Training Sessions - Depreciation

Local Government Services Division
Nevada Department of Taxation
Facilitating Interaction

- In Chat Type "?" for question;
- "&" for go back;
- "#" to see more math
Exam Tip

Bring the calculator you will use on the exam to these sessions!
Major Points of Depreciation

In Appraisal Theory, depreciation is defined as the loss from the upper limit of value from all causes (except depletion) of property having a limited economic life.
Major Points of Depreciation

In the cost approach, depreciation means accrued depreciation, the difference between reproduction or replacement cost new of an improvement and its market value as of the date of the appraisal.
Definition of Accrued Depreciation

• The difference between Replacement Cost New (RCN) and its market value on the day of the appraisal.

• Accrued Depreciation = RCN - Market Value of Improvements.

To build new: $100,000
Sale of a comparable 20-yr old improvement: - 80,000
Depreciation: $20,000
Depreciation in Nevada

NRS 361.227 (1)(b) “Depreciation of an improvement made on real property must be calculated at 1.5 percent of the cost of replacement for each year of adjusted actual age of the improvement to a maximum of 50 years.”
Depreciation in Nevada

NAC 361.016 “Depreciation defined. “Depreciation” means...a loss in the value of real or personal property from any cause.”
Major Points of Depreciation

• Measurement of accrued depreciation is only used in the cost approach and only applies to the improvements; land is a non-wasting asset.
• Depletion is not depreciation.
Major Points of Depreciation

• There are three categories (causes) of depreciation:
  1. Physical deterioration (curable or incurable);
  2. Functional obsolescence (curable or incurable);
  3. Economic obsolescence (usually incurable)
• Depreciation can be measured directly, from the subject property, and indirectly, from similar properties.
## Important Terms

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<th>Accrued depreciation</th>
<th>Deferred Maintenance</th>
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<td>Diminished utility</td>
<td>Basic Structure</td>
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<td>Physical deterioration</td>
<td>Deficiency</td>
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<td>Functional obsolescence</td>
<td>Superadequacy/Overimprovement</td>
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<td>Cost to cure</td>
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<td>Effective age</td>
<td>Age-life method</td>
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<tr>
<td>Remaining economic life</td>
<td>Engineering breakdown method</td>
</tr>
<tr>
<td>Total economic life (life span)</td>
<td>Economic obsolescence</td>
</tr>
</tbody>
</table>
THE NATURE OF DEPRECIATION

It is:

• RELATED TO IMPROVEMENTS ONLY

• SPECIFIC TO INDIVIDUAL PROPERTY

• BASED ON PAST EXPERIENCE

• TIME-RELATED
“Accrued depreciation” means the amount of loss in the value of an improvement … as a result of physical deterioration, functional obsolescence or economic obsolescence.”
Depreciation

Causes/types:

A. Physical deterioration – curable and incurable

B. Functional obsolescence – curable and incurable

C. Economic obsolescence – usually incurable
First type of accrued depreciation

A. **Physical deterioration**: loss in value due to wear and tear.
Further categorized as:

1. **Curable physical deterioration** is normal deferred maintenance. Measured by the cost to cure. You can invest money or effort to fix the problem(s).

2. **Incurable physical deterioration** is generally not economically feasible to repair.
Deferred Maintenance is also known as Physically-curable depreciation
Regarding the loss of value attributable to incurable physical deterioration…

- ... You don’t want to spend more to fix something than it would cost you to tear it down and start over.
Question:
If the structure of a building has significantly deteriorated, would that be curable or incurable physical depreciation?

• Structure =

• Incurable
Depreciation - Obsolescence

Causes/types:

A. Physical deterioration – curable and incurable

B. Functional obsolescence – curable and incurable

C. Economic obsolescence – usually incurable
Obsolescence

- NAC 361.116 “Obsolescence” defined.
  “Obsolescence” means an impairment to property resulting in the full cash value of the property being less than its taxable value as otherwise computed.”
B. Obsolescence is loss of value due to changes in style, taste, technology, needs, and demand.

1. Functional Obsolescence is the inability of a structure to perform adequately the function for which it is currently employed. Remember the terms: utility, usefulness, and outdated.
Second type of accrued depreciation

Examples of Functional Obsolescence include:
- Over-improvement (not highest and best use of the site)
- Under-improvement (not highest and best use of the site)
- Poor layout and design
- Inferior workmanship or materials
- Unnecessarily high quality or capacity of components
- Outmoded equipment and fixtures
- Changing public tastes and standards
- Nonconforming architectural style
Functional Obsolescence is further categorized as:

a. **Curable functional obsolescence**: economically prudent to correct.
Curable Functional Obsolescence:

- It makes sense to invest effort or money and fix the problem.

Examples:
- Remodel bathroom
- Update kitchen appliances
Functional Obsolescence is further categorized as:

b. **Incurable functional obsolescence**: physically or economically impractical to correct.
Incurable Functional Obsolescence:

- Not generally economical to repair or replace.

Examples:
- Poor room arrangements
- Extra high ceilings
- Undesirable shape of a commercial structure
Poor column spacing in a warehouse is

- Functional

- incurable

In Chat Type "?” for question; "&" for go back; "#" to see more math
The loss of value attributable to functional obsolescence . . .

- . . . when the defect involves the need for modernization or updating is measured by

- . . . the cost of installing a modern, up-to-date component, LESS the depreciated value of the existing component.
Third type of accrued depreciation

C. Economic (a.k.a. Locational or External) obsolescence – Remember: Outside Forces

• Caused by external factors
• Impacts the highest and best use of property
• Usually incurable
• Must be partially allocated to land
Taxable Value: NRS 361.227 (1)

- “Any improvements made on the land by subtracting from the cost of replacement of the improvements all applicable depreciation and obsolescence.”
Depreciation, as applied in the appraisal process . . .

• . . . is solely a charge against

• . . . and a . . .

• . . . deduction from the Replacement Cost New of an improvement.
Third type of accrued depreciation

Examples of **Economic Obsolescence** include:

- Encroachment of inharmonious land use
- Heavy traffic, excessive noises, unpleasant odors, physical hazards, etc.
- Inadequate public services
- Inadequate land use controls and protection
- Inadequate access to conveniences
- Legal actions (changes in zoning, etc.)
A busy highway in front of a personal residence is an example of what type of depreciation?

- Economic
- Incurable
- Depreciation

Economic **Incurable** Depreciation
The loss of value attributable to economic obsolescence . . .

• . . . can be measured by

□ . . . estimating rent loss by using the Gross Rent Multiplier.
Gross Rent Multiplier

...where market value is represented by the selling price, and annual gross income is income before expenses such as property taxes, insurance, utilities, etc.
https://www.surveymonkey.com/r/KRWGD82
Indirect method of measuring depreciation:

Comparable Sales Data
- From market
- Accrued depreciation is a by-product
- Similar to the **Comparative Sales Approach to Value**
- Very useful for Mass Appraisal
- Example:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated RCN</td>
<td>$30,000</td>
</tr>
<tr>
<td>Sales price of a comparable property</td>
<td>$28,000</td>
</tr>
<tr>
<td>Less estimated land value</td>
<td>-10,000</td>
</tr>
<tr>
<td>Value attributed to improvement(s)</td>
<td>$18,000</td>
</tr>
<tr>
<td>Accrued Depreciation</td>
<td>$12,000</td>
</tr>
</tbody>
</table>
Indirect method of measuring depreciation:

Advantages
• Reliable because it has market justification
• Relatively rapid to calculate

Disadvantages
• No breakdown of types of obsolescence
• Requires ample sales data
NRS 361.229:

Adjustment of actual age of improvements in computation of depreciation.

1. The actual age of each improvement made on a parcel of land must be adjusted, for the purpose of computing depreciation, when any addition is made or replacement is made whose cost, added to the cost of any prior replacements, is at least 10 percent of the cost of replacement of the improvement after the work is done. For the purposes of this section, “replacement” does not include changing or adding finish or covering to floors or walls, changing or adding small appliances, or other normal maintenance of the improvement in a good condition.

2. Except as otherwise provided in subsection 3, the amount of the reduction must be the product of the prior actual age multiplied by the ratio of the cost of the replacement or addition to the cost of replacement of the improvement after the work is done.

3. The amount of the reduction for additions which increase the floor area of the improvement may be calculated by multiplying the prior actual age of the improvement by the ratio of the number of square feet of additional floor area to the total number of square feet of the improvement including the addition.
Age/Life Terms and Definitions:

Per Nevada Law:

Age = chronological age; year built

Actual Age = total number of years from the year of the construction to the year of the lien date for the taxes which it affects

Adjusted Actual Age = Weighted age
Age/Life Terms and Definitions:

**Per Appraisal Theory:**

**Economic Life** = also called average life, effective life or useful life.

**Remaining Economic Life** = estimated period over which existing improvements are expected to continue to contribute economically to property value.

**Effective Age** = the difference between economic life and remaining economic life of the structure, how old the home appears to be; SUBJECTIVE
# Adjusted Age Calculation: Square Foot Method

<table>
<thead>
<tr>
<th>Square Ft.</th>
<th>% of sq ft</th>
<th>Age</th>
<th>Adj. Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original</td>
<td>1000</td>
<td>71.43%</td>
<td>16</td>
</tr>
<tr>
<td>New</td>
<td>400</td>
<td>28.57%</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>1400</td>
<td>100.00%</td>
<td></td>
</tr>
</tbody>
</table>

\[
\frac{1000}{1400} = 71.43\% \quad \text{and} \quad 0.7143 \times 16 = 11.43 \\
\frac{400}{1400} = 28.57\% \quad \text{and} \quad 0.2857 \times 2 = 0.57 \\
11.43 + 0.57 = 12.00 \text{ years}
\]
# Adjusted Age Calculation: Cost Method

<table>
<thead>
<tr>
<th>Cost</th>
<th>% of Cost</th>
<th>Age</th>
<th>Adj Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original</td>
<td>120,000</td>
<td>16</td>
<td>11.43</td>
</tr>
<tr>
<td>Addition</td>
<td>48,000</td>
<td>2</td>
<td>0.57</td>
</tr>
<tr>
<td>Total</td>
<td>168,000</td>
<td></td>
<td>12 Years</td>
</tr>
</tbody>
</table>

\[
\frac{120,000}{168,000} = 71.43\% \\
\frac{48,000}{168,000} = 28.57\% \\
\]

\[
.7143 \times 16 = 11.43 \\
.2857 \times 2 = .57 \\
11.43 + .57 = 12.00 \text{ years}
\]
Direct methods of measuring depreciation

A. Overall *(age-life)*
   a. Depreciation over straight-line
   b. Actual vs. effective age; remaining life vs. total life
Effective Age (EA) = \frac{\text{Total Economic Life (TEL)}}{} \quad \text{Remaining Economic Life (REL)}
Depreciation with Overall (Age-Life, Straight Line)

- Effective age (EA) = 10 years
- $10 + 40 = 50$ Years Total Life - (EA+REL=TEL)
- $10/50$ Years $= 20\%$
- $20\% \times $200,000 (RCN) $= $40,000 Depreciated to Date
Direct methods of measuring depreciation

B. Observed condition (breakdown)

Measure of Curable Physical Deterioration \(\text{plus}\)
Measure of Incurable Physical Deterioration \(\text{plus}\)
Measure of Curable Functional Obsolescence \(\text{plus}\)
Measure of Incurable Functional Obsolescence \(\text{plus}\)
Measure of External Obsolescence

\[= \text{ACCRUED DEPRECIATION}\]
Depreciation with Observed Condition (Breakdown) Method

• Estimates by analyzing each cause of depreciation and adding them together.
• Very detailed, accurate, and good for an assessor to know.
Depreciation tables

A. Grouping of properties exhibiting similar value trends
B. Irregular (decelerating) depreciation
C. Cannot be a blanket substitute for other forms of depreciation measurement.
CAUSES OF ACCRUED DEPRECIATION

1. PHYSICAL DETERIORATION
CAUSES OF ACCRUED DEPRECIATION

2. FUNCTIONAL OBSOLESCENCE
CAUSES OF ACCRUED DEPRECIATION

3. ECONOMIC (LOCATIONAL) OBSOLESCENCE
TYPES OF DEPRECIATION AND THEIR MEASUREMENT

1. **Curable physical deterioration (deferred maintenance)**

   • Measured by: the cost to cure.
2. Incurable physical deterioration

- Short-life items (curable physical postponed)

- Long-life items (basic or “bone” structure)
TYPES OF DEPRECIATION AND THEIR MEASUREMENT

3. Curable functional obsolescence
   • Deficiency (normal)
   • Modernization (replacement)
   • Superadequacy
TYPES OF DEPRECIATION AND THEIR MEASUREMENT

4. Incurable functional obsolescence

• Deficiency
TYPES OF DEPRECIATION AND THEIR MEASUREMENT

5. Economic (locational) obsolescence
1. **Overall (Age-life) method**

An estimate is made of both the effective age of the building and its remaining economic life. Together these form the life span of the building. The ratio of effective age to life span, multiplied by the replacement or reproduction cost new, yields the lump-sum deduction for accrued depreciation.
1. Overall (Age-life) method

• Advantage: simple to learn and apply.

• Disadvantage: does not recognize curable items. Does not recognize that short-lived items may have economic lives shorter than that of the total structure. Does not consider functional or economic obsolescence; seriously underestimates accrued depreciation when obsolescence is present.
1.1 Modified Overall (Age-life) method

First, the cost to cure all curable items is estimated.

This sum is then deducted from replacement or reproduction cost new of the entire improvement.

The remaining sum (the incurable items) is then multiplied by the ratio of effective age to life span, yielding the amount of incurable depreciation.

The sum of curable and incurable depreciation is the total depreciation for the property.
DIRECT METHODS OF MEASURING ACCRUED DEPRECIATION

1.1 Modified Overall (Age-life) method

- **Advantage:** simplicity - Is fairly reliable when the structure is relatively new and there is no economic or incurable functional obsolescence.

- **Disadvantage:** ignores economic and incurable functional obsolescence. Does not allow for individual differences in remaining economic life among components. Assumes that utility is reduced on a straight-line basis.
DIRECT METHODS OF MEASURING ACCRUED DEPRECIATION

2. Observed condition (Breakdown) Method

This method is recommended for use in demonstration narrative appraisal reports by most appraisal organizations.

This method requires a detailed estimate of replacement cost new; it involves considering the elements of diminished utility separately and measuring the amount of each. The estimates are then added together; this sum is deducted from replacement cost new.
2. Observed condition (Breakdown) Method

Curable items are considered and measured first, prior to an analysis of the incurable items; incurable items cannot be measured properly until all curable items have been accounted for.

- **Advantages:** all components of the structure are considered. All elements of depreciation (physical, functional, and economic) are considered.

- **Disadvantages:** care should be taken to avoid double counting. Each component should be considered once, and only once.

This method requires a detailed estimate of reproduction cost new as of the date of the appraisal.

The appraiser must carefully distinguish between curable and incurable items.
You are appraising a single-family residence that suffers from several forms of depreciation, including the diminished utility resulting from having the stairway to the basement located in the center of the residence.

In analyzing sales of comparable properties, you find the following:

- A residence that suffers from the same defect as the subject sold recently for $151,500.
- Approximately six months before this sale, a property similar in size, shape, physical condition and location, but without the defect, sold for $150,755.
- A study of the market indicates that prices of properties are increasing at a rate of 12 percent per year.

**PROBLEM:**
What is the indicated loss of value due to the defect suffered by the subject property?
Case Problem 1
Depreciation – from the Market

SOLUTION:

1. Sale price of comparable property without defect .......... $150,755
   Times factor .................................. x 1.06
   $159,800

Less sale price of comparable with defect ......................... $151,500

Estimated depreciation resulting from defect $8,300
Case Problem 1.1

Depreciation – from the Market

You are appraising a multi-family (duplex) residence that suffers from several forms of depreciation, including the diminished utility resulting from having the washing machine and dryer hookups in the garages.

In analyzing sales of comparable properties, you find the following:

• Approximately nine months before this sale, a property similar in size, shape, physical condition and location, but without the defect, sold for $290,000.
• A similar duplex that suffers from the same defect as the subject sold recently for $292,900.
• A study of the market indicates that prices of properties are increasing at a rate of 4 percent per year.

PROBLEM:

What is the indicated loss of value due to the defect suffered by the subject property?
Case Problem 1.1
Depreciation – from the Market

SOLUTION:

1. Sale price of comparable property without defect.........$290,000
   Times factor..................x 1.03
   $298,700

Less sale price of comparable with defect.......................$292,900

Estimated depreciation resulting from defect       $5,800
Age-life method of depreciation is another term for

Straight-line depreciation.

<table>
<thead>
<tr>
<th>Total Capital to Be Recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Periods</td>
</tr>
</tbody>
</table>

Depreciation for each year is identical.
Percent Good

• 1 or (100%) – minus the percentage depreciated.

• Example: A TV that is 30% depreciated is 70 Percent Good.

  • 1 = 100%
  • 100% - 30% = 70%
NRS 361.227 - Determination of taxable value

5. The computed taxable value of any property must not exceed its full cash value. Each person determining the taxable value of property shall reduce it if necessary to comply with this requirement. A person determining whether taxable value exceeds that full cash value or whether obsolescence is a factor in valuation may consider:

• (a) Comparative sales, based on prices actually paid in market transactions.

• (b) A summation of the estimated full cash value of the land and contributory value of the improvements.

• (c) Capitalization of the fair economic income expectancy or fair economic rent, or an analysis of the discounted cash flow.
NRS 361.357 Appeal to county board of equalization where full cash value of property is less than its taxable value.

1. The owner of any real or personal property placed on:
   (a) The secured tax roll who believes that the full cash value of his or her property is less than the taxable value computed for the property in the current assessment year may, not later than January 15 of the fiscal year in which the assessment was made, appeal to the county board of equalization. If January 15 falls on a Saturday, Sunday or legal holiday, the appeal may be filed on the next business day.
   (b) The unsecured tax roll which was assessed on or after May 1 and on or before December 15 who believes that the full cash value of his or her property is less than the taxable value computed for the property in the current assessment year may, not later than the following January 15, appeal to the county board of equalization. If January 15 falls on a Saturday, Sunday or legal holiday, the appeal may be filed on the next business day.

2. Before a person may file an appeal pursuant to subsection 1, the person must complete a form provided by the county assessor to appeal the assessment to the county board of equalization. The county assessor may, before providing such a form, require the person requesting the form to provide the parcel number or other identification number of the property that is the subject of the planned appeal.

3. If the county board of equalization finds that the full cash value of the property on January 1 immediately preceding the fiscal year for which the taxes are levied is less than the taxable value computed for the property, the board shall correct the land value or fix a percentage of obsolescence to be deducted from the otherwise computed taxable value of the improvements, or both, to make the taxable value of the property correspond as closely as possible to its full cash value.

4. No appeal under this section may result in an increase in the taxable value of the property.
Question

You estimated the replacement cost new for a 25 year old industrial building at $1,500,000. Comparable properties sold recently for $1,800,000 and each included land valued at $500,000. What amount of obsolescence did you deduct to prevent taxable value from exceeding full cash value?

- Step 1. Determine the market value of the comparable buildings by subtracting the land value: $1,800,000 - $500,000 = $1,300,000
- Step 2. Subtract the current market value of comparable buildings from the cost estimate for the subject industrial building:
  $1,500,000 - $1,300,000 = $200,000

- $200,000 is the amount of obsolescence to be deducted from the subject to prevent the taxable value from exceeding full cash value.
Which type of accrued depreciation is the most difficult to correct?

A. Curable Physical Deterioration
B. Incurable Physical Deterioration
C. Curable Functional Obsolescence
D. Incurable Functional Obsolescence
E. Curable Economic Obsolescence
F. Incurable Economic Obsolescence

Which type of depreciation is the most uncommon?
Question

• You have been asked to determine the indicated accrued depreciation for a subject property that has a land value of $45,000. The replacement cost new for its improvements equals $120,000. Comparable properties in the area sell for $105,000.

What is the amount of the accrued depreciation?
Depreciation Concepts

1. ______________ is loss of value due to consumption, such as mining and timber removal. Depletion

2. Flaking paint on a bedroom ceiling is an example of ____________ ___________ deterioration. 
   curable physical

3. Another name for the straight-line method is the _________ _________ method. 
   overall (age-life)
Depreciation Concepts

4. Effective age is the age of a building indicated by its observed condition.

5. Economic obsolescence, unlike functional obsolescence and physical deterioration, is usually considered incurable.

6. The observed condition & engineering breakdown methods require separation of elements of accrued depreciation into various categories.
Depreciation Concepts

7. The difference between reproduction or replacement cost new of a building and its market value as of the date of the appraisal is termed _________ _________.

   accrued depreciation

8. Curable physical deterioration is also known as _________ _____________________.

   deferred maintenance
Important Terms

Accrued depreciation
Diminished utility
Physical deterioration
Functional obsolescence
Cost to cure
Effective age
Remaining economic life
Total economic life (life span)
Deferred Maintenance
Basic Structure
Deficiency
Superadequacy/Overimprovement
Observed condition method
Age-life method
Engineering breakdown method
Economic obsolescence
Questions and Discussion