论文

薄壁深梁弯剪耦合应力分布规律

郭佳陇[1,2],王正中[1*],谌磊[1],朱军祚[1]

1. 西北农林科技大学水利与建筑工程学院, 陕西 杨凌 712100；2. 安徽省水利水电勘测设计院, 安徽 合肥 230088

摘要：

均布荷载作用下深梁的正应力属于弯剪耦合应力,传统的细长梁应力计算公式误差较大不再适用,在对薄壁深梁的设计中存在很多问题.基于梁横力弯曲的挠曲微分方程,推导出双轴对称截面深梁在横向均布荷载作用下弯曲正应力的计算公式,并对其弯曲正应力的沿梁长、梁高分布规律影响因素进行了分析.采用ANSYS软件对工程实例进行计算分析,利用分析结果对推导公式进行精度评价.结果表明：精度满足要求，对各类薄壁深梁的设计具有指导意义.

关键词： 深梁 均布荷载 弯剪耦合 应力分布

The stress distribution law of thin   walled deep beams with the shear-bending coupling

GUO Jia-long[1,2], WANG Zheng-zhong[1*] , CHEN Lei[1], ZHU Jun-zuo[1]

1. College of Water Resources and Architectural Engineering,Northwest A&F university, Shaanxi 712100, China；2. Anhui Survey And Design Institute of Water Conservancy and Hydropower

Abstract:

Positive stress belongs to the shear-bending coupling stress of deep beam under uniform load. The traditional formula of the slender beam is no longer suitable because of the comparatively great error, which can cause many problems in the design of a thin-walled deep beam. The flexural differential equation of a beam under lateral force and the calculation formula of positive stress of a thin-walled deep beam with bi-axed symmetrical cross   section under lateral uniform load were put forth, and the influential factors of bending positive stress along the length and height of the beam were analyzed. The software ANSYS was used to analyze two different examples and utilized the result to make precision evaluation on the formula. It indicated that the accuracy meets the requirements. Some instructions to the design of various thin-walled deep beams were obtained.

Keywords: deep beams   uniform loads   shear-bending coupling   stress distribution

通讯作者: 王正中

作者简介：

本刊中的类似文章

扩展功能

本文信息

Supporting info
PDF(1039KB)
[HTML全文](0KB)
参考文献[PDF]
参考文献

服务与反馈

把本文推荐给朋友
加入我的书架
加入引用管理器
引用本文
Email Alert
文章反馈
浏览反馈信息

本文关键词相关文章

▶ 深梁
▶ 均布荷载
▶ 弯剪耦合
▶ 应力分布

本文作者相关文章

▶ 郭佳陇
▶ 王正中*
▶ 谌磊
▶ 朱军祚