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TITLE OF DIPLOMA THESIS:

Water management methodology in open excavations

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ABSTRACT

This essay gives an overview of groundwater impact on soil, and deals, mainly, with groundwater control during design and construction of underground works, with emphasis on techniques used and their management. Groundwater management in underground works requires understanding of the principles of groundwater movement and its impact on soil structure, as well as acquaintance with the current pumping technology for the effective and safe completion of such works. Thus, the aim of this dissertation is to present the basic principles of groundwater control and provide a comprehensive management guide from the stage of design to that of construction. Furthermore, it provides information on groundwater-related problems and their treatment. On a theoretical level, the essay presents the current tools and methods of groundwater control and analysis, as well as the way in which the latter are selected. In practice, this is demonstrated through the case-study of groundwater control management analysis implemented during the excavation for the construction of Crossover “Sintrivani” of Thessaloniki metro. In this way, it is attempted to give a general overview for the design and operation of groundwater control systems. Throughout research regarding groundwater impact on underground works carried out in the present study, it is concluded that a thorough and in-depth geotechnical research forms an integral part of the construction, and that monitoring of groundwater traits and movements caused within the site is an indispensable tool for construction management and improvement of design.

KEYWORDS

Open excavations, Groundwater, Groundwater management