



Green Infrastructure & Stormwater Management CASE STUDY

Missouri Botanical Garden Parking Lots - Phase 2

Location: St. Louis, MO

Client: Missouri Botanical Garden

Design Firm(s): MTR Landscape Architects - LA & Lead; EFK Moen - Civil Engineer; Cannon Design - Electrical; AiC Structural Consultants - Structural; Irrigation Resource Management - Irrigation; Facility Control Systems - Security

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ASLA Chapter: Pennsylvania/Delaware



Photo: MTR Landscape Architects

Project Specifications

Project Description: When faced with the challenge of retrofitting their main visitor parking lots, MBG decided to seize the opportunity to demonstrate their commitment to sustainability while also providing a unique educational opportunity. Prior to renovation there were few trees and all stormwater drained directly to St. Louis' combined sewer system. The retrofit added a bioretention area, additional planting islands, porous concrete paving, and porous asphalt

paving. The bioretention area and porous paving areas met MSD (Metropolitan St. Louis Sewer District) standards (<http://www.stlmsd.com/home>). The rain garden features plants that are native, can survive harsh wet and dry cycles, and yet have a neat and tidy appearance. The project included other sustainability measures such as recycling of construction waste and use of recycled aggregates for paving base materials. MBG plans to use the parking lots to showcase and interpret sustainable design for Garden visitors.

Project Type:

Open space - garden/arboretum
A retrofit of an existing property

Design features: Bioretention facility, porous pavers, and curb cuts.

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

State statute, local ordinance, developer/client preference

Amount of existing green space/open space conserved or preserved for managing

stormwater on site: less than 5,000 sq/ft. No existing green space on site - was a parking lot. The project created approximately 1/2 acre of pervious cover on a site that was previously 95% impervious surface.

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? There were many program requirements related to visitors and events held in the parking lot. For example, we had to keep a large area open without any tree islands because of large tents that are erected for the annual Best of Missouri Market.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$100,000-\$500,000 (Public funding: Federal - Federal Project No. DP-5425(609))

Related Information: Note: cost given is just for stormwater portion of project.

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: It would have cost less to just repave the parking lot in its previous configuration. Because it was in an urban part of St.Louis and was not creating new impervious surface, the project could have gone forward without any stormwater management. However, the client wished to set an example of sustainable design.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly increased. It was a significant cost increase only because no stormwater management was required in this retrofit situation.

Number of jobs created: Not available

Job hours devoted to project: Not available

Planning and Design: Not available

Construction: Not available

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

Projected performance analysis:

- Porous paving: Drainage area: .48 acres 96% of annual storms will infiltrate fully with no runoff
- Bioretention area: Drainage area: .97 acres 22% of annual storms will infiltrate fully with no runoff 1.14" design storm retained on site with no runoff

Additional Information

Links to images: <http://www.mtrla.com/MBG-GreenDesign.html>