



# The Link

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## Green Roof Maintenance and Care

By Jared Markham

We have heard quite a bit about Green roofs in the past couple of years. Their benefits are becoming well known and more importantly, well documented here in the United States.

With the exponential growth of the LEED® rating system, and the many credits toward which Green roofs can contribute, these systems are being discussed for virtually every new Green facility, and specified on an increasing number of them. The frequency of retrofits coincident with roof repair or replacement on existing facilities is also growing dramatically as facility managers are asked to find more and more ways to increase the efficiency of their buildings. These trends help to explain why some manufacturers of Green roofing systems are reporting that their sales and installations in 2007 reached all-time records—and why they are forecasting record breaking installations again in 2008.

Because of the increasing popularity of Green roof systems as a multi-faceted sustainable building technology, it is essential for facility managers to learn about the required care and maintenance, especially when the green roof is first installed. This maintenance may vary, and mostly depends on the amount of planning and preparation put into the project rather than the type of Green roof selected.

### Choosing a Green Roof

When selecting a preferred Green roof system, one of the first concerns is if the existing structure can support the additional load of the green roof. If the Green roof will be installed on a new facility, the structural requirements are addressed in the design phase. However, the actual additional capacity included will drive which Green roof system is selected as weights vary considerably across the industry, even for Green roofs of the same approximate depth. With existing building retrofits, however, an engineer needs to be called in to verify that the facility can support the Green roof addition in every case.

A conventional built-in-place Green roof, consisting of layers of materials placed on the existing roof, followed by rooftop planting, can weigh as much as 25-30 pounds per square foot when fully saturated, even for a shallow, 4" extensive green roof. Because the relatively high weights may be unsupportable for many buildings, some opt to select a lighter *modular* system, such as those manufactured by [GreenGrid® Green roofs](#).

With a modular system, the growth (soil) and plant media are pre-planted in 100 percent recycled plastic modules. When wet, they weigh approximately 15-18 pounds per square foot for a four-inch-deep extensive module—considerably lighter than the alternatives. Deeper modules can be used when rooftop gardens or larger plants are desired, and these weigh 30-40 pounds per square foot for an eight-inch-deep module,

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depending on plants selected and their soil requirements.

European green roof experience has demonstrated that a green roof can double the life expectancy of the existing roof. Because of this, a Green roof should be placed over a new, or relatively new roof. The roof typically needs to be covered virtually in its entirety to realize this benefit.

### Initial Care

Properly selected vegetation is vital to a successful green roof system. It should be composed of hardy, drought-resistant plants that are low maintenance and self-propagating by nature. In many parts of the U.S., these plants will not be native to the local area given the harsh conditions of a rooftop environment and the very low organic content of most green roof media. In some areas, however, native plantings will actually perform better. A horticulturalist should be consulted to insure proper plant selection.

Regardless of the plants selected, all plants when small and before rooting will require some form of supplemental irrigation at the time the roof is first installed. This should occur on a weekly or somewhat regular basis for the first 30 to 90 days. Some modular Green roof systems can be pre-planted and pre-established, limiting the amount of post-installation maintenance required by the owner.

In some cases, the Green roof manufacturer or installer will include post-installation and/or long-term maintenance as part of its contract with the building owner. Facility managers are advised to have some type of after-installation maintenance agreement in place to make sure the vegetation not only survives but also thrives.

Finally, additional maintenance needs for extensive, succulent green roofs are generally limited, but include:

- **Weeding.** This is typically performed manually by maintenance workers.
- **Pest and disease control.** Insects and disease can harm the vegetation. In some cases, herbicides and insecticides may need to be applied to the Green roof but only if disease is present or if insects are harming the vegetation.
- **Plant replacement.** During the first 30 to 60 days, some vegetation may need to be replaced; however, this is mitigated by proper planting and planning.
- **Debris and inspection.** Roofs can be windy locations. It is not uncommon for some debris to collect. Roofs should be routinely checked and any debris removed. Additionally, many facility managers find that clearing the Green roof of debris is also a very good time to inspect the overall condition of the Green roofing system and other items such as roof drains, flashing, etc.

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