash Value		$ 82,500
Subtract the 5% exclusions		
5% of $82,500	=	- 4,125
Depreciated Insurable Value		$ 78,375

NOTE: Exclusions (underground piping, foundations, etc.) may be taken before depreciation if the insurable replacement cost is required. The type of exclusions or additions for debris removal is a matter of underwriting policy and not a matter of valuation. (See Section 96.)

Acquire replacement cost if available. If replacement cost dimensions or specifications are not available, the only alternative may be to apply the factor to the prior cash (sound) or insurable value. However, this will produce an error and give only an approximation. Preferably, apply comparative cost mulitpliers only to replacement cost new figures.

Equipment costs for the plant may be trended in the same manner by applying the correct factor for the industry.

DISTRICT COMPARATIVE COST MULTIPLIERS

This page is replaced every January, April, October and October. For other months, modify from the latest Monthly Green Supplement, Section 99. The factors on this sheet and on the Green Supplement do not allow for depreciation.

EXAMPLE: The replacement cost of an Eastern District brick apartment building built in April 2008 was $1,000,000. The multiplier under Class C opposite April 2008 is assumed to be 1.195. Assume that the Comparative Cost Multiplier correcting factor on Section 99, Page 4 for Class C is 1.004. (This figure is hypothetical to illustrate the methodology, will change each month and will be 1.000 in the months in which Section 98, Pages 5 and 6 are published.) Then 1.195 x 1.004 = 1.120. This, multiplied by $1,000,000, is $1,120,000, the current replacement cost. Since historical costs are already local in nature, do not use the Local Multipliers with these figures.

EASTERN

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JAN 2019	1.000	1.000	1.000	1.000	1.000
OCT 2018	1.012	1.003	1.003	1.001	1.005
JUL 2018	1.035	1.011	1.016	1.015	1.026
APR 2018	1.050	1.020	1.026	1.026	1.038
JAN 2018	1.057	1.030	1.036	1.036	1.047
OCT 2017	1.059	1.033	1.044	1.045	1.053
JUL 2017	1.066	1.040	1.055	1.059	1.066
APR 2017	1.078	1.047	1.062	1.064	1.073
JAN 2017	1.083	1.054	1.069	1.070	1.079
OCT 2016	1.081	1.054	1.071	1.072	1.082
JUL 2016	1.080	1.057	1.074	1.074	1.084
APR 2016	1.080	1.059	1.075	1.074	1.084
JAN 2016	1.080	1.061	1.076	1.074	1.084
OCT 2015	1.077	1.061	1.076	1.073	1.083
JUL 2015	1.080	1.065	1.077	1.074	1.085
APR 2015	1.081	1.070	1.081	1.077	1.088
JAN 2015	1.084	1.074	1.084	1.080	1.090
OCT 2014	1.090	1.080	1.091	1.087	1.097
JUL 2014	1.093	1.085	1.096	1.093	1.101
APR 2014	1.097	1.086	1.099	1.098	1.103
JAN 2014	1.106	1.095	1.108	1.105	1.109
OCT 2013	1.113	1.103	1.117	1.113	1.114
JUL 2013	1.118	1.108	1.125	1.124	1.119
APR 2013	1.129	1.119	1.138	1.139	1.127
JAN 2013	1.132	1.123	1.144	1.146	1.130
OCT 2012	1.138	1.130	1.152	1.156	1.135
JUL 2012	1.145	1.138	1.163	1.171	1.140
APR 2012	1.154	1.148	1.174	1.185	1.148
JAN 2012	1.160	1.155	1.182	1.193	1.153
OCT 2011	1.165	1.161	1.187	1.200	1.156
JUL 2011	1.180	1.173	1.198	1.209	1.170
APR 2011	1.197	1.189	1.210	1.219	1.185
JAN 2011	1.205	1.197	1.215	1.222	1.192
OCT 2010	1.210	1.201	1.219	1.226	1.195
JUL 2010	1.229	1.220	1.240	1.250	1.213
APR 2010	1.238	1.228	1.252	1.267	1.220
JAN 2010	1.241	1.233	1.258	1.273	1.221
OCT 2009	1.244	1.235	1.264	1.281	1.225
JUL 2009	1.206	1.201	1.239	1.260	1.176
APR 2009	1.166	1.164	1.209	1.231	1.129
JAN 2009	1.158	1.157	1.204	1.224	1.119
JUL 2008	1.239	1.228	1.256	1.259	1.205
JAN 2008	1.264	1.248	1.264	1.254	1.231

CENTRAL

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JAN 2019	1.000	1.000	1.000	1.000	1.000
OCT 2018	1.010	1.002	1.003	1.001	1.005
JUL 2018	1.033	1.009	1.014	1.013	1.025
APR 2018	1.053	1.019	1.026	1.026	1.040
JAN 2018	1.063	1.032	1.040	1.040	1.053
OCT 2017	1.067	1.038	1.052	1.052	1.062
JUL 2017	1.072	1.044	1.061	1.064	1.074
APR 2017	1.084	1.052	1.070	1.071	1.082
JAN 2017	1.092	1.061	1.078	1.079	1.091
OCT 2016	1.095	1.065	1.085	1.086	1.098
JUL 2016	1.097	1.070	1.091	1.091	1.102
APR 2016	1.096	1.070	1.091	1.089	1.101
JAN 2016	1.094	1.071	1.090	1.086	1.098
OCT 2015	1.090	1.070	1.087	1.083	1.094
JUL 2015	1.092	1.073	1.088	1.084	1.095
APR 2015	1.092	1.075	1.089	1.084	1.095
JAN 2015	1.094	1.078	1.092	1.087	1.096
OCT 2014	1.096	1.082	1.097	1.092	1.101
JUL 2014	1.097	1.085	1.100	1.096	1.103
APR 2014	1.100	1.087	1.103	1.100	1.105
JAN 2014	1.109	1.096	1.110	1.106	1.112
OCT 2013	1.110	1.097	1.110	1.106	1.110
JUL 2013	1.114	1.102	1.118	1.118	1.112
APR 2013	1.123	1.112	1.133	1.136	1.118
JAN 2013	1.130	1.121	1.144	1.149	1.122
OCT 2012	1.134	1.128	1.151	1.160	1.124
JUL 2012	1.143	1.138	1.164	1.178	1.131
APR 2012	1.150	1.145	1.174	1.193	1.138
JAN 2012	1.158	1.153	1.181	1.200	1.143
OCT 2011	1.163	1.160	1.188	1.205	1.148
JUL 2011	1.173	1.168	1.195	1.212	1.157
APR 2011	1.186	1.179	1.203	1.219	1.169
JAN 2011	1.193	1.186	1.206	1.220	1.176
OCT 2010	1.198	1.190	1.210	1.222	1.179
JUL 2010	1.211	1.201	1.224	1.240	1.183
APR 2010	1.230	1.221	1.244	1.264	1.201
JAN 2010	1.237	1.228	1.252	1.272	1.207
OCT 2009	1.239	1.231	1.256	1.276	1.207
JUL 2009	1.201	1.199	1.232	1.257	1.163
APR 2009	1.160	1.163	1.203	1.230	1.114
JAN 2009	1.151	1.156	1.197	1.222	1.103
JUL 2008	1.229	1.223	1.254	1.264	1.182
JAN 2008	1.260	1.249	1.267	1.262	1.211

WESTERN

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JAN 2019	1.000	1.000	1.000	1.000	1.000
OCT 2018	1.012	1.005	1.005	1.005	1.008
JUL 2018	1.034	1.013	1.016	1.017	1.028
APR 2018	1.053	1.025	1.031	1.033	1.046
JAN 2018	1.062	1.034	1.040	1.043	1.055
OCT 2017	1.064	1.039	1.052	1.054	1.063
JUL 2017	1.072	1.049	1.065	1.072	1.079
APR 2017	1.086	1.057	1.074	1.078	1.086
JAN 2017	1.094	1.066	1.083	1.086	1.095
OCT 2016	1.099	1.071	1.090	1.093	1.102
JUL 2016	1.099	1.075	1.096	1.097	1.106
APR 2016	1.098	1.076	1.096	1.096	1.105
JAN 2016	1.095	1.075	1.093	1.091	1.100
OCT 2015	1.092	1.074	1.093	1.090	1.098
JUL 2015	1.094	1.077	1.095	1.091	1.099
APR 2015	1.094	1.079	1.096	1.092	1.101
JAN 2015	1.095	1.082	1.099	1.094	1.102
OCT 2014	1.097	1.086	1.103	1.099	1.105
JUL 2014	1.101	1.089	1.106	1.103	1.108
APR 2014	1.110	1.098	1.118	1.119	1.115
JAN 2014	1.118	1.106	1.124	1.124	1.121
OCT 2013	1.121	1.108	1.125	1.124	1.122
JUL 2013	1.126	1.115	1.134	1.136	1.127
APR 2013	1.136	1.125	1.148	1.154	1.135
JAN 2013	1.143	1.135	1.159	1.166	1.140
OCT 2012	1.150	1.143	1.169	1.179	1.144
JUL 2012	1.156	1.150	1.179	1.194	1.148
APR 2012	1.164	1.158	1.190	1.209	1.157
JAN 2012	1.171	1.165	1.196	1.214	1.163
OCT 2011	1.178	1.172	1.202	1.220	1.170
JUL 2011	1.188	1.182	1.211	1.228	1.178
APR 2011	1.203	1.195	1.221	1.237	1.192
JAN 2011	1.211	1.201	1.226	1.242	1.201
OCT 2010	1.216	1.204	1.229	1.243	1.206
JUL 2010	1.233	1.222	1.248	1.267	1.212
APR 2010	1.248	1.238	1.268	1.292	1.226
JAN 2010	1.253	1.243	1.275	1.301	1.229
OCT 2009	1.258	1.249	1.283	1.310	1.234
JUL 2009	1.206	1.202	1.254	1.287	1.183
APR 2009	1.167	1.165	1.226	1.261	1.139
JAN 2009	1.163	1.161	1.222	1.255	1.133
JUL 2008	1.246	1.230	1.277	1.292	1.223
JAN 2008	1.272	1.251	1.288	1.293	1.244

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.

DISTRICT COMPARATIVE COST MULTIPLIERS

EASTERN

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JUL 2007	1.283	1.266	1.277	1.264	1.250
JAN 2007	1.304	1.287	1.289	1.269	1.268
JUL 2006	1.363	1.341	1.348	1.320	1.323
JAN 2006	1.404	1.380	1.389	1.358	1.363
JUL 2005	1.443	1.420	1.435	1.403	1.402
JAN 2005	1.471	1.451	1.467	1.435	1.430
JUL 2004	1.555	1.531	1.539	1.505	1.505
JAN 2004	1.642	1.612	1.600	1.556	1.591
JUL 2003	1.703	1.679	1.675	1.640	1.658
JAN 2003	1.715	1.691	1.684	1.647	1.669
JUL 2002	1.752	1.727	1.723	1.690	1.706
JAN 2002	1.768	1.744	1.742	1.710	1.718
JUL 2001	1.785	1.763	1.762	1.733	1.731
JAN 2001	1.780	1.760	1.761	1.733	1.731
JUL 2000	1.792	1.774	1.772	1.735	1.736
JAN 2000	1.821	1.798	1.802	1.767	1.767
JUL 1999	1.882	1.859	1.872	1.844	1.826
JAN 1999	1.900	1.880	1.895	1.868	1.838
JUL 1998	1.926	1.908	1.920	1.900	1.855
JAN 1998	1.941	1.922	1.926	1.897	1.868
JUL 1997	1.970	1.951	1.951	1.917	1.894
JAN 1997	1.991	1.976	1.978	1.951	1.912
JUL 1996	2.021	2.006	2.010	1.998	1.937
JAN 1996	2.031	2.011	2.009	1.991	1.946
JUL 1995	2.057	2.030	2.028	1.999	1.976
JAN 1995	2.075	2.050	2.048	2.018	2.001
JUL 1994	2.108	2.085	2.079	2.038	2.033
JAN 1994	2.176	2.156	2.152	2.146	2.094
JUL 1993	2.155	2.129	2.109	2.074	2.072
JAN 1993	2.220	2.193	2.180	2.176	2.123
JUL 1992	2.240	2.216	2.211	2.214	2.147
JAN 1992	2.256	2.234	2.236	2.254	2.159
JUL 1991	2.290	2.270	2.272	2.300	2.186
JAN 1991	2.282	2.259	2.264	2.291	2.178
JUL 1990	2.312	2.288	2.284	2.308	2.204
JAN 1990	2.331	2.305	2.302	2.320	2.221
JUL 1989	2.344	2.326	2.320	2.344	2.228
JAN 1989	2.361	2.342	2.339	2.363	2.246
JUL 1988	2.397	2.380	2.372	2.399	2.281
JAN 1988	2.505	2.477	2.454	2.459	2.406
JUL 1987	2.564	2.533	2.499	2.484	2.468
JAN 1987	2.573	2.541	2.508	2.483	2.476
JUL 1986	2.585	2.555	2.512	2.476	2.485
JAN 1986	2.618	2.587	2.554	2.529	2.516

CENTRAL

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JUL 2007	1.283	1.270	1.286	1.280	1.232
JAN 2007	1.298	1.285	1.293	1.281	1.245
JUL 2006	1.349	1.331	1.341	1.321	1.293
JAN 2006	1.392	1.370	1.378	1.353	1.332
JUL 2005	1.422	1.401	1.418	1.395	1.363
JAN 2005	1.445	1.421	1.440	1.417	1.387
JUL 2004	1.520	1.491	1.504	1.481	1.455
JAN 2004	1.603	1.563	1.558	1.529	1.534
JUL 2003	1.656	1.621	1.626	1.607	1.596
JAN 2003	1.656	1.625	1.629	1.609	1.597
JUL 2002	1.680	1.650	1.656	1.637	1.619
JAN 2002	1.700	1.668	1.674	1.655	1.635
JUL 2001	1.722	1.692	1.697	1.681	1.652
JAN 2001	1.721	1.693	1.701	1.691	1.657
JUL 2000	1.724	1.695	1.698	1.681	1.652
JAN 2000	1.747	1.715	1.725	1.710	1.673
JUL 1999	1.807	1.776	1.798	1.796	1.729
JAN 1999	1.825	1.796	1.819	1.818	1.742
JUL 1998	1.856	1.827	1.848	1.853	1.768
JAN 1998	1.873	1.845	1.859	1.855	1.782
JUL 1997	1.908	1.884	1.897	1.891	1.809
JAN 1997	1.944	1.924	1.939	1.942	1.837
JUL 1996	1.976	1.955	1.975	1.991	1.855
JAN 1996	1.989	1.962	1.974	1.981	1.866
JUL 1995	2.014	1.979	1.989	1.986	1.897
JAN 1995	2.037	2.005	2.012	2.006	1.926
JUL 1994	2.065	2.036	2.038	2.018	1.953
JAN 1994	2.128	2.098	2.109	2.122	2.008
JUL 1993	2.118	2.083	2.082	2.069	1.998
JAN 1993	2.190	2.156	2.167	2.195	2.056
JUL 1992	2.222	2.193	2.204	2.233	2.085
JAN 1992	2.245	2.219	2.239	2.288	2.100
JUL 1991	2.273	2.251	2.277	2.339	2.121
JAN 1991	2.269	2.247	2.276	2.326	2.118
JUL 1990	2.285	2.263	2.281	2.323	2.127
JAN 1990	2.288	2.268	2.284	2.317	2.130
JUL 1989	2.304	2.293	2.313	2.350	2.142
JAN 1989	2.306	2.295	2.323	2.360	2.144
JUL 1988	2.330	2.320	2.342	2.386	2.168
JAN 1988	2.418	2.395	2.403	2.426	2.272
JUL 1987	2.460	2.431	2.424	2.437	2.316
JAN 1987	2.460	2.430	2.423	2.436	2.315
JUL 1986	2.474	2.445	2.436	2.448	2.327
JAN 1986	2.493	2.462	2.463	2.483	2.344

WESTERN

YEAR OF FORMER COST	CLASS A Fireproofed Steel Frame	CLASS B Reinforced Concrete Frame	CLASS C Masonry Bearing Walls	CLASS D Wood Frame	CLASS S Metal Frame and Walls
JUL 2007	1.296	1.274	1.310	1.310	1.266
JAN 2007	1.315	1.294	1.325	1.318	1.280
JUL 2006	1.373	1.349	1.384	1.369	1.332
JAN 2006	1.426	1.399	1.435	1.419	1.386
JUL 2005	1.451	1.423	1.465	1.448	1.413
JAN 2005	1.481	1.450	1.493	1.473	1.444
JUL 2004	1.575	1.537	1.559	1.533	1.531
JAN 2004	1.647	1.604	1.612	1.583	1.602
JUL 2003	1.696	1.659	1.678	1.665	1.657
JAN 2003	1.698	1.662	1.681	1.668	1.657
JUL 2002	1.723	1.685	1.706	1.696	1.681
JAN 2002	1.741	1.703	1.725	1.713	1.697
JUL 2001	1.763	1.729	1.751	1.742	1.715
JAN 2001	1.760	1.726	1.750	1.743	1.710
JUL 2000	1.777	1.742	1.761	1.746	1.725
JAN 2000	1.809	1.770	1.793	1.775	1.752
JUL 1999	1.870	1.830	1.862	1.858	1.808
JAN 1999	1.885	1.847	1.879	1.872	1.820
JUL 1998	1.915	1.876	1.908	1.907	1.847
JAN 1998	1.922	1.885	1.909	1.900	1.849
JUL 1997	1.955	1.921	1.940	1.923	1.869
JAN 1997	1.982	1.950	1.973	1.963	1.888
JUL 1996	2.011	1.979	2.003	2.005	1.907
JAN 1996	2.015	1.978	1.995	1.999	1.910
JUL 1995	2.041	1.996	2.012	2.010	1.940
JAN 1995	2.056	2.014	2.030	2.014	1.957
JUL 1994	2.097	2.058	2.071	2.042	2.000
JAN 1994	2.145	2.104	2.119	2.115	2.042
JUL 1993	2.151	2.107	2.116	2.092	2.048
JAN 1993	2.215	2.170	2.186	2.202	2.100
JUL 1992	2.242	2.202	2.213	2.233	2.123
JAN 1992	2.249	2.213	2.234	2.273	2.130
JUL 1991	2.266	2.232	2.259	2.304	2.142
JAN 1991	2.271	2.235	2.263	2.294	2.138
JUL 1990	2.304	2.264	2.280	2.304	2.161
JAN 1990	2.324	2.288	2.313	2.329	2.185
JUL 1989	2.339	2.313	2.344	2.374	2.194
JAN 1989	2.358	2.331	2.372	2.414	2.218
JUL 1988	2.364	2.337	2.379	2.425	2.228
JAN 1988	2.424	2.387	2.414	2.439	2.301
JUL 1987	2.486	2.444	2.464	2.484	2.365
JAN 1987	2.493	2.451	2.470	2.492	2.370
JUL 1986	2.499	2.458	2.477	2.497	2.374
JAN 1986	2.492	2.448	2.475	2.496	2.372

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.

COST MULTIPLIERS

CURRENT COST MULTIPLIERS

CURRENT COST MULTIPLIERS (Section 99, Page 3) are the multipliers for bringing costs published on the preceding pages up-to-date. This page is republished monthly and is based primarily on the Building Cost Indexes.

LOCAL MULTIPLIERS

LOCAL MULTIPLIERS (Section 99, Pages 5 thru 10) reflect local cost conditions and are designed to adjust the basic costs to each locality. They are based on weighted labor and material costs, including local sales taxes and the Canadian GST, but do not include any new construction rebate where applicable. Local multipliers apply to all costs in the manual but not to any cost indexes or replacement cost multipliers. The local multipliers, when applied to the total replacement cost, will adjust for variations in component costs as a whole for a particular geographical area. Multipliers may not adequately adjust when applied to specific components or Unit-in-Place costs, e.g., in the case of a specific piece of equipment which may be national in scope requiring no significant localization. For most Unit-in-Place costs, the predominant building or material Class factor can be used (e.g., wood, Class D; masonry, Class C) or an average of all Classes may be appropriate. In some cases, local building problems and practices must be considered. In the best residential neighborhoods, costs are often higher than those for identical construction in a lower-cost neighborhood. These pages are republished every January, April, July and October.

SPECIAL LOCAL CONDITIONS: Normally, smaller cities and suburbs near larger cities fall under the same cost influence as the larger city; however, local wage scales, inspection practices, licenses, codes and fees may vary, and the valuator should consider these possible deviations. Within a large city, costs will often vary by distance from sources of materials, such as ready-mix plants, and the local multipliers apply only to typical conditions prevailing. The state multipliers are merely weighted averages of the various cities and do not have any other significance. They may fit quite closely to many of the cities in the state which are not listed, but some localities may vary appreciably.

SEISMIC AND WIND: In high wind (over 90 mph) and earthquake (zones 2, 3 & 4) prone areas, you can have additional structural elements which will affect the overall building costs. Lifeline structures, such as Hospitals, Governmental and Data Centers must meet stringent building and life safety codes. See Section 85 for further information. Individual components can be priced using the Segregated Method.

NATURAL DISASTERS: Widespread major natural disasters can create isolated materials and/or labor shortages requiring some upward adjustment to the multipliers. Some specific materials, such as roofing, can temporarily increase 30% to 50% or more above normal repair estimates.

ABNORMAL CONTRACTOR'S PROFIT: In areas of high growth, contractors are able to take higher than normal profits due to an increased demand with limited contractors and/or workforce availablity.

ABNORMAL SHORTAGES: Temporary supply-demand imbalances caused by events other than major catastrophes, such as factory closures, strikes, inadequate inventories, environmental legislation, trade embargoes, commodities speculation, etc., may require upward adjustment to the multipliers.

NOTE: *Even though a particular material or trade may increase dramatically in a short span of time, it may only be a small part of an entire structure, and valuators should use caution.*

COMPLEX SITES: Hillside construction will be much more expensive, due to added foundation and sitework. Downtown buildings are usually somewhat more expensive than outlying buildings. Sidewalks must be barricaded or roofed for the protection of pedestrians. Due to the lack of adequate space, material storage and handling is often more costly. Bordering property must often be protected. Such expenses are a part of construction costs.

GREEN BUILDINGS: High performance sustainable construction that is LEED certified can be more expensive, requiring some upward adjustments to the base costs.

WEATHER EXTREMES: Extreme cold, heat or wet weather may require temporary enclosures or covers, or special storage handling and wrapping of materials. Added costs may require some upward adjustment to the multipliers.

REMOTE LOCATIONS: Upward modification of the multipliers is appropriatelf a building or other structure is far removed from supplies of labor and materia, if its location is accessible with difficulty requiring higher freight charges on material, contains noncompetitive conditions for labor or materials, disproportionate crewing or labor per diem charges, or unusual climatic conditions occur. Examples are island, mountain, desert or resort locations and others not enjoying reasonable and adequate transportation facilities, for which no local modifier has been computed. When using the Mountain and Resort Cottage costs in Section 12, normal erection in remote areas is already included.

QUANTITY OR DEVELOPMENT CONSTRUCTION: There are usually cost savings in quantity or duplicate construction, which may or may not be passed on to the prospective buyer; usually, only part of the savings are passed on. Since costs in this manual will be based to some extent on such construction, the costs may require small, or no percentage reductions to reflect actual sales conditions in the area. Large industrial projects, using multiple tilt-up or residential modular construction can have savings double the listed averages.

AMATEUR WORKMANSHIP: All costs in this manual are based on professional labor supervised by a contractor or job foreman. For amateur workmanship or work done by farm or ranch help, costs should be decreased to reflect the proper wage rate and lack of contractor and architectural supervision relative to the quality of the work.

REPAIR AND REMODEL: All costs in this manual are based on new construction. Typical repair work will run 10% to 20% higher because of restricted area, movement of materials, temporary supports, shoring, etc., and other contingencies not encountered in new construction, excluding demolition and removal. For detailed costs we would recommend using our repair and claims products.

MODIFYING ADJUSTMENTS

The following are rough overall percentage ranges to apply for certain unusual conditions, which can be cumulative:

ADD FOR THE FOLLOWING:			
Abnormal contractor's profit	5%	to	25%
Abnormal shortages	2%	to	10%
Complex/congested areas	2%	to	5%
Hillside buildings	5%	to	20%
Remote areas	5%	to	15%
Resort locations	15%	to	30%
Weather extremes	2%	to	6%
Seismic or high wind	2%	to	5%
lifeline occ., high event (Zone 3/4)	5%	to	10%

ADDITIONS – CONTINUED			
Green Buildings, Commercial	0%	to	7%
Residential	3%	to	20%
SUBTRACT FOR THE FOLLOWING:			
Quantity or Development construction	1%	to	5%
Abnormal labor surplus	1%	to	5%
Amateur workmanship	15%	to	30%
Architects' fee adjustments: see discussion below and on Page 2.			

ARCHITECTS' FEES

The architects' fees listed on the next page are based on averages of fees actually charged or recommended. Actual fees, (based on the size of the project, technical difficulty, artistic requirements, and the reputation of the architect and his willingness to accept the assignment), vary greatly, and the estimate of the fee is a matter for the valuator's judgment. Architects' fees will normally include part or all of the following:

1. Plans and specifications including consultations, estimates and engineering studies.
2. General administration and overall supervision of construction, not including superintending construction.
3. Approving payment vouchers to the contractor.
4. Approval and acceptance of completed construction.

Regardless of the size and type of construction, all of these services must be performed by someone. On some projects, the owner or general contractor may supervise. On governmental projects, many services are performed by government employees; however, in replacing the building, the cost of these services, whether performed by the architect or others, must be included.

The architects' fee percentages given here are only a guide. On a simple pre-engineered structure or residence, stock plans and specifications may be purchased for under $300, plus $50 for each additional set. On a large housing development, the architect may get full fees for each individual design and payments as low as $325 per unit for additional uses of the plans, perform work as a corporate employee. Also, many shed, farm and utility buildings are commonly built without plans or from standard plans which can be obtained free, or at a small price. To add a full architects' fee would be unsuitable.

In actual practice, architects' fees are normally based, by contract, either on a percentage of the entire cost, a multiplier of the technical payroll plus incidental expenses, or on a fixed sum plus listed expenses.

In the final analysis, the architect's function, when fully performed, is a proper cost of construction. A well-considered matching of structure to land may enhance the end value by more than the fees involved. However, when poorly performed, the cost of design and drafting work may be wasted and result in functional obsolescence in a brand-new structure. This determination is a matter of judgment.

The average fees listed for buildings do not include fees for design of furniture, built-in equipment or appliances, plant or off-site, utilities or subdivision layout, or other detailed special items designed for a specific trade or personal use.

ARCHITECTS' FEES

TABLE I

Furnishings and Interiors
Special Lighting
High-value – Luxury Residences
Mausoleums and Memorials

TABLE II

Airport Terminals, Control Towers
Cathedrals
Specialized College Buildings
Convention Centers
Governmental Buildings
Hospitals and Outpatient Centers
Laboratories and Computer Centers
Libraries
Medical Schools
Museums, Galleries and Aquariums
Penal and Mental Institutions
Storefronts

TABLE III

Banks and Financial Institutions
Churches, Amphitheaters and Pavillions
Commons, Bookstores, Luxury Apartments
Communications and Broadcasting
Convalescent and Veterinary Hospitals
Country Clubs and Marinas
Detention and Firing Range Buildings
Fieldhouses and Natatoriums
Fire (Staffed) and Police Stations
Fraternal, Community and Senior Center Buildings
Hotels, City Clubs and Resort Lodges
Institutional Greenhouses
Medical/Dental Office Buildings
Major Post Office Buildings
Public Health and Service Centers
Restroom and Shower Buildings
Secondary and Vocational Schools
Specialty Shops and Boutiques
Stadiums, Sports Facilities, Colleges
Theaters, Auditoriums and Casinos

TABLE IV

Apartments and Dormitories
Bars and Lounges
Branch Post Offices
Bus Stations and Visitor Centers
Clubhouses and Gymnasiums
Cold Storage Buildings
Convents, Rectories and Rooming Houses
Day Care Centers, Retirement Care Complexes
Department/Anchor Stores and Pharmacies
Elementary Schools and Relocatable Buildings
Engineering and Research Industrial Buildings
Equestrian Centers
Fellowship Halls, Fraternity and Sorority Houses
Guard Houses and Golf Starter Booths
Group Care Homes & Retirement Complexes
Health Clubs and Fitness Centers
Homes for the Elderly and Assisted Living
Hotels – Limited-service
Laundries and Cleaners
Maintenance Hangars and Storage Bldgs.
Mortuaries
Motels, Inns and Cottages
Office and Administration Buildings
Public Recreation Facilities
Racquetball and Tennis Clubs
Regional Shopping Centers
Residences, Individual Design, Historical
Restaurants and Clubs

TABLE V

Arcade Buildings
Armories
Automotive Centers
Barber and Beauty Shops
Bowling Centers
Bulk and Bag Fertilizer Buildings
Car Washes, Full-service Tunnels
Community and Discount Shopping Centers
Creameries, Dairies or Milking Barns
Discount and Warehouse Stores
Dispensaries and Kennels
Distribution Warehouses
Docks and Wharfs
Fast Food, Truck Stops and Snack Bars
Golf Cart Barns
Grain Elevators
Loft and Industrial Flex Buildings
Manufacturing Industrial Buildings
Markets and Convenience Stores
Multiples, Row Houses, Individual Design
Neighborhood and Mixed Shopping Centers
Retail Stores and Florist Shops
Senior Citizen Residences
Showrooms and Complete Auto Dealerships
Skating Rinks and Recreational Enclosures
Stables and Horse Arenas
Storage Hangars
Wineries

TABLE VI

Car Washes, Self-serve, Drive-thru
Garages, Minilube and Service
General-purpose, Poultry and Hog Barns
Greenhouse Structures
Prefabricated Booths and Shelters
Recycling, Waste Transfer Structures
Service Stations and Parking Structures
Shipping Docks and Transfer Points
Storage and Volunteer Fire Garages
Storage Warehouses & Roadside Markets

EXPLANATION

The tables of architects' fees are based on composite curves for new construction derived from actual fees charged, recommendations of several architectural committees in various states, and architectural time studies. In cases where superior quality and detail are required, the fee may be higher than the average, while very low quality and standardized buildings may call for a fee which is lower. Special consultants or commissioning services for feasibility and energy and performance studies, post-occupancy evaluations, etc., can add .5 to 1.2 percent to the fees. Renovation or rehab work may require considerably more time, and fees can run 20% to 60% above those listed due to the many variables and complexities involved.

The fee schedules contain approximately 30% (20% to 40%) for contract administration and supervision. In many cases, this function may be performed by the contractor, an employee of the owner or an outside consultant. In any case, this is a proper charge against the building, and the total fee should be added to building costs computed from the Unit-in-Place or the Segregated Costs.

PROJECT COST Up To	TABLE I	II	III	IV	V	VI
$ 50,000	10.7	9.7	8.7	7.9	7.1	6.4
100,000	10.3	9.4	8.4	7.6	6.9	6.2
200,000	10.0	9.1	8.2	7.4	6.7	6.0
500,000	9.5	8.7	7.8	7.1	6.4	5.8
1,000,000	9.2	8.4	7.6	6.9	6.2	5.6
2,000,000	8.9	8.1	7.3	6.6	6.0	5.5
3,000,000	8.7	7.9	7.2	6.5	5.9	5.4
5,000,000	8.4	7.7	7.0	6.4	5.8	5.3
10,000,000	8.1	7.5	6.8	6.2	5.6	5.1
20,000,000	7.9	7.2	6.6	6.0	5.4	5.0
50,000,000	7.5	6.9	6.3	5.7	5.2	4.8
and up	7.3	6.8	6.2	5.6	5.1	4.7

The following are the approximate percentages included in the manual costs for single and multifamily residences, and miscellaneous light commercial and farm structures not listed in the above table. The single-family residence, Low-to-Average quality percentage represents stock plans only, with some variations commensurate to the quality. Good percentage represents custom drafting service and plans; while Very Good to Excellent percentages included in the tables above would represent full architects' fees, plans, specifications and supervision.

	LOW COST	FAIR	AVERAGE	GOOD
Single-family Residences and Structures	.5%	.8%	1.3%	3.6%
Multiple-residential Structures	1.5%	1.9%	2.4%	3.9%
Light Commercial Utility/Shop Structures	1.7%	2.1%	2.5%	3.5%
Miscellaneous Farm Structures	1.6%	1.9%	2.3%	3.3%

NOTE: To convert a percentage to a multiplier, simply move the decimal over two places and add the whole number "one" to the factors. Example, 10.7% expressed as a multiplier is 1.107 (1+.107).

EXCLUSION OF ARCHITECTS' FEES

The exclusion of architects' fees from the replacement cost for insurance purposes is a matter of underwriting and not of valuation. Plans and specifications can sometimes be reused in case of total loss, but this is not common practice. When used, plans are greatly modified or a second fee may be imposed. See Section 96.

CURRENT COST MULTIPLIERS

These multipliers bring costs from preceding pages up to date. Also apply Local Multipliers, Section 99, Pages 5 through 10.

CALCULATOR COST SECTIONS

(Effective Date of Cost Pages)		11 (11/18)	12 (8/18)	13 (5/18)	14 (2/18)	15 (11/17)	16 (8/17)	17 (5/17)	18 (2/19)
EASTERN	A	1.05	1.06	1.07	1.06	1.08	1.09	1.11	1.05
	B	1.05	1.05	1.03	1.06	1.04	1.06	1.08	1.04
	C	1.03	1.03	1.05	1.05	1.07	1.09	1.10	1.01
	D	1.02	1.03	1.04	1.04	1.06	1.08	1.08	1.01
	S	1.06	1.07	1.07	1.07	1.09	1.09	1.09	1.05
CENTRAL	A	1.00	1.01	1.02	1.04	1.04	1.05	1.06	0.98
	B	0.98	0.99	0.99	1.01	1.03	1.02	1.02	0.97
	C	0.99	1.00	1.01	1.01	1.03	1.03	1.04	0.98
	D	0.98	1.00	1.01	1.02	1.05	1.06	1.04	0.98
	S	0.97	1.01	1.00	1.03	1.03	1.04	1.07	0.98
WESTERN	A	1.00	1.04	1.07	1.09	1.08	1.07	1.08	0.98
	B	0.99	1.00	1.04	1.04	1.05	1.06	1.06	0.99
	C	1.00	1.03	1.02	1.06	1.05	1.07	1.07	1.02
	D	1.02	1.02	1.04	1.06	1.05	1.06	1.10	1.01
	S	0.99	1.01	1.06	1.06	1.06	1.10	1.09	0.98

SEGREGATED COST SECTIONS

(Effective Date of Cost Pages)		41 (12/18)	42 (9/18)	43 (6/18)	44 (3/18)	45 (12/17)	46 (9/17)	47 (6/17)	48 (3/17)
EASTERN	A	1.05	1.06	1.07	1.06	1.08	1.09	1.11	1.14
	B	1.05	1.05	1.03	1.06	1.04	1.06	1.08	1.10
	C	1.03	1.03	1.05	1.05	1.07	1.09	1.10	1.09
	D	1.02	1.03	1.04	1.04	1.06	1.08	1.08	1.09
	S	1.06	1.07	1.07	1.07	1.09	1.09	1.09	1.13
CENTRAL	A	1.00	1.01	1.02	1.04	1.04	1.05	1.06	1.07
	B	0.98	0.99	0.99	1.01	1.03	1.02	1.02	1.03
	C	0.99	1.00	1.01	1.01	1.03	1.03	1.04	1.05
	D	0.98	1.00	1.01	1.02	1.05	1.06	1.04	1.06
	S	0.97	1.01	1.00	1.03	1.03	1.04	1.07	1.07
WESTERN	A	1.00	1.04	1.07	1.09	1.08	1.07	1.08	1.07
	B	0.99	1.00	1.04	1.04	1.05	1.06	1.06	1.05
	C	1.00	1.03	1.02	1.06	1.05	1.07	1.07	1.09
	D	1.02	1.02	1.04	1.06	1.05	1.06	1.10	1.09
	S	0.99	1.01	1.06	1.06	1.06	1.10	1.09	1.07

UNIT-IN-PLACE COST SECTIONS (51 – 70)

Sec.	Page	Date		Eastern	Central	Western
51 -	2-3	(3/17)	Concrete Foundations	1.07	1.04	1.06
51 -	4	(3/17)	Pilings	1.10	1.05	1.09
51 -	7-8	(3/17)	Steel and Concrete Frame	1.08	1.03	1.07
51 -	3,7	(3/17)	Wood Foundations, Frame	1.07	1.06	1.10
52 -	1-4, 6	(3/17)	Interior Construction	1.08	1.07	1.08
52 -	5	(3/17)	Bank Vaults and Equipment	1.12	1.07	1.08
53 -	1-8	(6/17)	Heating, Cooling & Ventilating	1.08	1.05	1.08
53 -	9-12	(6/17)	Plumbing, Fire Protection, etc.	1.09	1.05	1.09
54 -	1-6	(6/17)	Electrical, Security	1.08	1.10	1.07
55 -	3-7	(8/17)	Wall Costs	1.06	1.04	1.08
56 -	1-2	(8/17)	Stained Glass	1.07	1.04	1.07
56 -	3-6	(8/17)	Storefronts	1.07	1.04	1.07
56 -	7	(8/17)	Stonework	1.05	1.05	1.08
56 -	8	(8/17)	Columns, Stone & Concrete	1.05	1.05	1.08
56 -	8	(8/17)	Columns, Wood & Aluminum	1.07	1.05	1.09
57 -	1-6	(9/17)	Roofs	1.06	1.05	1.07
58 -	1	(9/17)	Cold Storage	1.06	1.04	1.08
58 -	2-8	(9/17)	Elevators, Conveying Systems	1.08	1.05	1.08

Sec.	Page	Date		Eastern	Central	Western
61 -	1-8	(12/18)	Tanks	1.00	0.99	1.01
62 -	1	(6/18)	Industrial Pumps & Boilers	1.06	0.98	1.08
62 -	2-3, 6	(6/18)	Piping	1.06	0.98	1.08
62 -	4	(6/18)	Electrical Motors	1.06	0.98	1.08
62 -	5	(6/18)	Steel Stacks, Chutes	1.06	0.98	1.08
62 -	5	(6/18)	Masonry & Concrete Chimneys	1.03	0.98	1.05
62 -	6	(6/18)	Compactors, Incinerators	1.06	0.98	1.08
63 -	1-4	(9/18)	Trailer and Mfg. Housing Parks	1.01	1.00	1.06
63 -	5-10	(9/18)	Manufactured Housing	1.01	1.01	1.03
64 -	1-6	(3/18)	Service Stations, Car Washes	1.07	1.03	1.03
64 -	7-9	(3/18)	Prefabricated Metal Structures	1.06	1.02	1.07
64 -	7-8	(3/18)	Prefab. Wood & Air Structures	1.05	1.03	1.05
65 -	1-12	(3/18)	Equipment Costs	1.05	1.04	1.04
66 -	1	(12/17)	Subdivision Costs	1.05	1.02	1.07
66 -	2-9	(12/17)	Yard Improvements	1.05	1.02	1.08
66 -	10-11	(12/17)	Demolition & Remediation	1.04	1.04	1.07
67 -	1-2	(12/17)	Golf Courses	1.04	1.05	1.06
67 -	3-7	(12/17)	Recreational Facilities	1.04	1.04	1.07
70 -	1-32	(1/19)	Green Section	0.99	0.99	1.02

This page supersedes the January 2018 Green Supplement.

The data included on this page becomes obsolete after update delivery, scheduled for March 2019.

CURRENT BUILDING COST INDEXES

BUILDING COST INDEXES

		February 2019	February 2018 1 yr. ago	February 2017 2 yrs. ago	February 2016 3 yrs. ago	February 2015 4 yrs. ago	February 2014 5 yrs. ago
EASTERN	A	3353.3	3171.4	3090.9	3097.1	3087.5	3034.5
	B	3303.1	3213.4	3131.0	3109.5	3073.9	3018.5
	C	3320.5	3214.0	3106.4	3083.2	3060.6	3000.2
	D	3268.3	3166.3	3054.3	3041.1	3025.6	2960.9
	S	3065.3	2930.4	2836.5	2820.9	2808.3	2763.8
CENTRAL	A	3033.4	2856.6	2774.9	2763.5	2766.8	2732.2
	B	2991.4	2909.6	2822.0	2788.6	2773.0	2727.8
	C	3030.8	2929.0	2812.6	2774.7	2770.6	2728.3
	D	3008.7	2912.6	2793.9	2765.4	2767.9	2721.8
	S	2730.8	2603.1	2505.3	2480.6	2485.7	2452.3
WESTERN	A	3336.6	3142.1	3046.4	3038.0	3039.4	2982.0
	B	3273.3	3169.4	3070.8	3042.3	3020.9	2958.1
	C	3346.5	3222.0	3091.3	3055.3	3040.8	2973.5
	D	3292.9	3164.9	3034.4	3011.7	3004.7	2927.8
	S	2997.9	2845.7	2738.8	2719.0	2715.9	2671.3

ANNUAL COST CHANGES

		February 2018 1 yr. ago	February 2017 2 yrs. ago	February 2016 3 yrs. ago	February 2015 4 yrs. ago	February 2014 5 yrs. ago
EASTERN	A	5.7%	8.5%	8.3%	8.6%	10.5%
	B	2.8%	5.5%	6.2%	7.5%	9.4%
	C	3.3%	6.9%	7.7%	8.5%	10.7%
	D	3.2%	7.0%	7.5%	8.0%	10.4%
	S	4.6%	8.1%	8.7%	9.2%	10.9%
CENTRAL	A	6.2%	9.3%	9.8%	9.6%	11.0%
	B	2.8%	6.0%	7.3%	7.9%	9.7%
	C	3.5%	7.8%	9.2%	9.4%	11.1%
	D	3.3%	7.7%	8.8%	8.7%	10.5%
	S	4.9%	9.0%	10.1%	9.9%	11.4%
WESTERN	A	6.2%	9.5%	9.8%	9.8%	11.9%
	B	3.3%	6.6%	7.6%	8.4%	10.7%
	C	3.9%	8.3%	9.5%	10.1%	12.5%
	D	4.0%	8.5%	9.3%	9.6%	12.5%
	S	5.3%	9.5%	10.3%	10.4%	12.2%

DISTRICT MAP

WESTERN CENTRAL EASTERN

COMPARATIVE COST MULTIPLIERS

Bring the quarterly Comparative Cost Multipliers from Section 98, Pages 5 and 6 up to date by multiplying them by these monthly Correction Factors.

Correction Factors	Eastern	Central	Western
A	1.002	1.002	1.003
B	1.001	1.002	1.002
C	1.001	1.002	1.002
D	1.001	1.000	1.002
S	1.002	1.002	1.002

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

CANADA

(Computed in Canadian Dollars, including GST (PST) but no new construction rebate or exemptions.)

CLASS	A	B	C	D	S
ALBERTA	1.29	1.37	1.32	1.25	1.26
Calgary	1.28	1.37	1.32	1.25	1.27
Edmonton	1.30	1.37	1.35	1.29	1.27
Grande Prairie	1.24	1.33	1.29	1.21	1.25
Lethbridge	1.32	1.40	1.35	1.29	1.27
Medicine Hat	1.31	1.35	1.28	1.22	1.25
Red Deer	1.30	1.39	1.33	1.22	1.27
BRITISH COLUMBIA	1.27	1.32	1.27	1.21	1.24
Cranbrook	1.28	1.35	1.27	1.23	1.24
Kamloops	1.21	1.27	1.28	1.22	1.24
Kelowna	1.28	1.32	1.27	1.21	1.26
Nanaimo	1.21	1.22	1.17	1.13	1.15
Nelson	1.26	1.33	1.26	1.20	1.24
Penticton	1.26	1.26	1.21	1.17	1.23
Port Alberni	1.20	1.21	1.14	1.10	1.14
Prince George	1.31	1.41	1.37	1.29	1.31
Prince Rupert	1.46	1.50	1.41	1.33	1.38
Trail	1.26	1.33	1.26	1.20	1.21
Vancouver	1.29	1.29	1.29	1.24	1.24
Victoria	1.27	1.31	1.30	1.24	1.23
MANITOBA	1.26	1.28	1.25	1.17	1.24
Brandon	1.33	1.32	1.29	1.21	1.26
Thompson	1.31	1.34	1.28	1.19	1.30
Winnipeg	1.15	1.19	1.17	1.12	1.16
MARITIMES	1.31	1.32	1.33	1.27	1.28
Bathurst, NB	1.30	1.28	1.31	1.24	1.26
Bridgewater, NS	1.42	1.40	1.41	1.35	1.39
Cape Breton, NS	1.35	1.38	1.34	1.31	1.35
Charlottetown, PE	1.30	1.34	1.35	1.25	1.29
Corner Brook, NF	1.43	1.51	1.53	1.45	1.45
Dartmouth, NS	1.27	1.26	1.29	1.26	1.28
Edmundston, NB	1.20	1.19	1.20	1.14	1.08
Fredericton, NB	1.23	1.20	1.25	1.18	1.18
Gander, NF	1.38	1.44	1.40	1.34	1.32
Halifax, NS	1.26	1.26	1.28	1.25	1.27
Moncton, NB	1.27	1.22	1.24	1.20	1.21
New Glasgow, NS	1.26	1.26	1.25	1.24	1.26
North Shore Area, NB	1.21	1.20	1.17	1.13	1.07
St. John's, NF	1.25	1.28	1.29	1.22	1.21
St. John, NB	1.35	1.33	1.40	1.33	1.32
Sydney, NS	1.40	1.46	1.45	1.37	1.44
Truro, NS	1.36	1.35	1.35	1.30	1.34
Yarmouth, NS	1.39	1.40	1.39	1.33	1.38
NORTHWEST TERRITORY	1.65	1.80	1.73	1.66	1.60
Yellowknife	1.65	1.80	1.73	1.66	1.60

CLASS	A	B	C	D	S
ONTARIO	1.25	1.26	1.28	1.26	1.25
Barrie	1.32	1.34	1.38	1.33	1.32
Belleville	1.12	1.11	1.12	1.13	1.09
Brampton	1.27	1.29	1.34	1.32	1.30
Brantford	1.19	1.16	1.21	1.19	1.19
Brockville	1.18	1.21	1.18	1.20	1.19
Cambridge	1.20	1.21	1.23	1.23	1.17
Guelph	1.20	1.21	1.23	1.20	1.20
Hamilton	1.29	1.33	1.37	1.36	1.30
Kingston	1.24	1.27	1.31	1.28	1.24
Kitchener	1.29	1.31	1.33	1.31	1.31
Lancaster	1.28	1.30	1.29	1.28	1.30
Lindsay	1.13	1.16	1.16	1.17	1.11
London	1.34	1.32	1.34	1.31	1.31
Niagara Falls	1.12	1.11	1.14	1.12	1.10
North Bay	1.18	1.19	1.14	1.12	1.16
Orillia	1.11	1.13	1.14	1.15	1.08
Oshawa	1.17	1.15	1.20	1.17	1.17
Ottawa	1.32	1.36	1.36	1.35	1.34
Owen Sound	1.26	1.26	1.31	1.27	1.27
Peterborough	1.36	1.37	1.41	1.37	1.38
Sarnia	1.33	1.33	1.35	1.32	1.34
Sault Ste. Marie	1.34	1.39	1.41	1.36	1.35
St. Catharines	1.28	1.30	1.33	1.34	1.29
Sudbury	1.26	1.30	1.28	1.25	1.30
Thunder Bay	1.36	1.37	1.40	1.36	1.37
Timmins	1.30	1.29	1.32	1.26	1.27
Toronto	1.28	1.30	1.34	1.32	1.30
Trenton	1.13	1.11	1.12	1.11	1.07
Waterloo	1.29	1.30	1.32	1.31	1.31
Windsor	1.39	1.40	1.40	1.36	1.42
QUEBEC	1.19	1.22	1.24	1.21	1.21
Chicoutimi	1.22	1.24	1.27	1.22	1.24
Drummondville	1.22	1.26	1.25	1.21	1.22
Granby	1.13	1.18	1.22	1.19	1.16
Hull	1.26	1.34	1.32	1.25	1.31
Joliette	1.20	1.21	1.23	1.21	1.22
Jonquiere	1.09	1.10	1.11	1.15	1.11
Laval	1.19	1.22	1.25	1.20	1.21
Montreal	1.18	1.20	1.24	1.20	1.19
Quebec	1.18	1.17	1.22	1.19	1.18
Rimouski	1.18	1.19	1.23	1.21	1.18
Rouyn-Noranda	1.25	1.34	1.34	1.31	1.31
Sept Iles	1.13	1.10	1.14	1.13	1.12
Sherbrooke	1.18	1.21	1.25	1.19	1.19
Sorel	1.16	1.22	1.23	1.19	1.18
St-Hyacinthe	1.19	1.22	1.27	1.22	1.23
St-Jerome	1.22	1.24	1.26	1.22	1.25
Trois-Rivieres	1.23	1.25	1.28	1.24	1.23
Val d'Or	1.24	1.28	1.25	1.27	1.26

CLASS	A	B	C	D	S
SASKATCHEWAN	1.39	1.51	1.46	1.40	1.39
Moose Jaw	1.40	1.51	1.46	1.40	1.41
North Battleford	1.41	1.53	1.47	1.38	1.39
Prince Albert	1.35	1.47	1.44	1.40	1.35
Regina	1.37	1.53	1.46	1.40	1.40
Saskatoon	1.43	1.50	1.48	1.41	1.41
YUKON	1.53	1.67	1.56	1.46	1.45
Whitehorse	1.53	1.67	1.56	1.46	1.45

CANADIAN TAX REMOVAL

The following percentage deductions need to be applied to the Canadian local multipliers to remove all GST, PST and HST rates.

CLASS	A	B	C	D	S
Alberta	5.00%	5.00%	5.00%	5.00%	5.00%
British Columbia	9.51%	7.99%	8.71%	8.61%	8.83%
Manitoba	10.96%	9.43%	10.08%	10.01%	10.26%
New Brunswick	13.00%	13.00%	13.00%	13.00%	13.00%
Newfoundland	13.00%	13.00%	13.00%	13.00%	13.00%
Nova Scotia	15.00%	15.00%	15.00%	15.00%	15.00%
Northwest Territories	5.00%	5.00%	5.00%	5.00%	5.00%
Ontario	13.00%	13.00%	13.00%	13.00%	13.00%
Prince Edward Island	14.00%	14.00%	14.00%	14.00%	14.00%
Quebec	11.36%	9.40%	10.29%	10.19%	10.60%
Saskatchewan	8.90%	7.70%	8.20%	8.20%	8.40%
Yukon Territory	5.00%	5.00%	5.00%	5.00%	5.00%

Example:
Listed above are the percentages used to deduct all sales tax from the calculated replacement cost. For example, if one has a total replacement cost of $550,000 after both the Current Cost and Local multipliers have been applied, and have a tax deduction of 15%, one would take the $550,000 and divide by 1.15 to get the cost before taxes. Ex. 550,000/1.15 = $478,261 cost before taxes.

UNITED STATES TERRITORIES

GUAM	1.28	1.32	1.31	1.23	1.28
PUERTO RICO	0.92	0.91	0.91	0.91	0.94
VIRGIN ISLANDS (U.S.)	1.20	1.22	1.22	1.21	1.22
St. Croix	1.10	1.11	1.12	1.15	1.13
St. John	1.33	1.38	1.38	1.30	1.36
St. Thomas	1.16	1.18	1.17	1.17	1.17

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

UNITED STATES

CLASS	A	B	C	D	S
ALABAMA	0.88	0.89	0.87	0.86	0.88
Anniston	0.88	0.88	0.87	0.83	0.87
Auburn	0.83	0.85	0.83	0.81	0.83
Bessemer	0.90	0.92	0.91	0.89	0.89
Birmingham	0.90	0.92	0.91	0.91	0.92
Dothan	0.91	0.92	0.90	0.90	0.91
Florence	0.86	0.88	0.85	0.83	0.85
Gadsden	0.88	0.89	0.87	0.85	0.88
Huntsville	0.93	0.91	0.92	0.91	0.93
Mobile	0.91	0.89	0.91	0.92	0.91
Montgomery	0.91	0.89	0.90	0.90	0.92
Opelika	0.83	0.85	0.83	0.81	0.83
Phenix City	0.83	0.85	0.83	0.82	0.83
Sheffield	0.86	0.88	0.85	0.83	0.85
Tuscaloosa	0.88	0.90	0.86	0.83	0.87
ALASKA	1.34	1.35	1.35	1.33	1.35
Anchorage	1.25	1.29	1.28	1.28	1.30
Fairbanks	1.26	1.27	1.28	1.28	1.28
Juneau	1.36	1.37	1.41	1.34	1.34
Kenai Peninsula	1.25	1.27	1.27	1.27	1.28
Ketchikan	1.36	1.37	1.36	1.31	1.34
Kodiak	1.41	1.43	1.40	1.38	1.43
Mat-Su Valley	1.21	1.23	1.24	1.21	1.24
Sitka	1.39	1.38	1.38	1.36	1.39
ARIZONA	0.97	0.95	0.96	0.95	0.98
Apache County	0.88	0.86	0.86	0.86	0.88
Bullhead City	0.94	0.92	0.94	0.94	0.95
Casa Grande	0.93	0.90	0.93	0.93	0.93
Cochise County	0.96	0.94	0.93	0.92	0.98
Coconino County	0.98	0.95	0.95	0.91	0.93
Douglas	0.97	0.94	0.94	0.93	0.98
Flagstaff	1.02	0.99	1.01	0.98	1.02
Gila County	0.90	0.88	0.88	0.88	0.89
Graham County	0.91	0.90	0.92	0.90	0.91
Greenlee County	0.92	0.91	0.90	0.88	0.92
Kingman	0.96	0.94	0.95	0.95	0.97
La Paz County	0.92	0.91	0.94	0.93	0.93
Lake Havasu	0.94	0.93	0.96	0.96	0.96
Maricopa County	0.95	0.93	0.92	0.92	0.95
Mohave County	0.94	0.93	0.95	0.95	0.95
Navajo County	0.92	0.91	0.93	0.88	0.89
Nogales	0.97	0.95	0.95	0.94	0.99
Phoenix	0.96	0.93	0.94	0.93	0.96
Pima County	0.97	0.95	0.94	0.91	0.95
Pinal County	0.91	0.89	0.92	0.92	0.91
Prescott	0.96	0.96	0.99	0.98	0.95
Santa Cruz County	0.94	0.92	0.92	0.92	0.95
Sedona	1.02	1.01	1.03	1.01	1.02
Tucson	0.98	0.96	0.95	0.94	0.99
Yavapai County	0.93	0.93	0.93	0.93	0.89
Yuma	0.96	0.96	0.94	0.95	0.99
Yuma County	0.93	0.93	0.91	0.91	0.96

CLASS	A	B	C	D	S
ARKANSAS	0.87	0.85	0.85	0.85	0.87
Blytheville	0.79	0.80	0.78	0.79	0.80
Fayetteville	0.95	0.91	0.92	0.93	0.95
Fort Smith	0.88	0.85	0.86	0.85	0.88
Hot Springs	0.90	0.86	0.87	0.86	0.89
Jonesboro	0.79	0.79	0.78	0.79	0.79
Little Rock	0.90	0.87	0.89	0.88	0.90
Texarkana	0.88	0.84	0.84	0.82	0.87
West Memphis	0.88	0.90	0.88	0.89	0.89
CALIFORNIA	1.20	1.21	1.21	1.21	1.21
Alameda County	1.39	1.41	1.42	1.40	1.38
Alpine County	1.18	1.20	1.19	1.20	1.19
Amador County	1.20	1.20	1.19	1.20	1.20
Antelope Valley	1.14	1.16	1.15	1.15	1.16
Atascadero	1.16	1.17	1.17	1.18	1.18
Bakersfield	1.17	1.16	1.19	1.19	1.19
Barstow	1.15	1.16	1.16	1.17	1.16
Big Bear	1.18	1.22	1.20	1.21	1.20
Bishop	1.28	1.26	1.29	1.29	1.28
Blythe	1.08	1.10	1.12	1.11	1.08
Butte County	1.15	1.15	1.17	1.17	1.16
Calaveras County	1.13	1.14	1.15	1.16	1.13
Coalinga	1.20	1.19	1.22	1.22	1.22
Colusa County	1.15	1.17	1.18	1.17	1.16
Contra Costa County	1.37	1.39	1.39	1.38	1.37
Del Norte County	1.23	1.25	1.26	1.25	1.24
El Dorado County	1.24	1.25	1.23	1.23	1.25
Eureka	1.21	1.24	1.25	1.23	1.22
Fresno	1.26	1.26	1.28	1.29	1.27
Gilroy	1.14	1.17	1.18	1.17	1.16
Glenn County	1.20	1.23	1.23	1.23	1.21
Goleta	1.17	1.19	1.18	1.19	1.19
Hanford	1.15	1.15	1.15	1.16	1.15
Hesperia	1.12	1.13	1.12	1.13	1.12
Huntington Beach	1.24	1.24	1.22	1.23	1.24
Imperial County	1.10	1.13	1.14	1.14	1.13
Indio	1.15	1.18	1.16	1.18	1.16
Laguna Beach	1.25	1.25	1.21	1.24	1.24
Lake Arrowhead	1.20	1.22	1.19	1.18	1.21
Lake County	1.21	1.23	1.24	1.24	1.23
Lake Tahoe	1.21	1.24	1.25	1.22	1.24
Lompoc	1.18	1.19	1.18	1.20	1.19
Los Angeles	1.19	1.19	1.20	1.20	1.22
Madera	1.14	1.15	1.14	1.15	1.13
Mammoth Lakes	1.25	1.24	1.27	1.28	1.24
Marin County	1.36	1.38	1.39	1.37	1.36
Mariposa County	1.18	1.18	1.18	1.20	1.19

CLASS	A	B	C	D	S
CALIFORNIA (Continued)					
Marysville	1.14	1.15	1.16	1.16	1.14
Mendocino County	1.13	1.15	1.13	1.14	1.14
Merced	1.16	1.15	1.16	1.15	1.14
Modesto	1.27	1.22	1.26	1.25	1.25
Modoc County	1.17	1.16	1.17	1.17	1.17
Mono County	1.22	1.21	1.24	1.24	1.23
Monterey	1.31	1.32	1.29	1.26	1.30
Napa County	1.28	1.29	1.28	1.25	1.26
Nevada County	1.17	1.17	1.19	1.18	1.18
Newport Beach	1.24	1.25	1.22	1.23	1.24
Orange Co. (x/beaches)	1.22	1.23	1.20	1.21	1.24
Oxnard	1.21	1.18	1.20	1.22	1.22
Palm Springs	1.21	1.21	1.17	1.22	1.23
Paso Robles	1.17	1.18	1.15	1.17	1.17
Placer County	1.18	1.18	1.19	1.19	1.20
Plumas County	1.16	1.17	1.18	1.17	1.16
Redding	1.29	1.28	1.28	1.28	1.28
Riverside	1.16	1.18	1.17	1.19	1.17
Sacramento	1.21	1.24	1.25	1.23	1.23
Salinas	1.25	1.23	1.22	1.19	1.23
San Benito County	1.28	1.28	1.28	1.25	1.27
San Bernardino	1.14	1.15	1.16	1.16	1.15
San Clemente	1.24	1.25	1.23	1.24	1.25
San Diego	1.18	1.18	1.17	1.16	1.19
San Francisco	1.45	1.47	1.47	1.45	1.41
San Jose	1.35	1.39	1.40	1.40	1.36
San Luis Obispo	1.17	1.17	1.18	1.20	1.19
San Mateo County	1.39	1.40	1.38	1.37	1.36
Santa Barbara	1.22	1.23	1.24	1.24	1.23
Santa Clara County	1.35	1.36	1.35	1.33	1.32
Santa Cruz County	1.27	1.28	1.28	1.25	1.26
Santa Maria	1.24	1.25	1.24	1.24	1.27
Santa Rosa	1.28	1.29	1.27	1.24	1.28
Sierra County	1.16	1.16	1.18	1.16	1.15
Siskiyou County	1.27	1.27	1.27	1.26	1.26
Solano County	1.29	1.31	1.30	1.28	1.31
Stockton	1.21	1.22	1.21	1.21	1.22
Susanville	1.17	1.16	1.17	1.16	1.17
Tehama County	1.28	1.28	1.28	1.27	1.27
Trinity County	1.26	1.26	1.27	1.26	1.25
Tulare County	1.15	1.17	1.16	1.18	1.17
Tuolumne County	1.14	1.15	1.16	1.16	1.13
Ventura County	1.22	1.21	1.23	1.24	1.24
Victorville	1.14	1.17	1.16	1.18	1.16
Watsonville	1.26	1.23	1.23	1.21	1.25
Yolo County	1.15	1.16	1.17	1.17	1.18
Yuba City	1.14	1.15	1.16	1.16	1.16

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

UNITED STATES

CLASS	A	B	C	D	S
COLORADO	1.00	1.01	1.01	0.99	1.00
Aspen	1.12	1.14	1.12	1.11	1.12
Boulder	0.95	0.97	0.96	0.95	0.95
Colorado Springs	0.96	0.98	0.95	0.96	0.96
Costilla County	0.86	0.87	0.86	0.86	0.87
Denver	0.95	0.96	0.96	0.96	0.97
Durango	0.92	0.92	0.92	0.90	0.92
Eagle Co. (x/resort areas)	0.94	0.94	0.94	0.93	0.94
Fort Collins	0.97	0.99	1.01	0.98	0.98
Grand Junction	0.97	0.96	0.97	0.96	0.98
Greeley	0.97	0.99	1.00	0.98	0.97
Gunnison County	0.96	0.99	0.97	0.97	0.97
Kit Carson County	0.87	0.88	0.89	0.89	0.88
Logan County	0.90	0.91	0.90	0.89	0.90
Longmont	0.94	0.96	0.98	0.96	0.96
Loveland	0.95	0.97	1.01	0.98	0.96
Moffat County	0.90	0.92	0.90	0.90	0.91
Montrose County	0.91	0.91	0.92	0.89	0.91
Prowers County	0.91	0.90	0.90	0.90	0.91
Pueblo	0.94	0.94	0.94	0.93	0.93
Steamboat Springs	1.16	1.17	1.15	1.14	1.13
Vail	1.14	1.15	1.13	1.12	1.13
CONNECTICUT	1.14	1.16	1.15	1.15	1.15
Bridgeport	1.16	1.19	1.19	1.19	1.19
Bristol	1.12	1.14	1.13	1.11	1.13
Danbury	1.16	1.19	1.19	1.20	1.19
Fairfield	1.14	1.16	1.18	1.18	1.16
Greenwich	1.31	1.28	1.25	1.27	1.33
Hartford	1.14	1.18	1.17	1.16	1.15
Meriden	1.11	1.14	1.12	1.12	1.11
Middletown	1.11	1.14	1.14	1.13	1.10
Milford	1.10	1.11	1.09	1.10	1.11
New Britain	1.12	1.15	1.13	1.13	1.10
New Haven	1.14	1.15	1.14	1.11	1.13
New London	1.07	1.10	1.08	1.12	1.07
Norwich	1.08	1.10	1.08	1.11	1.07
Stamford	1.28	1.28	1.24	1.27	1.31
Waterbury	1.12	1.12	1.08	1.08	1.11
Windsor Locks	1.12	1.16	1.13	1.13	1.13
DELAWARE	1.11	1.09	1.09	1.10	1.10
Dover	1.07	1.07	1.06	1.07	1.07
Wilmington	1.14	1.11	1.11	1.13	1.13
DIST. OF COLUMBIA	1.05	1.08	1.05	1.04	1.04
FLORIDA	0.96	0.95	0.95	0.95	0.96
Bradenton	0.98	0.98	0.96	0.97	0.98
Brevard County	0.97	0.95	0.93	0.93	0.94
Broward County	0.97	0.97	0.97	0.97	0.99
Dade County	0.95	0.95	0.97	0.97	0.99
Daytona Beach	0.94	0.93	0.93	0.92	0.94
Fort Myers	0.94	0.93	0.94	0.94	0.96
Fort Pierce	0.97	0.94	0.93	0.93	0.97
Gainesville	0.94	0.94	0.95	0.92	0.93
Jacksonville	0.94	0.94	0.94	0.94	0.94
Key West	1.14	1.12	1.15	1.12	1.12
Lakeland	0.95	0.95	0.97	0.96	0.96
Marathon	1.09	1.06	1.09	1.06	1.10

CLASS	A	B	C	D	S
FLORIDA (Continued)					
Miami	0.95	0.95	0.97	0.97	0.99
Naples	0.94	0.95	0.94	0.94	0.96
Ocala	0.94	0.93	0.94	0.92	0.94
Orlando	0.98	0.97	0.98	0.97	0.96
Palm Beach	1.00	0.98	0.96	0.98	1.01
Panama City	0.80	0.81	0.80	0.82	0.81
Pensacola	0.84	0.83	0.83	0.86	0.85
Pinellas County	0.99	0.99	0.98	0.98	0.99
Sarasota	0.98	0.99	0.96	0.99	0.98
Tallahassee	0.94	0.93	0.92	0.92	0.94
Tampa	0.99	0.99	0.98	0.98	0.98
Vero Beach	0.98	0.95	0.93	0.91	0.96
GEORGIA	0.89	0.89	0.86	0.85	0.86
Albany	0.88	0.87	0.82	0.82	0.84
Athens	0.92	0.92	0.87	0.84	0.88
Atlanta	0.95	0.94	0.92	0.92	0.93
Augusta	0.88	0.89	0.83	0.81	0.83
Columbus	0.88	0.88	0.84	0.83	0.84
Macon	0.89	0.88	0.86	0.85	0.87
Rome	0.92	0.91	0.89	0.87	0.88
Savannah	0.87	0.87	0.87	0.87	0.87
Valdosta	0.83	0.83	0.81	0.82	0.81
HAWAII	1.59	1.65	1.63	1.63	1.60
Hilo	1.62	1.68	1.67	1.68	1.66
Kauai	1.74	1.81	1.79	1.80	1.76
Maui	1.50	1.56	1.55	1.55	1.51
Oahu	1.48	1.53	1.50	1.50	1.48
IDAHO	1.00	1.00	1.00	0.98	1.01
Boise	0.98	0.99	1.02	1.00	1.00
Caldwell	0.96	0.97	1.01	0.99	0.98
Coeur d' Alene	1.04	1.04	1.02	1.00	1.04
Idaho Falls	1.01	1.00	1.02	1.00	1.02
Lewiston	1.00	1.01	0.97	0.96	1.01
Moscow	1.01	1.02	0.97	0.97	1.02
Pocatello	0.97	0.98	0.96	0.95	0.99
Twin Falls	0.99	0.99	1.01	1.00	1.00
ILLINOIS	1.13	1.14	1.14	1.14	1.13
Alton	1.03	1.05	1.07	1.06	1.03
Aurora	1.22	1.23	1.24	1.23	1.21
Belleville	1.09	1.10	1.12	1.10	1.06
Bloomington	1.07	1.10	1.10	1.11	1.11
Carbondale	1.10	1.09	1.08	1.08	1.07
Centralia	1.07	1.06	1.08	1.07	1.07
Champaign	1.09	1.09	1.10	1.11	1.10
Chicago	1.27	1.26	1.26	1.26	1.25
Danville	1.10	1.10	1.10	1.11	1.11
De Kalb	1.21	1.22	1.22	1.21	1.20
Decatur	1.06	1.08	1.09	1.10	1.08
East St. Louis	1.08	1.08	1.10	1.10	1.08
Elgin	1.23	1.23	1.22	1.23	1.22
Evanston	1.24	1.24	1.24	1.23	1.23
Galesburg	1.10	1.09	1.08	1.09	1.10
Joliet	1.22	1.23	1.23	1.23	1.21
Kankakee	1.24	1.25	1.24	1.27	1.25
Marion	1.10	1.09	1.08	1.08	1.08
Moline	1.06	1.05	1.04	1.04	1.05

CLASS	A	B	C	D	S
ILLINOIS (Continued)					
Normal	1.08	1.10	1.11	1.12	1.12
Peoria	1.09	1.10	1.10	1.11	1.09
Quincy	1.11	1.14	1.14	1.13	1.12
Rock Island	1.08	1.06	1.06	1.08	1.07
Rockford	1.13	1.18	1.16	1.16	1.14
Skokie	1.25	1.25	1.26	1.27	1.25
Springfield	1.08	1.09	1.10	1.10	1.09
Urbana	1.09	1.09	1.10	1.11	1.10
Waukegan	1.23	1.23	1.23	1.22	1.23
INDIANA	1.03	1.03	1.02	1.02	1.04
Anderson	0.97	0.95	0.95	0.96	0.97
Bloomington	1.02	1.00	0.99	1.00	1.03
Columbus	1.00	1.00	0.98	0.98	0.99
Elkhart	1.06	1.03	1.02	1.03	1.05
Evansville	0.99	1.02	1.00	1.00	1.02
Fort Wayne	0.97	0.99	0.98	0.97	0.98
Gary	1.24	1.22	1.23	1.23	1.23
Hammond	1.24	1.22	1.23	1.23	1.23
Indianapolis	1.03	1.02	1.01	1.02	1.03
Kokomo	1.00	1.00	0.97	0.99	0.99
Lafayette	0.99	1.00	0.98	0.98	1.00
Logansport	0.97	0.95	0.92	0.93	0.96
Marion	0.95	0.96	0.93	0.93	0.96
Michigan City	1.24	1.22	1.22	1.22	1.22
Muncie	0.95	0.95	0.96	0.97	0.96
Richmond	0.94	0.94	0.93	0.95	0.96
South Bend	1.04	1.01	1.02	1.02	1.03
Terre Haute	1.02	1.00	1.00	1.01	1.02
IOWA	0.99	1.00	0.98	0.99	0.99
Burlington	1.00	1.00	0.97	0.98	0.99
Cedar Rapids	0.98	0.99	0.97	0.98	0.97
Council Bluffs	0.94	0.96	0.93	0.92	0.94
Davenport	1.07	1.06	1.06	1.07	1.06
Des Moines	1.01	0.97	0.99	0.99	1.00
Dubuque	1.04	1.05	1.01	1.04	1.03
Fort Dodge	0.98	0.99	0.99	0.98	0.99
Iowa City	0.99	1.00	0.98	1.00	0.98
Mason City	1.00	1.03	1.02	1.04	1.02
Sioux City	0.92	0.94	0.92	0.93	0.93
Waterloo	1.00	1.01	0.99	1.00	1.01
KANSAS	0.95	0.95	0.95	0.95	0.96
Dodge City	0.93	0.90	0.93	0.91	0.92
Fort Scott	0.93	0.94	0.93	0.95	0.94
Garden City	0.89	0.86	0.88	0.87	0.88
Goodland	0.92	0.89	0.91	0.90	0.90
Hays	0.88	0.86	0.85	0.83	0.87
Kansas City	1.06	1.08	1.08	1.08	1.07
Lawrence	1.02	1.03	1.04	1.05	1.03
Liberal	0.87	0.85	0.87	0.85	0.87
Manhattan	0.92	0.93	0.95	0.96	0.93
Olathe	1.06	1.09	1.09	1.08	1.08
Overland Park	1.05	1.08	1.08	1.08	1.07
Pittsburg	0.91	0.91	0.90	0.90	0.91
Salina	0.91	0.91	0.91	0.91	0.93
Topeka	0.99	1.00	0.97	0.95	1.02
Wichita	0.93	0.90	0.90	0.87	0.92

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

UNITED STATES

CLASS	A	B	C	D	S
KENTUCKY	0.97	0.97	0.97	0.98	0.98
Ashland	1.03	1.04	1.04	1.06	1.05
Bowling Green	0.96	0.95	0.95	0.96	0.98
Covington	0.95	0.97	0.97	0.97	0.98
Frankfort	0.93	0.93	0.95	0.97	0.93
Lexington	0.94	0.94	0.95	0.97	0.94
Louisville	0.98	0.97	0.97	0.99	0.97
Newport	0.95	0.97	0.97	0.97	0.98
Owensboro	0.97	0.99	0.98	0.95	1.00
Paducah	0.98	0.94	0.95	0.96	0.95
LOUISIANA	0.87	0.87	0.88	0.87	0.87
Alexandria	0.82	0.85	0.87	0.86	0.85
Baton Rouge	0.86	0.85	0.87	0.87	0.87
Lafayette	0.86	0.87	0.88	0.89	0.84
Lake Charles	0.89	0.88	0.88	0.85	0.88
Monroe	0.87	0.89	0.88	0.87	0.87
New Orleans	0.91	0.88	0.89	0.90	0.87
Shreveport	0.89	0.89	0.90	0.88	0.88
MAINE	1.00	0.99	1.01	1.01	1.00
Auburn	1.03	1.03	1.05	1.04	1.02
Augusta	1.05	1.04	1.07	1.06	1.07
Bangor	0.99	0.97	1.02	1.00	1.00
Biddeford	1.02	1.02	1.05	1.04	1.01
Caribou	0.94	0.93	0.94	0.95	0.95
Lewiston	1.03	1.03	1.05	1.04	1.02
Portland	1.01	1.00	1.03	1.02	1.03
Presque Isle	0.94	0.93	0.94	0.95	0.95
Waterville	0.96	0.97	0.98	0.98	0.98
MARYLAND	1.02	1.03	1.02	1.01	1.02
Anne Arundel County	1.03	1.03	1.00	1.00	1.05
Baltimore	1.01	1.01	1.01	1.02	1.03
Bethesda	1.04	1.07	1.04	1.02	1.03
Cumberland	1.01	1.01	1.02	1.01	1.02
Eastern Shore Area	0.99	0.95	0.97	0.97	0.99
Hagerstown	1.01	1.00	1.00	1.00	1.00
Silver Spring	1.04	1.07	1.04	1.02	1.04
MASSACHUSETTS	1.14	1.16	1.17	1.17	1.14
Boston	1.25	1.28	1.30	1.29	1.26
Cape Cod	1.16	1.18	1.18	1.19	1.15
Fall River	1.13	1.15	1.17	1.16	1.13
Holyoke	1.09	1.10	1.11	1.10	1.07
Lawrence	1.15	1.17	1.18	1.18	1.13
Lowell	1.16	1.17	1.17	1.17	1.14
Lynn	1.19	1.21	1.21	1.22	1.19
Methuen	1.16	1.15	1.17	1.19	1.14
Natick	1.18	1.19	1.20	1.22	1.17
New Bedford	1.14	1.17	1.17	1.17	1.14
Pittsfield	1.05	1.07	1.07	1.08	1.06
Springfield	1.13	1.15	1.15	1.13	1.12
Worcester	1.09	1.11	1.11	1.12	1.12

CLASS	A	B	C	D	S
MICHIGAN	1.05	1.05	1.05	1.04	1.05
Adrian	1.04	1.06	1.06	1.06	1.07
Alpena	1.05	1.01	1.00	0.99	1.03
Ann Arbor	1.09	1.11	1.11	1.10	1.12
Battle Creek	1.02	1.02	1.02	1.01	1.01
Bay City	1.10	1.06	1.04	1.04	1.08
Detroit	1.08	1.10	1.10	1.11	1.10
Escanaba	0.97	0.97	0.98	0.97	0.98
Flint	1.09	1.07	1.05	1.05	1.08
Grand Rapids	1.04	1.00	1.02	1.00	1.01
Ishpeming	0.99	0.99	1.00	0.99	0.99
Jackson	1.04	1.04	1.04	1.04	1.06
Kalamazoo	1.07	1.05	1.05	1.04	1.06
Lansing	1.01	1.02	1.01	0.99	1.01
Marquette	0.99	0.99	1.00	0.99	0.99
Monroe	1.05	1.08	1.08	1.08	1.09
Muskegon	1.04	1.02	1.02	1.01	1.02
Niles	1.10	1.06	1.09	1.07	1.09
Pontiac	1.10	1.10	1.10	1.10	1.11
Port Huron	1.05	1.09	1.07	1.09	1.08
Saginaw	1.07	1.04	1.02	1.02	1.05
Sault Ste. Marie	1.02	1.00	0.99	0.99	1.01
Traverse City	1.01	1.01	1.02	1.00	1.02
Ypsilanti	1.09	1.11	1.11	1.11	1.12
MINNESOTA	1.09	1.10	1.09	1.07	1.10
Austin	1.06	1.10	1.07	1.06	1.09
Brainerd	1.10	1.06	1.07	1.05	1.06
Duluth	1.08	1.12	1.10	1.07	1.10
Hibbing	1.08	1.08	1.07	1.02	1.07
Mankato	1.05	1.07	1.06	1.04	1.08
Minneapolis	1.14	1.17	1.15	1.15	1.15
Moorhead	1.08	1.05	1.04	1.02	1.08
Rochester	1.08	1.12	1.10	1.07	1.12
St. Cloud	1.06	1.10	1.09	1.07	1.09
St. Paul	1.14	1.17	1.15	1.15	1.15
MISSISSIPPI	0.87	0.87	0.87	0.88	0.87
Biloxi	0.88	0.88	0.88	0.89	0.87
Columbus	0.83	0.86	0.87	0.88	0.86
Greenville	0.89	0.88	0.90	0.92	0.89
Gulfport	0.87	0.86	0.88	0.89	0.88
Hattiesburg	0.88	0.86	0.86	0.87	0.87
Jackson	0.91	0.88	0.89	0.90	0.87
Laurel	0.90	0.90	0.87	0.88	0.89
Meridian	0.86	0.87	0.88	0.89	0.88
Natchez	0.85	0.85	0.85	0.86	0.85
Tupelo	0.83	0.87	0.86	0.87	0.85
Vicksburg	0.87	0.87	0.88	0.88	0.86

CLASS	A	B	C	D	S
MISSOURI	1.01	1.00	1.01	1.01	1.00
Cape Girardeau	0.94	0.92	0.94	0.92	0.91
Columbia	1.04	1.05	1.03	1.02	1.06
Independence	1.05	1.07	1.08	1.08	1.07
Jefferson City	0.99	0.98	0.98	1.00	0.98
Joplin	0.93	0.91	0.93	0.92	0.93
Kansas City	1.06	1.08	1.07	1.08	1.08
Rolla	0.90	0.90	0.91	0.90	0.87
Springfield	1.05	1.00	1.03	1.02	1.04
St. Joseph	1.01	1.04	1.03	1.04	1.02
St. Louis	1.08	1.08	1.10	1.10	1.08
MONTANA	0.93	0.93	0.96	0.94	0.96
Billings	0.97	0.95	1.00	0.97	0.99
Bozeman	0.93	0.93	0.96	0.95	0.97
Butte	0.91	0.93	0.96	0.93	0.94
Great Falls	0.94	0.93	0.95	0.91	0.97
Helena	0.89	0.89	0.94	0.92	0.93
Lewistown	0.92	0.91	0.94	0.93	0.92
Missoula	0.93	0.95	0.96	0.94	0.97
NEBRASKA	0.95	0.94	0.94	0.93	0.95
Grand Island	0.94	0.91	0.92	0.93	0.93
Lincoln	0.95	0.94	0.91	0.90	0.94
Norfolk	0.95	0.96	0.97	0.96	0.96
North Platte	0.97	0.96	0.97	0.95	0.95
Omaha	0.94	0.94	0.94	0.93	0.95
NEVADA	1.11	1.09	1.09	1.08	1.12
Carson City	1.08	1.08	1.07	1.06	1.10
Elko	1.13	1.11	1.10	1.09	1.13
Fallon	1.02	1.00	1.02	1.00	1.03
Las Vegas	1.12	1.10	1.10	1.12	1.12
Lincoln County	1.01	1.01	1.03	1.03	1.02
Nye County	0.95	0.93	0.91	0.88	0.95
Reno	1.10	1.07	1.07	1.05	1.11
Sparks	1.10	1.07	1.08	1.05	1.11
Tahoe Area	1.20	1.21	1.22	1.22	1.23
NEW HAMPSHIRE	1.02	1.04	1.04	1.03	1.02
Concord	0.96	0.99	0.97	0.97	0.97
Dover	1.07	1.09	1.09	1.09	1.07
Keene	0.97	1.00	0.98	0.98	0.97
Laconia	0.95	0.97	0.96	0.96	0.95
Littleton	0.96	0.95	0.95	0.94	0.96
Manchester	1.01	1.03	1.04	1.03	1.01
Nashua	1.14	1.17	1.15	1.14	1.12
Portsmouth	1.04	1.05	1.06	1.05	1.04
Rochester	1.05	1.08	1.07	1.07	1.05
Salem	1.07	1.11	1.10	1.08	1.08

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

UNITED STATES

CLASS	A	B	C	D	S
NEW JERSEY	1.27	1.28	1.26	1.27	1.27
Asbury Park	1.17	1.17	1.15	1.16	1.18
Atlantic City	1.30	1.31	1.31	1.33	1.31
Bayonne	1.31	1.33	1.29	1.30	1.30
Camden	1.23	1.21	1.19	1.19	1.20
Clifton	1.29	1.31	1.28	1.28	1.28
East Orange	1.30	1.30	1.28	1.29	1.29
Edison	1.30	1.30	1.29	1.29	1.28
Elizabeth	1.31	1.30	1.29	1.29	1.29
Fairlawn	1.30	1.32	1.28	1.29	1.30
Hackensack	1.30	1.32	1.29	1.29	1.30
Irvington	1.31	1.31	1.31	1.31	1.31
Jersey City	1.31	1.33	1.29	1.30	1.30
Lakewood	1.16	1.17	1.16	1.17	1.17
Morristown	1.31	1.31	1.30	1.31	1.31
New Brunswick	1.30	1.30	1.29	1.29	1.28
Newark	1.32	1.32	1.32	1.33	1.32
Passaic	1.29	1.31	1.28	1.28	1.28
Paterson	1.30	1.32	1.28	1.29	1.30
Plainfield	1.19	1.19	1.18	1.18	1.18
Somerville	1.28	1.28	1.27	1.26	1.29
Teaneck	1.30	1.32	1.29	1.29	1.29
Trenton	1.27	1.27	1.25	1.26	1.25
Vineland	1.18	1.18	1.18	1.19	1.19
West Orange	1.29	1.29	1.27	1.28	1.27
NEW MEXICO	0.94	0.92	0.93	0.92	0.93
Alamogordo	0.89	0.88	0.89	0.86	0.89
Albuquerque	0.91	0.90	0.90	0.89	0.91
Carlsbad	0.91	0.90	0.91	0.90	0.90
Clovis	0.95	0.94	0.94	0.93	0.92
Farmington	0.96	0.96	0.95	0.95	0.94
Gallup	0.92	0.89	0.90	0.89	0.91
Hobbs	0.90	0.88	0.90	0.90	0.89
Las Cruces	0.94	0.91	0.92	0.92	0.95
Los Alamos	0.99	0.94	0.97	0.98	0.97
Portales	0.88	0.86	0.85	0.84	0.85
Roswell	0.97	0.94	0.94	0.92	0.95
Santa Fe	0.98	0.94	0.97	0.97	0.96
Taos	1.06	1.03	1.06	1.06	1.06
NEW YORK	1.08	1.08	1.09	1.09	1.08
Albany	1.11	1.10	1.13	1.13	1.12
Amsterdam	1.08	1.08	1.11	1.13	1.09
Auburn	1.03	1.03	1.02	1.04	1.03
Binghamton	1.02	1.02	1.00	1.01	1.01
Buffalo	1.13	1.14	1.17	1.15	1.13
Elmira	0.99	1.00	1.00	1.01	1.00
Ithaca	1.00	0.99	1.01	1.02	1.00
Jamestown	1.02	1.04	1.06	1.04	1.03
Kingston	1.18	1.19	1.18	1.21	1.20
Niagara Falls	1.13	1.13	1.13	1.13	1.11
Plattsburgh	1.01	0.99	1.01	1.03	1.02
Poughkeepsie	1.18	1.19	1.19	1.21	1.20
Rochester	1.09	1.15	1.13	1.12	1.12
Rome	1.06	1.06	1.05	1.08	1.05
Schenectady	1.10	1.08	1.10	1.13	1.11
Syracuse	1.13	1.12	1.11	1.10	1.13
Troy	1.13	1.12	1.14	1.15	1.13
Utica	1.06	1.06	1.06	1.08	1.05
Watertown	1.03	1.03	1.02	1.03	1.02
NEW YORK CITY AREA	1.41	1.42	1.41	1.43	1.45
Bronx	1.43	1.43	1.43	1.45	1.48
Brooklyn	1.41	1.42	1.42	1.43	1.46
Manhattan	1.43	1.45	1.44	1.46	1.48
Nassau County	1.42	1.43	1.43	1.44	1.47
Orange County	1.27	1.28	1.27	1.27	1.30
Putnam County	1.30	1.28	1.28	1.30	1.31
Queens	1.41	1.42	1.43	1.43	1.46
Rockland County	1.30	1.30	1.30	1.31	1.32
Staten Island	1.35	1.35	1.32	1.35	1.38
Suffolk County	1.45	1.46	1.45	1.46	1.49
Westchester County	1.31	1.30	1.30	1.32	1.33
Yonkers	1.44	1.44	1.43	1.45	1.47
NORTH CAROLINA	0.90	0.91	0.90	0.90	0.90
Asheville	0.94	0.94	0.93	0.92	0.94
Charlotte	0.92	0.93	0.92	0.92	0.94
Durham	0.97	0.95	0.93	0.93	0.95
Fayetteville	0.90	0.92	0.89	0.90	0.89
Gastonia	0.93	0.93	0.95	0.93	0.95
Goldsboro	0.89	0.90	0.87	0.88	0.89
Greensboro	0.90	0.90	0.89	0.89	0.89
Greenville	0.86	0.88	0.86	0.86	0.86
Hickory	0.86	0.87	0.88	0.88	0.86
Jacksonville	0.86	0.89	0.86	0.86	0.87
Raleigh	0.97	0.95	0.93	0.93	0.95
Rocky Mount	0.91	0.91	0.88	0.89	0.89
Wilmington	0.88	0.91	0.90	0.91	0.91
Winston-Salem	0.87	0.88	0.88	0.86	0.87
NORTH DAKOTA	1.00	1.02	1.01	0.99	1.03
Bismarck	0.99	1.02	0.99	0.99	1.01
Fargo	0.99	1.01	1.02	0.99	1.03
Grand Forks	1.01	1.02	1.01	0.99	1.03
Jamestown	1.01	1.02	1.02	1.00	1.03
Mandan	0.99	1.02	0.99	0.99	1.01
Minot	1.02	1.02	1.02	1.00	1.04
Williston	1.02	1.02	1.03	1.00	1.05
OHIO	1.00	1.01	1.01	1.00	1.01
Akron	1.00	1.02	1.02	1.02	1.02
Canton	0.99	1.00	0.99	0.98	0.99
Cincinnati	0.97	0.99	0.98	0.99	1.00
Cleveland	1.04	1.07	1.07	1.05	1.07
Columbus	1.02	1.03	1.02	1.01	1.02
Dayton	0.96	0.97	0.99	0.99	0.98
East Liverpool	1.05	1.07	1.08	1.05	1.06
Hamilton	0.93	0.94	0.96	0.95	0.95
OHIO (Continued)					
Lima	0.95	0.97	0.97	0.95	0.96
Lorain County	1.02	1.05	1.05	1.04	1.05
Mansfield	1.00	1.02	0.99	0.99	1.00
Marion	1.00	1.02	0.98	0.98	1.00
Middletown	0.93	0.94	0.95	0.95	0.95
Newark	1.00	1.02	1.00	1.00	1.00
Portsmouth	0.92	0.91	0.91	0.91	0.94
Springfield	0.97	0.96	0.97	0.98	0.98
Toledo	1.06	1.09	1.09	1.09	1.11
Youngstown	1.07	1.09	1.05	1.03	1.08
OKLAHOMA	0.91	0.90	0.92	0.91	0.91
Ardmore	0.92	0.91	0.94	0.92	0.92
Bartlesville	0.86	0.85	0.87	0.87	0.87
Enid	0.93	0.91	0.93	0.93	0.93
Lawton	0.87	0.87	0.88	0.85	0.85
Norman	0.95	0.94	0.95	0.94	0.95
Oklahoma City	0.95	0.94	0.95	0.94	0.95
Tulsa	0.87	0.88	0.89	0.90	0.90
OREGON	1.08	1.07	1.05	1.05	1.08
Albany	1.08	1.06	1.04	1.02	1.06
Altamont	1.07	1.05	1.03	1.03	1.08
Astoria	1.07	1.06	1.04	1.02	1.05
Bend	1.14	1.11	1.12	1.12	1.12
Coos Bay	1.05	1.05	1.03	1.03	1.05
Corvallis	1.08	1.06	1.04	1.02	1.05
Eugene	1.09	1.11	1.10	1.08	1.11
Grants Pass	1.06	1.06	1.03	1.03	1.08
Klamath Falls	1.07	1.05	1.03	1.03	1.08
Medford	1.07	1.08	1.06	1.06	1.09
North Bend	1.05	1.05	1.03	1.04	1.05
Pendleton	1.10	1.09	1.08	1.10	1.10
Portland	1.13	1.09	1.09	1.08	1.09
Roseburg	1.05	1.04	1.01	1.01	1.07
Salem	1.10	1.09	1.06	1.05	1.07
Springfield	1.04	1.03	1.02	1.02	1.05
The Dalles	1.13	1.11	1.08	1.07	1.10
PENNSYLVANIA	1.11	1.12	1.09	1.10	1.10
Allentown	1.14	1.18	1.12	1.15	1.10
Altoona	1.10	1.12	1.09	1.09	1.10
Bethlehem	1.12	1.15	1.09	1.12	1.09
Easton	1.10	1.14	1.09	1.10	1.06
Erie	1.10	1.12	1.11	1.09	1.09
Harrisburg	1.09	1.09	1.06	1.05	1.08
Johnstown	1.08	1.08	1.08	1.06	1.05
Lancaster	1.09	1.07	1.05	1.06	1.06
Norristown	1.26	1.25	1.24	1.26	1.24
Philadelphia	1.27	1.26	1.25	1.28	1.25
Pittsburgh	1.11	1.13	1.11	1.10	1.12
Reading	1.12	1.15	1.11	1.11	1.08
Scranton	1.05	1.03	1.03	1.03	1.05
State College	1.05	1.05	1.04	1.03	1.04
Wilkes-Barre	1.02	1.05	1.05	1.03	1.05
Williamsport	1.05	1.05	1.03	1.03	1.08
York	1.10	1.09	1.06	1.05	1.09

LOCAL MULTIPLIERS

Apply to costs brought up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

UNITED STATES

CLASS	A	B	C	D	S
RHODE ISLAND	1.12	1.14	1.15	1.14	1.12
Newport	1.09	1.11	1.12	1.11	1.09
Providence	1.15	1.17	1.18	1.19	1.16
Warwick	1.12	1.13	1.14	1.13	1.11
SOUTH CAROLINA	0.89	0.89	0.88	0.89	0.88
Anderson	0.87	0.87	0.86	0.86	0.86
Charleston	0.87	0.91	0.90	0.90	0.89
Columbia	0.90	0.88	0.88	0.88	0.88
Florence	0.92	0.92	0.90	0.88	0.89
Greenville	0.87	0.88	0.87	0.87	0.87
Myrtle Beach	0.92	0.89	0.90	0.91	0.91
Rock Hill	0.88	0.89	0.89	0.91	0.89
Spartanburg	0.88	0.87	0.86	0.87	0.87
SOUTH DAKOTA	0.94	0.94	0.94	0.93	0.94
Aberdeen	0.95	0.94	0.95	0.93	0.96
Brookings	0.94	0.94	0.94	0.92	0.94
Huron	0.95	0.95	0.94	0.92	0.94
Mitchell	0.95	0.94	0.94	0.92	0.94
Pierre	0.94	0.93	0.93	0.91	0.93
Rapid City	0.94	0.92	0.95	0.94	0.93
Sioux Falls	0.93	0.93	0.94	0.94	0.94
Vermillion	0.94	0.94	0.93	0.92	0.94
Watertown	0.95	0.93	0.94	0.93	0.95
Yankton	0.93	0.94	0.92	0.92	0.93
TENNESSEE	0.90	0.90	0.89	0.90	0.90
Bristol	0.88	0.89	0.86	0.88	0.86
Chattanooga	0.94	0.94	0.93	0.94	0.97
Columbia	0.91	0.89	0.89	0.87	0.88
Jackson	0.89	0.88	0.88	0.89	0.89
Johnson City	0.87	0.86	0.84	0.86	0.85
Kingsport	0.90	0.92	0.91	0.90	0.91
Knoxville	0.89	0.91	0.89	0.90	0.91
Memphis	0.88	0.90	0.88	0.90	0.89
Nashville	0.96	0.92	0.92	0.92	0.94
TEXAS	0.86	0.86	0.87	0.87	0.86
Abilene	0.85	0.86	0.87	0.86	0.85
Amarillo	0.86	0.87	0.91	0.90	0.89
Austin	0.85	0.85	0.84	0.85	0.83
Baytown	0.89	0.86	0.88	0.87	0.88
Beaumont	0.86	0.85	0.89	0.88	0.86
Cameron County	0.77	0.79	0.78	0.77	0.77
Corpus Christi	0.85	0.86	0.88	0.87	0.88
Dallas	0.92	0.91	0.92	0.91	0.91
El Paso	0.88	0.87	0.88	0.89	0.88
Fort Worth	0.91	0.90	0.90	0.90	0.89
Galveston	0.90	0.87	0.90	0.88	0.87
Hidalgo County	0.77	0.78	0.78	0.77	0.77
Houston	0.92	0.89	0.91	0.89	0.90

CLASS	A	B	C	D	S
TEXAS (Continued)					
Laredo	0.76	0.77	0.78	0.77	0.77
Longview	0.91	0.92	0.94	0.92	0.92
Lubbock	0.86	0.84	0.86	0.86	0.86
Marshall	0.88	0.89	0.88	0.90	0.89
Midland	0.87	0.85	0.86	0.86	0.85
Odessa	0.91	0.88	0.91	0.89	0.89
Port Arthur	0.84	0.84	0.88	0.88	0.84
San Angelo	0.81	0.80	0.81	0.83	0.81
San Antonio	0.80	0.82	0.82	0.80	0.80
Texas City	0.90	0.87	0.90	0.89	0.88
Tyler	0.86	0.87	0.86	0.87	0.86
Victoria	0.77	0.78	0.79	0.80	0.78
Waco	0.87	0.85	0.84	0.86	0.86
Wichita Falls	0.86	0.87	0.86	0.88	0.86
UTAH	0.96	0.98	0.97	0.98	0.96
Cedar City	0.93	0.95	0.93	0.96	0.93
Ogden	0.98	1.00	1.00	1.02	0.98
Orem	0.96	1.00	0.98	0.99	0.97
Provo	0.96	0.99	0.98	0.99	0.97
Salt Lake City	0.97	1.00	0.99	0.98	0.98
St. George	0.93	0.95	0.93	0.95	0.93
VERMONT	1.01	1.01	1.04	1.01	0.99
Barre	1.00	1.01	1.05	1.01	0.99
Brattleboro	1.00	1.02	1.01	1.01	1.01
Burlington	1.02	0.99	1.03	1.01	1.00
Montpelier	1.00	1.01	1.05	1.02	0.99
Rutland	1.01	1.02	1.04	1.02	0.97
VIRGINIA	0.96	0.96	0.95	0.95	0.96
Alexandria	1.05	1.08	1.05	1.02	1.04
Arlington	1.05	1.08	1.06	1.03	1.03
Charlottesville	0.91	0.91	0.92	0.91	0.91
Chesapeake	0.95	0.94	0.94	0.94	0.93
Danville	0.92	0.90	0.88	0.89	0.90
Fredericksburg	1.03	1.05	1.03	1.03	1.02
Hampton	0.94	0.94	0.94	0.95	0.95
Lynchburg	0.90	0.88	0.88	0.89	0.91
Newport News	0.95	0.94	0.95	0.95	0.95
Norfolk	0.96	0.95	0.95	0.94	0.95
Petersburg	0.92	0.91	0.91	0.91	0.91
Portsmouth	0.95	0.94	0.94	0.94	0.93
Richmond	0.96	0.95	0.94	0.95	0.96
Roanoke	0.95	0.92	0.93	0.93	0.94
Virginia Beach	0.95	0.95	0.94	0.95	0.95
Winchester	1.03	1.04	1.01	1.00	1.05

CLASS	A	B	C	D	S
WASHINGTON	1.15	1.14	1.13	1.12	1.14
Bellingham	1.15	1.14	1.15	1.14	1.14
Clallam County	1.15	1.15	1.15	1.13	1.15
Everett	1.20	1.22	1.19	1.20	1.21
Island County	1.18	1.20	1.19	1.18	1.20
Kitsap County	1.16	1.18	1.17	1.16	1.16
Longview	1.13	1.09	1.09	1.06	1.11
Olympia	1.18	1.19	1.21	1.21	1.20
Pasco (Tri-cities)	1.12	1.11	1.10	1.10	1.12
Seattle	1.21	1.23	1.22	1.21	1.22
Spokane	1.10	1.10	1.08	1.06	1.10
Tacoma	1.20	1.20	1.20	1.19	1.20
Vancouver	1.13	1.08	1.09	1.07	1.09
Walla Walla	1.11	1.09	1.08	1.09	1.09
Wenatchee	1.09	1.08	1.07	1.07	1.08
Yakima	1.12	1.09	1.10	1.09	1.11
WEST VIRGINIA	1.08	1.06	1.06	1.07	1.08
Beckley	1.07	1.06	1.06	1.07	1.08
Bluefield	1.06	1.06	1.05	1.06	1.07
Charleston	1.08	1.08	1.07	1.08	1.10
Clarksburg	1.10	1.07	1.07	1.08	1.08
Fairmont	1.11	1.08	1.10	1.10	1.08
Huntington	1.06	1.07	1.06	1.07	1.08
Morgantown	1.10	1.06	1.06	1.08	1.08
Parkersburg	1.07	1.05	1.05	1.05	1.07
Wheeling	1.06	1.05	1.05	1.05	1.07
WISCONSIN	1.06	1.07	1.06	1.07	1.05
Appleton	1.05	1.04	1.05	1.05	1.03
Beloit	1.06	1.08	1.09	1.08	1.05
Eau Claire	1.07	1.07	1.06	1.06	1.07
Fond du Lac	1.03	1.03	1.01	1.02	1.00
Green Bay	1.05	1.04	1.05	1.04	1.05
Janesville	1.03	1.07	1.06	1.06	1.03
Kenosha	1.11	1.11	1.12	1.11	1.12
La Crosse	1.07	1.06	1.04	1.06	1.05
Madison	1.05	1.09	1.08	1.09	1.06
Manitowoc	1.06	1.07	1.07	1.10	1.07
Milwaukee	1.08	1.10	1.10	1.10	1.08
Oshkosh	1.04	1.04	1.04	1.05	1.03
Racine	1.05	1.06	1.06	1.07	1.06
Sheboygan	1.06	1.07	1.07	1.07	1.06
Superior	1.05	1.09	1.07	1.04	1.07
Wausau	1.06	1.04	1.04	1.04	1.03
WYOMING	0.96	0.97	0.96	0.95	0.98
Casper	0.92	0.93	0.94	0.93	0.95
Cheyenne	0.98	0.98	0.97	0.95	1.01
Cody	0.92	0.92	0.93	0.90	0.94
Laramie	0.99	0.99	0.97	0.99	1.01
Rock Springs	1.01	1.03	0.99	1.00	1.02
Sheridan	0.95	0.94	0.96	0.95	0.96

The data included on this page becomes obsolete after update delivery, scheduled for April 2019.