

## Investigation in the Optimal Design of Porous Concrete Sites

The primary goal of this research is to evaluate the performance of porous concrete used at a parking lot in Randolph, Vermont, to understand its hydrologic response during storm events, to model the site mathematically and then to use the resulting insights to develop a computer-assisted design capability for new sites. The mathematical code initially used for this purpose is a three-dimensional unsaturated flow model, which will be extended to include a shallow surface-water subroutine to simulate storm water runoff from surrounding impervious areas and also vertical migration of flow in the porous concrete. The study involves the analysis of water level data acquired from on-site monitoring wells through a pressure transducer system and the design and utilization of a laboratory method to determine the water retention curve of the underlying very low permeability soil. In addition, to further understand the hydrology of the site, there is an ongoing experiment aimed at quantifying evaporation in the rock-filled excavation located beneath the porous concrete surface.