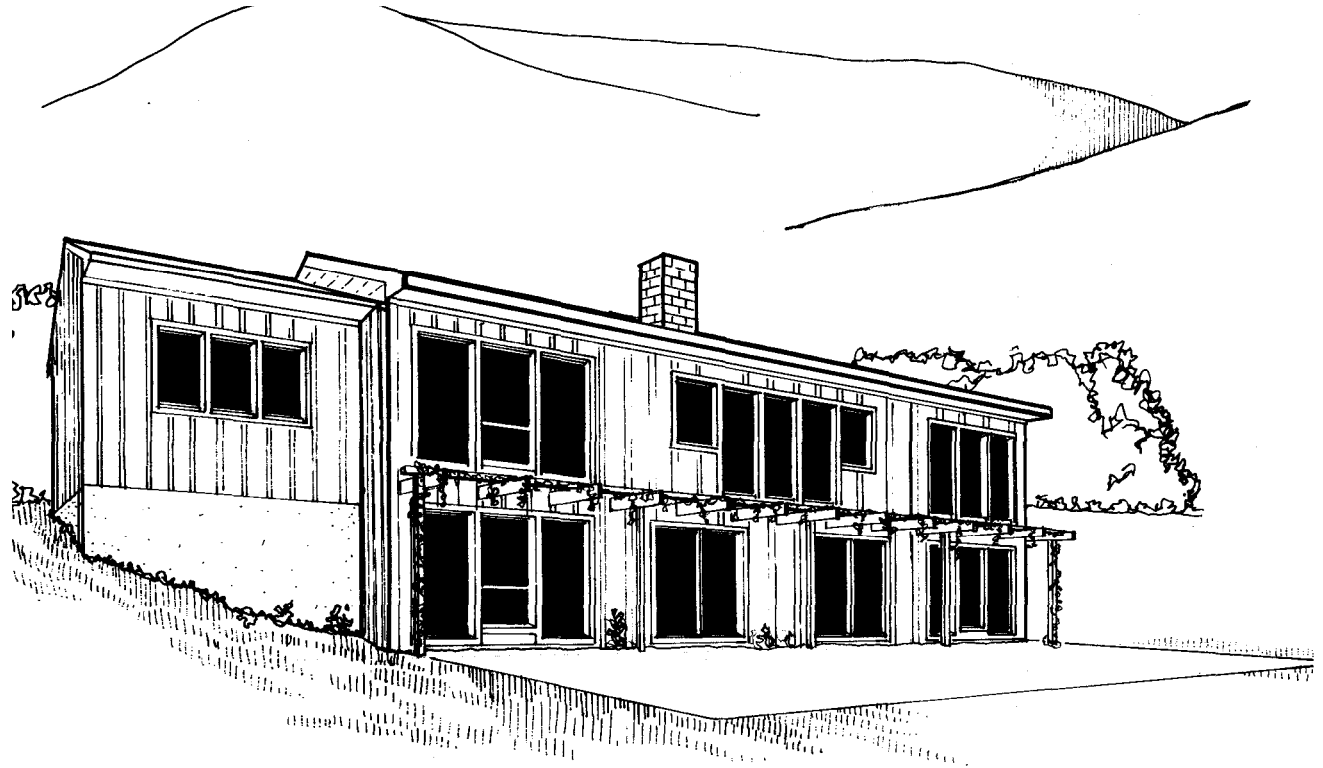


# Barnhart, MO



**Builder:** Parkton Development Company, Barnhart, MO

**Designer:** Londe-Rarke-Michels, Inc., St. Louis, MO

**Solar Designer:** Tim Michels, St. Louis, MO

**Price:** \$62,000

**Net Heated Area:** 2800 ft<sup>2</sup>

**Heat Load:** 49.0 x 10<sup>6</sup> BTU/yr

**Degree Days:** 4900

**Solar Fraction:** 63%

**Auxiliary Heat:** 1.29 BTU/DD/ft<sup>2</sup>

**Passive Heating System(s):** Direct gain

**Recognition Factors:** **Collector(s):** South-facing double glazing, 297 ft<sup>2</sup> **Absorber(s):** Ceramic tile over concrete slab, concrete wall surface  
**Storage:** Concrete floor and walls—**capacity:** 65,000 BTU/°F **Distribution:** Radiation, natural and forced ventilation **Controls:** Insulating shades, overhang, trellis, vents

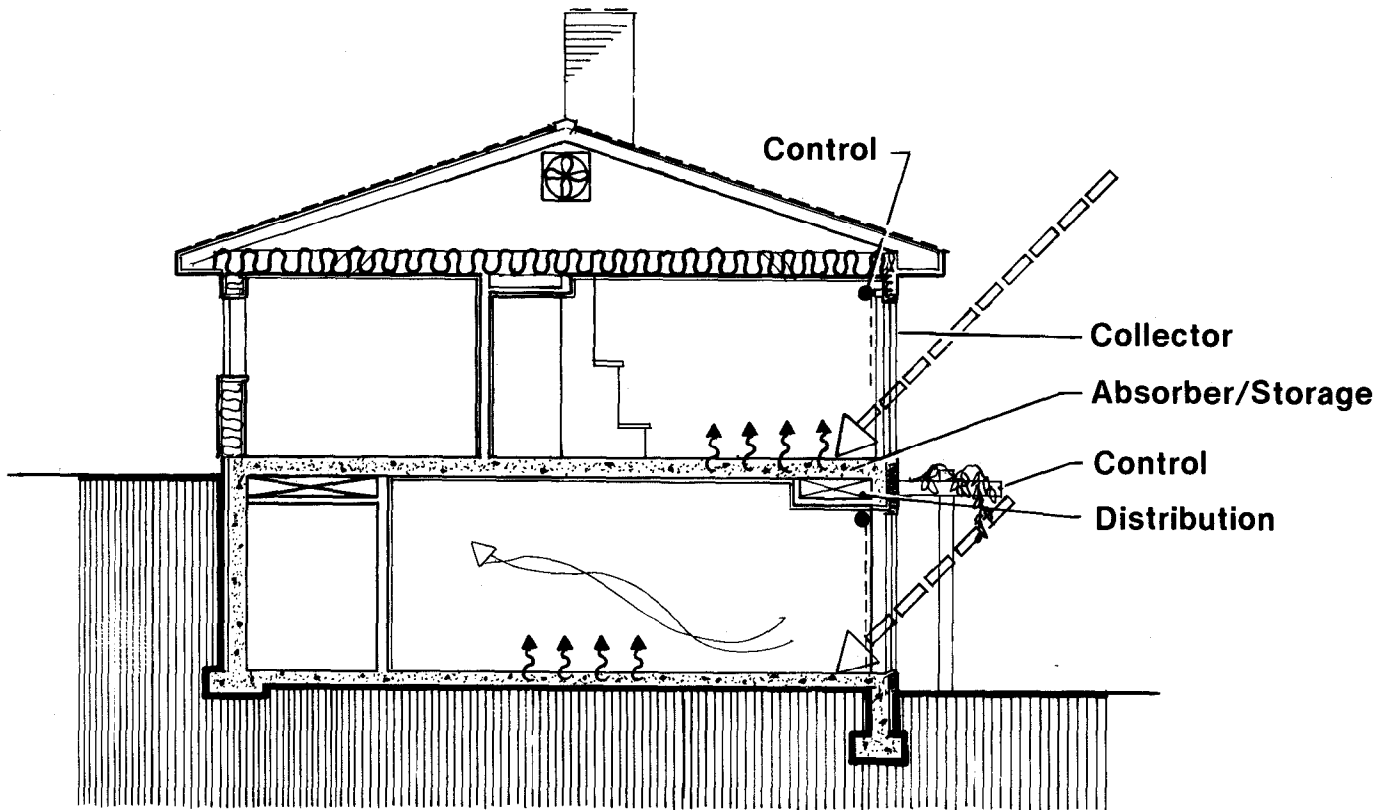
**Back-up:** Gas furnace

This passive solar house is an adaptation of a model home for a large development. It is built into a south slope so that its upper level is at grade on the north. The wall construction is 2- x 6-inch studs with 6-inch fiberglass batts and 3/4-inch polystyrene sheathing, while below grade walls are 8-inch concrete with 2-inch polystyrene. A continuous strip of butyl rubber sheet is attached to the exterior wall at the first-floor sill plate to reduce air infiltration. Twelve inch fiberglass batts insulate the roof.

With the exception of a few north-facing windows, glazing (297 square feet) is confined to the south side. All windows are double glazed and are equipped with manually operated roll-down insulating shades.

The winter sun is collected directly through the south windows to heat the floor of the major living spaces. Dark-colored ceramic tile flooring absorbs the radiation, and the 8-inch concrete slab stores most of the heat for radiant distribution to the living spaces at night, when the insulating shades have shut off the windows, minimizing heat losses.

Overheating is prevented in the summer by a roof overhang that shades the second floor and by a trellis that extends about 5 feet from the upper floor, supporting a deciduous vine growth. Additionally, an attic fan draws air from the living spaces and exhausts it through a continuous roof vent.



This plan is from the book  
“Passive Solar Homes – 91 new award-winning, energy-conserving single-family homes”,  
The U.S. Department of Housing and Urban Development, **1982**

The solar homes designs in this book were the winners of HUD’s fifth (and final) cycle of demonstration solar homes. The 91 winning home plans in the book were selected from 550 applications from builders.

This was a time of great interest and activity in the passive solar home designs – many of the winning homes show a level of innovation not found in most of today’s passive solar designs.

[www.BuildItSolar.com](http://www.BuildItSolar.com)

