

ALBERTA ASSESSORS' ASSOCIATION

Valuation Guide
Warehouses

ALBERTA

ASSOCIATION

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Warehouse Valuation Guide

1.0 Introduction

The primary functions of a warehouse are to store, mix, consolidate, and distribute raw materials, goods, and/or finished products. Warehouses can provide a number of these functions, or can be designed for one specific use.

Typically, warehouses are an integral part of a manufacturing or retailing operation, or act as trans-shipment points for goods and materials. Warehouses can be constructed of different kinds of materials (wood, concrete, metal). They can range in size from large, nation-wide distribution centres to small, local storage facilities. They can be owner-occupied, single tenanted, or multi-tenanted. They can be single-storey or multi-storey.

Although there is a wide variety of uses and styles of warehouses, such buildings are generally uncomplicated structures that can be adapted to a number of commercial and many light industrial uses. Warehouses are purchased, leased, or built to suit any or all of these conditions. Like any other property, the functionality of a warehouse is measured in terms of how well the facility serves its required purposes.

Types of Warehouses Covered in This Valuation Guide

The assessment methods described in this valuation guide are designed to suit:

- Storage warehouses (large and small),
- Distribution warehouses,
- Transit or cross-dock warehouses,
- Cold storage warehouses, and
- Mini-warehouses.

Although the methods presented here may be applicable to other types of industrial or commercial-industrial properties such as warehouse-showroom retail outlets, this guide does not directly address other types of properties.

Scope of Valuation Guide

This guide is designed as an aid in the valuation of warehouse properties for assessment purposes. It sets out:

- Procedures to follow to derive warehouse values using the *income approach*,
- Procedures to follow to derive warehouse values using the *cost approach*,
- Procedures to follow to derive warehouse values using a *sales comparison approach*,
and
- Methods of deriving values for typical types of warehouses.

This guide includes:

- Practical valuation procedures based on spreadsheet applications, and
- Cost models and other valuation parameters that provide the guidelines and controls needed to establish statistically sound values.

The methods presented in this guide are tools to enable the assessor to derive market values. They are not intended to replace the assessor's judgment.

2.0 Analysis of Valuation Approaches for Warehouse Properties

Types of Approaches

Income Approach

Although many warehouses are owner-occupied and form part of an integrated manufacturing or distribution system, typically a number of warehouses have lease arrangements. Where rental information is available, the *income approach* could be employed to establish market values.

Sales Comparison

Warehouses of all types and sizes are sold on the open market from time to time. If sufficient sales data are available, a *sales comparison approach* can be a useful tool for establishing market values.

Cost Approach

Although warehouses vary in size and function and can be constructed of many forms of building material, they are generally not complicated properties from a construction point of view. Therefore, the *cost approach* can be a useful tool in their valuation.

This cost approach is based on the development of replacement models depicting the average costs to build typical warehouses. Such models can be developed from local warehouse construction data or obtained from manuals produced by valuation service companies such as Marshall & Swift or Boeckh. Typically, a cost manual will utilize replacement cost rates to determine the cost of the warehouse improvements as new. Tables in these manuals indicate normal depreciation due to aging. Other forms of depreciation and obsolescence have to be established by research and comparison of property values established by using the sales comparison or income approaches.

Recommendation

In the assessment of warehouse properties in Alberta, any one of three approaches to value can be used.

Where lease and rental data are available, the *income approach* can be used.

Where market sales evidence is available the *sales comparison approach* is an appropriate method. The more comparable the sales evidence, the more applicable the approach. Market sales evidence will also assist in establishing capitalization rates, verifying the results of the *cost approach* estimate of value, and determining the appropriate amount of depreciation to apply.

The *cost approach* is recommended in situations where there is insufficient income and sales data. This method is widely understood and, with appropriate analysis of depreciation, it produces good results.

Application of the Income Approach

The theory behind the *income approach* to value is that **property values reflect the present worth of anticipated or forecasted future benefits from the real estate**. As such, the *income approach* analyzes the income attributable to the real estate and converts this net revenue into an estimate of current value.

Income Approach Methods

In general, two methods are available to convert future income into a present value:

- A direct capitalization method, or
- Discounted cash flow analysis.

Either type of analysis recognizes that money has a time value, i.e., given a choice, people would rather receive \$100 today than \$100 one year from now. However, certain people would rather receive \$110 (\$100 + 10%) in one year than \$100 today. The interest rates applied to convert future dollars to “cash in the pocket” today reflect the time value of money.

The valuation technique commonly used by assessors across Canada is based on the *direct capitalization method*, which is widely accepted as a mass appraisal technique and applies under existing jurisprudence. Also, it is relatively easy to use.

The valuation method presented here employs the direct capitalization method.

Overview of the Direct Capitalization Method

The analysis in this section presents a direct capitalization method that is suited for mass appraisal applications. Therefore, the analysis focuses on typical classes of warehouse properties.

Direct capitalization converts or capitalizes the expected level of current net earnings into an estimate of market value using a capitalization rate. Therefore, the conversion factor or capitalization rate is a reflection of all of the investor's relative and comparative feelings and aspirations about the property in light of the investment characteristics offered by the asset and in comparison to other investment opportunities on the market.

In its most basic form, the direct capitalization method is an elementary mathematical ratio involving the estimation of current net operating income (NOI), which is then capitalized into value to produce an estimate of current market value. The overall capitalization rate captures the return *of* and return *on* investment.

The Direct Capitalization Method

Market Value	=	$\frac{\text{Net Annual Operating Income}}{\text{Capitalization Rate}}$	V	=	$\frac{\text{NOI}}{R}$
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For example:

NOI	=	\$100,000
Cap Rate (R)	=	10%
Market Value	=	$\$100,000 \div 0.10 = \$1,000,000$

Although there are other methods of converting expected future income into an estimate of current value (e.g., discounted cash flow), the direct capitalization method lends itself to mass appraisal applications. It is possible to ascertain market values under this formula through proper evaluation of the expected net income and through the selection of an appropriate capitalization rate. However, there are two reasons why it is difficult to achieve precise accuracy with the direct capitalization method:

A large number of investment characteristics have to be evaluated within the selection of the overall capitalization rate, and

The value outcome is predicated on a snapshot of the income that is expected to be produced from the property.¹

The capitalization rate employed in the valuation of a warehouse must also reflect the investment characteristics of the property in comparison to other similar investment opportunities in the market.

The primary task in establishing the market values using the *income approach* is to evaluate the income generated by the real estate. For warehouses, this process involves determining the net operating income for the space. Establishing net operating income may involve analysis of both income and expenses as there are a number of different types of leases including net leases, gross leases and semi-gross leases. *Where there is insufficient lease data, another approach should be used.*

Application of the Sales Comparison Approach

The sales comparison approach described in this guide is better suited to smaller municipalities. In large jurisdictions where there are many warehouse sales, the assessors can use more sophisticated sales analysis techniques such as computer-assisted multiple regression analysis.

The *sales comparison approach* derives values by comparing the subject property with similar properties that have recently sold. To facilitate this comparison process, the assessor must investigate the subject and the comparable properties. The higher the comparability of the subject property to the sales data, the more relevant the approach.

It follows that at least one sale of a similar property is required in order to apply this approach. Preferably there will be a sufficient number of sales to provide statistically robust results. As a

¹ Manufacturers Life Insurance Co. v British Columbia [1996] B.C.J. No. 3046 p.14

rough guideline, data on five or more sales of similar properties would be considered reasonable in a direct sales comparison process; three sales are often acceptable. The more advanced sales comparison modeling techniques such as multiple regression analysis require a much larger number of sales.

Apart from the investigation of properties and the collection of data, the key to a successful *market sales comparison* analysis in a mass appraisal environment is to stratify or classify all the warehouse properties into groups containing common elements, e.g., cold storage facilities, distribution warehouses, cross-dock facilities, etc.

There may be sufficient sales data for some classes of warehouses and not for others, or the sales data may not “explain” the value of certain elements. *Where there is insufficient sales data, another valuation approach should be used.*

Application of the Cost Approach

The theory behind the *cost approach* to value follows the principle of substitution: the value of a property is equal to the amount it would cost to replace it with a substitute of equal utility.

Two principle tasks are involved in estimating replacement cost value:

- 1) Valuing the land, and
- 2) Valuing the improvements.

Land value is usually established by analyzing comparable market sales data.

To value the improvements:

Inspect the buildings and other improvements, quantify areas, note conditions, and analyze utility.

Estimate the cost new of the assessable improvements as of the valuation date.

Deduct from the costs new value an amount that reflects all forms of depreciation, including:

- Physical (curable and incurable),
- Functional (curable and incurable), and
- External (economic obsolescence).

The resulting value will be an estimate of the contribution of the improvements to the market value of the subject, depreciated for all causes.

The final sum of **land value** plus **improvement value** is the estimated market value of the real estate at the subject location.

Establishing Costs New

Costs new can be estimated from a number of sources including:

- The Marshall & Swift Valuation Services Manual,
- The Boeckh Manual,
- Alberta's Assessment Manual, or
- A study of actual costs.

The *Marshall & Swift Valuation Services Manual* (Marshall & Swift) is used as the costing tool in this guide. Actual cost information is useful in verifying the estimates generated by *Marshall & Swift*.

Replacement versus Reproduction Costs

There are two primary variations of the cost approach: reproduction cost and replacement cost.

Reproduction Cost

Reproduction cost is the cost of replacing an existing property with a replica as of a particular date. Strictly construed, reproduction cost calls for identical materials and quality of workmanship. In determining reproduction costs, it may be possible to substitute more modern replacements for some of the construction materials used in the original buildings. However, this does not constitute a determination of functional obsolescence. Neither does it necessarily constitute a determination of market value.

This variation of the cost approach is of limited usefulness because it is frequently not possible or desirable to duplicate an existing property, either because of a lack of certain materials or trade skills, or the functional obsolescence of an older property.

The difficulty of using reproduction cost increases as a property ages. However, this difficulty can be overcome if depreciation is accurately estimated.

Replacement Cost

A replacement approach reflects what actually would be built if the improvements were to be reconstructed. Replacements are designed, therefore, to replace the existing functions and capacity of the property. Replacements take advantage of advances in technology in the design, layout, and construction of the improvements. As a result, replacement costs take into account many of the elements that give rise to the functional obsolescence inherent in the

property. The replacement cost concept is the most meaningful as far as the principle of substitution is concerned.

The replacement cost method is difficult to apply in the case of complex, one-of-a-kind structures because it is difficult to establish the functionality of the buildings and what would be required to replace them.

In the case of common properties such as warehouses that are reasonably similar in nature, the replacement cost approach is an acceptable and appropriate method of arriving at an indicator of fair market value.

If the valuator starts with a reproduction cost analysis, he or she must ensure that all forms of depreciation are considered to arrive at an estimate of market value.

Depreciation

"The loss in utility and hence value from any cause." (Basics of Real Estate Appraising, *Appraisal Institute of Canada*, 1991, p. 284)

The concept of depreciation is simple, yet all encompassing - *a loss in value from any cause*.

Depreciation and the Market Comparison Approach

The inherent advantage of a *market comparison approach* is that all forms of depreciation are taken into account when an informed buyer purchases a property from an informed seller.

Depreciation and the Cost Approach

With the *cost approach*, determining the appropriate amount of depreciation and, therefore, the appropriate market value is more complicated. The approach generally starts with the amount it cost to reproduce the property as new. Then, given this amount, the valuator is charged with the task of producing an estimate of what the market would pay for such a property. The difference between the cost new and the amount the market would pay for the property is the *depreciation* inherent in the property. This process is not just a calculation exercise.

In estimating value using the *cost approach*, the analysis of depreciation is just as important as the analysis of costs new. As there are many reasons why a property can lose value, all types of depreciation and all causes of depreciation should be explored and analyzed to arrive at the correct value.

Physical Deterioration

All building improvements deteriorate over time and as a result have limited life spans. Therefore, physical deterioration (or depreciation) generally relates to the age of the property. Some forms of physical depreciation are curable while others are not economically viable to correct. The loss in value from deterioration is a simple reflection of the fact that a prospective purchaser will pay less for an older building in poor shape than for a similar, newer one in good shape. Such depreciation is determined by establishing the current condition of the property and estimating the effective age and the remaining physical life of the improvements.

Physical depreciation can be analyzed in detail. The assessor can judge the condition and expected remaining physical life of each building component, including short-term components such as dock levellers and ventilation systems, and long-term items such as the walls and foundation. Some items may be curable (e.g., ventilation systems). Others may not be economically prudent to fix (e.g., walls). This detailed method has limited applicability because it requires so much analysis and so many judgments concerning the condition and expected life of each component.

A more generalized approach would be to review the condition of the property as a whole, determine its effective age, and, given the expectation of typical maintenance, determine the physical life expectancy of the buildings.

Obsolescence

Depreciation as a result of obsolescence can be broken down into two components: 1) functional obsolescence, and 2) economic obsolescence (sometimes referred to as external or locational depreciation). Such depreciation is not related to the age of the property but arises out of analysis of the functionality and external conditions that may affect the value of the property.

“Obsolescence” is a reflection of the simple fact that people pay less for items or properties that have lost functionality, attractiveness, or utility. In the *Basics of Real Estate Appraising* obsolescence is defined as:

A loss in utility, and hence value, because of the inability of any component part of the structure or any item of equipment to perform its proper function according to today's standards and requirements. It is inherent in the property and is a loss from reproduction cost new, as of the date of appraisal, caused by deficiency, inadequacy, super adequacy, unattractive or unacceptable style, poor or inefficient design (p. 284).

Depreciation Schedules

The depreciation schedules in most valuation manuals reflect the amount of normal, physical, and age-related depreciation in a property. This method of estimating depreciation relies on three separate points of analysis:

- Analyzing the effective age of the improvements,
- Determining the expected life of the improvements, and
- Considering other non-age-related forms of depreciation.

The *cost approach* demonstrated in this valuation guide follows from the guidelines and models in *Marshall & Swift*.

Practical Approach

In this valuation guide, the income approach, sales comparison approach and cost approach have been developed into practical valuation tools.

Guidelines and instructions follow on:

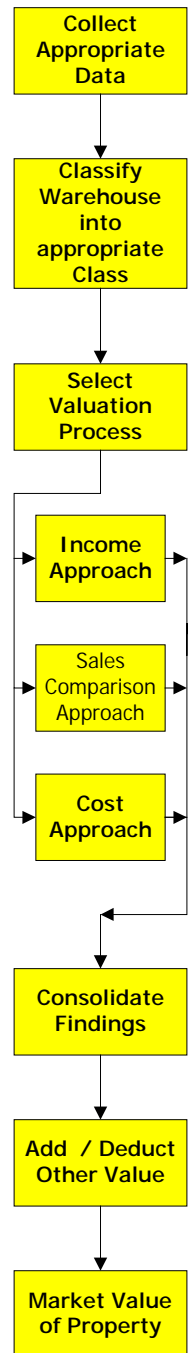
- Using the applicable spreadsheets,
- Collecting data,
- Determining costs new,
- Analyzing physical depreciation,
- Analyzing functional and economic depreciation,
- Developing market value, and
- Controlling the quality of assessment values.

3.0 Warehouse Valuation Process

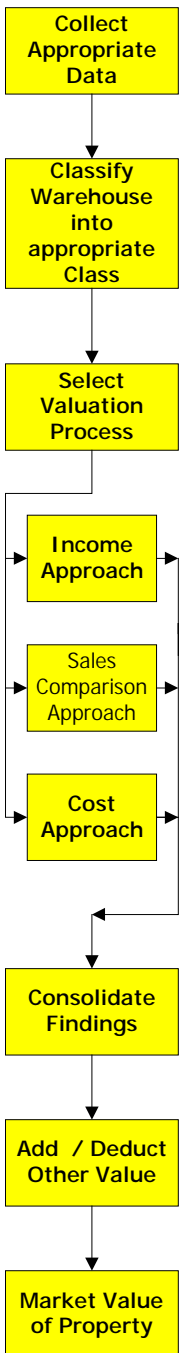
Overview of Procedure

- 1) **Collect appropriate information.**
- 2) **Classify the warehouse into an appropriate class.**
- 3) **Select a valuation process:**
 - Income approach,
 - Sales comparison approach, or
 - Cost approach.
- 4) **Apply method to derive values.**
- 5) **Add / deduct for other value.**
- 6) **MARKET VALUE OF PROPERTY.**

All warehouse valuations include steps 1 through 3, and 5 through 6. These steps should be completed regardless of which approach is being used to value the property.



This is how the valuation process works:



Collect information on warehouse sales.

Collect information on warehouse rentals and vacancy rates.

Collect physical and financial information about the property.

Classify the property according to type of warehouse.

Review data on hand and apply the appropriate valuation process. All warehouses in a particular class of warehouse properties should be valued using the same approach.

Determine if there are any other influences on value that are not captured in the above analysis and add or deduct this other value.

3.1 Collecting Appropriate Information

More than any other factor, the type and quality of information available dictates the methods that can be used to value properties. The efforts put in at the information collection stage will determine the quality of the final analysis.

Helpful sources of information for the valuation of warehouses include assessment records, owners, real estate consultants and brokers, real estate publications, cost manuals, and title registration offices.

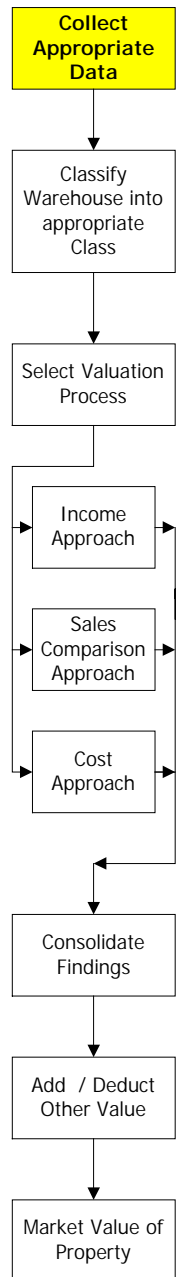
The following types of information need to be collected:

- Sales data,
- Property information,
- Income and financial data, and
- Construction costs.

Sales Data

Sales data should be collected whenever possible. Even though there may not be a sufficient number of sales to use the *sales comparison approach* for a certain class of warehouses, the sales information may still be useful in determining capitalization rates, depreciation, and confirming final market value. Sales data to be collected includes:

- Property address and legal description,
- Sale price,
- Date of transfer,
- Instrument number,
- Name and address of vendor and purchaser,
- Interests transferred (fee simple or other), and
- Financing conditions.



Property Information

Pertinent physical and descriptive information is required to compare one property to another, to properly classify each warehouse property, and to develop appropriate market values. The information collected should be entered on Form Whs-1: Warehouse Data Entry Form (see Figure 1).

Assessment Records

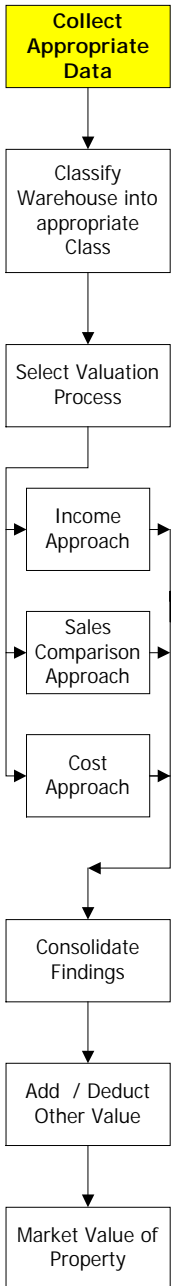
There should be some historical information on file in the assessment records. Where possible, the assessor should verify this information when inspecting the property. Where the information is not available or obtainable from inspection, the assessor should contact the property owner to complete the data on:

- Year built,
- Size,
 - area of site,
 - floor areas,
 - building dimensions,
 - heights,
 - number of floors, and
- Construction dates.

Property Inspection

To keep existing records up to date, all assessed properties should be inspected periodically. Inspectors should note:

- The physical measurements of the warehouse,
- Type of warehouse/ goods handled,
- Other buildings/improvements on site,
- Condition of improvement,
- Construction materials,
- Floor loading/ floor height,
- Truck door/ dock type,
- Quality of office space,
- Type of heating/ air conditioning,
- Sprinkler system,



- Location/ access,
- Lot size/ site,
- Performance, activity level, goods turnover,
- Layout,
- Internal conveyors, rollers, etc.,
- Recent renovations, and
- Functionality of property:
 - Does it meet current industry standards?
 - Is it capable of meeting current industry or capacity standards?

A photograph of the property is also a useful addition to the file.

Where there appears to be surplus land, the assessor should take note of and review the zoning use bylaws governing the property.

Income Data

If the *income approach* is to be used, then income and expense information should also be collected. However, even if the *income approach* is not used, information such as current market rents and vacancy rates can assist in estimating depreciation and obsolescence. To complete the income valuation procedure, the assessor should collect information from owners and taxpayers on:

- Gross leasable areas (GLA),
- Rents and expenses,
- Other income (if any),
- Vacancies,
- Operating expenses, and
- Unrecovered expenses.

The income and expense statement will contain much of the necessary financial information.

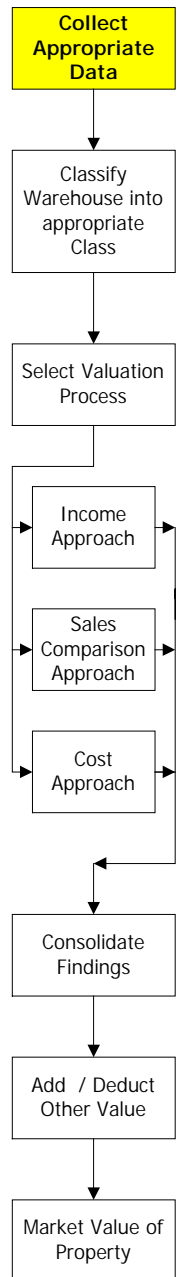


Figure 1. Form Whs1 - Warehouse Data Entry, Example

Collect Appropriate Data

Classify Warehouse into appropriate Class

Select Valuation Process

Income Approach

Sales Comparison Approach

Cost Approach

Consolidate Findings

Add / Deduct Other Value

Market Value of Property

Address	1010 23rd Street
Company Name	Highway 17 Ltd.
Municipality	Calgary
Roll #	654321

Value Date:	1-Jan-96
Type / Class:	Mega-Whse
Measurements in:	feet

Storage	Area in sq. feet	Flr. Ht: feet	# Flrs.	Volume in cubic feet	Dimensions	Perimeter feet	Build Date	Building Type	Bldg Class	Const. Quality
Warehouse	265,000	23.0	1.0	6,095,000	435 x 610	1,596	1974	Storage	S	Average
Cold Storage	78,800	18.0	1.0	1,418,400	150 x 525	1,350	1977	Cold Strg	C	Good
Basement	10,000	13.0	1.0	130,000	50 x 200	500	1974	Standard	C	Average
Other				0						
Office	35,400	11.5	2.0	814,200	435 x 40	80	1974			
Totals	389,200	21.6		7,643,400		3,526	1975			

Other Bldg	Area	Flr. Ht: feet	# Flrs.	Volume in cubic feet	Perimeter feet	Build Date	Building Type	Bldg Class	Const. Quality
Gate House	250	10.0		2,500		1982			Good
Garage				0					
Other				0					

Yard	Area	Comments
Elevator	1	Freight elevators
Scale	1	
Pavement	190,000	Paved truck parking area
Fence (linear)	5,000	
Rail Line (linear)	1,600	
Other Yard		

Land	Value
Site area: square feet	978,300
Coverage Ratio	39.8%
Value per square foot	\$1.45

Inspection Notes	
Inspection date	Sept. 12, 1996
Bldg. construction	Steel frame, metal and brick walls
% Office/ quality	9.1% of total space, dry wall partitions, carpeting, average quality.
Floor height/ Loading	On grade, standard loading, site excavated for truck dock height
Heating/ cooling	Heating and ventilation - moderate weather, A/C in office
Sprinklers	Wet system throughout warehouse & office, none in cold storage
Docking doors	Sealed doors with levellers
Extra features - yard	Large paved apron & scale
Condition	Good
Comment on use/ vacancy	Close to full at inspection
Internal goods movement	Forklifts
Comment on access	Close to hwy. 17, rail siding - used intermittently
Comment on location	Good - serves a wide area

Construction Costs

The “bricks and mortar” construction costs of a building can be estimated from a number of different cost manuals. Some manuals like the *Marshall & Swift Valuation Services Manual* are based on construction models of warehouses to estimate costs new.

In determining the value of a particular type of property, it is also useful to analyze *actual* construction costs. Therefore, assessors should ask owners for construction cost data for all new warehouses and all major reconstruction work. It may also be useful to consider the information provided on any building permit. The analysis of actual cost data will assist in confirming rates found in valuation manuals

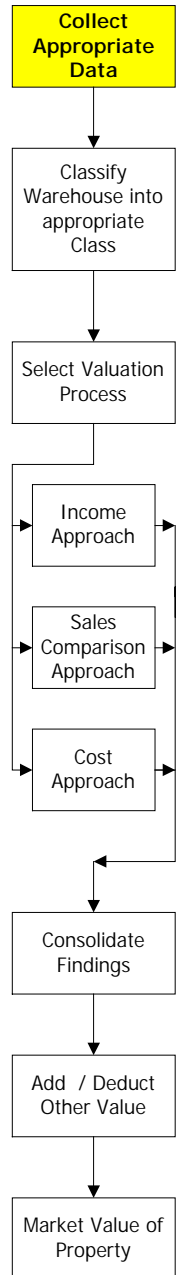
When analyzing construction cost data, exercise caution to ensure that the actual cost reflects the cost of all assessable items and only those items that are assessable.

Request for Information Form

The Request for Information Form that has been included in Section 6.1 can be used to facilitate the valuation process.

Other Sources of Current Market Information

Consultants,
Real estate publications,
Assessment appeal reports, and
Industry associations.

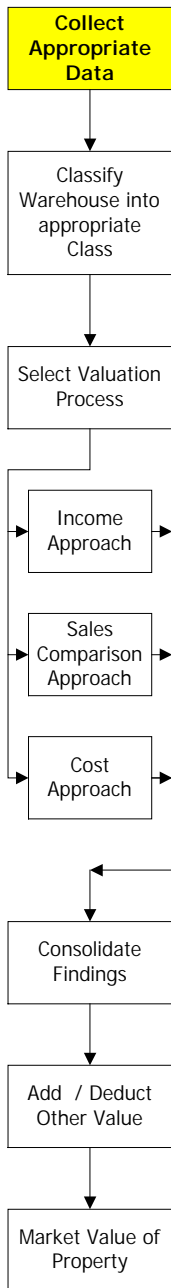


An Issue to Consider in the Collection of Data: Measurements

Under ideal conditions, all building areas would be measured and reported in the same manner and all building heights would reflect the same measure. In reality, the reporting of such measures can vary greatly. Heights often reflect either the **clear height**, from the top of the floor to the bottom of the structural steel, or the **structural height**, from the floor (top or bottom – depending on the cost manual) to the top of the structural steel. The height of the structural steel can vary between one and eight feet in height (depending on the size of the building and the type of construction).

In addition, the value of a warehouse property from a sales point of view is based on the clear height, while construction costs are generally based on structural heights.

Try to achieve consistency in determining and reporting heights and areas.



3.2 Classifying the Warehouse

The functionality, viability, and value of a warehouse is largely dependent on its attributes: volume, size, clear height, accessibility, location, truck or rail connections, number of truck doors, floor height, turnover or processing abilities, and competition from other warehouses. Therefore, the valuation of a warehouse property rests on the analysis and comparison of the properties.

To facilitate the valuation process, try to group the warehouses into homogeneous classes. Classification enhances the comparison process. The ability to compare properties is also crucial in the mass appraisal process because it allows the assessor to determine typical market conditions (e.g., typical clear heights, typical market rents and typical expenses).

Area versus Volume Measures

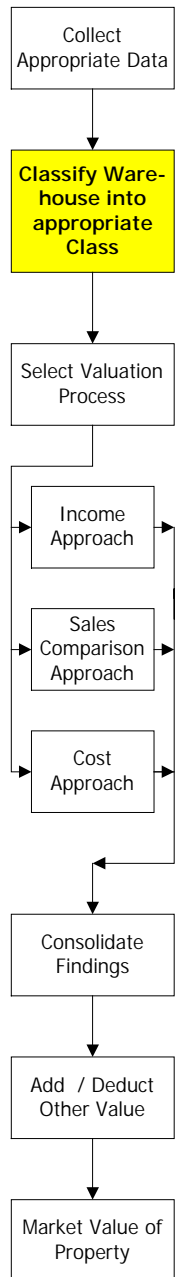
Most warehouse leases are written and based on the amount of *square feet* contained in the building. However, the key aspect of most warehouses is the *volume* of space available. As long as warehouses are classified into groups that have similar clear heights the typical rents and expenses per square foot will reflect the typical volume of space. Rents and expenses per cubic foot should be considered in the final verification of values or for those classes of warehouses that have varying heights.

Therefore, the income and sales comparison approaches in this guide will be presented as amounts per square foot.

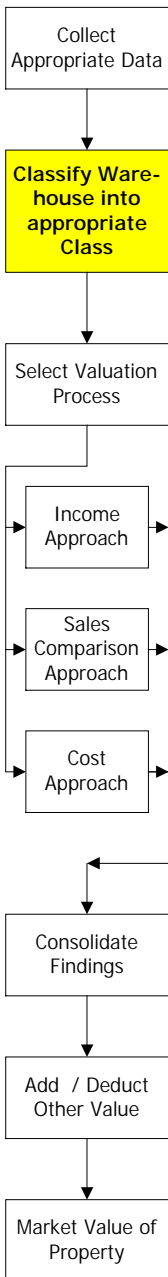
Establishing Warehouse Classes

The following characteristics can be used to classify warehouses:

- Function,
- Size,
- Age/ condition,
- Height,
- Location, and
- Land/ building ratio.



When a cost approach is used, classification relates to the building features and construction materials. A similar type of classification can be employed for the income and sales approaches as well.



Classes

Possible warehouse classes are as follows:

- Mega-warehouses over 250,000 square feet,
- Storage warehouses,
- Distribution warehouses,
- Transit or cross-dock warehouses,
- Cold storage warehouses,
- Mini-warehouses, and
- Multi-storey warehouses.

Possible size sub-classes

- Between 100,000 and 250,000 square feet,
- Between 50,000 and 100,000 square feet,
- Between 25,000 and 50,000 square feet, and
- Under than 25,000 square feet.

The *Marshall & Swift Manual*² has these definitions:

Warehouses are designed primarily for storage. An amount of office space commensurate with the quality of the building is included in the costs. Typically, this is between 3% and 12% of the total area.

Mega warehouses are the large facilities, typically over 200,000 sq. ft., where the interior build-out is only 1% to 5%.

Distribution warehouses will have larger areas, between 15% to 30% for office/sales and/or other subdivisions designed to accommodate breakdown and transshipment of small lots, as well as increased plumbing, lighting, and compartmentation to accommodate a larger personnel load.

² *Marshall & Swift Valuation Service Manual*, Section 14, p. 1, Sept. 1997.

Cold storage facilities are designed to keep stored commodities at various temperature levels. Some production or process areas are included in the better qualities.

Transit warehouses or truck terminals are designed for temporary closed storage, freight segregation and loading. The costs include dock height floors. They will generally have additional facilities, 10% to 30%, to cater to transient personnel.

Mini-warehouses are warehouses sub-divided into a mixture of cubicles of generally small size, designed primarily to be rented for small self-storage or noncommercial storage and may include some office-living space

When a cost approach is used the classes are further stratified by type of construction and subdivided according to the quality of the facility: excellent, good, average and low cost.

Classification for Income and Sales Comparison Analysis

When warehouse properties are classified for the income and sales comparison approaches these guidelines should be followed:

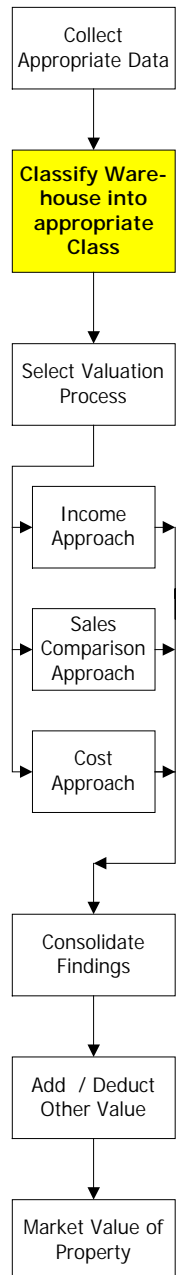
Make the classes specific enough to allow meaningful comparisons.

Conversely, define classes broadly enough to have sufficient numbers within each group to establish values.

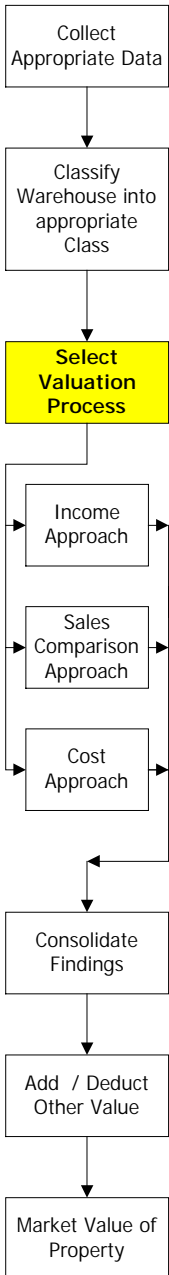
Use other classification systems or other approaches to value when:

There may not be enough comparable properties in a class to determine typical rents and expenses (four or more warehouses should be sufficient).

The data is insufficient or does not display homogeneous characteristics.



3.3 Selecting a Valuation Process



Income Approach

The *income approach* requires income and expense information. To employ this approach, the assessor must be able to establish the typical net market rents for the space within the various warehouse classes.

Market Sales Approach

If there is sufficient arms-length market sales data, the *sales comparison approach* can be used. The more similar the properties, the more applicable the approach.

Cost Approach

The *cost approach* can be based in large part on the information produced in the *Marshall & Swift Valuation Service Manual*.

3.4 Income Approach Process

Establishing Net Market Rents

As a rule rents and expense are determined on the basis of rents per square foot.

Lease arrangements for warehouse space can vary from triple net to gross, they can include charges for the handling of goods and management of the property, or the lessee can be fully in charge of all property operations. Because lease arrangements vary so much, financial statements and lease arrangements must be analyzed in the determination of rent.

The *income approach* procedure presented in this guide requires the assessor to establish the **typical net market rent** for the class of warehouse.

Net Leases

Where leases are triple net, rental rates reflect the net market rent at the time the lease was signed.

Semi-Gross or Gross Leases

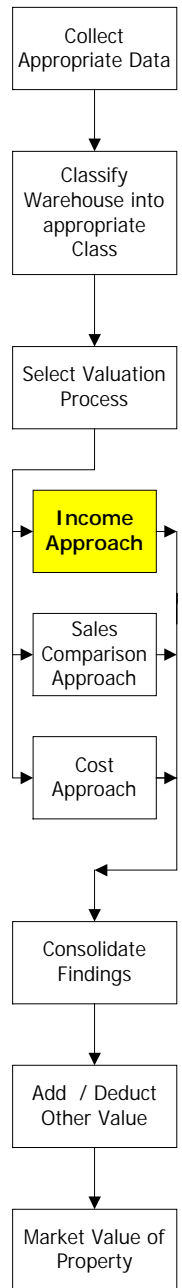
Where the lease rate includes some operating charges (for example, taxes or operating expenses), the effective operating charges should be deducted from the lease payment to obtain the net market rent.

Example of Net Lease Calculation from Gross Lease Rates

Gross Lease Rate	\$7.20	per square foot
- Heat / utilities	-0.40	
- Admin & mgmt.	-0.25	
- Other operating	-0.10	
- Taxes	- <u>1.10</u>	
Net Lease Rate	\$5.35	per square foot

Leases Including Handling Charges or Other Fees

Any lease that stipulates rent for purposes other than rental of the real estate should be adjusted to reflect the net market rent for fee simple real estate. For example, a lease may include a payment for the internal movement and management of goods



(in effect, the tenant simply parks a truck at the door and the warehouse owner handles the storage and sorting of goods). To establish the net market rent in this situation the handling and management fees should be determined and deducted from the lease payment.

Improper Expenses

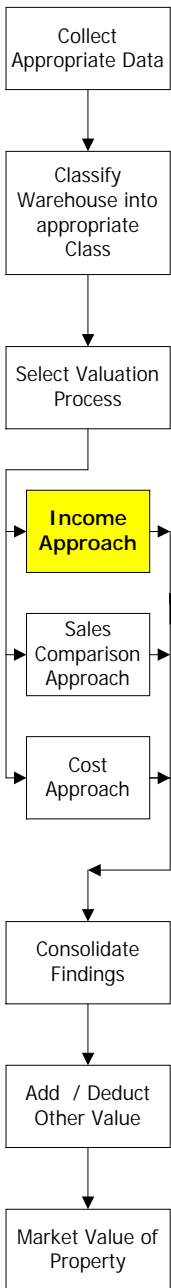
Income and expense statements often contain accounting items that do not form part of the income approach procedure. Examples of such items are:

- Income taxes,
- Depreciation,
- Interest and debt service,
- Capital improvements, and
- Owner's business expenses (over and above reasonable expenses incurred in the generation of income by the property).

Such expenses should not be deducted because they do not affect the value of the real estate. In the income approach, depreciation is treated as a form of value recapture and is therefore considered to be part of the capitalization rate. Debt service payments do not affect the value of the real estate, i.e., the price of a property will not change whether there is or is not a mortgage at current market rates. (Market value assumes a cash equivalent value). Capital expenses affect the long-term income-generating ability of the property and will therefore be reflected in the analysis of the income stream.

Establishing Typical Market Rents for a Class of Warehouses

Typical net market rent can be established by analyzing the net market rents from leases signed in or around the valuation date for a number of similar properties, i.e., warehouses within one class. There should be at least four relevant leases. The lease rates should be tabulated along with the relevant descriptive data, and the median net market rent should be established as the typical rent.



Steps in the Income Approach

Estimation of Potential Gross Income

Potential gross income (PGI) is derived by valuing all leasable volume or areas in the warehouse and multiplying this value by the current market rent for that space.

$$\boxed{\text{ALL AREAS}} \times \boxed{\text{MARKET RENT FOR SPACE}} = \boxed{\text{PGI}}$$

Determine Effective Gross Income

Effective gross income (EGI) is equal to PGI less the typical vacancy and bad debt allowance. Vacancy and bad debt allowances are generally expressed as a percentage of gross income.

Vacancies

Vacancies reflect the amount of space that is **typically** vacant in a type of warehouse. Two issues arise when considering vacancies:

1. All classes of warehouse do not necessarily have the same vacancy rates.
2. Individual warehouses can differ from the norm. However, unless there are extenuating circumstances, the assessor should strive to apply the typical vacancy rates within the range suggested in the valuation parameters (see Figure 2).

Bad Debt

Bad debts represent rental and other payments that tenants owe but do not pay. In this valuation approach, deductions for bad debts are considered part of the allowance given for typical vacancy rates.

$$\boxed{\text{EGI} = \text{PGI} - \text{TYPICAL VACANCY RATES AND BAD DEBT ALLOWANCE}}$$

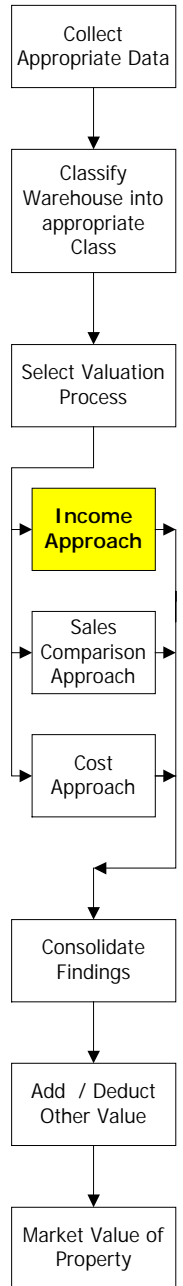


Figure 2. Sample Warehouse Valuation Parameters

These numbers are for illustrative purposes only - not to be used in property valuations

Parameter (areas in 1,000 cubic feet)	Storage				Distribution		Transit		Mini-Warehouse	
	<500	500 - 1,000	1,000 - 2,500	>2,500	<1,000	>1,000	<500	>500	<500	>500
Typical rent per cubic foot	\$0.175	\$0.155	\$0.147	\$0.135	\$0.171	\$0.141	\$0.193	\$0.167	\$0.228	\$0.216
Vacancy Allowance	5.0%	5.0%	5.0%	5.0%	4.0%	4.0%	3.0%	3.5%	9.0%	8.5%
Unrecovered Operating Expense	7.0%	7.0%	7.0%	7.0%	7.5%	7.5%	7.0%	7.5%	8.0%	8.5%
Capitalization Rates	10.0%	9.0%	9.0%	8.5%	9.0%	9.0%	9.0%	9.5%	11.0%	11.0%

Establish Net Operating Income

Operating expenses that are not recovered must be deducted from the effective gross income to obtain the net operating income³ (NOI) from the property.

Even on a triple net rental basis there are unrecovered operating expenses, i.e., expenses, not paid for under the operating agreements that must be covered by the owner. The effective gross income (EGI) must be reduced by the total amount of these unrecovered expenses to determine the net operating income received by the owner.

Unrecovered Operating Expenses

Operating expenses that are typically not recovered from tenants under the terms of a lease including:

Legal and audit fees.

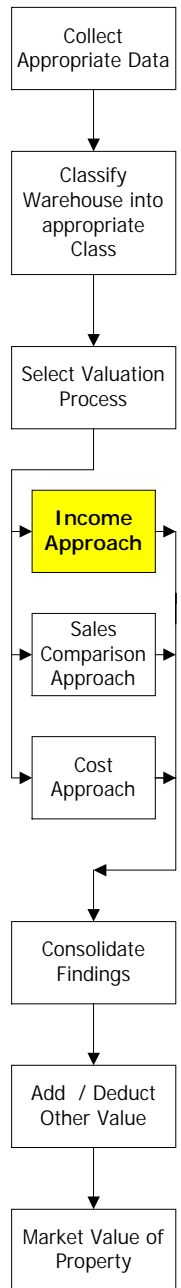
Structural repairs and capital repairs that are outside standard maintenance and repair work (e.g., roof and wall repairs and parking lot resurfacing). In the general operation of a warehouse, these types of expenses do not normally occur every year.

Advertising and promotion includes only advertisements by the management in the operation of the warehouse, for example, advertising to fill vacant space.

$$\text{NOI} = \text{EGI} - \text{UNRECOVERED EXPENSE}$$

Determination of Net Operating Income

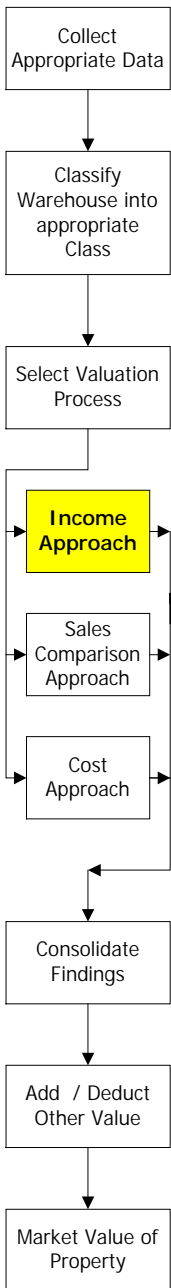
The objective of this valuation process is to determine the annual **net** operating income. When making deductions for unrecovered operating expenses from the EGI, the assessor must annualize expenses such as structural and other extraordinary repairs over a reasonable period of years. Deducting the annualized portion of these expenses from the EGI provides a more realistic picture of the NOI and a foundation for a more stabilized market value for the warehouse.



³ For a general discussion of the principles to be applied, see *Alstores Realty Corp. v Board of Assessors of Peabody*, 391 Mass. 60 460 N.E. 2d 1276 (1984).

Figure 3. Example of Net Operating Income Calculation

Procedure	Area SF	Rate	Amount
1. Establish PGI with typical net rent	50,000	\$5.35	\$267,500
2. Deduct typical vacancy		5.0%	- \$13,375
3. Establish EGI			\$254,125
4. Deduct typical unrecovered expense		9.0%	- \$22,871
5. Establish NOI			\$231,254



Capitalize the Net Operating Income into Value

The current value of the rental income stream is determined by capitalizing the net operating income. Selecting an appropriate capitalization rate is essential to the estimation of a realistic and equitable market value for the property.

$$\text{VALUE OF INCOME} = \text{NET OPERATING INCOME} \div \text{CAPITALIZATION RATE}$$

The capitalization rate to be applied in valuing a warehouse arises from analysis of two types of information:

- 1) Analysis of sales of similar properties is the primary source. (Turn the above equation around: $\text{Cap Rate} = \text{NOI} \div \text{Value}$).
- 2) A secondary source arises from the fact that, as an investment, a warehouse must compete with other investment opportunities. From an investment point of view, the more similar the characteristics of the associated income stream, i.e., the frequency of payment, its potential for growth, and the risks associated with the income, the more comparable the investment and the more comparable the capitalization rate.

Therefore, when warehouse sales information is unavailable, the capitalization rates can be established in comparison to mortgage rates and a combination of mortgage and equity rates. However, this and other methods of establishing capitalization rates should be considered only when appropriate sales data is not available and as a check on the results of the sales analysis.

Establishing a Capitalization Rate

The income approach is based on the present worth of **future** benefits. Therefore, when the assessor analyzes capitalization rates he should take into account the expected future income at the time of the valuation.

Capitalization Rate Guidelines

The following comments are guidelines for selecting an appropriate capitalization rate.

A number of factors can affect the capitalization rate to be applied. In general, **favourable conditions should lower the capitalization rate** and raise the value; negative conditions should raise the capitalization rate and lower the value.

Factors include:

Competition, and expected changes in competition,

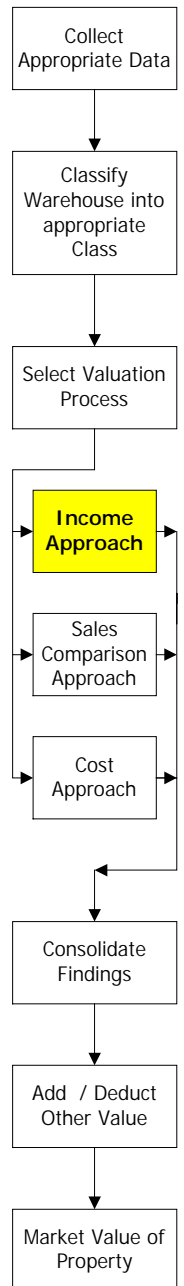
Location – access by roads, rail, etc.,

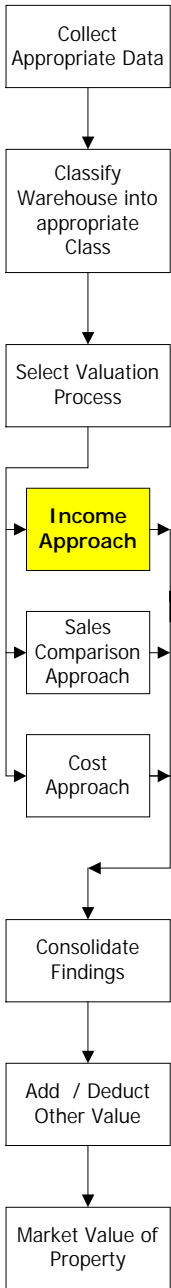
Age and condition of the property,

Design of the property,

Expansion capabilities, and

Property taxes.





Factor	Influence on Cap Rate
More growth potential in income stream	Lower
Less growth potential in income stream	Higher
More risk associated with rental payments, (i.e., unreliable tenants)	Higher
Less risk associated with rental payments, (i.e., stable and financially sound tenants)	Lower
Vacancy and bad debt problems	Higher
Lower rates and returns for competitive investments	Lower

Effective Tax Rates

In some income valuation procedures, the capitalization rate is adjusted for taxation considerations. Because net incomes are being considered in this warehouse valuation procedure, this adjustment is not required.

Add / Deduct Other Values

From an assessment perspective, an assessor should consider a number of potential sources of additional value before arriving at the final value of the property.

Excess Land

For warehouses, excess land is the major source of additional value that is not captured through the analysis of the income stream. “Excess land” means land that is not required for the warehouse building, yard, and parking areas. To determine whether there is excess land the assessor analyzes local zoning bylaws and the current development of the property.

Deductions

When a property is subject to a one-time, extraordinary maintenance expense, this expense should be accounted for as part of the value. The “Other Value” line at the bottom of Form Whs2 - Figure 4 allows for these adjustments.

Market Value of Property

Market value is determined by analyzing the physical and income characteristics of all warehouse properties and compiling this information into homogeneous classes. At this point, the value of any one property in a class is based on typical net rental rates. If required, any additional value is added to this total to produce an overall market value.

An example of the income approach analysis procedure is set out in Figure 4 - Form Whs2 – Warehouse Income Analysis.

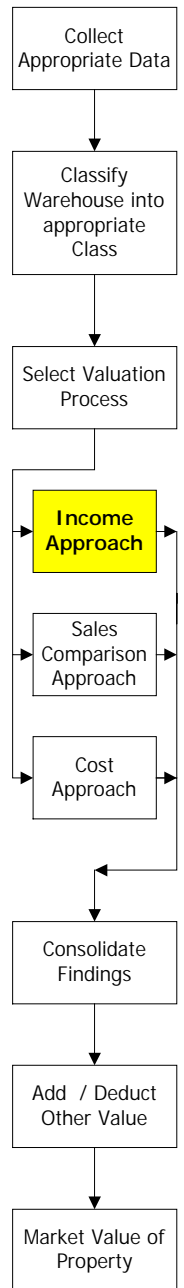
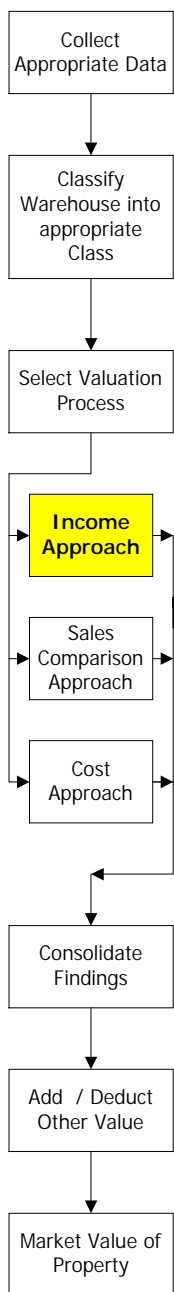


Figure 4. Form Whs2 – Warehouse Income Analysis



Address	1010 23rd Street	Value Date	1-Jan-96
Roll #	654321	Class	Mega-Whse

Type of Space	Rentable Area in sf	Net Market Rent per sf	Rent - Total
3.1 Warehouse	265,000	\$3.50	\$ 927,500
3.2 Cold Storage	78,800	\$4.00	\$ 315,200
3.3 Basement	10,000	\$1.00	\$ 10,000
3.4 Other	250		\$ 0
3.5 Office	35,400	\$6.00	\$ 212,400
Operating Expense Recoveries			
Other Income			
Potential Gross Income	389,450		\$1,465,100

Valuation Parameters		Comments
3.6 Other Net Income		
3.7 Other Value		
3.8 Vacancy Rate %	4.0%	
3.9 Unrecovered expense %	6.00%	
3.10 Base capitalization rate %	10.00%	
3.11 Effective tax rate %	3.00%	

Effective Gross Income	
Potential gross income	\$ 1,465,100
Vacancy rate 4.0%	\$ 58,604
Sub-total	\$ 1,406,496
Other net income	\$ 0
EGI	\$ 1,406,496

Net Operating Income	
Unrecovered exp. 6.0%	\$ 84,390
NOI	\$ 1,322,106

Market Value	
Overall capitalization rate	13.00%
Value sub-total	\$10,170,000
Other value	\$ 0
Value Conclusion	\$10,170,000

Value Breakdown	
Site area sf	978,300
Land value per s	\$ 1.45
Land value	\$ 1,418,535
Building value	\$8,751,465
Market Value	\$10,170,000

Value per sf	\$26.11
---------------------	----------------

3.5 Sales Comparison Process

Assessors who determine that there are sufficient sales to proceed with a sales comparison approach should take the following steps:

Verifying Sales Data

First, investigate all sales transactions to determine if they reflect market conditions and market values.

- 1) Is there any relationship between buyer and seller? (Is the transaction at arm's-length or has a relationship affected the price?)
- 2) What interests are being transferred?
- 3) What are the motivations of the buyer and seller? Is there any undue pressure on either party?
- 4) Do the financing terms affect the sales price?

To address these questions the assessor should:

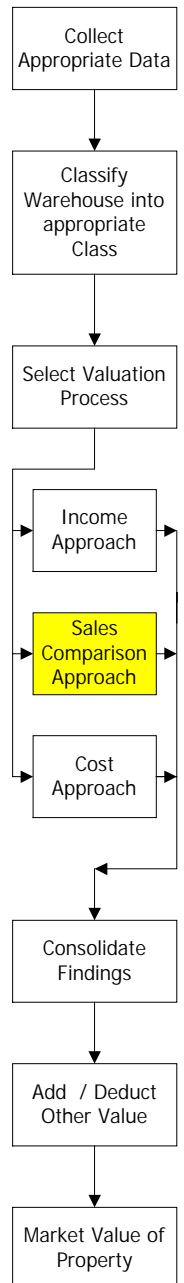
Interview either the purchaser or vendor (preferably both).

Search the title and obtain copies of deed and mortgage documents.

Investigate relationships between the vendor and purchaser.

- Do they have the same name?
- Do they live or work at the same address?
- If corporations are involved do they have a relationship? (Do a corporate search).

An analysis of the above information should enable the assessor to validate the sale.



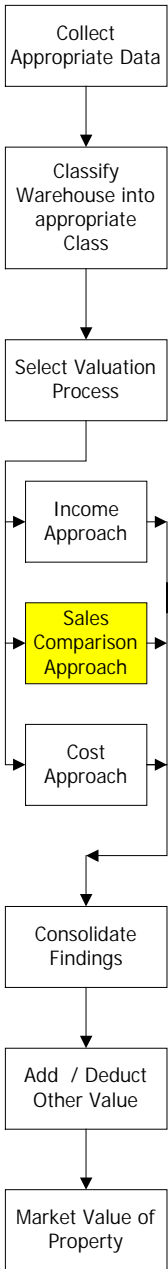
Methods of Sales Comparison

The next step is to sort the data into homogeneous groups for further analysis and comparison. There are a number of comparison procedures that could be adopted in the valuation of the process from least to most complex:

1) **Base sales data reference** is a means of verifying the values developed using alternative valuation methods. It simply involves the collection of data into homogeneous groups, determining the mean and range of the sale prices per square foot (or per cubic foot), and comparing the findings with the valuation for the subject property. For example, if the characteristics and cost value estimate per square foot for a warehouse is close to the mean price demonstrated by the sales of similar warehouses, the results of the subject *cost approach* valuation are probably valid.

Figure 5. Base Sales Data Reference - Example

Warehouse Types (Market approach)	No	Age in years		Sale price per sq. foot		Sale price per cubic foot	
		Mean	Range	Mean	Range	Mean	Range ±
Storage < 500,000 cf	8	12.3	7-27	\$36	\$27 - \$42	\$0.250	\$0.029
Storage > 500,000 cf	4	16.0	11-23	\$31	\$20 - \$37	\$0.195	\$0.034
Distribution > 2,500,000	3	14.7	4 -25	\$41	\$29 - \$49	\$0.282	\$0.033



2) Sales comparison analysis is the typical and traditional analysis undertaken by a fee appraiser when applying the *sales comparison approach*. The value of a warehouse is established as of a particular date through comparison and analysis – usually between three and seven sales of similar properties. The sale prices of the comparable properties are adjusted for time, financing, and physical differences as compared with the subject property. The value estimate for the subject property is developed from these adjusted sales prices.

This approach is applicable when comparable properties are available. To get meaningful comparisons and accurate adjustments to sales prices, the assessor must stratify the sales data into appropriate homogeneous classes.

The sales comparison analysis is time-consuming, but it can produce the most objective and supportable value conclusions. This analysis is often used in the defense of assessment appeals.

Adjustments in the Sales Comparison Process

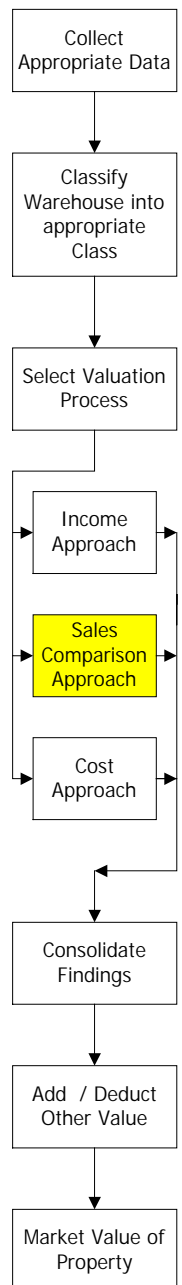
To estimate value using the sales comparison approach, adjust all sale prices to reflect the value of specific characteristics of the subject property. For example, a warehouse with a truck-level floor commands a higher price than a similar property that lacks this feature. Therefore, the price of the comparable must be adjusted downward in order to reflect the price to be expected for the subject – **a superior condition requires a negative adjustment.**

Financing

Financing terms and arrangements, which vary from straight cash to vendor take-back mortgages at favourable rates, can have a significant effect on the actual price paid. The objective of the sales analysis is to determine the “cash equivalency” of the sales arrangement – the amount of money the vendor “puts in their pocket”. For example, a mortgage at current market rates from a third party (bank) is considered to be equivalent to cash. A mortgage offered by the vendor at favourable interest rates must be analyzed to determine the cash equivalent price.

Time

Analysis of sales prices should consider the effect of the passage of time; that is, the change in value that would have occurred from the date of the sale to the valuation date for the assessment. Since assessments are to reflect the market value of a property as of the appropriate assessment date, market sales evidence should be adjusted to that date, if required.



Physical Differences

Physical differences such as superior height, a newer building, a better location, etc. must also be accounted for because they have an impact on the sales price. Establishing appropriate adjustments for these differences requires analysis of the sales data and stratifying sales into homogeneous classes.

Valuing unique properties will require the use of an alternative valuation approach.

Adjustments to sales data should be completed on the basis of research and analysis of the data. For example, changes in value over time are best illustrated by analyzing “paired” sales, i.e., the sale price of one property at time A compared to its sales price at time B.

Figure 6 provides an example of a sales adjustment process for a mega-warehouse. **This example is for illustrative purposes only.**

- Multiple regression analysis is a computer-based method of completing a *sales comparison approach* - given sufficient sales evidence. By analyzing the relationship between the property variables and the sales price, it is possible to determine a formula that can predict the sales price of the subject based on certain key features (e.g., location, size, use, etc.). The ability of the formula or computer model to predict depends on the extent and homogeneity of the data. Also, since most such multiple regression models (MRA) require more than 50 sales in order to obtain acceptable results, the MRA procedure is not recommended for warehouse properties in most jurisdictions.

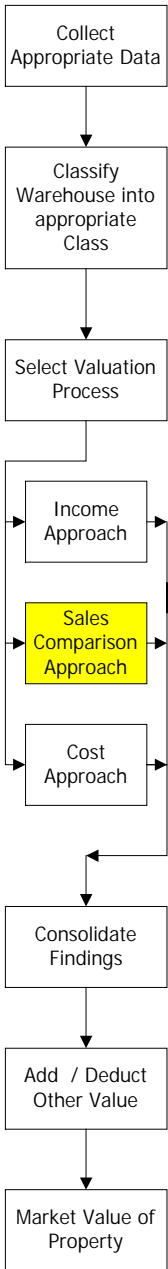


Figure 6. Form Whs3 - Example of Sales Adjustment Processx

Valuation Date: 1-Jan-96

Data for illustrative purposes only - not to be used in valuations

SALE	DATE	ADJUSTED PRICE	BUILDING AREA	PRICE PER SF BLDG.	LAND AREA (SF)	BLDG./ LAND	AGE	% OFFICE	CLEAR HEIGHT	VOLUME (less Office) / Cu.Ft.	PRICE / Cu.Ft.	ADJUSTMENTS					Adjusted \$ / Sq.Ft.	Adjusted \$ / Cu.Ft.	
												Location	Time	Age	Ratio	Size			
1	Vancouver, B.C.	12/31/94	\$4,500,000	183,969	\$24.46	519,306	35.4%	1966	20.6%	25.0	3,652,245	\$0.978	0.90	104.7%	1.14	0.98	1.04	\$26.78	\$1.071
2	Lachine, Que	2/19/95	\$12,500,000	690,509	\$18.10	1,275,000	54.2%	1958	7.6%	24.0	15,312,728	\$0.754	1.15	102.5%	1.26	1.06	0.94	\$26.79	\$1.116
3	Etobicoke, Ont.	11/14/95	\$5,600,000	212,960	\$26.30	633,283	33.6%	1970	9.0%	19.0	3,682,078	\$1.384	0.95	100.8%	1.07	0.98	1.09	\$28.78	\$1.515
4	Mississauga, Ont.	11/15/95	\$4,200,000	266,117	\$15.78	360,114	73.9%	1950	15.0%	20.0	4,523,989	\$0.789	0.95	100.8%	1.39	1.14	1.06	\$25.39	\$1.269
5	New Westminister, B.C.	6/29/96	\$5,600,000	233,504	\$23.98	603,200	38.7%	1961	6.0%	21.0	4,609,369	\$1.142	0.90	99.2%	1.22	1.00	1.07	\$27.95	\$1.331
6	Brampton, Ont.	9/21/96	\$14,000,000	456,576	\$30.66	1,275,000	35.8%	1976	7.6%	26.0	10,968,782	\$1.179	1.00	98.5%	0.98	0.98	0.93	\$26.98	\$1.038
7	Calgary, Alta	3/31/97	\$6,000,000	222,300	\$26.99	528,728	42.0%	1970	6.8%	22.0	4,560,485	\$1.227	1.00	92.6%	1.07	1.01	1.07	\$28.90	\$1.314
8	Wnnipeg, Man	5/4/97	\$6,720,000	306,784	\$21.90	409,190	75.0%	1970	15.0%	19.0	4,954,562	\$1.153	1.10	92.5%	1.07	1.11	1.05	\$27.80	\$1.463
Totals			\$59,120,000	2,572,719		5,603,821					52,264,236								
Mean				321,590	\$22.98		48.6%	1965				\$1.020						\$27.420	\$1.265
Median				249,811	\$24.22		38.7%	1966				\$1.142						\$27.386	\$1.291
Minimum					\$15.78		33.6%	1950				\$0.754						\$25.386	\$1.038
Maximum					\$30.66		75.0%	1976				\$1.384						\$28.901	\$1.515

Subject

1010 23rd Street	Calgary	389,200	978,300	39.8%	1975	9.1%	21.60	7,643,400	1.00	100%	1.00	1.00	1.00
Value	Per Sf	\$27.386	\$10,658,500										
Estimate	Per Cf	\$1.291	\$10,859,000										

This table is a sample analysis of a sales comparison process. The process relies on the nature of the data and may change .

3.6 Cost Approach Process

Overview of Procedure

- 1) Establish land values using a *sales comparison approach*. Preferably, comparable sites will be of similar size, have similar zoning, and be located in a similar area.
- 2) Classify the warehouse according to classifications in the manual (by): size, type and quality of construction.
- 3) Estimate **replacement** costs new of improvements.
- 4) Determine normal age-related depreciation based on the quality and condition of improvements. Deduct this amount from cost new.
- 5) Determine typical functional and economic obsolescence. Deduct this amount from cost new to produce:

Market value of improvements

- 6) Add market value of land to market value of improvements to produce:

Indicated market value of the property

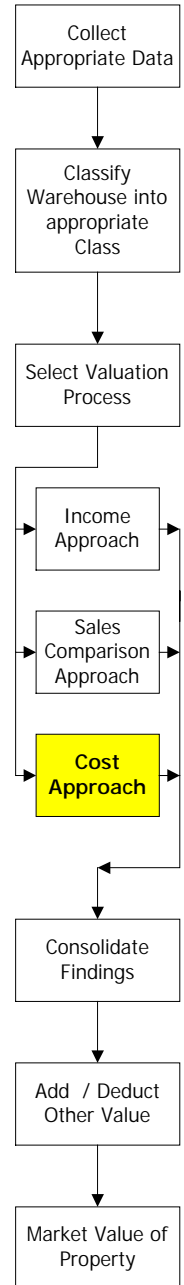
Establishing Land Values

The *cost approach* requires valuation of the land along with analysis of building values. Land should be valued using the *sales comparison approach*.

Comparable land sales should be of sites in comparable locations with approximately the same area and similar zoning. Ideally these sales should take place as close as possible to the date of valuation.

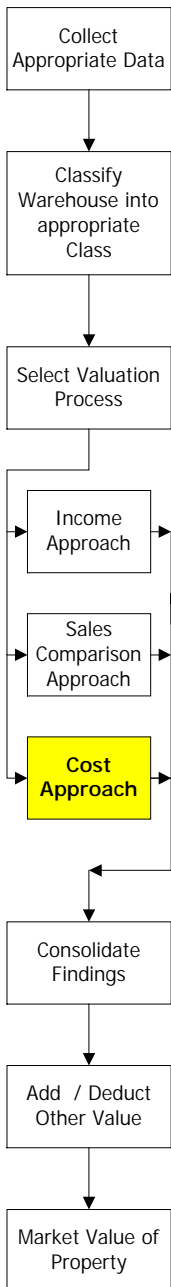
When comparable sales data have been obtained on and around the valuation date, determine the market value of the warehouse site using the *sales comparison approach*.

Land values should be established on the basis of dollar(s) per square foot or dollar(s) per acre.



Adjustments to value may have to be made for the following points of comparison:

- Location,
- Size of site,
- Zoning,
- Topography,
- Soil conditions, and
- Date of sale.



Classifying the Warehouse

Inspect the warehouse property and classify it according to the guidelines provided in this manual.

Estimating Replacement Costs New

Since warehouses are usually not complex properties in terms of construction, the cost new should be evaluated on the basis of a *replacement cost* analysis (the cost of replacing the existing property with a modern equivalent of equal functionality). The replacement model of a warehouse should be based on the square foot area, volume, size, floor height, quality of offices, and other pertinent physical characteristics.

Cost of Warehouse

The *Marshall & Swift Manual* provides two methods to determine costs new:

The calculator cost approach: summary approach providing one base cost plus adjustments to produce costs new.

A segregated cost approach: more detailed cost analysis by building component, suitable for complex properties.

Either the calculator or segregated cost approach can be used. The example provided in this guide is based on a calculator method. (See Figure 7.)

The costs so developed would include the value of all assessable items typically associated with a warehouse operation.

Cost of Other Improvements

Other improvements include such things as offices, gate houses, rail lines, driveways, parking areas, and fences. These items should be classified and costed according to their quality. Costs per square foot or cubic foot (or linear foot) can be found in the cost manual.

Using the Warehouse Cost Spreadsheet

Form Whs4 – Warehouse Valuation Cost Summary (Figure 7) works in conjunction with Form Whs1 – Warehouse Data Entry (Figure 1). These forms allow for the costing of up to eight different building improvements plus yard improvements based on *Marshall & Swift's calculator cost* method. The information about the buildings entered on Form Whs1 appears again on Form Whs4.

To use these forms, the assessor must establish the *base cost rate* for each component. Up to three types of additions are made to this rate, as well as up to four rate adjustments.

Additions:

- Heating, ventilation and air conditioning,
- Sprinkler, and
- Floor (truck height, loading).

Rate Adjustments:

- Floor area/perimeter multiplier,
- Height multiplier,
- Local cost multiplier, and
- Current cost multiplier.

Note: The cost analysis example provided in Figure 7 is designed to cover most of the improvements found in a typical warehouse. For items not covered in this study, refer to the cost manual.

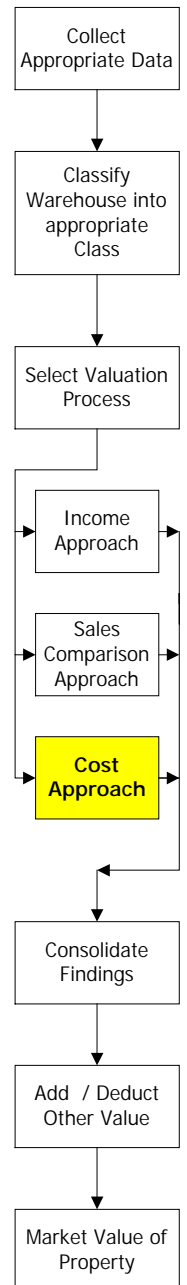


Figure 7. Form Whs4 – Warehouse Valuation Cost Summary

4.1	Address	1010 23rd Street	Value Date	2-Jan-00	Warehouse area sq. feet	389,200
4.2	Municipality	Calgary	Local Cost Multiplier	1.280	Volume (Ht. 19.64)	7,643,400
	Roll #	654321	Current Cost Multiplier	0.970	Type / Class	Mega-Whse

Replacement Cost Analysis

Item	Units in square feet	Base Rate	HVAC Addn	Sprkler Addn	Floor Addn	Total Rate	Area Mltpler	Height Mltpler	Final Rate	Costs New	Effective Age	Dpn Table	Dpn %	Costs New less Dpn
4.3	Warehouse	265,000	\$20.96	\$2.00	\$1.00	\$23.96	0.859	1.181	\$30.18	\$7,997,600	1966	MS50	43%	\$4,558,632
4.4	Cold Storage	78,800	\$51.09			\$51.09	0.859	1.181	\$64.35	\$5,070,900	1966	MS50	43%	\$2,890,413
4.5	Basement	10,000	\$17.38	\$2.00	\$1.00	\$20.38	0.859	1.000	\$21.74	\$217,400	1976	MS50	23%	\$167,398
4.6	Other	0				\$0.00	0.859	1.000	\$0.00	\$0			0%	\$0
4.7	Gate House	250	\$62.00			\$62.00	1.000	1.000	\$76.98	\$19,200	1966	MS40	68%	\$6,144
4.8	Garage	0				\$0.00	1.000	1.000	\$0.00	\$0			0%	\$0
4.9	Other	0				\$0.00	1.000	1.000	\$0.00	\$0			0%	\$0
4.10	Elevator	1	\$35,000			\$35,000			\$43,456	\$43,500	1975	MS40	43%	\$24,795
4.11	Scale	1	\$18,000			\$18,000			\$22,349	\$22,300	1982	MS30	46%	\$12,042
4.12	Pavement	190,000	\$1.50			\$1.50			\$1.9	\$353,900		yard	50%	\$176,950
4.13	Fence (linear)	5,000	\$8.10			\$8.10			\$10.1	\$50,300		yard	50%	\$25,150
4.14	Rail Line (linear)	1,600	\$65.0			\$65			\$80.7	\$129,100		yard	50%	\$64,550
4.15	Other Yard	0				\$0.00			\$0	\$0		yard	50%	\$0
Total		389,200	(warehouse bldgs.)			\$35.73				\$13,904,200			43.0%	\$7,926,074

Obsolescence Note			
4.16	There does not appear to be any abnormal depreciation or obsolescence.	Less Obsolescence% (see note)	\$0
4.17	Value per square foot is within the range of the market sales evidence.	Value of Improvements	\$7,926,074

Land Value	
Site Area	978,300
Value/ sq.foot	\$ 1.45
Land Value	\$ 1,418,535

Value Ratio	
\$ per square foot	\$24.01

Value Summary	
Land Value	\$1,418,535
Building Value	\$7,926,074
Market Value	\$9,344,000

Deduct Age-Related Depreciation

Depreciation due to age reflects the physical deterioration of the property over time and the normal decline in value as the functionality of a property also declines. Such depreciation is usually expressed as a percentage of costs new.

Depreciation Schedules

Most valuation manuals contain depreciation schedules that are intended to reflect the typical amount of normal, physical, and age-related depreciation in a property.

Automatic Application of Depreciation Schedule

The spreadsheet provided to assist in the valuation of warehouses has a “built-in” depreciation schedule based on the *Marshall & Swift Manual*. If desired, the schedule contained in the spreadsheet can be altered to reflect rates provided by other manuals.

To determine the appropriate amount of age-related depreciation, the assessor must analyze and enter on Form Whs4:

The effective age for each improvement (e.g., 1978).

The expected life of each improvement (e.g., 50 years - MS50).

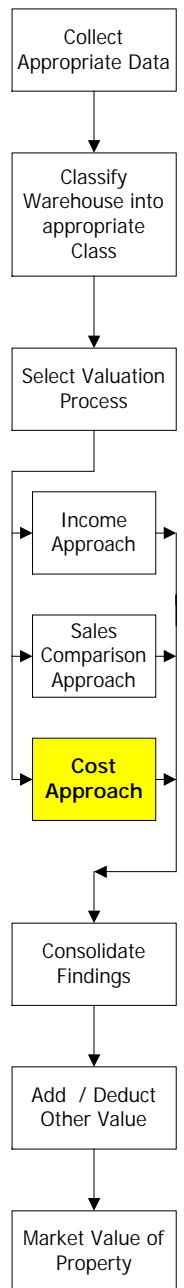
The Whs4 spreadsheet allows the assessors to apply a uniform depreciation rate to improvements as a whole, or individual rates to each improvement.

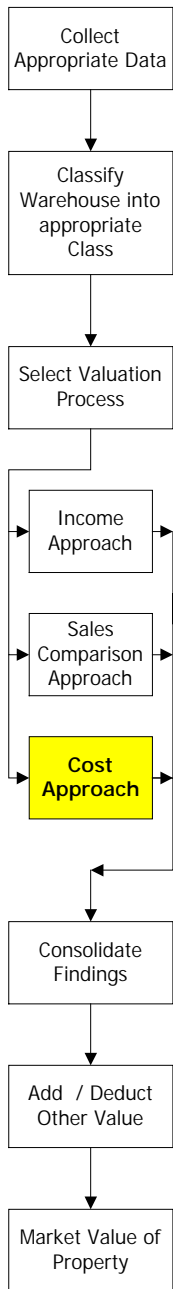
Deducting Obsolescence

The depreciation schedules in the *Marshall & Swift Manual* are developed on the basis of sales evidence, and therefore reflect the depreciation typically found in properties. *Obsolescence* reflects the “abnormal” depreciation that arises in some properties due to functional and/or externally generated economic problems.

Many properties suffer from *functional obsolescence* as a result of poor or outdated design, inadequate shipping or receiving doors, excess operating costs, multi-storey design, etc. Obsolescence is not related to the age of the property but to its ability to adequately perform its intended functions.

To determine whether an obsolescence factor applies to a property ask the question: “Could the existing facility be replaced with a more modern, efficient substitute, and if so, what would constitute this modern unit?”





Knowledge of current trends and building designs in the warehouse industry is important because it helps the assessor to recognize obsolescence.

Economic obsolescence or external depreciation is generally created by conditions outside a property. Changes in building technology and design, in industry, or in government legislation can lead to disuse through no fault of the property itself. Such events are all classified as economic obsolescence.

Evaluating Obsolescence

Signs of functional obsolescence include poor design and layout, poor or inferior construction, and the existence of excess operating costs. For uncomplicated properties such as warehouses, local economic conditions and the current warehouse utilization rates usually provide an indication of the “abnormal” economic obsolescence typically inherent in these types of properties.

Quantifying Obsolescence

Market Sales Analysis

All forms of depreciation and obsolescence are quantified in an open, market sale of a property. Therefore, a study of warehouse market sales data in combination with analysis of their costs new will produce the typical “total” depreciation inherent in such properties.

Functional Obsolescence

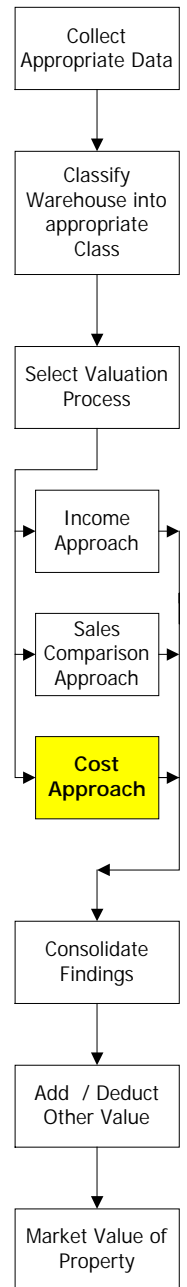
Using a *replacement* costs analysis will assist in dealing with many of the functional obsolescence factors resulting from layout and construction problems.

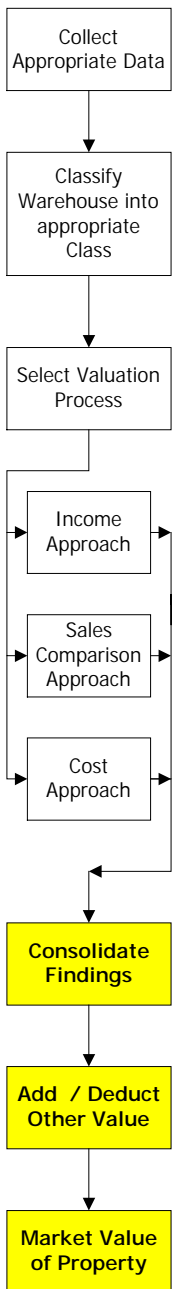
Economic Obsolescence

Economic obsolescence, which can be difficult to quantify, should be evaluated in respect of current industry performance standards. For consistency in many instances the assessor's judgment has to play major role.

Indicated Market Value

The market value of improvements is the product of deducting depreciation from costs new. To this figure add the market value of the land to determine the estimate of market value (*cost approach*).





3.7 Market Value of Property

Consolidate Findings

If two (or more) approaches to value are used, then the estimates of value should be consolidated into a final market value figure. This step can be performed using Form Whs5 – Warehouse Property Value Summary (Figure 8).

It is up to the assessor to determine how much weight to apply to each method in the final estimate of value.

Add / Deduct Other Value

The addition or deduction of other value is required when using the income and sales comparison approaches if the subject property has features that are not accounted for under these types of valuation analyses.

If there is no excess land and no extraordinary repair items, the valuations will not likely require “other value” adjustments.

Final Property Value

An example of a warehouse valuation is presented in the concluding section of this valuation guide.

Figure 8. Form Whs5 – Warehouse Property Value Summary

Address	1010 23rd Street
Municipality	Calgary
Roll #	654321

Value date	2-Jan-00
Class	Mega-Whse

Subject Description		% of total		
Total Area in square feet	389,200		Land / bldg ratio	39.8%
Office area	35,400	9.1%	Year built	1975
Average warehouse height	21.60		Condition	Good
Warehouse volume	7,643,400			

Value by Sales Comparison Approach

Value per sq. feet	\$27.42	\$10,658,500
Value per cubic feet	\$1.26	\$10,859,000
Value Estimate		\$10,758,750

Value Summary by Income Approach

Gross potential income		\$1,465,100
Vacancy allowance	4.0%	(\$58,604)
Other income		\$0
Effective gross income		\$1,406,496
Unrecovered expense	6.0%	(\$84,390)
Net operating income		\$1,322,106
Overall capitalization rate		13.00%
Value Estimate		\$10,170,000

Value Summary by Cost Approach

Improvements cost new		\$13,904,200
Depreciation	43.0%	(\$5,978,126)
Obsolescence	0.0%	\$0
Improvement market value		\$7,926,074
Land value		\$1,418,535
Value Estimate		\$9,344,600

Market Value Conclusion	\$10,500,000
Per square foot	\$26.98
Per cubic foot	\$1.374

4.0 *Validation of Results*

The strength of an assessment system rests on two tenets: its ability to produce appropriate market values, and its ability to treat similar properties fairly and consistently.

To accomplish these ends, the valuation process should reflect the views and methods used in the marketplace. The process should be applicable to all properties, but it should have enough flexibility to deal with the variations and market conditions encountered. The warehouse valuation approaches discussed in this guide meet each of these criteria.

Typically, there are three areas where the quality of the results can be ensured, quickly and efficiently: 1) valuation parameters, including such things as replacement cost rates, depreciation rates, and obsolescence adjustments, 2) checks against sales values, and 3) data filters for ensuring that appropriate data is entered.

Valuation Parameters

The proposed system sets up a table of costing rates based on the type of warehouse and the quality of construction. Normal depreciation is set by depreciation schedules provided in accepted cost manuals. Obsolescence is considered in two ways:

The notion of functionality (whether or not a property is performing well in terms of current operating standards). A property is not affected by obsolescence if it meets current standards. Generally speaking, functional obsolescence is inherent to a property.

Analyses of the industrial climate, warehouse capacity usage, and general economic conditions (whether or not a property is affected by factors external to the property itself).

If the assessor stays within these valuation parameters, the assessment system will be applied fairly and consistently.

The process also requires the assessor to give reasons for applying a different parameter. In this way, the process incorporates flexibility and accountability.

Check Against Sales Values

To ensure that the values developed are in line with the market, the assessment should be checked against any sales that take place. Although there may be some difficulty in finding perfectly comparable warehouse sales, analysis of all warehouse sales should help to verify the accuracy of the cost approach.

Data Filters

Another way to ensure consistent and reliable results is to place data filters on the input (e.g., all costs must fall between \$1.00 and \$200.00 per square foot).

5.0 *Example of Warehouse Valuation*

The five forms shown on the following pages illustrate an example of a warehouse valuation.

Form Whs1 – Warehouse Data Entry

The assessor enters the general descriptive data for the property, including address, class, type of warehouse, physical attributes, and inspection notes. The data entered on this worksheet will be carried forward to the next form as required.

Form Whs2 – Warehouse Income Analysis

The assessor enters the appropriate income, rents, and expenses to be applied to the property. Typical rents and valuation parameters according to the class of warehouse property should be employed. This form will then calculate an income value.

Form Whs3 – Example of a Warehouse Sales Comparison Process

Form Whs4 – Warehouse Cost Analysis

This form is set up to employ the calculator cost method found in the *Marshall & Swift Valuation Services Manual*. It does not actually “look-up” costing rates. Once the rates, factors, and depreciation amounts are entered, the form will calculate a cost value.

Form Whs5 – Warehouse Valuation Summary

This final form summarizes the analysis. If more than one method is employed, the results can be consolidated on this form.

Figure 9. Form Whs1 – Warehouse Data Entry

1.1	Address	1010 23rd Street
1.2	Company Name	Highway 17 Ltd.
1.3	Municipality	Calgary
1.4	Roll #	654321

Value Date:	2-Jan-00
Type / Class:	Mega-Whse
Measurements in:	feet

	Storage	Area in sq. feet	Flr. Ht: feet	# Flrs.	Volume in cubic feet	Dimensions	Perimeter feet	Build Date	Building Type	Bldg Class	Const. Quality
1.5	Warehouse	265,000	23.0	1.0	6,095,000	435 x 610	1,596	1974	Storage	S	Average
1.6	Cold Storage	78,800	18.0	1.0	1,418,400	150 x 525	1,350	1977	Cold Strg	C	Good
1.7	Basement	10,000	13.0	1.0	130,000	50 x 200	500	1974	Standard	C	Average
1.8	Other				0						
1.9	Office	35,400	11.5	2.0	814,200	435 x 40	80	1974			
	Totals	389,200	21.6		7,643,400		3,526	1975			

	Other Bldg	Area in sq. feet	Flr. Ht: feet	# Flrs.	Volume in cubic feet	Dimensions	Perimeter feet	Build Date	Building Type	Bldg Class	Const. Quality
1.10	Gate House	250	10.0		2,500			1982			Good
1.11	Garage				0						
1.12	Other				0						

	Yard	Comments
1.13	Elevator	1 Freight elevators
1.14	Scale	1
1.15	Pavement	190,000 Paved truck parking area
1.16	Fence (linear)	5,000
1.17	Rail Line (linear)	1,600
1.18	Other Yard	

Land	
Site area: square feet	978,300
Coverage Ratio	39.8%
Value per square foot	\$1.45

Inspection Notes		
1.19	Inspection date	Sept. 12, 1996
1.20	Bldg. construction	Steel frame, metal and brick walls
1.21	Office/ construction/ quality	Drywall partitions, carpeting, average, 9.1% of total space
1.22	Floor height/ Loading	On grade, standard loading, site excavated for truck dock height
1.23	Heating/ cooling	Heating and ventilation - moderate weather, A/C in office
1.24	Sprinklers	Wet system throughout warehouse & office, none in cold storage
1.25	Docking doors	Sealed doors with levellers
1.26	Extra features - yard	Large paved apron & scale
1.27	Condition	Good
1.28	Comment on use/ vacancy	Close to full at inspection
1.29	Internal goods movement	Forklifts
1.30	Comment on access	Close to hwy. 17, rail siding - used intermittently
1.31	Comment on location	Good - serves a wide area

Figure 10. Form Whs2 – Warehouse Income Analysis

Address	1010 23rd Street	Value Date	1-Jan-96
Roll #	654321	Class	Mega-Whse

Type of Space	Rentable Area in sf	Net Market Rent per sf	Rent - Total
3.1 Warehouse	265,000	\$3.50	\$ 927,500
3.2 Cold Storage	78,800	\$4.00	\$ 315,200
3.3 Basement	10,000	\$1.00	\$ 10,000
3.4 Other	250		\$ 0
3.5 Office	35,400	\$6.00	\$ 212,400
Operating Expense Recoveries			
Other Income			
Potential Gross Income		389,450	\$1,465,100

Valuation Parameters		Comments
3.6 Other Net Income		
3.7 Other Value		
3.8 Vacancy Rate %	4.0%	
3.9 Unrecovered expense %	6.00%	
3.10 Base capitalization rate %	10.00%	
3.11 Effective tax rate %	3.00%	

Effective Gross Income		
Potential gross income		\$ 1,465,100
Vacancy rate	4.0%	\$ 58,604
Sub-total		\$ 1,406,496
Other net income		\$ 0
EGI		\$ 1,406,496

Net Operating Income		
Unrecovered exp.	6.0%	\$ 84,390
NOI		\$ 1,322,106

Market Value		
Overall capitalization rate	13.00%	
Value sub-total		\$10,170,000
Other value		\$ 0
Value Conclusion		\$10,170,000

Value Breakdown	
Site area sf	978,300
Land value per s	\$ 1.45
Land value	\$ 1,418,535
Building value	\$8,751,465
Market Value	\$10,170,000

Value per sf	\$26.11
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Figure 11. Form Whs3 – Example of Sales Comparison Process

Valuation Date:		2-Jan-00																	
Data for illustrative purposes only - not to be used in valuations																			
SALE	DATE	ADJUSTED	BUILDING	PRICE PER	LAND	BLDG./	%	CLEAR	VOLUME	PRICE	ADJUSTMENTS					Adjusted	Adjusted		
		PRICE	AREA	SF BLDG.	AREA (Sf)	LAND		AGE	OFFICE	HEIGHT	(less Office)	/ Cu.Ft.	Location	Time	Age	Ratio	Size	\$ / Sq.Ft.	\$ / Cu.Ft.
1	Vancouver, B.C.	1/1/99	\$4,500,000	183,969	\$24.46	519,306	35.4%	1966	20.6%	25.0	3,652,245	\$0.978	0.90	104.7%	1.14	0.98	1.04	\$26.78	\$1.071
2	Lachine, Que	2/20/99	\$12,500,000	690,509	\$18.10	1,275,000	54.2%	1958	7.6%	24.0	15,312,728	\$0.754	1.15	102.5%	1.26	1.06	0.94	\$26.79	\$1.116
3	Etobicoke, Ont.	11/15/99	\$5,600,000	212,960	\$26.30	633,283	33.6%	1970	9.0%	19.0	3,682,078	\$1.384	0.95	100.8%	1.07	0.98	1.09	\$28.78	\$1.515
4	Mississauga, Ont.	11/16/99	\$4,200,000	266,117	\$15.78	360,114	73.9%	1950	15.0%	20.0	4,523,989	\$0.789	0.95	100.8%	1.39	1.14	1.06	\$25.39	\$1.269
5	New Westminister, B.C.	6/30/00	\$5,600,000	233,504	\$23.98	603,200	38.7%	1961	6.0%	21.0	4,609,369	\$1.142	0.90	99.2%	1.22	1.00	1.07	\$27.95	\$1.331
6	Brampton, Ont.	9/22/00	\$14,000,000	456,576	\$30.66	1,275,000	35.8%	1976	7.6%	26.0	10,968,782	\$1.179	1.00	98.5%	0.98	0.98	0.93	\$26.98	\$1.038
7	Calgary, Alta	4/1/01	\$6,000,000	222,300	\$26.99	528,728	42.0%	1970	6.8%	22.0	4,560,485	\$1.227	1.00	92.6%	1.07	1.01	1.07	\$28.90	\$1.314
8	Wnnipeg, Man	5/5/01	\$6,720,000	306,784	\$21.90	409,190	75.0%	1970	15.0%	19.0	4,954,562	\$1.153	1.10	92.5%	1.07	1.11	1.05	\$27.80	\$1.463
Totals			\$59,120,000	2,572,719		5,603,821					52,264,236								
Mean				321,590	\$22.98		48.6%	1965				\$1.020						\$27.420	\$1.265
Median				249,811	\$24.22		38.7%	1966				\$1.142						\$27.386	\$1.291
Minimum					\$15.78		33.6%	1950				\$0.754						\$25.386	\$1.038
Maximum					\$30.66		75.0%	1976				\$1.384						\$28.901	\$1.515
Subject																			
1010 23rd Street		Calgary		389,200		978,300	39.8%	1975	9.1%	21.60	7,643,400		1.00	100%	1.00	1.00	1.00		
Value	Per Sf	\$27.386	\$10,658,500																
Estimate	Per Cf	\$1.291	\$10,859,000																
This table is a sample analysis of a sales comparison process. The process relies on the nature of the data and may change .																			

Figure 12. Form Whs4 – Warehouse Cost Analysis

4.1	Address	1010 23rd Street	Value Date	2-Jan-00	Warehouse area sq. feet	389,200
	Municipality	Calgary	Local Cost Multiplier	1.280	Volume (Ht. 19.64)	7,643,400
4.2	Roll #	654321	Current Cost Multiplier	0.970	Type / Class	Mega-Whse

Replacement Cost Analysis

	Item	Units in square feet	Base Rate	HVAC Addn	Sprkler Addn	Floor Addn	Total Rate	Area Mltplr	Height Mltplr	Final Rate	Costs New	Effective Age	Dpn Table	Dpn %	Costs New less Dpn
4.3	Warehouse	265,000	\$20.96	\$2.00	\$1.00		\$23.96	0.859	1.181	\$30.18	\$7,997,600	1966	MS50	43%	\$4,558,632
4.4	Cold Storage	78,800	\$51.09				\$51.09	0.859	1.181	\$64.35	\$5,070,900	1966	MS50	43%	\$2,890,413
4.5	Basement	10,000	\$17.38	\$2.00	\$1.00		\$20.38	0.859	1.000	\$21.74	\$217,400	1976	MS50	23%	\$167,398
4.6	Other	0					\$0.00	0.859	1.000	\$0.00	\$0			0%	\$0
4.7	Gate House	250	\$62.00				\$62.00	1.000	1.000	\$76.98	\$19,200	1966	MS40	68%	\$6,144
4.8	Garage	0					\$0.00	1.000	1.000	\$0.00	\$0			0%	\$0
4.9	Other	0					\$0.00	1.000	1.000	\$0.00	\$0			0%	\$0
4.10	Elevator	1	\$35,000				\$35,000			\$43,456	\$43,500	1975	MS40	43%	\$24,795
4.11	Scale	1	\$18,000				\$18,000			\$22,349	\$22,300	1982	MS30	46%	\$12,042
4.12	Pavement	190,000	\$1.50				\$1.50			\$1.9	\$353,900		yard	50%	\$176,950
4.13	Fence (linear)	5,000	\$8.10				\$8.10			\$10.1	\$50,300		yard	50%	\$25,150
4.14	Rail Line (linear)	1,600	\$65.0				\$65			\$80.7	\$129,100		yard	50%	\$64,550
4.15	Other Yard	0					\$0.00			\$0	\$0		yard	50%	\$0
Total		389,200	(warehouse bldgs.)							\$35.73	\$13,904,200			43.0%	\$7,926,074

Obsolescence Note			
4.16	There does not appear to be any abnormal depreciation or obsolescence.	Less Obsolescence% (see note)	0.0%
4.17	Value per square foot is within the range of the market sales evidence.	Value of Improvements	\$7,926,074

Land Value	
Site Area	978,300
Value/ sq.foot	\$ 1.45
Land Value	\$ 1,418,535

Value Ratio	
\$ per square foot	\$24.01

Value Summary	
Land Value	\$1,418,535
Building Value	\$7,926,074
Market Value	\$9,344,000

Figure 13. Form Whs5 – Warehouse Property Value Summary

Address	1010 23rd Street
Municipality	Calgary
Roll #	654321

Value date	2-Jan-00
Class	Mega-Whse

Subject Description		% of total		
Total Area in square feet	389,200		Land / bldg ratio	39.8%
Office area	35,400	9.1%	Year built	1975
Average warehouse height	21.60		Condition	Good
Warehouse volume	7,643,400			

Value by Sales Comparison Approach

Value per sq. feet	\$27.42	\$10,658,500
Value per cubic feet	\$1.26	\$10,859,000
Value Estimate		\$10,758,750

Value Summary by Income Approach

Gross potential income		\$1,465,100
Vacancy allowance	4.0%	(\$58,604)
Other income		\$0
Effective gross income		\$1,406,496
Unrecovered expense	6.0%	(\$84,390)
Net operating income		\$1,322,106
Overall capitalization rate		13.00%
Value Estimate		\$10,170,000

Value Summary by Cost Approach

Improvements cost new		\$13,904,200
Depreciation	43.0%	(\$5,978,126)
Obsolescence	0.0%	\$0
Improvement market value		\$7,926,074
Land value		\$1,418,535
Value Estimate		\$9,344,600

Market Value Conclusion	\$10,500,000
Per square foot	\$26.98
Per cubic foot	\$1.374

6.0 Appendices

6.1 Request for Information Form - Warehouse

Province of Alberta Assessment Department						
As part of the ongoing assessment process the Assessment Department requires certain income and expense information from you pertaining to the property identified as:						
Building Name						
Address						
City						
Roll #						
Authorization for such requests arises out of section 295 of the Alberta Municipal Government Act (the <i>Act</i>).						
Any information received will be treated in a confidential manner as outlined in the <i>Act</i> .						
Failure to provide information has potential consequences as outlined in the <i>Act</i> .						
Information Required - If building leased						
Tenant Information						
Tenant	Leased Area	Clear Height	Volume	Lease Start Date	Term / Years	Lease Amount per sf.
Income and Expense Information						
* 1997 Income and Expense Statement						
* 1996 Income and Expense Statement						
Containing the following:						
	Rental Income Totals (all forms of rent)					
	Other Income					
	Expense Recoveries					
	Tax Recoveries					
	Other Recoveries					
	Operating Expense Total					
	Realty Taxes					
Vacancy Rate						
* 1997 Vacancy Rate						
* 1996 Vacancy Rate						
Information Format						
Information can be submitted in either electronic (by computer disk), or paper format , or by filling in the enclosed forms .						

Income and Expense – Request Form

THE INFORMATION REQUESTED ON THIS FORM CAN BE SENT IN YOUR OWN FORMAT (HARD COPY)

THIS FORM TO BE FILLED OUT IN CASES WHERE INCOME AND EXPENSE INFORMATION IS OTHERWISE NOT AVAILABLE

Building Name:
Address:

RENTAL INCOME	1996	1997
RENTAL INCOME		
OTHER INCOME		
TOTAL RENT		
EXPENSE RECOVERIES		
RECOVERIES - OTHER		
RECOVERIES - REALTY TAXES		
MISCELLANEOUS		
TOTAL INCOME		

OPERATING EXPENSES		
INSURANCE		
OPERATING EXPENSE		
MAINTENANCE		
CLEANING		
UTILITIES		
ADMINISTRATION		
MANAGEMENT		
LEASING AND PROMOTION		
OTHER EXPENSE		
TOTAL OPERATING EXPENSE		
REALTY TAXES		
TOTAL EXPENSE		