

# Penetrations Through PERM-A-BARRIER<sup>®</sup> Systems

Technical Letter 16

## PERM-A-BARRIER<sup>®</sup> Liquid, PERM-A-BARRIER<sup>®</sup> VPL, PERM-A-BARRIER<sup>®</sup> Wall and PERM-A-BARRIER<sup>®</sup> VPS Membranes

For an air barrier system to be effective, the air barrier material must be continuous onto the substrate they are applied, without any voids, gaps or holes. Often it may be more convenient or cost effective, from a design and application perspective, to penetrate an air barrier assembly after installation of the air barrier. Appropriate care must be taken to ensure continuity of the air barrier assembly when an installed air barrier will be penetrated.

Typical penetrations include anchors, brick ties, and screws. The best practice is to limit or eliminate the number of penetrations through an air barrier assembly, however, it is not always feasible to eliminate all penetrations.

GCP Applied Technologies has conducted in-house testing on PERM-A-BARRIER<sup>®</sup> Air Barrier Systems with a number of penetrations installed through the previously installed air barrier. The testing included an evaluation of both air leakage and water penetration, in accordance with ASTM E 1186 *Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems* and ASTM E 331 *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*.

The results demonstrated that GCP PERM-A-BARRIER<sup>®</sup> Air Barrier Systems provide a seal with the penetrants tested that prevented air and water leakage past the air barrier.

The following is a chart of the types of penetrants that have been evaluated by GCP and when installed correctly as per manufacturers written instructions can provide an air and watertight seal without additional sealant.

| FASTNER TYPE                               | E1186      | E331       |
|--|------------|------------|
| Hohman & Bernard DW-10 Anchor              | No Leakage | No Leakage |
| *Hohman & Bernard Corrugated Brick Tie     | No Leakage | No Leakage |
| *Wire-Bond RJ-711 Adjustable Veneer Anchor | No Leakage | No Leakage |
| **Heckman Pos-I-Tie with insulation        | No Leakage | No Leakage |

\*Not evaluated with PERM-A-BARRIER<sup>®</sup> Wall Membrane

\*\*Not evaluated with PERM-A-BARRIER<sup>®</sup> VPS

The following measures must be included to achieve this seal:

1. Ensure all fasteners are secured to a stud or other stable substrate and that the fastener head is tightened snug to the air barrier.
2. If a fastener is not secured to a stable substrate, then the fastener shall be removed entirely and the air barrier shall be repaired with a min. 4 inch by 4 inch patch of the original air barrier material or appropriate sealant.
3. If a fastener is over-tightened such that the head of the fasteners is embedded into the air barrier, then a min. 4 inch by 4 inch patch of the original air barrier material or appropriate sealant must be installed over the fastener.
4. All self-tapping screws should have a tap (tip) diameter no greater than the pilot (shaft) diameter.

Brick ties that allow for a tight seal between the air barrier and the brick tie, such as brick ties listed above, have been proven to provide an effective airtight and watertight seal without additional sealant. While these penetrations, in conjunction with PERM-A-BARRIER® Air Barriers, provide a seal, variability in installation may warrant the use of a sealant. When using brick ties other than those listed above, GCP recommends using an appropriate sealant to detail the brick tie penetrations.

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