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论文

纵波作用下边坡动力响应规律研究

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摘要：

地震工程的观点认为水平地震力是引起岩土体破坏的决定性因素,竖向地震力的影响则微不足道。鉴于汶川地震中表现出竖向地震力对边坡和建筑造成极大破坏,本文利用FLAC软件对不同坡高、坡角的边坡在不同周期、振幅的纵波作用下边坡动力响应规律做了数值模拟研究。结果表明：坡高较低时,振动加速度在1/2坡高以下范围内随高程逐渐增大, 1/2坡高以上则保持不变,当坡高增大时,振动加速度变化出现律动性,坡顶附近较其他部位存在明显的放大； 坡角的增大会造成振动加速度放大幅度的增大； 振动加速度随动力振幅的增大而增大,并呈明显的线性关系； 振动加速度随地震波周期的增大逐渐减小。

关键词： 边坡,纵波,动力响应规律,竖向加速度,FLAC

GENERAL LAW OF DYNAMIC RESPONSE OF SLOPES UNDER SEISMIC P WAVE

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Abstract:

In the viewpoint of seismic engineering,the horizontal seismic force is the decisive factor that leads to rock soil mass destruction,while the vertical seismic forces are negligible. In view of huge destruction of the slopes and constructions

caused by vertical seismic force in Wenchuan Earthquake,this paper conducted a numerical simulation research on the horizontal and vertical response law of the vertical acceleration in the slope with different heights and slope angle under the influence of the P wave with different cycles and amplitude by use of FLAC finite difference software. The results showed that when the slope height is low,the acceleration,less than half of the slope height,increases with the height,while more than half of the slope height,it remains unchanged. When the slope height increases,the acceleration changes with a regularity,and the acceleration in the peak of the slope is bigger than any other parts in the slope. The bigger the slope angle and the greater the vibration acceleration enlargement ranges.The vibration acceleration increases as the amplitude increases. They have significant linear relations.The vibration acceleration on the slope increases as the cycle gradually decreases.

Keywords: Slope stability,P wave,Dynamic response,Vertical acceleration,FLAC,Wenchuan earthquake

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