Letters

Tight House Heating Loads

I just finished reading the cover article of the May issue ("Insulating With Exterior Spray Foam"), and it left me curious. Under the "Mechanicals" section, the author reports that the Manual J calculation for the 2,000 square feet of the main living area gave 22,000 Btu/hr. I don't question that, given the construction and insulation levels described. But then the author states that "adding the basement and office space above the conventionally framed garage to the calculations brought the total design heat load to almost 60,000 Btu." That almost triples the load.

I wasn't sure whether the garage existed before the new house was built or if it was part of the house project. I wouldn't expect the basement heat load to add as much to the total as the 22,000 Btu/hr for the living area — in fact, I would have guessed that number included the basement — which means that the office space above the garage accounts for the bulk of the difference. If the garage and office space above it existed before the house project started, wouldn't the office have had its own heating system already? On the other hand, if the garage/office was part of the house project, why wouldn't the same energy-efficiency philosophy used for the house design have been applied to the design of the office space? Hopefully the author can shed some light on this.

Dick Russell
Moultonborough, N.H.

Author Tom Moore responds: For reasons related to our LEED application, our original heat-load calculations did not include the 14-foot-by-16-foot connector between the garage and the house. On the main floor, this connector includes the mudroom and a very small office; the mechanical room is located on the basement level. The connector was built with the same super-insulated wall detail as the main house (see photo, below) and adds 224 square feet of heated space on each level to the total heat-load calculation. The 24-foot-by-38-foot basement has about 912 square feet of floor area.

We built the garage at the same time we built the house, and framed the garage walls with rough 2x4 hemlock that we had milled on-site. Even though the walls are insulated with 1-inch-thick rigid polyiso foam on the outside and 4 inches of spray foam on the inside, they aren't as well-insulated or airtight as the walls of the main house. The garage has a truss roof, creating the cathedral ceiling in the office space above. It too is insulated with several inches of rigid and spray foam, but it still has only about half the R-value of the 30 inches of cellulose in the house attic. The 336-square-foot office was never intended to be full-time living space, so we felt that the added cost of the exterior studs and spray foam wasn't justified.

This means that the original 22,000 Btu/hr heat-load calculation was for 1,824 square feet of living space, while the second 60,000 Btu/hr heat-load calc was for 3,520 square feet of living space, almost double the area. Given the lower R-values in the walls and ceilings for much of the additional space, that seems about right.

Price of Spray Foam

I was very interested to read the article on exterior spray foam by Tom Moore (5/11). The featured house appears to have been well-thought-out and well-built. My first consideration in building a house like that would be cost. In my area, the foam alone would have cost more than $27,000, not the $18,500 mentioned in the article. (Even so, I am a big fan of spray foam.) Second, the labor and materials for the shell described would appear to be nearly twice that of conventional framing.

I can get blower-door test results in the 360-cfm to 380-cfm range using conventional air-sealing techniques and properly adjusted doors and windows, but I can't achieve the same level of overall energy efficiency with conventional framing.

I would love to see a follow-up in two years. There are a lot of good ideas out there, but it's difficult to judge them unless we know how well the house performs over time. Hopefully Tom will let us know what it is like to live in this home.

Jim Glover
Pierre, S.D.

Sealing a Ventilated Attic

I'm writing in response to Scott Flipse's letter (4/11), in which he voices the concern that it's difficult to seal off an attic from conditioned space. In fact, a ventilated attic can be pretty well sealed off from conditioned space with closed-cell spray insulation. A 3½-inch layer seals nicely, but while you're up there messing around you might as well lay up 7 inches, close off the soffit vents, and finish the job. I've used this method successfully on my own house and a dozen more around the Portland area. After cleaning out whatever insulation is in the way, the foam installs easily and conforms to complicated framing that would otherwise be nearly impossible to air-seal.

Harris Hyman
Portland, Ore.

Step-Flashing Technique

The February issue featured a photo of a worker applying peel-and-stick membrane directly to step flashing on a sidewall (page 54). As someone who has done a lot of repair and renovation work in my 25-plus years in construction, I cringed when I saw that photo. I pity the poor roofer who will some day have to deal with that totally unnecessary, sticky mess. Metal steps, which have a longer life than asphalt shingles, should always be allowed to float freely behind the siding. Steps can and should be reused when reroofing, as I've done many times. We all know that certain components of a building must be replaced, and asphalt shingles are a prime example. Showing a little consideration for the tradesmen who will do that work sometime in the future isn't just the decent thing to do, it's the mark of a professional.

You can counterflash effectively with strips of metal, vinyl, felt, or housewrap. Since the tops of these strips are taped higher up the wall, the steps remain free. Of course the sheathing at the corner juncture of roof deck and wall should always get a generous application of membrane.

While we're at it, I would be remiss if I didn't mention that there are a significant number of jokers out there who insist on nailing steps to the wall instead of the deck, resulting in the same problem. What ought to be a routine reroofing job turns into a time-wasting, completely unnecessary residing job as well. I've heard the claim that it's impossible to avoid pinning the steps to the wall when nailing the siding, but that's absurd. If your level of concentration is that dismal, you really ought to consider a different career. Some people advocate using extra-tall steps, which might indeed complicate the nailing of siding. They may want to claim "superior workmanship," but what they are doing is nothing but pointless overkill. Standard steps have been used successfully for generations; thanks to gravity, the old saying "an inch is as good as a mile" applies perfectly to counterflashing. Even on skylights, which exist in the harshest possible environment, the cladding only counterflashes the steps by a couple of inches. If an inch of counterflash on a sidewall doesn't do the trick, you'd better look for a boat because your house is submerged.

Arne Waldstein
Housatonic, Mass.

Ice-Dam Cause and Effect

As a professional home inspector for the past 41 years, I would like to comment on the article "Making a Business of Ice Dams" (1/11). The author states that "gutters do not cause or even increase the severity of ice dams." While I agree that ice dams can form even where there are no gutters, gutters definitely contribute to the problem by forming a "collection area" for snow and ice. In northern New York state, it is common practice to eliminate gutters and replace the bottom 4 feet or so of shingles with metal roofing. This allows snow and ice to slide off, thus minimizing ice damming.

Regarding heat cables, they are effective and not "a last resort," as the author states, if they are properly installed. The cables should lap into the gutters and run down through the downspouts to provide a path for the melting ice. The shortcoming of the cables is that they are expensive to operate (but less so than damage caused by a backup) and lose effectiveness at temperatures below 20°F.

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KEEP 'EM COMING!

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