

# LEED Principle: Stormwater Management and Roofing

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A major benefit of a vegetative roof is its capacity for stormwater management. Depending on the planting type, soil depth and how saturated the system already is, a vegetative roof can absorb anywhere from 60 to 100 percent of the rainfall on its area. It is such an effective strategy that some counties are using it as a substitute for detention ponds in their stormwater management plans, says Angie Durhman, Tecta America Corp. green roof manager.

Stormwater management is an issue in areas with combined sewer/stormwater systems, such as Chicago. In nearly 800 communities around the United States, heavy rainfall can overwhelm the combined system, causing raw sewage to be discharged into area waterways. In communities where facilities don't have the luxury of space to create detention ponds, rooftop water management can help alleviate the problem.

The vegetative roof works by detaining and retaining the water. Some of the water is taken up by the plants. The rest is temporarily stored in the planting medium and absorptive mats of the system and then slowly drains out. This allows the combined sewer/stormwater systems the time to properly process stormwater without overwhelming local system capacity.

A typical vegetative roof system weighs around 17 to 20 pounds per square foot, as compared to a typical gravel-ballasted roof coming in at 10 to 15 pounds per square foot. This makes it a strategy most often deployed in new construction, where the weight can be accommodated.

It's fairly common that an existing building will not be able to handle the additional weight. It is possible to remediate the situation through additional internal supports, says Reed Gooding, president of Gooding, Simpson & Mackes. However, the cost of shoring up the roof might outweigh the benefits. A structural engineer can decide if a roof can be made vegetative and how to do it.

Another possibility for stormwater management is using a ballasted roof with water detention mats.

## Roofing Incentives and Savings Calculators

### Incentives:

For information on the Federal Tax Incentives Assistance Project, go to [WWW.ENERGYTAXINCENTIVES.ORG](http://WWW.ENERGYTAXINCENTIVES.ORG)

For a database of state incentives for energy efficiency & renewable energy go to [www.dsireusa.org](http://www.dsireusa.org)

For community incentives for vegetated roofing systems go to [greenroofs.org/grtok/index.php](http://greenroofs.org/grtok/index.php)

### Energy Savings Calculators:

#### High R Insulation

The National Roofing Contractors Association's "EnergyWise" tool at [energywise.specright.net](http://energywise.specright.net) calculates roof energy costs per ASHRAE 90.1 and allows comparison between roofing alternatives.

#### Reflective Roofing

The U.S. Department of Energy Cool Roofing Calculator at [www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm](http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm) calculates annual heating and cooling savings for non-black surfaces and has a "CoolPeak" option for areas with peak demand charges.