

# Sky-

Green roofs move into  
the mainstream  
of landscape contracting;  
**are you ready?**



# scaping

BY ROBERT KRAVITZ

**T**he short of it is that a green roof is one partially or substantially covered with plants. The long of it is that it offers experienced landscape contractors the opportunity to challenge their teams to learn new skills in an emerging market. And did we mention profit potential?

“Although green roofs are still considered a novelty in some parts of North America, they’re not new,” says Sandra McCullough, a LEED Accredited Professional with Weston Solution’s GreenGrid Green roofing systems. “Green roofs are relatively common in Europe where they have topped buildings for several decades. In fact, it is estimated that more than 100 million square feet of green roofs have

been installed in Europe. And in Germany, one in eight buildings of all shapes and sizes and for all types of uses now has a green roof.”

When the Chicago City Hall green roof was completed in 2001, designed by Weston Solutions Inc., many considered it an oddity. Today, there are more than 200 green roofs existing or under way in Chicago, covering some 2.5 million sq. ft. of roof area on office buildings, hospitals, fast-food restaurants, schools, firehouses and big-box retailers.

Chicago isn’t alone. Cities from coast

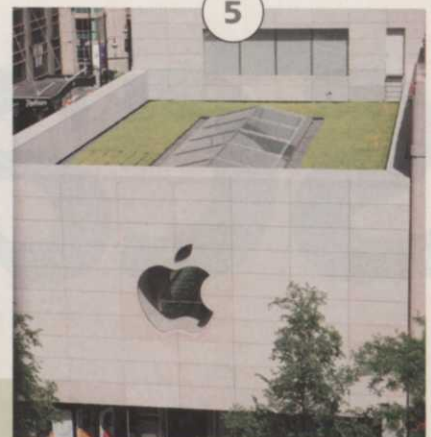
to coast are jumping on the green roof bandwagon. For instance, the Gap Inc. headquarters in San Bruno, CA, has a green roof, as does the Ford Motor Co. plant in Dearborn, MI. Even the American Society of Landscape Architects building in Washington, D.C., now has a green roof. A study by Green Roofs for Healthy Cities found that the number of square feet of roof area covered with green roofing in 2005 was up as much as 80% over previous years.

The reasons to install green roofs are many. They include:

**Main Image** Environmental Protection Agency building, Denver, CO **1** American Society of Landscape Architects, Green Roof Project, Washington D.C. **2** Eastern Village, Silver Spring Maryland **3** 601 Congress Street, Seaport District, Boston, MA



PHOTOS COURTESY: (MAIN IMAGE) GREENGRID ROOFS; (1) AMERICAN SOCIETY OF ARCHITECTS; (2) PHOTO BY: DAN CUNNINGHAM, COURTESY OF GREENROOFS.ORG; (3) GREENROOFS.ORG, SASAKI ASSOCIATES INC.

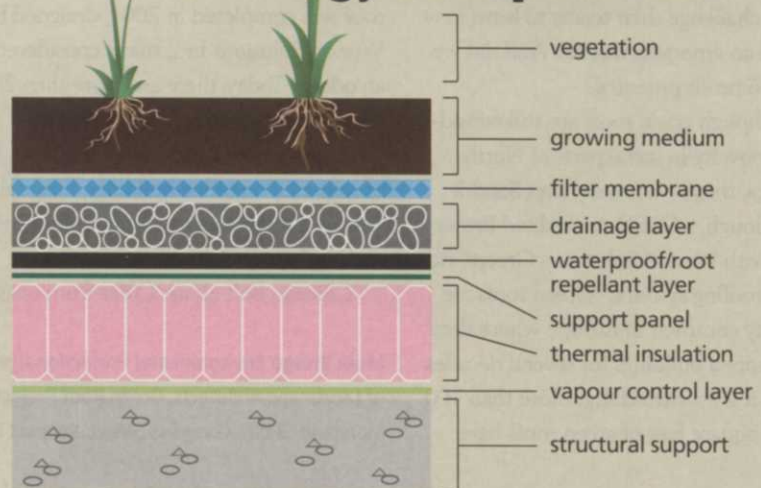


There are more than 2.5 million sq. ft. of green roofs in Chicago, including  
**4** Schwab Rehabilitation Hospital  
**5** Apple Computer store

- **Storm water reduction.** Green roofs can retain as much as 100% of a 1-in. rainfall. As a result, runoff is eliminated or, in a larger downpour, spread out over several hours to help minimize its impact on sewer systems.
- **Longer roof life.** Green roofs can double the life expectancy of an existing roof by moderating temperature swings and protecting the roof from ultraviolet rays.
- **Energy savings.** Because of the insulating qualities of green roofs, overall roof temperature is reduced, which can result in lower cooling costs in summer and heating costs in winter. These insulating qualities also help quiet the facility.
- **Reduction in "heat island" effect.** Partly because of conventional roofing systems, city downtown districts can be several degrees warmer than outlying areas due to the heat radiating from office towers and other structures. Green roofs help reduce that heat.
- **Improved air quality.** As with all landscaping, plants absorb carbon dioxide and release oxygen. They also trap airborne particulates and pollutants.

Although many facilities are installing green roofs solely to take advantage of

## Principal green roof technology components



SOURCE: NATIONAL RESEARCH COUNCIL, INSTITUTE FOR RESEARCH IN CONSTRUCTION

these benefits, in several cities, builders can also receive a variety of incentives to install green roofs.

Chicago, for example, has a pilot program that provides up to \$100,000 in matching funds to any developer retrofitting an existing downtown building with a green roof. The program has a total of \$500,000 available. Some cities award special grants or tax credits to developers and homeowners who install a green roof. And various localities expedite the building permit process, which can be exten-

sive, time-consuming and cumbersome in some cities — for any builder who installs a green roof on a new structure.

The growing popularity of green roofs is opening new doors for landscape professionals. Roofing contractors as well as green roof companies are working with landscape architects, landscape contractors, and nurseries to help design, prepare and install green roofs. And facility managers are contracting with landscapers to provide maintenance of their green roofs

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once installed. As a result, astute landscape professionals should know as much as they can about green roofs to take advantage of the opportunities they offer.

Typically, green roofs consist of four layers: plant media (vegetation), growth media (soil), a module or drainage layer — depending on the type of green roof installed — and a covering to protect the existing roof. There are two basic kinds of green roofs: intensive and extensive.

An intensive green roof is similar to a roof garden. The landscaping may consist of grasses, shrubs, bushes, trees and plants commonly found in a garden setting. With as much as 36 in. of soil, which translates to more than 120 lbs. sq. ft. when fully saturated, these are heavy roofs, and usually the architects and developers must specifically design the building to support them.

Extensive roofs, which are more common, consist of low-growing plants such as sedums and grasses planted in shallow growth media, from two to six inches deep. The plant media is drought-resistant and can vary to accommodate different climates. Extensive roofs are also much lighter, weighing 10 to 40 lbs. sq. ft. when

The Ballard Library in Seattle, Washington. The project was completed by American Hydrotech, Chicago.

fully saturated. Although a structural engineer should always be brought in to evaluate the roof, in most cases, extensive green roofs are light enough to accommodate a given structure.

There are two types of extensive green roofs. With built-in-place green roofing systems, which are actually built on the existing roof, all components are hauled to the rooftop, where several workers then install them.

“The other type of extensive green roof system is a modular system,” McCullough says. “This system uses lightweight modules made of 60% recycled plastic, which come in varying sizes and depths, rectangular and triangular. Growth and plant media are installed in the modules at a local nursery. Brought to the roof, they are then laid out atop the building’s existing roof, one after the other.”

Although both types of extensive roofing systems are used frequently in North America, the modular system is growing in popularity because of some of

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## The good



Green roofs provide a wide array of benefits:

- Shading the roof and cooling ambient air temperatures in summer
- Shielding the roof from wind and preventing heat transfer in winter
- Absorbing, retaining, filtering and storing precipitation
- Reducing the temperature of runoff
- Minimizing the impacts of impervious surfaces on watersheds
- Extending the lifetime of roofing membranes
- Increasing the area’s green space and wildlife habitat
- Enhancing the aesthetic of cityscapes
- Improving air quality
- Sequestering carbon dioxide
- Reducing traffic noise through absorption by the soil layer
- Ballasting the roofing membrane
- Mitigating floods in certain regions
- Reducing runoff and the need to expand the urban stormwater infrastructure’s capacity

## The bad



There are several implementation barriers to green roofs. Many include the lack of:

- Information and familiarity with green roof technology, design and function
- Knowledge about maintenance requirements
- Industry standards and design guidelines and specifications
- Qualified designers and contractors
- Incentives to make green roof applications more attractive

SOURCE: U.S. DEPARTMENT OF ENERGY, FEDERAL ENERGY MANAGEMENT PROGRAM  
WWW.EERE.ENERGY.GOV/FEMP

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its unique features: it tends to be considerably less labor intensive to install, often making it less expensive, and if roof repairs are necessary, the modules just need to be lifted and then replaced when finished. A built-in-place roof will need the growth and plant media removed from the service area and then restored and replanted — often a labor-intensive project.

“A built-in-place roof can take weeks to build and install,” McCullough says. “With a modular system, as much as 4,000 sq. ft. can be installed per day, which means the entire green roof can be installed on some facilities in a day.”

Landscaping professionals are already taking advantage of the budding green roof phenomena. Growth media for green roofs is now a major business seg-



**6** Oaklyn Branch Library, Evansville, IN **7** Target Retail Store, Chicago, IL.

ment of Midwest Groundcovers in St. Charles, IL. According to Grace Kohler, sales manager with Midwest Groundcovers, the company works with several green roof manufacturers, helping them select the heartiest plant media for different climates and settings. And through their affiliated company, Midwest Trading



Horticultural Supplies Inc. in Virgil, IL, they have tested and engineered special soils that help the plants survive and thrive in different situations and locations.

Landscaping professionals are getting involved in design and installation of high-profile projects. As temperatures soared last summer in New York, break-

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ing records and maximizing demand for electricity, Silvercup Studios where HBO's "The Sopranos" is filmed, was only moderately affected because of the 35,000-sq.-ft. green roof covering. The green roof project at the studio, spearheaded by a New York landscape design firm and installed by a local landscaping company, is part of a yearlong study to evaluate the energy savings and reduced storm water runoff benefits as a result of having a green roof.

In addition, do-it-yourself (DIY)

## Resources

- Greenroofs.com  
[www.greenroofs.com](http://www.greenroofs.com)
- Green Roofs for Healthy Cities North America Inc.  
[www.greenroofs.org](http://www.greenroofs.org)
- Penn State University  
<http://hortweb.cas.psu.edu/research/greenroofcenter/>
- Environmental Protection Agency  
[www.epa.gov/](http://www.epa.gov/)
- American Society of Landscape Architects  
[www.asla.org/land/050205/green-roofcentral.html](http://www.asla.org/land/050205/green-roofcentral.html)
- The Northwest EcoBuilding Guild  
[www.ecobuilding.org/](http://www.ecobuilding.org/)
- U.S. Green Building Council  
[www.usgbc.org/](http://www.usgbc.org/)

green roofing systems are now being introduced offering opportunities for landscape professionals to work frequently on smaller projects.

Growing interest in green roofs provide a whole new industry for landscaping pro-

fessionals. And many will benefit as they look for to the opportunities that are now growing up on the roof. **LM**

— Robert Kravitz is a communications professional working with organizations in the building and professional cleaning industry.

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