Builder Blunders

It's always cheaper to learn from the other guy's mistakes

One thing I've learned from investigating problems with wood in residential construction is that everybody makes mistakes. Most are

by Stephen Smulski

minor lapses that don't rise above punch list or callback status. But as the following true stories show, every once in a while I see something that makes me wonder,

"What were they thinking?"

The Finishing Touch

A homeowner complains that the cedar bevel siding is falling off her house less than a year after it was installed. Turns out the builder fastened it with pneumatically-driven finish nails. The nail heads are so small that they pull through the siding as the wood shrinks and swells in thickness and tries to cup. This occurs where the nails are sunk into the framing — lots of nails missed the framing altogether. Where that happened, movement of the siding slowly rachets their smooth shank out of the plywood sheathing. The only fix is to remove the siding and properly hand-nail new siding into the framing with ring-shank stainless-steel siding nails.

Hear No Evil, See No Evil, Speak No Evil

An architect visits the house he's having built for himself and is stunned by the condition of the wood I-joists the contractor used to frame the floors. By now, the two-story building is weathertight, and pipes and wires have been roughed-in through the I-joists' webs. Amazingly, the contractor installed nearly two dozen I-joists with obviously rotted webs without blinking an eye or mentioning anything to anyone simply because that's what was delivered to the job site. Equally astonishing is the apathetic silence of the plumber, electrician, and code officials who signed off on three separate inspections. One flange of every I-joist is weathered and gray, as is one side of the web of two I-joists. Clearly, these two I-joists were on the outside of a banded bundle that got wet and rotted while being improperly stored out in the open somewhere along the way. Whether the rotted I-joists are reinforced or removed, the utilities have to be pulled.

On-Center Space-Out

A developer stops by one of the spec houses he's financing a few days after the roof is shingled. He notices that all three of the building's hip roofs have three slightly different planes instead of a single plane that rises smoothly from eaves to ridge. Turns out the builder consistently positioned the first hip truss in each roof too far from the girder truss. This happened because he incorrectly referenced his measurement for the location of the first hip truss. Instead of measuring from the outside face of the girder truss — a two-ply truss 3 inches thick — to the outside face of the first hip truss, he measured from the center of the girder truss to the outside face of the first hip truss. This put the outside face of the first hip truss $25\frac{1}{2}$ inches from the outside face of the girder truss instead of the 24 inches called for. Consequently, the roof angle rose at the intended 45 degrees, dove to 43 degrees, then climbed back to 45 degrees. Although each plane sticks out like a sore thumb when the sun is low in the sky, the homeowner will have to learn to live with it.

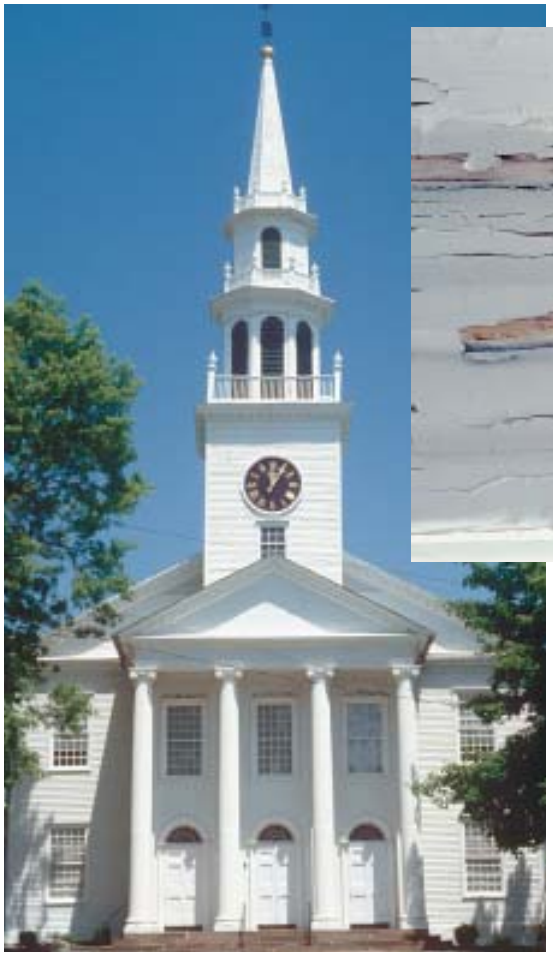
School Daze

Entering her classroom one morning, a teacher at a one-year-old slab-on-grade elementary school is startled by huge mushrooms sprouting out of the vinyl-tiled floor. A scan of the plan reveals that the classroom floor slab is depressed below the level of the sidewalk leading to the entrance door. This was done so that the sidewalk and floor would be at the same elevation. The sidewalk, of course, slopes toward the door. Water puddled on the sidewalk runs under the threshold and pools on the slab, where it saturates the plywood subflooring under the vinyl, creating conditions ideal for rot. This predictable problem wouldn't have happened had the architect properly put an interceptor grate and drain outside the door.

Hot-Air Headache

A homeowner complains of chronic peeling paint and red-brown stains on

the cedar bevel siding on his three-year-old two-story house, which is painted white. Most of the peeling and staining occurs between pairs of windows on the first floor beginning at the level of the rim joist between stories. Like many houses, this one has a forced-hot-air heating system with a humidifier. The hvac contractor, for reasons known only to him, routed the ductwork for the second floor up through the exterior walls instead of inside the interior partitions. The ductwork is uninsulated, joints between sections are not sealed, and the stud bays containing the ducts have virtually no insulation in them. Every time the heating system operates, it blows hot, humid air inside the walls. The resultant condensation wets the sheathing and siding, then discolors and pops the paint. No matter what correction is chosen, it will surely be expensive.



Follow the Instructions

A painting contractor uses a chemical stripper to remove 25 layers of lead-containing oil-based paint from the exterior of a historic wooden church, then repaints. Within months, the new primer and paint are cracking, flaking, and peeling to bare wood from foundation to steeple. The stripper the painter used is highly alkaline, just like the chemicals used for pulping wood in making paper. Apparently, the painter got frustrated that leaving the stripper on for only as long as the manufacturer recommends wasn't removing enough paint, so he decided to leave it on longer. So much longer that it pulped the surface of the wood. Primer and paint were then brushed onto this surface layer of damaged and weakly attached wood fibers. The stress exerted by the shrinking and swelling of the wood, as well as by the shrinking of the primer and paint, tore the surface layer of pulped fibers off the underlying good wood. Telltale wood fibers obscured the back of the peeled film. Salvaging this project meant scraping off the new primer and paint, sanding away the damaged wood fibers, neutralizing the residual stripper with acid, washing off the acid with water, letting the wood dry, fine sanding the wood, then repriming and repainting.

Fast-Track Train Wreck

A contractor was converting several old wooden warehouses into retail shops and office space on a tight schedule. In early August he poured a cementitious leveling compound over the existing floors, then soon laid sleepers and southern pine plank flooring so that he could frame the interior partitions on a smooth,

even base. By mid-October the flooring had been sanded and finished. A few weeks after the heat was turned on, tenants complained that there were wide gaps between planks and that the planks had arched upward. Thousands of square feet of flooring went south on this project because its moisture content was too high when it was installed. After being laid, the bottom of the planks adsorbed water vapor evaporating from the still-drying leveling compound. This caused them to cup, with their edges raised above the centers. When the cupped planks were sanded flat, the raised edges were taken off. Once the heat was turned on, all hell broke loose. Gaps between the planks grew excessively wide as they shrank in width because their moisture content had been too high when they were laid. Though the planks seemed to arch upward, they actually reflattened as they dried out, revealing a condition known as crowning, in which the center is raised above the edges. Because sanding the planks when they were cupped left their edges thinner than their center, the edges ended up lower than the center when the planks reflattened. Most of the crowning was removed by careful sanding, but nothing could be done to narrow the gaps.

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