Green Infrastructure & Stormwater Management CASE STUDY

H2O Flow

Location: 405 Martin Luther King, Jr. Blvd, Chapel Hill, NC
Client: Public Arts Offfice/Commission, Town of Chapel Hill
Design Firm(s): Legacyworks
Landscape architect/Project contact: Michael Roy Layne, RLA/ASLA/Ph.D.
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ASLA Chapter: North Carolina

Project Specifications

Project Description: An aesthetic engineering, site-specific environmental sculpture created using a biodegradable bamboo bioretention structure that spotlights and mirrors existing water collecting and water dispersing landforms to slow down and disperse two-point (roof drain and pedestrian walkway culvert) and overland water flows during peak stormwater concentration periods.

Project Type:
Public environmental sculpture
A retrofit of an existing property

Design features: Bioretention facility, bioswale, and embankment erosion control structure/artwork.

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, artwork as stormwater management tool

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

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 client wanted the stormwater control sculpture to spotlight and promote the use of public artworks as aesthetic engineering solutions to stormwater management and other ecological considerations within the landscape.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: >$10,000 (Public funding: Regional, local, town/county public art programs involved)

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: The purpose was to demonstration of use of artwork to mitigate existing stormwater degradation in an existing open green space.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? No, alternative cost saving calculations were not required or completed.

Number of jobs created: One

Job hours devoted to project:

Planning and Design: 112 hrs
Construction: 408 hrs
Annual Maintenance: 0 hrs
Other: 43 hrs Stormwater/Enviornmental education/training

Performance Measures

Stormwater reduction performance analysis:
Although the runoff rates and discharge velocity rates were calculated for the preexisting drainage pipes for 10-year and 25-year storms to determine if the structure could support the discharge velocity rates, no calculations were preformed to determine the percentage of stormwater retained on site.

Community & economic benefits that have resulted from the project: Landscape design students helped with installation while learning grading, drainage and stormwater management techniques. Youth and community participation in the project supported by ongoing stormwater and ecological education opportunities including planting of rescued and native plants and environmental art performances and lectures.

Project Recognition

Public Art Commission, Town of Chapel Hill Arts Program/Commission

Additional Information

Links to images: Photo credited to Town of Chapel Hill website - http://www.townofchapelhill.org/index.aspx?page=1624