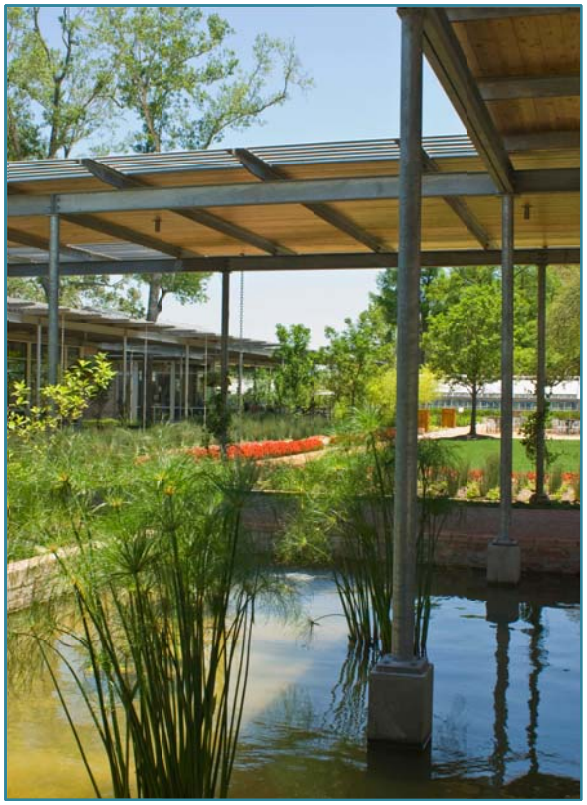
Green Infrastructure & Stormwater Management CASE STUDY

Shangri La Botanical Gardens and Nature Center

Location: Orange, TX
Client: Nelda C. and H.J. Lutcher Stark Foundation
Design Firm(s): Jeffrey Carbo Landscape Architects
Landscape architect/Project contact: Project Manager - Jeffrey Carbo, FASLA and Mike Lanaux, ASLA
Email: jcarbo@jeffreycarbo.com; mlanaux@jeffreycarbo.com
ASLA Chapter: Louisiana



Project Specifications

Project Description: Shangri La Botanical Gardens and Nature Center In Orange, Texas, is the first LEED Platinum-NC project in Texas. When it opened in 2008 it was one of only 50 Platinum projects in the world. The 252-acre site, located near the border of Texas and Louisiana, is now a hub of environmental awareness and education about regional landscapes and animal habitats. Shangri La's landscape design and environmental programming make visible the life processes of many species of birds, animals and insects within the context of a native landscape, a mid-twentieth century botanical garden, and a twenty-first century center for environmental education.

Project Type:
Open space - garden/arboretum
Part of a redevelopment project

Design features: Bioretention facility, rain garden, bioswale, cistern, downspout removal, porous pavers, and curb cuts.

This project was designed to meet the following specific requirements or mandates:
State statute, county ordinance, 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

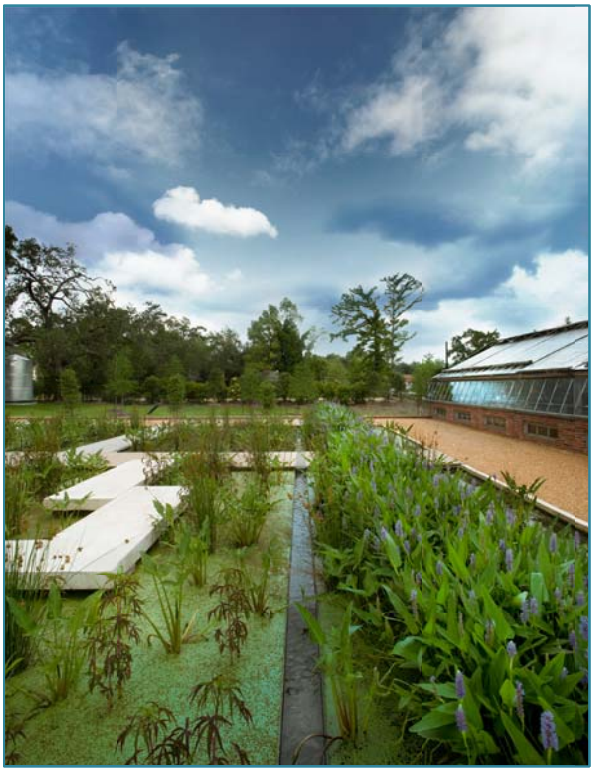
The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? The landscape architects and client rigorously examined Shangri La's three core strengths - its botanical garden, bayou, and birds - to expound on their environmental attributes, to make them visible, and to instill a sense of their importance among the public. Clients requested project built as LEED NC certified project. The project team worked diligently to implement sustainability and qualify Shangri La for green building rating. This goal was reached at the highest green building and performance measures in energy savings, usuable green space, and property value enhancements.

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: By conserving areas of open space/green space within the 252-acre site, we slightly reduced site design and development of project by leaving areas in natural state which could be viewed and used as a nature education center for visitors.

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). Collected stormwater is saved in cisterns to flush toilets and irrigate planted areas of the orientation center. On-site bioswales and retention ponds were an environmental solution for filtering and restoring water quality of "oxygen starved" ponds and wetlands of bird nesting grounds.

Number of jobs created: +/- 50

Job hours devoted to project:
Planning and Design: 15
Construction: 20
Annual Maintenance: 15
Other: 5

Performance Measures

Stormwater reduction performance analysis:
Data not available

Community & economic benefits that have resulted from the project: The project led to other projects in Orange, Texas. The projects are part of an effort to revitalize the downtown area and encourage new private development. Current scope of work includes a series of parks and flexible open spaces to attract visitors and residents to downtown Orange, Texas.

Project Recognition

Louisiana Chapter 2004(Planning), Texas Chapter 2004(Planning), Louisiana Chapter 2009(design); AIA 2009 COTE Top Ten Projects, AIA Citation Award 2008 San Antonio; 2008 Waterfront Center Honor Award; LEED NC Certified Platinum 2008

Additional Information

Links to images: http://www.shangrilagardens.org, www.jeffreycarbo.com http://jeffreycarbo.com/proj_gallery.php?aid=26&categoryid=5&projid=52

The Visitor Center is an enclave of small buildings organized around functional landscape spaces. These buildings form an open foyer t the Botanical Garden and display extensive examples of sustainable practices: recycled asphalt paves the parking lot; pine and cypress trees felled by Hurricane Rita are used as wheel stops, benches and arbors; water cisterns serve the building's grey water uses; there is a hands-on children's garden and nature-focused educational exhibits including a 2.5-acre wetland and water cleansing exhibit. This man-made wetland features aquatic plants, small pumps, and runnels that carry, filter, and clean water from Ruby Lake over a four-day period, finally returning the cleansed water through a brick cistern

and steel runnel. Shangri La's Visitor Center and its Education Zones emphasize Stark's vision of art in nature, love of plants, and environmental philanthropy.