



PINE HALL BRICK

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Permeable Paver Maintenance

Permeable pavements will last for 20-25 years with proper construction and maintenance. Maintaining surface infiltration and resulting exfiltration is key to long-term pavement performance.

Stormwater collection systems are designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. All these systems require periodic maintenance to insure infiltration and storage capacity. Permeable pavements are no exception. Soenke Borgwardt's study indicated that permeable systems using open graded aggregates can retain as much as 20% of their initial infiltration rates even after an extended period (10 years) without maintenance. This is not to suggest that these systems require no maintenance but that the myth of clogging has been exaggerated with permeable segmental pavements.

Clogging is dependent on several factors: traffic frequency, close proximity to sediment, surrounding soil permeability, nearby disturbed soil, and frequency of maintenance. It is important to note that clogging doesn't mean zero infiltration as noted above.

Design Best Practices To Avoid Maintenance Issues

- 1) Hire an experienced contractor with history of installing permeable pavers
- 2) Approve all material on the job-site with special attention given to the aggregates, which need to be clean, washed and void of any material passing the 200 sieve.
- 3) Avoid designing raised beds where landscaping materials can runoff into the pavement

Installation Best Practices To Avoid Maintenance Issues

- 1) Do not compact subgrade when infiltration into native soil is the goal
- 2) Cover pavement when dirty vehicles are driving over it
- 3) Fill joint material to top of the paver. Refill after 3 to 6 month.
- 4) Do not stock pile mulch and top soil on the pavers when doing finishing landscaping

Preventative Maintenance

Weekly or monthly that help prevent debris and trash from becoming clogged into the joints. This can be as simple as sweeping or blowing off grass clipping or fallen leaves to more robust maintenance such as bringing in a broom street sweeper to clean the loose debris from the joints of a large area.



Picture 1: Poor Design with Raise Beds. Site needs Preventative Maintenance.

Yearly Maintenance Checklist

- 1) Vacuum sweep the entire pavement to clean loose debris from the joints. This should be done more frequently if the pavement is heavily trafficked or has a lot of overhanging trees
- 2) Inspect joints and refill to the top of the paver if necessary
- 3) Settlement areas exceeding $\frac{1}{2}$ " and any protruding pavers that lip by more than $\frac{1}{4}$ " from surrounding pavers should be picked up and re-laid after base or bed layers are repaired.
- 4) Replace any badly damaged pavers.
- 5) Inspect any exfiltration pipes to verify that pipes are not clogged.

Regenerative Maintenance

Regenerative maintenance is removing the clogged joint material and replacing with fresh washed aggregate in order to restore the pavement to close to its initial rate of infiltration.

In order to determine if regenerative maintenance is necessary it is recommended that the pavement be viewed during a rain event. If area of the pavement either puddle or sheet flow across the joints, then that area of the pavement likely needs to be regenerated.

You can also test infiltration rates of permeable pavers using a single ring infiltration test as proscribed in ASTM C1781, but multiple tests across the pavement must be done in order to get a true feel for how the pavement drains.

If it is determined that the pavement needs regenerative maintenance then the goal is to remove the top ~1/2" of the joint material, which contains a debris chip and then replace it with new washed aggregates. It is important to note that the clogging does not extend into the bedding course and subbase.

To remove the top ~1/2" of joint material containing the debris chip and powerful vacuum sweeper that can suck out the debris chip. Once the debris chip is removed then new washed aggregate is swept into the joints in the same fashion as initial installation.



Picture 2: Vacuum Sweeper Truck

The frequency of regenerative maintenance depends on various factors including the amount of preventative maintenance to conditions of the site themselves. It could be as quickly a few years to well over a decade depending on the site.

Snow Removal & Deicing

Fortunately, permeable systems tend to stay drier with minimal ice due to the natural draining of the pavement and to the transfer of warmer air from below the frost line to the surface.

Snow and ice can be removed with normal hand equipment or motorized vehicles. Snowplow blades should be equipped with a rubber edge and set @ 1/4" above the pavement. Rotary brushes and snow blowers can also be used. The use of rock salts or sodium based deicers can be used but are likely to produce efflorescence for a period of time. Pure magnesium chloride is a premium deicer shown to not effloresce in lab testing.

Any product that is used to provide traction like sand or sawdust should be avoided as these products will increase clogging.