

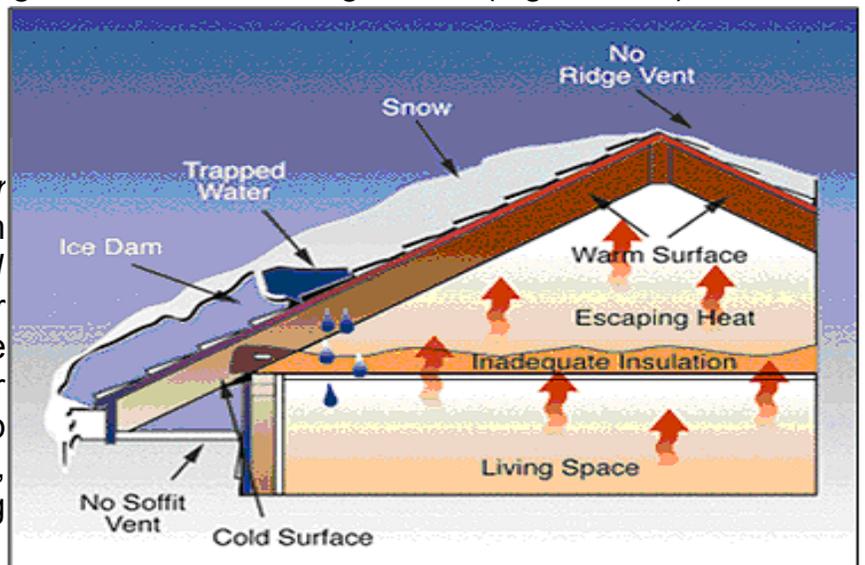
Preventing Ice Dams in Your Home



Most homes in New England experience **Ice Dams**. Ice dam leaks can cause *costly* damage to living area finishes, damage insulation in walls, cause rot, attract woodboring insects, warp and damage siding and house wall sheathing, and can create growths (e.g. MOLD) in hidden wall/ceiling areas.

What causes ice dams?

Simply put - the air in your attic is *warmer* than outdoors, and this heat escaping from the house causes the *melting of snow and ice* on the roof and *re-freezing* of the water at the roof's edge – causing a “dam” of ice to form, ponding water behind it on your roof. This ponding water often backs up under roofing, gets into flashing seams, and can enter the house – often causing damage.



What can be done about Ice Dams?

There are *four schools of thought* on this:

- Placing “Ice Shield” under the roofing to help prevent ice dam's water entry into the home
- Correcting the “Warm Air” situation in the attic (*through full attic ventilation, full insulation and full air sealing– explained later*) to prevent ice dam formation
- Spraying closed cell foam insulation to completely cover the ENTIRE underside of the roof (a “Hot Roof”)
- And installing metal type roofing (so ice slides off and thus doesn't allow ice dams to form).

Preventing Ice Dams in Your Home



**Ice Shield
Membrane
Installation**



**Ice Shield Is Best When Installed
On The Entire Roof Surface**

To TRULY prevent ice dams both Ice Shield membranes AND full ventilation, insulation, and air sealing of the attic areas are ALL needed.

While Ice Shield membranes may *prevent the water from entering*, they DO NOT actually fix the problem – they only help prevent the symptom (of leaks into the house) and ice dams CAN STILL FORM on roof areas. FULLY open ventilation in ALL lower (*soffit*) attic areas, and FULLY open upper ventilation (*usually Ridge vents*) are crucial to *keeping the attic at or near the outdoor air temperature (to prevent the melting that creates ice dams)*. Full air sealing of EVERY penetration or seam into the attic areas (open wire, pipe, duct, or other penetrations should be sealed with fire rated sealants – *EVEN THESE PENETRATIONS UNDER THE INSULATION NEED SEALING*) as well as FULL insulation between attic and heated areas. While the sealing of attics and adding full ventilation is often labor intensive, IT IS A ONE TIME COST that can help prevent ice dams for the life of the house (*and has the added benefits of extending roof life, lessening potentials for moisture/mold issues, and making the building less costly to heat and cool! And if Fire-Rated sealants are used, it will also help reduce the risk of fire spreading from/to the attic!*)



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The “**Hot Roof**” solution *has it's own potential issues*. So what's a hot roof? - Hot roofs are formed when the underside of the roof is sprayed with a thick layer of closed cell (“*moisture tight*”) foam. This will keep roof temperatures constant, but this style roof **REQUIRES** that a special “Hot Roof” rated asphalt shingle (or other heat rated roof) be installed, as the roof **WILL TYPICALLY DAMAGE** regular style asphalt roof shingles (**Usually VOIDING THEIR WARRANTY AND SHORTENING THEIR LIFE**)

Hot roofs also have another important issue: **LEAKS CAN CAUSE WATER TO BECOME TRAPPED ABOVE THE FOAM** – and *can cause extensive deterioration/damage before the leaks are even detected*. Also, spray foam is typically **combustible** – and **ALL** exposed foam **NEEDS** to be sprayed with a fire-resistant paint (*intumescent*) for safety.



Applying Closed Cell Spray Foam Insulation and Creating a “Hot Roof”
This **NEEDS** to be coated with intumescent (fire-resistant) paint

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What is the best Upper Ventilation?

Either Ridge vents (WITH “exterior baffles” AND fully cut open) or turbine style vents perform well – as they move the most air. ALL upper areas need ventilation. Roof mounted vents and gable vents simply do not move enough upper attic air. Attic fans do not work year round – and are *mostly useless* at preventing ice dams.



Turbine Style Vent



Ridge Vent With External Baffle

What is the best Lower Ventilation?

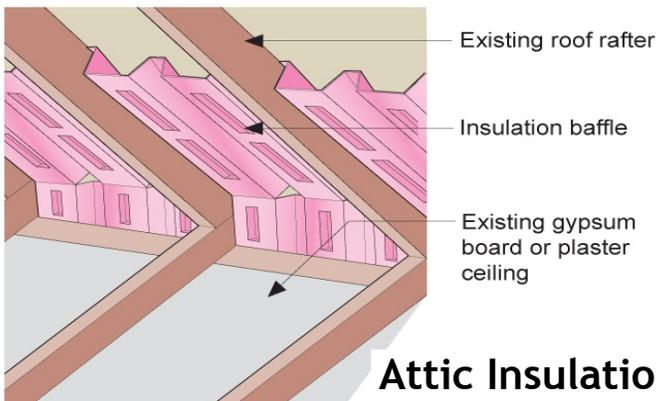
The best lower ventilation is FULLY open soffit vents (Typically, the soffit wood/material is removed and replaced with FULLY perforated vinyl/metal). The attic area also needs “Baffles” (*plastic/foam “spacers” are needed at EVERY soffit framing shaft to allow air to move and not get blocked by insulation*). These should be FULLY OPEN (*as big as the space between the rafters*) for best ventilation (*they are OFTEN undersized*). On roofs with no overhang, other *specialized style vents* can be added (*Too complicated to get into here*) and I often recommend ADDING an overhang when re-roofing (*if possible*).



Good Fully Open Soffit Vents



Insufficient Soffit Vents



Attic Insulation Baffles Installation



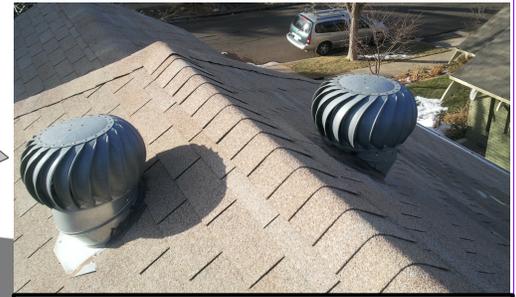
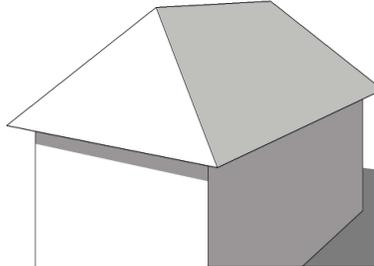
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Some style roofs are notoriously difficult to fully ventilate. Here are some of the most common roof styles which are difficult to ventilate:

★ Hip Style Roofs:

This style roof typically does not have enough upper ridge area to install enough ridge vents for proper ventilation. (Typically there should be $\frac{1}{2}$ as much open upper vents as there are lower vents). Ventilation in this style roof typically needs one or more Turbine style vents at the ridge.

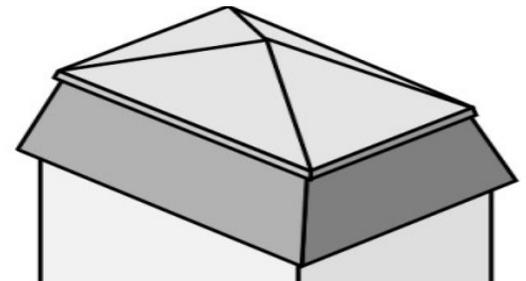
Hip Roof



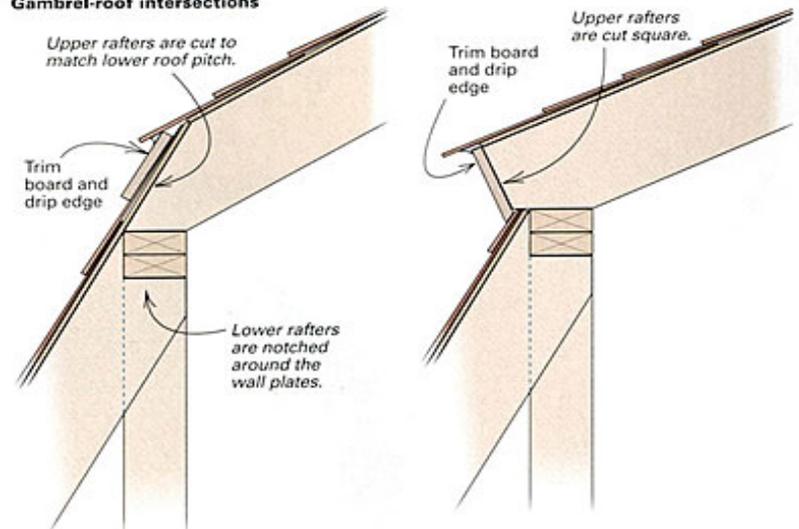
Turbine vents on Hip roof

★ Gambrel and Mansard Style Roofs:

This style roof has extra lower pitched side roofs – and these side roof areas usually have no ventilation shafts. Unless the roof framing allowed for the installation of open vent shafts between the upper attic and the side Gambrel/Mansard framing – the rafter shafts have no openings to allow air to flow from low soffit vents to the upper vents. Many people choose a “Hot Roof” solution to this style roof (REMEMBER – this requires a “heat rated” asphalt shingle and will typically damage/overheat/void the warranty of ordinary asphalt roofs). When re-roofing, wood “sleepers” can be installed with a spaced out new upper plywood roof over it – adding an air gap for ventilation “on top” of the existing gambrel/mansard side roofs (which then needs openings cut at the top of this new added vent shaft into the upper attic area). This is expensive and RARELY done. Another simpler way is to install standing seam metal roofing (again – simple, not inexpensive)

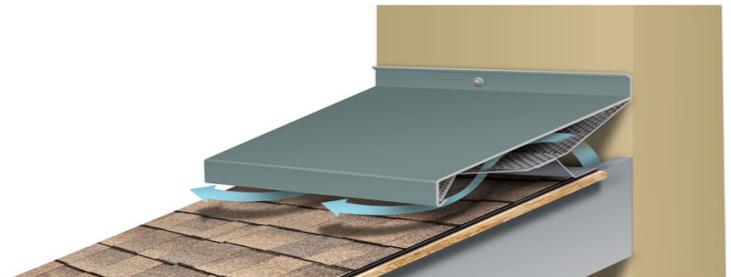


Gambrel-roof intersections



★ Shed Roofs:

This common style of roof is typically used on lower roof areas that abut the house sidewalls. The upper roof/wall flashing on these roofs is typically replaced with a ventilation unit (which both ventilates AND acts as flashing) – allowing proper ventilation to occur.



We hope this has helped. If you need a “Ventilation Evaluation” or any other inspection – Call us!

NOTE: We only INSPECT. We do not perform work on any property we inspect. This insures our complete neutrality, and helps prevent bias in the inspection process.