

Plant a Green Roof and Watch it Pay

By Rod Lawrence, JBG Companies

Going green means many things. To developers and builders, it often starts at the top – the rooftop – with green roofs.

Sustainable buildings are becoming common in the built environment and green roofs are often the most visible indication of this growing trend. In 2004, The JBG Companies installed the first green roof in Montgomery County, Maryland at 11333 Woodglen Drive. The green roof, with benefits ranging from stormwater management and energy conservation to providing an attractive amenity, is a selling point for environmentally aligned tenants. Today, new building codes and technologies lessen the financial, structural and operational burdens that traditionally discouraged their implementation.

Green roofs provide environmental benefits that can also reduce construction costs. In many cases, impervious surface mitigation requirements are reduced as green roofs decrease runoff by 15-90 percent thereby allowing stormwater retention ponds or underground galleries to be downsized or eliminated. The JBG Companies, for example, employed a 70,000 square-foot green roof on the U.S. Department of Transportation (DOT) headquarters in Washington, D.C. (with a partial grant from The Chesapeake Bay Foundation). As a result, JBG was relieved of the requirement to capture and sand filter runoff, since vegetation covered 75 percent of the roof.

The insulation properties of green roofs are considerable and can significantly reduce the extreme temperature volatility on the surface of traditional roofs. At DOT, the roof cools the building by releasing moisture stored in plants (evapo-transpiration) and by shading the roof. In many cases, a three-to-seven degree temperature drop translates to a 10 percent reduction in air conditioning requirements. In addition, noise and harmful UV radiation is greatly reduced by implementing a vegetated roof. Roof membranes are perhaps the greatest beneficiaries of green roofs' insulation properties, as their lifetime is often extended by 50 percent or more.

So what are the downsides? For one, if the roof membrane is punctured, a leak can be harder to locate than on a conventional roof. Additionally, at DOT, maintenance costs are \$3,000 per year for 73,000 square feet of green roof. Recently, it cost \$16,000 to kill a weed outbreak and re-plant one small section of the huge roof; however, after plants mature in five years, operational costs are significantly reduced.

Green roofs installed on apartment and condo complexes often realize different advantages. Green roofs can act as amenity spaces, providing open areas and desirable views. At a new JBG Company apartment community, The Alaire, in Rockville, Maryland, residents pay a \$50 premium for a view of the green roof, pool and patio areas. Other residents pay \$100 monthly premiums for apartments that adjoin the green roof.

New technologies are making green roofs easy to install and maintain. At The Alaire, thin panels of recycled materials, infused with nutrients, require no additional structural support and allow for more varied and taller plantings than conventional sedum.

These factors have allowed JBG to mitigate all of the upfront cost premiums and as stormwater mitigation and energy costs increase, the green roof will reduce overall project costs.

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