Q&A

Q. Vapor Retarders and Building Inspectors

I'm building a house in North Carolina, which has a mixed-humid climate (climate zone 3). My local building inspector — backed up by his boss — requires a polyethylene vapor retarder on the interior side of cellulose-insulated walls. My insulation contractor says that interior polyethylene is not only unnecessary in this type of climate, but it may create condensation problems. What should I do?

A. *Martin Holladay, editor of* Energy Design Update, *responds:* Your insulation contractor is correct: An interior polyethylene vapor retarder should not be installed in North Carolina. During the summer months, when interior drywall is cooled by a home's air conditioner, condensation can occur on the back (exterior side) of the polyethylene. This phenomenon — called inward solar-vapor drive — occurs after a rainstorm, when sun shines on damp siding. As the siding warms up, water vapor is driven into the wall, allowing condensation to form on the cool polyethylene. This is particularly a problem in homes with so-called "reservoir" claddings — such as brick, stucco, and adhered stone veneer — and in homes without foam sheathing.

Evidently, your local building code does not reflect recent changes adopted by the international codes. The 2004 supplements to the IRC and the International Energy Conservation Code (IECC) abolished all vapor-retarder requirements in climate zones 1, 2, 3, and 4. Moreover, the most recent versions of these codes (the 2007 supplements) provide new levels of flexibility in the remaining requirements for vapor retarders in climate zones 5 through 8.

Even older versions of most residential codes never required interior polyethylene. Until recently, codes defined a vapor retarder as "a material having a permeance rating of 1.0 or less when tested in accordance with ASTM E96," a requirement that can be met with a layer of vapor-retarding paint applied to the drywall. Show your local building inspector a can label; you may be able to satisfy him and conform to current national energy codes with this low-cost compromise.

If you can't change your inspector's mind with education or logic, it might necessary to follow the path of least resistance and cover your walls with a so-called "smart" vapor retarder like CertainTeed's MemBrain (800/233-8990, www.certainteed.com). Since the permeance of MemBrain varies with the relative humidity, it will allow a wall to dry to the interior during North Carolina's hot, humid summers.

Q. Removing Epoxy Grout

After the tile installer left one of our recent projects, we found dried epoxy grout on some of the bathroom's fixtures. He also failed to remove the grate from the shower drain when he grouted and now excess epoxy clogs the drain and fills in the screw slots, making it impossible to remove the grate for cleaning or replacement. Is there an easy way to clean up his mess?

A. *Mark Brooks, technical services manager with Laticrete International, responds:* For spot removal of excess epoxy grout, your best option is to use a heat gun capable of reaching 500°F. (Don't use a torch, which is too hot and may scorch or crack the adjacent surfaces.) The heat gun will soften the cured grout so that you can scrape it off the fixtures and out of the screw slots. After you've removed the grate, you should be able to clean the softened grout from it too.

You can also use this approach to remove individual tiles, though mechanical or chemical methods are suggested for large-scale grout removal. (For more information, see Laticrete's technical data sheet TDS-400 at www.laticrete.com.)

As with most tile repairs, it's a good idea to try this method on an inconspicuous area or test patch first, since a heat gun can damage finishes as well as some soft glazed tiles. Be sure to consult the manufacturer of the fixture or setting product — in this case, the drain assembly and waterproofing membrane — to determine its maximum exposure temperature; typically, epoxy grouts begin to soften at about 160°F. Work slowly, use tools that won't scratch the chrome — like wooden scrapers and Scotch-Brite pads — and provide adequate ventilation, since heated epoxy grout can give off a fairly strong odor.

GOT A QUESTION?

Send it to Q&A, *JLC,* 186 Allen Brook Lane, Williston, VT 05495; or e-mail to jlc-editorial@hanleywood.com.

Q&A

Q. Fix for Bouncy I-Joists?

Instead of glue and nails, my framing subcontractor used screws to fasten the sheathing to the I-joists of a new 14-foot-wide addition. While there are no interior walls bearing on the floor system and no excessive notching in the I-joist flanges — and the joists fall well within the APA's allowable span guidelines — my clients say their floor is excessively bouncy. Does the use of adhesive contribute to the stiffness of an I-joist floor system? Would it help to add midspan blocking?

A. *Bryan Readling, P.E., senior engineer at the APA/Engineered Wood Association, responds:* Midspan blocking — typically used with sawn lumber joists — isn't normally recommended for I-joist floor systems. In a floor framed with sawn lumber, blocking helps joists share loads so that a weaker joist may be reinforced by stronger joists on either side. Blocking also helps to vertically align twisted joists, improving their performance. But since I-joists are already straight and uniform in strength, blocking doesn't add significantly to their performance.

Construction adhesives prevent movement of the floor sheathing relative to the joists, eliminating a common source of squeaks: vibrations created as fasteners rub up and down within the floor sheathing. Glued floor sheathing also increases each joist's effective cross-sectional area and stiffness. The enhanced bond allows the joist and sheathing to act together in response to short-term loads, like foot traffic. In fact, not using glue with either nailed or screwed-down floor sheathing could reduce the allowable span of a residential I-joist by as much as 12 inches.

It's unlikely that your floor joists are overspanned. The span tables for most I-joist systems are based on an L/480 deflection, stiffer than the building-code minimum of L/360. (The tables also assume glued-nailed sheathing.)

Deflection of the floor sheathing between the joists shouldn't be contributing to the problem, since 23/32-inch APA-rated Sturd-I-Floor can span up to 24 inches, according to code. With joists 16 inches on-center, this floor sheathing has a "code-plus" allowable live load of 240 pounds per square foot. And using a liberal amount of floor-construction adhesive (I like to see squeeze-out on both sides of the joist) can stiffen the floor sheathing even further by limiting rotation at the connection.

The easiest way to improve a bouncy floor is to add furniture and carpeting. Extra mass dampens floor vibrations, while carpet and pad tend to soften footfalls and make vibrations less apparent.

Q. Finger-Jointed Studs

Can finger-jointed studs be used for wall plates and short window and door headers?

A. *Paul Fisette, director of Building Materials and Wood Technology at the University of Massachusetts Amherst and a* JLC *contributing editor, responds:* Besides being resource-efficient, the use of finger-jointed wall framing provides straighter, better walls — but if your studs are rated "for vertical use only," then the short answer is no.

While the IRC (2006, R602.1.1) allows graded finger-jointed lumber to be used interchangeably with solid-sawn members of the same species and grade, "for vertical use only" means this engineered product is equivalent to "stud"-grade lumber (the grade stamp should also indicate "stud"). Stud-grade lumber can have knots and other strength-reducing characteristics that compromise performance under bending stresses but not in compression. Both finger-jointed and sawn studs are strong enough for short-term bending or tension loads (from wind, earthquakes, and impact, for instance), but not for long-term exposure.

Practically speaking, continuously supported bottom plates and top plates with upper-level joists or rafters oriented directly over studs are not subject to continuous bending loads, so you could try to seek approval for this use of stud-grade lumber on a case-by-case basis from your building inspector. But the material is not meant for this purpose, and it comes in only 10- and 12-feet lengths, which is not ideal for most plate applications. If you want to use finger-jointed top plates, it's better to specify structural finger-jointed lumber (labeled "CERT EXT JNTS").

A final caveat: Finger-jointed studs can't be used in fire-rated assemblies unless they are labeled HRA (heat-resistant adhesive).