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Complex Systems That Fail

The DCD LEED® Square Foot Cost Guide

*Do Green Design Strategies
Really Cost More?*

Seattle City Hall
Seattle, Washington

Joint Venture: Bassetti Architects/Bohlin Cywinski Jackson

Building Products Revue

Green Roofs Form Centerpiece to High-Profile Seattle Projects

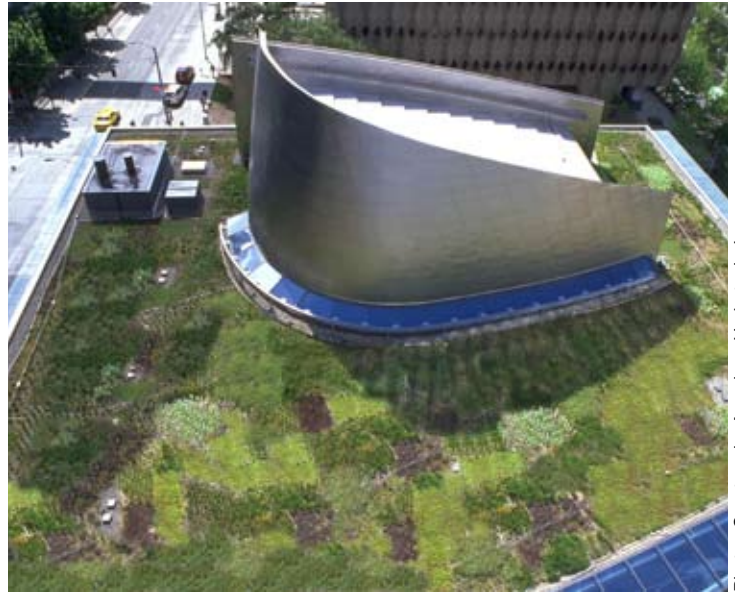
Lushly planted green roofs that change color with the season are the centerpieces of two new buildings in downtown Seattle. The roofs provide not only a distinctive design feature for the buildings but also important environmental and economic benefits for the city of Seattle.

The Justice Center's 8,500 square-foot garden roof was completed in 2002. From the very beginning, sustainability was a top design criterion, says Knut Hansen, senior associate for project architect NBBJ Design. The design features an intricate planting design guided by an image of sunlight reflected in a shallow streambed. But not only is the design visually appealing, the plants on the roof retain moisture and reduces the amount of stormwater entering the city's storm sewer system.

Across the street is the new 13,000 square-foot Seattle City Hall Garden Roof, which was completed in 2003. The north side of City Hall is a seven-story office tower. The building's south side is a two-story structure capped with a titanium-clad skylight dome. Although technically the same building, the different heights of the two towers gives the impression of two separate buildings. The green roof covers portions of both towers, integrating their appearance.

The green roofs on both the City Hall and Justice Center consist of a multi-layered waterproofing membrane integrated with an engineered solid support system that includes insulation and drainage/moisture retention elements, all part of a total assembly supplied by American Hydrotech, Inc., Snyder Roofing served as the roofing contractor for both the Justice Center and City Hall green roof projects.

Water retention and drainage are provided by lightweight panels



Photos Courtesy by American Hydrotech, Inc.

The Seattle City Hall and Justice Center's green roofs provide not only a distinctive design feature for the buildings but also important environment and economic benefits such as insulation that lowers cooling costs for the buildings, a reduction of annual stormwater runoff by 50 to 75 percent, and will improve air quality.

made of 100 percent recycled polyethylene molded into specially designed retention cups and drainage channels. This allows for the free drainage of excess water, achieving flow rates significantly higher than that of convention drainage methods, says American Hydrotech's Chuck Cronenweth.



Seattle City Hall's north side is a seven-story office tower, and on the south side of the building is a two-story structure capped with a titanium-clad skylight dome, giving the impression of two separate buildings. The green roofs by American Hydrotech cover portions of both towers, integrating their appearance.



According to Gregory Hepp, principal with Bassetti Architects, who designed the City Hall building through a joint venture with Bohlin Cywinski Jackson, the team chose to do a planted roof as part of their environmental statement and as a LEED® element.

According to Gregory Hepp, principal with Bassetti Architects, who designed the City Hall building through a joint venture with Bohlin Cywinski Jackson, the design team originally planned to use a glass roof on top of the building. “As we looked at some of the issues involved, we moved to the idea of a solid roof,” Hepp says. When the design team decided to move to a solid roof, “we started thinking about doing a planted roof as part of our environmental statement and as a LEED® element,” he says.

The City Hall design team presented two bids to the city of Seattle for the roof—one using a single-ply ethylene-propylene-diene-monomer (EDPM) membrane with ballasted pavers and the other the planted, green, roof. The city opted to go with the green roof, even though it was slightly more expensive, Hepp says, because it wanted to show its commitment to sustainable design.

Seattle became the first city in the nation to adopt the U.S. Green Building Council’s LEED® Silver level on construction projects with more than 5,000 square feet of occupied space. Moreover, “The City is very supportive of green roofs because they see it as a way to help reduce the storm surge from heavy storm events,” Hepp explains.

The roofs on both projects include a six-inch soil mix and low-growing hardy plants to create high-profile garden settings that are expected to hold up to the harsh rooftop environment without using a permanent irrigation system.

The roofs provide real environmental and economic benefits. The roofs provide insulation that lowers cooling costs for the building and are estimated to reduce annual stormwater runoff by 50 to 75 percent. This, combined with both building’s extensive water harvesting systems, helps to reduce the impact on local stream watersheds and salmon habitat. The green roofs also will help improve air quality, American Hydrotech’s Cronenweth says.

Although different architectural teams designed the two buildings, both use similar materials, Hepp says. In addition to each having garden roofs, both use the same exterior stone and the same stone on the floors, which visually ties the two buildings together.

The landscape design for the Justice Center incorporates a

water theme, guided by an image of sunlight reflected in a shallow streambed, says Matthew Suhadoinik, ASLA, of SvR Design. “Flowing, naturalistic patterns have been created using ground-cover plants of varying textures and in subtle shades of blue, gray and green. Sheep fescue placed throughout the plantings provides a unifying silvery-gray element representing ripples in a shallow, slow-moving stream,” he says.

Because the City Hall roof is not physically accessible to the public and would be primarily viewed from above, the design concept there was to turn the roof into one uniform carpet of vegetation. Marcia West of Gustafson Partners says, “We elected to mingle different textures and colors, so that the roof becomes one integrated carpet of plantings when you look down on it.”

Bassetti’s Hepp says the projects have been well received both by Seattle citizens and the municipal government. The roofs haven’t “required much maintenance at all” and there have been no issues with leaks or other problems, he says. Moreover, visitors seem to be impressed with the overall aesthetic appeal of the buildings. “Whenever I take people there, they are very impressed,” he says.



The 13,000 square-foot Seattle City Hall Garden Roof, supplied by American Hydrotech, Inc. Includes a six-inch soil mix and low-growing hardy plants to create a high-profile garden setting that is expected to hold up to the harsh rooftop environment without using a permanent irrigation system.

The true beauty of a green roof is what you can't see



Seattle City Hall

.....the membrane

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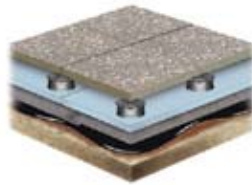
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