

HOMEOWNER TIP

The devil is in the details. It is perhaps a tired cliché but, in residential construction, it is more important to work with someone who understands and executes the details well than to choose the best products. A marginal product, well installed, will perform reliably. A great product, poorly installed, will almost always perform poorly.

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Is Your Home Doing its Most Important Job?

What is the primary purpose of a home? If you said “to shelter,” you are correct. While your home serves many other functions in your life, first and foremost it is a shelter.

Now, to serve as a shelter, what is the most important capability your home can provide? If you said “weather-tightness,” you would be right again. In this issue of YOUR HOME, let’s look at a few of the more fundamental aspects of weather-tightness. You might be surprised to discover that what’s most important is not what you thought.

In general, our homes are not as weather-tight as they once were. In most cases, it is because of a lack of attention to details and poor workmanship. The materials themselves - siding, roofing, windows, and doors - in most cases, if well installed, will produce a weather-tight home.

What follows are some important points about windows, doors and roofs. We will discuss siding in a future issue.

Windows & Doors

When properly closed, a window or door should be watertight. Most window or door units come from the manufacturer watertight. Leaks generally occur around the window or door as a result of substandard installation.

Leakage around windows can cause many problems including unsightly stains, damage to interior surfaces, mold growth, and rot in the framing around the windows.

The primary cause of leakage around windows is improper installation. The problem is so widespread that the American Society for Testing and Materials International (ASTM) has developed an industry standard for proper installation.

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Correct Installation?

Using the ASTM standards, the American Architectural Manufacturers Association (AAMA) has developed a training and registration program for window and door installers. After passing a test, they are registered as installation masters. To date, however, fewer than 1,000 of the estimated 125,000 door and window installers in the country are trained and certified.

The following are some excerpts from the AAMA training manual that are universally applicable to good window installation.

1. It is essential that a waterproof membrane or weather barrier be installed behind the siding (even brick veneer).
2. Because windows penetrate this waterproof layer, the joints between their frames and the weather barrier must be protected with a combination of flashings and sealants.
 - 2.1 Flashings may be rigid or flexible, with or without an adhesive backing. Paper flashing, consisting of two sheets of paper laminated with asphalt and reinforced with fiberglass yarns, is common. Some have a polyethylene coating, and others have a bitumen-type core between sheets of polyethylene or polypropylene.
 - 2.2 Rigid flashings may be metal (galvanized steel, aluminum, copper), plastic, vinyl or fiberglass. Regardless of the material used, all top, side and bottom flashings should be a minimum of 9 inches wide.
 - 2.3 The flashing should be shingled so the lowest piece is overlapped by the section above it. The head flashing is applied last, over any window mounting flange and tucked under the weather barrier on the wall surface above.
3. Sill pans made of rigid flashing material are used under some windows. They should be sloped toward the outside of the structure.
4. Sealants are used to prevent air and water movement around joints between the opening and the window or door. The sealant or caulk should be selected according to the materials being sealed.

Replacement Windows

For replacement windows, the original jamb is often left in place and the new window sealed to it. A new window installed in the original jamb will not eliminate existing leaks. Further, caulking is not a solution to the problem.

Installing a mounting-flange replacement window requires removing the original window entirely. It may also require the removal of some siding to flash the new unit to the wall properly. Essentially, there are no shortcuts to successful window replacement.

Doors

Finally, you should always confirm that the manufacturer's installation instructions have been carefully followed; such instructions are included with virtually all windows.

Poorly installed doors present the same risks noted above for windows. For all practical purposes, except for the sill being more vulnerable to damage from foot traffic and requiring more careful attention as a result, proper installation is essentially identical for doors and windows.

Roofing

Like windows, weather-tight roofing is usually not about the roofing itself. Installation and attention to detail matter.

Most roofs are of asphalt or composition shingles. Here are a few common compromises in roof shingle installation that will increase the risk of water entry and/or weather damage.

1. Although many building codes permit the use of staples, they are not an effective fastener for shingles. The holding power of a fastener is entirely dependent on the roof surface area under the head. Staples have far less head area than roofing nails and are much more likely to tear through the shingle in high winds.
2. Adequate nailing is important. Seasonal temperature swings and changes in the moisture content of the roof sheathing can cause inadequate or improperly driven nails to back out. To prevent this, use roofing nails with barbed or deformed shanks and a minimum 3/8 inch head. The nails must be long enough to penetrate through all roofing material including the decking.
3. A longer guarantee is not the answer. There's no objective standard behind 20-, 25- or 30-year guarantees: The durability of a 30-year shingle from one company is probably different than the durability of a 30-year shingle from another company. A shingle's durability depends on a number of factors, including the direction in which the roof faces, its geographical location, the degree of shading provided, and the color of the shingles.
4. Flashing is very important. Flashing should be installed at all transitions between the roofing and other building materials such as siding or chimneys. It should extend at least 12 inches under the adjacent material and be lapped to shed water.
5. Proper installation of the drip edge is very important. Too much overhang can cause shingles to bend and crack, and too little will allow water to run down the wall. While a drip edge is not required by code in all areas, its use is strongly recommended. Shingles should be positioned to overhang the drip edge by about 1/4 inch and no more than 3/4 inch.

6. In high wind areas, wind rating should be considered. It is an objective standard indicating that properly applied shingles have survived a specific third-party test. As with durability ratings, however, a lot depends on field conditions. The most important factor affecting wind resistance is whether the tabs have sealed properly. It is a good idea to re-inspect the installation 30 days after it was completed to confirm that all the shingles have sealed adequately.
7. New shingles should not be applied over old ones in most cases. Things that can go wrong include failure to replace bad decking, use of nails that are too short to hold well, and reuse of deteriorated flashing that seems okay upon a cursory inspection. Also, lightweight shingles that are applied over older shingles may not lay flat, which looks bad and often results in poor sealing.
8. When shingles are installed matters. In warm weather, it is best to start roofing early and take a break at midday. Some contractors will work early in the day, break around 10 a.m., and then return in the evening. Walking on shingles in warm conditions can damage them. Many roofing manufacturers recommend use of a foam mat or plywood sheet over the shingles as a working platform. In cold weather, shingling is not generally recommended.
9. Underlayment is recommended. Roofing felt, as it is often called, serves a variety of functions. Its primary job is to keep the roof deck dry before the shingles go on, but it also provides added protection from wind-driven rain or wind damage. Finally, felt provides increased fire resistance.
10. Use an open valley detail with “V”-crimped metal flashing in the valley. Valleys are a high probability area for leakage. Most valleys fail because of heavy water flow. If the valley contains granule surfacing, as in the closed, cut or woven valley detail, heavy water flow erodes the shingle granules which leads to UV deterioration.
11. Always maintain good attic/roof cavity ventilation. While poor ventilation may not be a primary cause of premature roof failure, good ventilation will keep roof surface temperatures down thus maximizing shingle life.

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