

A practical approach for supporting decisions in bridge condition assessment and monitoring

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1 Abstract

In this contribution a practical and rational decision-making approach is presented to be applied for common bridges typically managed by public authorities. The authors have developed a model with the intention to be applicable for practical cases for common bridges in the daily work of bridge operators responsible for a large number of assets, yet still maintain the principles of more generic frameworks based on probabilistic decision-theory.

Three main attributes of the verification of sufficiency of structural performance are considered, namely: 1) the level of sophistication of modelling performance, 2) the degree of verification and acceptance criteria in terms of dealing with uncertainties and consequences, 3) the extent of information is obtained and incorporated in the verification.

The simplicity of the approach is demonstrated through an illustrative case study inspired by practical condition assessment decision problems. It is argued that in practical cases it may be desirable to utilize less advanced methods owing to constraints in resources or lack of reliable data (e.g. based on structural health monitoring or other on-site measurement techniques).

Keywords: bridges; condition assessment; monitoring; decision-making.