

# The Building Envelope—How It Contributes to Your Building’s Health

A new building is up against a lot from the very beginning when it comes to problems with moisture. Water takes many forms – solid, liquid, vapor and absorbed into other materials. As liquid, it is impacted by gravity. As vapor, it is impacted by pressure differences and thermal gradients. A finding by the *National Academies of Sciences, Engineering and Medicine* [1] showed that “well-designed, constructed, and maintained building envelopes are critical to the control and prevention of excess moisture and molds...”

When excess moisture enters a building, and dampens materials for an extended period, it creates the opportunity for material deterioration, growth of mold and mildew and insect infestations. This impacts the quality of the air indoors and can lead to a building’s occupants developing respiratory issues including in some cases, asthma.[2]

There are several potential fault points with sheathing that can contribute to moisture intrusion, and building health. When traditional water-resistive and air barrier (WRB-AB) systems are applied over the field of the sheathing, improper installation, like ripped building wrap or fluid-applied membranes spread too thin, can create inconsistencies in their ability to protect the entire wall from moisture or air infiltration. When moisture penetrates the structural wall cavity through areas like rough openings, it needs somewhere to go, a way to dry out. When it can’t, mildew, mold and deterioration occur.

The importance of managing moisture in the building envelope is obviously critical, since moisture is responsible for a whopping 75 percent of all building envelope problems.[3] “The easiest way to control [moisture] diffusion is by installing vapor impermeable materials on the side of the assembly with the highest vapor pressure,” notes research by the Board of Infrastructure and the Constructed Environment, at the National Research Council of the National Academies.[4] “Many building codes and architectural standards require seams and holes in vapor barriers to be sealed to form a continuous, uninterrupted line of protection. However, in order for air barriers to be effective, they must be continuous and durable.”

If moisture can be effectively managed, so can its threats to the overall health of a structure and its inhabitants.

Some products have made an “uninterrupted line of protection” their hallmark. An integrated design, for example—one that fuses a WRB-AB as part of the sheathing’s core—can help mitigate risks like ripped building wrap, or a fluid-applied membrane that is applied unevenly or too thinly. An enhanced building envelope does not only drive moisture control, it contributes to a healthier indoor environment and a healthier building designed to last.

[1] <https://www.nap.edu/read/11756/chapter/5#52>

[2] <https://www.nap.edu/read/11756/chapter/5>

[3] <https://www.nap.edu/read/11756/chapter/5>

[4] <https://www.nap.edu/read/11756/chapter/5#49>

