What do you recommend as a weather-resistant barrier between wood-based sheathing and Portland cement plaster/stucco?

Some will argue that one layer of building paper (or housewrap), provided it is water resistant and doesn’t impede vapor transmission, is sufficient. Others assert that one layer of material, regardless of its moisture resistance and permeance, cannot adequately protect wood-based sheathing. Having heard the many opinions on this topic, I’m going to come down on the “better safe than sorry” side of this particular debate.

No doubt a surprise to everyone, the building codes do not all agree on the best approach. Section 2510.6 of the International Building Code states: “Weather-resistant barriers shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a weather-resistant vapor permeable barrier with a performance at least equivalent to two layers of Grade D paper.”

Section 2506.4 of the Uniform Building Code is a bit more specific: “Weather-resistant barriers shall be installed as required in Section 1402.1 and, when applied over wood-base sheathing, shall include two layers of Grade D paper.”

Leaving more wiggle room for the designer, the contractor and the building official, both the Standard Building Code and the National Building Code call for “at least Type 15 felt or kraft waterproof building paper,” without encumbering anyone with a specific number of layers.

I have seen several reports that all types of cladding can suffer soggy wall syndrome if the sheathing used is oriented strand board. Apparently, OSB will absorb surprising amounts of water, will swell to many times its original dimensions, and is very slow to dissipate that moisture once absorbed. Such swelling and moisture retention can result in cracking of a stucco membrane, not to mention the development of rot and mold in the wall cavity. So if OSB is part of the package, it seems only prudent to take extra measures to keep it dry.

Mark Fowler of the Northwest Wall and Ceiling Bureau once explained to me that there are several reasons for using two layers of Grade D paper. First, and most obvious, if there is excessive moisture introduced behind the cladding, the second layer of paper provides an additional barrier to that moisture, preventing it from entering the sheathing or the wall cavity. Additionally, Fowler explained that Grade D paper has the peculiar property of swelling up, wrinkling and creating channels in the back side of the wet plaster as it is applied. Once everything dries out, the paper returns to its original dimensions, leaving drainage channels in the back of the stucco.

The most recent edition of the Northwest Wall and Ceiling Bureau’s Stucco Resource Guide reports the results of a water drainage test confirming Fowler’s assertion: “Finding: The back surface of the stucco basecoat developed shallow vertical waves that functioned as channels for the water to drain down. The channels were a result of the curing of the cement plaster and the effect it had on the water-resistant barrier. A stucco assembly performs as a water-drainage system.”

In the Metal Lath Handbook, author Gary Maylon further makes the case for Grade D paper, although, not necessarily two layers (however, I know Maylon to be a proponent of using two layers): “The lath industry generally recommends the use of grade ‘D’ building paper that meets Federal Specification UU-B-790a, which is water resistant yet retains a high degree of vapor permeability. It is this type of paper that is applied to metal lath at the factory throughout most of the United States and Canada (several other grades are available in limited quantities and limited areas).”

About the Author
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