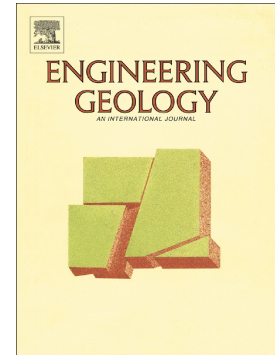


Accepted Manuscript

Geohazards of tunnel excavation in interbedded layers under high in situ stress

Jianping Yang, Weizhong Chen, Wusheng Zhao, Xianjun Tan, Hongming Tian, Diansen Yang, Chishuai Ma



PII: S0013-7952(17)30008-X
DOI: doi: [10.1016/j.enggeo.2017.09.007](https://doi.org/10.1016/j.enggeo.2017.09.007)
Reference: ENGEO 4644

To appear in: *Engineering Geology*

Received date: 3 January 2017
Revised date: 30 August 2017
Accepted date: 8 September 2017

Please cite this article as: Jianping Yang, Weizhong Chen, Wusheng Zhao, Xianjun Tan, Hongming Tian, Diansen Yang, Chishuai Ma , Geohazards of tunnel excavation in interbedded layers under high in situ stress. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Enggeo(2017), doi: [10.1016/j.enggeo.2017.09.007](https://doi.org/10.1016/j.enggeo.2017.09.007)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Geohazards of tunnel excavation in interbedded layers under high in situ stress

Jianping Yang^a, Weizhong Chen^{a,b*}, Wusheng Zhao^a, Xianjun Tan^a, Hongming Tian^a, Diansen Yang^a, Chishuai Ma^a

^a State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, China

^b Research Centre of Geotechnical and Structural Engineering, Shandong University, Jinan, Shandong 250061, China

Jianping Yang: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: jpyang@whrsm.ac.cn

Weizhong Chen: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: wzchen@whrsm.ac.cn
Research Centre of Geotechnical and Structural Engineering, Shandong University, Jinan, Shandong 250061, China

Wusheng Zhao: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: wszhao@whrsm.ac.cn

Xianjun Tan: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: xjtan@whrsm.ac.cn

Hongming Tian: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: hmtian@whrsm.ac.cn

Diansen Yang: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: dsyang@whrsm.ac.cn

Chishuai Ma: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China. Email: 806886758@qq.com

Abstract: In situ stress is one of the most important parameters that affect rock mass stability during tunnel excavation. High in situ stress may induce a series of geohazards, such as rockburst in strong rock and squeezing in weak rock. This paper presents a case study of a tunnel excavated using a tunnel-boring machine across interbedded strong and weak rock layers under high in situ stress in Pakistan. To estimate the induced geohazards during tunnel excavation, in situ stress was measured and the stability of the tunnel was analyzed using the finite element method. In situ stress measured in the strong rock layers shows that the maximum compressive stress is very high, and its direction is

* Corresponding author at: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Science, Wuhan, Hubei 430071, China.

E-mail address: wzchen@whrsm.ac.cn

Download English Version:

<https://daneshyari.com/en/article/5787421>

Download Persian Version:

<https://daneshyari.com/article/5787421>

[Daneshyari.com](https://daneshyari.com)