Green Infrastructure & Stormwater Management CASE STUDY

Johnny Appleseed Park

Location: Springfield, MA
Client: The City of Springfield's Department of Capital Asset Construction
Design Firm(s): GZA GeoEnvironmental, Inc.
Landscape architect/Project contact: Anja Ryan, ASLA
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ASLA Chapter: Boston

Project Specifications

Project Description: The Johnny Appleseed Park Redevelopment includes a new playground area complete with swing set and new play equipment, a new full-size basketball court, paved walkways, new benches, a picnic area, and a water fountain. Site drainage was designed so that runoff from the new paved pathways will sheet flow onto the abutting grass areas. The basketball court was pitched so that it will drain to two rain gardens, which were both designed as per Massachusetts Stormwater Management Handbook standards. Each rain garden is large enough to infiltrate runoff from the basketball court in a normal storm event. However they both will have an area drain in them with an invert 4" above finish grade and will be tied to an existing catch basin with an outfall to the Mill River. New underdrains from the playground area will also be tied into the catch basin.

Project Type:
Open space - park
Part of a redevelopment project

Design features: Rain garden and bioswale. All stormwater from impervious pavement sheet flows to surrounding green space. The only collected stormwater is through under drains in a wood chip surfaced play area. Under drains collect water that falls with the wood chip play area and then is pipe through perforated drain pipes for a length of approximately 50 feet before then entering a structure.

This project was designed to meet the following specific requirements or mandates:
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 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 requested the rain garden be easy to maintain.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $10,000-$50,000 (Public funding: Federal, state, local)

Related Information:

- Furnish and install area drains= $4,000
- Furnish and install pvc pipe= $3,000
- Excavation and grading= $1,250
- Soil Mixture= $1,850
- Plants= $3,500
- Mulch= $250

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 project was a redevelopment projects, yet the cost of development was lower because of the amount of green space preserved.

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: Not available

Job hours devoted to project:

Planning and Design: 300
Construction: 1,200
Annual Maintenance: 220

Performance Measures

Stormwater reduction performance analysis:

The rain gardens proposed for this project are sized based on a water quality volume

determined by multiplying 0.5 inches of runoff by the total impervious area of the post-development project site, resulting in a WQ volume of 430 cubic feet. The total area of proposed rain garden is 500 sq/ft, with 30" of engineered soil mix and 4 inches of available storage over the top of the mulch layer. Assuming a soil void space of 25%, the total water quality volume provided by the rain gardens is 480 cubic feet.

Community & economic benefits that have resulted from the project: The project completion date is due to be in April 2011.