Article 103

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A Second Look at Porous Pavement/Underground Recharge

by Thomas Cahill, Cahill Associates

The optimal stormwater management practice prevents both water quality and quantity impacts. In theory, practices that rely on maintaining the mechanism of soil infiltration are ideal. Allowing the hydrologic cycle to continue in a pre-disturbance condition, so that aquifers are recharged and increased surface runoff pollutant loadings are prevented, is clearly the goal. However, practical engineering solutions based on the infiltration concept have been difficult to design and even more challenging to implement.

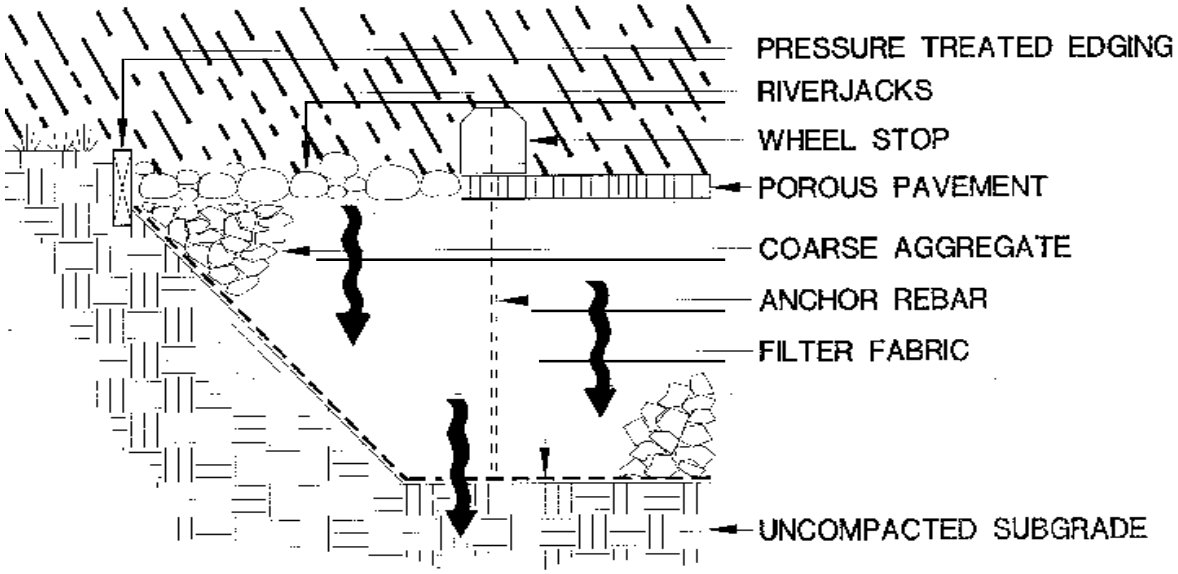
The quandary is illustrated vividly by porous pavement, a technique proposed over 20 years ago. After numerous unsuccessful installations, use of porous pavement is routinely rejected by most engineers, designers, and stormwater program managers. Contrary to prevailing wisdom, however, porous pavement/underground recharge bed stormwater practice applications *can* be developed successfully.

Cahill Associates (CA), a suburban Philadelphia environmental engineering firm, has been designing and constructing porous pavement/recharge bed installations in Middle Atlantic state locations for over 12 years. Their porous pavement installations serve a range of building parking needs and customers include office centers, fast food restaurants, libraries, and condominiums. Areas covered range from 3,000 to 147,000 square feet.

Experience has shown that most porous pavement failures occur because of a lack of erosion/sediment control during construction. In many instances, contractors, unfamiliar with *what* they were doing and *why* they were doing it, allowed substantial quantities of sediment to erode onto the pavement surface after installation. Construction traffic also tracks heavy loads of clay particles onto the surface. Void spaces in the porous asphalt became permanently clogged, preventing stormwater from even entering the recharge bed below.

The fine silts that managed to pass through the porous pavement and through the underlying rock-filled recharge beds then settled out on the recharge bed bottom, reducing the recharge bed's ability to infiltrate over time. These failures have made stormwater managers generally very reluctant to recommend porous pavement as a stormwater practice, rejecting the technology as impossible to apply in the real world.

Figure 1: A Typical Porous Pavement/Recharge Bed Design



Source: Cahill Associates