PAPER TITLE
Airtight Curtain Wall/Window Connection Best Practice

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ABSTRACT

Energy efficiency has taken on increasing importance as fuel costs rise, the economy struggles, global warming debates become more frequent and sustainability becomes more of a mainstream imperative.

Throughout the seasons energy moves through walls, be it cool air lost to the outside during summer or warm air lost in the winter. Thermal bridging and air infiltration are two of the largest contributors of energy loss. Combined, thermal bridges and air infiltration/leakage in the envelope can account for as much as 50 percent of the heat lost in a traditional building.

The value of energy-efficient windows is lost when connectivity from window to wall is poor. Small gaps can have a huge impact in heat loss, occupant comfort and premature deteriorations.

ASHRAE, the U.S. Army Corps of Engineers and International Green Construction Code have mandated a standard air leakage performance criteria of 0.25 CFM/sq. ft. @ 75 Pascals. Meeting this standard presents a significant challenge. To do this means ensuring the integrity of the building envelope. The entire exterior wall should serve as a weather-resistant barrier to keep water and air out.

An airtight and thermal bridge-free envelope ensures that heat and consequently energy generated in a building are not wasted. All penetrations and connections throughout the building must be designed appropriate to the character of the building envelope, sealed securely and they must perform throughout the life of the building to achieve this High-Performance standard.

This presentation will describe the sequence of installation and the holistic approach used to design a superior wall system incorporating advanced materials at crucial connecting points that not only meets but exceeds these performance requirements, when tested.

An integrated design of a wall system to meet all these requirements incorporates vapor-permeable air barrier membrane, flashing membranes and a multifunctional compressed tape as an all-in-one, airtight sealing system.

The result: Air and moisture movement is controlled and the integrity of the building envelope is maintained. Heat and relatively light inside air cannot penetrate the joints and cool off there, creating condensation that can lead to the deterioration of structural components, poor indoor air quality and increased energy consumption for heating and cooling.

According to EnergyStar, effectively sealing a building envelope can result in a reduction of up to 25 percent in HVAC energy costs. Incorporating Passive House technology would result in even greater energy cost savings.

Overall, this presentation will prepare attendees to meet more stringent standards of air leakage by creating an airtight building envelope and eliminating thermal bridges, which rob buildings of energy.