
DC LVDTs Assist in Testing Soil Strength

A manufacturer of automated load testing equipment utilizes our LVDTs in their machines to help test soil strength. Windows-based software - featuring user-friendly graphical interfaces - gives these systems an ultramodern look. Among the many sensors used to profile the soil sample, a DC-DC LVDT from our Series 240 measures deformation of the sample under load; this customer chooses from the Models 0242, 0243 & 0244 to match the stroke requirement of the application.

As seen in the photo, the LVDT is hard-mounted to the *deformation bracket* at the very top of the machine. The transducer's core assembly is fastened to the fixed *crosshead* just below the LVDT, making this the reference point. Two side rods, which are attached to the ends of the deformation bracket, pass freely through the crosshead and are connected at the other end to the circular *platen* just above the base. Located inside the base is a screwjack that pushes up on the platen and ultimately applies a load to the soil sample.

The soil sample - typically cylindrical in shape - is isolated inside a transparent chamber, located at the center of the

machine. In a clever twist to this innovation design, a steady pressure is applied by a fluid that surrounds the circumference of the sample, separated from the fluid by a rubber diaphragm. This is done to simulate real environmental conditions, as the sample can be taken from the earth at depths up to 200 feet.



As the platen moves upward, pressure is applied to the sample by a piston that enters the testing chamber through the top. A load cell, located just above the piston, measures load. The LVDT detects the linear motion of the platen through the two side rods connected at one end to the platen and at the other end to the deformation bracket holding the LVDT. The signal output from the LVDT and readings from the other sensors appear in display boxes on a computer screen. The sensor data is then manipulated to determine soil strength.

Information about soil strength is an important thing to know before buildings are constructed. And the accuracy of this information is only as precise as the data collected from the sensors - making our Series 240 DCDTs a critical part of this system.