Drainage is Critical
To better resist water penetration, the window or door frame must join with the exterior facing material, sheathing and the water-resistive barrier (WRB) to form a fully integrated "drainage plane"—a constrained rainwater pathway from roof to ground. Two different barrier systems are commonly used to provide this drainage plane: surface barrier systems and membrane/drainage systems.

In a surface barrier system, the outermost surface assumes the role of the WRB to shed water. Walls considered to be surface barrier systems are typically solid (e.g., single-width masonry, poured concrete walls, concrete block [CMU] and others) that do not have cavities within the wall.

A membrane/drainage system uses building paper, building wrap, sheathing or other water-shedding material as the WRB. Water that gets past the exterior cladding encounters this secondary barrier and drains down the cavity, where it is flashed to the exterior. Walls clad with siding, some types of EIFS, and brick or stone veneer are membrane/drainage systems.

Note that a membrane/drainage plane construction usually is better suited for areas that experience frequent heavy rain.

Standards are Key
Developed in conjunction with the Fenestration Manufacturers Association (FMA) and the Window and Door Manufacturers Association (WDMA), AAMA offers a series of standards for the installation of doors and windows that go beyond normal installation practices. They address installation in regions susceptible to a hurricane's wind-driven heavy rain conditions. While manufacturer installation instructions take precedence, these standards offer excellent guidelines when such instructions are missing or incomplete. They illustrate the proper way to cut, wrap and seal the WRB into rough openings and/or integrate it with the door or window mounting or frontal flanges.

Representative methods are detailed, and they're illustrated by diagrams.

The recommended installation methods have been water-tested to a pressure of 12 psf (575 Pa) using the ASTM E547 or E331 water test—the same methods prescribed for certification testing to NAFS (AAMA/WDMA/CSA 101/LS.2/A440). This water test pressure is the level corresponding to certification to a robust performance class of 80, which corresponds to a (nominal) design wind pressure of 80 psf (3830 Pa). That's equivalent a 177-mpg wind. (The 12 psf water test is equivalent to the force of about a 70-mpg wind.)

• FMA/AAMA 100-12, Standard Practice for the Installation of Windows with Flanges or Mounting Fins in Wood Frame Construction

• FMA/AAMA 200-12, Standard Practice for the Installation of Windows with Frontal Flanges for Surface Barrier Masonry Construction for Extreme Wind/Water Conditions, focuses on the installation of windows into surface barrier walls. The frontal flange covers a previously-installed backstop or buck, or integrates with a pre-cast sill.

• FMA/AAMA/WDMA 300-12, Standard Practice for the Installation of Exterior Doors in Wood Frame Construction for Extreme Wind/Water Exposure, is comparable to FMA/AAMA 100 except that it covers installation of side-hinged or sliding doors. It addresses three scenarios: doors with mounting flanges, doors with exterior casing/brick molding and non-flanged box frame units.

• FMA/AAMA/WDMA 400-13, Standard Practice for the Installation of Exterior Doors in Surface Barrier Masonry Construction for Extreme Wind/Water Exposure, covers the installation of exterior doors in buildings with surface barrier wall construction. It is for doors what FMA/AAMA 200 is for windows.

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