

Grasspave2
Maintenance Guide
for
Owners and Maintenance Staff



Invisible Structures, Inc.

Ph: 303-233-8383

www.invisiblestructures.com

Grasspave² - Maintenance Guide

Regular maintenance is required to maximize traffic on grass paved areas with minimum wear and tear problems. The following maintenance and repair information, compiled from more than a decade of client experience with Grassrings and Grasspave², will enable staff to keep your grass paved areas healthy and beautiful all year long.

For more information about basic maintenance, or for answers to questions about a unique site, call Invisible Structures, Inc., toll free, at 1-800-233-1510.

Normal Maintenance

Grasspave² paved areas require basically the same care as other turf areas. Mow, irrigate, and fertilize as necessary for selected grass species for a healthy turf. As levels and frequency of traffic increase, greater stress is placed on the turf, which requires careful observation and response by maintenance staff. Recommended fertilizers and micronutrients:

- **N,P,K Fertilizers** - for other fertilizer applications, use fertilizers best for grass species used. As traffic frequency increases, the need for additional nitrogen increase in order to make the grass GROW faster and replace damaged blades quickly. Take care to use fertilizers that do not have poor materials such as clay as "fillers." The best fertilizers are:

- slow release (temperature activated)
- liquid concentrates (through irrigation system)

- **Micronutrients** - apply fertilizer supplemented with micronutrients, such as Humate, once a year. Or, apply the micronutrient in a separate application.
- **Other Chemicals** - apply water, herbicide, and insecticides as needed in response to site specific needs/problems.

Aeration

IMPORTANT!! DO NOT AERATE GRASSPAVE² INSTALLATIONS!

Aeration is a treatment for compaction problems, associated with poor percolation.

Grasspave² paved areas do not need aeration because, if properly installed, compaction will not occur. Aeration equipment will damage the Grasspave² structure and could prevent its long term function.

If compaction and poor water penetration problems arise, they can be due to filling rings with organic soils. (Many sod farms grow sod in high organic soils, such as peat.) When these soils dry out, there can be severe shrinking. The use of dry fertilizers with clay as a "filler" material (sometimes as much as 70% of the bag contents) can also contribute to compaction and poor water penetration. Organics (silt, clay, peat) can effectively seal off the surface of the grass paved areas, preventing entry of air and water to the roots.

Poor percolation can also be a result of chemical change to soils of ionic charges that might increase water repellency of soils. Solutions include treatment with products or chemicals such as wetting agents (diluted detergents), gypsum, etc. Your local County Extension agent can be an excellent source for advice on local conditions.

Antifreeze Spills - See Oil/Antifreeze Spills

Grasspave² - Maintenance Guide

Bare Spots - Causes and Solutions

It is important to determine the cause of bare spots in order to select the most appropriate solution. Some possible causes and solutions:

(Cause / Solution)

- *Incorrect sod (sod grown in peat, silt, or clay) for high traffic areas*

Totally replace with sand grown sod and rings, for low traffic areas; amend soil with chemicals such as detergents and gypsum and add sand to cracks for low traffic areas, and reseed as needed.

- *Poor quality seed*
Reseed with fresh source.
- *Erosion*
Intercept source of water and redirect to reduce impact.
- *Lack of nutrient*
Increase water and fertilizer.
- *Shade*
Reduce shade cover or change grass to more shade tolerant species.
- *High traffic*
Increase fertilization and water, and/or reduce traffic frequency by limiting or alternating zones of access.

Bare Spots--Repair

1. Fill rings uniformly with clean sand (concrete sand is preferable) to the top of all rings. When seeding, lightly rake to disturb and loosen surface.
2. Moisten area with a diluted detergent solution to break the soil's surface tension.
3. Topdress small bare areas with a mixture of sand and grass seed that either matches the installed grass species or changes the species for an environmental response (such as a shade mix).
4. Mulch with a layer of cellulose (paper)

placed over the topdressing mix to speed germination and prevent surface erosion by irrigation or rainfall. Commercial mulch materials should have a fine texture, such as those used for hydromulching. If visually acceptable, thin strips of newspaper (per office shredders) can be used very effectively as mulch.

5. Inject Hydrogrow. Hydrogrow's advantage is that it is able to store moisture and dissolved nutrients within the root zone, making them directly available to plant roots. Check local dealers or equipment rental sources for machines (such as Olathe) to inject dry polymers by compressed air into existing installations.

Irrigation

Regular irrigation is necessary for grass subjected to the stress of daily traffic, even in areas with "historically high average rainfall." The combination of daily traffic and even a week of without rainfall can quickly destroy a quality grass paved area. Repaired areas also usually require supplemental water to establish grass.

The irrigation system can be a hose and sprinkler, a simple manual valve system, or an automatic pop-up system as appropriate for the owner's maintenance program and budget. Automatic irrigation systems are low in labor costs, provide quick response to usage, conserve water, and allow for easy and rapid fertilizer applications. Standard large diameter spray heads will keep the irrigation cost per square foot to a minimum. Manual systems have higher labor and water costs, and variable response to water needs.

Buried low-pressure porous pipe irrigation systems have also been used with success. This type of irrigation can work during daylight hours without wasteful spray damaging people or objects above the ground. However, grass leaves do not receive cleansing from water falling from above.

Grasspave² - Maintenance Guide

Oil/Antifreeze Spills

Small Spills - Naturally occurring micro-organisms in turf can break down oil and "clean" spills prior to their reaching the water table below. Thus, turf is capable of accepting oil drippings without harm to grass plants. Small amounts of diluted detergent (dishwashing concentrates) applied to minor spills will also help to reduce oil particles to manageable size and speed recovery.

Large Spills - Large oil or antifreeze spills will effectively sterilize affected soils for years and prevent growth of most vegetation. Thus, affected soil, base course, rings, and grass should be replaced and soil disposed of according to local codes relating to hazardous materials.

To create a uniform edge for repair, use a sod cutter or circular saw with masonry blade to cut the upper 2" of soil and Grasspave² structure. Be sure to wear appropriate eye and body protection when cutting into rings, soil, and gravel. The disturbed base can be dug by shovel or backhoe depending on the size of the area. Replace materials per Grasspave² Installation Guide .

Rings--Repair When Exposed

When properly installed, Grasspave² units are protected from damaging ultraviolet (UV) rays, which make plastics brittle, because they lie just below the soil surface. When impressions of the rings are visible as creases in grass blades (during the growing season), or when actual rings are visible to the eye, immediately cover the exposed rings with sand topdressing to a depth of between 1/8" to 1/4" above the top of the rings. This is easily done by spreader equipment or with a shovel and rake.

Ruts

The appearance of ruts in grass paving is a sign of improper installation. Possible errors

include:

1. Improper depth of base, or inadequate compaction
2. "Topsoil" placed between base and Grasspave²
3. More than 1/2" of soil above top of rings

Contact the original contractor to repair and re-install to specifications.

Shade

As trees mature in the landscape, grass paved areas (especially those carrying daily traffic) can experience a loss of grass vigor due to increased levels of shade. Some grasses are more tolerant of shade than others and may have to be seeded into the affected area.

This can be done without removing the existing grass because a shade tolerant mix will overcome a weaker grass. For a more rapid and complete conversion, however, an application of a short-term herbicide such as Roundup can be applied according to manufacturer's recommendations in preparation for reseeding. Use reseeding steps in "Bare Spots--Repair" described on Page 3.

Grass paved areas not subject to daily traffic (such as firelanes) will probably not show any stress from shading.

Snow Removal

Grasspave² paved areas can be easily plowed of snow using standard truck-mounted snow plow blades with small skids on the corners to keep the bottom of the blade off grass surface by approximately 1". This minimizes surface skinning. This apparatus should be used regardless of the pavement surface type.

The Grasspave² paved area surface should be at, or slightly below, that of adjacent hard surfaces to avoid gouging. Grass plants are dormant in the winter and damage to grass blades will be replaced with new growth in the spring. Damage to grass crowns can be

Grasspave² - Maintenance Guide

repaired by topdressing as described in "Bare Spot--Repair" on Page 3.

Avoid long-term pileup of snow on grass paved surfaces to minimize possible damage from snow mold and other related diseases. Snow melts from grass areas at about the same rate as that of asphalt.

Thatch Removal

Over time, most grass installations, including Grasspave² areas, will develop layers of thatch--usually defined as old leafless stems of grass, or layers of grass clipping in various state of decomposition. Thatch is a problem because it can prevent percolation and, if allowed to build layers over 1/2" in depth above rings, can allow compaction to take place above the Grasspave² structure. This layer of thatch must be removed for the long-term health of turf.

Different grasses require different techniques for thatch removal. The two most common methods are:

- Use of spring tines on rotary mower blades (best for buildup from clippings)
- Use of sod cutter, set to shallow depth to skim tops of rings (best for air/ waterborne soil deposits over long term)

Depending on the depth of thatch removed and the condition of grass crowns remaining, it may be necessary to topdress and reseed. (See "Bare Spots--Repair," page 3.)

Utilities--Subsurface Access

Subsurface utilities can be installed or repaired by cutting the Grasspave² structure and turf with a sod cutter (set to depth below the Grasspave²), pulling/rolling up the section, and setting it aside. To reinstall Grasspave², rebuild the base as in a new installation (See Grasspave² Installation Guide) and replace the Grasspave² and turf. Be sure to compact the base course material to 95% Proctor (3 to 4 passes with vibrating roller).

In the case of a broken water or gas line below Grasspave² paved areas, use a standard backhoe for rapid and easy emergency access. Reinstall following instructions for a new installation. If necessary, new Grasspave² units can be delivered by UPS Next Day anywhere in the country. The finish grade of base course (usually Finish Grade Less 1 Inch) can be used for temporary access until Grasspave² and grass are ready to complete the finish surface.

Grasspave² - Maintenance Guide

Grasspave² Normal Maintenance Checklist

<u>Function</u>	<u>Frequency</u>
Aeration NEVER AERATE GRASSPAVE ² PAVED AREA	
Fertilizing As appropriate for selected grass species.	
Herbicides/Insecticides As needed, following manufacturer's instructions.	
Irrigation As appropriate for selected grass species and rainfall amounts in area.	
Micronutrients Apply 1 time year (or every 6 month growing season in warm climate areas).	
Mowing As appropriate for selected grass species.	
Thatch Removal Remove when reaches 1/2" in depth above rings.	

1. Ensure that sandy gravel base is porous.
 - Run hose on base to make sure water flows into base.
 - If area has a low spot which collects water, provide subsurface drainage to remove excess water.
2. Apply Hydrogrow Soil Polymer to base.
 - Apply Hydrogrow Soil Polymer over the area by hand, or small fertilizer spreader, at a rate of 10 lbs per 1000 sf for use with sod, or seeding.

Warning - do not place any form of topsoil between sandy gravel base and Grasspave² unit!
3. Place Grasspave² units over base, use posts and rings to interlock. Cut with pruning shears or knife if needed.
 - Place Grasspave² units (with rings up) directly over the sandy gravel base. Use the posts and rings provided to connect the units.
 - If required, use pruning shears or sharp knife to cut web between rings to shape units. "U" shaped pins are not required, but can be used to secure unit to base if there is a slope or rapid speed and stopping involved.
4. Fill Grasspave² units with grass -
 - If seeding - fill mat area with clean sharp sand (washed concrete sand) to top of rings, broom to barely expose top of ring. Do not use "topsoil" to fill rings. Apply seed and mulch via hydroseeder, or similar. Topdress with concrete sand to depth of 1/4" thick max., 4 to 6 weeks after seeding, to cover tops of rings.
 - If sodding use thin (.5 inch, or 13 mm) sod - fill mat area with clean sharp sand (washed concrete sand) to top of rings (1 inch, or 25 mm), then place thin sod over sand with tight joints per normal installation. Do not use "topsoil" to fill rings.
 - If sodding with thin sod, fill rings with sand to allow sod soil to cover top of rings by 0.25"-0.5" (6 - 13 mm).
5. Irrigate, fertilize and maintain turf per normal lawn. Protect from traffic until turf root system is well established.

Grasspave² Installation Procedure