Grass Paving and Porous Paving Surfaces

Description

Grass Paving

Grass paving technology allows for the reduction of paved areas by implementing grass paving in areas that are infrequently used such as fire lanes and overflow parking where applicable. A variety of grass paving materials are available on the market. Grass paving units are designed to carry vehicular loading and may be composed of different types of materials. The pavers are typically covered with sod to make the areas indistinguishable from other grassed areas. Grass pavers allow water quality benefits by allowing storm water to infiltrate into the underlying soils and by the filtering of storm water as it flows through the grass.

Grass pavers provide a more aesthetically pleasing site and reduce the impact of complete asphalt surfaces. Grass pavers should not be used for frequently traveled or parked in areas. Grass pavers reduce the runoff volume and extend the time of concentration for a particular site. Some pavers provide enough infiltration to be considered a pervious area.

Porous Paving

Porous pavement is a permeable pavement surface with an underlying stone reservoir to temporarily store surface runoff before it infiltrates into the subsoil. This porous surface replaces traditional pavement, allowing parking lot storm water to infiltrate directly and receive water quality treatment, and also reducing runoff from the sit

When and Where to Use It

Porous pavement options include porous asphalt, pervious concrete, and grass pavers. The ideal application for porous pavement is to treat low-traffic or overflow parking areas. Porous pavement also has highway applications where it is used as a surface material to reduce hydroplaning.

Porous pavements are a good option in ultra-urban areas because they consume no space since there is very little pervious area in these areas. Since porous pavement is an infiltration practice, do not apply it on storm water hot spots due to the potential for ground water contamination. The best application of porous pavement for retrofits is on individual sites where a parking lot is being resurfaced.

Design Criteria

Take soil boring to a depth of at least 4 feet below bottom of stone reservoir to check for soil permeability, porosity, depth of seasonally high water table, and depth to bedrock.

Not recommended on slopes greater than 5% and best with slopes as flat as possible.

Minimum setback from water supply wells: 100 feet.

Minimum setback from building foundations: 10 feet down gradient, 100 feet upgradient.

Not recommended where wind erosion supplies significant amounts of sediment.

Use on drainage areas less than 15 acres.

Minimum soil infiltration rate of 0.3-0.5 inches per hour.

Typically design for storm water runoff volume produced in the tributary watershed by the 6-month, 24-hour duration storm event.

A typical porous pavement cross-section consists of the following layers:

1) Porous asphalt course 2-4 inches thick,
3) Reservoir course of 1.5 to 3 inch stone,
2) Filter aggregate course, and
4) Filter fabric.

Use a geotextile meeting AASHTO M288 Class 1, 2, or 3 in all cases as a filter to protect the long-term performance of the system.

Inspection and Maintenance

- Porous pavement requires extensive maintenance compared with other practices.
- Avoid sealing or repaving with non-porous materials.
- Ensure that paving area is clean of debris, paving dewaters between storms, and that the area is clean of sediments monthly.
- Mow upland and adjacent areas, and seed bare areas as needed.
- Vacuum sweep frequently to keep the surface free of sediment as needed.
- Inspect the surface for deterioration or spalling annually.
- Perform high pressure hosing to free pores in the top layer from clogging as needed.

Grass Paver

Porous Paving