

**REAL PROPERTY APPRAISAL MANUAL
FOR
NEW JERSEY ASSESSORS
Third Edition – 2021 update**



**Issued by
Property Administration – Local Property
Division of Taxation – Department of the Treasury
State of New Jersey**

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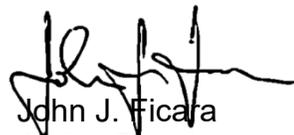
FOREWORD

The introduction of the Real Property Appraisal Manual for New Jersey Assessors, by the Local Property Tax Bureau in 1955 established a standard uniform statewide appraisal procedure. Since its inception, the Manual has been taught in every in-service training course and today is employed in all district-wide valuation programs. The Appraisal Manual enables the assessor to maintain municipal values. The Manual continues to be a firm foundation for professional assessing practices in New Jersey.

New Jersey, because of its continued reliance upon local property taxes as the prime financial foundation of local government, strives for, and has realized, continued improvement in the quality of local property tax assessment administration. The State requirements of certification and re-certification of tax assessors, the growth of professional associations and in-service training for assessors, and the computerization and improved application of mass appraisal techniques have all contributed to that progress. The publication and use of the Real Property Appraisal Manual for New Jersey Assessors continues to be an integral part of that effort.

In this 2021 update of the Third Edition, the Division of Taxation rewrote what was previously Volume I, and combined both volumes into one manual. In addition to the Volume I rewrite, Digital Billboards were added to the Billboard section. The residential costs updated in 2002 remain the same; however, the commercial costs have been eliminated.

Assessors are urged to make maximum use of the Real Property Appraisal Manual in order to provide taxpayers within their municipality with the highest possible quality of assessment administration.


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Acting Director
Division of Taxation

Trenton, New Jersey
April 2021

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100. Legal Basis for the Assessment of Real Property

The 1947 Constitution of the State of New Jersey is the authorizing instrument for all State Legislation, including that dealing with local property tax. The constitution sets forth in Article VIII, Section 1, and Paragraph 1...

“Property shall be assessed for taxation under general laws and by uniform rules. All real property assessed and taxed locally or by the State for allotment and payment to taxing districts shall be assessed according to the same standard of value, except as otherwise permitted herein, and such property shall be taxed at the general tax rate of the taxing district in which the property is situated, for the use of such taxing district.”

New Jersey statutes provide for the assessment of real property at full and true value or any percentage thereof, so long as the statute is applied uniformly throughout a taxing district. Every three years, each County Board of Taxation must pass a resolution that states the percentage level of assessments for that county. The standard of 100% of market value has been used in New Jersey since 1970. The various statutes and the judicial interpretation provide the significant link to valuing real property for tax purposes and define the “same standard of value” linking “true value” with “market value”. Borough of Englewood Cliffs v. Allison's Estate, 69 N.J. Super. 514 (1961), holds that the assessor must determine “true value” of property assessed which means market value as of the assessment date as of October 1 of the pretax year.

With each constitution, the concept of “same standard of value” evolved to equate with “true value” and “market value” and is widely accepted today. The requirement for “general laws” and “uniform rules” first appeared in the tax clause, Art. IV, Sec. VII, Par. 12, added to the Constitution of 1844 by amendment in 1875. Clarification of this phrase was expressed in Switz v. Middletown Township, 23 N.J. 580, 594 (1957), when the New Jersey Supreme Court announced:

“The direction for the assessment of property ‘under general laws, and by uniform rules, according to its “true value”, the standard laid down in the 1875 Amendment to the 1844 Constitution, requires, and is fulfilled by such regulations as should impose the same percentage of its actual value upon all the taxable property in the township for township purposes, in the county for county purposes, and in the state for state purposes’, Stratton v. Collins, 43 N.J.L., 562 (Sup. Ct. 1881), State Board of Assessors v. Central R. Co., 48 N.J.L. 146, 307 (E. & A. 1886).”

Building on the direction set with the 1875 Amendment, the Constitution of 1947 continued the same basic mandate regarding equality in the distribution of the burden of government among the owners of taxable real property. The Constitution of 1947, however, mandated certain changes. The substitution of "the same standard of value" for the term "true value" differed from the 1875 Amendment that specified the basis for assessment. In the proceedings of the Constitutional Convention of 1947, it plainly appears that “true value” was abandoned because it was thought to restrict the Legislature to a single, inescapable concept of “value”. The term "the same standard of value" was designed to permit flexibility in the approach to the valuation of property. At the same time, to avoid discriminatory treatment, the Constitution of 1947 requires that whatever "standard of value" is legislated, that “same standard” shall be applied to all real property taxable for local government (i.e., municipal, county, school, or special taxing districts).

Though the “true value” clause of the 1875 Amendment was replaced by "the same standard of value" provision under the Constitution of 1947, the implementing legislation (N.J.S.A. 54:4-1; N.J.S.A. 54:4-23) continued to provide for assessment at "true value" until the adoption of Chapter 51, Laws of 1960. Chapter 51 modified the “true value” assessment standard by permitting optional percentage common levels to be declared in each county. After three postponements, Chapter 51 became operative for the first time in tax year 1965.

Primarily a personal property reform law, Chapter 51, as it relates to real estate, provides that all real property subject to assessment and taxation for local use shall be assessed according to "the same standard of value", which shall be the "true

value", but that the assessment shall be expressed in terms of the "taxable value". The "taxable value" is defined as that "percentage of true value" which each County Board of Taxation establishes for the taxing districts within their county (L. 1960, C. 51, sec. 1; N.J.S.A. 54:4-2.25).

The constitutionality of Chapter 51 was upheld by the New Jersey Supreme Court in all respects, with the exception of a provision for the assessment of farm acreage at its farm value, as opposed to the standard of value applicable to all other classes of real property, Switz v. Kingsley, 37 N.J. 566 (1962).

The Supreme Court held that the special treatment given to farm acreage was unconstitutional, resulting in a constitutional amendment affected by voter approval in the 1963 November election. Article VIII, Section 1, Paragraph 1 (b) provides the authority for the preferential treatment of land that is actively devoted to agricultural or horticultural use provided it meets all the stated requirements. The constitutional amendment by legislature was implemented by the enactment of Chapter 48, Laws of 1964 (N.J.S.A. 54:4-23.2 et seq.) generally referred to as the Farmland Assessment Act.

The law provides that "for general property tax purposes, the value of land, not less than five acres in area, which is actively devoted to agricultural or horticultural use and which has been so devoted for at least two successive years immediately preceding the tax year in issue, shall, on application of the owner, and approval thereof, as hereinafter provided, be that value which such land has for agricultural or horticultural use". Values for farmland are developed and published annually by the State Farmland Evaluation Committee through the Division of Taxation. This information can be found on the Division of Taxation's official website <http://www.state.nj.us/treasury/taxation/lpt/farmland.shtml>.

Assessments for qualified farmland are reviewed and calculated annually based on the application. Additional regulations controlling the implementation and

application of farmland assessments are found in the New Jersey Administrative Code, Title 18, Chapter 15.

The other exception to the “same standard of value” is real property classified as “low- and moderate-income housing” under the regulations covered by the Council on Affordable Housing. The purchase price is linked to the potential owner’s income, and profit is limited on the subsequent sale of the property.

The tax assessor is required to determine both the market value and the taxability of real property. Exemption from taxation is the exception rather than the rule. Certain exemptions are provided by the Constitution. Article VIII, Section 1, Paragraph 2 of the Constitution, further provides that exemption from property tax may be granted by general laws. Exempt property is still valued under the “same standard of value” clause in the Constitution.

101. Real Property Records

Establishment and maintenance of an equitable assessment system involves the use of tax maps, individual property record cards, systematic unit land values, building standards and uniform procedures for property appraisal and equalization. Most records now can be stored electronically eliminating the vast amount of paper as used in the past. Electronic data must be easily retrievable and in a format that is understandable to the person using it. With new automated field data collection technologies becoming the norm, an assessor will have higher quality information.

Tax maps, land value records, zoning information, residential and commercial data collection and property record cards are essential for installation of the standardized assessment system and for maintenance of complete and accurate property assessments. Such maps and records are the necessary tools for use by the assessing office in determining and maintaining sound and equitable assessments for all property within the assessment jurisdiction. Other records that are useful include

deeds, photographs, sales information from sales records (SR-1A Forms) and income and expense data.

102. Data Collection Forms

One of the most important forms is the Data Collection Form used when inspecting a property whether residential or commercial. Complete and accurate information is the foundation of sound assessment practice. With the introduction of smaller laptops and tablets, this information can be collected and transmitted electronically at the site back to the office database. Information that should be included can be sectionalized as follows:

- 1.) General Property Information: block, lot, qualifier, owner name, property address, property class, land size, zoning, neighborhood Value Control Sector (VCS), special use zones and building permits.
- 2.) Site Information: utilities, street improvements, topography landscaping, shape, and other descriptive land factors.
- 3.) Improvement Information: type, use, number of stories or height, roof type and material, exterior finish, basement finish, interior wall and floor finish, attic, heating and cooling type, plumbing fixtures, fireplaces, decks and porches, garages, detached items, and interior/exterior condition.
- 4.) Graphs and Notes: area for sketch and remarks or comments.

Though the information that is collected is similar for residential and commercial properties, there can be differences in the two that can be adjusted for each type of property on a collection form. (For samples, see section 104.)

103. Property Record Cards

The data found in a Property Record Card is the cornerstone to the assessment of the real property and includes location and ownership data. The Property Record Card should show the characteristics of the property being assessed and display a variety of information related to the property's value.

Property Record cards are supplied by the vendors and differ in format and display. The data is to be recorded uniformly and is easily retrievable. At a minimum, the Property Record Card must contain the following information:

- Block and Lot
- Owners Name
- Street Address
- Tax Map Page
- Land Dimensions
- Property Class
- Zoning
- Sales Information
- Assessment Information
- Site Information
- Building Characteristics
- Room Count
- Sketch
- Detached and Other Items
- Photo
- Improvement Building Class
- Square Foot Area

Examples of residential and commercial Data Collection Worksheets and Property Record Cards can be found on the following pages:

106. Abstract of Deeds

In most instances, the assessor receives an Abstract of Deed for each sales transaction from the county tax board to assist in completing the SR-1A process. The abstract will serve as an aid in keeping the legal description and ownership records up to date. Most county clerk's offices now have these deeds and mortgages online.

107. SR-1A Forms and Market Data Records

The SR-1A form is used to report transfers of real estate and the assessed values of sales in each taxing jurisdiction. This information is checked and verified by the Division of Taxation's Property Administration Branch for developing assessment-sales ratios throughout the State.

The information included on each sale or transfer aids in determining if the sale is an arm's length transaction between a willing buyer and willing seller and meets the requisite conditions to be deemed a "fair market transaction". Each transfer must be carefully scrutinized before the data is used in the sales comparison approach to arrive at a properties' market value. Sales, which do not appear to be bona fide, such as sales under financial duress, transfers involving property trades, etc. should be set aside for further review. Additionally, sales should be verified against deeds to ensure that additional property, or personal property, is not included in the sales price. It is desirable to contact the grantor, grantee, or their attorneys in each transfer to obtain information about the exact motivation and other data that are useful in the appraisal process.

In reviewing the SR-1A forms, it is important for the assessor to remember that sales classified as "Non-Usable" for the *Director's Ratio* purposes may still be a useful comparable sale for appraisal purposes. For example, a sale of a new home may be classified for ratio purposes as a Non-Usable 7 (*Property substantially improved subsequent to the assessment and prior to the sale*) may be a good comparable if the buyer and seller meet the conditions of a fair market transaction. Similarly, a Non-Usable

6 (*Sales of property conveying only a portion of the assessed unit, usually referred to as split-offs*) may be a good value indicator of a building lot.

Sales data is extremely important in the appraisal process for determining unit land values and building values. The sales ratio of all properties that sold can be determined by dividing the assessed value by the sales price.

108. Income and Expense Data

Income and expense data are of value in the assessment process. Sources of this data include information obtained from property owners, real estate agents, newspapers, banks, and housing associations. The Chapter 91 Income and Expense Form is the most widely used method to obtain this information. Typical data collected includes the number and type of rental units, income received from them, vacancy rates, collection losses, miscellaneous income, and allowable expenses.

109. The Appraisal Process

The appraisal process is a uniform logical method of collecting, analyzing, and processing data into a well-reasoned value estimate. Whether using a mass appraisal system for assessments or doing a single property appraisal for a tax appeal, the steps are the same and no steps should be omitted.

There are seven steps in the appraisal process:

1. Define the problem
2. Scope of work
3. Preliminary survey and planning
4. Data collection and analysis
5. Highest and best use analysis
6. Application of the data using the three approaches to value
7. Reconciliation of the indicated values to come up with the final value estimate

At the end, the appraiser or assessor has studied all three value approaches and decides which one deserves to have the greatest weight in relation to value.

Define the Problem

This begins the appraisal process and contains several jobs to complete.

- Identify the property being appraised (legal description, street address, etc.)
- Determine the property rights being appraised (fee simple, leased fee, etc.)
- Purpose of Appraisal and Type of Value needed for the appraisal (market value, use value, agricultural value, etc.)
- Date of Appraisal (assessing date specified in NJ by statute is October 1 of the pretax year)

Preliminary Survey and Planning

- How to allocate time and resources to complete assignment
- Estimating the highest and best use of the property
- Making an inventory of the data that is required to be collected

Data Collection and Analysis

Three types of data need to be collected and analyzed.

1. General Data
 - Trends in the economy
 - Forces that affect value
 - Character of the neighborhood

2. Specific Data
 - Site data
 - Off-site data
 - Improvement information (square footage, depreciation, etc.)

3. Comparative Data

- All sales, cost, and income data gathered
- Cost manuals, market data grids, annual income statements

Highest and Best Use Analysis

Highest and best use is defined as the use that generates the highest net return to the property over a reasonable period of time. This is one of the most important steps in the process. There are many questions to be answered on the subject property.

- Is the use legally permitted that is allowed by zoning?
- Is the use physically possible?
- Is the use financially feasible?
- Do the approaches to value provide the maximum productivity?

Critical data needed here includes vacant land sales, zoning, market trends and supply and demand factors.

Application of the Data Using the Three Approaches to Value

The three approaches to value are cost, sales comparison, and income approach. Not all approaches are relevant to all properties. For example, the cost approach cannot be used to value vacant land as it values improvements only. The sales comparison approach cannot be used for properties that do not sell (single use properties such as churches and hospitals). The income approach is not applicable for single-family dwellings that are not rented.

Reconciliation of the Indicated Values to come up with the Final Value Estimate

In this step, the indicators of value are examined to arrive at the three approaches to value: cost, sales comparison, and income approach. The reconciliation of the values is done to resolve the differences, so a final value estimate is achieved.

It could be that all three estimates might be reasonably close together, but it could also be that one or two of the estimates vary widely and only one approach can be relied on for a

good estimate of value. Review the relevance of each approach, data reliability and the approaches strengths and weaknesses.

Never average the value estimates from each approach but look to the approach most relevant to the subject property.

110. Approaches to Value

COST APPROACH

The cost approach is based on the principle of substitution that states the market value is set by the cost of acquiring an equally desirable substitute property. The two most common methods of costing are reproduction and replacement costs.

1. Reproduction cost is the cost of constructing an exact replica structure using the same materials, design construction techniques and workmanship.

2. Replacement cost is the cost of building a substitute structure of equal utility using current materials, design, and standards. The cost figures in the manual are replacement cost values. There are limitations in using this approach that reduce the reliability in certain situations. When the improvements are older, the depreciation from physical deterioration and functional obsolescence becomes increasingly difficult to estimate. It also has limited use where the improvements no longer reflect the highest and best use of the property.

The six main steps in developing a cost value are:

1. Estimate the land value as vacant for its highest and best use.
2. Estimate the total cost new of the improvements.
3. Estimate the total accrued physical depreciation, functional obsolescence, and economic obsolescence.
4. Subtract the depreciation from the total improvement cost new.

5. Estimate the cost new less depreciation of any accessory buildings or site improvements.
6. Add the land value to the depreciated costs of the improvements, accessory buildings, and site improvements.

SALES COMPARISON APPROACH

The sales comparison approach is based on the concept that the sales price negotiated between a willing buyer and seller for a specific property reflects value. It is usually the easiest approach to understand and reflects actions of buyers and sellers in a particular marketplace. No two properties are exactly alike; therefore, this approach compares properties that have sold to the subject property and produces an indicated value by adjusting for differences between the subject and the comparable property.

Adjustments to the comparable sales prices can be made in either lump sum dollar amounts or percentages. If a comparable sale property is inferior to the subject property in an attribute, the sales price of that comparable merit an adjustment upward. Conversely, if the comparable is superior, the sales price is adjusted downward. The main limitation to the sales comparison approach is the possible lack of recent comparable sales information. This is usually the case in special use type properties or properties with a limited market. In some instances, due to a lack of sales, the expansion of the market area for comparables may be necessary. If this is the case, the market area used should have similar characteristics to the subject.

The five steps in the market approach are:

1. Identify and verify recent sales that are comparable to the property being appraised.
2. Select the units of comparison to be used and analyze the comparables accordingly.
3. Compare the comparables to the subject to identify differences to be adjusted.
4. Adjust the comparables for the differences using the selected units of comparison to arrive at an indicated value.
5. Analyze the indicated values produced and reconcile to a final value estimate for the subject.

INCOME APPROACH

The income approach links the value of a property to its ability to produce income. Its underlying principle is that of anticipation, which forecasts future benefits; the income stream from rents, to estimate their present value. This is the main approach used by investors when deciding to purchase or sell income-producing properties. Estimating value of income producing properties is done by capitalization. In simple terms, dividing the annual net income by an appropriate capitalization rate to estimate the property value. The three methods of capitalization are gross rent multipliers, direct capitalization, and yield capitalization. (These are explained further in this manual.) The gathering of income and expense information is often one of the problems with using this approach and may be difficult to obtain. The assessor can obtain this information through a Chapter 91, Income and Expense Statement request to the owner. The assessor often annually sends it to the taxpayer and if proper notice is provided with the Income and Expense Form, the taxpayer must comply by completing the form or risk their right to appeal their assessment.

The seven steps involved in using the income approach are:

1. Estimate potential gross income.
2. Deduct for vacancies and rent loss.
3. Add other sources of miscellaneous income to get effective gross income.
4. Deduct allowable operating expenses to get net operating income.
5. Select the capitalization rate.
6. Determine the method of capitalization to be used.
7. Capitalize the net operating income into an indication of value.

111. Introduction to Land Valuation

The appraisal of real property for assessment purposes is separated into two areas: the appraisal of land itself and the value of improvements, if any, added to the land. The improvements will deteriorate but the land, except for the depletion by erosion or physical removal is a permanent asset. There are six accepted methods in

developing land values: sales comparison, allocation, abstraction, anticipated use/development, ground rent capitalization and land residual capitalization. These will be discussed in section 112. There are three factors that can be applied to the land value. They are the depth factor, commercial corner influence and alley influence.

The appraisal of land involves the analysis of each parcel for its ability to produce profitably or perform services for the owner. This is accomplished by judging the use, which, in the opinion of the appraiser, will produce the greatest future benefits to the owner of the land.

In this analysis of land, the appraiser should understand the application and effect of the various elements which tend to establish the value. Some items, having little or no influence on the value of land if used for one purpose, will be of vital importance for land utilized for another purpose. The items or factors to be considered include the following:

1. Supply and Demand - the supply of and demand for land will regulate the value of land, which there is a finite amount of. However, changes in zoning within a municipality can alter the supply of land by uses in which it is permitted. Demand is determined by buyers who have the ability to purchase property given all available choices.
2. Highest and Best Use - the principles of supply and demand determine the highest and best use of a property.

Land uses will vary from time to time. For example, the demand for housing may require the development of farmland into lots or parcels for residential use. The development of land for residential purposes may, in turn, create a demand for commercial and industrial uses. Conversely, certain uses of land may cause land values to fall.

3. Shape - the shape of some small residential and commercial sites is more important than for farm and industrial tracts which require larger areas. The shape of a lot can have a bearing on value because of limitations to its functional utility. For example, a triangular lot will normally be worth less than a rectangular lot because it lacks utility.
4. Location - the location of land is of prime importance for all uses but to varying degrees. For instance, farmland does not require the same degree of accessibility as commercial or residential land and a corner location is more desirable for commercial use than for industrial use.
5. Frontage and Ingress/Egress - the location of land on a street or highway is desirable for residential, commercial, and industrial sites, but frontage on a highway is of less importance for farm or industrial land. Frontage can also pertain to an amenity such as a lake, bay, ocean, river, or a golf course. Ingress and egress affect the accessibility to a parcel and can greatly affect its value.
6. Depth - farmland and industrial sites require greater depths than residential and commercial sites.
7. Topography - refers to the physical features of a site such as view, drainage, and contour. The physical features of a parcel dictate how it can be developed.
8. Site Improvements - can be classified as on-site and off-site improvements. On-site improvements include grading, landscaping, paving, utility lines and hookups. The site value can be influenced by the value of the off-site improvements such as streets, curbs, sidewalks, and traffic.
9. Soil Type, Productivity and Capability of Soil - the type of soil is of vital importance for farm use. The productivity and capability of soil to produce

crops and support livestock is important to farm valuation. Commercial and industrial uses often require certain subsoil qualities for heavy foundations, drainage, etc. Residential land requires the ability to support the structure, septic system, drainage, etc.

112. Land Value Methods

Sales Comparison Method

The Sales Comparison Method compares the parcel under appraisal to recently sold similar properties. This approach is the most common method used when there are sufficient comparable sales available. The appraiser processes the sales prices into an indication of value by adjusting the sale prices of comparable sales for differences from the subject property. The similarity of the comparables to the subject property requires the use of units of comparison.

The five basic units of comparison used when valuing land are: front foot, square foot, acre, site or lot and units buildable. Front foot is based on the premise that frontage contributes to value. Square foot is typically used for irregular shaped lots where frontage is not the predominant factor. Acres are used for larger parcels. Site or lot is used when the market does not show a difference in value when there are differences in lot sizes. Units buildable are used when sites are sold on a unit basis. One must be careful when choosing a unit of comparison. The appropriate one is usually used in the marketplace when being bought and sold.

As no two parcels are identical, adjustments must be made to account for differences to the subject property. This process shows what a comparable would sell for by adjusting for the differences between the comparable and the subject. Adjustments are made to the comparable sales price, never to the subject property. If the difference in the comparable is superior to the subject, the comparable is adjusted downward. Adjustments are made in two ways, lump sum dollar or percentages. The order of adjustments needs to be considered. The typical order is financing, time, location, and physical characteristics.

In the reconciliation the assessor analyzes the types and number of adjustments made to the comparable to arrive at a final value estimate. Usually, the comparable with the least number of adjustments is given the most weight, although the absolute amount of the adjustments is also taken into consideration.

Below is an example of the sales comparison method using dollar adjustments. Through market analysis it was determined that time adjustment is \$250 per month upward, size adjustments are \$10 per square foot, and there is a \$10,000 difference for superior topography and \$20,000 difference for inferior location.

	Subject	Sale 1	Sale 2	Sale 3
Sale Price		\$205,000	\$223,000	\$177,000
Sale Date Time Adjustment		2 months ago +500	12 months ago +3,000	6 months ago +1,500
Time Adjusted Sale Price		\$205,500	\$226,000	\$178,500
Location	Average	Average	Average	Inferior +20,000
Land Size	12,500 SF	12,500 SF	14,000 SF -15,000	10,000 SF +25,000
Topography	Average	Average	Average	Superior -10,000
Net Adjustment		0	-15,000	+35,000
Adjusted Sale Price		\$205,500	\$211,000	\$213,500

After allowing for the proper adjustments for differences between the subject and sale properties, the adjusted sale prices of the comparables range from a low of \$205,500 to a high of \$213,500. Additionally, Sale 1 appears to be the most comparable sale having the least number of adjustments.

Allocation Method

This method can be useful if there are no sales of vacant land. In this method the appraiser establishes a land value to total property value ratio from analyzing improved property sales. An allowance is determined based on knowledge of the market for the

property being appraised. The factors considered when applying allocation are previous years site values, land to improvement ratios in comparable areas or developments and analysis of new construction. This method is more reliable when the improvements are new. As they get older the land to property value ratio usually increases.

For example, in a similar neighborhood it is determined that the site value is 30% of the total property value. For a property with a total value of \$200,000, the land value would be estimated as follows:

$$\$200,000 \times 30\% = \$60,000$$

Abstraction Method

This method involves using the cost approach to aid with estimating a land value from sales of improved properties. The appraiser subtracts the contributory value or depreciated cost of the improvements from the sale price yielding an indicated land value for the property. This method is helpful in certain circumstances but should be used cautiously. Analysis of several improved sales in a neighborhood could show a pattern of land values as shown below:

Sale	Price	Bldg. Cost New	Depreciation	Depreciated Bldg. Value	Land Value
1.	\$250,000	\$175,000	\$30,000	\$145,000	\$105,000
2.	\$275,000	\$180,000	\$20,000	\$160,000	\$115,000
3.	\$225,000	\$150,000	\$35,000	\$115,000	\$110,000

Sale 1 Example: $\$175,000 - \$30,000 = \$145,000 \rightarrow \$250,000 - \$145,000 = \$105,000$

Anticipated Use/Development Method

This method is used primarily for transitional land (typically farmland) that is to be developed. It is hypothetical in nature, as it requires the appraiser to estimate and forecast the variables used to estimate a value for the parcel before development. In this method, first estimate the number of lots that can be subdivided in the parcel

and the price they would sell for, which gives a projected sale prices for the developed lots. From this total value, all costs of development are deducted such as site improvements, marketing, entrepreneurial profit, overhead and sales expenses. This leaves an indicated value for the raw land. In this example of a 50-acre tract, it is found that the tract could get 45 building lots that would sell for \$100,000 each. From a survey of similar developments in the area, it is determined that site improvements are 20%; 15% for overhead and sales expenses and 25% for profit interest and entrepreneurial profit of the total sale price of the subdivided lots. The indicated value of the raw land is calculated as follows:

Projected Sale Price of Lots (45 Lots x \$100,000)		\$4,500,000
Site Improvements (\$4,500,000 x .20)	-\$900,000	
Overhead and Sales Expense (\$4,500,000 x .15)	-\$675,000	
Profit Interest and Entrepreneurial Profit (\$4,500,000 x .25)	-\$1,125,000	
Total Development Costs	=	-\$2,700,000
Indicated Raw Value of Land (50 Acres)		\$1,800,000

Therefore the value of the raw land is \$1,800,000 ÷ by 50 acres = \$36,000 per acre.

Ground Rent Method

This method uses the income approach to value. The ground rent produced by a parcel is capitalized into an indication of value by an appropriate capitalization rate derived from the market. Rental data comparisons utilized can be on a per square foot, front foot, or acre basis. From the yearly gross rent, net operating expenses are deducted to produce a gross income which is then capitalized into value. For example, a parcel is leased for \$9,000 a month and operating expenses are \$750 a month. From the market, a capitalization rate of 8% was derived. The indicated value of the subject would be calculated as follows:

Gross Income (\$9,000 x 12)	\$ 108,000
<u>Operating Expenses (\$750 x 12)</u>	- \$ 9,000
Net Income	\$ 99,000
<u>Capitalization Rate</u>	8%
Indicated Land Value (\$99,000 ÷ .08)	\$1,237,500

Land Residual Method

This technique is used for newer income producing properties where a good building value can be ascertained and supported, and the land value is unknown. It allocates the net operating income between the buildings and capitalizes the residual income left to the land into a value. Information needed to use this method include, the net operating income, a well-developed building value and capitalization rates for both the land and building. In this example, the net operating income is \$80,000 a year and the improvement value has been established at \$800,000. It is found that the building capitalization rate is 7% and the land capitalization rate is 5%:

Net Operating Income		\$	80,000
Less Income to the Improvement (\$800,000 x .07)	-	\$	56,000
<hr/>			
Income Attributable to Land		\$	24,000
Land Capitalization Rate	÷		5%
<hr/>			
Indicated Land Value (\$24,000 ÷ .05)		\$	480,000
Land Value		\$	480,000
Improvement Value	+	\$	800,000
<hr/>			
Total Property Value		\$	1,280,000

Depth Factor Tables

Depth Factor Tables measure changes in value because of differences in lot depth when land is bought on a front foot basis. Depth factors are applied to front foot values for lots to reflect variations from the standard depth. The lot on the following page has a standard depth of 100 feet. Lots in this area whose depth is 120 feet would need a depth factor applied of 1.08 to the standard calculation: number of front feet x the value of front foot x depth. In the case of lots with depths between indicated depths, the next lower factors should be used.

The basis for computing depth tables is called the “4-3-2-1 rule”. It states that the front 25% depth of a lot represents 40% of the total lot value, the next 25% represents 30% of the value, the next 25% is 20% of the value and the rear 25% is worth 10% of the value.

4-3-2-1 Rule

10% of value	\$7,000
20% of value	\$14,000
30% of value	\$21,000
40% of value	\$28,000

100 Feet

Front foot value = \$700

$100 \text{ FF} \times \$700 \times 1.00 = \$70,000$

The following page is a sample of a Residential Depth Factor Table:

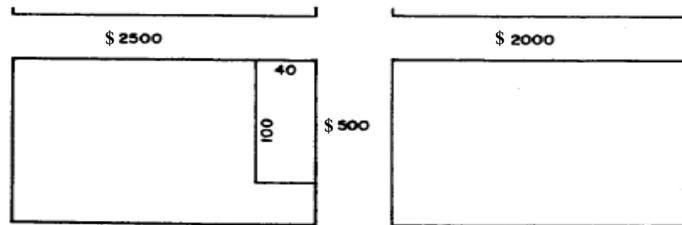
Residential and Apartment Depth Factor Tables
Standard Depth

<u>Depth in Feet</u>	<u>100'</u>	<u>125'</u>	<u>150'</u>	<u>175'</u>	<u>200'</u>	<u>300'</u>	<u>400'</u>
5	.10	.10	.10	.10	.10	.02	.02
10	.18	.16	.16	.14	.14	.05	.04
15	.26	.22	.20	.18	.18	.07	.06
20	.33	.28	.24	.22	.22	.10	.08
25	.40	.34	.28	.26	.25	.12	.10
30	.47	.40	.32	.30	.28	.16	.12
35	.53	.45	.36	.34	.31	.18	.14
40	.59	.50	.40	.38	.34	.21	.16
45	.65	.54	.44	.42	.37	.24	.18
50	.70	.58	.48	.46	.40	.26	.20
55	.75	.62	.52	.49	.43	.29	.22
60	.79	.66	.56	.52	.46	.32	.24
65	.83	.70	.60	.55	.49	.34	.26
70	.87	.74	.64	.58	.52	.37	.28
75	.90	.78	.68	.61	.55	.40	.30
80	.92	.81	.72	.64	.58	.42	.32
85	.94	.84	.75	.67	.61	.44	.34
90	.96	.86	.78	.70	.64	.46	.36
95	.98	.88	.81	.73	.67	.48	.38
100	1.00	.90	.84	.76	.70	.50	.40
105	1.02	.92	.87	.79	.72	.52	.42
110	1.04	.94	.89	.81	.74	.53	.43
115	1.06	.96	.91	.84	.76	.55	.45
120	1.08	.98	.93	.86	.78	.58	.46
125	1.10	1.00	.95	.88	.80	.60	.47
130	1.12	1.02	.96	.90	.82	.61	.49
135	1.14	1.04	.97	.92	.84	.63	.50
140	1.15	1.06	.98	.93	.86	.65	.52
145	1.16	1.08	.99	.94	.88	.67	.53
150	1.17	1.10	1.00	.95	.90	.70	.55
155	1.18	1.12	1.01	.96	.91	.71	.56
160	1.19	1.14	1.02	.97	.92	.72	.58
165	1.20	1.15	1.03	.98	.93	.74	.60
170	1.21	1.16	1.04	.99	.94	.75	.61
175	1.22	1.17	1.05	1.00	.95	.77	.63
180	1.23	1.18	1.06	1.01	.96	.78	.64
185	1.24	1.19	1.07	1.02	.97	.80	.65
190	1.25	1.20	1.08	1.03	.98	.81	.67
195	1.26	1.21	1.09	1.04	.99	.83	.68
200	1.27	1.22	1.10	1.05	1.00	.84	.70
250	1.30	1.25	1.15	1.10	1.06	.93	.80
300	1.32	1.27	1.20	1.14	1.10	1.00	.90
350	1.34	1.29	1.24	1.18	1.13	1.05	.95
400	1.36	1.31	1.26	1.21	1.16	1.08	1.00
450	1.38	1.33	1.28	1.23	1.18	1.10	1.04
500	1.40	1.35	1.30	1.25	1.20	1.11	1.05

Add .02 for Each 50 ft. over 500.

Corner Influence Table

This refers to the additional value of property bounded on two sides by intersecting roadways. This is most important for retail and commercial properties since the location makes the site more accessible to consumer traffic. The market analysis will show where corner influence factors should be applied. The following is the standard corner influence table applicable to commercial parcels. The corner influence is applied to the corner property up to 50 feet from the corner on the high value street in the central business district, as shown on the unit land value maps.



Corner Influence Table

Depth in Feet From Low Value Street	Low Value Street <u>Depth Factor</u>
5	.21
10	.31
15	.38
20	.43
25	.47
30	.51
35	.54
40	.57
45	.59
50	.60

CORNER INFLUENCE FACTOR RULE

To find the value of a corner lot, in cases where this Table is adopted, calculate first the value of the lot from the high value street; add to this sum the value of the lot calculated from the low value street to the depth of the corner up to 50 feet. Multiply the low value front foot value by the low value street depth factor to obtain the side street adjusted front foot.

EXAMPLE:

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
High Value Street 40' X 100'	40' X (\$2,500 X	1.00) =	\$2,500	\$100,000
Low Value Street 100' X 40'	100' X (\$500 X	.57) =	\$285	\$28,500

Total Land Value \$128,500

On land zoned and used for apartments, a flat corner influence percentage may be added to unit front foot values for the first 50 feet of the corner only if there is an indication that the corner lot has an increment of value over an inside lot.

Alley Influence

On land adjacent to rear or side public alleys, the following alley influence factors are applicable in larger cities and may be added to unit front foot values if the market so indicates.

Rear alley - add 5% (multiply the unit land value of affected property by factor 1.05)

Side alley - add 7% to adjacent property holdings only up to 50 feet frontage of such property from the side alley (multiply the unit land value of affected property by factor 1.07).

Unit Values of Industrial Land

The standard unit of valuation for industrial land is either square foot or acre. Exceptions to this rule are where light industrial lands, improved with loft or similar light structure buildings, located in commercial and other subdivided areas, or where platted areas have been zoned for industrial use. In these areas, the standard unit is front foot.

Unit Values of Unsubdivided Land

The standard unit of value for unsubdivided land is price per acre. Exceptions to this rule occur when the unsubdivided land fronts on a business or main thoroughfare. In this case, the applicable standard of value can be price per front foot.

113. Land Value Rules for Lots of Various Shapes and Sizes

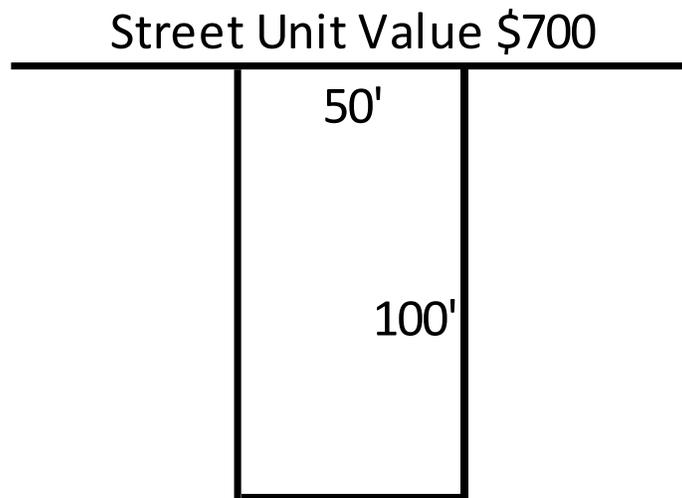
Rules 1 to 9 are examples based on Residential Standard Lot Depth of 100 Feet, Table R-IOO; rules 10 to 12 are examples based on Commercial Standard Lot Depth of 100 Feet, Table C-IOO:

RULE 1

RECTANGULAR LOT

To find the value of a rectangular lot, multiply the unit front foot value by the depth factor. Multiply the resulting front foot value (rounded off to the nearest dollar) by the linear feet of frontage or width of the lot.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 100'	50' X (\$700 X	1.00) =	\$700	\$35,000



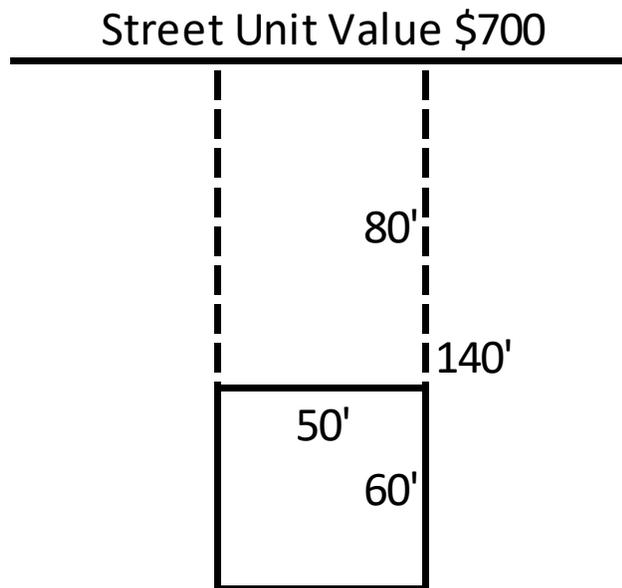
RULE 2

REAR RECTANGULAR LOT

To find the value of a rear rectangular lot, multiply the unit front foot value by the difference between the depth factors for the farthest and nearest distances of the lot from the street. Multiply the resulting adjusted front foot value by the frontage.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 60'	50' X (\$700 X	.23) =	\$161	\$8,050

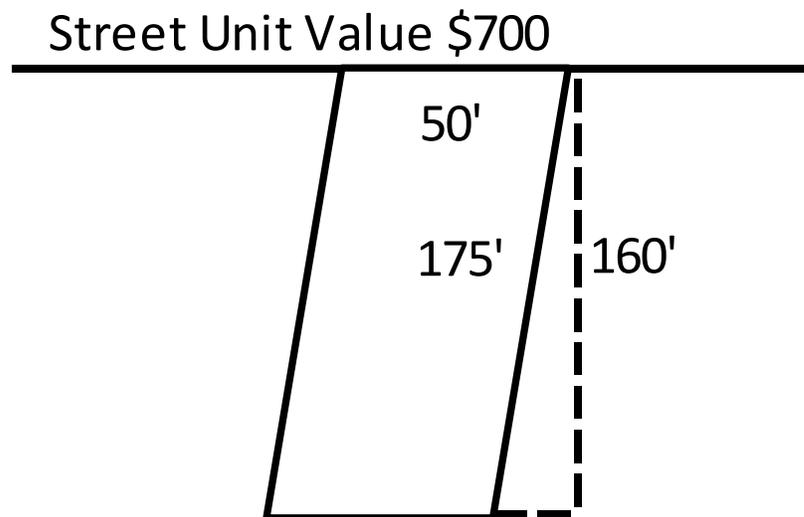
Depth (140' - 80'). Depth Factor (1.15 - .92) = .23



RULE 3
PARALLELOGRAM-SHAPED LOT
(Oblique to the Street)

To find the value of the lot, multiply the unit front foot value by the depth factor for the perpendicular depth of the lot. Multiply this adjusted front foot value by the frontage.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 160'	50' X (\$700 X	1.19) =	\$833	\$41,650

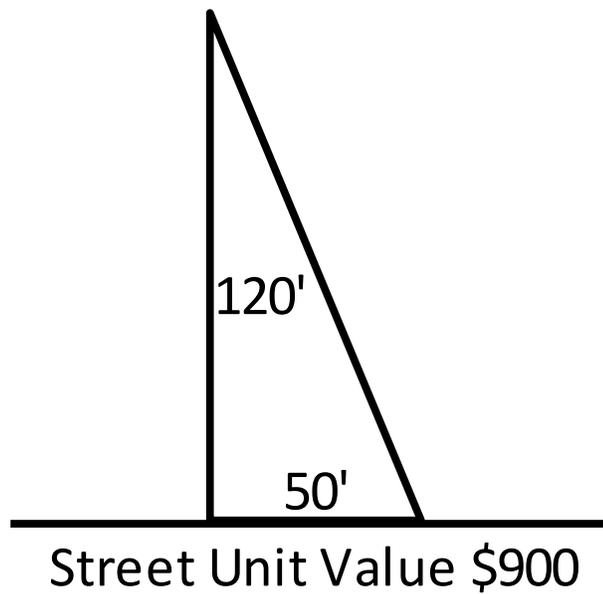


RULE 4
TRIANGULAR LOT

(With base on the street at right angles to the street)

To find the value of the lot, first compute as a rectangular or parallelogram lot of identical frontage and perpendicular depth. Take 65% of the value of this lot for the value of a triangular lot with base on the street at right angles to the street and round to the nearest hundred.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 120'	50' X (\$900	X 1.08 X	.65) =	\$632	\$31,600

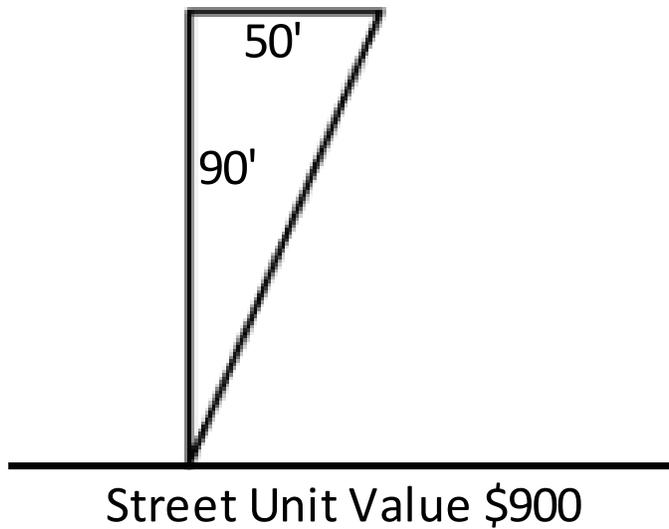


RULE 5
TRIANGULAR LOT

(With apex on the street and at right angles to the street)

To find the value of the lot, first compute as a rectangular or parallelogram lot with frontage and perpendicular depth identical to the base and depth of the triangular lot. Take 35% of the value of this lot for the value of a triangular lot with apex on the street and at right angles to the street.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 90'	50' X (\$900	X .96 X	.35) =	\$302.40	\$15,120

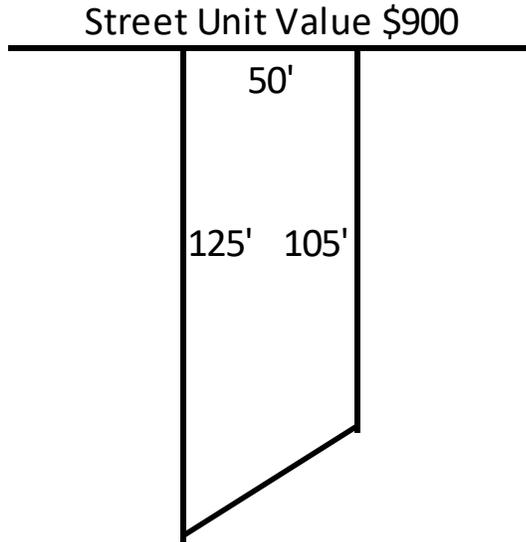


RULE 6
TRAPEZOIDAL LOT

(At right angles to the street)

To find the value of the trapezoidal lot at right angles to the street, multiply the unit front foot value by the depth factor for the average depth of the parallel sides of the lot. Multiply this adjusted front foot value by the frontage.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 115'	50' X (\$900 X	1.06) =	\$954	\$47,700

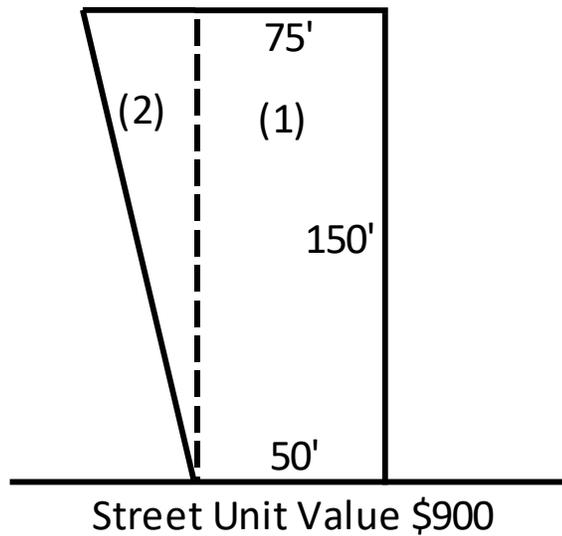


RULE 7
Trapezoidal Lot
(Parallel front and rear)

To find the value of the lot, compute the rectangular and triangular portions separately, according to rule, and take the sum of the two computations for the total value.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
(1) 50' X 150'	50' X (\$900	X 1.17)		\$ 1,053.00	\$52,650
(2) 25' X 150'	25' X (\$900	X 1.17	X .35) =	\$ 368.55	\$ 9,214

Total Land Value \$61,864



RULE 8
IRREGULAR LOT

Reduce the irregular lot to the nearest equivalent rectangular, trapezoidal, or triangular sections and apply the applicable rules.

LOT "A"

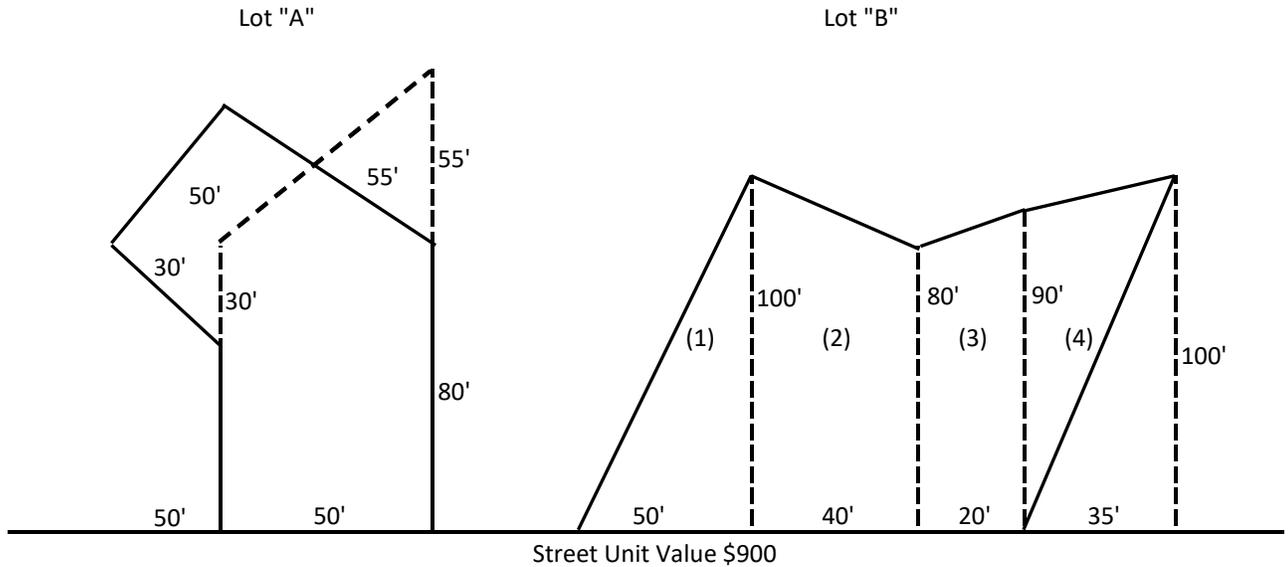
<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 108' *avg.	50' X (\$900	X 1.02) =		\$918	\$45,900

*Total average of both sides

LOT "B"

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
(1) 50' X 100'	50' X (\$900	X 1.00 X	.65) =	\$585	\$29,250
(2) 40' X 90'	40' X (\$900	X .96) =		\$864	\$34,560
(3) 20' X 85'	20' X (\$900	X .94) =		\$846	\$16,920
(4) 35' X 95'	35' X (\$900	X .98 X	.35) =	\$308.70	\$10,805

Total Land Value \$91,535



LOT "B"

Lot (2) $100 + 80 = 180 \div 2 = 90'$ Depth

Lot (3) $80 + 90 = 170 \div 2 = 85'$ Depth

Lot (4) $90 + 100 = 190 \div 2 = 95'$ Depth

RULE 9
CURVED LOT

To find the value of a curved lot, rectify the curvatures and reduce the lot to its nearest equivalent lot shape. Then, compute according to the applicable rules.

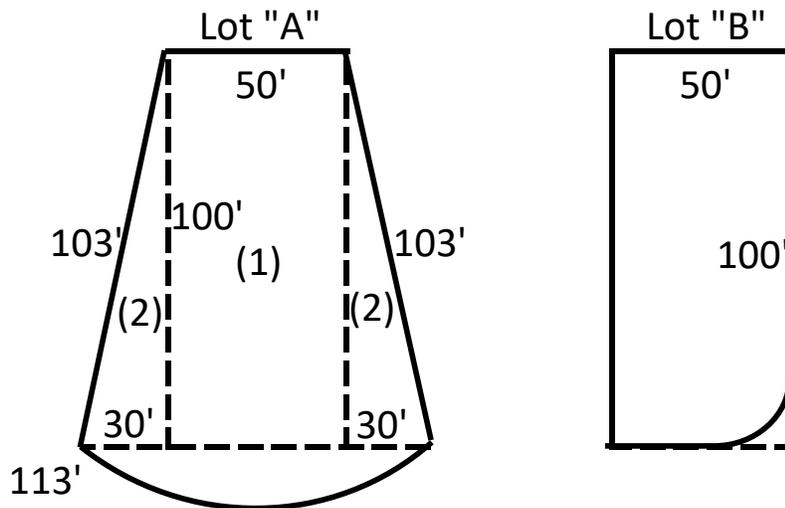
LOT "A"

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
(1) 50' X 100'	50' X (\$900	X 1.00) =		\$900	\$45,000
(2) 60' X 100'	60' X (\$900	X 1.00	X .65) =	\$585	\$35,100

Total Land Value \$80,100

LOT "B"

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 100'	50' X (\$900	X 1.00) =		\$900	\$45,000



Street Unit Value \$900

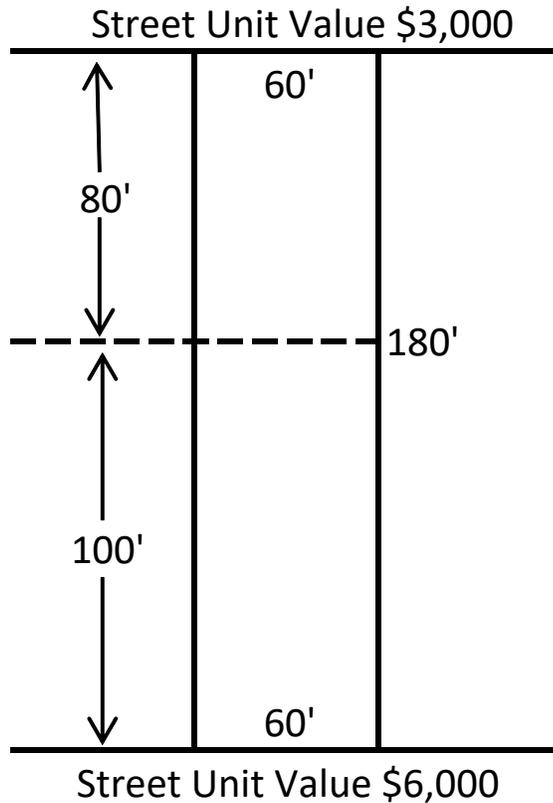
RULE 10

BUSINESS THROUGH LOT

To find the value of a through lot with two street fronts, compute from the high-value street to the standard depth or from half the depth, whichever is greater, and from the low-value street for the remaining depth. Then, add them together for the total value.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
60' X 180'				
High Value Street 60' X 100'	60' X (\$6,000	X 1.00) =	\$6,000	\$360,000
Low Value Street 60' X 80'	60' X (\$3,000	X .92) =	\$2,760	\$165,600

Total Land Value \$525,600

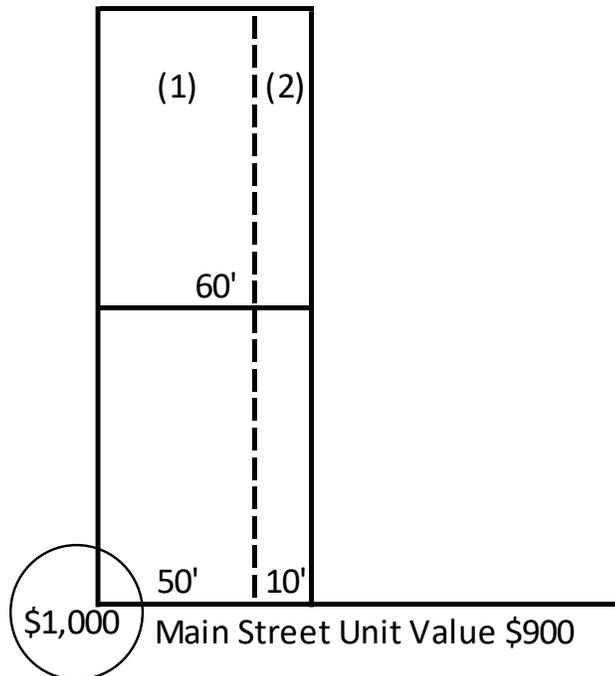


RULE 11
BUSINESS CORNER LOT

To find the value of a business corner lot:

- (a) Compute the frontage up to 50' on the high unit value street to depth of the lot on the basis of the circled unit front foot value.
- (b) Compute the remainder of frontage on the high unit value street to depth of the lot on the basis of the unit front foot value of the street.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
50' X 100'	50' X (\$1,000	X 1.00) =	\$1,000	\$50,000
10' X 100'	10' X (\$900	X 1.00) =	\$ 900	\$ 9,000
Total Land Value				\$59,000



RULE 12

TRIANGULAR CORNER ON TWO STREETS*

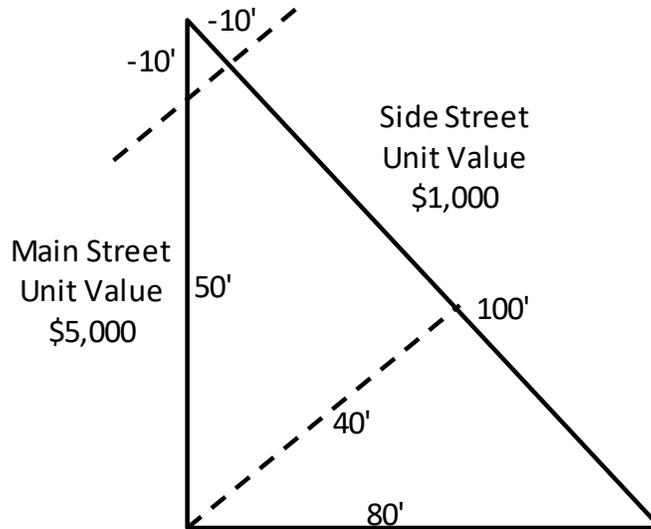
To find the value of the lot:

- (a) Deduct 10' from frontage on both streets if the angle is 45° or less.
- (b) Compute the frontage on the high unit value street as a triangle.
- (c) Compute the frontage on the low unit value street as a triangle.

<u>Lot Dimensions</u>	<u>Unit Value</u>	<u>Depth Factor</u>	<u>Triangle Factor</u>	<u>Adj. Unit Value</u>	<u>Lot Value</u>
(b) 40' X (50' - 10') X 80'	40' X (\$5,000)	X .92 X	.65) =	\$2,990	\$119,600
(c) 90' X (100' - 10') X 40'	90' X (\$1,000)	X .59 X	.65) =	\$383.50	\$ 34,515

Total Land Value \$154,115

NOTE: Triangle corner lots may present unusual problems. If the rules develop unrealistic results, judgment and special consideration should be given in comparison with similar properties.



114. Farmland Assessment Act of 1964 (Chapter 48, Laws of 1964)

1. Statutory Limitation

The Farmland Assessment Act is a jurisdictional exception authorized by the NJ State Constitution of assessing property at its “full and true value”. It authorizes and mandates assessment of qualified farmland on the basis of its use and productivity value in agriculture or horticulture rather than on the basis of its market value.

2. Use and Productivity Value

Assessment of farmland on the basis of its use and productivity value presents a number of difficulties. The principal difficulties arise for two important reasons:

1. Exact measures of the innate productivity of the 215 soil types in New Jersey are not available although there is a scientific base for making reasonable estimates of productivity.
2. The productivity of farmland varies with its particular use.

A method of overcoming the principal difficulties lies in combining the scientific knowledge available on the characteristics of New Jersey soils and their economic potential according to the current uses in agriculture. The procedure is simplified by grouping the 215 soil types into five rated soil groups based on the land’s productivity. Net income from the land is capitalized and allocated on the basis of the below rated capabilities, found in the agricultural soil groupings.

3. Agricultural Soil Groupings

New Jersey is fortunate in having a complete set of maps and a description of all of its soils. To aid in the assessing process, the agricultural soils have been categorized into five groups:

- Group A Very productive farmland - suitable for permanent cultivation. With proper management, yields tend to be high. Usually the most desirable soil in the area.
- Group B Good farmland - suitable for permanent cultivation. Yields are generally fairly high.
- Group C Fair farmland - suitable for permanent cultivation. Yields tend to be lower than those in Groups A and B. The limiting factors are usually shallowness, droughtiness or excessive moisture.
- Group D Rather poor farmland - usually wet, stony, droughty, or otherwise unsuitable for permanent cultivation.
- Group E Land unsuitable for tillage - usually because of excessive water, shallowness, stoniness or droughtiness.

In arriving at a realistic classification (placing each soil into one of five groups), the following factors were primarily used: General suitability of the soil for farming, mechanical composition, depth of the soil, drainage, stoniness, and other related properties.

4. Land Use Classes

Land use on the typical New Jersey farm differs for various reasons but the primary uses of land can be combined into five distinct classes: cropland harvested, cropland pastured, permanent pasture, appurtenant woodland, and non-appurtenant woodland. These classes are described below:

a.) Cropland Harvested - This is the heart of the farm and represents the highest use of land in agriculture. All land from which a crop was harvested in the current year falls into this category, as well as boarding, training, and rehabilitation facilities.

b.) Cropland Pastured - This land can be and sometimes is used for cropland. However, because of the organization of certain types of farming, it is often

found in pasture from which the maximum potential income may not be realized in any particular year. All cropland pastured falls into this category.

c.) Permanent Pasture - This land is not cropped because its economic potential is greater in pasture. It is meadow land, the rough and stony land, the land with a high degree of slope. It is usually unimproved land which farmers have found to be nonproductive except for pasturing and haying.

d.) Appurtenant Woodland - Woodland that is part of a qualified farm. Usually, this land is restricted to woodlots because of slope, drainage capability, soil type or topography. Such land has limited productive use, but it provides a windbreak, watershed, buffers, or controls soil erosion.

e.) Non-Appurtenant Woodland - Woodland which can only qualify for farmland assessment on the basis of being in compliance with a woodland management plan filed with the Department of Environmental Protection. It is actively devoted to the production for sale of tree and forest products unless it is under a Forest Stewardship Plan.

f.) Wetlands - Those lands as determined by regulations adopted by the Department of Environmental Protection.

5. Deriving Ranges of Value for Farmland

See the latest annual report of The State Farmland Evaluation Committee for the method used in determining the ranges of value for farmland in each county. These reports are published annually on October 1st on the taxation website at <http://www.state.nj.us/treasury/taxation/lpt/farmland.shtml>.

115. Cost Approach to Value

The cost approach is based on the principle of substitution which states that a buyer will pay no more for a property than the cost of acquiring an acceptable

replacement of like utility. It reflects market behavior as the real estate market relates value to cost. It involves two parts: estimating the land value and the depreciated cost of the building.

There are four types of cost:

1. **Reproduction cost** is the cost of producing an exact replica of an improvement using the same materials, design, and workmanship.
2. **Replacement cost** uses costs that have the same utility using modern materials, design, and workmanship.
3. **Historical cost** is the cost at the time a property was originally built.
4. **Trended historical cost** is historical cost factored by a current index for property components.

There are four categories of estimating cost:

1. The **quantity survey method** is the most detailed using an itemization of all the direct and indirect costs to construct a building, generally used by contractors and builders.
2. The **unit-in-place method** is a modified quantity survey that combines direct and indirect costs into a unit-in-place value.
3. The **comparative unit method** combines direct and indirect costs divided by a unit of value, square foot, or cubic foot, to get a cost per unit.
4. **Trended historical cost method** obtains a cost value by trending its historical cost with a factor from a construction cost index.

The New Jersey Appraisal Manual utilizes both unit-in-place and comparative unit methods. In order to estimate uniform, sound appraisals for individual properties, this manual provides for determination of replacement cost for buildings of similar type and construction. Examinations of typical buildings in different sections of the State show that there are basic similarities in building type and construction to permit classification into several classes of buildings. Variations in the construction and size of buildings within such groups are reflected by the unit replacement costs of the different building classes.

The following page shows the list of the major groups of residential and farm building classes for which base replacement costs and depreciation allowances have been developed for this manual.

Single-Family Dwelling

Low Quality Dwelling	R-12
Fair Quality Dwelling	R-13
Below Average Quality Dwelling	R-14
Average Quality Dwelling	R-15
Standard Quality Dwelling	R-16
Above Standard Dwelling	R-17
Good Quality Dwelling	R-18
High Quality Dwelling	R-19
Superior Quality Dwellings	R-20
Mansion Quality Dwellings	R-21
Estate Quality Dwellings	R-22
Highest Estate Quality Dwellings	R-23

Mobile Homes

Low Quality	R-50
Fair Quality	R-51
Average Quality	R-52
Good Quality	R-53
Highest Quality	R-54

Farm Buildings

Farm Barns	150-151
Other Farm Structures	152-156
Post & Frame Buildings	PF157-PF164

Semi-Detached Dwellings

Fair Quality	R-27
Average Quality	R-28
Above Average Quality	R-29
Good Quality	R-30

Row-Town House

Fair Quality	R-33
Average Quality	R-35
Above Average Quality	R-37
Good Quality	R-39

Two-to-Four Family Apartments

Fair Quality	R-43
Average Quality	R-45
Above Average Quality	R-47
Good Quality	R-49

116. Descriptions and Unit Costs of Different Building Classes

For each building class, base specifications have been developed including specific descriptions that show distinctions between the building classes. On the basis of the costs of labor and materials provided in the building class specifications, the base unit replacement cost and variations according to area or volume for each typical class have been calculated.

For example, the unit replacement cost for a residential building is expressed in dollars per square foot of floor area. Adjustments (additions or deductions) account for important variations in an individual building from the base specifications, which when totaled together, form the base replacement cost. The building descriptions and their base specifications provide the basis for selecting the building classification and recording other essential information on the property record cards which eventually determines the replacement cost of each building.

The unit replacement costs in this manual are based on average prices of material, labor, and other construction items throughout New Jersey; as of October 1st, 2001. Annually, the Division of Taxation publishes cost conversion factors to reflect updates in material costs and labor rates.

117. Residential (“R” Series) Building Classifications

In order to classify residential structures, it is necessary to understand the construction characteristics of the various classes of buildings. The quantity, quality, and types of materials and quality of workmanship determine construction characteristics. Building class is determined by comparing the building characteristics given for each class with the building construction found during physical inspections. Actual value determinations may dictate a shift in class, up or down, as results may demonstrate.

A general description of each building class is as follows:

CLASS R-12: LOW (POOREST) QUALITY

This is the lowest cost dwelling unit, providing minimal shelter. Materials and construction methods are of the lowest quality. Plumbing typically includes minimal bathroom and kitchen facilities. Construction methods may not meet today's building standards.

CLASS R-13: FAIR QUALITY

This class of dwelling is built with sub-standard quality material having defects. Workmanship is below professional standard of a semi or unskilled caliber. These units typically have wood floors in a portion of the dwelling. Plumbing usually consists of a three-fixture bath and kitchen sink.

CLASS R-14: BELOW AVERAGE QUALITY

The dwellings in this class will generally be found with adequate electrical and plumbing rough-ins, but the fixtures are commonly below average quality. The floors will occasionally be of inferior quality hardwood or a mix of hard and softwood. Partitions are dry wall or low-quality plaster. The floors and roof framing are usually less than standard. This class is considered to have the essential conveniences.

CLASS R-15: AVERAGE QUALITY

This class of dwelling is almost comparable to one of standard quality or an average of all existing housing. It contains all the conveniences usually found in a standard quality dwelling, but either the materials or workmanship used in the construction of this type of dwelling is slightly less than standard quality to that used in a standard quality dwelling built today.

CLASS R-16: STANDARD QUALITY

Dwellings in this class are typical of today's construction, materials, and methods. This class unit meets current building code standards. They are well framed, with rafters and floor joists of standard size and spacing. Plumbing consists of a kitchen sink, dish washer, water heater, laundry facilities and multiple baths. The floors are carpet or

hardwood, but with occasional tile finish. A developer typically builds this class of dwelling on a mass production basis (large-scale residential developments).

CLASS R-17: ABOVE STANDARD QUALITY

The dwellings in this class have materials and fixtures of above average quality and good workmanship. Plumbing fixtures and fittings are of above average quality. The kitchen has ample built-in cabinets. This class dwelling may have some exterior ornamentation and interior refinements. These units are found in mass-produced, better-grade developments.

CLASS R-18: GOOD QUALITY

This class dwelling has materials and fixtures of good quality and good workmanship. They are well framed with rafters and joists exceeding minimal standards. The plumbing and heating infrastructures found in these dwellings are of better quality. The floors and walls have better quality materials and finish. These dwellings typically have some exterior ornamental (brick or stone fronts) as well as interior refinements. This class of dwelling may be found in smaller developments. Units have some degree of customization.

CLASS R-19: HIGH QUALITY

This class includes dwellings of a higher quality than those cited above. Better grade construction, quality materials and workmanship are evident. Good quality plumbing is included, which may also include additional fixtures, such as whirlpool baths or saunas. Interior finish includes cabinets and wood trim of finer woods, including some wood paneling. These units typically show some emphasis on both interior and exterior refinements. This class of dwelling reflects custom housing built from the developer's plans.

CLASS R-20: SUPERIOR QUALITY

These dwellings use superior quality construction, having a low maintenance exterior of stone, stucco, or brick and with some special architectural highlights. Interior finishes and appointments are superior quality. Heating and cooling units are of superior quality

utilizing multiple zones. Units are typically custom designed by an architect for the property owner.

CLASS R-21: MANSION QUALITY

This mansion quality class dwelling is based upon a customized architectural design with construction typically supervised by the architect. Workmanship, interior elements and finishes, and exterior ornamentation are high quality. Multiple HVAC units are typical in this class. Some dwellings may have gated or brick/stone entrance ways.

CLASS R-22: ESTATE QUALITY

This class of dwelling has an excellent quality of construction, being supervised by an architect. These homes are built from detailed architectural plans and written specifications for a custom builder. Workmanship on exterior and interior ornamentation is of very high quality requiring exceptionally skilled craftsmanship. Special engineering and special construction may be needed to support unusual architectural elements. This class may have housing for staff or guests within the same building and a separate service entrance.

CLASS R-23: HIGHEST ESTATE QUALITY

The dwellings in this class use the highest luxury quality of construction. This dwelling is built for an individual without regard to resale value. Architectural expression may be a major element of the design. Opulence and eccentric details are considered typical in this class. Unusual features such as imported tile, bronze and gilded fixtures, hand carvings, rare woods and stones and works of art are characteristic of this class. This quality of property may contain special structural elements to support special features not typically found in residential construction. Arrangements frequently include separate service entrance areas, housing for staff and guests in separate buildings.

CLASS R-27, R-28, R-29, R-30:

FAIR, AVERAGE, ABOVE AVERAGE AND GOOD QUALITY SEMI-DETACHED RESIDENCES

These classes are comparable, in quality of materials and workmanship used in their construction, to a single-family residence of the same quality. They differ from the single-family residence in that one or a portion of one of their walls is a party wall.

CLASS R-33, R-35, R-37, R-39:

FAIR, AVERAGE, ABOVE AVERAGE AND GOOD QUALITY ROWHOUSE/TOWNHOUSE

These classes are comparable, in quality of materials and workmanship used in their construction, to a single-family residence of the same quality. They differ from the single-family residence in that two of their sidewalls are party walls except for the end units, which have one party wall.

CLASS R-43, R-45, R-47, R-49:

FAIR, AVERAGE, ABOVE AVERAGE AND GOOD QUALITY TWO-TO-FOUR FAMILY APARTMENTS

These classes are comparable, in quality of materials and workmanship used in their construction, to a single-family residence of the same quality. They differ in that they are multi-family dwellings having two-to-four apartments in each building.

CLASS R-50, R-51, R-52, R-53, R-54:

LOW, FAIR, AVERAGE, GOOD AND HIGHEST QUALITY MOBILE HOMES

Mobile homes are typically towed to the site. The lowest class (R-50) mobile home provides minimal shelter, with low quality material and construction. The quality of material and construction increases as the class progresses to the highest quality class (R-54), which is almost comparable in quality to a prefabricated dwelling.

118. Field Procedure for Building Valuation

The field inspection of each property is the first step used in recording the information necessary for estimating the land and building value. At this inspection, important data in regard to the lot or tract of land, the measurements and classification of buildings, a ground plan sketch of the principal buildings, and descriptive data on the principal accessory buildings on each lot or tract are entered on data collection forms.

The field operations of the appraiser consist of determining and entering all descriptive information about (a) each parcel of land (b) measurements of each principal building and garage or other accessory buildings (c) preparing a sketch of the buildings and other improvements (d) inspecting the building exterior and interior and entering required information on the data collection form as to building type, use, condition, structure construction, heating, plumbing, etc. along with specific data as to quality of the various components.

The appraiser, when inspecting the interior of the building, may request the owner or occupant to accompany them through the building. This will help in assuring expeditious inspection and recording of the desired information.

The necessity of accuracy, thoroughness, and neatness in the preparation of the records for the individual parcels and the buildings cannot be stressed too strongly. The soundness and fairness of the valuation of individual properties cannot be established on the procedures and standards applicable to the appropriate properties alone but must also depend on the accuracy and thoroughness of the inspection and recording of each individual property's data.

119. Recording Descriptions and Measurements for Buildings

As soon as the descriptive material on the land has been completed, the appraiser/assessor proceeds to check the outside measurements and enters information about the principal building, garage and any other accessory buildings or improvements.

The front of each building is measured first. Starting with the right-front corner then, proceeding around each building in clockwise direction to the place of beginning. Measurements are taken along the exterior surface of the ground floor. They should be taken directly on the walls and not from minor projections. Measurements should be read to the nearest foot. Building dimensions are entered on the outline sketch so that each dimension can be read.

Building measurements are entered in the appropriate spaces under “Floor Area Computations”. Irregular shaped buildings are divided into parts with dimensions shown for each part. The building segments can be labeled A, B, C... etc., both on the ground plan sketch and in the “Floor Area Computations”.

Story heights are entered on the sketch; the “B” indicates a basement. For example:

1B, 1/B, 1-B or 1+B is 1 story plus basement

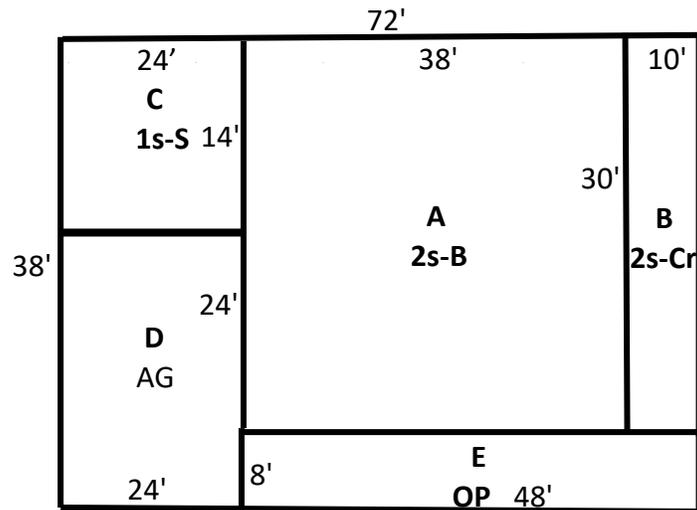
In case two or more different story heights occur in the same building, the different sections are divided by a line. Dimensions and story heights are indicated for each individual section.

Porches are measured, sketched, and identified by the designation “P#1”, “P#2”, etc., on the sketch of the ground plan. Built-in porches and built-in garages are shown on the ground plan sketch with dotted lines with measurements.

120. Example of Ground Plan Sketches and Recording Dimensions

The following example shows the method for preparing ground plan sketches and recording dimensions of buildings. Part A is 2 stories high and has a full basement. Part B is 2 stories high over a crawl space. Part C is only 1 story high on a slab. The building also has an open porch (OP) and an attached garage. The dimensions of this building are recorded as follows on the Property Record Card:

FLOOR AREA COMPUTATIONS

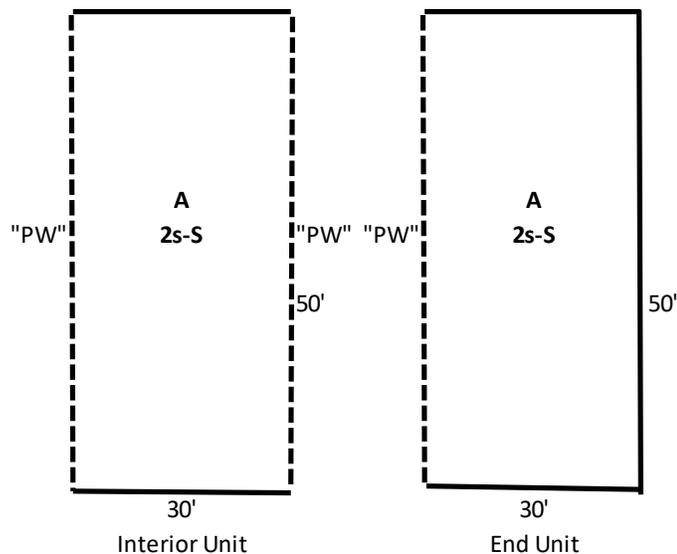


Segment	Width	Length	Basement	First	Upper
A 2s-B	38	30	1140	1140	1140
B 2s-Cr	10	30		300	300
C 1s-S	24	14		336	
Total Floor Area			1140	1776	1440
Attached Items	Width	Length	Area		
D Att Garage	24	24	576		
E Open Porch	48	8	384		

121. Recording Party Walls on Sketches

One family semi-detached, duplex, or detached dwellings and rowhouses contain two or more dwelling units which may be owned by more than one owner. The replacement cost schedules are prepared on a unit floor area basis. Therefore, it is necessary for the appraiser to indicate the existence of party walls on the ground plan sketch for individually owned units which are part of the complete buildings. Party or common walls are indicated on the ground sketch with broken lines and letters "PW" along the party wall side or sides.

The following examples illustrate the methods for preparing ground plan sketches for semi-detached and town house dwellings:



122. Ground Plan Sketches of Split-Level Residential Buildings

Split level residential buildings are essentially a combination of one- and two-story buildings with many variations of layout and design. The common difference between a conventional one- and two-story building and the split level is that the second floor of the two-story section of the split level is usually less than a full story height above the one-story level. While the first floor is lower than the level of the one-story section, the net effect is that, while the vertical distance from the one-story level to either level of the two-story portion is less than a full story, the total vertical distance (number of steps) is the same as in a conventional two-story house.

The lower level of a split-level house may be completely finished into living quarters or it may be unfinished with facilities similar to that of a basement. In many instances, a garage comparable to a basement garage is found in the lower level. In other instances, recreation rooms may be developed.

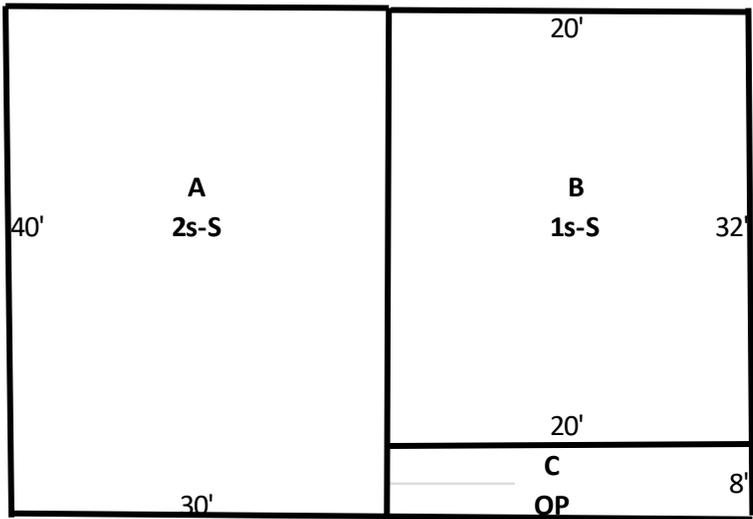
The appraiser must determine and record the story heights and degree of interior finish for each part of the structure at the time of inspection. The building classification will be based on the same factors as in other structures and the calculation of the replacement cost is identical to other buildings of the same class, story height and exterior wall construction.

In order to interpret the proper story height of split-level dwellings, the appraiser need only to visualize the various sections of the building as though each was separate conventional type built with or without a basement. If the lower level is finished for living quarters, that section can be considered as having two stories without a basement. However, if the lower level is finished for use as a garage or recreation room, the section might be considered as having only one-story with a basement and garage.

The following examples illustrate a few of the more common approaches used in determining story height of split-level dwellings.

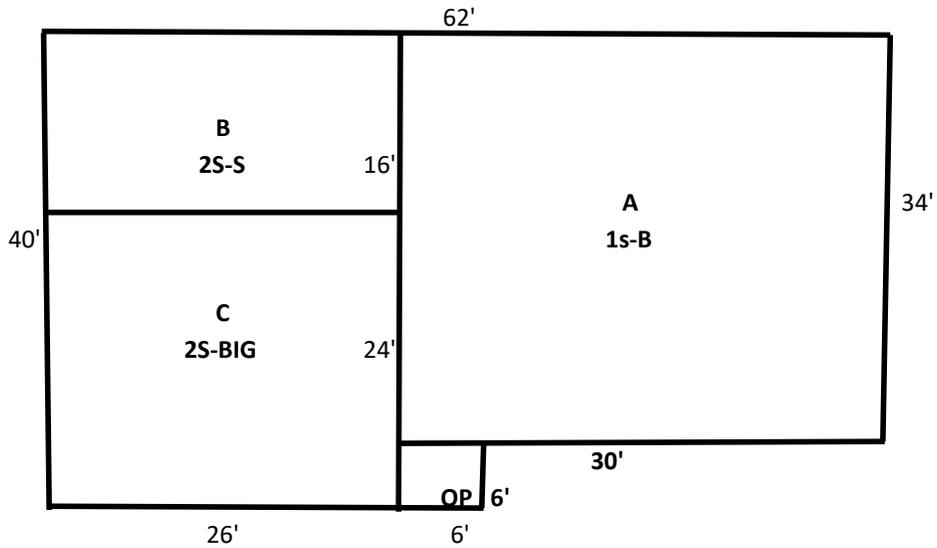


50'



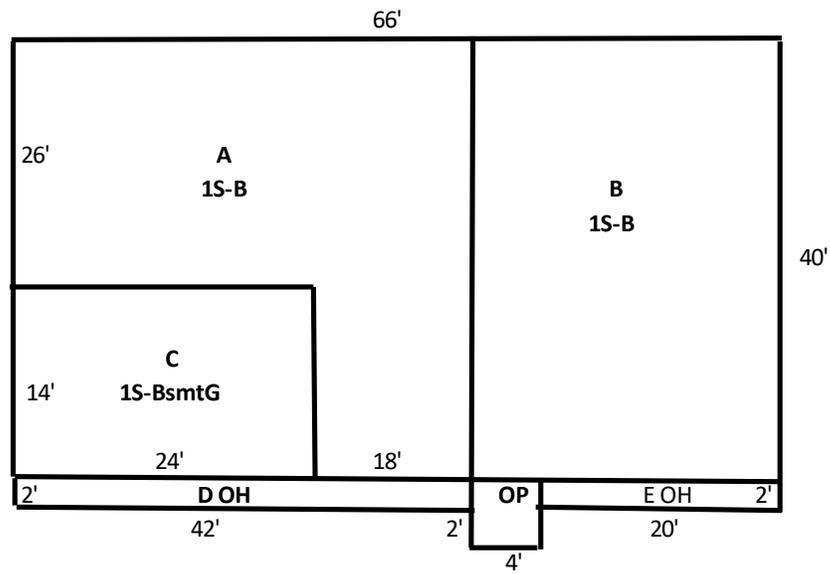
Segment	Width	Length	Basement	First	Upper
A 2s-S	30	40		1200	1200
B 1s-Cr	20	32		640	
Total Floor Area				1840	1200
Attached Items	Width	Length	Area		
C OP	20	8	160		

This building is considered as a part one-story and part two-story building. This can be readily appreciated by considering sections A and B to be separate structures. The result is a one-story building for section B and a two-story building for section A. Following this procedure all other considerations are identical to a standard single-family residence.



Segment	Width	Length	Basement	First	Upper
A 1s-B	36	34	1224	1224	
B 2s-S	26	16		416	416
C 2s-BIG	26	24			624
Total Floor Area			1224	1640	1040
Attached Items	Width	Length	Area		
C BI Garage	26	24	624		
OP	6	6	36		

This building is considered as a one-story and two-story building with a built-in garage (BIG). Assuming the building to have a basement under section A, all other considerations are identical to standard single-family residence.



Segment	Width	Length	Basement	First	Upper
A 1s-B	42	26	1092	1092	
	18	14	252	252	
B 1s-B	24	40	960	960	
C 1s-BsmtG	24	14		336	
D OH	42	2		84	
E OH	20	2		40	
Total Floor Area			2304	2764	
Attached Items	Width	Length	Area		
C Bsmt Garage	24	14	336		
OP	4	4	16		

This type dwelling, known as a Raised Ranch or Bi Level, is considered as a one-story building with a full basement and a basement garage. By visually lowering the floor level

of the first floor, the result is a one-story house with a full basement and basement garage. The additions necessary to adjust for the basement garage are required to complete the calculations of the building.

123. Residential Construction Components

The following is a list of items that should be noted when making a field inspection on a residential property besides a sketch, which allows the assessor to determine the overall square foot living area of the improvement. While some of the items are descriptive in nature, they assist in determining the overall class of the improvement along with the condition and effective age. Other items are directly related to cost values used in the New Jersey Real Property Appraisal Manual as adjustments to base costs.

1. Foundation Type and Material

Items such as the foundation type, slab, crawlspace, basement, etc. and the material are entered. If the dwelling has a basement, it is noted along with any finished area including the wall, floor, and ceiling finish. The New Jersey Real Property Appraisal Manual base costs assume the structure is constructed on a crawl space. There are adjustments to base cost values for structures built on a slab or a basement. The adjustment for a slab is a negative adjustment whereas an adjustment for a basement is positive adjustment.

2. Structure Characteristics

Items such as the type of construction, single-family, townhouse, condo, etc., are noted. Design and style, though not essential, is helpful in describing the type of construction such as ranch, cape cod, colonial, etc. The exterior finish is also noted as finishes with brick or stone are an adjustment to base value costs. Exterior condition is used to help in the determination of final condition.

3. Roof Types and Finish

Examples of various roof types are shown in the photos below. Roofing material should also be noted.



Flat



Hip



Gable



Gambrel



Mansard

4. Story Height

In determining the number of stories, "1 story" refers to a building all on one floor level and also any buildings in which the usable second story covers less than 40% of the first story floor area. A "1½ story" building is described as a building in which the roof meets the walls at a point high enough above the ground floor or at an angle steep enough to permit the use of floor area in the half story equivalent to 50% to 80% of the ground floor area. Buildings with over 80% of ground area usable as second floor space are considered as "2 story" buildings. Photos of typical residential buildings are shown below. Dormers add to the usable area of the top story and are considered in determining the story height.



1 Story



1 ½ Story



2 Story



2 ½ Story

5. Square Foot Living Area

Square foot living area (SFLA) is calculated from the **exterior** wall dimensions. It includes all finished and heated space above ground level, calculated for each story.

Cathedral ceiling space is also included in the total square foot living area of the story being calculated. For Classes 16-23, apply the cathedral ceiling factor to the total finished area base cost value. When calculating heating and cooling areas, all levels of the cathedral space are included.

6. Upper Floors

In buildings with more than two full stories, all upper floors should be added together, and the total square footage placed in the upper floors section of the Property Record Card. The price selected would be the price for the total square footage for upper floors.

For example, in a three-story building with 750 square feet on each floor, the upper floor area will be the total floor area on the second and third floor, i.e., 1,500 square feet. The price selected would be from the upper floors table at 1,500 square feet.

The base cost for half story finished, square foot areas, use the total square footage of the floor below. Only the actual heated and cooled areas should be used when calculating the heating and cooling adjustment to base cost.

7. Unfinished Half Story Deductions

If a half story is unfinished, this is adjusted under the unfinished half story adjustment. When making this adjustment, the square footage used should be based on the floor area below the half story and not the usable area in the half story.

8. Attic

All residential classes include an unfinished attic in base cost. This attic is assumed to be an area suitable only for storage space and cannot be realistically converted into usable living area.

9. Expanded Attic

Any area less than a half story, which could realistically be used for living space, should be treated as an expanded attic. The costs for a finished, expanded attic should be applied based on the floor area directly below the expanded attic. Included in the cost are interior finish and exterior structure. For expanded attics that are unfinished, the cost selected should be factored by .50 to adjust for the unfinished area.

10. Dormers

Dormers are an adjustment to base cost. They are valued on a linear foot basis. There are costs for finished and unfinished dormers.

11. Electric

Electric service should be noted. Usually indicated as adequate, limited or none.

12. Interior Finish

The type of interior wall, floor and ceiling finish should be noted along with the viewed condition.

13. Room Count

The different rooms should be counted and noted by floor level. Baths with two fixtures are considered a half bath.

14. Heating and Cooling

The type of heating system and whether the dwelling has central air should be noted. This includes finished basement area and finished attic space. Though not a factor in value, zoned HVAC can be noted.

15. Plumbing Fixtures

Plumbing fixtures are priced by the number of fixtures in a bathroom. There are also costs for kitchen sinks, hot tubs, whirlpool baths, stall showers, laundry tubs and plumbing rough-ins.

16. Built in Appliances

Built in appliances are adjustments to base cost. The base cost includes a stovetop and oven. Other items that can be added include security systems, central vacuums, intercoms, and extra kitchen units.

17. Fireplaces

Fireplaces are noted by the number of and the height in stories.

18. Garages and Carports

An attached garage is defined as a garage with one wall common with the principal building having its own roof. It may be considered as having its own roof even though there is no break in the roofline between the garage roof and the roof principal building. Built-in garages are defined as having garage area built into the first-floor level of the principal building and covered by an upper story that is, or could be, used as living space. A garage is also considered built-in if two full walls are common with the principal building.



Attached Garage



Built-in Garage



Basement Garage



Carport

19. Porches

A distinction must be made between porches, which are actually an unfinished portion of the principal building and classified as “built-in” and porches which have their own roof and are attached to the principal buildings. A built-in porch is defined as an area under the main roof of the principal building which is actually an unfinished portion of the principal building. It may have living area above or below it. The following illustrates open and built-in porches:



Open Porch



2 Story Open Porch



2nd Floor Built-in Porch



Enclosed Porch

When considering built-in porches, the area of the porch should be included in the floor area calculation for the base cost, as it is under the main roof. The finished area should then be deducted from the base cost.

For open porches that have been screened or enclosed without heating and cooling, the area of the porch should not be included in the floor area calculations. Only the actual living area per floor in the dwelling should be considered to

obtain the base cost. The class of a porch depends on the quality of the materials used in extent of the finish. Typically, the porch class is the same as that of the dwelling, but it can be different.

Any porches, patios or decks attached to the dwelling should be measured as they are priced on a square foot basis.

20. Elevators and Dumbwaiters

Elevators and dumbwaiters should be noted as they are an adjustment to base costs. Elevators and dumbwaiters are priced based on the number of stops and pound capacity.

21. Other Items

Other items such as sheds and pools are measured and recorded. For waterfront properties any bulkheads, pilings and docks/piers are also measured and noted.

124. Single-Family Residential Cost Calculations

The procedures for calculating the cost values using the New Jersey Real Property Appraisal Manual are as follows:

- Determine the appropriate dwelling class of the improvement.
- Calculate the base cost of the improvement by multiplying the square foot of living area per story by the appropriate unit cost.
- Add or deduct for items not included in the base cost from the residential adjustments section by calculating the items cost and applying the appropriate class factor. This includes basements, plumbing, heating/AC, fireplaces, porches, decks, patios, garages, etc.

- Total the base cost and the adjustments to base to arrive at the replacement cost new of the improvement.
- Multiply the replacement cost new by the appropriate cost conversion factor.
- Determine the depreciation from all causes and deduct from the replacement cost new to get the depreciated cost of the improvement.

125. Computation Procedures for Semi-Detached Dwellings

This classification is provided for single ownership of each dwelling unit of a semi-detached dwelling defined as two side-by-side, attached, single-family residences. The base replacement cost is based on the floor area per story of each dwelling unit with a party wall included.

NOTE: Each of the dwelling units of a semi-detached dwelling should be enumerated and computed on separate property record cards, even though the entire dwelling belongs to one owner. This is due to one or more factors that may influence the market value of each of the units. These factors may be remodeling, an addition to one of the units, effective age, etc.

126. Row/Townhouses

The base replacement cost for units of row/townhouses is based on a dwelling unit with two party walls included. This base replacement cost is determined by multiplying the square foot of floor area by the square foot cost per story.

For exterior or end units of row/townhouses, a factor of 1.07 should be applied because the unit costs are based on the interior units which have two party walls, whereas an exterior or end unit has only one-party wall and an outside wall (or its own wall). For this reason, end units have a market value greater than interior units with the same footage.

127. Single-Family Residences Converted to Multi-family Use

Whenever a single-family residence has been converted to multi-family use, it should be enumerated and computed as a single-family residence, then by use of the adjustments provided, adjusted for plumbing and kitchen units over and above those which are found in the single-family residence. Other adjustments should be made in the same manner as those of a single-family residence.

128. Two-to-Four Family Apartments

This classification is provided for those buildings designed and built as two, three or four family apartments, with over and under or side-by-side apartment units and with one owner. For single ownership of each side-by-side unit see semi-detached residences or row/townhouse.

The base replacement cost of two-to-four family apartments is based on two factors: the total number of units and the floor area per story of the building. This base replacement cost is computed by multiplying the floor area per story by the unit cost per square foot of first or upper stories in this classification.

129. Mobile Homes

The base cost schedules are arranged in five mobile home classes:

- Class R-50 - Low Quality
- Class R-51 - Fair Quality
- Class R-52 - Average Quality
- Class R-53 - Good Quality
- Class R-54 - High Quality

All dimensions are exterior measurements excluding the front hitch. The cost schedules do not include the typical costs for personal property items such as furniture, free standing appliances, and draperies. The allowance that has been made for these items

depends upon the quality of the unit. The base costs do include permanently installed built-in cabinets, wardrobes, vanities, appliances, and floor coverings as well as those items listed in base specifications for their respective class.

Most adjustments to the mobile home base specifications can be made from the Mobile Home Adjustment Section. Adjustments for heating and cooling may be secured from the Residential Adjustment Section of the Manual.

Typical delivery costs, set up charges, and all standard items listed in the base specification for each class are included in the base cost schedules. Separate effective age depreciation tables are provided for the mobile home classes. A mobile home situated outside of a mobile home park is taxable as real property.

130. Example of a Single-Family Residential Cost Calculation

The following pages are a demonstration of a residential building cost approach using the New Jersey Real Property Appraisal Manual. The information needed is entered on the sample data collection form.

RESIDENTIAL DATA COLLECTION WORKSHEET "R" SERIES

Block 1 Lot 1 Qual

YEAR BUILT / EFFECTIVE AGE 2019 / 1 BUILDING CLASS 20
OF UNITS (MULTIFAMILY)

Room Count	B	1	2	3
Living Room		1		
Dining Room		1		
Kitchen		1		
Baths	1	.5	3	
Bedrooms			6	
Family Room		1		
Office/Library			1	
Laundry Room		1		
Other	1			

COMMENTS
40x16 cement patio(pool)

PLUMBING (U)

5FX 5 Fix Bath	1
4FX 4 Fix Bath	
3FX 3 Fix Bath	3
2FX 2 Fix Bath	1
1FX Additional Fixture	
HTW Hot Tub - Wood	
HTF Hot Tub - Fiberglass	
WP Whirlpool Bath	
SNS Sauna - Small	
SNM Sauna - Medium	
SNL Sauna - Large	
BD Bidet	

FIREPLACES (U)

1FP 1 Sty	
1.5FP 1.5 Sty	
2FP 2 Sty	1
SSFP Same Stack	
FSFP Freestanding	
HFFP Heatatator & Fan	

BUILT-INS/APPLIANCES (U)

XHF Commercial Exhaust Hood Fan	
CVS Central Vacuum System	1
CMK Commercial Kitchen	
XKU Extra Kitchen Unit	
HEV1 Hydraulic Elevator - 750 lbs	
HEV2 Hydraulic Elevator - 1,000 lbs	
HEV3 Hydraulic Elevator - 1,500 lbs	
HEVL Hydraulic Elevator - Add. Level	
EEV1 Electric Elevator - 750 lbs	
EEV2 Electric Elevator - 1,000 lbs	
EEV3 Electric Elevator - 1,500 lbs	
EEVL Electric Elevator - Add. Level	
DMW2 Dumbwaiter - 2 Levels	
DMW3 Dumbwaiter - 3 Levels	

HEATING SYSTEM (A)

FWF Floor/Wall Furnace	
GHA Gravity Hot Air	
FHA Forced Air	1
HWB HW Baseboard	
HWR HW Radiator	
HWS HW Steam	
EBB Elect. Baseboard	
RE Radiant Electric	
RW Radiant Floor Heat	
HP Heat Pump	
UH Unit Heater	

AIR CONDITIONING (A)

ACS Separate Ductwork	
ACC Combined Ductwork	1
Finished Expanded Attic	
ATU Unfinished Expanded Attic	
DMF Dormer - Finished	
DMU Dormer - Unfinished	

FINISHED BASEMENT (A)

FB Finished Basement	1620
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EXTERIOR FINISH (A)

PB Partial Brick	820SF
PS Partial Stone	

WRITE - IN (A OR U)

MISC Misc / Other w/ Override Rate	
------------------------------------	--

DETACHED ITEMS

DG Detached Gargae	
DC Detached Carport	
SHU Shed - Unfinished	24x12
SHF Shed - Finished	
PVY BI Pool - Vinyl	20x40
PCO BI Pool - Concrete	
PFG BI Pool - Fiberglass	
PSP BI Pool - Swim in Place	
DDK Detached Deck	
DP Detached Patio	
GZW Gazebo Wood	
GZV Gazebo Vinyl	
DSO Solarium/Sunroom	12x24
PVC Paving - Concrete	
PVA Paving - Asphalt	
CP Concrete Pilings	
WP Wood Pilings	
PS Piling crane site setup fee	
BVA Bulkhead Vinyl - 16 ft	
BVB Bulkhead Vinyl - 20 ft	
BWA Bulkhead Wood - 16 ft	126FT
BWB Bulkhead Wood - 20ft	
DOC Dock/Pier	1620SF

MAIN STRUCTURE

1S 1 Story	
1.5S 1.5 Story	
2S 2 Story	
2.5S 2.5 Story	
3S 3 Story	
3.5S 3.5 Story	
1CC 1st Floor w/ Cathedral Ceiling	
(2,3,4)CC Upper Floor w/ Cathedral Ceiling	
1UA 1 Story Unfinished Area	
1.5UA 1.5 Story Unfinished Area	
2UA 2 Story Unfinished Area	
2.5UA 2.5 Story Unfinished Area	
3UA 3 Story Unfinished Area	
3.5UA 3.5 Story Unfinished Area	
(1,2,3,4)OH Overhangs	

SKETCH CODES

GARAGE TYPE

BG Basement Garage	
BIG Built-in Garage	
AG Attached Garage	
AC Attached Carport/Canopy	
DG Detached Garage	
DC Detached Carport	

BASEMENT

S Slab	
C Crawl	
B Basement	

PORCHES/DECKS

WDK Wood Deck	
TDK Trex Deck	
PT Patio	
OP Open Porch	
EP Enclosed Porch	
GP Glazed Porch	
BP BI Patio	
BOP BI Open Porch	
BEP BI Enclosed Porch	
BGP BI Glazed Porch	
SOL Solarium / Sunroom	
STC Stamped Cement	
PVT Paver Terrace	

OVERALL NET CONDITION

EX Excellent	FR Fair
VG Very Good	PR Poor
GD Good	UN Unsound
AV Average	



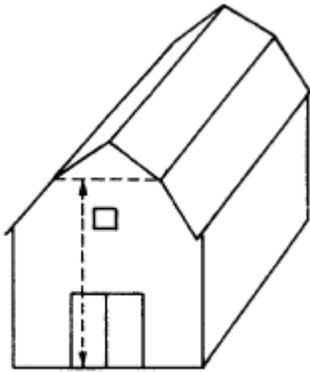
Cost Value Calculations
 Building Class: 20
 Built: 2019

Item	SF/Unit	Cost	Factor	Value
Base Cost 1st Floor	3,248	127.76	1.00	414,964
Base Cost 2nd Floor	2,588	90.51	1.00	234,240
Base Cost 1/2 Story	624	61.46	1.00	38,351
Basement	2,588	10.40	1.54	41,449
Basement Finish	1,620	14.22	1.30	29,947
Face Stone	820	25.05	1.00	20,541
Slab Adjustment	-624	2.91	1.95	-3,541
Heat	8,080	2.82	1.49	33,951
A/C	8,080	1.79	1.49	21,550
5 Fixture bath	1	4,095.00	1.49	6,102
3 Fixture Bath	3	2,595.00	1.49	11,600
2 Fixture Bath	1	1,895.00	1.49	2,824
Central Vacuum	1	1,700.00	1.37	2,329
2 Story F/P	1	4,850.00	1.60	7,760
Open Porch	220	13.04	1.30	3,729
Wood Deck	720	5.61	1.30	5,251
Solarium	288	140.00	1.30	52,416
Cement Patio	640	5.61	1.30	4,668
Attached Garage	1,040	17.89	1.58	29,397
Vinyl Pool	800	31.54	1.30	32,802
Shed	288	18.05	1.45	7,538
Wood Bulkhead 16 FT	126	331.00	1.00	41,706
Wood Dock	1,620	22.00	1.90	67,716
Replacement Cost				1,107,289
2019 Cost Conversion Factor			x	1.74
Total Replacement Cost New				<u>1,926,682</u>
Less Depreciation			x	0.98
Depreciated Cost				<u>1,888,149</u>

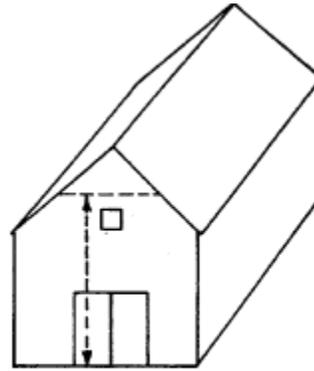
131. Farm Buildings

This section includes farm buildings normally found in rural areas. These include the older style wood frame constructed buildings and the newer post and frame style costs. There are no adjustments to base cost for the wood frame style structures required.

While most are valued on a price per square foot, the older style general purpose and dairy barns are based on cost per cubic foot with and without a loft. The following diagrams illustrate a standard procedure to be used in estimating the height of a barn which is multiplied by the ground area to obtain the cubic foot.



Height consideration on gambrel roofs from ground level to a point $\frac{2}{3}$ of the distance from the eaves to the peak.



Height consideration on gable roofs from ground level to a point of $\frac{1}{2}$ of the distance from the eaves to the peak.



132. Depreciation and Obsolescence

An important step of the cost approach is the estimate of depreciation. Depreciation is the loss in value from all causes. Total depreciation is the difference between an improvement's cost new and its value as of a certain time. Depreciation used in the cost approach applies to the improvement, not the land. All improvements have a certain economic life, which is the total number of years they contribute to the total property value. Depreciation is usually expressed as a percentage of net condition and deducted from 100 percent. There are five recognized methods to measure accrued depreciation typically used in single property appraisals that will be discussed later. Depreciation for mass appraisal is normally estimated by the use of depreciation tables. As improvements age they can suffer from physical deterioration and functional or economic obsolescence. Physical deterioration and functional obsolescence are further broken down into curable and incurable, which is also defined later in this manual.

Physical Deterioration

Physical deterioration is the loss in value due to wear and tear of nature and use. It begins as soon as the improvement is completed. Proper maintenance can slow the process, but it cannot be completely avoided. It can be further broken down into curable and incurable. Curable depreciation is when the value added by a repair equals or exceeds the cost of that repair. Curable depreciation is estimated as the "cost to cure". Examples include broken windows, leaky roof, or new heating unit. Incurable depreciation is when an item is not economical to repair or replace, the cost to repair exceeds the increase in value, or at the time of the appraisal the item is not ready to be replaced. Incurable items are classified as either short lived, items that have a shorter-term life than that of the structure (roof cover, carpets, or appliances), or long-lived items where their economic life is equal to that of the total structures.

Functional Obsolescence

Functional obsolescence is the loss in value due to changes in style, design, demand, and taste, which can be curable or incurable. Functional obsolescence occurs within the boundaries of the property. It can be a deficiency such as only one bathroom when the market calls for two, the need for modernization of an outdated kitchen or bathroom or a super adequacy which exists when the original construction of the improvement has a component in it that exceeds the expectations of the market. When buyers in the market see a loss in utility or functional obsolescence of an improvement the price they offer would be lower due to reduced demand. It is also classified as curable and incurable which depends on if the cost to cure an item is economically feasible at the time of the appraisal.

Economic or External Obsolescence

Economic obsolescence is the loss in utility or value due to factors outside the property's boundaries. These negative influences can cause both the improvement and the land to lose value. Examples can include changes in the highest and best use of the property because of governmental controls or market changes. It can also be because of inadequate services, location near non-harmonious industrial or commercial properties or traffic patterns. Economic obsolescence is always considered incurable.

133. Methods of Measuring Depreciation

Depreciation is measured using five accepted methods. The three direct methods are economic age life, modified economic age life and observed condition or breakdown. These methods involve measuring the depreciation of the property itself and estimating effective age and remaining economic life. The two indirect methods are sales comparison and income capitalization, where sales of comparable properties or income loss are used to measure depreciation.

Sales Comparison Method

In the sales comparison method, a property's depreciation is determined by the amount of depreciation attributed to similar properties using comparable sales in the market. Recent sales of improved properties of similar age, condition, desirability, and utility are found. The site value is deducted from the sales price to get a value attributed to the improvement. This value is then deducted from the replacement cost new to get an indicated depreciation. Since all improvements do not have the same cost new, the indicated depreciation found should be converted to a percentage before applying it to similar properties. This is done by dividing the depreciation found by the cost new of the comparable sale. This percentage is then deducted from 100% to get the percent good which is applied to the subject's replacement cost to find its depreciated value. This method is mostly used in mass appraisal systems and is reliable because it is market based. The two main disadvantages are (1) it requires a good comparable market data sample (2) the depreciation found is not broken out between physical depreciation and functional and economic obsolescence. For example:

Sale Property

Sale Price	\$300,000
Land Value	<u>-100,000</u>
Improvement Value	\$200,000

Replacement Cost New of Comparable	\$240,000
Improvement Value	<u>-200,000</u>
Indicated Depreciation	\$40,000

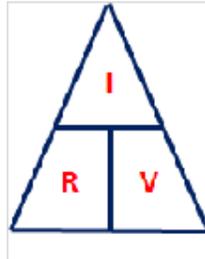
Depreciation from Market ÷ Cost New	\$40,000 ÷ \$240,000
Indicated Depreciation	16.7%
Percent Good	100% - 16.7% = 83.3%

Subject Property

Replacement Cost New of Subject	\$260,000
Percent Good	<u>x 83.3%</u>
Improvement Value	\$216,580
Land Value	+ <u>\$100,000</u>
Subject Total Value	\$316,580 or \$316,600

Income Capitalization Method

This method can be helpful with income producing properties. Depreciation is derived by capitalizing the net income of the subject property into a value, deducting the land value, and then comparing it to replacement cost new of the subject. It can be market derived if economic rent and expenses are used. The following is an example of a property with a replacement cost new of \$900,000.



Gross Income	\$100,000
Less Expenses	<u>- 40,000</u>
Net Operating Income	\$ 60,000
Capitalization Rate	<u>÷ 7.5%</u>
Indicated Property Value	\$800,000
Less Land Value	<u>- 150,000</u>
Value to Building	\$650,000
Replacement Cost New	\$900,000
Indicated Depreciation (\$900,000 - \$650,000)	\$250,000
Depreciation percentage (\$250,000 ÷ \$900,000)	.277 or 28%

Economic Age Life Method

The economic age life or straight-line method estimates depreciation by using a percentage of the effective age at time of appraisal divided by the total economic life of an improvement. The resulting percentage is then multiplied by the replacement cost new. This method does not break down the depreciation between physical depreciation and functional and economic obsolescence. It allocates a uniform percentage of loss in value equally over the life of the improvement. Effective age is an estimated number of years of age as indicated by the improvements condition and functional utility compared to actual age. Rehabilitation or renovations tend to decrease the effective age of a property. Usually, effective age is not equal to chronological age.

Economic life is the total number of years the improvement contributes to the property value. It never exceeds the physical life and equals remaining economic life plus effective age. Remaining economic life is the number of years left that an improvement contributes to the total property value. This method uses straight-line depreciation and does not differentiate between the physical life of short- and long-lived components. For example, a 20-year-old house that has been well maintained, an estimated effective age is 10 years. The remaining economic life is estimated to be 60 years and the replacement cost new is \$300,000, the depreciation is calculated as follows:

$$\text{Effective Age} \div \text{Total Economic Life} = \% \text{ of Depreciation}$$

Effective Age ÷ Total Economic Life	$10 \div 70 = 0.14\%$
Depreciation Rate x Replacement Cost New	$0.14 \times \$300,000 = \$42,000$
Depreciated Replacement Cost	\$258,000

Modified Economic Age Life Method

This method is similar to the economic age-life method except that it takes into consideration the effect of curable physical deterioration and curable functional obsolescence, which once these curable items are fixed or cured will most likely lower the effective age.

Observed Condition (Breakdown) Method

This method is the most complete and accurate way of handling all aspects of depreciation and obsolescence and is not really suitable for mass appraisal purposes. The five categories of depreciation and obsolescence that can be recognized in this method are: curable physical deterioration (deferred maintenance), incurable physical deterioration, curable functional obsolescence, incurable functional obsolescence, and incurable economic obsolescence. Although it is the most complete method, it is rarely used due to its complexity and the amount of time required. The following example shows the steps involved using this method.

The subject property is a 15-year-old dwelling, 2,000 square feet on a slab with one full bathroom, forced hot air heat and central A/C. It is located on a high traffic street in a neighborhood of comparable homes, except comparable homes in this neighborhood have basements and two full baths.

The improvements are in good condition but require exterior painting and new carpets. After the deferred maintenance items are cured it would have an effective age of 10 years. Homes in the area have a total economic life of 60 years.

The roof has an effective age of 15 years and an economic life of 30 years. The furnace has an effective age of 15 years and economic life of 20 years. The cost to build the home is \$175 per square foot and the land value is \$125,000.

The first step is to identify the cost to cure the curable physical deterioration items.

<u>Item</u>	<u>RCN</u>	<u>Cost to Cure</u>
Exterior Paint	\$4,000	\$4,500
New Carpet	<u>\$3,000</u>	<u>\$3,500</u>
	\$7,000	\$8,000

Next, the incurable physical deterioration short lived (S-L) items are depreciated.

<u>Item</u>	<u>RCN</u>	<u>Effective Age</u>	<u>Econ. Life</u>	<u>% Depreciated</u>	<u>Depreciated Amount</u>
Roof	\$20,000	15	÷ 30	= 50%	\$10,000
Furnace	<u>\$ 8,000</u>	15	÷ 20	= 75%	<u>\$ 6,000</u>
	\$28,000				\$16,000

Then, the depreciation for incurable physical deterioration long lived (L-L) items is calculated by the age-life method.

Replacement Cost New (2,000 sf x \$175)	\$350,000
Less: RCN Curable Physical Items	- \$ 7,000
Less: RCN Incurable Physical Short-Lived Items	- <u>\$ 28,000</u>
Replacement Cost New of Long-Lived Items	\$315,000

Effective age ÷ Economic Life (10 yrs ÷ 60 yrs = 0.167)	x <u>.167</u>
Total Incurable Physical Long-Lived Items	\$ 52,605

Physical Deterioration

Curable Physical Depreciation	\$8,000
Incurable S-L Depreciation	\$16,000
Incurable L-L Depreciation	<u>+\$52,605</u>
Total Physical Depreciation	\$76,605

Curable functional obsolescence estimation is the next step in the process. In this example the subject has only one full bath when other houses have two. The cost of adding another bath is \$10,000. If it were added when the house was built, it would have cost \$8,000. In the market it is found that the extra bath would add \$15,000 to the market price of the house. Since the cost to cure is less than the value added it is curable and the functional obsolescence amount is calculated:

Cost If Added Now	\$ 10,000
Cost If Originally Added	<u>-\$ 8,000</u>
Obsolescence (Excess Cost to Cure)	\$ 2,000

Incurable functional obsolescence is addressed next. This step is often done using the market approach with paired sales to find the loss in value attributed to that item in the marketplace. It can also be estimated using the income approach by capitalizing the income loss. From studying the market, it is determined that homes without basements sell for \$20,000 less than those with one. The incurable functional obsolescence is \$20,000.

External obsolescence is the last step in this method and can also be determined by the market or income approaches. Then, it is broken down between the land and the improvement by using the land to improvement value ratio. Depreciation is only on the building portion. In this example, the loss in rent due to being on a street with heavy traffic is \$100 per month. The Gross Rent Multiplier (GRM) is \$100. Rent loss times GRM equals \$10,000. The land ratio is 1:3 (1 part land to 3 parts building for a total of 4 parts). The external obsolescence attributable to the improvement is as follows:

$$\$10,000 \times .75 = \$7,500$$

The final step is to deduct the various depreciation and obsolescence values from the replacement cost new that yields the depreciated cost new. Then, add the estimated land value.

Replacement Cost New (2000 sf x \$175)		\$ 350,000
Curable Physical Deterioration	\$ 8,000	
Incurable Short-Lived Items	\$ 16,000	
Incurable Long Lived Items	\$ 52,605	
Curable Functional Obsolescence	\$ 2,000	
Incurable Functional Obsolescence	\$ 20,000	
External Obsolescence	<u>\$ 7,500</u>	
Total Depreciation	\$ 106,105	<u>-\$ 106,105</u>
Depreciated Replacement Cost New		\$ 243,895
Land Value		<u>+ \$ 125,000</u>
Estimated Value by Cost Approach		\$ 368,895
Rounded		\$ 368,900

Depreciation Tables

The five methods to estimate depreciation outlined previously are mainly used in single property appraisal, except possibly the economic age-life method. They are too time consuming and do not lend themselves to mass appraisal applications. For mass appraisal,

depreciation is estimated by using depreciation tables which show the estimated loss in value at certain ages or effective ages. Effective age is an estimate of age taking into consideration the physical condition and functional utility of a structure it may or may not equal actual age. These tables account for physical deterioration and require separate estimates of functional and economic obsolescence. As different types of properties depreciate at different rates, separate tables need to be developed for each type of property.

These depreciation tables use market data in their development. The steps are:

1. Stratify sales by structure type.
2. Deduct the land value and any other improvements to leave just the main structure value.
3. Subtract this structure value from the replacement cost new to get market derived depreciation.
4. Divide market depreciation by replacement cost new to get depreciation percent.
5. Plot these percentages against effective age.
6. Fit a curve to the data.
7. Develop a depreciation table.

Extra care should be taken when estimating the effective age of an improvement that has undergone major alterations, renovations, modernization, or additions as it increases the life expectancy and decreases the effective age of the improvement. It also lowers the effective age from what it was prior to the enhancement. There are three methods to determine the effective age of an improvement that has been altered, renovated, or added to. Each produces substantially the same result but utilizes different information. The method used will depend on what information is available.

1. Multiply the actual age by the cost of renovation and divide by the replacement cost of the building after renovation then subtract that from the actual age. For example, a 20-year-old building was renovated at a cost of \$100,000 and the replacement cost new is calculated at \$400,000, the effective age would be:

$$20 - (20 \times \$100,000 \div \$400,000) = 15 \text{ years effective age}$$

$$20 \text{ years} - 5 \text{ years} = 15 \text{ years effective age}$$

2. Multiply the actual age by the replacement cost before remodeling and then divide that number by the replacement cost after remodeling. A 35-year-old building had a replacement cost before of \$100,000 and after \$220,000, the effective age is calculated:

$$(35 \times \$100,000) \div \$220,000 = 15.9 \text{ years or } 16 \text{ years effective age}$$

3. Estimate the percentage of the improvement that has been renovated times the number of years since the remodeling has been done and add that to the percentage of the improvement times the actual age of the portion not renovated. The effective age of a 50-year-old building was 40% remodeled 5 years ago would be:

$$.40 \times 5\text{yrs} = 2$$

$$\underline{.60} \times 50\text{yrs} = +\underline{30}$$

$$1.00 \qquad 32 \text{ years effective age}$$

The following page is a depreciation table developed for use with the Appraisal Manual for New Jersey Assessors.

The following tabulation represents suggested guides for effective age percentage depreciation tables for different types of building construction. Each building class specification indicates the tables which are applicable to the building class.

Effective Age In Years	Table D	Table D-1	Table D-II	Table D-III	Table D-IV	Table D-V	Table D-VI	Table D-VII
1	4.0%	2.5%	2.0%	1.5%	1.5%	1.0%	1.0%	0.5%
2	7.0	4.5	3.5	2.5	2.5	2.0	2.0	1.5
3	11.0	7.0	4.5	3.5	3.0	2.5	2.5	2.0
4	16.0	9.0	6.0	4.5	4.0	3.5	3.5	3.0
5	20.0	11.0	7.0	5.5	4.5	4.0	4.0	3.5
6	22.0	13.0	8.5	6.5	5.5	5.0	5.0	4.5
7	27.0	15.5	10.0	8.0	6.5	6.0	5.5	5.0
8	30.0	17.5	11.0	9.0	8.0	7.0	6.5	6.0
9	34.0	20.0	12.5	10.5	9.0	8.0	7.0	7.0
10	37.5	22.0	14.0	11.5	10.0	9.0	8.0	7.5
11	41.0	24.0	15.5	13.0	11.0	10.0	9.0	8.0
12	44.0	25.5	17.0	14.0	12.0	10.5	9.5	9.0
13	47.0	27.5	18.0	15.5	13.0	11.5	10.5	9.5
14	50.0	29.0	19.5	16.5	14.0	12.5	11.0	10.0
15	52.0	31.0	21.0	18.0	15.0	13.5	12.0	10.5
16	54.0	33.0	22.5	19.0	16.0	14.5	13.0	11.0
17	56.0	34.5	24.0	20.5	17.5	15.5	13.5	12.0
18	58.0	36.5	25.5	21.5	18.5	16.5	14.5	12.5
19	60.0	38.0	27.0	23.0	20.0	17.5	15.0	13.5
20	62.0	40.0	28.5	24.0	21.0	18.5	16.0	14.0
21	64.0	41.5	30.0	25.5	22.0	19.5	17.0	14.5
22	65.0	43.0	32.0	27.0	23.0	20.5	17.5	15.0
23	67.0	45.0	33.5	28.0	24.5	21.5	18.5	16.0
24	68.5	46.5	35.0	29.5	25.5	22.5	19.0	16.5
25	70.0	48.0	36.5	31.0	26.5	23.5	20.0	17.0
26		49.5	38.0	32.5	28.0	24.5	21.0	18.0
27		51.0	39.5	34.0	29.0	25.5	22.0	19.0
28		52.0	41.0	35.0	30.5	26.0	23.0	20.0
29		53.5	42.0	36.5	32.0	27.0	24.0	21.0
30		55.0	43.5	38.0	33.0	28.0	25.0	22.0
35		61.0	49.0	44.0	38.5	33.5	29.0	26.0
40		65.0	54.0	47.5	43.0	37.0	33.0	30.0
45		68.0	58.0	50.5	44.5	38.5	34.5	31.5
50		70.0	62.5	53.0	45.5	39.5	35.5	32.5
55			65.0	55.0	47.0	41.0	37.0	34.0
60			68.0	57.0	48.0	42.0	38.0	35.0
65			70.0	59.0	49.5	43.5	39.5	36.5
70				60.5	50.5	44.5	40.5	37.5
75				62.0	52.0	46.0	42.0	39.0
80				63.0	53.0	47.0	43.0	40.0

Note: Buildings marked Fair Physical Condition increase deduction 5%
 Poor Physical Condition increase deduction 10%
 Dilapidated Condition increase deduction 20%
 Unusable and Beyond Repair increase deduction to total of 90%

134. New Jersey Cost Conversion Factor

Introduction

Since the introduction of the “Real Property Appraisal Manual for New Jersey Assessors”, by the Division of Taxation, this manual has become the uniform statewide standard for appraisal procedures in New Jersey and is the basis for residential valuations used in revaluation and reassessment programs.

Over the years this manual has undergone periodic reviews and revisions enabling it to reflect changes more accurately in construction techniques and building materials. Also, the Division of Taxation publishes annual cost conversion factors which enable the assessor to properly reflect price changes for each building class. The application of these cost conversion factors for specified building types provides a uniform and accurate basis for adjusting the replacement cost of any specific building type at a base year date or any subsequent date.

- **Component Items, Base Units, Prices, and Indexes of October 1975**

The Real Property Appraisal Manual cost index for commercial and wood and masonry farm buildings are based upon the average labor and prices of October 1975, for all twenty-one counties of the State. The October 1975 figures are used as the basis of all building class unit replacement cost for cost conversion. A conversion factor must be applied to adjust the value from the 1975 rate to the last revaluation/reassessment.

- **Component Items, Base Units, Prices and Indexes of October 1998 Farm Post and Frame PF Series**

The Real Property Appraisal Manual cost index for post and frame farm buildings is based upon the average labor and prices of October 1998, for all twenty-one counties of the State. The October 1998 figures are used as the basis of all building class unit replacement cost for cost conversion. A conversion factor must be applied to adjust the value from the 1998 rate to the last revaluation/reassessment.

- Component Items, Base Units, Prices, and Indexes for October 2001 Residential “R” Series

The Appraisal Manual cost index for the “R” Series buildings is based upon the average labor and prices of October 2001, for all twenty-one counties of the State. The conversion factor for this building base unit replacement cost is 1.00 or 100%. As of October 2001, Districts that undertake a revaluation or reassessment subsequent to 2001 should use the cost conversion factor most recently published for the revaluation implementation.

- Billboards

In 2004, a cost section for wood and steel billboards was developed which also has yearly cost conversion factors developed on a statewide basis. These values use a base year of 2004.

Classification of Building Classes for Cost Conversions

For the purpose of Cost Conversion Factor, the Division of Taxation has classified each specific building class according to type and construction and grouped them together in order to reflect the various building types, costs of labor and material used in its construction. Conversion Factors are calculated for each of the twenty-one counties for each group or series. Below are the classifications and how the building classes are grouped and listed on the published Cost Conversion Factor Chart.

RESIDENCES 1975 SERIES**	
WOOD FRAME	BRICK OR VENEER
TABLE R-1	TABLE R-2

RESIDENCES R-12 - R-54 2001 SERIES **	
WOOD FRAME	BRICK OR VENEER
TABLE RR-1	TABLE RR-2

APARTMENTS, HOTELS MOTELS AND OFFICE BUILDINGS	
MASONRY & WOOD 101,102 103, 145	STEEL & CONCRETE 104, 105 106
TABLE C-1	TABLE C-2

COMMERCIAL - INDUSTRIAL BUILDINGS			
WOOD FRAME	WOOD & MASONRY	STEEL & MASONRY	FIRE RESISTANT
101, 102 123, 133	103, 124 126, 134 136	105, 107, 108 109, 125,127 135, 137	104, 106
TABLE C-3	TABLE C-4	TABLE C-5	TABLE C-6

FARM BUILDINGS	
WOOD & MASONRY WOOD FRAME	POST & FRAME*
150, 151 152, 153 154,156	PF 157 -THRU- PF 162
TABLE F-1	TABLE F-2

To convert or adjust building construction cost to the current local labor and material costs, the appropriate table, as noted above, is used for each respective building class type of construction.

The cost conversion tables have been developed using average quantities and prices of the controlling items of labor and materials for the respective building classes. The measure of importance of each of the controlling items in the respective building classes is represented by a multiplier, which when multiplied by the current cost of the material or labor index, produces the item factor, which reflects the influence of that particular commodity in the total current cost of the buildings of the particular class.

Collection of Current Labor and Material Data

To obtain local current replacement costs for the various building classes in any assessment jurisdiction where property assessment is either being established or being brought up to date, the appraiser obtains the prevailing material and labor prices in his areas as of the current assessment date on the component items listed in the conversion tables.

In developing the cost conversion factors, Property Administration analyzes construction indexes and building material trends with the end view of preparing a simplified procedure for the cost conversion of the “unit in place” replacement costs of all building types in the manual. This detailed analysis takes into account three major components:

1. Average prices of specific foundational building materials;
2. Rates of prevailing labor wages for building construction;
3. Indexes of wholesale prices of plumbing fixtures and brass fittings, structural steel and iron, non-metallic mineral products, heating equipment and floor coverings.

These three components represent seventeen individual price index items as follows: six items for materials, six items for labor and five items for equipment.

Cost Conversion Factor Data Reference Guide

NJ DOL= New Jersey Prevailing Wage Rate

PPI= The Producer Price Index

ENR= Engineering News Record

<u>Component</u>	<u>Location</u>	<u>Description</u>
<u>Materials</u>		
Ready Mix Concrete	ENR	20 City Average
½" Plywood Sheathing	PPI	831
Dimension Lumber	ENR	20 City Average (2x4 pine fir & common and 2x8 common)
#1 Common Brick	ENR	20 City Average
Structural Steel Shapes	ENR	20 City Average
Reinforced Steel Rebar	ENR	20 City Average
<u>Equipment</u>		
Steel Mill Products	PPI	1017
Non-Metallic Mineral Products	PPI	13 (1300 Series)
Plumbing Fixtures and Brass Fittings	PPI	105
Heating Equipment	PPI	106
Floor Covering	PPI	123 (1230 Series)
<u>Class "A" Labor</u>		
Common Laborer	NJ DOL	Journeyman Rate/Hour
Carpenter	NJ DOL	Journeyman Rate/Hour
Plumber	NJ DOL	Journeyman Rate/Hour
Electrician	NJ DOL	Journeyman Rate/Hour
Iron Worker	NJ DOL	Journeyman Rate/Hour
Avg of Mason, Roofer, & Sheet Metal Laborer	NJ DOL	Journeyman Rate/Hour

Other sources of information include material dealers, building supply houses, contractors, builders, and employment agencies. Labor costs and material prices can be collected from reliable builders and representatives of the various classes of buildings built in the area. Care must be taken to assure that all costs collected are for the same grade, quality, and quantity of material. Data collected that appears to be inconsistent

with other comparable findings, having the same characteristics, should be verified and/or eliminated from further consideration.

When all the cost data has been collected, analyzed, and verified, the averages for each item including the total average labor rates, dimensional lumber, structural steel and reinforcing steel must be calculated for each county. In addition, the collected data for each of the remaining components the current year rates must be divided by the prior year rates to yield a percentage reflecting any increase or decrease for each of the components.

Application of Building Replacement Cost Conversion Factors

The updated total averages and percentages are entered into the final spreadsheet that is issued yearly on or before October 1st to replace the previous year's data. The data is entered and organized according to component items, base units, and price indexes for each respective building class for each county in order to get a statewide average for each component.

Multiplication of the replacement cost by the cost conversion factor for the particular building class gives the current local replacement cost of such building.

Example:

Assume a jurisdiction in Mercer County undergoes a revaluation or reassessment for 2015 they would use the cost conversion factor published October 2014. For example, in Table "Residences R12 - R54 2001 Series Wood Frame" the statewide average is 1.51 or 151%. This factor is multiplied by the base year 2001 Building Replacement Cost as shown on the property record card. The resulting value is the current building replacement cost of the specified property in the particular jurisdiction being reassessed.

These cost conversion factors used for assessment purposes are to be applied uniformly to all similar properties in the district. The following page is an example of the published Building Replacement Cost Conversion Factors and are found on the Taxation website at: http://www.state.nj.us/treasury/taxation/lpt/building_replace_cost.shtml

BUILDING REPLACEMENT COST CONVERSION FACTORS FOR OCTOBER 2014
TO BE APPLIED TO THE REAL PROPERTY APPRAISAL MANUAL FOR NEW JERSEY ASSESSORS

COUNTY	RESIDENCES 1975 SERIES**		RESIDENCES R-12 - R-54 2001 SERIES**		APARTMENTS, HOTELS MOTELS, & OFFICE BUILDINGS		COMMERCIAL - INDUSTRIAL BUILDINGS				FARM BUILDINGS	
	WOOD FRAME	BRICK OR VENEER	WOOD FRAME	BRICK OR VENEER	MASONRY & WOOD 101, 102 103, 145	STEEL & CONCRETE 104, 105 106	WOOD FRAME 101, 102 123, 133	WOOD & MASONRY 103, 124 126, 134 136	STEEL & MASONRY 105, 107, 108, 109, 125, 127, 135, 137, 138	FIRE RESISTANT 104, 106	WOOD & MASONRY, WOOD FRAME 150 THRU 156	POST & FRAME PF 157 THRU 164
	TABLE R-1	TABLE R-2	TABLE RR-1	TABLE RR-2	TABLE C-1	TABLE C-2	TABLE C-3	TABLE C-4	TABLE C-5	TABLE C-6	TABLE F-1	TABLE F-2
Atlantic	4.57	4.73	1.47	1.50	5.28	7.44	4.54	5.54	8.35	7.11	5.54	1.63
Bergen	4.55	4.70	1.50	1.47	5.43	8.08	4.56	5.75	9.15	7.68	5.75	1.64
Burlington	4.55	4.70	1.49	1.49	5.26	7.46	4.52	5.52	8.35	7.11	5.52	1.57
Camden	4.54	4.70	1.51	1.48	5.25	7.44	4.51	5.51	8.34	7.11	5.51	1.63
Cape May	4.55	4.71	1.50	1.51	5.25	7.43	4.51	5.52	8.34	7.09	5.52	1.63
Cumberland	4.57	4.71	1.50	1.52	5.26	7.43	4.53	5.53	8.33	7.09	5.53	1.63
Essex	4.55	4.68	1.50	1.51	5.41	8.07	4.55	5.73	9.14	7.67	5.73	1.64
Gloucester	4.54	4.66	1.49	1.48	5.24	7.43	4.51	5.50	8.33	7.09	5.50	1.63
Hudson	4.65	4.81	1.55	1.55	5.52	8.16	4.65	5.84	9.24	7.79	5.84	1.64
Hunterdon	4.57	4.75	1.49	1.52	5.41	8.00	4.54	5.73	9.08	7.59	5.73	1.63
Mercer	4.57	4.71	1.51	1.53	5.40	8.00	4.55	5.72	9.07	7.59	5.72	1.64
Middlesex	4.55	4.71	1.52	1.51	5.42	8.05	4.56	5.74	9.13	7.65	5.74	1.64
Monmouth	4.55	4.69	1.51	1.51	5.40	8.01	4.53	5.71	9.08	7.59	5.71	1.64
Morris	4.56	4.70	1.51	1.51	5.39	7.99	4.54	5.72	9.08	7.57	5.72	1.64
Ocean	4.55	4.68	1.51	1.51	5.27	7.52	4.53	5.54	8.43	7.16	5.54	1.63
Passaic	4.57	4.72	1.54	1.50	5.46	8.12	4.61	5.79	9.18	7.73	5.79	1.64
Salem	4.55	4.72	1.52	1.49	5.26	7.44	4.53	5.52	8.34	7.10	5.52	1.62
Somerset	4.56	4.71	1.50	1.55	5.42	8.04	4.56	5.74	9.11	7.62	5.74	1.64
Sussex	4.59	4.76	1.52	1.49	5.45	8.02	4.59	5.76	9.11	7.61	5.76	1.62
Union	4.57	4.70	1.54	1.52	5.43	8.06	4.58	5.75	9.13	7.66	5.75	1.64
Warren	4.47	4.56	1.48	1.49	5.33	7.96	4.49	5.65	9.03	7.54	5.65	1.63
State Average	4.56	4.71	1.51	1.51	5.36	7.82	4.55	5.66	8.83	7.44	5.66	1.63

NOTE: Union labor rates are used in computing all of the above conversion factors with the exception of the P.F. Series Farm Buildings*
 Use table R-1 and R-2 when converting from the 1975 base cost, employ tables RR-1 and RR-2 to convert from the 2001 base year**

*REVISED: September 2014

135. Sales Comparison Approach

Synonymous with market comparative approach, the sales comparison approach is regarded by appraisers as the most significant and consistently reliable valuation method when properly developed from an adequate sample of market data. Sales comparison involves collecting and analyzing the data, selecting appropriate units of comparison, making reasonable adjustments derived from the market and applying the data to the subject property. Data collection is the accumulation of all types of data, the analysis of the data and the assembly of useful data in suitable form for comparison with other sold properties. The analysis of market data first involves an examination of the available sales sample to determine its adequacy in depth and its significance in relation to the property being appraised.

If the sales sample is too small or is composed of heterogeneous (unlike) properties, the results are likely to be unreliable. Adequate sales samples with homogeneous properties are necessary for proper application of the sales comparison. In addition to the data normally collected on properties, it is necessary to accumulate data that relates to the sale itself. Items such as time of sale, location, conditions of sale, financing, site data and other features pertaining to the property which may have influenced the buyer or seller are gathered and analyzed.

In the adjustment phase, value differences between the comparable sales and the subject property are reconciled by making compensating adjustments for each market and property variable to the comparable sale property. The result of this procedure will be an adjusted value for each comparable property and, when performed for all properties in the same manner, will represent the market value of the subject property. In order to properly compare the subject property with the similar properties which have sold, it is necessary to establish uniform standards for measurement of the differences. The elements of these standards are subject to the judgment of the appraiser and applied uniformly in all comparisons. Adjustments can be either a dollar (lump sum) amount or percentage and are applied to the comparable sale price/comparable property. Adjustments should reflect

the contributory value of an individual item to the total property value rather than its cost. These adjustments should be derived from the market by using paired sales analysis.

After the comparables are properly adjusted for differences to the subject the comparable sales prices show an adjusted value range for the subject property. These values are then analyzed and reconciled into a final value estimate for the subject, relying on the comparable sale with the least number of adjustments and/or least gross dollar amount of adjustments.

The defense of assessed value when challenged in a tax appeal proceeding is based on the market value of the property. The direction of the defense is based on the statutory requirement N.J.S.A. 54:4-23, which, in part, states the assessor must...“determine the full and fair value of real property in the taxing district at such price as, in his judgment it would sell for a fair and bona fide sale by private contract on October 1st.” This indicates that the use of the market approach is the primary approach to be used in the defense of assessment appeals.

An adequately prepared sales comparison approach is more readily understood by the general public than the other approaches to value because its logic closely parallels the logic of the typical consumer in the market. In many instances the courts place greater credence upon this valuation method than the cost approach, providing there is sufficient documentation and there has been a proper analysis of the comparable sales.

The following is an example of the sales comparison approach showing adjustments to the comparable properties to arrive at an indication of value for the subject property. Never adjust the subject property. Through data collection and analysis, the following has been found:

<u>Comparable Property</u>	<u>Adjustment</u>
Superior to Subject	Negative or Subtract
Inferior to Subject	Positive or Increase

Subject Property

The property being appraised as of June 1, 2012 is a two-story colonial style dwelling, built in 2007, in good condition and average functional utility. It is located in a typical neighborhood on a quiet residential street. The lot is typical for the area 150' x 200' rectangular with city water, sewer, and underground electric. The dwelling is 2850 square feet with eight total rooms, four bedrooms three full baths and one-half bath, full unfinished basement, forced hot air heat and central air conditioning. It has a front porch with roof, a rear wood deck, fireplace and a two-car attached garage.

Comparable #1

The property sold February 10, 2012 for \$330,000. It is a two-story colonial style dwelling, built in 2007, in good condition with average functional utility. It is in the same neighborhood as the subject and on a similar residential street. The lot is smaller, 125' x 200', with the same utilities. The dwelling is 2600 square feet, eight rooms, four bedrooms and three full baths, full unfinished basement, forced hot air and central air conditioning. It has a front porch with roof, fireplace and one car attached garage.

Comparable #2

This property sold December 1, 2011 for \$360,000. It is a similar model two story colonial as the subject, built in 2007 in good condition and average functional utility. It is in the same neighborhood and on a similar street as the subject. The lot is 125' x 200' rectangular with all utilities. It is 2850 square feet, eight rooms, four bedrooms, three full baths and one-half baths, full basement with part finished room, forced hot air and central air conditioning. It has a front porch with a roof, rear wood deck and a two-car attached garage.

Comparable #3

The property sold April 15, 2012 for \$320,000. It is a two-story colonial style dwelling, built in 1997, average condition and average functional utility. It is located in a similar type of neighborhood on a traffic street. It is on a 150' x 200' lot with all utilities. The dwelling is 2550 square feet, eight rooms, four bedrooms, three full baths and one-half bath, full unfinished basement, forced hot air and central air conditioning. It has a front porch with roof, rear wood deck, fireplace and attached one car garage.

Through market analysis of similar type properties in the area, the following adjustments have been ascertained:

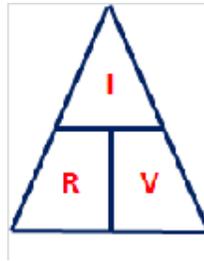
- The adjustment for time due to the increasing market is 6% per year or ½% per month.
- Being on a traffic street shows a \$10,000 decrease in value.
- Lot size is \$200 per front foot.
- Adjustment for age of improvement is \$5,000 for ten years.
- Half baths contributory value is \$3,000.
- Square foot adjustment is \$80 per square foot.
- A part finished basement contributes \$5,000 in value.
- Garages are \$5,000 per car.
- A deck contributes \$4,000 in value.

ITEM	SUBJECT	COMP#1	ADJ	COMP#2	ADJ	COMP#3	ADJ
SALE PRICE		\$330,000		\$360,000		\$320,000	
DATE OF SALE		2/10/2012	6,500	12/1/2011	10,500	4/15/2012	3,200
LOCATION	AVG	AVG		AVG		FAIR	10,000
LAND SIZE	150X200	125X200	5,000	125X200	5,000	150X200	
CONSTRUCTION QUALITY	AVG	AVG		AVG		AVG	
STYLE	COLONIAL	COLONIAL		COLONIAL		COLONIAL	
AGE	5 YEARS	5 YEARS		5 YEARS		15 YEARS	5,000
CONDITION	GOOD	GOOD		GOOD		AVG	10,000
ROOM COUNT	8/4/3.5	8/4/2003	3,000	8/4/3.5		7/4/3.5	
LIVING AREA	2850 SF	2600 SF	20,000	2850 SF		2550 SF	24,000
BASEMENT	FULL	FULL		FULL		FULL	
BSMT FINISH	UNFIN	UNFIN		PART FINISH	-5,000	UNFIN	
FUNCTIONAL UTILITY	AVG	AVG		AVG		AVG	
HEAT/AC	FHA/CENT	FHA/CENT		FHA/CENT		FHA/CENT	
GARAGE	2 CAR	1 CAR	5,000	2 CAR		1 CAR	5,000
PORCH	YES	YES		YES		YES	
DECK	YES	NO	4,000	YES		YES	
FIREPLACE	1	1		NONE	5,000	1	
NET ADJUSTMENT			43,500		15,500		57,200
INDICATED VALUE			\$373,500		\$375,500		\$377,200

After adjustments, the value range for the subject property is \$377,200 to \$373,500. Reconciling these value indicators into a final value estimate, comparable #2 was given most weight as it is the same model as the subject and had the least number of and total net adjustments.

136. Income Approach

The income approach links a property's income to value by determining the present worth of future net benefits. Much like an investor, three portions of the income stream are considered by this approach: the amount and quality of future income, when it will be received and for how long. A capitalization rate consisting of a return on and a return of investment is then applied to the income to derive a value estimate. In its simplest form, $\text{Value} = \text{Income} \div \text{Rate}$.



The line under “I” means to divide.

The line between “R and V” means multiply.

Cover the variable to be solved to get the desired equation.

It is the approach recognized by the courts when defending assessment appeals for income producing properties. The basic steps of the income approach are:

1. Estimate the potential gross income.
2. Deduct allowance for vacancy and rent loss.
3. Add miscellaneous income to get effective gross income.
4. Determine operating expenses and deduct from the effective gross income to arrive at net operating income
5. Select the proper capitalization rate.
6. Determine the capitalization method to be used.
7. Capitalize the net operating income into an indication of value.

Potential Gross Income

The first step is to estimate the potential gross income, which is the annual economic or market rent assuming the property is fully occupied. Economic rent is derived from a survey and analysis of similar use properties in the area. Factors considered when analyzing income include date and terms of the lease, location of property and physical characteristics. Typical units of comparison for income producing properties are price per square foot, price per room, price per apartment, price per space and percentage of gross income. Although rental information is sometimes difficult to obtain, one of the tools an assessor has at their disposal is the Chapter 91 Income and Expense Statements that should be filed annually by owners. When an income producing property is contesting their assessment this information is required or the appeal can be dismissed.

Effective Gross Income

The next step is to determine the effective gross income for the property, which is the potential gross income minus an allowance for vacancy and rent collection loss, plus any miscellaneous income. Miscellaneous income is any other income received other than the actual rent. Since most properties are not fully occupied for their entire life, a deduction is made that reflects the vacancy rate that is likely for the property. This is derived by analyzing the subject and similar use properties and their current and historical vacancy rates. It is usually expressed as a percentage of potential gross income. Collection loss is the loss of money from a tenant's non-payment of rent. This is also arrived at by a study of similar use properties and the property itself. This loss should only include non-payment for occupied units. It is also expressed as a percentage of gross income and usually combined with the vacancy rate. After the total vacancy and collection loss is subtracted from the potential gross income, any miscellaneous income is added to arrive at the effective gross income of the property. Miscellaneous income is income derived from the property other than actual rent such as coin operated laundry, operating fees, etc.

Net Operating Income

Net operating income is the income remaining after deducting allowable expenses from the effective gross income. It is the income that is capitalized to arrive at an indicated value for the property. Analyzing a property's operating statement is a critical step in

determining allowable expenses. They are divided into allowable and non-allowable expenses.

Expenses

In analyzing operating statements, it is known that all items shown cannot be used for real estate appraisal purposes. Allowable expenses are those that are typical, reasonable, and necessary to maintain the property's ability to produce income and will occur every year. Reported expenses should be compared to expense information for comparable properties to determine if reasonable. A tool used to do this is the operating expense ratio which is found by dividing the total or individual expenses by the effective gross income. When analyzing expenses, determine if the expense is typical for that type of property. Does the expense indicate typical management? Are they consistent on a year-to-year basis? Do they show a relationship to each other and are in line with similar use properties?

Allowable Expenses include:

Management

This is usually a fee paid to a management company to oversee day-to-day operations and is usually expressed as a percentage of Effective Gross Income.

Salaries

Wages and benefits paid to employees needed to keep a property rented.

Utilities

This deduction includes gas, water, electric, sewer, fuel, telephone, and garbage removal.

Supplies and Materials

Items used in the day-to-day operation.

Repairs and Maintenance

Costs caused by the physical use of the property.

Property Taxes

These can be considered as an expense when appraising individual properties. In assessment mass appraisal applications, they are included in the capitalization rate using the effective tax rate. For the assessor, it is included in the capitalization rate.

Insurance

Cost of insuring the property annually.

Miscellaneous

Small cost items that do not justify a separate listing.

Reserves for Replacement

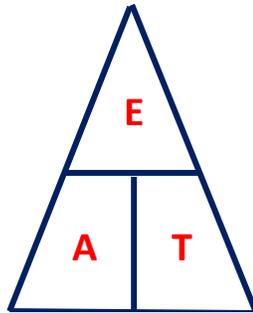
Short lived items that must be replaced before the building reaches the end of its economic life.

Improper Expenses

- Depreciation (recapture rate)
- Debt Service (yield/discount rate)
- Real Estate Taxes (effective tax rate)
 - These items are accounted for in the capitalization rate.
- Capital Improvements
 - This refers to items, such as an addition, made infrequently and are not necessary to maintain the annual income of a property.
- Income Taxes
- Owners Business Expenses
 - These expenses are not necessary to maintain the rental income of the property. They are personal expenses of the owner.

Capitalization Rates

The capitalization rate is often thought of as the rate of return an investor would expect to receive for a certain capital investment. It is comprised of three components: a discount rate, a recapture rate for the improvement and an effective tax rate. The discount rate considers four characteristics of investment: safety, risk, liquidity, and cost of management. The recapture rate is the yearly amount required to provide a return of investment over the time period the investment is held. The third component, when used as part of the cap rate, is the **E**ffective tax rate, which is the general **T**ax rate times the districts level of **A**ssessment (Director's Ratio).



The line under “E” means to divide.

The line between “A and T” means multiply.

When valuing vacant land only the discount rate and effective tax rate are used in the cap rate, as land is a non-wasting asset so there is no recapture rate needed.

Discount Rate

To develop the discount rate there are two recognized methods used, the band of investment method and the market comparison method. The band of investment method consists of the interest rates of first and second mortgages paid by an investor for the type of property being appraised and the anticipated yield or rate of return expected to be received on the equity in the property. The market comparison method is used when there are ample comparable sales with income information of similar use properties available.

Band of Investment

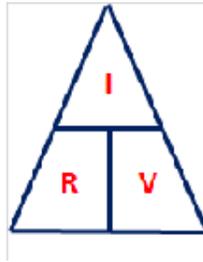
The band of investment method weighs the percent of investment of the debt or mortgage portion and the yield or equity portions which equals 100% of the property value. These percentages are then multiplied by the rate to get a weighted average which is then added to produce the discount portion of the cap rate. For example, \$600,000 can be borrowed on a property worth \$800,000 on a first mortgage; the typical interest rate for this type of property is 6.5%. An additional \$80,000 can be secured on a second mortgage at a rate of 5%. The expected equity yield rate for similar properties in the area is 9%. Given this information the discount portion would be calculated as follows:

	<u>Percent of Investment</u>	<u>Rate</u>	<u>Weighted Avg.</u>
First Mortgage	0.75%	0.065	.04875
Second Mortgage	0.10%	0.05	.00500
Equity	+ <u>0.15%</u>	0.09	+ <u>.01350</u>
Total	100%		.06725 or 6.73%

Market Comparison

Market comparison is a reliable method as it reflects an indicated overall capitalization rate of actual similar use properties in the area. It is arrived at by dividing net operating income by the sales price of the property. For example, a property sold for \$800,000, and the property's net income is \$100,000. The rate in this example would be:

$$\begin{aligned} \text{Net Income} \div \text{Sale Price} &= \text{Ro} \\ \$100,000 \div \$800,000 &= .125 \text{ or } 12.5\% \end{aligned}$$



$V = \text{sale price or property's market value } (V = I \div R)$

$I = \text{net income } (I = V \times R)$

$R = \text{overall capitalization rate } (R = I \div V)$

Recapture Rate

Another part of the capitalization rate is the recapture of capital that is invested in the improvements of a property. This is a portion of the rate that returns to an investor the money equal to the value of the improvement at the end of a specified period of time. The recapture rate only deals with the part of the investment that is attributable to the life of the improvement and does not include the land as that will still have its own value at the end. The two methods are the market comparison and straight-line method.

The market comparison method is almost the same as used to determine the discount rate portion of the cap rate except only the value of the improvement is considered. The basic formula is net operating income less tax dollars and discount dollars which equals the recapture dollars. The recapture dollars are then divided by the improvement value which is the sales price minus the land value. Given a sales price of \$900,000, land value of \$400,000, discount rate of 10% and net operating income after taxes of \$100,000, the recapture rate would be calculated as follows:

Sales Price		\$900,000
Land Value		<u>-\$400,000</u>
Building Value		\$500,000
Income after taxes	\$100,000	
Discount Rate	10%	

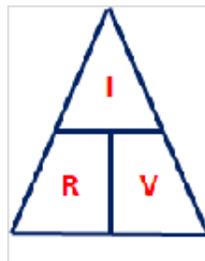
Income to satisfy Discount Rate	$\$900,000 \times .10 = \$90,000$
Recapture Income	$\$100,000 - \$90,000 = \$10,000$
Recapture Rate	$\$10,000 \div \$500,000 = 0.02$ or 2 %

The straight line or economic life method takes into account how many years an investor is willing to have money tied up in a particular property and the length of time banks are willing to make mortgage commitments for the property. An estimate of how long the improvement will add value to the land and produce income needs to be made. The simple formula is 1, divided by the remaining economic life. If a building has an economic life of 40 years, the recapture rate would be 2.5%.

$$1 \div 40 = 0.025 \text{ or } 2.5\%$$

137. Capitalization Methods and Techniques

There are two types of capitalization methods, direct and yield capitalization. Direct capitalization is the method of converting a single year's net income into an estimate of value.



Yield capitalization is the method of converting a series of future income amounts into a present value where future net incomes are discounted at a proper yield rate.

Direct Capitalization

Direct capitalization converts net income of a property into a value indication using a rate that is arrived at from the actual market. It only takes into consideration a single year income or an average of several years. For example, there are three sales of office

buildings whose net income is known. The net income is divided by the sale price to derive an indicated overall capitalization rate.

<u>Sale</u>	<u>Net Income</u>	<u>Sale Price</u>	<u>Rate</u>
1	\$53,000	\$750,000	.0707
2	\$43,400	\$625,000	.0694
3	\$63,900	\$875,000	.0730

Based on these three sales, an overall capitalization rate of .07 or 7% can be derived for similar type properties.

Example:

The property under appraisal is a similar type of office building with a net income of \$85,000. The indicated value for the property would be $\$85,000 \div .07 = \$1,214,285$ or \$1,214,300.

Band of Investment Technique

This method uses the weighted average of the equity and mortgage rates to obtain an overall capitalization rate. A percentage is assigned to each component based on the typical loan to value lending ratio for the particular use property. For example, if the typical policy is to lend 80% of the appraised value, the mortgage part is assigned 80% and the equity 20%. In this method, the mortgage part of the capitalization rate is the lending percentage times the periodic payment factor (found in monthly interest tables Column 6) for the percent and term of the loan times 12. The equity portion takes the remaining percentage times the typical return on investment for similar properties. If property taxes are not included in expenses, the effective tax rate is added to the cap rate.

The following is an example of a commercial property appraised using this method:

A building is 5,400 square feet, the actual rent is \$18 per square foot, market rents are found to range between \$16 and \$19 for similar use buildings in the area. Vacancy and rent loss is found to be 3% of Potential Gross Income. Allowable expenses include

\$2,000 for insurance. Typical management fees for similar properties are 3%, repairs and maintenance 2.5% and replacement reserves 3% of Effective Gross Income. Accounting/legal fees are \$4,000. Tenants pay all utilities. Current mortgage rates are 7% for 25 years and banks are lending 80% of the appraised value. Typical expected equity return is 9% for this type of property.

Mortgage Equity Technique

Potential Gross Income (PGI)	\$5,400 x \$18	\$97,200	
Less vacancy and rent loss @ 3% of PGI		<u>-\$ 2,916</u>	
Effective Gross Income (EGI)			\$94,284

Less operating expenses:

Insurance		\$2,000	
Management fees @ 3% of EGI		\$2,829	
Repairs and maintenance @ 2.5% of EGI		\$2,537	
Professional fees		\$4,000	
Reserves for replacement @ 3% of EGI		\$2,829	
Total operating expenses			<u>-\$14,195</u>
Net operating income			\$80,089

Cap Rate Analysis:

1) Mortgage: 80% first mortgage @ 7% monthly for 25 years			
annual constant .007068 x 12 = .084816	80% x .084816 =	.0678	
2) Equity: 20% cash invested with an expected			
return rate of 9%	20% x .0900 =	.0180	
3) Effective Tax Rate		<u> = .0200</u>	
	Overall cap rate		.1058
			Rounded to .106 or 10.6%

Indicated value via income approach $\$80,089 \div .106 = \$755,557$ or $\$755,600$

Straight Line and Sinking Fund Capitalization

Straight line capitalization, the simplest method, should be used when the income is going to decline over the life of the improvement, the tenant is financially average or poor, the lease is month- to- month and the improvement is recaptured equally over its life with the discount received on the remaining balance of the investment.

The sinking fund method produces a higher value than the straight-line method. It should be used when the income is constant, recapture is invested at a safe rate and the discount is received each year on the total original investment in the depreciating asset.

Two commonly used residual methods utilized in straight line capitalization are the building and land residual techniques. The information available and the type of property being appraised determine which method is used.

Land Residual

The land residual is used when the building value is known and is new. Land values are not evident due to a shortage of vacant land comparables; therefore, the land value is unknown. Depreciation and obsolescence should be minimal when applying this technique.

Straight Line Capitalization

Building value \$500,000

Net income before recapture and real estate taxes \$100,000

<u>Capitalization Rate:</u>	Building Cap Rate (BCR)	Land Cap Rate (LCR)
Discount rate	6.0%	6.0%
Recapture rate (40 years)	2.5%	
Effective tax rate (\$4/hundred 90% ratio)	<u>+3.6%</u>	<u>+3.6%</u>
Total	12.1%	9.6%

Building value \$500,000 x BCR

(\$500,000 x .1210) Income attributable to building	<u>-\$60,500</u>
Income attributable to land	\$39,500

Land Income ÷ Land Cap Rate = Land Value

\$39,500	.096	\$411,458
----------	------	-----------

Land income (\$39,500 ÷ .096 discount rate + land value)	\$411,458
Building value	<u>+\$500,000</u>
Total value	\$911,458
	or \$911,500
	(round to nearest 100)

Building Residual

The building residual technique is utilized when land values can be clearly established and the building is affected by depreciation or obsolescence, therefore the building value is unknown.

Straight Line Capitalization

Land value = \$250,000

Net income before recapture and real estate taxes	\$80,000
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Land value x LCR = Land income

(\$250,000 x .07) Income attributable to land	<u>- \$17,500</u>
---	-------------------

Income attributable to building	\$62,500
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<u>Capitalization rate:</u>	Building Cap Rate (BCR)	Land Cap Rate (LCR)
-----------------------------	-------------------------	---------------------

Discount rate	5.0%	5.0%
---------------	------	------

Recapture rate (25 years)	4.0%	
---------------------------	------	--

Effective tax rate (\$2/hundred x 100% ratio)	+ <u>2.0%</u>	+ <u>2.0%</u>
---	---------------	---------------

Total	11.0%	7.0%
-------	-------	------

Building income ÷ BCR = Building value

(\$62,500 ÷ .11) Building value	\$568,182
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Land value	<u>+\$250,000</u>
------------	-------------------

Total value	\$818,182
-------------	-----------

or \$818,200

Compound Interest Tables

Column 1 Future Worth of \$1 – The growth of a single deposit over a specific time period.

Column 2 Future Worth of \$1 per Period – The growth of a series of deposits over a specific time period.

Column 3 Sinking Fund Factor – The periodic deposit needed to accumulate a specific sum over a specified time period.

Column 4 Reversion Factor – The present worth of a single future payment.

Column 5 Present Worth of \$1 per Period – The present worth of a series of future level income payments. Also known as the annuity factor or Inwood coefficient.

Column 6 Partial Payment Factor – The periodic payment needed to amortize a loan over a specific number of years.

Level Terminal Annuity

When the amount of income does not change over a specific number of years and payments are equally spaced and scheduled. A simple procedure is used to value this type of property where the income payments are multiplied by the present worth of \$1 per period (Column 5). A level income of \$20,000 a year for 10 years at 6% would be calculated as.

$$(\$20,000 \times 7.360087) = \$147,201.74 \text{ or } \$147,200 \text{ rounded}$$

Level Perpetual Annuity

A property's value and income are expected to stay constant forever over its useful life. This type of income stream can be valued by the income divided by the rate. A property's value that is earning \$20,000 a year at 6% annually would be.

$$\$20,000 \div .06 = \$333,333.33 \text{ or } \$333,300 \text{ rounded}$$

Variable Annuity with no Reversion

With variable income streams each separate stream is discounted individually and totaling the results. The future worth of 1 (Column 1) for each year is multiplied by that year's income and added to get the value. A property that has a net operating income of \$50,000 in year one, \$52,000 in year 2, \$55,000 in year 3 and \$56,000 in year 4 at a steady rate of 7% would be valued as;

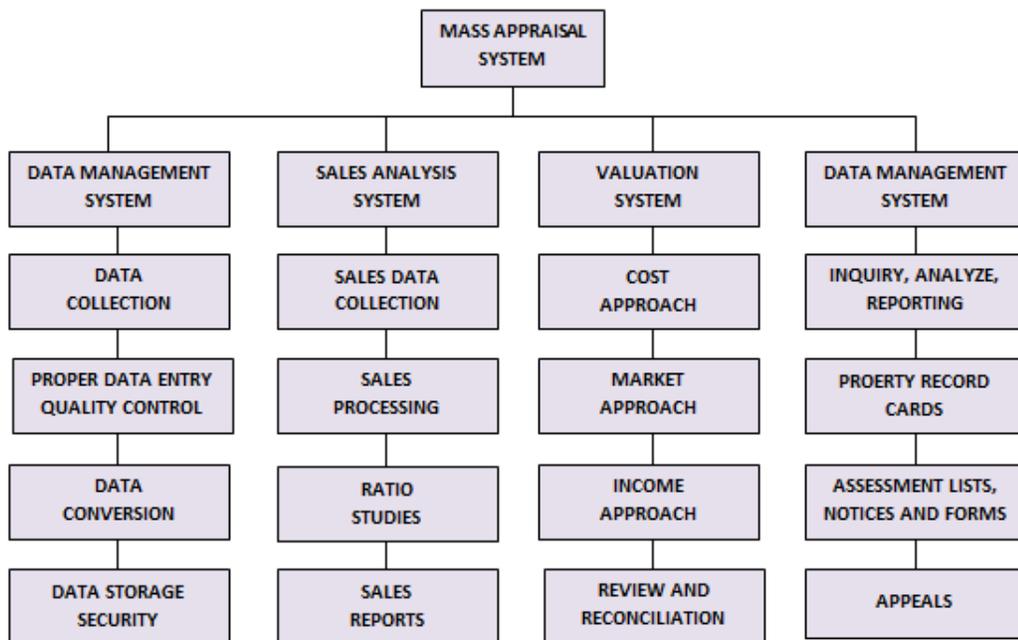
Year 1	\$50,000 x 1.070000 = \$53,500
Year 2	\$52,000 x 1.144900 = \$59,535
Year 3	\$55,000 x 1.225043 = \$67,377
Year 4	\$56,000 x 1.310796 = <u>\$73,405</u>
Total	\$253,817

138. Mass Appraisal Systems

Mass appraisal, which is done by a Computer Assisted Mass Appraisal system (CAMA), is the systematic appraisal of large groups of property at a given date using standardized procedures and statistical testing. The principles of mass appraisal are similar to those used in an individual appraisal, except they use large quantities of market data to develop market indicators for groups of properties and provide a way to establish and maintain uniform equitable values. Mass appraisal uses equations, tables and schedules called models which are based on the sales comparison approach. Analysis

There are four main areas to a mass appraisal system: 1) data management, 2) sales analysis, 3) valuation and 4) administration. Though each component is a separate system they are interdependent and share information between each other.

Mass Appraisal System Components



The data management area is the base of a mass appraisal system. It includes components that allow for data collection, data entry and editing, mapping, data conversion, data storage and security. Property characteristics from this component are used by the valuation and administrative areas.

The sales analysis area has components for sales data collection, sales screening and processing, ratio studies, and sales reports. It uses information from the valuation area for the sales studies and ratio reports.

The valuation area components include mass appraisal models of the cost approach, market approach and income approach along with the ability to review and reconcile the results. The cost approach needs maintenance for cost schedules and equations, depreciation tables and the ability to adjust values to the current market. Market models usually use multiple regression analysis (MRI) and adaptive estimation procedure (AEP), to analyze comparable sales and adjust the values produced to the current market. Income models must be able to develop income multipliers, overall capitalization rates and expense ratios for the different types of commercial properties. The valuation area uses property information from both the data management and sales analysis area.

The administration area includes components to produce the assessment lists, notices, forms, and property record cards. It also should have the ability to inquire, analyze and report on information from the other areas along with having word processing ability. One of the most important components is for assessment appeals, which should also be able to produce any information needed for the defense of an appeal. The administration area uses information from the other three areas.

139. Purpose of Mass Appraisal

Mass appraisal systems are used in revaluations to periodically update all real property values throughout the municipality.

Annually, the Division of Taxation, Property Administration develops ratio studies for all 565 municipalities. A Director's Ratio of less than 85% is one factor that may indicate the need for a revaluation. The primary tool used to develop annual sales ratios is analyzing individual sales to determine if they are arms' length sales, referred to as usable sales for the study.

Revaluation decisions are governed by statute and regulations. Mostly, revaluations are ordered by the County Tax Board, but a municipality may volunteer to conduct a revaluation. All revaluations require planning and resources such as updating the municipal tax map, having the needed staff, budget and having a qualified outside revaluation firm in a timely manner.

Specific action plans can be followed. For example, in New Jersey, the Division of Taxation provides a Plan of Work and monthly reporting as to the revaluations progress to the respective County Tax Board. In the Plan of Work critical activities are documented along with their completion date.

Once all needed data is collected, production of values begins using all the systems and tools of the mass appraisal system. The assessor must monitor the values being developed by the revaluation firm and conduct final ratio checks to accept or modify the new values.

Finally, the assessor can now produce the tax list where he or she is certifying the new values placed on the tax list. Notices of assessment are mailed out specifying appeal rights and informal appeals at the assessor's office can occur.

A good data maintenance program is essential in maintaining values. Periodic inspections occur as a result of receiving copies of building permits, subdivision plans and new deeds. These periodic inspection plans occur through annual reassessment programs. One factor to consider when ordering a revaluation is if the municipality is 10 years or more from its last update of values.

Routine field visits are used to verify changes in properties. Aerial mapping is also available now to assist in inspections for the office. Changes should always be verified with a field visit by the assessor or assessor's staff.

140. Mass Appraisal Statistics

Sales ratio study is the main tool used to test the accuracy of the results from market calibration of a mass appraisal system. Ratio studies help to identify weaknesses in a mass appraisal systems appraisal performance. The basis for any ratio study in New Jersey is the real property sales system which sends information to the State to promulgate the Director's Table of Equalized Valuations. This file includes all sales recorded at the county for a municipality in a fiscal year cycle. For appraisal purposes all arms' length and open market transactions should be included in the study. Sales that are excluded for the Director's Table can be used in ratio studies; examples are new construction and estate sales. As the ratio derived from these studies show the relation between the assessed value and market value, as of a specific date, they are helpful to show the appraisal and/or assessment level and uniformity of the values produced. As in any ratio study the quantity and quality of the sample available affects the accuracy and reliability of the statistics that are used to measure the assessment level and uniformity.

Typically, assessment level is measured by one of three measures of central tendency: the median, the mean, and the weighted mean.

The median is the exact middle ratio in an array sorted in numerical order. If there are an odd number of ratios, it is the center number; if an even number, it is the average of the two middle ratios. While easy to calculate and understand, it does not consider the effect of extreme outlying ratios.

The mean is the average of the ratios in a sample, or the sum of all the ratios divided by the total number of ratios. Like the median it is easy to calculate in small samples and outliers can skew the results.

The weighted mean is the sum total of appraised or assessed values divided by the sum total of the sales prices. Instead of each of the data points contributing equally to the final average, some data points contribute more than others. It allows the final average number to reflect the relative importance of each number that is being averaged.

The following is an example of the three measures of appraisal level:

<u>Sale Number</u>	<u>Assessed Value</u>	<u>Sales Price</u>	<u>Ratio</u>
1	\$ 120,000	\$ 175,000	.6857
2	\$ 240,000	\$ 310,000	.7742
3	\$ 290,000	\$ 350,000	.8286
4	\$ 300,000	\$ 320,000	.9375
5	<u>\$ 250,000</u>	<u>\$ 255,000</u>	<u>.9804</u>
	\$1,200,000	\$1,410,000	4.2064

Median - .8286

Mean - $4.2064 \div 5 = .8413$

Weighted Mean - $\$1,200,000 \div \$1,410,000 = .85106$ or .8511

Uniformity of assessments in a mass appraisal system are usually segmented within groups of properties that are broken down by use type and then within neighborhood areas or value control sectors (VCS). The main goal is to obtain uniformity within a specific group and between similar groups of properties. The objective is to achieve an appraisal level as close to 100% of market value as possible, with uniformity within neighborhoods or VCS's also being important. The common standard for uniformity is that the various neighborhoods appraised value level should fall within 5% of the overall appraisal level for the municipality. The accepted measures of uniformity include range, average absolute deviation, coefficient of dispersion, standard deviation, coefficient of variation and the price related differential.

Range is the difference between the highest and lowest ratios in the sample. Higher ranges may indicate low uniformity but can be deceiving as sample outliers are used to find the range. For this reason, it does not consider every ratio in the sample.

Average Absolute Deviation is the difference between each ratio of a sample and the median ratio of that sample. It is calculated by subtracting the median from each ratio, summing these values, and dividing by the number of ratios in the sample. One of the disadvantages of using average absolute deviation is that it measures uniformity as a raw percentage rather than in relative terms.

Coefficient of Deviation (sometimes known as Coefficient of Dispersion) is the most widely used measure of uniformity. It is calculated by taking the average of the absolute deviation of ratios about the median divided by the median ratio shown as a percentage. The lower the percentage is, the greater the uniformity of appraised values. Coefficients of Deviation of 15% or less are indicative of acceptable appraisal uniformity. Lower Coefficients of Deviation show good appraisal uniformity.

Standard Deviation is different from the Coefficient of Deviation because it shows how tightly all the various ratios are clustered around the mean versus the median. It is calculated by subtracting the mean from each ratio, squaring the resulting differences, then sum the squared differences. Then divide the sum of the squared differences by the number in the sample minus one to find the variance of the ratios. Finally, compute the square root of the variance to arrive at the standard of deviation. A lower standard deviation indicates that appraised values are closer to the norm and thus indicate better assessment uniformity.

Coefficient of Variation (COV) is a tool used to compare the appraisal levels between different groups of properties. It is calculated by dividing the standard deviation by the mean, assessment sales ratio, and multiplying by 100. The closer the COV is to 0, the more stable the sales group, provided there are a sufficient number of sales. It is also a good measure of uniformity.

Price Related Differential (PRD) is a statistic for measuring the regressivity or progressivity of assessment. It measures inequities between high and low value properties within a group such as a neighborhood. When high value properties are undervalued compared to the low value properties, the values are considered regressive. When high

value properties are overvalued, it is progressive. A PRD of 1.00 indicates no bias between the low and high value properties. A lower PRD indicates progressivity, while a high PRD indicates regressivity. The accepted range is between .98 and 1.03 as long as the sample size is large enough. It is calculated by dividing the mean by the weighted mean.

The following shows the calculation of the six measures of uniformity using the same five sales shown for the measures of appraisal level:

Range

<u>Sale Number</u>	<u>Assessed Value</u>	<u>Sales Price</u>	<u>Ratio</u>
1	\$ 120,000	\$ 175,000	.6857
2	\$ 240,000	\$ 310,000	.7742
3	\$ 290,000	\$ 350,000	.8286
4	\$ 300,000	\$ 320,000	.9375
5	<u>\$ 250,000</u>	<u>\$ 255,000</u>	<u>.9804</u>
	\$1,200,000	\$1,410,000	4.2064

Range - .6857 to .9804

Average Absolute Deviation

<u>Sale Number</u>	<u>Ratio</u>	<u>Absolute Difference from Median (.8286)</u>
1	.6857	.1429
2	.7742	.0544
3	.8286	.0000
4	.9375	.1089
5	.9804	<u>.1518</u>
		.4580

Average Absolute Deviation - $.4580 \div 5 = .0916$

Coefficient of Deviation

<u>Sale Number</u>	<u>Ratio</u>	<u>Absolute Difference from Median (.8286)</u>
1	.6857	.1429
2	.7742	.0544
3	.8286	.0000
4	.9375	.1089
5	.9804	<u>.1518</u>
		.4580

Average Absolute Deviation - $.4580 \div 5 = .0916$

Median - .8286

Coefficient of Deviation - $.0916 \div .8286 \times 100 = 11.054$

Standard Deviation

<u>Sale Number</u>	<u>Ratio</u>	<u>Difference from Mean (.8413)</u>	<u>Difference Squared</u>
1	.6857	.1556	.0242
2	.7742	.0671	.0045
3	.8286	.0127	.0002
4	.9375	.0962	.0093
5	<u>.9804</u>	<u>.1391</u>	<u>.0193</u>
	4.2064	.4707	.0575

Mean - $4.2064 \div 5 = .8413$

Variance - $.0575 \div 4 = .0144$

$n - 1$

$5 - 1 = 4$

Standard Deviation - Square Root of $.0144 = .1200$

Coefficient of Variation

<u>Sale Number</u>	<u>Ratio</u>	<u>Difference from Mean</u>	<u>Difference Squared</u>
1	.6857	.1556	.0242
2	.7742	.0671	.0045
3	.8286	.0127	.0002
4	.9375	.0962	.0093
5	<u>.9804</u>	<u>.1391</u>	<u>.0193</u>
	4.2064	.4707	.0575

Mean - $4.2064 \div 5 = .8413$

Variance - $.0575 \div 4 = .0144$

Standard Deviation - Square Root of $.0144 = .1200$

Coefficient of Variation - $.1200 \div .8413 \times 100 = 14.2636$

Price Related Differential

<u>Sale Number</u>	<u>Assessed Value</u>	<u>Sales Price</u>	<u>Ratio</u>
1	\$ 120,000	\$ 175,000	.6857
2	\$ 240,000	\$ 310,000	.7742
3	\$ 290,000	\$ 350,000	.8286
4	\$ 300,000	\$ 320,000	.9375
5	<u>\$ 250,000</u>	<u>\$ 255,000</u>	<u>.9804</u>
	\$1,200,000	\$1,410,000	4.2064

Mean - $4.2064 \div 5 = .8413$

Weighted Mean - $\$1,200,000 \div \$1,410,000 = .8511$

Price Related Differential - $.8413 \div .8511 = .9885$

141. Residential “R” Series Base Cost Values Class R-12 to R-49

This section contains the base cost values for single-family, rowhouse, townhouses, semi-detached residences, and two-to-four family dwellings. These costs are based upon material and labor costs prevailing in New Jersey as of October 2001. Specifications are written to provide for the valuation for most residential properties found throughout the State utilizing replacement costs.

Adjustments to base costs for the residential “R” series are found in Section 142. Cost Conversion Factors for any year other than 2001, must be applied to convert to another Base Year. These factors are published yearly and are found on the Division of Taxation website at: http://www.state.nj.us/treasury/taxation/lpt/building_replace_cost.shtml

R-12 Single Family Residence

Class R-12 Typical Photographs



CLASS R-12: SINGLE FAMILY RESIDENCE & CABINS

LOW QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. ROOF – Wood frame, medium pitch, sheathing with low quality composition or wood shingles. 2. FOUNDATION – Masonry or stone, perimeter wall or wood piers. 3. BASEMENT – None 4. STRUCTURE –
Exterior Walls – Wood frame, low quality wood or composition sheathing, poor quality shingles, siding or equivalent.
Interior Finish – Low quality drywall or wallboard on walls, partitions and ceilings.
Minimum number of closets and kitchen cabinets. 5. FLOORS – Frame, wood joists, subfloor with low quality wood finish or equivalent (i.e. – concrete slab on grade with low quality finish). 6. HEATING – None | <ol style="list-style-type: none"> 7. PLUMBING – One three – fixture bath. 8. LIGHTING – Low quality fixtures and minimum number of outlets. 9. BUILT-INS / APPLIANCES – Low quality range and oven. 10. FIREPLACE – None 11. ATTIC - Unfinished 12. PORCHES AND DECKS – None 13. GARAGES – None 14. OTHER ITEMS – None |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	42.15	22.75	700	49.88	27.35	15.40
250	-	38.01	20.68	750	48.57	26.97	15.21
300	-	35.24	19.32	800	47.43	26.61	15.05
350	-	33.25	18.34	850	46.42	26.31	14.88
400	64.68	31.78	17.60	900	45.50	26.04	14.78
450	60.84	30.64	17.03	950	44.71	25.80	14.64
500	57.77	29.71	16.57	1000	43.97	25.58	14.53
550	55.26	28.95	16.22	1100	42.72	25.20	14.34
600	53.17	28.33	15.92	1200	41.69	24.87	14.20
650	51.40	27.81	15.65	1300	40.79	24.60	14.07

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-13 Typical Photographs

R-13 Single Family Residence



CLASS R-13: SINGLE FAMILY RESIDENCE

FAIR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, sheathing with fair quality composition or wood shingles.</p> <p>2. FOUNDATION – Masonry or stone, perimeter wall or wood piers.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, fair quality wood or composition sheathing, fair quality shingles, siding or equivalent.
Interior Finish – Fair quality drywall or plaster on walls, partitions and ceilings.
Softwood doors and trim. Minimum number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with fair quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Fair quality fixtures and moderate number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – One fair quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	50.58	27.29	750	58.28	32.35	18.26
250	-	45.60	24.82	800	56.90	31.92	18.04
300	-	42.28	23.18	850	55.67	31.56	17.88
350	-	39.92	22.01	900	54.61	31.24	17.71
400	77.60	38.15	21.11	950	53.63	30.94	17.55
450	73.00	36.76	20.43	1000	52.76	30.69	17.44
500	69.33	35.65	19.89	1100	51.26	30.23	17.20
550	66.31	34.75	19.46	1200	50.01	29.85	17.03
600	63.81	34.01	19.07	1300	48.95	29.55	16.87
650	61.69	33.36	18.75	1400	48.03	29.28	16.73
700	59.86	32.82	18.48				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-14 Typical Photographs

R-14 Single Family Residence



CLASS R-14: SINGLE FAMILY RESIDENCE

BELOW AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing with below average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, below average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Moderate number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with below average finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Adequate number of below average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One below average quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	54.77	29.55	800	61.63	34.58	19.56
250	-	49.39	26.88	850	60.32	34.20	19.35
300	-	45.82	25.11	900	59.15	33.85	19.18
350		43.24	23.84	950	58.09	33.52	19.02
400	-	41.33	22.88	1000	57.17	33.25	18.88
450	-	39.84	22.15	1100	55.54	32.76	18.64
500	75.10	38.64	21.55	1200	54.18	32.35	18.45
550	71.83	37.66	21.06	1300	53.03	32.00	18.26
600	69.11	36.84	20.65	1400	52.03	31.70	18.12
650	66.83	36.13	20.33	1600	50.42	31.21	17.88
700	64.84	35.56	20.03	1800	49.20	30.86	17.69
750	63.13	35.05	19.78				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-15 Typical Photographs

R-15 Single Family Residence



CLASS R-15: SINGLE FAMILY RESIDENCE

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with average quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One and one half bath, one three fixture bath, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Adequate number of average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One average quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	60.22	32.49	850	66.28	37.58	21.28
250	-	54.28	29.55	900	65.00	37.20	21.09
300	-	50.34	27.59	950	63.86	36.84	20.90
350	-	47.51	26.20	1000	62.80	36.54	20.76
400	-	45.41	25.14	1100	61.03	36.00	20.49
450	-	43.75	24.33	1200	59.54	35.54	20.27
500	82.53	42.45	23.67	1300	58.26	35.16	20.08
550	78.94	41.36	23.16	1400	57.17	34.83	19.92
600	75.94	40.49	22.72	1600	55.43	34.31	19.65
650	73.41	39.73	22.34	1800	54.04	33.90	19.46
700	71.26	39.07	22.01	2000	52.95	33.58	19.29
750	69.39	38.50	21.74	2200	52.05	33.31	19.16
800	67.75	38.01	21.50	2400	51.32	33.09	19.05

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-16 Typical Photographs

R-16 Single Family Residence



CLASS R-16: SINGLE FAMILY RESIDENCE

STANDARD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, standard quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, standard quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, standard quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with standard quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – Two three - fixture, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Adequate number and standard quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One standard quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story \$	Upper Story \$	Half Story \$	Sq. Ft. Area	First Story \$	Upper Story \$	Half Story \$
200	-	68.62	37.03	950	72.79	42.01	23.84
250	-	61.88	33.69	1000	71.62	41.63	23.65
300	-	57.39	31.45	1100	69.58	41.03	23.35
350	-	54.18	29.85	1200	67.86	40.52	23.10
400	-	51.75	29.22	1300	66.42	40.08	22.88
450	-	49.90	27.75	1400	65.20	39.73	22.69
500	-	48.38	26.99	1600	63.18	39.10	22.39
550	-	47.15	26.39	1800	61.63	38.64	22.18
600	86.58	46.15	25.88	2000	60.38	38.26	21.99
650	83.70	45.28	25.47	2200	59.35	37.96	21.85
700	81.22	44.54	25.09	2400	58.50	37.71	21.71
750	79.10	43.89	24.76	2600	57.77	37.50	21.60
800	77.22	43.32	24.49	2800	57.17	37.30	21.52
850	75.56	42.83	24.24	3000	56.62	37.14	21.44
900	74.09	42.39	24.03	3500	56.08	36.98	21.36

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-17 Typical Photographs

R-17 Single Family Residence



CLASS R-17: SINGLE FAMILY RESIDENCE

ABOVE STANDARD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1 ROOF – Wood frame, medium pitch, wood sheathing, above standard quality composition shingles or equivalent.</p> <p>2 FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3 BASEMENT – None</p> <p>4 STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, above standard quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, above standard quality ceramic tile or equivalent wainscoting in bath.</p> <p>5 FLOORS – Frame, wood joists, adequate for span and load. Subfloor with above standard quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6 HEATING – None</p> | <p>7 PLUMBING – Two three - fixture, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8 LIGHTING – Above average number and quality fixtures and outlets.</p> <p>9 BUILT-INS / APPLIANCES – One above standard quality range and oven.</p> <p>10 FIREPLACE – None</p> <p>11 ATTIC - Unfinished</p> <p>12 PORCHES AND DECKS – None</p> <p>13 GARAGES – None</p> <p>14 OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	82.47	44.48	1000	86.03	50.03	28.44
250	-	74.35	40.48	1100	83.58	49.31	28.05
300	-	68.97	37.80	1200	81.53	48.68	27.75
350	-	65.10	35.89	1300	79.82	48.18	27.50
400	-	62.21	34.46	1400	78.33	47.71	27.28
450	-	59.94	33.33	1600	75.93	46.99	26.92
500	-	58.15	32.44	1800	74.05	46.44	26.64
550	-	56.68	31.72	2000	72.53	46.00	26.42
600	-	55.44	31.12	2200	71.32	45.61	26.23
650	-	54.39	30.59	2400	70.13	45.31	26.09
700	-	53.51	30.15	2600	69.44	45.06	25.95
750	-	52.74	29.76	2800	68.69	44.84	25.84
800	92.80	52.07	29.43	3000	68.03	44.65	25.76
850	90.81	51.47	29.13	3500	66.76	44.26	25.57
900	89.04	50.94	28.88	4000	66.13	44.06	25.47
950	87.47	50.47	28.63				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-18 Typical Photographs

R-18 Single Family Residence



CLASS R-18: SINGLE FAMILY RESIDENCE

GOOD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|---|
| <p>1 ROOF – Wood frame, medium pitch, wood sheathing, good quality composition shingles or equivalent.</p> <p>2 FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3 BASEMENT – None</p> <p>4 STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, good quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Good quality drywall or plaster on walls, partitions and ceilings. Hardwood doors and trims. Ample number of closets and kitchen cabinets, good quality ceramic tile or equivalent wainscoting in bath.</p> <p>5 FLOORS – Frame, wood joists, more than span and load. Subfloor with good quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6 HEATING – None</p> | <p>7 PLUMBING – Two three - fixture, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8 LIGHTING – Ample quantity of good quality fixtures and outlets.</p> <p>9 BUILT-INS / APPLIANCES – One good quality range and oven.</p> <p>10 FIREPLACE – None</p> <p>11 ATTIC - Unfinished</p> <p>12 PORCHES AND DECKS – None</p> <p>13 GARAGES – None</p> <p>14 OTHER ITEMS – None</p> |
|--|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	101.82	54.92	1000	106.25	61.79	35.11
250	-	91.82	49.97	1100	103.21	60.88	34.66
300	-	85.14	46.68	1200	100.69	60.12	34.26
350	-	80.37	44.32	1300	98.55	59.49	33.95
400	-	76.79	42.53	1400	96.71	58.92	33.69
450	-	74.04	41.17	1600	93.75	58.04	33.24
500	-	71.79	40.06	1800	91.42	57.33	32.90
550	-	69.97	39.15	2000	89.58	56.79	32.61
600	-	68.47	38.41	2200	88.07	56.34	32.39
650	-	67.19	37.79	2400	86.79	55.94	32.22
700	-	66.08	37.22	2600	85.71	55.63	32.05
750	-	65.12	36.76	2800	84.80	55.34	31.90
800	-	64.29	36.34	3000	84.01	55.12	31.79
850	-	63.55	35.97	3500	82.42	54.63	31.56
900	-	62.90	35.65	4000	81.22	54.29	31.39
950	-	62.30	35.37				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-19 Typical Photographs

R-19 Single Family Residence



CLASS R-19: SINGLE FAMILY RESIDENCE

HIGH QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1 ROOF – Wood frame, medium pitch, wood sheathing, high quality composition shingles or equivalent.</p> <p>2 FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3 BASEMENT – None</p> <p>4 STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, high quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – High quality drywall or plaster on walls, partitions and ceilings. Hardwood doors and trims. Ample number of closets and kitchen cabinets. High quality ceramic tile or equivalent wainscoting in bath.</p> <p>5 FLOORS – Frame, wood joists, adequate for span and load. Subfloor with high quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6 HEATING – None</p> | <p>7 PLUMBING – Two three - fixture, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8 LIGHTING – Substantial quantity of high quality fixtures and outlets.</p> <p>9 BUILT-INS / APPLIANCES – One high quality range and oven.</p> <p>10 FIREPLACE – None</p> <p>11 ATTIC - Unfinished</p> <p>12 PORCHES AND DECKS – None</p> <p>13 GARAGES – None</p> <p>14 OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	124.48	67.16	1100	-	74.41	42.37
250	-	112.25	61.09	1200	-	73.49	41.90
300	-	104.08	57.06	1300	-	72.69	41.51
350	-	98.25	54.16	1400	118.23	72.04	41.19
400	-	93.89	52.00	1600	114.59	70.95	40.62
450	-	90.49	50.31	1800	111.75	70.09	40.21
500	-	87.76	48.97	2000	109.50	69.41	39.88
550	-	85.54	47.88	2200	107.63	68.84	39.65
600	-	83.68	46.96	2400	106.09	68.40	39.38
650	-	82.11	46.16	2600	104.79	67.98	39.17
700	-	80.78	45.51	2800	103.72	67.66	39.03
750	-	79.50	44.92	3000	102.69	67.36	38.88
800	-	78.58	44.42	3500	100.76	66.80	38.58
850	-	77.70	43.97	4000	99.31	66.36	38.37
900	-	76.90	43.59	4500	98.16	66.00	38.20
950	-	76.19	43.23	5000	97.22	65.71	38.05
1000	-	75.54	42.90				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-20 Typical Photographs

R-20 Single Family Residence



CLASS R-20: SINGLE FAMILY RESIDENCE

SUPERIOR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1 ROOF – Wood frame, medium pitch, wood sheathing, superior quality composition shingles or equivalent.</p> <p>2 FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3 BASEMENT – None</p> <p>4 STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, superior quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Superior quality drywall or plaster on walls, partitions and ceilings. Hardwood doors and trims. Ample number of superior closets and kitchen cabinets, superior quality ceramic tile or equivalent wainscoting.</p> <p>5 FLOORS – Frame, wood joists more than adequate span and load. Subfloor with superior quality finish of hardwood, carpet, tile or equivalent.</p> | <p>6 HEATING – None</p> <p>7 PLUMBING – Two three - fixture, and one half fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8 LIGHTING – Substantial quantity of superior quality fixtures and outlets.</p> <p>9 BUILT-INS / APPLIANCES – One superior quality range and oven.</p> <p>10 FIREPLACE – None</p> <p>11 ATTIC - Unfinished</p> <p>12 PORCHES AND DECKS – None</p> <p>13 GARAGES – None</p> <p>14 OTHER ITEMS – None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
	\$	\$	\$		\$	\$	\$
200	-	165.73	89.41	1200	-	97.84	55.78
250	-	149.45	81.33	1300	-	96.78	55.27
300	-	138.57	75.96	1400	149.91	95.91	54.83
350	-	130.80	72.10	1600	145.30	94.45	54.09
400	-	125.00	69.22	1800	141.69	93.31	53.53
450	-	120.47	66.98	2000	138.84	92.40	53.10
500	-	116.84	65.20	2200	136.47	91.65	52.78
550	-	113.89	63.74	2400	134.52	91.06	52.43
600	-	111.40	62.52	2600	132.87	90.51	52.15
650	-	109.31	61.46	2800	131.52	90.08	51.96
700	-	107.54	60.59	3000	130.20	89.68	51.76
750	-	105.85	59.80	3500	127.76	88.93	51.37
800	-	104.62	59.13	4000	125.92	88.34	51.09
850	-	103.44	58.54	4500	124.46	87.87	50.85
900	-	102.38	58.03	5000	123.27	87.49	50.65
950	-	101.40	57.55				
1000	-	100.56	57.12				
1100	-	99.07	56.41				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-21 Typical Photographs

R-21 Single Family Residence



CLASS R-21: SINGLE FAMILY RESIDENCE
MANSSION QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|---|
| <p>1. ROOF – Wood frame, medium pitch, sheathing, excellent quality composition shingles, shakes or equivalent (i.e. –slate, copper, etc.)</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
 Exterior Walls – Masonry or wood frame and sheathing, excellent quality shingles, aluminum siding, brick, stone or equivalent with copper or equivalent gutters and downspouts.
 Interior Finish – Excellent quality hardwood or plaster on walls, partitions and ceilings. Custom Hardwood doors and trims. Ample number of closets and kitchen cabinets with superior hardware. Excellent quality marble, ceramic tile, or equivalent wainscoting.</p> <p>5. FLOORS – Frame, wood or steel joists, more than adequate for span and load. Subfloor with excellent quality finish of hardwood, carpet, terrazzo, slate, marble, tile, or equivalent.</p> | <p>6. HEATING – None</p> <p>7. PLUMBING – Two three – fixture baths and one half bath, kitchen sink, water heater, laundry- tub and one rough-in.</p> <p>8. LIGHTING – Substantial quantity of excellent quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – Excellent quality kitchen appliances.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES/CARRIAGE HOUSES – None</p> <p>14. OTHER ITEMS – None</p> |
|--|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
500	-	165.10	92.13	1800	191.11	131.85	75.64
550	-	160.92	90.07	2000	187.26	130.56	75.03
600	-	157.41	88.34	2200	184.07	129.51	74.58
650	-	154.46	86.84	2400	181.44	128.67	74.08
700	-	151.95	85.61	2600	179.21	127.89	73.69
750	-	149.56	84.50	2800	177.38	127.28	73.41
800	-	147.83	83.55	3000	175.61	126.72	73.14
850	-	146.16	82.72	3500	172.32	125.66	72.58
900	-	144.66	81.99	4000	169.84	124.83	72.19
950	-	143.38	81.32	4500	167.86	124.16	71.86
1000	-	142.09	80.71	5000	166.27	123.62	71.58
1100	-	139.98	79.71	5500	164.68	123.07	71.31
1200	-	138.25	78.82	6000	163.12	122.53	71.04
1300	-	136.75	78.09	6500	161.56	122.00	70.77
1400	202.20	135.52	77.48	7000	160.02	121.46	70.50
1600	195.97	133.46	76.42	7500	158.50	120.93	70.23

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-22 Typical Photographs

R-22 Single Family Residence



CLASS R-22: SINGLE FAMILY RESIDENCE

ESTATE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – Wood frame, medium to steep pitch sheathing, extraordinary quality composition shingles, shakes or equivalent (i.e. –slate, copper, etc.)</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Masonry or wood frame and sheathing, extraordinary quality shingles, aluminum siding, brick, stone or equivalent with copper or equivalent gutters and down-spouts.
Interior Finish – Extraordinary quality hardwood or plaster on walls, partitions and ceilings. Custom Hardwood doors and trims. Ample number of closets and kitchen cabinets with superior hardware. Extraordinary quality marble, ceramic tile, or equivalent wainscoting.</p> <p>5. FLOORS – Frame, wood or steel joists, more than adequate for span and load. Subfloor with extraordinary quality finished flooring of hardwood, carpet, terrazzo, slate, marble, tile, or equivalent.</p> | <p>6. HEATING – None</p> <p>7. PLUMBING – Two three – fixture baths and one half bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Substantial quantity of extraordinary quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – Extraordinary quality kitchen appliances.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES/CARRIAGE HOUSES – None</p> <p>14. OTHER ITEMS – None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
500	-	217.62	121.44	1800	240.95	173.79	99.71
550	-	212.11	118.72	2000	236.10	172.10	98.90
600	-	207.49	116.45	2200	232.07	170.70	98.31
650	-	203.60	114.46	2400	228.75	169.60	97.65
700	-	200.29	112.85	2600	225.94	168.57	97.14
750	-	197.13	111.38	2800	223.65	167.77	96.77
800	-	194.86	110.13	3000	221.41	167.03	96.40
850	-	192.66	109.03	3500	217.26	165.64	95.67
900	-	190.67	108.08	4000	214.13	164.54	95.15
950	-	188.99	107.19	4500	211.64	163.65	94.71
1000	-	187.30	106.39	5000	209.63	162.94	94.35
1100	-	184.51	105.07	5500	207.63	162.22	93.99
1200	-	182.23	103.89	6000	205.66	161.51	93.64
1300	-	180.25	102.94	6500	203.70	160.81	93.28
1400	254.93	178.63	102.13	7000	201.76	160.10	92.93
1600	247.08	175.92	100.73	7500	199.84	159.40	92.57

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-23 Typical Photographs

R-23 Single Family Residence



CLASS R-23: SINGLE FAMILY RESIDENCE

HIGHEST ESTATE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – W Wood frame, medium to steep pitch, sheathing, extraordinary quality composition shingles, shakes or equivalent (i.e. - slate, copper)</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Masonry or wood frame and sheathing, highest quality shingles, aluminum siding, brick, stone or equivalent with copper or equivalent gutters and down-spouts.
Interior Finish – Highest quality hardwood or plaster on walls, partitions and ceilings. Custom Hardwood doors and trims. Ample number of closets and kitchen cabinets with superior hardware. Highest quality marble, ceramic tile, or equivalent wainscoting.</p> <p>5. FLOORS – Frame, wood or steel joists, more than adequate for span and load. Subfloor with highest quality finished flooring of hardwood, carpet, terrazzo, slate, marble, tile, or equivalent.</p> | <p>6. HEATING – None</p> <p>7. PLUMBING – Two three – fixture baths and one half bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Substantial quantity of highest quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – Highest quality kitchen appliances.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES/CARRIAGE HOUSES – None</p> <p>14. OTHER ITEMS – None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
500	-	357.02	199.23	1800	334.25	285.11	163.57
550	-	347.99	194.77	2000	327.52	282.34	162.25
600	-	340.40	191.04	2200	321.94	280.05	161.29
650	-	334.01	187.78	2400	317.34	278.24	160.20
700	-	328.59	185.13	2600	313.44	276.56	159.36
750	-	323.41	182.73	2800	310.25	275.23	158.76
800	-	319.68	180.68	3000	307.15	274.03	158.15
850	-	316.07	178.87	3500	301.40	271.74	156.95
900	-	312.81	177.31	4000	297.06	269.93	156.11
950	-	310.05	175.86	4500	293.60	268.49	155.38
1000	-	307.27	174.53	5000	290.81	267.31	154.79
1100	-	302.70	172.37	5500	288.04	266.14	154.20
1200	-	298.96	170.44	6000	285.30	264.97	153.62
1300	-	295.71	168.87	6500	282.58	263.81	153.03
1400	353.65	293.06	167.55	7000	279.89	262.66	152.45
1600	342.76	288.60	165.26	7500	277.23	261.51	151.87

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-IV
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-V
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

R-27 Semi-Detached Residence

Class R-27 Typical Photographs



CLASS R-27: SEMI- DETACHED RESIDENCE

FAIR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, sheathing with fair quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry or stone, perimeter wall or wood piers.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, fair quality wood or composition sheathing, fair quality shingles, siding or equivalent.
Interior Finish – Fair quality drywall or wallboard on walls, partitions and ceilings.
Minimum number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, subfloor with fair quality wood finish or equivalent (i.e. – concrete slab on grade with fair quality finish).</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath.</p> <p>8. LIGHTING – Fair quality fixtures and minimum number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – Fair quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	75.36	39.74	22.26	800	45.54	28.78	16.12
300	62.10	34.86	19.53	900	44.41	28.38	15.88
400	55.46	32.43	18.18	1000	43.55	28.07	15.69
500	51.50	30.99	17.35	1200	42.20	27.58	15.45
600	48.83	30.00	16.80	1500	40.88	27.09	15.17
700	46.96	29.33	16.40				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-28 Typical Photographs

R-28 Semi-Detached Residence



CLASS R-28: SEMI - DETACHED RESIDENCE

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with average quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One and one half bath, one three fixture bath, and one two fixture bath, kitchen sink, water heater, laundry-tub and one rough-in.</p> <p>8. LIGHTING – Adequate number of average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One average quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
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BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	56.75	31.78	900	63.45	40.54	22.69
300	88.69	49.81	27.88	1000	62.19	40.08	22.42
400	79.23	46.34	25.95	1200	60.28	39.40	22.05
500	73.55	44.25	24.78	1500	58.38	38.69	21.68
600	69.77	42.87	23.98	2000	56.51	38.02	21.28
700	67.07	41.89	23.43	2500	55.37	37.59	21.04
800	65.04	41.12	23.03				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-29 Typical Photographs

R-29 Semi-Detached Residence



CLASS R-29: SEMI - DETACHED RESIDENCE

ABOVE AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, above average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, above average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with above average quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One and one half bath, one three fixture bath, and one two fixture bath, kitchen sink, water heater, laundry tub and one rough-in.</p> <p>8. LIGHTING – Adequate number of above average quality fixtures and minimum number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – Above average quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	76.62	42.90	900	85.65	54.73	30.65
300	-	67.25	37.65	1000	83.96	54.11	30.28
400	-	62.56	35.04	1200	81.38	53.19	29.76
500	99.29	59.73	33.44	1500	78.80	52.24	29.27
600	94.19	57.89	32.37	2000	76.28	51.32	28.74
700	90.53	56.54	31.63	2500	74.75	50.73	28.41
800	87.80	55.52	31.11				

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-30 Typical Photographs

R-30 Semi-Detached Residence



CLASS R-30: SEMI - DETACHED RESIDENCE

GOOD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, good quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, good quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Soft wood doors and trims. Adequate number of closets and kitchen cabinets.</p> <p>5. FLOORS – Frame, wood joists, more than adequate for span and load. Subfloor with good quality finished flooring of hardwood, softwood, carpet, vinyl or tile.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three fixture bath, and one two fixture bath, kitchen sink, water heater, laundry tub and one rough- in.</p> <p>8. LIGHTING – Adequate number of good quality fixtures and minimum number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – Good quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
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BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story	Upper Story	Half Story	Sq. Ft. Area	First Story	Upper Story	Half Story
200	-	103.44	57.92	900	115.63	73.88	41.38
300	-	90.79	50.83	1000	113.35	73.05	40.88
400	-	84.45	47.30	1200	109.87	71.81	40.17
500	134.04	80.64	45.15	1500	106.38	70.52	39.51
600	127.15	78.15	43.70	2000	102.98	69.28	38.81
700	122.22	76.33	42.70	2500	100.91	68.49	38.35
800	118.53	74.96	42.00	3000	99.50	67.99	38.06

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-33 Typical Photographs

R-33 Row / Townhouse Residence



CLASS R-33: ROW / TOWNHOUSE RESIDENCE

FAIR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, fair quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, fair quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, fair quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with fair quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three - fixture bath, per dwelling unit.</p> <p>8. LIGHTING – Fair quality fixtures and a minimum number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – Fair quality range and oven.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story \$	Upper Story \$	Sq. Ft. Area	First Story \$	Upper Story \$
300	56.66	27.24	1000	40.48	22.91
400	50.89	25.70	1100	39.86	22.76
500	47.42	24.75	1200	39.34	22.60
600	45.11	24.14	1400	38.51	22.39
700	43.45	23.68	1600	37.87	22.20
800	42.23	23.37	1800	37.40	22.08
900	41.24	23.12	2000	37.01	21.96

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-35 Typical Photographs

R-35 Row / Townhouse Residence



CLASS R-35: ROW / TOWNHOUSE RESIDENCE

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, average quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with average quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three - fixture bath, per dwelling unit</p> <p>8. LIGHTING – Adequate number of average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One average quality range and oven per dwelling unit.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story \$	Upper Story \$	Sq. Ft. Area	First Story \$	Upper Story \$
300	80.95	38.91	1200	56.20	32.28
400	72.69	36.70	1400	55.00	31.97
500	67.75	35.38	1600	54.11	31.72
600	64.43	34.49	1800	53.44	31.54
700	62.10	33.84	2000	52.88	31.39
800	60.31	33.38	2200	52.45	31.26
900	58.93	33.01	2400	52.05	31.17
1000	57.83	32.74	2600	51.75	31.08
1100	56.94	32.49			

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-37 Typical Photographs

R-37 Row / Townhouse Residence



CLASS R-37: ROW / TOWNHOUSE RESIDENCE

ABOVE AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, wood sheathing, above average quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, above average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, above average quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with above average quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three - fixture bath, kitchen sink, water heater, and laundry per dwelling unit.</p> <p>8. LIGHTING – More than adequate number of above average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One above average quality range and oven per dwelling unit.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story \$	Upper Story \$	Sq. Ft. Area	First Story \$	Upper Story \$
300	109.30	52.51	1400	74.26	43.15
400	98.12	49.54	1600	73.06	42.84
500	91.45	47.75	1800	72.14	42.56
600	86.97	46.56	2000	71.40	42.38
700	83.84	45.70	2200	70.82	42.20
800	81.41	45.67	2400	70.26	42.07
900	79.57	44.56	2600	69.87	41.95
1000	78.06	44.19	3000	69.19	41.77
1100	76.87	43.85	3400	68.64	41.64
1200	75.88	43.58			

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-39 Typical Photographs

R-39 Row / Townhouse Residence



CLASS R-39: ROW / TOWNHOUSE RESIDENCE

GOOD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – Wood frame, medium to steep pitch, wood sheathing, good quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter walls or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, good quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trims. Adequate number of closets and kitchen cabinets, good quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists, adequate for span and load. Subfloor with good quality finished flooring of hardwood, softwood, carpet, vinyl or tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three - fixture bath, kitchen sink, water heater, and laundry-tub per dwelling unit.</p> <p>8. LIGHTING – More than adequate number of good quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One good quality range and oven per dwelling unit.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	First Story \$	Upper Story \$	Sq. Ft. Area	First Story \$	Upper Story \$
300	147.55	70.89	1400	100.25	58.25
400	132.46	66.87	1600	98.63	57.83
500	123.46	64.47	1800	97.39	57.46
600	117.41	62.85	2000	96.39	57.21
700	113.18	61.69	2200	95.60	56.96
800	109.91	61.65	2400	94.86	56.80
900	107.42	60.16	2600	94.32	56.63
1000	105.39	59.66	3000	93.41	56.38
1100	103.77	59.20	3400	92.66	56.22
1200	102.44	58.83			

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-43 Typical Photographs

R-43 Two to Four Family Apartments



CLASS R-43: TWO TO FOUR FAMILY APARTMENTS

FAIR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Wood frame, medium pitch, sheathing with fair quality composition shingles.</p> <p>2. FOUNDATION – Masonry or stone, perimeter wall or wood piers.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, fair quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trim.
Adequate number of closets and kitchen cabinets in each apartment.</p> <p>5. FLOORS – Frame, wood joists adequate for span and load. Subfloor with fair quality finished flooring or hardwood, softwood, carpet, linoleum, tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath. per apartment.</p> <p>8. LIGHTING – Fair quality fixtures and minimum number of outlets.</p> <p>9. BUILT-INS / APPLIANCES – Fair quality range and oven per apartment.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	Number of Units	First Story	Upper Story	Sq. Ft. Area	Number of Units	First Story	Upper Story
800	2	59.98	33.72	2000	2	46.86	29.67
800	3	66.98	37.53	2000	3	52.33	33.14
800	4	72.26	40.54	2000	4	56.57	35.81
1000	2	55.59	32.37	2500	2	45.11	29.14
1000	3	62.10	36.05	2500	3	50.36	32.58
1000	4	67.04	38.94	2500	4	54.45	35.16
1200	2	52.70	31.48	3000	2	43.98	28.78
1200	3	58.84	34.52	3000	3	49.04	32.18
1200	4	63.54	37.90	3000	4	53.07	34.73
1400	2	50.61	30.83	3500	2	43.12	28.50
1400	3	56.51	34.40	3500	3	48.12	31.91
1400	4	61.05	37.16	3500	4	52.05	34.43
1600	2	49.04	30.34	4000	2	42.50	28.31
1600	3	54.79	33.87	4000	3	47.45	31.69
1600	4	59.18	36.58	4000	4	51.22	34.21
1800	2	47.85	29.97	4500	2	42.01	28.19
1800	3	53.40	33.44	4500	3	46.89	31.54
1800	4	57.73	36.15	4500	4	50.64	34.06

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-45 Typical Photographs

R-45 Two to Four Family Apartments



CLASS R-45: TWO TO FOUR FAMILY APARTMENTS

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – Wood frame, medium pitch, sheathing with average quality shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter wall or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Drywall or plaster on walls, partitions and ceilings. Softwood doors and trim.
Adequate number of closets and kitchen cabinets in each apartment.</p> <p>5. FLOORS – Frame, wood joists adequate for span and load. Subfloor with average quality finished flooring or hardwood, softwood, carpet, linoleum, tile, etc.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath. kitchen sink, water heater and laundry facilities per apartment.</p> <p>8. LIGHTING – Adequate number of average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One average quality range and oven per apartment.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	Number of Units	First Story	Upper Story	Sq. Ft. Area	Number of Units	First Story	Upper Story
800	2	85.65	48.18	2500	2	64.46	41.61
800	3	95.69	53.59	2500	3	71.95	46.53
800	4	103.25	57.89	2500	4	77.79	50.24
1000	2	79.42	46.25	3000	2	62.80	41.12
1000	3	88.72	51.50	3000	3	70.08	45.97
1000	4	95.75	55.65	3000	4	75.79	49.63
1200	2	75.27	44.96	3500	2	61.60	40.72
1200	3	84.05	50.12	3500	3	68.76	45.57
1200	4	90.78	54.14	3500	4	74.38	49.20
1400	2	72.29	44.04	4000	2	60.71	40.45
1400	3	80.74	49.14	4000	3	67.78	45.27
1400	4	87.22	53.07	4000	4	73.18	48.89
1600	2	70.05	43.36	4500	2	60.01	40.26
1600	3	78.25	48.40	4500	3	66.98	45.05
1600	4	84.54	52.27	4500	4	72.35	48.64
1800	2	68.33	42.81	5000	2	59.49	40.08
1800	3	76.28	47.78	5000	3	66.36	44.87
1800	4	82.46	51.65	5000	4	71.68	48.43
2000	2	66.95	42.38	6000	2	58.66	39.83
2000	3	74.75	47.35	6000	3	65.44	44.59
2000	4	80.80	51.13	6000	4	70.69	48.12

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

R-47 Two to Four Family Apartments

Class R-47 Typical Photographs



CLASS R-47: TWO TO FOUR FAMILY APARTMENTS

ABOVE AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium pitch, sheathing with above average quality shingles or equivalent (I.e. -low grade slate, etc.)</p> <p>2. FOUNDATION – Masonry perimeter wall or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, above average quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish –Above average quality drywall or plaster on walls, partitions and ceilings. Hardwood doors and trim. More than adequate number of closets and kitchen cabinets. Above average quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists more adequate for span and load. Subfloor with above average quality finished flooring or hardwood, softwood, carpet, tile or equivalent.</p> <p>6. HEATING – None</p> | <p>7. PLUMBING – One three – fixture bath, kitchen sink, water heater and laundry facilities per apartment.</p> <p>8. LIGHTING – More than adequate number of above average quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One above average quality range and oven per apartment.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	Number of Units	First Story	Upper Story	Sq. Ft. Area	Number of Units	First Story	Upper Story
800	2	115.62	65.04	3000	2	84.79	55.52
800	3	129.20	72.35	3000	3	94.62	62.06
800	4	139.39	78.16	3000	4	102.33	67.01
1000	2	107.21	62.43	3500	2	83.16	54.97
1000	3	119.77	69.53	3500	3	92.84	61.51
1000	4	129.26	75.12	3500	4	100.42	66.43
1200	2	101.62	60.68	4000	2	81.96	54.60
1200	3	113.47	67.65	4000	3	91.49	61.11
1200	4	122.56	73.09	4000	4	98.79	66.00
1400	2	97.60	59.45	4500	2	81.01	54.36
1400	3	108.99	66.33	4500	3	90.41	60.81
1400	4	117.74	71.65	4500	4	97.69	65.66
1600	2	94.56	58.53	5000	2	80.31	54.11
1600	3	105.64	65.35	5000	3	89.58	60.56
1600	4	114.15	70.57	5000	4	96.77	65.38
1800	2	92.25	57.80	6000	2	79.20	53.77
1800	3	102.97	64.49	6000	3	88.35	60.19
1800	4	111.32	69.74	6000	4	95.45	64.95
2000	2	90.38	57.21	7000	2	78.37	53.50
2000	3	100.91	63.94	7000	3	87.46	59.85
2000	4	109.08	69.04	7000	4	94.49	64.58
2500	2	87.03	56.17	8000	2	77.79	53.28
2500	3	97.14	62.80	8000	3	86.76	59.67
2500	4	105.03	67.84	8000	4	93.76	64.52

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section Cost Adjustment Factors: Brick 1.15, Stone 1.30
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

Class R-49 Typical Photographs

R-49 Two to Four Family Apartments



CLASS R-49: TWO TO FOUR FAMILY APARTMENTS

GOOD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Wood frame, medium to steep pitch, wood sheathing, good quality composition shingles or equivalent.</p> <p>2. FOUNDATION – Masonry perimeter wall or equivalent.</p> <p>3. BASEMENT – None</p> <p>4. STRUCTURE –
Exterior Walls – Wood frame, wood or composition sheathing, good quality shingles, aluminum siding or equivalent with gutters and downspouts.
Interior Finish – Good quality drywall or plaster on walls, partitions and ceilings. Hardwood doors and trim. More than adequate number of closets and kitchen cabinets. Good quality ceramic tile or equivalent wainscoting in bath.</p> <p>5. FLOORS – Frame, wood joists more adequate for span and load. Subfloor with good quality finished flooring or hardwood, softwood, carpet, tile or equivalent.</p> <p>6. HEATING - None</p> | <p>7. PLUMBING – One three – fixture bath, kitchen sink, water heater and laundry facilities per apartment.</p> <p>8. LIGHTING – More than adequate number of good quality fixtures and outlets.</p> <p>9. BUILT-INS / APPLIANCES – One good quality range and oven per apartment.</p> <p>10. FIREPLACE – None</p> <p>11. ATTIC - Unfinished</p> <p>12. PORCHES AND DECKS – None</p> <p>13. GARAGES – None</p> <p>14. OTHER ITEMS – None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	Number of Units	First Story	Upper Story	Sq. Ft. Area	Number of Units	First Story	Upper Story
800	2	141.06	79.35	3000	2	103.44	67.74
800	3	157.62	88.27	3000	3	115.43	75.72
800	4	170.06	95.35	3000	4	124.84	81.75
1000	2	130.79	76.17	3500	2	101.46	67.06
1000	3	146.12	84.82	3500	3	113.26	75.04
1000	4	157.70	91.64	3500	4	122.51	81.04
1200	2	123.98	74.03	4000	2	100.00	66.61
1200	3	138.44	82.54	4000	3	111.61	74.56
1200	4	149.53	89.17	4000	4	120.53	80.51
1400	2	119.07	72.53	4500	2	98.84	66.32
1400	3	132.97	80.93	4500	3	110.30	74.18
1400	4	143.65	87.41	4500	4	119.18	80.10
1600	2	115.36	71.41	5000	2	97.97	66.02
1600	3	128.88	79.73	5000	3	109.29	73.88
1600	4	139.26	86.10	5000	4	118.06	79.77
1800	2	112.55	70.51	6000	2	96.63	65.60
1800	3	125.62	78.68	6000	3	107.79	73.43
1800	4	135.81	85.09	6000	4	116.44	79.24
2000	2	110.26	69.80	7000	2	95.61	65.27
2000	3	123.11	78.00	7000	3	106.70	73.02
2000	4	133.08	84.22	7000	4	115.28	78.79
2500	2	106.18	68.53	8000	2	94.90	65.00
2500	3	118.51	76.62	8000	3	105.84	72.80
2500	4	128.13	82.76	8000	4	114.38	78.72

NOTE: Depreciation Schedules for Frame Wall Types – Section 150 Table D-III
 Depreciation Schedules for Masonry Wall Types – Section 150 Table D-IV
 For Cost Conversion Factors – See "R" Series Section 157
 Adjustments to base specifications – Section 142
 Cost Adjustment Factors: Brick 1.15, Stone 1.30

142. Residential Adjustments to Base Costs

This section contains the Residential R-Series Adjustments to Base Cost. As with the Base Costs these adjustments are as of October 2001 and a Cost Conversion Factor must be applied for any other Base Year.

Residential class factors may be applied to all classes of structures in the residential section and to the average grade costs in the residential adjustments section. The factors which apply are clearly indicated under each heading of the Adjustments Section and are repeated in tabular form here for comparison purposes and identification.

PROPERTY CLASS	Class R-12	Class R-13	Class R-14	Class R-15	Class R-16	Class R-17	Class R-18	Class R-19	Class R-20	Class R-21	Class R-22	Class R-23
				Class 27	Class 28	Class 29	Class 30					
				Class 33	Class 35	Class 37	Class 39					
				Class 43	Class 45	Class 47	Class 49					
PRINCIPAL BUILDING	0.51	0.70	0.84	0.91	1.00	1.14	1.35	1.62	1.90	2.08	2.28	2.51
ROOF	0.51	0.70	0.84	0.91	1.00	1.14	1.35	1.62	1.90	2.08	2.28	2.51
FOUNDATION	0.51	0.70	0.84	0.91	1.00	1.14	1.35	1.62	1.90	2.08	2.28	2.51
BASEMENT	0.76	0.85	0.93	0.97	1.00	1.15	1.32	1.44	1.54	1.68	1.85	2.04
BASEMENT FINISH	0.55	0.70	0.85	0.92	1.00	1.15	1.30	1.30	1.30	1.42	1.56	1.72
UNFINISHED AREAS	0.48	0.67	0.82	0.91	1.00	1.14	1.35	1.62	1.90	2.08	2.28	2.51
FULL BRICK	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.21	1.27	1.33
FULL STONE	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.37	1.43	1.50
FLOORS SLAB	0.82	0.82	0.82	0.91	1.00	1.14	1.35	1.62	1.95	2.13	2.34	2.58
HEATING/COOLING	0.69	0.82	0.95	1.00	1.00	1.12	1.15	1.30	1.49	1.63	1.79	1.97
PLUMBING	0.69	0.82	0.95	1.00	1.00	1.12	1.15	1.30	1.49	1.63	1.79	1.97
B.I. APPLIANCES	0.67	0.67	0.67	1.00	1.00	1.00	1.25	1.31	1.37	1.50	1.65	1.81
FIREPLACES	0.90	0.90	0.95	0.95	1.00	1.15	1.30	1.45	1.60	1.75	1.92	2.12
ATTIC FINISH	0.70	0.88	0.93	0.97	1.00	1.15	1.30	1.30	1.34	1.46	1.61	1.77
PORCHES / DECKS	0.55	0.70	0.85	0.92	1.00	1.15	1.30	1.30	1.30	1.42	1.56	1.72
SOLARIUMS	-	-	-	-	1.00	1.15	1.22	1.30	1.36	1.49	1.63	1.80
ADDITIONAL KITCHEN	-	-	-	-	1.00	1.12	1.25	1.31	1.37	1.50	1.65	1.81
GARAGES	0.52	0.66	0.85	0.93	1.00	1.13	1.24	1.39	1.58	1.73	1.90	2.09
CARPORTS/CANOPIES	0.59	0.78	0.92	0.96	1.00	1.06	1.10	1.13	1.19	1.30	1.43	1.57
SHEDS	0.56	0.78	0.78	0.89	1.00	1.20	1.20	1.45	1.45	1.58	1.74	1.92
SHED FINISH	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.45	1.45	1.58	1.74	1.92
SWIMMING POOLS	0.56	0.78	0.78	0.89	1.00	1.20	1.20	1.45	1.30	1.42	1.56	1.72
BULKHEADS / DOCKS	0.51	0.70	0.84	0.91	1.00	1.14	1.35	1.62	1.90	2.08	2.28	2.51
PAVING	0.70	0.70	0.85	1.00	1.00	1.00	1.15	1.30	1.00	1.09	1.20	1.32
SPECIAL EQUIPMENT	-	-	-	-	-	1.00	1.00	1.00	1.12	1.15	1.27	1.39

Since the unit cost of all residential classes are based on frame construction, to adjust for full brick or full stone, the factors for brick or stone must be applied to the base cost of the class structure.

REVISED 06/2002

**RESIDENTIAL BUILDINGS
ADJUSTMENTS TO BASE COSTS**

1. ROOF - Included in base specifications - no adjustments necessary.

2. FOUNDATION - Included in base specifications - no adjustments necessary.

3. BASEMENT - Base cost per square foot floor area.

Square Foot Area	3.01 Basement	3.02 Basement Finish
200	\$20.17	\$19.53
300	\$16.62	\$17.50
400	\$14.86	\$16.50
500	\$13.80	\$15.89
600	\$13.10	\$15.50
700	\$12.59	\$15.19
800	\$12.22	\$14.98
900	\$11.92	\$14.80
1000	\$11.68	\$14.68
1200	\$11.31	\$14.47
1400	\$11.07	\$14.35
1600	\$10.89	\$14.22
1800	\$10.74	\$14.13
2000	\$10.61	\$14.07
2500 & over	\$10.40	\$13.95

NOTE: Basement base cost average grade - multiply by class factor for adjustment.

NOTE: Basement finish base cost average grade - multiply by class factor for adjustment.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Unfin	0.76	0.85	0.93	0.97	1.00	1.15	1.32	1.44	1.54	1.68	1.85	2.04
Fin	0.55	0.70	0.85	0.92	1.00	1.15	1.30	1.30	1.30	1.42	1.56	1.72

* For building classes R-27 thru R-49, See Residential Specification pages

4. STRUCTURE

Unfinished Area - Base cost (deduct) per square foot floor area unfinished.

4.01 Unfinished Area

4.02 Unfinished Area (Based on square foot floor area below unfinished section)

Square Foot Area	4.01 Full Story	4.02 Half Story
200	11.10	7.40
300	9.10	6.07
400	8.10	5.40
500	7.50	5.00
600	7.10	4.73
700	6.81	4.54
800	6.60	4.40
900	6.43	4.29
1000	6.30	4.20
1200	6.10	4.07
1400	5.95	3.97
1600	5.85	3.90
2000	5.70	3.80
2500	5.58	3.72
3500 & over	5.44	3.63

Unfinished Areas - Base cost average grade - multiply by class factor for adjustment.

CLASS FACTOR*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.48	0.67	0.82	0.91	1	1.14	1.35	1.62	1.9	2.08	2.28	2.51

4.03 Partial Brick & 4.04 Partial Stone Base cost per square foot wall area.

Square Foot Area		Class											
		R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
100	Brick	7.43	8.29	9.15	10.01	10.87	11.73	12.59	13.45	14.31	15.17	16.03	17.15
	Stone	13.34	14.86	16.38	17.90	19.42	20.94	22.46	23.98	25.50	27.02	28.54	30.06
200	Brick	7.28	8.14	9.00	9.86	10.72	11.58	12.44	13.30	14.16	15.02	15.88	16.81
	Stone	13.19	14.71	16.23	17.75	19.27	20.79	22.31	23.83	25.35	26.87	28.39	29.91
400	Brick	7.13	7.98	8.83	9.68	10.53	11.38	12.23	13.08	13.93	14.78	15.63	16.48
	Stone	13.04	14.56	16.08	17.60	19.12	20.64	22.16	23.68	25.20	26.72	28.24	29.76
600	Brick	7.06	7.91	8.76	9.61	10.46	11.31	12.16	13.01	13.86	14.71	15.56	16.41
	Stone	12.96	14.48	16.00	17.52	19.04	20.56	22.08	23.60	25.12	26.64	28.16	29.68
800 & over	Brick	6.99	7.84	8.69	9.54	10.39	11.24	12.09	12.94	13.79	14.64	15.49	16.34
	Stone	12.89	14.41	15.93	17.45	18.97	20.49	22.01	23.53	25.05	26.57	28.09	29.61

* Factors for building classes R-27 thru R-49, See Residential Specification Pages.

4.05 CATHEDRAL CEILINGS

Factor to be applied to total finished square foot area base cost per level.
Typically, dwellings that are classified R-12 to R-15 will not contain a cathedral ceiling.

Square Foot Area of Cathedral Ceiling	Class	
	R-16 to R-19	R-19 to R-23
0-150 Square Feet	0.99	0.99
151 - 300 Square Feet	0.97	0.98
301 + Square Feet	0.94	0.96

5. FLOOR

5.01 Concrete Slab Floor -

Base cost per square foot area - deduct following costs.

	<u>Square Foot Area</u>							
	400	500	600	700	800	1200	1800	& over
Cost per square foot	\$3.82	\$3.28	\$2.91	\$2.67	\$2.49	\$2.03	\$1.73	

Concrete Slab Floors Factors - Multiply by class factor for adjustment.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.82	0.82	0.82	0.91	1	1.14	1.35	1.62	1.95	2.13	2.34	2.58

* Factors for building classes R-27 thru R-49, see Residential Specification pages

6. HEATING AND COOLING - Base cost per square foot floor area.

<u>Type</u>	<u>Square Foot Heated/Cooled</u>							
	400	600	800	1000	1200	1600	2000	2400
<u>6.01</u> Floor or wall furnace	3.43	2.85	2.58	2.40	2.27	2.15	2.06	2.00
<u>6.02</u> Gravity hot air	3.43	2.86	2.58	2.40	2.27	2.15	2.06	2.00
<u>6.03</u> Forced hot air	4.70	3.94	3.58	3.34	3.18	3.00	2.88	2.82
<u>6.04</u> Hot water baseboard	6.25	5.28	4.76	4.55	4.25	4.00	3.85	3.76
<u>6.05</u> Hot water or steam	7.58	6.31	5.70	5.31	5.06	4.73	4.55	4.43
<u>6.06</u> Electric baseboard	3.43	2.85	2.58	2.40	2.27	2.15	2.06	2.00
<u>6.07</u> Radiant electric	3.43	2.85	2.58	2.40	2.27	2.15	2.06	2.00
<u>6.08</u> Heat pump	10.83	8.31	7.04	6.28	5.76	5.16	4.76	4.52
<u>6.09</u> Central cooling system (Added to heating duct work)	6.22	4.46	3.58	3.03	2.67	2.24	1.97	1.79
<u>6.10</u> Central cooling system (with own duct work)	7.28	5.55	4.55	3.94	3.55	3.03	2.73	2.52

Heating/Cooling - Base cost - Average grade - Multiply by class factor for adjustment

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.69	0.82	0.95	1.00	1.00	1.12	1.15	1.30	1.49	1.63	1.79	1.97

* Factors for building classes R-27 thru R-49, see Residential Specification pages

7. PLUMBING - Base cost per fixture - and to or deduct from base specifications.

Type	Cost	Type	Cost
7.01 4 Fixture bath	\$3,185	7.11 Kitchen sink	\$805
7.02 3 Fixture bath	\$2,595	7.12 Laundry tub	\$635
7.03 2 Fixture bath	\$1,895	7.13 Water heater	\$750
7.04 Bathtub	\$1,110	7.14 Rough-in	\$380
7.05 Shower over tub	\$235	7.15 Floor drain	\$370
7.06 One piece fiberglass tub	\$1,315	7.16 Sump pump	\$420
7.07 Whirlpool bath	\$3,295	7.17 Hot tubs	
7.08 Stall shower with glass doors, tile base	\$1,245	Wood 6' diameter	\$4,890
7.09 Bidet	\$1,180	Fiberglass 8' diameter	\$6,600
7.10 Single fixture	\$910	7.18 Sauna - small	\$7,035
		7.19 Sauna - medium	\$10,560
		7.20 Sauna - large	\$19,070

Plumbing base cost - average grade - multiply by class factor for adjustment.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.69	0.82	0.95	1.00	1.00	1.12	1.15	1.30	1.49	1.63	1.79	1.97

*Factors for building classes R-27 thru R-49, see Residential Specification pages

8. ELECTRICAL - Included in base specifications - no adjustments necessary.

9. BUILT-INS/ APPLIANCES - Base cost per each.

Type	Cost	Type	Cost
9.01 Range top oven	\$1,700	9.08 Electronic oven	\$4,790
9.02 Drop-in range	\$1,455	9.09 Food center power unit	\$365
9.03 Dishwasher	\$1,335	9.10 Free standing range and oven	\$1,275
9.04 Garbage disposal	\$365	9.11 Extra kitchen unit	\$3,485
9.05 Exhaust hood and fan	\$365	9.12 Electronic garage door opener	\$460
9.06 Intercom system	\$970	9.13 Security system	\$1,350
9.07 Central vacuum system	\$1,700		

Built-ins/Appliances - Base cost is average grade - multiply factor for adjustment to specific grade.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.67	0.67	0.67	1.00	1.00	1.00	1.25	1.31	1.37	1.50	1.65	1.81

10. FIREPLACES - Base cost per unit

Type	Cost
<u>10.01</u> One-story stack	\$4,245
<u>10.02</u> One and one-half story stack	\$4,550
<u>10.03</u> Two story stack	\$4,850
<u>10.04</u> Second fireplace on same stack	\$1,605
<u>10.05</u> Free standing fireplace	\$3,505
<u>10.06</u> Heatilator and fan	\$605

Fireplace - Base cost - average grade - multiply by class factor for adjustment.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.90	0.90	0.95	0.95	1.00	1.15	1.30	1.45	1.60	1.75	1.92	2.12

* Factors for building classes R-27 thru R-49, See Residential Specification pages.

11. EXPANDED ATTIC & DORMERS (See Note)

11.01 Expanded Attic - Base cost per square foot floor area directly below.

<u>Area</u>	200	300	400	500	600	700
Cost per Sq. Ft.	14.71	12.74	11.68	11.07	10.61	10.31
<u>Area</u>	800	900	1000	1200	1600	2000 & over
Cost per Sq. Ft.	10.16	10.01	9.86	9.55	9.40	9.25

Dormers and Expanded Attic - Base cost - average grade, multiply by class factor for adjustment.

11.02 Dormers - Base cost per lineal foot.

Size	Up to 8'	9' to 19'	20' to 30'	Over 30'
Cost per Lineal Ft.	\$136	\$129	\$123	\$118

NOTE: If Attic or Dormer area is unfinished multiply above cost by 0.50.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.7	0.88	0.93	0.97	1	1.15	1.3	1.3	1.34	1.46	1.61	1.77

* Factors for building classes R-27 thru R-49, See Residential Specification pages.

12. PORCHES AND DECKS - Base cost per square foot floor area.

Type	Square Foot Area						
	20	40	60	80	100	200	500 & over
<u>12.01</u> Deck or patio	15.01	10.01	8.49	7.58	7.13	6.22	5.61
<u>12.02</u> Open porch	32.91	21.84	18.20	16.38	15.32	13.04	11.68
<u>12.03</u> Enclosed porch	81.13	54.14	45.04	40.49	37.91	32.45	29.27

Porches and Deck/Patios - Base cost - average grade multiply by class factor for adjustments.

12.04 Solariums \$140 per Sq. Ft., includes foundation and floor

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.55	0.70	0.85	0.92	1.00	1.15	1.30	1.30	1.30	1.42	1.56	1.72

13. GARAGE

Attached Garages and Carports/Canopies - Base cost per square foot floor area.

Type	Square Foot Area						
	200	300	400	500	600	700	800 and over
<u>13.01</u> Basement garage	12.28	9.86	8.64	7.89	7.43	6.98	6.82
<u>13.02</u> Attached garage	26.99	23.05	20.93	19.71	18.96	18.35	17.89
<u>13.03</u> Attached carport-canopy	7.89	6.98	6.52	6.22	6.07	5.91	5.76

CLASS FACTORS--GARAGES*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.52	0.66	0.85	0.93	1.00	1.13	1.24	1.39	1.58	1.73	1.90	2.09

Garages - Base cost are average grade - multiply by class factor for adjustment.

CLASS FACTORS--CARPORTS & CANOPIES*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.59	0.78	0.92	0.96	1.00	1.06	1.10	1.13	1.19	1.30	1.43	1.57

Carports/Canopies - Base cost are average grade - multiply by class factor for adjustment.

* Class factors for building classes R-27 thru R-49, see Building Class Spec sheet.

14. OTHER ITEMS

Detached Garages and Carports - Base cost per square foot floor area.

Type	Sq. Ft Area						
	200	300	400	500	600	700	800 & Over
14.01 Detached garage	31.39	26.23	23.66	22.14	21.08	20.47	19.86
14.02 Detached Carport/ canopy	9.25	8.19	7.73	7.43	7.13	6.98	6.82

Detached Garage - Base cost average grade - multiply by class factor for adjustments

CLASS FACTOR--DETACHED GARAGE*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.52	0.66	0.85	0.93	1	1.13	1.24	1.39	1.58	1.73	1.9	2.09

Brick Factor - 1.15

Stone Factor - 1.30

Detached Carport/ Canopy - base cost average grade - multiply by class factor for adjustment

CLASS FACTOR--DETACHED CARPORT/CANOPY*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.59	0.78	0.92	0.96	1	1.06	1.1	1.13	1.19	1.3	1.43	1.57

14.03 Shed Construction

Sq. Ft. Area	First Story	Second Story	Half Story	14.04 <u>Shed Finish</u>	
				Full Story Area	Half Story Area
80	26.99	13.04	8.95	27.60	18.50
100	24.57	11.83	8.04	24.57	16.53
120	22.90	11.07	7.58	22.59	15.16
140	21.84	10.46	7.13	21.08	14.10
160	20.93	10.01	6.82	20.02	13.34
180	20.17	9.70	6.67	19.11	12.74
200	19.71	9.40	6.52	18.50	12.28
300	18.05	8.64	5.91	16.38	10.92
400	17.14	8.19	5.61	15.32	10.31
600	16.38	7.89	5.46	14.41	9.55
800 & Over	15.92	7.73	5.31	13.80	9.33

Sheds and Shed Finish - Base cost per square foot floor area.

Sheds and Shed Finish - Base cost average grade - multiply by class factor for adjustment.

CLASS FACTORS*												
Class	R-12	R-13	R-14	R-15	R-16	R-17	R-18	R-19	R-20	R-21	R-22	R-23
Factor	0.56	0.78	0.78	0.89	1.00	1.20	1.20	1.45	1.45	1.58	1.74	1.92

NOTE - Shed finish can also be applied to detached garage when interior is finished.

* For building classes R-27 thru R-49, see building class spec sheet.

14. OTHER ITEMS (continued)

14.05 Swimming Pools - Base cost per square foot of surface area. Cost includes excavation, filter system, piping, coping and ladder.

Sq. Ft. Area	300	400	500	600	700	800 & over
Cost/Sq. Ft.	51.86	43.67	38.82	35.64	33.36	31.54

Swimming Pools - Base cost average quality - for differences in quality, multiply square foot cost by Quality Factor. Factors that affect Quality are type of construction, workmanship and/or shape of pool.

Quality	Low	Fair	Average	Good	High
Factor	0.6	0.75	1.00	1.30	1.90

14.06 & 14.07 Paving - Base cost per square foot pavement area.

	Type	Cost per Sq. Ft.
14.06	Concrete	\$3.18
14.07	Asphalt	\$2.12

15. SPECIAL EQUIPMENT

PASSENGER ELEVATOR--Two Levels

Capacity	750 Lbs.	1,000 Lbs.	1,500 Lbs.	Ea. Additional Level
15.01 Hydraulic	30,000	35,000	40,000	5,000
15.02 Electric	22,000	28,000	34,500	3,500

DUMBWAITER

	2-Levels	3-Levels
15.03 Hydraulic or electric, 75 to 100 lbs. Capacity	5,800	7,250

16. SPECIAL STRUCTURAL ELEMENTS

PILINGS

Add to items 16.01 & 16.02 a crane site set up fee of \$1150.

16.01 12" Concrete filled steel tube-----\$21.00 per lineal foot

NOTE: A typical piling is 30 ft. long.

16.02 10" to 12" (butt) treated wood piling-----\$12.50 per lineal foot

NOTE: A typical wood piling is 35 ft. long with a 8" tip and 10" to 12" butt.

MARINE BULKHEAD

	<u>Depth</u> 16 Ft.	<u>Depth</u> 20 Ft.
<u>16.03</u> Vinyl	\$375 per LF.	\$500 per LF.
<u>16.04</u> Wood	\$331 per LF.	\$441 per LF.

Typical width is 12 inches.

MARINE DOCKS / PIER*

16.05 Wood pilings with wood decking \$22 per Sq. Ft.

*Multiply by Class Factor for adjustment, See Residential Specification Pages.

143. Mobile Home Base Costs R-50 to R-54 and Adjustments to Base

This section includes the Base Costs and Adjustments to Base Costs for Mobile Home type dwellings. All costs are as of October 2001 and Cost Conversion Factors must be used for any other Base Year.

Class R-50 Typical Photographs

R-50 Mobile Home



CLASS R-50: MOBILE HOME

LOW QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. ROOF – Flat or low pitch with metal or composition roofing material of low quality.</p> <p>2. STRUCTURE – 6 1/2' to 7' high ceiling.</p> <p>Exterior Walls – Aluminum siding of light gauge and low quality on walls 2" to 3" thick.</p> <p>Interior Finish – Painted plywood, composition board or plywood panels of low quality. Softwood door and trim. Minimum number of closets and kitchen cabinets.</p> <p>3. DOOR AND WINDOWS - Low quality wood doors and minimum number of windows with small openings.</p> | <p>4. FLOORS - Floor joists with a plywood or particle board subfloor. Floor covering of low grade linoleum and/or carpeting.</p> <p>5. HEATING - Minimal forced hot air heating unit with straight-line ducts.</p> <p>6. PLUMBING - One low quality three fixture bathroom, small hot water heater and kitchen sink.</p> <p>7. LIGHTING - Minimal number of low quality fixtures and outlets.</p> <p>8. BUILT-INS/APPLIANCES - Low quality range and oven.</p> <p>9. OTHER ITEMS - None</p> |
|---|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	8'	10'	12'
150	53.11	-	-
200	47.65	-	-
250	44.39	-	-
300	42.18	43.69	-
350	40.65	42.12	-
400	39.48	40.95	34.41
450	-	40.06	32.94
500	-	39.33	31.77
550	-	38.71	30.82
600	-	38.25	29.99
650	-	37.79	29.35
700	-	37.48	28.80
750	-	37.15	28.27
800	-	-	27.81
850	-	-	27.45
900	-	-	27.11

NOTE: For Cost Conversion Factors, Table RR-1, See "R" Series, section 157
Adjustments to base specifications – this section

Class R-51 Typical Photographs

R-51 Mobile Home



CLASS R-51: MOBILE HOME
FAIR QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Flat or low pitch with metal or composition roofing material of fair quality.</p> <p>2. STRUCTURE – 7' to 7 1/2' high ceilings.</p> <p>Exterior Walls – Aluminum siding of light gauge and fair quality on walls 2" to 3" thick.</p> <p>Interior Finish – Painted plywood, composition board or plywood panels of fair quality. Softwood door and trim. Minimum number of closets and kitchen cabinets.</p> <p>3. DOOR AND WINDOWS - Fair quality wood or metal clad doors and adequate number of windows with small openings.</p> | <p>4. FLOORS - Floor joists with a plywood or particle board subfloor. Floor covering of fair grade linoleum and/or carpeting.</p> <p>5. HEATING - Standard forced hot air heating unit with straight-line ducts.</p> <p>6. PLUMBING - One fair grade three fixture bathroom, hot water heater and kitchen sink.</p> <p>7. LIGHTING - Minimal number of fair quality fixtures and outlets.</p> <p>8. BUILT-INS/APPLIANCES - Fair quality range and oven.</p> <p>9. OTHER ITEMS - None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	10 Feet	12 Feet	14 Feet
300	52.40	-	-
350	50.53	-	-
400	49.15	41.32	-
450	48.08	39.54	-
500	47.19	38.13	44.79
550	46.30	36.96	44.18
600	45.90	36.04	43.62
650	45.37	35.21	43.13
700	44.94	34.51	42.73
750	44.58	33.92	42.40
800	-	33.40	42.12
850	-	32.91	41.84
900	-	32.51	41.60
950	-	-	41.41
1000	-	-	41.20
1050	-	-	41.05
1100	-	-	40.89
1150	-	-	-
1200	-	-	-
1250	-	-	-
1300	-	-	-
1400	-	-	-
1500	-	-	-

NOTE: For Cost Conversion Factors, Table RR-1, See "R" Series, section 157
Adjustments to base specifications – this section

Class R-52 Typical Photographs

R-52 Mobile Home



CLASS R-52: MOBILE HOME

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Flat or gable with metal roof or shingles of average quality.</p> <p>2. STRUCTURE – 7' to 7 1/2' high ceilings.</p> <p>Exterior Walls – Enameled aluminum siding of medium gauge on insulated walls 3" to 4" thick. Double studding and headers over doors and large window openings.</p> <p>Interior Finish – Wood paneling of average quality on most interior walls. Softwood doors and trim. Adequate number of closets and kitchen cabinets.</p> <p>3. DOOR AND WINDOWS - Average grade metal clad doors and adequate fenestration.</p> | <p>4. FLOORS - Floor joists with a plywood or particle board subfloor. Floor covering of average grade seamless vinyl and carpeting.</p> <p>5. HEATING - Standard forced hot air heating unit with straightline or minimum branched ducting with adequate number of registers.</p> <p>6. PLUMBING - One average grade three fixture bathroom, hot water heater and kitchen sink.</p> <p>7. LIGHTING - Adequate number of average quality lighting fixtures and outlets.</p> <p>8. BUILT-INS/APPLIANCES - Average quality range and oven.</p> <p>9. OTHER ITEMS - None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	10 Feet	12 Feet	14 Feet	16 Feet	20 Feet	24 Feet	28 Feet
500	52.44	42.37	49.76	-	-	-	-
550	51.64	41.08	49.09	-	-	-	-
600	50.99	40.03	48.48	51.21	-	-	-
650	50.41	39.11	47.92	50.67	-	-	-
700	49.95	38.34	47.49	50.19	-	-	-
750	49.55	37.70	47.09	49.73	-	-	-
800	-	37.12	46.79	49.31	54.89	53.76	-
850	-	36.56	46.48	48.76	54.06	52.59	-
900	-	36.10	46.23	48.30	53.36	51.55	-
950	-	-	46.02	47.87	52.68	50.59	-
1000	-	-	45.77	47.54	52.25	49.76	-
1050	-	-	45.62	47.14	51.58	49.00	50.44
1100	-	-	45.44	46.81	51.08	48.32	49.43
1150	-	-	-	46.15	50.62	47.71	48.48
1200	-	-	-	45.52	50.23	47.09	47.65
1250	-	-	-	-	49.86	46.60	46.85
1300	-	-	-	-	49.55	46.08	46.17
1400	-	-	-	-	48.94	45.22	45.47
1500	-	-	-	-	48.35	44.48	44.33
1600	-	-	-	-	-	43.81	43.32
1700	-	-	-	-	-	43.23	42.43
1800	-	-	-	-	-	42.70	41.63
2000	-	-	-	-	-	-	39.73

NOTE: For Cost Conversion Factors, Table RR-1, See "R" Series, section 157
Adjustments to base specifications – this section

Class R-53 Typical Photographs

R-53 Mobile Home



CLASS R-53: MOBILE HOME

GOOD QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| <p>1. ROOF – Flat or gable roof with composition shingles of good quality.</p> <p>2. STRUCTURE – 7 1/2' to 8' high ceilings.
Living room may include cathedral type ceilings.</p> <p>Exterior Walls – Enameled aluminum siding of medium gauge on insulated walls 4" thick. Double studding and headers over doors and large window openings.</p> <p>Interior Finish – Wood paneling of good quality on most interior walls. Softwood doors and trim. More than adequate number of good quality closets and kitchen cabinets.</p> <p>3. DOOR AND WINDOWS - Good grade metal clad doors and adequate fenestration. Some bay, picture or louvered windows.</p> | <p>4. FLOORS - Floor joists with a plywood or particle board subfloor. Floor covering of good grade seamless vinyl and carpeting.</p> <p>5. HEATING - Standard forced hot air heating unit with large capacity ducts, cold air returns and branched ducting.</p> <p>6. PLUMBING - One good grade three fixture bathroom, hot water heater and kitchen sink.</p> <p>7. LIGHTING - Adequate number of good quality lighting fixtures and outlets.</p> <p>8. BUILT-INS/APPLIANCES - Good quality range and oven.</p> <p>9. OTHER ITEMS - None</p> |
|--|--|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	12 Feet	14 Feet	16 Feet	20 Feet	24 Feet	28 Feet
400	50.47	-	-	-	-	-
450	48.32	-	-	-	-	-
500	46.60	54.77	57.64	-	-	-
550	45.16	54.00	56.96	-	-	-
600	44.02	53.30	56.31	-	-	-
650	43.01	52.74	55.74	-	-	-
700	42.18	52.25	55.20	-	-	-
750	41.48	51.82	54.70	-	-	-
800	40.80	51.45	54.23	60.36	59.13	-
850	40.25	51.15	53.65	59.47	57.84	-
900	39.73	50.84	53.11	58.67	56.70	-
950	-	50.62	52.65	57.93	55.66	-
1000	-	50.38	52.31	57.47	54.77	55.47
1050	-	50.16	51.85	56.73	53.91	54.37
1100	-	49.98	51.50	56.21	53.14	53.33
1150	-	-	50.76	55.69	52.47	52.40
1200	-	-	50.08	55.26	51.82	52.10
1250	-	-	-	54.86	51.27	50.78
1300	-	-	-	54.49	50.69	50.01
1400	-	-	-	53.82	49.73	48.75
1500	-	-	-	53.20	48.94	47.65

NOTE: For Cost Conversion Factors, Table RR-1, See "R" Series, section 157

Adjustments to base specifications – this section

Class R-54 Typical Photographs

R-54 Mobile Home



CLASS R-54: MOBILE HOME

HIGHEST QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|---|
| <p>1. ROOF – Flat or gable roof with composition shingles of highest quality.</p> <p>2. STRUCTURE – 7 1/2' to 8' high ceilings. Living room, dining room and kitchen may include cathedral type ceilings.</p> <p>Exterior Walls – Enameled aluminum siding of heavy gauge on insulated walls 4" thick. Double studding and headers over doors and large window openings.</p> <p>Interior Finish – Wood paneling of simulated brick or stone paneling of high quality. Hardwood doors and trim. Substantial number of highest quality closets and kitchen cabinets.</p> <p>3. DOOR AND WINDOWS - Conventional home doors throughout. Selective use of bay, picture or louvered windows in living room, dining room and kitchen area.</p> | <p>4. FLOORS - Floor joists with plywood or particle board subfloor. Floor covering of heavy duty vinyl and highest quality carpeting.</p> <p>5. HEATING - Standard forced hot air heating unit with large capacity ducts, cold air returns and branched ducting.</p> <p>6. PLUMBING - One highest quality three fixture bathroom, hot water heater and kitchen sink.</p> <p>7. LIGHTING - Substantial number of highest quality lighting fixtures and outlets.</p> <p>8. BUILT-INS/APPLIANCES - Highest quality range and oven.</p> <p>9. OTHER ITEMS - None</p> |
|---|---|

BASE COST PER SQUARE FOOT FLOOR AREA

Sq. Ft. Area	14 Feet	16 Feet	20 Feet	24 Feet	28 Feet
600	58.15	-	-	-	-
650	57.53	62.59	-	-	-
700	57.01	61.97	68.25	-	-
750	56.52	61.33	66.99	-	-
800	56.15	60.75	65.85	-	-
850	55.78	59.90	64.84	-	-
900	55.44	59.17	64.04	61.86	-
950	55.23	58.50	63.21	60.72	-
1000	54.92	57.95	62.51	59.71	60.54
1050	54.74	57.44	61.89	58.79	59.31
1100	54.52	56.95	61.31	57.99	58.18
1150	-	56.57	60.76	57.22	57.41
1200	-	56.18	60.26	56.52	56.21
1250	-	-	59.83	55.90	55.38
1300	-	-	59.44	55.29	54.58
1400	-	-	58.70	54.28	53.20
1500	-	-	58.02	53.39	51.98
1600	-	-	-	52.56	50.90
1700	-	-	-	51.88	49.95
1800	-	-	-	51.27	49.12
2000	-	-	-	-	47.71

NOTE: For Cost Conversion Factors, Table RR-1, See "R" Series, section 157
Adjustments to Adjustments to base specifications – this section

MOBILE HOME ADJUSTMENTS

20. **PLUMBING** - Base cost per fixture - add to, or deduct from specifications.

		<u>LOW</u> <u>QUALITY</u>	<u>FAIR</u> <u>QUALITY</u>	<u>AVERAGE</u> <u>QUALITY</u>	<u>GOOD</u> <u>QUALITY</u>	<u>HIGH</u> <u>QUALITY</u>
20.1	4 Fixture	\$1003	\$1203	\$1338	\$1473	\$1605
20.2	3 Fixture	779	936	1040	1145	1249
20.3	2 Fixture	528	632	703	773	844
20.4	Single Fixture	338	402	448	494	537

21. **BUILT-INS / APPLIANCES**

		<u>LOW</u> <u>QUALITY</u>	<u>AVERAGE</u> <u>QUALITY</u>	<u>HIGH</u> <u>QUALITY</u>
21.1	Free standing range & oven	\$706	\$1010	\$1350
21.2	Drop-in range	635	908	1228
21.3	Oven	429	614	828
21.4	Counter top range	276	396	534
21.5	Microwave oven, built-in	669	954	1289
21.6	Exhaust hood, fan & light	224	319	429
21.7	Dishwasher	669	954	1289
21.8	Garbage disposal	168	242	328
21.9	Am-Fm Intercom	343	491	663
21.10	Trash Compactor	537	767	1037
21.11	Fireplace	1381	1974	2664

22. **OPTIONAL ITEMS (ALL COSTS PER SQUARE FOOT, EXCEPT AS NOTED)**

		<u>LOW</u> <u>QUALITY</u>	<u>AVERAGE</u> <u>QUALITY</u>	<u>HIGH</u> <u>QUALITY</u>
22.1	Patio covers	\$ 3.68	\$ 5.24	\$ 6.29
22.2	Carports	6.04	8.65	10.37
22.3	Storage sheds - wood	10.34	14.79	17.74
22.4	Storage sheds - metal	7.21	10.31	12.37
22.5	Screened porches	8.07	11.54	13.84
22.6	Enclosed porches	10.77	15.38	18.45
22.7	Redwood deck	4.85	6.90	8.28
22.8	Skirting - aluminum per lineal ft.	3.37	4.81	5.77
22.9	Skirting - vinyl per lineal ft.	3.13	4.48	5.37
22.10	Skirting - simulated stone per lineal ft.	4.60	6.56	7.88
22.11	Masonry foundation wall	7.06	7.98	9.36
22.12	Central Air Conditioning per square foot	1.65	2.40	2.76

144. Farm Building Specifications and Cost Section

This section of the New Jersey Real Property Appraisal Manual was revised in 1998 to include changes in construction techniques and building materials for farm buildings. Pre-engineered post and frame structures have replaced the traditional masonry and wood structures due to their cost effectiveness in construction. For the original traditional building costs, class 150 through class 156, no changes have been made to this section. Structures of this type, in most cases, will require significant functional and economic obsolescence, and if warranted, physical depreciation.

This section added includes replacement cost values using current construction material and methods for post and frame style buildings. These are the “PF” series which encompass categories 157 through 163. The post and frame cost tables and adjustment sections are based on local material and labor costs prevailing throughout New Jersey as of October 1998. Also, a section covering Greenhouses and/or Seed Starting Houses is included in this section. While historically these structures were addressed in the commercial portion of the Appraisal Manual, updated values are now provided for farm-based buildings. Square foot costs are current as of October 1998 and the cost conversion factor of F-2 is to be employed when appraising these building.

In the appraisal of farm buildings, the assessor must be familiar with all the recent legal and statutory rules governing the taxation of farm structures. Of particular concern in this area are the “single use” structures, which are exempt from taxation. N.J.S.A. 54:4-23.12 defines a single use agricultural or horticultural facility which is exempt from taxation. All other structures, whether used for agricultural or horticultural purposes, residential use or otherwise, must be valued, and taxed by the same standards applicable to all other taxable structures in the taxing district.

The Business Retention Act

P.L. 1992, c24, "The Business Retention Act", amends the description of local taxable property to reaffirm the Legislature's regularly stated position of excluding machinery, apparatus and equipment used or held for use in business from local taxation.

The law amends subsection b. of N.J.S.A. 54:4-1 to specify that items of machinery, apparatus or equipment used in the conduct of a business are defined as personal property regardless of the class or type of real property to which such items may be affixed. Such items are defined as locally taxable real property only if they constitute a structure, as defined in the law, or are primarily used to enable a structure to support, shelter, contain, enclose, or house persons or property. Examples of machinery, apparatus or equipment which enable a structure to house persons or property, and which are therefore locally taxable, include central heating or air conditioning systems, elevators, suspended ceilings, affixed partitions, plumbing and plumbing fixtures connected to a plumbing system, overhead lighting, sprinkler systems, piping and electric wiring up to the point of connection with a manufacturing process within the structure and a central hot water system or the boiler primarily used to supply it.

54:4 1.15 Definitions - Business Retention Act

"Machinery, apparatus or equipment" means any machine, device, mechanism, instrument, tool, tank, or item of tangible personal property used or held for use in business.

"Production process" means the process commencing with the introduction of raw materials or components into a systematic series of manufacturing, assembling, refining, or processing operations and ceasing when the product is in the form in which it will be sold to the ultimate consumer.

"Structure" means any assemblage of building or construction materials fixed in place for the primary purpose of supporting, sheltering, containing, enclosing, or housing persons or property.

"Used or held for use in business" means any item of machinery, apparatus or equipment used or held for use in a business transaction, activity or occupation conducted for profit in New Jersey.

54:4-23.12. Valuation, assessment, and taxation of structures

All structures, which are located on land in agricultural or horticultural use and the farmhouse and the land on which the farmhouse is located, together with the additional land used in connection therewith, shall be valued, assessed and taxed by the same standards, methods and procedures as other taxable structures and other land in the taxing district, regardless of the fact that the land is being valued, assessed and taxed pursuant to P.L.1964, c. 48 (C. 54:4-23.1 et seq.); provided, however, that the term "structures" shall not include "single-use agricultural or horticultural facilities." As used in this act, "single-use agricultural or horticultural facility" means property employed in farming operations and commonly used for either storage or growing, which is designed or constructed so as to be readily dismantled and is of a type which can be marketed or sold separately from the farmland and buildings and shall include, but not be limited to, temporary demountable plastic covered framework made up of portable parts with no permanent under-structures or related apparatus, commonly known as seed starting plastic greenhouses, or other readily dismantled silos, greenhouses, grain bins, manure handling equipment and impoundment's, but shall not include a structure that encloses a space within its walls used for housing, shelter, or working, office or sales space, whether or not removable.

The Director of the Division of Taxation shall adopt, in consultation with the Secretary of Agriculture and in accordance with the "Administrative Procedure Act," P.L.1968, c. 410 (C. 52:14B-1 et seq.), rules and regulations establishing criteria for the assessment of all farm structures.

In the valuation and assessment of farm structures the assessor shall consider those indications of value which such structures have under the same value applicable to all other real property. Assessors shall take into consideration the following criteria for the establishment of value:

Cost less depreciation: Based on the premise that the cost new of the structure is the highest possible value. Costs may include in addition to materials and labor, architect, engineering and permit fees, surveys, and site improvement costs. Deducted from the highest possible value are accrued depreciation, physical deterioration, and functional and economic obsolescence.

Alteration to existing structures: The cost of alterations or modernization to an existing farm structure does not necessarily add to building value. Where major alterations or modernization definitely increases or adds to the value of the farm structure, the percentage appreciation is determined by estimating the probable increase in sales value or the increase in remaining economic life of the building.

Specialized nature of building use: Farm structures are designed and built for specific production uses. Knowledge of building types, construction quality, useful life and utilization is important in determining value. Comparisons should be made with like structures.

Depreciation: The physical condition of agricultural buildings should be compared to the near perfect condition of similar new buildings, based on inspection of all components. A depreciation schedule for farm structures shall be used in the assessment of the physical condition of a building.

Obsolescence: This is loss of value due to internal or external deficiencies. Functional obsolescence is loss in value due to the inability of the structure to adequately perform the function it was intended for. Functional obsolescence would result if a building has limited contribution to a farming operation by being technologically obsolete, such as a dairy barn with 30 stall stanchions when today's standard is larger, free stall structures with milking parlors, or being unusable for the purpose for which it was built.

Economic obsolescence of a structure with a specialized agriculture use is loss in value as a result of impairment in utility and desirability caused by factors outside the properties boundaries. For example, dairy farming has generally been unprofitable for New Jersey Farmers, therefore farm structures design for milk production have limited value even though said structures are physically usable.

Municipal zoning: Ordinances or codes may limit the use of a farm structure to agricultural purposes. Consideration should be given to the permitted uses of a structure. The proximity of a farm structure to a farm dwelling shall also be considered since the valuation of both buildings may be adversely impacted.

CLASS 150 GENERAL PURPOSE BARNs

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Gambrel, Composition Shingle or Equivalent	5) Floors:	Part Concrete, Part Dirt, Hayloft with Wood Flooring
2) Foundations:	Masonry Walls or Equivalent	6) Plumbing:	Minimum Number of Outlets Water
3) Exterior Walls:	Wood Siding on Wood Frame, Concrete Block or equivalent	7) Lighting:	None
4) Interior Finish:	Stall Partitions, Feed Storage and Equipment Rooms	8) Other Items:	None

BASE COST PER CUBIC FOOT

<u>10,000</u>	<u>15,000</u>	<u>20,000</u>	<u>30,000</u>	<u>50,000</u>	<u>75,000</u>	<u>100,000</u>	<u>150,000</u>
\$0.45	\$0.40	\$0.35	\$0.35	\$0.35	\$0.30	\$0.30	\$0.30

For Low Quality, multiply by .75

For High Quality, multiply by 1.30

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 151 LIVESTOCK BARNES

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Gambrel, Wood Shingle or Equivalent	5) Floors:	Concrete Slab or Equivalent
2) Foundations:	Masonry Walls or Equivalent	6) Plumbing:	Adequate Number of Outlets Water
3) Exterior Walls:	Concrete Block, Wood Siding on Wood Frame or Equivalent	7) Lighting:	Conduit Wiring with Minimum Number of Fixtures
4) Interior Finish:	Stanchion and Stalls, Feed Room and Storage Rooms	8) Other Items:	None

BASE COST PER CUBIC FOOT

Without Loft

<u>10,000</u>	<u>15,000</u>	<u>20,000</u>	<u>30,000</u>	<u>50,000</u>	<u>75,000</u>	<u>100,000</u>	<u>150,000</u>
\$0.70	\$0.65	\$0.60	\$0.60	\$0.55	\$0.55	\$0.50	\$0.50

With Loft

<u>10,000</u>	<u>15,000</u>	<u>20,000</u>	<u>30,000</u>	<u>50,000</u>	<u>75,000</u>	<u>100,000</u>	<u>150,000</u>
\$1.10	\$1.00	\$0.95	\$0.90	\$0.85	\$0.80	\$0.80	\$0.75

For Low Quality, multiply by .70

For High Quality, multiply by 1.40

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 152 FARM SHED AND OUTBUILDINGS

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Shed Type, Composition Shingle or Equivalent	5) Floors:	Concrete Slab or Softwood
2) Foundations:	Masonry Walls or Equivalent	6) Plumbing:	None
3) Exterior Walls:	Wood Siding on Wood Frame, Concrete Block or equivalent	7) Lighting:	Conduit Wiring with Minimum Number of Fixtures
4) Interior Finish:	None	8) Other Items:	None

BASE COST PER SQUARE FOOT GROUND AREA

<u>100</u>	<u>150</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>1,000</u>	<u>2,000</u>	<u>3,000</u>
\$7.75	\$6.75	\$6.50	\$6.00	\$5.55	\$5.40	\$5.40	\$4.70

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 153 POLE BARN/EQUIPMENT SHEDS

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Shed Type, Metal or Aluminum on Wood Frame	5) Floors:	None
2) Foundations:	Creosoted Poles	6) Plumbing:	None
3) Exterior Walls:	Corrugated Metal or Aluminum on Wood Framing	7) Lighting:	Conduit Wiring with Minimum Number of Fixtures
4) Interior Finish:	None	8) Other Items:	None

BASE COST PER SQUARE FOOT GROUND AREA

<u>500</u>	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>	<u>2,500</u>	<u>3,000</u>	<u>3,500</u>	<u>4,000</u>	<u>5,000</u>
\$4.65	\$4.15	\$3.85	\$3.75	\$3.65	\$3.60	\$3.55	\$3.50	\$3.45

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 154 HORSE STABLES

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Shed Type, Average Quality Roofing	5) Floors:	Concrete Slab or Wood in Storage Rooms
2) Foundations:	Masonry Walls or Equivalent	6) Plumbing:	Water Outlets Only
3) Exterior Walls:	Stucco on Wall or Block, Wood Siding on Wood Frame, Concrete Block or Equivalent	7) Lighting:	Conduit Wiring with Minimum Number of Fixtures
4) Interior Finish:	Storage Rooms, Wood or Concrete Block Stall Partitions	8) Other Items:	None

BASE COST PER SQUARE FOOT GROUND AREA

<u>1,000</u>	<u>2,000</u>	<u>3,000</u>	<u>4,000</u>	<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>12,500</u>	<u>15,000</u>
\$9.85	\$8.75	\$8.25	\$7.90	\$7.75	\$7.60	\$7.50	\$7.20	\$7.00

For Low Quality, multiply by .55

For High Quality, multiply by 1.50

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 155 POULTRY HOUSES

AVERAGE QUALITY MATERIALS AND WORKMANSHIP

BASE SPECIFICATIONS

1) Roof:	Gable or Shed Type, Composition Shingle Roofing or Equivalent Insulated	5) Floors:	First Floor, Concrete Slab; Upper Floor, Wood
2) Foundations:	Masonry Walls or Equivalent	6) Plumbing:	Water Outlets Only
3) Exterior Walls:	Wood Siding on Wood Frame, Concrete Block or Equivalent	7) Lighting:	Conduit Wiring with Minimum Number of Fixtures
4) Interior Finish:	Minimum Partitioning	8) Other Items:	None

BASE COST PER SQUARE FOOT GROUND AREA

Number of Stories	<u>500</u>	<u>1,000</u>	<u>2,000</u>	<u>3,000</u>	<u>4,000</u>	<u>5,000</u>	<u>10,000</u>	<u>20,000</u>
1	\$7.80	\$7.25	\$6.45	\$6.15	\$6.00	\$5.90	\$5.60	\$5.50
2	\$15.20	\$13.65	\$12.95	\$11.70	\$11.40	\$11.20	\$10.65	\$10.45

For Low Quality, multiply by .70

For High Quality, multiply by 1.35

NOTES:

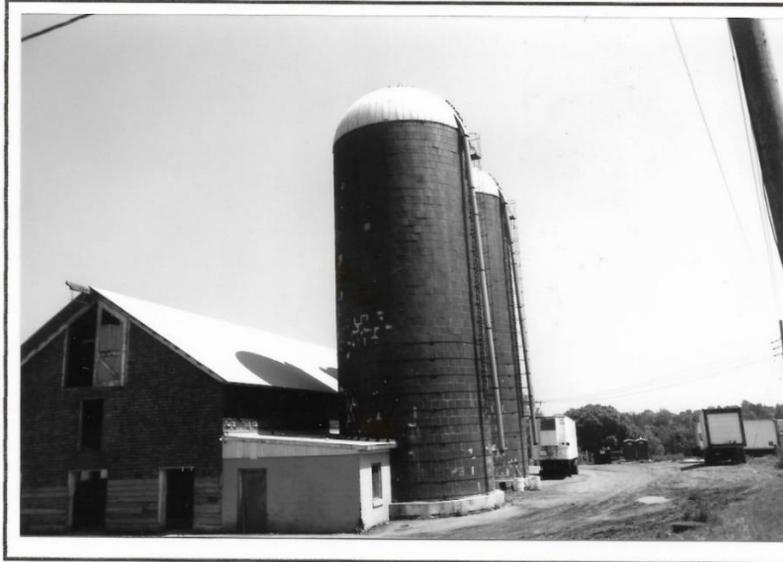
Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-1

Adjustments to Base Specifications: None

CLASS 156A FARM SILOS



AVERAGE QUALITY MATERIALS AND WORKMANSHIP

1) Roof:	None	5) Interior Finish:	None
2) Foundation:	Concrete Wall and Footing	6) Plumbing:	None
3) Exterior Walls:	Clay Tile or Poured in Place Concrete	7) Lighting:	None
4) Floors:	Concrete Slab or Equivalent	8) Other Items:	None

BASE COST

Base Height 28 Feet:

Diameter	10'	12'	14'	16'	18'	20'	22'	26'	30'	36'
Circumference	31'	38'	44'	50'	57'	63'	69'	82'	94'	113'
Wall type A	\$2,560	\$3,085	\$3,600	\$4,115	\$4,635	\$5,160	\$5,695	\$6,765	\$7,820	\$9,315

Add or Deduct for each 2' Variation in Height"

Wall type A	\$115	\$140	\$160	\$185	\$205	\$230	\$255	\$305	\$350	\$415
-------------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Additions:

Steel Roof	\$455	\$550	\$640	\$730	\$825	\$920	\$1,015	\$1,205	\$1,309	\$1,655
Add for Steel or Wood Chute per Foot -				\$7.50						
Tile per Foot -				\$8.50						
Add for Lining per Square Foot -				\$1.20						

Notes:

Depreciation Schedules all wall types - Section 150 Table D-III
 Cost Conversion Factors- Section 157 Table F-1
 Adjustments to Base Specifications: None

CLASS 156C FARM SILOS



AVERAGE QUALITY MATERIALS AND WORKMANSHIP

1) Roof:	None	5) Interior Finish:	None
2) Foundation:	Concrete Pad or Equivalent	6) Plumbing:	None
3) Exterior Walls:	Steel	7) Lighting:	None
4) Floors:	None	8) Other Items:	None

These structures are not assessable for Real Property Taxation Purposes.

These silos are not permanently affixed, they rest on concrete pads and can be easily removed without damage to the structure or to the real property. Under the guidelines of P.L. 1993, c.251 (S-15) these structures are exempted under the single purpose agricultural or horticultural use criteria. As such, they must be a single use; must be for storage or growing of an agricultural or horticultural commodity; designed or constructed so as to be readily dismantled; and can be marketed or sold separately from the farmland buildings.

CLASS PF 157 STALL BARN



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|---------------------|--|-----------------|------|
| 1) Roof: | Gable or Gambel, Average Quality Roofing, "Rigid" Insulation | 6) Floors: | None |
| 2) Foundation: | Treated Poles | 7) Plumbing: | None |
| 3) Exterior Walls: | Steel, Two (2) Sliding Doors | 8) Lighting: | None |
| 4) Interior Finish: | None | 9) Other Items: | None |
| 5) Height: | 9-10 Ft. | | |

BASE COST PER S/F

<u>1,000</u>	<u>2,500</u>	<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>15,000</u>
11.03	8.06	7.14	6.81	6.42	6.24

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 158 HORSE RIDING ARENAS



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|---------------------|--|-----------------|------|
| 1) Roof: | Gable or Gambrel, Average Quality Roofing, 1' "Rigid" Insulation | 6) Floors: | None |
| 2) Foundation: | Treated Poles | 7) Plumbing: | None |
| 3) Exterior Walls: | Steel, Two (2) Sliding Doors, One (1) Entry Door | 8) Lighting: | None |
| 4) Interior Finish: | None | 9) Other Items: | None |
| 5) Height: | 15 Ft. | | |

BASE COST PER S/F

<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>15,000</u>	<u>20,000</u>
7.52	7.11	7.13	7.23	6.92

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 159 HORSE TURN OUT SHEDS



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|---------------------|---|-----------------|------|
| 1) Roof: | Gable, Average Quality Roofing, No Insulation | 6) Floors: | None |
| 2) Foundation: | Treated Poles | 7) Plumbing: | None |
| 3) Exterior Walls: | Wood, One (1) Side Open | 8) Lighting: | None |
| 4) Interior Finish: | Wood Kick Board Liner - 5 Ft High | 9) Other Items: | None |
| 5) Height: | 9 Ft. | | |

BASE COST PER S/F

<u>144</u>	<u>288</u>	<u>432</u>	<u>576</u>	<u>720</u>
18.41	14.71	11.07	9.90	8.94

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

For Fully Enclosed Shed Add \$0.95/SF Wall Area

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 160 GENERAL PURPOSE/HAY BARNS



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

1) Roof:	Gable, Average Quality Roofing, Ridge Vent, Vented Overhang, No Insulation	5) Floors:	None
2) Foundation:	Treated Poles	6) Plumbing:	None
3) Exterior Walls:	Steel, One (1) Sliding Doors, One (1) Entry Door	7) Lighting:	None
4) Interior Finish:	None	8) Other Items:	None

BASE COST PER S/F

<u>SIDEWALL HT.</u>	<u>5.000</u>	<u>7.500</u>	<u>10.000</u>	<u>15.000</u>	<u>20.000</u>
16'	6.73	6.52	5.99	6.09	5.80
20'	7.58	7.25	6.65	6.72	6.39

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 161 LIVESTOCK BARN WITH STORAGE



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|---------------------|--|-----------------|------|
| 1) Roof: | Gambrel, Average Quality Roofing,
1' Rigid Insulation | 5) Floors: | None |
| 2) Foundation: | Treated Poles | 6) Plumbing: | None |
| 3) Exterior Walls: | Steel, Two (2) Sliding Doors,
One (1) Entry Door | 7) Lighting: | None |
| 4) Interior Finish: | None | 8) Other Items: | None |

BASE COST PER S/F

<u>SIDEWALL HT.</u>	<u>2,500</u>	<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>15,000</u>	<u>20,000</u>
10'	10.90	10.04	9.47	9.63	9.45	9.17
14'	12.26	11.20	10.59	10.62	10.40	10.08

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 162 POULTRY BARNs



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

1) Roof:	Gable, Average Quality Roofing, 1' Rigid Insulation	5) Floors:	None
2) Foundation:	Masonry & Treated Poles	6) Plumbing:	None
3) Exterior Walls:	Steel, Two (2) Sliding Doors, One (1) Entry Door	7) Lighting:	None
4) Interior Finish:	None	8) Other Items:	None

BASE COST PER S/F

<u>SIDEWALL HT.</u>	<u>2,500</u>	<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>15,000</u>	<u>20,000</u>
10'	8.19	7.12	6.94	7.07	7.18	6.91
14'	9.32	8.05	7.68	7.56	7.83	7.51

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS PF 163 POLE BARN



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

1) Roof:	Gable, Average Quality Roofing, No Insulation	5) Floors:	None
2) Foundation:	Treated Poles	6) Plumbing:	None
3) Exterior Walls:	Steel, One (1) Sliding Door, One (1) Entry Door	7) Lighting:	None
4) Interior Finish:	None	8) Other Items:	None

BASE COST PER S/F

<u>SIDEWALL HT.</u>	<u>1,000</u>	<u>2,500</u>	<u>5,000</u>	<u>7,500</u>	<u>10,000</u>	<u>15,000</u>	<u>20,000</u>
10'	8.65	6.85	5.88	5.75	5.78	5.91	5.68
14'	10.25	7.81	6.65	6.58	6.36	6.45	6.18

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

NOTES:

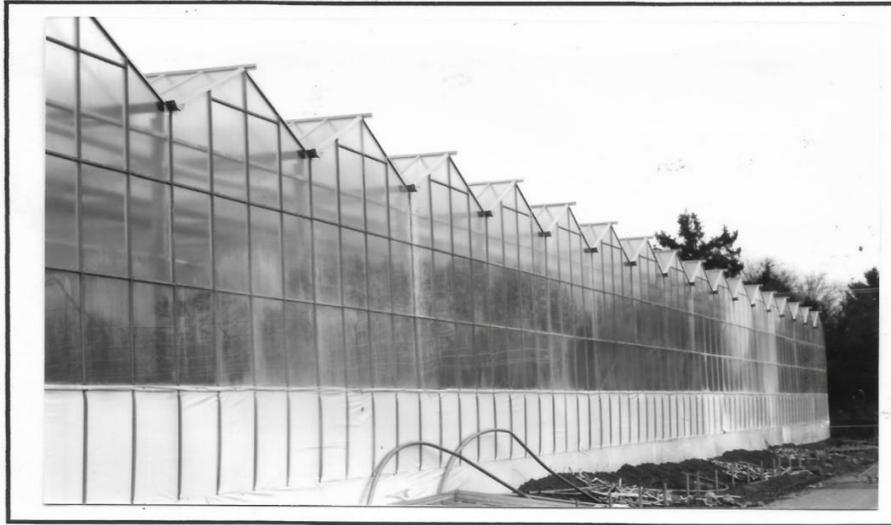
Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

Adjustments to Base Specifications: This Section

CLASS GH 164 GREEN HOUSES



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|----------------|---|--------------|------------------------------------|
| 1) Frame: | Steel with Glass Walls and Roof
Not Readily De-mountable | 4) Floors: | None |
| 2) Foundation: | Concrete/Masonry or Equivalent | 5) Plumbing: | Minimum Number of
Water Outlets |
| 3) Heating: | See GH164-02 Series | 6) Lighting: | Minimum Number of
Fixtures |

BASE COST PER S/F

<u>CLASS</u>	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>	<u>3,000</u>	<u>4,000</u>	<u>5,000</u>	<u>10,000</u>
GH164-01 (Unheated)	27.09	22.57	20.33	18.05	16.95	16.24	14.90
GH164-02 (Heated)	35.52	27.40	24.82	22.27	20.98	20.22	18.68

For Low Quality, multiply by .75

For High Quality, multiply by 1.25

ADJUSTMENTS TO BASE PER SQUARE FOOT OF FLOOR AREA

<u>ITEM</u>	<u>LOW</u>	<u>AVERAGE</u>	<u>HIGH</u>
Wood Flooring	2.60	5.07	7.78
Concrete Flooring	1.53	3.07	4.60
Crushed Stone (\$0.16/SF at 1 inch deep)	0.16	0.16	0.16

NOTES:

Depreciation Schedules - section 150

For High Quality - Table D-III, Average Quality - Table D-II, Low Quality Table D-I

Cost Conversion Factors- Section 157 Table F-2

CLASS GH 0000 TEMPORARY SEED/GREEN HOUSES



AVERAGE QUALITY MATERIALS AND WORKMANSHIP
BASE SPECIFICATIONS

- | | | | |
|----------------|---|------------|-----------------|
| 1) Frame: | De-Mountable Temporary Metal
or Wood Frame | 3) Floors: | None |
| 2) Foundation: | None | 4) Cover: | Plastic Covered |

These structures are not assessable for Real Property Taxation Purposes

Under Chapter 70 Laws of 1979 regarding seed starting plastic greenhouses and Chapter 251 Laws of 1993 pertaining to single purpose / use agriculture buildings, these buildings are not assessable locally. These protective coverings are designed or constructed to be readily dismantled. Included are the temporary de-mountable seed starting plastic greenhouses comprised of plastic covered framework of portable parts with no permanent under structures.

AGRICULTURAL ADJUSTMENTS TO BASE

*For Low Quality multiply cost by 0.75
For High Quality multiply cost by 1.25*

<u>ID CODE</u>	<u>DOORS</u>	<u>AVERAGE</u>
PF1	FULL DUTCH	\$569
PF2	HALF DUTCH	\$406
PF3	SLIDING	\$722
PF4	ENTRY	\$396
PF5	VENT	\$378
PF6	OVERHEAD	\$8.25/SF

<u>ID CODE</u>	<u>FLOORS</u>	<u>AVERAGE</u>
	CONCRETE	
PF7	4 inches REINFORCED	\$2.41/SF
PF8	6 inches REINFORCED	\$2.88/SF
PF9	STONE (per 1 inch deep)	\$0.16/SF

<u>ID CODE</u>	<u>WINDOWS</u>	<u>AVERAGE</u>
PF10	STANDARD	\$170
PF11	WITH BAR PROTECTION	\$265

<u>ID CODE</u>	<u>EQUESTRIAN EQUIPMENT</u>	<u>AVERAGE</u>
PF12	WASHROOM	\$1,233
PF13	TACK ROOM	\$1,492
PF14	FEED ROOM	\$1,492

NOTE: Cost based on an average size of 10 x 12

<u>ID CODE</u>	<u>EQUESTRIAN STALL</u>	<u>AVERAGE</u>
PF15	10 x 10	\$993
PF16	10 x 12	\$1,102
PF17	12 x 12	\$1,224
PF18	STIRRUP GUARDS	\$12.67/LF
PF19	SIDE WALL CURTAINS	\$5.30/SF

<u>ID CODE</u>	<u>LIGHTING</u>	<u>AVERAGE</u>
PF20	TRANSLUCENT PANEL	\$1.03/SF
PF21	WALL or CEILING	\$5.68/LF

<u>ID CODE</u>	<u>ELECTRICAL</u>	<u>AVERAGE</u>
PF22	Per Outlet	\$45
PF23	Service Panel	\$300 - \$700

<u>ID CODE</u>	<u>PLUMBING</u>	<u>AVERAGE</u>
PF24	COLD WATER TAP	\$780
PF25	COLD & HOT WATER TAP	\$1,260
PF26	FLOOR DRAIN	\$180
PF27	UTILITY TUB	\$225

<u>ID CODE</u>	<u>HEATING</u>	
PF28	SPACE HEAT, MINIMUM INDUSTRIAL UNIT HEATERS	\$0.50 - \$1.25 PER SF

<u>ID CODE</u>	<u>INSULATION</u>	<u>AVERAGE</u>
PF29	RIGID BOARD 1/2 inch	\$0.72/SF
PF30	FIBERGLASS	\$0.60/SF
PF31	9 inch FIBERGLASS STEEL	
PF32	INTERIOR CEILING	\$2.42/SF

<u>ID CODE</u>	<u>MISCELLANEOUS ITEMS</u>	<u>AVERAGE</u>
PF33	STORAGE LOFTS	\$3.05/SF
PF34	ROOF SHINGLES (standard 25 years)	\$1.05/SF
PF35	<u>DEDUCT FOR MISSING WALL</u> COST PER SF OF WALL AREA	\$0.95/SF

<u>ID CODE</u>	<u>EXTERIOR SIDING (Per SF of Wall Area)</u>	<u>AVERAGE</u>
PF36	T-111 SIDING or EQUIVALENT	\$0.90/SF
PF37	CEDAR SIDING or EQUIVALENT	\$2.26/SF
PF38	WHITE PINE SIDING or EQUIVALENT	\$1.75/SF

<u>ID CODE</u>	<u>INTERIOR OFFICE FINISH</u>	<u>AVERAGE</u>
PF39	AVERAGE QUALITY	\$11.99/SF

An introduction to estimating the replacement cost of an existing Livestock Barn, Class 151

The purpose of this demonstration appraisal is to review the cost valuation techniques applicable to the assessment of older type farm buildings that an assessor encounters in reassessment programs. The scope of this report is limited to the cost approach for building replacement value using the original type specifications provided in this handbook.

The steps in the cost approach to the building value are as follows:

-
- ◇ Estimate the replacement cost new of the improvements using the Class 151 cost specifications.
 - ◇ Estimate functional depreciation by comparing the replacement cost of the original building to the cost of the alternate structure derived through the PF 161 series buildings. The difference between the replacement cost and the substitution cost from the PF series building is the functional depreciation attributable to the dairy barn.
 - ◇ Deduct the functional depreciation from the new replacement cost calculated for the Class 151 building.
 - ◇ Estimate depreciation from all sources, physical, economic and deduct all accrued depreciation from the improvements to arrive at a present-day depreciated cost.
-

The first step listed above (Estimate Reproduction Cost New of the Improvements) is of major concern in this report. This cost is done in a detailed manner to promote an understanding of the Appraisal Manual and demonstrate its uniform application throughout New Jersey.

Class 151 includes all farm buildings having a structural frame of wood with exterior wall of wood and/or concrete block or wood on frame or equivalent. Buildings in this class have a masonry foundation or equal with a concrete slab as the floor.

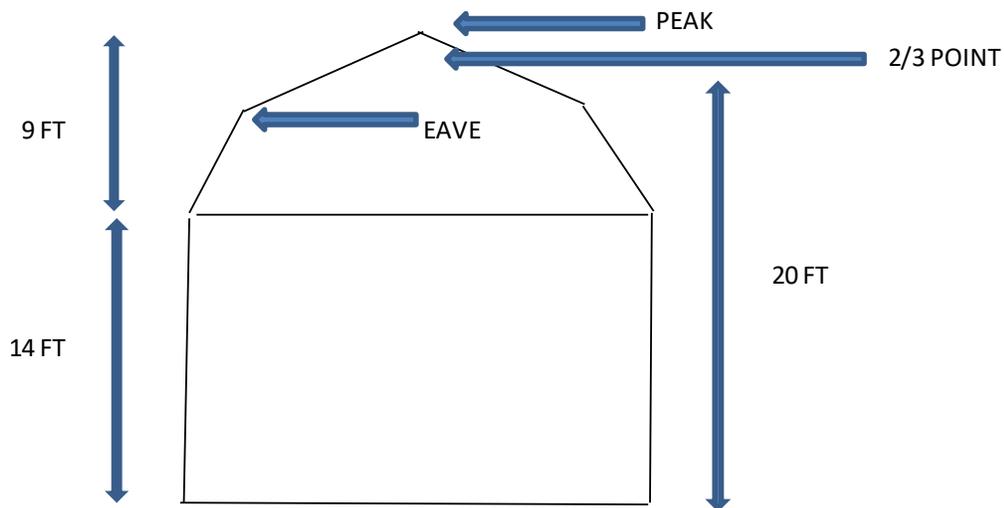
The base specifications for this demonstration of a Class 151 are found in the Farm Building Section of the Real Property Appraisal Manual.

For purposes of this demonstration the cost conversion factor of 4.79 for farm buildings series 150 through 156 is found on the 2012 cost conversion table.

Procedure for a Livestock Building Appraisal

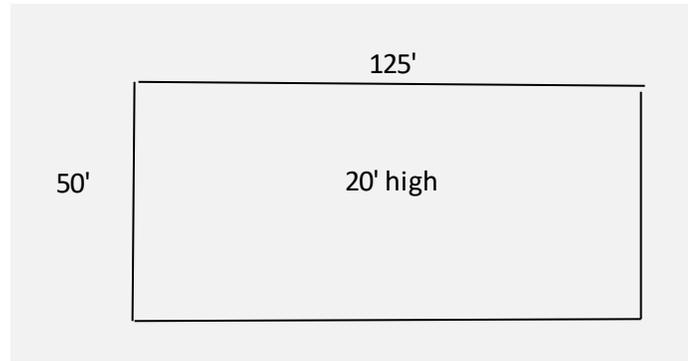
The base area replacement cost given for this Class 151 is determined in the following manner:

- 1) Measure and calculate the square footage of ground area.
- 2) Establish the standard height factor to be used. In this type of livestock barn with storage and a gambrel roof, the unit cost is based on cubic foot calculations with or without a loft. The building height is determined through the following procedure. The height component is calculated by adding the side wall elevation with two thirds (2/3) of the roof height from the eaves to the roof peak.



For the subject building the width of 50 X 125 of length = 6,250 square feet of floor area. Using a height factor of twenty (20) feet (14' (wall) + 6' (roof)) multiplied by the ground area results in a building volume of 125,000 cubic feet. Note: See step #5

- 3) Sketch the building dimensions using a floor view and noting the height profile. Clearly label all the dimensions to ensure accuracy in the area calculations.



- 3) In the note section of the property record card describe the structure, list the building materials, quality of construction, the year built, the observed physical condition and all relevant information that may affect its value.

NOTES:
Livestock Barn Wood Frame, Gambrel Roof, Wood Siding, Cement Floor, Unfinished Storage Loft 5 Water Outlets, Minimum Electric Built 1943, Normal Condition

5) Using the building dimensions derived from the example, calculate the building area, and apply the unit costs, quality factors and cost conversion factor to arrive at the RCN (Replacement Cost New) value of \$479,000. In this demonstration physical curable and incurable depreciation is estimated by using the AGE / LIFE method. The structure is 40 years old, in average condition and has a typical economic life of 60 years.

$$50' \times 125' \times 20' = 125,000 \text{ Cubic feet}$$

$$125,000 \times \$.80 = \$100,000$$

$$\$100,000 \times 4.79 \text{ (2012 CCF)} = \$479,000$$

$$40 \text{ years actual} \div 60 \text{ years economic} = 67\% \text{ physical depreciation}$$

$$\text{Replacement Cost New } (\$479,000) \times .67 = \$320,930 \text{ physical depreciation}$$

Replacement Cost New	\$479,000
Less physical depreciation	<u>- \$320,930</u>
RCNLD	\$158,070

6) Functional obsolescence in the subject property was extracted by comparing the cost new of a traditional 151 livestock barn to a PF series 161. As defined functional obsolescence is an element of accrued depreciation: a defect caused by a flaw in the structure, material, or design of the building. The subject building costs out new at \$479,000 in contrast to a PF series of \$86,099. This change in design, building techniques and construction materials reflects the 70% adjustment made for functional depreciation. As per the following example a basic PF 161 livestock barn of 50' X 125' was modified with the additions to base specifications to reflect current day replacement structure for the traditional class 151 building.

PF 161 cost (14 ft. high):	
Base Cost 6250 x \$10.59 =	\$66,187
Additions:	
4" Concrete Floor 625 x \$2.41 =	\$15,062
Plumbing Fixtures 5 x \$780 =	\$ 3,900
Lights and Outlets 10 x \$45 =	\$ 450
Electric Panel 1 x \$500	<u>\$ 500</u>
RCNLD	\$86,099
2012 Cost Conversion Factor	<u>x 1.65</u>
	\$142,063

Class 151 Reproduction cost new	\$479,000
Class PF 161 Replacement cost new	<u>- \$142,063</u>
	\$336,937

$$\$336,937 \div \$479,000 = 70\% \text{ functional obsolescence}$$

$$\text{RCNLD } \$158,070 \times .70 = \$110,649 \text{ Deduction for functional obsolescence}$$

7) In the subject demonstration a 15% adjustment was made for economic obsolescence. Economic obsolescence as defined is an element of accrued depreciation; an incurable defect caused by negative influences outside the property itself. When an Assessor can measure and justify an adjustment for loss in value due to external conditions, then a factor for economic obsolescence is warranted. For example, the decline in demand for dairy barns due to the general diminution of dairy farms in New Jersey was reflected in the above adjustment of economic obsolescence.

$$\$110,649 \times .85 = \$94,051.65 \text{ or } \$94,052 \text{ Final Cost Value}$$

145. Valuation of Green Buildings

Green buildings are buildings with high performance energy systems, create led of a carbon footprint, may be built using recycled materials and are environmentally friendly. They are often made using modular construction and utilize geothermal systems, solar panels, and the like. The Appraisal Institute has information on these buildings for valuation purposes.

A structure is rated green using the LEED point system and involves testing the equipment to verify that it is performing according to the design intent. Items that need to be commissioned include, HVAC, electrical. Plumbing and renewable energy. Design review is done at this time, particularly looking at exterior enclosures. The project must also have an operations and maintenance plan to keep the building running efficiently.

Interesting facts:

The Bullitt Centre, Seattle, Washington is one of the greatest commercial buildings in the entire world. It derives 100% of its power from renewable energy.

The Empire State Building, New York City, New York was renovated in 2011. \$550 million was put into the renovations, including all 6,514 of its glass windows, to make it greener. In 2011 it earned an LEED Gold Certification. Energy uses and expenses save about 4.4 million annually and within the next 10 years will reduce its carbon footprint by over 100,000 tons.

146. Billboard Specifications and Cost Section

This section contains the specifications and cost values for Billboard structures Class 201 to 207. These costs are based upon material and labor costs prevailing in New Jersey as of October 2005. Cost Conversion Factors for any year other than 2005, must be applied to convert to another Base Year. These factors are published yearly and are found on the Division of Taxation website at:

http://www.state.nj.us/treasury/taxation/lpt/building_replace_cost.shtml

REPORTING THE VALUE OF BILLBOARD STRUCTURES NJ PROPERTY TAX SYSTEM

Beginning with the 2005 Tax Year, billboards structures should be listed as separate line items on the tax list. The line item needs to be referenced to the same and block lot as the land on which the billboard structure is attached.

To facilitate the identification of billboards and record the value of the billboard structures, the NJ Property Tax System has added a qualification code to identify billboard structures. The new qualification code is:

3 characters	Alpha	Numeric
BNN	B	(NN) 0 through 99
		to accommodate more than one billboard structure on a Block and Lot

The three characters are mandatory in the Qualification Code.

For identification purposes, billboards should be identified by the block and lot numbers assigned to the land on which the billboard is located and the qualification code "B" followed by the numeric 01, 02, 03 etc.

Qualification Code for one billboard would be B01. The assessment is reported as an improvement value only.

(The qualification code "BNN" is to be added to each block and lot, in the same fashion as "QFARM" is used to identify qualified farmland).

Reporting billboard structures requires the assessor to: ESTABLISH A NEW LINE ITEM with the block and lot and the qualification code: "BNN".

Mandatory Field to Establish a New Line Item for a Billboard Structure:

Field Name	Field Description	Property
Identification	Block, Lot, and Qualification Code "BNN"	
Building Description	Construction Class from the Appraisal Manual	
Additional Lot	Name of Billboard Company and Permit Number	
Property Class	4A	
Owner	The billboard structure should be assessed to the owner of record * of the block and lot upon which it is located.	
Mailing Address		
City, State, Zip Code	* A billboard on exempt public property may be subject to assessment and treatment as a leasehold.	
Property Location	same as mother lot	
Land Value	"0" (zero)	
Improvement Value	Value of Billboard Structure	
Net Taxable Value	Value of Billboard Structure	

ASSESSMENT OF BILLBOARDS

BILLBOARDS ARE DEFINED AS REAL PROPERTY

The passing of Chapter 42, Public Laws of 2004 classifies billboards as real property, "An outdoor advertising sign, required to be permitted pursuant to the "Roadside Sign Control and Outdoor Advertising Act" PL 1991 C 413 (C.27:5-5 et seq), its other constituent parts, and the foundation, if any, to which the supporting structure is attached are deemed to be real property."

In accordance with the New Jersey Constitution, billboards, which are now defined as real property, are to be assessed at the "same standard of value" as all real property (constitutional exception of qualified farmland). Billboards may be taxable or exempt in accordance with preexisting state law.

BILLBOARDS VERSUS ON-PREMISE SIGNS

The key to determining if a billboard is assessable (*under C 42 PL 2004*) is whether the sign is subject to the permit process administered by the NJ Department of Transportation. While billboards are by definition "off-premise outdoor advertising signs" which advertise a business, product, or activity at another site or location, a billboard will occasionally provide advertisement for an on-site business or product. In contrast, an on-site sign is not required to have a permit issued by the NJ Department of Transportation and the sign always advertises a business or activity occurring on the same site or location as the sign. Off-site advertising structures are required to have a permit issued by the New Jersey Department of Transportation. A record of outdoor advertising permits is available from the Outdoor Advertising Section, Department of Transportation.

AN INTRODUCTION TO BILLBOARDS

An outdoor advertising sign in the form of a billboard consists of at least one display panel (face) and supporting framework. Billboards may be freestanding, mounted to buildings, or attached to other structures. Billboards are either static display or digital display. Modern billboards conform to engineering standards and are constructed of steel, while older billboard structures are made of wood or angle iron frames. A billboard may be smaller than the permitted size. This allows for the legal addition of a cutout or extension within the square foot envelope of the permitted area. Billboards vary in display position and size, but the industry standard display faces include:

Static Display

12 feet x 25 feet	(300 SF)	14 feet X 48 feet	(672 SF)
10.5 feet X 36 feet	(378 SF)	16 feet X 60 feet	(960 SF)
12 feet X 40 feet	(480 SF)	20 feet X 50 feet	(1,000 SF)

Digital Display

10 feet x 21 feet (viewable)	(210 SF)
10 feet x 36 feet (viewable)	(360 SF)
12 feet x 42 feet (viewable)	(504 SF)
13 feet x 47 feet (viewable)	(611 SF)

For both static and digital displays, typical arrangements of display faces include: single face, back-to-back or V-build, side-by-side, stacked, and tri-build configurations.

Billboard companies enter into sales contracts for advertising space on their billboards. Advertisements are designed and/or produced by a billboard company or an advertising agency in response to client specifications. Advertising space is often marketed for a group of billboards rather than for a single billboard. Group sales are called "showings." Showings are based on demographic information and are designed to target a market with a specified level of advertising exposure. The advertising client has no interest in the real property. Billboard sites are typically leased from an unrelated third party who owns the land or structure to which the billboard is affixed. The owner of the site generally has no interest in the billboard structure. A billboard site, the land or structure upon which a billboard is situated, is generally limited to an area large enough to accommodate the billboard structure, foundation and provide for service and maintenance. The "line of sight" is a consideration in viewing a billboard location.

VALUING BILLBOARD STRUCTURES

As with the appraisal of other real property for local property tax purposes, the three accepted approaches to value (income, sales comparison, and replacement cost less depreciation) are applicable to the valuation of billboard structures.

The market or sales comparison approach requires verifiable accurate sales information of individual billboards. Outdoor advertising structures are generally sold in bulk and the transfers include ongoing concern and host agreements. These transfers typically are not recorded on filed deeds; therefore, it may be difficult to obtain information on the sale of billboards. When information becomes available, an allocation of the sales price for billboard structures may be necessary.

The income approach requires net operating income/economic rent to be capitalized into a value for a specific property. While the rental income from a ground lease may be capitalized into a value, the income realized from the sale of advertising space is business income that is subject to other taxes in New Jersey. If the income approach is used, economic rent must be applied. Therefore, careful consideration and accurate income analysis must be made or the income approach will not yield reliable results.

The cost approach provides an efficient methodology to uniformly value billboard structures. The replacement cost less depreciation avoids the complicated allocation process and other issues associated with the income and market approaches. The cost approach may be applied uniformly and it is suitable for computer assisted mass appraisal (CAMA) applications. The data contained in this manual is based on information extracted from material costs, labor, and other integral components of billboard construction. Digital displays have a much shorter life than static displays, having an effective life of eight (8) years. Digital displays suffer from early physical deterioration as display clarity and brightness diminish, requiring replacement after eight years of operation. Effective age depreciation tables are provided to assist assessors in estimating loss in value due to age, elements and wear affecting the value of outdoor advertising signs.

LIMITING CONDITIONS WHEN VALUING BILLBOARDS

The total assessed value for an improved property in New Jersey is displayed as two components: a land assessment and an improvement assessment. The legislation that determined that billboards are real property placed a limiting condition on valuation of a billboard site. If the site is already classified as qualified farmland, the value must remain as qualified farmland. In order to have uniform reporting of billboard values, all billboard improvement values will be reported separately from the land (site) value.

Location must be considered in assessing billboard sites. The impact of location on the income that a particular billboard location generates may be considered. This impact results from the "traffic count" or "exposure" that a particular location provides. Although a higher traffic count has little to do with the value of a billboard structure, the location may impact on land value. In assessing billboard property, any value attributable to location must be assigned to the land and not to the billboard improvement.

The billboard permit required by Department of Transportation is an intangible asset that is necessary for the beneficial and productive use of billboard property. However, this use permit is an intangible asset, which is not assessable as real property. Any value attributable to the use permit and sale of advertising should not be included in the assessed value of the billboard property.

DEFINING AND CLASSIFYING BILLBOARD STRUCTURES FOR ASSESSMENT PURPOSES

For assessment purposes, billboards are grouped into five structural categories based on the building materials used and the underlying support system. The five categories include wood, steel frame, multi-mast steel, monopole, and building/roof mount.

At a minimum each billboard includes the following:

CLASS 201 WOOD STRUCTURE

This class of billboards is constructed with wood post or pole supports with dimensional lumber as the secondary support (A frame) with a wood or metal catwalk and a single display panel. Supports may be imbedded in the ground. There may be a foundation of concrete or gravel. Lighting, if present, is either fluorescent or mercury vapor.

CLASS 202 STEEL A-FRAME STRUCTURE

This class of billboards is constructed with angle iron or steel supports with metal framing, catwalk, and a single display panel. Supports may be imbedded in the ground. There may be a foundation of concrete or gravel. Lighting, if present, is either fluorescent or mercury vapor.

CLASS 203 MULTI-MAST STRUCTURE

This class of billboards is constructed with steel pole, I beam or equivalent as primary support, with a catwalk, and a single display panel. Lighting is fluorescent or mercury vapor.

CLASS 204 MONOPOLE

This class of billboards is constructed with tubular steel support (of various circumferences), tubular steel framing, metal catwalk and a single display panel. The foundation is concrete. Lighting is fluorescent or mercury vapor.

CLASS 205 ROOF/FASCIA MOUNTED

This class of billboards is non-pole mounted. The display panel is mounted with roof and/or fascia mounting brackets. Lighting is fluorescent or mercury vapor.

CLASS 206 MONOPOLE DIGITAL

This class of billboards is constructed with tubular steel support (of various circumferences), tubular steel framing, metal catwalk and a single digital display panel. The foundation is concrete. Lighting is fluorescent or mercury vapor.

CLASS 207 ROOF/FASCIA MOUNTED DIGITAL

This class of billboards is non-pole mounted. The digital display panel is mounted with roof and/or fascia mounting brackets. Lighting is fluorescent or mercury vapor.

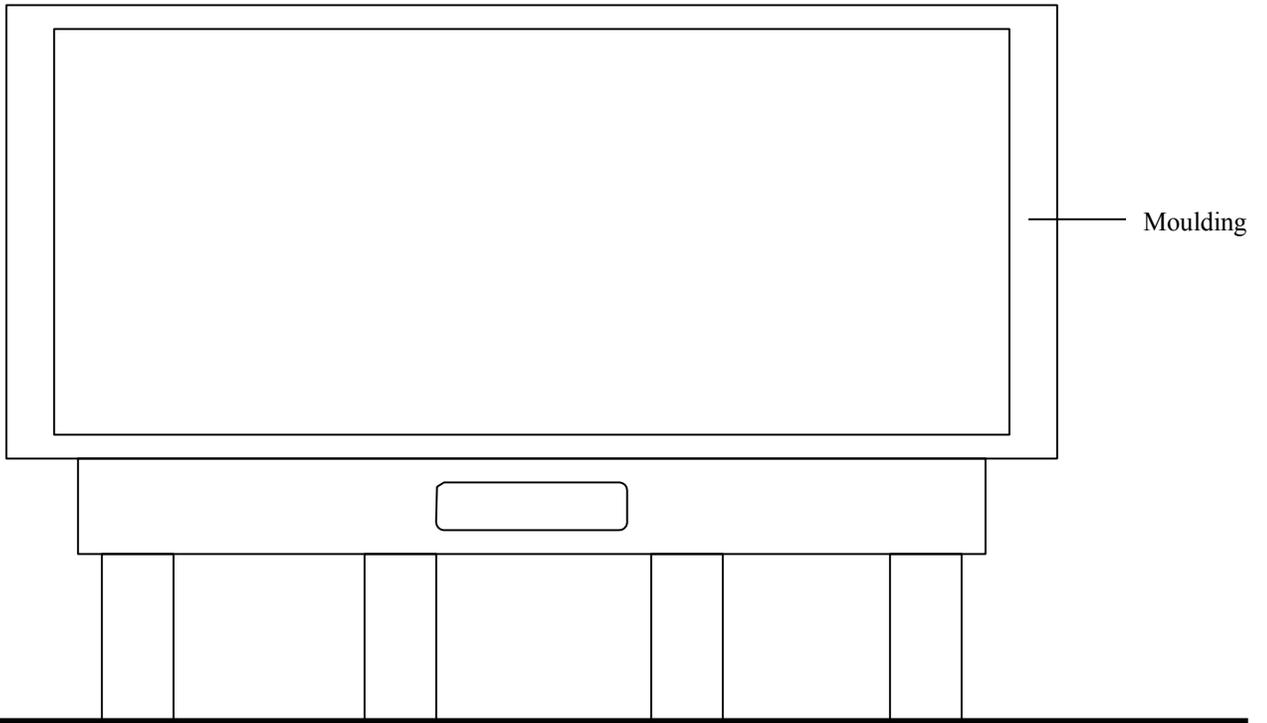
BILLBOARD DESIGNS AND CONSTRUCTION COSTS

The following pages * contain diagrams of various billboard designs, layouts and construction types along with base costs, photographs, class specifications, adjustments to base costs, and depreciation schedules. Also included are a sample data collection sheet and a cost calculation work sheet. The cost factors are based on information as of October 1, 2004 for use in the 2005 tax year. Municipalities with base years other than 2005 need to apply the Director's Ratio to adjust values to the date of their last reassessment or revaluation.

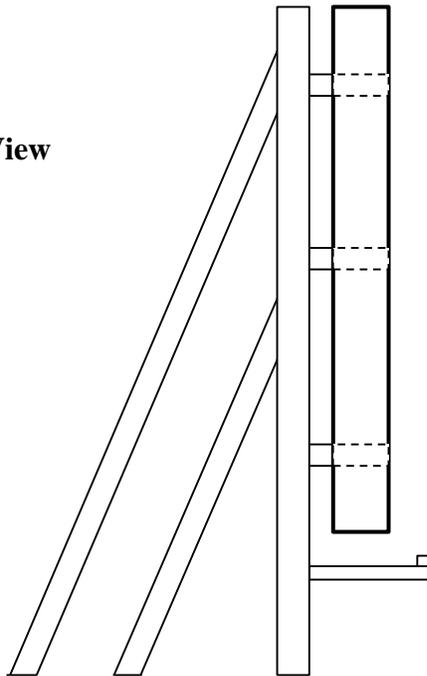
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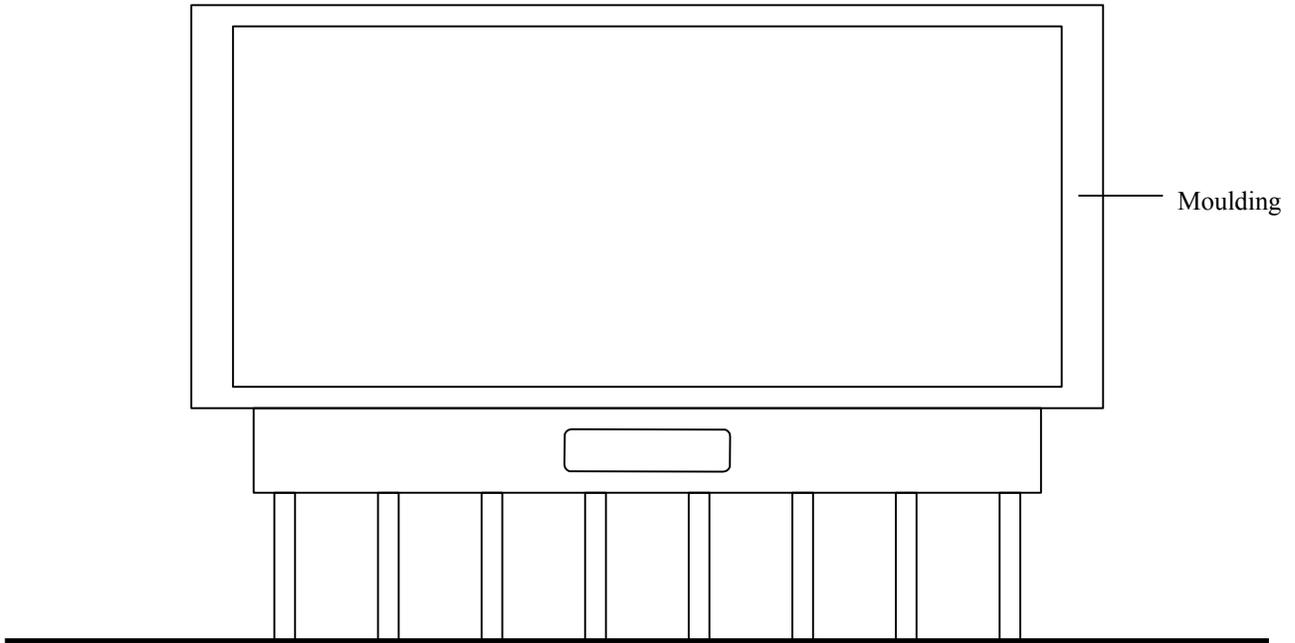
Illustrations of Wooden Billboards



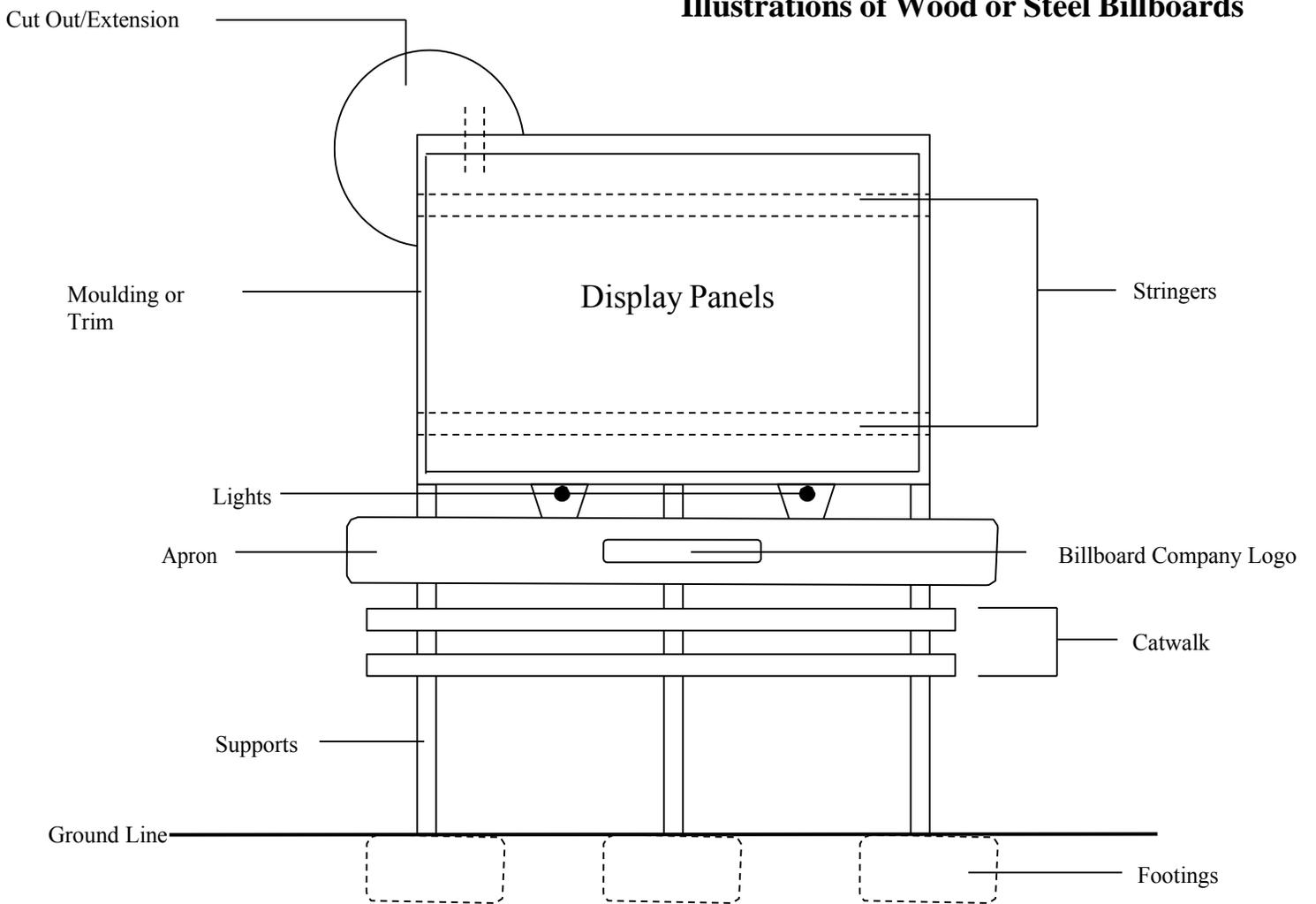
Wooden Billboard Side View



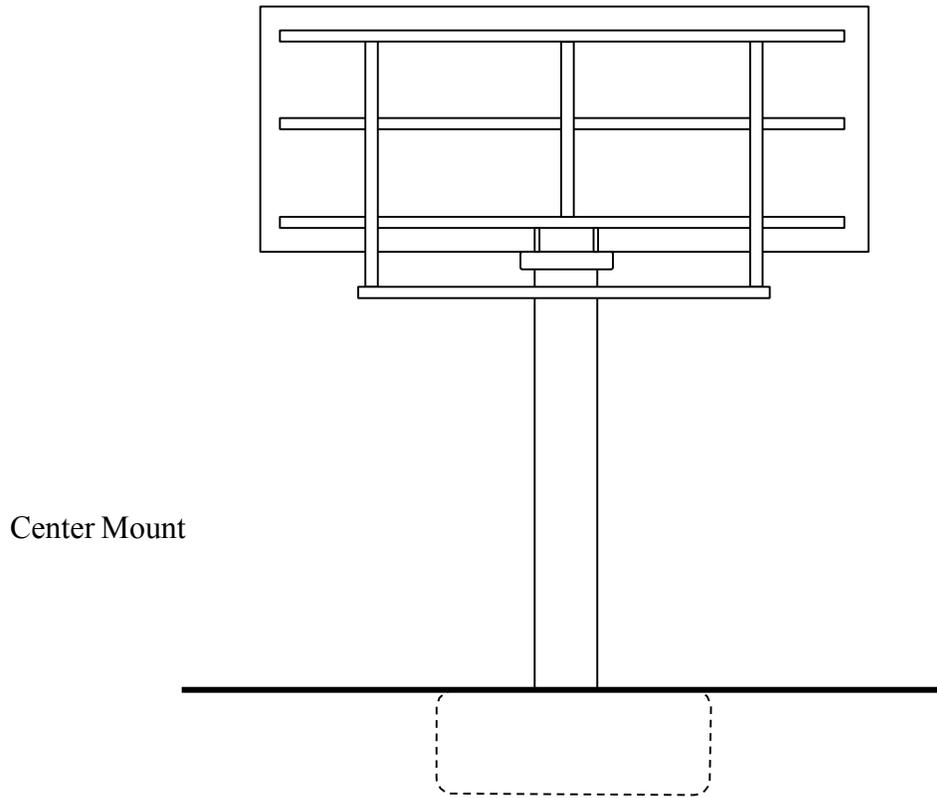
Illustrations of Steel Billboard



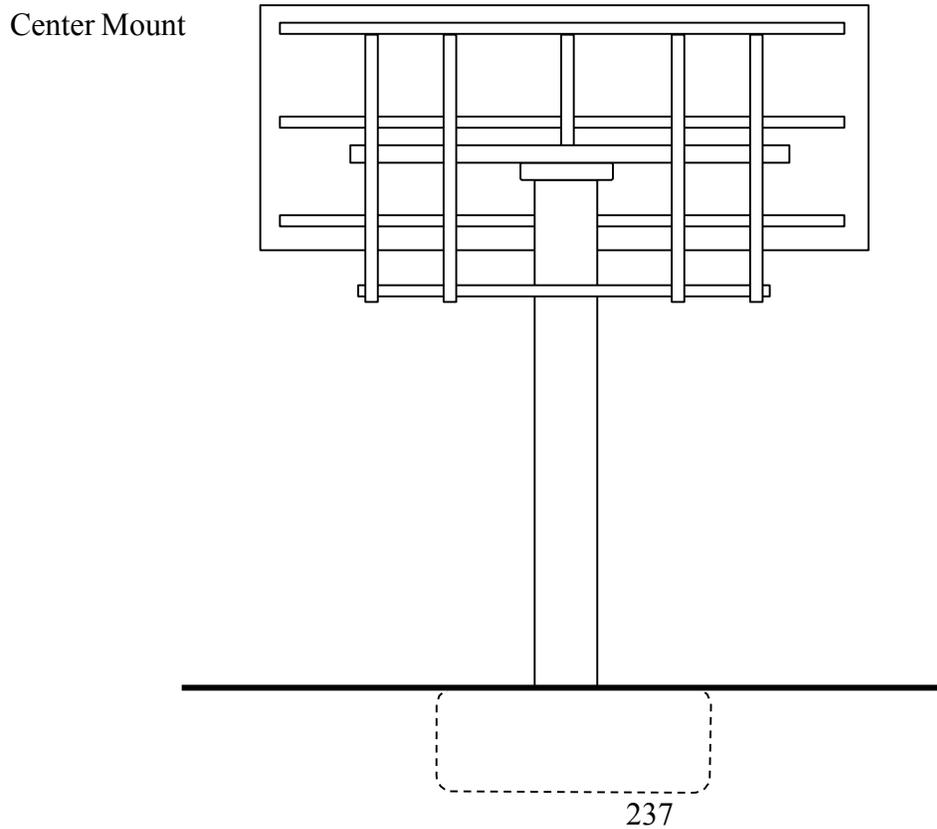
Illustrations of Wood or Steel Billboards



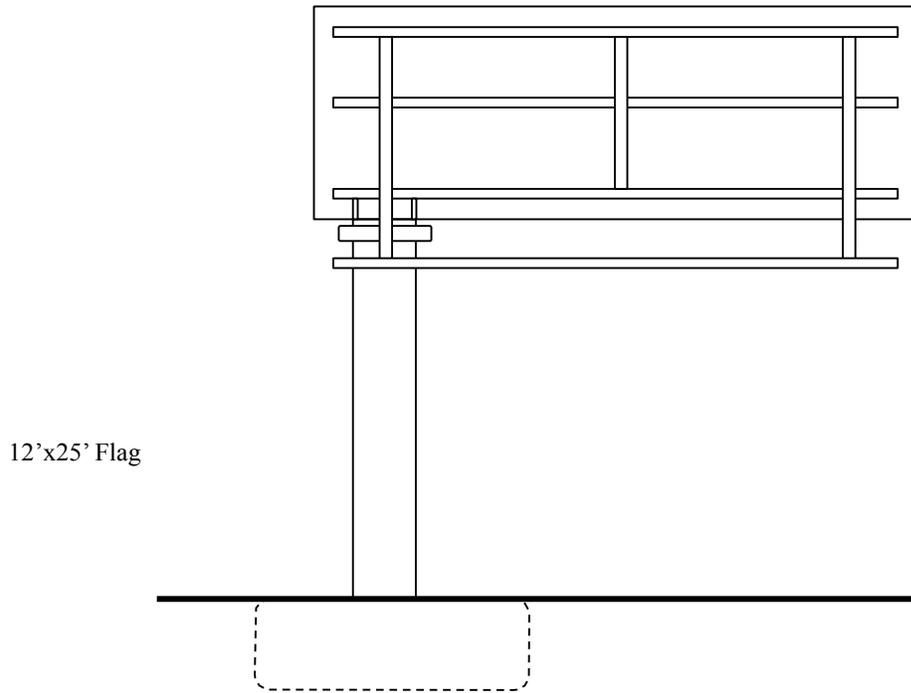
Illustrations of Monopole Billboard Construction



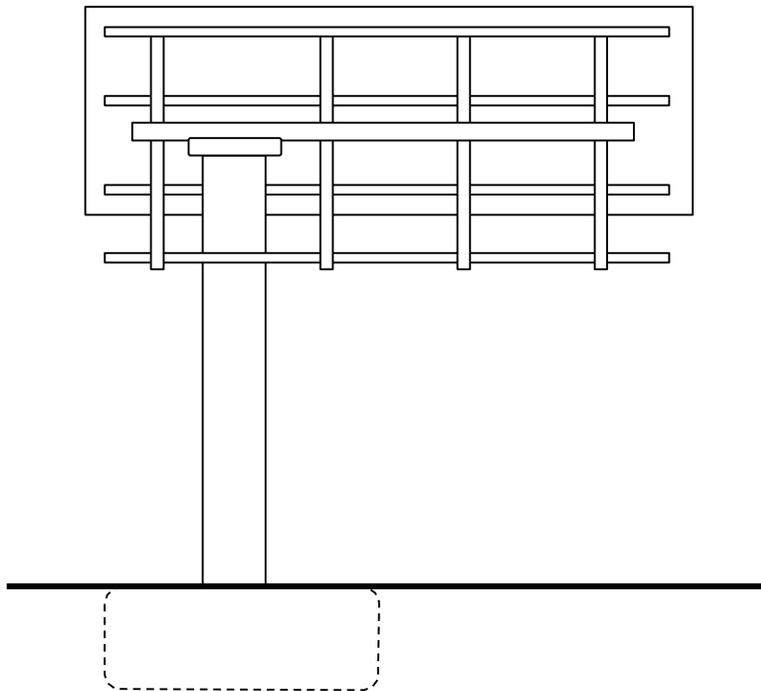
Illustrations of Monopole Billboard Construction Back View



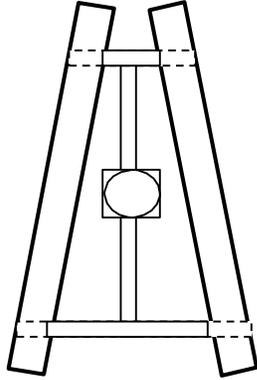
Illustrations of Monopole Billboard Construction



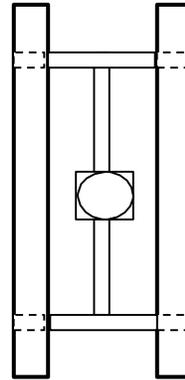
Illustrations of Monopole Billboard Construction Back View



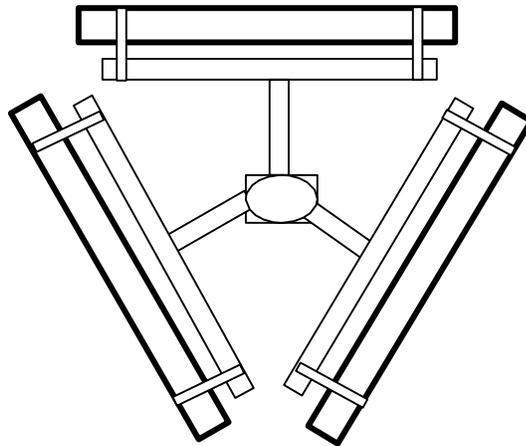
Illustrations of Monopole Billboard Construction Top view



The V Face



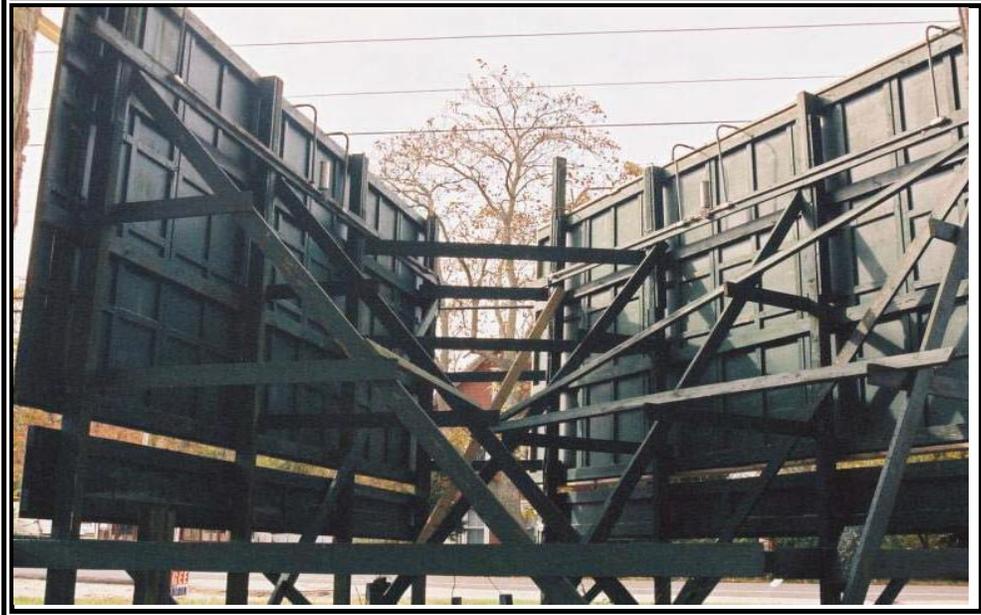
Double Face



12'x25' Triangle

Class 201 Wood Structure Billboards

Class201 Wood Structure Billboards



CLASS 201 WOOD STRUCTURE BILLBOARDS

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|--|
| 1. STRUCTURE - Wood support post or poles. | 5. APRON - Included in Base |
| 2. FOUNDATION – embedded in ground or equivalent | 6. LIGHTING - Included in Base |
| 3. PLATFORM OR CATWALK - Included in Base | 7. ADDITIONAL PANELS - None
For additional panels see Adjustments to Base |
| 4. PANELS - Included in Base. | 8. OTHER ITEMS - None |

BASE COST PER SQUARE FOOT OF SIGN AREA

Sq. Ft. Area	<u>SINGLE FACE</u>
300	\$ 25.50
378	\$ 23.80
480	\$ 23.43
672	\$ 22.76
960	****
1000+	****

ADJUSTMENTS TO BASE COSTS

ADDITIONAL DISPLAY PANELS:

Due to structural nature of wood billboards, when valuing side by side, V built, or back to back the cost should be double that of a single face billboard.

LIGHTING: (per fixture)

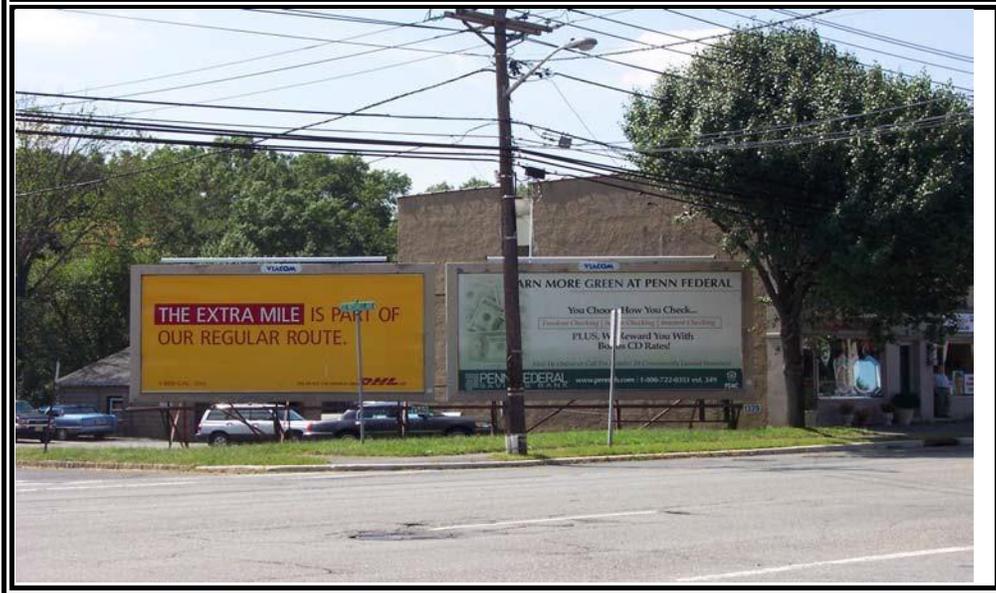
AVERAGE

\$545.00

NOTE: Depreciation Schedules for Billboards – 20 year wood

Class 202 Steel (A Frame) Structure Billboards

Class 202 Steel (A Frame) Structure Billboards



CLASS 202 STEEL (A FRAME) STRUCTURE BILLBOARDS

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. STRUCTURE - Steel, angle iron or equivalent as primary support.</p> <p>2. FOUNDATION – embedded in ground or equivalent</p> <p>3. PLATFORM OR CATWALK - Included in Base</p> <p>4. PANELS - Included in Base.</p> | <p>5. APRON - Included in Base</p> <p>6. LIGHTING - Included in Base</p> <p>7. ADDITIONAL PANELS - None
For additional panels see Adjustments to Base</p> <p>8. OTHER ITEMS - None</p> |
|---|--|

BASE COST PER SQUARE FOOT OF SIGN AREA

Sq. Ft. Area	<u>SINGLE FACE</u>	<u>BACK/BACK</u>	<u>SIDE X SIDE</u>	<u>V - BUILT</u>
300	\$ 46.50	\$ 63.00	* SEE	* SEE
378	\$ 44.04	\$ 61.90	COMMENTS	COMMENTS
480	****	****		
672	****	****		
960	****	****		
1000+	****	****		

ADJUSTMENTS TO BASE COSTS

ADDITIONAL DISPLAY PANELS

Due to structural nature of both the Side by Side and V - Built billboards, when valuing the cost should be double that of a single face billboard.

LIGHTING: (per fixture)

AVERAGE

\$545.00

NOTE: Depreciation Schedules for Billboards – 40 year steel

Class 203 Steel (Multi Mast) Structure Billboards

Class 203 Steel (Multi Mast) Structure Billboards



CLASS 203 STEEL (Multi mast) STRUCTURE BILLBOARDS

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| <p>1. STRUCTURE - Steel pole, I beam or equivalent as primary support.</p> <p>2. FOUNDATION – Cement/Gravel or equivalent</p> <p>3. PLATFORM OR CATWALK - Included in Base</p> <p>4. PANELS - Included In Base.</p> | <p>5. APRON - Included in Base</p> <p>6. LIGHTING - Included in Base</p> <p>7. ADDITIONAL PANELS - None
For additional panels see Adjustments to Base</p> <p>8. OTHER ITEMS - None</p> |
|---|--|

BASE COST PER SQUARE FOOT OF SIGN AREA

25 FT. HEIGHT				
Sq. Ft. Area	<u>SINGLE FACE</u>	<u>BACK/BACK</u>	<u>SIDE X SIDE</u>	<u>V - BUILT</u>
300	\$ 46.50	\$ 63.00	* SEE	* SEE
378	\$ 44.04	\$ 61.90	COMMENTS	COMMENTS
480	\$ 40.31	****		
672	\$ 34.15	****		
960	****	****		
1000+	****	****		
40 FT. HEIGHT				
Sq. Ft. Area	<u>SINGLE FACE</u>	<u>BACK/BACK</u>	<u>SIDE X SIDE</u>	<u>V - BUILT</u>
300	\$ 51.67	\$ 75.00	* SEE	* SEE
378	\$ 48.94	\$ 71.42	COMMENTS	COMMENTS
480	\$ 44.79	\$ 63.75		
672	\$ 37.95	\$ 53.57		
960	****	****		
1000+	****	****		

ADJUSTMENTS TO BASE COSTS

ADDITIONAL DISPLAY PANELS

Due to structural nature of both the Side by Side and V - Built billboard, when valuing the cost should be double that of a single face billboard.

LIGHTING (per fixture)

AVERAGE

\$545.00

NOTE: Depreciation Schedules for Billboards – 40 year steel

Class 204 Monopole Structure Billboards



CLASS 204 MONOPOLE STRUCTURE BILLBOARDS

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| 1. STRUCTURE - Tubular steel supports. | 5. APRON - Included in Base |
| 2. FOUNDATION – Poured concrete. | 6.LIGHTING - Included in Base |
| 3. PLATFORM OR CATWALK - Included in Base | 7. ADDITIONAL PANELS - Included in Base. |
| 4.PANELS - Included in Base. | 8. OTHER ITEMS - None |

BASE COST PER SQUARE FOOT OF SIGN AREA (40 ft. HIGH)

Sq. Ft. Area	<u>SINGLE PANEL</u>	<u>V - BUILT & BACK TO BACK</u>	<u>TRI - BUILT</u>
300	\$ 60.00	\$ 78.00	\$ 147.32
378	\$ 57.14	\$ 67.38	\$ 147.32
480	\$ 57.19	\$ 66.56	\$ 147.32
672	\$ 79.69	\$ 86.12	\$ 147.32
960	\$ 64.69	\$ 69.38	\$ 147.32
1000+	\$ 67.50	\$ 72.00	\$ 147.32

ADJUSTMENTS TO BASE COSTS

HEIGHT FACTOR:

70'	1.36
100'	1.6

DESIGN FACTOR

Part Flag	1.07
Full Flag	1.15

LIGHTING: (per fixture)

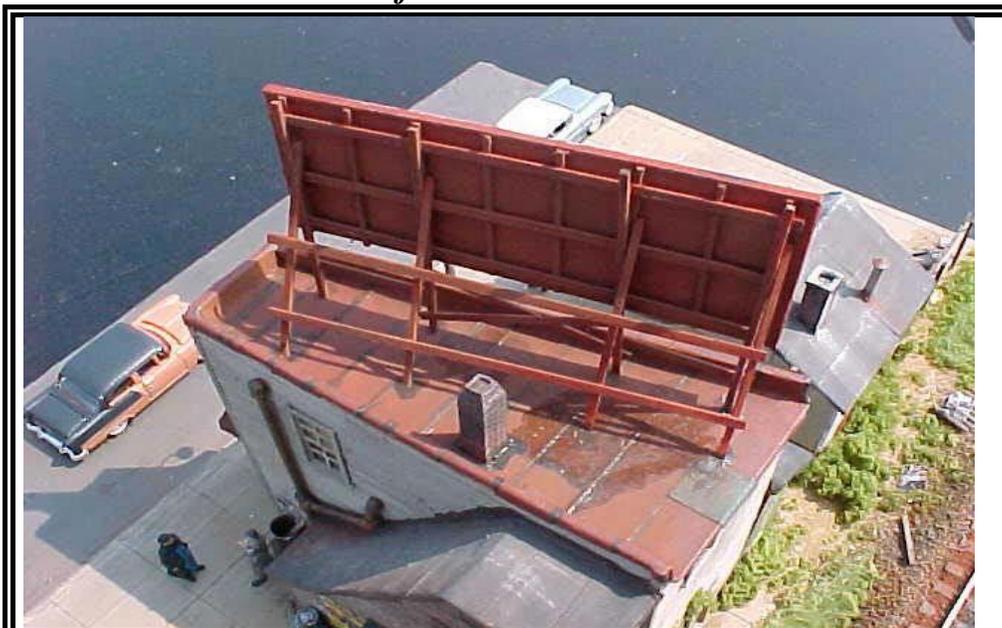
AVERAGE

\$545.00

NOTE: Depreciation Schedules for Billboards – 40 year steel

Class 205 Roof/Fascia Mounted Billboard

Class 205 Roof/Fascia Mounted Billboard



CLASS 205 ROOF / FASCIA MOUNTED BILLBOARD

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| 1. STRUCTURE - Mounted on roof or side of building. | 5. APRON - Included in Base |
| 2. FOUNDATION – None | 6.LIGHTING - Included in Base |
| 3. PLATFORM OR CATWALK - Included
in Base | 7. ADDITIONAL PANELS - Included in Base. |
| 4.PANELS - Included in Base. | 8. OTHER ITEMS - None |

BASE COST OF SIGN

AVERAGE COST INSTALLED: \$17,000. PER PANEL

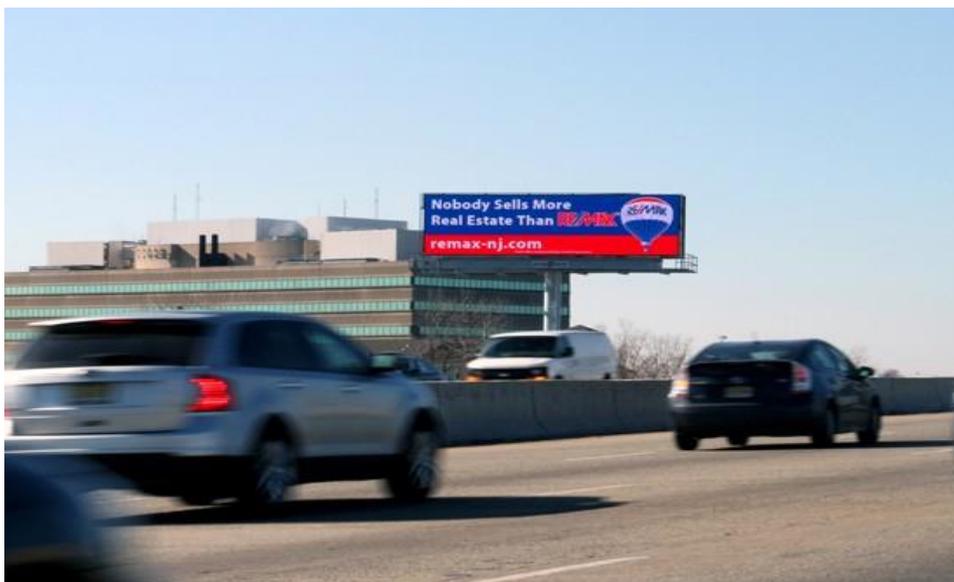
ADJUSTMENTS TO BASE COSTS

<u>LIGHTING: (per fixture)</u>	<u>AVERAGE</u>
	\$545.00

NOTE: Depreciation Schedules for Billboards – 40 year steel

Class 206 Monopole Digital Billboard

Class 206 Monopole Digital Billboard



CLASS 206 DIGITAL MONOPOLE STRUCTURE BILLBOARDS

BASE SPECIFICATIONS FOR CLASS

- | | |
|---|--|
| 1. STRUCTURE - Tubular steel supports. | 5. APRON - Included in Base |
| 2. FOUNDATION - Poured concrete. | 6. LIGHTING - None |
| 3. PLATFORM OR CATWALK - Included in Base | 7. ADDITIONAL PANELS - Included in Base. |
| 4. PANELS - Included in Base. | 8. OTHER ITEMS - None |

BASE COST PER SQUARE FOOT OF SIGN AREA (40 ft. HIGH)

<u>Sq. Ft. AREA</u>	<u>SINGLE PANEL per SF of Face Area</u>	<u>V - BUILT & BACK TO BACK (Applied to Total Face Area)</u>	<u>TRI - BUILT</u>
210	\$201.45	\$175.95	Not Applicable (NA)
390	\$179.00	\$152.50	NA
504	\$179.95	\$154.06	NA
611	\$183.37	\$151.58	NA

ADJUSTMENTS TO BASE COSTS

HEIGHT FACTOR

70' 1.36
100' 1.6

DESIGN FACTOR

Part Flag 1.07
Full Flag 1.15

Asian Import Display Factor - .80

LIGHTING: (per fixture)
NA

AVERAGE
\$0

NOTE: Depreciation Schedules for Billboards – 40 year digital

Class 207 Roof/Fascia Mounted Digital Billboard

Class 207 Roof/Fascia Mounted Digital



CLASS 207 DIGITAL ROOF / FASCIA DIGITAL MOUNTED BILLBOARD

BASE SPECIFICATIONS FOR CLASS

- | | |
|--|---|
| 1. STRUCTURE - Mounted on roof or side of building | 5. APRON – Not Applicable |
| 2. FOUNDATION — None | 6. LIGHTING – Not Applicable |
| 3. PLATFORM OR CATWALK - Included
in Base | 7. ADDITIONAL PANELS - Included in Base |
| 4. PANELS - Included in Base | 8. OTHER ITEMS - None |

BASE COST OF SIGN

AVERAGE COST INSTALLED: \$55,200.00 PER PANEL

ADJUSTMENTS TO BASE COSTS

<u>LIGHTING: (per fixture)</u>	<u>AVERAGE</u>
Not Applicable	

Asian Import Display Factor - .80

NOTE: Depreciation Schedules for Billboards — 40 year digital

DEPRECIATION SCHEDULE
(effective age)

<u>AGE (in years)</u>	<u>20 year life (wood)</u>	<u>40 year life (steel)</u>	<u>40 year life (digital)</u>
<u>1</u>	<u>95%</u>	<u>97.50%</u>	<u>90.10%</u>
<u>2</u>	<u>90%</u>	<u>95.00%</u>	<u>80.20%</u>
<u>3</u>	<u>85%</u>	<u>92.50%</u>	<u>70.30%</u>
<u>4</u>	<u>80%</u>	<u>90.00%</u>	<u>60.40%</u>
<u>5</u>	<u>75%</u>	<u>87.50%</u>	<u>50.50%</u>
<u>6</u>	<u>70%</u>	<u>85.00%</u>	<u>40.60%</u>
<u>7</u>	<u>65%</u>	<u>82.50%</u>	<u>30.70%</u>
<u>8</u>	<u>60%</u>	<u>80.00%</u>	<u>30.70%</u>
<u>9</u>	<u>55%</u>	<u>77.50%</u>	<u>30.70%</u>
<u>10</u>	<u>50%</u>	<u>75.00%</u>	<u>30.70%</u>
<u>11</u>	<u>45%</u>	<u>72.50%</u>	<u>30.70%</u>
<u>12</u>	<u>40%</u>	<u>70.00%</u>	<u>30.70%</u>
<u>13</u>	<u>35%</u>	<u>67.50%</u>	<u>30.70%</u>
<u>14</u>	<u>35%</u>	<u>65.00%</u>	<u>30.70%</u>
<u>15</u>	<u>35%</u>	<u>62.50%</u>	<u>30.70%</u>
<u>16</u>	<u>35%</u>	<u>60.00%</u>	<u>30.70%</u>
<u>17</u>	<u>35%</u>	<u>57.50%</u>	<u>30.70%</u>
<u>18</u>	<u>35%</u>	<u>55.00%</u>	<u>30.70%</u>
<u>19</u>	<u>35%</u>	<u>52.50%</u>	<u>30.70%</u>
<u>20</u>	<u>35%</u>	<u>50.00%</u>	<u>30.70%</u>
<u>21</u>		<u>47.50%</u>	<u>30.70%</u>
<u>22</u>		<u>45.00%</u>	<u>30.70%</u>
<u>23</u>		<u>42.50%</u>	<u>30.70%</u>
<u>24</u>		<u>40.00%</u>	<u>30.70%</u>
<u>25</u>		<u>37.50%</u>	<u>30.70%</u>
<u>26</u>		<u>35.00%</u>	<u>30.70%</u>
<u>27</u>		<u>35.00%</u>	<u>30.70%</u>
<u>28</u>		<u>35.00%</u>	<u>30.70%</u>
<u>29</u>		<u>35.00%</u>	<u>30.70%</u>
<u>30</u>		<u>35.00%</u>	<u>30.70%</u>
<u>31</u>		<u>35.00%</u>	<u>30.70%</u>
<u>32</u>		<u>35.00%</u>	<u>30.70%</u>
<u>33</u>		<u>35.00%</u>	<u>30.70%</u>
<u>34</u>		<u>35.00%</u>	<u>30.70%</u>
<u>35</u>		<u>35.00%</u>	<u>30.70%</u>
<u>36</u>		<u>35.00%</u>	<u>30.70%</u>
<u>37</u>		<u>35.00%</u>	<u>30.70%</u>
<u>38</u>		<u>35.00%</u>	<u>30.70%</u>
<u>39</u>		<u>35.00%</u>	<u>30.70%</u>
<u>40</u>		<u>35.00%</u>	<u>30.70%</u>

BILLBOARD DEFINITIONS

Catwalk: Platform located underneath the sign face, either in front or in back, used as a support for the maintenance crew.

Centermount: Monopole structure in which the supporting column is affixed to the center of the display panel.

Display Face (panels): The flat area normally rectangular in shape where the advertisement is displayed.

Double-Sided: A Billboard structure that has two display panels, which are parallel to each other facing in opposite directions.

Extension: When part of the advertisements extends beyond the display face in order to create better impact.

Flag Mount: Monopole structure in which the supporting column is affixed to the left or right of the center of the display panel.

Footings: Concrete used to solidify the structure upright in the ground.

Illumination: Light fixtures that allow the advertisements to be more visible.

Lease Cost: Costs associated in obtaining a lease site.

Molding: Decorative trim covering the perimeter of the display face.

Reflectors: Copy material that reflects light to aid visibility in hours of darkness when illumination is not present on the billboard structure.

Single-Sided: Billboard structure that has a single display panel facing only one direction.

Stackmount: A billboard structure in which multiple display panels are set above one another.

Stringers: Wood or steel braces attached to the back of the sign that support the structure aka: cross members.

Triangle: A billboard structure having three display panels arranged in the shape of a triangle with each panel facing in a different direction.

Uprights: Vertical posts, pipes or beams, mounted into the ground keeping the sign erect.

“V”-Shape: A billboard structure having two display panels that are not parallel to each other, facing in opposite directions.

Date Collected: _____

By: _____

Billboard Data Collection Form

County: _____ Municipality: _____

Address: _____ Block / Lot _____

Tax Map Pg: _____ Zoning: _____ Application # _____

Property Owner _____

Date of Sale: _____ Sale Price: _____ Book/Page: _____

*If available

*Grantor: _____ *Grantee: _____

*Lease Date: _____ *Lease Price: _____

*Lessor: _____ *Lessee: _____

*Terms: _____

Billboard Description

Type: Wood Frame Steel Frame Monopole Digital

of Display Surfaces: _____ Height: _____ S.F. Area: _____

Additional Improvements: Lighted Animated Revolving Aprons Platforms

Road Location: East West South North

Sign View: Northbound Southbound Eastbound Westbound

Age: _____ Road Characteristic: _____

Landmarks: _____

Comments: _____

Billboard Valuation Worksheet

- (1) Name of Company _____ (2) Date _____
- (3) Number _____
- (4) Location of Structure _____
- (5) DOT Application Number _____
(Five Digit Number)
- (6) Owner of Real Property _____
- (7) Original construction date _____ (8) Age (in years) _____
- (9) Construction (Wood, Steel, Monopole, Monopole Digital, Roof/Fascia Digital) _____ Class _____
- (10) Style: Single, Side-By-Side, Back-to-Back, V Build, Tri-Build, Stack
- (11) Height: _____
- (12) Number of display faces _____
- (13) Display Panel Size: 1) _____ 2) _____ 3) _____ 4) _____
- (14) Illumination: Yes No

Base price per square foot	_____	x	_____	square feet = _____	(A)
Additional Display Panels	_____	x	_____	per surface = _____	(B)
				Base structure cost = _____	(C)
				(add A & B)	
Height Factor Adjustment				_____	(D)
Design Factor Adjustment				_____	(E)
Cost Conversion Factor				_____	(F)
			Replacement Cost New (RCN)	_____	(G)
Less Depreciation				_____	(H)
Total Depreciated Billboard Value				_____	(I)
Director's Ratio (October 1 Pre-Tax Year)				_____	(J)
Adjusted Assessed Value				_____	(K)
				(I x J = K)	

147. Cell Towers



VALUING CELL TOWERS

Real Property

The tower, equipment buildings and other site improvements, such as paving or fences, should be valued by the cost approach. The best indicator would be the actual cost to construct. Costs for these items can be found in several nationally recognized cost manuals.

Personal Property

The antennas attached to a tower may be considered personal property. In this situation, the leases of the antennas should not be considered when valuing the property; these leases are part of the business and are not part of the real property.

Land Lease

The property owner typically receives the ground rent; this is where the income stream is most visible. Capitalizing the net income at an appropriate capitalization rate and attributing that value to the land is a direct and unencumbered method. Any additional value attributable to the land lease must be assigned to the land value and not to the cell tower improvement.

EXCEPTIONS

Under N.J.S.A 27:23-12 “The New Jersey Turnpike Authority has the statutory authority to allow cellular telephone companies to lease turnpike property for the installation of cellular equipment without destroying its exemption from local property tax.” As per an Attorney General’s opinion 99-0103 “Leases of county or municipal property by cell companies does not destroy the properties exemption under N.J.S.A 54:4-3.3 because the cellular equipment serves a public purpose under statute.”

TAX LIST IDENTIFICATION

The cell tower portion is designated on the tax list as a separate line item using the same block and lot as the mother lot it is situated on with the qualifier code “T”. It can include the land value which is attributable to the added value from the cell tower land lease and the improvement value of the tower itself.

COURT CASES

There are two court cases related to the taxability of towers though not specific to cell towers.

16 N.J. Tax 29 (Emmis Broadcasting Corp of NY v. East Rutherford) the courts found that the tower itself broadcasts the radio signal and that the tower is exempt.

230 N.J. Super. 530; (NYT Cable v. The Borough of Audubon), the courts found that the tower was real property under the real versus personal property three prong injury test N.J.S.A 54:4-1. However, the antennas and dish equipment attached were considered business personal property.

The FCC Act of 1996 limits the ability of municipalities to prevent construction of cell towers. Through zoning they can provide for a legal non-conforming use which runs with the land and not the improvements to accommodate cell towers.

148. Renewable Energy Systems



DEFINITION

Renewable Energy Systems is defined as “any equipment that is part of, or added to, a residential, commercial, industrial or mixed use building as an accessory use, and that produces renewable energy onsite to provide all or a portion of the electrical, heating, cooling, or general energy needs of that building...”.

RESIDENTIAL AND COMMERCIAL (P.L. 2008 Chapter 90, N.J.S.A. 54:4-3.13a-g)

The chapter 90 exemption encompasses all residential & commercial properties, which include the following: solar panels (photo voltaic), wind, biomass, geothermal, hydropower, fuel cells, wave & tidal action system and non-electric solar thermal. EPA requires that biomass systems meet the highest standards & minimizes any impacts.

A CRES application is required to be filed with the construction officer and finalized with the assessor. The system must be an “accessory use” and provide all or a portion of the electrical, heating, cooling, or energy needs of the building.

The exemption is for the renewable energy system only and is for the tax year following the year in which it was granted. It is designated on the tax list by the limited exemption code “Y”. The value of the renewable energy system is equal to the value of the improvements with the system, minus the value of the improvements without the system.

FARMLAND ASSESSED PROPERTY (P.L. 2009 Chapter 213 N.J.S.A 4-3.113a-g)

The Chapter 213 exemption is limited to farmland assessed properties, which include the following: solar panels (photo voltaic), wind, biomass, geothermal, hydropower, fuel cells, wave & tidal action system and non-electric solar thermal. EPA requires that biomass systems meet the highest standards & minimizes any impacts.

It is reported to the assessor on the annual FA-1 form application (filed for annual farm assessment). It must operate on land that was in the preceding year and is currently part of an operating farm. The power or heat is to be used to power the farm. The ratio of land used to generate this energy vs. farmland is 1 to 5 acres (That is a ratio of .17 or 1 divided by 6). Note there must be greater than 5 acres for the exemption. The system shall not take up more than 10 acres of farmland and produce no more than 2 megawatts. No income from the sale of the power may be used towards gross income sales receipts for farmland qualification. For solar, the property under the panel can be used for shade crops or grazing pasture where practical.

Biomass systems plans are to be filed with the Soil Conservation District (county extension) and the EPA requires that biomass systems meet the highest standards & minimizes any impacts. Installations in Pinelands are subject to the regulation of the Pinelands Protection Act and anything biomass needs approval from the Department of Agriculture.

It is designated on the tax list by the limited exemption code “Y”. The value of the renewable energy system is equal to the value of the improvements with the system, minus the value of the improvements without the system.

COMMERCIAL SOLAR FARMS

DEFINITION

The use of solar voltaic panels to generate electric energy that is usually sold directly to power companies and not used “on site”. The definition of a solar farm is not based on the number of panels or energy generated, but on the purpose of the energy. Energy generated by a solar farm is typically sold to energy companies, rather than end-users. The site typically is vacant land and not qualified farmland assessed property. If one is constructed on farmland the site will lose farmland assessment.

VALUATION

At the time of this writing there have been no legislation or tax court cases that offer guidance in the valuation in these type properties. It is typically considered that the solar panels are bolted onto the supporting system, are removable and considered personal property by the real vs. personal property three prong injury test found in the N.J.S.A. 54:4-1.

The support equipment (steel poles, racking system) and other site improvements are considered real property and should be valued by the cost approach. One indicator of value would be the actual cost to construct minus the cost of the panels. Any value from the real property should be shown in the improvement value.

The property owner typically receives the ground rent; this is where the income stream is most visible. Capitalizing the net income at an appropriate capitalization rate and attributing that value to the land is a direct and unencumbered method. Any additional value attributable to the land lease must be assigned to the land value and not to the improvement value.

149. Valuation and Contaminated Properties

Contamination may have an effect on the valuation of real property.

- Asbestos
- Nuclear facilities
- Radon
- Noise pollution
- Mold
- Drug labs
- Groundwater contamination
- Leaking underground storage tanks
- Air pollution
- Chinese drywall

Once contamination is discovered, the assessor needs to understand the extent of the problem. Once the extent is determined, the next steps are to figure out what the cost to cure is and how long the cure will take. There are legal costs, ongoing costs to cure and monitoring the cleanup.

Often, once a property has been contaminated there is still a stigma that can cause a lower valuation than the market normally provides. An example is buying the home where Charles Manson murdered several people. Someone had committed suicide in the home. Also, value losses occur in areas where sink holes are prevalent, such as Florida. Fracking may be a negative threat to home values.

150. Depreciation Tables

EFFECTIVE AGE DEPRECIATION DEDUCTION TABLE

The following tabulation representation suggested guides for effective age percentage depreciation tables for different types of building construction. Each building class specification indicates the tables which are applicable to the class.

EFFECTIVE AGE IN YEARS	TABLE D	TABLE D-I	TABLE D-II	TABLE D-III	TABLE D-IV	TABLE D-V	TABLE D-VI	TABLE D-VII
1	4.0%	2.5%	2.0%	1.5%	1.5%	1.0%	1.0%	0.5%
2	7.0	4.5	3.5	2.5	2.5	2.0	2.0	1.5
3	11.0	7.0	4.5	3.5	3.0	2.5	2.5	2.0
4	16.0	9.0	6.0	4.5	4.0	3.5	3.5	3.0
5	20.0	11.0	7.0	5.5	4.5	4.0	4.0	3.5
6	22.0	13.0	8.5	6.5	5.5	5.0	5.0	4.5
7	27.0	15.5	10.0	8.0	6.5	6.0	5.5	5.0
8	30.0	17.5	11.0	9.0	8.0	7.0	6.5	6.0
9	34.0	20.0	12.5	10.5	9.0	8.0	7.0	7.0
10	37.5	22.0	14.0	11.5	10.0	9.0	8.0	7.5
11	41.0	24.0	15.5	13.0	11.0	10.0	9.0	8.0
12	44.0	25.5	17.0	14.0	12.0	10.5	9.5	9.0
13	47.0	27.5	18.0	15.5	13.0	11.5	10.5	9.5
14	50.0	29.5	19.5	16.5	14.0	12.5	11.0	10.5
15	52.0	31.0	21.0	18.0	15.0	13.5	12.0	10.5
16	54.0	33.0	22.5	19.0	16.0	14.5	13.0	11.0
17	56.0	34.5	24.0	20.5	17.5	15.5	13.5	12.0
18	58.0	36.5	25.5	21.5	18.5	16.5	14.5	12.5
19	60.0	38.0	27.0	23.0	20.0	17.5	15.0	13.5
20	62.0	40.0	28.5	24.0	21.0	18.5	16.0	14.0
21	64.0	41.5	30.0	25.5	22.0	19.5	17.0	14.5
22	65.0	43.0	32.0	27.0	23.0	20.5	17.5	15.0
23	67.0	45.0	33.5	28.0	24.5	21.5	18.5	16.0
24	68.5	46.5	35.0	29.5	25.5	22.5	19.0	16.5
25	70.0	48.0	36.5	31.0	26.5	23.5	20.0	17.0
26	71.5	49.5	38.0	32.5	28.0	24.5	21.0	18.0
27	73.0	51.0	39.5	34.0	29.0	25.5	22.0	19.0
28	74.5	52.0	41.0	35.0	30.5	26.0	23.0	20.0
29	76.0	53.5	42.0	36.5	32.0	27.0	24.0	21.0
30	77.5	55.0	43.5	38.0	33.0	28.0	25.0	22.0
35		61.0	49.0	44.0	38.5	33.5	29.0	26.0
40		65.0	54.0	47.5	43.0	37.0	33.0	30.0
45		68.0	58.0	50.5	44.5	38.5	34.5	31.5
50		70.0	62.5	53.0	45.5	39.5	35.5	32.5
55		72.0	65.0	55.0	47.0	41.0	37.0	34.0
60		74.0	63.0	57.0	48.0	42.0	38.0	35.0
65		76.0	70.0	59.0	49.5	43.5	39.5	36.5
70		78.0	73.5	60.5	50.5	44.5	40.5	37.5
75			75.5	62.0	52.0	46.0	42.0	39.0
80			78.0	63.0	53.0	47.0	43.0	40.0

NOTE: Building marked Fair Physical Condition increase deduction 5%
 Poor Physical Condition increase deduction 10%
 Dilapidated Condition increase deduction 20.0%
 Unusable and Beyond Repair increase deduction to total of 90%

DEPRECIATION

TYPICAL MOBILE HOME EFFECTIVE AGE DEPRECIATION TABLES

<u>EFFECTIVE AGE</u>	<u>LOW</u>	<u>FAIR</u>	<u>AVERAGE</u>	<u>GOOD</u>	<u>HIGH</u>
1	5.5%	5.0%	4.5%	4.0%	3.0%
2	9.5%	8.5%	7.5%	6.5%	5.0%
3	14.5%	13.0%	11.5%	9.5%	8.0%
4	20.0%	17.5%	16.0%	12.5%	11.0%
5	25.0%	21.5%	20.0%	16.0%	14.0%
6	27.5%	24.0%	22.0%	17.5%	15.0%
7	34.0%	29.0%	27.0%	22.0%	19.0%
8	38.0%	33.0%	30.0%	24.5%	21.0%
9	43.0%	37.5%	34.0%	28.0%	24.0%
10	47.0%	40.5%	37.5%	30.5%	26.0%
11	51.0%	44.0%	41.0%	34.0%	29.0%
12	55.0%	48.0%	44.0%	36.5%	31.0%
13	59.0%	51.0%	47.0%	39.0%	33.0%
14	62.5%	54.5%	50.0%	41.5%	35.0%
15	65.0%	57.0%	52.0%	43.0%	36.0%
16	67.5%	59.0%	54.0%	45.0%	38.0%
17	70.0%	61.0%	56.0%	46.5%	39.0%
18	72.0%	62.5%	58.0%	48.5%	41.0%
19	74.0%	65.0%	60.0%	50.0%	42.0%
20	75.0%	67.5%	62.0%	51.5%	43.0%
21	-	70.0%	64.0%	53.0%	45.0%
22	-	71.0%	65.0%	54.0%	46.0%
23	-	72.5%	67.0%	55.5%	47.0%
24	-	74.0%	68.5%	57.0%	48.0%
25	-	75.0%	70.0%	58.5%	49.0%
30	-	-	-	63.0%	53.0%
35	-	-	-	70.0%	56.0%
40	-	-	-	-	59.5%
45	-	-	-	-	63.0%
50	-	-	-	-	66.5%

151. Land Depth Factor Tables

Residential and Apartment Depth Factor Tables
Standard Depth

<u>Depth in Feet</u>	<u>100'</u>	<u>125'</u>	<u>150'</u>	<u>175'</u>	<u>200'</u>	<u>300'</u>	<u>400'</u>
5	.10	.10	.10	.10	.10	.02	.02
10	.18	.16	.16	.14	.14	.05	.04
15	.26	.22	.20	.18	.18	.07	.06
20	.33	.28	.24	.22	.22	.10	.08
25	.40	.34	.28	.26	.25	.12	.10
30	.47	.40	.32	.30	.28	.16	.12
35	.53	.45	.36	.34	.31	.18	.14
40	.59	.50	.40	.38	.34	.21	.16
45	.65	.54	.44	.42	.37	.24	.18
50	.70	.58	.48	.46	.40	.26	.20
55	.75	.62	.52	.49	.43	.29	.22
60	.79	.66	.56	.52	.46	.32	.24
65	.83	.70	.60	.55	.49	.34	.26
70	.87	.74	.64	.58	.52	.37	.28
75	.90	.78	.68	.61	.55	.40	.30
80	.92	.81	.72	.64	.58	.42	.32
85	.94	.84	.75	.67	.61	.44	.34
90	.96	.86	.78	.70	.64	.46	.36
95	.98	.88	.81	.73	.67	.48	.38
100	1.00	.90	.84	.76	.70	.50	.40
105	1.02	.92	.87	.79	.72	.52	.42
110	1.04	.94	.89	.81	.74	.53	.43
115	1.06	.96	.91	.84	.76	.55	.45
120	1.08	.98	.93	.86	.78	.58	.46
125	1.10	1.00	.95	.88	.80	.60	.47
130	1.12	1.02	.96	.90	.82	.61	.49
135	1.14	1.04	.97	.92	.84	.63	.50
140	1.15	1.06	.98	.93	.86	.65	.52
145	1.16	1.08	.99	.94	.88	.67	.53
150	1.17	1.10	1.00	.95	.90	.70	.55
155	1.18	1.12	1.01	.96	.91	.71	.56
160	1.19	1.14	1.02	.97	.92	.72	.58
165	1.20	1.15	1.03	.98	.93	.74	.60
170	1.21	1.16	1.04	.99	.94	.75	.61
175	1.22	1.17	1.05	1.00	.95	.77	.63
180	1.23	1.18	1.06	1.01	.96	.78	.64
185	1.24	1.19	1.07	1.02	.97	.80	.65
190	1.25	1.20	1.08	1.03	.98	.81	.67
195	1.26	1.21	1.09	1.04	.99	.83	.68
200	1.27	1.22	1.10	1.05	1.00	.84	.70
250	1.30	1.25	1.15	1.10	1.06	.93	.80
300	1.32	1.27	1.20	1.14	1.10	1.00	.90
350	1.34	1.29	1.24	1.18	1.13	1.05	.95
400	1.36	1.31	1.26	1.21	1.16	1.08	1.00
450	1.38	1.33	1.28	1.23	1.18	1.10	1.04
500	1.40	1.35	1.30	1.25	1.20	1.11	1.05

Add .02 for Each 50 ft. over 500.

Commercial Depth Factor Tables

Standard Depth

<u>Depth in Feet</u>	<u>100'</u>	<u>125'</u>	<u>150'</u>	<u>200'</u>	<u>250'</u>
5	.15	.12	.10	.10	.10
10	.25	.21	.18	.15	.14
15	.34	.29	.25	.20	.18
20	.42	.36	.31	.25	.22
25	.50	.43	.36	.30	.26
30	.58	.50	.41	.34	.30
35	.63	.55	.46	.38	.34
40	.68	.59	.50	.42	.38
45	.72	.63	.54	.46	.41
50	.75	.66	.58	.50	.44
55	.78	.69	.62	.54	.47
60	.81	.72	.66	.57	.49
65	.84	.75	.69	.60	.51
70	.87	.78	.72	.63	.53
75	.90	.80	.74	.65	.55
80	.92	.82	.76	.67	.57
85	.94	.84	.78	.69	.59
90	.96	.86	.80	.71	.61
95	.98	.88	.82	.73	.63
100	1.00	.90	.84	.75	.65
105	1.02	.92	.86	.77	.67
110	1.04	.94	.88	.79	.69
115	1.06	.96	.90	.81	.71
120	1.08	.98	.92	.83	.73
125	1.10	1.00	.94	.85	.75
130	1.12	1.02	.96	.86	.77
135	1.14	1.04	.97	.87	.79
140	1.16	1.06	.98	.88	.80
145	1.18	1.08	.99	.89	.81
150	1.20	1.10	1.00	.90	.82
155	1.22	1.12	1.01	.91	.83
160	1.24	1.14	1.02	.92	.84
165	1.26	1.16	1.03	.93	.85
170	1.28	1.18	1.04	.94	.86
175	1.30	1.20	1.05	.95	.87
180	1.32	1.21	1.06	.96	.88
185	1.33	1.22	1.07	.97	.89
190	1.34	1.23	1.08	.98	.90
195	1.35	1.24	1.09	.99	.91
200	1.36	1.25	1.10	1.00	.92
250	1.39	1.28	1.15	1.05	1.00
300	1.42	1.31	1.18	1.07	1.02
350	1.44	1.34	1.21	1.09	1.04
400	1.46	1.36	1.24	1.11	1.06
450	1.48	1.38	1.27	1.13	1.08
500	1.50	1.40	1.30	1.15	1.10

Add .02 for each 50 ft. over 500.

152. Glossary

This is a selected list of appraisal and building terms which assessing officials and their staff may encounter in their work. It is not, therefore, a complete list of terms used in appraisal and building construction. Some terms have been omitted because their meanings are common knowledge; others have been omitted because it is believed they will seldom, if ever, be encountered; and some have been shortened for ease of review.

Abstraction Method	A method to estimate land value when there is a lack of vacant land sales, by subtracting improvement costs from the total sales price.
Accessory building	A building subordinate to and used in conjunction with a principal or main building Accessory buildings include barns, cribs, sheds, and private garages.
Age-Life Method	Method of estimating accrued physical depreciation which is a function of the actual age of the improvement and the estimated economic age.
Anticipation	Appraisal principle which states value is created from the expectation of future benefits received.
Anchor Bolt	A bolt embedded in a building foundation for use in fastening the building superstructure to the foundation.
Accrued Depreciation	The total depreciation from all sources that effect property value.
Allocation Method	A method to value land by using a typical ratio of land to building value.

Apron	The wood trim beneath a windowsill; also applied to concrete or blacktop area adjoining a building or loading dock.
Appraisal Process	The systematic collection, analysis, and processing of data that leads to a well-reasoned estimate of value.
Appreciation	Increase in value of a property.
Arable Land	Any land suitable for cultivation.
Arm's length transaction	A sale of property on the open market, between a willing buyer and a willing seller, and there is no force or compulsion.
Ashlar	Cut stone laid in a definite pattern but seldom in regular courses.
Average Deviation	The average deviation of a data set is the sum of the total difference of all the ratios in a sample from the median, divided by the total number of samples`.
Balance	Appraisal principle that states markets move toward a state of equilibrium after a change to one of the elements of supply and demand.
Balloon Framing	Frame construction in which studs are fastened together in such a manner as to form a continuous or single piece from floor to roof rather than using heavy timbers joined by mortises and tenons. Commonly used in barns.

Baluster	A small pillar or column supporting a coping or handrail.
Balustrade	An ornamental railing or parapet made of coping or a handrail and balusters. A trim board at the floor line of an interior wall.
Baseboard	A narrow piece of lumber commonly used to cover a seam between two boards.
Batten	A principal division or compartment of a building marked off by columns, pillars, or similar.
Bay Window	A window forming a recess in a room, and projecting beyond the regular exterior walls of a building.
Beam	A principal horizontal load bearing structural member of a building.
Bowstring Truss	A roof or floor support having the form of a bow or arch.
Building Residual	A technique used to value property by discounting the income attributable to the building and adding that to the estimated land value.
Bundle of Rights	The rights of a property owner to use, sell, lease, enter or leave, give away, or refuse any of these rights.
Buttress	A support built into and projecting from a masonry exterior wall to give additional strength to the wall.
BX Wiring	Electrical cable in flexible metal conduit.

CAMA	Computer assisted mass appraisal, uses statistical analysis to estimate values.
Calibration	The adjustment of variables used in a mass appraisal model.
Capitalization	Converting anticipated income and rate of return into an estimate of value.
Capitalization Rate	The rate used to convert income into an estimate of value.
Carrara Glass	Heavy exterior structural glass commonly colored black.
Casement	A hinged window frame commonly made so the window will open outward.
Change	The appraisal principle was a change in social and economic forces affect supply and demand which influences market value.
Chimney	An upright shaft of a fireproof enclosure for disposing of smoke or waste gas. A chimney may contain one or more flues.
Clapboard	Exterior wall wood siding with one edge thicker than the other. Also called lap siding.
Coefficient of Dispersion	The average deviation of a set of numbers from the

median, expressed as a percentage.

Coefficient of Variation	The standard deviation expressed as a percentage of the mean.
Column	A heavy upright structural member carrying a buildings weight.
Comparable	Recently sold properties that are similar to the property being appraised.
Competition	the appraisal principle that states profits breeds competition.
Conduit	A pipe or tube enclosing electrical wires, also a pipe or tunnel carrying water or enclosing pipes.
Conformity	The appraisal principle that the maximum value is achieved when there is a degree of homogeneity within a neighborhood.
Contribution	The appraisal principle that the value of an individual component is measured by its value contribution to the whole property rather than its individual cost.
Conversion Factor	A multiplier used to bring costs and valuations into conformity with established standards as of a specified date.
Coping	The top covering of an exterior wall, commonly masonry, to give the wall a finished appearance and to shed water.

Cornice	An ornamental projection at the top of exterior wall of a building.
Cost Approach	One of the three approaches to value that uses replacement costs less depreciation plus a land value to arrive at a final value estimate.
Course	A continuous horizontal layer of stone, brick, or other building material of uniform thickness in a building.
Curable Depreciation	Depreciation that can be cured by maintenance or remodeling.
Curtain Wall	A wall that does not support any of the building weight other than its own weight. A curtain wall may be removed, and the building frame would still stand.
Deferred Maintenance	Repairs normally made to a property but were not which increases the depreciation of that improvement.
Dependent Variable	A variable, that its value is dependent upon other variables.
Depreciation	The difference between the value of a building (or other improvement) and the cost of replacement new as of the date of appraisal.
Direct Costs	Costs for labor and material that usually includes builders overhead and profit.
Discount Rate	The rate on return an investor requires to discount future income to its present worth.

Drop Siding	Tongue and groove wood siding forming a weather tight wall used as sheathing and siding.
Drywall	Interior wall constructed of material other than plaster, such as wallboard, fiberboard, plywood, or other similar material.
Easement	A right that may be exercised by the public or individuals on, over or through the lands of others.
Economic Life	The period of time an improvement contributes to the total value of a property.
Economic Obsolescence	Loss of value from influences outside the property.
Economic Rent	The rent a property should command if it is ready and available to rent. Also known as market rent.
Economies of Scale	An appraisal theory which states the larger an item is the less it should cost to build.
Effective Age	Computed or estimated age caused by modernization or alterations, which increase the life expectancy of the building or by adverse conditions which decrease the life expectancy of the building.
Effective Gross Income	Potential rent less vacancy and collection loss plus miscellaneous income.

Effective Tax Rate	The general or nominal tax rate times the districts level of assessment.
Eminent Domain	The right of a governmental body to take over private property for the public good.
Encroachment	A building, part of a building, or obstruction which intrudes upon or invades a highway or sidewalk or trespasses upon the property of another: any intrusion upon another property.
Enhancement	Increase in value due to improvements.
Escheat	A states right to take over property upon the death of the owner when there are no heirs or a will providing for the disposition of the property.
Excess Land	The portion of land that is more than needed to support the highest and best use of a property.
Expense Ratio	Ratio of expenses to effective gross income.
Exposed Beam Construction	A type of construction in which the roof is supported by heavy structural timbers rather than conventional rafters and in which the roof supports are exposed to the interior. This type of construction gives a rustic appearance.
Externalities	The appraisal principle that states the four major forces (social, economic, physical/environmental, and governmental) outside the property influences its value.

Firewall	A wall constructed of fire-resistant material to prevent the spread of fire within a building or between buildings. Exterior fire walls commonly extend above the roof of the building.
Fixed Costs	Costs that do not vary with levels of production.
Flashing	Strips (usually metal) used at roof openings to waterproof roof joints.
Flexi core	A hollow-core precast-reinforced concrete plank.
Flue	The lining of a chimney, commonly tile or metal.
Forces of Value	Forces that effect value are: Physical, Economic, Political, and Social.
Front Foot	A piece of land one foot wide abutting a street or highway and extending back the full depth of the parcel.
Functional Obsolescence	The loss in value from factors within the property such as changes in tastes, standards, or preferences.
Furring	Thin strips of wood, metal, or brick fastened to a wall or beam to level a surface for lathing, plastering, attaching an additional surface, or for making an air space.
General Data	Information is information that is common to many properties.

Girder	A structural member supported at both ends and designed to carry a load.
Ground Area	Total area of enclosed portion of a building computed from exterior measurements taken at top of foundation.
Gross Income Multiplier	The ratio of sale price to gross income. The factor that gross income is multiplied by to obtain a value estimate.
Gross Rent Multiplier	The ratio of sales price to gross rent. The factor that grosses rent is multiplied by to obtain a value estimate.
Gunite	Concrete blown into place by compressed air.
Header	A layer of brick or stone in a building wall with the short face to the front.
Highest and Best Use	Most profitable use that is legal, physically possible, and financially feasible.
Holding Period	Amount of time an investor will own a property before selling it.
Improvement	Any addition to the land that increases its value, includes building or site improvements.
Income Approach	The approach to value that capitalizes anticipated benefits of owning property into a value estimate.
Income Stream	The payments an owner receives over the life of the investment.

Increasing/Decreasing Returns	The appraisal principle that states that as units are added a point is reached where adding more will not contribute to the overall value compared to the cost for that unit.
Independent Variable	A variable in a CAMA program whose value is not determined by other variables.
Jamb	The upright side of a doorway, window, or fireplace.
Joist	Timber to which flooring or ceiling laths are fastened.
Land Ratio	Ratio of land area to building area.
Level of Assessment	The overall ratio of assessed values to sale prices.
Lintel	Horizontal piece of timber, stone, or metal over doorway or window supporting the wall above the doorway or window.
Load Bearing Wall	A wall that supports its own weight and also the floor and walls above it.
Louver	A ventilator built of slats slanted so as to admit air but to prevent water, snow, and other foreign objects from entering the opening. The slats may be movable or rigid.
Market Approach	Approach to value that estimates a properties appraised value using comparable sales, adjusted for differences.

Market Value	The price a willing buyer will pay and a willing seller will accept. The buyer and seller must be entirely independent of each other and neither compelled to buy or sell.
Market Rent	The prevailing rent other comparable properties are getting for similar space.
Mass Appraisal	The valuing of a group of properties using standard methods and statistical testing.
Mean	The sum of all values in a set divided by the number of samples.
Median	The midpoint or middle value in a set of numbers.
Mill Type Construction	Heavy appearing structure with masonry load bearing walls, heavy wood framing, and heavy plank or laminated flooring.
Mode	The number in a set of values that appears the most.
Model	Words or equations that explain the relationship between values or sales prices and supply and demand variables, used in mass appraisal.
Monitor Roof	A comparatively small roof structure built on the main roof to provide light and ventilation. Monitor roofs are found mostly in barns, sheds, and industrial buildings.
Mortice	A rectangular hole in one piece of wood cut to receive a projection on another piece, so <i>as</i> to form a joint.

Mud Sill Foundation.	A foundation constructed of heavy timbers laid on the ground.
Mullion	The upright divider between windowpanes, or a series of joined doors, or panels.
Neighborhood	A contiguous set of individual properties that share similar physical, economic, and governmental characteristics.
Neighborhood Clusters	The combining of neighborhood groups that a single set of comparable sales selection criteria and adjustments of sales prices can be applied.
Neighborhood Group	The assignment of noncontiguous neighborhoods with similar characteristics together for modeling and sales ratio studies.
Net Operating Income	Income left after deducting operating expenses.
Newel Post	The post at the foot of a stairway, or in a winding stairway. The central post around which the stairway winds.
Obsolescence	Loss in property value due to causes other than physical deterioration such as becoming out of date, excess of supply over demand, or loss in desirability and use for the specific type of property.
Operating Expenses	Expenses needed to maintain the income stream for a property.

Opportunity Cost	The appraisal principal that states money allocated for a certain use cannot be used for another purpose.
Overall Rate	The capitalization rate for land and building that includes the appropriate discount rate, recapture rate, and effective tax rate.
Over-Improvement	A building having a value in excess of that which the value of the land on which it is built justifies.
Parapet	A low wall at the edge of a roof, balcony, or terrace.
Parcel	A single piece of land under one ownership that can be conveyed separately.
Party Wall	A wall common to or separating two buildings.
Parquet Floor	Flooring consisting of wood blocks laid in adhesive material in systematic (commonly colored) patterns.
Patio	An outside floor area, without roof, constructed of brick, tile, stone, slate, or other similar material, usually adjoining a house, and used as an outdoor living area.
Percent Good	A value estimate, expressed as a percentage of the replacement cost less depreciation from all types has been deducted.
Physical Depreciation	The loss in value due to wear and tear of an improvement.
Pier	Blocks of concrete. Stone or wood used in lieu of a foundation wall to support a building.

Pilaster	An upright column or pillar projecting from an exterior wall to provide added support to the wall particularly at points of load concentration.
Pole Building	A building in which poles are placed upright in the ground and serve as the foundation and as the framework of the building.
Potential Gross Income	The income from rent and all other sources a property can generate.
Price Related Differential	The Mean divided by the weighted mean. Used to measure assessment progressivity or regressivity.
Principal Building	A main building such <i>as</i> a residence, apartment building, motel, commercial or industrial building.
Property Record Card	Computerized record or card on which description and measurements of each parcel of land and buildings thereon are recorded, and the valuation of the property is computed.
Property Residual	A technique used to value property discounting anticipated income attributable to the property and then adding it to the present worth of the reversion.
Quantity Survey Method	A method of estimating the cost of a structure by itemizing of all labor and material costs by component, plus all indirect costs are added to find a cost value.
Rafter	A beam, usually sloping, supports a roof.

Ramp	An inclined runway or walkway.
Range	The difference between the high and low values in a sample.
Real Estate	The land and improvements and the right to own or use them.
Real Property	The land and any objects attached to the land in a permanent manner such as buildings, trees etc., and the rights inherent in ownership.
Remaining Economic Life	Years left in the economic life of an improvement as of the date of appraisal.
Replacement Cost	The cost of constructing an improvement having the same utility at current prices, material, standards, design, and layout.
Reproduction Cost	The cost to construct an exact duplicate at today's prices that have the same characteristics and using the same materials, standards design layout and quality of the original improvement.
Reserves for Replacement	An allowance for replacement of short-lived items in the income approach.
Reversion	Property value at the end of a holding period.
Riser	Upright part of a stair step.

Romex Wiring	Electrical cable in flexible non-metallic conduit.
Sales Ratio	The ratio between a sale price and the assessed or appraised value of a property.
Sash	A frame for holding panes of glass in a window or door.
Sheathing	The inner covering placed next to the studding or rafters of the walls or roof.
Sheetrock	Trade name for drywall sheets with a gypsum base and paper covering.
Siding	Finished exterior wall of a frame building.
Sash	The bottom horizontal member of a window or door,
Sleeper	Strips of lumber fastened to the sub-floor for fastening finished flooring to and for providing a dead air space beneath the flooring.
Span	The horizontal distance between supports. As for an arch or roof.
Spandrel	The triangular space between the curves of an arch and the straight-line construction above the curves.
Specific Data	Information that is specific to the subject property or comparables.
Sprinkler System	A fire protection system consisting of overhead water pipes and nozzles so installed and regulated that water is sprayed

automatically over the protected area when the temperature in the area reached a predetermined point.

Standard Deviation	The result of subtracting the mean from each value in a set, squaring those and adding them, then dividing them by the number of samples in the set minus 1 and taking the square root of that number. It measures the dispersion of a set of data from its mean.
Stile	Upright piece in the frame of a door or window.
Straight Line Capitalization	A technique that estimates a value by dividing net income by a capitalization rate which is comprised of a discount rate, the reciprocal of remaining economic life and effective tax rate.
Studding	Upright framework to which walls of a building are attached.
Subfloor	Rough flooring laid on floor joists to form a base for finished flooring.
Substitution	The appraisal principal where a buyer will pay no more for a property than the cost of acquiring an equally desirable property.
Substructure	The part of a building below the top of the foundation.
Superstructure	The part of a building above the top of the foundation.

Super Adequacy	An item whose cost exceeds its value.
Surplus Productivity	The income left after the costs of land, labor, capital, and management have been satisfied.
Suspended Ceiling	A ceiling hung below the ceiling joists.
Tax Map	A map showing all lots and tracts of land in their relative size, shape, and location. Also known as plat map, or property location map.
Tenon	The end of a piece of wood cut so as to fit into a hole in another piece of wood, and so form a joint.
Terrace	An outside floor area, without roof; constructed of concrete, brick tile, stone, slate, or other similar material, usually adjoining a house and used as an outdoor living area. Same as a patio.
Through Lot	A lot abutting two parallel, or approximately parallel streets.
Tilt-up Construction	Concrete exterior wall construction in which precast reinforced concrete sections are lifted into position in the wall. This type of construction is sometimes found in commercial and industrial buildings.
Tongue and Groove	Lumber (usually flooring or siding) or other building material in which one edge has a projecting tongue and the

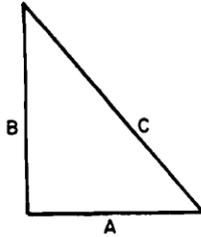
opposite edge has a groove that fits over the tongue of matching material to form a locked joint.

Tract	A single piece of land under one ownership. Can be a lot or acreage. Same as a parcel.
Transom	A low window opening above a door or another window.
Tread	The top, or horizontal, part of a stair step.
Trending	Adjusting a variable value to compensate for increases or decreases in the market over time.
Truss	A series of beams, bars and similar structural members assembled into an open web pattern to support a roof or floor, itself supported at both ends.
Under Improvement	A building having value less than that which the value of the land on which it is built justifies.
Unit Foot Value	The value of a piece of land one foot wide abutting a street or highway and extending back from the front the standard lot depth.
Unit Front Foot	A piece of land one foot wide abutting a street or highway and extending back from the front the standard lot depth.
Unit Heater	A complete heating unit, without ducts, for heating the area in which it is located, such as a room or other part less than the complete area of a building.

Unit in Place Method	A cost estimate where all the direct and indirect costs of each component are combined to arrive at a cost value.
Unit Land Value Map	A map showing the value of land per unit front foot, square foot, or acre in an assessment area.
Value	The present worth of future benefits of owning property.
VCS	Value Control Sector, a group of properties with similar physical, economic and governmental characteristics defined for mass appraisal modeling.
Wainscot	The lower part of an interior wall (approximately four feet high) when finished different from the remainder of the wall, as with tile.
Wall Board	An interior wall and ceiling fiber material cut into sheets for use in place of plaster.
Wall Ratio	The relationship of the exterior walls (perimeter) to the ground area of the building. The wall ratio is used for determining the base unit cost of commercial and industrial buildings and is found by dividing the square feet of the building ground area by the perimeter of the exterior walls.

153. Area and Volume Formulas

AREA AND VOLUME FORMULAS



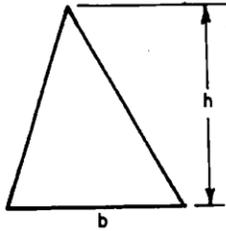
Rule of Right Triangle

- Square of hypotenuse of a right triangle is equal to the sum of the squares of other two sides.
- Square of one side equals square of hypotenuse minus square of other side.

$$C^2 \text{ equals } A^2 \text{ plus } B^2$$

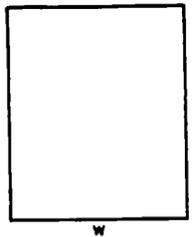
$$A^2 \text{ equals } C^2 \text{ minus } B^2$$

$$B^2 \text{ equals } C^2 \text{ minus } A^2$$



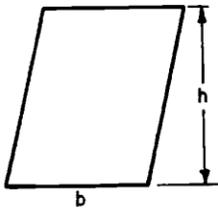
Triangle

Area equals 1/2 the product of base and altitude
 $A = 1/2 (bh)$



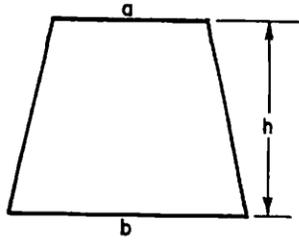
Rectangles and Squares

Area equals the product of length and width
 $A = lw$



Parallelograms

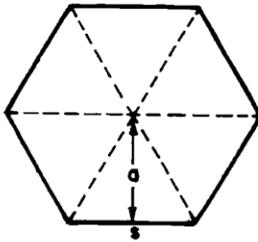
Area equals the product of base and altitude
 $A = bh$



Trapezoid

Area equals the product of the height and 1/2 the sum of the bases.

$$A = \frac{a + b}{2} \times h$$

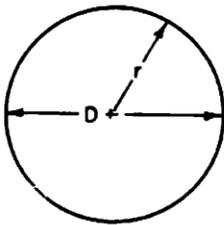


Hexagon

Area equals 3 times the product of apothem and 1 side.

$$A = 3as$$

NOTE: Divide hexagon into triangles.



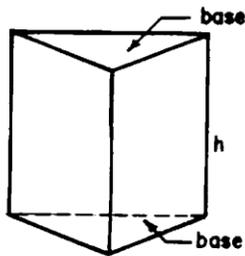
Circle

Area equals the product of π (3.1416) and radius squared.

$$A = \pi r^2 \text{ or } .7854D^2$$

Circumference equals the product of π and diameter.

$$C = \pi D \text{ or } C = 2\pi r$$

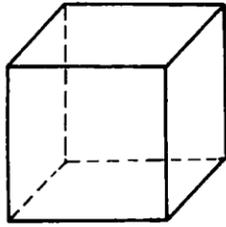


Prism

Lateral area equals the perimeter of the base times the height.

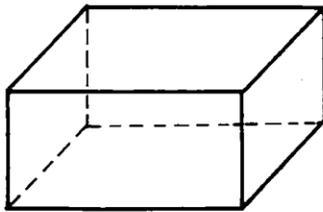
Total area equals the combined area of lateral faces and the bases.

Volume of any prism equals the area of base times altitude.



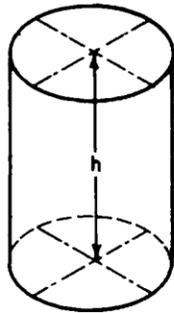
Cube

Total area equals 6 times the square of one edge.
Volume equals area of the base times altitude.



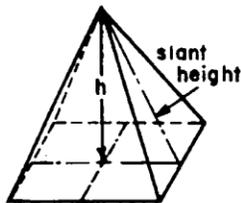
Rectangular Solid

Lateral area equals the perimeter of the base times the height.
Total area equals combined area of lateral faces and the bases.
Volume equals area of base times altitude.



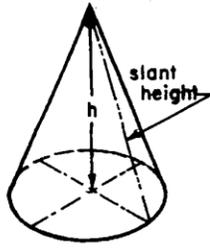
Cylinder

Lateral area equals the circumference of base times height.
Volume equals the area of its base times altitude.



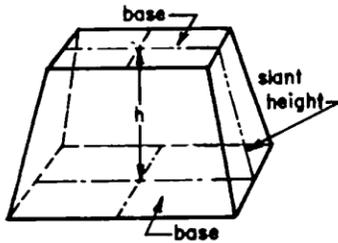
Pyramid

A solid whose base is a polygram and sides are triangles and meet in common point to form the vertex.
Lateral area is equal to the perimeter of base x 1/2 slant height.
Volume is 1/3 the base area x altitude.



Cone

A solid whose base is a circle and whose surface tapers to a point called vertex or top. May be considered a pyramid with an unlimited number of sides.
 The lateral area equals the circumference of base x 1/2 slant height.
 Volume equals 1/3 of the product of the base area and altitude.



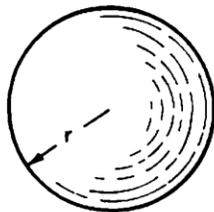
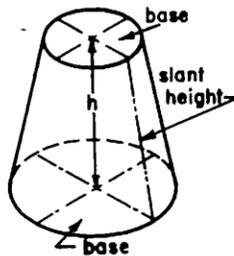
Frustums

Lateral area of a frustum of a right pyramid equals one half of the sum of the perimeters of two bases times the slant height.

Lateral area of a frustum of a cone is found by multiplying one-half the sum of the circumference of the two bases by the slant height.

Total area of a frustum is the sum of lateral area and the two bases.

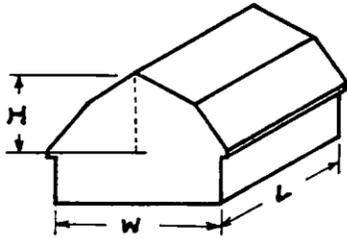
For volume of a frustum take sum of the areas of the two bases; to this add the square root of the product of the areas of the two bases, multiply result by 1/3 of the altitude.



Sphere

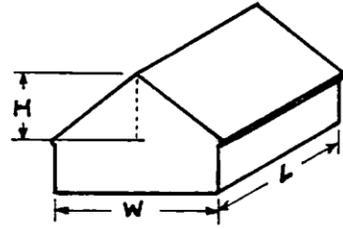
(A solid bounded by a curved surface, every point equally distant from the center.)
 Surface of a sphere equals π times the square of the diameter.
 Volume of a sphere equals the area of the surface times 1/3 of the radius.
 Circumference is the same as that of a circle.

ROOF VOLUME FORMULAS



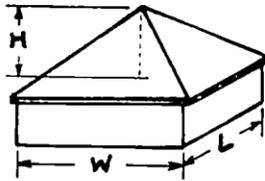
GAMBREL ROOF

$$\frac{W \times L \times H \times 2}{3}$$



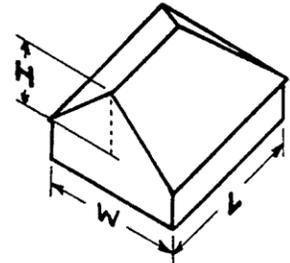
GABLE ROOF

$$\frac{W \times L \times H}{2}$$



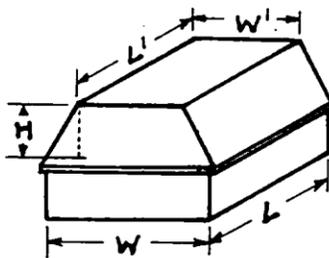
PYRAMID ROOF

$$\frac{W \times L \times H}{3}$$



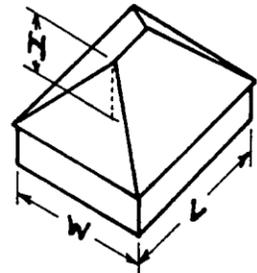
SINGLE HIP ROOF

$$\frac{W \times L \times H}{2} - \frac{W \times L \times H}{6}$$



MANSARD ROOF

$$\left[(W \times L) + (W' \times L') \right] \times \frac{H}{2}$$



DOUBLE HIP ROOF

$$\frac{W \times L \times H}{2} - \frac{W \times L \times H}{3}$$

NOTE:

All heights (H) are measured from the upper side of attic floor joist to the peak.

All widths and lengths are outside measurements.

154. Units of Measurements

Tables of Weights and Measures and Other Information Which May Be Helpful to the Assessor

Linear Measure

1 Foot	=	12 inches
1 Yard	=	3 feet - 36 inches
1 Rod	=	5 1/2 yards - 16 1/2 feet
1 Furlong	=	40 rods - 220 yards - 660 feet
1 Mile	=	8 furlongs - 320 rods - 1,760 yards - 5,280 feet

Surveyor's Linear Measure

1 Link	=	7.92 inches
1 Rod	=	25 links
1 Chain	=	4 rods - 100 links - 66 feet
1 Furlong	=	10 chains
1 Mile	=	8 furlongs - 80 chains

Square Measure

1 Square Foot	=	144 sq. inches
1 Square Yard	=	9 sq. feet - 1,296 sq. inches
1 Square Rod	=	1 pole or perch - 30 1/4 sq. yards - 272 1/4 sq. feet
1 Rood	=	40 sq. rods
1 Acre	=	160 sq. rods - 4,840 sq. yards - 43,560 sq. feet
1 Square Mile	=	640 acres

Surveyor's Square Measure

1 Square Rod	=	526 sq. links
1 Square Chain	=	16 sq. rods
1 Acre	=	10 sq. chains
1 Square Mile	=	640 acres

Cubic Measure

1 Cubic Foot	=	1,728 cu. inches - 7,481 gallons
1 Cubic Yard	=	27 cu. feet
1 Cord Foot	=	16 cu. feet
1 Cord of Wood	=	8 cord feet - 128 cu. feet
1 Perch of Masonry	=	24 3/4 cu. feet
1 Bushel	=	1.2445 cu. feet

Angles and Arcs

1 Minute	=	.60 seconds
1 Degree	=	60 minutes
1 Right Angle	=	90 degrees - 1 quadrant
1 Circumference	=	360 degrees - 4 quadrants

Board Measure

1 Board Foot	=	length in feet x width in feet x thickness in inches.
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Measurements in General Use:

1 link is 7.92 inches
1 foot is 12 inches
1 yard is 3 feet or 36 inches
1 rod is 16 1/2 feet, 5 1/2 yards or 25 links
1 surveyors chain is 66 feet, or 4 rods, or 100 links
1 furlong is 660 feet, or 40 rods
1 mile is 8 furlongs, 320 rods, 80 chains or 5,280 feet
1 square rod is 272 1/4 square feet or 30 1/4 square yards
1 acre contains 43,560 square feet
1 acre contains 160 square rods

A span is 9 inches
A hand - horse measurement - is 4 inches
A knot - nautical - is 6,080.27 feet
A fathom - nautical - is 6 feet
A stone is 14 pounds

A square acre is approximately 208.7 feet on each side
1 acre is about 8 rods by 20 rods, or any two combinations of rods whose product is 160.

Simple Formula Converting Square Feet to Acres:

Multiply by 23 and point off 6 places
Example: 1500 ft. x 2050 ft. = 3,075,000 sq. ft. x 23 = 70.73 acres
(This method is not exact but is useful for rough calculations)

To Find Capacity of Cylindrical Tanks Standing on End:

To find the capacity of cubic feet of a tapered round tank or other object: See "Volume of Frustrum".

To find the capacity of a cylindrical tank in gallons:
Multiply area of base (πr^2) by height of tank to obtain capacity in cubic feet.
Multiply capacity in cubic feet by 7.481 gallons per cubic foot.

Board Measure:

Multiply thickness in inches by width in inches, divide product by 12 and multiply result by the length in feet. The result is board measure content.

Conversion factors for converting lineal feet of lumber into board feet.

Example:

50 - 2" x 10"s 20' long

50 x 20' = 1000 lineal feet

2" x 10" = 20 sq. inches - 12 = 1.667 board feet x 1000 lineal feet equals 1,667 board feet.

UNITS OF LENGTH INTERNATIONAL MEASURE*

Units	Inches	Feet	Yards
1 inch =	<u>1</u>	0.083 333 33	0.027 777 78
1 foot =	<u>12</u>	<u>1</u>	0.033 333 3
1 yard =	<u>36</u>	<u>3</u>	<u>1</u>
1 mile =	<u>63 360</u>	<u>5280</u>	<u>1760</u>
1 centimeter =	0.393 700 78	0.032 808 40	0.010 936 13
1 meter =	39.370 08	3.280 840	1.093 613

Units	Miles	Centimeters	Meters
1 inch =	0.000 015 782 83	<u>2.54</u>	<u>0.025 4</u>
1 foot =	0.000 189 393 9	<u>30.48</u>	<u>0.304 8</u>
1 yard =	0.000 568 181 8	<u>91.44</u>	<u>0.914 4</u>
1 mile =	<u>1</u>	<u>160 934.4</u>	<u>1609.344</u>
1 centimeter =	0.000 006 213 712	<u>1</u>	<u>0.01</u>
1 meter =	0.000 621 371 2	<u>100</u>	<u>1</u>

UNITS OF LENGTH SURVEY MEASURE*

Units	Links	Feet	Rods	Chains
1 link =	<u>1</u>	<u>0.66</u>	0.04	<u>0.01</u>
1 foot =	1.515 152	<u>1</u>	0.050 606 06	0.015 151 52
1 rod =	<u>25</u>	<u>16.5</u>	<u>1</u>	<u>0.25</u>
1 chain =	<u>100</u>	<u>66</u>	<u>4</u>	<u>1</u>
1 mile =	<u>8000</u>	<u>5280</u>	<u>320</u>	<u>80</u>
1 meter =	4.970 960	3.280 833	0.198 838 4	0.049 709 60

Units	Miles	Meters
1 link =	0.000 125	0.201 168 4
1 foot =	0.000 189 393 9	0.304 800 6
1 rod =	0.003 125	5.029 210
1 chain =	0.0125	20.116 84
1 mile =	<u>1</u>	1609.347
1 meter =	0.000 621 369 9	<u>1</u>

* One survey foot = 1.000.002 international feet
 One survey mile = 1.000.002 international mile

UNITS OF VOLUME

Units	Cubic Inches	Cubic Feet	Cubic Yards
1 cubic inch =	<u>1</u>	0.000 578 703 7	0.000 021 433 47
1 cubic foot =	<u>1728</u>	<u>1</u>	0.037 037 04
1 cubic yard =	<u>46 656</u>	<u>27</u>	<u>1</u>
1 cubic centimeter =	0.061 023 74	0.000 035 314 67	0.000 001 307 951
1 cubic decimeter =	61.023 74	0.035 314 67	0.001 307 951
1 cubic meter =	61 023.74	35.314 67	1.307 951

Units	Cubic Centimeters	Cubic Decimeters	Cubic Meters
1 cubic inch =	16.387 064	0.016 387 064	0.000 016 387 064
1 cubic foot =	28 316.846 592	28.316 846 592	0.028 316 846 592
1 cubic yard =	764 554.857 984	764.554 857 984	0.764 554 857 984
1 cubic centimeter =	<u>1</u>	<u>0.001</u>	<u>0.000 001</u>
1 cubic decimeter =	<u>1 000</u>	<u>1</u>	<u>0.001</u>
1 cubic meter =	<u>1 000 000</u>	<u>1000</u>	<u>1</u>

ALL UNDERLINED FIGURES ARE EXACT.

UNITS OF AREA INTERNATIONAL MEASURE*

Units	Square Inches	Square Feet	Square Yards
1 sq. inch =	<u>1</u>	0.006 944 444	0.000 771 604 9
1 sq. foot =	<u>144</u>	<u>1</u>	0.111 111 1
1 sq. yard =	<u>1296</u>	<u>9</u>	<u>1</u>
1 sq. mile =	<u>4 014 189 600</u>	27 878 400	3 097 600
1 sq. centimeter =	0.155 000 3	0.001 076 391	0.000 119 599 0
1 sq. meter =	1550.003	10.763 91	1.195 990

Units	Square Miles	Sq. Centimeters	Sq. Meters
1 sq. inch =	0.000 000 000 249 097 7	<u>6.451 6</u>	0.000 645 16
1 sq. foot =	0.000 000 035 870 06	<u>929.030 4</u>	0.092 903 04
1 sq. yard =	0.000 000 322 830 6	<u>8361.273 6</u>	0.836 127 36
1 sq. mile =	<u>1</u>	25 899 881 103.36	2 589 988.110 336
1 sq. centimeter =	0.000 000 000 038 610 22	<u>1</u>	0.000 1
1 sq. meter =	0.000 000 386 102 1	<u>10 000</u>	<u>1</u>

UNITS OF AREA SURVEY MEASURE*

Units	Square Feet	Square Rods	Square Chains	Acres
1 sq. foot =	<u>1</u>	0.003 673 095	0.000 229 568 4	0.000 022 956 84
1 sq. rod =	<u>272.25</u>	<u>1</u>	0.062 5	0.006 25
1 sq. chain =	<u>4 356</u>	<u>16</u>	<u>1</u>	<u>0.1</u>
1 sq. acre =	<u>43 560</u>	<u>160</u>	<u>10</u>	<u>1</u>
1 sq. mile =	<u>27 878 400</u>	<u>102 400</u>	<u>6400</u>	<u>640</u>
1 sq. meter =	10.763 87	0.039 536 70	0.002 471 004	0.000 247 104 4
1 hectare =	107 638.7	395.367 0	24.710 44	2.471 044

UNITS OF AREA SURVEY MEASURE*

Units	Square Miles	Square Meters
1 sq. foot =	0.000 000 035 870 06	0.092 903 41
1 sq. rod =	0.000 009 765 625	25.292 95
1 sq. chain =	<u>0.000 156 25</u>	404.687 3
1 acre =	<u>0.001 562 5</u>	4 046.873
1 sq. mile =	<u>1</u>	2 589 998
1 sq. meter =	0.000 000 386 100 6	<u>1</u>
1 hectare =	0.003 861 006	<u>10 000</u>

Units	Hectares
1 sq. foot =	0.000 009 290 341
1 sq. rod =	0.002 529 295
1 sq. chain =	0.040 468 73
1 acre =	0.404 687 3
1 sq. mile =	258.999 8
1 sq. meter =	<u>0.000 1</u>
1 hectare =	<u>1</u>

* One square survey foot = 1.000 004 square international feet
 One square survey mile = 1.000 004 square international mile

ALL UNDERLINED FIGURES ARE EXACT.

Table for the Conversion of Lineal Feet into Board Feet

2" x 4"	(1 lineal foot)	.667 board feet
3" x 4"	"	1.000 " "
2" x 6"	"	1.000 " "
2" x 8"	"	1.333 " "
2" x 10"	"	1.667 " "
2" x 12"	"	2.000 " "
2" x 14"	"	2.333 " "
2" x 16"	"	2.667 " "
3" x 6"	"	1.500 " "
4" x 6"	"	2.000 " "
4" x 8"	"	2.667 " "
4" x 10"	"	3.333 " "
4" x 12"	"	4.000 " "
6" x 6"	"	3.000 " "
6" x 8"	"	5.000 " "
10" x 12"	"	10.000 " "
12" x 12"	"	12.000 " "

MENSURATION PRINCIPLES

Plane figure - A plane surface bounded by either straight or curved lines and having no thickness.

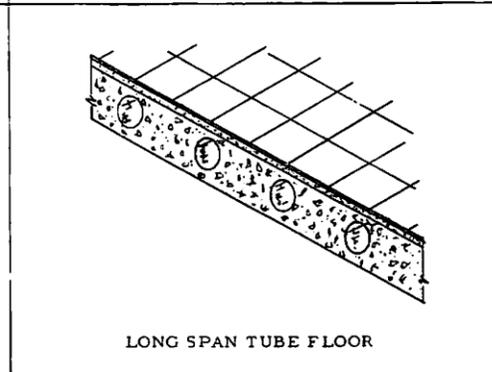
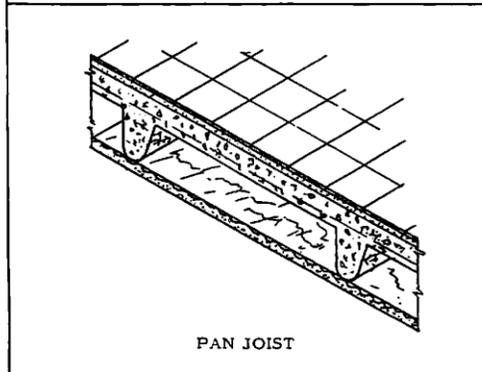
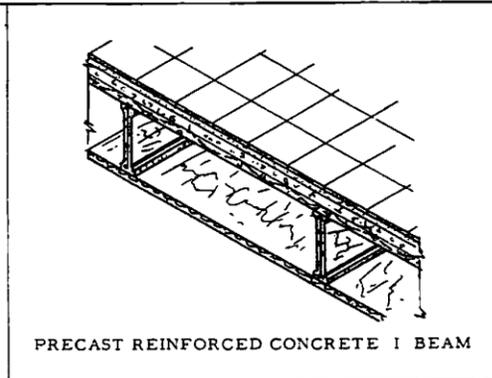
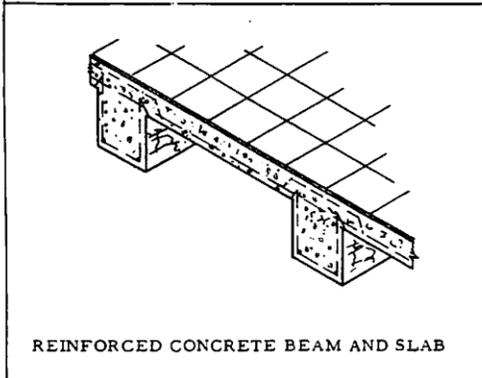
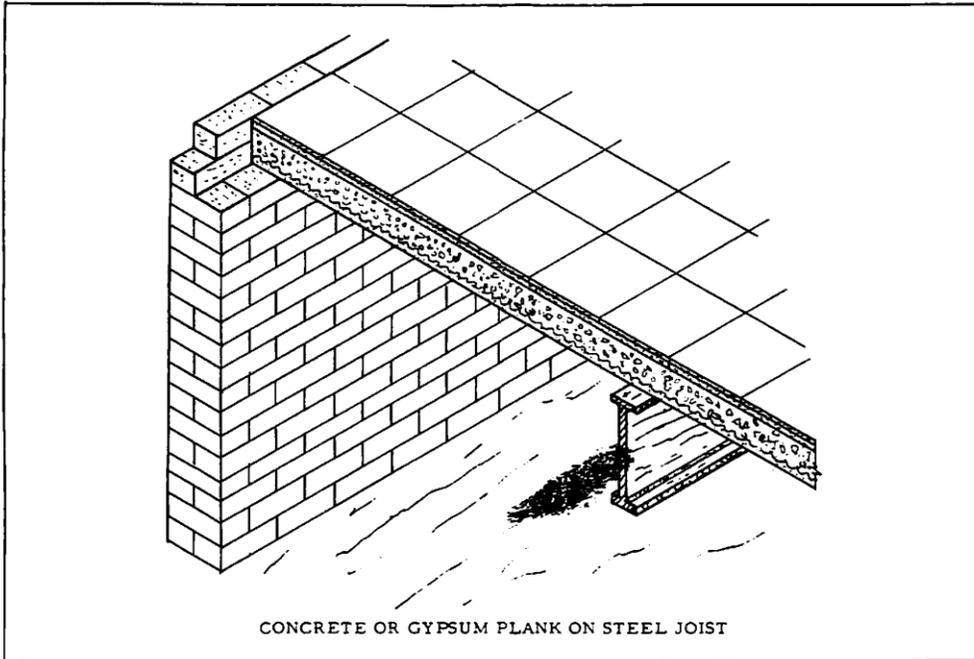
Solid - A body, such as a barrel, building, etc.

Square measure - Area calculation requiring only two dimensions, length and width.

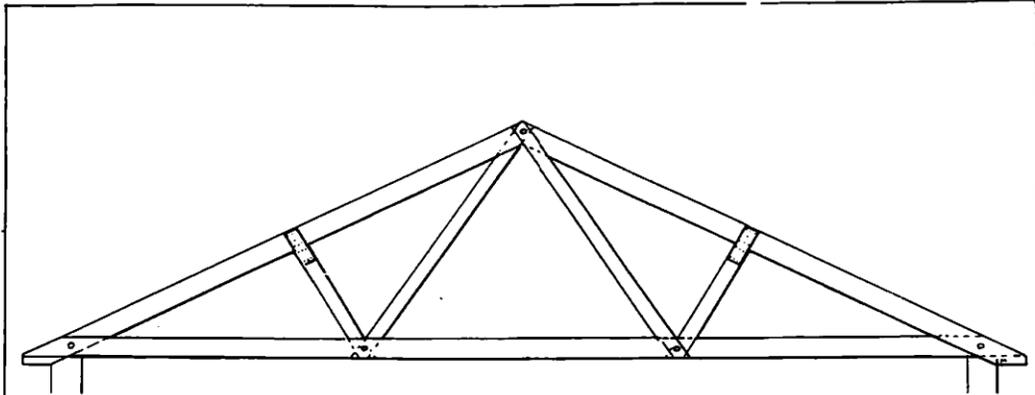
Cubic measure - Cubic or cubage means volume and gives size in terms of its bulk. Calculation requires 3 dimensions, length x width x depth or height or thickness.

155. Construction Illustrations

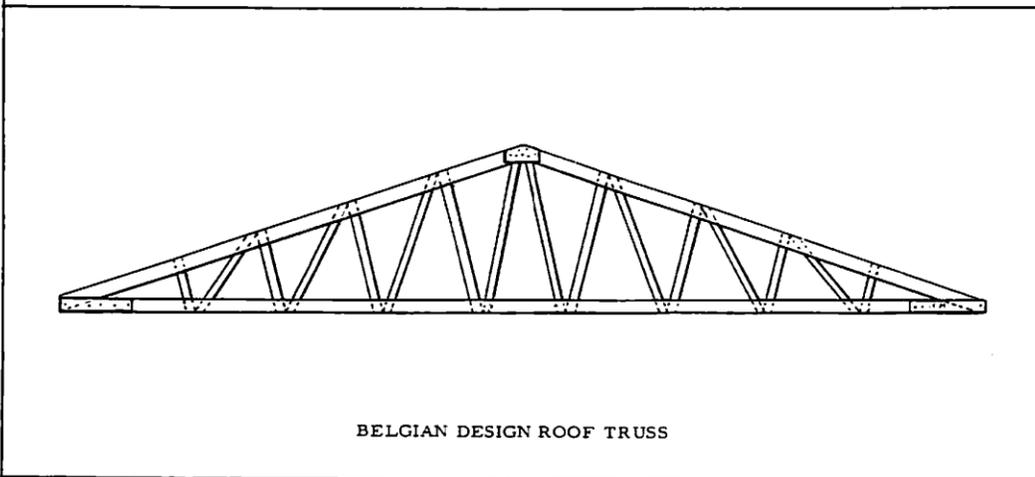
ILLUSTRATIONS FLOORS



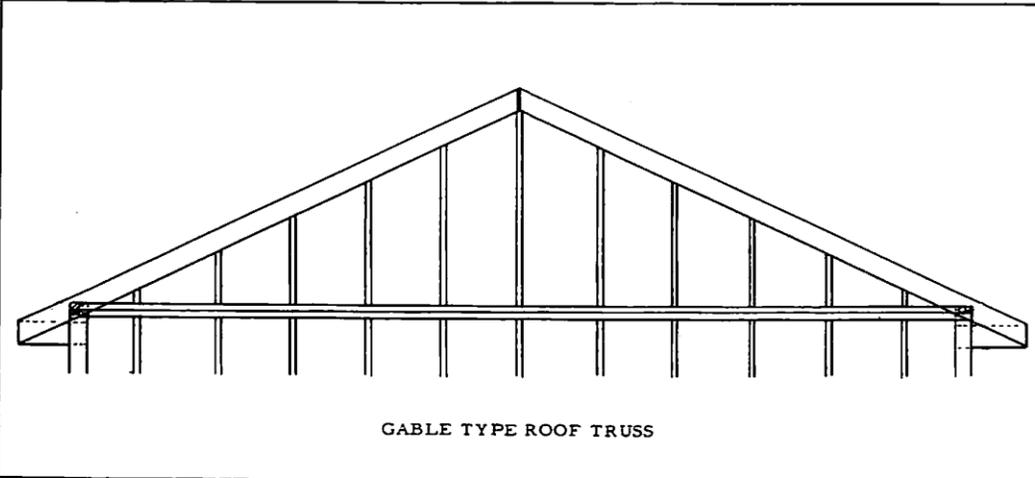
RESIDENTIAL TRUSSES



BOLTED ROOF TRUSS

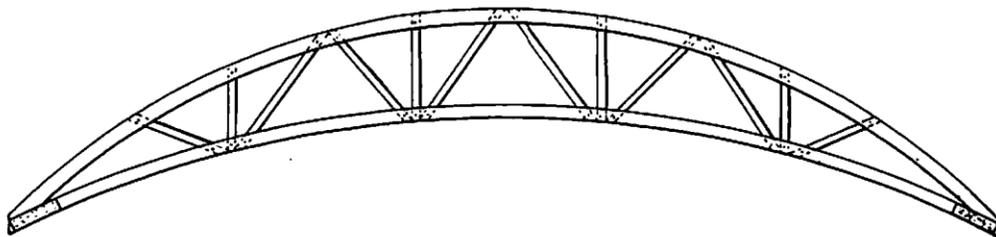


BELGIAN DESIGN ROOF TRUSS

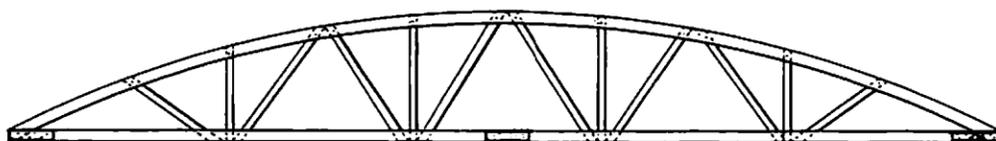


GABLE TYPE ROOF TRUSS

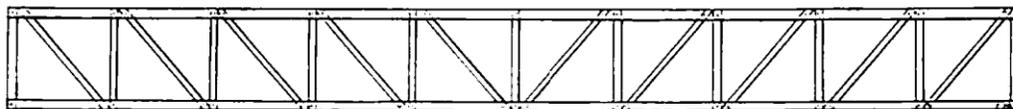
COMMERCIAL TRUSSES



CRESENT DESIGN ROOF TRUSS

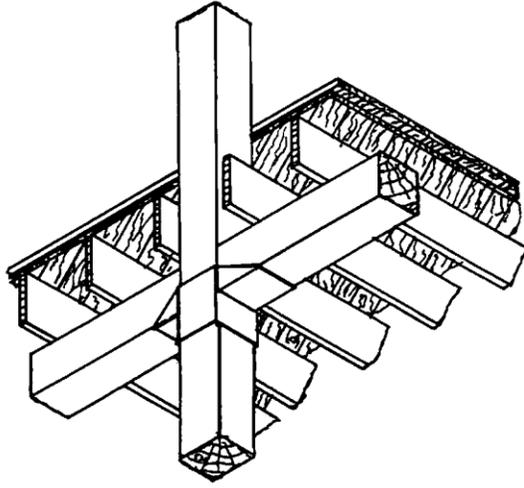


BOWSTRING ROOF TRUSS

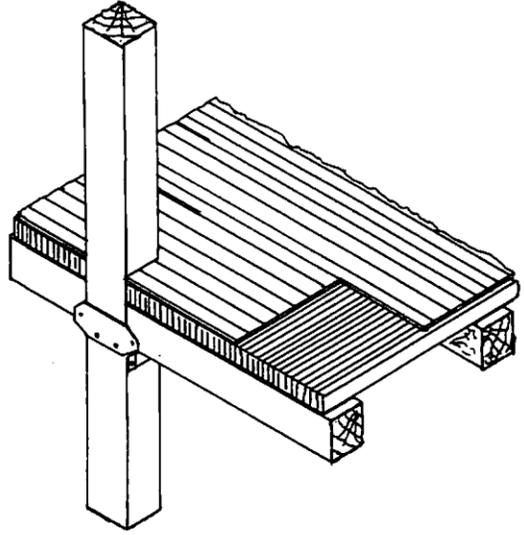


FLAT TOP OR HOWE DESIGN ROOF TRUSS

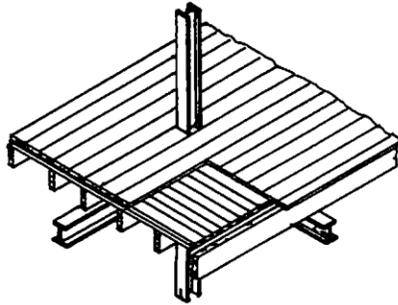
FRAMING



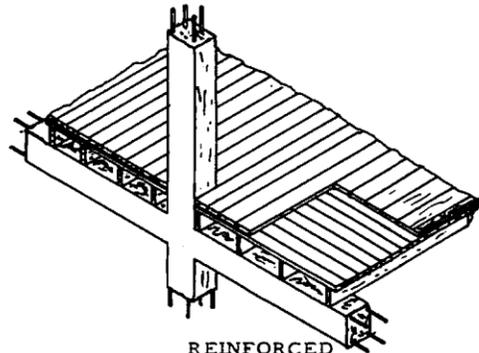
WOOD FRAME



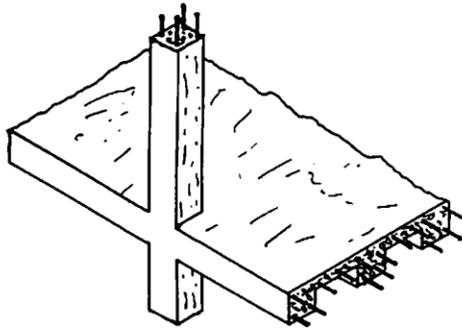
WOOD FRAME
MILL TYPE FLOOR



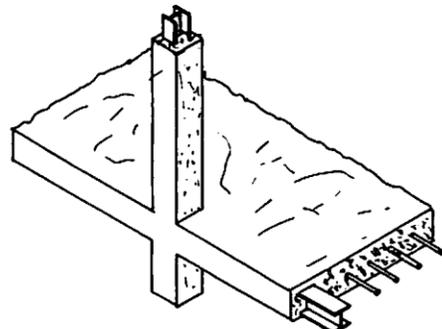
OPEN SKELETON
STEEL FRAME



REINFORCED
CONCRETE FRAME



REINFORCED
CONCRETE BEAMED



CONCRETE PROTECTED
STEEL FRAME

156. Compound Interest Tables

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4%

ANNUAL TABLE

4%

YEARS	1	2	3	4	5	6
	AMOUNT OF ONE	AMOUNT OF ONE PER PERIOD	SINKING FUND FACTOR	PRESENT WORTH OF ONE	PRESENT WORTH ONE PER PERIOD	PARTIAL PAYMENT
1	1.040 000	1.000 000	1.000 000	.961 538	.961 538	1.040 000
2	1.081 600	2.040 000	.490 196	.924 556	1.886 095	.530 196
3	1.124 864	3.121 600	.320 349	.888 996	2.715 091	.380 349
4	1.169 859	4.246 464	.235 490	.854 804	3.429 895	.275 490
5	1.216 653	5.416 323	.184 627	.821 927	4.451 822	.224 627
6	1.265 319	6.632 975	.150 762	.790 315	5.242 137	.190 762
7	1.315 932	7.898 294	.126 610	.759 918	6.002 055	.166 610
8	1.368 569	9.214 226	.108 528	.730 690	6.732 745	.148 528
9	1.423 312	10.582 795	.094 493	.702 587	7.435 332	.134 493
10	1.480 244	12.006 107	.083 291	.675 564	8.110 896	.123 291
11	1.539 454	13.486 351	.074 149	.649 581	8.760 477	.114 149
12	1.601 032	15.025 805	.066 552	.624 597	9.385 074	.106 552
13	1.665 074	16.626 838	.060 144	.600 574	9.985 648	.100 144
14	1.731 676	18.291 911	.054 669	.577 475	10.563 123	.094 669
15	1.800 944	20.023 588	.049 941	.555 265	11.118 387	.089 941
16	1.872 981	21.824 531	.045 820	.533 908	11.652 296	.085 820
17	1.947 900	23.697 512	.042 199	.513 373	12.165 669	.082 199
18	2.025 817	25.645 413	.038 993	.493 628	12.659 297	.078 993
19	2.106 849	27.671 229	.036 139	.474 642	13.133 939	.076 139
20	2.191 123	29.778 079	.033 582	.456 387	13.590 326	.073 582
21	2.278 768	31.969 202	.031 280	.438 834	14.029 150	.071 280
22	2.369 919	34.247 970	.029 199	.421 955	14.451 115	.069 199
23	2.464 716	36.617 889	.027 309	.405 726	14.856 842	.067 309
24	2.563 304	39.082 604	.025 587	.390 121	15.246 963	.065 587
25	2.665 836	41.645 908	.024 012	.375 117	15.622 080	.064 012
26	2.772 470	44.311 745	.022 567	.360 689	15.982 769	.062 567
27	2.883 369	47.084 214	.021 239	.346 817	16.329 586	.061 239
28	2.998 703	49.967 583	.020 013	.333 477	16.663 063	.060 013
29	3.118 651	52.966 286	.018 880	.320 651	16.983 715	.058 880
30	3.243 398	56.084 936	.017 830	.308 319	17.292 033	.057 830
31	3.373 133	59.328 335	.016 855	.296 460	17.586 494	.056 855
32	3.508 059	62.701 469	.015 949	.285 058	17.873 551	.055 949
33	3.648 381	66.209 527	.015 104	.274 094	18.147 646	.055 104
34	3.794 316	69.857 909	.014 315	.263 552	18.411 198	.054 315
35	3.946 089	73.652 225	.013 577	.253 415	18.664 613	.053 577
36	4.103 933	77.595 314	.012 887	.243 669	18.908 282	.052 887
37	4.268 090	81.702 246	.012 240	.234 297	19.142 579	.052 240
38	4.438 813	85.970 336	.011 632	.225 285	19.367 864	.051 632
39	4.616 366	90.409 150	.011 061	.216 621	19.584 485	.051 061
40	4.801 021	95.025 516	.010 523	.208 289	19.792 774	.050 523
41	4.993 061	99.826 536	.010 017	.200 278	19.993 052	.050 017
42	5.192 784	104.819 598	.009 540	.192 575	20.185 627	.049 540
43	5.400 495	110.012 382	.009 090	.185 168	20.370 795	.049 090
44	5.616 515	115.412 877	.008 665	.178 046	20.548 841	.048 665
45	5.841 176	121.029 392	.008 262	.171 198	20.720 040	.048 262
46	6.074 823	126.870 568	.007 887	.164 614	20.884 654	.047 887
47	6.317 816	132.945 190	.007 527	.158 281	21.042 936	.047 527
48	6.570 578	139.263 206	.007 181	.152 195	21.195 131	.047 181
49	6.833 347	145.833 734	.006 851	.146 341	21.341 412	.046 851
50	7.106 681	152.667 084	.006 550	.140 713	21.482 185	.046 550
51	7.390 951	159.773 767	.006 259	.135 301	21.617 485	.046 259
52	7.686 589	167.164 718	.005 982	.130 097	21.747 582	.045 982
53	7.994 052	174.851 306	.005 719	.125 093	21.872 675	.045 719
54	8.313 814	182.845 359	.005 469	.120 282	21.992 957	.045 469
55	8.646 367	191.159 173	.005 231	.115 656	22.108 612	.045 231
56	8.992 222	199.805 540	.005 005	.111 207	22.219 819	.045 005
57	9.351 910	208.797 762	.004 789	.106 930	22.326 749	.044 789
58	9.725 987	218.149 672	.004 584	.102 817	22.429 567	.044 584
59	10.115 026	227.875 659	.004 388	.098 863	22.528 430	.044 388
60	10.519 627	237.990 685	.004 202	.095 060	22.623 490	.044 202

$$S^n = (1+i)^n \quad S_m = \frac{S^n}{i} \quad | \quad 1/S_m = \frac{i}{S^n} \quad | \quad v^n = \frac{1}{S^n} \quad | \quad A_m = \frac{1 - 1/S^n}{i} \quad | \quad \frac{1}{A_m} = \frac{i}{1 - 1/S^n}$$

5%

ANNUAL TABLE

5% 6%

ANNUAL TABLE

6%

YEARS	5%						6%					
	AMOUNT OF ONE	AMOUNT OF ONE PER PERIOD	SINKING FUND FACTOR	PRESENT WORTH OF ONE	PRESENT WORTH ONE PER PERIOD	PARTIAL PAYMENT	AMOUNT OF ONE	AMOUNT OF ONE PER PERIOD	SINKING FUND FACTOR	PRESENT WORTH OF ONE	PRESENT WORTH ONE PER PERIOD	PARTIAL PAYMENT
1	1.050 000	1.000 000	1.000 000	.952 381	.952 381	1.050 000	1.000 000	1.000 000	.943 396	.943 396	1.050 000	
2	1.102 500	2.050 000	.487 805	.907 029	.907 029	.537 805	1.123 600	2.060 000	.889 996	.889 996	.964 396	
3	1.157 625	3.152 500	.317 209	.863 839	.863 839	.837 209	1.313 600	3.173 000	.839 619	.839 619	.945 437	
4	1.215 125	4.310 125	.202 012	.822 002	.822 002	.782 012	1.522 000	4.334 000	.792 094	.792 094	.914 110	
5	1.274 288	5.527 631	.160 975	.783 526	.783 526	.720 975	1.738 226	5.637 093	.747 258	.747 258	.888 591	
6	1.340 096	6.801 913	.147 017	.746 215	.746 215	.657 017	1.968 519	6.975 319	.706 961	.706 961	.864 324	
7	1.407 100	8.142 008	.122 820	.710 681	.710 681	.542 820	2.213 600	8.393 838	.665 051	.665 051	.841 035	
8	1.477 455	9.549 109	.104 722	.676 839	.676 839	.454 722	2.478 600	9.897 468	.627 412	.627 412	.818 784	
9	1.551 328	11.026 564	.090 690	.644 609	.644 609	.344 690	2.760 000	11.491 316	.591 898	.591 898	.800 682	
10	1.628 895	12.577 893	.079 505	.613 913	.613 913	.249 505	3.056 000	13.180 795	.558 395	.558 395	.783 868	
11	1.710 339	14.206 787	.070 389	.586 639	.586 639	.170 389	3.369 564	14.971 643	.526 788	.526 788	.768 793	
12	1.795 856	15.917 127	.062 825	.566 837	.566 837	.102 825	3.698 000	16.802 138	.496 859	.496 859	.754 844	
13	1.885 649	17.712 983	.056 556	.550 321	.550 321	.046 556	4.040 000	18.725 928	.468 201	.468 201	.742 980	
14	1.979 932	19.598 632	.051 024	.538 661	.538 661	.004 024	4.396 564	20.741 066	.441 265	.441 265	.732 082	
15	2.078 928	21.578 564	.046 342	.531 017	.531 017	.000 342	4.768 000	22.895 518	.415 868	.415 868	.722 129	
16	2.182 875	23.657 492	.042 270	.527 770	.527 770	.000 270	5.154 564	25.188 000	.391 646	.391 646	.713 229	
17	2.292 618	25.837 365	.038 679	.524 521	.524 521	.000 679	5.556 000	28.212 800	.371 364	.371 364	.705 445	
18	2.407 188	28.117 305	.035 521	.521 751	.521 751	.001 521	5.972 564	31.995 600	.352 357	.352 357	.698 621	
19	2.526 950	30.539 004	.032 746	.519 374	.519 374	.002 746	6.404 000	36.185 591	.334 344	.334 344	.692 821	
20	2.653 298	33.065 954	.030 243	.517 889	.517 889	.003 243	6.850 564	40.741 135	.318 330	.318 330	.688 021	
21	2.785 963	35.719 252	.027 996	.516 942	.516 942	.004 252	7.312 000	45.718 000	.303 316	.303 316	.684 221	
22	2.925 261	38.505 214	.025 911	.516 403	.516 403	.005 214	7.793 564	51.072 000	.289 301	.289 301	.680 421	
23	3.071 524	41.430 475	.024 117	.516 209	.516 209	.006 475	8.294 000	56.864 000	.276 286	.276 286	.676 621	
24	3.224 355	44.497 099	.022 591	.516 162	.516 162	.007 999	8.814 564	63.056 000	.264 271	.264 271	.672 821	
25	3.383 355	47.797 099	.021 299	.516 142	.516 142	.009 599	9.354 000	69.608 000	.253 256	.253 256	.669 021	
26	3.555 673	51.333 454	.019 564	.516 145	.516 145	.012 454	9.912 564	76.572 000	.243 241	.243 241	.665 221	
27	3.733 456	55.099 126	.018 292	.516 163	.516 163	.015 126	10.488 000	83.908 000	.234 226	.234 226	.661 421	
28	3.920 129	59.092 593	.017 123	.516 194	.516 194	.018 593	11.081 564	91.568 000	.226 211	.226 211	.657 621	
29	4.116 136	63.322 712	.016 046	.516 247	.516 247	.022 712	11.691 000	99.608 000	.219 196	.219 196	.653 821	
30	4.321 942	67.800 848	.015 051	.516 317	.516 317	.027 848	12.316 564	108.000 000	.213 181	.213 181	.650 021	
31	4.538 039	72.527 790	.014 132	.516 399	.516 399	.033 790	12.957 000	116.708 000	.207 166	.207 166	.646 221	
32	4.764 941	77.509 879	.013 280	.516 488	.516 488	.040 879	13.612 564	125.768 000	.201 151	.201 151	.642 421	
33	5.003 189	82.746 771	.012 490	.516 583	.516 583	.048 771	14.281 000	135.132 000	.195 136	.195 136	.638 621	
34	5.253 348	88.246 959	.011 755	.516 684	.516 684	.057 959	14.963 564	144.808 000	.189 121	.189 121	.634 821	
35	5.516 015	94.020 307	.011 072	.516 791	.516 791	.067 307	15.659 000	154.792 000	.183 106	.183 106	.631 021	
36	5.791 816	99.993 323	.010 434	.516 904	.516 904	.077 323	16.368 564	165.088 000	.177 091	.177 091	.627 221	
37	6.079 416	106.266 159	.009 840	.517 023	.517 023	.087 159	17.091 000	175.600 000	.171 076	.171 076	.623 421	
38	6.379 471	112.849 566	.009 280	.517 147	.517 147	.097 566	17.827 564	186.328 000	.165 061	.165 061	.619 621	
39	6.690 751	119.749 023	.008 745	.517 276	.517 276	.107 023	18.578 000	197.272 000	.159 046	.159 046	.615 821	
40	7.013 989	127.079 774	.008 238	.517 409	.517 409	.116 774	19.341 564	208.432 000	.153 031	.153 031	.612 021	
41	7.349 988	134.759 763	.007 762	.517 546	.517 546	.126 763	20.118 000	219.808 000	.147 016	.147 016	.608 221	
42	7.698 588	142.809 751	.007 315	.517 687	.517 687	.137 751	20.908 564	231.408 000	.141 001	.141 001	.604 421	
43	8.059 750	151.249 004	.006 884	.517 832	.517 832	.149 004	21.712 000	243.232 000	.135 086	.135 086	.600 621	
44	8.433 150	160.093 004	.006 465	.517 981	.517 981	.161 004	22.529 564	255.288 000	.129 171	.129 171	.596 821	
45	8.819 508	169.359 156	.006 056	.518 134	.518 134	.173 156	23.360 000	267.568 000	.123 256	.123 256	.593 021	
46	9.218 508	179.059 156	.005 656	.518 291	.518 291	.185 156	24.204 564	280.072 000	.117 341	.117 341	.589 221	
47	9.630 971	189.209 422	.005 264	.518 451	.518 451	.197 422	25.062 000	292.800 000	.111 426	.111 426	.585 421	
48	10.056 710	199.929 393	.004 881	.518 614	.518 614	.210 393	25.933 564	305.752 000	.105 511	.105 511	.581 621	
49	10.495 471	211.229 863	.004 508	.518 781	.518 781	.223 863	26.818 000	318.928 000	.099 596	.099 596	.577 821	
50	10.947 971	223.129 863	.004 145	.518 951	.518 951	.237 863	27.716 564	332.328 000	.093 681	.093 681	.574 021	
51	11.414 971	235.649 863	.003 791	.519 124	.519 124	.252 863	28.628 000	346.048 000	.087 766	.087 766	.570 221	
52	11.897 971	248.799 863	.003 445	.519 301	.519 301	.268 863	29.553 564	360.088 000	.081 851	.081 851	.566 421	
53	12.396 971	262.579 863	.003 108	.519 481	.519 481	.285 863	30.494 000	374.448 000	.075 936	.075 936	.562 621	
54	12.911 971	277.009 863	.002 779	.519 664	.519 664	.303 863	31.449 564	389.128 000	.070 021	.070 021	.558 821	
55	13.443 971	292.109 863	.002 456	.519 851	.519 851	.322 863	32.419 000	404.128 000	.064 106	.064 106	.555 021	
56	13.992 971	307.889 863	.002 139	.520 041	.520 041	.342 863	33.399 564	419.448 000	.058 191	.058 191	.551 221	
57	14.558 971	324.389 863	.001 826	.520 234	.520 234	.363 863	34.389 000	435.168 000	.052 276	.052 276	.547 421	
58	15.142 971	341.629 863	.001 518	.520 431	.520 431	.385 863	35.388 564	451.288 000	.046 361	.046 361	.543 621	
59	15.744 971	359.629 863	.001 214	.520 631	.520 631	.408 863	36.397 000	467.808 000	.040 446	.040 446	.539 821	
60	16.364 971	378.389 863	.000 914	.520 834	.520 834	.432 863	37.414 564	484.728 000	.034 531	.034 531	.536 021	

7%

ANNUAL TABLE

7% 8%

ANNUAL TABLE

8%

EFFECTIVE RATE 8% BASE 1.08

YEARS	7% 8%						8%					
	1	2	3	4	5	6	1	2	3	4	5	6
1	1-070 000	1-000 000	1-000 000	934 519	834 519	1-070 000	1-000 000	1-000 000	925 926	825 926	1-080 000	1-080 000
2	1-144 900	2-070 000	1-483 092	873 439	1-808 000	1-573 000	2-080 000	1-480 769	857 339	1-783 265	1-560 769	1-560 769
3	1-270 752	3-216 900	2-315 252	915 689	2-624 216	2-081 952	3-226 000	2-259 712	830 832	2-571 097	1-988 034	1-988 034
4	1-402 552	4-376 900	3-135 920	957 939	3-474 576	2-493 752	4-308 000	3-038 034	793 832	3-332 127	2-501 921	2-501 921
5	1-500 730	5-750 730	4-131 691	986 172	4-100 191	2-843 691	5-686 601	4-508 112	735 030	3-952 710	2-750 456	2-750 456
6	1-605 781	7-153 291	5-139 796	1-000 000	5-766 540	3-209 796	7-335 929	5-830 170	630 170	5-622 880	3-216 315	3-216 315
7	1-718 186	8-654 021	6-389 289	1-015 553	6-389 289	3-855 553	8-313 874	6-512 823	583 000	6-206 370	3-706 370	3-706 370
8	1-838 131	10-259 803	7-891 468	1-031 952	7-891 468	4-585 952	10-211 624	7-891 468	540 269	7-466 639	4-174 015	4-174 015
9	1-964 726	11-977 248	9-513 386	1-049 816	9-513 386	5-438 816	12-063 558	9-513 386	500 249	8-246 888	4-600 080	4-600 080
10	2-100 000	13-810 448	11-353 986	1-069 795	11-353 986	6-423 986	14-288 562	11-353 986	463 193	9-210 081	5-169 029	5-169 029
11	2-252 192	15-783 599	13-537 357	1-092 858	13-537 357	7-549 858	16-645 487	13-537 357	428 082	10-118 064	6-150 076	6-150 076
12	2-409 845	17-888 451	15-759 902	1-118 553	15-759 902	8-811 553	18-971 176	15-759 902	392 572	11-030 076	7-172 695	7-172 695
13	2-572 552	20-140 643	18-118 648	1-146 964	18-118 648	10-228 964	21-312 920	18-118 648	357 498	12-000 000	8-347 498	8-347 498
14	2-740 816	22-550 488	20-513 386	1-177 914	20-513 386	11-577 914	23-712 114	20-513 386	322 641	13-030 000	9-512 641	9-512 641
15	2-924 165	25-129 022	23-079 795	1-210 914	23-079 795	13-140 914	26-152 114	23-079 795	288 082	14-110 000	10-710 081	10-710 081
16	3-123 185	27-888 054	25-858 858	1-246 858	25-858 858	14-946 858	28-823 223	25-858 858	253 641	15-250 000	11-946 858	11-946 858
17	3-337 512	30-840 217	28-928 413	1-295 864	28-928 413	17-000 864	30-324 283	28-928 413	219 176	16-400 000	13-000 864	13-000 864
18	3-567 816	33-999 033	32-228 413	1-357 864	32-228 413	19-346 864	32-823 223	32-228 413	184 858	17-600 000	14-118 648	14-118 648
19	3-814 816	37-378 965	35-758 413	1-434 816	35-758 413	22-000 864	35-446 864	35-758 413	150 413	18-850 000	15-290 864	15-290 864
20	4-078 816	41-000 000	40-558 413	1-528 816	40-558 413	24-946 864	38-223 223	40-558 413	116 858	20-200 000	16-546 864	16-546 864
21	4-360 000	44-946 864	44-800 864	1-638 816	44-800 864	28-118 648	41-223 223	44-800 864	83 413	21-600 000	17-946 864	17-946 864
22	4-660 000	49-118 648	49-118 648	1-764 816	49-118 648	31-546 864	43-823 223	49-118 648	50 864	23-100 000	19-446 864	19-446 864
23	4-980 000	53-612 114	53-612 114	1-908 816	53-612 114	35-223 223	46-546 864	53-612 114	18 864	24-700 000	21-046 864	21-046 864
24	5-320 000	58-446 864	58-446 864	2-070 816	58-446 864	39-223 223	49-323 223	58-446 864	7 413	26-500 000	22-746 864	22-746 864
25	5-680 000	63-612 114	63-612 114	2-250 816	63-612 114	42-323 223	52-223 223	63-612 114	0 000	28-400 000	24-546 864	24-546 864
26	6-060 000	69-118 648	69-118 648	2-458 816	69-118 648	45-646 864	55-323 223	69-118 648	-118 648	30-400 000	26-446 864	26-446 864
27	6-460 000	75-000 000	75-000 000	2-696 816	75-000 000	49-223 223	58-646 864	75-000 000	-223 223	32-500 000	28-446 864	28-446 864
28	6-880 000	81-223 223	81-223 223	2-964 816	81-223 223	53-118 648	62-223 223	81-223 223	-346 864	34-700 000	30-546 864	30-546 864
29	7-320 000	87-823 223	87-823 223	3-272 816	87-823 223	57-323 223	65-946 864	87-823 223	-470 864	37-000 000	32-746 864	32-746 864
30	7-780 000	94-823 223	94-823 223	3-620 816	94-823 223	61-946 864	69-946 864	94-823 223	-600 864	39-400 000	35-046 864	35-046 864
31	8-145 113	102-073 041	102-073 041	4-018 816	102-073 041	66-823 223	74-118 648	102-073 041	-746 864	41-900 000	37-446 864	37-446 864
32	8-515 211	110-218 154	110-218 154	4-454 816	110-218 154	71-546 864	79-646 864	110-218 154	-896 864	44-400 000	40-046 864	40-046 864
33	8-900 000	119-323 425	119-323 425	4-948 816	119-323 425	77-118 648	84-946 864	119-323 425	-1060 864	47-000 000	42-346 864	42-346 864
34	9-310 000	128-458 765	128-458 765	5-490 816	128-458 765	83-546 864	90-646 864	128-458 765	-1240 864	49-700 000	44-346 864	44-346 864
35	9-740 000	138-623 816	138-623 816	6-090 816	138-623 816	89-223 223	97-646 864	138-623 816	-1430 864	52-500 000	46-346 864	46-346 864
36	10-190 000	149-913 460	149-913 460	6-750 816	149-913 460	95-946 864	106-223 223	149-913 460	-1630 864	55-400 000	48-346 864	48-346 864
37	10-660 000	162-337 402	162-337 402	7-470 816	162-337 402	104-823 223	115-946 864	162-337 402	-1840 864	59-400 000	50-346 864	50-346 864
38	11-150 000	176-913 425	176-913 425	8-260 816	176-913 425	114-323 223	126-223 223	176-913 425	-2060 864	63-500 000	52-346 864	52-346 864
39	11-660 000	192-640 292	192-640 292	9-120 816	192-640 292	123-546 864	138-118 648	192-640 292	-2290 864	68-000 000	54-346 864	54-346 864
40	12-190 000	209-635 112	209-635 112	10-060 816	209-635 112	133-118 648	150-646 864	209-635 112	-2530 864	73-000 000	56-346 864	56-346 864
41	12-740 000	218-609 570	218-609 570	11-080 816	218-609 570	143-223 223	163-223 223	218-609 570	-2780 864	78-000 000	58-346 864	58-346 864
42	13-310 000	229-637 240	229-637 240	12-180 816	229-637 240	153-946 864	177-118 648	229-637 240	-3040 864	83-000 000	60-346 864	60-346 864
43	13-900 000	242-776 696	242-776 696	13-360 816	242-776 696	165-223 223	191-646 864	242-776 696	-3310 864	88-000 000	62-346 864	62-346 864
44	14-510 000	258-120 851	258-120 851	14-620 816	258-120 851	177-946 864	206-223 223	258-120 851	-3590 864	93-000 000	64-346 864	64-346 864
45	15-140 000	275-749 311	275-749 311	15-960 816	275-749 311	191-223 223	222-118 648	275-749 311	-3880 864	98-000 000	66-346 864	66-346 864
46	15-790 000	294-609 570	294-609 570	17-380 816	294-609 570	206-546 864	238-118 648	294-609 570	-4180 864	103-000 000	68-346 864	68-346 864
47	16-460 000	315-637 240	315-637 240	18-890 816	315-637 240	223-823 223	255-646 864	315-637 240	-4490 864	108-000 000	70-346 864	70-346 864
48	17-160 000	338-913 460	338-913 460	20-490 816	338-913 460	242-118 648	274-223 223	338-913 460	-4810 864	113-000 000	72-346 864	72-346 864
49	17-890 000	364-458 765	364-458 765	22-280 816	364-458 765	252-546 864	296-118 648	364-458 765	-5140 864	118-000 000	74-346 864	74-346 864
50	18-650 000	392-276 696	392-276 696	24-260 816	392-276 696	263-823 223	320-118 648	392-276 696	-5480 864	123-000 000	76-346 864	76-346 864
51	19-440 000	422-409 570	422-409 570	26-440 816	422-409 570	276-118 648	346-118 648	422-409 570	-5830 864	128-000 000	78-346 864	78-346 864
52	20-260 000	454-946 864	454-946 864	28-820 816	454-946 864	290-546 864	372-118 648	454-946 864	-6190 864	133-000 000	80-346 864	80-346 864
53	21-110 000	489-637 240	489-637 240	31-400 816	489-637 240	306-823 223	400-118 648	489-637 240	-6560 864	138-000 000	82-346 864	82-346 864
54	22-000 000	527-458 765	527-458 765	34-180 816	527-458 765	324-118 648	429-118 648	527-458 765	-6940 864	143-000 000	84-346 864	84-346 864
55	22-920 000	568-609 570	568-609 570	37-160 816	568-609 570	343-546 864	459-118 648	568-609 570	-7330 864	148-000 000	86-346 864	86-346 864
56	23-880 000	612-243 594	612-243 594	40-350 816	612-243 594	364-823 223	490-118 648	612-243 594	-7730 864	153-000 000	88-346 864	88-346 864
57	24-880 000	659-450 646	659-450 646	43-860 816	659-450 646	387-118 648	522-118 648	659-450 646	-8140 864	158-000 000	90-346 864	90-346 864
58	25-920 000	710-637 240	710-637 240	47-690 816	710-637 240	412-546 864	556-118 648	710-637 240	-8560 864	163-000 000	92-346 864	92-346 864
59	27-100 000	766-000 000	766-000 000	51-840 816	766-000 000	440-823 223	592-118 648	766-00				

11%

ANNUAL TABLE

11%

ANNUAL TABLE

11%

12%

ANNUAL TABLE

12%

ANNUAL TABLE

12%

YEARS	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
1	1-110 000	1-000 000	900 901	800 901	700 901	600 901	1-110 000	1-000 000	900 901	800 901	700 901	600 901	1-120 000	1-000 000	900 000	800 000	700 000	600 000
2	1-232 000	2-110 000	-811 822	-712 934	-614 046	-515 158	1-232 000	2-110 000	-811 822	-712 934	-614 046	-515 158	1-254 400	2-120 000	1-089 012	-989 118	-890 226	-791 334
3	1-367 631	3-342 000	-1 031 191	-932 303	-833 415	-734 527	1-367 631	3-342 000	-1 031 191	-932 303	-833 415	-734 527	1-404 928	3-374 400	-2 098 349	-1 999 457	-1 899 565	-1 799 673
4	1-518 070	4-709 731	-1 212 326	-1 113 438	-1 014 550	-915 662	1-518 070	4-709 731	-1 212 326	-1 113 438	-1 014 550	-915 662	1-573 519	4-779 328	-2 698 236	-2 599 344	-2 499 452	-2 399 560
5	1-685 058	6-227 801	-1 605 570	-1 506 682	-1 407 794	-1 308 906	1-685 058	6-227 801	-1 605 570	-1 506 682	-1 407 794	-1 308 906	1-782 342	6-352 847	-3 151 410	-3 052 518	-2 953 626	-2 854 734
6	1-870 415	7-912 860	-2 014 640	-1 915 752	-1 816 864	-1 717 976	1-870 415	7-912 860	-2 014 640	-1 915 752	-1 816 864	-1 717 976	1-973 823	8-115 189	-3 723 226	-3 624 334	-3 525 442	-3 426 550
7	2-076 160	9-783 274	-2 431 715	-2 332 827	-2 233 939	-2 135 051	2-076 160	9-783 274	-2 431 715	-2 332 827	-2 233 939	-2 135 051	2-210 681	10-089 012	-4 453 349	-4 354 457	-4 255 565	-4 156 673
8	2-304 538	11-859 434	-2 850 800	-2 751 912	-2 653 024	-2 554 136	2-304 538	11-859 434	-2 850 800	-2 751 912	-2 653 024	-2 554 136	2-415 963	12-299 693	-5 268 610	-5 169 718	-5 070 826	-4 971 934
9	2-558 037	14-163 972	-3 270 900	-3 172 012	-3 073 124	-2 974 236	2-558 037	14-163 972	-3 270 900	-3 172 012	-3 073 124	-2 974 236	2-713 079	14-775 656	-6 077 679	-5 978 787	-5 879 895	-5 780 993
10	2-839 421	16-722 009	-3 691 000	-3 592 112	-3 493 224	-3 394 336	2-839 421	16-722 009	-3 691 000	-3 592 112	-3 493 224	-3 394 336	3-105 848	17-548 735	-6 886 984	-6 788 092	-6 689 200	-6 590 308
11	3-151 357	19-561 430	-4 102 100	-4 003 212	-3 904 324	-3 805 436	3-151 357	19-561 430	-4 102 100	-4 003 212	-3 904 324	-3 805 436	3-418 550	20-654 583	-7 682 100	-7 583 208	-7 484 316	-7 385 424
12	3-503 280	22-711 180	-4 503 200	-4 404 312	-4 305 424	-4 206 536	3-503 280	22-711 180	-4 503 200	-4 404 312	-4 305 424	-4 206 536	3-736 766	22-133 133	-8 477 216	-8 378 324	-8 279 432	-8 180 540
13	3-895 203	26-094 618	-4 905 300	-4 806 412	-4 707 524	-4 608 636	3-895 203	26-094 618	-4 905 300	-4 806 412	-4 707 524	-4 608 636	4-111 982	24-029 109	-9 272 332	-9 173 440	-9 074 548	-8 975 656
14	4-310 441	30-004 918	-5 307 400	-5 208 512	-5 109 624	-5 010 736	4-310 441	30-004 918	-5 307 400	-5 208 512	-5 109 624	-5 010 736	4-488 112	32-392 402	-10 137 448	-10 038 556	-9 939 664	-9 840 772
15	4-764 569	34-405 359	-5 709 500	-5 610 612	-5 511 724	-5 412 836	4-764 569	34-405 359	-5 709 500	-5 610 612	-5 511 724	-5 412 836	5-043 566	37-279 715	-11 002 564	-10 903 672	-10 804 780	-10 705 888
16	5-210 894	39-189 948	-6 111 600	-6 012 712	-5 913 824	-5 814 936	5-210 894	39-189 948	-6 111 600	-6 012 712	-5 913 824	-5 814 936	5-418 794	42-753 280	-11 867 680	-11 768 788	-11 669 896	-11 570 994
17	5-695 293	44-306 974	-6 513 700	-6 414 812	-6 315 924	-6 217 036	5-695 293	44-306 974	-6 513 700	-6 414 812	-6 315 924	-6 217 036	5-817 010	46-883 474	-12 732 800	-12 633 908	-12 535 016	-12 436 124
18	6-223 744	50-004 618	-6 915 800	-6 816 912	-6 718 024	-6 619 136	6-223 744	50-004 618	-6 915 800	-6 816 912	-6 718 024	-6 619 136	6-149 226	51-749 615	-13 607 920	-13 509 028	-13 410 136	-13 311 244
19	6-802 312	56-211 638	-7 317 900	-7 219 012	-7 120 124	-7 021 236	6-802 312	56-211 638	-7 317 900	-7 219 012	-7 120 124	-7 021 236	6-543 691	53-439 681	-14 483 040	-14 384 148	-14 285 256	-14 186 364
20	7-438 044	62-912 878	-7 720 000	-7 621 112	-7 522 224	-7 423 336	7-438 044	62-912 878	-7 720 000	-7 621 112	-7 522 224	-7 423 336	7-046 293	57-279 715	-15 368 160	-15 269 268	-15 170 376	-15 071 484
21	8-143 866	70-189 948	-8 122 100	-8 023 212	-7 924 324	-7 825 436	8-143 866	70-189 948	-8 122 100	-8 023 212	-7 924 324	-7 825 436	7-469 444	61-899 136	-16 273 280	-16 174 388	-16 075 496	-15 976 604
22	8-923 574	78-054 618	-8 524 200	-8 425 312	-8 326 424	-8 227 536	8-923 574	78-054 618	-8 524 200	-8 425 312	-8 326 424	-8 227 536	8-083 848	67-136 333	-17 200 400	-17 101 508	-17 002 616	-16 903 724
23	9-778 901	86-511 180	-8 926 300	-8 827 412	-8 728 524	-8 629 636	9-778 901	86-511 180	-8 926 300	-8 827 412	-8 728 524	-8 629 636	8-798 976	73-053 870	-18 151 520	-18 052 628	-17 953 736	-17 854 844
24	10-714 044	95-666 618	-9 328 400	-9 229 512	-9 130 624	-9 031 736	10-714 044	95-666 618	-9 328 400	-9 229 512	-9 130 624	-9 031 736	9-649 615	80-155 241	-19 122 640	-19 023 748	-18 924 856	-18 825 964
25	11-734 866	105-439 681	-9 730 500	-9 631 612	-9 532 724	-9 433 836	11-734 866	105-439 681	-9 730 500	-9 631 612	-9 532 724	-9 433 836	10-643 437	87-439 681	-20 123 760	-20 024 868	-19 925 976	-19 827 084
26	12-851 430	116-895 948	-10 135 600	-10 036 712	-9 937 824	-9 838 936	12-851 430	116-895 948	-10 135 600	-10 036 712	-9 937 824	-9 838 936	11-720 064	95-439 681	-21 154 880	-21 055 988	-20 957 096	-20 858 204
27	14-074 901	129-912 878	-10 540 700	-10 441 812	-10 342 924	-10 244 036	14-074 901	129-912 878	-10 540 700	-10 441 812	-10 342 924	-10 244 036	12-883 615	104-202 894	-22 226 000	-22 127 108	-22 028 216	-21 929 324
28	15-418 372	144-405 359	-10 945 800	-10 846 912	-10 748 024	-10 649 136	15-418 372	144-405 359	-10 945 800	-10 846 912	-10 748 024	-10 649 136	15-178 629	114-553 870	-23 347 120	-23 248 228	-23 149 336	-23 050 444
29	16-883 844	160-439 681	-11 351 900	-11 253 012	-11 154 124	-11 055 236	16-883 844	160-439 681	-11 351 900	-11 253 012	-11 154 124	-11 055 236	17-000 064	133-333 870	-24 518 240	-24 419 348	-24 320 456	-24 221 564
30	18-470 315	178-054 618	-11 758 000	-11 659 112	-11 560 224	-11 461 336	18-470 315	178-054 618	-11 758 000	-11 659 112	-11 560 224	-11 461 336	19-749 615	153-333 870	-25 749 360	-25 650 468	-25 551 576	-25 452 684
31	20-191 866	197-189 948	-12 164 100	-12 065 212	-11 966 324	-11 867 436	20-191 866	197-189 948	-12 164 100	-12 065 212	-11 966 324	-11 867 436	21-649 615	174-912 878	-27 040 480	-26 941 588	-26 842 696	-26 743 804
32	22-051 430	218-511 180	-12 570 200	-12 471 312	-12 372 424	-12 273 536	22-051 430	218-511 180	-12 570 200	-12 471 312	-12 372 424	-12 273 536	22-720 064	198-439 681	-28 461 600	-28 362 708	-28 263 816	-28 164 924
33	24-058 901	241-666 618	-13 076 300	-12 977 412	-12 878 524	-12 779 636	24-058 901	241-666 618	-13 076 300	-12 977 412	-12 878 524	-12 779 636	23-912 878	224-333 870	-30 022 720	-29 923 828	-29 824 936	-29 726 044
34	26-214 472	267-895 948	-13 582 400	-13 483 512	-13 384 624	-13 285 736	26-214 472	267-895 948	-13 582 400	-13 483 512	-13 384 624	-13 285 736	25-749 615	254-333 870	-31 713 840	-31 614 948	-31 516 056	-31 417 164
35	28-530 044	296-912 878	-14 088 500	-13 989 612	-13 890 724	-13 791 836	28-530 044	296-912 878	-14 088 500	-13 989 612	-13 890 724	-13 791 836	27-809 136	284-912 878	-33 544 960	-33 446 068	-33 347 176	-33 248 284
36	31-016 615	328-912 878	-14 594 600	-14 495 712	-14 396 824	-14 297 936	31-016 615	328-912 878	-14 594 600	-14 495 712	-14 396 824	-14 297 936	29-043 566	315-912 878	-35 526 080	-35 427 188	-35 328 296	-35 229 404
37	33-673 186	364-405 359	-15 100 700	-15 001 812	-14 902 924	-14 804 036	33-673 186	364-405 359	-15 100 700	-15 001 812	-14 902 924	-14 804 036	30-383 848	349-439 681	-37 657 200	-37 558 308	-37 459 416	-37 360 524
38	36-508 757	404-439 681	-15 606 800	-15 507 912	-15 409 024	-15 310 136	36-508 757	404-439 681	-15 606 800	-15 507 912	-15 409 024	-15 310 136	31-824 136	387-912 878	-39 948 320	-39 849 428	-39 750 536	-39 651 644
39	39-624 328	447-439 681	-16 112 900	-16 014 012	-15 915 124	-15 816 236	39-624 328	447-439 681	-16 112 900	-16 014 012	-15 915 124	-15 816 236	33-364 437	431-912 878	-42 399 440	-42 300 548	-42 201 656	-42 102 764
40	42-929 901	494-439 681	-16 619 000	-16 520 112	-16 421 224	-16 322 336	42-929 901	494-439 681	-16 619 000	-16 520 112	-16 421 224	-16 322 336	35-004 922	481-912 878	-44 990 560	-44 891 668	-44 792 776	-44 693 884
41	46-525 472	545-439 681	-17 125 1															

157. Cost Conversion Tables

Cost conversion tables for residential, commercial and farm structures can be found on the Division of Taxation's website at:

http://www.state.nj.us/treasury/taxation/lpt/building_replace_cost.shtml

Group of Building Classes for Construction Cost Conversion

In order to reflect the variations in quantities and costs of building labor and material used in the construction of buildings classified according to type and construction, each specific building class has been classified and listed under the following building cost conversation groups.

Classification of Typical Building Classes Under Cost Conversion Groups

Class of Building	Type of Building					
	<u>Frame</u>	<u>Brick-Stone</u>	<u>Apt.</u>	<u>Hotel-Motel</u>	<u>Office</u>	<u>Comm-Indus</u>
R-12	RR-1	RR-2	-	-	-	-
R-13	RR-1	RR-2	-	-	-	-
R-14	RR-1	RR-2	-	-	-	-
R-15	RR-1	RR-2	-	-	-	-
R-16	RR-1	RR-1	-	-	-	-
R-17	RR-1	RR-2	-	-	-	-
R-18	RR-1	RR-2	-	-	-	-
R-19	RR-1	RR-2	-	-	-	-
R-20	RR-1	RR-2	-	-	-	-
R-21	RR-1	RR-2	-	-	-	-
R-23	RR-1	RR-2	-	-	-	-
R-27	RR-1	RR-2	-	-	-	-
R-28	RR-1	RR-1	-	-	-	-
R-29	RR-1	RR-2	-	-	-	-
R-30	RR-1	RR-2	-	-	-	-
R-33	RR-1	RR-2	-	-	-	-
R-35	RR-1	RR-2	-	-	-	-
R-37	RR-1	RR-2	-	-	-	-
R-39	RR-1	RR-2	-	-	-	-
R-43	RR-1	RR-2	-	-	-	-
R-45	RR-1	RR-1	-	-	-	-
R-47	RR-1	RR-2	-	-	-	-
R-49	RR-1	RR-2	-	-	-	-
R-50	RR-1	-	-	-	-	-
R-51	RR-1	-	-	-	-	-
R-52	RR-1	-	-	-	-	-
R-53	RR-1	-	-	-	-	-
R-54	RR-1	-	-	-	-	-
101	-	-	C-1	C-1	C-1	C-3
102	-	-	C-1	C-1	C-1	C-3
103	-	-	C-1	C-1	C-1	C-4
104	-	-	C-2	C-2	C-2	C-6

Classification of Typical Building Classes Under Cost Conversion Groups (con't)

Class of Building	Type of Building					
	<u>Frame</u>	<u>Brick-Stone</u>	<u>Apt.</u>	<u>Hotel-Motel</u>	<u>Office</u>	<u>Comm-Indus</u>
105	-	-	C-2	C-2	C-2	C-5
106	-	-	C-2	C-2	C-2	C-6
107	-	-	-	-	-	C-5
108	-	-	-	-	-	C-5
109	-	-	-	-	-	C-5
123	-	-	-	-	-	C-3
124	-	-	-	-	-	C-4
125	-	-	-	-	-	C-5
126	-	-	-	-	-	C-4
127	-	-	-	-	-	C-5
133	-	-	-	-	-	C-3
134	-	-	-	-	-	C-4
135	-	-	-	-	-	C-5
136	-	-	-	-	-	C-4
137	-	-	-	-	-	C-5
145	-	-	C-1	-	-	-
150	R-1	R-2	-	-	-	-
151	R-1	R-2	-	-	-	-
152	R-1	R-2	-	-	-	-
153	R-1	R-2	-	-	-	-
154	R-1	R-1	-	-	-	-
155	R-1	R-2	-	-	-	-
156	R-1	R-2	-	-	-	-