

MODERN GREEN

A contemporary home showcases the possibilities of eco-friendly concrete



On a lot ravaged by the Oakland firestorm, Gloria and Peter Yu built a sun-splashed contemporary house that's admired as much for its striking design as for its approach to green building. At 4,500 square feet, the four-level house is large, but it was thoughtfully designed for low energy use. Photovoltaic panels generate electricity, and solar thermal collectors provide heat for the radiant-floor heating system and a small lap pool. The structure is well-insulated, with spray-in cellulose insulation in the walls and ceiling and high-performance windows that keep the home comfortable year-round.

Extensive concrete work, all with a high recycled flyash content, contributes to the home's passive solar design, helping moderate temperatures. The Yús' interest in green building is also reflected in their choices of interior finishes and products, including bamboo floors, low-VOC paints, Energy Star® appliances, and even a backyard clothesline to cut down on energy use.

"We have always wanted to live in a more environmentally responsible way, and by building and 'living' green we are enjoying our house very much."

—Gloria Yu, homeowner

GREEN PRODUCTS

High-volume flyash (HVFA) concrete. All poured concrete contains 50% recycled flyash, including the foundation, exterior stairs and walls, back patio and planter boxes. One of the defining architectural features of the home is the vibrant blue concrete floor in the main living space, with its concentric aluminum control joints radiating out from the home's spiral staircase.

"The blue concrete slab is a significant advancement for HVFA concrete, and a bit of an experiment," says Michael Curran, project manager for Canyon Construction, the Yús' general contractor. "The slab is only 2.25 inches thick with radiant heating tubes running throughout, and the control joints are concentric circles. It was a prototype, with no guarantee on the end result. This made the reward greater when we were able to give the Yús what they wanted. And there are no cracks!"

GREEN at a GLANCE

ENERGY & SYSTEMS

- Passive solar heating & daylighting
- 1.2-kW photovoltaic system (Sharp modules, installed by Canyon Construction and Borrego Solar)
- Hydronic radiant-floor heating
- Solar hot water
- "Cool" roof (Galvalume)
- On-demand hot-water circulation pump
- Insulated foundation/slab before backfill
- Floor insulation over crawl space
- House wrap under siding
- Cellulose insulation in walls and ceiling (Cocoon by U.S. GreenFiber)
- Cotton batt insulation under staircase
- Low-e windows (Blomberg)
- Energy Star® dishwasher, washing machine and refrigerator
- Sealed combustion furnace and water heater
- LED exterior lights
- Photosensitive exterior lighting controls
- Clothesline

MATERIALS & PRODUCTS

- Advanced framing techniques
- Reused form boards
- Engineered lumber: glulams for barrel-vault roof framing, wood I-joists for floors and ceilings
- 50% flyash in concrete
- FSC-certified fingerjointed trim for baseboards
- Exposed concrete as finish flooring
- Bamboo flooring

OTHER GREEN FEATURES

- 65% recycling of construction waste
- Low-VOC interior paint
- Range hood vented to outside

RENEWABLE ENERGY

Solar thermal collectors. From the exterior, the home's most prominent green feature is the rooftop solar thermal panels. Four glycol-based collectors, each four-by-ten feet, generate enough heat to supply the home's radiant-floor heating system and to keep a 2,400-gallon lap pool in the basement at a comfortable temperature year-round. During warmer months, the system also preheats the domestic hot water.

YEAR BUILT: 2002

SIZE:
4,500 SF

ARCHITECT:
JARVIS ARCHITECTS
GENERAL CONTRACTOR:
CANYON CONSTRUCTION

ENERGY EFFICIENCY

“Cool” roof. The light-colored standing-seam metal roof is Galvalume, a zinc/aluminum composition. Its high solar reflectance helps keep the home cool on hot days.

Daylighting. The home was designed so that natural light provides sufficient illumination during daylight hours, allowing electric lights to remain off. A spiral staircase surrounded by a two-story glass-block wall contributes to the daylighting design.



“Working with Gloria and Peter is a real joy. Sustainability is realized through motivated clients.”

—Chris Avant, contractor

