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Testing Spray-Foam Jobs

The article "Insulating Unvented Attics with Spray Foam" (3/07) was very good, as far as it went. We have been using spray foam in unvented roof assemblies for nearly 10 years, overall with good results.

One thing to keep in mind, however, is that spray foam is not foolproof. It's possible to install it badly — in fact, in my experience, careless installations are surprisingly common. Because the material is so good at air-sealing where it is applied, the spots you miss can have an exaggerated impact on the performance of the house. Even if you manage to seal 95 percent of the potential leakage points with the spray foam — outstanding performance, by the standards of insulation installations in general — you can cause real problems as warm moist indoor air or freezing cold outdoor air gets funneled into the 5 percent of the remaining leakage points.

The solution should be easy: Have your insulation contractor test the house with a blower door just as his crew is finishing up. They'll find the remaining leakage points when it's very easy to fix them. The problem is that, at least in my region, there's not a single insulation contractor who owns a blower door. To me, this is analogous to a carpenter who doesn't own a level or a tape measure.

So our company bought our own blower door. When we started testing our projects, I was truly alarmed at the mistakes we discovered that our insulation subcontractors had been making, despite their best intentions.

At $2,500 to $3,000, a blower door is not a trivial expenditure. Possibly you could team up with a few other companies or a local builders' association chapter to share ownership to reduce the cost. If you're truly serious about the performance of your projects, though, and about quality construction in general, it's a question not of *if* but *when* you will make sure you have ready access to one.

Paul Eldrenkamp
Byggmeister
Newton, Mass.

Ridge Beams and Collar Ties

I wanted to make a few comments regarding the article "Retrofitting a Structural Ridge" (2/07). This was a typical retrofit of a structural ridge directly below the existing one, and the major design factors were considered. Unfortunately, one of the most important design aspects — the connection — was neglected.

The author was correct in pointing out the importance of tying the rafter to the ceiling joist at the top-plate location. However, his observation that a structural ridge was needed because collar ties were being eliminated was incorrect. Collar ties have absolutely no relation to the strength of a ridge. The IRC clearly states that as soon as the ceiling joist — or rafter tie — leaves the top plate, a ridge beam is required (R802.3.1).

In a standard roof system, the critical connection is between the rafter and the ceiling joist. In that situation, all of the roof loading is being transferred at the connection by shear forces on the nailing. With a structural ridge, however, a large portion of the roof loading is being "held" at the ridge to prevent the walls from bowing outward. Surely the new ridge will support the old ridge and the imposed loading.

The problem is the connection point of the rafters to the old ridge. This connection is now under both shear and tension stresses, whereas the existing through-nailing is ineffective. In new construction this is dealt with by using a connector such as a Simpson LSSU; in remodeling there are other connectors that could have been used.

I was surprised to see that this point was not mentioned in the article. Will this roof fail? Probably not. Is this a correct ridge design? Absolutely not.

Thomas H. Wojick
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Author Kipton Tewksbury responds: Mr. Wojick's comment that collar ties have no relation to the strength of

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the ridge seems to contradict the IRC (R802.3.1, 2006 edition), which says, "Where ceiling joists are not connected to the rafters at the top wall plate, joists connected higher in the attic shall be installed as rafter ties, or rafter ties shall be installed to provide a continuous tie. ... Where ceiling joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or girder designed in accordance with accepted engineering practice."

We could not clearly determine how the ceiling joists were attached to the rafters because of the attic floor. According to our engineer, verifying and strengthening the rafter-joist connection was one of the things we could have done instead of installing the ridge beam. But because of poor access and our wish not to disturb the ceiling below, we opted for the ridge beam, which the engineer clearly thought was a sound approach and met code as he interpreted it.

Note that we also added bearing knee walls on both sides of the roof, with connections to the rafters that exceeded code. Both of these knee walls were directly over — or close enough to — interior walls below, which carried loads to the ground in the basement.

The engineer and I spent considerable time verifying the load path for the knee walls and the support posts. We even opened up part of the downstairs wall framing to visually verify a solid, continuous load path. And as the article stated, we added structural elements at both gable ends to spread the load over the walls below.

Had we used rafter-to-ridge connectors, we would have used Simpson H1s or H11s. Because of the narrowness of the space, no other connector could be securely fastened — and even the H1 would have presented access problems.

We also could have invented a new tie, similar to a collar tie, to straddle the ridge beam and connect the opposing rafters, with a flange bent down on either side of the ridge beam to allow fastening. This would have required separate engineering costs because it would not have been covered by the code. Ultimately, the engineer did not specify additional connections at the ridge.

We gave all of this considerable thought; the design was the result of collaboration between builder and engineer and our collective knowledge and skill.

Safety Reminder

It was Sunday evening, and as I opened my February issue of *JLC,* it was if some strange power led me directly to the picture leading off the article on 16-gauge finish nailers.

It was as if someone were trying to remind me of my foolish behavior from only a day earlier, when, unlike the carpenter in the picture — who uses a block of wood to align the material being nailed — I had ignored my better judgment and instead chose to align a corner using my thumb while nailing. The photo shows the result. Kudos for showing the right way to do it.

Jeff Johnson
Glen Allen, Va.

Back-Rolling Needed?

Regarding Jason Seltin's otherwise clear article "Using an Airless Paint Sprayer" (3/07), I think he's misinformed on back-rolling. While 2,000-psi delivery pressures "should" embed paint in the work surface adequately, all surfaces are not equal.

The question is which surfaces and conditions warrant back-rolling. Particularly with new rough-sawn siding or shingles, the paint is often too thick to soak in properly before it dries. This can lead to a paint job that looks great when it's fresh — but two years later any pro can see the shadowy effects of inadequate coverage. Repainting a house that has a good original paint job can often be done without back-rolling, but I'd be careful.

Roscoe Vanhorne
Ben Lomond, Calif.

Leave a Gap in Subfloor

The article "Framing the First-Floor Deck" (12/06) contains good tips for floor layout and framing. We applaud the use of a glued-nailed floor system and the care that this crew shows for their work.

One photo shows a worker with a sledgehammer beating the wood structural panels together "so that the T&G joints will close." Because it's not clear from the text what "close" means, I wanted to remind readers that it's important to leave a 1/8-inch gap along the top edges to allow the panels to expand to reach their equilibrium moisture content.

Sometimes it's necessary to coax panels together, but forcing the tongue too deep can damage the panels. Plus, panels that are tightly butted together may buckle and telegraph through to the finished flooring, especially with vinyl, thin carpet, or linoleum.

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