

This information is provided as a guide to providing adequate ventilation. The purpose is to provide general guidelines, so make sure that the soffit you are using provides the ventilation required by local building codes. CertainTeed shall not accept any liability or responsibility under its written warranty for failure caused by application that does not meet our requirements for proper installation. These requirements are outlined throughout the CertainTeed Installation Guide (CTS205). Any deviations from these requirements should be approved in writing by CertainTeed Corporation.

### What Attic Ventilation Does

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Good ventilation creates a cooler attic in the summer and a drier attic in the winter.

Summer sunshine can cause an enormous buildup of heat in the attic. In a home with poor attic ventilation, the heat in the attic may eventually reach 140°F on a 90° day. If the unventilated attic is heavily insulated, the heat will stay in the attic much of the night, perhaps slowly migrating into the home's interior. This excessive heat buildup can also damage the roof decking and affect the shingles.

In the winter, moist warm air moves from the lower portions of the home into the attic. In the cold attic, the warm moist air condenses on the cold surfaces of the rafters, the nails, and the attic side of the roof deck.

This water can create several problems. First, the condensation can swell the roof deck and shingles. Second, the water can rot the roof deck, destroying its ability to carry loads and hold nails. Third, severe condensation can drip onto insulation, reducing its effectiveness and possibly seeping through to the ceiling below.

Another winter problem caused by poor attic ventilation is the formation of ice dams. Ice dams develop when warm air finds its way into the attic from the living quarters of the home and becomes trapped along the underside of the roof deck. The warmed deck then melts the snow above it and the water runs down the slope toward the eaves. As the water trickles past the lower and unheated sections of the roof near the eaves, it freezes. The wall of ice continues to build, forming an ever-larger dam. The pond of water blocked by the dam can get deeper and deeper until it backs up under the shingles, causing leaks and perhaps damage to the shingles and the deck. When the water gets below the deck, it can leak through the ceiling to cause all kinds of unsightly damage and structural weakening to the house.

Good ventilation will move the hot air out of the attic in the summer and dilute and remove the moist air during the winter before it can cause damage. Also, proper ventilation helps keep a more uniform temperature on the underside of the deck in the winter, and that will eliminate one of the common causes of ice dams.

### How Ventilation Works

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There are many types of attic ventilation systems in use today. Some systems use all natural forces, such as the wind or "thermal convection" (rising warm air) to move the air. Other systems use mechanical fans to move the air. Still other systems use some combination of natural and mechanical forces.

#### Natural Forces

As the wind moves against and around the building, it creates areas of higher and higher air pressure. Higher pressures push air away while lower pressures pull, or suck, air toward them. A well-designed ventilation system will have intake vents where the high pressure is created on the outside of the roof system, at the eaves, and have exhaust vents where there is low pressure on the outside, high on the roof. The best combination for this to occur is soffit ventilation and a vent across the ridge of the roof.

Other types of ventilators, such as gable louvers, turbine vents, or power fans with thermostats, only push heat out in the summer and do nothing to alleviate problems associated with wintertime ventilation. Turbine and box vents do not evenly ventilate the underside of the roof deck. As a result, hot spots on the roof can occur.

#### Ventilated Soffit

Ventilation is one of the most important features of a good roof and soffit system. Proper ventilation provides a mechanism to remove heat in the summer and moisture in the winter. By using CertainTeed Ventilated Soffit, you can achieve intake with smaller, and more common, overhangs. When you use Triple 1-1/3" InvisiVent™, Ironmax™, Universal, or Value Soffit, you will achieve maximum performance of your ventilation system.

## How Much Ventilation Do I Need?

The 2003 International Building Code (IBC) Section 1203 Ventilation furnishes a basic guide for determining proper ventilation for any home. The information provided here may under certain circumstances not result in enough ventilation. Therefore, the calculation provided should be used as a guide only.

The IBC guideline requires that any attic or space between the top floor, ceiling and roof must be ventilated. It requires one square foot of ventilation area for every 150 square feet of attic space.

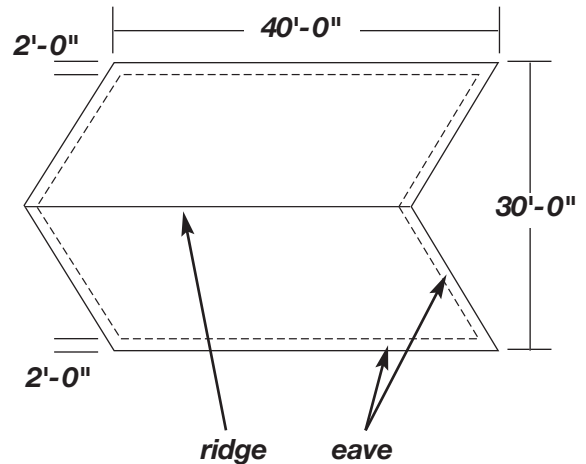
If a vapor retarder of less than one perm has been installed on the warm side of the ceiling or if at least 50% of the required ventilating area has already been provided by gable and vents or ridge vents, you need add only one-half of the ventilation area that would otherwise be required. The requirement would then be one square foot of ventilation area for every 300 sq. ft. of attic space.

### How to Determine Soffit Ventilation

#### 1. Determine local code requirement for total attic ventilation.

**1:150** requires 1 sq. ft. of ventilation for every 150 sq. ft. of attic space.

**1:300** requires 1 sq. ft. of ventilation for every 300 sq. ft. of attic space, if a vapor barrier having a transmission rate not exceeding 1 perm is installed on the warm side of the ceiling.



#### 2. Determine total area of attic (sq. ft.) to be ventilated.

40 ft. x 30 ft. = 1,200 sq. ft.

#### 3. Total free area of ventilation required for attic.

1,200 sq. ft. / 150 = 8.0 sq. ft.

#### 4. Convert square feet into square inches (sq. in.).

8.0 sq. ft. x 144 = 1,152 sq. in.

#### 5. Location of vents.

50% at ridge, roof vent or gable vent = 1,152 x .50 = 576 sq. in.

50% at soffit / eave = 1,152 x .50 = **576 sq. in.**

#### 6. Total soffit ventilation area required.

Area of soffit available for ventilation:  
80 lineal ft. x 2 ft. soffit depth = 160 sq. ft.

Ventilation area required per sq. ft. of soffit = 576 sq. in. / 160 sq. ft. = **3.6 sq. in./sq. ft.**

#### 7. Soffit product selection.

Compare the soffit ventilation area required to the manufacturer's soffit product literature.

If you have any questions, please call us at 800-233-8990.