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龙山双连拱隧道动态位移反分析与预测

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摘要 摘要: 龙山双连拱隧道跨度大、埋深浅、围岩稳定性差。为了保证施工顺利进行, 需加强监测并对施工引起的围岩位移做出合理预测, 根据监测及预测位移调整后施工方法。依据施工计划建立模拟动态施工过程的有限元模型, 以第1施工步测点位移的监测值通过反分析确定所需计算参数, 依据此参数预测第2施工步引起的围岩位移; 在得到第2施工步测点监测位移后, 反馈给所建立的有限元模型, 再次进行反分析计算以修正所需计算参数并预测第3施工步所引起的围岩位移; 如此反复进行, 直至施工结束。预测结果与实测位移的对比表明, 在所建有限元模型能够准确模拟实际施工过程及真实施工状态的前提下, 所采用方法可以较为精确的预测后续施工引起的位移, 从而为调整后续施工方案提供依据。

关键词 [关键词: 隧道工程](#) [公路双连拱隧道](#) [反分析](#) [有限元](#) [动态施工](#)

分类号

DYNAMIC DISPLACEMENT BACK ANALYSIS AND PREDICTION OF LONGSHAN TWO-ARCADE TWIN TUNNEL

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Abstract

Abstract: In order to ensure the security of the construction of Longshan two-arcade twin tunnel which has large span, shallow depth and bad wall rock condition, the extensive measurement and reasonable prediction of the displacements of the wall rock are necessary. After the multi-step finite element model, which can simulate the real construction process is established, the measured displacements caused by the first construction step are used in back analysis to achieve the needed parameters; and prediction of the displacements resulted from the second construction step is made based on these parameters. When the second construction step is accomplished, newly measured displacements are compared with the calculated ones. Then newly measured displacements are fed back to the established finite element model and another back analysis is taken to get the parameters which can represent the influence of these reasons of considerable differences. The prediction of displacements caused by the third step is then made based on the computed parameters. The same process is repeated until the construction is completed. It is shown from the results that if the construction state is ignored, considerable difference will occur between predicted displacements and measured ones. On the contrary, if the computation model can simulate the real construction process and the construction state, the results are encouraging. The construction state can be represented by some special parameters; and these parameters can be gotten from back analysis. Therefore, the dynamic method applied to the presentation is an effective way to predict reasonable displacements caused by construction.

Key words [Key words: tunneling engineering](#) [highway two-arcade twin tunnel](#) [back analysis](#) [finite element](#) [dynamic construction](#)

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