Are they really the same?
The 3-P’s and how they relate to storm water management

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Managing Rate and Volume to Forested Conditions

Pre-Settlement Conditions
19th Century

Historical Urban Development

Green Infrastructure
Pre-developed hydrologic regime:

- Evapotranspiration: 40-50%
- Interflow: 20-30%
- Surface runoff: <1%
Managing Rate and Volume to Forested Conditions

Pre-Settlement Conditions
19th Century

Historical Urban Development
20th Century

Green Infrastructure
Post-developed hydrologic regime:

- **Evapotranspiration**: ~25%
- **Interflow**: 0-30%
- **Surface Runoff**: ~30%
- **Groundwater**: ~15%
- **Precipitation**
- **Evapotranspiration**
- **Surface Runoff**
- **Interflow**
- **Water Table**
Water Quantity and Volume

- Increased peak flows
  - Accelerated erosion
  - Habitat degradation
- Increased runoff volume: flooding and SS Overflows
Managing Rate and Volume to Forested Conditions

Pre-Settlement Conditions
19th Century

Historical Urban Development
20th Century

Green Infrastructure
21st Century
Several attempts have been utilized in minimizing storm water run-off issues caused by impervious surfaces.

- Impervious Concrete
- Impervious Asphalt
- Poor-Mans Permeable Pavement
- Pervious Concrete (No-Fines Concrete)
- Pervious Asphalt
- Wood/Rubber Mulch
Permeable pavers are comprised of a layer of concrete or fired clay brick pavers separated by joints filled with crushed aggregate. Permeable pavers are different from pervious and porous pavers, as rainwater passes around the paver opposed to passing through the paver.
Porous pavers are manufactured in a variety of designs and materials. Concrete turfblock for grass paving began in the mid-1940’s and plastic versions were invented in the late 70’s and early 80’s. Porous pavers are generally a cellular grid system filled with dirt, sand, or gravel.
SUPER PERVIOUS PAVER

www.xeripave.com
Xeripave on asphalt road’s edge
Xeripave® SUPER PERVIOUS PAVERS

- Made with natural aggregate bonded together with a high strength (low VOC) clear polyurethane binder w/UV Inhibitor
- Not affected by the Sun’s UV rays or Salt!
- Not affected by freeze / thaw
- ADA Slip / Skid resistant

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<thead>
<tr>
<th>Xeripave Slab Pavers</th>
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<tbody>
<tr>
<td><strong>Size</strong></td>
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<tr>
<td>12” x 12” x 2”</td>
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<tr>
<td>12” x 12” x 4”</td>
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<td>16” x 16” x 2”</td>
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<table>
<thead>
<tr>
<th>XeriBrix Pavers</th>
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<tbody>
<tr>
<td><strong>Size</strong></td>
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<tr>
<td>4.5” x 9” x 2.38”</td>
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<td>4.5” x 9” x 3.125”</td>
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Permeability of Xeripave Pervious Pavers vs. other pervious / permeable surfaces shows an average performance of 10x better hydraulic conductivity.

Test result for Xeripave derived from permeability of porous materials “Falling Head Test” (09-28-2006)
SO PERVERIOUS THAT...
SO PERVIOUS THAT...

Xeripave (12" x 12" Paver)

Permeable Concrete Pavers (100+ sqft)
WHY SO PERVERIOUS?

XERIPAVE PERVERIOUS PAVERS HAVE 39% VOIDS

Space representative of total voids in a 12x12 paver

Runoff Coefficient of “0”

FLOW RATE WITH GRAVEL BASE- 5,220" PER HOUR
WHAT ARE THE POSSIBILITIES?
15% – 18% surface area covered in Xeripave handles 100% of entire surface!

The other remaining area can be impervious or permeable, saving on initial costs and future maintenance.
Retro-Designed Projects
CURB AREA DRAINAGE
CHICAGO GREEN ALLEYWAY
Chicago Green-Alleyway Project

The city of Chicago's Department of Transportation was intrigued by the potential for pervious pavers to inhibit flooding. So 3 years ago they began a pilot program. Project Manager Ibrahim Hadzic says pervious pavers allowed them to do partial reconstruction of alleyways with just a 2'-wide strip in the center of a 16'-wide alley, and achieve good drainage.

Ibrahim says, "We have had promising results and I expect to start using it more. If I compare the cost of pervious pavers to the cost of other solutions, they are around 20% less expensive. Which is quite a lot.

"In my opinion there is one huge advantage no one is talking about: The pervious pavers are the highest level of environmentally friendly material. If you need to modify or repave an alley, you can take the pavers out and reuse them. Other materials have to be recycled. They must be excavated and taken away to be crushed and reprocessed. And in their place you put new material."

http://www.hardscapemagazine.com/pavers-designed-for-drainage.htm
Hardscape Magazine February/March 2014 issue
**Xeribrix Applications**

4.5” x 9” (Aspect Ratio)
TREE SURROUNDS AND SIDEWALKS USING 12” X 12” GRANITE PAVERS
AMTRAC TRAIN STATION, OREGON CITY, OR
TREE SURROUNDS / SIDEWALK
ADVENTIST HOSPITAL PORTLAND, OR
Winter 2013 Concrete-Heave Issues

BEFORE
1st Source Bank
South Bend, IN

AFTER
ORACLE SOFTWARE COMPLEX
BEDFORD, MA
Xeripave® Storm Water
Catch Basin Tray System
300 TO 400 GPM
Maintenance

Xeripave is an effective filter that requires contaminants to be removed periodically. The frequency will depend on the area contaminant profile. Typical cleaning is accomplished with a pressure washer and/or mechanical vacuum.
LIKE CELL PHONES....
PAVERS HAVE COME A LONG WAY BABY!
STANDARD COLORS
MONTANA