HANOVER ARCHITECTURAL PRODUCTS

Permeable Paving Units & Green Products
Hanover® Architectural Products has participated in the development of concrete unit paver systems for over 48 years, as they became an integral part of architectural design. Custom color and aggregate blending have become Hanover’s trademark, as well as the ability to adapt to the special paver needs of each individual project. No other company can offer the superior quality and complete selection that Hanover® can.

Hanover® continually strives to provide the highest quality products in the industry. Consumers are more conscious of the products they purchase and how those purchases impact our environment. Consumers now demand green products. In response to the increasing demand, Hanover® provides several product lines with environmental benefits. Hanover® Products facilitate the process of earning SS Credits and obtaining LEED Certification.
Produced with Post-Industrial Recycled Content, Hanover’s Asphalt Block is an eco-friendly paving alternative.

Post-Industrial, or Pre-Consumer, Recycled Content is the percentage of materials in a product that is recycled from manufacturing waste. Examples include asphalt road grindings, fly ash from the smoke stacks of coal-burning power plants, and PVC scrap from pipe manufacturing. Buying building products with recycled content allows industry to keep a closed loop industrial cycle. By specifying Hanover® Asphalt Block, you support the recycling process.

Percentage of Recycled Content is shown.

A8009 Natural Finish: 23.9%
A80010 Ground Finish: 23.6%
A80011 Ground Finish: 11.6%
A80012 Ground Finish: 24%
A80013 Ground Finish: 22.6%
A80014 Ground Finish: 13.4%
A80016 Ground Finish: 23.8%
A80017 Ground Finish: 20.8%
A80018 Ground Finish: 20.1%
A80020 Ground Tudor® Finish: 11.4%
A80024 Ground Finish: 11.5%
A80026 Ground Finish: 24.4%
A80033 Ground Finish: 21.5%
A80055 Ground Finish: 81.3%

With a less than 1% absorption rate, Asphalt Block is incredibly durable and spark resistant, yet attractive, and comfortable to walk on. Available in several sizes and a variety of colors and textures, Hanover® Asphalt Block will enhance any project.

The Asphalt Block colors shown are just a few Hanover® can provide. Percentage of recycled content is based on the recycled materials used and varies for each color. Percentages for other colors are available upon request.

PLEASE NOTE: Color photos shown were prepared with great concern for accuracy. However, it is suggested that actual samples be requested before specifying.

CHESAPEAKE COLLECTION
Hanover® Asphalt Block have been infused with clam shells adding to the recycled content. Contact Hanover® for details.
Hanover® Architectural Products manufactures concrete Prest® Pavers with recycled content.

Recycled-content products are manufactured from materials that would otherwise have been discarded. Building products produced with recycled materials reduce the need for virgin materials in new products. In turn, the need to landfill discarded products and the impact of mining is reduced. Natural resources and energy are conserved. By specifying Hanover® Prest® Pavers, you support the recycling process.

High compressive strength and density give Prest® Pavers durability and low water absorption comparable to natural stone. A wide range of sizes, colors and textures are available, creating endless design opportunities.

The colors shown are just a few Hanover® can provide. Percentage of recycled content is based on the recycled materials used and varies for each color. Percentages for other colors are available upon request.

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CHESAPEAKE COLLECTION
Hanover® Prest® Pavers have been infused with clam shells adding to the recycled content. Contact Hanover® for details.
Hanover® provides pavers with reflectance and emittance values. Solar Reflectance is the ratio of the amount of solar radiation reflected from a surface to the total amount reaching that surface. Emittance refers to a material’s ability to release absorbed heat. The Solar Reflectance Index (SRI) is a value that incorporates solar reflectance and emittance in a single value to represent a material’s temperature in the sun. Hanover’s Glacier White with Tudor® finish has high reflectance, emittance and SRI values. These values are a critical element in the roof’s ability to reduce heat consumption. Contact Hanover® for most current information and test results.

With the help of Hanover’s Roof Pavers, heat producing rooftops and plazas are turned into cooler environments decreasing the building’s energy consumption and reducing the heat island effect.

Hanover® Pavers work hand in hand with Green Roof assemblies to provide environmental benefits and aesthetically appealing rooftops or plaza gardens. From planted areas which incorporate topsoil and mulch to grassy areas over a layer of soil or lightweight gravel fill, Hanover® Pavers are an integral part of these energy efficient roofs. Pavers can be used to create walkways, terraces or seating areas while providing positive drainage.
The USGBC provides standards for green building design and construction based on LEED Green Building Rating System. Building projects earn points for compliance with SS Credits. The total points earned result in an overall rating for the building from Certified to Platinum. Hanover® Pavers aid in earning SS Credits and achieve LEED points.

Hanover’s Glacier White Guardian® Paver System provides reflective properties as well as wind uplift resistance. The Guardian® System consists of a three piece pedestal and a shaped paver which create a monolithic roof paver surface.

Hanover’s RockCurb® is an integral part of green building projects, helping to earn SS Credits and achieve LEED points. Working with green roof assemblies to provide environmental benefits and aesthetically appealing rooftop gardens, RockCurb® can be used to separate green areas from hardscaped areas.

Hanover® AND LEED POINTS

Pennsylvania State University School of Law, Lewis Katz Building, University Park, PA; Architect: Polshek Partnership Architects; Size & Color: 23 1/2" x 23 1/2" x 2", RockCurb®, Glacier White; Finish: Tudor®

Corporate Campus, Houston, TX; Architect: HOK; Landscape Architect: Clark Nord; Size & Color: 23 1/2" x 23 1/2" x 2". Chesapeake Collection M3437; Finish: Ground Tudor®
THE PROBLEM. With urban development comes excessive stormwater runoff. Runoff occurs in urban and suburban areas where impervious surfaces such as streets, parking lots and sidewalks prevent rainwater from absorbing into the soil. As water runs across these surfaces, contaminants are collected and deposited into storm drains or directly into receiving waters, such as rivers and lakes. As waters are polluted, they become unusable to people and a danger to fish and other aquatic life.

Under the Clean Water Act, developers must comply with the regulations for stormwater management which often means the loss of valuable land to build large, expensive retention ponds.

THE SOLUTION. Hanover’s Permeable Paving Units allow for stormwater drainage and manage excessive runoff, as most municipalities now require. Stormwater is directed through a series of natural filtration systems – through joints or voids in the pavers and into the subgrade below before entering streams or rivers, reducing groundwater pollution. Permeable pavers have been proven to be very beneficial.

- Erosion and stormwater runoff are reduced.
- Land-use is increased through more efficient use of the total building site.
- Water quality is improved.
- Project costs for drainage and retention systems are reduced.
- Access for underground repairs is permitted.
- Design options are increased.

Green Building trends are on the rise as large cities and small towns are making great strides toward managing runoff and creating environment-friendly developments. The need for Sustainable Design will continue as natural resources become increasingly scarce.
Green Products | PERMEABLE 3 1/4” X 18”

With a 1/16” bevel, Hanover’s Permeable 3 1/4” x 18” meets standards set forth by the Americans with Disabilities Act (ADA). The Permeable 3 1/4” x 18” is available in a 4” thickness and will provide the project with 10% open area. Minimal openings provide a comfortable walking surface while allowing for water percolation. The Permeable 3 1/4” x 18” can accommodate wheelchair traffic making it the perfect choice for high foot traffic areas such as walkways, plazas and entrance ways.

Suggested for pedestrian use only, the 3 1/4” x 18” can be produced with a Natural, Tudor® or Chiseled finish. It is available in Hanover’s full range of colors creating endless design options.
Hanover’s newest Permeable Paving Unit is nominally sized at 4” x 8”. Produced with a 1/16” bevel and hidden spacers, the Permeable 4” x 8” x 3” is ADA compliant. Minimal openings provide a comfortable walking surface while accommodating wheelchair traffic. Sized at 3 7/8” x 7 7/8”, the Permeable 4” x 8” is a true rectangle, providing the correct size ratio to create interlock stability. With an interlocking installation design, heavy low speed vehicular loads are supported.

The 4” x 8” can be produced with several finishes. Hanover’s full range of colors is available as a custom order when quantities permit. Design options are endless.

- ADA Compliant
- 6.4% open area per unit
- Supports heavy low speed vehicular loads
- Sized at 3 7/8” x 7 7/8” to achieve interlock stability
- Available in Hanover’s full range of colors when quantities permit
Produced with a 1/16” bevel and hidden spacers, Hanover’s Permeable 4 1/2” x 9” meets standards set forth by the Americans with Disabilities Act (ADA). Minimal openings provide a comfortable walking surface while allowing for water percolation. The Permeable 4 1/2” x 9” will provide the project with 5.8% open area allowing water to be infiltrated at a rate of 7” to 8” per hour based on proper installation methods. The Permeable 4 1/2” x 9” can accommodate wheelchair traffic making it the perfect choice for high foot traffic areas such as walkways, plazas and entrance ways. With a 3” thickness and interlocking installation design, heavy low speed vehicular loads can be supported.

Sized at 4 5/8” x 9 1/4”, the Permeable 4 1/2” x 9” is a true rectangle, providing the correct size ratio to create interlock stability. The 4 1/2” x 9” can be produced with a Natural, Tudor®, Tumbled or Chiseled finish. It is stocked in Limestone Gray and Charcoal with a Natural finish. Hanover’s full range of colors is available as a custom order. The Permeable 4 1/2” x 9” combines the beauty of an interlocking paver with the advantages of a permeable paving system.
Designed to be installed mechanically, Hanover’s Permeable 4 1/2” x 9” Scored is perfect for large driveways, parking lots, and industrial applications. Pavers are laid layer by layer through the use of a machine, increasing speed and efficiency. Each layer is composed of individual units to provide maximum interlock with a random appearance. Produced with a 1/16” bevel and hidden spacers, the ADA compliant Permeable 4 1/2” x 9” Scored is made to order in standard and custom colors when quantities permit.

Green Products | PERMEABLE 12” X 18”

With actual dimensions of 11 3/4” x 17 5/8” x 2”, the Permeable 12” x 18” is ADA Compliant. Minimal openings allow for a comfortable walking surface while permitting water drainage to the ground below. The Permeable 12” x 18” provides 4.88% open area per unit. Recommended for pedestrian applications only, the Permeable 12” x 18” is made to order in standard and custom colors when quantities permit.
Sized at 11 3/4” x 11 3/4” x 4”, Hanover® EcoGrid® provides the project with 37% open area for drainage aggregate or grass turf. EcoGrid® has the largest percentage of open space in the industry, allowing the most opportunity for water to permeate into the sub-soil. EcoGrid® interlocks for stability to support light vehicular traffic. Stocked in Hanover’s Natural color with a Natural finish, EcoGrid® can also be made to order in custom colors when quantities permit.

Hanover’s Aqua-Loc® is available in a 4 1/2” x 9” x 3” unit with a score to appear as two 4 1/2” x 4 1/2” x 3” pieces. Aqua-Loc® interlocks for stability and provides open space for drainage aggregate. Aqua-Loc® will provide the project with 5.7% open area per unit allowing water to be infiltrated at a rate of 7” to 8” per hour based on proper installation methods. Made to order in custom colors when quantities permit, Aqua-Loc® can be installed mechanically to save time and reduce costs.

When used in vehicular parking applications, Aqua-Loc® works in conjunction with tight-jointed pavers.

PLEASE NOTE: Aqua-Loc® is cubed in a Herringbone design and can be installed mechanically. When installing by hand, use both half and full pieces throughout the entire application.
The U.S. Green Building Council (USGBC) provides standards for green building design and construction based on LEED Green Building Rating System. Building projects earn points for compliance with Sustainable Sites (SS) Credits. LEED (Leadership in Energy and Environmental Design) is a point rating system devised by the United States Green Building Council to evaluate the environmental performance of a building and encourage sustainable design. Understanding the LEED rating system will enable Hanover®, in collaboration with architects, specifiers and contractors, to respond to the market and develop more sustainable products.

Using concrete permeable paving systems can facilitate the process of obtaining LEED Green Building certification. There are two applicable LEED Site Credits that pertain to Hanover® Permeable Paving Units:

- Stormwater Management
- EPA Best Management Practices

**STORMWATER MANAGEMENT**

LEED awards 1 point for measures taken to manage or reduce stormwater runoff. Permeable paving systems reduce runoff by allowing infiltration of rain into the subsurface. LEED has a simplified calculation to demonstrate compliance based solely on the runoff coefficient of site surfaces. The runoff coefficient relates the amount of runoff to the amount of precipitation received. The coefficient of runoff (c value) for level permeable pavements installed over recommended drainage coarse base elements has been proven to be 0.15. In comparison, asphalt, a non-permeable pavement, is 0.98 using the rational method. For unit paver installations, a minimum 1% grade is suggested, creating a c value of 0.25. It is suggested the design value be established at 0.40 to allow for 50% clogging of the permeable joints in the first 5 years. It is likely that permeable paving systems will need to be combined with additional measures like green roof assemblies or rain water harvesting to fully comply with this LEED credit.

**EPA BEST MANAGEMENT PRACTICES**

Permeable paving can also help a project earn a second LEED point within the stormwater management credit for stormwater treatment/quality control. For this point, LEED requires EPA Best Management Practices that effectively remove at least 80% of the total suspended solids (TSS) and 40% of total phosphorus (TP) from stormwater volumes leaving the site. As with the credit above, additional measures like infiltration basins may be required for a project to fully comply with this credit, but permeable paving systems do contribute toward compliance.
Best Management Practices (BMPs) are defined by the EPA as a “technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of stormwater runoff in the most cost-effective manner.” In other words, they are techniques used to manage stormwater and improve water quality. LEED credits can be earned by complying with EPA Best Management Practices. The USGBC addresses stormwater management in two separate credits, one relating to the quantity of water that runs off a building site and other dealing with the quality of the water. For more information on LEED credits, refer to the page 14.

**Please Note:** Due to variations in native soil types, infiltration rates (Curve) may differ.

The detail shown above is an example of a typical permeable paver installation. Requirements and regulations are different for each municipality. Contact your municipality for specific installation instructions. An industry professional should be consulted to develop a specification for the individual project in accordance with the municipal requirements.

When EcoGrid® will be filled with planted vegetation, the installation detail shown is not adequate. If grass is intended, a typical cross section will consist of compacted sub base and a 3/4" to 1" setting bed.

**Please Note:** Not all sizes are stocked materials. Some are only available through special order and when quantities permit.
**PRODUCT INSTALLATION:** Each project and site conditions are unique. It is important to contact a Hanover® representative for product details and installation guidelines. An architect, landscape architect, and/or structural engineer should be consulted to develop a specification suited for the individual project. Neither this catalog, nor any of the individual product catalogs from Hanover® Architectural Products, is intended to be a design manual. The projects pictured and the installation suggestions given in this catalog are only illustrations of Hanover® products. Each application and specification for installation should have the attention of an architect, landscape architect, and/or structural engineer. As product use and site conditions are not within our control, Hanover® does not guarantee results from use of such products or other information herein. No warranty, express or implied is given. As government regulations and use conditions may change, it is the Buyer’s responsibility to determine the appropriateness of these products for the specific end uses.

**PLEASE NOTE:** The color photos shown in this catalog were prepared with great concern for accuracy. However, it is suggested that actual samples be requested before specifying. Due to the natural variance of the raw materials used, products can be expected to differ slightly from sample to actual product. It is recommended that the products be cleaned after the installation is finished. Please contact our representatives for product suggestions.

Hanover® Architectural Products reserves the right to modify, alter or discontinue the texture, color, content, shape or size of its products or any product line at any time for any reason.

**CONTACT US** for product details and information. We invite you to call us at 800-426-4242 to discuss your project, visit our web site www.hanoverpavers.com to download current catalogs and more detailed product information, or request our complete product brochures and samples.

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