

In This Issue: Insulated Foundation Systems

4 TAUNTON'S

# Fine Homebuilding

Installing a Portable Generator • Synthetic Crown Molding • Painting Walls

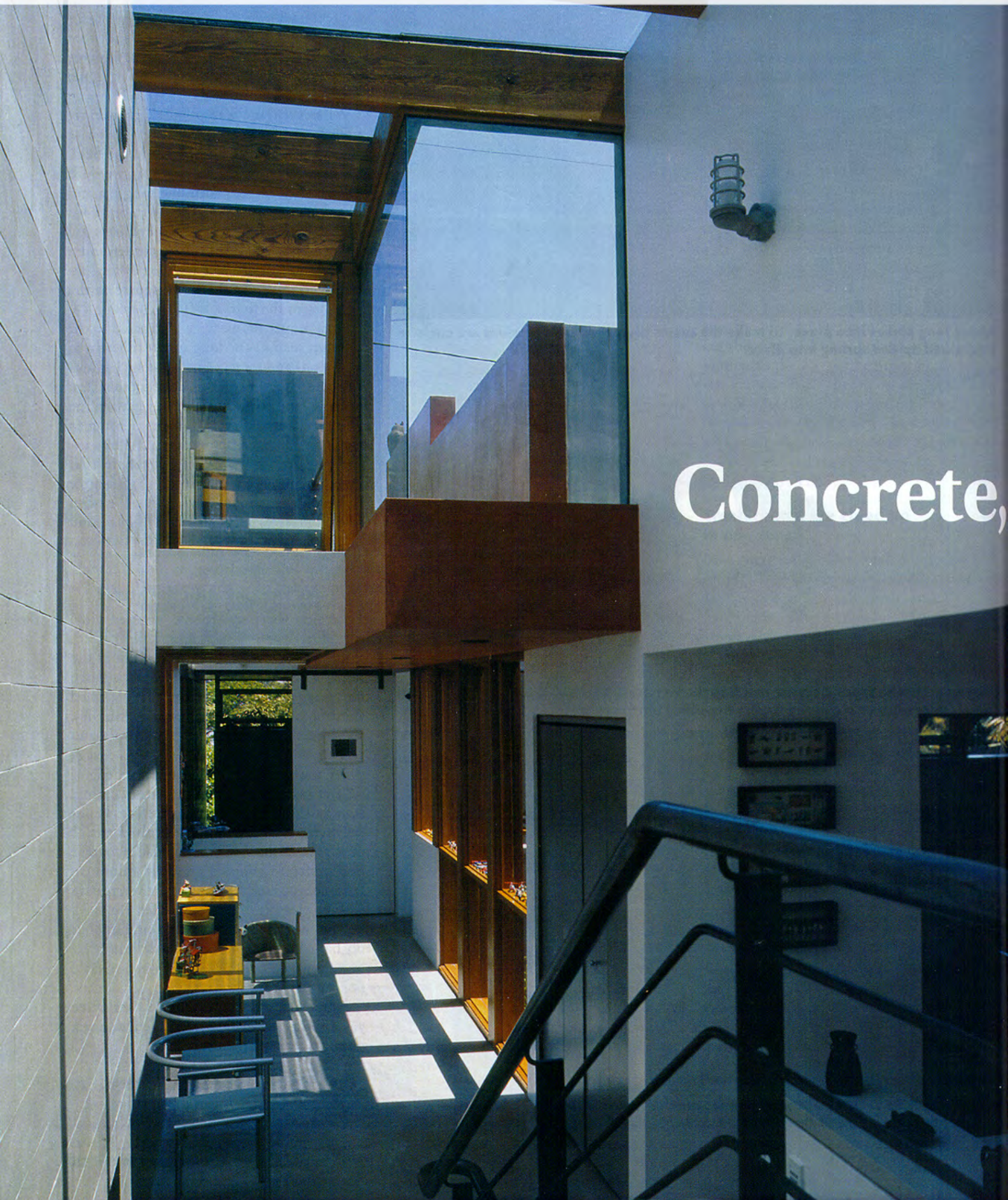


**Recycled Redwood Wainscoting**



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U.S. \$4.95/Canada \$6.95

# Fine Homebuilding



Concrete,

**S**ince I was a boy, I'd wanted to design and build my own home. I became an architect but always designed houses for other people, never for myself. When my wife, Stacy, and I stumbled onto a narrow, vacant lot in Venice, California, we had no plans to build a new house, but we made a low offer to buy the land anyway. To our surprise, the offer we made for the land was accepted, and suddenly, I had the chance to design a house for my family, a contemporary house that would have plenty of open space, natural light and ventilation. This house would also give me an opportunity to experiment with "green" building materials.

### **A multilayered plan packs a lot of space into a small site**

The 40-ft. by 90-ft. lot was in one of Venice's typically dense neighborhoods, all of which are subject to stringent zoning reg-

ulations. Any house that grew on the lot would have to be compact. Complicating matters, the city's building code required that any lot include a garage for at least two cars and that the garage have a 15-ft. setback from the street.

Rather than devoting the entire front of the lot to cars, my first step was to design a three-car garage off the alley at the rear of the property (floor plans, p. 125). The 15-ft. setback from the alley required by code would have placed the garage against the house and would have eliminated the possibility of any usable backyard. By obtaining a variance, I was able to position the garage only 5 ft. off the alley; this plan opened a 15-ft. long courtyard between the house and garage. To gain more interior room, I included space above the garage for two bedrooms and a bath; an enclosed bridge (photo facing page) connects the house, garage and upper roof decks.

The house itself would take up the lot's remaining space. As a family of five, we needed at least three bedrooms. Rather than work with a traditional arrangement of two levels (section drawing, p. 125), I divided the plan into seven levels, an arrangement that compresses more living space into the 25-ft. height allowed by code. The kitchen, living and dining areas are at ground level; the entertainment area is a step below. One flight up are the kids' bedrooms and office space; half a flight above that is the master suite. The remaining three levels consist of the flat roofs, which serve as decks and gardens.

Any floor plan that tries to pack lots of design into a small space runs the risk of becoming mazelike. To increase the sense of space and to take advantage of the climate, I opened the house to the outside on each level and included an outdoor sleeping porch off the master bedroom (photo bottom left, p. 127). Long expanses of high ceilings and

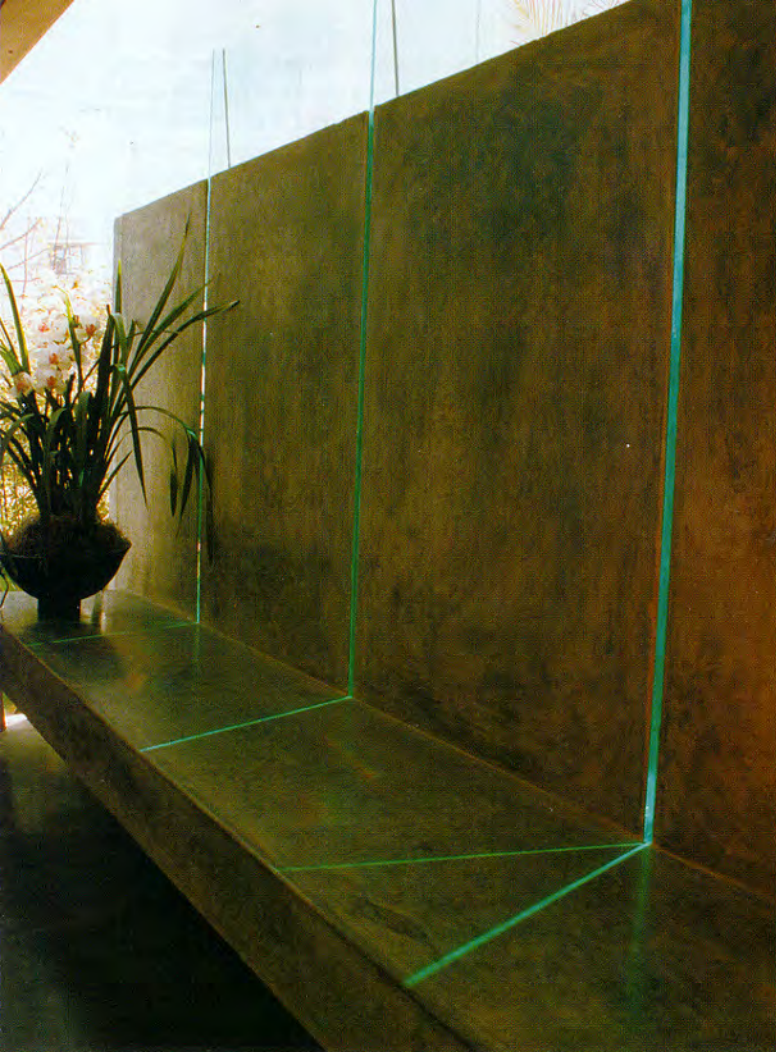
# Timber and Glass



On a small urban lot, an architect combines striking materials and a complex floor plan to make a home for his family

BY DAVID HERTZ

**Making full use of the lot.** The author designed a multi-level plan that includes roof decks and a bridge (photo facing page) between the garage and the house. Photos taken at A and B on floor plan.



**Tempered glass creates interesting light.** Cast into the concrete front wall, long glass triangles catch the afternoon sun and brighten the concrete bench and floor. Photo taken at C on floor plan.



frameless-glass corner windows also work to make the interiors seem larger.

### **Building with renewable materials**

This house was an opportunity for me to build with materials that are alternatives to conventional construction. I like working with concrete because it's relatively inexpensive, because it's strong and because it's flexible in terms of design applications. All the floors in the house are concrete; the first-floor slab slopes out to the exterior so that the entire house can be hosed out if neces-

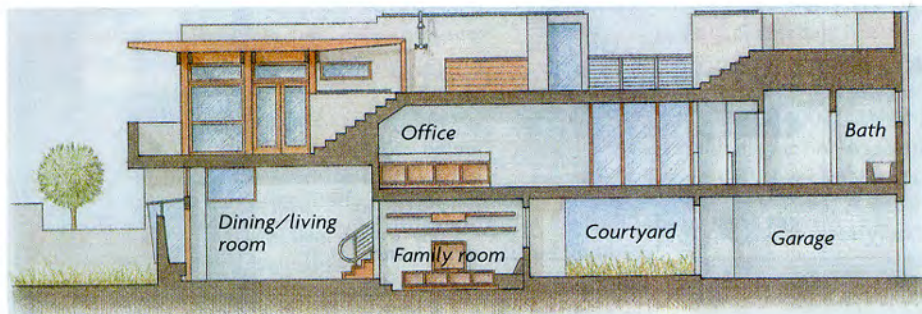
sary. On the upper levels, a 1½-in. slab was poured over conventionally framed decks. The concrete has proved popular with our three kids, who can skateboard indoors without damaging the floors.

I also used a precast lightweight concrete composite that I developed called Synconcrete (sidebar p. 126), incorporating it into 6-in. by 12-in. by ¾-in. wall tiles, countertops, bathtubs and sink basins. The dining-room table (photo bottom right) and several benches around the house are made of Synconcrete as well.

I used recycled fir for the exposed 4x12 roof timbers. I also designed custom vertical-grain fir doors and windows; in the master bath (photo top right, p. 126), the fir vanity adds some warmer tones to the overall scheme. In the kitchen (photo top right), I used birch cabinets for the same reason.

To create an interesting detail in the front of the house, I designed triangular fins of ¾-in. thick tempered glass that were cast at right angles into the concrete exterior entry wall, a detail that was inspired by the work of California modernist John Lautner. During

**A kitchen dedicated to the task at hand.** The kitchen's small area includes maple cabinets, appliances, sink and work surfaces, all within arm's reach. Photo taken at D on floor plan.

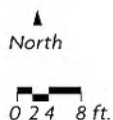


**Section**

**A plan of interlocking levels.** To get the most living space from a small lot, the author split the floor plan into seven levels. Each level has access to the outside, an important feature in Southern California.

**SPECS**

- Bedrooms:** 3
- Bathrooms:** 3 1/2
- Size:** 2,700 sq. ft.
- Cost:** \$150 per sq. ft.
- Completed:** 1997
- Location:** Venice, California
- Architect:** David Hertz
- Builder:** Michael MacDowell

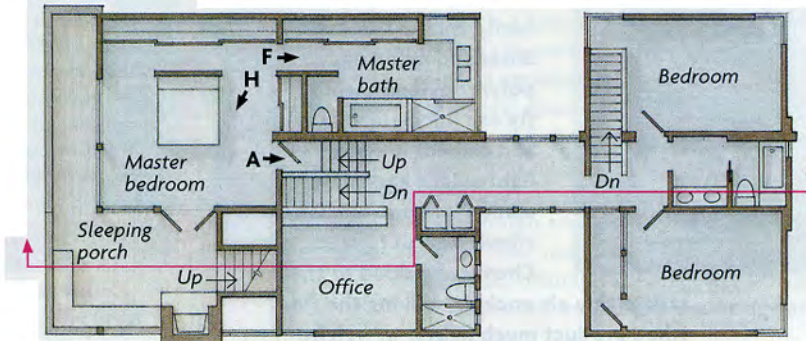


Photos taken at lettered positions.

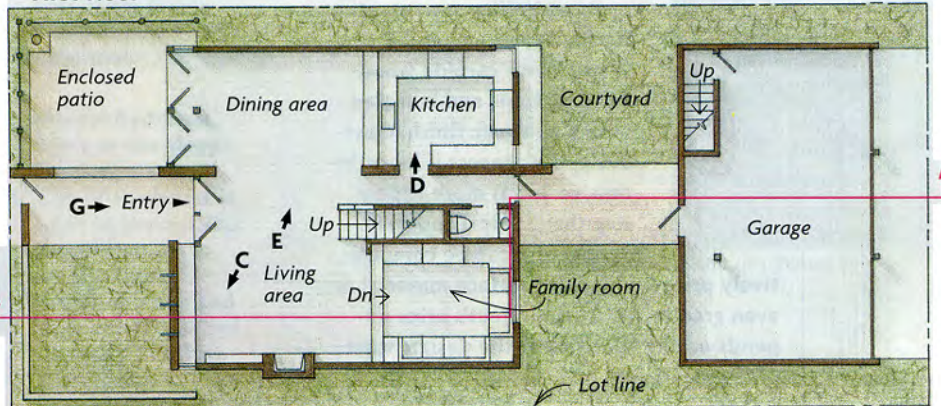


**Open plan of dining area creates the illusion of space.** Although it is a relatively small space, the dining area seems larger because of its high ceilings and smooth, uninterrupted lines. Photo taken at E on floor plan.

**Second floor**



**First floor**



B →

Section shown above

## Lightweight concrete that's versatile

After designing with concrete for years, I got frustrated. Concrete is a wonderful medium, but its weight and inability to hold a hard edge are both drawbacks if you're making anything besides foundations. After 15 years of research in lightweight concrete, I came up with a cement-based composite that was half the weight of normal concrete and had twice the compressive strength.

My company, Syndesis Inc., handles the design, manufacture and installation of the material (Syndesis Inc., 2908 Colorado Ave., Santa Monica, CA 90403-3616; 310-829-9932; [www.syndesisinc.com](http://www.syndesisinc.com)). Called Syndecrete, this proprietary composite is a mixture of cement, recycled materials and industrial byproducts that would ordinarily end up in a landfill. Shredded nylon and polypropylene carpet fiber, fly ash (incinerator waste) and cement are mixed with lightweight aggregates made from brass, plastic and circuit boards (photos left). Chemicals added to the mix

create tiny air pockets, making the finished product much lighter in weight.

The mix is poured into a form; once dry, it undergoes a steam-curing process. Unlike concrete, the finished product can be shaped with carbide woodworking tools and is sealed with a nontoxic finish. Obviously, the process is labor-intensive and is more expensive than typical concrete.

Syndecrete can be competitively priced with solid-surface material or even granite, but each project's price depends on the specifics of the design, type of aggregate, etc.

—D. H.



**Mirrors and natural light enlarge the master bathroom.** The dark Syndecrete sinks and tub seem bright amid large mirrors and the glass shower enclosure, all lit by the windows above. Photo taken at F on floor plan.





the afternoon, the sunlight channels through the edges of the glass fins, splaying green rays of light across the concrete (photo top left, p. 124).

The house's entrance gave me the opportunity to design a smaller door (photo below) for my children. It's something that's built to their scale; the door gives them a sense of ownership. The door also makes the entrance look a little less uniform.

### Passive systems heat and cool the house

Concrete can be cool to the touch. That's not so bad in hot weather, but during the rainy season or on cool nights, cold concrete is unfriendly. To warm things up, I integrated a solar hydronic-heating system into many of the concrete surfaces, including floors, show-

ers, tubs and even some wall surfaces, such as the concrete entry wall and bench.

The radiant system was designed by Earth-Star Energy Systems (207-832-6861) and Scholfield Solar (800-232-8009). About 80% of our heating and domestic hot-water needs are served by one 4-ft. by 12-ft. recycled, commercial-grade solar panel. A gas-fired water heater provides the necessary backup. A whole-house thermostat and an outdoor anticipator, which detects drops in outdoor temperature, are used to monitor and automatically deliver hot water where needed.

The system has proved to be cost effective (our total gas bill averages about \$50 a month), delivering silent, comfortable, uniform heat. There are no problems with airborne mold or spores typically associated with other heating systems. Another benefit of the system is that there's no need for soffits or hidden ducts, as with a conventional HVAC unit.

To keep the house cool in warmer months, I incorporated several cross-ventilation strategies. Hopper windows, both interior and exterior, control airflow throughout the house. I also bought several thermostatic controllers for skylights and windows; when the house gets too warm, the thermostats signal the windows to open, exhausting the air.

### Finishing the project

Venice is a beach town, so it's important to protect a house's exterior woodwork against constant exposure to sun and salt. After testing several manufacturers' finishes for water repellency, I chose a UV-stable transparent finish from Sikkens (800-833-7288) for the exterior woodwork. Although expensive, it seems tough enough to withstand the elements. The main body of the house was stuccoed; although the majority was left a natural color, we did dye the bridge area a deep red.

Once the main shell was complete, my wife, Stacy, began working with storage in mind, designing beds with ample drawers below, closets, cabinets and shelves throughout the house. We wanted to minimize air-quality problems with interior finishes, so we used zero-VOC latex paints for the walls, linseed oil for the exposed beams and a clear urethane for doors and windows. □

Architect David Hertz is the head of Syndesis Inc. in Santa Monica, California. Photos by Charles Bickford.



**A door just the right size.** The main entry door is flanked by a smaller door for the younger members of the family. Photo taken at G on floor plan.

**Master bedroom leads to the sleeping porch.** Every part of the house is open to the outside. In addition to French doors, hinged window and door inserts control the room's airflow. Photo taken at H on floor plan.