

BY DOUG HORGAN

Three Ways to Install Drainable EIFS Wrong (and One Way to Make It Work)

The original EIFS (exterior insulation finishing system) was a very problematic system when used on wood buildings. There was no drainage or drying space behind the synthetic stucco. If any water leaked anywhere into the wall, it was stuck there and would soak the wood and cause rot, biological growth, and permanent damage.

Manufacturers realized pretty quickly that they had to reinvent the system to be less likely to fail, and they came up with “drainable” EIFS (or “drainage” EIFS). As you can tell by the name, drainable EIFS has pathways for water to drain out, should it get in. In theory these are great, but as they say, “in theory, theory and practice are the same, but in practice they are not.” (I first heard this from Joe Lstiburek, but the saying’s been around a while.) We’ve had the opportunity to fix a few problems with drainable EIFS—and even nearly make our own mistake with it—so let me share what we’ve seen.

Vertical grooves. Several of the systems use foam base sheets with vertical channels cut into the foam facing the wood wall. Water can drop down in the channels and drain out the bottom of the system.

Someone should have explained that to the crew that installed the foam board on a house we stripped and re-stuccoed when the EIFS failed in several areas. They ran the channels up and down on the main parts of the walls, but for unknown reasons, they ran the channels horizontally at the rim-joist level all the way around the house, totally blocking the drainage at every level.

Vertical adhesive. Another style of drainable EIFS uses ordinary, flat foam boards, but they’re adhered to the wall with a thick adhesive applied with a notched trowel. The idea is to make vertical drain channels between the beads of adhesive.

On our first install with this system, I watched a very skilled troweler carefully float out a dip in the wall, then scratch the channels in the last layer of mud. However, we had apparently failed to communicate that the channels had to be vertical because he elected to run them horizontally in this area, probably more to do with how he had to stand while working on it. We took advantage of this learning moment to reiterate to the entire crew that the vertical channels were a key part of the install, and they were happy to do it correctly.



“Drainable” (or “drainage”) EIFS has vertical drain channels behind the foam insulation board. The channels can be molded into the back of the foam (1) or made with adhesive applied with a notched trowel (2).



Drainage channels (arrows) were installed horizontally at the band-joint area on this house, blocking the vertical channels above (3). (We had already replaced the sheathing visible here, since the trapped water had rotted out the original OSB.)

I think we got that job done right, but I still don't love this system. Even if the installers are on board with the concept, it's too easy to squeeze the adhesive beads flat so they cover nearly the entire area, leaving only tiny drain spaces—or worse, to inadvertently fail to line up the gaps between boards, which again will completely block the vertical channels.

Drain exits. Another issue we've seen is where vertical channels are all run properly, but the exit path is blocked off. On one house, metal head flashing was installed above every window and door, which should have directed draining water out. But, someone had very carefully caulked above the flashing, completely sealing any draining water into the wall. (This may have been a different crew or even a later caulking replacement job, but either way, it blocked the drainage.)

We had been working on the house because of a persistent leak at a bad roofing connection. Water in the drain spaces was blocked at the window below and could only soak into the header and seep around the sides of the window, where it caused further damage.

Another house had a plastic track installed at the bottom of the EIFS. The weeps in the track were the outlet for the drain channels on the walls, but the small weep holes were blocked by caulking installed between the track and additional EIFS installed on the foundation wall below. Water soaked into the sheathing in the area of the track.

It should be noted that as with other types of draining systems, long-term, repeated water entry will eventually cause damage even with properly installed WRBs and drainage gaps. I've seen this on a few houses. Good wall practices handle small amounts of incidental water, but a consistent source that keeps the drain space wet will result in failure.

Drainage matrix. Ultimately, I've seen enough trouble with these vertical groove systems that I find myself drawn to another



In this view from above of what should be an open drainage space (arrow) between the white EPS board and the blue substrate, it's apparent that adhesive has filled the whole space (4). We had the crew remove the board, revealing that the vertical channels were blocked by the additional adhesive used to flatten a dip in the wall (5).

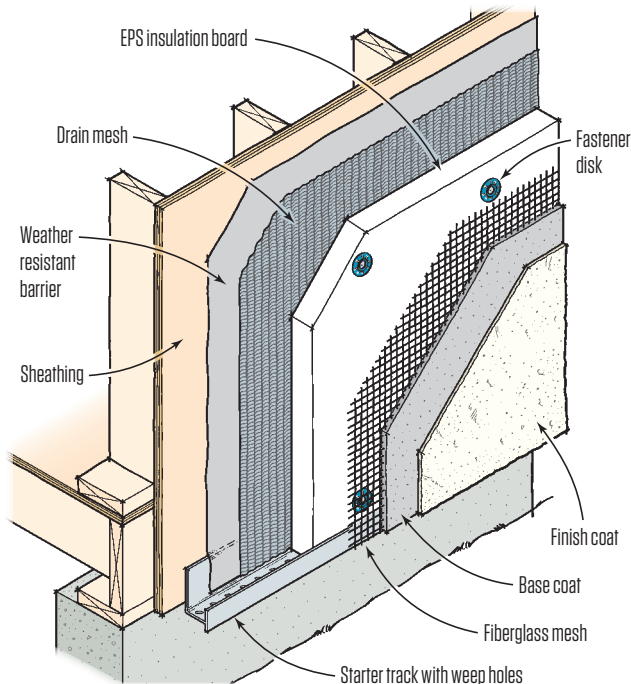


The heavy bead of sealant on top of this window head flashing blocked the drain path from the vertical channels above the window (arrow) **(6)**.



Heavy caulking blocked the weep holes in this plastic track installed at the bottom of the drained EIFS on the wood walls **(7)**. The trapped water caused water staining all along the bottom of the wall, visible in the background.

Drainable EIFS System



Drain-mesh material allows vertical drainage as well as drying in every direction, with better airflow than small vertical channels. It's now commonly stocked at suppliers and works with standard flat foam boards.

way to install EIFS so it drains: Use a drain-mesh product behind the foam boards. These plastic mesh materials create a gap in front of the WRB and are sold by several manufacturers; brands include Cedar Breather, Home Slicker (benjaminobdyke.com), Driwall (keenebuilding.com), MortAirVent (advancedbuildingproducts.com), and competitors. We started using it behind wood, stone, and stucco and now use it behind EIFS foam boards.

The advantages of drain mesh are that it's hard to mess up and block off the drain path, and additionally (unlike vertical channels), it allows sideways movement of water and moisture, which should add some resilience when someone does unintentionally block off an entire window flashing or whatever. It also allows more drying in multiple directions, which again should allow more water to be successfully handled by the system. Our stucco and EIFS crews are very familiar with these materials these days, too, and we don't have to explain how to install them, so there's another whole set of potential failures that we avoid.

We haven't recommended EIFS to a client in quite a while. In fact, we usually discuss removing and replacing it altogether, and several clients have had us completely reclad their houses because this is viewed as helpful at resale (EIFS is a red flag for many buyers). But as remodelers, we're still repairing it, tying additions into it, and even sometimes adding it to make additions match existing houses. I'm pretty confident that drain-mesh installations will work well over time, as long as we don't dump a lot of water into the gaps.

Doug Horgan is vice president of best practices at BOWA, a design/build remodeling company in McLean and Middleburg, Va.