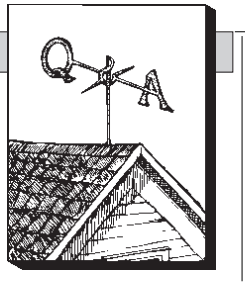

Condensation Cures

Q. *What can be done about moisture condensation in an earth-bermed house? Is dehumidification the only solution?*

A. A lot depends on where the moisture is coming from. The options are removing the source of the moisture, raising the temperature of the surface where the condensation is occurring, or ventilating to remove the moisture.

If it is capillary moisture coming through the walls, there is the possibility that the use of a water-resistant paint would help. If the condensation is appearing on the wall surfaces below the grade line, it may be necessary to use a fan to circulate the room air across the wall to raise the wall temperature. Furniture placed against walls can restrict air circulation enough to form a cold spot and condensation.

Dehumidifiers seldom work well enough to justify their use in the heating season. They are very good at dropping the humidity from 90 percent to 50 or 60 percent in the summer, but they frost the coils at lower room temperatures and humidities in the winter.

Ventilation is the only practical method of removing humidity during the winter once the water has evaporated. These solutions apply to all houses—not just earth-bermed ones.

Things That Go Bump In the Night

Q. *We recently built a ranch house with a trussed roof, and about R-40 loose insulation in the ceiling. On cold nights (below 0 F) the owner hears a popping and cracking sound throughout the ceiling and to a minor degree in the walls. Is this a problem? If not, what causes it?*

A. The popping and cracking is caused by structural members moving in relation to each other, but the amount of movement is so slight it does not present any problems.

As far as we know, wood does change dimension with changes in relative humidity and temperature. In extremely cold weather, there is contraction due to temperature and the very low relative humidity. Stresses build up slowly, then when the pieces move even slightly, there is a popping noise.

Covering the bottom chord with insulation keeps that member warmer and increases the differential movement. This is the same thing that causes the truss-rise phenomenon we have discused in this column before. However, this is within the normal movement of connections and is not a structural problem.

Condensation and Furnaces

Q. *About two years ago, I had a new, high-efficiency furnace installed in my house, and I have had a severe moisture problem since. I assume that the high-efficiency furnace is taking less air out of the house, thereby reducing the infiltration rate and increasing the humidity. Is this typical, and is there a better solution than an air-to-air heat exchanger?*

A. Certainly one of the benefits of a high-efficiency furnace is that it should decrease infiltration, since it effectively provides the equivalent of a flue damper when the exhaust fan is turned off.

Some units also draw combustion air from outdoors rather than from the house. Reduced infiltration will increase the relative humidity, but the difference usually is not enough to produce the problems you describe. If this is the cause of your problem, your choice is to reduce the moisture evaporation at its source or to ventilate, either directly or through an air-to-air heat exchanger.

However, considering the severity of the problem, I suggest that the furnace installation (and water heater) be checked carefully to be sure that all combustion products are being exhausted. Burning fossil fuels can produce enough moisture to cause major problems in a house that has not had problems in the past.

Why Felt; Which Caulk?

Q. *What purpose is served by felt put around the perimeters of exterior rough openings? Is acoustic sealant better than latex caulk for sealing vapor barriers?*

A. The only purpose that I can see for felt around exterior rough openings is to serve as an air barrier. There are many better ways to do it.

Acoustic sealant is much better than latex caulk for sealing polyethylene, because most latex caulks do not stick to the poly. Acoustic sealant, however, is very sticky stuff, and it adheres well to polyethylene (as well as clothing, tools and skin; it's known as "black death" to those who use it).

There are several tapes on the market, that also effectively seal poly, and they are much more pleasant to use. A partial list includes "Griff Tape," from the Griffolyn Division of Reef Industries; "Thermo-Brite Tape" from Parsec, Inc.; and "3M Contractors Sheathing Tape" (No. 8086) and "Superbond Film Tape" (No. 396), both from the 3M Industrial Tape Division. In addition, "Fab Tape" from Griffolyn is a caulking tape with paper protection on one side. ■

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