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## **ROLE OF GEOTECHNICAL MONITORING: STATE OF THE ART AND NEW PERSPECTIVES**

### **Summary:**

*As geotechnical engineers, we all well know that, each project involving rock or earth, underruns the risk of facing surprises. We also are well aware of the fact that each of our designs is, to some extent, hypothetical. These facts are coming from our privilege of working with materials created by nature and, therefore, different from any theoretical model that we choose to describe them. Consequently, the uncertainties involved in the behaviour of a geotechnical structure are generally larger than those related to any other engineered structure are. Field observations and in particular quantitative measurements of specific physical quantities are the only antidote to the described inherent limitations and allow the geotechnical engineer to efficiently and safely design a project, on one side, and the constructor to carry out the work economically and effectively, on the other. The paper introduces the main aspects of geotechnical monitoring, from design to implementation, and outlines the principles governing the choice between traditional or innovative instrumentation.*

### **Key words:**

*Geotechnical monitoring, observational method, instrumentation, early warning, MEMS, field observation.*

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