

## عنوان مقاله:

Study on the Rapid Drawdown and Its Effect on Portal Subsidence of Heybat Sultan Twin Tunnels in Kurdistan-Iraq

## محل انتشار:

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## خلاصه مقاله:

The excavation of tunnels below the water table causes variations in the hydraulic level, pore pressure and effective stresses. In this regard, rapid drawdown is considered as a destructive phenomenon as to the change in the flow regime which has mostly been studied for the reservoirs of embankment dams. The rapid drawdown occurred at the upstream shell of the dam gives rise to increase in the pore pressure at the upstream shell. This is as a result of the incompilance between the water loss inside the shell and the reservoir water level. Hence, it would be more likely to have instability and sliding at the upstream slope on account of decrease in the effective stress. Lack of sufficient studies performed on this matter in tunnelling projects on the one hand and the knowledge on the most important parameter for decreasing the destructive effects of this phenomenon on the other hand necessitates performing further studies on this matter. To this end, the reasons for the occurrence as well as the affecting parameters were studied by modelling the large subsidence of the inlet portal of Heybat Sultan twin tunnels located in Kurdistan-Iraq making use of the variations of the groundwater boundary conditions under Phase 2 code. The modelling results depict the importance of the drawdown rate and the permeability coefficient of the surrounding rock mass. In the interim, the rapid loss in the hydraulic gradient caused by the drainage of a considerable volume of precipitations into the tunnels led to the rapid decrease in the pore pressure and increase in the effective stresses up to total stress. This has resulted in the consolidation settlement in the tunnel portal.

## کلمات کلیدی:

Rapid Drawdown; Subsidence; Pore Pressure; Effective Stress; Tunnelling

## لینک ثابت مقاله در پایگاه سیویلیکا:

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