

Project Profile

Project

PECO Headquarters
Philadelphia, Pennsylvania

Owner

Philadelphia Electric Company

Roofing Contractor

United States Roofing Corporation
Norristown, Pennsylvania

Roofing Consultant

Systems Design & Analysis, Inc.
Jackson, New Jersey

Green Roof Engineering and Design

Roofscapes, Inc.
Philadelphia, Pennsylvania

Construction Manager

C. Erickson & Sons
Philadelphia, Pennsylvania

Waterproofing System

Sarnafil® G476 waterproofing

Project Size

48,000 square feet

Completed

November 2008

Sika Sarnafil Green Roof a PECO Point of Pride

The roof of a utility company is not usually a place where you would expect to find people taking guided tours, but the new roof on the Philadelphia Electric Company (PECO) headquarters is not your typical roof. Totalling 48,000 square feet, the PECO roof is the largest green roof on an existing building in Pennsylvania and serves as a public example of PECO's commitment to the environment. Approximately 43,000 square feet of this area is covered by an unirrigated extensive green roof with only three inches of growth media. The roof has also become an outdoor classroom for the Philadelphia Horticultural Society, which offers monthly public tours that focus on the composition and benefits of a vegetative roof.

The PECO roof features a variety of adaptive plants placed in growth media ranging from three to eight inches in thickness. The roof is expected to reduce stormwater runoff by "absorbing 60 to 70 percent of the approximate 1.5 million gallons of annual rainwater that falls on the Main Office Building," according to PECO promotional materials. The new roof is also expected to save on cooling costs by reducing the summertime peak roof temperature by 60 to 80 degrees, and also absorb certain airborne pollutants.

A Proven System

Since this roof will serve as such a public example of PECO's green mission, it was important to select a waterproofing system that would live up to PECO's needs and expectations. "We took a long time deciding upon the right waterproofing system for this job," said Jan Chrostowski, principal at Systems Design & Analysis, Inc., of Jackson, New Jersey, one of the roofing consultants on this project. "We finally decided the Sika Sarnafil G476 membrane system, with Electric Field Vector Mapping® (EFVM®) as the quality control system, would be ideal for this application."

Charlie Miller, principal of Roofscapes, Inc. of Philadelphia, the green roof engineering and design firm on this project, also played a role in selecting the Sika Sarnafil system. "We've been working with Sika Sarnafil for over a decade and are really sold on the product," Miller explained. "The membrane stands alone in terms of longevity because it has been used for over 30 years and is highly regarded here and in Europe. That gives us a lot of confidence."

Location and Logistics Provide Challenges

As might be expected, performing a roof tear-off and installing a roof in the middle of Philadelphia was not without its obstacles — especially when major renovations on

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adjacent pedestrian walkways and traffic bridges were being done at the same time.

“From the beginning, this re-roof project was a challenge,” said Natalie Solowej, project manager at United States Roofing Corporation of Norristown, Pennsylvania. “The bridge and highway restoration was unforeseen and provided a lot of logistic challenges, because we ended up sharing a worksite with limited access and available space for staging.”

Once the old modified bitumen roof was removed, two-inch extruded Sarnatherm insulation was adhered to the substrate. The grounding screen for the EFVM leak detection system and the Sika Sarnafil membrane, which incorporates heat-welded seams, were loose laid over the insulation.

Because this roof is five stories up and the building lies adjacent to the Schuylkill River, it is subjected to strong and persistent wind. “To prevent membrane blow-offs before the vegetation was installed, we filled hundreds of five-gallon poly bags with water to serve as a temporary overburden,” Solowej stated.

Another challenge was designing and installing a compatible transition between the main Sika Sarnafil roof and the perimeter waterproofing system, which included 88 scuppers, retrofit drains and over 1,000 linear feet of custom coping.

Other roof features U.S. Roofing had to deal with were five linear skylights, 3,000 square feet of pavers, 470 linear feet of metal railing, two equipment hatches, and a helicopter pad.

Because of project delays, Roofscapes couldn't install the green roof until October, which posed some problems. “The working conditions were awful – very windswept,” Miller said. “However, once we put down the vegetative mats you would think you were on the ground – it was one of the best demonstrations I've seen on how a green roof negates wind uplift pressure.”

An Example of Positive Teamwork

Solowej said that the construction manager, C. Erickson & Sons of Philadelphia, did a great job in building teamwork between all the different parties involved with this project.



“Things couldn't have gone better because the construction manager kept the lines of communication open between everyone so we all worked well as a team,” she stated. “From concept to completion it came out exactly as expected.”

Sika Sarnafil representatives were important team members, according to Solowej. “The Sika Sarnafil rep's were a big help whenever there was an unforeseen problem,” she said. “They were very prompt with a solution to any problem that occurred.”

“Sika Sarnafil representatives were very helpful, especially with some detailing around some oddball-type things,” Chrostowski stated. “They also gave us some good guidance on what should be corrected or improved – they helped us out a lot.”

Michael J. Reteneller of C. Erickson & Sons said, “Everyone worked together really well on this project. Sika Sarnafil people worked well with everyone, and U.S. Roofing did a great job and had a great crew. They were very good to work with.”

Miller agreed that U.S. Roofing did a great job. “This was a very challenging job logistically, and U.S. Roofing proved they are adept at doing large-scale, complex jobs,” he said. “We were compressed for time and cooperation was critical, and they were very professional to work with.”

It was this professionalism that earned U.S. Roofing Third Place in Sika Sarnafil's 2009 Contractor Project of the Year, Waterproofing Category.

EFVM and Quality Control

The EFVM quality assurance system was critical in assessing watertightness throughout the completion of the project. The EFVM uses pulses of low voltage electricity to detect roof system breaches, even with overburden in place. The breach can then be easily identified and repaired.

A Roof Worthy of Note

Today the PECO roof is doing well and garnering praise not only for PECO, but also for Sika Sarnafil. “We haven't had a single problem since the grand opening,” said Chrostowski. “I would definitely specify the Sika Sarnafil system again if the right opportunity came up.”

“The roof is holding up very well,” Reteneller said. “I would absolutely recommend the Sika Sarnafil system.”

“This roof has been showcased locally and regionally as a green roof trailblazer,” Solowej said. “U.S. Roofing is proud to have been part of the installation of this noteworthy roof, which we believe will be a source of pride for PECO for many years to come.”

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