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论文

岩质边坡关键块体的搜索方法及工程应用

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摘要:

工程边坡开挖所揭露的某些结构面组合块体在破坏原有静力平衡状态后,进行应力重新分配,进而块体会发生失稳、滑动等变形,甚至影响到整个边坡发生破坏,因此,结构面组合块体的稳定性是决定岩质边坡稳定的重要因素。本文通过对某工程开挖边坡地形和结构面三维实体模型的建立,实现了边坡结构面与开挖地形实体模型在AutoCAD平台上的可视化操作,剖切不同位置的二维图形预测分析了边坡开挖后可能存在的结构面组合块体,采用块体计算程序(Swegde)验证关键块体并进行稳定性评价。结果表明:三维实体模型及剖切技术与块体计算方法的结合,易于搜索关键块体。事实证明,该方法操作简便,计算结果准确,搜索方法具备可行性。

关键词: 岩质边坡,实体模型,关键块体,可视化

SEARCH METHOD OF KEY BLOCK IN ROCK SLOPE AND ITS APPLICATION

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Abstract:

Cut slopes are usually formed during excavating in rock mass. The rock structural surfaces are exposed and rock blocks are formed. They influence the cut slope and cause it breaking. The failure would occur after the original static

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岩质边坡,实体模型,关键块体,可视化

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equilibrium state is destroyed and the stress is redistributed. Therefore, the stability of rock blocks formed with structural surfaces is the important factor that determines the stability of rock slope. This paper establishes a 3D solid model to realize the visible operation of cut slope and structural planes and excavation terrain model on an AutoCAD Platform. It then makes sectional cutting of two-dimensional graphs in different locations. It further makes a forecast and analysis of structural surface assembly blocks possibly existed after excavation. It adopts the block computational procedure (Swedge) to verify the key block and makes an evaluation on its stability. The results show that it is easy to search the key block of rock slope through 3D solid model and the slice technology in combination with block calculation. It is proved that this method is simple. The calculation result is accurate. The search method is feasible.

Keywords: Rock cut slope Solid model Key block Visualization, Slope stability

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