Hydraulic Conductivity Cone

Hydraulic conductivity

Hydraulic conductivity plays an important part in many geotechnical and particularly in environmental geotechnical problems. Because horizontal groundwater flow predominantly takes place in aquifers, if present, it is desirable to measure the horizontal hydraulic conductivity of these aquifers.

Specifications

GeoDelft developed a hydraulic conductivity probe with the following specifications:

- Results of measurements can be used for profiling horizontal hydraulic conductivity against depth
- Measurement of permeability: 10-3 – 10-7 m/s
- Maximum depth: 30m below ground level.

Pressure potentials

Water is pumped into the soil through the filter, at a constant rate. Pressure potentials, generated by the constant flow rate of water, are measured in at least two places below the filter. The pressure potential data is used for calculating the horizontal hydraulic conductivity.

Measurements

The probe has a 36mm diameter and can be pushed into the soil by a standard CPT rig. For measuring a profile of horizontal hydraulic conductivity the probe is pushed into the soil to the required depth. At that depth, before the actual measurement of the hydraulic conductivity takes place, the penetration is stopped in order to prevent interference of water pressures by the preceding penetration. Measurement data are used to make a profile of the horizontal permeability as a function of the depth.