工程地质学报
JOURNAL OF ENGINEERING GEOLOGY

工程地质学报 » 2012, Vol. » Issue (2): 204-212 DOI:

汶川地震重灾区陇南红土坡滑坡稳定性分析与防治对策研究

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STABILITY ASSESSMENT AND TREATMENT FOR HONGTUPO LANDSLIDE IN SEVERE DISASTER AREA OF SOUTHERN GANSU INDUCED BY WENCHUAN EARTHQUAKE

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全文: PDF (774 KB) HTML (KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 汶川地震诱发了大量的次生地质灾害,陇南红土坡滑坡在地震期间局部发生崩塌并出现大量拉张裂缝,该滑坡一旦整体复活滑动,将堵塞北峪河形成堰塞湖,对北峪河下游陇南武都城区8万人以及红土坡上游村庄928人的生命财产安全造成极大威胁。因此准确判断该滑坡稳定性,并采取相应的防治措施尤为重要。本文基于滑坡区地质环境,通过区域地质调查、坡微地貌和变形破坏特征测量等手段,对红土坡滑坡特征和成因进行了系统研究。研究成果表明,该滑坡具有显著的分级分块滑动特性,地震、降雨、河流冲刷及不良的岩土体工程地质性质是形成该滑坡的主要因素。在分析滑坡成因的基础上,采用传递系数法等手段,定性与定量相结合,评价该滑坡在天然、暴雨和地震工况下的稳定性,并提出了预应力锚索框架+拦挡坝+排水+护岸墙等综和防治对策。

关键词: 汶川地震 滑坡 稳定性分析 防治对策

Abstract: The"5?12"Wenchuan earthquake induced many secondary geological disasters.The Hongtupo landslide in southern Gansu took place in large-scale collapse and cracks during the earthquake.If the landslide was moved as a whole,then it would form a dammed lake.It seriously threats the safety of eighty hundreds people in place below the landslide.So,it is very important to adequately understand stability of the landslide and take effective emergency measures.Based on the geological environment where landslide located,a systematic research on characteristics and forming mechanism of the Hongtupo landside at Southern Gansu was achieved.The used methods includedregional geological investigation,measurement of micro physiognomy and failure and geophysical reconnaissance survey.The research results show that this landslide has the characteristics of remarkable classification and partitioning.The key elements of inducing this landslide to be revivable are rainfall,earthquake,river degradation and poor rock and soil mass engineering geological properties.Based on the landslide forming mechanism,using the method of transfer coefficient and so on,the stability states were evaluated by combination of qualitative and quantitative analysis on the conditions of natural state,rainfall and earthquake,respectively.The integrated control measures of prestressed anchor cable frame,blocking dam,draining and protective wall are put forward.

Key words: Wenchuan earthquake Landslide Stability analysis Control measures

收稿日期: 2011-06-25;

基金资助:交通运输部行业联合科技攻关项目(2008353361420), 西部灾害与环境力学教育部重点实验室开放基金项目(Klmwde201004), "5·12" 汶川地震中央灾后重建基金项目资助

引用本文:

穆鹏,吴玮江,折学森. 汶川地震重灾区陇南红土坡滑坡稳定性分析与防治对策研究[J]. 工程地质学报, 2012, (2): 204-212.

MU Peng,WU Weijiang,SHE Xuesen. STABILITY ASSESSMENT AND TREATMENT FOR HONGTUPO LANDSLIDE IN SEVERE DISASTER AREA OF SOUTHERN GANSU INDUCED BY WENCHUAN EARTHQUAKE[J]. Journal of Engineering Geology, 2012, (2): 204-212.

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