



INSIDE
12-13 A LOOK
AT SOME
NOTABLE
GREEN SPACES.

GREEN CONSTRUCTION



JENNIFER KEIRN

Bert Diehl, left, the director of facilities management, is shown on Lakeland Community College's green roof with Tim Hollo, territory manager for The Garland Co. The Cleveland company installed Lakeland's roof.

IT'S A LASTING VIEW

Green roofs are gaining in popularity, easy to maintain and have sustainability benefits

By JENNIFER KEIRN
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When Lakeland Community College first considered a green roof in 2008, Bert Diehl heard some grumbling from the maintenance crew.

"They said, 'Are we going to be weeding this thing?'" said Mr. Diehl, the college's director of facilities management. "It was an opportunity to educate them, 'You don't have to do a thing.'"

That promise has held true. Over five years, the roof's sedum, a hardy ornamental ground cover, has never been watered and rarely weeded or dead-headed.

The green roof atop Lakeland's S Building — the first such roof in Lake County — is helping to lengthen the life of underlying roofing materials, he said, and it is adding energy efficiency to the building. Adjacent to a science lab and rooftop greenhouse, it has become an extension of the curriculum.

Best yet, added Mr. Diehl, it's become a visible sign of the college's overall sustainability strategy.

"The location was ideal, the size was



CONTRIBUTED PHOTO

A rendering of the vegetative roof that is being installed at Case Western Reserve University's Tinkham Veale University Center.

ideal," he said. "It was a nice opportunity to do something that would be part of our mission to educate the folks of the future."

The installation of green roofs — also called living or vegetative roofs — is on the rise across the country.

According to nonprofit Green Roofs for Healthy Cities, the North American green roof industry grew 24% between 2011 and 2012. Its members reported 982 new green roof projects in 2012, totaling nearly 5.6 million square feet.

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GREEN CONSTRUCTION: BY THE NUMBERS

■ Nearly half of greenhouse gas emissions in Northeast Ohio come from residential and commercial buildings, primarily from burning fossil fuels for lighting, heating and cooling.
Source: GreenCityBlueLake



billion in GDP
■ Support more than 7.9 million jobs
■ Provide \$396 billion in labor earnings
Source: U.S. Green Building Council, "Green Jobs Study"

From 2000 to 2008, the green construction market has:
■ Generated \$173 billion in GDP
■ Supported more than 2.4 million jobs
■ Provided \$123 billion in labor earnings
From 2009-2013, it is forecasted that green construction will:
■ Generate an additional \$554

Worldwide, 51% of architects, engineers, contractors, owners and consultants anticipate that more than 60% of their work will be green by 2015, up from 28% of firms in 2012.
■ The U.S. green building market has grown from 2% in 2005 to 44% in 2012, according to a McGraw-Hill Construction analysis of nonresidential construction project starts data.
Source: McGraw-Hill Construction, SmartMarket Report, 2013

GREEN SPACES: CLEVELAND STATE UNIVERSITY

In its efforts to work toward a sustainable future, Cleveland State University says it is poised to save \$60 million over the next 10 years due to energy-friendly renovations and construction on its campus.

CSU has three buildings that have attained LEED (Leadership in Energy and Environmental Design) certification from the U.S. Green Building Council, and a fourth that is pending certification:

- Julka Hall, home to the College of Education and Human Services, and the School of Nursing (LEED Gold).

- Recreation center (LEED certified).

- Euclid Commons residence hall (LEED Silver).

- Student center (pending).

CSU project manager Tania Anochin said the university has been working to update campus buildings for the last decade, but

DOLLARS AND CENTS

- COSTS:** CSU project manager Tania Anochin estimated construction costs are about 5% to 10% higher on the front end.

- BENEFITS:** Cost savings on the back end will come out to between 10% and 20% annually because the buildings are easier to maintain and efficient systems run cleaner.

only recently embraced the green and sustainable movement.

While she said there are a little more costs associated with going green, the payback in energy efficiency and savings on the back end comes within five to 15 years, depending on the building and systems.

Ms. Anochin said it's too early to gauge all the benefits of going green, but students and faculty showed a



CONTRIBUTED PHOTO

Cleveland State has three buildings that have achieved LEED status, and a fourth that is pending. Shown here is the recreation center's green roof.

keen interest in the initiative through a Campus Sustainability Coalition, which looks at all aspects of developing a sustainable campus.

The university is replacing older equipment with more energy-efficient systems, including a geothermal system at the administration center, the installation of solar panels on some buildings and a 7,000-square-foot green roof on the Recreation Center.

"I think in the long run the ben-

efits are not just money — it's the environment and how we treat our planet," Ms. Anochin said. "There is a cost savings overall in going green and sustainable. It's a little bit higher up-front cost in the beginning, but the payback is there."

She estimated construction costs are about 5% to 10% higher on the front end, but the cost savings on the back end will come out to between 10% and 20% annually because the buildings are easier to

maintain and efficient systems run cleaner.

The Julka Hall project, for example, reduced water usage by 30% per year, earned two years of wind-power credits and used 30% recycled content in its building products. Euclid Commons will achieve energy savings of at least 29% per year through energy-efficient lighting systems and minimum thresholds for cooling, air circulation and filtration systems.

A combination of low-flow bathroom faucets, dual-flush toilets and low-flow showerheads and kitchen sinks helped reduce water usage by more than 30% at the residence hall.

"Those green initiatives are a part of the strategy for the design from the very beginning, from the site to the actual operation of the building," Ms. Anochin said. "We're also looking at being carbon neutral in the next 10 to 15 years."

She said the university is reutilizing as much as it can from older buildings and giving them new life through green renovation.

Mather Mansion, Fenn Tower and the Campus Safety Building are among those buildings modified and updated through sustainable practices.

— Kimberly Bonvissuto

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View: Roofs are like a 'giant sponge'

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Method growing on region

While Northeast Ohio lags behind the green roof acceptance of other major cities, there have been notable local investments into the technology.

Nordson Corp. in Westlake,

University Hospitals and Cleveland State University all have green roofs, and Case Western Reserve University will install 30,000 square feet of vegetative roof on its under-construction Tinkham Veale University Center.

"When you think about green construction, you think recycled materials, low VOCs (volatile organic compounds), energy efficiency, all things that are hard to see," said Brian Lambert, director of products and systems for Cleveland roofing manufacturer The Garland Co., which installed Lakeland's roof. "A green roof stamps a project as a visual representation of what the building owner is trying to do."

Mr. Lambert likens a green roof to a "giant sponge" that minimizes storm water run-off in addition to the added energy efficiency and roofing durability benefits. A green roof also reduces the heat signature of a building and contributes points toward LEED (Leadership in Energy and Environmental Design) certification.

"There are sustainability benefits, but there's also a 'cool' factor," said Bill Doty of Bedford-based Doty + Miller Architects, which has incorporated green roofs into five recent projects. "One of the best benefits is the biophilia response, the ability to integrate nature into our buildings."

Aesthetics played a role in Case Western Reserve's decision to add a green roof to its two-story university center, which is adjacent to the wide open spaces of Freiberg Field, and it is on track to achieve LEED Gold status.

"It's a lower building surrounded by higher buildings, so a lot of attention was paid to how the roof would incorporate into the surrounding green space," said Joanne Brown, Case Western Reserve's director of planning, design and construction.

As Lakeland's maintenance crew

found, it doesn't take a green thumb to make a green roof work in Northeast Ohio.

At Corso's Perennials in Sandusky, a demonstration green roof gives architects, contractors and roofers a look at the LiveRoof, a system made of pre-planted trays.

"We try to abuse it as much as we can," said president Gus Corso, whose three decades-old greenhouse is the exclusive LiveRoof grower for Ohio and Pittsburgh. "All of them are excited by how simple it is to install and keep growing."

More green for green

Mr. Corso got into the green roof businesses five years ago, and estimated that LiveRoof installations are now 15% of his business, with about 10 installations each year ranging from 300 square feet to 30,000 square feet.

Watering may only be needed in periods of prolonged drought, said Mr. Corso, who recommends that building owners weed periodically and use a slow-release fertilizer once a year.

Green roofs can be installed on existing buildings provided the roof can bear the weight, which Mr. Corso said is just 15 pounds per square foot for the shallowest LiveRoof system.

Mr. Lambert usually tells clients to expect to pay double for a green roof, depending on how elaborate they become. That was the case at Lakeland, where Mr. Dichl said the cost totaled \$150,000.

Solar roofs can actually be less expensive, said Mr. Doty, and white reflective roofs also can achieve LEED points.

But Mr. Doty said a traditional calculation of ROI shouldn't be the deciding factor in a green roof decision.

"It has to be part of an integrated sustainable philosophy," he said.

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