Green Infrastructure & Stormwater Management CASE STUDY

GreenForge - Stormwater Management Retrofit

Location: Greensburg, Westmoreland County, PA
Client: GreenForge Inc
Design Firm(s): Westmoreland Conservation District
Landscape architect/Project contact: Kathryn Hamilton, ASLA, RLA
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ASLA Chapter: Pennsylvania/Delaware

Project Specifications

Project Description: The GreenForge project is an adaptive re-use of an industrial building for commercial use. Renovations included sustainable stormwater retrofit demonstrations across the site. Built in the 1980s, the 16,400 sq/ft structure had no stormwater management and contributed to erosion, flooding events and stream degradation in the Sewickley Creek Watershed. Innovative stormwater management technologies retrofitted onto the site include a 1,600 sq/ft vegetated wall to minimize the footprint of site disturbance, 9,000 sq/ft of green roof, 5,400 sq/ft of permeable pavements for parking and walkways, 700 sq/ft of bio-infiltration rain garden and native landscaping across the site.

Project Type:
Commercial
A retrofit of an existing property

Design features: Bioretention facility, rain garden, green roof, and porous pavers.

This project was designed to meet the following specific requirements or mandates: To meet funding criteria

Impervious area managed: 5,000 sq/ft to 1 acre
Amount of existing green space/open space conserved or preserved for managing stormwater on site: 5,000 sq/ft to 1 acre

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? The green roof was a consideration for building heating and cooling, and the permeable pavements, vegetated wall, rain garden and, native landscaping all contribute to reducing the 'heat island effect'.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $100,000 - $500,000 (Public funding: State, regional - PA DEP Growing Greener II grant, PA DEP Energy Harvest grant, Southwestern Pennsylvania Watershed Protection Program grant)

Related Information: The project costs were over $250,000 including $18,500 for 3,900 sq/ft of porous paving using concrete unit pavers; $13,100 for 1,500 sq/ft permeable concrete; $139,100 for 9,000 sq/ft of new roofing membrane and green roof; $3,900 for 700 sq/ft of rain garden; $56,400 for 1,600 sq/ft of face for vegetated retaining wall system for low-impact development; and $22,800 for native landscaping across the 2.6-acre site.

Was a green vs. grey cost analysis performed? No. This project was a stormwater management retrofit on an existing site where none existed.

Cost impact of conserving green/open space to the overall costs of the site design/development project: Not applicable

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Not applicable

Number of jobs created: Not available
Job hours devoted to project:
- Planning and Design: 510 for project coordination and design
- Construction: 240 hours for construction oversight
- Annual Maintenance: 30 total for all management practices

Performance Measures
Stormwater reduction performance analysis:
This project manages 50% to 100% of the 2-year storm event. The green roof will manage at least 50%, the permeable pavements will manage 100%.

Community & economic benefits that have resulted from the project: The GreenForge stormwater management retrofit is an educational showcase which includes a walkable stormwater trail. Visitors to the site can follow descriptive signposts explaining all the stormwater management retrofits and their benefits used on the project.

Project Recognition
PA/DE ASLA 2008 Special Recognition Award for Sustainability; National Concrete Masonry Association (NCMA) 2007 Design Award of Excellence; Smart Growth Growth Partnership of Westmoreland County Award 2008

Additional Information
Links to images: See attached