2019

SCHEDULE OF VALUES, STANDARDS AND RULES

RANDOLPH COUNTY TAX DEPARTMENT

725 MCDOWELL ROAD
ASHEBORO, NORTH CAROLINA 27205

RandolphCounty
Serving with Heart from the
Heart of North Carolina

Introduction

By North Carolina law (G.S. 105-286) all counties must conduct a reappraisal of all real property at least every eight years. However, counties can decide to advance a reappraisal of real property if the board of county commissioners adopts a resolution providing for advancement of the reappraisal. In February 2004 the Randolph County Board of County Commissioners adopted a six (6) year reappraisal cycle. The scheduled reappraisal was for 2013 but was delayed due to data migration and software conversion issues. A new effective date for the reappraisal was set for January 1, 2014 by the Randolph County Commissioners followed by a next scheduled reappraisal for Randolph County with an effective date of January 1, 2019. Randolph County will return to a six (6) year reappraisal cycle thereafter. The reappraisal is conducted by the Randolph County Tax Department Staff.

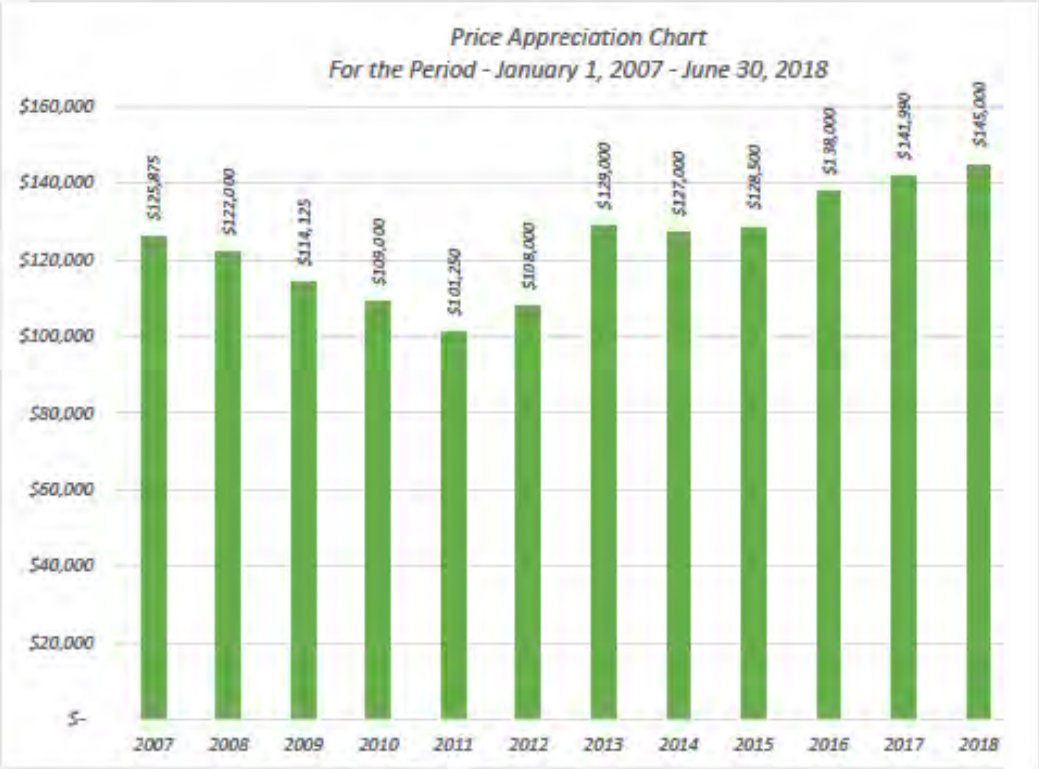
The primary goal of reappraisal is uniformity and fairness. The process of a reappraisal is <u>not</u> to increase revenues or to provide tax breaks, but to fairly, equally and uniformity appraise real property at its true value in money. True value in money is the price estimated in terms of money at which the property would change hands between a willing and financially able buyer and a willing seller, neither being under any compulsion to buy or sell and having reasonable knowledge of all the uses to which the property is adapted and for which it is capable of being used (NC G.S. 105-283). When this knowledgeable, willing buyer and seller agree on a price and a transaction in money occurs, market value is established. This is commonly known as an arm's length transaction.

The 2014 reappraisal was a reflection of the real estate market that had been drastically effected by the recession starting in 2008. Data from reports specific for Triad Multiple Listing Service (MLS), permit data from Randolph County Planning and Development, deed recordings, foreclosures, and bankruptcies have all converged to indicate the real estate market is slowly recovering and positive growth is being observed for the 2019 reappraisal

Median sales prices have steadily increased from the 2014 median average of $127,000 to a median average of $145,000. The building permits for single family homes has risen 73% from 2014. The number of foreclosures continues to drop. Deed transactions have increased each year since 2014. All of these are indicators of how the market has steadily increased since the last reappraisal in 2014.

Calendar Year	Median Sales Price	# of Sales	Days on Market
2007	$ 125,875	1066	73
2008	$ 122,000	817	77
2009	$ 114,125	796	77
2010	$ 109,000	816	83
2011	$ 101,250	712	96
2012	$ 108,000	845	75
2013	$ 129,000	743	76
2014	$ 127,000	814	74
2015	$ 128,500	909	75
2016	$ 138,000	1078	47
2017	$ 141,990	1234	30
2018	$ 145,000	603	24

* Data report for calendar 2018 year is year-to-date through June 2018
**Data source MLS



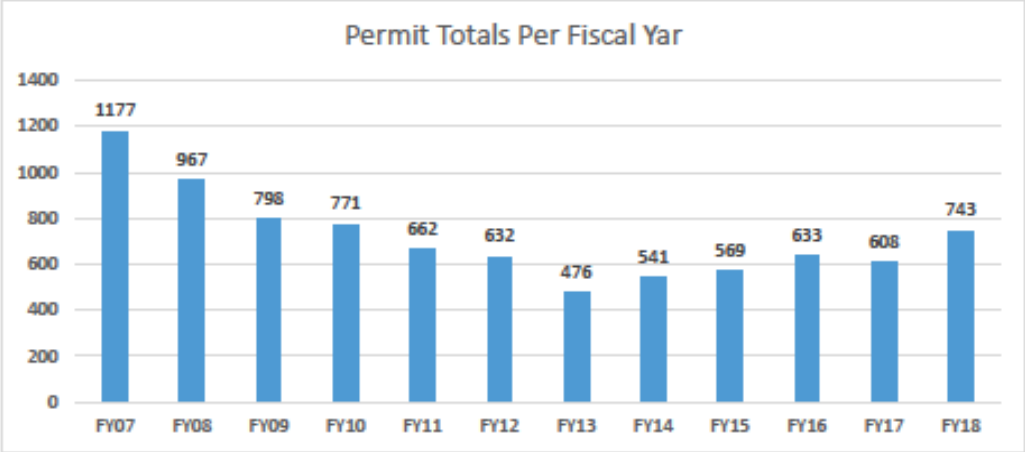
Randolph County Building Inspections

Residential and Commercial Building Permits

July 1 - Jun 30

	FY07	FY08	FY09	FY10	FY11	FY12
Site built home	418	329	213	189	172	137
Modular home	67	52	43	56	27	28
Residential addition	161	145	116	106	110	127
Residential accessory bldg	204	163	142	140	119	126
Residential remodeling	92	105	119	132	110	86
Residental towhome	40	10	13	4	8	6
Commercial	195	163	152	144	116	122
Total	**1,177**	**967**	**798**	**771**	**662**	**632**

	FY13	FY14	FY15	FY16	FY17	FY18
Site built home	142	142	157	208	236	246
Modular home	28	30	25	29	27	35
Residential addition	8	87	101	112	2	106
Residential accessory bldg	114	99	107	111	133	130
Residential remodeling	58	68	73	73	85	72
Residental towhome	6	7	10	22	36	35
Commercial	120	108	96	78	89	119
Total	**476**	**541**	**569**	**633**	**608**	**743**

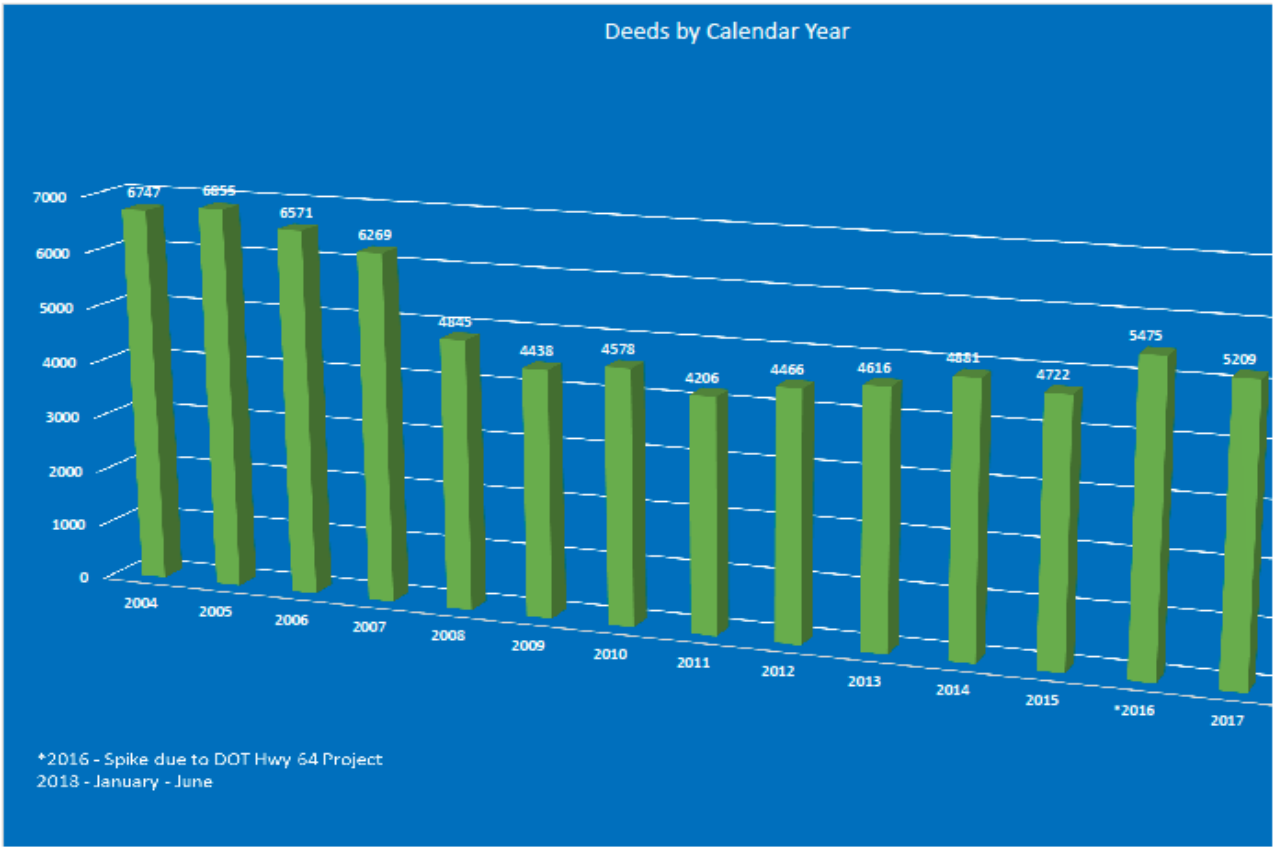


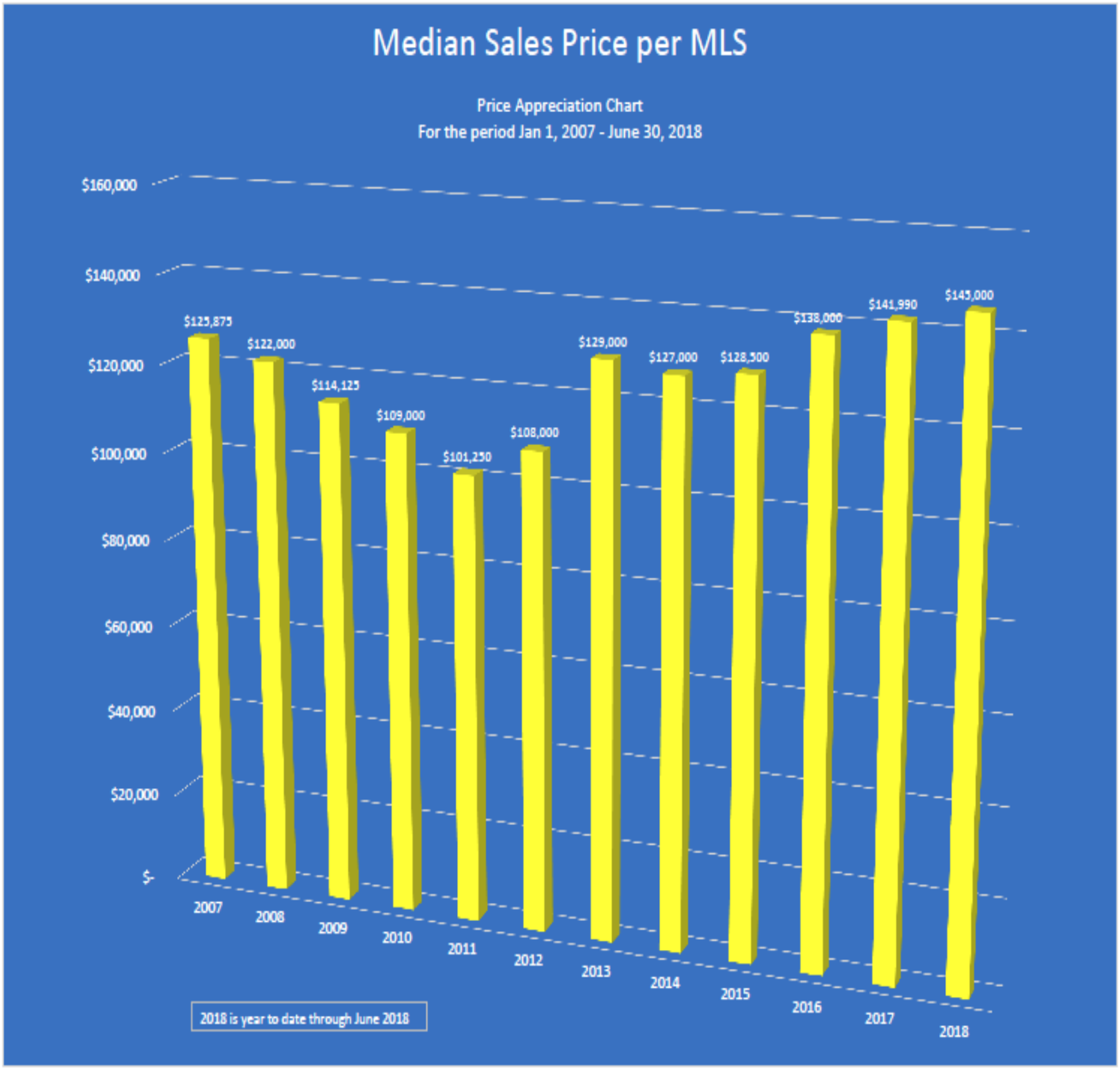
These calculations do not include the City of Asheboro.

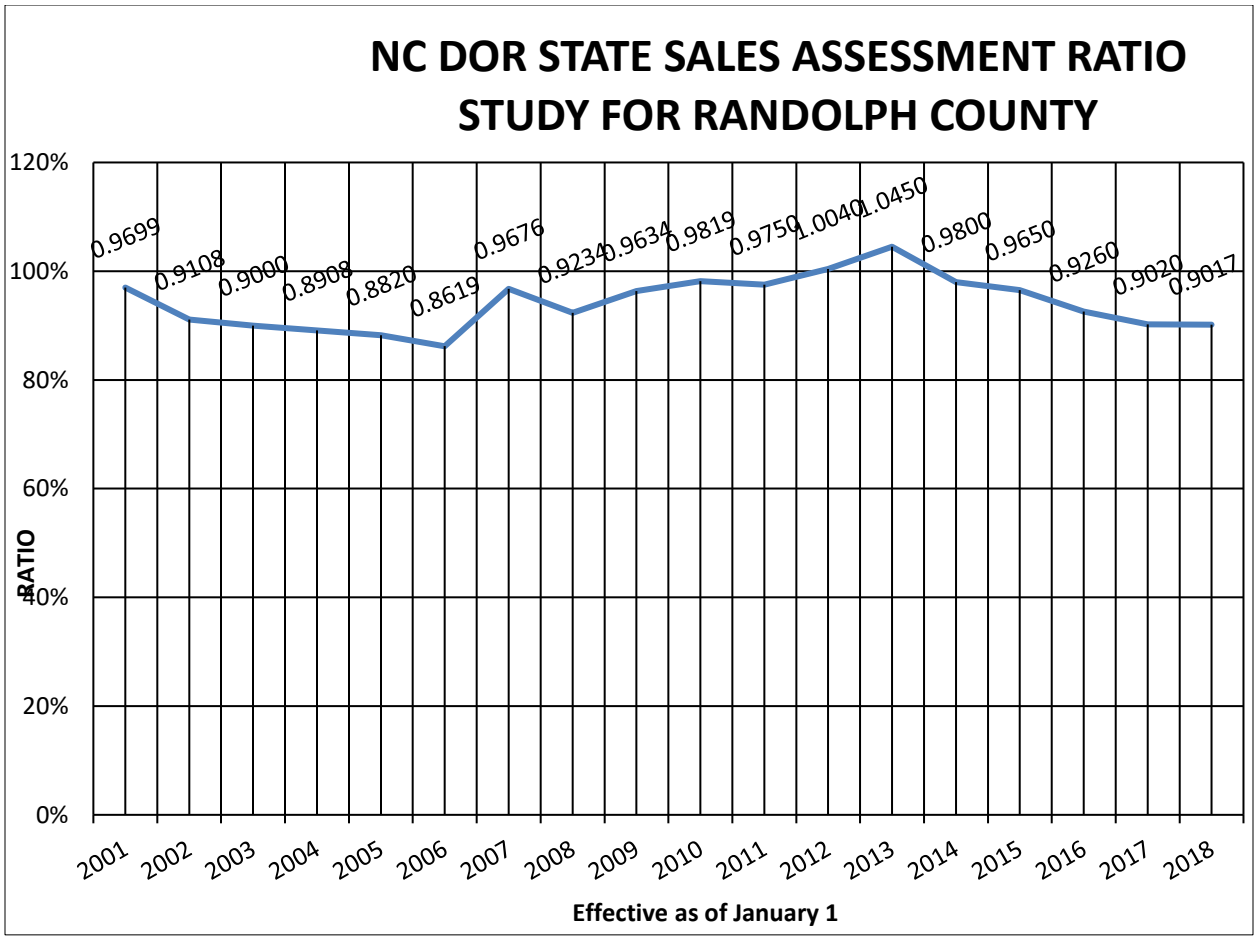
Prepared by

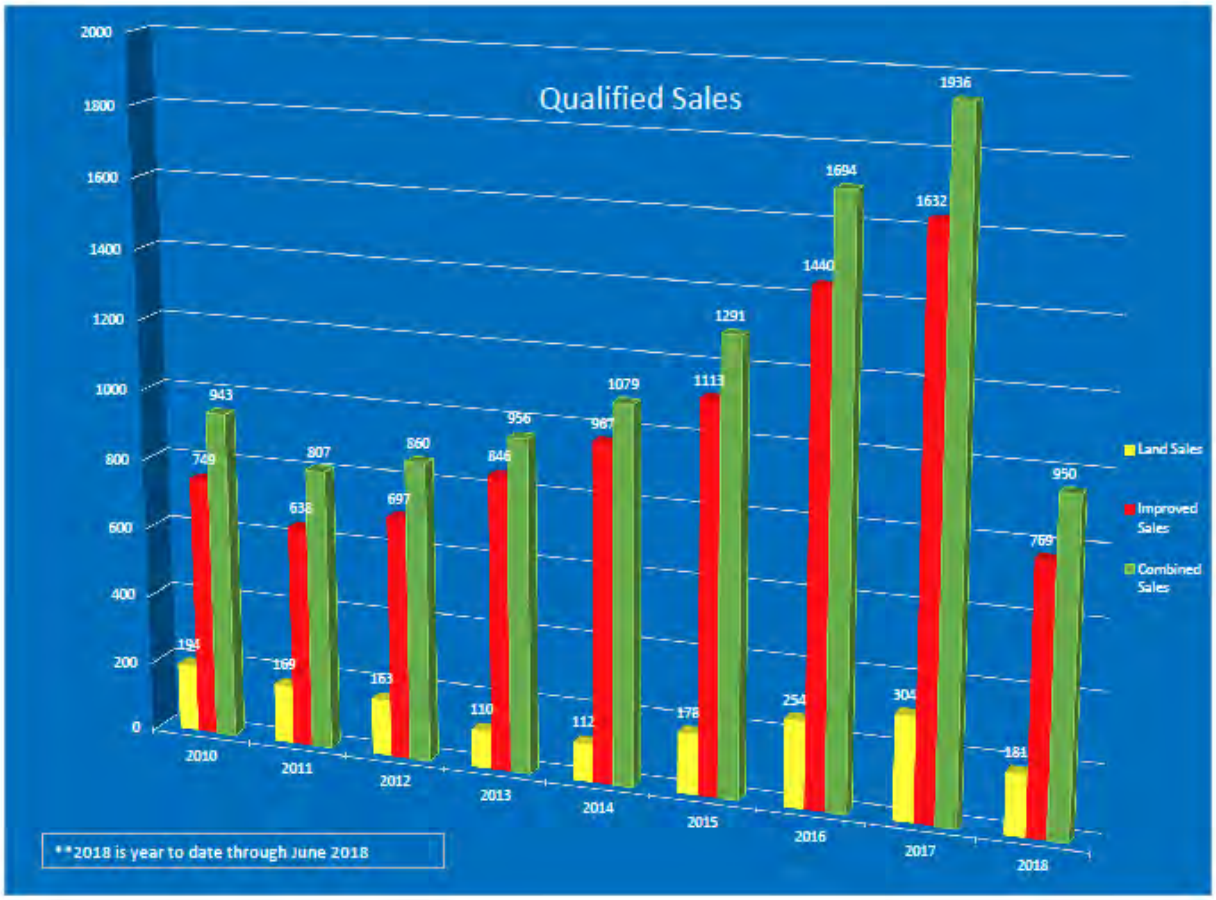
Randolph County Planning & Development

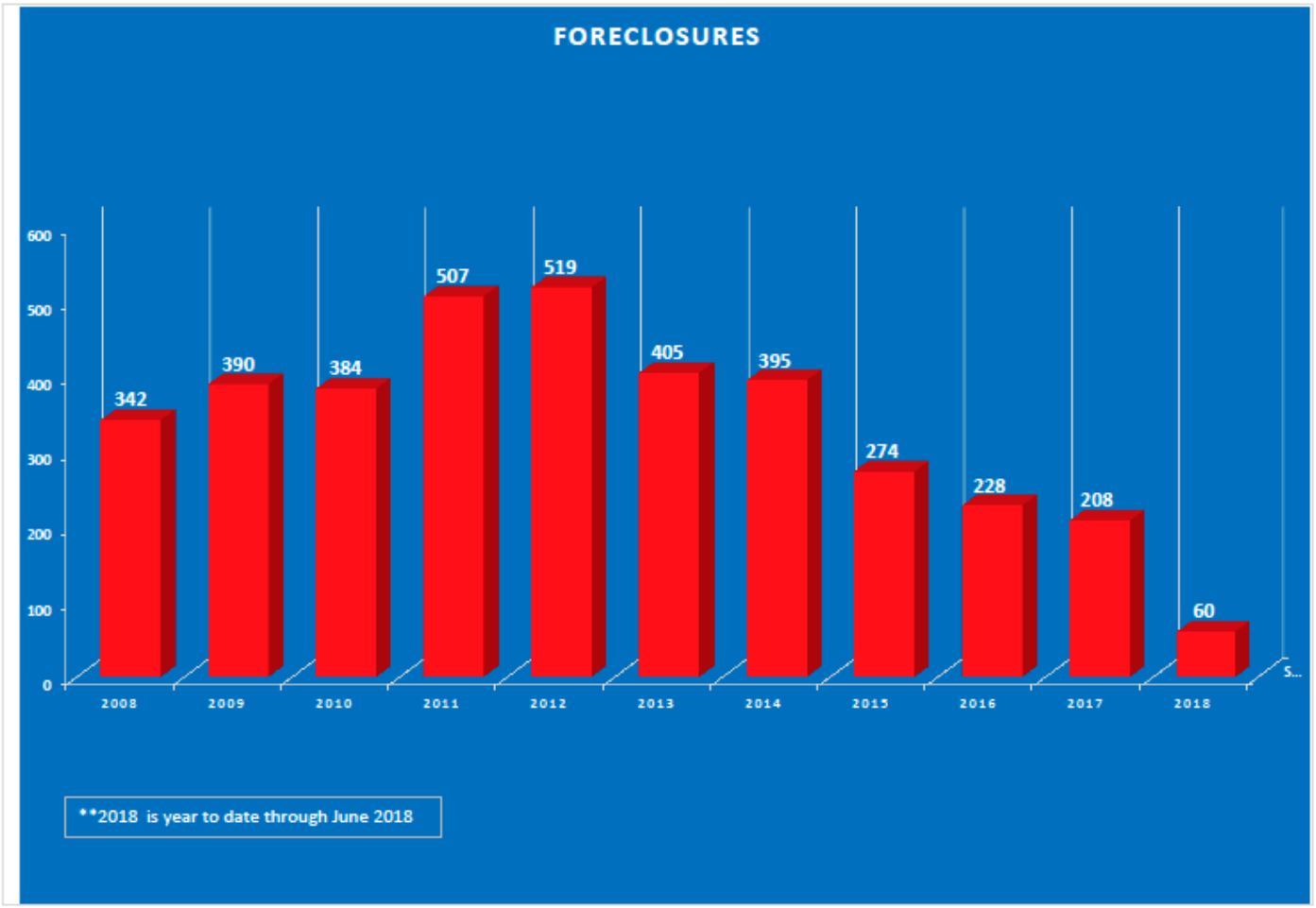
27-Jul-18


Deeds by Calendar Year
7000
6000
5000
4000
3000
2000
1000
0
6747
6855
6571
6269
4845
4438
4578
4206
4466
4616
4881
4722
5475
5209
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
*2016
2017
*2016 - Spike due to DOT Hwy 64 Project
2018 - January - June


Median Sales Price per MLS
Price Appreciation Chart
For the period Jan 1, 2007 - June 30, 2018
$160,000
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$-
$125,875
$122,000
$114,125
$109,000
$101,250
$108,000
$129,000
$127,000
$128,500
$138,000
$141,990
$145,000
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2018 is year to date through June 2018


NC DOR STATE SALES ASSESSMENT RATIO STUDY FOR RANDOLPH COUNTY
120%
100%
80%
60%
40%
20%
0%
RATIO
0.9699
0.9108
0.9000
0.8908
0.8820
0.8619
0.9676
0.9234
0.9634
0.9819
0.9750
1.0040
1.0450
0.9800
0.9650
0.9260
0.9020
0.9017
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Effective as of January 1


Qualified Sales
2000
1800
1600
1400
1200
1000
800
600
400
200
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
194
749
943
169
638
807
163
697
860
110
846
956
112
967
1079
178
1113
1291
254
1440
1694
304
1632
1936
181
769
950
Land Sales
Improved Sales
Combined Sales
**2018 is year to date through June 2018


FORECLOSURES
600
500
400
300
200
100
0
342
390
384
507
519
405
395
274
228
208
60
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
**2018 is year to date through June 2018

These are the general market conditions, locally, in which the County undertakes a general reappraisal effective as of 1 January 2019. As evidenced by the charts and graphs, most properties are selling for more in in 2019 than in the prior reappraisal cycle.

Reappraisals are dependent on data and the expertise to analyze and interpret that data. Randolph County subscribes to the Triad Multiple Listing Service (hereinafter MLS). From the MLS Sold Report data we are able to compile various reports allowing us to examine the sales transactions in a variety of ways; by location, price point, etc.,. By a similar measure we use the Assessment/Sales Ratio Reports conducted under the general guidelines and auspices of the North Carolina Department of Revenue's Property Tax Division. From a randomly-selected base of arm's length sales, a comparison is made between the actual sales price of a series of property transactions and their respective assessed values. Randolph County is a subscriber to CoStar Group. CoStar is a resource for commercial real estate information, marketing, and analytics including income and comparable sale information.

Reappraisals measure change. As we approach 2019, we are observing the ever changing market. To prepare for the reappraisal we will examine and analyze sales, review building cost data and income/expense information from income producing properties. These approaches will be used to develop estimates of market value under the jurisdiction of Standard Six (6) Mass Appraisal of the Uniform Standards of Professional Appraisal Practice (USPAP). This standard has been included in the Addendum and by which reference are hereby made a part of this set of Schedules, Standards and Rules

The Randolph County reappraisal will be effective as of 1 January 2019. We will continue to collect market data through 31 December 2018. By ruling of the North Carolina Appellate Courts, sales occurring after 1 January 2019 are not to be considered for valuations established on 1 January 2019. The schedules presented herein will allow for us to continue examining the market with the latest available activity occurring in calendar year 2018 and by so doing, permit us to be as accurate and up-to-date as the data will allow.

Respectfully submitted,

Debra P Hill

Debra P Hill
Tax Administrator

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Property Valuation

COMPONENTS OF A REAPPRAISAL PROGRAM

Mass appraisal for ad valorem tax purposes builds on the same principles as independent fee, single-property appraisal. Mass appraisal techniques, however, emphasize valuation modules (expressed as equations, tables and schedules), standards of practice and statistical quality control. A reassessment program consists of four basic subsystems:

1. A data management system.
2. A sales analysis system.
3. A valuation system.
4. An administrative system.

The subsystems are independent. For example, the valuation system uses information maintained in the sales analysis and data management systems and produces output (valuations) required by the administrative system in the production of tax bills.

DATA MANAGEMENT SYSTEM

The data management system has components for collection, entry, editing, organization, conversion, storage and security of property characteristics and ownership data. This system is the heart of the Randolph County mass appraisal program. Quality control of this system is of the utmost importance because the accuracy of the values determined depends on the reliability of the data from which they are generated. In addition, data collection, conversion and maintenance are the most expensive aspect of any reappraisal program. Much thought and planning are required to detail the data management logic in order to minimize the operating costs of this system.

Data maintenance is the protocol for creating new parcels, capturing and valuing new construction and making changes to the county's current property database. The maintenance protocol consists of three components:

- County land records system:
  The daily creation of new parcels from the recording of "splits" (the sale of a part of an existing parcel). The recording of new subdivision plats feed the second component of our system.
- Permits and inspections:
  As the appraisal staff receives notice of new permits and inspections, property records are flagged and new data is collected daily. The real property appraisal section receives reports from Community Development when new permits are issued and when the Certificate of Occupancy (hereinafter CO), is issued. Reports of the various inspections requested and required between the initial application and the CO, are received allowing staff to monitor the construction progress and make determinations of the percentage of construction competed as of 1 January each calendar year.
- Periodic re-inspection of all properties:
  Routine field visits are supplemented with information obtained from the latest Orthphotography, information provided by property owners as part of the annual Listing abstracts, as well as requests from taxpayers for reviews or appeals and MLS Sold Reports.

SALES ANALYSIS SYSTEM

The sales system has components for sales data collection, sales screening and processing, ratio studies and sales reporting. Assessment/sales ratio studies are the primary tool for measuring mass appraisal performance. They are invaluable for monitoring appraisal results, identifying reappraisal priorities, adjusting valuations to the market and assisting the administrative system in planning and scheduling.

Ratio studies and sales reports draw on values produced by the valuation system and on property characteristics maintained in the data management system.

The ongoing sales file program includes a computerized sales ratio study and report, an active computerized sales questionnaire system, an active sales maintenance routine and a collection of photographs on subject properties.

VALUATION SYSTEM

The valuation system (CAMA) consists of mass appraisal applications of the three approaches to value and/or allows for various adjustments that recognize specific aspects of each approach.

- The COST APPROACH requires maintenance and application of computerized cost schedules and equations, depreciation schedules and indexing factors.
- SALES COMPARISON APPROACH applications include multiple regression analysis and model building for automated comparable sales analysis.
- The INCOME APPROACH will require income multipliers and overall rates.

The optimum results of the valuation system will be to consider all three approaches to value, as appropriate to property type and determine which method(s) produces the best results for the final appraisal. Properly executed, any of the three approaches to value will yield creditable results. The Sales Comparison and Income Approaches are highly dependent on available data. Only the Cost Approach can be uniformly applied with limited data.
A general county-wide reappraisal depends on data being available from a wide variety of sources in order to properly apply each of the three approaches to value. Even when an abundance of relevant data is available for applying the Sales Comparison Approach and the Income Approach that data may also be utilized in refining the Cost Approach. In the absence of relevant data prior to the final determination of reappraisal values, the Cost Approach becomes the more reliable approach for all property types as shown below:

Comparing the Three Approaches to Value to Various Property Types When Relevant Data is Available from the Market:

RESIDENTIAL	COMMERCIAL	INDUSTRIAL / SPECIAL PURPOSE
1. Sales Comparison	1. Income	**1. Cost**
2. Cost	**2. Cost**	2 or 3. Sales Comparison
3. Income	3. Sales Comparison	2 or 3. Income

THE ADMINISTRATIVE SYSTEM

The administrative system is comprised of a variety of functions and activities; each of which requires information from the sales analysis, valuation, or data management systems and produces products used by the administrative system. For example, the appeals process uses valuation and property characteristics data and the results of sales ratios and reports. The results of the appeals process affect other systems in the form of data changes, value adjustments and recalculated ratio statistics. The administrative system serves throughout the reappraisal process; in the beginning in identifying areas of concern, throughout the reappraisal process as various analytical measures are studied and adjusted and at the conclusion when sales are measured against assessed values as part of a randomly-selected ratio study.

IN-HOUSE REAPPRAISAL

An in-house reappraisal is a major effort requiring careful preparation, the support of county management and the Board of County Commissioners, adequate time and sufficient funds. The outlined plan will show the detailed work scheduling tasks and activities. The schedule takes into account the relationship between the daily operations of the tax office and the reappraisal program. It includes adequate time to cover probable delays and contingencies to deal with unforeseen problems.

The reappraisal process should be viewed as separate and distinct from daily operations. However, existing staff, duties, responsibilities and priorities must be modified and additional staff may be required. The tax office will have control over the quality and performance of additional personnel.

SUMMARY

General reappraisals of real property are required by statutory authority to be performed on an octennial plan (the eight-year cycle). Counties may adopt a shorter cycle via a Resolution by their respective county board of commissioners. The prevailing trend in North Carolina is a four-year reappraisal cycle.

Reappraisal Cycle (# of Years between Reappraisals)	# of Counties
8-Year Reappraisal Cycle	56 Counties
6-Year Reappraisal Cycle	2 Counties
5-Year Reappraisal Cycle	3 County
4-Year Reappraisal Cycle	39 Counties

Presently, the trend is for counties to hire and train the staff in order to perform “In-House” reappraisals as opposed to “contracted” reappraisals with expertise being contracted from outside the county lines.

Type of Reappraisal	# of Counties
Contracted Reappraisals with an Outside Appraisal Firm	31 Counties
In-House Reappraisal with Full-time County Staff	29 Counties
Joint; Primarily In-House, but with some Outside Expertise	40 Counties

NOTE: Based on data supplied by the Property Tax Division of the NC DOR, the average parcel count for counties contracting with a reappraisal firm was 25,600 parcels. The average size of counties undertaking a Joint reappraisal effort was 70,747. Counties conducting In-House reappraisals averaged 65,040 parcels.
The tax office understands that an effective reappraisal requires careful planning. A realistic analysis of the present state of the assessment records and values and the resources needed to conduct the reappraisal is always under consideration. Reappraisals are a costly, highly visible and politically sensitive undertaking. However, since the real property staff in the tax office understands its own resources and the technical requirements of the tasks, they are committed to conducting the most fair and equitable reappraisal.
The success of this endeavor depends on the leadership of the tax office, an informed public awareness and committed management support.

Before an assessor can undertake his/her responsibilities and duties properly, he/she must be familiar with the legal framework in which his/her function is performed. In addition to the specific statutory direction and appellate court rulings, it is necessary to be well-versed with the nature of appraised values and property and with the basic economic principles that serve as the foundation of the valuation process.

Concepts of Property and Property Rights

A discussion of property and property rights should begin with a definition of property. When the layman thinks of property, he tends to think of a thing. Legally, however, property is associated with the *right* of any person to possess, use, enjoy and dispose of a thing. Property, then, is a broad term expressing the relationship between owners and their rights in and to possessions. In appraising real property, the parcel to be appraised includes the rights inherent in the ownership of the property be included in the opinion of value rendered by the reappraisal.

All property may be divided into two major categories-real property and personal property. Real property is defined as the sum of the tangible and intangible rights in land and improvements. It refers to the interest, benefits and rights inherent in the ownership of physical real estate. A synonym for real property is realty. Real estate, on the other hand, is the physical land and everything permanently attached to it. Personal property consists of movable items not permanently affixed to, or part of, the real estate and is commonly known as “personalty" or "chattels."

Real estate may be divided into two categories-land and improvements. Land may be defined as the surface of the earth together with everything under its boundary and everything over it, extending indefinitely into the heavens. The shape of a parcel of land can be described as an inverted pyramid with its apex at the center of the earth and extending upward through the surface into space. Certain legal limitations have been imposed throughout the years by the Courts, such as the right of aircraft to fly over the land. Improvements (land improvements, such as paving, fencing, structures and landscaping) consist of immovable items affixed to and becoming part of the real estate. "Permanently affixed" refers to the original intent of the owner and the economic life of the improvements rather than "forever."

In discussing the distinction between real estate and personal property, the term “affixed” was used. Defining “fixture” has been the subject of much litigation and the courts do not always agree. Generally speaking, personal property annexed to land is called a fixture. Chattels that have been annexed to land are called a fixture.

Chattels that have been annexed to the land so as to lose their character as chattels become real estate for ad valorem tax purposes. In determining the nature of the annexation of personal property, there are two basic considerations: first, the adaptability of the personal property to the use of that part of the realty and, second, the person by whom the annexation is made and his interest in the land and the personal property.

Courts tend to agree that, if the chattel is affixed to the land so that it loses its original physical character and cannot be restored to its original condition as a practical matter; it loses its nature as personal property and becomes real property. In some cases there are two basic tests to determine whether personal property becomes real property (1) the intention of the person who put the item in its place and whether the item may be removed from the real estate without damaging either the item or the real estate. An excellent example is in how NC law distinguishes manufactured homes as personal versus real property.
N.C.G.S. 105-273(13)b. reads:

"Real property, real estate, or land. – Any of the following:

a. The land itself.

b. Buildings, structures, improvements, or permanent fixtures on land.

c. All rights and privileges belonging or in any way appertaining to the property.

d. A manufactured home as defined in G.S. 143-143.9(6), unless it is considered tangible personal property for failure to meet all of the following requirements:

1. It is a residential structure.

2. It has the moving hitch, wheels and axels removed.

3. It is placed upon a permanent foundation either on land owned by the owner of the manufactured home or on land in which the owner of the manufactured home has a leasehold interest pursuant to a lease with a primary term of at least 20 years and the lease expressly provides for disposition of the manufactured home upon termination of the lease."

Another important distinction in property is that of tangible and intangible property. Tangible property consists of actual physical property. Intangible property is evidence of ownership of property rights. Examples of intangible property are patent rights, copyrights, notes, mortgages, deeds of trust and stock certificates.

Ownership of Property

There are six basic rights associated with the ownership of property:

1. The right to use.
2. The right to sell.
3. The right to lease or rent.
4. The right to enter or leave (real property).
5. The right to give away.
6. The right to refuse to do any of these.

These rights are known as the “bundle of rights”, which is the ownership of all the legal rights obtained with fee-simple title. The bundle of rights may be compared to a bundle of sticks, each representing one property right. Property rights are divisible. Property ownership is sometimes transferred without the exchange of the full bundle of rights.

Unless property is owned by the government, it is subject to certain public and possibly private restrictions. The United States and other nations impose certain limitations for the common good. These public, or legal, restrictions thrust limitations on the full bundle of rights. Four rights, or "sticks," have been removed from the full bundle in favor of governmental control, identified as follow:

- Taxation - the right to tax the property for support of the government.
- Eminent domain - the right to take the property for public use provided that just compensation is paid.
- Police power - the right to regulate the use of property for the public welfare in the areas of safety, health, morals, zoning, building codes and traffic and sanitary regulations.
- Escheat - the right to have property revert to the state for nonpayment of taxes or where there are no legal heirs of a decedent who dies intestate.

Some examples of private limitations which affect fee-simple ownership of property are (1) the rights of other co-owners of the property; (2) covenants, conditions and restrictions that are found in the chain of title to the property; (3) mortgages (a mortgage is a written instrument pledging specified real estate as a guarantee for the repayment of a loan used to purchase property); (4) easements and rights of way (an easement is a right held by one person to use the land of another); (5) liens and judgments (a lien is a legal right to hold property or to have it sold or applied for a payment of a claim-n); and (6) leases.

Estates in Property

An “estate” may be defined as the legal position or status of an owner with respect to the property and the degree or quantity of interest owned with respect to the nature of the right, its duration, or its relation to the rights of others. Estates in real property may be categorized according to the quality and duration of the property rights. The two main divisions in estates are freehold and non-freehold. A freehold estate is one which is to endure for an uncertain period of time but which usually lasts during the life of some person. Non-freehold estates endure for a specified period of time and may be subject to immediate termination. There are three basic types of freehold estates: fee simple absolute, fee tail and life estates.
An “estate in fee simple” is one which has been given to an individual and his heirs without any end or limit put to his estate. Fee-simple title is the greatest possible degree of ownership. It is title free and clear of all encumbrances, including easements, rights of way, liens and so forth. In other words, it is the ownership of

all legal rights. With certain statutory exceptions, fee-simple title is the only estate which the assessor values. Personal property is always valued by the assessor as free and clear of all encumbrances.

N.C.G.S. 105-302 sets forth the statutory direction regarding in whose name real property should be listed. In North Carolina, the property will be listed, appraised and assessed at "fee simple" to the holder of the life estate, usually referred to as the "life tenant". A life estate is granted with ownership limited to the life of the owner or that of another party.

G.S. 105-302 (c) (8) reads:

"A life tenant or tenant for the life of another shall be considered the owner of real property and it shall be his duty to list the property for taxation, indicating on the abstract that he is a life tenant or tenant for the life of another named individual."

Estates in real property may also be categorized according to the way in which title is held: tenancy in severalty indicates ownership interest by one owner; tenancy in common indicates ownership by more than one person where the interest is not divided and descends individually to each owner's heirs; tenancy by the entirety indicates joint ownership by husband and wife where ownership reverts to the survivor and cannot a disposed of individually during the lifetime of either. There are many different types of tenancy in which the assessor is interested primarily for the purpose of keeping ownership records up to date. Ultimately, North Carolina General Statutes control how ownership of all real property is determined for ad valorem tax purposes.

Nature of Property Appraisal or Value

The word "value" is an abstract word; generic in nature, with many acceptable definitions and meanings, the term defying an exact definition to suit all circumstances. Generally speaking, its definition is largely dependent upon the context in which it is being used. In a broad sense, value can be defined as the relationship between an object desired and a potential purchaser. It is the ability of a commodity to command another commodity (money) in exchange. For purposes of real property appraisal, value may be described as the present worth of future benefits arising from the ownership of real property.

A major distinction must be made between value in use and value in exchange. A property may have relatively little value in use and a significantly different value in exchange. Value in use embodies the objective premise, which maintains that value is within the object itself. A hose rack built into a fire station is a useful and valuable item as long as the building is used as a fire station. If use as a fire station is abandoned, however, the hose rack probably will not add value to the property unless it can be used for an almost identical purpose. Under the concept of value in exchange, the subjective element is accentuated. In a subjective context, value is within the mind of man. The value-in-use concept easily accommodates cost. In an economic sense, value in exchange is the primary concern for the assessor because this value – market value – reflects the actions and reactions of buyers, sellers and investors.

In order for property to have value, there must be desirability, utility, scarcity and economic purchasing power. Utility is the capacity of goods to excite desire for possession and should not be confused with usefulness. Diamonds possess utility in that they excite a desire for possession in the minds of most people and usefulness in that they are the hardest substance known and have many industrial uses. Utility is a subjective concept, in the mind of man; usefulness is an objective concept, inherent in the property.

Scarcity is the third requirement for value. The air we breathe has utility, but it is not valuable, primarily because it is not scarce. There are two economic forces that determine scarcity: supply and demand. As

demand increases or supply decreases, the value of the goods will increase. Conversely, if the supply increases or the demand decreases, the value of the goods will decrease

Utility and scarcity by themselves do not confer value on an object, unless the desire by the purchaser is present, a desire backed by the economic purchasing power of the buyer(s).

A comparison of the terms "cost" and "price" is useful in a discussion of value. Cost may be defined as the sacrifice made in the acquisition of property and commonly reflects the perspective of the buyer. It may be incurred in either the purchase of an existing property or the construction of a new property. Price may be defined as the amount of money given or expected or arrived at arranging for the exchange of property. Cost and price may be the same. If a purchaser pays $100,000 to buy a property, it may be stated that the property costs the purchaser $100,000. However, while price is defined in terms of money, cost is expressed as a sacrifice. A sacrifice may be in terms of money, labor, or time. Also, when a property is sold, the price may be either above or below the owner's cost.

Market Value

While the term "value" remains quite difficult to define, the term "market value" does not suffer from the same limitation. The constitutions and statutes of the 50 states have many different definitions of market value; they also have different definitions of value for property taxation, eminent domain, corporate reorganization and public utility rate regulation. The assessor must adhere to the definition of market value as stated in N.C.G.S. 105-283 and as interpreted in various decisions rendered by the North Carolina Appellate Courts, as set forth below:

N.C.G.S. 105-283. Uniform Appraisal Standard.

> **"All property, real and personal, shall as far as practicable be appraised or valued at its true value in money. When used in this Subchapter, the words "true value" shall be interpreted as meaning market value, that is, the price estimated in terms of money at which the property would change hands between a willing and financially able buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of all the uses to which the property is adapted and for which it is capable of being used. For the purposes of this section, the acquisition of an interest in land by an entity having the power of eminent domain with respect to the interest acquired shall not be considered competent evidence of the true value in money of comparable land."**

NOTE: In analyzing sales of property, close attention is paid to identifying all transactions that are the result of a foreclosure or short sale. Such sales are not retained for further consideration in determining the schedules set out elsewhere in this document and neither will they be considered in analyzing the reappraisal results via the State-mandated assessment/sales ratio study.

Several Appellate Court cases have addressed the issue of defining market value:

- **Neither this section nor G.S. 105-317(a) requires the commission to value property according to its sales price in a recent arm's length transaction when competent evidence of a different value is presented.**
  In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).

- **The purpose of the statutory requirement that all property be appraised at its true value in money is to assure, as far as practicable, a distribution of the burden of taxation in proportion to the true values of the respective taxpayers' property holdings, whether they be rural or urban.**
  In re *King,* 281 N.C. 533, 189 S.E.2d 158 (1972).

- **In substance this section and G.S. 105-317.1 provide that all property shall be appraised at market value and that all the various factors which enter into the market value of property are to be considered by the assessors in determining this market value for tax purposes.**
  In re *Bosley,* 29 N.C.App. 468, 224 S.E.2d 686, cert. denied, 290 N.C. 551, 226 S.E.2d 509 (1976).

- **Where sale was not between a willing buyer and a willing seller, as contemplated by this section, sales price was not indicative of property's true value.**
  In re *Phoenix Ltd. Partnership,* 134 N.C. App. 474, 517 S.E.2d 903 (1999)

- **Section 105-317(a), in fixing the guide which assessors must use in valuing property for taxes, includes as a factor the past income therefrom and its probable future income. But the income referred to is not necessarily actual income. The language is sufficient to include the income which could be obtained by the proper and efficient use of the property. To hold otherwise would be to penalize the competent and diligent and to reward the incompetent or indolent.**
  In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).

- **To find the true value of property subject to conservation easements, the Commission must determine the market value prior to the granting of the easements and then reduce that value by applying a damage factor caused by the granting of the conservation easements. Determining the highest and best use of the property prior to the granting of the easement is a critical part of the appraisal process.**
  In re *Rainbow Springs Partnership v. County of Macon,* 79 N.C. App. 335, 339 S.E.2d 681, cert. denied, 316 N.C. 736, 345 S.E.2d 392 (1986).

- **A post-octennial valuation sale is not a statutory permissive basis for adjusting a property's tax valuation.**
  In re *Allred,* 351 N.C. 1, 519 S.E.2d 52 (1999)

- **State Tax Commission's reliance upon an independent appraiser's collateral determination of petitioners' property value, without challenge or correlation to the county's schedules of value or the application of those schedules to the property, was in violation of the statutory requirement of this section that any permissible increase or decrease in the appraised value of real property be calculated using the schedules and standards established by the county.**
  In re *Allred,* 351 N.C. 1, 519 S.E.2d 52 (1999)

- **In order for a taxpayer to have valuation set aside, he must show more than a failure to follow statutory procedures. It is not enough for the taxpayer to show that the means adopted by the tax supervisor were wrong; he must also show that the result arrived at is substantially greater than the true value in money of the property assessed, i.e., that the valuation was unreasonably high.**
  In re *Highlands Dev. Corp.,* 80 N.C. App. 544, 342 S.E.2d 588 (1986).

Other General Legal References that bear on the Concept of Value :

- **The North Carolina General Assembly and no one else, determines how property in this State should be valued for purposes of ad valorem taxation.**
  In re *Amp, Inc.,* 287 N.C. 547, 215 S.E.2d 752 (1975).

- **The legislature has decreed that all property, real and personal, within the jurisdiction of the State, is subject to taxation whether owned by a resident or a nonresident. The purpose of this strong decree is to treat all property owners equally so that the tax burden will be shared proportionately and to gather in all the tax money to which the various counties and municipalities are entitled.**
  In re *Plushbottom & Peabody, Ltd.,* 51 N.C. App. 285, 276 S.E.2d 505, cert. denied, 303 N.C. 314, 281 S.E.2d 653 (1981).

- **Uniformity in taxation relates to equality in the burden of the State's taxpayers.**
  In re *Martin*, 286 N.C. 66, 209 S.E.2d 766 (1974).

- **Ad valorem tax assessments are presumed to be correct and when such assessments are challenged, the burden of proof is on the taxpayer to show that the assessment was erroneous.**
  In re *Bosley,* 29 N.C.App. 468, 224 S.E.2d 686, cert. denied, 290 N.C. 551, 226 S.E.2d 509 (1976).

- **Ad valorem tax assessments are presumed correct. In order to rebut this presumption, the taxpayer must present evidence to show that an arbitrary method of valuation was used, or that an illegal method of valuation was used and that the assessment substantially exceeded the true value in money of the property.**
  In re *Interstate Income Fund I,* 126 N.C. App. 162, 484 S.E.2d 450 (1997).

- **In order to obtain relief from valuations upon their property by the State Board of Assessment, appellant electric membership corporations must show that the methods used in determining true value were illegal and arbitrary, and that appellants were substantially injured by a resulting excessive valuation of their property.**
  In re *Albemarle Elec. Membership Corp. v. Alexander,* 282 N.C. 402, 192 S.E.2d 811 (1972).
- **Burden is on the taxpayer to show that it comes within the exemption or exception.**
  In re *Martin*, 286 N.C. 66, 209 S.E.2d 766 (1974).

- **Exemption from taxation is exceptional. Such exemptions should be strictly construed.**
  In re *Notice of Attachment & Garnishment Issued by Catawba County Tax Collector*, 59 N.C. App. 332, 296 S.E.2d 499 (1982), cert. denied, 307 N.C. 576, 299 S.E.2d 645 (1983).

The following important points regarding market value should be noted:

- It is the most probable price.
- It is not the highest, lowest, or average price.
- It is expressed in terms of money.
- It implies a reasonable time for exposure to the market.
- It implies that both buyer and seller are well-informed of the uses to which the property may be put. It requires an arm's length transaction in the open market.
- It requires a willing buyer and willing seller, with no advantage being taken by either buyer or seller. This is a constraint against consideration of foreclosures and short sales.
- It recognizes the present use as well as the potential use of the property.

Highest and Best Use

The way in which property is used, or could be used, plays an essential role in determining its market value. Most appraisal organizations recognize the highest and best use of a given property must conform to the following four points:

- It must be a legal use. (in many instances zoning will identify the legal use)
- It must be a physically possible use.
- It must be an economically feasible use.
- It must be the use that generates the greatest net return to the owner.

Almost all property is subject to competing uses. Rural land is subject to the competition of farming and grazing. Urban land is subject to many competing uses; a single parcel of land may be sought after as the site for a store, gas station, apartment building, or office building. When determining an opinion of market value, it is necessary to determine which of the competing uses is the highest and best use.

Highest and best use may be defined as that use which will generate the highest net return to the property over a period of time. Further amplification of this definition is necessary for a clear understanding of the term.

The highest and best use must be a legal use. This means not only that the use cannot be criminal but also that it must be permitted under local administrative regulations, such as zoning. Assuming that zoning regulations are strictly enforced, the highest and best use may be limited. If it is easy to obtain a change or variance in zoning, uses not permitted by current regulations must be considered along with the probability that zoning will be changed. The use also must not be prohibited by enforceable restrictions contained in the chain of title to the property.

The use must be a probable use and not a highly unlikely or speculative one. There must be a demand for the use either in the present or in the near future. This, of course, is determined by persons in the market and not by a bias on the part of the assessor. It is important to consider as well that the highest and best *use may* be the present use or an entirely different one. It may even be a combination of uses over a period of time. Imagine, for example, a site in a good downtown location on which stands a three-story store with a 75 percent vacancy factor. Assume that the site could be developed with a modern fifteen-story office building. However, since there is currently too much unrented office space on the market, the highest and best use of the property might be as a parking lot for the next five years. Once the excess office space is absorbed, its highest and best use could be as an office building.

The highest and best use will be a complementary rather than a competitive use. For example, if there are gas stations on three of four corners, a fourth gas station will reduce the customers that are available to all four stations. However, suppose that on the fourth comer a fast-food restaurant were established. The restaurant would draw business from the gas station customers. Conversely, the gas stations would draw *business from* the restaurant's customers.
The highest and best use must be the most profitable for the entire property, land, buildings and other improvements-since the market deals with the total property unit and land and buildings usually are not sold separately. Also, when estimating highest and best use, the assessor should not combine parcels of common ownership that are used independently for different purposes.

The highest and best use generates the highest net return over a reasonable period of time. A use that yields a very high immediate income but one of short duration may not be as valuable as a use that results in a lower but more prolonged income stream. Just as everything changes with time, the highest and best use of property will change. The character of a neighborhood may be altered, thereby creating demands for

different uses. The assessor periodically reviews conclusions as to highest and best use and revises them according to the data that are collected.

Properties in transition present a difficult appraisal problem. Not only must a new highest and best use be found for the property, but also an estimate must be made as to when the property will begin the new use. Occasionally, there will be an interim use prior to the future highest and best use. In order to estimate the value of these consecutive uses, the benefits must be identified, valued and summed. The total value is the sum of:

1. The present worth of the income stream from the interim use for the period of that use less the cost of erecting interim improvements.
2. The present worth of the salvage value of the interim improvements less the present worth of removing them.
3. The present worth of the income stream from the future use less the present worth of erecting the future improvements.

For example, assume that a vacant parcel of land downtown has a highest and best use as a parking lot for five years and as a twenty-five-story office building thereafter. The sum of the future benefits is shown as pluses and minuses in the following example:

Plus. . . . .

1. Present worth of parking-lot income for five years,
2. Present worth of salvage value of parking-lot improvements deferred five years,
3. Present worth of sixty-year income stream from twenty-five-story office building deferred six years (one year for construction)

Minus . . . . .

1. Cost of erecting parking-lot improvements: paving, fencing and small office.
2. Present worth of cost to demolish parking-lot improvements deferred five years.
3. Present worth of cost to construct a 25-story office building deferred six years.

Basic Principles of Value

These principles, which have evolved from economic doctrine, are generally accepted as having a direct effect on the modern concept of value. It should be emphasized that these principles rarely if ever can be considered in isolation; it is typical to conceive of them in an interrelated setting, for they tend to complement and accompany one another. It should also be pointed out that highest and best use is the resulting use after considering the interrelationship among the basic appraisal principles.

The following are generally regarded as essential to the understanding of the appraisal function. They are listed (in alphabetical order) as follows:

Principle of Anticipation:

Market value is the present worth of all the anticipated future benefits to be derived from the property. The benefits may be in the form of an income stream or amenities. Anticipated future benefits are those benefits anticipated by the market. The assessor should not allow personal opinion to influence the determination of anticipated future benefits. Past sales of the property and past income are of importance only when they are an indication of what may be expected in the future. The principle of anticipation works in conjunction with the principle of change.

Principle of Balance:

The principle of balance has dual significance. When applied to an individual property, the principle states that maximum market value is reached when the four agents of production - labor, coordination or management, capital and land attain a state of equilibrium. In the case of individual properties, the principle works in conjunction with the principles of contribution, increasing and decreasing returns and surplus productivity. When applied to a neighborhood, the principle of balance indicates that maximum market value is reached when the complementary uses of land attain equilibrium. For example, a single-family residential neighborhood requires commercial facilities such as grocery stores, gasoline stations, drugstores and so forth. It also needs residential support facilities such as churches, schools, recreational facilities and the like. When these complementary uses are in balance, the individual properties (and the neighborhood) achieve maximum market value. When the principle of balance is applied to a neighborhood, it works in conjunction with the principle of competition.

Principle of Change:

This principle states that market value is never constant, because economic, social and governmental forces are at work to change the property and its environment. In addition, property itself is constantly changing, For example, the forces of nature can change the quality of the soil and improvements change by aging. Because change is continuous, the estimate of market value is valid only on the effective day for which it is made. The principle of change works in conjunction with the principle of anticipation.

Principle of Competition:

The principle states that when substantial profits are being made, competition is created. This leads to the aphorism that profit tends to breed competition and that excess profit breeds ruinous competition. A neighborhood can support only a certain number of bowling lanes, department stores, gasoline service stations and shopping centers. An excess of any one type of facility will tend to decrease the value of most, if not all, other such facilities.

Principle of Conformity:

This principle states that maximum market value is reached when a reasonable degree of economic and social homogeneity is expected in the foreseeable future. When the principle is applied to improvements, reasonable homogeneity implies reasonable similarity, not monotonous uniformity. When it is applied to the residents, it means similarity in age, income, background, education, attitudes and so on. Conformity works in conjunction with the principles of progression and regression and is essential in understanding the "neighborhood" concept as a mass appraisal technique.

Principle of Consistent Use:

This principle states that the property must be valued with a single use for the entire property. It is improper to value a property on the basis on one use for the land and another use for the improvements. This is not to say that consecutive uses for the entire property would violate the principle of consistent use. The principle of consistent use is especially applicable to a property in transition from one use to another.

While the improvements on a parcel ready for a higher use may theoretically have a long physical life, their economic life may have already terminated. In this case the improvements may have a negative value, namely, the cost of demolition.

Principal of Contribution:

This principle states that the value of an agent of production (or a property component) depends upon its contribution to the whole. This is another way of saying that cost does not necessarily equal value. Some examples are:

1. Cost does not always equal value. Ten thousand dollars is spent on labor, (which is a cost), to build a two-car garage. What has the $10,000 worth of labor contributed to the value of the property-- less than $10,000, $10,000 or more than $10,000?
2. The real estate market tends to look at the contribution of a property characteristic in broad terms. While there can be significant cost differences between a stucco chimney and a very plain fireplace profile versus a stone chimney and fireplace profile, that difference in cost may very likely not be likewise reflected in the value of the two homes located in the same neighborhood with the very different chimneys and fireplaces.
3. An owner spends $20,500 to erect a garage for use with the home. Based on a comparable sales analysis, it is determined that such a garage adds $21,500 to the overall market value of the property. In this case $21,500 is the value contribution of the garage.
4. In the case of income-producing properties, the value of an agent in production (or property component) can be measured by the amount it contributes to net income, since net income can be capitalized into value. For example, assume that the owner of a small retail store finds that, by spending $2,000 for an air-conditioning unit, annual gross income from rents can be increased by $650. Additional operating expense due to the air-conditioning unit will be only $400, including amortization of the investment. Consequently, installation of this unit will add value to this property

in excess of its cost. If the additional annual income were less than $400, the expense would not be practical.

This principle is the basis for the adjustment process of the comparative sales approach to value and the direct sales comparison method of land valuation, for determining whether physical deterioration and functional obsolescence are curable or incurable and for justifying remodeling and modernization. Many of the adjustments to value that are detailed herein for various property characteristics, are based on their contribution to the whole property, not their actual cost.

The principle of contribution works in conjunction with the principles of balance, increasing and decreasing returns and surplus productivity.

Principle of Increasing and Decreasing Returns:

This principle states that when successive increments of one agent of production are added to fixed amounts of other agents, future net benefits (income or amenities) will increase up to a certain point (point of decreasing returns), after which successive increments will decrease future net benefits. For example, assume a number of hypothetical buildings, each constructed on the same site.

A 10,000 square foot building that can earn 1.4 percent on its cost;
A 20,000 square foot building that can earn 5.5 percent on its cost;
A 30,000 square foot building that can earn 8.0 percent on its cost;
A 40,000 square foot building that can earn 5.8 percent on its cost;
A 50,000 square foot building that can earn 1.2 percent on its cost.

In this illustration, constructing larger buildings will produce increasing returns up to the point of a 30,000 square foot building. Beyond this point, additional investment to construct a larger building starts to contribute to diminishing returns. The principle of increasing and decreasing returns works in conjunction with the principles of balance, contribution and surplus productivity.

Principles of Progression and Regression:

Progression indicates that the value of a lesser object is enhanced by association with better objects of the same type. For example, a $72,000 house among $125,000 homes could probably bring a higher price in the market. The principle of regression states that when there are dissimilar properties within the same general classification and in the same area, the better property will be adversely affected. Thus, when a $150,000 house is located in an area where the typical home is in the $75,000 category, the market value of the former will tend to fall. The $150,000 house, in this example, is an over-improvement for the neighborhood. The principles of progression and regression work in conjunction with the principle of conformity. This principle is sometimes referred to as the “hydraulic principle” – all waters tend to seek the same level – whereas comparable properties within a given neighborhood tend to seek a common market level.

Principle of Substitution:

A property's market value tends to be set by the cost of acquiring an equally desirable and valuable substitute property, assuming that no costly delay is encountered in making the substitution. This principle serves as the basis of the three approaches to value-cost, comparative sales and income.

Principle of Supply and Demand:

This principle states that market value is determined by the interaction of the forces of supply and demand. A sudden increase in the population of an area would increase demand. If, at the same time, mortgage interest rates rose sharply, demand might lessen.

Principle of Surplus Productivity:

This principle states that the net income remaining after the cost of the agents of production-labor, coordination and capital has been paid is considered surplus productivity. The surplus productivity is the income earned by or attributable to the land. The agents in production must be satisfied in the following order: labor (wages), coordination (management), capital (improvements) and land. As a result, land value tends to be set by the cost of labor, coordination and capital. The principle of surplus productivity works in conjunction with the principles of balance, contribution and increasing and decreasing returns.

Important Concepts Regarding Property

1. Real property is the sum of tangible and intangible rights in land and improvements. Real estate is the physical land and everything permanently attached to it. Personal property consists of movable items not permanently affixed to, or part of, the real estate.
2. Land is the surface of the earth together with everything under its boundary and everything over it. Improvements are movable items affixed to and becoming part of the real estate.
3. The six basic rights associated with the ownership of property are the rights to use, sell, lease, or rent, enter or leave, give away and refuse to do any of these.
4. The four limitations imposed by governments on the private ownership of property are taxation, eminent domain, police power and escheat.
5. Fee-simple title is the greatest possible degree of ownership and is title free and clear of all encumbrances.

Concepts of Value

1. Value in use embodies the objective premise, which maintains that value is within the object itself. Value in exchange holds that value is within the mind of man. Value in exchange-market value- is the primary goal of the assessor.
2. Desire, utility, scarcity and economic purchasing power are essential in creating value.
3. Market value is the most probable price, expressed in terms of money, that a property would bring if exposed for sale in the open market in an arm's-length transaction between a willing seller and a willing buyer, both of whom are knowledgeable concerning all the uses to which it is adapted and for which it is capable of being used.
4. Estimating market value is dependent upon determining the highest and best use of the property. Highest and best use is defined as the legal, physically possible and economically feasible use which will generate the highest net return to the property over a period of time.
5. The determination of highest and best use requires the proper application of the interrelated appraisal principles.

Value is an elusive item that occurs in many different forms. The forces and influences which combine to create, sustain, or destroy value are numerous and varied. It is the appraiser's function to define the type of value sought (market value in North Carolina for ad valorem tax purposes), to compile and to analyze all related data and giving due consideration to all the factors which may influence the value, to process and translate that data into a final opinion or *estimate of value.* This, appraisers must do for each parcel to be appraised.

The processing of this data into a conclusion of value generally takes the form of three recognized approaches to value; Cost Approach, Sales Comparison Approach and Income Approach. The use of one or all three approaches in the valuation of a property is determined by the quantity, quality and accuracy of the data available to the appraiser for that particular property type. Underlying each of the approaches is the Principle of Substitution; that the justifiable price of a property is no more than the cost of acquiring and/or reproducing an equally desirable substitute property.

The COST APPROACH involves making an estimate of the depreciated cost of reproducing or replacing the building and site improvements. *Reproduction Cost* refers to the cost at a given point in time of reproducing an exact replica of the improvements, whereas *Replacement Cost* refers to the cost of producing improvements of equal utility, but using modern materials and construction techniques. Depreciation is deducted from this cost new for loss in value caused by physical deterioration and functional or economic obsolescence. To this depreciated cost is then added the estimated value of the land, resulting in an indication of value derived by the Cost Approach.

The significance of the Cost Approach lies in its extent of application . . . it is the one approach that can be used on all types of construction. It is a starting point for appraisers and therefore it is a very effective "yardstick" in any equalization program for ad valorem taxes. Its widest application is in the appraisal of properties where the lack of adequate market and income data preclude the reasonable application of the other traditional approaches.[1]

The SALES COMPARISON APPROACH involves compiling sales and offerings of properties, which are comparable to the property being appraised. These sales and offerings are then adjusted for any dissimilarities and a value range obtained by a comparison of said properties. The approach is reliable to the extent that the properties are comparable and the appraiser's judgment of proper adjustments is sound. The procedure for using this approach is essentially the same for all types of property with the only difference being the elements of comparison.

The significance of this approach lies in its ability to produce estimates of value, which directly reflect the attitude of the market. Its application is contingent upon the availability of comparable sales and therefore finds its widest range in the appraisal of vacant land and residential properties. Applicable North Carolina case law includes:

> **Neither this section nor G.S. 105-317(a) requires the commission to value property according to its sales price in a recent arm's length transaction when competent evidence of a different value is presented.**

[1] Please refer to the chart at the top of Page 6 comparing the relative strengths of the three approaches to value to Residential, Commercial and Industrial/Special Purpose property.

In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).
Where sale was not between a willing buyer and a willing seller, as contemplated by this section, sales price was not indicative of property's true value.
In re *Phoenix Ltd. Partnership,* 134 N.C. App. 474, 517 S.E.2d 903 (1999)

Essentially, North Carolina law prohibits the presumption that the sale price of any particular property must be the basis for its appraised value for ad valorem tax purposes. Instead, reliance is placed on the greater weight of evidence determined from a larger sampling of comparable properties and as a result, the appraised value may be less than or greater than the sale price of any particular property.

The INCOME APPROACH measures the present worth of the future benefits of a property by the capitalization of the net income stream over the remaining economic life of the property. The approach involves making an estimate of the "Effective Gross Income" (EGI), of a property, derived by deducing the appropriate "Vacant and Collection Loss" from its estimated "Gross Potential Income" (GPI), based on its economic rent, as evidenced by the yield of comparable properties. From this figure are deducted applicable operating expenses, the cost of taxes and insurance and reserve allowances for replacements resulting in an estimate of "Net Income", which may then be capitalized into an indication of value.

The income approach obviously has its basic application in the appraisals of properties universally bought and sold on their ability to generate and maintain a stream of income for their owners. The effectiveness of the approach lies in the appraiser's ability to relate to the changing economic environment and to analyze income yields in terms of their relative quality and durability. Applicable North Carolina case law includes:

Section 105-317(a), in fixing the guide which assessors must use in valuing property for taxes, includes as a factor the past income therefrom and its probable future income. But the income referred to is not necessarily actual income. The language is sufficient to include the income which could be obtained by the proper and efficient use of the property. To hold otherwise would be to penalize the competent and diligent and to reward the incompetent or indolent.
In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).

Neither this section nor G.S. 105-317(a) requires the commission to value property according to its sales price in a recent arm's length transaction when competent evidence of a different value is presented.
In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).

If it appears that the income actually received is less than the fair earning capacity of the property, the earning capacity should be substituted as a factor rather than the actual earnings. The fact finding board can properly consider both.
In re *Property of Pine Raleigh Corp.,* 258 N.C. 398, 128 S.E.2d 855 (1963);
In re *Valuation of Property Located at 411-417 W. Fourth St.,* 282 N.C. 71, 191 S.E.2d 692 (1972).

If the highest and best use *of* a property is its current use, a valid indication of value may be derived by estimating the value of the land and adding the land value to the depreciated value of the structures on the land; the resulting equation being...

Estimated Land Value
\+ Estimated Replacement Cost New of Structures
\- Estimated Depreciation
= Indication of Property Value

Since estimating the land value is covered in a separate section, this section will address itself to the two remaining elements, Replacement Cost and Depreciation.

REPLACEMENT COST

Replacement Cost is the current cost of producing an improvement of equal utility to the subject property; it may or may not be the cost of reproducing a replica property. The distinction being drawn is one between Replacement *Costs,* which refers to a substitute property of equal utility, as opposed to *Reproduction Cost,* which refers to an exact replica of the property. In a particular situation the two concepts may be interchangeable, but they are not necessarily so. They both, however, have application in the Cost Approach to value, the difference being reconciled in the consideration of depreciation allowances.

In actual practice, outside of a few historic type communities in this country, developers and builders, for obvious economic reasons, replace buildings, not reproduce them. It logically follows that if an appraiser's job is to measure the actions of knowledgeable persons in the market place, the use of proper replacement costs should provide an accurate point of beginning in the valuation of most improvements.

The replacement cost includes the total cost of construction incurred by the builder whether preliminary to, during the course of, or after completion of the construction of a particular building. Among these are material, labor, all subcontracts, builders' overhead and profit, architectural and engineering fees, consultation fees, survey and permit fees, legal fees, taxes, insurance and the cost of interim financing.

ESTIMATING REPLACEMENT COST

There are various methods that may be employed to estimate replacement cost new. The methods widely used in the appraisal field are the quantity survey method, the unit-in-place or component part-in-place method and the model method.

The Quantity-Survey Method involves a detailed itemized estimate of the quantities of various materials used, labor and equipment requirements, architect and engineering fees, contractor's overhead and profit and other related costs. This method is primarily employed by contractors and cost estimators for bidding and budgetary purposes and is much too laborious and costly to be effective in every day appraisal work, especially in the mass appraisal field. The method, however, does have its place in that it is used to develop certain unit-in-place costs, which can be more readily applied to estimating for appraisal purposes.

The *Unit-in-Place Method* is employed by establishing in-place cost estimates (including material, labor, overhead and profit) for various structural components. The prices established for the specified components

are related to their most common units of measurement such as cost per yard of excavation, cost per lineal foot of footings and cost per square foot of floor covering.

The unit prices can then be multiplied by the respective quantities of each component as they are found in the composition of the subject budding to derive the whole dollar component cost, the sum of which is equal to the estimated cost of the entire building, providing of course, that due consideration is given to all other indirect costs which may be applicable. This components part-in-place method of using basic units can also be extended to establish prices for larger components in-place such as complete structural floors (including the finish flooring, sub-floor, joists and framing), which are likely to occur repeatedly in a number of buildings.

The *Model Method* is still a further extension, in that unit-in-place costs are used to develop base unit square foot or cubic foot costs for total specified representative structures in place, which may then serve as "models" to derive the base unit cost of comparable structures to be appraised. The base unit cost of the model most representative of the subject building type is applied to the subject building and appropriate tables of additions and deductions are used to adjust the base cost of the subject building to account for any significant variations between it and the model.

Developed and applied properly, these pricing techniques will assist the appraiser in arriving at valid and accurate estimates of replacement cost new as of a given time, which for ad valorem tax purposes is always January 1 of the reappraisal year. That cost generally represents the upper limit of value of a structure. The difference between its replacement cost new and its actual value is depreciation. The final step in completing the Cost Approach then is to estimate the amount of depreciation and deduct said amount from the replacement cost new.

DEPRECIATION

Simply stated, “accrued depreciation” is defined as "a loss in value from all causes”. As applied to real estate, it represents the loss in value between market value and the sum of the replacement cost new of the improvements plus the land value as of a given time. The causes for the loss in value may be divided into three broad classifications; Physical Deterioration, Functional Obsolescence and Economic Obsolescence.

Physical Deterioration pertains to the wearing out of the various building components, referring to both short-life and long-life terms, through the action of the elements, age and use. The condition may be considered either "curable" or "incurable", depending upon whether it may or may not be practical and economically feasible to cure the deficiency by repair and replacement.

Functional Obsolescence is a condition caused by either inadequacies or super-adequacies in design, style, composition, or arrangement inherent to the structure itself, which tends to lessen its usefulness and desirability in the marketplace. Like physical deterioration, the condition may be considered either curable or incurable. Some of the more common examples of functional obsolescence are inadequate wall and ceiling heights, excessive structural construction, surplus capacity and ineffective layouts.

Economic Obsolescence is a condition caused by factors extraneous to the property itself, such as encroachment of inharmonious land uses on adjoining or nearby parcels. The condition is generally incurable in that the causes lie outside the property owner's realm of control.

ESTIMATING DEPRECIATION

An estimate of depreciation represents an opinion of the appraiser as to the degree that the present and future appeal of a property has been diminished by deterioration and obsolescence. Of the three estimates necessary to the cost approach, it is the one most difficult to make. The accuracy of the estimate will be a product of the appraiser's experience in recognizing the symptoms of deterioration and obsolescence and the ability to exercise sound judgment in equating all observations to the proper monetary allowance to be deducted from the replacement cost new. There are several acceptable methods, which may be employed:

Physical deterioration and/or functional obsolescence can be measured by observing and comparing the physical condition and/or functional deficiencies of the subject property as of a given time with either an actual or hypothetical, comparable, new and properly planned structure.

Curable physical deterioration and functional obsolescence can be measured by estimating the cost of restoring each item of depreciation to a physical condition as good as new, or estimating the cost of eliminating the functional deficiency.

Functional and economic obsolescence can be measured by capitalizing the estimated loss in rental due to the structural deficiency or lack of market demand.

Total accrued depreciation may be estimated by first estimating the total useful life of a structure and then translating its present condition, desirability and usefulness into an effective age (rather than an actual age), which would represent that portion of its total life (percentage), which has been used up.

Total accrued depreciation may also be estimated by deriving the amount of depreciation recognized by purchasers as evidenced in the prices paid for property in the market place; the loss of value being the difference between the cost of replacing the structure new and its actual selling price (total property selling price less the estimated value of the land).

INTRODUCTION

The justified price paid for income producing property is no more than the amount of investment required to produce a comparably desirable return; and since the market can be analyzed in order to determine the net return actually anticipated by investors, it follows that the value of income producing property can be derived from the income which it is capable of producing. What is involved is an estimate of income through the collection and analysis of available economic data, the development of a proper capitalization rate and the processing of the net income into an indication of value by employing one or more of the acceptable capitalization methods and techniques.

The caveat to a sole reliance on the above premise in the income approach occurs when actual and/or economic rents will not support the sales price. In those instances, other forces must be assumed to be present; the anticipation of future benefits being foremost.

THE PRINCIPLES OF CAPITALIZATION

Capitalization is the process for converting the net income produced by property into an indication of value. Through the years of appraisal history, a number of procedures have been recognized and employed by appraisal authorities in determining the value of real estate by the income approach. For ad valorem tax purposes, when and where reliable data is available, direct capitalization will be used.

EXPLORING THE RENTAL MARKET

The starting point for the appraiser is an investigation of current economic rent in a specific area in order to establish a sound basis for estimating the gross income, which should be returned from competitive properties. The appraiser must make a distinction between *economic rent* and the rent which the property would normally be expected to produce on the open market, as opposed to *actual rent* or that which the property is actually producing at the time of the appraisal, usually due to lease terms established sometime in the past.

The first step then is to obtain specific income and expense data on properties, which best typify normal market activity. The data is necessary to develop local guidelines for establishing the economic rent and related expenses for various types of properties.

The next step is to similarly collect income and expense data on individual properties and to evaluate the data against the established guidelines. The collection of income and expense data (I & E) is an essential phase in the valuation of commercial properties. The appraiser is primarily concerned with the potential earning power of the property. The objective is to estimate its expected net income. Income and Expense Statements of past years are valuable only to the extent to which they serve this end. The statements must not only be complete and accurate, but must also stand the test of market validity. Consideration of the following factors should assist the appraiser in evaluating the "Income & Expense" data in order to arrive at an accurate and realistic estimate of net income; sometimes expressed as "Net Income Before Recapture".

Randolph County sends surveys soliciting income and expense data from property owners of commercial (income-producing) property. Historically, these surveys are not well-received by the public. Historically, a

more significant amount of additional information becomes available upon the mailing of the reappraisal notices of value. At that point, as part of the local appeals process, income and expense data is generally provided by the property owner in support of their claim seeking a decrease in appraised value. The quality/worth of that data is dependent on the documentation provided. Lease information (lease rates, terms and other stated considerations) is best. Undocumented statements are least useful.

NOTE: Randolph County, as part of our development of the 2011 Schedules of Values, Standards and Rules, recently mailed surveys to Mobile Home Park Owners and owners of commercial property, with the following results, to date:

- 3160 surveys mailed
- 1259 surveys returned (39.84%)

Randolph County recently subscribed to Karnes © in order to have access to their database of commercial property listings and sales. This statewide database allows for us to narrow our search to listings and sales located within Randolph County only. Given the number of commercial enterprises in our county, this database is an attempt to obtain as much information as possible.

QUESTIONS RELATING TO INCOME DATA

A. Was the reported income produced entirely by the subject property? Very often the rental will include an amount attributable to one or more additional parcels of real estate. In this case, it would be necessary to obtain the proper allocations of rent.

B. Was the income attributable to the subject property as it physically existed at the time of the appraisal, or did the appraisal include the value of leasehold improvements and remodeling for which the tenant paid in addition to rent? If so, it may be necessary to adjust the income to reflect economic rent.

C. Does the reported income represent a full year's return? It is often advisable to obtain both monthly and annual amounts as a crosscheck.

D. Does the income reflect current economic rent? Is either part or all of the income predicated on old leases? If so, what are the provisions for renewal options and rates?

E. Does the reported income reflect 100% occupancy? What percentage of occupancy does it reflect? Is this percentage typical of this type of property, or is it due to special non-recurring causes?

F. Does the income include rental for all marketable space? Does it include an allowance for space, if any, which is either owner or manager occupied? Is the allowance realistic?

G. Is the income attributable directly to the real estate and conventional amenities? Is some of the income derived from furnishings and appliances? If so, it will be necessary to adjust the income or make provisions for reserves to eventually replace them, whichever local custom dictates.

H. In many properties an actual rental does not exist because the real estate is owner occupied. In this event it is necessary to obtain other information to provide a basis to estimate economic rent. The information required pertains to the business operation using the property. Proper analysis of the annual operating statements of the business, including gross sales or receipts, can provide an accurate estimate of economic rent. Caution must be exercised to relate the income and expense data as it is attributable to the property and not the business enterprise. Information requirements for a few of the more common property uses are as follows:

Retail Stores	The annual net gross sales (Gross sales less returned merchandise) and leased space if any.
Hotels and Motels	The annual operating statement of the business. If retail or office space is leased in these properties, obtain the actual rent paid.
Theaters	The annual gross receipts (including admissions and concessions) and seating capacity.
Automobile Parking	The annual gross receipts.

ANALYSIS OF EXPENSE DATA

The appraiser must consider only those expenses, which are applicable to the cost of ownership; that is, those expenses, which are normally owner incurred. Any portion of the expenses incurred directly or indirectly by the tenant should not be considered. Each expense item must stand the test of both legitimacy and accuracy. How do they compare with the established guidelines and norms? Are they consistent with the expenses incurred by comparable properties?

Management refers to the cost of administration. These charges should realistically reflect what a real estate management company would actually charge to manage the property. If no management fee is shown on the statement, the appraiser must make a proper allowance. On the other hand, if excessive management charges are reported, as is often the case, the appraiser must disregard the reported charges and use an amount, which he deems appropriate and consistent with comparable type properties. The cost of management bears a relationship with the risk of ownership and will generally range between 4 to l0% of the gross income.

General expenses may include such items as the cost of services and supplies not charged to a particular category. Unemployment and F.I.C.A. taxes, Workmen's Compensation and other employee insurance plans are usually legitimate deductions when employees are a part of the building operation.

Reimbursed expenses refer to the cost associated with the maintenance of public or common areas of the commercial property. This expense is passed on to the tenants and should, therefore, only be considered when the amount of reimbursement is included as income.

Miscellaneous expenses are the "catch-all" category for incidentals. This item should reflect a very nominal percentage of the income. If expenses reported seem to be excessive, the appraiser must examine the figures carefully in order to determine if they are legitimate and if so, to allocate them to their proper category.

Cleaning expenses are legitimate charges. 'Many are for such items as general housekeeping and maid service and include the total cost of labor and related supplies. All or a portion of the cleaning services may be provided by outside firms working on a "contract" basis. Cleaning expenses vary considerably and are particularly significant in operations such as offices and hotels. "Rule of thumb" norms for various operations are made available through national management associations. The appraiser should have little difficulty in establishing local guidelines.

Utilities are generally legitimate expenses and if reported accurately, need very little reconstruction by the appraiser, other than to determine if the charges are consistent with comparable properties. Local utility companies can provide the appraiser with definite guidelines.

Heat and Air Conditioning costs are often reported separately and in addition to utilities. The expenses would include the cost of fuel other than the above-mentioned utilities and may include, especially in large installations, the cost of related supplies, inspection fees and maintenance charges. These are generally legitimate costs and the same precautions prescribed for "utilities" are in order.

Elevator expenses, including the cost of repairs and services, are legitimate deductions and are generally handled through service contracts. These fees can generally be regarded as fairly stable annual recurring expenses.

Decorating and minor alterations are necessary to maintain the income stream of many commercial properties. In this respect they are legitimate expenses. However, careful scrutiny of these figures is required. Owners tend to include the cost of major alterations and remodeling which us, in fact, capital expenditures and as such are not legitimate operating expenses.

Repairs and Maintenance expenses reported for any given year may not necessarily be a true indication of the average or typical annual expense for these items. For example, a statement could reflect a substantial expenditure for a specific year (possibly because the roof was replaced and/or several items of deferred maintenance were corrected); yet the statement for the following year may indicate that repairs and maintenance charges were practically none. It is necessary for the appraiser to either obtain complete economic history on each property in order to make a proper judgment as to the average annual expense for these items, or include a proper allowance based on norms for the type and age of the improvements to cover annual expenses. Since it is neither possible nor practical to obtain enough economic history on every property, the latter method is generally used and the amounts reported for repairs and maintenance are then estimated by the appraiser.

Insurance. Caution must be used in accepting insurance expense figures. Cost shown may be for more than one year, or may be for blanket policies including more than one building. It is generally more effective for the appraiser to establish his own guidelines for insurance. He must also be careful to include only items applicable to the real estate. Fire extended coverage and owner's liability are the main insurance expense items. Separate coverage's on special component parts of the buildings, such as elevators and plate glass, are also legitimate expenses.

Real Estate Taxes. In making appraisals for tax purposes, the appraiser must exclude the actual amount reported for real estate taxes. Since future taxes will be based on his appraised value, the appraiser must express the taxes as a factor of the estimated value. This can be done by including an additional percentage in the capitalization rate to account for real estate taxes.

Depreciation. The figure shown for depreciation on an operating statement is a "bookkeeping figure" which the owner uses for Internal Revenue purposes and should not be considered in the income approach. This reflects a tax advantage, which is one of the benefits of ownership.

Interest. Although interest is considered a legitimate expense, it is always included in the Capitalization Rate. Most property is appraised as if it were "free and clear"; however, the appraiser does consider the interest of a current mortgage in the Capitalization Rate build-up.

Land Rent. When appraising for real estate tax purposes, only the sum of the leasehold and the leased fee is usually considered. Land rent is not deducted as an expense. Considered separately, rent from a ground lease would be an expense to the leasehold interest and an income to the leased fee. However, if land were rented from another property to supply additional parking for example, that land rent would be an allowable expense.

It is obvious that there are some expense items encountered on operating statements that the appraiser should not consider as allowable. This is because he is interested in legitimate cash expenses only. Income statements are usually designed for income tax purposes where credit can be taken for borrowing costs and theoretical depreciation losses.

It is virtually impossible and certainly not always practical to obtain a complete economic history on every commercial property being appraised. On many properties, however, detailed economic information can be obtained through the use of Income and Expense forms. One must realistically recognize the fact that the data obtainable on some properties is definitely limited.

In most cases, the gross income and a list of the services and amenities furnished can be obtained during the data gathering operation. However, in order to insure a sound appraisal, it may be necessary to estimate the fixed *and operating expenses.* This is best accomplished by setting guidelines for expenses, based on a percent of Effective Gross Income or a cost per square foot of leasable area. These percentages or costs will vary depending on the services supplied and the type of property.

CAPITALIZATION METHODS

The most prominent methods of capitalization are Direct, Straight Line, Sinking Fund and Annuity. Each of these is a valid method for capitalizing income into an indication of value. The basis for their validity lies in the action of the market, which indicates that the value of income producing property can be derived by equating the net income with the net return anticipated by informed investors. This can be expressed in terms of a simple equation:

Value = Net Income ÷ Capitalization Rate

The *Straight Line and Sinking Fund* methods are both actual forms of Straight Capitalization, with one using Straight Line recapture and the other using Sinking Fund recapture. Both methods follow the same basic principles as Direct Capitalization, differing only in that they provide for separate Capitalization rates for land and buildings; the building rate differing from the land rate in that it includes an allowance for recapture.

Straight Line Capitalization allows for "recapture" based on remaining economic life of the building - implying that at the end of that period of time, there would be a zero improvement value. There are three fallacies in this thinking. First, the potential buyer (investor) has no intention of holding the property that long. The average investment period might average ten years. Second, the investor anticipates that at the end of that period he will either get all his money back or will make a profit. And third, is the depreciation allowance possible in connection with federal income taxes.

Depreciation allowances begin to "run out" between seven and ten years, so the advantages of owning the property are reduced considerably. A prudent owner may choose to sell the property at this point and re-invest in another property so that he may begin the depreciation cycle again and continue to take full advantage of the favorable tax laws.

For these reasons, the Straight Line Capitalization Method does not usually follow what the market indicates.

Straight Line recapture calls for the return of investment capital in equal increments or percentage allowances spread over the estimated remaining economic life of the building.

Sinking Fund recapture calls for the return of invested capital in one lump sum at the termination of the estimated remaining economic life of the building. This is accomplished by providing for the annual return

of a sufficient amount needed to invest and annually re-invest in "safe" interest-bearing accounts, such as government bonds or certificates of deposit, which will ultimately yield the entire capital investment during the course of the building's economic life.

Annuity Capitalization lends itself to the valuation of long-term leases. In this method, the appraiser determines, by the use of annuity tables, the present value of the right to receive a certain specified income over stipulated duration of the lease. In addition to the value of the income stream, the appraiser must also consider the value that the property will have once it reverts back to the owner at the termination of the lease. This reversion is valued by discounting its anticipated value against its present day worth. The total property value then is the sum of the capitalized income stream plus the present worth of the reversion value.

CURRENT TECHNIQUES

There are two methods, however, that do lend themselves to an accurate measure of market value based on potential income. These are Direct Capitalization, utilizing the Direct Comparison Method of Rate Selection and Mortgage Equity Capitalization.

DIRECT CAPITALIZATION

In *Direct Capitalization,* the appraiser determines a single "overall" capitalization rate. This is done by analyzing actual market sales of similar types of properties. He develops the net income of each property and divides the net income by the sales price to arrive at an overall rate to provide an indication of value. Many of the appellate court rulings regarding the valuation of income-producing properties for ad valorem tax purposes have relied on direct capitalization.

MORTGAGE EQUITY CAPITALIZATION

Mortgage Equity Capitalization is a form of direct capitalization with the major difference in the two approaches being the development of the overall capitalization rate.

In this method, equity yields and mortgage terms are considered influencing factors in construction of the interest rate. In addition, a plus or minus adjustment is required to compensate for anticipated depreciation or appreciation. Ibis adjustment can be related to the recapture provisions used in other capitalization methods and techniques.

RESIDUAL TECHNIQUES

It can readily be seen that any one of the factors of the Capitalization Equation (Value = Net Income ÷ Capitalization Rate) can be determined if the other two factors are known. Furthermore, since the value of property is the sum of the land value plus the budding value, it holds that either of these can be determined if the other is known. The uses of these mathematical formulas in capitalizing income into an indication of value are referred to as the *residual techniques,* or more specifically, the property residual, the budding residual and the land residual techniques.

The Property Residual Technique is an application of Direct Capitalization. In this technique, the total net income is divided by an overall capitalization rate (which provides for the return on the total investment) to arrive at an indicated value for the property. This technique has received more popular support in recent

years because it closely reflects the market. With this technique, the capitalization rate may be developed by either "direct comparison" in the market or by the Mortgage Equity Method.

The *Building Residual Technique* requires the value of the land to be a known factor. The amount of net income required to earn an appropriate rate of return on the land investment is deducted from the total net income. The remainder of the net income (residual) is divided by the building capitalization rate (which is composed of a percentage for the return on the investment, plus a percentage for the recapture of the investment) to arrive at an indicated value for the building.

The Land *Residual Technique* requires the value of the building to be a known factor. The amount of net income required to provide both a proper return on and the recapture of the investment is deducted from the total net income. The remainder of the net income (residual) is then divided by the land capitalization rate (which is composed of a percentage for the return on the investment) to arrive at an indicated value for the land.

GENERAL DISCUSSION:

The SALES COMPARISON APPROACH to value is a method for estimating the market value of a property on the basis of information from sold properties. It is the most commonly used approach in the minds of many participating in the market, as it mimics their general inclinations whether buying and selling a car, a piece of furniture, or an item of clothing. In the process of making comparisons, the buyer generally is aware of a comparable car, piece of furniture, or a similar piece of clothing available at a different business for a different or not-so-different price. Sellers are also mindful of what is being offered in the market that is in direct competition with what they are attempting to sell.

The SALES COMPARISON is so named because the act of comparison is the basic technique being employed. Actually, comparisons are made in each of the three valuation approaches. It is more accurate to say the entire appraisal process is a series of comparisons. This is especially true in the mass appraisal process for property tax administration, where in the final analysis it must be demonstrated that all taxable properties have been uniformly, accurately and equitably valued.

INTRODUCTION TO THE SALES COMPARISON APPROACH:

Constitutions, statutes and case law define a market value standard for assessment purposes. When sales data is available, the sales comparison approach is generally consider the most reliable. However, in North Carolina assessment litigation, under the **"rules of evidence"** a bona fide sale of the subject property may not be considered the best evidence of market value **"when competent evidence of a different value is presented".** In re *Greensboro Office Partnership,* 72 N.C.App. 635, 325 S.E.2d 24, cert. denied, 313 N.C. 602, 330 S.E.2d 610 (1985).

The purpose, in both the North Carolina statutory language and the interpretation of relating actual sales to market value by the North Carolina Courts, is to emphasize uniformity and the equitable distribution of the tax burden relative to the premise that similar properties should share similarly in that burden. For that reason, no property is likely to be appraised and assessed for its most recent sales price. Instead, each sale will be included in the sales file from which sales will be analyzed by property type, location, etc. and from which assessments can be fine-tuned for greater uniformity.

The SALES COMPARISON APPROACH models the behavior of the market by comparing the properties being appraised (subject property) with similar properties that have recently sold (comparable properties), or for which offers to purchase have been made. Comparable properties are selected for their similarity to the subject property. Their sales prices are then adjusted for their differences from the subject. Finally, a market value for the subject is determined from the adjusted sales prices of the comparable properties.

The economic principles of supply and demand provide a framework for understanding how the market works. The interaction of supply and demand factors impacts property prices. Supply depends on current inventories and, in the longer run, on the availability of human skills, material and capital. Demand is influenced by population levels, mortgage rates, income levels, local services, personal housing preferences and the cost of substitutes. One demand factor is the cost of substitutes, which ensures that prudent consumers will pay no more for a piece of property than for comparable properties with equal utility,

assuming no unreasonable delays. The Principle of Substitution implies that the market will recognize differences in utility between the subject and its best alternatives by a difference in price.

The SALES COMPARISON APPROACH requires the following steps:

- Definition of the appraisal problem.
- Data collection.
- Analysis of market data to develop units of comparison and select attributes for adjustment (model specification).
- Development of reasonable adjustments (model calibration).
- Application of the model to adjust the sales prices of comparables to the subject property.
- Analysis of the adjusted sales prices to indicate the value of the subject property.

The entire valuation process depends on accurately defining the appraisal problem, because the nature of the problem determines the sources of information, methods of comparable selection and adjustment techniques.

Defining the appraisal problem includes:

- Identifying the property (Parcel Number or PIN for ad valorem tax purposes)
- The rights to be appraised (generally Fee Simple for ad valorem tax purposes)
- The date of appraisal (January 1 of the reappraisal year)
- The use (Highest and Best Use)
- The type of value to estimate (Market Value, for NC ad valorem tax purposes)

The rights to be valued can be a partial interest or fee simple absolute interest. Fee simple absolute interest is usually assumed for both the subject and comparable sales. The date of the appraisal, the "as of' date, is usually defined by statute. In narrative appraisals, the date of appraisal is identified on the valuation report. All comparables are adjusted to the "as of' date.
The collection of accurate data is also essential to the SALES COMPARISON APPROACH. The appraiser analyzes market data to identify important supply and demand factors and determine data needs.

Although the SALES COMPARISON APPROACH has such a wide application as a method of estimating value there are factors, which do or can limit its usefulness. Examples of these limitations include the following:

1. No provision is made for arriving at an estimate of value in those cases where no comparable properties have been sold in recent months or years.
2. No two properties are ever exactly alike. At the very least, they vary in location, even if they are alike in other respects.
3. Depreciation affects value. Because houses are dissimilar in quality of construction and materials, they depreciate at varying rates. Even structures built exactly alike depreciate at different rates because of inevitable differences in maintenance, occupancy and use.
4. Amenities, being intangible qualities, are difficult to compare. The value of otherwise similar houses may not be the same because of the direction in which one house faces or the view it affords its occupants.

5. Learning the exact conditions attending each sale is essential so that the validity of the sale as comparative data may be substantiated. If the owner had to sell and could not wait for an "informed buyer" and/or was unaware of the current market, the price he accepted may not be indicative of the property's value in the market. Many motivations lead to the transfer of real property at figures unrelated to its market value. Transfers of property between relatives frequently do not give a true indication of market value and are rarely relied upon as being "arm's length".
6. Properties can vary considerably in their appointments and equipment; heating system, plumbing and electrical equipment and fixtures, insulation, kitchen facilities and built-in features. All of these factors must be considered in the comparative process, adjusting for the degree of variation. The more factors to be compared and adjusted, the greater the number of decisions and judgments the appraiser must make. Obviously, the more decisions and judgments that must be made, the greater the incident of error.

In spite of its limitations, the SALES COMPARISON APPROACH has broad application in all appraisal work. The value estimates found by the use of this approach are considered particularly significant because they are expressions of value as established by transactions in the market place.
Randolph County employs the SALES COMPARISON APPROACH to estimating Market Value for both the residential category and some commercial properties. Additionally, some valuation parameters of the other valuation approaches (cost & income) are influenced by the application of and observations gleaned from the SALES COMPARISON APPROACH.

EXPLANATION OF THE SALES COMPARISON APPROACH PROCESS:

There are five specific applications of the SALES COMPARISON APPROACH in the appraisal process. Three relate to residential properties and two relate to commercial properties.

Residential
- Multiple Regression Analysis via Group Modeling (MRA)
- Comparable Sales Estimate of Value (Comp Sales)
- Time Adjustment of Previous Selling Price (TASP)

Commercial
- Capitalization of Net Income *(Income)*
- Comparable Value Approach

The quality of these five applications, moreover, the quality of the appraisal/assessment base for real property, depends upon the quality of the sales file.

Conceptually, the database is made up of two separate, interacting, storage files:

I. A large file (Property Characteristics File) that houses the property characteristics on all properties and
2. A smaller sub-file (Sales Information File) created from the Property Characteristics File that houses a "snapshot" of the information stored in the characteristics file, plus, additional information such as sales date, sale amount, etc.

The purpose of the "Sales File", in addition to facilitating faster processing time, is to permit adjustments to a "Sales File" parcel so that the condition of the property as of the time of sale can be reflected without alteration to the current property characteristics stored in the "property Characteristics File".

In determining market value by the SALES COMPARISON APPROACH a sufficient number of complete and valid sales are imperative. Therefore, proper procedures should be developed and adhered to in the

creation and maintenance of a "Sales File". Otherwise, the results produced from an "unverified" Sales File would be unreliable and most likely, misleading.

MAJOR STEPS IN THE SALES REVIEW PROCESS

There are four major efforts required to insure that the information contained in the Sales File is as accurate as possible.

Step 1. Identification – A review of all available ownership transfer information (deeds, records, MLS, etc.) should take place to "identify", for further analysis, those properties that may be included in the Sales File.

Step 2. Screening - An office review (screening) of the sold properties being considered for inclusion in the Sales File should be conducted to code transactions that are obviously invalid, such as transactions between family or related parties.

Step 3. Verification - After office screening, the property characteristics and sales information on sold property should be verified (and/or corrected) so that they reflect the "status" of the property at the time of sale. Following are different methods of sales verification.

1. Telephone confirmation
2. Mailing and return of sales verification letters
3. On-site, field visit
4. Multiple Listing Service

NOTE: Randolph County mails a *Sales Confirmation Questionnaire* to all buyers. Upon receipt of a recorded deed that meets all the apparent requirements of an *arm's-length* sale, the questionnaire is mailed; a good percentage of which are filled out, completed and mailed back to us (we include a return envelope, we do not include the return postage). See below:

Year	# Mailed	# Returned	Percentage Returned
2012 Jan – Dec	909	501	55%
2013 Jan – Dec	1,009	562	56%
2014 Jan – Dec	1,102	563	51%
2015 Jan – Dec	1,277	619	48%
2016 Jan – Dec	1,534	759	49%
2017 Jan – Mar	1,668	806	48%
2018 Jan – Jun	884	341	39%

Randolph County subscribes to the Asheboro/Randolph Realtors and Triad Multiple Listing Service (hereinafter, MLS) and attempts to confirm all sales through their MLS Sold Reports. If confirmed through MLS, copies of the sold reports for parcels are stored in notebooks. Randolph County considers sales confirmation through MLS as the 2nd most reliable source, following the returned *Sales Confirmation Questionnaire* from the buyer.

Occasionally, staff is made aware of confirmed sales included as a part of an appraisal reports authored by an independent fee appraiser. Such information is considered the 3rd most reliable source. When verified by a member of our staff, the confirmation can be elevated to the most reliable source, equal to a returned *Sales Confirmation Questionnaire* from a buyer.
Randolph County considers Deed Stamps attached to a recorded General Warranty Deed to be the 4th most reliable source, only slightly more reliable than an un-confirmed source.

Once the parcel conveyance has been confirmed or “Qualified as a reliable indication of an “arm’s-length transaction, the Tax Market/ Sales Specialist reviews the tax data against the MLS Sold document to verify record. If anything from our various sources appears to be in conflict with the tax data, an onsite visit is conducted.

Step 4.Validation - Because the Sales File is not limited to just "good" sales it is necessary to assign a "validity code" to each property. This code allows for the sorting and grouping of various properties for analysis and reporting purposes. Invalid sales are coded based on NCDOR edit sheet for disqualifying sales.

TASP - TIME ADJUSTED SALE PRICE

The TIME ADJUSTED SALE PRICE (TASP) is basically an extrapolation to the present day (January 1 of the reappraisal year), of a previously known selling price as of a specific date for a particular property, based upon the market trend in the area of the property in question. It should be noted in particular that two parameters must be known about the particular property before this extrapolation is made, namely the exact date and amount of transfer consideration. Moreover, it is also necessary to have an established set of accurate sales data on similar properties in the area, in order to establish the trend of sales prices over a period of time. The important feature of this calculation is that it does not establish a total estimated selling price from an "a priori" calculation; rather it merely calculates the increment of value that has been added to an already established market value. That is to say, the Time Adjusted Selling Price does not attempt to establish the magnitude of the market value, but rather it computes a value increment based on the change in market value in an area. Thus, the market value for a particular property is established by the market itself at some point in the past, while the change in that known market value to today's date is indicated by the trend in market values in that area.

The calculation of the TIME ADJUSTED SELLING PRICE (TASP) depends upon the knowledge of the selling price at some known time in the past and the ability to compute the increment of value added (or subtracted) since that time. The standard equation for TASP is as follows:

TASP = PREVIOUS SELLING PRICE + INCREMENTAL Value

Where INCREMENTAL VALUE equals NUMBER OF MONTHS INTERVAL X TASP adjustment factor X the previous sale amount.

RESIDENTIAL PROPERTIES CATEGORY

For residential properties, the three market approaches to estimating Market Value are similar in that they each depend upon measured relationships between property data and sales data. They are different, however, in their specific focus and accordingly, one market approach may be more appropriate than another, depending upon the information and situation. For example, TASP is an excellent market approach technique when the subject property has recently sold. Also, MRA via the analysis of sales of properties similar to the individual property being appraised (IMRA) may produce better results than MRA against a mixed group of sold properties (MRA).

CALIBRATING THE SALES COMPARISON MODEL

- **DETERMINING ADJUSTMENT AMOUNTS**

  During model specification, the appraiser determines the significant attributes and the relationships among the attributes. The adjustment amounts (coefficients) are determined during model calibration. Paired sales analysis, multiple regression analysis, adaptive estimation procedure and the cost method are often used to calibrate sales comparison models.

- **PAIRED SALES**

  Paired sales analysis is the foundation of single-property appraisal by the sales comparison approach. Paired sales analysis requires that sales properties be identical in all attributes except the attribute being measured or that adjustments have already been made for the other attributes. The assessor compares these sales and isolates the value contribution for the desired attribute.

  Calibrating with paired sales analysis is usually impractical in mass appraisal because it is difficult to find sales that meet the above narrow conditions. Even more unreasonable is the expectation that sales are available to measure all the attributes needed in the sales comparison approach. In addition, it is difficult, if not impossible, to determine rates of change using this method, such as when the contribution for additional square feet decreases as the size of the property increases. However, paired sales analysis can be useful when many homogeneous sales are available; for example, in some residential neighborhoods (condominiums are one example), it can be used to determine both time and attribute adjustments.

  An analysis of re-sales using paired sales analysis is one method of determining time adjustments. It is necessary to use properties that have had no changes between the sale dates. The steps are:

  1. List the sales
  2. Calculate the percent change between the first sale price and the resale price
  3. Divide the percent change by the number of months
  4. Estimate a time adjustment from the results.

  As with any data, the level of confidence in the estimate is a function of the regency, amount, variance and reliability of the data. Proper functional fit to a well-specified model is also essential to good estimates.

  When an adequate volume of sales is available, the appraiser can use paired sales to estimate qualitative and quantitative adjustments. Again, the analysis requires that attributes other than the one being measured remain constant. This process differs from estimating the time adjustment because re-sales are not required (sales should occur at the same time or have already been adjusted for time). In paired sales analysis, the appraiser must determine benchmark properties for measurement purposes. The paired sales method can be used for any adjustment including size, style, garage, basement, or location. The greater the number of sales, the greater the level of confidence in the adjustments.

In preceding sections, the fundamental concepts, principles and valuation techniques underlying the appraisal process has been outlined. The task is to reappraise all real property within Randolph County via a systematic mass appraisal program, with the goals of producing appraisal results that yield valid, accurate and equitable property valuations at a reasonable cost, as dictated by budgetary limitations and within a time span compatible with administrative needs.

The key elements of the program are validity, accuracy, equity, economy and efficiency. To be effective, the program must...

- incorporate the application of proven and professionally acceptable techniques and procedures;
- provide for the compilation of complete and accurate data and the processing of that data into an indication of value approximating the prices actually being paid in the market place as of the effective assessment date;
- provide the necessary standardization measures and quality controls essential to promoting and maintaining uniformity throughout the jurisdiction;
- provide the appropriate production controls necessary to execute each phase of the operation in accordance with a carefully planned budget and work schedule; and
- provide techniques especially designed to streamline each phase of the operation, eliminating superfluous functions and reducing the complexities inherent in the appraisal process to more simplified but equally effective procedures.

In summary, the objective of an individual fee appraisal is to arrive at an opinion of value, the key elements being the validity of the approach and the accuracy of the estimate. The objective of a mass appraisal for tax purposes is essentially the same. However, in addition to being valid and accurate, the value of each property must be equitable to that of each other property and what's more, these valid, accurate and equitable valuations must be generated as economically and efficiently as possible.

OVERVIEW

The prime objective of mass appraisals for tax purposes is to equalize property values. Not only must the value of one residential property be equalized with another, but it must also be equalized with each agricultural, commercial and industrial property within the County.

The common denominator and the basis for equalization is market value, set forth by N.C.G.S. 105-283 as the Uniform Appraisal Standard, as follows:

"All property, real and personal, shall as far as practicable be appraised or valued at its true value in money. When used in this Subchapter, the words "true value" shall be interpreted as meaning market value, that is, the price estimated in terms of money at which the property would change hands between a willing and financially able buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of all the uses to which the property is adapted and for which it is capable of being used. For the purposes of this section, the acquisition of an interest in land by an entity having the power of eminent domain with respect to the interest acquired shall not be considered competent evidence of the true value in money of comparable land.

The job of the appraiser is to arrive at a reasonable estimate of that justified price. To accomplish this, the coordination of approaches to the valuation of the various classes of property must be made relative to one another in such a way as to reflect the motives of the prospective buyers and sellers of each type of property.

A prospective buyer of a residential property is primarily interested in its capacity to render service to the family as a place to live. Its location, size, quality, design, age, condition, desirability and usefulness are the primary factors to be considered in making a selection. By relying heavily upon powers of observation, knowing what could be afforded and simply comparing what is available, one property will eventually stand out to be more appealing than another. So it is likewise the job of the ad valorem appraiser to evaluate the relative degree of appeal of one property to another.

The prospective buyer of agricultural property will be motivated somewhat differently. The primary interest will be in the productive capabilities of the land. It is reasonable to assume that the buyer will be familiar, at least in a general way, with the productive capacity of the farm. It might be expected that the prudent investor will have compared one farm's capabilities against another. Accordingly, where the highest and best use of the property is for agricultural purposes, the appraiser must rely heavily upon prices being paid for comparable farmland in the community.

The prospective buyer of commercial property is primarily interested in the potential net return and possible tax shelter the property will provide. Ideally, the property must return the investment made by the purchase price and provide a return on that investment. Real estate, as an investment, not only must compete with other real estate, but also with stocks, bonds, annuities and other similar investment areas. The commercial appraiser must explore the rental market and compare the income-producing capabilities of one property to another.

The prospective buyer of industrial property is primarily interested in the overall utility value of the property. Of course, in evaluating the overall utility, individual consideration must be given to the land and each improvement thereon. Industrial buildings are generally of special purpose design and often, cannot readily be divorced from the operation for which they were built. As long as the operation remains effective, the building will hold its value. However, if the operation becomes obsolete, the building likewise will become obsolete. The upper limit of its value is its replacement cost new and its current value is some measure of its current usefulness relative to the purpose for which it was originally designed.

Any effective approach to value for ad valorem tax purposes must be patterned in such a way as to reflect the typical motivation of buyers in the market place. As indicated above, the motives influencing prospective buyers tend to differ depending upon the type of property involved. It follows that the appraiser's approach to value must differ accordingly.

The residential appraiser must rely heavily upon the market data approach to value . . . analyzing the selling prices of comparable properties and considering the very same factors of location, size, quality, design, age, condition, desirability and usefulness which were considered by the buyer.

The rural appraiser must likewise rely primarily upon the market data approach to value, but in addition to analyzing the selling prices of comparable properties, an effective analysis of the farm's productive potential might also be necessary.

Rural dwellings are similar to urban dwellings in that their primary purpose is to provide a family with a home. As such, the appraiser should value them in the same manner as the valuation of any other residence. The approach to farm buildings, however, must be somewhat different. Here, the primary objective is to arrive at that value which the building's presence contributes to the highest and best use of the property, either as a farm or so other competing use, taking into consideration their degree of utility or usefulness.

In determining the productive capabilities of the land in the Land Use program, it will be necessary to divide the land into various classes according to specific types and uses, such as tillable, pasture, woodland and wasteland; to compute the acreage of each class; and to value each class individually. Due consideration must be given to soil types and their fertility, making every effort to utilize all soil and land maps available through agriculture extension services and state universities. Similarly, should the highest and best use be a competing use, equal consideration must be given to all other factors affecting the value of the property, such as its location relative to the market place, its relative accessibility, the topography of the land, the shape and size of the parcel, etc.,.

The commercial appraiser will find that since commercial property is not bought and sold as frequently as is residential property, the sales market will likely not be readily established. By relying heavily on the income approach to value, the net economic rent which the property is capable of yielding can be determined and the amount of investment required to affect that net return at a rate commensurate with that normally expected by investors, can also be determined. This can only be achieved through a comprehensive study of the income-producing capabilities of comparable properties and an analysis of present-day investment practices.

The industrial appraiser will not be able to rely on the market data approach because of the absence of comparable sales, each sale generally reflecting different circumstances and conditions. Also, it is not possible to rely upon the income approach. Again, most industrial property is owner-occupied and it is difficult to accurately determine the contribution of each building unit to the overall income produced. There is also an absence of comparable investments. Therefore, ad valorem appraisals typically rely heavily on the cost approach, requiring careful estimates in the loss of value resulting from physical, functional and economic factors.

The fact that there are different approaches to value, some of which are more applicable to one class of property than to another, does not, by any means, preclude equalization between classes. Remember that the objective in each approach is to arrive at a price which a well-informed buyer, fully aware of the existence of competing properties and not being compelled to act, is justified in paying for any one particular property. Underlying and fundamental to each of the approaches is the comparison process. Regardless of whether the principal criteria are actual selling prices, income-producing capabilities, or functional usefulness, like properties must be treated alike.

The primary objective is equalization; the equitable distribution of the tax burden. The various approaches to value, although valid in themselves, must nevertheless be coordinated one to the other in such a way as to produce values which are not only valid and accurate, but are also equitable. The same "yardstick" of values must be applied to all properties and must be applied by systematic and uniform procedures.

It is obvious that sales on all properties are not required to effectively apply the market data approach. The same is true regarding any other approach. What is needed is a comprehensive record of all the significant physical and economic characteristics of each property in order to compare the properties of "unknown" values with the properties of "known" values. All significant differences between properties must in some measure, either positively or negatively, be reflected in the final estimate of value.

Each property must be given individual treatment, but the treatment must be uniform and standardized and essentially no different than that given to any other property. All the factors affecting value must be analyzed and evaluated for each and every property within the County. It is only by doing this that equalization between properties and between classes of properties can be ultimately realized.

All this, at best, is an oversimplification of the equalization process underlying the entire Mass Appraisal Program. The program itself consists of various operational phases and its success depends primarily upon the systematic coordination of collecting and recording data, analyzing the data and processing the data to an indication of value.

DATA INVENTORY

Basic to the appraisal process is the collecting and recording of pertinent data. The data will consist of general supporting data – that data required to develop the elements essential to the valuation process; neighborhood data - information regarding pre-delineated neighborhood units; and specific property data – property characteristics compiled for each parcel of property. All the resulting information will be processed into an indication of value by the cost, market and/or income approach.

The data must be comprehensive enough to allow for the adequate consideration of all factors which significantly affect property values. In keeping with the economics of a mass appraisal program, it is costly and impractical to collect, maintain and process data of no or marginal contribution to the desired objectives. Appraisers, if given the choice, would generally opt for "too much data". What is more important is to have an appropriate amount of data, no more or no less than necessary to support and generate the necessary and defendable valuations.

- *General Supporting Data.* The appraisal staff will be primarily concerned with cost, sales and income data, but they will also find it necessary to research and compile general socioeconomic information pertaining to the entire political unit under appraisal. The information will serve to assist the staff during the analytical phase of the operation and should include, but not necessarily be limited to, population trends, prevailing geographical factors, primary transportation facilities, primary income sources, unemployment and income levels, institutional influences, the annual volume of new construction and ownership transfers, availability of vacant land, construction labor and material costs, preponderance of residential rentals and the amount of residential vacancies.

- *Cost data* must be sufficient enough to develop or select and validate the pricing schedules and cost tables required to compute the replacement cost new of improvements needed to apply the cost approach to value.

- All data pertaining to the cost of total buildings in place should include the parcel identification number, property address and date of completion, construction cost, name of builder, source of information, structural characteristics and other information pertinent to analysis. Questionnaires are mailed to builders. The principal sources for obtaining cost data are builders and developers. It is generally advisable to collect data in conjunction with new construction.

- *Sales data* must be sufficient enough to provide a representative sampling of comparable sales needed to apply the market data approach, to derive unit land values and depreciation indicators needed to apply the cost approach and to derive gross rent multipliers and elements of the capitalization rate needed to apply the income approach.

  All sales data should include the parcel identification number, property classification code, month and year of age, selling price, source of information, i.e., buyer, seller, agent, or fee and a reliable judgment as to whether or not the sale is representative of a true arm's length transaction. Sales data should be recorded on the same form (assigned property record card) used to record specific property data and verified during the property-listing phase..

The principal source for obtaining sales data is the Register of Deeds Office and the real estate transfer returns. Other sources may include developers, Realtors, lending institutions and individual owners during the listing phase of the operation,

- *Income and expense data* must be sufficient enough to derive capitalization rates and accurate estimates of net income needed to apply the income approach. Income and expense data should include both general data regarding existing financial attitudes and practices and specific data regarding the actual incomes and expenses realized by specific properties. The general data should include such information as equity return expectations, gross rentals, vacancy and operating cost expectations and trends, prevailing property management costs and prevailing mortgage costs. Specific data should include the parcel identification number, property address (or building ID), source of information, the amount of equity, the mortgage and lease terms and an itemized account of the annual gross income, vacancy loss and operating expenses for the most recent two-year period.

  The general data should be documented in conjunction with the development of capitalization procedural guidelines. The specific data, since it is often considered confidential and not subject to public access, should be recorded on special forms, designed in such a way as to accommodate the property owner or agent thereof in submitting the required information. The forms should also have space reserved for the appraiser's analysis and calculations.

  The principal sources for obtaining the general financial data are investors, lending institutions and property managers. The primary sources for obtaining specific data are the individual property owners and/or tenants during the listing phase and the appeals phase of the reappraisal effort.

- *Neighborhood data.* At the earliest feasible time during the data inventory phase of the operation and after a thorough consideration of the living environment and economic characteristics of the overall county, or any political sub-division thereof, the appraisal staff should delineate the larger jurisdictions into smaller "neighborhood units," each exhibiting a high degree of homogeneity in residential amenities, land use, economic trends and housing characteristics such as structural quality, age and condition. The neighborhood delineation should be outlined on an index (or comparable) map and each assigned an arbitrary Valuation Control Section Number (VCS) , which when combined with the parcel identification numbering system, will serve to uniquely identify it from other neighborhoods.

  Neighborhood data must be comprehensive enough to permit the adequate consideration of value-influencing factors to order to understand the variations in selling prices and income yields attributable to benefits arising from the location of one specific property as compared to another. The data should include the taxing district, the school district, the VCS number, special reasons for delineation (other than obvious physical and economic boundaries) and various neighborhood characteristics such as the type (urban, suburban, etc.), the predominant class (residential, commercial, etc.), the trend (whether it is declining, improving, or relatively stable), its accessibility to the central business district, shopping centers, interstate highways and primary transportation terminals, its housing characteristics, the estimated range of selling prices for residentially-improved properties and a rating of its relative durability.

  All neighborhood data should be recorded on a specially designed form during the delineation phase. The existing property record card can serve in this capacity as it contains the current data on file.

- *Specific property data* must be comprehensive enough to provide the database needed to process the characteristics of each parcel into an indication of value, to generate the tax roll and related tax roll requirements, to generate other specified output and to provide the assessing officials with a

- permanent record to facilitate maintenance functions and to administer taxpayer assistance and appeal proceedings.

  The data should include the parcel identification number, ownership and mailing address, legal description, property address, property classification code, local zoning code, neighborhood identification code, site characteristics and structural characteristics.

  All the data should be recorded on a single, specially designed property record card customized to meet individual assessing needs. Each card should be designed and formatted in such a way as to accommodate the listing of information and to facilitate data processing. In addition to the property data items noted above, space must be provided for a building sketch, land and building computations, summarization and memoranda. In keeping with the economy and efficiency of a mass appraisal program, the card should be formatted to minimize writing by including a sufficient amount of site and structural descriptive data which can be checked and/or circled. The descriptive data should be comprehensive enough to be suitable for listing any type of land and improvement data regardless of class, with the possible exception of large industrial, institutional and utility complexes which require lengthy descriptions. In these cases, it will generally be necessary to use a specially designed supplemental property record document, keyed and indexed to the corresponding property record card. The property record card should be made a permanent part of the assessing system and used not only in conjunction with the revaluation, but also to update the property records for subsequent assessments.

  The specific property data should be compiled from existing assessing records and field inspections. The parcel identification number, ownership, mailing address and legal description may be obtained from existing tax rolls. Property classification codes may also be obtained from existing tax rolls (whenever available) and verified in the field. Local zoning codes may be obtained from existing zoning maps. Neighborhood identification codes may be obtained from the neighborhood delineation maps. Lot sizes and acreage may be obtained from existing tax maps. The property address and the site and structural characteristics may be obtained by making a physical inspection of each property.

During the measuring and listing phase of the operation, the appraiser must visit each property and try to make personal contact with the occupant. In the course of the inspection, the following procedures must be adhered to.

- Verify the identification of the property (parcel ID or PIN).
- Verify the ownership (recording any transfers which may have occurred).
- Record or confirm the property's situs address.
- Verify the property classification.
- If possible interview the occupant of the building and record all pertinent economic data.
- Verify the exterior measurements and inspect the exterior of the building, as well as all other improvements on the property and record the story height and the dimensions and/or size of each.
- Record a sketch of the principal building(s), consisting of an overhead view showing the main portion of the structure along with any significant attached exterior features, such as porches, etc. All components must be identified and the exterior dimensions shown for each.
- Select and record the proper "grade" of the improvement (construction quality).
- Select and record the proper replacement costs or replacement cost adjustments for all field priced items.
- Review the property record card for completeness and accuracy.
- Take photo of building

After the field inspection is completed, the property record cards must be submitted to data entry personnel to update any changes made in the field to property record in the CAMA system.

Complete and accurate data are essential to the program. Definite standardized data collection and recording procedures must be followed if these objectives are to be met.

PROCESSING THE DATA

This phase of the operation involves the analysis of data compiled during the data inventory phase and the processing of that data to an indication of value through the use of the cost, market and income approaches to value.

During the analytical phase, it will be necessary to evaluate cost, market and income data in order to provide a basis for validating the appropriate cost schedules and tables required to compute the replacement cost new of all buildings and structures; for establishing comparative unit land values for each class of property; for establishing the appropriate depreciation tables and guidelines for each class of property; and for developing gross rent multipliers, economic rent and operating expense norms, capitalization rate tables and other related standards and norms required to effect the mass appraisal of all the property within an entire political unit on an equitable basis.

After establishing the appropriate standards and norms, it is necessary to evaluate the specific data compiled for each property by giving due consideration to the factors influencing the value of that particular property as compared to another and then to process the data into an indication of value by employing the techniques described in the section of the manual dealing with the application of the traditional approaches to value.

Any one, or all three of the approaches, if applied properly, should lead to an indication of market value. The primary concern is applying the approaches on an equitable basis. This requires the coordinated efforts of a number of individual appraisers, each acting as a member of a team, with the team effort directed toward a valid, accurate and equitable appraisal of each property within the County. Each property must be reviewed, during which time the following procedures must be adhered too.

- Verify the property characteristics recorded on the property record card.
- Confirm that the proper schedules and cost tables were used in computing the replacement cost of each building and structure,
- Confirm the determination of the proper quality grade and design factor is applied to each building to account for variations from the base specifications.
- Make an appraisal judgment of the overall condition, desirability and usefulness of each improvement in order to arrive at a sound allowance for depreciation.
- If applicable, capitalize the net income capabilities into an indication of value in order to determine the loss of value attributable to functional and economic obsolescence.
- Confirm that the depreciated value of all improvements has been added to the land value and review the total property value relative to the value of comparable properties.
- Confirm that the total property value established can be correlated to actual sales of comparable properties.

Once the final values have been established for each property, the entire program should be evaluated in terms of its primary objectives; do the values reflect a satisfactory level of market value and what's more important, are the values equitable? Satisfactory answers to these questions can best be obtained through a statistical analysis of recent sales in an assessment/sales ratio study, if sufficient sales are available.

To perform the study, it is necessary to take a representative sampling of recent valid sales and compute the assessment-to-sale ratio for each of the sales. If the *sample* is representative, the computed median assessment-to-sale ratio will give an indication of how close the appraisals within each district approximate the market value. This is providing, of course, that the sales included represent true market transactions. It is then needed to determine the deviation of each individual appraisal-to-sale ratio from the median ratio and to compute either the average or the standard deviation, which will give an indication of the degree of equity within each individual district. What remains then is to compare the statistical measures across property classes in order to determine those areas, if any, which need to be further investigated, revising the appraisal, if necessary, to attain a satisfactory level of value and equity throughout the entire jurisdiction.

The techniques and procedures set forth herein, if applied skillfully, should yield highly accurate and equitable property valuations and should provide a sound property tax base. It should be noted, however, that no program, regardless of how skillfully administered, can ever be expected to be error free. The appraisal must be fine tuned and can best be done by giving the taxpayer an opportunity to question the value placed upon his property and to produce evidence that the value is inaccurate or inequitable. During this time, the significant errors will be brought to light and taking the proper corrective action will serve to further the objectives of the program. What's important in the final analysis is to use all these measures as well as any other resources available to assure the highest degree of accuracy and equity possible.

NEW CONSTRUCTION PERCENTAGE OF COMPLETION GUIDE

This guide is to be used in estimating the percentage of completion of both residential and commercial buildings under construction.

		PERCENT OF TOTAL	CUMULATIVE PERCENT OF TOTAL	PERCENT COMPLETE
1.	Plans, permits and survey	2	2	
2.	Excavation, forms, water/sewage hookup	4	6	
3.	Concrete	8	14	
4.	Rough framing	21	35	
5.	Windows and exterior doors	2	37	
6.	Roof cover	3	40	
7.	Rough-in plumbing	4	44	
8.	Insulation	1	45	
9.	Rough-in electrical and mechanical	11	56	
10.	Exterior cover	6	62	
11.	Interior drywall and ceiling finish	8	70	
12.	Built-in cabinets, interior doors, trim, etc	13	83	
13.	Plumbing fixtures	5	88	
14.	Floor covers	3	91	
15.	Built-in appliances	3	94	
16.	Light fixtures and finish hardware	2	96	
17.	Painting and decorating	4	100	
	TOTAL	100%		

Signature _____ Date _____

As near as possible, it is essential to estimate the percentage of completion as of January 1 of the year for which the appraisal is being made and for which taxes on the value of the new construction will be levied.

INTRODUCTION

This section is provided to establish general guidelines and procedures in the identification (delineation) of residential and commercial market areas.

Definition of a "Market Area" or VCS (Valuation Control Section).

> **A set of parcels within a specific geographical area, where the parcels share a high degree of homogeneity, the environment of which has a direct and immediate impact on the value of the parcels within its boundary.**

The following points are noted:

- Ideally, it is the smallest geographic unit that can be defined as a single area in which property characteristics for all parcels are qualitatively homogenous.
- The term is primarily an urban and suburban concept. However, it may be extended to rural areas.
- Market Areas are characterized by the activities or operations that are carried on within its borders.
- The boundaries of a market area must be delineated for the purpose of analysis. The types of boundaries are:
    - natural, (including rivers, hills, lakes, ravines and undeveloped areas)
    - manmade (streets, highways, roads, railroad tracks, rights-of-way, subdivision boundaries) and
    - political (city limits, school districts, zoning districts)
    - predominant land use and anticipated changes
    - housing characteristics (type, quality, age and condition)

There are four forces, or sets of factors, to be addressed in market area analysis: physical, economic, governmental and social. They must be analyzed specific to their impact on each market area.

It should be noted that mere size does not determine a market area, although large area market areas have the advantage of better protection from infiltration of inharmonious influences or detrimental property uses from adjoining properties.

MARKET AREA DESCRIPTION CODE

The appraisal technique for both residential and commercial properties, employed for assessment purposes, is mass appraisal. That is, within a market area a large number of sales are analyzed and the results applied to a larger number of parcels within the same market area. Market Area grouping allows for comparable market areas that are not contiguous to one another to share sales data. Results are applied to a particular group of properties (market area), rather than to individual properties.

The mass appraisal process requires every parcel be assigned to a "market area" or MA number. This assignment number, or market area description code, links properties of like characteristics for market area grouping and subsequent market analysis and development of land rate tables. The large number of market area descriptions (approximately 921 residential and 186 commercial) prohibits their inclusion in this document, but are on file in the Randolph County Tax Office.

The "Market Area description" number is can be an alpha-numeric field and is user-defined.

Commercial/Industrial market areas (MA) are assigned unique MA numbers that best identify the types of properties located in the market area. Commercial/Industrial market areas (MA) first character will be a zero (0). The last digit will identify the type most representative of the market area.

The types are: (1) CENTRAL BUSINESS DISTRICT to indicate the core is in the center of a city in which is concentrated the major retail, financial, governmental, professional and services activities of the city. In many instances, these boundaries have already been established or defined by city planners or other agencies.

(2) PERIMETER CENTRAL BUSINESS DISTRICT to indicate the outer boundaries of the central business district or core area in which the concentration of major mercantile activity is significantly less pronounced.

(3) BUSINESS CLUSTER to indicate a cluster or number of commercial Properties grouped together due to some attracting force (such as major intersection of interstate highways or a major shopping mall.)

(4) MAJOR STRIP to indicate the type of commercial development in which major thoroughfares are bordered by an almost continuous row or strip of retail stores and allied service establishments.

(5) SECONDARY STRIP to indicate row or strip type commercial development bordering secondary arteries.

(6) MARKET AREA OR SPOT to indicate -

A – dwellings located in primarily residential areas

B - for commercial properties, individual or scattered commercial establishments located in basically residential area.

(7) COMMERCIAL/INDUSTRIAL PARK to indicate a controlled park-like development designed to accommodate specific light industrial and mercantile properties and containing the required utilities, streets and other appurtenances.

(8) INDUSTRIAL SITE to indicate land or land and improvements (not located in an established industrial park) adaptable for industrial use. Normally, this is a

combination of land, improvements and machinery intended for the assembling, processing and manufacturing of products of natural resources.

(9) APARTMENT/CONDOMINIUM COMPLEX to indicate the property is an apartment or condominium complex site.

Residential market areas (MA) numbers are to identify a set of parcels for market analysis and land table rates assigned randomly or sequentially.

The steps involved in the assignment of the Market Area Description Code are as follows:

1. Identify and locate surveyed tracts and subdivisions
   Assign a numerical identification code to the areas
   Enter the assigned identification code into the individual parcels
2. Identify and locate non-surveyed tracts and subdivisions.
   Assign an unused numerical identification code to the areas.
   Enter the assigned identification code into the individual parcels
3. Identify and locate major pockets (clusters) of properties.
   Breakdown the pockets (clusters) by like market area characteristics.
   Assign an unused identification code to each identified area.
   Enter the assigned identification code into the individual parcels
4. Identify and locate rural areas of like market area characteristics.
   Assign and unused numerical identification code to the areas.
   Enter the assigned identification code into the individual parcels
5. Identify all properties that are without a market area description code.
   Assign to the identified properties an unused numerical identification code or to an existing identification code of like characteristics.
   Enter the assigned identification code into the individual parcels

GENERAL DISCUSSION:

The property tax is an *ad valorem* tax (according to value) and because value is defined as "market" value and because market value is evaluated by measuring "sales" of properties in the market place, then the quality of a group of assessments may be evaluated by measuring their ratio to the real estate sales from the same geographical area as of the assessments. This process of comparing appraised values to sale prices is called the assessment/sales ratio study.

DEFINITION:

The word "ratio" is a statistical term that, when numerically expressed, simplifies the comparison of magnitude of numbers. There are various types of ratios, distinguished by their base of comparison, that is the denominator of the fraction and they may take the form of fractions, proportions, percentages or rates. Some of the leading types of ratios are the results of comparing a part to its whole, comparing a part to a part within a whole, or comparing one whole to another whole.

SALES RATIO STUDY:

The Randolph County Tax Office has a straight forward purpose -- to value all properties uniformly and equitably. Therefore, it is incumbent on the staff appraiser to place property values that represent the current probable selling price or some constant fraction thereof.

The ratio study has been found to be a useful and meaningful tool in measuring the quality of the real property appraisals. The measurements (commonly referred to as ratio studies and median assessment levels) can be either in the aggregate or sectional and are found by comparing the value placed on properties which have sold with the amount for which the property actually sold.

Again, it is important to stress caution when reviewing sales ratio results for the properties that make up a sales file which does not always constitute a representative sample of the property type (class) population within the County. The calculated results could be biased, even if carefully weighted for some important classes of properties are seldom, if ever, sold.

The appraiser collects and analyzes market information that is either qualified or disqualified for sales ratio and valuation. Only "arm's length" transactions are used to establish market value. Transactions that are results of a foreclosure or short sale are <u>not</u> considered in determining market value or schedule of values.

STEPS IN THE SALES REVIEW PROCESS

1. Indentify the parcels that have ownership transfer through deeds and MLS
2. Review of the sold properties and code each transaction accordingly. Ones that are obviously invalid or disqualified such as foreclosures, family, or related parties are coded as such.
3. Verification of the remaining sales then begins. This is accomplished several ways:

    (1) all buyers are mailed questionnaires
    (2) review of MLS
    (3) telephone confirmation

4. Review the returned sales confirmation questionnaires; listing the owners state purchase Price and disqualify/qualify as a result of the replies.

DEED EDIT SHEET

CODE REASONS FOR REJECTION:

A. The transaction includes the conveyance of two (2) or more parcels.

B. Sales for which the improvements sold are not included in the tax assessment or the assessment included improvements built after the sale.

C. Deed shows $6.00* or less in revenue stamps. *Transaction is for $3,000 or less.

D. The date the deed was made, entered or notarized is outside the dates of the study period. (The study period runs from January 1 to December 31.)

E. The transaction is between relatives or related businesses.

F. The grantor is only conveying an undivided or fractional interest to the grantee.

G. The deed reserves unto the grantor, a life estate or some other interest.

H. The deed reserves unto the grantor the possession of or lease of, the property for specified period following the sale.

I. One or both of the parties involved in the transaction is governmental, a public utility, lending institution, or a relocation firm.

J. The deed conveys a cemetery lot or other tax-exempt property.

K. One or both of the parties involved in the transaction is a church, school, lodge, or some other educational organization.

M.The deed indicates that the property conveyed is situated in more than one county.

N. The transaction is for minerals, timber, etc., or the rights to mine or cut same.

O. The transaction includes the conveyance of personal property and the value of such is not specified separate from the real property value in the deed.

P. The transaction is the result of a forced sale or auction.

Q. Transaction made by the use of a Contract for Deed, the agreement for which is executed and sale actually made prior to the study.

R. The transaction involves the trade or exchange of real property.

S. The transaction is for real property, which cannot be clearly identified on the county tax records.

X. Other (An explanation must be provided when this code is used).

Z. To use when $1 is put in the Assessed Value (for use of Access Database Only).

Residential Cost

UTILIZATION OF REPLACEMENT COST LESS DEPRECIATION

The *COST APPROACH* to value lends itself best to property valuation for tax purposes for two principle reasons.

1. Appraisals for ad valorem taxes generally require separate land value estimates. N.C.G.S. 105-317(a)(1) requires the following:

   "In determining the true value of land, to consider as to each tract, parcel, or lot separately listed at least its advantages and disadvantages as to location; zoning; quality of soil; waterpower; water privileges; dedication as a nature preserve; conservation or preservation agreements; mineral, quarry, or other valuable deposits; fertility; adaptability for agricultural, timber-producing, commercial, industrial, or other uses; past income; probable future income; and any other factors that may affect its value except growing crops of a seasonal or annual nature."

2. The cost approach can be applied to all classes of property.

The use of one approach to the exclusion of the others is contrary to the appraisal process. The better method would therefore be an integrated approach based essentially upon cost but incorporating both market comparison and income whenever feasible and appropriate.

The following cost schedules are based on a typically constructed one story frame fifteen hundred square foot dwelling of average quality components and workmanship with five standard plumbing fixtures (water heater, kitchen sink and one full, 3-fixture, baths) , crawl space and a central heating system.

All necessary adjustments to reflect any variance from base are also supplied.

The informed buyer is not justified in paying anything more for a property than what it would cost him to acquire an equally desirable substitute property. Likewise, the upper limit of value of most improvements is the cost of reproducing an equally desirable substitute improvement. It follows, then, that a uniform starting point for a Reappraisal is to determine the Replacement Cost New of each and every improvement.

REPLACEMENT COST

Replacement Cost is the current cost of producing an improvement of equal utility to the subject property; it may or may not be the cost of reproducing a replica property. The distinction being drawn is one between Replacement Cost, which refers to a substitute property of equal utility, as opposed to *Reproduction cost*, which refers to a substitute replica property.

The Replacement Cost of an improvement includes the total cost of construction incurred by the builder, whether preliminary to, during the course of, or after completion of its construction. Among these are materials, labor, all sub-contracts, builder's overhead and profit, architectural and engineering fees, consultation fees, survey and permit fees, legal fees, taxes, insurance and the cost of interim financing.

PRICING SCHEDULES

Pricing schedules and related cost tables are included in this section to assist the appraiser in arriving at accurate estimation of Replacement Cost New. They have been developed by applying unit-in-place costs to the construction of specified hypothetical or model buildings. Application of the schedules involves the selection of the model which most nearly resembles the subject building and adjusting its price to compensate for all significant variations.

Cost adjustments for the variations which are most frequently encountered in a particular type building are included.

PRICING SCHEDULES AND COST TABLES

The Pricing Schedules and Cost Tables in this manual are provided to assist the appraiser in arriving at accurate and uniform valuations. Used properly, they should prove to be an invaluable tool. Quality valuations, however, are not the product of schedules and tables themselves, but rather of the appraiser's ability to use the effectively. In order to bring this about, a thorough understanding of the make-up and the capabilities and limitations of each schedule is essential. The appraiser must know the specifications from which the base prices were derived, the composition of the prices and the proper techniques and procedures for applying the prices. What's more important, the appraiser must be able to exercise good common sense and sound judgment in selecting and using them.

It should also be noted that the schedules and tables in the manual have be developed primarily for mass appraisal and tax equalization purposes. They have, therefore, been designed to provide the appraiser with an uncomplicated, fast and effective method of arriving at an accurate estimate of replacement costs. In order to maintain simplicity in the schedules, techniques and procedures, it is often necessary to make certain compromises from a strictly technical and engineering point of view. Extensive effort has been made in developing the schedules to minimize these compromises and limit them to variables which have minimal influence on the final value of the building. The schedules have been designed to reflect actual building costs and practices. Field tests have proven them to be both accurate and reliable and when applied properly, highly effective in arriving at realistic replacement costs.

BASE REPLACEMENT COST

FOR RESIDENTIAL PROPERTY

The base replacement cost formula has been developed using the following as base cost:

One (1) story
Frame Exterior
Crawl Space
1500 square feet of living area
One (1) bath
Central heating and cooling

Base Cost $82.57 per square foot.

How to calculate the value of a residential property

1. Main body square footage
2. Size adjustment for total living area
3. Base rate from SOV for building use
4. Base rate * Number of Stories adjustment * Size adjustment
5. Total Refinements and additions
6. Rate * square footage * Grade Adjustment (RCN)
7. Percentage complete adjusted RCN
8. Built in
9. Physical Depreciation from SOV
10. Other Depreciation (Functional, Economic)
11. Total depreciated value * market area factor = assessed building value

RESIDENTIAL REPLACEMENT COST BASE RATE RANGES

RESIDENTIAL BUILDING ADDITIONS

CODE	DESCRIPTION	RATE RANGE		
		UPPER	MAIN	LOWER
AFIN	ATTIC FINISHED	$ 49.54	$ 49.54	
APTF	PART ATTIC FINISHED	$ 33.03	$ 33.03	
AUNF	ATTIC UNFINISHED	$ 8.26	$ 8.26	
BMTREC	BASEMENT RECREATION ROOM		$ 28.90	$ 28.90
BMTFIN	BASEMENT FINISHED		$ 41.29	$ 41.29
BWF	BAY WINDOW FRAME	$ 82.57	$ 82.57	$ 41.28
BMTUNF	BASEMENT UNFINISHED		$ 16.51	$ 16.51
BWM	BAY WINDOW MASONRY	$ 90.83	$ 90.83	$ 45.41
CNPY	CANOPY ATTACHED	$ 11.56	$ 11.56	$ 11.56
CPT	CARPORT	$ 16.80	$ 16.80	$ 16.80
EFP	ENCLOSED FRAME PORCH	$ 33.25	$ 53.50	$ 53.50
EMP	PORCH ENCLOSED MASONRY	$ 30.30	$ 48.60	$ 48.60
FRAA	ADDITION FRAME	$ 82.57	$ 82.57	$ 41.28
FRHS	HALF STORY FRAME	$ 61.93	$ 61.93	$ 41.28
GFA	ATTACHED FRAME GARAGE		$ 23.50	$ 23.50
GMA	ATTACHED MASONRY GARAGE		$ 26.00	$ 26.00
MAHS	HALF STORY MASONRY	$ 68.53	$ 68.53	$ 45.41
MASA	ADDITION MASONRY	$ 90.83	$ 90.83	$ 45.41
MS	STOOP MASONRY TERR		$ 17.85	$ 17.85
OFP	OPEN FRAME PORCH	$ 21.75	$ 35.00	$ 35.00
OHF	OVERHANG FRAME	$ 82.57	$ 82.57	$ 41.28
OHM	OVERHANG MASONRY	$ 90.83	$ 90.83	$ 45.41
OMP	PORCH OPEN MASONRY	$ 18.65	$ 30.00	$ 30.00
PCON	PATIO CONCRETE		$ 6.20	$ 6.20
PMAS	PATIO MASONRY TILE STONE		$ 13.30	$ 13.30
SUNR	SUNROOM	$ 38.40	$ 57.80	$ 57.80
URF	FRAME UTILITY ROOM	$ 20.50	$ 30.75	$ 30.75
URM	MASONRY UTILITY ROOM	$ 22.65	$ 34.00	$ 34.00
WDDK	WOOD DECK	$ 18.50	$ 18.50	$ 18.50
STRY	UPPER STORY	100% of adjusted base rate		

Story Height Multipliers

MIN_NUM_STORY	MAX_NUM_STORY	ADJUSTMENT
0.01	1.09	1.000000
1.10	1.19	0.986000
1.20	1.29	0.980000
1.30	1.39	0.973000
1.40	1.49	0.967000
1.50	1.59	0.958000
1.60	1.69	0.940000
1.70	1.79	0.922000
1.80	1.89	0.906000
1.90	1.99	0.892000
2.00	2.09	0.882000
2.10	2.19	0.881000
2.20	2.29	0.880000
2.30	2.39	0.879000
2.40	2.49	0.878000
2.50	2.59	0.875000
2.60	2.69	0.865000
2.70	2.79	0.856000
2.80	2.89	0.847000
2.90	2.99	0.839000
3.00	3.24	0.837000
3.25	3.49	0.835000
3.50	3.74	0.833000
3.75	3.99	0.819000
4.00	999.99	0.805000

RESIDENTIAL REPLACEMENT COST BASE RATE RANGES

ADDITIONS/DEDUCTIONS

EXTERIOR WALL MULTIPLIERS

Block	+4% of Base Rate
Brick	+10% of Base Rate
Composition	Base
Wood Frame	Base
Log	+10% of Base Rate
Masonry Frame	+5% of Base Rate
Stone	+15% of Base Rate
Stucco	Base
Vinyl	Base

AIR CONDITIONING

Central Air	Base
NAC (No Air Conditioning)	- $2.30

ATTIC AREA

None	Base
Unfinished	+$8.26

BASEMENT/FOUNDATION

Crawl space	Base
Pier	-$2.30
None	-$4.60
Slab	-$4.60
Skirting	-$2.30
Unfinished basement	+$16.51

HEATING

Central forced air or equal	Base
Non-central	-$1.80
No heat	-$3.40
Unknown (new construction)	-$3.40

PLUMBING

Base equals (5 Fixtures, 1 Full bath, hot water heater and kitchen sink)

Extra fixtures	$1,780 each
No plumbing	-$8,900

RESIDENTIAL BUILDING - OTHER FEATURES

WOOD BURNING FIREPLACES	Add Per Item	
	Stack and One Opening	$3,400
	Each Additional Opening	$1,350
PREFABRICATED METAL FIREPLACES	Add Per Stack	$2,000
FINISHED BASEMENT RECREATION ROOMS	Refers to relatively open undivided area not necessarily finished with a quality of materials and workmanship consistent with the main living area of the dwelling	
	Add Per Sq Ft of Finished Area	$28.90
	Price Includes Interior Wall Finish, Flooring Ceiling, Lighting, Normal Built - Ins	
FINISHED BASEMENT LIVING AREA	Refers to a divided area finished with a quality of materials and workmanship consistent with the main living area of the dwelling…such as in the lower of grade level of split-level and bi-level dwellings.	
	Add Per Sq Ft of Finished Area	$41.29
	Price includes Interior Wall Finish, Flooring Ceiling, Lighting, Normal Built - Ins and Partitioning	

BUILT-INS

Add Per Item

Elevator	2 passenger	E2	$25,500
	8 passenger	E8	$58,000
Generator	permanently affixed	GN	$4,400
Jacuzzi		JA	$4,600
Star Lift		SL	$8,850
Basement Garage	- 1 car	BSGD1	$1,750
Basement Garage	- 2 car	BSGD2	$2,450
Basement Garage	- 3 car	BSGD3	$3,250

APPLYING THE PROPER GRADE FACTOR

Grading would be a relatively simple process if all buildings were built to conform to the quality grade specifications outlined above. The fact is, however, that this ideal condition does not exist. It is not unusual for any conventional building to be built incorporating construction qualities that fall between the established grade levels. The grading system in this manual has been designed in such a way as to provide the appraiser with a method for accounting for such variations by establishing intermediate grades.

If the subject building is judged to be a better or inferior quality than the actual grade levels, a grade factor of plus (+) or minus (-) should be applied, i.e., C+ would be better than a straight "C" Grade, B- poorer than a straight "B" Grade, etc.

There is very rarely any clear-cut designation of a specific grade factor. The appraiser/reviewer will generally select a range, such as C+ to B- and then weigh the various quality factors exhibited in the construction in order to select the proper factor.

Note: The appraiser/reviewer must exercise extreme caution not to confuse the concepts "quality" and "condition" when selecting the proper grade. This is especially applicable to an older building, wherein a deteriorated condition can have a noticeable effect on their physical appearance. A building will always retain its initial grade of construction, regardless of its existing deteriorated condition. The Quality Grade ultimately selected must reflect the original built-in quality, and the selection of that grade cannot be influenced in any way by the physical condition of the building.

Grade Factors

X PLUS	250.00
X	210.00
X MINUS	185.00
A PLUS	167.00
A	155.00
A MINUS	145.00
B PLUS	135.00
B	126.00
B MINUS	117.00
C PLUS	108.00
C	100.00
C MINUS	92.00
D PLUS	85.00
D	78.00
D MINUS	70.00
E PLUS	60.00
E	50.00
E MINUS	40.00

Grade X Residences

Residences are usually individually designed and are characterized by the high quality of workmanship, finishes, unique and elaborate architectural styling and treatment, finest quality materials. Superior quality interior finish and built-in features.

FOUNTATION
Masonry walls, waterproofed, reinforced concrete footings, drain tile, interior bearing wall foundation.

EXTERIOR WALLS
Fenestration is designed with excellent quality sash. Custom ornamentation and trim, select brick, cut stone, high quality siding, etc. are used.

ROOF
Gable, hipped or gambrel type. Heavy wood rafters and sheathing. High quality shingles, slate, tile, wood shingles or equal cover. Copper flashing and gutters.

FLOOR STRUCTURE
Basement 4" concrete floor with monolithic finish on gravel base. Wood or steel floor joists and subfloor on first and upper floors.

FLOOR COVER
High quality carpet or hardwood (parquet or plank), terrazzo and vinyl ceramic or marble tile.

INTERIOR FINISH
Interior walls are taped and painted drywall with high-grade paper or vinyl wall covering, hardwood paneling or ceramic tile. Built-in book shelving and ample cabinets, which may include such specialty cabinetry items as a cooking island, bar, desk, etc. High-quality Pullman or vanity cabinets in bathrooms and dressing areas. Ceramic tile, marble or highest quality laminated plastic countertops and splash. Ceilings are mostly painted drywall with molding and coving details and other ornamentation with some degree of intricacy in their design and/or finish. Vaulted or cathedral ceilings will usually be found in master bedrooms, dining great or family rooms, as well as entries. Raised panel hardwood veneer or enameled doors with good-quality hardware. Base, casings and moldings have tight mitered corners. Spacious walk-in closets or wardrobes with may built-in features. Large linen storage closets and pantry full shelved.

HEATING/COOLING
A forced-air furnace/heat pump with multiple controls, large capacity with insulated ductwork to all main areas. Could possibly have electronic control system.

PLUMBING
High-quality plumbing fixtures and piping. The fixtures can include water heater, laundry tray, tiled shower stall, toilet, bidet, lavatory, tub, tub with shower over, kitchen sink, wet bar and Jacuzzi.

ELECTRICAL
Many well-positioned outlets and high-quality fixtures throughout. Large luminous fixtures in kitchen, bath and dressing areas. Some recessed, track and fluorescent lighting possible.

Note: These grading specifications are only guidelines for general descriptive purposes and may or may or may not be limited to the detail of the individual components.

Grade A Residences

Residences are frequently individually designed. Constructed of excellent quality materials and workmanship, exhibiting outstanding architectural styling and treatment. Attention has been given to interior refinements and detail. Exteriors have good fenestration with custom ornamentation.

FOUNDATION
Masonry wall, waterproofed, reinforced concrete footings, drain tile, interior bearing wall foundation.

EXTERIOR WALLS
Fenestration is well designed with high-quality sash. Custom ornamentation and trim are used. Select brick, stone, high quality siding, etc. are used.

ROOF
Gable, hipped or gambrel type. Wood rafters and sheathing. High quality shingles or equal cover. Copper flashing and gutters

FLOOR STRUCTURE
Basement 4" concrete floor on gravel base. Wood or steel floor joist and subfloor on first and upper floors.

FLOOR COVER
High-quality carpet or hardwood (parquet or plank), vinyl and ceramic tile.

INTERIOR FINISH
Interior walls are taped and painted drywall with high-grade paper or vinyl wall covering, hardwood paneling or ceramic tile. Ample amount of cabinetry, which may include such specialty cabinetry items as a cooking island, bar, desk, etc. High-quality Pullman or vanity cabinets. Ceramic tile or highest-quality laminated plastic countertops and splash. Ceilings are mostly painted drywall, with some molding and coving details. Vaulted or cathedral ceilings will usually be found in master bedrooms and entries. Raised-panel hardwood veneer or enameled doors with good-quality hardware. Base, casing and moldings have tight mitered corners. Spacious walk-in closets or wardrobes and large line store closets.

HEATING/COOLING
A forced-air furnace/heat pump with multiple controls, large capacity with insulated ductwork to all main areas. Could possibly have electronic control system.

PLUMBING
High-quality plumbing fixtures and piping. The fixtures can include water heater, laundry tray, tiled shower stall, toilet, bidet, lavatory, tub, tub with shower over, kitchen sink, wet bar and Jacuzzi.

ELECTRIAL
Many well-positioned outlets and high-quality fixtures throughout. Large luminous fixtures in kitchen, bath and dressing areas. Some recessed, track and fluorescent lighting possible.

Note: These grading specifications are only guidelines for general descriptive purposes and may or may not be limited to the detail of the individual components.

Grade B Residences

Residences constructed with good quality materials and above average workmanship exhibiting pronounced architectural styling and treatment. Good quality interior finish and built-in features. Exteriors have good fenestration with ornamental materials or other refinements.

FOUNDATION
Masonry or concrete block walls, concrete footings, drain tile interior bearing wall foundation.

EXTERIOR WALLS
Good fenestration using good-quality sash. Some ornamental trim. Face brick, good quality siding, etc. are used.
ROOF
Gable, hipped or gambrel type. Wood rafters and sheathing. Good quality shingles or other equal cover. Vinyl/metal flashing and gutters.

FLOOR STRUCTURE
Basement 4" concrete floor on gravel base. Wood floor joists and subfloor on first and upper floors.

FLOOR COVER
Good quality carpet, hardwood and vinyl are used.

INTERIOR FINISH
Interior walls are taped and painted drywall with some good quality wallpaper or wood paneling. Kitchen and baths have enamel-painted walls and ceilings. An ample amount of cabinetry with natural wood-veneer finish is used in the kitchen, with a large Pullman or vanity in the bath areas. Countertops and splash are laminated plastic, ceramic tile or simulated marble. Ceilings are painted drywall. Some small areas i.e., entries or foyers, may have low core with attractive hardware. Baseboard and casings are hardwood or softwood and have mitered corners. Walk-in closets or large sliding door wardrobes. Ample linen and storage closets. Workmanship throughout is of good quality.

HEATING & COOLING
A forced-air furnace/heat pump with adequate output and ductwork to all main areas.

PLUMBING
Good quality fixtures and piping. The fixtures can include any of the following water heater, laundry tray, tile or modular fiberglass shower stall, toilet, lavatory, tub, tub with shower over, kitchen sink.

ELECTRICAL
A good amount of convenience outlets. Luminous fixtures in kitchen and bath areas. Some recessed, track and fluorescent lighting possible.

Note: These grading specifications are only guidelines for general descriptive purposes and may or may not be limited to the detail of the individual components.

Grade C Residences

Residences constructed of average quality materials and workmanship, exhibiting moderate architectural styling and treatment and having a minimal amount of built-in features. Architectural design will include ample fenestration and some ornamentation on the front elevation. Average quality interior finish. Typical tract built homes would normally fall in this classification.

FOUNDATION
Masonry or concrete block walls, concrete footings, interior bearing wall foundation.

EXTERIOR WALLS
Standard aluminum sash or wood sash is typical of the fenestration at average quality. Face brick, average quality siding, etc. are used.

ROOF
Gable or hipped type. Rafters or prefabricated trusses with exterior-grade plywood or wood sheathing with a medium-weight composition shingles. Vinyl/metal flashing and gutters.

FLOOR STRUCTURE
Basement 4" concrete floor on compacted earth. Wood structure and subfloor on first and upper floors.

INTERIOR FINISH
Interior walls are taped and painted drywall with an allowance for some inexpensive wallpaper or paneling. Kitchen and baths have enamel painted walls and ceilings. Prefinished plywood cabinets in the kitchen with a small Pullman or vanity in bath areas. Countertops are laminated plastic or ceramic tile. Doors are medium grade, hollow core with standard-grade hardwood. Baseboard and casings are stock. An adequate amount of closet space. Workmanship throughout is of average quality.

HEATING & COOLING
A forced-air furnace/heat pump with adequate output and ductwork.

PLUMBING
Average quality fixtures and piping. The fixtures can include any of the following: water heater, laundry tray, tile or modular fiberglass show stall, toilet, lavatory, tub, tub with show over and kitchen sink.
ELECTRICAL
An adequate number of outlets with some luminous fixtures in kitchen and bath areas.

Note: These grading specifications are only guidelines for general descriptive purposes and may or may not be limited to the detail of the individual components.

Grade D Residences

Residences constructed of fair quality materials and workmanship, generally lacking architectural styling and treatment and having only a scant amount of built-in features. Interior finish is plain with few refinements.

FOUNDATION
Concrete block walls, concrete footing or piers.

EXTERIOR WALLS
Moderate fenestration with inexpensive sash is typical. Front elevation may have inexpensive trim. Face brick, economy quality siding, etc. are used.

ROOF
Gable or hipped type. Rafters or prefabricated trusses with plywood or other inexpensive sheathing with lightweight composition shingles. Roof slope is usually less than 4 in 12 with a minimal eave.

FLOOR STRUCTURE
Basement 3" concrete floor on compacted earth. Wood structure and subfloor on first and upper floors.

FLOOR COVER
Economy quality carpet, asphalt or vinyl composition tile floor cover is used.

INTERIOR FINISH
Interior walls are taped and painted drywall with enamel painted walls and ceilings and kitchen and baths. Inexpensive stock cabinets of paint-grade wood or vinyl veneer in kitchen with a small Pullman or vanity in bath. Countertops are laminated plastic with a small splash. Stock, hollow core doors with inexpensive hardware. Minimal amount of closet space.

HEATING & COOLING
A forced-air furnace with minimum output and ductwork. May or may not have central cooling system.

PLUMBING
Inexpensive quality fixtures and piping. The fixtures can include any of the follow: water heater, laundry tray, plastic modular stall shower, toilet, lavatory, tub, tub with shower over or kitchen sink.

ELECTRICAL
A minimum number of outlets and lighting fixtures.

Note: These grading specifications are only guidelines for general descriptive purposes and may or may not be limited to the detail of the individual components.

Grade E Residences

Residences constructed of low-cost, quality materials and poor workmanship, void of any architectural treatment and built-in features. Architectural design is concerned with function, not appearance. Interior and exterior finished are plain and inexpensive with little or no attention to detail.

FOUNDATION
Concrete block walls or piers. Concrete footings.

EXTERIOR WALLS
Minimum fenestration with inexpensive sash with little or no trims. Low cost sidings are used.

ROOF
Gable or shed type. Rafters or prefabricated trusses with plywood or other inexpensive sheathing with lightweight composition shingle. No cornice or gutters.

FLOOR STRUCTURE
Basement 3" concrete on earth. Wood structure and subfloor on first and upper floors.

FLOOR COVER
Low grade carpet and asphalt or vinyl composition tile is used.

INTERIOR FINISH
Walls are inexpensive taped drywall with paint or textured finish. Kitchen and baths may have enamel painted ceilings and walls. Cabinets are paint-grade wood or vinyl veneer with low-cost laminated plastic countertops. Doors are hollow core with low-cost hardwood. Minimum amount of closet space.

HEATING & COOLING
Minimum heat. May or may not have forced-air furnace. No central cooling system.

PLUMBING
Low-cost inexpensive fixtures and piping. The fixtures can include any of the following: water heater, modular plastic shower shall, toilet, lavatory, tub, tub with shower over, or kitchen sink.

ELECTRICAL
A minimum number of outlets and low-cost lighting.

Note: These grading specifications are only guidelines for general descriptive purposes and or may not be limited to the detail of the individual components.

MANUFACTURED HOUSING

Manufactured housing can be single wide mobile homes, double wide mobile homes, or modular homes. These structures are designed with a steel undercarriage and wheel assemblies for transporting to the site. Modular homes have wood joists rather than a steel undercarriage. N.C.G.S. 105-273(13), in defining real property, provides for inclusion of manufactured housing as follows:

> "Real property,' 'real estate,' and 'land' mean not only the land itself, but also buildings, structures, improvements and permanent fixtures thereon and all rights and privileges belonging on in any wise appertaining thereto. These terms also mean a manufactured home as defined in G.S. 143-143.9(6) if it is a residential structure; has the moving hitch, wheels and axles removed; and is placed upon a permanent foundation either on land owned by the owner of the manufactured home or on land in which the owner of the manufactured home has a leasehold interest pursuant to a lease with a primary term of at least 20 years for the real property on which the manufactured home is affixed and where the lease expressly provides for a disposition of the manufactured home upon termination of the lease. A manufactured home as defined in G.S. 143-143.9(6) that does not meet all of these conditions is considered tangible personal property.

The following guidelines should be used when estimating replacement cost:

On manufactured homes, the wheel and hitch assemblies are usually removed at the building site location. The hitch is not included in the overall dimensions when calculating the actual square footage.

Manufactured homes built in the USA after June 15, 1976, must meet Federal Standards outlined in Title VI, Housing and Community Development Act of 1974. A HUD seal certifying these standards must be displayed on each unit. This section will be used for the purpose of appraising replacement cost for those built prior to its enactment, as well as those built after 1976.

COST

Factory-produced homes consist of single or multi wide units, eight feet or greater in width and at least thirty-two feet or greater in length. These units are transported on their own wheel assemblies to the building site. The units are then set up on a permanent or semi-permanent foundation with utilities attached. Utilities such as water, electricity, sewer or septic tank are included in the building site (land) cost, not the factory home cost.

Manufactured homes are usually described in terms of length and width (12 x 60, 14 x 74, 24 x 52, 28 x 66, etc.) and are priced accordingly. Although most units are sold furnished, furnishings and appliances are not included in the base rate schedules for tax purposes.

Items such as wood decks, stoops, porches, patios etc. are add-ons and are valued accordingly to the schedule in the followings pages.

There has been a separate depreciation schedule developed for manufactured homes.

What is considered a permanent foundation?

The Department of Insurance has issued building codes for installation of manufactured homes. The only foundation required by the building code for a manufactured home is footings and piers. The footings are either of the poured concrete type or a pre-cast solid concrete pad. The size and depth of the footing depends on the type of home and the location of the home. The Building Code states that "The bottom of all footings shall be below the frost line on a minimum of 4 inches below finished grade, whichever is greater." The frost lines vary across the state and there is a chart in the Building Code which shows the frost line by County. The piers are either single stacked or double stacked. The number and placement of the piers are dictated by the Building Code. It is our opinion that all manufactured homes have a permanent foundation if their installation is in compliance with the Building Code. The North Carolina Building Code for manufactured home can be found at:
www.ncdoi.com/osfmdocuments/manufacturedbuilding/mhcode.pdf

Under G.S. 105-273(13) only those doublewides which meet the four criteria listed in the definition can be assessed as real property. All other doublewides are personal property. This does not mean that the value has to change on these units but that the property is treated as personal property from a listing, appraising, assessing and collection standpoint. All doublewides on leased land or located on the land of another must be considered personal property. While the law does not require that all personal property be appraised each year, there is no requirement that units listed as personal property must have a change assessed valuation each year. While it can be reasonably expected that values might change, given the lack of sales data available for personal property, it can be argued that the change is not so easily measurable over a one or two-year period. The value of these homes carried as personal property must be reviewed each year and changes made if dictated by the market. All doublewides will be assessed using the latest adopted Schedule of Values.

APPLYING THE PROPER DESIGN AND STYLE ADJUSTMENTS

Architectural fees, material quantities, labor efficiency and other factors influencing total construction costs may vary considerably from one building type to another, depending upon its particular design. Two dwelling, types for instance, showing no marked difference in size and quality may still show a measurable difference in cost, attributable primarily to a difference in design and style

In computing the replacement cost of any building, therefore, it is necessary to adjust the cost to account for any features varying significantly from the base specifications from which the pricing schedules were developed.

The pricing schedules included in this manual, unless otherwise specified have been developed to reflect perimeter-to-area wall ratios of rectangular shaped buildings, uniform eave lines and roof slopes, overhangs, ceiling heights and other architectural features most typical of conventional designs.

The adjustments for variations in design and style must be made by applying a Design and Style Adjustment in the building features of a residential property. The positive or negative adjustment is a percentage of base cost displayed as a dollar amount in the Building Refinements.

DESIGN AND STYLE ADJUSTMENTS

Description	Adjustment
Bi Level	0 to +10%
Condominium	-5 to -20%
Contemporary	0 to +10%
Duplex	-10 to -30%
Cabin	-5 to -20%
Mansion	+200 to +300%
Mobile Home Real	0 to -15%
Split Level	0 to -15%
Townhouse	0 to -20%
Quadplex	-10 to -30%
Triplex	-10 to -30%

Residential Building Size Factor

MIN_SIZE	MAX_SIZE	SIZE_FACTOR
0	300	1.8978
301	310	1.8978
311	320	1.8978
321	330	1.8978
331	340	1.8978
341	350	1.8978
351	360	1.8978
361	370	1.8978
371	380	1.8978
381	390	1.8978
391	400	1.8978
401	410	1.8978
411	420	1.8978
421	430	1.8978
431	440	1.8978
441	450	1.8978
451	460	1.8978
461	470	1.8978
471	480	1.8978
481	490	1.8978
491	500	1.8978
501	510	1.8978
511	520	1.8978
521	530	1.8978
531	540	1.8978
541	550	1.8978
551	560	1.8978
561	570	1.8978
571	580	1.8978
581	590	1.8978
591	600	1.8978
601	610	1.8679
611	620	1.8379
621	630	1.8080
631	640	1.7781
641	650	1.7481
651	660	1.7182
661	670	1.6883
671	680	1.6583
681	690	1.6284

MIN_SIZE	MIN_SIZE	MIN_SIZE
691	700	1.5985
701	710	1.5805
711	720	1.5625
721	730	1.5446
731	740	1.5266
741	750	1.5087
751	760	1.4907
761	770	1.4727
771	780	1.4548
781	790	1.4368
791	800	1.4189
801	810	1.4069
811	820	1.3949
821	830	1.3829
831	840	1.3710
841	850	1.3590
851	860	1.3470
861	870	1.3350
871	880	1.3230
881	890	1.3111
891	900	1.2991
901	910	1.2904
911	920	1.2818
921	930	1.2731
931	940	1.2645
941	950	1.2558
951	960	1.2471
961	970	1.2385
971	980	1.2298
981	990	1.2212
991	1000	1.2125
1001	1010	1.2062
1011	1020	1.1999
1021	1030	1.1937
1031	1040	1.1874
1041	1050	1.1811
1051	1060	1.1748
1061	1070	1.1685
1071	1080	1.1622
1081	1090	1.1560
1091	1100	1.1497
1101	1110	1.1447

MIN_SIZE	MIN_SIZE	MIN_SIZE
1111	1120	1.1397
1121	1130	1.1347
1131	1140	1.1297
1141	1150	1.1247
1151	1160	1.1197
1161	1170	1.1147
1171	1180	1.1097
1181	1190	1.1047
1191	1200	1.0997
1201	1210	1.0957
1211	1220	1.0917
1221	1230	1.0877
1231	1240	1.0837
1241	1250	1.0798
1251	1260	1.0758
1261	1270	1.0718
1271	1280	1.0678
1281	1290	1.0638
1291	1300	1.0598
1301	1310	1.0566
1311	1320	1.0533
1321	1330	1.0500
1331	1340	1.0468
1341	1350	1.0435
1351	1360	1.0402
1361	1370	1.0370
1371	1380	1.0337
1381	1390	1.0304
1391	1400	1.0272
1401	1410	1.0244
1411	1420	1.0217
1421	1430	1.0190
1431	1440	1.0163
1441	1450	1.0136
1451	1460	1.0109
1461	1470	1.0081
1471	1480	1.0054
1481	1490	1.0027
1491	1500	1.0000
1501	1510	0.9977
1511	1520	0.9954
1521	1530	0.9931

MIN_SIZE	MIN_SIZE	MIN_SIZE
1531	1540	0.9908
1541	1550	0.9885
1551	1560	0.9862
1561	1570	0.9839
1571	1580	0.9816
1581	1590	0.9793
1591	1600	0.9770
1601	1610	0.9751
1611	1620	0.9731
1621	1630	0.9711
1631	1640	0.9691
1641	1650	0.9671
1651	1660	0.9652
1661	1670	0.9632
1671	1680	0.9612
1681	1690	0.9592
1691	1700	0.9572
1701	1710	0.9555
1711	1720	0.9538
1721	1730	0.9521
1731	1740	0.9504
1741	1750	0.9487
1751	1760	0.9470
1761	1770	0.9453
1771	1780	0.9436
1781	1790	0.9419
1791	1800	0.9402
1801	1810	0.9387
1811	1820	0.9372
1821	1830	0.9357
1831	1840	0.9342
1841	1850	0.9327
1851	1860	0.9312
1861	1870	0.9297
1871	1880	0.9282
1881	1890	0.9267
1891	1900	0.9252
1901	1910	0.9239
1911	1920	0.9226
1921	1930	0.9213
1931	1940	0.9199
1941	1950	0.9186

MIN_SIZE	MIN_SIZE	MIN_SIZE
1951	1960	0.9173
1961	1970	0.9160
1971	1980	0.9146
1981	1990	0.9133
1991	2000	0.9120
2001	2010	0.9108
2011	2020	0.9096
2021	2030	0.9085
2031	2040	0.9073
2041	2050	0.9061
2051	2060	0.9050
2061	2070	0.9038
2071	2080	0.9026
2081	2090	0.9015
2091	2100	0.9003
2101	2110	0.8993
2111	2120	0.8982
2121	2130	0.8972
2131	2140	0.8961
2141	2150	0.8951
2151	2160	0.8940
2161	2170	0.8930
2171	2180	0.8919
2181	2190	0.8909
2191	2200	0.8898
2201	2210	0.8889
2211	2220	0.8879
2221	2230	0.8870
2231	2240	0.8860
2241	2250	0.8851
2251	2260	0.8841
2261	2270	0.8832
2271	2280	0.8823
2281	2290	0.8813
2291	2300	0.8804
2301	2310	0.8795
2311	2320	0.8787
2321	2330	0.8778
2331	2340	0.8770
2341	2350	0.8761
2351	2360	0.8752
2361	2370	0.8744

MIN_SIZE	MIN_SIZE	MIN_SIZE
2371	2380	0.8735
2381	2390	0.8727
2391	2400	0.8718
2401	2410	0.8710
2411	2420	0.8703
2421	2430	0.8695
2431	2440	0.8687
2441	2450	0.8679
2451	2460	0.8671
2461	2470	0.8663
2471	2480	0.8655
2481	2490	0.8648
2491	2500	0.8640
2501	2510	0.8633
2511	2520	0.8625
2521	2530	0.8618
2531	2540	0.8611
2541	2550	0.8604
2551	2560	0.8597
2561	2570	0.8590
2571	2580	0.8583
2581	2590	0.8576
2591	2600	0.8569
2601	2610	0.8562
2611	2620	0.8556
2621	2630	0.8550
2631	2640	0.8543
2641	2650	0.8537
2651	2660	0.8530
2661	2670	0.8524
2671	2680	0.8517
2681	2690	0.8511
2691	2700	0.8505
2701	2710	0.8498
2711	2720	0.8492
2721	2730	0.8486
2731	2740	0.8480
2741	2750	0.8474
2751	2760	0.8468
2761	2770	0.8462
2771	2780	0.8456
2781	2790	0.8450

MIN_SIZE	MIN_SIZE	MIN_SIZE
2791	2800	0.8444
2801	2810	0.8439
2811	2820	0.8433
2821	2830	0.8428
2831	2840	0.8422
2841	2850	0.8417
2851	2860	0.8411
2861	2870	0.8406
2871	2880	0.8400
2881	2890	0.8395
2891	2900	0.8389
2901	2910	0.8384
2911	2920	0.8379
2921	2930	0.8374
2931	2940	0.8369
2941	2950	0.8364
2951	2960	0.8358
2961	2970	0.8353
2971	2980	0.8348
2981	2990	0.8343
2991	3000	0.8338
3001	3010	0.8333
3011	3020	0.8328
3021	3030	0.8324
3031	3040	0.8319
3041	3050	0.8314
3051	3060	0.8310
3061	3070	0.8305
3071	3080	0.8300
3081	3090	0.8295
3091	3100	0.8291
3101	3110	0.8286
3111	3120	0.8282
3121	3130	0.8277
3131	3140	0.8273
3141	3150	0.8268
3151	3160	0.8264
3161	3170	0.8259
3171	3180	0.8255
3181	3190	0.8251
3191	3200	0.8246
3201	3210	0.8242

MIN_SIZE	MIN_SIZE	MIN_SIZE
3211	3220	0.8238
3221	3230	0.8234
3231	3240	0.8230
3241	3250	0.8226
3251	3260	0.8222
3261	3270	0.8218
3271	3280	0.8214
3281	3290	0.8209
3291	3300	0.8205
3301	3310	0.8201
3311	3320	0.8198
3321	3330	0.8194
3331	3340	0.8190
3341	3350	0.8186
3351	3360	0.8182
3361	3370	0.8178
3371	3380	0.8174
3381	3390	0.8170
3391	3400	0.8166
3401	3410	0.8163
3411	3420	0.8159
3421	3430	0.8155
3431	3440	0.8152
3441	3450	0.8148
3451	3460	0.8145
3461	3470	0.8141
3471	3480	0.8138
3481	3490	0.8134
3491	3500	0.8131
3501	3510	0.8127
3511	3520	0.8124
3521	3530	0.8120
3531	3540	0.8117
3541	3550	0.8114
3551	3560	0.8110
3561	3570	0.8107
3571	3580	0.8103
3581	3590	0.8100
3591	3600	0.8097
3601	3610	0.8093
3611	3620	0.8090
3621	3630	0.8087

MIN_SIZE	MIN_SIZE	MIN_SIZE
3631	3640	0.8083
3641	3650	0.8080
3651	3660	0.8077
3661	3670	0.8074
3671	3680	0.8070
3681	3690	0.8067
3691	3700	0.8064
3701	3710	0.8061
3711	3720	0.8058
3721	3730	0.8055
3731	3740	0.8052
3741	3750	0.8049
3751	3760	0.8046
3761	3770	0.8043
3771	3780	0.8040
3781	3790	0.8037
3791	3800	0.8034
3801	3810	0.8031
3811	3820	0.8028
3821	3830	0.8025
3831	3840	0.8023
3841	3850	0.8020
3851	3860	0.8017
3861	3870	0.8014
3871	3880	0.8012
3881	3890	0.8009
3891	3900	0.8006
3901	3910	0.8003
3911	3920	0.8001
3921	3930	0.7998
3931	3940	0.7995
3941	3950	0.7992
3951	3960	0.7990
3961	3970	0.7987
3971	3980	0.7984
3981	3990	0.7981
3991	4000	0.7978
4001	4100	0.7976
4101	4200	0.7973
4201	4300	0.7971
4301	4400	0.7968
4401	4500	0.7965

MIN_SIZE	MIN_SIZE	MIN_SIZE
4501	4600	0.7963
4601	4700	0.7960
4701	4800	0.7957
4801	4900	0.7955
4901	5000	0.7952
5001	5100	0.7950
5101	5200	0.7948
5201	5300	0.7945
5301	5400	0.7943
5401	5500	0.7940
5501	5600	0.7938
5601	5700	0.7936
5701	5800	0.7933
5801	5900	0.7931
5901	6000	0.7929
6001	6100	0.7926
6101	6200	0.7924
6201	6300	0.7922
6301	6400	0.7920
6401	6500	0.7917
6501	6600	0.7915
6601	6700	0.7913
6701	6800	0.7911
6801	6900	0.7909
6901	7000	0.7906
7001	7100	0.7888
7101	7200	0.7870
7201	7300	0.7852
7301	7400	0.7834
7401	7500	0.7816
7501	7600	0.7799
7601	7700	0.7781
7701	7800	0.7763
7801	7900	0.7745
7901	8000	0.7727
8001	8100	0.7715
8101	8200	0.7702
8201	8300	0.7690
8301	8400	0.7678
8401	8500	0.7666
8501	8600	0.7654
8601	8700	0.7642

MIN_SIZE	MIN_SIZE	MIN_SIZE
8701	8800	0.7630
8801	8900	0.7618
8901	9000	0.7606
9001	9100	0.7597
9101	9200	0.7589
9201	9300	0.7580
9301	9400	0.7572
9401	9500	0.7563
9501	9600	0.7555
9601	9700	0.7546
9701	9800	0.7538
9801	9900	0.7529
9901	10000	0.7521
10001	10100	0.7514
10101	10200	0.7508
10201	10300	0.7501
10301	10400	0.7495
10401	10500	0.7489
10501	10600	0.7482
10601	10700	0.7476
10701	10800	0.7469
10801	10900	0.7463
10901	11000	0.7456
11001	11100	0.7451
11101	11200	0.7446
11201	11300	0.7441
11301	11400	0.7436
11401	11500	0.7431
11501	11600	0.7426
11601	11700	0.7421
11701	11800	0.7417
11801	11900	0.7412
11901	12000	0.7407
12001	12100	0.7403
12101	12200	0.7399
12201	12300	0.7395
12301	12400	0.7391
12401	12500	0.7387
12501	12600	0.7383
12601	12700	0.7379
12701	12800	0.7375
12801	12900	0.7371

MIN_SIZE	MIN_SIZE	MIN_SIZE
12901	13000	0.7367
13001	13100	0.7364
13101	13200	0.7361
13201	13300	0.7357
13301	13400	0.7354
13401	13500	0.7351
13501	13600	0.7348
13601	13700	0.7344
13701	13800	0.7341
13801	13900	0.7338
13901	14000	0.7334
14001	14100	0.7332
14101	14200	0.7329
14201	14300	0.7326
14301	14400	0.7323
14401	14500	0.7321
14501	14600	0.7318
14601	14700	0.7315
14701	14800	0.7312
14801	14900	0.7310
14901	15000	0.7307
15001	15100	0.7305
15101	15200	0.7302
15201	15300	0.7300
15301	15400	0.7298
15401	15500	0.7296
15501	15600	0.7293
15601	15700	0.7291
15701	15800	0.7289
15801	15900	0.7287
15901	16000	0.7285
16001	16100	0.7283
16101	16200	0.7281
16201	16300	0.7279
16301	16400	0.7277
16401	16500	0.7275
16501	16600	0.7273
16601	16700	0.7271
16701	16800	0.7269
16801	16900	0.7267
16901	17000	0.7265
17001	17100	0.7263

MIN_SIZE	MIN_SIZE	MIN_SIZE
17101	17200	0.7261
17201	17300	0.7260
17301	17400	0.7258
17401	17500	0.7256
17501	17600	0.7255
17601	17700	0.7253
17701	17800	0.7251
17801	17900	0.7250
17901	18000	0.7248
18001	18100	0.7246
18101	18200	0.7245
18201	18300	0.7243
18301	18400	0.7242
18401	18500	0.7240
18501	18600	0.7238
18601	18700	0.7237
18701	18800	0.7235
18801	18900	0.7234
18901	19000	0.7232
19001	19100	0.7231
19101	19200	0.7229
19201	19300	0.7228
19301	19400	0.7227
19401	19500	0.7226
19501	19600	0.7224
19601	19700	0.7223
19701	19800	0.7222
19801	19900	0.7220
19901	20000	0.7219
20001	999999999	0.7218

Economic Depreciation (EC) – External obsolescence conditions from outside the property which are considered detrimental to the property value.
This adjustment is reserved for appraiser's discretion

Functional Depreciation – Any internal factor from deficiencies or super adequacies which prohibits the utilization of the property to its fullest extent..

This adjustment is reserved for appraiser's discretion.

Protected Corridor- GS105-277/9A
Real property on which a building or other structure is located and that lies within a transportation corridor marked on an official map filed under Article 2E of Chapter 136 of the General Statutes is designated a special class of property under Section 2(2) of Article V of the North Carolina Constitution and is taxable at fifty percent (50%) of the appraised value of the property if the property has not been subdivided, as defined in G.S. 153A-335 or G.S.160A-376, since it was included in the corridor.

Protected Corridor will be adjusted in the Economic Depreciation Field.

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X GRADE RESIDENTIAL

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E GRADE RESIDENTIAL

Depreciation

Depreciation is a loss of utility and hence value from any cause. An effect caused by deterioration and/or obsolescence. Deterioration or physical depreciation is evidenced by wear and tear, decay, dry rot, cracks, encrustations, or structural defects. Obsolescence is divisible into two parts, functional and external. Functional obsolescence may be due to poor plan, mechanical inadequacy or over adequacy, functional inadequacy over adequacy due to size, style, age, etc. It is evidenced by conditions within the property. External obsolescence is caused by changes external to the property.

Depreciation begins upon construction of the improvements; they immediately begin to age physically and to suffer from functional obsolescence in their design. Negative environmental forces cause immediate external obsolescence.

When the improvements are constructed their economic life begins. During this period, they should contribute value to the property. If they are the "perfect improvement', the amount of value they contribute would be their total cost. Since few, if any, perfect improvements are constructed, a difference exists between their total cost and their value, which represents some form of depreciation.

Generally, if the house is of average condition and design and conforms to the other houses in a market area that is not subject to unusual economic influences, its effective age and chronological age will be about the same. If the house has had better than average maintenance, rehabilitation or modernization, its effective age probably will be less than its chronological age.
If it is in poorer condition than typical houses of the same age or has not been modernized or rehabilitated as other similar houses in the market areas, or if some off-site economic or environmental factor is negatively affecting the value, the effective age will be greater than the chronological age.

Accrued depreciation may be estimated directly through observation and analysis of the components of depreciation affecting the property or through use of a formula based on physical or economic age-life factors. It may be estimated indirectly by use of the income or market data approaches.

Three techniques are used by appraiser to measure depreciation:

1. The breakdown method separates charges in the basis of origin for cause of loss (physical deterioration, curable and incurable; functional obsolescence, curable and incurable; and functional obsolescence, curable and incurable; and external obsolescence). Each component is estimated separately, using the engineering method of observation techniques.

2. The age-life method is accomplished by estimating the typical economic life of the Improvements and their effective age.

3. The abstraction or market method extracts depreciation directly from the market.

For the purpose of this manual, all three techniques have been considered producing an overall condition, desirability and degree of usefulness of each structure.

	DEPRECIATION PERCENT GOOD TABLE RATING GUIDE
EXCELLENT	BUILDING IS IN PERFECT CONDITION; VERY ATTRACTIVE AND HIGHLY DESIRABLE.
VERY GOOD	SLIGHT EVIDENCE OF DETERIORATION; STILL ATTRACTIVE AND QUITE DESIRABLE.
GOOD	MINOR DETERIORATION VISIBLE; SLIGHTLY LESS ATTRACTIVE AND DESIRABLE, BUT USEFUL.
AVERAGE	NORMAL WEAR AND TEAR IS APPARENT; AVERAGE ATTRACTIVENESS AND DESIRABILITY.
FAIR	MARKED DETERIORATION - BUT QUITE USABLE; RATHER UNATTRACTIVE AND UNDESIRABLE.
POOR	DEFINITE DETERIORATION IS OBVIOUS; DEFINITELY UNDESIRABLE AND BARELY USABLE.
VERY POOR	CONDITION APPROACHES UNSOUNDNESS; EXTREMELY UNDESIRABLE AND BARELY USABLE.
UNSOUND	BUILDING IS DEFINITELY UNSOUND AND PRACTICALLY UNFIT FOR RESIDENTIAL USE. COULD POSSIBLY BE USED FOR STORAGE.

Residential 60 Year Depreciation										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
60	2019	0	0.00	0.00	3.00	5.00	10.00	20.00	30.00	95.00
60	2018	1	0.00	0.00	3.00	5.00	10.00	20.00	30.00	95.00
60	2017	2	0.00	0.00	3.00	5.00	10.00	20.00	30.00	95.00
60	2016	3	0.00	2.00	4.00	6.00	11.00	21.00	31.00	95.00
60	2015	4	0.00	2.00	5.00	7.00	12.00	22.00	32.00	95.00
60	2014	5	0.00	2.00	5.00	8.00	13.00	23.00	33.00	95.00
60	2013	6	1.00	3.00	6.00	9.00	14.00	24.00	34.00	95.00
60	2012	7	1.00	3.00	7.00	10.00	15.00	25.00	35.00	95.00
60	2011	8	2.00	4.00	8.00	11.00	16.00	26.00	36.00	95.00
60	2010	9	2.00	4.00	9.00	12.00	17.00	27.00	37.00	95.00
60	2009	10	3.00	5.00	10.00	13.00	18.00	28.00	38.00	95.00
60	2008	11	3.00	6.00	11.00	14.00	19.00	29.00	39.00	95.00
60	2007	12	3.00	7.00	12.00	15.00	20.00	30.00	40.00	95.00
60	2006	13	4.00	8.00	13.00	16.00	21.00	31.00	41.00	95.00
60	2005	14	4.00	9.00	14.00	17.00	22.00	32.00	42.00	95.00
60	2004	15	5.00	10.00	15.00	18.00	23.00	33.00	43.00	95.00
60	2003	16	6.00	11.00	16.00	19.00	24.00	34.00	44.00	95.00
60	2002	17	7.00	12.00	17.00	20.00	25.00	35.00	45.00	95.00
60	2001	18	8.00	13.00	18.00	21.00	26.00	36.00	46.00	95.00
60	2000	19	9.00	14.00	19.00	22.00	27.00	37.00	47.00	95.00
60	1999	20	10.00	15.00	20.00	23.00	28.00	38.00	48.00	95.00
60	1998	21	11.00	16.00	21.00	24.00	29.00	39.00	49.00	95.00
60	1997	22	12.00	17.00	22.00	25.00	30.00	40.00	50.00	95.00
60	1996	23	13.00	18.00	23.00	26.00	31.00	41.00	51.00	95.00
60	1995	24	14.00	19.00	24.00	27.00	32.00	42.00	52.00	95.00
60	1994	25	15.00	20.00	25.00	28.00	33.00	43.00	53.00	95.00
60	1993	26	16.00	21.00	26.00	29.00	34.00	44.00	54.00	95.00
60	1992	27	17.00	22.00	27.00	30.00	35.00	45.00	55.00	95.00
60	1991	28	18.00	23.00	28.00	31.00	36.00	46.00	56.00	95.00
60	1990	29	19.00	24.00	29.00	32.00	37.00	47.00	57.00	95.00
60	1989	30	20.00	25.00	30.00	33.00	38.00	48.00	58.00	95.00
60	1988	31	21.00	26.00	31.00	34.00	39.00	49.00	59.00	95.00
60	1987	32	22.00	27.00	32.00	35.00	40.00	50.00	60.00	95.00
60	1986	33	23.00	28.00	33.00	36.00	41.00	51.00	61.00	95.00
60	1985	34	24.00	29.00	34.00	37.00	42.00	52.00	62.00	95.00
60	1984	35	25.00	30.00	35.00	38.00	43.00	53.00	63.00	95.00
60	1983	36	26.00	31.00	36.00	39.00	44.00	54.00	64.00	95.00
60	1982	37	27.00	32.00	37.00	40.00	45.00	55.00	65.00	95.00
60	1981	38	28.00	33.00	38.00	41.00	46.00	56.00	66.00	95.00
60	1980	39	29.00	34.00	39.00	42.00	47.00	57.00	67.00	95.00

ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
60	1979	40	30.00	35.00	40.00	43.00	48.00	58.00	68.00	95.00
60	1978	41	31.00	36.00	41.00	44.00	49.00	59.00	69.00	95.00
60	1977	42	32.00	37.00	42.00	45.00	50.00	60.00	70.00	95.00
60	1976	43	33.00	38.00	43.00	46.00	51.00	61.00	71.00	95.00
60	1975	44	33.00	38.00	43.00	46.00	51.00	61.00	71.00	95.00
60	1974	45	33.00	38.00	43.00	46.00	51.00	61.00	71.00	95.00
60	1973	46	34.00	39.00	44.00	47.00	52.00	62.00	72.00	95.00
60	1972	47	34.00	39.00	44.00	47.00	52.00	62.00	72.00	95.00
60	1971	48	34.00	39.00	44.00	47.00	52.00	62.00	72.00	95.00
60	1970	49	34.00	39.00	44.00	47.00	52.00	62.00	72.00	95.00
60	1969	50	34.00	39.00	44.00	47.00	52.00	62.00	72.00	95.00
60	1968	51	34.00	39.00	44.00	48.00	53.00	63.00	73.00	95.00
60	1967	52	34.00	39.00	44.00	48.00	53.00	63.00	73.00	95.00
60	1966	53	34.00	39.00	44.00	48.00	53.00	63.00	73.00	95.00
60	1965	54	34.00	39.00	44.00	48.00	53.00	63.00	73.00	95.00
60	1964	55	35.00	40.00	45.00	49.00	54.00	64.00	74.00	95.00
60	1963	56	35.00	40.00	45.00	49.00	54.00	64.00	74.00	95.00
60	1962	57	35.00	40.00	45.00	49.00	54.00	64.00	74.00	95.00
60	1961	58	35.00	40.00	45.00	49.00	54.00	64.00	74.00	95.00
60	1960	59	35.00	40.00	45.00	49.00	54.00	64.00	74.00	95.00
60	1959	60	35.00	40.00	45.00	50.00	55.00	65.00	75.00	95.00

Residential 30 Year Depreciation										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
30	2019	0	4.00	4.00	4.00	6.00	11.00	21.00	32.00	95.00
30	2018	1	4.00	4.00	4.00	6.00	11.00	21.00	32.00	95.00
30	2017	2	4.00	4.00	4.00	6.00	11.00	21.00	32.00	95.00
30	2016	3	5.00	5.00	5.00	8.00	13.00	23.00	34.00	95.00
30	2015	4	6.00	6.00	6.00	10.00	15.00	25.00	36.00	95.00
30	2014	5	7.00	7.00	7.00	12.00	17.00	28.00	38.00	95.00
30	2013	6	9.00	9.00	9.00	14.00	19.00	30.00	40.00	95.00
30	2012	7	11.00	11.00	11.00	16.00	21.00	32.00	42.00	95.00
30	2011	8	13.00	13.00	13.00	18.00	23.00	34.00	44.00	95.00
30	2010	9	15.00	15.00	15.00	20.00	25.00	36.00	46.00	95.00
30	2009	10	17.00	17.00	17.00	22.00	27.00	38.00	48.00	95.00
30	2008	11	19.00	19.00	19.00	24.00	29.00	40.00	50.00	95.00
30	2007	12	21.00	21.00	21.00	26.00	31.00	42.00	52.00	95.00
30	2006	13	23.00	23.00	23.00	28.00	33.00	44.00	53.00	95.00
30	2005	14	25.00	25.00	25.00	30.00	35.00	46.00	56.00	95.00
30	2004	15	27.00	27.00	27.00	32.00	37.00	48.00	59.00	95.00
30	2003	16	30.00	30.00	30.00	35.00	40.00	51.00	62.00	95.00
30	2002	17	33.00	33.00	33.00	38.00	43.00	54.00	65.00	95.00
30	2001	18	36.00	36.00	36.00	41.00	46.00	57.00	68.00	95.00
30	2000	19	39.00	39.00	39.00	44.00	49.00	60.00	71.00	95.00
30	1999	20	42.00	42.00	42.00	47.00	52.00	63.00	74.00	95.00
30	1998	21	45.00	45.00	45.00	50.00	55.00	66.00	77.00	95.00
30	1997	22	48.00	48.00	48.00	53.00	58.00	69.00	80.00	95.00
30	1996	23	51.00	51.00	51.00	56.00	61.00	72.00	83.00	95.00
30	1995	24	54.00	54.00	54.00	59.00	64.00	75.00	85.00	95.00
30	1994	25	57.00	57.00	57.00	62.00	67.00	78.00	85.00	95.00
30	1993	26	60.00	60.00	60.00	65.00	70.00	81.00	85.00	95.00
30	1992	27	63.00	63.00	63.00	68.00	73.00	84.00	85.00	95.00
30	1991	28	66.00	66.00	66.00	71.00	76.00	85.00	85.00	95.00
30	1990	29	69.00	69.00	69.00	74.00	79.00	85.00	85.00	95.00
30	1989	30	70.00	70.00	70.00	75.00	80.00	85.00	85.00	95.00

Miscellaneous Improvements

OUTBUILDINGS AND YARD ITEMS PRICING SCHEDULES

The Out Building and Yard item pricing schedules are provided to calculate the replacement cost new of a variety of types of structures typically associated with residential/agricultural properties.

PREFABRICATED METAL BUILDINGS

TYPES	DESCRIPTION
AX1	Prefabricated metal building
AX1DF	Prefabricated metal building with dirt floor
AX1DFHH	Prefabricated metal building with dirt floor and high wall height
AX1DFLH	Prefab dirt floor with low wall height
AX1DFSW	Prefabricated metal building with dirt floor and slanted walls
AX1HIHT	Prefabricated metal building with 16-20 foot wall height
AX1LOWHT	Prefabricated metal building with 9-12 foot wall height
AX1NOE	Prefabricated metal building with no electricity
AX1NOEDF	Prefabricated metal building with no electricity and dirt floor
AX1NOEHH	Prefabricated metal building with no electricity and high wall height
AX1NOELH	Prefabricated metal building with no electricity and low wall height
AX1NOESW	Prefabricated metal building with no electricity and slanted walls
AX1SWHH	Prefabricated metal building with no electricity and slanted walls with high wall heights
AX1SWLH	Prefabricated metal building with no electricity and slanted walls with low wall height

PREFABRICATED METAL BUILDINGS

BASE SPECIFICATIONS	
B GRADE	
FRAME	STEEL FRAME AND TRUSS
EXTERIOR WALLS:	SURFACE TREATED STEEL OR ALUMINUM SIDING
INTERIOR:	UNFINISHED SHOP AREA INCLUDING TOOL CABINETS
FLOOR:	CONCRETE ON GRADE
OTHER FEATURES	GOOD LIGHTING AND OUTLETS
C GRADE	
FRAME	STEEL FRAME AND RAFTERS
EXTERIOR WALLS	STEEL SIDING
INTERIOR	UNFINISHED
FLOOR	CONCRETE ON GRADE
OTHER FEATURES	ADEQUATE LIGHTING AND OUTLETS
D GRADE	
FRAME	LIGHT STEEL FRAME & RAFTERS
EXTERIOR WALLS	SHEET METAL
INTERIOR	UNFINISHED
FLOOR	CONCRETE ON GRADE
OTHER FEATURES	MINIMAL ELECTRICAL SERVICE

BASE FOUNDATIONS	
FOUNDATION	Concrete Walls and Footings
WALLS	Wood or Metal siding on Wood Frame; Masonry for Stable, Normal Openings
FLOORS	First, Earth; Upper, Wood on Wood Joist, Timber of Steel Beams and Columns
ROOF	Asphalt Shingles or Metal on Wood Decking, Rafters and Timber Framing
PLUMBING	Water Connection
OTHER FEATURES	Loft

QUALITY GRADE SPECIFICATIONS	
B Grade	Good Quality Construction with Numerous Electrical Fixtures and Outlets, Numerous Windows, Service Doors and Equipment Access Doors
C Grade	Average Quality Construction with Adequate Electrical System, Norman Norman Windows, Service and Equipment Access Doors
D Grade	Poor Quality Construction Utilizing Interior Material, Minimal Electrical and Few Windows and Doors

PREFABRICATED STEEL BUILDINGS

BARNS

TYPES	DESCRIPTION
BANK BARN	
BB	Bank Barn
BBCE	Bank Barn with concrete floor & electricity
BBCF	Bank Barn with concrete floor
BBEL	Bank Barn with electricity
BBSC	Bank Barn with stalls and concrete floor
BBSCE	Bank Barn with stalls, concrete floor and electricity
BBSE	Bank Barn with stalls and electricity
BBSP	Bank Barn with stalls
FLAT BARN	
BF	Barn Flat
BFCEE	Barn Flat with concrete floor and electricity
BFCF	Barn Flat with concrete floor
BFEL	Barn Flat with electricity
BFSC	Barn Flat with stalls and concrete floor
BFSCE	Barn Flat with stalls, concrete floor and electricity
BFSE	Barn Flat with stalls and electricity
BFSP	Barn Flat with stalls
BARN STABLE/DAIRY	
BS	Barn Stable/Dairy
BSCE	Barn Stable/Dairy with concrete floor and electricity
BSCL	Barn Stable/Dairy with concrete floor
BSEL	Barn Stable/Dairy with electricity
BSSC	Barn Stable with stalls and concrete floor
BSSCE	Barn Stable/Dairy with stalls concrete floors and electricity
BSSE	Barn Stable/Dairy with stalls and electricity
BSSP	Barn Stable/Dairy with stalls

BASE FOUNDATIONS	
FOUNDATION	Concrete Walls and Footings
WALLS	Wood or Metal siding on Wood Frame; Masonry for Stable, Normal Openings
FLOORS	First, Earth; Upper, Wood on Wood Joist, Timber of Steel Beams and Columns
ROOF	Asphalt Shingles or Metal on Wood Decking, Rafters and Timber Framing
PLUMBING	Water Connection
OTHER FEATURES	Loft

QUALITY GRADE SPECIFICATIONS	
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D Grade	Poor Quality Construction Utilizing Interior Material, Minimal Electrical and Few Windows and Doors

SPECIAL PURPOSE DAIRY & HORSE BARNS

GENERAL PURPOSE BANK BARNS

GENERAL PURPOSE BARNS & SHEDS

CANOPY

TYPES	DESCRIPTION
CANCF	Canopy with concrete or asphalt floor
CANCFE	Canopy with concrete floor and electricity
CANE	Canopy with electricity
CANOPYRES	Canopy

Base Specifications - no perimeter footings, earth floor, flat roof, prefabricated metal

CARPORT

TYPES	DESCRIPTION
CARPORT	Carport
CPCF	Carport with concrete or asphalt floor
CPCFE	Carport with concrete/asphalt floor and electricity
CPE	Carport with electricity
CPUATTIC	Carport w/unfinished attic, concrete floor
CPBONRM	Carport w/bonus room concrete floor

Base Specifications - Permanent footings or foundation, pitch roof, earth floor

ENCLOSED PORCH

ENCPORCH	Enclosed porch, detached

Base Specifications - Above grade level, roof, walls (screen, glass, frame, masonry)

GARAGE

TYPE	DESCRIPTION
GARFRM	Garage frame
GARMAS	Garage masonry
GFATTSTG	Garage frame with attic storage
GFABONRM	Garage frame with bonus room
GFSFLA	Garage full story with finished living area
GFHSFLA	Garage frame half story with finished living area
GFUFAS	Garage frame unfinished interior with attic storage
GFUFBR	Garage frame unfinished interior with bonus room
GFUFFSLA	Garage frame unfinished interior with full story finished living area
GFUFHSLA	Garage frame unfinished interior with half story finished living area
GFUFINT	Garage frame unfinished interior
GMATTSTG	Garage masonry with attic storage
GMBONRM	Garage masonry with bonus room
GMFSFLA	Garage masonry full story finished living area
GMHSFLA	Garage masonry half story finished living area
GMUFFSLA	Garage masonry unfinished interior with full story living area
GMUFHSLA	Garage masonry unfinished interior with half story finished living area
GMUNFINT	Garage masonry unfinished interior
GMUFAS	Garage masonry unfinished interior with attic storage
GMUFBR	Garage masonry unfinished interior with bonus room

Base Specifications - Concrete block or slab foundation, wood framing or masonry, adequate wiring, windows and doors

TYPE	DESCRIPTION
GAZEBO	GAZEBO

Base specifications - Octagon shape, wood or vinyl, assemble kits or site built

GRAIN BIN

GB	Grain bin without drying bin
GBDB	Grain bin with drying bin

Base Specifications - Steel columns and beam support floor, auger tube, includes a door or manhole concrete slab foundation.
Grain Bins with drying bin would have fans & heat

STEEL GRAIN BINS

GREENHOUSES

TYPE	DESCRIPTION
GREENFR	Greenhouse frame
GREENMET	Greenhouse metal
GREENPL	Greenhouse plastic
GREENPO	Greenhouse polyethylene

BASE SPECIFICATIONS

GREENFR	**"B" grade** continuous wall foundation, tempered or laminated double or triple pane glass, good quality wood frame (with end wall doors), concrete floor, good ventilation, electrical and water service **"C" grade** continuous wall foundation, double pane standard glass, average wood frame (with end wall doors), adequate ventilation, electric and water service **"D grade"** low continuous wall foundation, standard glazed glass, low quality frame with door, minimum ventilation and electrical service.
GREENMET	**"B" grade** continuous wall foundation, tempered or laminated double or triple pane glass, anodized metal or tubular framing (with end wall doors), concrete floors or walks, good ventilation, electrical and water service **"C" grade** continuous wall foundation, standard glazed, double or triple pane glass, average steel frame (with end wall doors), gravel or earth floor, adequate ventilation, electrical and water service. **"D grade"** low continuous wall foundation, standard glazed glass, low cost aluminum or pipe frame with door, earth floor, minimal ventilation and electrical service.
GREENPL	**"B grade"** Continuous wall foundation, good plastic cover, good quality wood frame (with end wall doors), concrete walks, good ventilation, electrical and water service **"C grade"** Continuous wall foundation, average plastic cover, average wood frame (with end wall doors), grave or earth floor, adequate ventilation. **"D grade"** low continuous wall foundation, standard plastic cover, low cost wood frame with door, earth floor, minimal ventilation, electrical service.

GREENPO	**"C grade"** Polyethylene over tubular structure, cheap pipe frame structure

LEAN-TO

TYPE	DESCRIPTION
LT	LEAN-TO A pole shed with sloping roof that is supported on one side by the wall of an adjoining building

PERSONAL PROPERTY MOBILE HOME ADDITIONS

TYPES	DESCRIPTION
MHA	Mobile home addition (living area)
MHC	Mobile home carport/canopy
MHD	Mobile home wood deck
MHE	Mobile home enclosed porch
MHP	Mobile home open porch

Base specifications - same as additions to dwellings.

MOBILE HOME SITE /HOOKUP

TYPES	DESCRIPTION
MHSITE	Mobile home site

Base specifications - Land improvements, (utilities, electricity, driveway, etc) made for manufactured home. Typically small land area with minimum landscaping. Manufactured home listed as personal property.

MILK HOUSES

TYPES	DESCRIPTION
MIH	Milk house detached
MP	Milking parlor

BASE SPECIFICATION

FOUNDATION	Concrete walls & footings
WALLS	Concrete block/glazed tile w/wood/steel sash windows
FLOOR	Concrete
ROOF	Double pitch w/asphalt shingles on wood decking & framing
OTHER FEATURES	Electric lighting, unit heaters, plumbing and floor drains

MILK HOUSES AND MILKING PARLORS

MINERAL RIGHTS

TYPE	DESCRIPTION
MINRIGHT	Mineral Rights

All oil, gas or minerals interest in lands severed or separated from the surface fee simple ownership and forfeitable under the terms of G.S. 1-42.9(b) must be listed for ad valorem taxes

OPEN PORCH

TYPE	DESCRIPTION
OPNPORCH	Open porch detached

Base Specification - above grade level, foundation or pier support, cost includes steps, roof railing

TYPE	DESCRIPTION
PATIO	Patio with kitchen and fire feature

TYPE	DESCRIPTION
PATIO	Patio

Base Specification - Concrete slab construction at grade level. No roof

POLE FRAME BUILDINGS AND IMPLEMENT SHEDS

TYPE	DESCRIPTION
PF40CF	Pole bldg frame 4 side open with concrete floor
PF4C	Pole bldg frame 4 sides closed
PF4CCF	Pole bldg frame 4 sides closed w/concrete floor
PF4CCFI	Pole bldg frame 4 sides closed w/concrete floor, insulation
PF4CCFIL	Pole bldg frame 4 sides closed w/concrete floor, insulation and wood lining
PF4CI	Pole bldg frame 4 sides closed w/insulation
PF4CIWL	Pole bldg frame 4 sides closed w/insulation and wood lining
PF4CWL	Pole bldg frame 4 sides w/ wood lining
PF4O	Pole bldg frame 4 side open
PFIO	Pole bldg frame 1 side open
PFIOCF	Pole bldg frame 1 side open w/concrete floor
PFIOCFI	Pole bldg frame 1 side open w/concrete floor and insulation
PFIOCFIL	Pole bldg frame 1 side open w/concrete floor, insulation and wood lining
PFIOCFWL	Pole bldg frame 1 side open w/concrete floor and wood lining
PFIOI	Pole bldg frame 1 side open w/insulation
PFIOIWL	Pole bldg frame 1 side open w/insulation and wood lining
PFIOWL	Pole bldg frame 1 side open w/wood lining
PM10CF	Pole bldg metal 1 side open w/concrete floor
PM10CFI	Pole bldg metal 1 side open w/concrete floor and insulation
PM10CFIL	Pole bldg metal 1 side open w/concrete floor and insulation, and wood lining
PM10CFWL	Pole bldg metal 1 side open w/concrete floor & wood lining
PM10I	Pole bldg metal 1 side open w/insulation
PM10IWL	Pole bldg metal 1 side open w/insulation and wood lining
PM1O	Pole bldg metal 1 side open
PM40	Pole bldg metal 4 side open
PM40CF	Pole bldg metal 4 side open with concrete floor
PM4C	Pole bldg metal 4 sides closed
PM4CCF	Pole bldg metal 4 sides closed w/concrete floor
PM4CCFI	Pole bldg metal 4 sides closed w/concrete floor and insulation
PM4CCFIL	Pole bldg metal 4 sides closed w/concrete floor, insulation and wood lining
PM4CCFWL	Pole bldg metal 4 sides closed w/concrete floor and wood lining
PM4CI	Pole bldg metal 4 sides closed w/insulation
PM4CIWL	Pole bldg metal 4 sides closed w/insulation and wood lining
PM4CWL	Pole bldg metal 4 sides closed w/wood lining

Base Specifications:

Foundation - concrete pier

Walls - wood or metal on wood framing

Roof - wood or metal on wood trusses - 36' clear span

Floor - earth or gravel

POLE FRAME BUILDINGS AND IMPLEMENT SHEDS

POULTRY HOUSES

TYPE	DESCRIPTION
PH	Poultry house
PHBH	Poultry house/breeder
PHE	Egg House
PHPH	Poultry/pullet house w/extra ventilation
PHS	Poultry house storage

BASE SPECIFICATIONS

B GRADE

Foundation:	Masonry footing
Exterior Walls:	Good quality metal siding on higher grade wood or light steel frame. Adequate insulation and windows
Interior:	Unfinished
Ground Floor:	Earth or concrete
Roof:	Double pitch with rafters; metal or asphalt shingles. Roofing on wood sheathing on wood or steel frame
Other Features:	Adequate electrical and water service; roof ventilators

C GRADE

Foundation:	Masonry footing
Exterior Walls:	Concrete/wood with wire mesh (enclosed with lost cost material such as plastic or treated paper in severe weather) or lower grade wood frame. Adequate insulation
Interior:	Unfinished
Ground floor:	Earth
Roof	Double pitch, metal or roll composition on wood sheathing and frame
Other Features:	Adequate electrical and water service

D GRADE

Foundation:	No foundation
Exterior Walls:	Post construction with minimal insulation
Interior:	Unfinished
Ground Floor:	Earth
Roof:	Double pitch, metal or roll composition on wood sheathing and frame
Other Features:	Minimal electrical and water service

*Poultry house equipment is considered personal property and **not** included in base cost of house.

POULTRY HOUSES

POULTRY HOUSE WITH EGG HOUSE

RESIDENTIAL SWIMMING POOLS

TYPE	DESCRIPTION
POOLCONC	Pool concrete
POOLHSE	Pool house
POOLVIN	Pool Vinyl

Base Price includes: basic pool structure, filter and pump equipment, all plumbing, drains and aluminum 3" perimeter concrete walkway.

Prefabricated Pool	Vinyl liner and hopper bottom, galvanized steel walls or equal
Reinforced Concrete Pool	Good quality poured concrete walls and bottom.
Pool House	Typically frame structure with dressing area, plumbing, wiring and storage area for pool equipment (A,B,C,D,E)

QUONSET BUILDINGS

TYPE	DESCRIPTION
QUON	Quonset bldg
QUONDF	Quonset bldg w/dirt floor
QUONE	Quonset bldg w/electricity
QUONEDF	Quonset bldg w/electricity and dirt floor

Base Price costs include doors in end walls, no lighting or heating and concrete floor

QUONSET BUILDING

SHOP

TYPE	DESCRIPTION
SHOP	Shop
SHOPALL	Shop with hvac/plumbing/unfinished attic
SHOPHAPL	Shop with heating/air conditioning and plumbing
SHOPVAC	Shop with heating/air conditioning
SHOPLBG	Shop with plumbing
SHOPUNAT	Shop with unfinished attic
SHPHACUA	Shop with heating/air conditioning and unfinished attic
SHPPLBUA	Shop with plumbing and unfinished attic

Base Specifications: Concrete block or slab foundation, wood framing on masonry, adequate wiring, windows and doors (Grades B,C,D,E)

SILO

TYPE	DESCRIPTION
SILOCONC	Silo concrete
SILOPREF	Silo prefabricated

Base Specifications: Foundation, chute ladder, dome room and erection included in base cost.

CONCRETE STAVE SILO

PREFABRICATED STEEL SILO

STORAGE

TYPE	DESCRIPTION
STGFR	Storage building frame/metal
STGMAS	Storage building masonry
STGFRATT	Storage bldg frame/metal with attic loft
STMSATT	Storage bldg masonry w/attic loft

Base Specifications:

A Grade	Very good quality construction; good windows and doors; good lighting and water service
B Grade	Good quality construction; concrete footings; few windows; concrete floor, finished interior, electric lighting.
C Grade	Average quality construction; 6-8 foot wall height, concrete or plank floor, unfinished interior, prefab wood or high quality.
D Grade	Fair quality construction, earth floor, unfinished interior prefab low quality metal.
E Grade	Low quality, used materials, earth floor, unfinished interior.

SWINE BARNS

TYPE	DESCRIPTION
SWINE	Swine/hog house
SWINECP	Swine/hog house with concrete pit
SWINEFH	Swine/farrowing house
SWINERF	Swine/hog house with raised floor

Base Specifications:	Brick or bloc, adequate fenestration, ventilated, insulated ceiling, slab floor.

* Swine barn equipment is considered personal property and not included in base cost of barn.

SWINE CONFINEMENT/FARROWING BARN

RESIDENTIAL TENNIS COURTS

TYPE	DESCRIPTION
TENNISA	Tennis court asphalt
TENNISC	Tennis court concrete

Base Specifications: 60'x120' typical size

WOOD DECK

TYPE	DESCRIPTION
WDDK	Wood deck

Base Specification detached construction above grade level, pier foundation, includes steps and railings.

MISCELLANEOUS IMPROVEMENTS

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE $	ECON LIFE
1,2 CO-LOCATIONS PER TOWER	1,2 CO-LOCATIONS PER TOWER	70000.00	
3,4 CO-LOCATIONS PER TOWER	3,4 CO-LOCATIONS PER TOWER	80000.00	
5,6 CO-LOCATIONS PER TOWER	5,6 CO-LOCATIONS PER TOWER	90000.00	
7,8 CO-LOCATIONS PER TOWER	7,8 CO-LOCATIONS PER TOWER	100000.00	
ARMORY	ARMORY	100.00	52.00
AUDITORIUM	AUDITORIUM	110.00	52.00
PREFAB MET BUILDING	PREFAB METAL BUILDING	14.75	30.00
PREFAB DIRT FLOOR	PREFAB DIRT FLOOR	13.75	30.00
PREFAB DT FL/HI HT	PREFAB DIRT FLOOR WITH HIGH WALL HEIGHT	14.85	30.00
PREFAB DT FL/LOW HT	PREFAB DIRT FLOOR WITH LOW WALL HEIGHT	12.75	30.00
PREFAB DT FL/SLWALL	PREFAB DIRT FLOOR WITH SLANTED WALLS	12.75	30.00
PREFAB HIGH HEIGHT	PREFAB 16-20 FOOT WALL HEIGHT	15.75	30.00
PREFAB LOW HEIGHT	PREFAB 9-12 FOOT WALL HEIGHT	13.65	30.00
PREFAB NO ELE	PREFAB NO ELECTRICITY	13.75	30.00
PREFAB NO ELE/DT FL	PREFAB NO ELECTRICITY WITH DIRT FLOOR	12.85	30.00
PREFAB NO ELE/HH	PREFAB NO ELECTRICITY WITH HIGH WALL HEIGHT	14.85	30.00
PREFAB NO ELE/LH	PREFAB NO ELECTRICITY WITH LOW WALL HEIGHT	12.75	30.00
PREFAB NO ELE/SLWALL	PREFAB NO ELECTRICITY WITH SLANTED WALLS	12.75	30.00
PREFAB SLANTED WALL	PREFAB SLANTED WALLS	13.65	30.00
PREFAB SLWALL/HH	PREFAB SLANTED WALLS WITH HIGH WALL HEIGHT	14.75	30.00
PREFAB SLWALL/LH	PREFAB SLANTED WALLS WITH LOW WALL HEIGHT	12.65	30.00
BANK CANOPY/DRIVE	BANK CANOPY DRIVE THRU	42.75	52.00
BARN BANK	BANK BARN	23.75	52.00
BARN BANK W COFL/ELE	BANK BARN WITH CONCRETE FLOOR AND ELECTRICITY	26.50	52.00
BARN BANK W CONC FL	BANK BARN W CONCRETE FLOOR	24.90	52.00
BARN BANK W ELEC	BANK BARN WITH ELECTRICITY	25.50	52.00
BARN BANK W ST/COFL	BANK BARN WITH STALLS AND CONCRETE FLOOR	25.75	52.00
BARN BANK W ST/ELEC	BANK BARN WITH STALLS,CONCRETE FLOOR/ELECTRICITY	27.50	52.00
BANK BARN WITH STALLS AND ELECTRICITY	BANK BARN WITH STALLS AND ELECTRICITY	26.40	52.00
BANK BARN WITH STALLS	BANK BARN WITH STALLS	24.60	52.00
BARN FLAT	BARN FLAT	21.30	51.00

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE	ECON LIFE
BARN BANK W COFL/ELE	BARN FLAT WITH CONCRETE FLOOR AND ELECTRICITY	23.90	51.00
BARN BANK W CONC FL	BARN FLAT W CONCRETE FLOOR	22.30	51.00
BARN BANK W ELEC	BARN FLAT WITH ELECTRICITY	22.90	51.00
BARN BANK W ST/COFL	BARN FLAT WITH STALLS AND CONCRETE FLOOR	23.10	51.00
BARN BANK ST/CFL/ELE	BARN FLAT WITH STALLS/CONCRETE FLOOR/ELECTRICITY	24.65	51.00
BARN BANK W ST/ELEC	BARN FLAT WITH STALLS AND ELECTRICITY	23.50	51.00
BARN BANK W STALL	BARN FLAT WITH STALLS	21.90	51.00
BLEACHERS METAL	BLEACHERS METAL	45.50	20.00
BLEACHERS WOOD	BLEACHERS WOOD	23.00	20.00
BARN STABLE/DAIRY	BARN STABLE/DAIRY	28.75	52.00
BARN STABLE COFL/ELE	BARN STABLE WITH CONCRETE FLOOR AND ELECTRICITY	32.40	52.00
BARN STABLE CONC FL	BARN STABLE WITH CONCRETE FLOOR	30.15	52.00
BARN STABLE WITH ELECTRICITY	BARN STABLE WITH ELECTRICITY	31.00	52.00
BARN STABLE W ELEC	BARN STABLE WITH STALLS AND CONCRETE FLOOR	31.00	52.00
BARN STABLE ST/CF/EL	BARN STABLE WITH STALLS/CONCRETE FLOOR AND ELECTRICITY	33.10	52.00
BARN STABLE ST/ELEC	BARN STABLE WITH STALLS AND ELECTRICITY	31.80	52.00
BARN STABLE W STALL	BARN STABLE WITH STALLS	29.60	52.00
CANOPY CONC FL	CANOPY WITH CONCRETE OR ASPHALT FLOOR	6.00	30.00
CANOPY CONFL ELE	CANOPY WITH CONCRETE FLOOR AND ELECTRICITY	7.00	30.00
CANOPY ELECTRIC	CANOPY WITH ELECTRICITY	3.20	30.00
CANOPY/AVERAGE	CANOPY/AVERAGE	48.50	30.00
CANOPY/ECONOMY	CANOPY/ECONOMY	34.00	30.00
CANOPY/GOOD	CANOPY/GOOD	62.00	30.00
CANOPY RESIDENTIAL	CANOPY RESIDENTIAL	2.20	30.00
CANOPY COMMERCIAL	CANOPY COMMERCIAL	3.25	30.00
CANOPY/SLAB	CANOPY/SLAB	6.60	30.00
CARPORT	CARPORT	14.00	30.00
CHURCH	CHURCH	120.00	52.00
CHURCH FELLOW HALL	CHURCH FELLOWSHIP HALL	88.00	52.00
COLLEGE CLASSROOM	COLLEGE CLASSROOM	130.00	52.00
COLLEGE GYM	COLLEGE GYM	100.00	52.00
COMMON AREA	COMMON AREA INTEREST	10.00	30.00
COURT HOUSE	COURT HOUSE	175.00	30.00

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE	ECON LIFE
CARPORT BON ROOM	CARPORT WITH BONUS ROOM AND CONCRETE FLOOR	36.65	52.00
CARPORT CONC FL	CARPORT WITH CONCRETE OR ASPHALT FLOOR	19.00	30.00
CARPORT CONFL ELE	CARPORT WITH CONCRETE FLOOR AND ELECTRICITY	20.15	30.00
CARPORT ELECTRIC	CARPORT WITH ELECTRICITY	16.80	30.00
CARPORT UNF ATTIC	CARPORT WITH UNFINISHED ATTIC AND CONCRETE FLOOR	26.65	30.00
CRYPTS	CRYPTS	2200.00	30.00
DORMITORY	DORMITORY	100.00	52.00
ENCLOSED PORCH	ENCLOSED PORCH	31.20	30.00
FENCE CHAIN LINK	FENCE CHAIN LINK	2.80	20.00
FIRE STATION	FIRE STATION	95.00	52.00
FOOD BOOTH AVG	PREFAB FOOD BOOTH AVERAGE	187.00	20.00
FOOD BOOTH FAIR	PREFAB FOOD BOOTH FAIR	165.00	20.00
FOOD BOOTH GOOD	PREFAB FOOD BOOTH GOOD	212.00	20.00
GARAGE FRAME	GARAGE FRAME	29.65	52.00
GARAGE MASONRY	GARAGE MASONRY	32.15	52.00
GAZEBO	GAZEBO	37.00	25.00
GRAIN BIN NO DRY BIN	GRAIN BIN WITHOUT DRYING BIN	31.00	25.00
GRAIN BIN DRY BIN	GRAIN BIN WITH DRYING BIN	44.00	25.00
GAR FR ATTIC STGE	GARAGE FRAME WITH ATTIC STORAGE	36.45	52.00
GAR FR BONUS RM	GARAGE FRAME WITH BONUS ROOM	48.40	52.00
GAR FR FULL STORY	GARAGE FRAME FULL STORY FINISHED LIVING AREA	65.15	52.00
GAR FR HALF STORY	GARAGE FRAME HALF STORY FINISHED LIVING AREA	61.60	52.00
GAR FR UN INT AT STG	GARAGE FRAME UNFINISHED INTERIOR WITH ATTIC STORAGE	30.95	52.00
GAR FR UN INT BON RM	GARAGE FRAME UNFINISHED INTERIOR WITH BONUS ROOM	42.90	52.00
GAR FR UNF INT FULL	GARAGE FRAME UNFINISHED INTERIOR WITH FULL STORY FINISHED LIVING AREA	59.65	52.00
GAR FR UNF INT HALF	GARAGE FRAME UNFINISHED INTERIOR WITH HALF STORY FINISHED LIVING AREA	56.10	52.00
GAR FR UNF INT	GARAGE FRAME UNFINISHED INTERIOR	24.15	52.00
GAR MAS ATTIC STGE	GARAGE MASONRY WITH ATTIC STORAGE	38.95	52.00
GAR MAS BONUS RM	GARAGE MASONRY WITH BONUS ROOM	50.90	52.00
GAR MAS FULL STORY	GARAGE MASONRY FULL STORY FINISHED LIVING AREA	67.65	52.00
GAR MAS HALF STORY	GARAGE MASONRY HALF STORY FINISHED LIVING AREA	64.10	52.00

SHORT DESCRIPTION	DESCRIPTION	BAE PRICE	ECON LIFE
GAR MA UN INT AT STG	GARAGE MASONRY UNFINISHED INTERIOR WITH ATTIC STORAGE	33.45	52.00
GAR MA UN INT BON RM	GARAGE MASONRY UNFINISHED INTERIOR AND BONUS ROOM	45.40	52.00
GAR MAS UNF INT FULL	GARAGE MASONRY UNFINISHED INTERIOR WITH FULL STORY FINISHED LIVING AREA	62.15	52.00
GAR MAS UNF INT HALF	GARAGE MASONRY UNFINISHED INTERIOR WITH HALF STORY FINISHED LIVING AREA	58.60	52.00
GAR MAS UNF INT	GARAGE MASONRY UNFINISHED INTERIOR	26.65	52.00
GOLF CSE IMP AVG	GOLF COURSE IMPROVEMENTS AVERAGE	116000.00	51.00
GOLF CSE IMP FR	GOLF COURSE IMPROVEMENTS FAIR	80000.00	51.00
GOLF CSE IMP GD	GOLF COURSE IMPROVEMENTS GOOD	170000.00	51.00
GOLF CSE IMP VG	GOLF COURSE IMPROVEMENTS VERY GOOD	270000.00	51.00
GOLF MINI AVG	GOLF COURSE MINIATURE AVERAGE	12500.00	20.00
GOLF MINI FAIR	GOLF COURSE MINIATURE FAIR	3300.00	20.00
GOLF MINI GOOD	GOLF COURSE MINIATURE GOOD	33000.00	20.00
GREENHOUSE FRAME	GREENHOUSE FRAME	10.50	25.00
GREENHOUSE METAL	GREENHOUSE METAL	10.55	25.00
GREENHOUSE PLASTIC	GREENHOUSE PLASTIC	6.85	25.00
GREENHOUSE POLY	GREENHOUSE POLYETHYLENE	4.40	25.00
GROSS	GROSS BUILDING VALUE	1.00	
GUARDHOUSE AVERAGE	GUARDHOUSE AVERAGE	124.00	20.00
GUARDHOUSE FAIR	GUARDHOUSE FAIR	82.50	20.00
HANGAR	HANGAR AIRCRAFT	33.00	52.00
HOSPITAL	HOSPITAL	257.00	52.00
CENTRAL A/C	CENTRAL A/C	5.25	15.00
UNIT A/C	UNIT A/C	2.60	15.00
JAIL	JAIL	180.00	52.00
KENNELS	KENNELS	32.50	52.00
LIBRARY	LIBRARY	130.00	52.00
LEAN TO	LEAN TO	6.15	30.00
LUMB SHED 2SIDE OPEN	LUMBER SHED 2 SIDE OPEN	14.00	30.00
LUMB SHED 4SIDE OPEN	LUMBER SHED 4 SIDE OPEN	11.50	30.00
MOBILE HOME ADDITION	MOBILE HOME ADDITION	49.50	30.00
MOBILE HOME CARPORT	MOBILE HOME CARPORT/CANOPY	13.45	30.00
MOBILE HOME WDDK	MOBILE HOME WOOD DECK	17.30	30.00
MOBILE HOME ENC POR	MOBILE HOME ENCLOSED PORCH	30.50	30.00

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE	ECON LIFE
MOBILE HOME PORCH	MOBILE HOME OPEN PORCH	23.20	30.00
MOBILE HOME PARK AVG	MOBILE HOME PARK AVERAGE	12000.00	51.00
MOBILE HOME PARK FR	MOBILE HOME PARK FAIR	9000.00	51.00
MOBILE HOME PARK GD	MOBILE HOME PARK GOOD	18000.00	51.00
MOBILE HOME PARK PR	MOBILE HOME PARK POOR	6000.00	51.00
MOBILE HOME PARK RV	MOBILE HOME PARK RV	6000.00	51.00
MOBILE HOME PARK VG	MOBILE HOME PARK VERY GOOD	24000.00	51.00
MOBILE HOME SITE	MOBILE HOME SITE	12000.00	51.00
MILK HOUSE	MILK HOUSE	22.25	51.00
MINERAL RIGHTS	MINERAL RIGHTS	10.00	
MISC	MISCELLANEOUS IMPROVEMENT	1.00	
MILKING PARLOR	MILKING PARLOR	20.70	51.00
NICHES	NICHES	160.00	52.00
NURSING HOME	NURSING HOME	135.00	52.00
OPEN PORCH	OPEN PORCH	23.20	15.00
PAVING ASPHALT	PAVING ASPHALT	3.50	15.00
PAVING ASPHALT/CONC	PAVING ASPHALT/CONCRETE SERVICE STATION	4.50	15.00
PARKING DECK	PARKING DECK	43.50	30.00
PATIO	PATIO	6.00	30.00
PAVING CONCRETE	PAVING CONCRETE	5.25	15.00
PAVING CONC/HVY DTY	PAVING CONCRETE HEAVY DUTY	5.50	15.00
PAVING CONC/MAT/SLAB	PAVING CONCRETE MAT/SLAB	7.25	15.00
POLEFRM4SOCF	POLE BLDG FRAME 4 SIDE OPEN WITH CONCRETE FLOOR	9.50	30.00
POLEFRM4SC	POLE BLDG FRAME 4 SIDES CLOSED	10.40	30.00
POLEFRM4CCF	POLE BLDG FRAME 4 SIDES CLOSED W CONCRETE FLOOR	12.50	30.00
POLEFRM4CCFI	POLE BLDG FRAME 4 SIDES CLOSED W CONCRETE FLOOR AND INSULATION	13.10	30.00
POLEFRM4CCFIWL	POLE BLDG FRAME 4 SIDES CLOSED W CONCRETE FLOOR, INSULATION AND WOOD LINING	14.55	30.00
POLEFRM4CCFIWL	POLE BLDG FRAME 4 SIDES CLOSED W CONCRETE FLOOR AND WOOD LINING	13.90	30.00
POLEFRM4CI	POLE BLDG FRAME 4 SIDES CLOSED W INSULATION	11.00	30.00
POLEFRM4CIWL	POLE BLDG FRAME 4 SIDES CLOSED W INSULATION AND WOOD LINING	12.40	30.00
POLEFRM4CWL	POLE BLDG FRAME 4 SIDES CLOSED W WOOD LINING	11.80	30.00
POLEFRM4SO	POLE BLDG FRAME 4 SIDE OPEN	7.40	30.00
POLEFRM1SO	POLE BLDG FRAME 1 SIDE OPEN	9.05	30.00

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE	ECON LIFE
POLEFRM1SOCF	POLE BLDG FRAME 1 SIDE OPEN W CONCRETE FLOOR	11.15	30.00
POLEFRM1SOCFI	POLE BLDG FRAME 1 SIDE OPEN W CONCRETE FLOOR AND INSULATION	11.75	30.00
POLEFRM1SOCFIWL	POLE BLDG FRAME 1 SIDE OPEN W CONCRETE FLOOR, INSULATION, AND WOOD LINING	13.20	30.00
POLEFRM1SOCFWL	POLE BLDG FRAME 1 SIDE OPEN W CONCRETE FLOOR AND WOOD LINING	12.60	30.00
POLEFRM1SOI	POLE BLDG FRAME 1 SIDE OPEN W INSULATION	9.65	30.00
POLEFRM1SOIWL	POLE BLDG FRAME 1 SIDE OPEN W INSULATION AND WOOD LINING	11.10	30.00
POLEFRM1SOWL	POLE BLDG FRAME 1 SIDE OPEN W WOOD LINING	10.50	30.00
POULTRY HOUSE	POULTRY HOUSE	5.30	25.00
POULTRY/BREEDER HSE	POULTRY/BREEDER HOUSE	5.45	25.00
POULTRY EGG HOUSE	POULTRY EGG HOUSE	17.30	25.00
POULTRY/PULLET HSE	POULTRY/PULLET HOUSE EXTRA VENTILATION	5.45	25.00
POULTRY HOUSE STG	POULTRY HOUSE STORAGE	2.20	25.00
PLUMBING FIXTURES	PLUMBING FIXTURES	1780.00	30.00
PLOT BURIAL	PLOT BURIAL	800.00	
POLEMET1SOCF	POLE BLDG METAL 1 SIDE OPEN W CONCRETE FLOOR	10.30	30.00
POLEMET1SOCFI	POLE BLDG METAL 1 SIDE OPEN W CONCRETE FLOOR AND INSULATION	10.95	30.00
POLEMET1SOCFIWL	POLE BLDG METAL 1 SIDE OPEN W CONCRETE FLOOR, INSULATION, AND WOOD LINING	12.40	30.00
POLEMET1SOCFWL	POLE BLDG METAL 1 SIDE OPEN W CONCRETE FLOOR AND WOOD LINING	11.75	30.00
POLEMET1SOI	POLE BLDG METAL 1 SIDE OPEN W INSULATION	8.80	30.00
POLEMET1SOIWL	POLE BLDG METAL 1 SIDE OPEN W INSULATION AND WOOD LINING	10.25	30.00
POLEMET1SOCFWL	POLE BLDG METAL 1 SIDE OPEN W WOOD LINING	9.65	30.00
POLEMET1SO	POLE BLDG METAL 1 SIDE OPEN	8.20	30.00
POLEMET4SO	POLE BLDG METAL 4 SIDE OPEN	6.60	30.00
POLEMET4SOCF	POLE BLDG METAL 4 SIDE OPEN WITH CONCRETE FLOOR	8.70	30.00
POLE MET4SC	POLE BLDG METAL 4 SIDES CLOSED	9.20	30.00
POLE MET4SCCF	POLE BLDG METAL 4 SIDES CLOSED W CONCRETE FLOOR	11.30	30.00

SHORT DESCRIPTION	DESCRIPTION	*BASE PRICE*	ECON LIFE
POLE MET4SCCFI	POLE BLDG METAL 4 SIDES CLOSED W CONCRETE FLOOR AND INSULATION	11.95	30.00
POLEMET4SCCFIWL	POLE BLDG METAL 4 SIDES CLOSED W CONCRETE FLOOR, INSULATION AND WOOD LINING	13.40	30.00
POLE MET4SCCFWL	POLE BLDG METAL 4 SIDES CLOSED W CONCRETE FLOOR AND WOOD LINING	12.75	30.00
POLE MET4SCI	POLE BLDG METAL 4 SIDES CLOSED W INSULATION	9.80	30.00
POLE MET4SCIWL	POLE BLDG METAL 4 SIDES CLOSED W INSULATION AND WOOD LINING	11.25	30.00
POLE MET4SCWL	POLE BLDG METAL 4 SIDES CLOSED W WOOD LINING	10.65	30.00
POOL COMMERCIAL	SWIMMING POOL COMMERCIAL	73.50	30.00
POOL CONCRETE	POOL CONCRETE	71.50	25.00
POOL HOUSE	POOL HOUSE	45.40	15.00
POOL VINYL	POOL VINYL	55.00	15.00
POST OFFICE	POST OFFICE	100.00	52.00
PRESSBOX	PRESSBOX	60.00	20.00
QUON BLDG	QUONSET BLDG	13.50	30.00
QUON BLDGDF	QUONSET BLDG W DIRT FLOOR	12.40	30.00
QUON BLDGE	QUONSET BLDG W ELECTRICITY	14.10	30.00
QUON BLDGEDF	QUONSET BLDG W ELECTRICITY AND DIRT FLOOR	13.00	30.00
RESTROOM BRICK/STONE	RESTROOM BRICK/STONE	50.00	30.00
RESTROOM FRM/BLK	RESTROOM FRAME/BLOCK	45.40	30.00
RAILROAD SPUR	RAILROAD SPUR	120.00	30.00
SCHOOL GYM	SCHOOL GYM	120.00	52.00
SCHOOL	SCHOOL	143.50	52.00
SHED ALUMINUM	SHED ALUMINUM	10.00	30.00
SHED FIN METAL	SHED FINISHED METAL	18.30	30.00
SHED FRAME	SHED FRAME	11.25	30.00
SHOP	SHOP	24.40	30.00
SHOP HVAC/PLBG/UNAT	SHOP WITH HVAC/PLUMBING/UNFINISHED ATTIC	35.00	30.00
SHOP HVAC/PLBG	SHOP WITH HEATING/AIR CONDITIONING AND PLUMBING	28.35	30.00
SHOP HEAT/AIR	SHOP WITH HEATING/AIR CONDITIONING	26.65	30.00
SHOP PLUMBING	SHOP WITH PLUMBING	26.15	30.00
SHOP PLBG/UNF ATTIC	SHOP WITH UNFINISHED ATTIC	31.10	30.00
SHOP UNFIN ATTIC	SHOP WITH HEATING/AIR CONDITIONING AND UNFINISHED ATTIC	33.30	30.00
SHOP PLBG/UNF ATTIC	SHOP WITH PLUMBING AND UNFINISHED ATTIC	32.80	30.00
SILO CONC	SILO CONCRETE	27.20	51.00
SILO PREFAB	SILO PREFABRICATED	31.00	51.00

SHORT DESCRIPTION	DESCRIPTION	BASE PRICE	ECON LIFE
STORAGE FRAME	STORAGE BLDG FRAME/METAL	17.75	30.00
STGE FR ATTIC	STORAGE BLDG FR/MTL ATTIC LOFT	26.50	30.00
STORAGE MASONRY	STORAGE BLDG MASONRY	23.85	30.00
STGE MAS ATTIC	STORAGE BLDG MAS ATTIC LOFT	35.75	30.00
SWINE HOUSE	SWINE/HOG HOUSE	17.20	30.00
SWINE HOUSECP	SWINE/HOG HOUSE WITH CONCRETE PIT	19.55	30.00
SWINE FARROWING	SWINE/FARROWING HOUSE	24.55	30.00
SWINE HOUSERF	SWINE/HOG HOUSE WITH RAISED FLOOR	22.50	30.00
TENNIS ASPHALT	TENNIS COURT ASPHALT	4.55	30.00
TENNIS CONCRETE	TENNIS COURT CONCRETE	5.15	30.00
RADIO/TV TOWER SITE	RADIO/TV TOWER SITE	70000.00	
TUNNEL	TUNNEL	550.00	52.00
WOOD DECK	WOOD DECK	16.75	30.00
WATER TANK	WATER TANK	3.70	51.00
MORTON BUILDING	MORTON BUILDING	36.50	52.00
SOLAR FARM	SOLAR FARM	10000.00	
CONCESSION STAND FRAME	CONCESSION STAND FRAME	30.00	30.00
CONCESSION STAND MASON	CONCESSION STAND MASONRY	33.00	30.00
OUTDOOR LIVING	OUTDOOR LIVING	5000.00	25.00

MISCELLANEOUS IMPROVEMENT 15 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
15	2019	0	14.00	14.00	15.00	17.00	27.00	38.00	47.00	91.00
15	2018	1	20.00	21.00	22.00	25.00	35.00	48.00	55.00	91.00
15	2017	2	26.00	27.00	28.00	34.00	44.00	58.00	63.00	92.00
15	2016	3	31.00	32.00	34.00	42.00	53.00	67.00	70.00	92.00
15	2015	4	37.00	38.00	40.00	49.00	60.00	74.00	76.00	92.00
15	2014	5	41.00	42.00	45.00	56.00	66.00	79.00	81.00	93.00
15	2013	6	46.00	47.00	50.00	62.00	71.00	83.00	85.00	93.00
15	2012	7	50.00	52.00	54.00	66.00	75.00	86.00	88.00	93.00
15	2011	8	54.00	56.00	58.00	70.00	79.00	88.00	90.00	94.00
15	2010	9	57.00	59.00	62.00	74.00	82.00	90.00	91.00	94.00
15	2009	10	60.00	63.00	65.00	77.00	84.00	91.00	92.00	94.00
15	2008	11	63.00	66.00	68.00	79.00	86.00	93.00	94.00	94.00
15	2007	12	66.00	69.00	71.00	82.00	87.00	94.00	94.00	95.00
15	2006	13	68.00	71.00	73.00	83.00	89.00	94.00	95.00	95.00
15	2005	14	70.00	73.00	75.00	85.00	90.00	95.00	95.00	95.00

MISCELLANEOUS IMPROVEMENT 20 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXEL	VERY GOOD	GOOD	AVER	FAIR	POOR	VERY POOR	UNSOUND
20	2019	0	13.00	13.00	14.00	15.00	23.00	33.00	44.00	90.00
20	2018	1	17.00	18.00	19.00	22.00	29.00	42.00	49.00	91.00
20	2017	2	22.00	23.00	24.00	29.00	37.00	50.00	57.00	91.00
20	2016	3	27.00	28.00	29.00	35.00	44.00	58.00	64.00	91.00
20	2015	4	31.00	32.00	34.00	41.00	51.00	65.00	70.00	92.00
20	2014	5	35.00	36.00	38.00	47.00	56.00	70.00	75.00	92.00
20	2013	6	39.00	40.00	42.00	53.00	62.00	75.00	80.00	92.00
20	2012	7	43.00	44.00	46.00	57.00	66.00	79.00	83.00	92.00
20	2011	8	46.00	48.00	50.00	61.00	70.00	81.00	86.00	93.00
20	2010	9	49.00	51.00	53.00	65.00	74.00	84.00	88.00	93.00
20	2009	10	52.00	54.00	56.00	68.00	76.00	86.00	90.00	93.00
20	2008	11	55.00	57.00	59.00	71.00	78.00	88.00	92.00	93.00
20	2007	12	57.00	60.00	62.00	73.00	80.00	89.00	92.00	94.00
20	2006	13	59.00	62.00	64.00	75.00	82.00	90.00	93.00	94.00
20	2005	14	62.00	64.00	66.00	77.00	84.00	91.00	93.00	94.00
20	2004	15	64.00	67.00	69.00	79.00	86.00	92.00	94.00	94.00
20	2003	16	66.00	69.00	71.00	81.00	87.00	93.00	94.00	95.00
20	2002	17	68.00	71.00	73.00	83.00	88.00	94.00	94.00	95.00
20	2001	18	69.00	72.00	74.00	84.00	89.00	95.00	95.00	95.00
20	2000	19	70.00	73.00	75.00	85.00	90.00	95.00	95.00	95.00

MISCELLANEOUS IMPROVEMENT 25 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
25	2019	0	12.00	12.00	13.00	14.00	19.00	29.00	41.00	90.00
25	2018	1	15.00	16.00	17.00	19.00	24.00	36.00	44.00	91.00
25	2017	2	19.00	19.00	20.00	24.00	30.00	43.00	51.00	91.00
25	2016	3	23.00	23.00	24.00	29.00	36.00	50.00	58.00	91.00
25	2015	4	26.00	27.00	28.00	34.00	42.00	56.00	64.00	92.00
25	2014	5	29.00	30.00	32.00	39.00	47.00	62.00	70.00	92.00
25	2013	6	33.00	34.00	35.00	44.00	53.00	67.00	75.00	92.00
25	2012	7	36.00	37.00	39.00	48.00	57.00	72.00	79.00	92.00
25	2011	8	39.00	40.00	42.00	52.00	61.00	75.00	82.00	93.00
25	2010	9	41.00	43.00	45.00	56.00	65.00	78.00	85.00	93.00
25	2009	10	44.00	46.00	48.00	59.00	69.00	81.00	87.00	93.00
25	2008	11	47.00	49.00	51.00	63.00	71.00	83.00	88.00	93.00
25	2007	12	49.00	52.00	54.00	65.00	74.00	85.00	89.00	93.00
25	2006	13	51.00	54.00	56.00	68.00	76.00	87.00	90.00	94.00
25	2005	14	54.00	56.00	58.00	70.00	78.00	88.00	91.00	94.00
25	2004	15	56.00	59.00	61.00	73.00	80.00	89.00	92.00	94.00
25	2003	16	58.00	61.00	63.00	74.00	82.00	90.00	92.00	94.00
25	2002	17	60.00	63.00	65.00	76.00	83.00	91.00	93.00	94.00
25	2001	18	61.00	64.00	66.00	78.00	85.00	92.00	93.00	94.00
25	2000	19	63.00	66.00	68.00	79.00	86.00	93.00	94.00	94.00
25	1999	20	65.00	68.00	70.00	81.00	87.00	93.00	94.00	95.00
25	1998	21	66.00	69.00	71.00	82.00	88.00	94.00	94.00	95.00
25	1997	22	67.00	70.00	72.00	83.00	89.00	94.00	94.00	95.00
25	1996	23	69.00	72.00	74.00	84.00	89.00	95.00	95.00	95.00
25	1995	24	70.00	73.00	75.00	85.00	90.00	95.00	95.00	95.00

MISCELLANEOUS IMPROVEMENT 30 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
30	2019	0	11.00	11.00	12.00	13.00	18.00	24.00	36.00	90.00
30	2018	1	14.00	14.00	15.00	17.00	22.00	29.00	39.00	91.00
30	2017	2	17.00	17.00	18.00	21.00	27.00	35.00	45.00	91.00
30	2016	3	20.00	21.00	22.00	25.00	32.00	42.00	52.00	91.00
30	2015	4	23.00	24.00	25.00	30.00	37.00	49.00	59.00	91.00
30	2014	5	26.00	27.00	28.00	34.00	42.00	55.00	65.00	92.00
30	2013	6	29.00	30.00	31.00	38.00	46.00	60.00	70.00	92.00
30	2012	7	31.00	32.00	34.00	42.00	51.00	65.00	75.00	92.00
30	2011	8	34.00	35.00	37.00	46.00	55.00	69.00	79.00	92.00
30	2010	9	37.00	38.00	40.00	49.00	59.00	72.00	81.00	92.00
30	2009	10	39.00	40.00	43.00	53.00	62.00	75.00	84.00	93.00
30	2008	11	41.00	42.00	45.00	56.00	65.00	78.00	87.00	93.00
30	2007	12	44.00	45.00	48.00	59.00	68.00	80.00	88.00	93.00
30	2006	13	46.00	47.00	50.00	62.00	71.00	82.00	89.00	93.00
30	2005	14	48.00	49.00	52.00	64.00	73.00	84.00	89.00	93.00
30	2004	15	50.00	51.00	54.00	66.00	75.00	85.00	90.00	93.00
30	2003	16	52.00	54.00	57.00	68.00	77.00	87.00	90.00	94.00
30	2002	17	54.00	56.00	58.00	70.00	78.00	88.00	91.00	94.00
30	2001	18	55.00	57.00	60.00	72.00	80.00	89.00	92.00	94.00
30	2000	19	57.00	59.00	62.00	74.00	81.00	90.00	93.00	94.00
30	1999	20	59.00	61.00	64.00	75.00	83.00	91.00	94.00	94.00
30	1998	21	60.00	63.00	65.00	77.00	84.00	91.00	94.00	94.00
30	1997	22	62.00	65.00	67.00	78.00	85.00	92.00	94.00	94.00
30	1996	23	63.00	66.00	68.00	79.00	86.00	93.00	94.00	94.00
30	1995	24	64.00	67.00	69.00	80.00	87.00	93.00	95.00	95.00
30	1994	25	66.00	69.00	71.00	82.00	87.00	94.00	95.00	95.00
30	1993	26	67.00	70.00	72.00	82.00	88.00	94.00	95.00	95.00
30	1992	27	68.00	71.00	73.00	83.00	89.00	94.00	95.00	95.00
30	1991	28	69.00	72.00	74.00	84.00	89.00	95.00	95.00	95.00
30	1990	29	70.00	73.00	75.00	85.00	90.00	95.00	95.00	95.00

MISCELLANEOUS IMPROVEMENT 51 YEAR DEPRECIATION

ECONOMIC LIFE	EFF YEAR	EFF AGE	EXEL	VERY G00D	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
51	2019	0	10.00	10.00	11.00	12.00	17.00	22.00	35.00	90.00
51	2018	1	12.00	12.00	13.00	14.00	19.00	24.00	37.00	90.00
51	2017	2	13.00	13.00	14.00	16.00	20.00	26.00	39.00	91.00
51	2016	3	15.00	15.00	16.00	17.00	22.00	28.00	41.00	91.00
51	2015	4	16.00	16.00	18.00	19.00	24.00	31.00	44.00	91.00
51	2014	5	18.00	18.00	19.00	21.00	26.00	34.00	47.00	91.00
51	2013	6	19.00	20.00	21.00	23.00	28.00	36.00	49.00	91.00
51	2012	7	21.00	21.00	23.00	25.00	30.00	39.00	52.00	91.00
51	2011	8	22.00	23.00	24.00	27.00	32.00	42.00	55.00	92.00
51	2010	9	23.00	24.00	26.00	29.00	34.00	44.00	56.00	92.00
51	2009	10	25.00	26.00	27.00	31.00	36.00	47.00	59.00	92.00
51	2008	11	26.00	27.00	29.00	32.00	38.00	50.00	61.00	92.00
51	2007	12	27.00	28.00	30.00	34.00	40.00	52.00	63.00	92.00
51	2006	13	28.00	29.00	31.00	36.00	42.00	54.00	65.00	92.00
51	2005	14	29.00	30.00	33.00	38.00	43.00	57.00	68.00	92.00
51	2004	15	31.00	32.00	34.00	39.00	45.00	59.00	70.00	92.00
51	2003	16	32.00	33.00	35.00	41.00	47.00	61.00	71.00	93.00
51	2002	17	33.00	34.00	37.00	43.00	49.00	63.00	73.00	93.00
51	2001	18	34.00	35.00	38.00	44.00	50.00	64.00	74.00	93.00
51	2000	19	35.00	37.00	39.00	46.00	52.00	66.00	76.00	93.00
51	1999	20	36.00	38.00	40.00	47.00	53.00	68.00	78.00	93.00
51	1998	21	36.00	39.00	42.00	49.00	55.00	69.00	79.00	93.00
51	1997	22	37.00	40.00	43.00	50.00	56.00	71.00	81.00	93.00
51	1996	23	38.00	41.00	44.00	51.00	57.00	72.00	82.00	93.00
51	1995	24	39.00	42.00	45.00	53.00	59.00	73.00	83.00	93.00
51	1994	25	40.00	43.00	46.00	54.00	60.00	75.00	85.00	93.00
51	1993	26	41.00	44.00	47.00	55.00	61.00	76.00	86.00	94.00
51	1992	27	42.00	45.00	48.00	56.00	62.00	77.00	87.00	94.00
51	1991	28	42.00	45.00	49.00	58.00	64.00	78.00	88.00	94.00
51	1990	29	43.00	46.00	50.00	59.00	65.00	79.00	88.00	94.00
51	1989	30	44.00	47.00	51.00	60.00	66.00	80.00	89.00	94.00
51	1988	31	45.00	48.00	52.00	61.00	67.00	80.00	89.00	94.00
51	1987	32	45.00	49.00	53.00	62.00	68.00	81.00	90.00	94.00
51	1986	33	46.00	50.00	54.00	63.00	69.00	82.00	90.00	94.00
51	1985	34	47.00	51.00	54.00	64.00	70.00	83.00	90.00	94.00
51	1984	35	47.00	51.00	55.00	65.00	71.00	83.00	90.00	94.00
51	1983	36	48.00	52.00	56.00	66.00	71.00	84.00	90.00	94.00
51	1982	37	48.00	52.00	57.00	66.00	72.00	85.00	90.00	94.00
51	1981	38	49.00	53.00	58.00	67.00	73.00	85.00	90.00	94.00

MISCELLANEOUS IMPROVEMENT 51 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
51	1980	39	50.00	54.00	58.00	68.00	74.00	86.00	90.00	94.00
51	1979	40	50.00	55.00	59.00	69.00	74.00	86.00	91.00	95.00
51	1978	41	51.00	56.00	60.00	70.00	75.00	87.00	91.00	95.00
51	1977	42	51.00	56.00	60.00	70.00	76.00	87.00	91.00	95.00
51	1976	43	52.00	57.00	61.00	71.00	77.00	88.00	91.00	95.00
51	1975	44	52.00	57.00	62.00	72.00	77.00	88.00	91.00	95.00
51	1974	45	53.00	58.00	63.00	73.00	78.00	89.00	91.00	95.00
51	1973	46	54.00	59.00	63.00	73.00	78.00	89.00	91.00	95.00
51	1972	47	54.00	59.00	64.00	74.00	79.00	89.00	91.00	95.00
51	1971	48	55.00	59.00	64.00	74.00	79.00	90.00	92.00	95.00
51	1970	49	55.00	60.00	65.00	75.00	80.00	90.00	92.00	95.00

MISCELLANEOUS IMPROVEMENT 52 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
52	2019	0	5.00	5.00	6.00	7.00	12.00	17.00	30.00	90.00
52	2018	1	7.00	7.00	8.00	9.00	14.00	19.00	32.00	90.00
52	2017	2	8.00	8.00	9.00	10.00	15.00	20.00	33.00	91.00
52	2016	3	10.00	10.00	11.00	12.00	17.00	22.00	35.00	91.00
52	2015	4	12.00	12.00	13.00	14.00	19.00	24.00	37.00	91.00
52	2014	5	13.00	13.00	14.00	16.00	21.00	26.00	39.00	91.00
52	2013	6	15.00	15.00	16.00	17.00	22.00	28.00	41.00	91.00
52	2012	7	16.00	16.00	17.00	19.00	24.00	30.00	43.00	91.00
52	2011	8	17.00	18.00	19.00	20.00	26.00	32.00	45.00	92.00
52	2010	9	19.00	20.00	20.00	22.00	27.00	34.00	46.00	92.00
52	2009	10	20.00	21.00	22.00	23.00	29.00	36.00	48.00	92.00
52	2008	11	21.00	22.00	23.00	25.00	31.00	38.00	50.00	92.00
52	2007	12	22.00	23.00	24.00	26.00	32.00	40.00	51.00	92.00
52	2006	13	23.00	25.00	26.00	27.00	34.00	42.00	53.00	92.00
52	2005	14	24.00	26.00	27.00	29.00	35.00	43.00	54.00	92.00
52	2004	15	25.00	27.00	28.00	30.00	37.00	45.00	56.00	92.00
52	2003	16	26.00	28.00	29.00	31.00	38.00	47.00	57.00	93.00
52	2002	17	27.00	29.00	30.00	33.00	40.00	49.00	59.00	93.00
52	2001	18	28.00	30.00	31.00	34.00	41.00	50.00	60.00	93.00
52	2000	19	29.00	31.00	32.00	35.00	42.00	52.00	62.00	93.00
52	1999	20	30.00	32.00	33.00	36.00	44.00	53.00	64.00	93.00
52	1998	21	30.00	33.00	35.00	37.00	45.00	55.00	65.00	93.00
52	1997	22	31.00	34.00	35.00	38.00	46.00	56.00	66.00	93.00
52	1996	23	32.00	35.00	36.00	39.00	47.00	57.00	67.00	93.00
52	1995	24	33.00	36.00	37.00	40.00	49.00	59.00	69.00	93.00
52	1994	25	33.00	36.00	38.00	41.00	50.00	60.00	70.00	93.00
52	1993	26	34.00	37.00	39.00	42.00	51.00	61.00	71.00	94.00
52	1992	27	35.00	38.00	40.00	43.00	52.00	62.00	72.00	94.00
52	1991	28	35.00	39.00	41.00	44.00	53.00	64.00	73.00	94.00
52	1990	29	36.00	40.00	42.00	45.00	54.00	65.00	74.00	94.00
52	1989	30	37.00	40.00	43.00	46.00	55.00	66.00	74.00	94.00
52	1988	31	37.00	41.00	43.00	47.00	56.00	67.00	75.00	94.00
52	1987	32	38.00	42.00	44.00	48.00	57.00	68.00	75.00	94.00
52	1986	33	38.00	42.00	45.00	49.00	58.00	69.00	76.00	94.00
52	1985	34	39.00	43.00	46.00	50.00	59.00	70.00	76.00	94.00
52	1984	35	39.00	43.00	46.00	50.00	60.00	71.00	77.00	94.00
52	1983	36	40.00	44.00	47.00	51.00	61.00	71.00	77.00	94.00
52	1982	37	40.00	44.00	48.00	52.00	61.00	72.00	78.00	94.00
52	1981	38	41.00	45.00	48.00	53.00	62.00	73.00	78.00	94.00
52	1980	39	41.00	45.00	49.00	53.00	63.00	74.00	78.00	94.00

MISCELLANEOUS IMPROVEMENT 52 YEAR DEPRECIATION										
ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
52	1979	40	42.00	46.00	50.00	54.00	64.00	74.00	79.00	95.00
52	1978	41	42.00	46.00	50.00	55.00	65.00	75.00	80.00	95.00
52	1977	42	42.00	46.00	51.00	56.00	65.00	76.00	80.00	95.00
52	1976	43	43.00	47.00	52.00	56.00	66.00	77.00	81.00	95.00
52	1975	44	43.00	47.00	52.00	57.00	67.00	77.00	81.00	95.00
52	1974	45	44.00	48.00	53.00	58.00	67.00	78.00	82.00	95.00
52	1973	46	44.00	48.00	53.00	58.00	68.00	78.00	83.00	95.00
52	1972	47	44.00	49.00	54.00	59.00	69.00	79.00	84.00	95.00
52	1971	48	45.00	49.00	54.00	59.00	70.00	79.00	84.00	95.00
52	1970	49	45.00	50.00	55.00	60.00	70.00	80.00	85.00	95.00

Land

In making appraisals for ad valorem tax purposes, it is generally necessary to estimate separate values for the land and the improvements on the land. In actuality, the two are not separated and the final estimate of the property as a single unit must be given prime consideration. However, in arriving at that final estimate of value, aside from the requirements for property tax appraisals, there are certain other reasons for making a separate estimate of value for the land:

1. An estimate of land value is required in the application of the Cost Approach.

2. An estimate of land is required to be deducted from the total property selling price in order to derive indications of depreciation through market-data analysis. (Depreciation being equal to the difference between the replacement cost new of a structure and the residual price attributable to the structure from the sales price.)

3. As land is not a depreciable item, a separate estimate of land value is often required for bookkeeping and accounting purposes; likewise, the total capitalization rate applicable to land will differ from the rate applicable to the improvements on the land.

4. Since land may or may not be used at its highest and best use (potential), the value of land may be completely independent of the existing improvements on the land.

Real Estate if valued in terms of its highest and best use. The highest and best use of the land (or site), as if vacant and available for use, may be different from the highest and best use of the *improved property.* This will be true when improvement is not an appropriate use and yet makes a contribution total property value in excess of the value of the site. Highest and Best Use (Highest and Most Profitable Use; Optimum Use) is that reasonable and probable use which will support the highest present value as of the date of the appraisal. Alternatively, it is the most profitable likely use to which a property can be put. It may be *measured* in terms of the present worth of the highest nest return that the property can be expected to produce over a stipulated long run period of time. (American Institute of Real Estate Appraisers' Appraisal Terminology Handbook, 1981 edition.)

As appraisers' opinions are based on data derived from the market, it is necessary to study and adapt, if possible, procedures used by those closest to everyday transactions.

COMPARABLE SALES METHOD

The most frequently used method in estimating the value of land is the comparable sales method in which land values are derived from analyzing the selling prices of similar sites. This method is in essence the application of the market data approach to value and all the considerations pertaining thereto are equally applicable here.

The appraiser must select comparable and valid market transactions and must weigh and give due consideration to all the factors significant to value, adjusting each to the subject property. The comparable sites must be used in the same way as is the subject property and subjected to the same zoning regulations and restrictions. It is also preferable, whenever possible, to select comparables from the same or a similar market area. The major adjustments will be to account for variations in time, locate and physical

characteristics to include size shape, topography, access, as well as other factors which may significantly influence the selling price.

Although it is always preferable to use sales of unimproved lots for comparables, it is not always possible to do so. Older market areas are not likely to yield a sufficient number of representative's sales of unimproved lots to permit a valid analysis. In such cases, in order to arrive at an estimate of land values using the comparable sales approach, it is necessary to consider improved property sales and to estimate the portion of the selling price applicable to the structure. The procedure would be to estimate the replacement cost of the buildings as of the date of sale, estimate the accrued depreciation and deduct that amount from replacement cost resulting in the estimated selling price of the buildings, which can be deducted from the total selling price of the property to derive the portion of the selling price which can be allocated to the land. The equation is as follows:

Selling Price of Property – Estimated Depreciation Value of Buildings = Indication of Land Value

In some older market areas, vacant lots will exist often as a result of improvement being razed or normal deterioration. Care must be taken in determining their highest and best use as either a building site or as a buffer of additional land to an adjoining owner.

In order to apply the comparable sales method, it is first necessary to establish a common unit of comparison. The units generally used in the valuation of land are price per front foot, price per square foot and price per acre. The selection of any one particular unit depends upon the type of property being appraised; frontage being more appropriate for older, platted, uniform type residential lots; square footage and acreage for larger, unplatted tracts, as well as irregularly shaped lots lacking in uniformity. Depth factor adjustments are most appropriate for residential parcels valued by the frontage method and if applied to commercial parcels may have a tendency to distort this concept. Use of square footage is especially desirable in Central Business Districts and along commercial arteries where the entire lot maintains the same level of value.

The utility of a site will vary with the frontage, width, depth, shape and overall area. Similarly, the unit land values should be adjusted to account for differences in size and shape between the comparables and the subject property. Since such an adjustment is generally necessary for each lot, it is beneficial that the appraiser adopts and/or develops standardized procedures for adjusting the lot size and the unit values to account for the variations. While it is not uncommon for all lots within some developments to market at the same price, should the data so indicate, it will be necessary to make alterations or adjustments to reflect the data from the marketplace. In some of these cases, a "site value" concept has advantages. Other techniques commonly employed include:

Standard lot sizing techniques provide for the adjustment of the frontage, width and depth of irregular shaped lots to make the units of measurement more comparable with uniform rectangular lots.

Standard Depth Tables provide for the adjustment of front foot unit values to account for variations in depth from a predetermined norm.

Frontage Tables provide for the adjustment of front footage unit values to account for variations in the relative utility value of excessive or insufficient frontage as compared to a predetermined norm.

Acreage or Square Footage Tables provide for the adjustment of unit values to account for variations in the relative utility value of excessive of insufficient land sizes as compared to a predetermined norm.

During the process of adjusting the comparable sales to account for variations between them and the subject property, the appraiser must exercise great care to include all significant factors and to properly consider the

impact of each of the factors upon the total value. If done properly, the adjusted selling prices of the comparable properties will establish a range in value in which the value of the subject property will fall. Further analysis of the factors should enable the appraiser to narrow the range down to the value level which is most applicable to the subject property.

RATIO METHOD

A technique useful for establishing broad indications of land values is a "typical" allocation or *ratio* method. In this technique, the *ratio* of the land value to the total value of improved properties is observed in situations where there is good market and/or cost evidence to support both the land value and total values. This market abstracted ratio is then applied to similar properties where the total values are known, but the allocation of values between land and improvements are not known. The ratio is usually expressed as a percentage which represents the portion of the total improved value that is land value, or as a formula:

$$\frac{\text{Total Land Value}}{\text{Total Property Value}} \times 100\% = \%\ \text{Land Is of Total Property Value}$$

This technique can be used on most types of improved properties, with important exceptions being farms and recreational facilities, provided that the necessary market and/or cost information is available. In actual practice, available market information limits this technique primarily to residential properties and to much lesser extent, commercial and industrial properties such as apartment, offices, shopping centers and warehouses.

The ratio technique cannot give exact indications of land values. It is nevertheless useful, especially when used in conjunction with other techniques of estimating land values because it provides an indication of the reasonableness of the final estimate of land value.

The ratio should be extracted from available market information and applied to closely similar properties. It should be noted that any factor that affects values may also affect the ratio of values. Zoning is particularly important because it may require more or less improvements be made to the land, or may require a larger or smaller minimum size. This tends to have a bearing on land values and so it may also influence the ratio of values considerably from community to community. The following is an example of a residential land valuation situation:

Market information derived from an active new subdivision:

Typical Lot Sale Price (most lots equivalent)

Improved Lot Sales (range)

Indicated Ratio $\frac{\$15{,}000}{75{,}000}$ to $\frac{15{,}000}{65{,}000} \times 100\% = 20\%$ to 23%

Similar subdivision, but 100% developed:

Typical Lot Sale (most lots equivalent) unavailable

Improved Lot Sales (range) $85,000 to $105,000

Broadest Indicated Range of Lot Values
(20% x $85,000 to 23% x $125,000) $17,000 to $24,150

Narrowest Indicated Range of Lot Values
(23% x $85,000 to 20% x $105,000) $19,550 to $21,000

If both lots and improvements vary considerable, the broadest range is most appropriate. If most lots vary little and are judged equivalent but the improvements vary somewhat, the narrowest range is appropriate. Most subdivisions exhibit a combination of the two ranges: showing a narrow typical range, but a wide actual range of land values.

Cost of Development Method

This method finds its widest application in the appraisal of large tracts of undeveloped land suitable for residential, commercial, or industrial development. It is a technique which requires a great deal of data, time and skill and is therefore generally used only in those cases where an insufficient number of comparable sales are available for analysis. This method involves making an estimate of the value of the site fully developed for its highest and most likely use and deducting an estimate of the total cost of developing the site to derive an indication of its present value. The procedure for employing the method is as follows:

1. Determine the highest and most likely use of the site, including the optimum size of the lots if the use involves subdividing.

2. Estimate the most likely selling price of the developed site(s) by the comparable method.

3. In cases involving subdividing, determine the optimum number of sites which can be developed.

4. Calculate the aggregate selling price which the developer can expect to receive.

5. Estimate the developing cost to include the cost of improvements, taxes, insurance, engineering fees, interest, advertising, sales, profit and other related expenditures and deduct that amount from the anticipated gross sales, to arrive at an indication of the present value of the underdeveloped tract.

There are several types of land that the Tax Department has defined. The market areas are defined as rural acreage, market area and subdivision lots, commercial market areas and industrial market areas. Depending on the type of land use, land may be value on a per acre basis, a per lot basis or a per square foot basis.

In valuing land, the appraiser determines a *base price* of the market area being assessed. The best method for valuing vacant land is using current market sales of vacant land in the immediate area. If current sales are not available then the appraiser will use the allocation method to determine the land value. The abstraction method to land valuation takes the sale price of the property and subtracts the value of the improvements on the property; the remaining value is attributed to the land. There are several factors Randolph County considers when appraising land. Condition factors are factors that have a negative influence on a parcel of land. Land influence factors are factors that have a positive influence on a parcel of land.

Rural acreage land is defined as land that is outside most city limits and is over 5 acres in size. Historically this land has been used in farming and agricultural processes. Rural large acreage tracts are valued by the acre. Appraisers determine the base acre price for the market area by using sales of similar size acreage tracts sold in the market area or in a highly similar market area. There are several factors that can affect the value of rural acreage land. The main factors considered by an appraiser when valuing a parcel of land are location, topography, flood plain/wetlands, accessibility, shape and size.

Neighborhood and Subdivision lots are in a market area or a named subdivision where the surrounding properties are similar in value and in use. Appraisers valuing the market area use sales of lots in the market area to determine a base land value. In market areas where a subdivision is fully developed and there are no sales, the appraiser may use the abstraction method to value the land. The main factors that influence the base value of market area and subdivision are topography, shape, accessibility and size.

Commercial use properties are properties that are typically zoned for commercial use. Commercial market areas are valued by the acre or by the square foot. Base price for the market area is determined by the appraiser through sales of vacant similar use properties. If current sales are not available, the appraiser may use the allocation method of land valuation to determine the market area base value. Commercial land value tends to have a higher value than residential and rural properties. Zoning can have significant influence on a parcels value.

Industrial use properties are properties that are specifically zoned for Industrial use. Industrial market areas are valued by the acre or by the square foot. Base price for the market area is determined by the appraiser through sales of vacant similar use properties. If current sales are not available, the appraiser may use the abstraction method of land valuation to determine the market area base value. Acreage tracts with industrial use land generally will have a higher value than acreage tracts used for residential purposes.

Condominiums and townhouses are treated slightly different from other parcels of land. Condominium owners do not actually own the land under their building, but the owners own a percent of total property value. Randolph County assigns a value to the land of condominium use types as a representation of the value of the jointly owned common area of each complex. Townhouses are treated similarly to condos. Although the townhouse owners actually own the land below their units, all the common area and common area improvements in the townhouse development are valued and then divided amongst the townhouse owners. Townhouse owners actually have a base lot value and an additional value is added to cover the value of the common areas.

Land Class Codes are a description of how the land is being used or how it can legally be used according to zoning requirements.

The land size and influences factors were derived from sales of vacant land in Randolph County. By looking at acreage tract sales over a multi-year period, Randolph County has developed a uniform size adjustment table for acreage size tracts in the County. A trending analysis was determined by plotting the sales by graph. This trending analysis shows that there is an inverse relation to the value per acre as the amount of acreage increases. This relationship is also known as economy of scale. The base acreage that the county uses is 20 acres. In other words, a parcel with 20 acres would have no factor applied for the size. For properties that are more than 20 acres an size factor is applied. These factors are applied to the base rate per acre of a market area to account for differences in land sizes of the individual parcels in the market area.

The rural acreage size factor chart on the following page is a guideline that appraisers use to determine the value impact of acreage size in relation to rural land value. Sales analysis shows that there is an inverse relation to the value per acre as the amount of acreage increases. This relationship is also known as economy of scale. The base acreage size for the county is 20 acres after site.

LAND DESCRIPTION CODES

Code	Description
AGR	Agriculture/woodland

Market value rural acreage tracts with road frontage. Unimproved tracts typically being used for growing crops, grazing or timber.

APT	Apartment

Used for apartment complexes. Land base rate based on number of living units in complex. Included in the unit value is area for amenities.

APTBAL	Apartment Balance

Unimproved apartment acreage tract. Remaining acreage at an apartment complex and could be used for future development.

COMMON	Common Area

All property owned by a nonprofit homeowners association that is held for the use of all members of the association. The allocated value of the association's property. G.S. 105-277.8

COMMSITE	Commercial site

Improved with commercial building or used in conjunction with commercial building

COMMBAL	Commercial balance

Unimproved commercial acreage tract. Remaining acreage at a commercial site.

COMUNDEV	Commercial Undeveloped

Undeveloped commercial acreage tract. Potential or future development of a commercial site.

FOREST	Forestry

Land that is part of a forest unit or agriculture unit that is actively engaged in the commercial growing of trees or seedlings under a sound forestry management programs. The requirements of G.S.105-277.2-6 must be met.

HORT	Horticultural

Land that is a part of a horticultural unit that is actively engaged in the commercial production of fruits, vegetable, nursery, or floral products under a sound management program. The requirements of G.S.105-277.2-6 must be met.

INDSITE	Industrial site

Improved with industrial building or used in conjunction with industrial building based size dependent on building size to land ratio.

Code	Description
INDBAL	Industrial Balance

Unimproved industrial acreage tract or remaining acreage at an industrial site.

INDUNDEV Industrial Undeveloped

Undeveloped industrial acreage tract. Potential or future development of an industrial site.

LOT Lot

Improved site. Base value not dependent on size or shape. Unit value concept

NOMKTVAL No Market Value

Land that is used for easement, private road buffer, tract owned by a homeowners association (value allocated to members of HOA), etc.

OPEN Open Land

Open land that is part of a farm unit that is actively engaged in the commercial production or growing crops, plants, or animals under a sound management program and that is not used as building sites, access to building sites, or for purposes other than agricultural use. The requirements of G.S. 105-277.2-6 must be met.

PARKSITE Mobile Home Park Site

Improved site used for mobile home park, typically more than 3 hook-ups (sites) and meets zoning requirements for a mobile home park. Four (4) hookups (sites) per 1 acre site.

PARKBAL Mobile Home Park Balance

Unimproved mobile home park acreage tract. Remaining acreage at a mobile home park site.

RESID Residual

Land with no public access. Small slivers of land owned by adjoining landowner or which cannot be used because of condition, size or zoning. Rear portion of large acreage tract. Rear lot within a city or subdivision not suitable for building site. Small lot/tract used a buffer.

SECSITE Secondary Site

Improved with major structure but located on dirt road, private road or has deeded access. Older dwellings where utilities have not been maintained, small mobile home sites and multiple dwellings.

Code	Description
SITE	Primary Site

Lot improved with major structure, such as a dwelling. Normally, this is the typical or zoned base lot size for the market area. A tract that is considered subdivided into lots when the lots are located on streets laid out and open for travel and the lots have been sold or offered for sale. Acreage tract site can be one or more acres.

UNDEV	Undeveloped

Lots that have been laid out and platted, but the streets have not been cut and open for travel. Unimproved building sites. Rural acreage tracts of 0.70 acre up to 15 acres with road frontage which is suitable for a home site and which meets soil conditions for county percolation requirements.

UNPERK	Unperkable

Lot will not meet the requirements for county percolation test. Verified through the Randolph County Health Department. Not intended for tracts listed as agriculture.

WASTE	Wasteland

Land that is a part of either an agricultural unit, forest unit or horticultural unit but which will not produce or assist in the production of crops, plants, trees or animals. Remaining tract meets requirements of G.S.105-277.26

WILDOPEN	Wildlife Open
WILDWOOD	Wildlife Woodland

100 acres or less which has a written wildlife habitat conservation agreement with North Carolina Wildlife Resources Commission and meets the requirements. G.S. 105-277.15

Land Condition Factors

Condition factors are factors that have a negative influence on a tract of land.

Type	Description
ACCESS	Access/Easement

This influence factor is reserved for properties that have limited access. Property that has no state maintained road frontage. Access should be through easement, deeded access, private roads/driveways, or cart ways. This adjustment recognizes that the market often penalizes a property for access problems. The value range adjustment is 70% - 50% good.

This factor is reserved for the appraiser's discretion.

CONESMT	Conservation Easement

This influence factor is reserved for deed recorded Conservation Easements. These are a "protected natural area" meaning a nature reserve or park in which all types of wild nature, flora and fauna and biotic communities are preserved for observation and study. The adjustment will be based on any reduction in value caused by the conservation agreement from its true market value.

ECON	Economic

This influence factor is reserved for economic detriments to the property. Conditions from outside the property which are considered detrimental to the property value. Adjustments for, but not limited to: heavy traffic, noise, dirt roads, undesirable nuisances adjacent to the property, commercial or industrial encroachments.

This factor is reserved for the appraiser's discretion.

Economic Factor Guide

	Condition	Factor
Normal -	No significant adverse economic influence	None
Minor -	An adverse economic influence exists which represents a slight loss of desirability to the property.	95% - 80% good
Moderate -	Economic influence exists which represents a significant loss of desirability to the property	80% - 50% good
Severe -	Economic influence is so severe that it prevents any utilization of building improvements to the property ype	50% - 10% good

Type	Description

FLOOD Flood Plain

This influence factor is reserved for frequent flooding. Those parcels subject to loss of value due to the potential for periodic flooding. Land that lies within a flood plain area. Flood plain coverage is provided through GIS system based on 100 year flood plain.

Frequent Flooding Factor Guide

	Condition	Factor
Normal -	The property is not subject to flooding	none
Minor -	The property is subject to potential flooding at rare or infrequent intervals which does not prevent utilization but represents a potential hazard.	95% - 85% good
Moderate -	The property is subject to a potential flooding at a frequency which limits the utilization.	80% - 60% good
Severe -	The property is subject to a degree of frequency and severity that is not economically feasible to utilize.	50% - 10% good

MISIMP Mis-improvement

This influence factor is reserved for mis-improvements (either under-improvement or over-improvement). The mis-improvement would prohibit the property from being utilized to its highest and best use. A private agreement that restricts the use and occupancy of the property. Mis-improvement adjustments include but are not limited to: easements, deeded access, power line right-of-ways, underground cables, encroachments.

This factor is reserved for the appraiser's discretion.

Mis-Improvements Factor Guide

	Condition	Factor
Normal -	No encumbrance	None
Minor -	Problem is slight but handicaps the property from full utilization. Mis-improvements could be "curable".	95% - 85% good
Moderate	Problem is significant. Limits the utilization. Mis-improvements are long or permanent.	80% - 60% good
Severe	Problem is a know environmental hazard	50% - 25% good

Type	Description
NONPERK	will not perk

This influence factor is reserved for building lots that do not meet the requirements for county soil percolation tests. Lots should be listed as "unperk" or "agriculture" in the land segment type. Lot value has been adjusted by changing the land segment type from a buildable site to residual/agriculture

SHAPE	Shape

This influence factor is reserved for irregular shape or size for the presumed utilization of the land. Irregular shape adjustment includes but is not limited to: limited road frontage, "frying pan" shape, "flagpole" shape.

This factor is reserved for the appraiser's discretion.

Shape Factor Guide

	Condition	Factor
Normal -	Shape is no significant detriment to the presumed utilization of the parcel	None
Minor -	The land is economically usable for the presumed utilization but shape precludes the full utilization of the land.	95% - 75% good
Moderate -	Shape represents a significant handicap to the presumed utilization or development of the parcel.	75% – 50% good
Severe -	Shape problem is so severe that the land has very little utilization. The value adjustment will most likely be adjusted in land segment type "residual".	75% – 10% good
	Severe Examples – long narrow strips, small piece That crosses road, strip to straighten out boundary lines, well site.	

Type	Description
TOPO	Topography

This influence factor is reserved for topographical features abnormal to the market area.

Topography factors include but are not limited to: mountainous, hilly, low-lying sub-surface rock ledge, gullies.

This factor is reserved for the appraiser's discretion.

Topography Factor Guide

	Condition	Factor Range
Normal -	Typical for market area	None
Minor -	Problem is slight but handicaps the land from full utilization. The lot is correctable but less desirable than typical lot in market area.	95% - 85% good
Moderate -	Problem is significant. Limits the utilization of the land. Less desirable than the typical lot in market area.	85% - 50% good
Severe -	Problem is so severe that is has little or no utilization. It is economically not feasible to attempt to correct.	50% - 10% good

Combination Factor

This influence factor was used for software migration purposes. It combined two (2) or more influence factors into one (1) total influence factor. The individual factors are listed in the narrative section of the CAMA system.

Land Influence Factors

Influence factors are factors that have a positive influence on a tract of land

Type	Description
CORNER	Corner

This influence factor is reserved for Corner/Alley. The factor recognizes the enhancement in the land value attributable to potential utilization of a corner or alley lot. This enhancement is not applicable to Residential properties. Corner influence should be applied to only those cases of commercial or industrial property where the corner is an actual enhancement to the property.

This factor is reserved for the appraiser's discretion.

Corner Influence Factor Guide

	Condition	Factor
Normal	The presence of a corner or alley has no effect on value	None
Minor	The lot value is moderately enhanced by the presence	110% - 140% good
Major	The lot value is significantly enhanced by the presence of corner or alley	140% - 150% good

ECON	Economic

This influence factor is reserved for positive economic influence which is considered favorable to the property. The value range adjustment is 110% - 150% good.

This factor is reserved for the appraiser's discretion.

TOPO	Topography

This influence factor is reserved for a positive topography influence for topographical features superior to the typical topography of the market area. The value range adjustment is 110%-150%.

This factor is reserved for the appraiser's discretion.

VIEW	View

This influence factor is reserved for view enhancement. This factor is normally a positive adjustment for tracts with scenic or water view when compared to similar tracts in the same market area where no significant view is present.

This factor is reserved for the appraiser's discretion.

View Influence Factor Guide

	Condition	Factor
Normal	Typical for market area	None
Minor	The property has a moderate enhancement due to an appealing view above normal for market area.	105% - 150% good
Moderate	The property has a significant enhancement due to an appealing view above the normal for the market area.	160% - 200% good

RESIDENTIAL LAND GUIDE

Urban residential lots and suburban subdivision will be priced on square foot basis. Acreage tracts in these areas may be priced on a per acre basis. Each lot will be appraised separately considering its advantages and disadvantages as to location, topography, utilities and any other factors that may affect its value.

Rural – Remote or sparsely developed areas of the county where much of the land is being actively farmed or lying idle. Turnover is infrequent and development is generally limited to major highway intersections and rural hamlet communities. Public water may or may not be available. The majority of homes are served by individual wells and septic systems.

Rural Land Table Ranges

Homesites	$10,000 - $75,000	per acre
Secondary site	$ 7,500 - $57,000	per acre
Agriculture	$ 1,800 - $38,000	per acre
Residual	$ 900 - $19,000	per acre
Undeveloped	$ 7,500- $57,000	per acre

Sub-Urban – Areas in the county in which development is occurring or has reached equilibrium stage. Includes typical subdivisions and concentrated communities surrounding cities and towns. Public water is normally available and in some cases sanitary sewer services exist.

Subdivision Table Ranges

Primary site	$0.50 - $4.00	per sq ft
Secondary Site	$0.40 - $3.00	per sq ft
Residual	$0.10 - $0.50	per sq ft
Undeveloped	$0.10 - $0.50	per sq ft
Unperk	$0.10 - $0.50	per sq ft
Common area	$2,000- $50,000	per unit

Urban – Areas in or surrounding cities or towns with a high density of housing, commercial and/or industrial properties. Land is almost always bought and sold with the intent to develop; turnover is frequent and development is rapid. Public water and sewer are readily available.

Urban Table Ranges

Primary site	$0.50 - $8.00	per sq ft
Residual	$0.10 - $0.50	per sq ft
Undeveloped	$0.10 - $0.50	per sq ft
Unperk	$0.10 - $0.50	per sq ft
Common area	$2,000-$50,000	per unit

Lot	Typically 80% of site value
No Market Value	0

COMMERCIAL LAND GUIDE

Urban – Commercial lots will be priced on a square foot basis. Acreage tracts in these areas may be priced on a per acre basis. Each tract will be an appraised separately considering its advantages and disadvantages as to location, topography utilities and other factors that may affect value.

Rural – Commercial/Industrial land will be priced on a per acre price. Each tract will be appraised separately, considering its advantages and disadvantages as to location, topography, utilities and other factors that may affect value.

Commercial/Industrial Urban Land Table Ranges

Commercial Site	$14,000 - $1,500,000	per acre
Commercial Balance	$ 2,500 - $ 400,000	per acre
Commercial Undeveloped	$10,000 - $1,400,000	per acre
Home sites	$10,000 - $1,500,000	per acre
Industrial Balance	$ 2,500 - $ 400,000	per acre
Industrial Site	$14,000 - $1,500,000	per acre
Industrial Undeveloped	$10,000 - $1,400,000	per acre
Residual	$ 1,200 - $ 400,000	per acre
Secondary Site	$ 7,500 - $ 1,300,000	per acre
Undeveloped	$ 7,500 - $ 1,400,000	per acre
Commercial Site	$0.30 - $40.00	per sq ft
Industrial Site	$0.30 – $40.00	per sq ft
Residual	$0.05 - $4.15	per sq ft
Secondary	$0.20 - $30.00	per sq ft
Undeveloped	$0.20 - $36.00	per sq ft

Commercial/Industrial Rural Land Table Ranges

Commercial Site	$14,000 - $190,000	per acre
Commercial Balance	$ 1,800 - $ 50,000	per acre
Commercial Undeveloped	$10,000 - $170,000	per acre
Home site	$10,000 - $ 90,000	per acre
Industrial Site	$14,000 - $190,000	per acre
Industrial Balance	$ 1,800 - $ 50,000	per acre
Industrial Undeveloped	$10,000 - $170,000	per acre
Residual	$ 900 - $ 25,000	per acre
Secondary Site	$ 5,600 - $ 60,000	per acre
Undeveloped	$ 5,600 - $ 60,000	per acre
Apartments	$ 2,500 - $ 65,000	per unit
Apartment Balance	$ 2,500 - $ 400,000	per acre
Mobile Home Park Site	$14,000 - $1,500,000	per acre
Mobile Home Park Balance	$ 2,500 - $ 400,000	per acre
Lot	Typically 80% of site value	
No Market Value	0	

ACRE SIZE FACTOR CONDITION

ACRES AFTER SITE	SIZE FACTOR
21	.99
22	.97
23	.96
24	.95
25	.94
26	.93
27	.92
28-29	.91
30	.90
31-32	.89
33-34	.88
35-36	.87
37-38	.86
39-41	.85
42-44	.84
45-47	.83
48-52	.82
53-57	.81
58-63	.80
64-70	.79
71-79	.78
80-92	.77
93-109	.76
110-133	.75
134-171	.74
172-239	.73
240-399	.72
400-938	.71
DO NOT ROUND SITE ACREAGE EXCLUDED APPLIED TO AGR LANDLINES ONLY	

Watershed Protection and Water Critical Areas

Almost the entire northern half of Randolph County is located in one of the following watersheds: Randleman Lake, Lake Reese, Sandy Creek, Rocky River, Lake Lucas and Bunch Lake, Polecat Creek, Badin Lake and Bear Creek. The topography of land in *watersheds* is such that all drainage would eventually lead to the reservoir. Minimum lot sizes and watershed classification are mandated and approved by the State.

Randolph County also provides *Water Critical Area* protection to all areas within one-half (1\2) mile of the reservoir water line. Minimum lot size and development standards in the water critical areas are designed to provide additional protection to the County's water resources.

County and State watershed regulations strictly regulate the amount of **impervious surface** that can be built upon lands located within a watershed area. Developers should contact the County Planning Department to determine the allowed **impervious surface** coverage for any project **other than a single-family residence.**

WATERSHED NAME	WQCA %	WQCA LOT SIZE REQUIREMENT	BALANCE OF WATERSHED %	BALANCE LOT SIZE REQUIREMENT*
BACK CREEK	6%	80,000 sq ft	12%	40,000 sq ft
BADIN LAKE	N/A	N/A	24%	40,000 sq ft
BEAR CREEK	N/A	N/A	24%	40,000 sq ft
BIG ALAMANCE CREEK	N/A	N/A	24%	40,000 sq ft
LAKE REECE	6%	80,000 sq ft	24%	40,000 sq ft
McCRARY LAKES	6%	80,000 sq ft	12%	40,000 sq ft
POLECAT LAKE	6%	80,000 sq ft	24%	40,000 sq ft
RANDLEMAN LAKE	6%	80,000 sq ft	12%	40,000 sq ft
ROCKY RIVER	N/A	N/A	24%	40,000 sq ft
SANDY CREEK	6%	80,000 sq ft	24%	40,000 sq ft

Note: *minimum state-maintained road frontage is 100 ft; County private road standards can be used on subdivision having a minimum lot size of **5 acres.** No private road within Randolph County shall be longer than 1320 feet. In addition, no private road, created after Adoption of this ordinance and as defined by the Subdivision Ordinance, within the County shall serve more than six (6) lots. All private roads shall connect to a public road.

NC General Statues dictate certain guidelines for valuing properties affected by highway project.

§ 105-277.9. (Effective for taxes imposed for taxable years beginning before July 1, 2011) Taxation of property inside certain roadway corridors.

Real property that lies within a transportation corridor marked on an official map filed under Article 2E of Chapter 136 of the General Statutes is designated a special class of property under Article V, Sec. 2(2) of the North Carolina Constitution and is taxable at twenty percent (20%) of the general tax rate levied on real property by the taxing unit in which the property is situated if:

(1) As ofJanuary I, no building or other structure is located on the property; and

(2) The property has not been subdivided, as defined in G.S. 153A-335 or G.S. 160A-376, since it was included in the corridor. (1987, c. 747, s. 22; 1998-18

§ 105-277.9. (Effective for taxes imposed for taxable years beginning on or after July 1, 2011) Tasation of property inside certain roadway corridors .

Real property that lies within a transportation corridor marked on an official map filed under Article 2E of Chapter 136 of the General Statutes is designated a special class of property under Article V, Sec. 2(2) of the North Carolina Constitution and is taxable at twenty percent (20%) of the appraised value of the property if each of the following requirements is met:

(1) As of January I. no building orother structure is located on the property.

(2) The property has not been subdivided, as defined in G.S. 153A-335 or G.S. 160A-376, since it was included in the corridor. (1987, c. 747, s. 22; 1998-184, s. 2; 2011-30, s. I.)

§ 105-277.9A. (Effective for taxes imposed for taxable years beginning on or after July 1, 2011. See note for delayed repeal.) Taxation of improved property inside certain roadway corridors.

(a) Reduced Assessment. - Real property on which a building or other structure is located and that lies within a transportation corridor marked on an official map filed under Article 2E of Chapter 136 oftl1e General Statutes is designated a special class of property under Section 2(2) of Article V of the North Carolina Constitution and is taxable at fifty percent (50%) of the appraised value of the property if the property has not been subdivided, as defined in G.S. 153A-335 or G.S. 160A-376, since it was included in the corridor.

(b) Sunset. - This section is repealed effective for taxes imposed for taxable years beginning on or after July I, 2021. (2011-30, s. 2.)

Commercial/ Industrial

COMMERCIAL VALUATION

THE INCOME APPROACH

The income approach requires the appraiser to estimate the income from a property and capitalize the income into an estimate of true market value. The approach recognizes that potential buyers demand property because they anticipate a future stream of income. Appraisers view this as the principle of anticipation.

Also important in the income approach is the principle of substitution. Real estate investment can be substituted for other kinds of investments and the demand for income-producing properties is influenced by the return on alternative investments. A change in interest rates or in the expected earnings in non-realestate enterprises will reduce the demand for income producing properties.

The formula that relates income to value is:

$I = R \times V$ OR $V = I / R$
Were, I = Income
R = Overall capitalization rate
V= Value

The appraiser estimates the income stream that would be produced in the highest and best use under typical management. The property, not current management, is being valued; therefore, it is proper to assume that potential investors would use the property for its most profitable legal use, and that the buyer would employ typical rather than extraordinary management.

To apply the income approach, appraisers estimate a capitalization rate. The appraiser estimates the rate by collecting information from the market about the rate investors are receiving on investments of similar risk. Investors buying properties with uncertain income prospects demand rates of return higher than the return available from risk-free investments such as government bonds. Estimating a rate is sometimes done directly by computing the rate of return received by investors in similar properties.

The income approach is most suitable for types of properties frequently purchased and held for the purpose of producing income, such as apartments, commercial buildings, and office buildings. It is difficult to apply to properties such as factory buildings that are integrated into complex business operations and seldom leased.

INCOME CAPITALIZATION

Income capitalization translates a stream of future income into a single present value. It considers the quantity and quality of future income, when the income is to be received, and the duration of the income stream. A capitalization rate i8 used to convert the income stream into a lump sum value.

The capitalization rate used by appraisers includes both a return on and a return of investment. Return on is called the discount rate. It is the compensation to the investor for the risk. Return of is called recapture. It is the recovery of invested capital.

Any investor expects a return on and return of his investment. A prudent investor looks to the future income as well as potential resale. When deciding how much to pay for an investment, investors consider potential income, resale proceeds and income tax benefits.

CAPITALIZATION RATES

A capitalization rate converts net operating income into an estimate of value. The capitalization rate is made of several components.

Discount Rate — The discount rate is sometimes called a *required rate of return on investment,* or required rate of return. The discount rate is made up of an *interest* rate (a required rate of return on borrowed funds) and a *yield* rate (a required rate of return on equity).

Recapture Rate — A recapture rate provides for the recovery of capital on an annual basis. The recapture rate is also called the rate of return *of* investment. This rate applies only to the portion of the investment that will waste away during the investment period. Recapture rates are not included in land capitalization rates because land does not waste away.

Effective Tax Rate — The effective tax rate is the property tax rate expressed as a percentage of market value. When an appraisal is done for ad valorem tax purposes the capitalization rate must include an effective tax rate. Property taxes are not subtracted as an operating expense because they are not yet known. Indeed, the appraisal's purpose is to estimate a property value from which property taxes can be calculated.

Overall Rate — Overall rate is another term used to describe the capitalization rate in direct capitalization. The overall rate blends all requirements of discount, recapture, and effective tax rates. The overall rate is a ratio of net operating income to value,

Estimating Capitalization Rates — Capitalization rates express complex market factors and relationships. Overall rates in the direct capitalization method are derived from market transactions for properties that are similar to the subject — they entail similar risk and have similar land-to-building ratios, remaining economic lives, and operating expense ratios. Yield

capitalization also derives rates from market transactions but explicitly takes into account the yield sought by particular investors, changes in the income stream, changes in capitalization rates, and reversionary value (the lump-sum value expected at the end of the holding period).

Small errors in estimating the capitalization rate will have a pronounced effect on the estimate of property value. For example, estimating the capitalization rate at 9 or 11 percent instead of 10 percent will change the estimated value by approximately 10 percent. For this reason, capitalization rates should be derived with care and supported with market data.

Choice of Capitalization Method

The choice of direct or yield capitalization methods depends on the type of property, its economic life, and the quality, quantity, and duration of the income stream. The quality and quantity of data available for similar properties are also important in rate development and in determining the method of estimating the recapture rate. Both direct and yield methods may be used with residual techniques.

I& E DATA

The collection of income and expense data is an essential phase in the valuation of commercial properties. The appraiser is primarily concerned with the potential earning power of the property. His/her objective is to estimate its expected income. If the appraiser is to perform this function satisfactorily, he/she should have a thorough and workable understanding of some of the major analytical considerations which must be given to income and expense data.

Questions Relating to Income Data

A. Was the reported income produced entirely by the subject property? Very often the rental will include an amount attributable to one or more additional parcels of real estate. In this case, it would be necessary to obtain the proper allocations of rent.

B. Was the income attributable to the subject property as it physically existed at the time of the appraisal or did the appraisal include the value of leasehold improvements and remodeling for which the tenant paid in addition to rent? If so, it may be necessary to adjust the income to reflect economic rent.

C. Does the reported income represent a full year's return? It is often advisable to obtain both monthly and annual amounts as a cross check.

D. Does the income reflect current economic rent? Is either part or all of the income predicated on old leases? If so, what are the provisions for renewal options and rates?

E. Does the reported income reflect 100% occupancy? What percentage of occupancy does it reflect? Is this percentage typical of this type of property, or is it due to special non-recurring causes?

F. Does the income include rental for all marketable space? Does it include an allowance for space, if any, which is either owner or manager occupied? Is the allowance realistic?

G. Is the income attributable directly to the real estate and conventional amenities? Is some of the income derived from furnishings and appliances? If so, it will be necessary to adjust the income or make provisions for reserves to eventually replace them.

H. In many properties an actual rental does not exist because the real estate is owner occupied. In this event it is necessary to obtain other information to provide a basis to estimate economic rent. The information required pertains to the business operation using the property. Proper analysis of the annual operating statements of the business including gross sales or receipts can provide an accurate estimate of economic rent, Information requirements for a few of the more common property uses are as follows:

Retail Stores:	The annual net gross sales. (Gross sales less returned merchandise.)
Hotels and Motels:	The annual operating statement of the business. If retail or office space is leased in these properties, obtain the actual rent paid.
Theaters:	The annual gross receipts (including admissions and concessions) and seating capacity.

Operating Expense Considerations

The appraiser must consider only those expenses which are applicable to the cost of ownership. Any portion of the expenses incurred either directly or indirectly by the tenant need not be considered. Reimbursed expenses can only be considered when the amount of reimbursement is included as income. Each expense item must stand the test of both legitimacy and accuracy. How do they compare with the established guide lines and norms: Are they consistent with the expenses incurred by comparable properties?

A. MANAGEMENT refers to the cost of administration. These charges should realistically reflect what a real estate management company would actually charge to manage the property. If no management fee is shown on the statement, a proper allowance must be made by the appraiser. On the other hand, if excessive management charges ate reported, as is often the case, the appraiser must disregard the reported charges and use an amount which he deems appropriate and consistent with comparable type properties. The cost of management

bears a relationship with the risk of ownership and will generally range between 4 to 10% of the gross income.

B. GENERAL expenses in that they include such items as the cost of services and supplies not charged to a particular category, unemployment and F. I. C. A. taxes, Workmen's Compensation, and other employee insurance plans are legitimate deductions.

   Miscellaneous expenses is the "catch-all" category for incidentals. This item should reflect a very nominal percentage of the income, If the expenses reported seem to be excessive, the appraiser must examine the figures carefully in order to determine if they are legitimate expenses, and if so, to allocate them to their proper category.

C. CLEANING expenses are legitimate charges. They are for such items as general housekeeping and maid service and include the total cost of labor and related supplies. All or a portion of the cleaning services may be provided by outside firms

working on a "contract" basis. Cleaning expenses vary considerably and are particularly significant in operations such as Offices and hotels. "Rule of the thumb" norms for various operations are made available through national management associations. The appraiser should have little difficulty in establishing local guide lines.

D. UTILITIES are generally legitimate expenses and if reported accurately need very little reconstruction by the appraiser, other than to determine if the charges are consistent with comparable properties. Local utility companies can provide the appraiser with definite guide lines.

Heat and Air Conditioning costs are often reported separately and in addition to utilities. The expenses would include the cost of fuel other than the above mentioned utilities, and may include, especially in large installations, the fireman's wages, the cost of related supplies, inspection fees, and maintenance charges. These are generally legitimate costs and the same precautions prescribed for "utilities" are in order.

E. ELEVATOR expenses including the Cost of repairs and services are legitimate deductions. Repairs and services are generally handled through service contracts and can be regarded as fairly stable annual recurring expenses.

F. CONSTRUCTION expenses include the costs of decorating, repairs, and maintenance as follows:

I. Decorating and minor alterations are necessary to maintain the income stream of many commercial properties. In this respect they are legitimate expenses. However, careful scrutiny of these figures is required. Owners tend to include the cost of major alterations and remodeling which are, in fact, capital expenditures and, as such, are not legitimate operating expenses.

2. Repairs and Maintenance expenses reported for ally given year may not necessarily be a true indication of the average or typical annual expense for these items. For example, a statement could reflect a substantial expenditure for a specific year (possibly because the roof was replaced and/or several items of deferred maintenance were corrected); yet the statement for the following year may indicate that repairs and maintenance charges were practically nil. It is necessary for the appraiser to either obtain complete economic history on each property in order to make a proper judgement as to the average annual expenses for these items or include a proper allowance in the building capitalization rate to cover these annual expenses. Since it is neither possible nor practical to obtain enough economic history on every property, the latter method is generally used and the amounts reported for repairs and maintenance are not deducted as an expense item. Careful consideration must be given to the allowance used in the building capitalization rate as the cost of repairs and maintenance for commercial

buildings will vary considerably depending on age, condition, the general quality of construction, and local labor costs.

Note that custodial charges such as wages of janitors, watchmen, doormen, porters, etc., must always be analyzed to determine if they are consistent with current wages. Consideration has be to given to the living quarters occupied by such employees. The economic rent attributable to the space Should be included in the income estimate. The costs incurred in providing this space and other remunerations should be deducted as an expense item.

G, FIXED expenses include those items which show no or very little variation from year to year. It is practical to treat these items individually.

1. Insurance — As was the case of some other expense items, the amount reported for insurance in any given year may not be indicative of the actual annual expense. Many owners obtain the more economical 3-year coverage plans and expense the entire premium in one year. Furthermore, many owners obtain "blanket" coverage for more than one building and fail to make the proper allocations of cost. It is generally more effective for the appraiser to establish his own guide lines. He must be careful to include only items applicable to real estate. Fire extended coverage, and owner's liability are the main insurance expense items. Separate coverages on different components of the building such as elevators and plate glass are also legitimate expenses. This factor is usually built into the building capitalization rate; however, in some instances, it will be necessary to adjust the rate to reflect unusual conditions related to specific properties.

2. Real Estate Taxes — In making appraisals for tax purposes, the appraiser will find it more convenient to exclude the actual amount reported for real estate taxes. Since future taxes will be based upon his appraised value, he can readily provide for this expense item by including it in his capitalization rate.

3. Other Taxes — Expenses reported in this category such as income taxes, corporate taxes and franchise taxes, usually do not pertain to the real estate and should, therefore, be disregarded.

4. Depreciation — The appraiser provides for this expense by the recapture rate which he includes in this building capitalization rate. The amount reported for depreciation is a "bookkeeping figure" which the owner uses for Internal Revenue purposes and should not be considered in the income approach. In newer properties, this figure may provide an accurate indication of the original cost.

5. Interest — Interest on borrowed capital is not a legitimate expense. All property is appraised as if it were "free and clear". It makes no difference to the appraiser whose money is used for purchasing the property. If a portion of the investment

is borrowed capital, the owner of the fee (the property) is entitled only to a return on that portion of the property he owns, while the return on the balance of the investment is assigned to the holder of the mortgage. Interest paid for borrowed capital is not a deductible expense since interest on the total investment, as normal return, is considered in the capitalization rate.

6. Land Rent — Land rent is paid in lieu of purchasing the land and is generally not considered an expense item in the capitalization process. It is, however, a significant item in that it may have a direct bearing upon the market value of a property. Land leases have the tendency to influence value of property upward or downward depending upon whether or not they are favorable or unfavorable to a prospective buyer. It is, therefore, advisable to obtain the amount and terms of all leases whenever possible.

LEVELS OF REAL ESTATE INCOME

Potential gross rent*
Less
Vacancy and collection allowance
plus
Miscellaneous income*
equals
Effective gross income
less
Operating expenses (allowable):
Maintenance and operating
Administrative
Utilities
Insurance
Real estate taxes**
Replacement reserves
equals
Net operating income
less
Debt service:
Mortgage principal
Mortgage interest
equals
Before-tax cash flow
(cash throw-off or equity dividend)
less
Income tax liability
(Taxable income = net operating income less
depreciation and mortgage interest)
Tax liability = taxable income x tax rate
(negative tax = tax savings)
equals
After-tax cash flow (net return)

*Potential gross income is the sum of potential gross rent and miscellaneous income.

**Real estate taxes, although an operating expense, are reflected for assessment purposes by an increase in the capitalization rate, instead of a net operating income reduction.

COMMERCIAL OVERALL CAPITALIZATION RATE RANGE

Commercial Sales & Services	5.00%	14.00%
Shopping Centers & Mall	5.00%	15.00%
Office Buildings	6.00%	15.00%
Apartment Buildings & Complexes	5.00%	13.00%
Hotels & Motels	5.00%	19.00%
Industrial & Warehouses	5.00%	20.00%
Golf Courses	5.00%	15.00%
Mobile Home Parks	5.00%	15.00%
Health Care & Senior Housing	5.00%	15.00%
Restaurants & Fast Food	5.00%	15.00%

COMMERCIAL/INDUSTRIAL BUILDING USE/TYPE BASE RATES		
CODE	**DESCRIPTION**	**RATE**
APTVERT	APARTMENT CONVERTED	82.57
APTHIGH	APARTMENT HIGH RISE	64.50
APTLOW	APARTMENT LOW RISE	64.50
GOVARM	ARMORY	93.00
ASSTLIV	ASSISTED LIVING FACILITY	80.00
AUDITOR	AUDITORIUM	110.00
AUDESERV	AUTO DEALER SERVICE AREA	51.50
AUDESHOW	AUTO DEALER SHOWROOM/OFFICE	70.00
AUTOSERV	AUTO SERVICE GARAGE	45.00
BANKBRAN	BANK BRANCH OFFICE	100.00
BANKDRIV	BANK DRIVE-THRU	125.00
BANKMAIN	BANK MAIN OFFICE	100.00
BANKMOD	BANK MODULAR OFFICE	70.00
BARTAVN	BAR/TAVERN	66.50
BOWLING	BOWLING ALLEY	65.00
CAFETERI	CAFETERIA	71.00
CWAUTOMA	CAR WASH AUTOMATIC	57.50
CWFULLSV	CAR WASH FULL SERVICE	52.00
CWMANUAL	CAR WASH MANUAL	43.00
COMMCTR	COMMUNITY CENTER	110.00
CONVSTOR	CONVENIENCE STORE	66.00
CONVRURL	CONVENIENCE STORE RURAL	60.00
CONVFF	CONVENIENCE STORE/FAST FOOD	118.00
GOVJAIL	CORRECTIONAL FACILITY	200.00
CTRYCLUB	COUNTRY CLUB	85.00
GOVCTHSE	COURTHOUSE	150.00
DCVENT	DAY CARE CONVENTIONAL	100.00
DCVERT	DAY CARE CONVERTED	82.57
DEPTSTOR	DEPARTMENT STORE	80.00
DISCSTOR	DISCOUNT STORE-SUPERMARKET	58.00
DISCSS	DISCOUNT SUPERSTORE	50.00
DISTWHSE	DISTRIBUTION WAREHOUSE	42.50
DORMHIGH	DORMITORY HIGH RISE	64.50
DORMLOW	DORMITORY LOW RISE	64.50
DRUGSTR	DRUG STORE	80.00
FASTFOOD	FAST FOOD	118.00

CODE	DESCRIPTION	RATE
RELHALL	FELLOWSHIP HALL	85.00
GOVFDSTA	FIRE DEPARTMENT STAFFED	110.00
GOVFDVOL	FIRE DEPARTMENT VOLUNTEER	60.00
FITCTR	FITNESS CENTER (YMCA)	90.00
FUHOVENT	FUNERAL HOME CONVENTIONAL	90.00
FUHOVERT	FUNERAL HOME CONVERTED	82.57
GYM	GYMNASIUM	95.00
HOSPITAL	HOSPITAL	220.00
HOTHIGH	HOTEL HIGH RISE	68.25
HOTLOW	HOTEL LOW RISE	68.10
GOVLAWEC	LAW ENFORCEMENT CENTER	130.00
LIBRARY	LIBRARY	120.00
LOCKROOM	LOCKER ROOM FACILITY	60.00
LOWER-AUDESERV	LOWER-AUTO DEALER SERVICE AREA	31.00
LOWER-RELHALL	LOWER-FELLOWSHIP HALL	51.00
LOWER-LOCKROOM	LOWER-LOCKER ROOM FACILITY	36.00
LOWER-MFGLT	LOWER-MANUFACTURE LIGHT	26.00
LOWER-MULTSTGE	LOWER-MULTI-USE STORAGE	24.00
LOWER-OFFGEN	LOWER-OFFICE GENERAL	54.00
LOWER-OFFOPEN	LOWER-OFFICE OPEN	50.00
LOWER-RELEDUC	LOWER-RELIGIOUS EDUCATION	50.00
LOWER-RELWORSP	LOWER-RELIGIOUS WORSHIP	72.00
LOWER-RETMIXUS	LOWER-RETAIL CENTER MIXED USE	33.00
LOWER-RETSTOR	LOWER-RETAIL STORE	41.00
LOWER-SOCIAL	LOWER-SOCIAL/FRATERNAL HALL	63.00
LOWER-WHSE	LOWER-WAREHOUSE	22.00
MFG	MANUFACTURING	54.00
MFGLT	MANUFACTURING LIGHT	43.50
MINIWHSE	MINI WAREHOUSE	35.00
MOTHIGH	MOTEL HIGH RISE	62.15
MOTLOW	MOTEL LOW RISE	62.00
MOVIETH	MOVIE THEATER	80.00
MULTSTGE	MULTI-USE STORAGE	40.00
DINERNBD	NEIGHBORHOOD DINER	78.00
NURSEHOM	NURSING/CONVALESCENT HOME	135.00
OFFCONDO	OFFICE CONDO	90.00
OFFVERT	OFFICE CONVERTED	82.57
OFFGEN	OFFICE GENERAL	90.00
OFFMED	OFFICE MEDICAL	100.00
OFFMDCON	OFFICE MEDICAL CONDO	100.00

CODE	DESCRIPTION	RATE
OFFMOD	OFFICE MODULAR	70.00
OFFOPEN	OFFICE OPEN	83.00
OFFMDCTR	OFFICE SURGERICAL/MEDICAL CENTER	125.00
OFFVET	OFFICE VETERINARY	75.00
OFFWHSE	OFFICE/WAREHOUSE	48.00
GOVPOST	POST OFFICE	135.00
RADTVBLG	RADIO/TELEVISION TRANSMITTER BLDG	80.00
RELEDUC	RELIGIOUS EDUCATION	83.00
RELWORSP	RELIGIOUS WORSHIP	120.00
REST	RESTAURANT	76.00
RESTMOD	RESTAURANT MODULAR	66.50
RETMIXUS	RETAIL CENTER MIXED USE	55.00
RETCONDO	RETAIL CONDO	68.50
RETVERT	RETAIL CONVERTED	82.57
RETSTOR	RETAIL STORE	68.50
ROWAPT	ROW APARTMENT (DOWNTOWN)	62.00
ROWMIX	ROW MIXED USE (DOWNTOWN)	72.00
ROWOFF	ROW OFFICE (DOWNTOWN)	80.00
ROWRET	ROW RETAIL (DOWNTOWN)	60.00
SCHOOL	SCHOOL	125.00
SSRETAIL	SERVICE STATION CONVERTED RETAIL	65.00
SSSTGE	SERVICE STATION CONVERTED STORAGE	65.00
SSWBAYS	SERVICE STATION WITH BAYS	65.00
SSWOBAYS	SERVICE STATION WITHOUT BAYS	65.00
REGMALL	SHOPPING MALL	55.00
SKATE	SKATING RINK-ICE/ROLLER	75.00
SOCIAL	SOCIAL/FRATERNAL HALL	105.00
STRIPSC	STRIP SHOPPING CENTER	55.00
THEATER	THEATER	110.00
UPPER-APTVERT	UPPER-APARTMENT CONVERTED	79.30
UPPER-APTHIGH	UPPER-APARTMENT HIGH RISE	61.90
UPPER-APTLOW	UPPER-APARTMENT LOW RISE	61.90
UPPER-ASSTLIV	UPPER-ASSISTED LIVING FACILITY	76.80
UPPER-BANKMAIN	UPPER-BANK MAIN OFFICE	96.00
UPPER-RELHALL	UPPER-FELLOWSHIP HALL	81.60
UPPER-HOTHIGH	UPPER-HOTEL HIGH RISE	65.50
CODE	DESCRIPTION	RATE
UPPER-HOTLOW	UPPER-HOTEL LOW RISE	65.40
UPPER-LOCKROOM	UPPER-LOCKER ROOM FACILITY	57.60
UPPER-MFG	UPPER-MANUFACTURING	51.80

CODE	DESCRIPTION	RATE
UPPER-MFGLT	UPPER-MANUFACTURING LIGHT	41.80
UPPER-MOTLOW	UPPER-MOTEL LOW RISE	59.50
UPPER-MULTSTGE	UPPER-MULTI-USE STORAGE	38.40
UPPER-OFFVERT	UPPER-OFFICE CONVERTED	79.30
UPPER-OFFGEN	UPPER-OFFICE GENERAL	86.40
UPPER-OFFMED	UPPER-OFFICE MEDICAL	96.00
UPPER-OFFMDCON	UPPER-OFFICE MEDICAL CONDO	96.00
UPPER-OFFOPEN	UPPER-OFFICE OPEN	79.70
UPPER-OFFWHSE	UPPER-OFFICE/WAREHOUSE	46.10
UPPER-RELEDUC	UPPER-RELIGIOUS EDUCATION	79.70
UPPER-RELWORSP	UPPER-RELIGIOUS WORSHIP	115.20
UPPER-RETMIXUS	UPPER-RETAIL CENTER MIXED USE	52.80
UPPER-RETSTOR	UPPER-RETAIL STORE	65.80
UPPER-ROWAPT	UPPER-ROW APARTMENT (DOWNTOWN)	59.50
UPPER-ROWMIX	UPPER-ROW MIXED USE (DOWNTOWN)	69.10
UPPER-ROWOFF	UPPER-ROW OFFICE (DOWNTOWN)	76.80
UPPER-ROWRET	UPPER-ROW RETAIL (DOWNTOWN)	57.60
UPPER-SOCIAL	UPPER-SOCIAL/FRATERNAL HALL	100.80
UPPER-STRIPSC	UPPER-STRIP SHOPPING CENTER	52.80
UPPER-WHSE	UPPER-WAREHOUSE	35.20
WHSE	WAREHOUSE	36.70

COMMERCIAL/INDUSTRIAL ADD/DEDUCT ADJUSTMENTS

AIR CONDITIONING

The base rate for commercial/industrial buildings includes the cost of a central air-conditioning system. Depending on the type of air-conditioning code selected, the appropriate adjustments will be made to the base rate as shown below:

CODE	DESCRIPTION	ADJUSTMENT
Central	Central AC	Base
None	None	-5.0% of base
Unit	Unit	-3.0% of base

ATTIC

Although rare, it is possible for commercial/industrial buildings to have an attic. The base price for commercial/industrial buildings does not include attic area. Finished attic will be included in the story height adjustment. See Commercial/Industrial addition pricing.

BANK VAULT

CODE	DESCRIPTION	ADJUSTMENT
BE1	Security Vault	$ 200.00 per sqft
BE2	Record Storage	$ 75.00 per sqft

CRANEWAYS

CODE	DESCRIPTION	ADJUSTMENT
CRN	Craneways	$200.00 per linear ft

DOCK LEVEL FLOORS

CODE	DESCRIPTION	ADJUSTMENT
DLF	Dock Level Floors	$2.60 per sqft

DOCK LEVELERS

CODE	DESCRIPTION	ADJUSTMENT
LD5	Hydraulic Dock Leveler	$9,500.00 per leveler
LDM	Manual Dock Leveler	$1,600.00 per leveler

PLUMBING

The base rate specifications for each commercial/industrial building calls for "adequate, commensurate with the type and use of the building".

CODE	DESCRIPTION	ADJUSTMENT
AD	Adequate	Base
ANF	Above normal	+6.0% of base
LP	Limited plumbing	-3.0% of base
NP	No plumbing	-6.0% of base
UNK	Unknown (new construction)	-6.0% of base

SPRINKLER SYSTEM

CODE	DESCRIPTION	ADJUSTMENT
SPRDI	Dry Pipe (Industrial)	$2.86 per sqft
SPRDL	Dry Pipe (Apt, Hotels, Nursing)	$4.15 per sqft
SPRWI	Wet Pipe (Industrial)	$2.25 per sqft
SPRWL	Wet Pipe (Apt, Hotels, Nursing)	$3.25 per sqft

WALK-IN COOLERS

CODE	DESCRIPTION	ADJUSTMENT
CF1	Chiller (35 to 5 degrees)	$7.60 per sqft
CF2	Freezer (5 to -15 degrees)	$9.10 per sqft
CF3	Sharp Freeze (-15 to -45 degrees)	$10.60 per sqft

BUILT-IN

CODE	DESCRIPTION	ADJUSTMENT
EL1	Elevator Electric Freight	$125,700.00
EL2	Elevator Electric Passenger	$104,900.00
EL3	Elevator Hydra Freight	$58,400.00
EL4	Elevator Hydra Passenger	$65,000.00
EL5	Escalator Stair Width 32"	$153,500.00
EL6	Escalator Stair Width 48"	$167,300.00
FI1	Fireplace 1 opening	$3,400.00
FI2	Fireplace 2 opening	$4,750.00
FI3	Fireplace 3 opening	$6,100.00
SC2	Indoor pool	$38,000.00

FOUNDATION

The base rates for foundation are shown below:

CODE	DESCRIPTION	ADJUSTMENT
CS	Crawl space	Base
PF	Pier	-3% of base
SL	Slab	Base

EXTERIOR WALLS

The base rate adjustment for exterior walls are shown below:

CODE	DESCRIPTION	ADJUSTMENT
BLOCK	Concrete block	Base
BRFR	Masonry on block	+4% of base
BRONCB	Brick on block	+5% of base
BRICK	Brick veneer	+6% of base
CONLOAD	Concrete load	+6% of base
CONNOLD	Concrete non-load	+4% of base
CONTILT	Concrete tilt up	base
CORRASB	Corr asbestos	-5% of base
FRAME	Frame	-4% of base
GLANDMAS	Glass and masonry	+11% of base
GLASS	Glass	+14% of base
LTMTL	Light metal	-12% of base
NATSTONE	Native stone	+10% of base
SANDMET	Sandwich metal	+4% of base
SOLAR	Solar glass	+25% of base
TILE	Tile tilt up panels	+8% of base

FIREPLACE

CODE	DESCRIPTION	ADJUSTMENT
1FP	Masonry additional opening	$1350.00
MFP	Prefab fireplace	$2000.00

HEATING

The base rate for commercial/industrial buildings includes the cost of a central, automatic, forced air system. The base rate adjustments for heating are shown below:

CODE	DESCRIPTION	ADJUSTMENT
ELEC	Electric	Base
HOTAIR	Hot air	Base
HOTWAT	Hot water	Base
HTPUMP	Heat pump	Base
NONE	None	-5% of base
SOLAR	Solar	Base
UNIT	Unit	-3% of base
CLIM CONT	Climate Control (Mini Warehouse)	+19% of base

INTERIOR FINISH

The base rate for the commercial/industrial building includes appropriate interior finish for the type and use of the building.

MEZZANINE FINISH

CODE	DESCRIPTION	ADJUSTMENT
FINISH	Finished	$40.00 per sq ft
FLOOR	Floor only	$20.00 per sq ft
SEMIFIN	Semi-finished	$30.00 per sq ft

ROOF FLOOR SYSTEM

The base rate adjustments for roof floor system are shown below:

CODE	DESCRIPTION	ADJUSTMENT
FIREPROF	Fireproof	+20% of base
FIREREST	Fire Resistant	+7% of base
PREFAB	Pre-engineered steel	-5% of base
WOODFRAM	Wood frame	Base

Grade Factors

X PLUS	250.00
X	210.00
X MINUS	185.00
A PLUS	167.00
A	155.00
A MINUS	145.00
B PLUS	135.00
B	126.00
B MINUS	117.00
C PLUS	108.00
C	100.00
C MINUS	92.00
D PLUS	85.00
D	78.00
D MINUS	70.00
E PLUS	60.00
E	50.00
E MINUS	40.00

STORY HEIGHT

Story height adjustments for commercial/industrial buildings are accomplished by the one story square foot price being multiplied by the entry in the story height field.

STORY HEIGHT	ADJUSTMENT
1.00	BASE
1.10	BASE
1.15	BASE
1.20	BASE
1.25	BASE
1.30	BASE
1.35	BASE
1.40	BASE
1.45	BASE
1.50	BASE
1.55	BASE
1.60	BASE
1.65	BASE
1.70	BASE
1.75	BASE
1.80	BASE
1.85	BASE
1.90	BASE
1.95	BASE
2.00	BASE
2.05	BASE
2.10	BASE
2.15	BASE
2.20	BASE
2.25	BASE
2.30	BASE
2.35	BASE
2.40	BASE

STORY HEIGHT	ADJUSTMENT
2.45	BASE
2.50	BASE
2.55	BASE
2.60	BASE
2.65	BASE
2.70	BASE
2.75	BASE
2.80	BASE
2.85	BASE
2.90	BASE
2.95	BASE
3.00	BASE
3.25	BASE
3.50	BASE
3.75	BASE
4.00	BASE
4.25	BASE
4.50	BASE
5.00	BASE
5.50	BASE
6.00	BASE
7.00	BASE
8.00	BASE
9.00	BASE
10.00	BASE

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY Type	MIN	MAX	RATE
INDUSTRIAL WAREHOUSE	0.00	1000	1.30
INDUSTRIAL WAREHOUSE	1001	1500	1.28
INDUSTRIAL WAREHOUSE	1501	2000	1.25
INDUSTRIAL WAREHOUSE	2001	3000	1.21
INDUSTRIAL WAREHOUSE	3001	4000	1.19
INDUSTRIAL WAREHOUSE	4001	5000	1.16
INDUSTRIAL WAREHOUSE	5001	6000	1.15
INDUSTRIAL WAREHOUSE	6001	7000	1.14
INDUSTRIAL WAREHOUSE	7001	8000	1.12
INDUSTRIAL WAREHOUSE	8001	10000	1.10
INDUSTRIAL WAREHOUSE	10001	12000	1.09
INDUSTRIAL WAREHOUSE	12001	14000	1.07
INDUSTRIAL WAREHOUSE	14001	16000	1.05
INDUSTRIAL WAREHOUSE	16001	18000	1.04
INDUSTRIAL WAREHOUSE	18001	20000	1.03
INDUSTRIAL WAREHOUSE	20001	25000	1.02
INDUSTRIAL WAREHOUSE	25001	30000	1.01
INDUSTRIAL WAREHOUSE	30001	35000	1.00
INDUSTRIAL WAREHOUSE	35001	40000	0.99
INDUSTRIAL WAREHOUSE	40000	50000	0.98
INDUSTRIAL WAREHOUSE	50001	60000	0.97
INDUSTRIAL WAREHOUSE	60001	70000	0.96
INDUSTRIAL WAREHOUSE	70001	80000	0.94
INDUSTRIAL WAREHOUSE	80001	100000	0.92
INDUSTRIAL WAREHOUSE	100001	120000	0.90
INDUSTRIAL WAREHOUSE	120001	140000	0.88
INDUSTRIAL WAREHOUSE	140001	180000	0.86
INDUSTRIAL WAREHOUSE	180001	225000	0.84
INDUSTRIAL WAREHOUSE	225001	400000	0.82
INDUSTRIAL WAREHOUSE	400001	999999999	0.80

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY TYPE	MIN	MAX	RATE
MULTI USE APARTMENT HIGH RISE	0	599	1.10
MULTI USE APARTMENT HIGH RISE	600	799	1.05
MULTI USE APARTMENT HIGH RISE	800	999	1.00
MULTI USE APARTMENT HIGH RISE	1000	1199	0.98
MULTI USE APARTMENT HIGH RISE	1200	999999999	0.97

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY TYPE	MIN	MAX	RATE
MULTI USE APARTMENT LOW RISE	0	599	1.10
MULTI USE APARTMENT LOW RISE	600	799	1.05
MULTI USE APARTMENT LOW RISE	800	999	1.00
MULTI USE APARTMENT LOW RISE	1000	1199	0.98
MULTI USE APARTMENT LOW RISE	1200	999999999	0.97

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY TYPE	MIN	MAX	RATE
OFFICE HIGH RISE	0	500	1.25
OFFICE HIGH RISE	501	600	1.24
OFFICE HIGH RISE	601	700	1.23
OFFICE HIGH RISE	701	800	1.22
OFFICE HIGH RISE	801	900	1.21
OFFICE HIGH RISE	901	1000	1.20
OFFICE HIGH RISE	1001	1100	1.19
OFFICE HIGH RISE	1101	1200	1.18
OFFICE HIGH RISE	1201	1400	1.17
OFFICE HIGH RISE	1401	1600	1.16
OFFICE HIGH RISE	1601	1800	1.15
OFFICE HIGH RISE	1801	2000	1.14
OFFICE HIGH RISE	2001	2200	1.13
OFFICE HIGH RISE	2201	2400	1.12
OFFICE HIGH RISE	2401	2700	1.11
OFFICE HIGH RISE	2701	3000	1.10
OFFICE HIGH RISE	3001	3300	1.09
OFFICE HIGH RISE	3301	3600	1.08
OFFICE HIGH RISE	3601	3900	1.07
OFFICE HIGH RISE	3901	4200	1.06
OFFICE HIGH RISE	4201	4500	1.05
OFFICE HIGH RISE	4501	4800	1.04
OFFICE HIGH RISE	4801	5200	1.03
OFFICE HIGH RISE	5201	5600	1.02
OFFICE HIGH RISE	5601	6000	1.01
OFFICE HIGH RISE	6001	8000	1.00
OFFICE HIGH RISE	8001	10000	0.99
OFFICE HIGH RISE	10001	12000	0.98
OFFICE HIGH RISE	12001	14000	0.97
OFFICE HIGH RISE	14001	16000	0.96
OFFICE HIGH RISE	16001	20000	0.95
OFFICE HIGH RISE	20001	25000	0.94
OFFICE HIGH RISE	25001	30000	0.93
OFFICE HIGH RISE	30001	40000	0.92
OFFICE HIGH RISE	40001	50000	0.91
OFFICE HIGH RISE	50001	999999999	0.90

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY TYPE	MIN	MAX	RATE
OFFICE LOW RISE	0	500	1.25
OFFICE LOW RISE	501	600	1.24
OFFICE LOW RISE	601	700	1.23
OFFICE LOW RISE	701	800	1.22
OFFICE LOW RISE	801	900	1.21
OFFICE LOW RISE	901	1000	1.20
OFFICE LOW RISE	1001	1100	1.19
OFFICE LOW RISE	1101	1200	1.18
OFFICE LOW RISE	1201	1400	1.17
OFFICE LOW RISE	1401	1600	1.16
OFFICE LOW RISE	1601	1800	1.15
OFFICE LOW RISE	1801	2000	1.14
OFFICE LOW RISE	2001	2200	1.13
OFFICE LOW RISE	2201	2400	1.12
OFFICE LOW RISE	2401	2700	1.11
OFFICE LOW RISE	2701	3000	1.10
OFFICE LOW RISE	3001	3300	1.09
OFFICE LOW RISE	3301	3600	1.08
OFFICE LOW RISE	3601	3900	1.07
OFFICE LOW RISE	3901	4200	1.06
OFFICE LOW RISE	4201	4500	1.05
OFFICE LOW RISE	4501	4800	1.04
OFFICE LOW RISE	4801	5200	1.03
OFFICE LOW RISE	5201	5600	1.02
OFFICE LOW RISE	5601	6000	1.01
OFFICE LOW RISE	6001	8000	1.00
OFFICE LOW RISE	8001	10000	0.99
OFFICE LOW RISE	10001	12000	0.98
OFFICE LOW RISE	12001	14000	0.97
OFFICE LOW RISE	14001	16000	0.96
OFFICE LOW RISE	16001	20000	0.95
OFFICE LOW RISE	20001	25000	0.94
OFFICE LOW RISE	25001	30000	0.93
OFFICE LOW RISE	30001	40000	0.92
OFFICE LOW RISE	40001	50000	0.91
OFFICE LOW RISE	50001	999999999	0.90

MAIN SECTION BUILDING AREA ADJUSTMENT TABLE			
OCCUPANCY TYPE	MIN	MAX	RATE
RETAIL	0	500	1.15
RETAIL	501	700	1.14
RETAIL	701	900	1.13
RETAIL	901	1200	1.12
RETAIL	1201	1600	1.11
RETAIL	1601	2000	1.10
RETAIL	2001	2500	1.09
RETAIL	2501	3000	1.08
RETAIL	3001	3500	1.07
RETAIL	3501	4000	1.06
RETAIL	4001	4500	1.05
RETAIL	4501	5000	1.04
RETAIL	5001	5500	1.03
RETAIL	5501	6000	1.02
RETAIL	6001	6500	1.01
RETAIL	6501	7000	1.00
RETAIL	7001	8000	0.99
RETAIL	8001	10000	0.98
RETAIL	10001	12000	0.97
RETAIL	12001	14000	0.96
RETAIL	14001	16000	0.95
RETAIL	16001	18000	0.94
RETAIL	18001	20000	0.93
RETAIL	20001	25000	0.92
RETAIL	25001	30000	0.91
RETAIL	30001	40000	0.90
RETAIL	40001	60000	0.89
RETAIL	60001	80000	0.88
RETAIL	80001	120000	0.87
RETAIL	120001	175000	0.86
RETAIL	175001	999999999	0.85

Wall Height Adjustment Factor

Base Wall Height is 16 feet.

Adjustment Factor for Section Buildings with more or less than 16 feet wall height

(100 + (([SFTTSSHM] – 16.00) * 1.10)) / 100.00

SFTTSSHM = Section Building Actual Wall Height

COMMERCIAL ADDITION PRICING

PURPOSE	DESCRIPTION	RATE	MAIN PERCENT
C	AERIAL WALKWAY	335.00	
C	APARTMENT CONVERTED	82.57	
C	APARTMENT HIGH RISE	64.50	
C	APARTMENT LOW RISE	64.50	
C	ARMORY	93.00	
C	ASSISTED LIVING FACILITY	80.00	
C	ATRIUM(COVER ONLY)	140.00	
C	ATRIUM(WALLS)	90.00	
C	ATTIC FULLY FINISHED	49.54	
C	ATTIC PARTIALLY FINISHED	33.03	
C	ATTIC UNFINISHED	8.26	
C	AUDITORIUM	110.00	
C	AUTO DEALER SERVICE AREA	51.50	
C	AUTO DEALER SHOWROOM/OFFICE	70.00	
C	AUTO SERVICE GARAGE	45.00	
C	BALCONY	23.00	
C	BANK BRANCH OFFICE	100.00	
C	BANK CANOPY DRIVE-IN	48.00	
C	BANK DRIVE-THRU	125.00	
C	BANK MAIN OFFICE	100.00	
C	BANK MODULAR OFFICE	70.00	
C	BAR/TAVERN	66.50	
C	BOWLING ALLEY	65.00	
C	CAFETERIA	71.00	
C	CANOPY ONLY	11.56	
C	CANOPY ROOF/SLAB	16.80	
C	CANOPY SERVICE STATION-AVERAGE	25.65	
C	CANOPY SERVICE STATION-ECONOMY	19.90	
C	CANOPY SERVICE STATION-GOOD	33.00	
C	CAR WASH AUTOMATIC	57.50	
C	CAR WASH FULL SERVICE	52.00	
C	CAR WASH MANUAL	43.00	
C	CARPORT	16.80	
C	COMMUNITY CENTER	110.00	
C	CONVENIENCE STORE	66.00	
C	CONVENIENCE STORE RURAL	60.00	
C	CONVENIENCE STORE/FAST FOOD	118.00	
C	CORRECTIONAL FACILITY	200.00	
C	COUNTRY CLUB	85.00	

CODE	DESCRIPTION	RATE	MAIN PERCENT
C	COURTHOUSE	150.00	
C	COVERED MALL	55.00	
C	DAY CARE CONVENTIONAL	100.00	
C	DAY CARE CONVERTED	82.57	
C	DEPARTMENT STORE	80.00	
C	DISCOUNT STORE-SUPERMARKET	58.00	
C	DISCOUNT SUPERSTORE	50.00	
C	DISTRIBUTION WAREHOUSE	42.50	
C	DORMITORY HIGH RISE	64.50	
C	DORMITORY LOW RISE	64.50	
C	DRUG STORE	80.00	
C	ENCLOSED ENTRY	35.00	
C	FAST FOOD	118.00	
C	FELLOWSHIP HALL	85.00	
C	FIRE DEPARTMENT STAFFED	110.00	
C	FIRE DEPARTMENT VOLUNTEER	60.00	
C	FITNESS CENTER (YMCA)	90.00	
C	FUNERAL HOME CONVENTIONAL	90.00	
C	FUNERAL HOME CONVERTED	82.57	
C	GARAGE FRAME ATTACHED	23.50	
C	GARAGE MASONRY ATTACHED	26.00	
C	GYMNASIUM	95.00	
C	HOSPITAL	220.00	
C	HOTEL HIGH RISE	68.25	
C	HOTEL LOW RISE	68.10	
C	LAW ENFORCEMENT CENTER	130.00	
C	LIBRARY	120.00	
C	LOADING DOCK,INTERIOR	45.00	
C	LOADING DOCK,STEEL OR CONCRETE	21.00	
C	LOADING DOCK,WOOD	17.00	
C	LOCKER ROOM FACILITY	60.00	
C	LOWER-AUTO DEALER SERVICE AREA	31.00	
C	LOWER-CANOPY ROOF/SLAB	16.80	
C	LOWER-CARPORT	16.80	
C	LOWER-FELLOWSHIP HALL	51.00	
C	LOWER-GARAGE FRAME ATTACHED	23.50	
C	LOWER-GARAGE MASONRY ATTACHED	26.00	
C	LOWER-LOADING DOCK,STEEL OR CONCRETE	21.00	
C	LOWER-LOADING DOCK,WOOD	17.00	
C	LOWER-LOCKER ROOM FACILITY	36.00	

CODE	DESCRIPTION	RATE	MAIN PERCENT
C	LOWER-MANUFACTURING LIGHT	26.00	
C	LOWER-MULTI-USE STORAGE	24.00	
C	LOWER-OFFICE GENERAL	54.00	
C	LOWER-OFFICE OPEN	50.00	
C	LOWER-PATIO CONCRETE	6.20	
C	LOWER-PATIO MASONRY TILE STONE	13.30	
C	LOWER-PORCH OPEN	32.50	
C	LOWER-RELIGIOUS EDUCATION	50.00	
C	LOWER-RELIGIOUS WORSHIP	72.00	
C	LOWER-RETAIL CENTER MIXED USE	33.00	
C	LOWER-RETAIL STORE	41.00	
C	LOWER-SOCIAL/FRATERNAL HALL	63.00	
C	LOWER-STOOP MASONRY TERR	17.85	
C	LOWER-UTILITY BUILDING, BRICK OR STONE	24.00	
C	LOWER-UTILITY BUILDING, FRAME	22.00	
C	LOWER-UTILITY BUILDING,METAL	22.00	
C	LOWER-WAREHOUSE	22.00	
C	LOWER-WOOD DECK	18.50	
C	MAIN BODY ATTIC UNFINISHED	8.26	
C	MAIN BODY FINISHED BASEMENT		60%
C	MAIN BODY FINISHED REC ROOM		40%
C	MAIN BODY UNFINISHED BASEMENT	18.50	
C	MANUFACTURING	54.00	
C	MANUFACTURING LIGHT	43.50	
C	MINI WAREHOUSE	35.00	
C	MOTEL HIGH RISE	62.15	
C	MOTEL LOW RISE	62.00	
C	MOVIE THEATER	80.00	
C	MULTI-USE STORAGE	40.00	
C	NEIGHBORHOOD DINER	78.00	
C	NURSING/CONVALESCENT HOME	135.00	
C	OFFICE CONDO	90.00	
C	OFFICE CONVERTED	82.57	
C	OFFICE ENCLOSURE	45.00	
C	OFFICE GENERAL	90.00	
C	OFFICE MEDICAL	100.00	
C	OFFICE MEDICAL CONDO	100.00	
C	OFFICE MODULAR	70.00	
C	OFFICE OPEN	83.00	
C	OFFICE SURGERICAL/MEDICAL CENTER	125.00	

CODE	DESCRIPTION	RATE	MAIN PERCENT
C	OFFICE VETERINARY	75.00	
C	OFFICE/WAREHOUSE	48.00	
C	PATIO CONCRETE	6.20	
C	PATIO MASONRY TILE STONE	13.30	
C	PORCH ENCLOSED	51.00	
C	PORCH ENCLOSED UPPER	31.75	
C	PORCH OPEN	35.00	
C	PORCH OPEN UPPER	21.75	
C	PORCH SCREENED	37.00	
C	REGIONAL SHOPPING MALL	55.00	
C	RELIGIOUS EDUCATION	83.00	
C	RELIGIOUS WORSHIP	120.00	
C	RESTAURANT	76.00	
C	RESTAURANT MODULAR	66.50	
C	RETAIL CENTER MIXED USE	55.00	
C	RETAIL CONDO	68.50	
C	RETAIL CONVERTED	82.57	
C	RETAIL STORE	68.50	
C	ROW APARTMENT (DOWNTOWN)	62.00	
C	ROW MIXED USE (DOWNTOWN)	72.00	
C	ROW MIXED USE UPPER FLOOR UNFINISHED	55.00	
C	ROW OFFICE (DOWNTOWN)	80.00	
C	ROW RETAIL (DOWNTOWN)	60.00	
C	ROW RETAIL UPPER FLOOR UNFINISHED	42.00	
C	SCHOOL	125.00	
C	SERVICE STATION CONVERTED RETAIL	65.00	
C	SERVICE STATION CONVERTED STORAGE	65.00	
C	SERVICE STATION WITH BAYS	65.00	
C	SERVICE STATION WITHOUT BAYS	65.00	
C	SKATING RINK-ICE/ROLLER	75.00	
C	SOCIAL/FRATERNAL HALL	105.00	
C	STOOP MASONRY TERR	17.85	
C	STRIP SHOPPING CENTER	55.00	
C	THEATER	110.00	
C	TRUCK AND TRAIN WELLS	13.25	
C	UPPER-AERIAL WALKWAY	335.00	
C	UPPER-APARTMENT CONVERTED	79.30	
C	UPPER-APARTMENT HIGH RISE	61.90	
C	UPPER-APARTMENT LOW RISE	61.90	
C	UPPER-ASSISTED LIVING FACILITY	76.80	

CODE	DESCRIPTION	RATE	MAIN PERCENT
C	UPPER-ATTIC FULLY FINISHED	49.54	
C	UPPER-ATTIC PARTIALLY FINISHED	33.03	
C	UPPER-ATTIC UNFINISHED	8.26	
C	UPPER-BALCONY	23.00	
C	UPPER-BANK MAIN OFFICE	96.00	
C	UPPER-CANOPY ONLY	11.56	
C	UPPER-CANOPY ROOF/SLAB	16.80	
C	UPPER-CARPORT	16.80	
C	UPPER-ENCLOSED ENTRY	35.00	
C	UPPER-FELLOWSHIP HALL	81.60	
C	UPPER-HOTEL HIGH RISE	65.50	
C	UPPER-HOTEL LOW RISE	65.40	
C	UPPER-LOCKER ROOM FACILITY	57.60	
C	UPPER-MANUFACTURING	51.80	
C	UPPER-MANUFACTURING LIGHT	41.80	
C	UPPER-MOTEL LOW RISE	59.50	
C	UPPER-MULTI-USE STORAGE	38.40	
C	UPPER-OFFICE CONVERTED	79.30	
C	UPPER-OFFICE ENCLOSURE	45.00	
C	UPPER-OFFICE GENERAL	86.40	
C	UPPER-OFFICE MEDICAL	96.00	
C	UPPER-OFFICE MEDICAL CONDO	96.00	
C	UPPER-OFFICE OPEN	79.70	
C	UPPER-OFFICE/WAREHOUSE	46.10	
C	UPPER-PATIO CONCRETE	6.20	
C	UPPER-PORCH ENCLOSED	31.75	
C	UPPER-PORCH ENCLOSED UPPER	31.75	
C	UPPER-PORCH OPEN	21.75	
C	UPPER-PORCH OPEN UPPER	21.75	
C	UPPER-RELIGIOUS EDUCATION	79.70	
C	UPPER-RELIGIOUS WORSHIP	115.20	
C	UPPER-RETAIL CENTER MIXED USE	52.80	
C	UPPER-RETAIL STORE	65.80	
C	UPPER-ROW APARTMENT (DOWNTOWN)	59.50	
C	UPPER-ROW MIXED USE (DOWNTOWN)	69.10	
C	UPPER-ROW OFFICE (DOWNTOWN)	76.80	
C	UPPER-ROW RETAIL (DOWNTOWN)	57.60	
C	UPPER-SOCIAL/FRATERNAL HALL	100.80	
C	UPPER-STRIP SHOPPING CENTER	52.80	
C	UPPER-UTILITY BUILDING, BRICK OR STONE	38.40	

CODE	DESCRIPTION	RATE	MAIN PERCENT
C	UPPER-UTILITY BUILDING, FRAME	35.00	
C	UPPER-UTILITY BUILDING,METAL	35.00	
C	UPPER-WAREHOUSE	35.20	
C	UPPER-WOOD DECK	18.50	
C	UTILITY BUILDING, BRICK OR STONE	40.00	
C	UTILITY BUILDING, FRAME	36.50	
C	UTILITY BUILDING,METAL	36.50	
C	WAREHOUSE	36.70	
C	WOOD DECK	18.50	

SECTION BUILDING ECONOMIC LIFE		
OCCUPANCY_CODE	**CLASS**	**LIFE**
APARTMENT CONVERTED	FIREPROOF	60.00
APARTMENT CONVERTED	FIRE RESISTANT	60.00
APARTMENT CONVERTED	PRE-ENGINEERED STEEL	40.00
APARTMENT CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
APARTMENT HIGH RISE	FIREPROOF	60.00
APARTMENT HIGH RISE	FIRE RESISTANT	60.00
APARTMENT HIGH RISE	PRE-ENGINEERED STEEL	40.00
APARTMENT HIGH RISE	WOOD FRAME/JOIST/BEAM	50.00
APARTMENT LOW RISE	FIREPROOF	60.00
APARTMENT LOW RISE	FIRE RESISTANT	60.00
APARTMENT LOW RISE	PRE-ENGINEERED STEEL	40.00
APARTMENT LOW RISE	WOOD FRAME/JOIST/BEAM	50.00
ARMORY	FIREPROOF	60.00
ARMORY	FIRE RESISTANT	60.00
ARMORY	PRE-ENGINEERED STEEL	40.00
ARMORY	WOOD FRAME/JOIST/BEAM	50.00
ASSISTED LIVING FACILITY	FIREPROOF	60.00
ASSISTED LIVING FACILITY	FIRE RESISTANT	60.00
ASSISTED LIVING FACILITY	PRE-ENGINEERED STEEL	40.00
ASSISTED LIVING FACILITY	WOOD FRAME/JOIST/BEAM	50.00
AUDITORIUM	FIREPROOF	60.00
AUDITORIUM	FIRE RESISTANT	60.00
AUDITORIUM	PRE-ENGINEERED STEEL	40.00
AUDITORIUM	WOOD FRAME/JOIST/BEAM	50.00
AUTO DEALER SERVICE AREA	FIREPROOF	50.00
AUTO DEALER SERVICE AREA	FIRE RESISTANT	50.00
AUTO DEALER SERVICE AREA	PRE-ENGINEERED STEEL	40.00
AUTO DEALER SERVICE AREA	WOOD FRAME/JOIST/BEAM	40.00
AUTO DEALER SHOWROOM/OFFICE	FIREPROOF	50.00
AUTO DEALER SHOWROOM/OFFICE	FIRE RESISTANT	50.00
AUTO DEALER SHOWROOM/OFFICE	PRE-ENGINEERED STEEL	40.00
AUTO DEALER SHOWROOM/OFFICE	WOOD FRAME/JOIST/BEAM	40.00
AUTO SERVICE GARAGE	FIREPROOF	50.00
AUTO SERVICE GARAGE	FIRE RESISTANT	50.00
AUTO SERVICE GARAGE	PRE-ENGINEERED STEEL	40.00
AUTO SERVICE GARAGE	WOOD FRAME/JOIST/BEAM	40.00

OCCUPANCY CODE	CLASS	LIFE
BANK BRANCH OFFICE	FIREPROOF	60.00
BANK BRANCH OFFICE	FIRE RESISTANT	60.00
BANK BRANCH OFFICE	PRE-ENGINEERED STEEL	40.00
BANK BRANCH OFFICE	WOOD FRAME/JOIST/BEAM	50.00
BANK DRIVE-THRU	FIREPROOF	60.00
BANK DRIVE-THRU	FIRE RESISTANT	60.00
BANK DRIVE-THRU	PRE-ENGINEERED STEEL	40.00
BANK DRIVE-THRU	WOOD FRAME/JOIST/BEAM	50.00
BANK MAIN OFFICE	FIREPROOF	60.00
BANK MAIN OFFICE	FIRE RESISTANT	60.00
BANK MAIN OFFICE	PRE-ENGINEERED STEEL	40.00
BANK MAIN OFFICE	WOOD FRAME/JOIST/BEAM	50.00
BANK MODULAR OFFICE	FIREPROOF	50.00
BANK MODULAR OFFICE	FIRE RESISTANT	50.00
BANK MODULAR OFFICE	PRE-ENGINEERED STEEL	40.00
BANK MODULAR OFFICE	WOOD FRAME/JOIST/BEAM	40.00
BAR/TAVERN	FIREPROOF	50.00
BAR/TAVERN	FIRE RESISTANT	50.00
BAR/TAVERN	PRE-ENGINEERED STEEL	40.00
BAR/TAVERN	WOOD FRAME/JOIST/BEAM	40.00
BOWLING ALLEY	FIREPROOF	50.00
BOWLING ALLEY	FIRE RESISTANT	50.00
BOWLING ALLEY	PRE-ENGINEERED STEEL	40.00
BOWLING ALLEY	WOOD FRAME/JOIST/BEAM	40.00
CAFETERIA	FIREPROOF	50.00
CAFETERIA	FIRE RESISTANT	50.00
CAFETERIA	PRE-ENGINEERED STEEL	40.00
CAFETERIA	WOOD FRAME/JOIST/BEAM	40.00
CAR WASH AUTOMATIC	FIREPROOF	50.00
CAR WASH AUTOMATIC	FIRE RESISTANT	50.00
CAR WASH AUTOMATIC	PRE-ENGINEERED STEEL	40.00
CAR WASH AUTOMATIC	WOOD FRAME/JOIST/BEAM	40.00
CAR WASH FULL SERVICE	FIREPROOF	50.00
CAR WASH FULL SERVICE	FIRE RESISTANT	50.00
CAR WASH FULL SERVICE	PRE-ENGINEERED STEEL	40.00
CAR WASH FULL SERVICE	WOOD FRAME/JOIST/BEAM	40.00
CAR WASH MANUAL	FIREPROOF	50.00
CAR WASH MANUAL	FIRE RESISTANT	50.00
CAR WASH MANUAL	PRE-ENGINEERED STEEL	40.00
CAR WASH MANUAL	WOOD FRAME/JOIST/BEAM	40.00

OCCUPANCY CODE	CLASS	LIFE
COMMUNITY CENTER	FIREPROOF	60.00
COMMUNITY CENTER	FIRE RESISTANT	60.00
COMMUNITY CENTER	PRE-ENGINEERED STEEL	50.00
COMMUNITY CENTER	WOOD FRAME/JOIST/BEAM	50.00
CONVENIENCE STORE	FIREPROOF	50.00
CONVENIENCE STORE	FIRE RESISTANT	50.00
CONVENIENCE STORE	PRE-ENGINEERED STEEL	40.00
CONVENIENCE STORE	WOOD FRAME/JOIST/BEAM	40.00
CONVENIENCE STORE RURAL	FIREPROOF	50.00
CONVENIENCE STORE RURAL	FIRE RESISTANT	50.00
CONVENIENCE STORE RURAL	PRE-ENGINEERED STEEL	40.00
CONVENIENCE STORE RURAL	WOOD FRAME/JOIST/BEAM	40.00
CONVENIENCE STORE/FAST FOOD	FIREPROOF	50.00
CONVENIENCE STORE/FAST FOOD	FIRE RESISTANT	50.00
CONVENIENCE STORE/FAST FOOD	PRE-ENGINEERED STEEL	40.00
CONVENIENCE STORE/FAST FOOD	WOOD FRAME/JOIST/BEAM	40.00
CORRECTIONAL FACILITY	FIREPROOF	60.00
CORRECTIONAL FACILITY	FIRE RESISTANT	60.00
CORRECTIONAL FACILITY	PRE-ENGINEERED STEEL	50.00
CORRECTIONAL FACILITY	WOOD FRAME/JOIST/BEAM	50.00
COUNTRY CLUB	FIREPROOF	60.00
COUNTRY CLUB	FIRE RESISTANT	60.00
COUNTRY CLUB	PRE-ENGINEERED STEEL	40.00
COUNTRY CLUB	WOOD FRAME/JOIST/BEAM	50.00
COURTHOUSE	FIREPROOF	60.00
COURTHOUSE	FIRE RESISTANT	60.00
COURTHOUSE	PRE-ENGINEERED STEEL	50.00
COURTHOUSE	WOOD FRAME/JOIST/BEAM	50.00
DAY CARE CONVENTIONAL	FIREPROOF	60.00
DAY CARE CONVENTIONAL	FIRE RESISTANT	60.00
DAY CARE CONVENTIONAL	PRE-ENGINEERED STEEL	40.00
DAY CARE CONVENTIONAL	WOOD FRAME/JOIST/BEAM	50.00
DAY CARE CONVERTED	FIREPROOF	60.00
DAY CARE CONVERTED	FIRE RESISTANT	60.00
DAY CARE CONVERTED	PRE-ENGINEERED STEEL	40.00
DAY CARE CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
DEPARTMENT STORE	FIREPROOF	60.00
DEPARTMENT STORE	FIRE RESISTANT	60.00
DEPARTMENT STORE	PRE-ENGINEERED STEEL	40.00
DEPARTMENT STORE	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
DISCOUNT STORE-SUPERMARKET	FIREPROOF	50.00
DISCOUNT STORE-SUPERMARKET	FIRE RESISTANT	50.00
DISCOUNT STORE-SUPERMARKET	PRE-ENGINEERED STEEL	40.00
DISCOUNT STORE-SUPERMARKET	WOOD FRAME/JOIST/BEAM	40.00
DISCOUNT SUPERSTORE	FIREPROOF	60.00
DISCOUNT SUPERSTORE	FIRE RESISTANT	60.00
DISCOUNT SUPERSTORE	PRE-ENGINEERED STEEL	40.00
DISCOUNT SUPERSTORE	WOOD FRAME/JOIST/BEAM	50.00
DISTRIBUTION WAREHOUSE	FIREPROOF	60.00
DISTRIBUTION WAREHOUSE	FIRE RESISTANT	60.00
DISTRIBUTION WAREHOUSE	PRE-ENGINEERED STEEL	40.00
DISTRIBUTION WAREHOUSE	WOOD FRAME/JOIST/BEAM	50.00
DORMITORY HIGH RISE	FIREPROOF	60.00
DORMITORY HIGH RISE	FIRE RESISTANT	60.00
DORMITORY HIGH RISE	PRE-ENGINEERED STEEL	40.00
DORMITORY HIGH RISE	WOOD FRAME/JOIST/BEAM	50.00
DORMITORY LOW RISE	FIREPROOF	60.00
DORMITORY LOW RISE	FIRE RESISTANT	60.00
DORMITORY LOW RISE	PRE-ENGINEERED STEEL	40.00
DORMITORY LOW RISE	WOOD FRAME/JOIST/BEAM	50.00
DRUG STORE	FIREPROOF	60.00
DRUG STORE	FIRE RESISTANT	60.00
DRUG STORE	PRE-ENGINEERED STEEL	40.00
DRUG STORE	WOOD FRAME/JOIST/BEAM	50.00
FAST FOOD	FIREPROOF	50.00
FAST FOOD	FIRE RESISTANT	50.00
FAST FOOD	PRE-ENGINEERED STEEL	40.00
FAST FOOD	WOOD FRAME/JOIST/BEAM	40.00
FELLOWSHIP HALL	FIREPROOF	60.00
FELLOWSHIP HALL	FIRE RESISTANT	60.00
FELLOWSHIP HALL	PRE-ENGINEERED STEEL	40.00
FELLOWSHIP HALL	WOOD FRAME/JOIST/BEAM	50.00
FIRE DEPARTMENT STAFFED	FIREPROOF	60.00
FIRE DEPARTMENT STAFFED	FIRE RESISTANT	60.00
FIRE DEPARTMENT STAFFED	PRE-ENGINEERED STEEL	40.00
FIRE DEPARTMENT STAFFED	WOOD FRAME/JOIST/BEAM	50.00
FIRE DEPARTMENT VOLUNTEER	FIREPROOF	60.00
FIRE DEPARTMENT VOLUNTEER	FIRE RESISTANT	60.00
FIRE DEPARTMENT VOLUNTEER	PRE-ENGINEERED STEEL	40.00
FIRE DEPARTMENT VOLUNTEER	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
FITNESS CENTER	FIREPROOF	60.00
FITNESS CENTER	FIRE RESISTANT	60.00
FITNESS CENTER	PRE-ENGINEERED STEEL	40.00
FITNESS CENTER	WOOD FRAME/JOIST/BEAM	50.00
FUNERAL HOME CONVENTIONAL	FIREPROOF	60.00
FUNERAL HOME CONVENTIONAL	FIRE RESISTANT	60.00
FUNERAL HOME CONVENTIONAL	PRE-ENGINEERED STEEL	40.00
FUNERAL HOME CONVENTIONAL	WOOD FRAME/JOIST/BEAM	50.00
FUNERAL HOME CONVERTED	FIREPROOF	60.00
FUNERAL HOME CONVERTED	FIRE RESISTANT	60.00
FUNERAL HOME CONVERTED	PRE-ENGINEERED STEEL	40.00
FUNERAL HOME CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
GYMNASIUM	FIREPROOF	60.00
GYMNASIUM	FIRE RESISTANT	60.00
GYMNASIUM	PRE-ENGINEERED STEEL	40.00
GYMNASIUM	WOOD FRAME/JOIST/BEAM	50.00
HOSPITAL	FIREPROOF	60.00
HOSPITAL	FIRE RESISTANT	60.00
HOSPITAL	PRE-ENGINEERED STEEL	40.00
HOSPITAL	WOOD FRAME/JOIST/BEAM	50.00
HOTEL HIGH RISE	FIREPROOF	60.00
HOTEL HIGH RISE	FIRE RESISTANT	60.00
HOTEL HIGH RISE	PRE-ENGINEERED STEEL	40.00
HOTEL HIGH RISE	WOOD FRAME/JOIST/BEAM	50.00
HOTEL LOW RISE	FIREPROOF	60.00
HOTEL LOW RISE	FIRE RESISTANT	60.00
HOTEL LOW RISE	PRE-ENGINEERED STEEL	40.00
HOTEL LOW RISE	WOOD FRAME/JOIST/BEAM	50.00
LAW ENFORCEMENT CENTER	FIREPROOF	60.00
LAW ENFORCEMENT CENTER	FIRE RESISTANT	60.00
LAW ENFORCEMENT CENTER	PRE-ENGINEERED STEEL	40.00
LAW ENFORCEMENT CENTER	WOOD FRAME/JOIST/BEAM	50.00
LIBRARY	FIREPROOF	60.00
LIBRARY	FIRE RESISTANT	60.00
LIBRARY	PRE-ENGINEERED STEEL	40.00
LIBRARY	WOOD FRAME/JOIST/BEAM	50.00
LOCKER ROOM FACILITY	FIREPROOF	50.00
LOCKER ROOM FACILITY	FIRE RESISTANT	50.00
LOCKER ROOM FACILITY	PRE-ENGINEERED STEEL	40.00
LOCKER ROOM FACILITY	WOOD FRAME/JOIST/BEAM	40.00

OCCUPANCY CODE	CLASS	LIFE
LOWER-AUTO DEALER SERVICE AREA	FIREPROOF	50.00
LOWER-AUTO DEALER SERVICE AREA	FIRE RESISTANT	50.00
LOWER-AUTO DEALER SERVICE AREA	PRE-ENGINEERED STEEL	40.00
LOWER-AUTO DEALER SERVICE AREA	WOOD FRAME/JOIST/BEAM	40.00
LOWER-FELLOWSHIP HALL	FIREPROOF	60.00
LOWER-FELLOWSHIP HALL	FIRE RESISTANT	60.00
LOWER-FELLOWSHIP HALL	PRE-ENGINEERED STEEL	40.00
LOWER-FELLOWSHIP HALL	WOOD FRAME/JOIST/BEAM	50.00
LOWER-LOCKER ROOM FACILITY	FIREPROOF	50.00
LOWER-LOCKER ROOM FACILITY	FIRE RESISTANT	50.00
LOWER-LOCKER ROOM FACILITY	PRE-ENGINEERED STEEL	40.00
LOWER-LOCKER ROOM FACILITY	WOOD FRAME/JOIST/BEAM	40.00
LOWER-MANUFACTURE LIGHT	FIREPROOF	50.00
LOWER-MANUFACTURE LIGHT	FIRE RESISTANT	50.00
LOWER-MANUFACTURE LIGHT	PRE-ENGINEERED STEEL	40.00
LOWER-MANUFACTURE LIGHT	WOOD FRAME/JOIST/BEAM	40.00
LOWER-MULTI-USE STORAGE	FIREPROOF	50.00
LOWER-MULTI-USE STORAGE	FIRE RESISTANT	50.00
LOWER-MULTI-USE STORAGE	PRE-ENGINEERED STEEL	40.00
LOWER-MULTI-USE STORAGE	WOOD FRAME/JOIST/BEAM	40.00
LOWER-OFFICE GENERAL	FIREPROOF	60.00
LOWER-OFFICE GENERAL	FIRE RESISTANT	60.00
LOWER-OFFICE GENERAL	PRE-ENGINEERED STEEL	40.00
LOWER-OFFICE GENERAL	WOOD FRAME/JOIST/BEAM	50.00
LOWER-OFFICE OPEN	FIREPROOF	60.00
LOWER-OFFICE OPEN	FIRE RESISTANT	60.00
LOWER-OFFICE OPEN	PRE-ENGINEERED STEEL	40.00
LOWER-OFFICE OPEN	WOOD FRAME/JOIST/BEAM	50.00
LOWER-RELIGIOUS EDUCATION	FIREPROOF	60.00
LOWER-RELIGIOUS EDUCATION	FIRE RESISTANT	60.00
LOWER-RELIGIOUS EDUCATION	PRE-ENGINEERED STEEL	40.00
LOWER-RELIGIOUS EDUCATION	WOOD FRAME/JOIST/BEAM	50.00
LOWER-RELIGIOUS WORSHIP	FIREPROOF	60.00
LOWER-RELIGIOUS WORSHIP	FIRE RESISTANT	60.00
LOWER-RELIGIOUS WORSHIP	PRE-ENGINEERED STEEL	40.00
LOWER-RELIGIOUS WORSHIP	WOOD FRAME/JOIST/BEAM	50.00
LOWER-RETAIL CENTER MIXED USE	FIREPROOF	60.00
LOWER-RETAIL CENTER MIXED USE	FIRE RESISTANT	60.00
LOWER-RETAIL CENTER MIXED USE	PRE-ENGINEERED STEEL	40.00
LOWER-RETAIL CENTER MIXED USE	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
LOWER-RETAIL STORE	FIREPROOF	60.00
LOWER-RETAIL STORE	FIRE RESISTANT	60.00
LOWER-RETAIL STORE	PRE-ENGINEERED STEEL	40.00
LOWER-RETAIL STORE	WOOD FRAME/JOIST/BEAM	50.00
LOWER-SOCIAL/FRATERNAL HALL	FIREPROOF	60.00
LOWER-SOCIAL/FRATERNAL HALL	FIRE RESISTANT	60.00
LOWER-SOCIAL/FRATERNAL HALL	PRE-ENGINEERED STEEL	40.00
LOWER-SOCIAL/FRATERNAL HALL	WOOD FRAME/JOIST/BEAM	50.00
LOWER-WAREHOUSE	FIREPROOF	50.00
LOWER-WAREHOUSE	FIRE RESISTANT	50.00
LOWER-WAREHOUSE	PRE-ENGINEERED STEEL	40.00
LOWER-WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00
MANUFACTURING	FIREPROOF	60.00
MANUFACTURING	FIRE RESISTANT	60.00
MANUFACTURING	PRE-ENGINEERED STEEL	50.00
MANUFACTURING	WOOD FRAME/JOIST/BEAM	50.00
MANUFACTURING LIGHT	FIREPROOF	50.00
MANUFACTURING LIGHT	FIRE RESISTANT	50.00
MANUFACTURING LIGHT	PRE-ENGINEERED STEEL	40.00
MANUFACTURING LIGHT	WOOD FRAME/JOIST/BEAM	40.00
MINI WAREHOUSE	FIREPROOF	50.00
MINI WAREHOUSE	FIRE RESISTANT	50.00
MINI WAREHOUSE	PRE-ENGINEERED STEEL	40.00
MINI WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00
MOTEL HIGH RISE	FIREPROOF	50.00
MOTEL HIGH RISE	FIRE RESISTANT	50.00
MOTEL HIGH RISE	PRE-ENGINEERED STEEL	40.00
MOTEL HIGH RISE	WOOD FRAME/JOIST/BEAM	40.00
MOTEL LOW RISE	FIREPROOF	50.00
MOTEL LOW RISE	FIRE RESISTANT	50.00
MOTEL LOW RISE	PRE-ENGINEERED STEEL	40.00
MOTEL LOW RISE	WOOD FRAME/JOIST/BEAM	40.00
MOVIE THEATER	FIREPROOF	50.00
MOVIE THEATER	FIRE RESISTANT	50.00
MOVIE THEATER	PRE-ENGINEERED STEEL	40.00
MOVIE THEATER	WOOD FRAME/JOIST/BEAM	40.00
MULTI-USE STORAGE	FIREPROOF	50.00
MULTI-USE STORAGE	FIRE RESISTANT	50.00
MULTI-USE STORAGE	PRE-ENGINEERED STEEL	40.00
MULTI-USE STORAGE	WOOD FRAME/JOIST/BEAM	40.00

OCCUPANCY CODE	CLASS	LIFE
NEIGHBORHOOD DINER	FIREPROOF	50.00
NEIGHBORHOOD DINER	FIRE RESISTANT	50.00
NEIGHBORHOOD DINER	PRE-ENGINEERED STEEL	40.00
NEIGHBORHOOD DINER	WOOD FRAME/JOIST/BEAM	40.00
NURSING/CONVALESCENT HOME	FIREPROOF	60.00
NURSING/CONVALESCENT HOME	FIRE RESISTANT	60.00
NURSING/CONVALESCENT HOME	PRE-ENGINEERED STEEL	40.00
NURSING/CONVALESCENT HOME	WOOD FRAME/JOIST/BEAM	50.00
OFFICE CONDO	FIREPROOF	60.00
OFFICE CONDO	FIRE RESISTANT	60.00
OFFICE CONDO	PRE-ENGINEERED STEEL	40.00
OFFICE CONDO	WOOD FRAME/JOIST/BEAM	50.00
OFFICE CONVERTED	FIREPROOF	60.00
OFFICE CONVERTED	FIRE RESISTANT	60.00
OFFICE CONVERTED	PRE-ENGINEERED STEEL	40.00
OFFICE CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
OFFICE GENERAL	FIREPROOF	60.00
OFFICE GENERAL	FIRE RESISTANT	60.00
OFFICE GENERAL	PRE-ENGINEERED STEEL	40.00
OFFICE GENERAL	WOOD FRAME/JOIST/BEAM	50.00
OFFICE MEDICAL	FIREPROOF	60.00
OFFICE MEDICAL	FIRE RESISTANT	60.00
OFFICE MEDICAL	PRE-ENGINEERED STEEL	40.00
OFFICE MEDICAL	WOOD FRAME/JOIST/BEAM	50.00
OFFICE MEDICAL CONDO	FIREPROOF	60.00
OFFICE MEDICAL CONDO	FIRE RESISTANT	60.00
OFFICE MEDICAL CONDO	PRE-ENGINEERED STEEL	40.00
OFFICE MEDICAL CONDO	WOOD FRAME/JOIST/BEAM	50.00
OFFICE MODULAR	FIREPROOF	50.00
OFFICE MODULAR	FIRE RESISTANT	50.00
OFFICE MODULAR	PRE-ENGINEERED STEEL	40.00
OFFICE MODULAR	WOOD FRAME/JOIST/BEAM	40.00
OFFICE OPEN	FIREPROOF	60.00
OFFICE OPEN	FIRE RESISTANT	60.00
OFFICE OPEN	PRE-ENGINEERED STEEL	40.00
OFFICE OPEN	WOOD FRAME/JOIST/BEAM	50.00
OFFICE SURGERICAL/MEDICAL CENTER	FIREPROOF	60.00
OFFICE SURGERICAL/MEDICAL CENTER	FIRE RESISTANT	60.00
OFFICE SURGERICAL/MEDICAL CENTER	PRE-ENGINEERED STEEL	40.00
OFFICE SURGERICAL/MEDICAL CENTER	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
OFFICE VETERINARY	FIREPROOF	60.00
OFFICE VETERINARY	FIRE RESISTANT	60.00
OFFICE VETERINARY	PRE-ENGINEERED STEEL	40.00
OFFICE VETERINARY	WOOD FRAME/JOIST/BEAM	50.00
OFFICE/WAREHOUSE	FIREPROOF	50.00
OFFICE/WAREHOUSE	FIRE RESISTANT	50.00
OFFICE/WAREHOUSE	PRE-ENGINEERED STEEL	40.00
OFFICE/WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00
POST OFFICE	FIREPROOF	60.00
POST OFFICE	FIRE RESISTANT	60.00
POST OFFICE	PRE-ENGINEERED STEEL	40.00
POST OFFICE	WOOD FRAME/JOIST/BEAM	50.00
RADIO/TELEVISION TRANSMITTER BLDG	FIREPROOF	60.00
RADIO/TELEVISION TRANSMITTER BLDG	FIRE RESISTANT	60.00
RADIO/TELEVISION TRANSMITTER BLDG	PRE-ENGINEERED STEEL	40.00
RADIO/TELEVISION TRANSMITTER BLDG	WOOD FRAME/JOIST/BEAM	50.00
RELIGIOUS EDUCATION	FIREPROOF	60.00
RELIGIOUS EDUCATION	FIRE RESISTANT	60.00
RELIGIOUS EDUCATION	PRE-ENGINEERED STEEL	40.00
RELIGIOUS EDUCATION	WOOD FRAME/JOIST/BEAM	50.00
RELIGIOUS WORSHIP	FIREPROOF	60.00
RELIGIOUS WORSHIP	FIRE RESISTANT	60.00
RELIGIOUS WORSHIP	PRE-ENGINEERED STEEL	40.00
RELIGIOUS WORSHIP	WOOD FRAME/JOIST/BEAM	50.00
RESTAURANT	FIREPROOF	50.00
RESTAURANT	FIRE RESISTANT	50.00
RESTAURANT	PRE-ENGINEERED STEEL	40.00
RESTAURANT	WOOD FRAME/JOIST/BEAM	40.00
RESTAURANT MODULAR	FIREPROOF	50.00
RESTAURANT MODULAR	FIRE RESISTANT	50.00
RESTAURANT MODULAR	PRE-ENGINEERED STEEL	40.00
RESTAURANT MODULAR	WOOD FRAME/JOIST/BEAM	40.00
RETAIL CENTER MIXED USE	FIREPROOF	60.00
RETAIL CENTER MIXED USE	FIRE RESISTANT	60.00
RETAIL CENTER MIXED USE	PRE-ENGINEERED STEEL	40.00
RETAIL CENTER MIXED USE	WOOD FRAME/JOIST/BEAM	50.00
RETAIL CONDO	FIREPROOF	60.00
RETAIL CONDO	FIRE RESISTANT	60.00
RETAIL CONDO	PRE-ENGINEERED STEEL	40.00
RETAIL CONDO	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
RETAIL CONVERTED	FIREPROOF	60.00
RETAIL CONVERTED	FIRE RESISTANT	60.00
RETAIL CONVERTED	PRE-ENGINEERED STEEL	40.00
RETAIL CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
RETAIL STORE	FIREPROOF	60.00
RETAIL STORE	FIRE RESISTANT	60.00
RETAIL STORE	PRE-ENGINEERED STEEL	40.00
RETAIL STORE	WOOD FRAME/JOIST/BEAM	50.00
ROW APARTMENT (DOWNTOWN)	FIREPROOF	60.00
ROW APARTMENT (DOWNTOWN)	FIRE RESISTANT	60.00
ROW APARTMENT (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
ROW APARTMENT (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
ROW MIXED USE (DOWNTOWN)	FIREPROOF	60.00
ROW MIXED USE (DOWNTOWN)	FIRE RESISTANT	60.00
ROW MIXED USE (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
ROW MIXED USE (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
ROW OFFICE (DOWNTOWN)	FIREPROOF	60.00
ROW OFFICE (DOWNTOWN)	FIRE RESISTANT	60.00
ROW OFFICE (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
ROW OFFICE (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
ROW RETAIL (DOWNTOWN)	FIREPROOF	60.00
ROW RETAIL (DOWNTOWN)	FIRE RESISTANT	60.00
ROW RETAIL (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
ROW RETAIL (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
SCHOOL	FIREPROOF	60.00
SCHOOL	FIRE RESISTANT	60.00
SCHOOL	PRE-ENGINEERED STEEL	40.00
SCHOOL	WOOD FRAME/JOIST/BEAM	50.00
SERVICE STATION CONVERTED RETAIL	FIREPROOF	50.00
SERVICE STATION CONVERTED RETAIL	FIRE RESISTANT	50.00
SERVICE STATION CONVERTED RETAIL	PRE-ENGINEERED STEEL	40.00
SERVICE STATION CONVERTED RETAIL	WOOD FRAME/JOIST/BEAM	40.00
SERVICE STATION CONVERTED STORAGE	FIREPROOF	50.00
SERVICE STATION CONVERTED STORAGE	FIRE RESISTANT	50.00
SERVICE STATION CONVERTED STORAGE	PRE-ENGINEERED STEEL	40.00
SERVICE STATION CONVERTED STORAGE	WOOD FRAME/JOIST/BEAM	40.00
SERVICE STATION WITH BAYS	FIREPROOF	50.00
SERVICE STATION WITH BAYS	FIRE RESISTANT	50.00
SERVICE STATION WITH BAYS	PRE-ENGINEERED STEEL	40.00
SERVICE STATION WITH BAYS	WOOD FRAME/JOIST/BEAM	40.00

OCCUPANCY CODE	CLASS	LIFE
SERVICE STATION WITHOUT BAYS	FIREPROOF	50.00
SERVICE STATION WITHOUT BAYS	FIRE RESISTANT	50.00
SERVICE STATION WITHOUT BAYS	PRE-ENGINEERED STEEL	40.00
SERVICE STATION WITHOUT BAYS	WOOD FRAME/JOIST/BEAM	40.00
SHOPPING MALL	FIREPROOF	60.00
SHOPPING MALL	FIRE RESISTANT	60.00
SHOPPING MALL	PRE-ENGINEERED STEEL	40.00
SHOPPING MALL	WOOD FRAME/JOIST/BEAM	50.00
SKATING RINK-ICE/ROLLER	FIREPROOF	50.00
SKATING RINK-ICE/ROLLER	FIRE RESISTANT	50.00
SKATING RINK-ICE/ROLLER	PRE-ENGINEERED STEEL	40.00
SKATING RINK-ICE/ROLLER	WOOD FRAME/JOIST/BEAM	40.00
SOCIAL/FRATERNAL HALL	FIREPROOF	60.00
SOCIAL/FRATERNAL HALL	FIRE RESISTANT	60.00
SOCIAL/FRATERNAL HALL	PRE-ENGINEERED STEEL	40.00
SOCIAL/FRATERNAL HALL	WOOD FRAME/JOIST/BEAM	50.00
STRIP SHOPPING CENTER	FIREPROOF	50.00
STRIP SHOPPING CENTER	FIRE RESISTANT	50.00
STRIP SHOPPING CENTER	PRE-ENGINEERED STEEL	40.00
STRIP SHOPPING CENTER	WOOD FRAME/JOIST/BEAM	40.00
THEATER	FIREPROOF	50.00
THEATER	FIRE RESISTANT	50.00
THEATER	PRE-ENGINEERED STEEL	40.00
THEATER	WOOD FRAME/JOIST/BEAM	40.00
UPPER-APARTMENT CONVERTED	FIREPROOF	60.00
UPPER-APARTMENT CONVERTED	FIRE RESISTANT	60.00
UPPER-APARTMENT CONVERTED	PRE-ENGINEERED STEEL	40.00
UPPER-APARTMENT CONVERTED	WOOD FRAME/JOIST/BEAM	50.00
UPPER-APARTMENT HIGH RISE	FIREPROOF	60.00
UPPER-APARTMENT HIGH RISE	FIRE RESISTANT	60.00
UPPER-APARTMENT HIGH RISE	PRE-ENGINEERED STEEL	40.00
UPPER-APARTMENT HIGH RISE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-APARTMENT LOW RISE	FIREPROOF	60.00
UPPER-APARTMENT LOW RISE	FIRE RESISTANT	60.00
UPPER-APARTMENT LOW RISE	PRE-ENGINEERED STEEL	40.00
UPPER-APARTMENT LOW RISE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-ASSISTED LIVING FACILITY	FIREPROOF	60.00
UPPER-ASSISTED LIVING FACILITY	FIRE RESISTANT	60.00
UPPER-ASSISTED LIVING FACILITY	PRE-ENGINEERED STEEL	40.00
UPPER-ASSISTED LIVING FACILITY	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
UPPER-BANK MAIN OFFICE	FIREPROOF	60.00
UPPER-BANK MAIN OFFICE	FIRE RESISTANT	60.00
UPPER-BANK MAIN OFFICE	PRE-ENGINEERED STEEL	40.00
UPPER-BANK MAIN OFFICE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-FELLOWSHIP HALL	FIREPROOF	60.00
UPPER-FELLOWSHIP HALL	FIRE RESISTANT	60.00
UPPER-FELLOWSHIP HALL	PRE-ENGINEERED STEEL	40.00
UPPER-FELLOWSHIP HALL	WOOD FRAME/JOIST/BEAM	50.00
UPPER-HOTEL HIGH RISE	FIREPROOF	60.00
UPPER-HOTEL HIGH RISE	FIRE RESISTANT	60.00
UPPER-HOTEL HIGH RISE	PRE-ENGINEERED STEEL	40.00
UPPER-HOTEL HIGH RISE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-HOTEL LOW RISE	FIREPROOF	60.00
UPPER-HOTEL LOW RISE	FIRE RESISTANT	60.00
UPPER-HOTEL LOW RISE	PRE-ENGINEERED STEEL	40.00
UPPER-HOTEL LOW RISE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-LOCKER ROOM FACILITY	FIREPROOF	50.00
UPPER-LOCKER ROOM FACILITY	FIRE RESISTANT	50.00
UPPER-LOCKER ROOM FACILITY	PRE-ENGINEERED STEEL	40.00
UPPER-LOCKER ROOM FACILITY	WOOD FRAME/JOIST/BEAM	40.00
UPPER-MANUFACTURING	FIREPROOF	60.00
UPPER-MANUFACTURING	FIRE RESISTANT	60.00
UPPER-MANUFACTURING	PRE-ENGINEERED STEEL	50.00
UPPER-MANUFACTURING	WOOD FRAME/JOIST/BEAM	50.00
UPPER-MANUFACTURING LIGHT	FIREPROOF	50.00
UPPER-MANUFACTURING LIGHT	FIRE RESISTANT	50.00
UPPER-MANUFACTURING LIGHT	PRE-ENGINEERED STEEL	40.00
UPPER-MANUFACTURING LIGHT	WOOD FRAME/JOIST/BEAM	40.00
UPPER-MOTEL LOW RISE	FIREPROOF	50.00
UPPER-MOTEL LOW RISE	FIRE RESISTANT	50.00
UPPER-MOTEL LOW RISE	PRE-ENGINEERED STEEL	40.00
UPPER-MOTEL LOW RISE	WOOD FRAME/JOIST/BEAM	40.00
UPPER-MULTI-USE STORAGE	FIREPROOF	50.00
UPPER-MULTI-USE STORAGE	FIRE RESISTANT	50.00
UPPER-MULTI-USE STORAGE	PRE-ENGINEERED STEEL	40.00
UPPER-MULTI-USE STORAGE	WOOD FRAME/JOIST/BEAM	40.00
UPPER-OFFICE CONVERTED	FIREPROOF	60.00
UPPER-OFFICE CONVERTED	FIRE RESISTANT	60.00
UPPER-OFFICE CONVERTED	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE CONVERTED	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
UPPER-OFFICE GENERAL	FIREPROOF	60.00
UPPER-OFFICE GENERAL	FIRE RESISTANT	60.00
UPPER-OFFICE GENERAL	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE GENERAL	WOOD FRAME/JOIST/BEAM	50.00
UPPER-OFFICE MEDICAL	FIREPROOF	60.00
UPPER-OFFICE MEDICAL	FIRE RESISTANT	60.00
UPPER-OFFICE MEDICAL	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE MEDICAL	WOOD FRAME/JOIST/BEAM	50.00
UPPER-OFFICE MEDICAL CONDO	FIREPROOF	60.00
UPPER-OFFICE MEDICAL CONDO	FIRE RESISTANT	60.00
UPPER-OFFICE MEDICAL CONDO	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE MEDICAL CONDO	WOOD FRAME/JOIST/BEAM	50.00
UPPER-OFFICE OPEN	FIREPROOF	60.00
UPPER-OFFICE OPEN	FIRE RESISTANT	60.00
UPPER-OFFICE OPEN	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE OPEN	WOOD FRAME/JOIST/BEAM	50.00
UPPER-OFFICE/WAREHOUSE	FIREPROOF	50.00
UPPER-OFFICE/WAREHOUSE	FIRE RESISTANT	50.00
UPPER-OFFICE/WAREHOUSE	PRE-ENGINEERED STEEL	40.00
UPPER-OFFICE/WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00
UPPER-RELIGIOUS EDUCATION	FIREPROOF	60.00
UPPER-RELIGIOUS EDUCATION	FIRE RESISTANT	60.00
UPPER-RELIGIOUS EDUCATION	PRE-ENGINEERED STEEL	40.00
UPPER-RELIGIOUS EDUCATION	WOOD FRAME/JOIST/BEAM	50.00
UPPER-RELIGIOUS WORSHIP	FIREPROOF	60.00
UPPER-RELIGIOUS WORSHIP	FIRE RESISTANT	60.00
UPPER-RELIGIOUS WORSHIP	PRE-ENGINEERED STEEL	40.00
UPPER-RELIGIOUS WORSHIP	WOOD FRAME/JOIST/BEAM	50.00
UPPER-RETAIL CENTER MIXED USE	FIREPROOF	60.00
UPPER-RETAIL CENTER MIXED USE	FIRE RESISTANT	60.00
UPPER-RETAIL CENTER MIXED USE	PRE-ENGINEERED STEEL	40.00
UPPER-RETAIL CENTER MIXED USE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-RETAIL STORE	FIREPROOF	60.00
UPPER-RETAIL STORE	FIRE RESISTANT	60.00
UPPER-RETAIL STORE	PRE-ENGINEERED STEEL	40.00
UPPER-RETAIL STORE	WOOD FRAME/JOIST/BEAM	50.00
UPPER-ROW APARTMENT (DOWNTOWN)	FIREPROOF	60.00
UPPER-ROW APARTMENT (DOWNTOWN)	FIRE RESISTANT	60.00
UPPER-ROW APARTMENT (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
UPPER-ROW APARTMENT (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00

OCCUPANCY CODE	CLASS	LIFE
UPPER-ROW MIXED USE (DOWNTOWN)	FIREPROOF	60.00
UPPER-ROW MIXED USE (DOWNTOWN)	FIRE RESISTANT	60.00
UPPER-ROW MIXED USE (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
UPPER-ROW MIXED USE (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
UPPER-ROW OFFICE (DOWNTOWN)	FIREPROOF	60.00
UPPER-ROW OFFICE (DOWNTOWN)	FIRE RESISTANT	60.00
UPPER-ROW OFFICE (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
UPPER-ROW OFFICE (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
UPPER-ROW RETAIL (DOWNTOWN)	FIREPROOF	60.00
UPPER-ROW RETAIL (DOWNTOWN)	FIRE RESISTANT	60.00
UPPER-ROW RETAIL (DOWNTOWN)	PRE-ENGINEERED STEEL	40.00
UPPER-ROW RETAIL (DOWNTOWN)	WOOD FRAME/JOIST/BEAM	50.00
UPPER-SOCIAL/FRATERNAL HALL	FIREPROOF	60.00
UPPER-SOCIAL/FRATERNAL HALL	FIRE RESISTANT	60.00
UPPER-SOCIAL/FRATERNAL HALL	PRE-ENGINEERED STEEL	40.00
UPPER-SOCIAL/FRATERNAL HALL	WOOD FRAME/JOIST/BEAM	50.00
UPPER-STRIP SHOPPING CENTER	FIREPROOF	50.00
UPPER-STRIP SHOPPING CENTER	FIRE RESISTANT	50.00
UPPER-STRIP SHOPPING CENTER	PRE-ENGINEERED STEEL	40.00
UPPER-STRIP SHOPPING CENTER	WOOD FRAME/JOIST/BEAM	40.00
UPPER-WAREHOUSE	FIREPROOF	50.00
UPPER-WAREHOUSE	FIRE RESISTANT	50.00
UPPER-WAREHOUSE	PRE-ENGINEERED STEEL	40.00
UPPER-WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00
WAREHOUSE	FIREPROOF	50.00
WAREHOUSE	FIRE RESISTANT	50.00
WAREHOUSE	PRE-ENGINEERED STEEL	40.00
WAREHOUSE	WOOD FRAME/JOIST/BEAM	40.00

40 Year Economic Life Table

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOO	GOOD	AVERAGEE	FAIR	POOR	VERY POOR	UNSOUND
C	40	2019	0	0.00	0.00	3.00	5.00	10.00	20.00	30.00	95.00
C	40	2018	1	0.00	0.00	4.00	6.00	12.00	22.00	32.00	95.00
C	40	2017	2	0.00	2.00	5.00	8.00	13.00	23.00	33.00	95.00
C	40	2016	3	2.00	3.00	6.00	9.00	15.00	25.00	35.00	95.00
C	40	2015	4	2.00	4.00	7.00	10.00	16.00	26.00	36.00	95.00
C	40	2014	5	3.00	5.00	8.00	12.00	18.00	28.00	38.00	95.00
C	40	2013	6	3.00	6.00	9.00	13.00	19.00	29.00	39.00	95.00
C	40	2012	7	4.00	7.00	10.00	15.00	21.00	31.00	41.00	95.00
C	40	2011	8	4.00	8.00	12.00	16.00	22.00	32.00	42.00	95.00
C	40	2010	9	5.00	9.00	14.00	18.00	24.00	34.00	44.00	95.00
C	40	2009	10	6.00	10.00	15.00	19.00	25.00	35.00	45.00	95.00
C	40	2008	11	7.00	11.00	16.00	20.00	27.00	37.00	47.00	95.00
C	40	2007	12	8.00	12.00	17.00	22.00	28.00	38.00	48.00	95.00
C	40	2006	13	9.00	13.00	18.00	23.00	30.00	40.00	50.00	95.00
C	40	2005	14	10.00	14.00	20.00	25.00	31.00	41.00	51.00	95.00
C	40	2004	15	11.00	15.00	21.00	26.00	33.00	43.00	53.00	95.00
C	40	2003	16	12.00	16.00	22.00	27.00	34.00	44.00	54.00	95.00
C	40	2002	17	13.00	17.00	23.00	29.00	36.00	46.00	56.00	95.00
C	40	2001	18	14.00	18.00	25.00	30.00	37.00	47.00	57.00	95.00
C	40	2000	19	15.00	19.00	26.00	32.00	39.00	49.00	59.00	95.00
C	40	1999	20	16.00	20.00	27.00	33.00	40.00	50.00	60.00	95.00
C	40	1998	21	17.00	21.00	28.00	34.00	42.00	52.00	62.00	95.00
C	40	1997	22	18.00	22.00	29.00	36.00	43.00	53.00	63.00	95.00
C	40	1996	23	19.00	23.00	31.00	37.00	45.00	55.00	65.00	95.00
C	40	1995	24	20.00	24.00	32.00	39.00	46.00	56.00	66.00	95.00
C	40	1994	25	21.00	25.00	33.00	40.00	48.00	58.00	68.00	95.00
C	40	1993	26	22.00	26.00	34.00	41.00	49.00	59.00	69.00	95.00
C	40	1992	27	23.00	27.00	35.00	43.00	51.00	61.00	71.00	95.00
C	40	1991	28	24.00	28.00	37.00	44.00	52.00	62.00	72.00	95.00
C	40	1990	29	25.00	29.00	38.00	46.00	54.00	64.00	74.00	95.00
C	40	1989	30	26.00	30.00	39.00	47.00	55.00	65.00	75.00	95.00
C	40	1988	31	27.00	31.00	40.00	48.00	57.00	67.00	77.00	95.00
C	40	1987	32	28.00	32.00	41.00	50.00	58.00	68.00	78.00	95.00
C	40	1986	33	29.00	33.00	43.00	51.00	60.00	70.00	80.00	95.00
C	40	1985	34	30.00	34.00	44.00	53.00	61.00	71.00	81.00	95.00
C	40	1984	35	30.00	35.00	45.00	54.00	63.00	73.00	83.00	95.00
C	40	1983	36	30.00	36.00	46.00	55.00	64.00	74.00	84.00	95.00

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
C	40	1982	37	30.00	37.00	47.00	57.00	66.00	76.00	86.00	95.00
C	40	1981	38	30.00	38.00	49.00	58.00	67.00	77.00	87.00	95.00
C	40	1980	39	30.00	39.00	50.00	60.00	69.00	79.00	89.00	95.00
C	40	1979	40	30.00	40.00	50.00	60.00	70.00	80.00	90.00	95.00

50 Year Economic Life Table

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
C	50	2019	0	0.00	0.00	3.00	4.00	8.00	15.00	25.00	95.00
C	50	2018	1	0.00	0.00	4.00	6.00	9.00	16.00	26.00	95.00
C	50	2017	2	0.00	2.00	6.00	8.00	10.00	18.00	28.00	95.00
C	50	2016	3	1.00	2.00	6.00	9.00	12.00	19.00	29.00	95.00
C	50	2015	4	1.00	3.00	8.00	10.00	13.00	20.00	30.00	95.00
C	50	2014	5	2.00	3.00	8.00	11.00	14.00	22.00	32.00	95.00
C	50	2013	6	2.00	4.00	10.00	12.00	15.00	23.00	33.00	95.00
C	50	2012	7	3.00	4.00	10.00	13.00	16.00	24.00	34.00	95.00
C	50	2011	8	3.00	5.00	12.00	14.00	17.00	25.00	35.00	95.00
C	50	2010	9	4.00	5.00	12.00	15.00	18.00	27.00	37.00	95.00
C	50	2009	10	5.00	6.00	14.00	16.00	20.00	28.00	38.00	95.00
C	50	2008	11	5.00	6.00	14.00	17.00	21.00	29.00	39.00	95.00
C	50	2007	12	6.00	7.00	16.00	18.00	22.00	31.00	41.00	95.00
C	50	2006	13	6.00	7.00	16.00	19.00	23.00	32.00	42.00	95.00
C	50	2005	14	7.00	8.00	18.00	20.00	24.00	33.00	43.00	95.00
C	50	2004	15	7.00	8.00	18.00	21.00	26.00	35.00	45.00	95.00
C	50	2003	16	8.00	9.00	20.00	22.00	27.00	36.00	46.00	95.00
C	50	2002	17	8.00	9.00	20.00	23.00	28.00	37.00	47.00	95.00
C	50	2001	18	9.00	10.00	22.00	24.00	29.00	38.00	48.00	95.00
C	50	2000	19	10.00	11.00	22.00	25.00	30.00	40.00	50.00	95.00
C	50	1999	20	11.00	12.00	24.00	26.00	32.00	41.00	51.00	95.00
C	50	1998	21	11.00	13.00	24.00	27.00	33.00	42.00	52.00	95.00
C	50	1997	22	12.00	14.00	26.00	28.00	34.00	44.00	54.00	95.00
C	50	1996	23	12.00	15.00	26.00	29.00	35.00	45.00	55.00	95.00
C	50	1995	24	13.00	16.00	28.00	30.00	36.00	46.00	56.00	95.00
C	50	1994	25	14.00	17.00	28.00	31.00	38.00	48.00	58.00	95.00
C	50	1993	26	14.00	18.00	30.00	32.00	39.00	49.00	59.00	95.00
C	50	1992	27	15.00	19.00	30.00	33.00	40.00	50.00	60.00	95.00
C	50	1991	28	15.00	20.00	32.00	34.00	41.00	52.00	62.00	95.00
C	50	1990	29	16.00	21.00	32.00	35.00	42.00	53.00	63.00	95.00
C	50	1989	30	17.00	22.00	34.00	36.00	44.00	55.00	65.00	95.00
C	50	1988	31	17.00	22.00	34.00	37.00	45.00	56.00	66.00	95.00
C	50	1987	32	18.00	23.00	36.00	38.00	46.00	57.00	67.00	95.00
C	50	1986	33	18.00	24.00	36.00	39.00	47.00	58.00	68.00	95.00
C	50	1985	34	19.00	25.00	38.00	40.00	48.00	60.00	70.00	95.00
C	50	1984	35	20.00	26.00	38.00	41.00	50.00	61.00	71.00	95.00
C	50	1983	36	20.00	27.00	40.00	42.00	51.00	62.00	72.00	95.00

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
C	50	1982	37	21.00	28.00	40.00	43.00	52.00	64.00	74.00	95.00
C	50	1981	38	21.00	29.00	42.00	44.00	53.00	65.00	75.00	95.00
C	50	1980	39	22.00	30.00	42.00	45.00	54.00	66.00	76.00	95.00
C	50	1979	40	23.00	31.00	44.00	46.00	56.00	68.00	78.00	95.00
C	50	1978	41	23.00	32.00	44.00	47.00	57.00	69.00	79.00	95.00
C	50	1977	42	24.00	33.00	46.00	48.00	58.00	70.00	80.00	95.00
C	50	1976	43	24.00	34.00	46.00	49.00	59.00	71.00	81.00	95.00
C	50	1975	44	25.00	35.00	48.00	50.00	60.00	73.00	83.00	95.00
C	50	1974	45	26.00	36.00	48.00	51.00	62.00	74.00	84.00	95.00
C	50	1973	46	26.00	37.00	50.00	52.00	63.00	75.00	85.00	95.00
C	50	1972	47	27.00	38.00	50.00	53.00	64.00	77.00	87.00	95.00
C	50	1971	48	27.00	39.00	50.00	54.00	65.00	78.00	88.00	95.00
C	50	1970	49	28.00	40.00	50.00	55.00	66.00	79.00	89.00	95.00
C	50	1969	50	30.00	40.00	50.00	56.00	67.00	80.00	90.00	95.00

60 Year Economic Life Table

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXEC	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
C	60	2019	0	0.00	0.00	0.00	2.00	5.00	10.00	20.00	95.00
C	60	2018	1	0.00	0.00	0.00	2.00	5.00	10.00	20.00	95.00
C	60	2017	2	0.00	0.00	2.00	4.00	10.00	20.00	22.00	95.00
C	60	2016	3	0.00	2.00	2.00	4.00	10.00	20.00	22.00	95.00
C	60	2015	4	2.00	2.00	4.00	6.00	12.00	22.00	24.00	95.00
C	60	2014	5	2.00	2.00	4.00	6.00	12.00	22.00	24.00	95.00
C	60	2013	6	2.00	4.00	6.00	8.00	14.00	24.00	26.00	95.00
C	60	2012	7	2.00	4.00	6.00	8.00	14.00	24.00	26.00	95.00
C	60	2011	8	4.00	4.00	8.00	10.00	16.00	26.00	28.00	95.00
C	60	2010	9	4.00	6.00	8.00	10.00	16.00	26.00	28.00	95.00
C	60	2009	10	4.00	6.00	10.00	12.00	18.00	28.00	30.00	95.00
C	60	2008	11	4.00	6.00	10.00	12.00	18.00	28.00	30.00	95.00
C	60	2007	12	6.00	8.00	12.00	14.00	20.00	30.00	32.00	95.00
C	60	2006	13	6.00	8.00	12.00	14.00	20.00	30.00	32.00	95.00
C	60	2005	14	6.00	8.00	14.00	16.00	22.00	32.00	34.00	95.00
C	60	2004	15	6.00	10.00	14.00	16.00	22.00	32.00	34.00	95.00
C	60	2003	16	8.00	10.00	16.00	18.00	24.00	34.00	36.00	95.00
C	60	2002	17	8.00	10.00	16.00	18.00	24.00	34.00	36.00	95.00
C	60	2001	18	8.00	12.00	18.00	20.00	26.00	36.00	38.00	95.00
C	60	2000	19	8.00	12.00	18.00	20.00	26.00	36.00	38.00	95.00
C	60	1999	20	10.00	12.00	20.00	22.00	28.00	38.00	40.00	95.00
C	60	1998	21	10.00	14.00	20.00	22.00	28.00	38.00	40.00	95.00
C	60	1997	22	10.00	14.00	22.00	24.00	30.00	40.00	42.00	95.00
C	60	1996	23	10.00	14.00	22.00	24.00	30.00	40.00	42.00	95.00
C	60	1995	24	12.00	16.00	24.00	26.00	32.00	42.00	44.00	95.00
C	60	1994	25	12.00	16.00	24.00	26.00	32.00	42.00	44.00	95.00
C	60	1993	26	12.00	16.00	26.00	28.00	34.00	44.00	46.00	95.00
C	60	1992	27	12.00	18.00	26.00	28.00	34.00	44.00	46.00	95.00
C	60	1991	28	14.00	18.00	28.00	30.00	36.00	46.00	48.00	95.00
C	60	1990	29	14.00	18.00	28.00	30.00	36.00	46.00	48.00	95.00
C	60	1989	30	14.00	20.00	30.00	32.00	38.00	48.00	50.00	95.00
C	60	1988	31	14.00	20.00	30.00	32.00	38.00	48.00	50.00	95.00
C	60	1987	32	16.00	20.00	32.00	34.00	40.00	50.00	52.00	95.00
C	60	1986	33	16.00	22.00	32.00	34.00	40.00	50.00	52.00	95.00
C	60	1985	34	16.00	22.00	34.00	36.00	42.00	52.00	54.00	95.00
C	60	1984	35	16.00	22.00	34.00	36.00	42.00	52.00	54.00	95.00

PURPOSE	ECONOMIC LIFE	EFF YEAR	EFF AGE	EXCEL	VERY GOOD	GOOD	AVERAGE	FAIR	POOR	VERY POOR	UNSOUND
C	60	1983	36	18.00	24.00	36.00	38.00	44.00	54.00	56.00	95.00
C	60	1982	37	18.00	24.00	36.00	38.00	44.00	54.00	56.00	95.00
C	60	1981	38	18.00	24.00	38.00	40.00	46.00	56.00	58.00	95.00
C	60	1980	39	18.00	26.00	38.00	40.00	46.00	56.00	58.00	95.00
C	60	1979	40	20.00	26.00	40.00	42.00	48.00	58.00	60.00	95.00
C	60	1978	41	20.00	26.00	40.00	42.00	48.00	58.00	60.00	95.00
C	60	1977	42	20.00	28.00	42.00	44.00	50.00	60.00	62.00	95.00
C	60	1976	43	20.00	28.00	42.00	44.00	50.00	60.00	62.00	95.00
C	60	1975	44	22.00	28.00	44.00	46.00	52.00	62.00	64.00	95.00
C	60	1974	45	22.00	30.00	44.00	46.00	52.00	62.00	64.00	95.00
C	60	1973	46	22.00	30.00	46.00	48.00	54.00	64.00	66.00	95.00
C	60	1972	47	22.00	30.00	46.00	48.00	54.00	64.00	66.00	95.00
C	60	1971	48	24.00	32.00	48.00	50.00	56.00	66.00	68.00	95.00
C	60	1970	49	24.00	32.00	48.00	50.00	56.00	66.00	68.00	95.00
C	60	1969	50	24.00	32.00	50.00	52.00	58.00	68.00	70.00	95.00
C	60	1968	51	24.00	34.00	50.00	52.00	58.00	68.00	70.00	95.00
C	60	1967	52	26.00	34.00	50.00	54.00	60.00	70.00	72.00	95.00
C	60	1966	53	26.00	34.00	50.00	54.00	60.00	70.00	72.00	95.00
C	60	1965	54	26.00	36.00	50.00	56.00	62.00	72.00	74.00	95.00
C	60	1964	55	26.00	36.00	50.00	56.00	62.00	72.00	74.00	95.00
C	60	1963	56	28.00	36.00	50.00	58.00	64.00	74.00	76.00	95.00
C	60	1962	57	28.00	38.00	50.00	58.00	64.00	74.00	76.00	95.00
C	60	1961	58	28.00	38.00	50.00	60.00	66.00	76.00	78.00	95.00
C	60	1960	59	28.00	38.00	50.00	60.00	66.00	76.00	78.00	95.00
C	60	1959	60	30.00	40.00	50.00	60.00	68.00	78.00	80.00	95.00

APARTMENT, HIGH RISE

APARTMENT, LOW RISE

APARTMENT, LOW RISE

APARTMENT, LOW RISE

APARTMENT LOW RISE

AUTO DEALER SHOWROOM/OFFICE

AUTO DEALER SERVICE AREA

AUTO SERVICE GARAGE

BANK BRANCH MODULAR UNIT

BANK BRANCH DRIVE-THRU

BANK MAIN OFFICE

BANK BRANCH

BAR/TAVERN

BAR/TAVERN

BOARDING/ROOMING HOUSE

CAFETERIA

CAR WASH AUTOMATIC

CAR WASH MANUAL

CHURCH

COMMUNITY CENTER

CONVENIENCE STORE/FAST FOOD

CONVENIENCE STORE, RURAL

CONVENIENCE STORE WITH GAS

COUNTRY CLUB

COURTHOUSE

1898 COURTHOUSE
145 Worth Street
OUR CONFEDERATE HEROES

RANDOLPH COUNTY
COURTHOUSE

DAYCARE CONVERSION

DAYCARE CONVENTIONAL

DEPARTMENT STORE

DISCOUNT SUPERSTORE

STRIP SHOPPING CENTER

DISTRIBUTION CENTER

DRUG STORE

Walgreens
PHARMACY

RITE AID
PHARMACY
Drive Thru
Pharmacy
RITE AID
PHARMACY

RESTAURANT, FAST FOOD

RESTAURANT, FAST FOOD, MODULAR UNIT

FIRE DEPARTMENT, VOLUNTEER

ARMORY

FIRE DEPARTMENT, STAFFED

FITNESS

FUNERAL HOME, CONVENTIONAL

FUNERAL HOME, CONVERSION

HOSPITAL

VETERINARY HOSPITAL

HOTEL HIGH RISE

MOTEL, LOW RISE

HOTEL LOW RISE

LAW ENFORCEMENT CENTER

POST OFFICE

LIBRARY

ASHEBORO • RANDOLPH
PUBLIC LIBRARY

ARCHDALE PUBLIC LIBRARY

MANUFACTURING

MEDICAL OFFICE

MINI WAREHOUSE

THEATRE

NURSING HOME/ASSISTED LIVING

OFFICE CONVERSION

OFFICE WAREHOUSE

OFFICE WAREHOUSE

OFFICE

RADIO/TV TRANSMITTER BUILDING

REGIONAL MALL

REGIONAL MALL

RELIGIOUS EDUCATION BUILDING

FELLOWSHIP HALL

RESTAURANT

RESTAURANT

RESTAURANT

RETAIL CONDOMINIUMS

MEDICAL OFFICE CONDOMINIUM

RETAIL CONVERSION

SERVICE STATION CONVERSION TO STORAGE

RETAIL STORE

RETAIL STORE

RETAIL STORE

ROW TYPE BUILDINGS

SCHOOL

BOWLING

SENIOR ADULT CENTER

GYMNASIUM

SERVICE STATION, FULL SERVICE

SERVICE STATION WITH BAYS

SERVICE STATION CONVERSION TO RETAIL

CONVENIENCE STORE, MODULAR UNIT

SOCIAL/FRATERNAL HALL

SURGICAL CENTER

WAREHOUSE

Randolph County

Tax Department

725 McDowell Road, Asheboro, NC 27205-7370
336.318-6500
Visit us: www.randolphcountync.gov

August 6, 2018

Dear Property Owner,

As an owner or manager of an income producing property you are aware of the impact that economic factors have on property value. So that we may estimate a fair and equitably appraised value of income producing property, we request that you complete the enclosed income and expense form with the appropriate economic information. Please return the form in the envelope provided as soon as possible. N.C. law requires this information be held confidential. It will be used by the appraisal staff to assist in determining market value when considering the income approach.

This information is being requested of all income producing properties and will be used in conjunction with the 2019 general reappraisal. Please provide us, at this time, with your 2017 income and expense information and any changes as of the date of this mailing for 2018.

If additional space is required or if you wish to submit any supplemental information please attach it to the enclosed form. If you have any questions regarding completion of this form, please do not hesitate to contact our office at: (336) 318-6530 or email: marcus.frick@randolphcountync.gov.

If this property is owner occupied, please indicate this on the Income and Expense form. If the property is owner occupied, you do not need to complete the form but please return the form so we may remove you from our mailing list of income producing properties.

Thank you,

Marcus T. Frick
Real Property Supervisor

Debra P. Hill
Tax Administrator

2017 Income and Expense Statement

Owner's name:
Physical Address:
Parcel Number:
REID:
BUISNESS NAME (If different than owner) _____
Property Owner Occupied? ☐ **Yes** ☐ **No**

Gross Annual Rental Income

Commercial/Industrial Buildings				
Used As	**Net Leasable**	**Rent Per Month**	**% Occupied**	**Total**
Retail				**$**
Office				**$**
Warehouse				**$**
Bank				**$**
Other				**$**
Misc Income				**$**
Total Per Month				**$**
Grand Total Per Year				**$**

Apartments/Duplex				
Unit Type	**Number of Units**	**Rent Per Month**	**% Occupied**	**Total**
1 Bedroom				**$**
2 Bedroom				**$**
3 Bedroom				**$**
Efficiency				**$**
Misc Income				**$**
Total Per Month				**$**
Grand Total Per Year				**$**

Hotel/Motel				
Unit Type	**Room Count**	**Average Daily**	**% Occupied**	**Total**
Double Bed				**$**
King Bed				**$**
2 Double Beds				**$**
Suites				**$**
Other				**$**
Misc Income				
Total Per Day				**$**
Grand Total Per Year				**$**

Annual Expenses			
Management Fees	**$**	**Garbage Removal**	**$**
Professional Fees	**$**	**Maintenance & Repair**	**$**
Insurance	**$**	**Reserves For**	**$**
Telephone	**$**	**Other (Explain)**	**$**
Utilities	**$**	**Other (Explain)**	**$**
Advertising	**$**	**Other (Explain)**	**$**
Supplies	**$**	**Other (Explain)**	**$**
Grand Total Expenses			**$**

Sales Data ***If purchased after January 1, 2014***	**If the purchase price includes any amount for items other than the real estate (such as furniture and fixtures or machinery and equipment), please explain below.**
Price paid for land only	**$**
Price paid for land and building	**$**

Cost Data	**All costs should include labor, materials, architectural fees, contractors' overhead and profit.**		
	Cost if built after January 1, 2014	**Year**	**Comments**
Site (land) improvements	**$**		
Buildings	**$**		
Additions or Remodeling	**$**		
Paving	**$**		
Other Yard Items	**$**		
Total	**$**		

Comments	

This form is *strictly confidential* **and is to be retained only by the appraisal staff and is not considered public record. Should you require further explanation or assistance in completing this document, please our office at: (336) 318-6530 or email: marcus.frick@randolphcountync.gov.**

Submitted by _____ **Date** _____

Title _____ **Telephone Number** _____

Randolph County

Tax Department

725 McDowell Road, Asheboro, NC 27205-7370
336.318-6500
Visit us: www.randolphcountync.gov

August 6, 2018

Dear Property Owner,

As an owner or manager of an income producing property you are aware of the impact that economic factors have on property value. So that we may estimate a fair and equitably appraised value of income producing property, we request that you complete the enclosed income and expense form with the appropriate economic information. Please return the form in the envelope provided as soon as possible. N.C. law requires this information be held confidential. It will be used by the appraisal staff to assist in determining market value when considering the income approach.

This information is being requested of all income producing properties and will be used in conjunction with the 2019 general reappraisal when considering the income approach to value. Please provide us, at this time, with your 2017 income and expense information and any changes for 2018 as of the date of this mailing.

If additional space is required, or if you wish to submit any supplemental information, please attach it to the enclosed form. If you have any questions regarding completion of this form, please do not hesitate to contact our office at: (336) 318-6530 or email: marcus.frick@co.randolph.nc.us.

If this property is owner occupied, please indicate this on the Income and Expense form. If the property is owner occupied, you do not need to complete the form but please return the form so we may remove you from our mailing list of income producing properties.

Thank you,

Marcus T. Frick

Marcus T. Frick
Real Property Supervisor

Debra Hill

Debra P. Hill
Tax Administrator

Owner's name:
Property location:
Parcel Number:
REID:
Mobile Home Park Name: _____ **(please fill in)**

Gross Annual Rental Income For Spaces Only (2017)				
	Total spaces in park	**Avg # spaces rented per month**	**Rent per month per space**	**Total**
Spaces				**$**
Miscellaneous				**$**
Total Per Month				**$**
Grand Total Per Year				**$**

Gross Annual Rental Income For Mobile Homes Only (2017)				
Total # of Mobile Homes for Rent in	**Avg # Mobile Homes Rented Per Month**	**Rent Per Month Per Mobile Home**	**Total Income**	
			$	
Total Per Month			**$**	
Grand Total Per Year			**$**	

Annual Expenses (2017)			
Management Fees	**$**	**Garbage removal**	**$**
Professional Fees	**$**	**Maintenance & repair**	**$**
Insurance	**$**	**Supplies**	**$**
Taxes	**$**	**Reserves for replacement**	**$**
Telephone	**$**	**Other (Explain)**	**$**
Utilities	**$**	**Other (Explain)**	**$**
Advertising	**$**	**Other (Explain)**	**$**
Grand Total Expenses			**$**

Comments	

This form is *strictly confidential* **and is to be retained only by the appraisal staff and is not considered public record. Should you require further explanation or assistance in completing this document, please contact our office at: (336) 318-6530 or email: marcus.frick@co.randolph.nc.us.**

_____

Submitted by _____ **Date**

_____

Title _____ **Telephone number**

ADDENDUM

1- GS 105-317

2- GS 105-283

3- GS 105-285

4- Uniform Standards of Professional Appraisal Practice Standard 6
Mass Appraisal, Development, Reporting

5- Guide to Leasehold Improvements

6- Real vs. Personal Property

7- IAAO – Standard on Mass Ratio Studies

8- IAAO – Standard on Ratio Studies

Article 19.

Administration of Real and Personal Property Appraisal.

§ 105-317. Appraisal of real property; adoption of schedules, standards, and rules.

(a) Whenever any real property is appraised it shall be the duty of the persons making appraisals:

(1) In determining the true value of land, to consider as to each tract, parcel, or lot separately listed at least its advantages and disadvantages as to location; zoning; quality of soil; waterpower; water privileges; dedication as a nature preserve; conservation or preservation agreements; mineral, quarry, or other valuable deposits; fertility; adaptability for agricultural, timber-producing, commercial, industrial, or other uses; past income; probable future income; and any other factors that may affect its value except growing crops of a seasonal or annual nature.

(2) In determining the true value of a building or other improvement, to consider at least its location; type of construction; age; replacement cost; cost; adaptability for residence, commercial, industrial, or other uses; past income; probable future income; and any other factors that may affect its value.

(3) To appraise partially completed buildings in accordance with the degree of completion on January 1.

(b) In preparation for each revaluation of real property required by G.S. 105-286, it shall be the duty of the assessor to see that:

(1) Uniform schedules of values, standards, and rules to be used in appraising real property at its true value and at its present-use value are prepared and are sufficiently detailed to enable those making appraisals to adhere to them in appraising real property.

(2) Repealed by Session Laws 1981, c. 678, s. 1.

(3) A separate property record be prepared for each tract, parcel, lot, or group of contiguous lots, which record shall show the information required for compliance with the provisions of G.S. 105-309 insofar as they deal with real property, as well as that required by this section. (The purpose of this subdivision is to require that individual property records be maintained in sufficient detail to enable property owners to ascertain the method, rules, and standards of value by which property is appraised.)

(4) The property characteristics considered in appraising each lot, parcel, tract, building, structure and improvement, in accordance with the schedules of values, standards, and rules, be accurately recorded on the appropriate property record.

(5) Upon the request of the owner, the board of equalization and review, or the board of county commissioners, any particular lot, parcel, tract, building, structure or improvement be actually visited and observed to verify the accuracy of property characteristics on record for that property.

(6) Each lot, parcel, tract, building, structure and improvement be separately appraised by a competent appraiser, either one appointed under the provisions of G.S. 105-296 or one employed under the provisions of G.S. 105-299.

(7) Notice is given in writing to the owner that he is entitled to have an actual visitation and observation of his property to verify the accuracy of property characteristics on record for that property.

(c) The values, standards, and rules required by subdivision (b)(1) shall be reviewed and approved by the board of county commissioners before January 1 of the year they are applied. The board of county commissioners may approve the schedules of values, standards, and rules to be used in appraising real property at its true value and at its present-use value either separately or simultaneously. Notice of the receipt and adoption by the board of county commissioners of either or both the true value and present-use value schedules, standards, and rules, and notice of a property owner's right to comment on and contest the schedules, standards, and rules shall be given as follows:

(1) The assessor shall submit the proposed schedules, standards, and rules to the board of county commissioners not less than 21 days before the meeting at which they will be considered by the board. On the same day that they are submitted to the board for its consideration, the assessor shall file a copy of the proposed schedules, standards, and rules in his office where they shall remain available for public inspection.

(2) Upon receipt of the proposed schedules, standards, and rules, the board of commissioners shall publish a statement in a newspaper having general circulation in the county stating:

a. That the proposed schedules, standards, and rules to be used in appraising real property in the county have been submitted to the board of county commissioners and are available for public inspection in the assessor's office; and

b. The time and place of a public hearing on the proposed schedules, standards, and rules that shall be held by the board of county commissioners at least seven days before adopting the final schedules, standards, and rules.

(3) When the board of county commissioners approves the final schedules, standards, and rules, it shall issue an order adopting them. Notice of this order shall be published once a week for four successive weeks in a newspaper having general circulation in the county, with the last publication being not less than seven days before the last day for challenging the validity of the schedules, standards, and rules by appeal to the Property Tax Commission. The notice shall state:

a. That the schedules, standards, and rules to be used in the next scheduled reappraisal of real property in the county have been adopted and are open to examination in the office of the assessor; and

b. That a property owner who asserts that the schedules, standards, and rules are invalid may except to the order and appeal therefrom to the Property Tax Commission within 30 days of the date when the notice of the order adopting the schedules, standards, and rules was first published.

(d) Before the board of county commissioners adopts the schedules of values, standards, and rules, the assessor may collect data needed to apply the schedules, standards, and rules to each parcel in the county. (1939, c. 310, s. 501; 1959, c. 704, s. 4; 1967, c. 944; 1971, c. 806, s. 1; 1973, c. 476, s. 193; c. 695, s. 5; 1981, c. 224; c. 678, s. 1; 1985, c. 216, s. 2; c. 628, s. 4; 1987, c. 45, s. 1; c. 295, s. 1; 1997-226, s. 5.)

Article 13.

Standards for Appraisal and Assessment.

§ 105-283. Uniform appraisal standards.

All property, real and personal, shall as far as practicable be appraised or valued at its true value in money. When used in this Subchapter, the words "true value" shall be interpreted as meaning market value, that is, the price estimated in terms of money at which the property would change hands between a willing and financially able buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of all the uses to which the property is adapted and for which it is capable of being used. For the purposes of this section, the acquisition of an interest in land by an entity having the power of eminent domain with respect to the interest acquired shall not be considered competent evidence of the true value in money of comparable land. (1939, c. 310, s. 500; 1953, c. 970, s. 5; 1955, c. 1100, s. 2; 1959, c. 682; 1967, c. 892, s. 7; 1969, c. 945, s. 1; 1971, c. 806, s. 1; 1973, c. 695, s. 11; 1977, 2nd Sess., c. 1297.)

Article 14.

Time for Listing and Appraising Property for Taxation.

§ 105-285. Date as of which property is to be listed and appraised.

(a) Annual Listing Required. - All property subject to ad valorem taxation shall be listed annually.

(b) Personal Property; General Rule. - Except as otherwise provided in this Chapter, the value, ownership, and place of taxation of personal property, both tangible and intangible, shall be determined annually as of January 1.

(c) Repealed by Session Laws 1987, c. 813, s. 12.

(d) Real Property. - The value of real property shall be determined as of January 1 of the years prescribed by G.S. 105-286 and G.S. 105-287. The ownership of real property shall be determined annually as of January 1, except in the following situation: When any real property is acquired after January 1, but prior to July 1, and the property was not subject to taxation on January 1 on account of its exempt status, it shall be listed for taxation by the transferee as of the date of acquisition and shall be appraised in accordance with its true value as of January 1 preceding the date of acquisition; and the property shall be taxed for the fiscal year of the taxing unit beginning on July 1 of the year in which it is acquired. The person in whose name such property is listed shall have the right to appeal the listing, appraisal, and assessment of the property in the same manner as that provided for listings made as of January 1.

In the event real property exempt as of January 1 is, prior to July 1, acquired from a governmental unit that by contract is making payments in lieu of taxes to the taxing unit for the fiscal period beginning July 1 of the year in which the property is acquired, the tax on such property for the fiscal period beginning on July 1 immediately following acquisition shall be one half of the amount of the tax that would have been imposed if the property had been listed for taxation as of January 1. (1939, c. 310, s. 302; 1945, c. 973; 1971, c. 806, s. 1; 1973, c. 735; 1985, c. 656, s. 21; 1987, c. 813, s. 12; 1993, c. 485, s. 17.)

August 20, 2018

Debra Hill
Randolph County Tax Administrator
725 McDowell Road
Asheboro, NC 27205

Dear Ms. Hill:

This is in response to your inquiry regarding permission to reproduce *Standard 6: Mass Appraisal, Development and Reporting* from the *2018-19 edition of the Uniform Standards of Professional Appraisal Practice (USPAP).*

USPAP is a copyrighted document published annually by The Appraisal Foundation. Under certain circumstances, permission to reproduce USPAP material is granted. The Appraisal Foundation hereby grants permission to the Randolph County Tax Office on a onetime nonexclusive agreement to reproduce Standard 6 in compliance with the following conditions:

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1155 15th Street, NW, Suite 1111
Washington, DC 20005
T 202.347.7722
F 202.347.7727

5. At the time of the reproduction, you will send to The Appraisal Foundation one original of the reproduction and advise the Foundation of the exact number of copies printed.

If you agree to adhere to the conditions outlined above, please sign the attached agreement and return it to The Appraisal Foundation. Please do not hesitate to contact me should you have any questions.

Sincerely,

David S. Bunton
President

1155 15th Street, NW, Suite 1111
Washington, DC 20005
T 202.347.7722
F 202.347.7727

Attachment

re

August 20, 2018
page three

AGREEMENT TO REPRODUCE STANDARD 6: MASS APPRAISAL, DEVELOPMENT AND REPORTING FROM THE 2018-19 EDITION OF THE UNIFORM STANDARDS OF PROFESSIONAL APPRAISAL PRACTICE (USPAP)

The Appraisal Foundation

Name: David S. Bunton

Title: President

Signature

Date 8-22-18

Debra Hill
Randolph County Tax Administrator

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UNIFORM STANDARDS OF PROFESSIONAL APPRAISAL PRACTICE 2018-2019 EDITION

APPRAISAL STANDARDS BOARD

THE APPRAISAL FOUNDATION
Authorized by Congress as the Source of Appraisal Standards and Appraiser Qualifications

Published in the United States of America. ISBN: 978-

0-9985335-0-6

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EFFECTIVE:

January 1, 2018 through December 31, 2019

In reporting the results of a mass appraisal, an appraiser must communicate each analysis, opinion, and conclusion in a manner that is not misleading.

FAQ See also FAQ 242-

Comment: STANDARD 6 addresses the content and level of information required in a report that communicates the results of a mass appraisal.

STANDARD 6 does not dictate the form, format, or style of mass appraisal reports. The form, format, and style of a report are functions of the needs of intended users and appraisers. The substantive content of a report determines its compliance.

STANDARDS RULE 6-1

Each written report of a mass appraisal must:

(a) clearly and accurately set forth the appraisal in a manner that will not be misleading;

(b) contain sufficient information to enable the intended users of the appraisal to understand the report properly; and

Comment: Documentation for a mass appraisal for ad valorem taxation may be in the form of (1) property records, (2) sales ratios and other statistical studies, (3) appraisal manuals and documentation, (4) market studies, (5) model building documentation, (6) regulations, (7) statutes, and (8) other acceptable forms.

(c) clearly and accurately disclose all assumptions, extraordinary assumptions, hypothetical conditions, and limiting conditions used in the assignment.

Comment: The report must clearly and conspicuously:

- state all extraordinary assumptions and hypothetical conditions; and
- state that their use might have affected the assignment results.

STANDARDS RULE 6-2

Each written report of a mass appraisal must:

(a) state the identity of the client, unless the client has specifically requested otherwise; state the identity of any intended users by name or type;[62]

Comment: An appraiser must use care when identifying the client to avoid violations of the Confidentiality section of the ETHICS RULE. If a client requests that the client's identity be withheld from the report, the appraiser may comply with this request. In these instances, the appraiser must document the identity of the client in the workfile and must state in the report that the identity of the client has been withheld at the client's request.

(b) state the intended use of the appraisal;[63]

(c) disclose any assumptions or limiting conditions that result in deviation from recognized methods and techniques or that affect analyses, opinions, and conclusions;

(d) state the effective date of the appraisal and the date of the report;

Comment: In ad valorem taxation the effective date of the appraisal may be prescribed by law. If no effective date is prescribed by law, the effective date of the appraisal, if not stated, is presumed to be contemporaneous with the data and appraisal conclusions.

62 See Advisory Opinion 36, *Identification and Disclosure of Client, Intended Use, and Intended Users.*
63 See Advisory Opinion 36, *Identification and Disclosure of Client, Intended Use, and Intended Users.*

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The effective date of the appraisal establishes the context for the value opinion, while the date of the report indicates whether the perspective of the appraiser on the market and property as of the effective date of the appraisal was prospective, current, or retrospective.[64]

(e) state the type and definition of value and cite the source of the definition;

Comment: Stating the type and definition of value also requires any comments needed to clearly indicate to intended users how the definition is being applied.[65]

When reporting an opinion of market value, state whether the opinion of value is:

- In terms of cash or of financing terms equivalent to cash; or
- Based on non-market financing with unusual conditions or incentives.

When an opinion of market value is not in terms of cash or based on financing terms equivalent to cash, summarize the terms of such financing and explain their contributions to or negative influence on value.

(f) state the properties appraised including the property rights;

Comment: The report documents the sources for location, describing and listing the property. When applicable, include references to legal descriptions, addresses, parcel identifiers, photos, and building sketches. In mass appraisal this information is often included in property records. When the property rights to be appraised are specified in a statute or court ruling, the law must be referenced.

(g) summarize the scope of work used to develop the appraisal;[66] exclusion of the sales comparison approach, cost approach, or income approach must be explained;

Comment: Because intended users' reliance on an appraisal may be affected by the scope of work, the report must enable them to be properly informed and not misled. Sufficient information includes disclosure of research and analyses performed and might also include disclosure of research and analyses not performed.

When any portion of the work involves significant mass appraisal assistance, the appraiser must describe the extent of that assistance. The signing appraiser must also state the name(s) of those providing the significant mass appraisal assistance in the certification, in accordance with Standards Rule 6-3.[67]

(h) summarize and support the model specification(s) considered, data requirements, and the model(s) chosen;

Comment: The appraiser must provide sufficient information to enable the client and intended users to have confidence that the process and procedures used conform to accepted methods and result in credible value conclusions. In the case of mass appraisal for ad valorem taxation, stability and accuracy are important to the credibility of value opinions. The report must include a summary of the rationale for each model, the calibration techniques to be used, and the performance measures to be used.

(i) summarize the procedure for collecting, validating, and reporting data;

Comment: The report must summarize the sources of data and the data collection and validation processes. Reference to detailed data collection manuals or electronic records must be made, as appropriate, including where they may be found for inspection.

(j) summarize calibration methods considered and chosen, including the mathematical form of the final model(s); summarize how value conclusions were reviewed; and, if necessary, state the availability and location of individual value conclusions;

64 See Advisory Opinion 34, *Retrospective and Prospective Value Opinions*.
65 See Advisory Opinion 34, *Retrospective and Prospective Value Opinions*.
66 See Advisory Opinion 28, *Scope of Work Decision, Performance, and Disclosure* and Advisory Opinion 29, *An Acceptable Scope of Work*
67 See Advisory Opinion 31, *Assignments Involving More than One Appraiser.*

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(k) when an opinion of highest and best use, or the appropriate market or market level was developed, summarize how that opinion was determined;

Comment: The mass appraisal report must reference case law, statute, or public policy that describes highest and best use requirements. When actual use is the requirement, the report must discuss how use-value opinions were developed. The appraiser's reasoning in support of the highest and best use opinion must be provided in the depth and detail required by its significance to the appraisal.

(l) identify the appraisal performance tests used and the performance measures attained;

(m) summarize the reconciliation performed, in accordance with Standards Rule 5-7; and

(n) include a signed certification in accordance with Standards Rule 6-3.

STANDARDS RULE 6-3

Each written mass appraisal report must contain a signed certification that is similar in content to the following form:

I certify that, to the best of my knowledge and belief:

— the statements of fact contained in this report are true and correct.
— the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
— I have no (or the specified) present or prospective interest in the property that is the subject of this report, and I have no (or the specified) personal interest with respect to the parties involved.
— I have performed no (or the specified) services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.
— I have no bias with respect to any property that is the subject of this report or to the parties involved with this assignment.
— my engagement in this assignment was not contingent upon developing or reporting predetermined results.
— my compensation for completing this assignment is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
— my analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice*.
— I have (or have not) made a personal inspection of the properties that are the subject of this report. (If more than one person signs the report, this certification must clearly specify which individuals did and which individuals did not make a personal inspection of the appraised property.)[68]
— no one provided significant mass appraisal assistance to the person signing this certification. (If there are exceptions, the name of each individual providing significant mass appraisal assistance must be stated.)

Comment: The above certification is not intended to disturb an elected or appointed assessor's work plans or oaths of office. A signed certification is an integral part of the appraisal report. An appraiser, who signs any part of the mass appraisal report, including a letter of transmittal, must also sign this certification.

In an assignment that includes only assignment results developed by the real property appraiser(s), any appraiser(s) who signs a certification accepts full responsibility for all elements of the certification, for the assignment results, and for the contents of the appraisal report. In an assignment that includes personal property assignment results not developed by the real property appraiser(s), any real property appraiser(s) who signs a certification accepts full responsibility for the real property elements of the certification, for the real property assignment results, and for the real property contents of the appraisal report.

68 See Advisory Opinion 2, *Inspection of Subject Property.*

In an assignment that includes only assignment results developed by the personal property appraiser(s), any appraiser(s) who signs a certification accepts full responsibility for all elements of the certification, for the assignment results, and for the contents of the appraisal report. In an assignment that includes real property assignment results not developed by the personal property appraiser(s), any personal property appraiser(s) who signs a certification accepts full responsibility for the personal property elements of the certification, for the personal property assignment results, and for the personal property contents of the appraisal report.

When a signing appraiser(s) has relied on work done by appraisers and others who do not sign the certification, the signing appraiser is responsible for the decision to rely on their work. The signing appraiser(s) is required to have a reasonable basis for believing that those individuals performing the work are competent. The signing appraiser(s) also must have no reason to doubt that the work of those individuals is credible.

The names of individuals providing significant mass appraisal assistance who do not sign a certification must be stated in the certification. It is not required that the description of their assistance be contained in the certification, but disclosure of their assistance is required in accordance with Standards Rule 6-2(g).[69]

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Randolph County Tax Department's
Guide to Leasehold Improvements

Leasehold improvements are modifications made to a leased premises used for business purposes by the tenant or lessee. They are taxable in North Carolina as business personal property. It is the responsibility of the lessee (not the real property owner) to properly list these improvements with the Tax Department as of January 1 of each year.

Any modifications made to a leased premises for the purpose of improving the tenant's comfort, enhancing the tenant's image, or promoting the tenant's business viability are considered leasehold improvements.

The ownership or taxability of leasehold improvements may be further or otherwise defined by a lease agreement between the landlord and tenant.

The following are examples of real property taxable to the building/land owner and personal property/leasehold improvements taxable to the lessee.

1.	Plumbing Waste supply lines, Waste and vent lines.	Real Property
2.	Electrical Main electrical connections Breaker panels, transformers, and meters for building.	Real Property
	All wiring for basic electrical service	Real Property
	Additional electrical connections breaker panels, transformers, meters, and wiring for equipment.	Personal Property
3.	Floor and floor covering concrete slab floor or frame subfloor.	Real Property
	Tile, vinyl flooring carpet glued to concrete slab floor. by the tenant over the base floor or sub-floor is a lease-hold improvement	Any flooring installed
	Baseboards added by the tenant	Personal property when
4.	Lighting Panel lighting, track lighting	Personal property when

	lens covers	added by the tenant
	outdoor lighting	Personal property
	Emergency light and exit lights	Personal property
5.	Doors Rolling grille doors (security gates) as in malls	Personal property
	Fire doors	Real property
	Locks and alarm locks	Personal property
6.	Interior Finishes Beams	Real property
	Floor to ceiling walls	Real property
	Column enclosures, painting and staining wall cover, moveable, freestanding partitions, mirrors affixed to walls Built-in counters, fitting rooms	Personal property
7.	Roof-top HVAC system	Real property
8.	Sprinkler system (building)	Real property
	Additional sprinklers for equipment	Personal property
9.	Smoke detector systems	Personal property
10.	Signs personal property even when permanently affixed to the ground	All signs are considered
11.	Store fronts would materially harm the premises.	Real property, removal
12.	Construction allowances paid to the tenants	Personal property

Note that architectural, engineering fees, freight, transportation and installation costs attributable to the design and construction of leasehold improvements are considered part of the improvements.

RANDOLPH COUNTY TAX DEPARTMENT
CLASSIFICATION OF SELECTED ITEMS AS REAL OR PERSONAL

A General Guide

In general, machinery and equipment used primarily as part of a manufacturing process (process equipment) is taken as Personal Property. Machinery and equipment which is part of the land or building improvement is taken as Real Estate.

ITEMS	REAL	PERSONAL
Acoustical fire resistant drapes & curtains		**XX**
Apartment Appliances		**XX**
Asphalt plants – batch mix, etc., moveable		**XX**
Air-Conditioning – building air conditioning, including refrigeration equipment for comfort of occupants, built-in	**XX**	
Air-Conditioning – window units, package units, including e.g. that are used in data processing rooms and mfg processing		**XX**
Airplanes		**XX**
Auto exhaust systems– for equipment		**XX**
Auto exhaust systems – built-in floor or ceiling	**XX**	
Awning		**XX**
Bank vault doors (on leased property)		**XX**
Bank vault doors (owner/operator)		**XX**
Bank equipment (teller counters & lockers)		**XX**

Bar and bar equipment		**XX**
Boats and motors – all		**XX**
Bowling alley lanes (equipment)		**XX**
Boiler – primarily for process		**XX**
Boiler – for service of building	**XX**	
Bulk barns		**XX**
Burglar alarms		**XX**
Car wash – all equipment		**XX**
Concrete plant – electronic mixing, conveyors, tanks, etc		**XX**
Construction and grading equipment (Non-licensed vehicle, etc)		**XX**
Construction allowance paid to tenant		**XX**
Conveyor systems		**XX**
Coolers (walk-in) – prefab, portable		**XX**
Cold Storage – built-in cold storage rooms	**XX**	
Cold Storage – refrigeration equipment		**XX**
Cooling towers – primary use in mfg		**XX**
Cooling towers – primary use for building (Air conditioners for building)	**XX**	
Computers – all and all related equipment & data lines		**XX**
Cooking equipment (restaurant, etc.)		**XX**
Compressed air & gas systems for process		**XX**
Control systems – electronic		**XX**
Chair – all types		**XX**
Dairy processing plants – all process items		**XX**

Data processing equipment – all items		XX
Diagnostic center equipment (auto)		XX
Dock levelers	XX	
Drying systems (special heating process system)		XX
Dumpsters		
Dust catchers, control systems etc.		XX
Desks – all		XX
Electronic control systems (weighing, mixing, etc)		XX
Fire alarm systems		XX
Fans – freestanding		XX
Farm equipment – all		XX
Fencing on residential used for business		XX
Floors, computer room	XX	
Floors, computer room (raised)		XX
Foundations for machinery equipment		XX
Freight charges		XX
Furnaces – steel mill process, etc, foundry		XX
Furniture and fixtures		XX
Fuels not held for resale		XX
Grain bin, not permanently attached to realty		XX
Greenhouses – if permanently affixed	XX	
Greenhouse benches, heating system, etc		XX
Humidifiers, process		XX

Heating systems, process	**XX**
Hoppers – metal bin type	**XX**
Hospital systems – oxygen, public address, emergency Electric, closed TV call system, autoclave, etc	**XX**
Hotel/Motel – appliances, TV & wiring	**XX**
Inventories	**XX**
Incinerators	**XX**
Industrial piping, process	**XX**
Irrigation equipment – farm	**XX**
Insulation cost	**XX**
Kilns – metal tunnel, moveable	**XX**
Kiln heating system	**XX**
Laboratory equipment	**XX**
Leased equipment – lessor or lessee possession	**XX**
Laundry bins	**XX**
Leasehold improvement (7 yr contingent upon revaluation cycle)	**XX**
Lighting – yard lighting	**XX**
Lifts – other than elevator	**XX**
Law/professional	**XX**
Law libraries	**XX**
Machinery and equipment	**XX**
Medical equipment	**XX**

Milk handling – milking, cooling, piping, storage		**XX**	
Mineral rights		**XX**	
Night depository		**XX**	
Office equipment – all			**XX**
Ovens – food processing		**XX**	
Office supplies		**XX**	
Oil company equipment – pumps, supplies, etc.		**XX**	
Outdoor lighting signs & flag poles		**XX**	
Power generator systems (auxiliary emergency, etc)		**XX**	
Portable buildings (greenhouse, construction, etc)		**XX**	
Package and labeling equipment		**XX**	
Piping systems – process piping		**XX**	
Playground equipment		**XX**	
Poultry house equipment		**XX**	
Public address systems (intercom, music, etc)		**XX**	
Pneumatic tube systems		**XX**	
Railroad sidings (other than railroad-owned)	**XX**		
Restaurant equipment included attached to floor & bldg		**XX**	
Refrigeration system – compressors, etc		**XX**	
Rock crusher		**XX**	
Safe wall & free standing		**XX**	
Scales		**XX**	
Sales tax as part of all cost (equipment)		**XX**	

Scale houses (unless portable	**XX**	
Satellite dishes		**XX**
Screens, movie-indoor		**XX**
Screens – drive-in outdoor theater		**XX**
Signs (including billboards, etc.)		**XX**
Speakers (at drive-ins) all types		**XX**
Spray booths (unless built-in, can be real)		**XX**
Seats – theater		**XX**
Software capitalized		**XX**
Sound projection equipment		**XX**
Sound systems		**XX**
Spare parts		**XX**
Sprinkler system – fire protection	**XX**	
Sprinkler system for process		**XX**
Sprinkler – golf course	**XX**	
Switchboard (motel, etc. – when not owned by utility)		**XX**
Service station equipment – pumps, tanks, lifts		**XX**
Supplies (office & other)		**XX**
Swine house equipment		**XX**
Storage containers		**XX**
Tanks – if permanently affixed structure, etc. (e.g., bulk plant)		**XX**
Tanks – manufacturing, process, etc.		**XX**

Tanks – service station underground gasoline & above ground			**XX**
Teller II – banks similar to computer equipment			**XX**
Tunnels – unless part of process system	**XX**		
Transformer banks			**XX**
Solar – thermal			**XX**
Solar – photo voltaic (not owned by real estate owner)			**XX**
Solar – photo voltaic (owned by real estate owner but used for process)			**XX**
Towers – TV, radio, CATV, two-way radio, etc.			**XX**
Towers – microwave and equipment			**XX**
Telephone system – private			**XX**
Vacuum system, process			**XX**
Ventilation systems – building improvement	**XX**		
Ventilation systems – mfg. process, etc			**XX**
Vent fans – free-standing			**XX**
Utility systems – (other than in-state assessed utilities, and other than central heating and cooling for buildings, etc., e.g., motel-owned telephone switchboard systems, private railroad sidings, private water systems, emergency power generating equipment, etc.)			**XX**
Utility systems – buildings for private systems		**XX**	
Walk-in coolers – portable or prefab, etc			**XX**

Walls – partitions, portable	**XX**
Water lines – for process above or below ground	**XX**
Water tanks, process equipment	**XX**
Water coolers – electric	**XX**
Wells – pumps, motors, equipment	**XX**
Wiring – power wiring for machinery and equipment computers	**XX**

Standard on Mass Appraisal of Real Property

Approved January 2012

International Association of Assessing Officers

This standard replaces the 2002 *Standard on Mass Appraisal of Real Property*. The 2002 standard combined and replaced the 1983 *Standard on the Application of the Three Approaches to Value in Mass Appraisal*, the 1984 *Standard on Mass Appraisal*, and the 1988 *Standard on Urban Land Valuation*. The IAAO's assessment standards represent a consensus in the assessing profession and have been adopted by the Executive Board of the International Association of Assessing Officers (IAAO). The objective of the IAAO's standards is to provide a systematic means by which concerned assessing officers can improve and standardize the operation of their offices. The IAAO's standards are advisory in nature and the use of, or compliance with, such standards is purely voluntary. If any portion of these standards is found to be in conflict with the *Uniform Standards of Professional Appraisal Practice* (*USPAP*) or state laws, *USPAP* and state laws shall govern.

Acknowledgments

At the time of the 2011 revision (approved January 2012) the Technical Standards Committee was composed of Alan Dornfest, AAS, chair; Doug Warr, AAS; Bill Marchand; Robert Gloudemans; Mary Reavey; Dennis Deegear, associate member; and Chris Bennett, staff liaison.

Revision Notes

The last full revision of the *Standard on Mass Appraisal of Real Property* was in February 2002. The most recent partial revisions, approved January 2012, were made to section 3.3

Published by
International Association of Assessing Officers
314 W 10th St
Kansas City, Missouri 64105-1616

816/701-8100 fax: 816/701-8149 http://www.iaao.org

ISBN 978-0-88329-202-0

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Printed in the United States of America.

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Standard on Mass Appraisal of Real Property

1. Scope

This standard defines requirements for the mass appraisal of real property. The primary focus is on mass appraisal for ad valorem tax purposes. However, the principles defined here should also be relevant to computer-assisted mass appraisals (or automated valuation models) used for other purposes, such as mortgage portfolio management. The standard primarily addresses the needs of the assessor, assessment oversight agencies, and taxpayers.

This standard addresses mass appraisal procedures by which property can be appraised at market value, including mass appraisal application of the three traditional approaches to value (cost, sales comparison, and income). Appraisals made on an other-than-market-value basis or on an individual basis are outside the scope of this standard. Where assessed value differs from market value because of statutory constraints such as use value, acquisition value, base year value, or classification, this standard does not provide guidance for determining assessed value.

Mass appraisal requires complete and accurate data, effective valuation models, and proper management of resources. Section 3 focuses on the collection and maintenance of property data. Section 4 summarizes the primary considerations in valuation methods, including the role of the three approaches to value in the mass appraisal of various types of property. Section 5 discusses certain managerial considerations: staff levels, data processing support, contracting for reappraisals, support of valuations, and benefit-cost issues.

2. Introduction

Market value for assessment purposes is generally determined through the application of mass appraisal techniques. Mass appraisal is the process of valuing a group of properties as of a given date using common data, standardized methods, and statistical testing (IAAO [1990, chapter 5] and Gloudemans [1999, chapter 5]). To determine a parcel's value, assessing officers must rely upon valuation equations, tables, and schedules developed through mathematical analysis of market data. Unless required by law, values for individual parcels should not be based solely on the sale price of a property; rather, valuation schedules and models should be consistently applied to property data that is correct, complete, and up-to-date.

Properly administered, the development, construction, and use of a computer-assisted mass appraisal system results in a valuation system characterized by accuracy, uniformity, equity, reliability, and low per-parcel costs (see section 5.5). Except for unique properties, individual analyses and appraisals of properties are not practical for ad valorem tax purposes.

3. Collecting and Maintaining Property Data

Choose software wisely because it can limit the data that can be collected. The choice of data is largely dictated by the valuation software, whether it is programmed in house or supplied by a commercial service, a mass appraisal company, or a state agency.

3.1 Overview

Uniform and accurate valuation of property requires correct, complete, and up-to-date property data. Assessing offices must establish effective procedures for collecting and maintaining property data (that is, property ownership, location, size, use, physical characteristics, sales prices, rents, costs, and operating expenses). Such data are also used for performance audits, defense of appeals, public relations, and management information. The following sections recommend procedures for collecting these data.

3.2 Geographic Data

Assessors should maintain accurate, up-to-date cadastral maps (also known as assessment maps, tax maps, parcel boundary maps, and property ownership maps) covering the entire jurisdiction. At a minimum these maps should

display a unique parcel number for each parcel. Such cadastral maps allow assessing officers to identify and locate all parcels, in both the field and the office. Maps become especially valuable in the mass appraisal process when a geographic information system (GIS) is used. A GIS permits graphic displays of sale prices, assessed values, inspection dates, work assignments, land uses, and much more. In addition, a GIS permits high-level analysis of nearby sales, neighborhoods, and market trends; when linked to a computer-assisted mass appraisal system, the results can be very useful. For additional information on cadastral maps, parcel identification systems, and GIS, see the *Standard on Manual Cadastral Maps and Parcel Identifiers* (IAAO 2004), *Standard on Digital Cadastral Maps and Parcel Identifiers* (IAAO 2009), and *Procedures and Standards for a Multipurpose Ca-dastre* (National Research Council 1983), and *GIS Guidelines for Assessors* (URISA/IAAO 1999).

3.3 Property Characteristics Data

The assessor should collect and maintain sufficient property characteristics data for classification, valuation, and other purposes. Accurate valuation of real property by any method requires descriptions of land and building characteristics.

3.3.1 Selection of Property Characteristics Data

Property characteristics to be collected and maintained should be based on the following:

- **factors that influence the market in the locale in question**
- **requirements of the valuation methods that will be employed**
- **requirements of classification and property tax policy**
- **requirements of other governmental and private users**
- **marginal benefits and costs of collecting and maintaining each property characteristic**

Determining what data on property characteristics to collect and maintain for a computer-assisted mass appraisal system is a crucial decision with long-term consequences. A pilot program is one means of evaluating the benefits and costs of collecting and maintaining a particular set of property characteristics. (See IAAO [1990, chapter 5] and Gloudemans [1999, chapter 2].) In addition, much can be learned from studying the data used in successful computer-assisted mass appraisals in other jurisdictions. Data collection and maintenance are usually the most costly aspects of a computer-assisted mass appraisal. Collecting data that are of little importance in the assessment process should be avoided unless another governmental or private need is clearly demonstrated.

The quantity and quality of existing data should be reviewed. If the data are sparse and unreliable, a major recanvass will be necessary. Data that have been confirmed to be reliable should be used whenever possible. New valuation programs or enhancements requiring major recanvass activity or conversions to new coding formats should be viewed with suspicion when the existing database already contains most major property characteristics and is of generally good quality.

The following property characteristics are typically used in predicting residential property values:

Improvement Data

- **Living area**
- **Construction quality or key components thereof (foundation, exterior wall type, etc.)**
- **Effective age or condition**
- **Building design or style**
- **Secondary areas including basements, garages, covered porches, and balconies**
- **Building features such as baths and central air conditioning**
- **Significant detached structures including guests houses, boat houses, and barns**

Land Data

- **Lot size**

- **Available utilities (sewer, water, electricity)**

Location Data

- **Market area**
- **Submarket area or neighborhood**
- **Site amenities, especially view and golf course or water frontage**
- **External nuisances, e.g., heavy traffic, airport noise, or proximity to commercial uses**

For a discussion of property characteristics important for various commercial property types, see Gloudemans and Almy (2011, chapter 9).

3.3.2 Data Collection

Collecting property characteristics data is a critical and expensive phase of reappraisal. A successful data collection program requires clear and standard coding and careful monitoring through a quality control program. The development and use of a data collection manual is essential in achieving accurate and consistent data collection. The data collection program should result in complete and accurate data.

3.3.2.1 Initial Data Collection

A physical inspection is necessary to obtain initial property characteristics data. This inspection can be performed either by appraisers or by specially trained data collectors. In a joint approach, experienced appraisers would make key subjective decisions, such as the assignment of construction quality class or grade, and data collectors would gather all other details. Depending on the data required, an interior inspection might be necessary. At a minimum, a comprehensive exterior inspection should be conducted.

3.3.2.2 Data Collection Format

Data should be collected in a prescribed format designed to facilitate both the collecting of data in the field and entry of the data into the computer system.

A logical arrangement of the collection format makes data collection easier. For example, all items requiring an interior inspection should be grouped together. The coding of data should be as objective as possible, with measurements, counts, and check-off items used in preference to items requiring subjective evaluations (such as "number of plumbing fixtures" versus "adequacy of plumbing: poor, average, good"). With respect to check-off items, the available codes should be exhaustive and mutually exclusive, so that exactly one code logically pertains to each observable variation of a building feature (such as type of room). The data collection format should promote consistency among data collectors, be clear and easy to use, and be adaptable to virtually all types of construction. Specialized data collection formats may be necessary to collect information on agricultural property, timberland, industrial parcels, and other property types.

3.3.2.3 Data Collection Manuals

A clear, thorough, and precise data collection manual is essential and should be developed, updated, and maintained. The written manual should explain how to collect and record each data item. Pictures, examples, and illustrations are particularly helpful. The manual should be simple yet complete, with a high degree of standardization for uniformity. Data collection staff should be trained in the use of the manual and related updates to maintain consistency. The manual should present guidelines for personal conduct during field inspections, and, if interior data are required, it should outline procedures to follow when the property owner has denied access or when entry might be risky.

3.3.2.4 Data Accuracy Standards

The following standards of accuracy for data collection are recommended.

- **Continuous or area measurement data, such as living area and exterior wall height, should be accurate within one foot (rounded to the nearest foot) of the true dimensions or within 5% of the area. (One foot equates to approximately 30 centimeters in the metric system of measurement). If areas, dimensions, or volumes must be estimated, the property record should note where quantities are estimated.**
- **For each objective, categorical, or binary data field to be collected or verified, at least 95 percent of the coded entries should be accurate. Objective, categorical, or binary data characteristics include such**

attributes as exterior wall material, number of full bathrooms, and waterfront view. As an example, if a data collector captures 10 objective, categorical, or binary data items for 100 properties, at least 950 of the 1,000 total entries should be correct.

- **For each subjective categorical data field collected or verified, data should be coded correctly at least 90 percent of the time. Subjective categorical data characteristics include data items such as quality grade, physical condition, and architectural style.**

3.3.2.5 Data Collection Quality Control

A quality control program is necessary to ensure that data accuracy standards are achieved and maintained. Independent quality control inspections should occur

immediately after the data collection phase begins and may be performed by jurisdiction staff, project consultants, auditing firms, or oversight agencies. The inspections should review random samples of completed work for completeness and accuracy and keep tabulations of items coded correctly or incorrectly, so that statistical tests can be used to determine whether accuracy standards have been achieved. Stratification by geographic area, property type, or individual data collector can help detect patterns of data error. Data that fails to meet quality control standards should be re-collected.

The accuracy of subjective data should be judged primarily by conformity with written specifications and examples in the data collection manual. Subjective data judgment calls should be substantiated by field notes.

3.3.3 Data Entry

To avoid duplication of effort, the data collection form should be able to serve as the data entry form. Data entry should be routinely audited to ensure accuracy.

Data entry accuracy should be as close to 100 percent as possible, and should be supported by a full set of range and consistency edits. These are error or warning messages generated in response to invalid or unusual data items. Examples of data errors include missing data codes and invalid characters. Warning messages should also be generated when data values exceed normal ranges (for example, more than eight rooms in a 1,200-square-foot residence). The warnings should appear as the data are entered. When feasible, action on the warnings should take place during data entry. Field data entry devices provide the ability to edit data as it is entered and also eliminate data transcription errors.

3.3.4 Maintaining Property Characteristics Data

Property characteristics data should be continually updated in response to changes brought about by new construction, new parcels, remodeling, demolition, and destruction. There are several ways of doing this. The most efficient involves building permits. Ideally, strictly enforced local ordinances would require building permits for all significant construction activity, and the assessor would be given copies of the permits. This would allow the assessor to identify properties whose characteristics are likely to change, to inspect such parcels on a timely basis (preferably as close to the assessment date as possible), and to update the files accordingly.

Aerial photographs also can be helpful in identifying new or previously unrecorded construction and land use.

Some jurisdictions have used self-reporting, in which property owners are given the data in the assessor's records and asked to provide additions or corrections. Information derived from multiple listing sources and other third-party vendors can be used to update property records.

A system should be developed for making periodic field inspections to identify properties and ensure that property characteristics data are complete and accurate. Properties should be periodically revisited to ascertain that assessment records are accurate and current. Assuming that most new construction activity is identified through building permits or other ongoing procedures, a physical review at least every four to six years should be conducted, including an on-site verification of property characteristics. A reinspection should include partial remeasurement of the two most complex sides of improvements and a walk around the improvement to identify additions and deletions or independent review of the current measurements with specific requirements by an outside auditing firm or oversight agency. Photographs taken at previous physical inspections can help identify changes.

3.3.5 Alternative to Periodic On-Site Inspections

Provided that an initial physical inspection has been completed—and the requirements of a well-maintained data-collection and quality-management program (see sections 3.3.2.1 to 3.3.4) have been achieved, jurisdictions may employ a set of digital imaging technology tools to supplement field inspections with a computer-assisted office review. These imaging tools should include:

- **Current high-resolution street-view images (at a sub-inch pixel resolution that enables quality grade and physical condition to be verified)**
- **Orthophoto images (minimum 6" pixel resolution in urban/suburban and 12" resolution in rural areas, updated every 2 years in rapid growth areas, or 6–10 years in slow growth areas).**

- **Low level oblique images capable of being used for measurement verification (four cardinal directions, minimum 6" pixel resolution in urban/suburban and 12" pixel resolution in rural areas, updated every 2 years in rapid growth areas or, 6–10 years in slow growth areas).**

Effective tool sets validate CAMA data and incorporate change detection techniques that compare building dimension data (footprints) in the CAMA system to georeferenced imagery or remote sensing data from sources (such as LiDAR [light detection and ranging]) and identify potential CAMA sketch discrepancies for further investigation.

In addition, appraisers should visit assigned areas on an annual basis to observe changes in neighborhood condition, trends and property characteristics. An on-site physical review is recommended when significant construction changes are detected, a property is sold, or an area is affected by catastrophic damage. Building permits should be regularly monitored and affected prop erties that have significant change should be inspected when work is complete.

It is incumbent on assessment jurisdictions and oversight agencies to ensure that images meet expected quality standards. Standards required for vendor-supplied images should be spelled out in the RFP and contract for services, and images should be checked for compliance with specified requirements. For general guidance on preparing RFPs and contracting for vendor-supplied services, see the *Standard on Contracting for Assessment Services* [IAAO 2008].

3.4 Sales Data

States and provinces should seek mandatory disclosure laws to ensure comprehensiveness of sales data files. Regardless of the availability of such statutes, a file of sales data must be maintained. Sales data are required in all applications of the sales comparison approach, in the development of market-based depreciation schedules in the cost approach, and in the derivation of capitalization rates or discount rates. Refer to IAAO (1990, chapter 5) and Gloudemans (1999, chapter 2) for guidelines relating to the acquisition and processing of sales data.

3.5 Income and Expense Data

Income and expense data must be collected for income-producing property, as these data are required in the application of the income approach to value. (See section 4.4.) Refer to IAAO (1990, chapter 5) and Gloudemans (1999, chapter 2) for guidelines addressing the collection and processing of income and expense data.

3.6 Cost and Depreciation Data

Current cost and depreciation data adjusted to the local market are required for the cost approach (see section 4.2). Cost and depreciation manuals and schedules may be purchased from commercial services or created in-house. See Gloudemans (1999, chapter 4) for guidelines on creating manuals and schedules.

4. Valuation

4.1 Valuation Models

Any appraisal, whether single-property appraisal or mass appraisal, uses a model, that is, a representation in words or an equation of the relationship between value and variables representing factors of supply and demand. Mass appraisal models attempt to represent the market for a specific type of property in a specified area. Mass appraisers must first specify the model, that is, identify the variables (supply and demand factors) that influence value, for example, square feet of living area. Then, mass appraisers must calibrate the model, that is, determine the adjustments or coefficients that best represent the value contribution of the variables chosen, for example, the dollar amount the

market places on each square foot of living area. Careful and extensive market analysis is required for both specification and calibration of a model that estimates values accurately. All three approaches to value—the cost approach, the sales comparison approach, and the income approach—are modeled for mass appraisal.

Geographic stratification is appropriate when the value of property attributes varies significantly among areas. It is particularly effective when housing types and styles are relatively uniform within areas. Separate models can be developed for market areas (also known as economic or model areas). Subareas or neighborhoods can

serve as variables in modeling and can also be used in land value tables and selection of comparable sales. (See Gloudemans [1999, chapter 3].) Smaller jurisdictions may find it sufficient to develop a single residential model.

Commercial and income-producing properties should be stratified by property type. In general, separate models should be developed for apartment, warehouse/industrial, and retail properties. Large jurisdictions may be able to stratify apartment properties further by type or area or to develop multiple commercial models.

4.2 The Cost Approach

The cost approach is applicable to virtually all improved parcels and, if used properly, can produce highly accurate valuations. The cost approach is more reliable for newer structures of standard materials, design, and workmanship.

Reliable cost data are imperative in any successful application of the cost approach. The data must be complete, typical, and current. Current construction costs should be based on the cost of replacing a structure with one of equal utility, using current materials, design, and building standards. Costs of individual construction components and building items should also be included in order to adjust for features that differ from the base specifications. These costs should be in-corporated into a construction cost manual and related computer software. The software can perform the valuation function, and the manual, in addition to providing documentation, can be used when nonautomated calculations are required.

Construction cost schedules can be developed internally, based on a systematic study of local construction costs, obtained from firms specializing in such information, or custom generated by a contractor. Cost schedules should be verified for accuracy by applying them to recently constructed improvements of known cost. Construction costs also should be updated before each assessment cycle.

One weakness in the cost approach tends to occur in the estimation of accrued depreciation. This estimate must be based on non-cost data (primarily sales) and can involve considerable subjectivity.
Depreciation schedules can be extracted from sales data in several ways. Methods for extracting depreciation can be found in IAAO (1990, chapter 8) and Gloudemans (1999, chapter 4).

Another key difficulty in use of the cost approach is determination of land value, which is estimated independently from sales (often from sales of improved property because sales of vacant land are scarce). Land values used in the cost approach must be current and consistent. Section 4.5 provides standards for land valuation in mass appraisal.

4.3 The Sales Comparison Approach

The sales comparison approach estimates the value of a subject property by statistically analyzing the sale prices of similar properties. This approach is usually the preferred approach for estimating values for residential and other property types with adequate sales.

Applications of the sales comparison approach include direct market models and comparable sales algorithms (See Gloudemans 1999, chapter 3 & 4, IAAO 1990, chapter 6 & 15, and IAAO 1999, and the IAAO *Standard on Automated Valuation Models* 2003). Comparable sales algorithms are most akin to single property appraisal applications of the sales comparison approach. They have the advantages of being familiar and easily explained and can compensate for less well specified or calibrated models, since the models are used only to make adjustments to the selected comparables. They can be problematic if the selected comparables are not well validated or representative of market value. Because they predict market value directly, direct market models depend more heavily on careful model specification and calibration. Their advantages include efficiency and consistency, since the same model is directly applied against all properties in the model area.

Users of comparable sales algorithms should be aware that sales ratio statistics will be biased if sales used in the ratio study are used as comparables for themselves in model development. This problem can be avoided by (1) not using sales as comparables for themselves in modeling or (2) using holdout or later sales in ratio studies.

4.4 The Income Approach

In general, for income-producing properties the income approach is the preferred valuation approach when reliable income and expense data are available, along with well-supported income multipliers, overall rates, and required rates of return on investment. Successful application of the income approach requires the collection, maintenance, and careful analysis of income and expense data.

Mass appraisal applications of the income approach be-gin with collecting and processing income and expense data. (These data should be expressed on an appropriate per-unit basis; such as per square foot or per apartment unit.) Appraisers should then compute normal or "typical" gross incomes, vacancy rates, net incomes, and expense ratios. These figures can be used to judge the reasonableness of reported data for individual parcels and to estimate income and expense figures for parcels with unreported data. Alternatively, models for estimating gross or net income and expense ratios can be developed using actual income and expense data from a sample of properties and calibrated using multiple regression analysis. For an introduction to income modeling, see IAAO (1990, chapter 14) and Gloudemans (1999, chapter 3). The developed income figures can be capitalized into estimates of value in a number of ways. The most direct method involves the application of gross income multipliers, which express the ratio of market value to gross income. At a more refined level, net income multipliers or their reciprocals, overall capitalization rates, can be developed and applied. These multipliers and rates should always be extracted from actual income and sale price data obtained from properties that have recently been sold. Income multipliers and overall rates tend to provide reliable, consistent, and readily supported valuations when good sales and income data are available.

4.5 Land Valuation

State or local laws may require the value of an improved parcel to be separated into land and improvement components. When the sales comparison or income approach is used, an independent estimate of land value must be made and subtracted from the total property value to obtain a residual improvement value. Some computerized valuation techniques provide a separation of total value into land and building components.

Land values should be reviewed annually. At least once every four to six years the properties should be physically inspected and revalued. The sales comparison approach is the primary approach to land valuation and is always preferred when sufficient sales are available. In the absence of adequate sales, other techniques used in mass appraisal include allocation, abstraction, anticipated use, capitalization of ground rents, and land residual capitalization. (See IAAO [1990, chapter 7] and Gloudemans [1999, chapter 3].)

4.6 Considerations by Property Type

The appropriateness of each valuation approach varies with the type of property under consideration. Table 1 ranks the relative usefulness of the three approaches in the mass appraisal of major types of properties. The table assumes that there are no major statutory barriers to obtaining cost, sales, and income data. Again, although certain approaches tend to produce better results for a given type of property, the use of two or more approaches should produce greater accuracy.

4.6.1 Single-Family Residential Property

The sales comparison approach is the best approach for single-family residential property, including condominiums. Automated versions of this approach are highly efficient and generally accurate for the majority of these properties. The cost approach is a good supplemental approach and should serve as the primary approach when the sales data available are inadequate. The income approach is usually inappropriate for mass appraisal of single-family residential properties, because most of these properties are not rented.

4.6.2 Multifamily Residential Property

The sales comparison and income approaches are preferred in valuing multifamily residential property when sufficient sales and income data are available. Multiple regression analysis and related techniques have been successfully used in valuing this property type. Income multipliers can also be highly effective. As with other residential property, the cost approach is useful in pro-viding supplemental valuations and can serve as the primary approach when good sales and income data are not available.

4.6.3 Commercial and Industrial Property

The income approach is the most appropriate method to apply when valuing commercial and industrial property if sufficient income data are available. Direct sales

Table 1. Rank of typical usefulness of the three approaches to value in the mass appraisal of major types of property comparison models can be equally effective in large jurisdictions with sufficient sales. When a sufficient supply of sales data and income data is not available, the cost approach should be applied. However, values generated should be periodically checked against available sales data. Cost factors, land values, and depreciation schedules must be kept current through periodic review.

	Cost	Sales comparison approach	Income
Single-family residential	2	1	3
Multifamily residential	3	1,2	1,2
Commercial	3	2	1
Industrial	1,2	3	1,2
Non-agricultural land	—	1	2
Agricultural*	—	2	1
Special-purpose**	1	2,3	2,3

Includes farm, ranch, and forest properties.

****Includes institutional, governmental, and recreation properties***

4.6.4 Non-Agricultural Land

The sales comparison approach is the preferred approach for non-agricultural land. Application of the sales comparison approach to vacant land involves the collection of sales data, the posting of sales data on maps, the calculation of standard unit values (such as value per square foot, per front foot, or per parcel) by area and type of land use, and the development of land valuation maps or computer-generated tables, in which the pattern of values is displayed. When vacant land sales are not available or are few, additional benchmarks can be obtained by subtracting the replacement cost new less depreciation of improvements from the sales prices of improved parcels. The success of this technique requires reliable cost data and tends to work best for relatively new improvements, for which depreciation is minimal.

If neither vacant-parcel nor improved-parcel sales data are available, the assessor will need to apply allocation methods or use valuation methods that provide separate land and building values. Sometimes income approach applications can also be used.

4.6.5 Agricultural Property

If adequate sales data are available and agricultural property is to be appraised at market value, the sales comparison approach would be preferred. However, nearly every state or province provides for use-value assessment (and usually appraisal), which significantly understates the market value for agricultural property, so the sales comparison approach is usually not applicable. Because of this limitation, it is imperative to obtain good income data and to use the income approach for agricultural land. Land rents are often available, sometimes permitting the development and application of overall capitalization rates. This method, of course, also entails the estimation of normal land rents for unrented parcels. When agricultural parcels include improvements, the cost approach or sales comparison models that provide separate building values may be used to determine their value.

4.6.6 Special-Purpose Property

The cost approach tends to be most appropriate in the appraisal of special-purpose properties, due to the distinctive nature of such properties and the general absence of adequate sales or income data.

4.7 Frequency of Reappraisals

Section 4.2.2 of the *Standard on Property Tax Policy* (IAAO 2010) states that current market value implies annual assessment of all property. Annual assessment does not necessarily mean, however, that each valuation must be reviewed or recomputed individually. Instead, trending factors based on criteria such as property type, location,

size, and age can be developed and applied to groups of properties. These factors should be derived from ratio studies or other market analyses.

Analysis of ratio study data can suggest groups or strata of properties in need of physical review. In general, trending factors can be highly effective in maintaining equity when appraisals are uniform within strata. However, such factors are not a substitute for physical reviews and individual reappraisals, which are required to correct lack of uniformity within strata.

Although assessment trending can be effective for short periods, properties should be physically reviewed and individually reappraised at least every four to six years. This can be accomplished in at least three ways:

- **reappraising all property at periodic intervals (that is, every four to six years)**
- **reappraising properties on a cyclical basis (for example, one-fourth or one-sixth each year)**
- **reappraising on a priority basis as indicated by ratio studies or other considerations while still ensuring that all properties are physically reviewed at least every sixth year**

5. Managerial Considerations 5.1 Overview

Mass appraisal requires human, computing, and other resources to be well managed and appropriate appraisal and analytical methods need to be employed. In this section certain key managerial considerations are discussed.

5.2 Staffing

A successful in-house appraisal program requires a sufficiently large staff composed of persons skilled in general administration and supervision, appraisal, mapping and drafting, data processing, and secretarial and clerical functions. Typical staffing sizes and patterns for jurisdictions of various sizes are illustrated in *Property Appraisal and Assessment Administration* (IAAO 1990, chapter 16).

Unless efficiency or practical concerns dictate otherwise, persons performing the various mass appraisal functions should be employees of the assessor. When these functions are not performed by assessment staff, it is imperative that they be adequately provided by other departments, an oversight agency, a service bureau, a qualified contractor, or another source. Strong lines of communication must be established between the assessor's staff and the designated support groups.

5.3 Data Processing Support

Computer-assisted mass appraisals require considerable data processing support. (See the *Standard on Facilities, Equipment, Computers, and Supplies* [IAAO 2003].)

5.3.1 Hardware

The hardware should be powerful enough to permit computerization of appropriate applications of the cost, sales comparison, and income approaches, as well as providing word processing, data inquiry, and activity summaries. The requirements for efficient running of desired software should be established before the acquisition of hardware. Computer equipment can be purchased, leased, rented, or shared with other jurisdictions. If the purchase option is chosen, the equipment should be easy to upgrade so that technological developments can be taken advantage of without purchasing an entirely new system.

5.3.2 Software

Computer software can be developed internally, adapted from software developed by other public agencies, or purchased (in whole or in part) from private vendors. (Inevitably there will be some tailoring needed to adapt externally developed software to the requirements of the user's environment.) Each alternative has advantages and disadvantages. The software should be designed so that it can be easily modified; it should also be well documented, at both the appraiser/user and programmer levels.

Security measures should exist to prevent unauthorized use and to provide backup in the event of accidental loss or destruction of data.

5.4 Contracting for Appraisal Services *5.4.1 Overview*

Reappraisal contracts can include mapping, data collection, data processing, and other services, as well as valuation. They offer the potential of acquiring professional skills and resources quickly. Often these skills and resources are not available internally. Contracting for these services can permit the jurisdiction to maintain a modest staff and to budget for reappraisal on a periodic basis, but also makes the assessor less likely to develop in-house expertise. (See the *Standard on Contracting for Assessment Services* [IAAO 2008].)

5.4.2 In-House Staff

The assessor's staff must have confidence in the appraisals and be able to explain and defend them. This confidence begins with application of reliable appraisal techniques, generation of appropriate valuation reports, and review of preliminary values. It may be helpful to have reports that list each parcel, its characteristics, and its calculated value. Parcels with unusual characteristics, extreme values, or extreme changes in values should be identified for subsequent individual review. Equally important, summary reports should show average values, value changes, and ratio study statistics for various strata of properties. These should be reviewed to ensure the overall consistency of values for various types of property and various locations. (See the *Uniform Standards of Professional Appraisal Practice*, Standards Rule 6-7, for reporting requirements for mass appraisals [The Appraisal Foundation, Appraisal Standards Board 2008–2009].)

The staff should also be prepared to support individual valuations as required, preferably through comparable sales. At a minimum, staff should be able to produce a property record and explain the basic approach (cost, sales comparison, or income) used to estimate the value of the property. A property owner should never merely be told that "the computer" or "the system" produced the appraisal. Generally, the staff should tailor the explanation to the taxpayer's knowledge and expertise. Equations converted to tabular form can be used to explain the basis for valuation. Cost tables can be used to explain values based on the cost approach.

In all cases, the assessor's staff should be able to produce sales or appraisals of similar properties in order to support (or at least explain) the valuation of the property in question. Comparable sales can be obtained from reports that list sales by such features as type of property, area, size, and age. Alternatively, interactive programs can be obtained or developed that identify and display the most comparable properties.

Assessors should notify property owners of their valuations in sufficient time for property owners to discuss their appraisals with the assessor and appeal the value if they choose to do so (*Standard on Public Relations* [IAAO 2011]). Statutes should provide for a formal appeals process beyond the assessor's level (*Standard on Assess-ment Appeal* [IAAO 2001]).

5.5 Benefit-Cost Considerations *5.5.1 Overview*

The object of mass appraisal is to produce equitable valuations at low costs. Improvements in equity generally require increased expenditures.

Benefit-cost analysis in mass appraisal involves two ma-jor issues, one of policy and the other of administration.

5.5.2 Policy Issues

An assessment jurisdiction requires a certain expenditure level simply to inventory, list, and value properties. Beyond that point, additional expenditures make possible rapid improvements in equity initially, but marginal improvements in equity diminish as expenditure increases. At a minimum, jurisdictions should budget to meet statutory standards of equity. Refer to the *Standard on Ratio Studies* (IAAO 2010) for a listing of performance standards.

5.5.3 Administrative Issues

Maximizing equity per dollar of expenditure is the primary responsibility of assessment administration. The assessor must provide leadership, make decisions, and get results by planning, budgeting, organizing, and controlling within all social, economic, and governmental limits (IAAO 1990, chapter 16). The computer-assisted mass appraisal system selected must be designed and used to evaluate appraisal performance and ensure compliance with laws, regulations, and policies.

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Glossary

Abstraction Method—Method of land valuation in the absence of vacant land sales, whereby improvement values obtained from the cost model are subtracted from sales prices of improved parcels to yield residual land value estimates. Also called land residual technique.

Accrued Depreciation—(1) The amount of depreciation, from any and all sources, that affects the value of the property in question on the effective date of the appraisal. (2) In accounting, the amount reserved each year or accumulated to date in the accounting system for replacement of a building or other asset. When depreciation is recorded as a dollar amount, it may be de-ductible from total plant value or investment to arrive at the rate base for public utilities. See also Depreciation.

Acquisition Value—An assessed value based on the cost of acquiring the property; increases in this value are usually limited until the next qualifying sale.

Adaptive Estimation Procedure (AEP)—A computerized, iterative, self-referential procedure using properties for which sales prices are known to produce a model that can be used to value properties for which sales prices are not known. Also called "feedback."

Adjusted Sale Price—The sale price that results from adjustments made to the stated sale price to account for the effects of time, personal property, financing, or the like.

Adjustments—Modifications in the reported value of a variable, such as sale price or gross income. For example, adjustments can be used to estimate market value in the sales comparison approach by adjusting the sale price of the comparable for differences between comparable and subject properties.

Ad Valorem Tax—A tax levied in proportion to the value of the thing(s) being taxed.

Aerial Photograph—A photograph of a part of the earth's surface taken by an aircraft-supported camera.

Agricultural Property—Improved or unimproved land devoted to or available for the production of crops or other agricultural products, livestock, and agricultural support buildings.

Allocation Method—A method used to value land, in the absence of vacant land sales, by using a typical ratio of land to improvement value. Also called land ratio method.

Appraisal Foundation, The—The organization authorized by the United States Congress as the source of appraisal standards and appraiser qualifications.

Appraisal Ratio—(1) The ratio of the appraised value to an indicator of market value. (2) By extension, an estimated fractional relationship between the appraisals and market values of a group of properties. See also Level of Appraisal.

Appraisal Ratio Study—A ratio study using independent expert appraisals as indicators of market value.

Arm's-Length Sale—A sale between two unrelated parties, both seeking to maximize their positions from the transaction.

Assessment Cycle—A legally sanctioned reappraisal period generally ranging from one to ten years.

Assessment Date—The status date for tax purposes. Appraised values reflect the status of the property and any partially completed construction as of this date.

Assessment Equity—The degree to which assessments bear a consistent relationship to market value.

Assessment Level—The common, or overall, ratio of assessed values to market values.

Assessment Maps—See Cadastral Map.

Assessment Ratio—(1) The fractional relationship an assessed value bears to the market value of the property in question. (2) By extension, the fractional relationship the total of the assessment roll bears to the total market value of all taxable property in a jurisdiction. See Level of Assessment.

Assessment Ratio Study—An investigation intended to determine the assessment ratio and assessment equity.

Assessment Ratio—(1) The fractional relationship an assessed value bears to the market value of the property in question. (2) By extension, the fractional relationship the total of the assessment roll bears to the total market value of all taxable property in a jurisdiction. See Level of Assessment.

Assessment Ratio Study—An investigation intended to determine the assessment ratio and assessment equity.

Audit—A systematic investigation or appraisal of procedures or operations for the purpose of determining conformity with specifically prescribed criteria.

Audit, Performance—An analysis of an organization to determine whether or not the quantity and quality of work performed meets standards. Ratio studies are an important part of performance audits of an assessing organization.

Audit, Procedural—An examination of an organization to determine whether established or recommended procedures are being followed.

Audit Program—The procedures undertaken or particular work done by an accountant in conducting an examination.

Audit Trail—A set of records of the changes made to another set of records.

Automated Valuation Model—A computer program for property valuation that analyzes data using an automated process. See also Computer-assisted Mass Appraisal.

Base Year Value—In a nonmarket-value assessment system, the assessed value established as of a specific year.

Benchmark—(1) A term used in land surveying to mean a known point of reference. (2) In property appraisal, a property of known value and of known effective age and replacement cost. (3) By extension, a model property to be used in determining by comparison the grade or quality class of other properties.

Cadastral Map—A scale map displaying property ownership boundaries and showing the dimensions of each parcel with related information such as parcel identifier, survey lines, and easements.

Calibration—The process of estimating the coefficients in a mass appraisal model.

CAMA—See Computer-assisted Mass Appraisal.

Capitalization Rate—Any rate used to convert an estimate of future income to an estimate of market value; the ratio of net operating income to market value.

Capitalization of Ground Rents—A method of estimating land value in the absence of comparable sales; applicable where there is an income stream; for example, to farmland and commercial land leased on a net basis.

Class—A set of items defined by common characteristics. (1) In property taxation, property classes such as residential, agricultural, and industrial may be defined. (2) In assessment, building classification systems based on type of building design, quality of construction, or structural type are common. (3) In statistics, a predefined category into which data may be put for further analysis. For example, ratios may be grouped into the following classes: less than 0.500, 0.500 to 0.599, 0.600 to 0.699, and so forth.

Coding—(1) The act of reducing a description of a unique object, such as a parcel of real estate, to a set of one or more measures or counts of certain of its characteristics, such as square footage, number of bathrooms, and the like. (2) Encoding, a related term, is usually used to refer to the act of translating coded descriptions useful to human beings into a form that can be processed by computers. (3) Coding is sometimes also used to refer to the writing of instructions that direct the processing done by computers.

Coefficient—(1) In a mathematical expression, a number or letter preceding and multiplying another quantity. For example, in the expression, 5X, 5 is the coefficient of X, and in the expression aY, a is the coefficient of Y. (2) A dimensionless statistic, useful as a measure of change or relationship; for example, correlation coefficient.

Commercial Property—Generally, any nonindustrial, nonresidential realty of a commercial enterprise. In-cludes realty used as a retail or wholesale establishment, hotel or motel, service station, commercial garage, warehouse, theater, bank, nursing home, and the like.

Comparable Sales; Comparables—(1) Recently sold properties that are similar in important respects to a property being appraised. The sale price and the physical, functional, and locational characteristics of each of the properties are compared to those of the property being appraised in order to arrive at an estimate of value. (2) By extension, the term "comparables" is sometimes used to refer to properties with rent or income patterns comparable to those of a property being appraised.

Comparative Unit Method—(1) A method of appraising land parcels in which an average or typical value is estimated for each stratum of land. (2) A method of estimating replacement cost in which all the direct and indirect costs of a structure (except perhaps architect's fees) are aggregated and specified with reference to a unit of comparison such as square feet of ground area or floor area, or cubic content. Separate factors are commonly specified for different intervals of the unit of comparison and for different story heights, and separate schedules are commonly used for different building types and quality classes.

Computer-assisted Assessment System—A system for assessing real and personal property with the assistance of a computer. A computer may be used, for example, in the appraisal process, in keeping track of ownership and exemption status, in printing the assessment roll, in coordinating the work load of real property appraisers and personal property appraisers with respect to the assessment of commercial and industrial properties, and in a number of other areas.

Computer-assisted Mass Appraisal (CAMA)—A system of appraising property, usually only certain types of real property, that incorporates computer-supported statistical analyses such as multiple regression analysis and adaptive estimation procedure to assist the appraiser in estimating value.

Cost—The money expended in obtaining an object or attaining an objective; generally used in appraisal to mean the expense, direct and indirect, of constructing an improvement.

Cost Approach—(1) One of the three approaches to value, the cost approach is based on the principle of substitution—that a rational, informed purchaser would pay no more for a property than the cost of building an acceptable substitute with like utility. The cost approach seeks to determine the replacement cost new of an improvement less depreciation plus land value. (2) The method of estimating the value of property by (a) estimating the cost of construction based on replacement or reproduction cost new or trended historic cost (often adjusted by a local multiplier), (b) subtracting depreciation, and (c) adding the estimated land value. The land value is most frequently determined by the sales comparison approach.

Cost Schedules—Charts, tables, factors, curves, equations, and the like intended to help estimate the cost of replacing a structure from a knowledge of some other factors, such as its quality class and number of square feet.

Data—The general term for masses of numbers, codes, and symbols. "Data" is the plural of datum, one element of data.

Data Edit—The process of examining recorded data to ensure that each element of data is reasonable and is consistent with others recorded for the same object, such as a parcel of real estate. Data editing, which may be done by persons or by computer, is essentially a mechanical process, distinct from verifying the correctness of the recorded information by calling or writing property owners.

Data Management—The human (and sometimes computer) procedures employed to ensure that no information is lost through negligent handling of records from a file, that all information is properly supplemented and up-to-date, and that all information is easily accessible.

Depreciation—Loss in value of an object, relative to its replacement cost new, reproduction cost new, or original cost, whatever the cause of the loss in value. Depreciation is sometimes subdivided into three types: physical deterioration (wear and tear), functional obsolescence (suboptimal design in light of current technologies or tastes), and economic obsolescence (poor location or radically diminished demand for the product). See also Accrued Depreciation.

Depreciation Schedules—Tables used in mass appraisal that show the typical loss in value at various ages or effective ages for different types of properties.

Discount Rate—The rate of return on investment; the rate an investor requires to discount future income to its present worth.

Economic Area—A geographic area, typically encompassing a group of neighborhoods, defined on the basis that the properties within its boundaries are more or less equally subject to a set of one or more economic forces that largely determine the value of the properties in question.

Equity—(1) In assessment, the degree to which assessments bear a consistent relationship to market value. Measures include the coefficient of dispersion, coefficient of variation, and price-related differential. (2) In popular usage, a synonym for tax fairness. (3) In ownership, the net value of property after liens and other charges have been subtracted.
Expense Ratios—The ratio of expenses to gross income.

Factor—(1) An underlying characteristic of something (such as a house) that may contribute to the value of a variable (such as its sale price), but is observable only indirectly. For example, construction quality is a factor defined by workmanship, spacing of joists, and materials used. Factor definition and measurement may be done subjectively or by a computer-assisted statistical algorithm known as factor analysis. (2) Loosely, any characteristic used in adjusting the sales prices of comparables. (3) The reciprocal of a rate. Assessments may be equalized by multiplying them by a factor equal to the reciprocal of the assessment ratio, and value can be estimated using the income approach by multiplying income by a factor equal to the reciprocal of the discount rate.

Feedback—See Adaptive Estimation Procedure.

Front Foot—The unit or standard of linear measure used in measuring frontage.

Geographic Information System (GIS)—(1) A database management system used to store, retrieve, manipulate, analyze, and display spatial information. (2) One type of computerized mapping system capable of integrating spatial data (land information) and attribute data among different layers on a base map.

Gross Income—The payments to an owner that a prop-erty can generate before expenses are deducted.

Gross Income Multiplier—A capitalization technique that uses the ratio between the sale price of a property and its potential gross income or its effective gross income.

Improvements—Buildings, other structures, and attachments or annexations to land that are intended to remain so attached or annexed, such as sidewalks or sewers.

Income Approach—One of the three approaches to value, based on the concept that current value is the present worth of future benefits to be derived through income production by an asset over the remainder of its economic life. The income approach uses capitalization to convert the anticipated benefits of the ownership of property into an estimate of present value.

Industrial Property—Generally, any property used in a manufacturing activity, such as a factory, wholesale bakery, food processing plant, mill, mine, or quarry.

Integrity—The quality of a data element or program being what it says it is; usually distinguished from validity, the quality of its being what it should be in terms of some ultimate purpose. After data are edited and encoded and programs are prepared, their integrity is ensured by safeguards that prevent accidental or unauthorized tampering with them.

Land—(1) In economics, the surface of the earth and all the natural resources and natural productive powers over which possession of the earth's surface gives man control. (2) In law, a portion of the earth's surface, together with the earth below it, the space above it, and all things annexed thereto by nature or by man. See also Improvements.

Land Residual Technique—See Abstraction Method.

Legal Description—A delineation of dimensions, boundaries, and relevant attributes of a real property parcel that serve to identify the parcel for all purposes of law. The description may be in words or codes, such as metes and bounds or coordinates. For a subdivided lot, the legal description would probably include lot and block numbers and subdivision name.

Level of Appraisal—The common, or overall, ratio of appraised values to market values. Three concepts are usually of interest: the level required by law, the true or actual level, and the computed level, based on a ratio study.

Level of Assessment; Assessment Ratio—The common or overall ratio of assessed values to market values. Compare Level of Appraisal. Note: The two terms are sometimes distinguished, but there is no convention determining their meanings when they are. Three concepts are commonly of interest: what the assessment ratio is legally required to be, what the assessment ratio actually is, and what the assessment ratio seems to be, on the basis of a sample and the application of inferential statistics. When level of assessment is distinguished from assessment ratio, "level of assessment" usually means either the legal requirement or the true ratio, and "assessment ratio" usually means the true ratio or the sample statistic.

Linear Regression—A kind of statistical analysis used to investigate whether a dependent variable and a set of one or more independent variables share a linear correlation and, if they do, to predict the value of the dependent variable on the basis of the values of the other variables. Regression analysis of one dependent variable and only one independent variable is called simple linear regression, but it is the word simple (not linear) that distinguishes it from multiple regression analysis with its multiple independent variables.

Location—The numerical or other identification of a point (or object) sufficiently precise so the point can be situated. For example, the location of a point on a plane can be specified by a pair of numbers (plane coordinates) and the location of a point in space can be specified by a set of three numbers (space coordinates). However, location may also be specified in other terms than coordinates. A location may be specified as being at the intersection of two specific lines by identifying it with some prominent and known feature (for example, "on top of Pikes Peak" or "at the junction of the Potomac and Anacostia Rivers").
Map—A conventional representation, usually on a plane surface and at an established scale, of the physical features (natural, artificial, or both) of a part or the whole of the earth's surface. Features are identified by means of signs and symbols, and geographical orientation is indicated.

Map, Tax—A map drawn to scale and delineated for lot lines or property lines or both, with dimensions or areas and identifying numbers, letters, or names for all delineated lots or parcels.

Market—(1) The topical area of common interest in which buyers and sellers interact. (2) The collective body of buyers and sellers for a particular product.

Market Adjustment Factors—Market adjustment factors, reflecting supply and demand preferences, are often required to adjust values obtained from the cost approach to the market. These adjustments should be applied by type of property and area and are based on sales ratio studies or other market analyses. Accurate cost schedules, condition ratings, and depreciation schedules will minimize the need for market adjustment factors.

Market Analysis—A study of real estate market conditions for a specific type of property.

Market Area—See Economic Area.

Market Value—Market value is the major focus of most real property appraisal assignments. Both economic and legal definitions of market value have been developed and refined. A current economic definition agreed upon by agencies that regulate federal financial institutions in the United States is:

> ***The most probable price (in terms of money) which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:***
>
> ***The buyer and seller are typically motivated;***
>
> ***Both parties are well informed or well advised, and acting in what they consider their best interests;***

A reasonable time is allowed for exposure in the open market;

Payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto;

The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Market-Value Standard—A requirement of law or practice that the assessment ratio of all properties be equal to one. Two issues are implicit here: that fractional assessment levels be avoided and that all property be assessed on the basis of its market value and not on the basis of its value in some particular use—for example, agriculture—unless that use is the only use to which the property can legally be put (in which case its use value would be equal to its market value).

Mass Appraisal—The process of valuing a group of properties as of a given date, using standard methods, employing common data, and allowing for statistical testing.

Mass Appraisal Model—A mathematical expression of how supply and demand factors interact in a market.

Model—(1) A representation of how something works. (2) For purposes of appraisal, a representation (in words or an equation) that explains the relationship between value or estimated sale price and variables representing factors of supply and demand.

Model Area—See Economic Area.

Model Calibration—The development of adjustments, or coefficients, based on market analysis, that identifies specific factors with an actual effect on market value.

Model Specification—The formal development of a model in a statement or equation, based on data analysis and appraisal theory.

Multiple Regression, Multiple Regression Analysis (MRA)—A particular statistical technique, similar to correlation, used to analyze data in order to predict the value of one variable (the dependent variable), such as market value, from the known values of other variables (called "independent variables"), such as lot size, number of rooms, and so on. If only one independent variable is used, the procedure is called simple regression analysis and differs from correlation analysis only in that correlation measures the strength of relationship, whereas regression predicts the value of one variable from the value of the other. When two or more variables are used, the procedure is called multiple regression analysis. See Linear Regression.

Neighborhood—(1) The environment of a subject property that has a direct and immediate effect on value. (2) A geographic area (in which there are typically fewer than several thousand properties) defined for some useful purpose, such as to ensure for later multiple regression modeling that the properties are homogeneous and share important locational characteristics.

Net Income—The income expected from a property after deduction of allowable expenses.

Net Income Multiplier—A factor expressing the relationship between value and net operating income; the reciprocal of the overall rate.

Objective—The quality of being definable by specific criteria without the need for judgment.

Open Market—A freely competitive market in which any buyer or seller may trade and in which prices are determined by competition.

Overall Rate (OAR)—A capitalization rate that blends all requirements of discount, recapture, and effective tax rates for both land and improvements; used to convert annual net operating income into an indicated overall property value.

Parcel—A contiguous area of land described in a single legal description or as one of a number of lots on a plat; separately owned, either publicly or privately; and capable of being separately conveyed.

Parcel Identifier—A code, usually numerical, representing a specific land parcel's legal description. The purpose of parcel identifiers is to permit reference to legal descriptions by using a code of uniform and manageable size, thereby facilitating record-keeping and handling. Also called parcel identification number.

Personal Property—Consists of every type of property that is not real property. Personal property is movable without damage to itself or the real estate and is subdivided into tangible and intangible.

Price, Adjusted Sale—The sale price that results from adjustments made to the stated sale price to account for the effects of time, personal property, atypical financing, and the like.

Price, Market—The value of a unit of goods or service, expressed in terms of money, as established in a free and open market. Note: This term is sometimes distin-guished from "market value" on the ground that the latter term assumes that buyers and sellers are informed, but this assumption is also implied by the phrase "free and open market." Compare Price, Sale.

Price, Sale—(1) The actual amount of money exchanged for a unit of goods or services, whether or not established in a free and open market. An indicator of market value. (2) Loosely used synonymously with "offering" or "asked" price. Note: The sale price is the "selling price" to the vendor and the "cost price" to the vendee.

Property—(1) An aggregate of things or rights to things. These rights are protected by law. There are two basic types of property: real and personal. (2) The legal interest of an owner in a parcel or thing.

Property Record Card (Form)—An assessment document with blanks for the insertion of data for property identification and description, for value estimation, and for property owner satisfaction. The basic objectives of property record forms are, first, to serve as a repository of most of the information deemed necessary for identifying and describing a property, valuing a property, and assuring property owners that the assessor is con-

versant with their properties, and, second, to document property appraisals. Use of properly designed property record forms permits an organized and uniform approach to amassing a property inventory.

Ratio, Assessment—See Assessment Ratio.

Ratio Study—A study of the relationship between appraised or assessed values and market values. Indicators of market values may be either sales (sales ratio study) or independent "expert" appraisals (appraisal ratio study). Of common interest in ratio studies are the level and uniformity of the appraisals or assessments. See also Level of Appraisal and Level of Assessment.

RCN—Replacement cost new or reproduction cost new.

RCNLD—Replacement cost new less depreciation or reproduction cost new less depreciation.

Real Estate—The physical parcel of land and all improvements permanently attached. Compare Real Property.

Real Property—Consists of the interests, benefits, and rights inherent in the ownership of land plus anything permanently attached to the land or legally defined as immovable; the bundle of rights with which ownership of real estate is endowed. To the extent that "real estate" commonly includes land and any permanent improvements, the two terms can be understood to have the same meaning. Also called "realty."

Reappraisal—The mass appraisal of all property within an assessment jurisdiction accomplished within or at the beginning of a reappraisal cycle (see below, sense 2). Also called revaluation or reassessment.

Reappraisal Cycle—(1) The period of time necessary for a jurisdiction to have a complete reappraisal. For example, a cycle of five years occurs when one-fifth of a jurisdiction is reappraised each year and also when a jurisdiction is reappraised all at once every five years. (2) The maximum interval between reappraisals as stated in laws.

Reassessment—(1) The relisting and revaluation of all property, or all property of a given class, within an assessment district by order of an authorized officer or body after a finding by such an officer or body that the original assessment is too faulty for correction through the usual procedures of review and equalization. (2) The revaluation of all real property by the regularly constituted assessing authorities, as distinguished from assessment on the basis of valuations most or all of which were established in some prior year. See also Re-valuation.

Reciprocal—The result obtained when 1 is divided by a given number.

Reconciliation—The final step in the valuation process wherein consideration is given to the relative strengths and weaknesses of the three approaches to value, the nature of the property appraised, and the quantity and quality of available data in formation of an overall opinion of value (either a single point estimate or a range of value). Also termed "correlation" in some texts.

Regression Analysis—See Multiple Regression Analysis.

Reliability—The degree to which measures are free from random error and therefore yield consistent results; the extent to which a procedure yields consistent results on repeated trials.

Replacement Cost; Replacement Cost New—The cost, including material, labor, and overhead, that would be incurred in constructing an improvement having the same utility to its owner as a subject improvement, without necessarily reproducing exactly any particular characteristics of the subject. The replacement cost concept implicitly eliminates all functional obsolescence from the value given; thus, only physical depreciation and economic obsolescence need to be subtracted to obtain replacement cost new less depre-ciation (RCNLD).

Replacement Cost New Less Depreciation (RCLD)— In the cost approach, replacement cost new less physical incurable depreciation.

Reproduction Cost; Reproduction Cost New—The cost of constructing a new property, reasonably identical (having the same characteristics) with the given property except for the absence of physical depreciation, using the same materials, construction standards, design, and quality of workmanship, computed on the basis of prevailing prices and on the assumption of normal competency and normal conditions.

Residential Property—Property used for housing such as single-family residences, duplexes, or apartment buildings.

Residual—The difference between an observed value and a predicted value for a dependent variable.

Residual Technique—A method of arriving at the unknown value of a property component by subtracting the known values of other components from a known overall value.

Revaluation—A reappraisal of property; especially a complete reappraisal of real property after assessment for one or more years on valuations most (or all) of which were established in some prior year. Compare Reassessment and Reappraisal.

Review—(1) Consideration by a board of appeals, a board of equalization, a board of review, or a court, of individual, property class, or district assessments, whether for the purpose of adding omitted taxable property, removing exempt property, or equalizing the valuations placed on listed property. (2) The act or process of criti-cally studying a report, such as an appraisal, prepared by another.

Sale, Arm's-Length—A sale in the open market between two unrelated parties, each of whom is reason-ably knowledgeable of market conditions and under no undue pressure to buy or sell.

Sale Price—See Price, Sale; Price, Adjusted Sale.

Sales Comparison Approach—One of three approaches to value, the sales comparison approach estimates a property's value (or some other characteristic, such as its depreciation) by reference to comparable sales.

Sales Data—(1) Information about the nature of the transaction, the sale price, and the characteristics of a property as of the date of sale. (2) The elements of information needed from each property for some purpose, such as appraising properties by the direct sales comparison approach.

Sales File—A file of sales data.

Sales Ratio Study—A ratio study that uses sales prices as proxies for market values.

Schedules—Tables, equations, or some other means of presenting the relationship between the values of two or more variables that are functionally related. For example, cost schedules present the relationship between cost per square foot and living area for a number of quality classes, building heights, and other characteristics.

Single-Property Appraisal—Systematic appraisal of properties one at a time.

Site—The location of a person, thing, or event.

Site Characteristics—(1) Characteristics of (and data that describe) a particular property, especially land size, shape, topography, drainage, and so on, as opposed to location and external economic forces.

Software—(1) Computer programs. (2) Those parts of a computer system that are not machinery or circuits; procedures and possibly documentation are included along with programs.

Special-Purpose Property—A property adapted for a single use.

Standard 6—See *Uniform Standards of Professional Ai-iraisal Practice*.

Stratify—To divide, for purposes of analysis, a sample of observations into two or more subsets according to some criterion or set of criteria.
Stratum, Strata (pl.)—A class or subset that results from stratification.

Subclass—A group of properties within a class, smaller than the class, usually (although not necessarily) defined by stratification rather than by sampling.

Subject Property—The property being appraised.

Subjective—Having the quality of requiring judgment in arriving at an appropriate answer of value of a variable (such as the quality class of a structure).

Three Approaches to Value—A convenient way to group the various methods of appraising a property. The cost approach encompasses several methods for estimating replacement cost new of an improvement less depreciation plus land value. The sales comparison approach estimates values by comparison with similar properties for which sales prices are known. The methods included in the income approach are based on the assumption that value equals the present worth of the rights to future income.

Time-adjusted Sale Price—The price at which a property sold, adjusted for the effects of price changes reflected in the market between the date of sale and the date of analysis.

Trending—Adjusting the values of a variable for the effects of time. Usually used to refer to adjustments of assessments intended to reflect the effects of inflation and deflation and sometimes also, but not necessarily, the effects of changes in the demand for microlocation-al goods and services.

Trending Factor—A figure representing the increase in cost or selling price over a period of time. Trending accounts for the relative difference in the value of a dol-lar between two periods.

Uniformity—The equality of the burden of taxation in the method of assessment.

***Uniform Standards of Professional Appraisal Prac-tice*—Annual publication of the Appraisal Standards Board of The Appraisal Foundation: "These Standards deal with the procedures to be followed in performing an appraisal, appraisal review, or appraisal consulting service and the manner in which an appraisal, appraisal review, or appraisal consulting service is communicated. ... Standard 6 establishes requirements for the development and reporting of mass appraisals of a universe of properties for ad valorem tax purposes or any other intended use" (The Appraisal Foundation, Appraisal Standards Board 2002, Preamble, p. 6).**

Unit of Comparison—A property as a whole or some smaller measure of the size of the property used in the sales comparison approach to estimate a price per unit.

Use Class—(1) A grouping of properties based on their use rather than, for example, their acreage or construction. (2) One of the following classes of property: single-family residential, multifamily residential, agricultural, commercial, industrial, vacant land, and institutional/exempt. (3) Any subclass refinement of the above—for example, townhouse, detached single-family, condominium, house on farm, and so on.

Use Value—(1) The value of property in a specific use. (2) Property entirely used for a specific purpose or use that may entitle the property to be assessed at a different level than others in the jurisdiction. Examples of properties that may be assessed at use value under the statutes include agricultural land, timberland, and historical sites.

USPAP—See *Uniform Standards of Professional Appraisal Practice*.

Valuation—(1) The process of estimating the value— market, investment, insured, or other properly defined value—of a specific parcel or parcels of real estate or of an item or items of personal property as of a given date. (2) The process or business of appraising, of making estimates of the value of something. The value usually required to be estimated is market value.
Valuation Date—The specific date as of which assessed values are set for purposes of property taxation. This date may also be known as the "date of finality." See also Assessment Date.

Valuation Model—A representation in words or in an equation that explains the relationship between value or estimated sale price and variables representing factors of supply and demand.

Value—(1) The relationship between an object desired and a potential owner; the characteristics of scarcity, utility, desirability, and transferability must be present for value to exist. (2) Value may also be described as the present worth of future benefits arising from the ownership of real or personal property. (3) The estimate sought in a valuation. (4) Any number between positive infinity and negative infinity. See also Market Value.

Variable—An item of observation that can assume various values, for example, square feet, sales prices, or sales ratios. Variables are commonly described using measures of central tendency and dispersion.

Verify—To check the accuracy of something. For example, sales data may be verified by interviewing the purchaser of the property, and data entries may be verified by check digits.

Assessment Standards of the International Association of Assessing Officers

Guide to Assessment Administration Standards

Standard on Assessment Appeal

Standard on Automated Valuation Models

Standard on Contracting for Assessment Services

Standard on Digital Cadastral Maps and Parcel Identifiers

Standard on Facilities, Computers, Equipment, and Supplies

Standard on Manual Cadastral Maps and Parcel Identifiers

Standard on Mass Appraisal of Real Property

Standard on Oversight Agency Responsibilities

Standard on Professional Development

Standard on Property Tax Policy

Standard on Public Relations

Standard on Ratio Studies

Standard on Valuation of Personal Property

Standard on Valuation of Property Affected by Environmental Contamination

Standard on Verification and Adjustment of Sales

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Standard on Ratio Studies

Approved January 2010

INTERNATIONAL ASSOCIATION OF ASSESSING OFFICERS

The assessment standards set forth herein represent a consensus in the assessing profession and have been adopted by the Executive Board of the International Association of Assessing Officers. The objective of these standards is to provide a systematic means by which concerned assessing officers can improve and standardize the operation of their offices. The standards presented here are advisory in nature and the use of or compliance with such standards is purely voluntary. If any portion of these standards is found to be in conflict with the Uniform Standards of Professional Appraisal Practice (USPAP) or state laws, USPAP and state laws shall govern.

Acknowledgements

At the time of the adoption of the standard by the IAAO Executive Board, the IAAO Technical Standards Committee was composed of Chair Joe Hapgood, CAE; Nancy C. Tomberlin; Bill Marchand; Robert Gloudemans; and Mary Reavey.

The majority of revisions were done in 2009. At that time the IAAO Technical Standards Committee was composed of Chair Nancy C. Tomberlin; Joe Hapgood, CAE; Alan S. Dornfest, AAS; Bill Marchand; and Mary Reavey.

The standard benefited from recommendations and thorough review by Peter Davis, Dennis Donner; Wayne D. Llewellyn, CAE; Ruth Sorenson; and Robert Denne.

Revision Notes

The last full revision of the *Standard on Ratio Studies* was in July 2007.

The most recent partial revisions were made to the following sections:
Part 1—3.5, 9.1
Part 2—3.5, 10
References
Appendix A—A.5
Appendix B—B.1

Published by
International Association of Assessing Officers
314 W 10th St
Kansas City, Missouri 64105-1616

816/701-8100
Fax: 816/701-8149
http://www.iaao.org

ISBN 978-0-88329-195-5
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Standard on Ratio Studies

Part 1. Guidance for Local Jurisdictions

This standard comprises two major parts. Part 1 focuses on the needs of local assessors. Part 2 presents guidelines for oversight agencies that use ratio studies for equalization and appraisal performance monitoring. The Definitions section explains the terms used in this standard. The appendixes present many technical issues in greater detail. More information on many topics addressed in this standard can be found in Property Appraisal and Assessment Administration (IAAO 1990, chapter 20) and in Gloude-mans (1999, chapter 5).

1. Scope

This part of the standard provides recommendations on the design, preparation, interpretation, and use of ratio studies for the real property quality assurance operations of an assessor's office. Quality assurance/control measures include data integrity review, assessment level and uniformity analysis, and computer-assisted mass appraisal (CAMA) system performance testing, among others.

Assessors may have the opportunity to utilize ratio study information at a greater depth than oversight agencies. These internal studies can help improve appraisal methods or identify areas within the jurisdiction that need attention. External ratio studies conducted by oversight agencies (Part 2) focus more upon testing the assessor's past performance in a few broad property categories.

2. Overview

For local jurisdictions, *ratio study* is used as a generic term for sales-based studies designed to evaluate appraisal performance. The term is used in preference to the term *as-sessment ratio study* because use of assessments can mask the true level of appraisal and confuse the measurement of appraisal uniformity when the legal assessment level is other than 100 percent of fair market value.

2.1 The Concepts of Market Value and Appraisal Accuracy

Market value is the major focus of most mass appraisal assignments. The major responsibility of assessing officers is estimating the market value of properties based on legal requirements or accepted appraisal definitions. The viability of the property tax depends largely on the accuracy of such value estimates. The accuracy of appraisals made for assessment purposes is therefore of concern, not only to assessors but also to taxing authorities, property taxpayers, and elected representatives. Appraisal accuracy refers to the degree to which properties are appraised at market value, as defined by professional standards (see *Glossary for Property Appraisal and Assessment* [IAAO 1997]) and legal requirements. While a single sale may provide an indication of the market value of the property in question, it cannot form the basis for a ratio study, which provides information about the market values of groups of properties. Dividing the appraised value by the sale price forms the ratios. The ratio can be multiplied by 100 and expressed as a percentage.

Market value is a concept in economic theory and cannot be observed directly. However, market values can be represented in ratio studies by sales prices (market prices) that have been confirmed, screened, and adjusted as necessary (see Appendix A, "Sales Validation Guidelines"). Sales prices provide the most objective estimates of market values and under normal circumstances should provide good indicators of market value.

2.2 Aspects of Appraisal Performance

There are two major aspects of appraisal accuracy: level and uniformity. Appraisal level refers to the overall ratio of appraised values to market values. Level measurements provide information about the degree to which goals or certain legal requirements are met. Uniformity refers to the degree to which properties are appraised at equal percentages of market value.

2.3 Uses of Ratio Studies

Key uses of ratio studies are as follows:

- **measurement and evaluation of the level and uniformity of mass appraisal models**
- **internal quality assurance and identification of appraisal priorities**
- **determination of whether administrative or statutory standards have been met**
- **determination of time trends**
- **adjustment of appraised values between reappraisals**

Assessors, appeal boards, taxpayers, and taxing authorities can use ratio studies to evaluate the fairness of funding distributions, the merits of class action claims, or the degree of discrimination (see Appendix F). However, ratio study statistics cannot be used to judge the level of appraisal of an *individual* parcel. Such statistics can be used to adjust assessed values on appealed properties to the common level.

2.4 Applicability

Local jurisdictions should use ratio studies as a primary mass appraisal testing procedure and their most important performance analysis tool. The ratio study can assist such jurisdictions in providing fair and equitable assessment of all property. Ratio studies provide a means for testing and evaluating mass appraisal valuation models to ensure that value estimates meet attainable standards of accuracy; see *Uniform Standards of Professional Appraisal Practice* (USPAP) *Standard Rule 6-6* (Appraisal Foundation 2010-2011). Ratio study reports are typically included as part of the written documentation used to communicate results of a mass appraisal and to comply with *Standard Rule 6-7(b)*. Ratio studies also play an important role in judging whether constitutional uniformity requirements are met. Compliance with state or provincial performance standards should be verified by the local jurisdiction before value notices are sent to property owners.

3. Steps in Ratio Studies

Ratio studies generally involve the seven basic steps listed below.

1. **define the purpose, scope and objectives**
2. **design**
3. **stratification**
4. **collection and preparation of market data**
5. **matching of appraisal and market data**
6. **statistical analysis**
7. **evaluation and use of results**

3.1 Definition of the Purpose, Scope, and Objectives

The first step in any ratio study is to determine and state clearly the reasons for the study. This crucial step of identifying the purpose of the study determines the specific goals, scope, content, depth, and required flexibility.

3.2 Design

In the design of the study the assessor must consider the quantity of sale data and the resources available for con-ducting the ratio study. Although absolute accuracy cannot be ensured, all reasonable, cost-effective steps should be taken to maximize reliability.

The assessor should identify the following factors:

- **the groups or classes of properties to be included in the study**
- **important legal, physical, and economic characteristics of the properties selected for study**

- the quantity and quality of data available
- the values being tested and sales period being used
- available resources, such as the number and expertise of staff, computer hardware and software applications, and additional limiting conditions

3.2.1 Level of Sophistication and Detail

A basic design principle is to keep the study as simple as possible while consistent with its purpose. Ratio studies are not all alike and should be tailored to an intended use.

Data analysis has been made easier through computerization. Although every study does not require the same level of statistical detail, each ratio study should include measures of appraisal level, appraisal uniformity, and statistical reliability. Graphs, charts, or other pictorial representations can be useful tools for showing distributions and patterns in the data. There is no model ratio study design that can serve all jurisdictions or all situations equally well. Informed, reasoned judgment and common sense are required in the design of ratio studies.

3.2.2 Sampling

A ratio study is a form of applied statistics, because the analyst draws conclusions about the appraisal of the population (the entire jurisdiction) of properties based only on those that have sold during a given time period. The sales ratios constitute the sample that will be used to draw conclusions or inferences about the population.

To determine the accuracy of appraisals with absolute certainty, it would be necessary for all properties in the population to have been sold in arm's-length, open-market transfers near the appraisal date. Since this is not possible, ratio studies must use samples and draw inferences or conclusions about the population from these samples.

The number of parcels in the population (the jurisdiction or stratum) is not an important determinant of a statistically valid and reliable sample.

3.2.2.1 Limitations of Sale Samples

Users of sales ratio studies should be aware of the follow-ing cautions associated with use of sale samples:

- Sales are not "randomly selected" from the population, in the strict technical sense (see section 4.5, Sample Representativeness).
- Value-related characteristics of a sale sample may not represent all the value-related characteristics of the population.
- Adjustments to sale prices maybe difficult to support or may be subjective.

3.2.2.2 Data Accuracy and Integrity

The findings of a ratio study can only be as accurate as the data used in the study. Personnel involved in collecting, screening, and adjusting sales data or making appraisals should be familiar with real estate conveyance practices in their region. They also should be proficient in the principles and practices of real estate appraisal and understand local market conditions.

Accuracy and integrity of data entered into or transferred through computer systems must be ensured. Design of computer programs should make it easy to verify data accuracy. Query tools should be accessible to users, so that data can be verified easily. Methods for checking the accuracy of assigned strata (such as school district, city, neighborhood, and category) as well as of assessed or appraised value, sale price, parcel identifier, and other fields must be established to reduce these and other nonsampling errors.

3.3 Stratification

Stratification divides all the properties within the scope of the study into two or more groups or strata. Stratification facilitates a more complete and detailed picture of appraisal performance and can enhance sample representativeness.

Each type of property subject to a distinct level of assessment could constitute a stratum. Other property groups, such as neighborhoods and age and size ranges, could constitute additional strata.

When the purpose of the study is to evaluate appraisal quality, flexibility in stratification is essential. The general goal is to identify areas in which the assessment levels are too low or lack uniformity and property groups for which additional reappraisal work may be required. In such cases, it also is highly desirable to stratify on the basis of more than one characteristic simultaneously.

Stratification can help identify differences in level of appraisal between property groups. In large jurisdictions, stratification by geographic areas is generally more appropriate for residential properties, while stratification of commercial properties by either geographic area or property subtypes (e.g., office, retail, and warehouse/industrial) can be more effective.

3.4 Collection and Preparation of Market Data

The reliability of a ratio study depends in part on how well the sales used in the study reflect market values. The underlying principle for review of sales data is to optimize the sample size, but at the same time to exclude sales that provide invalid indicators of market value. A ratio study sample with fewer than five sales tends to have exceptionally poor reliability and is not very useful.

3.5 Matching of Appraisal and Market Data

The physical and legal characteristics of each property used in the ratio study must be the same as when sold. This implies two essential steps. First, the appraiser must ascertain whether the property descriptions match. If a parcel is split between the appraisal date and the sale date, a sale of any of its parts should not be used in the ratio study.

Second, the appraiser must ascertain whether the property rights transferred, the permitted use, and the physical characteristics of the property on the date of assessment are the same as those on the date of sale. If the physical characteristics of the property have changed since the last appraisal, adjustments may be necessary before including the property in a ratio study. Properties with significant differences in these factors should be excluded from the ratio study.

When statutory constraints are imposed on appraisal methods, the resulting assessment may be less than market value. In such cases a sales ratio study may not provide use-ful performance information. Constraints typically apply to land that qualifies for agricultural use value, subsidized housing, mineral land, and timberland.

Sales may include property of a type other than the type for which the ratio study analysis is intended. However, sales including more than minimal values of secondary categories are unlikely to be representative, even with adjustment.

For example, a property that is predominantly commercial may include residential components. This sale can be included as representative of the commercial category. In this case, the numerator in the ratio calculation would be the total appraised value including the value of both the commercial and residential components.

In a second example, for a ratio study of vacant land, the numerator in the ratio should reflect only the appraised value of the land. The sale price should be adjusted for the contributory value of the improvements or the sample should be excluded from further analysis.

3.6 Statistical Analysis

After a ratio is computed for each parcel in the study, measures of appraisal level, uniformity, and reliability for the entire jurisdiction and each group or stratum should be computed. The sample also could undergo exploratory data analysis to reveal patterns or features of the data (Hoaglin, Mosteller, and Tukey 1983).

3.7 Evaluation and Use of Results

A properly designed ratio study is a powerful tool for analyzing appraisal performance, evaluating CAMA system models, and suggesting strategies for improvement. A ratio study also can identify weaknesses in appraisal system performance. Unexpected study results may indicate a need to respecify or recalibrate an appraisal model

or to reevaluate the data elements used in the valuation process. However, users of ratio studies should recognize the inherent limitations of this tool, as follows:

1. **A ratio study cannot provide perfect information about appraisal performance. Lack of sufficient sales or overrepresentation of one geographic area or type of property can distort results.**
2. **Ratio study validity requires that sold and unsold parcels be appraised at the same level and in the same manner. Violation of this condition seriously undermines the validity of the study.**
3. **Findings should be used only in ways that are consistent with the intended use(s) for which the study was designed.**
4. **Ratio study data are subject to statistical sampling errors and other processing (nonsampling) errors (see Lessler and Kalsbeek), but these limitations do not invalidate their use for informed decision-making.**

4. Timing and Sample Selection

4.1 Data Requirements and Availability

The availability of data influences the design of the study and can call for revisions in the objectives of the study, limit the usefulness of the calculated statistics, or both.

4.1.1 Nature of the Population

The type of properties, market conditions, and composition of the population in terms of age, size, and value range are essential to the proper design of the study and interpretation of the results. Very large properties that rarely sell (e.g., a large power plant) can be ignored in a ratio study designed to evaluate local appraisal performance.

4.1.2 Assessment Information

Appraised values are the numerators in the ratios used in a ratio study. Information about appraisal dates, legal requirements concerning reappraisals, the dates on which the appraisals were originally set, and the period they remained in effect is required for establishing the date of analysis.

4.1.3 Indicators of Market Value

Sale price, as an indicator of market value, is the denominator in the calculation of the ratio. Specific information about the date, amount, terms, and conditions of a sale is required for proper analysis.

4.1.4 Property Characteristics

Information on property characteristics is crucial for determining whether property that was assessed is essentially the same as what was sold. Data for both sold and unsold properties should be current, relevant, and collected in a consistent manner.

4.2 Frequency of Ratio Studies

The purpose of a ratio study dictates how often it should be conducted. Regardless of the reappraisal cycle, ratio studies made by assessors should be conducted at least annually. This frequency enables potential problems to be recognized and corrected before they become serious.

When there is a revaluation, assessors should conduct at least four ratio studies to establish the following:

1. **a baseline of current appraisal performance**
2. **preliminary values so that any major deficiency can be corrected**
3. **values used in assessment notices sent to taxpayers**

4. final values after completion of the first, informal phase of the appeals process

The final study can be used in planning for the following year. In addition, ratio studies can be conducted as needed to evaluate appraisal procedures, investigate a discrimination complaint, or answer a specific question.

4.3 Date of Analysis

The date of analysis depends on the purpose of the study, but generally is the assessment date of the tax year being studied, which can be the current, the next, or a past year. The assessment date of the next tax year should be used when the purpose of the study is to evaluate preliminary values in a reappraisal.

4.4 Period from Which Sales Are Drawn

This period depends on the purpose of the study and on sales activity. In general, the period should be as short as possible and, ideally, no more than one year. A longer period may be required to produce a representative sample for some strata within a jurisdiction.

To develop an adequate sample size, the sales used in ratio studies can span a period of as long as five years provided there have been no significant economic shifts or changes to property characteristics and sales prices have been adjusted for time as necessary.

4.5 Sample Representativeness

In general, a ratio study is valid to the extent that the sample is sufficiently *representative* of the population.

The distribution of ratios in the population cannot be ascertained directly and appraisal accuracy can vary from property to property. By definition, a ratio study sample would be representative when the distribution of ratios of properties in the sample reflects the distribution of ratios of properties in the population. Representativeness

is improved when the sample proportionately reflects major property characteristics present in the population of sold and unsold properties. As long as sold and unsold parcels are appraised in the same manner and the sample is otherwise representative, statistics calculated in a sales ratio study can be used to infer appraisal performance for unsold parcels.

However, if parcels that sell are selectively reappraised based on their sale prices and if such parcels are in the ratio study, uniformity inferences will not be accurate (appraisals appear more uniform than they are). In this situation, measures of appraisal level also will not be supportable unless similar unsold parcels are appraised by a model that produces the same overall percentage of market value (appraisal level) as on the parcels that sold (see Appendix D, ”Sales Chasing Detection Techniques”). Assessing officials must incorporate a quality control program; including checks and audits of the data, to ensure that sold and unsold parcels are appraised at the same level.

Operationally, representativeness is improved when the following occur:

1. Appraisal procedures used to value the sample parcels are similar to procedures used to value the corresponding population
2. Accuracy of recorded property characteristics data for sold property does not differ substantially from that of unsold property,
3. Sample properties are not unduly concentrated in certain areas or types of property whose appraisal levels differ from the general level of appraisal in the population
4. Sale prices provide valid indicators of market value.

The first requirement generally is met unless sampled parcels are valued or updated differently from nonsampled parcels, or unless appraisals of sample parcels were done at a different time than appraisals of nonsampled parcels. For example, it is unlikely that the sample is representative of unsold parcels when the sample consists mostly of new construction, first-time sales of improved properties, condominium conversions, or newly platted lots.

The second requirement is met only if value-related property characteristics are updated uniformly for all property in a class as opposed to being updated only upon sale.

The third requirement relates to the extent to which appraisal performance for the sample reflects appraisal performance for the population.

The fourth requirement generally is met when the sales to be used in the sample are properly screened, adjusted if necessary, and validated.

4.6 Acquisition and Validation of Sales Data

Sales data are important in ratio studies and play a crucial role in any credible and efficient mass appraisal system. In some instances, it may be necessary to make adjustments to sales prices so they are more representative of the market. When there is more than one sale of the same property during a study period, only one of the transactions should be used in the ratio study. For guidelines on sales validation see Appendix A.

5. Ratio Study Statistics and Analyses

Once data have been properly collected, reviewed, assembled, and adjusted, outlier handling and statistical analysis can begin. This process involves the following steps.

1. **A ratio should be calculated for each observation in the sample by dividing the appraised (or assessed) value by the sale price.**
2. **Graphs and exhibits can be developed that show the distribution of the ratios.**
3. **Exploratory data analysis, including outlier labeling/identification, and tests of the hypotheses of normality may be conducted.**
4. **Ratio study statistics of both appraisal level and uniformity should be calculated.**
5. **Reliability measures should be calculated.**

An example of a ratio study statistical analysis report is given in table 1-1.

5.1 Data Displays

Displays or exhibits that provide a profile or picture of ratio study data are useful for illustrating general patterns and trends, particularly to nonstatisticians. The particular form of the displays, as well as the data used (e.g., sales prices, sales ratios, and property characteristics) depends on the purposes of the particular display. Types of displays useful in ratio studies are arrays, frequency distributions, histograms, plots, and maps (Gloudemans 1999).

Graphic displays can be used to

- **indicate whether a sample is sufficiently representative of the properties in a stratum**
- **indicate the degree of nonnormality in the distribution of ratios**
- **depict the overall level of appraisal**
- **depict the degree of uniformity**
- **depict the degree of value bias (regressivity or progressivity)**
- **compare the level of appraisal or degree of uniformity among strata**
- **detect outlier ratios**

Table 1-1. Example of Ratio Study Statistical Analysis Data Analyzed

Rank of ratio	Appraised	Sale Price ($)	Ratio (AV/SP)
1	48,000	138,000	0.348
2	28,800	59,250	0.486
3	78,400	157,500	0.498
4	39,840	74,400	0.535
5	68,160	114,900	0.593
6	94,400	159,000	0.594
7	67,200	111,900	0.601
8	56,960	93,000	0.612
9	87,200	138,720	0.629
10	38,240	59,700	0.641
11	96,320	146,400	0.658
12	67,680	99,000	0.684
13	32,960	47,400	0.695
14	50,560	70,500	0.717
15	61,360	78,000	0.787
16	47,360	60,000	0.789
17	58,080	69,000	0.842
18	47,040	55,500	0.848
19	136,000	154,500	0.880
20	103,200	109,500	0.942
21	59,040	60,000	0.984
22	168,000	168,000	1.000
23	128,000	124,500	1.028
24	132,000	127,500	1.035
25	160,000	150,000	1.067
26	160,000	141,000	1.135
27	200,000	171,900	1.163
28	184,000	157,500	1.168
29	160,000	129,600	1.235
30	157,200	126,000	1.248
31	99,200	77,700	1.277
32	200,000	153,000	1.307
33	64,000	48,750	1.313
34	192,000	144,000	1.333
35	190,400	141,000	1.350
36	65,440	48,000	1.363

Note: Due to rounding, totals may not add to match those on following table, which reports results of statistical analysis of above data.

Results of statistical analysis

Statistic	**Result**
Number of observations in	36
Total appraised value	$3,627,04
Total sale price	$3,964,62
Average appraised value	$100,751
Average sale price	$110,128
Mean ratio	0.900
Median ratio	0.864
Weighted mean ratio	0.915
Price-related differential (PRD)	0.98
Coefficient of dispersion (COD)	29.8%

95% median two-tailed confidence interval (0.684, 1.067) 95% weighted mean two-tailed confidence (0.806, 1.024) interval

Normal distribution of ratios (0.05 level of significance) Reject – **D'Agostino** Pearson $\mathbf{K}^2$ &

	Shapiro-Wilk **W**
Date of analysis	9/99/9999
Category or class being analyzed	Residential

- identify specific opportunities to improve mass appraisal performance
- track performance measures over time

5.2 Outlier Ratios

Outlier ratios are very low or high ratios as compared with other ratios in the sample. The validity of ratio study statistics used to make inferences about population parameters could be compromised by the presence of outliers that distort the statistics computed from the sample. One extreme outlier can have a controlling influence over some statistical measures. However, some statistical measures, such as the median ratio, are resistant to the influence of outliers and trimming would not be required. Although the coefficient of dispersion (COD) is affected by extreme ratios, it is affected to a lesser extent than the coefficient of variation (COV) and the mean. The price-related differential (PRD) and weighted mean are sensitive to sales with high prices even if the ratios on higher priced sales do not appear unusual relative to other sales.

Outlier ratios can result from any of the following:

1. an erroneous sale price
2. a nonmarket sale
3. unusual market variability
4. a mismatch between the property sold and the property appraised
5. an error in the appraisal of an individual parcel
6. an error in the appraisal of a subgroup of parcels
7. any of a variety of transcription or data handling errors

In preparing any ratio study, outliers should be

1. identified
2. scrutinized to validate the information and correct errors
3. trimmed if necessary to improve sample representativeness

For guidelines on outlier identification and trimming, see Appendix B, "Outlier Trimming Guidelines."

5.3 Measures of Appraisal Level

Estimates of appraisal level are based on measures of cen-tral tendency. They should be calculated for each stratum and for such aggregations of strata as may be appropriate. Several common measures of appraisal level (central tendency) should be calculated in ratio studies, including the median ratio, mean ratio, and weighted mean ratio. When one of these measures is calculated on the data in a sample, the result is a point estimate, which is accurate for the sample but is only one indicator of the level of appraisal in the population. Confidence intervals around the measures of level provide indicators of the reliability of the sample statistics as predictors of the overall level of appraisal of the population. Note that noncompliance with appraisal level standards cannot be determined without the use of confidence intervals or hypothesis tests.

5.3.1 Median

The median ratio is the middle ratio when the ratios are arrayed in order of magnitude. If there is an even number of ratios, the median is the average of the two middle ratios.

The median always divides the data into two equal parts and is less affected by extreme ratios than the other measures of central tendency. Because of these properties, the median is the generally preferred measure of central tendency for evaluating overall appraisal level, determining reappraisal priorities, or evaluating the need for a reappraisal.

5.3.2 Arithmetic Mean

The arithmetic mean (aka mean or average) ratio is the average of the ratios. It is calculated by summing the ratios and dividing by the number of ratios. In a normal distribution the mean equals the median. In a distribution skewed to the right (typical of ratio study data), the mean is greater than the median. The mean is affected more by extreme ratios than the median.

5.3.3 Weighted Mean

The weighted mean ratio is the value-weighted average of the ratios in which the weights are proportional to the sales prices. The weighted mean also is the ratio of the average assessed value to the average sales price value. The weighted mean gives equal weight to each dollar of value in the sample, whereas the median and mean give equal weight to each parcel. The weighted mean is an important statistic in its own right and also is used in computing the PRD, a measure of uniformity between high- and low-value properties

The weighted mean also can be calculated by (1) summing the appraised values, (2) summing the sales prices, and (3) dividing the first result by the second. The weighted mean also is called the *aggregate ratio*.

5.3.4 Contrasting Measures of Appraisal Level

Because it gives equal weight to each ratio and is unaffected by extreme ratios, the median is the preferred measure of central tendency for evaluating appraisal performance. Although the mean ratio is also a parcel-based measure, it can be affected appreciably by extreme ratios and can be relied upon only if the sample is of adequate size and contains few outliers.

5.4 Measures of Variability

Measures of dispersion or variability relate to the uniformity of the ratios and should be calculated for each stratum in the study. In general, the smaller the measure, the better the uniformity, but extremely low measures can signal one of the following:

acceptable causes

- **extremely homogeneous properties**
- **very stable markets unacceptable causes**
- **lack of quality control**
- **calculation errors**
- **poor sample representativeness**
- **sales chasing**

Note that as market activity changes or as the complexity of properties increases, the measures of variability usually increase, even though appraisal procedures may be equally valid.

5.4.1 Coefficient of Dispersion

The most generally useful measure of variability or uniformity is the COD. The COD measures the average percentage deviation of the ratios from the median ratio and is calculated by the following steps:

1. **subtract the median from each ratio**
2. **take the absolute value of the calculated differences**
3. **sum the absolute differences**
4. **divide by the number of ratios to obtain *the average absolute deviation***
5. **divide by the median**
6. **multiply by 100**

The COD has the desirable feature that its interpretation does *not* depend on the assumption that the ratios are normally distributed. In general, more than half the ratios fall within one COD of the median. The COD should not be calculated about the mean ratio.

5.4.2 Other Measures of Variability

Other useful measures of variability or the distribution of ratio study data are as follows:

- **range**
- **percentiles**
- **quartiles**
- **interquartile range**
- **median absolute deviation (MAD)**

- **median percent deviation**
- **coefficient of concentration**
- **standard deviation**
- **coefficient of variation (COV)**
- **weighted coefficient of dispersion**
- **weighted coefficient of variation**

See *Property Appraisal and Assessment Administration* (IAAO 1990, chapter 20) and Gloudemans (1999, chapter 5) for further discussion on these statistical measures.

Note that the typical percentage error is not the COD, but is expressed by the median percentage deviation statistic. Also, it is the interquartile range, not the COD, that brackets the middle 50 percent of the assessment ratios.

5.5 Measures of Reliability

Reliability, in a statistical sense, concerns the degree of confidence that can be placed in a calculated statistic for a sample. (For example, how precisely does the sample median ratio approximate the population median appraisal ratio?) The primary measure of importance to the local assessor is the confidence interval. A confidence interval consists of two numbers (upper and lower limits) that bracket a calculated measure of central tendency for the sample; there is a specified degree of confidence that the calculated upper and lower limits bracket the true measure of central tendency for the population. See Appendix 204 in *Property Appraisal and Assessment Administration* (IAAO 1990) and Appendix C for guidelines on calculating small-sample confidence intervals.

New computer-intensive statistical methods, such as the "bootstrap" (Efron and Tibshirani 1993), now enable the development of confidence interval estimates for any statistic of interest, including measures of level and uniformity.

Measures of reliability explicitly take into account the errors inherent in a sampling process. In general, these measures are tighter (better) when samples are relatively large and the uniformity of ratios is relatively good.

Measures of reliability indicate whether there is a desired degree of confidence that a given level of appraisal has *not* been achieved. This does not mean that an appraiser should tolerate measures of central tendency that fail to meet goals whenever measures of reliability are wide due to small samples, poor uniformity, or both. Such cases require either additional data for proper analysis or alternative action, such as a reappraisal, if poor uniformity is the cause. Such correction might include reappraisal, trending of strata, and respecifying or recalibrating mass appraisal models (see section 9 in this part for a discussion of ratio study standards).

5.6 Vertical Inequities

The measures of variability discussed in section 5.4 relate to "horizontal," or random, dispersion among the ratios in a stratum, regardless of the value of individual parcels. Another form of inequity can be systematic differences in the appraisal of low- and high-value properties, termed "vertical" inequities. When low-value properties are appraised at greater percentages of market value than high-value properties, assessment *regressivity* is indicated. When low-value properties are appraised at smaller percentages of market value than high-value properties, assessment *progressivity* is the result. Appraisals made for tax purposes of course should be neither regressive nor progressive.

An index statistic for measuring vertical equity is the PRD, which is calculated by dividing the mean ratio by the weighted mean ratio. This statistic should be close to 1.00. Measures considerably above 1.00 tend to indicate assessment regressivity; measures below 1.00 suggest assessment progressivity. When samples are small or the weighted mean is heavily influenced by several extreme sales prices, the PRD may not be a sufficiently reliable measure of vertical inequities. A scatter plot of ratios versus appraised values or sale prices is a useful diagnostic tool. A downward (or upward) trend to the data indicates systematic regressivity (or progressivity). Assuming representativeness, high PRDs generally indicate low appraisals on high-priced properties. If not sufficiently representative, extreme sales prices can be excluded in calculation of the PRD. Similarly, when samples are very large, the PRD may be too insensitive to show small pockets in which there is significant vertical inequity. Standards for evaluating the PRD are given in section 9.2.7 in this part. In addition, more powerful statistical tests for vertical inequities are

available and should be employed to determine the significance of the indication provided by the PRD (see section 5.7 in this part and Twark, Everly and Downing [1989]).

When these tests show vertical inequities, such inequities should be addressed through reappraisal or other corrective actions. In some cases, additional stratification can help isolate the problem. Measures of level computed for value strata should not be compared as a way of determining vertical inequity because of a boundary effect that is most pronounced in the highest and lowest strata (Schultz 1996).

5.7 Tests of Hypotheses

An appropriate test should be used whenever the purpose of a ratio study is implicitly or explicitly to test a hypothesis. A hypothesis is essentially a tentative answer to a question, such as, Are residential and commercial properties appraised at equal percentages of market value? A test is a statistical means of deciding whether the answer "yes" to such a question can be rejected at a given level of confidence. In this case, if the test leads to the conclusion that residential and commercial properties are not appraised at equal percentages of market value, some sort of corrective action on the part of assessing officials is clearly indicated.

Tests are available to determine whether the

- level of appraisal of a stratum fails to meet an established standard
- meaningful differences exist in the level of appraisal between two or more strata
- high-value properties are appraised at a different percentage of market value than low-value properties

Appropriate tests are listed in table 1-2 and discussed in Gloudemans (1999), *Property Appraisal and Assessment Administration* (IAAO 1990), and *Improving Real Prop-erty Assessment* (IAAO 1978, 137–54).

5.8 The Normal Distribution

Many conventional statistical methods assume the sample data conform to the shape of a bell curve, known as the normal (or Gaussian) distribution. Performance measures based on the mean or standard deviation can be misleading if the study sample does not meet the assumption of normality. As a first step in the analysis, the distribution of sample ratios should be examined to reveal the shape of the data and uncover any unusual features. Although ratio study samples typically do not conform to the normal distribution, graphical techniques and numerical tests can be used to explore the data thoroughly. Traditional choices are the binomial, chi-square, and Lilliefors tests. Newer and more powerful procedures are the Shapiro-Wilk W, the D'Agostino-Pearson K^2, and the Anderson-Darling A_2 tests (D'Agostino and Stephens 1986).

5.9 Parametric and Distribution-Free (Non-para metric) Statistics

For every problem that might be solved by using statistics, there is usually more than one measure or test. These measures and tests can be divided into two broad categories: parametric and distribution-free (nonparametric). Parametric statistics assume the population data conform to a known family of probability distributions (such as the normal distribution). When the mean, weighted mean, and standard deviation are used in this context, they tend to be more meaningful. Distribution-free statistics make less restrictive assumptions and do not require knowledge about the shape of the underlying population distribution. Given similar distribution of ratios in the underlying populations, distribution free tests, such as the Mann-Whitney test, can determine the likelihood that the level of assessment of property groups differ (Hart 2001). Distribution-free statistics are the median and the COD.

6. Sample Size

6.1 Importance of Sample Size

There is a general relationship between statistical reliability and the number of observations in a sample. The larger the sample size, the greater the reliability.

6.2 Adequacy of a Given Sample Size

The adequacy of a given sample size can be evaluated by computing measures of reliability. If the confidence interval is sufficiently narrow, the sample is large enough. If the confidence interval is too wide, the assessor must either accept less precision or enlarge the sample, if possible.

6.3 Required Sample Size

Formulas are available to compute the minimum sample size necessary to produce selected margins of error at a specified level of confidence. Such formulas depend crucially on the estimated variability of the ratios (Cochran 1977).

Table 1-2. Tests of Hypotheses

Null	Nonparametric Test	Parametric Test
1. Ratios are normally distributed.	Shapiro-Wilk **W** test **D'Agostino**-Pearson K^2 test Anderson-Darling A^2 test Lillifores Test	N/A
2. The level of appraisal meets legal	Binomial test	t-test
3. Two property groups are appraised at equal percentages of market	Mann-Whitney test	t-test
4. Three or more property groups are appraised at equal percentages of	Kruskal-Wallis test	Analysis of Variance
5. Low- or high-value properties are appraised at equal percentages of	Spearman Rank test	Correlation or regression
6. Sold and unsold parcels are treated	Mann-Whitney test	t-test

6.4 Remedies for Inadequate Samples

Small samples should be enlarged if the assessor desires to increase the reliability of statistical measures. Inadequate sample sizes are typically indicated by unacceptably wide confidence intervals. The following alternatives should be considered:

1. ***Restratification*. If levels of appraisal are similar or properties are homogenous, broader strata containing larger samples can be created by combining existing strata or by stratifying on a different basis.**
2. ***Extending the period from which sales are drawn*. This is often the most practical and effective approach. Sales from prior years can be used; however, adjusting the sale price for time may be necessary and significant property characteristics must not change.**
3. ***Enlarging the sample by validating previously rejected sales*. Sales previously excluded from the analysis, because it was not administratively expedient to confirm them or to make adjustments, can be reevaluated.**
4. ***Imputing appraisal performance*. Ratio study statistics for strata with no or few sales can sometimes be imputed from the results obtained for other strata. These strata should be as similar as possible. Procedures and techniques used to appraise properties in the strata also should be similar.**

6.5 Other Sample Size-Related Representativeness Problems

Sales from areas or substrata in which the number of sales is disproportionately large can distort ratio study results by weighting level and uniformity indicators toward whatever conditions exist in the overrepresented area. To alleviate this problem and create better representativeness, large samples can be further stratified by

- **randomly selecting sales to be removed**
- **isolating the overrepresented groups into substrata**
- **redefining the time period for the overrepresented groups**
- **weighting the data**

7. Reconciliation of Ratio Study Performance Measures

An important objective of a ratio study conducted by a local jurisdiction is the evaluation of model performance. This is a USPAP requirement in the reconciliation of a mass appraisal. Assessing officials must incorporate a quality control program, including checks and audits of the data, to ensure that sold and unsold parcels are appraised at the same level. This also requires characteristic data for both sold and unsold properties to be current, appropriate, relevant, and collected in a consistent manner.

8. Presentation of Findings, Documentation, and Training

The findings of a ratio study should be sufficiently detailed and documented to meet the needs of the users of the study. Documentation for internal ratio studies can be less detailed than for reports prepared for external uses. The following documentation should be provided in conjunction with any published ratio study.

8.1 Text

A brief text describing the purpose and the methods used should accompany a ratio study. This information can be incorporated in the report of the findings or be contained in a separate memorandum. The text should contain the statistics presented and outline the major procedural steps in completing the study. The text also should describe any rules for eliminating sales or extreme ratios and acknowledge any significant limitations in the data.

8.2 Exhibits

The body of the ratio study report should include for each stratum the statistical results intended to be used for decision-making purposes. All reports should contain the following information:

- date and tax year of the appraisals being evaluated
- number of parcels in each stratum
- number of sales
- number of sales trimmed from the study
- measures of central tendency (appraisal level)
- measures of uniformity (variability) and price-related biases
- confidence interval (measures of reliability) about the measures of central tendency
- summary of adjustments made to sales prices

In addition, there should be a description of the steps taken to ensure that sold and unsold properties were valued and described consistently. If the sold and unsold properties were not treated identically, the documentation should characterize the differences discovered between them.

8.3 Analyses and Conclusions

An objective statement of the results of the ratio study should be prepared. If the study is one in a series, a comparison of the results with those of previous studies can be helpful.

8.4 Documentation

Ratio study procedures should be documented thoroughly. This documentation should take three forms. First, a general guideline should explain the design of the study. This guideline should be updated whenever procedures are changed. Second, all software applications should be documented so that the program logic can be reviewed and modified as needed. Third, a user's manual should explain how to execute the study or run the software.

8.5 Training and Education

The effectiveness of ratio studies can be improved through education and training. Assessment supervisors should conduct seminars or workshops for the appraisal staff to explain how to interpret reports, how ratio studies can be used to improve appraisal performance, and how the results will be used in-house.

9. Ratio Study Standards

Each local jurisdiction should have ratio study performance standards. Local standards should be consistent with state or provincial standards. The standards summarized in table 1-3 are suggested for jurisdictions in which current market value is the legal basis for assessment. In general, when these standards or other local standards are not met, reappraisal or other corrective measures should be taken.

All standards recommended in this section are predicated on the assumption that steps have been taken to maximize representativeness and validity in the underlying ratio study.

9.1 Level of Appraisal

In analyzing appraisal level, ratio studies attempt to measure statistically how close appraisals are to market value (or to a required statutory constraint that can be expressed as a percentage of market value) on an overall basis. While the theoretically desired level of appraisal is 1.00, an appraisal level between 0.90 and 1.10 is considered acceptable for any class of property. However, each class of property must be within 5 percent of the overall level of appraisal of the jurisdiction (see Section 9.2.1 in this part). Both criteria must be met. By themselves, the calculated measures of central tendency provide only an indication, not proof, of whether the level meets the appropriate goal. Confidence intervals and statistical tests should be used to determine whether it can be reasonably concluded that appraisal level differs from the established goal in a particular instance. Additionally, when uniformity measures show considerable variation between ratios, level measurements may be less meaningful.

9.1.1 Purpose of Level-of-Appraisal Standard

Jurisdictions that follow the IAAO recommendation of annual revaluations *(Standard on Property Tax Policy* [IAAO 2010] and *Standard on Mass Appraisal of Real Property* [IAAO 2008]) and comply with USPAP standard rules should be able to develop mass appraisal models that maintain an overall ratio level of 100 percent (or very near thereto). However, the local assessor may be compelled to follow reappraisal cycles defined by a legal authority or public policy that can extend beyond one year. During extended cycles the influence of inflation or deflation can shift the overall ratio.

The purpose of a performance standard that allows reasonable variation from 100 percent of market value is to recognize uncontrollable sampling error and the limiting conditions that may constrain the degree of accuracy that is possible and cost-effective within an assessment jurisdiction. Further, the effect of performance standards on local assessors must be considered in light of public policy and resources available.

Table 1-3. Ratio Study Uniformity Standards indicating acceptable general quality*

Type of property—General	Type of property—Specific	COD Range**
Single-family residential (including residential	Newer or more homogeneous areas	5.0 to 10.0
Single-family residential	Older or more heterogeneous areas	5.0 to 15.0
Other residential	Rural, seasonal, recreational, manufactured housing, 2–4 unit	5.0 to 20.0
Income-producing properties	Larger areas represented by large	5.0 to 15.0
Income-producing properties	Smaller areas represented by smaller	5.0 to 20.0
Vacant land		5.0 to 25.0
Other real and personal		Varies with local conditions

These types of property are provided for guidance only and may not represent jurisdictional requirements.

*** Appraisal level for each type of property shown should be between 0.90 and 1.10, unless stricter local standards are***
required.

PRD's for each type of property should be between 0.98 and 1.03 to demonstrate vertical equity.

PRD standards are not absolute and may be less meaningful when samples are small or when wide variation in prices
exist. In such cases, statistical tests of vertical equity hypotheses should be substituted (see table 1-2).

**** CODs lower than 5.0 may indicate sales chasing or non-representative samples.***

9.1.2 Confidence Intervals in Conjunction with Performance Standards

The purpose of confidence intervals and similar statistical tests is to determine whether it can be reasonably concluded that the appraisal level differs from the established performance standard in a particular instance. A conclusion of noncompliance requires a high degree of confidence; thus, a 90 percent (two-tailed) or 95 percent (one-tailed) confidence level should be used, except for small or highly variable samples. The demonstration ratio study report in table 1-4 presents 95% two-tailed confidence interval estimates for the mean, median, and weighted mean ratio.

9.2 Appraisal Uniformity

Assuming the existence of an adequate and sufficiently representative sample, if the uniformity of appraisal is unacceptable, model recalibration and/or reappraisal should be undertaken. It is important to recognize that the COD is a point estimate and, especially for small samples, should not be accepted as proof of assessment uniformity problems. Proof can be provided by recognized statistical tests, including bootstrap confidence intervals.

In unusually homogeneous strata, low CODs can be anticipated. In all other cases, CODs less than 5 percent should be considered suspect and possibly indicative of nonrepresentative samples or selective reappraisal of selling parcels.

Table 1-4. Demonstration Ratio Study Report

Rank	Parcel #	Appraised	Sale price*	Ratio	Statistic	Result
1	9	$87,200	138,720	0.629	Number (n)	17
2	10	38,240	59,700	0.641	Total appraised value	$1,455,330
3	11	96,320	146,400	0.658	Total sale price	$1,718,220
4	12	68,610	99,000	0.693	Avg appraised value	$85,608
5	13	32,960	47,400	0.695	Avg sale price	$101,072
6	14	50,560	70,500	0.717		
7	15	61,360	78,000	0.787	Mean ratio	0.827
8	16	47,360	60,000	0.789	Median ratio	0.820
9	17	56,580	69,000	0.820	Weighted mean ratio	0.847
10	18	47,040	55,500	0.848		
11	19	136,000	154,500	0.880		
12	20	98,000	109,500	0.895	Price-related differential	0.98
13	21	56,000	60,000	0.933	Coefficient of dispersion	14.5
14	22	159,100	168,000	0.947		
15	23	128,000	124,500	1.028	95% conf. int. mean (two-	0.754 to
16	24	132,000	127,500	1.035	95% conf. int. median (two-	0.695 to
17	25	160,000	150,000	1.067	95% conf. int. wtd. mean (two-	0.759 to

Date: 0/0/00. No outlier trimming

**** or adjusted sale price***

9.2.1 Uniformity among Strata

Although the goal is to achieve an overall level of appraisal equal to 100 percent of the legal requirement, ensuring uniformity in appraisal levels among strata also is important. The level of appraisal of each stratum (class, neighborhood, age group, market areas, and the like) should be within 5 percent of the overall level of appraisal of the jurisdiction. For example, if the overall level of appraisal of the jurisdiction is 1.00, but the appraisal level for residential property is 0.93 and the appraisal level for commercial property is 1.06, the jurisdiction is not in compliance with this requirement. This test should be applied only to strata subject to compliance testing. It can be concluded that this standard has been met if 95 percent (two-tailed) confidence intervals about the chosen measures of central tendency for each of the strata fall within 5 percent of the overall level of appraisal calculated for the jurisdiction. Using the above example, if the upper confidence limit for the level of residential property is 0.97 and the lower confidence limit for commercial property is 1.01, the two strata are within the acceptable range.

9.2.2 Uniformity among Single-Family Residential Properties

The COD for single-family homes and condominiums in older or more heterogeneous areas should be between 5.0 and 15.0. In areas of newer or fairly similar residences, it should be between 5.0 and 10.0.

9.2.3 Uniformity among Income-Producing Properties

The COD should be between 5.0 and 20.0. In larger, urban market areas, it should be between 5.0 and 15.0.

9.2.4 Uniformity among Unimproved Properties

The COD for vacant land should be between 5.0 and 20.0. The upper limit for an acceptable COD for vacant rural residential or seasonal land may be 25.0.

9.2.5 Uniformity among Rural Residential and Seasonal Properties, Manufactured Housing, and Multifamily Dwellings

The COD for heterogeneous rural residential property, recreational or seasonal homes, manufactured housing, and multifamily dwellings (2-4 units) should be between 5.0 and 20.0.

9.2.6 Uniformity among Other Properties

Target CODs for special-purpose real property and per-sonal property should reflect the nature of the properties involved, market conditions, and the availability of reliable market indicators.

9.2.7 Vertical Equity

PRDs should be between 0.98 and 1.03. The reason this range is not centered on 1.00 relates to an inherent upward bias in the arithmetic mean (numerator in the PRD) that does not equally affect the weighted mean (denominator in the PRD). When samples are small, have high dispersion, or include properties with extreme values, the PRD may not provide an accurate indication of assessment regressivity or progressivity. Similar considerations apply to special-purpose real property and to personal property. It is good practice to perform an appropriate statistical test for price-related biases before concluding that they exist (see table 1-2).

9.2.8 Alternative Uniformity Standards

The above standards may not be applicable to properties in unique, depressed, or rapidly changing markets. In such cases, assessment administrators may be able to develop

target standards based on an analysis of past performance or results in similar markets elsewhere. Such an analysis can be based on ratio study results for the past five years or more.

9.3 Natural Disasters and Ratio Study Standards

Natural disasters such as earthquakes, floods, and hur-ricanes can have a substantial impact on the interpretation and use of ratio studies. In particular, they

- **increase the difficulty of accurately identifying the physical and economic characteristics of property on the dates of sale and appraisal**
- **increase the difficulty of producing sufficiently reliable appraised values**
- **decrease the availability of usable sales and other market data**
- **disrupt the supply and demand equilibrium in the neighborhood community or region**

As a result of these potential problems, a number of unreliable sample properties may need to be excluded and sample sizes may be unavoidably reduced. All these factors should be considered when ratio study standards are being applied to study results from areas substantially affected by disasters. Such consideration must not result in unwarranted relaxation of applicable standards. When faced with such situations, assessors must use informed, reasoned judgment and common sense to produce a sufficiently reliable ratio study, based upon the best information available.

10. Personal Property Ratio Studies

Studies can be done by local assessors to determine the quality of assessments of personal property in their jurisdictions. For guidelines on conducting personal property ratio studies, see section 12 in Part 2.

Standard on Ratio Studies

Part 2. Equalization and Performance Monitoring

1. Scope

This part of the standard provides guidance and supplementary information to oversight agencies that perform ratio studies. Oversight or equalization ratio studies are designed to examine the overall degree of accuracy of as-sessments within or among categories of property, market areas, assessment jurisdictions or political subdivisions, such as school districts, municipalities, counties, states or provinces.

2. Oversight Ratio Studies

Oversight agencies are often required to monitor appraisal performance and take corrective actions when necessary. Equalization is a common tool used by oversight agencies to address problems associated with appraisal level. Reappraisal orders can be used to correct uniformity problems.

2.1 Monitoring of Appraisal Performance

Oversight agencies usually perform sales ratio studies, which can include independent appraisals, to monitor local assessment performance. The findings can serve as the basis for enforcement actions, such as reappraisal or equalization orders. State/provincial agencies also often perform ratio studies to advise assessors and the public about local appraisal conditions. Many state or provincial oversight agencies have a dual role. One role is to advise and assist local appraisal offices, and the other role is to measure local appraisal performance. These two roles can create a conflict of interest, which should be minimized.

2.2 Equalization

Oversight agencies can use the results of ratio studies to equalize, directly or indirectly, appraisals or assessments in taxing jurisdictions. Direct equalization is accomplished by an oversight agency which alters locally determined assessments by ordering appraisals within jurisdictions or property classes to be adjusted to market value or to the legally required level of assessment. Direct equalization can also involve adjusting appraisals of centrally assessed

properties. When indirect equalization is used, appraisals are not adjusted. Instead, indirect equalization involves an oversight agency estimating total taxable value, given the legally required level of assessment or market value. Indirect equalization allows proper distribution of intergovernmental transfer payments between state or provincial and local governments despite different levels of appraisal among

jurisdictions or property classes. Equalization is not an appraisal or a substitute for reappraisal.

When equalization is based on ratio study samples, sampling error must be taken into account. When confidence intervals include an acceptable range, equalization cannot be supported statistically. When confidence intervals *fail* to bracket official requirements, equalization actions are supported (see section 6.5, "Measures of Reliability," and section 11.1, "Level of Appraisal").

Legal aspects of ratio studies, many of which relate to equalization, are discussed in Appendix F.

2.2.1 Direct Equalization

Many states and provinces have authority and specific procedures for direct equalization. The advantage of direct equalization is that it can be applied to specified strata, such as property classes, geographic areas, and political subdivisions that fail to meet appraisal level performance standards (Dornfest [Journal of Property Tax Assessment and Administration, 2004]). Direct equalization also produces results that are generally more visible to the taxpayer and more clearly reduces perceived inequities between classes *(Standard on Property Tax Policy* [IAAO 2010]). For example, direct equalization allows proper and equal application of debt and tax rate limits and equitable partial exemptions.

Direct equalization involves use of adjustment factors, which produce effects mathematically identical to those derived through the application of "trending" or "index" factors, which are commonly used for value updating by local assessing jurisdictions. The most significant differ-ences typically are the level of the jurisdiction originating the adjustments and the stratification of property to which the factors are applied. Local jurisdictions with primary assessment responsibility can develop value adjustment factors as an interim step between complete reappraisals. Such factors commonly are applied to properties by prop-erty type, location, size, age and other characteristics (see *Property Appraisal and Assessment Administration* [IAAO 1990, p. 310]). It is rare for equalization factors developed by oversight agencies to be applied to strata more specific than property class or broad geographic area. Often such factors are applied jurisdiction-wide.

States and provinces that employ direct equalization techniques should understand that such equalization is not a substitute for appraisal or reappraisal. Direct equalization
applied at the stratum level improves equality in effective tax rates between strata and lessens the effect of assessment practices that improperly favor one stratum over another. For example, assuming that all classes of property are to be assessed at 100% of market value, without such equalization, in a case where residential property is assessed at a median of 80% of market value, while commercial property is assessed at a median of 90% of market value, residential property will pay 80% of its proper tax share and commercial property will pay 90% of its proper tax share. Other classes that may be assessed at 100% will pay more than their proper tax shares. Direct equalization mitigates this problem. However, such equalization cannot improve uniformity between properties within a given stratum. So, in the previous example, the median level of assessment for residential property can be adjusted from 80% to 100% of market value, assessment dispari-ties between individual residential properties will not be addressed. For this reason, reappraisal orders should be considered as the primary corrective tool for uniformity problems, and direct equalization should be considered appropriate only if time or other constraints preclude such an approach.

2.2.2 Indirect Equalization

The most common use of indirect equalization is to enable proper funding distribution, particularly for school districts. Such equalization provides an estimation of the proper tax base (acknowledging statutory constraints such as agricultural use value) despite appraisals that are higher or lower than legally required levels in certain jurisdictions. For example, if the assessed value of residential property in a jurisdiction is $750 million, but a residential ratio study shows an assessment level of 75 percent, while the legally required level of assessment is 100 percent, an equalized value of $1,000 million could be computed ($750 million/0.75). This adjusted or equal-ized value would then be used to apportion payments or requisitions between the state or province and associated local governments.

Indirect equalization results in fairer funding apportionment because the overall appraisal levels of the taxing jurisdictions tend to vary. If there were no equalization, the extent that a jurisdiction under- or overestimated its

total tax base would result in over- or under-apportionment of funds. Indirect equalization does not correct under- or overvaluation between classes of property within a jurisdiction. It adjusts only a portion of the tax or sometimes only intergovernmental payments, is less visible to taxpayers, and often lacks checks and balances associated with direct equalization (see *Standard on Property Tax Policy* [IAAO 2010]). By adjusting governmental payments, tax rates, or partial exemptions, indirect equalization encourages taxing jurisdictions to keep their overall tax bases close to the required level.

Whether used to equalize shared funding or tax rates, the degree of equalization of the property tax is more limited than with direct equalization. Indirect equalization generally is applied to or affects only a portion of the funding or property tax levy (perhaps the school general levy or city levy). Indirect equalization usually is applied to the jurisdiction, rather than to a stratum, and therefore resolves interjurisdictional discrepancies in assessment level. In ad-dition, properties in strata with poor uniformity are affected disproportionately. For this reason, indirect equalization also is not a substitute for reappraisal.

3. Steps in Ratio Studies

Ratio studies conducted by oversight agencies generally follow the basic steps described for the assessor's office in Part 1, except that it is more important to adopt uniform procedures and be consistent in their application.

3.1 Definition of the Purpose, Scope, and Objectives

The first step in any ratio study is to determine and state clearly the reasons for the study. This crucial step of identifying the purpose of the study determines the specific goals, scope, content, depth, and required flexibility.

3.2 Design of Study

The most important design consideration is that the study sample be sufficiently representative of the population of properties or the distribution of values in the jurisdiction under review. For direct equalization the level of appraisal for property classes or strata subject to such equalization is the primary area of interest and the sample must be designed accordingly. Indirect equalization seeks to estimate the overall dollar value of the population, so the sample must be representative of that overall value and must reflect the disproportionate influences of high value properties. Performance monitoring is concerned with both level and uniformity, but typically involves sample design similar to that required in direct equalization.

3.2.1 Level of Sophistication and Detail

A basic design principle is to keep the study as simple as possible consistent with its purpose. Ratio studies are not all alike and should be tailored to an intended use.

Data analysis has been made easier through computerization. Although every study does not require the same level of statistical detail, each ratio study should include measures of appraisal level, appraisal uniformity, and statistical reliability. Graphs, charts, or other pictorial representations can be useful tools for showing distributions and patterns in the data. There is no model ratio study design that can serve all jurisdictions or all situations equally well. Informed, reasoned judgment and common sense are required in the design of ratio studies.

3.2.2 Sampling

A ratio study is a form of applied statistics, because the analyst draws conclusions about the appraisal of the uni-verse (the entire jurisdiction) of properties based only on those that have sold during a given time period or apprais-als selected for a random sample. The ratios constitute the sample that will be used to draw conclusions or inferences about the population.

To determine the accuracy of appraisals within a jurisdiction with absolute certainty, it would be necessary for all properties in the population to have been sold in arm's-length, open-market transfers near the appraisal date or all properties would need to be appraised independently by the oversight agency. Since this is not possible, ratio studies must use samples and draw inferences or conclusions about the population from these samples.

The number of parcels in the population (the jurisdiction or stratum) is not an important determinant of a statistically valid and reliable sample.

3.2.3 Determining the Composition of Samples **In the design stage, the oversight agency must decide whether the ratio study sample should comprise sales (or asking prices when appropriate), independent appraisals, or a combination of the two. Each sample type has its advantages and disadvantages, as described below.**

3.2.3.1 Sale Samples

The advantages of using sale samples include the following:

- **Properly validated sales provide more objective indicators of market value than independent appraisals.**
- **Using sales is much less expensive than producing independent appraisals.**

The disadvantages include the following:

- **Difficulty in collecting sales data in jurisdictions without disclosure documents**
- **The oversight authority may not have control over the sales data collection and validation process**
- **Influence of sales chasing can be difficult to detect or prevent**
- **Samples of sales may not adequately represent the population of properties**
- **An adequate sample size may not be achieved if sales data are scarce**
- **Time adjustments are more critical when supplemental sales are included**

3.2.3.2 Independent Appraisal Samples

Independent appraisals also can be used instead of or in addition to sales for ratio study samples. (See section 8, "Appraisal Ratio Studies," in this part.)

3.2.3.3 Samples Combining Sales and Independent Appraisals

The oversight agency can design and conduct ratio studies using samples comprised of sales and independent appraisals. In this approach, the combined advantages of sale samples and appraisal samples are realized. However, the disadvantage of combining sales and independent appraisals is the possible existence of some of the disadvantages of sale samples and/or appraisal samples (see Section 8.7).

3.3 Collection and Preparation of Market Data The reliability of a ratio study depends in part on how ac-curately the sales or independent appraisals used in the study reflect market values. For sales-based studies, oversight agencies should conduct an independent sales verification and screening program if resources permit. Alternatively, oversight agencies should develop audit criteria to review data submitted to qualify sales, corroborate representativeness and confirm adequate sample size. Audit decisions should accommodate needs of the agency and resources available. Independent appraisals used in ratio studies must comply with the appropriate sections of the *Uniform Standards of Professional Appraisal Practice* (USPAP; Appraisal Foundation 2010–2011), and reflect market values as of the date being studied. Most oversight agencies use property data collected by the local jurisdiction to develop their independent appraisals. In order to produce credible appraisals, the oversight agency must be certain that the local jurisdiction accurately recorded the appropriate value-related property characteristics for each property it is independently appraising. Steps must be taken to ensure that errors in the database made by the local jurisdiction do not materially or significantly affect the conclusions or opinions of value developed by the oversight agency.

3.4 Stratification

Stratification divides all the properties within the scope of the study into two or more groups or strata. Stratification facilitates a more complete and detailed picture of appraisal performance and can enhance sample representativeness

Each type of property subject to a distinct level of assessment could constitute a stratum. Other property groups, such as market areas, school districts and tax units, could constitute additional strata.

Strata should be chosen to be consistent with factors in the mass appraisal model. When the purpose of the study is to evaluate appraisal quality, flexibility in stratification

is essential. The general goal is to identify areas in which the assessment levels are too low or lack uniformity and property groups for which additional reappraisal work may be required. In such cases, it also is highly desirable to stratify on the basis of more than one characteristic simultaneously.

Stratification can help identify differences in level of appraisal between property groups. In large jurisdictions, stratification by market areas is generally more appropriate for residential properties, while stratification of commercial properties by either geographic area or property subtypes (e.g., office, retail, and warehouse/industrial) can be more effective.

3.5 Matching Appraisal Data and Market Data

The physical and legal characteristics of each property used in the ratio study must be the same when appraised for tax purposes and when sold. This implies two essential steps. First, the property description for the sold parcel must match the appraised parcel. If a parcel is split between the appraisal date and the sale date, a sale of any of its parts should not be used in the ratio study.

Second, the property rights transferred, permitted use, and physical characteristics of the property on the date of assessment must be the same as those on the date of sale. Properties with significant differences in these factors should be excluded from the ratio study.

When statutory constraints are imposed on appraisal methods, the resulting assessment may be less than market value. In such cases a sales ratio study may not provide useful performance information. Constraints typically apply to land that qualifies for agricultural-use value, subsidized housing, mineral land, and timberland.

Sales may include property of a type other than the type for which the ratio study analyses is intended. However, sales including more than minimal values of secondary categories are unlikely to be representative, even with adjustment.

For example, a property that is predominantly commercial may include residential components. This sale can be included as representative of the commercial category. In this case, the numerator in the ratio calculation would be the total appraised value including the value of both the commercial and residential components.

In a second example, for a ratio study of vacant land, the numerator in the ratio should reflect only the appraised value of the land. The sale price should be adjusted for the contributory value of the improvements or the sample should be excluded from further analysis.

3.5.1 Stratification for Equalization Studies

Oversight agencies generally should define the strata prior to acquiring and compiling data for the ratio study. Predefined stratification is more transparent and enhances cooperation between the oversight agency and the jurisdiction appraising the property subject to equalization. In general, oversight agencies should not redefine the strata once they have been defined for equalization purposes, especially in the case of direct equalization. It is appropriate, however, to collapse strata to compensate for otherwise inadequate samples sizes. In addition, a reappraisal or equalization order can be targeted for specific problem areas that cause noncompliance at a broader level of aggregation. If value stratification is necessary, predefined strata may not be practical.

3.5.2 Stratification for Direct Equalization

Strata should be chosen consistent with operational re-quirements for the required level of equalization. Statistical issues in the determination of strata include the size of the population and resulting strata and the likely variability of the ratios in each stratum. Care must be taken not to over-stratify, that is, to create strata that are too small to achieve statistical reliability (see section 6, Sample Size" in part 1 and Sherrill and Whorton [1991]). No conclusion about stratum level or uniformity should be made from stratum samples that are unreliably small (resulting in unacceptably large margins of error). Ultimately, the degree of stratification is determined largely by available sales data, unless it is cost-effective and practical to add sufficient independent appraisals. If sufficient sales or appraisals are not available for a given stratum, it should be combined with similar strata. When strata are combined, provided there is no reason to suspect dissimilar ratios as evidenced by different level or uniformity measures, such combinations permit broader applicability of ratio study results and prevent ratio study analysis from becoming too focused on substrata with few sales or appraisals. When jurisdiction or category wide equalization actions are required, reliability of component strata is not an issue.

3.5.3 Stratification for Indirect Equalization

Indirect equalization develops an estimate of full market value, but assessed values of individual properties are not altered. Such studies can use a substantially different approach to stratification than ratio studies intended for performance evaluation or direct equalization. The purpose of stratification in this case is to minimize distortions due to different assessment levels, which can vary by property type, value range, geographic area, and other factors. If stratification creates a more representative sample, equal-ization decisions may be based on results from individual stratum. . If the overall sample is representative of the population then equalization decisions should be based on overall sample results. A reasonable number of strata with small samples and larger margins of error can increase overall representativeness and may reduce the margin of error for the overall jurisdiction-wide sample.

The primary level of stratification should ordinarily be by major property type (e.g., residential, commercial, and vacant land). If circumstances permit, a secondary level of stratification also is recommended. When relying on the weighted mean, the secondary level of stratification (substrata) should normally be value range. Higher-value properties can sell with a different frequency than low-value properties, and appraisal levels can vary between high and low-value properties. As a result, high-value properties can be oversampled (or undersampled) and, because of their high value, can exert a disproportionate influence on the weighted mean and resulting estimated value. Value stratification reduces distortion of the weighted mean caused by over or under-representation of value strata with different levels of appraisal. To properly develop and use value strata, the oversight agency needs each individual assessment in the study universe. If detailed value information is not available, the oversight agency should work with local taxing jurisdictions to obtain sufficient information. At a minimum, a questionnaire can be used to request the total value and number of parcels in predetermined value categories or quantiles (each range contains the same amount of value).

In situations in which value stratification information is not available, or where property ratios are not significantly value-influenced, substrata can be created based on prop-erty subtype, geographic area, or other appropriate criteria. Stratification by these criteria corrects for differences in level of appraisal between substrata. In large jurisdictions, substratification by geographic areas generally is more appropriate for residential properties while sub-stratification by either geographic area or property subtypes (e.g., office, retail, and warehouse/industrial) can be appropriate for income-producing properties.

When relying on the median and when sample sizes permit, it is appropriate to stratify within property class by whichever property characteristic is most likely to capture differences in appraisal levels. This characteristic can be geographic area, property subtype, or value range. Substratification by value range helps capture value-related differences in assessment levels, which (unlike the weighted mean) are not reflected in the median.

3.6 Statistical Analysis

When ratio studies are conducted for equalization purposes, confidence intervals and statistical tests can be used to determine whether it should be concluded at a given confidence level that appraisal performance or level requirements in a stratum (or jurisdiction) being tested meets or falls outside of mandated standards. Statistical tests can be used for comparisons among strata, provided the sample sizes are large enough that meaningful differences are not missed (see section 6, "Ratio Study Statistics and Analyses").

3.7 Evaluation and Use of Results

Lack of independence between locally determined values and sale prices (sales chasing) or independent appraisals can subvert attempts to improve equity (direct equalization) and result in incorrect distribution of funds between states or provinces and local jurisdictions (indirect equalization). To guard against these possibilities, oversight agencies should ensure that sold and unsold properties are appraised similarly. Also, appraisals used as substitutes for sales must reflect market value, and the oversight agency must take remedial measures in instances in which they do not (see section 9, "Estimating Performance of Unsold Properties", and Appendix D, "Sales Chasing Detection Techniques").

4. Timing and Sample Selection

Ratio studies made by oversight and equalization agencies should be conducted at least annually. Where possible, ratio studies conducted by equalization agencies should use final values established at the local level, inclusive of changes made by local appeal boards up to that time. However, if local appraisers or boards "chase sales" or set

values in a manner that is dissimilar to the way other property values have been set, the sample may not be sufficiently representative and should not be used without careful investigation and necessary adjustment.

4.1 Date of Analysis

The date of analysis is a past year when appraisals from past years are being evaluated to avoid the effects of sales chasing. When prior-year assessments are used to gauge current performance (to avoid sales chasing), the results should be adjusted for any reappraisal activity or assessment changes that occurred in the population (net of new construction) between the prior and current years. Sale prices also should be adjusted to the assessment date to account for time trending.

If the purpose of the study is equalization, using sales after the appraisal date (adjusted for time as necessary) helps en-sure the independence of appraisals and sales prices. A sales period spanning the appraisal date can be used if measures are taken to ensure the independence of appraisals made after the earlier sales. This approach has the advantage of reducing the importance of time adjustments.

4.2 Representativeness of Samples

The design and conduct of ratio studies requires decisions that maximize representativeness within the constraints of available resources.

In many kinds of statistical studies, samples are selected randomly from the population and from within each stratum to maximize representativeness. Ratio study samples based on independent appraisals can be randomly selected. Because sales are convenience samples and do not repre-
sent true random samples, care must be taken to maximize the representativeness of sales samples.

A ratio study sample is considered sufficiently representa-tive for direct equalization and mass appraisal performance evaluation when the distribution of ratios of properties in the sample reflects the distribution of ratios of properties in the population. A ratio study is considered sufficiently representative for indirect equalization when the distribution of ratios of dollars of property value in the samples reflects the distribution of ratios of dollars of property value in the population.

Sales from areas or substrata in which the number of sales is disproportionately large can distort ratio study results by weighting level and uniformity indicators toward whatever conditions exist in the overrepresented area. To alleviate this problem and create better representativeness, large samples can be further stratified by

- randomly selecting sales to be removed
- isolating the overrepresented groups into substrata
- redefining the time period for the overrepresented groups
- weighting the data

4.2.1 Maximizing Representativeness with Independent Appraisals

For independent appraisal-based ratio studies, the application of random sampling techniques can help ensure that appraisal procedures used for the sampled properties are similar to the corresponding population. A well-designed random sampling plan also can help ensure that properties selected for independent appraisals are not concentrated in areas of high sales activity or associated with property types with higher turnover rates in the market.

The USPAP competency rule requires appraisers to have both knowledge and experience required to perform specific appraisals. Independent single-property appraisals must be developed in compliance with Standard 1, must be reported in compliance with Standard 2, and must be reviewed in compliance with Standard 3 of USPAP. Most importantly, care must be taken to ensure that independent appraisals reflect market value as of the appraisal date. In-dependent mass appraisals must be developed and reported in compliance with Standard 6 of *USPAP.*

4.2.2 Very High-Value Properties

Assessment jurisdictions often contain unique, very-high-value properties (for example, properties that constitute more than 10 percent of the value of a property class) that cannot reasonably be combined with other properties for purposes of the ratio study. For indirect equalization, high-value parcels are especially important to maximize representativeness. For instance, consider a population consisting of 1,000 properties, 999 of which range in value from $20,000 to $750,000, and one that is valued at $1 billion (e.g., a power plant). If the intended use of the ratio study is to estimate the general level and uniformity of appraisal in regard to the typical property, the stratified population of parcels need not include the $1 billion property. If the intended use of the ratio study is to estimate the total market value in the jurisdiction, however, exclusion of the power plant can distort the study.

Very high-value properties should not be ignored or assumed to be appraised at the legal or general level for indirect equalization studies. An equalization agency should place very high-value property in a separate stratum to prevent distortion of the overall weighted mean or total estimated value. To value the property for ratio study purposes the equalization agency should use a recent properly adjusted sales price if available. If a recent sale is not available the agency should conduct an appraisal of such properties (this is the preferred option) or audit and adjust as necessary the values developed by the local jurisdiction.

5. Acquisition and Analysis of Sales Data

The highest level of independence and objectivity in an equalization or performance monitoring ratio study requires independent sales validation. If resources are not available to achieve this level of sophistication, then a comprehensive audit program should be developed to review the validation and screening work of the local jurisdiction (see Appendix A, "Sales validation Guidelines").

5.1 Sale Adjustments for Statutorily Imposed Value Constraints

Most states and provinces require appraisal of certain classes of property using statutorily prescribed methods of appraisal that are intended to produce a constrained value that is less than market value. The most common class of property to which such constraints apply is farmland and rangeland that qualifies for agricultural-use valuation. However, constraints may also apply to subsidized housing, mineral land, and other classes. When the purpose of the ratio study is direct or indirect equalization, sales prices must be adjusted as if the selling parcel were subject to the same constraints. If this cannot be done, independent appraisals, which employ the required constraints, should be used to determine the level of appraisal in a manner consistent with the statutory constraints. For example, assume that statutory restrictions require a fixed or artificially high capitalization rate to be used in determining farmland value. If unadjusted farmland sales were to be used, the resulting ratios would be low and could lead to improper equalization decisions. Instead, independent appraisals using the required capitalization rate should be done. These appraisals would lead to ratios that would correctly allow for the statutory constraint.

Use of constrained values produces ratio study results that do not provide information on the true level of appraisal in relation to market value. Use of constrained values is appropriate for equalization. However, when the purpose of the ratio study is to determine the overall quality of assessments or the amount of benefit being awarded by a given statutory constraint on appraised value, the unadjusted sale price or independent market value appraisal must be used. Often, procedural audits can be used as adjuncts to more traditional ratio studies. These audits can be particularly effective when the purpose is to judge overall appraisal quality and when precise, quantitative statistical measures are not obtainable.

5.2 Outlier Ratios

Oversight agencies should consider the extent of sales verification when developing guidelines for trimming limits. In practice, this means that if an oversight agency derives sales data from assessing jurisdictions that may have already removed outliers from the sample, additional trimming may not be necessary (see Appendix B, "Outlier Trimming Guidelines").

5.2.1 Value Outliers

When the weighted mean is used for indirect equalization, a method that identifies high-value *influential* sales is recommended. Since an influential sale may not have an unusually low or high ratio relative to the rest of the sample, the definition of distortion is based on the principle that the point estimate calculated from the sample should not be statistically significantly different whether the suspect observation is in the sample or not.

To test for an influential sale, one approach is to remove it from the sample and compute the weighted mean and associated confidence interval. If the weighted mean of the sample lies outside the confidence interval calculated without the influential sale, then the sale is truly influential and is a candidate for further scrutiny, isolation in a separate stratum, or possible trimming.

This procedure is intended to test the presence of individual influential sales and is not intended to be used successively after deletion of a sale, but can be applied to more than one apparent outlier at a time by leaving all other sales in the comparison group. Note, however, that the presence of multiple influential sales can indicate the start of a trend. Presence of influential sales is often associated with high price-related differential (PRD) values, which could be the result of systematic regressivity or progressivity.

5.2.2 Outlier Trimming

Statistics calculated from trimmed distributions, obviously, cannot be compared to those from untrimmed distributions or interpreted in the same way. This is especially problematic when making interjurisdictional comparisons. For this reason, oversight agencies may wish to promulgate uniform trimming procedures, based on sound statistical principles. Regardless of the chosen procedure, trimming of outliers must not occur more than once for any sample.

6. Ratio Study Statistics and Analyses

Ratio study measures covered in Part 1 are equally applicable to equalization ratio studies based upon sales or independent appraisals. See section 5.3, "Measures of Appraisal Level," and section 5.4, "Measures of Variability," in Part 1.

6.1 Measures of Appraisal Level

The median is the generally preferred measure of central tendency for direct equalization, monitoring of appraisal performance, or evaluation of the need for a reappraisal. The mean should not be used for indirect equalization if there are measurable differences in appraisal level of high- and low-value properties (see table 2-2). In data commonly containing outliers, the trimmed mean can be substituted for the mean (Gloudemans 1999, chapter 3). See Appendix B for outlier-trimming procedures. Because of its dollar-weighting feature, the weighted mean is most appropriately used in indirect equalization, when estimating the total dollar value of the jurisdiction. When relying on the measure, however, outliers should be care-fully reviewed (and deleted if appropriate), since they can strongly affect the weighted mean, particularly when they occur for high-value properties and in small samples.

6.2 Overall Ratio for Combined Strata

For purposes of oversight monitoring of overall appraisal performance and direct equalization, the generally preferred approach is to weight the median ratio of each stratum on the basis of the relative number of properties in

the stratum. For indirect equalization, the weight assigned to a measure of central tendency of a stratum should be proportional to the share of that stratum's total estimated market value. Because the number of parcels bears only a loose relationship to dollar value, weighting by number of parcels is not appropriate for indirect equalization.

For indirect equalization, the preferred method of calculating the overall market value of a jurisdiction is as follows:

1. **Divide the total appraised (or assessed) value of each stratum by the stratum sample's measure of central tendency (see section 6.3, "Contrasting Measures of Appraisal Level," in this part) to obtain an estimate of the total market value of taxable property in the stratum.**
2. **Sum the estimates of total stratum market value to obtain an estimate of the total market value**

Table 2-1. Illustration of Combining Measures of Central Tendency (Example shown is for indirect equalization)

Data for properties in the study					
Stratum (1)	Total sample assessed value	Total sample sale price	Weighted mean	Total assessed value of stratum (5)	Indicated market value of stratum (6)
Residential	$3,000,000	$4,000,000	0.750	$600,000,000	$800,000,000
All other	950,000	1,000,000	0.950	400,000,000	421,000,000
Total				**$1,000,000,000**	**$1,221,000,000**

Overall ratio = $1,000,000,000/$1,221,000,000 = 0.819 **Table 2-2.** Preferred Estimators

	Indirect Equalizatio	Direct Equalizatio	Monitoring Performanc
Median	—	X	X
Mean	—	—	—
Weighted	X*	—	—

* Caution should be exercised when the sample contains vakue outliers or indicates value bias based on the PRD

of taxable property in the jurisdiction or class of property.

3. **To obtain an overall weighted level of assessment (or ratio), divide the total appraised (or assessed) value of the jurisdiction or class of property by the estimated total market value (table 2-1 contains a simplified example).**

6.3 Contrasting Measures of Appraisal Level

Table 2-2 summarizes the preferred measures of central tendency for the three broad purposes of indirect equalization, direct equalization, and the general monitoring of appraisal performance.

For indirect equalization, the preferred measure is the weighted mean (the measure used in table 2-1), because it gives equal weight to each dollar. This helps achieve an accurate estimate of total dollar value, the goal of indirect equalization. However, there are implicit difficulties in obtaining sales samples that are representative of all significant groups of properties with different ratios. The weighted mean can be disproportionately influenced by high-value properties, particularly in a small sales sample. A disproportionate influence of high-value properties can be reduced through value stratification within the property class. Such value stratification helps capture value-related ratio differences, as well as improve representativeness, regardless of which measure of central tendency is used. If there are provable value-related ratio differences within strata, the weighted mean must be used since the median is incapable of capturing value-related differences. In cases in which value stratification is not practicable, equalization agencies may stratify by some proxy for value, such as neighborhood or property sub-class. If results appear distorted by non-representative high-value sales, outlier identification methods described in Appendix B should be employed. While not conceptually preferred, the median can be used to prevent the disproportionate influence of high-value properties with outlier ratios. To be clear, although the median is not the conceptually appropriate measure, it nonetheless has the desirable property of smaller sampling variance and, in cases in which assessment regressiv-ity/progressivity has not been found to be a significant concern, can provide an acceptable substitute for the weighted mean.

If samples are known to be reasonably representative through outlier trimming, the use of stratification or selection of random appraisals, the weighted mean would be the (only) correct measure. In cases which sample representativeness is a concern due to small samples or outliers, the median can reasonably be used as long as the equalization agency has checked to ensure that there are no significant price-related biases within the strata used in the study.

6.4 Measures of Variability

Measures of dispersion or variability relate to the uniformity of the ratios and should be calculated for each stratum in the study. In general, the smaller the measure, the better the uniformity, but extremely low measures can signal one of the following:

acceptable causes

- **extremely homogeneous properties**
- **very stable markets**
- **unacceptable causes**
- **lack of quality control**
- **calculation errors**
- **poor sample representativeness**
- **sales chasing**

Note that as market activity changes or as the complexity of properties increases, the measures of variability usually increase, even though appraisal procedures may be equally valid.

6.5 Measures of Reliability

It is good practice to calculate measures of reliability whenever the results of a ratio study are used for equalization. Measures of reliability will indicate whether there is a desired degree of confidence that a given level of appraisal has not been achieved. The most commonly used measure of ratio study sample reliability is the confidence interval. This interval brackets the unknown population parameter for any sample statistic with a specified (chosen) degree of confidence. When the interval includes a desired assessment level or a performance standard range around the desired level (see section 11 and Table 2-4), equalization adjustments are not warranted. Similarly, when the interval includes a maximum allowable COD (see Table 2-3), reappraisal or other action to correct poor uniformity is not warranted.

6.6 Vertical Inequities

The measures of variability discussed in section 6.4 relate to "horizontal," or random, dispersion among the ratios in a stratum, regardless of the value of individual parcels. An-other form of inequity can be systematic differences in the appraisal of low- and high-value properties, termed "vertical" inequities. When low-value properties are appraised at greater percentages of market value than high-value properties, assessment *regressivity* is indicated. When low-value properties are appraised at smaller percentages of market value than high-value properties, assessment *progressivity* is the result. Appraisals made for tax purposes should be neither regressive nor progressive.

An index statistic for measuring vertical equity is the PRD, which is calculated by dividing the mean ratio by the weighted mean ratio. This statistic should be close to 1.00. Measures considerably above 1.00 tend to indicate assessment regressivity; measures below 1.00 suggest assessment progressivity. When samples are small or the weighted mean is heavily influenced by several extreme sales prices, however, the PRD may not be a sufficiently reliable measure of vertical inequities. A scatter plot of ratios versus appraised values or sale prices is a useful diagnostic tool. A downward (or upward) trend to the data indicates systematic regressivity (or progressivity). If not sufficiently representative, extreme sales prices can be excluded in calculation of the PRD. Similarly, when samples are very large, the PRD may be too insensitive to show small pockets in which there is significant vertical inequity. Standards for evaluating the PRD are given in section 9.2.7 in this part. In addition, more powerful statistical tests for vertical inequities are available and should be employed to determine the significance of the indication provided by the PRD (see section 5.7 in this part and Twark, Everly and Downing [1989]).

When these tests show vertical inequities, such inequities should be addressed through reappraisal or other corrective actions. In some cases, additional stratification can help isolate the problem. Measures of level computed for value strata should not be compared as a way of determining vertical inequity because of a boundary effect that is most pronounced in the highest and lowest strata (Schultz 1996).

6.7 Tests of Hypotheses

An appropriate test should be used whenever the purpose of a ratio study is implicitly or explicitly to test a hypothesis. A hypothesis is essentially a tentative answer to a question, such as, Are residential and commercial properties appraised at equal percentages of market value? A test is a statistical means of deciding whether the answer "yes" to

such a question can be rejected at a given level of confidence. In this case, if the test leads to the conclusion that residential and commercial properties are not appraised at equal percentages of market value, some sort of corrective action on the part of assessing officials is clearly indicated. Appropriate tests are listed in table 1-2 and discussed in Gloudemans (1999), *Property Appraisal and Assessment Administration* (IAAO 1990), and *Improv-ing Real Property Assessment* (IAAO 1978, 137–54)

6.8 The Normal Distribution

Many conventional statistical methods assume the sample data conform to the shape of a bell curve, known as the normal (or Gaussian) distribution. Performance measures based on the mean or standard deviation can be misleading if the study sample does not meet the assumption of normality. As a first step in the analysis, the distribution of sample ratios should be examined to reveal the shape of the data and uncover any unusual features. Although ratio study samples typically do not conform to the normal distribution, graphical techniques and numerical tests can be used to explore the data thoroughly. Traditional choices are the binomial, chi-square, and Lilliefors tests. Newer and more powerful procedures are the Shapiro-Wilk W, the D'Agostino-Pearson K^2, and the Anderson-Darling A_2 tests (D'Agostino and Stephens 1986).

7. Sample Size

7.1 Importance of Sample Size

If it is desirable to create narrow, uniform margins of error in jurisdictions without sufficient sales, independent appraisals may be added.

7.2 Adequacy of a Given Sample Size

The adequacy of a given sample size can be evaluated by computing measures of reliability. If the confidence interval is sufficiently narrow, the sample is large enough. If the confidence interval is too wide, the oversight authority must either accept less precision or enlarge the sample, if possible.

7.3 Required Sample Size

Because designing for sampling objectives and planning for resource allocation in ratio studies must occur well before final ratio data sets are available and ratio study statistics are calculated, decisions on critical input variables must be made well before their true values are known. For example, the sample size formulas (Cochran 1977; Sherrill and Whorton 1991; and Gloudemans 1999) used to plan for specific margins of error and/or specific levels of confidence theoretically require, as input variables, the actual variation within the final ratio data sets (usually measured by the coefficient of variation). However, the actual variation in final ratio data sets is not known during the design and planning stage and, thus, the desired sample size must be projected based upon the best information available at the time of design and planning. This projection results in unavoidable forecast error and can result in the production of a higher or lower sample size than needed to reach sampling objectives. This issue is an ac-cepted part of conducting ratio studies when it is necessary and important to attain a predetermined or uniform degree of precision. In other cases, it may be acceptable to use all available qualified sales. When predetermination of sample size is important, the variation in the ratio data set from the most recent time period available can provide a reasonable estimate for the time period under analysis.

7.4 Remedies for Inadequate Samples

In addition to recommendations discussed in section 6.4, "Remedies for Inadequate Samples," in Part 1, supple-mental independent appraisals can be combined with sales (also see section 8.7, "Combining of Sales and Appraisals," in this part).

7.5 History of Sales Reporting

Oversight agencies that develop ratio studies from sales provided by local assessment jurisdictions should track the number of transfers obtained in different study periods. Quality control techniques can be used to measure market activity or to determine whether an assessor is fully reporting sales information.

8. Appraisal Ratio Studies

Appraisal ratio studies are conducted by using appraised values for a random sample of parcels. Such sampling plans can be designed to be more representative of the population in terms of property characteristics than a sales sample of the same size but require adequately trained appraisers and are comparatively expensive. Few ratio studies are based solely on independently conducted appraisals, which then are compared to values determined by assessing officials. Many equalization or oversight agencies, however, do ratio studies in which both sales and appraisals are combined. Furthermore, it may be possible to develop sales driven models for use in appraising a particular population of properties (excluding those not adequately represented in the underlying model) or randomly selected parcels for ratio study purposes (see

Standard on Automated Valuation Models, [IAAO 2003]). Estimates of value developed for use in appraisal ratio studies are considered appraisal services and must comply with *USPAP* Standards 1 and 2 or Standard 6.

8.1 Rationale

Independent appraisals can be used as indicators of market value. Independent appraisals are appraisals performed by appraisers who are not employees of the appraisal agency that is the subject of the study. Such appraisal ratio studies are particularly useful for property classes with limited sale data, such as commercial and industrial real property and personal property (see *Property Appraisal and Assessment Administration* IAAO 1990, appendix 1-1] and Gloudemans [1999, chapter 6]). In addition, appraisal ratio studies can be used for agricultural or other properties not appraised on an ad valorem basis. In this case, the appraisals should reflect the use value or other statutory basis on which the properties are appraised.

8.2 Advantages and Disadvantages

Appraisal ratio studies have both advantages and disadvantages. The advantages of appraisal ratio studies are

- the ability to sample from areas or property types with insufficient sales information
- a high degree of control in sample size that enables the analyst to treat jurisdictions equally, regardless of the availability of market information
- the avoidance of nonrepresentativeness stemming from the use of sales samples that may not represent the property population.
- the size of the sample can be specified and
- the initial sample can be randomly drawn, thus helping to maximize representativeness.

If objectivity can be maintained, the appraisal ratio study avoids potential distortions due to systematic differences between appraisals of sampled and unsampled properties. In addition, independent appraisals can be used to test for systematic differences between appraisals of sold and unsold properties.

A disadvantage of appraisal ratio studies is the extra time and cost involved with the independent appraisal process. The subject and any comparables should be physically inspected and the appraisals documented according to appropriate standards. Applicable USPAP guidelines should be followed. Independent single-property appraisals should be developed in compliance with *Standard 1*, should be reported in compliance with *Standard 2*, and should be reviewed in compliance with *Standard 3* of USPAP. Inde-pendent appraisals done with a mass appraisal model should be developed and reported in compliance with *Standard 6* of USPAP. Another disadvantage is that appraisals are an opinion of value. Accordingly, they should be documented and tested against the market. However, this becomes difficult when sales data are scarce. To reduce this disadvantage, appraisal ratio study analysts should ensure that appraisals are carefully reviewed and allow local appraisers to submit appraisal information that may affect the value conclusion (see *Standard on Administration of Monitoring and Compli-ance Responsibilities* [IAAO 2003]). Where adequate sales are available, independent appraisals should be checked for consistency with sales.

8.3 Sample Selection and Resource Requirements

Sample selection and resource planning in appraisal ratio studies require knowledge of statistical sampling, estimation principles, and available resources. Judgment must be used, because the determination of an adequate sample can require more information than is available during the design and planning phase, such as the actual variation within the final ratio data sets (see section 6.2, "Adequacy of a Given Sample Size," in Part 1). Moreover, the cost of the study increases with the size of the sample. Therefore, the value of more reliable information must be balanced against the costs of obtaining that information.

In determining the size of the sample for each stratum, the following should be taken into consideration:

1. the required precision (typically measured by the margin of error) of the estimate of the appraisal level, for example, ±0.05
2. the required confidence level, for example, 95 percent

3. **the amount of dispersion expected in the final ratio data set**
4. **the wastage associated with properties that cannot be efficiently appraised or appraisals that cannot be used for one reason or another (see Gloudemans [1999, chapter 6] for sample size formulas and required input variables; also see Sherrill and Whorton [1991]).**

Once the desired size of an appraisal sample has been determined, the individual properties that will constitute the sample should be selected using a statistically valid sampling plan. Stratified random sampling is preferred.

If value stratification is used, sample properties selected from value groups during resource planning can shift into other value groups before completion of the study, thus reducing the ultimate representativeness of the sample. Some appraisal parcels may need to be removed from the sample when anomalous conditions are discovered such as environmental contamination (sufficiently reliable valua-tions may be prohibitively difficult or resource intensive) or when the independent appraiser is not allowed access to the property. Any sample parcels that are voided or that shift from a stratum because of value changes should be replaced if possible.

Appraisal ratio studies, as with sales ratio studies, require informed, reasoned judgment to maximize sample representativeness and statistical reliability.

8.4 Data Requirements and Appraisal Techniques

The appraisal techniques selected for an appraisal ratio study should be consistent with accepted appraisal principles and practices. The appraisals should reflect the appraisal date in question and should be well documented. Statistical software should be used as much as possible to expand analytical capabilities and perform calculations.

The appraisals used in appraisal ratio studies can be based on CAMA and automated valuation model (AVM) techniques (see Standard on Automated Valuation Models, [IAAO 2003]). The models used must be developed independently from those used for assessment purposes. Adequate market data and property characteristic data are required to develop reliable and defensible model estimates. If available, sales from a later period can be used to expand sample size. However, as in sales-based ratio studies, sales derived from primary assessing jurisdictions should be reviewed to ensure accuracy and validity. CAMA and AVM models have the advantage of reducing costs, permitting the use of larger, more representative samples. CAMA and AVM models developed for equalization must focus on the adequacy of overall, not individual, value or level of assessment estimates.

Because the purpose of the appraisal is to make an *independent* value estimate, not audit the assessor's work, the appraisals should be made without knowledge of the asses-sor's value. Appraisers should *not* be supplied with copies of the assessor's appraisal work sheets or model information. Supervisors should spot-check and review the work of staff appraisers to ensure that the required independence is maintained. When the purpose of the ratio study is equalization or performance measurement, rather than internal quality assurance, the appraisals should not be revealed to the assessor until the assessor's values are final.

8.5 Appraisal Chasing

Appraisal chasing can take two forms, either of which reduces or destroys the validity of the ratio study. The first occurs when an independent appraiser knows the local ap-praised value and either consciously or unconsciously biases the independent appraised value towards the local appraised value. Independent appraisers should not have access to the local appraiser's values or appraisal work papers prior to completing their appraisals. Also, independent appraisals should be reviewed and tested against the market.

The second form of appraisal chasing occurs when the local appraisal jurisdiction knows which properties are in the ratio study appraisal sample and adjusts local appraised values on some or all of these properties to achieve better ratios without making similar adjustments to unsampled properties. This form of appraisal chasing is similar to sales chasing and has similar consequences (see Appendix D, "Sales Chasing Detection Techniques"). Ratio study analysts should guard against this form of appraisal chasing by withholding the release of sample information until the local appraisal office's values are final. If this form of appraisal chasing occurs, the oversight agency can use local values prior to adjustment to provide a more accurate representation of the population ratios.

8.6 Reviewing of Appraisals

Appraisal supervisors should review appraisal models or individual single-property appraisals to ensure that USPAP and the agency's standards are met. It also is good practice to include some recently sold properties in the sample being appraised as a check on the validity of the methods being applied. In addition, the assessor must be afforded an opportunity to review the appraisals along with supporting documentation and to submit information supporting different value conclusions. If different value conclusions or factual information would materially affect the outcome of the study, a procedure for resolving conflicts, for example, by an independent review body, should be established.

8.7 Combining of Sales and Appraisals

Appraisals can be combined with valid sales in a ratio study. Using available sales adds objectivity to the study and reduces the required number of appraisals. On the other hand, combining sales and appraisals mixes two market indicators. If sales and appraisals are combined, an analysis should be performed to test the consistency of measures of central tendency derived from the sales ratios compared to the same measures derived from the appraisal ratios. A Mann-Whitney test comparing values per unit or compar-ing ratios based on sales with those based on appraisals is appropriate for this purpose. Significant differences can result from several of the following conditions:

1. **Sales have been chased.**
2. **Sales and appraisals came from different geographic areas with different markets and different levels of appraisal (maximize representativeness by stratifying).**
3. **Sales and appraisals have different property characteristics that cause different levels of appraisal.**
4. **All or some of the sales are invalid.**
5. **Outlier ratios are causing sale/appraisal ratio differences.**

6. **All or some of the appraisals are inaccurate.**

If none of the first five conditions listed above apply, the appraisals should be tested against the market and revised as necessary (see Wooten, 2003).

Variability measures computed on sales used in the sample should not be expected to be similar to variability measures computed on appraisals. Sales ratios reflect the vagaries of the marketplace. Appraisal ratios, on the other hand, come from comparing the results of one appraisal model (the oversight agency's) to the results of another (the assessing office's). If both parties use mass appraisal procedures, differences in appraisals between the two models should be less than when compared with sales; thus, variability measures based on appraisal ratios can be expected to be lower than those based on sales ratios as long as they represent properties with similar characteristics and similar degrees of appraisal difficulty.

8.8 Average Unit Value Comparisons

In addition to a traditional ratio study, "expert" appraisals can take the form of average unit values and be compared against the assessor's average unit value for the same parcels. In this technique, parcels are stratified into homogeneous groups, as they would be for appraisal purposes. Appropriate units of comparison are identified for each group, and average unit values are determined through an analysis of available sales, cost, and income data. The assessor's average unit values for the same strata are then calculated and the two averages are compared. Average unit value comparisons is well-rooted in mass appraisal theory and offers an alternative to the time and expense associated with the selection and appraisal of individual parcels.

9. Estimating Performance for Unsold Properties

The objective of a ratio study is to determine appraisal performance for the population of properties. As long as sold and unsold parcels are appraised in the same manner and the data describing them are coded consistently, statistics calculated in a sales ratio study can be used to infer appraisal performance for unsold parcels. However, if parcels that sell are selectively reappraised or recoded, based on their sale prices or some other criterion (such as listing price) and if such parcels are in the ratio study, sales ratio study uniformity inferences will not be accurate (appraisals will appear more uniform than they are). In this situation, measures of appraisal level will also be unsupportable unless similar unsold parcels were appraised by a model that produces the same overall percentage of market value (appraisal level) as the parcels that sold.

Oversight agencies must ensure that sold and unsold parcels are appraised at the same level. Several techniques are available for determining whether assessors are selectively appraising sold parcels (see Appendix D, "Sales Chasing De-

tection Techniques," or *Property Appraisal and Assessment Administration* [IAAO 1990, appendix 20-2] and Gloudemans [1999, chapter 6] for a more detailed discussion).

If unsold properties within a properly specified group are not appraised consistently with sold properties within the same group and according to applicable guidelines, unadjusted sales ratio results cannot be used. The oversight agency will have to adjust calculated results or conduct an alternative study.

Once it is determined that *sales chasing* probably has occurred and probably is reducing the validity of ratio study statistical measures of level or uniformity, it is necessary to redo the ratio study to establish valid measures before any other recommendations, such as reappraisal or equalization action, can be made. If feasible, probably the best approach is to select a sample period that effectively precludes sales chasing. For example, when the lien or appraisal date is January 1, many jurisdictions use sales occurring before that date to make valuation decisions. To test the resulting valuations, it would be appropriate to use sales occurring after January 1 (or after the last date for changing assessments for the year in question), provided such data are time-adjusted (when necessary) backward to match the appraisal date. As a slight variation on this principle, earlier sales could be used, except when sales chasing is detected, in which case it is appropriate to switch to a later, post-appraisal-date sales period.

Legal or practical constraints can prevent use of optimal sample periods in many cases. In these situations, it is important to determine the exact cause of the sales

chasing. For example, if a large proportion of selling properties are appealed and if appeal boards typically adjust to sale price, the result is the same as sales chasing by the assessor. One solution is to use appraised values prior to the action of the appeal board, provided that the appeal adjustment is not merely the result of an atypical clerical or other error. Another approach is to use current sales prices and prior-year values, adjusted for reappraisal activity or assessment value changes in the population. The percentage increase or decrease in the prior-year's appraised values for the population (net of new construction) should be used to adjust the prior-year's values for the sample (Gloudemans 1999).

10. Presentation of Findings, Documentation, and Training

Oversight agencies should produce ratio studies in a manner that is transparent in all stages to all stakeholders.

(See section 8, Part 1.)

11. Ratio Study Standards

Each state and province should have ratio study performance standards. These standards, summarized in table 2-3, are suggested for jurisdictions in which current market value is the legal basis for assessment. In general, when state and provincial standards are not met, reappraisal or other corrective measures should be taken or equalization procedures can be imposed. When an oversight agency orders such actions, the burden of proof should be on the agency to show that the standards have not been achieved.

Table 2-3. Ratio study uniformity standards indicating acceptable general quality*

General Property Class	Jurisdiction Size /Profile /Market Activity	COD Range
Residential improved (single family dwellings, condominiums, manuf.	Very large jurisdictions / densely populated / newer properties /	5.0 to 10.0
	Large to mid-sized jurisdictions / older & newer properties / less	5.0 to 15.0
	Rural or small jurisdictions / older properties / depressed	5.0 to 20.0
Income-producing properties (commercial, industrial, apartments,)	Very large jurisdictions / densely populated / newer properties /	5.0 to 15.0
	Large to mid-sized jurisdictions / older & newer properties / less	5.0 to 20.0
	Rural or small jurisdictions / older properties / depressed	5.0 to 25.0
Residential vacant land	Very large jurisdictions / rapid development / active markets	5.0 to 15.0
	Large to mid-sized jurisdictions / slower development / less	5.0 to 20.0
	Rural or small jurisdictions/ little development / depressed	5.0 to 25.0
Other (non-agricultural) vacant land	Very large jurisdictions / rapid development / active markets	5.0 to 20.0
	Large to mid-sized jurisdictions / slower development / less	5.0 to 25.0
	Rural or small jurisdictions/ little development / depressed	5.0 to 30.0

These types of property are provided for general guidance only and may not represent jurisdictional requirements. *The COD performance recommendations are based upon representative and adequate sample sizes, with outliers trimmed and a 95% level of confidence.

Appraisal level recommendation for each type of property shown should be between 0.90 and 1.10.

PRD's for each type of property should be between 0.98 and 1.03 to demonstrate vertical equity.

PRD standards are not absolute and may be less meaningful when samples are small or when wide variation in prices exist. In such cases, statistical tests of vertical equity hypotheses should be substituted.

CODs lower than 5.0 may indicate sales chasing or non-representative samples.

All standards recommended in this section are predicated on the assumption that all practicable steps necessary to maximize representativeness and validity in the underlying ratio studies have been conducted.

11.1 Level of Appraisal

The calculated measures of central tendency are point estimates and provide only an indication, not proof, of whether the level meets the appropriate goal. Confidence intervals and statistical tests should be used to determine whether the appraisal level differs from the established goal in a particular instance.

A decision by an oversight agency to take some action (direct equalization, indirect equalization, reappraisal) can have profound consequences for taxpayers, taxing jurisdictions, and other affected parties. This decision should not be made without a high degree of certainty that the action is warranted. Conversely, a decision not to take action when action is needed can have equally profound consequences. Oversight agencies should weigh all the options and consider the issues discussed below when developing or revising a level-of-appraisal standard, and when developing equalization or other appraisal oversight procedures.

11.1.1 Purpose of Level-of-Appraisal Standard

Jurisdictions that follow the IAAO recommendation of annual reassessments and comply with USPAP standards should be able to develop mass appraisal models that maintain an overall ratio level of 100 percent (or very near thereto). The local assessor may be required to observe reappraisal cycles defined by a legal authority or public policy that can extend beyond one year. During extended cycles inflation or deflation can influence the overall ratio.

The purpose of a performance standard that allows reasonable variation from 100 percent of market value is to recognize uncontrollable sampling error and the limiting conditions that may constrain the degree of accuracy that is possible and cost-effective within an assessment jurisdiction. Further, the effect of performance standards on local assessors must be considered in light of expectations of public policy and resources available. For these reasons, states or oversight agencies may adopt performance standards for appraisal level that allow some variance from the 100 percent goal of market value.

11.1.2 Recommended Appraisal Level Standards for Direct and Indirect Equalization

The performance standard adopted by an oversight agency should be a range around the legally required level of appraisal in a property class or an overall jurisdiction. This range should be 90 to 110 percent of the legally required level of appraisal for direct equalization or reappraisal, or 95 to 105 percent for indirect equalization. A smaller maximum range for indirect equalization is justified because taxpayers are not as comprehensively affected. Oversight agencies should adopt performance standards that are as close to the legally required level as can be justified given the local situation and taking into account the factors discussed herein.

In addition to the above appraisal level standards, each class of property for which appraisal level standards have been defined must be within 5 percent of the overall level of appraisal of the jurisdiction (see section 11.2.3, "Uniformity among Strata," in this part). Both criteria must be met.

11.1.3 Confidence Intervals in Conjunction with Performance Standards

By themselves, the calculated measures of central tendency provide only an indication, not proof, of whether the appraisal level meets the performance standard. So, the purpose of confidence intervals and similar statistical tests is to determine whether the appraisal level differs from the established performance standard in a particular instance. A conclusion of noncompliance requires a high degree of confidence, thus a 90 percent (two-tailed) or 95 percent (one-tailed) confidence interval should be used, except for small or highly variable samples as described in section 11.1.5, "Adjustment for High Variability and Small Samples," in this part.

11.1.4 Decision Model

The oversight agency should determine whether the estimate is outside the acceptable range around the legal level of appraisal with a specified degree of statistical significance. The chosen interval should overlap the performance standard range of 90 percent to 110 percent in the case of direct equalization or measuring appraisal performance. For indirect equalization the chosen interval should overlap the performance standard range of 95 percent to 105 percent. If the confidence interval does not overlap any portion of the appropriate range, equalization is performed or reappraisal orders are issued. See table 2-4 for an example of the direct equalization or appraisal performance decision making process.

11.1.5 Adjustments for High Variability and Small Samples

High variability, small sample size, or a combination of these factors often causes confidence intervals to become quite wide. Wide confidence intervals reflect the imprecision of the underlying statistic and can decrease the

usefulness of performance measures. Also, wide confi-dence intervals can cause an inequitable situation in which jurisdictions with small samples and large variability are never subject to equalization or reappraisal orders, while jurisdictions with larger samples and much less variability are more likely to be subject to such orders even though their appraisal performance may be arguably better.

For these reasons, oversight agencies should consider expanding sample sizes by taking steps to increase the number of sales or by making independent appraisals (see section 7.4 part 2). If the sample size cannot be increased, two options may be considered when the point estimate fails to achieve compliance but the confidence interval overlaps the range of compliance:

- **If a particular point estimate does not meet the standard for the current study cycle the oversight agency may reduce the level of confidence by 5% the following year. This may be followed by an annual stepwise reduction of 5%. Such a reduction may continue to a 70 percent level of confidence if the point estimate fails to meet the compliance threshold over this period of time. Corrective action would be imposed when a given year's confidence interval fails to include the performance standard range.**
- **The oversight agency may examine statistical point estimates over several study cycles. A jurisdiction that fails to meet a particular point standard for 5 consecutive years has a probability of less than 5% that compliance has been achieved, even if the confidence interval overlaps the compliance threshold every year. In such cases the oversight agency would impose corrective decisions based upon the point estimate.**

11.1.6 Calculating Equalization Adjustments

If noncompliance with either direct or indirect equalization standards is indicated, the appropriate point estimate (sta-tistic) measuring appraisal level should be used to calculate adjustment factors, by dividing it into 100 percent.

11.2 Appraisal Uniformity

Assuming the existence of an adequate and sufficiently representative sample, if the uniformity of appraisal is unacceptable, reappraisal should be undertaken regardless of the level of appraisal. The oversight agency should recognize that the COD is a point estimate and cannot be accepted as proof of assessment uniformity problems without an appropriate degree of statistical confidence. Such proof can be provided by recognized statistical tests, including bootstrap confidence intervals. If the data are normally distributed, the COV and confidence intervals around this measure also can be determined. Then the COV can be mathematically converted into an equivalent COD.

11.2.1 Oversight Uniformity Standards

Oversight agencies should establish uniformity standards for local assessment jurisdictions. Any COD performance standards applied to strata within a particular jurisdiction should be related to the overall size, profile of property characteristics (type, age, condition, and obsolescence) and market activity. In general, tighter uniformity standards can be applied to larger jurisdictions with newer construction and active markets. And generally, less stringent uniformity standards should be applied to older, economically depressed or less densely developed areas with less efficient markets. Standards should also be relaxed in jurisdictions that experience economic instability due to sudden changes in supply or demand factors. In developing uniformity standards, oversight agencies should consider reasonable tolerance ranges in making compliance decisions.

11.2.2 Multi-level Uniformity Standards

The uniformity standards presented in table 2-3 are defined in terms of the COD (point estimate) measure and are intended to apply to ratio studies based on sales, not those based on independent appraisals in which lower CODs often are typically observed. If reliability measures are not employed, sample size will play a critical role in setting the maximum acceptable COD. In addition, in unusually homogeneous or restrictive markets or for properties subject to use-value or similar constrained value assessment, low CODs also can be anticipated. In all other cases, CODs less than 5 percent should be considered unusual and possibly indicative of nonrepresentative samples or the selective reappraisal of sold parcels. The COD standards in table 2-3 may not be applicable to property strata in unique, depressed, or rapidly changing markets. In such cases, assessment administrators may be able to develop target standards based on an analysis of past performance or results in similar markets elsewhere. Such an analysis can be based on ratio study results for the past five years or more.

11.2.3 Uniformity among Strata

Although the goal is to achieve an overall level of appraisal equal to 100 percent of the legal requirement, ensuring uniformity in appraisal levels among strata is also important.

Table 2-4. Ratio Study Standards and Decision Making—Direct Equalization or Appraisal Performance Using Median 90%–110% Standard
Example demonstrating application of standard at a 95% level of confidence

Case	Point	Confidence Interval (CI) Width	CI Overlaps Performance	Point Estimate in Performance	Equalization Action or
1	92%	86% to 101%	yes	yes	no
2	88%	81% to 95%	yes	no	no
3	84%	79% to 88%	no	no	yes

The level of appraisal of each stratum (class, neighborhood, age group, market areas, and the like) should be within 5 percent of the overall level of appraisal of the jurisdiction. For example, if the overall level of appraisal of the jurisdiction is 1.00, but the appraisal level for residential property is 0.93 and the appraisal level for commercial property is 1.06 the jurisdiction is not in compliance with this requirement. This test should be applied only to strata subject to compliance testing. The oversight agency can conclude that this standard has been met if 95 percent (two-tailed) confidence intervals about the chosen measures of central tendency for each of the stratum fall within 5 percent of the overall level of appraisal calculated for the jurisdiction. Using the above example, if the upper confidence limit for the level of residential property is 0.97 and the lower confidence limit for commercial property is 1.01, the two strata are within the acceptable range.

11.2.4 Vertical Equity

PRDs should be between 0.98 and 1.03. The reason this range is not centered on 1.00 relates to an inherent upward bias in the arithmetic mean (numerator in the PRD) that does not equally affect the weighted mean (denominator in the PRD). When samples are small, have high dispersion, or include properties with extreme values, the PRD may not provide an accurate indication of assessment regres-sivity or progressivity. Similar considerations apply to special-purpose real property and to personal property. It is good practice to perform an appropriate statistical test for price-related biases before concluding that they exist (see table 1-2 in Part 1).

11.3 Natural Disasters and Ratio Study Standards

Natural disasters such as earthquakes, floods, and hurricanes can have a substantial impact on the conduct of ratio studies and the interpretation and use of the results, and in general, they:

- **increase the difficulty of accurately identifying the physical and economic characteristics of property on the dates of sale/lease and the date of appraisal**
- **increase the difficulty of producing sufficiently reliable appraised values (numerators)**
- **decrease the availability of usable sales and other market data**
- **increase the difficulty of identifying and obtaining such usable data**
- **increase the difficulty of producing sufficiently reliable independent appraisals**
- **increase the difficulty of accurately matching the characteristics of numerators with those of denominators**

These potential problems can result from extraordinary changes in market conditions and in the physical and economic characteristics of property between the dates of sale/ lease and the date of appraisal. As a result of these potential problems, a number of unreliable sample properties may need to be voided and usable sample sizes can be reduced significantly. All of these factors should be considered when ratio study standards are applied to ratio study results from areas substantially affected by natural disasters, but such consideration must not result in unwarranted relaxation of applicable standards. When faced with such situations, oversight agencies must use informed, reasoned judgment and common sense to produce a sufficiently reliable ratio study, based upon the best information available.

12. Personal Property Studies

Most personal property ratio studies performed by oversight agencies are performed for equalization purposes. Because indirect equalization in particular requires overall estimation of value, it is imperative for these ratio studies to focus on large accounts.

Horizontal equity requires similar levels of appraisal between real and personal property. Sales data for per-sonal property are difficult to obtain and analyze because markets for personal property are generally less visible and more difficult to follow than real property markets. Therefore, performance reviews and appraisal ratio studies should be used in place of sales ratio studies to determine the quality of appraisal of personal property. The performance review does not quantify assessment conditions but can determine general assessment quality. The appraisal ratio study can be used to determine the level and uniformity of assessment for personal property.

12.1. The Performance Review

The performance review is an empirical study that evaluates the assessment method used and the ability of the jurisdiction to meet its legal requirement in the assessment of personal property. This type of study can be used to allocate tax dollars in multijurisdictional funding calculations or equalization by assuming that jurisdictions passing the performance review are assessing personal property at the general level of other classes of property analyzed with ratio studies.

12.1.1. Discovery

The jurisdiction must have the ability to discover the owners or users of taxable personal property within the jurisdiction. This is accomplished using phone books, business/occupational licenses, listings, sales tax rolls, and field reviews (see IAAO Course 500, "The Assessment of Personal Property," and *Standard on Valuation of Personal Property* [IAAO 2005] for a complete list).

12.1.2. Valuation

Personal property is valued by using acceptable schedules and methods including depreciation schedules published by nationally recognized valuation firms, market data from published valuation guides, and other generally ac-cepted valuation methods and acceptable adjustments (see Standard on Valuation of Personal Property).

12.1.3. Verification

Inclusiveness of personal property returns and reports should be verified by an audit program. The audit program should focus on larger and complex accounts; however, it also should include randomly selected accounts. The audit program should provide coverage of the entire tax base regardless of the jurisdiction's reappraisal cycle.

12.1.4 Forms and Renditions

Comprehensive forms supplied by the assessment authority should allow the taxpayer to disclose fully all assessable personal property. The tax laws should require mandatory compliance, with meaningful penalties for noncompliance.

12.2. Appraisal Ratio Studies for Personal Property

The appraisal ratio study produces an estimate of the level of assessment of personal property by developing a ratio for property that is on the tax roll through the use of appraisals. The level of assessment determined in this way can be adjusted downward to account for property that has not been assessed.

12.2.1 Assessment Ratio for Personal Property

Personal property market values are usually derived from appraisals using a replacement cost new less depreciation (RCNLD) approach (see IAAO Course 500). A comparison of the depreciation schedules in use to nationally accepted schedules would enable the calculation of a ratio for property on the roll. A statistically sound process should be used to select a sample that is representative of personal property on the tax rolls. Such a sample can be parcel- or value-based depending on the intended use of the ratio study in indirect or direct equalization.

12.2.2 Stratification

Proper stratification of personal property accounts should be done for greater statistical accuracy. Strata should be based on the type and value of personal property accounts.

Stratification by type of account should occur first. Personal property accounts can be divided into residential

(motor vehicles, boats, aircraft, and the like), agriculture, and business accounts. Further stratification can occur in residential and agricultural accounts but is necessary in business or commercial accounts. Business accounts are usually stratified by size into a minimum of four groups. Value ranges for these groups should be derived from the value ranges in the local market. One example would be small (less than $250,000), medium ($250,000 to $1 mil-lion), moderate ($1-$5 million), and large (greater than $5 million). Individual size of account can be determined by value on the prior-year personal property roll.

12.2.3 Property Escaping Assessment

Personal property is particularly prone to escaping assessment. Some determination should be made about the portion of taxable personal property not on the assessment roll. However, estimates based on national averages are less meaningful at the local jurisdictional level.

12.2.3.1 Identifying Personal Property Owners and Users Not on the Roll

Discovery tools can be used to determine accounts not on the roll for a sample area or group. Once the extent of the problem is identified, a projection can be made of the percentage of personal property not identified on the assessment roll.

12.2.3.2 Identifying Personal Property Not Included in Taxpayer Returns/Reports

The accepted method of determining the property omitted in taxpayer returns/reports is to audit the account (see IAAO workshops on auditing). The audit results are applied back to the account value. The resulting fraction is property that is escaping taxation within that particular personal property account. If appropriate sampling techniques are used in selecting the accounts for audit, the resulting ratio is applied to the total roll to help determine the percentage of personal property escaping assessment within the jurisdiction.

12.2.4 Computing the Level of Appraisal

The overall ratio is then determined by reducing the valuation ratio by the percent of property wholly or partially escaping taxation. For example, if the appraisal level is found to be 90 percent and it is determined that 5 percent of personal property is escaping assessment, then the corrected level of assessment is the appraisal level times the percentage of personal property assessed: $0.90 \times (1 - 0.05) = 0.855$. For indirect equalization, this calculation would result in a higher equalized value.

Standard on Ratio Studies

Definitions

Absolute value. The value of a number (or variable) regardless of its sign. For example, 3 and –3 (minus 3) both have an absolute value of 3. The mathematical symbol for absolute value is one vertical bar on each side of the number in question, for example, |3|.

Accuracy. The closeness of a measurement, computation, or estimate to the true, exact, or accepted value. Accuracy also can be expressed as a range about the true value. *See also* precision *and* statistical accuracy.

Adjusted sale price. The sale price that results from adjustments made to the stated sale price to account for the effects of time, personal property, financing, or the like.

Appraisal. "The act or process of developing an opinion of value; an opinion of value" (USPAP 1999). The act of estimating the money value of property. The money value of property as estimated by an appraiser.

Appraisal date. The date as of which a property's value is estimated. *See also* assessment date.

Appraisal ratio. (1) The ratio of the appraised value to an indicator of market value. (2) By extension, an estimated fractional relationship between the appraisals and market values of a group of properties. *See also* level of appraisal.

Appraisal ratio study. A ratio study using independent expert appraisals as indicators of market value.

Appraisal-sale price ratio. The ratio of the appraised value to the sale price (or adjusted sale price) of a property; a simple indication of appraisal accuracy.

Appraised value. The estimate of the value of a property before application of any fractional assessment ratio, partial exemption, or other adjustments.

Arithmetic mean. A measure of central tendency. The result of adding all the values of a variable and dividing by the number of values. For example, the arithmetic mean of 3, 5, and 10 is 18 divided by 3 or 6.

Array. An ordered arrangement of data, such as a listing of sales ratios, in order of magnitude.

Assessed value. (1) A value set on real estate and personal property by a government as a basis for levying taxes. (2) The monetary amount at which a property is put on the assessment roll for purposes of computing the tax levy. Assessed values differ from the assessor's estimate of actual (market) value for four major reasons: fractional assessment ratios, partial exemptions, preferential assessments, and decisions by assessing officials to override market value.

Assessment. (1) In general, the official acts of determin-ing the amount of the tax base. (2) As applied to property taxes, the official act of discovering, listing, and appraising property, whether performed by an assessor, a board of review, or a court. (3) The value placed on property in the course of such act.

Assessment-appraisal ratio. The ratio of the assessed value of a property to an independent appraisal.

Assessment date. The status date for tax purposes. Appraised values reflect the status of the property and any partially completed construction as of this date.

Assessment progressivity (regressivity). An appraisal bias such that high-value properties are appraised higher (or lower) than low-value properties in relation to market values. *See also* price-related differential.

Assessment ratio. (1) The fractional relationship of an assessed value to the market value of the property in question. (2) By extension, the fractional relationship of the total of the assessment roll to the total market value of all taxable property in a jurisdiction. *See also* level of assessment.

Assessment-sale price ratio. The ratio of the assessed value to the sale price (or adjusted sale price) of a property.

Assessor. (1) The head of an assessment jurisdiction. Assessors can be either elected or appointed. In this standard the term is sometimes used collectively to refer to all assessment officials charged with administering the assessment function. (2) The public officer or member of a public body whose duty it is to make the original assessment.

Average deviation. The arithmetic mean of the absolute deviations of a set of numbers from a measure of central tendency such as the median. Taking absolute values is generally understood without being stated. The average deviation of the numbers 4, 6, and 10 about their median (6) is $(2 + 0 + 4) \div 3 = 2$. The average deviation is used in computing the coefficient of dispersion (COD).

Bias. A type of nonsampling error in which a calculated statistic differs systematically from the population parameter. A process is biased if it produces results that vary systematically with some factor that should be irrelevant. In assessment administration, assessment progressivity (regressivity) is one kind of possible bias.

Bootstrap. A computer-intensive method of statistical inference that is based on a repeated resampling of data to provide more information about the population characteristics. The bootstrap is a data-driven procedure that is

particularly useful for confidence interval approximation when no traditional formulas are available or the sample has been drawn from a population that does not conform to the normal distribution.

CAMA. *See* computer-assisted mass appraisal

Central tendency. (1) The tendency of most kinds of data to cluster around some typical or central value, such as the mean or median. (2) By extension, any or all such statistics. Some kinds of data, however, such as the weights of cars and trucks, may cluster about two or more values, and in such circumstances the meaning of central tendency becomes unclear. This may happen in ratio studies in which two or more classes of property are combined.

Class. A set of items defined by common characteristics. (1) In property taxation, property classes such as residential, agricultural, and industrial may be defined. (2) In assessment, building classification systems based on type of building design, quality of construction, or structural type are common. (3) In statistics, a predefined category into which data may be put for further analysis. For example, ratios may be grouped into the following classes: less than 0.500, 0.500 to 0.599, 0.600 to 0.699, and so forth.

COD. See coefficient of dispersion.

Coefficient of concentration. The percentage of observations falling within a specified percentage (say, 15 percent) of a measure of central tendency.

Coefficient of dispersion (COD). The average deviation of a group of numbers from the median expressed as a percentage of the median. In ratio studies, the average percentage deviation from the median ratio.

Coefficient of variation (COV). A standard statistical measure of the relative dispersion of the sample data about the mean of the data; the standard deviation expressed as a percentage of the mean.

Computer-assisted mass appraisal (CAMA). A process that uses a system of integrated components and software tools necessary to support the appraisal of a universe of properties through the use of mathematical models that represent the relationship between property values and supply/demand factors.

Confidence interval. A range of values, calculated from the sample observations, that are believed, with a particular probability, to contain the true population parameter (mean, median, COD). The confidence interval is not a measure of precision for the sample statistic or point estimate, but a measure of the precision of the sampling process (see reliability).

Confidence level. The degree of probability associated with a statistical test or confidence interval, commonly 90, 95, or 99 percent. For example, a 95 percent confidence interval implies that were the estimation process repeated again and again, then 95 percent of the calculated intervals would be expected to contain the true population measure (such as the median, mean, or COD).

Contributory value. The amount a component of a property contributes to the total market value. For improvements, contributory value must be distinguished from costs.

COV. *See* coefficient of variation.

Date of sale (date of transfer). The date on which the sale was consummated. This is considered to be the date the deed, or other instrument of transfer, is signed. The date of recording can be used as a proxy if it is not unduly delayed as it would be in a land contract.

Direct equalization. The process of converting ratio study results into adjustment factors (trends) and changing locally determined appraised or assessed values to more nearly reflect market value or the legally required level of assessment. *See also* equalization and indirect equalization.

Dispersion. The degree to which data are distributed either tightly or loosely around a measure of central tendency. Measures of dispersion include the range, average deviation, standard deviation, coefficient of dispersion, and coefficient of variation.

Distribution-free statistics. A set of robust nonparametric methods whose interpretation or reliability does not depend on stringent assumptions about the distribution of the underlying population from which the sample has been drawn. *See also* parametric statistics.

Equalization. The process by which an appropriate governmental body attempts to ensure that property under its jurisdiction is assessed at the same assessment ratio or at the ratio or ratios required by law. Equalization can be undertaken at many different levels. Equalization among use classes (such as agricultural and industrial property) can be undertaken at the local level, among properties in a school district and a transportation district; equalization among counties is usually undertaken by the state to ensure that its aid payments are distributed fairly. *See also* direct equalization *and* indirect equalization.

Exploratory data analysis. That part of statistical practice concerned with reviewing the data set to isolate structures, uncover patterns, or reveal features that may improve the confirmatory analysis.

Fixture. An asset that has become part of real estate through attachment in such a manner that its removal would result in a loss in value to either the asset or the real estate to which the asset is affixed.

Fractional assessments. Assessments that by law or by practice have assessment ratios different from 1. Usually the assessment ratio is less than 1, and if assessment biases are present, different classes of property may have different fractional ratios.

Frequency distribution. A table or chart showing the number or percentage of observations falling in the boundaries of a given set of classes. Used in ratio studies to summarize the distribution of the individual ratios. *See also* class *and* histogram.

Histogram. A bar chart or graph of a frequency distribution in which the frequencies of the various classes are indicated by horizontal or vertical bars whose lengths are proportional to the number or percentage of observations in each class.

Hypothesis. A statement in inferential statistics, the truth of which the analyst is interested in determining.

Independent appraisal. An estimate of value using a model different from that used for assessment purposes. Independent appraisals are used to supplement sales in sales ratio studies or in appraisal ratio studies.

Indirect equalization. The process of computing hypothetical values that represent the oversight agency's best estimate of taxable value, given the legally required level of assessment or market value. Indirect equalization allows proper distribution of intergovernmental transfer pay-ments between state or provincial and local governments despite different levels of appraisal between jurisdictions or property classes. *See also* equalization *and* direct equalization.

Interquartile range (IQR). The result obtained by subtracting the first quartile from the third quartile. By definition 50 percent of the observations fall within the IQR.

Land contract. An executor's contract for the purchase of real property under the terms of which legal title to the property is retained by the vendor until such time as all conditions stated in the contract have been fulfilled; commonly used for installment purchase of real property.

Level of appraisal. The common, or overall, ratio of appraised values to market values. Three concepts are usually of interest: the level required by law, the true or actual level, and the computed level based on a ratio study.

Level of assessment. The common or overall ratio of assessed values to market values. *See also* level of appraisal. *Note:* The two terms are sometimes distinguished, but there is no convention determining their meanings when they are. Three concepts are commonly of interest: what the assessment ratio is legally required to be, what the assessment ratio for the population actually is, and what the assessment ratio for the population seems to be, on the basis of a sample and application of inferential statistics. When level of assessment is distinguished from assessment ratio, *level of assessment* usually means either the legal requirement or the true ratio, and *assessment ratio* usually means the true ratio or the sample statistic.

Margin of error. A measure of the uncertainty associated with statistical estimates of a parameter. It is typically linked to consumer surveys or political poll questions. A margin of error is a key component of a confidence interval. It

reports a "plus or minus" percentage or proportion quantity in a confidence interval at a specified level of probability (typically 95 percent). *See also* confidence interval.

Market value. The major focus of most real property appraisal assignments. Both economic and legal definitions of market value have been developed and refined. A current economic definition agreed upon by agencies that regulate federal financial institutions in the United States is: The most probable price (in terms of money) which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby: The buyer and seller are typically motivated; Both parties are well informed or well advised, and acting in what they consider their best interests; A reasonable time is allowed for exposure in the open market; Payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale. (See USPAP for additional comments.)

Mass appraisal. The process of valuing a universe of properties as of a given date using standard methodology, employing common data, and allowing for statistical testing (see *USPAP*)

Mean. *See* arithmetic mean.

Median. A measure of central tendency. The value of the middle item in an uneven number of items arranged or arrayed according to size; the arithmetic average of the two central items in an even number of items similarly arranged.

Median absolute deviation. The median of the absolute deviations from the median. In a symmetrical distribution, the measure approximates one-half the IQR.

Median percent deviation. The median of the absolute percent deviations from the median; calculated by dividing the median absolute deviation by one-hundredth of the median.

Nonparametric statistics. *See* distribution-free statistics.

Nonsampling error. The error reflected in ratio study statistics from all sources other than sampling error. While nonsampling error is unavoidable due to the inefficiencies inherent in real property markets, the imperfections of the appraisal process, and the imperfections of conducting ratio studies, all practicable steps must be taken to minimize nonsampling error in ratio studies.

Normal distribution. A theoretical distribution often approximated in real world situations. It is symmetrical and bell-shaped; 68 percent of the observations occur within one standard deviation of the mean and 95 percent within two standard deviations of the mean.

Observation. One recording or occurrence of the value of a variable, for example, one sale ratio among a sample of sales ratios.

Outliers. Observations that have unusual values, that is, differ markedly from a measure of central tendency. Some outliers occur naturally; others are due to data errors.

Parameter. Numerical descriptive measure of the population, for example, the arithmetic mean or standard deviation. Parameters are generally unknown and estimated from statistics calculated from a sample of the population.

Parametric statistics. Statistics whose interpretation or reliability depends on the distribution of the underlying data. *See also* distribution-free statistics.

Percentile. The values that divide a set of data into specified percentages when the data are arrayed in ascending order. The tenth percentile includes the lowest 10 percent of the values, the twentieth percentile includes the lowest 20 percent of the values, and so forth.

Personal property. *See* property.

Plottage value. The excess of the value of a large parcel of land formed by assemblage over the sum of the values of the unassembled parcels.

Point estimate. A single numerical value that can be used to estimate a population parameter. It is calculated on the basis of information collected from a sample. Point estimates are generally constructed to provide the best unbiased estimate of the population parameter consistent with the sample data. However, the point estimate is only an estimate, and is unlikely to have the same value as the population parameter. (See Confidence interval and Reliability for discussion of precision of the sampling process.)

Points. Prepaid interest on a loan; one point is equal to 1 percent of the amount of the loan. It is common to deduct points in advance of the loan, so that an individual pays interest on 100 percent of the loan but gets cash on, say, only 99 percent.

Population. All the items of interest, for example, all the properties in a jurisdiction or neighborhood; all the observations in a data set from which a sample may be drawn.

Precision. The level of detail in which a quantity or value is expressed or represented. It can be characterized as the number of digits used to record a measurement. A high level of represented precision may be used to imply a greater level of accuracy; however, this relationship may not be true. Precision also relates to the quality of an operation or degree of refinement by which results are obtained.

A method of measurement is considered precise if repeated measurements yield the same or nearly the same numeric value. *See also* accuracy *and* statistical precision.

PRD. *See* price-related differential.

Price. The amount asked, offered, or paid for a property. (See USPAP [2004] for additional comments.)

Price-related differential. The mean divided by the weighted mean. The statistic has a slight bias upward. Price-related differentials above 1.03 tend to indicate assessment regressivity; price-related differentials below 0.98 tend to indicate assessment progressivity.

Progressivity. *See* assessment progressivity (regres-sivity).

Property. An aggregate of things or rights to things. These rights are protected by law. There are two basic types of property: real and personal. Real property consists of the interests, benefits, and rights inherent in the ownership of land plus anything permanently attached to the land or legally defined as immovable; the bundle of rights with which ownership of real estate is endowed. To the extent that "real estate" commonly includes land and any permanent improvements, the two terms can be understood to have the same meaning. Also called *realty*. Personal property is defined as those items that generally are movable or all items not specifically defined as real property. Many states include as personal property the costs associated with placing personal property in service, such as sales tax, freight, and installation. Installation items include, but are not limited to, wiring, foundations, hookups, and attachments. Two commonly used tests for distinguishing real and personal property are (1) the intent of the parties and (2) whether the item may be removed from the real estate without damage to either.

Qualified sale. A property transfer that satisfies the conditions of a valid sale and meets all other technical criteria for inclusion in a ratio study sample. If a property has undergone significant changes in physical characteristics, use, or condition in the period between the assessment date and sale date, it would not technically qualify for use in ratio study.

Quartiles. The values that divide a set of data into four equal parts when the data are arrayed in ascending order. The first quartile includes the lowest quarter of the data, the second quartile, the second lowest quarter, and so forth.

Random sample. A sample of *n* items selected from a population in such a way that each sample of the same size is equally likely. This also includes the case in which each element in the sample has an equal chance of being selected.

Range. (1) The maximum value of a sample minus the minimum value. (2) The difference between the maximum and minimum values that a variable may assume.
Ratio study. A study of the relationship between appraised or assessed values and market values. Indicators of market values may be either sales (sales ratio study) or independent "expert" appraisals (appraisal ratio study). Of common interest in ratio studies are the level and uniformity of the appraisals or assessments. *See also* level of appraisal *and* level of assessment.

Real property. *See* property.

Regressivity. *See* assessment progressivity (regressiv-ity).

Regressivity index. *See* price-related differential.

Reliability. In a sampling process, the extent to which the process yields consistent population estimates. Ratio studies typically are based on samples. Statistics derived from these samples may be more or less likely to reflect the true condition in the population depending on the reliability of the sample. Representativeness, sample size, and sample uniformity all contribute to reliability. Formally, reliability is measured by sampling error or the width of the confidence interval at a specific confidence level relative to the central tendency measure.

Representative sample. A sample of observations from a larger population of observations, such that statistics calculated from the sample can be expected to represent the characteristics of the population being studied.

Sale price. (1) The actual amount of money exchanged for a unit of goods or services, whether or not established in a free and open market. An indicator of market value. (2) Loosely used synonymously with "offering" or "asking price."

Sale ratio. The ratio of an appraisal (or assessed) value to the sale price or adjusted sale price of a property.

Sales chasing. Sales chasing is the practice of using the sale of a property to trigger a reappraisal of that property at or near the selling price. If sales with such appraisal adjustments are used in a ratio study, the practice causes invalid uniformity results and causes invalid appraisal level results, unless similar unsold parcels are reappraised by a method that produces an appraisal level for unsold properties equal to the appraisal level of sold properties. (2) By extension, any practice that causes the analyzed sample to misrepresent the assessment performance for the entire population as a result of acts by the assessor's office. A subtle, possibly in-advertent, variety of sales chasing occurs when the recorded property characteristics of sold properties are differentially changed relative to unsold properties. Then the application of a uniform valuation model to all properties results in the recently sold properties being more accurately appraised than the unsold ones.

Sales ratio study. A ratio study that uses sales prices as proxies for market values.
Sample. A set of observations selected from a population. If the sample was randomly selected, basic concepts of probability may be applied.

Sampling error. The error reflected in ratio study statistics that results solely from the fact that a sample of the population is used rather than a census of the population.

Scatter diagram or scatter plot. A graphic means of depicting the relationship or correlation between two variables by plotting one variable on the horizontal axis and one variable on the vertical axis. Often in ratio studies it is informative to determine how ratios are related to other variables. A variable of interest is plotted on the horizontal axis and ratios are plotted on the vertical axis.

Significance. A measure of the probability that an event is attributable to a relationship rather than merely the result of chance.

Skewed. The quality of a frequency distribution that makes it asymmetrical. Distributions with longer tails on the right than on the left are said to be skewed to the right or to be positively skewed. Distributions with longer tails to the left are said to be skewed to the left or to be negatively skewed.

Standard deviation. The statistic calculated from a set of numbers by subtracting the mean from each value and squaring the remainders, adding together all the squares, dividing by the size of the sample less one, and taking the square root of the result. When the data are normally distributed, the percentage of observations can be calculated within any number of standard deviations of the mean from normal probability tables. When the data are not normally distributed, the standard deviation is less meaningful and the analyst should proceed cautiously.

Standard error. A measure of the precision of a measure of central tendency; the smaller the standard error, the more reliable the measure of central tendency. Standard errors are used in calculating a confidence interval about the arithmetic mean and the weighted mean. The standard error of the sample mean is the standard deviation divided by the square root of the sample size.

Statistical accuracy. The closeness between the statistical estimate and the true (but unknown) population parameter value it was designed to measure. It is usually characterized in terms of error or the potential significance of error and can be decomposed into sampling error and nonsampling error components. Accuracy can be specified by the level of confidence selected for a statistical test. *See also* accuracy.

Statistical precision. A reference to how closely the survey results from a sample can reproduce the results that would be obtained from the entire population (a complete census). The amount by which a sample statistic can vary from the true population parameter is due to error. Even if all the sample data are perfectly accurate, random (sampling) error affects statistical precision (measured by the standard error or standard deviation). The dispersion of ratios in the population and the sample size have a controlling influence over the precision of any statistical estimate. When the reliability of a statistical measure is being evaluated, narrower confidence intervals have greater precision. *See also* precision.

Statistics. Numerical descriptive data calculated from a sample, for example, the median, mean, or COD. Statis-tics are used to estimate corresponding measures, termed parameters, for the population.

Stratify. To divide, for purposes of analysis, a sample of observations into two or more subsets according to some criterion or set of criteria.

Stratum, strata (pl.). A class or subset that results from stratification.

Time-adjusted sale price. The price at which a property sold adjusted for the effects of price changes reflected in the market between the date of sale and the date of analysis.

Trimmed mean. The arithmetic mean of a data set identified by the proportion of the sample that is trimmed from each end of the ordered array. For example, a 10 percent trimmed mean of a sample of size ten is the average of the eight observations remaining after the largest and smallest observations have been removed.

Value. (1) The relationship between an object desired and a potential owner; the characteristics of scarcity, utility, desirability, and transferability must be present for value to exist. (2) Value may also be described as the present worth of future benefits arising from the ownership of real or personal property. (3) The estimate sought in a valuation. (4) Any number between positive infinity and negative infinity.

Variable. An item of observation that can assume various values, for example, square feet, sales prices, or sales ratios. Variables are commonly described by using measures of central tendency and dispersion.

Weighted mean; weighted average. An average in which each value is adjusted by a factor reflecting its relative importance in the whole before the values are summed and divided by their number.

Weighted mean ratio. Sum of the appraised values divided by the sum of the sales prices (or independent estimates of market value), which weights each ratio in proportion to the sale price (or independent estimate of market value).

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Additional readings on ratio studies can be found at Li-braryLink, IAAO's online catalog of resources, and http://www.iaao.org. Many Web sites offer good information on statistics. Because Web site addresses change frequently, they are not listed here.

Appendix A. Sales Validation Guidelines

A.1 Sources of Sales Data

The best sources of sales data are copies of deeds or real estate transfer affidavits containing the full consideration and other particulars of the sale. Assessing officers in jurisdictions without laws mandating full disclosure of sales data to assessing officials work under a severe handicap and should seek legislation that provides for such disclosure.

1. ***Real estate transfer documents*. These documents are (1) copies of deeds and land contracts, (2) copies of real estate transfer affidavits, and (3) closing statements.**
2. ***Buyers and sellers*. Buyers and sellers of real property can be contacted directly to secure or confirm sales data. Means of contact include sales questionnaires, telephone interviews, and personal interviews.**
3. ***Third-party sources*. Third-party sources include multiple listing agencies, real estate brokers and agencies, government and private fee appraisers, attorneys, appraisal organizations, and others. Of particular value are those individuals or agencies that publish lists of sales or provide sales in an electronic format.**

A.2 Information Required

The following data are needed to make any necessary adjustments to sales prices, compute sales ratios, and update ownership information.

1. ***Full consideration involved.* This is the total amount paid for the property, including the cash down payment and amounts financed. The sale price is the most essential item of information concerning the sale, and its accuracy must be carefully scrutinized. In many jurisdictions it is common practice in deeds of conveyance to state considerations in such terms as "one dollar plus other due and just consideration." These amounts are rarely the actual selling price and should be ignored in favor of information from the buyer and seller or other reliable source.**
2. ***Names of buyer and seller*. This information permits the assessor to maintain a current record of the owners of all property in the jurisdiction. Transfer documents often refer to the buyer as the grantee or transferee and to the seller as the grantor or transferor.**
3. ***Addresses, phone numbers, and other contact information of buyer and seller or their legal designee*. This information helps to identify more positively the parties to the sale. If the buyer will not reside at the property, the buyer's address may be needed for future correspondence. If the seller has established a new address, this information will aid the assessor in contacting the seller regarding the sale.**
4. ***Relationship of buyer and seller*. It is important to know whether the buyer and seller are related individuals or corporate affiliates because such sales often do not reflect market value.**
5. ***Legal description, address, and parcel identifier*. If each parcel is assigned a unique parcel identifier and if this number is noted on the document at the time it is recorded, then the assessor can locate the parcel in the files directly. If not, the legal description or street address is essential to locate the parcel.**
6. ***Type of transfer*. It is crucial to identify whether or not a sale is an "arm's-length" transfer. Therefore, if the sources of sales data do not include copies of deeds, the type of deed should be specifically required.**
7. ***Time on the market*. Sales that have been exposed to the open market too long, not long enough, or not at all may not represent market value.**

8. ***Interest transferre*d. The appraiser must identify whether or not the entire bundle of rights (fee simple) to the property has transferred. For example, in some transactions, only a life tenancy ("life estate") may be conveyed, or the seller may retain mineral or other rights to the property. Similarly, the sale price of a property encumbered by a long-term lease may not reflect the market value of the fee simple estate in the property.**
9. ***Type of financin*g. In analyzing the sale, it is helpful to know the amount of down payment; the type, remaining amount, and interest rates of notes secured by mortgages or deeds of trust assumed by the buyer; and the value of any stocks, bonds, notes, or other property passed to the seller. It is also important to know whether the sale conveys title to the property or that it is a land contract, in which title is not conveyed until some time in the future, typically several years.**
10. ***Personal propert*y. A sales ratio study requires knowledge of the amount paid for the real property. The sale document ideally would note the type and value of any significant personal property items included in the transaction.**
11. ***Date of transfe*r. This is the date on which the sale was closed or completed. The date the deed or other transfer document was recorded can be used as a surrogate, provided there was no undue delay in the recording. If there has been a delay in recording, the date of the deed or transfer instrument should be used.**
12. ***Instrument numbe*r. This number, as well as the record or deed book and page, indicates where the deed is located in the official records and thus can be important in researching sales or leases and identifying duplication.**

The data noted above should be maintained in a separate data file or the sale history file component of a CAMA system. In addition, the file should include additional information useful for stratification and other analytical purposes. Sales data files should reflect the physical characteristics of the property when sold. If significant legal, physical, or economic changes have occurred between the sale date and the assessment date, the sale should not be used for ratio studies. (The sale may still be valid for mass appraisal modeling by matching the sale price against the characteristics that existed on the date of sale.)

A.3 Confirmation of Sales

A.3.1 Importance of Confirmation

The usefulness of sales data is directly related to the completeness and accuracy of the data. Sales data should be routinely confirmed or verified by contacting buyers, sellers, or other knowledgeable participants in the transaction. In general, the fewer the sales in a stratum, the less common or more complex the type of property, and the more atypical the sale price, the greater the effort should be to confirm the particulars of the sale. With larger sample sizes, It may be sufficient to confirm single-family residential sales by audit or exception.

A.3.2 Methods of Confirmation

In general, the completeness and accuracy of sales data are best confirmed by requesting the particulars of a sale from parties to the sale. If a transfer document is not required, questionnaires after the sale can be used. A sales questionnaire, which requests the type of information listed in Section A.2, is one practical means of confirming sales. Telephone or personal interviews can be more com-prehensive than mailed questionnaires. Forms with space to record the same types of information should be used for such interviews. Appendix G contains a model sale confirmation questionnaire (additional sample sales ques-tionnaires and interview forms can be found in *Improving Real Property Assessment* [IAAO 1978, 95–104]).
Mailed sales questionnaires should be as concise as possible and should include

- **a postage-paid return envelope**
- **official stationery**
- **purpose of the questionnaire**

- **contact person**
- **authorized signature**

Forms designed for telephone interviews should include the name and phone number of the contact person. Such forms also should include the date and name of the person conducting the interview along with the number of attempts made to contact a party to the sale.

A.4 Screening Sales

Sales used in a ratio study must be screened to determine whether they reflect the market value of the real property transferred. Specific objectives of sales screening are as follows:

- **to ensure that sales prices reflect to the maximum extent possible only the market value of the real property transferred and not the value of personal property, financing, or leases**
- **to ensure that sales that occurred only during the period of analysis are used**
- **to ensure that sales are excluded from the ratio study only with good cause (e.g., when they compromise the validity of the study)**

Every arm's-length, open-market sale that appears to meet the conditions of a market value transaction should be included in the ratio study unless one of the following occurs:

- **Data for the sale are incomplete, unverifiable, or suspect.**
- **The sale fails to pass one or more specific tests of acceptability.**
- **A sufficiently representative sample of sales that occurred during the study period can be randomly selected to provide sufficiently reliable statistical measures.**

The sales reviewer should take the position that all sales are candidates as valid sales for the ratio study unless sufficient and compelling information can be documented to show otherwise. If sales are excluded without substantiation, the study may appear to be subjective. Reason codes can be established for invalid sales.

No single set of sales screening rules or recommendations can be universally applicable for all uses of sales data or under all conditions. Sales screening guidelines and procedures should be consistent with the provisions of the value definition applicable to the jurisdiction. Appraisers must use their judgment, but should not be arbitrary. To help analysts make wise and uniform judgments, screening procedures should be in writing. Each sales analyst should be thoroughly familiar with these procedures as well as with underlying real estate principles (Tomberlin 2001).

A.4.1 Sales Generally Invalid for Ratio Studies

The following types of sales are often found to be invalid for ratio studies and can be automatically excluded unless a larger sample size is needed and further research is conducted to determine that sales are open-market transactions.

1. ***Sales involving government agencies and public utilities*. Such sales can involve an element of compulsion and often occur at prices higher than would otherwise be expected.**
2. ***Sales involving charitable, religious, or educational institutions*. A sale to such an organization can involve an element of philanthropy, and a sale by such an organization can involve a nominal consideration or restrictive covenants.**
3. ***Sales involving financial institutions*. A sale in which the lienholder is the buyer can be in lieu of a foreclosure or a judgment and the sale price can equal the loan balance only.**
4. ***Sales between relatives or corporate affiliates*. Sales between relatives are usually non-open-market transactions and tend to occur at prices lower than would otherwise be expected.**

5. ***Sales settling an estate*. A conveyance by an executor or trustee under powers granted in a will may not represent fair market value, particularly if the sale takes place soon after the will has been filed and admitted to probate in order to satisfy the decedent's debts or the wishes of an heir.**

6. ***Forced sales*. Such sales include those resulting from a judicial order. The seller in such cases is usually a sheriff, receiver, or other court officer.**

7. ***Sales of doubtful title*. Sales in which title is in doubt tend to be below market value. When a sale is made on other than a warranty deed, there is a question of whether the title is merchantable. Quit claim deeds and trustees' deeds are examples.**

A.4.2 Sales with Special Conditions

Sales with special conditions can be open-market sales but must be verified thoroughly and used with caution in ratio studies.

1. ***Trades.* In a trade, the buyer gives the seller one or more items of real or personal property as all or part of the full consideration. If the sale is a pure trade with the seller receiving no money or securities, the sale should be excluded from analysis. If the sale involves both money and traded property, it may be possible to include the sale in the analysis if the value of the traded property is stipulated, can be estimated with accuracy, or is small in comparison to the total consideration. However, transactions involving trades should be excluded from the analysis whenever possible, particularly when the value of the traded property appears substantial.**

2. ***Partial interests*. A sale involving the conveyance of less than the full interest in a property should be excluded from the analysis unless several sales of partial interests in a single property take place at the same time and the sum of the partial interests equals the fee-simple interest. Then the sum of the sales prices of the partial interests can sometimes be assumed to indicate the sale price of the total property. At other times, however, the purchase of such partial interests is analogous to plottage value in which a premium may have been paid.**

3. ***Land contracts*. Land contracts and other installment purchase arrangements in which title is not transferred until the contract is fulfilled require careful analysis. Deeds in fulfillment of a land contract often reflect market conditions several years in the past, and such dated information should be excluded from analysis. Sales data from land contracts also can reflect the value of the financing arrangements. In such instances, if the transaction is recent, the sale price should be adjusted for financing (see section A.5.2).**

4. ***Incomplete or unbuilt common property*. Sales of condominium units and of units in planned unit developments or vacation resorts often include an interest in common elements (for example, golf courses, clubhouses, or swimming pools) that may not exist or be usable on the date of sale or on the assessment date. Sales of such properties should be examined to determine whether prices might be influenced by promises to add or complete common elements at some later date. Sales whose prices are influenced by such promises should be excluded from the analysis, or the sales prices should be adjusted to reflect only the value of the improvements or amenities in existence on the assessment date.**

S. ***Auctions*. In general, auction sales of real property tend to be at the lower end of the price spectrum. Auction sales that have been well-advertised and well-attended may be valid for consideration in ratio**

studies. The seller also must have the option to set a minimum bid on the property or the right of refusal on all bids *(with reserve*) in order for the sale to be considered valid.

A.4.3 Multiple-Parcel Sales

A multiple-parcel sale is a transaction involving more than one parcel of real property. These transactions present special considerations and should be researched and analyzed before being used in ratio studies.

If the appraiser needs to include multiple-parcel sales, he or she should first determine whether the parcels are con-tiguous and whether the sale comprises a single economic unit or multiple economic units. Regardless of whether the parcels are contiguous, any multiple-parcel sale that also involves multiple economic units generally should not be used in ratio studies because of the likelihood that these sales include some plottage value or some discount for economies of scale, unless adequate adjustments for these factors can be made to the sale price.

A.4.4 Acquisitions or Divestments by Large Property Owners

Acquisitions or divestments by large corporations, pension funds, or real estate investment trusts (REITs) that involve multiple parcels typically should be rejected for ratio study purposes.

A.4.5 IRS 1031 Exchanges

Internal Revenue Service (IRS) Regulation 1031 stipulates that investment properties can be sold on a tax-deferred basis if certain requirements are met. Sale transactions that represent Section 1031 exchanges should be analyzed like any other commercial transaction and, absent conditions that would make the sale price unrepresentative of market value, should be regarded as valid.

A.4.6 Internet Marketing

Property that sells on the Internet and meets the criteria of being an open-market, arm's-length transaction should be included as a valid transaction in a ratio study. Brokerage and realty firms are using the Internet as an additional method to advertise and market their inventory of property.

A.4.7 Inaccurate Sale Data

Sale information should never be considered absolutely trustworthy. Jurisdictions can reduce the problem by requiring a sale verification questionnaire (see Appendix G). There should be statutory penalties for persons who falsify information.

A.5 Adjustments to Sale Prices

Sale prices used in ratio studies may need to be adjusted for financing, assumed long-term leases, personal property, gift programs, and date of sale. This is especially true for nonresidential properties. The real property tax is based on the market value of real property alone as of a specific date. This value may not be the same as investment value (that is, the monetary value of a property to a particular investor) and does not include the value of personal property or financing arrangements.

If adjustments for more than one purpose are to be made, they should be made in the following order:

1. **adjustments that convert the price to a better representation of the market value as of the date of sale (These include adjustments for financing and assumed long-term leases.)**
2. **adjustments that develop or isolate the price paid for taxable real property (These include adjustments for personal property received by the buyer, property taken in trade by the seller, the combination of partial interest sales, and incomplete or unbuilt common property.)**
3. **adjustments for differences in market value levels between the date of sale and the date of analysis**

Procedures for adjusting sales prices should be documented and the adjustment factors supported by market data. These requirements imply an ongoing study of local real estate prices, interest rates, and financing practices.

Unsubstantiated or blanket adjustments can jeopardize the acceptance accorded a ratio study by making it appear subjective.

A.5.1 Adjustments for Financing

When financing reflects prevailing market practices and interest rates, sales prices require no adjustment for financing. Adjustments should be considered in the following instances:

1. **The seller and lender are the same party and financing is not at prevailing market rates.**
2. **The buyer assumes an existing mortgage at a non-market interest rate. As with personal property, the preferred means of adjusting for financing is by individual parcel. In this instance and no. 1 above, downward adjustments are warranted when (1) the loan appears to be well secured and the contract interest rate is less than the market interest rate, or (2) the loan appears not to be well secured and the contract interest rate is lower than that required by the market for a loan of equal risk. The amount of adjustment can be computed by capitalizing the difference between monthly payments based on the required market interest rate and those based on the actual interest rate. Market analysis using paired sales (sales of similar properties, some with and some without conventional financing) or statistical techniques can correct for such factors.**
3. **The seller pays "points" (a percentage of the loan amount). *(Points paid by the borrower are part of the down payment and do not require adjustment.)* When the seller pays points, the sale price should be adjusted downward by the value of the points.**
4. **The property is sold under a gift program. Gift programs are a type of creative financing for qualified buyers by certain lending institutions that provide the buyer with additional monies to use as part of a down payment or for property improvements. This program is typically associated with low-value properties and can be difficult to discover without a validation questionnaire and/or telephone interview. The gift amount is added to the actual sale price of the property; however, the seller is never in receipt of the gift amount. This gift amount must be deducted from the actual sale price of the real estate prior to statistical analysis.**

Adjustments for financing require data on actual and market interest rates, the amount of the loan, and the term and amortization provisions of the loan. Obtaining and properly analyzing such data, as well as estimating the extent to which the market actually capitalizes non-market financing, are difficult and time-consuming and require specialized skills.

A.5.2 Adjustments for Assumed Leases

The sale price of a property encumbered by a long-term lease of at least three years should be adjusted as follows:

- **If the contract rent differs significantly from market rent, then the sales price should be adjusted by the difference between the present worth of the two income streams.**
- **If the contract rent exceeds market rent, the present worth of the difference in the two income streams should be subtracted from the sale price.**
- **If the contract rent is less than current market rent, the present worth of the difference in the two income streams should be added to the sale price.**

A.5.3 Adjustments for Personal Property

Sales screening includes determining the contributory value of any significant personal property included in the sale. Personal property includes such tangibles as machinery, furniture, and inventories and such intangibles as franchises, licenses, and non-compete agreements. Ordinarily, it is not necessary to consider goodwill, going-concern value, business enterprise value, or the like, unless the value of these intangible assets has been itemized in a sales contract or a formal appraisal has been prepared by either party.

It is necessary to decide whether each item included in the sale should be classified as real or personal property. (See *Standard on Valuation of Personal Property* [IAAO 2005], which provides guidance on classification of property as real or personal.)

Sale prices should be adjusted by subtracting the contributory value of personal property received by the buyer. Ordinary window treatments, outdated models of freestanding appliances, and common-grade used furniture included with residential property do not usually influence the sale price of real property and do not require an adjustment unless the items were specifically broken out in the contract as personal property included in the sale price.

If the value of personal property appears to be substantial (10 percent for residential, 25 percent for commercial), the sale should be excluded as a valid sale in statistical analysis unless the sample size is small.

A.5.4 Adjustments for Time

There should be a program to track changes in price levels over time and adjust sale prices for time as required. This step is an important component of a ratio study. Time ad-justments must be based on market analysis and supported with appropriate documentation.

Valid time-adjustment techniques are as follows:

- **tracking sales and appraisal ratios over time**
- **including date-of-sale as a variable in regression or feedback models**
- **analyzing re-sales**
- **comparing per-unit values over time in homogeneous strata, such as a subdivision or condominium complex**
- **isolating the effect of time through paired sales analysis**
- **statistically supported time trend analysis studies**

These techniques are discussed in Gloudemans (1990; 1999), *Property Appraisal and Assessment Administration* (IAAO 1990, Appendix 5-3), and *Improving Real Property Assessment* (IAAO 1978, section 4.6). If sales prices have generally been rising, ratios for sales that occurred after the assessment date tend to understate the overall level of appraisal. Similarly, sales ratios for sales that occurred before the assessment date tend to overstate the level of appraisal. If prices are generally declining, an opposite pattern results. When tracking ratios over time (using the inverse ratio technique) for determining time adjustments, it is important that ratios for chased sales be excluded, since there is no correlation of such sales ratios with the date of sale.

Changes in price levels should be monitored and time adjustments made by geographic area and type of property, because different segments of the market tend to change in value at different rates.

Oversight agencies can make any appropriate time adjustments after making all other adjustments.

A.5.5 Other Adjustments

Adjustments to sales prices should not be made for real estate sales and brokerage commissions; closing costs, such as attorney's fees, transfer taxes, and title insurance; and current or delinquent property taxes. Exceptions to this general rule occur when the buyer agrees to pay real estate commissions and delinquent property taxes, in which case the amounts of the payments should be added to the sale price if not already included in the sale amount. Other exceptions occur when the seller agrees to pay expenses normally paid by the buyer. Such expenses include loan origination fees and repair allowances. Loan origination fees paid by the seller should be deducted from the sale price. Repair allowances should be deducted from the sales price only if the property was in an unrepaired state on the appraisal date, but sold at a higher price reflecting the value of the repairs. If the sale occurred before the appraisal date and the repairs were made prior to that date, no adjustment should be made (Knight, Miceli, and Sirmans 2000).

A.5.6 Special Assessments

Special assessments are used to finance capital improvements or provide services adjacent to the properties they directly benefit. Typically, the property owner is obligated to make annual payments of principal and interest to a local unit of government over a specified number of years. The sale price of a property encumbered by a special assessment can require adjustment if the current balance of the defrayed amount is significant. The sale price can be adjusted upward to account for this lien. If the effect on market value is significant and can be ascertained, an adjustment should be made

Appendix B. Outlier Trimming Guidelines

B.1 Identification of Ratio Outliers

It is first necessary to determine a procedure to identify outliers. Outlier identification based on the interquartile range (IQR) uses order statistics (see table B-1) and has been shown to be robust for a wide variety of distributions (Iglewicz and Hoaglin 1993; Barnett and Lewis 1994). The term outlier is often associated with ratios that fall outside 1.5 multiplied by the IQR. A factor of 3.0 X IQR often is chosen to identify extreme outliers. Other outlier identification procedures are found in statistical literature and can be used. Outlier identification and trimming must not be a part of the sales validation process and should follow this process.

The example in table B-1 demonstrates the use of the 1.5 X IQR procedure to identify outlier ratios. The distribution of ratios often is skewed to the right; therefore, it may be preferable to apply appropriate transformations to the ratios prior to applying the IQR method. For example, the use of logarithmic transformations tends to identify fewer high and more low ratios as outliers.

B.2 Scrutiny of Identified Outliers

The preferred method of handling an outlier ratio is to subject it to additional scrutiny to determine whether the sale is a non-market transaction or contains an error in fact. If an error can be corrected (for example, data entry), the property should be left in the sample. If the error cannot be corrected or inclusion of the identified outlier would reduce sample representativeness, the sale should be excluded.

B.3 Outlier Trimming

Once outliers have been identified and scrutinized and any errors resolved, the next step is to exclude those that may unduly influence calculated statistical measures. For this reason, it is acceptable to trim outliers identified by recognized procedures (for cautionary notes on trimming small samples, see Tomberlin [2001] and Hoaglin, Mo-steller, and Tukey [1983]. An example of such trimming is found in Table B-2. However, trimming of outliers using arbitrary limits, for example, eliminating all ratios less than 50 percent or greater than 150 percent, tends to distort results and should not be employed.

Detected outliers should be reported and can be treated in a variety of ways, including trimming (D'Agostino and Stephens 1986). If outliers are to be considered for removal, the analyst can select a procedure to trim all or just the extreme or influential outliers (see table B-2). If a trimming method has been used to reject ratios from the sample, this fact must be stated in the resulting statistical

Table B-1. A Distribution-Free Method for Locating Outliers ***(The following procedure identifies outlier ratios that fall more than 1.5 times beyond the range of the middle 50 percent of the arrayed sample.)***

Locating trim boundaries Data set before trimming

Rank	Ratio (A/S)
1	0.61
2	0.75
3	0.76
4	0.85
5	0.86
6	0.90
7	0.92
8	0.94
9	1.01
10	1.05
11	1.17
12	1.36
13	1.85
14	2.50
Median ratio	**0.935**
COD	**32.271**

Steps to locate trim boundaries

1. ***Locate the first quartile point***
   Formula to locate the first quartile:
   (0.25 x number of ratios) + 0.25
   (0.25 x 14 ratios) + 0.25 = 3.75
   3.75 is three-quarters between the third and fourth ranked ratios.
   Ratio 3 = 0.762
   Ratio 4 = 0.853
   Three-quarters between = (0.853 - 0.762) x 0.75 = 0.068
   The first quartile point = 0.762 + 0.068 = 0.830

2. ***Locate the third quartile point***
   Formula to locate the third quartile
   (0.75 x number of ratios) + 0.75
   (0.75 x 14 ratios) + 0.75 = 11.25
   11.25 is one-quarter between the eleventh and twelfth ranked ratios.
   Ratio 11 = 1.178
   Ratio 12 = 1.367
   One-quarter between = (1.367 - 1.178) x 0.25 = 0.047
   The third quartile point = 1.178 + 0.047 = 1.225

3. ***Compute the interquartile range***
   The distance between the first and third quartile = interquartile range
   1.225 - 0.830 = 0.395

4. ***Establish the lower boundary***
   Lower trim point = first quartile - (interquartile range x 1.5 or 3.0) 0.830 - (0.395 x 1.5) = 0.238,

5. ***Establish the upper boundary***
   Upper trim point = (interquartile range x 1.5 or 3.0) + third quartile (0.395 x 1.5) + 1.225 = 1.818

Outliers identified:

1.850
2.500

Table B-2. Effects of Outlier Trimming ***Outliers identified in Table B-1 trimmed After 1.5x trimming***

Rank	Ratio (A/S)
1	0.611
2	0.756
3	0.762
4	0.853
5	0.867
6	0.909

7	0.925
8	0.944
9	1.014
10	1.052
11	1.178
12	1.367

Median ratio 0.917 COD 15.649

analysis. Outlier trimming is not mandatory; however, if outlier-trimming procedures are not used, sales with extreme or influential ratios must be thoroughly validated and determined to be highly trustworthy observations because they can play a pivotal role in the ratio study outcome.

B.4 Trimming Limitations

For some distributions, such as when the sample exhibits a high clustering around a specific ratio, the IQR outlier identification method is not appropriate. In such cases the IQR could be quite narrow, leading to the calculation of lower and upper boundaries for outliers and extremes that are quite close to the middle of the data. In such cases, ratios beyond those boundaries should not be automatically excluded, but instead reasonable judgment should be applied to exclude only true outliers or extremes. As one safeguard, analysts can refrain from automatically deleting any "outliers" or "extremes" inside the boundaries where 95 percent (two standard deviations) of the observations would be expected to lie, assuming a normal distribution of data.

It is also appropriate to set maximum trimming limits. For small samples, no more than 10 percent (20 percent in the most extreme cases) of the ratios should be removed. For larger samples, this threshold can be lowered to 5 to 10 percent depending on the distribution of the ratios and the degree to which sales have been screened or validated. Trim limits should be developed in consideration of the extent of sales verification.

In general, IQR-based outlier identification should be undertaken in instances in which sample sizes are sufficient to preclude the aberrant results that can be expected when this procedure is applied to small, highly variable samples.

B.5 Analytical Use of Identified Outliers

After identification, scrutiny, and correction of errors associated with outliers, the procedure can be run again to identify any remaining apparent outliers. If outlier ratios tend to be concentrated in certain areas or other subsets of the sample, they can point directly to systematic errors in the appraisal process and should be stratified and reanalyzed if they are sufficiently representative.

B.6 Reporting Trimmed Outliers and Results

Ratio study reports or accompanying documentation should clearly state the basis for excluding outlier ratios. Statistics calculated from trimmed distributions, obviously, cannot be compared to those from untrimmed distributions or interpreted in the same way.

Appendix C.
Median Confidence Interval Tables for Small Samples

For small samples, tables C-1 and C-2 demonstrate use of a formula based upon the binomial distribution (Clapp 1989) to develop the lower and upper median confidence interval estimates. R_j is the ratio in an array ranked from the lowest (i = 1) to the highest (sorted in ascending order). Each confidence interval boundary typically falls between two ratios in the array. The interpolation factor is multiplied by the ratio value and the two are added together to obtain a weighted average. This method should be used for small samples with up to 30 observations (see tables C-1 and C-2). For larger samples the method found in *Property Appraisal and Assessment Administration* (IAAO 1990,
p 609) may be used.

Example
Using data from table 1-4 (n =17 ratios) and a 95 percent confidence interval in table C-2:

Lower bound:

[0.695 ($Ratio_5$) X 0.9899] + [0.717 ($Ratio_6$) X 0.0101] = **0.695**

Upper bound:

[0.933 ($Ratio_{13}$) X 0.9899] + [0.895 ($Ratio_{12}$) X 0.0101] = **0.933**

Therefore, the 95% median ratio confidence interval in table 1-4 is from .695 to .933.

Table C-1. 90% Confidence Interval Table

n	Lower Bound	Upper Bound
5	.8800 x R^1 + .1200 x	.8800 x R^5 + .1200 x R_4
6	.6333 x R^1 + .3667 x	.6333 x R^6 + .3667 x R_5
7	.2286 x R^1 + .7714 x	.2286 x R^7 + .7714 x R_6
8	.8643 x R^2 + .1357 x	.8643 x R^7 + .1357 x R_6
9	.5667 x R^2 + .4333 x	.5667x R^8 + .4333 x R_7
10	.1067 x R^2 + .8933 x	.1067 x R^9 + .8933 x R_8
11	.7855 x R^3 + .2145 x	.7855 x R^9 + .2145 x R_8
12	.4282 x R^3 + .5718 x	.4282 x R^{10} + .5718 x
13	.9558 x R^4 + .0442 x	.9558 x R^{10} + .0442 x
14	.6511 x R^4 + .3489 x	.6511 x R^{11} + .3489 x
15	.2217 x R^4 + .7783 x	.2217 x R^{12} + .7783 x
16	.8261 x R^5 + .1739 x	.8261 x R^{12} + .1739 x
17	.4603 x R^5 + .5397 x	.4603 x R^{13} + .5397 x
18	.9735 x R^6 + .0265 x	.9735 x R^{13} + .0265 x
19	.6480 x R^6 + .3520 x	.6480 x R^{14} + .3520 x
20	.2072 x R^6 + .7928 x	.2072 x R^{15} + .7928 x
21	.8084 x R^7 + .1952 x	.8084 x R^{15} + .1952 x
22	.4156 x R^7 + .5844 x	.4156 x R^{16} + .5844 x
23	.9413 x R^8 + .0587 x	.9413 x R^{16} + .0587 x
24	.5884 x R^8 + .4116 x	.5884 x R^{17} + .4116 x
25	.1203 x R^8 + .8797 x	.1203 x R^{18} + .8797 x
26	.7371 x R^9 + .2629 x	.7371 x R^{18} + .2629 x
27	.3161 x R^9 + .6839 x	.3161 x R^{19} + .6839 x
28	.8687 x R^{10} + .1313 x	.8687 x R^{19} + .1313 x
29	.4831 x R^{10} + .5169 x	.4831 x R^{20} + .5169 x
30	.9876 x R^{11} + .0124 x	.9876 x R^{20} + .0124 x

From Table 1-4. Demonstration Ratio Study Report

Rank	Parcel #	Appraised value	Sale price*	Ratio
1	9	$87,200	138,720	0.629
2	10	38,240	59,700	0.641
3	11	96,320	146,400	0.658
4	12	68,610	99,000	0.693
5	13	32,960	47,400	0.695
6	14	50,560	70,500	0.717
7	15	61,360	78,000	0.787
8	16	47,360	60,000	0.789
9	17	56,580	69,000	0.820
10	18	47,040	55,500	0.848
11	19	136,000	154,500	0.880
12	20	98,000	109,500	0.895
13	21	56,000	60,000	0.933
14	22	159,100	168,000	0.947
15	23	128,000	124,500	1.028
16	24	132,000	127,500	1.035
17	25	160,000	150,000	1.067

ate: 0/0/00. No outlier trimming

**** or adjusted sale price***

Table C-2. 95% Confidence Interval Table

n	Lower Bound	Upper Bound
6	.9000 x R^1 + .1000 x	.9000 x R^6 + .1000 x R_5
7	.6857 x R^1 + .3143 x	.6857 x R^7 + .3143 x R_6
8	.3250 x R1 + .6750 x	.3250 x R^8 + .6750 x R_7
9	.9222 x R^2 + .0778 x	.9222 x R^8 + .0778 x R_7
10	.6756 x R^2 + .3244 x	.6756 x R^9 + .3244 x R_8
11	.2873 x R^2 + .7127 x	.2873 x R^{10} + .7127 x R_9
12	.8936 x R^3 + .1064 x	.8936 x R^{10} + .1064 x R_9
13	.6056 x R^3 + .3944 x	.6056 x R^{11} + .3944 x
14	.1659 x R^3 + .8341 x	.1659 x R^{12} + .8341 x
15	.8218 x R^4 + .1782 x	.8218 x R^{12} + .1782 x
16	.4827 x R^4 + .5173 x	.4827 x R^{13} + .5173 x
17	.9899 x R^5 + .0101 x	.9899 x R^{13} + .0101 x
18	.7076 x R^5 + .2924 x	.7076 x R^{14} + .2924 x
19	.3059 x R^5 + .6941 x	.3059 x R^{15} + .6941 x
20	.8835 x R^6 + .1165 x	.8835 x R^{15} + .1165 x
21	.5479 x R^6 + .4521 x	.5479 x R^{16} + .4521 x
22	.0697 x R^6 + .9303 x	.0697 x R^{17} + .9303 x
23	.7381 x R^7 + .2619 x	.7381 x R^{17} + .2619 x
24	.3373 x R^7 + .6627 x	.3373 x R^{18} + .6627 x
25	.8958 x R^8 + .1042 x	.8958 x R^{18} + .1042 x
26	.5481 x R^8 + .4519 x	.5481 x R^{19} + .4519 x
27	.0677 x R8 + .9323 x	.0677 x R20 + .9323 x
28	.7221 x R9 + .2779 x	.7221 x R20 + .2779 x
29	.3063 x R9 + .6937 x	.3063 x R21 + .6937 x
30	.8709 x R10 + .1291 x	.8709 x R21 + .1291 x

Appendix D. Sales Chasing Detection Techniques

As long as sold and unsold parcels are appraised in the same manner and the data describing them are coded consistently, statistics calculated in a sales ratio study can be used to infer appraisal performance for unsold parcels. However, if parcels that sell are selectively reappraised or recoded based on their sale prices or some other criterion (such as listing price) and if such parcels are in the ratio study, sales ratio study uniformity inferences will not be accurate (appraisals will appear more uniform than they are). In this situation, measures of appraisal level also will be unsupportable unless similar unsold parcels were appraised by a model that produces the same overall percentage of market value (appraisal level) as on the parcels that sold based on consistently coded descriptive and locational data.

Assessors and oversight agencies do not need to employ all the detection techniques described in this appendix, but should consider implementing at least one procedure. In some cases, access to assessment information for all properties is necessary to perform the suggested tech-niques. Agencies that do not have access to these data are at a disadvantage, but should still implement detection techniques, such as those described in sections D.3 and D.4, which do not require such comprehensive assessment information.

D.1 Comparison of Average Value Changes

If sold and unsold properties within a specified group are appraised in the same way, their appraised values should reflect similar average percentage changes from year to year. Accordingly, changes in appraised values for sold and unsold parcels can be compared to determine whether sold parcels have been selectively appraised. Alternatively, the average percent change in value for sample parcels can be compared to that for the population of properties within a specified group or stratum for an indication of selective reappraisal.

For example, if sold parcels are considered representative of a stratum and appraised values increased an average of 10 percent while appraised values for unsold parcels in the same stratum increased an average of only 2 percent, "sales chasing" is a likely conclusion. At a more sophisticated level, the distribution of value changes for sold and unsold parcels can be compared, or statistical tests can be used to determine whether the distributions are different at a given level of confidence.

Statistical significance in the absence of practical significance may be moot. In large samples, small differences in the magnitude of assessed value changes on sold and unsold parcels can be proven to be statistically significant, yet the actual differences may be slight. Therefore, it is prudent to establish some reasonable tolerance, such as 3 percentage points (e.g., a change of 6 percent for sold properties and 3 percent for unsold properties), before concluding that a meaningful problem exists. Such tolerance applies to other detection techniques discussed below.

D.2 Comparison of Average Unit Values

If sold and unsold parcels are appraised equally, average unit values (for example, value per square foot) should be similar. An appropriate test (Mann Whitney or t-test) can be conducted to determine whether differences are significant.

D.3 Split Sample Technique

In this technique, two ratio studies are performed, one using sales that occurred before the appraisal date and one using sales after the appraisal date, both adjusted for date of sale as appropriate. Except for random sampling error and any error in time adjustments, results of the two studies should be similar. Sales chasing is indicated if the results of the first study are consistently better than those from the second. In such a case, the second study is still valid; the first study should be rejected.

D.4 Comparison of Observed versus Expected Distribution of Ratios

Assuming the ratio studies are based on sales that have been properly adjusted for time and other factors, a strong indication of the likelihood of "sales chasing" can be obtained by computing the proportion of ratios that would be expected to fall within a particular narrow range of the mean given the lowest likely standard deviation (although this depends somewhat on the assumption of a normal distribution). For example, with a standard deviation of 5 percent given a normal distribution, about 32 percent of the ratios would be expected to fall within ±2 percent of the mean (for example, between 98 and 102 percent, given a mean of 100 percent). Except in highly constrained or

well-behaved real estate markets, many appraisers consider such a low standard deviation, corresponding approximately to a COD of 4 percent, to be unachievable. Regardless of the distribution of the ratios, the likelihood is extremely low that there would be a sufficiently representative sample with more than this proportion of ratios in such a narrow range. If such is the case, "sales chasing" is a likely conclusion. Sometimes other processes through which adjustments to assessments on selling parcels are more pronounced than on the population as a whole mimic the effect of sales chasing, such as more intensive reviews of sales than non-sales. Regardless of the practice, the representativeness of the ratio study is called into question and additional tests should be instituted.

Although samples may not be normally distributed, in which case equivalently precise proportions of expected ratios around the median cannot be determined, the 32 percent concentration is very conservative. Finding such a high concentration of ratios around any measure of central tendency is a strong indicator of sales chasing or of a non-representative ratio study. In addition, when the distribution of ratios is bimodal or multimodal, similar significant concentrations of ratios around these modes can indicate selective reappraisal or sales chasing.

Table D-1 demonstrates the conservative nature of the 32 percent concentration. If the minimum achievable COD is, in fact, higher than 4 percent for the strata or property class being analyzed, then even lower concentrations could indicate sales chasing, and previously discussed investigative procedures should be instituted. One disadvantage to this procedure is that it can be misleading when applied to small samples. Therefore the method should not be employed for sample sizes less than 30.

Even when critical proportions of ratios shown in table D-1 are exceeded, further investigation should be conducted before concluding that sales chasing has occurred.

D.5 Mass Appraisal Techniques

Provided sales are sufficient in number, oversight agencies can develop mass appraisal models to apply to a random sample of unsold properties or to the population of properties that are represented by the sold properties. An independent multiple regression or other automated calibration techniques can be used to develop the models. An appraisal ratio study is then conducted for the unsold parcels by using values predicted by the independent models as indicators of market values. This approach has the following advantages:

- **It is objective and rooted in the market.**
- **The models can be reviewed for sufficient reliability before being applied to the unsold parcels.**
- **The technique yields measures of central tendency, which can be compared against those produced by the sales ratio study and tested for compliance with standards for the level of appraisal.**
- **The technique takes the form of an appraisal ratio study but avoids the time and expense of single-property appraisals.**

Reliability of this method depends on the accuracy and independence of the mass appraisal models used to generate the value estimates. The models must be consistent with appraisal theory and reviewed for sufficient reliability by examining goodness-of-fit statistics. The models should be independent of those used for assessment purposes.

Table D-1. Example of critical ratio concentrations indicative of sales chasing or similar practices

Minimum achievable COD	Standard deviation assuming normal distribution and	Critical proportion of	z score based on ± 2% range	Expected proportion of ratios below	Expected proportion of ratios below	Expected proportion between 0.98 and 1.02 (within ± 2% of central tendency)
1.6%	2.00%	69	1.0000	0.1587	0.8413	0.6826
4.0%	5.00%	32	0.4000	0.3446	0.6554	0.3108
5.0%	6.25%	26	0.3200	0.3745	0.6255	0.2510
6.0%	7.50%	22	0.2667	0.3949	0.6051	0.2102
7.0%	8.75%	19	0.2286	0.4110	0.5896	0.1801
8.0%	10.00%	16	0.2000	0.4207	0.5793	0.1586
10.0%	12.50%	13	0.1600	0.4364	0.5636	0.1272
12.0%	15.00%	11	0.1333	0.4467	0.5530	0.1063
14.0%	17.50%	10	0.1143	0.4545	0.5455	0.0910
16.0%	20.00%	8	0.1000	0.4602	0.5398	0.0796

**** Given the assumption that the COD shown represents the minimum achievable COD for the property type, class, or strata being analyzed with the ratio study, sales chasing (or a similar distortive procedure) is very likely if the concentration of ratios with ± 2% of a measure of central tendency, such as the median or a mode, or 100%, equals or exceeds this value. This proportion is based on values of the standard normal distribution function and assumption that sample size is greater than 30. The critical number equals the integer immediately exceeding the expected proportion.***

Appendix E. Alternative Uses for Ratio Study Statistics

In addition to the use of statistical measures to determine underlying assessment level and uniformity, comparisons between measures can provide useful information about sample representativeness, the distribution of the ratios, and the influence of outliers. For example, by comparing the mean and weighted mean, even without determining the PRD, the analyst should be aware that a large difference between these two measures indicates probable influence of atypical ratios on high-priced properties. This in turn could mean that outliers are still present in the sample and that the sample is not representative. Alternatively, it could indicate systematic appraisal error in the appraisal of properties within a particular price range. The geometric mean-to-mean relationship can provide similar information, especially about the presence of very low ratios, which have a greater influence on the geometric mean. The relationship between the COD and COV can provide similar additional guidance. This standard chooses the COD as the primary recommended measure of uniformity. This choice reflects the expectation of nonnormal distributions of ratios. Despite this consideration, it is useful to recognize that, in a normal distribution, the COV is approximately 1.25 times the COD. When the COV/COD ratio exceeds 1.25, the likely cause is a small number of very high ratios, which may again be non-representative.

It is incumbent on the analyst to review the ratio study sample to attempt to provide a representative sample. Comparisons of statistics, such as those given in this appendix, provide an additional tool to help the analyst in this regard.

Appendix F. Legal Aspects of Ratio Studies

Property taxation is governed by federal, state, and provincial constitutions, statutes, and administrative rules or regulations, many of which require uniform treatment of property taxpayers. Ratio studies play an important role in judging whether uniformity requirements are met. Relevant Canadian Federal statutes based on the Constitution Acts of 1867–1975 provide that municipal councils cannot discriminate between taxpayers of the same class within municipalities.

Relevant United States federal provisions include the Bill of Rights, the commerce clause of the United States Constitution, the Fourteenth Amendment, and the Tax Injunction Act (28 U.S.C. § 1341). Together they guarantee basic protections and due process while still granting states the authority to classify property and grant reasonable exemptions. Many constitutions have clauses that require uniformity in the assessment and taxation of property, although some jurisdictions, either by constitution or statute, permit certain differences between classes. Ratio studies provide a gauge of whether uniformity requirements are being met. A key U.S. federal statute relating to ratio studies is the U.S. Railroad Revitalization and Regulatory Reform Act ("4-R Act") of 1976 (49 U.S.C. § 11501). The 4-R Act requires that rail transportation property be assessed for tax purposes at no more than 105 percent of the assessment level of other commercial and industrial property in the same taxing jurisdiction. Similar federal statutes relate to air transportation property, motor carriers, and bus lines (49 U.S.C. §§14502 and 40116).

The 4-R Act provides that ratio studies be used to measure alleged discrimination. In such cases, as in any ratio study, the purpose of the study must be clearly defined and the study must be conducted so that it accurately evaluates the issues at hand. Important issues in ratio studies conducted pursuant to the 4-R Act include the proper definition of "other" commercial and industrial property, screening and adjustments to sales data, proper measures of the level of appraisal, and the combining and weighting of centrally valued and locally assessed properties.

Appendix G. Sales Validation Questionnaire

Parcel Identification Number _____ Instrument Number ____
Instrument Type _____ ❑ Multi Parcel Sale ❑ Split Sale Recording Date

Seller (Grantor) Name	Buyer (Grantee) Name
Mailing ___	Mailing ___
City/ST/ZIP _____	City/ST/ZIP _____
Phone _____	Phone _____
E-mail address _____	E-mail address _____
Brief Legal Description	Property/Situs Address _____
_____	Name and Mailing Address for Tax Statements
_____	_____
_____	_____

PLEASE ANSWER THE FOLLOWING QUESTIONS:

1. Special factors:
   - ❑ Sale between immediate family members: SPECIFY THE RELATIONSHIP
   - ❑ Sale involved corporate affiliates belonging to the same parent company
   - ❑ Sale of convenience (correct defects in title; create a joint or common tenancy, etc.)
   - ❑ Auction Sale
   - ❑ Deed transfer in lieu of foreclosure or repossession
   - ❑ Forced sale or s**heriff's sale**
   - ❑ Sale by judicial order (guardian, executor, conservator)
   - ❑ Sale involved a government agency or public utility
   - ❑ Buyer (new owner) is a religious, charitable, or benevolent organization, school or educational association
   - ❑ Land contract or contract for deed
   - ❑ Sale of only a partial interest in the real estate
   - ❑ Sale involved a trade or exchange of properties
   - ❑ **NONE OF THE ABOVE**
2. Check use of property at the time of sale:
   - ❑ Single Family Residence ❑ Agricultural Land
   - ❑ Farm/Ranch with Residence ❑ Vacant Lot
   - ❑ Condominium Unit ❑ Commercial/Industrial
   - ❑ Other: (Specify) _____
3. Was the property rented or leased at the time of sale? ❑ Yes ❑ No
4. Did the sale price include an existing business? ❑ Yes ❑ No
5. Was any personal property (such as furniture, equipment, machinery, livestock, crops, business franchise or inventory, etc.) included in the sale price? ❑ Yes ❑ No
   If yes, please describe _____

   Estimated value of all personal property items included in the sale price $ _____
6. Any recent changes to the property? ❑ Yes ❑ No
   - ❑ New Construction ❑ Demolition
   - ❑ Remodeling ❑ Additions

   Was the work performed by a professional? ❑ Yes ❑ No Date Completed _____/_____/_____
   Estimated cost of labor and materials? $ _____
7. Was there a change in use? ❑ Yes ❑ No
   If yes, please explain: _____

8. Does the buyer hold title to any adjoining property? ❑ Yes ❑ No
9. Was there an appraisal made on the property? ❑ Yes ❑ No

10. Were any **delinquent** taxes assumed by the purchaser?
    ❑ Yes—Amount $ _____ ❑ No
11. Were the **delinquent** taxes included in the sale price?
    ❑ Yes ❑ No ❑ NA
12. How property was marketed (check all that apply):
    ❑ Listed with real estate agent ❑ **Displayed a "For Sale" sign**
    ❑ Advertised in the newspaper ❑ Offered by word of mouth
13. Was the property made available to other potential purchasers?
    ❑ Yes ❑ No
    If not, explain _____

14. How long was the property on the market?
15. What was the asking price?
16. Date sales price was agreed upon _____/_____/
17. Method of financing (check all that apply):
    ❑ New loan(s) from a Financial Institution
    Name of lending institution: _____
    Cash down payment $ _____
    Amount $ _____Interest rate _____% Term
    ❑ Assumption of Existing Loan(s)
    Amount $ _____Interest rate _____% Term
    ❑ Seller Financing
    Amount $ _____Interest rate _____% Term
    ❑ Trade of Property: Estimated Value $ _____
    Describe Traded Property _____
    ❑ All Cash ❑ Not Applicable
18. **Total Sale Price $ _____**
19. Was the sale influenced by any unusual circumstances?
    ❑ Yes ❑ No
    If yes, please explain _____

20. Is the total sale price a fair reflection of the market value for the real estate on the sale date? ❑Yes ❑No If no, please explain _____

PRINT NAME -

SIGNATURE _____
❑GRANTOR (SELLER) Daytime Phone No. ( )
❑GRANTEE (BUYER) _ Daytime Phone No. ( )
❑AGENT _____ Daytime Phone No. ( )

Assessment Standards of the International Association of Assessing Officers

JANUARY 2010
Standard on Ratio Studies

JANUARY 2010
Standard on Property Tax Policy

JANUARY 2010
Standard on Public Relations

JANUARY 2008
Standard on Mass Appraisal of Real Property

DECEMBER 2005
Standard on Valuation of Personal Property

AUGUST 2004
Guide to Assessment Administration Standards

AUGUST 2004
Standard on Manual Cadastral Maps and Parcel Identifiers

SEPTEMBER 2003
Standard on Automated Valuation Models

JULY 2003
Standard on Administration of Monitoring and Compliance Responsibilities

JANUARY 2009
Standard on Digital Cadastral Maps and Parcel Identifiers

JANUARY 2003
Standard on Facilities, Computers, Equipment, and Supplies

DECEMBER 2008
Standard on Contracting for Assessment Services

JULY 2001
Standard on Assessment Appeal

JULY 2001
Standard on Valuation of Property Affected by Environmental Contamination

DECEMBER 2000
Standard on Professional Development

REFERENCES/RESOURCES

Marshall and Swift Valuation Service

North Carolina Department of Revenue-Local Government Division

North Carolina Machinery Act

International Association of Assessing Officers

The Appraisal Foundation

Asheboro/Randolph Board of Realtors

Triad Multiple Listing Service

Local Builders/Contractors

CoStar

Farragut Systems