



Smith Residence

Prairie Grove, Illinois

Steve and Jackie Smith

Profile:

The Smith's have a strong commitment to sustainability. Steve wanted energy efficiency and alternative construction. Jackie wanted to connect with the outdoors and preserve the site's natural wealth: monumental oaks, numerous deer and foxes, and views into the woods. We integrated the best construction technologies with the most sensitive design practices, and the resulting high performance aspects are significant. The building is basically one room deep with a long southern exposure. This orientation maximizes winter solar gain and daylighting, while shading blinding hot, east/west exposures, both enhanced by direct low/high cross ventilation. Trees that had to be cut to allow for the house were salvaged, dried, and used as baseboard throughout the construction. Precast concrete floor planks were leveled with a vaulted topping slab system derived from Roman times. The result is a design that does quadruple duty as the structural floor system, thermal mass for passive solar, the airducting system provides radiant heat and provides the beauty of a stained floor finish throughout the house. In addition to an efficient heat pump, energy conservation was further established via 12 geothermal wells designed to harvest the constant temperature of the earth, enhancing heating and cooling. H-Windows were incorporated for their high insulating value and patented pivot that allows seals as tight as refrigerator doors. Solarcrete exterior walls also added to the efficiency creating a durable, continuous R-35 exterior wall (R-19 is typical).



Limestone from a local quarry accentuates the south elevation otherwise designed for solar energy.



Open space between the counter tops and cabinets provides natural light into the kitchen



The second story windows bring daylight to the new rock garden that will one day house bamboo plants