

Five Typical Field Testing Problems

Field Testing

Common mistakes and how to avoid them



By **Jason Seals**

While laboratory testing per the North American Fenestration Standard establishes the Performance Grade of a fenestration product, leaks originating from surrounding wall or roof conditions or substandard installation practices can render even this rigorous testing incapable of accurately predicting actual jobsite performance. Field testing during or immediately after construction, but prior to the installation of interior finishes, should be specified.

The FGIA provides pre-occupancy field testing methods in the form of three AAMA specifications:

AAMA 502-12 is the appropriate field test method for verifying water and air leakage resistance of newly installed operable windows and doors. Using ASTM E783 and ASTM E1105, AAMA 502 requires the application of a uniform pressure across the installed products through the temporary application of a sealed test chamber to simulate the effects of wind-driven rain. The entire installed fenestration product is tested, including the adjacent wall interface. Note that AAMA 502 expressly excludes commercial curtain wall, sloped glazing and storefront systems, which are addressed by **AAMA 503**.

AAMA 501.2-15 is a simple quality assurance water spray test using a specific water nozzle and pressure for finding leaks in fully installed, permanently closed (non-operable) glazing. It is not appropriate for testing operable windows and doors and does not simulate the effects of wind-driven rain. However, when access issues prevent checking water leakage performance with portable test chambers (as per AAMA 502 and 503), or when a simple quality check of the glazing system is needed, the fallback option is the 501.2 method.

There are several commonly encountered mistakes in field testing that defeat its purpose, however, outlined on the following page.

Accredited investigators

To avoid the common problems listed in the sidebar on the following page, field testing methods all require implementation by an AAMA-accredited Field Testing Agency (FTA) to ensure the use of well-maintained and calibrated equipment by qualified and trained personnel, using established procedures under a documented quality management system.

The AAMA FTA Accreditation Program, an FGIA program, validates that FTAs are capable of testing fenestration products per the referenced field-test methods. Validation of the FTA's ability to properly administer AAMA 502 is the minimum requirement, although an agency can also be optionally accredited to perform AAMA 501.2 and/or 503. Requirements of the program are detailed in the Procedural Guide, AAMA LAP-3.

Given the possible liability consequences of water leaks, ranging from poor performance to physical damage to mold infestation, providers are counselled to verify the actual installed performance of fenestration products using an accredited field testing agency.

Editor's note: The author provided a list of references in order of appearance in this article, which is available online at windowanddoor.com and by email request: [contact ethompson@glass.org](mailto:ethompson@glass.org).

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1 Using an ad hoc test method.

There are many anecdotal stories of invalid testing, such as using a pressure washer to test for water leakage. Obviously, this leads to wildly erroneous conclusions.

2 Using the wrong test method.

Because the equipment required to run the test is relatively accessible, AAMA 501.2 is too often improperly substituted as a quick and cheap replacement for AAMA 502. It is often used on operable fenestration, which virtually guarantees “leaks.”

3 The test area is not fully or properly prepared.

The test may not be employed at the proper time during construction, such as before perimeter sealant is applied. Also, interior finishes should be left off until testing is complete.

4 The test method is not properly applied.

For example, it is often difficult to bring water of sufficient pressure to the site. Yet, sufficient water pressure is needed to make up for head losses due to hose length and elevated test locations. AAMA 501.2 requires between 30 and 35 psi at the nozzle to properly run the test. A supply measuring 50 psi at the source is recommended.

Another common incorrect application of AAMA 502 or 503 involves performing water testing at a uniform pressure higher than the fenestration product was designed to experience during wind-driven rain events. These high pressures may actually create leaks that would not be experienced during the normal service life of the product. Conversely, testing at excessive pressures may conceal defects that would have produced leakage at lower pressures.

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5 The area tested is not representative of the building envelope.

The test areas should be selected based on the complexity and commonality throughout the project of any given detail or condition. Field testing should always be performed on an area representative of the entire installation and include the interface between the window and the adjacent wall assembly. ■