One Dimensional Consolidation and Direct Shear Tests: Experimental Setup Based on a LabVIEW Approach

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ABSTRACT

This work describes an experimental setup that was developed in order to automate the one-dimensional consolidation and the direct shear Tests. This experimental setup assures repeatability in the data acquisition, avoiding human errors, mainly when the tests data vary with a high dynamic. The described setup is based on LabVIEW, LVDT sensors and a 16 Bit Data Acquisition Board. For the one-dimensional consolidation test it was used a Load device and a consolidometer, being the experimental setup developed according to the standard ASTM D2435 / D2435M - 11. For the direct shear Test it was used an apparatus, covered in ASTM standard D-3080 / D3080M - 11, "Standard Method for direct shear test on soils under consolidated drained conditions".