

Preface xi

Series Introduction xiii

Chapter 1. The Project Environment	1
Some History of Project Management	1
Defining Project Management	4
Project Goals	8
Basic Project Management Philosophy	12
What Are We Going to Plan, Organize, and Control?	13
Project Manager's Job Description	15
Project Size	16
References	22
Introduction to Case Studies	22
Case Study Instructions	22
Chapter 2. Proposals and Contracts	25
Project Execution Approach	25
The Contractor Selection Process	27
Managing the Proposal Effort	36
Capital Project Contracting	37
The Role of the Project Manager in Contracting	46
Contract Technical Terms	46
Contract Commercial Terms	50
Contract Administration	59
References	61
Case Study Instructions	62
Chapter 3. Project Planning	63
Planning Definitions	63
Planning Philosophy	63
Types of Planning	65
Operational Planning Questions	66

The Project Master Plan	66
Project Execution Format for Capital Projects	68
Instrumentation	76
A Typical Nonprocess Capital Project Format	78
Summary	84
References	84
Case Study Instructions	84
Chapter 4. Project Scheduling	87
Scheduling a Nonprocess Project	88
Procurement	91
Scheduling a Process-Type Project	94
Major Activities to Be Scheduled	94
The Design Phase	95
Engineering Schedule	95
Procurement Activities	99
Construction Schedule	100
Overall Schedule	101
Scheduling Systems	103
Bar Charts	103
Basic Network Diagramming	106
Advantages and Disadvantages of CPM and Bar	
Chart Methods	00
Scheduling System Selection	118
References	120
Case Study Instructions	121
Chapter 5. The Project Money Plan	123
Project Cost Estimating	123
How to Make the Four Classes of Estimates	127
Estimating Methods	133
Estimating Tools	134
Estimating Escalation and Contingency	135
Estimating Home Office Services	138
Requirements for a Good Estimate	144
Project Budgeting	145
Budgeting Escalation and Contingency	148
Computerized vs. Manual Budgets	150
The Project Cash Flow Plan	151
Summary	152
References	153
Case Study Instructions	153
Chapter 6. Project Resources Planning	155
Human Resources Planning	155
Subcontracting Design and Construction	163

Design Subcontracting	164
Construction Subcontracting	167
Material Resources Planning	167
Summary	171
References	172
Case Study Instructions	172
Chapter 7. Project Organization	173
Organizational Overview	173
Constructing the Organization Chart	176
Selecting and Motivating the Project Team	186
Project Modes: Matrix vs. Task Force	191
Some Advantages and Disadvantages of the Task Force vs. Matrix Systems	197
Organizational Procedures	200
The Project Procedure Manual	200
Review of the Main Sections	201
Design Procedures	205
Planning and Scheduling	206
Project Control and Reporting	207
Change Order Procedure	208
Computer Services	208
Project Procedure Manual Publication	209
Satellite Office Procedures	210
Summary	210
References	210
Case Study Instructions	211
Chapter 8. Project Control	213
The Control Process	213
Controlling the Money Plan	214
A Typical Cost Control System	218
How a Cost Control System Really Works	220
Controlling Material Resource Costs	228
Specific Areas for Cost Control	236
Controlling Cash Flow	245
Schedule Control	250
Equipment and Material Control	260
Controlling Quality	262
Operating the Controls	268
References	271
Case Study Instructions	271
Chapter 9. Project Engineering	273
The Project Engineering Environment	274
The Administrative Side of Project Engineering	275

x Contents

The Technical Side of Project Engineering	280
Human Factors in Project Engineering	284
Leadership	286
References	286
Case Study Instructions	286
Chapter 10. Project Communications	289
Project Communications	291
Summary	314
References	314
Case Study Instructions	314
Chapter 11. Human Factors in Project Management	317
Qualities for a Successful Project Manager	318
Human Relations	322
Personal Human Factors	333
References	335
Case Study Instructions	336
Appendixes	
A. Project Manager's Job Description	337
1.0 Concept	337
2.0 Foreword	337
3.0 Duties and Responsibilities	338
4.0 Authority	340
5.0 Working Relationships	341
6.0 Leadership Qualities	341
B. Project Services Checklist	343
C. Case Studies	357
Project 1	357
Project 2	358
Project 3	358
Project 4	359
Project 5	359
D. Typical Project File Index	361
Index	365