World Academy of Science, Engineering and Technology
International Journal of Geotechnical and Geological Engineering
Vol:9, No:03, 2015

Groundwater Seepage Estimation into Amirkabir Tunnel Using Analytical Methods and DEM and SGR Method

Authors : Hadi Farhadian, Homayoon Katibeh

Abstract : In this paper, groundwater seepage into Amirkabir tunnel has been estimated using analytical and numerical methods for 14 different sections of the tunnel. Site Groundwater Rating (SGR) method also has been performed for qualitative and quantitative classification of the tunnel sections. The obtained results of above-mentioned methods were compared together. The study shows reasonable accordance with results of the all methods unless for two sections of tunnel. In these two sections there are some significant discrepancies between numerical and analytical results mainly originated from model geometry and high overburden. SGR and the analytical and numerical calculations, confirm the high concentration of seepage inflow in fault zones. Maximum seepage flow into tunnel has been estimated 0.425 lit/sec/m using analytical method and 0.628 lit/sec/m using numerical method occurred in crashed zone. Based on SGR method, six sections of 14 sections in Amirkabir tunnel axis are found to be in "No Risk" class that is supported by the analytical and numerical seepage value of less than 0.04 lit/sec/m.

Keywords : water Seepage, Amirkabir Tunnel, analytical method, DEM, SGR
Conference Title : ICCCGE 2015 : International Conference on Civil, Construction and Geological Engineering
Conference Location : Rome, Italy
Conference Dates : March 05-06, 2015