

SWMPave Simplified Infiltration Testing

Background

Frequent visual inspections and cleaning of the wearing surface is vital to ensuring the long-term performance of a permeable pavement system. The best way to assess the function of your permeable pavement is to observe the system during a significant rainfall event... ***just use your SWMpave umbrella to keep dry!***

During the visual inspection, find locations with puddles or surface runoff that indicate possible clogging. Areas observed to have soil in the joints or vegetation growing in the joints indicate even more severe clogging problems. The probable causes of clogging (e.g. drainage from pervious upslope areas, vehicle tracking, wind deposition) should also be evaluated by your inspection team, to eliminate recurring problems and reduce maintenance needs.



Setting up the Infiltration Test

Assessment of the surface infiltration rate can also be performed using a simplified infiltration test. This test provides a rapid estimate of the surface infiltration rate by a single person using easily-furnished materials and relatively small water volumes. Because the simplified infiltration test measures infiltration under shallow head conditions (<2.0" of water), pressure on the putty seal is minimized and lateral leakage is reduced.

Materials:

- Cut a 6" high ring from a 12" diameter PVC pipe, with a 1" depth marked on the inside of the ring.
- Partially fill a 5-gallon bucket with 10" depth of clean water (3.4 gallons).
- 40 oz. plumber's putty (use as necessary).
- Stopwatch or similar timepiece.
- Knee pads (or other protective equipment, as required).

The pavement surface should initially be swept in the areas to be tested, to remove any large debris. The ring is then placed, putty-side down, in the area to be tested (use a 1-inch wide bead of plumber's putty around the bottom edge of the PVC ring to prevent lateral leakage from the device). Apply weight to the ring, and press the putty into the pavement joints, then add additional putty as necessary along the inside or outside edge of the frame to create a watertight seal.

Weight in the form of water buckets, cinder blocks, or body weight can also be applied to the frame during the testing to



maintain the seal.

Running the Infiltration Test

With a stopwatch or timepiece ready, the water is gradually emptied into the sealed ring and the time is recorded from when water hits the pavement until all ponded water has fully infiltrated the surface. Pour the water in order to maintain approximately a one inch depth in the ring at all times (constant head) until the bucket is empty.

The permeable pavement's infiltrative capabilities are then characterized as follows:

Newly Installed / Recently Maintained:	< 2 minutes (> 230 in/hr)
Acceptable — Provide Preventative Maintenance:	2 to 8 minutes
Clogged — Provide Restorative Maintenance:	> 8 minutes (< 60 in/hr)

ASTM Testing Method

ASTM Standard C 1701 "Standard Test Method for Infiltration Rate of In Place Pervious Concrete" may also be used for evaluating permeable pavement performance; however, this simplified method can be less expensive and more routinely used to monitor your permeable pavement system for routine maintenance purposes.