

**ADVISORY COMMITTEE COMMENT FORM**  
**FOR PROPOSED CODE CHANGES**  
(This form must be submitted electronically)

**IBC 2510.6**

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**Proposed Code Change - Language**

**2510.6 Water-resistive barriers.** *Water-resistive barriers* shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a water resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper. ~~The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section 1405.4) intended to drain to the water-resistive barrier is directed between the layers.~~

**Exception:** Where the *water-resistive barrier* that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60-minute Grade D paper and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space.

**Proposed Code Change – Need and Reason**

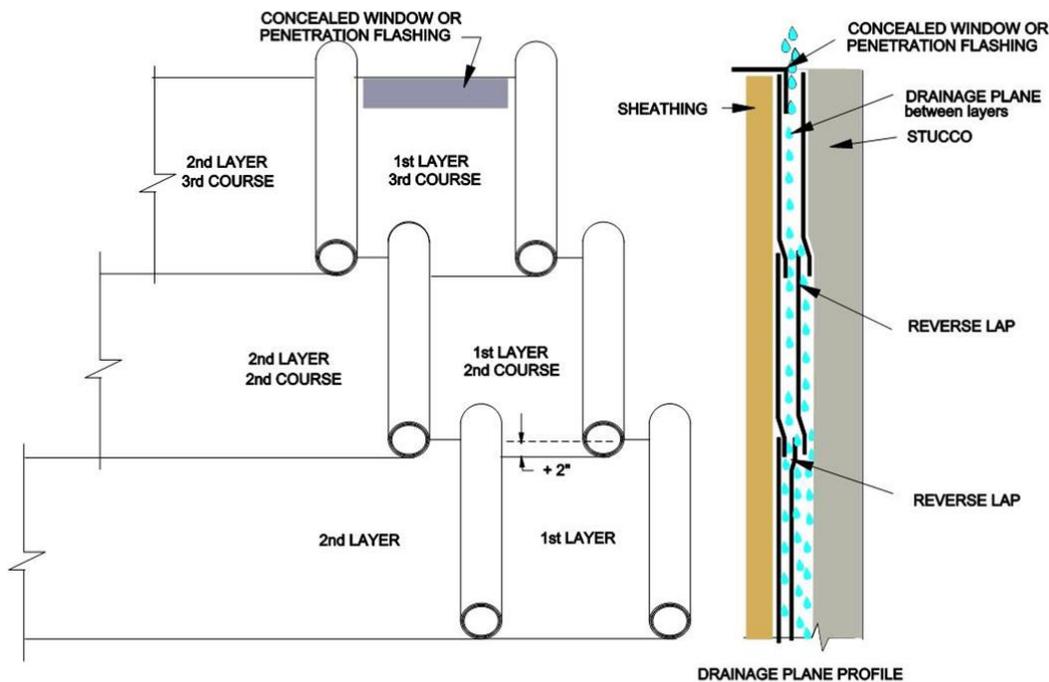
The building codes have held the requirement for two layers of building paper over wood-based sheathings since 1982. The code since that time has never specified that the paper had to be put on in successive applications. Why is it that stucco requires two layers of water-resistive barrier (WRB) where most cladding installations typically require one? To answer this question the Minnesota Lath and Plaster Bureau would like to provide the following quote from an April 1981 symposium on Portland Cement Plastering, hosted by the Association of Walls and Ceilings Industry:

*“In many parts of the country, plywood sheathing is used to construct horizontal shear resisting elements on a building. It has been observed that the incidence of plaster cracking is usually more extensive and severe where plywood backs up the lath and plaster. Evidently the plywood sheathing pulls the water out of the plaster right through the paper backed lath. This osmosis effect tends to make plywood sheathing swell and at the same time deprives the plaster of water needed for adequate hydration. A simple solution to this problem appears to lie in the installation of an additional layer of weather resistant paper. The results are dramatic and well worth the added cost when lathing over plywood or any large wooden member.”* Walter F. Pruter Furring and Lathing Information Bureau

The drainage plane for stucco applications is between the stucco and the outermost layer of building paper. This has been verified by some noteworthy testing:

1. In 1996 the Northwest Wall and Ceiling Bureau sponsored research conducted by Federal Testing Laboratories, to test stucco's water resistance and drainage capacity. When water was sprayed into a designed opening at the top of various stucco panels, it was found to have drained down the full 9 foot height of the panels and weep out the bottom. Interestingly, what was discovered was that as the wet stucco cures and moisture is drawn from the building paper back into the stucco; the initial bond between the stucco and the building paper releases and shallow channels develop in the building paper that allow for the passage of moisture.<sup>1</sup>
2. This was affirmed in a study sponsored by the City of Seattle in 2002. Computer modeling conducted by Oakridge National Laboratory, observed that: "Proper installation of weather-resistive barriers and integration with flashing is one of the most important factors in the successful performance of exterior walls. Two layers of WRB (one layer installed over the other) behind the exterior cladding was shown to provide better drainage control over one layer.)"<sup>2</sup>

What happens when you put the two layers up in two separate applications? The second layer creates reverse laps from the first layer. The reverse laps it would seem would amplify any moisture problem rather than mitigate it. This could be problematic with stucco. See illustration that follows.

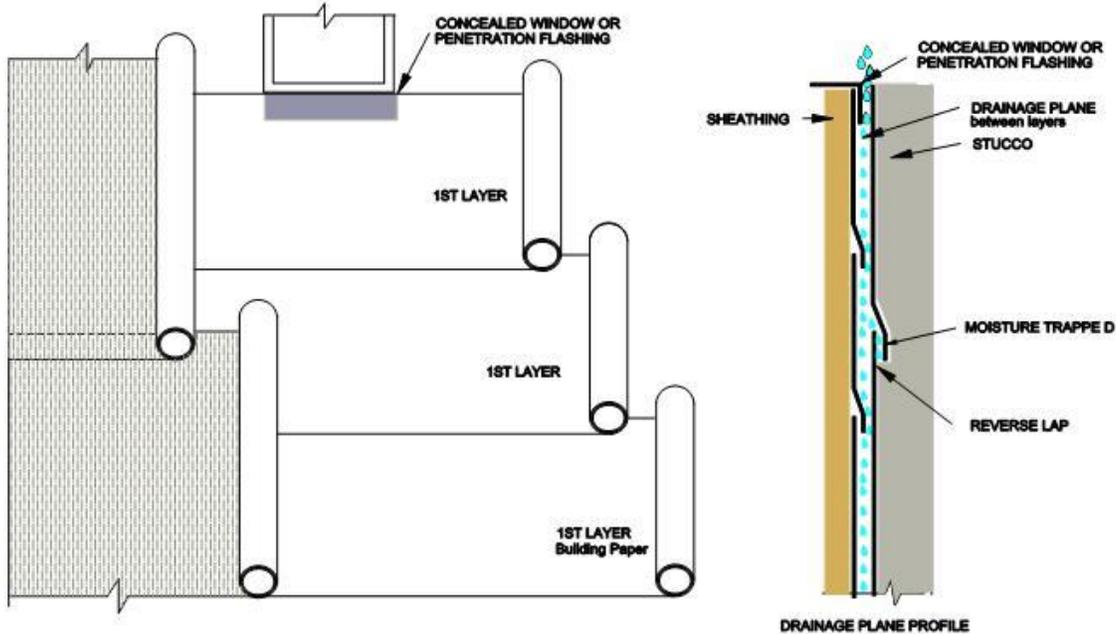


**DOUBLE LAYER SEPARATE APPLICATION  
WHAT REALLY HAPPENS**

<sup>1</sup> Testing Upholds Stucco's Water Resistance, Walls & Ceilings magazine, February 1997, Bob Drury, Northwest Wall and Ceiling Bureau.

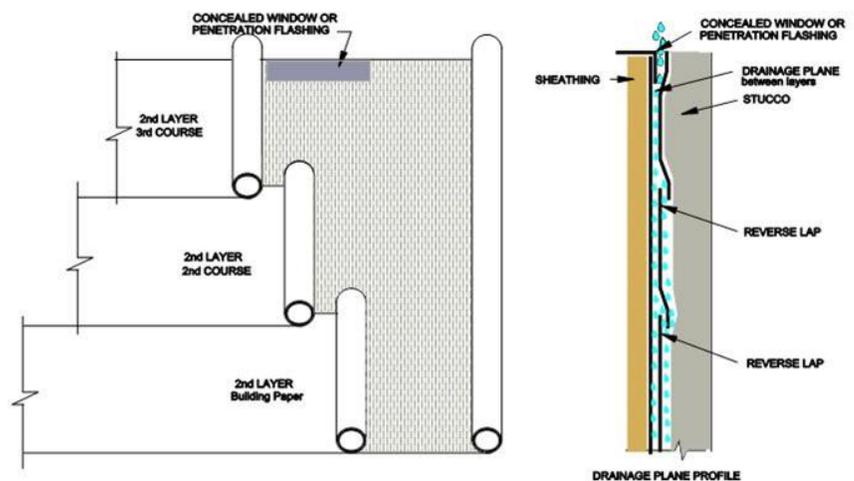
<sup>2</sup> Summary of Wood-Framed Exterior Wall Performance Study, City of Seattle, August 2002

WRB polymeric wraps such as Tyvek, Typar, Barricade and Amowrap (et.al.) present special challenges when used in a double layer application. Most of these materials are comprised of polypropylene, polyolefin or polyethylene synthetics. What has been demonstrated in their use is that they bond tenaciously with stucco (capillarity continuity). In the application of two successive layers of polymeric wrap, the drainage plane would have to be considered between the layers. There is also the opportunity for moisture to become trapped between the layers. See illustration that follows.



**DOUBLE LAYER SEPARATE APPLICATION  
POLYMERIC HOUSEWRAP OVER BUILDING PAPER**

In typical stucco installation practice it would be rare to have two layers of polymeric wrap applied in separate applications. Economics usually prevents it from happening. The fact of reality is that a layer of polymeric wrap is often paired with a single or sometimes even a double layer of building paper applied over the top of it. In that scenario the flashing attachments to either the house wrap or the building paper would not it seem be as deleterious to the installation because the polymeric wrap is more water-resistant than building paper. See illustration right.



**DOUBLE LAYER SEPARATE APPLICATION  
BUILDING PAPER OVER POLYMERIC HOUSEWRAP**

Conclusion: Including the language stricken into Minnesota Rule needs to be carefully thought through, considering the multitude of potentially different pairings of water-resistive barriers. This is especially troublesome to plastering contractors who often find only the windows and pan flashing in place prior to the installation of the water-resistive barrier. In that scenario their preference would be to install a double laminate roll of building paper. This has been demonstrated to work and it defines the drainage plane in the position originally intended by the plastering industry. To require the drainage plane between layers of building paper applied in separate applications would discriminate against a time proven practice and it may have detrimental results.

**Proposed Code Change – Cost/Benefit Analysis**

This proposal will reduce the cost of construction

**Other Factors to Consider Related to Proposed Code Change**

1. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).  
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delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.  
No

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.  
No

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.  
No

5. Who are the parties affected or segments of industry affected by this proposed code change?

Code officials, building designers, contractors, building owners

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

No

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No

**IBC 2510.6 SONAR Draft 1-20-12**