



ISSUES AND IDEAS

## When Sod Goes High-Tech

# Could an Eco-Friendly 'Green' Roof Be in Your Future?

BY SHEILA WALSH

There's something new – or at least a new version of something old – under the sun in environmentally friendly housing design: layered, vegetation-covered roofing systems known as green roofs or eco-roofs.

Inspired by Scandinavian sod roofs of yesteryear, these high-tech systems are already widely used in Europe, particularly Germany. Green roofs help homeowners save on energy costs, because the vegetation provides homes with additional insulation against extreme temperatures.

The concept hasn't yet caught on in the affordable housing field in the United States, because a green roof costs approximately three times more to install than a conventional roof. However, according to the U.S. Environmental Protection Agency, green roofs are competitively priced in the long-run, because they save more energy and last longer than conventional roofs.

Industry observers expect the initial cost of green roofs in the United States to drop in the next few years, as the systems become more widely used by local governments and commercial builders. Portland, Seattle, and Chicago, for example, already are investing in green roofs as part of their stormwater management programs. (The layers of a green roof are designed to absorb and filter rainwater that would otherwise run off and carry pollution from paved surfaces into watersheds.)

The city of Chicago has installed green roofs on a number of its buildings, including city hall, and recently adopted a policy that encourages and, in some cases, requires green roofs in developments. As of June 2004,

Hamilton West Apartments. PHOTO BY KARI FUGE



more than 80 municipal and private green roofs, totaling more than 1 million square feet, were in various stages of installation in Chicago, according to the city's Web site.

Commercial installations elsewhere include the Ford Motor Company in Dearborn, Michigan; the Ritz-Carlton Hotel & Towers in Boston; the Gap headquarters in San Bruno, California; and the Monterey Business Park in Baltimore.

In contrast, community development practitioners in the United States are only beginning to explore this promising technology, though a few affordable housing projects have included green roofs.

"There is no reason that it couldn't be done," says Karl Bren of **Community Housing Partners Corporation**, a NeighborWorks® organization in Virginia that has a sustainable development initiative, "but green roofs are significantly more expensive than typical roofs used on most housing, especially affordable housing. I do believe, though, we will experience a major increase in the use of green roofs in the years ahead."

According to the U.S. Environmental Protection Agency (EPA), the up-front cost of a green roof with lightweight plants in the United States currently starts at about \$8 a square foot, including materials, preparation work, and installation. In comparison, a traditional roof starts at about \$1.25 a square foot.

However, according to the EPA, "future summertime energy savings brings the price of a green roof closer to that of a traditional roof." The vegetation on green roofs

extends the roof's life because, as the EPA explains, "less solar energy reaches the roof substrate, thereby limiting damage from UV radiation as well as daily temperature fluctuations, which cause repeated contraction and expansion."

Ironically, green roofs are perhaps most needed in affordable housing projects. According to the National Low Income Housing Coalition, 56 percent of extremely low-income renters pay more than half their income in rent and utilities. Reductions in utility costs would give these families greater opportunity for economic advancement.

### Pushing the Market

That's one of the reasons why Housing Initiative Partnership (HIP) of Hyattsville, Maryland, decided to install a green roof on a 12-unit apartment building for low-income artists in Mt. Rainier, Maryland, a Washington, D.C., suburb.

"We see ourselves as providing affordable housing," said Stephanie Proestel, HIP's deputy director, "but we are also a force that pushes the market. We can show that development can be done in different ways."

For a small building on a quiet street, HIP's artists' housing is generating lots of buzz and traffic. Visitors from around the world have come to marvel at the building's green roof and other eco-friendly features. Located one block from Washington, D.C.'s northeast border, the building has an "extensive" green roof, meaning that it has a lightweight planting burden and uses plants with shallow roots. In contrast, an "intensive" green roof weighs more and includes plants such as trees that have deeper roots.

Seven different varieties of sedum, a hardy, drought-resistant plant with a shallow root system, cover the roof, creating the effect of a Zen garden with hairplugs. The sedum spreads on its own, with no watering and minimal weeding. In the spring, it blooms yellow-white.

"Green roofs are a technology very much worth implementing," says Stephanie Proestel. "We haven't had any problems with the roof. The plants have done well, and the roof is attractive as well as environmentally responsible. We created a

green space that wasn't here before."

The renovation of this historic building, completed in August 2003, was funded by \$1.8 million in grants from nine funders. The largest donors were the Maryland Department of Housing and Community Development (\$1,020,000) and the Prince George's County Department of Housing and Community Development (\$569,966). HIP artists housing's 12 units rent for \$425 a month each.

The building is packed with other green design features under its green roof. Storm water is either absorbed by the green roof or treated onsite through bioretention landscaping – shallow, landscaped depressions that collect rainwater. The idea is to prevent storm water from flowing into the Anacostia, a heavily polluted urban river that is the focus of citizen activists and a District of Columbia revitalization initiative. Native plants, including coneflowers and butterfly bush, increase the soil's ability to absorb rain while adding to the property's aesthetic appeal. Funding for the landscaping was provided by Prince George's County Department of Environmental Resources.

Other green design features include a tankless hot water heater that can save up to 20 percent on annual heating costs, high-efficiency windows, air conditioning that uses the more environmentally-friendly refrigerant Puron rather than Freon, ENERGY STAR appliances, efficient light fixtures with compact fluorescent bulbs, and a bike rack.



HIP's artists' housing.

PHOTOS BY DAVID PLIHAL

According to Proestel, the environmentally friendly features added approximately 5 percent to project costs.

“For a nonprofit, it can be overwhelming to think of all the things related to green design,” said Proestel. “But you can try one thing – something simple such as upgrading windows or installing ENERGY STAR appliances or more environmentally friendly siding – and it can make a big difference. People who need affordable housing also need to save energy.”

### A Gathering Place

Across the country, in Portland, Oregon, the 8,700 square-foot green roof of Hamilton West Apartments has become a gathering place for the affordable housing complex’s tenants and visitors. The 10-story, 152-unit building’s roof has a perfect view of Mt. St. Helens, Mt. Hood, and downtown Portland, said building manager Sean O’Neill.

In early October, for example, crowds gathered on the roof to see steam clouds above Mt. St. Helens after the U.S. Geological Survey issued a level-three volcano alert, the highest-level warning of an imminent eruption.

“Everyone loves the eco-roof, not just tenants but prospective tenants,” said O’Neill. “I think it is a major selling point for the building, and it’s been very helpful in attracting new tenants.”

The green roof, at 24 pounds a square inch, is stronger than the tar roofs commonly used in big apartment buildings, said O’Neill. “If it wasn’t an eco-roof, it wouldn’t be strong enough to support our rooftop terrace and all the traffic it gets.”

Funded by the Housing Authority of Portland, the Portland Development Commission, and the city’s environmental services division, Hamilton West Apartments’ green roof is part of the city’s larger effort to reduce the amount of polluted storm water running off rooftops and concrete into rivers and streams.

The roof cost \$10.50 a square foot to install. Units in the building, reserved for people with incomes 40 percent or more below the city’s median, range from \$368 for an efficiency to \$600 for a one-bedroom.

Several different kinds of vegetation, including sedum, succulents, and thyme, grow on the roof. Grass seeds transported by birds have also taken root. Bare spots are filled in with red lava rock.

“All apartment buildings have similar features, but an eco-roof is distinctive,” said O’Neill. “It really sets us apart from other affordable housing buildings.” ■

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## TRAINING OPPORTUNITIES

### ANNOUNCEMENTS

#### Faculty Award

Jason Zavala, president of MitiGate Inc., Rochester, Vermont, has been selected for the Washington, D.C., 2004 NeighborWorks® Training Institute’s Faculty Award. Zavala has been ahead of the curve in foreclosure-prevention education. Chair of the Vermont Anti-Predatory Lending Coalition, Zavala specializes in foreclosure intervention and has worked with the Vermont Senate Joint Housing Committee and other key policy-makers.



Jason Zavala

He also knows the importance of consumer education. He has coauthored such consumer guides as “When the Lender Knocks” and “Don’t Get Soaked by Your Mortgage.”

“Jason’s broad knowledge, exemplary course evaluations and his involvement in the industry made him a likely candidate for this award,” said Karen

Hoskins, NeighborWorks® curriculum manager for homeownership and community lending training. “He exemplifies the kind of individual who has given the National Training Institute the solid reputation that it enjoys.”

Prior to launching MitiGate Inc., Zavala concentrated his work in rural Vermont. There, he was the HomeOwnership Center® director and loss prevention initiatives manager for Rutland West Neighborhood Housing Services, now NeighborWorks® of Western Vermont. Among its successes is an intervention program that has prevented default and foreclosure for many homeowners living in an economically depressed region.

## Scholarships for Multifamily Bond Course

Enterprise Mortgage Corporation provided \$500 scholarships to all 13 practitioners attending the “Advanced Issues in Multifamily Bond Transactions” course in Chicago in September. The course was part of the Advanced Practitioner Program’s Contemporary Issues (CI) Program, which comprehensively addresses particular critical issues that impede maximum effectiveness to community-based development organizations.

The course offered very senior staff the opportunity to glean knowledge from faculty and experts, and learn from the experiences of colleagues in an intimate and confidential setting. Participants were required to have conducted at least two bond deals prior to attending.

In the course, practitioners applied their hands-on knowledge to formal review of bond transactions in community development. By the end of the course, they were able to access a wider range of choices in each bond deal, use templates to analyze those choices; compare the advantages and disadvantages of different types of bonds; and understand the particular issues posed by preservation and refunding deals.

## Advanced Practitioner Program April Offering

The Advanced Practitioner Program of Neighborhood Reinvestment Corporation will be offering a two-day advanced clinic, “Organizational Performance: Connecting Your Strategic Plan, Your Board, and Your Executive Director’s Performance,” at the April NeighborWorks® Training Institute brochure for Minneapolis.

“Organizational Performance,” a revision of the course on “Creating a Culture of Evaluation,” will be offered Monday and Tuesday, April 18 and 19. It looks at an organization’s performance through how the board, the board chair, and executive director succeed in contributing to it and how each knows what they are contributing. This clinic, which is based on situations and systems being used by clinic participants, examines how the board chair, other board members, and the executive director can create useful accountability and improved performance, and carry out effective evaluations.

Participants will use their own strategic plans in creating an evaluation process in their own organizations and examine potential approaches to make evaluations more productive for the organization. Evaluations of the board and board chair will be included as well as a look at the changing role of boards in defining and evaluating the

strategic direction of the organization. Executive directors and the board chair will have a chance to develop some next steps for their evaluation system as part of the clinic, and some limited follow-up assistance will be available from the consultants.

This clinic is targeted to board chairs and executive directors – both from an organization must attend. In fact, because of the advanced and in-depth nature of the clinic, participants are required to submit information about their current evaluation system upon registration and to bring their strategic plan with them, which will be shared with the faculty and others in the group. Participants will not be confirmed until the required information has been received and reviewed.

Further details: Lisa Archey ([larchey@nw.org](mailto:larchey@nw.org)), training manager, Advanced Practitioner Program. ■