An assessment model for identifying maintenance priorities strategy for bridges

Dina Mahmoud Mohamed Elsayed Mansour,Ibrahim Mahmoud Mahdi Mostafa ,A Khalil, H Arafat

Abstract

The main purpose of this paper is to develop a model which is capable of assessing the overall condition of bridges as well as the condition of each element for the purpose of prioritizing maintenance strategies. The model will also be capable of ranking the bridges in a network according to their urgency of need for repair based on specific parameters. This paper explains how to achieve reliable assessment of a bridge starting with visual inspection and proceeding with the collection of information and carrying out in-depth investigations to achieve a reliable indication of the bridge's repair needs and its priority in the road network. The model is designed especially for bridges in Egypt as a typical example of a developing country. The methodology of the research was started by surveying the various inspection techniques of bridges. Then all probable defects, their causes and the appropriate repair techniques are identified and classified. After that, the experience and knowledge of bridge maintenance experts in Egypt were added to create evaluation criteria for reliable assessment model to prioritize maintenance strategy of bridges. This is incorporated via conducting questionnaires and interviewing those experts. The final outcome is a Bridge Overall Priority Indicator (BOPI) that ranks the bridges in a network according to their condition and maintenance urgency. The model is designed to be applied to the bridges in Egypt as it is based on the body of knowledge and expertise gained by maintenance and repair experts but it can easily be adjusted to suit any other country. Also the model is designed to cover specific bridge elements which are of major significance in bridge performance as described in this work while overlooking some, less important, elements. It has been observed that there is no effective bridge maintenance plan in most of the developing countries and that in most cases maintenance is carried out after an event has occurred and resulted in severe damage and caused a public outcry. Also developing countries have limited budgets for maintaining their assets. Therefore, it is very important to have an assessment criterion as a development tool to optimize the use of scarce maintenance budgets and get the most out of aging bridge networks.

Ain Shams Engineering Journal 2019, December

Future University In Egypt (http://www.fue.edu.eg)

Copyright É 2026 [Future University in Egypt]. All rights reserved.