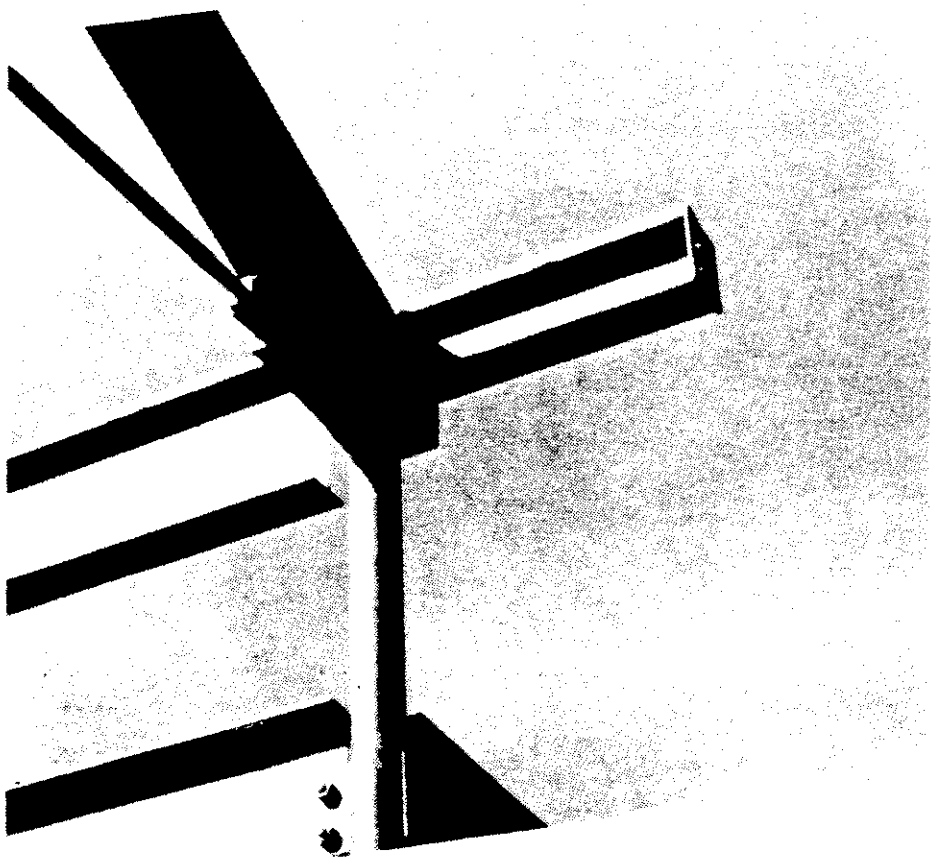
TECHNICAL PUBLICATION NO. 87

CONTRACTOR FINANCIAL MANAGEMENT AND CONSTRUCTION PRODUCTIVITY IMPROVEMENT
- PHASE I -
VOLUME I - CONTRACTOR FINANCIAL MANAGEMENT

SPONSORED BY A GRANT FROM THE BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE



By: Dr. Carleton Coulter, III
Mr. Charles A. Kelley

School of Building Construction
University of Florida
1992

WORKSHOP FOR THE SMALL-TO-MEDIUM SIZE CONTRACTOR

R 89-14 REVISED

CONTRACTOR FINANCIAL MANAGEMENT AND

CONSTRUCTION PRODUCTIVITY IMPROVEMENT - PHASE I

VOLUME I - CONTRACTOR FINANCIAL MANAGEMENT

PREPARED BY

DR. CARLETON COULTER III, PROFESSOR
PRINCIPAL INVESTIGATOR

AND

MR. CHARLES A. KELLEY
CO-INVESTIGATOR AND GRADUATE RESEARCH ASSISTANT

M.E. RINKER, SR. SCHOOL OF BUILDING CONSTRUCTION
UNIVERSITY OF FLORIDA (FAC 110)
GAINESVILLE, FLORIDA 32611

SPONSORED BY

FLORIDA BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE

FALL 1992

BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE (BCIAC)

Mr. William Conway
BCIAC Chairman

Mr. Mel A. Bryan
President
Devcon Group

Mr. Donald R. Dolan
Executive Vice President
Mechanical Contractors
Association of South Florida

Mr. Deane Ellis
President
Florida Air Conditioning
Contractors Association

Mr. Joseph Holland, III
Consultant
Daytona Beach, Florida

Mr. Harold Johnson
Owner
Winter Garden, Florida

Mr. Thomas Mack
State Director
Florida Home Builders Association

Mr. John C. Pistorino
President,
Pistorino & Alam
Consulting Engineers, Inc.

Mr. Bruce Simpson
Vice Chairman of the Board
The Crom Corporation

Mr. Russell P. Smith
President
The Plumbing Experts, Inc.

Mr. Clifford I. Storm
Director
The Broward County Board
of Rules and Appeals

Mr. Warren M. Sutton
President
Universal Diversified
Enterprises, Inc.

Mrs. Celeste K. Valdez
Vice President
Kalemeris Construction

Ex-Officio Member

The Honorable Wm. Cecil Golden
Deputy Commissioner
Florida Department of Education

Staff

Dr. Brisbane H. Brown, Jr.
Executive Secretary
University of Florida

Ms. Patty Wood
Sr. Secretary
University of Florida

EXECUTIVE SUMMARY

This short course is one of four workshops recommended for funding by the Florida Building Construction Industry Advisory Committee (BCIAC) to the State of Florida Commissioner of Education. Funds come from the set aside of the contractor's licensing fee for research and continuing education.

The BCIAC recommended development of four courses to constitute a continuing education program for the small and medium contractor. The courses are: (1) Construction Productivity Improvement, (2) Safety and Loss Control, (3) Change Order Estimating and Control, and (4) Contractor Financial Management.

Intent

The courses are intended to be taught on a regular basis by institutions eligible for BCIAC continuing education funding. Contractor associations, especially smaller chapters in conjunction with community colleges, can use the BCIAC materials to improve member education.

Scope

The table of contents provides details on the course's scope. Each course consists of a course manual and a video tape. The manual's main components are an introduction, each hour's instructional materials with case study problems and solutions, blank forms, and notes for the instructor, including lesson plans.

A brief but thorough video segment introduces the course and each lesson's important items. The video is intended to supplement the course instructor or moderator. As a minimum, a moderator is necessary for soliciting student comments and reviewing each hour's problems and solutions.

Methodology

The courses were developed in three phases over the following academic periods.

Precontract Phase (Summer 1990 - Spring 1991). During the recontract phase, a tentative course outline was prepared. Contact was made with small and medium contractors in Boca Raton, Gainesville, Jacksonville, Orlando, Sarasota, Tampa, Vero Beach, and West Palm Beach to ascertain their needs and ideas for inclusion in the course. Graduate Research Assistants (GRA) reviewed the literature and prepared preliminary course material.

Research Phase (Summer 1991 - Fall 1991). During the research phase, contractors were recontacted on specific questions and additional suggestions were solicited and the material revised. The format is similar to the continuing education courses of the Construction Industry Institute (CII). The materials were field tested at the Continuing Education Division, University of Florida and the Florida East Coast Chapter of Associated General Contractors of America, Inc.

Development Phase (Spring 1992 - Fall 1992). During the development phase, the research materials, including a supporting video tape, were completed and reviewed by the BCIAC.

Investigators

The principal investigator was Dr. Carleton Coulter III, Professor, M.E. Rinker, Sr. School of Building Construction, University of Florida. The co-investigator was Charles A. Kelley. Graduate students developing course materials were: Mark Meeske, Construction Productivity Improvement; John V. Ward, Jr., Safety and Loss Control; William Clark, Change Order Processing and Control; and Charles A. Kelley, Contractor Financial Management.

Acknowledgements

Appreciation is expressed to the BCIAC coordinators who freely gave of their time to review the materials and suggest improvements. BCIAC coordinators for the course materials were: Bruce Simpson (Vice Chairman of the Board, The Crom Corporation) for Construction Productivity Improvement, Safety and Loss Control, and Contractor Financial Management; and Mr. Thomas Mack (State Director, Florida Home Builders Association), Mr. Clifford Storm (Director, The Broward County Board of Rules and Appeals), and Mrs. Celeste Valdez (Vice President, Kalemeris Construction, Inc.) for Change Order Processing and Control. Forms are courtesy of JAC Construction Consultants, Palm Beach Gardens, Florida.

Obtaining Copies

A copy of this report and accompanying video may be obtained by contacting: Executive Secretary, BCIAC, M.E. Rinker, Sr. School of Building Construction, FAC 101, University of Florida, Gainesville, Florida, 32611, 904/392-5965.

TABLE OF CONTENTS

INTRODUCTION

OBJECTIVES

1. INSTRUCTOR'S BACKGROUND
2. STUDENTS' BACKGROUND
3. GETTING YOUR MONEY'S WORTH
4. ADMINISTRATION
5. COURSE OBJECTIVES

Spend a brief period introducing each other and learning what each participant wishes to learn from the course.

INSTRUCTOR'S BACKGROUND

1. NAME, POSITION, AND COMPANY
2. TYPE OF CONSTRUCTION OF CURRENT COMPANY
3. OVERALL EXPERIENCE
4. QUALIFICATIONS FOR MODERATING THIS COURSE

STUDENT'S BACKGROUND

1. NAME, POSITION, AND COMPANY
2. TYPE OF CONSTRUCTION OF CURRENT COMPANY
3. OVERALL EXPERIENCE
4. REASONS FOR ATTENDING THIS COURSE
5. EXPECTATIONS UPON COMPLETING THIS COURSE

Some of the most valuable suggestions come from attenders like yourself. Make this a better course by contributing your ideas with respect to each lesson's material.

GETTING YOUR MONEY'S WORTH

1. WRITE IN YOUR MANUAL IMPORTANT "TIPS" FROM THE INSTRUCTOR OR STUDENTS

2. HIGHLIGHT IMPORTANT ITEMS IN THE MANUAL

3. PARTICIPATE BY ASKING AND ANSWERING QUESTIONS

4. WORK IN GROUPS, INCLUDING HELPING OTHER GROUP MEMBERS

5. BRING UP CONCERNS OR PROBLEMS DURING CLASS OR AT BREAKS

6. INFORM INSTRUCTOR AT A BREAK IF COURSE CONTENT IS NOT WHAT IS EXPECTED

7. TRY TO GET AT LEAST ONE GOOD IDEA PER LESSON THAT YOU CAN TAKE BACK TO USE IN YOUR COMPANY

The instructor/moderator cannot read your mind. If the material does not meet your needs, please mention what you wish to know. The information is adaptable to most small contractors. You may have some special needs. The instructor can show you how to use the proposed ideas in your company or make other suggestions that may serve your needs.

ADMINISTRATION

1. COMPLETE THE REGISTRATION FORM
2. BREAKS ARE MID-MORNING AND MID-AFTERNOON
3. SMOKING OUTSIDE OF CLASSROOM IN DESIGNATED SMOKING AREAS
4. LUNCH TIME - USUALLY AN HOUR
5. NOTIFY INSTRUCTOR IF LEAVING EARLY
6. COMPLETE COURSE EVALUATION
7. RECEIVE ATTENDANCE CERTIFICATE

COURSE OBJECTIVES

1. PROFIT CENTER ANALYSIS
2. GETTING BEHIND THE NUMBERS
3. CHART OF ACCOUNTS
4. BUDGETING AND COST CONTROL
5. DEVELOPING MARKUP FACTORS
6. MARKUP USING COST POOLS
7. CASH FLOW ANALYSIS
8. GETTING PAID ON TIME

The course covers the eight major topics listed above. Remember, try to get at least one good idea each lesson to improve your company's bottom line.

The complexity of course material application can be tailored to the size and specific requirements of the individual business concern.

Look for concepts to consider and apply, as well as the specific techniques discussed.

The presentation order of the material is not a consideration, all the topics (objectives) are interrelated and should be considered in a total context.

Note: Throughout this course "CFM" shall mean "Contractor Financial Management".

LESSON #1 PROFIT CENTER ANALYSIS

OBJECTIVES

1. CONTRACTOR FAILURE RATE
2. CAUSES OF CONTRACTOR FAILURE
3. TYPICAL PROFIT CENTERS
4. PROFIT MEASURES
5. PROFIT CENTER ANALYSIS

This workshop stresses important keys to financial success for the small and small-to-medium contractor. Small and small-to-medium contractors have unique financial problems. This workshop cannot give answers to all these problems and pitfalls, but it can give ideas to make your firm more profitable. The manual covers important items such as profit center analysis, budgeting, and markup. Research into contractor needs indicate that budgeting and markup are especially important for financial success.

This lesson begins with a brief introduction to the high rate of contractor failure, including why construction firms fail. The lesson concludes with how to perform profit center analysis. Profit center analysis provides insight as to what kind of work you should pursue.

CFM PROFIT TIP #1

FIND OUT WHAT IS YOUR MOST PROFITABLE WORK AND DO MORE OF IT

Note: CFM = Contractor Financial Management.

Every company does some type of construction more efficiently and thus more profitable than its competitors. Knowing what type(s) work is/are most profitable for your firm is a major key to financial success. Conversely, you can lessen financial risk by reducing the amount of unprofitable or marginally profitable work you do.

CONTRACTOR FAILURE RATES*

THREE YEARS OR LESS		22.5%
ONE YEAR OR LESS	4.8%	
TWO YEARS	7.9%	
THREE YEARS	9.8%	
FOUR TO FIVE YEARS		18.0%
FOUR YEARS	9.3%	
FIVE YEARS	8.7%	
SIX TO TEN YEARS		27.0%
SIX YEARS	7.4%	
SEVEN YEARS	6.4%	
EIGHT YEARS	4.7%	
NINE YEARS	4.4%	
TEN YEARS	4.1%	
OVER TEN YEARS		32.5%

* Business Failure Rate, Economics Division, Dun & Bradstreet, New York, NY, 1991.

Construction is a risky business with contractor failures exceeded only by retail sales, such as small clothing and food stores. However, many contractors remain in business year-after-year, including certain firms that go on to second and third generations of family ownership or management.

To be successful and remain in business, the contractor has to understand why one job is more profitable than another. Within every company is a certain level of expertise unique to that company. This expertise applied properly is the source of your profits. Therefore, a key to good financial management is knowing what type(s) of job(s) you do best, that is which type(s) of job(s) is/are your most profitable.

1. Does your firm know what its area(s) of expertise is/are compared to your competition?

2. Does your firm analyze past job costs and profit to determine which where more profitable than others, including why certain jobs are more profitable than others?

CAUSES OF CONTRACTOR FAILURE*

1.	ECONOMIC CAUSES		46.1%
	- INSUFFICIENT PROFITS	21.2%	
	- INDUSTRY WEAKNESS	21.8%	
	- INADEQUATE SALES	1.9%	
	- NOT COMPETITIVE	0.8%	
	- POOR GROWTH PROSPECTS	0.3%	
	- HIGH INTEREST RATES	0.1%	
2.	FINANCIAL CAUSES		39.0%
	- INSUFFICIENT CAPITAL	20.8%	
	- HEAVY OPERATING EXPENSES	9.8%	
	- BURDENSOME DEBT	8.4%	
3.	EXPERIENCE CAUSES		9.9%
	- LACK OF BUSINESS EXPERIENCE	8.4%	
	- LACK OF LINE EXPERIENCE	0.8%	
	- LACK OF MANAGERIAL EXPERIENCE	0.7%	
4.	NEGLECT CAUSES		3.3%
	- BUSINESS CONFLICTS	1.3%	
	- FAMILY PROBLEMS	1.0%	
	- LACK OF COMMITMENT	0.8%	
	- POOR WORK HABITS	0.2%	
5.	DISASTER		1.4%
6.	FRAUD		0.6%

* Business Failure Rate, Economics Division, Dun & Bradstreet, New York, NY, 1991.

There are some causes for contractor failure which the firm cannot do much about, such as bad economic conditions in the community or country. Review the previous table and identify those causes of failure which the contractor can best control. Notice that many of the controllable causes relate to financial management.

1. Which causes of failure may be beyond the contractor's control?

2. Which causes of failure are generally within the contractor's control?

3. How will sound financial management techniques help the contractor control the prospect of failure?

TYPICAL PROFIT CENTERS

1. TYPE OF WORK
   - RESIDENTIAL
     - NEW CONSTRUCTION
     - REMODELING
   - COMMERCIAL
     - NEW CONSTRUCTION
     - REMODELING
   - HEAVY
   - HIGHWAY
   - UTILITIES
2. TYPE OF CONTRACT
   - LUMP SUM
   - COST PLUS
   - DESIGN/BUILD
   - CONSTRUCTION MANAGEMENT
3. TYPE OF PRICING
   - COMPETITIVE
   - NEGOTIATED
   - TIME AND MATERIALS
4. VALUE OF CONTRACT
   - LESS THAN $20,000
   - $20,000 TO $50,000
   - MORE THAN $50,000
5. OTHER TYPES OF PROFIT CENTERS

A profit center is a specific type of construction that makes a contribution to company profits. For example, a general contractor might have profit centers for private owners, government, and developers. A subcontractor might have profit centers for new construction, remodeling, and maintenance.

To determine your profit centers review the types of jobs you have had for the past three years. Group jobs under the profit center categories listed in the table on the previous page. You can also list jobs by contract dollar value, such as $0-to-$50,000; $50,00-to-$100,000; and over $100,000.

You may have to look at financial data several ways to find your company's special niche(s). After thoughtful detailed analysis, it will become clear what are your area(s) of expertise is/are and what kind(s) of work you should seek.

Profit center analysis should be done annually to help focus, develop, and maintain a certain expertise within your firm, considering your employees and subcontractors. In order to better operate during changes in the business cycle, it is best, if possible, to be obtain work in more than one type profit center. Multiple profit centers allows you to secure work in one area when there is no work in another area.

1. What are your company's profit centers?

2. Does your company manage by profit centers?

3. Can you see any other benefits in looking at work by profit centers?

PROFIT CENTER COST ELEMENTS

1. DIRECT COSTS
   - LABOR
   - MATERIALS
   - EQUIPMENT
   - SUBCONTRACTS
2. INDIRECT COSTS
3. PROFIT
4. CONTRACT PRICE
5. MARKUP
6. PROFIT MARGIN

Review major costs and percentages after job completion. Such review further reinforces seeking out the profitable work. You learn critical financial management questions, such as the job's actual (true or final) markup or profit margin. Once you have good records on each job's final costs and profit, you can conduct a profit center analysis. If you have not kept this information current and available, you must thoroughly review past job cost records.

1. Does your firm perform post job financial analysis?

STEPS IN PROFIT CENTER ANALYSIS

1. DEFINE YOUR PROFIT CENTERS
2. ASSIGN JOB COSTS
   - DIRECT COSTS AND INDIRECT COSTS
   - REVENUE
3. CALCULATE JOB
   - PROFIT
   - PERCENT MARKUP
4. CALCULATE PROFIT MEASURES
   - PERCENT PROFIT MARGIN
   - PERCENT REVENUE CONTRIBUTION
   - PERCENT INDIRECT COST CONTRIBUTION
   - PERCENT PROFIT CONTRIBUTION
   - PERCENT PROFIT CENTER CONTRIBUTION

The remainder of this lesson concentrates on how to accomplish each of the above steps, including calculations.

PERCENT MARKUP*

DEFINITION: AMOUNT ADDED TO DIRECT COSTS TO COVER INDIRECT COSTS AND PROFIT

USE: COMPARE THE PERCENT ADDED FOR INDIRECT COSTS AND PROFIT FOR EACH JOB

$$\text{MARKUP} = \frac{\text{REVENUE - INDIRECT COSTS}}{\text{DIRECT COSTS}}$$

$$\text{MARKUP} = \frac{\$20,000 - \$15,000}{\$15,000}$$

MARKUP = 0.33 OR 33%

* Numbers in calculations refer to Job #1 in Problem #1 at the end of the lesson.

Percent markup is the amount added to the job's estimated direct costs to cover indirect costs and profit.

Knowing the profit margin for different kinds of work is valuable for profitable financial management. By knowing the next job's estimated direct costs, you can quote a contract price using the markup for this kind of work. The contractor also learns what the proper profit markup for each type of work should be. The proper or optimum markup is the one which returns the highest potential profit while retaining a reasonable potential for getting the job.

1. Does your company have markup factors for different kinds of work?

2. Does it make sense to have different markup factors for different kinds of work? Why or why not?

PERCENT PROFIT MARGIN

DEFINITION: AMOUNT ADDED TO DIRECT AND INDIRECT COST FOR PROFIT

USE: COMPARE PERCENT ADDED FOR PROFIT FOR EACH JOB

$$\text{PROFIT MARGIN} = \frac{\text{PROFIT}}{\text{REVENUE}}$$

$$\text{PROFIT MARGIN} = \frac{\$\ 2{,}500}{\$20{,}000}$$

PROFIT MARGIN = 0.13 OR 13%

Percent profit margin is the amount added to indirect and indirect costs for profit.

Knowing the percent profit margin is a valuable tool in financial management. The amount added for profit is discretionary, that is the decision is up to the company. For a given percent profit margin, say six percent, you should usually make about that margin profit on the kind of work to which the margin is applied. In a highly competitive bid situation (i.e., many bidders), you might have to lower your profit margin to obtain work. In a bid situation with fewer bidders, you might be able to raise your profit margin and still obtain work.

PERCENT REVENUE CONTRIBUTION

DEFINITION: INDICATES THE PERCENT THAT A JOB REVENUE CONTRIBUTES TO THE COMPANY TOTAL REVENUE

USE: COMPARE PERCENT OF EACH JOB'S REVENUE TO TOTAL REVENUE

$$\text{PERCENT REVENUE CONTRIBUTION} = \frac{\text{JOB REVENUE}}{\text{TOTAL REVENUE}}$$

$$\text{PERCENT REVENUE CONTRIBUTION} = \frac{\$\ 20{,}000}{\$500{,}000}$$

PERCENT REVENUE CONTRIBUTION = 0.04 OR 4%

Percent revenue contribution is important for it indicates the amount that a job contributes to the total company revenue.

1. Can a job contribute a large percentage to company revenue and have a small profit margin?

2. Would doing several jobs with low percent revenue contribution and low profit margin make sense?

3. Which is better, more jobs with a lower percent revenue contribution or fewer jobs with a higher percent revenue contribution? Why?

INDIRECT COST CONTRIBUTION

DEFINITION: PERCENT OF JOB'S REVENUE TO DEFRAY INDIRECT COSTS

USE: OBTAIN JOBS THAT CONTRIBUTE A HIGH PERCENT TO DEFRAY INDIRECT COSTS

$$\text{INDIRECT COST CONTRIBUTION} = \frac{\text{JOB INDIRECT COSTS}}{\text{TOTAL INDIRECT COSTS}}$$

$$\text{INDIRECT COST CONTRIBUTION} = \frac{\$\ 2{,}500}{\$55{,}000}$$

INDIRECT COST CONTRIBUTION = 0.04 OR 4%

The indirect cost contribution factor is the percent the job contributes to paying for the company's indirect costs, so called overhead or company overhead. Many contractors try to secure enough work to cover just their indirect costs with little of no profit. With this kind of job, you are assured of having the revenue to cover company indirect costs. However, on work where the contractor has a firm or fixed price there is a considerably increased risk of loss due to the small or non-existent profit margin available to cover cost overruns.

1. What uses can you see in knowing each job's indirect cost contribution?

2. Would you rather have more work at lower total profit margin (i.e., lower indirect cost and profit markup) or less work with a higher total profit margin (i.e., higher indirect cost and profit markup)? Why?

PERCENT PROFIT CONTRIBUTION

DEFINITION: PERCENT OF JOB'S REVENUE TO TOTAL PROFIT

USE: OBTAIN JOBS WITH A HIGH PERCENT CONTRIBUTION TO COMPANY PROFIT

$$\text{PROFIT CONTRIBUTION} = \frac{\text{JOB PROFIT}}{\text{TOTAL PROFIT}}$$

$$\text{PROFIT CONTRIBUTION} = \frac{\$\ 2{,}500}{\$45{,}000}$$

PROFIT CONTRIBUTION = 0.06 OR 6%

The percent profit contribution indicates each job's percent contribution to the company's total (overall) profit. Percent profit contribution is an important profit measure. Naturally, contractors try to seek and secure work that has potentially high profit contribution.

PROFIT CENTER MARGIN

DEFINITION: PERCENT PROFIT OF JOB WITHIN ITS PROFIT CENTER

USE: OBTAIN JOBS WITH THE HIGHEST PROFIT MARGIN (PERCENT PROFIT) WITHIN THE PROFIT CENTER

$$\text{PROFIT CENTER MARGIN \#1} = \frac{\text{JOB PROFIT}}{\text{PROFIT CENTER REVENUE}}$$

$$\text{PROFIT CENTER MARGIN \#1} = \frac{\$\ 2{,}500}{\$80{,}000}$$

PROFIT CENTER MARGIN #1 = 0.03 OR 3%

Profit center margin indicates each job's percent profit within its profit center. Profit center margin is a valuable financial management tool which shows the most profitable jobs for each profit center. If you are seeking work and managing by profit center, you evaluate future work based on its potential profit center margin.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #1: Profit Center Analysis

Listed below is the annual profit center analysis of XYZ Electrical Contractors. The profit centers are residential, commercial, and government. Amounts are in $1,000.

JOB#	(1) Direct Costs ($)	(2) Indirect Costs ($)	(3) Profit ($)	(4) Revenue ($)	(5) Markup (4-1/1) (%)	(6) Profit Margin (3/4) (%)	(7) Revenue Contrib (4/R) (%)	(8) Indirect Contrib (2/IC) (%)	(9) Profit Contrib (3/P) (%)	(10) Profit Ctr Mar (3/RC4) (%)
Residential:										
#1	15	2.5	2.5	20	33	13	4	5	6	3
#2	20	5	5	30	50	17	6	9	11	7
#3	25	2.5	2.5	30	20	8	6	5	6	3
PC Total	60	10	10	80	33	13	16	19	23	13
Commercial:										
#4	100	10	10	120	20	8	24	18	22	4
#5	120	15	5	140	17	4	28	27	11	2
PC Total	220	25	15	260	18	6	52	45	33	6
Government:										
#6	120	20	20	160	33	13	32	36	44	13
PC Total	120	20	20	160	33	13	32	36	44	13
	(DC)	(IC)	(P)	(R)						
Total	400	55	45	500	25	9	100	100	100	9

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #1: Profit Center Analysis

Using the Profit Center Analysis case study on the previous page, answer the following questions.

1. Which job had the greatest profit?
2. Which job had the greatest revenue?
3. Which job had the greatest markup?
4. Which job had the greatest profit margin?
5. Which job had the greatest revenue contribution?
6. Which job had the greatest indirect cost contribution?
7. Which job had the greatest profit contribution?
8. Which job had the greatest profit center contribution?
9. Based on your answers, what would you recommend the company do to improve profits?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #1: Profit Center Analysis

1. Which job had the greatest profit? #6
2. Which job had the greatest revenue? #6
3. Which job had the greatest markup? #2
4. Which job had the greatest profit margin? #2
5. Which job had the greatest revenue contribution? #5
6. Which job had the greatest indirect cost contribution? #6
7. Which job had the greatest profit contribution? #6
8. Which job had the greatest profit center contribution? #4
9. In general, try to develop and expand work in the residential and governmental areas.

   a. Secure more work similar to job #6 because it has the largest profit, makes the greatest contribution to revenue. Job #6 also makes the largest contribution to indirect costs and profits.

   b. Secure more work similar to job #2 because it has the greatest markup and profit.

LESSON #2 GETTING BEHIND THE NUMBERS

OBJECTIVES

1. REASONS FOR LOST PROFIT
2. PRIMARY CAUSES OF DELAYS AND COST OVERRUNS

Getting behind the numbers means knowing why some work is more profitable than others. In other words, it is not sufficient jut to know that one job is more profitable than another. Good financial management today consists of the bookkeeper or controller working with company management to determine the reasons for lost or increased profit.

Why would one wish to know the reasons for profit shortfall? By knowing why one job is more or less profitable than another, management can take corrective action.

This lesson briefly presents some ideas on how to analyze past job profit or loss to determine why the job made or lost money.

CFM PROFIT TIP #2

GET BEHIND THE NUMBERS - THE NUMBERS WILL SET YOU FREE

Research indicates that companies who analyze job costs and profit, including the reasons why planned profit was met or lost, stay in business longer. Post job analysis is one of the most valuable financial informational resources that the financial manager can provide senior and project management. If management knows why a particular job's financial outcome is such, then they can better take the appropriate measures to meet or exceed the next job's planned profit.

REASONS FOR LOST PROFIT

1. 1/3 INDUSTRY CIRCUMSTANCES
2. 1/3 COMPANY MISMANAGEMENT
3. 1/3 JOB MISMANAGEMENT

Industry Circumstances, such as labor shortages and cycles in the economy, account for approximately one third of the factors contributing to companies' losing profits. Fortunately, the contractor directly controls the remaining two-thirds of the reasons why profits are lost. Improving overall company and project management not only improves the company in question, but also indirectly improves overall construction industry circumstances.

PRIMARY SOURCES OF DELAYS AND COST OVERRUNS

1. 45% DESIGN PROBLEMS
2. 35% CHANGE ORDERS
3. 15% SUBCONTRACTOR PROBLEMS
4. 5% QUALITY CONTROL AND INSPECTIONS

For over two decades, national surveys indicate four primary reasons for construction delays and cost overruns. You can use this information to review your projects after completion and determine ways to better attain planned profit for future work.

One can be cognizant of these problems when pricing, planning, and performing a project in order to preclude or minimize the causes and consequent costs.

1. Do you believe that there are reasons for delays and cost overruns other than those stated above?

2. If so, what are other reasons for delays and cost overruns?

DESIGN PROBLEMS

1. DESIGN PROGRAM AND CRITERIA
2. INADEQUATE DESIGN REVIEWS
3. UNKNOWN SUBSURFACE CONDITIONS
4. LACK OF SITE INVESTIGATION
5. CONTRACT DOCUMENT ERRORS AND OMISSIONS
6. UNANTICIPATED LOCAL AND EXISTING CONDITIONS
7. ERRONEOUS BUDGETS AND ESTIMATES

Some of these problems are the designer's fault. However, by spotting these problems early, the contractor can ask that they be corrected, allow for their cost in the bid, or request a change order.

Design program and criteria define the project scope. Incomplete information results in incomplete design and consequent changes. Poor design review, especially the checking of drawings and specifications, results in changes and delays the job until adequate information is supplied.

Fifty percent of changed conditions is due to subsurface conditions that were not identified at the time of design.

The contractor can avoid many of the above problems through thorough review of the drawings and specification before beginning construction. The contractor can also anticipate and correct or alleviate job site problems before they occur by checking the job site and other local conditions.

1. Which of the above causes seem(s) to lessen your project profitability?

2. Which of the above problems potentially has (have) the most adverse cost consequences for the contractor?

CHANGE ORDER PROBLEMS

1. DESIGN DEFICIENCIES (INCOMPLETE SCOPE)
2. CHANGED OWNER NEEDS
3. USING NEW MATERIALS
4. CHANGED FIELD CONDITIONS
5. LACK OF DESIGN CONSTRUCTIBILITY
6. DELAYS (WEATHER, STRIKES, ETC.)
7. CONTRACT DOCUMENT ERRORS AND OMISSIONS
8. DESIGN AMBIGUITIES
9. VALUE ENGINEERING RECOMMENDATIONS
10. INADEQUATE PROJECT REVIEW

Changes can be spotted before submission of the bid or during construction. The best way to overcome potential profit losses is to set up a change order control system that systematically estimates and process all changes.

Meticulous review of design documents prior to construction reduces change order problems.

Adequate, detailed project planning by the contractor prior to construction can reduce change order problems and their associated potential for lost profit.

1. Are lost profit due to changes a problem in your company?
2. How do you handle changes so as not to loose profit?

SUBCONTRACTOR PROBLEMS

1. LACK OF PRE-QUALIFICATION
2. ILL DEFINED SCOPE OF WORK
3. THIN PROFIT MARGIN
4. BID SHOPPING
5. UNFAMILIAR WORK
6. NO SUBMITTAL CONTROL
7. SLOW FORWARDING OF CHANGES QUOTES
8. UNCOORDINATED SUBCONTRACTORS AND SUPPLIERS
9. RETAINAGE TOO HIGH
10. PROCUREMENT DELAYS

Most subcontractor problems occur due to incorrect subcontractor selection and poor subcontractor coordination on the job site. Often, the lowest priced marginal subcontractor is the one who does not properly man the job. Low bid marginal subcontractors frequently go out of business, thus requiring the general contractor to hire another subcontractor, paying additional mobilization costs as well as other possible added costs. The financial strength and business acumen of the subcontractor is important to both the general contractor and the owner, with respect to both quality and overall cost.

1. Does your firm pre-qualify subcontractor by reviewing their financial strength and past job performance?

2. Are there things the general contractor can due to improve or better ensure the financial stability of subcontractors? If so, what?

QUALITY CONTROL & INSPECTION PROBLEMS

1. NOT AGREEING BEFOREHAND ON WORKMANSHIP STANDARDS
2. SHORTAGE OF QUALIFIED INSPECTORS
3. JOB SUPERVISION SPREAD "TOO-THIN"
4. INSPECTOR OVER SUPERVISING
5. PRIDE & IGNORANCE
6. INSUFFICIENT KNOWLEDGE OF PLANS AND SPECS
7. NO PRE-INSPECTION BY PRIME CONTRACTOR
8. UNQUALIFIED CRAFTSMEN AND LABOR
9. ORDERING INCORRECT MATERIALS
10. NOT KNOWING QUALITY AND INSPECTION STANDARDS

Review your past job costs to learn if you lost profits due to poor quality control or failed inspections. Such problems account for approximately five percent of delays and cost overruns. Concentrating on good quality and passing inspections can save you money on all projects, regardless of the type construction.

1. In your experience, what other reasons are there for lost profit due to poor quality and failed inspections?

2. What would you recommend to overcome these problems and increase profits?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #2: Getting Behind the Numbers

In the previous lesson you analyzed job profits for XYZ Electrical Contractors. The company management team meet and reviewed all the projects and the reasons for their respective high or low profit. Listed below is each project and the number of times the four major causes of delays and cost overruns has occurred. Review the table, noting where there are major problems reflected by the data.

PROFIT CENTER	PRIMARY CAUSE OF DELAYS AND COST OVERRUNS			
Job Number	Design Problems	Change Orders	Subs & Suppliers	Q.C & Inspect.
Residential				
#1	4	10	4	4
#2	0	15	2	5
#3	6	20	4	6
Subtotal	10	45	10	15
Commercial				
#4	10	10	5	5
#5	20	5	5	5
Subtotal	30	15	10	10
Government				
#6	10	25	15	40
Subtotal	10	25	15	40
Total	50	85	35	65

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #2: Getting Behind the Numbers

As the controller of XYZ Electrical Contractors you wish to learn why certain jobs are more profitable than other jobs. To this end, you develop a spreadsheet listing:

1. Job number (#) by profit center
2. Dollar ($) over or under budget
3. Percent (%) over or under budget
4. Days over or under schedule
5. Percent (%) over or under schedule

In addition, while talking with the owner and project manager you learn the reasons for each job's delays and cost overruns. You provide each major reason with a ranking as to the degree it contributed to delays and cost overruns. For each reason you use a scale of 1 to 10 where:

1 = no significant problems
5 = average number of problems
10 = major number of problems

The findings are summarized in the PROFIT CENTER - PRIMARY CAUSE OF DELAYS AND COST OVERRUNS Table on the previous page.

Based on the experience in your own company, what are some of the recommendations you can make to the owner to make future jobs more profitable?

There is no "one correct" solution to these situations, although certain solutions may be better under a given set of circumstances than other solutions. The blanks on the form are for your convenience and fit one possible set of responses; however, you may alter the format as you see fit.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #2: Getting Behind the Numbers

Based on your experience and knowledge, fill in this form with some approaches that the small contractor should take to prevent delays and cost overruns.

	PROBLEM	SOLUTION
A.	Design Problems:	
1.	_____	1. _____
2.	_____	2. _____
3.	_____	3. _____
4.	_____	4. _____
B.	Change Orders Problems:	
1.	_____	1. _____
2.	_____	2. _____
3.	_____	3. _____
4.	_____	4. _____
C.	Subcontractor Problems:	
1.	_____	1. _____
2.	_____	2. _____
3.	_____	3. _____
4.	_____	4. _____
D.	Quality Control & Inspection Problems:	
1.	_____	1. _____
2.	_____	2. _____
3.	_____	3. _____
4.	_____	4. _____

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #2: Getting Behind the Numbers

	PROBLEM	SOLUTION
A.	Design Problems:	
1.	Budget & Estimates	1. Experience and coordination
2.	Errors & Omissions	2. Review and coordination
3.	Program & Criteria	3. Owner input & coordination
4.	Existing Conditions	4. Site/area investigation
B.	Change Orders Problems:	
1.	Design Ambiguities	1. Doc review & coordination
2.	Errors & Omissions	2. Doc review & coordination
3.	Designs Deficiencies	3. Doc review & coordination
4.	Constructibility	4. Contractor review & input
C.	Subcontractor Problems:	
1.	Uncoordinated Subs	1. Job meetings
2.	Change Order Forwarding	2. Job meetings & CO distrib
3.	Submittal Review	3. Job mtngs & approval schdle
4.	Procurement	4. Planning & scheduling
D.	Quality Control & Inspection Problems:	
1.	Unqualified Crafts	1. Pre-qualify subcontractors
2.	Plans & Specs Knowledge	2. Job mtngs & document review
3.	Inspector Supervision	3. Mtngs, schedule, reporting
4.	Pride & Ignorance	4. Understanding/review/coord

LESSON #3 CHART OF ACCOUNTS

OBJECTIVES

1. COST DEFINITIONS
2. CHART OF ACCOUNTS
3. COST POOLS

This lesson will help you understand, analyze, and develop a chart of accounts for your company. If you already have a chart of accounts, application of this lesson's information will allow you to check, revise, and possibly improve your current chart of accounts. A complete appropriate chart of accounts is a critical first step in proper accounting and financial management. Cost pools can make budgeting, analysis, control, and markup easier.

A chart of accounts lists all budget categories for each class (type) of direct and indirect expense. Accounts are generally grouped into five broad well defined divisions which are common to all types of business enterprises: (1) Assets, (2) Liabilities, (3) Expenses, (4) Income, and (5) Net Worth (or Owner's equity or Shareholder's Equity). For our purposes, we will discuss those costs and expenses incurred in creating our product (i.e., the work or job) which are generally grouped under the broad category of expenses. Costs are the monies spent for goods (assets) and services. Expenses are the costs of goods and services that have been consumed or have expired in the production of the revenue for a specific accounting period (i.e., project or calendar term).

> "Cost" is defined as the exchange price associated with a business transaction at the point of recognition (i.e., dollar value at the time of transaction; original cost; historical cost).[1]
>
> "Expenses" are defined as the costs of the goods and services used up in the process of obtaining revenue (i.e., expired cost).[2]

Cost and expense are not mutually exclusive terms. Cost represents the amount of money expended or liability incurred for goods or services. Costs may be classified as "unexpired costs" (i.e., prepaid expenses such as insurance, rent, materials, or office supplies) or "expired costs" (i.e., insurance, rent, materials, or office supplies expense). The term "expenses" is used in the broad sense to include all expired costs (i.e., cost of items consumed, used, past, or completed). "Expenses" is also commonly used in a

narrower sense to refer to the income statement categories of selling, general, and other expenses. The term "costs" is then restricted to items that become a part of the cost of product manufactured (i.e., the work or job).[3] This course uses the terms cost (costs) and expense (expenses) interchangeably.

Review this lesson's standard chart of accounts and cost pools, then use this information to check your firm's chart of accounts and cost pools. Develop a chart of accounts that makes sense for you, your type of work, and your tax structure. Check your final chart of accounts and cost pools with your accountant or tax attorney to determine special tax code or other applicable unique requirements, if any.

1. Needles, p.46.
2. Needles, p.G-8.
3. Niswonger, p.501.

CFM PROFIT TIP #3

DEVELOP A CHART OF ACCOUNTS FOR YOUR TYPE OF CONSTRUCTION

The chart of accounts is the first step in planning a budget for direct and indirect costs, and calculating the markup for bidding indirect costs and profit.

CHART OF ACCOUNTS

DEFINITIONS

1.	COST ACCOUNTS:	THE CLASSIFICATIONS TO WHICH COSTS ARE CHARGED
	EXAMPLE:	CONCRETE EXPENSE CHARGED TO "FOUNDATIONS COST ACCOUNT"
2.	COST POOL:	A GROUP OF COST ACCOUNTS AGGREGATED UNDER A COMMON HEADING FOR PURPOSES OF BUDGETING, MARKUP, AND CONTROL
	EXAMPLE:	ALL MARKETING COSTS CHARGED TO "MARKETING" COST POOL

A "chart of accounts" is the listing by name and/or number of all the accounts (i.e., the items or classifications or categories) against which costs are charged or grouped for accounting and control purposes.

> A classified list of the accounts of an enterprise, with or without their numbers, is known as a "chart of accounts".[1]

A "cost pool" is a grouping of like or related accounts for purposes of convenience, budgeting, analysis, and/or control.

> A "cost center" (i.e., cost pool) is any organizational segment or area of activity for which there is a reason to accumulate costs.[2]

Some examples of cost pools (cost centers) are: the company as a whole, company divisions, direct costs, indirect costs, labor, materials, equipment, and subcontracts.

For example, all expenses for equipment such as "fuels", "lubricants", and "repairs" may be allocated under separate accounts for each respective type of expenditure. All equipment related accounts can then be consolidated under the "equipment" cost pool.

1. MacFarland, p.75.
2. Needles, p.941.

CHART OF ACCOUNTS

COST ACCOUNTS

1. DIRECT COSTS: JOB RELATED
   - LABOR
   - MATERIALS
   - EQUIPMENT
   - SUBCONTRACTS
2. INDIRECT COSTS: MANAGEMENT RELATED
   - EQUIPMENT
   - LABOR BENEFITS
   - SHOP & YARD
   - VEHICLES
   - MARKETING & ESTIMATING
   - GENERAL & ADMINISTRATIVE (G & A)
3. PROFIT: MARKET AND PRODUCTION RELATED

Direct costs are cost items that can be identified and charged (tracked and attributed) to a particular job (i.e., a specific element of work or other identifiable cost objective). For example, if you can track the cost of supervision, such as foremen and superintendent time, then their labor wages are direct costs. Four generally used major categories of direct cost are: labor, materials, equipment, and subcontracts.

> A "direct cost" is any cost that can be conveniently and economically traced to a specific "cost objective".[1]
>
> A "cost objective" is the destination of an assigned cost.[2]

Indirect (also called overhead costs) costs are cost items that can be identified but which cannot be charged (attributed) directly to a particular item of work or job (i.e., a specific element of work or other identifiable cost objective). For example, home office

(head or central office as opposed to project or job site office) rent is an indirect cost because it cannot be directly charged to a particular job (assuming more than one job is, has been, or will be undertaken by the firm). Indirect costs might be considered as those costs incurred for the benefit of the overall business in lieu of a particular item of work or job.

> An "indirect cost" is a cost that is not traceable to a specific product of cost objective and must be assigned by some allocation method.[3]

There are two general classes of indirect or overhead expenses:

> "Job indirect (overhead) expenses" are those costs which are incurred for a particular job but do not physically become an integral part of the construction (i.e., such expenses as permits, bonds, bidding expenses, and job office expenses).[4]

> "General indirect (overhead) expenses" are those costs incurred for purposes of general nature and not directly chargeable to any one job (i.e., such expenses as home office expenses, home office salaries, legal and audit expenses, and marketing).[5]

The term "profit" has many meanings; however, for our purposes profit is the amount of revenue remaining after paying for all direct and indirect costs (i.e., after paying for all costs).

> "Profit" is the imprecise term for the earnings of a business enterprise.[6]

> "Profit" can be more precisely defined as "net income". Net income is the net increase in owner's equity resulting from the operations of the company. Net income is measured as by the difference between revenues and expenses. If expenses exceed revenues, a "net loss" occurs.[7]

1. Needles, p.941.
2. Needles, P.941.
3. Needles, P.G-10
4. Practical Accounting, P.329.
5. Practical Accounting, P.330.
6. Needles, p.G-15.
7. Needles, p.89-90.

CHART OF ACCOUNTS

CONSTRUCTION INDIRECT COST POOLS

1. EQUIPMENT
2. OVERHEAD POOLS
   - LABOR BENEFITS
   - VEHICLES
   - SHOP & YARD
   - MARKETING & ESTIMATING
3. GENERAL & ADMINISTRATIVE (G & A)
   - VARIABLE COSTS
   - FIXED COSTS

Most accounting texts and tax codes recommend the above cost pools for contractors. The next few pages will briefly discuss each pool and its respective cost accounts.

CHART OF ACCOUNTS

EQUIPMENT COST POOL
(HEAVY/SPECIAL EQUIPMENT)

1. DEPRECIATION OR REPLACEMENT (SINKING FUND)
2. INSURANCE
3. LEASE COSTS
4. MAINTENANCE
5. OPERATION (FUEL & OIL)
6. PAYMENT COSTS
7. RENTAL COSTS
8. REPAIRS
9. SALARIES: SUPERVISORS & MECHANICS

The equipment cost pool includes such cost accounts as depreciation and direct supervision such as salaries of equipment supervisors and mechanics. The equipment cost pool and its cost accounts are especially useful for heavy, highway, and utility contractors. These larger contractors might even have cost pools for each type of equipment. For example, there might be cost pools for cranes, dozers, pile drivers, and scrapers. Larger contractors would probably use all of the above cost accounts in their chart of accounts and equipment cost pool(s).

Small contractors like site contractors might use only one or two cost items, such as depreciation and operating costs, in their chart of accounts and, if used, equipment cost pool.

CHART OF ACCOUNTS

LABOR BENEFIT COST POOL

1. MEDICAL & DENTAL
2. RETIREMENT
3. SICK LEAVE
4. VACATION

The labor benefit cost pool lists typical labor benefits that cannot be (or is not) directly charged to wages. For example, the cost of the company's group medical insurance (that portion paid by the company if not directly based on individual wages) would be prorated over each job.

CHART OF ACCOUNTS

VEHICLE COST POOL
(CARS & LIGHT TRUCKS)

1. DEPRECIATION OR REPLACEMENT (SINKING FUND)
2. INSURANCE
3. LEASE COSTS
4. MAINTENANCE
5. OPERATION (FUEL & OIL)
6. PAYMENT COSTS
7. RENTAL COSTS
8. REPAIRS
9. SALARIES: SUPERVISORS & MECHANICS

Vehicles include cars and light trucks such as pickup trucks and vans. This cost pool is similar to the equipment pool; however, you must determine which accounts, if any, apply to your specific operation.

1. Review the vehicle cost pool. Which accounts apply to your company?

2. Does your firm combine equipment and vehicles under one cost pool or have a separate cost pool for each?

3. When might the equipment and vehicle cost pools not be necessary?

CHART OF ACCOUNTS

SHOP & YARD COST POOL
(MATERIALS FABRICATION)

1. EQUIPMENT
2. MATERIALS
3. FABRICATION
4. STORAGE
5. INSURANCE
6. SUPERVISION: SUPERVISORS AND CRAFTSMEN

Shop and yard applies to those contractors who store and fabricate materials off the job site. For example, carpentry and mill work subcontractors would need a cost pool to cover the indirect costs of their fabrication shop.

Shop and yard also applies to equipment subcontractors who have additional off site costs for equipment maintenance and storage. This type of contractor would charge equipment costs under the "Equipment" cost pool and yard operation under "Shop and Yard" cost pool.

1. If you are storing and fabricating material off site, review the shop and yard cost pool. Do any of these accounts apply to your operations?

2. If such accounts apply to your operation, are there any additional accounts that would help you track costs?

CHART OF ACCOUNTS

MARKETING & ESTIMATING COST POOL

1. ADVERTISING
2. BOAT & CONDOMINIUM
3. CONTRIBUTIONS
4. CLUB MEMBERSHIPS
5. ENTERTAINMENT
6. OFFICE EQUIPMENT/COMPUTER ESTIMATING
7. TRAVEL
8. SALARIES

Marketing and estimating are major costs in many companies. The cost accounts under the marketing and estimating cost pool range from advertising through traveling to meet owners, designers, and subcontractors. Because marketing and estimating costs are directly related to revenue and are a large part of indirect costs, it is generally prudent to have them allocated as a separate cost pool.

Marketing is the costs associated with informing prospective clients about your firm and enticing them to ask for your services.

Estimating is necessary to bidding and quoting prices. Computerized estimating and take-off can result operating efficiencies and increased revenue. The computer, properly used, can increase the production and accuracy of estimates and bids. Consequently, computer is often a cost account under the marketing and estimating cost pool.

1. Does your firm have a combined estimating and marketing cost pool?

2. Does your firm have separate estimating and marketing cost pools?

3. What are the advantages and disadvantages to having a combined marketing and estimating cost pool?

CHART OF ACCOUNTS

VARIABLE G & A COST POOL
(INCREASE OR DECREASE WITH REVENUES)

1. COMMUNICATIONS
   - TELEPHONE
   - FAX
   - MOBILE PHONE
2. INSURANCE
3. REPRODUCTION
4. SALARIES: SUPERVISORS AND OTHER MANAGEMENT AND SUPPORT PERSONNEL

The "General and Administrative" (G & A) cost pool includes the costs of operating the business that are not related to the previously discussed cost pools. G & A is often divided into two major cost pools: (1) variable costs and (2) fixed costs.

Variable General and Administrative costs are those cost that decrease or increase with revenue. For example, certain insurance costs are sometimes directly related to the amount of total revenue and would consequently be allocated under G & A. Supervision costs that cannot be charged directly to a job are might be included under variable G & A.

Variable G & A plays a major role in determining profitability. Some of these costs, such as insurance and supervision, are discretionary to a degree. Profitable contractors tightly control their variable G & A as every dollar of such cost incurred which does not generate compensatory income decreases profits.

CHART OF ACCOUNTS

FIXED G & A COST POOL
(REMAIN CONSTANT WITH INCREASE OR DECREASE REVENUES)

1. DEPRECIATION OR REPLACEMENT (SINKING FUND)
2. INSURANCE
3. MORTGAGE
4. RENT
5. UTILITIES
6. SALARIES: SUPERVISORS AND PERSONNEL

Fixed General and Administrative (G & A) costs are those costs that remain constant regardless of the decrease or increase in company revenue. For example, the office rent remains the same regardless of decreased or increased revenue. Fixed G & A are those costs usually required to remain in business regardless of the amount of revenue.

Fixed G & A plays a big role in profitability. Some of these costs, such as office salaries, are discretionary to a degree. Profitable contractors tightly control their fixed G & A as every dollar of such cost incurred which does not generate compensatory income decreases profits.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #3: Developing a Chart of Accounts

As a result of profit center and post job analyses, XYZ Electrical Contractors has doubled its annual revenue to one million dollars. As the company owner, you decide to revise the company's chart of accounts for equipment direct costs and indirect costs. The company presently has the following assets:

1. One backhoe for excavation
2. Two pickup trucks
3. Fabrication shop for special assemblies
4. Computerized estimating system
5. Bookkeeper

Using the format provided on the next page, develop a chart of accounts for the equipment and indirect (overhead) cost pools. List each appropriate cost account under its applicable cost pool.

There is no one correct solution to this exercise. The chart of accounts would depend on each company's circumstances and the goals of management. The blank numbers correspond to each cost account the company should have as determined by one possible solution. Add or delete cost accounts as you see fit.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #3: Developing a Chart of Accounts

XYZ Electrical Contractors
Chart of Accounts

Equipment Cost Pool:

1.
2.
3.
4.
5.
6.

Overhead Cost Pool:

Labor Benefit Cost Pool

1.
2.
3.

Vehicle Cost Pool

1.
2.
3.
4.
5.
6.

Shop and Yard Cost Pool

1.
2.

Marketing Cost Pool

1.
2.

Variable G & A cost Pool

1.
2.

Fixed G & A Cost Pool

1.
2.
3.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #3: Developing a Chart of Accounts

XYZ Electrical Contractors
Chart of Accounts

Equipment Cost Pool:

1. Depreciation (Sinking Fund)
2. Insurance
3. Maintenance
4. Operation
5. Repairs
6. Operator Salary

Overhead Cost Pools:

Labor Benefit Cost Pool

1. Medical Insurance
2. Sick Leave
3. Vacation

Vehicle Cost Pool

1. Depreciation (Sinking Fund)
2. Insurance
3. Maintenance
4. Operation
5. Repairs
6. Operator Salary

Shop and Yard Cost Pool

1. Rent
2. Fabrication Salaries

Marketing Cost Pool

1. Advertising
2. Estimating System

Variable G & A Cost Pool

1. Communications
2. Insurance

Fixed G & A Cost Pool

1. Rent
2. Utilities
3. Office Salaries

LESSON #4 BUDGETING AND COST CONTROL

OBJECTIVES

1. BUDGET DEVELOPMENT
2. DIRECT AND INDIRECT JOB COSTS
3. RETURN ON INDIRECT COSTS (RIC)

The next step in contractor financial management is budgeting. Budgeting includes projections of revenue, direct and indirect costs, and profit.

Budgeting is critical for any size contractor. A budget assists in the following three areas of financial management.

First, a budget helps you determine how much total revenue is required to cover all direct and indirect costs, and make the profit you desire.

Second, a budget helps you control costs by providing a base against which to check expenses (costs).

Third, a budget helps you determine the necessary markup to cover indirect costs and provide the desired profit.

CFM PROFIT TIP #4

BUDGETING AND CONTROLLING INDIRECT COSTS IS THE KEY TO MAKING PROFIT IN THE MARGIN

Making profit in the margin means reducing your indirect costs, thereby making more profit (with the same overall markup on direct costs). With a thorough detailed budget you can project your indirect costs, review them, and see if you need to or can reduce them to increase your profit.

WHY BUDGETING HELPS PROFITS

1. SETS GOALS FOR MANAGERS
2. PROVIDES AN OPERATING PLAN
3. IDENTIFIES RELATIONSHIPS BETWEEN COST POOLS
4. PROVIDES PARAMETERS FOR DAILY DECISION MAKING
5. HELPS CONTROL DIRECT COST OVERRUNS
6. HELPS CONTROL INDIRECT COST OVERRUNS
7. USED FOR ACCURATE MARKUP

Contractors of any size and type can benefit from budgeting. A budget is a great planning tool. If you need or wish to purchase capital equipment such as computers or vehicles, you can estimate the annual expense and include it in the budget. Budget analysis considering the additional capital expense verses the proposed cost savings, if any, and projected revenue will allow the determination of whether or not the additional capital expenditure is justified and/or affordable.

A budget provides several checks:

* Direct cost
* Indirect cost
* Profit
* Cash flow

A budget tells you what expenditure is allowable for each cost account. You can easily check the budgeted amount versus actual expenditures.

STEPS IN BUDGET PLANNING

1. FORECAST DIRECT COSTS - PERCENT AND AMOUNT
2. FORECAST INDIRECT COSTS - PERCENT AND AMOUNT
3. FORECAST NET PROFIT - PERCENT AND AMOUNT

Budget development is simple once you understand the steps.

1. **Forecast Direct Costs:**

   Estimate your future direct costs as a percent of revenue. Review past work to determine approximate percentages for labor, materials, equipment, and subcontracts. For example, as a percent of revenue direct cost might be 80 percent, including 30 percent labor, 30 percent materials, 10 percent equipment, and 10 percent subcontracts.

2. **Forecast Indirect Costs:**

   Estimate your future indirect costs as a percent of revenue. Develop a budget for each indirect cost pool and its accounts. For example, as a percent of revenue fixed G & A might be five percent with one percent each for rent, utilities, telephone, office expenses, and salary.

3. **Forecast Profit:**

   Forecast your profit as a percent of revenue. For example, if you project $3 million in annual revenue and wish a five percent profit your forecast profit is (0.05) x ($3,000,000) or $150,000.

FORECASTING DIRECT COSTS

1.	FORECAST ANNUAL REVENUE			$5,000,000
2.	FORECAST DIRECT COSTS BY PROFIT CENTER			
	PROFIT CENTERS			
	- NEW HOMES	70%	OR	$3,500,000
	- REMODELING	30%	OR	$1,500,000
	TOTAL			$5,000,000
3.	FORECAST DIRECT COST POOLS BY PROFIT CENTER			
	NEW HOMES			
	- LABOR	40%	OR	$1,400,000
	- MATERIALS	40%	OR	$1,400,000
	- EQUIPMENT	5%	OR	$ 175,000
	- SUBCONTRACTORS	15%	OR	$ 525,000
	PROFIT CENTER TOTAL			$3,500,000
	REMODELING			
	- LABOR	40%	OR	$ 600,000
	- MATERIALS	40%	OR	$ 600,000
	- EQUIPMENT	5%	OR	$ 75,000
	- SUBCONTRACTORS	15%	OR	$ 225,000
	PROFIT CENTER TOTAL			$1,500,000
	TOTAL			$5,000,000
4.	FORECAST NEXT 1 TO 3 YEARS			

Most contractors perform more than one type of construction work. Earlier you learned that the different areas of work are called profit centers. The previous page shows a contractor with two profit centers: (1) new home construction, and (2) remodeling.

1. As a first step, based on past experience and the current and projected market, the contractor forecasts total annual revenues of $5 million dollars.

2. Second, again based on past experience and the current and projected market, the contractor forecasts that future work will be 70 percent new home construction and 30 percent remodeling.

3. Third, based on past experience, the contractor estimates the percent of direct cost pools for each type of construction, new homes and remodeling. The direct cost pools and their respective percentages are as follows:

LABOR	= 40%
MATERIALS	= 40%
EQUIPMENT	= 5%
SUBCONTRACTORS	= 15%

4. Forecast next one to three years.

PROFIT CENTER DIRECT COST BUDGET

($'s = 1,000's)

DIRECT COSTS	HOMES	REMODELING	TOTAL
LABOR	$1,400	$ 600	$2,000
MATERIALS	1,400	600	2,000
EQUIPMENT	175	75	250
SUBCONTRACTORS	525	225	750
TOTAL	$3,500	$1,500	$5,000

The direct cost budget by profit center is shown above.

FORECASTING INDIRECT COSTS AND PROFIT

1. CHECK PAST THREE YEARS INDIRECT COSTS & PROFIT
2. PLAN NEXT YEARS INDIRECT COSTS & PROFIT
3. ADD NEW EXPENSES
4. ESCALATE FOR INFLATION
5. CHECK INDIRECT COST RETURN
6. FORECAST NEXT 1-3 YEARS

Similar to your projection of direct cost, your forecast of indirect cost and profit is based on past experience and records. It is generally best is to check the previous three years of direct cost, indirect cost, and profit. Three years usually provides sufficient data to make an accurate forecast. A forecast of plus or minus 1-5 percent of actual direct and indirect cost is considered accurate for most purposes.

1. How does your firm forecast indirect costs and profit?

2. Does your firm compare indirect costs with that of competitors? If not, why not?

SOURCES OF INFORMATION ON INDIRECT COSTS & PROFITS

1. DUN & BRADSTREET (NEW YORK CITY, NY)
   - COST OF DOING BUSINESS
   - CREDIT REPORTS
2. ROBERT MORRIS & ASSOCIATES (PHILADELPHIA, PA)
   - COST OF DOING BUSINESS
   - CREDIT REPORTS
3. IRS (WASHINGTON, D.C.)
4. TRADE PUBLICATIONS
   - F.W. DODGE (NEW YORK CITY, NY)
   - R.S. MEANS (KINGSTON, MA)
5. INDUSTRY ASSOCIATION SURVEYS
   - ASSOCIATED GENERAL CONTRACTORS (AGC)
   - NATIONAL ASSOCIATION OF HOME BUILDERS (NAHB)
   - ASSOCIATED BUILDERS AND CONTRACTORS (ABC)

The above sources publish data on contractor finances, including operating costs (indirect costs or overhead) and profit margins for different types of construction.

Contractors should check their planned indirect costs and profit against that of their competitors. Much of this information is easily obtainable, such as knowing what a competitor should pay for rent, telephone, equipment rental, vehicle rental, etc. However, as the contractor gets larger or operates in locations farther from the home office, it is wise to check indirect costs and profit margins against regional and/or national averages.

Indirect costs and profit margins will be unique for each specific set of circumstances. Comparing your indirect costs and profit margin with your competitor's probable indirect costs and profit margin gives you an idea of whether or not your indirect costs and profit margins are competitive, i.e., high or low.

INDIRECT COST BUDGET

($'s = 1,000's)

ASSUMPTIONS: ANNUAL INFLATION = 10%

INDIRECT COSTS	FY	FY+1	FY+2	FY+3
EQUIPMENT	$ 50	$ 55	$ 60.5	$ 66.55
LABOR/BENEFITS	50	55	60.5	66.55
SHOP & YARD	50	55	60.5	66.55
VEHICLES	50	55	60.5	66.55
MARKETING	100	110	121.0	133.10
-ESTIMATOR				
-COMPUTER				
G & A VARIABLE	100	110	121.0	133.10
-SUPERINTENDENT				
-ADMINISTRATOR				
G & A FIXED	100	110	121.0	133.10
TOTAL	$500	$550	$605.0	$665.50

A typical forecast of indirect costs is shown above. Larger numbers are used for ease of illustration. The same principals apply for any size contractor.

The current fiscal year is in the column FY. The projections for the next three years are: FY+1, FY+2, and FY+3 respectively.

RETURN ON INDIRECT COST
(RIC)

1. GENERAL CONTRACTORS 40 TO 60 PERCENT
2. SUBCONTRACTORS 20 TO 40 PERCENT
3. SPECIALTY SUBCONTRACTORS 10 TO 20 PERCENT

Surveys over the past 20 years indicate that a good gauge of contractor's control of indirect costs and profitability is return on indirect costs (RIC). A contractor who's RIC is within the above ranges most likely adequately controls indirect costs, makes a profit, and stays competitive.

RIC is the amount of profit made as a percent of indirect costs. With a given RIC one can forecast indirect costs required to return the desired profit or forecast profit based on the projected indirect costs.

RIC views your indirect costs as an investment, which it is. The money spent on indirect expenses is somewhat discretionary and can be consider the cost of doing business which requires a return like any other investment. Profit is the amount of return the business is making on indirect expenses.

A company needs to maintain a certain minimum percentage overall profit return in order to make a reasonable return on indirect costs (RIC). Different levels of risk require and justify different levels of return. Usually a general contractor has a higher level of business risk than a subcontractor and should therefor earn a higher level of return on assets and investments. Consequently the RIC for a general contractor is usually higher than the RIC for a subcontractor. The appropriate level of return serves as a guide for the indirect cost markup percentage.

CALCULATING RETURN ON INDIRECT COSTS

$$RIC = \frac{\text{NET PROFIT}}{\text{INDIRECT COST}}$$

EXAMPLE:

NET PROFIT = $100,000

INDIRECT COSTS = $500,000

$$RIC = \frac{\$100,000}{\$500,000} = \underline{0.20} \text{ OR } \underline{20\%}$$

The example contractor has forecast $500,000 for indirect cost and $100,000 for profit, providing a 20 percent return on indirect costs.

Based on the previous chart, twenty percent is acceptable as an upper level for specialty contractors, such as cabinet and metal work, and the lower level for subcontractors in general.

If the contractor was a general contractor, the 20 percent would not be an acceptable RIC. In this case the general contractor would re-evaluate the amount of profit necessary to provide an acceptable RIC for the given indirect costs.

1. Does you company evaluate its return on indirect costs (RIC)?

2. Does your company compare profit to indirect cost?

CALCULATING PROFIT GOAL FROM RIC

PROFIT = RIC X INDIRECT COSTS

EXAMPLE:

RIC = 50% OR 0.50

INDIRECT COSTS = $500,000

PROFIT = 0.50 X $500,000 = $250,000

In the example above, for a return of 50 percent on indirect costs of $500,00 the contractor must achieve a profit of $250,000.

1. Does your company project profit based on a return on indirect costs (RIC)?

FORECASTING THE YEARLY BUDGET

1. FORECAST GROSS REVENUE
2. ESTABLISH PROFIT GOAL
3. FORECAST DIRECT COSTS
4. CALCULATE FIXED INDIRECT COSTS
5. CALCULATE VARIABLE INDIRECT COSTS
6. CALCULATE TOTAL INDIRECT COSTS =

   FIXED INDIRECT COSTS + VARIABLE INDIRECT COSTS
7. CALCULATE PROFIT = REVENUE - INDIRECT COSTS
8. CHECK CALCULATIONS

The budget forecast can be made using certain of the budget items as givens to forecast the other budget items. For example, one can start with the forecasting of total revenue, as shown above; or one can start with the indirect costs as a given and project the revenue and direct cost required to provide a given return on indirect cost (RIC).

1. What methodology does your firm use to prepare its budget forecasts?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #4: Budget Planning

Based on your recommendations, XYZ Electrical Contractors has decided to increase revenue. Although the market is depressed, the company is well positioned to expand its more profitable work. Additionally, less profitable work can be made more profitable by correcting the major causes of delays and cost overruns. Such corrective action will effectively reduce direct cost relative to revenue, consequently increasing profit while also raising the return on indirect costs (RIC).

The company has the following goals and forecasts for the next two fiscal years (FY+1 and FY+2):

1. Increase revenue by $300,000 per year.

2. Increase profit by ten percent (10%) per year.

3. Forecasts all costs (both direct and indirect) increasing (escalating, inflating) by ten percent (10%) per year.

Develop a two year budget plan (forecast) for all costs and profit. Check for return on indirect costs (RIC) and percentage profit growth.

Budget Steps:

1. Using current year data and the given revenue goal, forecast FY+1 and FY+2 revenue.

2. Using the given inflation percentages, forecast direct cost and indirect cost items and their respective percentages.

3. Calculate gross profit (revenue less direct costs) dollar amount and percentage.

4. Calculate net profit (gross profit less indirect cost) dollar amount and percentage.

5. Calculate the return on indirect cost (RIC = net profit divided by indirect cost).

6. Calculate the percentage increase in profit (current year profit less previous year profit divided by previous year profit).

7. Check calculations.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #4: Budget Planning

($'s = 1,000's)

	FY		FY+1		FY+2	
	$	%	$	%	$	%
REVENUE	3,000	100.00	3,300	100.00	3,600	100.00
DIRECT COSTS						
LABOR	900	30.00				
MATERIALS	900	30.00				
EQUIPMENT	150	5.00				
SUBCONTRACTS	450	15.00				
TOTAL DIRECT COSTS	2,400	80.00				
GROSS PROFIT	600	20.00				
INDIRECT COSTS						
EQUIPMENT	30	1.00				
LABOR BENEFITS	30	1.00				
SHOP & YARD	30	1.00				
VEHICLES	30	1.00				
ESTIMATING	30	1.00				
MARKETING	30	1.00				
VARIABLE G & A	90	3.00				
FIXED G & A	180	6.00				
TOTAL INDIRECT COST	450	15.00				
NET PROFIT	150	5.00				
RETURN ON INDIRECT COST		33.33%		%		%
NET PROFIT PERCENTAGE INCREASE				%		%

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #4: Budget Planning

($'s = 1,000's)

	FY		FY+1		FY+2	
	$	%	$	%	$	%
REVENUE	3,000	100.00	3,300	100.00	3,600	100.00
DIRECT COSTS						
LABOR	900	30.00	990	30.00	1,080	30.00
MATERIALS	900	30.00	990	30.00	1,080	30.00
EQUIPMENT	150	5.00	165	5.00	180	5.00
SUBCONTRACTS	450	15.00	495	15.00	540	15.00
TOTAL DIRECT COSTS	2,400	80.00	2,640	80.00	2,880	80.00
GROSS PROFIT	600	20.00	660	20.00	720	20.00
INDIRECT COSTS						
EQUIPMENT	30	1.00	33	1.00	36	1.00
LABOR BENEFITS	30	1.00	33	1.00	36	1.00
SHOP & YARD	30	1.00	33	1.00	36	1.00
VEHICLES	30	1.00	33	1.00	36	1.00
ESTIMATING	30	1.00	33	1.00	36	1.00
MARKETING	30	1.00	33	1.00	36	1.00
VARIABLE G & A	90	3.00	99	3.00	108	3.00
FIXED G & A	180	6.00	198	6.00	216	6.00
TOTAL INDIRECT COST	450	15.00	495	15.00	540	15.00
NET PROFIT	150	5.00	165	5.00	180	5.00
RETURN ON INDIRECT COST		33.33%		33.33%		33.33%
NET PROFIT PERCENTAGE INCREASE				10.00%		9.09%

LESSON #5 DEVELOPING MARKUP FACTORS

OBJECTIVES

1. MARKUP STRATEGY
2. SUBCONTRACT INTENSIVE MARKUP
3. LABOR INTENSIVE MARKUP

Research indicates that contractors generally correctly estimate direct cost, but often have trouble calculating their markup for indirect costs and profit. Indirect costs and profit are very important in financial management, this lesson addresses the markup calculations associated with indirect costs and profit.

Markup is the amount of money added to direct cost to cover indirect costs and profit. Markup is usually expressed as a percentage which is to be added to the direct cost. This lesson explains markup methods for two types of contractors, subcontract intensive and labor intensive contractors.

Addressed first is the markup for subcontract intensive contractors. Subcontract intensive contractors are contractors with the majority of their direct costs as subcontracts. Most general contractors are subcontract intensive contractors.

Addressed second is the markup for labor intensive contractors. Labor intensive contractors are contractors with the majority of their direct costs as labor. Most subcontractors are labor intensive contractors.

1. Is your company a subcontract intensive or labor intensive contractor?

CFM PROFIT TIP #5

MARK UP EACH BID SO IT RECOVERS ITS FAIR SHARE OF INDIRECT COSTS AND PROFIT

The idea of markup is to recover or pay back to the company all of its planned indirect costs and desired profit. Based on the annual budget one can calculate the markup for the type of contracting involved, which for our example purposes is either labor intensive or subcontract intensive.

1. Does your firm always try to recover all of your anticipated indirect costs when marking up a bid?

2. How does your firm calculate markup?

MARKUP STRATEGY

1. ADDED TO DIRECT COSTS
   - INDIRECT COSTS
   - PROFIT
2. PROPERLY USED MARKUP FACTORS
   - RECOVER INDIRECT COSTS
   - PROVIDE PROFIT MARGIN
3. ALWAYS RECOVER ALL INDIRECT COSTS
4. PROFIT ADJUSTED FOR MARKET CONDITIONS

Markup strategy involves a simple but essential idea. Each job should recover its fair share of indirect costs. If the company makes its revenue goal and each job carries its fair share of indirect costs, at year end the firm will have recovered all indirect costs and made the planned profit. Included in this strategy is the necessity to control direct and indirect costs throughout the year.

The amount of profit added (profit margin or profit markup) depends on several factors. The primary factor affecting profit margins is the market, for example profit margins may be reduced to be more competitive in a tight market. Lost planned profit can often be made up by tighter control of direct and indirect costs. Sometime it is possible to add higher profit margins to jobs which are less competitive or have a greater construction risk. The strategy is to achieve your planned profit (as delineated in the annual budget) by year end using the appropriate markup for indirect costs and profit.

1. Does your firm try to mark up for profit separate from indirect cost markup when marking up a bid?

2. What methodology does your company use to mark up direct costs for bidding purposes?

3. Does you company vary its markup for indirect costs from job to job during the budget year? If so, why?

4. Does you company vary its markup for profit from job to job during the budget year? If so, why?

INDIRECT COST AND PROFIT MARKUP

1. BASED ON ANNUAL BUDGET
2. CALCULATED CONSIDERING INTENSIVE DIRECT COSTS
3. REVISED AS BUDGET CHANGES

The markup strategy involves three considerations.

First, the markup factor is based on the annual budget.

Second, the markup factor is calculated based on the intensive direct costs category; in this lesson's examples, either by subcontract dollars or labor hours. The direct cost categories chosen for markup (i.e., the "intensive" direct costs) can be any one or combination of or all of the direct costs, whatever suits the contractor's business and financial requirements.

Third, the markup must be revised as the budget changes with respect to direct costs (revenue), indirect costs, or desired profit.

1. Does your company revise markup as the amount of direct and indirect costs change during the budget year? If so, why and how?

2. Which direct cost(s) does your firm use to calculate markup?

SUBCONTRACT INTENSIVE CONTRACTOR MARKUP

(APPROXIMATELY $1 TO $5 MILLION ANNUAL GROSS REVENUE)

1. CONTRACTOR USES MOSTLY SUBCONTRACTORS

2. MARKUP BASED ON BID'S SUBCONTRACT DOLLARS

The subcontract intensive contractor's markup is based on the annual amount of projected subcontract dollars. For example, a home builder might have an annual budget of $4,000,000 in direct costs of which $2,000,000 is subcontracts. The markup factor would be based on the $2,000,000 of annual subcontract direct costs, not the $4,000,000 of total annual direct costs.

CALCULATING SUBCONTRACT INTENSIVE CONTRACTOR MARKUP

1. ANNUAL BUDGET (PROJECTED COSTS AND PROFIT):

DIRECT COSTS	
LABOR	$1,000,000
MATERIALS	1,000,000
EQUIPMENT	- 0 -
SUBCONTRACTS (SUB $)	2,000,000
TOTAL DIRECT COSTS	$4,000,000
INDIRECT COSTS	500,000
PROFIT	300,000
TOTAL PROJECTED REVENUE	$4,800,000

2. INDIRECT COST MARKUP FACTOR

$$\frac{\text{INDIRECT COSTS}}{\text{BUDGET SUBCONTRACT \$'S}} = \frac{\$500,000}{\$2,000,000} = \$0.25/\text{SUB \$}$$

3. PROFIT MARKUP FACTOR

$$\frac{\text{BUDGET PROFIT}}{\text{BUDGET SUBCONTRACT \$'S}} = \frac{\$300,000}{\$2,000,000} = \$0.15/\text{SUB \$}$$

The annual budget is based on total projected direct costs, indirect costs, and desired profit; the sum of which equals total projected revenue. The company prorates its markup for indirect costs and profit in relation to the annual subcontract dollar amount of direct costs.

In the above example, for each job the subcontract intensive contractor will mark up the job's subcontract direct costs by $0.25 per $1.00 of subcontract cost to cover indirect costs and $0.15 per $1.00 of subcontract cost to allow for profit.

If the above contractor receives $4,800,000 in annual revenue and controls direct and indirect costs, the company will achieve a $300,000 planned net profit.

SUBCONTRACT INTENSIVE CONTRACTOR BID MARKUP

MARKUP IS A FACTOR OF BID'S SUBCONTRACT DIRECT COSTS

COST ITEM:	MARKUP:	PRICE:
DIRECT COSTS		
LABOR		$100,000
MATERIALS		100,000
SUBCONTRACTS		200,000
TOTAL DIRECT COSTS		$400,000
INDIRECT COSTS	$200,000 X $0.25/SUB $	50,000
PROFIT	$200,000 X $0.15/SUB $	30,000
BID AMOUNT		$480,000

Using the planned markup factors from the annual budget calculated on the previous page, the bid's subcontract direct cost amount is marked up for indirect costs and profit.

It is essential that estimates and bids adequately reflect the direct costs. With accurate direct costs, the markup factors for indirect cost and profit will correspond to the company's indirect cost burden and desired profit margin.

LABOR INTENSIVE CONTRACTOR MARKUP

(APPROXIMATELY $1 TO $5 MILLION ANNUAL GROSS REVENUE)

1. CONTRACTOR USES MOSTLY ITS OWN LABOR

2. MARKUP BASED ON LABOR HOURS

The labor intensive contractor's markup is based on the company's annual projection of labor hours. Labor hours are usually computed based on a general dollar amount to cover all labor costs, for example, an electrician at $40.00 per hour. Use 2,080 hours per year (40 hours/week x 52 weeks/year = 2080 hours/year) for each unit of labor (i.e., employee). A company with ten craftsmen would have (10 men x 2,080 hrs/yr) or 20,800 hours of direct annual labor.

1. Does your firm plan on doing a fixed amount of labor hours per year to recover the direct cost of labor?

2. Does your company have more than one type of labor costs? If so, how would you arrive at a general cost of labor?

CALCULATING LABOR INTENSIVE CONTRACTOR MARKUP

1. ANNUAL BUDGET (PROJECTED COSTS AND PROFIT):

DIRECT COSTS		
LABOR	80,000 HRS @ $25/HR	$2,000,000
MATERIALS		1,000,000
EQUIPMENT		- 0 -
SUBCONTRACTS		1,000,000
TOTAL DIRECT COSTS		$4,000,000
INDIRECT COSTS		500,000
PROFIT		300,000
TOTAL PROJECTED REVENUE		$4,800,000

2. INDIRECT COST MARKUP FACTOR

$$\frac{\text{INDIRECT COSTS}}{\text{BUDGET LABOR HOURS}} = \frac{\$500,000}{80,000 \text{ HRS}} = \$6.25/\text{LABOR HR}$$

3. PROFIT MARKUP FACTOR

$$\frac{\text{BUDGET PROFIT}}{\text{BUDGET LABOR HOURS}} = \frac{\$300,000}{80,000 \text{ HRS}} = \$3.75/\text{LABOR HR}$$

The annual budget is based on total projected direct costs, indirect costs, and desired profit; the sum of which equals total projected revenue. The company prorates its markup for indirect costs and profit in relation to the annual labor hours.

In the above example, for each job the labor intensive contractor will mark up the job's labor hours by $6.25 per labor hour to cover indirect costs and $3.75 per labor hour to allow for profit.

If the above contractor receives $4,800,000 in annual revenue and controls direct and indirect costs, the company will achieve a $300,000 planned net profit.

LABOR INTENSIVE CONTRACTOR BID MARKUP

MARKUP IS A FACTOR OF BID'S LABOR HOURS

COST ITEM:	MARKUP:	PRICE:
DIRECT COSTS		
LABOR	4,000 HRS @ $25.00/HR	$100,000
MATERIALS		100,000
SUBCONTRACTS		100,000
TOTAL DIRECT COSTS		$300,000
INDIRECT COSTS	4,000 HRS @ $6.25/HR	25,000
PROFIT	4,000 HRS @ $3.75/HR	15,000
BID PRICE		$340,000

Using the planned markup factors from the annual budget calculated on the previous page, the bid's total labor hours are marked up for indirect costs and profit.

It is essential that estimates and bids adequately reflect the direct costs and labor hours. With an accurate estimate of labor hours, the markup factors for indirect costs and profit will correspond to the company's indirect cost burden and desired profit margin.

1. Does your company revise its annual projected indirect costs and profit?

2. How often should the company update it projected budget for costs and profit?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #5-1: Subcontract Intensive Contractor Markup

ABC Home Builders is a subcontract intensive general contractor. At the beginning of the year, ABC Home Builders estimates that it will have $5,000,000 in annual revenues of which $3,000,000 will be subcontracts. Estimated annual indirect costs are $180,000 and planned annual profit is $90,000.

1. Calculate the company's markup factors for indirect costs and profit.

   a. Indirect Cost Markup Factor:

   $$\frac{\text{Indirect Costs}}{\text{Subcontracts}} = \text{---------- } = \text{ }$$

   b. Profit Markup Factor:

   $$\frac{\text{Profit}}{\text{Subcontracts}} = \text{---------- } = \text{ }$$

2. Given the following bid information, calculate the bid indirect cost and profit amounts using the respective markup factors, and then calculate the total bid amount.

   Direct Costs

Labor	$ 50,000
Materials	50,000
Equipment	- 0 -
Subcontracts	100,000
Total Direct Costs	$200,000

   Indirect Costs

   Bid's Subcontracts x Indirect Markup

   _____ x _____ =

   Profit

   Bid's Subcontracts x Profit Markup

   _____ x _____ = $_____

   Bid Amount $_____

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #5-2: Labor Intensive Contractor Markup

XYZ Electrical Contractors is a labor intensive contractor. At the beginning of the year, XYZ Electrical Contractors estimates that it will have $5,000,000 in annual revenues of which $2,400,000 will be labor costs. The company averages 80,000 labor hours per year with an average labor wage cost of $30.00 per hour ($2,400,000 ÷ 80,000 hours). Estimated annual indirect costs are $200,000 and planned annual profit is $160,000.

1. Calculate the company's markup factors for indirect costs and profit.

   a. Indirect Cost Markup Factor:

   $$\frac{\text{Indirect Costs}}{\text{Total Labor Hrs}} = \frac{\qquad\qquad}{\qquad\qquad} =$$

   b. Profit Markup Factor:

   $$\frac{\text{Profit}}{\text{Total Labor Hrs}} = \frac{\qquad\qquad}{\qquad\qquad} =$$

2. Given the following bid information, calculate the bid indirect cost and profit amounts using the respective markup factors, and then calculate the total bid amount.

   Direct Costs

Labor	(4,000 Hours @ $30.00/Hour)	$120,000
Materials		50,000
Equipment		- 0 -
Subcontracts		50,000
Total Direct Costs		$220,000

   Indirect Costs

   Bid Labor Hours x Indirect Markup

   _____ x _____ =

   Profit

   Bid Labor Hours x Profit Markup

   _____ x _____ = _____

   Bid Amount $_____

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #5-1: Subcontract Intensive Contractor Markup

1. Calculate the company's markup factors for indirect costs and profit.

   a. Indirect Cost Markup Factor:

$$\frac{\text{Indirect Costs}}{\text{Subcontracts}} = \frac{\$180,000}{\$3,000,000} = \$0.06 \text{ per Sub } \$$$

   b. Profit Markup Factor:

$$\frac{\text{Profit}}{\text{Subcontracts}} = \frac{\$90,000}{\$3,000,000} = \$0.03 \text{ per Sub } \$$$

2. Given the following bid information, calculate the bid indirect cost and profit amounts using the respective markup factors, and then calculate the total bid amount.

Direct Costs

Labor	$ 50,000
Materials	50,000
Equipment	- 0 -
Subcontracts	100,000
Total Direct Costs	$200,000

Indirect Costs

Subcontract Cost	x Indirect Markup		
$100,000	x $0.06 / Sub $	=	6,000

Profit

Subcontract Cost	x Profit Markup		
$100,000	x $0.03 / Sub $	=	3,000

Bid Amount $209,000

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #5-2: Labor Intensive Contractor Markup

1. Calculate the company's markup factors for indirect costs and profit.

   a. Indirect Cost Markup Factor:

$$\frac{\text{Indirect Costs}}{\text{Total Labor Hrs}} = \frac{\$200{,}000}{80{,}000 \text{ Hrs}} = \$2.50 \text{ per Labor Hour}$$

   b. Profit Markup Factor:

$$\frac{\text{Profit}}{\text{Total Labor Hrs}} = \frac{\$160{,}000}{80{,}000 \text{ Hrs}} = \$2.00 \text{ per Labor Hour}$$

2. Given the following bid information, calculate the bid indirect cost and profit amounts using the respective markup factors, and then calculate the total bid amount.

Direct Costs

Labor	(4,000 Hours @ $30.00/Hour)	$120,000
Materials		50,000
Equipment		- 0 -
Subcontracts		50,000
Total Direct Costs		$220,000

Indirect Costs

Bid Labor Hours x Indirect Markup

4,000 Hours x $2.50 / Hour = 10,000

Profit

Bid Labor Hours x Profit Markup

4,000 Hours x $2.00 / Hour = 8,000

Bid Amount $238,000

LESSON #6 MARKUP USING COST POOLS

OBJECTIVES

1. COST POOL RATIONALE
2. COST POOLS DEFINED
3. COST POOL MARKUP FACTORS
4. BID MARKUP BY COST POOLS

The previous lessons explained markup factors for indirect costs and profit for contractors with a brief chart of accounts summarized as direct costs, indirect costs, and profit. This lesson explains how to use markup by cost pool.

Often small-to-medium size contractors have a chart of accounts which is arranged in cost pools. Contractors grouping indirect costs by cost pools need to know how to markup by cost pool.

The correct allocation of markup is especially important for contractors using cost pools. Direct costs may be easily estimated, but marking up the bid by cost pool to correctly recover your indirect costs and provide for profit requires a methodology based on good accounting principles and sound financial management.

1. Does your firm use cost pools to allocate direct and indirect costs and profit?

2. What are the reasons a firm might have for using cost pools?

CFM RULE #6

MARK UP THE BID'S DIRECT COSTS BY COST POOL TO RECOVER INDIRECT COSTS AND HAVE A COMPETITIVE PRICE

Using markup by cost pools may improve your bid's competitiveness.

Bids are generally similar in their direct cost pricing. Bids largely differ in the amounts included for indirect costs and profit.

Indirect cost markup by cost pool factors will more closely reflect your true indirect costs and consequently should improve your bid's accuracy (exactness) and competitiveness. What one adds for profit is a matter of the budgeted (planned) profit and market conditions.

Improving the accuracy or exactness of allocating indirect costs by using cost pools in effect removes a level of uncertainty from the bid thus making it tighter, which is to say lower or more competitive.

COST POOLS

1. GROUPING OF SIMILAR (LIKE, RELATED) ACCOUNTS
2. RATIONALE
    - A. CONVENIENCE
    - B. EASE OF USE
    - C. ANALYSIS
    - D. CONTROL
    - E. BUDGETING
2. MARKUP BY INDIRECT COST POOLS
    - A. EQUIPMENT
    - B. LABOR BENEFITS
    - C. SHOP AND YARD
    - D. VEHICLES
    - E. MARKETING AND ESTIMATING
    - F. GENERAL AND ADMINISTRATIVE (G & A)
    - G. PROFIT

If a contractor's annual revenue exceeds $1-5 million, chances are the contractor has a lengthy chart of accounts which is probably grouped by cost pools. If so, the contractor should know how to mark up by cost pool. Cost pools or cost centers were defined earlier in the course. Essentially, a cost pool is a group of similar (like or related) cost accounts categorized under a common heading or pool for convenience, ease of use, analysis, control, budgeting, or similar rationale.

Cost pools can include such categories as equipment, labor benefits, shop and yard, vehicles, marketing and estimating, and general and administrative. Categories such as equipment, labor, shop and yard, and vehicles may have cost pools for both direct costs and indirect costs. In this lesson we focus on the allocation of indirect costs and therefor deal with cost pools for indirect costs.

EQUIPMENT MARKUP

1. FORMULA

$$\frac{\text{EQUIPMENT POOL INDIRECT COST BUDGET}}{\text{BUDGET PLAN USABLE EQUIPMENT HOURS}} = \text{EQUIPMENT POOL MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$200,000}{10,000 \text{ HRS}} = \$20.00 \text{ PER USABLE EQUIPMENT HOUR}$$

3. BID MARKUP

BID EQUIPMENT HOURS x EQUIPMENT MARKUP FACTOR

Equipment includes heavy equipment such as cranes, dump trucks, and dozers; not included are vehicles which are cars and light trucks such as vans and pickups.

Equipment markup is based on the budget's planned usable equipment hours. In the example above, each bid's usable equipment hours are marked up by $20.00 per equipment hour to recover the indirect costs of equipment operation. The total indirect costs budget for equipment operation (i.e., the overhead for the equipment cost pool) is $200,000 for the budget year.

1. When is an equipment cost pool useful?

2. How does your firm handle direct and indirect costs for equipment?

LABOR BENEFIT MARKUP

1. FORMULA

$$\frac{\text{LABOR BENEFIT BUDGET}}{\text{BUDGET PLAN LABOR HOURS}} = \text{LABOR MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$100,000}{40,000 \text{ HRS}} = \$2.50 \text{ PER LABOR HOUR}$$

3. BID MARKUP

BID LABOR HOURS x LABOR BENEFIT MARKUP FACTOR

Labor benefits include expenses for payroll taxes and workers compensation. Other labor costs that might also be included in the labor benefits cost pool are such items as medical insurance, dental insurance, vacation pay, and retirement fund. Any item of cost associated with labor that can not be directly allocated with the hourly wage rate, or for which it is not convenient to do so, can be allocated under the indirect costs labor benefits cost pool.

Labor benefit markup is based on the budget's planned labor hours. In the example above, each bid's labor hours are marked up by $2.50 per labor hour to recover the indirect cost of labor benefits. The total annual cost of labor benefits is $100,000.

1. What are the advantages of a labor benefits cost pool?

2. How does your company allocate labor benefits?

SHOP & YARD MARKUP

1. FORMULA

$$\frac{\text{SHOP \& YARD BUDGET}}{\text{BUDGET PLAN MATERIALS COST}} = \text{SHOP \& YARD MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$200,000}{\$2,000,000} = \$0.10 \text{ PER } \$1.00 \text{ OF MATERIALS COST}$$

3. BID MARKUP

BID MATERIALS COST x SHOP & YARD MARKUP FACTOR

Shop and yard includes the indirect costs associated with the off site storage of materials, off site fabrication, and associated off site supervision (supervision of the shop and yard facility).

Shop and yard markup is based on the budget's planned direct costs for materials. In the example above, each bid's materials dollars are marked up by $0.10 per $1.00 direct cost of materials to recover the indirect cost of operating the shop and yard. The total cost of operating the shop and yard is $200,000 per year and the budgeted direct costs of materials for the year is $2,000,000.

1. Does your company operate a shop and yard? If so, how does the company allocate the cost of shop and yard operation?

2. What are the disadvantages of a shop and yard cost pool?

VEHICLES MARKUP

1. FORMULA

$$\frac{\text{VEHICLES BUDGET}}{\text{BUDGET PLAN DIRECT COSTS}} = \text{VEHICLES MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$100,000}{\$8,000,000} = \$0.0125 \text{ PER } \$1.00 \text{ OF DIRECT COSTS}$$

3. BID MARKUP

BID DIRECT COSTS x VEHICLES MARKUP FACTOR

Vehicle cost pools includes all expenses associated with operating light vehicles such as cars and pickup trucks. Operating costs include insurance, gas, repairs, and maintenance.

Vehicle markup is based on the budget's total direct costs. In the example above, each bid's direct costs are marked up by $0.0125 per $1.00 of direct costs to recover the indirect costs of vehicle operation. The total cost of vehicle operation is $100,000 per year and the budgeted direct costs are $8,000,000 for the year.

1. Does your firm have a vehicles cost pool?

2. In what other ways might vehicle costs be controlled?

MARKETING AND ESTIMATING MARKUP

1. FORMULA

$$\frac{\text{MARKETING BUDGET}}{\text{BUDGET PLAN DIRECT COSTS}} = \text{MARKETING MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$200,000}{\$8,000,000} = \$0.025 \text{ PER } \$1.00 \text{ OF DIRECT COSTS}$$

3. BID MARKUP

BID DIRECT COSTS x MARKETING MARKUP FACTOR

The marketing and estimating cost pool includes all expenses associated with getting new business (new jobs). Marketing and estimating costs include advertising, business entertainment, estimating, and associated salaries.

Marketing and estimating markup is based on the budget's total direct costs. In the example above, each bid's direct costs are marked up by $0.025 per $1.00 of direct costs to recover the indirect cost of marketing and estimating. The total cost of marketing and estimating is $200,000 per year and the budgeted direct costs are $8,000,000 for the year.

1. How does your firm control and allocate marketing and estimating costs?

2. Is it better to have combined or separate marketing and estimating cost pools.

G & A MARKUP

1. FORMULA

$$\frac{\text{G \& A BUDGET}}{\text{BUDGET PLAN DIRECT COSTS}} = \text{G \& A MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$200,000}{\$8,000,000} = \$0.025 \text{ PER } \$1.00 \text{ OF DIRECT COSTS}$$

3. BID MARKUP

BID DIRECT COSTS x G & A MARKUP FACTOR

General and administrative (G & A) includes both variable and fixed G & A expenses.

Variable G & A expenses are those that increase or decreases with an increase or decrease in revenue. For example, salaries for additional personnel such as a general superintendent that cannot be charged to a specific job is a variable expense.

Fixed G & A expenses are those necessary to carry on the business, such home office rent, telephone, and utilities.

G & A markup is based on the budget's total direct costs. In the example above, each bid's direct costs are marked up by $0.025 per $1.00 of direct costs to recover the indirect cost of G & A. The total cost of G & A is $200,000 per year and the budgeted direct costs are $8,000,000 for the year.

1. What are the various costs that might be allocated under the G & A cost pool?

PROFIT MARKUP

1. FORMULA

$$\frac{\text{PLAN PROFIT}}{\text{BUDGET PLAN DIRECT COSTS}} = \text{PROFIT MARKUP FACTOR}$$

2. EXAMPLE

$$\frac{\$1,000,000}{\$8,000,000} = \$0.125 \text{ PER } \$1.00 \text{ OF DIRECT COSTS}$$

3. BID MARKUP

BID DIRECT COSTS x PROFIT MARKUP FACTOR

Profit as used here is net profit before taxes. The company needs incorporate in the budget the amount of profit it wishes to make for the year. Included in profit are such amounts as earnings for the owner and retained earnings to be left in the company for operating capital and growth.

Profit markup is based on the budget's total direct costs. In the example above, each bid's direct costs are marked up by $0.125 per $1.00 of direct costs recover the desired profit. The total desired profit is $1,000,000 for the year and the budgeted direct costs are $8,000,000 for the year.

1. What are other ways that profit might be calculated and allocated?

2. Does your firm allocate profit separately for each job?

3. Does your firm have an annual profit goal based on projected total revenue? If not, how does your company deal with profit on an annualized basis, if at all?

INDIRECT COST POOL MARKUP ALLOCATION ITEMS

INDIRECT COST POOL	BUDGET ITEM
- EQUIPMENT	- USABLE EQUIPMENT HOURS
- LABOR BURDEN	- LABOR HOURS
- SHOP & YARD	- MATERIALS COST
- VEHICLES	- DIRECT COSTS
- MARKETING	- DIRECT COSTS
- G & A	- DIRECT COSTS
- PROFIT	- DIRECT COSTS

Summarized above are the indirect cost pools and budget items used to calculate the recovery of indirect cost and provision for profit. The next two pages show how these indirect costs recovery factors are calculated from a typical budget and how the markup factors are then used to markup a bid.

1. What are other cost pools that can be used?

2. Does your company use all of the above cost pools? If not, how does your company allocate costs associated with the above cost pools?

CONTRACTOR ANNUAL BUDGET EXAMPLE

1. DIRECT COSTS			
- LABOR	40,000 HRS @ $25/HR		$ 1,000,000
- MATERIALS	DIRECT COST		2,000,000
- EQUIPMENT	10,000 HRS @ $100/HR		1,000,000
- SUBCONTRACTS	DIRECT COST		4,000,000
TOTAL DIRECT COST			$ 8,000,000
2. INDIRECT COSTS			
- LABOR BURDEN		$100,000	
- SHOP & YARD		200,000	
- EQUIPMENT		200,000	
- VEHICLES		100,000	
- MARKETING		200,000	
- G & A		200,000	
TOTAL INDIRECT COST			1,000,000
3. PROFIT			1,000,000
4. TOTAL PROJECTED REVENUE			$10,000,000

Above is an annual budget which might be typical for a small-to-medium contractor. Shown are planned direct and indirect expenses, profit, and total revenue by major budget categories. Specific cost accounts are aggregated under their respective cost pools.

CONTRACTOR BID EXAMPLE
(MARKUP BY COST POOLS)

1. DIRECT COSTS			
- LABOR	8,000 LABOR HOURS @ $25/HR		$ 200,000
- MATERIALS	DIRECT COST		200,000
- EQUIPMENT	1,000 EQUIPT HRS @ $100/HR		100,000
- SUBCONTRACTS	DIRECT COST		500,000
TOTAL PROJECT DIRECT COST			$1,000,000
2. INDIRECT COSTS			
(COST POOL AMOUNT x COST POOL MARKUP FACTOR)			
- LABOR	8,000 HRS @ $2.50/HR	= $20,000	
- SHOP & YARD	$200,000 @ $0.10/$	= 20,000	
- EQUIPMENT	1,000 HRS @ $20.00/HR	= 20,000	
- VEHICLES	$1,000,000 @ $0.0125/$	= 12,500	
- MARKETING	$1,000,000 @ $0.025/$	= 25,000	
- G & A	$1,000,000 @ $0.025/$	= 25,000	
TOTAL PROJECT INDIRECT COST			122,500
3. PROFIT	$1,000,000 @ $0.125/$		125,000
4. BID AMOUNT			$1,247,500

Above is a typical bid marked up by cost pool. While the calculations may appear complex because of the number of them, they are relatively simple. The examples of cost pool markup calculation shown earlier in this lesson demonstrate each of the above indirect cost pool markup factor calculations and may be referred to for clarification of the computation.

1. In what other ways might this bid break-out for indirect costs be handled, if any?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #6: Markup Using Cost Pools

You are the controller for XYZ Electrical Contractors. XYZ Electrical Contractors has annual revenues of $10 million. At the beginning of each quarter you revise the budget for the next twelve months and develop markup factors to recover indirect costs allocated to each job. For the ensuing twelve month period, the following markup factors have been developed along with the corresponding bid item on which each is based.

Indirect Cost Item	Markup Factor	Bid Item
Labor Burden	$ 5.00/Labor Hour	Labor Hours
Shop & Yard	$ 0.15/$	Materials Cost
Equipment	$20.00/Equip Hour	Usable Equipment Hours
Vehicles	$ 0.01/$	Direct Costs
Marketing & Estimating	$ 0.03/$	Direct Costs
G & A	$ 0.03/$	Direct Costs
Profit	$ 0.05/$	Direct Costs

Use the above information to calculate a bid price for the office building project shown on the next page.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #6: Markup Using Cost Pools

XYZ ELECTRICAL CONTRACTOR

Project: Office Building

Direct Costs		
Labor	30,000 Labor Hours @ $25/Hr.	$ 750,000
Materials		900,000
Equipment	1,500 Equip. Hrs. @ $100/Hr.	150,000
Subcontracts		1,500,000
	Total Direct Costs	$3,300,000
Indirect Costs		
	Markup Item x Markup Factor	
Labor		
Shop & Yard		
Equipment		
Vehicles		
Marketing		
G & A		
Total Indirect Costs		
Profit		
Bid Amount		$

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #6: Markup Using Cost Pools

XYZ ELECTRICAL CONTRACTOR

Project: Office Building

Direct Costs			
Labor	30,000 Labor Hours @ $25/Hr.		$ 750,000
Materials			900,000
Equipment	1,500 Equip. Hrs. @ $100/Hr.		150,000
Subcontracts			1,500,000
	Total Direct Costs		3,300,000
Indirect Costs			
Labor	30,000 HRS @ $ 5.00/HR	= $150,000	
Shop & Yard	$900,000 @ $ 0.15/$	= 135,000	
Equipment	1,500 HRS @ $20.00/HR	= 30,000	
Vehicles	$3,300,000 @ $ 0.01/$	= 33,000	
Marketing	$3,300,000 @ $ 0.03/$	= 99,000	
G & A	$3,300,000 @ $ 0.03/$	= 99,000	
	Total Indirect Costs		546,000
Profit	$3,300,000 @ $ 0.05/$		165,000
Bid Amount			$4,011,000

LESSON #7 CASH FLOW ANALYSIS

OBJECTIVES

1. CASH FLOW DEFINITIONS
2. CASH FLOW IN CONSTRUCTION
3. CASH FLOW LEVELS
4. CASH FLOW STRATEGIES
5. CASH PLANNING FACTORS
6. JOB CASH FLOW
7. COMPANY CASH FLOW

Projecting cash flow is an important aspect of contractor financial management.

A cash flow forecast is a projection of the cash receipts and cash payments for a future period of time.[1]

Contractors can easily get behind in paying their subcontractors and suppliers due to late payment from the owner or the improper allocation of payment monies received by the contractor. Lack of adequate capital or operating reserves (cash on hand) can also contribute to the contractor's inability to pay subcontractors and suppliers.

Good construction financial management should result in a positive cash flow which allows the contractor to avoid or minimize borrowing. A positive cash flow also allows the contractor to take advantage of supplier discounts for early payment.

This lesson presents some ideas on projecting cash flow and maintaining a positive cash flow.

1. Needles, p.979.

CFM RULE #7

FORECAST JOB AND COMPANY CASH FLOW TO HAVE A POSITIVE CASH FLOW AND AVOID BORROWING

Profitable contractors forecast each job's cash flow on a monthly basis. By projecting cash flow one can see which jobs do not have enough cash to carry them (i.e., negative cash flow, require cash infusions) and which jobs have a surplus cash flow (i.e., positive cash flow, throw off cash). Knowing each job's cash requirements is the first step in taking action to bring cash requirements under control.

Forecasting an overall company cash flow provides an aggregate view of combined job cash flows. The net cash flow picture company wide allows the proper allocation of company resources.

1. Does your company project each job's cash flow on a monthly basis?

2. Does your company project an overall company cash flow on a monthly basis?

3. If not done, do you believe your company would benefit by forecasting its cash requirement for 30, 60, 90, 180, and 365 day periods?

CASH FLOW DEFINITIONS

1. CASH FLOW:

   THE ACTUAL CASH (MONEY) THAT FLOWS INTO (RECEIPTS) AND OUT OF (DISBURSEMENTS) A BUSINESS OVER A SPECIFIC TIME PERIOD (NOT THE NET ACCOUNTING INCOME).

2. NET CASH FLOW:

   INCOME CASH FLOW (RECEIPTS) LESS OUT GO CASH FLOW (DISBURSEMENTS) - THE AMOUNT OF CASH RECEIPTS (INCOME) OVER CASH DISBURSEMENTS (EXPENSES) OR THE AMOUNT OF DISBURSEMENTS OVER RECEIPTS, THE LATTER AMOUNT BEING A NEGATIVE NET CASH FLOW.

3. NET CASH FLOW BEFORE TAXES (AFTER TAXES):

   CASH FLOW CALCULATIONS PRIOR TO TAKING INTO ACCOUNT INCOME TAXES (OR AFTER TAKING INTO ACCOUNT INCOME TAXES).

4. RELEVANT CASH FLOWS:

   CASH FLOWS WHICH SHOULD BE CONSIDERED WHEN EVALUATING A PROJECT.

5. SUNK COSTS:

   COSTS WHICH DO NOT CHANGE WITH CHANGES IN CONSTRUCTION VOLUME AND THEREFORE ARE IRRELEVANT TO THE EVALUATION OF SPECIFIC PROJECTS. HOWEVER, SUNK COSTS ARE IMPORTANT WHEN CONSIDERING THE OVERALL VOLUME OF BUSINESS REQUIRED TO BE PROFITABLE.

As you can see from the foregoing, there are several types of cash flow, including definitions other than those listed above. This course will generally be concerned with cash flow and net cash flow as they relate to both specific projects and the entire firm.

Cash flow forecast (cash budget): A forecast or budget that shows the firm's projected ending cash balance and the cash position for each month of the year so that periods of high or low cash availability can be anticipated.[1]

1. Needles, p.G-3.

CASH FLOW IN CONSTRUCTION

1. NON-UNIFORM CASH FLOWS
2. PROGRESS PAYMENTS
3. RETAINAGE
4. LOW PROFIT MARGINS

There are many items to consider in developing a positive cash flow in construction. Several factors contribute to the difficulty in maintaining a positive cash flow in the construction industry. Non-uniform cash flow is due to the nature of construction where work is spread over a period of time and performed irregularly (i.e., not in direct relation to elapsed time), and the method of payment by progress payments.

Progress payments are payments for work performed to date requested by the contractor and paid by the owner.

- Payment is sometimes irregular or incomplete due to disputes over workmanship and changes (change orders).
- Payment amounts are often irregular with respect to the work accomplished and not always in direct proportion to the work accomplished.
- The construction company may not receive planned cash due to late payment by the owner (or general contractor in the case of a subcontractor).
- Payments from the owner lag behind the completion of work, often by periods of thirty days or more.

Construction contracts usually specify that a portion of each progress payment will be withheld for retainage (as assurance of continued performance by the contractor). Retainage is customarily 10 percent of each progress payment.

Low profit margins compound the problem of developing a positive cash flow.

1. How can the contractor overcome, or at least mitigate, each of the problems addressed above?
2. Which of the above problems does your company find the most prevalent? How does your company mitigate the problem(s)?

CASH FLOW LEVELS

1. CASH CRUNCH
2. CASH SHORTFALL
3. QUANTITY OF PROFIT
4. QUALITY OF PROFIT

The following four stages might be used to describe the various levels of cash flow.

1. **Cash Crunch:** During the cash crunch stage the company has run out of cash. Payrolls and subcontractors might soon go unpaid. Suppliers have put the company on a cash only basis (COD). The cash crunch stage is now, the next 30-to-90 days.

2. **Cash Shortfall:** Cash shortfall is similar to the cash crunch stage. The variation is that serious financial difficulties are not as eminent. The cash shortfall stage shows cash flow problems developing in the next 90-to-180 days.

3. **Quantity of Profit:** The quantity of profit stage is not as serious as the cash crunch and cash shortfall stages. However, quantity of profit indicates erosion of cash flow and profits will occur in the near future. The company currently has work and sufficient cash, but planned profit margins are low and the prospects for future work are uncertain. The quantity for profit stage usually covers from six to twelve months into the future.

4. **Quality of Profit:** The quality of profit stage indicates current work is profitable with an adequate positive cash flow. There is adequate work under contract for the foreseeable future. The quality of profit stage usually covers the next 12 to 24 months.

1. What cash flow stage is your company in at the present?

2. Is it possible to have different stages apply to individual projects and to the entire company? What is the rationale for your response?

CASH FLOW STRATEGIES

1. EARLY PAYMENT RECEIPT
   - PLAN PROJECT CASH FLOWS
   - DOCUMENT PROGRESS PAYMENTS
   - FILE TIMELY REQUESTS FOR PAYMENT
2. CASH RESERVES INVESTMENT
   - USE DISCOUNTS
   - MAKE SHORT TERM INVESTMENTS
3. DELAYED PAYMENTS

There a several steps the company can take to develop a positive cash flow. Every company needs to be aware of cash flow strategies that help develop a positive cash flow. Review the cash flow strategies listed above and then consider the following questions.

1. Based on your experience, which of the above cash flow strategies works best to develop a positive cash flow?

2. Based on your experience, which of the above cash flow strategies is least effective in developing a positive cash flow?

3. Are there any of the above strategies that you do not currently use which you might find useful in developing a positive cash flow?

4. Are there cash strategies that you know about or have tried that are not listed above?

CASH PLANNING FACTORS

1. PROJECT BUDGET AND SCHEDULE OF VALUES
2. PROJECT SCHEDULE
3. PROJECT CASH FLOW FORECAST
4. COMPANY CASH FLOW FORECAST

There are several items that help you plan and forecast your cash requirements.

First, you require a project budget, including a schedule of values for each major work item or subcontract.

A schedule of values lists each major work item and its respective budget (cost). General contractors can use the schedule of values submitted to the owner, which is based on the contractors own schedule of values and those submitted by the various subcontractors on the job. Subcontractors also need a detailed schedule of values. For example, an HVAC contractor might have a schedule of values listing subcontract amounts or unit costs for ducting, wiring, vents, controls, and HVAC units (equipment).

The project schedule lists the major items of work showing the start date and completion date (i.e., work period or duration of the item) for each respective item of work.

Using the budget and project schedule the contractor can forecast a project cash flow. Project cash flows are aggregated into a company cash flow.

1. Are the schedule of values for work items standard parts of the contracts your firm uses?

2. Does your firm prepare a project schedule reflecting major items of work or schedule of value items?

3. Does your firm prepare a company cash flow forecast which aggregates all project cash flow forecasts?

JOB CASH FLOW

1. ESTIMATED DIRECT COSTS
2. ESTIMATED INDIRECT COSTS
3. ESTIMATED PROFIT
4. ESTIMATED REVENUE = BID (1 + 2 + 3)
5. DIRECT COSTS EACH MONTH
6. TOTAL MONTHLY DIRECT COSTS (SUM OF ALL ITEMS IN 5)
7. PERCENT COMPLETE (6 ÷ 1)
8. INDIRECT COSTS PLUS PROFIT ([2 + 3] x 7)
9. REVENUE INCOME (6 + 8)
10. RETAINAGE @ 10% (9 x 0.1)
11. PAY REQUEST (9)
12. PAYMENT RECEIVED (11 - 10)
13. PROFIT RECEIVED ([3 x 7] x 0.9)
14. MONTHLY JOB CASH FLOW (12 - 9 + 13)
15. CUMULATIVE JOB CASH FLOW
    (PRIOR MONTHS 15 + CURRENT MONTHS 14)

Listed above are the elements for a job cash flow. Shown in Problem #7-1 is a job cash flow using the above elements.

When actually preparing a job cash flow, the fact that payments received lag expenditures by some period, usually by approximately one month, must be taken into account.

There are other ways to name and list the elements of a cash flow, but the concept is the same regardless of the terminology used.

As mentioned earlier in the lesson, there are several types of cash flow such as net cash flow, before tax cash flow, and after tax cash flow. Be sure to correctly define or know the type of cash flow which you are using.

COMPANY CASH FLOW

1. NET JOB CASH FLOWS
2. TOTAL NET JOB CASH FLOWS (SUM OF ALL JOBS IN 1)
3. COMPANY INDIRECT COSTS
4. TOTAL COMPANY INDIRECT COSTS (SUM OF ALL ITEMS IN 3)
5. MONTHLY COMPANY CASH FLOW (2 - 4)
6. CUMULATIVE COMPANY CASH FLOW
   (PRIOR MONTHS 6 + CURRENT MONTHS 5)

Listed above are the elements for a job cash flow. Shown in Problem #7-1 is a job cash flow using the above elements.

There are other ways to name and list the elements of a company or aggregate cash flow, but the concept is the same regardless of the terminology used.

As with project cash flow, there are several types of company cash flows such as net cash flow, before tax cash flow, and after tax cash flow. Be sure to correctly define or know the type of cash flow which you are using.

CASE STUDY: **CONTRACTOR FINANCIAL MANAGEMENT**

Problem #7-2: **Company Cash Flow**

XYZ ELECTRICAL CONTRACTORS
Company Cash Flow

	May	June	July	August
(1) Job Cash Flows	($)	($)	($)	($)
Job #101	- 0 -	19,700	80,300	- 0 -
Job #102	100,000	50,000	- 0 -	- 0 -
Job #103	<100,000>	<50,000>	- 0 -	- 0 -
Job #104	50,000	40,300	<20,300>	60,000
(2) Company Cash Flow (Sum of 1)	50,000	60,000	60,000	60,000
(3) Company Indirect Costs				
Variable Costs	10,000	5,000	30,000	10,000
Fixed Costs	30,000	30,000	30,000	30,000
(4) Total Indirect Costs (Sum of 3)	40,000	35,000	60,000	40,000
(5) Monthly Company Cash Flow (2 - 4)				
(6) Net Cumulative Cash Flow (Prior 6 + Current 5)				

* Previous months cumulative cash flow was zero (0).
< > Denotes a negative number.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT
Solution #7-1: Project Cash Flow

XYZ ELECTRICAL CONTRACTORS
Project Cash Flow: Job #A01

			May		June		July		August	
(1)	Direct Cost =	300,000	(%)	($)	(%)	($)	(%)	($)	(%)	($)
(2)	Indirect cost =	80,000								
(3)	Profit =	20,000								
(4)	Revenue (Bid) =	400,000								
(5)	Direct Cost									
	Labor	100,000	25	25,000	50	50,000	25	25,000		
	Materials	100,000	25	25,000	50	50,000	25	25,000		
	Equipment	50,000	25	12,500	50	25,000	25	12,500		
	Subcontracts	50,000	25	12,500	50	25,000	25	12,500		
(6)	Total Direct Cost (Sum of 5)	300,000		75,000		150,000		75,000		
(7)	Percent Complete ([6 ÷ 1] x 100)			25		50		25		
(8)	Indirect + Profit ([2 + 3] x 7)	100,000		25,000		50,000		25,000		
(9)	Revenue Earned (6 + 8)	400,000		100,000		200,000		100,000		
(10)	Retainage (@ 10%) (9 x 0.10)	40,000		10,000		20,000		10,000		
(11)	Payment Request (9 - 10)			90,000		180,000		90,000		
(12)	Payment Received (Prior Month 11)					90,000		180.000	{1}	130,000
(13)	Profit Received ([3 x Prior Month 7] x 0.9)					4,500		9,000	{2}	4,500
(14)	Monthly Cash Flow (12 - 9 + 13)			(100,000)		(105,500)		89,000		134,500
(15)	Net Cumulative Cash Flow (Prior 15 + Current 14)			(100,000)		(205,500)		(116,500)		18,000

{1} Includes $40,000 Retainage. {2} Includes prior month @ $4,500 + balance of $2,000.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #7-1: Company Cash Flow

XYZ ELECTRICAL CONTRACTORS
Company Cash Flow

	May	June	July	August
(1) Job Cash Flows	($)	($)	($)	($)
Job #101	- 0 -	19,700	80,300	- 0 -
Job #102	100,000	50,000	- 0 -	- 0 -
Job #103	<100,000>	<50,000>	- 0 -	- 0 -
Job #104	50,000	40,300	<20,300>	60,000
(2) Company Cash Flow (Sum of 1)	50,000	60,000	60,000	60,000
(3) Company Indirect Costs				
Variable Costs	10,000	5,000	30,000	10,000
Fixed Costs	30,000	30,000	30,000	30,000
(4) Total Indirect Costs (Sum of 3)	40,000	35,000	60,000	40,000
(5) Monthly Company Cash Flow (2 - 4)	10,000	25,000	- 0 -	20,000
(6) Net Cumulative Cash Flow (Prior 6 + Current 5)	10,000*	35,000	35,000	55,000

* Previous months cumulative cash flow was zero (0).
< > Denotes a negative number.

LESSON #8 GETTING PAID ON TIME

OBJECTIVES

1. GETTING THE FIRST CHECK
2. GETTING PAID EACH MONTH
3. GETTING THE LAST CHECK
4. ESSENTIAL INGREDIENTS
   - PROJECT BUDGET
   - SCHEDULE OF VALUES
   - CHANGE ORDER PROCEDURE
   - PAYMENT PROCEDURE
   - ESCROW ACCOUNTS
   - CASH FLOW SCHEDULE

Nation wide, contractors of all types find that getting paid by the owner for work accomplished is a major problem. This is possibly the number one problem faced by contractors in general today. Late payments and default by the owner on his financial obligations are serious, potentially bankrupting, concerns for all contractors. This lesson addresses this issue of contractor payment and discusses some ways contractors have found to eliminate, or at least alleviate, the problems of late payment and payment default.

At the project level, financial management is primarily concerned with the timely processing of the periodic payment requests (i. e., getting paid on time). At the company level, financial management is concerned with developing and implementing policies designed to avoid late payment and maintain a company overall positive cash flow. Some of the concepts addressed you may already know and possibly have had direct experience using. In reviewing the various steps outlined in this section, consider other financial management methods in payment assurance with which you are familiar and mention them to the class. To be successful, project and company management must be aware of the various financial management means at their disposal for having the owner pay, and to do so on time. Receiving payment for work accomplished is essential to staying in business; timely payment better ensures an adequate cash flow (and consequent higher profits).

CFM PROFIT TIP #8

GET THE FIRST CHECK AND THE LAST CHECK

AND

DO EVERYTHING NECESSARY IN BETWEEN

The above profit tip is known to experienced, profitable contractors. A very simple and effective idea underlies this philosophy; that is, get the owner in the habit of paying on time from the outset and carry through from the first payment to the final payment.

Not only do everything necessary financial management wise to receive payment, also do every thing necessary pursuant to your contract (that is, do the work promised when promised). This action on your behalf will remove the primary reason for the owner delaying or withholding payment while more favorably disposing the owner towards timely payments.

GETTING THE FIRST CHECK

1. KNOW YOUR CONTRACT'S PAYMENT PROVISIONS
2. SUBMIT A SCHEDULE OF VALUES FOR PAYMENTS AND CHANGE ORDERS
3. PLAN CASH FLOW KEEPING IN MIND THE PAYER'S ABILITY TO PAY
4. KNOW PAYER'S PAYMENT APPROVAL PROCESS
5. TRY TO REDUCE RETENTION THROUGHOUT THE JOB
6. GET EARLY PAYMENT IF AT ALL POSSIBLE

Owners, designers, and contractors each may have, and often do have, different ideas about what the pay provisions of the contract really mean. Consequently, at contract commencement, discuss the contract's payment provisions in detail with each and every party having responsibility in the payment process, consider what the provisions mean and how they are to be administered. Ensure that the contract provisions are clear; if not, have the payment provisions redrafted to everyone's mutual understanding and satisfaction.

Be sure that the owner's financial arrangements are adequate and in order. You may have to seek assurance of the owners's ability to pay, such as having the project lender make payments directly to the contractor and requiring retention amounts be placed in escrow.

Negotiate interim and final retention amounts or percentages to minimize the cash flow impact of any retention. Attempt to reduce the retention percentage as the project progresses and secure return of retention amounts after each phase of work (such as site work, foundation, and structural).

Submit to the owner a project cash flow and point out the schedule of payments due. Provide the owner with a schedule of values for both payments and changes (change orders). Both the payment schedule and schedule of values should be a part of the contract.

There are many different methods used to calculate the amount due the contractor for a given pay period. Ensure that there is mutual agreement as to the method to be used. The method of calculating payment can be subject to audit, at each time of payment or final payment or both, to ensure equity to each party. Clearly define the owner's (payer's) requirements for requests for payment.

GETTING PAID EACH MONTH

1. NEGOTIATE A SCHEDULE OF VALUES FOR PAYMENT
2. GET EARLY APPROVAL FOR CHANGE ORDERS
3. KEEP THE CHANGE ORDER PROCESS SIMPLE
4. UPDATE YOUR CASH FLOW REQUIREMENTS
5. ASSERT AND PRESERVE YOUR RIGHTS
6. MAKE SCHEDULE OF VALUES A PART OF THE CONTRACT
7. WALK THE PROJECT ON THE 20TH OF EACH MONTH WITH OWNER AND AGREE ON THE PERCENT OF WORK TO BE COMPLETE BY THE END OF THE MONTH
8. HAVE DESIGNER (OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE) PRESENT DURING PROJECT PAYMENT INSPECTIONS TO CERTIFY PERCENT OF WORK COMPLETE
9. SUBMIT PAY REQUESTS BASED ON CONTRACT PROVISIONS
10. USE PRE-AGREED STANDARDIZED FORM FOR PAY REQUESTS
11. PAY YOUR SUB-CONTRACTORS WITHIN 5 DAYS OF RECEIPT OF YOUR PAYMENT
12. REQUIRE THAT OWNER PUT RETENTION IN ESCROW
13. SEND A DEFAULT NOTICE CERTIFIED MAIL (RETURN RECEIPT REQUESTED) WHEN PAYMENT IS LATE

The method of calculating payments due the contractor should be clearly incorporated in the contract. Ensure that the agreed payment procedure suits your method of business and the specific project in question. Methods of payment include:

1. Percent of completion considering the overall contract price.
2. Percent of completion considering a predetermined schedule of values for defined items of work.
3. Percent of completion considering a unit cost basis.
4. Square foot completion considering a cost per square foot basis.
5. Unit completion, cost of completed units in place.

GETTING THE LAST CHECK

1. START FINAL APPROVAL OF WORK AS EARLY AS POSSIBLE

2. REVIEW LOGS FOR OUTSTANDING WORK THAT MIGHT HOLD UP FINAL PAYMENT

3. SHORT-INTERVAL SCHEDULE THE FINAL WORK SO AS NOT TO DELAY PROJECT COMPLETION

4. CHANGE MASTER KEYS BEFORE SUBMITTING REQUEST FOR FINAL PAYMENT

5 DELAY PERMANENT UTILITY HOOKUP UNTIL YOU GET FINAL PAYMENT

6. DELAY FINAL GOVERNMENTAL APPROVALS AND ACCEPTANCES UNTIL YOU GET FINAL PAYMENT

Generally, closing out a project is the least efficient part of the schedule. The last five percent of the work may take fifteen percent of the time to complete. Often the start of a project is accompanied with more intense scheduling than the completion. It is equally important to adequately schedule the closeout of a project.

Missed details may result in delayed project completion and consequent delayed final payment, including the retention. Develop a project closeout and final payment procedure keeping in mind matters such as those addressed in the above block. A proper, detailed closeout procedure and schedule will better ensure that the last payments, generally critical to project financial success, are dealt with in an efficient and timely manner.

1. Are there any special steps that your firm takes to ensure that it receives final payment and retention?

2. How do you feel about taking the appropriate steps to deny the owner access to the completed project to ensure final payment is made?

PROJECT BUDGET

1. VIABLE PROJECT BUDGET
   - ESSENTIAL TO SUCCESS
   - MUST BE ACCURATE
   - MUST BE REALISTIC
   - MUST BE DIRECTLY RELATED TO SPECIFIC PROJECT
   - MUST BE SPECIFIC AS TO EACH COST ITEM
2. ENSURES AGAINST FINANCIAL LOSS
3. ESSENTIAL FOR ADEQUATE COST CONTROL
4. BASED ON
   - ESTIMATE FOR NEGOTIATED WORK
   - BID FOR BID WORK (BASED ON VIABLE ESTIMATE)
5. BASIS FOR ALL FINANCIAL MANAGEMENT

Many, if not most, project financial problems have their beginnings in an inadequate or incorrect project budget. The more detailed and accurate the project budget the more effective the cost control.

1. Does your firm often have to revise the project budget after project commencement? If so, why?

2. Does your company tie the project budget (bid) to a schedule of values?

SCHEDULE OF VALUES

1. PART OF AGREEMENT FOR CONSTRUCTION (CONTRACT)
2. TIED TO ESTIMATE OR BID
3. TIED TO SUBCONTRACTS
4. ESTABLISHES BASE PAYMENT RATES FOR CHANGE ORDERS
5. USE FROM PROJECT INCEPTION
6. ADHERE TO THE VALUES

The owner and the contractor (contractor and subcontractors) must agree as to what will be paid for each item of work. One way to develop this "meeting of the minds" among the contractual parties is to agree on a schedule of values. A schedule of values lists each item of work and its respective cost or price. An accurate, thorough, and current schedule of values is the basis for the monthly valuation of work completed, change order pricing, and payment requests.

1. Does your company prepare a schedule of values for each project?

2. If prepared, is the schedule of values included as part of the agreement for construction?

3. What are the advantage(s), if any, to having a schedule of values for each subcontract?

CHANGE ORDER PROCEDURE

1. ESTABLISH A CHANGE ORDER PROCEDURE
   - RESPONSIBILITIES
   - COMPLIANCE (STANDARD LETTERS)
   - ESTIMATING PROCEDURE (PRICING OR COSTING)
2. FORMAL (WRITTEN)
3. PART OF AGREEMENT FOR CONSTRUCTION
4. PART OF SUBCONTRACT AGREEMENTS
5. USE FROM PROJECT INCEPTION
6. ADHERE TO THE PROCEDURE
7. CREATE AND USE CHANGE ORDER CHECKLISTS
   - FOR CHANGE ORDER PROCEDURE
   - FOR CHANGE ORDER COMPLIANCE
   - FOR CHANGE ORDER PAYMENT

For better or worse, like it or not, change orders are often a major factor in today's construction projects. Consequently, change orders can make up a significant portion of a projects budget and requests for payment. While this course is not designed to address change orders, it is strongly recommended that you have a change order policy, train in its use, make it a part of every contract, and follow its procedures.

1. Does your company have a change order policy?

2. If your company has a change order policy, are the company's employees adequately trained in its use?

3. What advantages do you see in a formal change order policy?

PAYMENT PROCEDURE

1. ESTABLISH A PAYMENT PROCEDURE
2. FORMAL (WRITTEN)
3. PART OF AGREEMENT FOR CONSTRUCTION
4. PART OF SUBCONTRACT AGREEMENTS
5. USE FROM PROJECT INCEPTION
6. ADHERE TO THE PROCEDURE
7. CREATE AND USE A PAYMENT CHECKLIST
   - FOR INDIVIDUAL REQUESTS FOR PAYMENT
   - FOR FINAL REQUEST FOR PAYMENT

The importance and complexity of payment necessitates a formal payment procedure (policy). A payment procedure helps interpret the contract as to matters of payment, especially for those within the firm who may not be privity to or have a complete understanding of the contract.

While essential in some form or another for medium and large size contractors, a formal payment procedure may not be essential for a small contractor. However, the principles underlying a formal payment procedure are also essential to a small contractor, even if they are adhered to in the manner of the owner carrying them around in his head so to speak.

Payment procedures should be incorporated in the agreement for construction in any case.

ESCROW ACCOUNTS

1. RETENTION

   - THIS IS YOUR MONEY

   - ENSURE THAT IT IS AND WILL BE AVAILABLE

2. PAYMENT AMOUNTS IN DISPUTE

   - THIS IS OR MAY BECOME YOUR MONEY

   - ENSURE THAT IT IS AND WILL BE AVAILABLE

Escrow accounts allow the contractor and the payer, usually the owner, to place money with in a third party account pending disbursement. These are funds either due you which have not yet been paid or in dispute as to the amount owed. The escrow account ensures that the funds will be available when due, protecting the contractor against the owner's financial mismanagement, intentional or otherwise.

Monies withheld from payments pursuant to contract retention provisions can be placed in an escrow account pending completion of the work. The escrow account will assure that the funds are available upon contract completion.

Monies in dispute as to the amount owed, such as the payment due for change order work, can be placed in an escrow account pending resolution of the exact amount due.

Contractor's are within their rights to require the depositing of funds in an escrow account. Escrow accounts are particularly useful where the payer might not fulfill or be able to fulfill its obligations under the contract. Situations where an escrow account might be appropriate are when dealing with a new owner, when payment retention is high, when constructing a long duration project, and when dealing in high risk projects (i.e., market or financial risk is high) such as large speculative office buildings or condominiums for sale.

1. Does your firm require retention monies be placed in escrow?

2. In what other ways might escrow accounts be used to ensure the proper handling of funds for a construction project?

CASH FLOW SCHEDULE

1. DEVELOP FOR EACH PROJECT
2. DEVELOP FOR THE COMPANY
3. ESSENTIAL TO GOOD FINANCIAL MANAGEMENT
4. UPDATE PERIODICALLY (AT LEAST MONTHLY)
5. BE REALISTIC

The cash flow schedule (cash flow forecast or cash flow budget) was discussed earlier in the course. However, the concept is also essential to adequate and timely payment. Provide the cash flow schedule to the owner and make it a part of the contract. Update the cash flow schedule periodically as required by circumstances. Ensure that the contract provides for appropriate cash flow updating.

Keep your part of the bargain, stay on schedule.

1. Why might a cash flow schedule be important in receiving payments from the owner?

2. Does your company prepare a cash flow schedule for each project?

3. Does your company make a cash flow schedule a part of each contract for construction?

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #8: Getting Paid

As the controller for XYZ Electrical Contractors you wish to improve the company's payment record. Your goal is to insure timely, full payment for all work completed for all projects at any given point in time. Change orders, progress payments, and final payments are each important.

Following are some of the problems experienced by XYZ Electrical Contractors in receiving payment.

A. On occasion, XYZ Electrical Contractors contracts directly with an owner. There have been problems in receiving timely payments from some owners; and there have been times when payment was not forthcoming for work completed, change orders completed, and retention due.

B. When working as a subcontractor, there have been occasions when the general contractor did not make timely payment to XYZ Electrical Contractors even though the general contractor received timely payment from the owner.

C. There have been occasions when designers, as the owner's representative or the general contractor's representative, have not been fully cooperative in approving appropriate requests for payment from XYZ Electrical Contractors.

On the following page is a list of problems associated with each payer previously addressed. Next to each problem provide a solution or recommendation to better ensure adequate and timely payment in the specific circumstance.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Problem #8: Getting Paid

XYZ ELECTRICAL CONTRACTORS

PAYMENT CHECKLIST

PROBLEM	SOLUTION
A. OWNER:	
1. Late monthly payment	1.
2. Delayed change order pay	2.
3. Withholding interim pay	3.
4. Withholding retention	4.
B. GENERAL CONTRACTOR:	
1. Late monthly payment	1.
2. Delayed change order pay	2.
3. Withholding interim pay	3.
4. Withholding retention	4.
C. DESIGNER:	
1. No monthly inspection	1.
2. Late change order approval	2.
3. Delayed final inspection	3.
4. Payment amount dispute	4.

CASE STUDY: CONTRACTOR FINANCIAL MANAGEMENT

Solution #8: Getting Paid

XYZ ELECTRICAL CONTRACTORS

PAYMENT CHECKLIST

PROBLEM	SOLUTION
A. OWNER:	
1. Late monthly payment	1. Financial check of owner
2. Delayed change order pay	2. Weekly change order mtngs
3. Withholding interim pay	3. Interest on late payments
4. Withholding retention	4. Place retention in escrow
B. GENERAL CONTRACTOR:	
1. Late monthly payment	1. Financial check of cntrctr
2. Delayed change order pay	2. Weekly change order mtngs
3. Withholding interim pay	3. Interest on late payments
4. Withholding retention	4. Place retention in escrow
C. DESIGNER:	
1. No monthly inspection	1. Inspections in contract
2. Late change order approval	2. Weekly change order mtngs
3. Delayed final inspection	3. Time frame in contract
4. Payment amount dispute	4. Arbitration provision

CONTRACTOR FINANCIAL MANAGEMENT

INSTRUCTOR NOTES

INSTRUCTOR NOTES

This course is intended primarily for the small contractor, grossing less than approximately $5 million annually. However, larger contractors can also gain important profit making tips. The course will have attenders with construction experience ranging from a few years to several decades. Attenders will include a wide range of positions, including foremen, superintendents, project managers, general superintendents, office personnel, and company owners. the instructors biggest problem will be to keep this diverse audience interested.

Based on teaching this course and companion courses, implementing the following suggestions may make instruction less difficult and more effective for the instructor while being more appealing and worthwhile to the student.

There are two kinds of instructors. One type of instructor is the lecturer who may not wish to use the accompanying video tape, but teach directly from the manual. The advantage of this approach is that informal contact and interaction is increased between the instructor and student.

The other type of instructor is the moderator who will use the video tape to present each lesson's content. Afterward viewing each lesson's video tape, the moderator will cover the respective lesson's material in more detail if necessary, usually by asking for student questions and comments.

Both the lecturer and moderator will explain the case study problems and solutions provided with each lesson, including asking for student questions and comments.

Although this is an eight hour course, nothing prevents it being made longer or shorter, including conducting the course over a period of several days.

EFFECTIVE INSTRUCTION

Following are some guidelines for making instruction more effective and better ensuring that the students feel attendance is worthwhile.

1. **Know the Material:** The best way to allay your fears or nervousness in teaching is to be well prepared. Read and become thoroughly familiar with all the material, including each lesson's problems and solutions. Use a highlighter to mark important material in your manual which you wish to emphasize. Make additional notes in your manual. Preparation helps ensure you cover each lesson's important points.

2. **Meet Student Expectations:** During the course introduction session, ask each student to state their expectation(s) from attending the course. Ask frequently (after each lesson, before each break, and at end of the course) "What important ideas or tips did you learn?" Poll each person, asking them to state what they believe to be worthwhile. Use this positive response technique to stress important points, summarize material, and motivate attenders.

3. **Increase Communications:** Communication is a key element in successful learning. Make certain you have a room that accommodates your audience, as to size, acoustics, lighting, and comfort. It is helpful to have an instructor's table in front of the class with student tables in a U shaped arrangement facing the instructor's table. Try not to overly impose the instructor's table between yourself and the students. You can sit on the instructor's table, thereby increasing the informality of the arrangement. Movement by the instructor helps keep the presentation flowing and maintain student interest.

4. **Use Visual Aids:** Use the accompanying video tape to introduce the material. Make view graphs (for use with overhead projector) of the manual's key points, important figures, and problem work sheets and solutions. Place the overhead projector on one side of the instructor's table, thus making it easier to explain the materials while maintaining eye contact with the students. Have available (placed on the side opposite from the projector) a blackboard and/or an easel with blank chart paper. The blackboard and/or chart paper can be used to further illustrate points which are not adequately addressed by the manual or your view graphs.

5. **Lesson Plans:** Included in this section of the manual are lesson plans for each of the course's eight lessons. The lesson plans are designed with one hour allotted for each lesson. Review the lesson plans to get an idea of how much time to spend on each lesson's respective objectives. The time allocations may be considered relative guidelines if more or less than one hour is to be used for a lesson. For example, if 6 minutes is assigned to a particular lesson topic, then it is approximately 10 percent of the lesson's assigned time based on the lesson plan allotted time of one hour.

CLASS ADMINISTRATION

Consider the following key elements in conducting your workshop.

1. **Cooperate with Sponsor:** Make certain you meet all your contract arrangements with whomever is sponsoring the course,

including meeting the sponsor's expectations of you as an instructor.

2. **Inspect Classroom:** Inspect the classroom the day before class. Explain to whomever is in-charge what arrangement you wish, leaving a list of what needs to be done prior to class commencement.

3. **Registration:** Registration usually commences a half-hour before starting the first lesson. Have available for the students a registration table with registration or sign-in forms (if required), manuals, name tags, pencils, and highlighters for students.

4. **Name Tags and Place Cards:** Provide a name tag and place card for each student. By calling on each person by name from time to time, you can increase individual participation and enhance student-instructor rapport.

5. **Note Taking Materials:** Provide pencils and highlighters for note taking. If the manual is printed each page single sided, advise students that they may make notes on the blank page opposite the material in question. If the manual is printed double sided, students can make notes at the bottom of the page or in the margins.

6. **Breaks:** Hold regular breaks at least every two hours. Breaks are usually five to fifteen minutes.

7. **Smoking and Refreshment Policy:** Allow smoking outside the classroom at breaks, not in the classroom. If possible, have coffee and other refreshments available at the back of the classroom or in the corridor. Place the refreshments so as not to disturb attenders during class.

MATERIAL PRESENTATION

Following are some techniques in teaching which may be helpful when presenting the workshop.

1. **Voice, Repetition, and Motivation:** Practice your presentation. During the introduction session, ask if everyone can hear you. Emphasize and repeat important words and concepts, especially those that concern the topic you are explaining. Repetition is a good teaching method. Motivate students by mentioning savings, such as improved bottom line. If you do not sound convincing, then the students will not be convinced.

2. **Body Language:** Body language plays a major part in influencing the students attention and willingness to learn.

If you are nervous, your audience will be nervous. The best way to make your audience relax is to be relaxed yourself. Stand unaffectedly, feet slightly apart, do not rock back and forth; move smoothly and purposely before your audience as you speak.

3. **Hand Gestures:** Control your hands and use them to ease the effort of instruction. Avoid making fists, hand wringing, or other nervous gestures. Avoid grasping at clothes or placing your hands in your pockets. Use smooth flowing, deliberate gestures to emphasize points.

4. **Eye Contact:** Frequent individual eye contact is invaluable for keeping your audience with you. Eye contact with each attender is a key to keeping everyone progressing with you as you teach the workshop. Vary eye contact, do not just scan back and forth from left to right. Talk to one side of the audience, then to the other, moving frequently at random among your audience.

5. **Focus Attention:** Eye contact must be made with the students to capture their attention. When attention is given to the individual student, the student will return the attention. Once attention focuses, the listening and learning processes are enhanced. Focus on one individual at a time, speaking to that person until the point or thought is complete. Then move on, to the next individual or switch to the opposite side of the room.

6. **Regaining Contact:** If you feel you are losing someone, or they are not convinced, or they do not understand, then move closer to that person. Ask them specific questions, but not to the extent of producing uneasiness in the student. Then provide a direct specific answer if you can, or offer to get back to them after you have further researched the matter. Hint: in some cases it is best to ask another class member to answer the question. Hearing the answer from one's peers often boosts learning and retention.

7. **Blackboard:** Use a blackboard and/or chart paper to explain material, including working computations and drawing sketches. Place the blackboard and/or easel with chart paper on the side of the room opposite overhead projector.

8. **Overhead Transparencies:** Use overhead transparencies (view graphs). Explain each transparency in a systematic manner. For example, state: "This is the foreman's labor budget. Along the top is information regarding the project. Along the left side is information for each task, including cost code and construction task."

9. **Pointer:** Use a retractable pointer. Place the retracted

pointer on overhead transparencies to emphasize important items. Use the extended pointer to indicate important items on the blackboard and chart paper.

COURSE CONTENT

Following are suggestions for dealing with the varied backgrounds of your students.

1. **Student Background:** Quickly learn each student's background and expectation(s) from attending the course. Try to meet each student's specific expectations each hour.

2. **Course Content:** Explain that the course was developed from contacts with smaller contractors like themselves. Materials were developed in an attempt to meet the average contractor's needs. Explain that the material has been field tested, including the updating of previous course material.

3. **New Ideas:** Some of the ideas presented in the course may be new to you or the student. Explain that these approaches are the result of input by successful contractors. Most of the material can be used as presented or is easily adaptable to individual situations.

4. **Material Adaptation:** Do not hesitate to adjust the focus to the background and comprehension of your particular class. If you have mostly superintendents and foremen, stress the practical field aspects of job management. If you have company owners and project managers, stress how to implement the material at the managerial level. Remember students are there to learn, so do not hesitate to present any of the material, even if it is new to you. Just present the material in a manner that is tailored to the needs of that particular class.

5. **Student Manual:** The course material is developed so that you and the student have everything in one manual. It is generally best to start the class by covering the courses objectives and reasons why each objective is important. Then start each lesson by addressing that lesson's objectives and why they are important.

   When you print the student manual, omit this section, "Instructor Notes".

6. **Read Manual:** You can ask the students to read certain material in the manual and then explain it in more detail. Reading varies the instructional technique.

7. **Student Teams:** Have student's work the case study problems in teams (groups of two or three, depending on the size and

experience level of the class). Teaming students often improves the learning process as students learn from their peer's experiences.

8. **Explain the Case Study Problems:** Be certain to thoroughly explain the case study problems. Many attenders may not have been in a classroom in many years and consequently may not be sure what is expected of them during the case study problem solving portion of the lesson. Walk around the class, review how well individuals and teams are solving the problem. Provide individual assistance as needed. If you see that most students are making the same mistake, stop work and re-explain how to address the problem. Ensure everyone knows that the case study problems are a learning experience only and not a means of student grading or evaluation. Make everyone comfortable with this portion of the lesson.

9. **Student Solutions:** Ask attenders to present their individual or group solution to the class. Student solutions facilitate the learning process.

SPECIAL INSTRUCTIONS

1. Have students express their thoughts on what they have learned.

2. Summarize the course for the class.

3. Have students complete the evaluation form for your report to the BCIAC.

4. Award certificates of completion.

CHECKLIST

The following checklist may be useful for class logistics.

A. Administration

( ) Student roster

( ) Registration forms

( ) Student manuals

( ) Pencils and highlighters

( ) Name cards and place cards

( ) Certificates of completion

B. Classroom

( ) Instructor's table

( ) Student tables and chairs appropriately arranged

( ) Blackboard, chalk, eraser

( ) Chart paper, easel, marking pens

( ) Waste paper basket

( ) Overhead projector

( ) TV and video cassette player

C. Refreshments

( ) Table, table cloth, napkins

( ) Coffee pot, coffee, cups

( ) Sugar, cream, stir sticks

( ) Waste paper basket(s)

( ) Soap and paper towels in rest rooms

LESSON PLAN: INTRODUCTION

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Introduction to Workshop

B. **OBJECTIVE:** To familiarize the student with the instructor's background, each fellow student's background, getting your money's worth from the course, course administration, and course objectives.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Introduction Objectives	1 MIN
2. Instructor's Background	3 MIN
3. Student's Background	10 MIN
4. Getting Your Money's Worth	5 MIN
5. Course Administration	4 MIN
6. Course Objectives	2 MIN
7. Student Questions	5 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Introduction.
2. Student's Background.
3. Student Questions.

F. **TEACHING AIDS:**

1. Introduction Objectives
2. Instructor's Background
3. Student's Background
4. Getting Your Money's Worth
5. Administration
6. Course Objectives

LESSON PLAN #1

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Profit Center Analysis

B. **OBJECTIVE:** To familiarize the student with contractor failures and how they relate to financial management. To teach the student the concept of profit center analysis and how it applies to contractors. To have the student complete a practical exercise in profit center analysis.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #1 Introduction	5 MIN
2. Contractor Failures	5 MIN
3. Profit Centers	10 MIN
4. Profit Measures	10 MIN
5. Profit Center Analysis	15 MIN
6. Problem #1	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #1.
2. Complete Problem #1: Profit Center Analysis.

F. **TEACHING AIDS:**

1. Lesson #1 Objectives
2. CFM Profit Tip #1
3. Contractor Failure Rates
4. Causes of Contractor Failure
5. Typical Profit Centers
6. Profit Center Cost Elements
7. Steps in Profit Center Analysis
8. Percent Markup
9. Percent Profit Margin
10. Percent Revenue Contribution
11. Indirect Cost Contribution
12. Percent Profit Contribution
13. Profit Center Margin
14. Case Study: Problem #1
15. Solution Problem #1

LESSON PLAN #2

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Getting Behind the Numbers

B. **OBJECTIVE:** To familiarize the student with project financial analysis, both pre and post construction. To learn some of the problems which lead to construction financial difficulties. To have the student complete a practical exercise in financial problem analysis and solution.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #2 Introduction	5 MIN
2. Reason for Lost Profit	10 MIN
3. Financial Related Problems	15 MIN
4. Dealing with Problems	15 MIN
5. Problem #2	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #2.
2. Complete Problem #2: Getting Behind the Numbers.

F. **TEACHING AIDS:**

1. Lesson #2 Objectives
2. CFM Profit Tip #2
3. Reasons for Lost Profit
4. Primary Sources of Delays and Cost Overruns
5. Design Problems
6. Change Order Problems
7. Subcontractor Problems
8. Quality Control & Inspection Problems
9. Case Study: Problem #2
10. Solution Problem #2

G. **SPECIAL INSTRUCTIONS:** Take a 10-20 minute break, if you wish.

LESSON PLAN #3

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Chart of Accounts

B. **OBJECTIVE:** To familiarize the student with typical charts of account and their application in construction. To learn reasons behind increased profit. To familiarize the student with methods of overhead allocation. To have the student complete a practical exercise in developing a chart of accounts.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #3 Introduction	5 MIN
2. Chart of Accounts	10 MIN
3. Cost Categories	15 MIN
4. Overhead Allocation	15 MIN
5. Problem #3	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #3.
2. Complete Problem #3: Chart of Accounts.

F. **TEACHING AIDS:**

1. Lesson #3 Objectives
2. CFM Profit Tip #3
3. Definitions
4. Cost Accounts
5. Construction Indirect Cost Pools
6. Equipment Cost Pool
7. Labor Benefit Cost Pool
8. Vehicle Cost Pool
9. Shop & Yard Cost Pool
10. Marketing & Estimating Cost Pool
11. Variable G & A Cost Pool
12. Fixed G & A Cost Pool
13. Case Study: Problem #3
14. Solution Problem #3

LESSON PLAN #4

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Budgeting and Cost Control

B. **OBJECTIVE:** To familiarize the student with the steps involved in budgeting and cost control. To teach the student how to develop a project cash flow projection. To have the student complete a practical exercise in developing a budget and cash flow projection.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #4 Introduction	5 MIN
2. The Budget Process	5 MIN
3. Direct Cost Planning	10 MIN
4. Indirect Cost Planning	10 MIN
5. Return on Indirect Cost (RIC)	10 MIN
6. Forecasting the Yearly Budget	10 MIN
7. Problem #4	10 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #4.
2. Complete Problem #4: Budget Planning.

F. **TEACHING AIDS:**

1. Lesson #4 Objectives
2. CFM Profit Tip #4
3. Why Budgeting Helps Profits
4. Steps in Budget Planning
5. Forecasting Direct Costs
6. Profit Center Direct Cost Budget
7. Forecasting Indirect Costs and Profit
8. Sources of Information on Indirect Costs & Profits
9. Indirect Cost Budget
10. Return on Indirect Cost (RIC)
11. Calculating Return on Indirect Costs
12. Calculating Profit Goal from RIC
13. Forecasting the Yearly Budget
14. Case Study: Problem #4
15. Solution Problem #4

G. **SPECIAL INSTRUCTIONS:** A good time for the lunch break.

LESSON PLAN #5

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Developing Markup Factors

B. **OBJECTIVE:** To familiarize the student with the concept of markup and the steps involved in creating markup. To teach the student how to develop markup factors and apply them to construction projects. To have the student complete a practical exercise in developing and applying markup factors.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #5 Introduction	5 MIN
2. Markup Concept and Strategy	15 MIN
3. Markup Factors	25 MIN
4. Problem #5	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #5.
2. Complete Problem #5-1: Subcontract Intensive Contractor Markup.
3. Complete Problem #5-2: Labor Intensive Contractor Markup.

F. **TEACHING AIDS:**

1. Lesson #5 Objectives
2. CFM Profit Tip #5
3. Markup Strategy
4. Indirect Cost and Profit Markup
5. Subcontract Intensive Contractor Markup
6. Calculating Subcontract Intensive Contractor Markup
7. Subcontract Intensive Contractor Bid Markup
8. Labor Intensive Contractor Markup
9. Calculating Labor Intensive Contractor Markup
10. Labor Intensive Contractor Bid Markup
11. Case Study: Problem #5
12. Solution Problem #5

LESSON PLAN #6

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Markup Using Cost Pools

B. **OBJECTIVE:** To familiarize the student with the concept of cost pools and the steps involved in creating markup for cost pools. To teach the student how to develop cost pool markup factors and apply them to construction projects. To have the student complete a practical exercise in developing and applying cost pool markup factors.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #6 Introduction	5 MIN
2. Cost Pools	10 MIN
3. Cost Pool Markup Factors	15 MIN
4. Profit Markup and Bidding	15 MIN
5. Problem #6	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #6.
2. Complete Problem #6: Markup Using Cost Pools.

F. **TEACHING AIDS:**

1. Lesson #6 Objectives
2. CFM Profit Tip #6
3. Cost Pools
4. Equipment Markup
5. Labor Benefit Markup
6. Shop & Yard Markup
7. Vehicles Markup
8. Marketing and Estimating Markup
9. G & A Markup
10. Profit Markup
11. Indirect Cost Pool Markup Allocation Items
12. Contractor Annual Budget Example
13. Contractor Bid Example
14. Case Study: Problem #6
15. Solution Problem #6

G. **SPECIAL INSTRUCTIONS:** Take a 10-20 minute break, if you wish.

LESSON PLAN #7

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Cash Flow Analysis

B. **OBJECTIVE:** To familiarize the student with the concept of cash flow and its application in the construction industry. To teach the student cash flow factors, analysis, and strategies. To have the student complete a practical exercise in applying cash flow analysis.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #7 Introduction	5 MIN
2. Cash Flow Concept	10 MIN
3. Cash Flow Factors	10 MIN
4. Cash Flow Analysis and Strategies	20 MIN
5. Problem #7	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #7.
2. Complete Problem #7-1: Project Cash Flow.
3. Complete Problem #7-2: Company Cash Flow.

F. **TEACHING AIDS:**

1. Lesson #7 Objectives
2. CFM Profit Tip #7
3. Cash Flow Definitions
4. Cash Flow in Construction
5. Cash Flow Levels
6. Cash Flow Strategies
7. Cash Planning Factors
8. Job Cash Flow
9. Company Cash Flow
10. Case Study: Problem #7
11. Solution Problem #7

LESSON PLAN #8

CONTRACTOR FINANCIAL MANAGEMENT

A. **SUBJECT:** Getting Paid on Time

B. **OBJECTIVE:** To familiarize the student with the concept of obtaining timely payment for work accomplished. To teach the student procedures for obtaining full and timely payment for work completed. To have the student complete a practical exercise in application for payment.

C. **LOCATION:** Classroom

D. **LESSON OUTLINE:**

SUBJECT:	TIME REQUIRED:
1. Lesson #8 Introduction	5 MIN
2. Initial Progress Payment	10 MIN
3. Monthly Progress Payments	15 MIN
4. Final Payment	15 MIN
5. Problem #8	15 MIN

E. **STUDENT ASSIGNMENT:**

1. Read Lesson #8.
2. Complete Problem #8: Getting Paid.

F. **TEACHING AIDS:**

1. Lesson #8 Objectives
2. CFM Profit Tip #8
3. Getting the First Check
4. Getting Paid Each Month
5. Getting the Last Check
6. Project Budget
7. Schedule of Values
8. Change Order Procedure
9. Payment Procedure
10. Escrow Accounts
11. Cash Flow Schedule
12. Case Study: Problem #8
13. Solution Problem #8

BIBLIOGRAPHY

Adrian, James J. Construction Accounting: Financial, Managerial, Auditing, and Tax. Reston, Virginia: Reston Publishing Company, Inc., 1979.

Business Failure Rate. New York: Economics Division, Dun & Bradstreet, 1991.

Collier, Courtland A., and Don A. Halperin. Construction Funding. Second Edition. New York: John Wiley & Sons, Inc., 1984.

Coombs, William E., and William J. Palmer. The Handbook of Construction Accounting and Financial Management. 3rd. ed. New York: McGraw-Hill Book Company, 1984.

Cushman, Robert F., ed. The McGraw-Hill Construction Business Handbook. New York: McGraw-Hill Book Company, 1978.

Hammond, Bersch. Construction Business Management Series Financial Management Seminar (Associated General Contractors of America). U.S.A.: Toucche Ross & Co. 1981.

Hickok, Richard S., ed. Construction Accounting Manual. Boston: Warren, Gorham & Lamont, Inc., 1985.

Jackson, Ira Jerome, III, and Marita H. Gilliam. Financial Management for Contractors. New York: McGraw-Hill Book Company, 1981.

Lucas, Paul D. Modern Construction Accounting Methods and Controls. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1984.

MacFarland, George A., Robert D. Ayars, and Willard E. Stone. Accounting Fundamentals. New York: McGraw-Hill Book company, Inc., 1957.

Mott, Charles H. Accounting and Financial Management for Construction. New York: John Wiley & Sons, 1981.

Needles, Belverd E., Jr., Henry R. Anderson, and James C. Caldwell. Principles of Accounting. 3rd ed. Boston: Houghton Mifflin Company, 1987.

Newnan, Donald G. Engineering Economic Analysis. 4th ed. San Jose, California: Engineering Press, Inc., 1991.

Niswonger, C. Rollin, and Philip E. Fess. Accounting Principles. Ninth Edition. Cincinnati: South-Western Publishing Company, 1965.

Pansza, Henry G. Handbook for Construction Accounting and Auditing. 2nd ed. Englewood Cliffs, New Jersey: Printice Hall,1988.

Practical Accounting and Cost Keeping for Contractors. Chicago: Frank R. Walker Company, 1978.

Silton, Lawrence C. Taking Cash Out of the Closely Held Corporation. 4th ed. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1988.

Wilson, James D. Budgeting and Profit Planning Manual. Boston: Warren, Gorham & Lamont, Inc., 1983.