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	In the mountain scenic area, we can enjoy the perilous rock landscape in nice style actually with the vivid, infectious, unique, aesthetic appreciation of the value. These vivid perilous rock landscapes not only represent a natural beauty, but also offer a good place to go for the psyche. But the increasing number of tourists aggravates the destruction of perilous rock landscape nowadays, which also harms the tourists and the non-renewable geological heritage. So it is necessary to study the methods to protect perilous rock landscape. However, the current prevention technique about the unstable rock is hard to satisfy the protective requirement of non-destruction and aesthetic on perilous rock landscape, such as the protection of Elephant Trunk Hill. The Elephant Trunk Hill is located in the world geopark of Dragon Tiger Mountain, Jiangxi province, which is a typical natural beauty of Danxia landform, in where are 99 peaks, 24 cliffs, 108 natural and cultural scenic spots. It was formed by the purple-red sandy conglomerate and its angle is almost horizontal. There are two fissures developing in the root of nose and are still expanding. By long-term effect of synergism of endogenic and exogenic geological process, Elephant Trunk Hill take shape a characteristic spot belonging to the grade one landscape, which is a non-renewable nature resource. According to the field engineering geological conditions and the satisfaction of protective principles on perilous rock landscape, the paper proposes a hang-pull method that made by the rope, cable, etc. to provide some upward pull to make the unstable rock suffice the required coefficient of stability, which can protect Elephant Trunk Hill. From the treatment effect, the theoretical calculation of method is easier and the construction is more convenient, so it can be widely applying in unstable rock' s protection in all kinds of				

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Research protecting methods to perilous rock landscape: taking an example of protecting Elephant Trunk Hill in Dragon Tiger Mountain, China

Fuwei Jiang ^a, Fusheng Guo^b East China Institute of Technology, Fuzhou, Jiangxi province China ^ajfwei_666@yahoo.com.cn, ^bfsguo@263.com

Key words: Elephant Trunk Hill; Geological heritage; Protective methods; Hang-pull method; Perilous rock Landscape.

Abstract. In the mountain scenic area, we can enjoy the perilous rock landscape in nice style actually with the vivid, infectious, unique, aesthetic appreciation of the value. These vivid perilous rock landscapes not only represent a natural beauty, but also offer a good place to go for the psyche. But the increasing number of tourists aggravates the destruction of perilous rock landscape nowadays, which also harms the tourists and the non-renewable geological heritage. So it is necessary to study the methods to protect perilous rock landscape. However, the current prevention technique about the unstable rock is hard to satisfy the protective requirement of non-destruction and aesthetic on perilous rock landscape, such as the protection of Elephant Trunk Hill. The Elephant Trunk Hill is located in the world geopark of Dragon Tiger Mountain, Jiangxi province, which is a typical natural beauty of Danxia landform, in where are 99 peaks, 24 cliffs, 108 natural and cultural scenic spots. It was formed by the purple-red sandy conglomerate and its angle is almost horizontal. There are two fissures developing in the root of nose and are still expanding. By long-term effect of synergism of endogenic and exogenic geological process, Elephant Trunk Hill take shape a characteristic spot belonging to the grade one landscape, which is a non-renewable nature resource. According to the field engineering geological conditions and the satisfaction of protective principles on perilous rock landscape, the paper proposes a hang-pull method that made by the rope, cable, etc. to provide some upward pull to make the unstable rock suffice the required coefficient of stability, which can protect Elephant Trunk Hill. From the treatment effect, the theoretical calculation of method is easier and the construction is more convenient, so it can be widely applying in unstable rock's protection in all kinds of construction.

Introduction

Some studies have been attempted to consider the protection and preservation of historic sites and monuments with regard to perilous rock problems and have been reported in the literature. Fangzhen Liu [1] reinforced the rocks under bad condition in the Great Buddha Temple. Tamer Topal [2] assessed the perilous rock hazard around Afyon Castle in Turkey. Yun Fang [3] calculated the stability of perilous rock with the method of limit equilibrium in Huashan rock art in Ningming. Siming He [4] analyzed the regional geological environment conditions, basic rock features and types and prevented of the unstable rock in Leshan Giant Buddha Scenic Area. M. C. Tunusluoglu [5] evaluated perilous rock hazard potential and performed a series of perilous rock analyses in a cultural and natural heritage (Ortahisar Castle, Cappadocia, Turkey). Yosoon Choi [6] made an engineering geological investigation into perilous rock problem in the Seated Seokgayeorae Image carved on a rock face at the UNESCO World Heritage site in Korea.

Internationally, it is sparse to carry out the special studies and reinforcing technology is immature for it in scenic spot. Using the theory of railroading and highway construction tend to damage the landscape, heritage and other heritage monuments.

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