

Chapter 11

Long-Lived Assets

Tangible Long-Lived Assets

Tangible long-lived assets (also sometimes referred to as plant assets) are resources that:

- have physical substance.
- are recorded at cost in accordance with the cost principle of accounting.
- the cost consists of all expenditures necessary to acquire the asset and make it ready for its intended use.



Examples: Tangible Long-Lived Assets

Tangible long-lived assets include:

- buildings
- equipment, machinery
- leasehold improvements
- land improvements
- land



Cost of Building

When a new building is constructed, its cost consists of:

- the contract price
- architect's fees
- building permits
- excavation costs
- interest costs during the construction period



Cost of Equipment

The cost of equipment consists of the:

- cash purchase price
- sales tax
- freight charges
- insurance during transit paid by the purchaser
- expenditures required in assembling, installing and testing the unit.

In essence, all the costs associated with placing the asset in service (i.e., ready for use)



Land Improvements

The cost of land improvements includes all expenditures necessary to make the improvements ready for their intended use.

For example, the cost of a parking lot would include the amount paid for paving, fencing, and lighting.



Land

The cost of land includes:

- the cash purchase price
- closing costs, such as title and attorney's fees
- real estate brokers' commissions
- accrued property taxes and other liens on the land assumed by the purchaser
- all necessary costs incurred in making land ready for its intended use



Depreciable Assets

Depreciation applies to the following tangible assets:

- Buildings
- Leasehold Improvements
- Equipment
- Land improvements

NOTE: Land is not a depreciable asset, since it does not have a finite useful life



Capitalization Versus Expense

Capitalization is the act of recognizing costs that provide a future economic benefit by setting up an asset account.

- Tangible assets whether purchased or self-constructed are almost always recognized
- Intangible assets that are acquired are generally recognized. Internally generated (i.e., self-constructed) intangibles (e.g., trained employees) are generally **NOT** recognized.



Depreciation

Depreciation is the rational and systematic process of allocating the cost of a tangible asset over its useful (service) life.



GAAP Versus Economic Values

GAAP fails to accurately reflect economic values of tangible assets because it:

- Makes incorrect assumptions regarding the pattern of future cash flows from the fixed asset
- Ignores interest

GAAP fails to accurately reflect economic values of intangible assets because:

- Self-produced intangibles are not recorded



Accumulated Depreciation

The balance in the Accumulated Depreciation (**a contra asset account**) represents the total amount of the asset's cost that has been expensed to date.



Factors in Computing Depreciation

Cost--historical cost of the asset.

Useful life--estimate of the expected productive life, also called service life, of the asset.

Salvage value--an estimate of the asset's value at the end of its useful life.

NOTE: Salvage value is not used for double-declining balance.



Depreciation Methods

The following methods of depreciation are acceptable under generally accepted accounting principles (GAAP):

- Straight-line
- Units-of-Activity
- Declining-Balance
- Sum-of-the-Years'-Digits



Straight-line Method

- Straight-line depreciation is the most widely used method of depreciation.
- Under the straight-line method, depreciation is the same for each year of the asset's useful life.



Straight-line Method

Annual depreciation under straight-line method:

Depreciable Cost*

The asset's useful life measured in years

*(cost of the asset minus its salvage value)



Straight-line Method

On January 1, 2004, Rhody purchases equipment for \$60,000. The equipment has a useful life of 8 years and a salvage value of \$4,000. Annual depreciation under the straight-line method is \$7,000.

$$\frac{\$60,000 - \$4,000}{8} = \frac{\$56,000}{8} = \$7,000$$



Straight-line Method

Journal Entry:

Depreciation expense 7,000
 Accumulated Depreciation 7,000



Straight-line Method

Assume Rhody purchases the equipment on April 1, 2004. Annual depreciation under straight-line method is \$5,250.

$$\$7,000 \times \frac{9}{12} = \$5,250$$

Journal Entry:

Depreciation expense 5,250
 Accumulated depreciation 5,250

Note: This illustrates that an entity can only depreciate an asset for time it was placed in service for that year (i.e., 9 months).



Units-of-Activity Method

Under the **units-of-activity method**, the life of an asset is expressed in terms of the total units of production or the use expected from the asset.



Units of Activity Method

Under the **units of activity method**, depreciation is calculated as:

$$\text{Depreciable Cost}^* \times \frac{\text{Yearly activity (i.e., use)}}{\text{Total expected activity}}$$

* (Original cost of the asset – salvage value)



Units-of-Activity Method

On January 1, 2004, Rhody purchases a truck for \$50,000. The truck has a useful life of 80,000 miles and a salvage value of \$5,000. The truck was driven 16,000 miles during 2004. Annual depreciation under the units-of-activity method is \$9,000.

$$\begin{aligned} \$50,000 - \$5,000 &= \$45,000 \text{ depreciable cost} \\ \$45,000 \times \frac{16,000}{80,000} &= \$9,000 \end{aligned}$$



Declining-Balance Method

The **declining-balance method** is an accelerated method.

Accelerated methods of depreciation result in more depreciation in the early years of an asset's life and less depreciation in the later years of an asset's life than does the straight-line approach.



Double-Declining Method

The depreciation under the double-declining method is calculated as:

$$\frac{\text{Depreciable Cost}^*}{\text{Asset's useful life in years}} \times 2$$

* (original cost - accumulated depreciation)

NOTE: In year 1, accumulated depreciation is zero.



Double-Declining Method

On January 1, 2004, Rhody purchases equipment for \$60,000. The equipment has a useful life of 8 years and a salvage value of \$4,000. The depreciation under the double-declining method is \$15,000.

$$\frac{\$60,000 - \$0}{8} = \frac{\$60,000}{8} = \$7,500$$
$$\$7,500 \times 2 = \$15,000$$



Double-Declining Method

What is Rhody's depreciation expense for 2005?

The depreciation under the double-declining method is \$11,250.

$$\frac{\$60,000 - \$15,000}{8} = \frac{\$45,000}{8} = \$5,625$$
$$\$5,625 \times 2 = \$11,250$$



Sum-of-the-Years'-Digits

The **sum-of-the-years'-digits method** is an accelerated method.

As with the double-declining balance method, it will result in more depreciation in the early years of an asset's life and less depreciation in the later years of an asset's life.



Sum-of-the-Years'-Digits

Depreciation under the sum-of-the-years'-digits is calculated as:

$$\text{Original cost} - \text{salvage value} \times \frac{\text{Asset years left}}{\text{Total asset years}}$$



Sum-of-the-Years'-Digits

On January 1, 2004, Rhody purchases equipment for \$60,000. The equipment has a useful life of 8 years and a salvage value of \$4,000. The depreciation under sum-of-the-years'-digits is \$12,444

$$(\$60,000 - \$4,000) = \$56,000 \times \frac{8}{36^*} = \$12,444$$

$$*(8+7+6+5+4+3+2+1) = 36$$



Disposal of Plant Assets

Whether a plant asset is sold, retired, or traded in, the company must determine the book value of the plant asset at the time of disposal.

- Book value is the difference between the cost of the plant asset and the accumulated depreciation to date.
- If disposal occurs mid-year, the depreciation for the fraction of the year to the date of disposal must be recorded.



Sale of Plant Assets

Book Value:

Original Cost
- Accumulated Depreciation
Book Value of Asset

Gain on Sale:

If sales proceeds > book value of the asset

Loss on Sale:

If sales proceeds < book value of the asset.



Sale of Plant Assets

On January 1, 2004, Rhody sells equipment for \$20,000. The original cost of the equipment is \$40,000 and the accumulated depreciation is \$24,000. What is Rhody's gain or loss?



Sale of Plant Assets

Rhody has a gain of \$4,000.

Sales proceeds	\$20,000
Net book value *	<u>16,000</u>
Gain on sale	\$ 4,000

* **Net book value is original cost minus accumulated depreciation.**



Sale of Plant Assets

Journal Entry:

Cash	20,000	
Acc. Depreciation	24,000	
	Equipment	40,000
	Gain	4,000



Asset Impairment

GAAP requires that an entity review its tangible assets and determine if an asset is impaired. An asset might be impaired if:

- The market value has significantly decreased.
- The asset's utilization has changed.
- The entity forecasts losses from the asset's continued use.
- Adverse business conditions affect the asset.
- Self-constructed assets cost significantly more than originally estimated.



Asset Impairment

Once an entity determines that an impairment might have taken place, it must perform an **impairment test**. This test requires that the entity compare the estimated undiscounted future cash flows of the asset to the asset's current book value.



Asset Impairment

If the **undiscounted** cash flows **EXCEED** the current book value, no impairment exists and no entry is required.

If the **undiscounted** cash flows **ARE LESS THAN** the current book value, the asset is impaired and a “write-down” is required. This “write-down” will equal:

- The difference between the asset’s current book value and the present value of the expected future cash flows.



Example: Asset Impairment

On December 31, 2004, Rhody determines that the undiscounted cash flows are less than the current book value (\$16,000) of the equipment. Rhody determines that the present value of the future cash flows is \$10,500. What adjustment must Rhody make to the value of its equipment?



Example: Asset Impairment

Rhody must recognize a loss on the value of the equipment by writing the asset down to its present value of \$10,500. The journal entry would be :

Loss on impairment 4,500

 Accumulated Depreciation – Equip. 4,500

NOTE: The loss is reflected in the income statement



Analyzing Plant Assets

The three measures by which plant assets are evaluated are:

- Average useful life
- Average age of plant assets
- Asset turnover ratio



Average Useful Life

To determine average useful life of assets:

$$\frac{\text{average cost of plant assets}^*}{\text{depreciation expense}}$$

- * Total cost (i.e. original cost before any accumulated depreciation) of plant assets at the beginning of the period plus total cost of plant assets at the end of the period divided by 2.



Average Age of Plant Assets

To determine the average age of plant assets:

$$\frac{\text{accumulated depreciation}}{\text{depreciation expense.}}$$



Asset Turnover Ratios

To calculate total asset turnover ratio:

$$\frac{\text{net sales}}{\text{average total assets}}$$

To calculate fixed asset turnover ratio:

$$\frac{\text{net sales}}{\text{average fixed assets (PP\&E)}}$$



Intangible Assets

Intangible assets are rights, privileges, and competitive advantages that result from ownership of long-lived assets that do not possess physical substance.

Examples of intangible assets include goodwill and purchased patents.



Intangible Assets

- Intangible assets are recorded at cost and are expensed over the useful life of the intangible asset in a manner similar to depreciation.
- The term used to describe how an intangible asset is expensed is called amortization.
- Conceptual amortization and depreciation operate the same.



Goodwill

- Goodwill represents the value of all favorable attributes that relate to a business enterprise, including exceptional management, desirable location, good customer relations, skilled employees, etc.
- When an entire business is purchased, goodwill is the difference between the purchase price of the business and the fair market value of the net assets (assets less liabilities) acquired.



Where in the Balance Sheet Are Long-Lived Assets Presented?

- Tangible assets are shown in the balance sheet under Property, Plant, and Equipment. Sometimes these assets are shown net (original cost minus accumulated depreciation). If shown net, then the firm must disclose accumulated depreciation in the footnotes.
- Intangibles, if material, are shown separately; otherwise they are shown as part of other assets.

