

Tunnel monitoring and Tunnel construction-In the case of Hualien New Ziqiang tunnel

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Abstract

The New Ziqiang tunnel located between Ruisui Township and Yuli Town in Hualien county ,with Double track railway. The geological material of tunnel including: Slate, Wuhe Conglomerate, Schist, and some weak clay inside the Wuhe Conglomerate. When tunnel excavation near or in the weak clay, tunnel show large deformation and collapse. In this case, we use two tunnel monitoring tool: 1. Tunnel Roof (Top arch) Sink monitoring. 2. Tunnel space convergence monitoring. Tunnel monitoring can quickly show the deformation status of the tunnel. The tunnel construction countermeasures, especially during the tunnel collapse and deformation, can be quickly reviewed by compared with Tunnel monitoring data. The countermeasures to do with tunnel collapse and deformation should be multi-modal and multi-stage, can be rolling correction with monitoring data and find the most effective construction way. In the Future, tunnel monitoring should be based on the ability to quickly obtain numerical values, such as automated reading tools.