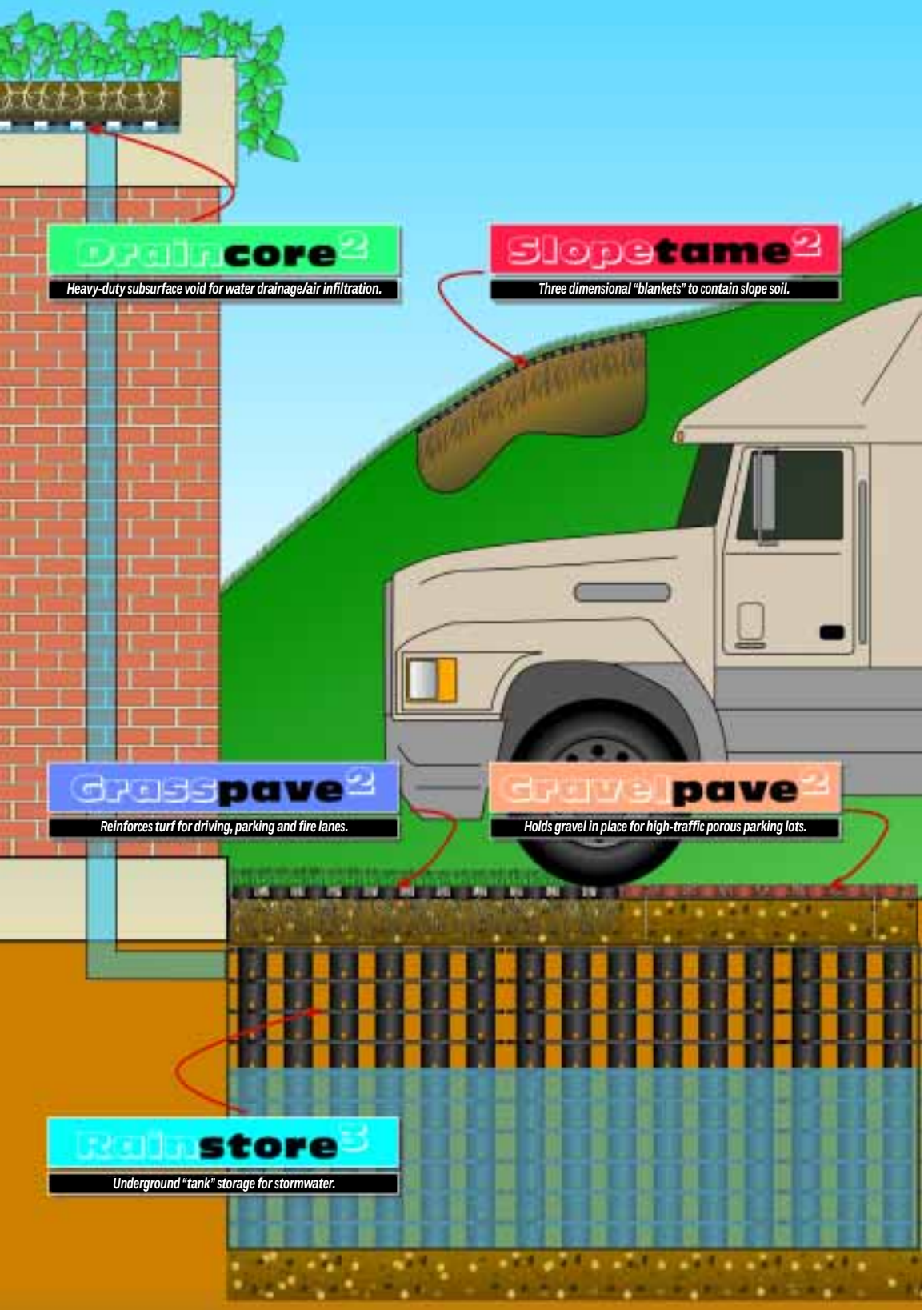
Total Stormwater Management



Invisible Structures, Inc.

Product Capabilities

Reduce Runoff Volume and Rate

•

Conserve and Protect Natural Areas

•

Reduce and Treat Stormwater Pollutants

•

Protect Slopes and Channels from Erosion

•

Allow Multiple Surface Uses

•

Reduce Radiated and Reflected Solar Heat

Manufactured by:
Invisible Structures, Inc.
20100 E. 35th Drive
Aurora, CO 80011-8160
1-800-233-1510
303-373-1234
Fax 303-373-1223
www.invisiblestructures.com

Grasspave²

Reinforces turf for driving, parking, and fire lanes.

A *Orange Bowl, Miami FL—Stormwater percolates into Grasspave² parking bays.*
B *Grasspave² System Components—sandy gravel base course at 95% compaction, Grasspave² filled with sand, and grass seed or sod cover.*
C *Westfarms Mall, West Hartford, CT—multi-use overflow parking.*
D *Fire Truck Access—emergency access over high strength grass since 1982.*

CSI No. 02795

Grasspave² is a structure which provides incredible load bearing strength while protecting vegetation root systems from deadly compaction. High void spaces within the entire cross-section enable excellent root development, and storage capacity for rainfall from storm events. Stormwater is slowed in movement through and across Grasspave² surfaces, which deposits suspended sediment and increases time to discharge. Suspended pollutants and moderate amounts of engine oils are consumed by active soil bacteria, which are aided by the system's excellent oxygen exchange capacity.

Applications Include:

- Overflow Parking
- Driveways
- On-street Parking
- Emergency Access
- Firelanes
- Employee Parking
- Pedestrian Access
- Infiltration Basins
- Event Parking
- Utility Access
- Handicap Parking

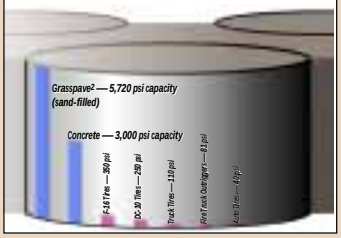
Functions Include:

- Pervious Load Bearing Surface
- Stormwater Pollution Filtration and Treatment
- Airborne Dust Capture and Retention
- Heat Energy Reflection Reduction, "Cool" Surface
- Tree Growth within Parking Areas

Patent number 5,250,340

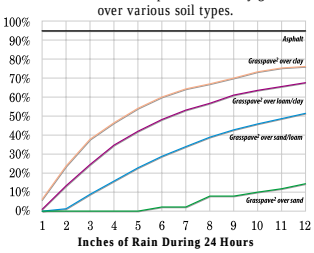
Lab Compression Test Results

Load-bearing capacity of sand-filled Grasspave² rings vs concrete, and vehicle loading examples



Runoff Comparison Chart

Runoff coefficients, Grasspave² and sandy gravel base over various soil types.



Calculations include Grasspave² placed over 6" of sandy gravel base course, laid over native soils indicated.

Gravelpave²

Holds gravel in place for high-traffic porous parking lots.

A *Grand Canyon Trust, Flagstaff, AZ—30-car parking for employees and visitors.*
B *Gravelpave² System Components—filter fabric backing and rings contain 3/16" minus sharp gravel with minimal dust.*
C *Residential Drive and Walk, Savannah, GA—Meets ADA surface criteria .*
D *Frostburg Univ. Dorm Parking, MD—Prevents pollutants from entering adjacent creek.*

CSI No. 02795

Gravelpave² is a structure to provide heavy load bearing support and true containment of gravel to create a porous pavement surface with unlimited traffic volume and/or duration time for parking. When used with a proper porous base course material, Gravelpave² can provide a void space of 35% for storage volume of rainfall during rain events. For example, an 8" deep cross-section would store 2.8" of rain. Although bacteria concentrations are lower than with Grasspave², polluted runoff and vehicle drippings are consumed prior to reaching the water table.

Applications Include:

- All Parking Aisles and Bays
- Automobile and Truck Storage Yards
- Loading Dock Areas
- Boat Ramps
- Infiltration Basins
- Handicap Parking Spaces
- All Service and Access Drives
- Trails for Multiple Uses
- Outdoor Bulk Storage Areas (Lumber, Steel, etc.)
- High-use Pedestrian Areas

Functions Include:

- Pervious Load Bearing Surface – Unlimited Traffic
- Stormwater Pollution Filtration and Treatment
- Heat Energy Reflection Reduction, "Cool" Surface
- Tree Growth within Parking Areas

Patent number 5,250,340

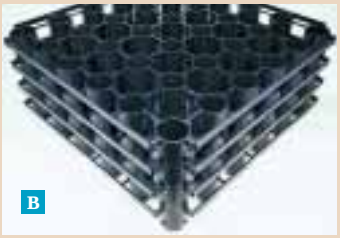
Fill	% Passing	Sieve Size
	100	#4 Screen
	80	#8 Screen
	50	#16 Screen
	30	#30 Screen
	15	#50 Screen
	5	#100 Screen

Base	% Passing	Sieve Size
	100	3/4"
	85	3/8"
	60	#4
	30	#40
	5	#200

Burger King, Henderson, NC—50% pervious parking provides infiltration from asphalt runoff.

Rainstore^3

Underground "tank" storage for stormwater.



A *Multnomah Elementary School, Los Angeles, CA—storage basin to irrigate grass play area.*
B *Four Layer Rainstore^3 Structure—each unit 0.1 cubic meter (40″×40″×4″) stackable columns.*
C *LDS Church, Boise, ID—vegetated swale at low end of parking lot to store runoff and exfiltrate to soils below.*
D *2.5m (8.2′) Depth Cell—H-25 load capacity allows deep storage under parking lots with up to 94% efficiency.*

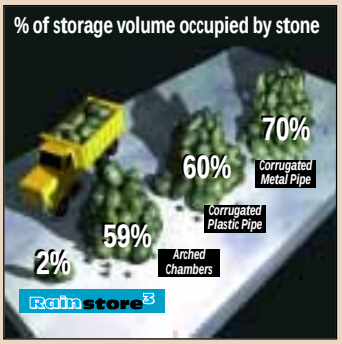
CSI No. 02660

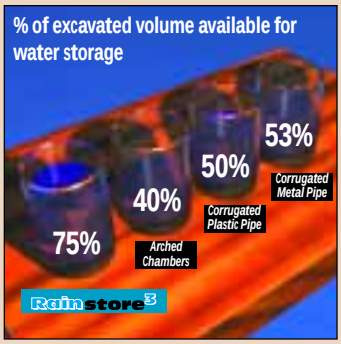
Rainstore^3 is a modular and stackable structure designed to support heavy loads up to H-25, with 12″ minimum road base cover. 94% void space creates an efficient storage Wet Vault below parking or landscaped surfaces with minimal excavation. Detention and retention can be accomplished using geotextile fabrics, or waterproof liners to wrap the structure. Inlets, outlets, pump access, and inspection ports are readily incorporated. Rainstore^3 can be installed in layers from 4 inches to 8.2 feet, accommodating high water table or shallow rock conditions.

Applications Include:
- Subsurface Water Storage – Detention, Retention
- Water Reuse and Recycling
- Potable (Treated) Water Storage
- Process Water Storage—Heating and Cooling
- Combined Water Conveyance and Storage
- Energy Dissipation at Pipe Outfall
- Septic Leach Fields and Wetlands Treatment
- Dry Wells, Wet Vaults, and Cisterns

Benefits Include:
- Heavy Load Capacity Above Chamber
- Simple and Low Cost Liner Materials
- Maximum Excavation to Storage Efficiency
- Rapid Installation
- Modular for Design Flexibility
- Large Surface Area for Rapid Storage Exfiltration

Rainstore^3 U.S. and International Patents Pending





Slopetame^2

Three-dimensional "blankets" to contain slope soil.

A *Erosion Control and Energy Dissipation—Vegetated bio-swale to collect soil erosion.*
B *Slopetame^2 Reinforcement Matrix—can be prevegetated and pinned onto slopes.*
C *Merrill Lynch Drainage Swale, Denver, CO—vegetated with seed mix of 27 different plants.*
D *Total Systems, Inc., Chattahoochee River, GA—Slopetame^2 and Bermuda grasses protect this slope from floods several times per year.*

CSI No. 02370

Slopetame^2 is a permanent three-dimensional reinforcement and stabilization matrix for steep vegetated slopes and channel banks. The integral rings, bars, grid, and fabric act to contain upper root zone soils, allow vegetation roots to easily pass through, and minimize movement and loss by rain or flowing water. Slopetame^2 is shipped in roll form, with connections allowing rolls to be fastened together forming one large continuous mat covering the entire face of long slopes. Rolls can also be pre-vegetated by vibrating sod into rings (or growing custom plant mixes in mat by contract), to allow mats to be placed and anchored to slopes with established root systems, able to withstand intense rainfall or water flow immediately. Holes can be cut in the mat to provide for large containerized or balled plant material.

Applications Include:
- Steep Slope Erosion Control
- Channel Energy Dissipation
- Immediate Slope Protection (with pre-vegetation)
- Channel Bank Stabilization
- Infiltration Trenches
- Vegetated Swales and Strips

Patent number 5,250,340

Invisible Structures — Standard Product Roll Sizes
Grasspave^2, Gravelpave^2, Slopetame^2, Draincore^2

	Width		Length		Diameter		Area		Weight	
Model	m	ft	m	ft	m	ft	m^2	ft^2	kg	lbs
1010	1	3.3	10	32.8	0.5	1.7	10	108	19	41
1020	1	3.3	20	65.6	0.8	2.7	20	215	37	82
1050	1	3.3	50	164	1.2	4	50	538	93	205
1520	1.5	4.9	20	65.6	0.8	2.7	30	323	56	123
1550*	1.5	4.9	50	164	1.2	4	75	807	139	308
2020	2	6.6	20	65.6	0.8	2.7	40	430	75	164
2050*	2	6.6	50	164	1.2	4	100	1,076	186	410
2520	2.5	8.2	20	65.6	0.8	2.7	50	538	93	205
2550*	2.5	8.2	50	164	1.2	4	125	1,346	233	513

* Roll sizes marked with asterisks should be installed by lifting machines only. All other rolls can be installed manually (2 people advised).

Draincore²

Heavy-duty subsurface void for water drainage/air infiltration.

A *Planter Drainage—cleans and moves water while providing insulating air layer from extreme cold weather or hot sun.*
B *Draincore² Cut-away View—showing "AIRFIELD" sports turf system, also effective as landfill cap drainage control.*
C *Infiltration Trench Detail—allows rapid influx of surface and subsurface water.*
D *Hydraulic Lab Test Flows—Colorado State University testing = 58 gpm per foot width.*

CSI No. 02622

Draincore² is a high volume drainage layer capable of withstanding heavy loads in direct contact. This drainage core is wrapped in a geotextile fabric, which allows water to enter from any direction, with the rings placed vertically or horizontally. Water can flow between rings in either vertical or lateral directions simultaneously. Flow volumes can be matched with multiple layer configurations.

Applications Include:

- Infiltration Basin Collector and Conveyance
- Cutoff Drain for Surface and Subsurface Flow
- Constructed Wetlands
- Foundation and Retaining Wall Drainage
- Roof Deck and Planter Drainage
- Sports Turf Drainage System
- Landfill Cap and/or Drainage Construction

Patent number 5,848,856

www.invisiblestructures.com

Grasspave²
Data Sheet | Tech Specs | Design Details | Photos & Videos | Large Rolls | Roll Sizes | Articles/Letters | Material Safety | Hydrogrow | Brochure | Grasspave²

Gravelpave²
Tech Specs | Design Details | Photos & Videos | Installation | Roll Sizes | Brochure | Gravelpave²

Rainstore³
Design Details | Sizes | Brochure | Rainstore³

Slopetame²
Data Sheet | Tech Specs | Design Details | Roll Sizes | Slopetame²

Draincore²
Home | Data Sheet | Photos | Draincore²

Surefoot⁴
Tech Specs | Installation | Colors | Photos | Roll Sizes | Brochure | Surefoot⁴

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History | Our Team | Location | Facility | Company Profile

Media & Tech Specs
Brochures | Tech Specs | Design Details | Product Info | Slide Show | Free Video

Company Products 100% Recycled Plastic

Recycling is at the core of our manufacturing process. We collect plastic in the form of 55-gallon drums, bread trays, shopping carts, milk jugs, road construction markers, and many other items. Our 14-foot-high granulator turns these plastic items into resin chips shown above. Then our injection molding machines melt and mold the resin into our products. Manufacturing waste is recycled as well. Instead of putting more plastic into landfills, we're encouraging a greater use of recycled products for improving the environment with porous paving, erosion control, and water collection.

See our nearest dealer

Other Products

Surefoot⁴
Livestock footing and flooring system

Beachrings²
Portable mats for wheelchair access on beaches.