

A proposal for classification of key performance indicators for road bridges

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Abstract

Because of the competing demands for scarce resources (funds, manpower, etc) national road owners are required to monitor the condition and performance of infrastructure elements through an effective inspection and assessment regime as part of an overall asset management strategy. COST Action TU1406 aims to bring together research and practicing communities in order to establish a European guideline in this issue. In this context, this paper proposes a framework to classify research-based performance indicators related to highway bridge life-cycle analyses according to a parameter readiness level (PRL). Such a method examines program concepts, technology requirements, and demonstrated capabilities to rate the level of maturity of different categories of indicators. This approach is illustrated with some examples.

Keywords: Performance indicators; parameter readiness level (PRL); maintenance; road bridges; COST TU1406.

1 Introduction

The transport system represents a fundamental factor for the economic and social development, as it allows the quick, safe and easy exchange of passengers and freight. For the most part, this mobility is sustained by the network of roads and highways providing high level of service and flexibility [1-3]. To maintain a high quality of service, there is a significant need for tools which allow road administrations to better manage their infrastructure stock. In particular, these tools have to enable condition assessment of the infrastructure asset and then help make decisions policies [4-5].

Road bridges are key elements in terms of safety and functionality for the whole infrastructure. The ageing and deterioration of bridges and the increased traffic intensities and loads, make them the bottlenecks of the transport infrastructure. The inconveniences (congestions) created by the necessary activities for upgrading and repairing these civil engineering structures grow rapidly with increased traffic and age [6-8].

The decision to replace or repair, when and how to repair each individual structure, is a common and difficult management issue for asset managers. For structural assessment, various types of sensor information are used to generate data related to the health and load carrying