

Technical Memorandum

Penetrations - The need for mechanical fasteners through an air barrier membrane is unavoidable.

November 2018 Edition

The detailing of fastener penetrations should be part of the design process and part of the construction documents. Before the start of any construction, contractors should be fully aware of what the designer is trying to accomplish with design. Those small but important details must be a part of the pre-construction meeting and must be clarified prior to commencement of the construction process. It is the responsibility of the contractor to properly understand, install, and treat details as required in the construction documentation to achieve the desired air barrier assembly and expected performance.

DELTA®-VENT SA self-adhered water resistive barrier and air barrier passes ASTM D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection, commonly known as the Nail Sealability Test. Some manufacturers use the term “self-sealing” to indicate that the membrane will seal around fastener penetrations. This could be true in lab conditions; however jobsites are the real world where products must perform as originally intended by the designer.

“Self-sealing” is not to be confused with “self-healing”. Dörken Systems Inc. makes no claims as to “self-healing” abilities of DELTA®-VENT SA to self-heal the membrane in damaged or vacant fastener holes.

The ability of the membrane to “self-seal” around the fastener penetrations is dependent on certain conditions. Screws should be self-tapping:



the head must be larger in diameter than the shank. The point or self-drilling portion must be no larger in diameter than the shank. All fasteners should be driven perpendicularly to the substrate until flush with the air barrier membrane. The fastener head should be compressed firmly against the air barrier membrane to create a gasketing seal without damaging the membrane or the substrate.

Do not install fasteners through air barrier membranes over unsupported areas of the substrate, like sheathing joints. Overdriven fasteners, improperly installed fasteners, defective or broken fasteners or fasteners not properly fastened into the building structure beyond the air barrier membrane should be removed and the hole sealed in an approved method.

When the requirements mentioned above cannot be met on the job, Dörken Systems Inc. provides a variety of details for designers and accessories for contractors to make sealing at fastener penetrations more user-friendly to ensure performance goals can be met.

In buildings with brick façades, brick ties are required. By simply placing a patch of DELTA®-FLEXX-BAND in locations where brick ties will be installed, water and air tightness will be ensured, giving the contractor and building owner the peace of mind that the building will be air and water tight even if conditions in the field are not flawless. Another quick and reliable option is the use of DELTA®-TILAXX sealant at penetrations. The fastener/anchor is installed while the sealant is still wet.

For any addition information, refer to Technical Guide DELTA®-VENT SA – Air Barrier Systems for Low and Mid-Rise Commercial and Residential Buildings or Technical Guide DELTA®-VENT SA – Air Barrier Systems for Low and Mid-Rise Wood Framed Buildings up to Six Stories with Continuous Exterior Insulation.