

# USING POROUS PAVEMENT TO REDUCE RUNOFF

## Part Three of Three

### INTRODUCTION

Porous or pervious pavement systems can be used to reduce stormwater runoff. This is the third in a series of three articles about porous pavements. In the previous *Perspectives* articles, we described different porous pavement trials that are underway in Northern Lower Michigan, porous pavement construction details, and relative costs of porous pavements. In this installment, we will discuss deicing and pavement maintenance considerations. Code and ordinance modifications needed to take advantage of porous pavement's reduction of the overall impervious footprint of development are also discussed.

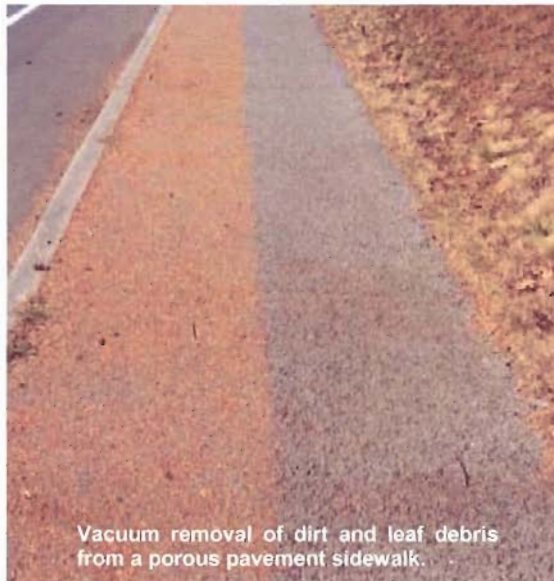
### DEICING

Application of salt to porous pavements requires a very even application of deicing salts or sand and salt mixtures. Salts applied to conventional pavements will melt snow and ice and the salt-laden melt water will thaw adjacent snow and ice as it flows across the pavement. Because water flows through, rather than across porous pavement, the application of salts will result in patchy melting of snow and ice unless the deicing compound is spread evenly across the pavement. However, snow and ice often melt more quickly on porous pavements than conventional pavements.



### POROUS PAVEMENT MAINTENANCE

In Michigan, most of the existing porous pavements have only been in place for a relatively short time. Therefore, the maintenance history is somewhat limited in this area. Some areas of the country, including cold-weather areas, have porous pavements that are nearly 20 years old with no significant maintenance problems reported. However, almost all of these pavements are in light-use areas.



It is generally agreed that freeze-thaw cycles with a saturated pavement will accelerate any pavement deterioration. Therefore, it is important to take steps that prevent the saturation of the subbase and pavement. Underdrains or edge drains for the pavement subbase should be maintained.

Some locations in the southeastern United States have as much as 10 to 20 years of experience with porous asphalt and concrete. These areas have observed the importance of maintaining the open voids of porous pavements. The pores of pervious concrete and asphalt will accumulate sand, litter, and leaf and lawn debris that can clog the pavement, reducing its capacity to absorb rainfall and snowmelt.

The use of sand for winter snow and ice removal exacerbates this problem. Sweeping porous pavement with conventional brush-type street sweepers will not adequately remove fine particles from the pavement. Vacuum equipment is best suited for cleaning porous pavement. Researchers also found that power washing a clogged pervious pavement can restore 80 to 90% of its porosity.

Brick and concrete pavers with gaps between the brick units are somewhat less susceptible to clogging. Also, conventional brush-type sweeping equipment may be effective for cleaning brick pavements.



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### ZONING AND CODE CONSIDERATIONS

Many communities are adopting ordinances and codes that mandate the maximum allowable impervious coverage on property. In addition, almost all communities have ordinances that mandate stormwater retention/detention and stormwater best management practices. In areas having significant land costs or where land availability may be limited, pervious pavement can offer real advantages.



For example, the City of Traverse City is offering a credit or exception for impervious area limitations if porous pavement is used. This can allow property owners to establish more "hard" surface on their property if desired. This can be particularly helpful if a property owner desires additional sidewalk, a patio, or more parking.

Porous pavement may also be used to reduce or eliminate stormwater retention/detention basins, thereby making more land available for useable green space or additional development. Under the right set of circumstances, the expense of porous paving may be outweighed by the savings from avoiding stormwater management facilities.

### CLOSING OBSERVATIONS

Porous pavements offer a viable method to manage stormwater without devoting land to unsightly retention basins or building traditional storm sewer systems. Their use can provide real environmental and land-use benefits and should be given serious consideration for all new developments, as well as retro-fitting in existing developments.

Porous pavements have been used for as long as two decades in some parts of the country. There is some concern about the durability of porous pavements through the freeze-thaw cycles of cold weather climates. However, by properly designing and building these pavements, they can remain stable and functional for many years, even in cold weather areas.



*For more information about porous pavements or copies of the entire three part series about porous pavements contact: Gosling Czubak Engineering Sciences, Inc. at 800-968-1062.*

**Gosling Czubak**  
1280  
Business Park Dr.  
Traverse City, MI  
49686-8607

**Telephone:**  
231-946-9191  
1-800-968-1062

**Fax:**  
231-941-4603

**Website:**  
[goslingczubak.com](http://goslingczubak.com)