



Green Infrastructure & Stormwater Management CASE STUDY

Greening Virginia's Capitol

Location: Richmond, VA

Client: City of Richmond, Va. Dept. of General Services, Va. Dept. of Conservation & Recreation

Design Firm(s): Civil & Environmental Services (civil/site); Bioform Landscape Archi. & Environmental Design (landscape architecture)

Landscape architect/Project contact: Chris Sonne, PE, Affiliate ASLA

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ASLA Chapter: Virginia



Photo: VA DGS

Project Specifications

Project Description: A low-impact stormwater management demonstration project, incorporating a variety of methods to provide aesthetically pleasing and effective stormwater management on a highly visible and historic site. This project is also a Sustainable Sites Initiative pilot project.

Project Type:

Open space - park

A retrofit of an existing property

Design features: Bioretention facility, rain garden, cistern, porous pavers, curb cuts, and streetside urban bioretention planters, as large as 6' wide x 77' long constructed on a 6.5% slope and integrating salvaged materials (granite curbing) provide a unique and challenging LID opportunity.

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

Designed to proposed state stormwater management standards

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? City of Richmond Downtown Master Plan & Capitol Square Preservation Master Plan compliance, educational factors for future site visitors.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$500,000-\$1,000,000 (Public funding: Federal, National Fish & Wildlife Foundation grant)

Related Information:

- Phase I - (5,800 sq/ft permeable brick pavers w/granite steps - replacing existing): \$ 225,000
- Phase II - (750 sq/ft rain gardens with underdrain piping): \$34,000
- Phase III - (Seven urban bioretention planters with integral infiltration vault): \$155,000
- Phase IV - (Rain water harvesting system with 15,000 gallon tank, piping, controls & pump): \$50,000



Photo: VA DGS

- Phase V - (Large urban bioretention planters adjacent to Capitol) - awaiting bids

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: This approach was integral to the project goals. Although no comparison of what the costs associated with equivalent "conventional" stormwater management were prepared, this comparison will be prepared for information purposes once the final costs are all compiled.

Cost impact of conserving green/open space for stormwater management over

traditional site design/site development approaches (grey infrastructure)? Did not influence costs. Although this comparison has not yet been done, I do not anticipate any significant difference in the costs.

Number of jobs created: 4

Job hours devoted to project:

Planning and Design: ~ 350

Construction: ~ 120

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

Final values will depend on the scope of construction allowable (once final bids come in), but at a minimum, facilities are designed to capture 1" of runoff over upstream drainage areas.

Community & economic benefits that have resulted from the project: This project provides a tremendous educational opportunity about low-impact practices for the State Legislators and thousands of general public who visit this site each year. It will also add shade and aesthetic value to the downtown streetscape.

Project Recognition

Scenic Virginia (Innovative Site Design)

Additional Information

Links to images: www.greenvacapitol.org