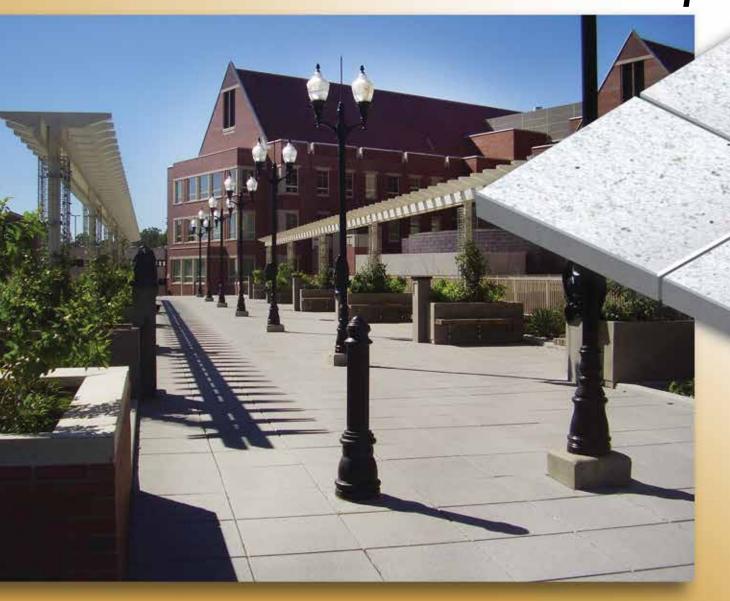


# The Ultimate Assembly®



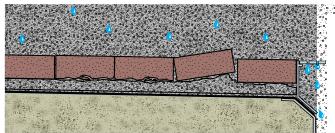
WATERPROOFING & OPEN JOINT PAVER ASSEMBLY FOR PLAZAS & ROOF DECKS

#### THE ULTIMATE ASSEMBLY®

Hydrotech's Ultimate Assembly® is the perfect solution for roof decks and plazas when optimal performance must be matched with superior aesthetics. Utilizing pavers manufactured by Hanover Architectural Products and installed in an open joint assembly, the Ultimate Assembly offers many advantages over other installation methods.

The Ultimate Assembly begins at the substrate with Hydrotech's premier waterproofing membrane, Monolithic Membrane 6125®, a fluid applied rubberized asphalt membrane with more than 50 years of proven performance. The assembly can include insulation, drainage, and other components so it can be tailored to meet a wide variety of jobsite conditions. The architectural pavers that complete the assembly offer high compressive strength, low moisture absorption, and are available in a wide variety of colors and textures.

It is not uncommon to find pavers on plazas installed in a setting bed (asphaltic, concrete or sand). However, pavers installed in this method are susceptible to premature deterioration due to constant wetting and drying, as well as freeze thaw damage. Over time this can lead to heaving and displacement of the pavers and setting bed (see illustration below left). Pavers in a setting bed application must be sloped to move water to a drain, otherwise ponding water on the paver surface can occur. This ponded water can be a slip hazard especially in the winter when it turns to ice. There is a better way!

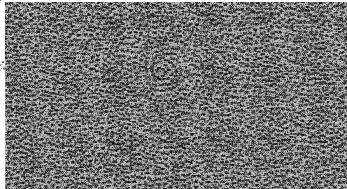


Open Joint Assembly - The open joint paver assembly offers many advantages over a setting bed application. Pavers installed in this configuration can be set level on fixed height and adjustable pedestals, regardless of the slope at the membrane level

below. This open joint configuration allows water to drain off the paver surface and quickly flow to concealed drains (see illustration below right), eliminating the issues typically seen with setting bed applications.

**Installation Ease** - The installation of pavers on fixed height or adjustable pedestals to an established grade and leveled where a sloped deck exists is a simple, durable solution.

**Access to Substructure** - Since the pavers are loose laid on fixed height or adjustable pedestals, access to drains or other components below is easy. Pavers can be simply lifted and reset in place when work is done, so maintenance and future alterations are easily accomplished.



Setting Bed vs. Open Joint

# **Assembly Components**

**Monolithic Membrane 6125**® - This membrane is the ideal base for The Ultimate Assembly. A fluid-applied, seamless, rubberized asphalt made of 100% solids, MM6125® bonds to the substrate with strength and durability that last. It has been protecting high profile structures across the globe for more than 50 years.

**Hydroflex Protection Sheet** - This heavy-duty fiberglass reinforced rubberized asphalt sheet helps to protect the membrane from construction traffic and topping materials, while also acting as a separation layer between the membrane and insulation.

**Hydrodrain® Drainage Medium** - A durable prefabricated drainage panel composed of a high-density polyethylene core and filter fabric, Hydrodrain acts as an avenue for water to flow to substrate-level drains, thereby lessening unwanted moisture. (optional component)

**DuPont STYROFOAM**<sup>™</sup> **Insulation** - A CFC-free, closed cell, extruded polystyrene board with high compressive strength, STYROFOAM<sup>™</sup> is moisture resistant and able to retain its thermal value over the years. (optional component)

**Architectural Pavers** - Hanover® pavers are hydraulically pressed and exhibit high compressive strength, low moisture absorption and exceptional quality where aesthetics cannot be sacrificed. Available in a wide array of colors and finishes — including crushed granite, limestone and blue stone — standard nominal sizes are 12", 18", 24", 30" and 36" square, with thicknesses of 2" to 2 3/4". Rectangular and custom sizes, colors and finishes are available.

**The Ultimate Assembly Accessories** - Accessories help to create a finished assembly that is simple and reliable. Spacer tabs ensure joint uniformity, while facilitating expansion, drainage, and air circulation. Pedestals can telescope and can be used with other accessories to compensate for slope in the deck — so the paver surface is level.

**Site Amenities** - RockCurb and wall panels are available to complement your project design. Contact Hydrotech for specific colors and finishes.

## SINGLE SOURCE WARRANTY

Hydrotech's Ultimate Assembly® warranty provides an owner with "peace of mind" knowing the membrane protecting their structure has a proven performance record of more than 50 years. In fact, this single source warranty covers every component of the assembly provided by Hydrotech, from the membrane up through the pavers. It's a warranty only Hydrotech can offer and peace of mind only Hydrotech can give.

The warranty includes:

- · Watertightness of membrane
- Thermal retention of the insulation
- Wind uplift resistance
- Performance of the pavers
- · Removal and replacement of overburden if a warranted repair to the membrane is needed

Please contact Hydrotech for specific warranty terms and conditions.

#### TYPICAL INSTALLATIONS

Plazas and Promenades - A plaza finished with architectural pavers can greatly improve the look of a building exterior. As these areas often enclose occupied space or parking, watertightness is critical – which is why the Ultimate Assembly has been installed on thousands of plazas nationwide.

**Roofs and Terraces** - Few roofing systems can match the integrity and beauty of The Ultimate Assembly. Since the layers above the MM6125® waterproofing act as a shield against UV rays and harsh weather, the building structure is well protected. With architectural pavers as the finished surface, the design process gains creative

flexibility, while the structure benefits from a high performance overburden.

**Ultimate Assembly - Concrete Pavers Architectural Pavers** Fixed height Pedestal or Tabs STYROFOAM" Hydroflex® Monolithic Membrane 6125® Surface Conditioner Approved Substrate

(typical components depicted)



\*Please refer to Hydrotech's Wood Tile Brochure for applicability, specific applications and conditions

**Renovation** - Replacing old plaza surfaces is a task no owner or developer looks forward to. So when the time does arrive, few care to risk a system with a short or inconsistent performance record. The Ultimate Assembly removes that element of mystery with our time tested MM6125 waterproofing, insulation and drainage (if needed), topped with exceptionally durable architectural pavers – and of course, it's warranted by American Hydrotech, Inc. Thanks to the open joint configuration, maintenance of the entire assembly is remarkably simple.

High Wind Applications - Based on the structures wind design requirements, pavers may be required at roof corners, the perimeter or over the entire roof surface. Concrete pavers can provide the necessary weight and wind resistance that typical stone roof ballast can't. However, in some cases a building's wind design may require something more. Hanover developed the Guardian Paver System for these high wind conditions. The Guardian Paver System is made up of a unique 3 piece pedestal and a specially shaped paver that lock together, forming a monolithic open joint paver surface across the roof, for excellent high wind uplift resistance. Contact Hydrotech for additional information.



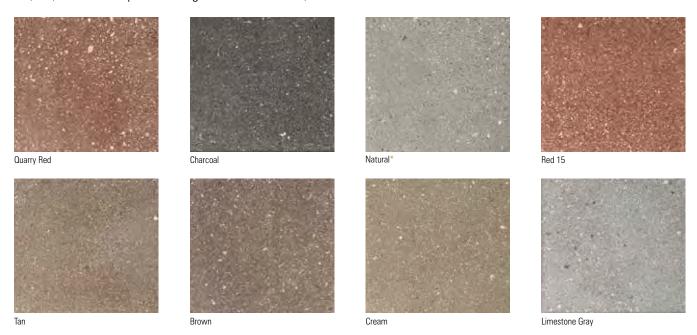
Baptist East Hospital - Louisville, KY



Rich Tree Open Kitchens - Skokie, II.

#### STANDARD FINISHES AND COLORS

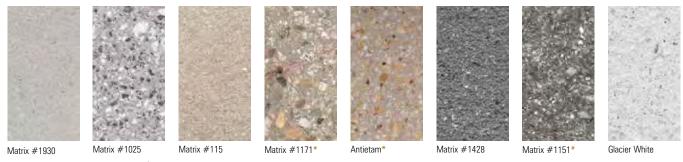
Hanover® pavers, as marketed by Hydrotech, are the perfect finish to the Ultimate Assembly®. With a high compressive and flexural strength, along with an unmatched combination of colors and finishes, designers and owners can be confident in their choice of the Ultimate Assembly. The eight colors below represent the stable of standard colors available in all finishes. Standard nominal sizes are 12", 18", 24", 30" and 36" square. Rectangular and custom sizes, colors and finishes are also available.



<sup>\*</sup>Natural color Prest® Pavers have a tendency to vary in color within any given shipment. It may vary in shade from gray/buff to light gray, and even to a darker gray. This variance should be expected and considered normal for the Natural color Prest® Pavers.

# **CUSTOM COLORS - TUDOR FINISH**

The blends shown below were all developed by Hanover to address a specific project requirement. Additional custom blending is available by special order when quantities permit. Hanover's Tudor® finish is a specialized texture designed to reveal the aggregates naturally. It gives the surface a "granite-like" appearance which adds slip resistant qualities to the paver.

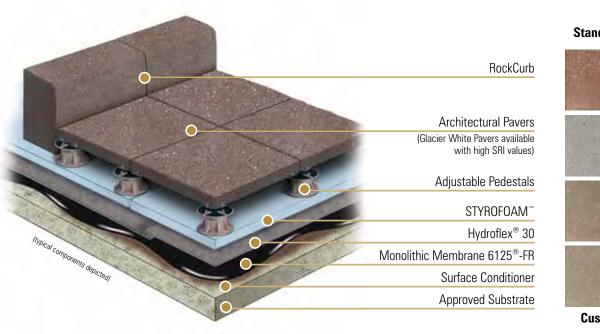


\*Colors are available with a Heavy Tudor® finish only.

The Ultimate Assembly is not intended for vehicular traffic.



#### **ULTIMATE ASSEMBLY**



# **Standard Paver Colors**



Custom Colors Also Available

Hanover® pavers installed on fixed-height or adjustable pedestals can convert sloped decks to dead level usable roof and plaza areas. This open joint assembly accommodates drainage by allowing water to flow beneath the pavers unobstructed to the drains.

Architectural pavers are available in a number of standard sizes, colors and finishes. The Glacier White paver is the perfect choice in rooftop applications where a LEED™ compliant high SRI value may be desired (see page 7). Custom colors and finishes to meet your specific needs are also available.

# **Assembly Benefits:**

- Free draining no ponding water on paver surface
- Level paver installation doesn't have to follow the slope of the structure
- Easy access to roof/plaza components below (if needed)
- Future flexibility if roof or plaza design changes

## **Assembly Features:**

- Multiple paver sizes are available, including oversized pavers
- Many standard paver colors and finishes available
- Custom colors available upon request
- A high reflectance (SRI) paver, Hanover Glacier White is available
- For high-wind situations the Guardian paver system is available
- The typical weight of a 2' x 2' x 2" paver is 25 lbs./S.F.



First Citizens - Raleigh, NC



UNC Charlotte Football Stadium - Charlotte, NC

#### **GLACIER WHITE & LEED**

Hanover® can provide pavers with high reflectance and emittance values that combine to provide a Solar Reflectance Index (SRI) meeting LEED requirements.

- 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.

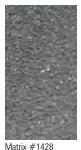
The Solar Reflectance Index (SRI) is a value that incorporates solar reflectance and emittance as a single value. Hanover's Glacier White pavers provide SRI values as follows; Tudor - 85, Finish 13 - 81, Diamond Finish - 81.



Hanover's Glacier White with Tudor® finish has a reflectance value of 0.69, emittance value of 0.94 and an SRI of 85.

## **TUDOR #13 FINISH**

Hanover® Pavers are also produced in a Tudor #13 finish which gives a delicate "sandstone" texture. Tudor #13 is available in all the standard colors. A few of the available custom colors are shown below. Other custom colors can be ordered when quantities permit.









Matrix #2127 Matrix #19

## **SLATEFACE FINISH**

The SlateFace® Paver has been designed to reproduce the texture, color and appearance of natural slate. Stocked in BlueStone and Tennessee Flagstone colors, the irregular top surface was taken from actual slate faced stone. SlateFace® Pavers feature a square edge.



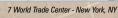


BlueStone (#M2374)

Tennessee Flagstone (#M2343)

Please Note: The photos shown are a representation of possible color blend and texture. The actual product may vary. A natural effect can be achieved by rotating the direction of the pavers during installation,



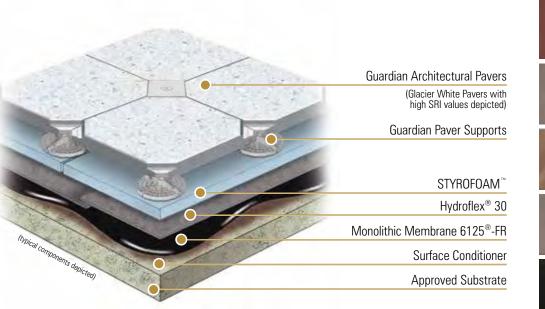


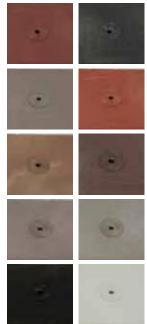


City Creek Center - Salt Lake City, UT

#### **GUARDIAN PAVER SYSTEM**

#### **Standard Accessory Colors**

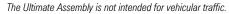




High wind and special site conditions require a paver assembly up to the task. Hanover Guardian Paver Assembly is ideal for the most severe conditions, which require an elevated roof paver pedestal system. This system will provide a monolithic interlocked paver surface which provides high wind uplift resistance. Guardian is made up of a unique 3 piece pedestal and a shaped paver that, together, will "lock down" and unitize the entire roof paver surface.

#### **Product Features:**

- Specially designed for wind uplift resistance.
- Pavers are interlocked creating a monolithic roof surface.
- Compatible with Elevator Pedestals.
- 18" x 36", 24" x 24" and 30" x 30" nominal sizes available.
- An oversized Guardian® Paver at 24" x 36" is also available and scored with a false joint and corner impressions at the 23 1/2" dimension. This paver should be used where a smaller piece would typically be required. (depicted at right)
- 18" x 36", 24" x 24" and 24" x 36" available in 2" and 3" thickness, 30" x 30" is only available in 2" thickness.





Trump International Hotel & Tower - Chicago, IL









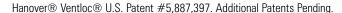
Oregon Health & Science University - Collaborative Life Sciences Building - Portland, OR

#### VENTLOC PAVERS

Hanover® Ventloc® pavers can provide superior wind uplift resistance and have been tested at wind speeds up to 130 mph. Designed with tongue and groove sides and a patented venting edge that enables the rapid transfer of over-payer pressures

to under-paver pressures (known as pressure equalization). This unique combination results in a significant enhancement of lightweight paver system wind uplift resistance. The interlocking tongue and groove design creates a surface in which an individual paver is no longer the weakest link.

As a ballast only option, and sized at 11 3/4" x 17 5/8" x 2", Ventloc® is available in all of Hanover's standard colors as well as a Tudor® finish. Additional colors are available when quantities permit. When reflective properties are important, Glacier White is also available.





Shown in Glacier White with Natural Finish

#### CHESAPEAKE COLLECTION

Hanover® Chesapeake pavers have been infused with sea shells to create a unique coastal paver collection. A wide range of colors, textures and sizes are available. All images depict a Ground Tudor Finish.

















**GRANITE PAVERS** 

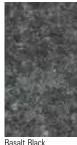
Hanover® also offers a line of granite pavers fabricated to the highest standards. Careful selection of raw materials and production of pavers made with the closest tolerances in the industry make Hanover® Granite Pavers a natural choice for all types of applications. In order to respond to those installations requiring immediate paver delivery, Hanover® stocks six colors of granite in a 23 1/2" x 23 1/2" x 2" size. These payers will also have a thickness tolerance of (±) 1/16". The stocked Granite Pavers are available with a Thermal/Flamed finish. Additional custom colors, sizes and finishes are available on special order.













Ashford White

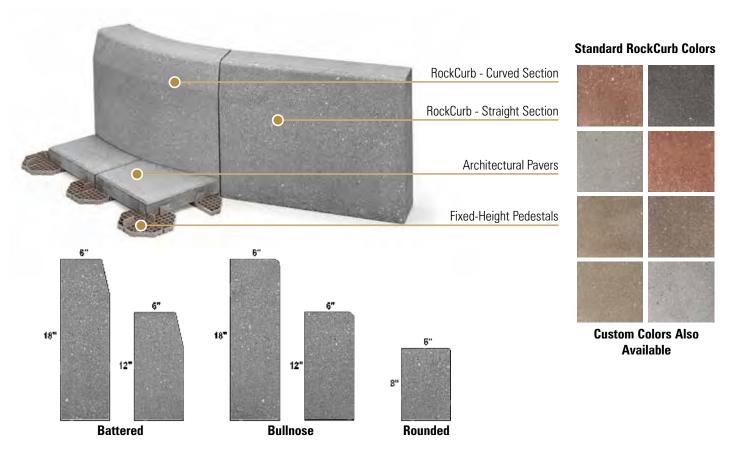




City View Condos - Chicago, IL

Shell Woodcreek Campus - Houston, TX

#### **ULTIMATE ASSEMBLY - ROCKCURB**



RockCurbs can be used to divide landscaped areas from hardscaped areas on a roof or plaza. RockCurb is hydraulically pressed concrete with a minimum strength of 8,500 psf. It comes in the standard Tudor finish and eight standard colors, complementing the standard paver finish and color. The Tudor finish appears on the top and front sides only. The end face and back side is left unfinished.

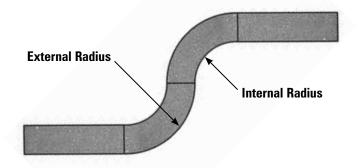
RockCurbs are available in a variety of configurations. Each piece is 6" thick, 36" long and comes in 8", 12" and 18" heights. The 18" RockCurb is available in battered edge only. The 8" is available with a slightly rounded edge only.

#### **Product Features:**

- 6" thick
- 8", 12" and 18" height
- 36" length
- 15° battered, bull nose and rounded profiles available
- Standard and custom colors available
- · Glacier White RockCurbs available with high SRI values.

RockCurb is also available in a limited number of height and radius sections as follows:

- 12" high 5, 10, 15, 20 and 30 foot external radius length
- 18" high 3, 6, 8, 10, 15, 20 and 30 foot external radius length
- 18" high 6, 15, 20 and 30 foot internal radius length





Resurrection Medical Center - Chicago, IL



Penn State University - Millennium Science Center - State College, PA

#### THE ULTIMATE ASSEMBLY - SPECIAL PRODUCTS

The Ultimate Assembly can accommodate almost any condition with an array of specialty products manufactured by Hanover®.

- Ballast Pavers Lightweight and Standard Walkway pavers are available in a natural color with a diamond finish. The Diamond payer finish is not recommended if aesthetics are important. Contact Hydrotech for sizes, thicknesses and weights.
- Rectilinear Pavers Available in four nominal sizes: 12" x 24". 12" x 36". 12" x 48" and 24" x 48" with thicknesses ranging from 2"- 3" and a beveled edge. Produced with integral spacer lugs, they can be laid individually or combined with other Hanover Pavers.
- Detectable Warning Pavers Manufactured in accordance with the requirements set forth in the American's Disabilities Act (ADA), Hanover's Detectable Warning Paver is fabricated with a detectable texture applied to the surface of the paver. The Tudor finish is available for special order when quantities permit.
- Pedestal Pavers are a unique alternative to the typical pedestal support system incorporating integral concrete feet on all four corners. A perfect solution when a ballast paver on a PMR Assembly is needed.
- Drainage Pavers are available upon request. They can be manufactured with holes or slots depending on the project requirements.
- Pool Edge Profile pavers are available in 4 edge styles. Each pool edge profile payer is 2" thick. By integrating standard payers on pedestals with pool edge profiles, designers have the opportunity to create a space where individual units can easily be lifted for underground repairs while maintaining a consistent design for the pool area.

**Ballast Pavers** 



Color: Natural

Finish: Diamond

Rectilinear Pavers



Detectable Warning







Pedestal Pavers



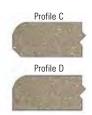
Drainage Pavers (slots and holes)





Pool Edge Profiles











Duke University French Science Center - Durham, NC

### THE ULTIMATE ASSEMBLY - ACCESSORIES

The Ultimate Assembly can be installed using a variety of accessories.

Joint spacers are available when fixed-height pedestals will not or cannot be used (i.e. due to height limitations). Plastic cruciform or "T" spacers are available to maintain a 1/8" joint between pavers. Spacers would typically be used in conjunction with 1/16" and/or 1/8" leveling shims to elevate pavers off the substrate from 1/16"-1/4".

Hanover® flexible fixed-height pedestals are square, 1/4" thick EPDM rubber support pedestals with integral 1/8" joint spacer tabs. Flexible fixed-height pedestals can be used singly or combined with 1/16" and/or 1/8" leveling shims, made of the same flexible EPDM rubber, to elevate pavers off the substrate from 1/4"-5/8".

Hanover® fixed-height and High-Tab® fixed-height pedestals are octagonal, 5/8" high support pedestals composed of high density polyethylene. Both types of pedestals have 1/8" integral joint spacer tabs with taller tabs on High-Tab® units. Fixed-height pedestals can be used singly, stacked together or combined with 1/16" and/or 1/8" leveling shims, made of flexible rubber, to elevate pavers off the substrate from 5/8"-2".

The Hanover Elevator<sup>™</sup> adjustable pedestal system consists of a series of threaded base and top pedestal units composed of high density polypropylene, which can be combined with a threaded Coupler also of high density polypropylene. The top pedestal units have integral 1/8" spacing tabs and inset rubber pads. The top pedestal units come with either 4 spacing tabs for typically "stacked bond" installations or 3 spacing tabs for "running bond" or otherwise offset joint installations. EdgeFinder To is a new accessory that, when installed on the "no tab" Elevator top plate, provides an edge restraint for the pavers that helps prevent the pavers from "walking" and resulting in a more solid feel when transitioning from a paved area to a grass area or planting bed.

The Elevator adjustable pedestal system is designed for use with Hydrotech supplied Hanover Architectural Pavers to provide a loose-laid, open joint paver installation. Combinations of Elevator pedestals and Couplers can provide elevation of the pavers off the substrate from 2 to 16 inches, to provide adequate space for utilities to run beneath the paver surface or to make up for differences in height between the structural deck and the finished elevation.



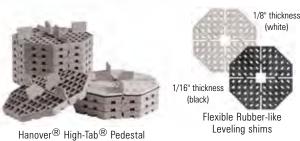
Jacksonville Library - Jacksonville, FL Photo Credit: Hanover Architectural Pavers



Hanover® EPDM Pedestal

and Leveling Shims

Stand alone use only



with Flexible Leveling Shims



3" Top





4" Top



4" Base & Top

4 3/4"-7 3/4"

Please Note: All units are packaged separately. 50 pieces per box



3" Base, 4" Top & 4" Base, 4" Top & Coupler Coupler 7 3/4"-10"

4" Base, 4" Top & 2 Coupler 12"-16"



University of Texas - MD Anderson Cancer Center - Houston, TX

# **ULTIMATE ASSEMBLY - ACCESSORIES**

The Hanover Compensator system consists of specially designed tapered discs made of high density plastic. Compensators allow the installation of a level paver surface over a sloped substrate.

One Compensator can level a slope of 1/8 inch per foot. Two or more Compensators stacked together and aligned properly can level slopes from 5/32 inch to 1/2 inch per foot.

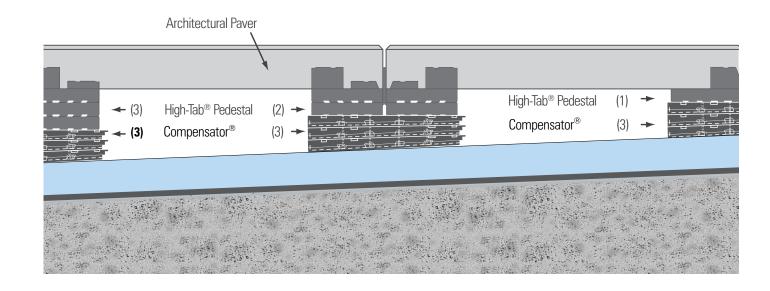
Hanover Fixed Height and Elevator Pedestals must be placed on top of the final Compensator assembly.





Hanover<sup>®</sup> Compensator<sup>®</sup>

Elevator® on Compensators®





HIHHH

550 West Adams - Chicago, IL

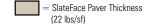
Durham Center - Durham, NC

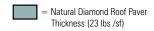
# **ULTIMATE ASSEMBLY - PAVER PRODUCT DATA**

st® Paver Sizes								
	13/411	113/16"	2"	21/411	21/211	2 3/4"	3"	4"
11 3/4" x 11 3/4"	X	Х	Х	Х	X	X	Х	
11 3/4" x 17 5/8"	Х		Х	Х	Х	Х	Х	
11 7/8" x 11 7/8"			X	X	X	X	X	
11 15/16" x 11 15/16"			X	X	X	Χ	X	
14 7/8" x 14 7/8"			Х	Х	X	Х	Х	
15 7/8" x 15 7/8"			X	X	X	X	X	
17 5/8" x 17 5/8"	X	X	X	Х	X	X	X	Х
17 7/8" x 17 7/8"			Χ	X	X	Χ	X	
17 5/8" x 23 1/2"	X	X	X	Х	X	Х	X	
17 5/8" x 35 3/8"			X	X	X	Χ	X	
23 1/2" x 23 1/2"	X	X	X	X	X	Χ	X	Х
23 7/8" x 23 7/8"			X	X	X	Χ	X	
23 1/2" x 29 1/2"		Χ	X	X	X	Χ	X	
23 1/2" x 35 3/8"	X	X	X	Х	X	Х	X	
23 7/8" x 35 7/8"			Х	Х	X	Х	Х	
29 7/8" x 29 7/8"			X	Х	Х	Х	Х	
35 3/4" x 35 3/4"				Х	Х	Х	Х	
35 3/8" x 35 3/8"					Х	Х	Х	
35 7/8" x 35 7/8"					Х			

Miscellaneous Roof Paver Sizes					
Rectilinear Pavers	2"	2 1/411	2 1/2"	2 3/411	3"
11 3/4" x 23 1/2"	Х	Х	Х	Х	X
11 3/4" x 35 3/8"	Х	Х	Х	Х	Х
11 3/4" x 47 1/8"			Х		
23 1/2" x 47 1/8"			Х		Х
Guardian® Pavers					
17 5/8" x 35 3/8" (with or without score line)	Х				Х
23 1/2" x 23 1/2"	X				Χ
23 1/2" x 35 3/8" (with or without score line)	Χ				Χ
29 3/4" x 29 3/4"	X				
Ventloc® Pavers: Standard weight =16 lbs/	sf, Heavywe	ight = 20 lb	s/sf		
11 3/4" x 17 5/8"	Х				
Pedestal® Paver: 22 lbs/sf					
23 1/2" x 23 1/2"		Х			









#### **Relative Strengths** at 2" Thickness

Compressive: 8,500 psi Absorption: less than 5% Density: 155 lbs./cu ft. Flexural: 1,100 psi





Western Carolina University - School of Gerontology - Cullowhee, NC

Southwest Area High School - Chicago, IL

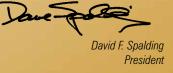


Trump International Hotel - Chicago, IL

Much has changed in our industry since I began my career over 50 years ago, but the values that underpin our success have not: integrity, quality, trust, accountability and relationships based on respect for each other. At American Hydrotech we have talented and energetic people who have a passion for their work and who are committed to providing value at a fair price.

In the 1980s Hydrotech recognized a need in the marketplace for architects and designers to have an architectural finish quality paver and watertightness on a variety of deck configurations backed by a single-source warranty. The Ultimate Assembly® was developed to address this need and expand the intrinsic benefit of the usable space solutions.

Our thanks to all of you who have supported us over this great journey. Our goal is to continue to serve our customers with creativity and consistency to generate growth across all channels. May we assist you on your next project? Please give us a call.







St. Regis Hotel - Park City, UT



10 Rittenhouse Square - Philadelphia, PA



#### **Hydrotech Membrane Corporation**

10,951 Parkway, Ville D'Anjou, Quebec H1J 1S1 800.361.8924; 514.353.6000 FAX 514.354.6649 en.hydrotechmembrane.ca

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2019-BR-1-ULT-DY

Cover Photo - Florida State University - Life Sciences Center - Tallahassee, FL

STYROFOAM is a registered trademark of DuPont

The management system governing the manufacture of MM6125 is ISO 9001:2015 certified