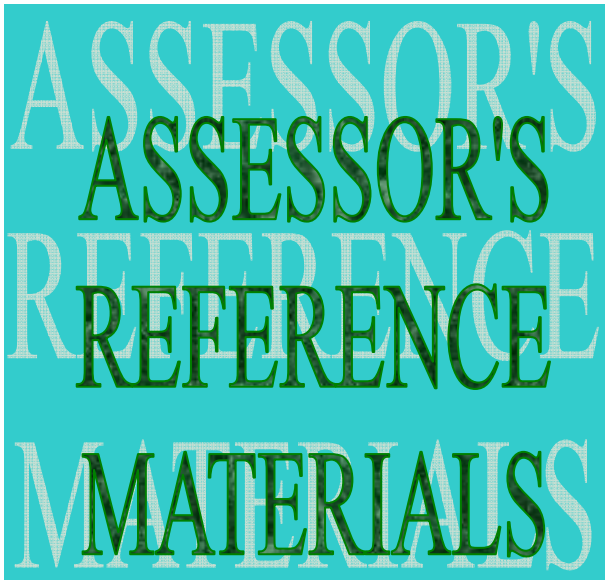
Real Property Tax Administration
Office of Tax and Revenue
941 N. Capitol Street, NE, Suite 400
Washington, DC 20002

Office of the Chief Financial Officer
Office of Tax and Revenue
Real Property Tax Administration

Real Property Assessment Division

2008 General Reassessment Program



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February 2007

Helpful Hints:

This document represents a selected compilation of materials developed and used during the 2008 revaluation of the real property in the District of Columbia. As such, it does not purport to be an exhaustive collection of all assessment administration documents and materials. Its purpose is designed to be a quick reference guide for the real property assessor in his/her day-to-day activities.

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If you have any comments or suggestions, please feel free to call. Thank you.

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OFFICE OF TAX AND REVENUE
REAL PROPERTY TAX ADMINISTRATION
INTEROFFICE MEMORANDUM

TO: Real Property Assessment Division

FROM: Thomas W. Branham, Chief Assessor

SUBJECT: Tax Year 2008 Reassessment

DATE: February 21, 2007

I would like to thank all of you for the contribution you made to the Tax Year 2008 general reassessment. As a result of your expertise and effort, we reassessed 185,000 properties in the District of Columbia and will timely mail assessment notices to District property owners by the statutory deadline for the sixth year in a row.

The Washington metropolitan area economic conditions remain above average at year end. The House Price Index as reported by the Office of Federal Housing Enterprise Oversight (OFHEO) is 11.30 percent annual appreciation for the period ending September 30, 2006. The House Price Index (HPI) is a measure designed to capture changes in the value of single-family homes in the U.S. as a whole, in various regions of the country, and in individual states and the District of Columbia. The HPI is published by OFHEO using data provided by Fannie Mae and Freddie Mac. Despite anecdotal information that property values have peaked or begun to fall, empirical data supports continued appreciation.

The transition from sizzling markets to normal markets has been orderly so far, and recent drops in interest rates lessen the likelihood that precipitous changes will occur. In spite of a significant reduction in the number of home sales in 2006, the Commerce Department recently reported that homes sales increased in December by 4.8 percent following an even bigger 7.4 percent rise in November. The real estate boom saw sales of both new and existing homes set records for five consecutive years. The lowest mortgage rates in forty years helped to fortify the market.

The available inventory of houses and condos dropped toward the end of 2006 signifying a balancing out of the market. District properties are now on the market for an average of four months, according to a report prepared by Coldwell Banker Residential Brokerage Realtors. Most realtors say a four month supply of

homes is a balanced market of buyers and sellers. Current favorable interest rates and lower inventories indicate that this will be a mild market correction.

With regard to the quality of the District's real property assessment data, now that we have completed the building photography, geo-coded (GPS) each property, verified street addresses and confirmed property characteristics, the following new improvements are complete or will soon be available;

1. Property Record Cards will be available via the Internet to all taxpayers in the District at no cost. This process will provide significantly improved customer service to the citizens and reduce the need for a labor intensive effort by the Assessment Division staff.

2. Through integration of our major valuation (CAMA) and administration systems (ITS) with our spatial data (maps), we will have a tremendous analytical tool available to assist in providing more equitable and uniform assessments.

3. Assessment and Taxation lots and Ownership cards have been imaged and indexed allowing search capability for the Assessment Division staff and will soon provide the last database necessary to perform a title search on our web site.

4. Pictometry ChangeFindr has been completed and will assist the division with the identification and assessment of properties that have had improvements made outside of the official permitting process or have been missed by the department in prior years. This program will serve as the foundation for regular electronic review of the District's building inventory.

5. Income and Expense forms have been improved with barcodes that identify the form type, page and square/suffix/lot to improve processing speed and accuracy.

6. Business Process Reengineering (BPR) is substantially complete with the documentation of our business processes and includes best practices and other recommendations for improvements to the processes.

7. We are currently involved in a pilot program to identify the benefit of utilizing hand held data collection devices to perform field work and improve efficiency and accuracy. Meanwhile, we have developed data transfer programs and procedures to accommodate the new process within our CAMA system.

The overall goal of the Assessment Division is to uniformly and equitably assess all properties in the District and to employ market-driven valuation techniques.

The technical aids, data and processes mentioned above will assist us in improving the quality of property specific appraisals.

A brief description of the methods used this year to value property is shown below and a more detailed discussion follows. Each method was selected based on its ability to provide the most accurate assessment and/or generate improved results over the previous year.

This year a new valuation model was implemented as a result of a collaborative effort of the Standards and Services and General Commercial units with special assistance from Bill Nelson and Robert Gloudemans. The Vision CAMA Income Approach Valuation Process is included as a new section in this year's Assessor Reference Materials.

A. Market-oriented cost approach – A mass appraisal technique where the estimated cost to construct a new improvement is determined and from that, an appropriate amount of depreciation is deducted. The resulting value is then added to the land value to arrive at the total assessed value of the property. Instead of relying on traditional cost tables, the market oriented approach refines the process by using actual market-derived costs. Extensive analysis of market sales data and property characteristics generate the appropriate values for the components of the improvements. For example, a traditional cost table may list a fireplace value as $5,000, whereas the DC market may indicate a fireplace adds $7,500 to the improvement.

B. Multiple Regression Analysis (MRA) –A mass-appraisal technique used to predict, or estimate, the market value of property. Through statistical analysis of properties that have recently sold, MRA develops the relationship between various property components and the value they contribute to the sale price. The process estimates the contributory value of such components as the size of the house, the number of bathrooms, the number of bedrooms and other components that may contribute to the sale price of the house. As an example, let us say that several sales in a neighborhood reliably indicate the contributory value of one full bath is $16,000 and houses with two full baths is $40,000. When estimating the value of a house containing two full baths, one-value component would be $40,000 to account for the baths. The full market value estimation would be the total contributory value of all those value components identified in the house whose value is being predicted.

C. Income approach – A commercial property appraisal technique, where net operating income is converted in an estimate of value using a process called capitalization. The technique is property-specific; however, many of the variables (market rent, vacancy, expense ratios, and capitalization rates) are derived from market sales analysis. RPAD's *Pertinent Data Book* summarizes the annual analysis of DC commercial sales and economic data that becomes the basis for the income approach to value.

Property assessments in general are up throughout the metropolitan area including 18.7 percent in Maryland. Properties valued at less than $200,000 before the reassessment increased an average of 25 percent annually.

A study performed by the DC Fiscal Policy Institute made several key findings;

- As a result of substantial tax relief adopted in 2005, property tax bills will be lower in 2007 than in 2005 for 66 percent of DC homeowners.

- DC's property taxes on homeowners are now the lowest in the region. The taxes paid by middle-income households are lower than in either suburban Maryland or Virginia.

- A trigger in the law resulted in a further cut in the property tax rate in 2007, even though most homeowners would have paid less than they did in 2005 without the additional cut. The law could trigger even more cuts in the future.

- The two-year changes reflect the fact that, for most homeowners (80 percent) property taxes decreased in 2006, ***then increased in 2007 but typically less than five percent.*** The combined effect left most homeowners with lower taxes in 2007 than 2005. These are significant findings, considering that the ***median property assessment increased for 2007 to over $400,000, 48 percent higher than the 2005 median assessment of $270,000.***

The next several sections will provide more detail regarding the actual steps taken in the reassessment.

In closing, I would like to once again thank you for the effort you put forth on behalf of all property owners in the District of Columbia. The Tax Year 2008 assessment program was improved as a result of your contribution.

Explanation of Residential Market-oriented Cost Method

Note: The market-oriented cost approach to valuation is further explained and illustrated in the document, *Vision Residential Valuation Process*.

The market-oriented cost approach involved the following:

1. Extracting the CAMA data from approximately 13,800 qualified sales and importing it into SPSS.
2. Building a preliminary regression model that reflects the variables of the CAMA cost approach.
3. Reviewing the results of the preliminary regression to identify candidate market areas where the data was such to allow for successful regression analysis.
4. Eliminating outliers in the candidate areas to better ensure accuracy of the regression results.
5. Establishing time adjustment factors in order to analyze sale prices as of a specific point in time. The city was divided into 4 major market areas for time adjusting sale prices. Market data indicated monthly time adjustment factors over 32 months (1/1/2004 through 9/8/2006) as follows:

	1/1/04 - 12/31/04	1/1/05 - 12/31/05
"Southeast" Neighborhoods: (2, 3, 16, 18, 22, 28, 32, 33, 43)	+ 2.40% /mo	+ 1.80% /mo
"Northeast" Neighborhoods: (5, 6, 7, 12, 14, 15, 17, 19, 31, 35, 36, 42, 47, 48, 49, 51, 52, 56, 66)	+ 2.20% /mo	+ 1.00% /mo
"Northwest" Neighborhoods: (1, 4, 8, 11, 13, 21, 23, 24, 25, 26, 27, 29, 30, 34, 37, 38, 41, 50, 53, 54, 55)	+ 1.40% /mo	+ 0.50% /mo
"Downtown" Neighborhoods: (9, 10, 20, 39, 40, 46)	+ 2.10% /mo	+ 0.70% /mo

6. Building a final regression model, using the time-adjusted sale price as the dependant variable.
7. Calibrating that model using non-linear multiple regression. Variables were included to extract land values from the market.
8. Reviewing the regression predicted values and removing extreme outliers.
9. Examining the predicted-values-to-time-adjusted-sale-price ratios for equitability with respect to lot size, building area, age, use, grade, and location.
10. Entering the coefficients indicated by the regression analysis back into the CAMA program's cost model.
11. Applying the cost model in CAMA and reviewing the resulting values to ensure they agreed with the predicted values produced by the regression.
12. Performing sales analysis to determine if acceptable levels of assessment were achieved and adjusting rates as necessary.
13. Applying model to inventory and producing old-to-new (outlier) reports and percent change detail analysis reports for assessor review.
14. Incorporating oversight of the computer aided procedure by our professional staff cited in the *2008 Valuation Review Process*. All projected market value changes are submitted to the staff for their review, refinement, and adjustments.

Explanation of Residential Condominium Valuation Methods

Regression:

The sales comparison approach using multiple regression analysis involved the following:

1. Extracting the CAMA data of qualified sales and importing it into SPSS.
2. Reviewing data to determine what regimes were candidates for regression analysis. As a rule, regimes could be valued using regression where the physical data attributes were complete and adequate sales data existed. Regimes without adequate sales, but with complete data, could be clustered with regimes having similar profiles to allow regression to be used.
3. Exploring the data to determine what variables would likely contribute to the model.
4. Building a base model.
5. Reviewing the results of the base model and eliminating outliers in the candidate regimes to better ensure the accuracy of the regression results.
6. Establishing time adjustment factors in order to analyze sale prices as of a specific point in time. Market data over 32 months (1/1/2004 through 10/3/2006) indicated a citywide monthly time adjustment factor of 0.89% per month.
7. Building a final regression model, using the time-adjusted sale price as the dependant variable.
8. Calibrating that model using multiple regression analysis.
9. Applying the model to the sales, reviewing the predicted values and removing extreme outliers.
10. Performing sales analysis to determine if acceptable levels of assessment were achieved and adjusting rates as necessary.
11. Extracting condominium inventory data and importing into SPSS.
12. Applying model to inventory, and exporting the values back to CAMA, allocating 30% of predicted value to land and 70% of predicted values to improvements.
13. Producing percent change reports for assessor review.
14. Identifying necessary corrections to data and location adjustments.
15. Repeating process of extracting data, applying model, and exporting back to CAMA to include corrections.

Final Assessor Review:

At the conclusion of the valuation, several reports are produced showing the results of the reassessment. These reports, reflecting proposed market value changes, are submitted to the assessment staff for their review, refinement and adjustment in accordance with the processes outlined in the *2008 Valuation Review Process* document.

The Condominium Regression Model:

ESP= (368.60 * SIZE * SIZE_ADJ * COND_ADJ * VIEW_ADJ * BATH_ADJ + PARK_ADJ) * LOC_ADJ.

Estimated Sale Price (ESP) – the value predicted by the model for the parcel, given the variables in the model, the coefficients of those variables and the attributes of the subject unit.

Base Rate (368.60) – base size rate (constant)

Size – the square footage of the unit

Size Adj. – the adjustment for the unit's size being larger or smaller than the base size

The base unit size is 800 sf. The formula for calculating the size adjustment is: $((SIZE^{.6735})/SIZE)/.113$, where $.113 = (800^{.6735})/800$). See graph titled *Condominium Size Curve*.

Condition – adjustment for the unit's physical condition

(1) Poor	.75
(2) Fair	.87
(3) Average	1.00
(4) Good	1.08
(5) Very Good	1.15
(6) Excellent	1.20

View – adjustment for the unit's view

(1) Poor	.88
(2) Fair	.94
(3) Average	1.00
(4) Good	1.03
(5) Very Good	1.07
(6) Excellent	1.13

Bath Adj. – adjustment for the unit's number of baths more than one.

BATH_ADJ = 1 + (((FULLBATH - 1) + (.5 * HALFBATH)) * .07)

Example: *2 ½ baths: 1 + (((2 – 1) + (.5 * 1)) * .07) = 1.105*
*3 baths: 1 + (((3 – 1) + (.5 * 0)) * .07) = 1.14*

Parking – adjustment for Limited Common Element parking

Outdoor	Covered	Indoor	
30080	38680	51570	subject to location adjustment

Location – adjustment for unit's geographic location

Location adjustments were made for neighborhood, sub-neighborhood, cluster of regimes, or unique regime. The actual location adjustment for any unit may be the combination of one or more of those location factors.

Explanation of Cooperative Valuation Method

Cooperatives are a type of residential property. In a cooperative, a corporation owns the property and the shareholders can use the unit or units represented by their shares. In Washington, DC, cooperatives are assessed according to statue by either of three methods. The first method is by calculating the cumulative value of the leasehold interests (by sales). The second method is to treat the project as if it was a condominium project and reduce the value by 30%. After arriving at either of these values, we further reduce the value an additional 35% according to the statue. The third method is available only to Limited Equity Cooperatives.

Limited-equity cooperatives (LEC) are defined in the DC Official Code in § 47-802 (11) as, "one required by a government agency or non-profit to limit the resale price of membership shares to keep the housing affordable for low and moderate income buyers." The assessed value of improved real property owned by an LEC is the lesser previously described approaches or the annual amount residents pay in carrying charges (excluding subsidies), divided by an appropriate capitalization rate as determined by the Office of Tax and Revenue (OTR).

The cooperatives in the district had not been reassessed from 1997 - 2002. During this period there was an assessment freeze for several years and after the freeze we didn't have access to sales information to make good evaluations. After the 2003 review we were able to collect sales information from MRIS. Using this information we were able to more accurately calculate the actually values.

For 2007, we reviewed all the complexes with sales information and calculated the sales prices per square foot without factoring in any time adjustment. Matched pairs sales were used to calculate the typical percentage increase per month. We were surprised to discover that in the better complexes the trend from 1999 - 2002 was approximately 3% per month. In other words, units that sold in 1999 would sell for about twice as much in 2002. In 2003 and 2004 the market began to cool although sales prices were still increasing by 1-2% per month in many complexes. This past year some units sold for less than we were projecting indicating a flat or receding market. Multiplying the square footage of the units by the adjusted rates (occasionally they were adjusted for view or parking as sales indicated) would result in the aggregate values which were further reduced for personal property and the result multiplied by 65%.

In complexes where there were no sales, we treated them as if they were condominiums. To do this we would find a condominium as similar as possible to the subject and use the square foot rate that seemed to be appropriate to the square foot of the units or the estimated square footage. We would multiply the rate times the square footage and reduce the result by 30% and then by 35%. The complexes without sales were usually limited equity coops or very small complexes.

2008 Valuation Review Process

As part of the valuation process, initial assessments for all properties will be estimated and preliminary reports will be generated summarizing the results of the valuation effort. Your review, modification and approval of the proposed assessments indicate that they are representative of the estimated market value.

The Valuation Review Process is designed to allow for a thorough review of the new values for the upcoming tax year before notices are sent to property owners. The purpose of this review is two-fold. First, it allows us the opportunity to correct any errors that may have occurred in the valuation process before they cause administrative difficulties (i.e. public relations problems, unnecessary appeal activity, and the like). Second, the process provides feedback to the CAMA modeling and calibration process.

The process involves examining all assessments with particular attention given to the outliers in a relatively short period. As such, the assessor is primarily concerned with arriving at a reasonable final value estimate for all accounts and pay particular attention to the properties on the outlier list, known as the Old-to-New Report. Briefly, the process involves the assessor of record reviewing a selected group of properties in their neighborhood that, on first inspection, appear to be over or under appraised based on previously determined criteria such as sales price, percent change reports, etc. When this review indicates correct values, no records are changed, however, if the value requires modification, the assessor will make changes in the CAMA record and on the PRC to correct the situation. If he/she discovers minor discrepancies in the data, it should be noted and corrected or revisited during another inspection program at the discretion of the assessor. The purpose of this program is not to engage in a detailed analysis of accounts but rather to expeditiously review outlier accounts to improve our estimate of market value.

> **NOTE**: It is advisable that the assessor has a solid knowledge of CAMA valuation before proceeding with the review process. Please refer to *the "2008 CAMA Residential Construction Valuation Guideline."* Along with the report entitled “VISION CAMA Valuation,” the guideline will serve as a tutorial for the methodology employed within CAMA for valuing residential property.

Following are some general guidelines to consider while conducting review activity.

1. The valuation review process begins with CAMA producing two reports for each (sub)neighborhood. The first report is the “Old to New” report that shows the old value, new value, percent and dollar change in value from the current assessment to the proposed assessment for specific properties that constitute outliers in the (sub)neighborhood. Included are

the individual PRCs for each corresponding account listed in the report that increased 10 percentage points more than the median increase for the (sub)neighborhood or decreased more than 10 percent. The second report, Percent Change Detail Analysis, contains more specific detail about all of the accounts in the selected (sub)neighborhood. Changes to the 2008 report are the removal of the "sketch flag" and the addition of the sales verification code, "VC" flag.

2. The assessor will be provided these two individual reports for each of the assigned (sub)neighborhoods, along with individual PRCs from the Old-to-New report.

3. Before individual reviews of the Old to New report begins, the assessor will examine the Percent Change Detail Analysis report for signs of irregularities or general discrepancies based on their knowledge of their neighborhoods. The review entails several tasks as follows:

   A. Review the "A/S Ratio", when present. The ratios are calculated based on sales over a long period of time. Pay particular attention to sales that occurred during 2004 – 2006. These sales will give a better picture of the actual assessment/sales ratio. Where the assessed values are not close to the sales prices, fully examine the record, and consider making appropriate changes. The assessor will notice many of the ratios exceed 100%. This will often occur because the sale price used to calculate the ratio has not been time adjusted to the present. As the age of the sale increases, the likelihood of an apparently high A/S ratio also increases. This is to be expected. The "VC" flag can be used to indicate that a sale has been previously disqualified, possibly rendering an erroneous ratio less meaningful. Additionally the review of the "VC" code with an erroneous ratio may indicate that a previously qualified sale needs to be now disqualified.

   B. Examine the "Grade" of the accounts. If there is a two or more departure of grade between the account and the typical grade in the (sub) neighborhood, the assessor may be concerned.

   C. Look for extremes in the "Cond" and "% Good" data. Again, on average, these should be relatively consistent throughout the (sub)neighborhood.

The preferred process to follow when conducting individual reviews of accounts contained on the Old-to-New report (residential only) is as follows:

1. The assessor will examine each record that appears on the "Old to New" report. Each record has been selected for inclusion because the value change from last year to this year has dropped or is more than 10 percent points greater than the median increase for the (sub)neighborhood. These records constitute the "outliers" of the (sub)neighborhood. The values may be correct or erroneous, and the purpose of this process is to make that determination.

2. The assessor, exercising his or her professional skill and judgement, first will conduct a "desk review" of each account appearing on the report. If the value does not seem reasonable perform the following actions:

    A. Examine the PRC for any missing or incorrectly coded data contained in the Construction Detail section.

    B. In the Building Summary Section, check the sq. ft. sizes of the areas listed for accuracy and reasonableness.

    C. Check the Building Cost Section for correct *Effective Area*, *Special Feature RCN and % Good.* If any are erroneous, examine their respective sections for details.

    D. Examine the Special Features/Amenities and Detached Structures sections for accuracy.

    E. On the front of the PRC, check the Land Line Valuation Section for proper size and value.

    F. Make use of the Pictometry tool available in the Mobile Video Viewer or the Mapping Apps folder.

3. Several results may occur from the desk review:

    A. The desk review indicates the value is correct. In this case, note in the column adjacent to the account "OK", your initials and the date.

    B. The desk review indicates an erroneous value discovered by examining various reports and records (i.e. Percent Change, CAMA record, etc). In this case, the assessor makes the correction in the

CAMA record, notes the changes made on the PRC in red, notes on the OTN report the new amount, your initials and the date.

C. The desk review is inconclusive and a field inspection is in order.

An example may help illustrate scenario "A", the first situation. Let's say the Old-to-New report indicates an account has jumped 400%, from $300,000 to $1,200,000! That amount of increase seems absolutely erroneous. To determine a possible explanation, the assessor begins the review by locating the account on the Percent Change Detail Analysis report. After finding the account, the assessor notices that the properties close to the account have only increased by approximately 20%, the median for the neighborhood. They are approximately similar to the account in size, grade, and condition, but their prior year's value was $900,000, while the outlier was only $300,000. The assessor would be safe to conclude that the account was grossly under-assessed last year. The low "old" value caused the large increase in value, not an over-assessed new value. To complete the desk review, the assessor notes on the Old-to-New report, "OK", his/her initials and the date.

Scenario "B", the second situation, may find the assessor reviewing an account that also appears to be over-assessed based on the large increase from old to new value. The assessor again locates the account on the Percent Change Detail Analysis report and reviews the account in context to other (sub)neighborhood properties. The assessor discovers that most of the data about the account is similar to the other properties – same use code, similar size, percent good, etc. However, where most of the properties are listed at Grade 4, the account is Grade 7. This would help explain the likelihood that the account is over-assessed. The assessor would make the change to the grade in the CAMA system, note the new value, make the change on the PRC in red, and document the change on the Old-to-New report by writing the new value, his/her initials and the date in the far right column of the report next to the account.

The last scenario, "C", results when the assessor can not immediately explain the reason an account appears on the Old-to-New report. He/she should set aside accounts that will require field inspection and at a point, go to the field for inspection. Upon conclusion of the inspection, the assessor will document the results in a similar manner to the desk reviews. The actual schedule for field-work will vary and will be coordinated by the assessor and his/her supervisor.

Records Retention -- Old-to-New Reports (residential only) and Percent Change Detail Analysis Reports (residential, residential condominium, commercial) are to be retained for two years, so that the current and proposed years are readily available for review. The retained reports will reflect all necessary dates and initials, indicating the required review and approval. The supervisory assessor for each unit will be responsible for ensuring compliance with the review process

within their unit, and for the retention of their unit's reports for the appropriate period of time. Reports may be discarded when they are no longer the current or proposed year. For example, upon the completion of the tax year (TY) 2008 revaluation, the TY 2006 reports may be discarded, and the reports from TY 2007 (current) and TY 2008 (proposed) must be on file.

Market Approach to Land Valuation in Costed Neighborhoods

A non-linear regression model was used to calibrate the residential cost model. It was developed from citywide market analysis of qualified sales. One of the variables calibrated by the model was the land rate. Base land rates were adjusted for location in each sub-neighborhood. Regression analysis calibrated the land and building components of the model at the same time using the same market data. Additionally, the analysis established two size curves for land area. Land size curve "1" and land size curve "2" both indicate that as lot sizes increase, values also increase. However, with land size curve "2" values increase more rapidly with size. In both cases, land rates decrease as land area increases. Market data supports both curves up to approximately 5 times the standard lot size. However, in application, rates are assumed to continue similar decreases beyond that point. Each sub-neighborhood was assigned to one of the two land size curve groups based upon analysis of the qualified sales data. It is important to keep in mind, that land value is only one component of a number of variables that contribute to a property's sale price and/or estimated market value. In practical terms, it is the combination of all of a property's attributes, nuances in the market, and buyer preference that contribute to the final market value of a property. It is difficult to isolate some of the contributory elements and value them separately with certainty. Nevertheless, it is required in the District of Columbia that land and building values be separated for assessment purposes. Because of this requirement, it is necessary to create land rate tables for use in the District's CAMA product. These rates were developed in the regression analysis referred to above. The results of the analysis are applied to the market-oriented cost model in the Vision CAMA system.

Land is calculated in Vision using the following algorithm:

Area * ((Base Rate * Size Adj) + $ Special Adj 1 + $ Special Adj 2) * % Special Adj 1 * % Special Adj 2

Where:

Area is the lot size expressed in square feet.

Base Rate is the market-derived rate for each sub-neighborhood.

Size Adj is the market-derived adjustment made for the lot size as it relates to the standard size lot for the sub-neighborhood. The look-up along the size curve is based on the ratio of the subject lot size to the standard lot size.

% Special Adj is any adjustment present that is expressed and applied as a percentage adjustment to the rate.

$ Special Adj is any adjustment present that is expressed and applied as a dollar adjustment to the rate.

Land Rate Development Example

A hypothetical example may help illustrate how regression analysis develops the base land rates and subsequent adjustments to the rates. Suppose two properties in a neighborhood were recently sold. The first, comprised of just a house without land, sold for $400,000. The second property had the identical house but with a lot of 2,000 square feet (sf.), the typical size for that neighborhood. It sold for $600,000. In a process similar to adjusting comparables in the sales comparison approach to value, regression analysis identifies the contributory value of the lot to the second property and sets its value to $200,000. The base land rate of $100 per sf ($200,000/2,000 sf) will be the basis for lot values for all other properties in that (sub)neighborhood.

Sold for $ 400,000
(no lot)

Sold for $600,000
w/ 2,000 SF Lot
(Land = $200,000)

Next, let us assume another house sells. In this instance, the house is identical to the previous sale in all respects, except the lot size was 4,000 sf instead of the "standard" (base lot) size of 2,000 sf. This house recently sold for $700,000, $100,000 more than a property with the standard lot size. The land component of this sale is $300,000.

Sold for $600,000
w/ 2,000 SF Lot
(Land = $200,000)

Sold for $700,000 w/ 4,000 SF Lot
(Land = $300,000)

This sale helps develop size adjustments for non-standard lots in the neighborhood. If no adjustment was made to the land rate, the land component of this sale would be $400,000 (4,000 sf * $100). The appraisal would overstate the value of the property by $100,000. An adjustment to the base land rate is necessary to recognize the market response to the departure from the standard lot size. Regression analysis would calculate the appropriate land size adjustment necessary to properly determine the contributory value of the larger lot. Dividing the market-indicated value of the lot by the unadjusted appraised value of the lot ($300,000/$400,000) yields a factor of 0.75. In this example, CAMA would follow the model:

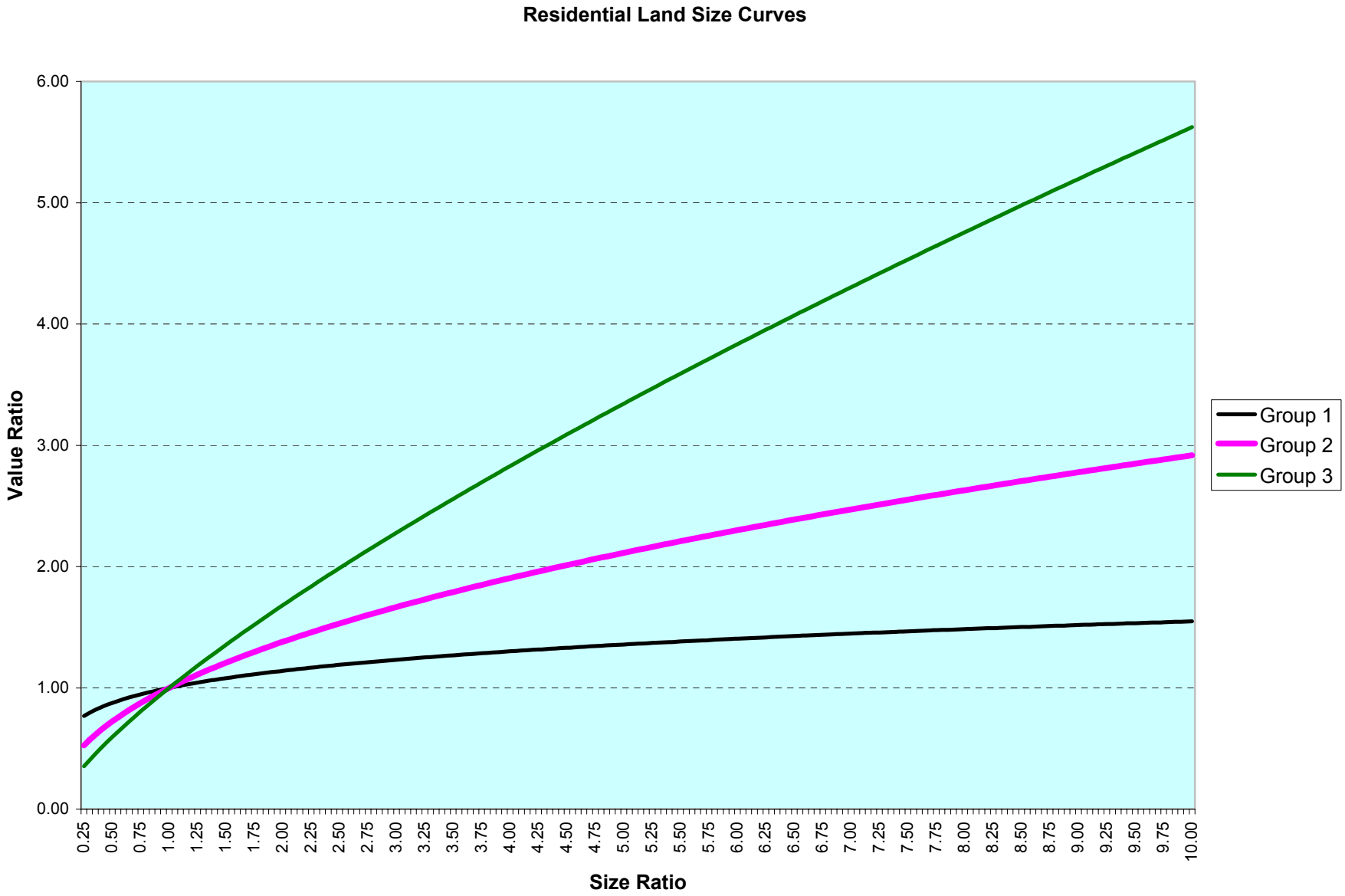
Appraised land value = Area * (Base Rate * Size Adj)

or

$300,000= 4000sf * ($100 * .75)

Residential Base Land Rates By Neighborhood

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
1A	4000 sf	$94.22	$376,880	LG1
1B	5000 sf	$78.87	$394,350	LG1
1C	5000 sf	$78.87	$394,350	LG1
2A	2000 sf	$67.61	$135,220	LG1
2B	2000 sf	$71.10	$142,200	LG1
3	2000 sf	$55.95	$111,900	LG1
4A	6700 sf	$79.82	$534,794	LG2
4B	10000 sf	$64.81	$648,100	LG2
4C	8000 sf	$73.87	$590,960	LG2
5A	1700 sf	$97.85	$166,345	LG1
5B	1700 sf	$90.49	$153,833	LG1
6A	4000 sf	$63.78	$255,120	LG1
6B	4000 sf	$61.47	$245,880	LG1
6C	2000 sf	$109.81	$219,620	LG1
6D	4000 sf	$67.66	$270,640	LG1
6E	3000 sf	$74.87	$224,610	LG1
7A	2000 sf	$90.18	$180,360	LG1
7B	3000 sf	$71.43	$214,290	LG1
7C	3000 sf	$75.83	$227,490	LG1
7D	5000 sf	$47.15	$235,750	LG1
7E	2000 sf	$100.01	$200,020	LG1
8A	2000 sf	$197.94	$395,880	LG1
8B	2000 sf	$212.81	$425,620	LG1
9A	1400 sf	$241.77	$338,478	LG2
9B	1400 sf	$250.87	$351,218	LG2
9C	1400 sf	$260.17	$364,238	LG2
10	1400 sf	$340.14	$476,196	LG1
11A	5000 sf	$74.35	$371,750	LG1
11B	5000 sf	$74.90	$374,500	LG1
11C	5000 sf	$74.82	$374,100	LG1
11D	5000 sf	$71.62	$358,100	LG1
11E	5000 sf	$66.25	$331,250	LG1
12	4000 sf	$56.04	$224,160	LG1
13	5000 sf	$131.11	$655,550	LG3
14	9000 sf	$37.23	$335,070	LG1
15A	1800 sf	$154.64	$278,352	LG1
15B	1800 sf	$141.91	$255,438	LG1
15C	1800 sf	$123.60	$222,480	LG1
15D	1800 sf	$148.43	$267,174	LG1
15E	1800 sf	$159.17	$286,506	LG2
16A	2400 sf	$56.74	$136,176	LG1
16B	2400 sf	$54.59	$131,016	LG1
16C	2400 sf	$57.76	$138,624	LG1
17	6000 sf	$59.58	$357,480	LG1
18A	3000 sf	$48.79	$146,370	LG1
18B	3000 sf	$44.44	$133,320	LG1
18C	3000 sf	$45.84	$137,520	LG1
18D	3000 sf	$52.14	$156,420	LG1
18E	3000 sf	$47.61	$142,830	LG1
19A	1800 sf	$138.10	$248,580	LG1
19B	1800 sf	$121.97	$219,546	LG1
20	1000 sf	$386.69	$386,690	LG1
21	9000 sf	$59.25	$533,250	LG2
22A	3000 sf	$52.83	$158,490	LG1
22B	2400 sf	$57.78	$138,672	LG1
22C	3000 sf	$49.70	$149,100	LG1
22D	2400 sf	$67.88	$162,912	LG1
23	2500 sf	$150.18	$375,450	LG1
24	2400 sf	$169.02	$405,648	LG2
25A	1800 sf	$217.82	$392,076	LG2
25B	1800 sf	$285.66	$514,188	LG2
25C	1800 sf	$249.64	$449,352	LG2
25D	1800 sf	$267.70	$481,860	LG2
25E	1800 sf	$313.59	$564,462	LG3
25F	2000 sf	$274.20	$548,400	LG3
25G	2000 sf	$276.79	$553,580	LG2
25H	2000 sf	$268.71	$537,420	LG3
25I	800 sf	$403.24	$322,592	LG3
25J	1200 sf	$338.73	$406,476	LG3
26	1700 sf	$219.83	$373,711	LG1
27	9000 sf	$41.67	$375,030	LG1
28A	2400 sf	$67.02	$160,848	LG1
28B	5000 sf	$45.45	$227,250	LG1
28C	5000 sf	$44.35	$221,750	LG1
29A	2000 sf	$224.03	$448,060	LG3
29B	2000 sf	$250.30	$500,600	LG3
29C	2000 sf	$212.47	$424,940	LG2
30A	8000 sf	$81.60	$652,800	LG3
30B	7000 sf	$93.99	$657,930	LG3
30C	7000 sf	$73.72	$516,040	LG2
31A	1800 sf	$138.02	$248,436	LG1
31B	1800 sf	$143.18	$257,724	LG1
32A	5000 sf	$35.07	$175,350	LG1
32B	2000 sf	$67.70	$135,400	LG1
33	2000 sf	$61.24	$122,480	LG1
34	9000 sf	$119.80	$1,078,200	LG3
35	5000 sf	$45.91	$229,550	LG1
36A	2000 sf	$172.01	$344,020	LG1
36B	2000 sf	$191.96	$383,920	LG2
36C	1600 sf	$229.59	$367,344	LG1
37	3000 sf	$132.96	$398,880	LG2
38	5000 sf	$131.85	$659,250	LG3
39A	1500 sf	$167.71	$251,565	LG1
39B	1500 sf	$191.20	$286,800	LG1
39C	1500 sf	$211.85	$317,775	LG1
39D	1500 sf	$178.24	$267,360	LG1
39E	1200 sf	$180.32	$216,384	LG1
39F	1200 sf	$213.05	$255,660	LG1
39G	1500 sf	$130.21	$195,315	LG1
39H	1500 sf	$132.31	$198,465	LG1
39J	1500 sf	$194.26	$291,390	LG1
39K	1500 sf	$210.69	$316,035	LG1
39L	1200 sf	$186.96	$224,352	LG1
39M	1500 sf	$222.62	$333,930	LG1
40A	1400 sf	$172.00	$240,800	LG1
40B	1400 sf	$202.29	$283,206	LG1
40C	1600 sf	$229.37	$366,992	LG2
40D	1600 sf	$279.62	$447,392	LG2
40E	1600 sf	$246.21	$393,936	LG2
40F	1200 sf	$258.77	$310,524	LG2
40G	1600 sf	$218.69	$349,904	LG2
41	5000 sf	$75.29	$376,450	LG1
42A	1800 sf	$125.05	$225,090	LG1
42B	1800 sf	$121.43	$218,574	LG1
42C	1800 sf	$118.16	$212,688	LG1
43A	2000 sf	$73.64	$147,280	LG1
43B	2000 sf	$73.16	$146,320	LG1
43C	2000 sf	$66.95	$133,900	LG1
46	1200 sf	$230.73	$276,876	LG1
47	3000 sf	$61.93	$185,790	LG1
48	5000 sf	$56.00	$280,000	LG1
49A	3000 sf	$88.39	$265,170	LG1
49B	3000 sf	$82.60	$247,800	LG1
49C	3000 sf	$73.60	$220,800	LG1
50A	10000 sf	$60.82	$608,200	LG2
50B	6000 sf	$90.70	$544,200	LG2
50C	14000 sf	$56.95	$797,300	LG2
50D	15000 sf	$61.14	$917,100	LG2
51	3000 sf	$66.51	$199,530	LG2
52A	1800 sf	$91.34	$164,412	LG1
52B	1600 sf	$103.27	$165,232	LG1
52C	1600 sf	$101.67	$162,672	LG1
53	5000 sf	$76.46	$382,300	LG1
54A	6000 sf	$128.41	$770,460	LG3
54B	1000 sf	$298.34	$298,340	LG1
55	6000 sf	$88.79	$532,740	LG2
56A	5000 sf	$45.91	$229,550	LG1
56B	5000 sf	$41.31	$206,550	LG1
56C	5000 sf	$42.24	$211,200	LG1
56D	5000 sf	$36.94	$184,700	LG1
66	5000 sf	$41.31	$206,550	LG1


Residential Land Size Curves
Value Ratio
6.00
5.00
4.00
3.00
2.00
1.00
0.00
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0.50
0.75
1.00
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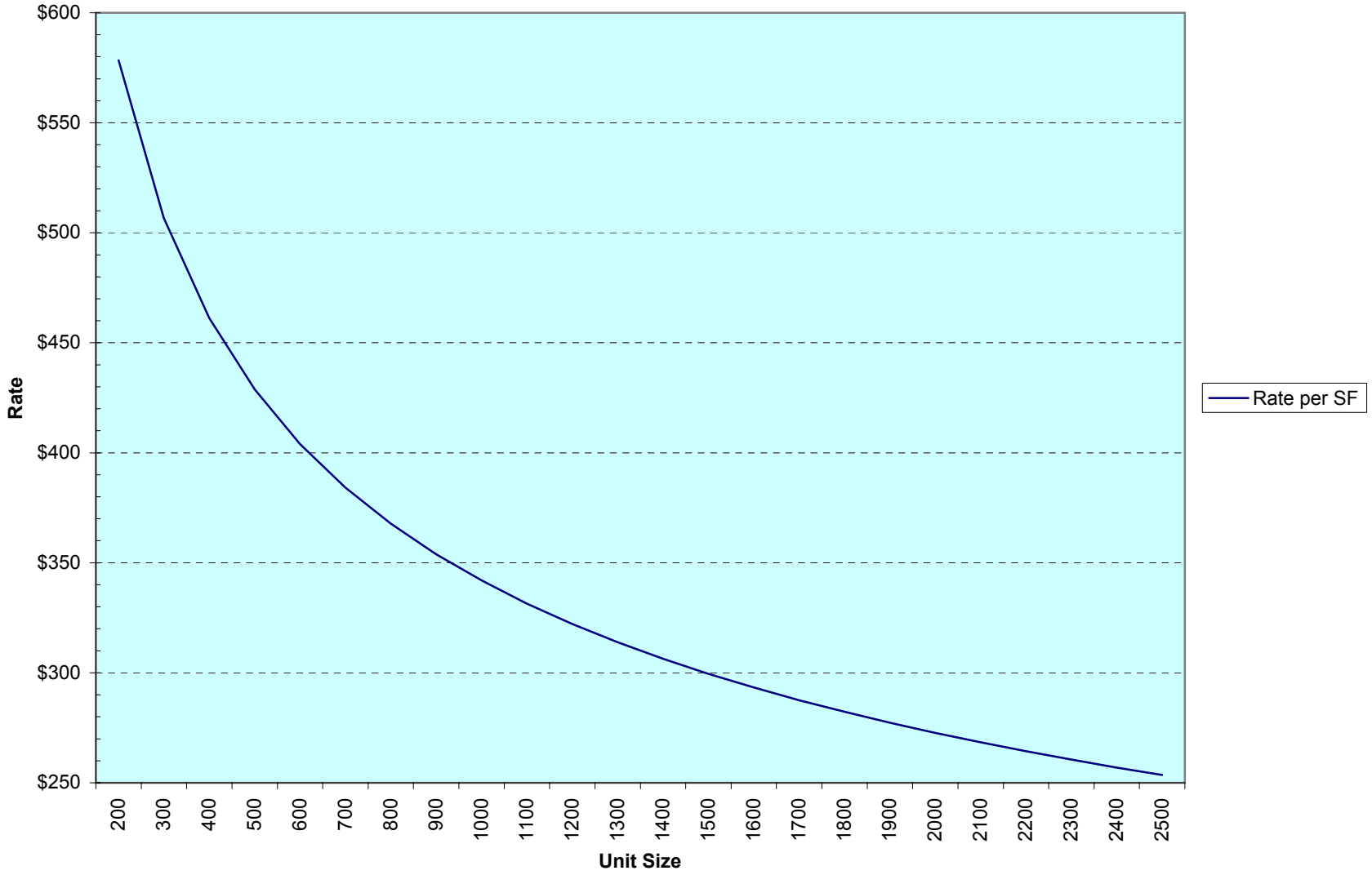
Size Ratio
Group 1
Group 2
Group 3

Condominium Size Curve



Vision© CAMA Residential Valuation Process

The market-derived cost approach to the valuation of real estate follows the generic formula of **Market Value = ((RCN-LD) + land value)**, where **RCN** is Replacement Cost New of the improvements and **LD** means Less Depreciation. When properly developed and calibrated, this approach is a reliable indicator of market value especially suited to mass-appraisal CAMA systems.

The following exercise will attempt to illustrate how the Vision© CAMA system utilized by the District of Columbia, calculates values using the above model. The first section will illustrate the development of the Replacement Cost New of a typical residence, the second will show the steps involved in determining the amount of depreciation that has accrued to the residence, and the last section will illustrate land or lot valuation.

Replacement Cost New

The Vision© CAMA system arrives at a RCN value for residential properties based on a market-calibrated hybrid cost model. The hybrid nature of the model simply means that the model employs both additive and multiplicative variables in its design and specification. The nature of the model will become clearer as we proceed through this exercise. Please also be aware that a model is dynamic in both its specifications and calibration. The specifications, those cost elements that comprise the model, may change from time to time based upon research and market conditions. *As you may discover, the dollar rates, or calibrations, contained here most likely are different from the current model in use*. The model used in this exercise is as follows:

$$\textbf{Building RCN} = [(\textbf{Base Rate} + \sum \textbf{ABRV}_n) * \textbf{Effective Area} * \textbf{Size Adjustment} + \sum \textbf{AFRV}_n] * (\textbf{MV}_0 * \textbf{MV}_2 * \ldots * \textbf{MV}_n)$$

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on use code
ABRV = Additive Base Rate Variables
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
AFRV = Additive Flat Rate Variables
MV = Multiplicative Variables

Several items will be helpful while examining the features of the cost model and they are collected as Appendix “A” of this document. You will need to refer to them often during this exercise. They include the following:

- Sample home’s Property Record Card (PRC)
- Cost.dat printout of the sample home
- 2007 CAMA Residential Construction Valuation Guideline

1. First, let's illustrate the calculation of the Effective Area of our sample home.

Building RCN = [(Base Rate + ∑ $ABRV_n$) * Effective Area * Size Adjustment + ∑ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

Illustration 1 shows the CAMA sketch of the sample home we'll be using throughout this exercise.

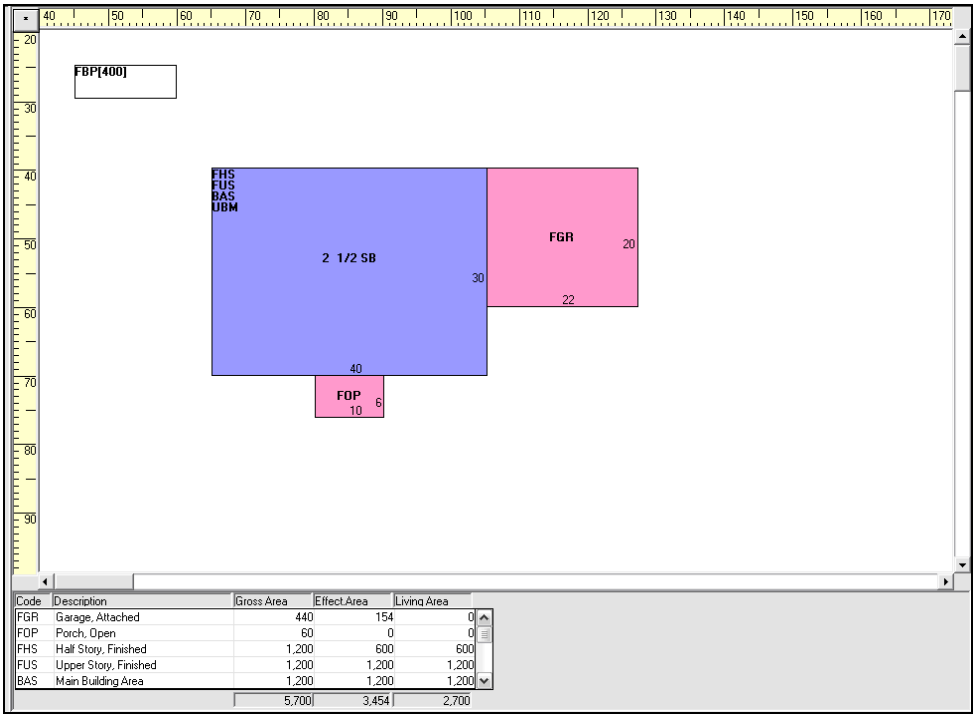
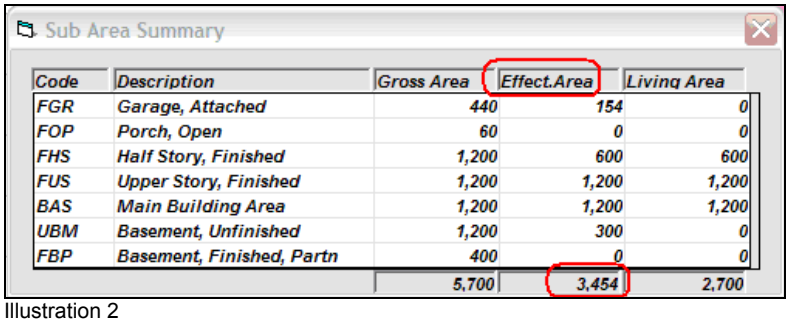


Illustration 1

It is described as a 2½ story single-family detached residence, with basement. It is brick veneer, frame construction with a two-car garage and small porch across the front. The bottom of the sketch screen in CAMA provides the information about the sizes of the various areas of the house.


Sub Area Summary

Code	Description	Gross Area	Effect.Area	Living Area
FGR	Garage, Attached	440	154	0
FOP	Porch, Open	60	0	0
FHS	Half Story, Finished	1,200	600	600
FUS	Upper Story, Finished	1,200	1,200	1,200
BAS	Main Building Area	1,200	1,200	1,200
UBM	Basement, Unfinished	1,200	300	0
FBP	Basement, Finished, Partn	400	0	0
		5,700	3,454	2,700

Illustration 2

The Effective Area is comprised of the totals of the base area (Main Building Area @ 1,200 SF), the finished second floor area (Upper Story, Finished @ 1,200 SF), the adjusted area of the finished half story (Half Story, Finished @ 50% of 1200 SF), the adjusted area of the garage (Garage, Attached @ 35% of 440 SF), and the adjusted area of the unfinished basement (Basement, Unfinished @ 30% of 1,200 SF).

The adjustments to the finished half story, garage and unfinished basement take into account these areas are not as expensive as the finished main building area. For example, if the base rate for the finished main building area is $100/SF, the rate for the garage area may only be $35/SF. The RCN value of the garage would be calculated as follows:

RCN of Garage = $15,400 or (440 SF * $35)

Another way to state the same situation is to adjust the size of the garage to 40% of its measured size and then multiply the resulting, *or effective*, size by the base rate of $100/SF:

RCN of Garage = $15,400 or [(440 * .35) * $100]

Both methods arrive at the same value for the garage. The first method is more intuitive and easier to explain to taxpayers as it adjusts for the differences in costs for the various areas. The second method again provides the same results but is much easier to model and calculate within a CAMA system, thus the effective area calculations shown here represent the methodology employed in the Vision© CAMA system.

Let's take a moment to examine the treatment of the basement in this house. The house has a full-sized basement comprised of 1,200 SF. In addition, the basement contains a finished area (400 SF), and the balance as unfinished. Illustration 3 shows the contribution of the unfinished portion to the effective area calculation. However, notice that the finished portion of the basement is not included in the effective area calculations. The value attributed to this finished area is accounted for as an Additive Flat Rate Variable later in the valuation model. The reason for this methodology is to ensure that the effective area is not erroneously overstated by the amount of any finished area in the basement.

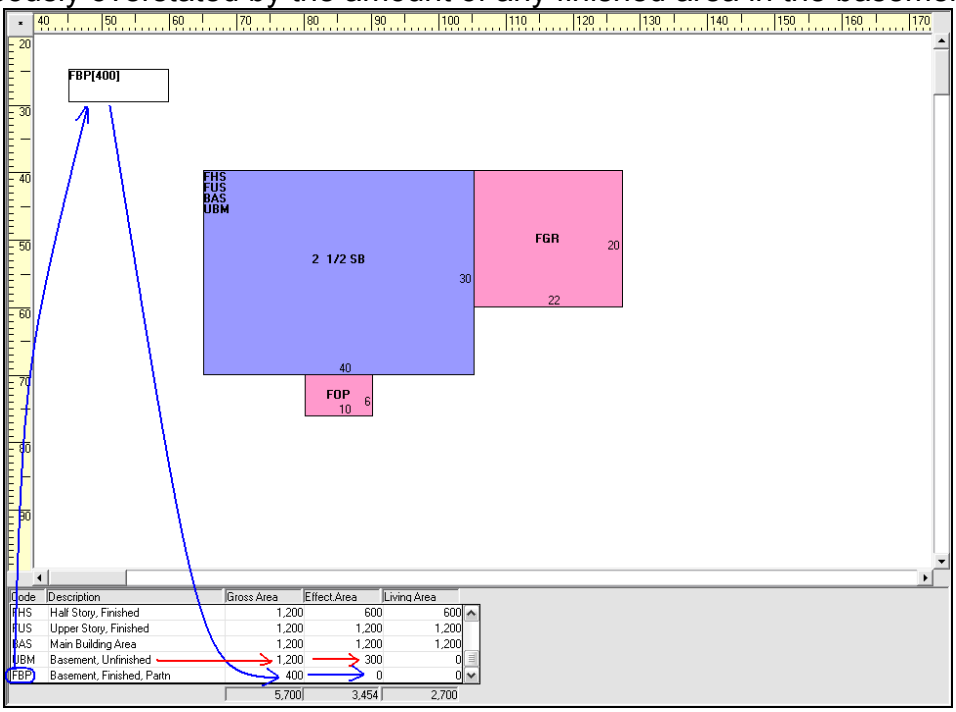


Illustration 3

Finally, the Gross Area shown in Illustration 2 is the total unadjusted size of all the areas that are a part of, and attached to, the home. The Living Area is the unadjusted size of the actual finished living area of the home.

With the inclusion of the Effective Area calculation, our cost model now looks like this:

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * *3,454* * Size Adjustment
Effective Area
+ $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

2. Next, let's look at the selection of the Base Rate for the sample home.

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * Effective Area * Size Adjustment + $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

The Base Rate is the dollar rate per square foot used in the valuation model that is derived from market analysis and selected based on the Use Code of the building. Our sample home is a "Use Code 012 - Detached", corresponding to a Residential-Detached–Single Family residence. The Base Rate is automatically selected by the CAMA system and the appropriate base rate for the sample home is $ 149.27. Now the cost model looks like this:

Building RCN = [(*$149.27* + $\sum$ $ABRV_n$) * *3,454* * Size Adjustment
Base Rate **Effective Area**
+ $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

3. The Base Rate of the home is just the start of the valuation process and it will be further modified as more specific features about the home are taken into consideration. Let's look at the first of two types of modifications that will affect the Base Rate, the Additive Base Rate Variables (ABRV).

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * Effective Area * Size Adjustment + $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

Additive Base Rate Variables represent a variety of features found in residential improvements. For example, the value for air conditioning and floor covering are such features. The typical characteristic of these ABRVs is that the features are usually an integral part, and therefore an integral cost, of the whole house. As such, the value of the particular ABRV is added to the Base Rate. Each ABRV incrementally increases the Base Rate by its own square foot rate. So therefore, the **$\sum$ $ABRV_n$** literally means the sum of all the rates for individual features are added to the Base Rate.

Highlighted in Illustration 4 are all the fields in the Construction Detail CAMA screen that can modify the selected Base Rate as ABRVs.

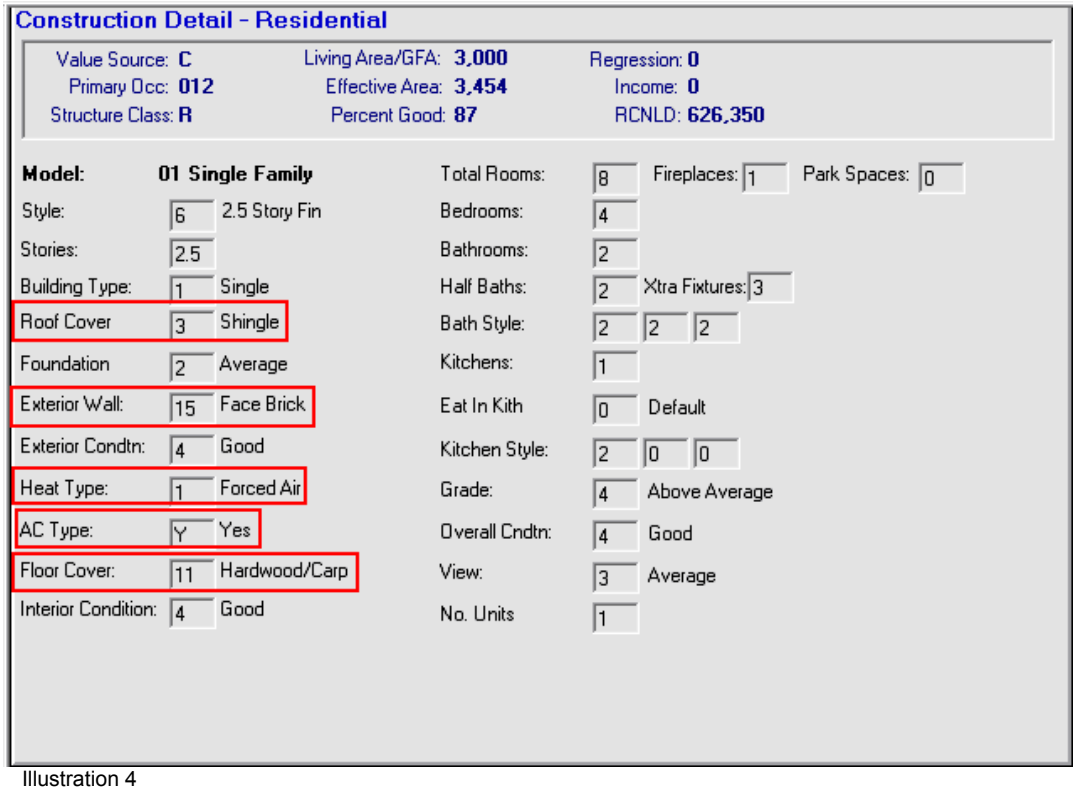


Illustration 4

The Cost.dat sheet of our sample home lists each ABRV under the heading Base Rate Adjustments as follows:

**********Base Rate Adjustments**********
AIR CONDITIONING Y (Yes) = 1.8 + BaseRate
EXTERIOR WALL 15 (Face Brick) = 3.95 + BaseRate
FLOOR COVER 11 (Hardwood/Carp) = 4.67 + BaseRate
ROOF COVER 3 (Shingle) = .68 + BaseRate

The sum, ∑, is $11.10 (1.80+3.95+4.67+0.68). This will be added to the Base Rate of $149.27 to give a modified Base Rate of $160.37.

Our model now looks like this:

Building RCN = [(*$149.27* + $11.10) * *3,454* * Size Adjustment
Base Rate ∑ ABRV$_n$ Effective Area
+ ∑ AFRV$_n$] * (MV$_0$ * MV$_2$ * … * MV$_n$)

4. Next, let us turn our attention to the second type of modification to the Base Rate - the Size Adjustment.

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * Effective Area * Size Adjustment + $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

The Size Adjustment modifies the Base Rate to account for the size difference between the "standard size" for the "typical" house in the model and the actual size of the sample house. The "standard" size of 1,800 SF for the "typical" house, consisting of a 2-story frame residence, is used as the basis for establishing the initial Base Rates used in CAMA. The adjustment in the Base Rate allows the proper square foot rate to be applied to a house based on its size. It is reasonable to expect that as a house becomes larger than typical, the rate per square foot would decrease and conversely, if the house were smaller than typical, the rate would be higher. This Size Adjustment variable is the component in the model that adjusts for this situation. Our sample home's Size Adjustment is 0.93906 as listed on the Cost.dat sheet. Now our Base Rate is calculated to be $150.60 ((149.27+11.10) * 0.93906).

Because the adjustment is less than 1.00, it would be proper to conclude that our sample home is larger than the typical 2-story home in the District of Columbia. Had the sample home been smaller than 1,800 SF, the Size Adjustment would have been greater than 1.00. The use of size adjustments eliminates the need for the traditional cost tables based on size.

The cost model continues to grow, and now looks like this:

Building RCN = [(*$149.27* + *$11.10*) * *3,454* * *0.93906*
Base Rate $\sum$ $ABRV_n$ Effective Area Size Adjustment
+ $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

5. We are finished establishing the Base Rate for our sample home and now turn to the Additive Flat Rate Variables (AFRV). This portion of the cost model is relatively straightforward. The individual Additive Flat Rate Variables are summed and the added to the product of the previous calculations.

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * Effective Area * Size Adjustment + $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_n)

Here is where we make allowances for individual extra features contained in the sample house. Illustration 5 shows some of those features that constitute Additive Flat Rate Variables in the cost model:

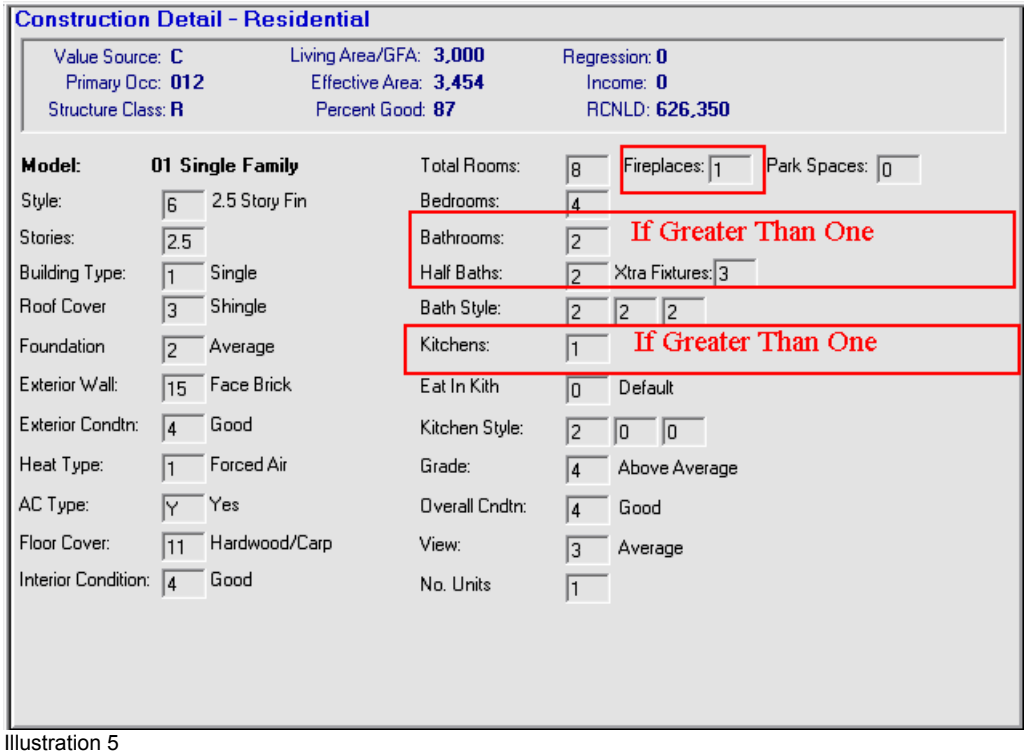


Illustration 5

Unlike the Additive Base Rate Variables (ABRV) described earlier, most of these features are not an integral portion of the whole house, but stand alone, so to speak. Examples include such items as fireplaces, extra bathrooms, and extra kitchens. Again, as with other variables in the cost model, the values of these features are derived from market analysis.

Our sample home has several Additive Flat Rate Variables (AFRVs), including additional bathrooms and a fireplace. The cost for one full bath and one kitchen is always included in the original base rate. Any bathrooms or kitchens over and above the first are accounted for as AFRVs.

The value of an additive flat rate variable is calculated by multiplying the number of "units" by the dollar rate per unit. For example, illustration 5 shows our sample home also has two half baths. The AFRV for the half baths is $21,440 (2 "units" X $10,720 per unit) as shown in a portion of the Cost.dat file below.

Also included in the AFRVs are the partitioned finished basement and the small open porch on the front of the house. Recall that in illustration 3, neither of these areas was included in the calculation of the effective area of the house, therefore, their valuations are included here, as AFRVs.

The partitioned finished basement is calculated to be $18,000. In this case, "units", the gross square footage of 400 SF (shown in the sketch area of the record), are multiplied by the rate of $45 per SF. The open porch is calculated in a similar manner.

**********Flat Value Additions**********

FULL BATHS OVER 1 = 16000 + RCN
HALF BATHS = 21440 + RCN
FIREPLACES = 7100 + RCN
PARTITIONED FINISHED BASEMENT = 18000 + RCN
OPEN PORCH = 801 + RCN

The sum, $\sum$, is $63,341 (16,000+21,440+7,100+18,000+801) that will be added to the product of the previous portions of the cost formula.

The cost model is almost finished for our sample home, and now looks like this:

Building RCN = [(*$149.27* + *$11.10*) * *3,454* * *0.93906*
Base Rate **$\sum$ ABRV$_n$** **Effective Area** **Size Adjustment**
+ *$63,341*] * (MV$_0$ * MV$_2$ * … * MV$_n$)
$\sum$ AFRV$_n$

6. The last portion of the cost model used to calculate the RCN are the multiplicative variables (MV).

Building RCN = [(Base Rate + $\sum$ ABRV$_n$) * Effective Area * Size Adjustment + $\sum$ AFRV$_n$] * (MV$_0$ * MV$_2$ * … * MV$_n$)

This portion of the formula can have the largest influence on the cost model. Each multiplicative variable modifies *all* of the cost data that has preceded it. These variables modify the Base Rate, the sum of all the increases to the Base Rate ($\sum$ ABRV$_n$), the Size Adjustment, and the sum of all the Flat Rate Variables ($\sum$ AFRV$_n$). This is where such important characteristics as the building grade, building condition, remodeling, and location factors have their impact.

The sample home is graded “Above Average - 4”, and consequently has a 1.10 multiplicative factor. This one variable, grade, is going to increase the RCN value of the sample home by 10%. Grade can have a sizable impact on the final value of the building. For example, a "Superior - 8" increases the final rate by 48% over that of an "Average Quality - 3" house.

The condition of the building is also accounted for by the multiplicative variables. The interior, exterior and overall conditions of our sample home are each "Good" and the corresponding multiplicative variable for each is 4.8%. The level of condition may be different for each of the three variables and therefore the coefficients may be different. Please refer to the *2007 CAMA Residential Construction Valuation Guideline --RPAD* for these and all other coefficients used in the valuation model.

Just as construction grade has a significant impact on the final value of a house, so does condition. For example, a house in overall "Poor" condition throughout will have its value reduced by 20.6%, whereas a house in excellent condition throughout will have its value increased by 10.5%. That's a range of over 31%.

Illustration "6" shows a portion of the features that constitute the multiplicative variables in the cost model:

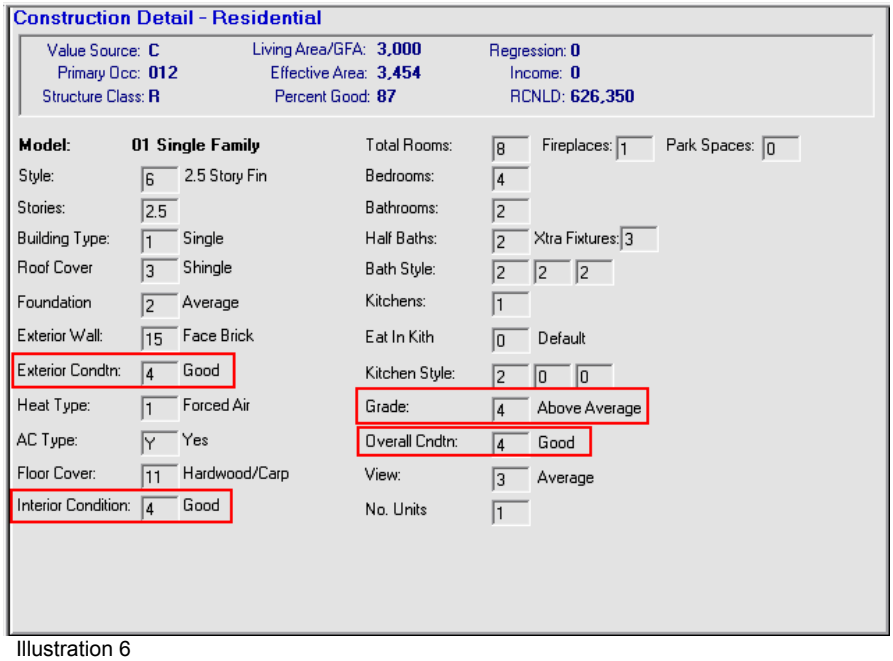


Illustration 6

Another important multiplicative variable, Remodel Type, takes into account whether or not the house has been remodeled and to what extent. In addition, the age of the remodel factors into the amount of adjustment applied by this multiplicative variable.

Our sample home was remodeled in 2001. The portion of the CAMA record that captures this information is shown in Illustration 7 below.

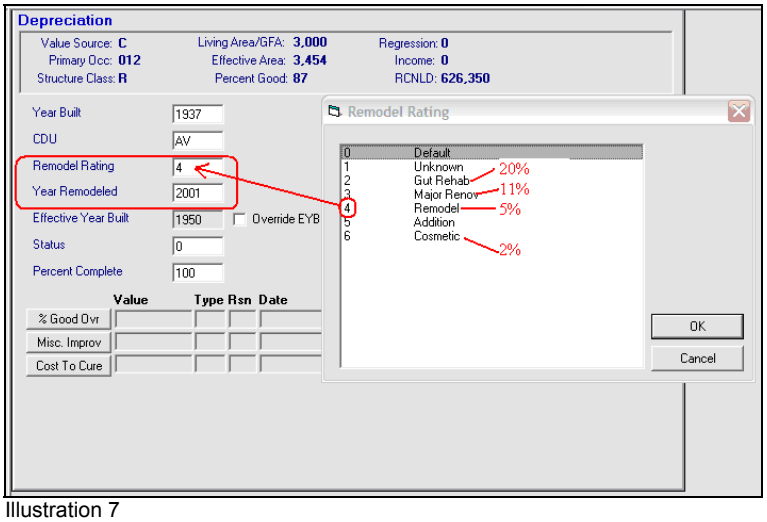


Illustration 7

Obviously, a "Gut Rehab" would increase the value of property more than "Cosmetic" changes, and the coefficients listed in the above illustration demonstrate this. Our sample home was remodeled in 2001, indicating that the MV should be five percent. Five percent would be the correct amount if the remodel occurred in 2005, but it actually occurred in 2001, four years earlier. The CAMA model takes into consideration how long ago a remodel occurred and reduces its impact, as it becomes older. The rate of reduction of the MV is five percent per year. After twenty years, a remodel has no affect on value. In this example, our sample home's remodel occurred four years ago and thus the MV is reduced by twenty percent to 4.0% (5%*.80).

The last multiplicative variable, “Sub-Neighborhood Adj A", is the local neighborhood multiplier established within the particular neighborhood where the sample home is located. This variable is going to lower the RCN value of the sample home by 6.3%. The “Sub-Neighborhood Adj” reflects the market-derived fact that location is a very significant factor in the value of real estate. Two otherwise identical homes can have a substantial difference in value based on their locations.

The variables for our sample home are summarized in the Cost.dat file as follows:

**********Factor Adjustments**********
OVERALL CONDITION 4 (GOOD) = 1.048 x RCN
EXTERIOR CONDITION 4 (GOOD) = 1.048 x RCN
GRADE 40 (Above Average) = 1.1 x RCN
INTERIOR CONDITION 4 (GOOD) = 1.048 x RCN
REMODEL FACTOR 4 = 1.04 x RCN
SUB-NEIGHBORHOOD ADJ A = .937 x RCN

Each MV is multiplied together to determine the combined, or overall, MV. The sample home’s MV is 1.2338132 (1.048*1.048*1.1*1.048*1.04*.937).

7. Finally, the Building RCN model is complete and contains the specific data of the sample home used in this demonstration. The market-derived cost model for the sample home is as follow:

Building RCN = [(Base Rate + $\sum$ ABRV$_n$) * Effective Area * Size Adjustment + $\sum$ AFRV$_n$] * (MV$_0$ * MV$_2$ * … * MV$_n$)

$ 719,947 = [($149.27 + $11.10) * 3,454 * .93906 + $63,341] * (1.2338132)

The Cost.dat file shows a summary of the same information.

**********Building #1 Calc Start**********
Cost Calculation for pid, bid = 182803,173587
Account Number = 9999 9999
Use Code = 012
Cost Rate Group = R12
Model ID: R06

Section #
Base Rate: 149.27
Size Adjustment: .93906
Effective Area: 3454
Adjusted Base Rate = (149.24 + 11.1) * .93906
Adjusted Base Rate: 150.6
RCN = ((150.6 * 3454) + 63341) * 1.23381334499738
RCN: 719947

The replacement cost new for our sample home is $719,947. There is still one thing left to address before we turn our attention to depreciation. Our sample home has a built-in sauna in the basement. This item was not costed as a component of the sample home, but rather as a Special Building Feature, with its own unit price of $ 12,680. Also, note that the depreciation applied to the Special Building Features is identical to the amount applied to the main building. See illustration 6 below.

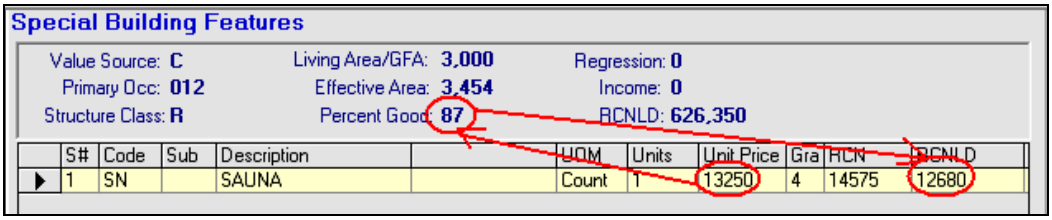


Illustration 8

We now know the total replacement cost new (RCN) of our sample home, including the sauna, is $ 733,197 ($719,947 + $13,250).

If the sample home were brand new, we'd be finished, but it was actually built in 1937.

Next, we need to address accrued depreciation . . .

Depreciation

Depreciation is defined as a loss in the upper limits of value from all sources. Typically, three types of depreciation can affect real estate - physical deterioration, functional obsolescence and economic obsolescence. This next portion of the demonstration will illustrate how Vision© calculates the amount of depreciation accrued to our sample home.

Several terms come into use when discussing depreciation in CAMA. They are defined as follows:

- Actual Age: The mathematical difference between the Base Year and the actual year the improvement was built to completion.
- Actual Year Built (AYB): The earliest time the main portion of the building was built. It is not affected by subsequent construction.
- Base Year: The year, usually the current year, that the depreciation table is calibrated, such that the age of a building built during the base year would be 0 years old.
- Depreciation Table: A market-driven table that lists the amount of depreciation corresponding to an Effective Year Built and the Base Year predicated upon a specific economic life.
- Effective Age: The mathematical difference, in years, between the Base Year and the Effective Year Built.
- Effective Year Built (EYB): The calculated or apparent year, that an improvement was built that is most often more recent than AYB. The EYB is determined by the condition and quality of the improvement. Subsequent renovation, additions, upgrades and the like, extend an improvements remaining economic life and therefore cause the EYB to be closer to the Base Year than the AYB.
- Percent Good: The mathematical difference between 100 percent and the percent of depreciation. (100% - depreciation %) = percent good

The RCN model used above indicated that our sample home has an RNC of $733,197. As stated earlier, the home was built in 1937 so there should be some depreciation to deduct from the RCN. We'll uses a five-step process to depreciate improvements:

1. Calculate the Actual Age of the improvement
2. Determine the Effective Age of the improvement
3. Determine the improvement's Effective Year Built
4. Look-up Percent Good corresponding to EYB on depreciation table
5. Apply selected depreciation to RCN to determine RCNLD

1. Our first step is to calculate the Actual Age of our sample home. As you are aware, a valuation is always qualified as of a specific date. For ad valorem purposes in the District of Columbia, the valuation date is January 1 immediately preceding the tax year. In our example, the tax year is 2007; therefore, the valuation date is January 1, 2006. This date is also significant in terms of the depreciation accrued to improvements. In the past, the nature of triennial assessments required that base years within a Tri-Group remain unchanged for a period of three years. Now, however, with the return to annual assessments, the base year coincides with the valuation date. The Base Year is used to determine the Actual Age of the sample home. In this case, the sample home's Actual Age is 69 years (2006-1937).

2. The next step is to determine the sample home's Effective Age. Effective Age may or may not represent actual or chronological age. The premise is simple but the application can be confusing. If a home is built and never maintained (painting, re-roof, etc.) or remodeled, the home would quickly depreciate from physical deterioration. The CAMA system would depreciate the home at the fastest rate possible based on the selected Depreciation Table. For example, CAMA uses a 75-year Economic Life Depreciation Table for residential property. If the home were left to rot, the Effective Age would most likely be the same as the Actual Age.

Let's say the owners of our sample home have completely neglected their property from the time it was built in 1937 to the present. Their home would have an effective age of 69 years as indicated on the Depreciation Table below:

Depreciation Table

Base Year 2006

Effective Age of Building	*% Depr.*	*% Good*	*Effective Year Built*
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
9	4	96	1997
10	5	95	1996
11	5	95	1995
12	5	95	1994
13	5	95	1993
14	6	94	1992
15	6	94	1991
16	6	94	1990
17	6	94	1989
18	6	94	1988
44	11	89	1962
45	11	89	1961
46	11	89	1960
47	11	89	1959
48	12	88	1958
49	12	88	1957
50	12	88	1956
51	12	88	1955
52	12	88	1954
53	12	88	1953
54	13	87	1952
55	13	87	1951
56	13	87	1950
57	13	87	1949
58	13	87	1948
59	13	87	1947
60	14	86	1946
61	14	86	1945
62	14	86	1944
63	14	86	1943
64	14	86	1942
65	14	86	1941
70	15	85	1936
75	16	84	1931

Illustration 1

The Actual Year Built (1937) and the Effective Year Built (1937) would be the same and consequently the Effective Age is 70 years. Moving across the table,

we see that a home with an EYB of 1937 has 15 percent depreciation and therefore is 85 Percent Good (100%-15%). If the RCN of our sample home is $ 733,197, the depreciated value, RCNLD, is only $ 623,217 (733,197* 0.85).

Note: The depreciation table moves in 5-year periods towards its end; this explains the apparent inconsistencies in 70 years v. 69 years. The Cost.dat file represents the actual numbers used in calculations.

The situation described above rarely, if ever, occurs in the market. People do maintain and renovate their homes and in doing so, extend the home's useful or remaining economic life. As homeowners repair roofs, paint siding, replace windows and furnaces, they *prolong* the life of the home and consequently *decrease* its Effective Age.

Along with the actual age of the sample home, the illustration below shows which variables within CAMA affect the calculation of effective year built.

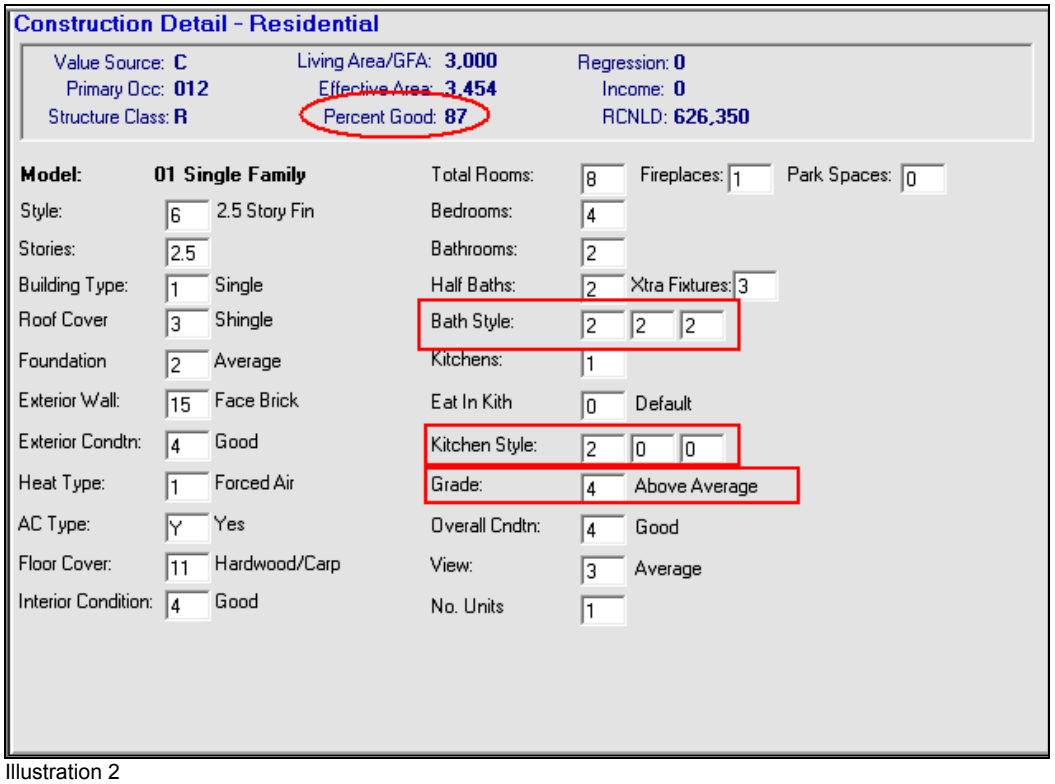


Illustration 2

All of the features or variables dealing with depreciation, highlighted in Illustration 2 are multiplicative variables. As such, they are multiplied one by the other and then the Actual Age is multiplied by the product of the MVs. Below is the portion of the Cost.dat file that summaries these MV for our sample home.

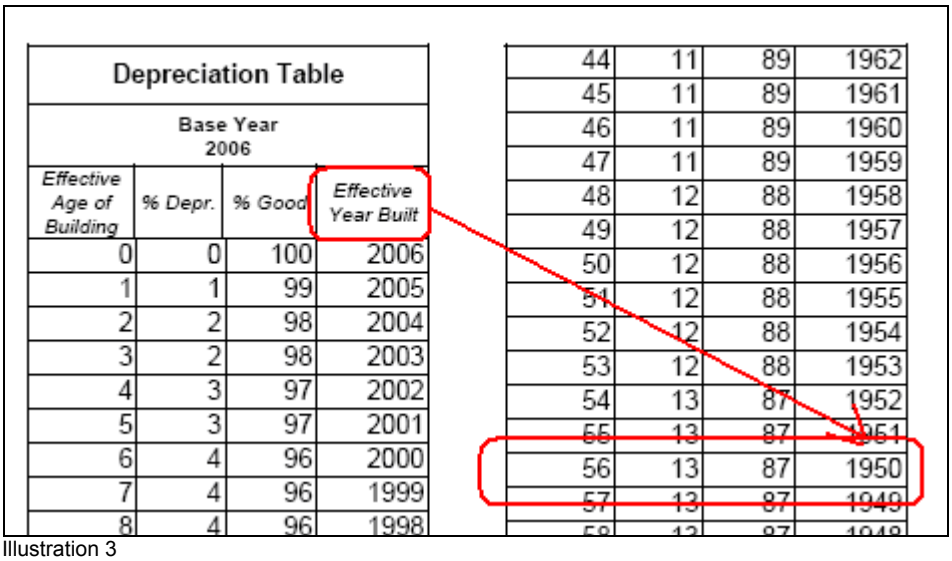
```
**************Effective Age Adjustments***************
      BATH STYLE 2 (Semi-Modern) = .95 * Age
      EFF AGE GRADE 40 (Good Quality) = .95 * Age
      KITCHEN STYLE 2 (Semi-Modern) = .9 * Age
```

The product of each of these MV adjustments is calculated to be 0.81225 (0.95 * * 0.95 * 0.9). This product is then multiplied by the Actual Age to calculate the Effective Age. Recall our sample home's Actual Age is 69 years. The Effective Age is calculated to be 56 years (69 * 0.81225). Instead of CAMA using 69 chronological years to calculated depreciation, it will use 56 years. Below is a portion of the Cost.dat file that shows these calculations.

```
*****************************************************
      Actual Year Built:  1937
      Effective Age = 69 * .81225
      Effective Age:  56
      Percent Good = 87
      RCNLD: 626350
```

3. We're almost finished. Knowing the Effective Age makes the calculation of the Effective Year Built for our sample home very simple. The Effective Year Built is 1950 (2006 – 56).

4. Having established the Effective Year Built, we look up 1950 on the *75-Year Economic Life Depreciation Table* and find that the Percent Good is 87% for that year. See Illustration 3 below.



Depreciation Table

Base Year 2006

Effective Age of Building	*% Depr.*	*% Good*	*Effective Year Built*
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
44	11	89	1962
45	11	89	1961
46	11	89	1960
47	11	89	1959
48	12	88	1958
49	12	88	1957
50	12	88	1956
51	12	88	1955
52	12	88	1954
53	12	88	1953
54	13	87	1952
55	13	87	1951
56	13	87	1950
57	13	87	1949

Illustration 3

5. The last step in the process is to simply multiple the RCN by 0.87 and we have RCN LD. The depreciated, market-derived cost approach value of the sample home used in this demonstration is $ 626,350.

Some closing comments regarding depreciation are in order. Recall from the outset that we defined depreciation as a loss in value resulting from physical deterioration, functional and/or economic obsolescence. The demonstration above dealt only with depreciation attributed to the physical deterioration of the sample home. This, by far, is the most common type of depreciation that exists in residential property. However, occasions may require additional depreciation because of excessive physical deterioration, functional and/or economic obsolescence. One must use caution when invoking these types of depreciation. The market must support any decision regarding the extent of these adjustments. Below illustrates our sample home with an additional ten percent economic obsolescence. A gas station was built across the street from the home, and a recent sale of the next-door neighbor's house showed the impact of this situation.

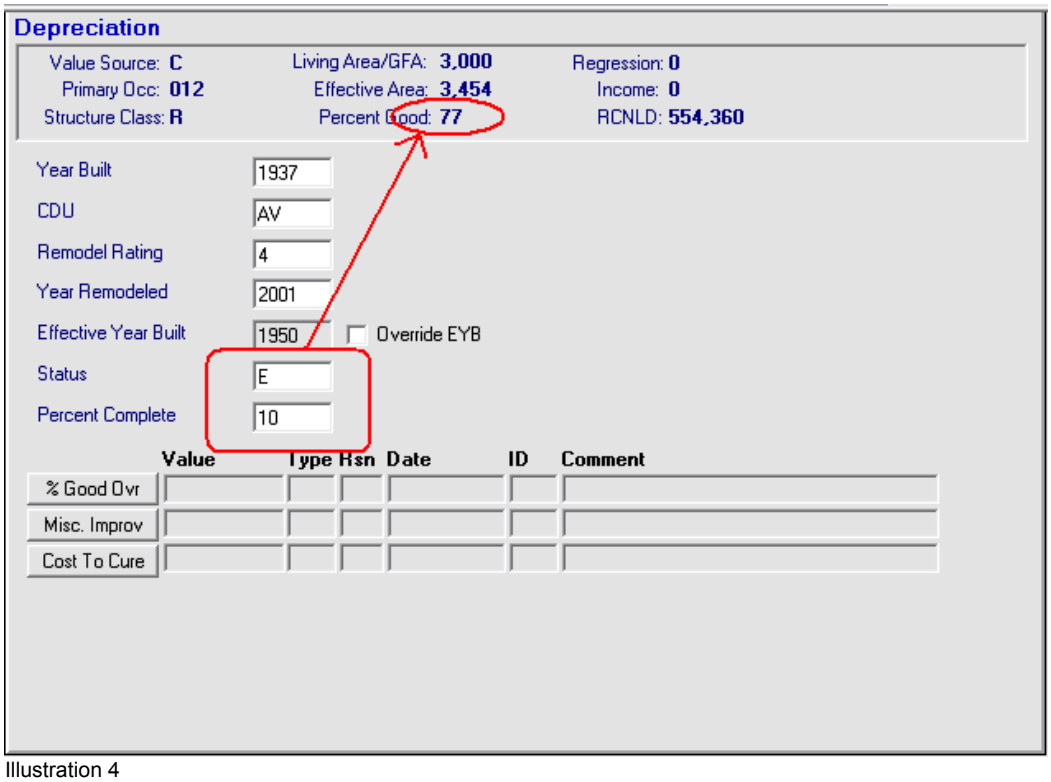


Illustration 4

The actual mechanics of adjusting depreciation for functional or economic obsolescence within CAMA are briefly discussed below. If the situation occurs, seek guidance from your supervisor and/or CAMA manager.

Illustration 5 shows the portion of the CAMA screen used to allow for additional depreciation. It is not necessary to make adjustments in the "CDU" field or to override the EYB field. Nor is it necessary to enter information on the lower 1/3 of the screen. The "Status" and "Percent Complete" fields are the only two fields that are utilized to account for additional depreciation.

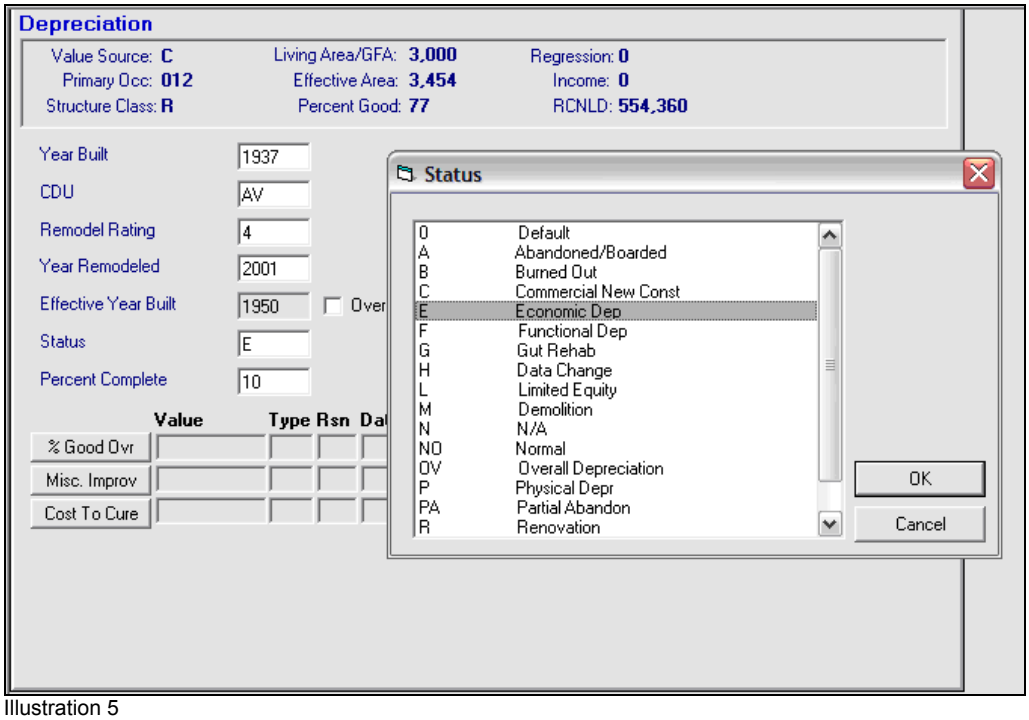


Illustration 5

The “Status” field’s pick-list is expanded in Illustration 6 to show only those types of items that have a direct affect on depreciation and the nature of the affect. Notice that only a limited number of Status Codes are functional within CAMA and their affect on depreciation is either to ***replace*** the existing amount in the “% Good” field or ***decrease*** the “% Good.” The corresponding numeric amount that will affect the “% Good” is entered in the field called “Percent Complete.” Please note that the field name “Percent Complete” is somewhat erroneous because the word “Complete” has no meaning in this context. This is the field that you will enter the amount to either decrease the existing “% Good” or replace the existing “% Good," based on the Status Code selected.

Status

Status Codes

Code	Description	Affect on % Good
0	Default	NONE
A	Abandoned/Boarded	NONE
B	Burned Out	NONE
C	Commercial New Const	REPLACE
E	Economic Dep	DECREASE
F	Functional Dep	DECREASE
G	Gut Rehab	NONE
H	Data Change	NONE
L	Limited Equity	NONE
M	Demolition	NONE
N	N/A	NONE
NO	Normal	NONE
OV	Overall Depreciation	REPLACE
P	Physical Depr	DECREASE
PA	Partial Abandon	NONE
R	Renovation	NONE
T	Order of Taking	NONE
V	Vacant	NONE

Illustration 6

Recall our example of the gas station. The Percent Complete field has “10” as it’s value. Based on the “E” Status Code, we know that the original depreciation will increase by ten percent resulting in a decrease in Percent Good to 77% (87-10).

Another comment regarding depreciation concerns the impact that the quality of design, material and workmanship have on depreciation. The grade assigned to a home obviously makes a considerable difference in the final RCN, but it also plays a substantial part in determining the amount of depreciation accrued to the home. It is easy to understand that if all other things were equal, a home built with better material and workmanship would age better than one with poorer materials and workmanship. The higher quality the home the more slowly it will deteriorate. Conversely, a shoddily built home will age more quickly than the average home.

Lot Valuation

Now that we've calculated RCN in the first section and the amount of depreciation in the second section, we know the value of our improvements from the formula RCN-LD to be $639,030.

Next let's turn our attention to the final portion of the process – land or lot valuation. There are several aspects or characteristics to land that affect its value. Needless to say the old adage "Location, Location, Location!" is certainly true, but beyond that there are considerations for such things as lot size, shape, frontage, topography, view, restrictions and the like that influence the final value of land.

Let's once again return to our sample home and examine the details on the PRC to get our first look at the lot valuation.

LAND LINE VALUATION SECTION																		
B#	Occ	Description	Zone	Frontage	Depth	Units		S.I	I. Factor	I.T	Price	Size Adj	Site Rating		Adjustments/Special Use		Notes	Land Value
1	012	Residential Detached Single Fa				6,000	SF	P	1.00		63.14	0.8630		1.00	I:80%	V:0	Poor topo in back; River view	375,060

Illustration 1

Notice that the detail tells us the lot size, the price per unit, and any adjustments that affect the lot. The model used to calculate the value of lots in CAMA is as follows:

Lot Value = [Lot Size *((Base Rate * Size Adjustment) + ∑ Dollar Adjustments) * ∑ Percent Adjustments]

The formula represents the following steps:

1. *Determine the base rate for the particular neighborhood where the lot is located and multiply that rate by the 'size adjustment factor';*
2. *Next, add the adjusted rate in step one to the sum of all dollar amount adjustments;*
3. *Next, multiply the results by the lot size;*
4. *Lastly, multiply that result by the product of all percentage adjustments.*

Most of this activity can be seen in the Land.Dat file in Appendix A of this document. You may wish to refer to it as we go through this exercise.

Let's expand the discussion and follow the steps of the process to explain the lot valuation of our sample home in more detail.

1. "*Determine the base rate for the particular neighborhood where the lot is located and multiply that rate by the 'size adjustment factor'."*

The residential base land rates are different for each (sub)neighborhood in the District. Each year, the current base rates are updated in CAMA and published in the *Assessor Reference Materials*. In addition to the base rates, the base lot sizes and size curves are included. Our property is located in Chevy Chase, and below shows the portion of the land rate table for that neighborhood:

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
11 A	5,000 sf	$73.16	$365,800	LG 1

Illustration 2

The base rate for our property is $ 73.16 per sf.

The size adjustment factors are also incorporated in CAMA. These factors make allowances for lots whose sizes differ from the standard "base" size for the lots in that particular (sub)neighborhood. Recall that as the size or area of a building or lot increases, the dollar rate per unit typically goes down from the base rate, and conversely, the dollar rate typically increases over the base rate when the area or size is smaller than the standard base rate.

Recall that our lot is 6,000 sf in size. The table states that the Base Lot Size is 5,000, so a size adjustment will be necessary. Intuitively, one would expect that the size adjustment would be less than 100% because the actual lot is larger than the base size lot. CAMA contains the algorithms to calculate the proper size adjustment. Essentially, it determines which "land size curve" is to be used as the basis for determining the adjustment, then it mathematically interpolates and extrapolates the factor from the particular size table associated with the curve based on the amount of difference between the standard size and the actual size.

In the case of our sample home, the size curve is LG 1. This curve is one of the four curves existing in CAMA and it is effect on rates is the lowest of the curves. Based on the difference between the base size and the actual size of the lot, CAMA has selected a factor of 0.863 as the adjustment. If the lot were smaller, say 4,000, sf the selected factor would have been 1.198.

So, to finish step 1, we multiply the (sub)neighborhood base land rate by the calculated size adjustment factor to arrive at a size adjusted rate of $ 63.14 ($73.16 * 0.863).

2. "*Next, add the adjusted rate in step one to the sum of all dollar amount adjustments."*

If there are any dollar-amount adjustments to the rate, this is the time to make the them. For example, you may choose to lower the rate by $10 per sf on a particular lot in a neighborhood because it is on a busy street corner. In our example, the rate is increased by $15 per sf because the property has an

excellent view of the river not enjoyed by the other lots in the neighborhood. This adjustment increases the rate to $78.14 ($63.14 + $15.00).

Use caution when making any adjustments to the calculated rates. If adjustments are warranted, seek guidance from your supervisor or CAMA manager.

3. *"Next, multiply the resulting rate by the lot size."*

This is an easy step. The land value at this point is $468,822 ($78.14 * 6,000).

4. *"Lastly, multiply that result by the product of all percentage adjustments."*

As before, here's where we can reflect adjustment to the lot for such things as topography, view, shape irregularity, and the like. There may be an easement across the back of the lot that affects value. Again be certain that the adjustment is peculiar to just the subject or a few lots in the (sub)neighborhood, otherwise the condition would have been already accounted for in the calculations done by the multiple regression analysis process that generated the original base rates, size curves and standard lot sizes.

Our sample lot had a steep drop-off across the back that the assessor accounted for by adjusting the final rate by 80 percent. This is the last calculation to determine the subject property's lot value. The final value of our lot is $ 375,060 (468,822 * 0.80).

The illustrations below summarize much of the information discussed in this land valuation exercise. Illustration 3 shows a portion of the data entry screen in Vision© CAMA and the second, illustration 4, is the Land.dat file with selected information highlighted.

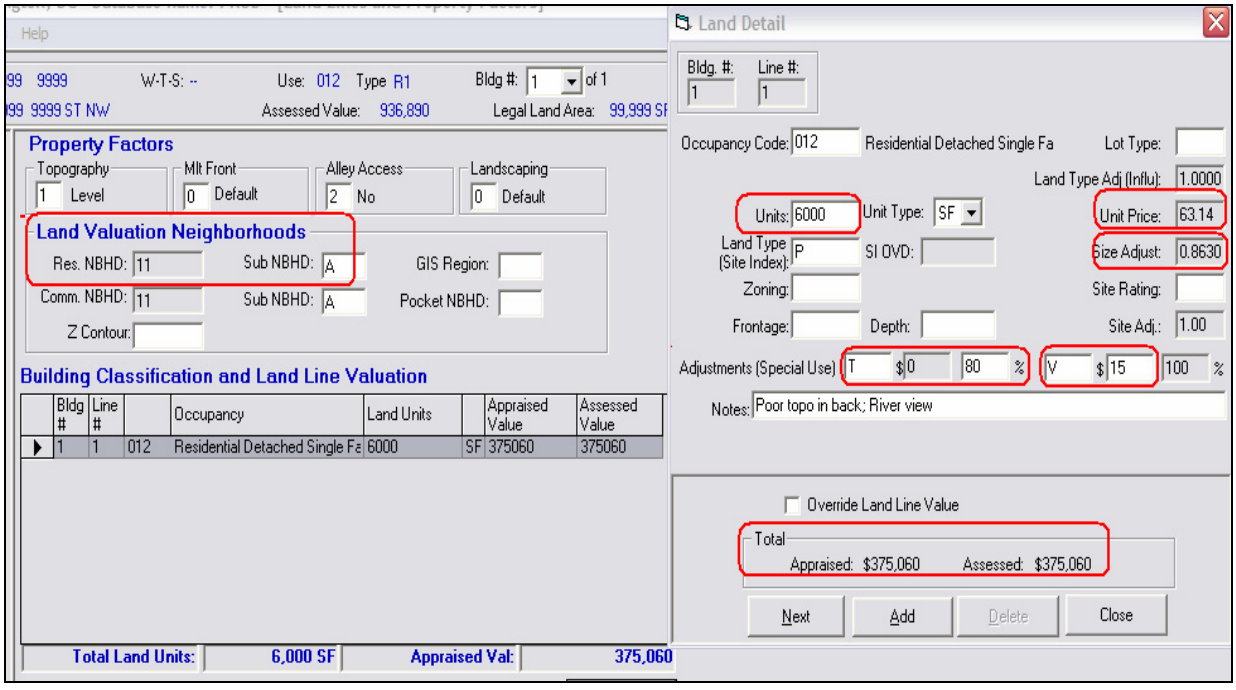


Illustration 3

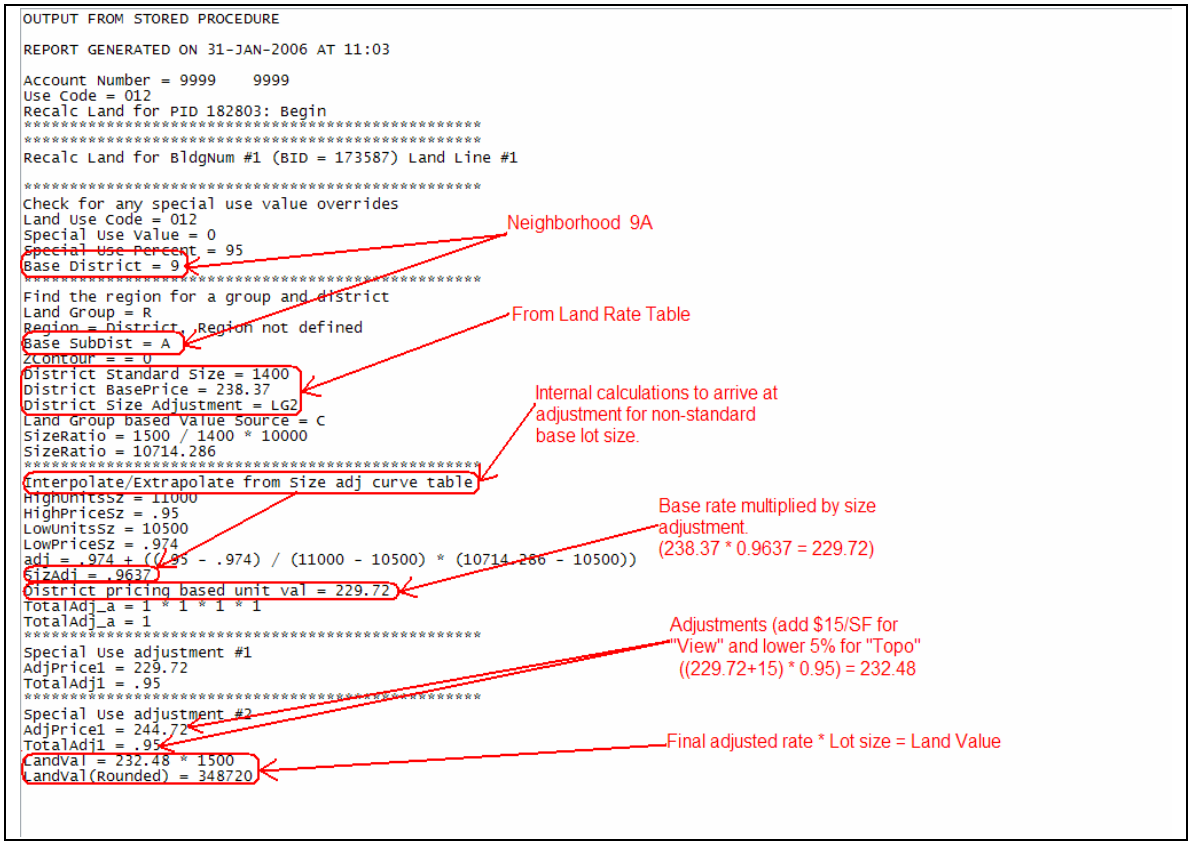


Illustration 4

Some Final Thoughts

We have introduced you to some of the most elementary aspects of property valuation using the District's Vision® CAMA system. We have developed the RCN of a fictitious home, reduced its value by the accrued depreciation and finally added the land value component to complete the appraisal. This guideline is merely a small window, a first step, in the complex field of CAMA mass appraisal. A CAMA system robust enough to appraise 180,000 different properties will necessarily be comprehensive and complex. As you explore and utilize the program make certain that you fully understand the ramifications and results of your actions. Your supervisor and/or CAMA manager will always be available to assist you.

Appendix A

1. Property Record Card, SSL 9999 9999
2. Cost.dat print-out, SSL 9999 9999
3. Land.dat print-out, SSL 9999 9999
4. 2008 CAMA Construction Valuation Guideline – Residential

ACCOUNT #: 9999 9999 | Property Location: 9999 9999 ST NW | Batch #:
Internal ID: 182803 | WASHINGTON, DC 99999 | Bldg #: 1 of 1 | Card 1 of 1 | Print Date: 02/09/2006 14:45

CURRENT OWNER

JOSEPH TAXPAYER
JANE DOE-TAXPAYER
626 BREAKAWAY DR

WASHINGTON, DC 20000
Additional Owners:

ACCOUNT INFORMATION

Use Type	Use Code	Lot SF	Status Code
R1	012	99,999	E

VISIT/CHANGE HISTORY

Date	ID	Type	Inf. Source	Code	Description
8/8/2003	002	C	O	P	Permit Work
7/23/2003	002	E	N	P	Permit Work

CURRENT ASSESSMENT

Description	Use	Assessed Value
RESIDNTL	012	567,040
RES LAND	012	375,060
Value Source: C	Total:	942,100

	Value Date	Value Status
Reg	02/09/2006	
Cost	02/09/2006	C

RES

District of Columbia Real Property Assessment Division

OWNERSHIP HISTORY

	INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	A.C.
JOSEPH TAXPAYER	123456	02/29/2000	Q	I	654,321	01

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Use	Type	Val Source	Land Value	Building Value	Assessed Value
2007	012	R1	C	375,060	639,030	1,014,090
2006	012	R1	C	303,620	636,800	940,420
2005	012	R1	C	221,870	555,760	777,630
2004	012	R1	O	183,470	439,510	622,980

APPEALS

Appeal #	Decision	Amount	Revised AV

PROPERTY FACTORS

TOPO.	MLT FRONT	ALLEY ACCESS	LANDSCAPE
1 Level	0 Default	2 No	0 Default

TAX TYPE

Year	Type	Description

SUPPLEMENTAL DATA

Type	Description
Neighborhood	
Part Part	
Mixed Use	
Vcnt Lnd Use	12
Model Type	
Base Lot Val	
Abbutt Lot	
Sketch Flag	

COMMENTS

PARCEL LOCATION SUMMARY

SSL	NBHD	SUB-NBHD	ZONING	WARD	GROUP	ARN
	11	A				203

VALUE SUMMARY

	Regress (L&B)	Cost (L&B)
	387,740	942,100

	Factor/Value	Type	Reason	Date	ID
Value Adjust.					
Override					
Comment					

BUILDING PERMIT INFORMATION

Permit ID	Issue Date	Type	Amount	Description	Insp. Date
B654321	04/03/2003	NW	200,000	SFD - Construct a new single family dwelling and two-car garag	08/08/2003
B123456	04/02/2003	RZ	0	SFD - Raze existing building	07/23/2003

DATA ENTRY

Entry Date: _____ Entry ID: _____

LAND LINE VALUATION SECTION

B#	Occ	Description	Zone	Frontage	Depth	Units		S.I.	I. Factor	LT	Price	Size Adj	Site Rating		Adjustments/Special Use		Notes	Land Value
1	012	Residential Detached Single Fa				6,000	SF	P	1.00		63.14	0.8630		1.00	T:80%	V:0	Poor topo in back; River view	375,060
						Total Land Units	6,000	SF									Total Land Value:	375,060

ACCOUNT #: 9999 9999 **Property Location:** 9999 9999 ST NW **Batch #:**

Internal ID: 182803 WASHINGTON, DC 99999 **Bldg #:** 1 of 1 **Card** 1 **of** 1 **Print Date:** 02/09/2006 14:45

CONSTRUCTION DETAIL

Element	Cd.	Chng	Description
Occupancy	012		Residential Detached S
Model	01		Single Family
Grade	4		Above Average
Style	6		2.5 Story Fin
Stories	2.5		
Building Type	1		Single
Roof Cover	3		Shingle
Foundation	2		Average
Exterior Wall	15		Face Brick
Exterior Cndtn	4		Good
Heat Type	1		Forced Air
AC	Y		Yes
Floor Cover	11		Hardwood/Carp
Interior Cndtn	4		Good
Total Rooms	8		
Fireplaces	1		
Bedrooms	4		
Full Baths	2		
Half Baths	2		
Extra Fixtures	3		
Bath Style	2		Semi-Modern
Kitchens	1		
Kitchen Style	2		Semi-Modern
Eat-In Kitchen	0		Default
Overall Cndtn	4		Good
View	3		Average
Off Street Parking	0		
No. Units	1		

BUILDING SUMMARY SECTION

Code	Description	Gross	Eff. Area	Living
BAS	Main Building Area	1,200	1,200	1,200
FBP	Basement, Finished	400	0	0
FGR	Garage, Attached	440	154	0
FHS	Half Story, Finished	1,200	600	600
FOP	Porch, Open	60	0	0
FUS	Upper Story, Finish	1,200	1,200	1,200
UBM	Basement, Unfinish	1,200	300	0
	Total:	5,700	3,454	3,000

BUILDING COST

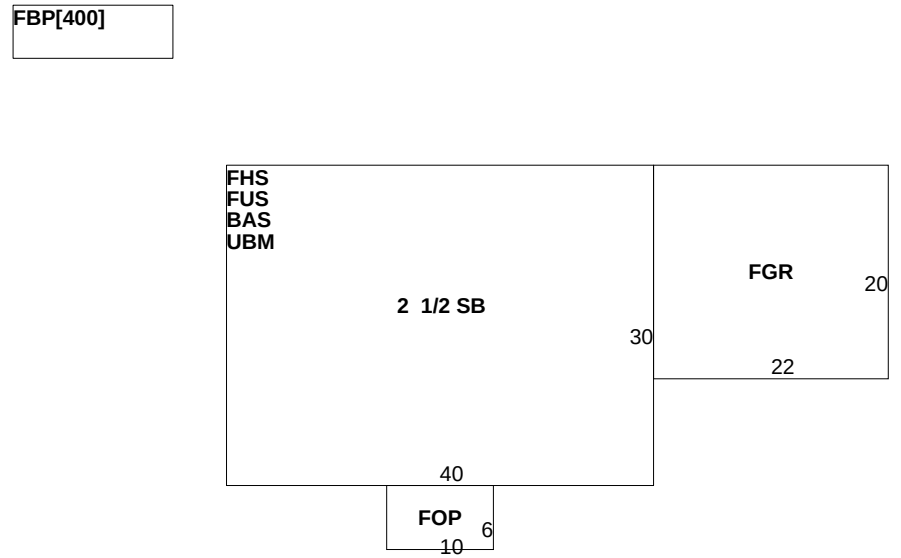
Effective Area	3,454
Building RCN	719,947
Spec.Feature RCN	14,575
Total RCN	734,522
% Good	77
Building Cost	567,040

DEPRECIATION

	Current	Change
Primary OCC	012	
Structure Class	R	
Actual Year Built	1937	
Year Remodeled	2001	
Effective Year Built	1950	
CDU	AV	
Status	E	
% Complete	10	

% GD Override (Cost)
Type
Reason
Date
ID
Comment

SKETCH



SPECIAL FEATURES/AMENITIES

Code	Description	Units	UOM	Unit Price	Grade	RCN
SN	SAUNA	1	Count	13,250.00	4	14,575

DETACHED STRUCTURES

Code	Description	Units	UOM	Unit Price	Grade	Cndtn	RCN	% Gd	Assessed Val

OUTPUT FROM STORED PROCEDURE
REPORT GENERATED ON 06-FEB-2006 AT 01:23

**********Building #1 Calc Start**********
Cost Calculation for pid, bid = 182803,173587
Account Number = 9999 9999
Use Code = 012
Cost Rate Group = R12
Model ID: R07

Section #
Base Rate: 149.27
Size Adjustment: .93906
Effective Area: 3454
Adjusted Base Rate = (149.27 + 11.1) * .93906
Adjusted Base Rate: 150.6
RCN = ((150.6 * 3454) + 63341) * 1.23381334499738
RCN: 719947

**********Base Rate Adjustments**********
AIR CONDITIONING Y (Yes) = 1.8 + BaseRate
EXTERIOR WALL 15 (Face Brick) = 3.95 + BaseRate
FLOOR COVER 11 (Hardwood/Carp) = 4.67 + BaseRate
ROOF COVER 3 (Shingle) = .68 + BaseRate

**********Flat Value Additions**********
FULL BATHS OVER 1 = 16000 + RCN
HALF BATHS = 21440 + RCN
FIREPLACES = 7100 + RCN
PARTITIONED FINISHED BASEMENT = 18000 + RCN
OPEN PORCH = 801 + RCN

**********Factor Adjustments**********
OVERALL CONDITION 4 (Good) = 1.048 x RCN
EXTERIOR CONDITION 4 (Good) = 1.048 x RCN
GRADE 4 (Above Average) = 1.1 x RCN
INTERIOR CONDITION 4 (Good) = 1.048 x RCN
REMODEL FACTOR 4 = 1.04 x RCN
SUB-NEIGHBORHOOD ADJ A = .937 x RCN

**********Effective Age Adjustments**********
BATH STYLE 2 (Semi-Modern) = .95 * Age
EFF AGE GRADE 4 (Above Average) = .95 * Age
KITCHEN STYLE 2 (Semi-Modern) = .9 * Age
****

Actual Year Built: 1937
Effective Age = 69 * .81225
Effective Age: 56
Percent Good = 87
RCNLD: 626350

USECODE

(Selects Base Rate)

No.	Description	Value
011	Row	$126.65
012	Detached	$149.27
013	Semi-Detached	$124.27
015	Mixed Use	$126.65
019	Miscellaneous	$126.65
023	Small Apt. Bldg.	$ 84.56
024	Conversion	$127.45
097	Vacant & Aban.	$126.65

CONSTRUCTION DETAIL

No.	Description	Value
Style	**(Descriptive)**	
1	1 Story	
2	1.5 Story Unfin	
3	1.5 Story Fin	
4	2 Story	
5	2.5 Story Unfin	
6	2.5 Story Fin	
7	3 Story	
8	3.5 Story Unfin	
9	3.5 Story Fin	
10	4 Story	
11	4.5 Story Unfin	
12	4.5 Story Fin	
13	Bi-Level	
14	Split Level	
15	Split Foyer	
Foundation (Descriptive)		
0	No Data	
4	Pier	
5	Wood	
6	Concrete	
View	**(Descriptive)**	
0	Typical	
1	Poor	
2	Fair	
3	Average	
4	Good	
5	Very Good	
6	Excellent	
Building Type (Descriptive)		
0	Default	
1	Single	
2	Multi	
6	Row End	$2.00
7	Row Inside	
8	Semi-Detached	
Roof	**(Add to Base Rate)**	
0	Typical	
1	Comp Shingle	
2	Built Up	
3	Shingle	$0.68
4	Shake	$0.79
5	Metal-Pre	$0.50
6	Metal Sms	$0.50
7	Metal-Cpr	$0.50
8	Composition Roll	-$0.43
9	Concrete Tile	$1.88
10	Clay Tile	$2.93
11	Slate	$2.86
12	Concrete	$1.88
13	Neoprene	$0.00
15	Wood- FS	$0.68
Exterior Finish (Add to Base Rate)		
0	Default	
1	Plywood	
2	Hardboard Lap	
3	Metal Siding	
4	Vinyl Siding	
5	Stucco	
6	Wood Siding	
7	Shingle	
8	SPlaster	
9	Rustic Log	
10	Brick Veneer	$3.95
11	Stone Veneer	$9.38
12	Concrete Block	
13	Stucco Block	
14	Common Brick	$3.95
15	Face Brick	$3.95
16	Adobe	
17	Stone	$9.38
18	Concrete	$3.95
19	Aluminum	
20	Brick/Stone	$6.67
21	Brick/Stucco	$1.98
22	Brick/Siding	$1.98
23	Stone/Stucco	$4.69
24	Stone/Siding	$4.69
Heat Type (Add to Base Rate)		
0	No Data	
1	Forced Air	
2	Air-Oil	$0.55
3	Wall Furnace	-$1.27
4	Electric Rad	-$0.29
5	Elec Base Brd	-$0.20
6	Water Base Brd	$1.42
7	Warm Cool	
8	Ht Pump	
9	Evp Cool	
10	Air Exchng	
11	Gravity Furnace	
12	Ind Unit	
13	Hot Water Rad	
AC Type (Add to Base Rate)		
0	Default	
N	No	
Y	Yes	$1.80
Floor Covering (Add to Base Rate)		
0	Default	$2.50
1	Resilient	$2.63
2	Carpet	$2.17
3	Wood Floor	$6.06
4	Ceramic Tile	$8.53
5	Terrazzo	$8.30
6	Hardwood	$7.17
7	Parquet	$8.15
8	Vinyl Comp	$1.64
9	Vinyl Sheet	$2.86
10	Lt Concrete	$0.75
11	Hardwood/Carp	$4.67

Per Unit Adjustment (Flat Rate Add)

Full Bath (over 1)	$16,000
Half Bath	$10,720
Fireplace	$ 7,100
Kitchen	$10,440
Finished Basement (Basic)	$30.00/sf
Finished Basement (Partition)	$45.00/sf
Basement Garage	$30.00/sf
Carport	$26.71/sf
Stoop	$13.35/sf
Open Porch	$13.35/sf
Covered Open Porch	$28.93/sf
Screen Enclosed Porch	$35.61/sf
Glass Enclosed Porch	$40.06/sf
Fully Enclosed Porch	$44.51/sf
Deck	$17.80/sf
Patio	$ 5.97/sf

Grade (Multiplies Base, Add & Flat)		
0	Default	
1	Low Quality	0.50
2	Fair Quality	0.80
3	Average Quality	1.00
4	Above Average Quality	1.10
5	Good Quality	1.20
6	Very Good Quality	1.25
7	Excellent Quality	1.35
8	Superior Quality	1.48
9	Extraordinary – A	1.65
10	Extraordinary – B	2.00
11	Extraordinary – C	2.20
12	Extraordinary – D	2.50
Interior Condition (Multiplies Base, Add & Flat)		
0	Typical	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105
Exterior Condition (Multiplies Base, Add & Flat)		
0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105
Overall Condition (Multiplies Base, Add & Flat)		
0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105
Remodel Type (Multiplies Base, Add & Flat)		
0	Default	
1	Unknown	
2	Gut Rehab	1.20
3	Major Renov	1.11
4	Remodel	1.05
5	Addition	
6	Cosmetic	1.02

The effect of this multiplier diminishes at a rate of 5% per year based on the ***Remodel Year***.

DEPRECIATION DETAIL

No.	Description	Value
Grade	**(Adjust EYB)**	
0	Default	
1	Low Quality	20%
2	Fair Quality	10%
3	Average Quality	--
4	Above Average	-05%
5	Good Quality	-10%
6	Very Good Quality	-15%
7	Excellent Quality	-25%
8	Superior Quality	-35%
9	Extraordinary – A	-45%
10	Extraordinary – B	-50%
11	Extraordinary – C	-50%
12	Extraordinary – D	-50%
Bath Style	**(Adjust EYB)**	
0	Default	
1	No Remodeling	
2	Semi-Modern	- 05%
3	Modern	- 10%
4	Luxury	- 20%
Kitchen Style	**(Adjust EYB)**	
0	Default	
1	No Remodeling	
2	Semi-Modern	- 10%
3	Modern	- 20%
4	Luxury	- 40%

Building RCN = [(Base Rate + $\sum$ ABRV$_n$) * Effective Area * Size Adjustment + $\sum$ AFRV$_n$] * (MV$_0$ * MV$_2$ * … * MV$_N$)

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on use and style
ABRV = Additive Base Rate Variables
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
AFRV = Additive Flat Rate Variables
MV = Multiplicative Variables

Depreciation Table

Base Year 2006

Effective Age of Building	*% Depr.*	*% Good*	*Effective Year Built*
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
9	4	96	1997
10	5	95	1996
11	5	95	1995
12	5	95	1994
13	5	95	1993
14	6	94	1992
15	6	94	1991
16	6	94	1990
17	6	94	1989
18	6	94	1988
19	7	93	1987
20	7	93	1986
21	7	93	1985
22	7	93	1984
23	7	93	1983
24	8	92	1982
25	8	92	1981
26	8	92	1980
27	8	92	1979
28	8	92	1978
29	9	91	1977
30	9	91	1976
31	9	91	1975
32	9	91	1974
33	9	91	1973
34	9	91	1972
35	10	90	1971
36	10	90	1970
37	10	90	1969
38	10	90	1968
39	10	90	1967
40	10	90	1966
41	11	89	1965
42	11	89	1964
43	11	89	1963
44	11	89	1962
45	11	89	1961
46	11	89	1960
47	11	89	1959
48	12	88	1958
49	12	88	1957
50	12	88	1956
51	12	88	1955
52	12	88	1954
53	12	88	1953
54	13	87	1952
55	13	87	1951
56	13	87	1950
57	13	87	1949
58	13	87	1948
59	13	87	1947
60	14	86	1946
61	14	86	1945
62	14	86	1944
63	14	86	1943
64	14	86	1942
65	14	86	1941
70	15	85	1936
75	16	84	1931

OUTPUT FROM STORED PROCEDURE

REPORT GENERATED ON 06-FEB-2006 AT 10:37

Account Number = 9999   9999
Use Code = 012
Recalc Land for PID 182803: Begin
****
****
Recalc Land for BldgNum #1 (BID = 173587) Land Line #1

****
Check for any special use value overrides
Land Use Code = 012
Special Use Value = 0
Special Use Percent = 80
Base District = 11
****
Find the region for a group and district
Land Group = R
Region = District, Region not defined
Base SubDist = A
ZContour = = 0
District Standard Size = 5000
District BasePrice = 73.16
District Size Adjustment = LG1
Land Group based Value Source = C
SizeRatio = 6000 / 5000 * 10000
SizeRatio = 12000
****
Interpolate/Extrapolate from Size adj curve table
SizAdj = .863
District pricing based unit val = 63.14
TotalAdj_a = 1 * 1 * 1 * 1
TotalAdj_a = 1
****
Special Use adjustment #1
AdjPrice1 = 63.14
TotalAdj1 = .8
****
Special Use adjustment #2
AdjPrice1 = 78.14
TotalAdj1 = .8
LandVal = 62.51 * 6000
LandVal(Rounded) = 375060

Vision© Commercial Cost CAMA Valuation Process

The market-derived cost approach to the valuation of real estate follows the generic formula of **Market Value = ((RCN LD) + land value)**, where **RCN** is Replacement Cost New of the improvements and **LD** means Less Depreciation. When properly developed and calibrated, this approach is a reliable indicator of market value especially suited to mass-appraisal CAMA systems.

The following exercise will attempt to illustrate how the Vision© CAMA system utilized by the District of Columbia, calculates values using the above model. The first portion will illustrate the development of the Replacement Cost New of a small commercial building, and the last portion will show the steps involved in determining the amount of depreciation that has accrued to the building. Land valuation is not discussed in this exercise.

Replacement Cost New

The Vision© CAMA system arrives at a RCN value for commercial properties based on a market-calibrated hybrid cost model. The hybrid nature of the model simply means that the model employs both additive and multiplicative variables in its design and specification. The nature of the model will become clearer as we proceed through this exercise. Please also be aware that a model is dynamic in both its specifications and calibration. The specifications, those cost elements that comprise the model, may change from time to time based upon research and market conditions. *As you may discover, the dollar rates, or calibrations, contained here most likely are different from the current model in use.* The model used in this exercise is as follows:

$$\text{Building RCN} = [\text{Section}_1\ (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (MV_1 * MV_2 * \ldots * MV_n)] + [\text{Section}_n\ (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (MV_1 * MV_2 * \ldots * MV_n)] + [\sum \text{Special Building Features}]$$

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on occupancy (use) code and construction class
Section_n = Each separate building or section of building
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
MV = Multiplicative Variables

Several items will be helpful while examining the features of the cost model and they are collected as Appendix "A" of this document. You will need to refer to them often during this exercise. They include the following:

- Sample building's Property Record Card (PRC)
- Cost.dat printout of the sample building
- Depreciation Schedule
- 2007 CAMA Construction Valuation Guideline – Commercial

The commercial building designed for this exercise is typical of a small commercial property in the District. It consists of a one-story full service restaurant and an adjoining two-story building. The two-story section consists of a package goods store and a small apartment on the second floor. The building is of good quality and is constructed of brick veneer over concrete block. For this exercise, the building has been logically sectioned into two sections. Section 1 covers the restaurant and Section 2 covers the package goods/apartment portion.

Below shows the Construction Detail in the CAMA record of the building. The first illustration depicts Section 1 – the restaurant and the second represents Section 2 – the package goods store and apartment.

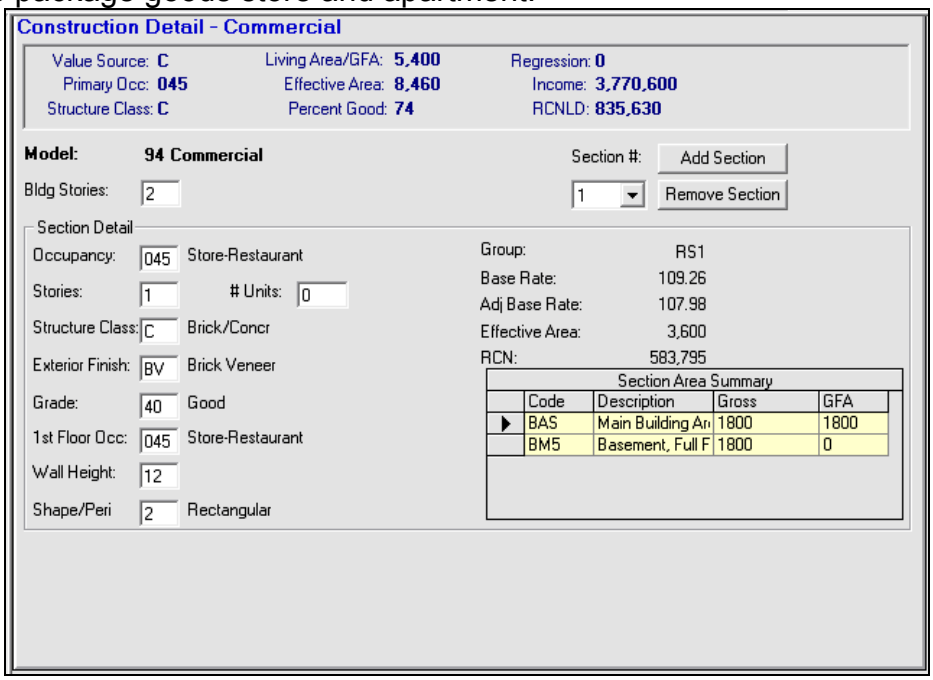


Illustration 1

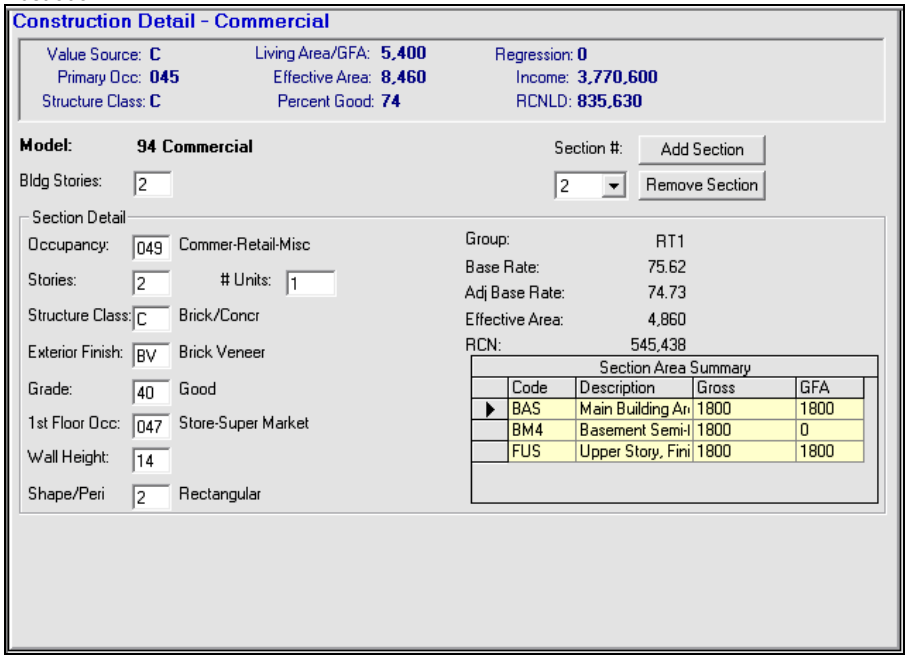
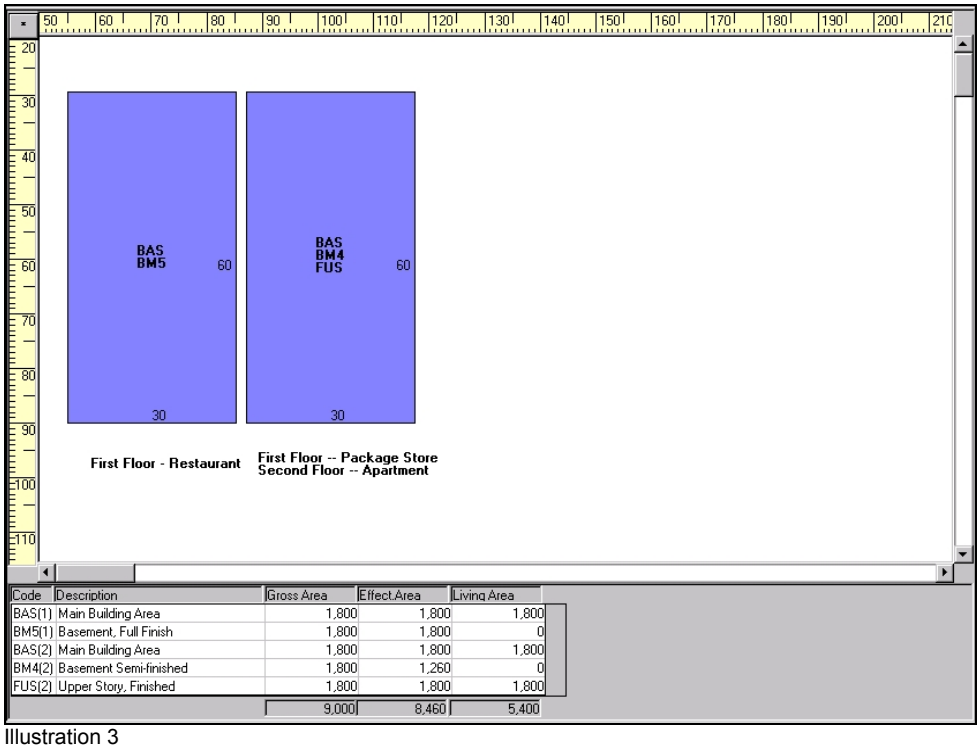


Illustration 2

Illustration 3 shows the CAMA sketch of the sample building we'll be using throughout this exercise.



Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 3

The bottom of the sketch screen in CAMA provides the information about the sizes of the different areas that comprise the two sections of the building. Each section is denoted as (1) or (2) under the Code column.

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 4

1. First, let's illustrate the calculation of the Effective Area of our sample building's first section, the restaurant.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] + [Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] + [$\sum$ Special Building Features]

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 5

The Effective Area is comprised of the totals of the Bas(1) Main Building Area @ 1,800 SF and the BM5(1) Basement, Full Finish @ 1,800 SF for a total of 3,600 SF.

The second section's Effective Area is calculated in the same manner.

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 6

BAS(2) Main Building Area, BM4 (2)Basement Semi-finished, and FUS (2) Upper Story, Finished total 4,860 SF. The adjustment to the semi-finished basement takes into account this area is not as expensive as the finished main building area. For example, if the base rate for the finished main building area is $100/SF, the rate for the semi-finished basement area may only be $70/SF. The RCN value of the basement would be calculated as follows:

RCN of Basement = $126,000 or (1800 SF * $70)

Another way to state the same situation is to adjust the size of the basement to 70% of its measured size and then multiply the resulting, *or effective*, size by the base rate of $100/SF:

RCN of Basement = $126,000 or [(1800 * .70) * $100]

Both methods arrive at the same value for the basement. The first method is more intuitive and easier to explain to taxpayers as it adjusts for the differences in costs for the various areas. The second method again provides the same results but is much easier to model and calculate within a CAMA system, thus the effective area calculations shown here represent the methodology employed in the Vision© CAMA system.

The Gross Area shown in Illustration 2 is the total unadjusted size of all the areas that are a part of the building. The Living Area is more properly called "Gross Floor Area" and is the unadjusted size of the actual finished floor area above grade in the building.

With the inclusion of the Effective Area calculation, our cost model now looks like this:

Building RCN = [Section$_1$ (Base Rate * 3600 * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [Section$_n$ (Base Rate * 4860 * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [∑ Special Building Features]

(3600 = Effective Area; 4860 = Effective Area)

2. Next, let's look at the selection of the Base Rate for the sample building. There will be two rates because there are two different sections. Each section's RCN will be independently calculated.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [∑ Special Building Features]

The Base Rate is the dollar rate per square foot used in the valuation model that is derived from tables within the CAMA system. It is selected based on the building's Building Occupancy (Use) Code and Construction Class. Our sample's first section is a "45-Store-Restaurant" constructed as a Class "C", concrete block/brick building. Based on this information, the Base Rate of $ 109.26 is automatically selected.

The second section, "49-Commercial Retail-Misc.", also constructed as a Class "C", concrete block/brick building, has a Base Rate of $75.62.

With the inclusion of the selected Base Rates, our model now looks like this:

Building RCN = [Section$_1$ ($109.26 * 3600 * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [Section$_n$ ($75.62 * 4860 * Size Adjustment) * (MV$_0$ * MV$_2$ * … * MV$_n$)] + [∑ Special Building Features]

($109.26 = Base Rate; 3600 = Effective Area; $75.62 = Base Rate; 4860 = Effective Area)

3. Next, let us turn our attention to a modification to the Base Rate - the Size Adjustment.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] +
[Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] +
[∑ Special Building Features]

The Size Adjustment modifies the Base Rate to account for the size difference between the "standard size" for the "typical" building of a particular occupancy type and the actual size of the sample building. The comparison is based on the building's "gross floor area." The "standard" size of 5,000 square feet for the "typical" restaurant is used as the basis for establishing the initial Base Rates used in Section 1 of this appraisal. The "standard" size of 4,000 square feet for the "typical" retail-misc. is used as the basis for establishing the initial Base Rates used in Section 2.

The adjustment in the Base Rate allows the proper square foot rate to be applied to a building based on its size. It is reasonable to expect that as a building becomes larger than typical, the rate per square foot would decrease and conversely, if the building were smaller than typical, the rate would be higher. The Size Adjustment variable is the component in the model that adjusts for this situation. Our sample building's size, the "gross floor area," is the total area of both sections, 5,400 square feet. Our building is only slightly larger than the standard size of 5,000 square feet. The Size Adjustment is 0.98825. Now our Adjusted Base Rate is calculated to be $107.98(109.26 * 0.98825) for Section 1 and $ 74.73 (75.62 * 0.98825) for Section 2 of our example.

Because the adjustment is less than 1.00, it would be proper to conclude that our sample building is larger than the typical building of its type in the District of Columbia. Our sample building was compared to the larger of the two "standard" sizes, 5,000 square feet. Had the sample building been smaller than 5,000 square feet, the Size Adjustment would have been greater than 1.00. The use of size adjustments eliminates the need for the traditional cost tables based on size.

The cost model continues to grow, and now looks like this:

Building RCN = [Section$_1$ ($109.26 * 3600 * 0.98825) *
Base Rate Effective Area Size Adjustment
(MV_0 * MV_2 * … * MV_n)] +
[Section$_n$ ($75.62 * 4860 * 0.98825) *
Base Rate Effective Area Size Adjustment
(MV_0 * MV_2 * … * MV_n)] +
[∑ Special Building Features]

4. The next portion of the cost model used to calculate the RCN are the multiplicative variables (MV).

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * ($MV_0 * MV_2 * \ldots * MV_n$)] +
[Section$_n$ (Base Rate * Effective Area * Size Adjustment) * ($MV_0 * MV_2 * \ldots * MV_n$)] +
[$\sum$ Special Building Features]

This portion of the formula can have the largest influence on the cost model. Each multiplicative variable modifies *all* of the cost data that has preceded it. These variables modify the Base Rate and Size Adjustment. This is where such important characteristics as the CDU (condition, desirability, utility), building grade, local cost multipliers, Neighborhood and Sub Neighborhood location factors have their impact.

The CDU, or Condition Desirability Utility, is the first of our multiplicative variables. This variable is used to account for a property's general overall physical condition and to a lesser extent the desirability and the utility of the property. Our sample building has been listed as "Good" and the appropriate multiplicative variable is 1.15. Stated a different way, the "Good" CDU will increase the RCN of our building by 15%. This one variable, CDU, can have a profound impact on the RCN of a building. The range can increase the RCN for an "Excellent" building by 35% all the way down to a 90% reduction in RNC for an "Unsound" building.

The sample building is graded "Good Quality - 4", and consequently has a 1.12 multiplicative variable. This one variable, grade, is going to increase the RCN value of the sample building by 12%. Another MV, "DC Local Multiplier C" modifies costs to account for the small additional costs incurred in construction of "C" class buildings in the in the DC area. The other multiplicative variable, "COMM NBHD 9", is the local neighborhood multiplier established for the particular neighborhood where the sample building is located. This variable is going to increase the RCN value of the sample building by 10%. The "COMM NBHD" adjustment reflects the market-derived fact that location is a very significant factor in the value of real estate. Two otherwise identical buildings can have a substantial difference in value based on their locations.

These four variables are summarized in the Cost.dat file as follows:

****************Factor Adjustments***********************
CONDITION DESIRABILITY UTILITY G = 1.15 X RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN

Each MV is multiplied together to determine the combined, or overall, MV. The sample building's MV is 1.501808 (1.15 * 1.12 * 1.06 * 1.1).

5. Except for the Special Building Features, our RCN model is complete and contains the specific data for the sample building used in this demonstration. The RCN cost model for the sample building is as follow:

Building RCN = [Section$_1$ ($109.26 * 3600 * 0.98825) *
Base Rate Effective Area Size Adjustment
(1.501808)] +
Multiplicative Variables
[Section$_n$ ($75.62 * 4860 * 0.98825) *
Base Rate Effective Area Size Adjustment
(1.501808)] +
Multiplicative Variables
[∑ Special Building Features]

The RCN for Section 1, the restaurant is $ 583,795 ($109.26 * 3600 * 0.98825 * 1.501808). The package goods store's RCN is $423,520 ($75.62 * 4860 * 0.98825 * 1.501808).

The Cost.dat file shows a summary of the same information as follows:

Section #1
Base Rate: 109.265
Size Adjustment: .98825
Effective Area: 3600
Adjusted Base Rate = (109.26 + 0) * .98825
Adjusted Base Rate: 107.98
RCN = ((107.98 * 3600) + 0) * 1.501808
RCN: 583795
Section #2
Base Rate: 75.62
Size Adjustment: .98825
Effective Area: 4860
Adjusted Base Rate = (75.62 + 0) * .98825
Adjusted Base Rate: 74.73
RCN = ((74.73 * 4860) + 0) * 1.501808
RCN: 545438

So far, the RCN of the building is $ 1,129,233 (583,795+545,438). We still have Special Features to add to complete the cost model.

6. The Special Features component is the last portion of the cost model. This is the place where such things as sprinklers and HVAC systems are accounted for and valued in the building.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] +
[Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_n)] +
[∑Special Building Features]

Take a look at illustration 7. Here we see that both sections are sprinklered and heated and cooled with a complete HVAC system. Both of these Special Building features are calculated based on the size, in square feet, of the area affected. Their value is determined by the size, dollar rate and quality grade for each feature. Finally, the Special Building Features are depreciated at the same rate as the main buildings.

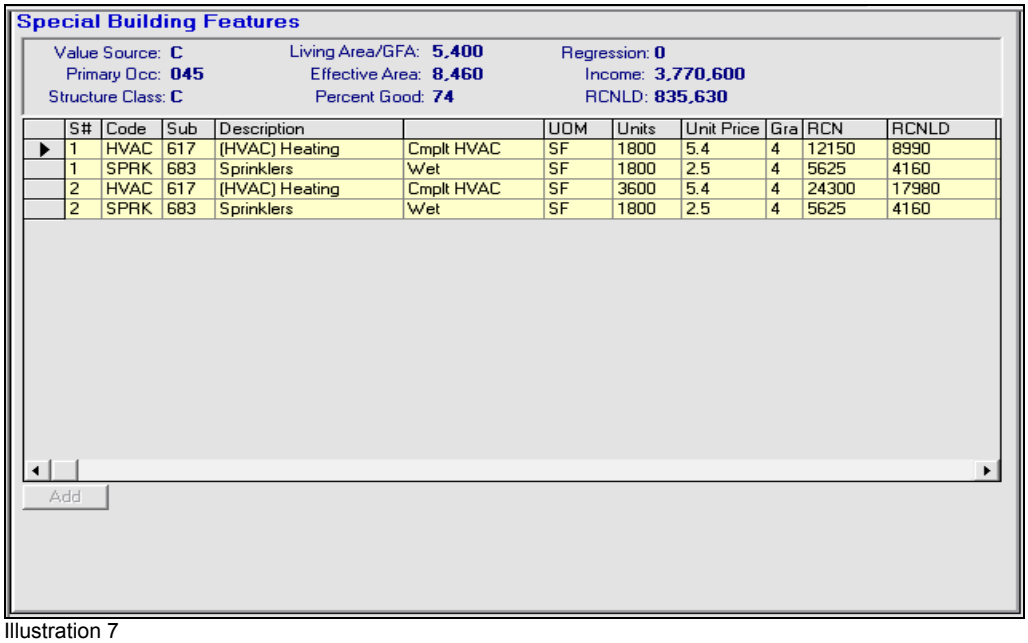


Illustration 7

Illustration 8 shows the data-entry screen, as it would look if we were to add an elevator to the building.

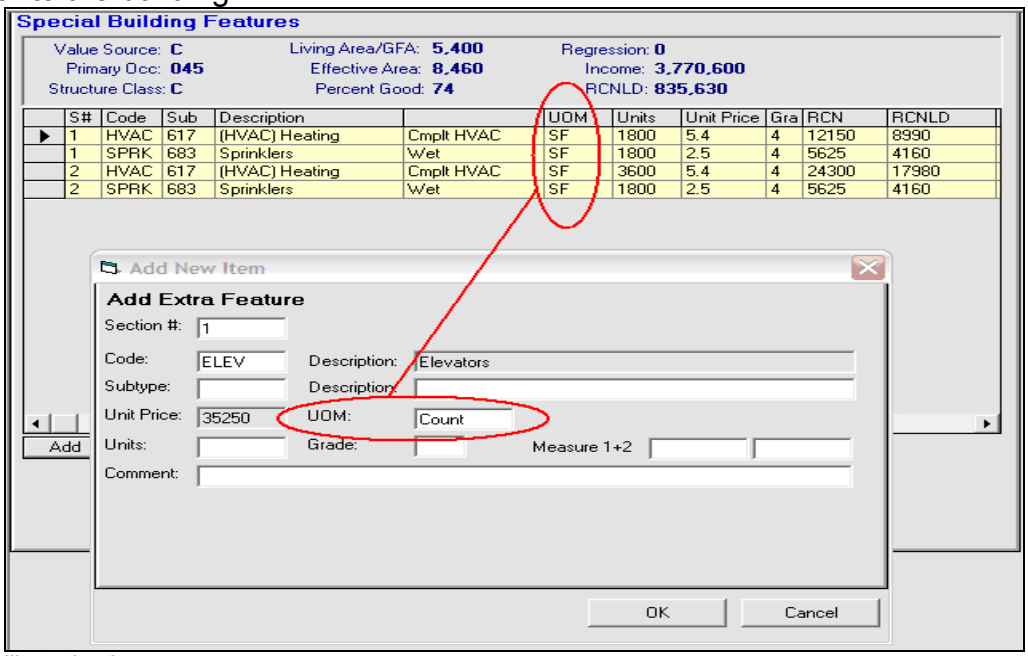


Illustration 8

Note that this extra feature's UOM (unit of measurement) is by count and not SF. For each count, the unit price is $35,250. Be sure that the UOM is proper for the individual special feature included in the building.

The total RCN of the Special Feature in this sample is $ 47,700 (∑Special Building Features =12,150 + 5,625 +24,300 + 5,625).

We now know the total replacement cost new (RCN) of our sample building, including Special Features, is $ 1,176,933 ($1,129,233 + $47,700).

$1,176,933 = Building RCN

[Section$_1$ ($109.26 * 3600 * 0.98825) * (1.501808)] +

Base Rate | Effective Area | Size Adjustment | Multiplicative Variables

[Section$_n$ ($75.62 * 4860 * 0.98825) * (1.501808)] +

Base Rate | Effective Area | Size Adjustment | Multiplicative Variables

[$47,700]

[∑ Special Building Features]

If the sample building were brand new, we'd be finished, but it was actually built in 1953.

Next, we need to address accrued depreciation . . .

Depreciation

Depreciation is defined as a loss in the upper limits of value from all sources. Typically, three types of depreciation can affect real estate - physical deterioration, functional obsolescence and economic obsolescence. This next portion of the demonstration will illustrate how Vision© calculates the amount of depreciation accrued to our sample building.

Several terms come into use when discussing depreciation in CAMA. They are defined as follows:

- Actual Age: The mathematical difference between the Base Year and the actual year the improvement was built to completion.

- Actual Year Built (AYB): The earliest time the main portion of the building was built. It is not affected by subsequent construction.

- Base Year: The year, usually the current year, that the depreciation table is calibrated, such that the age of a building built during the base year would be 0 years old.

- Depreciation Table: A market-driven table that lists the amount of depreciation corresponding to an Effective Year Built and the Base Year predicated upon a specific economic life.

- Economic Life: The useful life span for a structure based on its occupancy (use) code and its construction class.

- Effective Age: The mathematical difference, in years, between the Base Year and the Effective Year Built.

- Effective Year Built (EYB): The calculated or apparent year, that an improvement was built that is most often more recent than AYB. The EYB is determined by the condition and quality of the improvement. Subsequent renovation, additions, upgrades and the like, extend an improvements remaining economic life and therefore cause the EYB to be closer to the Base Year than the AYB.

- Percent Good: The mathematical difference between 100 percent and the percent of depreciation. (100% - depreciation %) = percent good

The RCN model used above indicated that our sample building has an RNC of $1,176,933. As stated earlier, the building was built in 1953, so there should be some depreciation to deduct from the RCN. We'll use a seven-step process to depreciate the improvements:

1. Calculate the Actual Age of the improvement.
2. Determine the Effective Age of the improvement.
3. Determine the improvement's Effective Year Built.
4. Look-up Depreciation corresponding to EYB on depreciation table.
5. If required, modify the depreciation by the amount given for obsolescence.
6. Apply final depreciation to RCN to determine RCN-LD.

1. Our first step is to calculate the Actual Age of our sample building. As you are aware, a valuation is always qualified as of a specific date. For ad valorem purposes in the District of Columbia, the valuation date is January 1 immediately preceding the tax year. In our example, the tax year is 2007, therefore the valuation date is January 1, 2006. This date is also significant in terms of the depreciation accrued to improvements. In the past, the nature of triennial assessments required that base years within a Tri-Group remain unchanged for a period of three years. Now, however, with the return to annual assessments, the base year coincides with the valuation date. The base year is used to determine the Actual Age of the sample building. In this case, the Actual Age of the sample building is 53 years (2006-1953).

2. The next step is to determine the sample building's Effective Age. Effective Age may or may not represent actual or chronological age. The premise is simple but the application can be confusing. If a building is built and never maintained (painting, re-roof, etc.) or remodeled, the building would quickly depreciate from physical deterioration. The CAMA system would depreciate the building at the fastest rate possible based on the selected Depreciation Table. For example, our building has an economic life of sixty years. If the building were left to rot, the Effective Age would most likely be the same as the Actual Age.

Let's say the owners of our sample building have completely neglected their property from the time it was built in 1953 to the present. Their building would have an effective age of 53 years as indicated on the Depreciation Table below:

Economic Life Depreciation Tables

Base Year 2006

Age of Building	Effective Year Built	70 Year Economic Life		60 Year Economic Life		50 Year Econmic Life	
		Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2006	0	100	0	100	0	100
1	2005	0	100	0	100	0	100
2	2004	1	99	1	99	2	98
3	2003	1	99	1	99	2	98
48	1958	46	54	58	43	77	23
49	1957	47	53	59	41	78	22
50	1956	49	51	61	39	82	18
51	1955	51	49	64	36		
52	1954	52	48	65	35		
53	1953	54	46	68	33		
54	1952	55	45	69	31		
55	1951	57	43	71	29		
56	1950	58	42	73	28		
57	1949	60	40	75	25		
58	1948	61	39	76	24		
59	1947	63	37	79	21		
60	1946	64	36	80	20		
61	1945	65	35				
62	1944	67	33				
63	1943	68	32				
64	1942	70	30				
65	1941	71	29				
70	1940	76	24				
75	1932	80	20				

Illustration 9

The Actual Year Built (1953) and the Effective Year Built (1953) would be the same and consequently the Effective Age would be 53 years. Moving across the table, we see that a building with an EYB of 1953 has 68 percent depreciation and therefore is 32 Percent Good (100%-68%). If the RCN of our sample building is $1,176,933, the depreciated value, RCN-LD, is only $ 376,619 (1,176,933* 0.32).

The situation described above rarely, if ever, occurs in the market. People do maintain and renovate their buildings and in doing so, extend the building's useful or remaining economic life. As building owners repair roofs, paint siding, replace windows and furnaces, they *prolong* the life of the building and consequently *decrease* its Effective Age.

A recent building remodel, renovation or rehabilitation will go a long way to extend its useful life. As the useful life is extended, the Effective Age is reduced and therefore the Effective Year Built is more recent than the building's Actual Year Built.

Our sample building had a major renovation done in 1998. The portion of the CAMA record that captures this information is shown in Illustration 10 below.

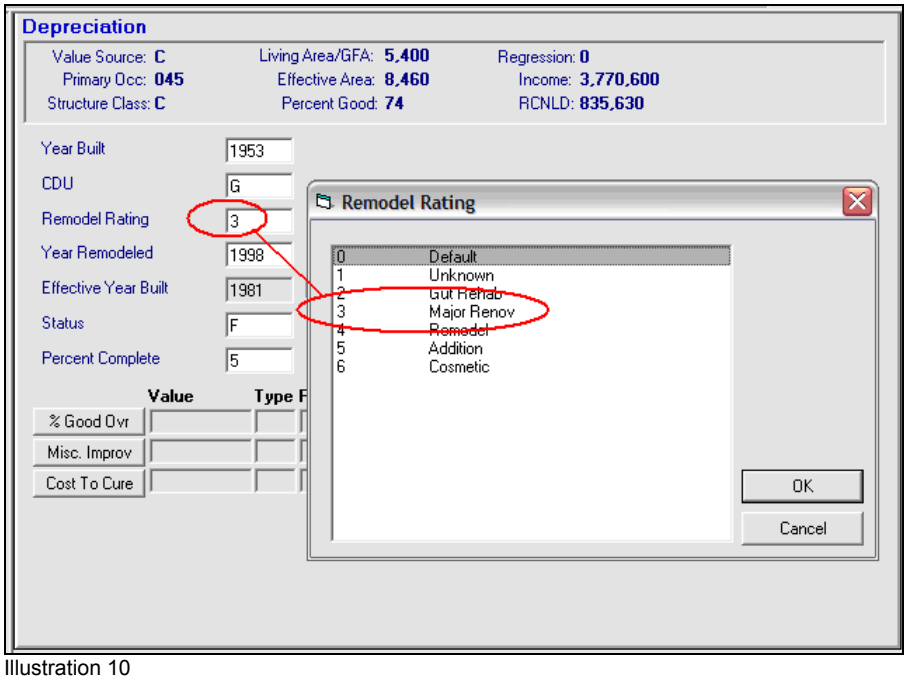


Illustration 10

Two factors come together to determine the impact a remodel has on the amount of depreciation calculated for the building – the Remodel Rating and the Year Remodeled. How extensive the remodel is and how recently it has occurred combines to determine its overall affect on its effective year built, and in turn, the building's depreciation. A brand-new gut rehab would substantially decrease the effective age of a building much more so than an older remodel. Conversely, an older remodel may have little or no affect on the depreciation.

We'll see the significance of that renovation in a moment, but first, back to our sample building's Effective Age calculation.

The construction class of the building also affects the calculation of Effective Age. It is only natural that an "A" class structure would have a longer economic life than a "D" class building (recall the story of the three little pigs). The Structure Class Age Factor makes allowance for this situation by reducing the effective age of an "A" class building by more than, say, a "D" building. As an example, CAMA reduces the effective age by 20% for "A" buildings, 15% for "B" structures, 10% on "C" buildings, and no adjustment for the "D" class buildings.

The features or variables dealing with the effective age calculation are multiplicative variables. As such, they are multiplied one by the other and then the Actual Age is multiplied by the product of the MVs. Below is the portion of the Cost.dat file that summaries these MV for our sample building.

**********Effective Age Adjustments**********
REHAB FACTOR 3 = .45 * Age
STRUCTURE CLASS AGE FACTOR C = .9 * Age
REHAB YEAR = 1.15 * Age

The product of each of these MV adjustments is calculated to be 0.46575 (0.45 * 0.90 * 1.15). This product is then multiplied by the Actual Age to calculate the Effective Age. Recall our sample building's Actual Age is 53 years. The Effective Age is calculated to be 24 years (53 * 0.42525). Instead of CAMA using 53 chronological years to calculated depreciation, it will use 24 years, based on the building's quality and renovation. The portion of the Cost.dat file that illustrates this information is below:

****

Actual Year Built: 1953
Effective Age = 53 * .46575
Effective Age: 24
Percent Good = 74
RCNLD:835630

Back to our renovation, the 1998 major renovation done to the building reduced the effective age to 51.75% (Rehab Factor 3 = .45 * Rehab Year = 1.15) of the 53 years of actual age, resulting in an effective age of 27 years old. What impact on the effective age would there be if just a small remodel occurred in 1990? We would expect the effective age not to shorten, or decrease, as much. Let's see what happens.

As you know, CAMA has many calibrated variables associated with all of the calculations it makes to determine the RCN and calculate depreciation. Again, the two variables that come into play here are the Rehab Factor and the Rehab Year. We've just seen the values of those variables were with regard to the recent major renovation example. For the 1990 remodel the values are: Rehab Factor 4= 0.55 and Rehab Year = 1.15. This combination will reduce the effective age to 63.25% (0.55 * 1.15) of the 53 years of actual age, as a result, making the effective age now 34 years old.

The difference between the two scenarios is seven years. Without doing all math, the difference in the appraised value as a result an effective age of 31 years verses 24 years is about $100,000 on a building with a RCN of $1,769,933. The proper documentation of remodel activity is significant when arriving at proper appraised values.

3. We're almost finished. Knowing the Effective Age makes the calculation of the Effective Year Built for our sample building very simple. The Effective Year Built is 1982 (2006 – 24).

4. Having established the Effective Year Built, we look up 1982 on the *60 Year Economic Life Depreciation Table* and find that the Depreciation is 20% for that year. See Illustration 11.

Economic Life Depreciation Tables

Base Year 2006

Age of Building	Effective Year Built	70 Year Economic Life		60 Year Economic Life		50 Year Econmic Life	
		Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2006	0	100	0	100	0	100
1	2005	0	100	0	100	0	100
20	1986	13	87	16	84	22	78
21	1985	13	87	16	84	22	78
22	1984	14	86	18	83	23	77
23	1983	15	85	19	81	25	75
24	1982	16	84	20	80	27	73
25	1981	17	83	21	79	28	72
26	1980	18	82	23	78	30	70
27	1979	19	81	24	76	32	68
28	1978	20	80	25	75	33	67
29	1977	21	79	26	74	35	65
30	1976	22	78	28	73	37	63
31	1975	23	77	29	71	38	62

Illustration 11

You may notice that there is a conflict between the Cost.dat file and the depreciation table with regards to “Percent Good.” The Cost.dat file report that our building’s percent good is 74, whereas the depreciation table says it’s 80. The explanation is addressed in step 5, dealing with obsolescence and direct adjustments to depreciation, not effective year built calculations.

5. If the assessor notes any obsolesce, this is where it is addressed. Recall from the outset that we defined depreciation as a loss in value resulting from physical deterioration, functional and/or economic obsolescence. The demonstration up to this point has dealt only with depreciation attributed to the physical deterioration of the sample building. This, by far, is the most common type of depreciation that exists in commercial property. However, occasions may require additional depreciation because of excessive physical deterioration, functional and/or economic obsolescence. One must use caution when invoking these types of depreciation. The market must support any decision regarding the extent of these adjustments.

Our sample building is suffering from a small amount of functional obsolescence. The assessor has noted that the interior design of the building contains many support columns interrupting the efficient use of the floor space. As a result, the restaurant has a few less tables and the package goods store does not have a good aisle layout. Consequently, it is appropriate to allow for a small amount of functional obsolescence – five percent.

Illustration 12 shows the results of this additional allowance for functional obsolescence. Whereas the depreciation table in illustration 3 shows the percent good for 20 years at 80%, by subtracting the 5% attributed to functional obsolescence, we are left with 74% (rounding error) as the percent good for our building. This matches the figure shown in the Cost.dat file.

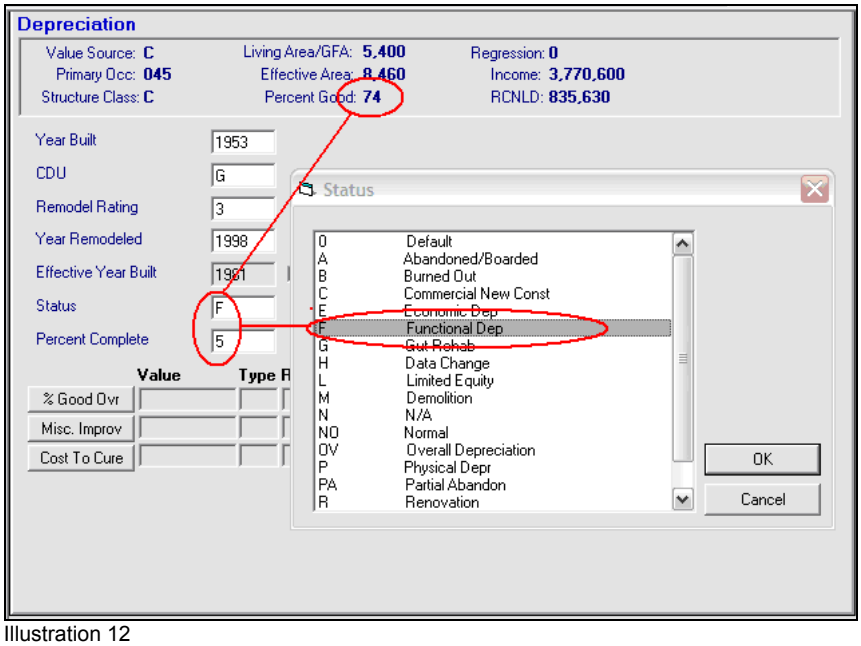
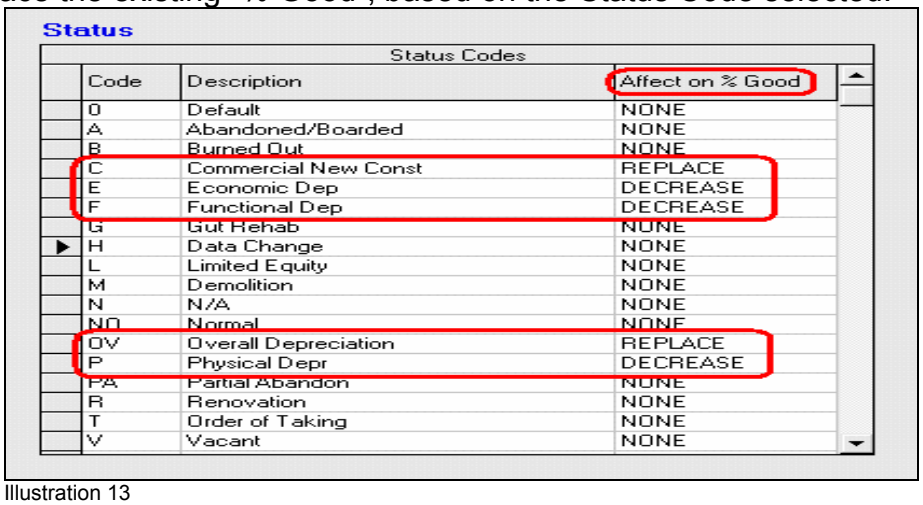


Illustration 12

The actual mechanics of adjusting depreciation for functional or economic obsolescence within CAMA are briefly discussed below. If the situation occurs, seek guidance from your supervisor and/or CAMA manager.

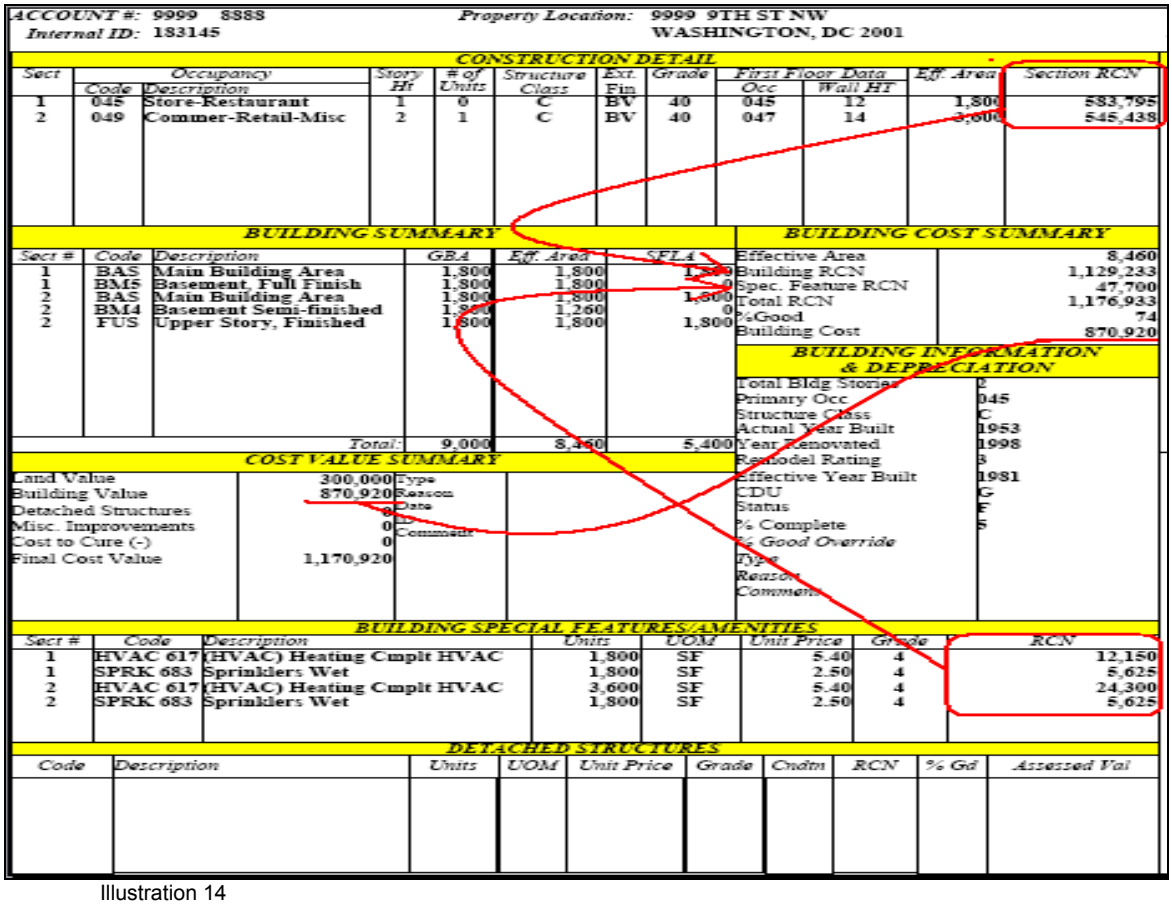
The "Status" field's pick-list is expanded in Illustration 13 to show only those types of items that have a direct affect on depreciation and the nature of the affect. Notice that only a limited number of Status Codes are functional within CAMA and their affect on depreciation is either to ***replace*** the existing amount in the "% Good" field or ***decrease*** the "% Good." The corresponding numeric amount that will affect the "% Good" is entered in the field called "Percent Complete." Please note that the field name "Percent Complete" is somewhat erroneous because the word "Complete" has no meaning in this context. This is the field that you will enter the amount to either decrease the existing "% Good" or replace the existing "% Good", based on the Status Code selected.



Code	Description	Affect on % Good
0	Default	NONE
A	Abandoned/Boarded	NONE
B	Burned Out	NONE
C	Commercial New Const	REPLACE
E	Economic Dep	DECREASE
F	Functional Dep	DECREASE
G	Gut Rehab	NONE
H	Data Change	NONE
L	Limited Equity	NONE
M	Demolition	NONE
N	N/A	NONE
NO	Normal	NONE
OV	Overall Depreciation	REPLACE
P	Physical Depr	DECREASE
PA	Partial Abandon	NONE
R	Renovation	NONE
T	Order of Taking	NONE
V	Vacant	NONE

Illustration 13

6. The last step in the process is to simply multiple the RCN by 0.74 and we have RCN LD of the building. Knowing the total RCN of our sample building is $1,176,933, the RCN LD is $870,920 (1,176,933 * 0.74). Below is a portion of the Property Record Card that illustrates this information.



ACCOUNT #: 9999 8888 — Property Location: 9999 9TH ST NW
Internal ID: 183145 — WASHINGTON, DC 2001

CONSTRUCTION DETAIL

Sect	Occupancy Code	Occupancy Description	Story Ht	# of Units	Structure Class	Ext. Fin	Grade	First Floor Data Occ	First Floor Data Wall Ht	Eff. Area	Section RCN
1	045	Store-Restaurant	1	0	C	BV	40	045	12	1,800	583,795
2	049	Commer-Retail-Misc	2	1	C	BV	40	047	14	3,600	545,438

BUILDING SUMMARY

Sect #	Code	Description	GBA	Eff. Area	SFLA
1	BAS	Main Building Area	1,800	1,800	1,800
1	BMS	Basement, Full Finish	1,800	1,800	0
2	BAS	Main Building Area	1,800	1,800	1,800
2	BMH	Basement Semi-finished	1,200	1,260	0
2	FUS	Upper Story, Finished	1,800	1,800	1,800
		Total:	9,000	8,460	5,400

BUILDING COST SUMMARY

Effective Area	8,460
Building RCN	1,129,233
Spec. Feature RCN	47,700
Total RCN	1,176,933
%Good	74
Building Cost	870,920

BUILDING INFORMATION & DEPRECIATION

Total Bldg Stories	2
Primary Occ	045
Structure Class	C
Actual Year Built	1953
Year Remodeled	1998
Remodel Rating	3
Effective Year Built	1981
CDU	G
Status	F
% Complete	5
% Good Override	
Type	
Reason	
Comment	

COST VALUE SUMMARY

Land Value	300,000	Type
Building Value	870,920	Reason
Detached Structures	0	Date
Misc. Improvements	0	ID
Cost to Cure (-)	0	Comment
Final Cost Value	1,170,920	

BUILDING SPECIAL FEATURES/AMENITIES

Sect #	Code	Description	Units	UOM	Unit Price	Grade	RCN
1	HVAC 617	(HVAC) Heating Cmplt HVAC	1,800	SF	5.40	4	12,150
1	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625
2	HVAC 617	(HVAC) Heating Cmplt HVAC	3,600	SF	5.40	4	24,300
2	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625

DETACHED STRUCTURES

Code	Description	Units	UOM	Unit Price	Grade	Cndtn	RCN	% Gd	Assessed Val

Illustration 14

Conclusion

This exercise has been prepared to assist the commercial assessor understand some of the concepts, features and techniques employed by the Vision© CAMA system in arriving at a cost approach to valuation of commercial properties in the District of Columbia. It does not serve as an exhaustive training manual. Any specific questions regarding the features and operations of this CAMA should be directed to your supervisor or the CAMA manager.

Appendix "A"

1. Vision© Property Record Card, SSL 9999 8888.

2. "Cost.dat" printout of sample building.

3. Economic Life Depreciation Tables, Base Year 2006.

4. 2007 CAMA Commercial Construction Valuation Guideline.

ACCOUNT #: 9999 8888 **Property Location:** 9999 9TH ST NW **Batch #:**

Internal ID: 183145 WASHINGTON, DC 2001 **Bldg #:** 1 of 1 **Card** 1 **of** 1 **Print Date:** 02/14/2006 07:53

CURRENT OWNER

ACCOUNT INFORMATION

Use Type	Use Code	Lot SF	Status Code
C	045	999,999	F

VISIT/CHANGE HISTORY

Date	ID	Type	Inf. Source	Code	Description

CURRENT ASSESSMENT

Description	Use	Assessed Value
COMMERCL	045	870,920
COM LAND	045	300,000

Value Source: C Total: 1,170,920

DATA ENTRY

Entry ID:_____ Entry Date: / /

COMM

District of Columbia
Real Property
Assessment Division

OWNERSHIP HISTORY

INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	A.C.

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Use	Type	Val Source	Land Value	Building Value	Assessed Value
2007	045	C	C	300,000	870,920	1,170,920
2006	045	C	C	300,000	721,060	1,021,060
2005	047	C	C	300,000	658,710	958,710
2004	047	C	C	300,000	562,370	862,370

MIXED USE

Code	Description	%
	Res Land	%
	Res Building	%
	Cmrcl Land	%
	Cmrcl Building	%

APPEALS

Appeal #	Decision	Amount	Revised AV

ASSOCIATED PARCELS

Primary SSL	SSL	USE	Lot Size	%	Total Value

TAX TYPE

Year	Type	Description

SUPPLEMENTAL DATA

Type	Description
Neighborhood	
Part Part	
Mixed Use	
Vcnt Lnd Use	
Model Type	
Base Lot Val	
Abbutt Lot	
Sketch Flag	

COMMENTS

PARCEL LOCATION SUMMARY

SSL	NBHD	SUB NBHD	ZONING	WARD	GROUP	ARN
	9	0				457

BUILDING PERMIT INFORMATION

Permit ID	Issue Date	Type	Amount	Description	Insp. Date

Pocket NBHD: 0

LAND LINE VALUATION SECTION

B#	Occ	Description	Zone	Frontage	Depth	Units		S.I.	I. Factor	LT	Price	Size Adj	Site Rating	Adjustments/Special Use	Notes	Land Value
1	045	Store-Restaurant				10,000	SF	0	1.00		30.00	0.0000				300,000
					Total Land Units:	10,000	SF								Total Land Value:	300,000

ACCOUNT #: 9999 8888 **Property Location:** 9999 9TH ST NW **Batch #:**

Internal ID: 183145 WASHINGTON, DC 2001 **Bldg #:** 1 of 1 **Card** 1 **of** 1 **Print Date:** 02/14/2006 07:53

CONSTRUCTION DETAIL

Sect	Occupancy Code	Occupancy Description	Story Ht	# of Units	Structure Class	Ext. Fin	Grade	First Floor Data Occ	First Floor Data Wall HT	Eff. Area	Section RCN
1	045	Store-Restaurant	1	0	C	BV	40	045	12	1,800	583,795
2	049	Commer-Retail-Misc	2	1	C	BV	40	047	14	3,600	545,438

BUILDING SUMMARY

Sect #	Code	Description	GBA	Eff. Area	SFLA
1	BAS	Main Building Area	1,800	1,800	1,800
1	BM5	Basement, Full Finish	1,800	1,800	0
2	BAS	Main Building Area	1,800	1,800	1,800
2	BM4	Basement Semi-finished	1,800	1,260	0
2	FUS	Upper Story, Finished	1,800	1,800	1,800
		Total:	9,000	8,460	5,400

BUILDING COST SUMMARY

Effective Area	8,460
Building RCN	1,129,233
Spec. Feature RCN	47,700
Total RCN	1,176,933
%Good	74
Building Cost	870,920

BUILDING INFORMATION & DEPRECIATION

Total Bldg Stories	2
Primary Occ	045
Structure Class	C
Actual Year Built	1953
Year Renovated	1998
Remodel Rating	3
Effective Year Built	1981
CDU	G
Status	F
% Complete	5
% Good Override	
Type	
Reason	
Comment	

COST VALUE SUMMARY

Land Value	300,000	Type	
Building Value	870,920	Reason	
Detached Structures	0	Date	
Misc. Improvements	0	ID	
Cost to Cure (-)	0	Comment	
Final Cost Value	1,170,920		

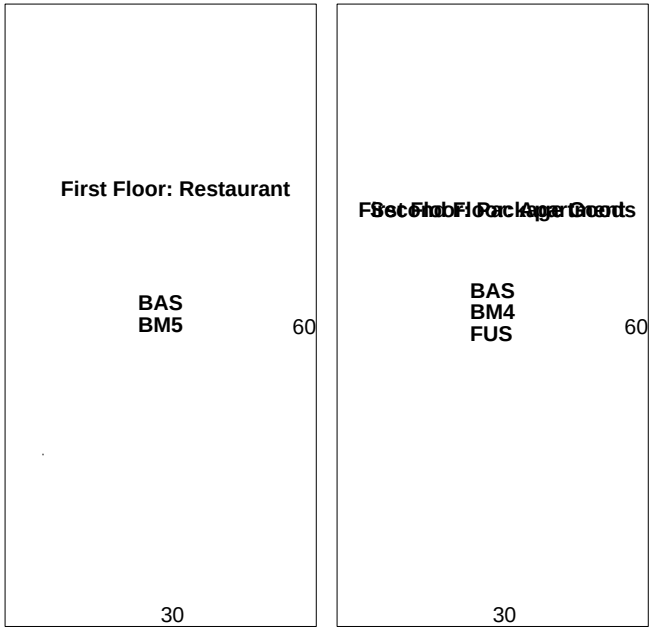
BUILDING SPECIAL FEATURES/AMENITIES

Sect #	Code	Description	Units	UOM	Unit Price	Grade	RCN
1	HVAC 617	(HVAC) Heating Cmplt HVAC	1,800	SF	5.40	4	12,150
1	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625
2	HVAC 617	(HVAC) Heating Cmplt HVAC	3,600	SF	5.40	4	24,300
2	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625

DETACHED STRUCTURES

Code	Description	Units	UOM	Unit Price	Grade	Cndtn	RCN	% Gd	Assessed Val

SKETCH



No Photo On Record

INCOME APPROACH

Bldg #	Style	Style Desc	FL	Tenants	# of Units	Use Adj	Loc Adj	Rent/Unit	Gross Income	Vac Adj	Vacancy %	Exp Adj	Expense %	NOI
1	3	Retail	GL	3	6,000	A	A	12.00	72,000	A	.15	A	0.08	56,304
1	1	1 BR	UL	1	10	A	A	18,000.00	180,000	A	.1	A	0.10	145,800
1	2	2 BR	UL	1	10	A	A	21,600.00	216,000	A	.1	A	0.10	174,960

INCOME NOTES

INCOME SUMMARY

Primary Occ	045
Total Rentable Units	468,000
Total Gross Income	468,000
Vacancy $	50,400
Expense $	40,536
Total NOI	377,064
Cap Code	001
Cap Adj.	A
Cap Rate	0.1000
Income Value	3,770,600
Excess Land	0
Total Income Value:	3,770,600

OUTPUT FROM STORED PROCEDURE
REPORT GENERATED ON 14-FEB-2006 AT 07:45

**********Building #1 Calc Start**********
Cost Calculation for pid, bid = 183145,173784
Account Number = 9999   8888
Use Code = 045
Cost Rate Group = RS1
Occupancy Type = 045 (Store-Restaurant)
Model ID: DCC

Section #1
Base Rate: 109.26
Size Adjustment: .98825
Effective Area: 3600
Adjusted Base Rate = (109.26 + 0) * .98825
Adjusted Base Rate: 107.98
RCN = ((107.98 * 3600) + 0) * 1.501808
RCN: 583795

**********Factor Adjustments**********
CONDITION DESIRABILITY UTILITY G = 1.15 x RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN

Section #2
Base Rate: 75.62
Size Adjustment: .98825
Effective Area: 4860
Adjusted Base Rate = (75.62 + 0) * .98825
Adjusted Base Rate: 74.73
RCN = ((74.73 * 4860) + 0) * 1.501808
RCN: 545438

**********Factor Adjustments**********
CONDITION DESIRABILITY UTILITY G = 1.15 x RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN

**********Effective Age Adjustments**********
REHAB FACTOR 3 = .45 * Age
STRUCTURE CLASS AGE FACTOR C = .9 * Age
REHAB YEAR = 1.15 * Age
****

Actual Year Built: 1953
Effective Age = 53 * .46575
Effective Age: 24
Percent Good = 74
RCNLD: 835630

Economic Life Depreciation Tables

Base Year 2006

Age of Building	Effective Year Built	70 Year Economic Life		60 Year Economic Life		50 Year Econmic Life	
		Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2006	0	100	0	100	0	100
1	2005	0	100	0	100	0	100
2	2004	1	99	1	99	2	98
3	2003	1	99	1	99	2	98
4	2002	2	98	3	98	3	97
5	2001	2	98	3	98	3	97
6	2000	3	97	4	96	5	95
7	1999	4	96	5	95	7	93
8	1998	4	96	5	95	7	93
9	1997	5	95	6	94	8	92
10	1996	5	95	6	94	8	92
11	1995	6	94	8	93	10	90
12	1994	7	93	9	91	12	88
13	1993	8	92	10	90	13	87
14	1992	8	92	10	90	13	87
15	1991	9	91	11	89	15	85
16	1990	10	90	13	88	17	83
17	1989	10	90	13	88	17	83
18	1988	11	89	14	86	18	82
19	1987	12	88	15	85	20	80
20	1986	13	87	16	84	22	78
21	1985	13	87	16	84	22	78
22	1984	14	86	18	83	23	77
23	1983	15	85	19	81	25	75
24	1982	16	84	20	80	27	73
25	1981	17	83	21	79	28	72
26	1980	18	82	23	78	30	70
27	1979	19	81	24	76	32	68
28	1978	20	80	25	75	33	67
29	1977	21	79	26	74	35	65
30	1976	22	78	28	73	37	63
31	1975	23	77	29	71	38	62
32	1974	24	76	30	70	40	60
33	1973	25	75	31	69	42	58
34	1972	27	73	34	66	45	55
35	1971	28	72	35	65	47	53
36	1970	29	71	36	64	48	52
37	1969	30	70	38	63	50	50
38	1968	32	68	40	60	53	47
39	1967	33	67	41	59	55	45
40	1966	35	65	44	56	58	42
41	1965	36	64	45	55	60	40
42	1964	38	62	48	53	63	37
43	1963	39	61	49	51	65	35
44	1962	41	59	51	49	68	32
45	1961	42	58	53	48	70	30
46	1960	44	56	55	45	73	27
47	1959	45	55	56	44	75	25
48	1958	46	54	58	43	77	23
49	1957	47	53	59	41	78	22
50	1956	49	51	61	39	82	18
51	1955	51	49	64	36		
52	1954	52	48	65	35		
53	1953	54	46	68	33		
54	1952	55	45	69	31		
55	1951	57	43	71	29		
56	1950	58	42	73	28		
57	1949	60	40	75	25		
58	1948	61	39	76	24		
59	1947	63	37	79	21		
60	1946	64	36	80	20		
61	1945	65	35				
62	1944	67	33				
63	1943	68	32				
64	1942	70	30				
65	1941	71	29				
70	1940	76	24				
75	1932	80	20				

CONSTRUCTION DETAIL

Section Detail

No. Description Value

Building Stories
As Indicated.

Occupancy
As Indicated.
Select from list.

Stories and #Units
As Indicated.

Structure Class

0	Default
A	Fireproof Steel
B	Reinforced Concrete
C	Con. Block/Solid Brick
D	Wood Frame
P	Wood Pole
S	Steel/Sheet Metal

Exterior Finish

0	Typical
AS	Asphalt Siding
BR	Brick (Solid)
BV	Brick Veneer
C	Concrete
CB	Concrete Block
MS	Metal Siding
S	Stone
SU	Stucco
SV	Stone Veneer
WS	Wood Siding

Grade (Multiplies Base, Features)

0	Default	--
0	Poor Quality	-30%
15	Poor+ Quality	-20%
20	Fair Quality	-10%
25	Fair+ Quality	-05%
30	Average Quality	--
35	Average+ Quality	06%
40	Good Quality	12%
45	Good+ Quality	21%
50	Very Good Quality	30%
55	Very Good + Quality	38%
60	Excellent	45%

Story Height (Multiplies Base)
Currently not in use

Wall Height (Adds to Base Rate)
Currently not in use

CDU Condition, Desirability, Utility (Multiplies Base, Features)

EX	Excellent	35%
VG	Very Good	30%
G	Good	15%
AV	Average	--
F	Fair	-25%
P	Poor	-50%
VP	Very Poor	-70%
US	Unsound	-90%

DEPRECIATION DETAIL

No. Description Value

Structure Class (Adjust EYB)

0	Default	0
A	Fireproof Steel	-20%
B	Reinforced Conc.	-15%
C	Con. Block/Brick	-10%
D	Wood Frame	0
S	Steel/Sheet Metal	0

Remodel Rating (Adjusts EYB)

0	Default	--
1	Unknown	-10%
2	Gut Rehab	-70%
3	Major Renovation	-55%
4	Remodel	-45%
5	Addition	-30%
6	Cosmetic	-10%

Year Remodeled (Adjust EYB)

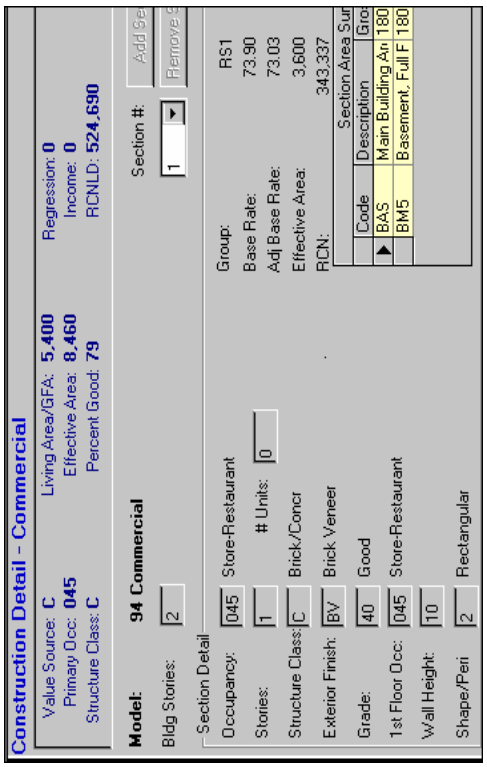
2002-2005	0%
2000-2001	5%
1995-1999	15%
1990-1994	25%
Earlier -1990	50%

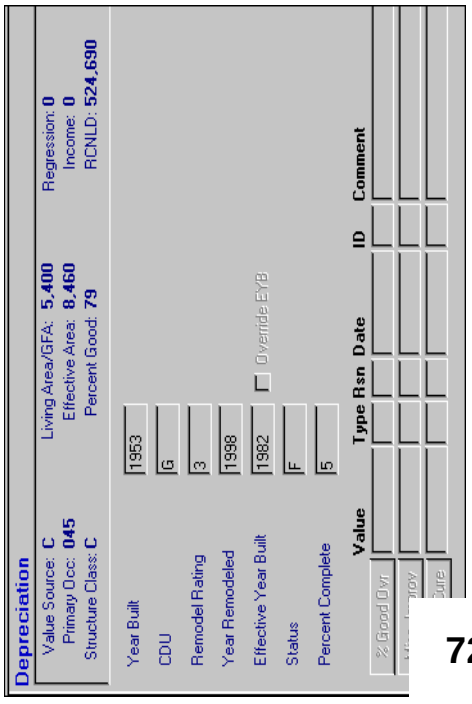
Extra Features (Flat and Sq Ft Add)

BL	Balcony	Flat
ELEV	Elevators	Flat
HVAC	Heat & Cool	Sq. Ft.
MZ	Mezzanines	Sq. Ft.
SPRK	Sprinklers	Sq. Ft.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_N)] + [Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_N)] + [∑Special Building Features]

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on occupancy (use) code and construction class
Section$_n$ = Each separate building or section of building
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
MV = Multiplicative Variables





Vision® CAMA Income Approach Valuation Process

The income approach to the valuation of real property follows the generic formula of **Market Value = NOI/Capitalization Rate** , where **NOI** is the net operating income of the property and the **Capitalization Rate** is a market-derived overall direct capitalization rate. When properly developed and calibrated, this approach is a reliable indicator of market value of income producing properties within a mass-appraisal CAMA system.

The following exercise will attempt to illustrate how the Vision© CAMA system utilized by the District of Columbia calculates values using the above model. The first section will illustrate the traditional development of a market value estimate for a typical apartment building. This example will serve to provide a practical foundation for understanding the concepts of the income approach to valuation as well as an understanding of the major components of the Vision© CAMA methodology. The second section will illustrate the actual CAMA valuation of the apartment building described in the first section.

Income Approach to Value

An understanding of the income capitalization approach to value is essential in order to utilize the Vision© CAMA system's income model. Of the three traditional approaches to value (cost, market, income), the income approach is most often the appropriate approach when appraising property owned for it's ability to produce income to the owner. An owner anticipates future income production and the income approach quantify the present value of the income derived from the ownership of the property. There are several varieties or forms of the income approach used to quantify or convert income into an estimate of value. The most widely used approach is direct capitalization. Direct capitalization involves converting one year's stabilized net operating income into an estimate of value in one direct step using an appropriate rate. The direct capitalization method is rooted in the market. The rate used to convert income into value represents the relationship between value and income through the following formula:

$$\frac{I}{R \times V}$$

Where, I = Income
R = Rate
V = Value

Formula 1

To determine an estimate of value, divide the income by the rate. The income is the net operating income (NOI) and the rate is the direct capitalization rate. For example, if a property generates an NOI of $50,000 per year and the market-derived capitalization rate is 8 percent, the indicated value would be $625,000 ($50,000/.08).

Where do these two numbers come from? The first number, NOI, is determined by a combination of things. First, the income and expenses of the particular property are analyzed and "re-constructed" to produce the NOI. Re-constructing simply means that we analyze the income and more particularly the expenses to ensure that we have a true understanding and estimate of the amount of net operating income annually produced by the property. Oftentimes an income report will detail some expenses not directly associated with the property. For example, the debt service of a loan on the property may be subtracted from the gross income. This is not a proper expense as it is a function of the owner's financing and not an operating expense of the property. Another example may be a large "expense" taken against gross income that should be more properly spread over several years, or capitalized. Expense ratios are calculated for the various categories of expenses.

Another source for determining the NOI of a property is the analysis of many other similar properties for their income levels and expense levels or ratios. If the subject property's income and expenses are typical for similar properties, the actual NOI of the property becomes the amount to be capitalized by the rate. If, on the other hand, the property exhibits unusual income or expenses based on comparison of the ratios, some actual amounts of income or expenses may be substituted with the amounts represented by more typical ratios. The goal is to establish the typical level of NOI that a prudent investor would anticipate deriving from the property each year.

Where does the rate come from? The rate is the overall direct capitalization rate. This is the rate for the overall property used to convert a single year's income into an indication of value of the overall property using the IRV formula shown above. The rate is derived through sales analysis. Ideally, where arms-length sales of similar properties occur and the income and expense data are well known, a direct capitalization rate can be derived using the IRV formula. For example, suppose the subject property is office building and a similar office building recently sold for $750,000. The reconstructed income and expense analysis indicated that at the time of sale the property was producing an annual net operating income of $60,000. Using the IRV formula, the capitalization rate of the property was 8 percent ($60,000/$750,000). Reliable capitalization rates are the result of the analysis of many sales of income producing properties.

The following illustration is an example of a reconstructed income and expense statement for our sample property. The property, Breakaway South, is a high-rise apartment complex consisting of a one eight story concrete block building. The building has 164 rental units, a management office, laundry facility and on-site surface parking. It is located in the area of Saint Elizabeth's in SE

Washington, DC. We'll use this property both here and in the example within Vision© CAMA in the second part of this tutorial.

Breakaway South Apartments
- December 31, 2006-

Potential Gross Income		$1,419,600
Vacancy & Collection Loss (4%)		- 56,784
Miscellaneous Income (laundry)		+ 54,000
Effective Gross Income		$1,416,816
Expenses		
Operating:		
Management (11%)	$155,850	
Insurance (10%)	141,682	
Salaries (7%)	99,177	
Utilities (9%)	127,513	
Yard and Snow (4%)	56,673	
Marketing (3%)	42,505	
Sub-total (44%)	$623,400	
Reserves for Replacements:		
Roof (5%)	$ 70,840	
Parking (4%)	56,673	
Redecorating (7%)	99,176	
Appliances (4%)	56,673	
Sub-total (20%)	$283,362	
Total Expenses (64%)		$906,762
Net Operating Income (36%)		$510,054
Capitalization Rate:		6.0%
Indicated Market Value		**$8,500,900**

Illustration 1

As you examine the statement, you'll notice a few terms we have not discussed. The **potential gross income** is defined as the maximum amount of income the property can produce if fully rented at market rent before any expenses are deducted. There will always be some amount to deduct from the potential gross income in the form of **vacancy** and **collection loss.** Even if the property is fully leased, the appraiser must take some vacancy allowance to acknowledge tenant

turn-over and inevitable vacancies. It is unrealistic not to allow for some vacancy. Collection loss is that amount deducted from the potential gross income for nonpayment of rent.

In addition to rent, a property may have other sources of income. This **miscellaneous income** can come from such sources as an on-site laundry facility, furniture rental, community room rentals, and the like.

When an amount for vacancy and collection loss is subtracted, and an amount for miscellaneous income is added to the gross potential income, the result is the **effective gross income** of the property. Expenses are subtracted from, and expense ratios are calculated based upon, the effective gross income.

Expenses usually fall into two categories: **operating expenses** and **reserves for replacement**. Sometimes operating expenses may be further divided between variable and fixed expenses. Operating expenses are those legitimate expenses necessary to support the property's ability to produce effective gross income. The sample shows some of the more typical expenses incurred by an apartment building. Notice the calculation of the expense ratios mentioned earlier. As an example, the expense ratio for management is eleven percent of the effective gross income ($155,850/$1,416,816). These actual ratios are compared to typical ratios to see if any expenses are out of the ordinary.

Reserves for replacements are a category of expenses that are designed to set aside funds for long lived items that periodically need to be replaced. The amount of the expense is based on the item's economic life and the estimated cost to replace it in the future. Let's say that appliances must be replaced every five years at an estimated cost of $1,728 per unit. With 164 units, we need to accumulate $ 283,392 over a five year period. Charging $56,673 per year to the reserves for replacement expense allows us to set aside enough money to replace the appliances according to the five year schedule. It is always appropriate to set aside reserves for replacements, even though in practice a property may not have done so. This is another aspect to "re-constructing" the income statement.

Subtracting the total expenses from the effective gross income leaves us with the net operating income of the property. The NOI of the property is the "I" in the IRV formula that will be converted to an indication of value using a capitalization rate.

As mentioned earlier, we employ the direct capitalization of income to produce an estimate of value. Again, the capitalization rates are determined by the analysis of sales of similar properties where the NOI is known. Capitalization rates vary between and within different categories of income-producing properties. Extensive analysis is necessary to determine the proper rate to apply to the different properties. For example, a capitalization rate for a high quality office building in a prime location will be lower than a capitalization rate for a lower quality office in a less desirable location. With all other things remaining equal and no unusual externalities, capitalization rates for offices are generally less

than rates for motels or shopping centers. It all harkens back to the level of return the buyer's expect to receive on their investment in commercial real estate. One of their considerations is that the more risk involved with the property, the more return they require thereby raising the capitalization rate resulting in a lower valuation.

We have selected a capitalization rate of 6 percent for our example property. Based on the information we now have available we can estimate the market value of the subject apartment to be $8,500,900 ($510,054/0.06).

The above discussion has been presented as a review of the income approach to valuation, more specifically the direct capitalization technique. Included was an example of the valuation of an apartment building. In the next section, we'll again value the same apartment building but conduct the valuation from within the District's CAMA system. Although the work flow may appear different, the underlying IRV formula should generate the same results.

Vision's® CAMA Income Approach to Value

In addition to the market-calibrated cost approach utilized by CAMA to value the residential property in the District, CAMA also has the capability to value commercial property using the more appropriate approach – the income capitalization approach. The discussion in this section will serve to illustrate the manner in which a commercial property, an apartment building, is valued based on the income approach.

To effectively value property, complete and accurate property characteristic must be known. Although the physical characteristics such as wall type, roof type, building style and the like are important, the most important information regarding commercial property subject to the income approach are characteristics of the property dealing with its ability to produce income. In an office building, for example, the gross building area or net leaseable area are important. In hotels and motels the significant measure is the number of rooms available. And in apartment buildings it would be the number and style of the units for rent.

We'll begin our appraisal of Breakaway South by identifying the "mix" of units in the building. The table below represents this information.

The mix of units is as follows:

No. of Bedrooms	1 Bed	2 Bed	3 Bed
No. of Bathrooms	1 Bath	1 Bath	2 Bath
No. of Units	62	76	26

Table 1

From our previous discussion of the income approach, we know that there are three “key” areas having to do with the income approach to value:

- Gross Income
- Vacancy & Expenses
- Capitalization Rate

The illustration below highlights the location of these key areas on the data entry screen within CAMA.

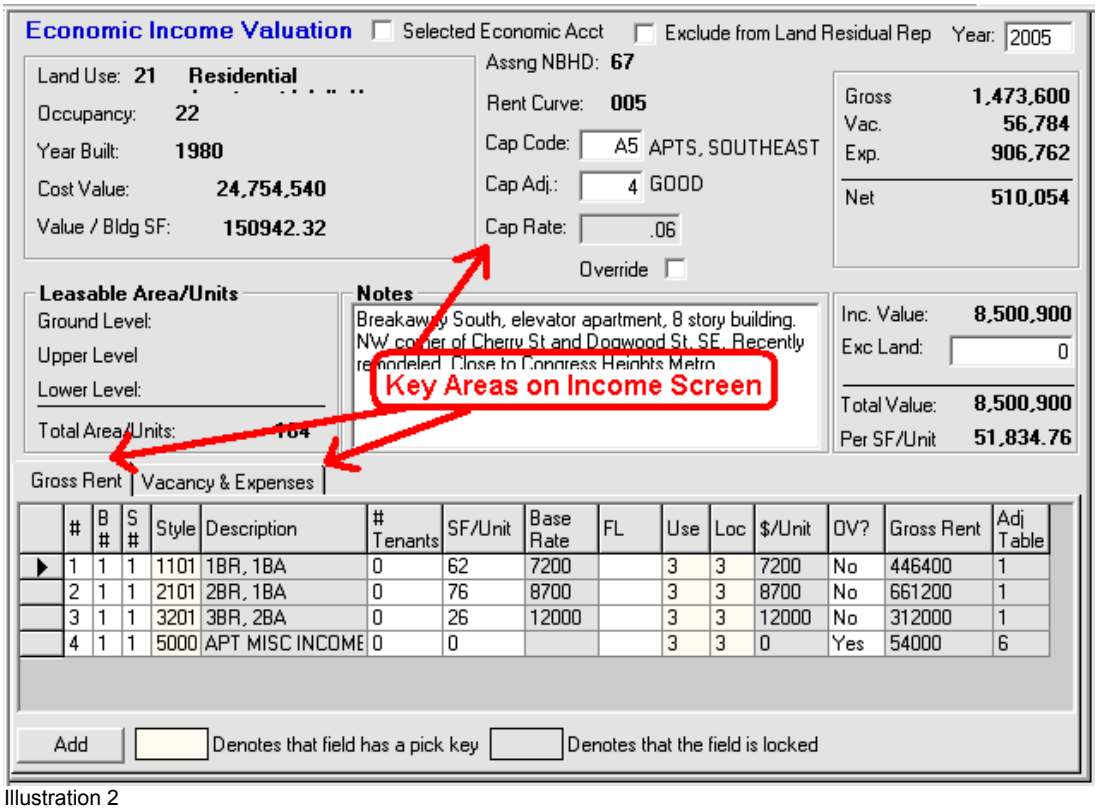
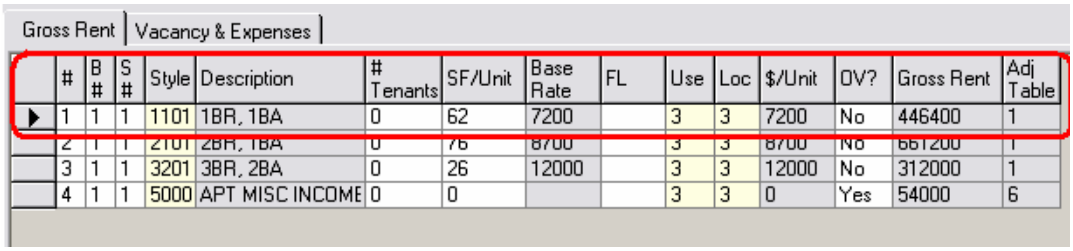


Illustration 2

Gross Rent

Recall we will be appraising the same apartment property from the example in the first section. Let’s first turn our attention to the Gross Rent tab on the data entry screen. We’ll be entering information about the complex in the Gross Rent table, using one line for each *style* of apartments. By style, we mean the unit of comparison designated for apartment buildings – 1 bed-1 bath, 2 bed w/den-1 bath, 3 bed-2 bath, and the like.

Let's look at the first line of the table:



#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	$/Unit	OV?	Gross Rent	Adj Table
1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1
2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1
3	1	1	3201	3BR, 2BA	0	26	12000		3	3	12000	No	312000	1
4	1	1	5000	APT MISC INCOME	0	0			3	3	0	Yes	54000	6

Illustration3

Our first line will account for the 1 bedroom-1 bath units in the complex. The style code "1101" is selected from a pick-list that describes the different styles available for apartments. Please refer to the illustration below for a partial list of Income Style for apartments.

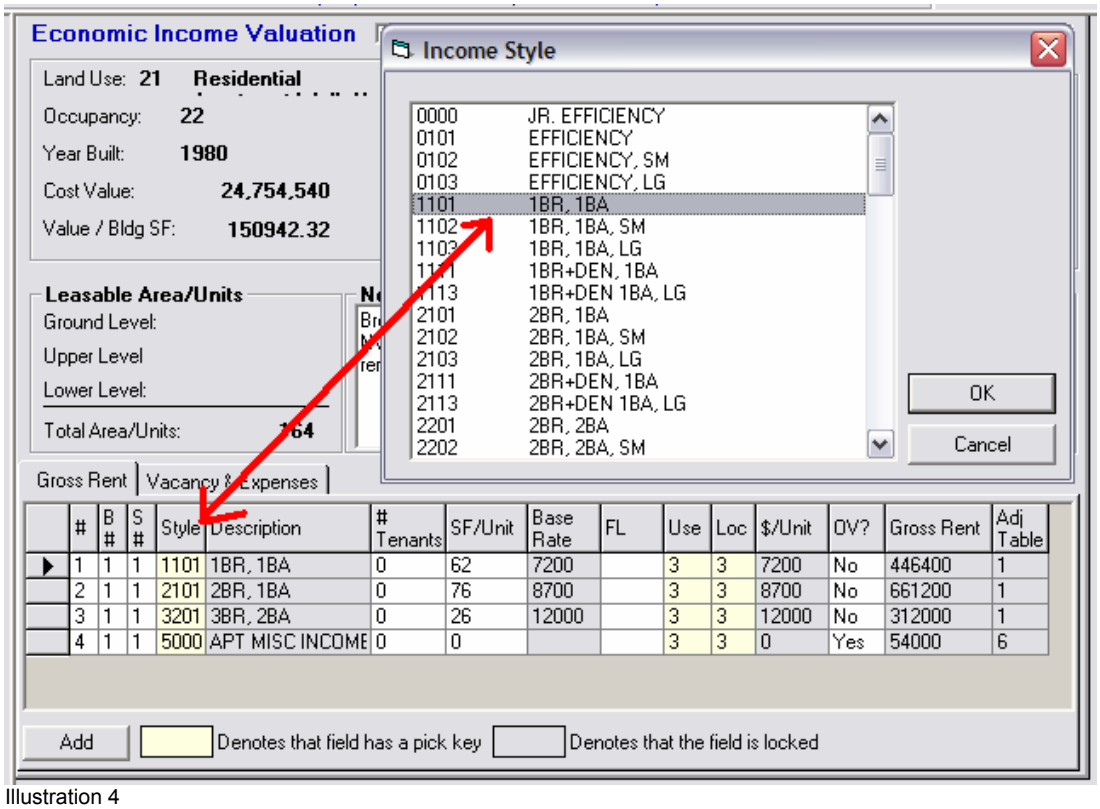
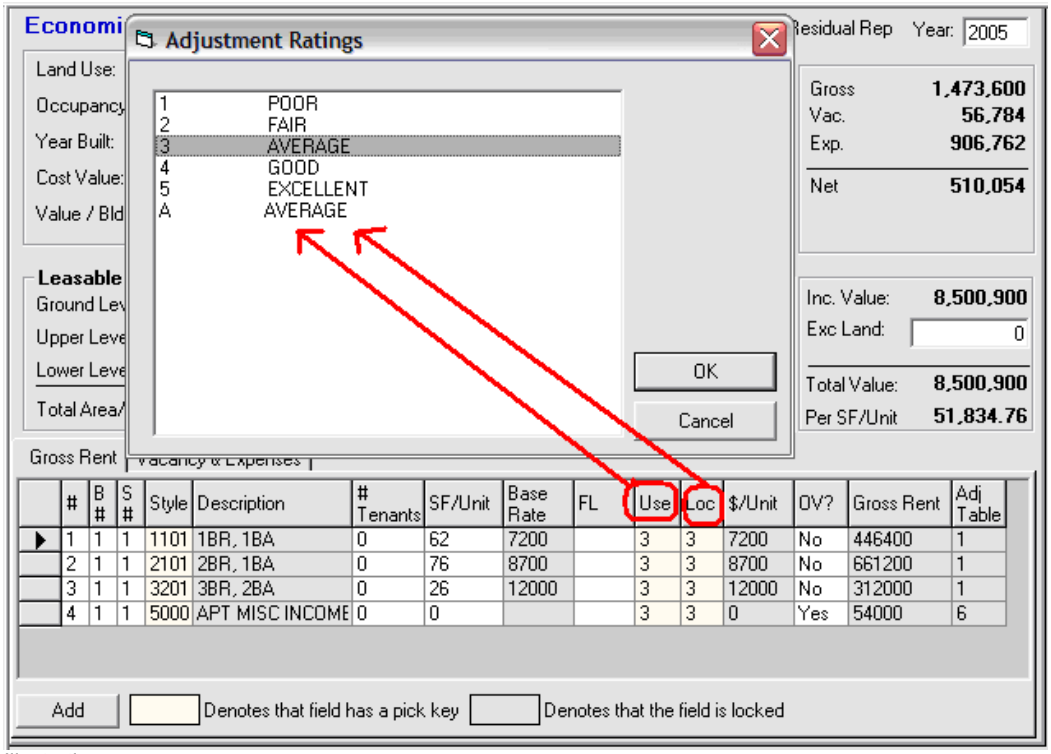


Illustration 4

Recall that there are sixty-two 1BR, 1BA units and that number is recorded in the "SF/Unit" column of the table. In addition to recording the style and number of units, the assessor may choose to modify the Gross Rent by taking into consideration both the tenant desirability and the location of the apartment. The two columns labeled "Use" and "Loc" account for these adjustments, respectively. The adjustments are percentage increases or decreases to the

Gross Income from the default value of “average.” Both the “Use” and “Loc” allow for the same percent adjustment each, as shown in the illustration below.



#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	$/Unit	OV?	Gross Rent	Adj Table
1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1
2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1
3	1	1	3201	3BR, 2BA	0	26	12000		3	3	12000	No	312000	1
4	1	1	5000	APT MISC INCOME	0	0			3	3	0	Yes	54000	6

Illustration 5

The amount of adjustment is based on the table below:

Rating	Description	Location	Use
1	POOR	0.8	0.8
2	FAIR	0.9	0.9
3	AVERAGE	1	1
4	GOOD	1.1	1.1
5	EXCELLENT	1.25	1.25
A	AVERAGE	1	1

Table 2

In our example, we chose not to make any adjustments for location or desirability to any of the apartment units in this property.

The Base Rate shows the annual rent for each unit of the particular style “1101” – 1BR, 1BA. In this example the rent is $ 600 per month or $7,200 on an annual basis as shown in the base rate column. This value has been selected from a table in CAMA. The table has been calibrated based upon extensive market analysis of current rents segmented by location and style, throughout the District. Below is an excerpt of a table that illustrates the rents for our particular property.

		SOUTHEAST
Code	Description	Monthly Rent
0000	JR. EFFICIENCY	416
0101	EFFICIENCY	520
0102	EFFICIENCY, SM	468
0103	EFFICIENCY, LG	572
1101	1BR, 1BA	600
1102	1BR, 1BA, SM	540
1103	1BR, 1BA, LG	660
1111	1BR+DEN, 1BA	825
1113	1BR+DEN 1BA, LG	908
2101	2BR, 1BA	725
2102	2BR, 1BA, SM	653
2213	2BR+DEN 2BA, LG	1100
3101	3BR, 1BA	900
3102	3BR, 1BA, SM	810
3103	3BR, 1BA, LG	990
3111	3BR+DEN, 1BA	1150
3113	3BR+DEN 1BA, LG	1265
3201	3BR, 2BA	1000

Table 3

Notice that our subject property is located in the Southeast market. The District of Columbia is divided into nine separate commercial markets for modeling purposes. The market influences within the Southeast are, for example, different from the influences within Central Business District or the Northwest market. Separate rent schedules exist for each separate market.

As we continue with our example, we account for the other two styles of units in a similar manner. At this point, the gross rent has been calculated to be $1,419,600. But, if you recall from the income and expense statement, the property generated an additional $54,000 in non-rental income. We need to include this amount to determine to total gross income.

To account for the miscellaneous income, select “5000 APT MISC INCOME” as the style and enter the actual amount directly into the Gross Rent column. We want to be sure to set the “OV?”(override), column to “Yes.” By doing so, we ensure that the amount does not get adjusted for vacancy and collection loss discussed in the next section. Typically, only rental income is subjected to vacancy and collection loss. See the illustration below:

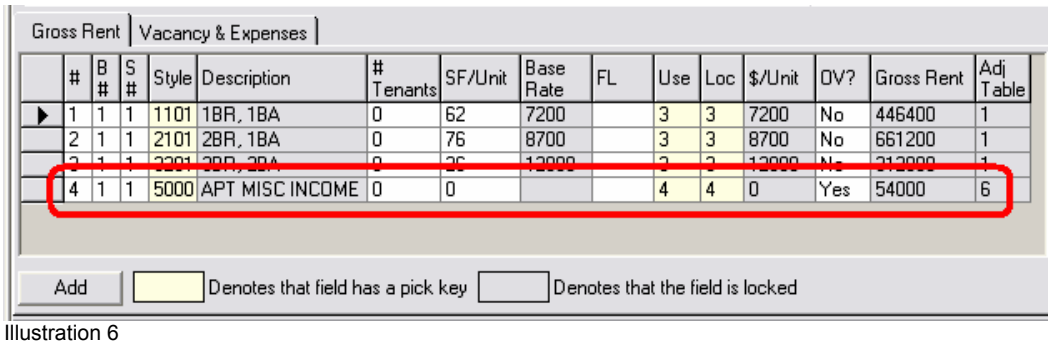


Illustration 6

This concludes our discussion of the Gross Rent tab in the CAMA system. We have accounted for all of the rent attributable to the property and concluded that the Gross Rent is the sum of $ 1,473,600, the same amount as shown on the income and expense sheet from section one. Next, we'll turn to the Vacancy & Expenses portion of the record.

Vacancy and Expenses

Our work in the Vacancy and Expenses tab will be similar to what we did in the Gross Income tab. However, in this table we'll account for four items:

- Vacancy amount
- EGI (Effective Gross Income) calculation
- Expense amount
- NOI (Net Operating Income) calculation

The sum of the NOI calculated here will be the basis for the final valuation using the IRV formula, after selecting a rate. See below:

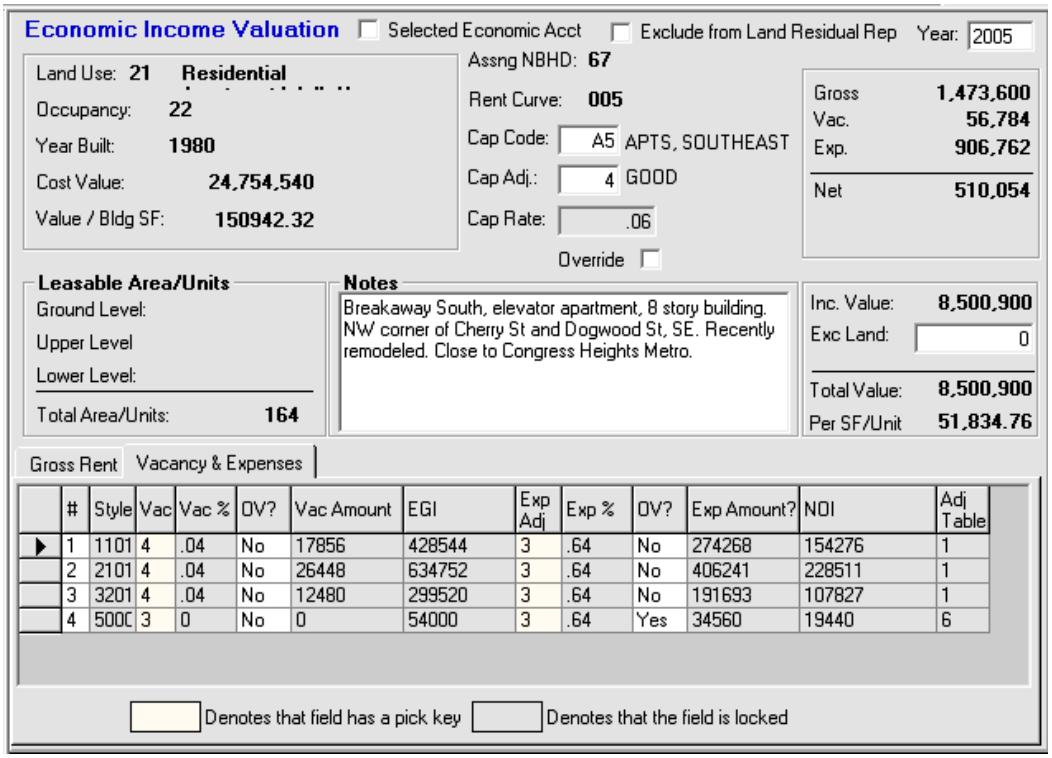


Illustration 7

A Vacancy and Expenses line is automatically created for each style shown on the Gross Rent tab. The values assigned by CAMA are based on the market location of the property and are derived from extensive market analysis. Recall that our apartments are located in the Southeast market. CAMA populates the

Vac% column and the Exp% column with the market rates appropriate for Southeast; in this case it would be based on this table:

		OLD CITY #2	SOUTHEAST	SOUTHWEST	UPTOWN EAST	UPTOWN WEST
	Vacancy Ratio	7%	8%	5%	7%	5%
	Expense Ratio	48%	64%	50%	64%	48%

Table 4

You may have noticed that the Vacancy % in the table and on the tab does not agree. We have examined the property and concluded that the vacancy rate should be less than the typical of 8 percent, to reflect the true status of the property. To make this adjustment, change the value in the column named "Vac' to an appropriate number. In this case, the vacancy is "Good", thereby changing the Average, 8 percent to a lesser amount of 4 percent. See the illustration below:

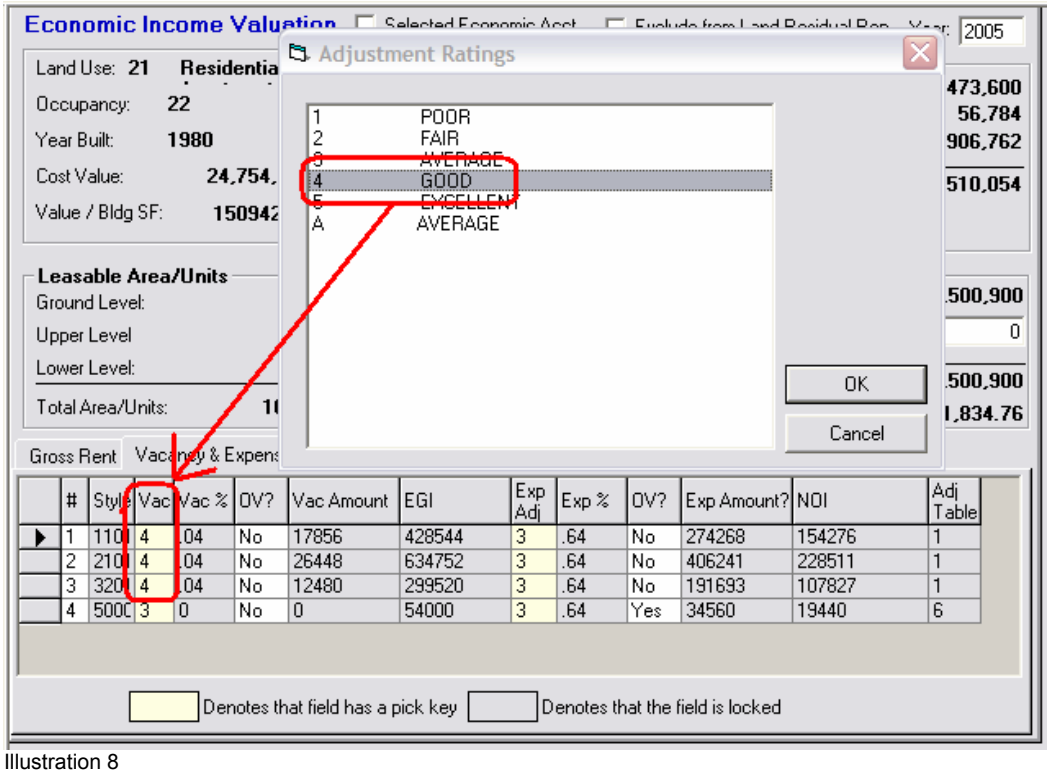


Illustration 8

The amount of adjustment for both vacancy and expense are shown in the table below. Whereas the typical vacancy for the Southeast market area is 8 percent, selecting "Good", modifies the vacancy ratio by appropriate multiplier in the adjustment table. The adjusted amount is 4 percent (0.08 * 0.50).

Rating	Description	Vacancy	Expense
1	POOR	2	1.25
2	FAIR	1.5	1.1
3	AVERAGE	1	1
4	GOOD	0.5	0.9
5	EXCELLENT	0.25	0.75
A	AVERAGE	1	1

Table 5

By subtracting the vacancy amount calculated here from the Gross Income from the Gross Rent, the result is the EGI, as shown.

The Expense % may be adjusted in a similar manner, but in this case we'll leave it set to the typical percent associated with the Southeast market of sixty-four percent. By subtracting the Exp. Amount from the EGI, we get the NOI of the property. CAMA has calculated the NOI to be $510,054, identical to our earlier income and expense report.

We're almost done. The last piece of the valuation puzzle is the capitalization rate.

Capitalization Rate

The capitalization rate is assigned to the property based on its market location. Neighborhood 67, Saint Elizabeth's, is located in the Southeast market area.

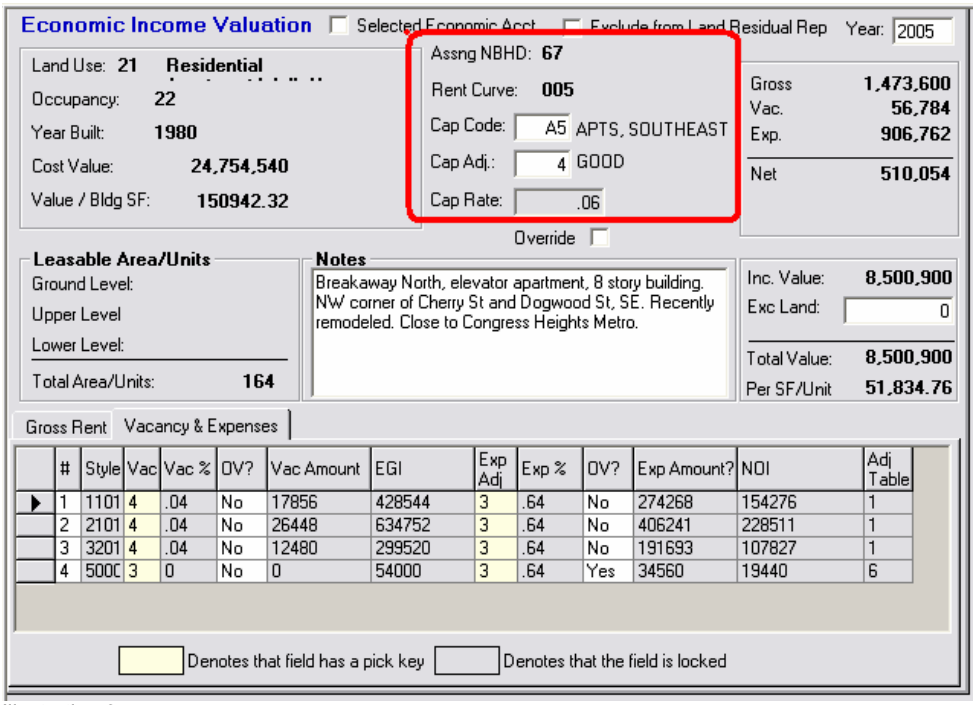


Illustration 9

Capitalization rates may vary across the District based on the class of property (office, retail, apartments, etc.) and its location (market area). The assigned capitalization rate for apartments in the Southeast market is 0.069 or 6.9 percent.

Upon analysis of the property and its income and expenses, an adjustment to the cap rate is warranted. Instead of 'average', we want to adjust the rate down to reflect the property's overall good performance. Its good performance appears to be attributed, in part, to its close location to the hospital and the Congress Heights Metro stop. This adjustment is accomplished by the Cap Rate adjustment dialog box. See below.

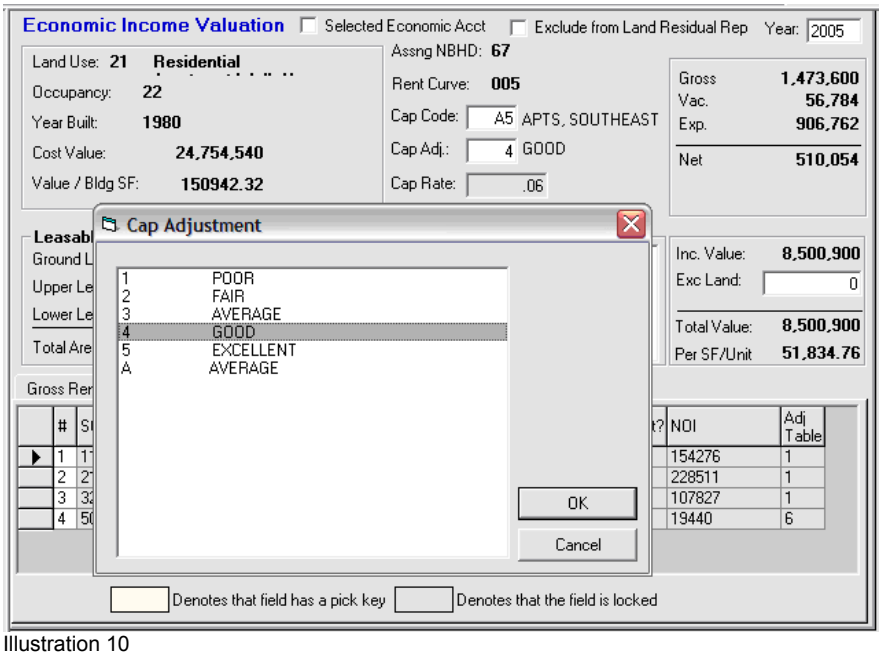


Illustration 10

The typical market capitalization rate was to be 0.069. The adjustment to good changed the rate to 0.060 or 6 percent. This was accomplished by multiplying the assigned rate by the appropriate adjustment factor, in this case 0.87.

Had we determined that the property was inferior and the cap rate needed to be adjusted to "Fair", the resulting rate would have been 0.079 or 7.9 percent. Remember IRV tells us that, all other things being equal, the lower the cap rate the higher the property value and visa versa. The table below shows the capitalization rate adjustment factors.

Cap Rating	Description	Adjustment
1	POOR	1.29
2	FAIR	1.15
3	AVERAGE	1
4	GOOD	0.87
5	EXCELLENT	0.75
A	AVERAGE	1

Table 6

Valuation

We have finally come to the end of our example and exercise. One simple division remains. Knowing that the NOI is $510,054 and that the overall direct capitalization rate is 0.06, we can calculate the estimated value of Breakaway South to be $8,500,900 ($510,054/0.06). Again, this is identical to the amount estimated in the first section of the exercise. The final results are highlighted below.

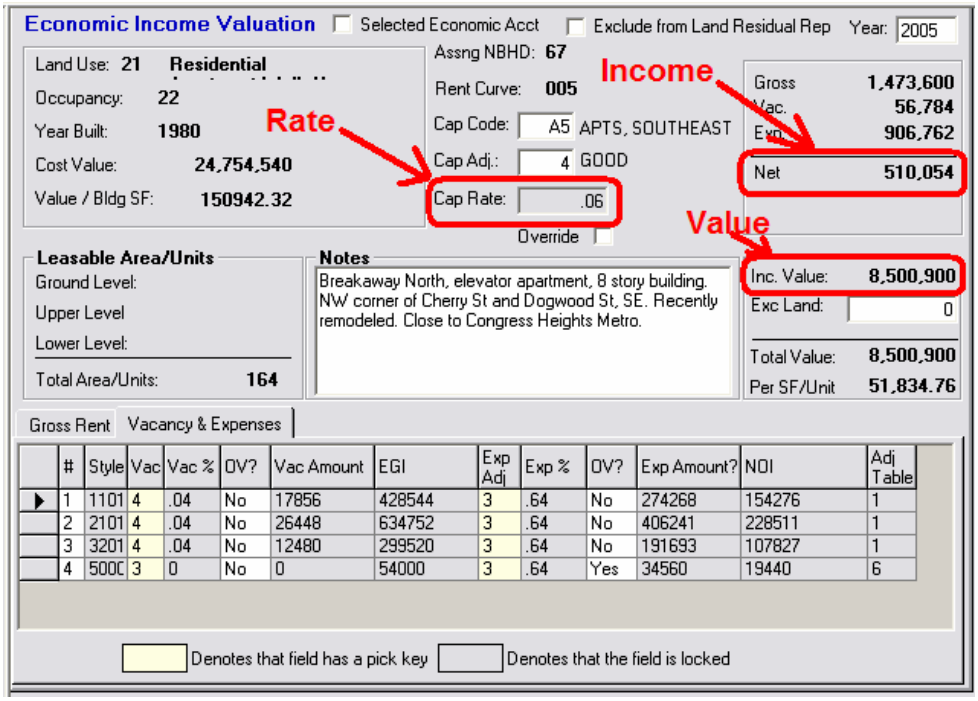


Illustration 11

Some Final Thoughts

We have introduced you to some of the most elementary aspects of property valuation using the District's Vision® CAMA system. We have developed the estimated market value of a fictitious apartment complex, utilizing the direct capitalization income approach to value. This guideline is merely a small window, a first step, in the complex field of mass appraisal. A CAMA system robust enough to appraise 184,000 different properties will necessarily be comprehensive and complex. Additionally, an initial valuation generated by CAMA is always subject to the review and approval of a qualified, professional appraiser before it becomes a final value. As you explore and utilize the program make certain that you fully understand the ramifications and results of your actions. Your supervisor and/or CAMA manager will always be available to assist you.

(A)

TY	2005					SQ/LOT		
RET ER	AREA	L-T RETAIL	OFC ER	AREA	L-T OFFICE	VACANT/ST SPACE		
(1)	(4)	(6)	(9)	(12)	(14)	OFFICE	RETAIL	
		$0			$0	(16)	(23)	
$ -	0	$0			$0		0	
$ -	0	$0			$0		0	
$ -	0	$0			$0		0	
$ -		$0	$ -		$0		0	
$ -		$0	$ -	0	$0		0	
$ -		$0	$ -	0	$0		0	
$ -		$0	$ -	0	$0		0	
$ -		$0	$ -	0	$0		0	OFC-MKT RATE
$ -		$0	$ -	0	$0		0	
$ -		$0	$ -	0	$0	0	0	
$ -		$0	$ -	0	$0	0	0	
$ -		$0	$ -	0	$0	0	0	
		(7b)			(15b)	(17)	(24)	
		(7)			(15)	(18)	(25)	
	(5)	(7a)		(13)	(15a)	(19)	(26)	
(2) #VALUE!			(10)			(20)	(27)	VACANT/ST LL
VAC MEZZ	(3)	(8)	(11)			(21)	(28)	
						(22)	(29)	LL INCOME

NRA: (1) SF OF OFC/RETAIL

(E)

VALUE CALCULATION

PGI	(2)	#VALUE!		(14)	#VALUE!	STAB VALUE
CONCESSIONS	(3)	$0		(15)	$0	PV OF LEASE UP COSTS
VAC	(4)	(7)		(16)	$0	REHAB COSTS
SUBTOTAL	(5)	#VALUE!		(17)	#VALUE!	MARKET VALUE AS IS
PARKING	(6)			(18)	#VALUE!	VALUE PER SF
ROOF	(7)					
STORAGE	(8)					
OTHER	(9)					
OP EXP	(10)		$0.00 (11)			
NOI	(12)	#VALUE!				
OAR	(13)					

RETAIL-MKT RATE

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(B)

VACANT AND S-T OFFICE LEASE-UP COSTS

2004	2005	2006	
(1)	(14)	(27)	
		0	
		0	
0		0	
0	0	0	
0	0	0	
(2)	(15)	(28)	
(3)	(16)	(29)	
(4)	(17)	(30)	
(5)	(18)	(31)	PGI
(6)	(19)	(32)	
(7)	(20)	(33)	
(8)	(21)	(34)	NOI LOSS
(9)	(22)	(35)	
(10)	(23)	(36)	
(11)	(24)	(37)	
(12)	(25)	(38)	
(13)	(26)	(39)	

(C)

RETAIL-VACANT/ST SPACE LEASE UP COSTS

(1)	(6)	(11)	PV OF COMMISSIONS
(2)	(7)	(12)	EXCESS VACANCY
(3)	(8)	(13)	

VACANT AND S-T RETAIL LEASE UP

2004	2005	2006	
(4)	(9)	(14)	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
(5a)	(10a)	(15a)	
(5)	(10)	(15)	TOTAL VACANT AND S-T RETAIL

(D)

ASSUMPTIONS

LEASE GROWTH RATE:	(1)
LEASE-UP ASSUMPTION:	
USE 50% IF 6 MO. PERIOD	(2)
USE 100% IF 12 MO. PERIOD	
STANDARD TENANT IMP:	(3)
RENEWAL TENANT IMP:	(4)
NEW TENANT COMM:	(5)
RENEWAL COMM:	(6)
EGI-VAC RATE:	(7)
OP EXP:	(8)
VACATE PROBABILITY:	(9)
DISCOUNT FACTORS @ 12%	(10)

$0 PV OF(11)
EX. VAC
$0 PV TI's(12)
$0 PV COMM (13)
$0 PV OF LEASE-UP (14)

Retail Totals

(15)
(16)
(17)

(F)

ADDITIONAL L-T RETAIL REVENUE

RET ER	AREA	L-T RETAIL
(1)	(2)	(3)
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
	0	**(4)**

(G)

ADDITIONAL L-T OFFICE REVENUE

OFC ER	AREA	L-T OFFICE
(1)	(2)	(3)
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -	0	$0
$ -		$0
	0	**(4)**

(H)

ADD'L VAC/SHORT TERM SPACE

OFFICE	RETAIL
(1)	(2)
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
(3)	**(4)**

LEASE-UP ANALYSIS

ADD'L VAC/ST SPACE

OFFICE	RETAIL
2001	**2001**
(5)	(6)
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
(7)	(8)
2002	**2002**
(9)	(10)
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
(11)	(12)
2003	**2003**
(13)	(14)
0	0
0	0
0	0
0	0
(15)	(16)

OFFICE MKT LEASE RATE-
RECENT OFFICE LEASES SIGNED IN BLDG

(I)

LEASE DATE	RATE	AREA	LEASE REVENUE	COMP SQ/LOT
(1)	(2)	(3)	(4)	(5)
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
	$ -		$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
		0	$0	
		(6)	(7)	(8) WT AVG

RETAIL MKT LEASE RATE-
RECENT LEASES SIGNED IN BLDG

(J)

LEASE DATE	RATE	AREA	LEASE REVENUE	COMP SQ/LOT
(1)	(2)	(3)	(4)	(5)
	$ -	0	$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	
			$0	

(K)

FACTORS	12% (1)			
Year	Estimated Loss	PV Factor	PV of Loss(es)	
1	(2)	0.89286	(3)	(4)
2	$0	0.79719		$0
3	$0	0.71178		$0
4	$0	0.63552		$0
5	$0	0.56743		$0
6	$0	0.50663		$0
7	$0	0.45235		$0
8	$0	0.40388		$0
9	$0	0.36061		$0
10	$0	0.32197		$0
			(5)	

#	Field Name	Description	Calc	Calculation
A-1	Retail Effective Rates	Long term (beyond 3 years) Retail, Rental Rates from Rent Roll	NO	
A-2		Weighted Average Long Term Retail Rental Rate X Lease Growth Rate	YES	Total of Long Term Retail Income divided by Total Long Term Retail Area
A-3	Vacant Mezzanine Area	Vacant or Short Term Mezzanine Area from Rent Roll	NO	
A-4	Area	Long Term (Beyond 3 Years) Retail Area From Rent Roll (col 3)	NO	
A-5		Total of Long Term Retail Area from A-4	YES	Sum of Long Term Leases
A-6	Long Term Retail	Actual Reported Income from Long Term Retail Leases	YES	Rental Rate X Area
A-7		Total of Long Term Retail Income	YES	Sum of Actual Long Term Retail Leases
A-7a		Total of Long Term Retail Income	YES	Total of Long Term Retail Income X Lease Growth Rate
A-7b		Total of all Long Term Retail Rent from Additional Revenue Worksheet	YES	Brings Total Long Term Retail Leases from Additional Revenue Worksheet (F4)
A-8		Market Rental Rate Assigned to Vacant/Short Term Mezzanine Area	NO	
A-9	Office Effective Rents	Long Term Office Rental Rate From Rent Roll	NO	
A-10		Weighted Average Long Term Office Rental Rate X Lease Growth Rate	YES	Total of Long Term Office Income X Lease Growth Rate/Total Area LTOFF
A-11		Vacant or Short Term Market Mezzanine Income	YES	Vacant/Short Term Mezz Area X Mezz Market Rental Rate
A-12	Area	Long Term Office Area From Rent Roll	NO	
A-13		Total of Long Term Office Area from A12	YES	Sum of Long Term Office Leases
A-14	Long Term Office	Actual Rental Income From Long Term Office Leases	YES	Office Rental Rate X Area
A-15		Total of Long Term Office Income	YES	Sum of Actual Long Term Office Leases
A15a		Total of Long Term Office Income Increased by Lease Growth Rate	YES	Sum of Actual Long Term Office Leases X Lease Growth Rate
A15b		Total of all Long Term Office Rent from Additional Revenue Worksheet	YES	Brings Total Long Term Office Leases from Additional Revenue Worksheet (F4)
A-16	Vacant/Short Term Space	Vacant or Expiring (Within # Years)Office Leases	NO	
A-17		Additional Vac/ST Office Space from Additional Spaces Worksheet	YES	Sum of Additional Vac/ST Office From Additional Spaces Worksheet
A-18		Total of Vacant/Short Term Office Space	YES	Sum of Vac/ST Office Spaces
A-19		Vacant/Short Term Office Market Income	YES	Vacant/Short Term Office Area X Office Market Rate
A-20	Vacant/Short Term Lower Level	Vacant/Short Term Lower Level Office Space	NO	
A-21		Vacant/Short Term Lower Level Office Market Rental Rate	NO	
A-22	Lower Level Income	Vacant/ST Lower Level Office Market Income	YES	Vac/ST LL Office Area X Market Rental Rate
A-23	Vacant/ Short Term Space	Vacant or Expiring(Within # Years) Retail Leases	NO	
A-24		Additional Retail Space from Additional Revenue Worksheet	YES	Adds Total Retail from Additional Revenue Worksheet H-4
A-25		Total of Vac/ ST Retail Spaces	YES	Sum of Vac/ST Retail Leases
A-26		Vacant/ST Retail Market Income	YES	Sum of Vac/ST Retail Leases X Retail Market Rate
A-27	Vacant/ST Lower Level Retail	Vacant/Short Term Lower Level Retail Space	NO	
A-28		Vacant/Short Term Lower Level Retail Market Rental Rate	NO	
A-29	Lower Level Income	Vacant/Short Term Lower Level Retail Market Income	YES	Vac/ST Retail Area X Market Retail Rate
B-1		Office Leases Scheduled to Expire in Year 2001	NO	
B-2		Additional Office Leases Scheduled to Expire in 2001	YES	Sum of Additional Office Leases from Lease Worksheet
B-3		Total of Office Leases Scheduled to Expire in Year 2001	YES	Sum of Office Leases from Lease Worksheet
B-4	Office Market Rate	Market Rental Rate for Vacant Short Term Office Space for 2001	NO	
B-5	Potential Gross Income	Market Office Income From Leases to Expire in Year 2001	YES	Sum of Office Leases Scheduled to Expire X Office Market Rental Rate
B-6		Effective Office Gross Income From Leases to Expire in 2001	YES	PGI - Vacancy Rate
B-7		Estimated Expenses for Office Leases scheduled to Expire in 2001	YES	Total Off Leased Area to Expire in 2001 X Reduced Op Ex X Occupancy Rate
B-8	NOI Loss	EGI Less Estimated Expenses for Office Leases to Expire in 2001	YES	EGI - Estimated Expenses
B-9		Income Loss Adjusted for Lease-up Time and Vacate Probability for 2001	YES	NOI Loss X Lease-up Assumption X Vacate Probability Rate
B-10	Discount Factor	Converts To Present Value	NO	
B-11		PV of Excess Vacancy for 2001	YES	NOI Loss X Discount Rate
B-12		PV of Tenant Finish for 2001	YES	2001 Exp or Vac Off Space X Occ Rate X Ten Finish Cost X Discount Rate
B-13		PV of Leasing Commissions for 2001	YES	Off Mkt Rate X Exp 2001 Lease Area X Occ Rate X Comm Rate X 7.5 Years X Discount Rate
B-14		Office Leases Scheduled to Expire in Year 2002	NO	
B-15		Additional Office Space to Expire in 2002	YES	Sum of Additional 2002 Office Leases from Additional Worksheet
B-16		Total of Office Leases Scheduled to Expire in Year 2002	YES	Sum of Office Leases to Expire in 2002
B-17	Office Market Rate	Market Rental Rate Adjusted by CPI for Vacant Office Space in 2002	NO	
B-18	Potential Gross Income	Office Market Income From Leases To Expire in 2002	YES	Sum of Office Leases scheduled to Expire in 2002 X 2002 Market Rental Rate
		Effective Office Gross Income From Leases to Expirre in 2002	YES	PGI - Vacancy Rate
		Estimated Expenses for Office Leases scheduled to Expire in 2002	YES	Total Office Leased Space To Expire 2002 X Reduced OpEX Rate X Occ Rate

#	Field Name	Description	Calc	Calculation
B-21	NOI Loss	EGI Less Expenses for Office Space to Expire in 2002	**YES**	EGI - Estimated Expenses
B-22		Income Loss Adjusted for Lease Up Time & Vacate Probability for 2002	**YES**	NOI Loss X Leaseup Assumption X Vacate Probability Rate
B-23	Discount Rate	Converts To Present Value	**NO**	
B-24		PV of Excess Vacancy for 2002	**YES**	NOI Loss X Discount Factor
B-25		PV of Tenant Finish for 2002	**YES**	2002 Exp or Vac Off Space X Occ Rate X Ten Finish Cost X Discount Rate
B-26		PV of Leasing Commissions for 2002	**YES**	Off Mkt Rate X Exp 2002 Lease Area X Occ Rate X Comm Rate X 7.5 Years X Discount Rate
B-27		Office Leases Scheduled to Expire in Year 2003	**NO**	
B-28		Additional Office Space to Expire in 2003	**YES**	Sum of Additional 2003 Office Leases from Additional Worksheet
B-29		Total of Office Leases Scheduled to Expire in Year 2003	**YES**	Sum of Office Leases to Expire in 2003
B-30	Office Market Rate	Market Rental Rate Adjusted by CPI for Vacant Office Space in 2003	**NO**	
B-31	Potential Gross Income	Office Market Income From Leases To Expire in 2003	**YES**	Sum of Office Leases scheduled to Expire in 2003 X 2003 Market Rental Rate
B-32		Effective Office Gross Income From Leases to Expire in 2003	**YES**	PGI - Vacancy Rate
B-33		Estimated Expenses for Office Leases scheduled to Expire in 2003	**YES**	Total Office Leased Space To Expire 2003 X Reduced OpEX Rate X Occ Rate
B-34	NOI Loss	EGI Less Expenses for Office Space to Expire in 2003	**YES**	EGI - Estimated Expenses
B-35		Income Loss Adjusted for Lease Up Time & Vacate Probability for 2003	**YES**	NOI Loss X Leaseup Assumption X Vacate Probability Rate
B-36	Discount Rate	Converts To Present Value	**NO**	
B-37		PV of Excess Vacancy for 2003	**YES**	NOI Loss X Discount Factor
B-38		PV of Tenant Finish for 2003	**YES**	2003 Exp or Vac Off Space X Occ Rate X Ten Finish Cost X Discount Rate
B-39		PV of Leasing Commissions for 2003	**YES**	Off Mkt Rate X Exp 2003 Lease Area X Occ Rate X Comm Rate X &.5 Years X Discount Rate
C-1		PV of Retail Leasing Commissions for 2001	**YES**	Retail Market Rate X Retail Area Exp in 2001 X Occ % X Commission % X 7.5 Years X Discount Rate
C-2		Retail Excess Vacancy for 2001	**YES**	Retail Rental Rate X Area X Occ Rate X Leaseup Assumption % X Vacate %
C-3	Rental Market Rate	Market Rate for Vacant/Short Term Retail Space for 2001	**NO**	
C-4		Retail Leases Scheduled to Expire in 2001	**NO**	
C-5		Total of Retail Leases Scheduled to Expire in 2001	**YES**	Sum of Retail Leases Scheduled to Expire in 2001
C5a		Additional Retail Area from Additional Revenue Worksheet	**YES**	Adds Total Area from Additional Revenue Worksheet Sec H-8
C-6		PV of Retail Leasing Commissions for 2002	**YES**	Retail Market Rate X Retail Area Exp in 2002 X Occ % X Commission % X 7.5 Years X Discount Rate
C-7		Retail Excess Vacancy for 2002	**YES**	Retail Rental Rate X Area X Occ Rate X Leaseup Assumption % X Vacate %
C-8	Rental Market Rate	Market Rate for Vacant/Short Term Retail Space for 2002	**NO**	
C-9		Retail Leases Scheduled to Expire in 2002	**YES**	Retail Rental Rate X Area X Occ Rate X Leaseup Assumption % X Vacate %
C-10		Total of Retail Leases Scheduled to Expire in 2002	**YES**	Sum of Retail Leases Scheduled to Expire in 2002
C-10a		Additional Retail Area from Additional Revenue Worksheet	**YES**	Adds Total Area from Additional Revenue Worksheet Sec H-12
C-11		PV of Retail Leasing Commissions for 2003	**YES**	Retail Market Rate X Retail Area Exp in 2003 X Occ % X Commission % X 7.5 Years X Discount Rate
C-12		Retail Excess Vacancy for 2003	**YES**	Retail Rental Rate X Area X Occ Rate X Leaseup Assumption % X Vacate %
C-13	Rental Market Rate	Market Rate for Vacant/Short Term Retail Space for 2003	**NO**	
C-14		Retail Leases Scheduled to Expire in 2003	**YES**	Retail Rental Rate X Area X Occ Rate X Leaseup Assumption % X Vacate %
C-15		Total of Retail Leases Scheduled to Expire in 2003	**YES**	Sum of Retail Leases Scheduled to Expire in 2003
C-15a		Additional Retail Area from Additional Revenue Worksheet	**YES**	Adds Total Area from Additional Revenue Worksheet Sec H-16

#	Field Name	Description	Calc	Calculation
D-1	Lease Growth Rate	Selected Yearly Lease Growth Rate	NO	
D-2	Lease-up Assumption	Used to Estimate Excess Vacancy	NO	
D-3	Standard Tenant Improvement	T I Cost Applied to New Leasesd Space	NO	
D-4	Renewal Tenant Improvement	T I Cost Applied to Renewal Leased Space	NO	
D-5	New Tenant Commission	Leasing Commission Applied to New Leased Space	NO	
D-6	Renewal Commission	Leasing Commission Applied to Renewal Leased Space	NO	
D-7	Vacancy Rate	Selected Vacancy Rate to Determine Eff Gross Income	NO	
D-8	Op Exp Saved Per SQFT	Expenses Used to Determine NOI Loss for Excess Vacancy	NO	
D-9	Vacate Probability	If Tenant is Leaving 100% is Used This Effects Vacancy, TI's & Comm	NO	
D-10	Discount Rate	Used to Calculate Discount Factors	NO	
D-11	PV of Excess Vacancy	Sum of PV Office Excess Vacancy for 2001-2003	YES	Sum of PV office Ex Vac 2001-2003
D-12	PV TI's	Sum of PV of Office TI's for 2001-2003	YES	Sum of PV of Office TI's for 2001-2003
D-13	PV Comm	Sum of Office Commissions for 2001-2003	YES	Sum of Office Commissions for 2001-2003
D-14	PV of Lease-up	Sum of PV of Office Excess Vacancy, TI's & Commissions	YES	Sum of PV of Office Excess Vacancy, TI's & Commissions
D-15	PV of Commissions	Sum of PV of Retail Commissions for 2001-2003	YES	Sum of PV of Retail Commissions for 2001-2003
D-16	Excess Vacancy	Sum of Retail Excess Vacancy for 2001-2003	YES	Sum of Retail Excess Vacancy for 2001-2003
D-17	Total PV of Retail	PV of Total Retail Commissions & Retail Excess Vacancy	YES	PV of Total Retail Comm & Retail Excess Vacancy
E-1	NRA	Total Square Footage of Office and Retail	YES	Total of all Square Feet in Section A (Office, Retail, Mezz, Lower Level)
E-2	PGI	Potential Office Mezzanine Retail Gross Income	YES	Total of all Income in Section A (Off, Retail, Mezz and Lower Level)
E-3	Concessions	Enter Lease Concessions	NO	
E-4	Vacancy Rate	Vacancy Percentage	YES	Vacancy from Section D
E-5	Subtotal	Office and Retail Income Minus	YES	PGI-Concessions-Vacancy
E-6	Parking	Estimated Parking Income	NO	
E-7	Roof	Typical Antenna Income	NO	
E-8	Storage	Storage Income	NO	
E-9	Other	Other Income	NO	
E-10	Op Expenses	Operating Expenses	NO	
E-11		Operating Expenses Per SQFT	YES	Op Ex divided by NRA
E-12	NOI	Net Operating Income	YES	Total Income minus Op Ex
E-13	OAR	Selected Capitalization Rate	NO	
E-14	Stabilized Value	Value before Any Lease-up Costs	YES	NOI divided by OAR
E-15	PV of Lease-up Cost	PV of All Office & Retail Lease-up Cost	YES	PV of Off Lease-up Cost + PV of Retail Lease-up Cost
E-16	PV of Rehab Cost	PV of Rehab Cost, PV of Above or Below Market Rent Difference	NO	
E-17	Market Value	Total Estimated Market Value	YES	Stabilized Value minus PV of Lease-up Cost minus PV of Rehab Cost
E-18	Value Per Square Foot	Market Value Per SqFt of NRA	YES	Market Value divided by NRA
F-1	Long Term Retail Rent	Continuation from Income Worksheet Of Long Term Retail Rents	NO	
F-2	Long Term Retail Area	Leased area for Retail Tenants With Long Term Rents	NO	
F-3	Long Term Retail Annual Rent	Annual Rent From Long Term Retail Tenants	YES	Long Term Retail Rent X Leased Square Feet
F-4	Total Long Term Retail Rent	Sum of all Retail Tenants in this Section	YES	Totals all Annual Rents in this Section to be added to Worksheet in Sec A7-b
G-1	Long Term Office Rent	Continuation from Income Worksheet Of Long Term Office Rents	NO	
G-2	Long Term Office Area	Leased area for Office Tenants With Long Term Rents	NO	
G-3	Long Term Office Annual Rent	Annual Rent From Long Term Office Tenants	YES	Long Term Office Rent X Leased Square Feet
G-4	Total Long Term Office Rent	Sum of all Office Tenants in this Section	YES	Totals all Annual Rents in this Section to be added to Worksheet in Sec A15-b

#	Field Name	Description	Calc	Calculation
H-1	Office Short Term Area	Continuation from Income Worksheet of Short Term/Vacant Office Area	NO	
H-2	Retail Short Term Area	Continuation from Income Worksheet of Short Term/Vacant Retail Area	NO	
H-3	Total Office Area	Total of all Office Area in this Section	YES	Sums all Short Term or Vacant Office space in this Sec Added to A-17
H-4	Total Retail Area	Total of all Retail Area in this Section	YES	Sums all Short Term or Vacant Retail space in this Sec Added to A-24
H-5	Office Short Term Year 1	Area of Office Tenants Whose Leases Expire in Year 1	NO	
H-6	Retail Short Term Year 1	Area of Retail Tenants Whose Leases Expire in Year 1	NO	
H-7	Total Office Short Term Year 1	Total Area of Office Tenants Whose Leases Expire in Year 1	YES	Sums Office Area in this Section to be added to Section B-2
H-8	Total Retail Short Term Year 1	Total Area of Retail Tenants Whose Leases Expire in Year 1	YES	Sums Retail Area in this Section to be added to Section C-5a
H-9	Office Short Term Year 2	Area of Office Tenants Whose Leases Expire in Year 2	NO	
H-10	Retail Short Term Year 2	Area of Retail Tenants Whose Leases Expire in Year 2	NO	
H-11	Total Office Short Term Year 2	Total Area of Office Tenants Whose Leases Expire in Year 2	YES	Sums Office Area in this section to be added to section B-15
H-12	Total Retail Short Term Year 2	Total Area of Retail Tenants Whose Leases Expire in Year 2	YES	Sums Retail Area in this section to be added to section C-10a
H-13	Office Short Term Year 3	Area of Office Tenants Whose Leases Expire in Year 3	NO	
H-14	Retail Short Term Year 3	Area of Retail Tenants Whose Leases Expire in Year 3	NO	
H-15	Total Office Short Term Year 3	Total Area of Office Tenants Whose Leases Expire in Year 3	YES	Sums Office Area in this section to be added to section B-28
H-16	Total Retail Short Term Year 3	Total Area of Retail Tenants Whose Leases Expire in Year 3	YES	Sums Retail Area in this section to be added to section C-15a
I-1	Office Market Leases Date	Date Signed for Office Market Leases to be used as Comparable	NO	
I-2	Office Market Leases Rent	Rent per Sq Ft for Office Market Leases to be used as Comparable	NO	
I-3	Office Market Leases Area	Square Foot Area for Office Market Leases to be used as Comparable	NO	
I-4	Office Market Leases Annual $	Annual Rent for Office Market Leases to be Used as Comparable	YES	Office Area X Market Rent
I-5	Office Market Comps Sq/Lot	Square & Lot for Comparable Lease if not from Subject	NO	
I-6	Total Area Off Market Leases	Total Area of Office Leases in this Section	YES	Sums Total Rented Area in this Section
I-7	Total Rent Off Market Leases	Total Rent for Office Leases in this Section	YES	Sums Total Office Annual Rent For This Section
I-8	Weighted Avg Off Market Leases	Average of all Office leases in this section	YES	Divides Total Annual Rent By Total Office Area For Weighted Average
J-1	Retail Market Leases Date	Date Signed for Retail Market Leases to be used as Comparable	NO	
J-2	Retail Market Leases Rent	Rent per Sq Ft for Retail Market Leases to be used as Comparable	NO	
J-3	Retail Market Leases Area	Square Foot Area for Retail Market Leases to be used as Comparable	NO	
J-4	Retail Market Leases Annual $	Annual Rent for Retail Market Leases to be Used as Comparable	YES	Retail Area X Market Rent
J-5	Retail Market Comps Sq/Lot	Square & Lot for Comparable Lease if not from Subject	NO	
J-6	Total Area Ret Market Leases	Total Area of retail Leases in this Section	YES	Sums Total Rented Area in this Section
J-7	Total Rent Ret Market Leases	Total Rent for Retail Leases in this Section	YES	Sums Total Retail Annual Rent For This Section
J-8	Weighted Avg Ret Market Leases	Average of all Retail leases in this section	YES	Divides Total Annual Rent By Total Retail Area For Weighted Average
K-1	Discount Rate	Discount Rate used to Estimate PV of Losses	NO	
K-2	Estimated Loss	Year 1 of Loss of Estimated Loss, Capitalized Expense or Excess Rent	NO	
K-3	PV Factor	Present Value formula for Discount Rate in L1	YES	Present Value Formula for Discount Rate in L1
K-4	PV of Loss(es)	Present Value times Annual Loss	YES	Present Value times Annual Loss
K-5	Total PV of Losses	Totals Present Value of Losses	YES	Totals Present Value of Losses Over Holding Period

USECODE

(Selects Base Rate)

No.	Description	Value
011	Row	$131.99
012	Detached	$154.17
013	Semi-Detached	$132.95
015	Mixed Use	$131.99
019	Miscellaneous	$131.99
023	Small Apt. Bldg.	$ 96.34
024	Conversion	$135.78
097	Vacant & Aban.	$131.99

CONSTRUCTION DETAIL

No.	Description	Value
Style	**(Descriptive)**	
1	1 Story	
2	1.5 Story Unfin	
3	1.5 Story Fin	
4	2 Story	
5	2.5 Story Unfin	
6	2.5 Story Fin	
7	3 Story	
8	3.5 Story Unfin	
9	3.5 Story Fin	
10	4 Story	
11	4.5 Story Unfin	
12	4.5 Story Fin	
13	Bi-Level	
14	Split Level	
15	Split Foyer	
Foundation (Descriptive)		
0	No Data	
4	Pier	
5	Wood	
6	Concrete	
View	**(Descriptive)**	
0	Typical	
1	Poor	
2	Fair	
3	Average	
4	Good	
5	Very Good	
6	Excellent	
Building Type (Descriptive)		
0	Default	
1	Single	
2	Multi	
6	Row End	$2.00
7	Row Inside	
8	Semi-Detached	
Roof	**(Add to Base Rate)**	
0	Typical	
1	Comp Shingle	
2	Built Up	
3	Shingle	$0.68
4	Shake	$0.79
5	Metal-Pre	$0.50
6	Metal Sms	$0.50
7	Metal-Cpr	$0.50
8	Composition Roll	-$0.43
9	Concrete Tile	$1.88
10	Clay Tile	$2.93
11	Slate	$2.86
12	Concrete	$1.88
13	Neoprene	$0.00
15	Wood- FS	$0.68

Exterior Finish (Add to Base Rate)

0	Default	
1	Plywood	
2	Hardboard Lap	
3	Metal Siding	
4	Vinyl Siding	
5	Stucco	
6	Wood Siding	
7	Shingle	
8	SPlaster	
9	Rustic Log	
10	Brick Veneer	$3.95
11	Stone Veneer	$9.38
12	Concrete Block	
13	Stucco Block	
14	Common Brick	$3.95
15	Face Brick	$3.95
16	Adobe	
17	Stone	$9.38
18	Concrete	$3.95
19	Aluminum	
20	Brick/Stone	$6.67
21	Brick/Stucco	$1.98
22	Brick/Siding	$1.98
23	Stone/Stucco	$4.69
24	Stone/Siding	$4.69

Heat Type (Add to Base Rate)

0	No Data	
1	Forced Air	
2	Air-Oil	$0.55
3	Wall Furnace	-$1.27
4	Electric Rad	-$0.29
5	Elec Base Brd	-$0.20
6	Water Base Brd	$1.42
7	Warm Cool	
8	Ht Pump	
9	Evp Cool	
10	Air Exchng	
11	Gravity Furnace	
12	Ind Unit	
13	Hot Water Rad	

AC Type (Add to Base Rate)

0	Default	
N	No	
Y	Yes	$1.80

Floor Covering (Add to Base Rate)

0	Default	$2.50
1	Resilient	$2.63
2	Carpet	$2.17
3	Wood Floor	$6.06
4	Ceramic Tile	$8.53
5	Terrazzo	$8.30
6	Hardwood	$7.17
7	Parquet	$8.15
8	Vinyl Comp	$1.64
9	Vinyl Sheet	$2.86
10	Lt Concrete	$0.75
11	Hardwood/Carp	$4.67

Per Unit Adjustment (Flat Rate Add)

Full Bath (over 1)	$17,300
Half Bath	$11,600
Fireplace	$ 9,800
Kitchen	$10,440
Finished Basement (Basic)	$30.00/sf
Finished Basement (Partition)	$48.00/sf
Basement Garage	$35.00/sf
Carport	$28.88/sf
Stoop	$16.85/sf
Open Porch	$16.85/sf
Covered Open Porch	$33.70/sf
Screen Enclosed Porch	$36.11/sf
Glass Enclosed Porch	$40.92/sf
Fully Enclosed Porch	$48.14/sf
Deck	$21.66/sf
Patio	$ 6.26/sf

Grade (Multiplies Base, Add & Flat)

0	Default	
1	Low Quality	0.50
2	Fair Quality	0.80
3	Average Quality	1.00
4	Above Average Quality	1.10
5	Good Quality	1.20
6	Very Good Quality	1.25
7	Excellent Quality	1.35
8	Superior Quality	1.50
9	Extraordinary – A	1.70
10	Extraordinary – B	2.00
11	Extraordinary – C	2.20
12	Extraordinary – D	2.50

Interior Condition (Multiplies Base, Add & Flat)

0	Typical	
1	Poor	.794
2	Fair	.928
3	Average	1.000
4	Good	1.063
5	Very Good	1.105
6	Excellent	1.119

Exterior Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.928
3	Average	1.000
4	Good	1.063
5	Very Good	1.105
6	Excellent	1.119

Overall Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.928
3	Average	1.000
4	Good	1.063
5	Very Good	1.105
6	Excellent	1.119

Remodel Type (Multiplies Base, Add & Flat)

0	Default	
1	Unknown	
2	Gut Rehab	1.20
3	Major Renov	1.12
4	Remodel	1.05
5	Addition	
6	Cosmetic	1.02

The effect of this multiplier diminishes at a rate of 5% per year based on the ***Remodel Year***.

DEPRECIATION DETAIL

No.	Description	Value
Grade	**(Adjust EYB)**	
0	Default	
1	Low Quality	20%
2	Fair Quality	10%
3	Average Quality	--
4	Above Average	-05%
5	Good Quality	-10%
6	Very Good Quality	-15%
7	Excellent Quality	-25%
8	Superior Quality	-35%
9	Extraordinary – A	-45%
10	Extraordinary – B	-50%
11	Extraordinary – C	-50%
12	Extraordinary – D	-50%
Bath Style	**(Adjust EYB)**	
0	Default	
1	No Remodeling	
2	Semi-Modern	- 05%
3	Modern	- 10%
4	Luxury	- 20%
Kitchen Style	**(Adjust EYB)**	
0	Default	
1	No Remodeling	
2	Semi-Modern	- 10%
3	Modern	- 20%
4	Luxury	- 40%

Building RCN = [(Base Rate + $\sum$ $ABRV_n$) * Effective Area * Size Adjustment + $\sum$ $AFRV_n$] * (MV_0 * MV_2 * … * MV_N)

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on use and style
ABRV = Additive Base Rate Variables
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
AFRV = Additive Flat Rate Variables
MV = Multiplicative Variables

Depreciation Table

Base Year 2007

Effective Age of Building	*% Depr.*	*% Good*	*Effective Year Built*
0	0	100	2007
1	1	99	2006
2	2	98	2005
3	2	98	2004
4	3	97	2003
5	3	97	2002
6	4	96	2001
7	4	96	2000
8	4	96	1999
9	4	96	1998
10	5	95	1997
11	5	95	1996
12	5	95	1995
13	5	95	1994
14	6	94	1993
15	6	94	1992
16	6	94	1991
17	6	94	1990
18	6	94	1989
19	7	93	1988
20	7	93	1987
21	7	93	1986
22	7	93	1985
23	7	93	1984
24	8	92	1983
25	8	92	1982
26	8	92	1981
27	8	92	1980
28	8	92	1979
29	9	91	1978
30	9	91	1977
31	9	91	1976
32	9	91	1975
33	9	91	1974
34	9	91	1973
35	10	90	1972
36	10	90	1971
37	10	90	1970
38	10	90	1969
39	10	90	1968
40	10	90	1967
41	11	89	1966
42	11	89	1965
43	11	89	1964
44	11	89	1963
45	11	89	1962
46	11	89	1961
47	11	88	1960
48	12	88	1959
49	12	88	1958
50	12	88	1957
51	12	88	1956
52	12	88	1955
53	12	88	1954
54	13	87	1953
55	13	87	1952
56	13	87	1951
57	13	87	1950
58	13	87	1949
59	13	87	1948
60	14	86	1947
61	14	86	1946
62	14	86	1945
63	14	86	1944
64	14	86	1943
65	14	86	1942
70	15	85	1937
75	16	84	1932

CONSTRUCTION DETAIL

Section Detail

No.	Description	Value

Building Stories
As Indicated.

Occupancy
As Indicated.
Select from list.

Stories and #Units
As Indicated.

Structure Class

0	Default
A	Fireproof Steel
B	Reinforced Concrete
C	Con. Block/Solid Brick
D	Wood Frame
P	Wood Pole
S	Steel/Sheet Metal

Exterior Finish

0	Typical
AS	Asphalt Siding
BR	Brick (Solid)
BV	Brick Veneer
C	Concrete
CB	Concrete Block
MS	Metal Siding
S	Stone
SU	Stucco
SV	Stone Veneer
WS	Wood Siding

Grade (Multiplies Base, Features)

0	Default	--
0	Poor Quality	-30%
15	Poor+ Quality	-20%
20	Fair Quality	-10%
25	Fair+ Quality	-05%
30	Average Quality	--
35	Average+ Quality	06%
40	Good Quality	12%
45	Good+ Quality	21%
50	Very Good Quality	30%
55	Very Good + Quality	38%
60	Excellent	45%

Story Height (Multiplies Base)
Currently not in use

Wall Height (Adds to Base Rate)
Currently not in use

CDU Condition, Desirability, Utility (Multiplies Base, Features)

EX	Excellent	35%
VG	Very Good	30%
G	Good	15%
AV	Average	--
F	Fair	-25%
P	Poor	-50%
VP	Very Poor	-70%
US	Unsound	-90%

DEPRECIATION DETAIL

No.	Description	Value

Structure Class (Adjust EYB)

0	Default	0
A	Fireproof Steel	-20%
B	Reinforced Conc.	-15%
C	Con. Block/Brick	-10%
D	Wood Frame	0
S	Steel/Sheet Metal	0

Remodel Rating (Adjusts EYB)

0	Default	--
1	Unknown	-10%
2	Gut Rehab	-70%
3	Major Renovation	-55%
4	Remodel	-45%
5	Addition	-30%
6	Cosmetic	-10%

Year Remodeled (Adjust EYB)

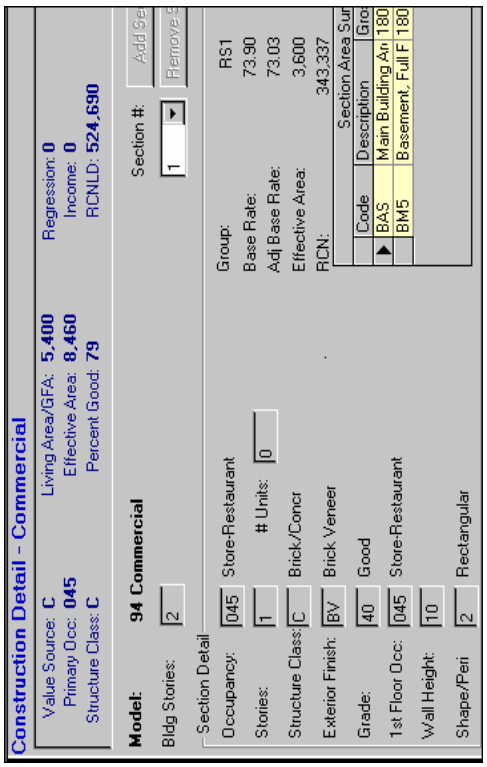
2002-2005	0%
2000-2001	5%
1995-1999	15%
1990-1994	25%
Earlier -1990	50%

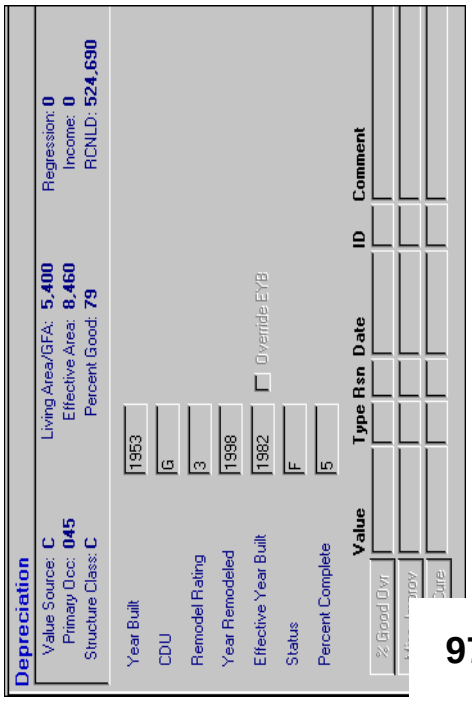
Extra Features (Flat and Sq Ft Add)

BL	Balcony	Flat
ELEV	Elevators	Flat
HVAC	Heat & Cool	Sq. Ft.
MZ	Mezzanines	Sq. Ft.
SPRK	Sprinklers	Sq. Ft.

Building RCN = [Section$_1$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_N)] + [Section$_n$ (Base Rate * Effective Area * Size Adjustment) * (MV_0 * MV_2 * … * MV_N)] + [∑Special Building Features]

Where:
RCN = Replacement Cost New
Base Rate = $ rate based on occupancy (use) code and construction class
Section$_n$ = Each separate building or section of building
Effective Area = Adjusted SF area of improvement
Size Adjustment = Adjustment factor for deviation from base size
MV = Multiplicative Variables





Economic Life Depreciation Tables

Base Year 2007

Age of Building	Effective Year Built	70 Year Economic Life		60 Year Economic Life		50 Year Econmic Life	
		Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2007	0	100	0	100	0	100
1	2006	0	100	0	100	0	100
2	2005	1	99	1	99	2	98
3	2004	1	99	1	99	2	98
4	2003	2	98	3	98	3	97
5	2002	2	98	3	98	3	97
6	2001	3	97	4	96	5	95
7	2000	4	96	5	95	7	93
8	1999	4	96	5	95	7	93
9	1998	5	95	6	94	8	92
10	1997	5	95	6	94	8	92
11	1996	6	94	8	93	10	90
12	1995	7	93	9	91	12	88
13	1994	8	92	10	90	13	87
14	1993	8	92	10	90	13	87
15	1992	9	91	11	89	15	85
16	1991	10	90	13	88	17	83
17	1990	10	90	13	88	17	83
18	1989	11	89	14	86	18	82
19	1988	12	88	15	85	20	80
20	1987	13	87	16	84	22	78
21	1986	13	87	16	84	22	78
22	1985	14	86	18	83	23	77
23	1984	15	85	19	81	25	75
24	1983	16	84	20	80	27	73
25	1982	17	83	21	79	28	72
26	1981	18	82	23	78	30	70
27	1980	19	81	24	76	32	68
28	1979	20	80	25	75	33	67
29	1978	21	79	26	74	35	65
30	1977	22	78	28	73	37	63
31	1976	23	77	29	71	38	62
32	1975	24	76	30	70	40	60
33	1974	25	75	31	69	42	58
34	1973	27	73	34	66	45	55
35	1972	28	72	35	65	47	53
36	1971	29	71	36	64	48	52
37	1970	30	70	38	63	50	50
38	1969	32	68	40	60	53	47
39	1968	33	67	41	59	55	45
40	1967	35	65	44	56	58	42
41	1966	36	64	45	55	60	40
42	1965	38	62	48	53	63	37
43	1964	39	61	49	51	65	35
44	1963	41	59	51	49	68	32
45	1962	42	58	53	48	70	30
46	1961	44	56	55	45	73	27
47	1960	45	55	56	44	75	25
48	1959	46	54	58	43	77	23
49	1958	47	53	59	41	78	22
50	1957	49	51	61	39	82	18
51	1956	51	49	64	36		
52	1955	52	48	65	35		
53	1954	54	46	68	33		
54	1953	55	45	69	31		
55	1952	57	43	71	29		
56	1951	58	42	73	28		
57	1950	60	40	75	25		
58	1949	61	39	76	24		
59	1948	63	37	79	21		
60	1947	64	36	80	20		
61	1946	65	35				
62	1945	67	33				
63	1944	68	32				
64	1943	70	30				
65	1942	71	29				
70	1941	76	24				
75	1940	80	20				

2007 Cost Occupancy / Use Codes

Occ. Code	Land Class	Description	Bldg. Model	Bldg. Occ.	Cost Group	Cost Adjustment	Size Adj. Table	Standard Size	Standard Wall Height	Wall Height Adjustment	Run Cost?
001	C	Non-conform residential-single	94	001	RH1	1	S90	2000	8	0.015	-1
002	R	Non-conform residential-multi-	03	002	AP1	1	S90	1500	8	0.02	-1
003	R	Residential Transient	05	003	RH1	1	S90	8000	10	0.015	-1
004	C	Commercial-Retail (NC)	94	004	RT1	1	S90	5000	12	0.01	-1
005	C	Commercial-Office (NC)	94	005	OF1	1	S90	6000	10	0.015	-1
006	C	Commercial-Spec Purpose (NC)	94	006	GS1	1	S90	6000	8	0.015	-1
007	C	Industrial (NC)	96	007	MN2	1	S90	20000	8	0.015	-1
008	C	Special Purpose (NC)	94	008	GS1	1	S90	8000	8	0.015	-1
011	R	Residential Row Single Family	01	011	R11	1	SG3	1800	8	0.015	-1
012	R	Residential Detached Single Fa	01	012	R12	1	SG3	1800	8	0.015	-1
013	R	Residential-Semi-Detached Sing	01	013	R13	1	SG3	1800	8	0.015	-1
014	R	Residential Garage	00	014		1	S90	10000	0	0.015	-1
015	R	Residential-Mixed Use	01	015	R15	1	SG3	1800	8	0.02	-1
016	R	Residential-Condo-Horizontal	05	016	CND	1	S90	1000	8	0.015	-1
017	R	Residential-Condo-Vertical	05	017	CND	1	S90	1000	8	0.015	-1
018	R	Residential-Condo-Parking	00	018		1	S90	10000	8	0.015	-1
019	R	Residential-Single Family-Misc	01	019	R19	1	SG3	1800	8	0.015	-1
021	C	Residential Apartment-Walk-Up	94	021	AP1	1	S90	10000	8	0.02	-1
022	C	Residential-Apartment-Elevator	94	022	AP2	1	S90	50000	8	0.015	-1
023	R	Res Flats-Less than 5 Units	03	023	R23	1	SG4	3000	8	0.015	-1
024	R	Res-Coversions less than 5 Uni	02	024	R24	1	SG3	1800	8	0.015	-1
025	C	Res-Coversions 5 Units	94	025	MRC	1	S90	10000	8	0.02	-1
026	C	Res-Cooperative-Horizo	94	026	AP2	1	S90	10000	8	0.015	-1
027	C	Res-Cooperative-Verical	94	027	AP2	1	S90	50000	8	0.015	-1
028	C	Res-Conversions-mr than 5	94	028	MRC	1	S90	20000	8	0.015	-1
029	C	Res-Multi-family Misc	94	029	AP1	1	S90	10000	8	0.015	-1
031	C	Hotel-Small	94	031	HT1	1	S90	20000	9	0.01	-1
032	C	Hotel-Large	94	032	HT2	1	S90	135000	9	0.01	-1
033	C	Motel	94	033	HT1	0.8	S90	20000	9	0.01	-1
034	C	Private Club	94	034	GS1	1	S90	4000	14	0.015	-1
035	C	Tourist Homes	94	035	RH1	1	S90	8000	10	0.015	-1
036	C	Dormitory	94	036	RH2	1	S90	8000	8	0.015	-1
037	C	Inn	94	037	MRC	0.8	S90	12000	10	0.01	-1
038	C	Fraternity/Sorority House	94	038	RH2	1	S90	8000	10	0.015	-1
039	C	Res-Transient Misc	94	039	RH1	1	S90	5000	8	0.015	-1
041	C	Store-Small 1 Story	94	041	RT1	1	S90	10000	14	0.01	-1
042	C	Store-Misc	94	042	RT1	1	S90	4000	14	0.01	-1
043	C	Store-Department	94	043	RT3	1	S90	40000	14	0.01	-1
044	C	Store-Shopping Center/Mall	94	044	RT2	1	S90	60000	18	0.01	-1
045	C	Store-Restaurant	94	045	RS1	1	S90	5000	12	0.01	-1
046	C	Store-Barber/Beauty Shop	94	046	RT4	1	S90	4000	14	0.01	-1
047	C	Store-Super Market	94	047	RT2	0.88	S90	22000	14	0.01	-1
048	C	Commer-Retail-Condo	94	048	RT1	1	S90	3000	14	0.01	-1
049	C	Commer-Retail-Misc	94	049	RT1	1	S90	4000	14	0.01	-1
051	C	Commercial-Office-Small	94	051	OF1	1	S90	6000	10	0.015	-1
052	C	Commercial-Office-Large	94	052	OF3	1	S90	60000	10	0.015	-1
053	C	Commercial-Planned-Development	94	053	OF3	1	S90	300000	10	0.015	-1
056	C	Office-Condo-Horizontal	94	056	OF1	1	S90	3000	10	0.015	-1
057	C	Office-Condo-Vertical	94	057	OF1	1	S90	3000	10	0.015	-1
058	C	Commercial-Office-Condo	94	058	OF3	1	S90	6000	10	0.015	-1
059	C	Commercial-Office-Misc	94	059	OF2	1	S90	6000	10	0.015	-1
061	C	Commercial-Banks_Financial Svc	94	061	BN1	1	S90	3000	14	0.015	-1
062	C	Commercial-Garage_ Vehicle Sal	94	062	PK1	1	S90	5000	8	0.015	-1
063	C	Commercial-Parking Garage	94	063	PK2	1	S90	55000	8	0.015	-1
064	C	Parking Lot Special Purpose	00	064		1	S90	25000	0	0	-1
065	C	Vehicle Svc Station_ Vintage	94	065	SV1	1	S90	5000	12	0.01	-1
066	C	Theaters_ Entertainment	94	066	GS2	1	S90	20000	22	0.01	-1
067	C	Commercial-Restaurant	94	067	RS1	1	S90	5000	12	0.01	-1
068	C	Commercial-Restaurant-Fast Foo	94	068	RS2	1.1	S90	3000	12	0.01	-1
069	C	Commercial-Specific Purpose	94	069	RT1	1	S90	10000	14	0.01	-1
071	C	Industrial-Raw Material	94	071	MN1	1	S90	15000	14	0.015	-1

2007 Cost Occupancy / Use Codes

Occ. Code	Land Class	Description	Bldg. Model	Bldg. Occ.	Cost Group	Cost Adjustment	Size Adj. Table	Standard Size	Standard Wall Height	Wall Height Adjustment	Run Cost?
072	C	Industrial-Heavy Manufacturing	94	072	MN2	1	S90	30000	12	0.015	-1
073	C	Industrial-Light	94	073	MN1	1	S90	22000	12	0.015	-1
074	C	Industrial-Warehouse-1-story	94	074	WH2	1	S90	25000	16	0.01	-1
075	C	Industrial-Warehouse-Multistor	94	075	WH1	1	S90	20000	16	0.01	-1
076	C	Industrial-Truck Teminal	94	076	WH3	1	S90	20000	16	0.01	-1
078	C	Warehouse-Condo	94	078	WH2	1	S90	5000	16	0.01	-1
079	C	Industrial -Misc	94	079	MN1	1	S90	22000	12	0.015	-1
081	C	Religious	94	081	PS1	1	S90	15000	24	0.01	-1
082	C	Medical	94	082	MC1	1	S90	15000	10	0.01	-1
083	C	Educational	94	083	ED1	1	S90	80000	12	0.01	-1
084	C	Public Service	94	084	PS1	1	S90	12000	12	0.01	-1
085	C	Embassy_ Chancery	94	085	PS2	1	S90	12000	12	0.01	-1
086	C	Museum_ Library_ Gallery	94	086	GS3	1	S90	14000	14	0.01	-1
087	C	Recreational	94	087	RB1	1	S90	20000	24	0.01	-1
088	C	Healthcare Facitlity	94	088	MC2	1	S90	8000	12	0.01	-1
089	C	Special Purpose	94	089	GS2	1	S90	2000	8	0.01	-1
091	R	Vacant	00	091		1	S90		0	0.015	-1
092	R	Vacant-with permit	00	092		1	S90		0		-1
093	R	Vacant-zoning limits	00	093		1			0		-1
094	R	Vacant-false abutting	00	094		1			0		-1
095	R	Vacant-Commercial Use	00	095		1			0		-1
096	R	Vacant-Unimproved Parking	00	096		1			0		-1
097	R	Vacant-Improved and Abandoned	01	097	R97	0.5	SG3	1800	8	0.015	-1
116	R	Condo-Horizontal Combined	05	116	CND	1	S90	3000	8	0.015	-1
117	R	Condo-Vertictal Combined	05	117	CND	1	S90	2000	8	0.015	-1
126	C	Coop-Horizontal-Mixed Use	94	126	AP2	1	S90	10000	8	0.015	-1
127	C	Coop-Vertical-Mixed Use	94	127	AP2	1	S90	10000	8	0.015	-1
165	C	Vehicle Svc Station_ Kiosk	94	165	SS1	1	S90	5000	14	0.01	-1
189	C	Special Pupose-Memorial	94	189	GS1	1	S90	10000	8	0.01	-1
191	C	Vacant	00	191		1					-1
192	C	Vacant-with permit	00	192		1					-1
193	C	Vacant-zoning limits	00	193		1					-1
194	C	Vacant-false abutting	00	194		1					-1
195	C	Vacant-Commercial Use	00	195		1					-1
196	C	Vacant-Unimproved Parking	00	196		1					-1
197	C	Vacant-Improved and Abandoned	94	197	MN1	0.5	S90	5000	8	0.015	-1
214	C	Garage-Multi-family	00	214		1	S90	10000	0	0.015	-1
216	C	Condo-Investment-Horizontal	94	216	CND	1	S90	10000	8	0.015	-1
217	C	Condo-Investment-Vertical	94	217	CND	1	S90	50000	8	0.015	-1
265	C	Vehicle Svc Station_ Kiosk	94	265	SS1	1	S90	5000	12	0.01	-1
316	R	Condo-Duplex	05	316	CND	1	S90	5000	8	0.015	-1
365	C	Vehicle Svc Station_ Market	94	365	SS2	1	S90	5000	12	0.01	-1
417	R	Condo-Vertical-Parking-Unid	00	417		1		2000	0		-1
465	C	Vehicle Svc Station_ Market	94	465	SS2	1	S90	5000	14	0.01	-1
516	R	Condo-Detached	01	516	SIN	1	S90	2000	8	0.015	-1

2007 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
AP1	0	$93.28	5	60	80	99
AP1	A	$93.28	5	70	80	99
AP1	B	$93.28	5	70	80	99
AP1	C	$93.28	5	60	80	99
AP1	D	$89.17	5	50	80	99
AP1	S	$86.62	5	50	80	99
AP2	0	$108.49	5	60	80	99
AP2	A	$141.76	5	70	80	99
AP2	B	$136.38	5	70	80	99
AP2	C	$108.49	5	60	80	99
AP2	D	$105.98	5	50	80	99
BN1	0	$207.08	5	60	80	99
BN1	A	$248.24	5	70	80	99
BN1	B	$240.10	5	70	80	99
BN1	C	$207.08	5	60	80	99
BN1	D	$195.82	5	50	80	99
BN1	S	$178.40	5	50	80	99
BS1	0	$197.31	5	60	80	99
BS1	A	$257.22	5	70	80	99
BS1	B	$229.03	5	70	80	99
BS1	C	$197.31	5	60	80	99
BS1	D	$179.70	5	50	80	99
BS1	S	$70.47	5	50	80	99
CD	R	$132.13	5	99	80	99
CND	0	$294.88	5	50	80	99
CND	A	$294.88	5	50	80	99
CND	B	$294.88	5	50	80	99
CND	C	$294.88	5	50	80	99
CND	D	$294.88	5	50	80	99
CND	R	$294.88	5	50	80	99
CND	S	$294.88	5	50	80	99
CW1	0	$162.08	5	60	80	99
CW1	A	$192.04	5	70	80	99
CW1	B	$183.22	5	70	80	99
CW1	C	$162.08	5	60	80	99
CW1	D	$144.47	5	50	80	99
CW1	S	$144.47	5	50	80	99
ED1	0	$148.60	5	60	80	99
ED1	A	$193.81	5	70	80	99
ED1	B	$187.67	5	70	80	99
ED1	C	$148.60	5	60	80	99
ED1	D	$142.29	5	50	80	99
ED1	S	$111.09	5	50	80	99
GEN	0	$169.13	5	60	80	99
GEN	A	$234.47	5	70	80	99
GEN	B	$215.25	5	70	80	99
GEN	C	$169.13	5	60	80	99
GEN	D	$144.14	5	50	80	99
GEN	S	$144.14	5	50	80	99
GS1	0	$147.75	5	60	80	99
GS1	A	$147.75	5	70	80	99
GS1	B	$147.75	5	70	80	99
GS1	C	$147.75	5	60	80	99
GS1	D	$142.78	5	50	80	99
GS1	S	$96.94	5	50	80	99
GS2	0	$134.92	5	60	80	99

2007 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
GS2	A	$208.29	5	70	80	99
GS2	B	$200.85	5	70	80	99
GS2	C	$134.92	5	60	80	99
GS2	D	$127.52	5	50	80	99
GS2	S	$125.17	5	50	80	99
GS3	0	$166.42	5	60	80	99
GS3	A	$235.19	5	70	80	99
GS3	B	$228.70	5	70	80	99
GS3	C	$166.42	5	60	80	99
GS3	D	$159.35	5	50	80	99
GS3	S	$149.34	5	50	80	99
HT1	0	$113.01	5	60	80	99
HT1	A	$127.48	5	70	80	99
HT1	B	$127.48	5	70	80	99
HT1	C	$113.01	5	60	80	99
HT1	D	$107.94	5	50	80	99
HT1	S	$107.94	5	50	80	99
HT2	0	$174.16	5	60	80	99
HT2	A	$178.04	5	70	80	99
HT2	B	$174.16	5	70	80	99
HT2	C	$141.26	5	60	80	99
HT2	D	$134.30	5	50	80	99
HT2	S	$134.30	5	50	80	99
MC1	0	$255.78	5	60	80	99
MC1	A	$334.91	5	70	80	99
MC1	B	$329.56	5	70	80	99
MC1	C	$255.78	5	60	80	99
MC1	D	$242.71	5	50	80	99
MC1	S	$133.37	5	50	80	99
MC2	0	$165.70	5	60	80	99
MC2	A	$210.06	5	70	80	99
MC2	B	$204.55	5	70	80	99
MC2	C	$165.70	5	60	80	99
MC2	D	$158.07	5	50	80	99
MC2	S	$158.07	5	50	80	99
MLT	R	$96.34	5	70	80	70
MN1	0	$63.91	5	60	80	99
MN1	A	$71.41	5	70	80	99
MN1	B	$67.85	5	70	80	99
MN1	C	$63.91	5	60	80	99
MN1	D	$59.46	5	50	80	99
MN1	S	$56.39	5	50	80	99
MN2	0	$137.94	5	60	80	99
MN2	A	$177.21	5	70	80	99
MN2	B	$172.17	5	70	80	99
MN2	C	$137.94	5	60	80	99
MN2	D	$93.06	5	50	80	99
MN2	S	$126.37	5	50	80	99
MN4	0	$186.75	5	60	80	99
MN4	A	$237.84	5	70	80	99
MN4	B	$204.36	5	70	80	99
MN4	C	$186.75	5	60	80	99
MN4	D	$172.65	5	50	80	99
MN4	S	$172.65	5	50	80	99
MRC	0	$135.78	5	75	40	75
MRC	A	$135.78	5	75	40	75

2007 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
MRC	B	$135.78	5	75	40	75
MRC	C	$135.78	5	75	40	75
MRC	D	$135.78	5	75	40	75
MRC	S	$135.78	5	75	40	75
OF1	0	$140.55	5	60	80	99
OF1	A	$191.51	5	70	80	99
OF1	B	$185.98	5	70	80	99
OF1	C	$140.55	5	60	80	99
OF1	D	$133.28	5	50	80	99
OF1	S	$125.72	5	50	80	99
OF2	0	$140.55	5	60	80	99
OF2	A	$191.51	5	70	80	99
OF2	B	$185.98	5	70	80	99
OF2	C	$140.55	5	60	80	99
OF2	D	$133.28	5	50	80	99
OF2	S	$125.72	5	50	80	99
OF3	0	$185.98	5	60	80	99
OF3	A	$191.51	5	70	80	99
OF3	B	$185.98	5	70	80	99
OF3	C	$140.55	5	60	80	99
OF3	D	$133.28	5	50	80	99
OF3	S	$125.72	5	50	80	99
OFF	0	$128.93	5	60	80	99
OFF	A	$169.46	5	70	80	99
OFF	B	$158.39	5	70	80	99
OFF	C	$128.93	5	60	80	99
OFF	D	$117.88	5	50	80	99
OFF	S	$117.88	5	50	80	99
PK1	0	$83.53	5	60	80	99
PK1	A	$83.53	5	70	80	99
PK1	B	$83.53	5	70	80	99
PK1	C	$83.53	5	60	80	99
PK1	D	$78.55	5	50	80	99
PK1	S	$59.03	5	50	80	99
PK2	0	$61.44	5	60	80	99
PK2	A	$64.12	5	70	80	99
PK2	B	$61.44	5	70	80	99
PK2	C	$61.44	5	60	80	99
PK2	D	$61.44	5	50	80	99
PK2	S	$33.88	5	50	80	90
PS1	0	$172.50	5	60	80	99
PS1	A	$234.08	5	70	80	99
PS1	B	$227.05	5	70	80	99
PS1	C	$172.50	5	60	80	99
PS1	D	$164.22	5	50	80	99
PS1	S	$151.41	5	50	80	99
PS2	0	$173.41	5	60	80	99
PS2	A	$225.40	5	70	80	99
PS2	B	$218.86	5	70	80	99
PS2	C	$173.41	5	60	80	99
PS2	D	$166.76	5	50	80	99
PS2	S	$114.28	5	50	80	99
R11	R	$131.99	6	75	80	75
R12	R	$154.17	6	75	80	75
R13	R	$132.95	6	75	80	75
R15	R	$131.99	6	75	80	75

2007 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
R19	R	$131.99	6	75	80	75
R23	R	$96.34	6	75	80	75
R24	R	$135.78	6	75	80	75
R97	R	$131.99	6	75	80	75
RB1	0	$154.08	5	60	80	99
RB1	A	$197.50	5	70	80	99
RB1	B	$197.50	5	70	80	99
RB1	C	$154.08	5	60	80	99
RB1	D	$147.91	5	50	80	99
RB1	S	$144.94	5	50	80	99
RES	R	$96.10	5	70	80	70
RH1	0	$131.99	5	70	80	99
RH1	A	$131.99	5	70	80	99
RH1	B	$131.99	5	70	80	99
RH1	C	$131.99	5	70	80	99
RH1	D	$131.99	5	70	80	99
RH1	S	$131.99	5	70	80	99
RH2	0	$178.74	5	60	80	99
RH2	A	$206.52	5	70	80	99
RH2	B	$201.68	5	70	80	99
RH2	C	$178.74	5	60	80	99
RH2	D	$173.58	5	50	80	99
RH2	S	$91.87	5	50	80	99
RS1	0	$143.60	5	60	80	99
RS1	A	$184.63	5	70	80	99
RS1	B	$184.63	5	70	80	99
RS1	C	$143.60	5	60	80	99
RS1	D	$134.89	5	50	80	99
RS1	S	$131.15	5	50	80	99
RS2	0	$154.88	5	60	80	99
RS2	A	$203.73	5	70	80	99
RS2	B	$203.73	5	70	80	99
RS2	C	$154.88	5	60	80	99
RS2	D	$145.31	5	50	80	99
RS2	S	$141.99	5	50	80	99
RT1	0	$96.49	5	60	80	99
RT1	A	$119.68	5	70	80	99
RT1	B	$116.80	5	70	80	99
RT1	C	$96.49	5	60	80	99
RT1	D	$91.49	5	50	80	99
RT1	S	$88.53	5	50	80	99
RT2	0	$93.33	5	60	80	99
RT2	A	$106.01	5	70	80	99
RT2	B	$106.01	5	70	80	99
RT2	C	$93.33	5	60	80	99
RT2	D	$87.56	5	50	80	99
RT2	S	$84.68	5	50	80	99
RT3	0	$120.93	5	60	80	99
RT3	A	$150.23	5	70	80	99
RT3	B	$146.70	5	70	80	99
RT3	C	$120.93	5	60	80	99
RT3	D	$120.93	5	50	80	99
RT3	S	$120.93	5	50	80	99
RT4	0	$92.15	5	60	80	99
RT4	A	$92.15	5	70	80	99
RT4	B	$92.15	5	70	80	99

2007 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
RT4	C	$92.15	5	60	80	99
RT4	D	$85.92	5	50	80	99
RT4	S	$81.94	5	50	80	99
SIN	R	$154.17	5	70	80	70
SS1	0	$175.27	5	70	80	99
SS1	A	$175.27	5	70	80	99
SS1	B	$175.27	5	70	80	99
SS1	C	$175.27	5	70	80	99
SS1	D	$175.27	5	70	80	99
SS1	S	$175.27	5	70	80	99
SS2	0	$153.01	5	60	80	99
SS2	A	$153.01	5	70	80	99
SS2	B	$153.01	5	70	80	99
SS2	C	$153.01	5	60	80	99
SS2	D	$147.48	5	50	80	99
SS2	S	$148.79	5	50	80	99
SV1	0	$115.71	5	60	80	99
SV1	A	$115.71	5	70	80	99
SV1	B	$115.71	5	70	80	99
SV1	C	$115.71	5	60	80	99
SV1	D	$111.38	5	50	80	99
SV1	S	$80.26	5	50	80	99
TM1	0	$91.61	5	60	80	99
TM1	A	$112.75	5	70	80	99
TM1	B	$102.18	5	70	80	99
TM1	C	$91.61	5	60	80	99
TM1	D	$84.57	5	50	80	99
TM1	S	$84.57	5	50	80	99
UT1	0	$160.32	5	60	80	99
UT1	A	$181.47	5	70	80	99
UT1	B	$169.13	5	70	80	99
UT1	C	$160.32	5	60	80	99
UT1	D	$137.42	5	50	80	99
UT1	S	$137.42	5	50	80	99
WH1	0	$65.54	5	60	80	99
WH1	A	$94.50	5	70	80	99
WH1	B	$90.84	5	70	80	99
WH1	C	$65.54	5	60	80	99
WH1	D	$59.43	5	50	80	99
WH1	S	$83.56	5	50	80	99
WH2	0	$55.27	5	60	80	99
WH2	A	$80.58	5	70	80	99
WH2	B	$76.74	5	70	80	99
WH2	C	$55.27	5	60	80	99
WH2	D	$50.31	5	50	80	99
WH2	S	$75.50	5	50	80	99
WH3	0	$70.89	5	60	80	99
WH3	A	$78.12	5	70	80	99
WH3	B	$78.12	5	70	80	99
WH3	C	$70.89	5	50	80	99
WH3	D	$70.89	5	50	80	99
WH3	S	$69.16	5	50	80	99

Preliminary 2008 Performance Report

2006 SALES RATIOS CITY-WIDE

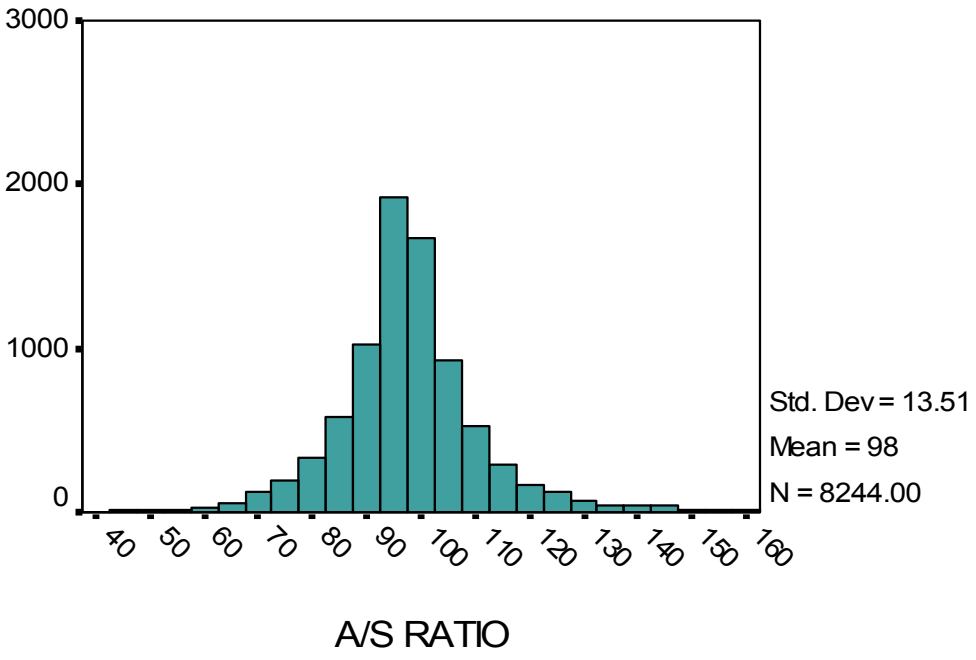
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
All	8,562	931,083	413,500	97.0	97.4	97.0	10.2	6,741	1,821	1.00

2006 SALES RATIOS BY PROPERTY TYPE: CITY-WIDE

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Residential	8,244	513,554	406,551	97.0	97.9	97.1	9.6	6,480	1,764	1.01
Commercial	318	11,755,325	987,500	85.4	84.8	97.0	26.8	261	57	.87

CITY-WIDE

RESIDENTIAL SALES RATIOS



Sales Ratio Report Using Current 2007 Values

2006 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	79	835,766	785,000	96.6	97.1	99.2	9.5	60	19	.98
2	ANACOSTIA	63	282,172	265,000	72.8	75.1	90.6	20.1	58	5	.83
3	BARRY FARMS	39	224,482	215,065	91.1	89.1	89.3	18.1	32	7	1.00
4	BERKELEY	22	1,583,186	1,685,000	92.1	92.1	98.1	10.7	19	3	.94
5	BRENTWOOD	27	325,069	300,000	77.9	78.3	89.3	18.8	25	2	.88
6	BRIGHTWOOD	142	469,370	450,000	86.6	86.9	96.2	11.0	132	10	.90
7	BROOKLAND	176	402,049	384,000	82.0	83.2	96.2	13.0	164	12	.86
8	BURLEITH	36	916,958	722,500	99.0	96.3	99.0	5.9	33	3	.97
9	CAPITOL HILL	133	812,899	749,500	97.7	96.7	99.8	11.0	106	27	.97
10	CENTRAL	5	1,196,120	999,000	91.1	98.8	101.5	12.3	3	2	.97
11	CHEVY CHASE	177	872,973	829,900	91.6	92.3	99.5	9.5	158	19	.93
12	CHILLUM	34	440,744	425,000	83.6	84.8	96.3	11.2	32	2	.88
13	CLEVELAND PARK	35	1,389,875	1,350,000	90.6	90.9	97.9	11.0	32	3	.93
14	COLONIAL VILLAGE	11	877,409	850,000	94.4	95.0	100.6	6.2	9	2	.94
15	COLUMBIA HEIGHTS	208	488,763	470,000	84.1	85.2	99.1	14.1	188	20	.86
16	CONGRESS HEIGHTS	192	288,074	271,000	69.5	74.5	87.9	18.7	184	8	.85
17	CRESTWOOD	15	992,007	913,510	99.1	96.7	100.7	7.3	12	3	.96
18	DEANWOOD	257	252,605	250,000	72.7	76.5	94.4	18.1	241	16	.81
19	ECKINGTON	83	474,110	485,000	83.3	86.7	99.8	15.6	70	13	.87
20	FOGGY BOTTOM	14	677,393	650,000	91.1	87.4	97.2	7.0	14	0	.90
21	FOREST HILLS	22	1,299,545	1,075,000	91.2	90.4	95.3	15.3	18	4	.95
22	FORT DUPONT PARK	117	275,513	258,000	74.6	78.1	95.2	17.5	105	12	.82
23	FOXHALL	20	759,339	742,500	93.5	94.3	99.6	7.2	18	2	.95
24	GARFIELD	27	1,261,708	1,150,000	83.4	83.9	93.3	12.0	26	1	.90
25	GEORGETOWN	121	1,658,206	1,300,000	89.0	87.9	96.7	14.8	106	15	.91
26	GLOVER PARK	50	756,319	745,000	89.6	90.7	99.2	7.6	46	4	.91
27	HAWTHORNE	10	907,400	782,500	90.4	93.4	97.6	10.9	8	2	.96
28	HILLCREST	64	401,792	403,500	79.6	81.7	99.2	13.2	61	3	.82
29	KALORAMA	35	2,191,006	1,870,000	87.7	86.2	92.9	14.4	32	3	.93
30	KENT	28	1,356,589	972,500	92.0	93.9	98.5	13.4	20	8	.95
31	LEDROIT PARK	54	583,354	582,834	91.7	93.3	97.6	13.2	42	12	.96
32	LILY PONDS	37	257,814	250,000	78.9	80.0	97.9	13.8	34	3	.82
33	MARSHALL HEIGHTS	65	249,269	225,000	73.3	75.7	91.6	18.9	62	3	.83
34	MASS. AVE. HEIGHTS	5	5,055,000	2,650,000	86.1	93.3	97.0	21.5	4	1	.96
35	MICHIGAN PARK	26	428,085	431,250	80.6	84.7	98.6	13.2	23	3	.86
36	MOUNT PLEASANT	94	737,670	718,000	96.3	98.2	103.3	10.6	68	26	.95
37	N. CLEVELAND PARK	19	811,089	789,000	92.7	94.0	99.8	10.3	16	3	.94
38	OBSERVATORY CIRCLE	15	1,442,160	1,375,000	93.4	95.1	100.0	8.5	13	2	.95
39	OLD CITY #1	608	517,008	499,000	88.2	89.7	98.6	15.1	506	102	.91
40	OLD CITY #2	276	756,294	672,450	91.1	91.5	98.4	16.1	220	56	.93
41	PALISADES	41	1,041,293	775,000	92.7	90.6	100.3	9.5	38	3	.90
42	PETWORTH	241	428,835	419,500	80.3	80.7	95.0	15.5	224	17	.85
43	RANDLE HEIGHTS	128	295,367	275,000	76.3	76.0	94.4	12.0	127	1	.81
46	R.L.A. (S.W.)	11	693,182	682,000	91.5	89.8	95.1	7.9	11	0	.94
47	RIGGS PARK	80	332,897	342,250	77.0	78.0	91.7	9.6	79	1	.85
48	SHEPHERD PARK	29	704,951	695,000	90.3	90.1	100.1	10.0	26	3	.90
49	16TH STREET HEIGHTS	81	609,002	575,000	86.9	88.2	97.4	16.3	70	11	.91
50	SPRING VALLEY	27	1,708,452	1,475,000	91.7	91.1	98.3	10.0	24	3	.93
51	TAKOMA PARK	22	397,369	386,000	84.2	81.9	94.2	11.6	22	0	.87
52	TRINIDAD	128	345,511	330,000	73.3	76.6	89.2	17.9	119	9	.86
53	WAKEFIELD	10	1,121,500	1,054,500	88.6	87.2	94.9	7.3	10	0	.92
54	WESLEY HEIGHTS	24	1,280,740	1,025,000	84.4	89.1	101.7	13.7	21	3	.88
55	WOODLEY	11	1,337,636	1,125,000	92.3	88.3	99.8	12.2	9	2	.88
56	WOODRIDGE	98	389,819	390,000	81.4	83.3	97.5	17.7	85	13	.85

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Residential	4,372	603,165	465,000	85.2	85.8	97.4	15.8	3,865	507	.88

Sales Ratio Report Using Current 2007 Values

2006 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	64	502,472	422,000	96.2	92.4	92.9	6.0	61	3	.99
2	ANACOSTIA	6	161,183	155,000	49.8	48.9	66.4	14.3	6	0	.74
3	BARRY FARMS	32	215,128	218,250	93.4	84.7	95.6	12.1	32	0	.89
4	BERKELEY	11	490,682	551,000	92.9	93.1	96.6	3.0	11	0	.96
5	BRENTWOOD	3	255,500	249,999	99.9	98.9	101.8	3.7	3	0	.97
6	BRIGHTWOOD	14	312,588	335,811	82.1	85.3	95.5	13.8	12	2	.89
7	BROOKLAND	68	223,843	199,000	90.0	87.9	93.9	8.7	65	3	.94
9	CAPITOL HILL	36	342,062	312,650	92.8	92.5	97.3	12.3	31	5	.95
10	CENTRAL	592	586,685	465,000	95.0	93.5	95.1	6.1	542	50	.98
11	CHEVY CHASE	22	328,632	301,000	94.4	95.4	98.8	6.3	19	3	.97
12	CHILLUM	1	240,000	240,000	86.3	86.3	95.2	.0	1	0	.91
13	CLEVELAND PARK	185	399,058	384,900	89.8	89.5	99.1	11.1	168	17	.90
15	COLUMBIA HEIGHTS	257	376,760	346,395	97.0	96.1	100.0	9.5	224	33	.96
16	CONGRESS HEIGHTS	112	169,144	165,940	92.6	87.5	92.3	9.9	109	3	.95
18	DEANWOOD	45	188,070	185,000	94.4	90.6	91.2	7.5	42	3	.99
19	ECKINGTON	39	310,292	275,000	98.8	99.5	97.8	7.6	29	10	1.02
20	FOGGY BOTTOM	51	301,501	245,000	92.9	92.9	98.2	9.5	46	5	.95
21	FOREST HILLS	54	313,617	309,500	97.8	98.1	101.7	11.2	39	15	.96
22	FORT DUPONT PARK	44	172,348	169,750	97.0	92.9	100.7	10.8	39	5	.92
24	GARFIELD	43	411,730	387,500	99.1	100	98.2	8.8	32	11	1.02
25	GEORGETOWN	57	785,602	555,000	91.8	90.6	96.5	12.1	49	8	.94
26	GLOVER PARK	79	363,720	351,000	95.0	94.2	94.8	7.1	72	7	.99
28	HILLCREST	111	184,216	180,000	91.6	87.8	93.1	12.4	101	10	.94
29	KALORAMA	140	518,700	433,000	99.3	97.2	96.6	9.1	110	30	1.01
31	LEDROIT PARK	26	267,577	261,950	97.0	99.6	101.6	3.4	23	3	.98
32	LILY PONDS	5	271,700	309,500	67.1	70.7	89.2	7.5	5	0	.79
33	MARSHALL HEIGHTS	37	171,165	175,000	95.0	91.1	92.7	4.4	37	0	.98
36	MOUNT PLEASANT	205	424,035	425,000	95.0	94.5	96.3	9.8	176	29	.98
37	N. CLEVELAND PARK	6	435,517	450,000	95.0	97.5	97.4	2.6	5	1	1.00
38	OBSERVATORY CIRCLE	81	696,804	765,000	97.1	99.0	96.0	8.6	63	18	1.03
39	OLD CITY #1	140	370,933	340,000	94.8	93.8	94.0	10.8	116	24	1.00
40	OLD CITY #2	1,029	425,439	396,900	94.7	93.4	98.2	8.8	912	117	.95
41	PALISADES	16	271,303	270,000	90.4	89.9	96.0	9.0	15	1	.94
42	PETWORTH	37	232,899	221,900	97.0	94.9	95.5	6.3	35	2	.99
43	RANDLE HEIGHTS	44	171,777	172,900	94.7	92.8	94.5	6.6	42	2	.98
46	R.L.A. (S.W.)	69	347,343	320,000	87.0	85.4	94.6	9.7	66	3	.90
49	16TH STREET HEIGHTS	8	293,488	297,500	97.5	98.2	99.2	3.4	7	1	.99
52	TRINIDAD	16	193,388	193,250	97.0	103	102.7	6.4	10	6	1.00
53	WAKEFIELD	17	328,695	320,000	92.9	91.0	97.5	7.9	16	1	.93
54	WESLEY HEIGHTS	43	389,068	308,000	92.6	91.7	92.6	8.1	40	3	.99
56	WOODRIDGE	7	230,214	290,000	79.6	82.6	92.6	16.2	6	1	.89
66	FORT LINCOLN	20	264,832	268,000	73.2	75.7	85.9	11.5	19	1	.88

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	3,872	412,371	362,000	95.0	93.0	96.6	9.1	3,436	436	.96

Sales Ratio Report Using Current 2007 Values

2006 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2	ANACOSTIA	1	1,700,000	1,700,000	47.1	47.1	52.9	.0	1	0	.89
7	BROOKLAND	3	1,226,667	1,200,000	54.4	51.9	59.4	15.6	3	0	.87
9	CAPITOL HILL	2	1,031,750	1,031,750	112.1	112	117.5	6.1	0	2	.95
10	CENTRAL	1	284,500	284,500	115.5	115	133.1	.0	0	1	.87
15	COLUMBIA HEIGHTS	7	3,687,714	1,700,000	52.9	60.9	72.8	28.1	7	0	.84
16	CONGRESS HEIGHTS	13	1,416,872	500,000	50.3	58.0	85.0	30.6	13	0	.68
18	DEANWOOD	2	570,500	570,500	39.8	39.8	59.1	22.0	2	0	.67
19	ECKINGTON	2	1,185,000	1,185,000	56.5	56.5	74.7	21.0	2	0	.76
22	FORT DUPONT PARK	5	1,153,800	656,000	60.2	64.3	68.2	23.9	5	0	.94
25	GEORGETOWN	3	2,725,000	2,550,000	47.1	44.7	54.3	13.7	3	0	.82
28	HILLCREST	2	1,264,000	1,264,000	63.0	63.0	56.4	34.7	2	0	1.12
29	KALORAMA	1	3,000,000	3,000,000	38.3	38.3	49.2	.0	1	0	.78
32	LILY PONDS	2	20,292,500	20292500	72.2	72.2	89.8	4.8	2	0	.80
33	MARSHALL HEIGHTS	4	898,595	608,250	48.2	54.1	61.7	49.1	4	0	.88
39	OLD CITY #1	4	1,934,913	1,877,325	48.7	101	75.9	125.8	3	1	1.33
40	OLD CITY #2	6	2,728,833	1,675,000	77.0	80.6	95.4	21.0	5	1	.85
42	PETWORTH	3	1,903,667	1,375,000	53.2	46.3	59.8	15.9	3	0	.78
43	RANDLE HEIGHTS	7	908,143	732,000	49.2	48.3	58.7	18.3	7	0	.82
49	16TH STREET HEIGHTS	2	2,575,000	2,575,000	49.2	49.2	52.2	2.6	2	0	.94
52	TRINIDAD	1	1,580,000	1,580,000	48.6	48.6	52.0	.0	1	0	.93

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
MultiFamily	71	2,282,174	1,100,000	52.9	62.1	77.1	37.3	66	5	.81

Sales Ratio Report Using Current 2007 Values

2006 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	1	10,507,145	10507145	73.3	73.3	89.4	.0	1	0	.82
2	ANACOSTIA	1	1,100,000	1,100,000	57.3	57.3	78.0	.0	1	0	.73
5	BRENTWOOD	10	2,963,094	1,387,500	45.6	47.8	81.5	29.5	10	0	.59
6	BRIGHTWOOD	3	2,084,827	2,004,482	79.6	80.1	91.0	9.8	3	0	.88
7	BROOKLAND	4	989,063	990,625	61.3	62.4	77.2	32.6	4	0	.81
9	CAPITOL HILL	6	2,996,667	1,115,000	73.0	71.5	87.4	33.7	5	1	.82
10	CENTRAL	54	50,511,090	33275000	74.9	73.6	100.9	22.1	52	2	.73
12	CHILLUM	1	490,000	490,000	48.9	48.9	56.1	.0	1	0	.87
15	COLUMBIA HEIGHTS	20	672,445	625,000	61.5	59.5	71.2	23.9	20	0	.84
16	CONGRESS HEIGHTS	9	423,000	475,000	59.6	69.8	79.1	29.6	9	0	.88
18	DEANWOOD	6	435,201	400,000	49.9	60.4	73.8	47.3	5	1	.82
19	ECKINGTON	2	447,500	447,500	55.1	55.1	61.9	13.7	2	0	.89
24	GARFIELD	1	936,000	936,000	128.6	129	151.3	.0	0	1	.85
25	GEORGETOWN	13	14,597,962	1,700,000	65.2	76.9	68.2	33.4	11	2	1.13
26	GLOVER PARK	1	383,590	383,590	121.1	121	136.1	.0	0	1	.89
28	HILLCREST	2	628,000	628,000	65.0	65.0	76.2	13.6	2	0	.85
29	KALORAMA	3	1,461,667	1,000,000	54.3	55.7	101.2	11.0	3	0	.55
32	LILY PONDS	2	1,260,485	1,260,485	68.9	68.9	79.3	22.6	2	0	.87
35	MICHIGAN PARK	1	400,000	400,000	35.0	35.0	101.3	.0	1	0	.35
36	MOUNT PLEASANT	3	916,667	650,000	70.3	64.9	75.7	8.7	3	0	.86
38	OBSERVATORY CIRCLE	2	11,362,500	11362500	80.0	80.0	101.4	18.1	2	0	.79
39	OLD CITY #1	38	5,352,413	562,500	61.6	69.1	96.7	33.2	33	5	.71
40	OLD CITY #2	34	1,623,711	1,000,000	66.5	64.2	98.2	34.5	30	4	.65
42	PETWORTH	11	443,182	414,000	57.0	63.1	77.8	28.5	10	1	.81
44	R.L.A.(N.E.)	1	3,200,000	3,200,000	52.7	52.7	74.0	.0	1	0	.71
46	R.L.A. (S.W.)	2	118000000	118000000	79.6	79.6	99.2	25.6	2	0	.80
47	RIGGS PARK	2	8,250,000	8,250,000	63.4	63.4	60.3	66.8	1	1	1.05
49	16TH STREET HEIGHTS	3	376,667	460,000	67.1	75.8	86.0	30.1	2	1	.88
51	TAKOMA PARK	3	2,983,333	3,800,000	57.1	55.6	63.9	8.3	3	0	.87
52	TRINIDAD	4	462,500	325,000	80.7	74.4	91.8	25.1	4	0	.81
56	WOODRIDGE	4	411,608	304,990	84.9	82.5	103.7	35.1	2	2	.80

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	247	14,478,377	936,000	65.3	67.9	97.9	31.2	225	22	.69

Sales Ratio Report Using Proposed 2008 Values

2006 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	79	835,766	785,000	100.1	100	99.2	5.8	64	15	1.01
2	ANACOSTIA	63	282,172	265,000	94.7	95.3	90.6	14.6	47	16	1.05
3	BARRY FARMS	39	224,482	215,065	92.9	92.6	89.3	16.5	31	8	1.04
4	BERKELEY	22	1,583,186	1,685,000	99.6	98.4	98.1	6.1	19	3	1.00
5	BRENTWOOD	27	325,069	300,000	92.2	94.6	89.3	16.2	18	9	1.06
6	BRIGHTWOOD	142	469,370	450,000	96.7	97.6	96.2	9.4	113	29	1.01
7	BROOKLAND	176	402,049	384,000	96.1	97.2	96.2	7.7	148	28	1.01
8	BURLEITH	36	916,958	722,500	99.9	99.6	99.0	2.7	33	3	1.01
9	CAPITOL HILL	133	812,899	749,500	101.2	102	99.8	9.8	91	42	1.02
10	CENTRAL	5	1,196,120	999,000	96.7	104	101.5	11.2	3	2	1.02
11	CHEVY CHASE	177	872,973	829,900	99.7	100	99.5	5.3	147	30	1.01
12	CHILLUM	34	440,744	425,000	94.7	96.3	96.3	10.9	26	8	1.00
13	CLEVELAND PARK	35	1,389,875	1,350,000	99.9	98.5	97.9	4.9	30	5	1.01
14	COLONIAL VILLAGE	11	877,409	850,000	100.5	101	100.6	4.8	8	3	1.00
15	COLUMBIA HEIGHTS	208	488,763	470,000	98.7	101	99.1	12.4	137	71	1.02
16	CONGRESS HEIGHTS	192	288,074	271,000	88.8	91.8	87.9	16.5	148	44	1.04
17	CRESTWOOD	15	992,007	913,510	100.3	101	100.7	1.9	13	2	1.00
18	DEANWOOD	257	252,605	250,000	94.1	97.0	94.4	13.8	190	67	1.03
19	ECKINGTON	83	474,110	485,000	100.6	101	99.8	10.1	60	23	1.02
20	FOGGY BOTTOM	14	677,393	650,000	101.3	98.0	97.2	6.1	12	2	1.01
21	FOREST HILLS	22	1,299,545	1,075,000	98.2	95.7	95.3	10.9	18	4	1.00
22	FORT DUPONT PARK	117	275,513	258,000	93.1	97.5	95.2	15.4	85	32	1.02
23	FOXHALL	20	759,339	742,500	100.0	99.7	99.6	5.9	13	7	1.00
24	GARFIELD	27	1,261,708	1,150,000	97.1	94.1	93.3	7.4	25	2	1.01
25	GEORGETOWN	121	1,658,206	1,300,000	97.4	98.3	96.7	9.8	93	28	1.02
26	GLOVER PARK	50	756,319	745,000	98.2	99.2	99.2	5.9	39	11	1.00
27	HAWTHORNE	10	907,400	782,500	97.6	98.5	97.6	5.1	9	1	1.01
28	HILLCREST	64	401,792	403,500	98.0	99.9	99.2	7.9	52	12	1.01
29	KALORAMA	35	2,191,006	1,870,000	97.3	95.0	92.9	8.5	32	3	1.02
30	KENT	28	1,356,589	972,500	99.1	101	98.5	7.7	20	8	1.03
31	LEDROIT PARK	54	583,354	582,834	99.7	99.7	97.6	6.6	39	15	1.02
32	LILY PONDS	37	257,814	250,000	97.8	100	97.9	12.2	25	12	1.02
33	MARSHALL HEIGHTS	65	249,269	225,000	92.6	95.9	91.6	15.0	50	15	1.05
34	MASS. AVE. HEIGHTS	5	5,055,000	2,650,000	96.7	102	97.0	12.7	4	1	1.05
35	MICHIGAN PARK	26	428,085	431,250	96.1	101	98.6	12.1	20	6	1.02
36	MOUNT PLEASANT	94	737,670	718,000	102.3	104	103.3	10.4	52	42	1.01
37	N. CLEVELAND PARK	19	811,089	789,000	98.1	100	99.8	5.2	17	2	1.00
38	OBSERVATORY CIRCLE	15	1,442,160	1,375,000	99.8	102	100.0	7.4	12	3	1.02
39	OLD CITY #1	608	517,008	499,000	98.7	101	98.6	12.1	425	183	1.02
40	OLD CITY #2	276	756,294	672,450	99.6	101	98.4	11.3	193	83	1.02
41	PALISADES	41	1,041,293	775,000	100.1	100	100.3	1.6	40	1	1.00
42	PETWORTH	241	428,835	419,500	96.4	97.5	95.0	12.5	182	59	1.03
43	RANDLE HEIGHTS	128	295,367	275,000	93.4	95.5	94.4	11.0	100	28	1.01
46	R.L.A. (S.W.)	11	693,182	682,000	96.3	95.6	95.1	4.9	11	0	1.01
47	RIGGS PARK	80	332,897	342,250	90.4	92.8	91.7	9.5	70	10	1.01
48	SHEPHERD PARK	29	704,951	695,000	99.5	101	100.1	5.3	24	5	1.01
49	16TH STREET HEIGHTS	81	609,002	575,000	98.6	99.2	97.4	11.5	60	21	1.02
50	SPRING VALLEY	27	1,708,452	1,475,000	99.5	100	98.3	5.0	21	6	1.02
51	TAKOMA PARK	22	397,369	386,000	97.3	95.3	94.2	11.5	17	5	1.01
52	TRINIDAD	128	345,511	330,000	89.6	93.1	89.2	15.0	105	23	1.04
53	WAKEFIELD	10	1,121,500	1,054,500	97.9	94.8	94.9	4.3	10	0	1.00
54	WESLEY HEIGHTS	24	1,280,740	1,025,000	100.0	102	101.7	2.6	22	2	1.00
55	WOODLEY	11	1,337,636	1,125,000	100.8	101	99.8	5.8	9	2	1.01
56	WOODRIDGE	98	389,819	390,000	96.5	99.6	97.5	12.5	70	28	1.02

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Residential	4,372	603,165	465,000	98.0	98.5	97.4	11.0	3,302	1,070	1.01

Sales Ratio Report Using Proposed 2008 Values

2006 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	64	502,472	422,000	96.3	92.7	92.9	5.9	61	3	1.00
2	ANACOSTIA	6	161,183	155,000	74.7	68.9	66.4	15.0	6	0	1.04
3	BARRY FARMS	32	215,128	218,250	98.0	95.4	95.6	7.0	28	4	1.00
4	BERKELEY	11	490,682	551,000	94.8	96.0	96.6	3.9	10	1	.99
5	BRENTWOOD	3	255,500	249,999	102.6	102	101.8	1.4	3	0	1.00
6	BRIGHTWOOD	14	312,588	335,811	89.9	96.7	95.5	10.6	10	4	1.01
7	BROOKLAND	68	223,843	199,000	94.7	94.4	93.9	5.1	64	4	1.01
9	CAPITOL HILL	36	342,062	312,650	96.4	98.8	97.3	7.6	29	7	1.02
10	CENTRAL	592	586,685	465,000	95.0	95.0	95.1	6.1	519	73	1.00
11	CHEVY CHASE	22	328,632	301,000	98.0	99.4	98.8	6.0	15	7	1.01
12	CHILLUM	1	240,000	240,000	95.2	95.2	95.2	.0	1	0	1.00
13	CLEVELAND PARK	185	399,058	384,900	99.5	99.4	99.1	7.5	142	43	1.00
15	COLUMBIA HEIGHTS	257	376,760	346,395	98.9	101	100.0	7.9	199	58	1.01
16	CONGRESS HEIGHTS	112	169,144	165,940	95.0	93.4	92.3	6.1	106	6	1.01
18	DEANWOOD	45	188,070	185,000	94.4	91.9	91.2	6.2	42	3	1.01
19	ECKINGTON	39	310,292	275,000	97.2	99.4	97.8	5.0	33	6	1.02
20	FOGGY BOTTOM	51	301,501	245,000	98.9	99.6	98.2	7.1	40	11	1.01
21	FOREST HILLS	54	313,617	309,500	100.5	101	101.7	11.7	35	19	1.00
22	FORT DUPONT PARK	44	172,348	169,750	99.4	101	100.7	8.2	32	12	1.00
24	GARFIELD	43	411,730	387,500	99.1	100	98.2	8.6	32	11	1.02
25	GEORGETOWN	57	785,602	555,000	96.9	96.9	96.5	6.2	48	9	1.00
26	GLOVER PARK	79	363,720	351,000	95.0	95.8	94.8	5.8	70	9	1.01
28	HILLCREST	111	184,216	180,000	97.1	93.2	93.1	10.8	97	14	1.00
29	KALORAMA	140	518,700	433,000	99.3	99.1	96.6	8.8	98	42	1.03
31	LEDROIT PARK	26	267,577	261,950	97.0	101	101.6	4.8	21	5	.99
32	LILY PONDS	5	271,700	309,500	86.0	90.8	89.2	7.6	4	1	1.02
33	MARSHALL HEIGHTS	37	171,165	175,000	95.0	92.8	92.7	2.7	37	0	1.00
36	MOUNT PLEASANT	205	424,035	425,000	95.0	97.0	96.3	7.8	175	30	1.01
37	N. CLEVELAND PARK	6	435,517	450,000	95.0	97.5	97.4	2.6	5	1	1.00
38	OBSERVATORY CIRCLE	81	696,804	765,000	96.3	96.5	96.0	5.7	71	10	1.01
39	OLD CITY #1	140	370,933	340,000	95.0	94.4	94.0	10.3	115	25	1.01
40	OLD CITY #2	1,029	425,439	396,900	98.5	99.3	98.2	7.4	787	242	1.01
41	PALISADES	16	271,303	270,000	95.3	97.0	96.0	7.1	14	2	1.01
42	PETWORTH	37	232,899	221,900	97.0	97.4	95.5	7.2	31	6	1.02
43	RANDLE HEIGHTS	44	171,777	172,900	95.0	94.8	94.5	4.4	41	3	1.00
46	R.L.A. (S.W.)	69	347,343	320,000	95.8	94.5	94.6	8.1	63	6	1.00
49	16TH STREET HEIGHTS	8	293,488	297,500	99.6	98.6	99.2	2.5	8	0	.99
52	TRINIDAD	16	193,388	193,250	101.4	103	102.7	5.1	13	3	1.01
53	WAKEFIELD	17	328,695	320,000	100.2	97.9	97.5	8.2	14	3	1.00
54	WESLEY HEIGHTS	43	389,068	308,000	94.2	93.9	92.6	8.1	36	7	1.01
56	WOODRIDGE	7	230,214	290,000	88.0	94.9	92.6	14.0	5	2	1.02
66	FORT LINCOLN	20	264,832	268,000	82.8	86.9	85.9	13.5	18	2	1.01

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	3,872	412,371	362,000	96.7	97.2	96.6	7.8	3,178	694	1.01

Sales Ratio Report Using Proposed 2008 Values

2006 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2	ANACOSTIA	1	1,700,000	1,700,000	52.9	52.9	52.9	.0	1	0	1.00
7	BROOKLAND	3	1,226,667	1,200,000	65.3	64.0	59.4	22.7	3	0	1.08
9	CAPITOL HILL	2	1,031,750	1,031,750	118.3	118	117.5	10.6	0	2	1.01
10	CENTRAL	1	284,500	284,500	133.1	133	133.1	.0	0	1	1.00
15	COLUMBIA HEIGHTS	7	3,687,714	1,700,000	73.9	73.7	72.8	21.0	7	0	1.01
16	CONGRESS HEIGHTS	13	1,416,872	500,000	70.4	77.7	85.0	24.5	11	2	.91
18	DEANWOOD	2	570,500	570,500	58.4	58.4	59.1	20.6	2	0	.99
19	ECKINGTON	2	1,185,000	1,185,000	82.8	82.8	74.7	17.4	2	0	1.11
22	FORT DUPONT PARK	5	1,153,800	656,000	87.1	83.4	68.2	17.3	4	1	1.22
25	GEORGETOWN	3	2,725,000	2,550,000	53.1	56.4	54.3	13.8	3	0	1.04
28	HILLCREST	2	1,264,000	1,264,000	71.6	71.6	56.4	35.1	2	0	1.27
29	KALORAMA	1	3,000,000	3,000,000	49.2	49.2	49.2	.0	1	0	1.00
32	LILY PONDS	2	20,292,500	20292500	90.6	90.6	89.8	.9	2	0	1.01
33	MARSHALL HEIGHTS	4	898,595	608,250	63.1	73.1	61.7	29.3	3	1	1.19
39	OLD CITY #1	4	1,934,913	1,877,325	52.3	64.2	75.9	32.7	3	1	.85
40	OLD CITY #2	6	2,728,833	1,675,000	95.4	104	95.4	18.5	4	2	1.09
42	PETWORTH	3	1,903,667	1,375,000	58.2	62.4	59.8	12.9	3	0	1.04
43	RANDLE HEIGHTS	7	908,143	732,000	54.6	65.7	58.7	28.4	7	0	1.12
49	16TH STREET HEIGHTS	2	2,575,000	2,575,000	52.3	52.3	52.2	2.4	2	0	1.00
52	TRINIDAD	1	1,580,000	1,580,000	52.0	52.0	52.0	.0	1	0	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
MultiFamily	71	2,282,174	1,100,000	70.4	75.5	77.1	29.7	61	10	.98

Sales Ratio Report Using Proposed 2008 Values

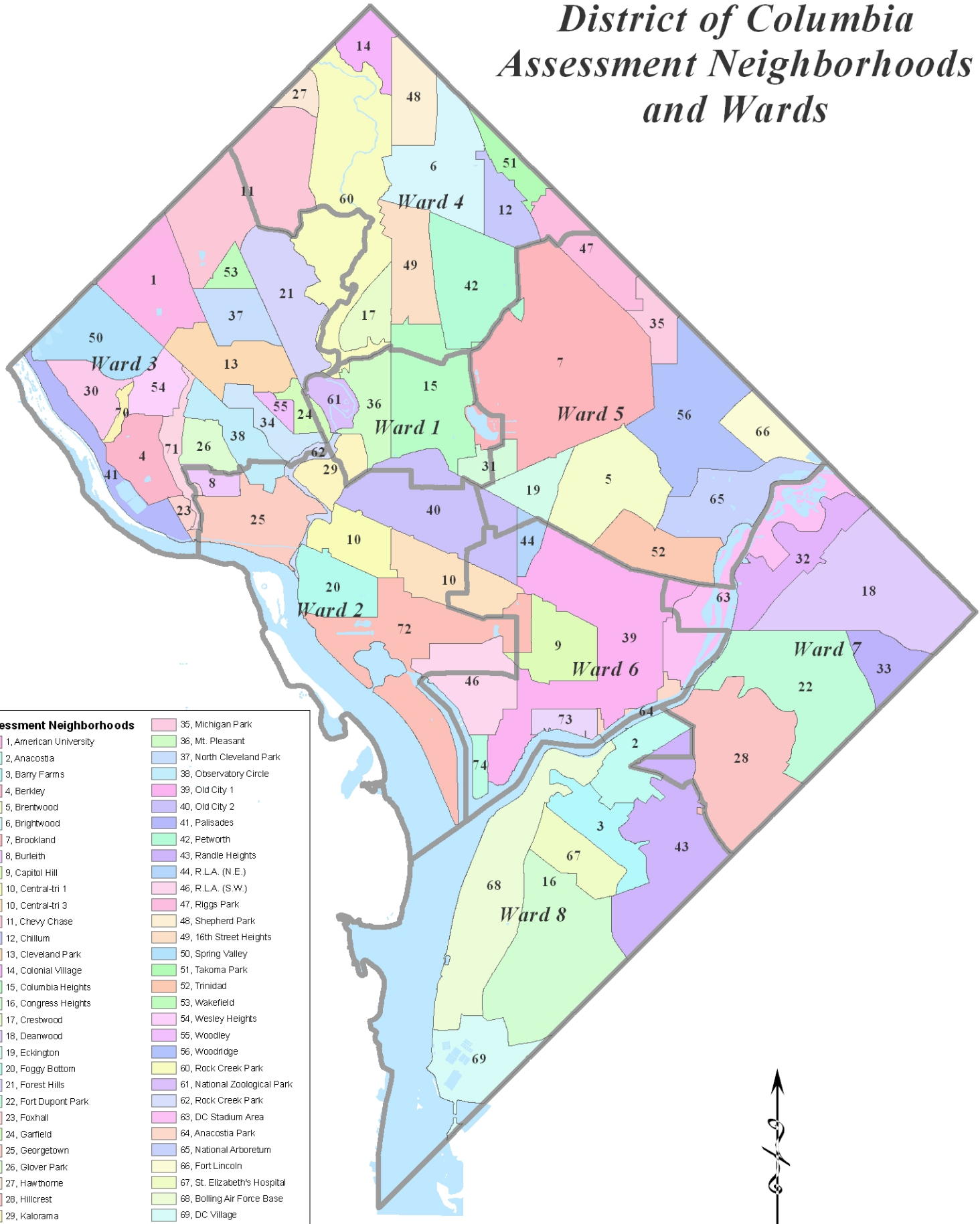
2006 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB	NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1	AMERICAN UNIVERSITY	1	10,507,145	10507145	89.4	89.4	89.4	.0	1	0	1.00
2	ANACOSTIA	1	1,100,000	1,100,000	78.0	78.0	78.0	.0	1	0	1.00
5	BRENTWOOD	10	2,963,094	1,387,500	64.1	81.2	81.5	48.1	8	2	1.00
6	BRIGHTWOOD	3	2,084,827	2,004,482	92.9	93.8	91.0	9.3	2	1	1.03
7	BROOKLAND	4	989,063	990,625	80.8	86.8	77.2	32.7	3	1	1.12
9	CAPITOL HILL	6	2,996,667	1,115,000	85.6	81.5	87.4	34.3	5	1	.93
10	CENTRAL	54	50,511,090	33275000	100.0	98.3	100.9	10.0	47	7	.97
12	CHILLUM	1	490,000	490,000	56.1	56.1	56.1	.0	1	0	1.00
15	COLUMBIA HEIGHTS	20	672,445	625,000	68.8	71.3	71.2	25.6	19	1	1.00
16	CONGRESS HEIGHTS	9	423,000	475,000	78.6	81.2	79.1	26.7	7	2	1.03
18	DEANWOOD	6	435,201	400,000	86.5	83.1	73.8	28.1	5	1	1.13
19	ECKINGTON	2	447,500	447,500	62.8	62.8	61.9	13.7	2	0	1.01
24	GARFIELD	1	936,000	936,000	151.3	151	151.3	.0	0	1	1.00
25	GEORGETOWN	13	14,597,962	1,700,000	76.4	83.8	68.2	25.7	11	2	1.23
26	GLOVER PARK	1	383,590	383,590	136.1	136	136.1	.0	0	1	1.00
28	HILLCREST	2	628,000	628,000	73.4	73.4	76.2	13.6	2	0	.96
29	KALORAMA	3	1,461,667	1,000,000	100.2	101	101.2	.6	3	0	.99
32	LILY PONDS	2	1,260,485	1,260,485	75.8	75.8	79.3	23.9	2	0	.96
35	MICHIGAN PARK	1	400,000	400,000	101.3	101	101.3	.0	1	0	1.00
36	MOUNT PLEASANT	3	916,667	650,000	88.5	82.9	75.7	15.3	3	0	1.10
38	OBSERVATORY CIRCLE	2	11,362,500	11362500	86.5	86.5	101.4	18.4	2	0	.85
39	OLD CITY #1	38	5,352,413	562,500	74.6	83.3	96.7	32.2	29	9	.86
40	OLD CITY #2	34	1,623,711	1,000,000	97.4	94.4	98.2	24.9	22	12	.96
42	PETWORTH	11	443,182	414,000	78.0	79.3	77.8	19.2	10	1	1.02
44	R.L.A.(N.E.)	1	3,200,000	3,200,000	74.0	74.0	74.0	.0	1	0	1.00
46	R.L.A. (S.W.)	2	118000000	118000000	98.7	98.7	99.2	.9	2	0	1.00
47	RIGGS PARK	2	8,250,000	8,250,000	92.4	92.4	60.3	45.9	1	1	1.53
49	16TH STREET HEIGHTS	3	376,667	460,000	73.8	83.9	86.0	22.2	2	1	.98
51	TAKOMA PARK	3	2,983,333	3,800,000	68.2	64.7	63.9	6.6	3	0	1.01
52	TRINIDAD	4	462,500	325,000	89.4	83.7	91.8	18.8	3	1	.91
56	WOODRIDGE	4	411,608	304,990	93.8	93.5	103.7	36.0	2	2	.90

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	247	14,478,377	936,000	89.4	87.4	97.9	25.1	200	47	.89

District of Columbia Assessment Neighborhoods and Wards



Assessment Neighborhoods

1, American University
2, Anacostia
3, Barry Farms
4, Berkley
5, Brentwood
6, Brightwood
7, Brookland
8, Burleith
9, Capitol Hill
10, Central-tri 1
10, Central-tri 3
11, Chevy Chase
12, Chillum
13, Cleveland Park
14, Colonial Village
15, Columbia Heights
16, Congress Heights
17, Crestwood
18, Deanwood
19, Eckington
20, Foggy Bottom
21, Forest Hills
22, Fort Dupont Park
23, Foxhall
24, Garfield
25, Georgetown
26, Glover Park
27, Hawthorne
28, Hillcrest
29, Kalorama
30, Kent
31, Ledroit Park
32, Lily Ponds
33, Marshall Heights
34, Massachusetts Avenue Heights
35, Michigan Park
36, Mt. Pleasant
37, North Cleveland Park
38, Observatory Circle
39, Old City 1
40, Old City 2
41, Palisades
42, Petworth
43, Randle Heights
44, R.L.A. (N.E.)
46, R.L.A. (S.W.)
47, Riggs Park
48, Shepherd Park
49, 16th Street Heights
50, Spring Valley
51, Takoma Park
52, Trinidad
53, Wakefield
54, Wesley Heights
55, Woodley
56, Woodridge
60, Rock Creek Park
61, National Zoological Park
62, Rock Creek Park
63, DC Stadium Area
64, Anacostia Park
65, National Arboretum
66, Fort Lincoln
67, St. Elizabeth's Hospital
68, Bolling Air Force Base
69, DC Village
70, Fort Drive
71, Glover - Archbold Parkway
72, Mall/East Potomac Park
73, Washington Navy Yard
74, Ft. McNair

1 0.5 0 1 Miles

District of Columbia
Office of Tax and Revenue
Real Property Assessment Divisio.