



PERMEABLE PAVEMENT

What is permeable pavement?

Permeable pavements, made of pervious concrete or asphalt, reinforced grass or gravel, or pervious pavers, are porous surfaces that allow storm water to slowly



infiltrate into underlying soils below, helping to treat pollutants and recharge groundwater. Unlike normal impervious pavement, permeable pavements prevent runoff of water into nearby drainage areas such as streams or

ditches. They are most often placed in parking lots, sidewalks and other walkways and playgrounds, where traffic is relatively low. In one study, surface runoff from asphalt had higher concentrations of motor oil, copper and zinc than did four tested permeable pavements (Brattebo and Booth 2004). Motor oil, for example, was found in 89% of samples from the asphalt runoff. None was found in the infiltrated water. However, hardness and conductivity were higher in the infiltrate.

How does it work?

Below the pavement is a storage reservoir with uniformly graded gravel or some aggregate material on top of uncompacted soil. A geosynthetic fabric sits below the gravel and serves to separate the aggregate from the natural soil below and to discourage preferential flow paths. If properly installed and maintained, pervious pavement can decrease annual runoff volume by 80% and decrease sediment runoff by 90% (UC Davis Extension).

What are the costs?

Initial costs for permeable pavement materials will likely be greater than conventional types. For example, porous pavement may cost \$3.00-\$6.00 per square foot compared with traditional



asphalt at \$.50-\$1.00 per square foot. Porous pavements also have higher maintenance costs. However, savings occur due to decreased investments in storm drainpipes, storm water and sewer systems, and their associated repairs.

Other Concerns?

Soils underlying permeable pavement must have a permeability between 0.5 and 3 inches per hour. They should also be at least 2-5 feet above the seasonally high groundwater table and be at least 100 feet away from drinking water wells (Stormwater Management Resource Center).

References and other information:

More detailed information on permeable pavement is available through numerous sources, a few of which are listed below.

Bean, Eban Z., William F. Hunt, D.A. Bidelsbach, J.T. Smith. 2004. Study on the Surface Infiltration Rate of Permeable Pavements. 50 pp.

<http://www.bae.ncsu.edu/info/permeable-pavement/icpi.pdf>

Brattebo, Benjamin O. and Derek B. Booth. 2004. Long-Term Stormwater Quantity and Quality Performance of Permeable Pavement Systems. *Water Resources* 37: 4369-4376.

<http://water.washington.edu/Research/Reports/permeableparking.pdf>

Center for Watershed Protection (CWP). 1998. *Better Site Design: A Handbook for Changing Development Rules in Your Community*. Center for Watershed Protection, Ellicott City, MD.

Stormwater Management Resource Center, Center for Watershed Protection. *Stormwater Management Fact Sheet: Porous Pavement*. Accessed at:

<http://www.stormwatercenter.net/>

UC Davis Extension. *Low Impact Development Techniques: Pervious Pavement*. Accessed at:

http://extension.ucdavis.edu/unit/center_for_water_and_land_use/pervious_pavement.asp

US EPA. 2000. *Field Evaluation of Permeable Pavements for Stormwater Management*. EPA-841-B-00-005B, Washington, DC, October.

<http://www.epa.gov/owow/nps/pavements.pdf>

To find out what's happening in your neighborhood with low impact practices, visit

www.networkedneighbors.org



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