

Making an X-Ray of your roof

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When there is morning frost or light snow on a roof, you can learn a lot about a heat losses from the house and how to eliminate ice dams and icicles.

What causes problems

Melting the bottom of a snow pack or melting off all snow at the crown of the roof sends water down under the snow to the cold overhang of the house where it freezes to ice. Follow this link for far more detail on Ice Dams.

Reading the roof

In this first photo you can see the whole upper portion of the roof has lost all of its snow, in this case from a combination of the sun and serious heat losses from the house below resulting from missing insulation after a poorly executed renovation. The water flows down, totally dams up in the restricted valley and pours into the living room.

In the second photo you see an extremely well built and ventilated roof of a house with a cathedral ceiling. Usually cathedral ceilings pose problems because they have relatively little insulation and little or no ventilation. Here you see the completely even snow pack yet snow melted away just around the ridge vent exit points. There are no particular heat losses and there is good roof space (attic) air flow.

The third house is my X-ray example

This roof was totally clean after a warm spell in the winter. Just before I managed to take this picture there was no snow, only the evening frost on the roof. Dark spots showing through the light frost indicated only a bit of heat directly around all the roof protrusions. It is with this morning frost that you can spot point heat spots that really create ice – like melting directly above recessed light fixtures, or above a leaking bathroom exhaust fan, or wide melt away around the plumbing stack. Reading frost melt when there is absolutely no snow can really surprise you and lead you directly to problems.

This morning there had been a very light snowfall. What you really see on this roof is the action of the wind, blowing off snow right from the two ends of the roof where wind turbulence is at its maximum. Also you can see the wind sweeping action downwind of the roof vent. The slight melting action around every penetration is quite normal and is what I saw before the snow fell. The other thing to read in this X-Ray image is that from bottom to top the light snow is very equally there without any melting sections toward the top – this means that the house is well sealed against warm air leaking into the attic and that the ventilation is keeping the temperature equal throughout the attic. Look back at the first picture to see how attic heat build-up is totally melting several inches of snow off of the peak of the roof and sending that water down to the cold lower edge.

To properly “read” a roof X-Ray you need to separate wind sweeping from heat melting. Where you get melting, either excessively around penetrations or more importantly just spots or zones here and there – check below those areas in the attic for direct air leakage from the room below. Click here for details on Air Sealing.

Keywords:

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