

## عنوان مقاله:

Influence of Tunneling in Soft Soils on Axial Response of Piles

## محل انتشار:

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## خلاصه مقاله:

The development in urban areas can be included the construction of shallow tunnels in soft soils. The construction of tunnels in shallow depth causes the ground to displace. Such displacements can, under certain circumstances, be imposed on in-service piled foundations, which are likely to be constructed in soft soils subsequently. Therefore, the response of piles to axial loading may be altered. In this paper, the free field vertical movements of the ground due to tunnelling, is primarily computed using a relatively new approach. In the next step, the computed free field movements of the ground are imposed on the pile. The response of the pile under the ground movements is then calculated using a numerical approach based on finite element methods. It is shown, through a parametric study, that the effects of tunnelling on the pile response is of great importance and depends on tunnel geometry, tunnel placement relative to the pile, the location of the pile tip relative to the tunnel axis, soil nonlinearity, ground loss ratio, and pile geometry. It will be shown that the induced forces on piles caused by tunnelling are significant and should be taken into consideration when designing piles for external loads exerted from supported structures.

## کلمات کلیدی:

Settlement, Soft soils, Tunneling, Nonlinear behavior, Piled foundations, Finite element methods

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