In roofs with vapor retarders, Tobiasson concedes the two-way vents may have a role to play in avoiding the creation of a vapor trap between the roofing membrane and the vapor retarder. Even in these, however, he thinks that the vents are unnecessary and may do more harm than good since they penetrate the roof surface—making potential leaks.

The second type of roof, shown in Figure 2, resembles a conventional cathedral ceiling. An airspace is left above the insulation and is vented around the perimeter of the roof with soffit vents. The problem is that in roofs with very low slopes there is no chimney effect to drive air through the space. Ventilation here depends on wind pressures or temperature differences.

Of all roofs, this is the most prone to moisture problems. Anything that can promote air movement in the roof cavity helps. One approach, developed in Canada, is to create a full plenum in the wall or roof cavity. The plenum is then vented, aided by a fan or cupola if necessary. A more moderate approach is to lay 2x4's across the tops of the ceiling joists under the roof sheathing. This interconnects the joist spaces and promotes better ventilation.

The real key with these roofs, though, is to keep moisture out of the ceiling. This is best achieved by using a continuous air/vapor barrier. Its most important job is to control airflow through ceiling penetrations, particularly in high-moisture areas. When problems occur, they are often over kitchen or bathroom vents, such as a leaky fan housing. Electrical and plumbing penetrations also need careful sealing. Since today's houses are prone to higher indoor humidities all over, the entire ceiling vapor barrier should be treated with great care. In commercial buildings, which usually have lower humidities, ceiling condensation problems are less common.

Another concern with flat roofs is ventilation. It's important to avoid air movement in the attic, especially in colder climates. Adequate ventilation is important in hot climates to keep the roof temperature low. A balanced ventilation system is necessary to prevent too much heat gain in the attic.