

2007 Department of Ecology Low Impact Development Stormwater Grant Program

CITY OF OLYMPIA – DECATUR STREET LID DEMONSTRATION PROJECT



Decatur Street before construction. By Craig Tosomeen

Project description

Stormwater runoff from two blocks of Decatur Street SW from 9th to 11th Avenues entered the traditional stormwater system that currently pipes the runoff to Schneider Creek and into Puget Sound. During 2007 and 2008, the city of Olympia re-constructed those two blocks for a low impact development (LID) demonstration site. The city will quantitatively compare the three different innovative LID techniques that clean and allow the stormwater runoff to infiltrate next to and under the road.

The project included installation of concrete curbs, rebuilding the roadway between the curbs, and

complete planter strip restoration along one side. Each of the three designs provides stormwater flow control and treatment within the existing right-of-way using different types of pavement sections. These demonstration designs are designated systems A, B, and C, in the illustration to the right.

System A – Regular asphalt pavement with cartridge filter for treatment and under-the-road infiltration.

System B – Porous asphalt pavement with under-the-road infiltration. (Cleaning the pavement is the water quality treatment of the system.)

System C – Regular asphalt pavement with rain garden for treatment and under-the-road infiltration.

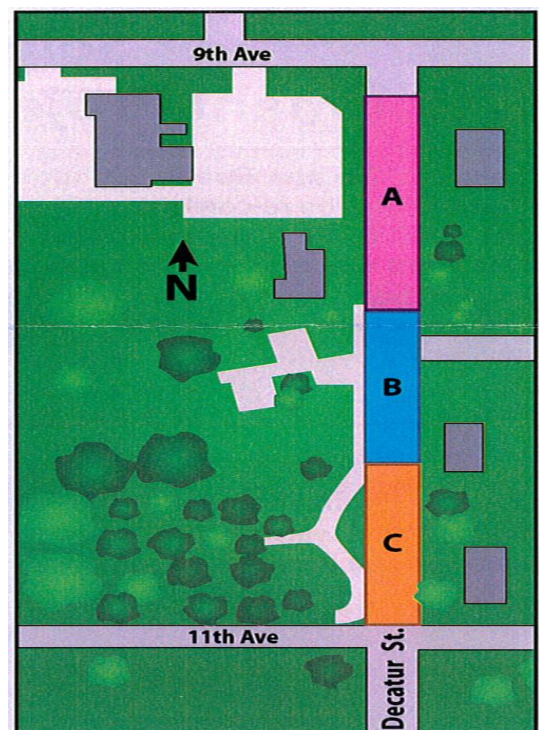
Challenges

The city encountered utility conflicts during construction. Working around facilities was more difficult than initially anticipated.

The native soils turned out to include more clays than the initial soil borings indicated. This may reduce the flow control and infiltration performance of the site.

Projected environmental benefits

Hydrologic and water quality improvements already exist on Decatur Street. While the visual evidence exists, the city is monitoring flow; total suspended solids; dissolved zinc; dissolved copper; total phosphorus; total nitrogen; and nitrate + nitrite to determine the LID technique's effectiveness. The following list is the project's water quality goals:



1. The three referenced treatment techniques meet the 2005 Ecology stormwater manual standards for water quality treatment. The project infiltrates at least 91 percent of average annual runoff volume from the site and thereby meets the water quality treatment standards for discharge from the site.
2. The design targets 100 percent infiltration of the present runoff from the site. Evaluate the effectiveness of under-pavement infiltration systems to determine the reduction of the average annual runoff from the site. Measure the infiltration rate of the under-pavement drainage system and compare it to the design infiltration rate to verify the volume reduction of the average annual runoff.
3. The water quality treatment devices used in the project meet the *Stormwater Management Manual for Western Washington* (revised 2005) standards for water quality pretreatment. The treatment systems achieve 50 percent removal of fine (50 micro-sized) and 80 percent removal of coarse (125-micro-sized) total suspended solids. Reduce polycyclic aromatic hydrocarbons (PAH's) and dissolved metals.



*Underdrain system on impervious pavement.
By Craig Tosomeen.*



*Pervious to impervious pavement.
Rain gardens on the side will treat runoff from
impervious pavement. By Craig Tosomeen.*

Public education

The city has a website for all its pervious pavement projects. You can find more information on this and other city related projects at this web address:

<http://www.olympiawa.gov/cityutilities/stormwater/scienceandinnovations/porouspavement.htm>

During an October storm, the city captured a video recording of rainfall and infiltration comparisons on all three LID techniques. You can view this video at the city's website.

Cost information

Ecology helped with 50 percent of the total project cost. This is the task breakdown:

Item	Cost	Grant Award
Project Management	\$10,700	\$5,350
Design Construction	\$593,000	\$296,500
Monitoring Equipment Installation	\$12,000	\$6,000
Sampling & Evaluation	\$69,800	\$34,900
Education & Outreach	\$20,000	\$10,000
Total	\$705,500	\$352,750

Partners

Ecology acknowledges, but cannot endorse the following contractors who participated in this project:

- Contractors - DLB Earthwork Company
- Asphalt Paving Subcontractor- Lakeside Industries
- Design Engineers - W&H Pacific
- Design Assistance - Contech Earth Stabilization Solutions Inc
- Geotechnical Evaluation - Landu Associates

For more information

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