



Pervious Concrete Pavements: The Environmentally Friendly Choice

By Anne Balogh, The ConcreteNetwork



Paved surfaces are so ubiquitous in urban areas today that most of us give little thought to the impact they have on water quality and the health of the environment. But here's the sobering reality: As more available land area in the country gets paved over, a larger amount of rainwater ends up falling on impervious surfaces such as parking lots, driveways, sidewalks, and streets rather than soaking into the soil. [*Continue >*](#)



This creates an imbalance in the natural ecosystem and leads to a host of problems including erosion, flash floods, water table depletion, and pollution of rivers, lakes, and coastal waters as rainwater rushing across pavement surfaces picks up everything from oil and grease spills to deicing salts and chemical fertilizers.

Pervious concrete is a great system that provides both day-to-day mitigation as well as catastrophic containment.

A simple solution to avoiding these problems is to stop installing the impervious surfaces that block natural water infiltration into the soil. But few of us are ready to give up our paved roads, driveways, and parking lots. Rather than building them with conventional concrete or asphalt, more and more communities, municipalities, and businesses are switching to pervious concrete—a material that offers the inherent durability and low life-cycle costs of a typical concrete pavement while retaining storm-water runoff and replenishing local watershed systems.

Instead of preventing infiltration of water into the soil, pervious concrete assists the process by capturing rainwater in a network of voids and allowing it to percolate into the underlying soil. In many cases, pervious concrete roadways and parking lots can double as water retention structures, reducing or eliminating the need for traditional storm-water management systems such as retention ponds and sewer tie-ins.





“It’s a great system in that it provides both day-to-day mitigation as well as catastrophic containment,” says Andy Youngs, a technical representative with the California Nevada Cement Promotion Council and a specialist in storm-water management. “With the change in EPA storm-water runoff regulations, pervious concrete has really come into play because of its use in controlling pollution. In California, the concrete industry knew about pervious concrete, but didn’t understand the fit and what a great product it is. It took some time to get everyone onboard, but now we’re starting to hit critical mass and see the use of pervious concrete explode.

Environmental Benefits

Storm-water runoff is a leading source of the pollutants entering our waterways. According to the U.S. Environmental Protection Agency, about 90 percent of surface pollutants are carried by the first 1-1/2 inch of rainfall. Storm-water drains don’t typically channel this polluted runoff to treatment facilities, but instead convey it directly into local water bodies. This can increase algae content, harm aquatic life, and require expensive treatments to make the water potable.

According to Youngs, the “big three” pollutants in urban runoff are sediment (dirt and debris), heavy metals (from the brake linings of cars), and hydrocarbons. One source of hydrocarbons is the oil that drips onto pavements from vehicles. But the primary contributor is asphalt. “Studies have shown that 90 to 95 percent of the hydrocarbons in urban runoff is from the binder and sealer used for asphalt pavements,” he says.

Pervious concrete has really come into play because of its use in controlling pollution.

To address these serious pollution concerns, the EPA and many local municipalities and regional watershed authorities are tightening environmental regulations and requiring more stringent storm-water management practices. Pervious concrete is becoming one of the most viable solutions.



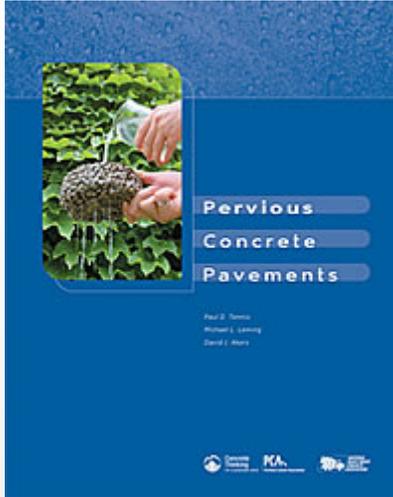
Here are some of the reasons why pervious concrete is becoming one of the most viable solutions.

A pervious concrete pavement can:

- Reduce the amount of untreated runoff discharging into storm sewers.
- Directly recharge groundwater to maintain aquifer levels.
- Channel more water to tree roots and landscaping, so there is less need for irrigation.
- Mitigate pollutants that can contaminate watersheds and harm sensitive ecosystems.
- Eliminate hydrocarbon pollution from asphalt pavements and sealers.

In addition to storm-water control, pervious concrete pavements aid in reducing the urban heat-island effect. Because they are light in color and have an open-cell structure, pervious concrete pavements don't absorb and store heat and then radiate it back into the environment like a typical asphalt surface. The open void structure of the pervious pavement also allows cooler earth temperatures from below to cool the pavement.





Pervious concrete as a paving material has seen renewed interest due to its ability to allow water to flow through itself to recharge groundwater and minimize storm-water runoff. The Portland Cement Association in cooperation with the National Ready Mixed Concrete Association is pleased to introduce *Pervious Concrete Pavements*, a reference manual on this sustainable construction technique.

This guidebook introduces readers to pervious concrete's applications and engineering properties, including environmental benefits, structural properties, and durability. Both hydraulic and structural designs of pervious concrete pavements are discussed, as well as construction techniques.

For more information or to order visit the PCA bookstore online at <http://www.cement.org>.





Sherpa info

HOW YOU CAN USE THIS DOCUMENT

You have unlimited right to print, distribute, and use this guide. E-mail it to a friend, put it on your website, or any other ideas you see fit. You can print it and post it on a job, at your favorite coffee shop, in your office, or get creative and engrave it in concrete. Please share freely, the only things you may not do is alter it or charge for it.

ABOUT THE AUTHOR

Anne Balogh writes feature articles each month for The Concrete Network. She is a freelance writer based in Glen Ellyn, Ill., and a former editor of Concrete Construction magazine. For questions regarding this guide please contact Dan Tate by email at dan@concretenetwork.com. To read more on the Concrete Network from Anne, [Click Here](#).

COPYRIGHT INFORMATION

The copyright in this work belongs to the [ConcreteNetwork.com](http://www.concretenetwork.com) and the author. Please direct questions regarding feedback, use, permission and screw-ups to dan@concretenetwork.com.

DOWNLOAD GUIDE

This guide is available on line at <http://www.concretesharpa.com/pervious>.

EMAIL TO A FRIEND

Click here to pass the guide along to someone cool.

<http://www.ConcreteSherpa.com/email/pervious>

SUBSCRIBE

Learn about the latest Sherpa Guides and other concrete information available in the Concrete Network's Newsletter. <http://www.ConcreteNetwork.com/newsletter.htm>





Sherpa info

SUMMIT DATE

This document reached the summit (was created) on May 9, 2005 and is based on the best information available to the Sherpa at that time. To check for updates please click here <http://www.ConcreteSherpa.com/pervious>.

NAVIGATION & USER TIPS

You can move around this guide by using your mouse or keyboard arrows. Left mouse button goes to the next page, right mouse button goes to previous page. Click on the right arrow (→) for the next page and the left arrow (←) to go the previous page.

KEYBOARD SHORT CUTS

	PC	MAC
Zoom in (Larger)	[Ctrl] [+]	[⌘] [+]
Zoom out	[Ctrl] [-]	[⌘] [-]
Full screen/normal screen view	[Ctrl] [L]	[⌘] [L]

ABOUT THE CONCRETE SHERPA

The Concrete Sherpa is a team of people that represent the experience, teaching and learning of our team members and other industry leaders *on a mission to make life better for the concrete contractor*. We are an idea center striving to deliver thought provoking ideas based on “Concrete Advice for Business and Life” to stimulate you to reach new heights. As a user, you should remember to consider all information you receive, here at the Concrete Sherpa or elsewhere, not as a *cast in concrete* recommendation, but rather as an idea for you to consider and ponder.

Sherpa info

THE JOURNEY LEADING TO THE CONCRETE SHERPA PROJECT

The Concrete Sherpa Project (A [Sherpa](#) is a “guide”) was born at The Concrete Network in mid 2004. Here is how it happened:

The biggest surprise, or gift, since starting The Concrete Network in 1999 has been the concrete contractor friends from around the country we’ve made and witnessing the passion they have for what they do. These people include Dave Pettigrew, up in the San Francisco Bay Area, or the Verlennich brothers in Minnesota, or Bob Harris in Georgia, the list goes on and on. It’s quite inspiring.

We were once asked, “How are you so excited every day about concrete?” Well the answer is simple, it is impossible to not be excited about concrete when you have the job we do—interacting with hundreds of concrete contractors from every state in the country.

The thing we’ve learned about concrete contractors is that most are passionate *craftsmen*—they are often less passionate and experienced in the “office stuff”. Human nature channels us to do what we are most comfortable with; learning how to use a new saw-cutting tool is comfortable; learning and implementing a new estimating strategy, or job management tool, is not so comfortable.



Sherpa info

THE JOURNEY CONTINUES...

So Sherpa was born to provide FREE and easy to use information on topics many contractors are not too comfortable with.

- Concrete Sherpa is here to provide help to contractors who are often 'Lone Rangers' and don't have anyone to get solid business advice from.
- Concrete Sherpa is here to provide help for contractors who have to work too hard and too many hours in their business, and one day realize they need to work *on their business, not in their business*.
- Have fun with Concrete Sherpa and go faster towards reaching success than you might have on your own.
- To skeptics who think something free can't be valuable, or there must be a trick- visit Concrete Sherpa and decide for yourself.

We hope you make great use of the Concrete Sherpa and it helps you to become an awesome success for yourself, your family, your church, and your community.

VISIT THE CONCRETE SHERPA

To visit the Concrete Sherpa click here <http://www.ConcreteSherpa.com>.

