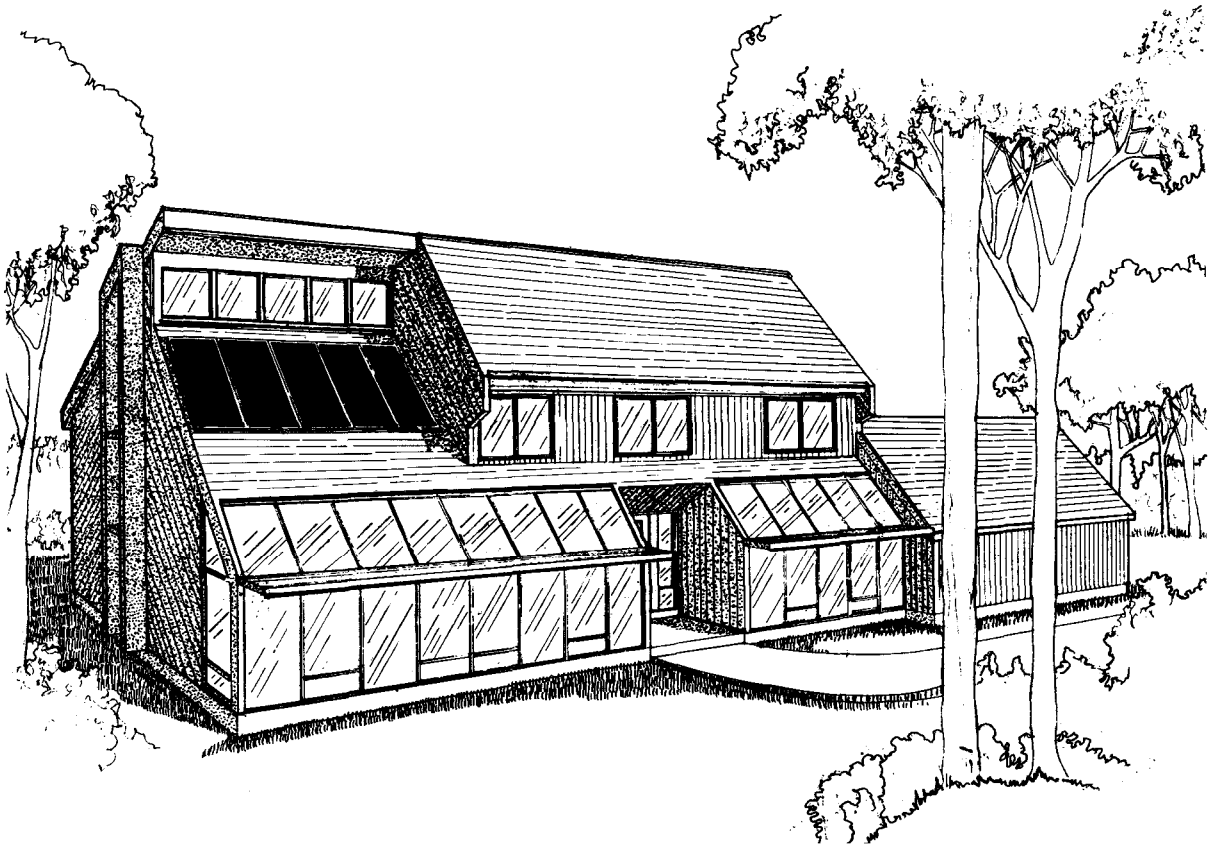
New City, NY



Builder: Bonnerville Construction Corporation, Monsey, NY

Designer: Perillo Associates, Hawthorne, NY Solar

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Price: $125,000

Net Heated Area: 2550 ft^2 Heat

Load: 146.0 x 10^6 BTU/yr

Degree Days: 4862

Solar Fraction: 38%

Auxiliary Heat: 7.34 BTU/DD/ft^2

Passive Heating System(s): Direct gain, isolated gain, sun~tempering

Recognition Factors: Collector(s): South-facing windows, greenhouse glazing, 466 ft^2 Absorber(s): Block wall, concrete floor surface Storage: Block wall, concrete floor-capacity: 12,230 BTU / ₀F Distribution: Rad iation, natural and forced convection Controls:Moveable insulation in greenhouse, shutters, registers, vents, trellis

Active Solar Heating: See DHW

Back-up: Furnace (88,000 BTU / H)

Domestic Hot Water: Liquid flat-plate collectors (105 ft^2)

Rockland County, New York, has unusually high utility and fuel rates, second only to the nation's highest in New York City. This fact was a major consideration for the builder when he planned this center hall, contemporary passive solar house. As a result, he has kept to a minimum the energy consumption of the house's simple auxiliary heating system.

The house is currently the only passive solar house in a growing subdivision where market demand has been for large residences with clearly designated living areas. However, its design is sufficiently inconsp~cuous to let it blend in with more traditional homes in the neighborhood.

Two greenhouses flanking the front approach on the south side act as passive solar collectors for heating the dining room and living room. In addition, five clerestory windows over the 2-story living room and three pairs of windows in the two south-facing bedrooms upstairs act as collectors.

Each greenhouse has a 6-inch concrete slab floor covering a total of 466 square feet. The radiation is absorbed and stored in a solid 12-inch concrete block wall with black painted textured surfaces facing south. A 6-foot sliding glass door is located in each storage wall in the greenhouses, allowing the sun to directly enter the house, and in the case of the living room

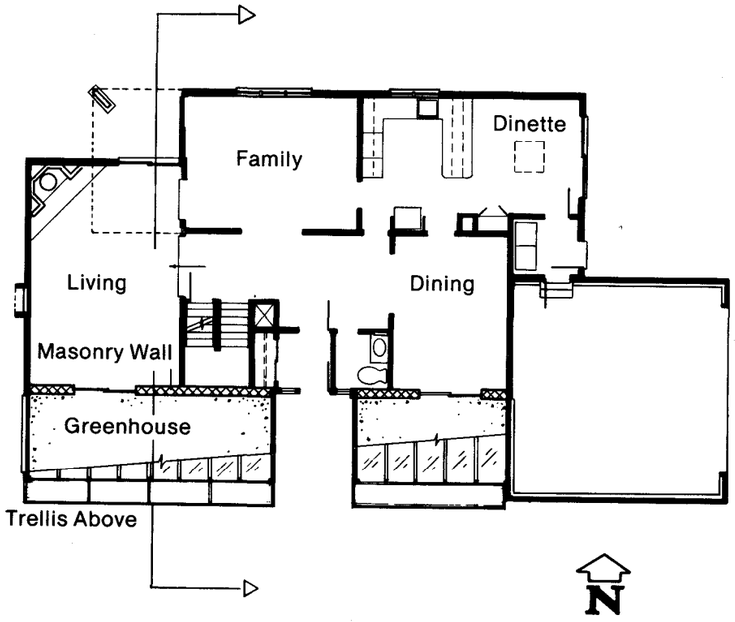
on the west side, strike the 4_inch solid concrete slab floor for additional heat storage.

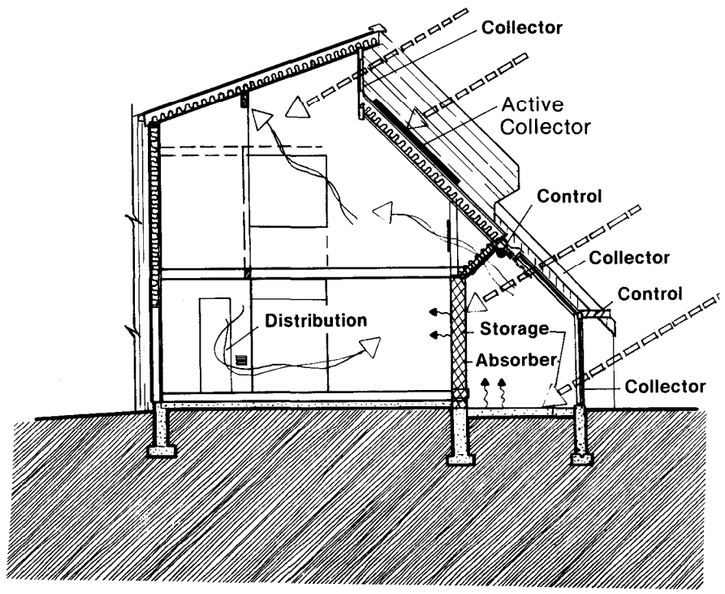
Heat is **distributed** into the living and dining rooms from the two greenhouses by radiation and then natural convection conveys the heated air through high registers into upstairs bedrooms. A two-zone fan system moves the air through a central duct system and this mechanically assisted convective loop continues to circulate stored heat at night.

Control features include a window quilt that can be lowered inside the sloping and vertical glass of the greenhouses. Translucent window shutters fit inside all windows and can be closed at night to prevent heat loss.

Along the south front is a trellis with removeable wooden slats which are taken down in winter and reinstalled in summer.

Two layers of 3/4-inch pOlystyrene perimeter insulation wrap the entire house at the foundation wall. All windows are double glazed and have 11/2-inch thick wood-framed pOlystyrene shutters (R-6). Exterior walls have 6-inch fiberglass (R-19) insulation. Attic, roof, and exposed overhang have 9-inch fiberglass batt insulation (R-30).





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.