GEORGIA DEPARTMENT OF REVENUE

LOCAL GOVERNMENT SERVICES DIVISION

Course IVA Urban Valuation

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The material within is intended to give the course participant a solid understanding of general principles in the subject area. As such, the material may not necessarily reflect the official procedures and policies of the Georgia Department of Revenue or the Department's official interpretation of the laws of the State of Georgia. The application of applicability to specific situations of the theories, techniques, and approaches discussed herein must be determined on a case-by-case basis.

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Urban Valuation - Land

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DEFINITION OF FAIR MARKET VALUE – O.C.G.A. 48-5-2

(.1) Arm's length, bona fide sale' means a transaction which has occurred in good faith without fraud or deceit carried out by unrelated or unaffiliated parties, as by a willing buyer and a willing seller, each acting in his or her own self-interest, including but not limited to a distress sale, short sale, bank sale, or sale at public auction.

(3) "Fair market value of property" means the amount a knowledgeable buyer would pay for the property and a willing seller would accept for the property at an arm's length, bona fide sale. The income approach, if data are available, shall be considered in determining the fair market value of income-producing property. If actual income and expense data are voluntarily supplied by the property owner, such data shall be considered in such determination. Notwithstanding any other provision of this chapter to the contrary, the transaction amount of the most recent arm's length, bona fide sale in any year shall be the maximum allowable fair market value for the next taxable year. With respect to the valuation of equipment, machinery, and fixtures when no ready market exists for the sale of the equipment, machinery, and fixtures, fair market value may be determined by resorting to any reasonable, relevant, and useful information available, including, but not limited to, the original cost of the property, any depreciation or obsolescence, and any increase in value by reason of inflation. Each tax assessor shall have access to any public records of the taxpayer for the purpose of discovering such information.

(A) In determining the fair market value of a going business where its continued operation is reasonably anticipated, the tax assessor may value the equipment, machinery, and fixtures which are the property of the business as a whole where appropriate to reflect the accurate fair market value.

(B) The tax assessor shall apply the following criteria in determining the fair market value of real property:

(i) Existing zoning of property;

(ii) Existing use of property, including any restrictions or limitations on the use of property resulting from state or federal law or rules or regulations adopted pursuant to the authority of state or federal law;

(iii) Existing covenants or restrictions in deed dedicating the property to a particular use;

(iv) Bank sales, other financial institution owned sales, or distressed sales, or any combination thereof, of comparable real property;
(v) Decreased value of the property based on limitations and restrictions resulting from the property being in a conservation easement;

(vi) Rent limitations, higher operating costs resulting from regulatory requirements imposed on the property, and any other restrictions imposed upon the property in connection with the property being eligible for any income tax credits with respect to real property which are claimed and granted pursuant to either Section 42 of the Internal Revenue Code of 1986, as amended, or Chapter 7 of this title or receiving any other state or federal subsidies provided with respect to the use of the property as residential rental property; provided, however, that properties described in this division shall not be considered comparable real property for the assessment or appeal of assessment of properties not covered by this division;

(vii)

(I) In establishing the value of any property subject to rent restrictions under the sales comparison approach, any income tax credits described in division (vi) of this subparagraph that are attributable to a property may be considered in determining the fair market value of the property, provided that the tax assessor uses comparable sales of property which, at the time of the comparable sale, had unused income tax credits that were transferred in an arm's length, bona fide sale.

(II) In establishing the value of any property subject to rent restrictions under the income approach, any income tax credits described in division (vi) of this subparagraph that are attributable to property may be considered in determining the fair market value of the property, provided that such income tax credits generate actual income to the record holder of title to the property; and

(viii) Any other existing factors provided by law or by rule and regulation of the commissioner deemed pertinent in arriving at fair market value.

(B.1) The tax assessor shall not consider any income tax credits with respect to real property which are claimed and granted pursuant to either Section 42 of the Internal Revenue Code of 1986, as amended, or Chapter 7 of this title in determining the fair market value of real property.

(B.2) In determining the fair market value of real property, the tax assessor shall not include the value of any intangible assets used by a business, wherever located, including patents, trademarks, trade names, customer agreements, and merchandising agreements.

AG Opinion - End of O.C.G. A. 48-5-2

Duty of county tax assessors to periodically update property valuations:

If the fair market value of property increases every two years, then it is the duty of county tax assessors to increase the valuation of property for tax purposes every two years. 1969 Op. Att'y Gen. No. 69-504 (rendered under former Code 1933, 92-5702).

What does this mean?

Update values any time that the market changes.
Internal Sales Ratio analysis should determine the time for revaluation.

Appraisal Procedures Manual Excerpts - Public Revenue 42
Georgia Department of Revenue 560-11-10-.09

(d) Collecting and maintaining property information.

The appraisal staff shall keep a record of information relevant to the ownership and valuation of all real property in the county and shall follow the procedures in this subparagraph when collecting and maintaining such real property data.

1. Description of property information.
The type of information the appraisal staff shall maintain includes, but is not limited to, property ownership, location, size, use, physical characteristics, sales prices, construction costs, rents, and operating expenses to the extent such information is available. The appraisal staff shall, consistent with this subparagraph, recommend to the board of tax assessors a uniform policy regarding the information to be included in their records.

(i) Geographic information.
Cadastral maps or computerized geographic information systems are to be maintained by the appraisal staff for all real property located in the county. In the event the county governing authority has established a separate mapping office and the maps maintained by such office conform with the requirements of this subparagraph, the appraisal staff may provide relevant information to such mapping office and still be in compliance with this subparagraph. Minimum mapping specifications shall include the following: all streets and roads plotted and identified; property lines delineated for each real property parcel; unique parcel identifier for each parcel; and physical dimensions or acreage estimate for each parcel. The appraisal staff shall use the parcel identifiers to link the real property records to the maps. The appraisal staff shall notify the Revenue Commissioner of all proposed changes to existing parcel-numbering systems before implementing such changes.

(ii) Sales information.
The appraisal staff shall maintain a record of all sales of real property that are available and occur within the county. The appraisal staff should also familiarize themselves with overall market trends within their immediate geographical area of the state. They should collect and analyze sales data from other jurisdictions having market and usage conditions similar to their county for consideration when insufficient sales exist in the county to evaluate a property type, especially large acreage tracts. The Real Estate Transfer Tax document, Department of Revenue Form PT-61, shall be a primary record source. However, the appraisal staff may also review deeds of transfer and security deeds recorded in the Office of the Superior Court Clerk, and probated wills recorded in the Office of the

Probate Judge to maintain a record of relevant information relating to the sale or transfer of real property. Records required to be maintained shall include at a minimum the following information: map and parcel identifier; sale date; sale price; buyer's name; seller's name; deed book and page number; vacant or improved; number of acres or other measure of the land; representativeness of sale using the confirming criteria provided in Rule 560-11-2-.56 (1)(d); any income and expense information reasonably available from public records; property classification as provided in Rule 560-11-2-.21, and; when available, the appraised value for the tax year immediately following the year in which the sale occurred.

(iii) Property characteristics.
The appraisal staff shall maintain a record of real property characteristics. This record shall include, but not be limited to, sufficient property characteristics to classify and value the property. In addition, the following criteria may be considered when determining which characteristics should be gathered and maintained: factors that influence the market in the location being considered; requirements of the valuation approach being employed; digest classification and stratification; requirements of other governmental and private users; and marginal benefits and costs of collecting and maintaining each property characteristic.

(iv) Land and location characteristics. The appraisal staff shall maintain a record of the land and location characteristics. The record should include, but not be limited to, location, frontage, width, depth, shape, size, topography, landscaping, slope, view, drainage, hydrology, off-site improvements, soil condition, soil productivity, zoning, absorption, nuisances, use, covenants, neighborhood, corner influence, proximity to recreational water, and quality of access.

(i) Field inspections.
The appraisal staff shall develop and present to the board of tax assessors for approval procedures that provide for periodic field inspections to identify properties and ensure that property characteristics information is complete and accurate. The procedures shall include guidelines for the physical inspection of the property by either appraisers or specially trained data collectors. The format should be designed for standardization, consistency, objectivity, completeness, easy use in the field, and should facilitate later entry into a computer assisted mass appraisal system, when one is used. When interior information is required, the procedures shall include guidelines on how and when to seek access to the property along with alternative procedures when such access is not permitted or feasible.

(iii) Field review frequency.

All real property parcels should be physically reviewed at least once every three years to ascertain that property information records are current.

(3) Land valuation.

The appraisal staff shall estimate land values by use of the sales comparison or income approach to value as provided in this subparagraph giving preference to the sales comparison approach when adequate land sales are available. The appraisal staff shall identify and describe the property, collect site-specific information, make a study of trends and factors influencing value and obtain a physical measurement of the site. Once the subject is analyzed, the appraisal staff shall classify the land for valuation. Once land values have been estimated, such appraisals should be regularly reviewed and updated.

1. Site analysis.

The appraisal staff shall utilize the trends and factors affecting the value of the subject property, such as its accessibility and desirability. The existing zoning, existing use, existing covenants and use restrictions in the deed and in law shall be applied. The other factors the appraiser may consider include, but are not limited to, environmental, economic, governmental, and social factors. Site-specific information that may be considered includes, but is not limited to, location, frontage, width, depth, shape, size, topography, landscaping, slope, drainage, hydrology, off-site improvements, soil condition, soil productivity, and the quality of access.

2. Market research and verification.

The appraisal staff shall build and maintain an up-to-date file system of qualified sales as provided in Rule 560-11-10-.09(2)(d)(1)(ii). Other preferred information to be considered is the motivations of the buyer and seller, as obtained from actual interviews of the parties to the sales. Adjustments to the sales to be considered by the appraiser include, but are not limited to, time of sale; location; physical characteristics; partial interest not conveyed; trades or exchanges included; personal property included; leases assumed; incomplete or unbuilt community property; atypical financing; existing covenants; deed restrictions; environmental, economic, governmental and social factors affecting the sale property and the subject parcel. These adjusted qualified sales may then be used to appraise the subject property.

STATISTICALLY TESTING AND PROVING THE RELIABILITY OF URBAN LAND VALUES

In many respects, the application of mass appraisal techniques and procedures is an art as well as a science. No mass appraisal system can hope to achieve 100% "accuracy". That is, very few appraisals will "hit right on" the actual selling price, but an adequate or effective appraisal schedule should, if properly applied in the field, result in an evaluation that closely approaches the selling price on a certain percentage of the sales.

There are statistical procedures to measure the acceptability of appraisals as compared to the actual selling price. It may be relatively easy to main a digest at 40%. It is another matter to maintain equity in a valuation system. Various procedures may be employed to "check" the accuracy of appraisals to determine if they fall within certain tolerable limits of variation.

Below are the statistical measures to evaluate the equity of an appraisal system:

Calculation of Statistics

Median

The median ratio is very simply the "middle" ratio. In addition to simplicity and ease of calculation of the median, perhaps its strong attribute is its statistical properties. **These properties allow a measure of central tendency that is not influenced by extreme ratios, or outliers.**

In order to find the median, follow these steps:

1. Calculate the assessment-sales ratio for each sample by dividing the assessment by the sales price.
2. Build an "array" of the ratios. An array is a listing of ratios from smallest to largest.
3. If, the total number of samples is an even number, the median ratio is the average of the two middle ratios. For example: if a sample size is 10, the two middle ratios will be ratio #5 and #6 in the array. Add ratio #5 and #6 together and divide by 2 to get the median.
4. If, the total number of samples is an odd number, the median ratio is the middle ratio. For example: If a sample size is 11, the median will be ratio #6 in the array.

Mean

The mean ratio is also known as the “average”. The mean is probably the most commonly used measure of central tendency. The Department of Revenue does not use the mean, because the mean is heavily influenced by the extreme ratios found in a sample.

To calculate the mean, follow these steps:

1. Calculate the assessment-sales ratio for each sample. Dividing the assessment by the sales price
2. Divide the total of all ratios by the number of ratios

Aggregate

The aggregate is also known as the weighted mean. The aggregate ratio may be your least desirable ratio because each sample is weighted according to its sale price, therefore, a sale with a large sale price will carry more ‘weight’ than a sale with a small price, thus the commonly known name ... weighted average.

To calculate the aggregate, follow these steps.

1. Add up all the assessments in the study.
2. Add up all the sales prices in the study.
3. Divide the total assessments by the total sales prices.

Confidence Intervals about the Median

Confidence Intervals are a very important part of sales ratio analysis for digest review and the determination of deficiencies. The Audit Department calculates confidence intervals about the Median and the Aggregate ratios which are used cooperatively with the Median and Aggregate ratio when used for the measure of central tendency.

The Audit Department will calculate a 95% confidence interval. Calculation of confidence intervals differs depending upon the measure of central tendency. The formula for calculating the confidence interval about the median:

N = Number of samples

$$\frac{1.96 * \text{Square Root (Number of Samples)}}{2}$$

or

.98 * Square Root (Number of Samples)

To compute the confidence interval around the Median:

Odd Number:
Add 1 to the above result and truncate to the nearest whole number. Count up & down this number of ratios from the median.

Even Number
Add .5 to the above result and truncate to the nearest whole number. Count up & down this number of ratios from the two middle ratios.

Example:
Number of samples (n) = 25
# of ratios up & down = Truncate (.98 * sqrt (25) +1) = 5
Interval is ratio #8 to ratio #18

Number of samples (n) = 26
# of ratios up & down = Truncate (.98 * sqrt (26) +.5) = 5
Interval is ratio #8 to ratio #19

You must have 6 or more observations to compute confidence intervals.

Confidence Intervals about the Aggregate

In order to compute a confidence interval around the Aggregate, we must calculate the Standard deviation of the ratios.

Compute Confidence Interval around Aggregate:

$$\text{Aggregate} +/- \frac{(1.96 * s)}{\text{Sqrt}(n)}$$

For Example:

Aggregate	=	38.50%
s	=	0.55
N	=	150
UCI	=	.3850 + { (1.96 * 0.55) / Sqrt(150) }
	=	.3850 + { 1.078 / 12.25 }
	=	.3850 + 0.0880
	=	.4730
LCI	=	.3850 – { (1.96 *0.55) / Sqrt(150) }
	=	.3850 – { 1.078 / 12.25 }
	=	.3850 – 0.0880
	=	.2970

Level of Assessment Statistical Tests

To pass the 'level of assessment' test, some part of the confidence interval must fall between the standard range of 36% to 44%. If the measure of central tendency (median or aggregate) of the sample is below 40%, the ratio at the upper end of the confidence interval (Upper Confidence Interval, UCI) must be no lower than 36%. If the measure of central tendency (median or aggregate) of the sample is above 40%, the ratio at the lower end of the confidence interval (Lower Confidence Interval, LCI) must be no higher than 44%.

LCI	Ratio	UCI	Pass or Fail
0.3234	0.3654	0.3788	Pass
0.3340	0.3401	0.3580	Fail
0.3600	0.3800	0.4000	Pass
0.4000	0.4200	0.4400	Pass
0.3300	0.3500	0.3800	Pass
0.4412	0.4540	0.4780	Fail

Coefficient of Dispersion (COD)

The Department of Revenue uses the coefficient of dispersion (COD) to measure uniformity. The COD measures the average amount of dispersion of the ratios from the measure of central tendency. Since the COD measures 'dispersion', it is to say that a low COD shows less dispersion or better uniformity.

To calculate a COD, follow these steps:

1. Find the median ratio.
2. Calculate the deviation (difference) of each sample ratio from the median ratio.
3. Take the absolute value of each deviation. Absolute value means disregarding any signs, negative or positive. If a deviation is -.0230 then the absolute value of that deviation is .0230.
4. Add up all the deviations.
5. Divide the total deviation by the number of samples, this is the "mean deviation".
6. Divide the mean deviation by the median.

Price Related Differential (PRD)

The Price Related Differential (PRD) is the statistic which measures assessment bias. When the PRD exceeds 1.00, this indicates that the higher valued properties are receiving a break because they are being under assessed relative to the lower valued properties.

For example: The PRD is 1.13, the higher valued properties may be assessed at 23% while the lower valued properties are assessed at 35%.

To calculate the PRD, follow these steps:

1. Calculate the mean ratio.
2. Calculate the aggregate ratio.
3. Divide the mean ratio by the aggregate ratio.

Progressivity – Higher value properties are generally assessed at larger percentage of fair market value than properties of lower value.

PRD < 1.00

Regressivity – Lower value properties are generally assessed at a larger percentage of fair market value than properties of higher value.

PRD > 1.00

Statistical Standards Summary

Level of Assessment

Determined using a Median ratio and considering an upper and lower confidence interval of 36% to 44%.

Equity/Uniformity

Determined using statistical measurement of Coefficient of Dispersion; whereby, setting a standard for approval at a COD of 15% or less for residential properties and 20% or less for agricultural, commercial and industrial properties.

Bias

Determined using statistical measurement of Price Related Differential, whereby, setting a standard for approval at a PRD of 95% to 110%.

Proposed Equalized Ratio

Ratio will be proposed to the county at 40% if the average level of assessment is measured between 38% and 42%, otherwise, ratio will be proposed at the measured average level of assessment.

Determination of Statistical Deficiencies

Once the Revenue Department receives the statistics from the Department of Audits, each homogeneous group (Residential, Agricultural, Commercial, and Industrial) is evaluated for deficiencies. Each homogeneous group is evaluated with three separate statistical tests, level of assessment, uniformity of assessment, and assessment bias.

Level of Assessment is measured using the Median. The standards for level of assessment are the same for each homogeneous group. The acceptable range for level of assessment is 36.00% to 44.00%. If the actual measure of central tendency falls within the range, or if the limits of the 95% confidence interval fall within this range, the homogeneous group of property shall be deemed to have passed the statistical test for level of assessment.

Uniformity of Assessment is measured using the Coefficient of Dispersion (COD). The standards for uniformity of assessment differ depending upon the homogeneous group of property evaluated. Residential Property shall meet a tighter standard for uniformity of assessment. The Residential standard is 15%. The COD for residential property shall be 15% or less in order to pass this statistical test. The standard for uniformity of assessment for all other homogeneous groups of property is 20%. The COD for all homogeneous groups shall be 20% or less in order to pass this statistical test. If, for purposes of achieving an adequate sample size, other homogeneous groups of property are combined with Residential property for the evaluation of residential property, the statistical standard shall be 20%, instead of 15%.

Assessment bias is measured using the Price Related Differential (PRD). The standards for assessment bias are the same for all homogeneous groups of property. The acceptable range for assessment bias is 0.95 to 1.10 (or 95% to 110%). The PRD must be greater than or equal to 0.95 or less than or equal to 1.10 in order to pass this statistical test.

Public Utility property is tested only in level of assessment.

Any homogeneous group of property can fail any or all of these statistical tests. Each test failed is listed as a separate finding in the digest order. Any finding or deficiency found to exist on a digest must be corrected by the next digest review year in order to avoid further penalties assessed against the county.

Sales Ratio Calculation Guidelines

Sales Ratio Study

Step 1 Step 2 Step 3

	Sale Price	Assessment	Ratio	Median Ratio	Deviation from Median Ratio
1	$33,000	$7,660	0.2321	0.2864	0.0543
2	$50,000	$13,200	0.2640	0.2864	0.0224
3	$50,000	$18,400	0.3680	0.2864	0.0816
4	$63,000	$30,870	0.4900	0.2864	0.2036
5	$65,000	$22,880	0.3520	0.2864	0.0656
6	$68,000	$16,320	0.2400	0.2864	0.0464
7	$68,000	$27,275	0.4011	0.2864	0.1147
8	$70,000	$25,370	0.3624	0.2864	0.0760
9	$75,000	$30,800	0.4107	0.2864	0.1243
10	$85,000	$15,300	0.1800	0.2864	0.1064
11	$110,000	$24,440	0.2222	0.2864	0.0642
12	$125,000	$25,125	0.2010	0.2864	0.0854
13	$200,000	$62,240	0.3112	0.2864	0.0248
	$207,000	$59,280	0.2864	0.2864	0.0000
Step 4	$400,000	$60,560	0.1514	0.2864	0.1350
Sum	***$1,669,000***	***$439,720***	***4.4725***		***1.2047***

Ratio = Assessment / Sales Price

Type	Answer	How
Median Ratio	0.2864	(number in the middle, once arrayed)
Mean Ratio	0.2982	(4.4725 / 15)
Aggregate Ratio	0.2635	(439,720 / 1,669,000)

Type	Answer	How	Standard
Average Absolute Deviation (AAD)	0.0803	(1.2047 / 15) *Average*	
Coefficient of Dispersion *Fairness*	0.2804	(.0803 / .2864) *AAD / Median*	.2000 or .1500
Price Related Differential *Pro / Regressivity*	1.13	(.2982 / .2635) *Mean / Aggregate Ratio*	1.00

Sales Ratio Analysis Steps

“RAMMACAP”

R atio – if(Appraised Value, (Appraised value * .40 = Assessment) divided by Sale Price) ***Total Saleprice & Assmt Columns)***

A rray– Array the ratios from lowest to highest
M ean – (total all ratios and divide by total number of ratios)
M edian– Find the middle (median). If (even number of sales, add the two, divide by 2)
A ADeviation (Mean Deviation) – subtract median from each ratio, ignore the negative sign, total deviations, divide by number of ratios.
C OD – AAD divided by Median
A ggregate – total all assessments divided by total of all sales
P RD – Mean divided by Aggregate

Sales Ratio Analysis Problem

Lot	SALE PRICE	APPRAISED VALUE	ASSESSMENT	RATIO
1	$55,590	$47,173		
2	$61,640	$50,203		
3	$75,550	$65,450		
4	$84,250	$81,708		
5	$96,700	$87,230		
6	$94,670	$87,295		
7	$66,440	$63,398		
8	$72,020	$69,150		
9	$75,550	$65,450		
10	$88,710	$69,298		

Calculate the Ratios for the sales above.
In addition, calculate the Median, COD, and PRD.
See next page for additional columns.

Array	Deviation

	Median		COD		Mean Deviation	
	Mean		PRD			
	Aggregate					

Use the following sales information to find the Median ratio, COD & PRD.

Sale	Assessed Value
$2,450,000	$907,700
$3,680,500	$1,579,200
$1,975,000	$771,500
$2,500,000	$885,000
$2,195,000	$826,600
$4,320,000	$1,881,200
$3,410,000	$1,200,500

Ratio	Array	Deviation

	Median		COD		Mean Deviation	
	Mean		PRD			
	Aggregate					

Using the following median ratios, array the ratios from lowest to highest. Perform a ratio analysis and determine the coefficient of dispersion.

Sales/Assessment Ratio
.2725
.3914
.3433
.4209
.3856
.3363
.4445

Array	Deviation

	Median		**COD**		**Mean Deviation**		
	Mean		**PRD**				
	Aggregate						

LAND VALUATION PRINCIPLES

The only source of market values for land is the market itself, inasmuch as land cannot be produced or built like improvements. Therefore, land never depreciates. However, land can be depleted due to the loss of value due to consumption, such as mining and timber removal. Sales and other market information about similar, comparable sites provide a basis for estimating the market value of the site being appraised. Thus, site values are primarily a reflection of market activity. The interaction of supply and demand produces prices that are the source of market value of sites.

Land Valuation

In appraisal procedure it is customary to derive an independent estimate of the value of the land, whether or not it is free and clear of all building improvements and available for development under a program of highest and best land use. The durability and relative indestructibility of land negates any reason for land depreciation and causes income from land to be capitalized into perpetuity. This is in contrast with site and building improvements which are subject to inevitable losses in value because of physical, functional, and economic causes of depreciation.

Often, the purpose of the appraisal necessitates the separation of land value from the total value of the improved property. To illustrate: Fire insurance is generally placed on the destructible portions of a property and not on the bare land used to support the site improvements. Also, in most jurisdictions, land value and the value of the improvements are recorded separately for ad valorem purposes.

The comparative sales approach is the most reliable method of land valuation. It involves comparisons and assumes that market evidence is available. Unfortunately, good, reliable sales data are not always available for use. For this reason, the assessor must resort to other methods of valuation. The five generally accepted methods are:

1. Market, or Direct (comparable) Sales comparison
2. Cost of Development, or Anticipated Use
3. Abstraction (Extraction of all improvements from sale) or Allocation, (Ratio of improvement value to site value or Distribution method)
4. Land Residual Capitalization (Income)
5. Capitalization of ground rent (Income)

Generally, only one of these approaches to land value is accepted as guiding, although a second approach, if applicable data are available, may prove useful as a check for accuracy. For purpose of clarity, the various approaches to land value will be discussed as independent appraisal techniques. In theory and practice, nevertheless, all valuation, irrespective of method or approach, is related to the local market. The interrelationship of the various approaches to value will become apparent from the discussion of recommended appraisal procedure as presented below. The land residual and capitalization methods will be covered in Course II: The Income Approach to Value.

CLASSIFICATION AND ANALYSIS OF DATA

All pertinent market data regarding comparables should be organized so that it can be retrieved quickly in a format that promotes easy and accurate comparison with the land being appraised. To qualify as an acceptable comparable sale, the details of each transaction must be verified. Hearsay evidence is not sufficient since the bona fide nature of each comparable used must be unquestionable.

The process of comparing the property being appraised with others in the market always involves two components – *elements of comparison* and *units of comparison*. To organize better the comparison process, a standard format is recommended. In this process, the appraiser is more exact and efficient by following guidelines that have been developed by practicing appraisers.

ELEMENTS OF COMPARISON

Appraisers use elements of comparison when considering the comparability of like properties, they are:

1. Trends and factors
2. Time or date of sale
3. Physical characteristics
4. Location
5. Conditions of sale.

Trends and Factors

The classification of land is basic to the study and analysis of trends and factors. At least a tentative decision on classification and highest and best use should be made at this point. The land may be classified as residential, commercial, industrial, land in transition, undeveloped, farm or ranch, or special purpose. The nature of the physical, economic, governmental, and social factors will assist in developing regional, city, neighborhood, and site data and in selecting the appropriate valuation method.

One of the more important factors to be considered in appraising land, particularly urban land, is zoning data. Zoning ordinances often describe in detail exactly what uses are permitted for the property. Highest and best use may be predetermined with the assistance of zoning ordinances. Zoning ordinances may also specify how many units may be built on a site, or they may limit the height of a building.

Time and Date of Sale

The process of comparing the date of the appraisal with the date of sale of the comparable recognizes that market conditions do change from time to time. This process determines if the comparable sale took place under the same or similar market conditions prevailing on the date of the appraisal. Sometimes market conditions remain relatively stable for a year or more, at other times they may change within a three to six month period, or even less. The interaction of demand and supply affects prices; if one or the other or both change, prices adjust accordingly. In either a seller's market or a buyer's market, price changes occur. This is the type of phenomenon that the appraiser must investigate, identify and compensate for in this step of the comparative procedure.

Judgments regarding the element of time of sale are made by a close study of market conditions prevailing at the time of the appraisal, compared and contrasted with those prevailing at the time of the sale of the comparable. If the comparable was sold in a market similar to that prevailing at the time of the appraisal, no adjustment need be made. If, however, the appraiser recognizes that market conditions varied considerably between the two dates, an adjustment must be made.

Although probably not adequate in itself to justify a difference between two markets, the simplest example is the situation in which a residential site sold one year ago in an open market situation after a reasonable listing period. Then for justifiable reasons, it sold again just two months ago for $1,200 more than the earlier price. This illustrates a singular example of the change in the market between two time periods expressed by the difference in the two sales prices. It also illustrates the kind of process the appraiser must apply to identify dollar or percentage adjustments between markets. An intimate knowledge of the market is necessary to establish the amount of the adjustment and a continuous collection and storing of data is essential to reach a defensible conclusion.

Adjusting for Date of Sale (Time Adjustments)
Inflation is 5% per year

2-Year-Old Sale Price $100,000 x 1.10 (2 x 5%) = $110,000 Adjusted Sale Price

Physical Characteristics

In this comparison process only major physical similarities and differences are identified and considered. A physical inspection of each comparable is desirable. The appraiser must be reasonably well informed about the basic soil conditions

and physical characteristics of the comparable sites being used so that justifiable adjustments can be made between them and the property being appraised.

If a great number of physical differences exist between the properties, the sale probably should not be used as a comparable. If there are none, or only a few such differences, it may be a justifiable and usable comparable.

The same procedure for determining the amount of adjustment for differences in physical characteristics is followed as for the other elements of comparison. Professional appraisers rely heavily on the local, active market from which to extract dollar (or percentage) amounts. The “matched pair” or “paired sales” technique is recommended.

When necessary, pairs of sales can be used to extract adjustments from the market even when there are two or more differences between the sales. One sale is selected as a base sale and all known differences between it and the other sales are adjusted for. The remaining difference is then attributed to any remaining unadjusted difference between the sales.

a. ***Location***

b. ***Frontage***: Frontage is the distance which a property abuts a street or other public way. It is normally expressed in front feet.

c. ***Width***: Width is normally measured along the front of a parcel. With regular shaped lots, the width and frontage are almost the same; with irregular shaped lots, width will be an average measurement either larger or smaller than the frontage. When the parcel is irregular, the standard method is to add together the front and rear measurements and divide by 2 to determine the average width.

d. ***Depth***: Depth is the distance from the front to the rear line of the parcel. The correct adjustment can be determined using either “paired sales” or depth factors. An example of “paired sales” is shown below:

   If there are two lots which are comparable in all respects except depth, one lot having 20 extra feet of depth, which sold for $250 more than the other lot, it is reasonable to conclude that the market paid $250 more for the extra depth of 20 feet. Such conclusions, however, should be supported by more than one pair of sales. The

greater the number of sales to support dollar (or percentage) adjustment figures, the more convincing the appraiser's conclusions.

e. ***Shape***: The shape of a site may be categorized as regular, slightly irregular, or very irregular. The shape of a lot may have direct bearing on its value.

f. ***Size***: Square footage or acreage or area. The area of a parcel is one of the most important characteristics affecting value. It is important to consider the effective area, that is, the area within which a building may be built. Zoning and deed restrictions often require that buildings be set back from the front, rear, and side property lines. This may have a major effect upon a site because of the reduction of usable land for improvements.

g. ***Topography***: Topography will often dictate the use to which a site may be put. It may also determine the size of the foundation, the type of construction, and the location of the building on the site.

h. ***Landscaping:***

i. ***Slope:*** It is necessary to determine whether the slope of the property is uphill, downhill, or side-to-side. The slope will determine what site improvements may be needed in the way of retaining walls and fill.

j. ***View:***

k. ***Drainage:*** The condition of the soil and subsoil will determine the feasibility of construction. In order to build on sites with fluid subsoil, it may be necessary to have special footings. *Percolation* refers to the ability of the soil to accept moisture. Poor percolation may require special drainage features. The soil condition may also determine whether ordinary landscaping may be used or whether additional cost will be required to improve the condition.

l. ***Hydrology:***

m. ***Off-Site Improvements***: The value of a site is strongly influenced by the value of the off-site improvements, such as streets, sidewalks, street lighting, and traffic patterns. Street width is of special importance to commercial and industrial property for

transportation needs; traffic flow may affect residential property due to the effect of noise and traffic hazards. The utilities available to the property, including water, gas, electricity, telephone and sewer will also have an effect upon the value of the site.

n. ***Soil Condition:***

o. ***Soil Productivity:***

p. ***Zoning:***

q. ***Absorption:***

r. ***Nuisances:***

s. ***Use:***

t. ***Covenants:***

u. ***Neighborhood:***

v. ***Corner Influence:***

w. ***Proximity to Recreational Water:***

x. ***Quality of Access:***

Land Characteristics Defined - Appraisal Procedures Manual 560-11-10-09 (2)(d)(iv)

Itemtype	item	item_no	descrip
PROP CHAR	INFLUENCE	001	Location
PROP CHAR	INFLUENCE	002	Frontage
PROP CHAR	INFLUENCE	003	Depth
PROP CHAR	INFLUENCE	004	Width
PROP CHAR	INFLUENCE	005	Shape
PROP CHAR	INFLUENCE	006	Size
PROP CHAR	INFLUENCE	007	Topography
PROP CHAR	INFLUENCE	008	Landscaping
PROP CHAR	INFLUENCE	009	Slope
PROP CHAR	INFLUENCE	010	View
PROP CHAR	INFLUENCE	011	Drainage
PROP CHAR	INFLUENCE	012	Hydrology
PROP CHAR	INFLUENCE	013	Off-Site Improvements
PROP CHAR	INFLUENCE	014	Soil Condition
PROP CHAR	INFLUENCE	015	Soil Productivity
PROP CHAR	INFLUENCE	016	Zoning
PROP CHAR	INFLUENCE	017	Absorption
PROP CHAR	INFLUENCE	018	Nuisances
PROP CHAR	INFLUENCE	019	Use
PROP CHAR	INFLUENCE	020	Covenants
PROP CHAR	INFLUENCE	021	Neighborhood
PROP CHAR	INFLUENCE	022	Corner Influence
PROP CHAR	INFLUENCE	023	Proximity Rec Water
PROP CHAR	INFLUENCE	024	Quality of Access

Location

The fourth element of comparison to be considered is that of location. Much emphasis has already been made of the importance of neighborhood influence on marketability of sites.

If a comparable site is in the same neighborhood as the appraised site, then there is a likelihood that no location adjustments would be made. In rare instances, if it were on the edge of a neighborhood and subject to either some beneficial or undesirable elements, neither of which affected the site being appraised, an adjustment must be made. If, however, the neighborhood has been properly identified, it is unlikely that differences in schools, parks, and other kinds of important neighborhood considerations will exist.

In the event a site being considered as a comparable is located in a different neighborhood from the property being appraised, a more thorough analysis must be made of possible differences between the two neighborhoods. It should be recognized, however that two separate neighborhoods may be very similar in all respects and no adjustments need be made. On the other hand, if there are major differences between the two neighborhoods, appropriate adjustments must be calculated.

For example, the neighborhood of the appraised site may be served by excellent schools in close proximity to the site. In contrast, the comparable may be located in a neighborhood with less desirable schools much farther away. The market typically would recognize both factors and pay accordingly. To estimate the difference in price for these two variations, the matched pair system can be used again. That is, the comparable in a different neighborhood is compared with an identical site that has sold in the subject's neighborhood. If the former has a lower sale price, this is an indication of the difference the market recognizes in the two neighborhoods because of the school situation.

Many other kinds of neighborhood differences, such as variations in deed restrictions, zoning and building codes, must be considered and if they are major, an adjustment must be made.

Conditions of Sale

This element of comparison is probably the most difficult to extract from the market and for which to make adjustment. It refers to the circumstances under which both buyer and seller make their decisions to purchase and sell a specific

site. By the definition, market value requires willing, informed and able purchaser and a willing and informed seller. Quite often, however, and probably more frequently than is generally realized, there are more than normal compulsions to buy or sell. An obvious situation of unusual pressure is a condition of bankruptcy.

Financing conditions are also considered in this element. If conventional financing is typical for the purchase of the type of site in question, comparables that have sold with 100% financing, on conditional sales contracts or with a type of financing other than conventional require special analysis and judgment. If such special conditions produce a price different from that which would have been paid with conventional financing, an adjustment must be made. The conditions of financing, which include the amount of interest charged, the length of the mortgage and the ratio of loan to value, may be analyzed for every sale. When there are substantial differences between the comparables and the property being appraised, either a percentage or dollar adjustment must be made. This again must be extracted from the market and requires thorough and complete analysis of the circumstances.

The condition of a sale element is often difficult to prove in the market. Even if certain conditions are recognized, it may be difficult to apply an appropriate or justifiable dollar or percentage adjustment for the differences between the property being appraised and the comparable in the market. Some professional appraisers feel strongly that if the conditions of the sale are different from those applying to the property being appraised, the sale should not be used as a comparable. Others feel that if reasonable adjustments can be made for conditions of the sale, it is permissible to use it in this procedure to reach an indication of the market value of the residential lot being appraised.

UNITS OF COMPARISON

It is often necessary to analyze differences in size and shape of comparable sales properties in order to apply uniform methods of valuation and to compare directly sites of varying size and shape. Five basic units of comparison are used to value sites:

1. Front Foot – where display area commands a premium
2. Square Foot
3. Acre
4. Site (lot)
5. Units Buildable -

Care must be exercised in selecting the unit of comparison. The assessors must ascertain from the market the appropriate unit or units in terms of which sites are bought and sold.

Front Foot

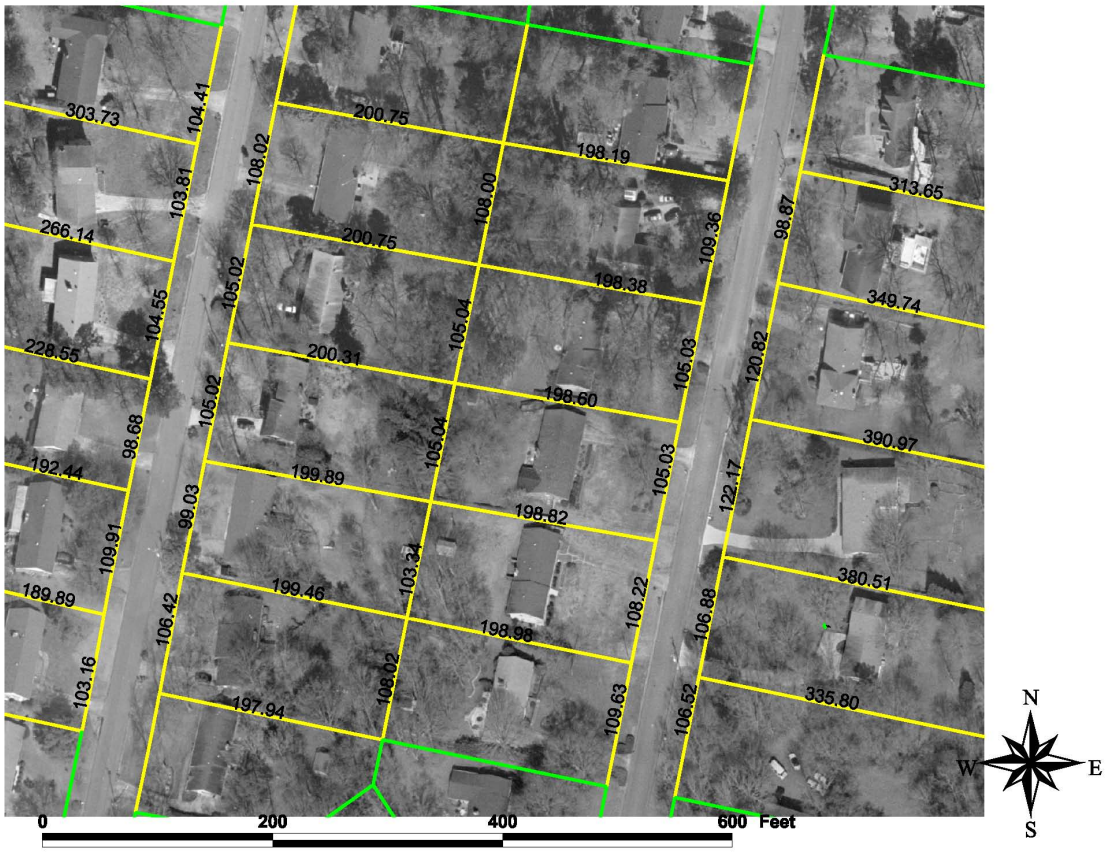
Use of the front foot as a unit of comparison is based upon the premise that frontage significantly contributes to value. A *front foot* is a strip of land 1-foot wide, fronting on a street, railroad siding, or body of water, and continuing to the rear of the parcel. This distance is frequently measured in terms of a standard depth.

The front foot method is useful in the valuation of commercial property, where the amount of frontage a property enjoys is important because of the exposure it gives for display area. It may also prove useful in the valuation of industrial property that fronts on a railroad siding in light of the requirements of the industrial firm. Likewise, the amount of frontage on a body of water may contribute to the value of a residential lot for swimming, boating, or the view. The "effective" frontage of irregularly shaped lots is calculated according to a formula that will be discussed later. An example of the front foot method is as follows:

> A downtown commercial lot has 60-foot frontage on Main Street and a depth of 100 feet. By analyzing comparable sales, it has been determined that similar lots with 100-foot depth are selling for $2,500 per front foot. Therefore, the lot would have a value of $150,000.
>
> 60 front feet x $2500 per front foot = $150,000

Front Foot Method Example - Commercial

Front Foot Method Example - Residential



4-3-2-1 Depth Rule

This depth rule has gained prominence because it is general in character and not tied by name to any person or location. The rule is based on the theory that a standard lot, if divided into four equal parts, will differ in value as follows: First quarter, 40 percent; second quarter, 30 percent; third quarter, 20 percent; and fourth quarter, 10 percent. This value allocation accounts for the rule's classification as 4-3-2-1. For every additional quarter of lot depth added beyond standard depth the value increment decreases by 1 percent from that of the last quarter. Thus, the next 25 feet beyond a 100-foot standard lot adds 9 percent of value; the next 25 feet beyond that, 8 percent; the next 7 percent, and so forth.

Depth Tables

Depth tables assist in the measurement of changes in value caused by variation in lot depths where land is typically purchased on a front-foot basis. They are based on the observation that the front section of a lot is more valuable on a unit basis than the rear portion. As depth increases, the value unit decreases.

The least complex basis for computing depth tables is the "4-3-2-1 rule." This rule states that the first 25 percent of depth of a lot represents 40 percent of the total lot value, the second 25 percent of depth represents 30 percent of the value, the third 25 percent of depth represents 20 percent of the value, and the fourth 25 percent of depth represents 10 percent of the value. Figure 1 illustrates the value of a 50-foot x 100-foot-deep lot having a front-foot value of $200.

Some depth tables may show small variations from this standard. Figure 1 is a sample depth table, based on a standard depth of 100 feet. Using this same depth table, the value of a lot of 65 x 125 feet can be computed. Assume that the unit foot value for lots with standard depth of 100 feet is $50. According to the table, the depth factor for a lot 125 feet deep is 109 percent, or 1.09. Therefore, the lot value is $3,542.50.

65 x 125-foot lot size

65 front feet x $50 per front foot value = $3250

Standard Lot Value $3250 x 1.09 depth factor = $3542.50 Adjusted Lot Value

Figure 1

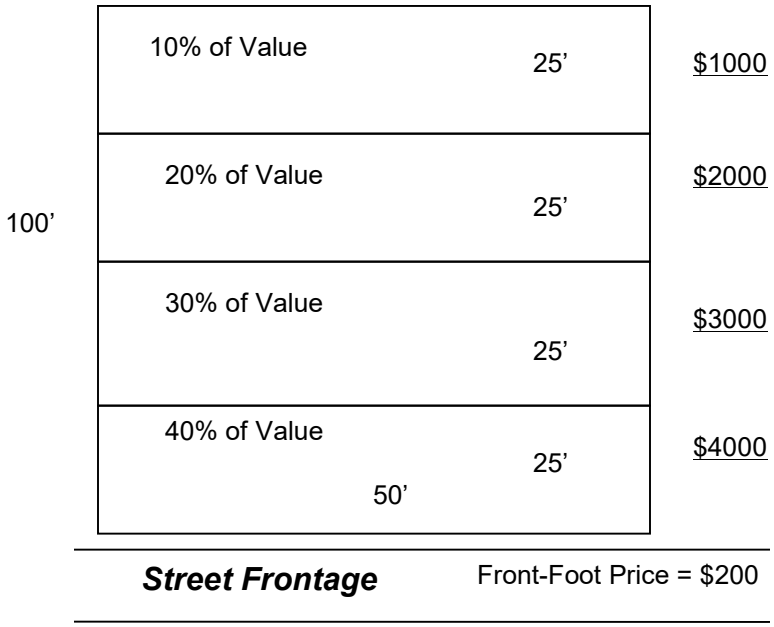
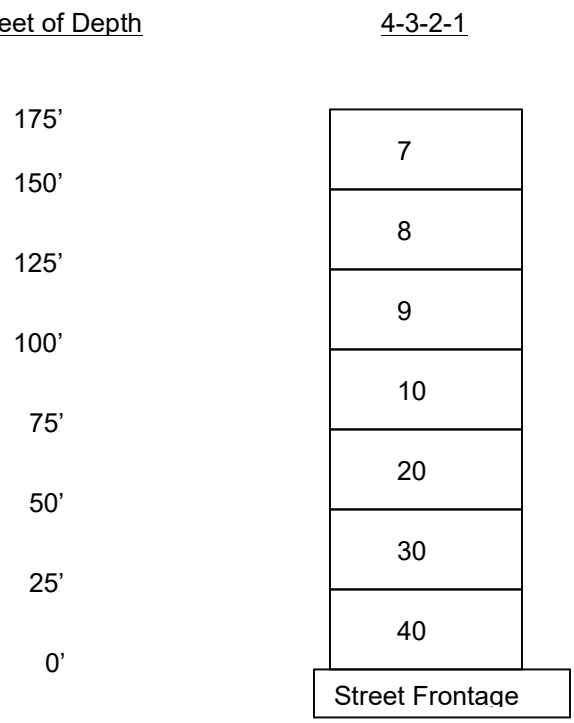


FIG. 1: 4-3-2-1 RULE

The estimated lot value is $10,000. The 4-3-2-1 rule assumes that the first 25 feet of depth is worth 40 percent, or $4,000; the second 25 feet is worth 30 percent, or $3,000; the third 25 feet is worth 20 percent, or $2,000; and the fourth 25 feet is worth 10 percent, or $1,000.

As stated under 4-3-2-1 depth rule, for every additional quarter of lot depth added beyond the standard depth the value increment decreases by 1 percent from that of the last quarter. Thus, the next 25 feet beyond a 100-foot standard lot add 9 percent of value. The next 25 feet beyond that, 8 percent, the next, 7 percent, and so forth as shown below in Figure 2.

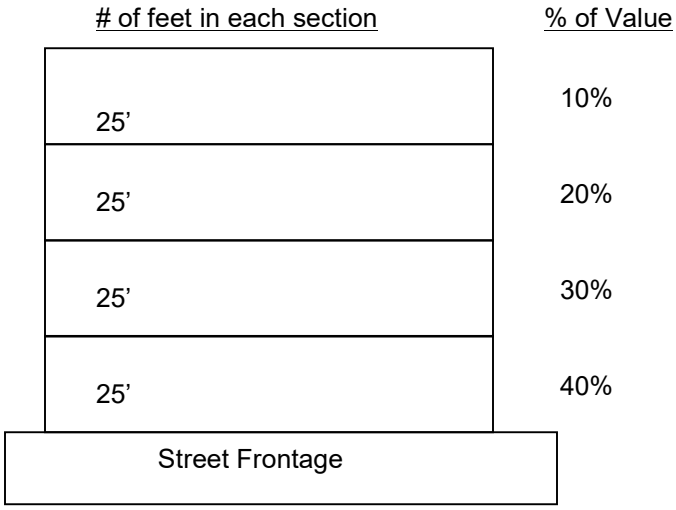
FIGURE 2



DEPTH COMPARISON BASED ON PERCENTAGE OF VALUE
(Standard Lot = 100 Feet)

Interpolation for Depth Factors

Interpolation, in a mathematical sense, is the process of finding intermediate terms or numbers in a sequence of terms or numbers. It may be used in conjunction with depth table if the depth of the subject property falls between depths listed with factors on the table being used. If this is the case then interpolation may be used to calculate the proper factor. For example Table I gives factors for depths in increments of 10 feet. The standard lot depth is 100 feet and you want the depth factor for 95 feet.



The lot is divided into equal quarters by 4-3-2-1 Rule. The depth factor desired is found in the last 1/4 of the lot. Determine how many feet of total depth are in the last 1/4 of the lot.

25 + 25 + 25 + 20 = 95

Determine what percentage 20 feet of depth is of the final 1/4 25 feet:

$$\frac{20}{25} = .80$$

Multiply that percent (.80) times the percent of lot value in which the depth is contained

.80 x .10 = .08

Add the newly calculated percentage to other percentages that comprise the lot.

40% + 30% + 20% + 8% = 98% Depth Factor for 95 foot deep lot.

Interpolation for Depth Factors - Exercise

Example #1

Depth Table with Standard Depth of 100':
You want to price a lot with a depth of 115' but table only shows factor for 110' = 1.0360 and factor for 120' = 1.0720. Using the 4-3-2-1 rule find the depth factor for 115'.

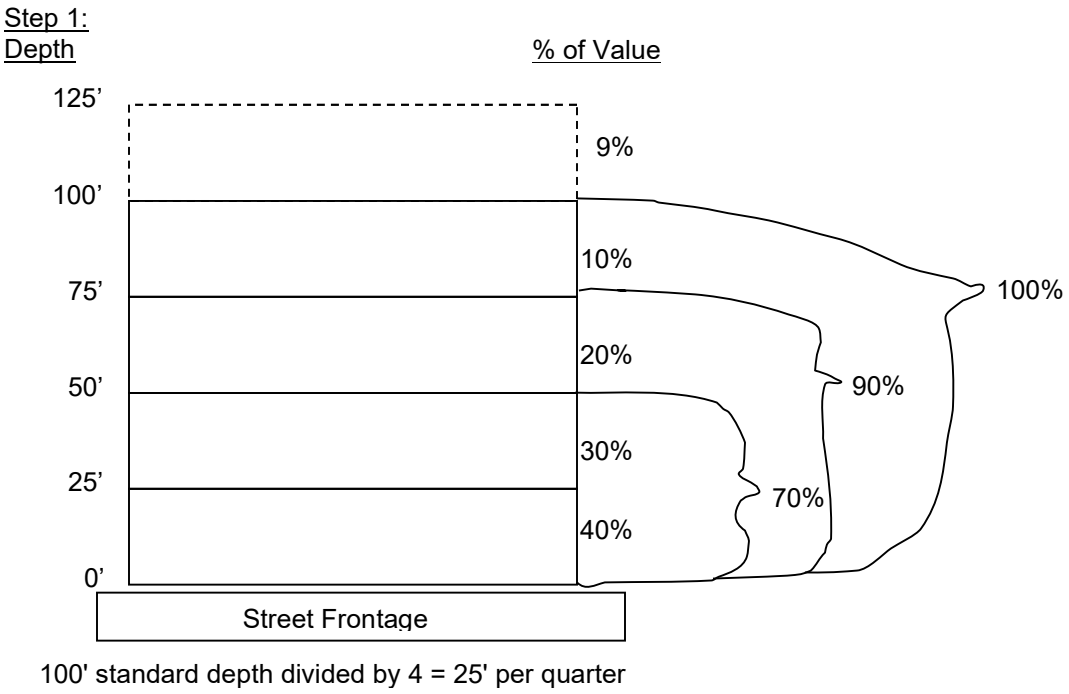
Example #2: Standard Depth of 100'

Using the 4-3-2-1 rule find the depth factor for 65'.

Example #3: Standard Depth of 200'

Using 4-3-2-1 rule with a standard depth of 200' you know that 40% of the value will be in the first 25% of the depth (i.e., .25 x 200' = 50' with depth factor of .4000). Find the depth factor for 80 feet.

Example #1



100' standard depth divided by 4 = 25' per quarter

Step 2: In example #1, we are looking for depth factor 115'. Therefore, the quarter we are looking for will be between 100 and 125 feet. The 4-3-2-1 rule tells us this total quarter represents 9% of value added. Therefore:

9% - Number of feet in quarter = % of value per foot in quarter
15' ÷ 25' = 60

Step 3: Looking for 115' depth factor. Therefore, we have 15 feet (115' - 100' = 15') in the next quarter.

Number of feet in quarter x % of value per foot added (Step 2) = % of value for subject in quarter

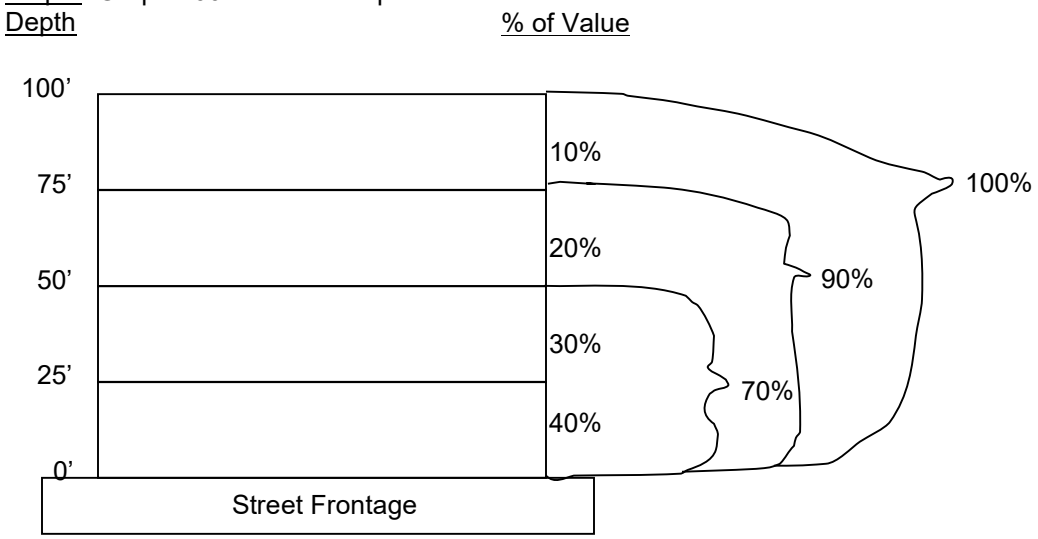
.60 x .09 = .054

Step 4: Depth factor for subject: Add Step 3 to preceding total % of value.

.0540 + 1.00 (100% for 100') = 1.0540 depth factor for 115' using 100' standard depth

Example #2

Step 1: Graph 100' standard depth



Step 2: In example #2, we are looking for depth factor for 65'. Therefore, the quarter we are looking for will be between 50 and 75 feet. The 4-3-2-1 rule tells us this total quarter represents 20% of value added. Therefore:

15' ÷ 25' = .60

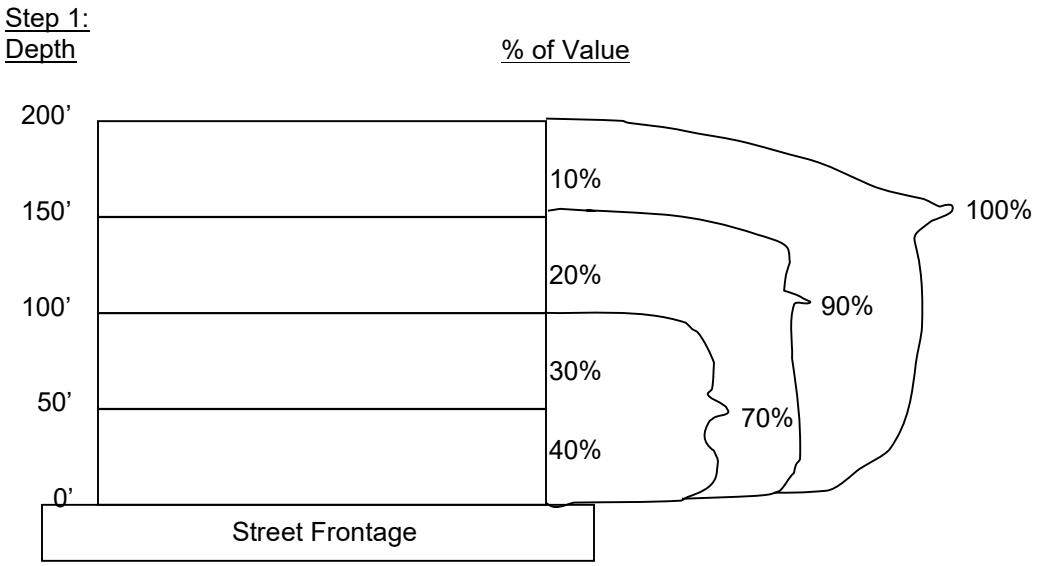
Step 3: Looking for 65' depth factor. Therefore, we have 15 feet (65' - 50' = 15') in the next quarter. Therefore:

.60 x .20 = .12

Step 4: Depth factor for subject: Add Step 3 to preceding total % of value. Therefore:

0.12 + .70 (70% for 50' depth) = 0.82 depth factor for 65' using 100' standard depth

Example #3



200’ standard depth divided by 4 = 50’ per quarter

Step 2: In example #3, we are looking for depth factor for 80 feet. Therefore, the quarter we are looking for will be between 50 and 100 feet. The 4-3-2-1 rule tells us this total quarter represents 40% of value added. Therefore:

30' ÷ 50' = .60

Step 3: We are looking for the 80' depth factor. Therefore, we have 30 feet in the quarter. Therefore:

.60 x .30 = .18

Step 4: Depth factor for subject: Add Step 3 to preceding total % of value. Therefore:

.18 + .40 (40% for 50' depth) = .58 depth factor using 200' standard depth

Sample 100’ Depth Table

Percentages

1 - 40		41 - 80		81 - 120		121 - 160		161 - 400	
Depth	Percentage	Depth	Percentage	Depth	Percentage	Depth	Percentage	Depth	Percentage
1	1.6	41	59.2	81	92.4	121	107.56	161	120.08
2	3.20	42	60.4	82	92.8	122	107.92	162	120.36
3	4.8	43	61.6	83	93.2	123	108.28	163	120.64
4	6.4	44	62.8	84	93.6	124	108.64	164	120.92
5	8	45	64	85	94	125	109	165	121.2
6	9.6	46	65.2	86	94.4	126	109.32	166	121.48
7	11.2	47	66.4	87	94.8	127	109.64	167	121.76
8	12.8	48	67.6	88	95.2	128	109.96	168	122.04
9	14.4	49	68.8	89	95.6	129	110.28	169	122.32
10	16	50	70	90	96	130	110.6	170	122.6
11	17.6	51	70.8	91	96.4	131	110.92	175	124
12	19.2	52	71.6	92	96.8	132	111.24	180	125.2
13	20.8	53	72.4	93	97.2	133	111.56	185	126.4
14	22.4	54	73.2	94	97.6	134	111.88	190	127.6
15	24	55	74	95	98	135	112.2	195	128.8
16	25.6	56	74.8	96	98.4	136	112.52	200	130
17	27.2	57	75.6	97	98.8	137	112.84	205	130.1
18	28.8	58	76.4	98	99.2	138	113.16	210	130.2
19	30.4	59	77.2	99	99.6	139	113.48	215	130.3
20	32	60	78	100	100	140	113.8	220	130.4
21	33.6	61	78.8	101	100.36	141	114.12	225	130.5
22	35.2	62	79.6	102	100.72	142	114.44	230	130.6
23	36.8	63	80.4	103	101.08	143	114.76	235	130.7
24	38.4	64	81.2	104	101.44	144	115.08	240	130.8
25	40	65	82	105	101.8	145	115.4	250	131
26	41.2	66	82.8	106	102.16	146	115.72	260	131.2
27	42.4	67	83.6	107	102.52	147	116.04	270	131.4
28	43.6	68	84.4	108	102.88	148	116.36	280	131.6
29	44.80	69	85.2	109	103.24	149	116.68	290	131.8
30	46	70	86	110	103.6	150	117	300	132
31	47.2	71	86.8	111	103.96	151	117.28	310	132.2
32	48.4	72	87.6	112	104.32	152	117.56	320	132.4
33	49.6	73	88.4	113	104.68	153	117.84	330	132.6
34	50.8	74	89.2	114	105.04	154	118.12	340	132.8
35	52	75	90	115	105.4	155	118.4	350	133
36	53.2	76	90.4	116	105.76	156	118.68	360	133.2
37	54.4	77	90.8	117	106.12	157	118.96	370	133.4
38	55.6	78	91.2	118	106.48	158	119.24	380	133.6
39	56.8	79	91.6	119	106.84	159	119.52	390	133.8
40	58	80	92	120	107.2	160	119.8	400	134

APPLICATION OF DEPTH TABLE
EXAMPLE

Use the Depth Table Handout to find the value of a lot that is 110 feet wide and 190 feet deep. Assume that the standard unit value is $175 per front foot.

$ 175.00	Standard Value per Front Foot
x 110.00	Front Foot
$19,250.00	**Value for Parcel of Standard Depth (100 Feet)**
x 1.276	DF on the previous page at 190 feet is 127.6% or factor of 1.276
$24,563.00	**Indicated Value**

Use the Depth Table Handout and a standard depth of 250’.

Find the depth factor for the following depths

295’ –

272’ –

265’ –

253’ –

308’ –

Use the 150’ Standard Depth.
Find the depth factor for the following depths

130’ -

181’ –

175’ –

125’ -

158’ –

Applying a Depth Table
Exercise

You are appraising commercial properties in an area where land is appraised on the front foot basis. The standard unit value for the area is $500 per front foot. Using the Depth Table Handout, find the depth factor and calculate the value for each lot using the 100' standard depth table column.

In addition, a fourth parcel across the street (same standard unit value) is 125 feet wide and 140 feet deep. What is its indicated value?

Formula: FF * $FF * Depth Factor = Value

$500 FF / LOT	FRONTAGE	DEPTH	DEPTH FACTOR	VALUE
1	100	125		
2	200	115		
3	75	90		

Using Interpolation find the depth factors for the following:

Problem 1

Using 150 feet standard depth table, what is the depth factor for 110 feet?

Solution:

Problem 2

Using 200 feet standard depth table, what is the depth factor for 175 feet?

Solution:

Problem 3:

Using 100 feet standard depth table, what is the depth factor for 118 feet?

Solution:

Problem 4:

Using 250 feet standard depth table, what is the depth factor for 190 feet?

Solution:

Using Interpolation find the depth factors for the following:

Problem 1

Using 300 feet standard depth table, what is the depth factor for 235 feet?

Solution:

Problem 2

Using 200 feet standard depth table, what is the depth factor for 169 feet?

Solution:

Problem 3:

Using 100 feet standard depth table, what is the depth factor for 135 feet?

Solution:

Problem 4:

Using 250 feet standard depth table, what is the depth factor for 175 feet?

Solution:

Calculating $ / FF Using the Market

Calculate new front foot value from sales.

Using 100' Standard Depth Find appropriate depth factor from depth table handout

Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$63,125	115	100		
6	$60,920	110	100		
7	$61,000	110	100		
8	$62,622	110	110		
9	$63,000	110	110		
10	$62,000	110	105		
13	$70,000	119	135		

What is the front foot price?

Odd-Shaped Lot Valuation

Irregular plots often present a problem in appraising. Assuming no disutility because of odd shape and no impairment of utilization under a highest and best land employment program, an irregular site should be evaluated in accordance with the customary unit measure applied in practice for similar and regular-shaped lots, plus value allowance for odd plot portions as demonstrated in Figure 3. Residential and commercial sites are generally evaluated in relation to the number of feet fronting on a city street. **Where the shape is a parallelogram** as shown in Figure 3, **no value adjustment is necessary** for lot irregularity since the two triangles marked B and C in effect form a rectangle the combined value of which is equal to a rectangle of like street frontage.

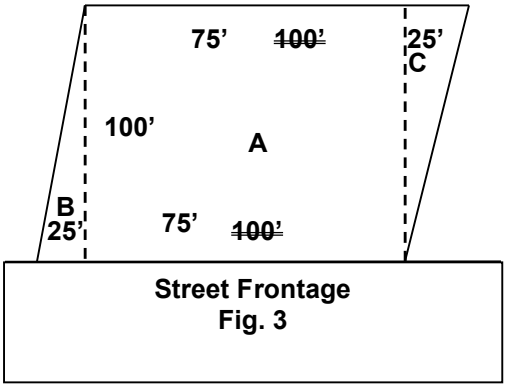


Fig. 3

Odd-shaped lots such as shown in Figure 4 are valued as rectangular lots, plus the additional value of the triangular lots. Based on market study, a triangular lot, provided the base fronts the street such as Lot 2 in Figure 4, is worth 65 percent of a rectangular lot of the same frontage. A triangular lot with its apex on the street such as Lot 1 in Figure 4 is worth 35 percent of a rectangular lot with a street frontage equal to the base of the triangle. To illustrate, assuming a value of $50 per front foot, the lots illustrated in Figure 4 could be appraised as shown below the figure. ***100' Standard Depth Table***

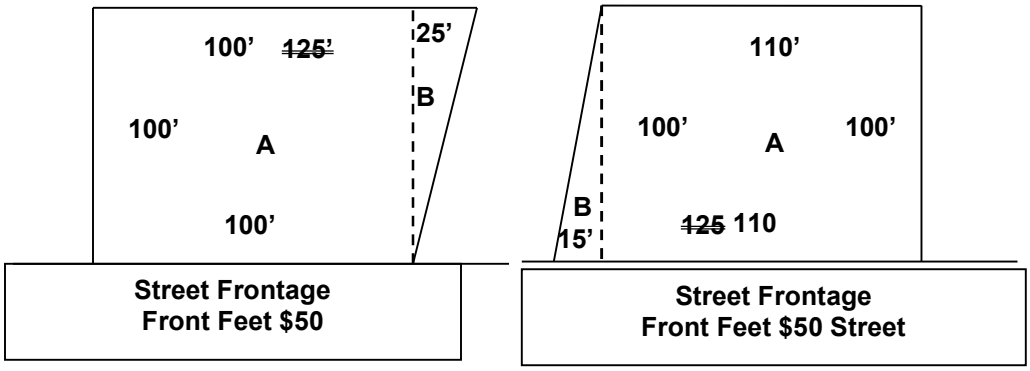
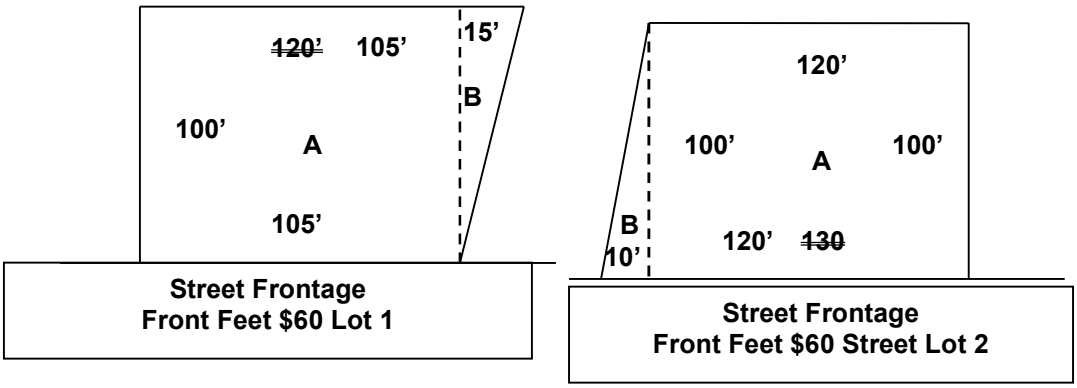


Fig. 4

Lot No. 1
A 100 feet @ $50.00 = $5,000.00
B 25 feet @ $50.00 x .35 = 437.50
Total value Lot No.1 = ***$5,437.50***

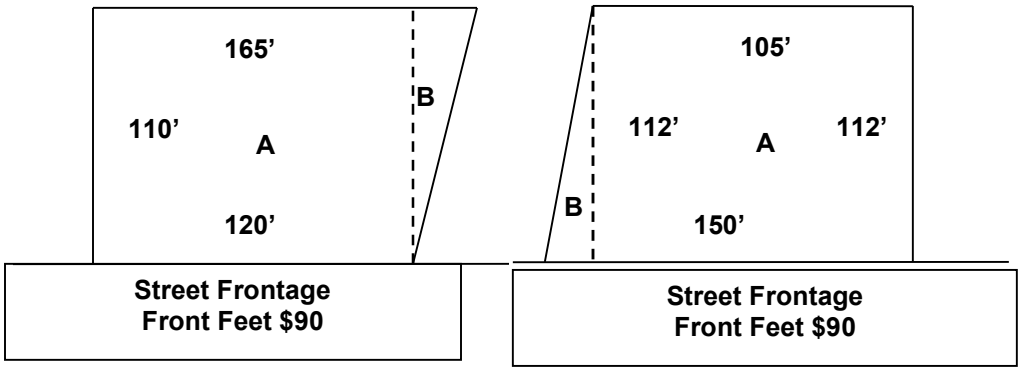
Lot No. 2
A 110 feet @ $50.00 = $5,500.00
B 15 feet @ $50.00 x .65 = 487.50
Total value Lot No. 2 = ***$5,987.50***

Odd-shaped lots Exercise ***100' Standard Depth Table***



Odd Shaped Lot Exercise

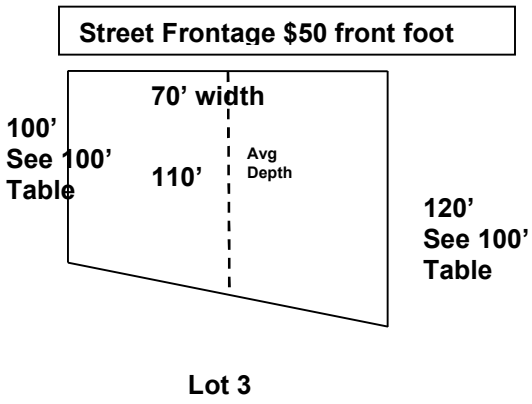
Use a Standard Depth of 100'.



Find the depth factor and value of each lot using 4-3-2-1 rule and 65-35 rule.
In addition, find the Fair Market Value of each lot.

Parallel Sides of Unequal Depth ***100' Standard Depth Table***

(A lot that has its side lines parallel and perpendicular depth unequal)



To compute the value of this lot, multiply the front foot rate by the width, then multiply this sum by taking the average of the two unequal sides.

EXAMPLE:

Manual Calculation

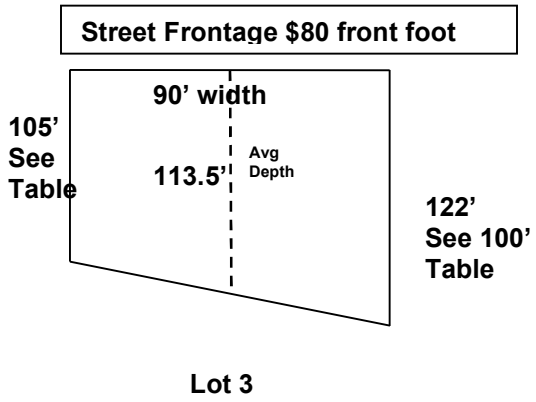
100 + 120 = 220 / 2 = 110 Average Depth

10/25=.40 x .09 = .036 + .10 + .20 + .30 + .40 = 1.036 Depth Factor

70' x $50 = $3500 x 1.036 = $3,626

Parallel Sides of Unequal Depth Exercise ***100' Standard Depth Table***

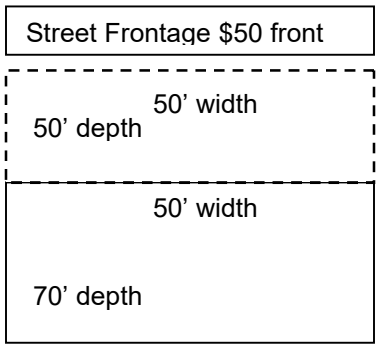
(A lot that has its side lines parallel and perpendicular depth unequal)



Lot 3

Back or Rear Lot ***100' Standard Depth Table***

(A lot having no street frontage, usually the result of an adjoining owner)



Lot 4

To compute the value of this lot, multiply the front foot rate by the width. Inasmuch as this lot does not have any frontage, we take the difference between the depth factor of the front lot and the depth factor of the rear lot and use this percentage.

EXAMPLE:

Manual Calculation
.40 + .30 = .70 Depth Factor @ 50'

50 + 70 = 120' Total Depth of Lot

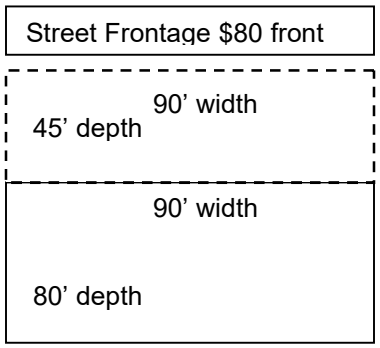
20 / 25 = .80 x .09 = .072 + .10 + .20 + .30 + .40 = 1.072 Total Depth Factor

1.072 - .70 = .3720 Depth Factor for Rear Lot

50' x $50 = $2500 x .3720 = $930 Value of Lot

Back or Rear Lot Exercise ***100' Standard Depth Table***

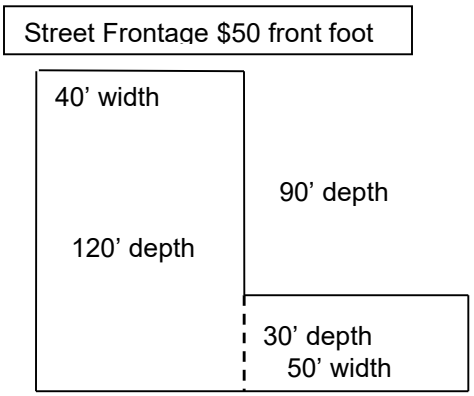
(A lot having no street frontage, usually the result of an adjoining owner)



Lot 4

"L" Shaped Lot ***100' Standard Depth Table***

(a combination of a rectangular and a back lot)



To compute the value of this lot, use the same method as a rectangular lot, previously shown, and the method used in the back-rear lot shown. By adding the two sums, value of lot is obtained.

EXAMPLE:
Manual Calculation

15 / 25 = .60 x .10 = .06 + .20 + .30 + .40 = .960 Depth Factor @ 90'

20 / 25 = .80 x .09 = .072 + .10 + .20 + .30 + .40 = 1.072 Total Lot Depth Factor

1.072 - .960 = .1120 Depth Factor for Rear Lot

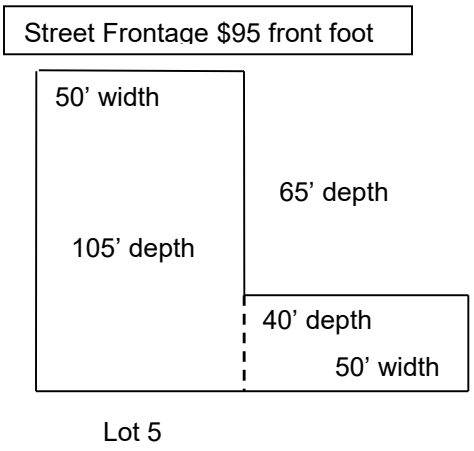
40' x $50 = $2000 X 1.072 = $2144

50' x $50 = $2500 x .1120 = $280

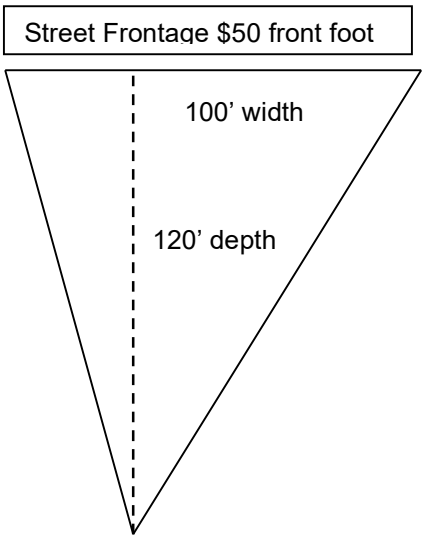
Total Value = $2424

"L" Shaped Lot Exercise ***100' Standard Depth Table***

(A combination of a rectangular and a back lot)



Triangular Lot (With Base on Street) ***100' Standard Depth Table***



Lot 6

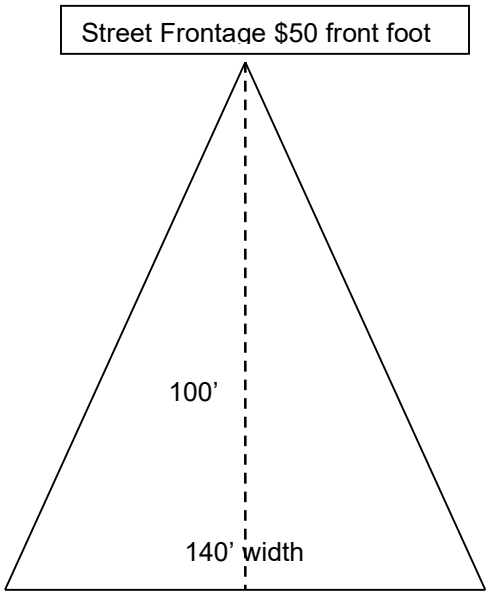
To compute the value of this lot, take 65% of the actual front foot width and multiply this result by the front foot rate, then multiply this result by the depth factor percentage to obtain value.

EXAMPLE:
Manual Calculation

20 / 25 = .80 x .09 = .072 + .10 + .20 + .30 + .40 = 1.072 Total Depth Factor

65% of 100' = 65' x $50 = $3250 x 1.072 = $3484

Triangle Lot (With Apex on Street) ***100' Standard Depth Table***



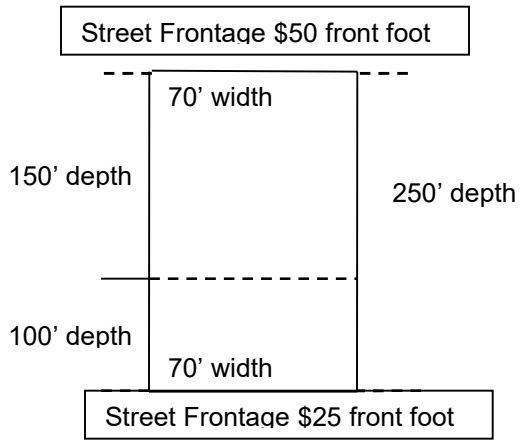
Lot 7

To compute the value of this lot, take 35% of the rear width to obtain the front foot width, then multiply this result by front foot rate, then multiply the depth factor percentage along the perpendicular depth line shown to obtain the value of this lot.

EXAMPLE:

35% of 140' = 49' x $50 = $2450 x 1.00 = $2450.

Lot Having Front on Two Streets ***100' Standard Depth Table***



Lot 9

To compute the value of this one owner lot, determine the depth point where the values are divided and use depth factor percentage of each. Compute as per rectangular lots using both front foot rates and results for value.

EXAMPLE:
Manual Calculation

.08 + .09 + .10 + .20 + .30 + .40 = 1.17 Depth Factor @ 150'
70' x $50 = $3500 x 1.17 = $4095

Depth Factor @ 100' = 1.00 (100 Standard Depth Table)
70' x $25 = $1750 x 1.00 = $1750

$4095 + $1750 = $5845

Corner Lot Valuation

With the increasing width of standard residential lots; from 20 and 25 feet to 100 feet or more in suburban subdivisions; the advantages which corner locations once offered in providing better light, more convenient access and, perhaps, greater privacy have diminished to a point where the additional hazards encountered at corner locations from automobile traffic have in some instances neutralized corner location advantages. In residential areas, therefore, the recommended appraisal practice is not to assign a value increment because of corner location, unless market sales in a community or area clearly demonstrate preference for such locations.

Commercial corner locations, however, do have value advantages over inside lots because of greater accessibility, increased pedestrian traffic, better merchandise display, and store visibility from two street locations. Corner lots typically command better rentals, and the net income to land is higher at corner store locations whether they are under owner or tenant occupancy. Under the income approach--that is demonstrated in Course II--the added corner value is directly accounted for by capitalization of the increased income attributable to a site location. Under the market approach, however, comparable sales data generally relate to inside lots, and adjustments are required to account for corner value influences. As stated previously, rules do not create value; nevertheless, they do offer, where tested by field practice, an opportunity to check value findings derived from other approaches to value.

Formula for Corner Influence (CI) is as follows:

$$CI = \frac{\text{Sale Price of Corner Lot*}}{\text{Sale Price of Interior Lot*}} = \text{Corner Adjustment}$$

*Unit of comparison may be Unit, Front Foot, or Square Foot.

$$CI = \frac{\text{Sale Price Lot 1}}{\text{Sale Price Lot 4}} = \frac{\$82,000}{\$78,000} =$$

CI = 1.05 or 5% Higher Than Interior

Alternate Method:

$$\frac{\text{Difference in Lots (1 and 4 Sale Price}}{\text{Lot 4 Sale Price}} = \frac{\$4,000}{\$78,000} = .0513 \text{ (Corner Adjustment)}$$

USAGE OF TABLES AND RULES

Below are five lots fronting on Main Street:

The established value in this area is $125 per front foot.

The following rules are used in this neighborhood to estimate land value:

"65-35" rule for triangular lots:

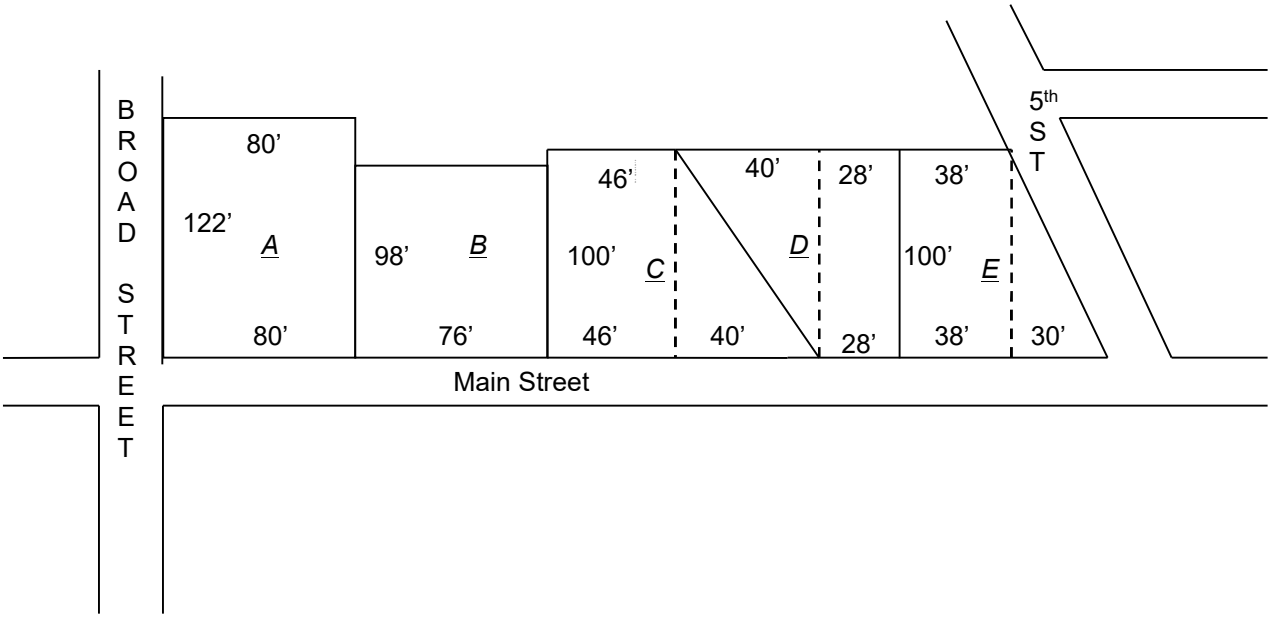
Use 35 percent of value of lot if the apex of a triangular lot is on the street.

Use 65 percent of value of lot if the apex of a triangular lot is at the rear.

Depth factors: Standard Depth of Lots Located in Area - 100'.

Interpolate for lots of greater or lesser depth using the 4-3-2-1 Rule.

Corner influences: (Formula: SPCL / SPIL)
Two lots (interior and corner) on Main Street sold. The interior lot sold for $25,000. The corner lot sold for $28,500. Determine the corner influence and apply it to the lot on Broad Street



PROBLEM:

Calculate the value of these five lots using the above rules.

Land Valuation Models

Some Computer Assisted Mass Appraisal systems use two methods for applying adjustments.

Linear or Additive

The dependent variable is the sum of the independent variables.

Base Rate x area x (adj1 + adj2 + adj3 + adj4) = Value

or, if Front Foot Method

Base Rate x area x depth factor x (adj1 + adj2 + adj3 + adj4) = Value

Multiplicative

The variables are raised to powers or themselves serve as powers; the results are then multiplied.

Base Rate x area x adj1 x adj2 x adj3 x adj4 = Value

Square Foot

The unit of comparison is used for irregularly shaped parcels and where frontage is not a dominant factor in the valuation process. It is used for sites that sell for an average price per square foot of land area. This method can be used to value residential, commercial, and small industrial sites. For example:

A subject property consists of 20,000 square feet. Comparable properties of similar size are selling for $1.50 per square foot. The indicated value of the subject site is therefore $30,000.

20,000 square feet x $1.50 per square foot = $30,000

In this example $1.50 is the average selling price per square foot; however, in many cases the assessor may not be able to find comparable sales of similar size. In the adjustment process, consideration should be given to the minimum site necessary for the improvement (dwelling, retail store, etc.) and the amount of excess land, if any. Through the analysis of sales, the square foot values should be developed for the minimum site as well as for any excess land. As an illustration, suppose that the minimum lot size required by zoning in the previous example is 15,000 square feet. After an analysis of various sized properties with similar characteristics, an estimate of the minimum lot value is $1.00 per square foot, and the excess land value is $0.20 per square foot. The indicated value of the minimum site is $15,000 and that of the excess land is $1,000.

Minimum site (15,000 square feet x $1.00) = $15,000
Excess land (5,000 square feet x $0.20) = $ 1,000
Total Site Value (20,000 square feet x $0.80) = $16,000

Square Foot Example

Area Formulas

Area of a Square (all 4 sides equal/congruent)	Area = base * height
Area of a Cube	# sq. ft. * height
Area of a Rectangle (parallelogram with 4 right angles)	Area = base * height
Area of a Triangle (3-sided polygon)	Area = ½Base * height
Area of a Parallelogram (quadrilateral with opposite sides parallel)	Areas = Base * height
Area of a Trapezoid (quadrilateral with one pair of parallel sides)	Area = median (½ sum of the parallel sides) * Height
Area of a Trapezium (quadrilateral with no parallel sides)	Divide into 2 triangles, measure base of triangle, measure height at 90˚ angle from base, calculate areas of triangle and total their areas
Circumference of a Circle (distance around circle)	C = 2 ∏ (6.2832) * radius ∏ = 3.1416
Diameter of a Circle	Circumference * .3183 or sq. root of area * 1.12838
Radius of a Circle (distance from center of circle to any point on the circle)	R = C / 2 ∏ (6.2832)
Area of a Circle (plane figure with all of its points the same distance from a given point called the center)	Area = ∏ (3.1416) * radius square
Side of Inscribed square	Diameter * .7071 or circumference * .225
Area of Ellipse	Product of the 2 diameters * .7854
Area of a parabola	Base * 2/3 of height (altitude)
Surface of Sphere	Diameter * Circumference
Solidity of Sphere	Surface * 1/6 diameter or cube of diameter * .5236 or cube of radius * 4.1888 or cube of circumference * .016887
Diameter of Sphere	Cube root of solidity * 1.2407 or Square root of surface * .56419
Circumference of Sphere	Square root of surface * 1.772454 or Cube root of solidity * 3.8978

Find the appropriate square foot price from sales.

Formula:
FF * Depth = SF
SP / SF = Price Per SF

Lot #	SP	FF	Depth	SF	$/SF
2	$59,900	120	105		
6	$58,600	130	105		
7	$58,600	130	105		
8	$50,000	130	95		
9	$52,000	130	98		
10	$53,030	130	92		
13	$57,970	124	110		

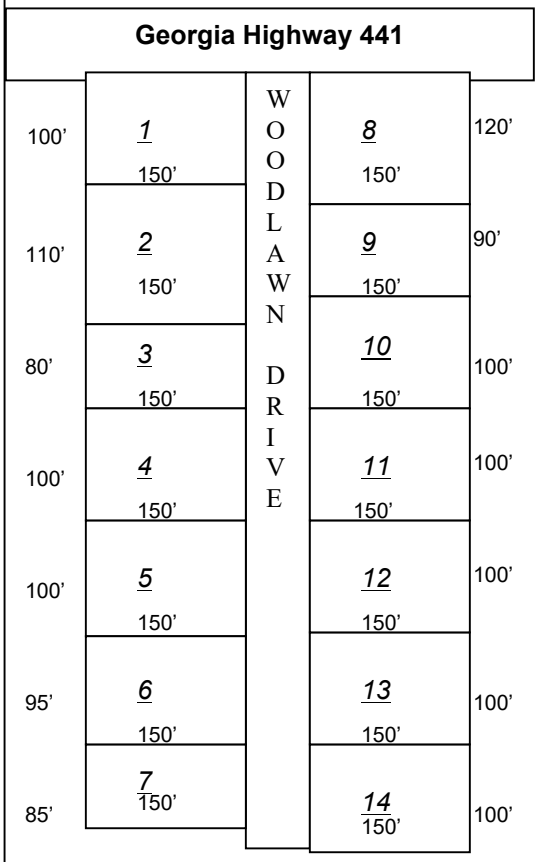
What is the Square Foot Price Range?

Square Foot Problem:

From the sales information below, determine the appropriate per square foot price and value each lot accordingly.

Formula:
FF * Depth = SF
SP / SF = Price Per SF
Time * %Adj.

Lot #	SP	Time Adj.	Adj. SP	FF	Depth	SF	$/SF
3	14,727						
6	19,380						
13	19,000						
14	20,000						



Woodland Heights S/D-AREA#1 Sq. Ft. Method		
Sales Data		
Lot	**Sale Price**	**Date**
3	**$14,727**	**Two-Year-Old Sale**
6	**$19,380**	**Current Year Sale**
13	**$19,000**	**One-Year-Old Sale**
14	**$20,000**	**Current Year Sale**

Time Adjustment = 5% per year

Acre

Acres may be calculated by dividing square footage by **43,560** and are used in the valuation of large industrial sites, shopping centers and rural and farm properties. There may be a breakdown between acres that front on a public thoroughfare and rear acres. In many circumstances front acres are more valuable.

Acreage Formulas

Acreage and Areas Square Tracts of Land		
Acres	One Side Lin. Ft.	Area Sq. Ft.
1/10	66.0	4,356
1/8	73.8	5,445
1/6	85.2	7,260
¼	104.4	10,890
1/3	120.5	14,520
½	147.6	21,780
¾	180.8	32,670
1.0	208.7	43,560
1 ½	255.6	65,340
2.0	295.2	87,120
2 ½	330.0	108,900
3.0	361.5	130,680
5.0	466.7	217,800

Surveyor's Measures	
7.92 inches	1-Link
25 Links	1-Rod
4-Rods	1-Chain
10 Sq. Chains	1-Acre
640 Acres	1-Sq. Mile
36 Sq. Miles or 6 Miles Sq.	1-Township

Acre Method Example

From the sales listed below:
Find the price per acre.
Formula: SP / Acres = Price Per Acre

Lot #	Sale Price	Acres	$Per Ac
1	$64,350	6.90	
5	$64,750	6.95	
7	$62,200	6.72	
9	$67,300	7.15	

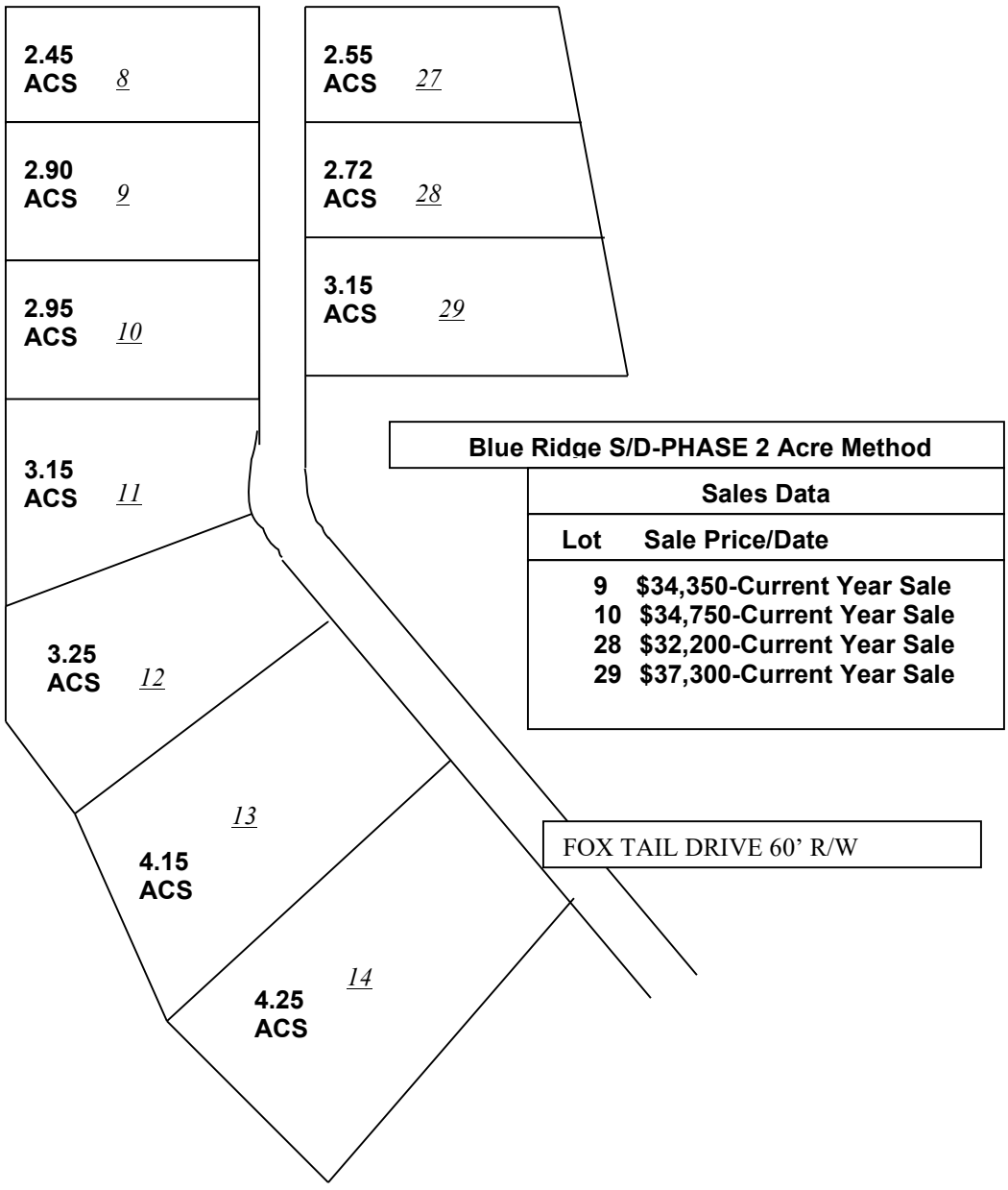
What is the indicated per acre price range?
What per acre price would you use?

Acre Method

LAND VALUE WORKSHEET
Blue Ridge S/D PHASE 2

Develop a per acre price for this rural subdivision and value each lot accordingly.

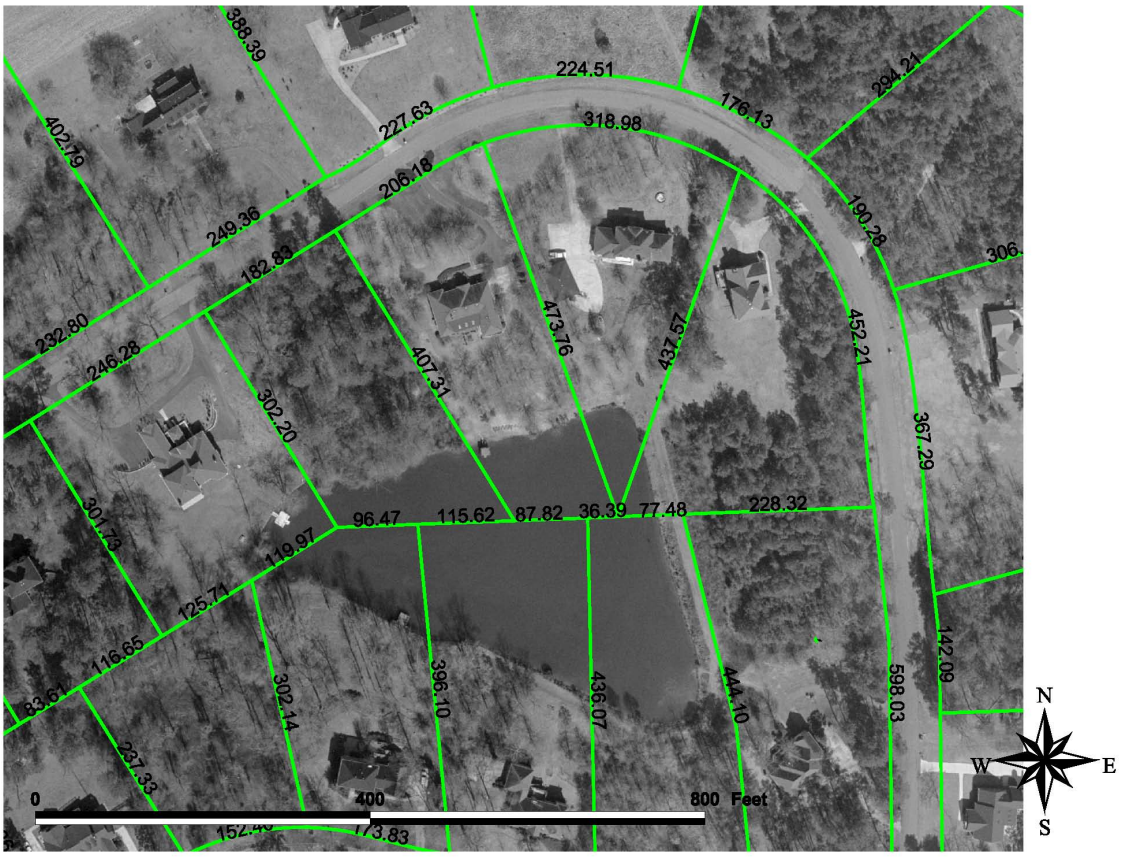
Lot #	Sale Price	Acres	$Per Ac
9			
10			
28			
29			



Site or Lot

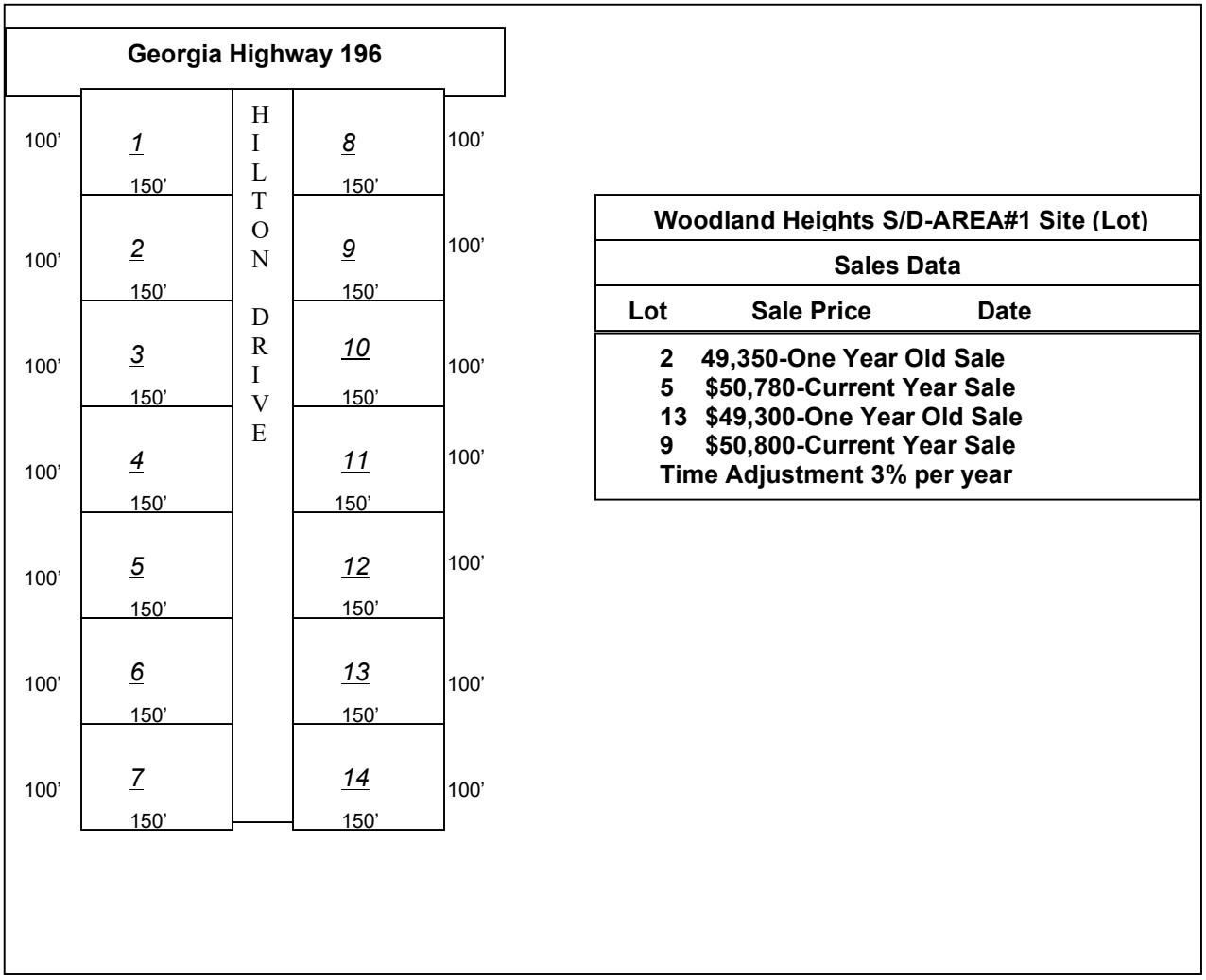
The site, or lot, unit of comparison is used when the market does not indicate a significant difference in lot value even when there is a difference in lot size. This method is becoming more prevalent and is found in residential subdivisions such as cluster developments and planned unit developments.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

Lot or Site Method Example



Site or Lot Problem:
From the below sales information, determine the appropriate per lot price and value each lot accordingly.

Lot #	Sale Price	Time Adj.	Adj. SP
2	$49,350		
5	$50,780		
13	$49,300		
9	$50,800		



Woodland Heights S/D-AREA#1 Site (Lot)		
Sales Data		
Lot	**Sale Price**	**Date**
2	**49,350-One Year Old Sale**	
5	**$50,780-Current Year Sale**	
13	**$49,300-One Year Old Sale**	
9	**$50,800-Current Year Sale**	
Time Adjustment 3% per year		

Units Buildable

This unit of comparison is used when the market indicates that a site is sold on a unit basis, such as an apartment property where the unit of comparison is selling price per buildable apartment or a parking garage site where the unit of comparison is selling price/car. The units buildable may be either a theoretical or an actual number of units. The probable number of units to be built may be different from the theoretical number permitted by zoning ordinances. Consideration should be given to market demand, setback limitations, topography, height limitations, and other limiting factors. As an illustration:

A subject site consists of 25 acres, and zoning ordinances permit 10 units per acre. The site has no limitations. There is one comparable sale of property consisting of 30 acres with an allowable density of 10 units per acre. The property was purchased for $700,000 with the knowledge that because of a topological problem only 280 units would be built. On the basis of this information, the subject site value can be estimated at $625,000.

Subject	Units Buildable:	25 acres x 10 units per acre= 250 units
Comparable	Units Buildable:	280 units (actually built)
Value per Unit Comparable		$700,000 / 280 = $2,500 per unit
Subject		250 units x $2,500 per unit = $625,000

The unit price, or $2,500 per unit, should be used because the developer purchased the property with the knowledge that only 280 units could be built.

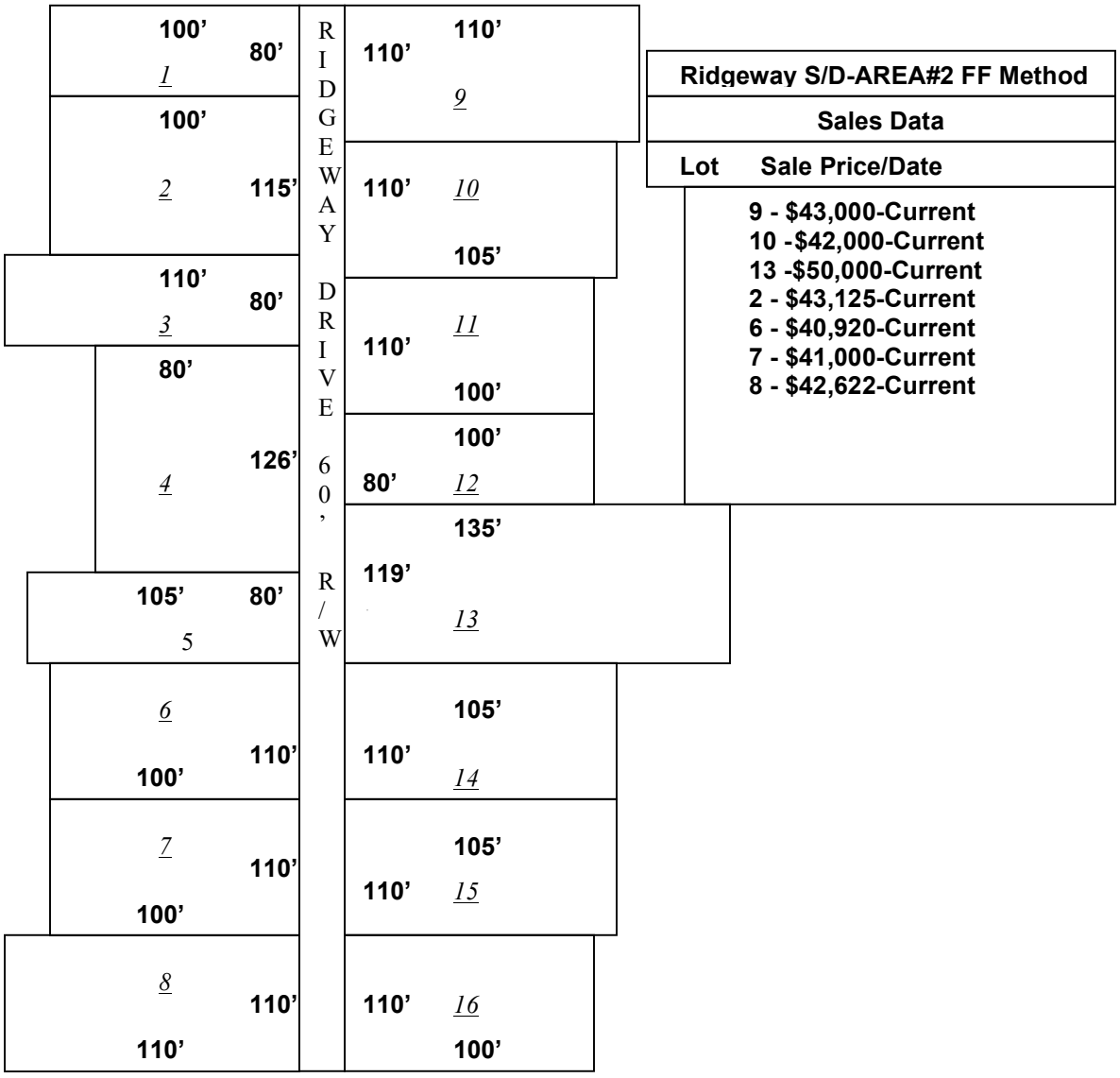
Units Buildable Problem

A 10-acre parcel in the city, zoned for multi-family development, 8 units to the acre (80 units), sold recently for $2,500,000. A parcel of similar size in the immediate area, subject to the same economic influences is zoned for 90 units. Due to restrictions from an above ground power line, only 85 units may be built upon.

What is the value of the parcel?

LAND VALUE WORKSHEET
Standard Depth 100’

Ridgeway Subdivision is currently priced at $280 per front foot. Using the 100’ standard depth table, determine the value each lot. Perform a sales ratio analysis using the sales information above. If any problem exists with the ratio, determine the new front foot price to correct any deficiencies in the level of assessment



Median (100%)		COD		Mean_Deviation							
Mean (100%)		PRD									
Aggregate (100%											
Median (40%)											
Mean (40%)											
Aggregate (40%)											
Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array

Ridgeway Worksheet - Front Foot Method

Find appropriate depth factor from depth table handout

Calculate lot values. ***Formula: FF * $FF * DF = Value***

Lot #	FF	Depth	$/FF	DF	Value
1	80	100	280		
2	115	100	280		
3	80	110	280		
4	126	80	280		
5	80	105	280		
6	110	100	280		
7	110	100	280		
8	110	110	280		
9	110	110	280		
10	110	105	280		
11	110	100	280		
12	80	100	280		
13	119	135	280		
14	110	105	280		
15	110	105	280		
16	110	100	280		

Perform Ratio Analysis.

Ridgeway Worksheet Continued;
Calculate new front foot value from sales to fix ratios.
Find appropriate depth factor from depth table handout
Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$43,125	115	100		
6	$40,920	110	100		
7	$41,000	110	100		
8	$42,622	110	110		
9	$43,000	110	110		
10	$42,000	110	105		
13	$50,000	119	135		

What is the new front foot price?

Apply new front foot price to all lots.
Find appropriate depth factor from depth table handout
Formula: Formula: FF * $FF * DF = Value

Lot #	FF	Depth	$/FF	DF	Value
1	80	100			
2	115	100			
3	80	110			
4	126	80			
5	80	105			
6	110	100			
7	110	100			
8	110	110			
9	110	110			
10	110	105			
11	110	100			
12	80	100			
13	119	135			
14	110	105			
15	110	105			
16	110	100			

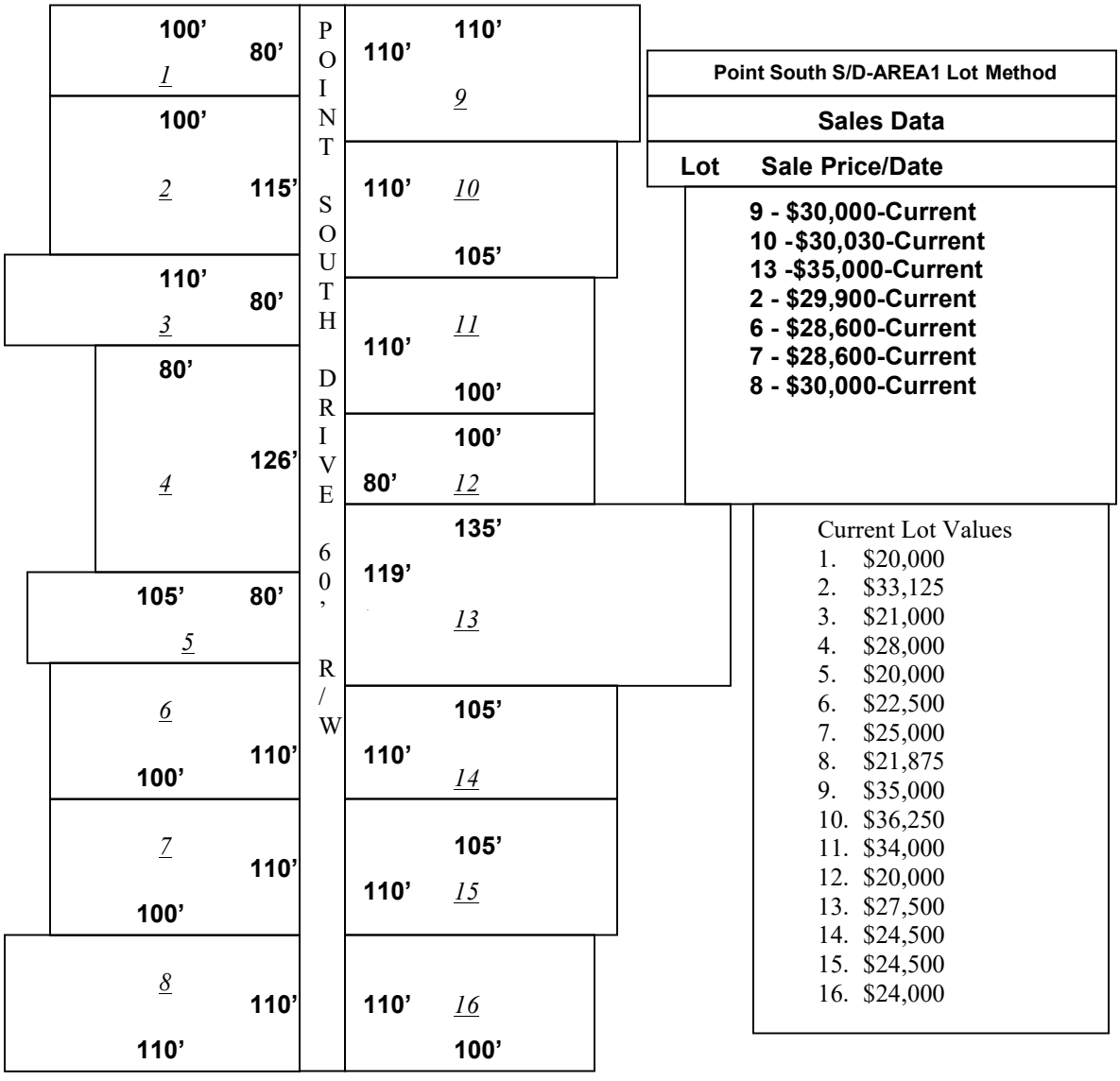
Ridgeway Worksheet Continued;

Perform Final Ratio Analysis to see if problems are fixed.

Median (100%)		COD		Mean_Deviation							
Mean (100%)		PRD									
Aggregate (100%											
Median (40%)											
Mean (40%)											
Aggregate (40%)											
Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array

LAND VALUE WORKSHEET
Standard Depth 100'

Due to frequent turnover in appraisers in XYZ County, rampant sales chasing is suspected in Point South Subdivision. Currently, lots are priced on a per lot basis. Perform a sales ratio analysis using the sales information below. If any problem exists with the ratio, determine the appropriate pricing method to correct any deficiencies.



Point South S/D-AREA1 Lot Method	
Sales Data	
Lot	**Sale Price/Date**
9 - $30,000-Current	
10 -$30,030-Current	
13 -$35,000-Current	
2 - $29,900-Current	
6 - $28,600-Current	
7 - $28,600-Current	
8 - $30,000-Current	

Current Lot Values
1. $20,000
2. $33,125
3. $21,000
4. $28,000
5. $20,000
6. $22,500
7. $25,000
8. $21,875
9. $35,000
10. $36,250
11. $34,000
12. $20,000
13. $27,500
14. $24,500
15. $24,500
16. $24,000

Point South Worksheet - Ratio Using Lot Method

Perform Ratio Analysis

Median (100%)		COD		Mean_Deviation							
Mean (100%)		PRD									
Aggregate (100%											
Median (40%)											
Mean (40%)											
Aggregate (40%)											
Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array

Apply Front Foot Method and Square Foot Method to Point South.

Point South Worksheet Continued;
Calculate front foot price from sales.
Find appropriate depth factor from depth table handout
Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$29,900	115	100		
8	$30,000	110	110		
9	$30,000	110	110		
7	$28,600	110	100		
13	$35,000	119	135		
6	$28,600	110	100		
10	$30,030	110	105		

What is front foot price?

Apply front foot price to all lots.
Find appropriate depth factor from depth table handout
Formula: Formula: FF * $FF * DF = Value

Lot #	FF	Depth	$/FF	DF	Value
1	80	100			
2	115	100			
3	80	110			
4	126	80			
5	80	105			
6	110	100			
7	110	100			
8	110	110			
9	110	110			
10	110	105			
11	110	100			
12	80	100			
13	119	135			
14	110	105			
15	110	105			
16	110	100			

Point South Worksheet Continued;
Perform final ratio analysis to see if problem is fixed using front foot method.

Median (100%)		COD		Mean_Deviation							
Mean (100%)		PRD									
Aggregate (100%											
Median (40%)											
Mean (40%)											
Aggregate (40%)											
Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array

Point South Worksheet Continued; Square Foot Method

Find square foot price from sales.
$SF Formula: SP / SF = $SF

Lot #	SP	FF	Depth	SF	$/SF
2	$29,900	115	100	11,500	
6	$28,600	110	100	11,000	
7	$28,600	110	100	11,000	
8	$30,000	110	110	12,100	
9	$30,000	110	110	12,100	
10	$30,030	110	105	11,550	
13	$35,000	119	135	16,065	

Apply square foot price to all lots.
Formula: SF * $SF = Value

Lot #	FF	Depth	SF	$/SF	Value
1	80	100	8,000		
2	115	100	11,500		
3	80	110	8,800		
4	126	80	10,080		
5	80	105	8,400		
6	110	100	11,000		
7	110	100	11,000		
8	110	110	12,100		
9	110	110	12,100		
10	110	105	11,550		
11	110	100	11,000		
12	80	100	8,000		
13	119	135	16,065		
14	110	105	11,550		
15	110	105	11,550		
16	110	100	11,000		

Point South Worksheet Continued;
Perform final ratio analysis to see if problem is fixed using square foot method.

Median (100%)		COD		Mean_Deviation							
Mean (100%)		PRD									
Aggregate (100%											
Median (40%)											
Mean (40%)											
Aggregate (40%)											
Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array

Which method is the best to use for Point South?

BASE LOT METHOD

The base lot method establishes the value of the standard, or "base", parcel value in the area using a sales comparison analysis, with the base lot serving as the subject parcel. The base lot may be an actual lot or a hypothetical standard lot. Once the base lot value is established, it is used as a benchmark to establish value for individual parcels.

The base lot method assumes that the sited characteristics are generally similar for most of the lots and the major factors causing variations in site values are such things as size, view, and traffic, etc. Adjustments for these factors must be developed using paired sales analysis or other forms of market research. Then, the comparables are adjusted to the base lot. After comparables are adjusted to the base lot, statistical analysis should be performed to test the accuracy and confidence of the base value.

This method requires an adequate amount of sales data. Older sales can be added to the sales base as long as they are appropriately adjusted for any variations in market conditions.

Illustration 0f Base Lot Method

Residential land in a given neighborhood tends to sell on a per lot basis except for lots with excessive width, which sell slightly higher. Location also affects prices. The base lot is a standard size interior lot.

1. Using the following data, determine a base lot value and estimate appropriate adjustments for width and location.

Sale #	Size	Location	Sale Price
1	200 x 250	Interior	$25,000
2	200 x 250	Interior	$26,000
3	200 x 250	Interior	$27,000
4	300 x 250	Interior	$35,750
5	200 x 250	Lake	$40,000
6	300 x 250	Lake	$49,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

2. Base Lot Value:
3. Adjustment for excess width:
4. Adjustment for location (lake):
5. Using the base lot method, what would be the indicated value of a lot with excess width located on the lake?

Base Lot Exercise
Suggested Solution

BASE LOTS RANGE

Sale #	Size	Location	Sale Price
1	200 x 250	Interior	$25,000
2	200 x 250	Interior	$26,000
3	200 x 250	Interior	$27,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Excessive Width – Compare (Unlike) Sale #4 with Sales #1 – 3						
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$35,750	-	$25,000	$10,750.00	0.43	1.43
2	$35,750	-	$26,000	$9,750.00	0.38	1.38
3	$35,750	-	$27,000	$8,750.00	0.32	1.32
Lake View – Compare (Unlike) Sale #5 with Sales # 1 - 3						
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$40,000	-	$25,000	$15,000.00	0.60	1.60
2	$40,000	-	$26,000	$14,000.00	0.54	1.54
3	$40,000	-	$27,000	$13,000.00	0.48	1.48

Indicated Base Lot Value $ 26,000
Indicated adjustment for Excessive Width + $ 9,750
Indicated adjustment for Location (Lake) + $ 14,000
Value of Excessive Width interior lot $ 26,000 + $9,750 = $ 35,750
Value of Excessive Width/Location Lake
$26,000 + $23,750($9,750+$14,000) = $ 49,750

Base Lot Exercise

Residential land in a Golf Course Subdivision tends to sell on a per lot basis except for lots with excessive width, which sell slightly higher. Location also affects prices. The base lot is a standard size interior lot.

1. Using the following data, determine a base lot value and estimate appropriate adjustments for width and location.

Sale #	Size	Location	Sale Price
1	200 x 250	Interior	$105,000
2	200 x 250	Interior	$106,000
3	200 x 250	Interior	$107,000
4	290 x 250	Interior	$112,750
5	200 x 250	Tee Box	$140,000
6	200 x 250	Green	$149,000
7	290 x 250	Fairway	$120,750
8	200 x 250	Fairway	$113,250

2. Base Lot Value
3. Adjustment for excess width:
4. Adjustment for location (green):
5. Adjustment for location (tee box):
6. Adjustment for location (fairway):

7. Using the base lot method, what would be the indicated value of a lot with excess width located on the Fairway?

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Base Lot Exercise

Residential land in a given neighborhood tends to sell on a per lot basis except for double lots, which command a premium. Street type and view also affect prices. The base lot is a single lot on a side street with a standard view.

1. Using the following data, determine a base lot value and appropriate adjustments for location on a major street, premium view and double lots.

Sale #	Size	Street	View	Sale Price
1	Single	Side	Standard	$15,000
2	Single	Side	Standard	$16,000
3	Single	Side	Standard	$17,000
4	Single	Side	Premium	$20,000
5	Single	Major	Standard	$14,500
6	Single	Major	Premium	$18,000
7	Double	Side	Standard	$23,000
8	Double	Major	Premium	$21,500

2. Base Lot Value:
3. Adjustment for major street:
4. Adjustment for premium view:
5. Adjustment for double lot:

6. Using the base lot method, what would be the indicated value of a double lot on a side street with a premium view?

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Base Lot Exercise

Residential land in a gated community tends to sell on a per lot basis except for, lots with excessive width, which sell slightly higher. Location in the subdivision also affects prices. The base lot is a standard size, interior lot.

1. Using the following data, determine a base lot value and estimate the appropriate adjustments for width and location.

Sale #	Size	Location	Sale Price
1	100 x 250	Interior	$65,900
2	100 x 250	Interior	$66,000
3	100 x 250	Interior	$66,100
4	200 x 250	Interior	$75,750
5	100 x 250	Pond	$80,000
6	200 x 250	Pond	$89,000

2. Base Lot Value:
3. Adjustment for excess width:
4. Adjustment for location (Pond):

5. Using the base lot method, what would be the indicated value of a lot with excess width located on the Pond?

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				
Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Base Lot Exercise

Residential land in a given neighborhood on a lake tends to sell on a per lot basis except for point lots, which command a premium. View and slope of the lots also affect prices. The base lot is located on standard water with a gentle slope and a typical view.

1. Using the following data, determine a base lot value and estimate appropriate adjustments for slope, premium view, and point lots.

Sale #	Water	Slope	View	Sale Price
1	Standard	Gentle	Typical	$90,000
2	Standard	Gentle	Typical	$96,000
3	Standard	Gentle	Typical	$102,000
4	Standard	Gentle	Premium	$120,000
5	Standard	Steep	Typical	$87,000
6	Standard	Steep	Premium	$108,000
7	Point	Gentle	Typical	$138,000
8	Point	Steep	Premium	$129,000

2. Base Lot Value:
3. Adjustment for steep slope:
4. Adjustment for premium view:
5. Adjustment for point lot:

6. Using the base lot method, what would be the indicated value of a point lot with a gentle slope and a premium view?

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:	Compare (Unlike) Sale # with Base Lot Sales #'s , , ,					
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:	Compare (Unlike) Sale # with Base Lot Sales #'s , , ,					
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:	Compare (Unlike) Sale # with Base Lot Sales #'s , , ,					
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:	Compare (Unlike) Sale # with Base Lot Sales #'s , , ,					
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:	Compare (Unlike) Sale # with Base Lot Sales #'s , , ,					
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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1. Using the following data, determine the base lot value and estimate appropriate adjustments for size and location.

Sale #	Lot #	Size	Type	Sale Price
1	224	97 x 123	Typical	$15,800
2	225	95 x 132	Typical	$16,000
3	239	101 x 111	Typical	$15,900
4	226	151 x 116	Typical	$22,750
5	232	112 x 151	Cul-desac	$23,000
6	229	71 x 144	Cul-desac	$20,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

2. Base Lot Value:
3. Adjustment for excess size:
4. Adjustment for location (Cul-desac):

5. Using the base lot method, what would be the indicated value of a lot with excess size located in the cul-desac?
6. Price all lots in subdivision.

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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		-				

Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Factor:		Compare (Unlike) Sale #		with Base Lot Sales #'s , , ,		
Base Lot Sale #	Unlike Sale Price	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
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Base Lot Exercise

Residential land in a given neighborhood on a lake tends to sell on a per lot basis except for Lake, Green, Fairway, and Tee lots, which command a premium. Large size lots also affect prices. The base lot is a standard lot with no water and no type of golf view.

1. Using the following data, determine the base lot value and estimate appropriate adjustments for Size, Water, and Golf View lots.

Sale #	Parcel#	Size	Water	Golf View	Sale Price
1	230	Standard	None	None	$25,500
2	231	Standard	None	None	$26,000
3	265	Standard	None	None	$26,500
4	491	Standard	None	Green	$36,000
5	250	Standard	Lake	None	$34,000
6	254	Standard	Lake	None	$34,100
7	269	Large	None	None	$27,950
8	466	Large	None	None	$28,050
9	240	Standard	None	Fairway	$31,000
10	500	Large	None	Tee	$36,000
11	504	Standard	None	Tee	$34,000
12	259	Standard	None	Tee	$33,950
13	260	Standard	None	Tee	$34,050

2. Base Lot Value:
3. Adjustment for Size:
4. Adjustment for Water:
5. Adjustments for Green:
6. Adjustments for Fairway:
7. Adjustments for Tee Box:

8. Using the Grid on the following page, appraise each lot in Castleberry Subdivision using the determined base lot value and apply lump-sum adjustments for differences using the Additive (Linear) Method.

Castleberry Subdivision Calculation Grid:

Parcel#	Base Lot $	Adj1	Adj2	Adj3	Adj4	Adj5	Total Adj$	Final Lot Value
285								
284								
283								
282								
281								
280								
279								
278								
219								
277								
276								
275								
274								
273								
272								
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253								
252								
251								
250								
249								
248								
247								
246								
245								
244								
243								

Castleberry Subdivision Calculation Grid:

Parcel#	Base Lot $	Adj1	Adj2	Adj3	Adj4	Adj5	Total Adj$	Final Lot Value
242								
241								
240								
239								
304								
238								
237								
236								
235								
234								
507								
506								
505								
504								
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475								
474								

Castleberry Subdivision Calculation Grid:

Parcel#	Base Lot $	Adj1	Adj2	Adj3	Adj4	Adj5	Total Adj$	Final Lot Value
473								
472								
471								
470								
469								
468								
467								
466								
233								
232								
231								
230								
229								
228								
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226								
225								
224								
223								
222								
221								

THE MARKET OR DIRECT (COMPARABLE) SALES COMPARISON APPROACH

The most reliable method of estimating land value is based on a comparison of the subject property with similar properties in like locations which have sold in recent times. Where the market is active and the sales recent and similar in kind, the comparison approach yields satisfactory value estimates.

The first and most important requirement in the market or comparison approach to value is ready access to up-to-date sources of real property sale transactions. The source of sales data in order of availability, accuracy, and convenience are as follows:

1. Abstract or title insurance company records
2. Assessor's record files
3. County clerk's official public records (PT-61)
4. Appraiser's personal office files
5. Real estate brokers multiple listing or general sales record files
6. Financial news or newspaper reporting services

The appraiser may use one or more of these sources for sales data depending on appraisal volume and procedures adopted for maintenance of a sales data bank. In many communities, copies of official deed records are made available by the county clerk's office at reasonable costs. This information, when promptly posted in geographic order or by alphabetical name of subdivisions, furnishes a ready and convenient source for market sales information. This recommended practice, where available, keeps the appraiser abreast of market transactions and thus provides them with ready information concerning volume of transfers, price trends, and community growth patterns.

Irrespective of the source from which sales record data are obtained, it is the appraiser's responsibility to verify the price and terms of sale by a personal or telephone interview with the buyer, the seller, or both. Real estate transactions historically are considered private in nature and public records may or may not reveal factual circumstances which "cushioned" or "sweetened" a sale. Interviewing the parties to the transaction, or informed persons such as lawyers or brokers who guided the sale, enables the appraiser to formulate judgments in adjusting market prices paid to the prices obtainable for the subject property if exposed for sale in the open market. If a sale cannot be confirmed, or where the prices of terms are deliberately held secretive, it is best to disregard the transaction in favor of another and more reliable sale property. When applying the market approach to value, caution must be exercised in accepting state revenue stamps affixed to deeds as reliable evidence of the transaction price.

Legally, a deed is considered an instrument of "conveyance" in which the actual consideration agreed on in a prior and unrecorded contract need not be stipulated. Although most state laws require that revenue stamps based on the exact transaction price be attached to the deed, there are, nevertheless, circumstances under which these stamps do not indicate the price for which the property was exchanged. For instance:

1. A buyer may wish to give the impression that he paid an amount greater than the actual purchase price and for that reason affixes more revenue stamps than the law requires. There is no limit to the number or amount of stamps that may be purchased, and the tax agent will gladly sell all the buyer wants. The attaching of excess steps may be a device to have future buyers believe that the property is worth a great deal more than the "bargain" price at which it is offered to them.

2. Sellers who must deliver the deed at time of closing--with revenue stamps attached--may attempt, unlawfully, to save on this expenditure by purchasing fewer stamps than the sale price calls for. The county clerk from whom the revenue stamps are obtained does not question the transaction price quoted by the seller, nor the intent of the seller in obtaining more or fewer stamps than the law requires.

3. Many states do not have deed revenue stamp laws, and even where such laws are in force the requirements regarding the effects of existing mortgages differ. In some states, only the cash portions of transactions need be considered; whereas in others, state revenue stamps representing the full consideration must be attached to the deed.

4. In the case of property exchange, the interested parties may understate or overstate the transaction price for tax or other purposes which prove mutually advantageous.

Although in many jurisdictions, revenue stamps do reflect fairly well the actual transaction price of the property, the possible exceptions noted above should be kept in mind when accepting deed revenue stamp data as evidence of market price or value. In most condemnation trials, too, revenue stamp data as evidence of market sale price is inadmissible or subject to challenge when introduced by an expert witness.

In securing information from courthouse or file records for entry on the work form, it should not be taken for granted that the date of title closing represents the date of sale. Often land is sold under a contract for deed, in which case months and years may separate the date of contract from the date of

title closing. The date of contract, in fact and in law, determines the time at which a meeting of minds took place, and it is that date which must serve as a basis for time adjustments reflecting changes in economic or market conditions up to the date of appraisal. Furthermore, the appraiser must make certain that the sale was concluded under objective, impersonal bargaining and that the terms of sale were fully disclosed. Sales from one relative to another, or where circumstances indicate undisclosed terms and conditions, or where prices appear unreasonable or questionable should be investigated and perhaps discarded in favor of other clear-cut, bona-fide sale transactions. Where market data for comparable properties is unavailable, limited reliance may be placed on property listings. These, however, will only indicate upper (asking prices) and lower (offering prices) value ranges.

The analysis of pertinent data about the subject site being appraised and comparable sales can be accomplished by developing a grid that lists the elements of comparison, comparing those of the subject being appraised with the comparables as shown:

Figure 1:

Site Sale Adjustment Grid

Element of Comparison	Site Being Appraised	Comparable Lot Sale #1		Comparable Lot Sale #2	
		Description	Adjustment	Description	Adjustment
Trends and Factors (Zoning)					
Time (Date) Of Sale					
Physical Characteristics					
Location					
Conditions of Sale					
Total Adjustments					

NOTE: Other items to be considered and used to expand the adjustment grid might be as follows:

- Inside lot compared to a corner lot
- A rectangular lot compared with an odd-shaped lot (five or six sided)
- Difference in storm water disposal (one area has no facilities; another is well-drained by storm sewer; the market probably would adjust for this difference.)
- Difference between a lot that is flat and relatively easy to build on and one that drops 20 feet below the street level.

Remember you are the appraiser/assessor and know your jurisdiction and which adjustments are needed.

Making Adjustments Using Units of Comparison

Adjustments for differences between the site being appraised and the comparables may be made in dollars or in percentages (See Figures 2 and 3). If dollar adjustments are used, they may be based on either total price of the whole property or on other units of comparison, such as price per square foot, per front foot (designated F/F) or per acre. Depending on local custom and practice, units of comparison may be used rather than total price of the whole site. A reference to $100 per F/F for a site is more specific and understandable than $10, 0000 for the site. It is sometimes easier to make adjustments using units of comparison than the whole price of a lot.

A front foot unit of comparison can be used appropriate even if the front footage of the site being appraised and that of the comparable are not identical. This system automatically takes care of this difference as long as the two lots have basically the same utility. In such circumstances where major frontage differences exist, the square foot unit of comparison may be preferable. Another unit of comparison for residential lots is an acreage unit for large estate type sites.

Percentage as well as dollar adjustments may be used. Like dollar adjustments, percentages may be used to recognize differences in market conditions from one time to another. If it is evident from empirical evidence that single family lot prices increased by 10% from last year to this year, a 10% adjustment is applicable to the lot being appraised in comparison with the sale of a year ago.

Typically, adjustments are made on a plus or minus basis. In Figure 3, the sale price of the comparable lot would be adjusted upward by 10%. Other adjustments might result in minus percentage

Figure 2:

Portion of Site Sales Adjustment Grid Using Dollar Adjustments

Element of Comparison	Site Being Appraised	Comparable Lot Sale #1	
		Description	Adjustment
Time (Date) Of Sale	Current	1 year ago	= $500 (10% in one year)
Physical Characteristics			
a) Size	60' x 150'	50' x 165' *	50 (lot 15 ft. deeper) **
b) Shape	Rectangle	Rectangle	None
c) Street, curbs & walks	Yes	Yes	None
d) Utilities	All	All	None
e) Terrain	Level	Level	None
Location			
a) Subdivison/ neighborhood	Jones Addition Section 1	Jones Addition Section 3	$250 (better parks & schools in Section 1)
Conditions of Sale	Open Market	Open Market	
Total Net Adjustments			+ $500

* This relatively small range of 10 feet in frontage in this example is considered to be within reasonable range for this kind of lot. If the differences in frontage were considered to be unreasonable, such as 40 feet, then this unit of comparison could not be used.
** Note that an adjustment was made only for depth. Appropriate adjustment is made for difference in frontage by using the front foot unit of comparison.

Figure 3:

Portion of Site Sales Adjustment Grid Using Percentage Adjustments

Element of Comparison	Site Being Appraised	Comparable Lot Sale #1	
		Description	Adjustment
Time (Date) Of Sale	Current	1 year ago	= 10% (market up 10% in one year)
Physical Characteristics			
f) Size	60' x 150'	50' x 165' *	- 5% (Lot 15 feet deeper) **
g) Shape	Rectangle	Rectangle	None
h) Street, curbs & walks	Yes	Yes	None
i) Utilities	All	All	None
j) Terrain	Level	Level	None
Location			
b) Subdivison/ Neighborhood	Jones Addition Section 1	Jones Addition Section 3	+ 5% (better parks & schools in Section 1)
Conditions of Sale	Open Market	Open Market	
Total Net Adjustments			+ 10 %

*This relatively small range of 10 feet in frontage in this example is considered to be within reasonable range for this kind of lot. If the differences in frontage were considered to be unreasonable, such as 40 feet, then this unit of comparison could not be used.
**Note that an adjustment was made only for depth. Appropriate adjustment is made for difference in frontage by using the front foot unit of comparison.

Reconciliation of Adjusted Site Sale Prices

The next step is to reconcile all the adjusted comparable sale prices into an indicated value of the site being appraised. Use of a simple arithmetic average of the value indications is not acceptable appraisal practice. Averaging small groups of numbers produces a meaningless measure of central tendency, which may or may not reflect actual market value. The accepted procedure is to review each sale and judge its comparability to the property being appraised. The final value is based on all the information available to the appraiser.

When a unit of comparison is used, two extra steps are needed. First, the adjusted unit sales prices are reconciled into a single or range of adjusted sale prices per unit. Then the number of units in the site being appraised is multiplied by the value or range of values per unit to given an indicated value or range of values of the site. For example:

> Assume the indicated value of the site being appraised is $100 per F/F, based on the reconciled adjusted sales price of comparable sites. If the site being appraised had 75 front feet, its total value is $7,500
>
> 75 F/F x $100 per F/F = $7,500
>
> If the indicated value of the site appraised was $.10 per square foot and the site was 80,000 square feet, its indicated value is $8,000
>
> 80,000 Sq. Ft. x $0.10 per sq. ft. = $8,000

For both dollar and percentage adjustments, the amount of adjustment should be extracted from the market in a valid manner. In some instances, adjustment amount may not be available from the market. If so, either logical judgment must be made regarding the amount of the adjustment or the sale must not be used as a comparable in developing the market value for the site being appraised.

Techniques of Making Adjustments

There are two basic techniques in making adjustments for differences between the comparable site and the site being appraised. No unanimous agreement exists as to whether one is better than the other is. Practicing appraisers use both techniques, and as long as they are used properly, they produce the same results. The first is considered by some to be more logical and understandable than the second is. It follows this rule:

- If the property being appraised is better than (+) the comparable, a plus adjustment is made **(CIA – Comparable Inferior Add)**

- If the property being appraised is poorer than (-) the comparable, a minus adjustment is made **(CBS – Comparable Better Subtract)**

For example, a lot being appraised is considered to be $500 better than Comparable A because of physical terrain. If Comparable A sold for $6,000, the adjustment would be made as follows:

> The lot being appraised is $500 better than (+) the Comparable. Indicated market value of the appraised property is $500 + $6,000, resulting in an estimated value of $6,500.

Now consider the situation in which the property being appraised is poorer than the comparable. The comparable lot sold for $7,500 and is served by a sanitary sewer; a sanitary sewer does not serve the lot being appraised. The market indicates a preference in the amount of $750 for sanitary sewer. Therefore, the appraised property is poorer than (-) the comparable by $750. The indicated market value of the lot being appraised is $6,250 ($7,000 - $750).

A second technique for making adjustments used by many appraisers is described on the joint FHLMC/FNMA single family appraisal form. It sates: "If a significant item in the comparable property is superior to, or more favorable than, the subject property, a minus (-) adjustment is made, thus reducing the indicated value of the subject; if a significant item in the comparable is inferior to, or less favorable than, the subject property, a plus (+) adjustment is made, thus increasing the indicated value of the subject." In the example used above, if a significant item in a comparable is inferior, that is, the lot is $500 less favorable than the lot being appraised, a plus adjust of $500 is made to the reported sales price of the comparable, increasing the indicated market value of the property being appraised to $6,500 ($6,000 + $500) In this technique, it is necessary to

remember that a favorable element of the comparable property becomes a minus and an inferior element of the comparable property becomes a plus in the adjustment process.

In the use of both techniques, however, it is essential to remember that adjustments are being made to the property being used as a comparable for the justifiable difference between the comparable and the property being appraised. In this manner, the comparable is being made as much like the property being appraised as possible. It is not the appraiser's desire to change the characteristics of the site being appraise; rather, the comparable is adjusted to make it as similar as possible to the site being appraised.

NOTE:

In the process of analyzing the differences in the market from the time of the appraisal to the time of the sale, strange phenomena may be encountered. One may tend to think that market prices and costs are even and steady in their change that is going up 4% per year, or remaining the same throughout a year, or declining 2% per year. This, however, may not be realistic. Markets are known for their erratic activity in short period of time; such activity may be cyclical, seasonal or a combination of both. There may be short period of time in an annual market period that will have very erratic activity, but the average for the whole year would not identify it as such. For example, average increases for the last calendar year may be 6%; however, a closer scrutiny reveals that all of this was experienced in the last quarters of the year. Sales data from the first three-quarters would have to be adjusted accordingly. Thus, the monthly average increase is not ½% nor is each quarterly average increase 1½%.

Cmps	1st	2nd	Diff = 2nd-1st	% chg=(diff/1st)*100	MTH	% per Mth=%chg/months
1	102,000	110,000	8,000	7.84	9	0.87
2	106,000	112,000	6,000	5.66	22	0.26
3	98,000	102,000	4,000	4.08	18	0.23
4	97,500	103,000	5,500	5.64	5	1.13
5	105,000	108,000	3,000	2.86	13	0.22

		Avg%mth	0.54
	Avg%Mth*12	Avg%yr	6.49

Time Adjustments
Inflation is 3% per year

Subject		Sale #1	Sale#2	Sale#3	Sale#4
	Sale Price	**220,000**	**195,000**	**202,000**	**235,000**
	Date of Sale	**2 Years**	**Current**	**1 Year**	**3 Years**
	Time Adjust				
	Time Adjusted S/P				

Sales Comparison Problem

Subject is a corner, commercial lot located on Main Street.

Sale 1 Secondary street, Interior lot, Sale price $175,000.
1 Yr Old sale.
Sale 2 Secondary Street, corner lot, Sale price $185,000.
Current year Sale.

Inflation 2% per year
Corner lot property commands 12% more than interior lots.
Lots located on Main Street command a 5% premium compared to secondary street lots.
Which sale is the best sale to use for the subject price?
What is the subject value?

	Sale#1	Sale#2
Lot Type	**Secondary**	**Secondary**
Location	**Interior**	**Corner**
Sale Date	**1 Years**	**Current**
Sale Price	**$175,000**	**$185,000**

Subject		Sale #1	Sale#2
	Sale Price	**$175,000**	**$185,000**
	Date of Sale	**1 Year**	**Current**
	Time Adjustment	**1*2%=2% 1.02 * $175,000 = $178,500**	**0 $185,000**
	Other Adjustments		
Corner	**Lot Type**	**Interior CIA + .12**	**Corner ---------**
Main	**Location**	**Secondary CIA + .05**	**Secondary CIA + .05**
	Net Adjustment	**+ .17**	**+ .05**
	Adjusted Value	**1.17 * $178,500 = $208,845**	**1.05 * $185,000 = $194,250**

Sale #2 has the least number of adjustments. Therefore, $194,250 is the value of the subject.

Sales Comparison Exercises
Most Reliable Method

Your assignment is to appraise Lot 40 in the Pine Ridge Subdivision, a subdivision adjoining Pine Ridge Golf Club. The lot has good access, a view of the green, typical amenities, and is adjacent to a lake. It is typical size.
An analysis of land sales in this area indicated that lots which have a view of the green command a $12,000 premium. In addition, lots on (adjacent to) the lake are worth $3,000 more than lots which are not. The lots are sold on a per site basis.
High demand for lots in this area resulted in a 6% per year increase in value over the last three years. All sales involved typical market conditions.
The following sales occurred in the Pine Ridge Subdivision:

	Sale#1	Sale#2	Sale#3	Sale#4
Location	**Pine Ridge**	**Pine Ridge**	**Pine Ridge**	**Pine Ridge**
Size	**Typical**	**Large**	**Typical**	**Typical**
Amenities	**Typical**	**Typical**	**Typical**	**Typical**
Lake	**No**	**Yes**	**No**	**Yes**
View	**Typical**	**Green**	**Green**	**Typical**
Age of Sale	**1 year**	**1 year**	**2 year**	**Current**
Sale Price	**$77,000**	**$86,000**	**$78,000**	**$80,000**

Subject		Sale #1	Sale#2	Sale#3	Sale#4
	Sale Price				
	Date of Sale				
	Time Adjustment				
	Time Adjusted Price				
	Other Adjustments				
	Size				
	Amenities				
	Lake				
	View				
	Net Adjustment				
	Adjusted Sale Price				

LAND VALUATION

You are appraising a residential lot in an average neighborhood, Orchard Hills Subdivision. The lot is level and has sewer lines, a water hookup, and on a paved street. The lot has good topography and is rectangular but, the lot is narrower and shallower than typical lots in the neighborhood. In this market, the value of land has increased one percent for every month in the past four years. Estimate the value for the subject site.

You have found four comparable sales of vacant lots in the subject's neighborhood and have set the adjustments as follows:

	Sale#1	Sale#2	Sale3	Sale#4
Sale Price	**$16,400**	**$17,645**	**$17,365**	**$19,600**
Date of Sale	**23 Months**	**22 Months**	**16 Months**	**19 Months**
Location	**Equal**	**Equal**	**Superior (20%)**	**Equal**
Frontage	**Superior (5%)**	**Superior (10%)**	**Superior (5%)**	**Superior (5%)**
Depth	**Superior (15%)**	**Superior (20%)**	**Equal**	**Superior (5%)**
Shape	**Inferior (5%)**	**Inferior (5%)**	**Inferior (5%)**	**Superior (10%)**
Topography	**Inferior (10%)**	**Inferior (5%)**	**Inferior (10%)**	**Equal**
Sewer, Water, Street	**Equal**	**Equal**	**Equal**	**Equal**

Subject		**Sale #1**	**Sale#2**	**Sale#3**	**Sale#4**
	Sale Price	**16,400**	**17,645**	**17,365**	**19,600**
	Date of Sale	**23 mths**	**22 mths**	**16 mths**	**19 mths**
	Time Adjust				
	Time Adjusted S/P				
	Other Adj				
Avg NBhood	**Location**	**Equal**	**Equal**	**Superior**	**Equal**
Narrow	**Frontage**	**Superior**	**Superior**	**Superior**	**Superior**
Shallow	**Depth**	**Superior**	**Superior**	**Equal**	**Superior**
Rectangular	**Shape**	**Inferior**	**Inferior**	**Inferior**	**Superior**
Good	**Topography**	**Inferior**	**Inferior**	**Inferior**	**Equal**
Sewer & Water	**Sewer, Water, Street**	**Equal**	**Equal**	**Equal**	**Equal**
	Net Adjustment				
	Adj Values				

COST OF DEVELOPMENT METHOD

Throughout the historical development of appraisal thought, and in the writing of most appraisal literature, the existence of land has been taken for granted. In effect it is implied that land cannot be produced and hence should not be valued via the cost approach. This classic theory of land as being permanent, indestructible, immovable, and unique is valid only if applied to raw land. The appraiser, however, is concerned with "economic" land, modified and improved by man; and in this economic sense, such land value can be produced and duplicated.

Man's ability to modify land and thereby produce land value is illustrated by the following story: A farmer, after years of grueling work cutting trees, pulling stumps, and plowing, had converted an overgrown forest region into a fertile and productive farm. One day while harvesting he was talking with a city cousin who was mightily impressed by the lush appearance of the farm and said: "Aren't you lucky to own this land, which God created and presented as a gift to man." The farmer looked bemused at his callused hands and replied: "It's true. But you should have seen this land when God had it all to himself."

Today virtually all land has been directly or indirectly modified by man. Relatively little virgin land continues in existence direct modification has included the construction of buildings, fences, dikes, drainage canals, land filling and grading, and the conversion of forests into grazing, farming, or building sites. Land has been modified indirectly by the construction of access roads, bridges, canals, modes of rapid transportation, and other means of public improvements which increase land utility.

Where land is anticipated to ripen into higher economic uses, or where the conversion of farm or rur-urban (land in transition being neither farm nor suburban in use or character) acreage into suburban building sites is justified by community growth and demand, the appraiser can logically and accurately apply the land development or cost of land production approach to value as follows: Suppose an appraisal problem calls for finding the value of 50 acres of rur-urban land which a developer seeks to purchase and develop into residential building sites. As a result of a highest and best land use study, it appears best to subdivide the 50-acre tract into 150 lots each measuring 100 feet by 120 feet, or 3 lots pr acre. Under this development plan, the 150 building lots comprise 82.5 percent of the total land area, while the balance of 17.5 percent of land is deemed necessary for construction of access streets, avenues, traffic isles, and other public uses.

Based on a study and analysis as follows:
150 lots at 10,000 per lot

Based on these market findings the anticipated use method yields the following results, assuming a discount rate of 12%, a time for absorption of 5 years, and a profit rate of 10 percent:

Note: Present worth of one factors; at a 12 percent discount rate are .8929 for one year; .7972 for two years; and .7118 for three years; .6355 for four years; .5674 for five years.

30	x	$10,000	x	.8929	=	$267,870
30	x	$10,000	x	.7972	=	$239,160
30	x	$10,000	x	.7118	=	$213,540
30	x	$10,000	x	.6355	=	$190,650
30	x	$10,000	x	.5674	=	$170,220

Total $1,081,440

Less
Development cost:

Street grading and paving @ $400 per lot	= 60,000
Sanitary and storm sewers @ $600 per lot	= 90,000
Curb and gutters @ $225 per lot	= 33,750
Water mains @ $250 per lot	= 37,500
Other costs:	
(Legal, filing, sales brokerage property taxes, and overhead)	=100,000
Developer's profit (10% of gross sales),	=150,000
Total development costs incurred the first year	= 471,250

Present worth of total development costs $471,250 x .8929 = $420,779
Net Present Value $1,081,440 - $420,779 = $660,661

Residual value of "raw" land

Value per acre = $660,661-/-50 acres = $13,213 per acre

The above illustration does not include costs of sidewalks, extension of gas, electric or telephone utilities; nor expenditures for other public or recreational facilities. Should such expenditures be incurred by the developer, they must, of course, be added into the calculation. This method is an example of the economic principles of balance and surplus productivity.

To use the cost-of-development method, the appraisal staff shall estimate the total development costs and subtract these costs from the projected sales prices of the developed lots to indicate the appraised value for the raw land. The projected improvements must represent the most probable use of the land. Estimated costs should include the direct costs of site preparation, utility hookups, all indirect costs, and a reasonable allowance for owner profit. The appraiser may use this method to directly value land in transition from agricultural use to residential or commercial use when there are insufficient sales to apply the comparative unit or base lot methods.

Absorption Rates

When appraising a subdivision, the appraisal staff shall use discounted cash-flow analysis in conjunction with the cost-of-development method to appraise the unsold parcels when it is anticipated that the parcels will require several more years of exposure to the market to sell. The appraisal staff may consider typical holding periods, marketing, and management practices when estimating anticipated revenues and allowable expenses.

XYZ County Example of Absorption - Platted Subdivision

This is an analysis of the anticipated absorption or “sell off” rate at which the subdivided lots can be sold successfully in the marketplace. The absorption study indicates the number of lots expected to be sold during a given period of time. The rate is usually expressed in terms of number of lots to be sold per year.

The anticipated absorption rate for the subject subdivision can be estimated from the sales activity of other comparable subdivisions in the area, together with an analysis of changes in the subdivision being appraised.

This method incorporates the present value of a lot to be received at a certain future date when discounted for absorption by the market at an interest rate for that number of years.

The criteria that is to be used in XYZ County is:

1. The subdivision must have a sell out of more than four years
2. The sell out time considered cannot exceed twenty years
3. The sell out time is determined by the number of lots available and the
4. number of lots sold the previous year
5. The rate of return will be one half point over the current local interest
6. rate on or about January 1, of each year
7. The appropriate rates from the Ellwood Pw1 Table (Table 4)

Example:

Three-year-old subdivision with an original 200 lots
Year one sold 10 lots
Year two sold 20 lots at $20,000 per lot
Current local interest rate 9.5%

Lots available equal 170
20 lots sold previous year
170 / 20 =9 year sell out

Apply Elwood PW1 Factors for 9 year sell out at 10% to 20 lots per year
If expenses are still being allocated, then apply the appropriate Elwood PW1 Factor.

COST OF DEVELOPMENT METHOD EXAMPLE

You are appraising a 30-acre tract zoned residential. A proposed plat allows a total of 60 subdivision sites. Based on market activity in similar areas, you project that the sites will be sold at $25,000 each over a three-year period (20 sites per year). The developer estimates development costs, including overhead and profit, to total $630,000. All of these costs will be incurred in the first year.

Using a discount rate of 12 percent, estimate the value of the property and value per acre, discounting all revenues and expenses as if received or incurred at the end of the year.

Note: Present worth of one factors; at a 12 percent discount rate are.8929 for one year; .7972 for two years; and .7118 for three years.

Cost of Development Method Example

Present value of estimated sales proceeds:

20	x	$25,000	x	.8929	=	$446,450
20	x	$25,000	x	.7972	=	$398,600
20	x	$25,000	x	.7118	=	$355,900
						$1,200,950

Present value of estimated development costs:

630,000	x	.8929	=	$562,527

Net present value = $1,200,950 - $562,527 = $638,423

Value Per Acre $638,423 / 30 = $21,280.77 rounded ($21,281)

COST OF DEVELOPMENT METHOD PROBLEM

You are appraising a 55-acre tract zoned residential. A proposed plat allows 2 houses per acre or a total of 110 subdivision sites. Based on market activity in similar areas, you project that the sites will be sold at $30,000 each over a five-year period (22 sites per year). The developer estimates development costs, including overhead and profit, to be 1,034,600 to be divided equally and allocated over the first 2 years.

Using a discount rate of 12 percent, estimate the value of the property and value per acre, discounting all revenues and expenses as if received or incurred at the end of the year.

Note: Present worth of one factors at a 12 percent discount rate are.8929 for one year; .7972 for two years; .7118 for three years; .6355 for four years; .5674 for five years.

ALLOCATION AND ABSTRACTION: The Ratio of Improvement Value to Site Value

Under conditions where the market, income, or anticipated use estimates of value is not applicable, an estimate of land value may be derived from a study of typical ratios of improvement value to value of comparable sales. Under highest and best utilization of land, studies disclose certain optimum improvements to land ratios on which the appraiser may rely for value guidance. At the outset, stress is laid on the fact that ratios, like depth or corner land value rules, do not make value but rather reflect typical land-improvement relationships which serve a useful purpose in the allocation of total value to the component parts of land and building improvements.

Allocation Method

A relationship exists between the application of the agents of production and the market value of a site. This is confirmed by the application of the principles of balance, contribution, surplus productivity and increasing and decreasing returns. Therefore, site value can be estimated by allocating the total sale price of a comparable between its two utilitarian and productive parts--the lot and the improvements. The appraiser determines what portion of a property's sale price typically may be allocated between the lot and the improvements, estimating the market value of the house and other improvements first. The balance (residual) then is allocated to the site.

Statistics shown from the U. S. Census demonstrate the relationship between sale price and site value of residential properties. The statistics are presented on a national and regional basis. The older the improvements, the higher the ratio of land value to total value. The typical ratio can be affected by a site of unusual size or characteristics and by building costs.

To estimate the value of unimproved property in an area where vacant land sales are lacking, the appraiser can allocate from the total sale price of a comparative property the part that could reasonably be assigned as building value. The remainder, except for intangibles, is the site value.

The advantage of this procedure is that a sense of proportion is retained. If a neighborhood is typically improved with certain types of properties that can justify only a certain land value, the typical vacant lot probably will not be improved to a higher and better use. Where no vacant site sales are available, this method

does afford an indication of site value. However, the results may sometimes be inconclusive and need market analysis.

Where land value equals improvement value, the ratio is said to be one to one; if the investment in building improvements is double that of the land value, the ratio is two to one and so on. Commercial land in the downtown area is generally characterized by a low (but efficient) land-to-improvement ratio, and the ratio increases as the land is put to lower (less efficient) uses.

Once a study of typical land uses within a community discloses a guiding relationship of improvement to site values, the appraiser may use the results as a basis for or check on the accuracy of value findings by other and more direct appraisal methods. For instance, if typical residential properties are improved with buildings costing three or four times the value of the building site, improvements ratios as low as two to one or as high as six or more to one may warn of under- or overdevelopment of the site. In either case, faulty improvement will cause a loss in building value reflected by the difference between actual and estimated potential dollar return realizable under a program of highest and best site utilization.

A 1:4 residential-land-to-building-value ratio, in essence, implies that typical investors or developers purchasing building sites at 20 percent of the price at which new, improved properties sell. Thus where residential properties sell at a price of $80,000, the 1 to 4 ratio indicates a site value of $80,000 time .20 or $16,000. The prevailing ratio of land value to building value for a given class of real property also aids the appraiser in deriving, by abstraction, appropriate market rates of capitalization, as will be explained and demonstrated in Course II: The Income Approach to Value.

Allocation Method Exercise

You are appraising land in a rural area. You have identified several comparable rural neighborhoods and determined that the land to building value ratio is 1: 4 (.20 for land, .80 for building) on all parcels. There are two roads that cut through the area. In comparable areas, location on the dirt road decreases the values (land and improvements) about 10 percent.

Below are 7 recent sales from the subject neighborhood:

Parcel	Sale price	Size	Street Type
1	$165,100	1Acre	Dirt
2	$244,940	1Acre	Paved
3	$164,500	1Acre	Dirt
4	$165,000	1Acre	Dirt
5	$241,000	1Acre	Paved
6	$243,000	1Acre	Paved
7	$166,000	1Acre	Dirt

1. Develop two base lot values for the subject neighborhood; one base lot value for the dirt road lots and one for paved road lots.

Allocation Method Exercise

Dirt Lots

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value
1	$165,100	.20	.90	$29,718.00
3	$164,500	.20	.90	$29,610.00
4	$165,000	.20	.90	$29,700.00
7	$166,000	.20	.90	$29,880.00

Range $29,610 to $29,880 – Say $29,700 on dirt road.

Paved Lots

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value
2	$244,940	.20	1.00	$48,988.00
5	$241,000	.20	1.00	$48,200.00
6	$243,000	.20	1.00	$48,600.00

Range $48,200 to $48,988 Say $48,600

Allocation Method Exercise

You are appraising land in a residential area. Many of the homes are tract homes built on one-fourth acre lots in the late 1980's. Others are custom built homes constructed over the past 20 years on large lots (one-third acre) that afford more room and privacy.

You have identified several comparable neighborhoods and determined that a land/total value ratio of 0.22 is appropriate for the tract parcels and 0.25 for the custom-built homes. There are two major streets that cut through the area. In comparable areas, location on major streets reduces values (land and improvements) about 8 percent.

Below are 10 recent sales from the subject neighborhood:

Parcel	Sale price	Lot Type	Major Street
1	$110,000	Tract	No
2	$194,940	1/3 Acre	Yes
3	$124,880	Tract	Yes
4	$114,500	Tract	No
5	$179,000	1/3 Acre	No
6	$128,780	Tract	Yes
7	$169,000	1/3 Acre	No
8	$175,000	1/3 Acre	No
9	$115,000	Tract	No
10	$189,000	1/3 Acre	Yes

2. Develop two base lot values for the subject neighborhood; one base lot value for the tract lots and one for the larger lots.

3. What would be the approximate land value of the two types of lots if they were located on a major street?

Allocation Method Exercise
Suggested Solution

Tract Lots (1/4 Acre)

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value

Range – Say
With street adjustment

Large Lots (1/3 Acre)

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value

Range Say
With street adjustment

Abstraction Method

The abstraction method of site valuation may be helpful when no vacant sales are available for comparison. It is based on the principle of balance, which states that there is a sense of proportion in the four agents of production (see Chapter 1). Land, as one of the agents of production, should have a logical value relationship to total property value.

As previously discussed, under the concept of allocation, a portion of total property value may be assigned to the site. A fair allowance is estimated, based on knowledge of the market for properties of the class under appraisal. Typical relationships are established from sales of improved properties. To establish proper ratios, the following are usually considered: (1) site values in previous years, (2) land-building ratios in similar neighborhoods, and (3) analysis of new construction o similarly classified sites.

Estimate, for example, that the site should represent about 20 percent of the total property value in a given area, classified as single-family residential. The allocation is 1:4; there is one-part land to four parts building. In a $40,000 property, land typically represents one-fifth, or 20 percent, of the total. The site in this example would be valued as follows: $40,000 x 20% = $8,000 or $40,000 ÷ 5 = $8,000.

Abstraction, as opposed to allocation, employs elements of the cost approach in the analysis of an improved property sale. The method involves subtracting the depreciated reproduction cost of improvements from the sale price of an improved property. The remainder is an indication of land value for that property.

The following example illustrates this method.

Value of property as indicated by sale		$40,000
Estimated replacement cost new of building	$50,000	
Accrued depreciation of all types	$18,000	
Estimated value of improvements		$32,000
Indicated site value		$ 8,000

Similar analysis with several sales of improved properties in a neighborhood may yield a pattern of site values as follows:

Sale Number	Sale Price	Replacement Cost New	Accrued Depreciation	Improvement Value	Indicated Site Value
1	$35,000	$28,000	$8,000	$20,000	$15,000
2	$31,000	$27,000	$10,000	$17,000	$14,000
3	$40,000	$29,000	$3,000	$26,000	$14,000

I

It may be estimated from this analysis that typical sites in this neighborhood have a value in the $14,000-$15,000 range.

This method should be employed with caution. It relies on an up-to-date cost manual for reproduction figures and the ability to accurately and uniformly estimate accrued deprecation.

Abstraction Exercise

An improved residential property on Lake Sinclair sold for $350,000. From your cost manual you calculate a replacement cost new of $147,450. You estimate depreciation to be $13,222. Using the abstraction method, what is the land value?

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Abstraction Method Exercise

Your assignment is to appraise residential lots in an area with few or no recent land sales. There are a number of verified improved property sales with new dwellings and you have reliable cost information. Lots are comparable in size, but prices vary by lake access, lake view, or interior (no lake view). No other influences are observed.

Sales #	Sales Price	Depreciated Improvement Cost	Lake Access	Lake View
1	$275,000	$180,000	Yes	No
2	$145,000	$122,500	No	No
3	$149,000	$126,000	No	No
4	$194,000	$150,000	No	Yes
5	$255,000	$170,000	Yes	No
6	$210,000	$165,000	No	Yes
7	$155,000	$130,000	No	No
8	$290,000	$200,000	Yes	No
9	$198,000	$155,000	No	Yes
10	$152,400	$129,000	No	No

Estimate a lot value for each lot type by abstraction.

Abstraction Method Exercise
Suggested Chart

Interior Lots

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value

Lake View Lots

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value

Lake Access Lots

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value

CAPITALIZATION OF GROUND RENTS

The capitalization of ground rent method employees the income approach to value, which is based on the premise that value is the present worth of future benefits of property ownership. The method may be desirable in central business districts where no vacant land sales can be found. If there is market data available to estimate the income potential of area parking lots, for example this income can be converted or capitalized into an expression of value.

There are many instances where land, particularly commercial land, is leased on a net basis. Rental data comparisons may be made on a per-square-foot or per-front-foot basis. Once the market rent of the subject site is established, a net income is calculated, and a capitalization rate selected. This method is only as reliable as the estimates of highest and best use, market rent, and correct capitalization rate for the subject property.

Formula:

Lease or rent / capitalization rate = value

Ground Rents

A **ground rent** is a form of **lease** in which unimproved **land** is leased for a long term for purposes of improvement by the **tenant**.

Subject Property

The subject property is vacant land located on Georgia Hwy 301. The lot is 25,000 square feet and is zoned for light industrial use. The owner recently leased the property to a technology firm. The firm intends to build a warehouse on the property and has signed a 20-year lease.

Operating Income and Expenses

The ground rent on the property is $1.00 per square foot, per month.
The owner's annual operating expenses, including property taxes and property management fees, are $95,500.

Comparable Property

The annual ground rent on the comparable property is $332,000.
The annual operating expenses for the comparable property are $110,000.
The owner purchased the comparable property two months ago for its estimated market value of $1,600,000.

Capitalization Rate

Calculate the capitalization rate using data from the comparable property.

Annual Rent – Annual operating expenses = Annual Net Income
Annual Income / property value = Capitalization Rate
$332,000 - $110,000 = $222,000
$222,000 / $1,600,000 = .1388

Using the ground rent method, calculate the estimated site value of the subject property.

$1.00 x 25,000 = $25,000 x 12 = $300,000
$300,000 - $95,500 = $204,500
$204,500 / .1388 = $1,473,343

CAPITALIZATION OF GROUND RENTS EXERCISE

You are required to value leased parking lots in your jurisdiction on an income or productivity basis. Typically, leases are $1.00 to $2.00 per square foot, depending on location. Using a capitalization rate of 9 percent, what is the range of value per square foot for parking lots based on the income approach?

Capitalization of Ground Rents Exercise
Solution

$1.00 / .09 = $11.11 per sq. ft. (rounded to $11.00)

$2.00 / .09 = $22.22 per sq. ft. (rounded to $22.00)

LAND RESIDUAL CAPITALIZATION

The land residual capitalization method is applicable only to income-producing properties for which a well-supported improvement value can be developed. The appraiser must be able to develop the annual net operating income attributable to the property and also develop a land and building capitalization rate. The annual net operating income attributable to the improvement is deducted from the total annual income. The remaining income, the residual amount attributable to the land, is then capitalized into a value indicator for the land.

Land Residual Capitalization Exercise

You are appraising a downtown parking lot that has recently been paved with asphalt over stone base at a cost of 70 cents a square foot. The paving has an estimated life expectancy of 10 years. The lot has 250 feet of frontage and a depth of 400 feet. Annual anticipated operating expenses are as follows:

Insurance	$400
Management	5% of effective gross income
Snow removal and lot maintenance	$3,000
Legal and accounting	1% of effective gross income
Miscellaneous	$600

The effective tax rate is 2.5%. The expected return on an investment of this type is 9.5%. The effective gross income of the property is $50,000.

Using straight-line capitalization, estimate the value of the property.

Valuation of Income Producing Property
Solution: Land Residual Technique

Effective Gross Income……	$ 50,000
Less Operating Expenses……	- 7,000
Less Annual Paving Recapture…… (Reserve for Replacement)	- 7,000
Residual Income to Property……	$ 36,000
Capitalized @ 12% (land rate) (9.5% + 2.5%) ……	$300,000

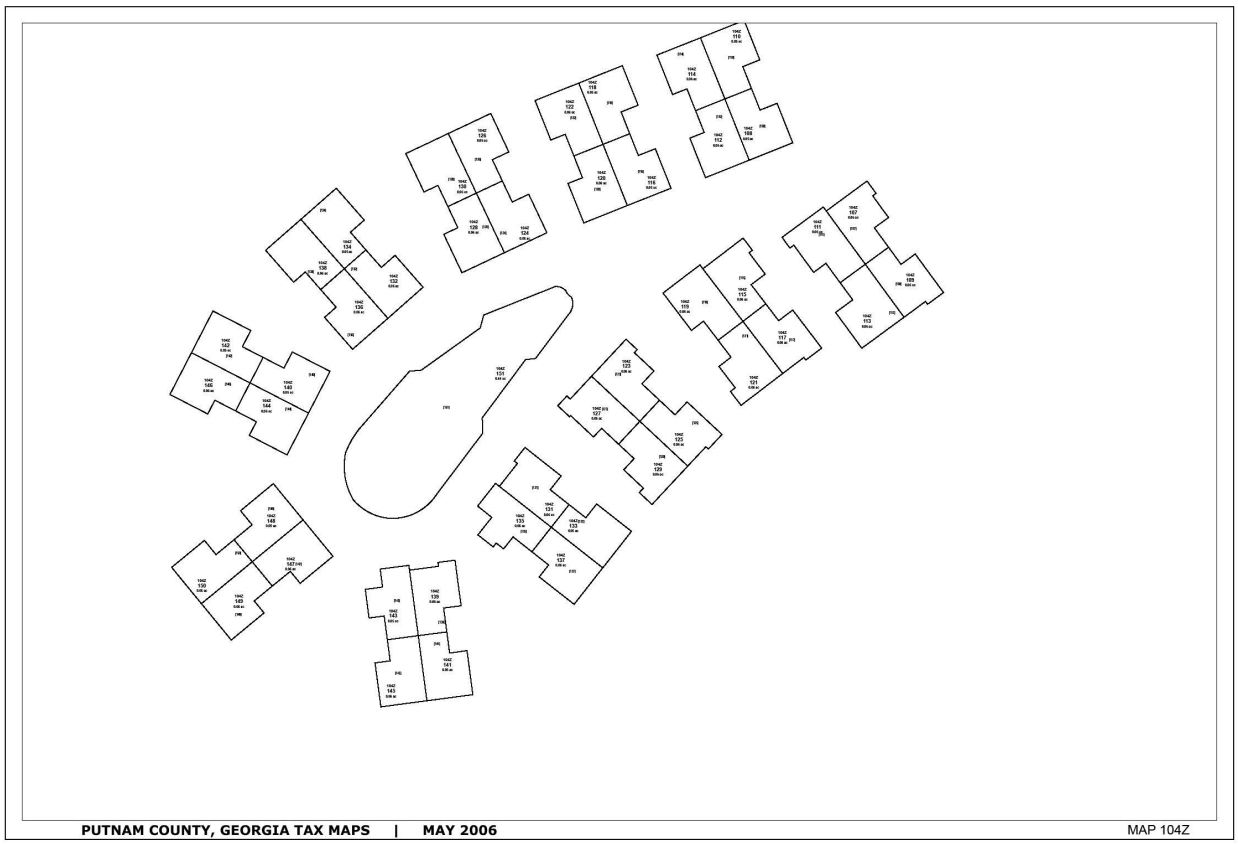
Alternate Solution

Effective Gross Income……		$ 50,000
Less Expenses:		
Insurance	$ 400	
Management (5%)	$2,500	
Snow Removal, Etc.	$3,000	
Legal & Accounting (1%)	500	
Miscellaneous	600	
Total Expenses		$ 7,000
Net Operating Income		$ 43,000
Less Income to Improvements (70,000 x 22% (9.5% + 10% + 2.5%)		- $ 15,400
Residual Income to Land		$ 27,600
Capitalized @ 12% (9.5% + 2.5%)		$230,000
Plus Improvement Value		$ 70,000
TOTAL PROPERTY VALUE		$300,000

VALUATION OF COMMON AREAS (Condominiums)

Georgia Condominium Act – O.C.G.A. 44-3-70 thru 96

(b) All undivided interest in the common elements shall be allocated to the units created by the declaration and shall be subject to reallocation as provided in this article.



VALUATION OF COMMON AREAS

Georgia Law
Appraisal Procedures Manual 560-11-10-.09(4)(d)1.

The appraisal staff may take into account the extent that the fair market value of individually owned units in a residential subdivision, planned commercial development, or condominium also represents the fair market value of any ownership interest in any common area that is conveyed with the individually owned units. When the appraisal staff determines that the fair market value of the common area is included in the fair market value of the individually owned units, the appraisal staff may recommend a nominal assessment of the common area parcel. When the appraisal staff makes such a determination, the fair market value of residual interests not conveyed to the owners of the individually owned units shall be appraised and an assessment recommended to the board of tax assessors.

See also O.C.G.A. 44-3-70, 77, 78, 96.

Retention Pond C54-149

Cell Tower Land Valuation

Land under cell tower and commercial billboards should be valued as urban land.

Commercial Structure Valuation

Most counties in the state of Georgia lack the necessary sales activity to develop commercial/industrial schedules via market analysis. Thus, the emphasis is on the cost approach. However, if substantial market or income data is available, the values in the schedules should be confirmed and adjusted accordingly.

Cost data, such as, base dollars per square foot, dollar per square foot adjustments for structural elements, extra feature values, etc. should be obtained from reliable sources. Sources considered as reliable would be contractors and/or nationally recognized and accepted cost manuals. Data found in manuals must be localized and adjusted for current time.

Any and all schedule values are the responsibility of the county. The creation of the values and subsequent schedules should be supported with proper documentation.

Note: Most CAMA Commercial Improvement schedules can be set up to use either the Segregated Cost Method or Calculator Cost Method of valuing Commercial Improvements, depending upon the preference of the appraiser.

The Appraiser should develop an understanding of the CAMA system's valuation process for commercial / industrial buildings and should facilitate the generation of the schedules for this property type.

Construction Types

Commercial buildings are usually divided into five basic cost groups by type of framing (supporting columns and beams), walls, floors and roof structures, and fireproofing.

1-Heavy Structural Steel
2-Reinforced Concrete
3-Masonry or Load Bearing Walls
4-Wood/Steel Combustible
5-Prefab Structural Steel

Construction Type 1

These building types have fireproofed steel frames that support all floor and roof loads. Walls, floors, and roofs are built of noncombustible materials.

Construction Type 2

These building types have fireproofed, reinforced concrete frames that support all floor and roof loads or masonry floors and roofs. Walls, floors, and roofs are built of noncombustible materials.

Construction Type 3

These building types have exterior walls of noncombustible materials such as masonry or concrete that may be load bearing or non load bearing. Interior partitions and roof structures are built of combustible materials. Floors may be concrete or wood frame.

Construction Type 4

These building types generally have wood exterior walls or wood and steel frame in bearing walls such as Masonry Veneer, etc.

Construction Type 5

These building types are specialized and do not fit in the other four categories. Such buildings may include pre-engineered metal buildings.

Building Types

Building Types categorize Commercial Improvements based on similarities in Construction Type and other components, such as Area / Perimeter and Wall Height. A Building Type is a homogeneous group of commercial buildings that will have the same pricing/adjustments for these additional items. The commercial buildings in these types do not have to be of the same use as long as the costs for the Commercial Structural Elements, such as heating and air conditioning, are similar. The cost for the Commercial Structural Elements may vary between different types of buildings. Consequently, each group of similar buildings must have a unique code for that type of building. These codes may be any 3 digit code that usually ties structural components back to the commercial base cost schedule. Below is a suggested Building Type categorization. Once the Building Types are defined the county can set up the Commercial Base Schedule, the Commercial Structural Components Schedule, and other Commercial Improvement Schedules to price Commercial Improvements correctly.

Building Type Category Examples

001 - Apartments, Hotels
002 - Multiple Family, Motels
003 - Stores and Standard Commercials
004 - Garages, Industrials, Warehouses
005 - Offices and Public Buildings
006 - Churches
008 - Schools

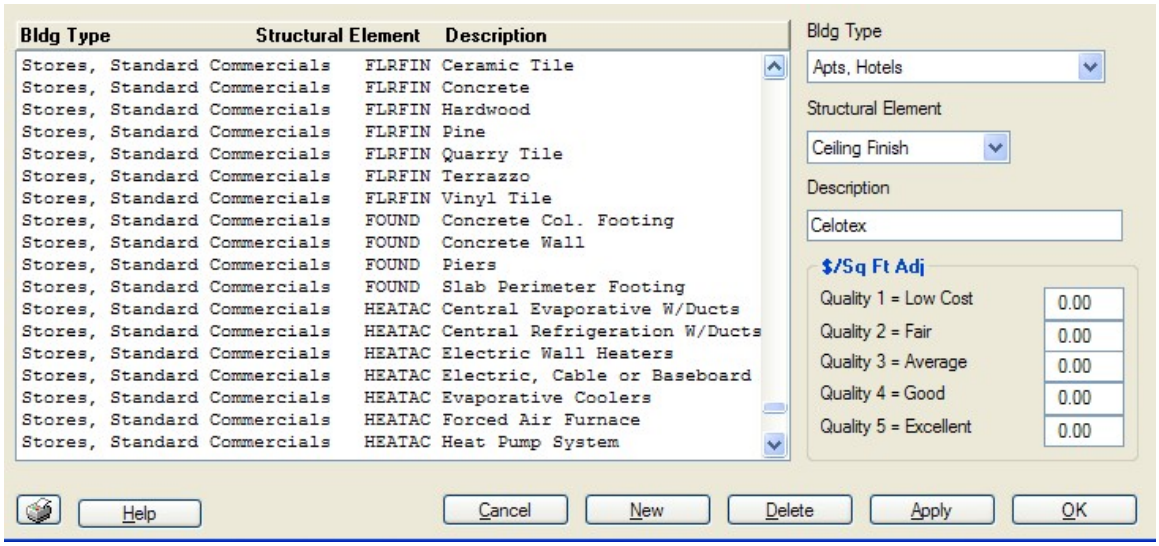
Structural Element Categories

Structural Elements are types of Structural Components, such as "Ceiling Finish", “Heat / AC” or "Floor Construction". These may add a square foot cost to the building if using segregated costing method or they may just be used for descriptive purposes if using calculator costing method. Structural Elements are usually preset in most CAMA systems and cannot be changed by the appraiser. Most CAMA system will allow for each structural element to be adjusted for quality. Following is a list of the twelve Structural Elements:

Ceiling	***Interior Wall***	***Wiring***
Lighting	***Exterior Wall***	***Floor Finish***
Roof Cover	***Floor Construction***	***Wall Frame***
Roof Frame	***Foundation***	***Heat / AC***

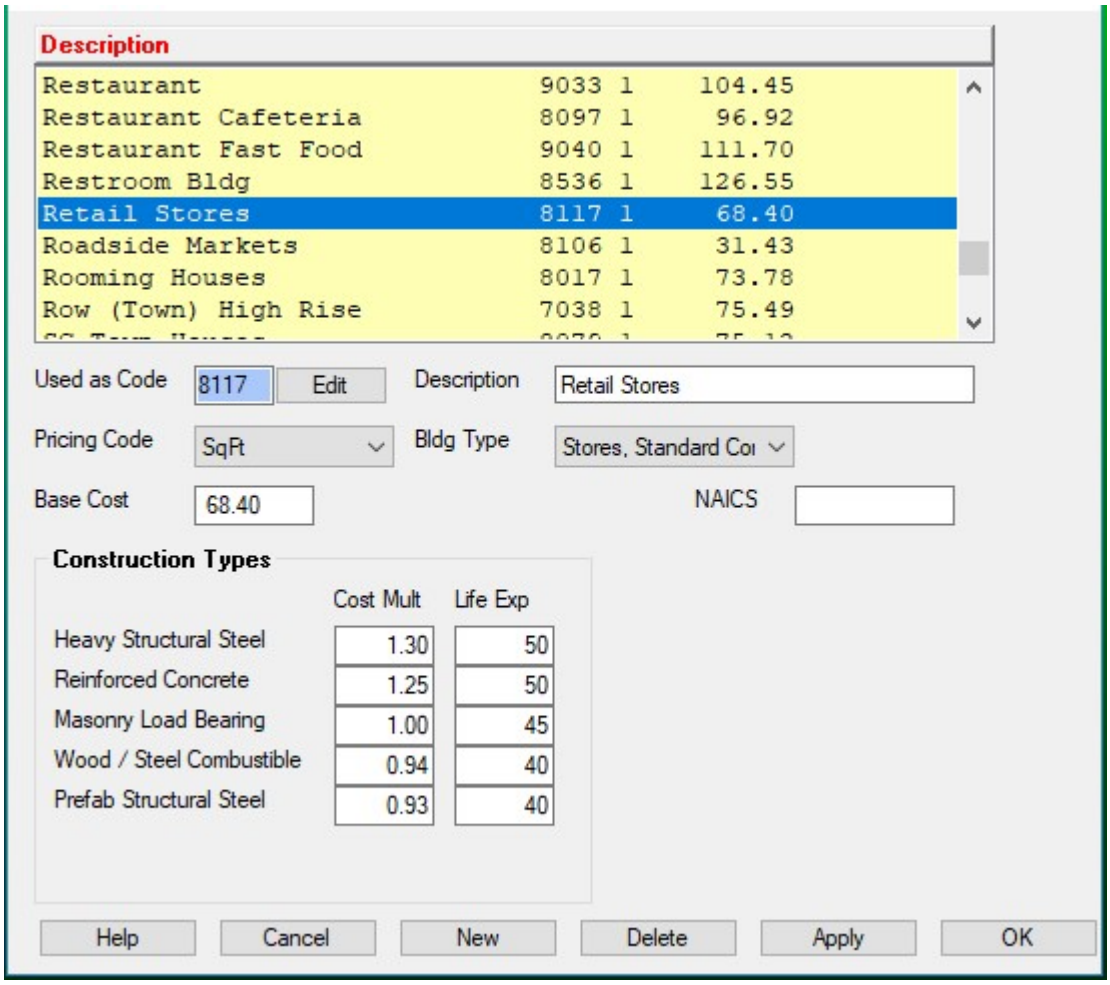
Structural Element Components

Each component may carry a zero value if using calculator costing method. However, if using segregated costing method, each would have a square foot price for each quality class.



Use Types (BuiltAs / UsedAs Codes)

Within each Building Type, subtypes should be defined based on the use for which the structure was designed. These Subtypes are usually referred to as BuiltAs or UsedAs codes and are identified by an alpha or numeric code. In addition, the BuiltAs code refers to the original use the structure and is used for determining an improvement's life expectancy and in calculating the depreciation of the improvement. The UsedAs code would define the current use of the building. Generally, this is where the base cost for the structure is keyed in CAMA systems.



Wall Height Tables

The Wall Height Table contains cost factors, or multipliers, that allow for adjustments based on the height of the walls of a Commercial Improvement. These multipliers are distinguished by Building Type.

Building Type: Stores, Standard Commerc

BLDG_TYPE	Wall Ht	Multiplier
003	9.00000	0.94
003	10.00000	0.96
003	11.00000	0.98
003	12.00000	1.00
003	13.00000	1.02
003	14.00000	1.04
003	15.00000	1.06

Building Type: Garages, Ind, Warehouses

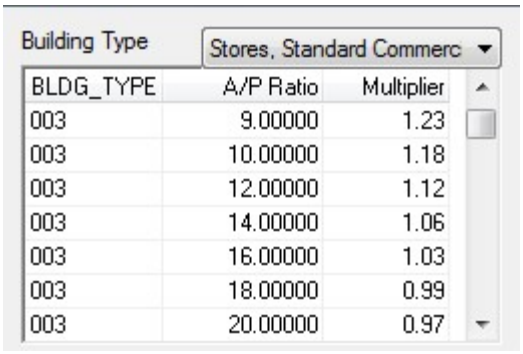
BLDG_TYPE	Wall Ht	Multiplier
004	11.00000	0.94
004	12.00000	0.96
004	13.00000	0.98
004	14.00000	1.00
004	15.00000	1.02
004	16.00000	1.04
004	17.00000	1.06

Area Perimeter Tables

The Area / Perimeter Tables contain cost factors, or multipliers, that adjust the cost of a Commercial Improvement for shape. These multipliers are distinguished by Building Type.

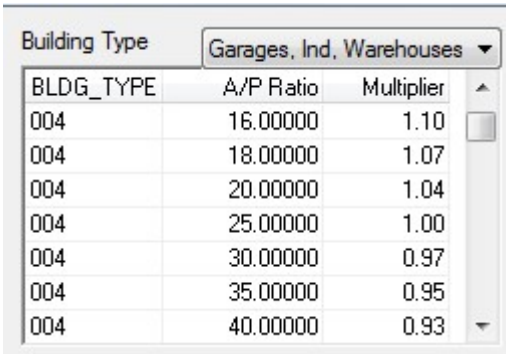
A/P Ratio: The Area/Perimeter Ratio is the ratio of the area of the Commercial Improvement to the perimeter of the Commercial Improvement.

For example, a Commercial Improvement has 10,000 square feet and a Perimeter of 400. The Area is divided by the Perimeter, in this example 10000 / 400, giving an Area / Perimeter Ratio (also called the Argument) of 25. Thus, 25 would be keyed in the Area / Perimeter field on the Area / Perimeter Table Form.



Building Type: Stores, Standard Commerc

BLDG_TYPE	A/P Ratio	Multiplier
003	9.00000	1.23
003	10.00000	1.18
003	12.00000	1.12
003	14.00000	1.06
003	16.00000	1.03
003	18.00000	0.99
003	20.00000	0.97

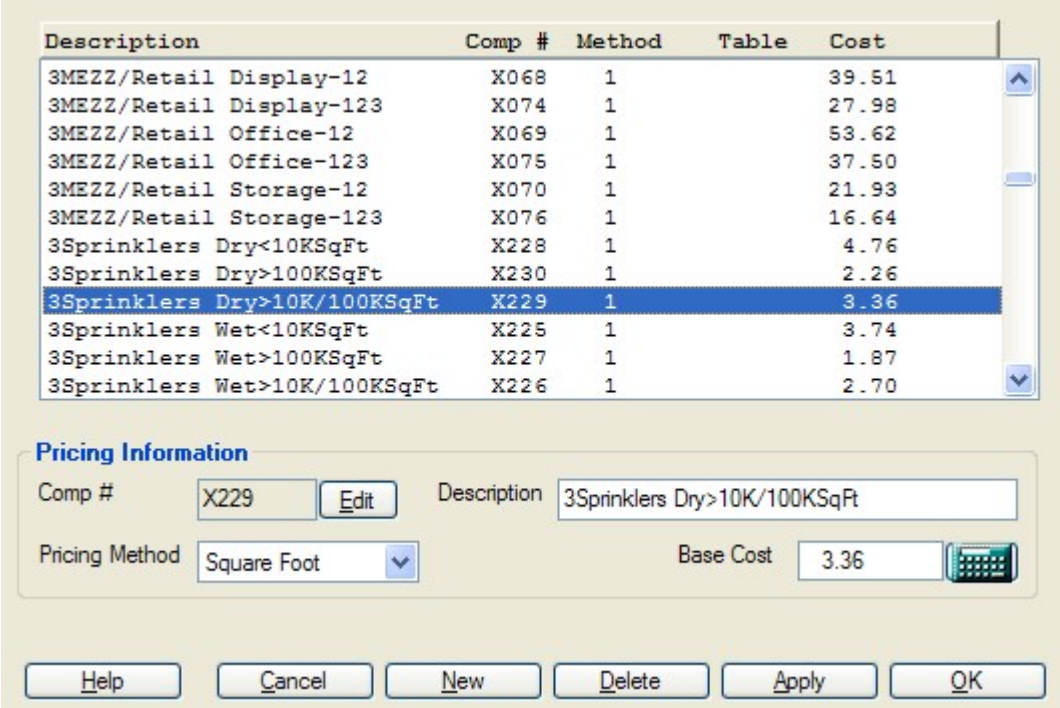


Building Type: Garages, Ind, Warehouses

BLDG_TYPE	A/P Ratio	Multiplier
004	16.00000	1.10
004	18.00000	1.07
004	20.00000	1.04
004	25.00000	1.00
004	30.00000	0.97
004	35.00000	0.95
004	40.00000	0.93

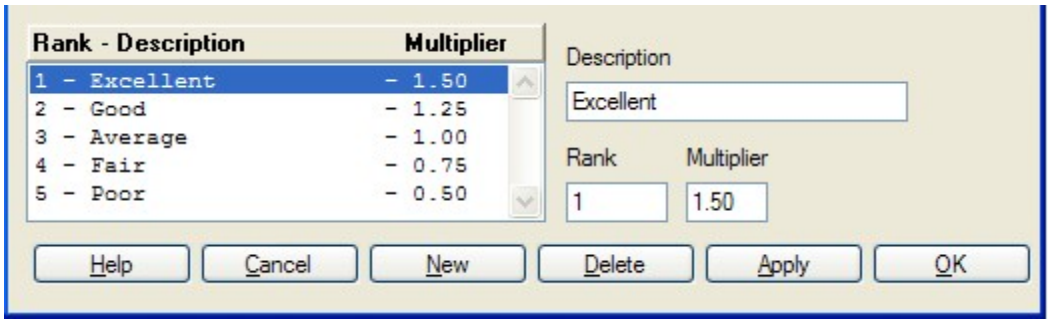
Extra Features Tables

Extra Features are items that are attached to or part of a Commercial Improvement but are not considered in the Base Cost. For example, a canopy, sprinkler system, overhead door, or loading dock would all be considered to be Extra Features. The lump sum or square foot method may be used for such items. However, if using the calculator costing method, some of these costs could already be included in the base cost..



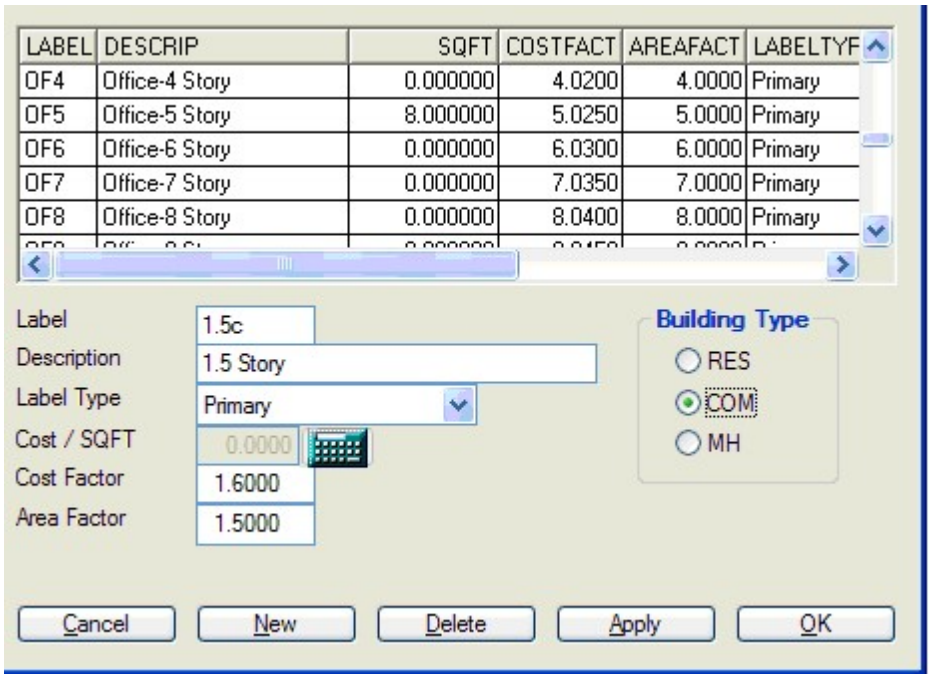
Commercial Extra Features Rank Table

The Commercial Rank Table contains cost factors, or multipliers, that allow for adjustments to extra feature values based on the quality class of any commercial extra feature relative to the improvements grade.



Commercial Story Height Adjustments

Multistory Buildings should be adjusted for each story, over three, above ground, to all base costs.



Commercial Quality Grade

Within each of the five basic cost groups by type of framing (supporting columns and beams), walls, floors and roof structures, and fireproofing, the appraiser should apply quality grade as compared to the standard for each group. Below is a grade range used by most CAMA systems.

Excellent	*160±*	*A*
Good	*120±*	*B*
Average	*100±*	*C*
Low Cost	*80±*	*D*
Cheap	*60±*	*E*

Commercial Field Data Collection Sheet

The appraiser should develop and use a field data collection sheet designed for the county's specific CAMA system in order to consistently and uniformly gather data in the field. See example of a commercial/industrial field data sheet on the next page.

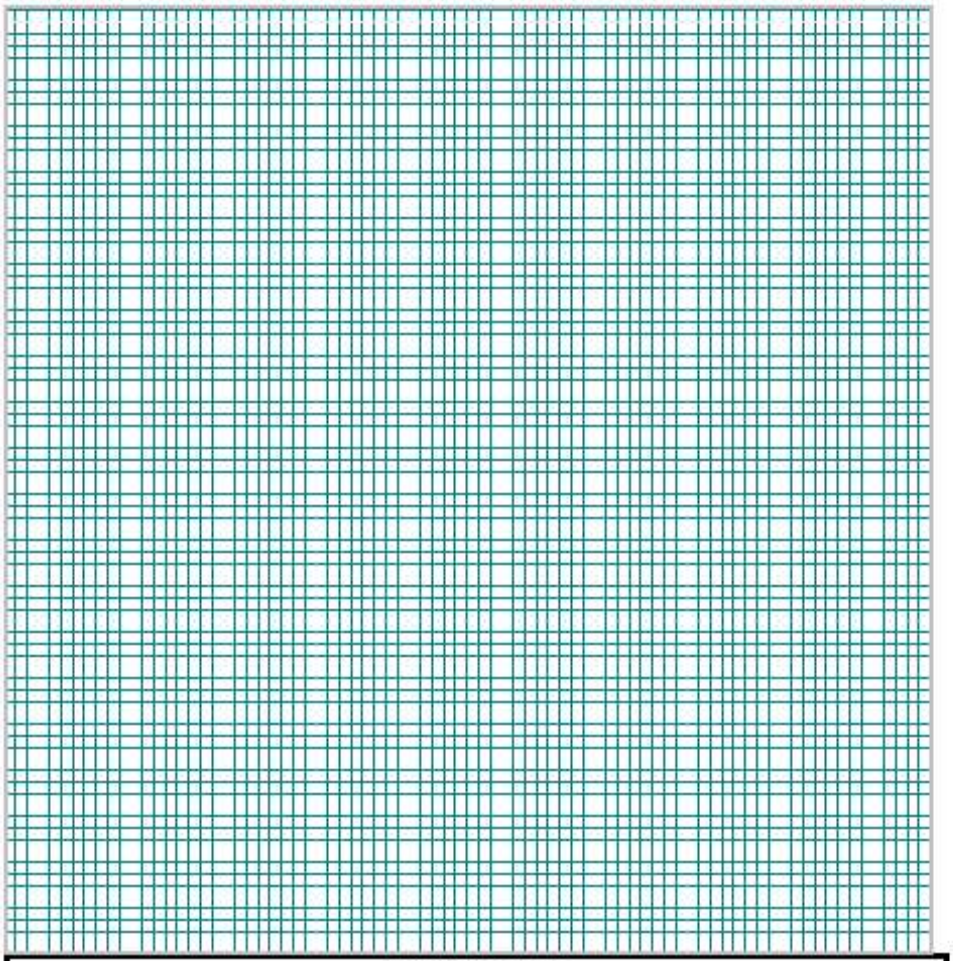
Commercial Field Data Collection Sheet

COMMERCIAL/INDUSTRIAL FIELD WORKSHEET									
Map/Parcel #						Imp#		Sec#	
Used As									
Built As									
Const Type	1	2	3	4	5	Apts, Hotels			001
Story Ht.		Common Wall							
Wall Height						Stores, Standard Commercial			003
Year Built						Garages, Ind, Warehouses			004
Eff Yr Built						Offices, Public Building			005
Grade		LC=80+- AV=100+- GD=140+- EX=160+-				Churches			006
Phy Dep		1-Fix Bath				Sheds , Ag Buildings			007
Ovr Dep		2-Fix Bath				Schools			008
Econ		3-Fix Bath				Special Supplemental Cost			65
Func		1.0-Bath/Kitc				Miscellaneous			99
Other Adj		1.5-Bath/Kitc							
% Comp		2.0-Bath/Kitc							

100□90
89□80
79□70
69□60
59□50
49□40
39□30
29□20
19□10
10□0

Structure Details								
Foundation			%	Floor Finish				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			
Wall			%	Interior Walls				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			
Exterior Walls			%	Ceiling				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			
Roof Frame			%	Wiring				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			
Roof Cover			%	Heating				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			
Floor Construction			%	Lighting				%
Desc1	QC1			Desc1	QC1			
Desc1	QC2			Desc1	QC2			
Desc1	QC3			Desc1	QC3			

Extra Feature Items
Item-
Item-
Item-
Item-
Item-
Item-
Item-



Accessory Items
Item-
Item-
Item-
Item-
Item-
Item-
Item-
Item-

Commercial Cost Built-As Used-As Tables

The use of the cost figures present on these pages is for classroom purposes only. Any use outside of the classroom will result in erroneous values.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Btype	Ucode	descript	cost	life1	life2	life3	life4	life5	ct1	ct2	ct3	ct4	ct5
12	004	8182	Armories	67.49	50	50	50	40	40	1.00	1.00	1.00	0.96	0.94
14	004	8810	Asphalt Plants	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
15	005	8215	Atriums/Vestibules	124.86	55	55	50	50	50	1.31	1.31	1.00	1.00	1.00
17	004	9141	Auto Service Center	54.04	40	40	40	35	35	1.00	1.00	1.00	0.95	0.91
22	005	9159	Bank Branch	134.34	55	55	50	45	45	1.29	1.24	1.00	0.93	0.92
23	005	9154	Bank Central Office	131.63	55	55	50	45	45	1.26	1.22	1.00	0.95	0.93
24	003	7042	Banquet Halls	84.02	40	40	40	40	35	1.00	1.00	1.00	0.94	0.92
25	003	9070	Barber/Beauty Shops	59.23	40	40	35	30	30	1.35	1.35	1.00	0.92	0.91
28	003	8089	Bars/Taverns	79.72	45	45	45	40	40	1.22	1.22	1.00	0.94	0.94
35	004	8176	Branch Post Office	86.30	55	55	50	45	45	1.22	1.22	1.00	0.96	0.95
36	004	8813	Breweries	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
37	004	8168	Broadcasting Facilities	95.70	50	50	45	40	40	1.53	1.53	1.00	0.97	0.95
47	004	8811	Cement Plants	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
50	005	8252	Churches/Sunday School	104.48	50	50	45	40	40	1.34	1.30	1.00	0.94	0.92
54	003	8093	Cocktail Lounges	88.55	40	40	40	35	35	1.23	1.23	1.00	0.94	0.95
55	004	8191	Cold Storage Facilities	48.30	50	50	45	40	40	1.23	1.23	1.00	0.95	0.94
59	003	8149	Comm Shop Cntr Shell	38.48	45	45	45	40	40	1.00	1.00	1.00	0.90	0.85
62	003	8132	Community Shop Center	74.99	45	45	45	40	40	1.00	1.00	1.00	0.94	0.93
63	004	9127	Comp Auto Dealerships	63.75	45	45	45	40	40	1.50	1.50	1.00	0.96	0.93
64	004	8164	Computer Data Centers	98.28	45	45	40	35	35	1.30	1.30	1.00	0.97	0.96
67	005	8234	Convalescent Hospitals	113.95	45	45	40	35	35	1.49	1.46	1.00	0.95	0.94
68	003	9044	Convenience Stores	69.80	45	45	45	35	35	1.23	1.23	1.00	0.94	0.94
75	004	8473	Creameries	61.45	30	30	30	25	25	1.38	1.38	1.00	0.93	0.92
77	003	8127	Dairy Sales	73.14	35	35	35	30	30	1.00	1.00	1.00	0.94	0.93
81	005	9167	Dental Clinics	114.98	40	40	40	35	35	1.00	1.00	1.00	0.95	0.91
82	003	8122	Department Stores	85.36	50	50	45	45	45	1.22	1.17	1.00	1.00	1.00
83	003	8103	Dining Atriums/Play Rooms	65.84	30	30	30	30	30	1.00	1.00	1.00	0.89	0.83
84	003	9056	Discount Stores	52.10	35	35	35	30	30	1.00	1.00	1.00	0.93	0.91
85	005	8225	Dispensaries Urgent Care	84.19	45	45	35	30	30	1.30	1.30	1.00	0.94	0.90
86	004	9109	Distribution Warehouse	36.24	50	45	45	40	40	1.63	1.56	1.00	0.91	0.89

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1	Btype	Ucode	descript	cost	life1	life2	life3	life4	life5	ct1	ct2	ct3	ct4	ct5
89	003	9066	Drug Store	81.23	45	45	40	30	35	1.18	1.18	1.00	0.95	0.79
109	005	9187	Fire Stations/Staff	100.16	45	45	40	35	35	1.52	1.52	1.00	0.91	0.81
110	005	9183	Fire Stations/Volunteer	55.59	45	45	45	40	35	1.56	1.56	1.00	0.90	0.86
113	003	9052	Florist Shop	65.68	50	50	40	35	35	1.24	1.24	1.00	0.94	0.73
119	004	8814	Gen Plant/Cool Water Gas	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
120	004	8815	Gen Plant/Fossil Fuel/SteamE	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
121	004	8816	Gen Plant/Geothermal	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
122	004	8817	Gen Plant/Hydropower	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
123	004	8820	Gen Plant/Mass Burn Trash	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
124	004	8818	Gen Plant/Natural Gas/CmbCyc	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
125	004	8819	Gen Plant/Nuclear	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
126	005	9172	General Hospitals	171.70	45	45	40	35	35	1.33	1.31	1.00	0.94	0.71
129	005	9192	Government Buildings	116.90	55	55	50	45	45	1.26	1.23	1.00	0.90	0.89
130	005	8238	Govt Comm Service Bldgs	96.22	55	55	50	40	40	1.26	1.26	1.00	0.94	0.93
143	004	8195	High Rise Mini Whses	33.83	45	45	40	35	35	1.38	1.38	1.00	1.22	1.21
158	004	8156	Ind Flex Mall Bldg	36.96	50	50	50	40	40	1.00	1.00	1.00	0.94	0.91
159	004	8828	Ind Plant/Bottling Lines	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
160	004	8829	Ind Plant/Canning Lines	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
161	004	8830	Ind Plant/Cog EqpLrg<=2000KW	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
162	004	8832	Ind Plant/Cog EqpPk150/750KW	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
163	004	8831	Ind Plant/Cog EqpSm<=1000KW	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
164	004	8834	Ind Plant/Gas Wells/Shore	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
165	004	8835	Ind Plant/Methane Gas Wells	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
166	004	8836	Ind Plant/Oil Wells/Shore	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
167	004	8833	Ind Plant/Wind Power Turbine	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
170	004	9095	Inds Heavy Manufacturing	83.11	60	60	55	50	50	1.34	1.30	1.00	0.91	0.91
171	004	9090	Inds Light Manufacturing	37.05	55	55	50	45	45	1.58	1.50	1.00	0.93	0.90
172	004	9100	Inds Research/Develop	51.67	55	55	50	45	45	1.37	1.31	1.00	0.95	0.93
173	005	8242	Jails Correct Facilities	155.08	50	50	40	35	35	1.18	1.18	1.00	0.94	0.93
174	005	9201	Jails/Police Stations	110.50	50	50	45	35	35	1.19	1.19	1.00	0.95	1.00

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1	Btype	Ucode	descript	cost	life1	life2	life3	life4	life5	ct1	ct2	ct3	ct4	ct5
175	005	9175	Kennels	75.35	40	40	40	35	30	1.00	1.00	1.00	0.93	0.91
177	004	8160	Laboratory Bldg	131.51	50	50	45	40	40	1.26	1.26	1.00	0.98	0.96
180	003	9073	Laundromats	66.04	35	35	35	30	30	1.00	1.00	1.00	0.92	0.90
181	004	8837	Laundry Plants	84.08	50	50	50	50	50	1.00	1.00	1.00	1.00	1.00
182	003	9076	Laundry/Dry Cleaning	63.88	40	40	40	35	30	1.00	1.00	1.00	0.93	0.90
186	004	8812	Lime Plants	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
189	004	8153	Lofts	52.06	55	55	50	40	40	1.29	1.29	1.00	0.95	0.93
196	004	9144	Lt Ind WHSE Shell	26.31	40	40	40	35	35	1.00	1.00	1.00	0.75	0.88
200	003	7052	Luxury Boutiques	168.77	55	55	50	45	45	1.12	1.12	1.00	0.96	1.00
202	004	8180	Mail Process Facilities	63.52	50	50	45	45	40	1.64	1.64	1.00	1.00	0.97
203	004	9104	Main Post Office	98.47	55	55	50	45	45	1.42	1.42	1.00	0.95	0.94
204	004	8198	Maintenance Hangars	41.02	45	45	45	40	40	1.00	1.00	1.00	0.94	0.88
206	003	8125	Mall Anchored Dept Store	69.02	50	50	45	40	40	1.20	1.20	1.00	0.94	0.71
208	003	9048	Market	66.42	40	40	40	35	35	1.25	1.25	1.00	0.93	0.92
212	004	8838	Mechanical Buildings	45.13	50	50	50	50	50	1.00	1.00	1.00	1.00	1.00
213	005	8219	Mechanical Penthouses	36.73	50	50	45	45	45	1.27	1.27	1.00	1.00	1.00
214	005	9164	Medical Office Bldg	112.25	45	45	40	35	35	1.27	1.24	1.00	0.94	0.89
215	004	8185	Mega Storage Dist Whse	26.82	45	45	45	45	40	1.00	1.00	1.00	1.00	0.99
216	003	7058	Mega Warehouse Store	37.55	35	35	35	35	30	1.00	1.00	1.00	1.00	0.92
221	005	8221	Mini Banks Walkup Drive	242.20	50	50	45	40	40	1.30	1.30	1.00	0.96	0.95
222	003	8109	Mini M Convenience Store	115.63	40	40	40	35	35	1.00	1.00	1.00	0.96	1.02
223	004	9117	Mini Warehouse	26.38	45	45	45	45	40	1.00	1.00	1.00	0.95	0.91
224	004	9130	Mini-Lube Garage	72.09	35	35	35	30	30	1.00	1.00	1.00	0.96	0.92
230	003	8130	Mix Ret Cntr Res Units	69.72	50	50	50	45	45	1.00	1.00	1.00	0.94	1.00
231	003	9082	Mix Retail/Office Unit	71.35	45	45	45	40	40	1.00	1.00	1.00	0.94	1.00
233	003	7046	Modular Restaurants Diners	172.90	30	30	30	30	30	1.00	1.00	1.00	1.00	1.00
244	004	8200	Municipal Service Gar	60.60	35	35	35	30	30	1.00	1.00	1.00	0.91	0.88
247	003	9085	Nbhd Shop/Shell Bldg	34.43	50	50	50	45	45	1.00	1.00	1.00	0.90	0.83
248	003	9079	Nbhd Shopping Center	70.39	40	40	40	35	35	1.00	1.00	1.00	0.94	0.92
249	005	9149	Office Buildings	89.14	55	55	50	45	45	1.44	1.38	1.00	0.94	0.88

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1	Btype	Ucode	descript	cost	life1	life2	life3	life4	life5	ct1	ct2	ct3	ct4	ct5
250	005	8229	Outpatient Surgical Cntrs	169.29	45	45	40	35	35	1.30	1.30	1.00	0.95	0.95
251	005	8217	Park Levels Int Under Bl	42.67	50	50	45	45	45	1.20	1.20	1.00	1.00	1.00
252	004	8211	Parking Parkade Structures	39.24	40	40	35	35	35	1.03	1.00	1.00	1.00	0.72
253	004	8172	Passenger Terminals	82.28	55	55	45	40	40	1.95	1.95	1.00	0.95	0.92
263	005	9197	Public Libraries	110.73	55	55	50	45	45	1.38	1.34	1.00	0.94	0.91
266	004	8839	Recycling Facilities	47.98	50	50	50	50	50	1.00	1.00	1.00	1.00	1.00
267	003	8136	Region Discount Shop Cntr	60.85	50	50	50	45	45	1.24	1.24	1.00	0.93	0.92
268	003	8146	Region Shop Cntr Shell	34.35	50	50	45	45	45	1.69	1.69	1.00	0.87	0.82
269	003	8140	Regional Shop Center	84.88	50	50	45	45	45	1.47	1.47	1.00	0.94	0.93
273	003	9033	Restaurant	99.23	40	40	35	35	55	1.25	1.25	1.00	0.93	0.91
274	003	8097	Restaurant Cafeteria	92.07	30	30	30	30	30	1.23	1.23	1.00	0.93	0.94
275	003	9040	Restaurant Fast Food	106.12	40	40	35	35	35	1.30	1.30	1.00	0.93	0.92
277	003	8117	Retail Stores	64.98	50	50	45	40	40	1.30	1.25	1.00	0.94	0.93
278	003	8106	Roadside Markets	29.86	30	30	30	25	25	1.00	1.00	1.00	0.87	0.86
290	004	8203	Service Garage Shed	18.07	30	30	30	25	25	1.00	1.00	1.00	0.80	0.87
291	004	9138	Service Repair Garage	40.75	40	40	40	35	30	1.49	1.49	1.00	0.91	0.85
292	004	8824	Sewage Plant/LrgeMun1M/5MGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
293	004	8823	Sewage Plant/Med15K/500KGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
294	004	8822	Sewage Plant/SmFG2K/12KGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
295	004	8821	Sewage Plant/SmStl1K/5KGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
299	005	8247	Shell Office Bldgs	48.17	55	55	50	45	45	1.65	1.55	1.00	0.90	0.78
301	003	7066	Shopg Ctr Mall CncourseB	61.60	40	40	40	40	40	1.23	1.23	1.00	1.00	1.00
303	004	8207	Showrooms	71.88	45	45	40	35	35	1.51	1.51	1.00	0.96	0.93
306	003	9036	Snack Bar	63.50	30	30	30	25	25	1.00	1.00	1.00	0.91	0.89
307	004	8840	Sound Stages	89.30	50	50	50	50	50	1.00	1.00	1.00	1.00	1.00
310	004	9134	Storage Garage	40.57	45	45	45	35	35	1.33	1.33	1.00	0.92	0.86
311	004	9120	Storage Hangers	30.68	40	40	40	35	35	1.00	1.00	1.00	0.92	0.87
312	004	9114	Storage Warehouse	31.24	50	50	45	40	40	1.56	1.47	1.00	0.92	0.90
313	003	7048	Supermarkets	67.38	40	40	40	35	35	1.22	1.00	1.00	0.93	0.92
314	004	9123	T/Hangers/Steel	27.26	30	30	30	30	20	1.00	1.00	1.00	1.00	0.91

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316	004	7999	Telephone Building	111.15	60	50	50	60	50	1.34	1.34	1.00	1.01	1.01
325	004	8187	Transit Warehouses	48.93	45	45	45	40	40	1.00	1.00	1.00	0.92	0.89
326	003	8100	Truck Stop Restaurant	105.11	30	30	30	30	30	1.00	1.00	1.00	0.95	0.96
329	004	8213	Underground Park Struc	67.59	40	40	40	40	40	1.00	1.00	1.00	1.00	1.00
332	005	9179	Veterinary Hospital	110.33	45	45	45	40	35	1.44	1.44	1.00	0.95	0.90
335	003	8112	Warehouse Discount Stores	40.58	30	30	30	30	30	1.00	1.00	1.00	0.91	0.92
336	003	9062	Warehouse Food Store	53.63	35	35	35	30	30	1.00	1.00	1.00	0.93	0.90
337	003	9059	Warehouse Showroom	43.91	35	35	35	30	30	1.00	1.00	1.00	0.92	0.93
338	004	8827	Water Plant/Lrge2M/10MGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
339	004	8826	Water Plant/Med750K/1MGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
340	004	8825	Water Plant/Sm200K/500KGPD	0.00	60	60	60	60	60	1.00	1.00	1.00	1.00	1.00
341	003	7054	Winery (Tasting) Shops	88.09	40	40	40	35	35	1.00	1.00	1.00	0.94	0.92
342														
343														
344														
345														
346														

Commercial Wall Height Tables

	A	B	C
1	bldg_type	Wallht	factor
2	3	7	0.92
3	3	8	0.92
4	3	9	0.94
5	3	10	0.96
6	3	11	0.98
7	3	12	1.00
8	3	13	1.02
9	3	14	1.04
10	3	15	1.06
11	3	16	1.09
12	3	17	1.11
13	3	18	1.13
14	3	19	1.15
15	3	20	1.17
16	3	21	1.19
17	3	22	1.21
18	3	23	1.24
19	3	24	1.26
20	3	25	1.28
21	3	26	1.30
22	3	27	1.32
23	3	28	1.34
24	3	29	1.36
25	3	30	1.38
26	3	35	1.47
27	3	40	1.47
28	3	45	1.47
29	3	50	1.47
30	4	7	0.89
31	4	8	0.89
32	4	9	0.90
33	4	10	0.92
34	4	11	0.94
35	4	12	0.96
36	4	13	0.98
37	4	14	1.00
38	4	15	1.02
39	4	16	1.04
40	4	17	1.06
41	4	18	1.07
42	4	19	1.10
43	4	20	1.13
44	4	21	1.16

Commercial Wall Height Tables

	A	B	C
1	bldg_type	Wallht	factor
45	4	22	1.18
46	4	23	1.21
47	4	24	1.23
48	4	25	1.25
49	4	26	1.28
50	4	27	1.31
51	4	28	1.33
52	4	29	1.35
53	4	30	1.38
54	4	35	1.52
55	4	40	1.65
56	4	45	1.79
57	4	50	1.93
58	5	7	0.96
59	5	8	0.96
60	5	9	0.98
61	5	10	1.00
62	5	11	1.02
63	5	12	1.04
64	5	13	1.06
65	5	14	1.07
66	5	15	1.09
67	5	16	1.11
68	5	17	1.13
69	5	18	1.15
70	5	19	1.16
71	5	20	1.18
72	5	21	1.20
73	5	22	1.22
74	5	23	1.23
75	5	24	1.26
76	5	25	1.28
77	5	26	1.30
78	5	27	1.32
79	5	28	1.34
80	5	29	1.35
81	5	30	1.37
82	5	35	1.37
83	5	40	1.37
84	5	45	1.37
85	5	50	1.37

Commercial Area/Perimeter Tables

	A	B	C
1	bldg_type	areaovrper	apfactor
2	3	0	1.57
3	3	5	1.57
4	3	6	1.45
5	3	7	1.36
6	3	8	1.28
7	3	9	1.23
8	3	10	1.18
9	3	12	1.12
10	3	14	1.06
11	3	16	1.03
12	3	18	0.99
13	3	20	0.97
14	3	25	0.92
15	3	30	0.89
16	3	35	0.87
17	3	40	0.85
18	3	50	0.83
19	3	60	0.82
20	3	80	0.80
21	3	100	0.78
22	3	120	0.77
23	3	140	0.76
24	3	160	0.75
25	3	180	0.74
26	3	200	0.73
27	3	250	0.72
28	3	300	0.70
29	4	0	1.60
30	4	5	1.60
31	4	6	1.53
32	4	7	1.46
33	4	8	1.39
34	4	9	1.32
35	4	10	1.25
36	4	12	1.18
37	4	14	1.13
38	4	16	1.10
39	4	18	1.07
40	4	20	1.04
41	4	25	1.00
42	4	30	0.97
43	4	35	0.95
44	4	40	0.93

Commercial Area/Perimeter Tables

	A	B	C
1	bldg_type	areaovrper	apfactor
45	4	50	0.91
46	4	60	0.90
47	4	80	0.88
48	4	100	0.86
49	4	120	0.84
50	4	140	0.82
51	4	160	0.80
52	4	180	0.78
53	4	200	0.76
54	4	250	0.74
55	4	300	0.72
56	5	0	1.30
57	5	5	1.30
58	5	6	1.24
59	5	7	1.19
60	5	8	1.13
61	5	9	1.11
62	5	10	1.08
63	5	12	1.04
64	5	14	1.02
65	5	16	1.00
66	5	18	0.98
67	5	20	0.96
68	5	25	0.93
69	5	30	0.92
70	5	35	0.91
71	5	40	0.90
72	5	50	0.88
73	5	60	0.86
74	5	80	0.83
75	5	100	0.80
76	5	120	0.78
77	5	140	0.76
78	5	160	0.75
79	5	180	0.74
80	5	200	0.73
81	5	250	0.72
82	5	300	0.70

Commercial $Adds

	A	B	C	D	E	F	G	H	I
1	bldg_type	menutype	menurespon	qc1	qc2	qc3	qc4	qc5	descript
150	3	FLRFIN	2	2.25	2.25	2.25	2.25	2.25	Carpet/Vinyl Tile
151	3	FLRFIN	3	1.97	1.97	1.97	1.97	1.97	Carpet
152	3	FLRFIN	4	2.52	2.52	2.52	2.52	2.52	Vinyl Tile
153	3	FLRFIN	5	6.80	6.80	6.80	6.80	6.80	Quarry Tile
154	3	FLRFIN	7	6.80	6.80	6.80	6.80	6.80	Ceramic Tile
155	3	FLRFIN	8	0.00	0.00	0.00	0.00	0.00	Pine
156	3	FLRFIN	9	6.30	6.30	6.30	6.30	6.30	Hardwood
157	3	FLRFIN	10	1.26	1.26	1.26	1.26	1.26	Asphalt
158	3	FLRFIN	13	0.64	0.64	0.64	0.64	0.64	Concrete
159	3	FLRFIN	14	6.80	6.80	6.80	6.80	6.80	Terrazo
188	3	FLRFIN	15	6.80	6.80	6.80	6.80	6.80	Brick
189	3	FLRFIN	16	0.00	0.00	0.00	0.00	0.00	Celotex
190	3	HEATAC	1	0.00	0.00	0.00	0.00	0.00	No Heat
191	3	HEATAC	2	1.01	1.01	1.01	1.01	1.01	Susp. Heaters
192	3	HEATAC	3	1.93	1.93	1.93	1.93	1.93	Forced Hot Air
193	3	HEATAC	4	2.31	2.31	2.31	2.31	2.31	Central Air Conditioning
194	3	HEATAC	5	3.53	3.53	3.53	3.53	3.53	Cent. Htg. & A.C.
195	3	HEATAC	6	0.92	0.92	0.92	0.92	0.92	Floor Furnace
196	3	HEATAC	9	1.60	1.60	1.60	1.60	1.60	Radiant
197	3	HEATAC	10	3.02	3.02	3.02	3.02	3.02	Steam Radiators
234	3	HEATAC	11	3.32	3.32	3.32	3.32	3.32	Susp Heat & AC
240	3	HEATAC	12	1.85	1.85	1.85	1.85	1.85	Baseboard
241	3	HEATAC	13	0.92	0.92	0.92	0.92	0.92	Wall Furnace
242	3	HEATAC	14	0.00	0.00	0.00	0.00	0.00	Gas W/U
243	4	FLRFIN	1	0.61	0.61	0.61	0.61	0.61	Concrete
244	4	FLRFIN	2	2.45	2.45	2.45	2.45	2.45	Carpet/Vinyl Tile
245	4	FLRFIN	3	1.76	1.76	1.76	1.76	1.76	Carpet
246	4	FLRFIN	5	6.38	6.38	6.38	6.38	6.38	Quarry Tile
247	4	FLRFIN	6	6.34	6.34	6.34	6.34	6.34	Terrazzo
338	4	FLRFIN	7	6.38	6.38	6.38	6.38	6.38	Ceramic Tile
339	4	FLRFIN	8	4.19	4.19	4.19	4.19	4.19	Pine
340	4	FLRFIN	9	5.88	5.88	5.88	5.88	5.88	Hardwood
341	4	FLRFIN	10	1.22	1.22	1.22	1.22	1.22	Asphalt
342	4	FLRFIN	11	0.61	0.61	0.61	0.61	0.61	Concrete
343	4	FLRFIN	12	2.35	2.35	2.35	2.35	2.35	Vinyl Tile
344	4	HEATAC	1	0.00	0.00	0.00	0.00	0.00	No Heat
345	4	HEATAC	2	1.81	1.81	1.81	1.18	1.81	Susp Heaters
346	4	HEATAC	3	1.93	1.93	1.93	1.93	1.93	Forced Hot Air
375	4	HEATAC	4	2.27	2.27	2.27	2.27	2.27	Central AC
376	4	HEATAC	5	3.78	3.78	3.78	3.78	3.78	Central H & A
377	4	HEATAC	6	0.92	0.92	0.92	0.92	0.92	Floor Furnace
378	4	HEATAC	7	0.92	0.92	0.92	0.92	0.92	Wall Furnace
379	4	HEATAC	8	1.81	1.81	1.81	1.81	1.81	Baseboard

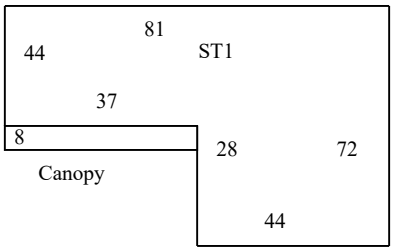
Commercial
$ADDS

	A	B	C	D	E	F	G	H	I
1	bldg_type	menutype	menurespon	qc1	qc2	qc3	qc4	qc5	descript
380	4	HEATAC	9	1.55	1.55	1.55	1.55	1.55	Radiant
381	4	HEATAC	10	3.11	3.11	3.11	3.11	3.11	Steam Radiators
382	4	HEATAC	11	4.08	4.08	4.08	4.08	4.08	Susp. Heat/AC
383	5	FLRFIN	1	0.66	0.66	0.66	0.66	0.66	Concrete
384	5	FLRFIN	2	2.44	2.44	2.44	2.44	2.44	Carpet/Vinyl Tile
385	5	FLRFIN	3	2.35	2.35	2.35	2.35	2.35	Carpet
537	5	FLRFIN	4	2.52	2.52	2.52	2.52	2.52	Vinyl Tile
539	5	FLRFIN	5	7.22	7.22	7.22	7.22	7.22	Quarry Tile
567	5	FLRFIN	6	7.01	7.01	7.01	7.01	7.01	Terrazzo
568	5	FLRFIN	7	7.22	7.22	7.22	7.22	7.22	Ceramic Tile
569	5	FLRFIN	9	6.59	6.59	6.59	6.59	6.59	Hardwood
570	5	FLRFIN	10	1.30	1.30	1.30	1.30	1.30	Asphalt
571	5	FLRFIN	11	4.19	4.19	4.19	4.19	4.19	Pine
572	5	FLRFIN	12	0.00	0.00	0.00	0.00	0.00	Acoustical Tile
573	5	HEATAC	1	0.00	0.00	0.00	0.00	0.00	No Heat
574	5	HEATAC	2	1.13	1.13	1.13	1.13	1.13	Susp. Heaters
575	5	HEATAC	3	2.81	2.81	2.81	2.81	2.81	Forced Hot Air
695	5	HEATAC	4	2.69	2.69	2.69	2.69	2.69	Central Air Conditioning
707	5	HEATAC	5	3.78	3.78	3.78	3.78	3.78	Cent. Htg. & A.C.
732	5	HEATAC	6	1.15	1.15	1.15	1.15	1.15	Floor Furnace
733	5	HEATAC	7	1.15	1.15	1.15	1.15	1.15	Wall Furnace
734	5	HEATAC	8	2.60	2.60	2.60	2.60	2.60	Baseboard
736	5	HEATAC	9	1.13	1.13	1.13	1.13	1.13	Radiant
738	5	HEATAC	10	3.11	3.11	3.11	3.11	3.11	Steam Radiators
742	5	HEATAC	11	3.82	3.82	3.82	3.82	3.82	Susp. Htr's. & A.C.

Commercial Drawing Labels

	A	B	C	D	E	F
1	label	descrip	costfact	areafact	labeltype	bldgtype
2	ST1	01 Story	1.00	1.00	Primary	Commercial
3	ST2	02 Story	2.00	2.00	Primary	Commercial
4	ST3	03 Story	3.00	3.00	Primary	Commercial
5	ST4	04 Story	4.02	4.00	Primary	Commercial
6	ST5	05 Story	5.03	5.00	Primary	Commercial
7	ST6	06 Story	6.03	6.00	Primary	Commercial
8	ST7	07 Story	7.04	7.00	Primary	Commercial
9	ST8	08 Story	8.04	8.00	Primary	Commercial
10	ST9	09 Story	9.05	9.00	Primary	Commercial
11	ST10	10 Story	10.05	10.00	Primary	Commercial
12	ST11	11 Story	11.06	11.00	Primary	Commercial
13	ST12	12 Story	12.06	12.00	Primary	Commercial
14	ST13	13 Story	13.07	13.00	Primary	Commercial
15	ST14	14 Story	14.07	14.00	Primary	Commercial
16	ST15	15 Story	15.08	15.00	Primary	Commercial
17	ST16	16 Story	16.08	16.00	Primary	Commercial
18	ST17	17 Story	17.09	17.00	Primary	Commercial
19	ST18	18 Story	18.09	18.00	Primary	Commercial
20	ST19	19 Story	19.10	19.00	Primary	Commercial
21	ST20	20 Story	20.10	20.00	Primary	Commercial
22	ST21	21 Story	21.11	21.00	Primary	Commercial
23	ST22	22 Story	22.11	22.00	Primary	Commercial
24	ST23	23 Story	23.12	23.00	Primary	Commercial
25	ST24	24 Story	24.12	24.00	Primary	Commercial
26	ST25	25 Story	25.13	25.00	Primary	Commercial
27	ST26	26 Story	26.13	26.00	Primary	Commercial
28	ST27	27 Story	27.14	27.00	Primary	Commercial
29	ST28	28 Story	28.14	28.00	Primary	Commercial
30	ST29	29 Story	29.15	29.00	Primary	Commercial
31	ST30	30 Story	30.15	30.00	Primary	Commercial

Pricing Commercial Structures



1-Heavy Structural Steel
2-Reinforced Concrete
3-Masonry or Load Bearing Walls
4-Wood/Steel Combustible
5-Prefab Structural Steel

Building Type Category Examples

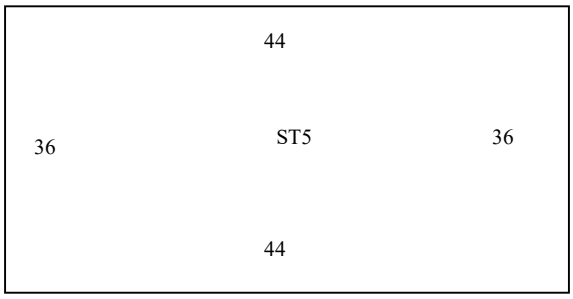
001 - Apartments, Hotels
002 - Multiple Family, Motels
003 - Stores and Standard Commercials
004 - Garages, Industrials, Warehouses
005 - Offices and Public Buildings
006 - Churches
008 - Schools

1 Story Medical Office Building (Use Code 9164) $112.25
Vinyl Exterior on Wood Frame ct4 .94
Wall Height 12' Btype 005 1.04
Central Heating & AC (qc3) Btype 005 $3.78
Typical Plumbing Fixtures In Base Cost
Ceramic Tile Flooring (qc3) Btype 005 $7.22
Canopy included in base cost

What is the value of the Structure?

Description	Desc/Cost/Factors		Calculations
Built-as Code/Description	9164-Medical Office Building		
Used-as Code/Description	9164-Medical Office Building		
Overall Commercial Base for County		1.00	
Used-as Code Base Cost		112.25	
Construction Type (Framing,walls,etc) Multiplier		0.94	
Wall Height Multiplier		1.04	
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**		1.00	
Story Height Cost Factor		1.0000	
$PSFT_WO_ADDS-Structural Elements	Total Structure Points		109.74
Heating&Cooling Type Add $ **X STHT Cost Factor**	$	3.78	3.78
Flooring Type Add $ **X STHT Cost Factor**	$	7.22	7.22
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements		120.74
Base Area		4796	
Grade		1.00	
RCN			$ 579,069.00
PHY (DEP) or (OVR DEP)		1.00	
Economic Obsolsescence		1.00	
Functional Obsolescence		1.00	
Other Factor		1.00	
Percent Complete		1.00	
NBHD Factor		1.00	
Structure Value			$ 579,069.00
Extra Feature			$ -
BLDG/SECTION Value			$ 579,069.00
FMV			$ 579,069.00

Pricing Commercial Structures



1-Heavy Structural Steel
2-Reinforced Concrete
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5-Prefab Structural Steel

Building Type Category Examples

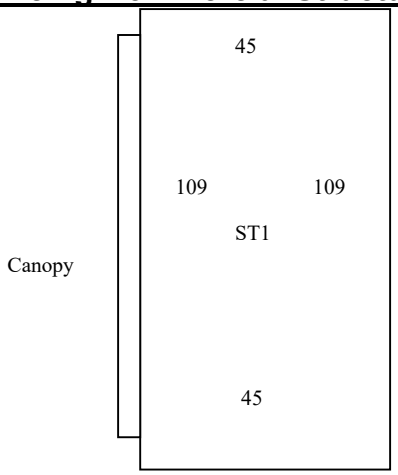
001 - Apartments, Hotels
002 - Multiple Family, Motels
003 - Stores and Standard Commercials
004 - Garages, Industrials, Warehouses
005 - Offices and Public Buildings
006 - Churches
008 - Schools

5 Story Office Building (Use Code 9149)
Brick on Concrete Block Frame
Wall Height 11'
Central Heating & AC (qc3)
Typical Plumbing Fixtures
Carpet & Vinyl Tile Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors	Calculations
Built-as Code/Description		
Used-as Code/Description		
Overall Commercial Base for County		
Used-as Code Base Cost		
Construction Type (Framing,walls,etc) Multiplier		
Wall Height Multiplier		
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**		
Story Height Cost Factor		
$PSFT_WO_ADDS-Structural Elements	Total Structure Points	-
Heating&Cooling Type Add $ **X STHT Cost Factor**	$ -	-
Flooring Type Add $ **X STHT Cost Factor**	$ -	-
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements	-
Base Area		
Grade		
RCN		$ -
PHY (DEP) or (OVR DEP)		
Economic Obsolsescence		
Functional Obsolescence		
Other Factor		
Percent Complete		
NBHD Factor		
Structure Value		$ -
Extra Feature		$ -
BLDG/SECTION Value		$ -
FMV		$ -

Pricing Commercial Structures



1-Heavy Structural Steel
2-Reinforced Concrete
3-Masonry or Load Bearing Walls
4-Wood/Steel Combustible
5-Prefab Structural Steel

Building Type Category Examples

001 - Apartments, Hotels
002 - Multiple Family, Motels
003 - Stores and Standard Commercials
004 - Garages, Industrials, Warehouses
005 - Offices and Public Buildings
006 - Churches
008 - Schools

1 Story McDonalds Restaurant (Use Code 9040)
Brick on Concrete Block Frame
Wall Height 12'
Central Heating & AC (qc3)
Good Plumbing Fixtures with tiled walls
Ceramic Tile Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors	Calculations
Built-as Code/Description		
Used-as Code/Description		
Overall Commercial Base for County		
Used-as Code Base Cost		
Construction Type (Framing,walls,etc) Multiplier		
Wall Height Multiplier		
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**		
Story Height Cost Factor		
$PSFT_WO_ADDS-Structural Elements	Total Structure Points	
Heating&Cooling Type Add $ **X STHT Cost Factor**	$ -	
Flooring Type Add $ **X STHT Cost Factor**	$ -	
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements	
Base Area		
Grade		
RCN		$ -
PHY (DEP) or (OVR DEP)		
Economic Obsolsescence		
Functional Obsolescence		
Other Factor		
Percent Complete		
NBHD Factor		
Structure Value		$ -
Extra Feature		$ -
BLDG/SECTION Value		$ -
FMV		$ -

Pricing Commercial Structures

	200	
50	ST1	50
	200	

1-Heavy Structural Steel
2-Reinforced Concrete
3-Masonry or Load Bearing Walls
4-Wood/Steel Combustible
5-Prefab Structural Steel

Building Type Category Examples

001 - Apartments, Hotels
002 - Multiple Family, Motels
003 - Stores and Standard Commercials
004 - Garages, Industrials, Warehouses
005 - Offices and Public Buildings
006 - Churches
008 - Schools

1 Story Mini Warehouse (Use Code 9117)
Galvanized Metal Exterior Wall with Steel Framing
Wall Height 7'
Climate Controlled Central Heating & AC (qc3)
Concrete Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors	Calculations
Built-as Code/Description		
Used-as Code/Description		
Overall Commercial Base for County		
Used-as Code Base Cost		
Construction Type (Framing,walls,etc) Multiplier		
Wall Height Multiplier		
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**		
Story Height Cost Factor		
$PSFT_WO_ADDS-Structural Elements	Total Structure Points	-
Heating&Cooling Type Add $ **X STHT Cost Factor**	$ -	-
Flooring Type Add $ **X STHT Cost Factor**	$ -	-
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements	-
Base Area		
Grade		
RCN		$ -
PHY (DEP) or (OVR DEP)		
Economic Obsolsescence		
Functional Obsolescence		
Other Factor		
Percent Complete		
NBHD Factor		
Structure Value		$ -
Extra Feature		$ -
BLDG/SECTION Value		$ -
FMV		$ -

APPENDIX

Ratio Study Solution

Lot	SALE PRICE	APPRAISED VALUE	ASSESSMENT	RATIO
1	$55,590	$47,173	18,869.00	0.3394
2	$61,640	$50,203	20,081.00	0.3258
3	$75,550	$65,450	26,180.00	0.3465
4	$84,250	$81,708	32,683.00	0.3879
5	$96,700	$87,230	34,892.00	0.3608
6	$94,670	$87,295	34,918.00	0.3688
7	$66,440	$63,398	25,359.00	0.3817
8	$72,020	$69,150	27,660.00	0.3841
9	$75,550	$65,450	26,180.00	0.3465
10	$88,710	$69,298	27,719.00	0.3125
Total	**771,120**		**274,541**	**3.5540**

	A	B	C	D	E	F	G	H	J	K	L	M
1	Median (100%)	0.8843	COD	0.0602	Mean_Deviation		0.0213					
2	Mean (100%)	0.8885	PRD	0.9983								
3	Aggregate (100	0.8900										
4	Median (40%)	0.3537										
5	Mean (40%)	0.3554										
6	Aggregate (40%	0.3560	771,120						274,541	3.5540	0.2126	
7	Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array
8	1		55590	Q	V			47173	18869	0.3394	0.0143	0.3125
9	2		61640	Q	V			50203	20081	0.3258	0.0279	0.3258
10	3		75550	Q	V			65450	26180	0.3465	0.0072	0.3394
11	4		84250	Q	V			81708	32683	0.3879	0.0342	0.3465
12	5		96700	Q	V			87230	34892	0.3608	0.0071	0.3465
13	6		94670	Q	V			87295	34918	0.3688	0.0151	0.3608
14	7		66440	Q	V			63398	25359	0.3817	0.0280	0.3688
15	8		72020	Q	V			69150	27660	0.3841	0.0304	0.3817
16	9		75550	Q	V			65450	26180	0.3465	0.0072	0.3841
17	10		88710	Q	V			69298	27719	0.3125	0.0412	0.3879

Mean = 3.554 / 10 = .3554

Median = .3608 + .3465 = .7073 / 2 = .3537

AAD .2126 / 10 = .0213

COD .0213 / .3537 = .0601

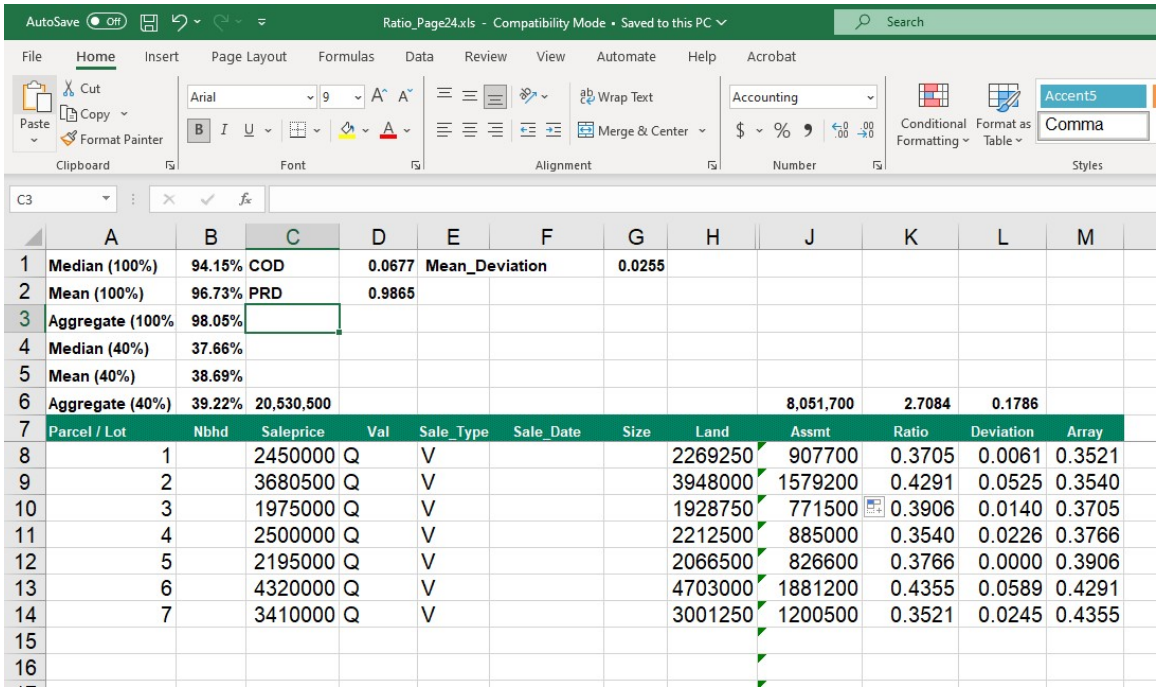
AGG 274,541 / 771,120 = .3560

PRD - .3554 / .3560 = .9983

Use the following sales information to find the Median ratio, COD & PRD.

Sale	Assessed Value
$2,450,000	$907,700
$3,680,500	$1,579,200
$1,975,000	$771,500
$2,500,000	$885,000
$2,195,000	$826,600
$4,320,000	$1,881,200
$3,410,000	$1,200,500
Total $20,530,500	**Total $8,051,700**

Solution:



	A	B	C	D	E	F	G	H	J	K	L	M
1	Median (100%)	94.15%	COD	0.0677	Mean_Deviation		0.0255					
2	Mean (100%)	96.73%	PRD	0.9865								
3	Aggregate (100%	98.05%										
4	Median (40%)	37.66%										
5	Mean (40%)	38.69%										
6	Aggregate (40%)	39.22%	20,530,500						8,051,700	2.7084	0.1786	
7	Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array
8	1		2450000	Q	V			2269250	907700	0.3705	0.0061	0.3521
9	2		3680500	Q	V			3948000	1579200	0.4291	0.0525	0.3540
10	3		1975000	Q	V			1928750	771500	0.3906	0.0140	0.3705
11	4		2500000	Q	V			2212500	885000	0.3540	0.0226	0.3766
12	5		2195000	Q	V			2066500	826600	0.3766	0.0000	0.3906
13	6		4320000	Q	V			4703000	1881200	0.4355	0.0589	0.4291
14	7		3410000	Q	V			3001250	1200500	0.3521	0.0245	0.4355
15												
16												

Using the following median ratios, array the ratios from lowest to highest. Perform a ratio analysis and determine the coefficient of dispersion.

Sales/Assessment Ratio
.2725
.3914
.3433
.4209
.3856
.3363
.4445

Arrayed Sales Assessment Ratio	- Median	= Deviation
.2725	.3856	.1131
.3363	.3856	.0493
.3433	.3856	.0423
.3856	.3856	0
.3914	.3856	.0058
.4209	.3856	.0353
.4445	.3856	.0589
	Total	0.3047

	A	B	C	D	E	F	G	H	J	K	L	M
1	Median (100%)	0.9640	COD	0.1128	Mean_Deviation		0.0435					
2	Mean (100%)	0.9265	PRD	1.0516								
3	Aggregate (100%	0.8810										
4	Median (40%)	0.3856										
5	Mean (40%)	0.3706										
6	Aggregate (40%)	0.3524	20,530,500						7,234,700	2.5945	0.3047	
7	Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array
8										0.2725	0.1131	0.2725
9										0.3914	0.0058	0.3363
10										0.3433	0.0423	0.3433
11										0.4209	0.0353	0.3856
12										0.3856	0.0000	0.3914
13										0.3363	0.0493	0.4209
14										0.4445	0.0589	0.4445

Median = .3856
.3047 / 7 = .0435 AAD (Mean Deviation)
AAD / Median = COD
.0435 / .3856 = .1128

Applying a Depth Table
Exercise

You are appraising commercial properties in an area where land is appraised on the front foot basis. The standard unit value for the area is $500 per front foot. Using the depth table handout, find the depth factor and calculate the value for each lot using the 100' standard depth table column.

In addition, a fourth parcel across the street (same standard unit value) is 125 feet wide and 140 feet deep. What is its indicated value?

$500 FF Lot	FRONTAGE	DEPTH	DEPTH FACTOR	VALUE
1	100	125	1.09	$54,500.00
2	200	115	1.054	$105,400.00
3	75	90	.96	$36,000.00

1. 100 x $500 = $50,000 x 1.09 = $54,500
2. 200 x $500 = $100,000 x 1.054 = $105,400
3. 75 x $500 = $37,500 x .96 = $36,000
4. 125 x $500 = $62,500 x 1.1380 = $71,125

Using Interpolation find the depth factors for the following:

Problem 1

Using 150 feet standard depth table, what is the depth factor for 110 feet?

Solution:

35 / 37.5 = .9333 x .20 = .1867 + .30 + .40 = .8867

Problem 2

Using 200 feet standard depth table, what is the depth factor for 175 feet?

Solution:

25 / 50 = .5 x .10 = .05 + .20 + .30 + .40 = .9500

Problem 3:

Using 100 feet standard depth table, what is the depth factor for 118 feet?

Solution:

18 / 25 = .72 x .09 = .0648 + .10 + .20 + .30 + .40 = 1.0648

Problem 4:

Using 250 feet standard depth table, what is the depth factor for 190 feet?

Solution:

2.5 / 62.5 = .04 x .10 = .004 + .20 + .30 + .40 = .9040

Using Interpolation find the depth factors for the following:

Problem 1

Using 300 feet standard depth table, what is the depth factor for 235 feet?

Solution:

10 / 75 = .1333 x .10 = .0133 + .20 + .30 + .40 = .9133

Problem 2

Using 200 feet standard depth table, what is the depth factor for 169 feet?

Solution:
19 / 50 = .38 x .10 = .038 + .20 + .30 + .40 = .9380

Problem 3:

Using 100 feet standard depth table, what is the depth factor for 135 feet?

Solution:

10 / 25 = .40x .08 = .032 + .09 + .10 + .20 + .30 + .40 = 1.122

Problem 4:

Using 250 feet standard depth table, what is the depth factor for 175 feet?

Solution:

50 / 62.5 = .8 x .20 = .16 + .30 + .40 = .8600

Use the Depth Table Handout and a standard depth of 250’.

Find the depth factor for the following depths

295’ – 1.0648

272’ – 1.0317

265’ – 1.0216

253’ – 1.0043

308’ – 1.0835

Use the 150’ Standard Depth.
Find the depth factor for the following depths

130’ - .9467

181’ – 1.0744

175’ – 1.0600

125’ - .9333

158’ – 1.0192

Calculating $ / FF Using The Market

Calculate new front foot value from sales using 100 foot standard depth table.
Find appropriate depth factor from depth table handout

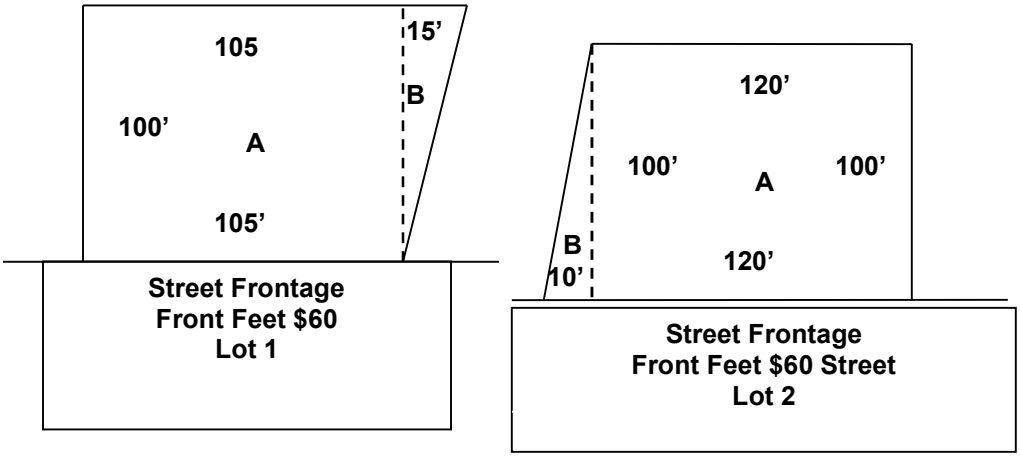
Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$63,125	115	100	1.00	549
6	$60,920	110	100	1.00	554
7	$61,000	110	100	1.00	555
8	$62,622	110	110	1.036	550
9	$63,000	110	110	1.036	553
10	$62,000	110	105	1.018	554
13	$70,000	119	135	1.1220	524

Range is $524 to $555
Array

What is the front foot price? $554

Odd-shaped lots Exercise

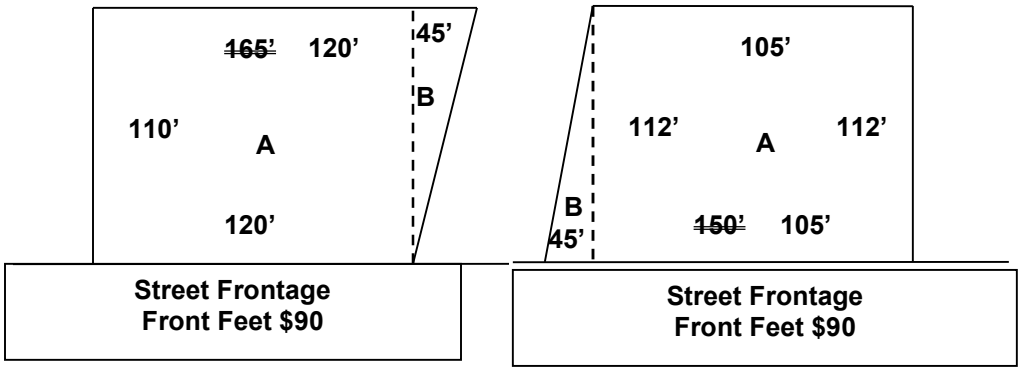


Lot No. 1
A 105 feet @ $60.00 = $6,300.00
B 15 feet @ $60.00 x .35 = 315.00
Total value Lot No.1 = ***$6,615***

Lot No. 2
A 120 feet @ $60.00 = $7,200.00
B 10 feet @ $60.00 x .65 = $390.00
Total value Lot No. 2 = ***$7,590***

Odd Shaped Lot Exercise

Use a Standard Depth of 100'.



Find the depth factor and value of each lot using 4-3-2-1 rule and 65-35 rule.
In addition, find the Fair Market Value of each lot.

Lot No. 1
A 120 feet @ $90.00 = $10,800.00
B 45 feet @ $90.00 x .35 = 1,417.50
Total value Lot No.1 = ***$12,218***

10 / 25 = .40 * .09 = .0360 + .10 + .20 + .30 + .40 = 1.036 DF

$12,218 * 1.036 = $12,658

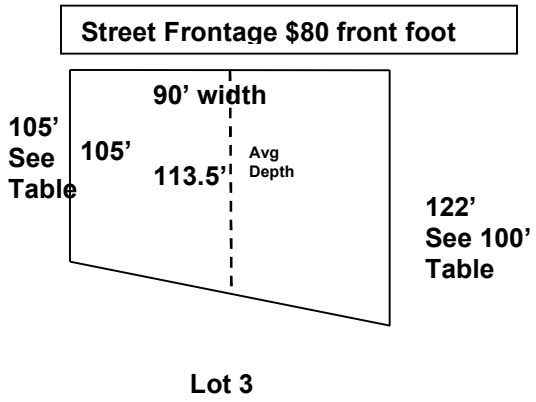
Lot No. 2
A 105 feet @ $90.00 = $9,450.00
B 45 feet @ $90.00 x .65 = $2,632.50
Total value Lot No. 2 = ***$12,083***

12 / 25 = .48 * .09 = .0432 + .10 + .20 + .30 + .40 = 1.0432 DF

$12,083 * 1.0432 = $12,605

Parallel Sides of Unequal Depth

(A lot that has its side lines parallel and perpendicular depth unequal)



To compute the value of this lot, multiply the front foot rate by the width, then multiply this sum by taking the average of the two unequal sides.

EXAMPLE:

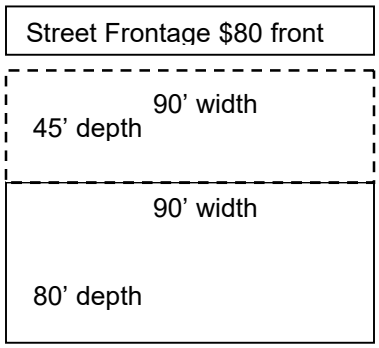
105 + 122 = 227 / 2 = 113.50 Average Depth

13.5/25=.54 x .09 = .0486 + .10 + .20 + .30 + .40 = 1.0486 Depth Factor

90' x $80 = $7,200 x 1.0486 = $7,549.92

Back or Rear Lot Exercise

(A lot having no street frontage, usually the result of an adjoining owner)



Lot 4

To compute the value of this lot, multiply the front foot rate by the width. Inasmuch as this lot does not have any frontage, we take the difference between the depth factor of the front lot and the depth factor of the rear lot and use this percentage.

EXAMPLE:

.64 Depth Factor @ 45’

45 + 80 = 125’ Total Depth of Lot

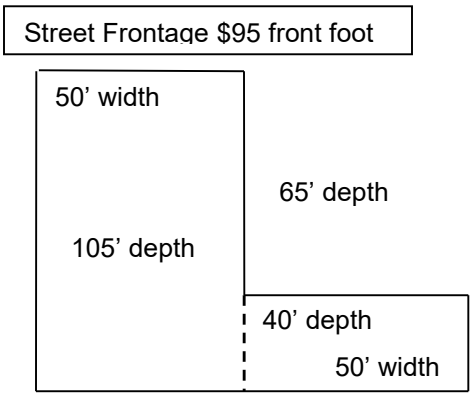
20 / 25 = .80 x .30 = .24 + .40 = .64
.09 + .10 + .20 + .30 + .40 = 1.0900 Total Depth Factor

1.0900 - .64 = .4500 Depth Factor for Rear Lot

90' x $80 = $7,200 x .4500 = $3,240 Value of Lot

"L" Shaped Lot Exercise

(A combination of a rectangular and a back lot)



Lot 5

To compute the value of this lot, use the same method as a rectangular lot, previously shown, and the method used in the back-rear lot shown. By adding the two sums, value of lot is obtained.

EXAMPLE:

15 / 25 = .60 x .20 = .12 + .30 + .40 = .82 Depth Factor @ 65’

5 / 25 = .20 x .09 = .018 + .10 + .20 + .30 + .40 = 1.018 Total Depth Factor

1.018 - .82 = .198 Depth Factor for Rear Lot

50' x $95 = $4,750 X 1.018 = $4,835.50

50' x $95 = $4,750 x .198 = $940.50

Total Value = $5,776

USAGE OF TABLES AND RULES

Below are five lots fronting on Main Street:

The established value in this area is $125 per front foot.

The following rules are used in this neighborhood to estimate land value:

"65-35" rule fore triangular lots:

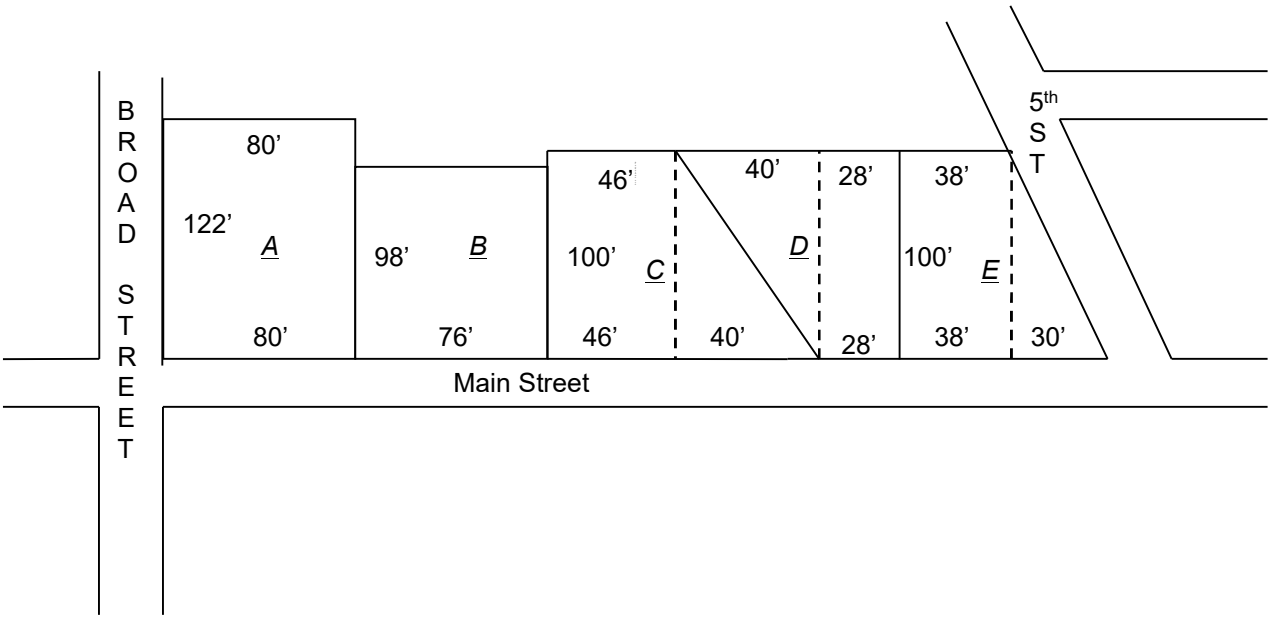
Use 35 percent of value of lot if the apex of a triangular lot is on the street.

Use 65 percent of value of lot if the apex of a triangular lot is at the rear.

Depth factors: Standard Depth of Lots Located in Area - 100'.

Interpolate for lots of greater or lesser depth using the 4-3-2-1 Rule.

Corner influences: (Formula: SPCL / SPIL) Two lots (interior and corner) on Main Street sold. The interior lot sold for $25,000. The corner lot sold for $28,500. Determine the corner influence and apply it to the lot on Broad Street.



PROBLEM:
Calculate the value of these five lots using the above rules.

Solution

CI=SPCL/SPIL or 28,500 / 25,000 = 1.14

A. 80*$125=10,000*1.0792=10,792*1.14=12,303
B. 76*125=9,500*.9920=9,424
C.
    a. 46*125=5,750
    b. 40*125=5,000*.65=3,250
    c. 5,750+3,250=9,000
D.
    a. 28*125=3,500
    b. 40*125=5,000*.35=1,750
    c. 3,500+1,750=5,250
E.
    a. 38*125=4,750
    b. 30*125=3,750*.65=2,438
    c. 4,750+2,438=7,188

Formula:
FF * Depth = SF
SP / SF = Price Per SF

Lot #	SP	FF	Depth	SF	$/SF
2	$59,900	120	105	12,600	4.75
6	$58,600	130	105	13,650	4.29
7	$58,600	130	105	13,650	4.29
8	$50,000	130	95	12,350	4.05
9	$52,000	130	98	12,740	4.08
10	$53,030	130	92	11,960	4.43
13	$57,970	124	110	13,640	4.25

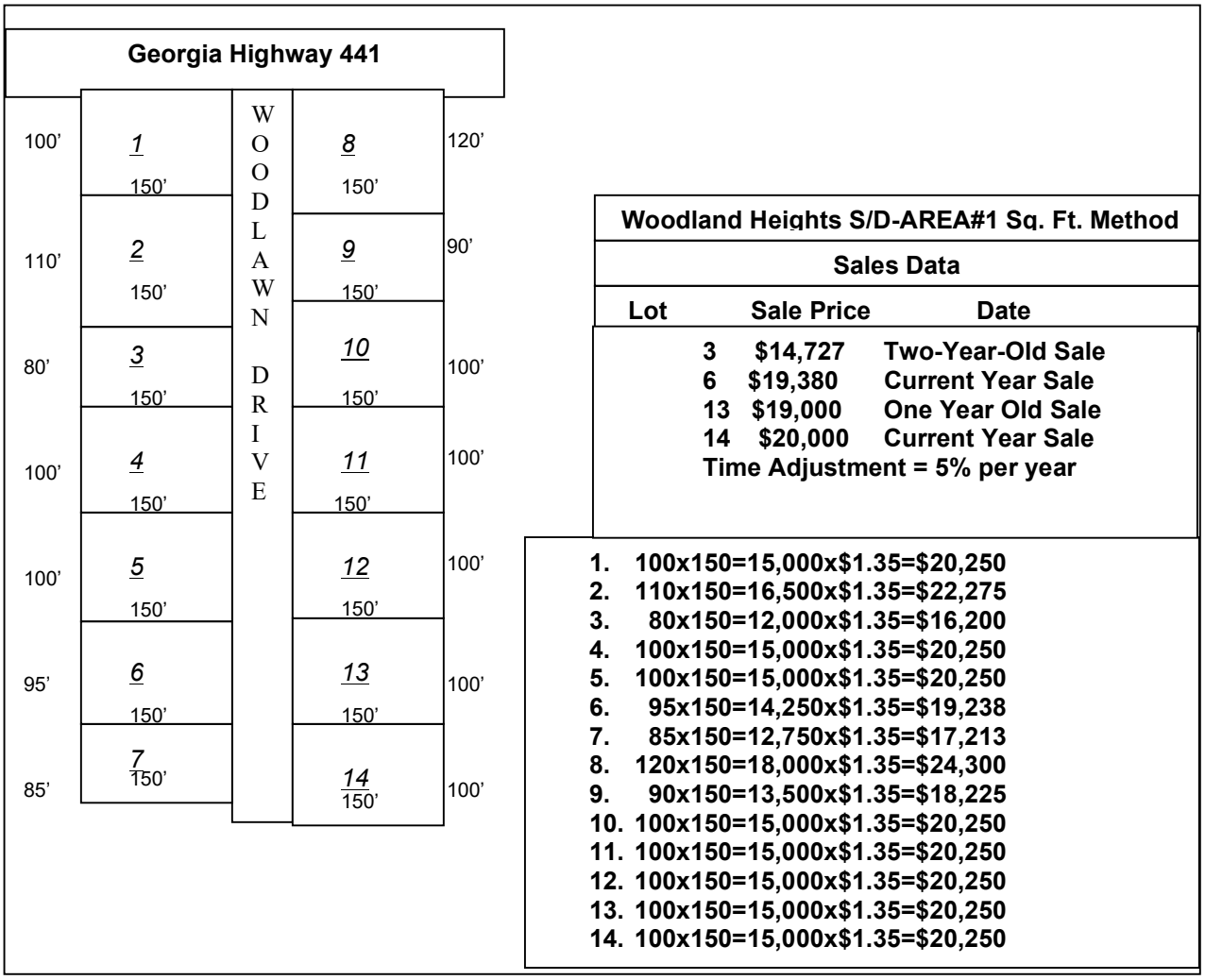
What is the Square Foot Price Range?
Range $4.05 – $4.75
Say $4.25

Square Foot Solution:

From the below sales information, determine the appropriate per square foot price and value each lot accordingly.

Lot #	Sale Price	Time Adj.	Adj. SP	SF	SF Price
3	$14,727	1.10	$16,200	12,000	$1.35
6	$19,380	1.00	$19,380	14,250	$1.36
13	$19,000	1.05	$19,950	15,000	$1.33
14	$20,000	1.00	$20,000	15,000	$1.33

Indicated range - $1.33 to $1.36
Use $1.35 for the subdivision.



Woodland Heights S/D-AREA#1 Sq. Ft. Method

Sales Data

Lot	Sale Price	Date
3	$14,727	Two-Year-Old Sale
6	$19,380	Current Year Sale
13	$19,000	One Year Old Sale
14	$20,000	Current Year Sale

Time Adjustment = 5% per year

1. 100x150=15,000x$1.35=$20,250
2. 110x150=16,500x$1.35=$22,275
3. 80x150=12,000x$1.35=$16,200
4. 100x150=15,000x$1.35=$20,250
5. 100x150=15,000x$1.35=$20,250
6. 95x150=14,250x$1.35=$19,238
7. 85x150=12,750x$1.35=$17,213
8. 120x150=18,000x$1.35=$24,300
9. 90x150=13,500x$1.35=$18,225
10. 100x150=15,000x$1.35=$20,250
11. 100x150=15,000x$1.35=$20,250
12. 100x150=15,000x$1.35=$20,250
13. 100x150=15,000x$1.35=$20,250
14. 100x150=15,000x$1.35=$20,250

From the sales listed below:
Find the price per acre.
Formula: SP / Acres = Price Per Acre

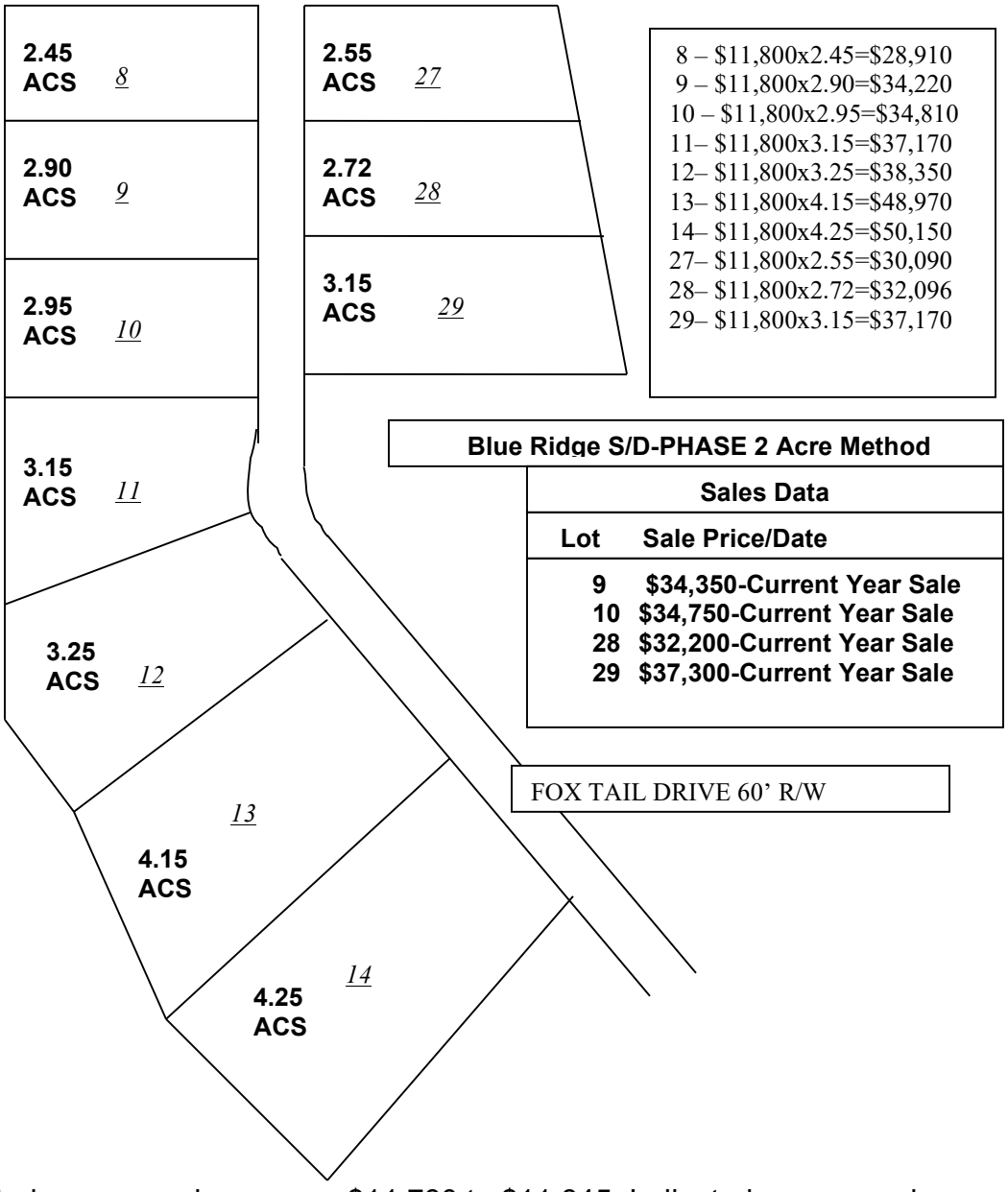
Lot #	Sale Price	Acres	$Per Ac
1	$64,350	6.90	9,326
5	$64,750	6.95	9,317
7	$62,200	6.72	9,256
9	$67,300	7.15	9,413

What is the indicated per acre price range?
Range $9,256 – $9,413

What per acre price would you use?
Say $9,325

Acre Method Blue Ridge S/D PHASE 2

Lot #	Sale Price	Acres	$Per Ac
9	$34,350	2.90	$11,845
10	$34,750	2.95	$11,780
28	$32,200	2.72	$11,838
29	$37,300	3.15	$11,841



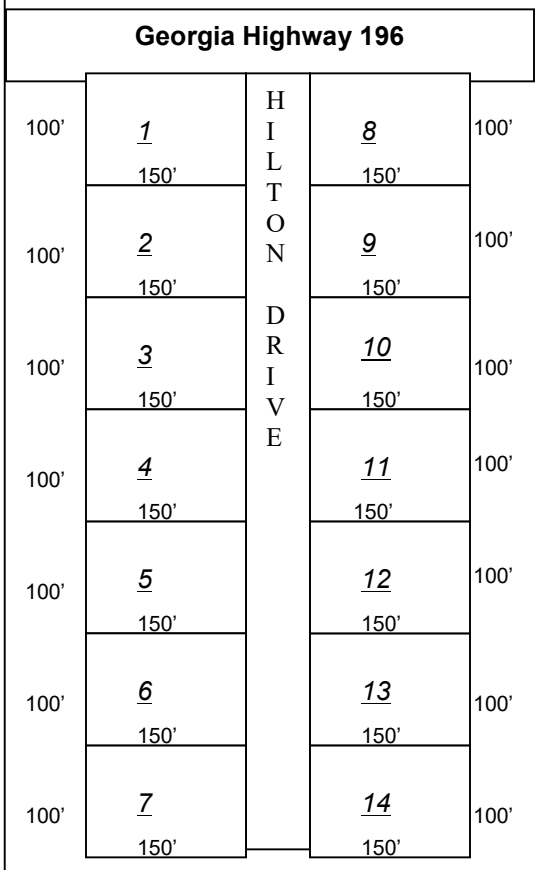
Indicated per acre price range - $11,780 to $11,845; Indicated per acre price $11,800

Site or Lot Solution:

From the below sales information, determine the appropriate per lot price and value each lot accordingly.

Lot #	Sale Price	Time Adj.	Adj. SP
2	$49,350	1.03	$50,831
5	$50,780	1.00	$50,780
13	$49,300	1.03	$50,779
9	$50,800	1.00	$50,800

Indicated value range -$50,779 to $50,831
Indicated value per lot $50,800



Woodland Heights S/D-AREA#1 Site (Lot)

Sales Data

Lot	Sale Price	Date
2	49,350	One Year Old Sale
5	$50,780	Current Year Sale
13	$49,300	One Year Old Sale
9	$50,800	Current Year Sale

Time Adjustment 3% per year

Current Lot Values
1. 50,800
2. 50,800
3. 50,800
4. 50,800
5. 50,800
6. 50,800
7. 50,800
8. 50,800
9. 50,800
10. 50,800
11. 50,800
12. 50,800
13. 50,800
14. 50,800

Units Buildable Problem

A 10-acre parcel in the city, zoned for multi-family development, 8 units to the acre (80 units), sold recently for $2,500,000. A parcel of similar size in the immediate area, subject to the same economic influences is zoned for 90 units. Due to restrictions from an above ground power line, only 85 units may be built upon.

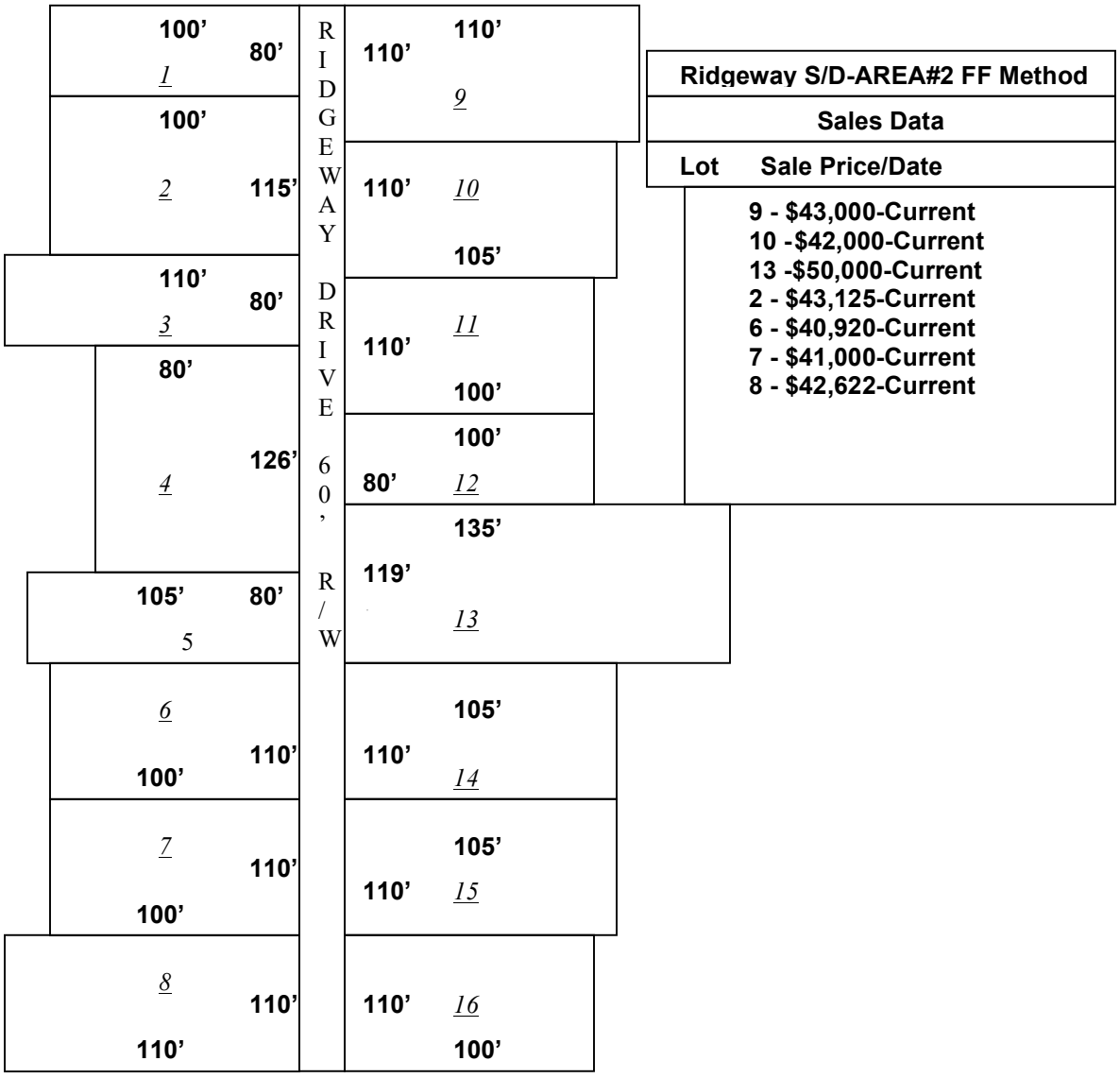
What is the value of the parcel?

$2,500,000 / 80 units = $31,250 per unit

Subject 85 Units * $31250 per unit = $2,656,250

LAND VALUE WORKSHEET
Standard Depth 100’

Ridgeway Subdivision is currently priced at $280 per front foot. Using the 100’ standard depth table, determine the value each lot. Perform a sales ratio analysis using the sales information above. If any problem exists with the ratio, determine the new front foot price to correct any deficiencies in the level of assessment.



Ridgeway Worksheet Continued;
Find appropriate depth factor from depth table handout
Calculate lot values. ***Formula: FF * $FF * DF = Value***

Lot #	FF	Depth	$/FF	DF	Value
1	80	100	280	1.00	$22,400
2	115	100	280	1.00	$32,200
3	80	110	280	1.036	$23,206
4	126	80	280	.92	$32,458
5	80	105	280	1.018	$22,803
6	110	100	280	1.00	$30,800
7	110	100	280	1.00	$30,800
8	110	110	280	1.036	$31,909
9	110	110	280	1.036	$31,909
10	110	105	280	1.018	$31,354
11	110	100	280	1.00	$30,800
12	80	100	280	1.00	$22,400
13	119	135	280	1.122	$37,385
14	110	105	280	1.018	$31,354
15	110	105	280	1.018	$31,354
16	110	100	280	1.00	$30,800

Perform Sales Ratio Analysis

Median (100%)	**0.7478**	**COD**	**0.0033**	**Mean_Deviation**	**0.0010**
Mean (100%)	**0.7480**	**PRD**	**1.0000**		
Aggregate (100%	**0.7480**				
Median (40%)	**0.2991**				
Mean (40%)	**0.2992**				
Aggregate (40%)	**0.2992**	**302,667**			

							90,544	**2.0943**	**0.0070**		
Parcel / Lot	**Nbhd**	**Saleprice**	**Val**	**Sale_Type**	**Sale_Date**	**Size**	**Land**	**Assmt**	**Ratio**	**Deviation**	**Array**
9		43000	Q	V	Current		31909	12764	0.2968	0.0023	0.2968
10		42000	Q	V	Current		31354	12542	0.2986	0.0005	0.2986
13		50000	Q	V	Current		37385	14954	0.2991	0.0000	0.2987
2		43125	Q	V	Current		32200	12880	0.2987	0.0004	0.2991
6		40920	Q	V	Current		30800	12320	0.3011	0.0020	0.2995
7		41000	Q	V	Current		30800	12320	0.3005	0.0014	0.3005
8		42622	Q	V	Current		31909	12764	0.2995	0.0004	0.3011

Ridgeway Worksheet Continued;
Calculate new front foot value from sales to fix ratios.
Find appropriate depth factor from depth table handout
Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$43,125	115	100	1.00	$375.00
6	$40,920	110	100	1.00	$372.00
7	$41,000	110	100	1.00	$372.73
8	$42,622	110	110	1.036	$374.01
9	$43,000	110	110	1.036	$377.33
10	$42,000	110	105	1.018	$375.07
13	$50,000	119	135	1.122	$374.48

What is the new front foot price?

Apply new front foot price to all lots.
Find appropriate depth factor from depth table handout
Formula: Formula: FF * $FF * DF = Value

Lot #	FF	Depth	$/FF	DF	Value
1	80	100	375	1.00	$30,000
2	115	100	375	1.00	$43,125
3	80	110	375	1.036	$31,080
4	126	80	375	.92	$43,470
5	80	105	375	1.018	$30,540
6	110	100	375	1.00	$41,250
7	110	100	375	1.00	$41,250
8	110	110	375	1.036	$42,735
9	110	110	375	1.036	$42,735
10	110	105	375	1.018	$41,993
11	110	100	375	1.00	$41,250
12	80	100	375	1.00	$30,000
13	119	135	375	1.122	$50,069
14	110	105	375	1.018	$41,993
15	110	105	375	1.018	$41,993
16	110	100	375	1.00	$41,250

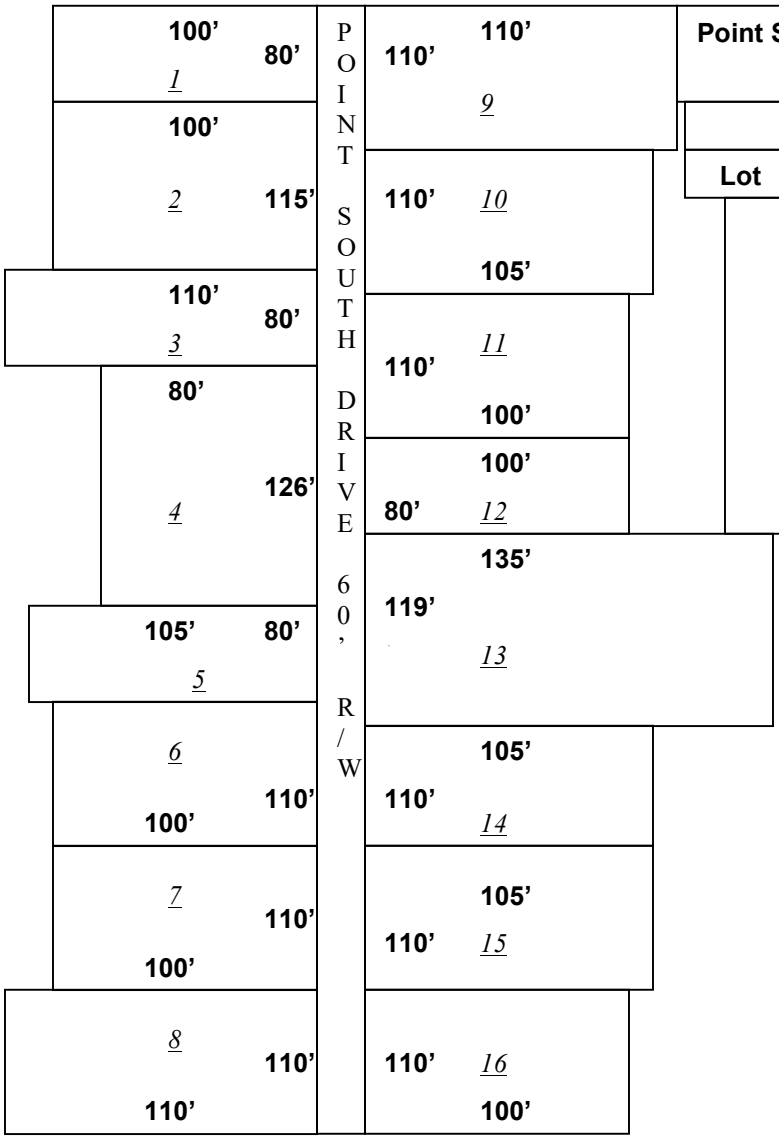
Perform Final Sales Ratio Analysis to see if problems are fixed.

Median (100%)	**100.15%**	**COD**	**0.0032**	**Mean_Deviation**	**0.0013**
Mean (100%)	**100.18%**	**PRD**	**1.0002**		
Aggregate (100%	**100.15%**				
Median (40%)	**40.06%**				
Mean (40%)	**40.07%**				
Aggregate (40%)	**40.06%**	**302,667**			

121,263	**2.8047**	**0.0093**									
Parcel / Lot	**Nbhd**	**Saleprice**	**Val**	**Sale_Type**	**Sale_Date**	**Size**	**Land**	**Assmt**	**Ratio**	**Deviation**	**Array**
2		43125	Q	V	Current		43125	17250	0.4000	0.0006	0.3975
6		40920	Q	V	Current		41250	16500	0.4032	0.0026	0.3999
7		41000	Q	V	Current		41250	16500	0.4024	0.0018	0.4000
8		42622	Q	V	Current		42735	17094	0.4011	0.0005	0.4006
9		43000	Q	V	Current		42735	17094	0.3975	0.0031	0.4011
10		42000	Q	V	Current		41993	16797	0.3999	0.0007	0.4024
13		50000	Q	V	Current		50069	20028	0.4006	0.0000	0.4032

LAND VALUE WORKSHEET
Standard Depth 100'

Due to frequent turnover in appraisers in XYZ County, rampant sales chasing is suspected in Point South Subdivision. Currently, lots are priced on a per lot basis. Perform a sales ratio analysis using the sales information below. If any problem exists with the ratio, determine the appropriate pricing method to correct any deficiencies.



Point South AREA#1 Lot Method

Sales Data

Lot	Sale Price/Date
9	$30,000-Current
10	$30,030-Current
13	$35,000-Current
2	$29,900-Current
6	$28,600-Current
7	$28,600-Current
8	$30,000-Current

Current Values Per Lot
1. $20,000
2. $33,125
3. $21,000
4. $28,000
5. $20,000
6. $22,500
7. $25,000
8. $21,875
9. $35,000
10. $36,250
11. $34,000
12. $20,000
13. $27,500
14. $24,500
15. $24,500
16. $24,000

Point South Worksheet Continued;
Solution – Ratio Using Lot Method

Median (100%)	0.8743	COD	0.1927	Mean_Deviation	0.0674
Mean (100%)	0.9510	PRD	1.0024		
Aggregate (100%	0.9488				
Median (40%)	0.3497				
Mean (40%)	0.3804				
Aggregate (40%)	0.3795	212,130		80,500	2.6631	0.4720

Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array
9		30000 Q	V		Current		35000	14000	0.4667	0.1170	0.2917
10		30030 Q	V		Current		36250	14500	0.4829	0.1332	0.3143
13		35000 Q	V		Current		27500	11000	0.3143	0.0354	0.3147
2		29900 Q	V		Current		33125	13250	0.4431	0.0934	0.3497
6		28600 Q	V		Current		22500	9000	0.3147	0.0350	0.4431
7		28600 Q	V		Current		25000	10000	0.3497	0.0000	0.4667
8		30000 Q	V		Current		21875	8750	0.2917	0.0580	0.4829

Calculate front foot price from sales.
Find appropriate depth factor from depth table handout
Formula: ***SP / FF / DF = Front Foot Price (round FF price to nearest dollar)***

Lot #	SP	FF	Depth	DF	$/FF
2	$29,900	115	100	1.00	$260.00
8	$30,000	110	110	1.036	$263.25
9	$30,000	110	110	1.036	$263.25
7	$28,600	110	100	1.00	$260.00
13	$35,000	119	135	1.122	$262.14
6	$28,600	110	100	1.00	$260.00
10	$30,030	110	105	1.018	$268.17

Point South Worksheet Continued;

Apply front foot price to all lots.
Find appropriate depth factor from depth table handout
Formula: Formula: FF * $FF * DF = Value

Lot #	FF	Depth	$/FF	DF	Value
1	80	100	260	1.00	$20,800
2	115	100	260	1.00	$29,900
3	80	110	260	1.036	$21,549
4	126	80	260	.92	$30,139
5	80	105	260	1.018	$21,174
6	110	100	260	1.00	$28,600
7	110	100	260	1.00	$28,600
8	110	110	260	1.036	$29,630
9	110	110	260	1.036	$29,630
10	110	105	260	1.018	$29,115
11	110	100	260	1.00	$28,600
12	80	100	260	1.00	$20,800
13	119	135	260	1.122	$34,715
14	110	105	260	1.018	$29,115
15	110	105	260	1.018	$29,115
16	110	100	260	1.00	$28,600

Median (100%)	**0.9918**	**COD**	**0.0078**	**Mean_Deviation**	**0.0031**
Mean (100%)	**0.9910**	**PRD**	**1.0003**		
Aggregate (100%	**0.9908**				
Median (40%)	**0.3967**				
Mean (40%)	**0.3964**				
Aggregate (40%)	**0.3963**	**212,130**			

Parcel / Lot	Nbhd	Saleprice	Val	Sale_Type	Sale_Date	Size	Land	Assmt	Ratio	Deviation	Array
								84,076	**2.7747**	**0.0220**	
2		29900	Q	V	Current		29900	11960	0.4000	0.0033	0.3878
6		28600	Q	V	Current		28600	11440	0.4000	0.0033	0.3951
7		28600	Q	V	Current		28600	11440	0.4000	0.0033	0.3951
8		30000	Q	V	Current		29630	11852	0.3951	0.0016	0.3967
9		30000	Q	V	Current		29630	11852	0.3951	0.0016	0.4000
10		30030	Q	V	Current		29115	11646	0.3878	0.0089	0.4000
13		35000	Q	V	Current		34715	13886	0.3967	0.0000	0.4000

Point South Worksheet Continued;
Find square foot price from sales.
$SF Formula: SP / SF = $SF

Lot #	SP	FF	Depth	SF	$/SF
2	$29,900	115	100	11,500	2.60
6	$28,600	110	100	11,000	2.60
7	$28,600	110	100	11,000	2.60
8	$30,000	110	110	12,100	2.48
9	$30,000	110	110	12,100	2.48
10	$30,030	110	105	11,550	2.60
13	$35,000	119	135	16,065	2.18

Apply square foot price to all lots.
Formula: SF * $SF = Value

Lot #	FF	Depth	SF	$/SF	Value
1	80	100	8,000	2.60	$20,800
2	115	100	11,500	2.60	$29,900
3	80	110	8,800	2.60	$22,880
4	126	80	10,080	2.60	$26,208
5	80	105	8,400	2.60	$21,840
6	110	100	11,000	2.60	$28,600
7	110	100	11,000	2.60	$28,600
8	110	110	12,100	2.60	$31,460
9	110	110	12,100	2.60	$31,460
10	110	105	11,550	2.60	$30,030
11	110	100	11,000	2.60	$28,600
12	80	100	8,000	2.60	$20,800
13	119	135	16,065	2.60	$41,769
14	110	105	11,550	2.60	$30,030
15	110	105	11,550	2.60	$30,030
16	110	100	11,000	2.60	$28,600

Perform Sales Ratio Analysis

Median (100%)	**1.0000**	**COD**	**0.0415**	**Mean_Deviation**	**0.0166**
Mean (100%)	**1.0415**	**PRD**	**0.9959**		
Aggregate (100%	**1.0458**				
Median (40%)	**0.4000**				
Mean (40%)	**0.4166**				
Aggregate (40%)	**0.4183**	**212,130**			

								88,728	**2.9164**	**0.1164**	
Parcel / Lot	**Nbhd**	**Saleprice**	**Val**	**Sale_Type**	**Sale_Date**	**Size**	**Land**	**Assmt**	**Ratio**	**Deviation**	**Array**
2		29900 Q		V	Current		29900	11960	0.4000	0.0000	0.4000
6		28600 Q		V	Current		28600	11440	0.4000	0.0000	0.4000
7		28600 Q		V	Current		28600	11440	0.4000	0.0000	0.4000
8		30000 Q		V	Current		31460	12584	0.4195	0.0195	0.4000
9		30000 Q		V	Current		31460	12584	0.4195	0.0195	0.4195
10		30030 Q		V	Current		30030	12012	0.4000	0.0000	0.4195
13		35000 Q		V	Current		41769	16708	0.4774	0.0774	0.4774

Base Lot Exercise

Suggested Solution

BASE LOTS RANGE

Sale #	Size	Location	Sale Price
1	200 x 250	Interior	$105,000
2	200 x 250	Interior	$106,000
3	200 x 250	Interior	$107,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Excessive Width – Compare Sale #4 with Sales #1 – 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$112,750	-	$105,000	$7,750.00	0.07	1.07
2	$112,750	-	$106,000	$6,750.00	0.06	1.06
3	$112,750	-	$107,000	$5,750.00	0.05	1.05
Tee Box View – Compare Sale #5 with Sales # 1 - 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$140,000	-	$105,000	$35,000.00	0.33	1.33
2	$140,000	-	$106,000	$34,000.00	0.32	1.32
3	$140,000	-	$107,000	$33,000.00	0.31	1.31
Green View – Compare Sale #6 with Sales # 1 - 3						
Base Lot Sale #	Sale #6	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$149,000	-	$105,000	$44,000.00	0.42	1.42
2	$149,000	-	$106,000	$43,000.00	0.41	1.41
3	$149,000	-	$107,000	$42,000.00	0.39	1.39
Fairway View – Compare Sale #8 with Sales # 1 - 3						
Base Lot Sale #	Sale #8	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$113,250	-	$105,000	$8,250.00	0.08	1.08
2	$113,250	-	$106,000	$7,250.00	0.07	1.07
3	$113,250	-	$107,000	$6,250.00	0.06	1.06

Indicated Base Lot Value $106,000

Indicated adjustment for Excessive Width	+	$ 6,750
Indicated adjustment for Location Tee Box View	+	$ 34,000
Indicated adjustment for Location Green View	+	$ 43,000
Indicated adjustment for Location Fairway View	+	$ 7,250

Value of Lot with Excessive Width/Location Fairway
$106,000+$14,000 ($6,750+$7,250) = $120,000

Suggested Solution

BASE LOTS RANGE

Sale #	Size	Street	View	Sale Price
1	Single	Side	Standard	$15,000
2	Single	Side	Standard	$16,000
3	Single	Side	Standard	$17,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Major Street – Compare Sale #5 with Sales #1 – 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$14,500	-	$15,000	($500.00)	-0.03	0.97
2	$14,500	-	$16,000	($1,500.00)	-0.09	0.91
3	$14,500	-	$17,000	($2,500.00)	-0.15	0.85
Premium View – Compare Sale #4 with Sales # 1 - 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$20,000	-	$15,000	$5,000.00	0.33	1.33
2	$20,000	-	$16,000	$4,000.00	0.25	1.25
3	$20,000	-	$17,000	$3,000.00	0.18	1.18
Double Lot – Compare Sale #7 with Sales # 1 - 3						
Base Lot Sale #	Sale #7	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$23,000	-	$15,000	$8,000.00	0.53	1.53
2	$23,000	-	$16,000	$7,000.00	0.44	1.44
3	$23,000	-	$17,000	$6,000.00	0.35	1.35

Indicated adjustment for Major Street	-	$ 1,500
Indicated adjustment for Premium View	+	$ 4,000
Indicated adjustment for Double Lot	+	$ 7,000
Indicated Base Lot Value		$16,000

Double Lot on Side Street with Premium View
$16,000+$11,000 ($7000+$4000) = $27,000

Suggested Solution

BASE LOTS RANGE

Sale #	Size	Location	Sale Price
1	100 x 250	Interior	$65,900
2	100 x 250	Interior	$66,000
3	100 x 250	Interior	$66,100

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Excessive Width – Compare Sale #4 with Sales #1 – 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$75,750	-	$65,900	$9,850.00	0.15	1.15
2	$75,750	-	$66,000	$9,750.00	0.15	1.15
3	$75,750	-	$66,100	$9,650.00	0.15	1.15
Pond Location – Compare Sale #5 with Sales # 1 - 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$80,000	-	$65,900	$14,100.00	0.21	1.21
2	$80,000	-	$66,000	$14,000.00	0.21	1.21
3	$80,000	-	$66,100	$13,900.00	0.21	1.21

Indicated Base Lot Value $66,000
Indicated adjustment for Excessive Width +$ 9,750
Indicated adjustment for Pond +$ 14,000
Value of Excessive Width/Location Pond
$66,000+ $23,750(+$9,750+$14,000) = $89,750

Base Lot Exercise
Suggested Solution

BASE LOTS RANGE

Sale #	Water	Slope	View	Sale Price
1	Standard	Gentle	Typical	$90,000
2	Standard	Gentle	Typical	$96,000
3	Standard	Gentle	Typical	$102,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Steep Slope – Compare Sale #5 with Sales #1 – 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$87,000	-	$90,000	($3,000.00)	-0.03	0.97
2	$87,000	-	$96,000	($9,000.00)	-0.09	0.91
3	$87,000	-	$102,000	($15,000.00)	-0.15	0.85
Premium View – Compare Sale #4 with Sales # 1 - 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$120,000	-	$90,000	$30,000.00	0.33	1.33
2	$120,000	-	$96,000	$24,000.00	0.25	1.25
3	$120,000	-	$102,000	$18,000.00	0.18	1.18
Point Lot – Compare Sale #7 with Sales # 1 - 3						
Base Lot Sale #	Sale #7	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$138,000	-	$90,000	$48,000.00	0.53	1.53
2	$138,000	-	$96,000	$42,000.00	0.44	1.44
3	$138,000	-	$102,000	$36,000.00	0.35	1.35

Indicated adjustment for Steep Slope - $ 9,000
Indicated adjustment for Premium View + $ 24,000
Indicated adjustment for Point Lot + $ 42,000
Indicated Base Lot Value $ 96,000
Point Lot/Gentle Slope with Premium View
$96,000+ $66,000(+24,000+42,000) = $162,000

7. Using the following data, estimate appropriate adjustments for size and location.

Sale #	Lot #	Size	Type	Sale Price
1	224	97 x 123	Typical	$15,800
2	225	95 x 132	Typical	$16,000
3	239	101 x 111	Typical	$15,900
4	226	151 x 116	Typical	$22,750
5	232	112 x 151	Cul-desac	$23,000
6	229	71 x 144	Cul-desac	$20,000

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Adjustment for excess size:
Adjustment for location (Cul-de-sac):

8. Adjust the sales to the base lot and determine the base lot value.
9. Using the base lot method, what would be the indicated value of a lot with excess size located in the cul-de-sac?
10. Price all lots in subdivision.

Base Lot Excercise
Suggested Solution

BASE LOTS RANGE

Sale #	Size	Type	Factor3	Sale Price
1	97 x 123	Typical		$15,800
2	95 x 132	Typical		$16,000
3	101 x 111	Typical		$15,900

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Size – Compare Sale #4 with Sales #1 – 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$22,750	-	$15,800	$6,950.00	0.44	1.44
2	$22,750	-	$16,000	$6,750.00	0.42	1.42
3	$22,750	-	$15,900	$6,850.00	0.43	1.43
Location – Compare Sale #6 with Sales # 1 - 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$20,000	-	$15,800	$4,200.00	0.27	1.27
2	$20,000	-	$16,000	$4,000.00	0.25	1.25
3	$20,000	-	$15,900	$4,100.00	0.26	1.26
– Compare Sale #7 with Sales # 1 - 3						
Base Lot Sale #	Sale #7	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
		-		0	**!Zero Divide**	**!Zero Divide**
		-		0	**!Zero Divide**	**!Zero Divide**
		-		0	**!Zero Divide**	**!Zero Divide**

Indicated adjustment for Size + $ 6,850
Indicated adjustment for Cul-de-sac + $ 4,100
Indicated Base Lot Value $ 15,900
Lot # 232 Large Size located in Cul-de-sac
$15,900+ $(+6,850+4,100) = $26,850

Suggested Solution

BASE LOTS RANGE

Sale #	Size	Water	Golf View	Sale Price
1	Standard	None	None	$25,500
2	Standard	None	None	$26,000
3	Standard	None	None	$26,500

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

Green View – Compare Sale #4 with Sales #1 – 3						
Base Lot Sale #	Sale #4	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$36,000	-	$25,500	$10,500.00	0.41	1.41
2	$36,000	-	$26,000	$10,000.00	0.38	1.38
3	$36,000	-	$26,500	$9,500.00	0.36	1.36
Fairway View – Compare Sale #9 with Sales # 1 - 3						
Base Lot Sale #	Sale #9	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$31,000	-	$25,500	$5,500.00	0.22	1.22
2	$31,000	-	$26,000	$5,000.00	0.19	1.19
3	$31,000	-	$26,500	$4,500.00	0.17	1.17
Large Lot – Compare Sale #7 with Sales # 1 - 3						
Base Lot Sale #	Sale #7	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$27,950	-	$25,500	$2,450.00	0.10	1.10
2	$27,950	-	$26,000	$1,950.00	0.08	1.08
3	$27,950	-	$26,500	$1,450.00	0.05	1.05
Large Lot – Compare Sale #8 with Sales # 1 - 3						
Base Lot Sale #	Sale #8	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$28,050	-	$25,500	$2,550.00	0.10	1.10
2	$28,050	-	$26,000	$2,050.00	0.08	1.08
3	$28,050	-	$26,500	$1,550.00	0.06	1.06

Lake View – Compare Sale #5 with Sales #1 – 3						
Base Lot Sale #	Sale #5	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$34,000	-	$25,500	$8,500.00	0.33	1.33
2	$34,000	-	$26,000	$8,000.00	0.31	1.31
3	$34,000	-	$26,500	$7,500.00	0.28	1.28
Lake View – Compare Sale #6 with Sales # 1 - 3						
Base Lot Sale #	Sale #6	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$34,100	-	$25,500	$8,600.00	0.34	1.34
2	$34,100	-	$26,000	$8,100.00	0.31	1.31
3	$34,100	-	$26,500	$7,600.00	0.29	1.29
Tee View – Compare Sale #11 with Sales # 1 - 3						
Base Lot Sale #	Sale #11	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$34,000	-	$25,500	$8,500.00	0.33	1.33
2	$34,000	-	$26,000	$8,000.00	0.31	1.31
3	$34,000	-	$26,500	$7,500.00	0.28	1.28
Tee View – Compare Sale 12 with Sales # 1 - 3						
Base Lot Sale #	Sale #12	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$33,950	-	$25,500	$8,450.00	0.33	1.33
2	$33,950	-	$26,000	$7,950.00	0.31	1.31
3	$33,950	-	$26,500	$7,450.00	0.28	1.28
Tee View – Compare Sale 13 with Sales # 1 - 3						
Base Lot Sale #	Sale #13	Minus	Base Lot Sales	Additive Adjustment	Additive Factor	Multiplicative Factor
1	$34,050	-	$25,500	$8,550.00	0.34	1.34
2	$34,050	-	$26,000	$8,050.00	0.31	1.31
3	$34,050	-	$26,500	$7,550.00	0.28	1.28

Indicated Base Lot Value		$ 26,000
Indicated adjustment for Green View	+	$ 10,000
Indicated adjustment for Fairway View	+	$ 5,000
Indicated adjustment for Large Lot	+	$ 2,000
Indicated adjustment for Lake View	+	$ 8,050
Indicated adjustment for Tee View	+	$ 8,000

Time Adjustments Solution
Inflation is 3% per year

Subject		Sale #1	Sale#2	Sale#3	Sale#4
	Sale Price	**220,000**	**195,000**	**202,000**	**235,000**
	Date of Sale	**2 Years**	**Current**	**1 Year**	**3 Years**
	Time Adjust	**3%*2 years +.06(1.06)**	**No Adjustment**	**3%*1 year +.03(1.03)**	**3%*3 years +.09(1.09)**
	Time Adjusted S/P	**1.06*$220,000 $233,200**	**195,000**	**1.03*$202,000 $208,060**	**1.09*$235,000 $256,150**

SALES COMPARISON APPROACH
(Most Reliable Method)

Your assignment is to appraise Lot 40 in the Pine Ridge Subdivision, a subdivision adjoining Pine Ridge Golf Club. The lot has good access, a view of the green, typical amenities, and is adjacent to a lake. It is typical size.
An analysis of land sales in this area indicated that lots which have a view of the green command a $12,000 premium. In addition, lots on (adjacent to) the lake are worth $3,000 more than lots which are not. The lots are sold on a per site basis.High demand for lots in this area resulted in a 6% per year increase in value over the last three years. All sales involved typical market conditions.
The following sales occurred in the Pine Ridge Subdivision:

	Sale#1	Sale#2	Sale#3	Sale#4
Location	Pine Ridge	Pine Ridge	Pine Ridge	Pine Ridge
Size	Typical	Large	Typical	Typical
Amenities	Typical	Typical	Typical	Typical
Lake	No	Yes	No	Yes
View	Typical	Green	Green	Typical
Age of Sale	1 year	1 years	2 years	Current
Sale Price	$77,000	$86,000	$78,000	$80,000

Subject		Sale #1	Sale#2	Sale#3	Sale#4
	Sale Price	77,000	86,000	78,000	80,000
	Date of Sale	1	1	2	Current
	Time Adjustment	.06 1.06	.06 1.06	.12 1.12	0
	Time Adjusted Price	81,620	91,160	87,360	80,000
	Other Adjustments				
Typical	Size	0	0	0	0
Typical	Amenities	0	0	0	0
Yes	Lake	+3,000	0	+3,000	0
Green	View	+12,000	0	0	+12,000
	Net Adjustment	+15,000	0	+3,000	+12,000
	Adjusted Sale Price	96,620	91,160	90,360	92,000
Sale # 2 has the least number of adjustments. Lot 40 should be valued at $91,160					

LAND VALUATION

You are appraising a residential lot in an average neighborhood, Orchard Hills Subdivision. The lot is level and has sewer lines, a water hookup, and on a paved street. The lot has good topography and is rectangular but, the lot is narrower and shallower than typical lots in the neighborhood. In this market, the value of land has increased one percent for every month in the past four years. Estimate the value for the subject site.

You have found four comparable sales of vacant lots in the subject's neighborhood and have set the adjustments as follows:

	Sale#1	Sale#2	Sale3	Sale#4
Sale Price	**$16,400**	**$17,645**	**$17,365**	**$19,600**
Date of Sale	**23 Months**	**22 Months**	**16 Months**	**19 Months**
Location	**Equal**	**Equal**	**Superior (20%)**	**Equal**
Frontage	**Superior (5%)**	**Superior (10%)**	**Superior (5%)**	**Superior (5%)**
Depth	**Superior (15%)**	**Superior (20%)**	**Equal**	**Superior (5%)**
Shape	**Inferior (5%)**	**Inferior (5%)**	**Inferior (5%)**	**Superior (10%)**
Topography	**Inferior (10%)**	**Inferior (5%)**	**Inferior (10%)**	**Equal**
Sewer, Water, Street	**Equal**	**Equal**	**Equal**	**Equal**

Subject		**Sale #1**	**Sale#2**	**Sale#3**	**Sale#4**
	Sale Price	**16,400**	**17,645**	**17,365**	**19,600**
	Date of Sale	**23 mths**	**22 mths**	**16 mths**	**19 mths**
	Time Adjust	**1%*23 mths +.23(1.23)**	**1%*22 mths +.22(1.22)**	**1%*16 mths +.16(1.16)**	**1%*19 mths +.19(1.19)**
	Time Adjusted S/P	**1.23*16,400 20,172**	**1.22*17,645 21,527**	**1.16*17,365 20143**	**1.19*19,600 23,324**
	Other Adj				
Avg NBhood	**Location**	**Equal 0**	**Equal 0**	**Superior -.20**	**Equal**
Narrow	**Frontage**	**Superior -.05**	**Superior -.10**	**Superior -.05**	**Superior -.05**
Shallow	**Depth**	**Superior -.15**	**Superior -.20**	**Equal**	**Superior -.05**
Rectangular	**Shape**	**Inferior +.05**	**Inferior +.05**	**Inferior +.05**	**Superior -.10**
Good	**Topography**	**Inferior +.10**	**Inferior +.05**	**Inferior +.10**	**Equal 0**
Sewer & Water	**Sewer, Water, Street**	**Equal 0**	**Equal 0**	**Equal 0**	**Equal 0**
	Net Adjustment	**-.05 (-1,009)**	**-.20 (-4,305)**	**-.10 (-2014)**	**-.20 (-4,665)**
	Adj Values	**19,163**	**17,222**	**18,129**	**18,659**

Indicated value of subject range is 17,222 to 19,163. In this scenario sale number 4 has the least number of adjustments. Subject should be valued at $18,659.

Cost of Development Method Solution

55 Acres (2 Lots Per Acre) = 110 sites
110 sites / 5 years = 22 lots per year

Present value of estimated sales proceeds:

22	x	$30,000	x	.8929	=	$589,314
22	x	$30,000	x	.7972	=	$526,152
22	x	$30,000	x	.7118	=	$469,788
22	x	$30,000	x	.6355	=	$419,430
22	x	$30,000	x	.5674	=	$374,484
						$2,379,168

Present value of estimated development costs:

1,034,600 / 2 years = 517,300

Year 1	517,300	x	.8929	=	$461,897
Year 2	517,300	x	.7972	=	$412,392

Net present value = $2,379,168 - $874,289 = $1,504,879

Value Per Acre $1,504,879 / 55 = $27,361.44 (rounded $27,361)

Allocation Method Exercise
Suggested Solution

Tract Lots (1/4 Acre)

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value
1	$110,000	.22	1.00	$24,200.00
3	$124,880	.22	.92	$25,276.00
4	$114,500	.22	1.00	$25,190.00
6	$128,780	.22	.92	$26,065.00
9	$115,000	.22	1.00	$25,300.00

Range $24,200 to $26,065 – Say $25,000 will be your Base Lot Value
With major street adjustment $25,000 x .92 = $23,000

Large Lots (1/3 Acre)

Sales #	Sale Price	Land Ratio	Street Adjustment	Indicated Value
2	$194,940	.25	.92	$44,836.00
5	$179,000	.25	1.00	$44,750.00
7	$169,000	.25	1.00	$42,250.00
8	$175,000	.25	1.00	$43,750.00
10	$189,000	.25	.92	$43,470.00

Range $42,250 to $44,836 Say $43,500 will be your Base Lot Value
With major street adjustment $43,500 x .92 = $40,020

Abstraction Solution

An improved residential property on Lake Sinclair sold for $350,000. From your cost manual you calculate a replacement cost new of $147,450. You estimate depreciation to be $13,222. Using the abstraction method, what is the land value?

$147,450
- $13,222
$134,228 RCN – Depreciation (Residual Building Value)

$350,000 – $134,228 = $215,772 Land Value

Abstraction Method Exercise
Suggested Solution

Interior Lots 23,000

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value
2	$145,000	$122,500	$22,500.00
3	$149,000	$126,000	$23,000.00
7	$155,000	$130,000	$25,000.00
10	$152,400	$129,000	$23,400.00

Lake View Lots 44,000

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value
4	$194,000	$150,000	$44,000.00
6	$210,000	$165,000	$45,000.00
9	$198,000	$155,000	$43,000.00

Lake Access Lots 90,000

Sales #	Sale Price	Depreciated Improvement Value	Indicated Land Value
1	$275000	$180,000	$95,000.00
5	$255,000	$170,000	$85,000.00
8	$290,000	$200,000	$90,000.00

Base Lot Information

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Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

$Adjustment Formula: Sale with Different (Unlike) Characteristic – Base Lot Sale = Adjustment
Factor Adjustment Formula (Additive): Adjustment / Base Lot Sale
Factor Adjustment Formula (Multiplicative): Sale with Different (Unlike) Characteristic / Base Lot Sale

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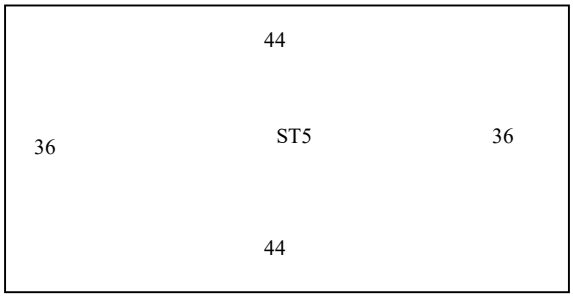
Pricing Commercial Structures

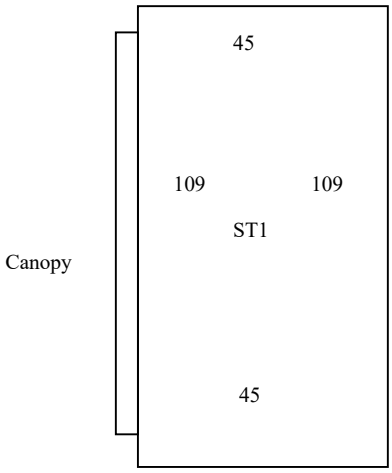


5 Story Office Building (Use Code 9149)
Brick on Concrete Block Frame
Wall Height 11'
Central Heating & AC (qc3)
Typical Plumbing Fixtures
Carpet & Vinyl Tile Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors	Calculations
Built-as Code/Description	9149-Office Building	
Used-as Code/Description	9149-Office Building	
Overall Commercial Base for County	1.00	
Used-as Code Base Cost	89.14	
Construction Type (Framing,walls,etc) Multiplier	1.00	
Wall Height Multiplier	1.02	
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**	1.08	
Story Height Cost Factor	5.0300	
$PSFT_WO_ADDS-Structural Elements	Total Structure Points	493.93
Heating&Cooling Type Add $ **X STHT Cost Factor**	$ 3.78	19.01
Flooring Type Add $ **X STHT Cost Factor**	$ 2.44	12.27
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements	525.21
Base Area	1584	
Grade	1.20	
RCN		$ 998,319.00
PHY (DEP) or (OVR DEP)	1.00	
Economic Obsolsescence	1.00	
Functional Obsolescence	1.00	
Other Factor	1.00	
Percent Complete	1.00	
NBHD Factor	1.00	
Structure Value		$ 998,319.00
Extra Feature		$ -
BLDG/SECTION Value		$ 998,319.00
FMV		$ 998,319.00

Pricing Commercial Structures

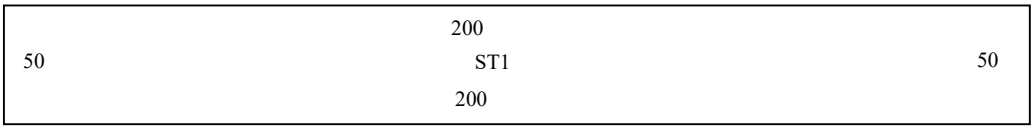


1 Story McDonalds Restaurant (Use Code 9040)
Brick on Concrete Block Frame
Wall Height 12'
Central Heating & AC (qc3)
Good Plumbing Fixtures with tiled walls
Ceramic Tile Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors	Calculations
Built-as Code/Description	9040-Restaurant Fast Food	
Used-as Code/Description	9040-Restaurant Fast Food	
Overall Commercial Base for County	1.00	
Used-as Code Base Cost	106.12	
Construction Type (Framing,walls,etc) Multiplier	1.00	
Wall Height Multiplier	1.00	
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**	1.03	
Story Height Cost Factor	1.0000	
$PSFT_WO_ADDS-Structural Elements	Total Structure Points	109.30
Heating&Cooling Type Add $ **X STHT Cost Factor**	$ 3.53	3.53
Flooring Type Add $ **X STHT Cost Factor**	$ 6.80	6.80
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements	119.63
Base Area	4905	
Grade	1.30	
RCN		$ 762,821.00
PHY (DEP) or (OVR DEP)	1.00	
Economic Obsolsescence	1.00	
Functional Obsolescence	1.00	
Other Factor	1.00	
Percent Complete	1.00	
NBHD Factor	1.00	
Structure Value		$ 762,821.00
Extra Feature		$ -
BLDG/SECTION Value		$ 762,821.00
FMV		$ 762,821.00

Pricing Commercial Structures



1 Story Mini Warehouse (Use Code 9117)
Galvanized Metal Exterior Wall with Steel Framing
Wall Height 7'
Climate Controlled Central Heating & AC (qc3)
Concrete Flooring (qc3)

What is the value of the Structure?

Description	Desc/Cost/Factors		Calculations
Built-as Code/Description	9117-Mini Warehouse		
Used-as Code/Description	9117-Mini Warehouse		
Overall Commercial Base for County		1.00	
Used-as Code Base Cost		26.38	
Construction Type (Framing,walls,etc) Multiplier		0.91	
Wall Height Multiplier		0.89	
(BaseArea/Perimeter Multiplier=**APRatio**) **APFactor**		1.04	
Story Height Cost Factor		1.0000	
$PSFT_WO_ADDS-Structural Elements	Total Structure Points		22.22
Heating&Cooling Type Add $ **X STHT Cost Factor**	$	3.78	3.78
Flooring Type Add $ **X STHT Cost Factor**	$	0.61	0.61
Adj$PSQFT_W_ADD$-Structural Elements	Total $ Sructural Elements		26.61
Base Area		10000	
Grade		1.00	
RCN			$ 266,100.00
PHY (DEP) or (OVR DEP)		1.00	
Economic Obsolsescence		1.00	
Functional Obsolescence		1.00	
Other Factor		1.00	
Percent Complete		1.00	
NBHD Factor		1.00	
Structure Value			$ 266,100.00
Extra Feature			$ -
BLDG/SECTION Value			$ 266,100.00
FMV			$ 266,100.00

Base Lot Information

Sale #	Desc 1	Desc 2	Desc 3	Sale Price

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Georgia Department of Revenue Revised 9-19-2017

You have found the following land sales around the city:

	Sale#1	Sale#2	Sale#3	Sale#4
Factor1				
No. Of Acres				
Factor2				
Sale Date				
Sale Price				

Subject		Sale #1	Sale#2	Sale#3	Sale#4
	Sale Price				
	#Acres				
	Date of Sale				
	Price/Acre				
	Time Adust				
	Time Adjusted Pr/Ac				
	Other Adjustments				
	Factor1				
	Factor2				
	Factor3				
	Factor4				
	Net Adjustment				
	Adjusted Value/Acre				