

Permeable Pavers

Alternative Name: Porous Pavers



Evergreen College, Washington
<http://picasaweb.google.com/buildgreeninfrastructure>
Retrieved 01/22/2008

BENEFITS

Overall

- Reduces stormwater runoff volume, flow rate and temperature
- Increases groundwater infiltration and recharge
- Provides local flood control
- Treats stormwater runoff
- Improves quality of local surface waterways
- Reduces the need for traditional stormwater infrastructure
- Improves aesthetic appeal of paved areas
- Flexible for use in areas of various shapes and sizes

Pollutant Removal

Permeable pavers can be very effective at eliminating many pollutants that are of concern in the Charles River watershed:

- Total Suspended Solids: 85% - 95%
- Total Phosphorus: 65% - 85%
- Total Nitrogen: 80% - 85%
- Heavy Metals: 90% - 98%^{1, 5, 6}



CCGT, Chicago
<http://picasaweb.google.com/buildgreeninfrastructure>
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DESCRIPTION

Permeable pavers are paving blocks laid across a surface with spaces left in between to allow water to percolate into the ground. Void spaces can be filled with sand, gravel or vegetation. Permeable pavers are underlain with a subsurface layer of coarse gravel to allow stormwater to be stored as it percolates into the ground. Pavers are ideally situated in areas where soil type, and seasonal water table and frost line levels allow for groundwater recharge. Pavers come in a wide array of materials, shapes, sizes, colors and textures. Permeable pavers are typically used in low traffic areas and are well suited for use in parking lots, low traffic roads, residential driveways and pedestrian walkways. They can also be installed surrounding other stormwater management systems to collect and infiltrate stormwater overflow.

MAINTENANCE

Needs and Frequency

- Periodic inspection during and after rain events to ensure that infiltration is occurring
- Regular (2-4 times a year) vacuum sweeping of porous paver surface
- Annual inspection of paver blocks for deterioration
- Periodic replacement of sand, gravel and vegetation

Cost

\$400 - \$500/year for vacuum sweeping of an half acre parking lot (periodic replacement of paver blocks will depend on the type of blocks utilized)²

Other

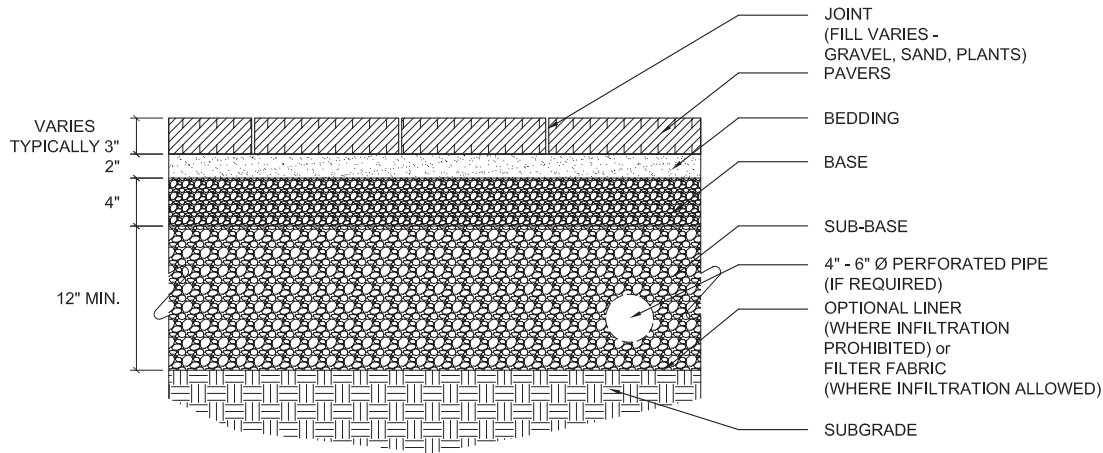
- Pavers will need to be completely replaced approximately every 25 years.
- When infiltration spaces are filled with grass, grass clippings must be collected and removed to prevent clogging from occurring.

INSTALLATION COST

\$8 - \$12/square foot, including underground infiltration bed⁷



SCHEMATIC



Adapted from Porous Pavers
<http://www.advancedpavement.com>
 Accessed 01/22/2008

EXAMPLE PROJECTS

Silver Lake Beach Parking Lot

Wilmington, MA

Porous pavers were used to pave 8,000 square feet of a parking area to provide parking for this popular swimming, boating and fishing destination while minimizing the stormwater runoff into the lake and improving lake water quality.⁴

Ashmont Grill

Boston, MA

This restaurant, located in the Dorchester neighborhood of Boston, features an outdoor dining area paved with permeable pavers to allow stormwater to permeate into the ground.

ADDITIONAL CONCERNS OR UNKNOWN

- Permeable pavers are ideally situated in areas with slopes of less than 2%.²
- Permeable pavers require a minimum of 2 feet between the bottom of the gravel base and the underlying bedrock and/or the seasonally high groundwater table.²
- Permeable pavers should be sited at least 10 feet downgradient of buildings and 100 feet away from drinking water wells.²
- Cost to volume of stormwater treated ratio is higher than many other stormwater best management practices.¹

SOURCES

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

²Georgia Stormwater Management Manual. (2001, August). Modular Porous Paver Systems. Volume 2: Technical Handbook. Available at: <http://www.georgiastormwater.com/vol2/cover.pdf>.

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

⁴Massachusetts Department of Conservation and Recreation. Demonstration 3 Permeable Paving Materials in a Parking Lot. <http://www.mass.gov/dcr/waterSupply/ipswichRiver/demo3-paving.htm>

⁵Milwaukee Metropolitan Sewerage District (MMSD). (2007). State of the Art Report. Available at: <http://www.mmsd.com/wqi/>.

⁶Pennsylvania Department of Environmental Protection. (2005, January). Porous Pavement with Infiltration Bed. Pennsylvania Stormwater Best Management Practices Manual. Available at: <http://www.dep.state.pa.us/dep/deputate/watermgmt/wc/subjects/stormwatermanagement/BMP%20Manual/BMP%20Manual.htm>.

⁷Roy, S. (2007). GeoSyntec. Personal Communication.

