

Inclinometer system

Deformation

Inclinometer systems are used to monitor deformation. The system includes inclinometer casing, an inclinometer probe and control cable, and an inclinometer readout unit.

ABS plastic inclinometer casing is typically installed in a near vertical borehole that passes through a zone of suspected movement. The bottom of the casing is anchored in stable ground. The inclinometer probe is used to survey the casing and establish its initial profile. It consists of two servo accelerometers housed in a stainless steel body, a connector for control cable, and two pivoting wheel assemblies.



Applications

Inclinometer systems are used for the measurement of lateral earth movements which can occur in the following:

- Land slides
- Unstable slopes
- Dams
- Embankments
- Landfills

They are also used to measure deflections in the walls of excavations, shafts, tunnels and in caissons, piles and sheet piling.

see next page

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Installation

The casing can be installed either in a grouted borehole or where ground conditions permit, pushed into position using CPT equipment. The annular space between the casing and the borehole is backfilled to the surface with a bentonite cement grout specifically designed to match the surrounding soil conditions. Where the push-in method is used there is usually no need to backfill around the casing with bentonite cement grout.

The inclinometer casing is installed so that one set of grooves is aligned with the expected direction of movement and the base is securely fixed into position well beyond the expected zone of movement.

Operation

Ground movement causes the casing to move away from its initial position.

The rate, depth, and magnitude of this movement is calculated by comparing data from the initial survey to data from subsequent surveys.

In a standard inclinometer survey, the probe is drawn from the bottom to the top of the casing twice. The inclinometer probe employs 2 force balanced servo-accelerometers to measure tilt. 1 accelerometer measures tilt in the plane of the inclinometer wheels, while the other accelerometer measures tilt in the plane that is perpendicular to the wheels.

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