

Green home drips savings

Water-efficient features of cottage at Furman drawing attention

By Mike Foley • STAFF WRITER • July 3, 2008
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With Greenville experiencing extreme drought conditions, it's no surprise that visitors to the Cliffs Cottage at Furman University are highly interested in the water conservation features of the 3,100-square-foot Southern Living Showcase Home.

From cutting-edge technology to time-tested traditions, the Cliffs Cottage shows ways that water can be conserved both indoors and out.

"Water conservation is the future," said Ed Marshall, director of special projects at Furman and the person who oversaw the Cliffs Cottage from start to finish. "We still have a long way to go, but this project certainly demonstrates the road map for getting there."

Here are the water-saving aspects of the house:

Home design

The Cliffs Cottage roof covers more than 4,000 square feet. A sudden downpour on that expansive sea of pine-shake roofing can provide enough water to supply the plants and trees surrounding the house for a long time.

Scott Johnston, of Greenville's Johnston Design Group, said the house and grounds had to look pleasing -- and work as part of the campus environment it's nestled in.

Johnston was tasked with reducing water run-off, which in turn reduces erosion, which reduces flash floods in the Reedy River and other waterways.

"Every surface on the site is permeable," Johnston said, "except the roof and the front steps."

Water from the roof is channeled into a 12,000-gallon cistern, while water from the front steps heads into a pond in the front yard.



The Cliffs Cottage on the Furman University campus uses rain chains to bring roof water down that can be filtered and emptied into the lake. (HEIDI HEILBRUNN/Staff)

WATER RESOURCES

Here is a list of the companies that provided the water conservation features at the Cliffs Cottage at Furman University:

- Cisterns -- Find more information about the 12,000-gallon system installed by Darco Inc., a Colorado firm, at: www.darcoinc.com/rain-capture.html
- Home design -- Scott Johnston, of Greenville's Johnston Design Group designed the Cliffs Cottage. For more: www.johnstondesigngroup.com
- Xeriscaping -- Mark Byington, of Innocenti & Webel, did the landscape design for the Cliffs Cottage. Contact: Innocenti & Webel, South Carolina office, Tryon, N.C., 828-859-6860. Mike Stoner, of Stoner Landscape of Taylors, performed the installation. Contact: stonerlandscape@aol.com or 864-895-1986.
- Appliances -- A Bosch washer and dryer are used in the home. Visit: www.boschappliances.com. The dishwasher and some of the other kitchen appliances are Thermador products. Visit: www.thermador.com.
- Bathroom -- The dual-flush toilets and low-volume toilets are from Toto, as is the Axiom sensor faucet. For more: www.totousa.com.

"This way we get the water back into the soil," Johnston said.

Even the parking areas and the driveway are gravel-encapsulated in a lattice-like design that holds the gravel in sections and allows water to run through to the ground.

Landscape design

Mark Byington, of the South Carolina office of Innocenti & Webel, said he had to make concessions with the Cliffs Cottage. While using native plants and many drought-resistant plants, he still had to make sure the home had beautiful gardens.

His task was made especially difficult because his deadlines required late-spring planting, which didn't give the flowers, shrubs and trees in the home's expansive gardens adequate time to establish themselves.

The house features five main gardens: A formal garden with a pond in front of the house and overlooking Furman's lake; a Carolina Fence garden that incorporates native and historical elements; an organic garden; an herb garden; and an ornamental/traditional landscape.

Trickiest for Byington was handling rainwater and storm water. Some of the water captured by the roof was used to water gardens, while some of the water collected in the garden closest to the cisterns was channeled into the underground tanks. Other water filtered into a bog, then a pond, before draining into Furman's lake.

Organic material was added to the hard-baked clay to make it more permeable and more fertile, he said, and to allow plants to better retain the water they received. And shade trees provided a more natural environment for native plants.

Centipede sod was used when grass was necessary. "If you have to use grass, Centipede is best," Byington said, "in terms of needing the least input of water, fertilizer and pest control."

Water retention

The Cliffs Cottage has a secret. Buried on the grounds are six, 2,000-gallon cisterns that retain rainwater. The \$20,000 cistern system allows the capture of water from torrential rains to later be used as irrigation. A one-inch rainfall on the 4,000-square-foot roof generates more than 2,000 gallons of free water.

Given that about one-half of an average household's water use goes to landscape irrigation, free water is a definite bonus. That's why Sandee Eisenman's phone is ringing off the hook these days. The national sales manager for Darco Inc., a Colorado-based cistern manufacturer, said cistern systems are used not only for irrigation, but as back-up sources for drinking water should drought conditions worsen.

The tanks at Furman, which are actually slightly above grade so visitors can see the cisterns, cover about the same land area as a two-car garage.

Appliances

Both the house's dishwasher and washing machine were chosen for their energy- and water-saving ability, said Adrian Fulmer, of Postcards from Paris, who handled most of the interior design.

The front-loading Bosch Axxis, an Energy Star washing machine, uses 40 percent less energy and water than a standard washer, according to the manufacturer. The Thermador dishwasher, also an Energy Star appliance, uses 41 percent less energy and "less water," the literature says.

Bathroom fixtures

If you want high-tech in your hand washing, the sink faucet in the study's bathroom has it. The Toto Axiom sensor faucet only turns on when your hands are near, and every time water flows through the tap, the "eco-power, self-generating, hydro power system" recharges its battery to power the system.

Two of the secondary bathrooms have Toto Aquia dual-flush toilets that allow the user to choose between .9-gallon flush and a 1.6-gallon flush, Fulmer said. The master bathroom is equipped with a Toto Eco-Nexus toilet, which uses 1.28 gallons per flush, as opposed to a standard 1.6-gallon.