



# Green Infrastructure & Stormwater Management CASE STUDY

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## Villanova Infiltration Trench

**Location:** Villanova University, Villanova, PA

**Client:** Villanova University

**Design Firm(s):** Villanova Facilities Management

**Landscape architect/Project contact:** Dr. Robert Traver (Principal Investigator)

**Email:** [robert.traver@villanova.edu](mailto:robert.traver@villanova.edu)

**ASLA Chapter:** Washington, D.C.

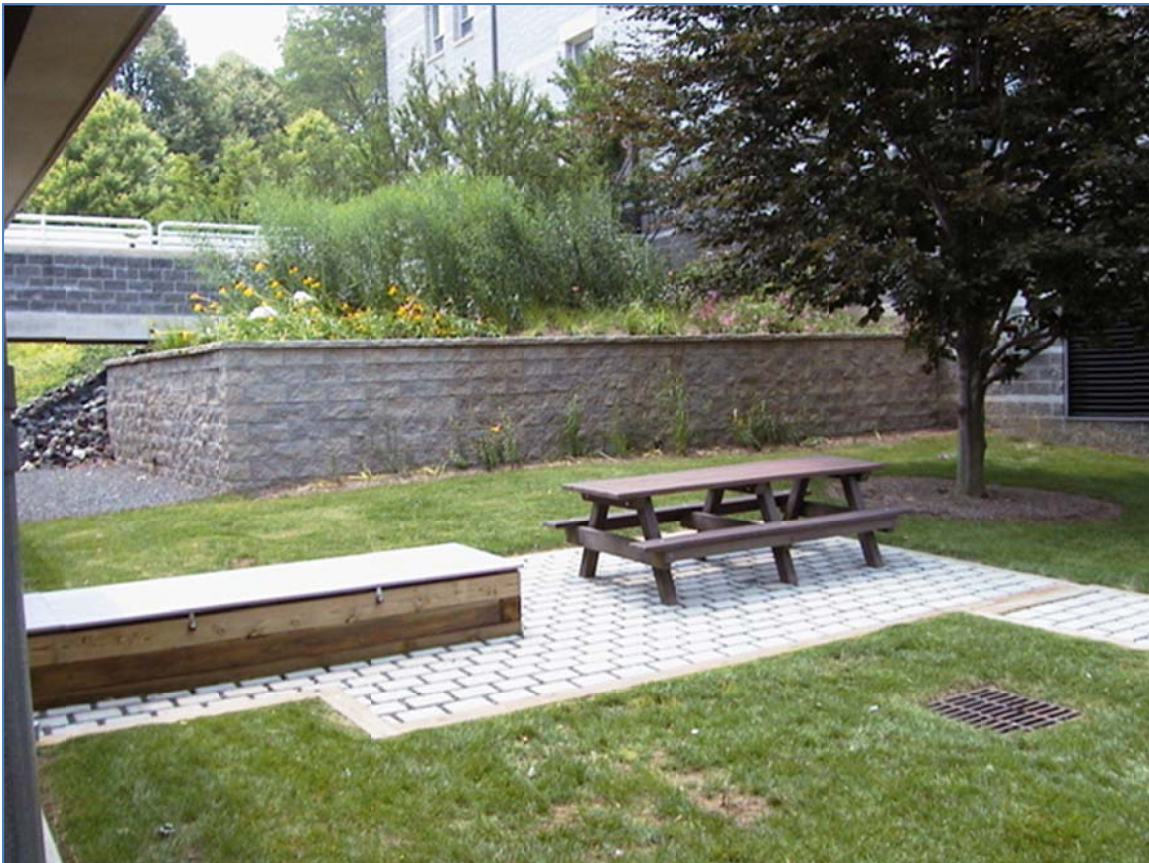


Photo: Villanova University

## Project Specifications

**Project Description:** The Infiltration Trench serves two functions: in addition to the stormwater management and monitoring capabilities of the site, it also provides an attractive and functional picnic and gathering area for Villanova students and faculty. The Trench is approximately

10'x13' and 6' deep, filled with large washed aggregate. This provides approximately 300 cubic feet of storage, which can accommodate about 1/4" of runoff over 20,400 sq/ft of impervious parking area. The Trench is overlain with porous eco-pavers and has an overflow discharge. The site is instrumented for water quantity and quality monitoring.

**Project Type:**

Open space - park

A retrofit of an existing property

**Design features:** Porous pavers and infiltration trench.

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

State statute, county ordinance, local ordinance, developer/client preference

**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:** less than 5,000 sq/ft

**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?** Yes. The client, Villanova University, required this space to provide an attractive and functional picnic and gathering area for Villanova students and faculty.

**Cost & Jobs Analysis**

**Estimated Cost of Stormwater Project:** \$10,000-\$50,000 (Public funding: State)

**Related Information:**

- Garage Piping \$4,900
- Marking Electrical utilities \$500
- Construction \$19,500
- Eco-Pavers Installation \$3,000
- Total construction cost \$27,900

**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:** Increased the costs.

**Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)?** Slightly increased.

**Number of jobs created:** 1

**Job hours devoted to project:**

Planning and Design: 40

Construction: 150

Annual Maintenance: 20

## Performance Measures

**Stormwater reduction performance analysis:**

The infiltration loading was intentionally oversized. The design capacity was 1/4" of runoff over tributary area (about 13% of a 2-year design storm).

**Community & economic benefits that have resulted from the project:** Created local business opportunity, created new research opportunity, enhanced existing properties of the land, attracted local and international interest groups.

## Additional Information

**Links to images:**

[http://www3.villanova.edu/vusp/bmp\\_research/inf\\_trench/inf\\_trench\\_main.htm](http://www3.villanova.edu/vusp/bmp_research/inf_trench/inf_trench_main.htm)

Although this BMP was intentionally designed for failure, it performed much better than anticipated, which advanced the knowledge on operations of such BMPs.