



Green Infrastructure & Stormwater Management CASE STUDY

Annapolis and Chesapeake Bay Visitors Center

Location: Annapolis, MD

Client: Department of Public Works

Design Firm(s): O'Doherty Group Landscape Architecture

Landscape architect/Project contact: Shelley Rentsch, ASLA

Email: annapolisla@verizon.net

ASLA Chapter: Potomac

Project Specifications

Project Description: The sustainable site development at the Annapolis and Chesapeake Bay Visitors Center, referred to locally as Gotts Court, serves to create the first impression as visitors approach. Site permeability has been increased from 20% to 100% (zero runoff most rain events - see link to video of tropical storm where it rained nine inches in twenty-four hours). 10,000 sq/ft of permeable brick pavers are included in the elliptical parking area. The entire parking area paver sub base serves as a filter that stormwater runs through and is discharged into rain gardens prior to entering the closed storm drain system.

The parking lot serves as an example of green building techniques for the City of Annapolis. Maryland's natural environment is featured including six rain gardens with the Bald Cypress and moist meadow native plant associations. On-site stormwater management minimizes conveyance quantity and improves water quality. Permeable paving increases infiltration and the runoff is directed through the rain gardens. The rain gardens filter the parking lot runoff through the plants and soil media prior to releasing the stormwater into the storm drain system. Recycled glass aggregate paving material accents the design and increases its sustainability. Recycled granite cobblestones salvaged from Baltimore city streets will be used for curbs. Refurbished pedestrian scale historic themed street lights, and energy efficient LED accent lights are used, as well as, solar bollards and parking pay and display terminals. Recycled corrugated flexible rain pipes set in the ellipse sub base to drain stormwater. Native plant associations reduce the need for irrigation and increase pest resistance. Finally, existing grades were raised to allow for protection of buried archaeological resources - archeologists uncovered 9,000 artifacts.

Project Type:

Historic, streetscape, state office and Chesapeake Bay Visitors Center related
A retrofit of an existing property

Design features: Bioretention facility, rain garden, bioswale, downspout removal, porous pavers, and curb cuts. In addition, the design features permeable red clay brick pavers (most of the standard products on the market are concrete), custom elliptical trench drain made out of recycled granite cobble stones set in blue glass aggregate, and six rain gardens that define ellipse thereby creating a space with true urban form relating to the historic city plan of Annapolis.

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

State statute, county ordinance, local ordinance, to meet funding criteria, 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: 5,000 sq/ft to 1 acre

The regulatory environment and regulator was apprehensive about the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Solar power, recycled and reclaimed construction materials were used in this project.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$500,000-\$1,000,000 (Public funding: Federal, state, local)

Related Information: This project was funded with American Recovery and Reinvestment Act funds from EPA directed through the Maryland Department of the Environment and then in the form of a \$767,000 grant to the City of Annapolis. Detailed tracking of the construction costs was kept through the construction phase.

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: In this case the urban form of the parking ellipse became the perceived open space and the residual green space defines that form.

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: Unknown - construction work and consultants

Job hours devoted to project: Not available

Planning and Design: Not available

Construction: Not available

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

100% is retained during a 2-year storm as proven by the 100% dry single outfall pipe which was intentionally exposed to allow for visual monitoring. The film on Youtube (below) shows water coming out of that pipe and over the scupper set above but that was a 100-year to 500-year storm event.

Community & economic benefits that have resulted from the project: Two buildings facing this upgraded space were refurbished as a result of this project.

Project Recognition

Four Rivers Heritage Award of Annapolis, Public Spaces/Private Initiative Award 2010

Additional Information

Links to images:

Video - 9" in 24 hours please watch - a video is much more convincing than forms.

http://www.youtube.com/watch?v=svNTKPryJHI&feature=player_detailpage

Plan Drawings, details, and photographs will be provided upon request.

This project is 30 minutes from DC.