

POROUS PAVEMENT OPERATION AND MAINTENANCE PROTOCOL

San Diego County Facilities

PREPARED FOR:

**County of San Diego Department of General Services
5555 Overland Avenue
San Diego, CA, 92123**

PREPARED BY:

**Cahill Associates
Environmental Consultants
104 South High Street
West Chester, PA 19382
www.thcahill.com
P: 610-696-4150
F: 610-696-8608**

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General Maintenance

With minimal maintenance, porous bituminous asphalt can function effectively for well over 20 years. The primary goal of porous pavement maintenance is to prevent the pavement surface and/or the underlying infiltration bed from being clogged with fine sediments. To keep the system clean throughout the year and prolong its lifespan, the pavement surface should be vacuumed biannually with a commercial cleaning unit. Pavement washing systems or compressed air units are not recommended. All inlet structures within or draining to the infiltration beds should also be cleaned out on a biannual basis.



Figure 1: Routine and adequate maintenance has allowed the porous asphalt parking lot at the Morris Arboretum to still be effective 20 years after installation.

Planted areas adjacent to porous pavement should be well maintained to prevent soil washout onto the pavement. If any washout does occur it should be cleaned off the pavement immediately to prevent further clogging of the pores. Furthermore, if any bare spots or eroded areas are observed within the planted areas, they should be replanted and/or stabilized at once. Planted areas should be inspected on a semi-annual basis. All trash and other litter that is observed during these inspections should be removed.



Figure 2: Example of soil wash-on/dumping from unstabilized landscaping.

Superficial dirt does not necessarily clog the pavement voids. However, dirt that is ground in repeatedly by tires can lead to clogging. Therefore, trucks or other heavy vehicles should be prevented from tracking or spilling dirt onto the pavement. Furthermore, all construction or hazardous materials carriers should be prohibited from entering a porous pavement lot.

Vacuuming

There are a variety of pavement vacuuming units and services available on the market today. Elgin, Schwarze, and Tymco are three examples of acceptable vacuum manufacturers that are generally used by local cleaning companies. These units contain a blower system that generates a high velocity air column, which forces the air against the pavement at an angle, creating a 'peeling' or 'knifing' effect. The high volume air blast loosens the debris from the pavement surface, then transports it across the width of the sweeping head and lifts it into the containment hopper via a suction tube. Thus, sediment and debris are loosened from the pavement and sucked into the unit.

Recent studies have also revealed the usefulness of powerwashing porous pavements with clean water and then immediate vacuuming. Combinations of power-washing and vacuuming techniques have proved effective in cleaning both organic clogging as well as sandy clogging. Research in Florida found that a “power head cone nozzle” that “concentrated the water in a narrowly rotating cone” worked best.



Figure 3: Photo of Elgin Whirlwind Vacuum Air Sweeper, example of effective vacuuming device

Winter Maintenance

Winter maintenance for a porous parking lot is certainly necessary, though it is usually less intense than that required for a standard asphalt lot. By its very nature, a porous pavement system with subsurface aggregate bed has superior snow melting characteristics than does standard pavement. Therefore, ice and light snow accumulation are generally not as problematic. However, snow will likely still accumulate during heavier storms. Abrasives such as sand or cinders should not be applied on or adjacent to the porous pavement surface. Snow plowing is fine, provided it is done carefully (i.e. by setting the blade slightly higher than usual, one inch is usually acceptable). Salt is acceptable for use as a deicer on the porous pavement, although a non-toxic, organic deicer, applied either as a blended, magnesium chloride-based liquid product or as pretreated salt, is preferable from an environmental standpoint. Acceptable products include Magic-O, Ice B' Gone, and Geomelt, among others.



Figures 4 and 5: Neither the porous asphalt parking lot at the University of Rhode Island nor the one at the Ford Rouge Plant in Dearborn, Michigan have experienced significant snow accumulations on the pavement after multiple harsh winters.

Repairs

Potholes in the porous pavement are extremely unlikely, though settling might occur if a soft spot in the subgrade is not removed during construction. For damaged areas of less than 50 square feet, a declivity could be patched by any means suitable with standard pavement, with the loss of porosity of that area generally considered insignificant. The declivity can also be filled with porous mix. If an area greater than 50 SF is in need of repair, approval of patch type must be sought from either the engineer or owner. **Under no circumstance is the pavement surface to ever be seal coated.**

Any required repair of drainage structures should be done promptly to ensure continued proper functioning of the system.



Figure 6: Standard bituminous patch in porous asphalt parking lot. This lot was constructed with an unmodified porous mix (i.e. no polymer modification) and had rutted in the center of the aisle due to construction traffic.

▪ **Summary of Maintenance Concerns**

- **Prevent Clogging of Pavement Surface with Sediment**
 - Vacuum pavement twice per year
 - Maintain planted areas adjacent to pavement
 - Immediately clean any soil deposited on pavement
 - Do not allow construction staging, soil/mulch storage, etc. on unprotected pavement surface
 - Clean inlets draining to the subsurface bed twice per year

- Snow/Ice Removal
 - Porous pavement systems generally perform better and require less treatment than standard pavements
 - **Do not apply abrasives such as sand or cinders on or adjacent to porous pavement**
 - Snow plowing is fine but should be done carefully (i.e. set the blade slightly higher than usual)
 - Salt application is acceptable, although more environmentally-benign deicers are preferable

- Repairs
 - Inspect for pavement rutting/raveling on an annual basis (some minor ruts may occur in the porous pavement from stationary wheel rotation)
 - **Surface should never be seal-coated**
 - Damaged areas less than 50 square feet can be patched with porous or standard asphalt
 - Larger areas should be patched with an approved porous asphalt

- Miscellaneous
 - Descriptive signage is recommended to maintain institutional memory of porous pavement
 - If properly maintained, porous pavements can last for well over 20 years. In the event that maintenance of the porous

pavement is neglected and it becomes clogged, the Owner shall vacuum the lot until the original permeability is restored. If the original permeability of the lot cannot be restored, the pavement should be removed and replaced with a new porous mix.