



PRESTO GEOSYSTEMS



GEOBLOCK®

GEOBLOCK®

APPLICATION & INSTALLATION OVERVIEW



PRESTO GEOSYSTEMS

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The Geoblock® Porous Pavement System Components

The Geoblock® Porous Pavement System provides pedestrian and vehicular load support over grass areas while protecting the grass from the effects of the traffic.

The fully developed system has four major components as shown in Figure 1.

The components are:

1. the Geoblock® unit,
2. the appropriate base material for support (if required),
3. the topsoil infill, and
4. the selected vegetation.

Aggregate-filled systems should utilize the Presto GeoPave® system.

Other components may include additional geosynthetic reinforcement and topsoil additives, which enhance vegetative growth.

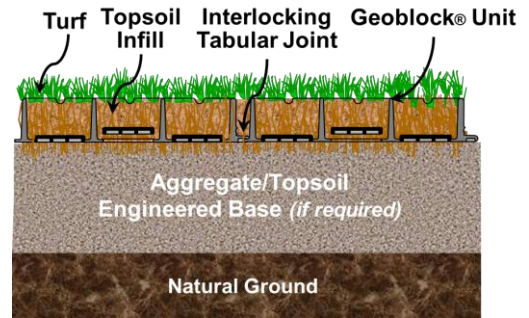
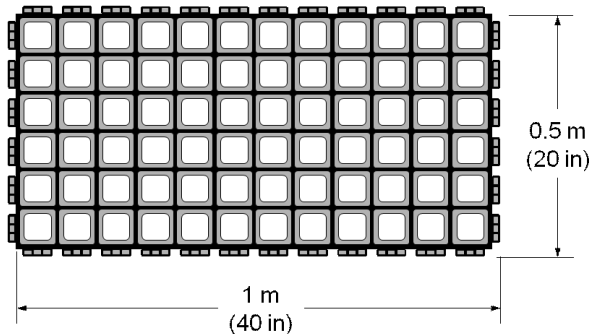


Figure 1 The Geoblock® Porous Pavement System Components

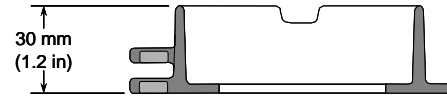
Table 1 Geoblock® Porous Pavement Unit

Item	Specification & Details
Material	Up to 97% Recycled Polyethylene *
Color	Ranges Dark Shades Gray to Black
Chemical Resistance	Superior
Carbon Black for Ultraviolet Light Stabilization	1.5% - 2.0%
Unit Minimum Crush Strength (Empty) @ 70°F (21°C)	420 psi (2,900 KPa)
Unit Minimum Crush Strength (Sand-Filled) @ 70°F (21°C)	5,980 psi (41,285 KPa)
Flexural Modulus @ 70°F (21°C)	35,000 psi (240,000 kPa)
Nominal Dimensions (width x length)	20 in x 40 in (0.5 m x 1.0 m)
Nominal Unit Depth	1.2 in (30 mm)
Nominal Coverage Area	5.3 ft² (0.5 m²)
Cells per Unit	128
Cell Size	2.25 in x 2.25 in (57 mm x 57 mm)
Top Open Area per Unit	88%
Bottom Open Area per Unit	56%
Weight per Unit (nominal)	4.7 lb (2.1 kg)
Runoff Coefficient @ 2.5 in/hr (64 mm/hr) Rainfall	0.15
Units per Pallet	92

- * The percentage of recycled content may vary depending on availability of recycled materials.
- Dimensions and weight are subject to manufacturing tolerances and are influenced by recycled components.
- End-to-end or side-to-side warp of the Geoblock unit shall not be greater than 0.5 in (6 mm).
- Avoid specifications that state material compressive strength only. Material compressive strength, with applied factors of safety must be sufficient to resist compressive and lateral loads. In addition, ultra-high compressive strength adds little value to a porous pavement system.



**Figure 2 Geoblock Unit
Nominal Dimensions**



**Figure 3 Geoblock Cell and Interlocking
Offset Tab**

Table 2 Base Recommendations for Geoblock®

Load Description¹	Depth of Engineered Base	
	CBR² 2 – 4³	CBR² > 4³
Heavy Fire Truck Access & H/HS-20 loading. Typical 110 psi (758 kPa) maximum tire pressure. Single axle loadings of 32 kips (145 kN), tandem axle loadings of 48 kip (220 kN). Gross vehicle loads of 80,000 lbs (36.3 MT). Infrequent passes ⁴ .	14 in (350 mm)	10 in (250 mm)
Light Fire Truck Access & H/HS-15 loading. Typical 85 psi (586 kPa) maximum tire pressure. Single axle loadings of 24 kips (110 kN). Gross vehicle loads of 60,000 lb (27.2 MT). Infrequent passes ⁴ .	10 in (250 mm)	6 – 10 in (150 – 250 mm)
Utility & Delivery Truck Access & H/HS-10 loading. Typical 60 psi (414 kPa) maximum tire pressure. Single axle loadings of 16 kips (75 kN). Gross vehicle loads of 40,000 lbs (18.1 MT). Infrequent passes ⁴ .	6 – 10 in (150 – 250 mm)	4 – 8 in (100 – 200 mm)
Cars & Pick-up Truck Access. Typical 45 psi (310 kPa) maximum tire pressure. Single axle loadings of 4 kips (18 kN). Gross vehicle loads of 8,000 lbs (3.6 MT). Infrequent passes ⁴ .	4 – 8 in (100 – 200 mm)	2 – 4 in (50 – 100 mm)
Trail Use. Loading for pedestrian, wheelchair, equestrian, bicycle, motorcycle and ATV traffic.	2 – 4 in (50 – 100 mm)	0 – 2 in (0 – 50 mm)

¹ The Geoblock system can be applied in areas where loading is greater than those listed above. In these situations, call Presto Geosystems or an authorized Presto Geosystems' representative for specific recommendations.

² CBR is the abbreviation for California Bearing Ratio. Methods for determining CBR vary from more sophisticated laboratory methods to simple field identification methods that use hand manipulation of the soil. Presto does not recommend one method over the other; however, the user must have a high degree of confidence in the results produced by the chosen method.

³ If other-than-CBR soil strength values exist, use available correlation charts to relate the value to CBR.

⁴ Infrequent passes is defined as the number of passes over any period of time that causes no lasting damage to the vegetation. This number will be a function of vegetation type and age, climatic conditions, and maintenance practices. This number is not a function of the Geoblock material.

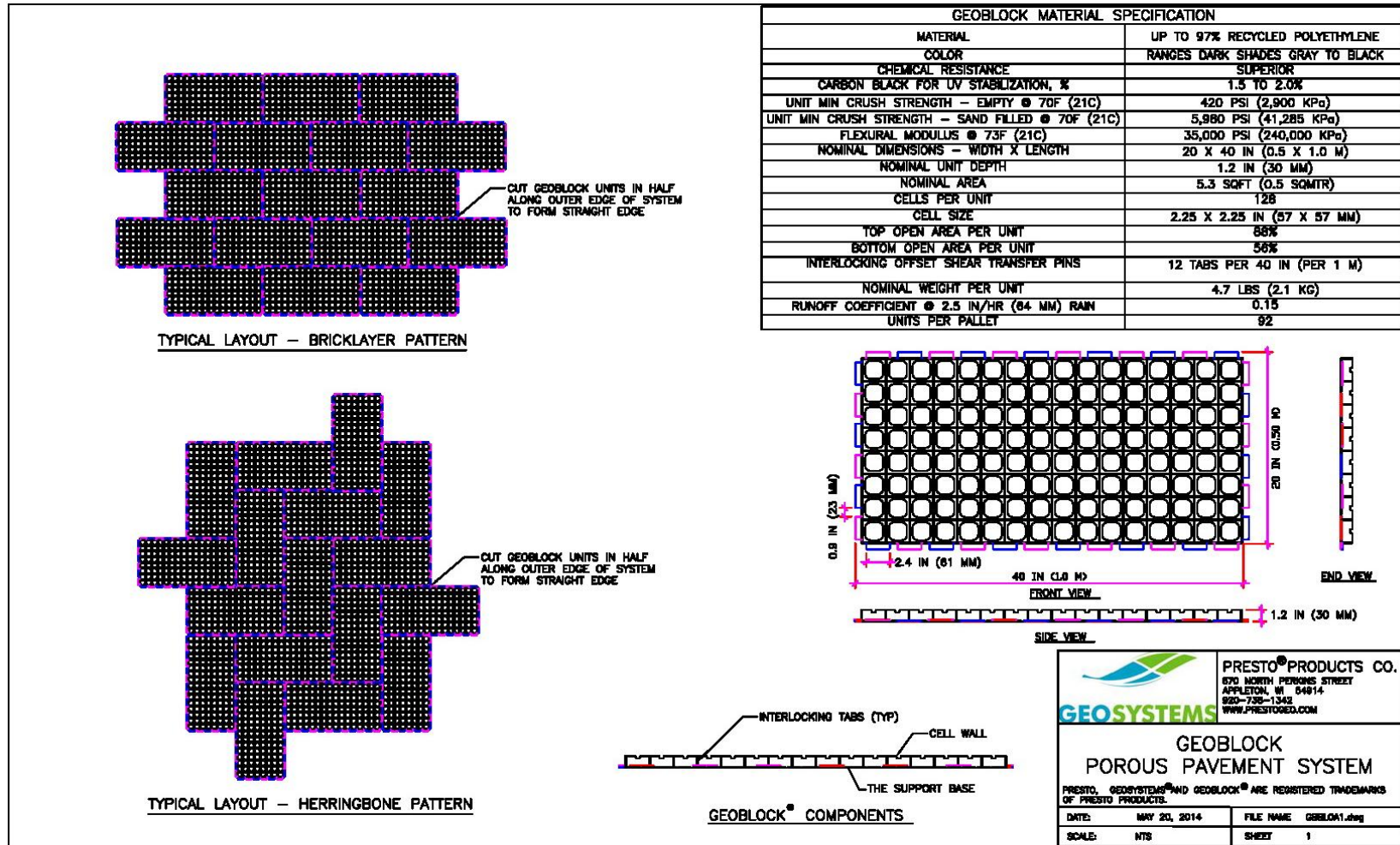


Figure 4 Geoblock® System Material Specification and Layout

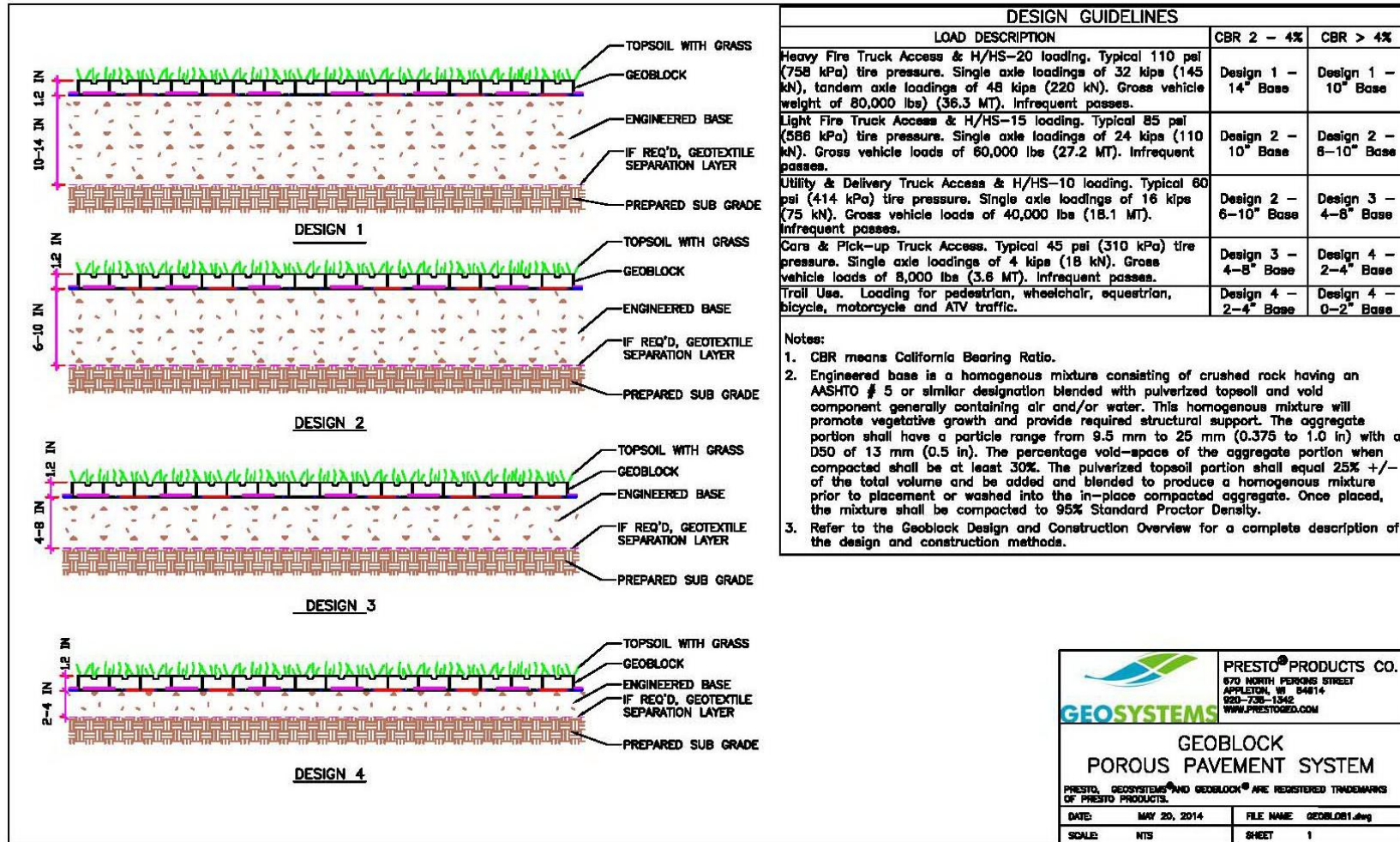


Figure 5 Geoblock® System Usage Guideline



Installing the Geoblock® System

Subgrade Preparation

Excavate the area, allowing for the Geoblock unit thickness and the required base depth (when applicable). When working with in-situ soils that have poor permeability, provide adequate drainage from the excavated area if the area has the potential to collect water. The in-situ soil should be relatively dry and free from any standing water. Finish-grade the surface of the in-situ soil specifically when the Geoblock unit is to be installed without any additional base. Level and clear the area of obtrusive objects such as rocks, pieces of wood, etc. to enable the Geoblock units to interlock properly and remain stationary after installation.

Geosynthetic Separation Layer

If required and/or specified by the project engineer, the geosynthetic layer shall be rolled out over the prepared subgrade per manufacturers' recommendations.

Sub-Drainage Component

If required and/or specified by the project engineer, install the specified sub-drain and outlet according to construction drawings. Ensure that a proper slope is maintained throughout the drainage system and that the outlet is free from any obstructions preventing free drainage.

Required Base Preparation – Vegetated Systems

For vegetated systems, a recommended 'engineered base' is a homogenous mixture consisting of 1) a clear-stone / crushed rock having an AASHTO # 5 or similar designation blended with 2) pulverized topsoil and 3) a void component generally containing air and/or water. This homogenous mixture will promote vegetative growth and provide required structural support.

The aggregate portion shall have particles ranging in size from 0.375 to 1.0 in (9.5 to 25 mm) with a D₅₀ of 0.5 in (13 mm). The percentage void-space of the aggregate portion when compacted shall be at least 30%. The pulverized topsoil, equal to 25%+/- of the total volume, shall be added and blended to produce a homogenous mixture prior to placement or washed into the in-place compacted aggregate. Once placed, the mixture shall be compacted to 95% Standard Proctor Density.

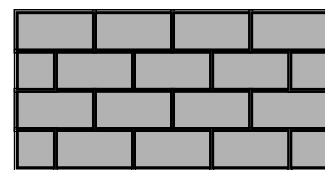
Geoblock Unit Installation

Orientation & Laying Pattern of Units

The Geoblock units are typically placed with the square hole to the ground. The user, however, shall determine which surface is more suitable for the specific application.

Recommended laying pattern is illustrated in **Figure 6**.

Other laying patterns are generally not recommended.



Bricklayer

Figure 6 Laying Pattern

Positioning of Units

Place the first row of Geoblock units against a stationary edge when available. If the units are placed between two perpendicular or near-perpendicular stationary edges (i.e. two parallel concrete curbs) allow for potential thermal expansion of the Geoblock units by keeping the units away from the stationary edge. The separation distance can be calculated using the reference value given in the section titled **Thermal Expansion**.

Slide the units together so that the interlocking tab joint is fully engaged as illustrated in **Figure 7**.



Figure 7 The Interlocking Tab



Anchoring Units

The Geoblock units can be fixed in-place to prevent the units from shifting during installation with wood or metal stakes through the perimeter units, and/or, by placing thread-forming tapping screws through the perimeter interlocking tabs. If staking is used to prevent movement during and after installation, the user shall determine if stakes shall be temporary or permanent and select the appropriate stake material. Figure 8 Anchoring Possibilities illustrates some of the anchoring possibilities.

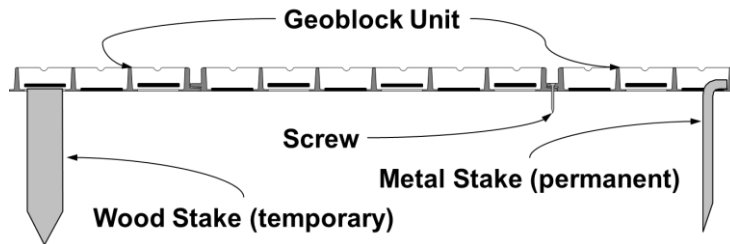


Figure 8 Anchoring Possibilities

Thermal Expansion

NOTE: The Geoblock polyethylene stabilized with carbon black and has a relatively high rate of thermal expansion. Joint separation occurring from large temperature fluctuations is normal. Therefore, rejoining of the Geoblock units should be considered normal construction practice.

The rate of thermal expansion is approximately 1.7% per 100°F (55 °C). Based on the temperature of the Geoblock unit exposed to full sunlight for several hours, a temperature gain of 60-70 °F (33-38 °C) is typical. As a result, a compensation of 1.375 in (34 mm) could be applied for each 10 ft (3 m) increment of length.

Infilling the Geoblock® Unit

Infill the Geoblock units with a suitable topsoil. Use spreading methods that will leave the cell infill uncompacted. Overfilling the cells is not recommended since vehicular loading will cause undesirable compaction of the topsoil. Infilling should take place immediately after the units are installed to minimize the potential of joint separation or upward buckling caused by thermal expansion/contraction.

If the Geoblock units are to remain unfilled, the inclusion of expansion joints may be recommended.

Finishing Procedures for Vegetated Systems

Seeding

Follow seeding, fertilizing, and watering procedures for turf establishment based on regional practices. If base recommendations are not followed and a free-draining base is used, an increase in watering frequency may be necessary for vegetation survivability.

Sod Application

Sod can be used for areas where immediate vegetation is desired. Young sod that is free from netting materials is recommended. Mature sod with a more developed root system and sod with netting may be difficult to press/cut into the Geoblock cells. When sod is used:

- Sweep out the topsoil from the Geoblock unit to allow room to seat the sod. Enough topsoil must be removed so that the crown of the sod is recessed slightly below the top of the cell after pressing the sod in place. If too much topsoil is removed, the bottom of the sod will not make contact with the topsoil after it is pressed into the cell. Avoid removing too much topsoil.
- Place the sod per typical practices.
- Press the sod into the partially emptied cells using a roller or other suitable equipment.

Use recommended watering procedures to ensure healthy sod growth.

Delineation

If used for lanes, delineation may be desirable to create greater visibility. Delineation methods can include the following: in-ground or above-ground curbing, shrubbery or vegetation, perimeter lighting or delineation markers, or other suitable systems.

**Maintenance****Lawn Care**

Normal turf care procedures should be followed, including de-thatching and aerating. Some equipment may slightly scar or cut the Geoblock wall structure during some operations, but will not affect overall structural integrity of the system.

Snow Removal

When snow removal is required, keep a metal edged plow blade from coming in contact with the surface during plowing operations to avoid causing damage to the Geoblock units.

Limited Warranty

Presto Geosystems warrants each Geoblock unit which it ships to be free from defects in materials and workmanship at the time of manufacture. Presto's exclusive liability under this warranty or otherwise will be to furnish without charge to Presto's customer at the original f.o.b. point a replacement for any unit which proves to be defective under normal use and service during the **10-year period** which begins on the date of shipment by Presto. Presto reserves the right to inspect any allegedly defective unit in order to verify the defect and ascertain its cause.

This warranty does not cover defects attributable to causes or occurrences beyond Presto's control and unrelated to the manufacturing process, including, but not limited to, abuse, misuse, mishandling, neglect, improper storage, improper installation or improper application. Presto makes no other warranties, express or implied, written or oral, including, but not limited to, any warranties or merchantability or fitness for any particular purpose, in connection with the Geoblock system. In no event shall Presto be liable for any special, indirect, incidental or consequential damages for the breach of any express or implied warranty or for any other reason, including negligence, in connection with the Geoblock system. Contact Presto Products Co. Ph: 800-548-3424; 920-738-1707, or Email info@prestogeo.com.

Disclaimer

This document has been prepared for the benefit of customers interested in the Geoblock® Porous Pavement System. It was reviewed carefully prior to publication. Presto assumes no liability and makes no guarantee or warranty as to its accuracy or completeness. Final determination of the suitability of any information or material for the use contemplated, or for its manner of use, is the sole responsibility of the user.

Project specifications take precedence over all manufacturers' recommendations.

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