

GOING GREEN:



MILWAUKEE GREEN ROOFS OFFER AESTHETIC AND ENVIRONMENTAL BENEFITS

Erin Cohen

The top of the four-story, Milwaukee Metropolitan Sewerage District headquarters in Milwaukee seems an unlikely spot for a garden of grasses and flowering plants. Although the vegetation—which spans over a third of the building’s 11,000 square-foot roof—is pleasing to the eye, the main idea behind the garden installation isn’t all about aesthetics.

The MMSD green roof was installed to examine how an existing space occupied by vegetation can absorb a greater amount of rainfall during heavy storms and thereby reduce excess water that might overwhelm the sewer system. The vegetation prevents the excess rain from entering the sewer system. This is just one example of the

many benefits a green roof can provide to the environment. The more you learn about green roofs, the more numerous the benefits become.

A layer of vegetation on the rooftop of a building can help to conserve energy by moderating the temperature of the roof and areas around it. During the

day, the soil and vegetation absorb heat, keeping the building cooler. At night, the heat that the roof retained keeps the building warmer. Green roofs can help to protect and extend the life of the roof itself, which limits the amount of standard roof maintenance and replacement costs.



MCSC recently collaborated with Groundwork Milwaukee to install a "green grid" rain garden system on the roof of the Historic Kilbourn Bank Building at 27th, Fond du Lac and Center.

Planted on the top of a building where heavy machinery is used, or other loud activities take place, green roofs can insulate for sound.

Built on top of hospitals and health facilities, green roofs can also offer therapeutic treatment for patients. The patients benefit from the aesthetic beauty, and may also participate in gardening or other maintenance activities. In other cities, green roofs have even been used to grow herbs, flowers, and vegetables.

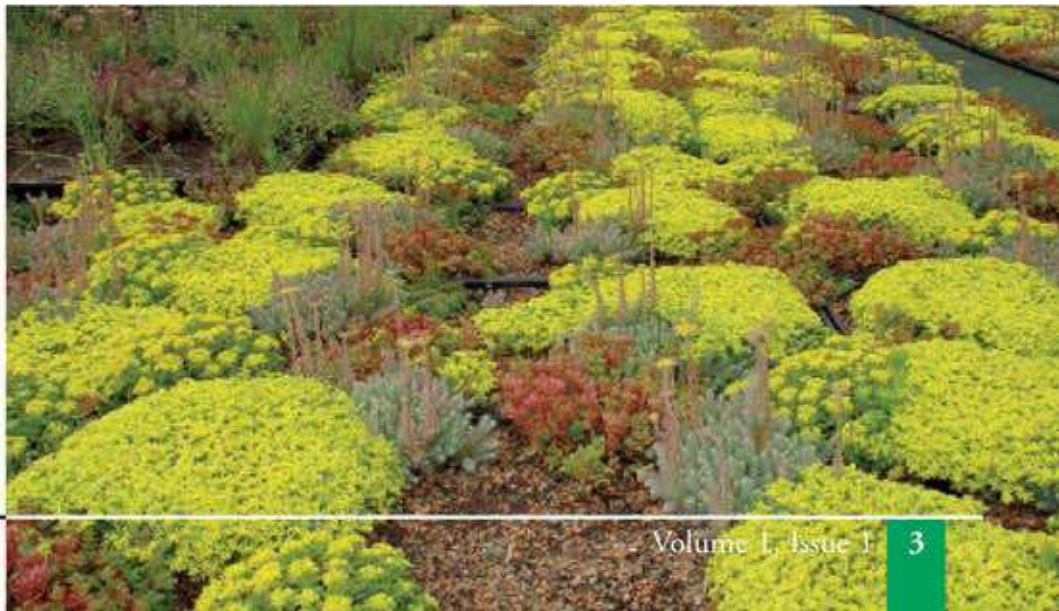
And the most obvious result of a green roof: it adds more green space to urban areas that may otherwise lack larger areas of vegetation.

EXTENSIVE GREEN ROOF SYSTEM

Installing or growing a green roof can be done in several ways, depending on the amount of time and money available. MMSD used a "GreenGrid" modular system for its building. With the GreenGrid method a series of interlocking recycled plastic containers are laid out in a specific design pattern. The system is less complicated because the seeds are already planted in the soil at the time of installation, and the grid can be rearranged if needed. The pre-planted seeds typically result in a higher survival rate for the plants. The containers used on the roof of the MMSD building measure 2 feet by 4 feet, and are four inches deep. Each container holds approximately eight plants.

The "GreenGrid" roof is an example of an "extensive" system, ideal for rooftops that require smaller weight loads on a building's structure. Extensive systems are also less expensive because they typically require no structural reinforcements to support the shallow soil depths. The Karen Peck Katz Conservation Center, located at the Milwaukee County Zoo, installed this same type of green roof in 2004.

The Housing Authority of the City of Milwaukee recently completed the construction of an extensive green roof atop its Highlands Gardens Housing Project. Believed to be the largest green roof on any residential development in the United States, the green roof spans more than 20,000 square feet. The system included 2,184 of the 2' x 4' x 4" plastic container modules, 132 of the 2' x 2' x 4" modules, and was completed in eight days.



INTENSIVE GREEN ROOF SYSTEM

With an "intensive" green roof system, several inches of soil are installed over a membrane on top of the roof structure. The weight load requires thorough calculation of the building's structural capacity, and can be considerably more expensive to install. However, the deep soil base allows for a diverse roof top garden with many more types of plant species.

The Urban Ecology Center (UEC) constructed an intensive green roof system on its new facility. According to Judy Krause, UEC Business Manager, the green roof serves as a "sensory garden that is also used as a teaching space year-round." In the winter the plants are cut back, and a tipi with a fire pit is set up for the UEC to use for various classes and festivals. "In the spring, we remove the tipi canvas and decking to allow the plants to grow again," she said.

Education was also a factor in the selection to install an intensive green roof at The Garden Room in Shorewood. The 1,900 square-foot green roof, is located on top of the gardening store. It was designed to educate customers about gardening, while also providing a unique way to display merchandise.

The Great Lakes WATER Institute of the University of Wisconsin – Milwaukee elected to install a hybrid intensive-extensive green roof on top of its building to set an example for other university buildings to follow, and to provide a learning experience for students in the University's architectural program. According to Erika Jensen-Hollis, associate



Above: the Mayfair extensive "GreenGrid" system while Highland Gardens of the City of Milwaukee's Housing Authority can be found below.

representatives from environmental organizations, and community residents. In 2007, the green roof will be expanded to cover the entire roof area of the building, approximately 10,000 square feet. The University of Wisconsin system is also working on additional sites for green roofs on its campuses.

MAINTENANCE

The degree of effort required to keep all of the plants healthy on a green roof varies by the type of green roof and its depth of soil. According to Jensen-Hollis, the extensive section of the Great Lakes WATER Institute's green roof, comprised of shallow soil grids, requires very little maintenance beyond

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researcher for the Institute, several architects, engineers, landscape architects, and teachers have visited the green roof to see its benefits firsthand. "We have held three open houses and given numerous tours of our green roof facility," Jensen-Hollis said. Tour groups have included local, state and federal officials,

occasional watering and weeding. "On the other hand, the intensive system requires much more maintenance," she added. Jensen-Hollis estimates that these sections of the roof require approximately 10 hours of maintenance work per week.



Green roofs are designed with drought-tolerant plants; watering is typically unnecessary. "We do not water the garden except during periods of prolonged drought, and the plants have done well on just rain water," stated Judy Krause of the Urban Ecology Center. "We weed as needed, but our maintenance during the first two years has been very little."

Individuals interested to learn more information about green roofs may visit the Milwaukee Metropolitan Sewerage District's (MMSD) website at www.mmsd.com. MMSD is promoting the widespread use of green roofs in Milwaukee as a long-term strategy to reduce storm water runoff.

