

# INFLUENCE OF TECTONIC FAULT ZONES ON TUNNEL LININGS

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**Abstract:** Main goal of this paper is to analyse the influence of presents of weakness planes in the zone of tunnel excavations on stress – deformation stage around tunnel opening, and intensity of cross section forces in tunnel linings. For this purpose, one circular tunnel structure is analysed excavated in rock mass category IV in accordance with Bieniawski classification (RMR-System). Finite Element Method (FEM) implemented in software PHASE2 ([www.roscience.com](http://www.roscience.com)) is used for numerical modeling of the problem. Plane of weakness is taken into account using (define joint) option in PHASE2 which allow slip to occure along the joint (plane of weakness). To see the effect of the fault zone on the tunnel lining, two models are analysed: (first) without fault zone, and (second) with fault zone sloped at angle of  $60^0$  with the horizontal axis. Analysis results shows much bigger intensities (8 times ) of cross section forces in the tunnel lining for the model with plane of weakness, which impose that conclusion that, plane of weakness presents in the zone of excavation has a great influence on stress – deformation stage and cross section forces in tunnel lining, and must be taken into account in the numerical modeling of the continuum to obtain more accurate and more realistic results.

**Key words:** PHASE2, Finite Element Method, modeling, numerical model.



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