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FIRST ANNUAL

Residential Issue

LEED MOVES INTO THE NEIGHBORHOOD

GREEN HOMES OUT OF THE BOX

McGraw Hill CONSTRUCTION

California Greenin'

TRANSCENDING A TIGHT URBAN SITE, ARCHITECT ROBERT NEBOLON CREATES A HOUSE OPEN TO SUNLIGHT, OCEAN BREEZES, AND VIEWS

CASE STUDY

GUNNING HOUSE
HERMOSA BEACH, CALIFORNIA

SARAH AMELAR

"UPSIDE DOWN HOUSE" IS ARCHITECT ROBERT Nebolon's nickname for the Hermosa Beach, California, home he designed for his sister and her young family. Instead of placing the communal spaces near the entrance, at grade, the architect opted for a more unconventional—and sustainable—configuration, perching the living, kitchen, and dining areas on the top floor of the three-story house. "The arrangement and orientation of rooms," Nebolon points out, "can strongly affect the occupants' comfort, as well as the building's cooling efficiency."

Though the site, a mere 30-by-50 foot lot, is squeezed into the densely built community of Hermosa Beach, along Los Angeles's South Bay, Nebolon was determined to give it optimal access to cooling breezes and unobstructed views of the ocean, a block and a half away. Despite the building's diminutive footprint and near-claustrophobic proximity to its neighbors, he also wanted to carve out a private oasis, indoors and out, with a leafy terrace, in contrast with the nearly treeless streetscape.

Nebolon's sister, who shares the home with her husband and their two young daughters, presented the architect with a remarkably concise wish list: "a 'green' 3-bedroom, 2-bath house." Her husband also requested a "man cave," a home office, separate from the main living spaces, with room for a couch and wide-screen TV. Leaving the rest to Nebolon's architectural instincts, the family ended up with a Modernist 1,837-square-foot house that exceeds the 2005 Build-It Green Guidelines, performs 36 percent better than California's Title 24 Standard Design for energy efficiency, and is on track for LEED Silver certification.

Though Nebolon—who studied architecture at the University of California in Berkeley and later established his firm there—had not specialized in "green" architecture per se, he was certainly attuned to it. In the early 1980s, his first job out of school focused on passive-solar design and analysis for

« Sited on a back lot, the house is entered off an alley (opposite). The garage door is made of translucent polycarbonate. The steel cladding is extremely durable, low maintenance, and resistant to salt air. The skylight over the stair (above) opens automatically to vent the interior.

DAVID DUNCAN LIVINGSTON

KEY PARAMETERS

LOCATION: Hermosa Beach, CA (Los Angeles basin)

GROSS SQUARE FOOTAGE: 1,832 ft² (170 m²)

COST: $550,000

COMPLETED: March 2007

ANNUAL PURCHASED ENERGY USE (HEATING AND HOT WATER ONLY; BASED ON SIMULATION): 12.8 kBtu/ft² (146 MJ/m²), 36% reduction from base case

ANNUAL CARBON FOOTPRINT (HEATING AND HOT WATER ONLY; PREDICTED): 1.7 lbs. CO_2/ft² (8.4 kg CO_2/m²)

PROGRAM: Residence

TEAM

OWNER: Barbara and Joe Gunning

ARCHITECT: Robert Nebolon Architects

INTERIOR DESIGNER: Robert Nebolon, AIA, Barbara Gunning

LANDSCAPE: Robert Nebolon

ENGINEER: Sarmiento Structural Engineering

GENERAL CONTRACTOR: John Madison Construction

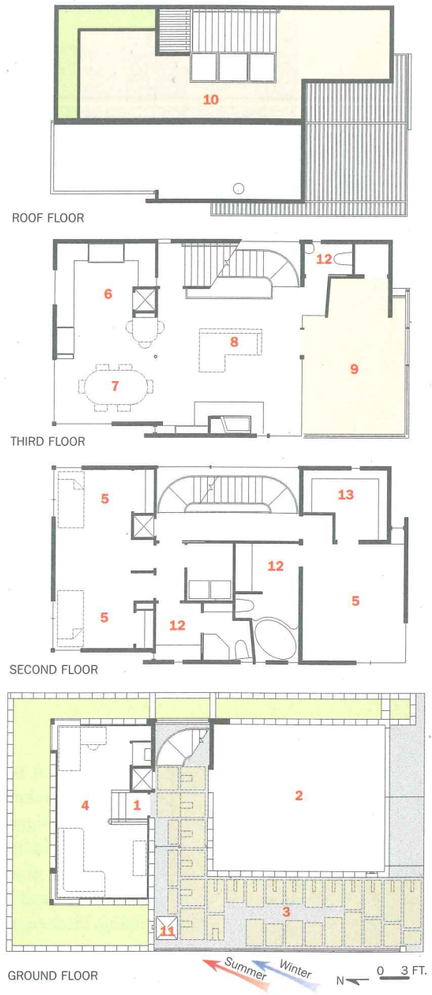
CONSULTANT: Steve Means (energy)

commercial and residential projects. And he had come of age architecturally in a place with a long history of climate-responsive design, a back-to-the-earth consciousness, and such local influences as the Lawrence Berkeley National Lab, noted for computer-modeled energy research. "I guess," says Nebolon, "I was 'green' for years without even knowing it—those concerns were integral to my practice."

"Upside Down" (or Gunning) House's site, a back lot, entered off an alleyway, was occupied by a rundown beach shack lacking insulation or seismic upgrades. The exorbitant economic hurdles necessary to salvage and renovate it convinced Nebolon to tear it down, recycling as much as possible.

One logistical challenge, however, was the local requirement that the new house include three off-street parking spaces. Nebolon's creation of a two-car garage, plus a carport for guest parking, left little space at grade. So he built upward, meeting the neighborhood's 30-foot maximum. Working within the lot's tight bounds, he devised a winding entry route, punctuated, for wayfinding, by brightly glazed concrete block. The path leads through a forecourt, or driveway, turning 90 degrees to a front door tucked between the garage and the "man cave."

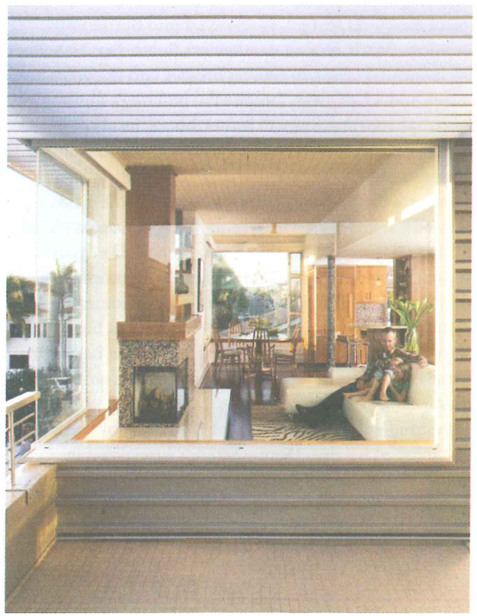
Committed to natural cooling methods, Nebolon oriented the bedrooms, on the second floor, and the living area, on the third, westward, toward the ocean and prevalent breezes. The key cooling—and spatial—concept relies on a grand open stair along the building's east wall that performs as a cooling chimney. Capping the stairwell, a skylight, with thermostatic controls, opens automatically to vent the building on warm days. Through windows and Dutch doors, a sea breeze flows across the



FLOOR PLANS

1 Entry
2 Garage
3 Entry court
4 Family
5 Bedroom
6 Kitchen
7 Dining
8 Living
9 Terrace
10 Roof deck
11 Outdoor shower
12 Bath
13 Storage

In the spirit of sustainability, the owners furnished the interior with used, mid-century Modern pieces, purchased on eBay. Nebolon playfully clad the fireplace and a column in tiny, multicolor tiles.



The main living spaces—perched on the third floor, just above neighboring rooftops—are open to light and views without sacrificing privacy.

house, generating a Venturi effect as it pushes warm air up through the skylight.

Beyond such practicalities, says Nebolon, the long route up also needed to be rich experientially. So he made it luminous, with daylight streaming in from above and through a huge, translucent polycarbonate-paned window, along the stair. (By night, at parties, he reports, the elegantly curving stair becomes a "major social zone.")

As you ascend, you gradually gain views out. A final flight, leading from the living areas up to a cantilevered roof deck, rewards climbers with a full ocean vista. A shading aluminum trellis over the roof terrace, as well as cool-rated surfaces and planting beds (adding thermal mass) modulate rooftop heat gain.

For the interior and exterior, Nebolon sought out sustainable materials with high durability, low maintenance, and resistance to the ravages of salty marine air. The exterior pairs light-green stucco with galvanized, pre-primed steel siding, expected to last at least 40 years. Not just part of a texturally varied and well-balanced composition, the steel cladding wraps the building protectively on its south and west sides, where sun and wind are harshest. While the stucco combines integral color (eliminating painting needs) with a protective elastomeric topcoat, the prefinished metal siding has a cool-rated, durable fluorocarbon paint (with a minimum 30-year life expectancy). Foil-coated plywood within heavily insulated exterior walls further reduces heat gain, as does low-e glass throughout the project. The interior integrates recycled kitchen cabinets of recycled teak and floors of sustainably harvested hardwoods.

The priority for most of the year is keeping cool, which the house accomplishes with air conditioning. To provide heat and hot water, Nebolon installed a natural gas-fueled hybrid hydronic system, which yields substantial energy savings over traditional methods (an increased efficiency of 25 percent for heat and 41 percent for hot water, according to his calculations). The house is fully wired for a solar-powered photovoltaic system; however, the owners have postponed purchasing PV panels for budgetary reasons.

During its first year, this $550,000 house has performed close to its energy-use projections—while providing a family with an inspiring and comfortable setting that reconnects their daily lives to the landscape. For Nebolon, "green" design really succeeds, as it does here, "when it transcends the specs, materials, and technical solutions, achieving spatial invention and a true language of architecture." <<

A former *Architectural Record* senior editor, Sarah Amelar writes about architecture and design.

A social gathering zone at parties, the stairway doubles as a cooling chimney. Thermostatic controls open and close the skylight above it, as needed. The large window alongside the stair is made of translucent polycarbonate.

SOURCES

PLYWOOD FLOOR WEB-JOISTS: Trus Joist MacMillan
PLYWOOD RADIANT BARRIER SHEATHING: Thermostat from Georgia-Pacific
MASONRY: Trenwyth Industries
SKYLIGHTS: Lane-Aire Skylights
FLOORING: Londeck from Lonseal
PAINTS AND STAINS: Aura from Benjamin Moore
LIGHTING CONTROLS: Lutron Maestro
INSULATION: Bonded Logic
DUAL-FLUSH TOILETS: Aquia from Toto
TANKLESS HOT-WATER HEATER: Munchkin #T80M