MODULE OVERVIEW

This module describes the types and uses of drawings prepared for commercial structures. It provides information about the format and content of commercial drawings and their use in conveying specific construction requirements. It describes the standard format for specifications.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommen
ded that the trainee shall have successfully completed Core Curriculum and Carpentry Fundamentals Level One.

OBJECTIVES

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

1. Recognize the difference between commercial and residential construction drawings.
2. Identify the basic keys, abbreviations, and other references contained in a set of commercial drawings.
3. Accurately read a set of commercial drawings.
4. Identify and document specific items from a door and window schedule.
5. Explain basic construction details and concepts employed in commercial construction.
6. Calculate the floor area of each room in a floor plan.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:

1. Locate 10 items contained in a set of commercial drawings. (The instructor will select the 10 items.)
2. Using a door and window schedule, identify the hardware, ratings, and finishing for each door and window.
3. Calculate the floor area in a floor plan.

MATERIALS AND EQUIPMENT LIST

<table>
<thead>
<tr>
<th>Items</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Markers/chalk</td>
<td>Appropriate personal protective equipment</td>
</tr>
<tr>
<td>Pencils and scratch paper</td>
<td>Set of commercial drawings</td>
</tr>
<tr>
<td>Whiteboard/chalkboard</td>
<td>Set of residential drawings</td>
</tr>
<tr>
<td>Carpentry Level Two PowerPoint® Presentation Slides (ISBN 978-0-13-229138-5)</td>
<td>Copies of Quick Quizzes*</td>
</tr>
<tr>
<td>Multimedia projector and screen</td>
<td>Module Examination**</td>
</tr>
<tr>
<td>Computer</td>
<td>Performance Profile Sheets**</td>
</tr>
</tbody>
</table>

* Located at the back of this module.

**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit job sites. Make sure that all trainees are briefed on site safety procedures.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

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 25 hours are suggested to cover Commercial Drawings. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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<tbody>
<tr>
<td><strong>Session I. Introduction to the Drawing Set</strong></td>
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<tr>
<td>A. Introduction</td>
<td></td>
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<tr>
<td>B. Requirements for Commercial Plans</td>
<td></td>
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<tr>
<td><strong>Sessions II through IV. Reading and Understanding Drawings I</strong></td>
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</tr>
<tr>
<td>A. Architectural Drawings</td>
<td></td>
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<tr>
<td>B. Laboratory</td>
<td></td>
</tr>
<tr>
<td>Trainees practice calculating the area of each room in a floor plan in a set of commercial drawings. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td>C. Schedules</td>
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<tr>
<td>D. Laboratory</td>
<td></td>
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<tr>
<td>Trainees practice using a door and window schedule. This laboratory corresponds to Performance Task 2.</td>
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<tr>
<td><strong>Sessions V and VI. Reading and Understanding Drawings II</strong></td>
<td></td>
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<tr>
<td>A. Structural Drawings</td>
<td></td>
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<tr>
<td><strong>Sessions VII and VIII. Reading and Understanding Drawings III</strong></td>
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<tr>
<td>A. Mechanical Drawings</td>
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<tr>
<td>B. Electrical Drawings</td>
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<tr>
<td>C. Laboratory</td>
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<tr>
<td>Trainees practice identifying and documenting the design and location of ten items contained in a set of commercial drawings. This laboratory corresponds to Performance Task 1.</td>
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<tr>
<td><strong>Session IX. Understanding Written Specifications</strong></td>
<td></td>
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<tr>
<td>A. Written Specifications</td>
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<tr>
<td><strong>Session X. Review and Testing</strong></td>
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<tr>
<td>A. Module Review</td>
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<tr>
<td>B. Module Examination</td>
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<tr>
<td>1. Trainees must score 70% or higher to receive recognition from NCCER.</td>
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<tr>
<td>2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.</td>
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<tr>
<td>C. Performance Testing</td>
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</tr>
<tr>
<td>1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.</td>
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<tr>
<td>2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.</td>
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</table>
MODULE OVERVIEW
This module covers the common materials used in residential and light commercial roofing, along with the safety practices and application methods for these materials. It includes shingles, roll roofing, shakes, tiles, and metal and membrane roofs, as well as the selection and installation of roof vents.

PREREQUISITES
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Module 27201-07.

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

1. Identify the materials and methods used in roofing.
2. Explain the safety requirements for roof jobs.
3. Install fiberglass shingles on gable and hip roofs.
4. Close up a valley using fiberglass shingles.
5. Explain how to make various roof projections watertight when using fiberglass shingles.
6. Complete the proper cuts and install the main and hip ridge caps using fiberglass shingles.
7. Lay out, cut, and install a cricket or saddle.
8. Install wood shingles and shakes on roofs.
9. Describe how to close up a valley using wood shingles and shakes.
10. Explain how to make roof projections watertight when using wood shakes and shingles.
11. Complete the cuts and install the main and hip ridge caps using wood shakes/shingles.
12. Demonstrate the techniques for installing other selected types of roofing materials.

PERFORMANCE TASKS
Under the supervision of the instructor, the trainee should be able to do the following:

1. Install fiberglass shingles on gable and hip roofs.
2. Close up a valley using fiberglass shingles.
3. Complete the proper cuts and install the main and hip ridge caps using fiberglass shingles.
4. Lay out, cut, and install a cricket or saddle.
5. Install wood shingles and shakes on roofs.
6. Complete the cuts and install the main and hip ridge caps using shakes/shingles.
7. Demonstrate the techniques for installing other selected types of roofing materials.

MATERIALS AND EQUIPMENT LIST

| Markers/chalk | Hardboard simulated shingle panels |
| Pencils and scratch paper | Metal simulated shingle panels |
| Whiteboard/chalkboard | Slate shingles |
| Multimedia projector and screen | Metal roofing |
| Computer | Synthetic tiles, shakes, and shingles |
| Appropriate personal protective equipment | Membrane roofing |
| Composition shingles | Corrugated metal roofing |
| Architectural shingles | Installation literature on standing-seam metal roofing |
| Roll roofing material | Scaffolding tags |
| Wood roofing shingles | Roofing brackets |
| Wood roofing shakes | Metal drip edge |
| Wood shingle panels | Flashing |

continued
Fiberglass shingles
Torch-down roofing material
Single-ply roofing material
Ice edging
Prepared roof deck for composite shingles with a valley, hip roof intersection, horizontal abutment, and sidewall (all sheathed and with underlay in place)
Prepared roof deck for wood shingles with spaced sheathing and hip roof intersection
Prepared low-pitch (flat roof) roof with sheathing in place
2 × 4s to build saddle
Roofing nails
Plastic cement
Felt underlayment
Weatherproof membrane
Prefabricated soil pipe flashing
Backsaw
Power circular saw
Crowbar
Handsaw
Carpenter’s level
Nail apron
Sliding T-bevel
Keyhole saw
Pop riveter
Chalkline
Power saber saw
Angle square
Power drill
Caulking gun
Tin snips
Pry bar
Utility knife
Scribing compass
Drill bit set (regular and masonry)
Framing square
Claw hammer
Pneumatic nail guns
Shingle hatchet
Straightedge
Composition shingle knife
Roofing hammer
Slater’s tools
Score and snap tile cutter
Hand grinder with diamond wheel
Portable metal brake
Margin trowel
Scaffolding
Materials moving equipment
Ladders and jacks
Full body harness with lanyard and deceleration devices
Damaged personal fall protection equipment
Propane torch and tank
Copies of the Quick Quiz*
Module Examinations**
Performance Profile Sheets**

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on job site safety. This module requires trainees to install roofing. Ensure that all trainees are briefed on tool safety, shop safety, and fall protection as required.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

Asphalt Manufacturers Association website, www.asphaltroofing.org
National Roofing Contractors Association website, www.ncra.net
Roof Coating Manufacturers Association website, www.roofcoating.org
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 25 hours are suggested to cover Roofing Applications. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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<tbody>
<tr>
<td>Session I. Introduction and Typical Roofing Materials</td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Typical Roofing Materials</td>
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<tr>
<td>C. Laboratory</td>
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<tr>
<td>Trainees practice identifying typical roofing materials.</td>
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<tr>
<td>Session II. Tools and Safety</td>
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<tr>
<td>A. Tools</td>
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<tr>
<td>B. Safety</td>
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<tr>
<td>C. Laboratory</td>
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<tr>
<td>Trainees practice donning safety equipment.</td>
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<tr>
<td>Sessions III through V. Preparation for Roofing Applications, Composition Shingle Installation</td>
<td></td>
</tr>
<tr>
<td>A. Preparation for Roofing Applications</td>
<td></td>
</tr>
<tr>
<td>B. Composition Shingle Installation: Gable and Hip Roofs</td>
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<tr>
<td>C. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice installing fiberglass shingles on gable and hip roofs. This laboratory corresponds to Performance Task 1.</td>
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<tr>
<td>D. Composition Shingle Installation: Valleys</td>
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<tr>
<td>E. Laboratory</td>
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<tr>
<td>Trainees practice closing up a valley using fiberglass shingles. This laboratory corresponds to Performance Task 2.</td>
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<tr>
<td>F. Composition Shingle Installation: Roof Projections and Flashing</td>
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<tr>
<td>G. Laboratory</td>
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<tr>
<td>Trainees practice installing a cricket or saddle. This laboratory corresponds to Performance Task 4.</td>
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<tr>
<td>H. Laboratory</td>
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<tr>
<td>Trainees practice installing the main and hip ridge caps using fiberglass shingles. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td>Sessions VI and VII. Alternative Roofing Materials I</td>
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<tr>
<td>A. Roll Roofing Installation</td>
<td></td>
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<tr>
<td>B. Wood Shingles and Shakes</td>
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<tr>
<td>C. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice installing wood shingles and shakes. This laboratory corresponds to Performance Task 5.</td>
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<tr>
<td>D. Laboratory</td>
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<tr>
<td>Trainees practice installing the main and hip ridge caps using wood shakes/shingles. This laboratory corresponds to Performance Task 6.</td>
<td></td>
</tr>
</tbody>
</table>
Sessions VIII and IX. Alternative Roofing Materials II

A. Common Metal Roofing
B. Slate and Tile Roofing
C. Single-Ply Roofing Application
D. Torch-Down Roofing Application
E. Laboratory

Trainees practice installing other selected types of roofing materials. This laboratory corresponds to Performance Task 7.

Session X. Ventilation and Ice Edging, Review, and Testing

A. Roof Ventilation and Ice Edging
B. Module 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.
D. Performance Testing
   1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
   2. Record the testing results on Craft Training Report Form 200, and submit the results to the Training Program Sponsor.
MODULE OVERVIEW

This module covers the selection and installation of various types of insulating materials in walls, floors, and attics. It also covers the uses and installation practices for vapor barriers and weather-proofing materials.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed *Core Curriculum; Carpentry Fundamentals Level One*; and *Carpentry Framing and Finishing Level Two*, Modules 27201-07 and 27202-07.

OBJECTIVES

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

1. Describe the requirements for insulation.
2. Describe the characteristics of various types of insulation material.
3. Calculate the required amounts of insulation for a structure.
4. Install selected insulation materials.
5. Describe the requirements for moisture control and ventilation.
6. Install selected vapor barriers.
7. Describe various methods of waterproofing.
8. Describe air infiltration control requirements.
9. Install selected building wraps.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:

1. Install blanket insulation in a wall.
2. Install a vapor barrier on a wall.
3. Install selected building wraps.

MATERIALS AND EQUIPMENT LIST

- Markers/chalk
- Pencils and scratch paper
- Whiteboard/chalkboard
- *Carpentry Level Two* PowerPoint® Presentation
- Multimedia projector and screen
- Computer
- Appropriate personal protective equipment
- Flexible insulation
- Loose-fill insulation
- Rigid or semi-rigid insulation boards
- Reflective insulation
- Staples
- Hand or power stapler
- Calculator
- Samples of various vapor barrier materials
- Samples of various waterproofing materials
- Soffit baffles
- Wire mesh if needed
- Tape measure
- Utility knife or shears
- Pencil
- Prepared wall for insulation, vapor barriers, and building wraps
- Copies of the Quick Quiz*
- Module Examinations**
- Performance Profile Sheets**

* Located at the back of this module.
**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.
SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to install insulation materials. Ensure that they are properly briefed on the use of all tools and personal protection necessary to handle insulation materials.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.


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 7½ hours are suggested to cover Thermal and Moisture Protection. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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<tbody>
<tr>
<td><strong>Session I. Introduction to Thermal Insulation</strong></td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Thermal Insulation</td>
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<tr>
<td>C. Insulation Installation Guidelines</td>
<td></td>
</tr>
<tr>
<td>D. Laboratory</td>
<td></td>
</tr>
<tr>
<td>Trainees practice installing blanket insulation in a wall. This laboratory corresponds to Performance Task 1.</td>
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<tr>
<td><strong>Session II. Moisture Control and Air Infiltration Control</strong></td>
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<tr>
<td>A. Moisture Control</td>
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<tr>
<td>B. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice installing a vapor barrier on a wall. This laboratory corresponds to Performance Task 2.</td>
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<tr>
<td>C. Waterproofing</td>
<td></td>
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<tr>
<td>D. Air Infiltration Control</td>
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<tr>
<td>E. Laboratory</td>
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<tr>
<td>Trainees practice installing selected building wraps. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td><strong>Session III. Review and Testing</strong></td>
<td></td>
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<tr>
<td>A. Module Review</td>
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<tr>
<td>B. Module Examination</td>
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</tr>
<tr>
<td>1. Trainees must score 70% or higher to receive recognition from NCCER.</td>
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<tr>
<td>2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.</td>
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<td>C. Performance Testing</td>
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</tbody>
</table>
Exterior Finishing  
Annotated Instructor’s Guide  

MODULE OVERVIEW  
This module covers the various types of exterior siding used in residential construction including wood, metal, vinyl, and cement board siding, and their installation procedures.

PREREQUISITES  
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27203-07.

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

1. Describe the purpose of wall insulation and flashing.
2. Install selected common cornices.
3. Demonstrate lap and panel siding estimating methods.
4. Describe the types and applications of common wood siding.
5. Describe fiber-cement siding and its uses.
6. Describe the types and styles of vinyl and metal siding.
7. Describe the types and applications of stucco and masonry veneer finishes.
8. Describe the types and applications of special exterior finish systems.
9. Install three types of siding commonly used in your area.

PERFORMANCE TASKS  
Under the supervision of the instructor, the trainee should be able to do the following:

1. Install a selected cornice or box cornice using the proper safety precautions.
2. Estimate the amount of lap or panel siding required for a structure.
3. Install three of the most common siding types in your area.

MATERIALS AND EQUIPMENT LIST  
Markers/chalk  
Pencils and scratch paper  
Whiteboard/chalkboard  
Multimedia projector and screen  
Computer  
Sample of building wrap  
MSDS  
Samples of aluminum and vinyl fascia and soffits and installation instructions  
2 × 4s with different types of tail rafter cuts  
2 × 4s for lookout  
2 × 4s for lookout ledger  
2 × 6s for false fascia  
1 × 8s for fascia  
1 × 2s for frieze  
Plywood for soffit  
Galvanized 4d box nails for soffit  
Galvanized 8d casing nails for fascia  
8d box nails for lookout ledger  
16d box nails for lookouts  
Samples of various types of wood siding  
Nails used to secure wood siding  
Samples of vinyl or metal siding  
Manufacturer’s installation instructions for metal and vinyl siding  
Quantity of one style of vinyl or metal siding  
Various manufactured vinyl or metal siding trim and starter components  
Metal and PVC trim coils  
Samples of various stucco, brick, stone, and synthetic stone veneer  
Samples of DEFs/EIFS wall cladding  
1 × 3s for story poles  
6” bevel wood siding and/or wood lap siding  
Board-and-batten siding  
Tongue-and-groove siding  
Shiplap siding  
Shingles and shakes  
Panelized shake or shingle siding  
4 × 8 plywood siding  
4 × 8 panel and lap-style hardboard/particleboard siding  

continued
Lap and panel styles of fiber-cement siding
Manufacturer’s installation instructions for fiber-cement siding
Manufacturer’s installation instructions for plywood siding
Caulk
Inside and outside corner materials
Furring strips for starter course
Spacing gauges (fabricated)
Siding gauges (fabricated)
Drip caps
Flashing
Building paper
Nails
Radial arm saw
Framing square
Steel measuring tape
Claw hammer
4’ level
Handsaw
Chalkline
Combination square
Water level

Circular saw or table saw
Fine-toothed, carbide-tipped, circular saw blade
Dry-diamond circular saw blade
Sawhorses or cutting table
Electric/pneumatic carbide-tipped power hand shears
Score-and-snap knife with tungsten carbide tip
Caulking gun
Pliers
Tin snips
Aviation shears
Steel awl
Putty knife
Utility knife
Snaplock punch
Vinyl siding unlocking tool
Nail hole punch
Flat-blade screwdriver
Portable brake
Copies of the Quick Quiz*
Module Examinations**
Performance Profile Sheets**

*Located at the back of this module.
**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to perform exterior finishing. Ensure that all trainees are properly briefed on site safety procedures and tool safety.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

The Vinyl Siding Institute website, www.vinylsiding.org
Cedar Shake & Shingle Bureau website, www.cedarbureau.org
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 35 hours are suggested to cover Exterior Finishing. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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</thead>
<tbody>
<tr>
<td>Sessions I and II. Introduction, Insulation, Flashing, and Cornices</td>
<td></td>
</tr>
<tr>
<td>A. Introduction</td>
<td></td>
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<tr>
<td>B. Safety</td>
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<tr>
<td>C. Insulation</td>
<td></td>
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<tr>
<td>D. Flashing</td>
<td></td>
</tr>
<tr>
<td>E. Cornices</td>
<td></td>
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<tr>
<td>F. Laboratory</td>
<td></td>
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<tr>
<td>Trainees practice installing a cornice. This laboratory corresponds to Performance Task 1.</td>
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<tr>
<td>Session III. Estimating</td>
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<tr>
<td>A. Estimating Panel and Board Siding</td>
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<td>B. Laboratory</td>
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<tr>
<td>Trainees practice estimating the amount of lap or panel siding required for a structure. This laboratory corresponds to Performance Task 2.</td>
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<td>Sessions IV through VII. Wood Siding</td>
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<td>A. Beveled Siding</td>
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<td>B. Board-and-Batten Siding</td>
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<td>C. Tongue-and-Groove Siding</td>
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<td>D. Shingle Siding or Shakes</td>
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<td>E. Plywood Siding</td>
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<td>F. Hardboard and Particleboard Siding</td>
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<td>G. Laboratory</td>
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<tr>
<td>Trainees practice installing siding. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td>Sessions VIII and IX. Fiber-Cement Siding</td>
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<tr>
<td>A. Types</td>
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<td>B. Installation Procedures</td>
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<td>C. Laboratory</td>
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<tr>
<td>Trainees practice installing siding. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td>Sessions X through XII. Vinyl and Metal Siding</td>
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<tr>
<td>A. Materials and Components</td>
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<td>B. Tools and Equipment</td>
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<td>C. Installation Procedures</td>
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<tr>
<td>D. Laboratory</td>
<td></td>
</tr>
<tr>
<td>Trainees practice installing siding. This laboratory corresponds to Performance Task 3.</td>
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</tr>
</tbody>
</table>
Session XIII. Exterior Finishes
   A. Stucco (Cement) Finishes
   B. Brick and Stone Veneer
   C. DEFS and EIFS

Session XIV. Review and Testing
   A. Module Review
   B. Module Examination
      1. Trainees must score 70% or higher to receive recognition from NCCER.
      2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
   C. Performance Testing
      1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
      2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
MODULE OVERVIEW

This module describes the types and grades of steel framing materials and includes instructions for selecting and installing metal framing for interior walls, exterior walls, and partitions.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27204-07.

OBJECTIVES

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

1. Identify the components of a steel framing system.
2. Identify and select the tools and fasteners used in a steel framing system.
3. Identify applications for steel framing systems.
4. Demonstrate the ability to build back-to-back, box, and L-headers.
5. Lay out and install a steel stud structural wall with openings to include bracing and blocking.
6. Lay out and install a steel stud non-structural wall with openings to include blocking and bracing.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:

1. Demonstrate the ability to build headers (back-to-back, box, and L-header).
2. Lay out and install a steel stud structural wall with openings to include bracing and blocking.
3. Lay out and install a steel stud non-structural wall with openings to include blocking and bracing.

MATERIALS AND EQUIPMENT LIST

Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Multimedia projector and screen
Computer
Appropriate personal protective equipment
Various hand tools used when framing with steel, including:
  Powder-actuated stud driver
  Hammer-driven stud driver
  Power screwdriver
  Locking pliers (Vise-Grip™ pliers)
  Circular metal saw
  Hole punches
  Hole saw
  End circuit nippers and metal snips
  Channel stud sheer
  Metal lock fastener (crimper)
  Hand level
  Claw hammer
  Framing square

Standard for Cold-Formed Steel—General Provisions

Various fasteners used with steel framing, including:
  Self-tapping screws
  Drywall screws
  ⅛”, ⅜” Type S or S-12 pan head screws
  ½” Masonry nails

Various samples of steel framing and framing materials, including:
  Studs
  Runners/tracks
  Metal furring channel and clips
  Resilient channel
  Cold-rolled channel
  Metal door frames, anchors, and clips
  Metal angles
  Tie wire
  Furring brackets for adjustable walls
  Breakaway clips
  Fine-gauge framing material
  Snap-in and standard runner track
  Stud shoes
  Standard resilient clips
  Resilient starter/finisher clips

continued
Plain drywall channel  
Metal joists  
Metal trusses  
Marked steel framing members  
Non-structural steel framing members and accessories  
To the maximum extent possible, prebuilt samples to demonstrate techniques, including:  
  Curtain wall framing  
  Double top plate  
  Held-back partition  
  Metal stud secured to a steel beam  
  Metal stud attached to a metal channel  
  Window frame and header  
  Simple 90° radius wall  

Combination wood/metal frame window  
Metal stud wall secured to a concrete wall  
Metal stud frame for glass wall  
Chalkline  
100' steel tape  
Plumb bob  
Floor plan  
Door frame jack  
Two 1\" × 25-gauge metal straps  
Red or yellow spray paint  
Thin boards  
Wood wedges and blocks  
Copies of the Quick Quizzes*  
Module Examinations**  
Performance Profile Sheets**  

*Located at the back of this module.  
**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to perform metal stud framing. Ensure that all trainees are properly briefed on the use of powder-activated tools and tool safety.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

www.steelframing.org
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 *Cold-Formed Steel Framing*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td><strong>Session I. Introduction, Tools, and Fasteners</strong></td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Tools Used for Steel Framing Work</td>
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<tr>
<td>C. Fasteners</td>
<td>_____________</td>
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<tr>
<td>D. Steel Framing Materials</td>
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<tr>
<td><strong>Sessions II–V. Steel Framing Applications</strong></td>
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<tr>
<td>A. Applications</td>
<td>_____________</td>
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<tr>
<td>B. Framing Walls</td>
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<tr>
<td>C. Floor and Roof Assemblies</td>
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<tr>
<td>D. Bracing Steel Walls</td>
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<tr>
<td>E. Non-Structural Wall Framing</td>
<td>_____________</td>
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<tr>
<td>F. Slip Connections</td>
<td>_____________</td>
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<tr>
<td>G. Laboratory</td>
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<tr>
<td>Trainees practice building headers. This laboratory corresponds to Performance Task 1.</td>
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<tr>
<td>H. Laboratory</td>
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<tr>
<td>Trainees practice laying out and installing a steel stud structural wall. This laboratory corresponds to Performance Task 2.</td>
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<tr>
<td>I. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice laying out and installing a steel stud non-structural wall. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td><strong>Session VI. Review and Testing</strong></td>
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<tr>
<td>A. Module Review</td>
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<tr>
<td>B. Module Examination</td>
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<tr>
<td>1. Trainees must score 70% or higher to receive recognition from NCCER.</td>
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</table>
MODULE OVERVIEW

This module describes the various types of gypsum drywall, their uses, and the fastening devices and methods used to install them. It also contains detailed instructions for installing drywall on walls and ceilings, using nails, drywall screws, and adhesives. It also covers fire- and sound-rated walls.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27205-07.

OBJECTIVES

Upon completion of this module, the trainee will be able to do the following:
1. Identify the different types of drywall and their uses.
2. Select the type and thickness of drywall required for specific installations.
3. Select fasteners for drywall installation.
4. Explain the fastener schedules for different types of drywall installations.
5. Perform single-layer and multi-layer drywall installations using different types of fastening systems, including:
   • Nails
   • Drywall screws
   • Adhesives
6. Install gypsum drywall on steel studs.
7. Explain how soundproofing is achieved in drywall installations.
8. Estimate material quantities for a drywall installation.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:
1. Install gypsum drywall panels on stud walls and ceilings using different types of fastening systems, including:
   • Nails
   • Screws
   • Adhesives
2. Install gypsum drywall panels on a steel wall.
3. Select the type and thickness of drywall required for specific installations and estimate material quantities for the installation.

MATERIALS AND EQUIPMENT LIST

Markers/chalk  
Pencils and scratch paper  
Whiteboard/chalkboard  
Carpentry Level Two PowerPoint® Presentation  
Multimedia projector and screen  
Computer  
Samples of common types of gypsum board  
Samples of the various edges found on gypsum board  
Drywall panels  
Metal or vinyl corners  
Samples of nails used to secure drywall

Nails  
Screws  
Samples of sound isolation and firestopping materials  
Various types of adhesives  
Adhesive  
Various tools used for gypsum board application including:
   • Steel rule with cutting edge  
   • 4’ T-square  
   • Hook-bill knife  
   • Utility saw  
   • Power cutout tool

continued
Drywall or keyhole saw  Samples of corner beads and casings
Gypsum board lifter  Local building codes
Circle cutter  Firestopping devices
Drywall hammer  Samples of different types of firestopping material
Nail pouch  Calculators
Drywall rasp  Copies of the Quick Quiz*
Screw gun  Module Examinations**
Drywall lift  Performance Profile Sheets**
T-brace

Several tools used to apply adhesives to gypsum board

*Located at the back of this module.
**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. If you require trainees to visit construction sites, ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to install drywall. Ensure that all trainees are properly briefed on safety procedures and tool safety. Ensure that all trainees are briefed on lifting safety and observe proper lifting procedures.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.


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 Drywall Installation. You may need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

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<thead>
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<td>A. Introduction</td>
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<tr>
<td>B. Gypsum Board</td>
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<tr>
<td>C. Tools Used for Gypsum Board Application</td>
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</tr>
</tbody>
</table>
Session II. Application of Gypsum Board
A. Single-Ply and Multi-Ply Construction
B. Job-Site Preparation
C. Cutting and Fitting Preparation
D. Drywall Fasteners—Nails
E. Laboratory
Trainees practice installing drywall using nails. This laboratory corresponds to Performance Task 1.
F. Drywall Fasteners—Screws
G. Laboratory
Trainees practice installing drywall using screws. This laboratory corresponds to Performance Task 1.

Session III. Adhesives
A. Adhesive
B. Laboratory
Trainees practice installing drywall using adhesives. This laboratory corresponds to Performance Task 1.

Session IV. Multi-Ply Application and Metal Framing
A. Multi-Ply Application
B. Metal Framing
C. Laboratory
Trainees practice installing drywall on a metal stud wall. This laboratory corresponds to Performance Task 2.

Session V. Special Applications
A. Self-Supporting Partitions
B. Non-Combustible Panels
C. Resurfacing Existing Construction
D. Corner Beads and Casings
E. Fire-Rated and Sound-Rated Walls
F. Moisture-Resistant Construction
G. Estimating Drywall
H. Laboratory
Trainees practice estimating drywall. This laboratory corresponds to Performance Task 3.

Session VI. Review and Testing
A. Module Review
B. Module Examination
1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
C. Performance Testing
1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
MODULE OVERVIEW

This module covers the materials, tools, and methods used to finish and patch gypsum drywall. It includes coverage of both automatic and manual taping and finishing methods.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27206-07.

OBJECTIVES

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

1. State the differences among the six levels of finish established by industry standards and distinguish a finish level by observation.
2. Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.
3. Identify the automatic tools used in drywall finishing.
4. Identify the materials used in drywall finishing and state the purpose and use of each type of material, including:
   - Compounds
   - Joint reinforcing tapes
   - Trim material
   - Textures and coatings
5. Properly finish drywall using hand tools.
6. Recognize various types of problems that occur in drywall finishes; identify the causes and correct methods for solving each type of problem.
7. Patch damaged drywall.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:

1. State the differences among the six levels of finish established by industry standards and distinguish a finish level by observation.
2. Properly prepare the following compounds for use:
   - Taping compound
   - Topping compound
   - Premix
   - Quickset compound
3. Select the proper hand tools and perform the following:
   - Joint taping and finishing
   - Fastener spotting
   - Corner finishing
   - Sanding
4. Patch damaged drywall.
MATERIALS AND EQUIPMENT LIST

Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Multimedia projector and screen
Computer
A Recommended Specification for Levels of Gypsum Board Finish

To the maximum extent possible, various samples of properly finished walls as defined in the Trainee Module, including:
Level 0
Level 1
Level 2
Level 3
Level 4
Level 5
Various types of joint reinforcing tape, including fiberglass, metal edge, and paper
Various compounds, including powder, premix, and quickset
Water
Mixing container
Mixing tools
Pieces of 2 × 4
Various trims, including corner bead with mesh flanges, L-bead, J-bead, and expansion joints
Various grades of sandpaper
Mesh cloth
Polyethylene sponges
Sanding tools

*Located at the back of this module.

**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. If you require trainees to visit construction sites, ensure that they are briefed on site safety procedures. This module requires trainees to finish drywall. Ensure that all trainees are properly briefed on safety procedures and tool safety. Ensure that all trainees are briefed on dust hazards and controlling dust.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

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 Drywall Finishing. You may need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

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<tbody>
<tr>
<td><strong>Session I. Introduction, Standards, and Tools</strong></td>
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</tr>
<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Finishing Standards</td>
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<tr>
<td>C. Laboratory</td>
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<tr>
<td>[Trainees practice identifying various finishing standards. This laboratory corresponds to Performance Task 1.]</td>
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<tr>
<td>D. Finishing Tools</td>
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<tr>
<td><strong>Session II. Finishing Materials</strong></td>
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<td>A. Finishing Materials</td>
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<tr>
<td>B. Laboratory</td>
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<tr>
<td>[Trainees practice preparing various types of finishing compounds. This laboratory corresponds to Performance Task 2.]</td>
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<tr>
<td><strong>Sessions III and IV. Finishing Procedures</strong></td>
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<tr>
<td>A. Finishing Procedures</td>
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<tr>
<td>B. Laboratory</td>
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<tr>
<td>[Trainees practice selecting the proper tool and performing various finishing techniques. This laboratory corresponds to Performance Task 3.]</td>
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<tr>
<td>C. Problems and Remedies</td>
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<tr>
<td>D. Laboratory</td>
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<tr>
<td>[Trainees practice patching drywall. This laboratory corresponds to Performance Task 4.]</td>
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<tr>
<td><strong>Session V. Review and Testing</strong></td>
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<tr>
<td>A. Module Review</td>
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<tr>
<td>B. Module Examination</td>
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</tr>
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<td>1. Trainees must score 70% or higher to receive recognition from NCCER.</td>
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<td>2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.</td>
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<td>C. Performance Testing</td>
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</tbody>
</table>
MODULE OVERVIEW
This module covers the installation of metal doors and related hardware in steel-framed, wood-framed, and masonry walls, along with their related hardware, such as locksets and door closers. It also covers the installation of wooden doors, folding doors, and pocket doors.

PREREQUISITES
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27207-07.

OBJECTIVES
Upon completion of this module, the trainee will be able to do the following:
1. Identify various types of door jambs and frames and demonstrate the installation procedures for placing selected door jambs and frames in different types of interior partitions.
2. Identify different types of interior doors.
3. Identify different types of interior door hardware and demonstrate the installation procedures for selected types.
4. Demonstrate the correct and safe use of the hand and power tools described in this module.
5. List and identify specific items included on a typical door schedule.
6. Demonstrate the procedure for placing and hanging a selected door.

PERFORMANCE TASKS
Under the supervision of the instructor, the trainee should be able to do the following:
1. Install a selected metal frame door using the proper safety precautions.
2. Install a prehung door unit or door hanging system using the proper safety precautions.
3. Lay out and cut hinges in a wooden door.
4. Install a lockset and door closer using the proper safety precautions.
5. Install a bifold door using the proper safety precautions.

MATERIALS AND EQUIPMENT LIST
Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Multimedia projector and screen
Computer
Segments of flush hollow-core, solid-core, and panel doors
Door schedules
Assembled and unassembled metal door frames with molding and accessories
Manufacturer’s warranty and installation instructions for wood doors
Assortment of doors, including: Bifold doors Bypass door Pocket door Wood folding door

Metal door with door light Fire door
Manufactured prehung door units Interior locksets and manufacturer’s installation instructions
Cylindrical, heavy-duty, and mortise locksets Multiple lock keying systems Electrical strikes Electrical bolt locks Electrical locksets/latches Electromagnetic locks Delayed exit alert locks External doorstop Door holder Door closer Touch bars Cross bars Flush bolts Dustproof striker

continued
Door coordinator
Smoke gasket
Open back strike
Finish nails
Anchor bolts
6¼" drywall screws (including coarse thread)
Closer sleeves
Assortment of anchors, including:
   Wood stud anchor
   Steel stud anchor
   Sill anchors
   Masonry wall anchors
Shims
8d 2¼" casing nails
Wood spreader bar
Expansion shields
Machine bolts
Wire
Pencil
Masking tape
Cardboard shim strips
Paraffin wax
Soft bar soap
Hinges
High-frequency usage hinge
Door jambs
Weatherstripping
Thresholds
6' level

Magnetic level
Screwdriver set
Drill bit set
Masonry drill bit set
Electric drill
Telescoping braces
Measuring tape/ruler
Finishing sawhorses
Knife
Power saw
Hand saw
Fabricated door jack
Butt gauge
Soft-faced hammer
Wood chisel
Butt marker
Hinge butt template for doors and jambs
Door hanging system
Self-centering screw hole punch
Self-centering bit
Plane
Hole saw
Sledgehammer
Square
Door wedges
Router and operator’s manual
Copies of the Quick Quizzes*
Module Examinations**
Performance Profile Sheets**

*Located at the back of this module.
**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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. If you require trainees to visit construction sites, ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to hang doors. Ensure that all trainees are properly briefed on safety procedures, tool safety, and lifting safety.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

**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 20 hours are suggested to cover *Doors and Door Hardware*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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<tbody>
<tr>
<td><strong>Sessions I and II. Introduction, Door Types, Metal Doors</strong></td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Safety</td>
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<tr>
<td>C. Door Types and Basic Construction</td>
<td></td>
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<tr>
<td>D. Metal Doors</td>
<td></td>
</tr>
<tr>
<td>E. Laboratory</td>
<td>Trainees practice installing a metal door. This laboratory corresponds to Performance Task 1.</td>
</tr>
<tr>
<td><strong>Sessions III–V. Wood Doors and Installing Prehung Doors</strong></td>
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</tr>
<tr>
<td>A. Interior Wood Door Jambs</td>
<td></td>
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<tr>
<td>B. Interior Wood Door</td>
<td></td>
</tr>
<tr>
<td>C. Laboratory</td>
<td>Trainees practice cutting hinges in a wooden door. This laboratory corresponds to Performance Task 3.</td>
</tr>
<tr>
<td>D. Door Stop Strips</td>
<td></td>
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<tr>
<td>E. Job Site Prehanging a Door Prior to Installation</td>
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<tr>
<td>F. Manufactured Prehung Door Unit Installation</td>
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</tr>
<tr>
<td>G. Laboratory</td>
<td>Trainees practice installing a prehung door or door hanging system. This laboratory corresponds to Performance Task 2.</td>
</tr>
<tr>
<td><strong>Session VI. Locksets and Other Door Hardware</strong></td>
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<tr>
<td>A. Locksets</td>
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<tr>
<td>B. Laboratory</td>
<td>Trainees practice installing a lockset. This laboratory corresponds to Performance Task 4.</td>
</tr>
<tr>
<td>C. External Door Stops, Holders, and Door Closers</td>
<td></td>
</tr>
<tr>
<td>D. Laboratory</td>
<td>Trainees practice installing door closers. This laboratory corresponds to Performance Task 4.</td>
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<tr>
<td>E. Other Door Hardware</td>
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<tr>
<td><strong>Session VII. Other Door Types and Door Lights</strong></td>
<td></td>
</tr>
<tr>
<td>A. Other Door Types</td>
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<tr>
<td>B. Laboratory</td>
<td>Trainees practice installing a bifold door. This laboratory corresponds to Performance Task 5.</td>
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<tr>
<td>C. Door Lights</td>
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<tr>
<td>D. Commercial Exterior Doors</td>
<td></td>
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</tbody>
</table>
Session VIII. Review and Testing

A. Module Review

B. Module Examination

1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.

C. Performance Testing

1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
MODULE OVERVIEW

This module includes the materials, layout, and installation procedures for many types of suspended ceilings used in commercial construction, as well as ceiling tiles, drywall suspension systems, and pan-type ceilings.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum: Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27208-07.

OBJECTIVES

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

1. Establish a level line.
2. Explain the common terms related to sound waves and acoustical ceiling materials.
3. Identify the different types of suspended ceilings.
4. Interpret plans related to ceiling layout.
5. Sketch the ceiling layout for a basic suspended ceiling.
6. Perform a material takeoff for a suspended ceiling.
7. Install selected suspended ceilings.

PERFORMANCE TASKS

Under the supervision of the instructor, the trainee should be able to do the following:

1. Use a water level and/or establish a level line at ceiling level such as is required when installing the wall angle for a suspended ceiling.
2. Lay out and install selected suspended ceiling systems according to a specific plan.
   - Exposed grid ceiling system
   - Metal pan ceiling system
   - Direct-hung concealed grid system
   - Drywall furring ceiling system
3. Draw a ceiling plan/sketch for a typical room, then use the plan/sketch to estimate the quantities of materials needed to install an exposed grid ceiling system in the room.

MATERIALS AND EQUIPMENT LIST

| Markers/chalk | Drywall furring ceiling system components |
| Pencils and scratch paper | Graph paper |
| Whiteboard/chalkboard | Examples of different types of ceiling panels and tiles |
| *Carpentry Level Two* PowerPoint® Presentation Slides (ISBN 978-0-13-229138-5) | Basic carpenter’s tool box |
| Multimedia projector and screen | Framing square |
| Computer | Level |
| Appropriate personal protective equipment | Driver/drill (electric and/or battery-operated) and assorted drill bits/driver bits |
| Pictures of various types of suspended ceilings | Ladders |
| Decibel meter | Water level, builder’s level, and/or laser with a wall/ceiling mount or tripod |
| Set of blueprints | Aviation snips |
| Scrap pieces of wall angle | Clamping pliers or Vise-Grip™ pliers |
| Exposed grid ceiling system components | Chalkline |
| Metal pan ceiling system components | 50’ or 100’ tape |
| Direct-hung concealed grid ceiling system components | continued |
**SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. If you require trainees to visit construction sites, ensure that they are briefed on site safety procedures. This module requires trainees to install suspended ceilings. Ensure that they are properly briefed on the use of all tools and personal protection necessary.

**ADDITIONAL RESOURCES**

This module presents thorough resources for task training. The following resource material is suggested for further study.


**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 Suspended Ceilings. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

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<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td><strong>Session I. Introduction to Suspended Ceilings</strong></td>
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</tr>
<tr>
<td>A. Introduction</td>
<td></td>
</tr>
<tr>
<td>B. Sound Wave Propagation and Characteristics</td>
<td></td>
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<tr>
<td>C. Acoustical Terms</td>
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<tr>
<td>D. Reading Blueprints</td>
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<tr>
<td>E. Ceiling Leveling Equipment</td>
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<tr>
<td>F. Laboratory</td>
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<tr>
<td>Trainees practice using a level to establish a level line. This laboratory corresponds to Performance Task 1.</td>
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</tbody>
</table>

**SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. If you require trainees to visit construction sites, ensure that they are briefed on site safety procedures. This module requires trainees to install suspended ceilings. Ensure that they are properly briefed on the use of all tools and personal protection necessary.

**ADDITIONAL RESOURCES**

This module presents thorough resources for task training. The following resource material is suggested for further study.


**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 Suspended Ceilings. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

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<td>F. Laboratory</td>
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<tr>
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<thead>
<tr>
<th>Tool</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyhole saw</td>
<td>Architect’s scale</td>
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<tr>
<td>Lath nippers</td>
<td>Awl</td>
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<tr>
<td>Magnetic punch</td>
<td>6’ folding rule</td>
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<tr>
<td>Scribes or compass</td>
<td>Straightedge</td>
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<td>Tile knife</td>
<td>A board</td>
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<tr>
<td>Pop-rivet gun</td>
<td>Hanger wire</td>
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<tr>
<td>Powder-actuated fastening tool</td>
<td>Copies of the Quick Quizzes*</td>
</tr>
<tr>
<td>Scaffold</td>
<td>Module Examinations**</td>
</tr>
<tr>
<td>Whitney punch</td>
<td>Performance Profile Sheets**</td>
</tr>
<tr>
<td>Plumb bob</td>
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</tbody>
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*Located at the back of this module.

**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.
Session II. Ceiling Panels and Tiles I
A. Ceiling Panels and Tiles
B. Exposed Grid System
C. Laboratory
Trainees practice laying out and installing selected ceiling systems. This laboratory corresponds to Performance Task 2.

Session III. Ceiling Panels and Tiles II
A. Metal Pan Systems
B. Laboratory
Trainees practice laying out and installing selected ceiling systems. This laboratory corresponds to Performance Task 2.

Session IV. Ceiling Panels and Tiles III
A. Direct-hung Concealed Grid Systems
B. Laboratory
Trainees practice laying out and installing selected ceiling systems. This laboratory corresponds to Performance Task 2.

Session V. Ceiling Panels and Tiles IV
A. Integrated Ceiling Systems
B. Luminous Ceiling Systems
C. Suspended Drywall Furring Ceiling Systems
D. Laboratory
Trainees practice laying out and installing selected ceiling systems. This laboratory corresponds to Performance Task 2.
E. Special Ceiling Systems

Session VI. Layout, Cleaning, Installation; Review and Testing
A. Laying Out and Estimating Materials
B. Laboratory
Trainees practice estimating materials needed for a ceiling. This laboratory corresponds to Performance Task 3.
C. Ceiling Cleaning
D. Installation Guidelines
E. Module Review
F. Module Examination
1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
G. Performance Testing
1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
MODULE OVERVIEW
This module covers the different types of trim used in finish work. It focuses on the proper methods for selecting, cutting, and fastening trim to provide a professional finished appearance.

PREREQUISITES
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27209-07.

OBJECTIVES
Upon completion of this module, the trainee will be able to do the following:
1. Identify the different types of standard moldings and describe their uses.
2. Make square and miter cuts using a miter box or power miter saw.
3. Make cope joint cuts using a coping saw.
4. Select and properly use fasteners to install trim.
5. Install interior trim, including:
   • Door trim
   • Window trim
   • Base trim
   • Ceiling trim
6. Estimate the quantities of different trim materials required for selected rooms.

PERFORMANCE TASKS
Under the supervision of the instructor, the trainee should be able to do the following:
1. Make square and miter cuts to selected moldings using a metal/wooden miter box.
2. Make square and miter cuts to selected moldings using a power miter/compound miter saw.
3. Make a coped joint using a coping saw.
4. Use a pneumatic finish nailer to fasten molding.
5. Install interior trim, including:
   • Door trim
   • Window trim
   • Base trim
   • Ceiling trim
6. Estimate the quantities of different trim materials required for selected rooms.

MATERIALS AND EQUIPMENT LIST
Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Multimedia projector and screen
Computer
Appropriate personal protective equipment
Assortment of custom and mill trim, including:
   Prefinished moldings
   Base, base cap, and base shoe molding
   Casing and casing stop moldings
   Crown, bed, and cove moldings
   Quarter round, corner guard, chair rail, and wainscot cap moldings
   Rabbeted stools
   Pneumatically driven nails
   Assortment of fiberboard polystyrene, and other non-wood moldings
   Basic carpenter’s tool box
   Coping saw
   Backsaw
   Carpenter’s and dovetail trim saw
   Framing square
continued
SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to cut and install trim. Ensure that they are properly briefed on the use of all tools and personal protection necessary.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.


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 25 hours are suggested to cover *Window, Door, Floor, and Ceiling Trim.* You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
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<tbody>
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<td>Session I. Introduction to Window, Door, Floor, and Ceiling Trim</td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Types of Moldings</td>
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<tr>
<td>Session II. Basic Procedures and Guidelines</td>
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</tr>
<tr>
<td>A. Cutting Trim—Square and Miter Cuts</td>
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<tr>
<td>B. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice making square and miter cuts. This laboratory corresponds to Performance Tasks 1 and 2.</td>
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<tr>
<td>C. Making a Coped Joint</td>
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<tr>
<td>D. Laboratory</td>
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</tr>
<tr>
<td>Trainees practice making coped joints. This laboratory corresponds to Performance Task 3.</td>
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<tr>
<td>E. Fastening Trim</td>
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<tr>
<td>F. Laboratory</td>
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<tr>
<td>Trainees practice using a pneumatic nailer to fasten trim. This laboratory corresponds to Performance Task 4.</td>
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</tbody>
</table>

Level
Metal and wooden miter boxes and hacksaw
Power and compound miter saws
Pneumatic finish nailer
Driver/drill (electric and/or battery-operated)
Copies of the Quick Quiz*
Module Examinations**
Performance Profile Sheets**

*Located at the back of this module.
**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.
Sessions III and IV. Window and Door Trim
   A. Window Trim Installation Techniques and Guidelines
   B. Laboratory
      Trainees practice installing window trim. This laboratory corresponds to
      Performance Task 5.
   C. Door Trim Installation Techniques and Guidelines
   D. Laboratory
      Trainees practice installing door trim. This laboratory corresponds to
      Performance Task 5.

Sessions V and VI. Baseboard Trim
   A. Baseboard Trim Installation Techniques and Guidelines
   B. Laboratory
      Trainees practice installing baseboard trim. This laboratory corresponds to
      Performance Task 5.

Sessions VII and VIII. Ceiling Trim
   A. Ceiling Trim Installation Techniques and Guidelines
   B. Laboratory
      Trainees practice installing ceiling trim. This laboratory corresponds to
      Performance Task 5.

Session IX. Estimating Trim Materials
   A. Estimating Materials
   B. Laboratory
      Trainees practice estimating trim materials needed for a room. This laboratory
      corresponds to Performance Task 6.

Session X. Review and Testing
   A. Module Review
   B. Module Examination
      1. Trainees must score 70% or higher to receive recognition from NCCER.
      2. Record the testing results on Training Report Form 200, and submit the
         results to the Training Program Sponsor.
   C. Performance Testing
      1. Trainees must perform each task to the satisfaction of the instructor to
         receive recognition from NCCER. If applicable, proficiency noted during
         laboratory exercises can be used to satisfy the Performance Testing
         requirements.
      2. Record the testing results on Training Report Form 200, and submit the
         results to the Training Program Sponsor.
MODULE OVERVIEW
This module provides detailed instructions for the selection and installation of base and wall cabinets and countertops.

PREREQUISITES
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27210-07.

OBJECTIVES
Upon completion of this module, the trainee will be able to do the following:
1. State the classes and sizes of typical base and wall kitchen cabinets.
2. Identify the cabinet components and hardware and describe their purposes.
3. Lay out factory-made cabinets, countertops, and backsplashes.
4. Explain the installation of an island base.

PERFORMANCE TASKS
Under the supervision of the instructor, the trainee should be able to do the following:
1. Lay out and identify various types of base and wall units following a specified layout scheme.
2. OPTIONAL—Install and assemble various types of factory-built base and wall units following a specified layout scheme.

MATERIALS AND EQUIPMENT LIST
Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Multimedia projector and screen
Computer
Literature on various types of kitchen cabinets
Examples of woods, plywood, particleboard, and other materials used in cabinet construction
Examples of cabinet doors and drawers
Examples of metal drawer guides
Examples of cabinet door hinges
Examples of cabinet door catches and knobs
Examples of plastic laminate and solid-surface materials used for countertops
Assortment of fasteners used for cabinet construction and installation
Wall base cabinet units
Shim shingles

2 × 4 scrap material
Countertop base and backsplash
Sheets of plastic laminate
Contact cement
Dowels or similar objects used to prevent unintentional contact between laminate and countertop cemented surfaces
Examples of blueprints, design sketches, and/or shop drawings of cabinet arrangements
Basic carpenter’s tool box
Framing square
Level
Block plate
Circular saw and extension cord
Power/compound miter saw
Driver/drill (electric and/or battery-operated) and assorted drill bits/driver bits
Assortment of clamps
Sawhorses
J-rollers

continued
Rollers/brushes for applying contact cement
Saber saw and blades
Biscuit jointer
Carpentry Levels 3 & 4 Video Package. Video 2: Interior Carpentry: Ceilings/Cabinets (optional)

*Located at the back of this module.
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SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to cut and install cabinets and countertops. Ensure that they are properly briefed on the use of all tools and personal protection necessary.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

Cabinet Makers Association website, www.cabinetmakers.org
Kitchen Cabinet Makers Association website, www.kcma.org
Mill’s Pride Cabinetry website, www.millspride.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 10 hours are suggested to cover Cabinet Installation. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

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<thead>
<tr>
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<tbody>
<tr>
<td>Session I. Introduction to Cabinet Construction</td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Parts of Manufactured Cabinets</td>
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<tr>
<td>C. Woods and Materials Used in Cabinet Construction</td>
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<tr>
<td>D. Cabinet Doors</td>
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<tr>
<td>E. Cabinet Drawers</td>
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<tr>
<td>F. Cabinet Door and Drawer Hardware</td>
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<tr>
<td>G. Cabinet Shelves and Shelf Hardware</td>
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</tbody>
</table>
Sessions II and III. Cabinet Installation

A. Cabinet Islands
B. Commercial Cabinets
C. Fasteners
D. Countertops
E. Installing Cabinets
F. Laboratory
Trainees practice laying out and identifying various types of base and wall units following a specified layout scheme. This laboratory corresponds to Performance Task 1.

G. Laboratory
Trainees practice installing and assembling various types of factory-built base and wall units. This laboratory corresponds to Performance Task 2.

Session IV. Review and Testing

A. Module Review
B. Module Examination
   1. Trainees must score 70% or higher to receive recognition from NCCER.
   2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
C. Performance Testing
   1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
   2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.
Cabinet Fabrication  
Annotated Instructor’s Guide  

MODULE OVERVIEW
This module provides an introduction to the materials, tools, and methods used in cabinetmaking. Practice projects are included to help trainees learn the various joining techniques used by cabinetmakers, while providing practice on stationary power tools. Two complete projects used in past SkillsUSA national competitions are also provided.

PREREQUISITES
Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed Core Curriculum; Carpentry Fundamentals Level One; and Carpentry Framing and Finishing Level Two, Modules 27201-07 through 27211-07.

OBJECTIVES
Upon completion of this module, the trainee will be able to do the following:
1. Recognize the common types of woods used to make cabinets.
2. Correctly and safely use stationary power tools.
3. Identify and cut the various types of joints used in cabinetmaking.
4. Build a cabinet from a set of drawings.
5. Install plastic laminate on a countertop core.

PERFORMANCE TASKS
Under the supervision of the instructor, the trainee should be able to do the following:
1. Use stationary power tools to make joints commonly used by cabinetmakers.
2. Build a cabinet from a set of drawings.
3. Install plastic laminate on a countertop core.

MATERIALS AND EQUIPMENT LIST
- Markers/chalk
- Pencils and scratch paper
- Whiteboard/chalkboard
- Multimedia projector and screen
- Computer
- Examples of woods, plywood, particleboard, and other materials used in cabinet construction
- Examples of cabinet doors and drawers
- Shaper cutting heads
- Samples of cuts made with a shaper
- Assortment of cabinet door, drawer, and shelf hardware
- Examples of joints commonly used by cabinetmakers
- Examples of plastic laminate and solid-surface materials used for countertops
- Countertop base and backsplash
- Contact cement
- Dowels or similar objects for use to prevent unintentional contact between laminate and countertop cemented surfaces.
- Scrap lumber, including:
  - 1 × 4
  - 1 × 6
  - 2 × 4
- Scrap piece of ¼” lauan plywood
- Wood glue
- Biscuits and dowels
- Carpenter’s basic tool box
- Framing square
- Level
- Block plane
- Assortment of clamps
- Sawhorses
- Router/laminate trimmer and assorted bits
- Samples of various cuts that can be made with a router
- J-rollers
- Saber saw and blades
- Belt sander and various abrasives
- Rollers/brushes for applying contact cement
- Biscuit joiner
- Brad gun
- Table saw

continued
Radial arm saw
Several grades of sandpaper
Semifinished pieces
Compound miter saw
Jointer-planer
Router table
Disc sander
Thickness planer
Samples of wood stock before and after using a thickness planer

Drill press
Scroll saw or band saw
Wood sealers
Wood filler
Carpentry Levels 3 & 4 Video Package. Video 2: Interior Carpentry: Ceilings/Cabinets (optional)
TV/DVD/VCR player
Module Examinations*
Performance Profile Sheets*

*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.

SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. This module may require trainees to visit construction sites. Ensure that they are briefed on site safety procedures. This module requires trainees to use power tools to cut and build cabinets and countertops. Ensure that they are properly briefed on the use of all tools and personal protection necessary.

ADDITIONAL RESOURCES

This module presents thorough resources for task training. The following resource material is suggested for further study.

- Cabinet Makers Association website, www.cabinetmakers.org
- Kitchen Cabinet Makers Association website, www.kcma.org
- Mill’s Pride Cabinetry website, www.millspride.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 10 hours are suggested to cover Cabinet Fabrication. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Planned Time</th>
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<tbody>
<tr>
<td>Session I. Introduction, Woods, Tools, and Joints</td>
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<tr>
<td>A. Introduction</td>
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<tr>
<td>B. Woods and Materials Used in Cabinet Construction</td>
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<tr>
<td>C. Shop Tools Used in Cabinetmaking</td>
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<tr>
<td>D. Joints</td>
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<tr>
<td>E. Laboratory</td>
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Trainees practice using stationary power tools to make joints commonly used by cabinetmakers. This laboratory corresponds to Performance Task 1.
Sessions II and III. Cabinet Construction
A. Assembling the Cabinet
B. Sanding and Finishing
C. Laboratory
  Trainees practice building a cabinet from a set of drawings. This laboratory
  corresponds to Performance Task 2.

Session IV. Countertops, Mass-Production, Review, and Testing
A. Plastic Laminate
B. Laboratory
  Trainees practice installing plastic laminate on a countertop core. This
  laboratory corresponds to Performance Task 3.
C. Installing Solid-Surface Countertops
D. Mass-Production Cabinetmaking
E. Module Review
F. Module Examination
  1. Trainees must score 70% or higher to receive recognition from NCCER.
  2. Record the testing results on Training Report Form 200, and submit the
     results to the Training Program Sponsor.
G. Performance Testing
  1. Trainees must perform each task to the satisfaction of the instructor to
     receive recognition from NCCER. If applicable, proficiency noted during
     laboratory exercises can be used to satisfy the Performance Testing
     requirements.
  2. Record the testing results on Training Report Form 200, and submit the
     results to the Training Program Sponsor.