

Greening a University's Roof

When the University of Wisconsin considered installing a Green Roof, they encountered a barrage of questions—most of which served a significant purpose. The inquiries helped the university more thoroughly understand Green Roofing systems – and their benefits.

Sandra McLellan, an assistant scientist at the University, was put in charge of adding a 9,000 square foot (approximate) Green roof to one of the campus' facilities. However, university officials first wanted some questions answered, for instance:

- What is a Green roof?
- How much would it cost to install?
- Can the present roof bear the weight of a Green roof?
- What benefits will come of it?



“We had to educate them—and ourselves—on just about everything involving Green roofs,” says McLellan. “We finally found the best way to do this was to produce our own *Green Roof Booklet* discussing each concern.”

Some of the items discussed in the booklet include:

Definitions. Very simply, a Green roof involves the placement of low-maintenance, hearty plants, such as succulents (often referred to as sedum), along with grasses and other small plant species on top of the present roof membrane.

Costs. The cost to install a Green roof can vary considerably, depending on the type. But, because Green roofs can extend the life of the present roof by as much as 20 years, this savings must be figured into the overall expenditure.

“One type of Green roof system is called *built-in-place*,” says McLellan. “The Green roof is built on top of the existing roof using about 40 inches of soil [that is] hauled up to the roof. Then, landscapers and workers plant the vegetation.”

The other type of Green roof is a *modular* system, the type selected by the University. With this system, the roof is assembled at a nursery; the soil and vegetation are planted into modules, which are made of 60 percent recycled plastic. The modules are then hoisted to the top of the building where they are laid out.

“This is a simpler and less expensive system,” notes McLellan. “We found as much as 4,000 square feet can be installed in a single day, whereas the built-in-place system can take weeks—affecting the price significantly.”

Weight. McLellan also found a great disparity in the weight of the two types of Green roofs. The built-in-place can be very heavy and some roofs may not be able to support it. However, the modular system is lighter and in most cases, the present roof can accommodate the additional weight.

Benefits. “There are many benefits to Green roofs, but we feel the energy savings is probably our biggest,” says McLellan. “According to our calculations, the roof will pay for itself in less than 15 years as a result of reduced heating and air conditioning costs.”

Additionally, McLellan found significant environmental benefits associated with Green roof systems. Green roofs can reduce the amount of storm water runoff by as much as 75 percent. This potentially-contaminated runoff can place exceptional burdens on some local sewer systems. “We found that by the time normal storm water runoff enters a city’s sewer system, it can have as much as 20,000 E-coli per 100 mils—20 times what is considered safe,” she says.

Lastly, McLellan learned about the importance of selecting the right company to do the job. “In the U.S., this is still a relatively new technology,” she says. “This makes it all the more imperative to select a firm that is well-experienced and can help answer all the questions and concerns that might come up.”