

## **MODULE OVERVIEW**

This module introduces the role and responsibilities of project management, including technical and management skills. It provides an overview of the phases in a construction project and describes alternate types of project delivery methods.

## **PREREQUISITES**

There are no prerequisites for this module.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to:

1. Define project.
2. Describe the characteristics of a project manager.
3. Describe the basic functions of project management.
4. Cite the importance of ethical approaches to project management.
5. Discuss the flow and phases of a construction project.
6. Describe the four common construction delivery systems.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

*Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management* DVD

*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Module Examination\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## **ADDITIONAL RESOURCES**

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated participants interested in further study. This is optional material for continued education rather than for task training.

PMI Standards Committee, *A Guide to the Project Management Body of Knowledge*. PMI Publications, Newton Square, Pa. (2004).

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 2½ hours are suggested to cover *Introduction to Project Management*.

Topic	Planned Time
<b>Session I. Introduction to Project Management; Review and Testing</b>	
A. Introduction to Project Management	_____
B. What is a Project?	_____
C. Characteristics and Functions of a Project Manager	_____
D. Ethical Approaches to Project Management	_____
E. Phases of a Construction Project	_____
F. Construction Project Flow	_____
G. Construction Delivery Systems	_____
H. Review	_____
I. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

### USING THE PM DVD WITH *INTRODUCTION TO PROJECT MANAGEMENT*

Inform the students that, during the course of this curriculum, they will have an opportunity to engage with a simulated scenario that recreates the real problems that project managers face on the job. Introduce the video story line and let the students know that there will be stimulating class discussions and exercises for each of the succeeding modules in the curriculum.

Before proceeding to the next module, plan to play the video. Depending upon your preferences in conjunction with your lesson plan, either play the video in its entirety or play Segments 1 and 2 to familiarize the students with the characters and the situation. It is recommended that you allow an additional 15 to 20 minutes of discussion time per scenario, so be sure to factor this into your overall lesson plan. You should plan to replay segments as you progress through the curriculum to aid the discussions and exercises, and to emphasize particular points that are relevant to the topics in the modules.



*Note:* Section 3.0.0, Characteristics and Functions of a Project Manager, presents discussion opportunities for students to evaluate Samantha’s performance and uncover how deficiencies in any of these areas may contribute to “The Missing Tool”.

**Annotated Instructor's Guide****MODULE OVERVIEW**

This module stresses the importance of job site safety and identifies the project manager's duties and responsibilities regarding safety. It covers loss prevention and creating a zero-accident work environment. Several checklists are presented as references.

**PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Module 44101-08.

**OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Recognize the need for an effective job site safety and loss prevention program.
2. Identify the project manager's duties and responsibilities with respect to safety and loss prevention.
3. Identify the direct and indirect costs of accidents.
4. Identify potential areas for loss and evaluate the risks.
5. Identify methods of risk control.
6. Understand OSHA's Focused Inspection Program.
7. Evaluate subcontractors on the basis of past safety experience.
8. Identify the need for and types of employee participation in safety programs.
9. List things to be considered when dealing with the press.
10. Plan, implement, and evaluate a job site safety program with assistance from staff safety professionals or outside consultants.

**MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

*Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management* DVD

*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

OSHA Forms 300 and 301

OSHA Poster (Form 3165)

Module Examinations\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

Contren® Learning Series, *Field Safety*, 2003

Contren® Learning Series, *Safety Technology*, 2003

The *OSHA Recordkeeping Handbook* (OSHA Publication #3245) is available from the OSHA website at: [www.osha.gov/pls/publications/pubindex.list](http://www.osha.gov/pls/publications/pubindex.list)

Other information relating to OSHA standards and regulations may be obtained from the OSHA website at [www.osha.gov](http://www.osha.gov), local OSHA offices, or from the U.S. Department of Labor – OSHA Publications Office, Room N3101, 200 Constitution Avenue, N.W., Washington, D.C. 20210

Construction Industry Institute (2001). *Making Zero Accidents a Reality*. Retrieved from: [www.construction-institute.org/scriptcontent/cpi2001slides/mathis\\_cpi.ppt](http://www.construction-institute.org/scriptcontent/cpi2001slides/mathis_cpi.ppt)

*Field Inspection Reference Manual (FIRM)*. OSHA. Retrieved from [www.osha.gov](http://www.osha.gov)

Heinrich, H.W., Petersen, D., Roos, N.R., Brown, J., and Hazlett, S. *Industrial Accident Prevention: A Safety Management Approach* (1980)

Meyer, S.W. and Pegula, S.M. *Injuries, Illnesses, and Fatalities in Construction, 2004*. Bureau of Labor Statistics, posted 24 May 2006. Retrieved from: [www.bls.gov/iif](http://www.bls.gov/iif) (1 October 2007)

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 15 hours are suggested to cover *Safety*.

Topic	Planned Time
<b>Session I. Project Manager Duties, Accident Costs, and Hazard Control</b>	
A. Project Manager's Duties and Responsibilities	_____
B. Accident Costs	_____
C. Cost of Administering an Effective Safety Program	_____
D. Causes of Accidents	_____
<b>Session II. Areas for Loss and Hazard Control</b>	
A. Potential Areas for Loss	_____
B. Process of Hazard Control	_____
C. Planning the Job	_____
<b>Session III. Complying with Regulations</b>	
A. Occupational Safety and Health Act	_____
B. Recommended Employer's Safety and Health Program	_____
C. Multi-Employer Work Sites	_____
<b>Session IV. Pre-Qualification of Contractors and Subcontractors and Pre-Task Job Planning</b>	
A. Pre-Qualification of Contractors and Subcontractors	_____
B. Pre-Task Safety Planning	_____
C. Job Safety Analysis	_____

**Session V. Key Elements of a Prevention Safety Program, Part One**

- A. Management Support and Policy Statement \_\_\_\_\_
- B. Policy on Alcohol and Drug Abuse \_\_\_\_\_
- C. Assignment of Responsibilities \_\_\_\_\_
- D. Employee Screening, Selection, and Placement \_\_\_\_\_
- E. Safety Rules \_\_\_\_\_

**Session VI. Key Elements of a Prevention Program, Part Two; Review and Testing**

- A. Orientation and Training \_\_\_\_\_
- B. Safety Meetings and Employee Involvement \_\_\_\_\_
- C. Crisis Management \_\_\_\_\_
- D. Emergency Reporting and Response \_\_\_\_\_
- E. Post-Incident Claims Management \_\_\_\_\_
- F. Review \_\_\_\_\_
- G. Module Examination \_\_\_\_\_
  - 1. Participants must score 70% or higher to receive recognition from NCCER.
  - 2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

**USING THE PM DVD WITH SAFETY**

Instruct the students to look at the main characters and the background workers on the site as each scenario is played. Have them point out whether there are any failures to adhere to proper PPE criteria.

As each scenario unfolds, ask the students to indicate how the actions of the individuals and the condition of the job site may jeopardize safety. What safety problems were brought to light?



*Note:* Section 7.3.0 Assignment of Responsibilities, presents discussion opportunities for students to observe the project manager, foremen, and superintendent’s attitudes towards safety and accountability.



## **MODULE OVERVIEW**

This module discusses the values and expectations of the workforce, building relationships, and satisfying stakeholders. It provides information on the principles of effective communication, how to apply the management grid, and using relationship skills to create a leadership environment. It describes behavioral interviewing and professional development of personnel.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 and 44102-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Briefly describe workforce expectations.
2. Describe how stakeholders are identified.
3. Define effective communication skills.
4. Apply human relations skills to the project management role.
5. Apply the Managerial Grid.
6. Define the leadership environment.
7. Describe mentoring and coaching.
8. Apply behavioral interview techniques.
9. Construct professional development plans.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

*Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management* DVD

*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Copies of Worksheets for Teaching Tips

Module Examination\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

Bennett, Jeffrey, "Diversity of Construction Workforce Presents Employee Benefits, Challenge," *The Business Review* (Albany), accessed at [www.bizjournals.com/albany/stories/2004/07/26/focus7.html](http://www.bizjournals.com/albany/stories/2004/07/26/focus7.html)

Blake, R. and J. Mouton, *The Managerial Grid: The Key to Leadership Excellence*. Houston: Gulf Publishing Co., 1964

Construction Managers, *Occupational Outlook Handbook*, U.S. Bureau of Labor Statistics, accessed at [stats.bls.gov/oco/ocos005.htm](http://stats.bls.gov/oco/ocos005.htm)

Construction Managers – Job Description, accessed at [www.careerplanner.com/Job-Descriptions/Construction-Managers.cfm](http://www.careerplanner.com/Job-Descriptions/Construction-Managers.cfm)

Employee Selection and Hiring Strategies – Get the Right People on Your Bus. Available at [www.therainmakergroupinc.com/services/Item.asp?ID=23](http://www.therainmakergroupinc.com/services/Item.asp?ID=23). Accessed Aug. 28, 2007

FMI Corporation, Raleigh, N.C.

Mochal, Tom, "Manage These Three Aspects of Change in Your Project," TechRepublic, June 4, 2007. Accessed at [articles.techrepublic.com/5100-10878\\_11618851.html](http://articles.techrepublic.com/5100-10878_11618851.html)

Nesby, Tom, "Diversity: New Realities for Construction Companies," Nesby & Associates, *Seattle Daily Journal of Commerce*, [www.djc.com/special/construct99/10050621.htm](http://www.djc.com/special/construct99/10050621.htm)

Project Management Institute, [www.pmi.org](http://www.pmi.org)

Workforce Central Florida. Accessed at [www.workforcecentralflorida.com](http://www.workforcecentralflorida.com)

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 12½ hours are suggested to cover *Interpersonal Skills*.

Topic	Planned Time
<b>Session I. Values and Expectations, Stakeholders, and Communication Skills</b>	
A. Values and Expectations of the Workforce	_____
B. Stakeholders	_____
C. Effective Communication Skills	_____
<b>Session II. Human Relationships, Part One</b>	
A. Technical Knowledge and Skills	_____
B. Clear Thinking Skills	_____
C. Ethical Behavior	_____
D. Management Style	_____
<b>Session III. Human Relationships, Part Two</b>	
A. Change Management Skills	_____
B. Conducting an Effective Meeting	_____
<b>Session IV. Human Relationships, Part Three; Leadership</b>	
A. Team-Building	_____
B. The Leadership Environment	_____



## Session V. Leadership, Building Relationships, Interview Techniques, and Professional Development Plans; Review and Testing

- A. Building Relationships \_\_\_\_\_
- B. Behavioral Interview Techniques \_\_\_\_\_
- C. Professional Development Plans \_\_\_\_\_
- D. Review \_\_\_\_\_
- E. Module Examination \_\_\_\_\_
  1. Participants must score 70% or higher to receive recognition from NCCER.
  2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

### USING THE PM DVD WITH *INTERPERSONAL SKILLS*



Section 4.0.0 presents an opportunity to discuss whether or not Samantha is an effective communicator. Ask students to describe which skills made her an effective communicator and which rendered her ineffective.

*Suggested response: Overall, Samantha was an effective communicator. She was able to listen to the workers and eventually solve the problem.*

*However, she yelled at, threatened, and placed blame on Keith, which led to an argument that could have been avoided had she attempted to speak with him in a calm, rational manner.*

*Samantha is an active listener. Throughout the scenario, she paid close attention to what the workers were saying and listened to all the facts before forming an opinion. She asked questions when necessary to clarify the message and made sure that the message was understood.*



Section 5.4.0 presents an opportunity for students to describe the different management styles they think Samantha uses throughout the video. Ask the students where they would place Samantha on the Managerial Grid.

*Suggested response: Most often, Samantha demonstrated characteristics of Processor, Juggler and Team Leader management styles.*

Ask students to describe the kind of management style Samantha demonstrated during her conversation with Keith. Ask them how she could have handled her conversation differently.

*Suggested response: Initially, Samantha demonstrated the Sarge management style when talking with Keith. She started her conversation with Keith by yelling at him because his sense of urgency in getting the job done was not apparent. Perhaps instead of yelling, she should have been more levelheaded when confronting Keith.*

In assessing Samantha's management style, ask students which characteristics stand out and which does she use to her advantage. Ask them which characteristics and functions could she improve upon.

*Suggested response: Samantha had the ability to see the issues between Keith and Anthony as a sign of legitimate concern. She showed reasonable concern for both tasks and people by pushing for productivity, but also trying to resolve the issues between Keith and Anthony. She was able to assess the situation in terms of immediate actions to be taken.*

*If Samantha had identified that poor housekeeping and missing tools were an issue prior to the argument between Keith and Anthony, she may have been able to meet her long-term goal of staying on schedule and finishing the project on time without extra labor.*

(continued)



Section 6.0.0, The Leadership Environment, presents an opportunity to discuss power as it relates to management. Discuss with students the type of power Samantha uses and whether or not it works to resolve the problems.

*Suggested response: Samantha used position power as project manager to tell Keith that production schedules, deadlines, and asset allocations were “her headache.” She threatened Keith with “consequences” for his part in production delays.*

*Samantha also used personal power throughout the scenario by trying to combine the goals of the project with the work goals of the team members.*



Section 6.4.0, Leadership and Motivation, provides an opportunity to rate Samantha as a leader and whether or not she knows how to motivate her team.

*Suggested response: Samantha was an effective leader in that she was sensitive to the environment, while recognizing data and emotional stresses throughout the scenario. She searched for the root cause of frustration among her workers, but ultimately focused on the most important goal: getting the job done on time and within budget.*

Discuss with students the motivational techniques that might have been used in the situation presented in the video and what effect it may have had on completing the work on time, improving relationships, and job safety.

*Mentoring and coaching could be used to help Anthony overcome his laid-back attitude and Keith his anger. Team-building techniques could bring this group together and create a more positive, cooperative environment. While time is tight on this job, some activities could be designed to reinforce the necessity for collaboration and to build respect among the team members. Samantha should also reinforce the shared vision and strategies for the team’s mission for this job. Going forward, she can devise routine team-building activities that will make future projects work more smoothly to bring the project in on time and on budget.*

**Annotated Instructor's Guide****MODULE OVERVIEW**

This module describes key elements of successful negotiations, including a review of negotiating techniques and styles. It explains how to recognize nonverbal signals, use negotiating tools, and apply conflict resolution strategies. Participants will learn how to identify barriers to solving problems, and how to apply problem-solving techniques such as brainstorming and identifying root cause consequences. Also included are tools, techniques, and processes for dispute resolution.

**PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44103-08.

**OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Identify signs of incompetent problem solving and negative problem identification climates.
2. Identify four major barriers to problem solving.
3. Demonstrate these problem-solving techniques:
  - Eight-step ladder
  - Fact-finding
  - Root cause diagram
  - Brainstorming
4. Name five key elements of successful negotiation.
5. List four universal truths of negotiation.
6. Cite the four phases of negotiation.
7. Identify and explain the eight negotiating techniques and how to respond to them.
8. Recognize communication cues.
9. Describe the stages of dispute resolution.

**MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

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PowerPoint® Presentation Slides

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Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Module Examinations\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

American Arbitration Association, 1633 Broadway, 10th Floor, New York, New York 10019.  
[www.adr.org](http://www.adr.org)

The Construction Industry Institute, 3925 West Braker Lane (R4500), Austin, Texas 78759.  
[www.construction-institute.org](http://www.construction-institute.org)

Frankel, Mark A. "Med-Arb: A Valuable Settlement Strategy," *Special to Wisconsin Law Journal*.  
Available at [www.wislawjournal.com/special/adr2004/med-arb.html](http://www.wislawjournal.com/special/adr2004/med-arb.html)

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 15 hours are suggested to cover *Issues and Resolutions*.

Topic	Planned Time
<b>Session I. Introduction to Problem Solving, Part One</b>	
A. The Eight-Step Problem-Solving Ladder	_____
B. Fact-Finding	_____
<b>Session II. Introduction to Problem Solving, Part Two</b>	
A. Using a Root Cause Consequence Diagram	_____
B. Brainstorming Methods	_____
<b>Session III. Introduction to Negotiating, Part One</b>	
A. Key Elements	_____
B. Phases of Negotiation	_____
<b>Session IV. Introduction to Negotiating, Part Two</b>	
A. Negotiating Techniques	_____
<b>Session V. Recognizing Communication Cues</b>	
A. Physical Cues	_____
B. Verbal or Conversational Cues	_____
<b>Session VI. Dispute Resolution; Review and Testing</b>	
A. Negotiating Tools	_____
B. Alternative Dispute Resolution Techniques	_____
C. Typical Process for Settling a Dispute	_____
D. Review	_____
E. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

## USING THE PM DVD WITH *ISSUES AND RESOLUTIONS*



Section 2.0.0 presents the opportunity to focus on the real issue(s) presented in the scenarios. Was the “Missing Tool”, for example, the problem, or was it a symptom?

**Suggested Class Exercise:** Project managers need to be able to identify the root cause(s) of a problem and solve it as quickly as possible. Have the students construct a root cause (fishbone) diagram to illustrate the cause(s) and consequences of the production delay problem.

Have students consider in their analysis what caused the initial conflict and, ultimately, the cause of delay in production. What side issues contributed to production delays?

Using the blank root cause diagram provided in Transparency 5 of this manual, have students follow the steps for developing a root cause diagram to analyze and create the root cause diagram.

*Note to Instructor:* If the class is large enough, have the students form teams to analyze the root causes and determine consequences. Have the students present their diagrams to the entire class.



## **MODULE OVERVIEW**

This module emphasizes the importance of project documentation and explains the types of documents, drawings, and specifications used on a typical construction project. It explains methods of obtaining work in the industry, types of contracts, and insurance requirements. Finally, it describes the change order process and the documents required to close out a project.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44104-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Explain the need for documentation on a project.
2. State the various approaches for obtaining work in the construction industry.
3. Identify the parts of a typical project manual.
4. Identify the various types of drawings and format specifications.
5. Discuss the types of contracts used in the construction industry.
6. Discuss insurance requirements for a company and a project.
7. List the types of documents used on a project.
8. Describe the change order process.
9. List the documents necessary to close out a project.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

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(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Example of project meeting minutes

Examples of construction drawings (if available)

Examples of an Invitation to Bid document

Sample punch list (if available)

Module Examination\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

PMI Standards Committee, *A Guide to the Project Management Body of Knowledge*. PMI Publications, Newton Square, Pa. (2004).

The American Institute of Architects, 1735 New York Ave., NW, Washington, DC 20006-5292.

The Construction Specifications Institute, 99 Canal Center Plaza, Suite 300, Alexandria, VA 22314.

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 10 hours are suggested to cover *Construction Documents*.

Topic	Planned Time
<b>Session I. Obtaining Work, Project Manual, and Drawings and Specifications</b>	
A. Obtaining Work in the Construction Industry	_____
B. Project Manual	_____
C. Drawings and Specifications	_____
<b>Session II. Types of Contracts and Insurance Requirements</b>	
A. Types of Contracts	_____
B. Insurance Requirements	_____
<b>Session III. Project Correspondence and Change Orders</b>	
C. Project Correspondence	_____
D. Change Orders	_____
<b>Session IV. Contractor Payments and Closeouts; Review and Testing</b>	
A. Contractor Payments	_____
B. Closeouts	_____
C. Review	_____
D. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

### USING THE PM DVD WITH *CONSTRUCTION DOCUMENTS*

There are several opportunities within the course of the video to discuss contract documents related to personnel or to the job itself. Daily reports are important records of what has taken place within a given day. Samantha uses them so her foremen can get back on track with their schedules.



Referring to Section 7.0.0, ask the class to consider what other kinds of reports might be generated as a result of the delays presented by Samantha's company. Back charges, perhaps?



## **MODULE OVERVIEW**

This module explains the importance of formal job planning and creating a performance-based work environment. It discusses the Work Breakdown Structure (WBS) as the foundation that identifies deliverables, tasks, and time. It defines the roles and responsibilities of an effective team, explains how to allocate resources, and introduces the basics of quality control.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44105-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Explain the importance of planning a job.
2. Create a performance-based work environment.
3. Explain the importance of scope and the work breakdown structure.
4. State the differences among the pre-construction, construction, and review phases of planning.
5. Describe how the planning process is carried out.
6. Define the roles and responsibilities of an effective team and how to allocate resources.
7. Define commodities, engineered equipment, construction equipment, and construction supplies.
8. Describe how to implement a plan.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

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*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Sample scope of work statement

Module Examination\*

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## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated participants interested in further study. This is optional material for continued education rather than for task training.

Robledo, Rebecca, "Unforeseen circumstances: your contract must acknowledge unforeseen construction problems, and lay out who's responsible for them or—you'll end up paying the price." *Pool & Spa News*, April 11, 2003. Accessed on Oct 3, 2007, at [http://findarticles.com/p/articles/mi\\_m0NTB/is\\_8\\_42/ai\\_99909406](http://findarticles.com/p/articles/mi_m0NTB/is_8_42/ai_99909406) (03 October 2007).

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 10 hours are suggested to cover *Construction Planning*.

Topic	Planned Time
<b>Session I. Introduction and Pre-Construction Planning</b>	
A. Introduction	_____
B. Pre-Construction Planning	_____
<b>Session II. Implementing the Plan</b>	
A. Work Analysis	_____
B. Overview	_____
C. Work Analysis Format	_____
<b>Session III. Planning Resources, Part One</b>	
A. Planning Materials	_____
B. The Quantity Survey	_____
C. Purchasing	_____
D. Pre-Purchase Considerations	_____
E. Issuing the Written Purchase Order	_____
F. Expediting	_____
G. Receiving Materials	_____
<b>Session IV. Planning Resources, Part Two; Review and Testing</b>	
A. Inventory	_____
B. Planning Equipment	_____
C. Planning Tools	_____
D. Planning Labor	_____
E. Coordinating the Work For Contractors	_____
F. Implementation of the Plan	_____
G. Review	_____
H. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

## USING THE PM DVD WITH **CONSTRUCTION PLANNING**

Resource Planning is a key topic in the Project Management DVD.



Referring students to Section 5.9.0, Planning for Tools, ask them to consider methods they might employ to ensure tools are properly controlled and don't go missing again.

*Suggested response: The workers (e.g., plumbers, drywall workers) were using contractor-supplied tools on Samantha's job site. However, she could have provided a small inventory of tools to prepare for instances where tools become damaged or lost. She could also have insisted that each contractor follow agreed-upon tool control procedures in order to minimize risk on the job.*



Section 5.1.0, Planning for Labor, presents an opportunity to discuss why Samantha's team leaders react negatively to her offer to add more crew members.

*Suggested response: The team leaders feel that additional workers would not solve the problem at this stage and are particularly concerned that untrained workers would cause more delays. Samantha would need to identify the number of skilled and unskilled crew members, and determine the amount of time it will take to train unskilled workers. She also would need to determine whether there is enough space to accommodate extra workers so that all workers are able to work safely and productively. Extra workers may need extra resources.*



## **MODULE OVERVIEW**

This module emphasizes the importance of accurate estimating. It summarizes the estimating process and the steps for developing an estimate. It defines the purpose of a cost control methodology, explains how to perform simple cost analysis, and covers the project manager's role in controlling cost and tracking rework cost.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44106-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Define cost control and identify the purpose of a cost control system.
2. Define budgeted (estimated) cost, actual cost, and projected cost.
3. Define the importance of accurate estimates
4. Explain the project manager's role in controlling cost.
5. Describe what a reporting system is and how it functions in a cost control system.
6. Explain the process of making a cost analysis.
7. Perform a simple cost analysis.
8. Describe how to track and document the causes and costs of rework.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player	Whiteboard / chalkboard
Multimedia projector and screen	Markers / chalk
<i>Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management</i> DVD	Pencils and scratch paper
<i>Project Management Level One</i>	Module Examination*
PowerPoint® Presentation Slides (ISBN 978-0-13-212939-8)	

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## **ADDITIONAL RESOURCES**

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

Excerpts from About.com 20th Century History, Jennifer Rosenberg. Retrieved from [http://history1900s.about.com/od/1930s/a/empirestatebldg\\_3.htm](http://history1900s.about.com/od/1930s/a/empirestatebldg_3.htm).

PMI Standards Committee, *A Guide to the Project Management Body of Knowledge*. PMI Publications, Newton Square, Pa. (2004).

Jonathan Goldman, *The Empire State Building Book* (New York: St. Martin's Press, 1980) 30.

John Tauranac, *The Empire State Building: The Making of a Landmark* (New York: Scribner, 1995) 156.

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 15 hours are suggested to cover *Estimating and Cost Control*.

Topic	Planned Time
<b>Session I. Introduction and Estimating</b>	
A. Case Studies in Costs	_____
B. Importance of Accurate Estimating	_____
C. Estimating Process	_____
D. Organizing and Developing the Estimate	_____
E. Steps Involved in Developing the Estimate	_____
<b>Session II. An Overview of Job Costs</b>	
A. Estimated Cost	_____
B. Actual Costs	_____
C. Projected Cost	_____
<b>Session III. Cost Control, Part One</b>	
A. Purposes of Cost Control	_____
B. Cost-Control System	_____
C. Job Cost-Coding	_____
<b>Session IV. Cost Control, Part Two</b>	
A. The Reporting System	_____
B. Developing a Reporting System	_____
C. Field Reporting System	_____
D. Office Reporting System	_____
<b>Session V. Cost Analysis</b>	
A. Analysis Process	_____
B. Cost of Changes	_____
<b>Session VI. Impact of Improper Reporting; Historical Records; Review and Testing</b>	
A. Impact of Improper Reporting	_____
B. Historical Records	_____
C. Review	_____
D. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

## USING THE PM DVD WITH *ESTIMATING AND COST CONTROL*



Section 3.0.0, An Overview of Job Costs, presents an opportunity to discuss the challenges project managers sometimes face trying to get the job done both on time and within budget.

If more labor resources were added, Samantha's attempt to keep costs under control might be thwarted. Think of some steps she could take or changes she might make that would help offset these added labor costs. What might the team do to help Samantha keep costs in check?

*Suggested response: Review the original plan and budget to determine if the remaining tasks can be re-organized and/or simplified to increase productivity (including minimizing downtime) and reduce additional labor requirements. Get the job site organized and cleaned up to reduce lost time looking for tools and to eliminate lost time due to prospective injuries.*



Section 5.0.0, Cost Analysis, presents an opportunity to discuss how Samantha might plan her next project when factoring in the lessons from this one.

*Suggested response: Samantha should review the actual costs of this job and compare it to the contract costs (estimated or budgetary) to determine which elements contributed to any substantial variances. She should consider whether her next bid should include additional labor and equipment resources to reduce the potential for delays that cause cost and schedule overruns. This is also an opportune time to examine workflow and the team's productivity and assess where gains could be achieved to reduce costs.*





**Annotated Instructor's Guide****MODULE OVERVIEW**

This module provides instruction in the basics of scheduling, from simple to-do lists through bar charts, network diagrams, and methods of managing resources. It discusses the importance of formal schedules, job planning, and establishing priorities and presents alternative scheduling methods.

**PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44107-08.

**OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Establish personal task priorities and delegate tasks.
2. Describe the purposes and benefits of using formal project schedules and why it is important to maintain schedules.
3. Identify basic project scheduling terms and inputs.
4. Develop a bar chart schedule.
5. Develop and interpret a network diagram.
6. Identify alternative scheduling methods.
7. Develop and calculate CPM schedules to include early start, early finish, late start, late finish, and total float.
8. Analyze an existing CPM schedule to optimize the project schedule.
9. Update and maintain a project schedule, including establishing baselines and targets.
10. Determine the effects of a change to the schedule.

**MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

*Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management* DVD

*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Module Examinations\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

Blair, Dr. Gerard, *Starting to Manage: The Essential Skills*, published by The Institute of Electrical Engineers (IEEE)

Howell, Greg and Glenn Ballard, Lean Construction Institute, Louisville, Colorado,  
www.leanconstruction.org

International Group for Lean Construction, www.iglc.net

VIP Quality Software, Odessa, Ukraine, www.vip-qualitysoft.com/timemanagement

Womack, James P. and Daniel T. Jones, *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*.  
New York: Simon & Schuster, 1996

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 15 hours are suggested to cover *Scheduling*.

Topic	Planned Time
<b>Session I. Time Management and Formal Schedules</b>	
A. Introduction	_____
B. Time Management	_____
C. Formal Schedules	_____
<b>Session II. Project Scheduling, Part One</b>	
A. Planning	_____
B. Developing a Bar Chart	_____
<b>Session III. Project Scheduling, Part Two</b>	
A. Developing a Critical Path Method Schedule	_____
<b>Session IV. Project Scheduling, Part Three</b>	
A. Short Interval Scheduling	_____
B. Lean Construction	_____
<b>Session V. Float Types and Lags</b>	
A. Float Types	_____
B. Lags	_____
<b>Session VI. Resource Management; Review and Testing</b>	
A. Using the Schedule to Balance Resources	_____
B. Determining the Effects of a Change Order	_____
C. Enforcing a Schedule	_____
D. Using the Schedule to Document Problems and Progress	_____
E. Review	_____
F. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

## USING THE PM DVD WITH *SCHEDULING*

When the job began to encounter delays, Samantha implemented weekly productivity quotas. Various team members reacted with frustration, resignation, and skepticism. Samantha's decision to supplement their crews with more workers was seen as ineffective since they had to be trained. In addition, some new workers were standing around with nothing to do because of schedule conflicts.

An alternative solution to implementing production quotas would have been to realign workflow and scheduling of contractors and crew tasks. Samantha eventually had to take this approach. In the end, it all came down to scheduling.



**Suggested Class Exercise:** Using the sample Short Interval Schedule included on the DVD, have the students prepare a short interval production schedule (SIPS) that might resolve Samantha's immediate scheduling crisis. Remind the students they would need to take into account the time it would take to orient and train new workers if they took Samantha's offer to add more labor.

*Note:* If the class is large enough, have the students form teams to discuss their approach and draft the schedule. Have the students present their SIPS scenarios to the entire class.



Referring to Section 4.5.0, Lean Construction, ask the class to consider how adopting lean construction principles may have improved the job site problems cited in the video (tool control, sloppy housekeeping, and safety hazards).

*Suggested response: Weekly team meetings to review progress, identify problems, take action on the root causes of tasks not completed, and revise workflow where necessary can minimize or eliminate problems and slippages. The just-in-time approach can facilitate having resources (materials, labor, tools) available when specifically needed, with the goal to eliminate time wasted waiting for a job to begin or searching for needed resources. The team approach is more likely to generate cooperation, understanding of each party's issues and concerns, and mutual respect.*



Referring to the section on CPM (4.3.0), ask the class to suggest methods Samantha might apply to scheduling in the future.

*Suggested response: Anticipate problems that might affect schedule so that critical activities are not impacted by poor planning. In this case, there may have been inadequate resources (e.g., Anthony needing to borrow Keith's saw). It also appears that there were a number of prior problems that caused delays and Samantha needs to plan for unexpected events to keep her project on schedule. Samantha should allow time in her schedule for the team to keep the job site in order for safety and productivity considerations. She should also set aside time for crew meetings and debriefings in her schedule.*



**Annotated Instructor's Guide****MODULE OVERVIEW**

This module discusses production, production control, and production control standards. It explains the manager's role in the production process and factors that can affect productivity. Methods for resource control and ways to evaluate and improve productivity are also covered.

**PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44108-08.

**OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. List the five elements of production control.
2. Recognize when production is under control.
3. Describe the role of reports in production control.
4. Identify and explain the major factors which affect production control.
5. Describe methods for alleviating the negative effects of the major production control factors.
6. List the three production standards and specify when they are to be used.
7. Explain the three methods for evaluating productivity.
8. Explain and give examples of production control alternatives.
9. Identify the resources that must be controlled and the project manager's role in the process.
10. Describe the role of the project manager in evaluating production both during and after a project.
11. Define debriefing and describe how it is accomplished and its value to production control.

**MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player

Multimedia projector and screen

*Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management* DVD

*Project Management Level One*

PowerPoint® Presentation Slides

(ISBN 978-0-13-212939-8)

Whiteboard / chalkboard

Markers / chalk

Pencils and scratch paper

Masking or painter's tape

Measuring tape

Flip chart

Copies of Caisson Case Study handout

Module Examinations\*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 10 hours are suggested to cover *Resource Control*.

Topic	Planned Time
<b>Session I. Production Control and Productivity Improvement</b>	
A. Production Control Reports and Comparisons	_____
B. Production Control Factors	_____
C. Productivity Study	_____
D. Production Control Standards	_____
E. Basic Improvement Methods	_____
F. Evaluating Productivity	_____
G. More Detailed Activity/Productivity-Based Methods	_____
H. Improving Work Methods	_____
I. Production Control Alternatives	_____
<b>Session II. Controlling Resources</b>	
A. The Project Manager's Role	_____
B. Material Control	_____
C. Equipment Control	_____
D. Tool Control	_____
E. Labor Control	_____
F. Increasing Labor Efficiency	_____
G. Evaluation and Debriefing	_____
<b>Session III. Resource Control Exercise</b>	
A. Teaching Tip, Resource Control	_____
<b>Session IV. Caisson Case Study; Review and Testing</b>	
A. Teaching Tip, Caisson Case Study	_____
B. Review	_____
C. Module Examination	_____
1. Trainees must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

## USING THE PM DVD WITH *RESOURCE CONTROL*

Samantha's crew is suffering a productivity loss because of the 'missing tool' and the time wasted on arguments and resolutions.



As presented in Section 2.0.0, discuss with the class which production control factors have contributed to the scheduling and productivity problems.

*Suggested response: Some of the factors that could apply include poor worker attitude; inadequate crew size and composition; lack of trained personnel; inefficient work activities or methods; disorganized job site; ineffective supervision; poor coordination of trades; down time; and insufficient tool resources.*



Section 4.4.0, Tool Control, presents an opportunity to discuss some tool control systems and processes that Samantha and her team might put into place to prevent the loss of tools in the future.

*Suggested response: Samantha needs to ensure that there is an inventory control system, adequate inventory of tools to do the job, and adequate control over the issuance and return of tools. Some of the tool control systems she may need to implement for her workforce and for her contractors include crew gang box checked out to the supervisor, master-keyed gang boxes, tool audits, labeled tools, and a receipt system for checking out and returning tools.*



Referencing Section 4.5.0, Labor Control, ask the students what factors of labor control might have contributed to the problem in the video and how might they be improved in the future?

*Suggested response: Searching or waiting for tools; idle time; lack of motivation (e.g., Anthony's attitude); lack of effective supervision (e.g., Keith not monitoring use and return of tools); poorly scheduled work; coordination issues with other trades; overtime; and time required to train new workers.*



In Section 6.0.0, Evaluation and Debriefing, ask the students whether conducting a team debriefing might have helped prevent these problems, and others, from recurring.

*Suggested response: Regularly scheduled debriefings would have enabled the crew leaders to point out the problems on the job site to Samantha, enabling her to act before the situation deteriorated and created a crisis.*

(continued)

## **USING THE PM DVD WITH *RESOURCE CONTROL* (Continued)**

**Class Exercise:** Divide the class into groups and instruct each group to develop a scenario to calculate the impact of the missing tool problem on productivity. Develop your own scenario or leave it up to the students to develop the parameters, or use the following example as a guideline. Refer the class to Labor Control in the Resource Control module for further guidance. Have each group present its scenario and the resulting cost to the project.

**Sample Exercise:** Samantha's project is behind schedule and has been incurring a million-dollar-a-day loss. She instituted productivity quotas in an attempt to stem the losses. The recent missing tool problem has created further delays and loss in productivity for this job. Acting as project manager, determine the productivity loss that has occurred because of this incident. Determine the time involved by Tony, Keith, and Craig and their crews, and consider Samantha's time. To simplify the calculation, you may want to use an average hourly rate for each crew. Factors you should consider include:

- Loaded labor rates
- Time lost by each crew member for each identifiable incident associated with the problem
- Idle time for any crew member
- Any labor added to compensate for the delays
- Any overtime incurred

Tasks can include:

- Searching for the tool
- Lack of tools to perform the work
- The confrontation
- Discussions with Samantha
- Samantha's time to resolve the issue
- Clean-up (housekeeping) to get the site in order.



## **MODULE OVERVIEW**

This module defines the role of project managers in relation to quality control and quality assurance. It emphasizes management's concerns about quality, explains project quality management, and presents guidelines on how to develop an effective quality control plan. It also discusses how to identify, assess, and measure weaknesses to avoid rework.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44109-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Define quality control and quality assurance.
2. Describe the essential components of an effective quality control and assurance program (or process).
3. Explain how to develop an effective quality control and assurance process.
4. Explain how to monitor the causes and costs of rework.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player	(ISBN 978-0-13-212939-8)
Multimedia projector and screen	Whiteboard / chalkboard
<i>Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management</i> DVD	Markers / chalk
<i>Project Management Level One</i>	Pencils and scratch paper
PowerPoint® Presentation Slides	Module Examinations*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## **ADDITIONAL RESOURCES**

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

American Society for Quality, Milwaukee, Wisconsin, [www.asq.org](http://www.asq.org)

American Concrete Institute, Farmington Hills, Michigan, [www.concrete.org](http://www.concrete.org)

Environmental Protection Agency, Washington, D.C., [www.epa.gov/hudson/012607\\_cqap\\_ph1-fswc.pdf](http://www.epa.gov/hudson/012607_cqap_ph1-fswc.pdf)

Haas, Dustin J., QA Guidebook. Accessed at [www.oregon.gov/ODOT/HWY/QA/docs/qa\\_guidebook.pdf](http://www.oregon.gov/ODOT/HWY/QA/docs/qa_guidebook.pdf)

Harrison, Jon, CQE Senior Quality Engineer, Construction Quality Assurance White Paper February 2005, Page 2, Performance Validation. Accessed at [www.perfval.com/news/Construction-Quality\\_Assurance\\_WhitePaper\\_2005.pdf](http://www.perfval.com/news/Construction-Quality_Assurance_WhitePaper_2005.pdf)

LA DPW Engineering, Bureau of Engineering, Project Manual, page 2 [eng.lacity.org/techdocs/pdm/Chapter09/Procedure9\\_1.pdf](http://eng.lacity.org/techdocs/pdm/Chapter09/Procedure9_1.pdf)

Unified Facilities Guide Specification (UFGS), 01/01/2007, PDF document [www.wbdg.org/ccb/DOD/UFGS/UFGS%20COMPLETE.pdf](http://www.wbdg.org/ccb/DOD/UFGS/UFGS%20COMPLETE.pdf)

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 5 hours are suggested to cover *Quality Control and Assurance*.

Topic	Planned Time
<b>Session I. The Fundamentals and Components of Quality Control and Assurance</b>	
A. An Introduction to Quality Control and Assurance	_____
B. Fundamentals of Quality Control and Assurance	_____
C. Components of an Effective Quality Control and Assurance Process	_____
<b>Session II. Developing an Effecting Quality Control and Assurance Process, Monitoring Rework, and Project- and Job-Specific Quality Checklists; Review and Testing</b>	
A. Developing an Effective Quality Control and Assurance Process	_____
B. Monitoring Rework	_____
C. Project- and Job-Specific Quality Checklists	_____
D. Review	_____
E. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

### USING THE PM DVD WITH *QUALITY CONTROL AND ASSURANCE*



Use Section 4.4.0 to discuss with the class the impact the problems presented throughout the video are likely to have on the quality of this job.

*Suggested response: To meet the productivity quotas, workmanship may suffer and shortcuts may be taken that impair the quality of the job. The need to compensate for delays in the project may lead to the reduction or elimination of inspections that could catch quality issues at an early stage. Rework may be required to resolve quality problems, leading to further delays and cost impacts.*

Under the topic of Quality Control, ask your students to identify some specific processes and controls that could prevent the problems in the scenarios from recurring.

*Suggested responses:*

- *Involve the team in the day-to-day quality improvement process.*
- *Implement the tool and labor control processes that are a critical part of resource control.*
- *Schedule regular crew debriefings to identify problems before they get out of hand.*
- *Ensure that the team understands the schedule and importance of meeting deadlines.*
- *Implement inspections for specific job requirements, as well as for areas that can lead to serious problems, such as poor housekeeping and safety hazards.*
- *Implement an effective communication process between Samantha and her team leaders, as well as among the team leaders as a group.*
- *Anticipate any need for additional workers as the job progresses and ensure that new or replacement workers are trained and able to perform as soon as they are called to the job.*

## **MODULE OVERVIEW**

This module describes the project manager's role in creating a culture of continuous improvement. It covers the fundamentals of a continuous improvement program and how to identify issues that require improvement. Participants will learn how to implement a continuous improvement process and measure results, with an emphasis on satisfying internal and external stakeholders.

## **PREREQUISITES**

Please refer to the Course Map in the Participant Module. Prior to training with this module, it is recommended that the participant shall have successfully completed *Project Management*, Modules 44101-08 through 44110-08.

## **OBJECTIVES**

Upon completion of this module, the participant will be able to do the following:

1. Describe the project manager's role in the culture of continuous improvement.
2. Explain the fundamentals of a comprehensive continuous improvement process as it relates to a project and company.
3. Present the objectives and explain the basic steps in implementing a continuous improvement process.
4. Describe some applications of continuous improvement.
5. Describe how to measure improvement.
6. Explain the importance of recognizing employees for embracing the continuous improvement process along with some of the major methods.

## **MATERIALS AND EQUIPMENT LIST**

Desktop or laptop computer or DVD player	(ISBN 978-0-13-212939-8)
Multimedia projector and screen	Whiteboard / chalkboard
<i>Minor Decisions: Major Impact – How to Deal with Real Issues in Project Management</i> DVD	Markers / chalk
<i>Project Management Level One</i>	Pencils and scratch paper
PowerPoint® Presentation Slides	Module Examinations*

\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

## **ADDITIONAL RESOURCES**

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated participants interested in further study. These are optional materials for continued education rather than for task training.

*1001 Ways to Reward Employees*, Bob Nelson

Heathfield, Susan, available at [http://humanresources.about.com/od/rewardrecognition/a/recognition\\_tip.htm](http://humanresources.about.com/od/rewardrecognition/a/recognition_tip.htm)

MACTEC, Atlanta, GA

Simon, Kerri, "80/20 Rule," accessed at [www.isixsigma.com/library/content/c010527d.asp](http://www.isixsigma.com/library/content/c010527d.asp)

*Six Sigma Handbook, The*, Thomas Pyzdek

Washington State University, Pullman, WA 99164

## TEACHING TIME FOR THIS MODULE

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 5 hours are suggested to cover *Continuous Improvement*.

Topic	Planned Time
<b>Session I. The Project Manager's Role in Continuous Improvement; Continuous Improvement Fundamentals</b>	
A. Project Manager's Role in Continuous Improvement	_____
B. Continuous Improvement Fundamentals	_____
<b>Session II. Implementing and Measuring Continuous Improvement; Employee Recognition; Review and Testing</b>	
A. Implementing Continuous Improvement	_____
B. Measuring Improvement	_____
C. Employee Recognition	_____
D. Review	_____
E. Module Examination	_____
1. Participants must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

### USING THE PM DVD WITH *CONTINUOUS IMPROVEMENT*



Referencing Section 3.3.3, Employee Involvement, ask the students if they think Samantha took advantage of employee feedback to resolve the situation.

*Suggested response: Samantha asked for employee feedback and suggestions once the problem occurred. It appears she may not have sought employee feedback or recognized this particular problem prior to the situation getting out of control. By listening carefully to each team leader's concerns and explanations, she can improve employee satisfaction and enjoy the resulting increase in improved performance. She is also building a culture of teamwork.*



Section 4.0.0, Implementing Continuous Improvement, presents an opportunity to discuss what methods Samantha could employ in the future to engage the team leaders in preventing other serious problems from cropping up.

*Suggested response: Samantha can involve workers by encouraging them to take ownership for their work and solve problems on their own. She can engage them in ongoing project evaluations and debriefings to identify and resolve problems quickly. Engaging those closest to the problem is the most effective way to identify problem areas and devise improved processes to address the problems. Holding regular crew meetings is an important means of soliciting opinions and ideas from those closest to the tasks and processes. Conducting employee satisfaction surveys on a regular basis helps build a culture of teamwork that is necessary for a successful continuous improvement program. Samantha should analyze the process and events that occurred (find the root causes) and revise or eliminate processes and activities that do not work. To accomplish this in the most effective manner, she should engage her team leaders in this task. One method she and the team can use is process mapping.*

**Class Exercise:** Ask the class to consider the roles of Samantha and her team leaders, Craig, Anthony, and Keith, and devise a plan for improvement using the principles of continuous improvement. Consider specific processes and functions that could improve as a result of the problems that surfaced on this job. If appropriate, process mapping can be used as a tool.

*Note to Instructor:* If the class is large enough, have the students form teams to discuss their approach and draft the improvement plan. Have the students present their plans to the entire class.