

BY TED CUSHMAN



Pinning Rock Wool to Sheathing

Fireproof, rot-proof, and stable, rock wool (also called “mineral wool”) has a lot to recommend it. In recent years, some builders have come to prefer rock wool not just for cavity insulation between studs, but also for exterior-applied insulation over wall and roof sheathing, as part of a rainscreen wall assembly or a hot roof. The material is free-draining, allowing it to serve as an insulation layer over a water-shedding WRB (weather resistant barrier), whether the WRB is a high-performance housewrap or a fluid-applied membrane.

In Wayland, Mass., the crew of Auburndale Builders is including Roxul rock wool in the superinsulated roof and wall assemblies for a high-end custom Passive House. The home’s walls will achieve about R60, including 10 inches of Johns Manville Spider spray-applied fiberglass in the double-stud wall, plus 4 inches of Roxul applied between the sheathed wall and the home’s brick

veneer exterior cladding (1). The roof will top out at better than R130, including Spider sprayed into the wood I-joist rafter cavities, plus R32 for 8 inches of Roxul applied over the structural roof sheathing (2, 3).

On the wall, the 4-inch layer of Roxul supplies a thermal break between the 10-inch-deep double stud wall and the brick veneer, with no thermally conductive framing interrupting the insulation. A layer of Delta-Dry Stucco and Stone ventilated rainscreen between the brick and the Roxul provides a drainage space and protects the assembly against vapor drive from wet brick; and a taped layer of Siga Majcoat fabric over the CDX plywood sheathing ensures the airtightness and water resistance of the stud wall.

In Passive House terminology, the terms “vapor control layer” and “air control layer” describe the functions of sheet material such as the Majcoat membrane

applied over the wall's plywood sheathing. In high-performance superinsulated walls and roofs such as these, the location of membranes and insulation within the assembly has to be carefully considered.

In theory, the plywood sheathing itself, with seams taped, might be able to serve as an air control layer for a building. But when the goal is Passive House levels of airtightness (0.6 air changes per hour at 50 pascals of pressure, or 0.6 ACH50), that turns out not to be the case—at least not for this house, production manager Mike Dutra told *JLC*. The team's first blower-door test took place on a rainy day, after plywood sheathing had been installed and seams taped, but before the Majcoat was applied. With the house under positive pressure, Dutra said, air was visibly bubbling through the wet plywood. With the fan reversed, Dutra said, water seeped in “like it was raining inside the house.”

Blower-door readings confirmed the evidence of the naked eye: Metered airflows during the test were well above the required 0.6 ACH50 threshold. But applying the Majcoat cut the leakage rate below 0.4 ACH50. The overlaid Roxul will keep the Majcoat membrane warm, in case any interior moisture should reach that plane in the wall and threaten to condense.

To fasten the Roxul to the plywood, the crew is using the innovative InsulFast system from Ramset. It includes both the InsulFast gas-fueled nail gun and the InsulFast plastic fastener, which looks like a giant plastic nail with a hollow shaft (4) and connects with virtually no thermal bridging. Each plastic fastener comes with a preinstalled stainless steel spiral-shank nail at the tip of the tube. The installer jams the plastic nail into the batt at the intended location, slides the gun's driver rod into the shaft, and pulls the trigger to drive the nail (5). Fuel canisters slip into a receiver in the gun's frame (6).

To cut the batts, Auburndale's crew and subcontractors are using a special machete-shaped handsaw manufactured by Hultafors (available at repconnw.com) (7). At outside corners, the installer can first fasten the Roxul batt, then slice it off at the desired angle (8).

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Window Heads Done Right

BY MARK PARLEE

On a recent job, we pulled off the existing casing around the windows. These boards were held on with little more than a caulk line, because the existing T1-11 siding underneath the casing was all but completely rotted away **(1)**. The windows themselves—vinyl-clad Andersen 400 units—were still in excellent condition.

This was a classic case of window heads gone bad. We see it all the time: Without any flashing, water that runs down the siding is drawn into the crevice between the unflashed head casing and the siding and just sits there. In our climate, it never really dries out, and rot is inevitable.

To fix the heads, we cut out the rotted material and applied a standard window L-flashing. This metal flashing had a 2-inch back leg, came out horizontally 1 ¼ inches, and ended in a hemmed drip lip. We taped the back leg of the flashing metal to the wall sheathing using 3M All-Weather 8067 tape. Over that, we applied our new casing—in this case, a piece of LP SmartSide Trim, which is an OSB-type product. The existing casing had a 45-degree end cut—a bit unusual, but the owner wanted to keep it.

Over the casing, we applied another piece of 24-gauge galvanized metal. This also had a 2-inch back leg, came out over the top edge of the casing, and turned down in a

drip lip **(2)**. We taped the back leg to the existing siding, then covered the old siding with a new weather-resistant barrier—a layer of Tyvek StuccoWrap—which we brought over the back leg of the flashing.

We applied a new layer of T1-11 siding, holding it a full ⅜ inch above the head flashing. While ¼ inch is allowed, we've seen the surface tension of water bridge ¼ inch. No one will notice the larger, ⅜-inch gap as long as the siding is cut dead straight across the top.

To finish the job off, we caulked everything in with a high-quality polyurethane caulk. We were careful to seal the siding at each end of the head—a detail that acts much like a kick-out flashing on a sidewall to direct water to the outside **(3)**.

The whole thing was painted out with two coats of Sherwin-Williams Resilience exterior acrylic latex. Resilience dries rain-fast in 30 minutes, so my painter can apply multiple coats in one day. We always spec a satin finish, which seals better and is self-cleaning; it won't hold dirt and ends up looking better over the life of the job.

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Photos by Mark Parlee