Invisible Structures, Inc.
1600 Jackson Street; Ste 310
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September 9, 2013

RE: Grasspave2 compared to Grass-Tek

To Whom It May Concern:

I would like to take this opportunity to present Grasspave2 advantages as compared to the Grass-Tek product. We feel it is very important to make sure that you are aware of the performance characteristics, maintenance, and safety issues that distinguish our Grasspave2 from Grass-Tek.

Geocells like Grass-Tek were originally developed to contain and stabilize normally unstable soils (such as sand) for use as a base course for temporary or remote access roads. This is done with thin flexible plastic cell walls that form lateral containment to minimize movement of materials away from loads applied to the surface. Geocells are provided in various thicknesses (depths) from 8” to 3” to accommodate various design loads.

Vertical containment is not possible as a horizontal fabric or membrane layer cannot be bonded to the bottom edge of geocell walls. Geocells can be placed over geotextile fabrics, but there is little to prevent cell walls from “floating” up, or allowing fill materials to encroach under cell walls (eliminating containment) if the cell wall is snagged by vehicle (snow plow, mower, trencher, etc.). Floating cells can be minimized by the use of textured fabric or membrane cell materials, holes in cell walls, or additional structural rod devices, at additional cost to basic structure.

Unless a firm or rigid wearing course is applied over the surface, ruts can develop and cell walls can become exposed. Aside from safety and comfort issues presented by walking over uneven pavement surfaces, exposed cell walls present a tripping hazard and will quickly deteriorate from UV light. Once ruts are created, original grade and containment by cell walls are impossible to reestablish, and maintenance costs rise dramatically.

The Grass-Tek cell size is approximately 9.9” x 9.9” when fully expanded. This

compares to the ground surface contact area of most vehicle tires equal to 6.5" x 6.5". Thus, heavy loads can be applied to materials within each cell, allowing compaction and movement of materials within the cell which not acceptable for grass paved surfaces. Grass root systems demand stable media that is protected from compaction to enable long term horticultural success. Grass-Tek walls are not spaced, nor are they structurally strong enough to support loads independently of the fill media.

Geocells work well to create a base course from low structural quality materials, but would be considered expensive and unnecessary when high quality base course materials are available.

A truly unique benefit Grasspave2 has over Grass-Tek is that they are flexible. Our porous pavement systems do not share a common wall and are connected by a flexible support grid. This makes our porous pavement systems distinctly different from our competition. Our competitors plastic porous pavement systems all share a common wall or cell. This makes those systems very rigid and less likely to undulate with a natural terrain, or be able to flex with expansive soils or freeze/thaw conditions without popping up. Rigid paver manufacturers usually specify a leveling layer of sand between the base course and paver, which not only adds to the expense and time of installation, but can actually create structural problems by allowing an unstable layer to receive loads - with potential for generating ruts above a properly compacted base.

A few of the additional benefits that our Grasspave2 product offers you are:

- The strength of Grasspave2 presumably exceeds that of Grass-Tek. NO compression strength data was found on their website.
- Grasspave2 interlocking strength has been tested at 458 lbs/inch. Grass-Tek geocells are permitted to be connected with a hand held stapler and heavy duty stables. They do not list a pull apart strength of their connections, but I assure you our product exceeds this requirement.
- Since Grasspave2 comes in rolls, it is much faster to install than the separate section of Grass-Tek. According to an experienced contractor in Florida, who has experience with both products - Grasspave2, and Grass-Tek. In a phone conversation, he said that Grass-Tek is even more difficult and time demanding than our other competitors and easily takes at least twice as long to install.
- According to the Reference Chart in their literature, Grass-Tek calls for an over fill of their cell of 1" plus 2" sod over the area. After 30+ years in the industry, we know that any amount of material above our product will be subjected to rutting. The 3" of material above the Grass-Tek product will rut with use because it is not provided any protection. The Grass-Tek area will not thrive if the area is used with any regularity. The Grasspave2 system, however, calls for only a thin cut (~0.5") of sod over the top of the system. When this compacts with use, there are no unsightly wear marks in the sod, and is often not even noticeable.

Invisible Structures, Inc. certifies that our Grasspave2 grass reinforcement product will meet every important performance criteria required, and is equal or better than any

competitive product available.

Finally, I would like to confirm that Grasspave2 is manufactured in an ISO 9002 facility. This insures that each part we send out is done so with the highest level of quality available in the manufacturing world.

I hope the enclosed information helps, and please feel free to contact us if you have any additional questions or comments.

Respectfully,

Kate Wright
Staff Engineer
Invisible Structures, Inc.

cc: Kevin Cobaugh