



Green Infrastructure & Stormwater Management CASE STUDY

Vandergrift CBD Street Trees Stormwater Management

Retrofit

Location: Borough of Vandergrift,
Westmoreland County, PA

Client: Vandergrift Improvement
Program

Design Firm(s): Westmoreland
Conservation District

**Landscape architect/Project
contact:** Kathryn Hamilton, ASLA,
RLA

Email: kathyh@wcdpa.com

ASLA Chapter:
Pennsylvania/Delaware



Project Specifications

Project Description: This project was a central business district stormwater management demonstration project to capture and treat stormwater along the streetscape. A 180-foot by 7-foot section of concrete sidewalk was replaced with an underground structural soil containment system to support street trees and permeable concrete. The system captures and retains stormwater runoff from a 200-foot long by 16-foot wide sidewalk and reduces the volume of runoff and provides water quality.

Project Type:

Transportation corridor/streetscape

A retrofit of an existing property

Design features: Bioretention facility; structural soil containment system (Silva Cell(TM)) supporting street trees and sidewalk of permeable concrete.

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

Impervious area managed: less than 5,000 sq/ft

Amount of existing green space/open space conserved or preserved for managing stormwater on site: . Not applicable

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? There was no net loss of pavement in the central business district along a sidewalk adjoining a municipal parking lot utilized for a farmer's market.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$50,000-\$100,000 (Public funding: State, County Environmental Initiative project through the Pennsylvania DEP Growing Greener II Program)

Related Information: \$18,000 Silva Cell product, \$45,000 Demolition, excavation, construction of Silva Cell SW retention system, \$12,000 Permeable concrete, \$10,000 Tree grates

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: Not applicable

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Did not influence cost – not applicable. The project is an urban streetscape retrofit in an area where there is no current stormwater management

Number of jobs created: 1 foreman, 2 laborers for 2 weeks; 4 concrete laborers for 3 days

Job hours devoted to project:

Planning and Design: 80 hours project design and coordination

Construction: 40 hours construction oversight

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

100% of the 2-year 24-hour storm event is managed. 3,200 sq/ft impervious area managed. Six canopy trees installed. 1,200 sq/ft porous concrete. 2,200 cu/ft structural infiltration soil support system. 650 cu/ft runoff captured.

Community & economic benefits that have resulted from the project: The project provides shade to the on-street parking lane and to the adjacent municipal parking lot, and landscaped business districts tend to attract more visitors. The underground retention system provides stormwater management for volume reduction and water quality improvements in an area where none currently exist.

Additional Information

Links to images: See attached file of photos

The Borough of Vandergrift was designed by the office of Frederick Law Olmstead and Sons in the 1890s and constructed at the turn of the century. A planned community to support a steel mill along the banks of the Kiskiminetas River, stormwater management was never an issue. The wide curving streets in the central business district were designed without a collection system to allow rainwater to flush the streets clean sending runoff and pollutants directly into the river. Current thinking and changes in stormwater management regulations have spurred communities like Vandergrift into action. Projects like the Vandergrift CBD Street Trees stormwater management retrofit project can be easily replicated.