

Stormwater Planter

Alternative Names: Infiltration Planter, Flow-Through Planter, Contained Planter



DESCRIPTION

A stormwater planter is a small, contained vegetated area that collects and treats stormwater using bioretention. Bioretention systems collect and filter stormwater through layers of mulch, soil and plant root systems, where pollutants such as bacteria, nitrogen, phosphorus, heavy metals, oil and grease are retained, degraded and absorbed. Treated stormwater is then infiltrated into the ground as groundwater (Infiltration Planter) or, if infiltration is not appropriate, discharged into a traditional stormwater drainage system (Flow-Through Planter). Stormwater planters do not require a large amount of space and can add aesthetic appeal and wildlife habitat to city streets, parking lots, and commercial and residential properties. Stormwater planters typically contain native, hydrophilic flowers, grasses, shrubs and trees.

BENEFITS

Overall

- Reduces stormwater runoff volume, flow rate and temperature
- Increases groundwater infiltration and recharge
- Treats stormwater runoff
- Improves quality of local surface waterways
- Improves aesthetic appeal of streets and neighborhoods
- Provides wildlife habitat
- Provides shade to nearby buildings to reduce energy costs
- Requires limited space
- Flexible for use in areas of various shapes and sizes
- Provides a cost-effective way of treating stormwater as the ratio of cost to volume of runoff treated is lower than many other stormwater best management practices

Pollutant Removal

Precise pollutant removal rates for stormwater planters will vary depending on the type of planter (infiltration or flow-through) and the types of vegetation growing in the planter. Stormwater planters are effective at removing some of the pollutants of concern in the Charles River watershed such as phosphorus, sediment and bacteria.⁶

Volume Attenuation/Flow Reduction

Flow reduction will depend on the type and size of the planter.

MAINTENANCE

Needs and Frequency

- Regular maintenance of vegetation, such as weeding, soil replacement and watering during dry periods
- Regular inspection of structural components, especially following large rain events
- Periodic cleaning of inflow and outflow mechanisms
- Periodic testing of mulch and soil for build-up of pollutants that may be harmful to the vegetation
- Periodic replacement of plants
- Periodic replacement of concrete structures surrounding planter

Cost

\$400 – \$500/year for a 500 square foot planter³
Maintenance costs will vary depending on the size and material of the planter and the types of plants utilized.

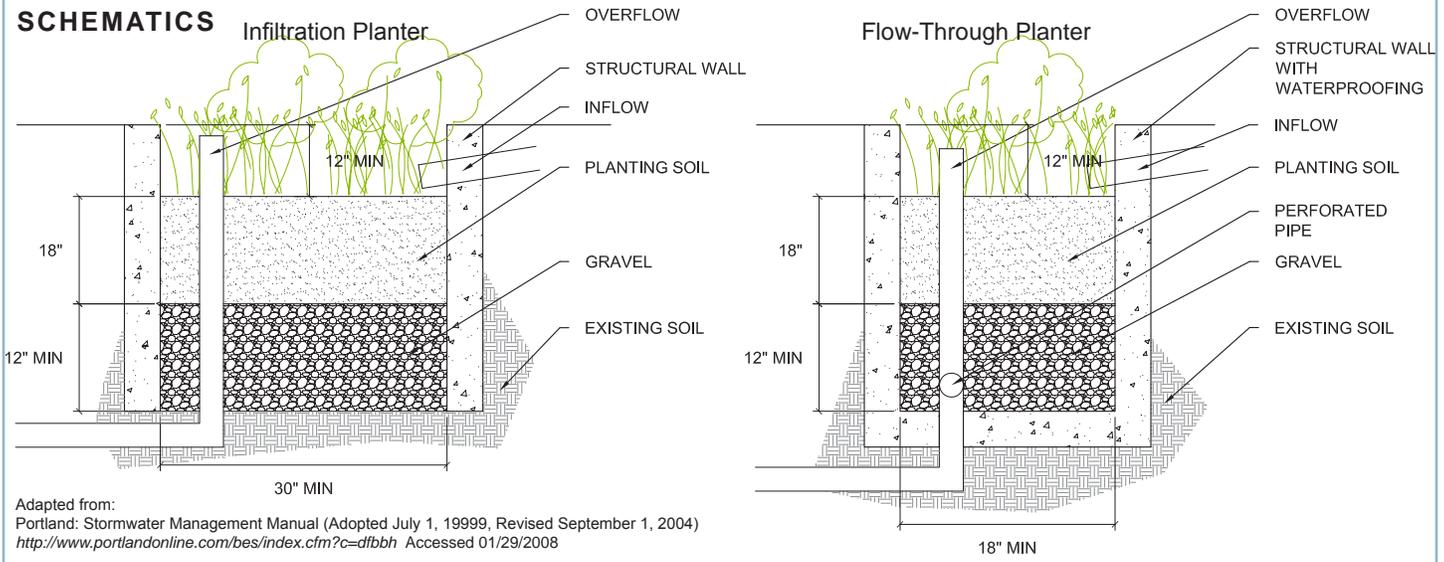
INSTALLATION COST

Approximately \$8/square foot³

Cost will vary depending on the size and material of the planter structure.



SCHEMATICS



EXAMPLE PROJECTS

Plymouth Town Hall⁶

Plymouth, MA

Flow-through planters surround the town hall, lending aesthetic appeal to the grounds. Building downspouts drain into the planters where rooftop runoff is treated before it enters the stormwater drainage system.⁸

12th Avenue

Portland, OR

Stormwater planters are being utilized in retrofits of narrow city streets to collect and treat stormwater before it is discharged into the Willamette River.⁷

ADDITIONAL CONCERNS OR UNKNOWNNS

- Stormwater planters are typically small scale structures and are not suitable for collection and treatment of stormwater from large impervious areas
- Stormwater planters will need to be replaced roughly every 25 years
- Stormwater planters should not be placed on steep slopes

SOURCES

¹Center for Watershed Protection. (2007, August). Urban Stormwater Retrofit Practices Appendices. Urban Subwatershed Restoration Manual Series.

²Environmental Services - City of Portland. Infiltration Planters. City of Portland Stormwater Solutions Handbook.

³Low Impact Development Center (LIDC). (2005, November). Planter Box. Low Impact Development for Big Box Retailers. Available at: http://www.lowimpactdevelopment.org/bigbox/lid%20articles/bigbox_final_doc.pdf.

⁴Lower Columbia River Estuary Partnership. Field Guide to Water Quality Friendly Development. Local Examples _ Infiltration Planter Box. Available at: <http://www.lcrep.org/fieldguide/examples/infiltrationplanter.htm>.

⁵Massachusetts Executive Office of Environmental Affairs LID Science and Research Subcommittee. (2004, September). Low Impact Development Techniques. Available at: <http://www.mass.gov/envir/lid/pdf/matrix.pdf>.

⁶New York State Department of Environmental Conservation. (2001, October). New York State Stormwater Management Design Manual. Chapter 9: Redevelopment. Alternative Stormwater Management Practice. Available at: <http://www.rpi.edu/~kilduff/Stormwater/planters1.pdf>.

⁷Portland Bureau of Environmental Services. (2008). SW 12th Avenue Green Street Fact Sheet. <http://www.portlandonline.com/BES/index.cfm?a=bcdhgg&c=efdig>.

⁸Roy, S. (2008) Geosyntec. Personal Communication.