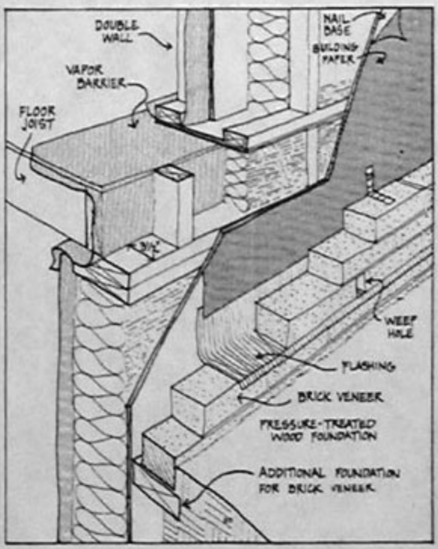
Double Wall Details

Q: With respect to John Hughes's article, "Double-Wall Houses," in *Solar Age*, December 1982, I have several questions: What is the exact placement of the double wall with respect to the edge of the floor joists? How does this affect the load-bearing capabilities of the joists? What thickness foundation wall is used? How about with a brick exterior? —Joseph Laubacker, Lockport, N.Y.

A: In Hughes's design, the double wall overhangs the floor platform, bringing the outside surface of the exterior sheathing in line with the outside of the foundation wall. The floor framing is set back from the outer edge of the foundation wall by 3½ to 4 inches. The overhanging section of the double wall is supported by short 2×4's toenailed between the top of the foundation sill and the bottom plywood plate, one 2×4 under each stud. Setting the load-bearing (inner) wall back from the band joist a few inches will, in most cases, not affect the sizing of the joists.



Hughes uses a treated-wood foundation system, ordinarily using 2×6 framing for one-story and 2×8 framing for two-story construction. A brick veneer would need to be supported by an additional thickness of foundation, whether wood or masonry. This section of foundation is often offset so that the brick wythe can be carried down to or below grade.

This framing system allows the air/vapor barrier to run continuously between floors—around band joists and plates. The spaces outside the band joists are filled with insulation, keeping the vapor barrier toward the warm side of the insulation.

Address questions about articles in Solar Age *to: Q&A,* Solar Age, *Church Hill, Harrisville, N.H. 03450. If you want a reply, enclose a self-addressed stamped envelope, and a member of our staff will respond. Questions of general interest will be printed in the magazine.*

Dew Point Dilemmas

Q: I have been concerned with the moisture condensation issue for some time but have not found solid answers easy to come by. The local representative for a major foil-faced sheathing tells me that vent strips should be used behind the sheathing in climates with more than 8000 degree days. In milder climates, apparently, their product does not create moisture problems in the walls. I still find this somewhat disconcerting since, although we have only 5000 degree days, the humidity is so high, especially in winter. When I questioned the representative for an extruded polystyrene product about its use as an exterior sheathing or roof insulation over an exposed-beam ceiling, I was told that the dew point is effectively moved to the center of the insulation board when the wall cavity is uninsulated. This does not leave me convinced, however, and I am even less confident about what will happen if the cavity is insulated.—Chuck Eberdt, Seattle.

A: We do not recommend venting a wall that uses foil-faced exterior sheathing. First, if the level of ventilation is high enough to relieve moisture problems, it will probably chill the wall cavity as well. Second, recent research at the USDA Forest Service's Forest Products Laboratory demonstrated that, in some cases, venting actually increases moisture accumulation in the wall. Researchers suspect that the vented air is being replaced with moist inside air drawn through gaps and seams in the vapor barrier. With a perfect vapor barrier, the venting would be unnecessary in the first place. Leaving the insulating sheathing unsealed at the joints, as most manufacturers recommend, should be adequate if a good inside vapor barrier is used.

As for the use of extruded polystyrene as a sheathing, we have spoken to a number of manufacturers, builders, and researchers and have heard of no problems with or without cavity insulation. Since the insulating sheathing warms the wall cavity, less moisture is driven there by diffusion. And with a perm rating of 1.2 per inch the sheathing provides some moisture relief. Reaching the dew point (calculated as a function of inside conditions) within the foam is generally not a problem, since the low rate of diffusion through the material effectively lowers the vapor pressure and dew point in that region to a safe level.

In unvented roofs, flat or pitched, the situation is complicated by the relative impermeability of most roofing materials. A high-quality vapor barrier on the warm side of the insulation is recommended. In high-moisture situations, this may be combined with a vented air space between the insulation and roofing underlayment. This approach can be very effective in hot climates (using foil-faced products) for cooling or in cold climates to prevent the formation of ice dams.