

Porous Concrete Sidewalk Cleaning Trial Using a Leaf/Litter Vacuum Machine

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What we did

The City of Olympia, Washington installed a porous concrete sidewalk in 1999. The surface was pressure washed in 2003. The sidewalk was swept in 2004. After a year and a half of no attention the sidewalk was cleaned with a leaf/ litter vacuum machine. Another section of Perco-Crete pervious sidewalk was also cleaned at the same time. The cleaning was performed with a Minuteman Parker Vac-35. This machine applies a vacuum directly at the surface to be cleaned. There are no brushes or scrubbing of the surface. The machine is self propelled and operates at a walking pace.

How did it do?

The vacuum machines did a great job of removing loose debris on the sidewalk surface and of removing material from the surface voids. The machine operates quickly and was able to collect a large amount of material in a short time. We collected about 100 pounds of material in 30 minutes. The vacuum machine does a better job of cleaning the surface voids than the sweeping machines tried on the same material. The vacuum machine was also effective on the perco-crete porous concrete.

We encountered several problems during the trial work. 1) The vacuum machine had a tough time ingesting leaf piles when they were more than 2 to 3 inches thick. One section of sidewalk is confined on the backside this results in a strip of deep leaf piles. The vacuum machine had to be slowed down and worked around to collect the piles of leaves. 2) The debris collection bag is the exhaust for the air from the vacuum head. As the bag fills there is less bag for air to leave from resulting in back pressure and less suction force. The bag should be emptied at half full. 3) The particular machine we used generated a lot of dust when emptying the bag. The design of the machine made changing the bag difficult.

Conclusions

Leaf/Litter vacuum are a very effective way to clean porous sidewalks. To be effective the vacuum must be applied to the cleaning surface. The machines operate quickly and effectively. The choice of a machine should consider the easy of emptying the debris collection bag. Leaf/Litter vacuums are more effective than sweeper with dust control vacuum systems.

Any sidewalk cleaning program which uses these vacuum machines should probably also include a pressure washing component in the program to restore porosity if debris migrates lower than the level at which the vacuum machines can remove the material.

Photos

Photo 1. Minuteman Parker Vac-35



Photo 2. One side cleaned with vacuum machine



Photo 3. Close up of cleaned and un-cleaned porous sidewalk.

