



Maintenance of stormwater green infrastructure is critical to its long-term performance. Observations during rainfall events, while efficient in determining potential areas of clogging, they are not always practical for maintenance professionals. Regular inspections will aid in observing potential sources of clogging; however, surface infiltration rates are a more accurate rapid assessment. Tools such as the Simple Infiltration Test (SIT) estimate surface infiltration rates in a manner that is cost-effective, efficient, and replicated.

The SIT infiltrator can be easily constructed using material found at a local hardware or home improvement store. The test measures infiltration under shallow head conditions (2" of water) using relatively small water volumes and can be performed in five minutes.

The following materials needed to build a SIT infiltrator and perform the test are shown in Figure 1.

- One 8-foot piece of unwarping 2"x4" lumber
- Screws and drill
- Plumber's putty
- 5-gallon bucket of water
- Stopwatch or timepiece



Figure 1. SIT Infiltrator (left) and lab-verified five-gallon bucket (right)

To perform the SIT, a 1-inch bead of plumber's putty is applied to the bottom edge of the frame to prevent lateral leakage from the device. The pavement surface should be relatively free of debris and placed, putty-side down, in the area to be evaluated. Weight is gently applied to the frame to press putty into pavement joints. An added fillet of putty can be applied along the inside and outside edge of the frame to ensure a watertight seal (Figure 2).



Figure 2. Intern, Jade Bailey, applying 1-inch bead of plumber's putty to SIT infiltrator



With timepiece ready, five gallons of water are quickly emptied into the sealed frame and the time is recorded from when water hits the pavement until all ponded water has infiltrated the surface or the time recorded is greater than 300 seconds/five minutes (Figure 3).



Figure 3. SIT Testing (water added on left, end of test on right)

The following table can be used to determine current conditions and type of maintenance needed based on the timing of the SIT Test.

Infiltration Time	Condition	Maintenance Activity Needed
< 30 seconds	Performing very well, corresponds with “excellent” or “good” perceived effectiveness rating, no runoff expected.	None at this time.
30-90 seconds	Moderate debris/sediment collection, minor vegetation could be present. Pavement is still infiltrating stormwater.	Preventative cleaning should be considered.
90-300 seconds	Pavement is clogging and some runoff or pockets of ponding are occurring. Very little stormwater is infiltrating.	Clean permeable pavement with regenerative air vacuum sweeper or equivalent method.
>300 seconds	Pavement is clogged. Stormwater runoff is occurring. Corresponding perceived effectiveness rating is “poor.”	Clean permeable pavement surface with a regenerative air vacuum street sweeper and consider hydroexcavation or similar method to remove clogging.