

Paper Number: 1490

Characteristics, mechanism and stability for the expansive soft rock landslide located in Xinyan section of Wang-Yan highway in Jilin Province, Northeastern China

Han, X.D.¹, Zhang W.¹, Chen, J.P.¹, Wang Q.¹, Niu C.C¹ and Zhan, J.W.¹

¹Jilin Univ, Coll Construct Engn, Changchun 130026, Peoples R China

E-mail address: chenjpwq@126.com

Abstract In recent two decades, highway landslide group has developed around Yanji city in Jilin Province, Northeastern China. Detailed knowledge of characteristics, mechanism and stability of highway landslides in this region is very necessary in order to reasonable governance. The landslide in Xinyan section is one of the highway landslides around Yanji city which is caused by the new filling embankment. The geological condition and deformation characteristics of the landslide were investigated in detail based on drilling work and field work. The soft rock characteristics of the landslide were obtained by mineral composition analysis and geotechnical testing. The result indicated that the soft rock had typical expansive property, which made the shear strength of the soft rock was low. An analysis on mechanism of the landslide was presented considering the expansive soft rock characteristics, the unreasonable load from filling materials for subgrade construction and the groundwater. Under the characteristics and mechanism of the landslide, the progressive failure characteristic has formed in the landslide body, and six potential failure surfaces could be specified based on drilling data, landslide shear crack and large-scale tension cracks in the landslide body. The vertical slice limit equilibrium methods (Bishop simplified and Janbu simplified) were applied to analyze the stabilities of them. This paper presented a comprehensive study on the expansive soft rock landslide in Xinyan section which was helpful for studying and treating other expansive soft rock landslides along the highway around Yanji city.

