Green Infrastructure & Stormwater Management CASE STUDY

O'Connor Park

Location: Mississauga, Ontario, Canada
Client: City of Mississauga
Design Firm(s): PMA Landscape Architects
Landscape architect/Project contact: Jim Melvin, ASLA
Email: jim@pmalarch.ca
ASLA Chapter: Canada

Project Specifications

Project Description: O'Connor Park is situated within a residential subdivision in the Greater Toronto area of Ontario, Canada. As the park lies within the Sawmill Creek sub-watershed and it was critical that its development be environmentally sound in order to preserve the health of the water table. The water balance objective of the park development was to increase the volume of water that drains to the wetland, in order to be able to increase the wetland itself, and to sustain the wetland vegetation. The design objective was to create an integrated open space that balances urban development with environmental conservation.

Project Type:
Open space - park
Part of a new development

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

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: 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? No - we practiced our due diligence and our impervious surface impact is marginal.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $1,000,000-$5,000,000 (Public funding: Regional, City of Mississauga)

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: We utilized the principals of low impact design. By planting native plants the watering requirements are much lower. The water that filled up the enhanced west wetland was pumped from the east smaller wetland in hopes of salvaging the organic matter. We were able to save water/resources by preserving the existing large wetland and not only maintain the existing wildlife habitat but enhance it. The parking lot and the area designated for bioretention was protected during construction from compaction and siltation.

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: 20

Job hours devoted to project:

Planning and Design: 300
Construction: Construction Review 100
Annual Maintenance: none yet

Performance Measures

Stormwater reduction performance analysis:

The post development peak flow for the 100-year storm event is to be controlled to well below the existing 10-year peak flow at the south outlet. Uncontrolled peak flows for the park land use condition were estimated to be lower than the peak flows for the pre-construction land use condition. (AMEC SWM Report, April 2010)

Community & economic benefits that have resulted from the project: The intention of the park development was not to replace what was in existance, but to enhance the natural area and engage users in recognizing its significance within the community. O'Connor Park provides a green space in a significantly developed subdivision community, will continue to contribute to

the Sawmill Creek sub-watershed. Enhancing the wetland provides habitat and refuge for local plants and animals in an area otherwise dominated by urban development. Social value is created through the link between the recreation areas including two soccer fields and an open lawn with a shelter and a universally accessible junior and senior playground and natural play zone.

Additional Information

A habitat island was designed and constructed specifically for the Midland Painted Turtle to nest and hatch. The island design features sand, gravel, rocks and salvaged, partially submerged logs for nesting and basking. Vegetation is restricted to the top of the berm at the east side of the island to create a refuge that doubles as a visual barrier between the wetland and the park users. The parking lot has permeable paving and a central bioswale to detain and filter the run-off water before it enters the newly enhanced wetland. Vertical planting on the face of the mounds flanking the pathways was achieved by using a vegetated deltalok wall retaining system. The result is a naturalized barrier that screens the view of the adjacent street. There are 3 outlook areas that host educational signage. The panels detail the history, discoveries and proposed enhancements of the site including wetland enhancements. Overall, this project demonstrates a holistic approach to sustainable design.