FLEXIBLE POROUS PAVEMENT

Flexible porous pavement allows stormwater to pass through the pavement to a stone storage layer. The water then either infiltrates into the soil or flows through an underdrain to the storm drain network. It is effective in storing, infiltrating, and treating runoff from impervious surfaces. There are a variety of flexible porous pavements including concrete pavers, paving grids, pervious concrete, porous asphalt, porous rubberized asphalt, and glass porous paving. Flexible porous pavement can be used in parking lots, parking lanes, low-volume roads, alleys, sidewalks, and plazas.

USE

- Roadway parking lanes
- Low-volume roads, alleys and bicycle facilities
- Plazas, paths, and sidewalks
- In areas where impervious space is highly utilized and cannot be spared for vegetated green infrastructure practices. In general, vegetated practices should be used as a first choice where space permits.
- Ensure that the drainage area has no significant sediment sources (e.g., gravel shoulders, gravel driveways, dirt roads) that will clog pavement.
- Select flexible porous pavement conducive to bike traffic in the area.
- Coordinate review by an arborist or forester for impacts to nearby trees.

DESIGN

- Design the system so that the storage layer drains within 24 to 48 hours by infiltration or an underdrain.
- To reduce the amount of sediment that collects on the flexible porous pavement, the area that drains to the flexible porous pavement should be largely impervious. The impermeable surface can be two to five times the surface area of the flexible porous pavement depending on the extent of sediment in the runoff.

- Specify a geotextile separator between the storage layer and adjacent soils to prohibit migration of fine soils into the storage layer.
- Size the stone drainage layer to meet local design standards.
  - Consider the potential for shifting pavement (especially modular systems) on slopes greater than five percent.
  - Allow porous concrete to cure for a minimum of three months before applying salt.
  - For concrete paver systems, incorporate a concrete header between the paver area and adjacent asphalt to decrease paver shifting.

OPERATIONS AND MAINTENANCE

- Remove accumulated sediment and particulates from the flexible porous pavement void spaces with a high efficiency vacuum sweeper at least twice per year.
- Pressure washing pavement is not recommended as particulates could further embed.
- Stone between pavers will need to be replaced after vacuuming as needed.
- Use of sand and fine aggregate for winter road conditions will quickly clog flexible porous pavement and should not be used.
- Cost of flexible porous pavement tends to be higher than traditional pavement. Costs vary with location and contractor familiarity of the installation.
- Concrete pavers and articulating concrete blocks tend to be more expensive than porous asphalt or pervious concrete.
- Use of flexible porous pavements can provide cost savings by reducing the amount of other storm treatment systems required.

SPECIAL CONSIDERATIONS

- For roads and parking lots, flexible porous pavement can be incorporated within parking lanes and stalls to intercept flow from driving lanes. This can be more cost effective than using flexible porous pavement across the entire paved area.

REFERENCES

- SEMCOG Low Impact Development Manual for Michigan (2008). Refer to Planter Boxes, Native Landscaping, and Bioretention sections for additional design guidance.
- Grand Rapids Green Infrastructure Guidance Manual (2015)
- Grand Rapids Green Infrastructure Technical Reference Manual (2013)