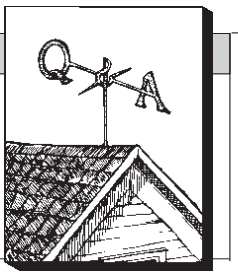

Why Vent Just the Ceiling?

by Henry Spies

Q. *If you build a wall system and a cathedral-ceiling system to have the same insulating value and have a vapor retarder on the warm side of both, why does the ceiling structure need a one-inch vented space, but not the wall?*

A. Basically, because the wall-cladding system usually is less permeable to moisture vapor than the roofing. If the finish of the exterior wall is impermeable, cold-side venting is desirable. This is why insulating metal buildings is so difficult—there is an impermeable cladding and no good way to vent the wall system.

Removing Mildew from Cedar Shingles

Q. *I recently reshingled my house with white cedar shingles, planning simply to let them weather to gray. However, they are turning black instead. Why? What can I do?* I *do not want to paint or stain the shingles.*

A. The black on the shingles almost certainly is the result of mildew. Mildew will grow anywhere there is a damp environment. Spraying the roof with a 50:50 solution of household bleach and water should both kill the mildew and remove the black color. It should then be rinsed to stop the bleaching action. This problem usually occurs where a house is heavily shaded.

Rafter Loads

Q. *How are the differences in thrust and load on rafters resolved in a modified saltbox design with a full-height front wall and a short rear knee wall?*

A. A beam or bearing wall must be used at the end of the ceiling joist where it hits the rafter on the low side. This support will take the vertical load and provide support for what essentially is a truss from that point to the front wall. The remainder of the rafter functions as in a shed roof. The lateral bracing is provided by the end walls and any cross or shear walls that may be erected.

Solar Collectors and Efficiency

Q. *How efficient are drain-back solar systems in the winter? What about summer?*

A. The efficiency of any solar-collector system depends upon the design of the collector, the glazing material, etc. Our experience with drain-back solar systems in Illinois has been a 150 percent failure rate; some of them have frozen up twice. Murphy's Law seems to be particularly applicable to active solar systems. ■

Henry Spies is with the the Small Homes Council/Building Research Council of the University of Illinois in Champaign.