



论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.32 No.6 Dec.2001

[PDF全文下载] [全文在线阅读]

文章编号: 1005-9792(2001)06-0573-04

钢筋混凝土不规则板的极限分析

王方¹, 杨智², 黄赛超¹

(1. 中南大学资源环境与建筑工程学院, 湖南长沙 410083;
2. 湖南大学土木工程学院, 湖南长沙 410012)

摘要: 由于不规则板边界条件的多样性、受力性能的复杂性, 要得到其弹性理论解非常困难. 板的极限分析方法能有效地解决不规则板在特定条件下的受力分析问题. 作者通过选择板的合理内力函数, 对钢筋混凝土“L”形不规则简支板在均布荷载作用下可能出现的弯矩和扭矩分布状态, 按照极限分析的方法, 使板满足平衡方程与边界条件, 并使其不违背屈服准则, 推导出钢筋混凝土“L”形不规则板极限分析的一般下限解. 研究表明, 推导出的极限荷载值与4块“L”形钢筋混凝土板的试验值比较接近, 证明所推导的一般下限解是正确的.

关键词: 钢筋混凝土; 不规则板; 极限分析; 一般下限解

The limit analysis of irregular reinforced concrete slabs

WANG Fang¹, YANG Zhi², HUANG Sai-chao¹

(1. College of Resources, Environment and Civil Engineering, Central South University, Changsha 410083, China;
2. College of Civil Engineering, Hunan University, Changsha 410012, China)

Abstract: It is very difficulty or impossible to obtain an elastic solution for irregular slabs under the various boundary conditions and the complicated stress conditions. Therefore, very few reports have been found to discuss the problem. But, in building engineering, there has not been appropriate calculation method to deal with irregular slabs. The limit analysis of slabs can effectively solve the calculation problem of irregular slabs in some specific conditions. In this paper, a suitable stress function of slab has been selected to solve the general lower bound solution of reinforced concrete irregular slabs with L plane form. The calculating course of the simply supported slab which bears the uniformly distributed load is given, which fits the edge support condition and the equilibrium equation, and does not violate the yield criterion. Compared with the four test slabs, the calculation method is satisfactory.

Key words: reinforced concrete; irregular slabs; limit analysis; lower bound solution

版权所有：《中南大学学报(自然科学版、英文版)》编辑部

地 址：湖南省长沙市中南大学 邮编： 410083

电 话： 0731-88879765 传真： 0731-88877727

电子邮箱： zngdxb@mail.csu.edu.cn 湘ICP备09001153号