Construction Accounting and Financial Management 3rd Edition Peterson Solutions Manual
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INSTRUCTOR'S MANUAL

TO ACCOMPANY

CONSTRUCTION ACCOUNTING AND FINANCIAL MANAGEMENT

THIRD EDITION

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ISBN-13: 978-0-13-267578-9
ISBN-10: 0-13-267578-1

Contents

New For the Third Edition

There are four major changes to the textbook for the third edition and numerous minor changes. The major changes include:

- The equations have been stacked to make them easier to read.
- Discussion questions have been added to the end of each chapter.
- The tax information has been updated.
- A figure has been added for each accounting transaction in Chapter 3 showing how a balance is maintained between the balance sheet, income statement, job cost ledger, and the equipment ledger.

The Instructor's Manual includes a list of learning objectives, instructional hints, suggested activities, and resources for each chapter. Bmp files for the figures and doc files for the tables in the textbook are now found on the companion website. It is my hope that these additional resources will make it easier for course instructors to teach the material in a meaningful manner. Because the courses that use this textbook are quite diverse, it is impossible to organize the chapters into one best order. Each instructor should consider his or her individual program and determine which chapters need to be taught and in what order.

Best wishes,

Steven Peterson, MBA, PE

Chapter 1: Construction Financial Management

Learning Objectives

At the completion of this chapter the student should be able to:

- Explain why financial management is so important to a construction company.
- Explain why financial management is different for construction companies that for most other industries.
- Understand that all managerial employees from the owner to the crew foreperson play a role in financial management of a construction company.

Instructional Hints

- Compare a construction company to a manufacturing plant. Emphasis the differences between a construction company and a manufacturing plant, particularly: construction companies build unique products and the equipment is not usually stationary at single location. These are the reasons a construction company needs a job cost system and an equipment cost system.

Activities

- Invite a financial manager (for example, an accountant or general manager) from a construction company to your class to discuss their role as a financial manager.
- Have each student interview a management employee for a construction company. The interviews should include owners, project managers, superintendents, and forepersons. Each student is to find out how the employee contributes to the financial management of the company. Discuss their findings in class.

Instruction Resources

- The figure from this chapter in electronic format can be found in companion website.
- Data on construction failures can be obtained from the Surety Information Office (www.sio.org).

Solutions to the Textbook Problems

1. They are: 1) ineffective financial management systems, 2) bank line of credits constantly borrowed to the limits, 3) poor estimating and/or job cost reporting, 4) poor project management, 5) no comprehensive business plan, and 6) communications problems.
2. Anyone who controls financial resources (cash, materials, labor, and equipment) including: owners, general managers, project managers, estimators, superintendents, and crew forepersons.
3. The way construction companies do business is very different than most companies. The reasons for this include: 1) for many construction companies, their entire product consists of one of a kind construction projects; 2) their projects occurs at different locations each time; 3) they receive progress payments from which retention is withheld; and 4) they rely heavily on subcontractors to perform the work.
4. Accounting for financial resources include: 1) tracking project and general overhead costs, 2) ensuring that a proper construction accounting system has been set up and is operating properly, 3) tracking committed costs and projecting the project costs at completion, 4) calculating under and over billings,

5) preparing financial statements, and 6) managing the company's finances so that the financial ratios are in line with the rest of the industry.

5. Managing costs and profits include: 1) controlling project costs, 2) monitoring and projecting profitability, 3) setting and managing labor burden markups, 4) managing overhead, 5) setting profit margins, and 6) monitor the profitability of individual customers.

6. Managing cash flows include: 1) matching the use of subcontractor and in-house labor to available cash, 2) making sure that sufficient cash is available to take on additional projects, 3) preparing income tax projections, 4) preparing annual cash flow projections, and 5) arranging for financing.

7. Construction managers must select where to invest the company's resources and select the most economical construction equipment to use.

8. The answer to this question will vary from student to student.

Chapter 2: Construction Accounting Systems

Learning Objectives

At the completion of this chapter the student should be able to:

- Explain the difference between cost reporting and cost control and identify the characteristics of an accounting system that is used for cost control.
- Explain how percentage of completion accounting is different from cash or accrual.
- Explain the relationships that must be maintained between the balance sheet, income statement, the job cost ledger, and the equipment ledger.
- Explain why retention is tracked separately from accounts receivable and accounts payable.
- Explain how over and under billings are represented on the balance sheet.
- Explain why equipment costs are recorded to a separate section on the income statement and then allocated to jobs rather than being charged directly to a job.
- Explain the purpose of the job cost ledger.
- Explain what factors should be taken into account when developing a job cost coding system.

Instructional Hints

- Help the students understand that even though most of them will never be accountants for a construction company, they may become owners or general managers of construction companies. One of the duties of an owner or general manager is to ensure that the company has an appropriate construction accounting system. To do this they must have an understanding of how the construction accounting system operates.

Activities

- Bring in sample financial statements from construction companies. Compare and contrast the financial statements to each other and those in the book. Discuss why there are differences in the accounting systems. Explain that the differences allow the companies to adapt the accounting system to the financial needs of the individual companies.
- Bring in sample job cost codes for a residential construction company, a commercial contractor, and a heavy/highway contractor. Discuss the differences between the ways each company the approached job cost coding.

Instruction Resources

- The figures and tables from this chapter in electronic format can be found in companion website.
- Financial statements for publicly held companies can be found at: http://sec.gov/edgar/searchedgar/webusers.htm
- Construction Contractors — AICPA Audit and Accounting Guide published by the American Institute of Certified Public Accountants

Solutions to the Textbook Problems

1. Processes the cash receipts and disbursements; collects and reports the data needed to prepare company financial statements; collects and reports the data needed to prepare income taxes, employment taxes, and other documents required by the government; and collects and provides the data needed to manage the finances of the company.

2. Cost reporting is where the accounting system provides management with the accounting data after the opportunity has passed for management to respond to and correct the problems indicated by the data. Cost control is where the accounting system provides management with the accounting data in time for management to analyze the data and make corrections in a timely manner.

3. Strong job cost and equipment tracking system, utilizes the principal of management by exception, has established accounting procedures to ensure that things do not fall through the cracks, and the data must be easily and quickly available to management and other employees who are directly responsible for controlling costs.

4. General ledger consists of all of the accounts necessary to track the financial data needed to prepare the balance sheet, income statement, and income taxes. The job cost ledger tracks the costs for each project as well as individual components within each of the projects. The equipment ledger tracks costs for individual pieces of equipment.

5. The chart of accounts contains all the accounts that comprise the general ledger—the balance sheet and income statement. On the general ledger the accounts for the balance sheet appear before the accounts for the income statement.

6. Under the cash method of accounting, revenue is recognized when the payment from the owner is received and expenses are recognized when bills are paid.

   Under the accrual method, revenues—except retention—are recognized when the company bills the project's owners; and expenses—except retention withheld—are recognized when the company receives a bill from the supplier or subcontractors.

   The percentage of completion method requires construction companies to recognize revenues, expenses, and estimated profits on a construction project through the course of the project. The estimated profits must be equally distributed over the entire project based on the expected cost of the project. Revenues are recognized when the company bills the project's owners and expenses are recognized when the company receives a bill from the supplier or subcontractors.

   Under the completed contract method, revenues and expenses are recognized at the completion of the project.

7. There are three relationships that must be maintained:

   On the balance sheet the sum of the asset accounts must equal the sum of the liability and the equity accounts.

   On the income statement the profit for the period must equal the total revenue for the period—including other income—less the sum of the expenses including all construction costs, equipment costs, overhead costs, other expenses, and income tax.

   The profit on the income statement for any period must equal the change in equity on the balance sheet for that same period.

8. There are two relationships that must be maintained:

   If revenue is recorded on the job cost ledger, the total of the revenue on the job cost ledger must equal the revenue from the core business—exclusive of interest received and other income—on the income statement for a specific period of time.

The total in each of the five subcategories—labor, material, equipment, subcontract, and other—on the job cost ledger must equal the construction costs on the general ledger in the associated account for any given period.

9. There are two relationships that must be maintained:

   The total of the costs allocated to jobs on the equipment ledger must be equal to the equipment contra accounts on the income statement for a specific period.

   The costs on the equipment ledger must equal the total of the equipment cost on the income statement—exclusive of the contra accounts—for a specific period.

10. The invoice is a subcontractor's invoice for countertop on phase 2 of job 102.

11. There is no set answer for this problem.

12. There is no set answer for this problem.

Table 2-1 Loader Costs

Month	Monthly Costs ($)	Hourly Costs ($)	Tires ($)	Billable Hours by Job	Average Hourly Cost ($)
January	3,200	0	0	0	?
February	3,200	0	0	0	?
March	3,200	0	0	0	?
April	3,200	2,800	6,000	80 hr on Job 101	150.00
May	3,200	6,300	0	80 hr on Job 101 100 hr on Job 102	52.78
June	3,200	6,300	0	180 hr on Job 102	52.78
July	3,200	6,300	0	180 hr on Job 102	52.78
August	3,200	6,300	0	180 hr on Job 102	52.78
September	3,200	6,300	0	180 hr on Job 102	52.78
October	3,200	1,400	0	40 hr on Job 102	115.00
November	3,200	0	0	0	?
December	3,200	0	0	0	?

KEY EQUATIONS FROM

CONSTRUCTION ACCOUNTING AND FINANCIAL MANAGEMENT

Assets = Liabilities + Equity (2-1)

$$R_m = \frac{1}{N} \tag{5-1}$$

$$D_m = \left(P - F\right) R_m \tag{5-2}$$

$$D_m = \frac{\left(P - F\right)}{N} \tag{5-3}$$

$$BV_m = P - m\left(D_m\right) \tag{5-4}$$

$$BV_m = BV_{m-1} - D_m \tag{5-5}$$

$$R_m = \frac{\left(N - m + 1\right)}{SOY} \tag{5-6}$$

$$SOY = \frac{N\left(N + 1\right)}{2} \tag{5-7}$$

$$D_m = \left(P - F\right) R_m \tag{5-8}$$

$$D_m = \left(P - F\right) \frac{\left(N - m + 1\right)}{SOY} \tag{5-9}$$

$$BV_m = P - \left(P - F\right) \frac{m\left(N - m/2 + 0.5\right)}{SOY} \tag{5-10}$$

$$BV_m = BV_{m-1} - D_m \tag{5-11}$$

$$R_m = \frac{2.00}{N} \text{ for 200\% declining-balance} \tag{5-12}$$

$$R_m = \frac{1.50}{N} \text{ for 150\% declining-balance} \tag{5-13}$$

$$D_m = (BV_{m-1})R_m \tag{5-14}$$

$BV_m = P(1 - R_m)^m$ provided that $BV_m \geq F$ and m is a whole number (5-15)

$$BV_m = BV_{m-1} - D_m \text{ provided that } BV_m \geq F \tag{5-16}$$

$$\text{Average} = \frac{A_1}{24} + \frac{A_2}{12} + \frac{A_3}{12} + \cdots + \frac{A_{11}}{12} + \frac{A_{12}}{12} + \frac{A_{13}}{24} \tag{6-1}$$

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Accounts Receivable}}{\text{Current Liabilities}} \tag{6-2}$$

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \tag{6-3}$$

$$\text{Current Liabilities to Net Worth} = \frac{\text{Current Liabilities}}{\text{Net Worth}} \tag{6-4}$$

$$\text{Debt to Equity} = \frac{\text{Total Liabilities}}{\text{Net Worth}} \tag{6-5}$$

$$\text{Fixed Assets to Net Worth} = \frac{\text{Net Fixed Assets}}{\text{Net Worth}} \tag{6-6}$$

$$\text{Current Assets to Total Assets} = \frac{\text{Current Assets}}{\text{Total Assets}} \tag{6-7}$$

$$\text{Collection Period} = \frac{\text{Accounts Receivable} \times 365}{\text{Revenues}} \tag{6-8}$$

$$\text{Receivable Turns} = \frac{365}{\text{Collection Period}} \tag{6-9}$$

$$\text{Average Age of Accounts Payable} = \frac{\text{Accounts Payable} \times 365}{\text{Materials} + \text{Subcontract}} \quad (6\text{-}10)$$

$$\text{Payable Turns} = \frac{365}{\text{Average Age of Accounts Payable}} \quad (6\text{-}11)$$

$$\text{Assets to Revenues} = \frac{\text{Total Assets}}{\text{Revenues}} \quad (6\text{-}12)$$

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities} \quad (6\text{-}13)$$

$$\text{Working Capital Turns} = \frac{\text{Revenues}}{\text{Working Capital}} \quad (6\text{-}14)$$

$$\text{Working Capital Turns} = \frac{\text{Revenues} - \text{Subcontractor}}{\text{Working Capital}} \quad (6\text{-}15)$$

$$\text{Accounts Payable to Revenues} = \frac{\text{Accounts Payable}}{\text{Revenues}} \quad (6\text{-}16)$$

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Revenues}} \quad (6\text{-}17)$$

$$\text{General Overhead} = \frac{\text{General Overhead}}{\text{Revenues}} \quad (6\text{-}18)$$

$$\text{Pretax Profit Margin} = \frac{\text{Net Profit Before Taxes}}{\text{Revenues}} \quad (6\text{-}19)$$

$$\text{After-Tax Profit Margin} = \frac{\text{Net Profit After Taxes}}{\text{Revenues}} \quad (6\text{-}20)$$

$$\text{Return on Assets} = \frac{\text{Net Profit After Taxes}}{\text{Total Assets}} \quad (6\text{-}21)$$

$$\text{Pretax Return on Equity} = \frac{\text{Net Profit Before Taxes}}{\text{Equity}} \quad (6\text{-}22)$$

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