

Estimation of adjacent building settlement during drilling of urban tunnels

ABSTRACT

Recent urbanization developments in big cities with limited available land for construction, have led the public transportation systems to go underground areas. The occurrences of unexpected damages due to wrong predictions on the behavior of the tunnel lining, the surrounding soil and the improper designing of the tunnel emphasizes the importance of the study and in addition the prediction of possible changes in form throughout the tunnel excavation. Studying the rate of a structure's settlement designed within the vicinity of these tunnels is therefore of great importance. In this paper, employing the Finite Element Method (FEM), optimizing settlement of the structure is considered throughout tunnel excavating. What have to be carefully considered are the horizontal distances between the tunnel and buildings with different stories, the diameter of the tunnel, and the relation between the settlements of buildings in any given direction. In addition, the vertical distance between tunnel and buildings is a crucial issue taken into account in this research. The result of this research can be useful to optimize the construction and implementation of underground structures.

Keyword: Entitative coal crossheading; Fully-mechanized; Mine pressure behaviour regularity