

Q&A

Q. Leaky Stucco

I've discovered leaks in the wall cavities of a large, multi-family building my company recently completed. The building has a three-coat stucco finish, and the leaks seem to be located primarily around the windows. An exploratory hole cut in the drywall revealed that the stucco sub's screws missed the studs quite often during installation of the metal lath, creating lots of holes in the stucco wrap. Could water be getting through (or behind) the stucco and entering the building through these holes? If so, how do I fix the problem?

A. Ron Webber, a veteran plastering contractor in Orange, Calif., responds: With the right preparation — including a proper drainage plane and flashing — three-coat stucco should keep 99 percent of the water out of a building; any incidental water that does get in behind the stucco should find a way out, typically through the perforated weep screed at the base of the stucco rather than through holes made by fasteners penetrating the drainage plane. In my experience, it's much more likely that the windows and other penetrations are leaking than the stucco itself.

But before jumping to any conclusions, do some water testing. At the window that seems to be the leakiest, mask off the stucco by taping poly sheeting to the window frame, leaving only the window exposed. Then let water run against the window, allowing the tracks in the frame to fill with water while observing from the inside. If you haven't done so already, you'll have to cut some inspection holes in the drywall so that you can watch for drips (a flashlight will help).

After running water against the window for an hour or so, let everything dry out and reverse the process by masking off the window and wetting the stucco. If water shows up inside, you'll need to determine if the water is going through the stucco or getting in at the gap

between the stucco and the window frame. First, wet the stucco without getting any water into the gap between the stucco and the window frame; then squirt water into the gap. Using the process of elimination, work your way slowly and systematically from bottom to top, looking for the source.

The repair method depends, of course, on the source of the leakage. For example, if water seems to be entering gaps between the stucco and window frames, try recaulking. One effective repair technique is to cut a $\frac{3}{8}$ -inch to $\frac{1}{2}$ -inch-deep saw kerf into the stucco around window and door frames before installing hydrophilic backer rod and a quality polyurethane sealant.

If the joints of the window frames themselves are leaking, contact the window manufacturer. Cracked welds in vinyl windows — often caused by rough handling during installation — are more common than you might think, and it's possible the manufacturer has a warranty or a method of repairing frame cracks.

Hairline cracks in the stucco are typically caused by shrinkage and are mostly a cosmetic problem, but larger cracks could be a source of water intrusion. If the cracks reappear after being repaired (see "Patching Stucco," 9/97), they may indicate structural problems that will need addressing (in which case some major sections of stucco may need to be removed from the building).

Finally, don't get talked into applying an elastomeric paint as a quick fix. While the good finishes I'm familiar with are all very effective at holding water out of sound stucco (and are vapor-permeable as well), they won't solve a serious leakage problem. In fact, I've seen elastomeric water balloons develop around the bottom of walls.

Q. Finishes for Garages

Are there any code-approved sheathing materials for a garage under a living space other than the typical $\frac{5}{8}$ -inch drywall? My clients complain that drywall doesn't hold up well in our environment, so I'm wondering if fire-retardant plywood would be a good substitute if the joints are properly prepared.

GOT A QUESTION?

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



A. *Lynn Underwood, an engineer, licensed contractor, and building code official in Norfolk, Va., responds:* There are two approaches to code compliance: prescriptive and performance. The prescriptive approach is like reading a cookbook: Follow the recipe spelled out in the code book — in this case, the 2006 IRC — and you won't have any trouble with your local code official. Among other conditions, Section R309.2 of the IRC requires that "garages beneath habitable rooms shall be separated from all habitable rooms above by not less than $\frac{5}{8}$ inch (15.9 mm) Type X gypsum board or equivalent."

The performance approach to code compliance is trickier. In the code language above, the key word is "equivalent," which means that materials that can be shown to perform equal to or better than $\frac{5}{8}$ -inch Type X gypsum board may also be allowed. For example, according to Table 720.1(3) in the IBC (items 21 and 22), two layers of $\frac{5}{8}$ -inch Type X drywall are needed to attain

a one-hour fire-resistance rating. Thus, it's reasonable to suppose that one layer of $\frac{5}{8}$ -inch Type X drywall — the thickness required by the IRC's Section R309.2 — has a fire-resistance rating of approximately 30 minutes.

According to the ICC evaluation report of a major manufacturer, its FRT plywood has a 30-minute rating for both surface-burning and flame-spread characteristics (per ASTM E84), but that is *not* a fire-resistance rating (per ASTM E119 or IBC 703.3). What I'd recommend is installing the FRT over the $\frac{5}{8}$ -inch Type X drywall on the ceiling; since only regular $\frac{1}{2}$ -inch drywall (or the equivalent) is required on garage separation walls, I would think that FRT plywood sheathing would be an acceptable alternative there.

Another durable finish option might be cement board, such as Durock or HardiBacker, but that would depend on its evaluation report and acceptance by your local code official.