

Ask Jon Eakes

The roof on the new house still leaks -- is it the codes fault?

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Sheila writes from Ottawa : Hi there. I will try to make this as easy as I can however, it may not be. I purchased a brand new home from a very reputable builder in 1999 and took possession in December of that same year. December led into January and towards the end of January I began to experience leaks from the roof. The builder admitted that there was not enough ventilation in the attic and that our insulation had in fact crystallized. About one month later they installed an additional two vents which then brought the total to five on the roof. They also re-shot new insulation into the attic. They repaired the damage to my walls and we thought that was the end of that. Well along comes the winter of 2000 and sure enough the same leaks occurred. After doing some research and checking the building code of Ontario, I discovered that builders are not mandatorily required to use ice and water shield. Instead they use black paper which is absolutely useless. My brother who has worked on roofs and in fact built his own home, tells me that most builders don't use ice and water shield because it is too expensive. I strongly believe and so does he, that had ice and water shield been used here I would not have experienced this leaking and the damage it has caused. The builder now tells us that it is because of the ice damming that we are having leaks. I say bull and so do nineteen other owners here that it is a design problem with this type of house. Please tell me if I am in fact wrong about the ice and water shield, or do you strongly believe it would have solved this problem? Last winter we did not have nearly the amount of snow we got this year, yet my roof still leaked even with the added vents. So how can they claim it is due to the ice damming? Oh and yes we followed preventative maintenance and had our snow removed not once but twice this winter. I would appreciate your input and advice on how to correct this problem. Thank you for listening as I spent the better part of this day crying over this. It was my brother who told me about you. Those nineteen other owners are experiencing the same and worse leaks. Oh and they did not remove the crystallized insulation, just covered it with new stuff.----- Reply I can certainly understand your frustrations. First a small detail: I really don't know what "crystallized" insulation is -- I have never heard of this. Does he mean water filled insulation that has frozen? On the Ice and Water shield. Although I do recommend installing this on the outer edge of the roof, I am not too excited about this product as "THE" solution to ice damming problems. At best it is a Band-Aid to try and catch water that gets past the shingles. It would be much better to stop the ice formation than to try and stop the water that backs up because of the ice. As for roofing felt paper, it is in fact quite good and serves two purposes: stopping the shingles from "rubbing" on the roof deck, and providing a bit of a second layer of defense. The advantage it has over the Ice Shield is that it will let the wood below dry out if it is wet. The Ice Shield does a better job of keeping the water out of the roof deck, but if there is a moisture problem, it gets stuck under this membrane and could rot out the roof deck. Ventilation is important in a roof, but recent research at CMHC has shown that it comes third in the effort to control ice. So let's first look at how some houses have ice on the roof and others do not, even with large quantities of snow. The snow actually is good insulation. So if the attic has too much heat inside for some reason, the snow won't allow the cold outdoor temperatures to keep the bottom of the snow pack from thawing. In fact most problems happen when it is about -2C outdoors, not too cold but below freezing. The bottom of the snow pack thaws, flows down the roof until it reaches the eaves, where it is not heated by the attic and so it now refreezes into ice. This builds up enough to create a dam that collects lots of liquid water, which now backs up the roof and under the shingles. For years we thought that simply ventilating off the excess heat was enough. Finally with serious studies of ice problems we have come to understand that the largest source of heat into the attic is air leakage of warm, often moist, air from the house below. In fact, this heat can come in quantities far to strong for simple

ventilation to take it away. Efforts to use power vents have actually increased the hot air into the attic by sucking it up from the house. The first line of defense against ice and consequent water penetration problems is to air seal the house below the insulation in the attic. In fact, a series of ceiling pot lights that are not manufactured and installed to be air tight can be the source of the ice dam problem. You can see some of the details of this by checking out "Air Sealing "Then we need good insulation to help keep the attic cold. Then we need good continuous ventilation to take away the little heat that manages to get to the attic. Here it is important that the ventilation be continuous, because anyplace where the insulation touches the underside of the roof deck, the snow will probably thaw on the roof above it. Continuous soffit ventilation, with good insulation baffles all along the edge of the house are necessary. Here is where original design deficiencies can come into operation. If the roof design does not allow enough space for a lot of insulation and a lot of ventilation near the eaves, you may never solve the ice problem and electric cables and ice shields may be the only Band-Aids available. But remember, we have found that stopping the heat of air leakage from getting into the attic in the first place is the first line of defense -- the one that contractors rarely ever even work on. With good air sealing and good insulation, minimum continuous ventilation is often all you need. Quit arguing about what is not under the shingles. Find a way to keep the attic freezing cold and it won't matter. So yes I agree that he has a design problem if all the houses have ice -- but the absence of Ice and Water Shield is not the important part of the design problem.

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