

DRAIN-CRETE

Pervious Concrete



The economical and environmentally sound choice for stormwater management.

ChaneyEnterprises.com/PerviousConcrete

CHANEY
ENTERPRISES

CHANEY ENTERPRISES is the most experienced pervious concrete production team in Maryland, Virginia, Delaware, and Washington, DC.

Pervious concrete is a unique blend concrete that has interconnected holes which allow water to flow through while providing a durable paving surface that outlasts traditional asphalt. Drain-Crete, Chaney Enterprises' proprietary mix of pervious concrete, is designed specifically to increase durability and ease of placement.

WHY USE PERVIOUS CONCRETE

Insane Infiltration

While most jurisdictions require infiltration of only several inches per hour, pervious concrete infiltration rates are typically around 300 to 400 inches per hour. While mixes can be designed to drain faster, that often comes at a sacrifice to durability, so we recommend controlling the voids to optimize infiltration and durability as we have in our Drain-Crete mixes.

Brighter is Better

Because concrete has a lighter surface it requires less lighting to keep the area safely lit at night. This is a cost savings the owner can keep over the life-cycle of the project. Additionally, the brighter

area contributes to a safer look and feel.

This brighter surface also lowers temperature and vastly improves what is called the urban heat island effect.

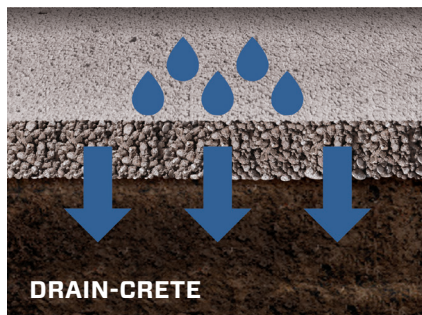
Durability

There are many pervious concrete pavements in Florida where pervious concrete first got its start in the United States that are over 40 years in age. While not all pervious parking lots will achieve the same long life, a properly maintained area should be serviceable for more than 25 years, far longer than any typical asphalt product, but not quite as long as a traditional concrete.

DESIGN AND SPECIFICATIONS

Pervious Concrete can be considered wherever there is a water issue.

It has been used in greenhouse floors, trails, sidewalks, slope stabilization, and roads, but most projects are parking lots. Pervious concrete works best where the natural subgrade infiltration is favorable and the site is generally clean from dirt and debris. For example, a parking lot over clay soils and at the bottom of a grassy hill where it would take run-off from and adjacent source would not be a good application.



MAJOR DESIGN CONSIDERATIONS

There are two main design considerations: **hydrology** and **structure**.

The **hydrological design** simply assures that for a given rain event, there is enough storage room in the aggregate base below the concrete to hold the water until it has time to naturally infiltrate into the ground water. Where soils drain slowly and expected rain events are heavy, more of an aggregate base will be required to store water. Conversely, where soils drain quickly and rain events are modest, less base material is required. Pervious concrete can even be placed directly on the subgrade where there are fast-draining, sandy soils. Where freezing is a concern, the concrete cannot be used in the storage calculations.

The **structural design** is the ability of the pavement structure to support the loads applied to it. Pervious concrete can handle substantial loading. The heavier the loads, the thicker the pavement. Once heavy truck loads require a design thickness greater than nine inches, traditional concrete should be considered instead. A typical concrete section for a retail parking lot is six inches.



Properly designed and placed pervious concrete has no trouble handling heavy loads, or the turning of vehicles on the surface, however heavy and turning loads will begin to ravel the concrete. For example, if using pervious concrete in a truck loading dock, it would be appropriate to place the concrete near the building where the trucks

would back in straight, however it would not be appropriate in the area where trucks would turn to get lined up with the loading dock. Regular car parking lot travel lanes are acceptable for pervious concrete.

If the designer wishes to abut pervious concrete to other surfaces, there should be a concrete transition strip to protect the edge of the pervious concrete from shifting asphalt or pavers. This transition strip should extend below the sub-base of each pavement type. Obviously, traditional concrete would be a more cost effective option if mixing pavement types. Because traditional concrete is less dependent on the sub-base than asphalt or pavers, you can use the space under traditional concrete for an extended storage area.

Design and Specification Help

There is a great deal of help available for designers. The National Ready mix Concrete Association offers a Design Assistance Program that is free in most cases if submitted through an association member such as Chaney Enterprises. Additionally, the American Concrete Pavement Association has made design software available called PerviousPave. This software is our recommendation for the fastest and easiest way to design pervious concrete pavement in terms of both hydrology and structure.

No designers or contractors of pervious concrete should be without two key documents from the American Concrete Institute: ACI 522R-10 R, Report on Pervious Concrete and ACI 522.1-13, Specification for Pervious Concrete Pavement. The hard work of researching and specifying has already been done for you.

CONSTRUCTION

There are a variety of ways that pervious concrete can be placed.

However, it should only be done by a contractor that has at least some level of pervious concrete certification.

There are three levels of certification:

- **Pervious Concrete Technician** – Requiring a written exam
- **Pervious Concrete Installer** – Requiring the technician exam, a field exam and 10,000 square feet of pervious concrete projects
- **Pervious Concrete Craftsman** – Requiring the technician exam, ACI Flatwork Finisher Technician or Craftsman certification, and either A) 3000 hours of pervious concrete experience, or B) 1500 hours of pervious concrete experience with a field exam.

The ACI 522.1-13, Specification for Pervious Concrete Pavement states that there should be **at least one certified craftsman** or **three certified installers** present for the entirety of each pervious concrete job. More information about certification can be found at NRMCA.org/Certifications.



We are happy to recommend certified and experienced concrete contractors for your project.

Acceptance or rejection of a load is based on ASTM C1688, *Standard*

Test Method for Density and Void Content of Freshly Mixed Pervious Concrete. This test is to ensure some degree of certainty that the mix has the proper void content in relation to the mix design.

Staging

Staging is an important consideration for every pour. It should be kept in mind that there is a seven day wet cure required for the concrete which may have implications on timing. Also, the dirtiest a site will ever be is during the construction phase. Care should be taken to keep the pervious concrete away from construction activities and placement should be as late in the project as is feasible.

MAINTENANCE

Benjamin Franklin said, “an ounce of prevention is worth a pound of cure.”

Pervious concrete is no exception to that.

Good maintenance begins with good design and placing the concrete in areas that reduce maintenance such as assuring there is no run-off from an adjacent source. Additionally, how a site is generally maintained has an impact. For example, grass clippings should be blown off the pervious concrete surface after mowing.

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Good maintenance begins with good design.

While maintenance requirements vary greatly from site to site, we recommend at least an annual inspection to assess the potential need for maintenance. You may find that maintenance is not needed for several years. An infiltration test can be accomplished using *ASTM C1701, Standard Test Method for Infiltration Rate of In Place Pervious Concrete*. A video of how to conduct this test is on our web site and YouTube Channel.

If maintenance is required, there are several options including power washing, low powered vacuums and higher powered regenerative air sweepers for extreme cases. Preventing problems, or catching them early through regular testing can avoid extreme measures.



FAQ'S

How much maintenance does a Drain-Crete pavement require?

Barring installation or design problems, it will last 20–40 years with little or no maintenance. In most locations, periodic vacuuming or pressure washing may be needed to remove surface debris.

How thick should Drain-Crete pavement be?

Pavement that does not get any vehicle traffic can be as thin as four inches. Pavement commonly used by vehicles as heavy as garbage trucks, delivery trucks or cargo vans should be 6–9 inches thick. Six inches is most common for a retail parking lot.

How about freeze-thaw issues?

A Drain-Crete pavement is 15% to 25% air, so there's plenty of space for water to expand if it freezes. Drain-Crete should be placed on a drainable rock base to guard against saturation.

Can Drain-Crete be colored?

Yes, Drain-Crete can be any color you can imagine! It can also be paired with other forms of pavement, such as stamped concrete, to create unique designs and a customized stormwater management system.



*Whitemarsh Park at Bloomfield Farm,
Centreville, MD*

Additional products:

- ChaneyCrete (Ready Mix Concrete)
- Sand, Gravel, & Stone Biosoils
- Colored Concrete
- Drain-Crete (Pervious Concrete)
- Insulated Concrete Forms (ICF)
- Reli-A-Fill (Flowable Fill)
- Self-Consolidating

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