

TOWNSHIP CODE AUTHORITY

Roof Ventilation, What is Required?

Ask people why today's building require attic ventilation, and many would say the ventilation is to prevent ice buildup on the roof. While the answer is part of the reason for ventilation, there are other reasons for venting an attic or roof assembly. Moisture, being carried into the rafter or attic space, y warm air penetrating the insulation, is another reason. There was a time when homes were not provided with attic or rafter ventilation; however the methods of construction have changed since then. Years ago, roof sheathing was spaced for air circulation, windows were drafty, and the construction practices used, didn't provide for the air-tight construction that we see today.

Every home and building has excess moisture in it. Though we can't see it, the moisture is there in the form of a vapor. This excess moisture can be created from the everyday activities such as cooking, showering and even breathing. Plants, animals, and some appliances can also contribute to excess moisture in a home. This moisture can, and will travel into attic and rafter spaces. Since construction practices have resulted in tighter homes, with less draft and air coming into a building, excess moisture needs to be removed from the interior space, and can be done with proper moisture management such as using kitchen and bath vents as needed, as well as through proper ventilation of the roof or attic space. Proper roof ventilation is extremely important, and should not be overlooked in the construction of our new home and building. Roof systems not provided with adequate ventilation can result in future moisture problems.

Section R806 of the 2003 Michigan Residential Code (MRC) contains the building code requirements for roof ventilation. Per section R806.1, roof ventilation is required in enclosed attics and rafter spaces formed where ceiling are applied directly to the bottom side of roof framing. When a ceiling is applied to the bottom of a truss system or rafter framing, a concealed space is created. This concealed space requires proper ventilation. The ventilation is required to be provided into each individual space between the rafters or trusses. Ventilation opening are required to be protected from the entrance of rain and snow. Screen or wire mesh should be provided with minimum 1/8" to 1/4" maximum openings.

Section R806.2 of the MRC contains the details on just how much ventilation is required by the building code. The total net free ventilating area is calculated at a rate of 1 square foot of ventilation. As an alternative, if a code compliant vapor barrier is provided on the warm side of the ceiling, the amount of ventilation required can be reduced to 1 square foot per 300 square feet of area. The amount of ventilation required should be split between the eave or soffit vents, and the ventilation provided in the upper portion of the roof, such as ridge vents, gable vents, pot vents or power roof vents. A minimum of 50% and not more than 80% of the ventilation is required to be provided at the upper portion of the space being ventilated. It is recommended that multiple types of vents be avoided, in the upper areas of vented spaces. For example, combining ridge vents and gable vents in the same roof, could actually slow or stop air flow from the soffit vents, thereby ventilating only the upper portion of the vented space, and not the lower area. Airflow needs to enter in the low portion of the vented area and escape through the ventilation in the upper area. As air flows through the ventilation space, excess moisture that has passed up through the ceiling insulation can be carried up to the upper vents and escape from the rafter or attic space.

Adequate space needs to be provided for the free flow of air between the insulation and the roof sheathing. A minimum of 1 inch space is required, per section R806.3 of the IRC. Typically this airflow space is created by using an air baffle, and is installed in the space between the rafter and trusses, over the exterior wall area. The airspace created allows air to enter from the soffit, flow into the attic space, and vent out the upper ventilation openings. In a cathedral or sloped ceiling, the airspace must be provided up to the upper ventilation. Care should be taken to follow manufacturer's directions when installing air baffles. Creating a tight seal between baffles, when using some materials, will prevent moisture from finding its way into the airspace, and prevent the moisture from being directed out through the upper ventilation.

By following the code requirements for roof ventilation, future moisture problems can be avoided. The roof system will be properly vented, allowing moisture to escape from the attic or rafter areas, ice buildup along the eaves can be kept to a minimum, and the attic will be cooler which is better for the roof covering material.