

# Recommended Ventilation Solutions

## MORE IS NOT ALWAYS BETTER

When ridge and soffit ventilation is added to an attic with other vents in place, such as gable end vents, box or turbine static vents, or power fans, you must remove or block off the other ventilators. When installed properly, ridge and soffit systems draw air in the bottom (soffits) and out the top (ridge). Other open ventilator holes in the roof or gable will shortcut the low-to-high draft and diminish the ventilation effectiveness.

## CAUSES OF PREMATURE AGING

Attic ventilation is required to prevent premature failure of properly manufactured shingles. All shingles age due to weathering from the day they are installed. Signs of aging will gradually appear over time. Toward the end of the warranted duration of the product, the aging will be very evident. However, the appearance of some conditions in the early years may be caused by extended overheating and/or by excessive moisture. Signs of premature shingle deterioration caused by excessive heat include blistering of the reinforced shingles, clawing, curling, cracking of the reinforced shingle and spalling of the top coating of the reinforced shingle. Overheating is known to be caused by inadequate attic ventilation. In addition, buckling and splitting of shingles can occur if the roof decking picks up or loses excessive moisture and expands or contracts. This deck movement can be controlled by proper ventilation. Deck deterioration, such as rotting, can occur if it becomes too wet, but proper ventilation can reduce its occurrence. Any damage to the shingles as a result of deck movement or deterioration is not covered by the shingle warranty.

### GENERAL VENTILATION REQUIREMENTS FOR CERTAINTeED SHINGLE WARRANTY COMPLIANCE

- ◆ If full soffit to ridge ventilation is installed, the ratio of Net Free Ventilation Area (NFVA)/attic floor space must be at least 1/300 (see number 1 in the table on page 46).
- ◆ In most other cases the ratio required is at least 1/150\*.
- ◆ If the minimum of 1/150 cannot be obtained, the shingle roof warranty for any CertainTeed asphalt composition shingle will be reduced to a maximum of 10 years without SureStart protection.

\* The following table provides typical examples of attic structural conditions and the ventilation solution required. When the recommended solution cannot be met, the warranty will be reduced to 10 years of coverage without SureStart™ protection. For conditions not described in the chart, please refer to the ventilation requirements in the preceding paragraph.

## REQUIRED and RECOMMENDED VENTILATION SOLUTIONS

| Attic Structure Description  | Solutions  |
|--|--|
| 1. The ridge and soffit will permit at least a 40/60 to 60/40 ratio of high and low Net Free Ventilation Area (NFVA) for a balanced ridge/soffit ventilation system.             | There must be a continuous soffit to ridge ventilation system installed that meets building code guidelines for 1/300 NFVA, or any other combination of fixed ventilation devices that meet the 1/150 NFVA standard. Ridge ventilators are recommended to have baffles.  |
| 2. There is a full ridge running from rake to rake, but insufficient eaves area is present for the installation of soffit ventilators.   | Drip edge ventilators must be installed or another type of ventilator installed behind the fascia board which will provide compliance with the 1/300 building code guidelines. Any other combination of fixed ventilators must meet the 1/150 code standard.   |
| 3. There is insufficient roof ridge to permit the installation of ridge ventilation that would provide a 40/60 outlet/inlet ventilation balance. An example would be a hip roof. | <b>Option 1:</b> Increase the number of air changes per hour (ACH) with a power vent (fan). The air inlet for the fan should be located in the soffit area and must be sized according to the ACH required by the fan manufacturer. The fan should be thermostatically controlled and in cold climates should also use a humidistat to prevent winter condensation and ice dam problems.<br><br><b>Option 2:</b> Use any combination of ventilation devices that will create a system in compliance with the 1/150 NFVA guidelines. An example is a 25/75 ridge/soffit system. |
| 4. The airway from the eaves to the ridge is structurally blocked. For example, knee walls are a common structural airway blockage problem.                                      | Use any combination of ventilators that will collectively meet the 1/150 standard and prevent condensation damage. Any unventilated space behind the knee wall will not be in compliance and will be limited to a 10-year warranty.  |
| 5. A roof slope of less than 3/12 with attic.  | The shingles would be covered by a 10 year warranty. If a power fan is installed near the ridge, with adequately-sized intake vents, the standard shingle warranty coverage applies.   |
| 6. The roof rafters, directly beneath the roof deck and over the attic space, are 30' long or longer.  | A power fan must be installed near the ridge with adequately-sized intake vents, or any combination of ventilation that meets the 1/150 NFVA standard.   |
| 7. A ventilated structural insulated panel (SIP) roof deck with less than 30' rafters and not less than 3/4" of free air clearance. (Cathedral ceilings)                         | The standard warranty requires a ridge ventilator, with external baffles recommended, and soffit ventilators, each with a minimum of 9 square inches NFVA per lineal foot.   |

## Attic Structure Description

## Solutions

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|---|--|
| 8. A ventilated structural insulated panel (SIP) roof deck with 30' rafters, or longer. (Cathedral ceiling) | Requires a minimum of 1½" free air space between the nailable deck and the insulation below, and a ridge ventilator, with external baffles recommended, and soffit ventilators, each with a minimum of 9 square inches NFVA per lineal foot. |
| 9. A ventilated nailboard insulation roof deck with less than ¾" free air clearance. (Cathedral ceiling)    | Does not comply. (10-year warranty would be in effect.)  |
| 10. An unventilated nailboard insulation roof deck. (Cathedral ceiling)                                     | Does not comply. (10-year warranty would be in effect.)  |
| 11. The airway below the deck is blocked by a non-structural obstacle, such as insulation.                  | Remove the obstacle and install ventilation to comply with appropriate conditions described above. Otherwise, the ten-year shingle warranty coverage applies.  |

## FORCED AIR VENTILATION

Over the years many roofers have contacted us and asked, **"When should forced air ventilation be used instead of soffit to ridge ventilation?"**

**ANSWER 1: When effective attic heat reduction is the primary desired result.**

All-season natural ventilation provided by soffit-to-ridge ventilators is not necessarily superior to forced air in regions where winter temperatures are generally not low enough to produce damaging condensation. In those areas the reduction of heat in the attic during the summer months is the primary goal of attic ventilation. This heat has two negative effects. One is to increase the cooling energy load in the living space below. The second is to reduce the natural life of the shingle by accelerating the embrittlement of the asphalt.

A powered fan installed in the center of the roof near the ridge, balanced with sufficient and well distributed outside air intake vents at a lower position in the attic has a superior capacity to bring attic temperatures closer to outside air temperatures. The following table shows the expected attic temperatures on a 90°F day, with three different "systems" The disadvantages of forced air ventilation include the added electrical energy costs, fan noise, and the possibility that without adequate intakes in the attic area the fan will draw cooled air out of the home interior.

| Ventilation System                       | Expected Attic Temperature When Outside Temperature Is 90°F |
|--|---|
| 1. No ventilation                        | 140° F  |
| 2. Soffit-to-ridge ventilation           | 116° F  |
| 3. Forced air ventilation (at 10-15 ACH) | 100° F  |

**Answer 2: When balanced soffit to ridge ventilation is not feasible.**

There are a number of attic designs that prevent optimum soffit to ridge ventilation. In some cases forced air ventilation is the solution.