

عنوان مقاله:

Analysis of the impact of various factors on ground settlement profile due to excavation Twin tunnels

محل انتشار:

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خلاصه مقاله:

Constant growing of cities has caused many problems in transportation, one of the greatest ways to overcome this problem, is using underground transportation system. In urban areas, regarding the shallow depth of tunnels, the ground often consists of soil, which design and calculation of it is very important, because building new tunnels near the existing buildings is inevitable. Generally excavation tunnels in any depth of soil causes a change in the stress distribution system followed by tunnel opening divergence leading to distortions in the ground surface. In this paper the settlement resulting from the excavation of a twin tunnel is investigated using the Isfahan subway twin tunnel data and finite difference software such as Flac 3D and Flac 2D. Also, to better compare different methods of tunnel excavation, the effects of factors such as two tunnels excavation delay, circular cross-section of the tunnel and various elastic modules of the surrounding soils of the tunnels are assessed as well. The results showed that the settlements calculated by Flac 3D and Flac 2D have a 6% and 9% difference with the real values respectively. Investigating two tunnels' excavation delay showed that simultaneous excavation increases the settlement by 3%. It was also observed that the settlement decreases by increasing the modulus of elasticity and for all the values, the ratio of the settlement of the surface ground on the top of the tunnel center to the settlement of the tunnel crown is constant and equal to 0.7.

کلمات کلیدی:

Soil settlement, Isfahan subway twin tunnel, Flac 3D, Flac 2D, Excavation delay

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