Contents

Tables

This appendix describes the concepts of accrued depreciation as applied in assessing:

- Commercial structures
- Industrial structures
- Commercial and Industrial yard structures

This appendix discusses how depreciation is used in the valuation process. It describes how the condition, age, desirability, and utility of a structure affect the determination of accrued depreciation. It provides step-by-step instructions for determining the normal depreciation percentage applicable to individual structures.

This appendix also provides instructions for calculating abnormal obsolescence.

Understanding the Concept of Depreciation as it Applies to Commercial and Industrial Property

Accrued depreciation is a loss in value to the cost new of the improvements from any and all causes. In estimating the replacement cost new of the improvements, you have determined the upper limit of value that the improvements will have on the valuation date. The accrued depreciation, therefore, is merely the difference between this upper limit of value (replacement cost new) and the true tax value of the improvement.

There are three major categories, or causes, of depreciation:

- **Physical Deterioration** is a loss in value caused by the building materials wearing out over time. It may be caused by wear and tear, use or abuse, action of the elements, and/or insect infestation.
- **Functional Obsolescence** is a loss in value caused by inutility within the improvement. It may be caused by defects in design, style, size, poor room layout, a deficiency, the need for modernization, a superadequacy, and/or by changes in the tastes of potential buyers.
- **External Obsolescence** is caused by an influence outside the property's boundaries that has a negative influence on its value. Noise, air, water, or light pollution; heavy traffic; inharmonious land uses; and/or crime are examples of external obsolescence.

Note: When applying any form of obsolescence the assessor should reevaluate the obsolescence on an annual basis.

In using the cost tables in this manual, you have produced a generalized cost estimation that is referred to as the *replacement cost new* of the structure. Replacement cost new is defined as the cost of constructing a building having the same utility as the subject structure but using modern construction materials, workmanship, and design. In so doing, you have effectively "cured" some forms of functional obsolescence that exist in the structure.

The depreciation on commercial and industrial structures is estimated as a lump sum percentage that accounts for the loss in value primarily from physical deterioration. In this manual, this depreciation percentage will be referred to as **normal depreciation.** Any additional loss in value from obsolescence beyond normal depreciation will be referred to as **abnormal obsolescence** and will be estimated separately from the normal depreciation.

Normal depreciation is estimated through the assignment of **typical life expectancies** and individual **structure condition classifications**.

The above examples of the various forms of obsolescence are given to provide typical types found in commercial and industrial properties. However, the obsolescence examples may or may not apply in specific markets depending upon buyer preferences. In other words, what is obsolete in one market may not be considered obsolete in another market where there are different influences affecting value.

Determining the Actual Age of a Structure

The actual age of a structure should be determined from the records of the owner. If this is not available, public records such as building permits or older property record cards may be used.

Structures which have had additions built subsequent to the construction of the principal or original structure must have a "weighted" age calculated to use in place of the actual age when using the commercial and industrial depreciation tables. The method of calculating weighted age is one of weighting the actual age of the original structure and each of its additions by the square footage contained in each part of the structure.

Note: Depreciation is based on the number of years that have lapsed from the date of construction and the effective date of valuation. Therefore, in this manual the age of a structure is the difference between its date of construction and January 1, 2019.

Example: An industrial plant was originally built in 1959 and has had two additions; one in 1979 and the second in 1994. The original structure contained twenty thousand (20,000) square feet, addition one contained five thousand (5,000) square feet and addition two contained ten thousand (10,000) square feet. The calculation of the weighted age would be as follows:

Part of Structure	**Size**		**Total S.F.**		**%**		**Year**		**Contribution**
Original Plant	20,000	÷	35,000	=	57.14	x	1959	=	1,119.43
1st Addition	5,000	÷	35,000	=	14.29	x	1979	=	282.71
2nd Addition	10,000	÷	35,000	=	28.57	x	1994	=	569.71
Totals	**35,000**				**100.00**				**1,971.85**

1,971.85 rounds to the year 1972. Therefore, the structure has a weighted age of forty-seven (47) years and the assessor would enter 1972 on the property record card in the age column under summary of improvements.

Understanding the Commercial and Industrial Structure Condition Classifications

The assessing official first determines the **structure condition classification** for the structure taking into account its physical condition, any inutilities, and location. The majority of structures will have an average structure condition classification. An average structure condition classification for a structure means it is in the average condition and has the average utility characteristics of the majority of the structures with the same age. Therefore, the structure given an average structure condition classification has experienced representative or typical maintenance and offers the same utility as the majority of structures within its age group.

Structures demonstrating higher maintenance, suffering from less inutility, and having superior locations than the majority of structures in the age group should be given condition classifications of good or excellent. Examples of these types of structures would include a structure having energy efficient replacement windows or a commercial structure that has had the façade modernized.

Structures demonstrating lower maintenance and suffering from more inutility should be given structure condition classifications of fair, poor, and very poor. Examples of these types of structures would include a structure that has a severely deteriorated roof or an industrial structure that is located away from any major form of transportation.

"***Table 1. Structure Condition Classifications***" at the end of this appendix, describes the classifications that are to be assigned.

Determining the Normal Depreciation Percentage

This section provides the instructions for using the commercial and industrial depreciation tables to calculate the normal deprecation percentage for a structure.

STEP 1 Determine the actual age (weighted age) of the structure using the procedure discussed in the section "***Determining the Actual Age of a Structure***" earlier in this appendix.

STEP 2 Assign a structure condition classification to the structure by comparing it to structures of similar age. Structure condition classifications are summarized in ***Table F-1. Structure Condition Classifications*** later in this appendix.

STEP 3 Determine the effective age of the structure by correlating the actual age (weighted age) with the structure condition classification in ***Table F-2. Actual Age to Effective Age Conversion Table*** located later in this appendix.

STEP 4 Determine the typical life expectancy in years of the structure by referring to ***Table F-3. Typical Structure Lives*** located later in this appendix.

STEP 5 Go to ***Table F-4. Depreciation – Commercial/Industrial Structures*** located later in this appendix and find the total life expectancy in year's column that you determined for the structure in Step 4 above.

STEP 6 In the effective age column of the table, locate the row corresponding to the structure's effective age as determined in Step 3 above.

STEP 7 Find the intersection of the selected row (effective age) and the selected column (typical life expectancy). This number is the percentage of normal depreciation from all causes suffered by the structure.

Example: A fifteen (15) year old supper club restaurant with a C grade, type 2 framing, has been assigned a structure condition classification of average based upon its physical condition and utility. Its effective age is determined to be fourteen (14) years by correlating its actual age with its structure condition rating in ***Table F-2. Effective Age to Actual Age Conversion Table***. The typical life expectancy for a restaurant with a C grade, type 2 framing is thirty-five (35) years as shown in ***Table F-3a. Typical Structure Lives***. Referring to ***Table F-4. Depreciation – Commercial/Industrial Structures***, we correlate the row for an effective age of fourteen (14) years with the typical life expectancy column for thirty-five (35) years and find the normal depreciation.

Determining Abnormal Functional Obsolescence

The normal depreciation that has been estimated as outlined in the first part of this appendix accounts primarily for typical physical deterioration. Any abnormal or excessive functional and external obsolescence beyond physical deterioration that affect the structure must be considered separately since they have not been accounted for in the normal depreciation table.

Abnormal obsolescence is calculated using different methodologies depending upon the type of inutility it represents. There are numerous methodologies and as a general rule, common appraisal concepts and methods may be used to determine obsolescence under true tax value. *See Canal Square v. State Board of Tax Commissioners*, 694 N.E.2d 801 (Ind. T.C. 1998). A discussion of some of the most common methods to calculate functional obsolescence is included below. This is not intended to be an exhaustive list, however, any method used by an assessing official or by a taxpayer on appeal must establish certain factors of reliability to be used as a basis for determining obsolescence.

The county should consider a number of factors to determine the relevancy of evidence regarding obsolescence. The first factor is whether the alleged maladies of the property actually lead to a loss of value. Evidence of such loss of value may be based on the assessing official's observations of the property, statistical evidence establishing a correlation between the faults of the property and its value, or from anecdotal evidence if sufficiently reliable. In many cases there will be causes of obsolescence that cannot be easily seen by the assessing official. In these cases, it is necessary to establish a link between the evidence and the loss in value. For statistical evidence this may be established by providing sufficient evidence of correlation of the evidence to value. For anecdotal evidence establishing reliability is more difficult. Uncorroborated assertions by the taxpayer in a tax appeal regarding the value of its property may be unreliable unless they can be confirmed either by other evidence or by the opinions of impartial observers. For example, a statement by a taxpayer that its property is worthless is not reliable if the same taxpayer has produced sales literature extolling the virtues of the property and discussing its great value.

Most Common Methods for Calculating Functional Obsolescence

Functional obsolescence is calculated using different methodologies depending upon the type of inutility it represents. Listed below are the most common forms of functional obsolescence and the appropriate methodologies used to convert them into a dollar loss in value.

- A **deficiency requiring an addition** is something lacking in the improvement that potential owners of the property desire. An example of this would be an office building without central air conditioning located in a neighborhood where all comparable, competing office buildings have central air conditioning. The depreciation caused by this type of functional obsolescence is calculated by determining the cost of adding (retrofitting) the item less the cost to install the item in new construction. Using the example in this paragraph; a contractor estimates it would cost $40,000 to add central air conditioning to the office building at the present time and the manual shows the cost new of this air conditioning system is $30,000. The amount of functional obsolescence would be calculated as follows:

Cost to Add (retrofit) Air Conditioning	$40,000
Less Cost of New Air Conditioning from Manual	- 30,000
Functional Obsolescence	$10,000

- The **need for modernization** means the improvement has the item desired by the potential owners but it is outdated or inefficient. An example of this would be a ventilating system in an industrial plant that does not effectively remove heat and odors from the manufacturing area. The depreciation caused by this type of functional obsolescence is calculated by taking the cost new of the item, less the physical depreciation already charged, less the salvage value of the existing item (if any), plus the cost to remove the existing item and the added cost to install the new, modern item. Using the example in this paragraph; the cost new of the current ventilating system was $20,000, it was physically depreciated 50%, had a salvage value as scrap metal of $500, and the cost to remove the existing system and install the new system was $30,000. The amount of functional obsolescence would be calculated as follows:

Cost (new) of Existing System	$20,000
Less Physical Depreciation (Already Charged @ 50%)	- 10,000
Less Salvage Value	- 500
Plus Cost of Removing Old and Installing New System	+ 30,000
Functional Obsolescence	$39,500

- A superadequacy in a structure is an item that is bigger, better or larger than potential owners demand. For example, assume you have an apartment building that is heated by a central, gas-fired boiler that produces steam. The boiler has a capacity that is twice as big as necessary to heat the building; therefore, it is superadequate. The depreciation caused by this type of functional obsolescence is calculated by taking the cost new of the item, less the physical deterioration already charged, plus the cost of removal of the item and the installation cost of a new adequate item, less the salvage value (if any) of the superadequate item.

  Using the example in this paragraph; the cost new of the existing boiler is $8,000, it was physically depreciated 80% and had a salvage value of $200 as scrap metal. The cost to remove the existing boiler and install a new, adequate boiler is $12,000. The amount of functional obsolescence would be calculated as follows:

Cost (new) of Existing Boiler	$8,000
Less Physical Depreciation (Already Charged @ 80%)	- 6,400
Less Salvage Value	- 200
Plus Cost of Removing Old and Installing New Boiler	+ 12,000
Functional Obsolescence	$13,400

- **Excess operating costs** are often incurred by a property that suffers functional obsolescence. This means the inutility within or between structures causes the owner to have to pay more to operate the property than he/she would if the inutility did not exist. An example of this would be an industrial property that has had a warehouse addition made to the main plant. Because of the site size and/or zoning restrictions, the warehouse addition was constructed in a manner that makes the movement of materials between the main plant and the warehouse less than efficient, thereby causing inutility. In order to overcome this inutility, the owner of the plant has had to purchase a forklift and hire an operator that would not have been needed had the warehouse been an integral part of the main plant. The depreciation is calculated as follows:

  a. Sum the annual cost of the operator's wages plus overheads (payroll taxes, insurance, and other benefits) and the annual operating expenses on the forklift (fuel, maintenance, and depreciation).

  b. Determine the number of years of remaining economic life for the main plant. This is the number of years from the date of valuation until you expect the plant to have a zero value. It is calculated by subtracting the effective age of the plant from its total life expectancy; both estimated under the normal depreciation procedure.

  c. Discount the total annual excess operating costs over the remaining economic life of the main plant at an appropriate discount rate to get the amount of functional obsolescence. A discussion of "discounting" can be found in any appraisal text that discusses the income approach to value.

Example:

Forklift Operator's Annual Wages	$20,000
Operator's Overheads (35% of Wages)	7,000
Maintenance on Forklift	1,000
Fuel for Forklift	3,000
Depreciation on Forklift	2,000

Total Annual Excess Operating Costs	$33,000
Times Present Worth of 1 per Period Factor for 20 Years (remaining economic life of plant) at a 12% Discount Rate	**x** 7.46944
Functional Obsolescence	**$246,492**

Other recognized appraisal methods for determining obsolescence may also be used if based on reliable and relevant data.

Calculating Total Depreciation for Income Producing Properties

The market most often uses a capitalized income approach to value income producing properties. This approach converts an estimate of the income the property receives from rent into value through a mathematical process known as capitalization. It more accurately reflects the actions of buyers and sellers of such properties than does the cost approach to value used in the manual.

The simplest method of capitalization is done through the use of Gross Income Multipliers (GIM). The use of this capitalization method requires certain assumptions. The first is the property will remain rented at a constant rate with no unusual vacancies. The second is that the subject and the comparable properties used in the analysis are truly comparable in that they are subject to the same market influences. The third is that any differences between the subject and the comparables are reflected in the rents each receives.

Dividing a property's sale price by its annual income (rent) derives a gross income multiplier (GIM). The resultant GIM is a number that tells you how many times gross annual rent a purchaser paid for the property being analyzed. Completing this calculation for all sold comparable properties within an area will yield a range of GIM's from which can be chosen the typical GIM for the area.

The mechanics of the GIM method are:

1) Derive GIM's from comparable sales by dividing the sale price by the gross annual income/rent that each was receiving at the time of sale.

2) Calculate the total value of the subject property by multiplying its annual gross rent by the appropriate GIM.

Compare this total value from the capitalization process to the subject property's RCN plus land value. If the capitalized value is equal to or greater than the RCN plus land value, no depreciation exists on the subject property. If the RCN plus land value is greater than the capitalized value, the difference between the two values is the indicated total depreciation for the subject property.

Other more sophisticated versions of the capitalized income approach may be used to determine total depreciation if based on reliable and relevant data.

Determining Abnormal External Obsolescence

External obsolescence can either be temporary or permanent. Temporary external obsolescence is caused by factors in the market such as an oversupply of the type of space it provides. This is sometimes found in income producing (rental) properties such as apartments, hotels/motels, office buildings, and retail commercial space such as shopping centers and downtown mercantile buildings. Permanent external obsolescence ~~is~~ may be caused by the subject property's location to an encroaching land use. Examples of this would be location in proximity to an environmental hazard, inharmonious land uses surrounding the property, and the absence of zoning and land use controls.

Market data must be used in estimating external obsolescence. Because external obsolescence affects the total property--improvement and land--the obsolescence attributable to the improvement must be isolated. Its effect on land value is reflected in the land value assigned to the subject property. Its effect on building value is the only concern discussed in this appendix because it is the depreciation of the structure that we are concerned with at this point in the true tax value determination. A properly determined land value ratio developed for the neighborhood in the land value process is used to determine the amount of external obsolescence to be allocated to the building.

Example: You have estimated $20,000 as the total external obsolescence for a commercial property. The land value ratio established for commercial property in this neighborhood is 1:3 meaning that one (1) part of the total value is in the land and three (3) parts are in the improvements. To determine the amount of external obsolescence on the improvements, you must allocate out of the total obsolescence three (3) parts, which is equal to seventy-five percent (75%). Therefore, 3 parts or 75% of $20,000 total obsolescence equals $15,000 of external obsolescence on the commercial building.

Calculating Abnormal External Obsolescence

There are two methods of measuring external obsolescence, both requiring the use of market data: comparing comparable sales of similar properties and capitalization of rent loss. See IAAO, Property Assessment and Valuation, Second Ed. (1997), pg. 175.

Sales Comparison Method

In this method of estimating external obsolescence, the assessing official locates two properties that have sold which are comparable to the subject and each other. One of the comparable properties suffers from the same external obsolescence as the subject; the second does not suffer the external obsolescence. The comparable sale prices are adjusted for time to reflect the same date of sale as the reassessment date and the difference in the adjusted selling prices is the indicated total market external obsolescence suffered by the one comparable property. You must next convert this market external obsolescence into an indicated true tax value external obsolescence by dividing the market external obsolescence (the difference in the adjusted selling prices of the two comparables) by the selling price of the comparable suffering the external obsolescence. The result is the percent of total external obsolescence.

To determine the percentage external obsolescence to be applied to the remainder value of the subject improvements, the land value ratio is applied to the total external obsolescence percentage as explained earlier in this appendix.

Example #1: The subject commercial property is located next to a landfill. This reduces the number of customers it draws in comparison to similar properties located several blocks away from the landfill. You have located two sales of comparable properties. The first sale suffers the same location problem as the subject and sold two (2) years prior to the assessment date for $80,000. The second sale does not suffer the same location problem as the subject and the first sale and sold one year prior to the assessment date for $94,000. The land value ratio for these properties in this neighborhood is 1:3 and sale prices have increased 5% per year in this neighborhood.

The external obsolescence percentage to be applied to the subject improvements is calculated as follows:

Sale Price of comparable w/o obsolescence, adjusted to assessment date	$94,000	+ 5%	=	$98,700
Sale Price of comparable with obsolescence adjusted to assessment date	$80,000	+ 10%	=	$88,000
Difference in adjusted selling prices (Indicated total market external obsolescence)				$10,700
Divided by sale price of comparable with external obsolescence			÷	$88,000
Equals percentage market external obsolescence			=	12.2%
Allocated to building using the L:B ratio of 1:3	12.2% x 75%		=	9.2%
Rounded to				9.0%

Therefore, 9.0% is the amount of external obsolescence that the subject property's improvements should receive and is applied to the remainder value of those improvements.

Example #2: Assume that a residence in an area zoned exclusively for residential purposes is located adjacent to an interstate highway, but without any access to the interstate. Analysis of sales of comparable properties that are not adjacent to the interstate indicate a loss of market value of $8,000 for this condition. Land value for the subject is $3,000 less than for comparable sales that are not adjacent to the busy street. External obsolescence may be estimated as follows:

Market Value Loss:	$8,000
Land Value Difference:	($3,000)
Loss Attributable to Improvement:	$5,000

Capitalization of Income Method

This method of estimating external obsolescence uses the income approach to value techniques whereby the rent loss caused by the external obsolescence is capitalized into an estimate of the loss in total property value. The assessing official estimates how much net rent is being lost by the subject property due to the external influence (external obsolescence). This net rent loss is then capitalized by an overall capitalization rate using the capitalization formula to arrive at the dollar amount of total external obsolescence for the property.

To determine the dollar amount of external obsolescence to be applied to the remainder value of the subject improvements, the land value ratio is applied to the total external obsolescence as explained earlier in this appendix. This dollar amount of external obsolescence is then converted to a percentage by dividing it by the remainder value of the subject improvements.

Example: An office building containing 40,000 square feet of leaseable area suffers a vacancy rate of 20% due to an oversupply of office space in the market. The normal vacancy rate for this type of property in a more active market is 5%, therefore 15% (actual vacancy of 20% minus normal vacancy of 5%) of the space cannot be utilized in the current market. The net rent of the subject property is $5.00 per square foot annually. The land value ratio for office buildings in the area is 1:5 and the capitalization rate is 12%. You have already calculated the remainder value at $1,700,000.

The external obsolescence percentage to be applied to the subject improvements is calculated as follows:

Calculation of Unused Space = 40,000 SF **x** 15%		=	6,000 sq. ft.
6,000 sq. ft. **x** $5.00/ sq. ft.		=	Annual rent loss or $30,000
Capitalized (divided by) Cap Rate of 12%			÷ 12%
Equals Total External Obsolescence		=	$250,000
Allocated to Building (using the L:B ratio of 1:5)	$250,000 **x** 83.33%	=	$208,333
Converted to a Percentage (by dividing the building external obsolescence by the remainder value)	$208,333 ÷ $1,700,000	=	12.26%
Rounded to:			12.00%

Therefore, 12.0% is the amount of external obsolescence that the subject property's improvements should receive and is applied to the remainder value of those improvements.

Obsolescence for Special-Purpose Properties

This section provides recommendations for estimating obsolescence of special-purpose properties. A special-purpose property is a type of limited-market property. A limited-market property is defined as:

> *A property that has relatively few potential buyers at a particular time.*[1]

Large manufacturing plants, railroad sidings, and research and development properties are examples of limited-market properties that typically appeal to relatively few potential purchasers. Many limited-market properties include structures with unique designs, special construction materials, or layouts that restrict their utility to the use for which they were originally built.

Special-purpose property is defined as:

> *A limited-market property with unique physical design, special construction materials, or a layout that restricts its utility to the use for which it was built; also called special-design property.*[2]

Special-purpose properties usually have limited conversion potential.

The steps in this analysis include:

1. Estimating the replacement cost new of the improvements
2. Breaking down the obsolescence into its component parts
3. Estimating the land value
4. Subtracting Step 2 from Step 1 to get the improvement value
5. Adding Step 4 to Step 3 to the total property value

Estimating Replacement Cost New

The primary source for estimating the replacement cost new will be the commercial and industrial cost tables. Special-purpose properties may have higher cost per square foot estimates than other industrial properties due to several factors. For instance, special-purpose properties may require more time to construct, which will add additional inflationary costs, interest costs, and holding period costs. Also, special-purpose properties may require unusual or made-to-order materials that are more expensive than normal construction materials. To the extent that special-purpose properties require more investment during construction before realizing a return to the owner, there is more risk involved as well.

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[1] Appraisal Institute, *The Appraisal of Real Estate*, 12th Ed. (2001), pg. 25
[2] Appraisal Institute, *The Appraisal of Real Estate*, 12th Ed. (2001), pg. 25-26.

There shall be a presumption that the replacement cost determined by the prescribed schedules is the actual replacement cost of the subject structure for purposes of determining true tax value. However, either the assessing officials or a taxpayer shall be permitted to consider and use other relevant and reliable information to rebut such presumption and establish the actual replacement cost.

Adjustments to Replacement Cost

Any portion of the facility not in use, or not in the process of being adapted for use, as of the assessment date requires adjustment. The assessor should subtract the cost of such improvements from the replacement cost prior to adjusting for physical, functional, and external obsolescence. The physical, functional, and external obsolescence adjustments should reflect that such costs have already been subtracted out.

Estimating Physical Depreciation

The assessing official should be concerned about estimating items of physical depreciation that jeopardize the foreseeable (5 years or less) usefulness of the facility (based on the portion remaining after subtracting the cost of unused areas). These should be itemized and the cost to repair or replace the item of physical depreciation should be estimated. Many companies maintain budgeted maintenance or capital improvement schedules that will serve as additional supporting documentation for the determination of physical depreciation and its cost.

Estimating Functional Obsolescence

Newly constructed facilities or specialized uses where the production function (or type of equipment) has not substantially changed since the original construction should not exhibit functional obsolescence. This assumes that the facility was originally designed to be efficient and that functional inefficiencies would not have been created purposefully. Substantial changes in technology, accepted production methods, and product specifications may result in property experiencing obsolescence even given its current use. If the use of the facility has changed over time, the assessor may find forms of functional obsolescence. In this case, the assessor should also reevaluate whether or not the real property is a special-purpose property to be evaluated under this methodology since it may have demonstrated a broader set of willing buyers and sellers during the sale process. Functional obsolescence usually is tied to specific events (e.g. a change in use, a change in production process, etc.) that can be objectively determined and will not occur simply because of age.

One difficulty that will arise in this approach is for facilities that contain production equipment requiring unusual physical layouts. For example, technologies that process items in rolls or "lengths" (e.g. paper and steel) usually have a production process that is in a straight, long line and may not allow for more efficiently shaped buildings. As long as the facility's design matches the needs of the production process, an unusually shaped building would not receive functional obsolescence adjustments based on the building's shape alone.

Determining the Depreciation Percentage for Yard Structures

This section provides instructions for calculating depreciation applicable to commercial and industrial yard structures. The following process is followed.

STEP 1 Determine the effective age of the yard structure by correlating the actual age of the yard structure with the structure condition classification in ***Table F-2. — Actual Age to Effective Age Conversion Table***.

STEP 2 Go to ***Table F-3e. — Typical Yard Structure Lives*** at the end of this appendix. Find the total life expectancy for the subject yard structure in these tables.

STEP 3 Go to ***Table F-4. — Depreciation – Commercial/Industrial Structures***. In the effective age column, locate the row corresponding to the structure's effective age as determined from Step 1.

STEP 4 Find the intersection of the selected row (effective age) and the selected column (total economic life expectancy). This number is the total depreciation percentage for the structure and represents all physical deterioration, functional and external obsolescence.

Example: A ten (10) year old, concrete parking lot, with a structure condition classification of fair has an effective age of twelve (12) years as shown in the ***Table F-2 — Actual Age to Effective Age Conversion Table***. It has a total economic life expectancy of fifteen (15) years as shown in ***Table 4-3e. — Typical Yard Structure Lives***. The total depreciation is then shown in ***Table F-4. — Depreciation – Commercial/Industrial Structures***.

Table F-1. Structure Condition Classifications

CLASSIFICATION	INDICATED DEPRECIATION
Excellent	All items that can normally be repaired or refinished have recently been corrected, such as new roofing, paint, HVAC overhaul or replacement, etc. The structure suffers no functional inadequacies of any kind and all short-lived components are in like-new condition. Excellent location for the type of structure.
Good	No obvious maintenance required with few signs of deterioration but not everything is new. The structure has above standard appearance and utility for structures of its age. Very good location for the type of structure.
Average	No evidence of deferred maintenance; need for a few minor repairs along with some refinishing. All major components still functional for age of the structure. Minor inutilities typical for structures of like age and design. Average location for the type of structure.
Fair	Evidence of deferred maintenance; need for replacement or major overhaul of some physical components. Building has inadequate utility and services for structures of like age and design. Fair location for the type of structure.
Poor	Many repairs needed; the structure suffers from extensive deferred maintenance. It suffers from major inutilities in that it lacks several amenities that the majority of structures of its age and design offer. Undesirable location for the type of structure.
Very Poor	Extensive repairs needed; the structure suffers from extensive deferred maintenance and is near the end of its physical life. It suffers from extensive inutilities in that it lacks most amenities that the majority of structures of its age and design offer. Poor location for the type of structure.

Note: In determining condition classifications identify the classification that best fits the structure being assessed. Not all of the descriptions must be met. The intent is to classify a structure considering all physical, functional, and external factors and weighing them accordingly.

Table F-2. Actual Age to Effective Age Conversion Table

	Effective Age based upon Condition Classification					
Actual Age	**Excellent**	**Good**	**Average**	**Fair**	**Poor**	**Very Poor**
0	0	0	0	0	0	0
01-03	1	2	2	2	3	3
04-06	3	4	5	6	7	8
07-09	4	6	8	9	11	12
10-12	6	8	11	12	15	17
13-15	7	11	14	15	18	21
16-18	9	13	17	19	23	26
19-21	10	15	20	22	26	30
22-24	12	17	23	25	30	35
25-27	13	20	26	29	34	39
28-30	15	22	29	32	38	44
31-33	16	24	32	35	42	48
34-36	18	26	35	39	46	53
37-39	19	29	38	42	50	57
40-42	21	31	41	45	54	62
43-45	22	33	44	48	58	66
46-48	24	35	47	52	62	71
49-51	25	38	50	55	65	75
52-54	27	40	53	58	69	80
55-57	28	42	56	62	71	80
58-60	30	44	59	65	73	80
61-63	31	47	62	68	75	80
64-66	33	49	65	72	79	80
67-69	34	51	68	75	80	80
70-72	36	53	71	78	80	80
73-75	37	56	74	80	80	80
76-78	39	58	77	80	80	80
79 and older	40	60	80	80	80	80

Table F-3a. Typical Structure Lives - GCM

		FRAMING TYPE			
Occupancy	Quality Grade*	1 Wood Joist	2 Fire Resistant	3 Reinforced Concrete	4 Fireproof Steel
Apartment	≥ B	50	55	60	60
Apartment	≤ C	45	50	55	55
Auto Service	≥ B	40	45	50	50
Auto Service	C	35	40	45	45
Auto Service	≤ D	30	35	40	40
Auto Showroom	≥ B	40	45	50	50
Auto Showroom	C	35	40	45	45
Auto Showroom	≤ D	30	35	40	40
Bank	≥ B	50	55	60	60
Bank	C	45	50	55	55
Bank	≤ D	40	45	50	50
Bowling Alley	≥ B	35	40	45	45
Bowling Alley	≤ C	30	35	40	40
Car Wash Auto	≥ B	25	30	35	35
Car Wash Auto	C	20	25	30	30
Car Wash Auto	≤ D	20	20	25	25
Convenience Market	≥ A	40	45	50	50
Convenience Market	B, C	35	40	45	45
Convenience Market	≤ D	30	35	40	40
Country Club	≥ B	45	50	55	55
Country Club	≤ C	40	45	50	50
Dining/Lounge	≥ A	40	40	45	45
Dining/Lounge	B, C	35	35	40	40
Dining/Lounge	≤ D	30	30	35	35
Funeral Home	≥ A	50	50	55	55
Funeral Home	B, C	45	45	50	50
Funeral Home	≤ D	35	40	45	45
Garage - Parking	≥ B	35	40	45	45
Garage - Parking	≤ C	30	35	40	40
Health Club	≥ B	40	45	50	50
Health Club	≤ C	35	40	45	45
Hotel	≥ B	45	50	60	60
Hotel	C	45	50	55	55
Hotel	≤ D	40	45	50	50
Ice Rink	≥ B	40	45	50	50
Ice Rink	C	35	40	45	45
Ice Rink	≤ D	30	35	40	40
Motel	≥ B	45	50	60	60
Motel	C	45	50	55	55

		Framing Type			
Occupancy	**Quality Grade***	**1 Wood Joist**	**2 Fire Resistant**	**3 Reinforced Concrete**	**4 Fireproof Steel**
Motel	≤ D	40	45	50	50
Nursing Home	≥ A	50	55	60	60
Nursing Home	B, C	45	50	55	55
Nursing Home	≤ D	40	45	50	50
Office - General	≥ B	50	55	60	60
Office - General	C	45	50	55	55
Office - General	≤ D	40	45	50	50
Office - Medical	≥ B	40	45	50	50
Office - Medical	≤ C	35	40	45	45
Retail - Department Store	≥ B	45	50	55	55
Retail - Department Store	≤ C	40	45	50	50
Retail – Discount Store	≥ B	35	40	45	45
Retail – Discount Store	≤ C	30	35	40	40
Retail - General	≥ B	45	50	55	55
Retail - General	C	40	45	50	50
Retail - General	≤ D	40	40	45	45
Shopping Ctr. - NH	≥ C	35	40	45	45
Shopping Ctr. - NH	≤ D	30	35	40	40
Shopping Ctr. - Regional	≥ B	50	55	55	55
Shopping Ctr. - Regional	≤ C	45	50	55	55
Supermarket	≥ A	40	45	50	50
Supermarket	B, C	35	40	40	40
Supermarket	≤ D	30	35	40	40
Theater	≥ A	40	45	50	50
Theater	B, C	35	40	45	45
Theater	≤ D	30	35	40	40
Utility/Storage	≥ B	30	35	40	40
Utility/Storage	C	25	30	35	35
Utility/Storage	≤ D	20	25	30	30

* ≤ means equal to or less than the quality grade shown; ≥ means equal to or greater than the quality grade shown

Table F-3b. Typical Structure Lives - GCI

		Framing Type			
Occupancy	Quality Grade*	1 Wood Joist	2 Fire Resistant	3 Reinforced Concrete	4 Fireproof Steel
Garage - Commercial	≥ B	35	40	45	45
Garage - Commercial	≤ C	30	35	40	40
Hangar	≥ AA	40	45	50	50
Hangar	A, B	35	40	45	45
Hangar	C	35	40	45	45
Hangar	≤ D	30	35	40	40
Manufacturing - Heavy	≥ B	50	55	60	60
Manufacturing - Heavy	≤ C	45	50	55	55
Manufacturing - Light	≥ B	40	45	50	50
Manufacturing - Light	C	35	40	50	50
Manufacturing - Light	≤ D	35	40	45	45
Manufacturing - Loft	≥ A	50	55	60	60
Manufacturing - Loft	B, C	40	50	55	55
Manufacturing - Loft	≤ D	35	40	50	50
Manufacturing – Mill	All	40	50	60	60
Office - Industrial	≥ B	35	40	45	45
Office - Industrial	C	30	35	40	40
Office - Industrial	≤ D	25	30	35	35
Power Generating Plant	All	45	50	55	55
Research & Development	≥ B	45	50	55	55
Research & Development	C	40	45	50	50
Research & Development	≤ D	35	40	50	50
Shop - Small	≥ B	30	35	40	40
Shop - Small	≤ C	25	30	35	35
Storage - Heavy Utility	≥ B	50	55	60	60
Storage - Heavy Utility	≤ C	45	50	55	55
Storage - Light Utility	≥ B	30	35	40	40
Storage - Light Utility	C	25	30	35	35
Storage - Light Utility	≤ D	20	25	30	30
Terminal – Truck	All	40	45	50	50
Warehouse – Light	≥ B	40	45	50	50
Warehouse – Light	C	35	40	50	50
Warehouse – Light	≤ D	35	40	45	45
Warehouse – Loft	≥ A	50	55	60	60
Warehouse – Loft	B, C	40	50	55	55
Warehouse – Loft	≤ D	35	40	50	50
Warehouse – Mini	≥ B	40	45	50	50
Warehouse – Mini	C	35	40	45	45
Warehouse – Mini	≤ D	30	35	40	40

* ≤ means equal to or less than the quality grade shown; ≥ means equal to or greater than the quality grade shown

Table F-3c. Typical Structure Lives - GCR

Occupancy	Quality Grade*	FRAMING TYPE 1 Wood Joist
Apartment	≥ A	55
Apartment	B, C	50
Apartment	≤ D	45
Bank	≥ B	50
Bank	C	45
Bank	≤ D	40
Dining/Lounge	≥ A	40
Dining/Lounge	B, C	35
Dining/Lounge	≤ D	30
Funeral Home	≥ A	50
Funeral Home	B, C	45
Funeral Home	≤ D	35
Motel	≥ B	40
Motel	C	35
Motel	≤ D	30
Nursing Home	≥ B	40
Nursing Home	≤ C	35
Office - General	≥ B	50
Office - General	C	45
Office - General	≤ D	40
Office - Medical	≥ B	40
Office - Medical	≤ C	35

* ≤ means equal to or less than the quality grade shown; ≥ means equal to or greater than the quality grade shown

Table F-3d. Typical Structure Lives - GCK

Occupancy	Quality Grade*	FRAMING TYPE Light, Pre-engineered Steel and Pole Frame
All occupancies	≥ B	35
All occupancies	C	30
All occupancies	≤ D	25

* ≤ means equal to or less than the quality grade shown; ≥ means equal to or greater than the quality grade shown

Table F-3e. Typical Structure Lives – Yard Structures

Yard Structure	Quality Grade	Life Expectancy
Bins – Corrugated Metal	All	15
Bins - Dry Storage	All	30
Bleachers - Permanent	Steel	30
Bleachers - Permanent	Wood	20
Bleachers - Portable	All	25
Bridges – Highway	All	60
Bridges – Pedestrian	All	30
Bridges - Skyway	All	30
Bulkhead Piling	Conc.	35
Bulkhead Piling	Stone	25
Bulkhead Piling	Wood	5
Canopies C/I	≥ B	30
Canopies C/I	≤ C	20
Car Wash Buildings – Do It Yourself	≥ B	30
Car Wash Buildings – Do It Yourself	C	25
Car Wash Buildings – Do It Yourself	≤ D	20
Car Wash Buildings – Drive Thru	≥ B	30
Car Wash Buildings – Drive Thru	C	25
Car Wash Buildings – Drive Thru	≤ D	20
Chimneys – Brick	All	40
Chimneys – Metal	All	25
Courses - Miniature Golf	All	5
Courts - Paddle Tennis	All	20
Courts - Shuffle Board	All	25
Courts – Tennis	Asp	20
Courts – Tennis	Clay	10
Dikes – Earth	All	5
Docks – Commercial; Steel Piles	Steel	30
Docks – Commercial; Wood Piles	Wood	25
Elevators – Grain	Conc.	60
Elevators – Grain	Steel	35
Fence - Chain Link	All	15
Fence – Wood	All	10
Greenhouses – Aluminum	All	25
Greenhouses – Pipe	All	20
Greenhouses – Steel	All	20
Greenhouses - Wood	All	10
Guard Rails	All	10
Horizontal Storage	All	45
Incinerators - Brick	All	20
Incinerators - Steel	All	15

Yard Structure	Quality Grade	Life Expectancy
Liners - Landfill	All	25
Masonry Walls	All	25
Paving – Asphalt	All	10
Paving – Concrete	All	15
Paving – Crushed Stone	All	5
Railroad Siding	All	10
Retaining Walls	All	10
Silos - Trench and Bunker	All	20
Stacks – Concrete and Brick	All	40
Stacks – Steel	All	25
Stadiums - Sports	All	40
Standpipes – welded steel	All	30
Surface Reservoirs – concrete tanks	All	35
Tanks - Bulk Storage	All	25
Tanks - Elevated Steel	All	35
Tanks - Fuel Oil	All	25
Tanks - General	All	20
Tanks - Oil Storage; Bolted Steel Type	All	25
Tanks - Oil Storage; Welded Steel Type	All	25
Tanks - Water Storage; Steel (Reservoirs)	All	30
Tanks - Water Storage; Wood	All	20
Tanks - Welded Steel Pressure	All	20
Theaters - Drive-In	All	30
Towers	All	50
Tracks - Running	All	20
Turf - Artificial	All	5

Table F-4. Depreciation - Commercial and Industrial Structures

Effective Age	TOTAL ECONOMIC LIFE EXPECTANCY											
	60	**55**	**50**	**45**	**40**	**35**	**30**	**25**	**20**	**15**	**10**	**5**
0	0	0	0	0	0	0	0	0	0	0	0	0
01-03	1	2	2	2	3	4	4	6	7	8	20	40
04-06	4	4	5	6	7	9	12	15	20	35	40	80
07-09	6	7	8	10	12	15	19	25	33	42	60	80
10-12	9	10	12	14	18	22	28	36	48	60	80	80
13-15	12	13	16	19	24	29	37	48	61	80	80	80
16-18	15	17	20	25	30	37	46	59	73	80	80	80
19-21	18	21	25	30	37	45	56	71	80	80	80	80
22-24	21	24	29	36	44	54	65	77	80	80	80	80
25-27	25	29	35	43	52	62	74	80	80	80	80	80
28-30	29	34	41	49	59	70	78	80	80	80	80	80
31-33	34	40	47	56	67	74	80	80	80	80	80	80
34-36	38	45	53	62	72	78	80	80	80	80	80	80
37-39	43	51	59	69	77	80	80	80	80	80	80	80
40-42	49	57	64	73	79	80	80	80	80	80	80	80
43-45	54	62	69	77	80	80	80	80	80	80	80	80
46-48	59	66	73	79	80	80	80	80	80	80	80	80
49-51	64	71	77	80	80	80	80	80	80	80	80	80
52-54	68	75	79	80	80	80	80	80	80	80	80	80
55-57	71	78	80	80	80	80	80	80	80	80	80	80
58-60	73	79	80	80	80	80	80	80	80	80	80	80
61-63	76	80	80	80	80	80	80	80	80	80	80	80
64-66	78	80	80	80	80	80	80	80	80	80	80	80
67-69	79	80	80	80	80	80	80	80	80	80	80	80
70-72	80	80	80	80	80	80	80	80	80	80	80	80
73-75	80	80	80	80	80	80	80	80	80	80	80	80
76+	80	80	80	80	80	80	80	80	80	80	80	80

Using the Commercial Swimming Pool Depreciation Table

There is one (1) commercial swimming pool depreciation table. In order to use this table you must first determine the age of the swimming pool.

The actual age of the swimming pool on the date of the general reassessment is to be used. Should the pool show excessive deferred maintenance for its actual age, an effective age of six (6) years less than the pool's construction year may be used to determine total depreciation.

Notes: Swimming pools are only depreciated during the general reassessment year; no further depreciation is to be applied until the next general reassessment.

No obsolescence is to be given on commercial swimming pools.

To determine the total depreciation percentage for a swimming pool, perform the following steps:

STEP 1: In the "Age" column, locate the row corresponding to the swimming pool's actual age or effective age.

STEP 2: Find the intersection of the selected row (age) and the "Depreciation" column. This number is the total depreciation percentage for the swimming pool.

Note: Instructions for recording the total depreciation percentage on the property record card, converting this percentage to a multiplier, and using this multiplier to calculate the remainder value of a commercial swimming pool are provided in the section "***Calculating the Remainder Value***" in Chapter 7.

Table F-5. Commercial Swimming Pool Depreciation

Price swimming pool from standard schedule and depreciate on the basis of a 20 year life expectancy, as follows:

Age	Depreciation
01-02	5
03-04	10
05-06	15
07-08	20
09	25
10	30
11-12	35
13-14	40
15-16	50
17-18	55
19-20	60
21-22	65
23-25	70
Over 25	75-80

Using the Riverboat Depreciation Table

There is one (1) riverboat depreciation table. In order to use this table you must first determine the actual age of the riverboat.

To determine the total depreciation percentage for a riverboat, perform the following steps:

STEP 1: In the "Age" column, locate the row corresponding to the riverboat's actual age.

STEP 2: Find the intersection of the selected row (age) and the "Depreciation" column. This number is the total depreciation percentage for the riverboat.

Note: Instructions for recording the total depreciation percentage on the property record card, converting this percentage to a multiplier, and using this multiplier to calculate the remainder value of a riverboat are provided in the section "***Calculating the Remainder Value***" in Chapter 7.

Table F-6. Riverboat Depreciation

ACTUAL AGE	DEPRECIATION
01	5
02	10
03-04	15
05-06	20
07-08	25
09-10	30
11-12	35
13-14	40
15-16	45
17-20	50
21-26	55
27-30	60
Over 30	65

Calculating Total Depreciation Percentage for Special Use Commercial Properties

Special use commercial properties are special purpose buildings (fast food restaurants and service stations) that are not readily adaptable to other uses. These types of structures go out of style both functionally and economically at a faster rate than they physically deteriorate due to changes in consumer preferences and demand. The businesses they house are highly competitive and rely heavily on site location and physical appearance. In order to keep up with the competition, owners renovate the interiors of the structures more frequently than they do on most general commercial structures.

Competition, oversaturation, changes in consumer habits, and changes in traffic patterns are a few of the factors that have an influence on the success of the operation. The obsolescence caused by these factors influences the life span of the buildings. Periodic renovation of these type structures cures most forms of obsolescence. Therefore actual age must be converted to effective age following the guidelines earlier in this appendix used for determining effective age.

A depreciation table that reflects the relatively short life of this type structure is provided in this Appendix. The table reflects normal physical depreciation and obsolescence.

To determine the total depreciation for special use commercial properties, perform the following steps:

STEP 1 Assign a structure condition classification to the structure relative to structures of similar age. Structure condition classifications are summarized in ***Table F-1. — Structure Condition Classifications*** earlier in this appendix.

STEP 2 Determine the effective age of the structure by correlating the actual age (weighted age) with the structure condition classification in ***Table F-2. — Actual Age to Effective Age Conversion Table*** located earlier in this appendix.

STEP 3 In the "Effective Age" column of the Special Use Commercial Table, locate the row corresponding to the effective age of the building.

STEP 4 Find the intersection of the selected row (effective age) and the "Depreciation" column. This number is the total depreciation percentage for the building.

Note: Instructions for recording the total depreciation percentage on the property record card, converting this percentage to a multiplier, and using this multiplier to calculate the remainder value of special use commercial structure are provided in the section "***Calculating the Remainder Value***" section in Chapter 8.

Table F-7. Special Use Commercial Property Depreciation

Effective Age in years	Depreciation
01	5
02	10
03	15
04	20
05	25
06	30
07-08	35
09-10	40
11-12	45
13-14	50
15-16	55
17-19	60
20-21	65
22-24	70
25-30	75
Over	80

Grain Elevator Depreciation Considerations

Grain elevators are special purpose structures and, with very few exceptions are rarely convertible into other uses. Therefore, the assessing official must carefully estimate all forms of depreciation correctly. ***Table F-4e*** allows the assessor to determine the physical deterioration and normal obsolescence suffered by the grain elevator but does not account for abnormal obsolescence caused by such factors as excess storage capacity, lack of transportation facilities (major highways, railroads, or waterways), nor other types of inutilities caused by changes in the agricultural economy.

Besides the normal depreciation from ***Table F-4e***, the assessing official must also determine the amount of abnormal obsolescence caused by factors such as these. The determination of the amount of abnormal obsolescence requires a comparative analysis of current operating data and the total licensed capacity. For example, a grain elevator has a total licensed capacity of 300,000 bushels. Over the last five years of operation, the elevator has stored an average of 240,000 bushels. Therefore it is suffering from abnormal functional obsolescence because, in the current market, it has 60,000 bushels of excess capacity.

The assessing official should value the grain elevator by first calculating the replacement cost new of the structure. Taking the average number of bushels stored for the most recent five years and multiplying by the unit costs given in this manual accomplishes this. Replacement cost is preferred as opposed to replacement cost because replacement cost estimates the cost of a physical structure with similar utility. Replacement cost eliminates the cost of obsolete materials, design, and building techniques. In so doing, most forms of functional obsolescence have been "cured" and do not have to be accounted for in the depreciation estimate. The assessor should then follow the steps outlined in this-appendix for determining the normal depreciation and apply this depreciation percentage to the replacement cost new estimate.

The amount of abnormal obsolescence should be reviewed annually and adjusted if necessary.