

Porous Asphalt Pavement FAQs (16 July 2012)

Q: What is the life cycle of a porous pavement? (This would apply to both permeability life and structural life.)

A: There are case studies of several examples of porous pavement installations that are still functioning well after 15 or 20 years. Dr. Robert Roseen, director of the University of New Hampshire Stormwater Center (UNHSC), has written porous asphalt pavements, "will have a longer life cycle from reduced freeze-thaw susceptibility and greater load-bearing capacity than conventional parking lot pavements." (<http://stormh2o.com/september-2008/pervious-asphalt-concrete.aspx>)

If designed, constructed, and maintained appropriately, porous pavements should have life spans at least comparable to conventional asphalt pavements.

Q: What is the rehabilitation strategy for a porous asphalt pavement?

A: Rehabilitation of a deteriorated porous asphalt surface will normally entail removing the deteriorated asphalt layer or layers to the depth necessary and repaving with new porous asphalt mixtures. Surface treatments of any kind that would tend to seal the pores in the pavement should not be used.

Q: How does porous asphalt stand up in a snow and ice climate? Or, perhaps better asked, how does snow and ice affect porous asphalt pavement?

A: Thelen and Howe stated in their guide (2) that 'Cold weather does not damage porous pavement. Water could freeze in the aggregate, but the voids are relatively large and there is room for expansion without damage.'

Studies performed at the UNHSC show that porous asphalt pavement performs well during sub-freezing weather and that frozen media does not reduce performance. Even the frozen pavement and infiltration bed retained a high level of permeability. (Seasonal Performance Variations for Storm-Water Management Systems in Cold Climate Conditions, Robert M. Roseen, Ph.D., P.E., M.ASCE, et. al.) (http://www.unh.edu/erg/cstev/pubs_specs_info/jee_3_09_unhsc_cold_climate.pdf)

Structurally, porous asphalt pavement will be durable if the reservoir is provided with suitable drainage to prevent the asphalt layers from remaining flooded during freezing weather.

Q: What type of maintenance needs to be done on porous asphalt pavements?

A: Porous pavement must be inspected and cleaned regularly to maintain the hydrologic performance of the pavement system. Agencies have had success with blowers to remove debris such as pine needles and leaves, walk-behind type vacuums and vacuum-type street sweepers for cleaning porous asphalt pavements. Some

regulatory agencies may require the property owner to have a maintenance agreement approved by the local MS4.

Typical maintenance requirements:

- Avoid clogging with construction sediments- During construction & long term
- Clean pavement to ensure pavement is free of debris and sediments -As needed (at least twice a year)
- Check to see that pavement dewater during large storms and does not pond into surface (check observation well for appropriate water levels) -After large storms
- Inspect upland and adjacent vegetated areas. Seed and straw bare areas. -As needed
- Inspect pavement surface for structural integrity and areas in need of repair. Repair as needed. -Annually
- Snow and Ice Removal. No sand or cinders should be used on porous pavements. Instead, winter maintenance should focus on timely snow plowing and judicious use of deicing materials.- As needed (see the UNHSC publication: [Winter Maintenance Guidelines for Porous Pavements](http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/pubs_specs_info/winter_maintenance_fact_sheet.pdf) at http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/pubs_specs_info/winter_maintenance_fact_sheet.pdf)
- Avoid sealing or repaving with non-porous materials -Long-term. Areas may be repaired using the same treatment as the original permeable pavement application or, small areas (not the lowest area on a sloping section) can be replaced with standard (impermeable) pavement. In that case the stone bed of the entire pavement will continue to provide storage and infiltration as designed. Surface treatments of any kind that would tend to seal the pores in the pavement should not be used.

Q: *Is maintenance of a porous asphalt pavement any more costly than that of conventional pavement?*

A: A definitive answer is undetermined and may only be answerable on a case by case basis. As noted elsewhere in this document, porous asphalt pavements will require periodic inspection and cleaning that, depending on the location and use, conventional pavements may not require. However, these extra costs, if any, may be offset by reduced snow and ice control costs and decreased storm drainage maintenance. And, of course, the true total costs need to be compared not to just alternative pavements; but, to the total costs associated with alternative storm water management practices as well.

Q. *Does the petroleum leach out of the porous pavement?*

A. No. Study after study has shown no tendency for the petroleum asphalt to leach out of asphalt pavement. See the report of the study by Brantley and Townsend at http://www.hinkleycenter.com/images/stories/publications/townsend_98-2.pdf

Q. *What effect does clogging have on the functionality of the porous asphalt surface?*

A. The porous asphalt is many times more permeable than any soil it may be constructed over. As a result, the functionality of the system is not compromised by less than total clogging of the surface. Dr. Roseen (reference 6) is quoted as saying that, "if 99% clogging were to occur, the infiltration rate would still be greater than 10 inches per hour, which is greater than most sand and soil mediums."

Q. *What is the cost of a porous asphalt pavement facility?*

A. Special features such as the underlying stone bed are more expensive than conventional construction, but these costs are more than offset by the elimination of many elements of standard storm-water management systems. On those jobs where unit costs have been compared, a porous asphalt pavement is generally the less-expensive option. The cost advantage is even more dramatic when the value of land that might have been used for a detention basin or other storm-water management features is considered.

Q. *Is an approved or certified applicator required to place a porous asphalt pavement?*

A. No. An added advantage to porous asphalt is that it does not necessitate proprietary ingredients. It does not require the contractor to have special paving equipment or skills. With the proper information, most asphalt plants can easily prepare the mix and general paving contractors can install it.