Letters

New Methods: Handle with Care

To the Editor:

This letter concerns Henri de Marne's article, "Ignoring New Technology Can Cost You," in the April issue of *New England Builder.*

I have been in construction for more than 30 years. I learned my trade from my father, who was a builder all of his working years and spent many years as a framing superintendent. Many of his jobs were contracted by the state of Connecticut. His building methods were the best from the "old school" and the best from the "new," including patience, care and pride of workmanship. In the fall of 1953, I received the status of journeyman and worked as a framing contractor; I subsequently worked with my father for many years and constructed more than 300 houses. I have worked on my own since 1980 doing repair work, replacement and remodeling.

In regard to the corner studs, I use a three-stud corner, as opposed to the two-stud corner Mr. de Marne writes about, and I achieve full insulation. I do not use it for strength but for nailing (see Figure 1).

On interior partitions, Mr. de Marne suggests using drywall and backup clips in conjunction with only one cat, or backing, in the center. Again, I prefer to install three, but I favor insulation as illustrated in Figure 2. Without constructing them on purpose, I have come across enough so-called "floating corners" created *accidentally* that have problems. You have to be careful when you use wood and metal in conjunction with one another, since wood shrinks and metal does not. This invariably causes problems.

Finally, as convenient and easy to install as joist hangers are, a ledger board is more practical in maintaining uniform shrinkage and settlement.

About 2x6s and 24-inch-o.c. framing versus 2x4s and 16-inch-o.c. framing: You do save one-third of the framing members by going 24 inches o.c., but if you consider that the third 2x4 member you save can be split into two 2x2s, and that those two "new" members can be applied to the other 2x4s to form 2x6s, you'd realize that you really haven't saved anything. Plus you still need additional footage for a shoe and plates. (You do save four nails, however.)

My own experience with a framing crew has been that when workers schlepp 2x6s as opposed to 2x4s and then lift the wall (with or without jacks), it takes maximum effort and strength of the crew. The rest period required from this effort eats up any labor saved on a third member.

About 65 to 70 percent of the repair problems I deal with are in homes built from the mid-1960s to the present in which inferior methods and products used in building have led to rot and to blistering and peeling paint. Most of my work on *older* homes (those constructed before 1950) involves remodeling and additions. Repairs due to inferior building methods and products are rare.

There are good modern building methods and products, but many of them only create problems later on. Builders should be very cautious about adopting new products. Whether old or new methods are used, the same care, skill and patience from the "old school" should apply. Before they are adopted, new products should be shown to produce the same excellent results of tried-and-true products.

I am concerned that many younger people entering the field of construction today don't learn this very valuable lesson: Use the best possible products and apply the care, patience and skill that produce beautiful and enduring structures.

Paul Hahn
Trumbull, Conn.

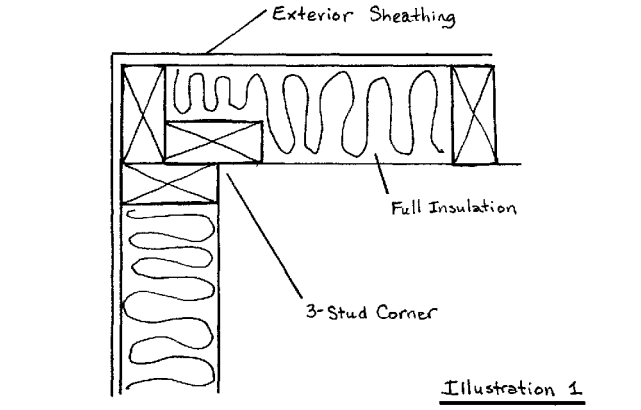

Illustration 1

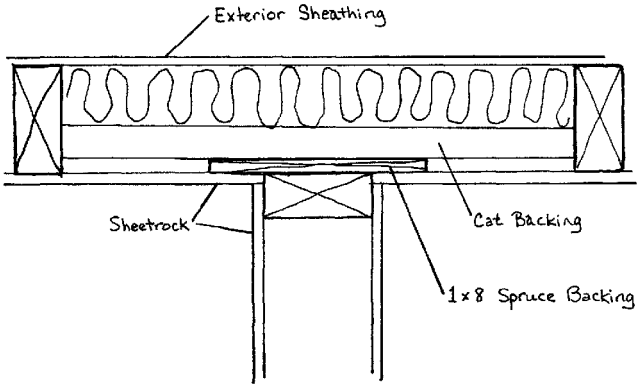

Illustration 2: Interior Corner

More on Aged R-Values

To the Editor.

Your June issue is as good as always. Your covers always knock me out! I would like to add two cents to Paul Hanke's excellent piece on the contradiction between claimed and actual R-values in isocyanurate foam sheathing.

The key problem, to my understanding, lies with the testing procedures as specified in ASTM and federal standards (ASTM C 591-83 and Federal Standard HH-I-1972/GEN), which call for a *steady-state* aging process. Like steady-state *conductance* testing procedures, this process often has little relevance to what happens in the field—and in this case, the process is particularly inaccurate. In real life, rather than sitting passively at a constant 73.4 degrees Fahrenheit, foam sheathing materials go through extreme temperature variations in daily and seasonal cycles—particularly if they are mounted on the south-facing exterior of a building.

The most obvious property of Freon gas is that its volume changes dramatically with temperature variations. Thus, on a cold winter night the urethane cells act as mini vacuum chambers, and they insulate very well as a result. When warmed by the sun or by ambient air temperatures, these same cells become pressurized with the expanding gas. This cycling creates a pumping action, which encourages the Freon/air-substitution process to proceed far more quickly than a constant-temperature aging test would indicate.

Not only would it generally be useless to apply foil to the edges of the sheets in an effort to slow the aging process, but, like typical nailing patterns, it also would create a critical thermal bridge between the two aluminum sheets—which could be more of an energy liability than any deterioration in the R-value of the foam itself.

Tom Wikon
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The Vapor-Barrier Debate Goes On

To the Editor:

I would like to commend you for producing a consistently interesting periodical. I look forward to each issue for the informative and controversial articles you carry. One of the latter was the piece by Bill Rose on the vapor-barrier issue (May issue, page 19).

I am most concerned about his references that George Tsongas's Spokane study looked in the wrong place for condensation—low in a wall in a semi-arid climate. In his capacity at the Small Homes Council, Mr. Rose certainly should be aware that this study was the second of two—a companion piece, as it were. The first was done in Portland, Ore., probably one of the last places in the world ever to be accused of being "semiarid." ("Semiaquatic" is more appropriate.) In the Portland study, Dr. Tsongas opened up both high and low points in the walls. The low points tended to have slightly higher moisture readings, but neither had significant problems.

Because this climate was criticized as not being cold enough for such a study, Spokane was chosen as a site. The low openings were chosen because the Portland study had shown them to have higher moisture readings. I can assure you that condensation occurs on windows in both Portland and Spokane.

Furthermore, while Mr. Rose points out that cellulose and fiberglass respond to indoor humidity levels, he fails to mention that wood, the most prevalent structural material in our buildings, also responds to relative-humidity levels. This has been shown in studies of attic venti-

lation conducted at Princeton University and in wall studies by Gerry Sherwood at the Forest Products Laboratory in Madison, Wisc.

At a Seattle conference on "Moisture Problems in Residential Construction: Separating Myths from Reality," the ability of wood to absorb and give off moisture on a daily and seasonal basis was noted by more than one speaker as a possible reason why moisture condensation is *not* responsible for more damage in residences.

Finally, while the changes in language that Mr. Rose notes are confusing, they also are revealing. The "vapor barrier" traditionally installed by most builders is much different from the polyethylene to which Harold Orr refers; the latter operates as *both* a "vapor barrier" (or "vapor diffusion retarder") and an air barrier. If this weren't such an important distinction, there wouldn't be all the emphasis on perfectly sealing *all* the penetrations. It probably will come as a surprise to many who haven't listened completely, but even everyone's favorite pariah, Joe Lstiburek, advises the use of a "vapor barrier." (He even recommends polyethylene!) Other possible approaches are face-stapled, foil-faced or asphalt/kraft-paper-faced blanket insulation, or vapor-barrier-rated paints.

Yet a material can be an excellent vapor-diffusion barrier and a lousy air barrier, and vice versa. Recent research indicates, however, that most moisture vapor transported from a house into a wall moves by convection, not diffusion. Because the traditional "vapor barrier" does not address this problem, it is not "just as important as ever." What is more important than ever is something "that keeps humid air from chilled surfaces." A membrane is one possible approach, but it is only *one* approach.

Chuck Eberdt
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I'd like to thank Mr. Eberdt for his thorough response. His letter is a good synopsis of some current moisture-effects research. Perhaps the fact that convection overshadows diffusion as a moisture transport mechanism in buildings bears repetition. I take it for granted.

This dialogue was sparked by research reports in the February issue of Energy Design Update (EDU), which questioned the use of vapor barriers. The March issue of EDU, meanwhile, contained reports of research at the Manville Service Corp. showing that while diffusion may be down, it's not out--and that vapor (diffusion) barriers are necessary...sometimes.

I use the term "vapor barrier" out of habit even when I'm talking about air leakage. And why not? A vapor barrier bars vapor. Some say that continued use of the term does not reflect the shift in importance from diffusion to convection effects. But do we have to change the names of familiar building components whenever we emphasize new criteria for their performance?

I applaud Dr. Tsongas's responsiveness in following up the Portland (mild and wet) study with the Spokane (cold and dry) study. However, I would welcome Dr. Tsongas (and Mr. Eberdt) to Illinois, which a contemporary of Abraham Lincoln described as "the hottest, coldest, wettest, driest place on earth."

—Bill Rose

Keep 'em coming....*New England Builder* welcomes letters from our readers. Letters must be signed and include the writer's address. Letters should be sent to NEB, P.O. Box 278, Montpelier, Vt. 05602.