Santa Fe New Mexican's "Real Estate Guide."

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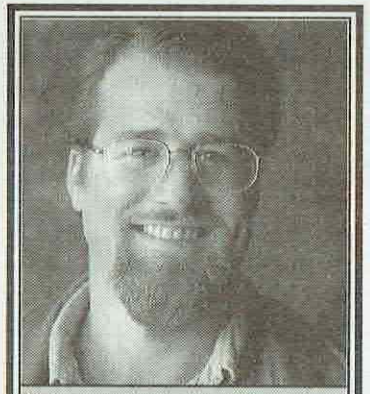
Passive solar design works well in Santa Fe



Permaculture in practice

Nate Downey

With our cold winter nights and typically sunny skies, Northern New Mexico has long been a hotbed for passive solar construction. The ancient Anasazi built cave dwellings in south-facing cliffs that soaked up the sun's heat all day and released it at night. Later Pueblo cultures situated their adobe villages to maximize solar gain, and Spanish settlers constructed important buildings in *solanas*, or "sunny areas".

In the late 1970s Ed Mazria and other local architects demonstrated the great potential of passive solar technology to a nation stressed by the effects of an energy crisis. Although the industry did have its ups and downs during the ensuing years, the country's largest municipal passive solar building, the new Genoveva Chavez Community Center, designed by Mazria & Associates, is now open in Santa Fe.

Passive solar architecture applies appropriate site selection and solar orientation in combination with thermal mass, insulation and ventilation to control indoor temperatures. Potential home builders who wish to decrease their dependence on utility companies should consider applying such techniques. Owning a solar home is also an asset when it comes time to sell.

There is not enough space here to delve into the details of solar architecture and there are many excellent books on the subject. People in the market to buy property should be aware that choosing an appropriate site to build a structure can be just as important as designing the structure properly.

If your entire property is on a north-facing slope or is shaded during the winter by hills or tall evergreen trees, even the world's best solar architect would face an improbable task. In general the best sites are slopes that face south, because the sun's path is lower in the sky during the winter. Structures built on such slopes will collect more solar radiation than structures built on flat land.

In addition, south-facing slopes are usually more protected from cold, north winds than are horizontal properties. Of course, if the piece of property that you do choose is relatively flat, the effects of north winds can be reduced by windbreaks, earth berms and appropriate building materials that increase thermal mass and the "R" (insulation) value of a building.

Looking for property with a south-facing slope also makes sense because of a phenomenon known as the "thermal belt." The thermal belt is that section of a slope that is neither close to the top nor close to the bottom of a hill. Colder local temperatures are found both at the tops of slopes (where less heat radiates from the earth's mass and wind-chill effects are greater) and at the bottom of slopes (because heat rises). What is left is the warmest part of the slope, that nearest its mid-section.

It is also important to understand that slopes facing the southwest are less suitable for passive solar structures than slopes facing southeast. One reason for this is that the hot western sun will often make indoor temperatures uncomfortably warm, even in the winter, not to mention summer. Another reason is that, after a building releases its heat at night, an eastern exposure will tend to quickly warm up a building. Southwestern facing slopes can still be used as long as fast growing deciduous trees are planted on the west side of the building site and windows are eliminated or kept to a minimum on west side walls.

There are drawbacks to building on slopes. Access is more difficult. Erosion tends to be problematic. Construction costs are often higher. In addition some flat area is desirable for recreation, gardening, parking and outdoor entertaining, so be sure to consider these and other factors before committing to a building site. However, it is often difficult to deny a perfect solar building site when long-term economic and ecological benefits are considered.

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