Geo Tech Note:

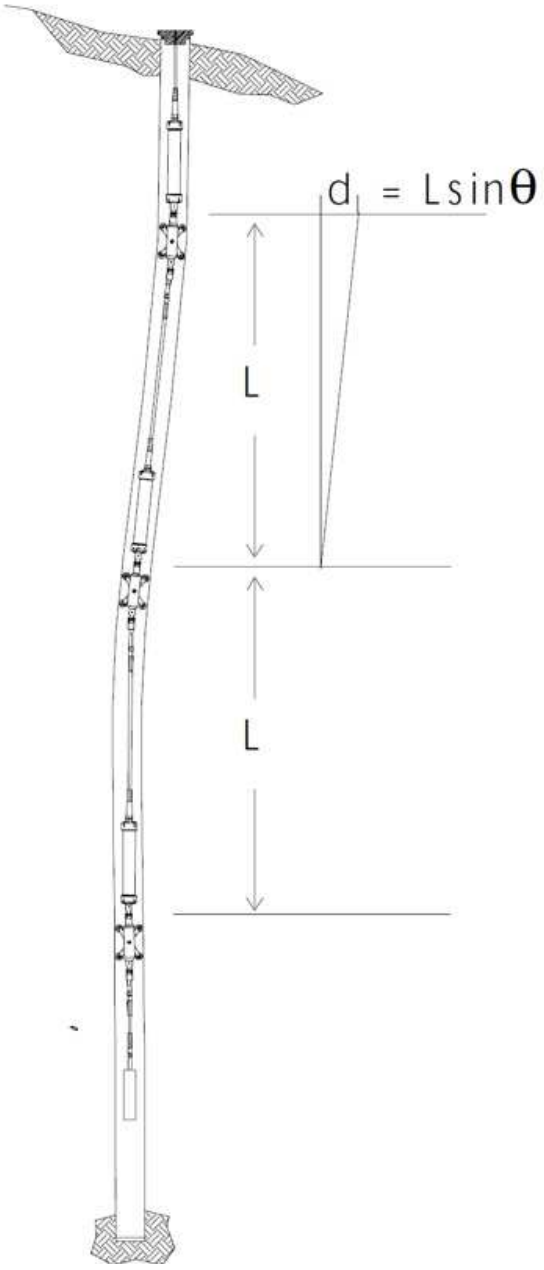
Little Dipper
In-Place Inclinometer

Little Dipper in-place inclinometers are used for monitoring slope and embankment performance. The individual biaxial sensors are connected by fiberglass rods and slide into standard inclinometer casing with a diameter of 2.75 inches or greater.

In multiple point applications, the sensors measure inclination of the casing at their depth of installation. In multiple interval applications, the sensor modules are attached to wheel sets with universal-joints and measure lateral displacements between the coupling depths.

Tilt of the casing is converted to a displacement d as shown on the adjacent figure. The cumulative displacement of the casing is determined by incrementally adding the displacements from a known or assumed fixed point - usually the bottom of the casing.

Each Little Dipper contains its own biaxial sensor and signal conditioning electronics within the downhole sensor module. The cable attached to each unit conducts DC power to the downhole electronics and conveys the output signal to the readout unit. Cable resistance changes or changes in cable length do not affect the output signal.



Jewell Instruments

Phone :
+1 (603) 669-6400

Email :
info@jewellinstruments.com

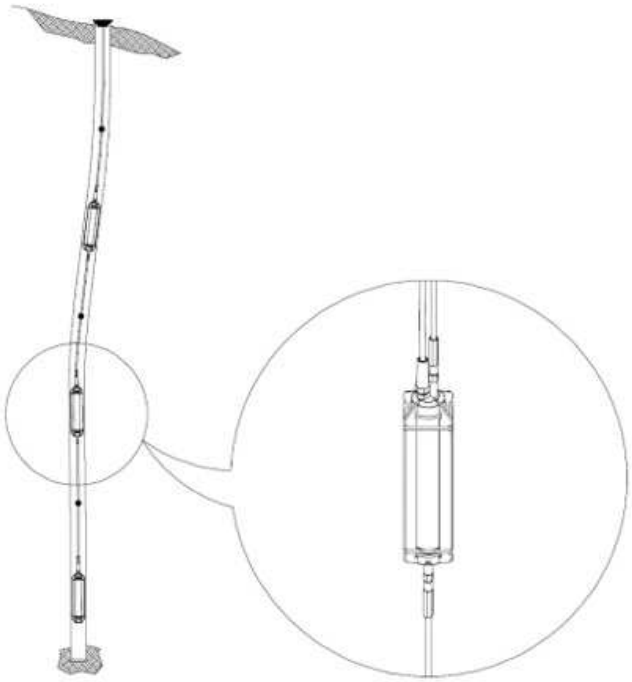
Web :
jewellinstruments.com

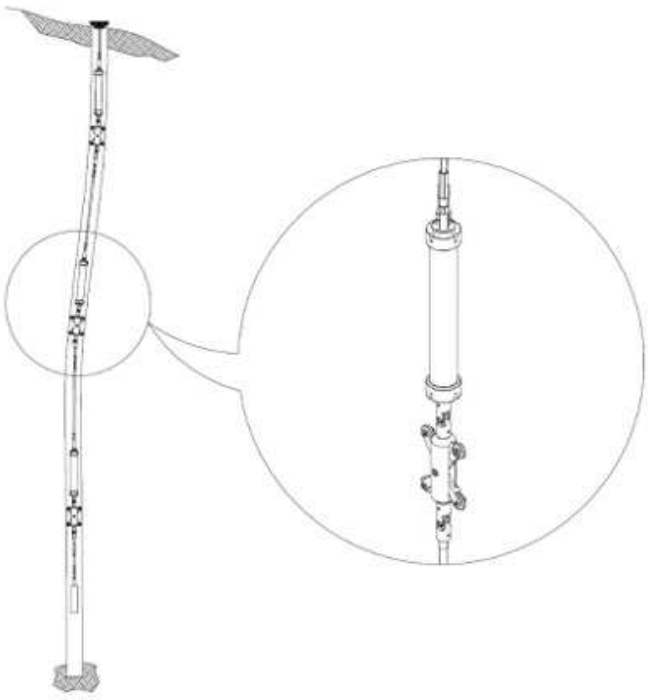
Geo Tech Note:

Little Dipper
In-Place Inclinometer

Multiple Point Installation

This application uses the Little Dipper to measure rotation at the instrument depth. This type of installation is appropriate for monitoring shoring systems or slurry walls as well as many types of movement, including creep, toppling, and subsidence. The assumption inherent in a multiple point installation is that measuring rotation at multiple points within the casing can adequately reflect the total amount of deformation. This is generally true when the length of casing over which the deformation occurs is greater than the instrument spacing. When most of the movement may be occurring on a discrete shear whose location is uncertain, a multiple interval installation is recommended. A multiple point installation can be used for monitoring movement within a shear zone if the location (depth) of the shear zone is known.





Multiple Interval In-Place Inclinometer Installation

With the optional variable length kit, the length of casing over which angular rotation measurements are made can be infinitely varied. In this application, the fins are removed from the sensor module, and a wheel set with universal joints is attached to the bottom of the sensor module. Fiberglass rods are attached to the top of the sensor module to extend the length over which the sensor is measuring rotation (See adjacent figure). A weight is placed at the bottom of the string of sensors to keep the system in tension. This allows fiberglass to be used instead of stainless steel (as long as the string is in tension, a string could be used to attach the sensors together). The wheel sets at each end of the fiberglass rods act as pivot points, allowing each gauge length to move independently without transferring any bending to adjacent lengths.

Jewell Instruments

Phone : +1 (603) 669-6400

Email : info@jewellinstruments.com

Web : jewellinstruments.com