OBJECTIVES

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

1. Define terms associated with concrete construction.
2. Identify the composition and characteristics of concrete.
3. Identify the uses of concrete as a building material.
4. Identify the effect of craftsmanship on finished concrete.
5. Explain the concrete construction process.
6. Identify site operation work requirements.
7. Explain the career potentials in concrete construction and finishing.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor's Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate Personal Protective Equipment

**Materials**
- Trainee Task Module
- Small container of cement
- Small container of sand
- Small container of gravel
- Small container of water
- Transparencies
- Module Examinations
- Markers/chalk
- Pencils and paper
HOW TO USE THIS INSTRUCTOR’S GUIDE

For each 2½ hour class session in this Instructor’s Guide, the basic Presentation Sequence is as follows:

- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
- Class Break
- Classroom, and/or Demonstration, and/or Laboratory
- Summary

Suggested time periods for classroom sessions are included throughout this Instructor’s Guide. These time periods should be adapted to meet local conditions and training requirements.

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**Classroom:** Sessions are designed for lectures, group discussions, coaching, and additional activities. Trainees should be encouraged to actively participate.

**Demonstration:** Instructors will demonstrate all procedures before trainees attempt them. Instructors should make sure that trainees can point out all safety procedures during demonstrations to be assured of the proper use of equipment by trainees.

**Laboratory:** Instructors will facilitate all laboratory activities, coach trainees as they practice the procedures, monitor trainee progress, and provide feedback. The instructor will make sure that safety rules are followed at all times and that protective equipment is worn.

**NCCER Standardized Craft Training Programs**

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MODULE OVERVIEW

This module introduces the Concrete Finishing trainee to the methods and procedures used in concrete finishing.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

Core Curricula

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 10 hours or four sessions of training time are suggested to cover Introduction to Concrete Construction and Finishing. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Four 2½-Hour Sessions

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; What is Concrete?; Uses of Concrete</td>
<td>1.0.0 – 3.1.4</td>
</tr>
<tr>
<td>2</td>
<td>Uses of Concrete</td>
<td>3.2.0 – 3.2.7</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory/Field Trip</td>
<td>3.2.0 – 3.2.7</td>
</tr>
<tr>
<td>4</td>
<td>Importance of Craftworkers; Careers in Concrete Construction and Finishing; Work Requirements Review/Practice Questions Module Examination</td>
<td>4.0.0 – 6.4.0</td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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


*Concrete Parking Lots: Eight Steps to Quality Construction*, Videotape, Portland Cement Association, Skokie, IL.


*Finishing Concrete Flatwork*, Videotape 32:00 minutes, Portland Cement Association, Skokie, IL, 1991.

*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

SAFETY REQUIREMENTS

OBJECTIVES

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

1. Describe and wear different types of safety gear for the work site.
2. State the guidelines for dressing appropriately for concrete work.
3. Describe how to safely handle concrete when forming, placing, curing, and finishing.
4. Describe safety precautions to follow when working in extreme heat and cold.
5. Describe safety precautions to follow when working with hazardous materials.
6. Describe proper procedures for handling and maintaining concrete construction tools safely.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead projector and screen</td>
<td>Trainee Task Module</td>
</tr>
<tr>
<td>Whiteboard/chalkboard</td>
<td>Pencils and paper</td>
</tr>
<tr>
<td>Appropriate Personal Protective Equipment:</td>
<td>Markers/chalk</td>
</tr>
<tr>
<td>Hard hats</td>
<td>OSHA standards</td>
</tr>
<tr>
<td>Hearing protectors</td>
<td>Company safety manual</td>
</tr>
<tr>
<td>Safety glasses</td>
<td>Operator’s manuals for concrete equipment</td>
</tr>
<tr>
<td>Face shields</td>
<td>Material Safety Data Sheets</td>
</tr>
<tr>
<td>Knee pads</td>
<td>Transparencies</td>
</tr>
<tr>
<td>Knee boards</td>
<td>Module Examinations</td>
</tr>
<tr>
<td>Rubber gloves</td>
<td>Performance Profile Sheets</td>
</tr>
<tr>
<td>Rubber boots</td>
<td></td>
</tr>
<tr>
<td>Safety shoes</td>
<td></td>
</tr>
<tr>
<td>Dust masks</td>
<td></td>
</tr>
<tr>
<td>Respirators</td>
<td></td>
</tr>
<tr>
<td>Safety harnesses</td>
<td></td>
</tr>
</tbody>
</table>

Concrete hand tools
Power float or trowel
Hand sprayer
Concrete saw
Carbon monoxide meter
HOW TO USE THIS INSTRUCTOR’S GUIDE

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Introduction/Overview
Classroom, and/or Demonstration, and/or Laboratory
Class Break
Classroom, and/or Demonstration, and/or Laboratory
Summary

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MODULE OVERVIEW

This module provides an overview of safety requirements specific to Concrete Finishing activities. It covers general work site safety, use and care of hand and power tools, hazardous and toxic chemicals, and the importance of appropriate personal protective equipment.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

- Core Curricula
  - Concrete Finishing Level 1, Module 23101

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 5 hours or two sessions of training time is suggested to cover Safety Requirements. The training class session is a suggested 2½ hour time period, which includes at least one break. **You will need to adjust the time required for hands-on activities and testing based on your class size and resources.** All time periods for this module are suggested and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Two 2½-Hour Sessions

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Accident Prevention and First Aid</td>
<td>1.0.0 – 4.4.0</td>
</tr>
<tr>
<td></td>
<td>Demonstration of Safety Equipment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Environmental Conditions; Surface Grinders</td>
<td>5.0.0 – 6.5.8</td>
</tr>
<tr>
<td></td>
<td>Demonstration of Care of Tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module Examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance Profile Examination</td>
<td></td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

PERFORMANCE PROFILE TASKS

1. Layout, inspect, and put on a safety harness with necessary strap adjustments.

2. Check operation of respirators, place on face, and adjust properly.
PROPERTIES OF CONCRETE

OBJECTIVES

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

1. Describe the properties of concrete.
2. Explain how the properties of concrete are used in construction.
4. Describe quality-control tests on concrete ingredients, fresh concrete, and hardened concrete.
5. Mix a test batch of concrete.
6. Perform a slump test.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor's Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**  
Overhead projector and screen  
Whiteboard/chalkboard  
Mixing boards (plywood)  
Hoes  
Square-end shovels  
Buckets or cubic foot boxes  
Slump test kits  
Appropriate Personal Protective Equipment

**Materials**  
Trainee Task Module  
Transparencies  
Pencils and paper  
Markers/chalk  
Example specification sheets  
Example reinforcing steel bars  
Portland cement  
Sand  
Aggregate  
Water  
Admixture samples  
Module Examinations  
Performance Profile Sheets
HOW TO USE THIS INSTRUCTOR’S GUIDE

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- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
- Class Break
- Classroom, and/or Demonstration, and/or Laboratory
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MODULE OVERVIEW

This module introduces the trainee to the properties of concrete and the components that make up the concrete mixture. Chemical and physical properties of cement, aggregate, and various types of admixtures are described. Basic tests used to determine properties such as slump and ultimate strength are explained.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

- Core Curricula
- Concrete Finishing Level 1, Modules 23101 and 23102

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 10 hours or four sessions of training time are suggested to cover Properties of Concrete. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Four 2½-Hour Sessions

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Components; Concrete Production</td>
<td>1.0.0 – 3.3.3</td>
</tr>
<tr>
<td>2</td>
<td>Properties of Concrete; Testing and Quality Control Demonstration/Laboratory</td>
<td>4.0.0 – 5.3.4</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory/Site Visit</td>
<td>2.0.0 – 5.2.0</td>
</tr>
<tr>
<td>4</td>
<td>Module Examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance Profile Examination</td>
<td></td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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TRANSPARENCY 2

TASK MODULE 23103, PROPERTIES OF CONCRETE

PERFORMANCE PROFILE TASKS

1. Mix a test batch of concrete.

2. Perform a slump test.
TOOLS AND EQUIPMENT

OBJECTIVES

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

1. Name the tools used in placing and finishing concrete.
2. Name the power equipment used in placing and finishing concrete.
3. Describe how each tool is used.
4. Describe how the power equipment is used.
5. Associate trade terms with the appropriate tools and equipment.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

Equipment

- Hand-held jointer
- Basic edger
- Pair edgers
- Radius edger
- Finishing broom
- Water broom
- Hand stone
- Hand-held concrete vibrator
- Gasoline-powered concrete saw
- Electric grinder
- Walk behind power trowel

Materials

- Trainee Task Module
- Transparencies
- Markers/chalk
- Pencils and paper
- Module Examinations
- Performance Profile Sheets
HOW TO USE THIS INSTRUCTOR’S GUIDE

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Introduction/Overview
Classroom, and/or Demonstration, and/or Laboratory
Class Break
Classroom, and/or Demonstration, and/or Laboratory
Summary

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**MODULE OVERVIEW**

This module introduces the Concrete Finishing trainee to the tools and equipment used in placing and finishing concrete.

**Prerequisites**

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

- Core Curricula
  - Concrete Finishing Level 1, Modules 23101 through 23103

**Safety Considerations**

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

**Teaching Time for This Module**

Approximately 7½ hours or three sessions of training time are suggested to cover *Tools And Equipment*. The training class session is a suggested 2½ hour time period, which includes at least one break. **You will need to adjust the time required for hands-on activities and testing based on your class size and resources.** All time periods for this module are suggested and you will need to adapt the suggested lesson plan to meet your local conditions.

**Suggested Teaching Sequence — Three 2½-Hour Sessions**

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Placing and Finishing Tools; Equipment</td>
<td>1.0.0 – 3.17.0</td>
</tr>
<tr>
<td>2</td>
<td>Laboratory/Site Visit</td>
<td>1.0.0 – 3.17.0</td>
</tr>
<tr>
<td>3</td>
<td>Equipment; Module Examination Performance Profile Test</td>
<td>3.13.0 – 3.17.0</td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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TRANSPARENCY 2

TASK MODULE 23104, TOOLS AND EQUIPMENT

PERFORMANCE PROFILE TASKS

1. Identify selected hand tools and their components.

2. Identify selected power tools and equipment.
PREPARING FOR PLACEMENT

OBJECTIVES

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

1. Describe basic site layout using levels and measuring tools.
2. Properly locate, grade, and build forms for horizontal placement.
3. Perform compaction activities on subgrades.
4. Describe various joints and where to locate them.
5. Describe various reinforcements and how to place them.
6. Describe information needed when ordering concrete.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead projector and screen</td>
<td>Trainee Task Module</td>
</tr>
<tr>
<td>Whiteboard/chalkboard</td>
<td>Transparencies</td>
</tr>
<tr>
<td>Engineer’s level</td>
<td>Markers/chalk</td>
</tr>
<tr>
<td>Laser level</td>
<td>Pencils and paper</td>
</tr>
<tr>
<td>Level rods</td>
<td>Construction stakes</td>
</tr>
<tr>
<td>Hand level</td>
<td>Batter boards</td>
</tr>
<tr>
<td>Measuring tape</td>
<td>Dimensional lumber (2 × 4 and 2 × 6)</td>
</tr>
<tr>
<td>Sandbox(es)</td>
<td>Nails</td>
</tr>
<tr>
<td>Shovels</td>
<td>String (mason’s line) and cutter</td>
</tr>
<tr>
<td>Come-alongs</td>
<td>Grease crayon or marking pen</td>
</tr>
<tr>
<td>Hammers</td>
<td>Reinforcing steel</td>
</tr>
<tr>
<td>Appropriate Personal Protective Equipment</td>
<td>Waterstop</td>
</tr>
<tr>
<td></td>
<td>Site plan</td>
</tr>
<tr>
<td></td>
<td>Module Examinations</td>
</tr>
<tr>
<td></td>
<td>Performance Profile Sheets</td>
</tr>
</tbody>
</table>
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- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
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MODULE OVERVIEW

This module provides training in the required activities and methods used in preparing a site for placing concrete. Topics include the processes from site excavation through ordering the concrete. Proper placement and inspection of formwork is emphasized.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

Core Curricula
Concrete Finishing Level 1, Modules 23101 through 23104

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 12½ hours or five sessions of training time are suggested to cover Preparing for Placement. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Five 2½-Hour Sessions

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Grade and Subgrade Preparation</td>
<td>1.0.0 – 2.5.2</td>
</tr>
<tr>
<td>2</td>
<td>Formwork; Surveying/Laboratory</td>
<td>3.0.0 – 3.6.5</td>
</tr>
<tr>
<td>3</td>
<td>Joints, Reinforcement; Embedments and Waterstops; Tolerances; Ordering Concrete</td>
<td>4.0.0 – 8.4.0</td>
</tr>
<tr>
<td>4</td>
<td>Formwork; Construct Forms on Grade/Laboratory</td>
<td>3.0.0</td>
</tr>
<tr>
<td>5</td>
<td>Module Examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance Profile Examination</td>
<td></td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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


*Concrete Parking Lots: Eight Steps to Quality Construction*, Videotape, Portland Cement Association, Skokie, IL.


*Finishing Concrete Flatwork*, Videotape 32:00 minutes, Portland Cement Association, Skokie, IL, 1991.

*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

TRANSPARENCY 2

TASK MODULE 23105, PREPARING FOR PLACEMENT

PERFORMANCE PROFILE TASKS

1. Set a batter board.

2. Locate and level a form.

3. Build a slab form to grade with dimension lumber.

4. Compact subgrade with a shovel and come-along.
PLACING CONCRETE

OBJECTIVES

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

1. Describe how concrete is conveyed and placed.
2. Draw up a pre-placement checklist.
3. Demonstrate the use of equipment and tools for placing concrete.
4. Demonstrate the process of depositing, spreading, consolidating, and striking off concrete in a form.
5. Associate trade terms with the appropriate processes and equipment.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate Personal Protective Equipment
- Sandbox(es)
- Wheelbarrows
- Come-alongs
- Square-end shovels
- Poker vibrators
- Straightedges
- Darbies
- Highway straightedges
- Bullfloats
- Slab forms

**Materials**
- Trainee Task Module
- Transparencies
- Pencils and paper
- Markers/chalk
- Example placing checklist
- Module Examinations
- Performance Profile Sheets
- Concrete
- Water
- Aggregate
HOW TO USE THIS INSTRUCTOR’S GUIDE

For each 2½ hour class session in this Instructor’s Guide, the basic Presentation Sequence is as follows:

- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
- Class Break
- Classroom, and/or Demonstration, and/or Laboratory
- Summary

Suggested time periods for classroom sessions are included throughout this Instructor’s Guide. These time periods should be adapted to meet local conditions and training requirements.

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In this Instructor’s Guide, the terms classroom, demonstration, and laboratory are defined and used as follows.

Classroom: Sessions are designed for lectures, group discussions, coaching, and additional activities. Trainees should be encouraged to actively participate.

Demonstration: Instructors will demonstrate all procedures before trainees attempt them. Instructors should make sure that trainees can point out all safety procedures during demonstrations to be assured of the proper use of equipment by trainees.

Laboratory: Instructors will facilitate all laboratory activities, coach trainees as they practice the procedures, monitor trainee progress, and provide feedback. The instructor will make sure that safety rules are followed at all times and that protective equipment is worn.

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MODULE OVERVIEW

This module provides an overview to the methods and procedures used in concrete placing, including the different types of tools and equipment used in placing.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

Core Curricula
Concrete Finishing Level 1, Modules 23101 through 23105

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 12½ hours or five sessions of training time are suggested to cover Placing Concrete. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Five 2½-Hour Sessions

Adjust your class times based on class size and resources.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Prepare Checklist; Delivery at Site; Discharging Concrete</td>
<td>1.0.0 – 4.8.0</td>
</tr>
<tr>
<td>2</td>
<td>Depositing, Spreading, and Consolidating; Strike Off and Smoothing Methods</td>
<td>5.0.0 – 6.3.3</td>
</tr>
<tr>
<td>3</td>
<td>Placing and Leveling Concrete Slab/Demonstration</td>
<td>1.0.0 – 6.3.3</td>
</tr>
<tr>
<td>4</td>
<td>Placing and Leveling Concrete Slab/Laboratory</td>
<td>1.0.0 – 6.3.3</td>
</tr>
<tr>
<td>5</td>
<td>Module Examination Performance Profile Examination</td>
<td></td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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


*Concrete Parking Lots: Eight Steps to Quality Construction*, Videotape, Portland Cement Association, Skokie, IL.


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*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

1. Place concrete using a wheelbarrow, square-end shovel, and come-along.

2. Consolidate placed concrete using spading and a poker vibrator.


4. Float concrete after striking off.
OBJECTIVES

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

1. Describe the basic finishing process.
2. Use the following finishing hand tools: float, edger, groover, and trowel.
3. Mark and cut joints with a saw.
4. Apply a broom finish.
5. Apply a rubbing finish.
6. Associate trade terms with the appropriate processes and equipment.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate Personal Protective Equipment
- Sandboxes (4 ft. × 4 ft.)
- Hammers
- Come-alongs
- Square-end shovels
- Straightedges
- Darbies
- Bullfloats
- Hand floats
- Edgers
- Groovers
- Trowels
- Concrete saw(s)
- Rubbing stone(s)
- Chalk lines
- Steel tape
- Brooms
- Wheelbarrows
- Power saws

**Materials**
- Trainee Task Module
- Transparencies
- Markers/chalk
- Pencils and paper
- Nails
- Concrete (ready-mixed recommended)
- Sand
- Lime
- Water
- Dimensional lumber slab form
- Burlap
- Grout mixture
- Marking pencils
- Module Examinations
- Performance Profile Sheets
HOW TO USE THIS INSTRUCTOR’S GUIDE

For each 2½ hour class session in this Instructor’s Guide, the basic Presentation Sequence is as follows:

- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
- Class Break
- Classroom, and/or Demonstration, and/or Laboratory
- Summary

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MODULE OVERVIEW
In this module, basic finishing techniques for slabs and other horizontal structures are described. Use of floats, trowels, edgers, and groovers is explained and demonstrated. Requirements for cutting joints using different types of saws are presented. Hands-on practice is provided for finishing concrete slabs.

Prerequisites
Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

Core Curricula
Concrete Finishing Level 1, Modules 23101 through 23106

Safety Considerations
Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module
Approximately 20 hours or eight sessions of training time are suggested to cover Finishing, Part One. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Eight 2½-Hour Sessions
Adjust your class times based on class size and resources.

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<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Basic Finishing Processes; Edging Concrete; Jointing Concrete; Finishing Techniques; Surface Treatments</td>
<td>1.0.0 – 6.6.2</td>
</tr>
<tr>
<td>2</td>
<td>Floating Techniques – Demonstration/Laboratory</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Edging, Grooving, and Troweling – Demonstration/Laboratory</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Finishing Small Slab – Demonstration/Laboratory</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Finishing Small Slab – Laboratory</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cutting Joints – Demonstration/Laboratory</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Finishing – Demonstration/Laboratory</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Module Examination</td>
<td>Performance Profile Examination</td>
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</tbody>
</table>
Optional References for Advanced Study

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Guide for Concrete Floor and Slab Construction, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

The Contractor’s Guide to Quality Construction, American Concrete Institute, Farmington Hills, MI, 1997.
PERFORMANCE PROFILE TASKS

1. Hand float, edge, groove, and trowel a 4 × 4 foot concrete slab.

2. Apply a broom finish to a slab.

3. Mark joints and cut them with a power saw.

4. Apply a rubbing finish to a slab.
CURING AND PROTECTING CONCRETE

OBJECTIVES

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

1. Describe the process of curing concrete.
2. Identify methods of curing concrete.
3. Describe how each method is applied.
4. Identify when each method is used.
5. Associate trade terms with the appropriate processes and equipment.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate Personal Protective Equipment
- Manual compound sprayers

**Materials**
- Trainee Task Module
- Transparencies
- Pencils and paper
- Markers/chalk
- Water
- Plastic sheeting
- Scrap lumber and rocks
- Wide plastic tape
- Samples of curing compounds
- Module Examinations
- Performance Profile Sheets
HOW TO USE THIS INSTRUCTOR'S GUIDE

For each 2 1/2 hour class session in this Instructor’s Guide, the basic Presentation Sequence is as follows:

  Introduction/Overview
  Classroom, and/or Demonstration, and/or Laboratory
  Class Break
  Classroom, and/or Demonstration, and/or Laboratory
  Summary

Suggested time periods for classroom sessions are included throughout this Instructor’s Guide. These time periods should be adapted to meet local conditions and training requirements.

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MODULE OVERVIEW

This module introduces the Concrete Finishing trainee to the methods and procedures used in curing and protecting concrete.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

  - Core Curricula
    - Concrete Finishing Level 1, Modules 23101 through 23107

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 5 hours or two sessions of training time are suggested to cover Curing And Protecting Concrete. The training class session is a suggested 2½ hour time period, which includes at least one break. You will need to adjust the time required for hands-on activities and testing based on your class size and resources. All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Two 2½-Hour Sessions

Adjust your class times based on class size and resources.

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<thead>
<tr>
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<th>Trainee Module Section(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; Importance of Curing; Curing Methods; Protection</td>
<td>1.0.0 — 4.5.0</td>
</tr>
<tr>
<td>2</td>
<td>Laboratory Test Module Examination Performance Profile Test</td>
<td>3.0.0 — 4.5.0</td>
</tr>
</tbody>
</table>
Optional References for Advanced Study

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*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

PERFORMANCE PROFILE TASKS

1. Spray a compound in a systematic total-coverage pattern over a marked slab surface.

2. Cover a marked wet slab surface with plastic sheeting, sealed and wrinkle free.
INTRODUCTION TO TROUBLESHOOTING

OBJECTIVES

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

1. Describe a basic troubleshooting methodology that can be used to identify a variety of concrete construction problems and their causes.
2. Identify problems with fresh concrete and describe ways to prevent them.
3. Identify different concrete defects such as crazing, cracking, dusting, scaling, popouts, and efflorescence, and describe ways to prevent them.

Note to the Instructor

Before teaching this module, you should review the details in this Instructor’s Guide for Equipment and Supplies, Testing, and the suggested Teaching Sequence. Be sure to allow ample time to prepare your own training plan or lesson plan and to gather all required equipment and materials.

Required Equipment and Materials

The following are required for instruction using this module:

**Equipment**
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate Personal Protective Equipment

**Materials**
- Trainee Task Module
- Transparencies
- Markers/chalk
- Paper and pencils
- Photographs of concrete problems
- Module Examinations
- Performance Profile Sheets
**HOW TO USE THIS INSTRUCTOR’S GUIDE**

For each 2½ hour class session in this Instructor’s Guide, the basic Presentation Sequence is as follows:

- Introduction/Overview
- Classroom, and/or Demonstration, and/or Laboratory
- Class Break
- Classroom, and/or Demonstration, and/or Laboratory
- Summary

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MODULE OVERVIEW

This course introduces the Concrete Finishing trainee to the methods and procedures used in troubleshooting the placement and finishing of fresh and hardened concrete.

Prerequisites

Please see the Course Map. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following modules:

Core Curricula
Concrete Finishing Level 1, Modules 23101 through 23108

Safety Considerations

Ensure that the trainees are equipped with Appropriate Personal Protective Equipment.

Teaching Time for This Module

Approximately 5 hours or two sessions of training time are suggested to cover Introduction to Troubleshooting. The training class session is a suggested 2½ hour time period, which includes at least one break. **You will need to adjust the time required for hands-on activities and testing based on your class size and resources.** All time periods for this module are suggested, and you will need to adapt the suggested lesson plan to meet your local conditions.

Suggested Teaching Sequence — Two 2½-Hour Sessions

Adjust your class times based on class size and resources.

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<tr>
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<tbody>
<tr>
<td>1</td>
<td>Introduction; Troubleshooting Method;</td>
<td>1.0.0 – 4.11.0</td>
</tr>
<tr>
<td></td>
<td>Fresh Concrete; Hardened Concrete</td>
<td></td>
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<tr>
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<td>Module Examination; Performance Profile Test</td>
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*Guide for Concrete Floor and Slab Construction*, ACI 302.1R-96, American Concrete Institute, Farmington Hills, MI, 1997.

PERFORMANCE PROFILE TASKS

1. Identify from a set of photographs the following problems:
   - Dusting
   - Crazing
   - Spalling
   - Popouts
   - Honeycombs
   - Scaling
   - Plastic shrinkage cracking
   - Excess bleeding
   - Drying-shrinkage cracks
   - Bugholes