[1]白丽丽,王振清,苏娟,等.火灾后钢筋混凝土梁的抗弯可靠性[J].自然灾害学报,2009,01:95-99.
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火灾后钢筋混凝土梁的抗弯可靠性(PDF)

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Title: Bending reliability of RC beam after fire exposure

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关键词: 火灾; 钢筋混凝土梁; 抗弯可靠性

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摘要: 利用ANSYS软件对火灾发生时钢筋混凝土梁截面的最高温度分布进行了分析,确定了火灾后钢筋混凝土梁的抗力折减系数,建立了火灾后梁的抗力模型和极限状态方程.利用改进的一次二阶矩法计算了不同温度作用下钢筋混凝土梁在承受原设计荷载时的可靠性指标,分析了不同受火时间对钢筋混凝土梁可靠性指标的影响,为火灾后钢筋混凝土构件的破损评估分析提供了理论基础.算例分析表明,不同受火时间对钢筋混凝土梁的可靠性有很大的影响,梁在受火时间超过120分钟时,需进行加固维修.

Abstract: The ANSYS software was utilized to analyze the maximum temperature distribution of reinforcement concrete(RC) beam section during exposure to fire.Reduced coefficient of resistance of the RC beam after fire was decided,resistance model and limit state equation of the RC beam after fire was determined.Reliability index of RC beam after different fire duration was calculated through the AFORM method for the beam under original design load.Influence of different fire duration on reliability index of RC beam was analyzed and this paper supplies some theoretical basis to the damage assessment of the RC member.The results of specific calcu lated example indicate that different firs duration have impact on the reliability of the RC beam,and the beam should be streng thened when the fire durat ion is over 120 m inutes.

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参考文献/REFERENCES

[1] 林鹏,赵春梅,卢兆明,袁国杰.性能化火灾安全评估应用个案研究[J].自然灾害学报,2006,15(1):74-78页.
[2] G.TG.Moham edbhai.Theres idual strength of concrete subjected to elevated temperatures[J].Concrete,1983(11):22-27P.

[3] U.Schnerder.Rebiability of fire damaged structures,CIBW 14 Report[J].Fire Safety Journal.1990 15(4):251-338P.
[4] 闵明保等.建筑物火灾后诊断与处理[M].南京:江苏科技出版社,1994,55-72页.
[5] R.Folic,V.Radonjanin,M.Ma lesev.The assessment of the structure of Novi Sad Open University damaged in a fire [J].Construction and Build ing Materials.2002(16):427-440P.
[6] 共和国建设部.G B50068-2001建筑结构可靠度设计统一标准[S].北京:中国建筑工业出版社,2001.
[7] Bing Chen,JuanyuLiu.Residual strength of hybrid-fiber-rein forced high-strength concrete after exposure to high temperatures,Cemment and Concrete Research.2004(34):1065-1069P.
[8] Zhan-Fei Huang,Kang-Hai Tan,Wee-Siang Toh,Guan-Hwee Phng.Fire res is tance of composite columns with embedded I-sectionsteel E ffects of section size and load level.Constructional steel Research.
[9] 吕天启.高温后混凝土静置性能的试验研究及已有建筑物的防火安全评估.大连理工大学博士学位论文,2002:53-68 页.
[10] L.Sarvaranta and E.Mikkola.Fiber mortar composites under fire conditions:effect of ageing and moisture content of specmiens,Materials and Structures,V 27,1994:532-538P.
[11] 谢荻敏,钱在兹.高温(明火)作用后混凝土强度与变形试验研究.工程力学(增刊),1996:54-58页.
[12] 吴波.火灾后钢筋混凝土结构的力学性能[M].北京:科学出版社,2003,36-58页.
[13] 李继华,林忠民,李明顺等.编著,建筑结构概率极限状态设计[M].北京:中国建筑工业出版社,1990,324-350页.
[14] Madsen H O,Krenk S,Lind N C.Methods of Structural Safety.New Jersey;Prentice-Hall,Inc.,1986.

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