

Ask Jon Eakes

Skylights that don't leak.

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Skylights are basically a window that is not vertical, but usually closer to horizontal as they sit on top of the roof. This makes them much more prone to leakage and condensation than regular windows. Unfortunately many skylights are designed and/or installed without taking the extra water and cold exposure into account and for years I have had so many complaints that I was rather against skylights in a cold climate.

I take my hat off to Velux, one of the primary skylight manufacturers, for finally producing a cold climate skylight curb and insisting on quality leak proof installations. In the first photo you can see one of the new frames. There is a wooden top and bottom, a plywood side and a lot of foam insulation. There is still some thermal bridging but most of the inside walls of this skylight will be warm enough to avoid condensation. They make a wide variety of these insulated curbs and on the TV show you saw a very large one for use on a flat-top roof. So whether you buy their insulated curb, or use their ideas to build your own, there is no longer any excuse for a skylight to be dripping wet with condensation on the inner walls, Velux has shown us how to build them better.

The second cause of condensation, sweating, peeling paint and dripping water is the use of glazing that is not really adequate for a cold climate. Plexiglas, and single panes of simple glass will cause condensation in a skylight as soon as it gets cold. The glazing on your skylight should be at least a double pane and you will probably want all the modern advances we have for the home's windows: Low-E filters, Argon or other gasses, double or in some extremely cold areas even triple glazing, not to mention good glass spacers. All of these window advances are available for skylights and if it is cold where you live, you really shouldn't settle for less.

Then the installation itself is important whether you are fighting ice and snow or just rain. A good skylight installation will rely on multiple layers of water protection, and no caulking at all!

First, if snow does stay on your roof, you want to build a curb high enough to keep the skylight above the average snow load. Otherwise your skylight will just be buried in snow much of the winter, and much more subject to leakage.

You never want to rely on caulking to close the joint between the roof and the curb. One day any caulking will get old and crack and you will end up with a leak. If you have ever had a leaking skylight and you tried to caulk it up year after year, you know what I am talking about. We need a waterproof membrane that is attached to the roof and flows right up the side of the curb. On flat roofs, that should be the roof membrane itself, not some afterthought. When adding a skylight to a roof, you will want to use Ice & Water Shield, a self adhesive rubberized membrane. This membrane, like the flashing to follow, always start at the bottom and as we put on separate pieces, they overlap in such a fashion as to cause water to flow over any cracks, like the shingles on your roof.

After the rubberized membrane has totally sealed the roof to curb junction, flashings are put on, both to shed water and to protect the membrane from the UV rays of the sun. Flashings are placed around the bottom first and then working their way up the sides with step flashings, which go on alternatively with the shingles, and finally the top flashing. You may even want to build a cricket or saddle into the top flashing to shed water off on either side, especially if there is a lot of roof, and hence a lot of water, above the skylight. The second and third photos show installing the flashings.

An interesting detail is that these flashings slide up under the overhang of the skylight itself, creating what we call a cap flashing. This detail allows movement between the skylight frame and the roof deck without breaking any seals. There are no seals. There is only well arranged flashing that sheds water. Click on this hot link to see STEP FLASHING details for a chimney, the same principle as for a skylight. To see better why all these details are important in snow country, check out Skylights That Leak.

Of course, technology has not been left behind in the producing of skylight products. You can now

get skylights with shades to block out an over-bearing sun -- of course with a remote control to run the shade. You can get skylights that open to give some fresh air, or let out hot summer air at the top of the room -- again with a remote control if you like so you no longer need a long pole or a ladder. And if you are worried about an open skylight when it starts to rain, the last photo above shows a water sensor, that little square block inside the frame of the skylight which will cause the window to automatically close if it starts to rain.

I used to say 'Leave the skylights in California' -- but now I have to change my tune and say that the appropriate skylight with a good installation can be used in absolutely any climate. Even an old dog like me can learn new tricks, when we get new materials to work with.

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