# Roofing, Flashing, and Attic Ventilation

# Weatherization Installer/Technician Fundamentals

Learning Objectives

By attending this session, participants will be able to:

* Name required fall protection components.
* Identify and repair leak sources.
* Remove roofing systems.
* Insulate roof decks.
* Explain the purpose and principles of attic ventilation.
* Determine ventilation needs by code and practical alternatives.
* List ventilation options and guidelines.
* Install attic ventilation and repair roofing.
* Flash new penetrations.

Key Terminology

Acrylonitrile Butadiene Styrene (ABS)

Active ventilation

Bernoulli Principle

Convection

Drainage plane

Eave chutes

Eave vent

Flashing

Gable vent

Mushroom vent

Net free area (NFA)

Passive attic venting

Personal Fall Arrest Systems (PFAS)

Power venting

Ridge venting

Roof jack

Roof vent

Soffit

Turbine vent

Vapor retarder

Vent terminations

Wind effect

**Supplemental Materials**

Handouts & Resources

Canadian Mortgage Housing Corporation. “Attic Venting, Attic Moisture and Ice Dams.” Fact Sheet CE-13. <www.cmhc-schl.gc.ca>.

Rose, William B. “Early History of Attic Ventilation.” Building Research Council – School of Architecture, University of Illinois at Urbana-Champaign. 1995.

Van der Meer, Bill. “Avoiding Moisture Problems.” *WTC Technical Update 1*. Weatherization Training Center at Pennsylvania College of Technology. Feb. 2003. <www.pct.edu>.

Woods, Tony. “Reexamining Roof Ventilation.” *Home Energy* Nov./Dec. 2000: 14-18. <www.homeenergy.org>.

Relevant Standard Work Specifications

1.100.1 – Global Worker Safety

4.1002 – Above Roof Deck Insulation

6.600 – Exhaust

6.6188.1 – Removing Supply Vents from Garage

6.6201 – Air Flow Requirements

6.6002 – Components

Classroom Props & Activities

Sample vents, including:

* Gable vent
* Roof vent
* Eave vent
* Turbine vent
* Mushroom vent

Point out the net free area specifications stamped on each vent. Discuss the uses for each type of vent per the speaker notes.

Common roofing materials and fasteners, including:

* Rolled aluminum flashing
* Flashing blanks
* Drip edge
* Step flashing
* Plastic-cap roofing nails

**Ventilation Principle Demonstration:**  Fill a clear soda or water bottle with smoke from a smoker puffer. Blow across the top of the bottle as if you’re about to play a tune, and watch as the smoke rises and exits the bottle.

Hands-on Props & Activities

**Install Roofing and Flashing:** Using simple roof props, have students practice installing vents onto a shingled roof, and practice installing roofing and proper flashing. The latter will often be necessary in conjunction with roof ventilation or other roof repairs.

Class Overview

* Ask students leading questions about their perceptions of attic ventilation. Use anecdotes from the field.
* Use the presentation, discussion, and handouts to introduce students to the key elements of attic ventilation for selection and placement of attic vents.
* Use slides to illustrate the principle of how ventilation works. As air moves across a roof vent opening, a negative pressure occurs in the attic, causing air to be drawn out of the attic space. Demonstrate the principle with a clear bottle as described above.
* After students have worked with the hands-on props, use running water to test the drainage plane.