

Constructing the Building Shell

Course 362: Constructing the Building Shell

Covers basic building techniques common to most structures, including methods of laying foundations, framing, covering walls, and roofs.

TPC Training is accredited by IACET to offer **0.5 CEU** for this program.



Lesson 1: Footings, Foundations, and Forms

Topics

Laying Out Building Lines; A Right Angle Without Instruments; Using a Transit Level and a Builder's Level; Setting Up Batterboards; Grading and Excavating; Safety in Excavating; Footings; Concrete: How It Works; Forms for Foundation Walls; Openings in Foundation Walls; Reinforced Concrete; Pouring Concrete Slabs; Waterproofing Your Concrete; Care of Concrete Forms

Objectives

- Demonstrate how to lay out a right angle without using instruments.
- Explain how to set up batterboards and building lines for an excavation.
- Tell what you can do to assure your own safety when working around an excavation.
- Describe how to erect a form for a concrete footing.
- Show how to mix a small batch of concrete using the "bottomless box."
- Describe how to prevent concrete slabs from cracking.

Lesson 2: Framing the Structure

Topics

The Most Common Framing Method; Mounting the Sill; Supporting the Floor Joists; Laying Out Floor Joists; Framing the Floor to Support Walls; Framing Openings in the Floor; Bridging between Floor Joists; Cantilever Framing; Thicknesses of Flooring Materials; The Subflooring; Framing the Inner Walls; Construction of Corners; Cross Bracing and Corner Bracing; Wall Sheathing; Estimating Framing Materials

Objectives

- Demonstrates how to lay out anchor bolt holes in sills.
- Describe the two methods of framing a cantilever.
- Compare cross bridging and solid bridging between floor joists.
- Explain how to construct and erect an inner stud wall.
- Tell why carpenters prefer to use plywood for sheathing walls.

Lesson 3: Framing the Roof with a Framing Square

Topics

Roof Designs; Parts of a Roof Frame; Principles of Rafter Layout; Pitch and Slope of a Roof; Principle of the Framing Square; Estimating the Length of Rafters; Framing the Upper Story Ceiling; How to Lay Out Roof Rafters; Setting the Roof Frame in Place; Laying Out Studs for End Frames; Framing a Hip Roof; Jack Rafters; Cripple Jacks; Roof Trusses; Roof Sheathing

Objectives

- Point out differences in heel, plumb, and seat cuts in a rafter.
- Identify the information printed on the face and back of a framing square.
- Explain how to use a framing square to determine the line length of a rafter.
- Describe how to lay out studs for a gable end.
- Tell how to determine the length of hip rafters.

Lesson 4: Installing Windows and Exterior Doors

Topics

Types of Windows Available; Types of Sash for Windows; Glazing; Heat Gain/Loss through Windows; Terminology for Window Parts; Dimensions for Installing Windows; Materials and Finishes for Windows; Installing a Window Unit; Installing Fixed Glass in Windows; Exterior Doors for a Building; Types of Exterior Doors; Standard Sizes of Doors; Constructing a Door Jamb; Cutting a Door to Size; Mounting Hinges and Hanging Doors; Weatherproofing Exterior Doors; Pre-hung Door Units; Overhead Doors

Objectives

- Explain how awning-type and hopper-type casement windows differ in operation.
- Name three or four of the common glazings and tell the advantages of each.
- List the critical dimensions for preparing and installing window units.
- Describe how to install a window unit.
- Tell how to mount a fixed glass in a picture window.
- Explain how to install mortise hinges on a door, and hang the door in the jamb.

Lesson 5: Installing Roofing and Siding

Topics

Common Materials for Roofing; Applying Built-Up Roofing; Applying the Hot Plies; Working Safely with Hot Tar; Applying Mineral-Surface Roofing; Applying Roofing Shingles; Installation of Flashing; Treatment of Valleys; Capping a Roof at the Ridge; Constructing Cornices; Estimating Materials for Roofing; Types of Modern Siding; Applying Wood Siding; Applying Other-than-Wood Siding; Applying Shingled Siding; Applying Vertical Siding; Door and Window Trim; Estimating Materials for Siding

Objectives

- Explain how a built-up roof is constructed.
- Give some of the safety precautions to follow when working with hot tar.
- Describe how to apply asphalt shingles to a roof.
- Tell how to estimate the amount of roofing required for a building.
- Describe how to use a story pole in the application of wood siding to a building.
- Explain how to install cornerboards for exterior trimming.