

# INSTALLATION AND MAINTENANCE



## TABLE OF CONTENTS

### INSTALLATION

p2: Site Preparation  
Tools/Materials

p3: Subgrade  
Porous Base Course

p4: Hydrogrow  
Laying Grasspave2  
Delineators  
Sandfill  
Grass

### MAINTENANCE

p5: Growth Waiting Period  
Growth Period Maintenance  
Regular Maintenance  
Extreme Weather Maintenance

### TROUBLESHOOTING

p6: Bare Spots/Grass Growth Issues  
Poor Surface Drainage  
Oil / Antifreeze Spills  
Exposed Rings

p7: Ruts  
Thatch Removal  
Utility Access  
Warranty

This document is a reference guide for installing and maintaining your Grasspave2 system. Please follow the instructions in this guide to create and maintain a properly functioning system. Lifetime warranty coverage is contingent upon proper installation.



## SITE PREPARATION

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### ADJACENT PAVING COMPLETED

All adjacent paving must be installed prior to the installation of the Grasspave2 system. (Pavers may be installed directly on sand-filled Grasspave2, which will prevent cracking, tipping and replacements.)

### AMBIENT TEMPERATURE

We recommend a minimum installation temperature of 55 degrees F (13 degrees C.) Do not use frozen or ice-covered materials. Do not build on a frozen, wet, or muddy subgrade.

### APPROVAL

All fire lane installations require fire department approval prior to installation of the base course. The depth must meet their specifications.

### STORAGE

If Grasspave2 must be stored prior to installation, standing the roll upright and covering it to protect from the elements is recommended.

## TOOLS/MATERIALS

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### BASE COURSE MATERIALS

Ensure the mix of gravel and sand corresponds to our technical specifications, detailed in the Porous Base Course section of this guide.

### BRUSH/BROOM

A stiff-bristled wide floor broom works well to evenly distribute the sand.

### COMPACTOR

Any base course for vehicular applications must be compacted to 95 Proctor.

### CONCRETE SAND

Clean, uniform sand is required to fill the Grasspave2 rings.

### EXCAVATION MATERIALS

To ensure proper base course depth.

### GRASS

Use grass seed or sod that is a hearty species for the climate. If using sod, thin-cut and types grown in sandy-loam is preferred.

### GRASSPAVE2

Recycled HDPE ring-on-grid porous paving rolls in sizes 1010 (107 sq ft.) and 2020 (430 sq ft.).

### HYDROGROW

1 lb. per 107 sq ft, provided with the rolls of Grasspave2.

### NUT DRIVER

Optional tool to speed up the snap-fit connections.

### PRUNING SHEARS

Trim edges and cut curves to custom fit the Grasspave2 system. Even rings on the edges can be cut to fit.

### ROTARY SPREADER (LARGE INSTALLATIONS) OR BUCKET (SMALL INSTALLATIONS)

To spread out the Hydrogrow included with your order.

**WARNING: Do not drive, park, walk on, or otherwise use** the Grasspave2 system for two mowing cycles (approx. 3 – 4 weeks) or until the grass roots have been established. Emergency vehicles may access the area but damage to any unestablished grass may need to be replaced.

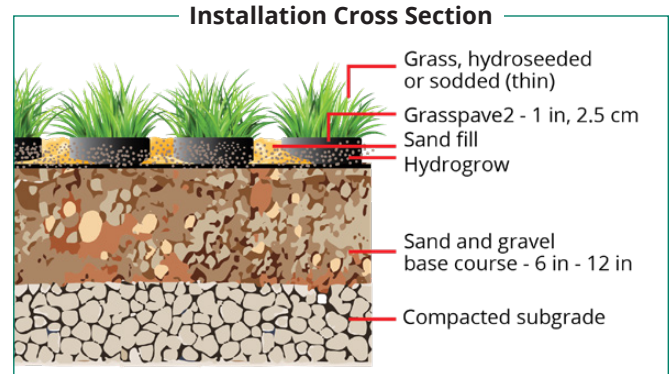
## SUBGRADE

- Subgrade and soil conditions should be examined prior to installation. The existing soil should not “give way” as with a clay or other weak soil. A geotextile or compaction may be required for stabilization. If these circumstances exist, consult with a landscape professional.
- Excavate the area accounting for ½” soil + 1” of product + the number of inches appropriate for your base course. Base course depth is determined based on application. Here are some recommended depths as a guide:

All depths require an additional +1” for product + ½” sod soil

Pedestrian	1” minimum*
Golf Cart	2” minimum*
Car/SUV	6” minimum*
Trucks	8” minimum*
Fire Trucks	12” minimum*
H2O Loading	12” minimum*

\*Increase up to 4” to optimize drainage in heavy rain areas



- Confirm all adjoining trenches, drains, and irrigation connections are operational and clear of debris.
- Grade subgrade to a uniform level and ensure it does not exceed the following slopes:

Fire Lanes	5% maximum
Cars and Trucks	8% maximum
Golf Carts, Trails	15 – 20%

## POROUS BASE COURSE

Once a satisfactory subbase has been confirmed, installation of the porous base course can begin.

- Coordinate base installation with any subdrains and irrigation lines. (For design details, visit [invisiblestructures.com](http://invisiblestructures.com).)
- Pour porous base course material meeting either the following sieve breakdown:
 

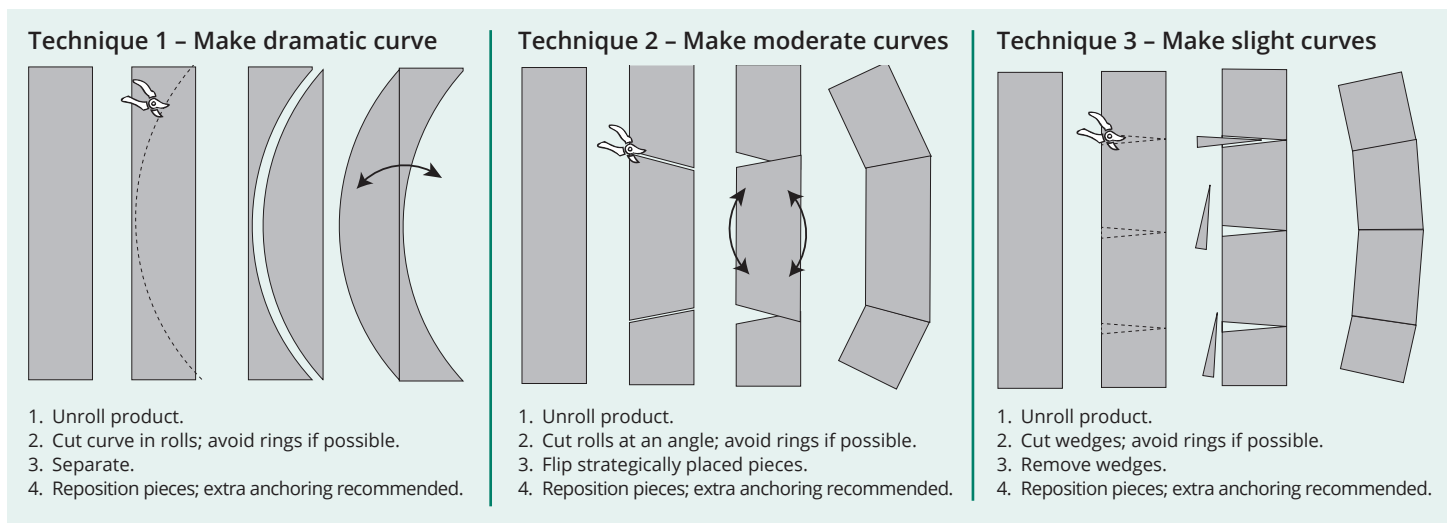
1”	100% passing
¾”	80-100% passing
⅜”	60-80% passing
#4	40-60% passing
#10	25-40% passing
#40	5-25% passing
#200	0-5% passing
- Alternatively, combine three parts #57 stone with one part concrete sand.
- Ensure the base course material is nearly neutral in pH (range from 6.5 – 7.2) to provide adequate root zone development for grass.
- Material may be “pit run” or “crusher run”. However, avoid using clay-based materials and/or decomposed granite. If using limestone, or another stone that loses porosity with continuous water exposure over time, it is required that at least 30 – 40% sand be added to the mix to maintain porosity.
- Compact the base course to 95% in “lifts” or piles not to exceed six inches.
- Leave 1½” of depth below final grade for the Grasspave2 product, the sandfill, and the grass above.
- Use a strong stream from a water hose to test the base course. Make sure the water drains easily from the surface.

## HYDROGROW

- Spread the provided Hydrogrow mix by hand or with a rotary spreader at the following rate:  
10 lbs. per 1076 sq ft. (4.53 kg per 100 m<sup>2</sup>).
- Hydrogrow can be added immediately before or immediately after installing the Grasspave2 rolls.

## LAYING GRASSPAVE2

- Clip the zip ties and roll out the Grasspave2 rolls over the prepared area. The rings should be facing up.
- Rolls can be connected to maintain uniform coverage using the snap-fit connectors. All connectors must be together if Grasspave2 is being used as a fire lane. (PRO TIP: use a nut driver on the connectors.)
- Grasspave2 can be easily cut with pruning shears. For curve cutting techniques, refer to the below diagrams:



- Small, trimmed pieces and areas on slopes can be further secured with U-pins or 40d common nails with fender washer.

## DELINEATORS

- Should the installation include InvisiMarker delineators, or any other type of delineation device, they should be installed at pre-determined locations prior to filling the rings with sand.

## SANDFILL

- Dump sand into empty rings until the sand is level with the top, using a stiff-bristled broom to evenly distribute the sand in the rings.
- Compact the sand using water – either from the irrigation system or from a hose. Add additional sand if necessary.
- The finished grade should be no less than the top of the rings and no more than ¼" (6mm) above the rings.

## GRASS

- Grass coverage on the sand-filled rings must be completed within one week. Sand must be reinstalled and leveled if rings become exposed due to the elements.
- Use grass seed or sod that is a hearty species for the climate. If using sod, thin-cut and types grown in sandy-loam is preferred.
- Roll out your thin-cut sod or spread out your hydroseed/seed over the sand-filled rings, ensuring all are covered evenly and well.

## GROWTH WAITING PERIOD

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- **Grass roots must be established before any traffic is permitted. Do not drive, park, walk on or otherwise use the Grasspave2 system** (3 – 4 weeks - unless there is an emergency). Hydroseeded and Seeded areas may need up to 8 weeks to allow for root germination.

## GROWTH PERIOD MAINTENANCE

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- Water or irrigate the grass three times per day for the first 6 - 8 weeks to ensure new grass growth.
- Mow as usual.
- Ensure the grass is exposed to enough sunlight on all areas.
- Apply fertilizer if recommended by your landscape professional. Clay fertilizers are not recommended.

## REGULAR MAINTENANCE

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- Water or irrigate the grass regularly. All grass porous paving systems require water due to the space for drainage in the base course. The deeper the base course, the more water may be required to saturate the grass roots on the surface.
- Ensure the grass has enough sunlight exposure. (Parking in the same spot every day is not recommended.)
- Mow and fertilize as usual.
- **Do not aerate a Grasspave2 installation.** Aerating will cause damage to the plastic structure and compromise the integrity of the system. If properly installed, a Grasspave2 installation will never need aeration.

## EXTREME WEATHER MAINTENANCE

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Grasspave2 areas can be easily plowed using standard truck-mounted snowplow blades with 1" skids on the corners to keep the bottom blade from damaging the grass. Avoid long-term snow pileup to minimize possible damage from mold and other diseases.

In times of drought, consult a landscape professional as to the best way to ensure grass revival after dormancy.

## BARE SPOTS/GRASS GROWTH ISSUES

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It is important to determine the cause of the bare spot to select the most appropriate solution:

- Incorrect sod – If a clay-based sod has been installed, or one not grown in a sandy loam, totally replace the sod, per the instructions in this manual.
- Poor quality seed – If the seed is not germinating well, reseed with a fresh source from a reputable vendor.
- Erosion – Intercept the source of the water and redirect it to reduce impact on the grass.
- Lack of nutrients – Increase water and fertilizer.
- Shade – Reduce shade cover or change grass type to a more shade-tolerant species.
- Dog urine – Apply a product such as Scott's EZ Seed which has an element to neutralize the effects, in addition to seed and mulch.
- High traffic – Increase fertilization and water and/or reduce traffic frequency by limiting or alternating zones of access. If compaction has occurred, dig out compacted area (do not dig out the base course) and re-install per the instructions in this manual.

## POOR SURFACE DRAINAGE

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If water is pooling, mud is present, or there is a loss of permeability, check for the following conditions:

- Was soil used to germinate the seed? If so, does it exceed a "light dusting" above the rings?
- Was soil installed instead of sand? If not, was the sand installed to the top of the rings?
- Was a geotextile installed beneath the rings?
- Are clay fertilizers being used?
- Was the base course comprised of decomposed granite?
- Did the base course contain more than 60 – 70% limestone – or was enough sand used in a limestone base course?
- Has the rainfall exceeded the water storage space within the base course? (If this occurs with frequency, consider deepening the base course or installing an underground water storage unit like Rainstore3.
- Is it possible the chemical makeup of the installation has changed? If so, a soil sample may be required to investigate further. A great resource for advice on local conditions is your local county extension agent.

If any of these conditions are present, the installation must be corrected per the instructions in this manual. Fortunately, Grasspave2 can be easily reused. If more Hydrogrow is required to re-install the grass in your installation, contact Invisible Structures customer service at 303-233-8383.

## OIL / ANTIFREEZE SPILLS

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- **Small Spills** – Naturally occurring micro-organisms in grass can break down oil and "clean" spills prior to them reaching the water table below. Therefore, common oil drippings are acceptable. Pro tip: small amounts of diluted dishwashing detergent applied to minor spills will also help reduce oil particles and speed recovery.
- **Large Spills** – Large oil or antifreeze spills will prevent the growth of vegetation for years. The affected turf, sand and base course should all be replaced and disposed of according to local codes relating to hazardous materials. Pro tip: to create a uniform edge for repair, use a sod cutter or circular saw.

## EXPOSED RINGS

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The Grasspave2 system should sit completely beneath the grass. Should any rings become visible, the area should be repaired by covering the exposed area with up to ¼" of sand topdressing, or by reseeding/resodding.

## RUTS

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The appearance of ruts in a Grasspave2 installation is a sign of improper installation. Possible errors include:

- Improper base course depth, composition installation or compaction.
- Topsoil installed between base and Grasspave2.
- More than ½" of soil above the top of the rings.

If any of these conditions exist, they must be corrected per the instructions in this manual.

## THATCH REMOVAL

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If grass clippings are not removed as the lawn is mowed, thatch – decomposing clippings or old leafless stems of grass – can build up. If the thatch is permitted to grow to ½" above the surface of the rings, removal is important as it may create compaction and rutting. The two most common methods are:

- Use of a "dethatcher" - spring tines on rotary mower blades (best for buildup of clippings)
- Use of a power rake (best for soil deposits over a long term)

Depending on the depth of thatch removed and the condition of the grass remaining, it may be necessary to address any bare spots. (See Bare Spots/Grass Growth Issues in this manual.)

## UTILITY ACCESS

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Should a subsurface utility, such as a water or gas line, need to be accessed or repaired, Grasspave2 can be easily removed and reinstalled. To remove, cut to the necessary depth with a sod cutter or backhoe and pull up or roll up the section. Set it aside.

Upon completion of the work, reinstall product per the instructions in this manual, including the compaction of the base course. If the Grasspave2 grid is damaged, it is still usable as the grass roots will eventually keep everything in place. If the rings are damaged, please reach out to an Invisible Structures representative for replacements.

## WARRANTY

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Invisible Structures, Inc. provides a limited lifetime warranty on all its products and will work with you to uncover any potential installation errors. Only product damaged within a proper installation will be replaced under the warranty. Proper documentation is required. Shipping and re-installation charges are not included.

If we can assist you in any way, please reach out to your distributor or contact the Invisible Structures customer service at 303-233-8383 or [sales@invisiblestructures.com](mailto:sales@invisiblestructures.com).

