6.0 FUNDAMENTAL APPRAISAL CONCEPTS

The first problem encountered in the valuation of property for an assessment roll is achieving a uniform understanding of the basic concept of value on the part of the assessors, appraisers, and boards of equalization. The term "value" is the subject of more writing and discussion than any other economic term. There are numerous qualifying definitions relating to the particular concept involved. Understanding the value concept as it applies to taxable property will not solve the appraisal problem, but it will indicate the nature of the data to be collected and analyzed in order to arrive at a solution.

In Missouri, fractional assessments, a percentage of "true value in money", are the standards in accordance with Section 137.115 RSMo. "True value in money is defined as the price that the subject property would bring when offered for sale by one willing but not obligated to sell it and bought by one willing or desirous to purchase but not compelled to do so. Rinehart v. Bateman, 363 S.W.3d 357, 365 (Mo. App. W.D. 2012); Cohen v. Bushmeyer, 251 S.W.3d 345, 348 (Mo. App. E.D. 2008); Greene County v. Hermel, Inc., 511 S.W.2d 762, 771 (Mo. 1974). True value in money is defined in terms of value in exchange and not in terms of value in use. Stephen & Stephen Properties, Inc. v. State Tax Commission, 499 S.W.2d 798, 801-803 (Mo. 1973). In sum, true value in money is the fair market value of the subject property on the valuation date. Hermel, Inc., 564 S.W.2d at 897.

"'True value' is never an absolute figure, but is merely an estimate of the fair market value on the valuation date." Drury Chesterfield, Inc., v. Muehlheausler, 347 S.W.3d 107, 112 (Mo. App. E.D. 2011), citing St. Joe Minerals Corp. v. State Tax Comm'n of Mo., 854 S.W.2d 526, 529 (Mo. App. E.D. 1993). "Fair market value typically is defined as the price which the property would bring when offered for sale by a willing seller who is not obligated to sell, and purchased by a willing buyer who is not compelled to buy." Drury Chesterfield, Inc., 347 S.W.3d at 112 (quotation omitted).

Market value, is defined by the Appraisal Institute as being "the most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress".[1]

For the purpose of establishing equalization in real property taxation, it is generally agreed that the basis for valuation is an approximation of market value arrived at through the application of the uniform rules and procedures of an appraisal. This manual encompasses the concept that an appraisal for assessment purposes is intended to reflect the market value of a fee simple ownership in real property. The term **Market Value** is held here to be synonymous with **"Fair Market Value"** and

[1] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

"True Value in Money", but regardless of the terminology involved, the concept infers that the appraised value will reflect the price which the property will bring if it were voluntarily exposed for sale by an informed seller and purchased voluntarily by an informed buyer, each acting sensibly and without undue pressure.

An appraisal is a statement of opinion concerning the value of real property as of a specific point in time. It does not produce answers of an exact nature; rather, it is an estimate developed by one trained in the social science of appraising and is based on an examination of market factors, conditions, and trends. Thus, the validity or accuracy of the appraisal depends not only upon the availability of pertinent data, but also the competency and the integrity of the appraiser and the skill with which the data is processed into an indication of value. The fundamental purpose of any appraisal is to estimate value; consequently, an understanding of the basic concepts of value and the factors that affect it is essential.

1. The Nature of Value

There have been numerous definitions of value; some are relatively simple while others are complex. However, all of these definitions have evolved from two basic theories. The Subjective Value Theory affirms that value is in the mind of a person and is determined by how much he or she will pay or give in exchange for possession of a commodity. The Objective Value Theory holds that value is inherent in the object itself and is determined by the cost of producing the object. For the most part, the concepts of value as they apply to real estate are subjective in nature.

In the valuation of real estate it is generally considered that four factors must be present for a property to have value. They are utility, scarcity, desire, and effective purchasing power.

Utility not only equates the usefulness of the object (property), but is also a measure of its ability to arouse the buyer for possession and to satisfy the wants, needs or desires of a purchaser. Scarcity must also be present for value to exist. Scarcity is the shortage in the amount of a commodity available in a stated area for a specific use. Thus, utility and scarcity are the prime requisites of value and both must be present before value can exist. However, utility and scarcity alone do not create value. There must be a desire on the part of an individual to possess the object, and he or she must have effective purchasing power. Effective purchasing power is the financial ability to participate in a market transaction through which one gains control or possession of the property. Thus, value is the relationship between a thing desired and a potential purchaser. This relationship is generally expressed in terms of money, which is the common denominator by which value is measured.

The one point common to all definitions of market value is the presumption of a sale or exchange of the property. If the property is of the type commonly bought and sold in the market, then the subjective

concept of value prevails and weight is given to value indicators derived from the market. Thus, value in exchange is the basis of estimating market value. However, if a property is of a highly special design or use and is of the type not commonly bought or sold in the market, then the objective concept of value prevails and other methods of estimating value must be formulated. Under a situation of this nature, the property is useful to the present owner and is of a functional design intended for a particular use. However, it may have little, if any, utility, and thus little value in an alternate use. Consequently, the property is said to be a limited-market or special-purpose property and have value in use as opposed to value in exchange. Use value is "the value a specific property has for a specific use".[2] Use value or value in use does not have as its basis highest and best use, nor the most likely price brought by the property if sold. The most typical utilization of value in use is where legislation mandates an agricultural use value for farmland. In no case should value in use be confused with market value, and where value in use is determined, it should be clearly stated.

Confusion often exists in the use of the terms cost, price, and value. They are sometimes used interchangeably but do not necessarily mean the same thing. Cost is a monetary measure of past sacrifices of the factors of production necessary to create an object. It is also used to denote the expenditure required to construct a new property or purchase an existing property. Price reflects the amount of money asked and/or paid for a particular property. It may or may not equal value, depending on the circumstances surrounding the sale and the relative knowledge of the parties involved. The assessor can determine market value by analyzing market prices reflected by sales of property similar to the subject property which is under appraisement.

2. The Property Rights to be Appraised

Real property is a physical asset. Because of its immobility, it cannot be physically transferred from one owner to another. As a result, real estate ownership is actually an ownership of rights in realty. Although other interests are sometimes valued, ad valorem valuation typically involves "fee simple" ownership rights. The definition of fee simple is "Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by governmental powers of taxation, eminent domain, police power and escheat."[3]

A. Property Taxation

This is the most basic limitation. Part of the cost of administering local government and its entities is funded by the property tax. Therefore, legal remedies are provided in the event of nonpayment of taxes.

[2] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

[3] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

B. Eminent Domain

Public and some private entities may exercise the right of eminent domain to acquire private property for public use. However just compensation must be paid for properties acquired by the condemnation process.

C. Police Power

Government reserves the right to impose limitations regulating the use of property in the interest of public health, safety, morals, and for the general public welfare. Building codes, zoning, property subdivision ordinances and restrictions of development are examples of police power.

D. Escheat

This limitation is minor and it applies only when an owner dies and leaves no heirs or will. Ownership of the property then reverts back to the state.

In addition to governmental restrictions on property, legal private agreements may also impose restrictions, which could limit the use or manner of development, or even the manner in which the ownership can be conveyed. These are called deed restrictions, and a purchaser of a property so encumbered may be obligated to use the property subject to such restrictions. Examples of private restrictions include easements, right-of-ways and party-wall agreements. Thus, some of the rights may have been severed from the property by a sale, lease or gift to other parties before a property is acquired.

Generally, the value of the complete fee simple rights in real property is assessed to the owner of record. This practice is a great administrative convenience; and while theoretical justification exists for the position that only those rights actually possessed by the owner of record should be assessed and that other partial interests should be assessed to those possessing them, it is not always feasible in a mass appraisal program to define all interests in a property for separate assessment. In effect, property rights are appraised as a unit and any division of tax responsibility is to be made between the owners of the various interests in the parcel.

3. Special Characteristics of Real Property

The general analysis of value that has been made applies to all economic goods. Real property valuation is simply an application of general economic principles to a specific type of goods; however some special characteristics of real estate create different problems in the application of general economic principles.

A. Immobility

Real estate generally cannot be divorced from its location. This is more nearly true of real estate than any other commodity. The value of the property is therefore closely related to the economic future of the area or neighborhood in which it is located. In addition, use of the property is dependent on the availability of external support services (roads, utilities, etc.) that also influence value.

B. Durability

The durability of real estate is well known, but its significance is not always considered. Structures usually have a limited life expectancy but land will exist in perpetuity. Real estate yields its services over a long period of time. The longevity of real estate creates serious problems for the urban land developer. Should he or she plan for an improved property that will satisfy current demand or estimated demand at some time in the future? The appraiser in turn must estimate a remaining useful/economic life of an existing improvement and its most probable use during that life.

C. Nonstandard Commodity

Each parcel of real property is unique. In varying degrees, each parcel is different from all others and comparison between properties can be extremely difficult. Because of this differentiation every appraisal problem is different and the appraiser's role is to find comparable properties in the marketplace whose characteristics are the most similar to those of the subject.

4. Basic Principles of Value

Value of property is created and maintained through the various actions of buyers and sellers in the marketplace. Therefore to estimate the value of property, it is necessary to have an understanding of the basic economic principles that are generally accepted as underlying to all real estate transactions. These principles influence, in varying degrees, the value that one property will have in relation to another.

A. Anticipation

The principle of anticipation is defined as, "the perception that value is created by the expectation of benefits to be derived in the future".[4] The future, not the past, is important in deriving opinions of value. The primary value of past experience arises from its significance for the estimation of possible future trends and conditions. A buyer of income property invests in anticipation of future benefits to

[4] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

be achieved through possession, operation or in the form of capital gain. Examination of a property's income experience may reveal factors, favorable or unfavorable, that have enabled this property to produce a net income. The assembled data is then analyzed and appropriate factors are weighed in order to form an opinion concerning whether the net income stream may be expected, under typical management and business conditions, to continue, to decline, or to increase. "The value of owner-occupied residential property is based primarily on the expected future advantages, amenities, and pleasures of ownership and occupancy."[5]

Value may be defined as the present worth of the rights to sell all prospective future benefits, tangible and intangible, accruing to ownership of real estate. In most cases the quantity, quality, and durability of future benefits may be estimated in the light of past experiences as disclosed by examining the operations of the property being appraised and comparable properties.

B. Substitution

"The principle of substitution states that when several similar or commensurate commodities, goods, or services are available, the one with the lower price attracts the greatest demand and widest distribution."[6] The importance in application of this principle can be found in many segments of the economy. In real estate, for example, if two apartments offer approximately the same advantages, the prospective tenant will select the one with the lowest rent.

The principle of substitution is the foundation of each of the three approaches to value.

1. The Cost Approach

No rational person will pay more for a property than the amount for which a property of equal desirability and utility can be obtained, through purchase of a site and construction of a building, without undue delay.

2. The Market Data Approach

The value of a property replaceable in the market tends to be set at the cost of acquiring an equally desirable substitute property, assuming no costly delay is encountered in making the substitution.

5 "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

6 "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

3. The Income Approach

Value tends to be set by the effective investment necessary to acquire, without undue delay, a comparable substitute income-producing property offering an equally desirable net income return.

C. Change

The principle of change asserts that, change is "the result of the cause and effect relationship among forces that influence real property value."[7] This principle holds that factors and conditions which influence real property are constantly changing. Generally, the changes are evolving so slowly that their movement is almost indiscernible.
However the impact of change on property values is quite evident when one observes the various phases in the life cycle of an older neighborhood. Invariably the life cycle is characterized by three basic periods:

1. Development or growth is evidenced by new construction and increasing values.

2. Equilibrium is the state where development is static and property values level off. Ordinarily this phase of the life cycle enjoys the longest duration.

3. Disintegration is evidenced by decline in property values, mixtures of inharmonious uses, and physical decay of older structures.

Obviously, the assessor must be aware of what phases of the life cycle the property and its neighborhood are in at the time the appraisal is made.

The principle of change implies that properties and their environments are in a continuing state of transition. Accordingly, a value estimate is valid only at a specific point in time. In the final analysis, the assessor must recognize changes, which are taking place in the community, and base the appraisals on trends and conditions, which reflect the actions of buyers and sellers in the market.

D. Competition

The principle of competition implies that when, "net income exceeds the requirements of labor, capital, coordination, and land, the excess constitutes profit and encourages competition."[8] Profit as applied to real property in this context is not the same as profit obtained from the operation of a business. Normal

[7] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

[8] "The Appraisal of Real Estate", 7th Edition, Published by AIREA

business profit is the monetary return for capital investment in the business. Similarly the normal return on the investment in land and buildings consists of an allocation of net income representing a fair return on the amount of the investment. In the analysis of real property profit implies some net return after all costs of operation and an adequate return to land and buildings have been satisfied. Thus, it is income in excess of that necessary to satisfy the four agents in production.

Whenever a property produces a profit, competition will move in to dissipate that profit. If the profit is excessive, the competition will become excessive. Competition is one of the most familiar and easily recognized forces present at all levels of economic activity. Reasonable competition stimulates further creative contributions; however, in excess it can destroy that which it attempts to create. The appraiser not only recognizes its presence in normal situations but also perceives the situations in which it may weaken and, if unchecked, destroy property values. Competition is a product of supply and demand and a proper study of the highest and best use of a property includes current supply and demand factors.

E. Balance

"The principle of balance holds that real property value is created and sustained when contrasting, opposing, or interacting elements are in a state of equilibrium."[9] Land in an area is most efficiently utilized when usage is related to the number of services or activities that can be supported by the population. Good zoning laws may assist a desirable balance in land utilization. When more land is allocated to commercial use than the population of the area can support, the commercial land value is adversely affected. Conversely, too little land available for such use may temporarily increase the commercial land value while adversely affecting the value of residential or apartment land that is inadequately provided with retail services. If the lack of commercial land results in strong competitive facilities being located elsewhere, even the existing commercial land value may be restricted in potential value. Improper balance may be reflected in an under or over-improvement of a site (as explained in the discussion of principle of conformity).

Balance underlies the process of estimating highest and best use in appraisal practice. The three principles related to the concept of balance are: (1) increasing and decreasing returns, (2) contribution, and (3) surplus productivity.

F. Increasing and Decreasing Returns

"The principle of increasing and decreasing returns affirms that larger amounts of the agents in production produce greater net income up to a certain point (the law of increasing returns). At this

9 "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

point, the maximum value has been developed (the point of decreasing returns). Any additional expenditure does not produce a return commensurate with these additional investments (the law of diminishing returns)."[10] The fertilization of farmland affords a simple example of this principle. Increasing the use of fertilizer may result in a greater yield, up to a point. Beyond this point, however, increasing the use of fertilizer does not produce an additional return sufficient to warrant its additional cost.

It is frequently necessary to determine the character and size of any structural improvement(s) that will enable the land to produce the greatest net yield. To ascertain this point, hypothetical combinations of probable income and expense factors and capital requirements for improvements of various types and sizes are analyzed. This process of developing hypothetical improvements to obtain the combination of agents that will return the greatest net yield illustrates the principle of increasing and decreasing returns as used to develop an opinion of highest and best use.

G. Contribution

"The principle of contribution states that the value of a particular component is measured in terms of its contribution to the value of the whole property or as the amount that its absence would detract from the value of the whole."[11] The value of any part of a structure or service provided to the occupants must be economically justified by its influence on the structure's productivity (income or occupancy) and utility. With a practical bearing on many valuation problems, the application of this principle is fundamental to any consideration of the feasibility of remodeling or modernizing, since any remodeling project of an existing building must justify itself economically. For example, installation of modern automatic elevators to replace older ones should increase net income by either, a reduction in operating expenses or an increase in rentals, to an amount that will provide for a fair return "on" and a recapture "of" the cost of installation.

The principle of contribution is applicable in valuing lots of varying depths. It is necessary to know the value, if any the additional land contributes to its parcel over and above the value of the standard depth lot in the area. In the reverse situation, where a lot is shorter than standard, its value reflects this loss of contribution by the value of that portion which falls short of conformity to the standard.

H. Surplus Productivity

"Surplus productivity is the net income to the land remaining after the costs of the other agents of

10 "The Appraisal of Real Estate", 7th Edition, Published by AIREA

11 "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

production have been paid."[12] This surplus constitutes a key element in the value of the land in its present use. Surplus productivity is dependent upon the principle of balance, the law of increasing and decreasing returns, and the proper apportionment of labor, capital, coordination and land.

Goods and services resulting from the use of these agents produce gross income. Labor has the first claim on gross income, costs of capital are second, costs of coordination (management) are third, and, in classical economic theory, land is last. Any income remaining after labor, capital, and coordination have been satisfied can be credited to the land for its contribution to the gross income. In appraisal practice, recovery of all or part of the capital invested in land is not provided for as an allowance, such as a depletion allowance for natural resources set aside for that purpose. Any uncertainty concerning the future value of urban land is reflected in the rate of return necessary to attract investment capital.

I. Conformity

"The principle of conformity holds that real property value is created and sustained when the characteristics of a property conform to the demands of the market."[13] Thus, conformity in use is usually a desirable feature of real property because it tends to create and maintain value. It is maximum value that affords an owner a maximum return. The elements of conformity are not preconceived standards of development, but have evolved as cities grew and land uses multiplied. Homeowners recognized the advantages of living in neighborhoods designed and developed to provide facilities or amenities adding to the benefits of ownership and they protected these assets by maintaining conformity through zoning.

Certain effects of a violation of the principle of conformity may be observed. For example, an over-improvement, under-improvement or misplaced improvement lacks conformity between a property and its environment. The value of an over-improvement sometimes declines (regresses) toward the value level of the conforming properties; conversely, under-improvement sometimes increases toward the value level of adjacent and otherwise conforming properties. The concepts of Regression and Progression relate to the principle of conformity.

The concept of regression maintains that between dissimilar properties, the value of the superior property is affected adversely by the presence of the inferior. The concept of progression is the opposite of regression; that is, the value of the lesser object is enhanced by association with better objects of the same type.

[12] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

[13] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

J. Supply and Demand

The principle of supply and demand states that the price of a commodity, good, or service or in a real estate context, "real property varies directly, but not necessarily proportionately, with demand and inversely, but not necessarily proportionately, with supply."[14] The supply of property depends upon the demand for that type of property and the supply available, within the limits of available purchasing power. Property values fluctuate, often widely, through operation of this principle. When there are more residential units, store spaces, shopping centers or motels than there are people who desire or need them and who have the money with which to purchase or rent them, the result is vacancy, foreclosures, reduced rentals and lower sales prices. When demand catches up with supply, vacancies vanish; rentals and sales prices increase, and when demand exceeds supply, rentals and sales prices increase still more. This real estate cycle is ever in motion, but the hills and valleys on a graph chart are more severe for an area that is active. If supply and demand were to remain in reasonable balance at all times, the work of the assessor/appraiser would be greatly simplified.

K. Externalities

"The principle of externalities states that factors external to a property can have either a positive or negative effect on its value." [15] Improvements and services such as highways and police and fire protection typically have a positive effect on value whereas factors such as adverse environmental conditions on a nearby property and the closing of a factory that is a major employer in the area typically have a negative effect on property value. Because real estate is immobile it can be affected by forces outside the property itself.

L. Highest and Best Use

For the purpose of real estate considerations Highest and Best Use is that use which maximizes the net return to the land and improvements over a given period of time. Real estate is an expensive and an immobile commodity. Consequently, it tends to be used as profitably as possible within the realm of legal limitations and market conditions. "Analysis of highest and best use includes consideration of both the land as though vacant, and the property as improved."[16] The highest and best use of a particular property is defined by the following criteria:

1. Legally Permissible – A property use that is in compliance with governmental regulations and other regulatory or contractual restrictions.

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[14] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

[15] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

[16] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

2. Physically Possible – A property use that is not limited by physical characteristics of the land.

3. Financially Feasible – An analysis of property use that considers the economic characteristics of potential uses.

4. Maximum Productivity – A property use that would ordinarily be expected to provide the best net return for the longest period of time.

A highest and best use analysis is an integral portion of the appraisal process but quite often is the component of real property valuation that receives only minimal analysis. Without a reasonable understanding of a property's highest and best use the property could be inappropriately analyzed and the concluded value may not be reasonable or supportable. Ordinarily, an extensive analysis of increasing and decreasing returns may not be necessary to determine the specific use of a particular land tract or improved property. For the most part, a property's present use will be its highest and best use, providing it conforms to the general program of land utilization found on adjoining properties and is consistent with applicable zoning. It should be pointed out however, that in some cases a property's present use is not its highest and best use and that property could require an extensive highest and best use analysis. For ad valorem valuation purposes an assessor must be consistent and equitable in determining highest and best use and property is generally classified as residential, agricultural or commercial based upon actual use.

The various levels of property values are determined by action of the real estate market in a particular community or county. It is the assessor's responsibility to investigate and analyze all segments of this market for the purpose of developing reasonably accurate and equitable value estimates. The procedure involved in accomplishing this is known as **"The Valuation Process"**. Briefly, this process may be defined as an orderly and systematic method of acquiring, classifying and analyzing data, and arriving at a supportable estimate of value. This procedure, as it applies to mass appraising, evolves around the three traditional approaches to value – The Cost Approach, The Market Approach and The Income Approach. All three approaches, though seemingly dependent upon separate considerations, are derived from an analysis of market data.

5. The Valuation Process

"The valuation process is a systematic set of procedures an appraiser follows to provide answers to a client's questions about real property value."[17] The process is initiated when an appraisal problem becomes known, and ends with a report of conclusions. Between these end points are a number of logical, intuitive steps that lead the appraiser from understanding, to research, then finally to a well

[17] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

supported opinion.

A. Definition of the Problem

The first critical step along the path in the valuation process is to build a framework of understanding around the appraisal question. This step addresses issues which set the limits of the assignment, define the parameters upon which later opinions are based, and serve to avoid any misunderstanding on the part of the end user of the appraisal.

1. Identify the intended user, users, or client. The appraiser must have a clear understanding for whom the work is being performed, and of those parties subject to exposure to the appraisal. This knowledge then leads to the next step.

2. Identify the intended use of the appraisal. The appraiser and the client or intended user must be in agreement about the specific purpose for making the appraisal. This avoids wasted effort, and dictates the course of research followed as the valuation process proceeds.

3. Identify the purpose of the appraisal. Here the appraiser determines and states the value to be concluded, whether it be market value, use value, going-concern value, investment value, or assessed value. The purpose must be appropriate for the intended use of the appraisal.

4. Identify the date of the opinion of value. This is a specific landmark in the valuation process, a set point in time where the opinion of value exists in an ever-changing landscape of market conditions. This date may be current, retrospective, or prospective.

5. Identify the property characteristics. A good footing has been laid thus far. Now the appraiser must finish constructing the foundation upon which the opinion of value will be built. There must be a thorough understanding, by the appraiser, about his subject. Where is it located? Are there restrictions that affect the property? What is to be included in value determination? The appraiser must know and report what property interests will be reflected by the opinion of value be they fee simple, leased fee, value in use, fractional, etc.

6. Identify any extraordinary assumptions. "Extraordinary assumptions presume uncertain information to be factual"[18]. Extraordinary assumptions may or may not be true as of the effective date of the valuation and are specific to a particular assignment. Should the assumptions prove not to be true the estimated value may no longer hold true. An example of an extraordinary assumption would be if an opinion of value were made assuming the property suffers no form of contamination, yet this is

[18] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

not a fact known in certainty to the appraiser.

7. Identify any hypothetical conditions. These are stated conditions affecting a property which are known to not be fact, but are declared so as a basis upon which the opinion of value is made. Here, the subject would be known to be contaminated, but the intended use, purpose of the appraisal, or perhaps the date of the opinion of value may dictate that the appraiser considered it otherwise.

8. Identify Jurisdiction Exceptions. Occasionally a jurisdictional exception needs to be considered and it will effect an appraisal assignment. This occurs when relevant law and/or a regulation supersedes compliance with professional standards that would typically apply for an appraisal assignment. An example of this, in the case of the Missouri State Tax Commission, is that agricultural land is valued on the basis of its concluded productivity with a chart of soil grade values being utilized.

"The scope of work is the amount and type of information researched and the analysis applied in an assignment."[19] The scope of work is tied directly to the appraiser's understanding of the intended use and the purpose of the appraisal. The responsibility in determining the appropriate scope of work is determined by the appraiser and must lead to credible results. The appraiser clearly reports what has been done, and what has not been done in the process of determining the value conclusion. The appraiser is responsible to the client to communicate why any departure has been made from the complete valuation process.

B. Data Collection and Property Description

With the preliminary steps now complete to form a solid foundation, the appraiser turns next to the collection of data necessary to build the value conclusion. The appraiser collects data that is both general (macro–level) data and specific (micro-level) data. Macro-level data gives insight into the environment in which the subject property exists. This information consists of governmental, economic, and demographic/social characteristics prevalent in the subject's market area. Micro-level data gives insight into the subject of the appraisal and into those properties utilized in comparable analysis. This information runs the gambit from the physical to the financial, and details every facet necessary for the valuation process to move forward into analysis.

1. Market area data bears collection for the analysis of the subject's region, city, and neighborhood or market area.

2. Subject property data collected should include all relevant characteristics of the subject land, improvements, and any other property characteristics previously identified earlier in the process

[19] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

while defining the appraisal problem.

3. Comparable property data collected includes specific points of information from the subject's market as manifested by properties similar to the subject property. This data may be in the form of sales, listings-for-sale, offerings, vacancies, cost and depreciation, rental income, operating expense, vacancy, and capitalization data. The greater the quality and quantity of this data, the more stable is the foundation and frame from which springs the opinion of value.

C. Data Analysis

The next step in the valuation process is to insightfully analyze the general and specific data collected in the previous step. This analysis generally branches into two disciplines.

1. Market analysis provides an understanding of the conditions that affect each approach to value. This is a study of the specific market environment in which the subject exists. For example, such analysis may yield knowledge of externalities to be considered in the cost approach, adjustment factors in the sales comparison approach, and capitalization considerations in the income approach to value. Market analysis "provides a background against which local developments are considered" and "knowledge of the broad changes that affect supply and demand".[20] The depth of analysis is directly related to the scope of work already determined to be appropriate to the appraisal problem.

2. Highest and best use analysis provides the appraiser with important tools. The appraiser should select optimal properties for use as comparable land and or improved sales and or comparable rental properties. Comparable properties should share the highest and best use characteristics of the subject. Additionally the appraiser should identify obsolescence indigenous to the subject. Should the improvement be razed? Should the improvements be modified? Is the improvement the most advantageous in optimizing return to the land? The answers to these questions have great influence upon the opinion of value. Highest and best use analysis should consider the ideal theoretical improvement, as if the site were vacant, and consider the property, as it exists improved, if it is improved. "The highest and best use conclusion should specify the optimal use, (or uses) when the property will be put to this use or achieve stabilized occupancy, and who would be the most likely purchaser or user of the property."[21]

D. Land Value Opinion

Where it is at all practicable, the appraiser should develop a separate value for the subject's land or

[20] "The Appraisal of Real Estate", 12th Edition, Published by the Appraisal Institute

[21] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

site. Most preferred is a valuation from the analysis of land sales in the subject's market area that share the highest and best use characteristics of the subject. However, where a sufficient quality or quantity of such data fails to exist, other techniques may be employed, as discussed later in Section 6.1. Separate valuation of the land is insightful when performing the income or sales comparison approaches to value, and critical when performing the cost approach to value.

E. Application of the Approaches to Value

The valuation process has now reached the stage where the appraiser utilizes all the previous steps to begin formulating indications of the subject's value. These indications are reached through the three approaches to value; the cost approach; the sales comparison approach; and the income approach to value. Not every appraisal situation will require the application of all three approaches to value. Nor will it be possible in every applicable situation to apply all three approaches to value. However, where an approach can be applied to the subject, it should be applied, consistent with the scope of work previously determined.

Each approach, as described in detail in Section 6.2, Section 6.3, and Section 6.4, may appear to be an autonomous methodology, but all are also interrelated. For example, what has been learned from the application of the income approach could serve to indicate adjustments in the sales comparison approach, or assess depreciation in the cost approach. Each approach should be explored as to how it relates to the other approaches.

F. Reconciliation of Value Indications and Final Opinion of Value

Approaching the end of the valuation process, the appraiser must now weigh the strengths, weaknesses, and applicability of each approach to value. Once accomplished, a final opinion of value is reached. This value may reflect the indicated value of one approach, or a blending of multiple approach values. The appraiser has now built a solid, supportable opinion of value within the well defined and understood parameters of the appraisal problem.

G. Report of Defined Value

The final step of the appraisal process is to report the defined opinion of value to the client. This may take many forms from a verbal report, to any one of many written report formats. The form in which the opinion of value is reported reflects the intended use, intended user or client, and the purpose of the appraisal.

6. The Uniform Standards of Professional Appraisal Practice or USPAP

The Uniform Standards of Professional Appraisal Practice were developed by the Appraisal Standards Board of the Appraisal Foundation, and adopted as effective April 27, 1987. The Appraisal Foundation is authorized by the United State Congress as the source of appraisal standards and appraiser qualifications. USPAP is regularly reviewed by the Appraisal Standards Board, edited, and amended as deemed necessary. As such, it is a consistently evolving document, always current to the circumstances of the appraisal profession.

"The purpose of the Uniform Standards of Professional Appraisal Practice (USPAP) is to promote and maintain a high level of public trust in appraisal practice by establishing requirements for appraisers."[22] The 2016-2017 edition of USPAP consists of: Definitions, the Preamble, the Ethics Rule, the Record Keeping Rule, Competency Rule, Scope of Work Rule, and the Jurisdictional Rule. Also included in this publication are eight standards (formerly ten) that encompass development and reporting of real property appraisal, personal property appraisal, appraisal review, mass appraisal and business appraisal. "It is essential that appraisers develop and communicate their analyses, opinions, and conclusions to intended users or their services in a manner that is meaningful and not misleading.[23]

What follows is only a brief introduction to the concepts set forth by USPAP, and does not reflect the actual or entirety of the text. An appraiser/assessor needs to obtain a working knowledge of USPAP and should remain up to date with revisions.

A. The Ethics Rule, In Brief

The ethics rule is intended to maintain public trust in the appraisal profession. The rule addresses four specific issues: conduct, management, confidentiality, and record keeping. The appraiser must not act fraudulently, in a criminal manner, as an advocate, or discriminatory in the practice of the appraisal profession. The appraiser must not engage in misleading advertising, nor accept compensation contingent upon the outcome of an assignment. The appraiser must maintain an understanding of all confidentially and privacy laws, protect the appraiser-client relationship, and never disclose confidential data unless specifically authorized to do so by the client or as required by agencies of enforcement.

22 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

23 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

B. The Record Keeping Rule in Brief

This rule establishes the work file requirements for written and oral appraisals as well as written and oral review appraisals. The appraiser must prepare and maintain a work file for each assignment and retain the file for a minimum 5 years, and two years after the disposition of judicial proceedings, which ever expires last.

C. The Competency Rule, In Brief

The appraiser must have the requisite experience and knowledge to credibly complete an assignment, or disclose to the client the lack thereof.

D. The Scope of Work Rule, In Brief

This rule "presents obligations related to problem identification, research and analyses. An appraiser must properly identify the problem to be solved in order to determine the appropriate scope of work."[24] The circumstances of an assignment, or its intended use, should never limit the scope of work such that credibility is threatened or the results are biased.

E. The Jurisdictional Exception Rule, In Brief

This rule "preserves the balance of USPAP if a portion is contrary to law or public policy of a jurisdiction."[25]

F. Standard 1: Real Property Appraisal, Development, In Brief

"In developing a real property appraisal, an appraiser must identify the problem to be solved, determine the scope of work necessary to solve the problem, and correctly complete research and analysis necessary to produce a credible appraisal."[26] Standard 1 and its Standard Rules 1-1 through Standards Rule 1-6 provide the appraiser with detailed clarification of the required items of consideration and instructions regarding the development of an opinion of value for a single property assignment.

G. Standard 2: Real Property Appraisal, Reporting, In Brief

"In reporting the results of a real property appraisal, an appraiser must communicate each analysis,

24 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

25 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

26 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

opinion, and conclusion in a manner that is not misleading."[27] Standard 2 and its Standards Rule 2-1 through Standards Rule 2-4 provide the appraiser with the requirements for what is to be included in oral or written appraisal report or a restricted use appraisal report for a single property assignment.

H. Standard 3: Appraisal Review, Development & Reporting, In Brief

"In developing an appraisal review assignment, an appraiser acting as a reviewer must identify the problem to be solved, determine the scope of work necessary to solve the problem, and correctly complete research and analyses necessary to product a credible appraisal review."[28] Standard 3 and its Standards Rule 3-1 through Standards Rule 3-7 provide an appraiser acting as a reviewer with the requirements for developing and reporting a review of another appraiser's work.

I. Standard 4: Real Property Appraisal Consulting, Development

This standard has been retired by the Appraisal Standards Board.

J. Standard 5: Real Property Appraisal Consulting, Reporting,

This standard has been retired by the Appraisal Standards Board.

K. Standard 6: Mass Appraisal, Development & Reporting, In Brief

"In developing a mass appraisal, an appraiser must be aware of, understand, and correctly employ those recognized methods and techniques necessary to produce and communicate credible mass appraisals."[29] Standard 6 and its Standards Rule 6-1 through Standards Rule 6-9 provide the appraiser with a detailed elucidation of the required items of consideration and instructions regarding the development of a mass appraisal, and provide the requirements for reporting a mass appraisal. Standard 6 is among the most relevant and significant sections of USPAP to the assessment professional.

L. Standard 7: Personal Property Appraisal, Development, In Brief

"In developing a personal property appraisal, an appraiser must identify the problem to be solved, determine the scope of work necessary to solve the problem, and correctly complete research and

27 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

28 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

29 "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

analyses necessary to produce a credible appraisal."[30] Standard 7 and its Standard Rules 7-1 through Standards Rule 7-6 provide the appraiser with a detailed clarification of the required items of consideration and instructions regarding the development of an opinion of value for a personal property appraisal assignment.

M. Standard 8: Personal Property Appraisal, Reporting, In Brief

"In reporting the results of a personal property appraisal, an appraiser must communicate each analysis, opinion, and conclusion in a manner that is not misleading."[31] Standard 8 and its Standards Rule 8-1 through Standards Rule 8-4 provide the appraiser with the requirements for what is to be included in oral or written report, be they a self-contained appraisal report, a summary appraisal report, or a restricted use appraisal report for a personal property appraisal assignment.

N. Standard 9: Business Appraisal, Development, In Brief

"In developing an appraisal of an interest in a business enterprise or intangible asset, an appraiser must identify the problem to be solved, determine the scope of work necessary to solve the problem, and correctly complete the research and analyses necessary to produce a credible appraisal."[32] Standard 9 and its Standard Rules 9-1 through Standards Rule 9-5 provide the appraiser with a detailed elucidation of the required items of consideration and instructions regarding the development of an opinion of value for a business appraisal assignment.

O. Standard 10: Business Appraisal, Reporting, In Brief

"In reporting the results of an interest in a business enterprise or intangible asset, an appraiser must communicate each analysis, opinion, and conclusion in a manner that is not misleading."[33] Standard 10 and its Standards Rule 10-1 through Standards Rule 10-4 provide the appraiser with the requirements for what is to be included in oral or written report, be they an Appraisal Report or a Restricted Appraisal Report for a business appraisal assignment.

6.1 LAND VALUATION

The assessor is concerned with making correct and uniform valuations of real estate, which involves the consideration of two separate entities: (1) The land, which is permanent (immovable) and

[30] "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

[31] "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

[32] "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal Foundation

[33] "Uniform Standards of Professional Appraisal Practice and Advisory Opinions", 2016-2017, Published by the Appraisal

imperishable (not subject to depreciation), and (2) the improvements which are typically affected by depreciation (physical, functional and/or external). In approaching the problem of land valuation, the assessor must realize that land fluctuates in value. Therefore, the valuation of land must be based upon an analysis of the local market at a given point in time.

The assessor must first establish a system of land classification based upon general use. For assessment purposes in Missouri, land classification can be divided into three major categories: (1) **Residential**--property used for human habitation; (2) **Agricultural**--property used for the production of crops and/or livestock and (3) **Commercial/Industrial**--property used for the sale of goods and/or services or for the production and fabrication of goods and all other that is not residential or agricultural. Within each major classification there may be several subclassifications; however, the basic principles and procedures of land valuation will be applicable regardless of class refinement.

Secondly, the assessor should establish a system of collecting, confirming, and analyzing land sales for the county. The sale information can be refined into sales within a particular area of the county, sales within a particular city or even into an area within a city having a particular land use. The level of refinement would depend on available sale information within a county with metropolitan areas most likely requiring more refinement than a small rural county. For those familiar with developing spreadsheets on a computer this information can be broken down into units of value such as value per front foot, value per square foot, value per acre, value per lot, or value per buildable-unit basis that are categorized by land use, location or whatever additional category that is desired. For those that are not familiar with developing spreadsheets the same information can be placed on a county map, a city map, or a map of an area of a city. The spreadsheet and/or mapping method would be helpful in displaying a range of value on a unit basis for vacant land sales in a particular location and/or for a particular use. This type of documentation is particularly beneficial when defending a value when challenged. It should also be noted that any documentation concerning any sale should be retained either digitally or in written form.

Illustrations of a valuation spreadsheet and a valuation map are shown in **Exhibit 6.1 and Exhibit 6.2. Exhibit 6.3** is an illustration of a form used to record pertinent market data.

EXHIBIT 6.1

Commercial Land Sales											
Sale Date	Address	City	Parcel #	Lot Size	SP/Ft Ft.	Sq. Ft. Size	Acre(s)	Sale Price	SP/Sq. Ft	SP/Acre	Description
May-16	Alvarado & 3rd	My Town	00-0.0-00-000-000-000.00	50x100	$186.00	5,000.00	0.115	$ 9,300.00	$ 1.86	$ 81,021.60	Has Slab Left
Feb-12	Along Hwy 28	My Town	00-0.0-00-000-000-000.00	200x435	$362.50	87,120.00	2.510	$ 72,500.00	$ 0.83	$ 28,884.46	Imprvd After Sale
May-15	Alvarado & 5th	My Town	00-0.0-00-000-000-000.00	100x150	$360.00	15,000.00	0.344	$ 36,000.00	$ 2.40	$ 104,544.00	Imprvd After Sale
Feb-14	Alvarado & 44th	My Town	00-0.0-00-000-000-000.00	100x156	$425.00	15,619.00	0.359	$ 42,500.00	$ 2.72	$ 118,528.72	Imprvd After Sale
Residential and Other Use Land Sales											
Jun-16	Route AA	Your Town	00-0.0-00-000-000-000.00	200x248	$75.00	49,658.40	1.140	$ 15,000.00	$ 0.30	$ 13,157.89	North Edge of Town
Oct-13	Westside Drive	Your Town	00-0.0-00-000-000-000.00	100x261	$125.00	26,136.00	0.600	$ 12,500.00	$ 0.48	$ 20,833.33	West Edge of Town
Oct-13	Taylor Avenue	My Town	00-0.0-00-000-000-000.00	50x150	$35.00	7,500.00	0.172	$ 1,750.00	$ 0.23	$ 10,164.00	Unknown Ck Out
Jan-14	Route M	My Town	00-0.0-00-000-000-000.00	200x439	$60.00	87,991.20	2.020	$ 12,000.00	$ 0.14	$ 5,940.59	West Area of Town
Dec-13	Highway 19555	My Town	00-0.0-00-000-000-000.00	400x817	$56.25	326,700.00	7.500	$ 22,500.00	$ 0.07	$ 3,000.00	East of Town
Jun-12	Main Street	Your Town	00-0.0-00-000-000-000.00	75x145	$133.33	10,890.00	0.250	$ 10,000.00	$ 0.92	$ 40,000.00	Central Bus. Dist.
Mar-13	Westside Drive	Your Town	00-0.0-00-000-000-000.00	100x270	$125.00	27,007.20	0.620	$ 12,500.00	$ 0.46	$ 20,161.29	West Edge of Town
Dec-16	Off Highway 498	Your Town	00-0.0-00-000-000-000.00	150x871	$43.33	130,680.00	3.000	$ 6,500.00	$ 0.05	$ 2,166.67	Unknown Ck Out
Oct-16	Main Street	Your Town	00-0.0-00-000-000-000.00	50x174	$200.00	8,712.00	0.200	$ 10,000.00	$ 1.15	$ 50,000.00	Central Bus. Dist.
Oct-09	County Road 634	Your Town	00-0.0-00-000-000-000.00	600x726	$41.67	435,600.00	10.000	$ 25,000.00	$ 0.06	$ 2,500.00	NW Rural Location
Nov-06	Main Street	Your Town	00-0.0-00-000-000-000.00	100x192	$60.00	19,166.40	0.440	$ 6,000.00	$ 0.31	$ 13,636.36	Central Bus. Dist.

EXHIBIT 6.2

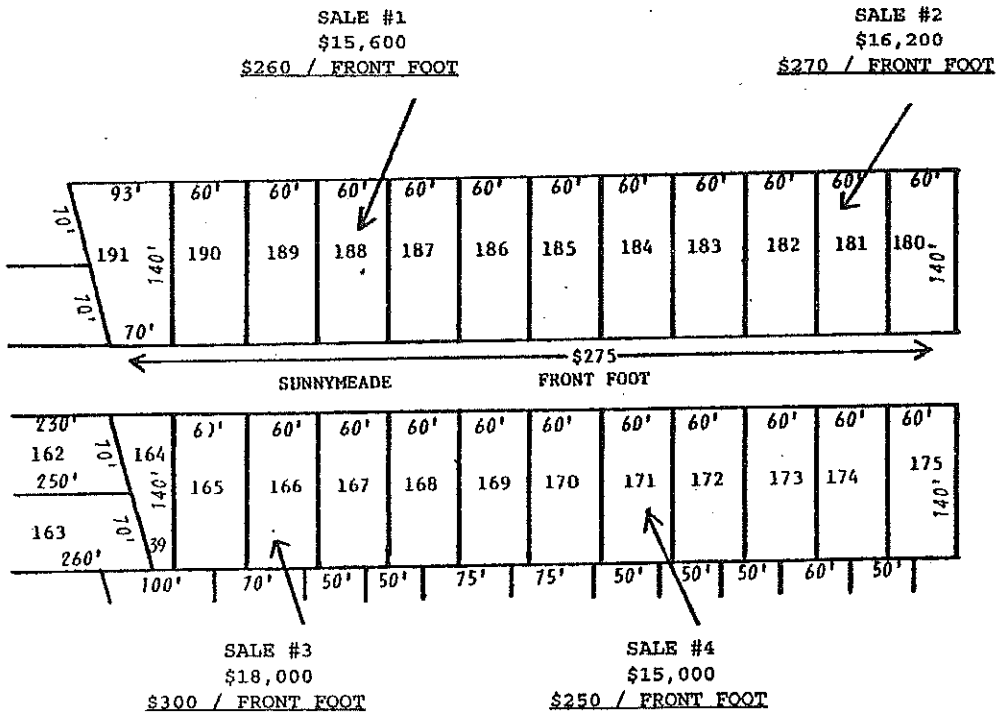

SALE #1
$15,600
$260 / FRONT FOOT
SALE #2
$16,200
$270 / FRONT FOOT
93'
60'
60'
60'
60'
60'
60'
60'
60'
60'
60'
60'
10'
191
140'
190
189
188
187
186
185
184
183
182
181
180
140'
10'
70'
$275
SUNNYMEADE
FRONT FOOT
230'
162
10'
164
250'
140'
165
166
167
168
169
170
171
172
173
174
175
140'
163
70'
39
260'
100'
70'
50'
50'
75'
75'
50'
50'
50'
60'
50'
SALE #3
$18,000
$300 / FRONT FOOT
SALE #4
$15,000
$250 / FRONT FOOT

EXHIBIT 6.3

MARKET DATA

Map No. _____

Grantor _____

Grantee _____

Location of Address _____

Legal Description _____
(Use space on back if needed)

Date of Sale _____ Sale Price $_____ Book _____ Page _____

Verified By_____ Date _____Zoning _____

Land Use _____ Vacant ____ Improved ____ Age of Improvement _____

Dimensions_____x_____= Size _____ Square Feet/Acres_____

Unit Land Price: Front Foot $_____ Square Foot $_____ Acres $_____

Land Value $_____ Improvement Value $_____ Total Value $_____

Additional Information:_____

_____

_____

Assuming that the land in a given area has been correctly classified and that all pertinent sales and zoning information has been posted on the spreadsheet or property map(s), the assessor is in a position to analyze the market. The assessor's objectives are to: (1) select the proper unit of measurement; (2) determine standard lot size and depth; (3) establish the standard unit price of land and (4) establish the basis for adjusting for nonstandard features.

Land valuation is basic to real estate appraisals. It encompasses three separate functions: land identification, site analysis and land valuation. Within the identification function, the assessment or aerial map is of particular importance to the assessor. Both site analysis and valuation encompass principles and techniques pertinent to the three approaches to value.

1. Land Identification

The first step in land valuation is identification of property, since it is essential that the assessor know how much land is being valued and where it is located. A legal description of real property identifies that property from all other properties in the area and further defines the location.

It is important that this description is correct down to the smallest detail as every letter, word, and figure has a meaning regarding the identity of the property. Once the land has been properly identified and described, an analysis of the property may be undertaken.

Therefore, an understanding of how to read and interpret legal descriptions is required. The following are the most common methods used to describe real estate in the State of Missouri.

A. Rectangular Survey System

The rectangular survey system is based upon existing law and was devised with the objective of marking and fixing for all time legal descriptions for purposes of describing and disposing of the public domain under the general land laws of the United States. "The rectangular survey system, which is also known as the *government survey system*, was established by the Land Ordinance of May 20, 1785." [34]

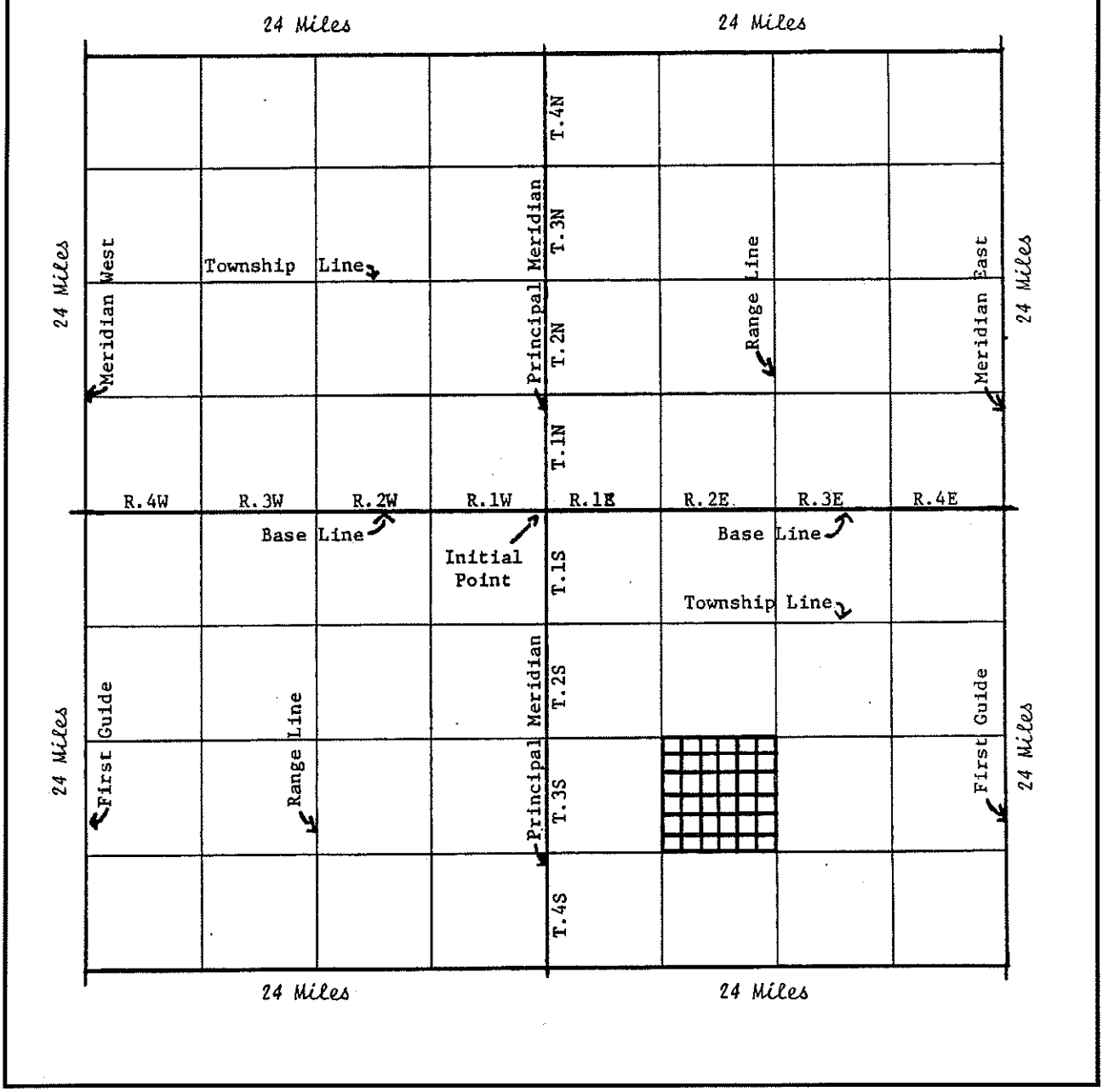
The rectangular land survey system is the most commonly used method of legally describing rural real estate. It embodies the recording of the identity of the section, township, range and the fractional description of property therein. Surveys of the rectangular system are located with respect to an initial point formed by the intersection of a Principal Meridian and a Base Line. The Principal Meridian is a true North-South line that passes through the geographic poles of the earth, while the Base Line is a line running East and West parallel to the equator. Once a Principal Meridian and Base Line has been established, additional divisions are created by the use of Township Lines and Range Lines. Range Lines run parallel to the Principal Meridian in a North and South direction and perpendicular from the Base Line at intervals of six (6) miles to an intersection with the next established Township Line. Township Lines run East to West, parallel to the Base Line, intersecting the Principal Meridian Line at intervals of six (6) miles.

The intersections of these Range and Township Lines thereby establish Townships approximately thirty-six miles square. Each six-mile division either North or South of the Base Line is called a Township North or a Township South, while each six-mile division either East or West of the Principal Meridian is called a Range East or a Range West. For example, Township 45 North, Range 30 West

[34] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

indicates that the southeast corner of this Township lies 45 Township Lines North of the Base Line and 30 Range Lines West of the Principal Meridian. An illustration of the rectangular survey grid is shown in **Exhibit 6.4**.

EXHIBIT 6.4


24 Miles
24 Miles
24 Miles
24 Miles
24 Miles
24 Miles
T.4N
T.3N
T.2N
T.1N
T.1S
T.2S
T.3S
T.4S
Principal Meridian
Principal Meridian
Township Line
Range Line
First Guide
First Guide
Meridian West
Meridian East
Base Line
Base Line
Initial Point
Township Line
Range Line
R.4W
R.3W
R.2W
R.1W
R.1E
R.2E
R.3E
R.4E

The key to the rectangular survey system is centered on the basic unit of a Township, with the subdivision of each Township into thirty-six equal sections of 640 acres each, more or less. Each section is approximately one-mile square. These sections are numbered consecutively, beginning with the section (Section 1) at the northeast corner of each Township and continuing west to the northwest corner (Section 6). The sequence of numbers then drops down one row and runs back to the East six sections and so on, until the entire Township is numbered, with Section 36 in the southeast corner. **Exhibit 6.5** shows the section numbering sequence of a Township.

EXHIBIT 6.5

TOWNSHIP MAP SHOWING SECTION NUMBERS

N ↑

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

The method of numbering the sections within a township should be carefully studied even though it is a simple process. Beginning with section number 1 in the northeast corner of the township, the sections are numbered to the left from 1 to 6 in the top tier of sections, then down one tier and the counting is to the right to section 12, then down one tier and to the left, then down one tier and to the right, then down another tier and to the left and down one tier and to the right, ending with section 36 in the lower right hand corner of the township.

As can be seen in the following description, further divisions can be made by reference to the halves and quarters of a sectional division. Take for example this description: the NE1/4 of the NW1/4 of the NW1/4 of Section 14, Township 45 North, Range 30 West. In analyzing this description, it is necessary to note that the first one-quarter section (the NE1/4) mentioned is the property of primary interest, and all subsequent mention of one-quarter sections relates only to the divisions necessary to locate the property. The key to the foregoing description is found in reading it backwards (**See Exhibit 6.6**). By progressively defining it in a reverse manner, the location of the property being described within the given section is delineated. When writing the fractions in legal descriptions, it is permissible to write only the denominators - E1/2 becomes E2; NE1/4 becomes NE4; etc. **Exhibit 6.7** is a chart depicting a Section and the subdivision distribution thereof.

EXHIBIT 6.6

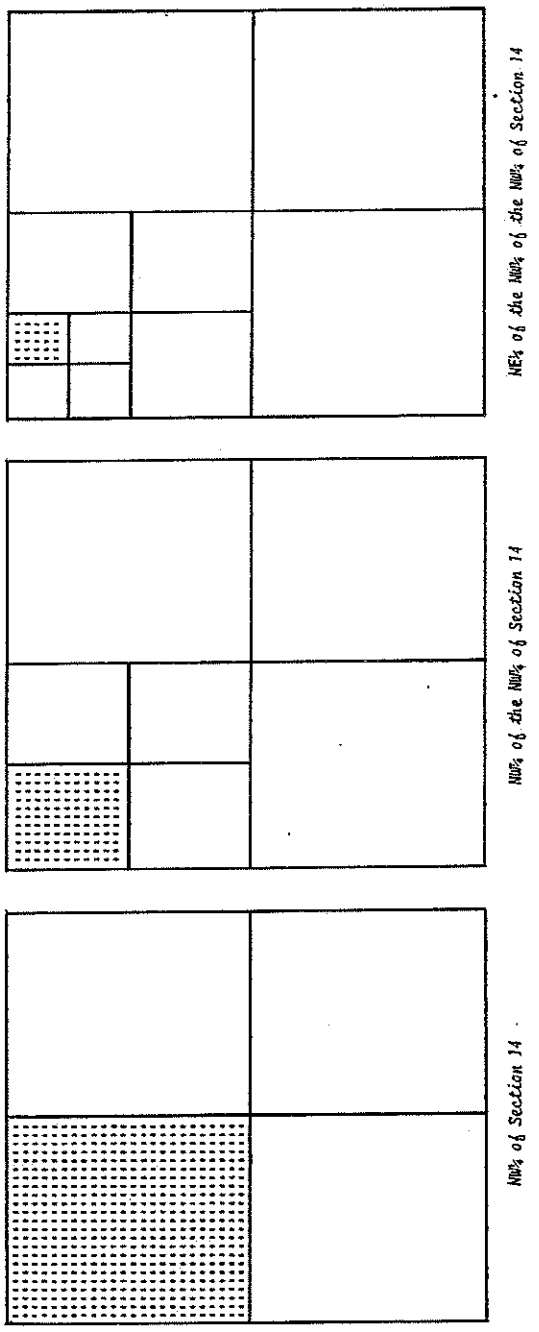


EXHIBIT 6.6

ANALYSIS OF PROPERTY DESCRIPTION

EXHIBIT 6.7

SECTION MAP SHOWING SUBDIVISIONS THEREOF

<table>
<tr><td colspan="2" rowspan="2">N½ of NW¼
80 acres</td><td rowspan="2">N</td><td>W½ of NW¼ of NE¼
20 acres</td><td>E½ of NW¼ of NE¼
20 acres</td><td>W½ of NE¼ of NE¼
20 acres</td><td>E½ of NE¼ of NE¼
20 acres</td></tr>
<tr><td colspan="2">N½ of SW¼ of NE¼
20 acres</td><td colspan="2">N½ of SE¼ of NE¼
20 acres</td></tr>
<tr><td colspan="2" rowspan="2">S½ of NW¼
80 acres</td><td colspan="2">S½ of SW¼ of NE¼
20 acres</td><td colspan="2">S½ of SE¼ of NE¼
20 acres</td></tr>
<tr><td>NW¼ of NW¼ of SE¼
10 acres</td><td>NE¼ of NW¼ of SE¼
10 acres</td><td colspan="2">N½ of NE¼ of SE¼
20 acres</td></tr>
<tr><td>NW¼ of SW¼
40 acres</td><td>NE¼ of SW¼
40 acres</td><td>SW¼ of NW¼ of SE¼
10 acres</td><td>SE¼ of NW¼ of SE¼
10 acres</td><td colspan="2">S½ of NE¼ of SE¼
20 acres</td></tr>
<tr><td>SW¼ of SW¼
40 acres</td><td>SE¼ of SW¼
40 acres</td><td>W½ NW¼ SW¼ SE¼ 5 a.
E½ NW¼ SW¼ SE¼ 5 a.
SW¼ of SW¼ of SE¼
10 acres</td><td>N½ NE¼ SW¼–SE¼ 5 a.
S½ NE¼ SW¼–SE¼ 5 a.
A 2½ a. B 2½ a.
C 2½ a. D 2½ a.</td><td>W½ of SE¼ of SE¼
20 acres</td><td>E½ of SE¼ of SE¼
20 acres</td></tr>
</table>

Tract A is the NW¼ of SE¼ of SW¼ of SE¼
Tract B is the NE¼ of SE¼ of SW¼ of SE¼
Tract C is the SW¼ of SE¼ of SW¼ of SE¼
Tract D is the SE¼ of SE¼ of SW¼ of SE¼

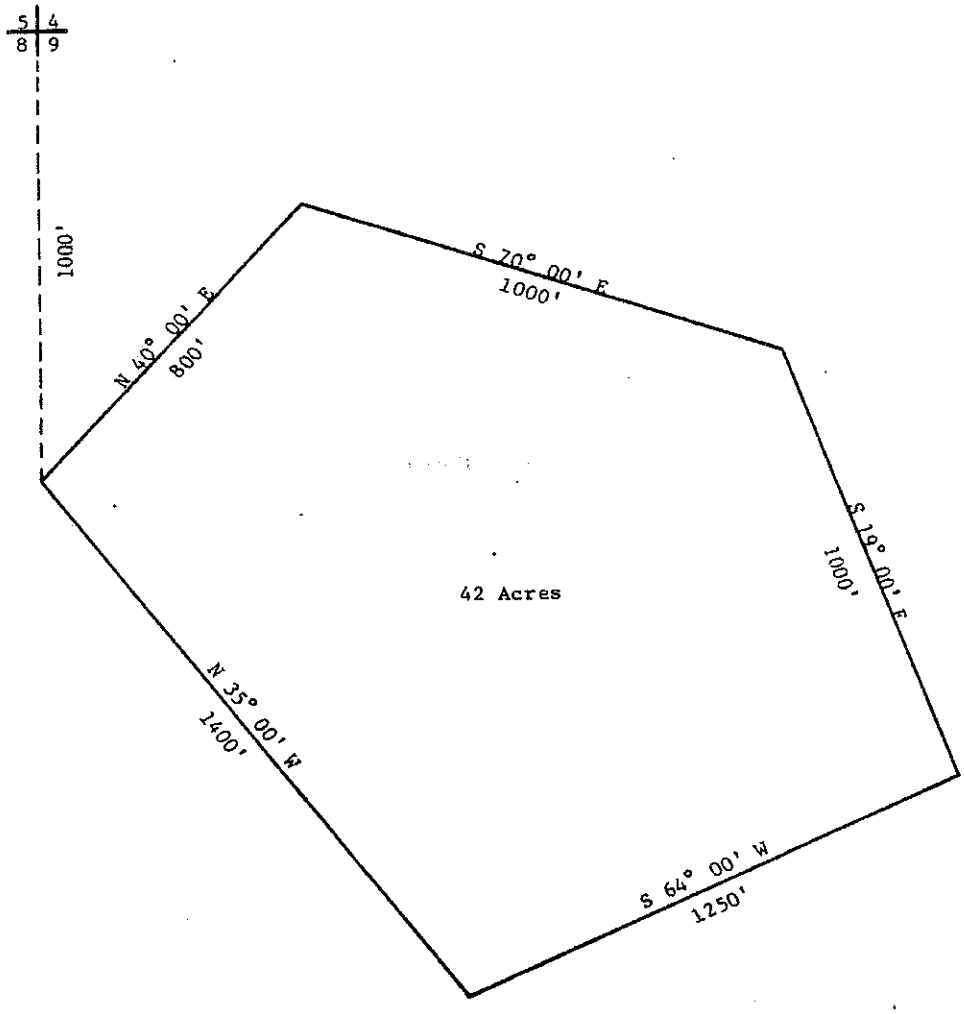
B. Metes and Bounds Descriptions

A general surveying practice has evolved which takes into consideration compass bearings and measurements along and between the boundaries of a property. The boundaries of a property being described in this manner are said to be described by metes and bounds. Metes mean measurements and bounds mean boundaries that include the features of the terrain in conjunction with compass bearings and distances.

The Point of Beginning of a metes and bounds survey description may be referenced by a distance and variance in degrees and minutes from a point established by Government Survey. The boundaries of such surveys are described by distance and bearing from the Point of Beginning, continuing in this manner until the boundary is closed by a distance and a bearing from some point to the Point of Beginning. **Exhibit 6.8** is an example of this type of survey.

EXHIBIT 6.8

METES & BOUNDS DESCRIPTION



Plot of a Metes and Bounds description showing proper designations of the several courses on an assessor's plat. Beginning at a point 1000 feet South of the section corner common to sections 4, 5, 8 and 9, Township 40 N, Range 30 W, thence N 40° 00' E 800 feet, thence S 70° 00' E 1000 feet, thence S 19° 00' E 1000 feet, thence S 64° 00' W 1250 feet, thence N 35° 00' W 1400 feet to the point of beginning containing 42 acres more or less.

On encountering a property described by metes and bounds, the assessor may find it necessary to draw out the written description on paper in order to recognize the land described.

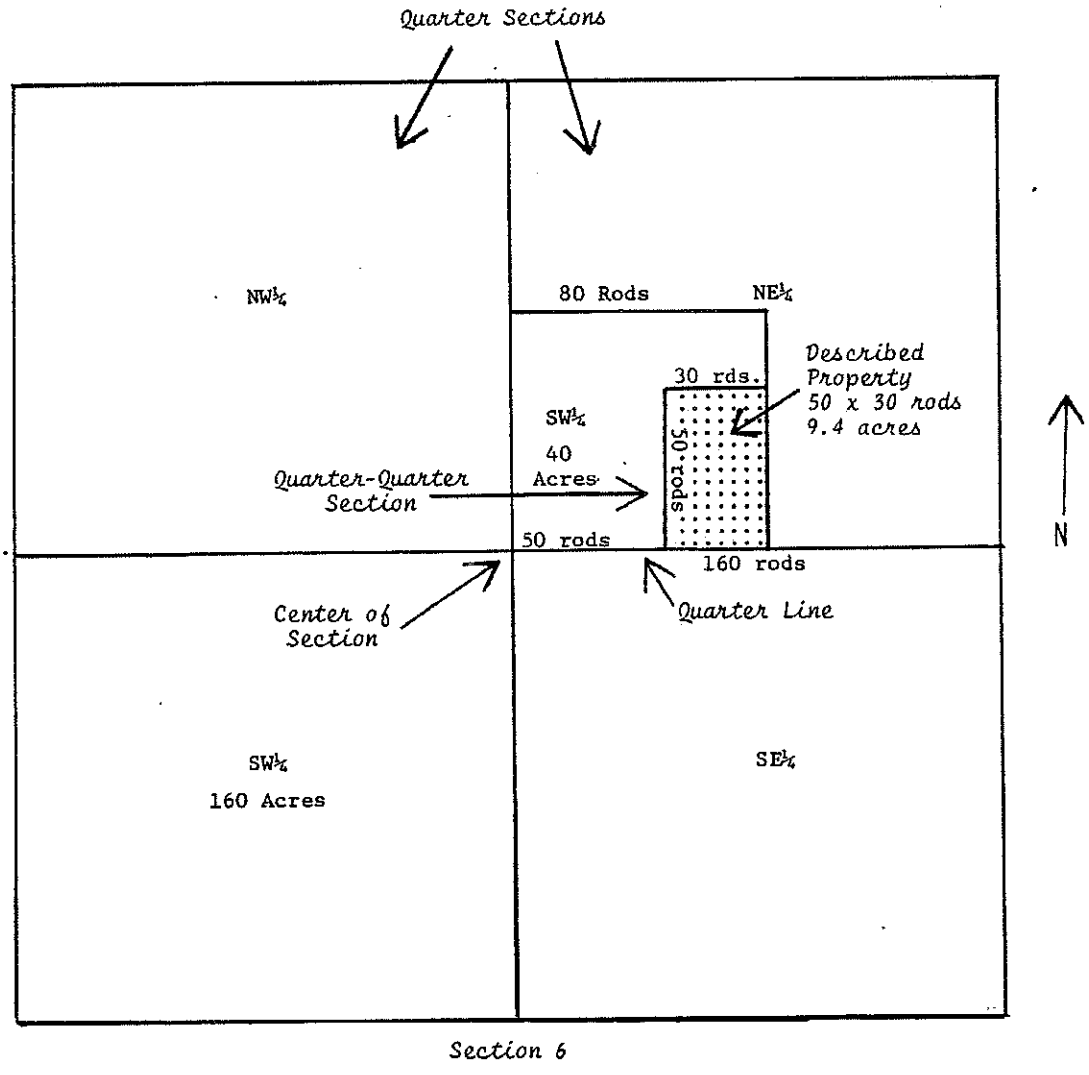
In drawing a map or identifying a parcel, a legal description should be approached in inverse order. By referring first to the township, range and section numbers the description is narrowed to the correct section. The rectangular survey description within the section should also be approached inversely. When the section of which the parcel is a part is found, then go to the beginning of the description and trace out the parcel according to the points and distances stated.

To illustrate, take the following example: The description reads: "Part of the SW1/4 of the NE1/4 of Section 6, Township 29, Range 37 described as follows: Beginning at a point on the quarter line 50 rods East of the center of the section, thence N 50 rods, thence E 30 rods, thence S 50 rods to the quarter line, thence W 30 rods to the point of beginning." To identify this parcel, the assessor will proceed as follows: Identify the township by the township and range line numbers, the section within the township by the section number (Section 6), the quarter of the section by the quarter last stated (NE1/4) in the description, and the quarter section within that quarter by the previous symbol (SW1/4). The location of the parcel has then been narrowed to this particular quarter-quarter section. At this point, the description may be outlined within these forty acres by locating the point of beginning, which is 50 rods East of the center of the section or 50 rods East of the SW corner of the quarter-quarter section. It is then apparent that the described land is a parcel 50 rods by 30 rods lying alongside the East line of the 40 acres in the SW corner of the quarter section, see **Exhibit 6.9**.

EXHIBIT 6.9

METES AND BOUNDS DESCRIPTION

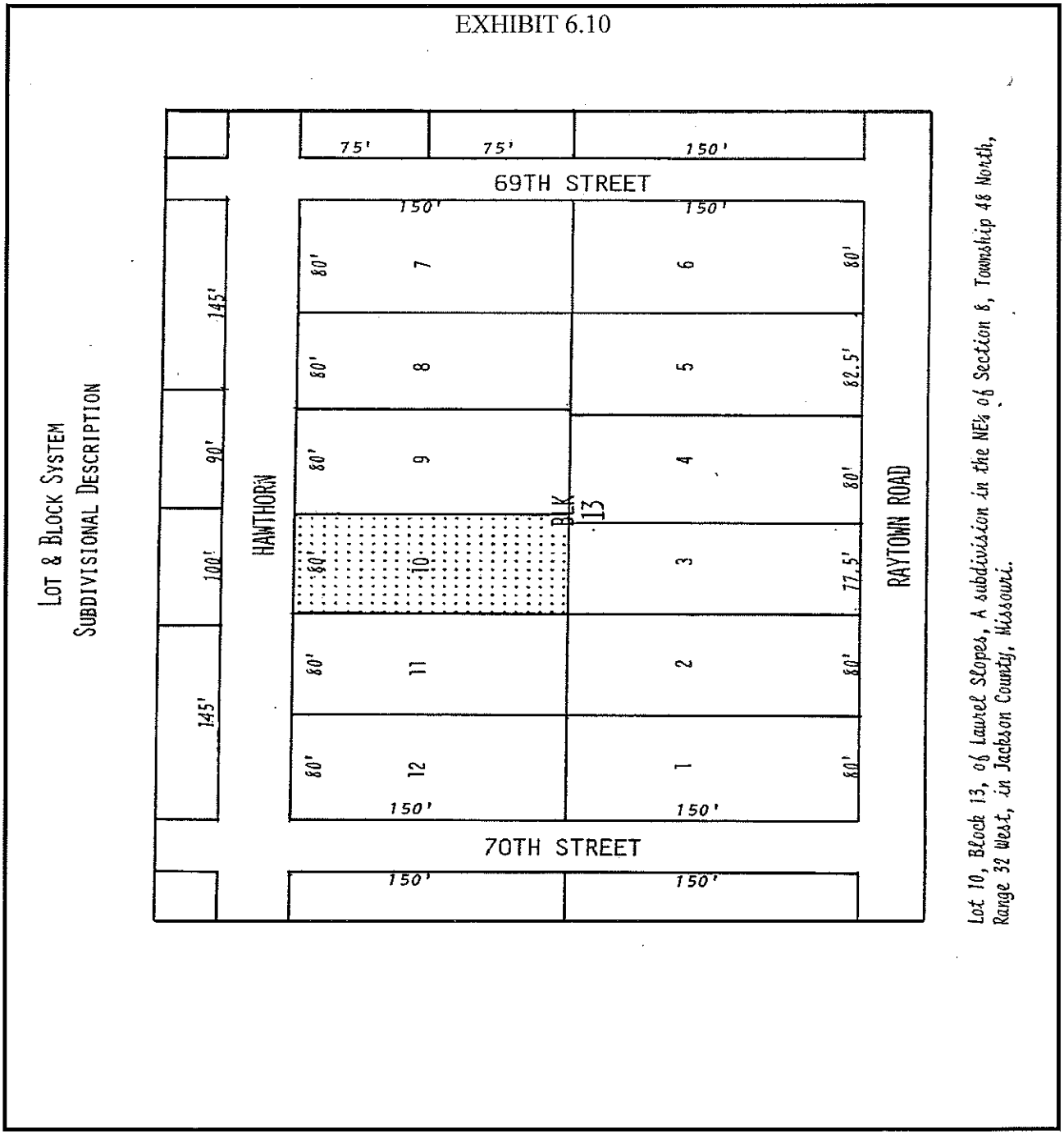
Part of the SW¼ of the NE¼ of Section 6, Township 29, Range 37 described as follows: Beginning at a point on the quarter line 50 rods East of the center of section, thence North 50 rods, thence East 30 rods, thence South 50 rods to the quarter line, thence West 30 rods to the P.O.B.



C. Lot and Block System

This system applies to most urban communities. Land occupied by cities and other population centers generally has been surveyed into small tracts suitable for residential or business use with adequate allowance for thoroughfares. This system involves making a survey of the property and its various individual tracts (lots and/or blocks), preparing a plat (map) of the property and recording the plat in the office of the County Recorder. Although the plat actually contains a metes and bounds survey of the property to be subdivided, each lot and block is then numbered for identification and these numbers are entered upon the plat map of the tract. Copies of this plat are then filed in the County Recorder's office for permanent reference. The property then can legally be described by simple reference to the lot and/or block numbers as shown on the plat. Each plat is also given a name, such as "Oak Meadows Subdivision", to distinguish it from other recorded plats. The lot and block system is simple and convenient. The following is an example of this type of description in verbal form: "Lot 10, Block 13, of Laurel Slopes, a subdivision in the NE1/4 of Section 8, Township 48 North, Range 32 West in Jackson County, Missouri." A graphic example of this lot and block description is shown in **Exhibit 6.10**.

EXHIBIT 6.10


LOT & BLOCK SYSTEM
SUBDIVISIONAL DESCRIPTION
75'
75'
150'
69TH STREET
150'
150'
145'
90'
100'
145'
HAWTHORN
BLK 13
RAYTOWN ROAD
60'
7
6
8
5
9
4
10
3
11
2
12
1
82.5'
77.5'
150'
150'
70TH STREET
150'
150'
Lot 10, Block 13, of Laurel Slopes, A subdivision in the NE¼ of Section 8, Township 48 North, Range 32 West, in Jackson County, Missouri.

2. Site Analysis - Valuation Factors

In the mass appraisal of land, standardized procedures achieve a reliable indication of market value, and establish equalization between properties. A standard procedure or appraisal system should provide for a means of considering all of the factors, which affect the value of land.
The value of land is dependent upon location; accessibility to major highways, urban centers, recreation areas; planning; zoning; utilities; the area's economic and social environment and a number of other factors. Residential, commercial and industrial lands are all affected by these factors and a careful study and analysis of market data is necessary to properly value these parcels.

Residential land values are based on desirability, scarcity, surroundings, restrictions, utilities and location. The more desirable the location, the more valuable is the land. Desirability is stimulated by the factors of surroundings, deed restrictions, utilities and availability of transportation, shopping facilities, schools and houses of worship.

Commercial lands are investment properties, and the value of this type of land generally is based on the buying power of the public and the location of the land in relationship to this buying power.

Establishing industrial land values is a complex procedure. Such lands are subject to a highly specialized and intensive use and are wholly dependent upon each individual owner's requirement. Certain industrial properties rarely sell on the open competitive market as other than unimproved sites and substantial adjustments must be made for site improvements. Each type of industrial property requires special treatment in valuing because of its individual characteristics. A detailed study of each site is required as to use, topography, shape, utility, industrial capacity, zoning, location in relation to transportation, proximity of the labor market and accessibility to the customer market.

The value of land is derived from its ability to provide service to the owner. If properly improved, the value of improved land is basically a direct result of its current use, while the value of unimproved land results from its potential use. However, even improved land may have some element of potential in that at some future time it could be available for a different use. The value of a parcel of land can result from various factors.

A. Physical Factors

These include factors of size, shape, topography, access, and location. Of the physical factors, location is the most important. To a certain degree, adverse features of size, shape, topography, and access can be corrected; however, an unfavorable location cannot be changed. The next consideration is whether or not the location is suitable for its intended use. Then, is the size sufficient for economically viable improvements? Is the access proper? Will an abnormal amount of work be needed to make the lot

useful? Are the utilities adequate? These physical features must be considered in relationship to the intended use of the land and the effect they may have on its value.

B. Economic Factors

These factors include rent capability, population, availability of money, and other economic conditions within an area. Primarily, physical factors affect the value of land on an individual basis within an area, while economic factors will usually pertain to more than one parcel and in part define the neighborhood.

The economic forces resulting from population density, city growth, availability of financing, and the income level of an area must be considered. Also, consideration must be given to what degree that the zoning patterns will affect values. Any encroachment of inharmonious types of land uses that may affect the value of land must be considered when determining the "highest and best use" of the property.

C. Governmental Factors

Planning and zoning, deed restrictions, easements, and taxation are important factors. If spot zoning is prevalent and an over- or under-zoning of certain classifications is present, land values will be affected. Deed restrictions in relation to limitations, terms and renewals must be considered. Easements are reservations retained by grantors in the chain of title, and such easements against the property circumscribe the rights of subsequent owners. An easement for ingress or egress in favor of parties other than the owner tends to decrease a property's utility value. However, there may exist an easement attaching to adjacent property, which is beneficial to the ownership of the subject property. Rights-of-way, party wall agreements and other agreements, which run with the land, can restrict or enhance the land's utility and value.

Therefore, it is important for the assessor to have an understanding of all the legal factors that may have an effect upon the valuation of real property.

D. Social Factors

Those factors involving social considerations, which may affect the value of property, must be considered. Social factors include population density, income, area growth and individual attitudes. The meaning of these factors is subjective and difficult to isolate, and the assessor must recognize the impossibility of accurately measuring these effects upon land value.
Value is best measured by the actions of buyers and sellers in the marketplace. Thus, the objective of the analysis should be to identify factors, which are relevant and can be objectively measured. The

extent to which these factors may have an influence upon value should be measured by the sales of comparable properties in the real estate market.

An examination of these factors (physical, social, governmental and economic) as they relate to residential, commercial, industrial and rural real estate is shown in **Exhibit 6.11**.

EXHIBIT 6.11

Factors Affecting Land Values

Physical Factors

Residential: Size and appearance of neighborhood; Topography; size, shape, and lot area; street pattern; soil and subsoil conditions; drainage; hazards and nuisances; utilities; conformity of houses; and proximity to supporting facilities.

Commercial: Street and traffic patterns; soil and subsoil conditions; drainage; parking; and nuisances.

Industrial: Size and shape of sites; street pattern; hazards; climate; utilities; waste disposal; and transportation facilities.

Rural: Topography; climate and weather; soil condition; irrigation; proximity to market; and availability of residential support facilities.

Economic Factors

Residential: Population growth, shifts, and declines; patterns of land use; amount of vacant land; new construction; employment of residents and family income; ownership-tenancy ratio; turnover and vacancy rates; price and rent levels; lender attitudes and policies; foreclosure rate; assessment equality; real estate taxes and special assessments; utility costs; and fire insurance rates.

Commercial: Population changes and direction of growth; compatability of development; rents, vacancy factors, and property expenses; competing commercial neighborhoods; business failure and turnover rate; and lender attitudes and policies.

Industrial: Wage rates and union attitudes; cost of utilities; transportation costs; and taxes and special assessments.

Rural: Family income; ownership-tenancy ratio; rent levels; lender attitudes and policies; real estate taxes; land capabilities; and operating costs.

Governmental Factors

Residential: Municiple services; planning and zoning; building codes; development regulations; taxes and special assessments; and assessment policies.

Commercial: Municiple services; planning and zoning; building codes; development regulations; taxes and special assessments; and assessment policies.

Industrial: Municiple services; planning and zoning; building codes; development regulations; and assessment policies, taxes, and special assessments.

Rural: Planning and zoning; building codes; development regulations; taxes and assessment policies; and federal farm policies.

Social Factors

Residential: Characteristics of the residents; population densities; and crime rate.

Commercial: Population densities; crime rate; shopping attitudes; and characteristics of the shoppers.

Industrial: Population growth, shifts, and changes; population density; and the labor force.

3. Site Analysis - Units of Comparison

Since the appraisal of land is done by comparison, all land values are expressed in terms of unit prices. The unit price is, in effect, the unit of measurement relating to the size and/or shape of a parcel of land. It establishes a common denominator by which sale prices can be analyzed and adjusted to indicate the value of other land with similar characteristics. The purpose of the unit price concept is to translate sales prices into definable dollar amounts per unit, which can be applied uniformly toward the valuation of similar land.

A. Standard Units of Measurements

Standard units of measurement used in the appraisal of land are: (1) Front Foot; (2) Square Foot; (3) Acre; (4) Site or Lot and (5) Buildable/Rental Unit. The unit of measurement is generally selected upon the basis of the size, shape and use of a particular property or group of similar properties. However, the unit selected should be consistent with the unit of comparison customarily found in the local market for each category or class of property.

Therefore, through the analysis of market data, the assessor must develop standard unit prices for each class of property within a designated area. These base or standard unit prices can then be applied uniformly to land of a particular classification that is located within these indicated areas. The assessor must also devise a systematic procedure of adjusting the base unit price for nonstandard features which may be found in any particular parcel.

The purpose of the analysis is to: (1) establish the normal or typical unit; (2) by process of elimination, isolate the various value influencing factors and measure their influence on price, and (3) design, or adapt standard adjustment tables based on variables indicated by the local market. The depth tables, excess frontage tables and corner influence tables developed through this analysis are then applied throughout the valuation process. The analysis needs to cover a large number of bona fide sales in order to establish a reliable pattern of the degree to which the various factors affect value.

1. Front Foot

Use of the front foot as a unit of comparison is based upon the premise that frontage significantly contributes to value. Generally used in the appraisal of residential and commercial land where parcels are rectangular in shape and of a standard size, a Front Foot unit is a strip of land one foot in width that lays perpendicular to the street and continues to the rear of the parcel.

An example of the application of the front foot method is illustrated as follows: A downtown commercial lot has a foot frontage of sixty feet on Main Street and a depth of one hundred feet. By

analyzing comparable sales, it has been determined that similar lots with a standardized one hundred foot depth are selling for $1,000 per front foot. Therefore, the lot would have a value of $60,000 (60 front feet x $1,000 per front foot).

2. Square Foot

This unit of comparison may be used for small irregularly shaped parcels where frontage may not be the dominant factor in the valuation process. This method may be used to value residential, commercial and small industrial sites.

For example, the subject property is an irregular shaped tract consisting of 20,000 square feet. Comparable properties of similar size are selling for 50 cents per square foot. The indicated value of the subject site is therefore $10,000 (20,000 square feet x $.50 per square foot).

3. Acre

Acreage may be calculated by dividing the total square footage of a property by 43,560. This method is useful in the valuation of large residential tracts, rural and farm properties, large commercial tracts and large industrial sites.

An example of the acreage method is as follows: The subject property is a large vacant tract in a rural community and contains 300 acres. Comparison of the sales prices of similar properties in the area indicates a market value for this type of farmland to be $500 per acre. The indicated value of this property is $150,000 (300 acres x $500 per acre).

4. Site/Lot Unit

The site/lot unit of comparison is used when the market does not indicate a significant difference in lot value even when there is a difference in lot size. This method is becoming more prevalent and is found in residential subdivisions such as cluster developments and planned-unit developments. Although uncommon, it may also be used in valuing industrial sites located in industrial parks.

5. Buildable Unit

This unit of comparison is used when the market indicates that a site is sold on a buildable-unit basis. The units buildable may be either a theoretical or actual number of units. The probable number of units to be built may be different from the theoretical number permitted by zoning ordinances. Consideration should be given to market demand, setback limitations, topography, height limitations and other limiting factors.

For example, a subject site consists of 25 acres and zoning ordinances permit 10 units per acre. The site has no limitations. There is one comparable sale of a property consisting of 30 acres with an allowable density of 10 units per acre. The property was purchased for $560,000 with the knowledge that because of topographical problems only 280 units could be built. On the basis of this information, the subject site value can be estimated at $500,000.

Comparable...Units buildable: 280 units (actually built)
Comparable.....Value/Unit: $560,000 ÷ 280 = $2,000 per unit

Subject.....Units buildable: 25 acres x 10 units/acre = 250 units
Subject.....Land Value: $2,000/unit x 250 units = $500,000

The unit price of $2,000 per unit should be used because the developer purchased the property with the knowledge that only 280 units could be built.

Generally speaking, the front foot unit of measurement is applied to uniformly shaped residential lots.

The square foot and acre units of measurement apply more to commercial property and larger tracts where size and the ability to accommodate larger structures is of primary consideration. The square foot unit will generally be used when appraising developed and undeveloped office, retail as well as industrial land, and irregularly shaped lots that cannot be priced on a front foot basis.

The acre unit also has application in the appraisal of large tracts suitable for some form of urban development and for large rural tracts.

The site or lot unit of measurement is appropriate in newer residential subdivisions where lots maintain equal utility, but fluctuate substantially in frontage, size and shape.

B. Standard Unit Adjustments

1. Excess Frontage Influence

One area of consideration in determining standard lot size is the presence of excess frontage. This consideration rarely applies to commercial property, but it may be frequently encountered in residential areas. When various land values per front foot have been determined, the assessor must consider the dimensions of the various parcels. Excess frontage is the additional width of a lot beyond what normally represents the typical or ideal frontage for a building site in a particular area. The added frontage may not add equal value since the utility or usefulness of the wider lot does not increase proportionately.

For example, you have two lots of various sizes. Lot A has a front footage of 100 feet and a depth of 200 feet which is the typical lot size for this area. Lot A sold for $5,000 or $50 per front foot. Lot B has a front footage of 125 feet and a depth of 200 feet and sold for $5,500 or $44 per front foot. The analysis of the two sales would show that the excess frontage contributed $500 to the lot value of the wider lot or only 40% of the standard unit front foot value. Thus, if sufficient data were available to establish this as the basis for adjustment, your valuation of other over-sized lots would be as follows:

Standard Lot...:	***100 Front Feet***	***@***	***$50 Front Foot***	***$5,000***
Excess Frontage:	***25 Front Feet***	***@***	***($50 x 40%)***	***+ 500***
Appraised Value:				***$5,500***

2. Depth Influence

Having given consideration to the effect of the frontage in determining lot values, it is also necessary to make adjustments for variations in depth. Depth influence recognizes the generally accepted premise that the front portion of a lot is more valuable than the portions of a site that is more distant from the street. It also recognizes the principle that the value added by increasing the depth of a lot is not in proportion to the increased depth. Mathematical studies, which reasonably approximate the relation of front foot values to the added depth, are tabulated into tables called depth tables. Depth tables were designed primarily for use in appraising residential lots. It should be kept in mind that these depth tables should not be used in areas where the front foot unit of comparison is not applicable to the market.

One method for deriving depth tables is the "4-3-2-1 Rule". This rule states that the first 25% of depth of the lot represents 40% of the total lot value, the second 25% of depth represents 30% of the value, the third 25% represents 20% of value and the fourth 25% represents 10% of the value. This is illustrated in **Exhibit 6.12**.
An additional method of compensating for additional depth or size considering the amount of a site's frontage would be a front foot to site size ratio. The ratio differences between sales can compared to each other and when measurable differences are noted an adjustment based on market data can be made. The use of this type of analysis is most common for urban commercial land.

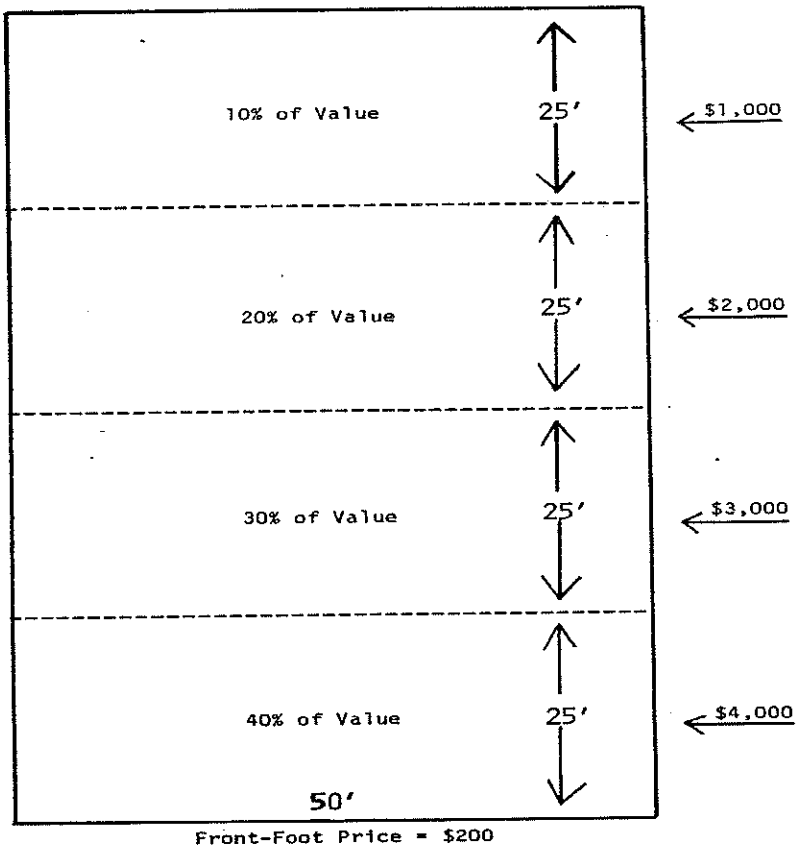
To check the need for depth adjustments from sales, several sold properties having differences in depth are selected and adjusted for all variations from the standard parcel except depth. The difference between the value indicated by the standard parcel and the adjusted sales price is an indication of the amount of depth factoring needed. **Exhibit 6.13** is an example of a depth-factoring table and **Exhibit 6.14** illustrates the application of these factors.

It should however be noted that in some instances when the additional depth of a site consists of steep

terrain, flood hazard area or otherwise more or less "unusable" area, the additional land may have only minimal if any additional value.

EXHIBIT 6.12

COMPUTATION OF DEPTH TABLES
"4-3-2-1 RULE"



Front-Foot Price = $200

The estimated lot value is $10,000.00. The 4-3-2-1 rule assumes that the first 25 feet of depth is worth 40 percent, or $4,000.00; the second 25 feet is worth 30%, or $3,000.00; the third 25 feet is worth 20 percent, or $2,000.00; and fourth 25 feet is worth 10 percent, or $1,000.00.

EXHIBIT 6.13

LAND DEPTH TABLES

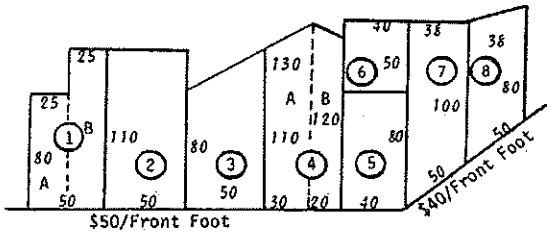
The following table of percentage factors is designed to give a uniform method of adjusting the value per front foot, up or down, depending on whether the lot is more or less than the standard depth.

Depth in Feet	Factor 100 Ft. Standard	Factor 125 Ft. Standard	Factor 150 Ft. Standard	Factor 200 Ft. Standard
10	.32	.29	.26	.22
15	.39	.35	.32	.27
20	.45	.40	.37	.32
25	.50	.45	.41	.35
30	.55	.49	.45	.39
35	.59	.53	.48	.42
40	.63	.57	.52	.45
45	.67	.60	.55	.48
50	.71	.63	.58	.50
55	.74	.66	.61	.52
60	.78	.69	.63	.55
65	.81	.72	.66	.57
70	.84	.75	.68	.59
75	.87	.78	.71	.61
80	.89	.80	.73	.63
85	.92	.83	.75	.65
90	.95	.85	.78	.67
95	.98	.87	.80	.69
100	1.00	.90	.82	.71
105	1.03	.92	.84	.73
110	1.05	.94	.86	.74
115	1.07	.96	.88	.76
120	1.10	.98	.89	.78
125	1.12	1.00	.91	.79
130	1.14	1.02	.93	.81
135	1.16	1.04	.95	.82
140	1.18	1.06	.97	.84
145	1.20	1.08	.98	.85
150	1.23	1.10	1.00	.87
160	1.27	1.13	1.03	.90
170	1.30	1.17	1.07	.92
180	1.34	1.20	1.10	.95
190	1.38	1.23	1.13	.98
200	1.41	1.27	1.16	1.00
210	1.45	1.30	1.18	1.03
220	1.48	1.33	1.21	1.05
230	1.52	1.36	1.24	1.07
240	1.55	1.39	1.27	1.10
250	1.58	1.42	1.29	1.12
300	1.73	1.55	1.42	1.23
350	1.87	1.67	1.53	1.32
400	2.00	1.79	1.63	1.42
450	2.12	1.90	1.73	1.50
500	2.24	2.00	1.83	1.58

EXHIBIT 6.14

SAMPLE LAND COMPUTATIONS

STANDARD LOT DEPTH: 125 FT.



Use 125' Depth Factor Table--Depth Factor x Unit Value = Adjusted Value

Adjusted Value x Frontage = Total

LOT	FRONT-AGE	DEPTH	DEPTH FACTOR	UNIT VALUE	FR. FT. VALUE	TOTAL
#1	A25	80	80%	50	40	1000
	B25	110	94	50	47	1175
#2	50	110	94	50	47	2350
#3	50	95 av	87	50	44	2200
#4	A30	120 av	98	50	49	1470
	B20	125 av	100	50	50	1000
#5	40	80	80	50	40	1600
#6	40-R	50	22	50	11	440
#7	38 eff	115 av	96	40	38	1444
#8	38 eff	90 av	85	40	34	1292

EXPLANATION OF ABOVE COMPUTATIONS:

#1 - Compute as two separate lots--1A plus 1B. Total Value of lot $2,175.00.

#2 - Regular lot. Frontage x Front Foot Value.

#3 - Sides of lot unequal. Obtain average depth (80 + 110 ÷ 2 = 95).

#4 - Compute as two lots. Find average depth of each.
(A) 110 + 130 ÷ 2 = 120'
(B) 130 + 120 ÷ 2 = 125' Total Value of lot $2,470.00.

#5 - Regular lot.

#6 - Rear lot. Find depth factor for total depth from street (130'0 subtract depth factor of front lot (80'), remainder is Depth Factor for rear lot. (102-80 = 22%) $50 x .22 = $11.

#7 - Depth Factor for average depth (115') times unit value times effective frontage.

#8 - Same as No. 7.

3. Corner Influence

Another important problem in determining the value of properties needing special treatment is that of corner influence. Corner influence is the degree by which land value increases in a corner lot over and above the value of an otherwise comparable inside lot. The amount of influence would depend upon the prominence of each abutting street and the size of the lot.

As in the case of depth influence, the only way to measure corner influence is by sales analysis. Also, to be considered are the zoning laws and the typical building placement on corner lots.

Retail properties, particularly in the downtown areas, benefit the most from corner location due to the added exposure and access. The corner influence in residential areas may actually be a negative factor due to the possibility of greater special assessments, lack of privacy, increased noise and dirt, added care of curbs and sidewalks and a reduction in buildable lot area by building line limitations on both frontages.

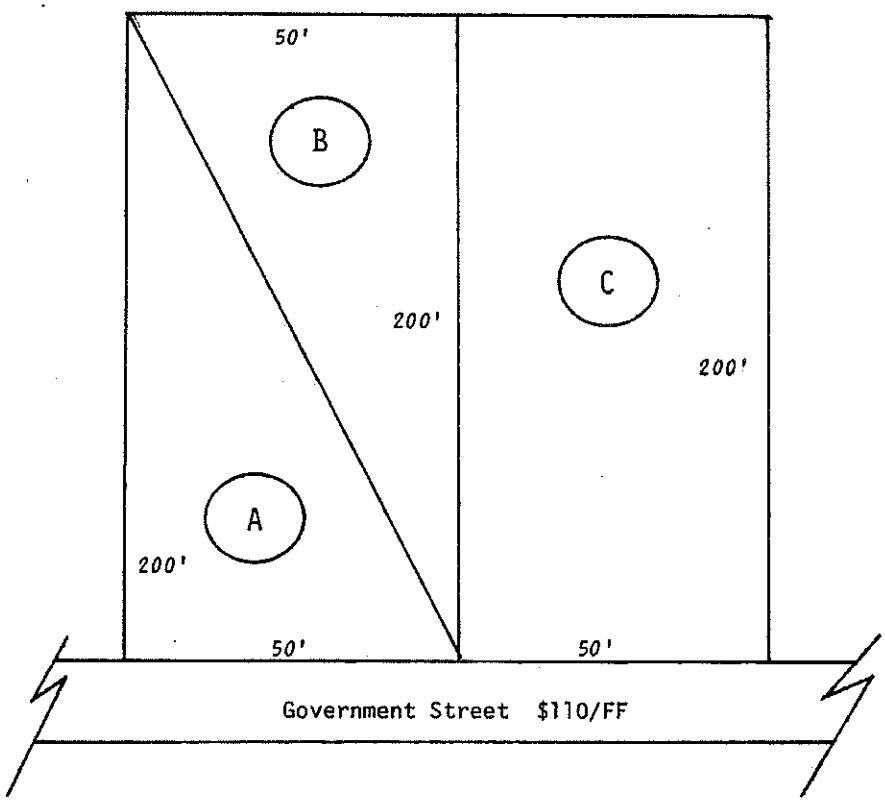
4. Irregular Lots

The utility of the lot may be seriously affected by its shape. The size or shape of a proposed building may be affected by setback requirements. The purpose of the adjustments for irregular shape is to convert the actual frontage of these parcels to an effective front footage for valuation by the front foot unit of comparison.

The most common rule used in developing an effective front footage value is known as the "65-35 Rule". It is based on the premise that a right-angle triangular shaped lot with its base on the street has 65% of the value of a rectangular lot having the same frontage and depth. It also assumes that a right-angle triangular lot with its apex (point) on a street has 35% of the value of a rectangular lot having the same dimensions. **Exhibit 6.15** illustrates the "65-35 Rule".

EXHIBIT 6.15

LAND VALUATION - EFFECTIVE FRONT FOOTAGE
"65 - 35 RULE"



Lot A: Right triangle with base on street use 65% factor.
50FF x 65% x $110/FF = $3,575

Lot B: Right traingle with apex on street use 35% factor.
50FF x 35% x $110/FF = $1,925

Lot C: Rectangular lot no factor used.
50FF x $110/FF = $5,500

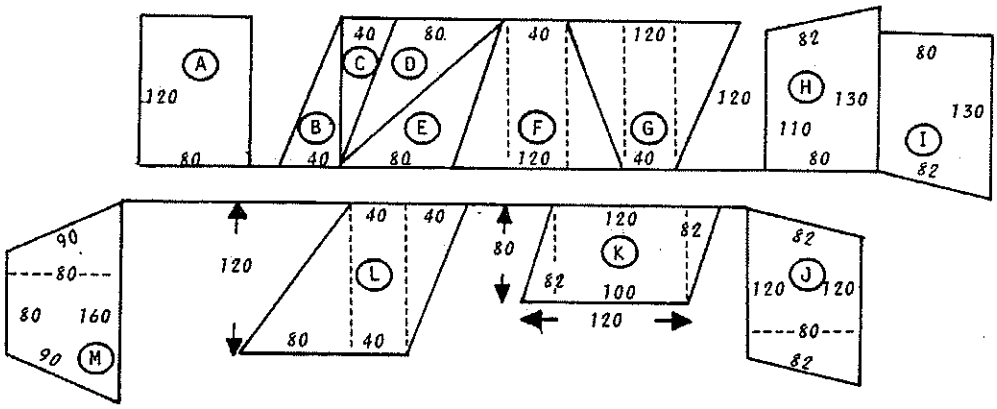
The most common basic shapes and an explanation of how to calculate the effective footage and depth of each is shown in **Exhibit 6.16**. Once again, the "65-35 Rule" must be tested and proven in the marketplace.

Depth tables and corner influence tables are designed to provide uniform methods of adjusting the value per front foot, up or down, depending on whether a particular lot has more or less depth than the standard lot and to what degree it benefits from a corner location. It must be emphasized, however, that all facets of land valuation are based upon an analysis of the market in which a particular property is located, and the use of any tables must be consistent with the conditions of that market. Do not apply depth tables if the market makes no distinction in the prices paid for lots of varying depths, and do not apply corner influence tables if the market attaches no premium to corner locations.

EXHIBIT 6.16

LAND VALUATION

BASIC SHAPES



A. Rectangular...effective frontage = 80'; effective depth = 120'.

B. Right Triangular w/base fronting the street...effective frontage = 65% of base = 65% x 40' = 26'; effective depth = perpendicular distance from base to apex = 120'

C. Right Triangular w/apex at the street...effective frontage = 35% of base = 35% x 40 = 14'; effective depth = perpendicular distance from base to apex = 120'.

D. Obtuse Triangular w/apex at the street and base parallel to the street...effective frontage = 35% of base = 35% x 80' = 28'; effective depth = perpendicular distance from base to apex = 120'.

E. Obtuse Triangular w/base fronting the street...effective frontage = 65% of base = 65% x 80' = 52'; effective depth = perpendicular distance from base to apex = 120'.

F. Trapezoidal, w/parallel side fronting the street, and forming a rectangle (A) and two (or possibly one) right triangles (B)...effective frontage = 40' + (65% x 80') = 92'; effective depth = 120'.

G. Trapezoidal w/parallel side fronting the street, and forming a rectangle (A) and tw (or possibly one) right triangles (C)...effective frontage = 40' + (35% x 80') = 68'; effective depth = 120'.

H. Trapezoidal w/parallel sides perpendicular to the street; effective frontage = 80'; effective depth = (110' + 130') ÷ 2 = 120'.

I. Trapezoidal w/parallel sides perpendicular to the rear and oblique side fronting the street; effective frontage = 80'; effective depth = (110' + 130') ÷ 2 = 120'.

J. Parallelogram with oblique side fronting the street...effective frontage = 80'; effective depth = 120'.

K. Parallelogram with oblique sides intersecting the street...effective frontage = 120'; effective depth = 80'.

L. Trapezoidal w/parallel side fronting the street, and forming a rectangular (A) and two right triangles (B & C)...effective frontage = 80' + (35% x 40') = 94'; effective depth = 120'

M. Trapezoidal with no right angles and an oblique side fronting the street... effective frontage = 80'; effective depth = (160' + 80) ÷ 2 = 120'.

4. Land Valuation

A basic principle in the estimation of land value is that land should be valued as though free and clear, and capable of being put to its highest and best use as of the date of the appraisal. Thus, any penalty due to the imbalance between the land's highest and best use and its actual use is attached to the improvements in the form of obsolescence.

This concept is based upon the attitude and facts of the market. Land value is estimated by a comparison to recently sold vacant sites with similar physical characteristics, equal potential for development, and identical use-density under applicable zoning. In other words the market establishes the price of comparable, competitive vacant lots with the assumption that the purchaser will be prudent and erect a building that is in keeping with the Principle of Balance, and thus, develop the land to its highest and best use.

The sales comparison approach is the most reliable method of land valuation. It involves comparisons and assumes that market evidence is available. Unfortunately, good reliable sales data are not always available for use. For this reason, the assessor must resort to other methods of valuations. The five generally accepted methods are: sales comparison; extraction or allocation; subdivision development analysis; capitalization of ground rent and land residual capitalization. In the body of this manual the sales comparison, extraction and allocation methods for land valuation will be discussed. Subdivision development analysis, capitalization of ground rent and land residual capitalization is discussed in the 6.0 supplement that follows the body of this document.

A. Sales Comparison

This method involves the comparison of recent sales of similar land. Occasionally the comparable sales may be similar enough to a subject property that no measurable value difference is noted or in some instances lots (primarily residential use sites) are sold as a unit/lot value and the majority of the lots in a development may sell for the same price regardless of variations in physical attributes.

However when a significant difference between sale prices and physical attributes are noted adjustments are most likely justified and should be made. These adjustments can be quantitative or qualitative in nature. A quantitative adjustment is objective in nature and made on a dollar or percentage amount based on measurable differences for physical attributes of a property. Qualitative adjustments are subjective in nature and are mostly immeasurable in the market place but a difference in value is perceived. The most desirable adjustment method is the quantitative method which considers differences in comparable sales that can be measured or counted and can be adjusted for. In applying the Sales Comparison Approach, the assessor should seek comparable sales that have the highest degree of similarity to the parcel being appraised. Similarity involves consideration of the

following: (1) the date of the sale; (2) location; (3) size and shape; (4) zoning; (5) topography; (6) utilities and (7) highest and best use. This numbered list is not necessarily assembled in order of importance.

The basic assumption of the Sales Comparison Approach that considers quantitative adjustment is that if two sites were identical in all respects, a current bona fide sale of one lot would signify the value of the other for appraisal purposes. However, the ideal comparison rarely exists, and adjustments must be made for differences between the land, which has sold, and the land, which is being appraised. Adjustments should be made only for measurable variations (those variables that have a measurable effect on value). The important thing to remember is that the total adjustment was developed through a series of individual adjustments derived from an analysis of the elements in the market. There are various methods of making adjustments: (1) component dollar adjustments; (2) percentage adjustments and (3) factor adjustments. Component dollar adjustments and percentage adjustments are adjustments that are added to or subtracted from the sale price of the comparable properties; while the factor adjustments are multiplied. The important thing to remember in making these adjustments is that adjustments are always made from the comparable property to the subject property.

METHODS OF ADJUSTMENT

Sales Price	*Location*	*Physical*	*Time*	*Net Adjustment*	*Adjusted Sales Price*
$5,000 (a)	*- 10%*	*+ 15%*	*+ 5%*	*+ 10%*	*$5,500*
$5,000 (b)	*-$500*	*+$750*	*+$250*	*+$500*	*$5,500*
$5,000 (c)	*.90*	*1.15*	*1.05*	*1.087*	*$5,435*

(a) Plus or minus percentage adjustments
(b) Component dollar adjustments
(c) Percentage factoring adjustments

A sample summary chart on which the derivation of a market value utilizing quantitative adjustment for a residential site is illustrated is shown in **Exhibit 6.17**.

As mentioned earlier adjustments can also be qualitative in nature. These adjustments are typically made as plus (+) or minus (-) adjustments and reflect the superiority or inferiority of a sale when compared to the subject property. Again it should be noted that this type of adjustment is subjective in nature and is due to perceived value difference between a sale and a subject property due to differences in physical attributes. After qualitative adjustments are made and considered the final adjusted accumulative indicator could be equal (=), positive (+) or negative (-). Although this method is not as

concise as the quantitative method it can be helpful in estimating a value range for a property by comparing the number on adjustments made for the sales and the notation (=, +, -) of the final adjustments as shown in **Exhibit 6.18.**

EXHIBIT 6.17

SALES COMPARISON ANALYSIS

	Property Under Appraisement	Sale A	Sale B	Sale C	Sale D
Sale Date		3/1/63	3/1/62	1/4/63	5/1/64
Sales Price		$3,500	$3,500	$2,000	$2,200
Frontage	86 Ft.	78.71 Ft.	78.71 Ft.	45 Ft.	55 Ft.
Sales Price per Fr. Ft.		$44.47	$44.47	$44.44	$40.00
Depth	106 Ft.	96 Ft. (Average)	96 Ft. (Average)	125 Ft. (-5%)	125 Ft. (-5%)
Location		Better (-5%)	Better (-5%)	Better (-5%)	Same ------
Land Pattern	Corner	Inside (+3%)	Inside (+3%)	Inside (+3%)	Inside (+3%)
Other		None	None	None	None
Net Adjustment		(-2%)	(-2%)	(-7%)	(-2%)
Time Factor		None	None	None	None
Adjusted Price per Fr. Ft.		$43.58	$43.58	$41.33	$39.20

Conclusion: After comparing the subject site with the above market sales and considering the differences in time, size, shape, location, and desirability, it is the appraiser's opinion the subject site is more nearly comparable to Sales D, which needed a minimum of adjustment. The other three sales also support Sale D, but are located farther from the industrially zoned property, south of the subject lot. For this reason, more weight was given Sale D.

It is the appraiser's opinion the front foot value applicable to the property under appraisement is $40.00 per front foot, 86 feet @ $40.00, or $3,440.00.

Land Sale A

Sold March 1, 1963. The lot size is 78.71 x 100 x 48.85 x 92.25 feet. It sold for $3,500 and develops a front foot price of $44.47. It is legally described as follows: Lot 7, Block 1, Bethwood Terrace Subdivision.

This is an irregular-shaped lot located approximately four blocks north of the subject property, and it has 78.71 feet of frontage on Second Avenue, south. It is in the same neighborhood with like surroundings, except it is free of the industrial zoning influence which affects the property under appraisement. This lot is high and dry and has been improved with a single-family residence since the time of sale. It was a free market transaction and, except for the industrial zoning influence, is considered comparable to the subject property.

Land Sale B

Sold March 1, 1962, lot size is 78.71 x 92.25 x 48.85 x 100 feet. This property sold for $3,500, reflecting a front foot price of $44.47. Legal Description: Lot 1, Block 8, Bethwood Terrace Subdivision.

This lot is also irregular in shape and located approximately four blocks north of the subject property. It is adjacent to the lot described in Land Sale A. It has 78.71 feet of frontage on Second Avenue, South, and is also a high and dry lot, located in the same general area as the lot under appraisement. Like Sale A, it is free from the industrial zoning influence which has affected the subject property. The purchaser has since improved the lot with a single-family residence. It was a free market transaction and, except for the industrial zoning influence, is considered comparable to the site appraised.

Land Sale C

Date of sale, January 4, 1963. Lot size, 45 x 125 feet. Sales price, $2,000, indicating a front foot price of $44.44. Legal description: Lot 3, less the East 7 feet thereof, and the East 7 feet of Lot 4, Block 3, Woodstock Subdivision.

This property is located approximately five blocks west of the one under consideration and in a newer area, which is developing rapidly with single-family homes in the $13,000 to $16,000 price range. It has no undesirable influences. This sale was a free market transaction and, except for the absence of the industrial zoning influence, is comparable to the subject site.

Land Sale D

Sold May 1, 1964. Lot size, 55 x 125 feet. Sale price $2,200 or $40 per front foot. Legal description: East 33 feet of Lot 12 and the West 22 feet of Lot 13, Block 10, West Central Avenue Subdivision.

This site is located some two and one-half blocks east of the subject property and is very similar. It has the same physical characteristics and also suffers from the industrial zoning directly across the street to the south.

B. Extraction or Allocation

This method involves determination of the contributory value of the improvements as part of the total sales price of an improved property. The balance of the sales price is attributable to the land.

When a particular area has been fully developed and there are no recent sales of vacant lots, you may either apply land values established by comparable sales in similar neighborhoods or extract the value of the land from current improved property sales. The procedure involves inspection, listing and grading the quality of the improvements and applying the appropriate cost and depreciation schedules to arrive at the depreciated value of the structure at the date of sale. By deducting the depreciated value of the improvements from the sales price of the entire property, you obtain the extracted or allocated value of the land as demonstrated below:

Sales Price .....:	***$45,750***
Replacement Cost New:	***$52,500***
Depreciation @ 30% ..:	***-15,750***
RCNLD .....:	***+ 36,750***
Extracted Land Value:	***$ 9,000***

This method requires a relatively high degree of uniformity and proficiency on the part of the assessor in applying cost and depreciation factors to the improvements.

Under the concept of Allocation, a portion of total property value may be assigned to the site. Land, as one of the agents of production, should have a logical value relationship to total property value. Typical relationships are established from sales of improved properties. To establish proper ratios the following are usually considered: (1) site value in previous years; (2) land-building ratios in similar neighborhoods and (3) analysis of new construction on similarly classified sites. To illustrate, let's estimate that the value of the land would represent about 20% of the total property value in a given residential area. Therefore, this allocation is 4:1; there are four parts building to one part land. If the total property value were $40,000, the value of the site in this example would be $8,000 ($40,000 x 20%).

Both the extraction and allocation methods are variations of the market data approach. Therefore, these methods require the use of a sufficient number of recent sales to establish a trend or pattern of allocated/extracted land values. An illustration of the method used to extract and apply an allocation rate is shown in **Exhibit 6.18**.

EXHIBIT 6.18

LAND VALUATION

Extraction ON & ALLOCATION METHOD

Extraction N OF AN ALLOCATION RATE

Sale	Sales Price		Known Land Value		Abstracted Rate
Lot A	$ 27,500	÷	$ 4,700	=	17.1%
Lot B	29,000	÷	4,650	=	16.0%
Lot C	25,500	÷	4,600	=	18.0%
Lot D	28,000	÷	4,750	=	16.9%

Conclusion: *Land Allocation Rate = 17%.*

Sales prices represent actual sales of improved properties from a comparable neighborhood where actual land values are known.

APPLICATION OF ALLOCATION RATE

Sale	Sales Price		Allocation Rate		Land Value
Lot 1	$ 30,100	x	17%	=	$ 5,117
Lot 2	29,500	x	17%	=	5,015
Lot 3	30,000	x	17%	=	5,100
Lot 4	29,750	x	17%	=	5,058

Conclusion: *Estimated Land Value = $5,100*

Sales price represent actual sales of improved properties located in the same neighborhood where no vacant land sales occured.

It is understood that assessors cannot make individual appraisals of each parcel in the taxing district by the various methods outlined in this chapter. However, they can and should use any applicable technique in establishing land values in several areas within the district depending on the amount of market data available. By applying applicable procedures to a reasonable extent in all areas, the assessors can utilize patterns of land value to estimate land value in various neighborhoods.

6.2 THE COST APPROACH

The cost approach is probably the most widely utilized method of estimating market value by assessors. In appraising real estate for tax purposes it is essential to value like properties in a consistent manner. It has been found that the most efficient manner in which to accomplish this end is through the use of the cost approach to value. The cost approach to value possesses two main characteristics, which contribute to its wide acceptance by assessors; the necessary information is available on all properties and the cost approach can be applied to all properties.

The data required for the cost approach is primarily of a physical nature and, as such, is more easily collectable by the assessor. Constructing an adequate comparable sales and income file may be a difficult task, requiring a significant outlay of resources. This may be especially true in the initial collection phase for a jurisdiction, which has not attempted the compilation of this data previously due to the reluctance on the part of homeowners and businesses to document the information. However, an assessor can always measure a property, and through visual inspection determine the class and quality of construction and the materials used, thereby obtaining the information necessary for calculation of the cost approach to value. The cost approach does require the use of market information to establish a value estimate. This market information is used in developing the depreciation schedules and in the final field review of the value estimates.

The cost approach may be applied to all improved properties. Many properties are rarely sold and some types of properties do not yield calculable money incomes; therefore, the information upon which to base the market and income approaches is not available. The cost approach has the advantage of universal application to all types of property regardless of the availability of other valuation data. In ad valorem tax valuations it may be the principal and sometimes sole approach used for some types of properties.

In a reappraisal program, the assessor is restricted by budgetary and time constraints in an effort to scrutinize individual parcels. It is neither feasible nor necessary that a narrative appraisal be prepared for every parcel within the taxing jurisdiction. Consequently the assessor must engage in mass appraising. The cost approach conforms to the environment necessitated by the mass appraisal process. The assessor must have some record of the properties being assessed. That information is generally sufficient to calculate a cost approach. The cost approach meets the assessor's requirement for a

system of valuation for a large number of properties within a singular time frame, and the use of consistent costing schedules retains uniformity between individual properties. The cost approach provides a simple, accurate and rapid method of determining uniform and equitable valuations on a quantity basis.

1. The Cost Concept

The cost approach is based upon the Principle of Substitution; the assumption is that the value of a property is equal to the cost of the acquisition of an equally desirable substitute property. In this case, the process of acquisition involves the replacement or reproduction of the substitute. The cost approach is variously defined as either a method of estimating the market value of the improvements alone, or a method of estimating the market value of a property. The difference, of course, is the addition of the land value estimate. For the purpose of this Manual, we will define the cost approach to include the estimation of land value, thus resulting in an indication of value for the entire property. As will be seen later all elements of the cost approach, including land value, are derived from the market; therefore, the resultant values are indicative of market behavior. Thus defined the cost approach consists of estimating the value of the site as if vacant and available for development at its highest and best use to which is added the current replacement cost of the structure less all-applicable accrued depreciation.

The term used above was Replacement Cost and, although sometimes used as such, is not synonymous with Reproduction Cost. Reproduction cost is the current cost to construct as nearly an exact replica of the property under appraisal as modern materials and equipment will permit. An exact replica is an identical structure with the same materials, construction standards, design and quality of workmanship. Replacement cost is the current cost to construct a structure similar to the one under appraisal, identical as to utility but of current design with presently available materials. In the mass appraisal process, most cost estimates tend toward replacement cost through the use of comparative cost manuals. The use of replacement cost tends to lessen the requirement of estimating functional obsolescence, and therefore, the distinction is most important in the consistent determination of accrued depreciation.

The "cost" referred to in the cost approach refers to all expenditures necessary to put the property in the hands of the user or purchaser. This includes **direct costs**, **indirect costs**, and **entrepreneurial incentive**. Direct costs include such items of expenditure as labor, material, site Improvements, utility service, and equipment rental. Examples of indirect costs include architectural fees, legal fees, interest on construction loans and builders' overhead and profit. Entrepreneurial incentive is "the amount an entrepreneur expects to receive for his or her contribution to a project".[35] Entrepreneurial profit is the realization of the incentive, and may be greater than, equivalent to, or less than the entrepreneur's expectation, or could reflect a loss. This may be measured where the market value and all

[35] "The Appraisal of Real Estate", 14th Edition, Published by the Appraisal Institute

developmental costs of a project are known. The entrepreneurial profit is the remainder, if any, after the direct and indirect costs of development are subtracted from market value of the property. There is typically a variance in entrepreneurial incentive or profit from property type to property type, and may be intangible in the case of properties developed for owner-occupancy.

It is quite often erroneously stated that the cost approach sets the upper limit of value. A more correct statement would be that the reproduction or replacement cost new would tend to set the upper limit of value. Certainly, the cost approach, like the other two approaches to value, is most reliable when the least amount of subjective judgment is exercised and when a site is improved with a newer structure representing the highest and best use of the land. When the cost approach is applied to an older structure the judgmental factor of depreciation comes into play. If the depreciation estimate is too high the indication of value for the property will be too low, even though the calculation of the cost new estimates itself was correct. However it is common for the depreciation estimate to be inadequate in the provisions made for functional and economic obsolescence and, in such a case, the resulting estimate of market value for the property would be too high. It is this failing on the part of the appraiser that has caused the misconception, not the inherent properties of the cost approach.

A. Methods of Cost Estimating

There are three commonly used methods of estimating improvement costs. They are the comparative unit method, the unit-in-place method and the quantity survey. The **comparative unit method** is the easiest and fastest method to apply, and is the most widely used in a mass appraisal program. A total cost for the structure is arrived at by comparison with the known cost of a similar structure reduced to a unit of comparison. All direct and indirect costs, and entrepreneurial incentive/profit are totaled and the sum is divided by a workable measurement such as ground floor area, total floor area or volume that results in either a cost per square foot or a cost per cubic foot. The cost per square foot is by far the most widely used. Occasionally, it is applied to the ground floor area - that area encompassed by the exterior walls of the ground floor. For structures greater than one floor, the cost per square foot is correspondingly increased. Items not included within the ground floor area such as porches, garages, etc. are separately calculated.

The cost per cubic foot may be used in warehouses and industrial type buildings where ceiling height becomes an important factor in the cost of construction. However the calculation of cost estimates for these types of structures is not limited to the cubic foot method since percentage adjustments for story height can be used if square footage is used. The cost figures to be used in the comparative methods can be either developed internally or a commercially published cost manual may be utilized. In either case the costs involved in the construction of a number of structures of a similar type are researched and broken down into a unit of comparison with a schedule developed for each of the various types of structures. The representative cost is then applied to all structures typical to the schedule. Features

particular to an individual structure are then accounted for by lump sum or percentage adjustments. The use of typical cost tends to produce replacement cost estimates.

The use of published cost schedules is widely accepted. The goal of developing locally representative costs, which is the purpose behind total development of a schedule in-house, may be adequately accomplished with the expenditure of fewer resources by merely developing local multipliers. In the calculation of cost new most cost schedules make two final adjustments by using percentage multipliers - the current cost multiplier and the local multiplier. The current cost multiplier accounts for changes in direct and indirect costs from the date the schedule was developed to the effective date of the appraisal. The local multiplier adjusts the typical costs represented in the schedule to a particular locality. For the development of these factors the assessor as an appraiser once again returns to the market. From a current sale price of a property containing a newly constructed structure the land value is subtracted. The resultant figure representing the sum of all direct and indirect costs for that particular structure is compared to the cost of the structure calculated from the manual. From a number of such comparisons the assessor may find, for instance, that an average quality ranch house in a particular locality can be constructed for 94% of the cost represented in the manual. The use of internally developed local multipliers alleviates the complaint sometimes voiced about the use of nationally published cost schedules. This analysis is also inclusive of entrepreneurial profit/incentive, thus a market-derived multiplier adjusts for time, location, and entrepreneurial incentive/profit.

The **unit-in-place method** expresses the summed cost of individual structural components such as foundation, walls, roof, plumbing, etc., on the basis of individual unit measurements such as area, volume or linear feet. All direct and most indirect costs of a completed unit area of a structure are computed. For example the in-place cost of a square foot of outside wall of a frame structure would include the interior wall finish, studding, sheathing, building paper and outside shingles or siding and the indirect cost required to construct the finished product. The cost of the exterior wall is then calculated by multiplying the number of square feet of wall area by the cost per square foot. A similar calculation is made for the other individual structural components and the results summed along with any lump sum or percentage adjustments to arrive at an estimate of cost new. Most manuals, which publish comparative cost schedules, also include in-place or segregated cost schedules. The calculation of cost new utilizing these schedules is generally found to be too time consuming for efficient use within a mass appraisal program. However there are always individual buildings which do not lend themselves readily to classification within the comparative cost schedules. For these unusual or special purpose properties, the segregated cost method may be used.

The most detailed and accurate of the cost estimating methods is the **quantity survey technique**. The quantity survey method entails the complete itemization of all material, equipment, labor and indirect costs required to assemble the components into a finished product. This is the method utilized by a building contractor prior to bidding a construction project. While it produces the most accurate cost

estimate the time and expertise involved make the use of this technique unfeasible by the assessor in a mass appraisal program. It can however be valuable to the assessor for the calculation of benchmarks for locally developed cost schedules and multipliers.

Although not one of the cost estimating techniques generally discussed, one approach that may be of some value to the assessor in a mass appraisal program is "trending". Trending is nothing more than the adjustment of a historical cost to reflect a present day expenditure. Publicized cost surveys usually include a section listing by year and type of construction the multipliers that can be used to trend or update historical costs. The assessor will find the use of trending most beneficial in developing a cost for special purpose properties, which are no longer, constructed in the same manner. However, functional obsolescence is exhibited by virtue of the fact that the structure would no longer be constructed as it once was and care must be exercised in this area when trended historical costs are used.

B. Depreciation

Depreciation may be simply defined as a loss in value from any cause. Depreciation is only used in the cost approach and is the difference between the current replacements or reproduction cost of a structure and the current market value of that structure. Depreciation accrues from the completion of the structure to the date of an appraisal and should not be confused with future depreciation or the recapture of the wasting asset as utilized in the income approach. The first of these is a factual matter; it is a loss in value, which has accrued and is measurable. The second is a theoretical concept to provide in the income stream for the return of the investment in the wasting asset. Land is not a wasting asset, while the structural component of a property may deteriorate to the point it is no longer useable. The land will remain as always available for some use and, therefore, depreciation is only figured on the building component of the property. Depreciation is a measure of the diminished utility experienced by a structure in its present condition and circumstances in comparison with the utility it would have as a new improvement representing the highest and best use of the site.

There are three types of depreciation: physical deterioration, functional obsolescence, and economic obsolescence. The resulting loss in value may be attributed to any one or more of the above causes. Although it is not necessary to segregate and individually measure the resultant loss in value from these causes as prescribed by the techniques of depreciation measurement, the assessor should be aware of their existence and effect to ensure that all forms of depreciation have been properly accounted for.

Physical deterioration is the loss in value due to the physical wear and tear experienced by the structure. It is a reflection of age and the actions of the elements on the building. It is a loss in the physical ability of the structure to withstand normal use. Physical deterioration may be classified as

either curable or incurable. Curable physical deterioration is sometimes referred to as deferred maintenance. It involves those physical defects of a structure which a prudent buyer would consider correcting upon purchase and who's cost to cure would be directly reflected in the increased market value of the property. Thus, curable physical deterioration concerns observable physical defects that would be economically viable to cure. Examples of curable physical deterioration would include such repairable or replaceable items as a new porch, painting, broken windows, etc. The amount of the loss in value due to curable deterioration is equal to the estimate of the cost required to cure the existing physical defect.

Incurable physical deterioration is deterioration where the cost to cure will exceed the return to be received from the increased marketability of the property. Incurable deterioration is generally thought of as applicable to, but not necessarily limited to, the main structural components of the improvement, i.e., the foundation, roof support structure, wiring, etc. The test as to whether deterioration is curable or incurable is, however, economical not structural. If it would be economically prudent in the marketplace to revive a structure, then the deterioration is curable; if not, it is incurable. Incurable physical deterioration is measured by the remaining contribution of that portion of the structure to the economic life of the structure. **Exhibit 6.19** illustrates an example of methods used to estimate both curable and incurable physical deterioration.

EXHIBIT 6.19

PHYSICAL DETERIORATIONS

Curable Physical

Exterior Painting	$ 1,500
Replace Broken Windows	70
Total Curable Physical	$ 1,570

Incurable Physical - Short-lived Components

Component	Replacement Cost New	Total Life Expectancy	Effective Age	% Depreciation	Depreciation
Floor Covering	$ 1,270	10	3	30%	$ 380
Plumbing Fixtures	700	20	8	40%	280
Heating Unit	3,450	15	8	53%	1,830
Electrical Fixtures	500	20	8	40%	200
Roof Cover	590	20	12	60%	350
Water Heater	215	8	4	50%	110
Built-in Appliances	865	12	8	67%	580
	$ 7,590				$ 3,730

Incurable Physical - Long-Lived Components

Total Structure Replacement Cost New (1,000 Sq. Ft. x 24.41)		$ 24,410
Deduct Allowance For:		
(1) Curable Physical Deterioration	$1,570	
(2) RCN Short-Lived Components	7,590	
Total Deductions		9,160
Replacement Cost New--Long-Lived Items		$ 15,250
Deterioration Rate:		
(1) Total Economic Life = 50 years		
(2) Effective Age = 10 years		
EA ÷ TEL = 10 ÷ 50		.20
Total Incurable Physical--Long-Lived		$ 3,050

Summary of Accrued Physical Deterioration

Curable	$1,570
Incurable--Short-Lived	3,730
Incurable--Long-Lived	3,050
TOTAL ACCRUED PHYSICAL DETERIORATION	$8,350

Functional obsolescence is the loss in value experienced by a structure due to its inability to perform efficiently the function for which it is presently used. Functional obsolescence is a result of inherent design deficiencies within the structure. Functional obsolescence may be either the result of functional inadequacy or super adequacy. A functional inadequacy would be a deficiency in design, which is reflected in the marketplace. For instance, an eight-bedroom house with one bathroom would not be worth as much as an eight-bedroom house with four bathrooms of the same size and quality. Functional super adequacy is the result of a structural component design not essential to the present utilization of the improvement. A six-story office building constructed with a foundation adequate for twelve stories in contemplation of future expansion represents a functional superadequacy.

Functional obsolescence, like physical deterioration, may be either curable or incurable. Also, like physical deterioration, the test is the economic viability of the alteration. If an increase in market value would justify the construction of additional bathrooms, the functional deficiency would be curable; if not, it would be incurable. Functional super adequacy is rarely curable. Curable functional obsolescence is measured by the cost to cure the functional deficiency. Incurable functional obsolescence is either measured by direct comparison in the marketplace or the capitalization of rent loss. Direct comparison in the marketplace would involve the comparison of two or more otherwise comparable sales, and the resultant difference in sales price would represent the measure of functional obsolescence. For example, an analysis of comparable sales reveals that, within the marketplace, typical buyers require that a four-bedroom home have two baths although the cost of installing an additional bath exceeds the value returned. Comparison of a house with two baths, which sold for $42,500, with an identical house containing only one bath, which sold for $41,300, reveals a loss in value as demonstrated below:

House - 2 baths	***$42,500***
House - 1 bath	***- 41,300***
Loss in value attributable to bath	***$ 1,200***

In the capitalization approach the difference in market rentals is capitalized to determine the loss in value. The difference per month in rent, due to the functional deficiency, multiplied by the GRM (Gross Rent Multiplier) indicates loss in value due to the functional obsolescence. Suppose that in the neighborhood, houses generally sold for 120 times the monthly rent indicating a GRM of 120. The appraiser ascribes a market rent of $200 per month to a house with two baths and $190 per month for a house with only one. The calculation of functional obsolescence is as follows:

Monthly rental - 2 baths	***$200***
Monthly rental - 1 bath	***- 190***
Rent Loss	***$ 10***
GRM	***x 120***
	$ 1,200
Functional obsolescence - 1 bath	***$ 1,200***

Physical deterioration and functional obsolescence relate to a loss in value due to the condition, construction, and design of the structure itself. **Economic obsolescence** refers to a loss in value from influences outside the boundaries of the property. A house, which cost $25,000 to construct on a barely passable gravel road may not be worth the same as a house that cost $25,000 to construct that is located on a blacktop road one mile from town. A nice home with a factory immediately adjacent to it could suffer immediate economic obsolescence. Economic obsolescence is generally considered to be incurable. As it arises from factors outside the boundaries of the property, it is rarely feasible to move the structure or to remove the cause of the economic obsolescence.

The loss in value due to economic obsolescence can be measured again by both the direct sale comparison in the market place and capitalization of rent loss. When land value is estimated correctly considering the existence of the external obsolescence, the land value will already reflect the existing obsolescence. Application of the loss in value, therefore, should be attributed to the building portion only. Direct comparison in the marketplace would involve the comparison of two otherwise comparable sales, and the resultant difference in sales price would represent the measure of economic obsolescence. For example, an analysis of comparable sales reveals that a home located in a typical residential neighborhood sold for $42,500 and a nearly identical home located near railroad tracts sold for $41,500. Comparison of the home located in a typical residential neighborhood that sold for $42,500, with a nearly identical house located near railroad tracks that sold for $41,500, reveals a loss in value as demonstrated below:

House – Typical residential neighborhood	***$42,500***
House – Located near railroad tracks	***- 41,500***
Loss in value attributable to location near railroad track	***$ 1,000***

Considering capitalization of rent loss, an example of houses near the railroad tracks are renting for $10 per month less. However in this instance the land to building ratio would need to be considered and a gross rent multiplier would need to be established for the neighborhood. For the purpose of this example the land to building ratio is considered to be 1:4 a typical gross rent multiplier for the area was considered to be 100. The computation of economic obsolescence is demonstrated below.

Rent Loss	***$10***
GRM	***x 100***
	$ 1,000
Building Portion = 80%	***x .80***
	$ 800
Economic obsolescence attributable	
To the Building	**$ 800**

Because sales and rentals in an area sometimes have other factors of the sale or rental that may or may not affect a sale price or rental amount more than one sale or rental example would be desirable. Using additional sales or rentals would most likely indicate a range of dollar or percentage loss and the assessor/appraiser would need to further analyze the indicated range to estimate the loss. This would apply for both functional and external obsolescence calculations.

C. Estimating Accrued Depreciation

The **replacement cost new** or the reproduction cost new (RCN) is only one element of the cost approach. Neither the assessor nor the property owner is particularly interested in what the cost would be if the structure was constructed today, but more importantly, in the value of the structure under the conditions which presently exist. To arrive at a reasonable estimate of market value, the assessor must deduct the appropriate depreciation from the RCN. Rarely in a mass appraisal environment is the assessor allowed the luxury of detailed categorization and measurement of depreciation as depicted above.

For purposes of uniformity in a mass appraisal program, depreciation schedules are often developed. Depreciation schedules are easily established through the use of market sales information and a reliable cost schedule. The basic formula is as follows:

Accrued Depreciation = RCN - (Sale Price - Land Value)

RCN		*$41,500*
Sales Price	*$45,000*	
Land Value	*- 7,650*	
Residual Building Value		*$37,350*
Accrued Depreciation		*$ 4,150*

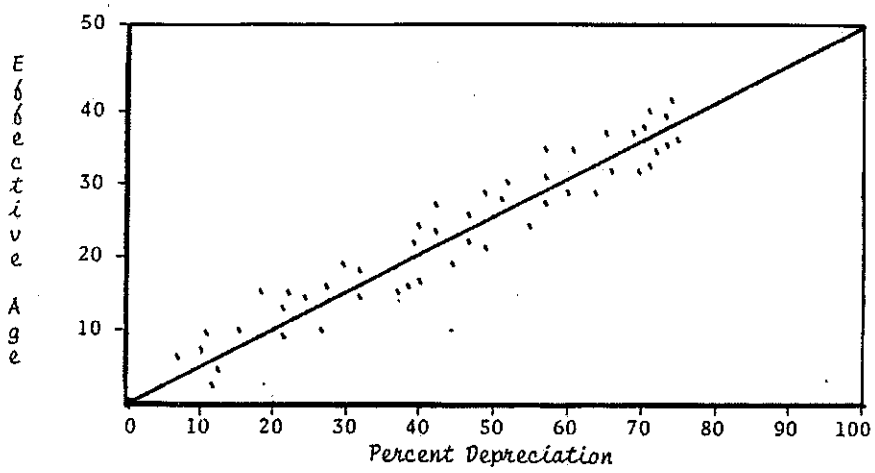
Depreciation Rate	=	*Percent of accrued RCN depreciation*		
Depreciation Rate	=	*Accrued Depreciation*	÷	*RCN*
	=	*$4,150*	÷	*$41,500*
	=	*.10 or 10%*		

Through numerous applications of the above technique, a depreciation schedule may be developed. The resultant accrued depreciation figures are then plotted on a graph and a curve is fitted which seems to best describe the data points with effective age on one axis, and the percent of accrued depreciation on the other. The resultant curve indications may be straight when depreciation is at an equal annual rate, or variable, when depreciation occurs at an unequally accelerating rate. **Exhibit 6.20** is an illustration of two such graphs. From the variable rate graph, a depreciation schedule may then be developed.

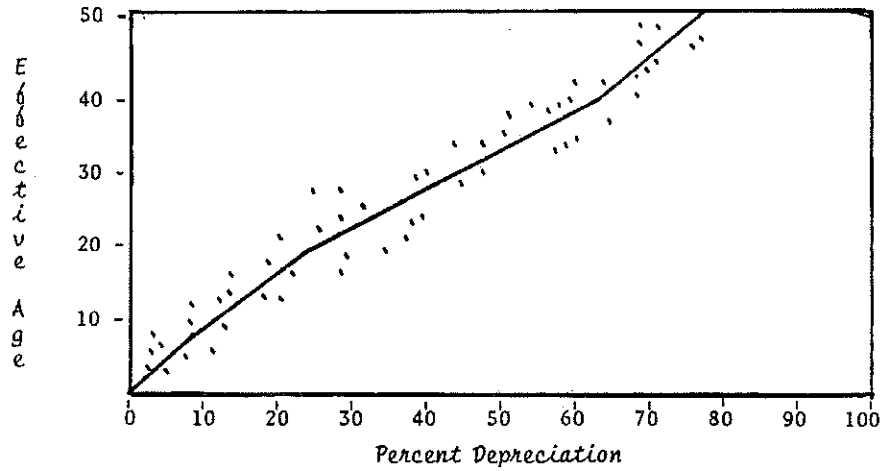
Effective Age	*Percent Depreciated*
NEW	*0%*
10	*11%*
15	*17%*
20	*25%*
25	*34%*
30	*44%*
40	*63%*
50	*77%*

EXHIBIT 6.20
DEPRECIATION SCHEDULE
ANALYSIS GRAPHS

Straight Rate



Variable Rate



The sales comparison method of estimating normal accrued depreciation is more effective when a higher degree of stratification exists. Analysis of such factors as building type, construction quality, and type of construction, age, and location form a significant basis for stratifying property. Ideally, a depreciation schedule would be developed for each neighborhood or homogeneous grouping of properties since, by definition, the structures would be very similar in these respects. Since that is not often feasible, it must be remembered that depreciation schedules reflect only typical depreciation, generally related to age and location. The appraiser must account for any additional factors resulting in a loss in value due to economic or functional dissimilarities. A depreciation schedule, like the cost manual to which it is applied, is nothing more than a tool of the appraiser. The ultimate value conclusion is the result of the application of these tools modified by the judgment of the appraiser.

In many jurisdictions in the State of Missouri, it may be extremely difficult to accumulate enough sales to develop a sufficiently stratified reliable depreciation schedule. There are other methods of estimating accrued depreciation readily available to the assessor. Once again, reliability decreases in direct proportion to ease of application. Virtually every cost manual published includes a section with recommended depreciation schedules applicable to the classifications developed within the manual. The schedules are developed in the same manner as above except a very large number of sales from throughout the country are used. While they may be adopted with some success in urban areas where buyer and seller motivations are more typically represented, they may lose much of their responsiveness in rural jurisdictions. A published depreciation schedule may be used as a base and modified by locally gathered sales information, with the resultant schedule being fairly reflective of local conditions.

By far the most widely used method of estimating accrued depreciation by the assessor is the age-life concept. The application of the age-life concept involves a thorough understanding of three terms: **typical or total economic life, remaining economic life and effective age**. Typical economic life is that period of time in which a structure, similar to the subject, may be expected to be economically viable. It represents that period of time beginning when the structure is completed until it is no longer capable of being utilized to perform the function for which it was designed. It is the estimated total life of the structure from "birth" to "death". Once again, most cost manuals publish typical economic lives for the individual classes of structures contained therein. Remaining economic life may be simply explained as that period of time from now until death. It is an estimate, by the appraiser, as to how long into the future the structure and its environment of present use will continue to be economically viable. It is upon the estimate of remaining economic life that the entire worth of the appraisal rests. The appraiser must be aware of all factors affecting the value of the subject property, not only the physical deterioration but also functional and economic obsolescence. The life of a structure may be lengthened by remodeling or by market forces from outside the property (for instance, a neighborhood in which many older buildings are being renovated) just as it may be shortened due to changes in economic conditions (use) or neglect causing a greater than a typical amount of deferred maintenance.

While the estimate of remaining economic life is totally subjective on the part of the appraiser, a trained appraiser who has developed an understanding of the local marketplace can utilize the age-life method of estimating accrued depreciation with amazingly accurate results. It is at this point more than any other that the judgment of the appraiser comes in. Rarely in a mass appraisal program do all of the field personnel have the experience necessary to develop and exercise this judgment and it is for this reason that the field review phase is so important.

Once the remaining economic life has been estimated, it is subtracted from the typical economic life and the effective age is thus determined. For the reasons stated above, the effective age may be the same as the chronological age of the structure, but most generally it is not. The percent of depreciation per year is then applied to the effective age and the total depreciation applicable to the subject property is calculated. The depreciation per year is usually calculated on a straight-line basis, meaning that the property depreciates an equal amount each year of its existence. There are other more sophisticated methods, such as declining balance and sum-of-the-year-digits. Since the key to an accurate depreciation estimate is the appraiser's estimate of remaining economic life, the use of these alternate concepts generally represents an over sophistication in which the increased effort is not rewarded with increased accuracy.

Once the appraiser has an estimate of remaining economic life, the calculation of the depreciation estimate is a straightforward matter:

Typical Economic Life	***45 Years***	***(From Manual)***
Remaining Economic Life	***12 "***	***(Appraiser's Estimate)***
Effective Age	***33 Years***	
Depreciated @	***2.22% / Year***	***(1 ÷ 45 = .0222%)***
Total Depreciation	***73.26%***	***(33 x 2.22%)***
	Say 73%	

Because an assessor is valuing many properties in a county the depreciation applied needs be consistent for similar type properties and or similar locations throughout the county.

6.3 Sales Comparison Approach

The sales comparison approach may be defined as that approach which uses direct evidence of the market's behavior in estimating value. There is no exact guide to the market value of a parcel of real estate, such as that which exists for stocks and bonds that are listed on the various exchanges. The

market value of listed stocks and bonds can be readily ascertained at any time during the operating hours of these exchanges. Furthermore, each share of stock or bond issued by a company has an equal value because it is issued by the same company with equal characteristics of operation and assets. Such is not the case with real estate. Because no two parcels are exact duplicates, the only possible method of estimating value is to assemble all available market data and translate them into an indication of value for the subject property or properties. Since all properties possess different attributes, certain adjustments or refinements are generally necessary. The assessor's judgment in interpreting various differentials and giving the correct amount of weight to the proper factors is of the utmost importance in making these adjustments.

The sales comparison approach is based upon the Principle of Substitution. Substitution implies that the value of a property is based on the price that would be paid to acquire a similar property. The similar property would have similar utility and would be as desirable as the property being replaced. The principle of substitution indicates that the reliability of the sales comparison approach is not as accurate if there are not substitute properties available in the market. Actually, no two properties are ever identical, but they may be reasonable substitutes for each other if all relevant economic characteristics are similar. Because of the nature of the real estate market and bargaining that is characteristic of most sales, even perfect economic substitutes frequently sell for different amounts. The assessor should not be disturbed by such situations because this is the nature of the real estate market. Therefore, the market value of real estate is more realistically described as a range than as a point. However, the assessor is attempting to make a single estimate of value that will fall somewhere within that range. When the work is completed, the result will produce an indication of what active and prudent buyers of real estate might reasonably pay for the property. It should be emphasized that there can never be a determination of value, only an estimate.

The sales comparison approach is applicable to all classes and types of property which are traded in the marketplace with any degree of frequency. The use of direct market evidence gives certain preeminence to the market data approach; however, the usefulness of this approach is limited. Certain types of properties are sold very infrequently. Large properties and those used for special purposes are seldom traded in the market.

Because of the uniqueness of special-purpose properties, they do not lend themselves to comparisons with others. For that reason, comparisons are difficult or impossible to make, and other valuation approaches must be relied upon. In addition, certain sales are not good indicators of market value. A sales price must meet certain conditions as prescribed by the definition of market value: (1) the sale must be under open market conditions; (2) neither party may take advantage of the duress of the other; (3) a reasonable time must be allowed to find a buyer; (4) a reasonable knowledge of the property's uses - both present and future - must be possessed by both buyer and seller and (5) no collusion or "love and affection" consideration between parties must exist. If the sale does not meet these

conditions, it may be adjusted to the extent that the absence of such conditions distorts the price. Once this adjustment has been made, the sale may be an indicator of market value of the sold property as of the date of the sale. If the required adjustment is too speculative, the sale should not be used.

The purpose of this section is to describe the practical procedure for application of the sales comparison approach. Application of this approach may be made manually or through computerized techniques such as Multiple Regression Analysis (MRA).

1. Analysis of Subject Property

Before the assessor can begin to research and analyze direct market evidence into an indication of value, he or she must be familiar with the property or properties to be appraised. Therefore, a thorough analysis of the subject property is required. The steps to be taken in analyzing the subject property include investigating the neighborhood, inspecting the site and improvements, identifying the physical characteristics of the property and identifying the property's highest and best use.

A. Indication of Neighborhood

It has often been said that the three most important things that influence value are location, location and location. Real estate generally cannot be divorced from its location. The value of the property is therefore closely related to the economic future of the area or neighborhood in which it is located. In addition, the use of the property is dependent upon the availability of external support services (roads, utilities, schools, etc.) that also influence value. Therefore, the subject property must be considered as an integral part of its environment and cannot be treated as an entity unaffected by its surroundings. The assessor will find that an important step in the valuation process is the identification and delineation of the different neighborhoods within the jurisdiction. Through the use of a neighborhood code or identification number, the assessor will be able to identify the areas in which comparable market evidence may be used.

B. Site and Improvement Inspection

A site is defined as land that has been improved in order to be used for a specified purpose. Raw land would then be described as land that has not had any improvements. The land is in its natural state and has not been prepared for a specific purpose. The size, shape, and accessibility of the site will affect its desirability and potential use. It is important that the assessor accumulate data concerning physical factors pertaining to the site such as dimensions and shapes, streets, drainage, site utilization, utilities, etc.

C. Physical Property Characteristics

In applying the sales comparison approach, the assessor must inspect the subject property and record the physical characteristics of the improvements necessary for the comparison of the subject property to those properties on which sales information has been obtained. Elements of comparison for improvements include building areas and dimensions, architectural design and shape, size, attractiveness, construction quality, construction materials, other building amenities, functional utility, age and condition, etc. In some cases environmental conditions may also need to be considered. It should also be mentioned that the cost of installing or removing an item may not be equal to the valued gained or lost. An example would be the addition of a wood deck that cost $5,000 to have installed. While this amenity may add value to the subject, it does not guarantee that that this will raise the value of a property by $5,000. There are also cases where the value gained is more than the cost to add an amenity. In the final analysis of these comparison elements, the assessor should consider only those characteristics that are considered by the participants in the marketplace as contributors of value.

D. Identification of Highest and Best Use

Since an informed seller would not sell a property for less than its worth at its highest and best use, market value is considered to be the value of the property at its highest and best use. In estimating value, the current use of a property should be given first and most serious consideration as its highest and best use, as property owners generally strive to develop property to its highest and best use. Buyers and sellers, however, do make mistakes and at times are not well informed. Also, some properties are in areas of transition to a higher and better use of land. Therefore, in applying the sales comparison approach, the assessor will need to make a careful study of the highest and best use of the property in order to identify the type of comparable data needed.

Once the assessor has obtained the necessary information and conducted a thorough analysis of the subject property, he can then enter the real estate market to search for comparative sales data.

2. Market Research and Analysis

One of the primary difficulties in the application of the sales comparison approach is a lack of sufficient data of adequate quality to justify a market value estimate. The comparative accuracy of value estimates made through the use of this approach will be proportional to the degree of care and effort with which data, both as to quantity and quality, are gathered, screened and interpreted. Therefore, based upon the nature of the sales comparison approach and to ensure valid market conclusions, the process of comparison and adjustment must be made with sales that constitute acceptable evidence of typical market actions within the market in which the properties are located.

In order for the assessor to maintain an adequate data bank, it is imperative that a system of collecting, analyzing and storing this data is developed. Data relative to a market data file may be stored in either a manual file, on a computer or both. Any data utilized needs to be retained for support in case of litigation.

A comprehensive market data collection program requires careful advanced planning. The development of a plan for the collection of market data should relate to the following minimum requirements: (1) the personnel to be responsible for the collection of market data; (2) identification of the information to be collected and stored in the market data file relative to the analysis of market transactions (sales prices, incomes and expenses, and construction cost indices); (3) identification of the type (sales prices, income and expense, and cost) of market data to be collected; (4) identification of the type of storage file to be used and (5) the procedures to be followed in distributing this data to the appropriate appraisers and or appraisal departments.

After verification of sales data and discarding those sales deemed to be invalid, the assessor should identify each sale as to its degree of compatibility with marketing areas within the jurisdiction. This may be accomplished through the use of the neighborhood code number that has been assigned to each property. The identification of those neighborhoods that may be used on a comparative basis will make it possible for the assessor to select the proper comparative sales in estimating values of all properties within a neighborhood.

An important step in the sales comparison approach is the analysis of the comparison factors. Too many factors of non-compatibility in any of the sales may require so much subjective adjustment that the assessor may conclude that a sale originally thought to be a comparable sale may not be. Similarities and dissimilarities must be identified. The most dependable conclusions are based on comparison of those properties with the most similar factors and conditions. The assessor should consider the value contribution of the dissimilarities and estimate an amount that may be added to, or subtracted from, the known price of the sale property in order to arrive at an adjusted figure that will reflect a probable sales price for those properties being appraised.

Some of the factors that may require adjustment are:

A. Real property rights conveyed
B. Financing Terms
C. Conditions of Sale
D. Market Conditions (Time)
E. Location
F. Physical Characteristics
G. Economic Characteristics

H. Use
I. Expenditures made after purchase
J. Non-realty components (personal property included)

Once these differences have been identified, the adjustment process can begin.

3. The Comparison and Adjustment Process

Once sales data has been collected, verified, and determined to be valid, the comparison of the subject properties to those comparable properties on which sales information has been obtained can be made. In order to complete the comparison process, it will be necessary to develop standardized units of comparison for application to specific property types; then, make the necessary adjustments for dissimilarities between properties.

A. Units of Comparison

The comparison of properties can be made on a total unit basis (one total property to another), or the properties may be compared by some unit of measurement common to the type of properties involved. Since it is difficult to make a comparison of sales prices in terms of whole properties, unless these properties are extremely similar, a sale price is typically converted to some common denominator or unit of comparison. These units of comparison establish a means by which sales prices can be analyzed and adjusted to indicate the value of other properties with similar characteristics. The unit of comparison selected needs to conform to the unit of comparison customarily preferred in the local market for each type of property.

The most common units of comparison found in the marketplace include, but are not limited to, the following:

1. Residential Properties

a. Square footage or cubic footage of building
b. Number of dwelling units
c. Number of rooms
d. Number of bedrooms

2. Commercial Properties

a. Square footage of building--gross leasable area
b. Square footage of building--net leasable area

3. Industrial Properties

a. Square footage and or cubic footage of building

The unit of comparison is developed by dividing the sales price by the number of units of measure for the property.

Development of units of comparisons is illustrated by the following example. An office building recently sold for $1,450,000 and contained a total floor area of 62,000 square feet. Of this, 50,500 square feet was net leasable area. The development of the units of comparison is illustrated in the following:

UNITS OF COMPARISON

Per Gross Building Area:	***$1,450,000 ÷ 62,000 square feet = $23.39***
Per Net Leasable Area:	***$1,450,000 ÷ 50,500 square feet = $28.71***

The units of comparison listed above are the most common comparison units for the type of property identified above. However there are additional units of comparison that are applicable for particular types of property such the number of seats in a restaurant or theater.

Another common unit of comparison used that can be extracted from market sale information that has particular applicability to income-producing properties is the Gross Rent Multiplier (GRM) and the Gross Income Multiplier (GIM). These multipliers express the relationship between the gross monthly or gross annual rental income and the value of the property.
Gross rent and gross income multipliers are calculated by dividing the property's selling price by either its gross monthly rental income or its gross annual income at the time of sale. Gross rent multipliers can be a useful analysis tool if properly developed and used. The major consideration is that the properties used to develop the GRM or GIM and those properties to which it is applied are closely similar.

In the appraisal of a single family residential property, where application of a typical income capitalization approach is not practical, the use of the GRM is widely regarded as the "income approach" for residential properties. In valuing residential properties, the gross monthly rental income is used as the basis for estimating the GRM. For example, a house which recently sold for $25,000 and rented for $235 per month would have a GRM as follows:

$25,000 ÷ $235 = 106.38, say 106 GRM.

The development of a GIM is demonstrated in the following example. The office building described in the previous example which sold for $1,450,000 had an annual potential gross income (rent and other income) of $254,000. The calculation of the GIM as follows:

Gross Rent Multiplier: $1,450,000 ÷ $254,000 = 5.7 GRM

B. The Elements of Comparison

An important step in the adjustment process is estimating the contributory value for elements of comparison. Through analysis of the local market, the assessor will have identified the pertinent and salient features which will require valuation adjustments. Adjustments should be made only for those variables that significantly add or detract from value. Therefore, the final value estimate of the property is based upon a total adjustment of the comparable properties' selling prices through a series of individual adjustments for those items of dissimilarity between the subject and comparable properties.

Since the adjustment process reconciles the sales prices of comparable properties into an indication of value for the subject property, the primary rule to remember in making adjustments is that adjustments are always made from the comparable to the subject. If the comparable is better than the subject in a particular feature, it requires a negative/minus (-) adjustment; and if the item of adjustment is inferior, it requires a positive/plus (+) adjustment.

The major categories into which elements of comparison fall, and in which adjustments for differences may be made, are: (1) time; (2) location; (3) conditions of sale; (4) terms of financing and (5) physical property characteristics.

1. Market Condition (Time)

The time adjustment is made in order to allow for changes in market conditions since the date of sale. The adjustment is made in order to project a probable selling price of the comparable property in today's market.

2. Location

It is best to select properties from the same neighborhood. Since this is not always possible, sales data on properties located in comparable neighborhoods may be used. Adjustments may then be needed for differences in location, but these adjustments should be supported with market data.

3. Condition of Sale

The definition of market value indicates that a sale must be a bona fide, arms-length transaction between knowledgeable parties with no undue pressure on either. Therefore, the possible sales that do not meet the established criteria for market value will need to be adjusted, if possible. If a sale has an unusual condition of sale that cannot be adjusted for, the sale should not be considered as a reliable indicator of value.

4. Financing Terms

Real estate is sold through a number of different financial arrangements. Since buyers of real estate usually borrow a portion of the purchase price, the methods of financing the property must be analyzed. One of the conditions of market value is a consideration of financing in the form of cash or its equivalent. Therefore, adjustments must be made to the sales price involving unusual financial terms in order to arrive at an equivalent price based upon the typical financing that was available at the time of sale.

5. Physical Characteristics

An inspection of those properties upon which market data has been acquired and those properties under appraisement will reveal a number of differences in the physical characteristics of each property. The elements of physical comparison could include style, size, and number of bathrooms, age, condition, functional adequacy, site and site improvements, structural type and quality as well as other special amenities.

C. Adjustment Techniques

After value estimates that are attributable to the elements of comparison have been identified, the assessor must then make the adjustments for the differences between those properties under appraisement and those comparable properties which have recently sold. In making the adjustments for the various dissimilarities in the properties, the assessor may use one of several techniques.

1. Lump-Sum or Whole Property Adjustments

This method involves the use of a single lump-sum adjustment figure to reflect the net effect of all the dissimilarities. This method makes no formal attempt at developing an individual adjustment for each item of dissimilarity, although these differences must be considered in the overall adjustment.

For example, you are appraising a subject property and comparing it with one which sold for $30,000. After consideration of all the dissimilarities between properties, you estimate that the subject property would sell for $4,000 more than the sale property. The indicated adjusted value is:

$30,000 + $4,000 = $34,000

2. Component Dollar Adjustment

In this method, the individual elements of dissimilarity are identified and an estimate of contributory value, expressed in dollars, for each of these elements is developed. The sum total of these individual adjustments will indicate the total refinement necessary to adjust the comparable sales properties to the subject. In arriving at a total adjustment, the assessor must add for deficiencies in the comparable property as opposed to the subject property, and subtract for those elements in which the comparable property is superior to the subject.

The application of this method involves the use of an adjustment grid which indicates the relative amenities of the subject property, the similarity or dissimilarity of each comparable sale to the subject, the sales price of each comparable property, the value adjustments for each item of dissimilarity, a total lump-sum adjustment and the adjusted value of each comparable property.

In this example, a thorough analysis of the market discloses the following elements of comparison and their contributory adjustment values. A comparable property sold for $30,000 one year ago, and since then the value has increased by $3,000. Its location is superior to the subject and requires an adjustment of $1,500. In the area of physical characteristics, the comparable has one less bath and no garage. A bath adds a value of $1,000 and the garage has a contributory value of $1,400. The adjustments are illustrated as follows:

Sales Price	*Time*	*Location*	*Phy. Char.*	*Net Adjustments*	*Indicated Value*
$30,000	*+$3,000*	*-$1,500*	*+$2,400*	*+$3,900*	*$33,900*

3. Percentage Adjustments

This method is similar to the component dollar adjustment method described above. Because precise dollar amounts are sometimes difficult to estimate from market evidence, the difference can be represented by a percentage differential between the comparable property and the subject property. In developing the percentage adjustments, time adjustments are usually made first which allows for the additional adjustments to be made in terms of current local market.

In the previous example, the comparable property sold for $30,000. The analysis of the subject and the sale property disclosed the following adjustments: (1) time +$3,000; (2) location -$1,500 and (3) physical characteristics +2,400. These adjustments expressed as percentages are illustrated below.

Sales Price	*Time*	*Location*	*Phy. Char.*	*Net Adjustments*	*Indicated Value*
$30,000	*+ 10%*	*- 5%*	*+ 8%*	*+ 13%*	*$33,900*

4. Percentage Factoring Adjustments

In quantifying the adjustments, existing differences may be expressed as a factor manifesting the adjustment amount for each element as it reflects the relationship of the comparable property to the subject. In developing the adjustment factor, the subject property is considered to be the base (1.00) to which is added the plus (+) or minus (-) percentage adjustment indicative of the dissimilarities. For example, sales prices have increased 10% since the date of sale; therefore, the time adjustment factor would be 1.10 (1.00 +.10).

A composite or accumulative adjustment factor is developed by multiplication of all individual adjustment factors. For example, 1.10 x .96 x .90 x 1.01 = .98.

To illustrate, the previously shown example had a comparable property selling for $30,000 with adjustments for time of +10%, location -5% and physical characteristics of +8%. The development of a composite adjustment factor is shown in the following illustration:

Sales Price	*Time*	*Location*	*Phy. Char.*	*Adjustment Factor*	*Indicated Value*
$30,000	*1.10*	*.95*	*1.08*	*1.129*	*$33,870*

The foundation of the various methods for making adjustments is the development of the amount of adjustment for each element of comparison. In developing an estimate of value for these comparison elements, the assessor is attempting through market analysis to identify the contributing value placed upon the existence or nonexistence of these elements by the marketplace. In developing adjustments, sales may be paired (Paired Sales Analysis) in an effort to identify the effects on value due to the specific differences between the properties. If two sales properties are closely comparable except for one element, the difference in sales price may be attributed to that element.

For example, in researching the market you have found two properties, located in the same neighborhood, which resold recently. Sale number 1 sold four and a half months ago for $31,800 and sold two years prior to that for $26,600. Sale number 2 sold two months ago for $32,500 with a prior

sale of one year earlier of $29,500. A time adjustment can be developed through the comparison of each property's current sales price and its previous sales price. In addition, an adjustment can also be developed through the comparison of sale number 1 with sale number 2. Using the current sale date of four and one-half months for property number 1 and the most recent sale date, two months ago, for property number 2, an adjustment can be developed. The development of an indicated time adjustment through application of both methods is illustrated in **Exhibit 6.21**.

The example time adjustments assumed that the sale properties were not affected by condition or other factors beyond the time difference.

In the following example, an analysis of the market indicates that the following elements - time, location, garage and physical condition - will require consideration in the adjustment process. Sales 2 and 4 were taken from the same neighborhood, while sales 1 and 3 were taken from a comparable neighborhood that was somewhat inferior to the subject's neighborhood. Sale number 1 has no garage, is in good condition and sold one month ago for $30,000. Sale number 2 also has no garage, is in good physical condition and sold two months ago for $32,000. Sale number 3 has a two car garage, is in good condition and sold one month ago for $32,500. Sale number 4 has no garage, is in fair condition and sold one and a half months ago for $31,500. An analysis of the market indicates that market values are increasing at the rate of one percent (1%) per month.
The adjustment process for this example is shown in **Exhibit 6.22**. This Exhibit illustrates an analysis grid indicating the development of the contributory value of each element, and an adjustment grid illustrating the application of the adjustment process in developing an indication of value for the subject property by the market approach.

EXHIBIT 6.21

ADJUSTMENT DEVELOPMENT
TIME ADJUSTMENT

DEVELOPMENT WITHIN PROPERTIES:

	Sale No. 1	Sale No. 2
Previous Sale Date	2 yrs. ago	1 yr. ago
Previous Sale Price	$ 26,600	$ 29,500
Current Sale Price	$ 31,800	$ 32,500
Change in Value--$ Amount	$ 5,200	$ 3,000
Change per Annum	$ 2,600 (1)	$ 3,000
Change in Value--% Amount	19.5%	10.2%
Changer per Annum	9.75% (2)	10.2%

Indicated Time Adjustment = $2,600-3,000/yr., or 9.75%-10.2%/yr.

DEVELOPMENT BETWEEN PROPERTIES:

	Sale No. 1	Sale No. 2
Sales Date	4.5 mos. ago	2 mos. ago
Sales Price	$ 31,800	$ 32,500
Time Difference	2.5 months	
Difference in Value - $ Amount	$280/month (3)	
Difference in Value - % Amount	.88%/month (4)	

Indicated Time Adjustment = $3,360/yr. or 10.5%/yr.

Overall Indication = $3,000 or 10% per year.

1. $31,800-$26,600 = $5,200 ÷ 2 (yrs.) = $2,600/yr.
2. $31,800-$26,600 = $5,200 ÷ $26,600 = .195 ÷ 2 (yrs.) = .0975/yr.
3. $32,500-$31,800 = $700 ÷ 2.5 (months) = $280/month
4. $32,500-$31,800 = $700 ÷ 31,800 = .022 ÷ 2.5 (months) = .0088/month.

EXHIBIT 6.22

MARKET APPROACH ADJUSTMENT PROCESS

Analysis Grid

Comparison Elements	Comparable Sales No. 1	No. 2	No. 3	No. 4
Sales Price	$30,000	$32,000	$32,500	$31,500
Date of Sale	1 month	2 months	1 month	1.5 months
Location	Good	Excellent	Good	Excellent
Garage	None	None	2-Car	None
Physical Condition	Good	Good	Good	Fair

Sales Number 1 & 2 - Location = $32,000 - $30,000 = $2,000
Sales Number 1 & 3 - Garage = $32,500 - $30,000 = $2,500
Sales Number 2 & 4 - Physical Condition = $32,000 - $31,500 = $ 500

Adjustment Grid

Subject	Comparables No. 1		No. 2		No. 3		No. 4	
Sales Price		$30,000		$32,000		$32,500		$31,500
Time -Current	1 Month +	300	2 Months +	640	1 Month +	325	1.5 Months +	475
Location -Excellent	Good +	2,000	Excellent	-0-	Good +	2,000	Excellent	-0-
Garage -2-Car	None +	2,500	None +	2,500	2-Car	-0-	None +	2,500
Physical Condition-Fair	Good -	500	Good -	500	Good -	500	Fair	-0-
NET ADJUSTMENTS	+	4,300	+	2,640	+	1,825	+	2,975
ADJUSTED VALUES		$34,300		$34,640		$34,325		$34,475

INDICATED VALUE = $34,475 or $34,500 (Rounded)

VALUE RANGE = $34,300 to $34,640

4. Reconciliation of Value and Final Opinion of Value

On completion of the adjustment process, an adjusted sales price will have been developed for each of the comparable sales properties used. If properly completed using good sale information the adjusted values should fall within a relatively narrow range. The final step of the sales comparison approach will be to correlate these adjusted value indicators into a single estimate of value for the subject property. Correlation is a procedure through which the market evidence used to develop the indications of value is logically analyzed to select the indication of value most representative of the data processed. In selecting the single value estimate, it is not proper to average the individual indications into a single value estimate. In an analysis of the comparable properties used, the greatest emphasis should be placed upon the adjusted sales price of those comparable properties regarded to be most similar to the subject property. Guidelines to be considered in making this analysis are total number of adjustments required, and the gross adjustment made to the property. Simply stated, those sales properties with the least number of adjustments and the smallest total adjustment would indicate the properties most likely to be closely comparable to the subject property. Once the final value has been determined it is also important to mention all three approaches to value in the reconciliation. The appraiser must explain each approach to value, or indicate why a certain approach was not considered or developed. An example of a reconciliation of value would be as follows. The sales comparison approach was deemed to be the best indicator of value for the subject property. Sales comparables similar to the subject were located and have been adjusted to indicate a final value estimate. The income approach, although considered, could not be developed because income/rental information for this type of property was scarce or more or less non-existent. The cost approach was developed and provides support for the sales comparison approach value indication. Overall, the final value is based on the sales comparison approach because it was concluded that this approach best reflects the attitudes of typical buyers and sellers in this market place. The previous reconciliation is a minimum of what this section of the appraisal should contain.

5. Multiple Regression Analysis

Multiple regression analysis (MRA) is a mathematical technique used to establish contributory values for comparative characteristics of a sale property adding the total sales price based upon known and available data. The known and available data are recorded sales prices and property characteristics. The supposition of multiple regression analysis is to derive an equation that best expresses the relationship of a number of significant factors to the total market value of a property developed through the analysis of a large number of sales.

The most important aspect in the use of a computerized MRA appraisal technique is the development and maintenance of an adequate data file. Since MRA is a statistical analysis technique, the validity of a characteristic's value indication depends upon the processing of a large number of valid sales. With

respect to property characteristics, the assessor will need to gather information on all those characteristics which might have a significant effect upon the total market value of properties within the jurisdiction. These include property improvement characteristics (number of bathrooms, square feet of living area, type of construction, effective age of structure, etc.); land characteristics (size of the lot, shape of lot, landscaping, etc.) and locational factors (neighborhood amenities, zoning, view, etc.).

The end result of regression analysis is the development of a mathematical equation that may be applied to unsold properties in arriving at an indication of value. The equation estimates the value of the dependent variable through the assignment by the computer of a dollar amount attributable to the independent variable. Market value serves as the dependent variable and the various property characteristics for which data have been collected serve as the independent variables. The mathematical equation used in MRA is expressed as follows:

$$Y' = A + B_1 X_1 + B_2 X_2 + B_3 X_3 + ... B_n X_n$$

In the equation, **"Y'"** is the estimated selling price; **"A"** is a constant in each regression equation and represents a residual portion of the estimate not accounted for by a coefficient; **"$B_1 ... B_n$"** are the coefficients, or dollar amounts, assigned by the computer to the independent variables and **"$X_1 ... X_n$"** are the numerical quantification of the property characteristics found to be significant in property valuations. For example, suppose the computer calculates a regression equation for neighborhood number 32 to be used as the basis for appraising unsold properties in that neighborhood. In analyzing sale properties within that neighborhood, the computer determined that 4 independent variables had an effect upon value. Therefore, the basic equation for consideration of these 4 variables is shown as follows:

$$Y' = \$3{,}000 + \$17.63\, X_1 + \$1{,}750\, X_2 + \$750\, X_3 - \$350\, X_4$$

In this equation **"X_1"** is the number of square feet of living area, **"X_2"** is the number of garage car-units, **"X_3"** is the number of bathrooms, and **"X_4"**is the effective age of the structure. The constant component **"A"** is $3,000, the square foot value **"B_1"** is $17.63, the garage unit value **"B_2"** is $1,750 per unit, the value per bath **"B_3"** is $750 and the impact of effective age **"B_4"** is -$350 per year. In the application of this regression equation to unsold properties to obtain value estimates, the computer is developing a value for a property that has 1,500 square feet of living area, a two car garage, two baths and an effective age of five years. Through application of the above equation, the computer estimates the value of the subject property as follows:

$$Y' = \$3{,}000 + (17.63 \times 1{,}500) + (1{,}750 \times 2) + (750 \times 2) - (350 \times 5)$$
$$Y' = \$3{,}000 + \$26{,}445 + \$3{,}500 + \$1{,}500 - \$1{,}750$$
$$Y' = \$32{,}695$$

Therefore, an application of the computer-developed equation to all unsold properties within the same neighborhood will produce a market value estimate for each of these properties. A more realistic example would, of course, contain many more independent variables. Despite the statistics and computer technology, the assessor must recognize that MRA is nothing more than a refined and automated application of the sales comparison approach to value, and the assessor should also generate value estimates based upon the cost approach and income approach where applicable.

In not all cases will MRA-assisted assessment programs prove to be cost beneficial to a taxing jurisdiction. Some initial costs of system development, particularly those associated with securing an adequate data file, are large.

The major initial cost outlay relates to the procurement of computer hardware and the development of the computer programs. After the initial capital expenditures required for system set up, the annual cost per parcel will begin to decline and compare favorably with traditional assessment methods. The advantages of MRA are such that assessment jurisdictions with a favorable property base, the necessary resources and with a sufficient number of verifiable arms-length transactions per year are urged to consider its use as an appraisal tool.

6.4 THE INCOME APPROACH TO VALUE

Typically utilized income approach methods will be discussed in the body of this manual. The 6.0 supplement that follows the body of this document has additional Income approach methods that would have fewer applications in Ad Valorem valuation.

The income approach is based on the premise that the value of a property is equivalent to the present worth of the net income it may be expected to produce during a normal term of ownership or over its remaining economic life. Application of the income approach is essential to the proper appraisal of all properties which are normally bought and sold on the basis of their ability to produce income. The necessity of applying this approach lies in the fact that the income producing capability of a property is a major factor in determining a sales price among investors. Likewise, one of the best measures of a property's utility and desirability is the amount of net rental income it can produce in an open and competitive market.

The income approach to value may be defined as any method of appraising that converts income into an estimate of value. This broad definition includes any use of monthly or annual gross multipliers of income as well as the more refined methods of processing income. In its simplest form, the income approach is a discounting process which expresses the relationship between income and value through a capitalization rate that reflects market demands for return **ON** and **OF** the investment in real estate.

1. Basic Assumptions

The income approach to value is a useful, although sensitive, appraisal tool. It is useful for many types of commercial property (due to their income-producing capabilities) because it is the most valid approach to value. It is sensitive because errors have a leverage affect and result in indicators of value being incorrect by many multiples of the original error. The income approach usually employs more complicated mathematics than the other approaches. An appraiser sometimes becomes so impressed with the mathematics that a greater degree of accuracy is attributed to the answer than is merited. The accuracy can be no greater than the validity of the basic assumptions applicable to this approach.

A. Value is a Function of Income

A basic assumption of the income approach is that people purchase property for the income it will yield. A different way of stating this assumption is that the value of property depends upon the income it will produce. This assumption has general acceptability in the appraisal of most commercial property. It is plausible, for example, that the landlord of a store owns the property for the rental income it generates and that a potential purchaser would buy it for the expected future income. This is an important assumption, and in cases where it does not correspond with the actual facts, the validity of the approach is reduced.

Income may be defined as a flow of benefits over time. In order to use the income approach, the benefits must be expressed in terms of money. The conversion of certain types of benefits into monetary equivalents may be difficult. Single-family residential properties produce benefits in the form of amenities. Appraisers find it difficult, if not impossible, to convert an amenity into a monetary value. Since commercial properties are usually leased to tenants, these benefits are converted into monetary income in a highly competitive market. Farm properties derive benefits from at least two different sources: (1) as a production unit whose benefits can be converted into monetary income and (2) as a living unit whose benefits are difficult, if not impossible, to convert into monetary income.

The income that is capitalized in the income approach is the expected future income. Past income is only a guide to estimating future income. When property is transferred, the buyer does not acquire the income that it has already yielded; instead, the property is acquired for the right to the income which it will yield in the future. In many cases, the immediate past or current income may be a good indicator of future income; however, complete reliance upon past or current income may be incorrect. The proper income to be used is the one which the typical purchaser would anticipate over the remaining productive life of the property. Income forecast should be based upon past and present income modified by foreseeable economic changes. The appraiser is not attempting to predict the future income, but rather to estimate the income that a typical investor would expect to receive.

The income to be processed must be the expected future income from the property to be appraised. An ordinary commercial retail store involves at least two businesses. One is the business of owning the property. The other is the business of selling merchandise or services. It is necessary to determine what portion of expected future earnings is attributable to the business of "owning the property". In some properties, especially certain industrials, this is impossible and the income approach has little, if any, validity.

Property rentals are the most desirable form of income data for use in the income approach. They avoid the problem of attributing a portion of the income to the business enterprise and the remainder to the business of owning the property. An operating statement of a retailer, wholesaler or manufacturer may list all of the earnings. It may reflect enterprise earnings or losses as well as property earnings or losses. A financial statement may show earnings which were derived, in part, from the business enterprise. These are not to be valued by the assessor. The appraiser must start with an operating statement in order to determine the income attributable to the property being appraised. Rent, in most cases, is a direct measure of the income from a property. Rentals are, in effect, short-term sales of the right to use the property for a short period of time. The appraiser is attempting to estimate a value for perpetuity. The usual appraisal problem of rental properties is one of estimating the value of the right to use the property in perpetuity by reference to the consideration in a sale for a limited term.

B. Remaining Economic Life

The income approach assumes that the investor in real property will estimate the quality and duration as well as the quantity of the income stream. For land, the duration is usually perpetuity (forever), but improvements have limited lives; therefore, the estimation of a remaining productive life (that period of time over which the property will earn a net income above the net rent applicable to the land) is important in the income approach and requires careful analysis. Average structure life tables can be developed as general guides; but a careful study of the structural soundness of the improvements, the degree of functional obsolescence and the economic and social trends in the neighborhood and community should serve as the basis of this estimate.

C. Discounting and the Capitalization Process

Another assumption of the income approach is that future income is less valuable than present income. It follows that future income must be discounted to make it equivalent to current dollars. Discounting is a method of finding the present value of a sum receivable at some future date. The value today is the amount which, when compounded periodically (usually annually) at a given rate will accumulate to the sum at the future date. For example, $104 due one year from today is worth $100 today if the interest rate is four percent (4%).

A series of payments made at equal intervals is known as an annuity. The present value of an annuity is the sum of several separate periodic incomes discounted to their respective present worth. The process of discounting an annuity, or any future payment of money, to obtain the present worth of this income (the indicated market value of the property producing the income) is called "capitalization". The components of the mathematical process are: (1) the money income to be discounted, (2) the rate at which it is to be discounted, (3) the time over which the income is to be realized, (4) and the indicated present value of that income.

In its simplest form, this process may be represented by the mathematical equation **V = I ÷ R**, where **"V"** equals the indicated present worth of the income stream, **"I"** equals the income to be capitalized and **"R"** is the capitalization rate. In applying basic mathematical principles, the net income, the capitalization rate and the value of the property constitute a basic equation from which any one of the three elements can be determined if the two remaining elements are known as observed in the following examples:

I ÷ V = R Income ($ 4,000) ÷ Value ($50,000) = Rate (8%)
V x R = I Value ($50,000) x Rate (8%) = Income ($4,000)
I ÷ R = V Income ($4,000) ÷ Rate (8%) = Value ($ 50,000)

In other words, if the income and value of a property are known, as in the case of a sold property, the capitalization rate can be determined. If the rate and value of a property are known, the income can be determined. And finally, if the income and capitalization rate are known, the value of the property can be estimated.

The appraiser must know the basic capitalization equation and understand the relationship between the various components of the equation before proceeding to the mechanics of the capitalization process. To capitalize means to convert net income into an amount of money consistent with the rate of return expected from the investment. The capitalization process has evolved out of the concept that an investor in income-producing real estate is entitled to (1) a return **ON** his or her investment and (2) a recapture **OF** the investment in that portion of the property which will eventually wear out or become valueless with the passage of time. The return on an investment is expressed as a percentage or rate of interest (discount rate) representing the annual yield on each dollar invested. For example, if an investor purchases a vacant parcel of land for $50,000 and leases it for $4,000 per year (net), he or she is receiving an 8% return on the investment:

R = I ÷ V
R = $4,000 ÷ $50,000
R = 8%

On the other hand, if this investor purchases an identical lot for $50,000 and constructs a building at a cost of $200,000 and then leases the entire property for $28,000 per year (net), he or she will be receiving an 11.2% overall return on the investment:

$$R = I \div V$$
$$R = \$28{,}000 \div \$250{,}000$$
$$R = 11.2\%$$

It is particularity important to note in the above illustrations that between similar parcels of land, the one improved with a building requires a higher overall rate of return. There is no reason to assume that the building itself would require a higher rate of interest than the land; therefore, the difference between the land interest or discount rate (8%) and the overall land and building rate (11.2%) must be an addition to the interest rate to provide for recapture or return of the investment in the building. The recapture rate in this case was 4% as calculated below:

Net Income Before Recapture:		***$28,000***
Investment:		
Land	***$ 50,000***	
Improvements	***+ 200,000***	
Total	***$250,000***	
Net Income Attributable to Interest:	***$250,000 @ 8%***	***- $20,000***
Net Income Attributable to Recapture:		***$ 8,000***
Recapture Rate:	***$8,000 ÷ $200,000***	***4%***
Recapture Period:	***1 ÷ .04***	***25 Years***

Thus, the capitalization process incorporates two basic principles:

1. Capitalization in Perpetuity does not include any provision for recapture. This is the interest rate and it represents the return on the investment. This rate is normally applied to the land.

2. Capitalization in Termination provides for both return on (interest) and return of (recapture) the investment in the wasting asset. This rate is normally applied to the improvements.

2. Processing Income

Once the appraiser accepts the basic assumptions of the income approach, the next logical step is to process the income to the point where it can be capitalized. The objective of this section is to explain the processing of income from a gross income to a net income.

A. Gross Income

The income approach begins with an estimate of the gross annual rental income which the property would be capable of producing if it were vacant and available for occupancy at the time of the appraisal. The income to be used is a figure representing the property's potential gross income at 100% occupancy over a period of one (1) year, and which would be expected by the typical investor for rental of the unencumbered fee simple rights.

Estimating the fair rental income of the full property rights is the objective of the appraiser. Fair rent is "fair" only in the sense that it reflects a foreseeable, future supply and demand for such real estate. Fair rents reflect the maximum earning power of the property in its particular market during its productive life. To ensure a proper estimate of gross annual income, the assessor should consider the following: (1) past and present rentals earned by the subject property and (2) past and present rentals earned by comparable properties. The terms fair rent and economic rent are synonymous and are used interchangeably. It should be noted that a property's contract rent is not necessarily equal to market rent.

B. Vacancy and Collection Losses

Unless a property is under a long-term lease to a responsible tenant, it is not expected to remain fully occupied during its total economic life. Consequently, it is reasonable that the gross annual income estimate, which assumes 100% occupancy, should be discounted to provide for anticipated vacancy losses. If, in fact, a property does not experience vacancy, it may be that the actual rent is too low. Even if this were not the case, it still would be a correct procedure to deduct a vacancy allowance from the gross income of the property, since a prudent investor and seller would anticipate some vacancy.

Vacancy losses are usually combined with collection losses, and are often expressed as a percentage of gross income. This income loss is estimated on the basis of a study of the subject property and an analysis of comparable properties in the neighborhood.

C. Effective Gross Income

Subtraction of the vacancy and collection loss allowance from gross income yields effective gross income. This result is the actual gross income that the investor can reasonably expect the property to produce year in and year out. No expenses have been deducted, so it is still a gross income figure.

Gross Annual Income	*$ 36,000*
Vacancy & Collection Losses @ 5%	*- 1,800*
Effective Gross Income	*$ 34,200*

D. Expenses

The next procedure is to subtract all expenses from effective gross income. The expense estimate, like the income estimate, should not necessarily be current or average past expenses, but an estimate of what expenses the prudent investor may reasonably expect during the remaining life of the property. They, like the income, are estimated on an annual basis.

There are several sources of information available to assist in preparing a reconstructed operating statement for the income approach. These include published national average expenditures for certain types of occupancy, and operating statements obtained from similar properties. Historical operating statements of the subject property itself should be given careful consideration. If income and expenses for the subject property have been relatively stable for the past three to five years, itemizing expenses on an average basis is satisfactory. However, if the historical operating statements show an upward or downward trend, more weight should be given to the most recent years. Remember, past income and expense statements are used only as a basis for projecting probable future expense to income ratios.

Likewise, in almost every case it will be necessary to reconstruct the owner's actual operating statement to adjust for capital improvements included as repairs, three-year insurance premiums charged to one year, etc. Items specifically excluded from the operating statement using the income approach are: (1) Mortgage interest and amortization payments; (2) Federal income tax and other personal expenses of the owner; (3) Building and equipment depreciation charges set up under I.R.S. regulations; (4) Additions to capital or major improvements to the property and (5) Special corporation costs and fees. The general rule is that all expenses of the property necessary to maintain the flow of income are deductible. The nature of the property and the terms of the typical lease agreement for that type of property will determine the appropriate items of expense to be charged against effective gross income. Expenses may be classified as follows.

1. Fixed Expenses

These costs fluctuate very little from year to year. They usually include real estate taxes and premiums for the necessary insurance coverage on the property. However, property taxes are one of the controversial items in the processing of income. The assessor should not treat property taxes as an expense. The purpose of an assessor's appraisal is to estimate a value for property tax purposes. If current property taxes are subtracted as an expense, the value of the property is assumed. Since the

property tax equals the tax rate times the assessed value, the calculation of taxes involves an assumption that the appraiser knows the assessed value and hence the market value. If the value based on an income approach analysis is known, there is no point in completing the income approach to value.

Since real estate taxes are unknown in assessment appraisals, this item is excluded from the operating statement as an annual expense and is included as an addition to the capitalization rate as an Effective Tax Rate. For example, assume that property is assessed at 32% of value and taxed on the basis of $6.50 per $100 of assessed valuation.

Effective Tax Rate = 32% x ($6.50 ÷ 100) = 2.08%

This means that the taxes will be $2.08 for every $100 of market value; therefore, a 2.08% inclusion in the capitalization rate will automatically provide for a property tax equal to 2.08% of the value of the property.

2. Operating Expense

Operating expenses paid by the owner may include such items as management, electricity, gas, water and sewer, janitorial services, salaries, maintenance and repairs, advertising, supplies and miscellaneous items, and other outlays necessary for the operation of the property.

The charge for maintenance and repair of the building and equipment should include only the normal annual expenditures necessary to keep the property efficient and in rentable condition. These costs include normal maintenance plus the annual prorated share of periodic painting and redecorating.

Management fees are considered proper expense deductions, whether the property is managed by a professional manager or the owner.

A considerable expenditure of time for accounting, supervision, and other managerial duties is required for efficient operation of the property. Additional cost for on-site management facilities and personnel may be required for larger properties. The amount of management fees, usually established in terms of a percentage of effective gross income, may be influenced by local custom.

3. Reserves for Replacement

Reserves for replacement are annual installment allowances for the eventual replacement of equipment items and components of the building which will wear out before the building reaches the end of its economic life. These costs normally include an annual reserve for roof covering, floor covering (carpet, etc.), appliances, heating and air-conditioning systems, etc.

If income and expenses are separately estimated year by year, the full cost of these replacements is expected to occur. It is far simpler, however, to set up an equal annual allowance for replacement of an item based upon the estimated life of the item. For example, a fifteen-year, bonded built-up roof with normal maintenance and repair could last for twenty years. If its cost of replacement was $3,000, the annual reserve would be $150 ($3,000 ÷ 20 years).

Reserve for replacement accounts may be set up on a straight-line basis as shown above or through the use of a sinking fund. Reserve accounts are not commonly established by the operators of real estate, and extreme care must be taken by the appraiser when utilizing a reserve for replacement account that these expenditures are not wholly or partially accounted for in the maintenance, repair or replacement accounts. When the capitalization process is achieved through the use of overall rates, derived from market transactions, the appraiser must know whether the accountability of these expenditure items is reflected in the derivation of net income or in the capitalization rate.

Also, to be considered is the relationship between the remaining economic life of the structure and the replaceable component. If the remaining economic life of the building itself is twenty-five years and the roof is expected to last for twenty years, no reserve for replacement should be set up.

In an income approach to value some items considered as expenses by an accountant are not considered as expenses by an appraiser. Interest and principal payments on a mortgage are not property expenses for appraisal purposes. They are merely indications that the property is encumbered. Depreciation, also, is not an allowable expense for appraisal purposes. Depreciation as used by the accountant is for the recapture of a previously incurred outlay. Instead, the appraiser seeks to estimate what value future income will need to recapture. For the appraiser to accept the accountant's depreciation charts as an expense means that he or she is accepting the sum to be recaptured as value. Only by incorporating the recapture of this depreciation as a factor in the capitalization rate does the appraiser avoid this assumption.

Income taxes, either individual or corporate, are not a deductible expense. These taxes are based on a corporation's or an individual's total income rather than income specifically earned from the ownership of real property, and it is almost impossible to allocate a portion of this tax to a specific property. In any case, when a capitalization rate is derived from actual sales using income prior to the deduction of income taxes and that rate is applied to incomes at the same level, these taxes are properly accounted for as the rate reflects income taxes recognized by the market.

It must be emphasized that normal expenses, like normal gross incomes, must reflect typical management. Sometimes an assessor may be able to utilize reported expense figures, but often stabilized figures calculated from similar properties will need to be applied.

For purposes of illustration, assume that you are appraising a fifteen-year-old apartment property, and the owner has provided you with an accountant's operating statement showing the actual dollars spent and received in connection with this property during the past year. The building has thirty-five units, of which twenty rent for $75.00 per month and fifteen rent for $100.00 per month. Based on data received from similar properties, the rentals are in line with the market and a 5% vacancy is typical. See **Exhibit 6.23** for the appraiser's Reconstructed Operating Statement and explanation.

E. Net Income

Normal expenses subtracted from gross income produces normal net income. This is the figure ordinarily converted or capitalized into value. The word "normal" emphasizes that the concept reflects typical conditions and expectations. The word "net" explicitly says that the figure is net after allowable expenses. The word "income" recognizes that other income, in addition to rental income, may be included in the figure. Normal net income is income before debt service, depreciation allowances and taxes. Other terms used synonymously with normal net income include net operating income and net income before recapture.

F. Capitalization Rates and Multipliers

A capitalization rate is a rate used for conversion of income into value. In the appraisal of real property for assessment purposes, future income is discounted at a rate that reflects the worth of present money over future interest, taxes and depreciation, if applicable. The capitalization rate is a hoped for or an expected rate of return on the investment, and the rate necessary to attract the capital to the investment.

A. Components of a Capitalization Rate

The capitalization rate is made up of three separate parts: (1) the interest or discount rate, which provides for a return on the investment; (2) the recapture rate, which provides for return of the investment in the wasting assets and (3) an effective tax rate, which provides for an allowance for property taxes.

1. Interest Rate

Within the income approach the interest or discount rate may be described as the rate of return or yield necessary to attract investments in property. And, as the return may be realized by direct payment from the income stream of the property or through future sale, it is assumed that the interest rate required by investors for investing in property includes a provision for any expected appreciation

or depreciation. Therefore, the interest rate applicable to a particular type of property may often be lower or higher, depending upon the risk, than so-called bank rates.

EXHIBIT 6.23

RECONSTRUCTED OPERATING STATEMENT

Items of Income & Expenses	Accountant's Statement	Appraiser's Reconstructed Operating Statement
Income:		
Actual rents received (1971)	$ 34,278 (a)	$ 34,200 (95%)
Expenses:		
Insurance (3-year premium)	$ 1,500	$ 500
Real Estate Taxes (1971)	5,937 (b)	-
Mortgage Interest	4,622 (c)	-
Depreciation (IRS)	3,500 (c)	-
Water & Sewer	1,282	1,300
Electricity	489	500
Payroll Expense (Janitor, etc.)	1,780	1,800
Replaced Roof Cover (15 Yr.)	2,500 (d)	125
Miscellaneous Cost	283	300
Maintenance & Repairs (int.-ext)	673	675
Redecorated 8 Apts. @ $117	936 (e)	1,365
Replaced Equipment Furnished:		
12 Refrigerators @ $150	1,800 (f)	350
8 Ranges @ $125	1,000 (f)	292
Owner's Salary @ $175 mo.	2,100 (g)	1,710
Professional Services	300	300
Total Expenses	$ 28,702	$ 9,217
Net Operating Income	$ 5,576 (h)	$ 24,983

Explanation of Reconstructed Operating Statement

(a) The owner's statement shows an actual vacancy of 4.18%. This should be rounded to 5% since this is typical of similar properties.

(b) Real estate taxes are included in the capitalization rate as an effective tax rate: 33 1/3 x .065 = .0216 tax rate.

(c) Mortgage interest and IRS depreciation schedules are not part of the appraiser's operating statement.

(d) New roof costs $2,500.00. Probable useful life 20 years. Annual reserve for replacement equals $2,500 divided by 20 or $125.00.

(e) Each apartment should be redecorated once every three years. Annual reserve equals $117 divided by 3 = $39 times 35 apts. = $1,365.00.

(f) Annual reserve is set up for replacement of ranges and refrigerators once every 15 years. Refrigerators 35 x $150 divided by 15 = $350.00. Ranges 35 x $125 divided by 15 = $292.00.

(g) Owner pays himself a salary in lieu of a property manager. Competent professional management is available at 5% of effective gross income.

(h) The amount of $5,576 is net income after interest, depreciation and real estate taxes. The amount of $24,983 is net income before depreciation and before real estate taxes. This is the figure converted into an indication of value by the assessor.

The interest rate reflects the quality or degree of risk involved in an investment. Since all investments - real estate or otherwise - are in competition with each other, the interest rate selection for capitalization of an income stream produced by a real estate investment must be selected in relation to the rates received by competitive investment opportunities.

The most common methods of developing a capitalization rate are extraction of a capitalization rate from market sale/income data and a capitalization rate calculated through the band-of-investment technique. Both these methods as well as any of the other methods discussed later can be used by itself or in combination with another technique to estimate a capitalization rate for a particular property.

2. Recapture Rate

The return of the investment in a property may be accomplished in either one or a combination of two ways. One is return of the investment through a payment from the income stream. The other is a return of the investment (all or part) at the end of the term of ownership.

Within the capitalization process using the first method, the income attributable to the wasting asset (building or other) is capitalized at a rate which includes a provision, the recapture rate, to completely recapture the investment in the wasting asset by the end of its economic life. In this case, the recapture rate represents that percent of the income necessary to provide for a return **OF** the investment in the wasting asset.

To determine the applicable recapture rate, the appraiser must estimate the remaining economic life of the improvements. Economic life is not necessarily related to the physical life, but may be described as the period of time an investor would expect the income from the building to cover expenses and provide a return of the original investment.

The period of time buildings in the area have been in existence before being demolished, buying habits of the public and vacancies of long duration are guidelines to the economic life for different buildings. Dividing the economic life into one hundred will yield the indicated annual recapture rate.

Recapture rate for 40 Year Economic Life = 100 ÷ 40 = 2.5%

The second method of providing for a return of an investment is called a reversion, and it is the present worth of the right to receive one lump sum payment (the estimated value the property will have) at the end of a specific term.

3. Effective Tax Rate

An allowance for property taxes is included in the capitalization rate of appraisals for assessment purposes. To expense property taxes would assume the value of the property is known. As a percentage, no matter what the final property value, the taxes will be the same proportional amount.

The rate used for taxes is determined by the relationship of the tax rate to the assessed value. In Missouri, commercial properties are assessed at 32%. If the tax rate was $9.80 per $100 assessed value, the effective tax rate would be calculated as follows:

Effective Tax Rate: 32% x ($9.80 ÷ 100) = 3.14%

Selecting the capitalization rate is the most crucial step in the income approach. Since a variance of only 1% in the capitalization rate has a considerable effect on the indicated value, these rates should be selected with great care. Generally speaking, the proper rates are those which the market reflects as those required by investors and the conditions of their purchase of a particular type of property.

B. Market Derived Rates and Multipliers

Market analysis is the preferred method of obtaining capitalization rates. Actual selling prices of comparable properties can be related to the anticipated income. For example, when the total costs incurred in developing a new property are known, a rate can be derived from the relationship between the total investment and the investor's anticipated income. Income and rate analysis must be based upon the investor's anticipated income because an investment in property is directly related to the anticipated return.

A variation of the basic capitalization equation is R = I ÷ V. Where we know "V" (the sale price of the property) and "I" (the income attributable to the property), derivation of "R" becomes a simple mathematical computation. The selling price of the property is the stable element in the equation. The rate will vary according to the type of income processed - whether "I" is gross or some form of net income. Several types of rates can be obtained by using the different levels of income.

Regardless of the type of rate developed through the capitalization process, the rate must be applied to the same level of income from which it was derived. For example, an overall rate derived from a net income before recapture must be applied to a net operating income prior to the deduction for recapture.

1. Gross Rent Multipliers and Gross Income Multipliers

The use of gross rent and or gross income multipliers in the appraisal process provides a rule of thumb method of valuation derived from the market data approach. They are used in comparing like properties of various classifications, including those which are income-bearing, primarily as checks on value estimates obtained through other techniques. The use of income multipliers is also considered a part of the income approach because value estimates produced by them are based upon rental values.

When gross income is used in the capitalization process, the relationship between **Income** and **Value** is usually expressed as a multiplier rather than as a rate. A multiplier is a factor and the reciprocal of a rate. In evaluating income-producing properties, especially where a satisfactory pattern of similar properties previously sold can be established, it is perhaps the simplest method of processing income into value.

In applying this method, the appraiser assembles and carefully examines available sales and rental records to ascertain prices at which properties comparable or nearly comparable to the one under appraisement have been sold and what rentals they commanded. The appraiser then divides the sales price by the market rent to arrive at a gross rent multiplier or gross income multiplier. This factor, applied to the market rent of the property under consideration, produces an estimate of value. In doing the analysis, it is important that the market rent at the time of the sale be used. Using actual rents that are below the market can lead to an overstatement of value when applied to current market rents.

This method is particularity applicable where there is a relatively high degree of comparability between the property being appraised and the sold properties used in the analysis. There must be a sufficient number of sales of like properties from which to obtain the factor used. No gross rent or gross income multiplier is sound if based upon only one or two property transactions. An illustration of its use in an appraisal is shown in **Exhibit 6.24**.

2. Overall Rates

An overall rate is the ratio of net operating income to the value of a property. Net operating income is gross income less vacancy and collection losses and all allowable operating expenses, but prior to deduction for recapture.

For example, if a property that was sold for $200,000 was capable of producing a gross income of $30,000 per year, an overall rate could be derived as follows:

EXHIBIT 6.24

DEVELOPMENT AND APPLICATION OF GROSS RENT MULTIPLIERS

Development of Factor

Typical sales price for properties comparable with the one under appraisement	$ 12,000
Typical monthly rental received from comparable properties	$ 120
The gross income multiplier obtained by dividing $12,000 by $120 is	100

Application of Factor

Monthly rental being received or reasonably expected from the property under consideration	$ 110
Application of predetermined factor results in a value estimate of $110 x 100, or	$ 11,000

Gross income multipliers can also be obtained by the use of annual instead of monthly rents, as follows:

Typical sales price	$ 12,000
Typical annual rental	$ 1,440
Gross income multiplier obtained by dividing $12,000 by $1,440	8.33
Annual rental received or reasonably expected from property under appraisement	$ 1,320
Application of factor - $1,320 x 8.33	$ 11,000

Anticipated Gross Income	***$ 30,000***
Less Vacancy and Collection Allowance (3%)	***- 900***
Effective Gross Income	***$29,100***
Less Expenses	***- 10,000***
Net Operating Income	***$19,100***
Overall Rate: $19,100 ÷ $200,000 = .0955 or	***9.5%***

Note that this rate expresses the relationship between the value of the entire property and the income stream. There is no separate indication as to the portion of the return allocated to the recapture of the improvements as opposed to the land. This limits the application of an overall rate, for it can be used only in the appraisal of properties which are highly comparable to the properties from which the rate was derived. The ratio of land to improvement value and the remaining life of the improvements are particularly important in this comparison.

3. Discount Rates

A discount or interest rate is the anticipated annual percentage rate of return **ON** the investment. In the appraisal process it is derived from and applied to anticipated income. It is the ratio of net income after deducting recapture charges for a recovery of wasting assets to the value of the property.

This rate can be extracted from market data by methods similar to that employed in deriving an overall rate, except that a dollar value for the recapture of any wasting assets must also be subtracted from the income stream. For example, suppose that a subject property sold for $200,000 and was capable of producing a gross income of $30,000 per year. The sales price included an improvement valued at $160,000 with a remaining economic life of forty years. A discount rate can be extracted as follows:

Anticipated Gross Income	***$30,000***
Less Vacancy & Collection Allowance (3%)	***- 900***
Effective Gross Income	***$29,100***
Less Expenses	***- 10,000***
Net Operating Income	***$19,100***
Less Annual Recapture Charge ($160,000 ÷ 40 Years)*	***- 4,000***
Net Income	***$15,100***
Discount Rate: $15,100 ÷ $200,000 = .0755 or	***7.6%***

****Assuming equal annual decline in value of improvement***

The discount rate contains components for interest, liquidity, investment management, and risk. Additionally, the capitalization rate must also provide for the return **OF** that portion of the investment that declines in value (recapture), and the capitalization rate used to appraise property for tax purposes must also include a component for property taxes (an effective tax rate).

The use of a discount rate in capitalization has certain advantages. A discount rate can generally be applied to a much wider range of properties than an overall rate or a gross rent multiplier as properties used to derive these rates need not be as comparable to the subject.

For example, owners of commercial property in a given area may expect a certain yield on their investment regardless of the age and size of the improvements. Variable recapture components in the capitalization rate will compensate for differences in anticipated life expectancies.

C. Band-Of-Investment Method

A discount rate can be determined by the band-of-investment method. This method is based on the premise that the rate is the weighted average of the different bands or portions of the investment. The two major portions are the debt and equity investments that apply to a property and the respective yield or return rate that each portion attracts. Debt typically consists of a first mortgage and perhaps a second or third mortgage. The appraiser can usually determine current rates for mortgage money and the percent of the total property value covered by the mortgage. The expected rate of return on equity is more difficult to estimate, and this is the basic weakness of the method.

For an example of a band-of-investment rate derivation, assume that a buyer could finance 80% of the purchase price of a property with a loan at 10% interest. In addition, he expects to receive a 12% return on the equity investment. The weighted average of these different components can be computed as follows:

Mortgage Component	***.80 x .10 =***	***.080***
Equity Component	***.20 x .12 =***	***+ .024***
Total Rate		***.104***
	or	***10.4%***

This discount or interest rate does not consider a recapture of any wasting assets or an allowance for taxes. An effective tax rate can be computed as indicated earlier in this document.

3. Capitalization Methods

Capitalization in the appraisal process is the method by which the value of the property can be

estimated from the quantity, quality and durability of its net income expectancy. To convert net income estimates into an indication of value, an understanding of the available capitalization methods is essential.

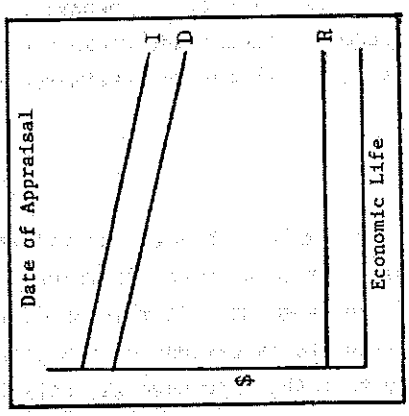
The methods of capitalizing income are all accepted methods, but they will produce different answers when all other conditions are unchanged. The problem that faces the appraiser is the determination of the proper method to be used. The appropriate method must reflect the type of income stream and the expectations of the investors who constitute the market for the property type being appraised.

A summation of the behavior of the income stream with respect to income, discount and recapture is illustrated in **Exhibit 6.25**. These matters must be estimated from analysis of market data.

EXHIBIT 6.25

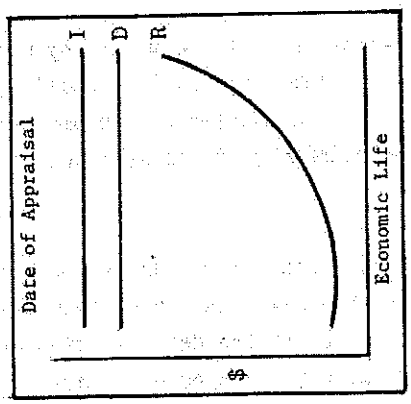
ANALYSIS OF INCOME STREAM & CAPITALIZATION METHODS

Straight Line



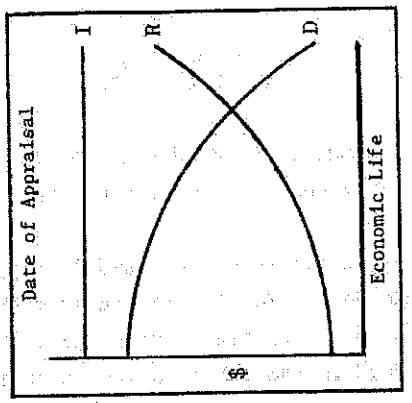
1. Income decreases as property age increases.
2. Recapture is received in equal amounts during the economic life of the improvement.
3. Discount is received on the balance of the investment.

Sinking Fund



1. Income remains constant over time.
2. Recapture is invested at a safe rate in a sinking fund.
3. Discount is received each year on the total original investment in the depreciating asset.

Annuity



1. Income remains constant over time.
2. Discount based on remaining life of improvement and decreases over time.
3. Recapture increases by the amount that discount decreases.

A. Direct Capitalization

Direct Capitalization is the simplest form of capitalization. This method can be used to indicate a total property value for a property composed of both land and improvements. In this process a net income attributable to the property is divided by a proper overall rate ($V = I \div R$). An **overall rate (OAR)** expresses the relationship between the entire property and its income stream. Direct capitalization contains built-in considerations for the recapture of the wasting asset and for all other factors considered by the market. When appraising for assessment purposes, an effective tax rate must be added to the overall rate prior to capitalization. The steps used in developing a valuation indication through direct capitalization by using an overall rate derived from market analysis are described as follows:

1. Research the market for sales prices of similar properties for which the net income is known or can be accurately estimated.

2. Using the relationship that income divided by value equals rate ($I \div V = R$), develop the overall rate for each sale.

3. From the pattern of rates thus derived, select the overall rate considered applicable to the properties being appraised.

4. Using the relationship that value equals income divided by rate ($V = I \div R$), capitalize the net income projection for the properties being appraised at the derived rate to arrive at a value indication through direct capitalization.

The advantages of direct capitalization using a market-developed **OAR** are that the procedure is easily understood by the public, it is based upon market evidence and it is easy to apply. Of course, the appraiser when applying this method to an improved property must allocate the total property value into values applicable to land and improvements.

The disadvantage of this method is that a market derived rate is applicable only to closely comparable properties when improvements are involved. Because an overall rate contains a component for recapture of the wasting asset and is used to capitalize all income generated by the property, the ratio of land to improvement value becomes important in rate application. A rate application to a property where half the total value is land, would not be applicable to a property where land value is significantly greater or a lesser portion of the overall value, even though the improvements are basically similar.

B. Mortgage-Equity Capitalization

The big difference between the mortgage-equity method and other capitalization methods is in the consideration of mortgage terms and equity yields as factors influencing the overall rate of return. Unlike other methods, mortgage-equity capitalization does not disregard mortgage terms or view a property as if free and clear. Instead, the mortgage-equity appraiser looks at mortgage financing as the life blood of real estate investments. This recognizes that the typical investor will seek the best mortgage financing available in order to get a maximum yield on a minimum down payment.

The "Ellwood Tables for Real Estate Appraising and Financing", published for the American Institute of Real Estate Appraisers (AIREA), provides the complete system for mortgage-equity capitalization. The publication consists of two parts. Part I was written to assist the appraiser in using the tables contained in Part II. Part II contains a complete set of compound interest tables, tables of mortgage coefficients for computing capitalization rates, tables of pre-computed basic capitalization rates and other special tables designed for real estate investment problems.

There are two basic techniques within the mortgage-equity capitalization premise: (1) the band-of-investment technique and (2) the discounted cash flow technique. One technique uses the band-of-investment method with the rate derivation being explained algebraically (Ellwood Method) or non-algebraically (Akerson Method or Ellwood without Algebra). In the other technique, the property value is developed by discounting the various cash flows generated by all elements of the real estate transaction. While the procedure for deriving the property's value may differ, the value derived is the same if the specified financial assumptions are similar.

1. Band-of-Investment

In the band-of-investment method, the mortgage-equity appraiser converts income into value by employing traditional capitalization techniques, usually direct capitalization with an overall capitalization rate.

This is accomplished by following the familiar steps viewed below:

1. Examination of the lease and/or local rental market, and an estimation of the annual net income which could be expected by an investor.

2. Examination of the market to discern a plausible relationship between annual earnings and value and expressing this relationship as an overall rate or capitalization rate. The development of this rate is explained in a previous section of this chapter.

3. Capitalizing the expected earnings by dividing the annual net income by the overall rate in order to obtain an indication of property value. It will be recognized immediately that these are the same steps followed in any appraisal using direct capitalization with an overall rate. In this sense mortgage-equity appraising is traditional and not unique.

In the band-of-investment method, one method of rate development is through application of the Ellwood Method. This method employs the use of an algebraic equation that was introduced in 1959 by Pete Ellwood. The equation and tables were introduced to simplify the work of capitalizing or discounting the income flows to real property.[36] The property's value is determined by dividing the capitalization rate into a level annual income.

Because the rate developed by Ellwood is divided into a single expression of income, the valuation equation assumes that the income is stabilized into perpetuity.

C. Discounted Cash Flow

In many instances, income streams are irregular and do not always conform to the patterns that are basic to traditional capitalization methods. In these situations the appraiser must use a method of capitalization that translates these variable income streams into a present worth estimate. Since the Ellwood Method was designed as a method of discounted cash flow analysis based upon a level annuity, it is losing favor with appraisers today because of the availability of computerized **Discounted Cash Flow (DCF)** models.

Through Discounted Cash Flow analysis, each periodic income payment is discounted into a present value equivalent. Then the sum of these discounted values represents the present worth of the right to receive these future income payments.

The logic of DCF is simple and direct, and the technology for its use is widely available through standard software packages and calculators. The use of computers in processing the data necessary for Discounted Cash Flow analysis makes it possible for the appraiser's efforts to be better spent in making projections of realistic cash flows and rates of return. The use of computers also makes it easily possible to perform several Discounted Cash Flow Analyses using different investment scenarios.

The process of Discounted Cash Flow begins with the development of a detailed spreadsheet where the appraiser itemizes the individual net cash flow projections on a year-by-year basis over the

36 "Ellwood Tables for Real Estate Appraising and Financing", 4th Edition, published for the AIREA by Ballinger Publishing Company.

expected holding period by the investor. These individual net cash flows are then discounted into an indicated present worth using an expected or typical rate of return.

The Discounted Cash Flow analysis can also be used to develop a rate of return that is indicated by a series of cash flow payments. This process is called an internal rate of return (IRR) analysis. The IRR is the rate of return that is produced by the investment during the period of ownership. It is similar to and also thought of as a discount rate, which is explained earlier in this chapter.

Discounted Cash Flow techniques have some disadvantages. Discounted Cash Flow analysis is usually applied to future expectations. Therefore, it is important that the appraiser analyze historical investment data in order to make realistic projections of future expectations. The appearance of the preciseness of DCF can suggest that this technique has a greater degree of accuracy than is warranted, and that the rates applied may be highly subjective.

As an example of DCF, an appraiser is valuing a property that is currently producing an annual net income of $10,000, with an anticipated annual increase of 3% per year. The typical market interest rate for this type property is 12%, with a typical holding period of 5 years. The projected market value of the property at the end of the 5 years is $150,000. The example of DCF is illustrated as follows:

YEAR	***NET INCOME***		***PRESENT WORTH FACTOR***	***PRESENT WORTH***
Income Stream				
1	***$10,000***	***x***	***0.892857***	***$8,929***
2	***10,300***	***x***	***0.797194***	***8,211***
3	***10,609***	***x***	***0.711780***	***7,551***
4	***10,927***	***x***	***0.635518***	***6,944***
5	***11,255***	***x***	***0.567427***	***6,386***
Total Value of Income Stream				***38,021***
Reversionary Value of Resale				
	$150,000	***x***	***.567427***	***85,114***
Total Value of Property			***$123,135***	
			Say	***$123,000***

(.567427 = Present worth of $1 factor for 5 years @ 12%)

The above example considers net income. In a more detailed discounted cash flow analysis consideration would be given to periodic increases in expenses such as property insurance, property

taxes, maintenance cost, etc. over the time period analyzed. Consideration of periodic increases in income and expenses are particularly crucial when a long holding period is being considered.

SUMMARY

Real estate is an investment, and as such, competes with other kinds of investments. Therefore, the investor must weigh the factors inherent in the ownership of real estate and their relation to the possible monetary benefits of investing the money associated with financing the real estate purchase into a competing investment. The assessor must be aware of the decisions made by investors in the market and how they impact upon the value of property. A review of the Income Approach is shown in **Exhibit 6.26**. A demonstration problem illustrating application of the Income Approach is shown in **Exhibit 6.27**.

6.5 Reconciliation of Value/Correlation

After all the data has been obtained and processed into different indicators of value for each approach, the next step is the review and correlation process. In some cases there will be three separate indicators of value. However in other instances, because of either inappropriateness or lack of data, one or more of the approaches may not be completed.

The assessor/appraiser is seeking to estimate the property's value as defined in the appraisal problem. The essence of correlation is an attempt to explain or reconcile differences that may exist between the different indicators of value into a final value estimate. The correlation process provides the opportunity to review each approach to value by examining the critical judgments made, the reliability of the data and the validity of each approach as a measure of value for the subject property. Since correlation is an analytical tool based upon judgment, the application of a mathematical formula is considered to be an unacceptable method of correlating these value indications. The assessor/appraiser's task is to apply qualitative judgment, rather than quantitative mathematics.

At this time, the cost approach should be reviewed for the proper application of the cost concept. In reviewing this approach, the assessor/appraiser considers the relative reliability of the land value estimate, whether the reproduction or replacement cost new has been properly estimated, whether a proper estimate of depreciation (physical deterioration, functional obsolescence and economic obsolescence) has been made, and whether the building reflects the highest and best use of the site.

EXHIBIT 6.26

Income Expense Analysis

The steps for arriving at net income before discount, recapture, and taxes are the following: (1) estimate potential gross income, (2) deduct for vacancy and collection loss, (3) add miscellaneous income, (4) determine operating expenses, and (5) deduct operating expenses. Following is a step-by-step delineation of the processes thus far described.

Gross Income Estimates

Potential gross income is economic rent for the property at 100 percent occupancy. From such sources as buyers and sellers, commercial property managers, realtors, and public records, rental market data must be collected.

1. Leases--ordinarily detail the terms and other factors reflecting considerations between tenant and owner.

2. Types of leases--month to month, short term, long term, percentage, graduated renewal.

3. Lease considerations--date, name of owner and tenant, reference, legal description, term, amount of rent, owner's and tenant's responsibilities, right to sublease, option to renew, tenant improvements, security, termination, special provisions.

4. Types of rent--contract, excess, percentage, minimum, overage, economic.

5. Rental units of comparison--square foot, room, apartment, space, percentage of gross business income, gross leasable area (GLA), net leasable area (NLA).

Effective Gross Income Estimates

Effective gross income is potential gross income less vacancy and collection loss, plus appropriate miscellaneous income.

1. Vacancy--a necessary deduction, since property will not remain fully rented for entire period of life; determined by study of comparable properties and analysis of their rental histories.

2. Collection loss--the loss resulting from the failure of tenants to pay the rent.

3. Miscellaneous income--income from sources other than actual rent (parking, resale of utilities).

Net Income Estimates

Net income is the income remaining after the allowance for vacancy and collection loss and after subtraction of operating expenses from potential gross income plus miscellaneous expenses.

1. Operating expenses--thorough analysis necessary to determine proper and improper expenses; include operating expenses, reserves for replacement.

2. Proper expenses--include management, salaries, utilities, supplies, materials, repairs and maintenance, property taxes, insurance, miscellaneous reserves for replacement.

3. Improper expenses--include depreciation, debt service, income taxes capital improvements, owner's business expenses.

4. Operating expense ratios--provide a quick check on the expense figures for comparable properties.

Capitalization Formulas and Rates

An understanding of the capitalization rate and its components is essential to utilization of the capitalization methods and techniques. Knowledge of the development of the discount rate, the recapture rate, and the effective tax rate is primary to the understanding of income-producing property as an investment. To reach a final value conclusion in the income approach, future income and the value indication must be linked, and the link is the capitalization rate. The capitalization rate and formulas can be summarized as follows:

Basic Formulas

There are three basic capitalization formulas for arriving at income, value and rate.

1. $V = I \div R$--value equals income divided by rate.

2. $R = I \div V$--rate equals income divided by value.

3. $I = R \times V$--income equals rate times value.

EXHIBIT 6.27

DEMONSTRATION PROBLEM
RETAIL/OFFICE BUILDING

The subject property is located in the central business district and is an old two story building built in 1928 containing a total of 6,500 square feet of leasable area on each floor. The first floor contains retail space rentable at $1.20/sq. ft. and the second floor contains office space rentable at $3.00/sq. ft. on short-term leases. The vacancy and credit loss for comparable properties is about 8%. The owner has submitted the following expense statement.

Retail/Office Building
(Statement of Expenses, January 1 - December 31)

Taxes	$ 2,640
Insurance (3 years)	1,192
Mortgage Payment	6,477
Utility	2,265
Maintenance	1,378
Management	3,972
New Roof (15 years Life)	4,500
New Heating System (20 year Life)	11,969
TOTAL EXPENSE	$34,413

You have determined that lenders are willing to make first mortgage at 9 3/4% on 65% of the property value, second mortgages at 13% on 15% of the value. The 20% equity can be attracted at a rate of 14%. The remaining economic life for the building is 20 years. The tax rate in the jurisdiction is $6.50 per $100 of assessed value at 33 1/3% of true value. The land value, on the basis of comparable sales, is $30,000. On the basis of this information the application of the income approach would be shown as follows:

Gross Possible Income:		
Retail Space (6,500 sq. ft. @ $7.20)		$ 7,800
Office Space (6,500 sq. ft. @ $3.00)		19,500
TOTAL GROSS INCOME		$27,300
Less Vacancy & Credit Loss (8%)		2,200
Effective Gross Income		$25,100
Operating Expenses:		
Insurance	$ 400	
Utilities	2,300	
Maintenance	1,400	
Management	4,000	
Reserves:		
Roof ($4,500 ÷ 15 years)	300	
Heating system ($11,969 ÷ 20 years)	600	
TOTAL	$9,000	9,000
Net OPERATING INCOME BEFORE DISCOUNT, RECAPTURE, AND TAXES		$16,100

The capitalization method and technique must now be selected. Since the land value is known, the building appears to represent the highest and best use for the land, and the building is old, the building residual technique should be used. The straight-line method of capitalization should be used because of the short-term lessor and the age of the improvements. Therefore, we can estimate the value of the property as follows:

NOI before discount, recapture, and taxes			$16,100
Discount Rate (By Band of Investment)			
65% First Mortgage (.65 x .0975)		.0634	
15% Second Mortgage (.15 x .13)		.0195	
20% Equity (.20 x .14)		.0280	
		.1109	
Discount Rate (Rounded)	11.1%		
Effective Tax Rate (.065 x 333)	2.2		
Recapture Rate (100% ÷ 20 years)	5.0		
Rate For Building (11.1% + 2.2% + 5%)		18.3%	
Rate For Land (11.1% + 2.2%)		13.3	
Income to Land ($30,000 x .133)			3,990
Income Residual to Building			$12,110
Building Value ($12,110 ÷ .183)			66,175
Land Value			30,000
PROPERTY VALUE			$96,175
ROUNDED TO			$96,000

The review of the sales comparison approach should involve a critical analysis of all adjustments made, the amount of available market data and the comparability of the subject property to the comparable sales used in the adjustment process. The sales comparison approach is generally the preferred approach.

In reviewing the income approach, the appraiser should re-examine his or her estimates to determine whether the gross income and operating expense have been properly forecasted, that the capitalization rate used was a reflection of the market and that the final value estimate was based upon the application of the appropriate method and/or technique.

A summary of the three approaches to value is shown in **Exhibit 6.28**.

After a complete and thorough analysis of the appraisal frame work, the assessor/appraiser must then develop a final value conclusion. After arriving at an opinion of value, he or she should check it once more by asking whether this figure is a realistic, probable selling price for the property consistent with the market value concept. Once the total property value conclusion is reached, an assessor then allocates value between the land and improvements. It is an acceptable practice to take the land value estimate used in the cost approach, since this is the more stable element, and subtract this amount from the total appraised value to derive the value attributable to the improvement.

EXHIBIT 6.28

SUMMARY OF THE THREE APPROACHES TO VALUE

MARKET DATA APPROACH

Value of property being appraised is based on prices at which comparable properties have sold or for which they can be acquired. A direct comparison of one whole property with another whole property.

Most Applicable

To all properties where satisfactory evidence is available.

Limitations

Difficult to find properties exactly comparable.

Lack of sales is specific types of property or in the area.

Sales evidence from a prior date, not comparable.

Frequent lack of knowledge about conditions or motives influencing sale or purchase.

Information may be hearsay if not fully documented.

COST APPROACH

Estimate of land value added to depreciated reproduction or replacement cost new of the buildings and equipment.

Most Applicable

To new single-family homes of approved and accepted design in suitable neighborhood.

To special use or service properties such as:
- Schools
- Hospitals
- Churches
- Clubs & Lodges
- Institutions
- Municipal & Government Buildings

To special purpose properties such as:
- Oil Refineries
- Bridges
- Transportation Terminals

To estimate cost of repair for modernization and rehabilitation.

To estimate the contributing value of non-comparable items for the income and market data approaches.

Limitations

Difficult to estimate accrued depreciation in older or obsolete buildings.

INCOME APPROACH

Based on assumption that value of property tends to be set by amount of future net income reasonable expected. Also called capitalization approach.

Most Applicable

To income producing property such as:
- Apartment Buildings
- Office Buildings
- Store Buildings

To estimate obsolescence and accrued depreciation in structures by residual method.

To residential, small commercial, and small apartment buildings by gross rent multipliers.

Limitations

Requires many assumptions and estimates. Error in capitalization rate makes considerable difference in value.

Not applicable to single-family residnece except by gross rent multipliers.

Inwood Table usable only when income has characteristics of an annuity.

Straight-line capitalization usable only when declining income anticipated.

Supplement

This supplement discusses Valuation techniques that are less used in Ad Valorem Valuation. Neither the supplement nor the main body of this document is meant to be an all inclusive manual on Ad Valorem Valuation. However it does include information that should be helpful to an assessor and or real estate appraiser. The assessor and or appraiser should obtain additional knowledge and education in real estate appraisal - especially in the area of the *Uniform Standards of Professional Appraisal Practice.*

Land Valuation

A. Subdivision Development Analysis

The Subdivision Development Analysis would be used to value large undeveloped tracts that have a definite potential for residential, commercial or industrial subdivision. It should be used only if sales of similar land are not available. It involves deriving an estimate of the ultimate sales price of the subdivided tract, less the cost of development, mitigation, financing, and entrepreneurial profit, then discounting this net income to present value over the estimated period of absorption of the lots, at a market-indicated rate.

In reflecting the increase in land value resulting from the creation of building lots or subdivisions out of acreage, the assessor must examine land sales closely to estimate the value to be placed upon the new lots and the effect of their sale on adjacent land. Rapid changes in land use affect not only values but also methods of valuation. Land destined for change from rural to urban use may be evaluated as a potential subdivision suitable for residential, commercial, industrial, or a combination of uses in the following manner:

1. Determine the type of subdivision that would produce the highest and best use of the particular location.

2. Study and lay out a subdivision plan to develop the total number of sites that could be available for sale.

3. Determine the total probable gross sales price of all lots.

4. Estimate the total development and administrative costs to include engineering fees, costs of streets and utilities, advertising sales costs, taxes and inspection fees, financing fees, etc.

5. Deduct these direct expenses for development from the total probable gross sales price.

6. Deduct an adequate profit allowance for the developer.

7. Determine the total number of years necessary for the development and market acquirement of the project.

8. Discount the annual net income flow over the time needed for completion and market consumption of the project to determine the total present worth of these future cash receipts.

The total of these discounted cash flows represents the price at which the land can reasonably be expected to sell and reflects the price a developer would be justified in paying for the raw land under the assumptions made. In fixing the amounts at which sites can be sold, the appraiser must assume either (1) that prices of sites will remain constant during development or (2) that they will increase or decrease. Also, planning for future sales should be guided by data on other developments in the area; therefore, a marketability study may be needed. An example of the land development method is shown in **Exhibit 6.29**.

EXHIBIT 6.29

LAND VALUATION

ANTICIPATED USE/DEVELOPMENT METHOD

PROBLEM: Assume a 100 acre parcel of raw land in an area about 80% built-up. This the only vacant land remaining in the area, and there is an increasing demand for residential properties. Market data in the area indicate that improved properties, comparable to homes that could be built and sold in this proposed development, are selling for about $20,000.00; an analysis shows that about fifteen percent (15%) of the total property value is allocated to land value.

It is estimated that you can develop five lots to the acre after streets have been laid out. Development costs are estimated at 45% of gross, selling expenses at 15%, and overhead and profit at 20%. It will take three years to sell the lots--1st year, 100 sales; 2nd year, 200 sales; 3rd year, 200 sales.

Improved properties selling at about $20,000			
Land Values =		*15%*	
Value Per Lot		*$ 3,000*	
100 acres x 5 lots x $3,000 = Gross Income of			*$1,500,000*
Less: Development Cost 45%		*$675,000*	
Selling Expense 15%		*225,000*	
Profit: 20% of Gross		*300,000*	
Total Expense and Profit		*$1,200,000*	*-$1,200,000*
			$ 300,000
Raw Land Value			*$ 300,000*
Land Sale Deferrals:			
Sales 1st year:			
100 lots or 1/5 of total			
1/5 of $300,000 = $60,000			
$60,000 deferred 1 year @ 6% (.943)[1]			*$ 56,580*
Sales 2nd year:			
200 lots or 2/5 of total			
2/5 of $300,000 = $120,000			
$120,000 for 2 years @ 6% (.890)[2]			*$ 106,800*
Sales 3rd year:			
200 lots or 2/5 of total			
2/5 of $300,000 = $120,000			
$120,000 for 3 years @ 6% (.8396)[3]			*$ 100,752*
Present value of $300,000 deferred partially one, two and three years.			*$ 264,132*
Market Value Per Acre			*$ 2,600*

1. Present worth factor of 1, at 6%, for 1 year.
2. Present worth factor of 1, at 6%, for 2 years.
3. Present worth factor of 1, at 6%, for 3 years.

B. Capitalization of Ground Rent

This method employs the income approach to value, which is based on the premise that value is the present worth of future benefits of property ownership. The market rent of the subject site is estimated, a net income is calculated, and a capitalization rate selected. The net income is then capitalized into an indication of value.
For the purposes of demonstration, a market study indicates that the subject site would rent or lease for a net income of $1,000 per year with a land capitalization rate of 10%. The net income would be capitalized into values as follows:

$1,000 ÷ 10% = $10,000

C. Land Residual Capitalization

This method somewhat parallels the anticipated use or development method of land valuation in that the highest and best use of the land is projected. It may be an office building, apartment house or shopping center, etc., which may or may not represent the existing use of the property. A new building, hypothetical or actual, representing the most profitable use is projected.

The net income earned by the total property, land and building as a unit, is projected from market data. The cost or contributory value of the building and other improvements is established. The income attributable to the building and other improvements is calculated and deducted from the total net income. The remaining net income, attributable to the land, is capitalized at the appropriate rate to determine a value indication of the land. An illustration of the land residual technique is shown in **Exhibit 6.30**.

EXHIBIT 6.30

LAND VALUATION

CAPITALIZATION - LAND RESIDUAL

PROBLEM: Assume you are appraising a plot of land 100' x 150' on which there is a building, the replacement cost less depreciation of which is estimated at $200,000.00. The net income of the property is $30,000.00. There have been no current vacant land sale from which to derive an estimate of market value attributable to the land.

Building rate determination:

Return on investment	9%
Return of investment (future depreciation)	2%
	11%

Building Value x Rate = Building Income

$200,000 x 11% = $22,000

Therefore:

Net income to property	$30,000
Less: NET INCOME TO BUILDING	-22,000
Net income to land	$ 8,000
Land capitalization rate	9%

(Return on investment only--no depreciation)

Capitalized value of land

$$\frac{\$8,000}{9\%} = \$88,889 = \text{Rounded } \$89,000$$

Therefore:

Land value by capitalization	$ 89,000
Building value by cost	$200,000
Total value of property	$289,000

Income Approach

A. Band-Of-Investment Method

The first portion of this section is a repeat of information already covered in the main body of this document but was included again because it is the basis of a more detailed analyses that follows.

A discount rate can be determined by the band-of-investment method. This method is based on the premise that the rate is the weighted average of the different bands or portions of the investment. The two major portions are the debt and equity investments that apply to a property and the respective yield or return rate that each portion attracts. Debt typically consists of a first mortgage and perhaps a second or third mortgage. The appraiser can usually determine current rates for mortgage money and the percent of the total property value covered by the mortgage. The expected rate of return on equity is more difficult to estimate, and this is the basic weakness of the method.

For an example of a band-of-investment rate derivation, assume that a buyer could finance 80% of the purchase price of a property with a loan at 10% interest. In addition, he expects to receive a 12% return on the equity investment. The weighted average of these different components can be computed as follows:

Mortgage Component	***.80 x .10 =***	***.080***
Equity Component	***.20 x .12 =***	***+ .024***
Total Rate		***.104***
	or	***10.4%***

This discount or interest rate does not consider a recapture of any wasting assets or an allowance for taxes. An effective tax rate can be computed as indicated earlier in this document.

This method of rate derivation is most valid when the expected return on equity is based on market analysis. A yield rate can be derived from sales of properties with similar investment potential and where current interest rates and loan ratios are known. The equity return can be extracted using the same basic mathematical technique used in the yield rate derivation.

For example, assume that the appropriate discount rate extracted from the market is 10.4% and mortgage money is available at 10% interest for 80% of the purchase price of a property. The equity position equals 100% less the mortgage loan amount.

Discount Rate		***.104***
Mortgage Component	***(.80 x .10)***	***-.080***
Equity Component		***.024***

The equity position equals 20% (100% - 80%)

Equity Return = Equity Component		***÷ Equity Position***	
Equity Return =	***.024***	***÷ .20***	***= .12 or 12%***

Of course, if a discount rate can be derived directly from the sales of similar properties, there is no point in developing a discount rate by the band-of-investment method. However an equity return rate is often derived from sales of properties not closely comparable to the subject but they may be similar in their investment potential. The expected rate of return on equity may be applicable to a broad range of properties even though the terms of available debt financing may vary.

One of the basic techniques within the mortgage-equity capitalization premise is the Band-of-Investment Technique. In the non-algebraic or Ellwood Method without Algebra, the band-of-investment rate development procedure is used to develop the basic rate. The band-of-investment procedure used is similar to the process applied in the previous section to develop a discount rate. The band-of-investment discount rate is the equivalent of the basic mortgage equity overall rate only when an investment is financed with an interest-only loan. With this type of financing, the value of a property is the full value of the loan plus the value of the equity. If there is no change in the total value of the property and no loan amortization during the holding period of the property, there will be no change in the relationship of the equity and debt positions. Therefore, when an amortization component is not required and there is no change in the value of the property during the holding period, the discount rate and the overall capitalization rate are the same.

However, in mortgage-equity rate development, the mortgage constant, not the loan interest rate, is used to calculate the mortgage or debt component of the overall rate. The reason for using the mortgage constant is to account for the amortization of the loan which increases the equity position. In mortgage-equity rate development, the terms of the mortgage and the required equity return are directly considered in deriving an overall rate.

1. Loan Amortization and Equity Buildup

Interest-only loans are seldom made in real estate transactions. Most mortgage loans require periodic principal payments in addition to interest. The usual method of repayment involves periodic equal payments that amortize the principal and pay interest over the life of the contract. In other words, the

payment schedule is a level terminating annuity. A capitalization rate for a level terminating annuity can be obtained from standard compound interest and annuity tables. It is the partial payment constant, sometimes called the mortgage constant. This constant may be defined as a periodic level payment needed to amortize and pay interest on a loan over the stipulated term, expressed as a percent of the principle. Expressed in the terms of the basic capitalization formula R = I ÷ V, it is **"R"** when **"I"** equals the periodic repayment of the loan including principal and interest and **"V"** equals the face value of the loan. Using this rate in the band-of-investment method, we can derive an overall rate for an amortization loan. For example, assume an 80% loan at 10% interest for 20 years, payments to be made in equal annual installments containing both principal and interest and an expected return on equity of 12%. An overall rate can be developed as follows:

Debt Component	***.80 x .11746***	***.094***
Equity Component	***.20 x .12***	***+ .024***
Overall Rate		***.118***
		or 11.8%

(.11746 = Equals Mortgage Constant @ 10% for 20 Years)

If this loan were to be paid with equal monthly payments containing principal and interest, the annual mortgage constant could be obtained by multiplying the appropriate monthly partial payment rate by twelve.

This overall rate can be used to capitalize net income into a value estimate but it does not necessarily reflect long-term prospects of a true yield. It is based on the relationship of the equity and debt (20% and 80%) that exists at the beginning of the loan term. It does not take into account the constantly changing relationship between these two factors. As loan payments are made, the equity portion increases and debt portion decreases. This changing relationship would not be significant if the interest rate on debt and the return rate on equity were the same, but an investor normally desires a rate of return on equity higher than the interest rate he pays. Over a period of time, this results in a buildup in equity that must be recognized if an accurate overall rate is to be derived. An adjustment is made by deducting a credit for an equity buildup from the previously established overall rate. The deduction is necessary because the component for amortization included in the previously established overall rate is too high. If the borrower made annual deposits in a separate debt retirement fund receiving 12% interest, the cost to duplicate debt retirement would be less than indicated in the overall rate for debt service.

The equity buildup adjustment is computed using a sinking fund factor. A sinking fund factor provides the periodic deposit required to accumulate $1.00 in a given number of periods when the deposit earns interest at a given rate. In other words, it is the portion of the value of the loan that

must be deposited periodically at a given interest rate to reach the full value of the loan at the end of the stated term. This factor must be applied only on the debt portion of the weighted average. Using the same terms previously stated, an adjusted overall rate is computed as follows:

Debt Component	***.80 x .11746***	***.0940***
Equity Component	***.20 x .12***	***+.0240***
Unadjusted overall rate		***.1180***
Less Credit for Equity Build-Up	***.80 x .013879***	***-.0111***
Equity Adjustment Overall Rate		***.1069***

(.11746 = Mortgage Constant @ 10% for 20 Years)
(.013879 = Sinking Fund Factor @ 12% for 20 Years)

The basic mortgage equity capitalization rate presumes an "interest only" loan that does not require a gradual reduction of principal and is not based on any definite term. The mortgage-equity capitalization overall rates previously developed in this section are based on the full term of the loan and would not be valid for a lesser term. In a sophisticated real estate market, investors often sell their properties after only 5 to 10 years to minimize income taxes and to maximize the return on their investments. An adjustment for a holding period less than the full term can be estimated by simple interpolation, but this adjustment can be more accurately determined by changing the computation of the credit for equity buildup. The sinking fund factor used in this computation must be for the shorter period of time and must be multiplied by the percentage of the loan that would be paid off during this shorter period. Using the same mortgage term and equity yield given in the previous examples, we can now compute a capitalization rate for an investment that is to be held for ten years.

Debt Component	***.80 x .11746***	***.0940***
Equity Component	***.20 x .12***	***+.0240***
Unadjusted Overall Rate		***.1180***
Credit for Equity Build-Up	***.2782 x .80 x .056984***	***-.0127***
Equity Adjusted Overall Rate		***.1053***

(.2782 = Portion of principal that has been paid after 10 years)
(.80 = Loan percent of original investment)
(.056984 = Sinking Fund Factor @ 12% for 10 years)

This rate is higher than the basic discount rate (10.4%) and lower than the full-term adjusted overall rate (10.7%). Note that a simple interpolation between these two percentages will result in a rate very similar to the mathematically computed rate (10.55%).

One other market consideration can be incorporated in the mortgage-equity overall rate analysis. The rate can be adjusted for anticipated depreciation or appreciation of the property during the holding period. As in any type of rate adjustment, anticipated depreciation can be accounted for by adding a recapture rate allowance to the previously computed rate. Conversely, anticipated appreciation can be accounted for by subtracting an allowance from the basic rate. The sinking fund concept is used for this adjustment.

We have already used the sinking fund concept to adjust for equity growth from known amortization. As the owner of the equity receives all the benefits of property appreciation or suffers all the losses from depreciation, we can adjust the overall rate for this element by adjusting the same basic sinking fund factor used in our equity buildup analysis. The adjustment procedure is simple. The estimated percentage of loss or gain that is anticipated during the holding period is multiplied by the sinking fund factor used for the previous equity growth adjustment. Using the same basic rate in our previous example but anticipating a 10% appreciation in value during the 10 year holding period, we derive the adjustment as follows:

Debt Component	***.80 x .11746***	***.0940***
Equity Component	***.20 x .12***	***+.0240***
Unadjusted Overall Rate		***.1180***
Credit for Equity Build-Up	***.2782 x .80 x .056984***	***-.0127***
Equity Adjusted Overall Rate		***.1053***
Credit for Appreciation	***.056984 x .10***	***-.0057***
Adjusted Overall Rate		***.0996***

(.2782 = Portion of principal that paid after 10 years)
(.80 = Loan percent of original investment)
(.056954 = Sinking Fund Factor @ 12% for 10 years)
(.10 = Rate of appreciation)

The adjustment was subtracted because the property was appreciating in value. Remember, capitalization at a lower rate produces a higher value than capitalization at a higher rate (assuming no change in income).

For a mortgage-equity overall rate to be valid in property tax appraising, the components of the rate should be determined from market data and this determination is the basic problem in the application of the technique. To compute a mortgage-equity overall rate, the terms of the available financing, the holding period, the estimated change in property value during the holding period and the equity yield must be known. The financial terms, the holding period and possible change in value can be estimated from market data; however, the equity yield rate cannot be directly calculated even when

the overall rate is known. When the mortgage component (mortgage ratio x mortgage constant) is subtracted from a market derived overall rate and the remainder (the weighted equity rate) is divided by the equity ratio, the quotient is not the true equity yield rate because the weighted equity rate contains adjustments for equity buildup during the estimated holding period and any projected value change. As equity yield must be known to determine the sinking fund factor needed to adjust the overall rate, the mathematical equation for the derivation of the equity yield has two unknowns and cannot be solved directly. The equity yield equation is shown as follows:

$$Y = R_e \frac{+App}{-Dep} X \frac{1}{S_n}$$

When mortgage-equity overall rates are used in property tax appraising, a tax component (an effective tax rate) must be added to the computed rate to form a capitalization rate, just as a tax component must be added to the other various market derived rates.

C. Straight-Line Capitalization

This method of capitalization, also known as "straight capitalization with straight-line recapture", is based upon the following assumptions:

1. The portion of income applicable to the land remains constant while that portion applicable to the improvements declines in a fixed annual amount due to reduction of the investment through an annual recapture.

2. Recapture is a constant annual amount over the remaining economic life of the improvements.

3. Return on the amount of investment remaining after recapture is received each year, and hence follows a straight-line declining pattern.

Therefore, each annual recapture payment reduces the amount of the investment remaining in the property from year to year, with the subsequent annual reduction in the number of dollars needed to pay the selected rate of return on the investment outstanding. Thus, use of the straight-line recapture provision implies a future annual decline in net income equal to the number of dollars recaptured each year times the interest rate. This declining pattern is demonstrated in **Exhibit 6.31**.
Under the straight-line recapture assumption, the appraiser, in selecting a rate for recapture, is not predicting that a property will have a specific remaining economic life. The rate selection reflects

that research has revealed that market behavior patterns interpreted within the concept of the capitalization method selected implies this pattern of remaining economic life.
The use of the straight-line method of capitalization may be justified in estimating value of property where income is to be realized over a comparatively short period. It is also properly employed where the elements within the investment are consistent with the assumptions implicit in this method. Certain residual techniques facilitate the processing of land and building incomes separately.

D. Annuity Capitalization

Straight Capitalization methods employ rates to develop an estimate of property values, while annuity capitalization is a process which makes use of pre-computed compound interest tables. The compound interest tables consist of six functions of a dollar and these functions are explained in **Exhibit 6.32**. Illustrations of monthly and annual compound interest tables[37] for 10% are shown in **Exhibit 6.33**. The annuity processes are commonly referred to as the "Inwood" and "Hoskold" premises.

37 "Ellwood Tables for Real Estate Appraising and Financing", 4th Edition, published for the AIREA by Ballinger Publishing Company.

EXHIBIT 6.31

ANALYSIS OF A DECLINING INCOME STREAM

ASSUMING END OF YEAR PAYMENT

	Bldg. Value	Land Value	Return Of	Return On Bldg.	Return On Land	Annual Income
Beginning of 1st year	75,000	20,000				
End of 1st year	67,500	20,000	7,500	6,750	1,800	16,050
End of 2nd year	60,000	20,000	7,500	6,075	1,800	15,375
End of 3rd year	52,500	20,000	7,500	5,400	1,800	14,700
End of 4th year	45,000	20,000	7,500	4,725	1,800	14,025
End of 5th year	37,500	20,000	7,500	4,050	1,800	13,350
End of 6th year	30,000	20,000	7,500	3,375	1,800	12,675
End of 7th year	22,500	20,000	7,500	2,700	1,800	12,000
End of 8th year	15,000	20,000	7,500	2,025	1,800	11,325
End of 9th year	7,500	20,000	7,500	1,350	1,800	10,650
End of 10th year	-0-	20,000	7,500	675	1,800	9,975

Assumption: *Straight-line recapture at 10% per year is based upon a remaining economic life of 10 years. Discount rate of 9%.*

EXHIBIT 6.32

COMPOUND INTEREST TABLES
SIX FUNCTIONS OF DOLLAR

Column 1: Amount of 1

This series of factors shows the amount to which $1 will grow at a given interest rate in a given number of years. The table is constructed by adding compound interest to the single deposit.

Example:
$1 is deposited at the beginning of the year and allowed to earn interest at 7 percent for three years.

Beginning of Year	*Deposit*	*Interest Rate*	*Interest Earned*	*End of Year*
First year.....	$ 1.00	0.07	$ 0.07	$ 1.07
Second year.....	1.07	0.07	0.0749	1.1449
Third year.....	1.1449	0.07	0.0801	1.2250

This shows that $1 at 7 percent will grow to $1.225 in three years and (from the table) to $1.967 in ten years. To calculate the amount to which any given number of dollars deposited will grow, simply multiply the number of dollars deposited by the factor for the selected interest rate and number of years: $20 deposited for ten years will grow to $39.34 ($20 x 1.967 = $39.34). The factors in this column are reciprocals of the factors in column 4, Present Worth of 1.

Column 2: Amount of 1 per Period

This series shows the amount to which $1 deposited each year will grow at a given rate of interest in a given number of years. The table is based on payments made at the end of the year along with the annual deposit.

Example:
$1 is deposited at the end of each year and allowed to earn interest at 7 percent.

End of Year	*Total*	*Interest Rate*	*Interest Earned*
First year.....	$1.00	0.07	*
Second year.....	$2.07 ($1.07 + $1.00)	0.07	0.07
Third year.....	$3.2149 ($2.2149 + $1.00)	0.07	0.2149

This shows that $1 deposited at the end of each year at 7 percent will grow to $3.2149 by the end of three years or (from the table) to $13.8164 in ten years. To calculate the amount to which any given number of dollars deposited annually will grow, simply multiply the number of dollars deposited by the factor for the selected interest rate and number of years: $20 per year deposited at the end of each year for ten years at 7 percent will grow to $276.33 ($20 x 13.8164 = $276.33). The factors in this column are reciprocals of the factors in column 3, Sinking-Fund Factor.

Column 3: Sinking-Fund Factor

This factor shows the annual deposit required to accumulate $1 at a given rate of interest in a given number of years.

Example:
An investor wants the sum of $100 to be available in three years. If the interest rate is 7 percent, the uniform annual deposit necessary to accrue $100 including interest is $31.11.

End of Year	*Total*	*Interest Rate*	*Interest Earned*
First year.....	$ 31.11	0.07	*
Second year.....	64.40	0.07	$ 2.18
Third year.....	100.00	....	4.51

* Since the deposit is made at the end of each year, no interest is earned until the second year.

EXHIBIT 6.32 (continued)

This shows that $31.11 deposited each year at the end of the year for three years at 7 percent will grow to $100.00. From the table, $7.24 will grow to $100.00 in ten years. To calculate the annual deposit necessary to accumulate a given number of dollars, simply multiply the amount of the desired accumulation by the sinking-fund factor for the selected interest rate and number of years: the annual deposit necessary to accumulate $750 in ten years is $54.28 ($750 x 0.072378 = $54.28). The factors in this column are reciprocals of the factors in column 2, Amount of 1 per Period.

Column 4: Present Worth of 1

This factor shows the present worth of money to be collected after a given number of years at a given interest rate. Also called a reversion factor.

Example:
An investor wishes to know what he needs to pay for the right to receive $100 three years from today, assuming 7 percent interest on his money. From column 4 of the 7 percent annual table for three years, the factor is 0.816298. The present worth of $100 at 7 percent in three years is $81.63 ($100 x 0.816298 = $81.63). The "present worth of 1" factor is the reciprocal of column 1, Amount of 1.

Column 5: Present Worth of 1 per Period

This table shows the present value of the right to receive $1 per period for a given number of periods at a stated interest rate. This table is constructed by subtracting compound interest. Also called Inwood Coefficients.

Example:
An investor wishes to know what he would pay today for the right to receive $100 each year for three years, assuming 7 percent interest on the money. From column 5 of the 7 percent annual table for three years, the factor is 2.624316. The present worth of 1 per period of $100 each year at 7 percent for three years is $262.43 ($100 x 2.624316 = $262.43). These factors are the reciprocals of column 6, Partial Payment.

Column 6: Partial Payment

This table shows the amount required per period to amortize principal and interest on an investment or loan in a given number of periods at a given interest rate.

Example:
An investor wishes to know what to pay per year to pay off a $1,000 loan in three years at 7 percent interest. From column 6 of the 7 percent table for three years, the factor is 0.381052. The periodic payment per year for three years at 7 percent necessary to pay off a $1,000 loan is $381.05 ($1,000 x 0.381052 = $381.05 per year). The factors in this table are reciprocals of column 5, Present Worth of 1 per period.

Compound Interest Formula

Column 1 AMOUNT OF ONE	Column 2 AMOUNT of ONE PER PERIOD	Column 3 SINKING-FUND FACTOR
$S^n = (1+i)^n$	$S\overline{n|i} = \frac{S^n-1}{i}$	$1/S\overline{n|i} = \frac{i}{S^n-1}$
Column 4 PRESENT WORTH ONE PER PERIOD	**Column 5** PRESENT WORTH of ONE	**Column 6** PARTIAL PAYMENT
$A\overline{n|i} = \frac{1-v^n}{i}$	$v^n = \frac{1}{S^n}$	$1/A\overline{n|i} = \frac{i}{1-v^n}$

EXHIBIT 6.33

10% MONTHLY COMPOUND INTEREST TABLES 10%

	1	2	3	4	5	6
Months	Amount of One	Amount of One Per Period	Sinking Fund Factor	Present Worth of One	Present Worth One Per Period	Partial Payment
1	1.008 333	1.000 000	1.000 000	.991 736	.991 736	1.008 333
2	1.016 736	2.008 333	.497 925	.983 539	1.975 275	.506 259
3	1.025 209	3.025 069	.330 571	.975 411	2.950 686	.338 904
4	1.033 752	4.050 278	.246 897	.967 350	3.918 036	.255 230
5	1.042 367	5.084 031	.196 694	.959 355	4.877 391	.205 028
6	1.051 053	6.126 398	.163 228	.951 427	5.828 817	.171 561
7	1.059 812	7.177 451	.139 325	.943 563	6.772 381	.147 659
8	1.068 644	8.237 263	.121 400	.935 765	7.708 146	.129 733
9	1.077 549	9.305 907	.107 459	.928 032	8.636 178	.115 792
10	1.086 529	10.383 456	.096 307	.920 362	9.556 540	.104 640
11	1.095 583	11.469 985	.087 184	.912 756	10.469 296	.095 517
Years						
1	1.104 713	12.565 568	.079 583	.905 212	11.374 508	.087 916
2	1.220 391	26.446 915	.037 812	.819 410	21.670 855	.046 145
3	1.348 182	41.781 821	.023 934	.741 740	30.991 236	.032 267
4	1.489 354	58.722 492	.017 029	.671 432	39.428 160	.025 363
5	1.645 309	77.437 072	.012 914	.607 789	47.065 369	.021 247
6	1.817 594	98.111 314	.010 193	.550 178	53.978 665	.018 526
7	2.007 920	120.950 418	.008 268	.498 028	60.236 667	.016 601
8	2.218 176	146.181 076	.006 841	.450 821	65.901 488	.015 174
9	2.450 448	174.053 713	.005 745	.408 089	71.029 355	.014 079
10	2.707 041	204.844 979	.004 882	.369 407	75.671 163	.013 215
11	2.990 504	238.860 493	.004 187	.334 392	79.872 986	.012 520
12	3.303 649	276.437 876	.003 617	.302 696	83.676 528	.011 951
13	3.649 584	317.950 102	.003 145	.274 004	87.119 542	.011 478
14	4.031 743	363.809 201	.002 749	.248 032	90.236 201	.011 082
15	4.453 920	414.470 346	.002 413	.224 521	93.057 439	.010 746
16	4.920 303	470.436 376	.002 126	.203 240	95.611 259	.010 459
17	5.435 523	532.262 780	.001 879	.183 975	97.923 008	.010 212
18	6.004 693	600.563 216	.001 665	.166 536	100.015 633	.009 998
19	6.633 463	676.013 601	.001 479	.150 751	101.909 902	.009 813
20	7.328 074	759.368 836	.001 317	.136 462	103.624 619	.009 650
21	8.095 419	851.450 244	.001 174	.123 527	105.176 801	.009 508
22	8.943 115	953.173 779	.001 049	.111 818	106.581 856	.009 382
23	9.879 576	1065.549 097	.000 938	.101 219	107.853 730	.009 272
24	10.914 097	1189.691 580	.000 841	.091 625	109.005 045	.009 174
25	12.056 945	1326.833 403	.000 754	.082 940	110.047 230	.009 087
26	13.319 465	1478.335 767	.000 676	.075 078	110.990 629	.009 010
27	14.714 187	1645.702 407	.000 608	.067 962	111.844 605	.008 941
28	16.254 954	1830.594 523	.000 546	.061 520	112.617 635	.008 880
29	17.957 060	2034.847 258	.000 491	.055 688	113.317 392	.008 825
30	19.837 399	2260.487 925	.000 442	.050 410	113.950 820	.008 776
31	21.914 634	2509.756 117	.000 398	.045 632	114.524 207	.008 732
32	24.209 383	2785.125 947	.000 359	.041 306	115.043 244	.008 692
33	26.744 422	3089.330 596	.000 324	.037 391	115.513 083	.008 657
34	29.544 912	3425.389 447	.000 292	.033 847	115.938 387	.008 625
35	32.638 650	3796.638 052	.000 263	.030 639	116.323 377	.008 597
36	36.056 344	4206.761 236	.000 238	.027 734	116.671 876	.008 571
37	39.831 914	4659.829 677	.000 215	.025 105	116.987 340	.008 548
38	44.002 836	5160.340 305	.000 194	.022 726	117.272 903	.008 527
39	48.610 508	5713.260 935	.000 175	.020 572	117.531 398	.008 508
40	53.700 663	6324.079 581	.000 158	.018 622	117.765 391	.008 491
41	59.323 824	6998.858 921	.000 143	.016 857	117.977 204	.008 476
42	65.535 804	7744.296 475	.000 129	.015 259	118.168 940	.008 462
43	72.398 259	8567.791 082	.000 117	.013 812	118.342 502	.008 450
44	79.979 303	9477.516 336	.000 106	.012 503	118.499 612	.008 439
45	88.354 181	10482.501 711	.000 095	.011 318	118.641 830	.008 429
46	97.606 018	11592.722 188	.000 086	.010 245	118.770 568	.008 420
47	107.826 644	12819.197 256	.000 078	.009 274	118.887 103	.008 411
48	119.117 502	14174.100 291	.000 071	.008 395	118.992 591	.008 404
49	131.590 661	15670.879 379	.000 064	.007 599	119.088 081	.008 397
50	145.369 923	17324 390 796	.000 058	.006 879	119.174 520	.008 391

$S^n = (1+i)^n$ | $S_{\overline{n}|} = \frac{S^n - 1}{i}$ | $1/S_{\overline{n}|} = \frac{i}{S^n - 1}$ | $V^n = \frac{1}{S^n}$ | $A_{\overline{n}|} = \frac{1 - 1/S^n}{i}$ | $\frac{1}{A_{\overline{n}|}} = \frac{i}{1 - 1/S^n}$

An annuity is a series of payments receivable at regular intervals. It is convenient to view the expected income to a property as an annual annuity. An annuity may be level, in which case the expected payments are assumed equal; or they may be variable, in which case the expected payments are assumed to vary from period to period.

The basic premise of annuity capitalization is that an investor will only be willing to invest today an amount which will earn interest at a compounding rate, the sum of which will equal the total of all expected future income payments. Therefore, present worth is that amount which investors should pay for the privilege of receiving these future income payments. Factors from the compound interest tables may be applied to a periodic payment of income to derive the present worth of this income stream for a specific period of time at a selected discount rate. The factor must reflect the risk inherent in receipt of these projected payments.

In the use of these factors, a separate recapture rate needs to be estimated because each factor includes provision for return **ON** and return **OF** the original investment.

1. The Inwood Premise

The Inwood premise, annuity capitalization, holds that a stream of income has a present worth based upon a single discount rate. Each installment of income is discounted as a reversion with a single discount rate and the total discounted values of the installments are accumulated to obtain the present worth of the income stream. It is assumed that the income must be sufficient to return the entire investment to the investor out of the income and, in addition, to pay the stipulated return on the investment. Usually, it is assumed that interest gradually declines, being calculated as the stipulated percentage of the un-recaptured capital. Any excess over the required interest payment is considered a return of capital and reduces the amount remaining in the investment. Since the installments are always the same amount, the principal payments increase by the same amounts that the interest payments decrease.

2. The Hoskold Premise

The Hoskold premise or sinking-fund capitalization method differs from the Inwood premise in the manner in which the recapturing of the capital investment is amortized. The development of the capitalization rate in this sinking-fund method utilizes two separate interest rates:

A. A **"speculative rate"** represents a fair rate of return on the capital commensurate with the risk involved. It is assumed that a stream of income of limited duration must be sufficient to pay a fair return on capital at an acceptable discount rate.

B. A **"safe rate"** (e.g., the rate on savings accounts) compounds annually with an equal annual reinvestment (deposit) in order to accumulate to an amount equal to the wasting asset at the end of the investment period.

The amount of income allocated to the return of the wasting asset is assumed to be placed into a sinking-fund periodically, usually annually, which in addition to compound interest at the safe rate will equal the original value of the wasting asset at the end of the investment period.

Since this premise is based upon the assumption that equal annual installment payments will be deposited to accumulate at interest, such an assumption is frequently inconsistent with the investment practices of the typical investor. The premise has limited use. The Hoskold premise is used to value investments in wasting assets such as mineral deposits. Therefore, the sinking-fund method of capitalization is seldom used in current general appraisal practices.

The application of these two premises to the same income stream is inappropriate. It is difficult to make a fair comparison of single rate and dual rate systems. The single rate of return applicable for valuation via the Inwood premise is not necessarily the appropriate speculative rate for valuation via the Hoskold premise.

3. Capitalization Techniques

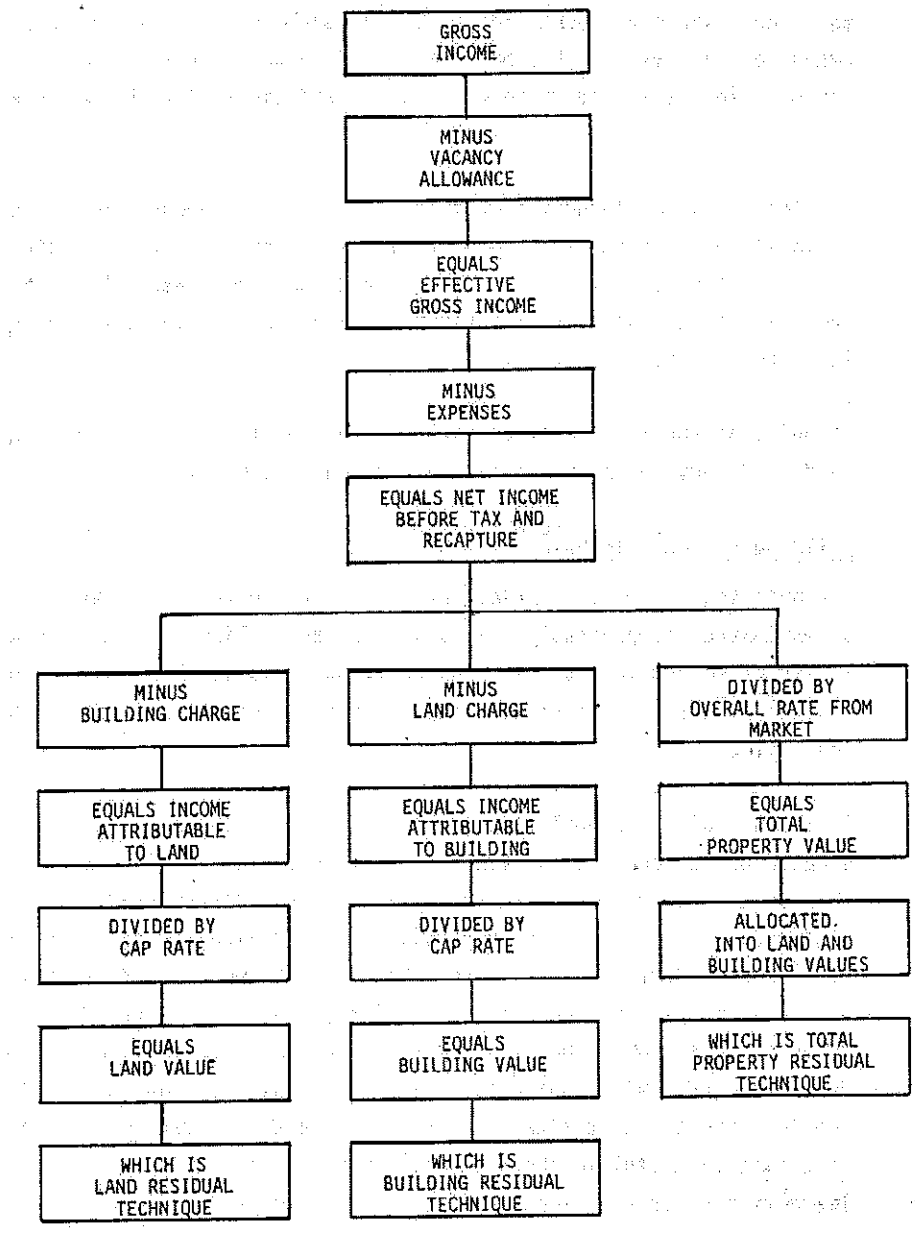
In applying the capitalization methods previously discussed, some of these methods require that one of the components, land or improvements, of the property be valued independently in order to arrive at the value of the remaining component. Each component contributes and works with the other in producing a net operating income. The residual technique assumes that the appraiser can estimate with reasonable accuracy the value attributable to one of the components through application of cost or market analysis.

In the appraisal process the term residual may refer to (1) the amount of net income remaining to the building after all land charges have been deducted, (2) the amount of net income remaining to the land after all building charges have been deducted or (3) the net income remaining to the property as a whole. After the applicable land or building capitalization rate is applied to the value of the known component, the resulting dollar amount is subtracted from net income. The residual income is considered to be attributable to the unknown component. The capitalization of this amount by the appropriate land or building rate will produce a value for the remaining unknown component.

Three residual techniques have been developed for use by the appraiser. These include the building residual, land residual and property residual techniques. **Exhibit 6.34** illustrates the steps used in applying these techniques.

EXHIBIT 6.34

RESIDUAL TECHNIQUES



A. Land Residual Technique

In the land residual technique the building is valued separately, and the annual net return to the building value (return on plus a provision for recapture) is deducted from the estimated net income attributable to the whole property. This residual amount is considered to be attributable to the land. Therefore, it is capitalized at the risk rate (an interest rate) plus the effective tax rate to arrive at an estimate of land value.

The value assigned to the building is customarily based on an estimate of its current cost new less any accrued depreciation, which should generally be minimal to validate this technique. Therefore, the land residual technique generally should be applied only to newer improvements whose value can be determined reliably because of the absence of physical deterioration. In addition, the improvements must represent the highest and best use of the land. If land is under- or over-improved, multiplying building value, as estimated by the cost approach, by the building capitalization rate (interest rate + recapture rate + effective tax rate) will result in assigning too large a share of normal income to the building, unless the full amount of obsolescence has been reflected in the cost approach. Hence, the building is likely to be overvalued and the land to be undervalued.

The land residual technique must be used with care because errors can seriously distort the land value estimate. Therefore, whenever a structure is either old or new and obviously doesn't represent the highest and best use of the site, the assessor should simply avoid using the land residual technique.

Examples of the land residual technique using straight-line, sinking-fund, and annuity capitalization are shown in **Exhibit 6.35**.

B. Building Residual Technique

The building residual technique assumes that the value of the land can be estimated independently. This is best accomplished through an analysis of vacant land sales. The building value is then computed by capitalizing the residual net income after deducting a return on the land value.

In the building residual technique, the value of the building is predicated on the quantity of its contribution to the net income, rather than on the appraiser's estimate of its current depreciated reproduction cost. This technique is particularly applicable where substantial accrued depreciation exists, the extent of which is difficult to estimate in the cost approach. Therefore, the building residual technique is useful when the value of the land can be reliably determined from sales of similar but vacant parcels.

EXHIBIT 6.35

EXAMPLES OF LAND RESIDUAL TECHNIQUES

Straight-Line Capitalization

Net income before recapture and real estate taxes		$10,000
Capitalization rate:		
Discount rate	9%	
Recapture (33-year life)	3	
Effective Tax rate	2	
Total	14%	
Income attributable to building ($40,000 x 0.14)		5,600
Income attributable to land		$ 4,400
Land Value ($4,400 ÷ 0.11 (0.09 discount + 0.02 effective Tax rate))		$40,000
Plus building value		40,000
Property value		$80,000

Sinking-Fund Capitalization

Net income before recapture and real estate taxes		$10,000
Capitalization rate:		
Discount rate	0.09000	
Recapture (6% sinking fund, 33 years)	0.01027	
Effective tax rate	0.02000	
Total	0.12027	
Income attributable to building ($46,562 x 0.12027		5,600
Income attributable to land		$ 4,400
Land value ($4,400 ÷ 0.11 (0.09 discount + 0.02 effective tax rate))		$40,000
Building value		46,562
Property value		$86,562

Annuity Capitalization

Net income before recapture and real estate taxes		$10,000
Capitalization rate:		
Inwood factor at 9% discount for 33 years	10.464	
Reciprocal of Inwood factor 10.464	0.09556	
Partial Payment factor	0.09556	
Effective tax rate	0.02000	
Total	0.11556	
Income attributable to building ($48,460 x 0.1156)		5,600
Income attributable to land		$ 4,400
Land value ($4,400 ÷ 0.11 (0.09 discount + 0.02 effective tax rate))		$40,000
Plus building value		48,460
Property value		$88,459

This technique does not require land to be utilized in its highest and best use, making it particularly useful in the appraisal of properties with old or obsolescent structures or improvements that are improper for the site.

Examples of the building residual technique using straight-line, sinking-fund and annuity capitalization are shown in **Exhibit 6.36**.

C. Property Residual Technique

The property residual technique utilizes an overall rate which is applied to the total net income. This process is the same as direct capitalization with an overall rate. The land and building residual techniques serve to estimate worth of a portion of the property whose value is unknown. The property residual technique provides an estimate of value applicable to the total property as one unit, without separation into land and building units.

The property residual technique employs direct capitalization of the net income by an overall rate that may be found by comparable sales as illustrated in the following example.

Property Residual Technique

Net Income		***$11,520***
Indicated Overall Rate		***11.5%***
Indicated Property Value		
$11,520 ÷ 11.5% =		***$100,173***
	Rounded	***$100,000***

The property residual technique may also be used with annuity capitalization. In using this technique, the land (or land and depreciated building value) is assumed to revert to the owner at the termination of the income stream or holding period. This reversion is evaluated through a discounting process, the result of which is combined with the value of the income stream to produce an estimated value for the total property. Therefore, the total value of the property is the sum of the present worth of the right to receive the projected net income plus the present worth of the reversionary interest.

This technique is applicable where the property as improved develops its highest value, where land and building values cannot be readily separated or where the estimated remaining economic life of the property is relatively short. This property residual technique may be used when property is subject to a relatively long-term lease that tends to support an income stream projection for a specific period at identifiable levels. In such a case, the projection period is usually the term of the lease or of the assumed income stream, and the reversionary interest consists of the value of the land together

with the depreciated value of the improvements.

EXHIBIT 6.36

EXAMPLES OF BUILDING RESIDUAL TECHNIQUE

Straight-Line Capitalization

Net income before recapture and real estate taxes		$ 10,000
Income to land ($40,000 x 0.11 (0.09 discount + 0.02 effective tax rate))		4,400
Income attributable to building		$ 5,600
Capitalization rate:		
Discount rate	9%	
Recapture (33 years)	3	
Effective tax rate	2	
Total	14%	
Building value ($5,600 ÷ 0.14)		$ 40,000
Plus land value		40,000
Property value		$ 80,000

Sinking-Fund Capitalization

Net income before recapture and real estate taxes		$ 10,000
Income to land ($40,000 x 0.11 (0.09 discount + 0.02 effective tax rate))		4,400
Income attributable to building		$ 5,600
Capitalization rate:		
Discount rate	0.0900	
Recapture (factor for 6% sinking fund, 33 years)	0.01027	
Effective tax rate	0.02000	
Total	0.12027	
Building value ($5,600 ÷ 0.12027)		$ 46,562
Plus land value		40,000
Property value		$ 86,562

Annuity Capitalization

Net income before recapture and real estate taxes		$ 10,000
Income to land ($40,000 x 0.11 (0.09 discount + 0.02 effective tax rate))		4,400
Income attributable to building		$ 5,600
Capitalization rate:		
Inwood factor at 9% discount for 33 years	10.464	
Reciprocal of Inwood factor 10.464	0.09556	
Partial payment factor	0.09556	
Effective tax rate	0.02000	
Total	0.11556	
Building value ($5,600 ÷ 0.11556)		$ 48,460
Plus land value		40,000
Property value		$ 88,460

An example of the property residual technique as it applies to straight-line capitalization, sinking-fund capitalization, and annuity capitalization is illustrated in **Exhibit 6.37**.

EXHIBIT 6.37

EXAMPLES OF THE PROPERTY RESIDUAL TECHNIQUE

Straight-Line Capitalization

Net income before recapture and real estate taxes	$ 10,000.00
Reversion ($40,000 x 0.0582 (9% for 33 years))	2,328.00
Net income (10,000 - $46.56 ($2,328 x 0.02 effective tax rate = $46.56))	9,953.44
$71,096 ($9,953.44 (net income) ÷ 0.14) + $2,328 (reversion)	$ 73,424.00

Proof:

$73,424 x 0.02 = $1,468.48

Net income before recapture and taxes	$ 10,000.00
Taxes	1,468.48
Net income before recapture	$ 8,531.52
$71,096 ($8,531.52 ÷ .12) + $2,328 (reversion)	$ 73,424.00

Sinking-Fund Capitalization

Net income before recapture and real estate taxes		$ 10,000.00
Reversion ($40,000 x 0.0582 (9% for 33 years))		2,328.00
Net income ($10,000 - $46.56 ($2,328 x 0.02 effective tax rate = $46.56))		9,953.44
Capitalization rate:		
Discount rate	0.09000	
Recapture (factor for 6% sinking fund, 33 years)	0.01027	
Effective tax rate	0.02000	
Total	0.12027	
$82,759 ($9,953.44 ÷ 0.12027) + $2,328 (reversion)		$ 85,087.00

Proof:

$85,087 x 0.02 = $1,701.74

Net income before recapture and taxes	$ 10,000.00
Taxes	1,701.74
Net income before recapture	$ 8,298.26
$82,759 ($8,298.26 ÷ 0.10027) + $2,328 (reversion)	$ 85,087.00

Annuity Capitalization

Net income before recapture and real estate taxes		$ 10,000.00
Reversion ($40,000 x 0.0582 (9% for 33 years))		2,328.00
Net income adjusted for tax on reversion ($10,000 - $46.56 ($2,328 x 0.02 = $46.56))		9,953.44
Capitalization rate:		
Inwood factor for 9% and 33 years	10.464	
Convert 10.464 to rate (reciprocal)	0.09556	
Effective tax rate	0.02000	
Total	0.11556	
$86,132 ($9,953.44 ÷ 0.11556) + $2,328 (reversion)		$ 88,460.00

It should be noted that this supplement to the main document nor the main document itself covers valuation of properties that involve "going concerns" such as hotel/motels and convenience stores. Caution should be exercised when analyzing comparable rentals and sales for these property types to be sure that no furniture, fixtures, equipment, or business value was included in the sale price or that these items can be extracted from the sale price for the purpose of comparison.