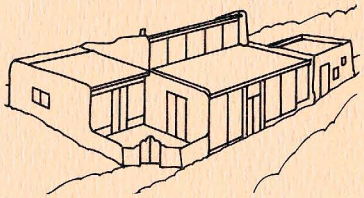
Second Village Unit B

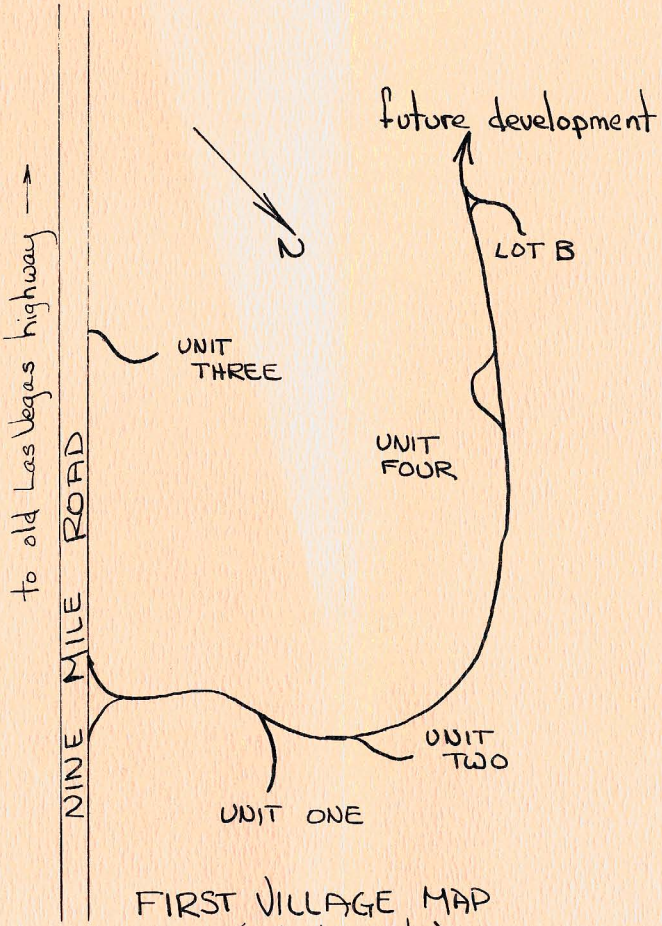


This passive solar home utilizes Trombe walls, clerestory windows and direct gain windows to collect solar energy, and poured concrete walls, adobe walls, and brick floors for thermal storage. The achievable solar fraction is dependent on the ratio of collecting glass area to thermal storage mass.

Trombe walls: 260 sq. ft. of double glazing over 16 inch thick cast concrete walls with a mass of 6000 lbs., giving a ratio of 231 lbs. of mass per square foot of glass.

Direct gain: 100 sq. ft. of south facing double glass with thermal storage in brick floors. 150 sq. ft. of clerestory and south-facing double glass with thermal storage in interior adobe walls and a 6 inch concrete rear wall (with 4 inches of polystyrene insulation on the outside), which have combined weights of approximately 4800 lbs. This gives a mass to glass ratio of about 320 lbs. per square foot of double glazing.

The estimated solar fraction for this home is in excess of 80%.



FIRST VILLAGE MAP
(not to scale)

FIRST VILLAGE

Santa Fe, New Mexico

Santa Fe, New Mexico

A community of solar homes designed for energy and water conservation and preservation of the natural landscape.

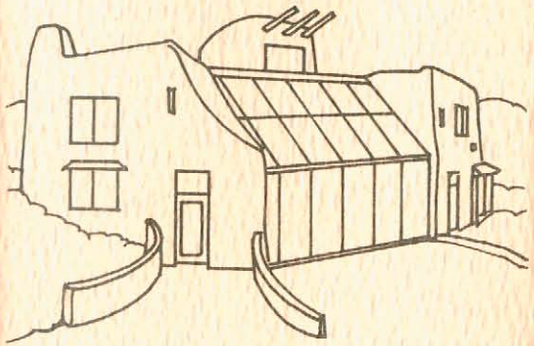
CommuniCo

Wayne & Susan Nichols

Information:

Box 81-D, Route 3
Seton Village
Santa Fe, NM 87501
(505) 983-1600

UNIT ONE



A hybrid solar system, providing more than 85% of the space heating requirements for the home. The primary solar component is a 400 sq. ft. south-facing, two story, double glazed greenhouse with a 14 inch thick adobe wall between the greenhouse and the living areas of the house. This mass wall provides thermal storage, accepting the sun's heat which passes through the wall with a delay of about 10 hours. In addition, warmed air is drawn off the top of the greenhouse by small fans, and stored in two rock bins located under the floor of each wing of the house. Back-up heat — for extended cloudy periods—is provided by thermostatically controlled baseboard electric heaters in each room.

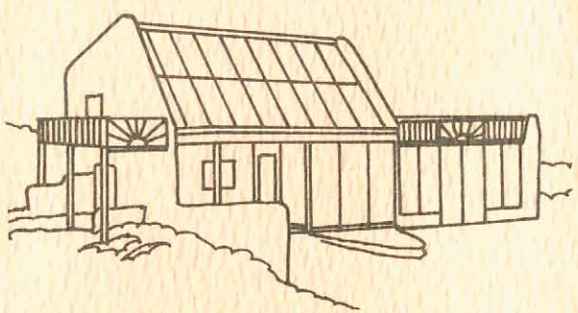
The greenhouse also provides summer cooling for the house. A vent located at the top of the stairs and doors in the front permit ventilation which prevents overheating in the greenhouse, and the adobe wall is shaded by balconies and the roof. The adobe wall and the rock bins remain cool, stabilizing the inside temperatures of the house.

UNIT TWO

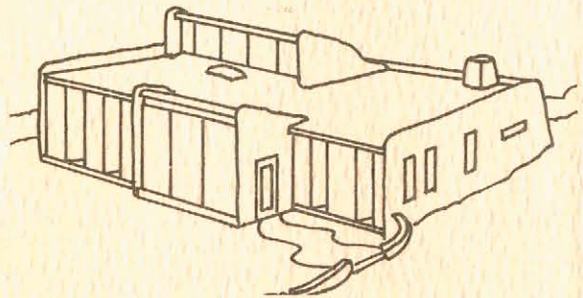
(this home is not open for viewing)

An active solar system, employing Sun Craft collectors as an integral part of the roof construction. Air is heated in the 375 sq. ft. collector area and then either distributed through the house as needed, or stored in rock bins for use at night or on cloudy days. The house is thus heated by a standard forced air system except that the sun provides heat instead of a furnace. Back up heating — for extended cloudy periods — is provided by an electric duct heater in the air handling units.

Summer cooling is achieved by venting the collectors, pulling cooler air into the house and by running the fans to store cool night air in the rocks.



UNIT THREE



This solar home employs several different passive features. The south side of the house is designed to catch the maximum amount of the sun's energy. Trombe walls on the east and west wings are made of 16 inch thick cast concrete behind double glazing. A greenhouse in the center collects and stores warm air in 14 inch adobe walls. Clerestory windows admit warming sunlight into back rooms with thermal storage in the poured concrete rear walls. Windows in the Trombe walls permit direct gain heating of the front rooms, with additional thermal storage provided by the slab floors.

UNIT FOUR

A passive solar home, employing a unique design feature — water filled Trombe walls in the east and west wings of the house. These walls are made of pre-cast concrete sections which are 10 inches thick: 2 inches of reinforced concrete surrounding a 6 inch hollow which is lined with plastic and filled with water. These units form the south walls of the bedroom wings. They are double glazed and also employ insulated shutters which can be raised at night to prevent heat loss and lowered during the day to allow their reflective surfaces to enhance heat gain. The central part of the house is heated by direct gain through the windows and clerestories with heat storage in the floors, massive interior wall, and 12 inch poured concrete rear wall. Back up heating is provided by electric baseboard heaters.