



## City of Mercer Island

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# PERMEABLE PAVER BLOCK DESIGN GUIDELINES (single-family residential projects)

## Introduction

### **Permeable Pavers**

The City of Mercer Island allows the use of permeable pavers in limited situations as a material exempted from impervious surface lot coverage for certain applications. Refer to MICC 19.02.020(D)(2) for specific exemptions.

Not all concrete pavers are considered permeable. The following list of paver materials meets the definition of “pavers” according to MICC 19.16.010(P) when installed properly.

### **Uni-Group USA ([www.uni-groupusa.org](http://www.uni-groupusa.org))**

- Eco-Stone
- Ecoloc
- Eco Optiloc
- Eco Priora

### **SF Concrete Technologies ([www.sfconcrete.com](http://www.sfconcrete.com))**

- SF Rima
- SF Matoro
- VS5 Eco
- VS5 Drain

### **Advanced Pavement Technologies ([www.advancedpavement.com](http://www.advancedpavement.com))**

- Eco Bric
- Aqua Bric
- Aqua Bric Type 4
- Aqua Loc
- Aqua Bricloc

Note: There may be other paver systems that meet the definition of “paver”. In general, the paver system should be pre-manufactured, interlocking, have an effective open/permeable surface area of at least 12% and conform to the cross-section shown on page 3. Manufacturer’s specifications for paver systems not listed above must be submitted for compliance review prior to issuance of a permit. The use of non-permeable pavers (eg. flagstone, stepping stones, architectural slabs, dimensional stone, etc.) in a permeable manner is described below in the following section.

### **Other pavers and stones**

Other pavers and stone material may be considered permeable when installed in a manner that provides equivalent performance function to permeable interlocking concrete pavers. The installation will require sufficient aggregate material beneath and in between the pavers/stones to allow the free flow of surface water runoff between and below the pavers/stones. The effective open/permeable surface area (“gap”) between the pavers/stones shall be a minimum of 12 percent. See below for paver dimensions and the corresponding minimum gap required.

Paver/Stone Size	Minimum Required Gap Surrounding Each Individual Paver*
12" x 12" (144 square inches)	1"
24" x 24" (576 square inches)	2"
24" x 36" (864 square inches)	3"
30" x 30" (900 square inches)	3"

*Note: Sizes not specified above, or oddly shaped pavers/stones require submittal of additional performance documentation and specific review of proposed material and design confirming a 12 percent minimum gap.*

\*Additional requirements include the following:

- Gap between pavers shall be filled with stone fill (ASTM No. 8) or other free draining material.
- Gap cannot be planted if using topsoil or other planting media that impedes the free flow of water between the pavers unless approved by the City Engineer.
- Pavers shall be underlain by at least 6" reservoir course (ASTM No. 57) and 2" leveling course stone fill (ASTM No. 8) in accordance with the typical cross-section for Pervious Concrete Block or "Paver" Systems.
- Refer also to the design and construction criteria below.

## **Design and Construction Criteria for Paver Blocks**

The following notes (as a minimum) shall be included on the construction drawings for single-family residential projects intended to use permeable pavers:

1. **General:** Installation must be in accordance with the manufacturer's requirements and specifications.
2. **Subgrade:** Compact the subgrade to the minimum necessary for structural stability. Use static dual wheel small mechanical rollers or plate vibration machines for compaction. Do not allow heavy compaction due to heavy equipment operation. The subgrade should not be subject to truck traffic.
3. **Geotextile:** Geotextile fabric shall be placed beneath the reservoir layer in areas where soil remains saturated part of the year, where there is soil freeze and thaw, or over clay and moist silty subgrade soils. The geotextile fabric should pass water at a greater rate than the subgrade soils.
4. **Underdrain:** Provide an underdrain pipe when subgrade soils are poorly draining or soils remain saturated part of the year.
5. **Aggregate Materials (stone fill, leveling course, and base/sub-base reservoir layer):**  
Use crushed aggregate. Clean and washed. No fines. "Open graded" rock containing only a small percentage of aggregate in the small range. Do not use round rock.
  - Stone Fill/Leveling Course – ASTM No. 8 crushed aggregate. Minimum 1" to 2" thickness.
  - Reservoir Course – ASTM No. 57 crushed aggregate. Minimum 6" to 12" thickness depending on permeability of the subgrade soils.
6. **Limitations:** The design shall have no surface drainage onto the pavers from other surfaces. If surface drainage comes from minor or incidental pervious areas, those areas must be fully stabilized. Slope adjacent impervious surfaces away from the permeable pavement to the maximum extent practicable. The maximum installed slope is generally 5%.
7. **Protection:** After work is complete, the contractor shall be responsible for protecting work from sediment deposition and damage due to subsequent construction activity on the site.
8. **Improper Installation:** May result in loss of impervious surface exemption or may require reconstruction of the paving system.
9. **Inspections:** The contractor shall call for inspection of the subgrade preparation prior to placement of base material and for a subsequent inspection of the base material placement prior to installation of blocks.
10. **Maintenance:** Homeowners must adequately maintain their permeable block pavements. Over time, the space between the pavers will tend to clog. Conduct periodic visual inspections to determine if surfaces are clogged with vegetation or fine grain soils. Clogged surfaces should be corrected immediately. Surfaces should be swept with a high-efficiency or vacuum sweeper twice per year; preferably, once in the autumn after leaf fall, and again in early spring. As long as annual infiltration rate testing demonstrates that a rate of 5 inches per hour or greater is being maintained, the sweeping frequency can be reduced to once per year.

# PERVIOUS CONCRETE BLOCK OR "PAVER" SYSTEMS

