

Laboratory Calibration of Soil Pressure Transducer for a Specified Field Application

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Abstract : Nowadays soil pressure transducers are widely used to measure the soil stress states in laboratory and field experiments. The soil pressure transducers, investigated here, are traditional diaphragm-type earth pressure cells (DEPC) based on strain gauge principle. It is found that the output of these sensors varies with the soil conditions as well as the position of a sensor. Therefore, it is highly recommended to calibrate the pressure sensors based on the similar conditions of their intended applications. The factory calibration coefficients of the EPCs are not reliable to use since they are normally calibrated by applying fluid (a special type of oil) pressure only over load sensing zone, which does not represent the actual field conditions. Thus, the calibration of these sensors is utmost important, and they play a pivotal role for assessing earth pressures precisely. In the present study, TML soil pressure sensor is used to compare its sensitivity under different calibration systems, for example, fluid calibration, and static load calibration with or without soil. The results report that the sensor provides higher sensitivity (more accurate results) under soil calibration system.

Keywords : calibration, soil pressure, earth pressure cell, sensitivity

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