

贵阳市政 BJ-1 隧道施工地质超前预报及监控量测技术

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USE OF ADVANCED GEOLOGICAL PREDICTION AND MONITORING MEASUREMENT TECHNOLOGY IN BJ-1 TUNNEL, GUIYANG

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摘要 BJ-1隧道为一浅埋、偏压的市政隧道,泥、页岩风化严重,岩体破碎,岩溶及地下水发育,地下管线和地表建筑物密集,施工安全风险极大。为确保隧道施工安全、保障地表建筑物及居民安全,隧道的施工地质超前预报和监控量测工作非常重要。在分析隧道可能存在的主要工程地质问题的基础上,结合地质预报重点及难点,以地质法为基础、以地质雷达和HSP声波反射法为主要物探手段,对隧道进行了综合地质预报。根据施工安全控制需要,制定BJ-1隧道施工监测实施大纲,重点实施隧道净空收敛、拱顶下沉、地表沉降和爆破振动等监测工作,建立隧道工程监测预警制度。对超前地质预报及隧道监测成果进行综合分析,为本隧道工程的安全施工决策提供了可靠依据,有效地避免了隧道施工过程中危险事件的发生。本研究方法对同类城市隧道工程设计、施工具有重要参考价值。

关键词: 市政工程 隧道 施工 超前地质预报 监控量测

Abstract: The BJ-1 tunnel is a municipal Engineering. It has shallow, bias condition, seriously weathered clay and shale, rock crushing, karst and groundwater development, underground pipelines and surface buildings intensive. So, the tunnel construction safety contained great risky. To ensure the safety of the tunnel construction, to protect surface buildings and the safety of the residents, it was very important to carry out the tunnel construction geological prediction and monitoring measurement. On the basis of analysis of the main engineering geological problems that may exist in the tunnel, the important and difficult geological prediction contents were determined. The comprehensive advanced geological forecast technology were put out. The geological methods were the basic methods. The ground penetrating radar and acoustic wave reflection method were the main geophysical means. According to the construction safety control needs, the implementation outline of the BJ-1 tunnel monitoring was formulated for construction safety control, focused on level convergence, vault sink, surface subsidence and blasting vibration monitoring. The monitoring and early warning system was established for the tunnel. By comprehensive analysis of advanced geological forecast and tunnel monitoring results, a reliable basis was given for the tunnel safety construction decisions. Dangerous incidents were avoided in the tunnel construction process. The research methods had important reference value for construction and design of similar city tunnel projects.

Key words: Municipal engineering Tunnel Construction Advanced geological prediction Monitoring measurement

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