



Green Infrastructure & Stormwater Management CASE STUDY

Rock Mill Park

Location: Alpharetta, GA

Client: City of Alpharetta, Georgia

Design Firm(s): Lead Designer- Breedlove Land Planning, Inc., Architect- Lyman Davidson Dooley, Inc. Architect: Dave McCauley, Greenroof Consultant- Linda Velazquez, ASLA

Landscape architect/Project contact:

Breedlove Land Planning, Inc., Alan Wieczynski, RLA, LEED AP BD+C

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ASLA Chapter: Georgia

Project Specifications

Project Description: Rock Mill Park is a passive recreational park that serves as an educational exhibit for the City of Alpharetta. This unique park is multi-use in nature,

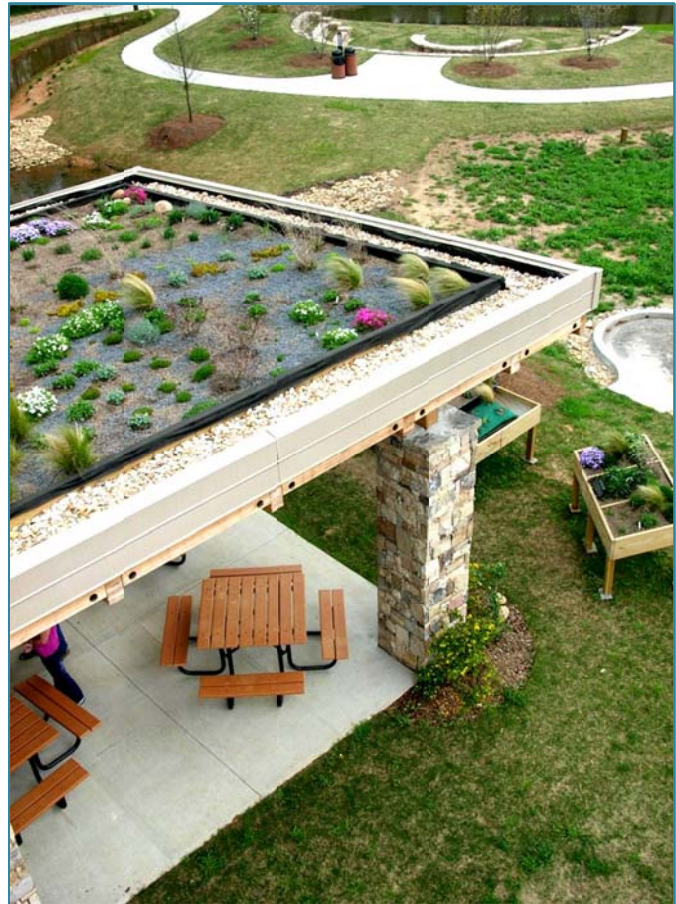
serving the public as well as operating as a maintenance center for the Recreation and Parks Department personnel. The park design emphasized the integration of stormwater quality treatment facilities including bioretention cells, green roofs, enhanced swales and constructed wetlands while educating the park's users on the various stormwater quality treatment facilities as well as the area's natural history, wildlife habitats, and City of Alpharetta history.

Project Type:

Open space - park

Part of a new development

Design features: Bioretention facility, rain garden, bioswale, green roof, downspout removal, curb cuts, sand filters, enhanced swales, and constructed wetland.



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

Local ordinance, developer/client preference

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: 1 acre to 5 acres

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 City asked that Rock Mill Park be a model of low impact development stormwater quality treatment processes. The Owner was also receptive to utilizing the site for monitoring of stormwater treatment process and as a public laboratory for green roof research (see below).

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: <\$5,000,000 (Public funding: Federal, state, local)

Related Information: Hard and soft costs: \$2.1 million, break out available upon request

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 site lies within a 40-acre property owned by the City of Alpharetta. A large portion of the site is made up of floodplain, wetlands, and other environmentally sensitive areas. In pre-development conditions the site was mostly wooded with a paved "greenway trail" that meanders through the property. This project included the disturbance of approximately 4.60 acres. Approximately 3.30 of the 4.60 acres of disturbances were in areas previously cleared and in a state of early successional undergrowth vegetation. The bulk of the proposed development was situated in this area to limit the removal of mature forest and significant natural features.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly reduced costs (1-9% savings).

Number of jobs created: Unknown

Job hours devoted to project:

Planning and Design: 750 (design team)

Construction: 160 (design team)

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

WATER QUALITY: Stormwater management facilities are located throughout the site including three bioretention cells, two enhanced swales, two sand filters, two drop out forebays, a green roof and constructed wetlands. The use of multiple low-impact and infiltration-based stormwater management facilities on site and in succession, resulted in a high pollutant removal rate.

Typical projects aim for 80% removal of total suspended solids. 'Hot Spot' areas of the site were treated for an exceptional 97% removal of total suspended solids (estimated).

WATER QUANTITY - Calculations in the downstream hydrologic assessment showed that providing detention larger storm events would actually increase the peak flows at the property line. This is due to large up-stream basin and the staggering of the peaking times. By providing detention, our peak flows would be delayed and reach the discharge point at a time when the remainder of the basin is closer to its peak thus, significantly impacting pre-development hydrology in a negative manner.

Community & economic benefits that have resulted from the project:

INTERPRETIVE SIGNAGE - The park is extremely educational in nature. Dispersed throughout the park is informational signage educating the Park's users on the various stormwater quality treatment facilities as well as the area's native wildlife, habitats and Alpharetta history.

GREEN ROOF DEMONSTRATION MODEL AND TRIAL GARDENS - There are four tabletop models at ground level and include The Greenroof Demonstration Model, a 6' x 3' module with three panels: the first is a mock-up using selective plants from the four zones found on top of the actual green roof pavilion; the center panel is the non-greened control panel, where we can test for stormwater runoff rates and pollutants as compared the green roof; and the third panel shows the material section of the American Hydrotech green roof system used. The three green roof trial models will be monitored for plant types including grasses, perennials and succulents; system types; growing media; and stormwater quantity and quality. Two 6' x 3' conventional green roof trial models are built-in-place layered system tabletops, one trialing native plants only while a second trials non-natives. The third tabletop is a 8' 5" x 4' 5" modular green roof trial model. Four modular systems are currently being studied here at



the following depths: green roof blocks @ 4", green paks @ 4", GreenGrid @ 4" and GreenTech @ 8.5" deep.

Project Recognition

Georgia American Society of Landscape Architects Merit Award; Georgia American Society of Civil Engineers Project of Excellence; American Water Resources Association, Georgia Section Water Resources Project of Excellence

Additional Information

Links to images: Project page: http://www.landplanning.net/portfolio/parks/rock_mill.html
Greenroofs.com: <http://www.greenroofs.com/projects/pview.php?id=629> City Page: <http://www.alpharetta.ga.us/index.php?p=366>

Rock Mill Park The City of Alpharetta, Georgia

Project Purpose and Intent: The main goal is protection and interpretation of the natural environment while serving as a rest area for greenway path users. This unique park is multi-use in nature, serving as an educational exhibit for users. It is comprised of outdoor trails, learning pods and open areas connecting to the greenway.

The landscape architect developed multiple site concepts and grading studies to determine how best to meet the project program while balancing cut and fill within the 100-year floodplain.

Unique Park Features: The landscape architect worked closely with the client to ensure that the main goals for the project were upheld throughout the design and construction of the project.

Key architectural elements of the park include:

- A greenway restroom building, an open pavilion, a green roof pavilion with demonstration models, and a maintenance building and yard.

Key site elements of the park include:

- An outdoor amphitheater, a friendship path with seating, walkways, landscape areas, parking for both park and greenway users, a wetlands observation deck and various site amenities from benches and trash receptacles to interpretive signage and way-finding posts.

Progressive stormwater management facilities are located throughout the site including:

- Three bioretention cells, two enhanced swales, two sand filters, two drop out forebays, a greenroof and constructed wetlands.

- The use of multiple low-impact and infiltration-based stormwater management facilities on site and in succession, resulted in a high pollutant removal rate. Typically projects aim for 80% removal of total suspended solids. 'Hot Spot' areas of the site were treated for an exceptional 97% removal of total suspended solids.

Interpretive Signage was designed and installed through the site to educate users on topics ranging from the Big Creek Watershed, basics of water quality, landscape ecology, the function of green roofs, and sustainable stormwater management techniques. The green roof pavilion includes a demonstration green roof with appropriate native vegetation as well as a hands-on display at ground level to further educate park users.

Project Significance:

- Rock Mill Park is a model of cost effective sustainable design.
- The project illustrates how landscape architects are providing leadership in progressive stormwater management solutions.
- Provides a sensible alternative to traditional (and unsightly) detention ponds and shows how multiple best management practices can be used in succession to form a comprehensive stormwater solution.

