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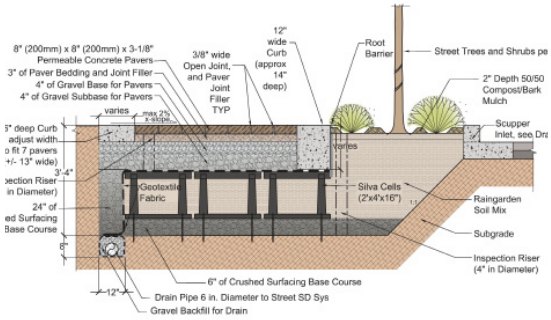
AURORA AVENUE'S SECRET RAIN GARDEN

Silva Cells extend bioretention planter under paving



SILVA CELL WITH RAINGARDEN AND PERMEABLE PAVERS

Stormwater infiltrates through to the Silva Cell system through pervious pavers as well as curb cuts.

Stormwater management and attendant flooding and pollution are among the biggest challenges facing urban areas and other heavily paved environments. As a result, designers are increasingly turning to green utilities such as trees and soil as solutions to help restore dysfunctional ecosystems in densely populated areas.

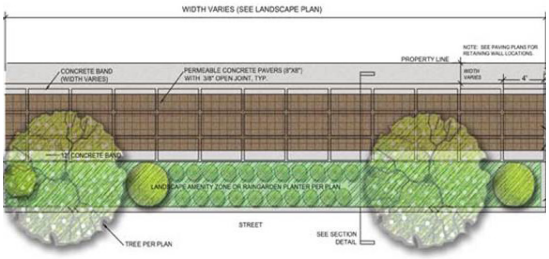
Implementing a system for on-site stormwater management was an important goal for the Aurora Shoreline, a three-mile long transit/stormwater management project along Route 99 near Seattle, WA. The site had a traditional stormwater system that was built in the 1960s, and a better form of infrastructure was required to improve traffic conditions, stormwater runoff, and water pollution (such as phosphorus) flowing into Lake Washington.

Otak Senior Associate Curtis LaPierre designed a streetscape with a rain garden along one side separating the pedestrian area from the roadway. In order to meet their stormwater goals, LaPierres created a system that integrated permeable pavers, curb cuts, and Silva Cells.

The Cells, which essentially extend the rain garden underneath the paving, contain the soil volume that nurtures the trees and also slows and treats the water before it is piped out of the system. The stormwater from the road enters the rain gardens through curb cuts and is absorbed into the soil where it is soaked up by the trees and plants and recharges the groundwater. Rain that falls directly on permeable pavers, in the rain garden itself, or that spills from adjacent sidewalks and parking lots undergoes the same process.

The project planners, who were working within a limited right-of-way and large paved areas with weak runoff control, faced major challenges. The overall plan called for additional traffic lanes, wider sidewalks, and up-to-date stormwater controls — all with strict sustainability requirements. The Silva Cell enabled them to help satisfy some of these needs without affecting how pedestrians or cars use the site. In addition to all this, the system meets their environmental goals by helping to slow the rate of runoff, reduce the total volume, and remove contaminants and heavy metals before they run directly into Lake Washington.

This project utilized around 800 Silva Cells in a one-layer system, adding 8,000 cubic feet of soil volume for the trees and 1,600 cubic feet of space to store and treat stormwater. Construction began in January 2010 and will be implemented in three phases through 2012.



Installation Summary:
Average soil volume per tree: 520 ft^3
Catchment area: 31,744 square ft (0.72 acres)
Number of trees: 40
Total Silva Cells: 800 frames, 800 decks
Installation date: May 2010
Installation type: Integrated - Trees & Stormwater
Project site: Streetscape
Project designer: Otak, Inc. & HDR, Inc.
Client: City of Shoreline, WA

For more information, please contact:
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Pictures courtesy of Otak, Inc.