

عنوان مقاله:

Geological evidences of collapse zones in TBM tunneling; a case study of Ghomroud water conveyance tunnel, IRAN

محل انتشار:

نهمین همایش ملی تونل (سال: 1390)

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خلاصه مقاله:

There are many factors such as equipments, management, personnel skills and ground condition that affected the TBM performance and mechanized excavation. The adverse geological condition that encountered in the tunnel is one of the most important parameters that affect the excavation process. Nature of the adverse geological conditions and fuzziness of them cause to decrease the accuracy of their prediction. It seems there are some evidences that can lead us to detect the problematic zones more exactly. To research the role of the geologic evidences in the collapse zones detection, the data gathered from a water conveyance tunnel excavated in central Iran were considered and analyzed. The rock formations along the tunnel path consist of metamorphic and sedimentary rocks aged from Jurassic to cretaceous. During the tunnel excavation the adverse geological conditions several times cause to collapse of tunnel and subsequently sticking of TBM. The parameters such as quartz content, fragment size and maximum fragment size of cuttings and amount of injected pea gravel behind the lining were monitored during the excavation, especially in collapse zones. The mentioned parameters have a variable rate along the tunnel path and these variations depend on the geologic condition. Quartz content of cutting materials in the collapse zones are higher than surrounding ground of these zones and the fragment size and maximum size of fragments in the collapse zones show an increasing trend relative to the normal condition of ground. Also, the injected pea gravel in collapses decreases in respect of other parts of tunnel. The results of this study show that the monitoring of variation in some geological parameters such as the amount of secondary minerals in cutting materials and the size of cutting fragments, also the amount of injected pea behind the lining of tunnel can help us to better prediction of collapse zones in the metamorphic rocks.

کلمات کلیدی:

TBM, collapse zone, quartz content, fragment size, cuttings

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