



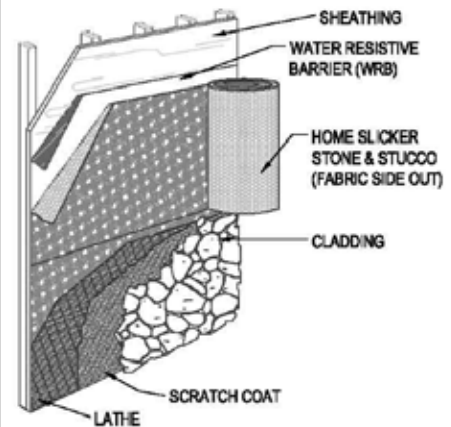
Photos: Steve Easley

Adhered thin veneer masonry has no drainage space to allow water to drain freely.

stick it to a thin layer of mortar without additional foundation thickness.

In addition to being lightweight, thin veneer stone is more porous than natural or cast stone. Thin masonry veneer weighs less than 75 lbs. per cubic foot or less than 15 lbs. per square foot; the reduced weight results in a fairly porous material that can absorb water. Contrast this with solid limestone, which weighs 171 lbs. per cubic foot and is a little less prone to absorb water.

Capillary action is a primary mechanism for moisture movement in this material. This would be considered a reservoir cladding system, which means that like all masonry materials it can store water. In my opinion, AMSMV is very similar to stucco in



Shown here is the installation sequence for the drainage matrix, courtesy Benjamin Obdyke.

the way it behaves with water. Codes for years have required two layers of weather resistive barrier behind stucco, so why should thin stone veneer be any different?

This two-layer system creates a drainage plane. Wind-driven rains can easily exert 6–10 lbs. per square foot (often more) of water pressure on a cladding system. The AMSMV absorbs the water and then it can wick through

Weatherproofing and Synthetic Stone Veneers

Adhered manufactured stone masonry veneer is lightweight and attractive, but you must mitigate water intrusion to prevent failures.

By Steve Easley

I receive a fair number of inquiries regarding synthetic stone water intrusion problems, or what the industry now refers to as adhered manufactured stone masonry veneer (AMSMV). In my job site visits I've seen a number of installs that have resulted in failure. Failures range from the OSB rotting and the stone buckling to water intrusion and mushrooms in the wall cavity.

Overall, AMSMV is a good material, but care must be taken during its installation. The goal of any cladding system and weather-resistive barrier (WRB) is to prevent water from reaching the OSB and the interior of walls. The 2006 IRC requires a weather-resistive barrier behind all claddings for good

reason. All claddings can develop leaks over the life of the home. It's not a matter of if it will leak, it's a matter of when.

Having properly installed weather-resistive barriers like home wraps are designed to prevent vulnerable, mold-friendly OSB from getting wet. Adhered thin stone veneer requires more than a weather resistive barrier.

Two Layers Are Better Than One

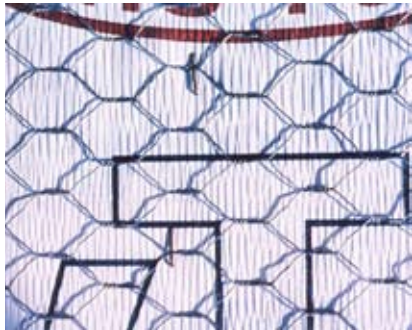
The advantage of AMSMV is that it looks great and is lightweight. It can be applied to a wall system without a brick or stone ledge to support it thus saving costs. Some in the industry use the term lick & stick: You can

Photos courtesy Benjamin Obdyke

the stone and the WRB and be absorbed by the OSB.

Just as with stucco, one layer is not enough because the masonry is in direct contact with the WRB. Because there is very little drainage, the water just sits there and slowly wicks through the WRB—they are not pool liners after all.

You need a minimum of two layers of WRB. I like WRBs that have drainage properties; these are called drainable housewraps. They have creases that can facilitate drainage. This system creates a drainage plane. (Tip of the day: Don't buy wraps with holes punched in them, they leak.)



Photos: Steve Easley

Note the creases in the Drainwrap, which facilitate drainage.

The Rain Screen Approach

The best solution to reduce water intrusion with thin masonry veneer is to apply a rain screen approach. A rain screen system is a small airspace between the WRB and the stone veneer. This creates a drainage space, which functions better to prevent water intrusion than a drainage plane. The principle is much like a rain fly over a tent.

The air space serves two functions: It provides a pressure equalized airspace behind the cladding for drainage and a capillary break, which prevents the wicking of water. This all results in drier sheathing and wall components.

Rain screens have been used for decades in building construction with great success.

The code-required 1" air space behind



Home Slicker Stone & Stucco by Benjamin Obdyke is a 1/4"-thick 3D mesh material that has a fabric mortar block material over it. The 1/4" gap created by the 3D mesh creates the drainage space.

brick veneer is an example of a rain screen. Water that infiltrates through the brick trickles down the back and drains through the weep holes. The success of this system relies on keeping this space clear of mortar droppings for drainage.

When brick systems fail it's because the mortar droppings create a bridge for the water to wick through the WRB as well as the lack of drainage due to plugged or missing weep holes.

I find it unsettling that the manufacturers of AMSMV systems seem to have forgotten the importance of a drainage space and a capillary break.

A Better Plan

One method to create a rain screen for adhered masonry is to apply 1x2 strapping to create the airspace. A second WRB is then placed over the strapping as a mortar block, then the wire lath, mortar, and veneer. The objection to this system is that it is labor intensive and adds thickness that can create depth and cosmetic issues at windows and doors.

I think a simpler approach is to apply a

drain wrap WRB over the sheathing as you normally would, properly integrating with flashing at windows, doors, and penetrations. Then use thin drainage mat materials like Benjamin Obdyke's Home Slicker Stone & Stucco. This product is a 1/4"-thick, 3D mesh material that has a fabric mortar block material over it to prevent the mortar from filling the gaps in the mesh.

The 1/4" gap creates a drainage "space," which is adequate for drainage and the needed capillary break. Then apply the wire lath, mortar, and stone.

This approach is a simple, effective way to create a rain screen system that will reduce the potential for water intrusion for adhered thin masonry veneer, which means your buyers can enjoy the look of stone at an affordable price. **GB**

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