Business

Staying Informed Can Keep You Out of Trouble

by Paul Eldrenkamp

You can get yourself in a lot of trouble in our industry by thinking you know what you really don't. From the business end, that's always been true; "knowing" that you should mark up 10 percent for overhead and 10 percent for profit, for instance, or "knowing" that the billing rate in your area for a skilled carpenter is $45 an hour — regardless of what your own numbers tell you — is the kind of pseudo-knowledge that can get you into a deep hole pretty quickly.

That particular form of ignorance masquerading as knowledge, though, is self-correcting; the financial feedback loop tells you in fairly short order to either change your ways or exit the industry.

Another type of pseudo-knowledge has a longer and more perilous feedback loop, and that's "knowledge" of basic building science — thinking, without basis, that we understand the rules of physics, chemistry, and biology as applied to the work we do.

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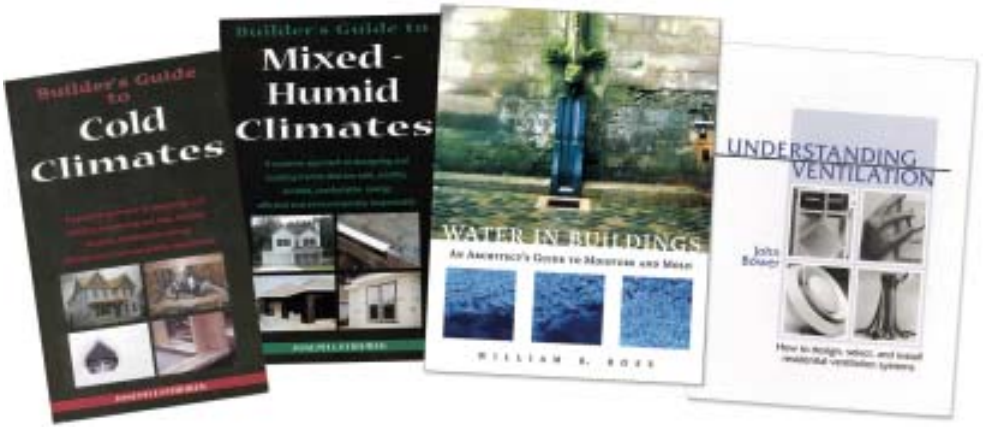

A World of Misinformation

Let's be honest here: Not many of us are in construction because we were such standouts in science class. So we're vulnerable to misinformation based on industry habit, stubborn myths, and outright fraud — not on sound empirical science. There's a lot of unreliable information out there, and our industry seems to have more than its share. The advent of the Internet has given us all unprecedented and instantaneous access to an ever-expanding reservoir of lousy advice.

For instance, more and more homeowners are becoming sensitized to mold and other air-quality issues, viewing them as potential household hazards. Combine this fear with widespread ignorance and the occasional large insurance-company payout and you have a potential liability that's hard to know how to manage. That people who think they're being poisoned by mold tend to believe whoever is giving them the most alarming information further exacerbates the problem.

In such situations, you'd better really know what you're talking about rather than just think you know — especially if you've broken a pipe and caused some minor flooding, as we did on a recent project (½-inch pipe, 60 seconds of flow).

It was my word against that of the mold guy, who wanted us to tear everything out because that was his one-size-fits-all, cover-your-rear approach to any situation that involved a leak. I was lucky, because I had access to better information than he did, but it still took a lot of time and effort to convince the homeowner that a total tear-out was going to be a waste of time and an unwarranted setback in completing the project.

Beware the Sales Pitch

It's not just clients who can cause problems based on faulty building

science. A chronic problem within our industry has been deceptive claims from radiant-barrier sales representatives. I recently wasted several hours dealing with subcontractors, staff, suppliers, and Web sites advocating for the use of a 1/2-inch-thick radiant blanket as insulation under a concrete slab with radiant heat.

The claim — totally bought into by the smart, experienced people I was working with — was that putting the radiant blanket under the slab would give us an R-value of somewhere between 5 and 10 (depending on who was doing the talking). This is complete nonsense — actual performance from such a product in a subslab installation might be roughly equivalent to R-1 at best.

In addition to its poor thermal performance, the product was going to cost more than 1-inch extruded polystyrene, which has an R-value of about 5. So the accepted industry "wisdom" was pushing for the use of a product that cost more and performed worse than readily available alternatives.

Reliable Sources

Those anecdotes, chosen from among many, illustrate how important it is that as professionals we be as well and as reliably informed about basic building science as possible. The corollary to this, of course, is that it's a major liability not to be well-informed.

Over the years, through trial and error, wide-ranging reading and research, and ongoing conversations with a spectrum of leading building scientists and practitioners, I've gotten a good idea of where I can find trustworthy information and advice.

Here, then, are resources for building-science information that I've learned over time I can rely on.

Trust Your Own Observations

What you can see with your own eyes — rot, mold, water trickling down a basement wall — is unassailable. It constitutes the most reliable information you've got about building performance problems.

What may be less reliable is how you interpret that information. It's a big leap from "I see mold" to "This mold was caused by the previous contractor's poor flashing details." There can be a lot of steps from the initial observation to the ultimate conclusion, and each one represents an opportunity to go wrong.

Make your observations, ask questions, and take short steps rather than giant leaps when it's time to start drawing conclusions.

Multiple observations over time are more reliable than one observation at a single point. That's why it's so essential to have an organized strategy of periodic returns to past jobs if you're serious about understanding building performance with regard to your own projects. Take pictures and good notes and store them in an accessible location.

At my company, I have assigned one person the task of "warranty manager" so that we have a single, consistent source for performance data for all our projects. He gives periodic reports at our company meetings to let us know what's working and what isn't; this allows us to deal with problems head-on and solve them once instead of over and over and over.

Use Your Ignorance

This may seem like an odd sort of "resource," but I assure you that you'll get into less trouble by assuming you don't know what's causing a problem than by assuming you do. In other words, don't be afraid, at first, to say to a client "I don't know" — even if you think you do.

Formulating an initial hypothesis is

okay, but jumping to a conclusion is not. There's a subtle but important distinction: Whereas a hypothesis suggests that more testing or investigation is called for, a conclusion implies that you're ready to fix the problem whether or not you've really identified it. Even if it's a problem you've seen before, it's worth stepping back a moment and asking yourself if the root cause could be something new.

Cautionary tale No. 1. Twenty years ago, I built an addition off a kitchen with a cathedral ceiling that contained some problematic lights: After snow fell, water would drip out of them. Obviously, the problem was a roof leak caused by an ice dam, right? An open-and-shut case.

So we stripped the roof, put down bituthene — all the way up, instead of just at the eaves — and reroofed.

Next time it snowed, the lights leaked again. Time for a closer look.

What was happening, it turned out, was that warm, moist air from the kitch-

en was leaking up around the recessed lights, condensing on the underside of the sheathing, and freezing. When snow fell, it would act as a layer of insulation on top of the sheathing, allowing the recessed lights to heat up the rafter cavity and melt the ice (the frozen condensation), which dripped down through the light.

Cautionary tale No. 2. About 10 years ago, we had a problem with chronic paint failure on clapboards — from day one, they couldn't hold a coat of paint.

The painter said it was indoor humidity migrating through the wall and taking the paint off with it.

The paint manufacturer's rep said it was "mill glaze," meaning the surface was too smooth to hold the paint and we should have scuffed it up by lightly sanding before painting.

The lumber-mill rep said the painter shouldn't have used latex primer, that oil primer would have "soaked into the wood" and adhered better.

They all thought they knew exactly what was going on, and all were clear that it was someone else's fault. Yet nobody was right.

Further tests and investigation revealed the culprit: surface water wicking up between the clapboard joints and soaking the back of the clapboards, which had not been back-primed prior to installation. The wetting from behind made it very difficult for paint to stick over time.

Luckily, we solved the problem relatively inexpensively by inserting plastic wedges at every nail to create a space between the clapboards too wide to allow for capillarity.

Don't Forget to Read

Here's a list of the books, magazines, Web sites, and other resources that, in my experience, will do the best job of keeping you out of trouble.

Energy Design Update. This periodical is pricey ($385 for 12 issues a year at 16 pages each), but it's the most important one I receive in terms of understanding residential building science and keeping up with the latest research. Any publication that can irritate members of the radiant-barrier industry and preeminent building scientist Joe Lstiburek at the same time — while retaining them all as subscribers — is doing something right.

Editor Martin Holladay is also extraordinarily generous with his time and expertise on a number of energy-related online forums; he's a voice of reason, providing an antidote to much of the unreliable information out there.

Joe Lstiburek's Builder's Guides (Building Science Press). These climate-specific handbooks of good construction details are invaluable. Their focus is on new construction, so they're less helpful in retrofit situations. (Ever try to add proper flashing details to a brick wall after the fact?) Still, the building science behind the recommended details is rock solid, and the illustrations are models of clarity.

Building Science Corp.'s Web site. The principals and staff at Building Science Corp. (www.buildingscience.com) have put together an extremely useful online resource for a broad range of residential building-science issues. Log on to the site and start trolling — there's good information, accessibly presented, everywhere you turn.

Water in Buildings, by William B. Rose (Wiley, 2005). This book may be heavy going, but it is the closest we have (and probably will have for years to come) to a definitive study of the topic. The content is as honest and objective as it gets in our industry — no axes to grind, just the facts. Keep it on a nearby shelf as a ready reference.

Camroden Associates' Web site. This is the Web site of Terry Brennan, principal of Camroden Associates (www.camroden.com). Terry's work on mold in buildings is solidly positioned where theory meets practice. I hired him to give a talk on mold at one of our company meetings and his dirt-under-the-fingernails approach earned real credibility with my field crew (and not just because he blatantly contradicted several things I had been telling them, as enjoyable as that was). The papers you can download from this site — coupled with mold papers you can download at Building Science Corp.'s site — will give you a really solid understanding of the issue.

Understanding Ventilation, by John Bower (The Healthy House Institute, 1995). Dated, with some inaccuracies, this is nevertheless a very useful resource. I keep it next to my *Builder's Guide to Cold Climates* and *Water in Buildings.* Given the topic, it's surprisingly readable. The book is now out of print, so you'll have to find a secondhand copy.

Environmental Building News. Green building is becoming less a political than a business statement: It's increasingly difficult to make useful distinctions between green construction and quality construction. Alex Wilson and Nadav Malin have done an outstanding job keeping *EBN* the premier publication on green building. *EBN* is not a cheerleader for the green-building movement — it covers the failures and problems as frankly and reliably as the successes.

JLC ***Live, Building Energy, Affordable Comfort, and EEBA's annual conference.*** These four shows all provide essential opportunities to hear firsthand what's going on in the world of residential building science, and to ask questions and compare notes with others struggling with the same problems.

It goes without saying that these resources, helpful as they can be individually, are even more useful collectively. Effective risk management starts with good information, and in our industry getting good information can be a challenge. These resources should make meeting that challenge a little easier.

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