

PEARSON NEW INTERNATIONAL EDITION



Construction Accounting and Financial Management Steven Peterson Third Edition

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#### Conclusion

Depreciation is the loss in value of a piece of equipment or real property. Different depreciation schedules may be used for the preparation of financial statements, the billing of equipment, and the preparation of income taxes, which may result in very different depreciation rates. For the preparation of financial statements and the billing of equipment, there are three commonly used methods. They are the straight-line method, the sum-of-the-years method, and the declining-balance method. For tax purposes, the IRS has set up standard recovery periods for assets and has identified the depreciation methods that may be used for each of the recovery periods. The depreciation methods allowed by the IRS include the straight-line, 200% declining-balance, and 150% declining-balance methods. The IRS has also established three standard conventions that are used to determine the percentage of the annual depreciation allowed when equipment or property is placed in service or disposed of. They are the half-year convention, the midquarter convention, and the midmonth convention. A business owner may expense some equipment under Section 179 of the Internal Revenue Code without having to depreciate the equipment.

#### **Discussion Questions**

- 1. What is a depreciation schedule?
- **2.** Why would a company use the sum-of-the-year or declining-balance methods to calculate depreciation?
- **3.** How many years does it take to depreciate a piece of equipment with a five-year recovery period using MACRS? Why does this happen?
- **4.** How does calculating depreciation using the IRS tables, such as Table 6, differ from calculating depreciation using declining-balance method used in Example 3?
- **5.** How does Section 179 of the Internal Revenue Code affect depreciation?
- **6.** For the current tax year, what are the maximum Section 179 deductions and the amount where Section 179 begins to be phased out?
- **7.** What are some of the reasons for using a different depreciation method or recovery period for financial purposes than is used for tax purposes?

### **Problems**

**8.** A piece of equipment is purchased for \$110,000 and has an estimated salvage value of \$10,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the straight-line method with a recovery period of seven years.

- **9.** A piece of equipment is purchased for \$40,000 and has an estimated salvage value of \$1,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the straight-line method with a recovery period of five years.
- **10.** A piece of equipment is purchased for \$110,000 and has an estimated salvage value of \$10,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the sum-of-the-years method with a recovery period of seven years.
- 11. A piece of equipment is purchased for \$40,000 and has an estimated salvage value of \$1,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the sum-of-the-years method with a recovery period of five years.
- **12.** A piece of equipment is purchased for \$110,000 and has an estimated salvage value of \$10,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the 200% declining-balance method with a recovery period of seven years.
- 13. A piece of equipment is purchased for \$40,000 and has an estimated salvage value of \$1,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the 200% declining-balance method with a recovery period of five years.
- **14.** A piece of equipment is purchased for \$110,000 and has an estimated salvage value of \$10,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the 150% declining-balance method with a recovery period of seven years.
- **15.** A piece of equipment is purchased for \$40,000 and has an estimated salvage value of \$1,000 at the end of the recovery period. Prepare a depreciation schedule for the piece of equipment using the 150% declining-balance method with a recovery period of five years.
- **16.** Prepare a depreciation schedule to be used for tax purposes for a \$110,000 railroad spur (track) using the 200% declining-balance method and a half-year convention. Ignore any special depreciation allowances.
- 17. Prepare a depreciation schedule to be used for tax purposes for \$40,000 of computer equipment using the 150% declining-balance method and a half-year convention. Ignore any special depreciation allowances.
- 18. Prepare a depreciation schedule to be used for tax purposes for a \$110,000 railroad spur (track) using the 200% declining-balance method and the midquarter convention. The equipment was placed in service during the second quarter of the company's tax year. Ignore any special depreciation allowances.
- 19. Prepare a depreciation schedule to be used for tax purposes for \$40,000 of computer equipment using the 200% declining-balance method and a midquarter convention. The equipment was placed in service during the third quarter of the company's tax year. Ignore any special depreciation allowances.

- 20. Prepare a depreciation schedule to be used for tax purposes for a \$1,170,000 office building. The office building is placed in service in the fifth month of the company's tax year. The cost of the land is not included in the \$1,170,000. Ignore any special depreciation allowances.
- 21. Prepare a depreciation schedule to be used for tax purposes for a \$495,000 apartment building. The apartment building is placed in service in the ninth month of the company's tax year. The cost of the land is not included in the \$495,000. Ignore any special depreciation allowances.
- **22.** The truck in Example 4 was sold for \$4,000 at the end of the fifth year. What is the capital gain or loss on the sale of the truck?
- **23.** The truck in Example 4 was sold for \$12,000 at the end of the second year. What is the capital gain or loss on the sale of the truck?
- 24. In 2010, your company purchased a front-end loader for \$150,000, a dump truck for \$85,000, and a dumping trailer (pup) for the dump truck for \$38,000. The front-end loader was placed in service in April and the dump truck and dumping trailer were placed in service in July. In 2011, your company purchased three side-dump trailers for \$65,000 each and three tractors to pull the side-dump trailers for \$68,000 each, which were placed in service in May. In December of 2012, your company purchased a dump truck for \$87,000. Determine the depreciation allowed for tax purposes for the 2012 tax year. The tax year runs from January to December. Ignore all Section 179 deductions. *Hint:* The tractors have a different recovery period than the rest of the equipment.
- **25.** How would the depreciation in Problem 24 change if you include the Section 179 deductions? Use the limits for the 2010 tax year for all three tax years.
- **26.** Modify the spreadsheet in Sidebar 1 to handle recovery periods up to 10 years. Test your spreadsheet by entering the data from Example 1 and Problems 8 and 9. Compare your spreadsheet's solution to the answer to these problems. *Hint:* Use the IF function to discontinue the depreciation and book value at the end of the recovery period.

- 27. Modify the spreadsheet in Sidebar 2 to handle recovery periods up to 10 years. Test your spreadsheet by entering the data from Example 2 and Problems 10 and 11. Compare your spreadsheet's solution to the answer to these problems. *Hint:* Use the IF function to discontinue the depreciation and book value at the end of the recovery period.
- **28.** Modify the spreadsheet in Sidebar 3 to handle recovery periods up to 10 years. Test your spreadsheet by entering the data from Example 3 and Problems 12 through 15. Compare your spreadsheet's solution to the answer to these problems. *Hint:* Use the IF function to discontinue the depreciation and book value at the end of the recovery period.
- 29. Modify the spreadsheet in Sidebar 4 to handle 3-, 5-, 7-, and 10-year recovery periods using the depreciation rates for the 200% declining-balance method and the half-year convention (see Table 6). Test your spreadsheet by entering the data from Example 4 and Problem 16. Compare your spreadsheet's solution to the answer to these problems. *Hint:* Use the IF function to select the depreciation rate and discontinue the book value at the end of the recovery period.
- **30.** Prepare a spreadsheet to calculate the depreciation for residential (27.5-year recovery period) and commercial (39-year recovery period) real estate using the straight-line depreciation method. The spreadsheet should allow the user to select the month that the real estate is placed in service, with January being the first month. Use the percentages in Table 5 to determine the first year's depreciation. Test your spreadsheet by entering the data from Example 6 and Problems 20 and 21. Compare your spreadsheet's solution to the answer to these problems. *Hint:* Use the IF function to discontinue the depreciation and book value at the end of the recovery period and the VLOOKUP function to select the data from Table 5. (See Appendix B for more information on the VLOOKUP function.)

#### References

IRS, Instructions for Form 4562, 2010.

IRS publication 946, How to Depreciate Property, 2009.

CHART OF ACCOUNTS			
110	Cash	730	Repairs and Maintenance
120	Accounts Receivable-Trade	740	Fuel and Lubrication
121	Accounts Receivable-Retention	750	Taxes, Licenses, and Insurance
130	Inventory	798	Equipment Costs Charged to Employees
140	Costs and Profits in Excess of Billings	799	Equipment Costs Charged to Jobs
150	Notes Receivable		
155	Due From Construction Loans	805	Advertising
160	Prepaid Expenses	806	Promotion
199	Other Current Assets	810	Car and Truck Expenses
		811	Computer and Office Furniture
210	Building and Land	812	Repairs and Maintenance
220	Construction Equipment	819	Depreciation
230	Trucks and Autos	820	Employee Wages and Salaries
240	Office Equipment	821	Employee Benefits
250	Less Acc. Depreciation	822	Employee Retirement
260	Capital Leases	823	Employee Recruiting
299	Other Assets	824	Employee Training
		825	Employee Taxes
310	Accounts Payable-Trade	830	Insurance
311	Accounts Payable-Retention	835	Taxes and Licenses
320	Billings in Excess of Costs and Profits	840	Office Supplies
330	Notes Payable		Office Purchase
340	Accrued Payroll	842	Office Rent
341	Accrued Payables	843	Office Utilities
342	Accrued Taxes	844	Postage and Delivery
	Accrued Insurance	845	Janitorial and Cleaning
	Accrued Vacation	846	Telephone
	Capital Leases Payable		Charitable Contributions
	Warranty Reserves	855	Dues and Memberships
	Other Current Liabilities		Publications and Subscriptions
380	Long-Term Liabilities		Legal and Professional Services
			Meals and Entertainment
	Capital Stock		Travel
	Retained Earnings		Bank Fees
430	Current Period Net Income		Interest Expense
	_		Bad Debts
500	Revenue		Unallocated Labor
0			Unallocated Materials
	Materials		Warranty Expense
	Labor		Miscellaneous
	Subcontract	899	Overhead Charged to Jobs
	Equipment	040	Others Income
650	Other		Other Income
740	Dent and Lease Dayments		Other Expense
	Rent and Lease Payments	950	Income Tax
720	Depreciation		

**FIGURE A** Chart of Accounts

# ANALYSIS OF FINANCIAL STATEMENTS

## ANALYSIS OF FINANCIAL STATEMENTS

In this chapter you will learn to use financial ratios to analyze a company's financial statements, including comparing the company's ratios to industrial averages. This includes adapting commonly used ratios to the unique characteristics of the construction industry. Analysis of the financial statements helps the financial manager identify problems before they become a crisis. These problems may be life threatening to the company (such as realizing that the company will not be able to pay its bills in the upcoming months) or simple planning issues (such as identifying that the company's equipment is aging and that funds need to be set aside to replace this equipment in the next few years).

he most common tools used to track and measure a company's financial health are the company's balance sheet and the income statement. The financial health of a company is determined by not only the values shown on the financial statements but also the relationships among these values. These relationships are known as financial ratios. Good construction financial management includes monitoring the critical financial ratios and comparing them to other companies in the industry. In this chapter we look at ratios that are commonly used to measure the performance of a company, regardless of its industrial segment. Where necessary, these ratios are adapted to the unique characteristics found in the construction industry. We also look at recommended target ratios for the construction industry.

Analysis of financial statements is done by dividing one category or group of categories on the company's financial statements by another category or group of categories on the company's financial statements. By making this calculation, we create a ratio that can be compared to other companies within the industry. These ratios represent the relationship between the two categories or among groups of categories and are often expressed as the ratio to 1, as in 2.00 to 1. At other times the ratios are expressed as a percentage or may represent the number of times an event occurs during a period, such as the number of times a company turns over working capital during the year. These ratios can provide insights into a company's ability to pay bills, how efficiently

it uses its financial resources, profitability, and the capital structure of the company.

When calculating ratios that include categories on the income statement and categories on the balance sheet, one must use the average balance for the categories from the balance sheet rather than the ending balance. This is necessary because the income statement represents all transactions between two points in time, whereas the balance sheet represents the separate points in time. The most common method of obtaining the average balance for a category on the balance sheet is to take the average of the balance of the category at the beginning of the period represented by the income statement and the balance of the category at the end of the period represented by the income statement.

Sometimes the amounts reported on the balance sheet at the beginning and ending of the year are not representative of the average balance for the year. This is the case for excavation companies whose fiscal year is the same as the calendar year and who shut down for the winter months because of poor working conditions. While the company is shut down, its accounts receivable and accounts payable are significantly lower than they were during the construction season, as are many other accounts on the balance sheet. To get a more accurate picture of the company's financial health, one should use the average monthly balance for the accounts. The average monthly balance is calculated as follows:

Average = 
$$\frac{A_1}{24} + \frac{A_2}{12} + \frac{A_3}{12} + \cdots + \frac{A_{11}}{12} + \frac{A_{12}}{12} + \frac{A_{13}}{24}$$
 (1)

where

 $A_1$  through  $A_{12}$  = Amounts at the beginning of the 12 months during the year

 $A_{13}$  = Amount at the beginning of the next year or end of this year

As ratios are discussed, when data is available, typical ratios for construction companies in the single-family residence, commercial, heavy and highway, and specialty trades sectors are given. This data is based on the data from financial statements for over 125,000 companies for the years 1996 through 2005 as reported by Dun & Bradstreet, Inc. <sup>1</sup> Data is also published by the Risk Management Association,

<sup>&</sup>lt;sup>1</sup>Dun & Bradstreet, Inc., *Industrial Norms and Key Business Ratios One Year—Desk Top Edition SIC #0100-8999*, years 1997 through 2006.

Standard and Poor's, Robert Morris Associates, and others. When comparing ratios to industrial averages, companies should obtain current data for their sector of the construction industry.

The data reported includes a typical median and a typical range for the years studied. The median is the point where half of the companies are above the median and half are below the median, which should not be confused with the average or mean. The typical range is based on the upper and lower quartiles and represents the range of values into which half of the construction companies fall, with 25% of the companies performing above and 25% performing below the range.

Single-family residential includes construction of new single-family homes and remodels, repairs, and additions to single-family homes performed by construction companies. Single-family residential excludes the construction of single-family homes built by speculative builders and developers.<sup>2</sup>

Commercial<sup>3</sup> construction includes the construction of multifamily housing, hotels, industrial buildings, warehouses, and other commercial construction by construction companies. Commercial construction excludes construction projects built by developers. Data on more specific classes of commercial construction is available from Dun & Bradstreet, Inc., as well as other sources.

Heavy and highway construction<sup>4</sup> includes the construction of streets, highways, elevated highways, bridges, tunnels, water lines, sewers, pipelines, communications, and power lines. Data on specific classes of heavy and highway construction is available from Dun & Bradstreet, Inc., as well as other sources.

Specialty trades<sup>5</sup> includes most subcontractor work and the following specific classes of specialty trades: plumbing, heating, and air-conditioning; paint and paper hanging; electrical work; masonry, stone setting, and other stonework; plastering, drywall, acoustical, and insulation work; terrazzo, tile, marble, and mosaic work; carpentry work; floor laying and other floor work not elsewhere classified; roofing, siding, and sheet metal work; concrete work; water well drilling; structural steel erection; glass and glazing work; excavation work; wrecking and demolition work; installing or erecting building equipment not elsewhere classified; and specialty trade not elsewhere classified. Data on specific classes of specialty trades is available from Dun & Bradstreet, Inc., as well as other sources.

## DEPRECIATION AND FINANCIAL ANALYSIS

There are a variety of ways a company may depreciate a piece of equipment. When preparing financial statements, the depreciation method used should

be the method that best matches the equipment's actual loss in value. When the depreciation method used differs greatly from the actual loss in value, the depreciation of the fixed assets is over- or understated in the financial statements. When the depreciation is overstated or understated, the net fixed assets are understated or overstated, as well as the total assets and owners' equity. For example, let's look at a small company that purchases only one piece of depreciable equipment during the year for \$300,000. The purchase takes place during the eighth month of the 2010 tax year and the company pays cash for the equipment. By using the Section 179 deduction, the company depreciates \$250,000 of the cost of the equipment, or 83% of the purchase price, in 2010. The actual depreciation of the equipment is closer to 10% for this four-month period. If the company were to use the depreciation calculated for tax purposes, the depreciation on the income statement would be overstated by about \$220,000, whereas the net fixed assets, total assets, and owner's equity would be understated by about \$220,000. For a small company, this would be a significant change in its financial statements.

Because the depreciation method can have a great impact on the financial statements, it is important to know which depreciation method is being used. When looking at financial ratios, any ratio that includes depreciation, net fixed assets, total assets, or owners' equity is affected by the depreciation method used when preparing the financial statements. In this chapter, eight of the financial ratios include depreciation, net fixed assets, total assets, or owners' equity in the calculations. They are current liabilities to net worth ratio, debt to equity ratio, fixed assets to net worth ratio, current assets to total assets ratio, assets to revenues ratio, return on assets, return on equity, and the degree of fixed asset newness.

#### **QUICK RATIO**

The quick ratio is a measurement of a company's ability to pay current (short-term) liabilities with cash or other near cash assets—assets that can quickly be turned into cash. The quick ratio may also be referred to as the acid test ratio. The quick ratio is calculated as follows:

Quick Ratio = 
$$\frac{Cash + Accounts Receivable}{Current Liabilities}$$
(2)

When calculating the quick ratio, a company should not include accounts receivable in the form of retention because often retention cannot be converted to cash quickly. Similarly, accounts receivable that are unlikely to be collected—often recorded as an allowance for bad debt—should not be included in the accounts receivable.

A company with a quick ratio of 1.00 to 1 or greater is considered liquid. A company with a ratio below 1.00 to 1 will need to convert inventory, notes receivable, other current or long-term assets to cash or raise cash through debt or equity financing to pay its current liabilities. A ratio greater

<sup>&</sup>lt;sup>2</sup>Includes all of U.S. Standard Industrial Classification (SIC) 1521.

<sup>&</sup>lt;sup>3</sup>Weighted average for SIC 1522, 1541, and 1542.

<sup>&</sup>lt;sup>4</sup>Includes all of SIC 16.

<sup>&</sup>lt;sup>5</sup>Includes all of SIC 17.