



# Green Infrastructure & Stormwater Management CASE STUDY

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## Ambler Green Roof

**Location:** Temple University, Ambler, PA

**Client:** Temple University

**Design Firm(s):** Roofscape, Inc., Kimmel Bogrette Architecture, Long, Tann & D'Onofrio, Inc.

**Landscape architect/Project contact:** Temple University

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**ASLA Chapter:** Pennsylvania/Delaware



### Project Specifications

**Project Description:** In 2005, new athletic fields and a field house were constructed at Temple University's Ambler campus to house intercollegiate sports programs. Included in the construction of the field house was a green roof designed by Temple's Landscape Architecture and Horticulture departments. The roof now serves as a living laboratory for students and professors to study energy efficiency, roof temperatures, water quality, and water retention. The roof garden is able to reduce storm water runoff to the nearby Rose Valley Creek, a tributary to the Wissahickon Creek.

**Project Type:**

Institutional/Education

Part of a new development

**Design features:** Green roof

**This project was designed to meet the following specific requirements or mandates:**

Developer/client preference

**Impervious area managed:** Less than 5,000 sq/ft

**Amount of existing green space/open space conserved or preserved for managing stormwater on site:** Less than 5,000 sq/ft. 3,700 sq/ft were created and conserved.

**The regulatory environment and regulator was** supportive of the project.

**Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements?** Energy savings were critical. Plus, it is a research facility, so its location on the campus was important.

## Cost & Jobs Analysis

**Estimated Cost of Stormwater Project:** \$10,000-\$50,000 (Public funding: None)

**Related Information:** Roof Materials and Installation - \$38,840 Plant Materials - \$4,160

**Was a green vs. grey cost analysis performed?** No

**Cost impact of conserving green/open space to the overall costs of the site design/development project:** None. The green roof was installed with a \$50,000 grant from Philadelphia Electric Company (PECO)

**Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)?** Did not influence costs.

**Number of jobs created:** 8 firms

**Job hours devoted to project:** Not available

## Performance Measures

**Stormwater reduction performance analysis:**

We estimate that the green runoff captures the first inch of precipitation.

**Community & economic benefits that have resulted from the project:** The new green roof has tied directly into the mission of the Landscape Arboretum of Temple University Ambler to serve as a living, learning laboratory that promotes an understanding of the relationship between people and the environment and awareness of both the need for and the means to achieve greater environmental responsibility. It is one of the only green roofs in the area and it is rare to have green roofs in suburban environments. It serves to educate faculty, staff, students,

and visitors to the campus about green roofs.

### Project Recognition

Poster Presentation, PA/DE ASLA Chapter (2011); Special Achievement Award for Conservation by the Garden Club Federation of Pennsylvania; Temple Ambler's 2002 Philadelphia Flower Show exhibit inspired the PECO Green Roof. It won Best of Show in the Academic Educational category (2002).



### Additional Information

**Links to images:** [http://www.temple.edu/ambler/csc/t-vssi/BMPSurvey/ambler\\_roof.htm](http://www.temple.edu/ambler/csc/t-vssi/BMPSurvey/ambler_roof.htm)  
<http://www.kimmel-bogrette.com/portfolio/port-rec-22-1.html>

The green roof installation included five layers on the Field House. The first layer consists of a waterproof membrane to prevent leaks, while a second layer, a root barrier membrane, prevents roots from damaging the roof. A third layer allows for drainage and is composed of coarse sand and gravel. The fourth layer is the growing medium, which is about 4 inches deep. The fifth layer, or surface layer, is made of porous expanded poly propylene to allow for rooting and draining. Two different sections of vegetation are planted on the roof: one is a traditional cutting mat and the other is a variety of diverse species. The goal of the set-up is to determine which section and which species grow the most successfully in the local climate. Some species included in the installation were from the Sedum, Delosperma, Jovibarba, Orostachys, Petrorhagia, Sempervivum, and Talinum families. The following firms were directly involved with the project: Roofscape Incorporated from Philadelphia; Kimmel Bogrette Architecture from Conshohocken, Pennsylvania; Long, Tann & D'Onofrio Incorporated from Wilmington, Delaware; Emory Knoll Farms from Street, Maryland; Temple University Ambler; David Brothers Landscape Nursery and Contractors from Worcester, Pennsylvania; Hamada Roofing from Philadelphia; and Florkowski Builders Incorporated from Philadelphia.