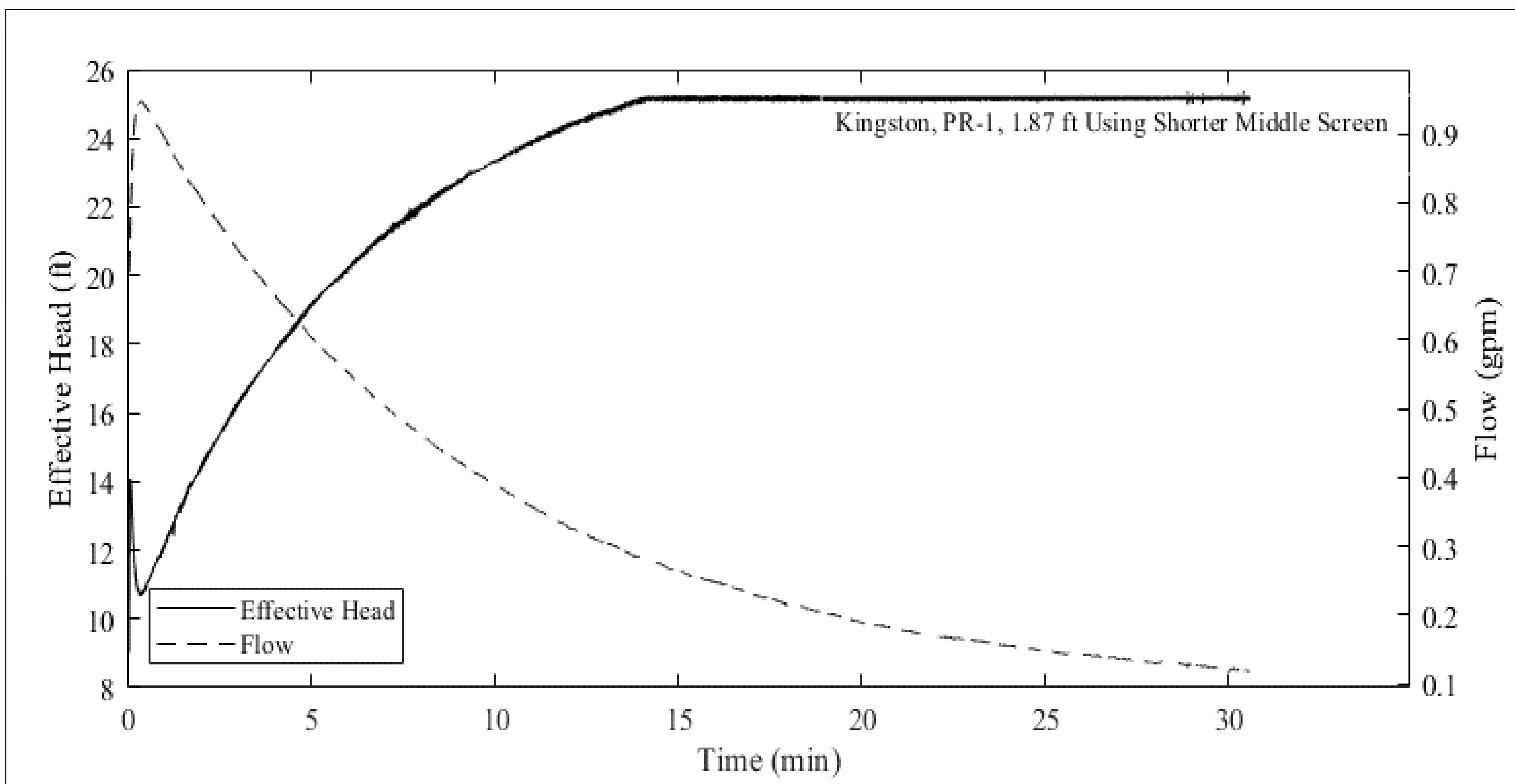
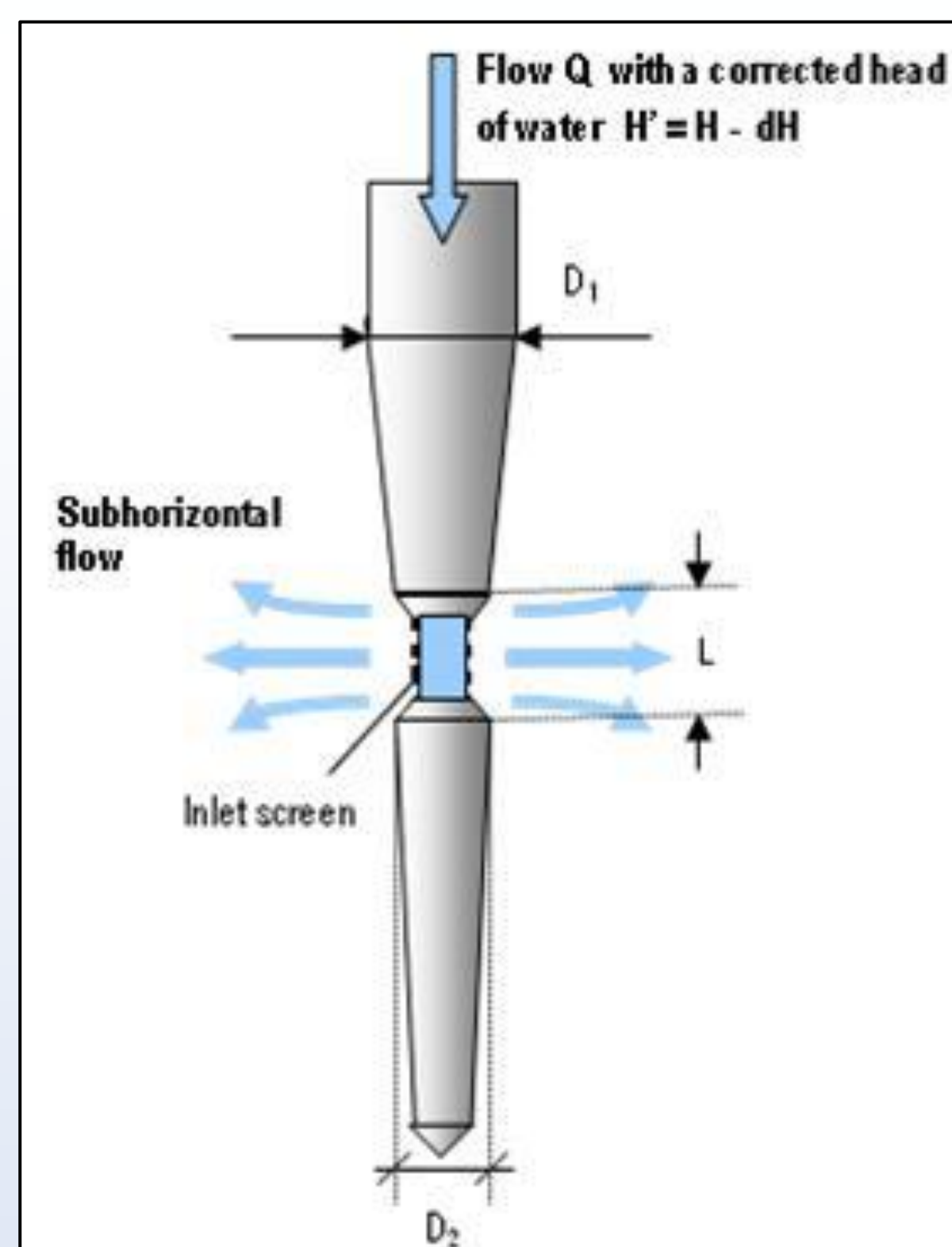


BACKGROUND

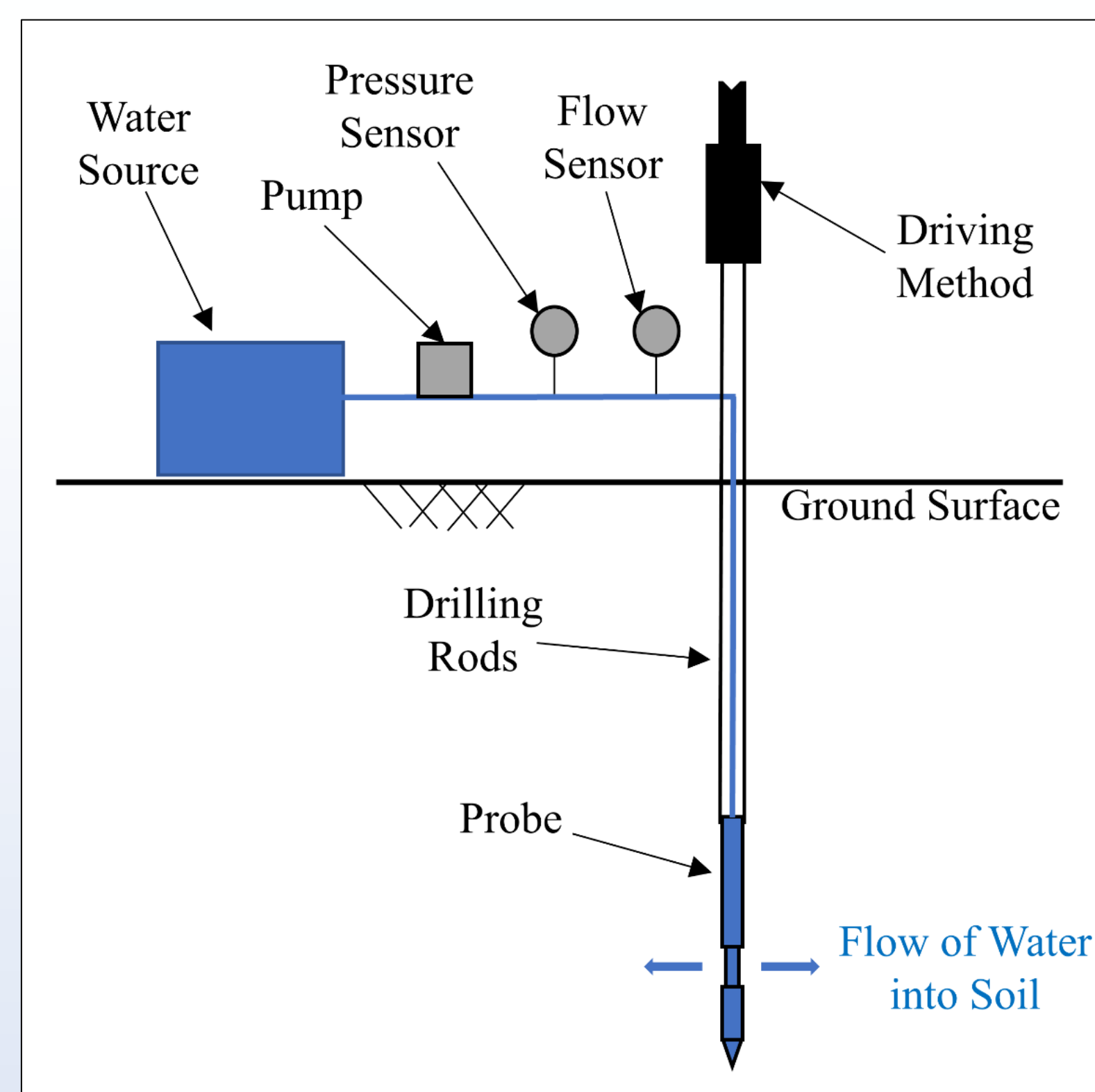
To characterize hydraulic conductivity for the design of stormwater best management practices (BMP's), the NHDOT currently uses a traditional field test, the borehole infiltration test. The interpretation method of this test uses general assumptions and lacks vigorous analysis due to its development in the 1950's. The proposed solution to these issues is to use a Permeator, an instrument originally developed in France to measure horizontal hydraulic conductivity in situ.



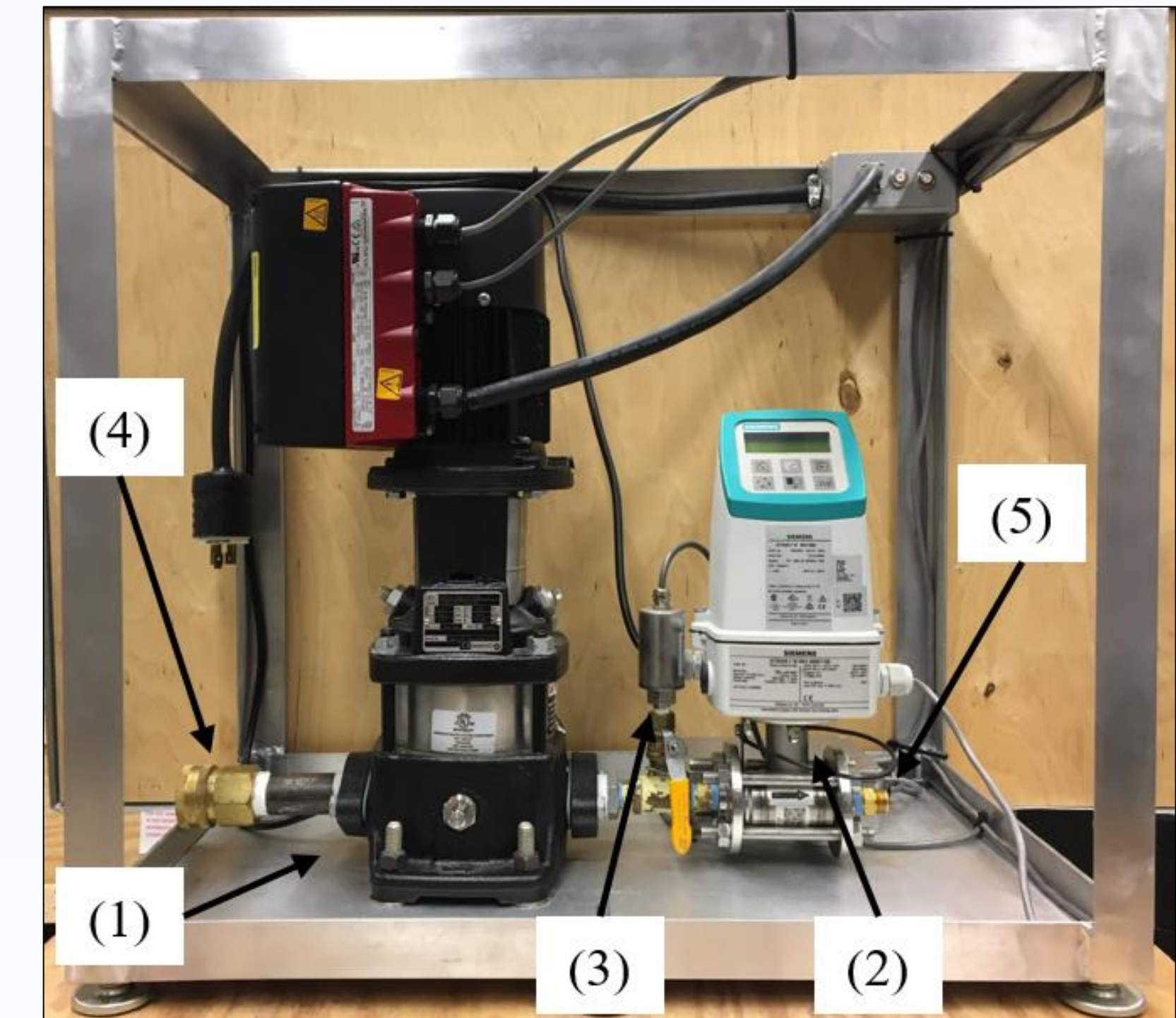
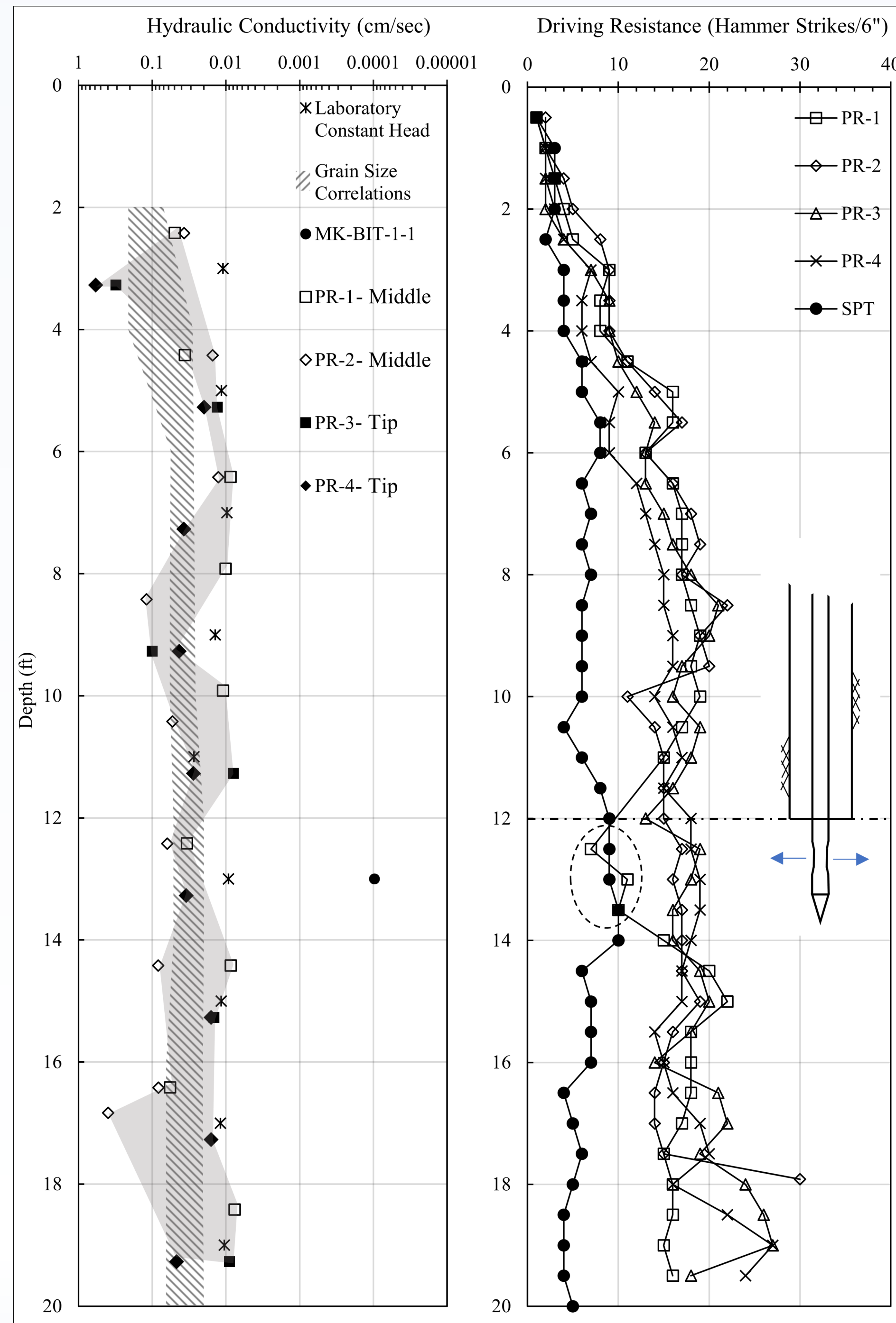
Example flow and effective head during Permeator test in Kingston, NH



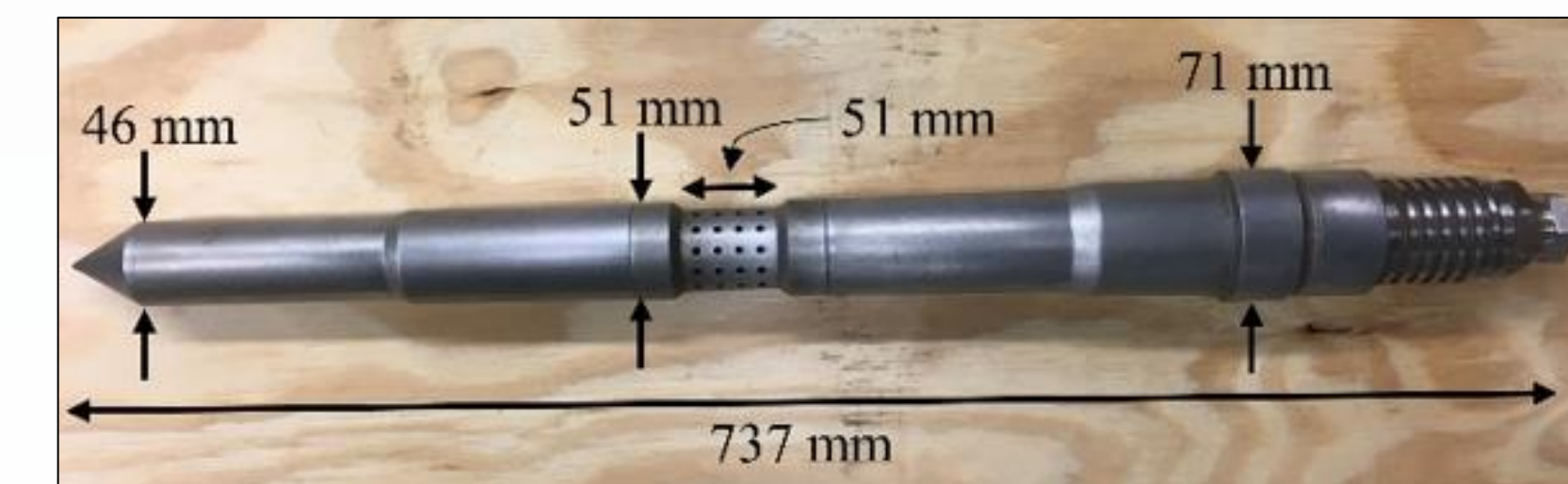
Schematic of Permeator probe



Permeator system configuration



Acquisition and Control System (Pump, Flowmeter, Pressure Sensor, Inlet Quick Connect, and Outlet Swagelok Fitting, respectively)



Probe configuration

Permeability and driving resistance results in Merrimack, NH

CONCLUSIONS

A Permeator has been designed, built, and tested at the University of New Hampshire. A simple testing procedure has been devised which allows the test to be carried out rapidly to obtain accurate measurements of pressure and flow of water into the ground during the Permeator test. The tool can be advanced into the ground using conventional drilling methods and the test takes less than 20 minutes at each depth of interest. The results from more than 120 field tests demonstrated the potential of the Permeator to rapidly characterize soils at different depths to generate profiles of hydraulic conductivity. Other methods such as borehole infiltration test are slow and provide limited data to support the required permeability measurements needed for design of BMPs.