

## I. Definition

A pavement system such as *pervious concrete*, , *porous asphalt*, *permeable interlocking concrete pavers*, *permeable interlocking clay brick pavers*, *pervious concrete blocks/pavers* or *permeable articulating concrete block/mat* or similar surface that allows movement of stormwater through the pavement surface and into a base/subbase reservoir designed to achieve water quality and quantity benefits.

Permeable pavement systems may be used in areas where infiltration is prohibited by regulations or limited by soil or groundwater conditions when appropriate low permeability liners and/or subsurface drainage mechanisms are installed where needed.

**B. Pavement Surface Design** – Permeable pavement surface materials and installation shall be in accordance with industry standards for the intended use:

1. Pervious Concrete - Comply with American Concrete Institute Specification for Pervious Concrete Pavement and recommendations from the Wisconsin and National Ready Mixed Concrete Associations.
2. Porous Asphalt - Comply with recommendations from Wisconsin and National Asphalt Pavement Associations.

### **C. Pavement Surface Infiltration Design –**

A design analysis shall be conducted over the entire anticipated pavement life to verify that the pavement surface infiltration rate will be no lower than 10 inches per hour (in/hr), by design. The design analysis shall use the following input parameters:

1. Rainfall data that is appropriate for the site as determined by the administering authority.
2. An initial surface infiltration rate of 100 in/hr.
3. A *surface clogging capacity* of 0.4 pounds per square foot (lbs/sf) of permeable pavement surface area.
4. A restoration of 50% of the surface infiltration rate reduction that occurs between cleaning events.

#### **D. Pavement Surface Infiltration**

**Properties** – Installed permeable pavement surfaces shall meet the following infiltration criteria:

1. The surface infiltration rate upon completion of the installation shall be at least 100 in/hr.
2. The in service surface infiltration rate shall be no lower than 10 in/hr.

**Note:** Initial and in service surface infiltration rate testing is not mandatory per this technical standard. However, surface infiltration rate testing may be required by the administering authority where there are questions or concerns regarding the surface infiltration rate.

2. To minimize the potential for pavement surface clogging, the ratio of run-on area to permeable pavement surface area shall be in accordance with Table 1.

<b>Table 1. Run-on Ratio to Minimize Pavement Surface Clogging Potential</b>	
<b>Source Area Type</b>	<b>Run-on Ratio</b>
<ul style="list-style-type: none"><li>• Landscape areas</li></ul>	$\leq 1:1$
<ul style="list-style-type: none"><li>• Roads</li></ul>	$\leq 3:1$
<ul style="list-style-type: none"><li>• Parking lots</li><li>• Rooftops</li><li>• Sidewalks</li><li>• Lawns</li><li>• Residential driveways</li></ul>	$\leq 5:1$

- b. The ratio of road and/or parking lot run-on area to *effective infiltration area* shall be no greater than 3:1.

**Note:** Effective infiltration areas can be increased by extending the aggregate storage reservoir under conventional pavement areas where appropriate.

**F. Pavement Surface Cleaning** – Cleaning shall be conducted using a regenerative air or vacuum sweeper or power washer in accordance with the following criteria:

1. For run-on ratios less than or equal to 2:1, the cleaning frequency shall be at least once per year.
2. For run-on ratios greater than 2:1, the cleaning frequency shall be at least twice per year.



**K. Pollutant Removal Credit** - Total suspended solids (TSS) and total phosphorus (TP) removal efficiency for permeable pavement system shall be determined as follows:

1. No pollutant removal credit shall be provided for the portion of the average annual runoff volume that does not infiltrate through the pavement surface.
2. A pollutant removal credit of 100% shall be provided for the portion of the average annual runoff volume that infiltrates into the native subgrade soils.

3. No pollutant removal credit shall be provided for the portion of the average annual runoff volume that passes through the pavement surface and discharges through underdrain piping (or equivalent) unless the following conditions are met:
  - a. The pavement surface void ratio shall be less than 30%.
  - b. Joints between pavers or blocks shall be filled with ASTM No. 8, 89 or 9 aggregate.
  - c. The aggregate storage reservoir depth shall be a minimum of 12 inches (see figure 1).

**Table 2. Permeable Pavement  
Underdrain Discharge Credit**

<b>TSS Removal Credit</b>	<b>TP Removal Credit</b>
70%	40%

- L. Infiltration Volume and Pollutant Load Reduction** - Infiltration volume and/or pollutant load reductions provided by permeable pavement systems shall be quantified using a model (e.g., WinSLAMM version 10.0) or other accepted computational methods.
- M. Peak Discharge Rate Control** - Accepted stormwater hydrologic and hydraulic computational methods shall be used to determine the peak discharge rate control provided by permeable pavement systems.

**Underdrain at  
bottom**

Run-On Ratio	Soil Type	Infiltration Rate (in/hr)	% Runoff Reduction	Overall % TSS Reduction with Underdrain Discharge Credit	
				70	40
3:1	Clay	0.035	17	75.1	50.2
3:1	Silt loam	0.065	28	82.1	64.1
3:1	Sandy loam	0.25	63	93.4	86.7
3:1	Sand	1.8	97	99.8	99.6
				70	40
5:1	Clay	0.035	14	74.2	48.4
5:1	Silt loam	0.065	23	80.1	60.3
5:1	Sandy loam	0.25	55	91.1	82.1
5:1	Sand	1.8	95	99.6	99.1
				70	40
0	Clay	0.035	29	78.7	57.4
0	Silt loam	0.065	46	88.5	77.0
0	Sandy loam	0.25	86	98.4	96.8
0	Sand	1.8	100	100.0	100.0

**Underdrain 6 inches above bottom**

Run-On Ratio	Soil Type	Infiltration Rate (in/hr)	% Runoff Reduction	Overall % TSS Reduction with Underdrain Discharge Credit	
				70	40
3:1	Clay	0.035	61	88.3	76.6
3:1	Silt loam	0.065	71	96.6	93.2
3:1	Sandy loam	0.25	92	99.7	99.5
3:1	Sand	1.8	100	100.0	100.0
				70	40
5:1	Clay	0.035	51	85.3	70.6
5:1	Silt loam	0.065	59	94.0	87.9
5:1	Sandy loam	0.25	83	99.0	98.0
5:1	Sand	1.8	99	100.0	100.0
				70	40
0	Clay	0.035	100	100.0	100.0
0	Silt loam	0.065	100	100.0	100.0
0	Sandy loam	0.25	100	100.0	100.0
0	Sand	1.8	100	100.0	100.0