

Study of the Mega-Landslide at the Community of Ropoto, Central Greece, and of the Design of Mitigation and Early Warning System Using the Fiber Bragg Grating Technology

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Abstract : This paper refers to the world known mega - landslide induced at the community of Ropoto, belonging to the Municipality of Trikala, in the Central part of Greece. The landslide affected the debris as well as the colluvium mantle of the flysch, and makes up a special case of study in engineering geology and geotechnical engineering not only because of the size of the domain affected by the landslide (approximately 750m long), but also because of the geostructure's global behavior. Due to the landslide, the whole community's infrastructure massively collapsed and human lives were put in danger. After the complete simulation of the coupled Seepage - Deformation phenomenon due to the extreme rainfall, and by closely examining the slope's global behavior, both the mitigation of the landslide, as well as, an advanced surveillance method (Fiber Bragg Grating) using fiber optics were further studied, in order both to retain the geostructure and to monitor its health by creating an early warning system, which would serve as a complete safety net for saving both the community's infrastructure as well as the lives of its habitats.

Keywords : landslide, remediation measures, the finite element method (FEM), Fiber Bragg Grating (FBG) sensing method

Conference Title : ICCGGE 2017 : International Conference on Civil, Geomechanical and Geotechnical Engineering

Conference Location : Zurich, Switzerland

Conference Dates : July 27-28, 2017