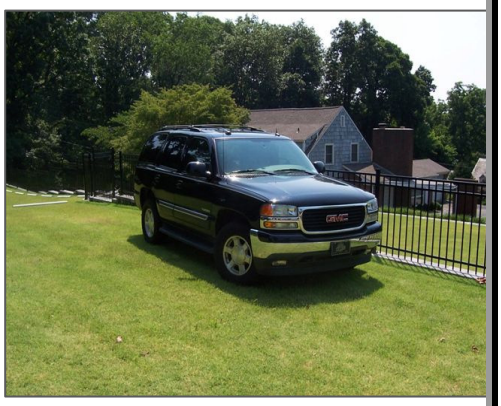
PRESTO GEOSYSTEMS

GEOBLOCK®

GEOBLOCK® 5150

APPLICATION & INSTALLATION OVERVIEW



JEN-HILL CONSTRUCTION MATERIALS

800-452-4435
info@jenhill.com
www.jenhill.com

PRESTO GEOSYSTEMS
670 N PERKINS STREET, APPLETON, WISCONSIN, USA 54914
PH: 920-738-1707 OR 800-548-3424 ■ FAX: 920-738-1222
E: INFO@PRESTOGEO.COM ■ WWW.PRESTOGEO.COM

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The Geoblock®5150 Porous Pavement System Components

The Geoblock®5150 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®5150 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.

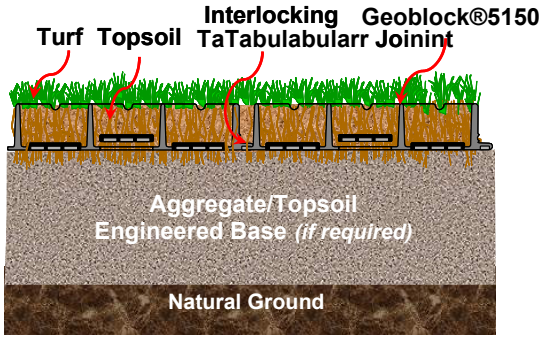


Figure 1 The Geoblock®5150 Porous Pavement System Components

NOT TO SCALE

Table 1 Geoblock ®5150 Material Properties

Item	Specification & Details
Material	Up to 97% Recycled Polyethylene *
Color	Variant Color; Dark Shades of Gray to Black
Carbon Black for Ultraviolet Light Stabilization	1.5% - 2.0%
Unit Minimum Crush Strength @ 21°C (70°F)	2,900 kPa (420 psi)
Nominal Dimensions (width x length)	0.5 m x 1.0 m (20 in x 40 in)
Nominal Unit Depth	30 mm (1.2 in)
Nominal Coverage Area	0.50 m² (5.38 ft²)
Cells per Unit	128 (8 x 16 cells)
Cell Size	57 mm x 57 mm (2.25 in x 2.25 in)
Top Open Area per Unit	88%
Bottom Open Area per Unit	56%
Weight per Unit (nominal)	2.1 kg (4.7 lb)
Runoff Coefficient @ 63.5 mm/hr (2.5 in) Rainfall	(.15)
Units per Pallet	92
End-to-end or side-to-side warpage of the Geoblock®5150 unit shall not be greater than 6 mm (0.5 in). * The percentage of recycled content may vary depending on availability of recycled materials.	
NOTE: Dimensions and weight are subject to manufacturing tolerances and are influenced by recycled component characteristics.	

Design Guideline

Table 2 Base Recommendations for the Geoblock®5150

Unit Load Class	Load Description	Gross Loading	Depth of Engineered Base	
			CBR[1] >4	CBR[1] 2-4
Surface Stabilization	Pedestrian, Wheelchair, Bicycle, Motorcycle, ATV, Golf Carts, Campers and Boats	<0.45 tonne (<1,000 lb)	0-50 mm[2] (0-2 in)	50-100 mm[3] (2-4 in)
Load Distribution	Car and Pick-up Truck Access Occasional Passes[4]	≤ 3.6 tonne (8,000 lb)	50-100 mm[3] (2-4 in)	100-200 mm[3] (4-8 in)
	H10 Loading: Maintenance Truck Access Infrequent Passes[4]	≤ 18.1 tonne (40,000 lb)	100-200 mm[3] (4-8 in)	150-250 mm[3] (6-10 in)
	H15-H20 Loading: Fire Truck Access Infrequent Passes[4]	≤ 36.3 tonne (80,000 lb)	150-250 mm[3] (6-10 in)	250-350 mm[3] (10-14 in)

[1] CBR is the abbreviation for California Bearing Ratio.

[2] 50 mm (2 in) is recommended if with vegetated infill and over sterile soils.

[3] A geotextile separation layer may be required between the natural ground and the engineered base.

[4] Occasional and infrequent passes is defined as the number of passes over any period of time that causes no lasting damage to vegetation. This number will be a function of the vegetation type and age, climatic conditions and maintenance practices.

Installing the Geoblock®5150 System

Subgrade Preparation

Excavate the area, allowing for the Geoblock®5150 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®5150 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®5150 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 9.5 to 25 mm (0.375 to 1.0 in) with a D_{50} of 13 mm (0.5 in). 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.

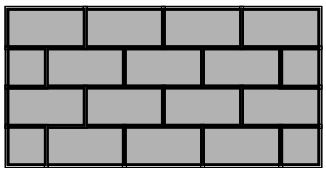
Geoblock®5150 Unit Installation

Orientation & Laying Pattern of Units

The Geoblock®5150 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 4**.

Other laying patterns are generally not recommended.



Bricklayer

Figure 4 Laying Pattern

Positioning of Units

Place the first row of Geoblock®5150 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®5150 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 5**.

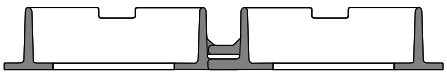


Figure 5 The Interlocking Tab

Anchoring Units

The Geoblock®5150 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 6 Anchoring Possibilities illustrates some of the anchoring possibilities.

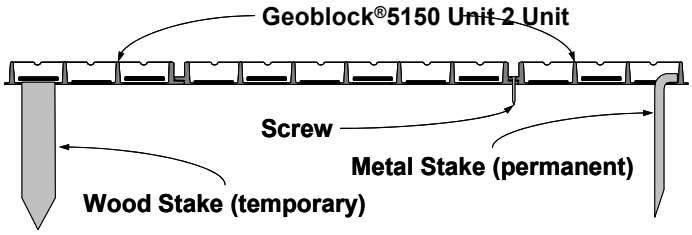


Figure 6 Anchoring Possibilities

Thermal Expansion

NOTE: The Geoblock®5150 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®5150 units should be considered normal construction practice.

The rate of thermal expansion is approximately 1.7% per 100 ºF (55 ºC). Based on the temperature of the Geoblock®5150 unit exposed to full sunlight for several hours, a temperature gain of 60-70 ºF (33-38 ºC) 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®5150 Unit

Infill the Geoblock®5150 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®5150 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®5150 cells. When sod is used:

- Sweep out the topsoil from the Geoblock®5150 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®5150 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 **2-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®5150 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®5150 system. Contact Presto Products Co. Ph: 800-548-3424; 920-738-1707, or Email info@prestogeo.com.

Disclaimer

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Project specifications take precedence over all manufacturers' recommendations.

