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## **Advances and Retreats in Geotechnical Measurements**

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#### **Abstract**

Measurements are essential to geotechnical practice. This paper examines the current state of geotechnical measurements in terms of the advances that have been made and the retreats that have accompanied these advances. Laboratory measurements are used to obtain mechanical and physical properties of geologic materials for analysis and design. Modern electronics makes possible a wide variety of laboratory tests to measure strength, stress-strain behavior and permeability. Automated testing systems offer many advantages, but they also produce problems. Capabilities of automated testing systems are presented and discussed along with advantages and problems. Field measurements of performance have been central to advancements in geotechnical practice. Experience gained from one of the largest geotechnical instrumentation programs ever undertaken is presented and discussed. The paper concludes with some observations about the current state of geotechnical measurement practice.