

Instructor's Manual

to Accompany

**COST ACCOUNTING AND
FINANCIAL MANAGEMENT FOR
CONSTRUCTION
PROJECT MANAGERS**

First Edition

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Introduction to the Instructor's Manual

1. Origins of Book

Thank you for choosing *Cost Accounting and Financial Management for Construction Project Managers* as your teaching tool. Before I provide some suggestions regarding its use in your classroom, I thought it might be appropriate to provide some background on its development. I felt that there were a few gaps in available teaching materials for construction management (CM) cost accounting courses. Almost all CM programs have a cost accounting course and many programs and courses choose an accounting book which is heavily home office and chief financial officer (CFO) biased and then use only limited portions of it which places a financial burden on the students. This book was developed with the student's limited budget in mind such that the student could use the whole book and feel they received their money's worth.

Students who take cost accounting within a CM or civil engineering (CE) program will likely begin their professional careers as construction project engineers (PEs), whether that is in the civil, commercial, or residential industry sectors, and hope to become PMs in 5-7-10 years later. Very few if any aspire to become CFO's. They may eventually become chief executive officers (CEO's) or other types of corporate officers or equity partners in construction companies, but their future is not in the accounting department. Although the book connects with home office accounting activities at every turn, its focus is on the accounting and financial responsibilities of the jobsite team and performed at the jobsite. Accounting is connected, rather than separated, from other project management activities; especially everything financially based is covered here. This book therefore bridges these gaps and is well-suited for sophomore, junior or senior students and entry-level project engineers.

An additional gap the book bridges is that between academic or theoretical and industry or practical. Many construction professionals input to these topics, reviewed chapter drafts, provided backup to figures, and even presented early lectures to test-drive the material. These contractors, accountants, and industry vendors have put their stamp of approval on the content. Individual contributors are noted in the text preface.

2. Organization of Text

Each chapter has a similar organization. Topics are first introduced in general terms, and then individual issues are discussed in detail and illustrated. In Chapter 1, I introduce the reader to a specific construction project that is used as a case study and connects to example documents and exercises woven through the text. In addition to the case study, other examples are 'boxed' in within many of the chapters from my professional construction career that help emphasize many of the financial points. Each chapter concludes with a set of review questions that emphasize the major points covered. These questions also are suitable for use in the development of quizzes or tests. Exercises are also provided to allow students to apply the principles learned, many of which are based on the project case study, but any construction management or construction engineering program or course could customize or substitute their own quarter or program-long

case study where applicable. The exercises would work great as homework assignments or in-class group exercises. Many of the applied exercises require math and spreadsheet development for resolution. Answers to all the review questions and many of the exercises are contained in this instructor's manual. The answers to the review questions should mimic the book as close as possible.

Some of the answers to the exercises require outside research or additional construction experience and some of them allow for personal opinions. Some math-based exercises have been accompanied with spreadsheet solutions in this manual. If there are additional applied exercises I did not provide solutions for, and you would like to use, please send me a note and I will work one up.

There is a companion website for the textbook with two levels of access. The first is open to all students and instructors and includes many expanded figures such as detailed estimates and detailed schedules for the case study project. An entry code, available from Routledge, allows instructors' access to this instructor's manual, with answers to the book's review questions and many of the exercises, as well as basic lecture slides for each chapter, over 670 total. These slides can be customized to fit any specific program, course, or instructor's preference.

3. Suggested Classroom Use

The book is suitable as a text for a construction cost accounting or civil engineering cost accounting course or an introduction to many construction financial management topics, particularly at the jobsite level. The instructor may choose to use the exercises and the case study as a context for assigning student work, or may choose to use a separate project, as we do at the University of Washington.

Web-based project management techniques could be used and students required to use electronic formats for submitting their work. All of the exercises from the text could be slightly modified with a different case study and/or changing the timeframes or dollars slightly, yielding unlimited possibilities for homework or in-class examples. Case studies can be used to supplement the information contained in the text. Several case studies from the third edition of "Who Done It? 101 Case Studies in Construction Management", an inexpensive accompaniment book available on Amazon/Create Space, are provided at the end of this instructor's manual that can be used for additional classroom discussion. This book is now being re-published through Routledge under its original title, "101 Case Studies in Construction Management" and will be available late 2018.

I have likely provided more material than can be presented in one quarter course. The provision of additional advanced financial management chapters towards the back of the book also bridges a gap for programs that use a two-quarter long introductory course or a semester course. These last few advanced chapters also support programs which have more-advanced students who may have already served an industry internship. If introductory construction management and estimating courses are being offered in parallel to, or proceeding, a cost accounting course, chapters 3 and 4 may be omitted. Some of the construction management chapters may be

eliminated to make it more of a pure cost accounting book and conversely some of the accounting chapters may be eliminated to make it more of a construction management or project management book. There are many other ways to customize a course and use this textbook for the creative instructor.

Author Feedback

This manual provides answers to the review questions and selected exercises. I have carefully checked these answers, but would welcome any feedback or comments regarding them or any other aspect of the text. Please feel free to contact me via email (Len Holm: holmcon@aol.com) or the publisher, Routledge. I hope you and your students find the book an effective educational resource. I have enjoyed creating it.

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Answers to Review Questions and Selected Exercises

Chapter 1

Introduction

Review Questions:

1. Why do we as project managers and project engineers need to know about accounting at the
a) home office and/or b) at the jobsite?
a) Home office: HOOH is included in fee and fee is a jobsite responsibility; The home office supports the jobsite with financial topics and reports and also requires financial reporting from the jobsite team
b) Jobsite: Project managers are responsible for all jobsite operations, including cost accounting and financial management
2. Which is the number one sign a contractor may be experiencing financial difficulties?
A: The first and most common sign that financial difficulties may be boding is the lack of a good financial management plan or system.
3. Of the construction company types discussed, which would most likely build:
 - a. A golf course, A: Civil
 - b. The golf course clubhouse, A: Commercial
 - c. The home for the golf professional adjacent to the 18th tee box? A: Residential

Exercises

2. Look ahead to Chapter 3's discussion of construction phases and Chapter 8's discussion of the cost cycle and compare those phases or steps with those of the accounting cycle in this chapter. There should be many overlaps.
A: See separate spreadsheet. See also Exercise 3.6
3. What is the difference between cost 'control' and cost 'management'? You may have to look forward for this one as well.
A: You cannot 'control' people, you can manage them by giving them adequate materials, tools, drawings, estimates, time, etc. to help them achieve success
4. Other than the reasons given above, why might a contractor choose to bid a project?
A: Want to gain access to a new market segment or geographical area; Experience with the project owner and/or designer; Easy project; Well-designed project; Need backlog; Unfortunately they may pursue it for the opposite reasons and see potential of change orders
5. Other than the signs given above, how might you notice a contractor, or subcontractor, is suffering financial difficulties?
A: Excessive material men's notices, pre-lien notices, request early payments, offer substantial discounts for early payments, request cash payments, reduction of personnel
7. Without looking at the organization chart on the companion website, draw one for the case study project from the information given above. You may want to thumb through the rest of the text for additional personnel and company names. After you are done, check it with the website. Did we forget anybody?
A: See separate org chart. See also Exercise 3.2

Chapter 2

Accounting Methods

Review Questions:

1. What is the difference between a C corporation and an S corporation?
A: C Corp is larger
2. What is the difference between a CEO and a CFO?
A: CEO is the boss, CFO is the financial manager who reports to the CEO
3. Why would a construction company want to perform accounting operations out of the home office?
A: Small projects, lump sum, closed book, more resources available
4. Why would a construction company want to perform accounting operations at the jobsite?
A: Cost-reimbursable project, out of town, complicated, open book, accounting is cost-reimbursable
5. What is a CPA? Is this a person or a company?
A: Can be a person or a company or more likely a person within an accounting company, they are licensed and certified, impartial
6. Why would a contractor employ the services of an outside CPA versus an internal bookkeeper?
A: Construction is project biased and each team needs to make a profit (might affect honest reporting) 2. To ensure that jobsite and home office teams are properly managing the corporation's money 3. To audit their own books for internal reporting as well as prepare tax reports
7. Who might the PM report to other than a CEO?
A: SPM, COO, VP of operations; Rarely the superintendent
8. What type of construction firm ownership structures are subject to double taxation?
A: C corp
9. What is the difference between a general and a limited partner?
A: G: financially responsible, L: no financial exposure beyond initial investment, no say in business operations
10. List at least two other staff positions in the home office beyond those provided in this chapter.
A: Receptionist, secretary, warehouse staff, marketing staff, in-house equipment coordinator, senior PMs, VPs, IT, HR, in-house legal

Exercises

1. Why do you feel a speculative home builder does not carry 50 completed homes in inventory?
A: Risk, too far leveraged, cannot negotiate with buyers, heavy interest on construction loan, potential changes in market
2. Other than the examples given above, what other industries are drastically different than construction?
A: Farming, food processing, energy providers, banking
3. What industries are similar to construction?
A: Film making and others
4. List another reason that the construction industry is different than other industries.
A: There will never be two identical construction projects with the same client, architect, general contractor, subcontractors, building sites, etc. B) Construction is job based or project oriented. Each project is managed independently and is considered a separate profit source C) Other industries are product based, not project based, and provide repeat products. i.e., pizza or cars. D) In construction each project is unique E) Each construction project utilizes thousands of variable parts and materials F) Construction projects are decentralized. Each project is built on a different site in a different location. G) Each project utilizes different construction equipment and is built with a different workforce H) The construction industry experiences irregular cash flow situations I) Construction projects have long term contracts
6. Not discussed in this text, but what items on a construction project might be vulnerable to external theft?
A: Tools, copper pipe and wire, light fixtures, plumbing fixtures, fire extinguishers, etc.
7. Construction CFOs are officers and often part-owners of the company. Why do you think that is?
A: They know where the \$ are, want them to have 'skin-in-the-game'
8. This author's construction consulting business is a sole-proprietorship and utilizes the cash accounting method. Why do you think he made those choices?
A: It was the easiest and allowed the most flexibility at the end of the year to move expenses either forward in a good year, or back in a bad year, and move income in the opposite directions
9. Compare the four primary methods of construction accounting discussed in this chapter and compute the reported revenue, expenses, and income or profit for each, for a contractor which has only one project for the whole year as reflected below. Assume January 1 through December 31 fiscal periods. Ignore any retention or tax considerations for this exercise. The reporting date is 12/31/2019.
 - Contract volume of \$1million
 - Included in the contract value is a 5% fee
 - \$500,000 was invoiced and received as of 11/30/19
 - All invoice values include a proportional share of fee
 - An additional \$100,000 is invoiced as of 12/31/19 due 1/10/2020
 - \$450,000 has been paid by the GC in labor, material and subcontractor expenses through 12/15/19