Moisture Barrier Systems

HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION FEMA 499/August 2005 *Technical Fact Sheet No. 9*

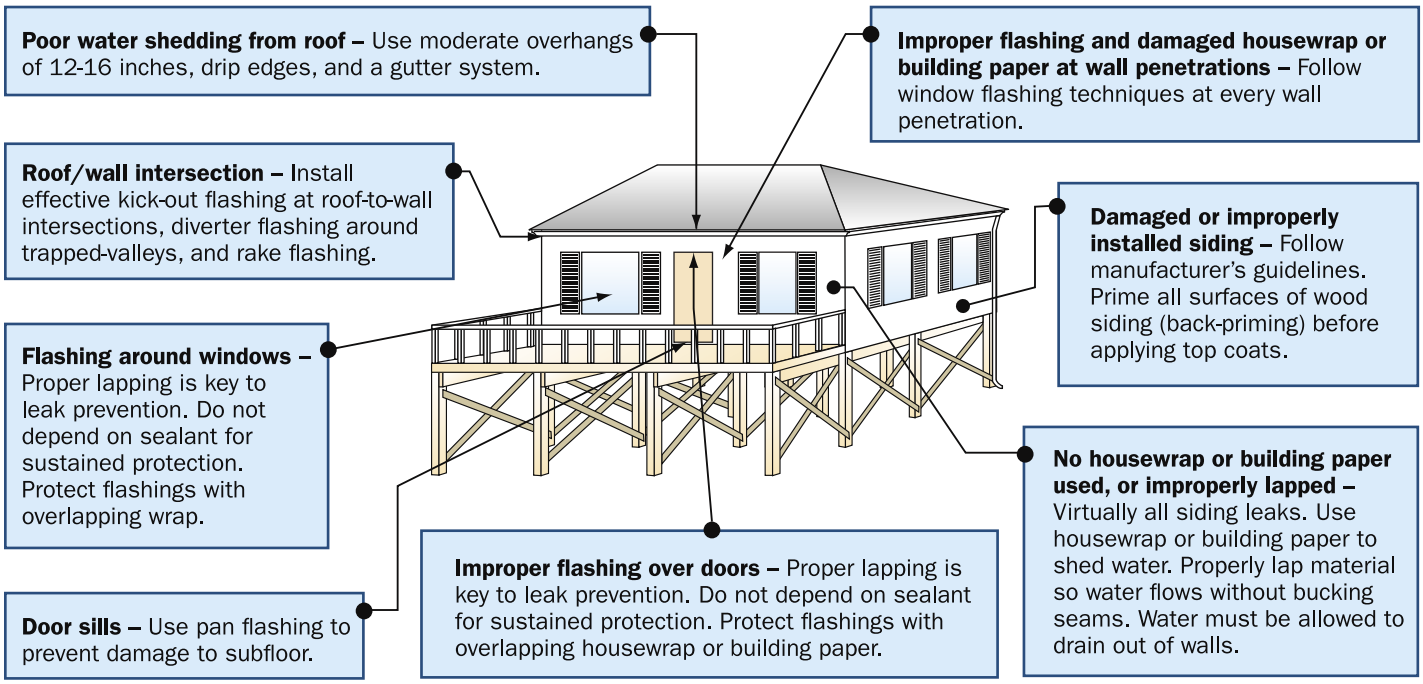
Purpose: To describe the moisture barrier system, explain how typical wall moisture barriers work, and identify common problems associated with moisture barrier systems.

Key Issues

- A successful moisture barrier system will limit water infiltration into unwanted areas and allow drainage and drying of wetted building materials.
- Most moisture barrier systems for walls (e.g., siding and brick veneer) are "redundant" systems, which require at least two drainage planes (see page 2).
- Housewrap or building paper (asphalt-saturated felt) will provide an adequate secondary drainage plane.
- Proper flashing and lapping of housewrap and building paper are critical to a successful moisture barrier system.
- Sealant should never be substituted for proper layering.

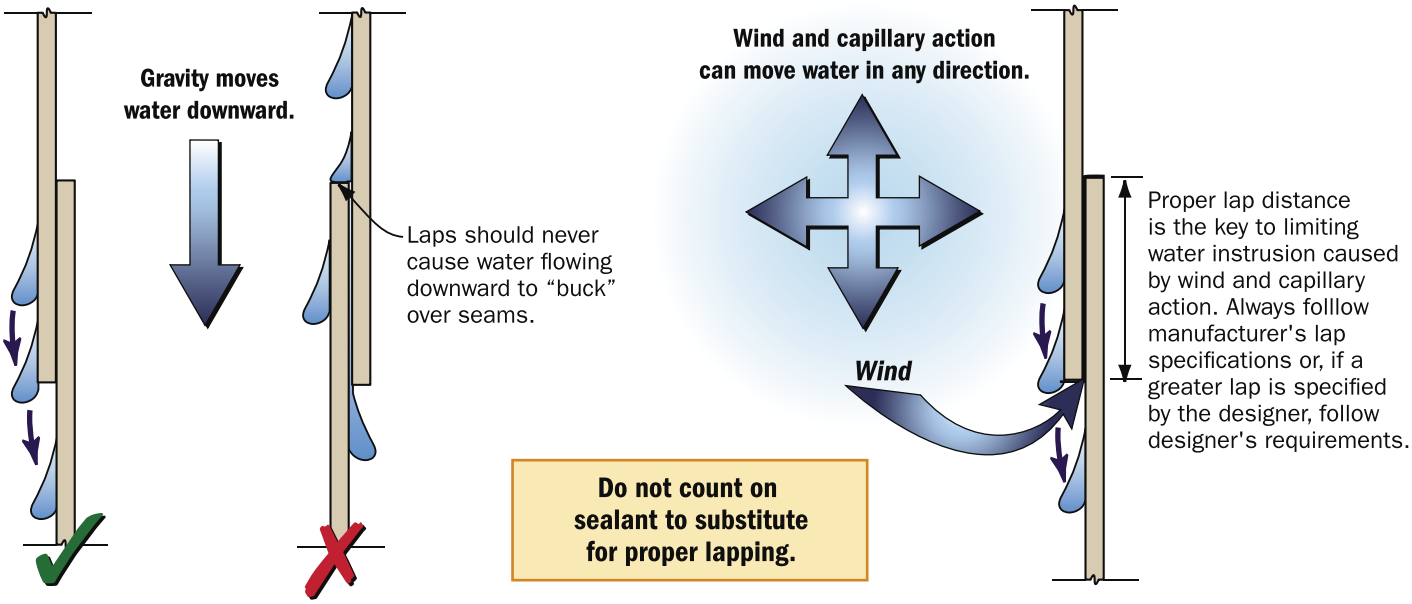
The purpose of the building envelope is to control the movement of water, air, thermal energy, and water vapor. The goal is to prevent water infiltration into the interior, limit long-term wetting of the building components, and control air and vapor movement through the envelope.

Locations and Causes of Common Water Intrusion Problems



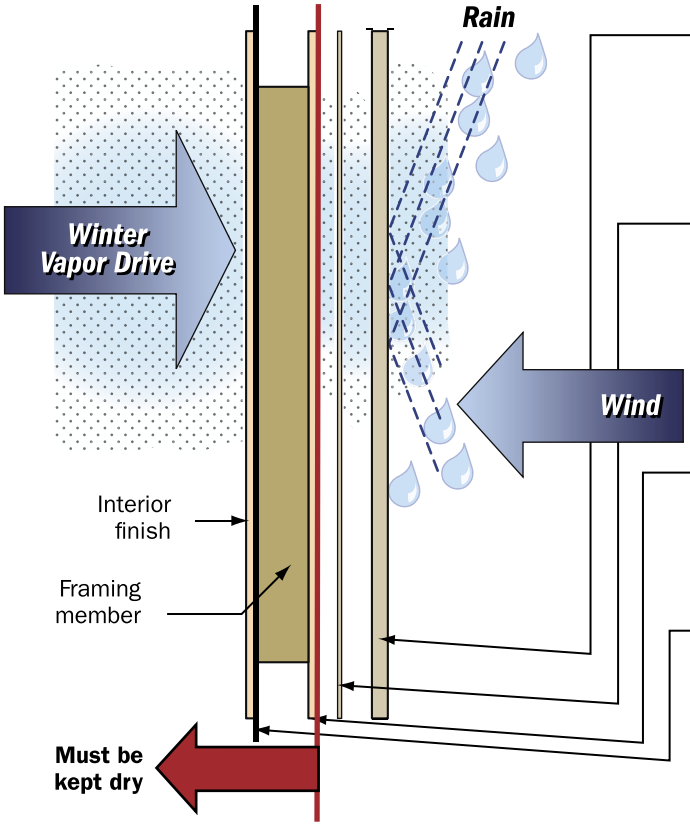
The location of water entry is often difficult to see, and the damage to substrate and structural members behind the exterior wall cladding frequently cannot be detected by visual inspection.

Proper Lapping Is the Key...



Proper lapping of moisture barrier materials is the key to preventing water intrusion. Most water intrusion problems are related to the improper lapping of materials. Usually, flashing details around doors, windows, and penetrations are to blame. If the flashing details are right and the housewrap or building paper is properly installed, most moisture problems will be prevented. Capillary suction is a strong force and will move water in ***any*** direction. Even under conditions of light or no wind pressure, water can be wicked through seams, cracks, and joints upward behind the overlaps of horizontal siding. Proper lap distances and sealant help prevent water intrusion caused by wicking action.

How a Redundant Moisture Barrier Works



Siding
The siding is the first line of defense, but by no means should it be the only protection from outside moisture. Sidings shed most of the water, but some does get through, especially in coastal areas where high winds can drive rain.

Housewrap or Building Paper
Housewrap or building paper is a dual-purpose protection layer. It sheds water that gets through the siding and limits air intrusion from the outside. A unique feature of this barrier is that it sheds water, but allows water vapor to pass through. This permits water vapor from the inside to pass through without condensing on the framing.

Sheathing
If structural sheathing is used, it should be protected from moisture. Prolonged wetting, especially without the ability to drain the moisture and dry out, will damage the sheathing.

Vapor Retarder
In cold regions, a vapor retarder is often used on the warm side of the wall cavity to minimize the movement of vapor from the inside of the building into the wall cavity, where it will condense on the cool framing members. Vapor retarders are typically used only where the predominant vapor drive is from the inside to the outside (cold climates).