On the House

Shrinkage Joints in EIFS Cladding

Q. *We're building a three-story house with plywood sheathing that will be covered with EIFS. Because the house has 9-foot ceilings, the horizontal sheathing joints don't fall near the band joist area. The EIFS rep says we have to plan for joist shrinkage by establishing a control joint, and he wants us to cut through the plywood sheathing at the floor line. I think the plywood sheathing is structurally important, and I'm reluctant to cut the sheathing where it ties the floors together. What should we do?*

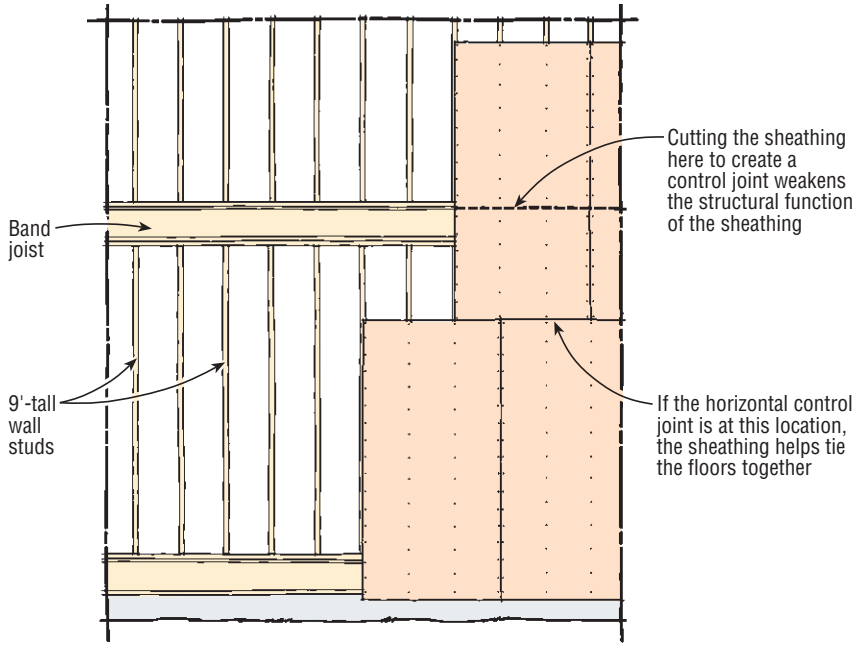
A. *John Edgar, senior technical services manager at Sto Corp., a manufacturer of EIFS systems, responds:* When EIFS is installed on a wood-frame building, EIFS manufacturers recommend the installation of a horizontal joint in the sheathing at floor lines (see "Success With EIFS," 11/01). The purpose of the joint is to accommodate the cross-grain shrinkage in the floor joists, as well as any settling. (This type of shrinkage can cause problems with many types of cladding, including EIFS, brick veneer, and vinyl siding.) In addition to providing a gap in the sheathing, a flexible joint is provided in the EIFS cladding, to accommodate the movement that occurs as the sheathing joint closes.

This standard detail is problematic when the sheathing spans the floor line to structurally tie the upper floor to the lower floor, as is often the case in seismic zones and high-wind coastal areas. In such cases, the EIFS joint should be installed at the nearest horizontal joint in the sheathing, even if that is not at the floor line. As the joists shrink, the stress will probably be focused at that sheathing joint.

This is the best solution, but it is not ideal. The stresses are somewhat unpredictable — if the sheathing is securely restrained above and below the floor line and the shrinkage is severe, the sheathing may bulge as it is compressed, causing the EIFS also to bulge out or crush at that point.

More information can be found in the *EIMA Guide to EIFS Construction*, which is posted at the website of the EIFS Industry Members Association at www.eima.com.

EIFS Control Joint



Clapboard Paint Problems

Q. *The red cedar clapboard siding on a house in the Boston area was not backprimed and has typical moisture-related paint failure. It has been painted five times in 25 years. The house has no interior vapor barrier. I am considering removing the siding and installing new backprimed clapboards over a vented rainscreen. Will the rainscreen installation solve the problem of premature paint failure, or must I address the lack of an interior vapor barrier?*

A. *Mark Snyder, a builder who works in Massachusetts and Vermont, responds:* Installing new backprimed clapboards over a rainscreen will almost certainly solve the problem of premature paint failure, regardless of whether the house has an interior vapor barrier. If you think an interior vapor barrier is important, you could paint the interior walls with a vapor barrier paint. In addition, the homeowner should know that every house needs adequate mechanical ventilation, both to maintain indoor air quality and to reduce the chance that interior humidity could migrate into the walls.

GFCI Protection for Shower Lighting

Q. *In a bathroom remodel, we plan to install a light fixture in a shower stall, with a switch near the shower door. Do the fixture and switch need to be GFCI-protected?*

A. *Master electrician Sean Kenney responds:* The short answer is yes. Although the *NEC* does not require either the switch or the light fixture to be GFCI-protected, most lighting fixtures designed for use in a shower stall require GFCI protection to meet UL requirements. Providing GFCI

protection for a switch within reach of a shower stall is a good safety practice, even when not required by code.

It's worth consulting your local inspector before you locate a switch within reach of a shower stall. Even though the *NEC* allows such an installation, two inspectors have made me move switches so they were out of reach of the shower stall.

Vinyl Siding Over Fan-Fold Foam

Q. *Before installing vinyl siding over existing wood siding, we first install a layer of fan-fold foam insulation. Is the fan-fold foam an adequate weather-resistive barrier?*

A. *Corresponding editor Paul Fisette responds:* Rigid foam will shed any water that gets past leaky vinyl siding. To be an effective weather-resistive barrier, though, the seams of the fan-fold must be carefully taped, since any seam can provide a pathway for water to reach the structure under the foam. As long as the foam is not foil-faced, the best tape is contractor's tape from 3M. It's always a good idea to check with the foam manufacturer to be sure that the tape you use is compatible with its product.

Fan-fold is typically sold in 1/4-inch by 4-foot by 50-foot sections and is installed horizontally across the existing siding to level out irregularities before re-siding with vinyl. This creates a horizontal seam every 4 feet. I have not seen any studies that show how well tape adheres to foam over the long haul. I am mildly concerned that if the tape fails and a horizontal joint is not flush (with the lower panel sticking out beyond the upper panel), a seam could trap water. To avoid this potential problem, you may want to consider installing the fan-fold vertically.

All penetrations, as well as areas around doors and windows, require careful detailing. If the fan-fold and J-channel are simply butted against existing window and door casings, water can get between the J-channel and the casing, and then behind the fan-fold. Proper flashing details at windows and doors may require installation of new flexible flashing, head flashing, and casing.

Sizing a Range Hood Fan

Q. *How do I size the exhaust fan for a range hood above a gas cooktop?*

A. *Paul Raymer, president of Tamarack Technologies in West Wareham, Mass., responds:* The Home Ventilating Institute (847/394-0150; www.hvi.org) recommends that a range hood exhaust fan should have a flow rate of 40 to 100 cfm per foot of range width. For example, a 30-inch-wide range should have a minimum flow rate of 100 cfm and a maximum rate of 250 cfm.

A gas cooktop is a combustion appliance, and it requires an exhaust fan to remove not only cooking odors and smoke, but also combustion byproducts from the gas burner. The range hood exhaust fan should be thought of as one component of a house's ventilation system. Whenever air is exhausted from a house, an equal volume of air must be able to enter the house. The house's exhaust system includes all appliances that exhaust air, including the range hood, bathroom fans, clothes dryer, central vacuum cleaner, and any combustion appliance that is not a sealed-combustion unit (including a furnace, boiler, water heater, or fireplace).

Usually these devices are not all operating simultaneously, and most older houses are so leaky that negative pressure is not a problem. But in a tightly built house, a range hood fan — even a 100-cfm unit — may not operate effectively unless a window is opened.

Got a question?

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