



## Architects Utilize Innovative Paving Techniques

### Porous Pavement Technology



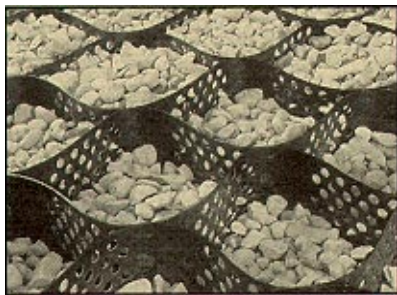
Porous pavement systems address environmental issues, such as aesthetics and permeability, while providing needed support for a wide variety of loading requirements. From heavy emergency vehicles to pedestrian foot traffic, porous pavement applications range from fire access lanes to utility roads, trails, walkways, and other high use areas. Porous systems are designed to handle the most demanding turf protection and load support requirements while allowing for vigorous growth of turf grass.

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### Stormwater Storage

With aggregate infill, porous systems create a natural stormwater storage system by allowing water to percolate into the ground, decreasing stormwater runoff and allowing natural groundwater replenishment. Aggregate with 35-45% void space creates a stormwater storage area that allows stormwater to slowly permeate into the existing ground while supporting loads. With 87-98% open surface area, porous pavement systems provide benefits over traditional hard surfaces, including:

- Lower development and construction costs by minimizing use of valuable land for stormwater holding systems.
- Lower cost of stormwater collection and discharge systems as reduced stormwater runoff allows the use of smaller, less expensive discharge pipes.
- Lower future cost of ground maintenance as potential turf damage caused by loading is significantly reduced.
- Direct replenishment of ground water as stormwater percolates into the ground through the open design.



### Permeable Solutions

Presto Products offers permeable solutions with two porous pavement, systems:

- The **Geoweb® System**, a polyethylene, three-dimensional honeycomb - like structure, provides maximum load support with the tire load supported by an aggregate-stabilized turf or aggregate infill.
- The **Geoblock® System**, a series of recycled polyethylene, interlocking blocks, delivers maximum protection to the turf while supporting the load through the system's wall structure.



The **Geoblock®/Geoweb® System** combined offers even greater load support of heavy vehicles over softer soils while providing maximum turf protection.

### Case History 1

#### Geoblock® Porous Pavement System

Friends University, Rose Window Plaza, Wichita, Kansas, Installed Fall of 1996.

#### Design Challenge

Creating Friends University's Rose Window Plaza challenged landscape architects to incorporate the University's rich history with the current needs of the students, faculty and staff. The University had recently finished renovations on the exterior of the campus' signature building, Davis Hall. The University wanted to make Davis Hall a strong focal point by installing a



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pedestrian mall in front of the building where student activities could be held.

Lee Engler, Landscape Architect with Wilson, Darnell and Mann had an inspiration to create a 76 foot diameter paver mosaic in front of David Hall using some 28,000 stone tiles to replicate the pattern of the building's stain glass window. The finished concept included formally laid out sidewalks, flower beds and period lights to match the 110-year-old building's construction.

Removing the frontage road and circle drive left the mall with diminished emergency vehicle access. Sufficient emergency access could be achieved with crushed gravel or brick pavers, but the University wanted an open, grassy look.

### **The Geoblock® System**

Presto's Geoblock® porous pavement system was chosen to construct a 25 ft. x 400 ft. strip of reinforced lawn using nearly 3,000 Geoblock units. The Geoblock system allows emergency access while protecting the grass from harmful effects of the traffic. The system protects the crown of the grass, prevents soil compaction and significantly reduces rutting. Manufactured from durable polyethylene, the Geoblock system works through a structure of interlocking, high strength blocks, supporting concentrated loads by creating a flexible structural bridge within the topsoil layer. The structural bridge provides maximum load transfer from block to block, flexing under loads that would break concrete.

The Geoblock system is comprised of four major components: 1) the Geoblock unit, 2) the base support material (topsoil/sand mix), 3) selected topsoil infill and 4) selected vegetation and is available in three sizes: 50m x 1m x 50mm (20 x 40 x 2 inch nominal), 1 ft x 2 ft x 1.25 in and 1 ft x 3 ft x 2 in.

The Geoblock porous pavement system proved to be the best choice for load support and aesthetic improvements to the historic Davis Hall at Friends University.

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## **Case History 2**

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### **Geoweb® Cellular Confinement System**

T. Mabry Carlton Jr. Memorial Reserve, Sarasota County, Florida, Installed February 1995



The County of Sarasota, Florida acquired a 24,565 acre environmentally sensitive wetland parcel to build the T. Mabry Carlton, Jr. Memorial Reserve, a public use and educa-

tion facility. The first phase of the project required building a 3,200 sq. ft. roadway to the building site and a parking area for 51 vehicles.

Bids for alternative systems submitted by local contractors were cost prohibitive. Presto's Geoweb® Cellular Confinement System was ultimately specified and used as the road building material.

### **Stormwater Retention**

The engineering firm required that the driveway and parking lot serve a dual function. The system had to support loads over poor soils and also function as a stormwater retention system, storing the first one inch of rainfall. The retention system consisted of 6 inch depth Geoweb sections and #57 stone infill. Seven inches of #57 stone with 40% voids yields a capacity of 2.8 inches of water storage, a 2.8 safety factor. The permeability rate of the underlying soils is 3 in/hour.



The roadway and parking areas were built with the base approximately 8 inches below the natural surface to form a surface that was flush with the existing terrain. A geotextile was placed over the muck soil as a separation layer. Next, the Geoweb sections were expanded over the geotextile and secured with stakes. The sections were stapled together, and the cells infilled with #57 stone. Another 2 inches of stone was placed on top of the Geoweb system for maximum water retention and drainage.

### **The Geoweb® System**

The Geoweb cellular confinement system confines and stabilizes structural fill, providing a load distribution system over weak soils and surface stabilization for unpaved surfaces. The three-dimensional cellular structure controls shearing and acts like a semi-rigid slab by distributing loads laterally, reducing subgrade contact pressures and minimizing the lateral displacement of the infill.

For speed and ease of installation, Presto provided custom lengths of the 6 inch depth, 8 foot wide Geoweb sections. Special 12 and 24 foot lengths were used for the single and double lane roadways, and 26 foot lengths for the vehicle parking area.

The project was installed with Sarasota County personnel and equipment saving 45% compared to using outside construction services. The fully-engineered Geoweb system proved to be the right solution for the T. Mabry Carlton, Jr. Memorial Reserve project from cost containment, speed, efficiency, and environmental standpoints.