



# The Link

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## The Green on Top

With all the interest in Green building materials, Green cleaning products, and operating facilities in an environmentally preferable manner, it appears that one Green item is topping them all – quite literally. That is the installation of Green roofs, which have become increasingly prevalent on all types of facilities, from schools to office buildings and homes to factories, in the past few years.

Indeed, interest in Green roof products and systems is growing so significantly that a prominent expert in the industry – Sandra McCullough, a LEED® Accredited Professional with [Weston Solutions®, Inc.](#), and [GreenGrid® Green Roofs](#) – recently weighed in to help people understand what this new technology is all about.

**Question:** When you speak of Green roofs, are you discussing a garden-type setting on a roof?

**McCullough:** That might be the first thing that comes to mind, and indeed, there are many buildings with garden roofs, but the technology we are really focused on is called an *extensive* Green roof. First developed in Germany more than 30 years ago, extensive Green roofs involve a relatively thin layer of soil in which low-maintenance, drought-resistant vegetations such as grasses and sedum are planted.

**Question:** What is the primary reason for installing a Green roof?

**McCullough:** As they have grown in popularity, it seems like the benefits of installing a Green roof on a facility continue to grow. However, the big driving force for installing a Green roof has been storm water management. In many older American cities, or those that have not brought their water- and sewage-treatment facilities inline to meet growing demand, the sewage-treatment plant is often unable to treat excessive amounts of storm water. The result: raw sewage can be released into waterways, lakes, and the ocean.

A Green roof can retain more than 90 percent of a one-inch rainfall and up to 72 percent of a four-inch rainfall. This reduces dramatically the amount of storm water runoff, easing burdens on local treatment facilities. This can also prove to be a major cost savings for building developers because elaborate plumbing systems to retain and carry the storm water away may be unnecessary.

**Question:** What are the other benefits of a Green roof?

**McCullough:** There are many. For instance, heating and especially air-conditioning costs can be reduced significantly – as much as 50 percent for the floor directly below – once a Green roof is installed. This is because of the insulating qualities the Green roof offers.

When it is 80 degrees Fahrenheit outside, a conventional rooftop can be as hot as 180 degrees. This affects the amount of energy necessary to air-condition the building below, and it promotes the “heat island” effect found in large urban areas, causing

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them to be several degrees warmer in the heat of the summer than surrounded forested areas.

Their insulating qualities also help quiet facilities because they minimize outside and overhead noises. And, because the vegetation absorbs carbon dioxide and releases oxygen, they have a powerful health and environmental benefit as well.

**Question:** What happens to the existing roof? Won't the soil and vegetation harm the existing roof?

**McCullough:** In most cases, just the opposite happens, especially with a modular Green roof system. The Green roof helps moderate temperature swings so that the existing roof stays cooler in the summer and warmer in the winter. The temperature swings can speed the roof's deterioration. In fact, we now believe the life expectancy of the existing roof can more than double once a Green roof is installed.

**Question:** You mentioned modular Green roofs. What exactly is this?

**McCullough:** Many Green roofs are built right on top of a facility's existing roof. These "built-in-place" Green roofs can be time-consuming to install, potentially dangerous to workers and landscapers working atop high rooftops, and, because they are so labor intensive, costly.

The modular system was developed to address these and other issues. This system uses modules made of 60 percent recycled plastic, which come in varying sizes and depths, rectangular and triangular. Soil and vegetation are installed in the modules at a local nursery, similar to an assembly-line fashion. They are then laid out atop the building's existing roof, one after the other. The entire process is much more streamlined, and as much as 4,000 square feet of Green roof can be installed in a day, which means many facilities will have a Green roof fully installed in a day or two.

**Question:** Can you walk on the Green roof? Do you encourage building occupants to visit the Green roof?

**McCullough:** Just like any garden, the Green roof should not be walked on unless the existing roof needs servicing. However, many facilities have installed sitting areas for building occupants around the Green roof to relax atop their buildings and enjoy the Green roof. At one mall in Austin, Texas, a major coffee house encouraged the mall's property managers to install a Green roof atop their building so their customers could enjoy the rooftop greenery.

**Question:** That brings up another question. What if the roof needs servicing? Does the Green roof need to be removed?

**McCullough:** Yes, but depending on the type of Green roof, this might be less of a problem than anticipated. With a built-in-place Green roof, the soil and plants do need to be dug up, removed, and then replaced after the repair work has been completed.

With the modular system, the individual modules just need to be picked up and replaced when work is completed. The process is relatively easy.

**Question:** We see there are benefits and cost savings after installing a Green roof. But how much does a Green roof cost?

**McCullough:** The actual costs to install a Green roof can vary significantly and depend on a variety of factors. Among these are the size and slope of the roof, complexity of the installation, plant selection, height, and accessibility of the roof, time, and labor costs.

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## ARCHIVES

A built-in-place extensive Green roof can cost anywhere from \$15 to more than \$40 per square foot, depending on these and other variables. A *modular* extensive Green roof system is less expensive, about \$9 to \$20 per square foot.

Many facilities see a return on their Green roof investment in a few years, often because of reduced energy costs. And of course, one of the biggest savings is the fact that the existing roof's life expectancy is doubled, eliminating a major expense for virtually all facilities.

**Attention LINK subscribers!** The folks at GreenGrid® Green Roofs are interested in what you think about Green roofs. They invite you to [take a brief survey](#), and we will report on the survey findings in an upcoming issue of The LINK. Thank you.

*More information on Green roofing systems is available by visiting [www.greengridroofs.com](http://www.greengridroofs.com) or contacting Sandra McCullough at [greengridroofs@westonsolutions.com](mailto:greengridroofs@westonsolutions.com) or calling 312-424-3319.*

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