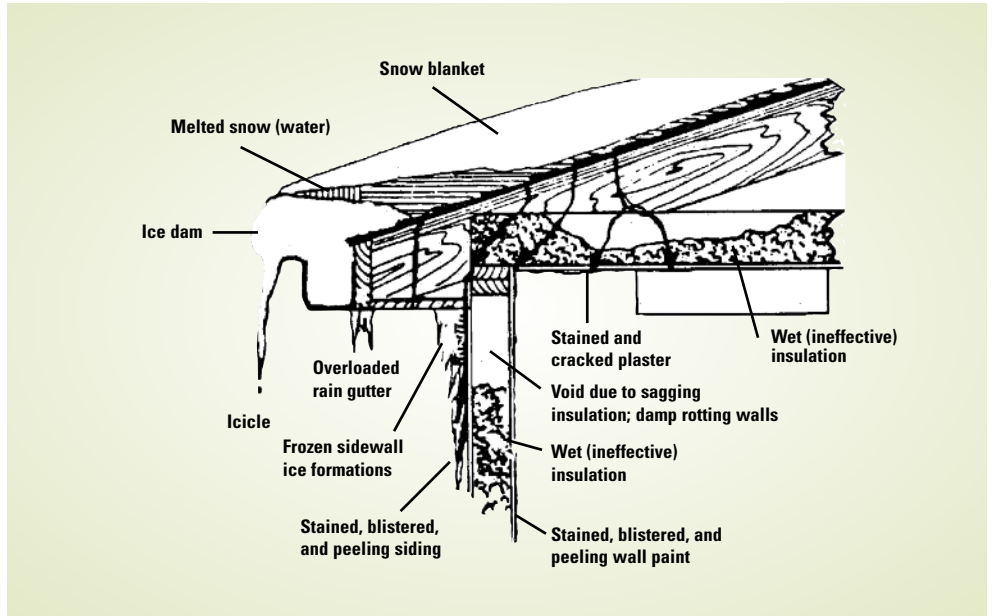


# ICE DAMS ON ROOF



Ice dams form when heat enters an attic and melts snow on the roof. The melted snow (water) runs down the roof, under the blanket of snow, to the edge of the roof where colder conditions cause it to freeze, forming ice dams. If ice dams are not removed, water may be caught behind them, forced under shingles or spill over to form icicles. This can result in costly damage to your home: wet (ineffective) insulation; stained or cracked plaster or sheetrock; damp, rotting walls; and stained, blistered or peeling paint.

## Preventing ice dams

Since the basic cause of ice dams are air leaks creating warm spots on the roof, the solution is usually to maintain a cold roof. You can take three steps to achieve a cold roof: seal bypasses, insulate and ventilate.

### Seal bypasses

Any hole, crack or crevice that allows heated air to leak through and past insulation is known as a bypass. If bypasses are not sealed before insulating, the insulation only “filters” the warm air on its way to the attic and your roof will still have warm spots.

### Bypasses are found:

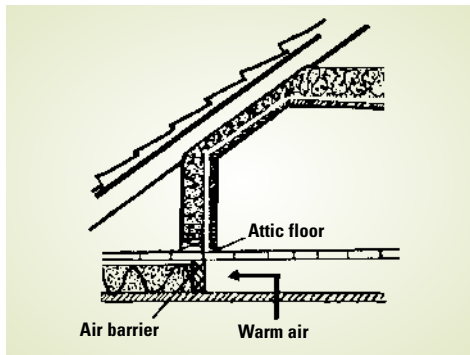
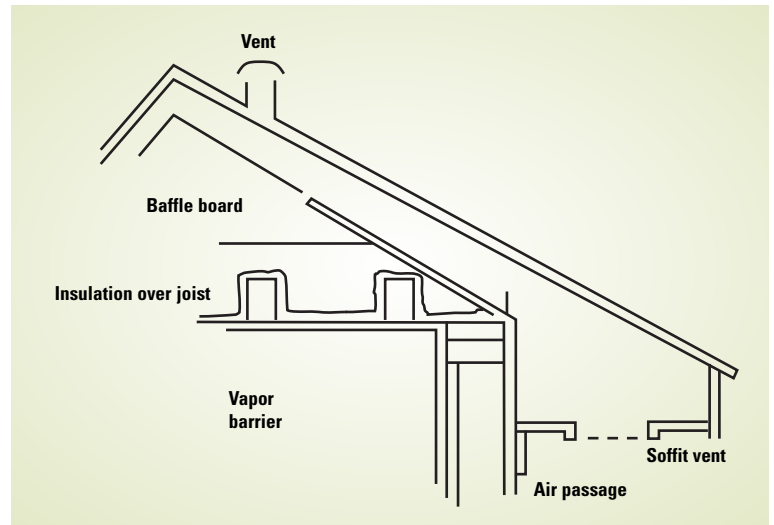
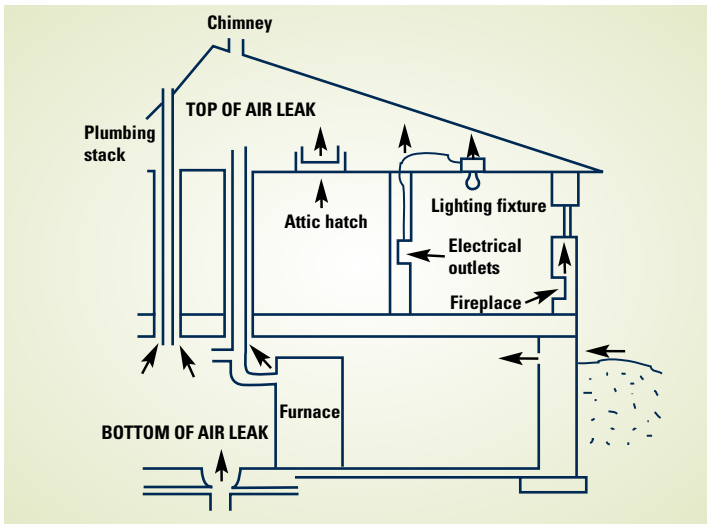
- Around light switches, outlets and light fixtures
- Around chimneys and plumbing stack pipes
- At the rim joist and foundation
- Around bathroom and kitchen ceiling vents and any other warm exhaust equipment
- Through dropped soffits (ceilings)

**NOTE: Recessed lights also are bypasses but, because of possible heat buildup, they should not be covered with insulation. If you can, replace with conventional lighting or a zero-clearance fixture.**



Each year, ice dams cause millions of dollars in damage to homes.

However, if you take the right steps, you can minimize or avoid this problem.



Techniques for sealing bypasses depend on the size and accessibility of the openings. Use regular caulk for small holes. Holes too large or deep for regular caulk can be sealed with foam caulk or void filler. Around a metal flue and masonry chimney, seal the bypass with a sheet metal collar and high-temperature silicone caulk.

Open wall cavities and other large openings such as spaces between floor joists in attic expansions may be sealed with air barriers made from rigid foam, blown foam or any material that provides an air barrier. Rigid materials should be cut to fit the opening and caulked into place.

### Insulate

The function of insulation is to resist the transfer of heat from your living space to the attic. Insulation is rated by R-value; the higher the R-value, the better it resists heat transfer. In Minnesota, an attic floor should have an R-value of at least 38 to 44.

Proper installation of insulation is as important as R-value. In many homes the continuity of insulation is broken by pipes, wires, recessed ceiling fixtures, bridging and recessed bridging, which allows heat to enter the attic. An attic floor with sealed bypasses and properly installed insulation will be the most effective.

### Ventilate

Despite efforts to seal bypasses, some warm moist air from the living space may still escape into the attic. Vents in the attic will help maintain a cold roof by allowing this air to escape to the outside. Without adequate ventilation, water vapor can condense and collect on insulation and rafters. Keep existing vents open. Air chutes or baffle boards may be needed to maintain an open space so air can flow from the soffit area to vents high on the roof.

While each home is unique, one square foot of open vent is usually needed for every 300 square feet of attic floor space. For the best air flow pattern, distribute vents equally between low (inlet) and high (outlet) areas on the roof. That way cool outside air will enter the low vents, move along the ridge rafters and exit through high vents. If you do not have a vapor barrier, the amount of ventilation could be doubled (up to one square foot for every 150 square feet). This recommendation also applies to cathedral, flat and mansard roofs/ceilings.

## Temporary or emergency measures

If you already have water or ice dam problems, the following methods can help but will probably have to be repeated with every winter storm.

- Remove all the snow with a “roof rake.” Beware of icy conditions, falling snow or ice, and overhead wires.
- Steam the roof. You may want to hire a professional with proper tools and equipment.
- You can install electric cables along the eaves and in the valleys of the roof to drain ice dams. But melting is limited to the few inches around the cables, and the sawtooth melting often causes secondary ice dams to develop higher on the roof. Also, cables use a great deal of energy.
- Never chop ice off the shingles or use a blow torch. This could damage the roof or cause a fire.

**Remember, these are only temporary or emergency measures and may only treat sections of the roof. Extreme care should be taken to avoid damaging the shingles, flashing and gutters.**

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