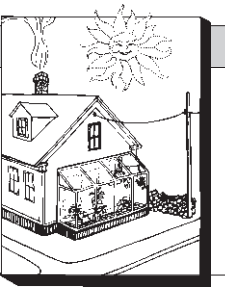

Framing & Foam For Skylights

by Chuck Silver and Terry Brennan

If you look at how much heat is lost out through a skylight (as we did two months ago in this column) and how much is gained, you discover that for most orientations with low-e, argon-filled units there is little or no energy penalty. In fact, even plain old double glass skylights aren't all that bad. I think there are a couple of reasons skylights got a bad energy reputation.

First, in the old days, they were built on site and weren't insulated or sealed very well against air leakage. Second, many of them were built with or later developed water leaks.

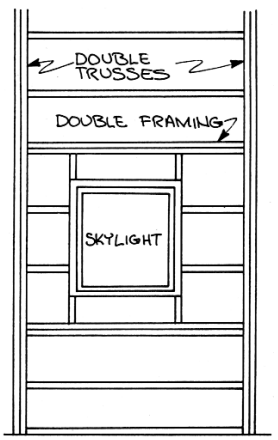

Figure 1. *Skylight framing.* *Remember to never cut a truss when framing for a skylight. Use a structural engineer to design the framing. Often the solution will look like this: a ladder-like arrangement with trusses doubled to carry the extra load.*

Well, weatherstripping and flashing have been taken care of by the manufacturers of modern skylights. That means all we have to do is get the chase insulated and sealed against air leakage. Here are some details and things to watch out for while doing this.

It all starts with framing. It is best, of course, if the roof doesn't cave in. The basic rules are:

- Don't cut into trusses.
- Double up on rafters and headers to carry extra loads.
- When in doubt, get an engineer to check it out.

Figure 1 shows typical details for framing a skylight in a trussed roof. Trusses are doubled up and a ladder-like frame spans the space between. The "rungs" of the ladder must be sized heavy enough to carry expected roof loads and to hold up the ceiling drywall.

I haven't found any tricks to make framing the light chase easier. Just go ahead and be careful to get all the angles correct. Flaring the chase out at the bottom gives a sense of depth and scale to the installation. A long narrow chase with the skylight at the top seems too much like a tunnel with a train coming down. I try to plan the angle so that a lot of the time sunlight hits the drywall in the chase and is reflected down into the room, reducing the amount of glare from the sun.

For insulating the chase itself I prefer foam board (see Figure 2). This is one of those awkward areas where a sheet of rigid material seems to be easier to work with than fiberglass batts and sheets of poly. Cut the sheets to the sizes and angles you need, nail them up, and seal the corners and joints with canned foam. You've got the insulation, air barrier, and vapor barrier all in one shot. I install at least R-30—often using a combination of foam board and fiberglass insulation.

two important details when insulating and sealing are:

Be sure to seal and insulate between the rough opening framing and the skylight jamb (good old canned foam works best). If warm indoor air can get to the bottom side of the aluminum flashing when it is cold outside, there is a good chance that the dewpoint will be reached and the skylight will appear to leak. Worse, it's a "leak" that no amount of roof cement gooped on the shingles and flashing will fix. So pay attention while installing the foam.

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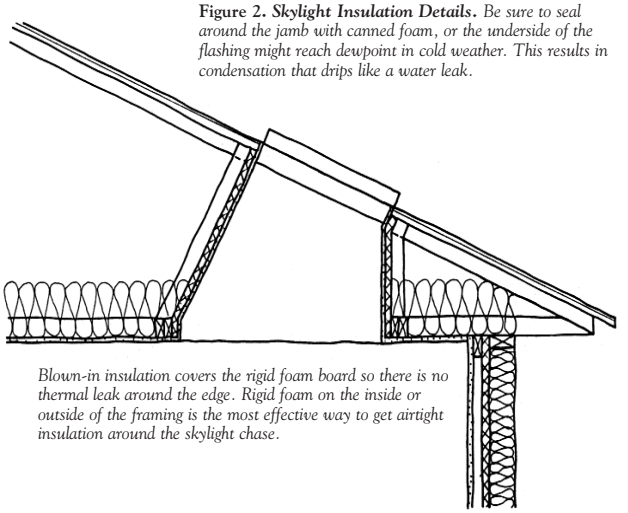
Carry the foam board insulation from the skylight frame all the way down the chase to the ceiling level. It's too difficult to make an air barrier if you stop the foam up higher and try to insulate the rest of the chase with the fiberglass ceiling insulation.

The general idea is to wrap the chase in a tight layer of insulation. This keeps the whole thing warm and free of air leaks or condensation. Skylights can add a great deal of drama to the lighting in your houses and they do it without sacrificing energy or comfort. Just do it right. ■

Figure 2. *Skylight Insulation Details.* *Be sure to seal around the jamb with canned foam, or the underside of the flashing might reach dewpoint in cold weather. This results in condensation that drips like a water leak.*



Blown-in insulation covers the rigid foam board so there is no thermal leak around the edge. Rigid foam on the inside or outside of the framing is the most effective way to get airtight insulation around the skylight chase.

Terry Brennan and Chuck Silver currently run training seminars on energy-efficient construction for the New York State Energy Office.