

# **Pervious Concrete** **When it Rains, it Drains.**

**Naturally...**

**Reduces Runoff**

**Cleans Stormwater**

**Replenishes Aquifers**

**Conserves Water**

**Protects Streams**

**ADA Friendly**

***Concrete Delivers***  
**[www.PerviousPavement.org](http://www.PerviousPavement.org)**





## **Pervious Concrete: The Natural Choice**

It's tough to balance the demand for development with the need to preserve our natural resources. However, this balance becomes easy to achieve when you construct parking lots using pervious concrete.

Pervious concrete is a mix of coarse aggregate, cement, water, and little to no sand. Also known as "no-fines" or porous concrete, this mixture creates an open-cell structure, allowing rainwater to filter through to underlying soil. By modeling natural ground cover, pervious concrete is an excellent choice for stormwater management.

## **Pervious Concrete: The Environmentally Sound Choice**

According to the United States Environmental Protection Agency (EPA), stormwater runoff can send as much as 90% of the pollutants—such as oil and other hydrocarbon liquids found on the surface of traditional parking lots—directly into our rivers and streams. The EPA now requires state and local governments to implement measures to reduce and improve the overall quality of stormwater runoff in an effort to address this important pollution problem. Pervious concrete has been recognized by the EPA as a best management practice (BMP) to address this most vital environmental concern. The open-cell structure of pervious concrete provides a medium for aerobic bacteria that break down many of the pollutants that seep from parked cars.

Pervious concrete also contributes to enhanced air quality by lowering atmospheric heating through lighter color and lower density, decreasing the impact of heat island effects. The heat island effect occurs when tree-covered areas are replaced with dark pavement surfaces, and is characterized by up to a 12-degree average temperature increase between an urban area and its surrounding countryside. This heat island effect increases ground level ozone production by as much as 30%.

Concrete surfaces, both pervious and conventional, have a much higher albedo—a measure of reflectance—than competitive paving materials. Specifications requiring a minimum surface albedo are becoming increasingly popular. The inherently light color of concrete naturally reflects heat and light. Studies have shown as much as a 30% savings in lighting costs over other pavement types due to concrete pavement's reflectivity.

## **Pervious Concrete: The Smart Business Choice**

Using pervious concrete pavement in your parking lot can reduce the need for large detention ponds because the pavement acts as a detention area. Parking lot owners will spend fewer dollars on labor, construction and maintenance of detention ponds, skimmers, pumps, drainage pipes, and other stormwater management systems. Expensive irrigation systems can also be downsized or eliminated.

A pervious concrete parking lot will help reduce demands upon sewer systems. Today, many government agencies are now implementing stormwater impact fees for all impervious areas. Pervious concrete can reduce these fees for the property owner.

Developers are using pervious concrete for parking lots to increase utilization of commercial properties. The land ordinarily devoted to costly stormwater management practices or compliance with maximum impervious area ordinances can now be developed or preserved, enhancing the bottom line.

Pervious concrete is a durable material—parking areas properly designed and constructed will last 20-40 years with little or no maintenance. Thus concrete, conventional or pervious, is widely recognized as the lowest life cycle cost option available for paving.





# Pervious Concrete Frequently Asked Questions

## Q: What about drainage issues in soils with high clay content?

**A:** Typically if a soil type has sufficient percolation to support a septic tank system it will be allowable for pervious concrete. If a soil is truly impervious, the pervious concrete system will still be useful for detention pond requirements. Soil percolation rates are most important if you must meet stormwater quality requirements. A typical parking lot design may have 5"– 8" of pervious pavement on top of a 6"–12" sub-base of #57 stone (40% voids) on a geotextile fabric. In sandy areas pervious is placed directly above the sand.

## Q: What about freeze-thaw issues?

**A:** Pervious concrete has been placed in freeze-thaw climates for over 15 years. Successful applications of pervious concrete in freeze-thaw environments have two common design features—the cement paste is air-entrained, and the pervious concrete is placed on 6–12 inches of drainable aggregate base (3/4" or larger clean gravel). For more information on pervious pavement in freeze-thaw applications go to [www.concreteparking.org](http://www.concreteparking.org) and view documents on pervious concrete, including "Freeze-Thaw Resistance of Pervious Concrete" and "Concrete in Practice #38 – Pervious Concrete."

## Q: What about clogging?

**A:** Clogging problems are mainly an issue of design. If a natural area with grass or exposed soil is allowed to drain stormwater across a pervious concrete pavement, fine material can be introduced into the system causing localized clogging. Vegetative matter can collect on the surface of the pervious concrete causing some clogging, but routine sweeping or vacuuming will restore porosity. Studies have been conducted that indicate pressure washing will restore most of the porosity of clogged pervious concrete to nearly new conditions.

## Q: What other uses are there for pervious concrete?

**A:** Pervious concrete has been successfully used for low volume streets, driveways, sidewalks, golf cart paths, retaining walls, slope protection, and French drains. Pervious concrete can be utilized in a variety of paving applications to provide hardscape without altering hydrology of the land.



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## Concrete Delivers

*Engineered concrete solutions for sustainability, durability and value.*

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## Benefits of Pervious Concrete

Reduces stormwater runoff

Eliminates the need for detention ponds and other costly stormwater management practices

Replenishes water tables and aquifers

Allows for more efficient land development

Minimizes flash flooding and standing water

Prevents warm and polluted water from entering our streams

Mitigates surface pollutants



**The best application for pervious concrete is parking lots.**

## When it Rains, it Drains.

Stormwater runoff occurs when rain falls. This runoff causes increased pollution in rivers and streams, flash floods, and loss of rainwater that could otherwise replenish water tables and aquifers. Pervious concrete has a 15-25% void structure and allows 3–8 gallons of water per minute to pass through each square foot —accounting for far more than is generated during most rain events. **Pervious concrete puts rainwater back in the ground where it belongs.**