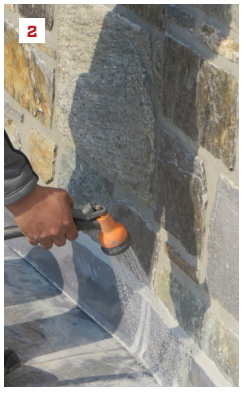
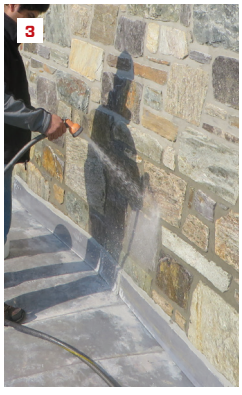
BY DOUG HORGAN

Getting to the Bottom of a Stone-Veneer Leak





The roof over a bump-out abutted the second floor's stone-veneered wall. Water-testing progressed upward: First, the soldered metal roof was water-tested **(1)**, then the counterflashing and the sealant joint just above the roof **(2)**, and last, the stone wall above the flashing **(3)**.

After 10 minutes, water appeared inside the house at the bottom edge of the felt WRB, which terminated at steel angle shelf **(4)**. Removal of a stone confirmed that through-wall flashing had not been installed **(5)**.

Photos by Doug Horgan; illustrations by Tim Healey

New clients had a problem with their existing home: A projecting bay would leak at the ceiling during heavy rain. It had happened often enough that they had removed the drywall and insulation, ready—we imagined—to place buckets below to catch any incoming water.

Located on the first floor, the 4-foot-by-10-foot bumped-out bay had a soldered metal roof that appeared to be in good condition. We water-tested the roof and found no leaks **(1)**. We didn't want to test the whole structure at once; we wanted to start at the bottom and work our way up so we could locate the issue. So next we moved our gentle water spray up onto the flashing, aiming the water downward to avoid wetting areas above the flashing. The flashing itself didn't leak, so we moved a bit higher, to the sealant joint at the top of the flashing **(2)**. This too didn't seem to leak.

We then started spraying the stone wall above the flashing **(3)**. While roofing and flashings often leak within a few minutes, our experience with masonry is it can take 10 minutes or longer for water to leak all the way through and appear inside. Sure enough, after about 10 minutes, a steady drip started off the bottom edge of some building felt that terminated at steel angle shelf **(4)**.

At this point, we were pretty sure the masonry was missing a through-flashing that would direct water out of the wall above the roof, a common and easily avoided problem we find fairly often in our area. To confirm, we removed some stone above the roof to see how it had been built **(5, 6)**.

We discovered the roof flashing was cut into the face of the stone and went in only about 1/2 inch **(7)**. Any water draining down within or behind the stone veneer would simply run down past the roof into the ceiling inside the house (see "Leak at Stone Veneer," next page).

A multilayered solution. We removed the stone down to a block starter course **(8)**. The existing double WRB layer, which consisted of 30-lb. asphalt felt over a layer of Tyvek, was also removed. (Ultimately, we discovered enough problems with the stone veneer that we ended up removing all of the stone on the addition portion of the home.)

For the first layer of our multilayered solution, we installed a flexible, self-adhesive membrane through-wall flashing over the existing block starter course and up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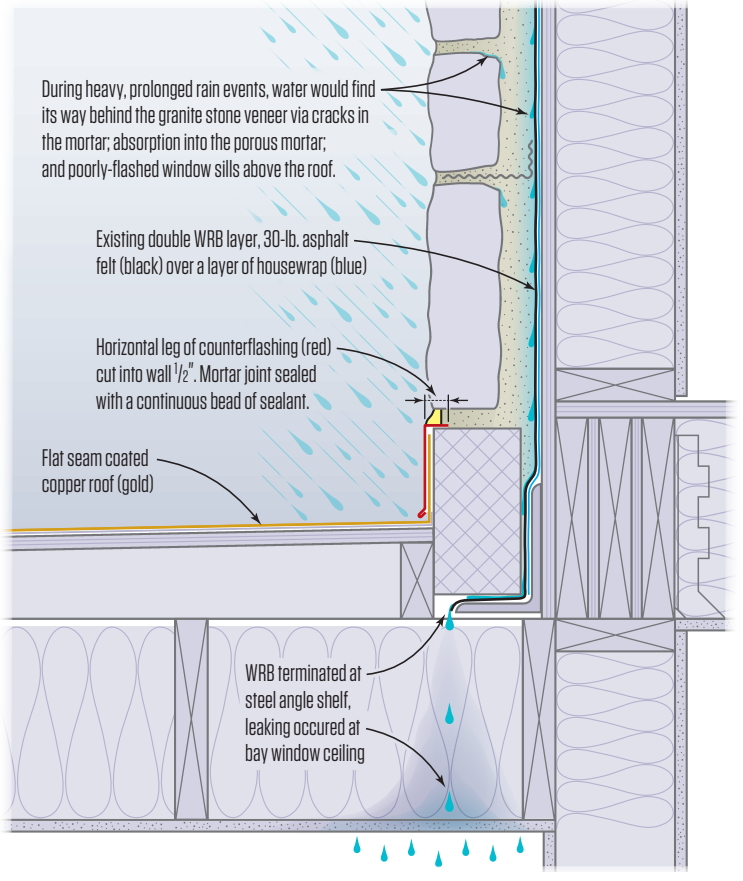
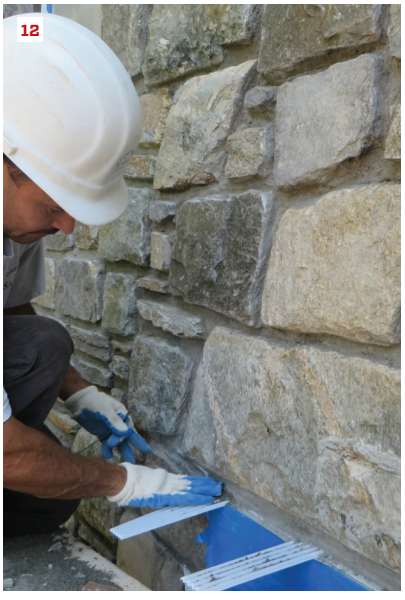
The roof counterflashing was inserted into the face of the stone **(6)** about 1/2 inch **(7)**. The continuous bead of sealant at the saw-cut-in flashing may have helped keep bulk water outside during lighter rain events, but when it rained long and hard enough, water draining down behind the stone veneer would simply run down past the roof and into the ceiling below (see illustration, right). The existing mortar had been mixed up dry on site and so was very loose and porous. The stone had been laid up without an air space, which was code-legal for a brief while in the vicinity where the author works. Though it was common practice, it was not ideal from a water-management perspective. Installing proper through-wall flashing entailed having to remove the granitic stone veneer **(8)**.

Leak at Stone Veneer





After the self-adhering membrane backup flashing was installed, the metal through-wall flashing was installed over it (seen here on an adjacent roof) **(9)**. The exposed face of coated copper flashing was protected with blue tape, then the water management layers were installed on the wall **(10)**. Self-spaced corrugated plastic weeps provided enhanced draining **(11, 12)**.

the wall sheathing. The membrane flashing helped dry in the roof-to-wall juncture and would serve as a backup flashing under the metal flashing; metal flashings have a tendency to leak at seams over time.

At roof-to-wall junctures, we typically install a two-piece through-wall flashing, which allows the roof to be repaired more easily later on **(9)**. The first, "through-wall" piece is fabricated with a 1-inch-tall vertical leg with a hook strip on the outside edge. The second piece, run vertically between the flashing's horizontal leg and the roofing, is clipped into the hook strip (this second piece can be removed and reinstalled as needed). (See "Through-Wall Flashing," right).

We installed the water-management layers on the wall so they landed on the through-flashing; any water entering the stone now is directed out onto the roof by the through-flashing. In this case, we used a self-adhered WRB—because of the multiple existing nail holes in the sheathing—added a layer of building paper and a masonry drain-mesh material, and re-installed the stone veneer **(10, 11, 12)**.

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Through-Wall Flashing