



Green Infrastructure & Stormwater Management CASE STUDY

Rain Garden Residence

Location: Shreveport, LA

Client: Bill and Tina Anderson

Design Firm(s): Jeffrey Carbo Landscape Architects

Landscape architect/Project contact: Project Manager - Jeffrey Carbo, FASLA

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ASLA Chapter: Louisiana

Project Specifications

Project Description: This residence is located in northwest Louisiana and occupies a 5-acre parcel. The site is characterized by heavily wooded slopes of pine and a mix of hardwoods. A ravine, the drainage corridor for approximately 150 acres of surrounding property, runs north/south on the site's western edge. Its water level during heavy rains can rise from 8-10 feet above the ravine's usual level. A sloping river escarpment with a dense tree canopy occupies a large area on the site's eastern boundary. Our firm collaborated with the owners and architect over a two-year period in preparing the site's master plan prior to construction. The project was exemplary in terms of an integrated design process among allied design professionals and the clients. Our firm developed design concepts for the entry, drive alignment and details, stormwater management as rain gardens/water features, exterior features adjacent to the residence including walls, walks, terraces, guest parking and all other site amenities, the architect refined plans for the residence to fit with site planning concepts as they were developed.

Project Type:

Single family residential

Part of a new development

Design features: Rain garden, bioswale, downspout removal, porous pavers, and curb cuts.

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

County ordinance, local ordinance

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 indifferent to the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? The clients expressed an interest in having water features, but asked us to be imaginative and innovative in our design, as they were concerned with maintenance implications for traditional water features. It was our desire to marry the most significant aspects of the site with the clients program for site improvements and usable green space.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$100,000-\$500,000 (Public funding: None)

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: Conserving most of the 5-acre site as a wooded preserve was a primary consideration and significantly reduced costs by leaving areas undeveloped and natural.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings).

Number of jobs created: 15-20

Job hours devoted to project:

Planning and Design: 2

Construction: 10

Annual Maintenance: 2

Other: 2

Performance Measures

Stormwater reduction performance analysis: Data not available.

Community & economic benefits that have resulted from the project: We understand the need for developing affordable designs that can be maintained over time. We incorporate sustainable design elements within every project. By incorporating a mixture of stormwater management, adaptive reuse of materials, and the use of native plantings, we provide the best solution for the site. The aspect of economic sustainability comes into play when considering

the long term maintenance of a project. We strive to design for the client's ability and desire to maintain the design in this manner, the end result can provide for both economic and environmental sustainability.

Project Recognition

Award of Excellence, Louisiana Chapter (2010)

Additional Information

Links to images: http://jeffreycarbo.com/proj_gallery.php?aid=35&categoryid=1&projid=121
www.jeffreycarbo.com

Our design decisions were guided by adapting materials native to this region to recall a foreign language and emphasis on using horizontal lines for proposed landscape features in ways that would enhance, yet not compete with the powerful vertical character of the site's existing native trees and vegetation. We believe this project was successful on many levels. The integrated design process was exemplary, as the landscape architect and architect both began work simultaneously and collaboratively, each allowing for input from the other throughout the planning process, design resolution, and construction. Preserving the site's unique character while incorporating the client's program proved challenging, yet ultimately, the results were successful and professionally rewarding. Local materials, such as limestone rip-rap, aggregates, washed gravel, and cypress timbers, connect this work to the region in which it is situated while they also reference the client's preference for distinctive architecture and garden spaces from another place. The drainage system adjacent to the residence, and french drains with the entry lawn terrace, are daylighted within the top of the stone wall where rain water moves within a rock filled and stainless steel runnel. Rain water spills over a ledge and into a river rock trough and ultimately into the ravine below. In the rear of the residence, lawn terraces are separated by a lower level rain garden filled with native plants and trees. All rear drainage is daylighted and fill lower trough which collects overflow water and carries it through a gravel and metal channel at the center of the rain garden. The water moves over a portion of the gravel trough that becomes suspended as it moves further from the terrace. The simple metal frame with minimal vertical supports is filled with gravel over gridded openings to interrupt the water and dispense water like a strainer.