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'Projects'

'Small House, Big View'

When most highly successful corporate executives set out to build a new home, it is pretty much a given that the house will be over 10,000 square feet. The operative questions might be whether a four car garage is big enough, how many guest suites to include, and whether the master bedroom suite should have its own wing.

Not so with Yvon Chouinard, founder of the outdoor clothing and equipment company Patagonia. In keeping with his corporate philosophy of environmental responsibility (see EBN Vol. 5, No. 5 on a Patagonia distribution center), Chouinard and his wife wanted a small house. They also wanted a house that would fit seamlessly into the wild Gaviota Coastline about an hour west of Santa Barbara, California, and a house that could be built and operated with a minimal impact on the earth.

Santa Ynez architect Robert Mehl and local contractor Kit Boise-Cossart worked hard to make it happen, creating a 1,340 square foot house plus 500 square foot garage built chiefly with recycled materials, containing not a stick of new wood, powered by the sun.

For Mehl and Boise-Cossart the house was a challenge to find recycled materials and develop strategies for minimizing resource use. They got to try out new materials they were not familiar with, such as Air Krete insulation, on a project where budget was not the number one priority (information on cost was not made available to EBN). Among the more notable features:

The Chouinard home is little more than half as large as the average new home built in America today.

Walls were constructed of broken chunks of salvaged sidewalk. (Sidewalks do not usually contain re-bar, so they can be broken and used as building blocks - Mehl wrote specifications to ensure that sidewalk material did not come from locations where toxins might be present, such as near transformers that could leak PCBs).

The 18' thick walls were insulated with Air Krete, a cementitious foam insulation that is totally nontoxic and fire safe (see product review in EBN Vol. 6, No. 7).

Interior floors were made from salvaged, broken, irregularly shaped slate shingles that were laid over a concrete slab with embedded tubing for radiant

floor heating. (Material cost was extremely low, but insulation was very expensive because each piece had to be fitted.)

Natural daylighting is used extensively throughout the house.

High efficiency appliances were used, including a Sun Frost refrigerator and a Miele clothes washer.

Much of the home's electricity is provided by an array of photovoltaic (PV) panels hidden behind landscaping walls, which were also built out of the salvaged sidewalks. (Originally the house was to be 100% PV powered, but some design and sizing problems resulted in electricity shortages, and they ended up making it a grid connected system.)

Space heating (for the 2,490 heating degree day climate) and water heating are provided by an active solar system with propane back up.

Only salvaged wood was used in the house, though now that the architect and builder are aware of third party certified wood, they say they would have gone that route for much of the wood.

Road base was all salvaged material from a local demolition company.

Low toxic AFM coatings and natural oil finishes were used for interior finishing.

A composting toilet was set up by the contractors and used for the duration of the construction - with the construction crew responsible for the operation and maintenance.

A greywater system was incorporated into the house for use in landscape irrigation (though a full sized conventional septic system was still required).

Because the Chouinard house is so energy efficient (it exceeds California's Title 24 requirements by 30%, according to Mehl), they were able to speed up the permitting and save some money on permits.

An Innovative Building Review Committee has leeway to review plans and provide exemptions to full Title 24 applications. Plan review time was reduced from six weeks to two weeks, and \$100.00 was saved in fees (an incentive for energy efficient construction).

The house was completed in May of 1997. For the 20 month period through the end of 1998, the house consumed 170 gallons of propane gas, or approximately 8 gallons per month. Boise-Cossart said that recent modifications to the solar heating system should reduce the need for the back up heat.

The house was hooked up to the electric grid for the back up electricity in October 1998, so there was only one month of data available on the purchased electricity. From October 30 through December 2 this purchased electricity totaled about 85 KWH - an average of 2.5 KWH a day. The house is in use about half time, but when the Chouinards are there, they tend to have visitors, so it is heavily occupied. Three weeks of the period for which they have electricity use data included pretty heavy occupancy, according to Boise-Cossart.