

# Standpipe Piezometer

## General

Standpipe piezometers are used to monitor piezometric water levels. They consist of a filter tip joined to a riser pipe. Readings are obtained with a water level indicator.

They are simple, reliable and relatively inexpensive. The accuracy depends on skill of operator. They can be very slow to respond to changes in pore-water pressure as large fluid volumes are required to change the level in the standpipe. It is not usually possible to remotely monitor these instruments.

## Applications

Typical applications for standpipe piezometers are:

- Monitoring pore water pressures to evaluate slope stability.
- Monitoring ground improvement techniques such as vertical drains, sand drains, and dynamic compaction.
- Monitoring dewatering schemes for excavations and underground openings.
- Monitoring pore pressures to check the performance of earthfill dams and embankments.
- Monitoring pore pressures to check containment systems at landfills and tailings dams.
- Monitoring water drawdown during pumping tests.

## Installation

The standpipe piezometer, which is either installed in a borehole or pushed into position, consists of a filter tip joined to a riser pipe. In a borehole filter tip is placed in a sand zone and a bentonite seal is placed above the sand to isolate the pore water pressure at the tip. The annular space between the riser pipe and the borehole is backfilled to the surface with a bentonite grout to prevent unwanted vertical migration of water.

*see next page*

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Where the push-in method is used there is usually no need to back fill around the riser pipe with bentonite grout. The riser pipe is terminated above ground level with a vented cap.

### **Operation**

Water levels in the standpipe piezometer are measured with a water level indicator. The water level indicator consists of a probe, a graduated cable or tape, and a cable reel with built-in electronics.

The probe is lowered down the standpipe until it makes contact with water. This is signaled by a light and a buzzer built into the cable reel. The depth-to-water reading is taken from the cable or tape. The Water Level Indicator features a sensitivity adjustment which helps the user obtain consistent measurements and eliminates false triggering.

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