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Top-Down Design

BY KATE O'CONNOR



PHOTO BY DAVID DIETRICH

When building a house, most folks think from the ground up. Not Yves and Martine Naar. Their mountainside site outside Brevard offered spectacular 360 degree views, but the steep slope and the desire to honor the landscape had them thinking outside the box—and up on the roof.

In envisioning their mountain retreat, the Naars were inspired by their son—a student of environmental science—who encouraged them to not only build responsibly, but to make their getaway a model of green technology, functionally and aesthetically sensitive to the pristine setting. At his urging, Yves attended a symposium in Colorado where he learned of the benefits of living roofs—planted with vegetation—which provide an energy efficient alternative to conventional treatments, and interact with, rather than intrude into the surrounding landscape.

“Living roofs have many advantages,” explains Emilio Ancaya of Living Roofs, Inc., who designed and implemented the Naars’ project. “They significantly reduce the reflective heat of the roof, insulate the structure and reduce storm water runoff. And because the plants diminish the wearing effects of sun exposure, a living roof has an extended lifespan—twice to three times that of other roofing surfaces.”

“The living roof was, by necessity, one of the first decisions that we made,” says Yves. The couple engaged architect Stephens Smith Farrell to create a residence that would support that decision and their desire to build a truly eco-friendly residence; incorporating passive and active solar and geothermal principles and utilizing the setting to its best advantage.

Farrell conceived a modest 1,250-square-foot, two-story structure with its north face nestled into the mountainside, providing natural insulation and wind protection while opening the south face to the sun and the sweeping vistas. SAGE Builders erected the home with minimal site impact, using recycled, reclaimed and zero to low VOC materials to the greatest extent possible. These efforts have been independently recognized: the home is rated as second highest in the state for HealthyBuilt homes.

In terms of energy consumption, the structure is net-zero: an array of four solar panels provides ample electricity to supply the Naars with household power and to supplement the geothermal system in preheating the water that flows through the hydronic radiant heat tubing that runs beneath the home’s slate floors.

Up above, the roofs of the main floor and lower patio are blanketed with 15 species of sedums and succulents, chosen for their texture, tenacity and low maintenance: all are frost hardy and drought tolerant. In late summer, they are awash with blooms.

Planting the roof was a multi-stage process, says Ancaya. “First of all, the roof appears flat, but it’s actually slightly sloped to provide drainage.” To seal the surface, a roofing contractor laid down a waterproof barrier. Then Emilio and Kate, his wife and business partner, began their work. A root barrier was rolled across the expanse to prevent the plants from encroaching on and damaging the waterproofing layer. Next, drainage mats were installed to direct excess water to the gutters, avoiding pooling.

The next step was a water-retention fabric. “It’s made of recycled materials and looks like fleece,” Emilio explains. “It absorbs excess water and releases that moisture to sustain the plants if the weather is dry.” A thin layer of specially engineered growing medium was then spread across the surface. “On a roof, lighter is better—this medium is one third the weight of regular topsoil.” Finally, the Ancayas unfurled pre-vegetated mats: a carpet of seedlings grown off-site, much like lawn sod.

From above, the effect virtually camouflages the home into the hillside. “The living roof and the structure are nicely feathered into the landscape,” notes Stephens Smith Farrell, the architect. An important feature, since the Naars plan to build another structure slightly uphill, overlooking their current dwelling and its verdant roofs.

But aesthetics aside, Ancaya applauds the Naars’ foresight and commitment to green building principles. “They did it right,” he says, “and for all the right reasons.” For the homeowners, those reasons are self-evident. “We’re talking about what we leave for our children,” says Yves, “...about the Earth itself. What could be more important than that?”

Local Resources: Stephens Smith Farrell – architect; SAGE Builders – builder; Living Roofs, Inc. – green roof services