Basement Vapor Barrier

Q. *Where does the vapor barrier go when finishing a basement? Since we use a vapor barrier on the inside of exterior above-grade walls to keep moisture in, it's my contention that a plastic vapor barrier should be used against the wall to keep out the moisture in the earth. Many disagree and say the basement is no different than the upstairs. My feeling is that the earth's moisture will penetrate the concrete and will condense on, or at least be trapped by, the outside of the interior vapor barrier, thereby lowering the insulation's R-value and possibly producing mildew in the wall cavity.*

A. *Stephen Smulski responds:* I agree with those who feel that a basement is no different than an above-grade living space: The vapor retarder should be installed on the warm side of the wood frame wall. Sandwiching the vapor retarder between the insulation and the interior finish ensures that the vapor retarder is always warmer than the dew point. As a consequence, moisture can't condense on it regardless of whether the water comes from inside the basement or from the soil outside the foundation.

The vapor retarder inside the wood frame wall works in conjunction with dampproofing (a bituminous liquid, for example) applied to the exterior of the foundation to keep the wood frame wall dry. By clogging micropores in the surface of concrete and masonry, dampproofing hinders both vapor diffusion and capillary transport of soil moisture through the foundation.

Placing a vapor retarder under the floor slab does the same thing. As an added precaution, you can apply a low permeability coating on the inside of the foundation before building the wood frame wall. This is no different than laying polyethylene sheeting over a concrete floor slab that lacks a vapor retarder before putting down a finish floor.

Keep in mind that basement moisture problems can be largely avoided by installing perimeter drains, by applying dampproofing, by sealing cracks, by backfilling with free-draining soil, by grading soils so that they slope away from the foundation, and by installing gutters and downspouts.

Stephen Smulski *is president of Wood Science Specialists of Shutesbury, Mass., a consulting firm specializing in wood performance problems in light-frame structures.*

Roof Vent Requirements

Q. *By code, how many linear feet of ridge vent is needed per square of roofing?*

A. *Henry Spies responds:* The amount of ridge vent needed is not related to the roof area, it is related to the living space below the roof. Most codes require roof ventilation having a minimum total net free ventilating area of 1/150 of the ceiling area of the living space beneath it. This can be reduced to 1/300 of the area if at least 50% and less than 80% of the required ventilation area is provided by ventilators located in the upper portion of the space to be ventilated, at least 3 feet above eaves or cornice vents, with the balance of the ventilation provided by eaves and cornice vents. As an alternative, the net free cross-ventilation area can be reduced to 1/300 when a vapor barrier having a transmission rate not exceeding 1 perm is installed on the warm side of the ceiling.

The net free ventilation area of a ridge vent is determined by the manufacturer. Wind tunnel tests indicate the effective net free area of ventilation provided by most ridge vents is typically half that indicated by the manufacturer. There is no problem with overventing the attic area, so the best course is to provide as much ridge vent as can be installed on the roof.

Henry Spies *is a home inspector in Champaign, Ill.*

Retrofitting Plywood Clips

Q. *A friend of mine recently tried to sell a home. The buyers' inspector discovered that no plywood clips had been installed on the roof sheathing. The roof has trusses 24 inches on-center and either 1/2-inch plywood or 7/16-inch OSB sheathing. Does anyone know a quick and easy fix for this?*

A. *Robert Allison responds:* I don't know of a "quick and easy" fix for this, but here is a method that I have used. Install 2x4 blocking across each joint from rafter to rafter. These blocks can be nailed through the rafter or truss or toe-nailed in place. Apply construction adhesive to the blocks to glue them to the decking. Though tedious, this simple repair works well. However, it is difficult to do on the first row of decking on low-slope roofs and impossible in some places due to framing members, cathedral ceilings, and so forth.

This answer was posted in the JLC *E-mail Forum. To participate in this discussion group, send an e-mail message to JLCForum@bginet.com.*

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