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Building Damage Assessment Next to Karaj Subway Station

Eshagh Namazi[1], Mohsen Hajihassani[2], Mohammad khosrotash[3], Hisham Mohammad[4], Masoumeh Karimi Shahrbabaki[5]

[1]Research Assistant, Steel Technology Centre, Universiti Teknologi Malaysia. eshagh.namazi@gmail.com

[2]Research Assistant, Department of Geotechnics and Transportation, Faculty of Civil Engineering, Universiti Teknologi Malaysia. mohsen_hajihassani@yahoo.com

[3]Managing Director, Tunnel Rod Construction Consulting Engineering Inc. Iran. mo_khosrotash@yahoo.com

[4]Senior Lecturer, Faculty of Civil Engineering, Universiti Teknologi Malaysia. mhisham@utm.my

[5]Department of Mining Engineering, Islamic Azad University, Tehran, Iran. mkarimi.shb@gmail.com

ABSTRACT

Tunnel excavation in the urban areas can induce ground movements, which distort and, in serve cases, damage overlying buildings and services. To predict damage in the buildings an analytical framework approach based on the concept of limiting tensile strain is used world-widely. In developing the approach clearly, there is the conspicuous shortage of well-documented case histories of measured building response to ground movement. In this paper, effects of construction of the Station E in Karaj Subway System on the adjacent 2-storey commercial buildings are presented. The Station was constructed by enlargement of the NATM tunnels. Damage to the building is assessed in two ways. First, the analytical assessment of building damage is made by calculating tensile strains due to settlement. Second, an external visual inspection was made of cracking or damage to verify the analytical prediction. The results provide an important frame of reference for interpreting the measured responses of the nearby buildings.

KEYWORDS

Karaj Subway; Surface Settlement; Building Damage Assessment; Subway Station; Cracks.