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## MASTEP Technology Review

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<b><u>Technology Name:</u></b>	Porous Pavement, Walden Pond parking lot
<b><u>Studies Reviewed:</u></b>	Installation and Evaluation of Permeable Pavement at Walden Pond State Reservation - February 1986
<b><u>Date:</u></b>	11/06/2008
<b><u>Reviewer:</u></b>	Jerry Schoen
<b><u>Rating:</u></b>	3 for infiltration and temperature data, 4 for water quality data

**Brief rationale for rating:** This study had several components, with separate methods, frequency, duration and magnitude of data collection. Groundwater temperature monitoring was conducted with reasonably rigorous methodology, but raw data was lacking in this report. Infiltration data was collected from a mix of artificial and natural rainfall. Little information provided on quality control. Number of natural storms and total rainfall monitored unknown. Integration of artificial and natural rainfall data is questionable, because different methods were used and rainfall intensities were generally much larger in the artificial tests than in natural rainfall measurements. Water quality data collected from a maximum of 3 storms, with very little documentation of quality control. Some problems were encountered in field sampling, but the report is not specific on how problems affected monitoring results.

### **Other Comments:**

- The study does include meticulous documentation of installation details, construction materials, testing equipment and methods, and a useful section on history of porous pavement use in the US.
- Maintenance and durability issues are discussed qualitatively.
- Water quality parameters tested included pH, conductance, COD, Total organic Carbon (TOC), TKN, NH<sub>3</sub>, NO<sub>2</sub>, NO<sub>3</sub>, Orthophosphate, TP, lead, zinc.
- Permeable and impermeable asphalt mixes were tested. The two permeable mixes had porosities of 23% and 16% respectively, with infiltration rates of 84% and 72%. Based on tests performed in 1981, the study found that under flooding conditions, the infiltration rates expressed as inches per hour translate to 39 and 17 inches respectively.
- Over a 4 year period, the 23% porous mix exhibited a maximum of 3.2% clogging. The 17% porous mix exhibited 20.7% maximum clogging over the same period
- Brief qualitative reviews are provided of nine other porous pavement installations elsewhere in the US, based on a literature review conducted by authors of this report.
- The study assessed the response of the pavement mixes to temperature variations and frost penetration (section 5). It was found that frost penetration was somewhat less with permeable pavement relative to traditional dense asphalt. In addition, duration of freezing was somewhat less beneath asphalt concrete than under a gravel cover.