A Passive Solar Residence
Sandia Heights, New Mexico

Client:
Mr. and Mrs. Donald L. Kress

Architect:
Alianza Arquitectos: An Architects’ Alliance
Albuquerque, New Mexico

Design Team:
Ervin E. Addy III, A.I.A. (Partner-in-charge)
Robert W. Peters, A.I.A.
Jerry W. Geurts, A.I.A.

Interior Design:
Alianza Arquitectos

Structural Engineer:
W.R. Underwood Jr.

Mechanical Engineer:
William Helfrich

Solar Consultant:
Susan Nichols

General Contractor:
Armstrong Brothers, Inc.
Albuquerque, New Mexico

Photography:
Alianza Arquitectos

Honor Award: Residential
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This passive solar house occupies a 1.75 acre high desert of chamisa, cactus, granite boulders and pinon trees at the edge of the Carson National Forest, elevation 6500 ft.

The hacienda form of house surrounding a courtyard is here given new definition. From the road on the North side of the property, the house steps down toward the arroyo, allowing clerestory lighting and solar heating at each level, while framing a consistently varied series of views of the mountains, arroyo landscape and the vast western panorama.

An area of 447 sq. ft. of south facing glass is used for solar heat collection. South surfaces include sections of trombe wall, clerestory windows and viewing windows all recessed or shaded from 78° summer sun by overhangs which form part of the grid of bronze aluminum frames for trombe glass and windows. This system is set in relief against the deep grey-green surface of the stucco wall masses which absorb upward of 90% solar gain. The total heat use of the house is 77,640,467 BTU/hr. Of that amount 48,956,630 BTU/yr. is provided by the south wall and the solar hot water heater. This results in a solar contribution of 64% of the total heating requirement.

The house contains 2100 sq. ft. of which 1700 sq. ft. is heated living space. Construction cost was $151,268.

The backup heating includes Heatilator-type fireplaces in principal rooms and under-floor electric coil systems.

The 6500 ft. high elevation, at the foothills of the Sandia mountains, allows natural summer cooling through use of hopper vent windows and sliding doors introducing southwest summer breezes at low level and exhausting heated air through higher openings on the north and east facades, as the floor levels rise (see plans.)
Jury Comments
A spirited and elegant design for a passive solar house. The house responds sensitively to its special site conditions such as view and sun. Interior spaces are highly attractive and finely detailed. Transition spaces from exterior to interior, such as the entrance court, are especially appropriate.