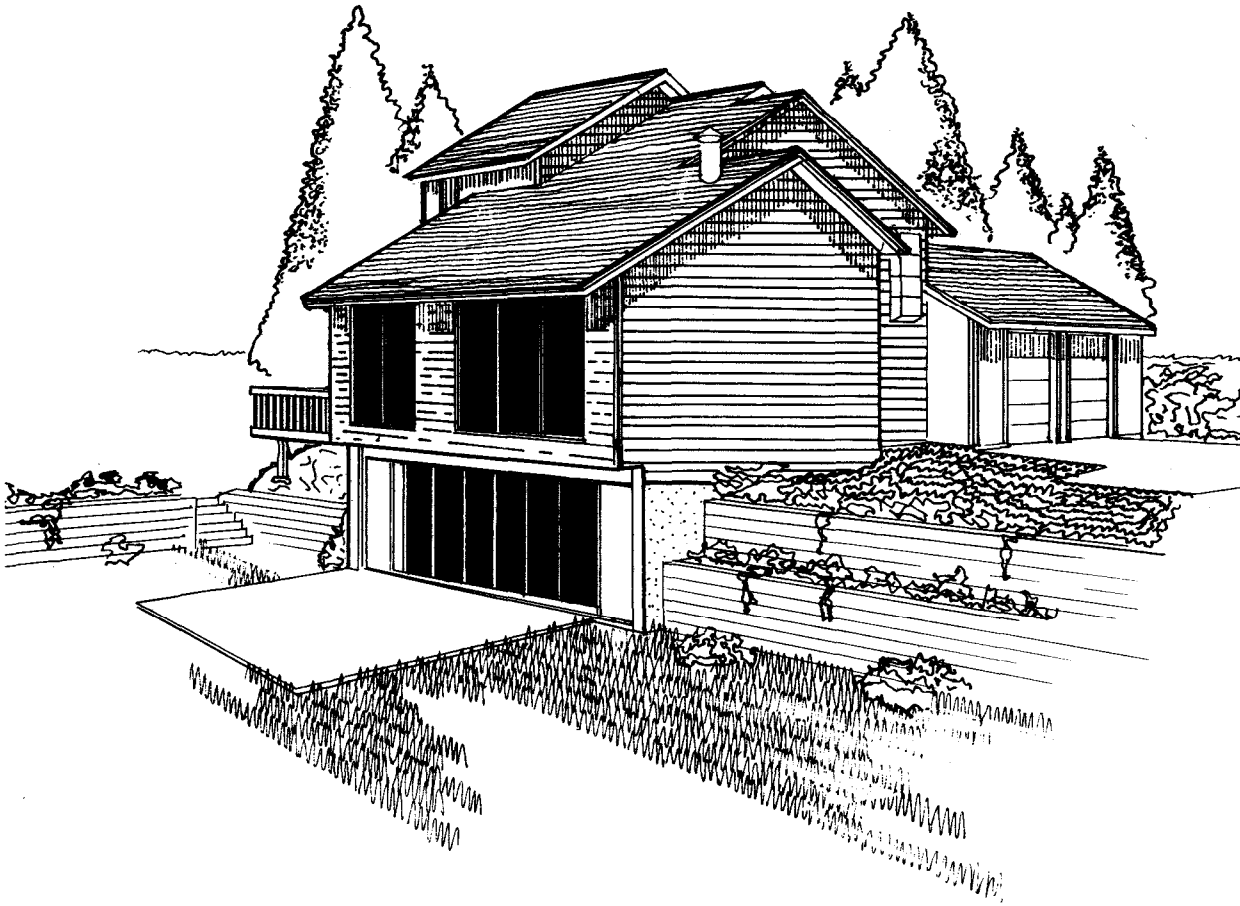
New Melle, MO



Builder: N.O. Brown Development Company, St. Louis, MO

Designer: N.O. Brown Development Company

Solar Designer: N.O. Brown Development Company

Price: $89,000

Net Heated Area: 2050 ft²

Heat Load: 62.6 x. 10^6 BTU/yr

Degree Days: 4900

Solar Fraction: 53%

Auxiliary Heat: 2.03 BTU/DD/ft²

Passive Heating System(s): Sun-tempering, indirect gain

Recognition Factors: Collector(s): Double-glazed panels, 293 ft² **Absorber(s):** Water-filled polyethylene containers **Storage:** Water-filled polyethylene containers—**capacity:** 4725 BTU/°F **Distribution:** Radiation, natural and forced convection **Controls:** Return air registers, roll-down shades, overhangs

Back-up: 51,000 BTU heat pump, wood stove

Domestic Hot Water: Optional DHW pre-heat

Cooling Load: 12.79 x 10^6 BTU/yr

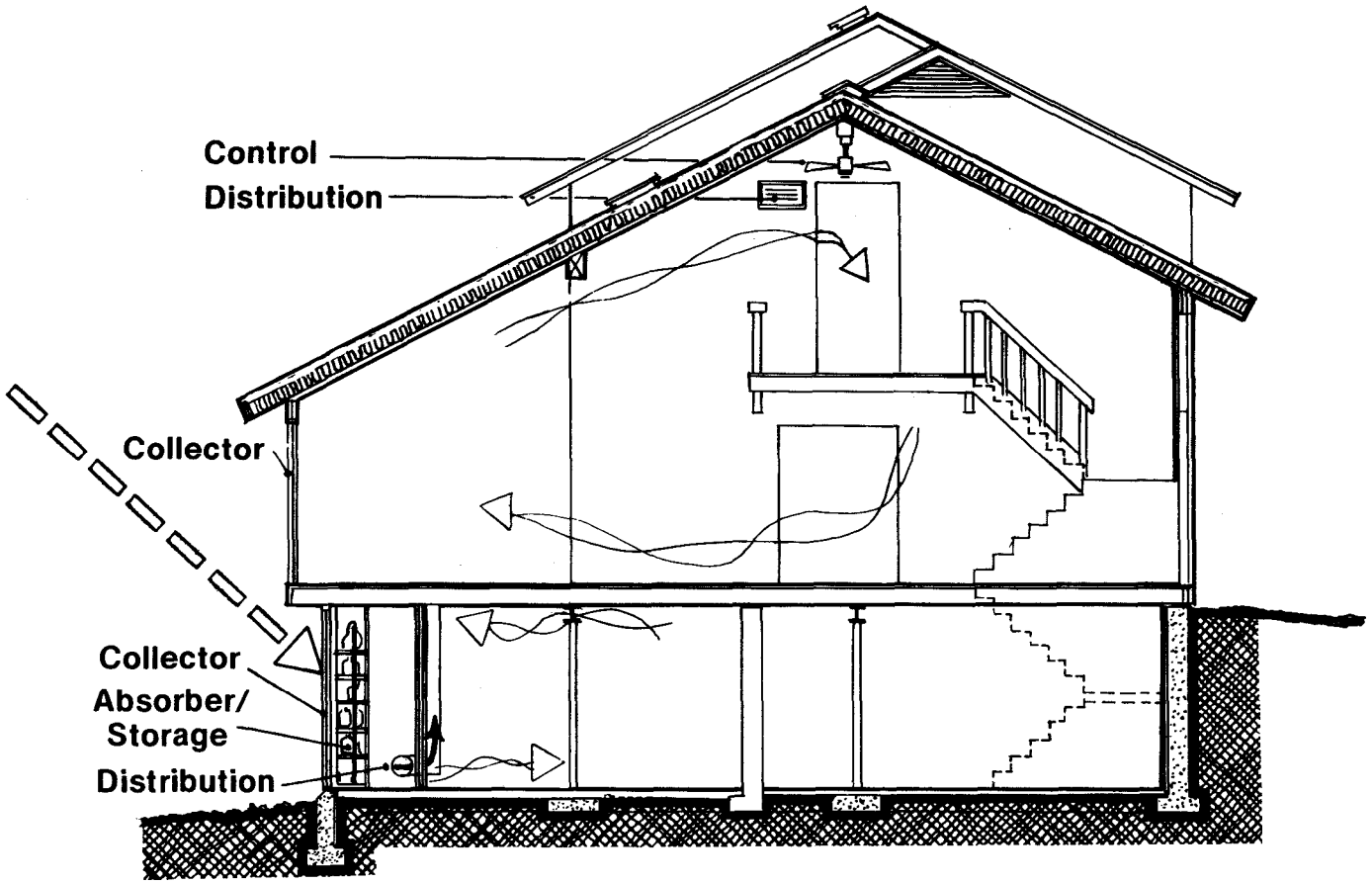
A large, water Trombe wall is the dominant passive solar feature of this house, which is part of a custom development. Solar radiation is **collected** through double-glazed panels on the south face of the basement wall and is **absorbed** and **stored** by the 120 polyethylene 5-gallon containers located in an enclosed space that is separated from the rest of the basement by three insulated walls. Heated air is **distributed** from the water wall as it rises through registers in the living room floor and circulates to a return air register at the top of the stairwell; from there it is drawn by fan to the bottom of the water wall to be heated again.

Another fan, which can be controlled either thermostatically or manually, has been installed in the registers to **control** first-floor overheating.

Supplemental collection is provided by direct radiation through the double-glazed living room/dining room windows. During summer, an attic fan is used to exhaust hot air to the outside, and both the water wall and direct south windows are shaded by overhangs.

The 2-story plan, which has a low surface to-volume ratio, is sited on a moderate south-facing slope. Earth is bermed on the

north, east, and west sides to envelop the basement and to serve as a winter wind deflector. A stand of pines planted to the northwest acts as an additional wind buffer. The building has R-30 insulation in the ceilings and R-18 insulation in the walls and features details to eliminate wind infiltration such as: sill plates installed over sealant and siding/foundation wall joints sealed with polyurethane foam.



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.