



Station 5 - Gravel Grass

An abbreviated gravel grass history

Gravel grass is a virtually unknown porous pavement type in the U.S. It has its origins in the German-speaking parts of Europe, where it was used as early as the 19th century. Its initial application was on estate paths, horse routes, and carriage driveways.

The types of traffic have changed since then, and so have the engineering principles of gravel grass. Research on modern gravel grass emerged in the late 1950s, where its suitability for highway shoulders was investigated in Switzerland. Research activity climaxed in the 1990's and led to the publication of a German gravel grass engineering manual in 2000.

Gravel grass 101

Gravel grass is a type of porous pavement: Think of it as a gravel parking space that is covered with grass. A well performing gravel grass pavement reconciles a number of apparent conflicts. It provides a structurally sound pavement with a minimum of 2 inches per hour infiltration rate, and accommodates a good cover of grasses and herbs under low traffic volumes.

To accomplish these objectives, the aggregate is engineered to be very porous to allow for good infiltration. It is

mixed with a sandy loam or loamy sand at a ratio of approximately 1:4. This ratio preserves the good porosity needed for infiltration, assures sufficient pavement stability, and provides enough soil minerals for the vegetation. The ratio further prevents the added soil from being compacted so densely that it becomes unsuitable for plant growth. The vegetation must be tolerant to the rocky and dry growing conditions.

When and where to use gravel grass?

Although almost unknown in the U.S., gravel grass has the potential of becoming an important low-cost pavement alternative. It is a perfect pavement option for occasional or seasonal use. One can think about it this way: How many driveways and parking spaces have been built with conventional impervious pavements because they MAY be needed ONE day? We seal up and pave over our natural resources, severely disrupting our natural water cycle, all to have vehicular access or parking for the one time in a week or three days in a year! These surfaces sit idle the majority of the time.

Gravel grass provides all the structural properties for occasional and seasonal use, and is a low-cost alternative to our conventional impervious pavements.

- Station 1 - Green roof
- Station 2 - Rain barrels
- Station 3 - Porous pavement
- Station 4 - Rain garden
- Station 5 - Gravel grass
- Station 6 - Cistern
- Station 7 - Bioswale



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Drought tolerant grasses

Coarse sand mulch

Gravel grass aggregate mix

Subgrade
(underlying soil)

Gravel grass vegetation

The selection of suitable plant species must take into consideration the porous nature of aggregate-soil mix, which provides a fast-draining and dry habitat, low in nutrients. Another consideration is the stress the plants are subjected to from vehicular traffic.

Suitable native species in the greater Midwest are Buffalo Grass and Side-Oats Grama. Various tough and drought tolerant Fescue varieties should also be added to the mix. It is further recommended to add clover, which does not become an obnoxious weed under these growing conditions, but fixes nitrogen that would be available to the grasses.

Maintenance on gravel grass is minimal. The harsh growing conditions keep the vegetation dwarfed. The occasional traffic further assures limitation of the vegetation height.

Gravel grass benefits

Gravel grass can significantly reduce runoff volumes and rates. Precipitation that soaks into the gravel grass will infiltrate into the lower soils (subgrade). Depending on the subgrade infiltration capacity, use of gravel grass can help to maintain the natural water cycle, recharging local aquifers and support groundwater-driven base flows in streams and other water bodies. Gravel grass can improve water quality through filtration and a reduction in runoff temperatures. It can reduce the need for costly stormwater infrastructure.

Gravel grass has all the structural properties required to provide a year-round stable and reliable surface. It allows for efficient land use through the combination of stormwater treatment and vehicular infrastructure. Its vegetation cover provides an aesthetic appeal and mitigates the urban heat island effect. Shade trees can be easily and cost-effectively integrated into a gravel grass parking lot.