



吊杆退化钢丝损伤模型及双折线近似计算

The Proposed Damage Model and Bilinear Approximation of Deteriorated

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英文关键词: [arch bridge](#) [suspender](#) [deteriorated wires](#) [damage model](#) [bilinear](#)

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中文摘要

提出了新的钢丝损伤模型及双折线近似计算方法。根据退化钢丝单调拉伸试验数据和有限元模拟结果,以钢丝荷载一位移包络加载历程等影响因素的损伤模型。并结合精确积分及S. M. Elachachi本构方程损伤计算结果,给出了新的双折线近似计算方法。依据进行了模型验证和参数分析。结果表明:钢丝损伤后,其力学性能退化较明显,本文建立的吊杆损伤因子反映了各力学性能的退化,较

英文摘要

A new damage model and bilinear approximation of deteriorated wires in suspenders are suggested based on the examined by experimental tests and FEM simulation in this paper. According to force-displacement envelope of deteriorated wires, bilinear approximation are proposed. The model is cumulative and capable of combining the real constitutive relation, corrosion, and loading history. The new bilinear approximation of deteriorated wires is advanced based on the exact constitutive method. Furthermore, the damage indicator of suspender is established combined with the corrosion distribution. The rationalization of the proposed model is validated and the sensibility of parameters is illustrated. It is found significantly with the corrosion and actual load history. In addition, the damage indicator of suspender in this paper reflects the degradation in strength, stiffness, and limit strain.